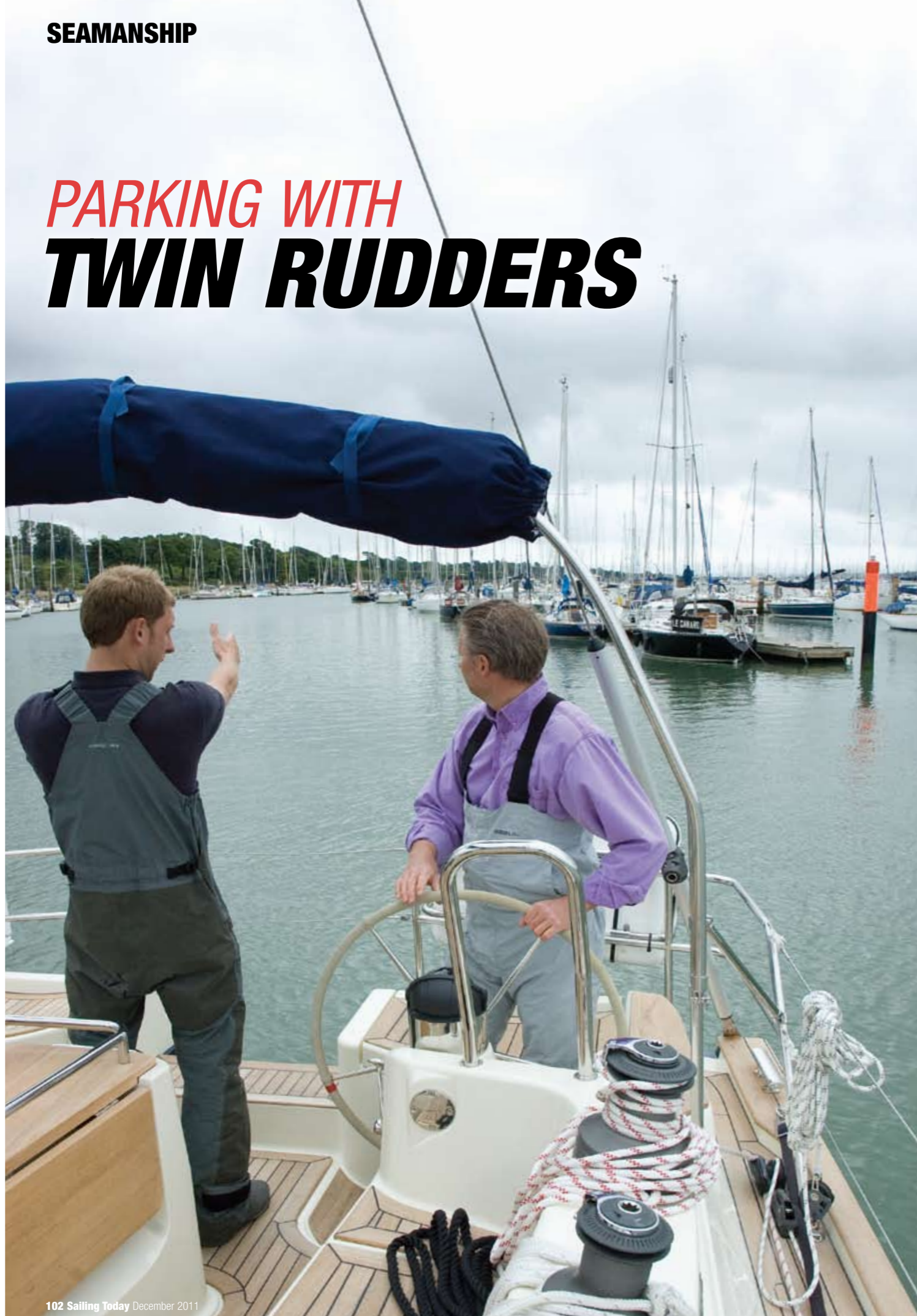


PARKING WITH TWIN RUDDERS

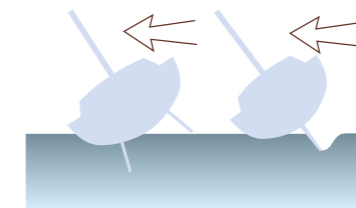


As more and more boat designers go for twin rudders, Hamble School of Yachting's **James Pearson** takes a look at how this thoroughly modern configuration requires their handling under power to be treated slightly differently.

TWIN RUDDERS - A POTTED HISTORY

Ever since the TransPac and Mini Transat race boats of the early 90s, followed quickly by their bigger brothers; the Open 60s, went down the route of twin rudders, more and more have been appearing on production boats. With a single rudder, there was a limit to how wide a transom could be, as there would come a point where the heeling angle would lever the rudder out, causing it to lose grip, leading to the boat rounding up. (as far right)

With twin rudders, designers can make a boat's transom wide, shallow and boxy, which provides lots of lift at the stern, often improving performance off the wind. This was crucial for the predominantly downwind races that such boats were initially designed for. The boats needed a wide, flat transom to plane off the wind and the elegant solution of a rudder at each corner of the transom ensured that their performance upwind, when it was occasionally required, would



also be acceptable. While cruising boats are not normally expected to plane downwind, their designers could still get downwind speed benefits from wider aft sections and even more appealing was the increased space this configuration would allow in the aft cabins. In the context of Northshore Yachts' lift keel shoal draught Southerly range, heavily reinforced twin rudders along with a raised keel and a grounding plate

make for a stable tripod for drying out on- yet another persuasive case for this modern configuration.

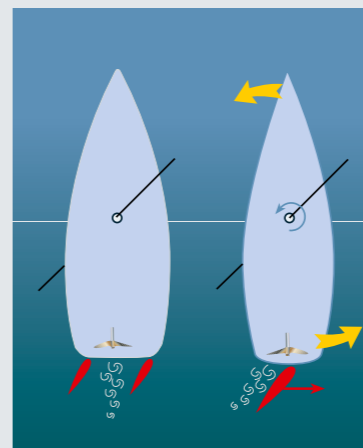
However, as twin rudder technology started to filter down into the cruising market, the new owners' delight at their boats' sprightly performance off

the wind, was moderated in some cases by occasional close quarters difficulties due to the boats' different behaviour under engine.

We were approached by Ray Bacon, the fortunate owner of *Firesong*, a New Southerly 42 RS, (his first twin rudder boat) to take him through any modifications he might need to make to his boat handling.

LIFE WITHOUT PROP WASH

Looking at the principle of prop wash in the diagram (below), we recall how, with a quick thrust of forward gear while stationary, the central single rudder of the hull on the right diverts the thrust of the prop wash to port, turning the stern to starboard, and due to the pivot point, the bow to port. Without a central rudder to divert this relatively narrow column of thrust, we soon realised that *Firesong* (depicted by the boat on the left) lacked one of the 5 mechanisms of boat handling. Ray informed us that Northshore Yachts have in the past installed a third short central rudder for owners who keep their boats in tight berths. However, Ray had concluded, and we had agreed, that adding the drag of a



third underwater appendage for the hours and days spent sailing just to make life a bit easier for the minutes spent parking was an exceptionally inelegant solution.

Although *Firesong* has a bow thruster, it's there as a backup and we wouldn't be using it today. Far better to get a thorough grounding in our boat's behaviour without it first, then we can more sensibly evaluate the

situations when we need to use it and when it isn't necessary.

Having stopped our boat and felt its windage, the second exercise we teach skippers familiarizing themselves with a new boat's behaviour is to turn the boat through 180° using forward, reverse gears and the helm from motoring slow ahead. This mimics the common scenario of entering a

BACK TO BASICS

Firstly we went back to consider again the 5 basic principles of boathandling under power (ST172- August 2011)

- Pivot point
- Windage
- Steerage
- Prop walk
- Slide



One could argue that because a twin rudder boat when unheeled typically has a slightly larger rudder area than an equivalent single rudder boat, it might display a tendency to pivot round a pivot point further aft. Allied to *Firesong*'s raised saloon, which gives the boat the RS suffix and increased lateral windage, we thought it prudent to begin our investigations with a dead stop in a light side wind in slack tide.

As we learnt in ST172, there is no better way to evaluate how a boat will behave at standstill. In 7 knots of breeze on the beam we allowed *Firesong* to come to a complete halt. While she's clearly a relatively high windage boat, most of her raised saloon is aft of her pivot point and her bow is relatively sharp and chiselled, so her bow blew off downwind in a manner that was no more sudden or surprising than Ray's previous boat; a more conventionally designed single rudder Dufour 385.

We found that *Firesong*'s behaviour concerning slide and prop walk were also as expected, but unsurprisingly when trying to gain steering from prop wash in gear ahead, she behaved very differently from a centrally keeled boat (see left).

confined space such as a marina trot, then having to turn around and head back out. With all boats without strong prop walk, in slack tide, it pays to turn the bow towards the wind first if possible. Sure enough, when Ray tried to turn the boat stern to the wind, completing the turn proved impossible while remaining on station. Using the boat's forward momentum to take the bow through the eye of the wind first means that the wind will do much of the rest of the turn for us. >

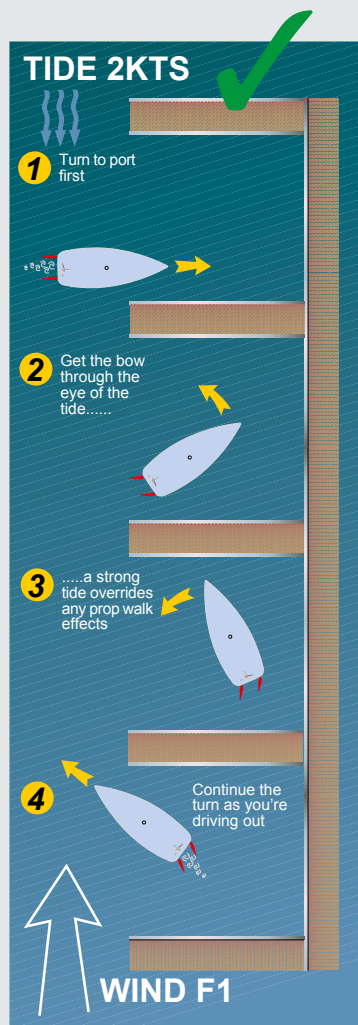
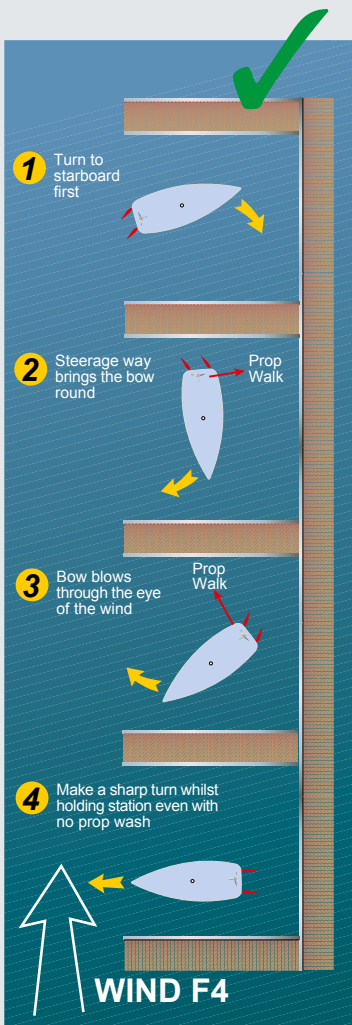
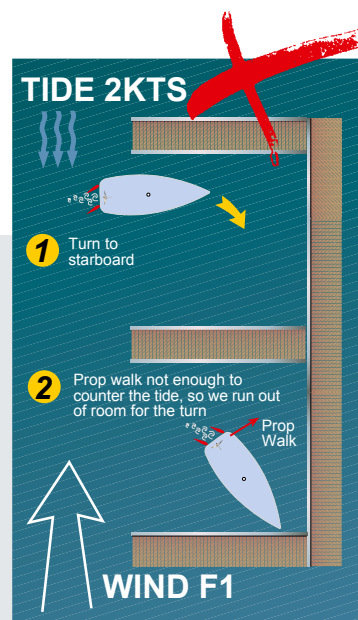
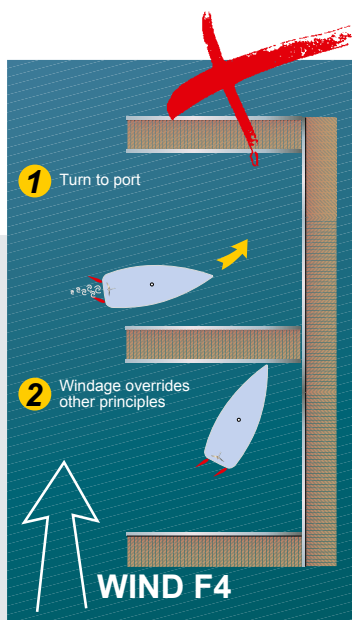


A PLAN TO TAKE AWAY

We then moved on to try a few berthing scenarios. With her mild prop walk still a viable, usable tool (she pushes her stern to port when going astern), we quickly worked out a few ground rules for manoeuvring her. If we wish to turn tail in a confined space (left, top) and the wind is on our starboard side, it's pretty much a no brainer that we take the bow through the eye of the wind first, using the propwash to port too. The decision is not always that easy though, so in the case of *Firesong*, when the wind is on the port side, if we turn to starboard we are committing the sin of turning away from the wind and if we turn to port we are committing the sin of turning against our prop walk. So our decision on which way is best needs to be based on whichever we believe will be the strongest force. Here lies the first conclusion of this article. We can get away with any berthing scenario we can in a single rudder boat with twin rudders, but we must more carefully adhere to the basic principles.

So we devise a plan of action when berthing so whenever possible when turning, we try to gauge the strongest influence and use it to our advantage. In light wind and slack water, in *Firesong* the prop walk is likely to be the strongest factor, so we go with it wherever possible by picking berths and berthing plans that favour sharper turns in this direction. In strong winds, the windage effects will override this boat's relatively mild prop walk. So once we get the bow through the eye of the wind, the wind will continue our turn for us. Where wind is light and tide strong, it's likely that the tide will be the strongest influence, so planning our berthing to turn up tide will provide the best controlled manoeuvre.

And how do we gain an appreciation of where the limits of the 3 influences (wind, tide and prop walk) lie for a particular boat? Practice, practice, practice starting out in slack water and light wind in an uncrowded location with close points of reference. Mooring buoys are ideal points of reference that show where we are without threatening our topsides.



ABOUT THE AUTHOR

James Pearson is an RYA Yachtmaster Instructor and Chief Instructor at Hamble School of Yachting. He has been a keen sailor since the age of seven, sailing on a variety of craft ranging from racing dinghies to tall ships. He became a professional instructor at 18 and has sailed tens of thousands of miles since and taught hundreds of people at various levels through the RYA schemes.

HAMBLE SCHOOL OF YACHTING



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Contact: www.hamble.co.uk