

Handling a Sailboat in Tight Spaces

More Complex Maneuvers

The Third of a three part series on boat handling.

This is the third article in a series on handling a sailboat in tight spaces. Over the past two months we have discussed the tools at our disposal and some basic maneuvers. This month we move on to more complex maneuvers. This article will not make much sense if you have not read the first two. They can be found online at www.48north.com, click on the link to January's magazine and turn to page 42 for the first article, and click on the link to February's magazine and turn to page 32 for the second in the series.

Please remember to practice these maneuvers in a safe place, somewhere with low traffic and enough room for you recover from a mistake.

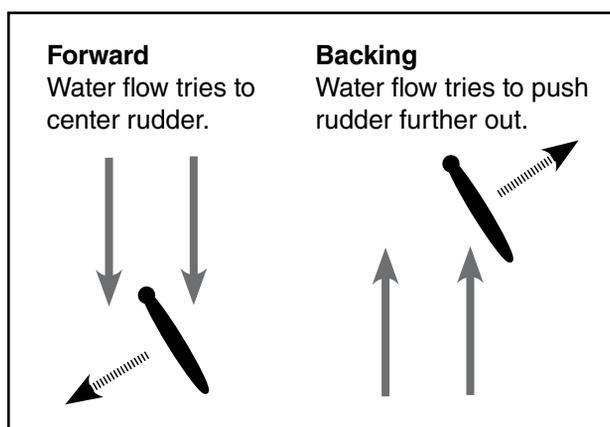
Steering Backward – The tools we have available when backing are the same as those discussed for steering forward. But like cars, boats are primarily designed to be driven in the forward direction; so driving them backwards is bit more challenging. Think about pulling a car out of a parking space; you need to be watching behind you to make sure you don't hit something and at the same time watching in front to be sure you don't swing into the car next to you. Driving a boat backwards has exactly the same issues. And, on boats with aft cockpits, it is hard to see if you are driving straight or not – looking forward to see if the bow is swinging is the easiest way to tell. For these reasons, I teach students to stand sideways and behind the wheel when backing. From this position they can easily see both forward and aft by simply turning their heads side to side.

Here are some other items of interest with backing a boat:

Prop walk has the most impact when a boat first starts to back up; once the boat gains enough speed for the rudder to bite it can over-power the prop walk. However, this usually takes more speed than may be comfortable around docks or may take more room than you have available.

If you need to eliminate the effects of prop walk, shift into neutral and it will instantly go away. Therefore, one useful trick is to goose the engine in reverse, not heavily, but enough to quickly get the boat moving in reverse – then shift into neutral. This is very handy if you are trying to back out of a slip and turn the stern to starboard (assuming a right handed prop).

When backing, never let go of the wheel or tiller. The danger is this; rudders are designed to steer a forward



moving boat – they have a large surface area behind the rudder post so the water moving past tends to center the rudder. When backing, the water pushes on this surface from behind the post and the pressure pushes the rudder further aside – and it can do so with surprising speed and force (see diagram). If the boat is moving fairly fast it can break

something in the steering system.

Prop wash usually comes into play when we want to slow our reverse motion and we put the engine in forward. If the rudder is not centered when we do this, prop wash will affect the boat; usually by fighting against the turn we were trying to make in reverse.

When backing, the pivot point moves aft, to about the back edge of the keel, usually around the companionway stairs on most boats.

The first exercise is to steer the boat backwards. Do so in an open area and just pick something behind you to steer towards. Don't go too fast, keep the speed at 2-3 knots and, remember, don't let go of the wheel. Next, pick a spot on the water or something like a mooring ball and back around it and go back the way you came.

Next, get a feel for the effect of prop walk on steering. Stop the boat, then put the engine in reverse at idle and turn to port; this turn should be easy with a right-handed prop. Next, stop the boat again and do the same trying to turn to starboard. Many boats will simply go straight back or even go to port when you try this; basically, the boat is not going fast enough for the rudder to over-power the prop walk.

Now try this, stop the boat again and try the turn to starboard by putting the wheel over and goosing the engine in reverse just enough to get some reverse momentum (say 1 knot), then shift into neutral; the boat should quickly start to turn to starboard.

As you are doing the above backing exercises practice bringing the boat to a stop with forward thrust and don't forget to center the wheel first. And when you do forget to center it, watch to see what happens (if you don't forget I will be impressed, but try it anyway just to see the effect).

Spinning – Have you ever seen a twin engine power boat pull out of a slip and then turn in place? This is relatively easy when you have two engines. While it is not as easy to do, it can be done with a sailboat. This maneuver can come in very handy – say you go down an aisle way only to find there are

no empty slips. You have two choices, back out the way you came or spin the boat around.

The tools used in a spin are primarily steering and prop wash but prop walk, wind and current must be taken into account since this maneuver is almost always done in a tight space.

Here are several exercises, starting with the basics and then adding in complexity. Like the previous exercises, these are best done in an open area and in calm conditions (at least to start with). Let's assume the boat has a right-handed prop and a fin keel. If your boat has a full keel this maneuver can most likely be done but it will likely require more speed and/or applying more power.

The first exercise is a basic spin done with only steering. Bring the boat up to 2 knots, then cut the wheel over hard (all the way over and done quickly) while leaving the engine in forward at idle. The idea is to turn the boat completely around and go back the way you came from. As you complete the turn look over at the water where you started the turn, how far away is it? Most boats should complete this type of turn in 1.5 to 2 boat lengths; so on a 30 foot boat where you started should be 45 to 60 feet away.

Next, let's see if we can cut this down to below 1.5 boat lengths. To do so you need to make the turn to starboard. Start with the same setup – boat speed at 2 knots and cut the wheel over hard. But this time, instead of leaving the engine in forward, shift it into reverse and rev it up just a little (to around 1000 RPM). Leave it in reverse until the turn is a bit over halfway done, then as the turn is finishing, shift back to forward. For this to work well the shift into reverse needs to be done smoothly but almost at the same time as cutting the wheel over. You should see a noticeable shortening of the turning radius compared to the first exercise. Do you see why we needed to make this turn to starboard? When we turn to starboard and put the engine in reverse the prop walk helps the turn, if we had turned to port the prop walk would have slowed or killed the spin. Try one to port to see what happens.

Starting a turn at 2 knots is not always practical so let's try a spin from a dead stop. Turn the wheel hard to

starboard and goose the engine, 2000-2500 RPM for 2-3 seconds (I judge when to end the goosing by feeling the boat, when it starts to react to the prop wash and gains spin momentum I pull the throttle back). Then go directly into reverse, again just above idle. Be patient, if the boat is still spinning just wait and let it. However, you will likely have to repeat these steps at least once more to complete a full turn around. It will take a bit of practice to learn what works for your boat. For example, boats with smaller engines will need to be goosed longer than boats with larger engines. And the amount of reverse needed will depend some on how much forward momentum the boat has gained during the goose.

A common variation is to start with the boat moving at about 1 knot. This is not enough speed to finish a spin so we will need to help it out. You can do so by goosing the engine as you are cutting the wheel over. This is our basic prop wash maneuver and it should add spin momentum without adding much forward speed. And, of course, you can then go into reverse if you need to shorten the turn radius.

There are other factors that need to be discussed. The first is positioning; if you are doing a spin move in an aisle way you will need to start from one side and turn toward the other. Most of the time, assuming a starboard turn, you would want to start from the left hand side of the aisle. Be sure to leave enough room for your stern to swing on the left side. But this can change if wind or current are coming from the port side. In that case, you would want to turn into the wind or current and not use reverse. The wind or current should slow forward momentum so reverse will not likely be needed; besides, using reverse would cause prop walk and kill the spin. As the wind speed increases you will need to put more power into the turn to get the bow through the wind. But once the bow is across the wind it will help finish the turn.

One last but important point, if there is a strong wind coming over your stern it may be best to just back out and skip the spin idea.

This concludes the series on close-quarters maneuvering. I hope it has been helpful.

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