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SHARPEN YOUR DOCKING SKILLS

Article by Don Dykstra in the March/April 2002 issue of
OCEAN NAVIGATOR, issue 120
(slightly modified for TASS skippers)

Recommended reading materials:
Required study guides for the American Sailing Association (ASA) Certification Test.

- SAILING FUNDAMENTALS by Gary Jobson
- CRUISING FUNDAMENTALS by Harry Munns

Required study guides for U.S. Sailing Certification Test.

- BASIC KEELBOAT
- BASIC CRUISING
- COASTAL NAVIGATION
- BAREBOAT CRUISING

You can buy the guides from the Sailing Schools that administer these tests.

DOCKING YOUR BOAT

If one of your goals in life is to be in control of your boat, instead of the other way around, the following exercises and tips may sharpen your docking skills. We'll only be talking about boats with inboard engine(s) and with one or two propeller(s). The basic principles of prop and rudder action apply to all kind of vessels, from small pleasure boats to 1500-foot super tankers.

The situations described below do not just pertain to cruising on Galveston Bay or along the Texas Coast, because TASS skippers pretty much find themselves in waters all over the world; from the Bahamas and West Indies to Tahiti and the Greek Isles, or from San Francisco Bay to Puget Sound and Maine.

One of the fundamental things you need to know about an engine-driven boat is the way the prop turns. Imagine yourself standing on the dock behind the boat with the stern in. (You are looking from stern to bow) When the engine is put in forward ("F" in the diagrams) and the prop turns clockwise, we have a right-handed prop. Most boats have right-handed props. Left-handed props do the reverse. Of course in dirty water it is not always easy to tell which way the prop turns. To find out, we'll do the following:

Exercise 1: Determining propwalk * (see Fig. 1)
**The arrows at the bow and at the stern of the boat indicate which way the boat is turning. The "F", "N" and "R" symbols indicate the engine is in Forward, Neutral or Reverse. The "prop" diagrams show which way the (right-handed) prop is turning at the indicated engine position.*

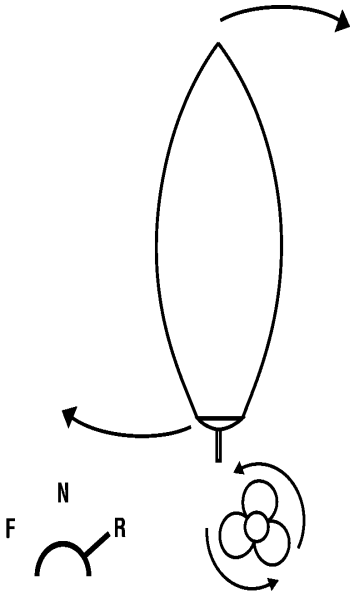


Figure 1

- Move your boat to an area with little traffic and no effect of wind, tide or current.
- Bring the boat to a complete stop. To check if the boat is completely stopped in the water, look at debris, air bubbles or small waves next to the boat as reference points.
- Put the wheel/rudder amidships.
- Put the engine in reverse and give a little “kick” with the throttle.
- Imagine the prop as being a paddle wheel on the back of a Mississippi Delta Queen. When you put the engine in reverse, a right handed prop will turn counter-clockwise and kind of eat itself through the water; thereby pulling the stern to Portside (PS). This action is called propwalk. (*The fact that your boat is pulling to Port or to Starboard has nothing to do with inclined prop shaft(s), as mentioned in a recent article in Ocean Navigator)*
- Now you know ! If somebody tells you a particular boat has a *right*-handed prop, and the engine is in reverse, the bow will pull to the *right*.

This is all pretty hard to remember. To make it easy, forget about left and right handed, clock or counter clockwise props. The only thing you need to remember is what the stern does when you put the engine in reverse.

NOTE !
It is always a good idea to test the engine while still tied to the dock.

- Put the engine in reverse at slow speed and then -via neutral- put it in forward to make sure the engine, transmission and throttle cables and the prop are working ok.
- When you take out somebody else's boat -like a charter- check the location of the shift and throttle cable connections to the transmission and to the engine. If a cable breaks while you're underway, you can send somebody down and move the engine controls by hand to get safely to port.
- Some boats feature a horizontal shift handle on the pedestal stand. Make sure you know which position is Forward (usually handle up) and Reverse (usually handle down).

Once all lines are off and you are backing your boat out of the slip, you can put the engine in reverse and watch which way the stern turns. On most boats it turns to the left and the bow to Starboard (SB).

Safety in a Marina
When pulling out of the slip, I always ask my crew to keep an eye out for other boats that move in or out of the marina. You can usually see moving masts several docks over. I also put a person on the bow to spot traffic in the marina's main channel while I am coming out of the side channel. Same thing when entering a marina: keep an eye on boats coming into the main channel from side channels. Whatever you do, go slow, so when you put the engine in reverse, you can come to a complete stop within about one boat length.

On busy waters, ask your crew to keep an eye on fast power (cigarette) boats**.** On many occasions you see macho drivers of these speedy craft horsing around with their bikini-clad passengers; holding a body part in one hand and having a beer in the other; meanwhile steering with their knees. Ask your crew to be your "eyes and ears" to spot dangerous situations.

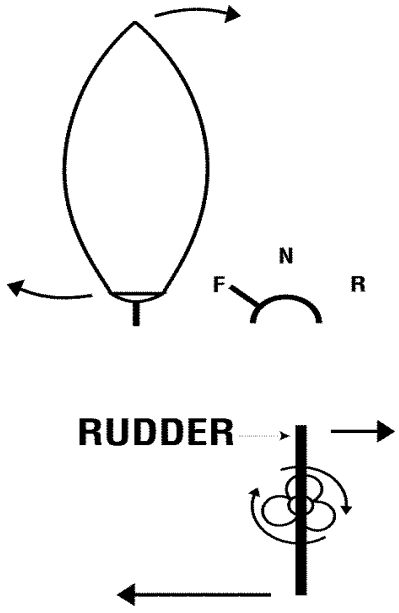


Figure 2

Action of prop and rudder while dead in the water and putting the engine <u>forward</u>.
First of all, with the engine in astern, the effect of the rudder is nil because the prop throws the water forward against the hull and not against the rudder. Propwalk is caused solely by the prop and is only noticeable when you put the engine in reverse. When you go <u>forward</u>, the prop throws the water aft; against the rudder. With a right-handed (clockwise) prop, the blade at the bottom of the prop throws water against the SB bottom side of the rudder. The blade at the top throws water against the PS top of the rudder. Since the propeller blade at the bottom is deeper in the water than the blade at the top, more pressure is exerted on the lower SB side than on the upper PS of the rudder. This results in the stern going to Port and the bow is going to SB.

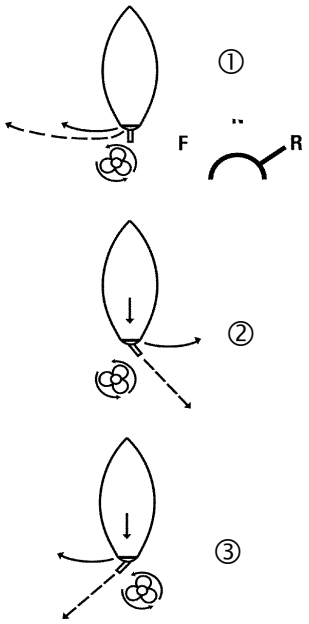
Exercise 2: Turning the bow to SB (see Fig. 2)

- Bring the boat to a complete stop under the same conditions as in exercise 1.

- Put the wheel/rudder hard over SB.
- Put the engine ahead and give a good "kick" with the throttle.
- You'll see the bow move sharply to SB.

Effect of the rudder by itself, while the boat is going backwards.
As we have seen above, the rudder does not have any effect when the boat is stopped with the engine is in reverse. Initially we only experience propwalk. However, once the boat starts moving backwards, the effect of the rudder becomes noticeable. The faster you go backwards, the bigger the effect of the rudder.

Exercise 3: Steering backwards * (see Fig. 3)
** The arrow drawn inside the boat in the diagrams indicate that the boat itself is moving forward or aft; regardless of gear position.*

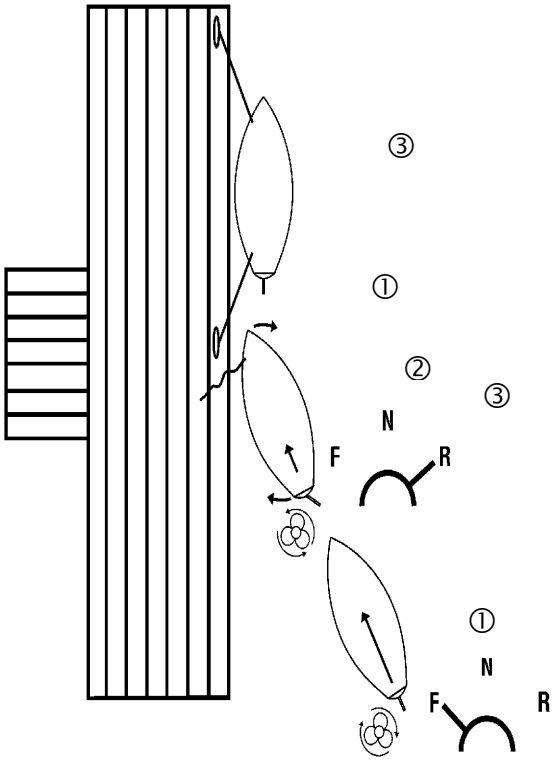


- In a quiet area with lots of room, bring the boat to a dead stop.
- Put the engine in reverse; wheel/rudder amidships.
- First the stern will pull to PS (with a right-hand prop) due to propwalk.
- Once the boat attains speed, turn the wheel/rudder to SB (right) and the back of the boat will go to your right. (pos. 2)
- Now turn the wheel/rudder to Port (left) and the back of the boat will go to the left. (pos. 3)

You can use above maneuver to back into a slip. (Stern-first) Due to lack of space, many chartering companies in the world don't have separate boat slips and make you bring the boat in stern-first; perpendicular to a pier or dock. The bow is usually tied off to a floating mooring ball, or you may have to drop an anchor. If you don't feel comfortable doing this tricky maneuver, contact the charter company by VHF and have one of their boat handlers come out in a dinghy to dock the boat for you. Better safe than sorry; especially in front of the chartering office with everybody watching you.

Figure 3

Exercise 4: Docking alongside a T-head (see Fig. 4)
- Look for an unoccupied T-head pier; preferably without wind, tide or current.
- Prepare for a PS docking. (Put fenders and mooring lines on PS)
- Have a line handler on stand-by to step (not jump) on the dock with a cleated headline.
- Approach the T-head under an angle of about 30^{o}; aiming for the middle of the dock. (pos. 1)
- When the bow is close to the dock, tell the line handler to step on the dock.
- Turn the wheel/rudder to SB and at the same time put the engine in reverse. (pos. 2)



- The rudder action makes the bow swing to SB and the propwalk action puts the stern to PS. The end result is that you come neatly to a stop; parallel to the dock. (pos. 3)
- The line handler on the dock cleats off the headline and walks aft to grab a stern line.

A good line handler is almost as important as the person at the wheel and engine controls. If your maneuvering skills are less than stellar, the line handler can still prevent the boat from crashing into the dock by placing a strategic fender, or quickly have the mooring lines cleated off before the wind blows you off the dock.

Figure 4

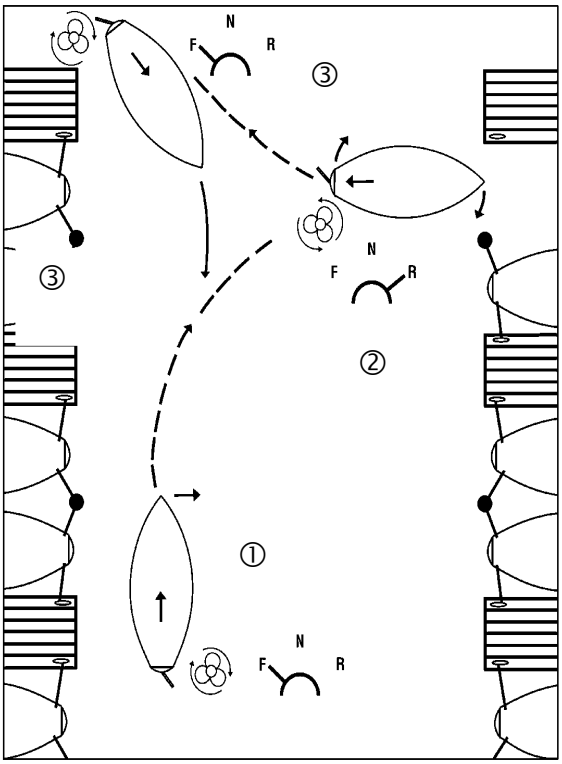


Figure 5 A

Exercise 5 A: Zig-Zag around (see Fig. 5)

- When you are in a tight spot, like when you discover that you are in the wrong slip channel and need to turn around, try the following: (with a right-handed prop)
- Bring the boat to a complete stop on the left side of the channel. (pos. 1)
- Put the wheel/rudder hard over to SB.
- Put the engine ahead at a pretty good "kick". The bow will turn sharply to SB. (pos. 2)
- When you get close to the opposite dock*, put the wheel/rudder amidships and put the engine in reverse at half speed. The propwalk effect will turn the stern to PS and bow to SB. (pos. 3)

* *Try to put your bow into an empty slip; rather than risk hitting a boat.*

- You may have to do this zig-zag maneuver a few times to turn the boat 180 degrees, depending how wide the channel is and depending on wind.

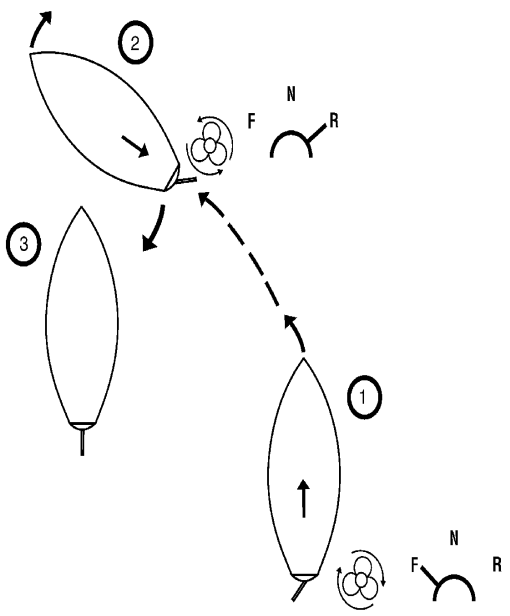


Figure 5 B

Exercise 5 B: Turning the wrong way (see Fig. 5 B)
Remember when you have a right-handed prop, you need to turn the boat to the right. (Making a SB turn). If you try to make a PS turn, you will probably not succeed; especially if the elements work against you.

- You can start out by stopping the boat on the right hand side of the channel and turn the wheel to Port to make your turn. (pos. 1)
- As soon as you put the engine in reverse, (pos. 2) the propwalk effect pulls the stern to Port and the bow back to SB.
- Now you are about in the same position as when you started out, except you are more on the left side of the channel. (pos. 3)

Try both maneuvers; turning over SB and over PS ! It is a great way to demonstrate that with the right procedure, your boat will do what *you* want it to do.

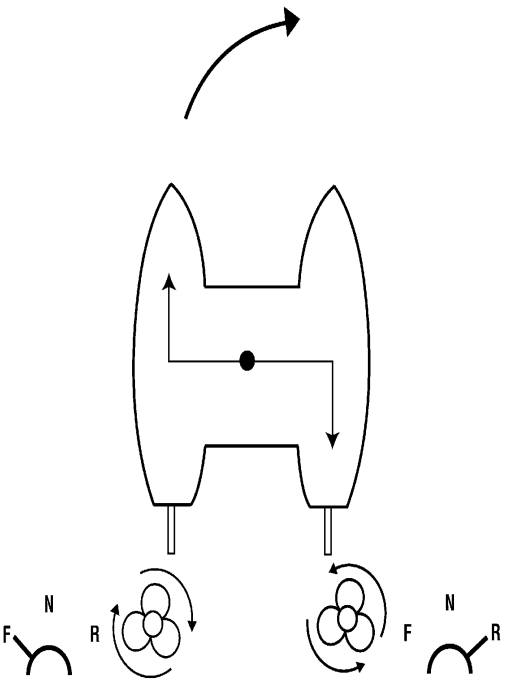


Figure 6

Exercise 6: Turning around a boat with two props; like a powerboat or a catamaran (Fig. 6)
This is a piece of cake ! Don't worry about clockwise or counter clockwise turning props.
If you want to turn over SB, put the SB engine in reverse and the PS engine ahead. The boat will turn almost on a dime. Same for going over Port, put the PS engine in reverse and the SB engine ahead.
To dock a powerboat or catamaran stern-in with two props, put both engines in reverse at the same rpm's and the boat will move straight back. (GO SLOW !)

BEWARE !
When getting ready to dock or to anchor, make sure to keep all lines, including dinghy painters, away from the prop. A line around the prop shaft, especially if it is nylon or polypropylene can turn into "glass" in a few seconds. You may need to hire a diver to have it removed.
When you are pulling a dinghy and you are about to dock, or anchor, pull the dinghy painter in tight and cleat it off. If you have to dock stern-first, move the dinghy to the bow area and tie it off.

Docking into a regular boat slip

As we have seen above, everything being equal, it is better to come PS alongside to take advantage of propwalk. However, in many instances you have to come SB alongside.

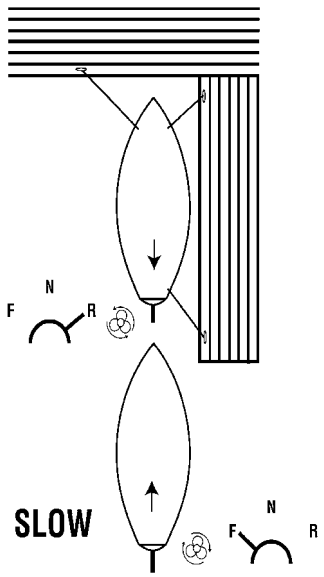


Figure 7

Exercise 7: Docking into a slip; SB side alongside (see Fig. 7)

- Put fenders and mooring lines on SB side.
- Line the boat up straight behind the slip. (see first part of Exercise 5 A)
- Enter the slip very slowly. (But not so slow that the wind blows you away)
- Use your rudder to make necessary course corrections.
- Have somebody step ashore as soon as possible with a cleated fore spring line.
- Put the fore spring on a dock cleat to prevent the boat from crashing into the T-head.
- Have a second person step ashore to grab a cleated stern line and put it loosely around a cleat on the dock.
- Put the engine in reverse to take the speed out of the boat. As soon as the engine is put in reverse, the person on the dock with the stern line needs to hold, to negate any propwalk effect.
- Tie off the bow.

Please note, wind, tides and currents can throw off the best laid plans**.** No two dockings are the same. The elements can help you push the boat against the dock, but they can also work against you. If things are less than ideal, the best thing to do is to make a trial run near the slip. This way you get a feel for outside forces on your boat and will give you a sense of what allowances you have to make to dock your boat safely.

In most marinas there are people at the dock, ready to grab a line and to help you dock the boat. However, if you are in a bind, don't hesitate to use your dinghy as a tugboat. Be sure to pick a skilled dinghy captain to take a line ashore, or to help you pull or push your boat into berth. A dinghy comes in handy also when your engine fails and it is not safe to sail the boat into a marina or anchorage.

If after a lot of practice you begin to feel a bit cocky and start showing off your docking skills, watch out ! "Disaster" is sure to lurk in the background to bring you back down to earth again.

*By Don Dykstra; graphics by Laura Coston and John "Gus" Gustaf*son, *Houston.*