

## The Downwind Gate – John Ball

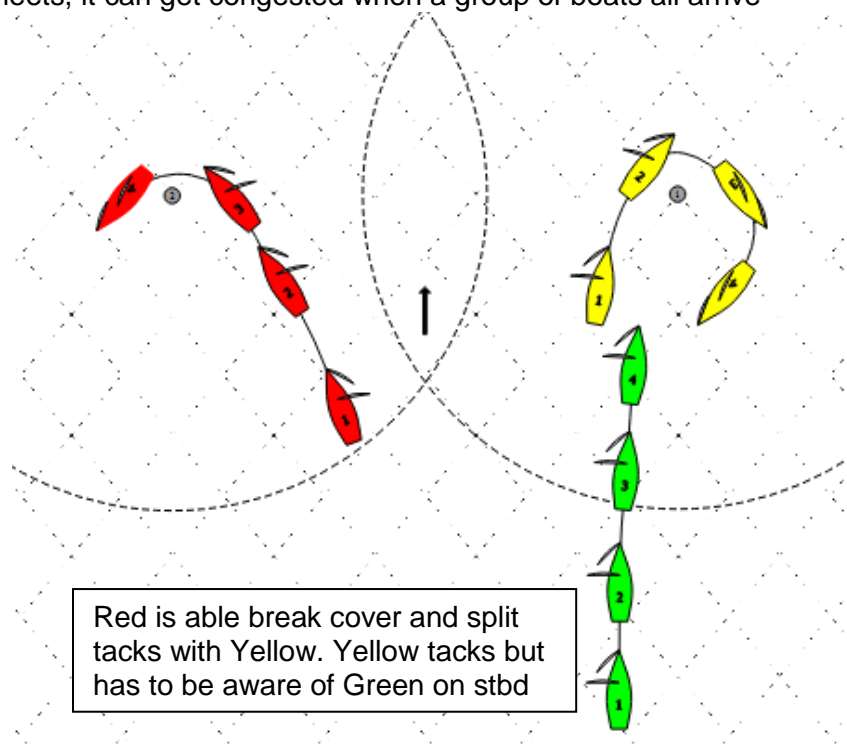


Photograph from the 2014 French IOM Nationals, Toulouse, taken by Hanneke Gillissen Pont

Getting tangled up with another boat is SLOW. After the start, the place where congestion is greatest, and where the risk of a collision is highest is at a mark rounding. Frequently at bigger regattas, the downwind mark is replaced by a gate. This article discusses issues, tactics, and rules at the downwind gate to help you anticipate and avoid problems before they develop.

A race committee has three options at the end of the downwind leg: a single mark, a downwind mark with an offset mark, or two marks designated as gate. With the single mark, all the boats round it in the specified direction. However with bigger fleets, it can get congested when a group of boats all arrive together. And as all the boats round the mark the same way, we see a procession of boats sailing back upwind in dirty air. To avoid the bad air, some boats may choose to tack soon after rounding to get clear air, but immediately run into the trailing boats, who are still heading downwind into the mark.

To reduce this conflict, a second 'offset' mark was added to separate the fleet to prevent the leading close hauled boats that have already rounded, from conflict with the following boats still on the run to the mark. That works better, but can still suffer from crowding if a group of boats arrive together. It also has a disadvantage in that it forces the fleet to one side of the course at the start of the new beat.



So the downwind gate evolved (see diagram above) – using the same two marks, but let the skippers choose which one to round. It has the immediate advantages of splitting the fleet, reducing the number of boats going around a given mark, and it has a tactical benefit, in allowing a trailing boat (Red) to break

cover and split tacks with a leading boat (Yellow). However the gate brings back the possibility of a leading boat (Yellow), tacking back across the path of the following fleet (represented by Green), soon after rounding.

[https://www.youtube.com/watch?feature=player\\_detailpage&v=Jx3oJSjkFQY#t=181](https://www.youtube.com/watch?feature=player_detailpage&v=Jx3oJSjkFQY#t=181)

**From time stamp 3:00 to about 4:00 A tidy rounding, but boats that took the stbd side quickly tacked back on to port and sailed up through the trailing boats running downwind on stbd – some close calls.**

A gate consists of two marks, each with its own zone, and a boat may choose which end of the gate to round. Normally, you go between the two marks and round one end or the other (sometimes referred to as 'inside out'). Like a starting line, a gate can have a favoured end – one mark is more upwind than the other, and you may want to go that way. The reason is simple - if one mark is two boat lengths more upwind than the other, you get an immediate four boat lengths advantage over a boat choosing to round the other end. But choosing which end to round can have strategic implications - setting you up for one side of the beat or the other, or tactical implications –to clear your air and break a cover, or to split tacks.

### **Setting up for the Gate**

Part way down the run, I start to think about choosing which end of the gate to round. What phase is the wind shift? Do I need to get away from a boat rounding just ahead to avoid their bad air? Or do I want to get to one side of the course because of wind or current differences on the course? If the boats are well spread out, then rounding should be straight forward, but if the fleet is bunched up, there are several things that can happen – usually quickly – and usually bad! As the downwind gate is downwind (by definition!) often it seems that the wind gets stronger, and the waves get bigger and boats can get 'twitchy' approaching the gate. These sometimes-violent manoeuvres are caused by over steering, and are one big reason why some sailors use the exponential settings of their programmable transmitters to 'soften' or reduce rudder travel around dead-centre.

<https://www.youtube.com/watch?v=e9N7m1fIVVo>

**It gets twitchy sometimes as the skippers start to alter course to head for the marks, and it is easy to over steer while attempting to avoid each other. First 90 seconds of video.**

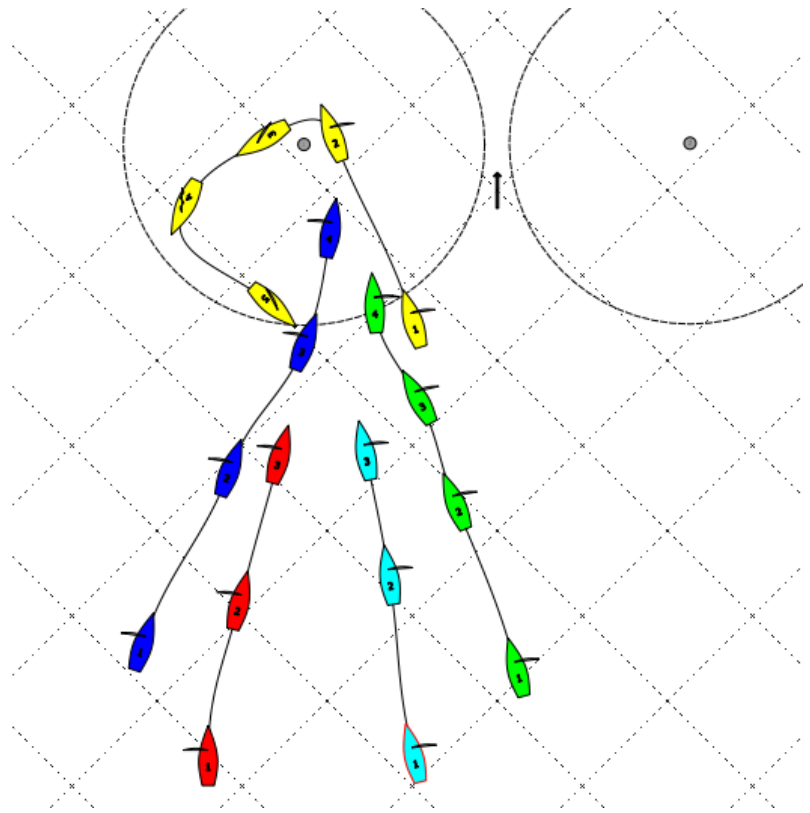
I think of the fleet as three groups of boats - Group 1 - the boats ahead; I need to anticipate the boats that are rounding ahead, and that are starting to beat back upwind – what happens if one of them tacks after rounding – sailing back across the course and into my path? Group 2 - the boats around me – which end are they setting up for – and for those coming to my mark, am I overlapped and inside or outside. Group 3 - the boats behind me that I may encounter after I have rounded and start heading back up wind.

The first hint is to watch what the group 1 boats (the boats ahead) are doing – those are some of the best sailors – (they are in front aren't they!), so what can I learn? If they are all going to one end of the gate, there is probably a good reason – a favoured end or a good wind shift for example. Then I should plan to follow them to get the same advantage. But if they are splitting to both ends, then I have more options to think about and plan for.

Facing down the course, as if you were on the boat, the gate has two ends; the left end, which is rounded to port, and the right end which is rounded to stbd.

### The Left End.

If you choose the left end and round to port, and tack to stbd shortly after rounding (like Yellow), you will be ROW over all boats still running down to that mark; the port tack boats under R10, and stbd tack boats under R 11, as they will be windward to you. When you tack, you will be subject briefly to R 13, and must give room to other boats to stay clear. Look at the left mark in the above diagram. Yellow is first around the mark, clear ahead of Blue, and has ROW over Red on stbd (R11), and Turquoise and Green, on port (R10). Now put yourself in one of the trailing boats; you have to look ahead and be prepared to avoid any boats on stbd coming back up the beat.



<https://www.youtube.com/watch?v=XoMUEv1-c7c>

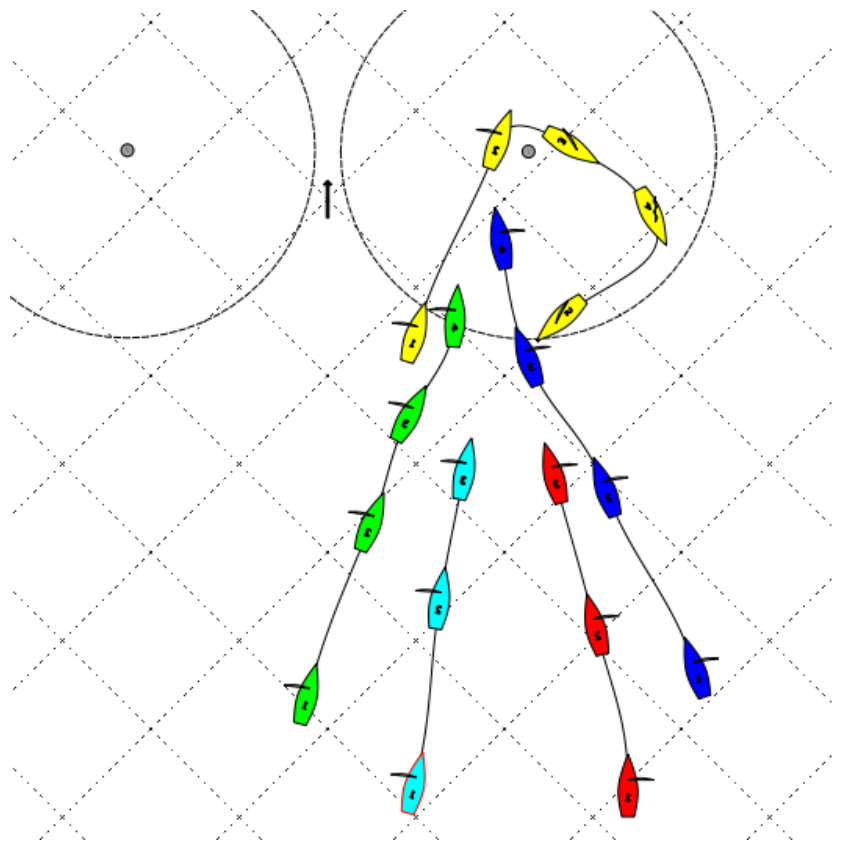
**Boats round the port gate and tack onto stbd, back into the following fleet. Listen for the hail of “Protest”!**

### The Right End.

(this is the same diagram as previous but mirror image to flip everything)

The right end is more complicated than the left when a boat wants to tack back soon after rounding. Once you tack, you will be on port tack crossing back through approaching downwind boats, and while you will have ROW over running port tack boats (R11), you will have to stay clear of running stbd tack boats (R10) - I said it could get complicated!

Looking at the right end mark, Yellow rounds clear ahead of Blue. Once she tacks, she will have ROW over any port tack boats, such as Blue and Red (R 11). However she will have to stay clear of Turquoise and Green who are on stbd (R 10). From the perspective of the trailing boats approaching the right end, the boats on port gybe have to stay clear of everyone, while the stbd gybe boats will be ROW over any port tack boats beating back



<https://www.youtube.com/watch?v=BEFBKxr0-as>

Watch the bottom left of picture for the first boat rounding to stbd and then tacks to port – Oops! Blue throws away a leading position by tacking to port and colliding with Orange on stbd.

### **Wind Shifts and the favoured end**

I suggested that one important factor in choosing which end to round, is when one end is favoured – positioned more upwind than the other, due to the mark placement by the Race Committee. But wind shifts also can cause one end to become favoured. If you are sailing downwind and the wind shifts counter-clockwise, to the stbd side, such that gybing to stbd gives you a faster sailing angle to the mark, then you should head for the right end of the gate. But as soon as you round the mark and come close hauled on stbd, you are in a header, and should look for a chance to tack to be on the lift. The opposite is also true – if you are sailing downwind, and the wind shifts clockwise, coming over the port side, and gybing to port gives a faster sailing angle, then head for the left mark. Again, after rounding and once you come to close hauled on port, you are in a header, and should look for an opportunity to tack to be on the lift.

[https://www.youtube.com/watch?feature=player\\_detailpage&v=iOIPvARqT14](https://www.youtube.com/watch?feature=player_detailpage&v=iOIPvARqT14)

Wind has shifted clockwise giving better sailing angle on stbd and stbd end is favoured. Note stbd boats tack to port soon after rounding as they are now on a header

In the absence of any strategic or tactical implications, and from a rules perspective, if you are in Group 1, or in a gap with no other boats near you, then it is probably safer to head for the left gate and round to port. You will now be sailing close hauled away from the mark and away from the Group 2 boats and avoiding any disturbed air. But when you do choose to tack, then at least, you will be on stbd, and have right of way over all of the downwind boats and maybe even more important, you will have right of way over other close hauled boats that went the other way and are now crossing back and close hauled on port.

If you are with just one or two other boats, then choose the mark that gives you inside overlap for the rounding. If you will be outside boat, then head for the other mark.

<https://www.youtube.com/watch?v=6g2Tos0PRyl>

The white boat 43 decides (somewhat late) to round to port to avoid being outside boat to Blue and to avoid his dirty air.

If you are in Group 2 or Group 3, it is probably safer to position yourself to be able to get on to stbd gybe in the last third of the run and head for the right gate and round to stbd. That way, you will have right of way over nearby port gybe boats, and also have right of way over any Group 1 boat that has already rounded that mark and that tacks over, as they will now be on port.

### **Two (Gates) for the price of one**

This video features a number of the situations that I wrote about earlier. It runs about 8 minutes but is well worth studying.

[http://www.youtube.com/watch?feature=player\\_embedded&v=CB-leuMZwlg](http://www.youtube.com/watch?feature=player_embedded&v=CB-leuMZwlg)

From the 2014 Australian IOM Nationals. Look for 47 Yellow hull. 1 Blue hull and 26 White hull/Blue deck. At the start line there is a big counterclockwise shift. Port end of start line is favoured. After rounding the weather and offset marks, most sail downwind on stbd gybe - better sailing angle – so the shift is still there and the right end of gate is favoured.

[http://www.youtube.com/watch?feature=player\\_detailpage&v=CB-leuMZwlg#t=160](http://www.youtube.com/watch?feature=player_detailpage&v=CB-leuMZwlg#t=160)

Jump to time stamp 2:40, 47 is leading and 1 and 26 are level. But 1 goes to the (unfavoured) left gate and gives up several boat lengths and several places to 26 and others who went to the (favoured) right gate. After rounding the right gate, 47, 26 and others are on the headed tack and tack to port (3:13) and converge with trailing Group 2 boats running on stbd and have to be careful and keep clear.

[http://www.youtube.com/watch?feature=player\\_detailpage&v=CB-leuMZwlg#t=360](http://www.youtube.com/watch?feature=player_detailpage&v=CB-leuMZwlg#t=360)

Jump to time stamp 6:00 for second time through gate. Shift is still there. This time 1 chooses the (favoured) right gate with the other lead boats and holds onto position. Better to take the bad air than lose distance late in the race. (1 is consolidating her position late in the race - but that is a topic for another article on 'The Finish').

I used a number of videos in this article, but am not able to identify the videographers individually. I would like to thank them for putting these segments on Youtube for us to enjoy and study.

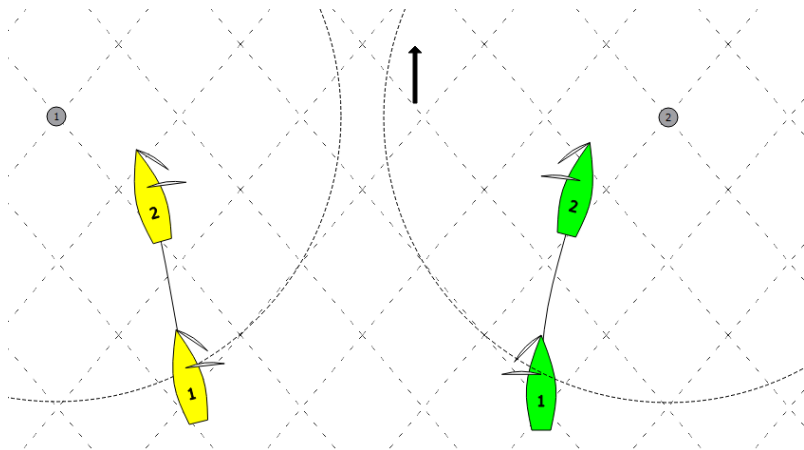
## The Rules

### R 18 and Mark Room at a downwind gate

The downwind gate has several unusual and surprising implications relating to R 18 and Mark Room. The first surprise is contained in R 18.1 which covers when R18 and mark room applies and when it does not.

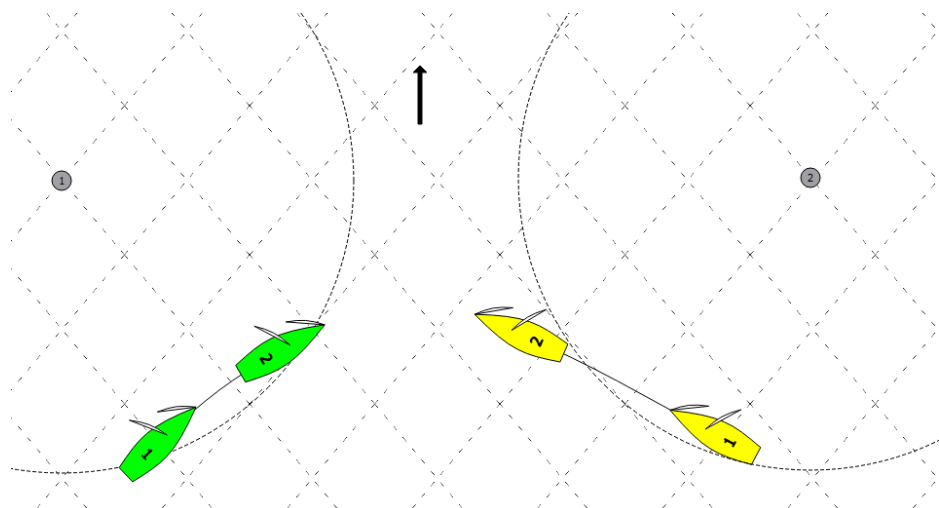
#### 18.1 When Rule 18 Applies

*Rule 18 applies between boats when they are required to leave a mark on the same side and at least one of them is in the zone.*



In the left diagram, R 18.1 is quite clear. Both boats are heading to different marks and rounding in different directions, so it makes no sense for either boat to request mark room from the other. R 18 and Mark Room does not apply.

The situation in the right diagram is more complicated. It shows Green, on stbd, heading for the right mark, to be rounded to stbd, and Yellow on port, heading for the left mark, to be rounded to port. Look at it and decide who has ROW and who should stay clear, and how may R 18 apply?



For the answer, note that the two boats are not rounding the same mark, and so R 18.1 says that R 18 does not apply. So we are left with a simple port/stbd R 10 situation and Yellow must stay clear of Green.

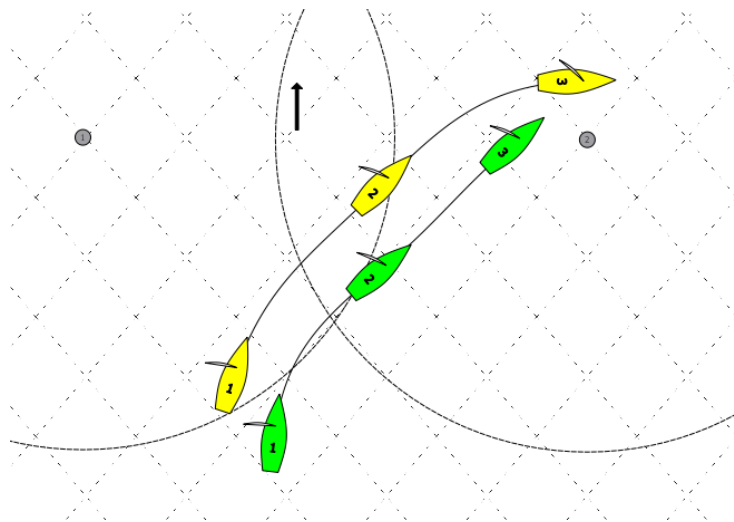
However, where several boats are heading to round the same mark, R 18 applies to each individual mark as normal. But there is a section of R18.4 that is specific to gates. If you look closely, it says that R 18.4 Gybing does not apply to gate marks!

#### 18.4 Gybing

*When an inside overlapped right-of-way boat must gybe at a mark to sail her proper course, until she gybes she shall sail no farther from the mark than needed to sail that course. Rule 18.4 does not apply at a gate mark.*

Ok, so R18.4 does not apply at a Gate – so what does that mean?

If you look at this diagram, at position 1, Yellow is in the zone of the left mark. If that were the only mark and there was no gate, then R 18.4 says essentially that Yellow, needing to gybe to round the left mark, must sail no further from the mark. But as this is a gate, R 18.4 does not apply, and so Yellow as right of way boat over Green (W/L R11), can choose to sail to the right mark, even though she touched the zone of the left mark first. Of course when they reach the right mark zone, and as they are overlapped at the right mark zone, Yellow must give mark room to Green.



### Overlapping Zones – a special opportunity!

This is from some match racing tactics, but can apply to fleet racing too. If the Gate Marks are close together, then watch out for overlapping zones. By entering the zones where they intersect, Yellow, clear ahead of both Green and Red, may choose either end to round and gains Mark Room for each end. This allows Yellow to delay her decision of which end to round which could gain her an advantage in shifty winds.

