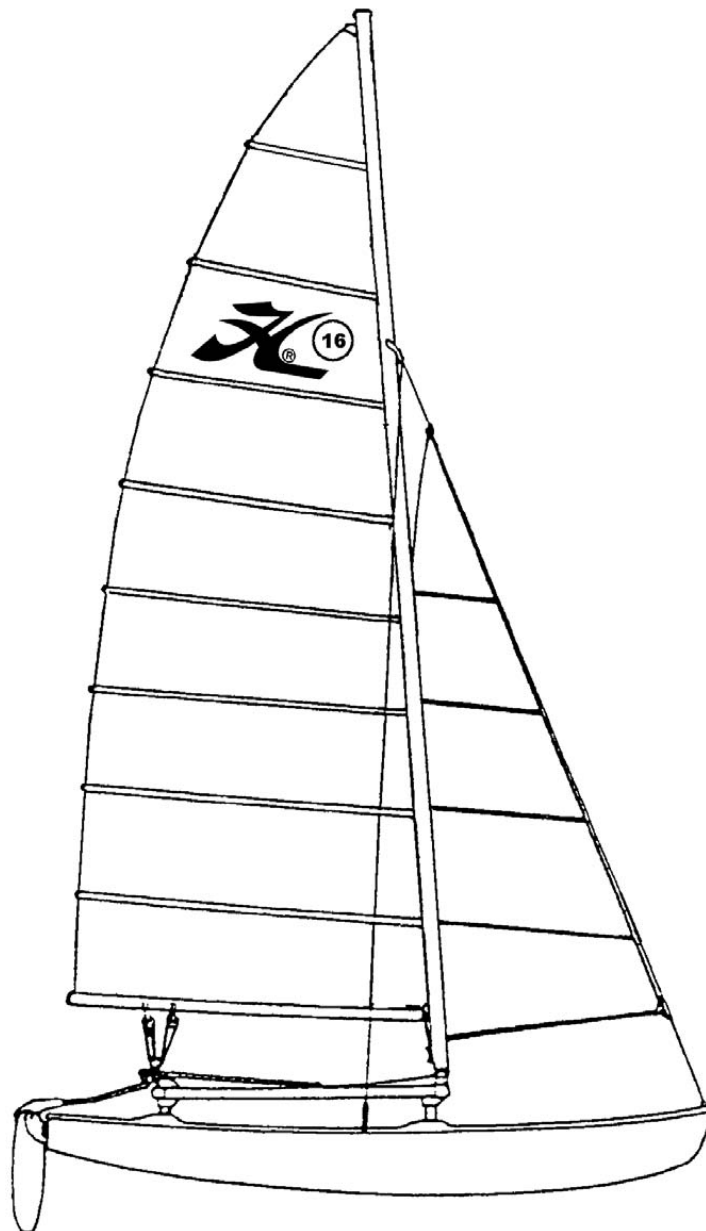


SUMMARY OF HOBIE 16 SAILING AND TUNING TIPS

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The following ideas, expressions and words were freely taken from the references listed at the end. These ideas were combined, grouped and edited with the sole purpose to compile a structured, explanatory summary of the available body of knowledge on Hobie 16 sailing and tuning, excluding tactics.



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GENERAL

1. Never sail out in strong wind only to prove that you are not a coward! And never put yourself in a dangerous position of sailing without the proper safety equipment.
2. Always check the condition of every part of your boat before sailing off to make sure you will not be caught unaware.
3. Always check that the rudders are free to be locked down, that the rudder cams are in the upright, unlocked position and that the main and jib-sheets are untangled before you set off to sail.
4. Always set and check the trapeze hooks before going afloat.
5. Follow a fixed routine while rigging the boat so that you do not forget to insert the drain plugs and attach the bridle fly (burgee).
6. Know the position of the shallow underwater obstacles in the area where you plan to launch and land the boat.
7. Do not sail in electrical storms. Lightning kills!
8. The weight distribution of the helmsman and crew is critical. It makes the difference between going slowly and getting in the groove and going fast.
9. Aim to have the waterline parallel to the water. The waterline along the leeward hull should hit about 50 - 100 mm below the bow, and the bottom point of the stern should just be above the water. The Hobie 16's hull bow area is narrow and more symmetrical than the stern, which is wide and asymmetrical in comparison. Thus you have a nice low-drag foil area cutting the water.
10. If your weight is too far forward the rudders will stall and the boat will be difficult to steer. Conversely if you are too far back the sterns will drag causing turbulence that will be apparent from the noise coming from the back of the boat.
11. The vertical, flat backs (square sterns) of the hulls, where the rudders attach, act as a brake on the boat. The further the bottom edges of these flat backs are depressed into the water, the more the water passing underneath the hulls has to kick back up into the void created by the depression of the water. This causes turbulence. Sit as far forward as possible in all directions of sail to keep the rear end out of the water. A Hobie likes to be sailed on its nose!
12. Sit, stand and trapeze near one another if you are on the same side - it is also much more comfortable if the boat is not hobby-horsing around causing a reduction in speed.
13. Make sail adjustments gentle and keep body movements smooth and to a minimum. This is especially required in light wind to avoid shaking the shape out of the sails and destroying the airflow across it. Every time you move, the mast swings and upsets the flow of air around the sails and it takes several seconds before the air flow becomes smooth again. Moving about also causes the hulls to see-saw vertically in the water and this upsets the flow of water past the boat.
14. In very light wind raise the windward rudder to reduce water resistance.
15. Never cleat the mainsheet no matter how tired your hands and arms are! Rather use main blocks with a ratchet system that allows the skipper to easily hold high line tension loads while the sheet is not cleated. When a gust hits your reaction time may be too slow to release the sheet to prevent capsizing. This is good advice!
16. Overloading a Hobie can cause a cartwheel capsize when the bow of the leeward hull makes a nosedive even in very light conditions because there may just not be enough buoyancy provided by the leeward bow.
17. Since a capsized Hobie floats on its side with the large trampoline area exposed to the wind, it is important that you remain connected to the boat as it capsizes by holding on to the mainsheet or jib-sheet, or it may blow away from you. The boat is your life raft, so hang on!
18. It is important to realise that the rudders act as brakes, therefore, use them as little as possible and with sensitive smooth tiller movement.

19. Conversely you can quickly break a catamaran by releasing the sheets and sharply turning one way and then the other.

RIG TENSION

1. Tremendous stress occurs in the shrouds and bridal wires. Check these regularly for any sign of corrosion or wear.
2. On a Hobie 16 the forestay only plays a role to keep the mast upright before the jib is hoisted as this function is replaced by the jib luff that is tensioned by the jib halyard.
3. The tension of the rig is set by adjusting the jib halyard. Pull the jib halyard until the shrouds go snug, not super tight. (Snug = take up the slack and pull another 70 mm on a 3:1 halyard system).
4. Remember that when the mainsheet is tensioned it pulls the mast backwards and, therefore, also increases the jib luff tension.
5. In all rigging and sail trim situations "the stronger it blows the tighter it goes".
6. If the jib halyard is too tight it causes mast rotation problems and if it is too loose it causes the mast and sails to bang around in light wind or choppy sea conditions.
7. A tight rig that does not allow the mast to move (except to rotate) gives maximum power from the sails for moderate wind.
8. In light wind it pays to avoid excessive tension on the rig and sheets.
9. Too little rig tension results in lack of power and pointing ability. Thus if you are underpowered, very easy to pull the mainsheet block-to-block, dragging in the water or difficult to trapeze, or seem to be unable to point close to the wind: Tighten the jib halyard that gives more rig tension and less mast rake.
10. Too much rig tension will cause the boat to fly a hull rather than accelerate in the gusts. Thus, if you are overpowered, can't pull the mainsheet block-to-block, have difficulties holding the hull down upwind, or seem to be able to point close to the wind but sailing slow, release the jib halyard that gives less rig tension and more mast rake.
11. In strong wind a loose rig (shrouds and jib halyard) allows the mast to rake more aft and lean sideways to spill power at the top of the sail, it opens up the jib slot while you can maintain centre traveller (main and jib) position. This allows the lower part of the mainsail to produce height to windward. However, it is important that you should still be able to apply enough sheet tension to flatten the sails. In strong wind too little rig tension can prevent flattening of the jib and mainsail as the jib-sheet and mainsheet reach block-to-block too easily, resulting in excessive power, hull flying and poor speed.
12. Keep the trampoline lacing tight without tearing out the grommets. This makes the boat stiffer and therefore faster.

MAST RAKE

1. The mast rake is the amount by which the mast leans backwards from the upright (vertical) position.
2. The minimum mast rake depends on the setting of the side stays in the shroud chain plates. Decrease the minimum mast rake by going up with the pin on the shroud chain plates and vice versa.
3. Increase the mast rake from the minimum setting by loosening the jib halyard. Never let the forestay go tight by a too slack jib halyard! Decrease the mast rake back to the minimum set by the shroud adjusters by tightening the jib halyard.
4. Forward mast rake gives leeward helm and lifts the sterns.
5. Lee helm is a terrible thing to have. It makes beating difficult, reaches become dangerous, excessive drag is created most of the time and if you fall overboard your cat will be encouraged to sail away. Lee helm can also make the boat's steering "twitchy" and unpredictable in gusty weather and at certain angles of sail.

6. Backwards mast rake gives weather helm and lifts the bows as the centre of effort of the sails moves aft. The cat will turn up towards the wind if the tiller is left free which is the safer condition.
7. Increasing the mast rake will give you extra speed and more stability. However, you pay a price for this as the boat with extra mast rake has extra weather helm. To compensate for this extra weather helm and to keep the boat running straight, the skipper has to supply extra tiller effort against the tendency to turn up into the wind.
8. Heavier teams should use less mast rake.
9. If you want to get maximum speed from your Hobie, rake the mast back as far as possible. The limiting factor is the leech tension in the mainsail and jib. The mainsheet blocks determine how far you can rake the mast back. As you rake the mast the loose, outer end of the boom tilts down towards the deck. This makes the mainsheet blocks come closer together. You can't rake the mast beyond that point of the blocks touching each other. The mast rake should be such to provide for a 300 to 355 mm (12 - 14") distance between the boom and back cross bar.
10. If the mast is raked back too much you will not be able to sheet the mainsail tight enough as the mainsheet will reach block-to-block too easily.
11. Mast rake is further limited by the fact that you want to be able to flatten the mainsail using mast bend that is induced by a very tight mainsheet. Therefore, you can only have the blocks touching after you have maximum operating tension on the mainsheet. If you have too much rake the blocks will touch before any mast bend is induced. See "Mast bend" below.
12. With mast rake the mast rotates backwards and, therefore, the jib also rotates backwards and down. With too much mast rake the jib cleat ends up too close to the jib traveller and you will not be able to sheet the jib tight enough as the jib-sheet will reach block-to-block too easily. Furthermore the jib clew may then be directly above the jib traveller and no matter which jib cleat hole you used while rigging, the jib-sheet will be vertical resulting in a very tight leech and a loose foot and you will not be able to flatten the jib or open the slot.
13. The class standard for measuring mast rake is to take the main halyard to one of the bows and place it at the top of the screw that attaches the bridle. With the halyard pulled taught from the top of the mast, mark the spot on the halyard that touched the screw. Then walk the halyard back to the transom of the same hull and mark the spot that measures to the bottom corner of the transom - this should be shorter than the previous measurement. The distance between the two marks is the measured rake. A good starting rake is 406 mm (16").

RUDDERS

1. The rudders on a Hobie 16 should be toed in 3 mm. With the rudders locked down, measure halfway down both rudders on both the leading and trailing edges and mark the positions. Measure the distance between the trailing edges as well as between the leading edges at these marks. The distance between the trailing edges should be 3 mm more.
2. If you are sailing around with one rudder up most of the time, this alignment is not important.
3. The rudders should be tucked under the transom, i.e. raked forward to balance the sideway forces on the rudder. See the Hobie Cat Sailing and Trailering Guide for instructions.
4. Service the rudders to remove all play (slop).

SAIL TRIM

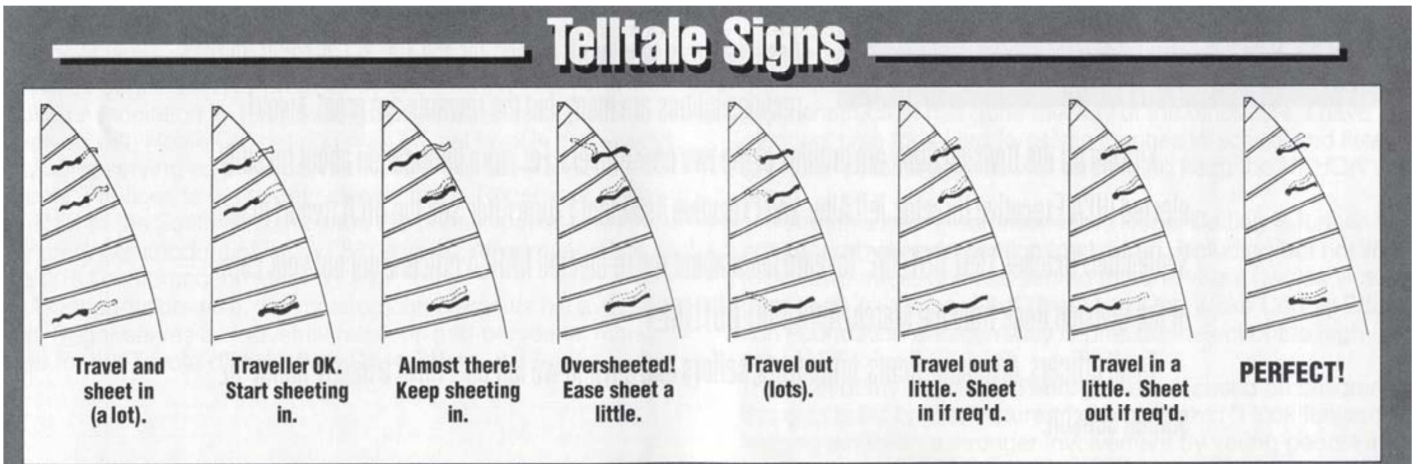
Tell-tales

1. The tell-tales react to the air flowing over the sail and are used to evaluate the effectiveness of sail trim.
2. For properly trimmed sails both the leeward and windward tell-tales should stream horizontally astern. If they flutter or blow forward, they indicate that the air stream has separated on that side of the sail causing turbulence.
3. The windward tell-tales will tell you when you are approaching a luff. When they start to point upwards or forward (fluttering), you are under-sheeted or pointing too close to the wind. However, in strong wind the windward tell-tales will seldom point straight back but fly back and up at about 45°.
4. If the leeward tell-tales stall (are fluttering) you are over-sheeted or not pointing close enough to the wind. Except for the sign of the tell-tales, over-sheeting is invisible because the sail will still keep its airfoil shape. This is unlike luffing where the sail starts flapping.
5. A Slight luff as indicated by the windward tell-tales is not as detrimental as a stall of the leeward tell-tales.
6. Furthermore, the airflow on the leeward side of a sail provides about two thirds of the sail's total drive, therefore it is more important to keep the leeward tell-tales streaming if the leeward and windward tell-tales refuse to stream back both at the same time.
7. The most critical telltale to be kept flowing on the mainsail is the leeward one just below the Hobie Cat sign.
8. If the upper and lower jib tell-tales are behaving differently it shows that the jib clew plate hole setting is tensioning the jib foot and leech differently. Adjust the position of the hole used. It may also be caused by an incorrect jib traveller position. See "Sheet tension and traveller position" below.
9. Leech tell-tales on the mainsail are valuable to indicate a properly trimmed sail.
10. While the standard tell-tales are used for steering, the leech tell-tales are used to indicate proper sail twist.
11. The wind needs to exit smoothly from the leech and this is the case when the leech tell-tales flow straight back.
12. When a leech telltale disappears around the lee side of the mainsail it means the mainsheet is too tight. The sail has too little twist, the leech of the sail is hooked (curled to the inside), and an eddy is forming behind the mainsail leech. Ease the mainsheet a little.
13. Try to have the mainsail leech tell-tails flowing 50% of the time. If these flow for less than 50% of the time, you are over-sheeted!

Sheet tension and traveller position

1. The major function of the jib-sheet and mainsheet is to control the angle at which the wind hits the luff of the sails.
2. The most common mistake for novices is over-sheeting (leeward tell-tales do not flow). This disrupts the flow of the wind on the sail and causes drag instead of creating power from the sail.
3. You are definitely over-sheeted if the leeward telltale does not flow even when the windward telltale indicates that the sail is apparently under-sheeted. It is likely that the leech telltales will then also not flow back.
4. If you feel more than normal weather helm on the tiller (and a rudder did not kick up) it is also an indication that you may be over-sheeted.
5. Use the traveller together with sheet tension to get the whole sail trimmed. The shape of the lower third part of a sail is affected more by the position of the traveller while the shape of the upper part of the sail is more affected by sheet tension.

6. When only the lower leeward tell-tale on the mainsail stalls it may be due to the traveller that is too far in (centered). It can also indicate that the jib is sheeted incorrectly causing the airflow to separate from the leeward aft surface of the mainsail.
7. Use the following procedure to determine the correct traveller position and sheet tension. Pull in the sheet until the upper leeward telltale begins to stall, and then ease out until it flows again. Move the traveller in until the lower leeward telltale stalls, and then move the traveller out until it flows again. See also the telltale signs below as taken from one of the references.



8. When beating in strong wind, and you need to spill wind, rather let the traveller out before you reduce the mainsheet tension. Using the traveller to let the sail out while keeping a tight mainsheet minimises twist-off and allows the majority of the mainsail to remain in trim. A tight mainsheet also keeps the jib forestay (luff) tight and helps the boat to point.
9. If you let the mainsheet way out to reduce power (when beating) you cause a lot of twist-off that makes the boat hard to control.
10. Pulling in the sheet is an effective way to flatten the sail. It also moves the draft in the sail slightly forward. But, the effect it has on the leech of the sail is the most significant factor in generating power.
11. When beating, the leech of the mainsail should ideally point aft, parallel to the centreline of the boat. Look at the leech about two-thirds of the way up the sail and adjust the mainsheet until it is right. Too much mainsheet tension will hook the leech, which is slow as it destroys the wind flow. You will also make more leeway.
12. It is a common mistake to have the mainsail leech hooked at the top. The wind cannot exit smoothly at a hooked leech. See "Tell-tales" above. Correct a hooked leech by sheeting and/or travelling out.
13. The leech of a fully battened catamaran sail controls the power and heeling force. Carrying an open leech in moderate airs is dumping off sorely needed power, but a closed leech in very light airs acts like a break.
14. The stronger the wind, the flatter the sails must be trimmed. Flatten the sails by tensioning the main and jib-sheets to allow the air to move across them faster. If you tension the mainsheet, the mast bends back and this also causes a flatter mainsail. In strong wind you cannot over-tighten the mainsheet. Sheet it as hard as you can to flatten and de-power it.
15. When tuning the sails on land, remember that without wind in the sails a sail that looks good on land may not be good in use – check sail shape while sailing.

Downhaul

1. Adjusting the downhaul tension is a very important trimming aid for a Hobie.
2. When the mainsail downhaul is tensioned the sail is forced into shape and develops power.

3. Furthermore, the mainsail downhaul controls the fullness of the mainsail. Enough initial tension is needed to give the sail shape and to prevent creases from the battens when the mainsheet is pulled in, but thereafter, the amount of tension required depends on the wind strength.
4. In light wind, keep the downhaul tension to a minimum just enough to smooth out any wrinkles. Too much downhaul in light wind may cause a hooked leech.
5. The stronger the wind the more the draft of the sail is blown backwards to the leech. The wind can then not exit smoothly as it has to make a sharp turn immediately before it exits at the leech causing turbulence. Therefore, in strong wind increase the downhaul to keep the camber one third of the way aft from the luff.
6. Tightening the downhaul aggressively to the black band will bend the mast an incredible amount. It flattens the sail and it also opens the leech to leeward especially at the top of the sail. Spilling the top of the sail slightly reduces power, but significantly reduces the heeling effect of the top of the sail to keep the hull down when beating.
7. Lubricate the mainsail rope in the slot of the mast with candle wax to reduce friction when adjusting the downhaul.
8. In 5-20 knots (9 - 37 km/h) wind the bottom of goose neck should be about 60 mm above the black band. For wind speeds over 20 knots (37 km/h) reduce this distance to 30 mm above the black band.

Mast bend

1. The sail maker cuts a curve in the luff of the mainsail to provide the proper camber distribution once the sail is hoisted up a straight mast. When the mast is no longer straight but bends into this pre-cut luff shape the camber in the sail is lost resulting in a flatter sail.
2. The mainsheet can purposefully be over-tightened to bend the mast to flatten the sail.
3. Tightening the downhaul aggressively to the black band also bends the mast significantly.
4. Mast bend reduces the draft in the sail over its entire height and frees (opens up) the leech over the uppermost panels to twist off. It de-powers the rig very heavy winds.
5. Bending the mast also opens the slot in heavy winds that helps the jib from back-winding the mainsail and counter-rotating the mast.

Batten tension

1. Make sure the battens are properly seated in the batten pockets. Batten tension must be snug enough to remove wrinkles and give slight sail shape.
2. The curve (camber/draft) of the sails may be increased or decreased by altering the batten tension. The more the batten tension the fuller the sails. However, batten tension has very little to do with shifting the point of maximum draft in the sail forwards. The sail's maximum draft should be 30 to 40% aft of the sail's leading edge.
3. In light wind, use slack battens to flatten the sail and allow air to pass over it easily without breaking away causing turbulence. Too much batten tension gives a hooked leech in light airs. If you have a fuller sail in light wind for more power you will have to flick the battens over when tacking.
4. In medium wind, use tight battens to give maximum camber and power.
5. In strong wind use slack battens to flatten the sails and de-power the top of the sails. In extreme conditions, the top few battens may be slackened off more than the lower ones to induce twist at the top of the mainsail.
6. It is important to obtain an even camber along the sail. Turn the catamaran on its side and support the mast. Use the following procedure to set the batten tension: Haul the mainsheet tight, pull the downhaul to remove major cross-wrinkles, and then tie the battens to give an even camber along the sail. Set the batten tension to obtain a smooth draft from top to bottom. The top and bottom of the sail will be flatter than the middle, but you do not want an irregular change of draft from one panel to another.

7. In light wind do not tension the top two battens of the jib too much as they will not pop through during tacks as required. You may also plane down the thickness of the top two battens making them softer so that they bend and pop through easier.
8. After the battens are set, adjust the downhaul tension to check how it affects the evened-up draft.
9. Cut the jib battens as short as possible so they do not catch on the halyards when tacking.
10. Relieving batten tension after sailing will prolong your sail's life and avoid the classic scalloping effect from stretched batten pockets.

Outhaul

1. Since the foot of a Hobie 16 mainsail is fixed to the boom, the outhaul adjustment has much less effect on the sail shape than for boats with a loose foot. However, don't underestimate the power of this outhaul adjustment. So many sailors do - use it to your advantage. Loosening the outhaul has an effect on the draft over the lower half of the sail.
2. Loosen the outhaul for a long downwind leg in moderate or light wind when the boat cries for more power.
3. The outhaul should be tight when beating as you need a flat sail upwind. The stronger the wind, the flatter the sail. In light wind a slightly fuller sail is required and thus the outhaul should not be pulled as tight.
4. It is fairly easy to loosen the outhaul as you round the weather mark. Grab the luff of the sail with your open hand and pull the bottom of the sail forward in the slot of the boom.
5. Lubricate the boom slot as well as the boom outer end with candle wax to reduce friction when tightening the outhaul for beating.

The slot effect

1. The jib generates power in its own right, but more importantly directs wind around the back of the bottom part of the mainsail, this is called the slot effect. It is not the jib's area that gives the Hobie so much power, but the slot effect. The slot effect keeps the leeward tell-tales on the mainsail from stalling, and it's the leeward side of the mainsail that gives most of the power.
2. The jib, therefore, increases the efficiency of the mainsail. This is especially true when tacking downwind with the apparent wind 90° to the direction of movement. See "Tacking downwind: General".
3. Before setting the slot (the gap between the jib and mainsail) first set the mainsail correctly.
4. Once the mainsail is trimmed correctly, the jib is brought in just to the point where the wind flows evenly (and therefore faster) through the slot. This is obtained with the trailing edge of the jib following the leeward side curl of the mainsail.
5. An open slot (under-trimmed jib) does not change the wind's direction enough to support the flow around the back of the mainsail and then the slot effect is lost.
6. A jib-sheet that is pulled in too tight, or a jib traveller not let out enough, chokes the slot and destroys the wind flow on the back of the main, greatly destroying the driving force.
7. Since the mainsail of a Hobie 16 is fully battened it is not so obvious if the jib-sheet is too tight or the jib traveller not let out enough to prevent back winding the main. However, if the jib leech is hooked it back winds the mainsail. Checking the flow of the jib leech tell-tales can, therefore, play an important role to avoid this.
8. On a Hobie 16 the shape of the jib is not adjustable by a movable fairlead position, but by the choice of hole where the jib-sheet is connected to the clew while rigging it.
9. By attaching the jib-sheet to a hole more to the upper side of the clew, the jib is full due to the loose foot and has a tight leech that gives a narrow slot that works well for medium wind.
10. By attaching the jib-sheet to a hole more to the underside of the clew the jib is flat due to the tight foot and has a slack leech that gives an open slot which works well in light and strong wind.
11. Use the hole in the jib clew that will give you the same tension in the jib's foot as in the jib's leech.
12. One hole down from the middle hole is the best for most sailing conditions.

13. When beating in light wind, it is especially easy to close off the slot. The top third of the jib slot must be kept open.
14. In very strong wind the amount you can release the mainsheet is restricted by the air flowing through the slot of the jib, which stops the fully battened mainsail from spilling wind. This can make the mast bend in reverse and counter rotate to windward, which can break it. It is, therefore, important to release the jib-sheet and jib traveller before the mainsheet and main traveller are released.

BEATING

General

1. It is particularly important for the crew to watch out for boats hidden by the sail.
2. The wind creates the maximum amount of sideways force when beating causing sideways slip (leeway). Therefore, dig in the leeward bow by moving inwards if required.
3. Allow for sideways slip in fetching the mark.
4. You need both the sails sheeted in all the way. Use the tiller to adjust the course to keep the tell-tales streaming.
5. The mainsail gives most of the power. The jib is secondary and that is how it should be trimmed. First trim the mainsail to have no twist and with the tell-tales streaming, and then trim and cleat the jib so that the windward tell-tales are agitated and just on the verge of turning forward. A well trimmed jib will just stop fluttering. If the jib-sheet is too loose the jib leech flutters noisily. As the jib-sheet is pulled in the noise suddenly dies out - don't sheet in any further. This manoeuvre sets the jib leech optimally. The jib should be on the verge of fluttering!
6. A Hobie is best taken to weather with the air flow within the boundary layer of the sail separated over a large portion on the windward side. This flow separation region reaches higher up the sail when pointing than when footing.
7. Sail direction depends on when the jib luffs. However, it is more important to have all the tell-tales of the mainsail streaming than to have the jib not luffing. If the jib is luffing slightly it is not as serious as if the jib stalls (leeward tell-tails not flowing) as the lee side of the jib produces most of the jib power. Turn towards the wind until the jib luffs and turn back until the flapping just stops. Repeat this manoeuvre every few seconds to check your course. A properly tuned boat will have the windward tell-tails of both the mainsail and jib starting to luff at the same time.
8. Pointing refers to the boat's level of efficiency in sailing close to the wind. Pointing too close to the wind will make the boat travel slowly and sluggish to steer. This pinching will also cause very large sideways forces on the sails and you will make more leeway - counteracting the purpose of pointing closer to the wind in the first place.
9. Pointing suffers if you let the traveller out just as it also suffers from insufficient mainsheet tension that produces an open leech.
10. Always keep the traveller centred when going up wind except in strong wind as travelling out reduces your ability to point.
11. If the boat feels slow and you do not point well, you may have too little rig tension and too much downhaul.
12. If the boat feels bound up, increase the downhaul and/or loosen the rig a little.
13. If you are fighting the helm (lots of weather helm) it may be caused by a rudder cam that unlocked or you may be over-sheeted, or have too much rig tension, or you are sitting too far forward.
14. Adjust your course to take advantage of each wind shift.
15. Re-balance and trim the cat after each gust and lull.
16. Never cleat the mainsheet. Every time you bear off, release the mainsheet a little. Every time you head up, sheet in a little.

Beating in light wind

1. The crew should be well forward and to leeward in a lying position to reduce wind resistance. Keep a low profile, don't sit up and allow the wind to blow you back where you came from!
2. Listen and be aware of gurgling or bubbling noises from water turbulence around the sterns. Avoid this by moving more to the bows to lift the sterns.
3. The leeward bow should be well dug in - in other words the hulls should not be balanced. This also tilts over the mast to give shape to the sail in very light conditions. In order to achieve this, the helmsman may have to lie on the leeward side.
4. Smooth tiller control, gentle, sensitive sheet handling and minimal, slow, co-ordinated movements on board are of utmost importance to prevent interruption of the airflow across the sails.
5. Use the top leeward telltale of the mainsail as a guide for sail trimming. It should stream back. Make sure the mainsail is not over-sheeted with a hooked top leech otherwise the top leeward telltale will be all over the place. Leech tell-tales on the mainsail are a great help.
6. If you over-sheet you will lose forward momentum and make more leeway. The mainsheet tension should bring the mainsail leech almost in line with the centreline of the cat.
7. The leech of the jib should remain open so that the flow of the wind between the leech of the jib and the luff of the mainsail is not throttled.
8. Cleat the jib-sheet snug about 150 mm from fully tight. If the jib-sheet is too tight it will destroy the sail shape and narrow the slot between the jib and mainsail. Jib leech tell-tales are a great help to avoid this. See "Tell-tales" above.
9. Do not go block to block unless you have loosened the jib halyard causing more mast rake.
10. In a real drifter with minimum boat speed the cat does not have enough resistance under the waterline to counteract the pivoting force of the wind on the mainsail (weathervane) when moving into the next light gust. This is when you need both rudders down. Rather prepare to receive the next light gust by bearing off a little and releasing the sheets a bit. Pick up some speed and thereby some resistance against pivoting and then point up again.
11. If the wind picks up, sheet in the main (100 mm - 200mm) and jib (20 mm - 30 mm) and release both again if the wind speed decreases.
12. When sailing in rough, choppy waters or very light airs, foot off slightly to maintain headway as you have to punch through the waves.
13. Avoid pinching to keep the cat moving. A Hobie does not like to be pinched. You can afford to pinch a bit in a puff, but you must keep the boat moving to maintain steerage in the lulls.
14. Avoid continuous trimming of the sails that disrupts the airflow.
15. Main traveller 0 to 150 mm out.
16. Main downhaul just enough to remove horizontal wrinkles when sheeted. Some sailors are of the opinion that the downhaul should be maximum to bend the mast and flatten the sail. This is a question of preparing the cat for first gear or 4th gear.
17. Jib traveller 0 to 100 mm (0 to 4") out.
18. Jib clew plate one to two holes down from the middle hole.

Beating in medium wind

1. Ensure the leeward hull is submerged deep with the windward hull just kissing the water.
2. Cleat the jib-sheet about 100 mm from fully tight.
3. Tension the mainsheet almost block to block to have a slight twist in the leech of the mainsail to leeward. Be careful not to over-sheet. More tension is required for stronger wind to prevent the leech from twisting off at the top.
4. If the top windward tell-tales of both the main and jib stall at the same time it indicates that the sails are balanced and work together.

5. When a gust is strong enough to lift the windward hull out of the water it is necessary to adjust both your sailing direction and sheet tension. If you only point the catamaran towards the wind (luffing) to keep the hull down it will lift the bows, stall both sails, and slow you down.
6. When puffs hit, ease the sheets slightly and head up slightly. When going through lulls sheet in slightly and bear away slightly. In other words both hands out in a puff and both hands in in a lull. These adjustments should be made very subtly and should be made before any significant loss of boat speed. Avoid excessive rudder movement.
7. Main traveller 0 to 200 mm out.
8. Main downhaul tight.
9. Jib traveller 0 to 200 mm out.
10. Jib clew plate middle to one hole down.
11. Tighten jib halyard to have a tight rig.

Beating in strong wind

1. Cleat the jib-sheet hard (fully tight).
2. Sheet in the mainsheet block-to-block to flatten and de-power the mainsail to prevent the leech from falling away (twisting off).
3. In gusts spill wind by pinching and releasing the mainsheet at the same time, i.e. both hands out in a gust (heading up and easing the mainsheet) and both hands in after the gust. If you only head up to keep the cat down in a gust the bow will lift and the sails will stall that will slow you down a lot. Keep the cat almost flat with the windward hull just kissing the water.
4. Only move the traveller out to spill wind if you cannot keep the windward hull down even without the gusts, because if you let the main traveller out you can no longer point as close to the wind.
5. Release the jib halyard to let the mast lean over sideways and rake more backwards to de-power the boat. However you should still be able to bend the mast with mainsheet tension before the mainsheet reaches block-to-block.
6. If you are overpowered and cannot keep the hull down, de-power as follows: a) The mainsail and jib should be sheeted in block-to-block all the time to ensure mast bend with flat de-powered sails. b) Increase the main downhaul to a maximum. This flattens the mainsail further, keeps the draft forward and will allow you to retain power and shape in the bottom of the sail while the top of the sail has an open leech that twists off and thereby significantly reduces the heeling effect. c) First release the jib traveller more and more to a maximum of two thirds out. The jib may, therefore, luff. d) Only then follow by releasing the main traveller and finally releasing the mainsheet a large amount if you are still overpowered.
7. It is thus important to release the jib traveller before the main traveller, to avoid back winding the mainsail that can make the mast bend in reverse and counter-rotate to windward, which can break it.
8. It is much better to sheet in and travel out than the reverse.
9. Avoid sailing with a high-flying hull, since this will only reduce boat speed.
10. Take the conditions into consideration and be alert for a cartwheel nosedive if you sail bows down as you should. The cart wheeling effect is to pivot the boat up and over on the point of the bow, throwing the helm and crew forward into the sail or water. To prevent this from happening first the jib-sheet and then the mainsheet should be released.
11. Jib clew plate one to two holes down from the middle hole.

TACKING UPWIND (COMING ABOUT)

1. When proceeding with a tack, both hulls of the Hobie 16 must change direction simultaneously. The leeward hull has to travel a longer distance through a larger radius than the windward hull. When they

change direction they work against each other and disrupt the flow of water due to the long waterline and because the hulls are fixed to each other. This results in lost boat speed and lost distance, as much as 8 boat lengths for each tack.

2. Due to its light construction a Hobie16 does not have much momentum. Therefore, ensure that your speed is up prior to initiating the tack so the boat will respond to the rudders and have enough momentum to complete the manoeuvre. Dinghy sailors have refined a sailing technique called the "roll tack" which vastly improves speed coming out of the tack. Many catamaran sailors are not aware that you can roll tack your catamaran as well by using the following procedure:
3. Move the main traveller to the centre and pull both sails hard in. If the traveller is slack the boat will be slow to reach head to wind.
4. Without pinching check that the boat is sailing as close to the wind. This is sailing on the edge of the no-go zone. If you do not check that you are as close as possible to the wind when you decide to tack, you may not fetch the mark as it will not be possible to sail in a direction $\pm 90^\circ$ to your current "foot-off" direction before the tack.
5. Check that the sheets are not tangled. Wait for flat water and initiate the tack and move together with the crew to the windward rear corner casting as you slowly but firmly begin to push the rudders to 45° .
6. The reason for moving the skipper and crew to the rear windward corner is to bring the bows up, and allow the boat to pivot on the one rear corner through the tack.
7. Avoid fast, jerky moves when putting the helm over, but push the tiller smoothly and firmly to continuously increase the angle to 45° maximum, thus cutting a smooth arc in the water. If you push the tiller over too quickly or too far, the rudders will stall and act as brakes and put the boat in irons. On the other hand, pushing the tiller over too slowly will cause you to run out of speed before you have completed the tack and put the boat in irons.
8. To help rotate the boat pull the mainsheet in tightly as you start turning the boat. The mainsail acts as a weathervane and helps to push the sterns around during the initiation of the tack. This is especially required if you have released the mainsheet somewhat before the tack to keep the hull from flying. If you allow the mainsheet to slacken during the tack the boat will lose speed in the turn.
9. Continue to hold the tiller in the 45° position and do not let go of it or the boat will straighten out before you want it to and the manoeuvre will be slowed way down. Do not waste any of the initial speed and energy by going straight or wiggling the rudders, but get through the turn smoothly to get wind power back in the sails as soon as possible!
10. It is important to release 300 to 600 mm of the mainsheet immediately the moment the boat passes through the eye of the wind. This helps the battens to pop over easily. Furthermore, if you leave the mainsheet tight, the mainsail will now act as a weathervane in the opposite direction that keeps the boat pointing into the wind and preventing you from completing the turn.
11. Except in strong wind, the helmsman should not move his weight from the old aft windward corner until the boat goes through the wind.
12. Only when the boat goes through the wind, the crew quickly moves to the opposite front corner-casting holding down the new windward hull. The crew should remove all the slack from the lazy jib-sheet to be able to cleat it quickly on the other side at the right time.
13. If the helmsman and crew move too early across to the other side the tack will be slow.
14. In strong wind, and especially in the case of a heavy helmsman, the crew should not first move together with the helmsman to the rear windward corner, but stay forward during the tack otherwise wind drag on the sails and wind caught underneath the trampoline may flip the boat over backwards as you go through the eye of the wind. The sterns do not have much buoyancy for a heavy helmsman who needs to be in a far back position to be able to change the tiller extension to the other side.
15. It is important for the helmsman to stay on the old aft windward corner until the boat is on a close reach for the new direction. Because you have eased the mainsheet, the boat will not fly the new windward hull except in extreme conditions. Move across sooner in strong wind. When you do move, move across and forward, trimming the mainsail as you go.

16. At this point, you have tacked and need only to recover. As you move under the boom, hand yourself the tiller extension on the new side. The forces on the rudders are nearly zero, but be careful not to wiggle or move them from 45° yet.
17. As you hand yourself the tiller extension, grab the mainsheet with your other hand and move forward next to the crew on the front corner casting. As you move, bring in tension to the mainsheet. Ideally, the crew should release the old jib-sheet before the jib backs but not if the turn is for some reason too slow. Then the crew should wait for the wind to push on the reverse side of the jib. This back winding will help to push the bows around and prevent the boat stalling head to wind.
18. It is important to first sheet the jib on the new side before sheeting in the mainsail.
19. In light wind the helmsman and crew should rather keep their weight well forward to avoid dragging the sterns and it is vital to avoid any movement on the boat until it has clearly gone past head-to-wind.
20. In light wind, the crew should backwind the jib a little longer to make sure the boat is on its new tack and should rotate the mast manually to speed up the airflow on the new tack.
21. In light wind, grab and flick the boom to pop the battens over and move your weight forward as soon as possible to lift the sterns out of the water so that the boat will accelerate.
22. The eased mainsail will just luff over to the other side and will not fill with wind until the boat is turned far enough to start sailing in the new direction. The fuller sail will give you more power to accelerate.
23. Turn beyond the desired new course (over-tack) to be able to foot off at first to pick up speed again. Tension the mainsheet slowly as the boat accelerates and smoothly brings the boat up to a close-hauled course.
24. It is very important to over-tack while moving slowly in light wind and to release the mainsheet after moving through the eye of the wind.
25. The most common mistake during tacking is to tension the mainsheet too early after the tack. The mainsail will then act as a weathervane causing the sterns to rotate right back where it came from with the boat pointing into the wind.

REACHING

General

1. Reaching is not only the fastest point of sailing but also the easiest to cause a cartwheel.
2. Steer straight to the next mark unless you can gain by sailing towards an oncoming gust or for other tactical reasons. This applies from a close to a beam reach.
3. Allow both sails as much fullness as possible and reduce the downhaul and outhaul.
4. Do not cleat the sheets. Adjust the sheets and travellers the whole time to let the tell-tales flow instead of changing direction with the tiller.
5. If the cat accelerates or decelerates, make quick jib- and mainsheet adjustments to accommodate the new apparent wind direction.
6. Notice that the sail trimming technique on a reach is exactly the opposite of that used on a beat. On a beat we first set up the sails with no twist (mainsheet and jib-sheet pulled right in) and then constantly vary our steering direction to have the windward tell-tales on the verge of not streaming back. On the other hand, when sailing on a reach we steer in a fixed direction directly to the next mark and have a lot of twist in both sails and constantly adjust the sheet tension and traveller positions to have the leeward tell-tales on the verge of not streaming back.

Reaching in light wind

1. Keep the leech of both sails open. The most common mistake is to over-sheet the mainsail so that the top of the leech is hooked to windward.
2. Keep the boat level, but it may be better to have the leeward hull slightly deeper in the water.
3. Minimise all body movements and make it smooth to avoid disrupting the airflow across the sails.
4. Constantly adjust the sheets to keep the tell-tales flowing but do it gently.

5. Use the jib traveller to open the slot.

Reaching in medium wind

1. Move inwards if required so that the windward hull is just kissing the water.
2. Constantly move fore-and-aft as the wind speed changes to avoid the bow from submerging causing a cartwheel or the sterns from digging in, causing drag and losing speed.
3. If you are too far forward, you will experience very uncomfortable steering problems.
4. Position the mainsail traveller $\pm$ halfway down so that there is twist in the leech of the mainsail. However, the traveller must not be out too far. If the wind picks up and the apparent wind moves forward, it must be possible to reset the tell-tales by sheeting in without pulling the traveller in.
5. To get smooth flow over the entire sail experiment by adjusting the traveller and mainsheet.

Reaching in strong wind

1. Reaching in strong wind is the most exhilarating experience as it is fast and you are living on the edge!
2. The power in the sails in strong wind will constantly force the leeward bow down. This point of sailing is the most common and easiest way to cause a cartwheel (the bow of one hull is forced down into the water) especially if the cat is overloaded.
3. Sit or trapeze as far back as possible and use the rear toe-straps to prevent falling forward if the nose digs in.
4. Constantly move forward and aft to level the cat, and move inboard and outboard to have the windward hull just kissing the water.
5. Spill wind by easing the mainsheet in gusts to prevent nosedives.
6. If a gust causes the leeward hull to plough under, threatening a cartwheel, first ease out the jib to reduce the pressure and if necessary reduce the power in the mainsail - do not bear away or luff up as this will only aggravate the situation.
7. Be careful not to overreact to a sudden lifting of the hull by letting the hull down hard and dunking the crew on the trapeze into the water.
8. Tremendous acceleration and deceleration will change the apparent wind quite considerably so you need to make rapid sheet alterations. To do this fast, work the mainsheet with both hands and keep the tiller extension under your armpit while steering by moving your shoulder.

RUNNING DEAD DOWNWIND

1. In very light wind, below 5 - 7 knots (9 - 13 km/h) it pays to sail dead downwind, but see "Tacking downwind" below for stronger wind conditions.
2. Tell-tales are only useful when there is airflow across the sail; for running dead downwind they are no help at all.
3. Keep the cat level fore-and-aft. The crew must be on the opposite side and the weight moved as far forward as possible to keep the sterns out of the water.
4. It is insufficient to run directly downwind with both sails on the same side as the mainsail will block the wind from the jib. The crew should hold the jib out on the opposite side of the mainsail in a goose-winged fashion.
5. The helmsman may have to push the boom out to the shroud by hand or foot with the main traveller at the leeward end of the track.
6. The helmsman may also sit or stand up facing backwards pushing the boom out with his back.
7. Most important is to keep absolutely still - no sudden movements.

GYBING

1. This manoeuvre is the opposite of coming about. The sterns cross the eye of the wind when gybing. The gybe is completed by turning away from the wind (falling off) to the opposite point of sail rather than into the wind as when tacking upwind.
2. If you were tacking downwind with the apparent wind at 90 ° to the boat, you will sail at 90° to this direction after the gybe.
3. The boat will be less stable during this manoeuvre than during a tack as the sail will have to swing clear across from fully out one side of the boat to fully out on the other side.
4. Care must be taken when attempting to gybe as the boat will be at full power and you can not easily depower it.
5. During an unplanned gybe, the boom could slam across violently causing serious injury to the unaware crewmembers.
6. Ensure that your speed is up prior to initiating the gybe. The faster you enter a gybe, the gentler the boom will come across. Slowing down will cause the apparent wind to increase on the back of the sail, thus causing the boom to slam across more violently.
7. Make sure the mainsheet is not hooked around the corner casting and the traveller free to move inwards.
8. Initiate the gybe by pulling the tiller smoothly towards you and immediately move across the boat on your knees to the other hull, facing backwards. Do not let the rudders straighten up during the gybe but gradually increase the angle of the rudders. If you are moving fast you need less rudder movement to turn.
9. Keep the turn on, move the tiller extension over to the new side behind the mainsheet, grab the mainsheet with your new front hand just below the boom and pull against the sail.
10. As the pressure on the mainsail gets light, alert the crew and swing the mainsail across (pre-gybe it). Do not wait for the wind to do it. Continue to turn and straighten the rudders only when you are on the new course. This will allow you to accelerate more quickly and regain the speed that you lost during the gybe.
11. Trim the sails to the new optimum course and re-balance the fore-and-aft trim of the hulls.
12. In strong wind it is critical to pre-gybe the mainsail. If you let the wind slam it across in its own time the impact is so great that the boat cannot accelerate fast enough and the bows are pushed down in a nosedive.
13. The aim should be to gybe at maximum speed and never when accelerating. This reduces the apparent wind and makes the boom coming over gentler. Try to gybe in a lull but when the boat is still moving fast.
14. In light wind the crew moves to the opposite side as the boat turns downwind, duck underneath the boom and catch the jib by the clew. The crew should manually rotate the mast, pre-set the jib on the new side and trim the jib by pulling on the jib leech to give the boat power. In light wind the secret is smoothness of movement by both the helmsman and crew.
15. In strong wind move the main traveller to the centre position before starting the gybe and the skipper and crew should stay far back to prevent a nosedive. As a safety precaution the crew may have to hold onto a foot strap. Pull the mainsheet in when the boat nears the straight downwind direction. This will prevent the sail from slamming all the way across when the sail fills from the opposite side and limits the exposed, effective sail area that can fill with wind. Control the speed of the boom while it crosses the trampoline by letting the mainsheet out in a controlled manner.
16. If you are losing control, run straight downwind and sheet in so the boat slows down. Only gybe when you have the boat under control. If you try to head up too fast, the reversed airflow will return to its original path across the sail, and you will execute a catastrophic nosedive!

TACKING DOWNWIND

General

1. The advantage of the slot effect generated by the jib is overestimated and makes very little difference for all points of sail from beating to a beam reach. However, the jib produces a substantial aerodynamic gain when tacking downwind in a zigzag fashion in a series of broad reaches in winds of 6 knots (11 km/h) or more as it allows for laminar airflow across the sails. (A Hobie 14 without a jib will only benefit from tacking downwind in winds of more than 11 knots (20 km/h).
2. The stronger the wind the better it pays to tack downwind. Although the distance sailed in a zigzag route is longer, the increased speed makes it far more efficient.
3. There is an optimum angle for tacking downwind. As the wind changes always keep adjusting the steering direction to keep the bridle wire wind indicator at 90° to the boat for medium and strong wind.
4. Gybe on wind shifts to steer a more direct course to your goal.
5. Do not release the downhaul downwind, it makes no difference

Tacking down in light wind

1. If the wind is very light, do not tack downwind, but rather run dead downwind.

Tacking down in medium wind

1. Set your sails for tacking downwind by easing the main traveller completely out to reduce the twist in the leech. Keep sailing in a direction with the bridle wire wind indicator at 90° to the boat.
2. Then ease the mainsheet until the sail just touches the shroud - any further than this and the sail will deform around the shrouds and its aerodynamic properties will be lost. You may need to hold the boom outboard.
3. Move the main traveller in until the lower leeward mainsail telltale begins to stall. Ease out the main traveller until it streams backwards again and cleat the main traveller in that position.
4. Pull in the mainsheet until the upper leeward telltale begins to stall, then let out the sheet until it streams backwards again and keep the mainsheet in that position.
5. Ease the jib traveller completely out and ease the jib-sheet until the jib luff is about to flap. Move the jib traveller in until the jib lower leeward telltale begins to stall. Ease out the jib traveller until it streams backwards again and cleat the jib traveller in that position.
6. Pull in the jib-sheet until the upper leeward telltale begins to stall, then let out the jib-sheet until it streams backwards again and keep the jib-sheet in that position.
7. The sails are now set for downwind sailing.
8. Adjust the travellers and sheet tension to keep all tell-tales streaming and especially the jib and mainsail leech tell-tales indicating that the proper amount of twist occurs.
9. The crew may need to be on the leeward side holding the jib out, effectively moving the jib lead off the boat. The crew should remember to control the twist in the jib when they are holding the jib out. If the jib is twisted too much, pull directly down on the jib-sheet. Keep the rounded shape of the jib by controlling the backward-forward position of the clew in your hand.
10. As the speed or direction changes, adjust the sailing direction such that the bridle wire wind indicator remains at 90° to the boat and quickly adjust the sheet tension of both sails to let the tell-tales flow. In other words if the wind changes, change the sailing direction and do not sheet in or out while retaining the original direction.
11. When a gust hits, the boat will accelerate immediately and the bows will move down. React by moving your weight back. The apparent wind will move forward so you can aim more directly downwind to your goal while still keeping the wind indicator at 90° to the boat. Adjust the jib and mainsheet tension to keep the tell-tales flowing.

12. If the bows really dig in after you have moved back, react by releasing the jib-sheet and if necessary also the mainsheet.
13. Make sure the top leeward telltale on the mainsail does not stall and if it does the only way to recover is to head up, let the boat accelerate and let the telltale flow again before you slowly bear away again.
14. The fore-and-aft trim downwind is very sensitive. Keep the boat level with the sterns out of the water. The helm and crew may need to be on opposite sides of the boat to keep both hulls in balance. If the wind speed picks up you will have to move back dramatically to keep the bows from digging in.
15. In a lull the apparent wind will decrease and the bridled wire wind indicator will move forward of 90° to the boat. If you do not head up, the sails will stall and the boat will slow down even more.
16. Gybe if a wind shift forces you to sail further away from your goal.
17. Main downhaul moderate.
18. Jib and main traveller way out.

Tacking down in strong wind

1. Setting up the sails is the same as for medium wind.
2. This is where the excitement starts. Sit way back to prevent the boat from cart wheeling or pitchpoling (both hulls are forced down at the same time). The crew may need to cling to a toe strap.
3. Pitchpoling occurs when both hulls are forced under the water at the same time, causing the boat to stop very abruptly and lifting the stern end right out of the water, and over. This normally happens only on windy days with severe gusts, when the boat trips over itself going downwind. A cat rarely pitchpoles on a reach and never on a beat.
4. Maintain enough sheet tension to prevent the mainsail from distorting around the shroud.
5. As the wind speed and direction changes, adjust the sailing direction such that the bridled wire wind indicator remains at 90° to the boat and quickly adjust the sheet tension of both sails to let the telltales flow. Note: If the wind changes, do not sheet in or out while retaining the original direction.
6. If the leeward bow begins to dig in you must immediately release the jib-sheet to reduce the pressure on the bow. Your reactions must be fast.
7. If this is not enough you may have to turn the boat further downwind (bear away) to stall the sails. The jib will then be in the shadow of the mainsail with its power reduced.
8. When you are already moving dead downwind and a heavy gust strikes, avoid an imminent pitchpole by depowering the mainsail by sheeting in and moving the traveller in a little. This has the effect of decreasing the pressure on the bow by reversing or spoiling the airflow across the mainsail, which makes the boat slow down and become more manageable. This is essential for survival.
9. Main downhaul tight.
10. Jib and main traveller way out.

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