

Driving, Manoeuvring, and docking the DVC

Basic manoeuvre

The first thing to understand about driving the DVC is she does not react like a typical a twin-screw vessel. Yes, she has two props, but for all practical purposes she is a single screw vessel with two props. This is because she has a single rudder and the props are very close together. For this reason she will not twist effectively on her props.

The DVC steers wonderfully if you drive her as a single screw vessel using the back and fill tactics.

Turning in tight areas

To turn sharply to starboard give full starboard rudder and starboard ahead. Yes, this is the inside engine and most twin screw boat drivers will have to get used to whole new way of thinking. For single screw boat drivers this will make perfect sense. The starboard prop will push a wash over the starboard turned rudder forcing the stern to port.



To turn sharply to starboard give full starboard rudder, and starboard engine ahead. The prop thrust will flow over the rudder and push the stern to port thus turning to starboard.

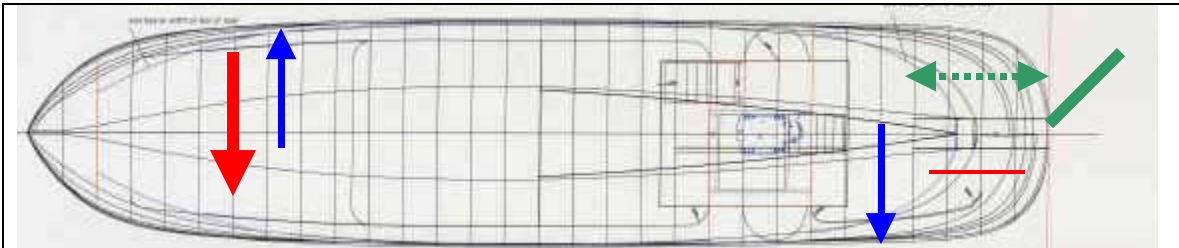
The Red lines indicate port engine or thruster action.

The Green lines indicate starboard engine or thruster action.

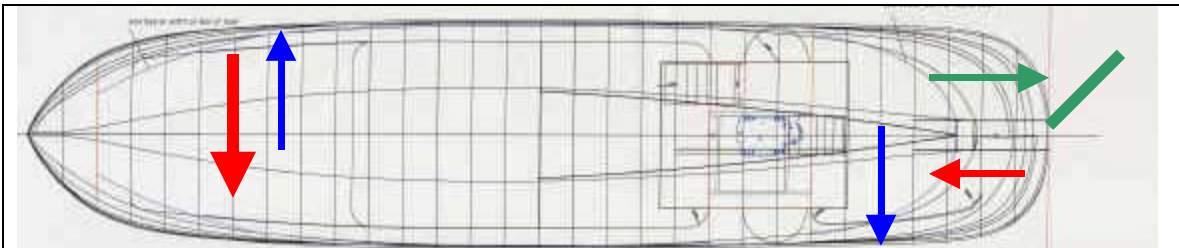
The Blue lines indicate predicted vessel movement.

Note: In the example above the starboard engine is in forward. The arrow shows the direction of water movement, or thrust. The boat will move AWAY from the arrow. In the example above the short blue arrow forward shows the bow will move slightly forward, but the long blue arrow will show the stern is swinging to port. The green arrow shows the starboard engine is in forward or thrusting water aft. The big green rudder line shows the rudder is turned to starboard. If a propeller line were dotted it would symbolize thrust followed by neutral, followed by more thrust as in a typical back and fill manoeuvre.

Turning the DVC in her own distance



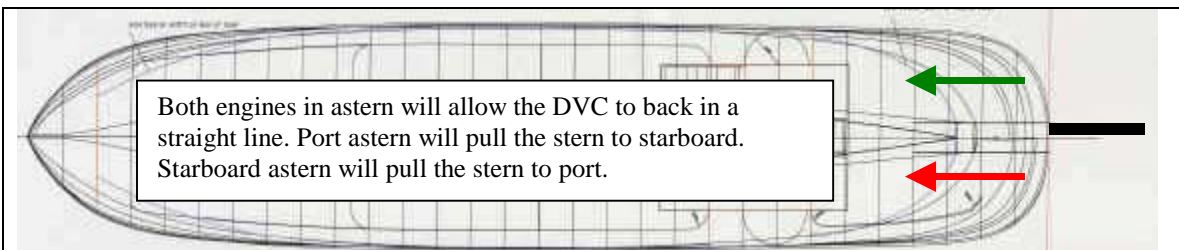
To make an almost perfect rotation of the DVC in her own distance combine the bow thruster with the back and fill method used above.



For maximum spinning motion try a propeller twisting motion combined with the bow thruster and the rudder hard over. The slight propeller twist motion will hamper the twist, but the more important continuous thrust of the starboard engine will push the stern to starboard. The port engine keeps the boat from moving forward. This combination will cause a perfect rotation of the vessel.

Stopping and backing with grace

Prop walk can help when stopping or backing. Both props back toward the centre. Thus, to back straight use both engines astern. To back gently to port use the starboard engine astern. If you want a gentle swing to starboard while stopping or backing then use the port engine.




You can use this to your advantage in many ways. For example if you are pulling up to a dock and are ready to give the final astern thrust to stop the boats progress look to see if the stern is exactly where you want it. If so then give both engines astern and let the boat stop. If you came in with the stern a little too far from the dock then stop with the outboard engine and the stern thrust will also walk the stern into the dock. If you are coming in with the stern swinging into the dock the give inboard (the engine toward the dock or obstruction) astern and the stern will swing gently away from the dock while

stopping.

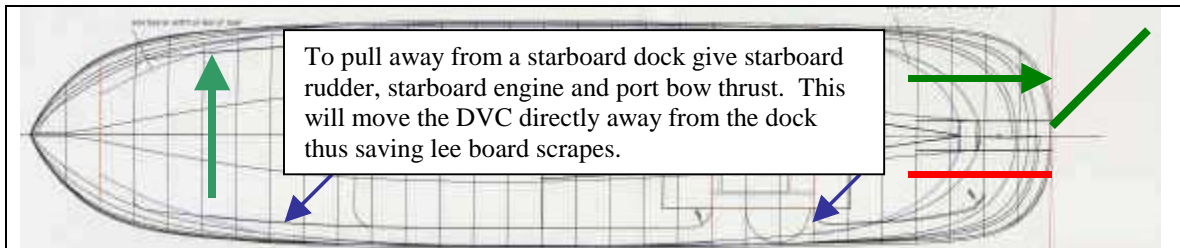
If we continue with this discussion you should be able to walk the stern one direction or the other by using the back and fill tactic. If you wanted to move just the stern to starboard then give full port rudder and port ahead. The prop wash over the rudder will push the stern to starboard. As the boat begins to move forward give port reverse. The prop thrust will stop the forward motion of the boat, and the wash will continue to pull toward starboard. Repeat the process as much as needed till the stern is where you want it.

To move the whole boat sideways perform this same manoeuvre of walking the stern to starboard while thrusting the bow to starboard. This would walk the boat directly sideways.

Maximum sideways walking motion to starboard is achieved by port rudder, port engine ahead, starboard engine astern, and bow thruster to starboard. This would be the maximum amount of sideways walking for the DVC. In calm conditions she can walk sideways at about 1.5 knots of speed.

 That means if you have to drive up a marina channel with a sideways setting current of more than 1.5 knots you may not be able to control the boat once you have stopped and are making your turn into the dock.

Disembarkation or leaving the dock



To leave the dock pull away at an angle to prevent the leeboards from dragging along and scraping the varnish. The easiest way I know of to do this is turn the rudder toward the dock, give bow thrust away from the dock, and engage the inside (engine toward the dock) engine ahead. The thruster will push the bow out, the prop wash toward the dock will push the stern directly away from the dock and the boat will move almost sideways away from the dock thus preventing any paint scrapes.

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The Blue lines indicate predicted vessel movement.

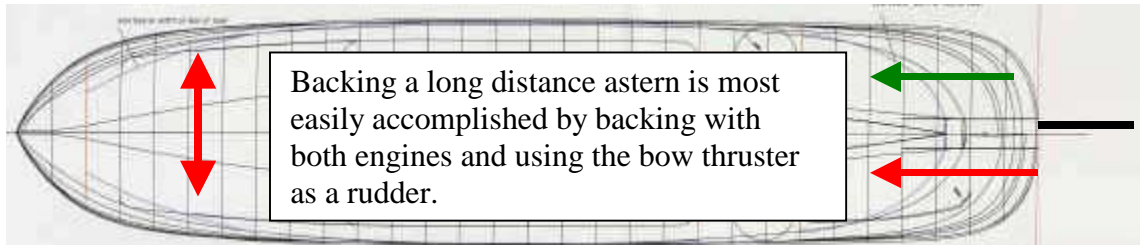
You must give neutral helm before you release the bow thruster or you will swing the bow into the dock causing you to look foolish.



<p>Bonus Test Question</p>	<p>Why use the helm to push the stern off when departing? Why not use the typical sailboat method of pushing the bow away from the dock and motoring away?</p>
<p>Answer</p>	<p>On a typical sailboat if you push the bow out and then begin motoring in forward current may set your stern toward the dock. In a worst case you can always give a push with a boat pole from the stern and push yourself off. The DVC is too large to push, and she does not have a keel to "cut" water causing her to drive away from the dock in a straight line. In fact her prop walk can actually push the stern back into the dock. Remember the driving then bow with one hand and the stern with the other? This is a prime example of needing to use that thought process. Any current or wind may set the stern into the dock causing a big ugly scrape on the beautiful white paint or maybe much worse. By taking active control of the stern and bow you command the boat throughout the complete disembarkation.</p>

Long distance backing

To back for a long distance the easiest method I know of is to first line up on the course you want to back. For example if you want the stern to back straight south then get the boat lined up bow to the north, and stern pointed directly to south. You can do this with thrusters, or using prop thrust.



Use both engines to back thus pulling the stern straight. Steer with the bow thruster. The bow becomes the stern because you're backing, and the thruster becomes the rudder. You can always use a little helm to pull you stern (now the bow) a little each way. You have a lot of control by using prop wash if you begin getting into trouble. For example if your are backing down a long slot in a marina and your stern begins getting swept into the bow of some boats then give helm toward the obstruction and some thrust on the same helm thus forcing your stern the opposite direction. For example if you were backing straight, but began to feel pinched with an obstruction off the port stern then give port rudder and port engine ahead. The port prop thrust will push the stern to starboard and away from the obstruction. If you do this quickly you might not loose your sternway thus making a correction along the way but not stopping thus loosing control of the vessel.

Stern Thruster

In most situations the bow is the most difficult to control and takes the most skill. The bow only has one 310mm prop powered by a single hydraulic motor through 3/4" lines. It reacts slowly, but builds incredible momentum. It can take a long time to stop once it gets moving especially if it has a little wind or current helping it along.

When walking sideways it's the bow that runs out of sideways thrusting power long before the stern. It's for this reason I don't mention the stern thruster when describing docking tactics. . You can use the stern thruster, but it won't give you much compared to the tactics I have described above.

In fact the stern thruster has two major disadvantages:

- The stern thruster has to overcome the lateral stability of the rudder located almost directly aft of it, so it can be a little slow to react.
- The same hydraulic pump as the bow thruster drives the stern thruster, so any stern thruster action directly removes thrust from the bow. As I have just said the

bow is the more difficult section of the boat to control so by using the stern thruster you can actually make the bow even less reactive.

Did you know...The thruster controls are variable speed. A little push is a little push.

Backing into a dock while dropping anchors off the bow



Notice how far the DVC sticks out from the dock. We often tie up in this manor. Note how the 65ft boat next to us is already sticking out way past the piling.

We use this system often since the DVC is larger than most 50ft slips will allow. We back in letting the starboard stern sit on the dock, and the anchors laid out in a V off the bow. The direction of the anchors needs to be enough to pull the bow forward, but also to port or starboard. If the angle is insufficient the bow will blow port and starboard in the wind and current slowly pulling your anchors loose.

The trick is to start with the port anchor. It has a longer chain. Drop the port anchor off the port bow about three boat lengths from where the bow will be once docked. The more rode the better, as you might have to pull in a fair amount of chain to get the anchor to set.

Once the port anchor has dropped leave the clutch and break completely loose and let the chain pay freely. You should have just enough tension on the clutch to prevent the chain from falling into a pile on the seabed. Drive the bow to the spot you have chosen for the starboard anchor and drop it. Again let the chain pay out freely. The idea is to have loose chain while docking. If the either bow chain catches while docking it may yank the bow to port or starboard causing risk of loosening control of the vessel. Be prepared for this possibility.

Tie off the stern while the helmsman holds the boat in position. Once the stern is tied securely take up on the anchors. You can tighten both clutches and loosen both breaks and reel in both anchors together to save time. Once one anchor chain goes tight set the beak, loosen the clutch and continue with the loose anchor. Once the second anchor chain is taking strain tighten the break. You should be ready to make any final adjustments.



Caution Keep an eye out for buried power cables, water hoses and phone lines. Many marinas have such cables laying on the sea floor to power another dock. Ask if you have any question.

Docking Tips

- Keep one fender on deck as a “running fender”. If the boat begins to get out of control you can jam the last fender into the point of impact thus saving the day.
- When the first fender touches the dock all forward momentum should be stopped. The boat should simply stay even with the dock.
- Line up a stanchion or piece of rigging to a point on the dock so you have a clear indication if the vessel is drifting for or aft.
- While docking always be ready to stop closing with the dock and reverse motion. You never know when someone might fall overboard, or the dock master may redirect you at the last moment. Keep in mind the manoeuvre to reverse direction so you don't have to think if the action is needed.
- **Hard over time on the rudder is seven seconds.** Remember to wait for the rudder to change position before attempting to thrust into it.
- Set the joystick to where you want the rudder to end up. Putting the helm to full port will not speed up the motion. The rudder will move the same rate of speed if it moving hard over to hard over or just two degrees.
- You should be able to pull up to the dock and stop six inches away, then hold the boat in this position while the crew ties up the lines. Practice this when docking.
- Don't leave the helm while the boat is being tied up. More accidents occur from the helmsman leaving station to take a line or move a fender than any other reason I know of. **Stay at your station.**
- When using the rudder/prop thrust full helm is acceptable. Driving through an anchorage at four knot seven to ten degrees is considered maximum rudder angle. At seven knots six to seven degrees might be considered maximum needed. (The rudder and steering system will take a hard over at full speed without straining anything. You only risk over correcting and making ling zig zagging turns)
- Start you turn when the bow is even with obstacle you want to turn around. If you start turning when the stern passes the item you risk making long sweeping out of control turns.
- **The joystick mimics the rudder.** Keep this in mind when backing and walking sideways.

- Be aware of what might happen if you suddenly lose bow thruster. That is a big long heavy bow. The bow thruster has failed in the past. Keep an escape plan in mind.
- The bow and stern are almost separate items to control when docking. Watch them individually and keep track of them both. It's easy to find yourself holding the thruster too long while watching the stern.
- Keep an eye that you don't accidentally leave the engine in idle ahead or astern while docking. It's easy to do.
- As you begin to tie up notice if the pasarell will fit between obstructions.
- Once the lines are secured put the engines ahead. Tighten all the forward leading lines. Then put the engines in astern and again tighten the aft leading lines. This will take up all the excess line slack. If you have it right the boat will not move more than a few inches from ahead to astern.

