



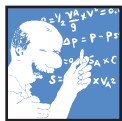
ISSUE #107

Mark Rounding Moves

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BRAIN TEASER

Current: Myth or fact?



At a starting line that is set square to the sailing wind, the current is flowing strongly from the committee boat to the pin end. If the wind and current stay steady up the first beat, it will be better to start at the RC boat (the up-current end).

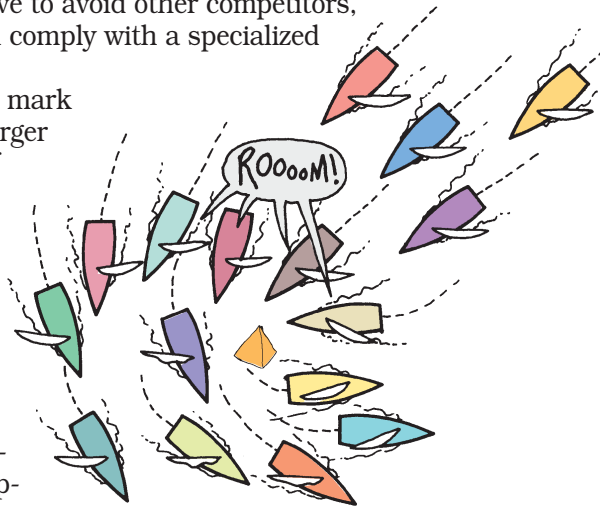
TRUE FALSE (Answer on page 13)

Tips for success at marks

The marks that define the course represent a critical crossroads in almost every race because the entire fleet must converge on one small spot. When rounding a mark, boats often have to make substantial turns and perform major sailhandling maneuvers. At the same time they have to avoid other competitors, steer clear of bad air, and comply with a specialized set of racing rules.

As a result of all this, mark roundings come with a larger than normal likelihood of making big gains or losses in the race. Every sailor has at least a few stories about how they passed (or got passed by) a ton of boats while rounding a mark. Therefore, a very important guideline when approaching marks is to look for opportunity, while at the same time avoiding excessive risk.

If you want consistently good mark roundings, you need smooth boathandling, speed, confidence in the rules, sound strategy and tactics, and an accurate assessment of risk versus reward. Plus it always helps to have a few mark-rounding tricks up your sleeve. That's what this issue of *Speed & Smarts* is all about. •



JH Peterson photo



Basic principles for rounding marks

If you want your mark roundings to be quick and safe, there are certain strategies that work almost every time. For example, you should round each mark close enough that you could reach out and touch it. You should locate the next mark visually before you round this one. And you should definitely develop a strategic plan for the next leg before you round any mark. These ideas are described in more detail on this page and the next.

One reason why it's important to follow rules of thumb like these is that they help you limit risk during mark roundings. As I said before, it's easy to make big gains or losses near marks. If you stick to certain guidelines, it's easier to navigate through the chaos at marks. By

thinking ahead and having a plan, you will add a sense of purpose to the randomness of many mark roundings. And this will help you be more successful consistently.

Before you get to any mark, think ahead about how much risk you're willing to take. When you are content with your fleet position or if it's early in the race or series, you'll probably want to minimize risk at the mark. If you come into a windward mark on port tack, for example, you should probably duck that starboard tacker and overstand slightly on the starboard layline.

But if you're not happy with how you're doing and you need to play catch up, then you'd be willing to take more risk. In the same windward mark situation, you

might try to leebow that starboard tacker on the layline and hope you can squeeze up around the mark.

Here are some more strategies to help minimize risk at marks:

- **Watch the boats ahead** – Keep a close eye on boats that round the mark before you. They will warn you about trouble (e.g. current) and may give you some ideas about how to get around the mark quickly.

- **Perform maneuvers early** – One of the most common, and costliest, mark-rounding mistakes is waiting too long to perform boathandling and sailhandling maneuvers. Be conservative by doing these earlier than you think (*see page 16*).

- **Communicate your rights** – Another easy way to lose a lot at marks is to break a rule. Many rule problems can be avoided with better communication. For example, if you think you have an inside overlap at the zone, yell to the other boat (even before you get to the zone). Either they will agree with you (and you'll get mark-room) or they will disagree (and then you'll have to decide if you want to risk forcing your way inside them).

- **Put on the brakes** – Often the best way to be conservative at a mark is by slowing down. Going slower may not seem like a smart strategy for winning a race, but it's usually better than rushing into a crowd and coming to a dead end. Maintain your tactical options by slowing to avoid getting an overlap on the boat(s) ahead.

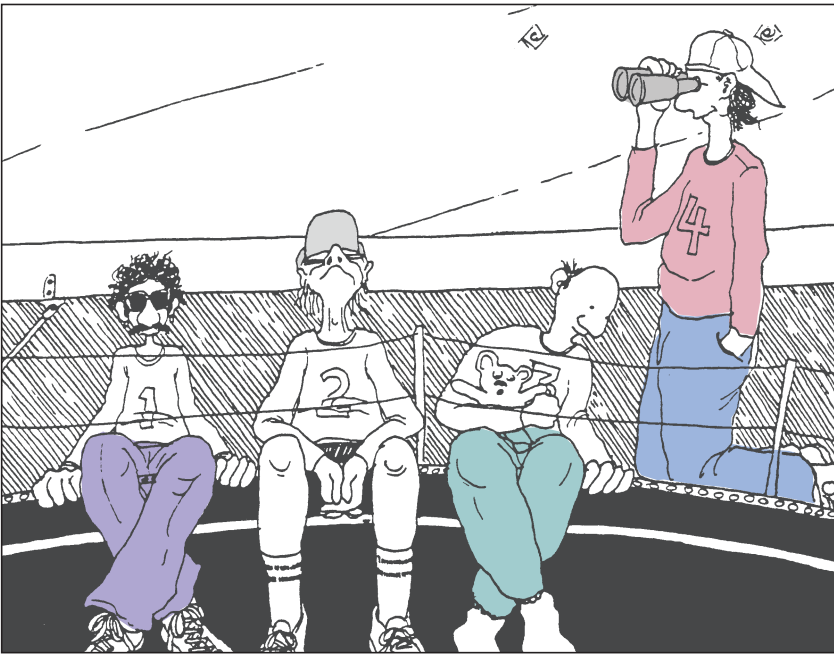
- **Find a happy balance** – Good mark roundings often come down to the ability to find a compromise between a bunch of factors. Focus on the crew maneuvers inside your boat, but make sure you also keep your head outside the boat and watch the big picture. Try to be conservative and avoid the risks that come with being greedy, but at the same time stay alert to possible opportunities for making big gains. You must walk the tight rope. •



JH Peterson photo

I. Round every mark close enough to touch it

It's amazing how wide many boats go around marks. In most cases they lose double the amount of distance they leave between them and the mark. They sail a certain distance past the mark and then they have to sail that far again just to get back to the mark. To minimize distance sailed, it's important to round close to every mark. Of course, there are a few times when it's OK to be farther from the mark – like at a windward mark in breeze when you need enough space to ease your main, or at a leeward mark when you are trying to do an 'end-run' around a pack of boats. But a good rule of thumb is that you should round each mark close enough that you can reach over and touch it. To get into this position you may have to slow down so you are right behind the boat ahead, but this ensures that you will sail the shortest course, and it gives you more tactical options and clearer air after the mark.



2. Always find the next mark first

Before you round a mark, it's absolutely essential to find the location of the next mark. This is critical for knowing what kind of rounding to make. For example, should you be inside at the windward mark so you can go low on the first reach, or outside so you can sail high? The answer to this question (and many similar ones) depends largely on where the next mark is.

The last thing you want to do is round a mark and then start looking for the next one. When this happens, the chances are good that you did not optimize your rounding or your strategy for the new leg.

On my boat, finding the next mark is so important that I assign one crewmember to look for it several minutes before we get on that leg. Their job is to locate the mark and find an easy way to describe its location to the rest of the crew. For example, they might say, "The reach mark will be near that tall smokestack on shore."

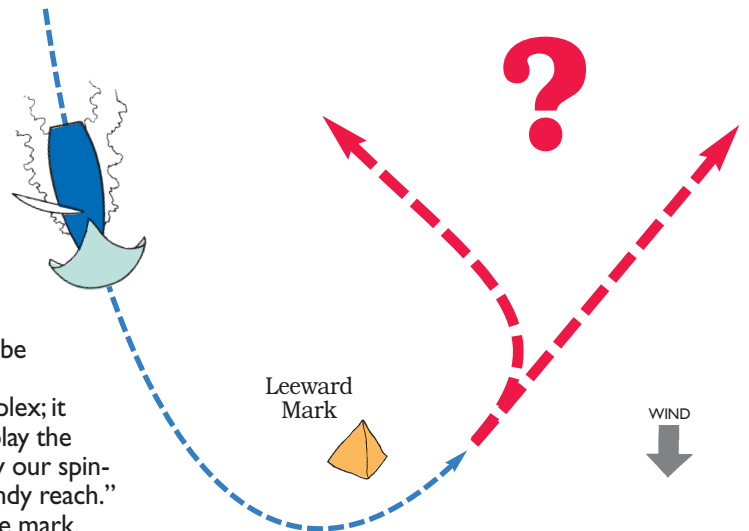
There are other things you can do to help find the next mark. If you have a compass, use geometry to figure out what course you will be steering on the next leg. On bigger boats, calculate the approximate true (or apparent) wind angle that you will be sailing toward the next mark.

3. Make a plan for the next leg

Just as you should develop a first-leg strategy before the start, you need to devise a strategy for the second leg before you round the first mark. It's much too late if you round the mark and then ask your crew, "OK, which way should we go on this leg?" By that time you have already missed your best chance to pursue your desired strategy.

Instead of waiting until the last minute, look ahead to the next leg several minutes before you reach the mark. Talk about what you see (such as wind pressure and the angle of other boats) and discuss your tactical and strategic options. It's good to do this early since certain moves (e.g. a jibe set) require a bit of planning before you get to the mark.

Your strategy for the next leg doesn't have to be too complex; it could simply be something like, "We're going to jibe set and play the left side of the run where there is more wind," or "Let's delay our spinnaker set so we can get up high in the passing lane on this windy reach." The most important thing is to have this before you round the mark.



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TECHNIQUE

Maintain speed while turning

Unless you need to slow down for tactical maneuvering, one of the most important things at any mark rounding is maintaining speed while you turn. Steering a curved course means you have to angle the rudder off centerline. This creates drag and slows the boat. So in most cases, turn the boat as little as possible.

When you do have to make big turns, like when rounding marks, you need good technique to keep going as fast as possible. This requires an optimal combination of rudder movement, weight placement and sail trim.

Turn the rudder as a last resort

It's nice to think you could make all your turns on the race course without using the rudder at all, but this is probably not possible. In practice, most sailors use the rudder quite a bit, especially during big turns like mark roundings, and especially when they have to maneuver in tight quarters around other boats.

But you should still try to use your rudder as little as possible. Work with weight and sail trim first, and move the rudder just enough to match the turn created by these other methods. When you must use your rudder, be gentle. Don't turn it too quickly or too far, and use a constant rudder angle for speed.

Move crew weight for turns

One way to help turn your boat with less rudder drag is by using crew weight to change your angle of heel. If you want the boat to turn to port, heel to starboard. If you want it to turn to starboard, heel to port. When you are turning around a mark, heel the boat to the outside of the turn (see diagrams).

For example, if you want to bear off around the windward mark, heel the boat to windward (to starboard for a port rounding). Even if you don't have enough weight to heel the boat to windward, try to reduce leeward heel as much as possible.

At the windward mark, a common mistake is for crews to move in off the windward rail too soon. This allows the boat to heel and makes it harder to bear off. Keep hiking fully until you have borne away; then you can move in to set the chute.

Moving weight is most effective (and important) in light air when there is not so much pressure in the sails (and therefore changes in sail trim have less effect on turning).

Adjust sail trim for turning

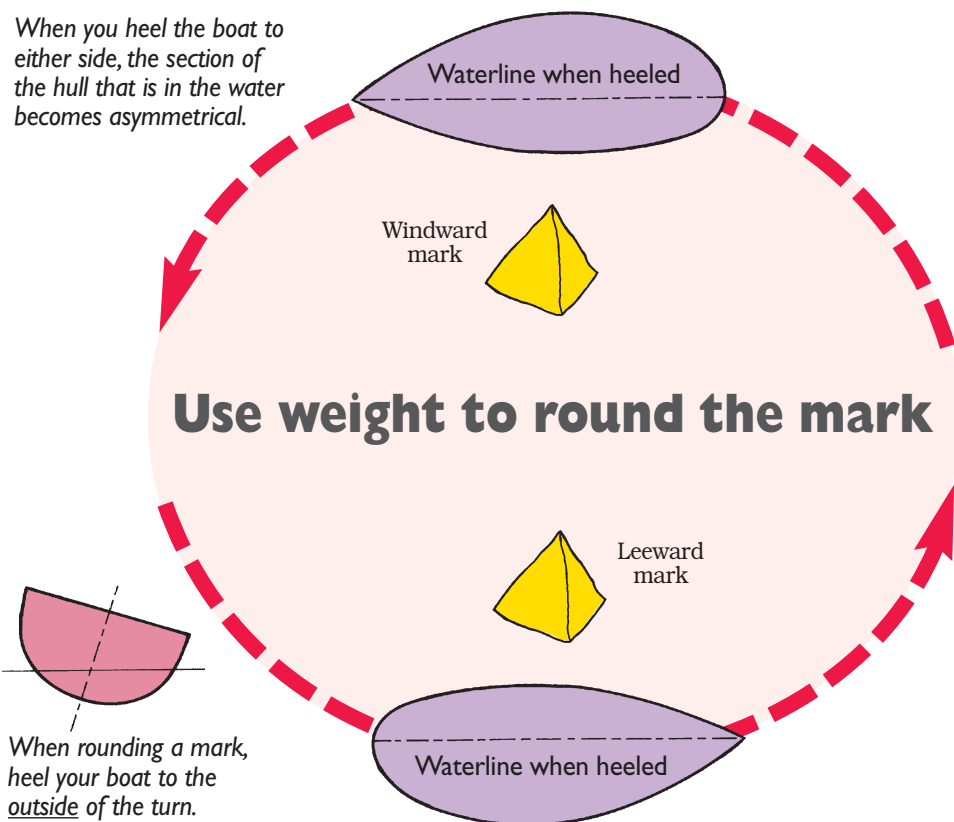
Adjustments in sail trim are usually effective for turning a boat quickly and efficiently. If you've ever been on a sailboard, for example, you

know how to move your rig forward to bear off and aft to head up.

A sailboat is similar. If you want to head up, ease your jib and trim your main. An undertrimmed jib allows the bow to turn toward the wind more easily, while an over-trimmed main pushes the stern to leeward. Do the opposite to bear off: trim the jib and ease the main.

Adjusting your sail trim to turn your boat helps in every condition, but it's especially critical when the wind is strong. If you've ever tried bearing off around the first mark on a windy day without easing your mainsheet, you know how critical it is to use your sails for steering. •

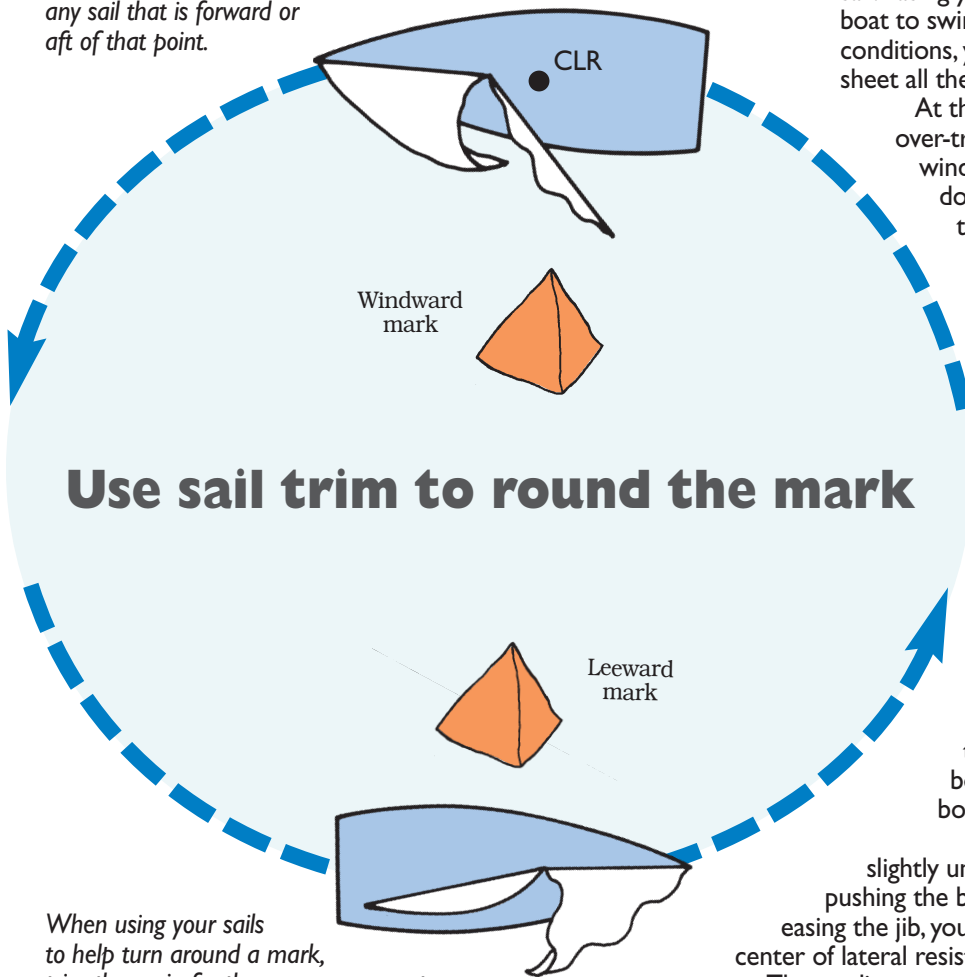
When you heel the boat to either side, the section of the hull that is in the water becomes asymmetrical.



When rounding a mark, heel your boat to the outside of the turn.

Altering your boat's angle of heel is a good way to make the boat change direction without creating a lot of drag by turning the rudder. When a boat is sailing flat (i.e. the mast is vertical), the part of her hull that's in the water is symmetrical from side to side, and this makes the boat want to continue in a straight line. But if you heel the boat to one side, this puts more of the curved hull in the water on that side. The underwater shape becomes asymmetrical, and this makes the boat turn away from the side where more hull is in the water. Therefore, when you are rounding a mark, you should heel the boat to the outside of the turn.

Think of your boat as a large wind pennant that pivots around its keel or centerboard (the center of lateral resistance – CLR). You can turn the boat by adjusting any sail that is forward or aft of that point.



Use sail trim to round the mark

When using your sails to help turn around a mark, trim the main for the course you want to be steering one boatlength later, and trim the jib for the course you were steering one boatlength earlier.

As you round the leeward mark, you need to trim both sails from a run to a beat. The ideal way to do this is by trimming the main slightly ahead of your turn and trimming the jib slightly behind the turn. That is, when you are on a beam reach in the middle of your turn, the main should be slightly over-trimmed and the jib slightly under-trimmed. This helps the boat turn up toward the wind.

However, while you are making this turn it's usually easier to pull in the jib than the main. That's why many boats end up rounding the leeward mark with their jib strapped in tight and the main still luffing. This trim obviously works against the turn you're trying to make.

Turning away from the wind

When you want to bear off around the windward mark, under-trim your main and over-trim your headsail. Easing your mainsheet allows the stern of your boat to swing more easily toward the wind. In breezy conditions, you may actually want to dump your mainsheet all the way out so the sail is completely luffing.

At the same time, keep the jib or genoa slightly over-trimmed to help pull the bow away from the wind. One time when you might not want to do this is when it's windy. In that case, over-trimming the jib will make the boat heel over more, which is bad for bearing off.

So you may actually need to ease the jib.

By easing the main and trimming the jib, you can help the boat turn down (i.e. pivot around its center of lateral resistance) without using any more rudder than necessary.

Turning toward the wind

When you want to head up around the leeward mark, over-trim your main and under-trim your headsail. Pulling in your mainsheet puts more pressure on the mainsail and pushes the stern of the boat away from the wind (it also heels the boat a little more which helps you head up).

At the same time, leave the jib or genoa slightly under-trimmed so there is less wind pressure pushing the bow to leeward. By trimming the main and easing the jib, you help the boat turn up (i.e. pivot around its center of lateral resistance) with minimal use of the rudder.

These adjustments in sail trim are especially important when it's windy. In light air the wind does not push so hard on the sails, so sail trim does not have such a great effect on turning moment. But in breeze you sometimes cannot turn without your sails.



JH Peterson photo



How to carve a 'perfect' turn

Once you get good at using crew weight and sail trim for turning your boat, you can think much more about the shape of the course that you steer around marks.

When it comes to carving turns, I imagine that sailing is a lot like racing a car. Both sailors and race-car drivers want to travel the shortest distance possible, but they can't cut any corner too sharply or they'll lose a lot of speed. Therefore, both steer turns that are a compromise between the fastest speed and the shortest distance.

One thing that's certain about good mark roundings is that you must think about each turn before you get there. You can't approach the windward mark thinking you will do a bearaway set, for example, and then switch at the last second to a jibe set. Well, you can try that, but chances are it won't be very fast or smooth.

Many factors influence the best path for you to steer around any mark. These include things like:

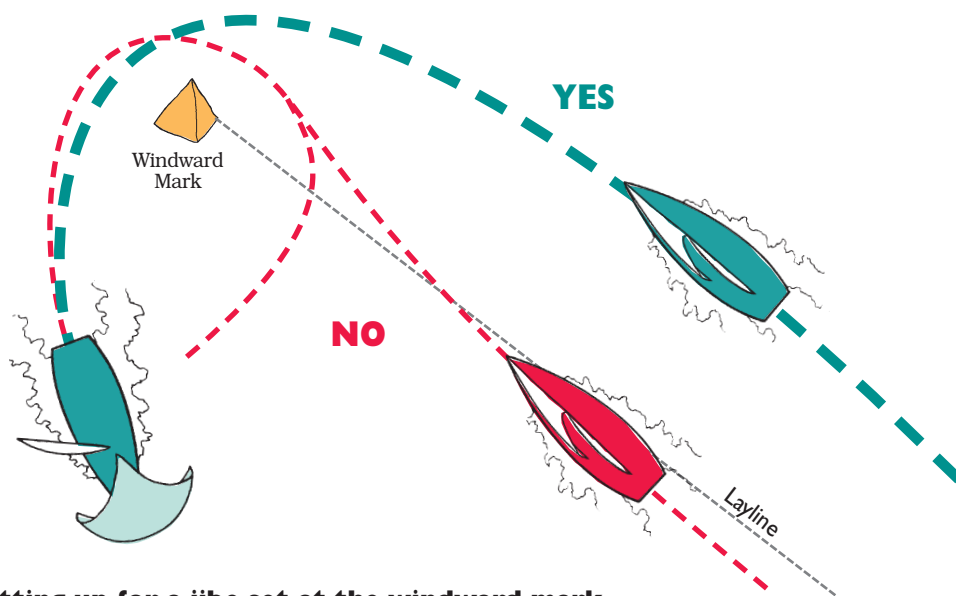
* **The weight and size of your boat.** Bigger, heavier boats have to make a much wider and slower turn in order to maintain speed.

* **The wind velocity.** In light air, for example, you have to turn more slowly and you shouldn't do a jibe set. In breeze, you must allow time for sailhandling maneuvers.

* **The presence of other boats.** The more traffic there is, the more this will disrupt your ideal turn.

If possible, you should always carve a 'strategic' turn around the mark. A strategic turn is basically your proper course. It's the course you steer when there are no other boats around and your only concern is getting to the finish line as quickly as possible.

A 'tactical' turn, on the other hand, is a rounding you make to beat the boats around you. Any time you have to maneuver relative to boats nearby, you lose distance to the rest of the fleet – so when



Setting up for a jibe set at the windward mark

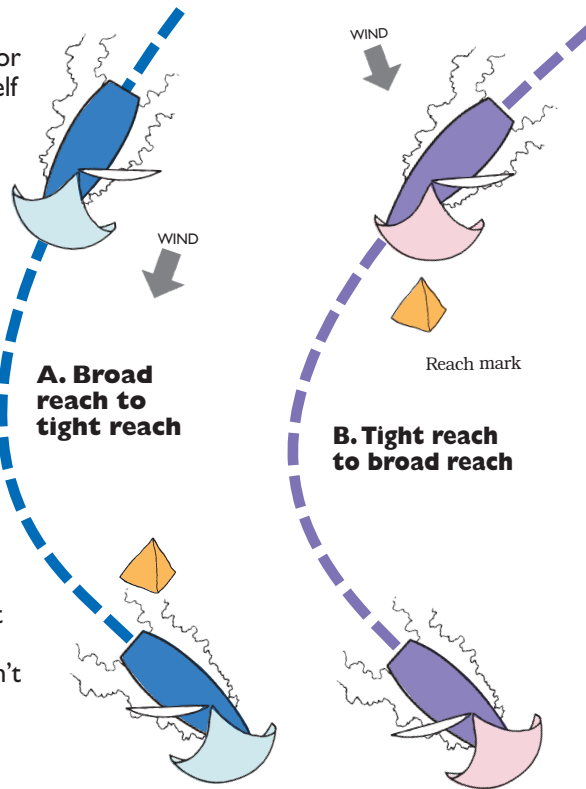
A jibe set is a challenging maneuver because it requires a substantial turn and tricky sailhandling. To pull it off successfully, plan ahead for your approach to the windward mark. Obviously, coming into the mark on port tack is a bad idea since a tack-jibe-set is very slow. The ideal approach is to be slightly overstood on the starboard layline (with no boats to leeward that could prevent you from jibing right around the mark) so you approach the mark on a very slight reach. This gives you good speed going into the jibe set and requires slightly less of a turn. It's possible to do a jibe set when you are squeezing up to the mark on the starboard layline, but you will have to make a big turn without so much speed, which doesn't usually work too well.

Jibing at the reach mark

There are two basic rules of thumb for reach-to-reach jibes: First, give yourself enough room to make a gradual turn (rather than a 90° 'bat-turn'). This helps maintain speed and gives you more time to get the spinnaker pole in position.

Second, complete your jibe before you get to the mark. In other words, get your pole on the mast before your bow passes the mark. This allows you to start going fast on the second reach and to go high if necessary to roll (or prevent being rolled by) other boats.

Completing your jibe before the mark is especially important when you are jibing to a tight reach (Diagram A). But when you are jibing to a broad reach (Diagram B), it's not so critical. In fact, it may actually be faster to jibe later (assuming you aren't worried about getting rolled by boats jibing inside you). This puts you farther to leeward with a faster angle on the second reach.



you are making your turn, minimize boat-on-boat tactics and maximize your progress to the next mark.

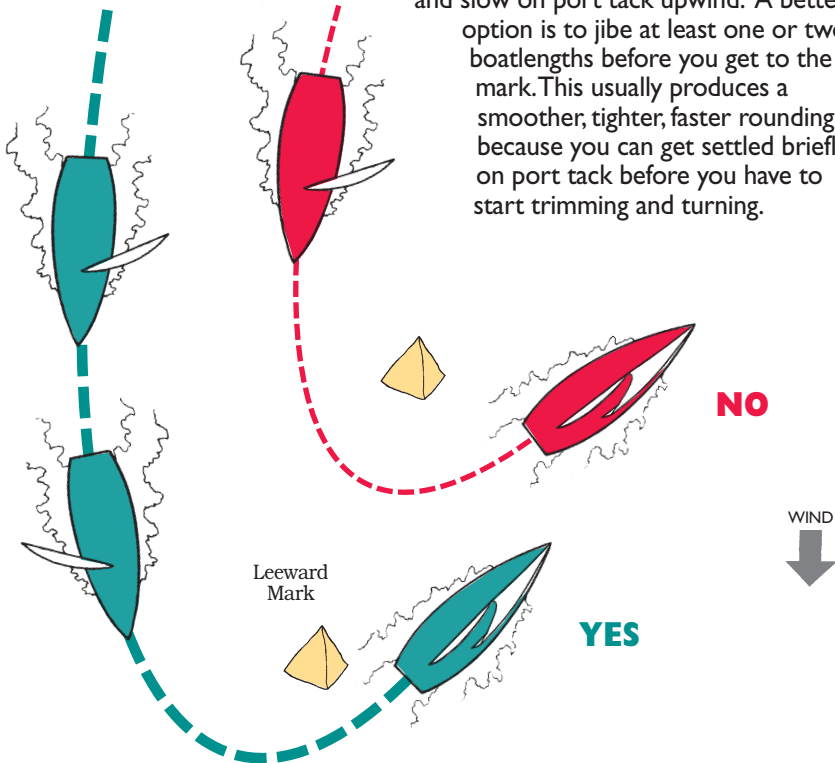
Like other maneuvers, a mark rounding will usually go better if you come into it with speed. Speed helps you carve a better turn, gives you more options, and usually means you come out of the mark-rounding maneuver going faster.

For example, when approaching the windward mark it's usually better to be one boatlength over the starboard layline than one length below it. Even if both boats can make it around the mark, the one that overstood slightly will have much more speed and therefore a better chance for a good rounding.

Once you begin turning around the mark, try to use as little rudder as possible. When you do turn the rudder, don't change its angle too much. The best way to maintain your speed is by turning in a constant radius. Of course, you will never be able to do this for an entire mark rounding, but if you hold the rudder steady for an extra couple of seconds it will make a difference. •

Jibing just before the leeward mark

When you are on starboard tack and approaching a leeward mark that you must round to port, when should you jibe? A common mistake is waiting until you are in the middle of your turn around the mark. This creates a difficult maneuver because you have to make a large course change (nearly 180°) while simultaneously throwing the boom over and pulling in all the mainsheet. Often you end up wide of the mark and slow on port tack upwind. A better option is to jibe at least one or two boatlengths before you get to the mark. This usually produces a smoother, tighter, faster rounding because you can get settled briefly on port tack before you have to start trimming and turning.

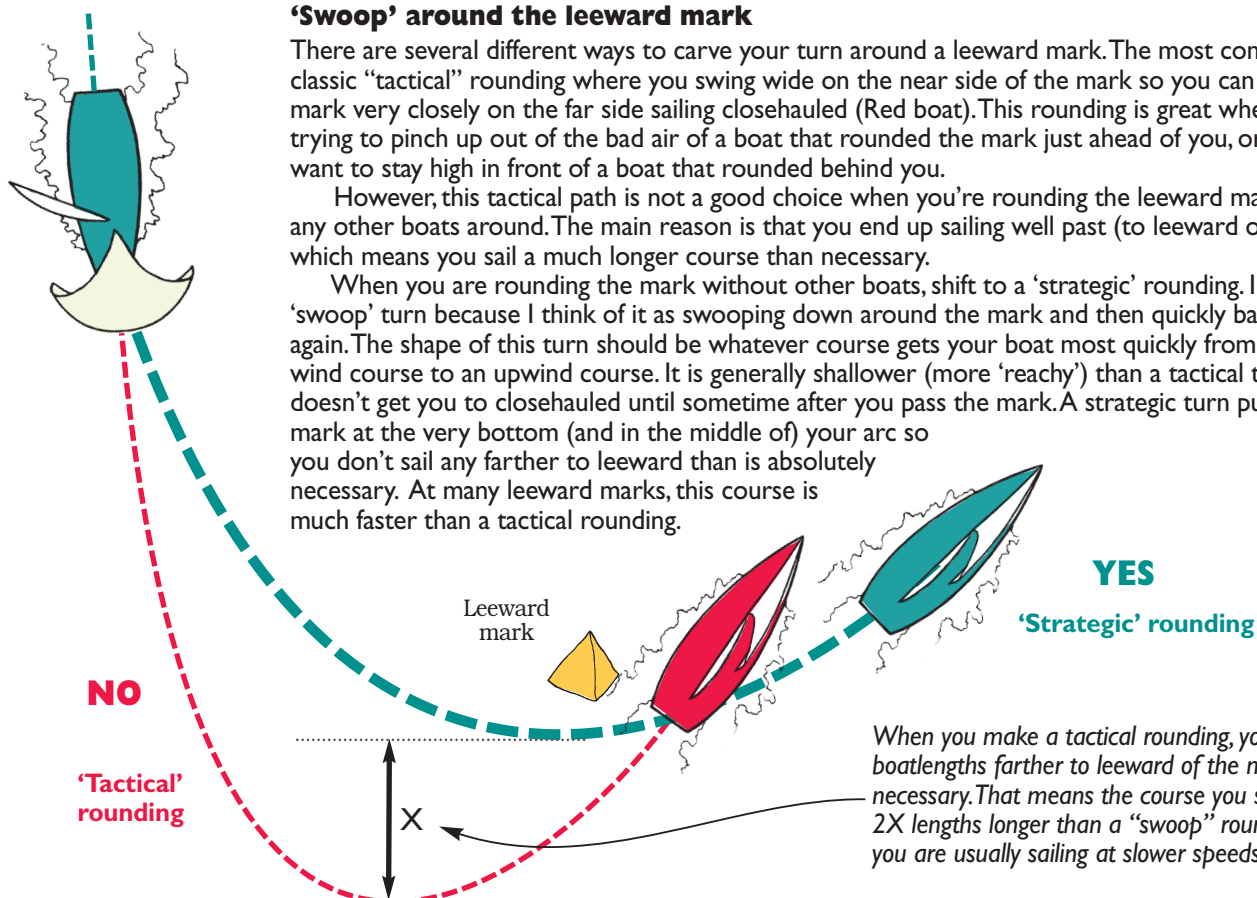


'Swoop' around the leeward mark

There are several different ways to carve your turn around a leeward mark. The most common is the classic "tactical" rounding where you swing wide on the near side of the mark so you can pass the mark very closely on the far side sailing closehauled (Red boat). This rounding is great when you are trying to pinch up out of the bad air of a boat that rounded the mark just ahead of you, or when you want to stay high in front of a boat that rounded behind you.

However, this tactical path is not a good choice when you're rounding the leeward mark without any other boats around. The main reason is that you end up sailing well past (to leeward of) the mark, which means you sail a much longer course than necessary.

When you are rounding the mark without other boats, shift to a 'strategic' rounding. I call this a 'swoop' turn because I think of it as swooping down around the mark and then quickly back upwind again. The shape of this turn should be whatever course gets your boat most quickly from a downwind course to an upwind course. It is generally shallower (more 'reacher') than a tactical turn and doesn't get you to closehauled until sometime after you pass the mark. A strategic turn puts the mark at the very bottom (and in the middle of) your arc so you don't sail any farther to leeward than is absolutely necessary. At many leeward marks, this course is much faster than a tactical rounding.



When you make a tactical rounding, you sail X boatlengths farther to leeward of the mark than necessary. That means the course you sail is roughly $2X$ lengths longer than a "swoop" rounding (and you are usually sailing at slower speeds too).



Rounding the windward mark

The first windward mark rounding is especially important because the fleet is usually still very close together there. If you sail smart and fast around this mark, you can gain a lot of places and start the next leg near the front of the fleet. But if you let other boats push you around, you'll end up in the middle of the pack.

Plan ahead strategically

At a windward mark, you typically have a wider choice of courses to steer than at other marks. You can bear off and stay high, bear off and go low, bear off and then jibe, or do a jibe set. Each of these options corresponds to a particular set of strategic/tactical conditions.

For example, if you think the right side (looking downwind) of the run is very favored, you might bear off and stay high to ensure that you can continue on starboard jibe in clear air. Or if you see that you can fetch the leeward mark on port jibe, you should do a jibe set.

Before you reach the windward mark, look ahead and decide which option you are going to choose. Be sure everyone on your team knows the plan and then execute it as well as you can.

One unique strategic factor at the windward mark is the location of wind shadows. Before you get there, you must be careful of bad air from the boats ahead of you. But once you round the mark, bad air comes from boats behind. Since

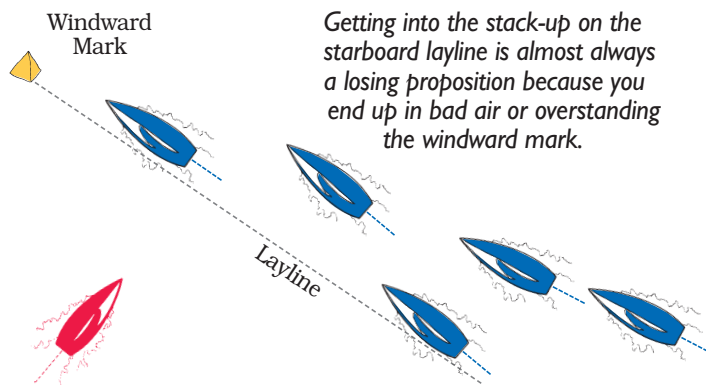


The windward mark is a unique animal because you have to pass this mark on its windward side, and that's also where its anchorline usually lies. Because of this, you must be a little careful here.

- Since you have to sail over this mark's anchorline, watch out for your keel, centerboard and rudder. This is a particular concern with a falling tide (which creates more scope) or conditions that push the mark to the end of its anchorline (e.g. strong breeze or current aligned with the wind). You never know how much scope the mark-setter has let out, nor whether they used a counterweight to hold the line down, so give this mark a wide berth, at least the first time around.
- Passing close on the windward side of the mark also creates other problems. At most windward marks you ease out your mainsheet to bear off, so be sure to leave enough space between you and the mark for the length of your boom. This is especially a concern when it's windy (because you surely have to let your main out to bear off) or when you tack right at the mark (and you must ease your mainsheet to keep the boat flat).
- If the windward mark is inflatable, be careful of this too. These marks spin, swing and rock a lot with the wind and waves, so don't get too close. They are also sensitive to your wind shadow when you sail past them. Without as much wind pressure pushing them to leeward, they often move toward you when you are passing closest to windward of them.

Don't rule out a port-tack approach.

Many sailors avoid coming into the windward mark on port tack because they worry about breaking rule 18.3 (Tacking When Approaching a Mark). That is definitely something to be careful about, but don't let it eliminate this tactical/strategic option. There are many reasons why the top left side of the beat is often advantageous. A major one is that many boats on the starboard layline end up sailing in bad air or overstanding the mark. Boats that approach the mark on port tack usually find less traffic (because sailors avoid this area), so they have clear air and can play the shifts. I will often take my chances coming in on port tack rather than sail into the mess on the starboard-tack layline.



you don't know where other boats will go after the windward mark, you have to be a bit flexible. Watch the space behind you (and your wind pennant) to make sure you stay in lanes of clear air, especially when the wind is light.

Make a timely spinnaker set

Hoisting the spinnaker is another unique part of rounding the windward mark. The timing and technique of your hoist is actually quite a significant tactical and strategic factor. It's great to be prepared for a spinnaker hoist by the time you get to the mark, but sometimes when you approach the mark it's better to focus on keeping the boat going fast and worry about the chute later.

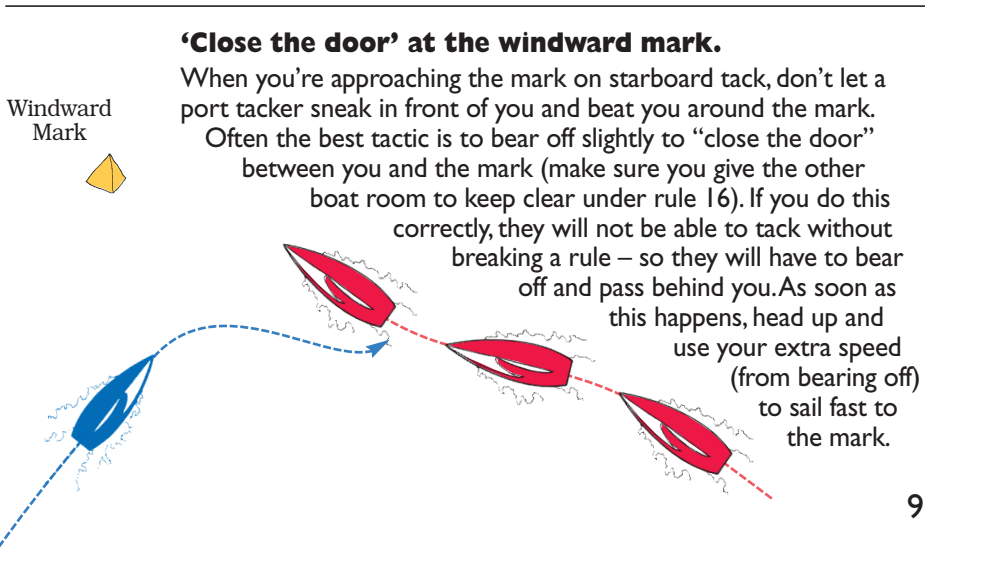
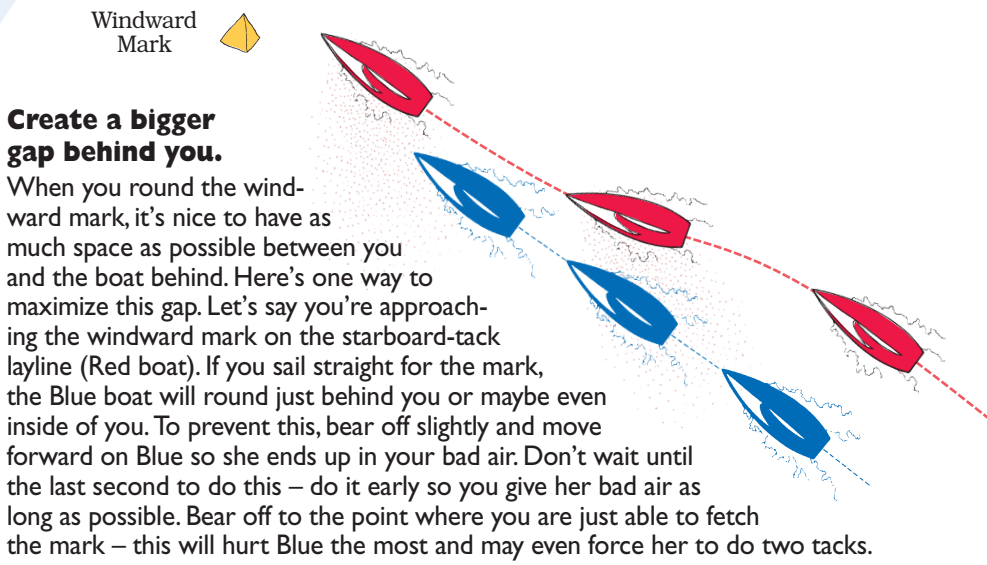
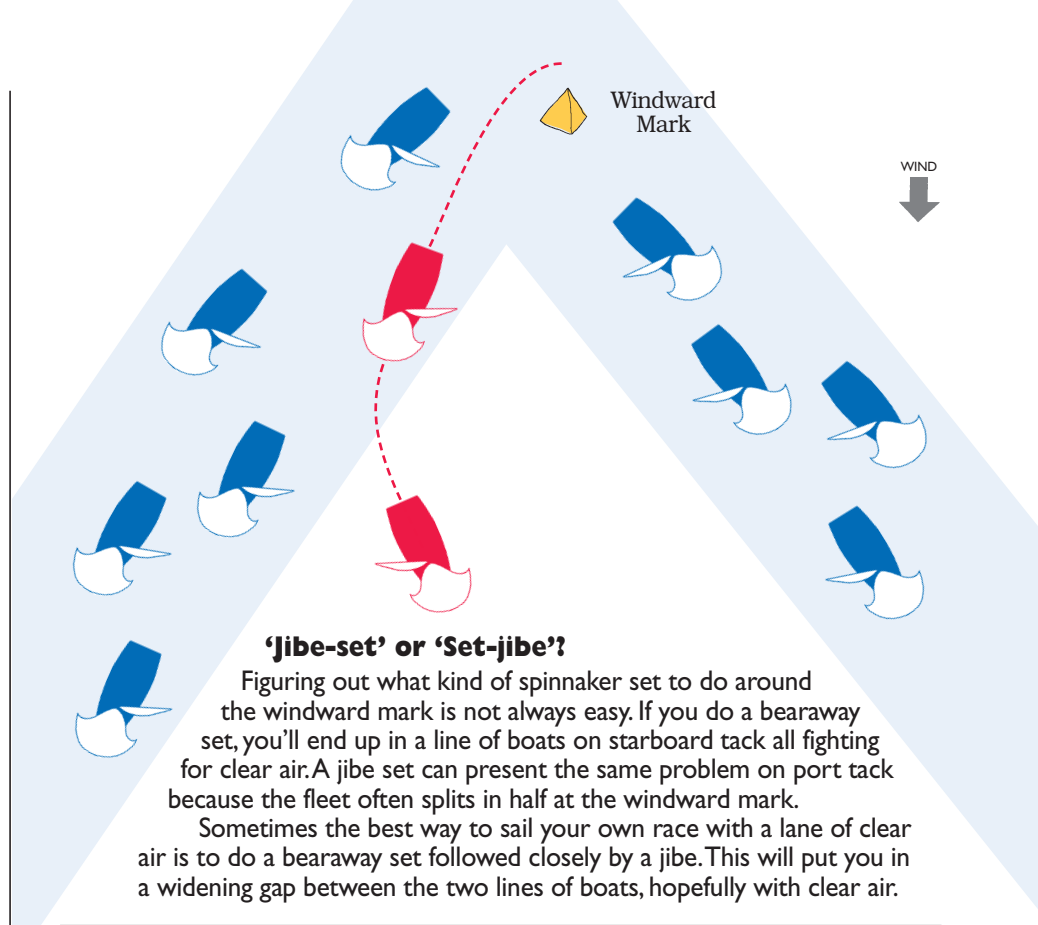
Many sailors set the spinnaker too soon. When you're rounding the mark, keep your weight on the rail to help the boat bear off. Then take a look around before you automatically call for the hoist. If the boats behind you are going high on the reach, for example, you might want to delay your set a bit.

Evaluate how you're doing

The windward mark provides a significant milestone in any race because it's the first place where, like it or not, you can see exactly where you stand in the race. It also completes the first segment of the race and is therefore a logical time for a quick evaluation of your game plan, and your psychological state.

* **Race strategy** – After you sail the first leg of the race, review how things are going. Is the crew communication OK? How is your speed? Was your strategic gameplan working? Make needed changes before you sail much farther in the race.

* **State of mind** – If you're not doing well when you get to the first mark, the most important thing you can do may be to psyche yourself up for the rest of the race. If this is tough to do, pretend that the race is starting all over again at the windward mark. In this new race, your only goal is to see how many boats you can pass from here to the finish. Use this for motivation, and keep track of how well you do. •





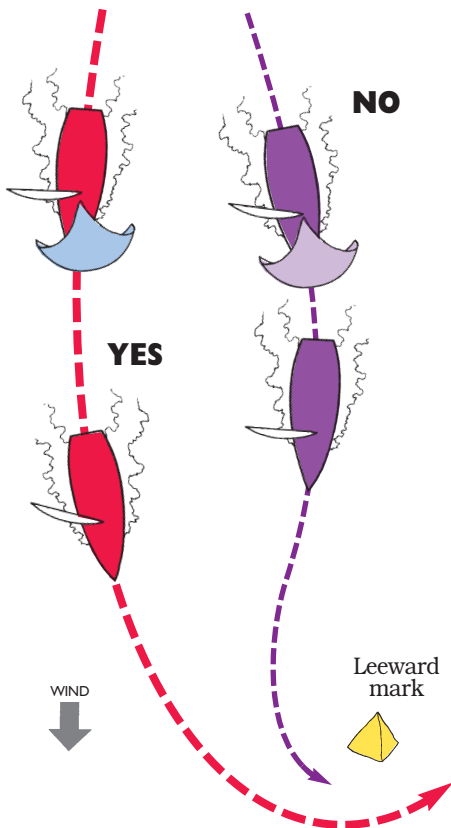
Rounding the leeward mark

Of all the mark roundings you must make during a race, the one at the leeward mark may be the most critical, for several reasons:

- 1) If you have a spinnaker, there can be lots of sailhandling involved;
- 2) You often have to make a bigger turn (nearly 180°) than at other marks; and
- 3) If you have a bad rounding, you'll end up in bad air or, worse, drifting to leeward (away from the next mark) while you recover.

Bearing off to round the mark

When you're approaching the leeward mark with a spinnaker, use the chute to position yourself for a "swing wide, cut close" rounding. Too many times I see boats take down their spinnaker and then bear off to make room for rounding the mark. But this doesn't make sense. If you need to bear off, do this while you still have the spinnaker flying. When you drop the spinnaker, you want to be in a position where you can start heading up so you maintain speed even without a chute. Try to avoid having to bear off without a spinnaker since that is slow.



For all these reasons, you must make this rounding a top priority. Start to think about it when you are part way down the run, and work hard until you are around the mark with clear air, following your strategic plan for the next beat.

Approaching the mark

Since most leeward mark roundings require a lot of sailhandling and maneuvering, make sure everyone in your crew knows the plan. For example, how many more jibes will you do before the leeward mark? Info like this is essential so everyone can do their job well.

When I am driving or doing tactics, I will communicate things like, "This is our final approach," "Ten seconds to a drop," or "We're looking for a tack right after the mark." Do this as early as possible and make sure everyone can hear you.

As you get closer to the mark, it's usually a good idea tactically to position your boat on the left side of the run (looking downwind). This will put you on the inside when you reach the zone and on starboard tack (with the right of way) as you converge with other boats. If you are going to a gate, this is not quite so important (gates require a totally different strategy and will be discussed in a future issue of S&S).

Focus on the overlap

If I had to name one thing that is

most critical for success at leeward mark roundings, I would say it's having an inside overlap at the zone. The presence or absence of an overlap when you reach the zone determines the relationship between the boats for the rest of the rounding. So work hard to make this overlap work for you.

If you have a favorable overlap, point this out to your competitor well before you get to the zone. Say "I have an inside overlap," or "I'm clear ahead." If they wonder why you are claiming this so early, it's because the rules favor the status quo (i.e. they support the boat that already has an inside overlap or is clear ahead) as boats approach the zone (see rule 18.2e).

Going around the buoy

Once you get to the mark, you must use all the techniques that we've discussed in the rest of this issue – turning with weight and sail trim, carving a fast arc around the mark, avoiding other boats as much as possible and so on.

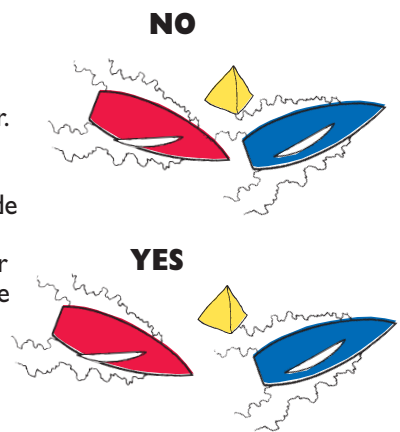
Perhaps the most important thing to remember is your overall goal for the leeward mark rounding: to exit the mark with speed, clear air and the ability to follow your game plan for the next beat. It's easy to become preoccupied with boathandling maneuvers and boat-on-boat tactics, but keep your focus on the real objective. •

When further behind is better

In most situations, the closer you are to a boat ahead, the better your chances of passing them. But at the leeward mark, closer may not be better. Being right behind a boat creates two problems:

- 1) If the other boat slows unexpectedly, you have nowhere to go except to leeward and outside of them, which is very slow; and
- 2) If you round the mark right behind the other boat you'll have very bad air and almost no chance of pinching above them.

For these reasons, it's usually better to leave a gap of half a boatlength or so. This will give you a safer rounding with more options.





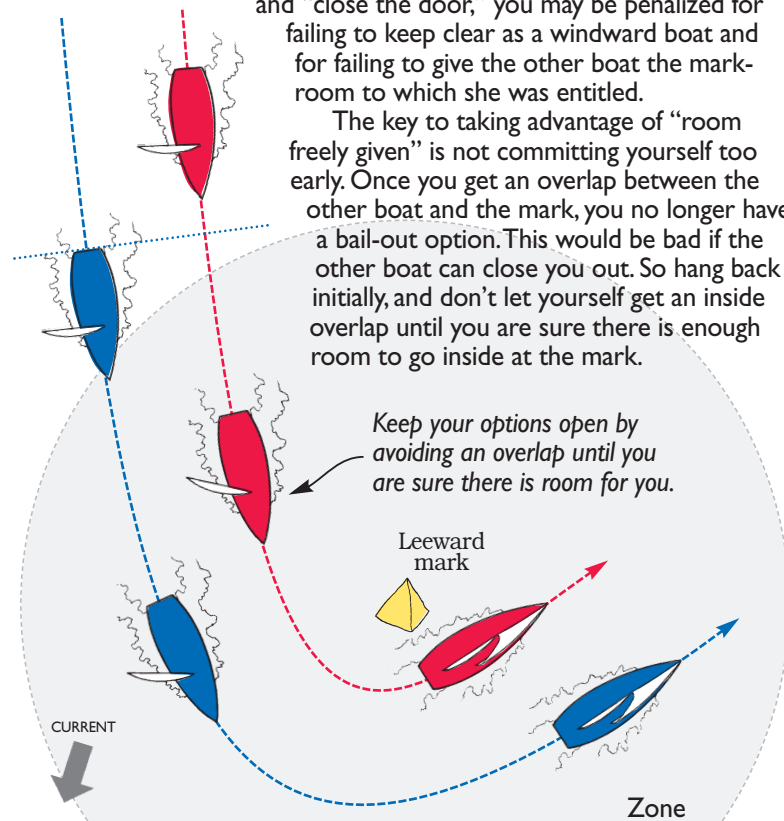
JH Peterson photo

Sometimes at a crowded leeward mark rounding the best strategy is simply to be conservative and maintain your position. It's tempting to take a chance and try to make a big gain, but often the potential rewards are not worth the risks you have to take. Before you get near the mark, take a look at the big picture. How badly do you need to improve your position, and how many more chances will you have to do that during the rest of this race?

Taking 'room freely given'

ISAF Case 63 says, "At a mark, when room is made available to a boat that is not entitled to it, she may, at her own risk, take advantage of the room." In other words, if a boat enters the zone clear ahead of you and then messes up her rounding, you can sail between her and the mark. Of course, you have to be careful here. If the other boat is able to recover and "close the door," you may be penalized for failing to keep clear as a windward boat and for failing to give the other boat the mark-room to which she was entitled.

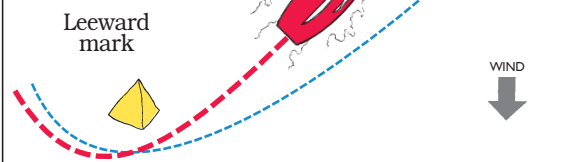
The key to taking advantage of "room freely given" is not committing yourself too early. Once you get an overlap between the other boat and the mark, you no longer have a bail-out option. This would be bad if the other boat can close you out. So hang back initially, and don't let yourself get an inside overlap until you are sure there is enough room to go inside at the mark.



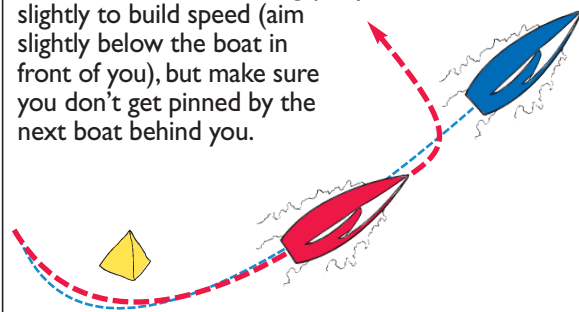
Leeward mark 'exit strategies'

When you go around the leeward mark, it's important to position yourself so you can 1) get clear air and 2) follow your strategy for the next beat. This is easy when you're the first boat around the mark, but more difficult when there's a boat just ahead of you. Basically, you have three options:

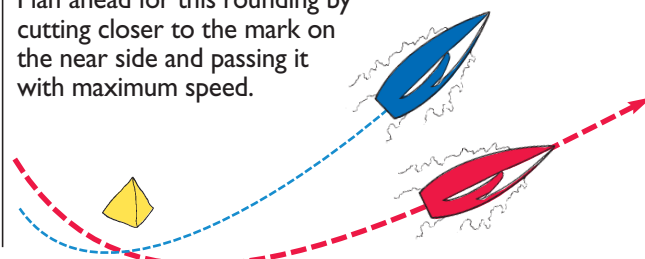
1. Pinch and 'live' on port tack – If you want to go right, your best option is usually to squeeze up and try to 'live' on the hip of the boat ahead. To do this, you need a good tactical rounding where you swing wide and cut very close to the mark. You want an early takedown so 1) you are sailing closehauled when you pass the mark and 2) you can sail high and fast without the distraction of spinnaker cleanup.

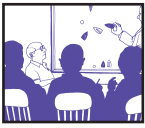


2. Tack to starboard – When you like the left side, tacking is obviously the way to go. This is also an option if you want to go right but you need a short hitch to clear your air. If you come into the mark with good speed, you may want to tack right around it. Usually, however, it's better to wait a few lengths so you are cleaned up and clear of the boats coming downwind. Before tacking, put your bow down slightly to build speed (aim slightly below the boat in front of you), but make sure you don't get pinned by the next boat behind you.



3. Foot off below on port tack – Another option when you want to go right is to foot off below the boat in front of you. This works best when you really like the right side and you can't hold a lane above the boat ahead. You don't want to do this if you are thinking of tacking any time soon, if the beat is not long enough to make up the lost distance, or if you cannot get clear air by reaching off. Plan ahead for this rounding by cutting closer to the mark on the near side and passing it with maximum speed.





How much room can you take?

It's hard to talk about rounding marks without considering how the racing rules affect your tactics. Most mark roundings involve a large number of boats in a small amount of space, so knowledge of the rules is critical for emerging cleanly from the pack.

Instead of discussing all the rules that apply to marks (which could take several issues of *Speed & Smarts!*), I want to focus on one aspect of rule 18 ("Mark-Room")

that is very important and often misunderstood. It's the issue of how much room a boat can take while rounding any mark.

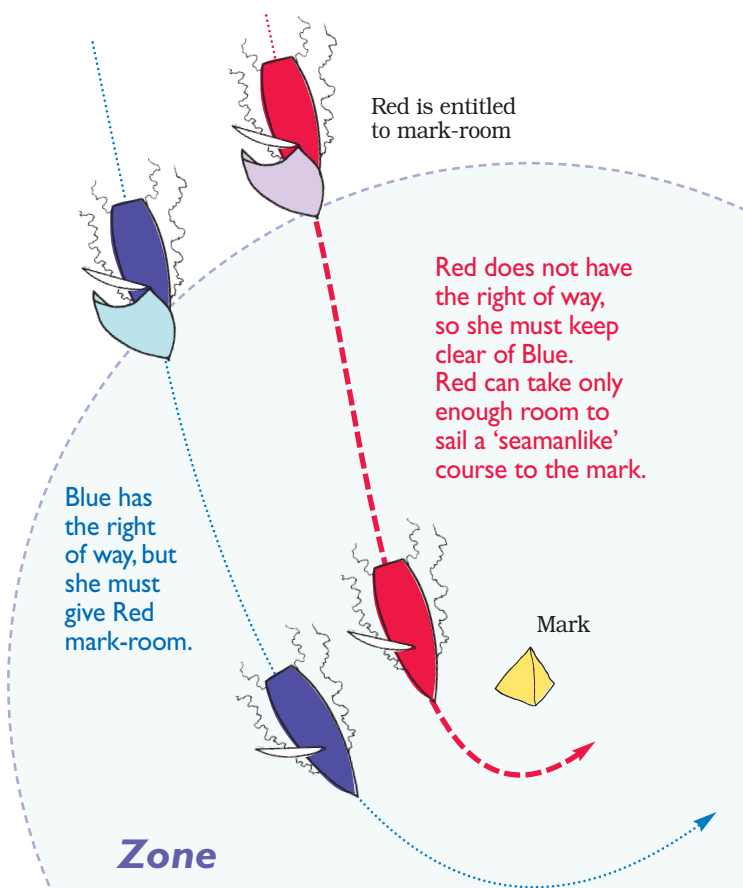
Most sailors know that when boats enter the zone at a mark, the boat that is outside or clear astern at that time must give the other boat mark-room. By looking at the definition of 'mark-room' we know this is enough room to sail to the mark in a seamanlike way and then enough room to sail your

proper course while you are 'at' the mark. But is this all the room an inside boat can take?

The answer depends on one major factor that is somewhat hidden in the rule: Does the boat entitled to mark-room also have the right of way? If she does, she can take a lot more room at the mark than if she doesn't.

Rule 18 was written to make sure that a boat on the inside can get mark-room. This is essential for

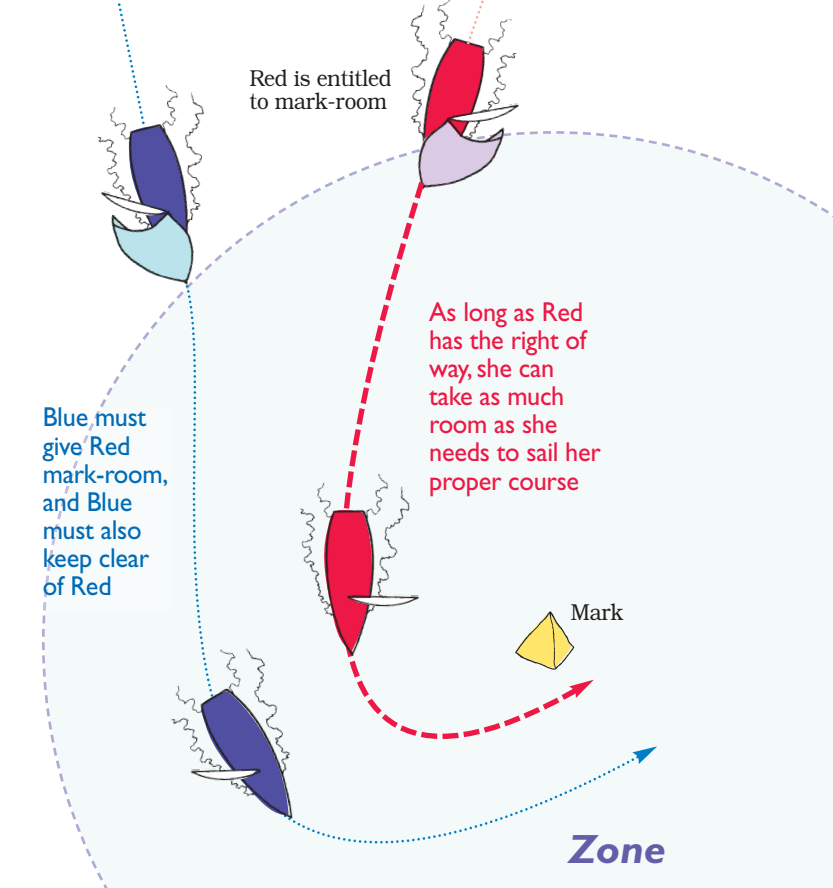
'Mark-room' boat does not have the right of way



When you are entitled to mark-room (because you had an inside overlap or were clear ahead at the zone) but you do not have the right of way, you can take only as much room as permitted by the definition of mark-room. That is, you get just enough room to sail a seamanlike course toward the mark, and then you get room to round the mark as necessary to sail the course.

However, you can change all this by acquiring the right of way. If you jibe to starboard or pull clear ahead, for example, the outside boat will then have to give you mark-room and keep clear of you (even if you do this inside the zone).

'Mark-room' boat has the right of way



When you are entitled to mark-room and you also have the right of way, you can take much more room at the mark. The outside boat not only has to give you mark-room – they must also keep clear of you. But if you are overlapped with the outside boat, rule 18.4 (Gybing) says you can sail no farther from the mark than needed to sail your proper course. That is, you must jibe when that's necessary to sail your proper course.

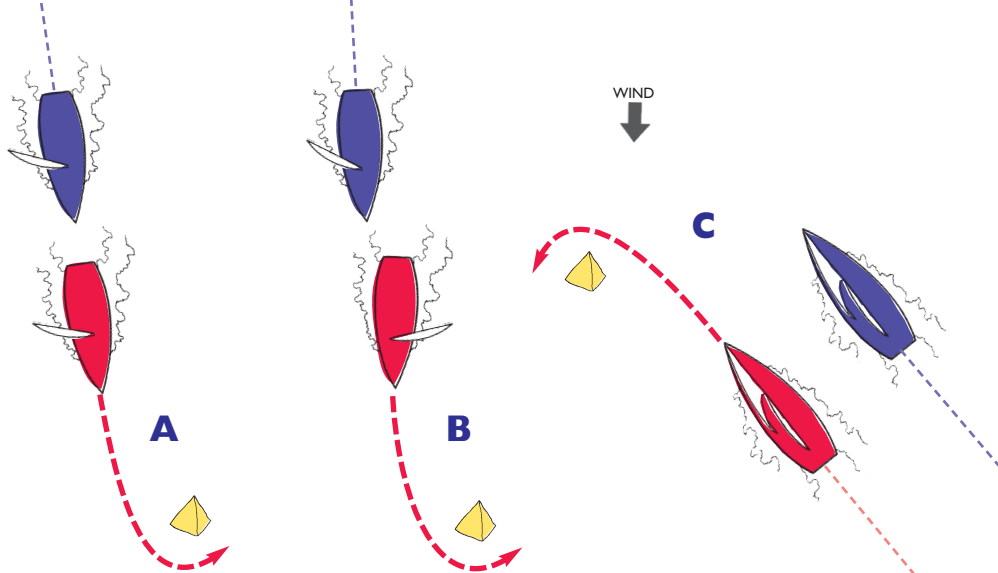
However, if this is a gate mark (or if you're in a team race), rule 18.4 does not apply so you can sail as wide around the mark as you want (but if you go outside the zone you lose your entitlement to mark-room).

boats that do not have the right of way – since without rule 18 these boats would get squeezed out of every mark rounding.

But when the inside boat has the right of way, rule 18 is not really necessary. That’s because the inside boat could get room at the mark just by asserting her right of way.

Many people think an inside boat is entitled only to “mark-room,” whether or not she has the right of way. But that is incorrect. Rule 18 is essentially a guarantee – that every inside boat will get at least mark-room, even if she doesn’t have the right of way. But rule 18 does not limit the amount of room that a right-of-way boat can take (except for rule 18.4 when a boat must jibe to sail her proper course).

The ‘take-away’ from all this is that when you are entitled to mark-room, it’s also better to have the right of way. If you are coming to a leeward mark, for example, consider jibing onto starboard – this will give you more options than if you remain a give-way boat on port tack. •



Three times when you can make a very wide rounding

In all of these situations, the Red boat entered the zone clear ahead or overlapped inside the Blue boat, and Red has the right of way. Therefore, Blue must give Red mark-room, and Blue must also keep clear of Red. As long as Red doesn’t pass head to wind or go out of the zone, Red can make as wide a rounding as she wants. But there are a few things that could change this:

- Situation A – If Red loses the right of way (e.g. if Blue gets an outside leeward overlap or jibes to starboard), then Red can take only as much room as allowed by the definition of mark-room.
- Situation B – If Blue gets an outside overlap (on Red’s starboard side), Red still has right of way, but rule 18.4 says she may sail no wider than her proper course.
- Situation C – If Red got her leeward overlap from clear astern or if she must jibe at the mark, she may sail no wider than her proper course around the mark.

IDEA: If you find it hard to judge the zone at marks, here’s a way to better estimate three boat lengths: In your backyard, or at your sailing club, measure three times the length of your boat and mark this off between two fixed points. Look at this often to get a visual reference in your mind about the size of the zone when you’re near a mark.

TEASER ANSWER

(From the Brain Teaser on page 1)

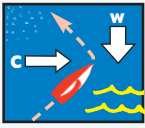
The answer is **False**. The starting line is set square to the sailing wind, so all boats on the line are on the same ‘ladder rung’ and will be even at the start. If wind and current stay constant on the first beat, is there any advantage to starting at the end that is “up-current”? No. All boats are even at the start and the current will affect them equally as they sail up the beat.

Look for a lot more about current in an upcoming issue!



JH Peterson photo

Star 07 had an inside overlap when these boats entered the zone, so she is entitled to mark-room. However, since 07 is a windward boat she must keep clear of 48. While 07 is sailing to the mark, she can take only enough room to make a ‘seamanlike’ approach. Once 07 is close to the mark, she is entitled to enough room to round the mark as necessary to sail the course (i.e. enough room to round the mark and head up to a closehauled course on port tack).



STRATEGY

Rounding the offset mark

The offset mark often seems like a windward mark afterthought: “Oh yea, we have to go around that little mark too.” But the offset leg can play a significant part in your strategy at the end of the beat and the beginning of the run.

First of all, don't forget about the offset mark. We've all done that and it's not pretty. Second, make sure you look ahead and gauge the angle of the offset leg well before you get to the windward mark. It can make a huge difference whether that leg is a tight or broad reach (*see next page*).

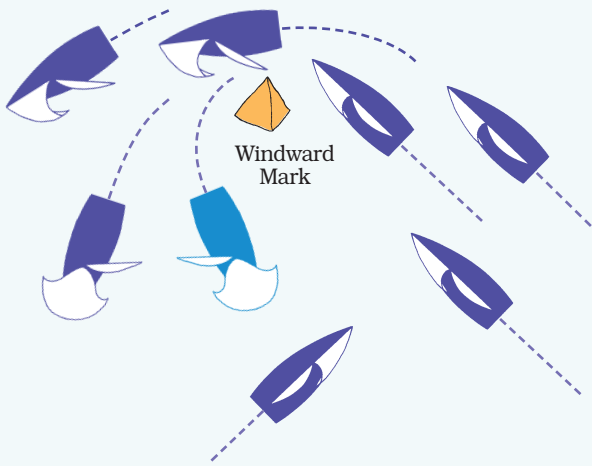
Remember also that there is a new zone for the offset mark. When the offset leg is short, boats may enter this zone very soon after they round the windward mark. Therefore, if you want to be inside at the offset mark (because you are planning to do a jibe set, for example) you must think about this before the windward mark.

The longer the offset leg, the more important it is to fly the right sails for that leg. If the leg is short, however, flying a spinnaker won't help too much, so your priority should be to set up for a good beginning to the run. This includes the possibility of doing a jibe set, which is usually much easier when you have an offset mark (*see below*).



JH Peterson photo

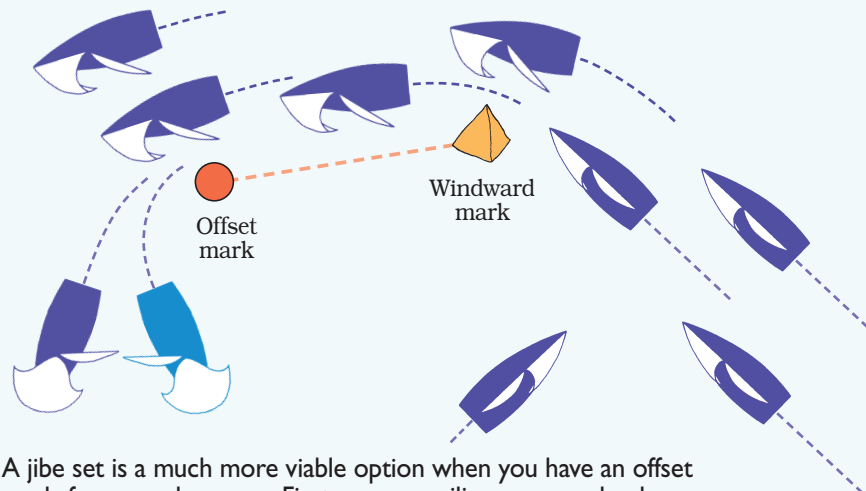
Jibe Sets at a Windward Mark



When you're rounding a single windward mark, there are many reasons why a jibe set doesn't usually work so well. First, you have to make a large turn, which is slow. Even if you approach the mark on the starboard layline, you have to turn almost 180° to get to the optimal spinnaker angle. This turn is obviously much worse if you come in to the mark on port tack.

Second, when you jibe around the mark you have to sail back through the bad air and water of all the boats that are approaching the mark upwind. And third, once you jibe you lose the right of way to every other boat in the fleet.

Jibe Sets at an Offset Mark



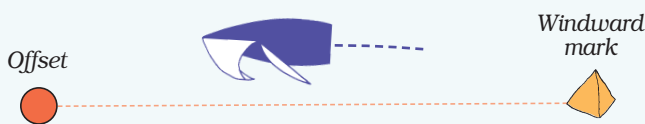
A jibe set is a much more viable option when you have an offset mark, for several reasons. First, you are sailing on a reach when you get to the offset mark, so you have extra boatspeed which makes jibing less painful. Second, because you are already on a reach, you don't have to make such a big, slow turn around the offset mark.

Third, wind shadows are not as bad at an offset mark as they are at a windward mark, especially if the offset leg has any length to it. Yes, you do have to sail through bad air of boats on the offset leg, but their wind shadows are usually milder than those from boats on a beat. Fourth, even though you still give up the right of way to the fleet, it's not a big problem because fewer boats sail upwind near the offset mark. And fifth, you have much more time to prepare for a jibe set while you're on the offset leg.

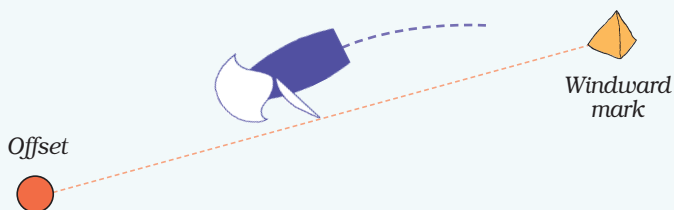
Of course, you won't be the only sailor who realizes that jibe-setting at an offset mark is easy. Even if you are inside at the jibe mark, there will often be a line of boats behind you and you'll have to sail high to keep your air clear. In that case, it may be better to hold your jibe for a few boatlengths and position yourself where you have a lane of clear air below the boats that jibed (*see page 9*).

Playing the offset leg

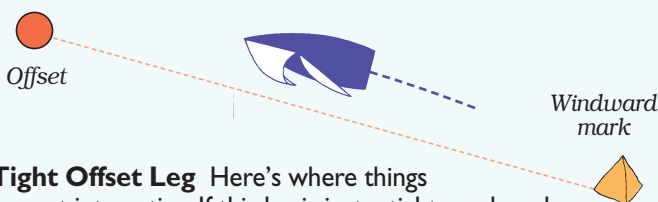
The offset leg is typically set perpendicular to the wind and roughly four to eight boatlengths long. However, the position of this mark varies quite widely from race to race. Sometimes it is so far to windward that you can barely fetch it from the windward mark; other times it's so low you can easily carry a chute. That's why it's important to look ahead at this leg before you get too close to the windward mark. Here are some thoughts on how to play various offset legs.



Typical Offset Leg On a normal offset leg you have a true wind angle of about 90 degrees, which is often in the grey area between carrying or not carrying a spinnaker. My personal preference is to hold off on the spinnaker unless I'm very sure it will make my boat significantly faster. On a short leg, especially with other boats around, I don't feel a slight increase in speed is worth the sacrifice in tactical maneuverability (I've seen many boats get in trouble on this leg by setting). I'd much rather use this leg to get everything organized and then have a great spinnaker set just before or as I round the offset mark.



Broad Offset Leg When the offset mark is set farther to leeward than normal, a spinnaker is easy to carry and will make you substantially faster. Therefore, you should get your chute up as soon as possible (unless you have tactical issues with nearby boats). Round the windward mark and do a normal spinnaker set to a reaching leg. Whether you go high or low depends on traffic around you and, more importantly, on whether you plan to bear off around the offset mark or jibe (in which case you need to sail low on the offset leg so you are inside when you enter the zone). That's why you need a strategy for the run before rounding the windward mark.



Tight Offset Leg Here's where things can get interesting. If this leg is just a tight reach and no one is careless enough to set their spinnaker, then there is no problem. But I have seen quite a few races where it's tough (or even impossible) to fetch the offset mark from the windward mark. In these cases the offset leg is an extension of the first beat, and the fastest course to the offset mark may not come too close to the 'windward mark'. The key is recognizing this early so you avoid getting trapped among all the boats that round the windward mark and pinch along the offset leg.

When in doubt, take down early!

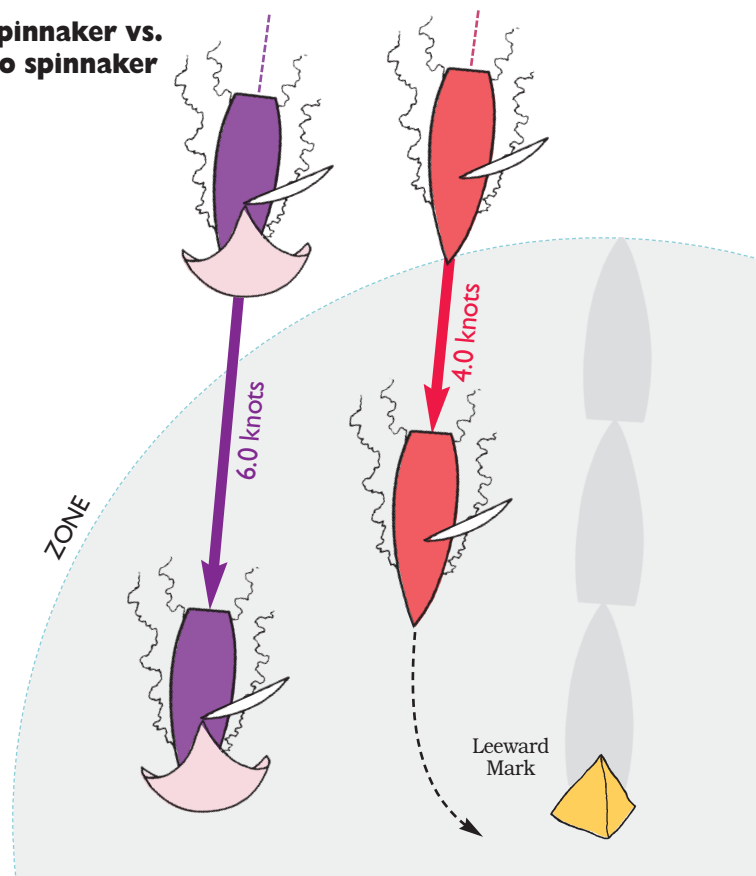
(Continued from page 16)

to take the chute down unless you absolutely must. But this doesn't make a lot of sense.

A spinnaker won't really help you much during the last few boatlengths before the mark. In most cases, an early takedown will cost you almost nothing (see diagram) while a late takedown could be disastrous. Therefore, this seems like a no-brainer. Since there is not much of a reward for taking a risk, you should usually drop your spinnaker when you think it's still a little too early to do so.

Of course, there are always exceptions. Keeping the spinnaker up longer is better on boats like skiffs where it makes a big speed difference and is easy to drop. It's also fine to keep the chute flying longer in light air, or when you are fighting to get or break an overlap.

Spinnaker vs. no spinnaker



Is it worth flying your spinnaker until the last second near a leeward mark? If you look at the math, I'd say usually not.

Let's say a boat (Purple) goes 6 knots with her spinnaker fully drawing. Another boat (Red) that drops her chute will probably travel at least 4 knots. So while Purple sails the radius of the zone (3 lengths), Red will go at least 2 lengths (assuming Purple's spinnaker is always drawing and Red doesn't carry any momentum from before she dropped her chute).

In the best case, Purple will gain one length inside the zone, but she is now at the mark with her spinnaker still up. If Red takes her chute down one length before she gets to the zone, she will lose only a third of a length (at most) before she reaches the zone. There are very few times when this will be costly for Red – on the other hand there are many times when leaving the chute up too long can hurt Purple.

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CREW WORK

When in doubt, take down early!

One of the most costly errors you can make at any mark rounding is having a bad spinnaker take-down at a leeward mark. A disaster like this usually happens when sailors wait too long before taking down their chute. Unless things go perfectly, it's easy to end up with a messy tangle and a huge loss to the rest of the fleet.

Mark roundings are tricky, so one of your main goals should be to minimize risk and make sure you don't lose any of the boats behind you. An obvious solution here is to take your spinnaker down early and eliminate the possibility of having a problem. So why do many sailors consistently wait so long that they suffer big losses?

The answer is that sailors overestimate the value of keeping the spinnaker flying a few more seconds. Everyone knows that a spinnaker makes you go faster, so when you're trying to win a race, it's hard

(Continued on page 15)



JH Peterson photo

When you approach a leeward mark, there are a number of telltale warning signs that tell you it's a good time to drop your spinnaker early. Take your chute down earlier than you think you should when you have:

- **Windy conditions** – More wind pushes you faster toward the mark
- **Favorable current** – This brings you to the mark sooner than expected
- **Lots of traffic** – An early takedown is critical for tactical maneuverability
- **A tricky maneuver to do** – If you must jibe at the mark, for example
- **An inexperienced team** – Sailors with less experience need more time