

CRUISING CLINIC

NEW SERIES Rachael Sprot steps aboard to help.

This month, Dave and Natalie want to...

I want to feel confident mooring astern so I can sail singlehanded



We would like to make berthing less stressful after a passage

'BRUSH UP ON MOORING ASTERN SO I CAN HANDLE MY BOAT SOLO'

Picture the scene: it's a beautiful summer evening, the marina is bathed in golden light and there are crowds of people outside the bar sipping gin and tonics. You'll soon be joining them but you've got a task to perform first: a reverse park into a finger berth. There's a rowdy audience hoping for a good show and one thing's for sure, reverse parking is a wonderful spectator sport, but being on stage is not much fun. So when Dave Millward confessed that he never reverse parks his Bavaria 37, *Kairos*, I sympathised. Why put yourself through unnecessary stress at the end of a long passage? Except that sometimes mooring astern is the easier approach and often it will make life simpler the next day when leaving.

DIAGNOSIS: Dave and his partner Natalie have owned *Kairos* for two years after selling their previous boat, a Contessa 32, because Dave's 6ft 7in frame had started to grumble at the lack of headroom. The Bavaria 37 is palatial by comparison and in all respects bar one it's been a positive move. Only power handling has turned out to be more challenging on the modern yacht. Because of his back injury, Dave usually does the mooring whilst Natalie handles the lines. Dave and Natalie make an excellent team, with Natalie using her years of experience as skipper of traditional vessels to manually 'warp' the boat around and position it well for Dave to make a slick getaway from their berth. But Dave would like to take the boat out on his own, and without her nimble positioning skills he'll need to be more confident in his reversing technique.

The boat behaves differently in astern, so I knew Dave would have to make a few mental adjustments before making the gear shift. I joined them in East Cowes marina to help them develop some backwards thinking...



RACHAEL SPROT, former director of Rubicon 3, is a Yachtmaster Instructor with an impressive number of sea miles logged, from Lofoten to St Lucia. **TURN THE PAGE** to see what she suggests for Dave and Natalie...



1. Understanding steerage

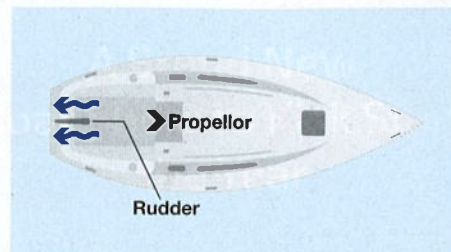
First, I needed to understand why Dave was finding the power handling more challenging on the Bavaria – which has a sail drive and less prop kick – than the Contessa. I suspected that the voluminous hull which had attracted them to the boat in the first place was part of the problem. The Bavaria has exponentially more windage for the extra 5ft of length. The Contessa would also have had better directional stability thanks to its deeper hull profile, slightly longer keel and skeg-hung rudder, so I thought there might be some work to do on steerage: how to get it and how to keep it.

Steerage is the first key component in any manoeuvre: we always need to have it or else we become a sitting duck, vulnerable to the whims of the tide and wind. Steerage is water flowing over the rudder. In forward gear there are two ways to achieve this: by moving the whole boat through the water, or by throwing water over the rudder from the propeller. Because the propeller is in front of the

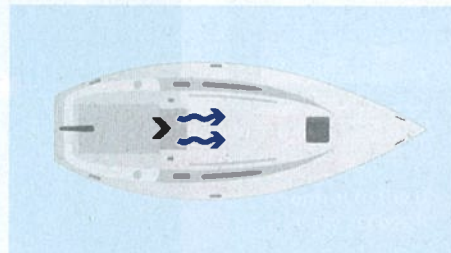
rudder, when we engage forward gear it sends a flow of water backwards and provides near-instant steerage without making way through the water. This can be a powerful tool allowing you to turn the boat without building up speed (1a). In reverse gear the water is thrown forwards away from the rudder so we can't use a short power burst to give steerage (1b). We only achieve steerage astern by having way on and moving positively through the water (1c).

This means that in reverse we're lacking one of the tools that's available to us in forward. If we add to that the fact that neither the hull nor propeller are efficient in reverse, then it's clear that going backwards takes more skill and forethought.

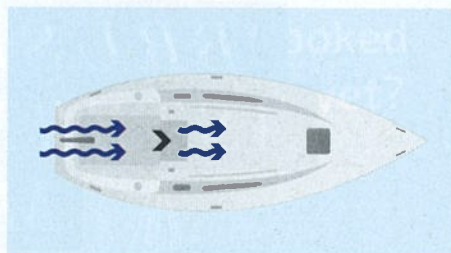
We set off into the river Medina at slack tide and with little wind. The aim was to practise reversing in benign conditions so that Dave could get a feel for the steerage without too many external factors to confuse matters.



1a: Forward gear throws water directly onto the rudder, creating steerage without moving



1b: In reverse, water is thrown forwards away from the rudder



1c: In reverse, water only flows over the rudder when you have way on



HELMING

The wheel on the Bavaria only had two thirds of a turn in each direction so even a small movement on the helm resulted in a large change in rudder angle, quickly throwing you off track.

The Contessa probably needed some firm encouragement when it came to steerage in reverse, but modern yachts are much more responsive and a 'less is more' approach is needed for helm inputs.

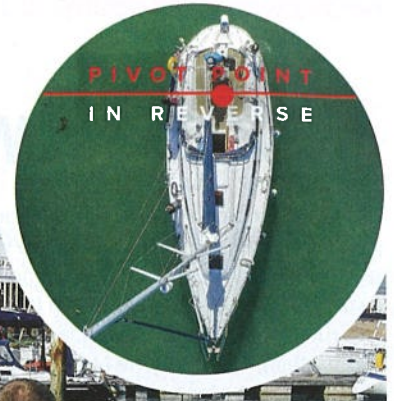
If you're too heavy-handed on the wheel you'll soon find yourself in a pirouette to rival anything Torvill and Dean could muster. Whilst the audience ashore might score you highly for elegance, most of us would rather not deliver a full-blown freestyle show.

Dave had a tendency to reach for the throttle during a steerage wobble and switched between gears quite readily, which definitely compounded the issue.

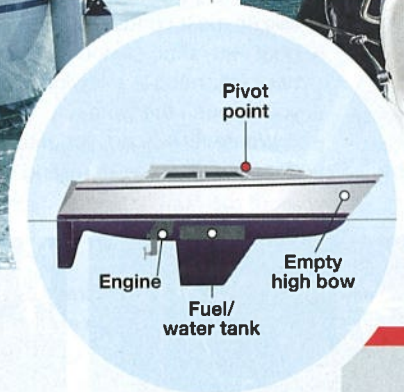
Once you've established steerage in reverse it's important not to change gear unless you actually want to stop the manoeuvre – any forward thrust over the rudder will kill the reverse steerage you've fought so hard to create, so changes of gear shouldn't be taken lightly.

PIVOT POINT

The second factor to consider is the pivot point. If asked, most of us would say that the pivot point is in the middle of the boat, just behind the mast. In forward gear this is



PIVOT POINT
Notice how the pivot point moves aft when in reverse



correct, but it's a hydrodynamic pivot point which changes with the motion of the vessel. In reverse gear the pivot point moves aft towards the rudder.

WINDAGE

The pivot point interacts directly with the third factor in reverse parking: windage. A yacht with generous accommodation often has very high topsides, especially in the bow section. The shallow forefoot and deep fin keel mean that there's not much in the water forwards of the mast, and relatively little weight. Conversely the rudder, keel, propeller and heavy items such as the engine and tanks are situated behind the mast, so the bow acts like a big sail.

When travelling astern, if you combine the location of the pivot point at the back of the boat with the windage of the front of the

boat you have a powerful lever that results in the bow falling off down wind – sometimes described as the 'stern seeking the wind'.

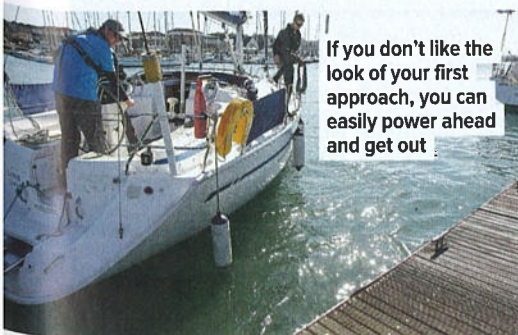
It means that with the limited power that we have in reverse, any cross wind can be problematic. The boat naturally wants to reverse into the wind and you'll need a lot of way on to overcome this tendency.

Trying to reverse down-wind is even more difficult – the bow is inevitably blown off in one direction and even if you have enough power to bring the bow back up to the wind, it will soon get blown off in the other direction. An interminable slalom of correction and overcorrection ensues as you try to overcome the rules of physics, and the onlookers order more peanuts...

PUTTING IT INTO PRACTICE

There wasn't enough wind to demonstrate this effect on the day, but once I'd explained it, Dave realised it had probably caused some of his frustration. A further factor that we didn't have the opportunity to explore is prop kick. It wasn't pronounced on the Bavaria, but if your boat does have a strong kick, you must factor it into your manoeuvres and allow for its effect.

Once he had a feel for the steering, I asked Dave to reverse across channel up to a long stretch of pontoon, aiming to stop the boat within a metre of it. This was to focus on stopping distance and throttle control. Dave had good power economy, using just enough speed for the manoeuvre to succeed, without losing steerage. Coming in too fast is a common mistake that many of us make, especially under pressure. The nice thing about reverse parking is that when you realise you're coming in a bit quickly, you've got a powerful handbrake available: a big burst of forwards gear will stop the boat quickly. Coming in too quickly in forward gear there is less help available.



If you don't like the look of your first approach, you can easily power ahead and get out



Be prepared for the wind to blow the bow off as you slow down

2. Dealing with tides

As we were doing this exercise the flood kicked in on the river. Now that Dave was more confident in reverse, it was time to switch the focus to tide. Usually, if there's tide running, it is the dominant factor in any berthing scenario. The Medina is no exception, with signs up in East Cowes marina warning unwary visitors about the silent predator haunting their berths. As the Instructor's mantra goes when preparing students for Yachtmaster exams, there's only one way to park: 'Into the tide, into the tide, into the [insert expletive] tide!'

By manoeuvring into the tide, we supercharge our steering. With a knot of tide running, the boat can be stationary relative to the berth, whilst still travelling through the water and experiencing positive flow over the rudder. This allows for a slow, controlled approach.

The tide doesn't just slow you down though, the real magic happens when we use the tide to move sideways by 'ferry gliding'. In this technique we open up the

angle between the tide and the keel, creating a vector from the two elements: tide flowing against us, and the vessel travelling through the water. Although traditionally done in forwards, it works just as well in astern. Once the flow of water catches one side of the keel, the resulting movement is a lateral one.

It's a trick that can be used to slot into a gap between two rafts of boats, and in Dave's case it would be a useful tool for traversing the gap between hammerheads to access the inner finger pontoons.

The main challenge in ferry gliding is perfectly matching the boat speed to the tide. In most conditions this means engaging gear for a short period and then coming back into neutral, allowing your way to carry you through the water.

Whatever you do, you mustn't change gear because you're relying on a constant

flow of water from the same direction in order for the rudder to function.

So how do we cope with overshooting or undershooting the slot that we're aiming for if we can't change gear? The answer is by changing the angle instead. By altering the angle of the keel to the tide you can change the rate and direction with which you're drifting without touching the throttle (1).

A shallower angle will reduce the tidal effect, slows down the lateral movement and allows the boat to move forwards (2). A bigger angle increases the effect of the tide and allows the boat to drop back slightly (3). At all costs you must avoid putting the boat broadside to the tide though, as the



Tide can be used to your advantage when berthing



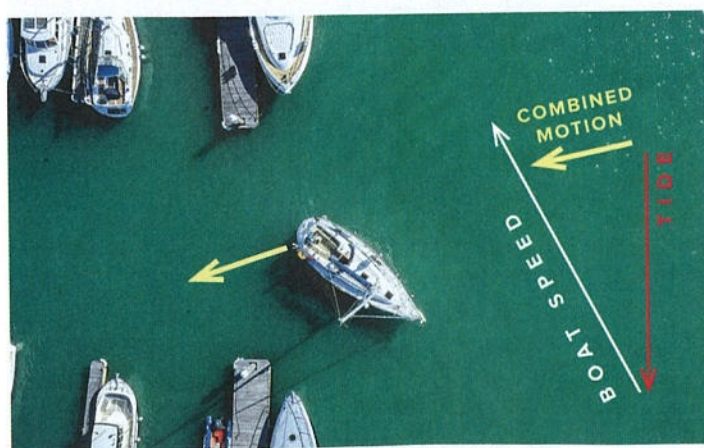
1 UNDERSTANDING THE VECTORS

Your sideways motion is a combination of the boat's movement, and the tide.



2 GO SHALLOW TO SLOW DOWN

If you straighten up into the tide, you eliminate the sideways motion and will just travel slowly through the water.



3 OPENING THE ANGLE

Increasing the angle of the tide on the keel makes the sideways motion more pronounced.



4 AVOID BEING BROADSIDE TO THE TIDE

At this angle, the boat will be rapidly set down tide without much control.

rudder will stall and the whole effect will be lost as the boat slips sideways (4).

As always, we practised the reverse ferry glide on an empty stretch of pontoon before adding in any constraints, using transits between a pile and a building in the background to ensure that we were only making lateral progress and not creeping forwards or backwards. Once Dave was happy with this technique we applied it to entering the narrow confines of the marina.

One of the challenges of finger berths is that getting to them often involves crossing the tide at right angles. This is fine in a contained marina with no water flow. However, it becomes trickier when the tide is running hard, because it means putting the keel across the tide. You'd need to go fairly fast in order to avoid being set on the raft of boats on the down-tide side of the pen.

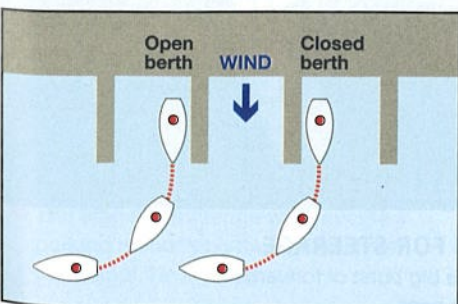
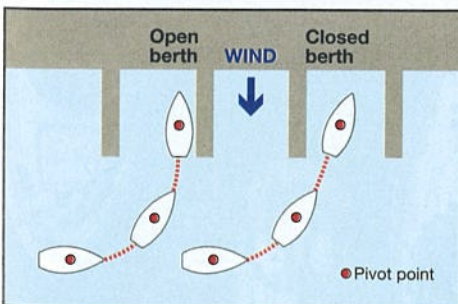
Ferry gliding offers a much more controlled approach as you can use a slight angle between keel and current to give the lateral motion, before straightening up into the finger berth at the final moment.

OPEN AND CLOSED BERTHS

This berth had been slightly easier to approach because it was an open berth. In a closed berth, you need to negotiate the end of the finger, before straightening up alongside it, which requires a tighter turn.

This is an instance where it is actually easier to approach in astern than forwards. In the closed approach you need the pivot point to be past the end of the pontoon before you can straighten up alongside the berth. With the pivot point being at the back of the boat in astern, there is less boat to move past the end of the pontoon before turning. The wind will also help to straighten you up as the bow wants to go that way.

Going into a closed berth in forwards, the central pivot point means you have to move half the boat beyond the pontoon before straightening up. If a head wind is blowing the bow, you can easily overshoot the berth.



PUTTING IT INTO PRACTICE

It took Dave a few attempts to get the angle right as he tried to slip into one of the inside pontoons. Initially he was too close to the up-tide side of the pen without enough angle to ferry glide sideways, but it wasn't a big deal to power forwards and get out of the situation before coming back in for another shot. It was the right error to make though: it's much more difficult to recover a manoeuvre if you've ended up on the down-tide side.



Getting into a finger berth often means negotiating a tight space with a strong cross tide



Staying close to the up-tide side means you have room to exit if the manoeuvre doesn't work out



In reverse, the helm has a better view of where they're going



This 'open' berth made a good choice for practising

It's important to remember that going forwards cancels the reverse steerage, so if you have to give a blast ahead it's usually the death knell of the manoeuvre.

When you find yourself in this situation you'll probably have to abort the approach, return to open water, re-establish steerage and come back in for a second attempt.

Dave soon got the hang of it and reversed her into a finger berth perfectly, maintaining a safe distance from the menacing row of anchors on the down-tide side of the gap.

As an instructor I'd always rather that someone takes a few attempts to get a manoeuvre right but, in the process, has kept good control of the vessel, than that they hit a lucky hole in one. Dave was always cautious in his approach, and although this ferry gliding technique was slow, it was also low risk, keeping the boat in a safe position with a viable exit strategy at all times.

3. Bringing it all together

Once the tide had turned we tried one last park, this time bringing all the concepts together to reverse into a narrow, closed berth. There was a slight breeze blowing slightly off the pontoon, and a neighbouring yacht for good measure.

Dave executed the up-wind, up-tide manoeuvre well, with the wind on the bow assisting the turn into the berth. I was confident that he had the skills he needed to include some reverse parks into his repertoire and stay out of the limelight of the sundown cabaret show (as much as any of us can, at least).

A NOTE OF CAUTION

It was time to return to their home berth which was now a down-tide approach. 'How would you reverse into this one?' Dave asked.

'I wouldn't,' I replied.

'Oh', he looked disappointed, and then smiled. 'So after all of that, it turns out I've been using the right approach all along?'

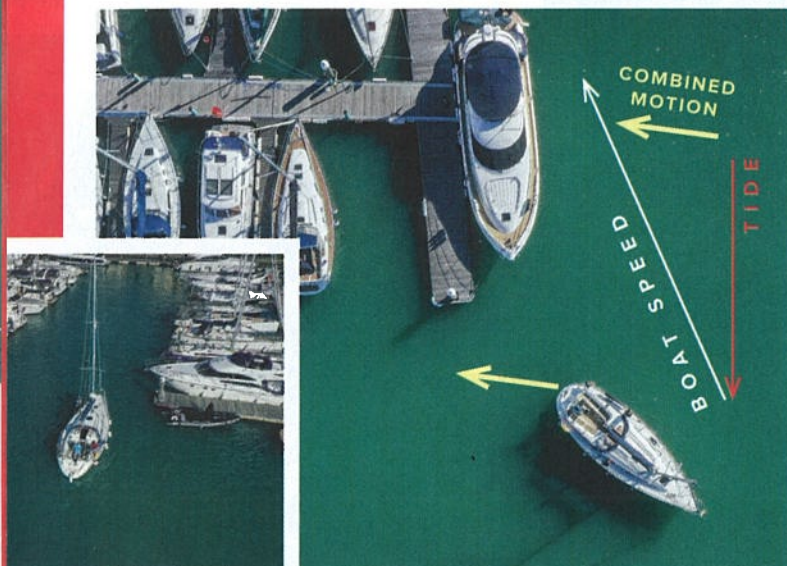
'I'm afraid so,' I replied. Discretion is the better part of valour after all.

Ultimately, reversing is a wind-sensitive procedure but in a tidal river the tide has to take precedence. If the wind and tide

are in alignment a reverse park should be straightforward, but if there's a cross wind, or if it's a down-tide park, you're better off going in forwards where you have more steerage.

In tidal settings there are fewer chances for reversing as the conditions aren't always optimal and it's important to recognise that reversing only works in certain circumstances, but in those ideal circumstances it can work beautifully.

The real proof of a perfect reverse park? It'll go unnoticed by the spectators on shore or in the marina.



1 USE THE VECTORS
Dave used the ferry gliding effect to get through the gap between the hammerheads.

2 THINK ABOUT THE PIVOT POINTS
As it was a closed berth, he needed to wait until the pivot point was past the end of the pontoon before straightening up.



3 WIND ON THE BOW
As he slowed down, the wind on the boat helped to straighten the boat up.

4 KEEP WAY ON FOR STEERAGE
Once in a berth, a big burst of forwards gear stopped the boat.



This tight spot was actually easier in reverse than forwards

LESSONS LEARNT

- Reversing into the wind is easy, reversing across the wind is harder, and reversing downwind is nigh on impossible!
- The movement of the pivot point from forward to aft when changing gear has a big impact on how the boat handles.
- Don't make unnecessary gear changes as they upset the waterflow over the rudder.
- Reverse parking gives you a powerful handbrake and useful escape strategy because you have the full weight of forwards gear available for stopping or if you happen to change your mind about the manoeuvre.
- Travelling in reverse, the skipper has a better view of the action end of the boat, which is always helpful in a tight spot.
- The biggest challenge with reverse parking is choosing the optimal time to attempt the manoeuvre.

Dave puts his vectors to the test



PRESCRIPTION: Because Dave only parks in forwards he always leaves the berth in astern, so he had more experience in reverse than he gave himself credit for. Two things were making life difficult for him: not realising the key role that the wind plays; and losing steerage through gear changes. These are easily remedied though. I prescribed close monitoring for symptoms of steerage loss and wind on the bow and the gentle exercise of reversing faculties. You can't get better at something you don't practise, so in benign conditions I recommended that he goes in backwards instead of forwards; and whilst waiting for Natalie to set up lines and fenders he should try to sit stern to the wind, holding station in reverse. This should allow him to develop a strong reversing technique in low-pressure scenarios.

Practise in benign conditions to build confidence

