

Install a Windlass

By Alex and Jack Wilken

How-To

Looking forward to the boating season, there are many projects to consider that might enhance your sailing enjoyment in the warmer weather. Anchoring out is one of cruising's great pleasures. Retrieving the anchor and rode by hand can be back-breaking. An electric windlass can make light of the task. Fifty years ago, an electric windlass was almost a form of heresy. They were seen as the kind of electrical tool that not only could, but definitely would break when most needed. Additionally, there were concerns about where the electrical power was going to come from.

Today's windlasses are very reliable, and electrical installations overall function better with the help of advancements like tinned wire,

someone up the mast now can be done with the help of a powerful electric motor so long as you can lead the line to the windlass fairly (Figure 1).

There are many considerations when installing a new windlass. They include: what kind of windlass will be most efficient, where and how best to mount it, and how to set the windlass up to get the maximum use from it?

First, here are some of the technical terms we will be using when discussing windlasses. The 'fall' is the minimum distance the rode or chain needs to fall in order not to jam the windlass (Figure 2). The anchor 'rode' is the term typically used to refer to the line attached to the anchor chain, sometimes referred to as 'chain and rode.' But, rode can have slightly varied meanings, including both chain and line together. The 'warping drum' is the part of the windlass that is designed to handle line (Figure 1). 'Warping' is a method of moving the boat by hauling on a line that is attached to a fixed point such as a cleat or anchor.

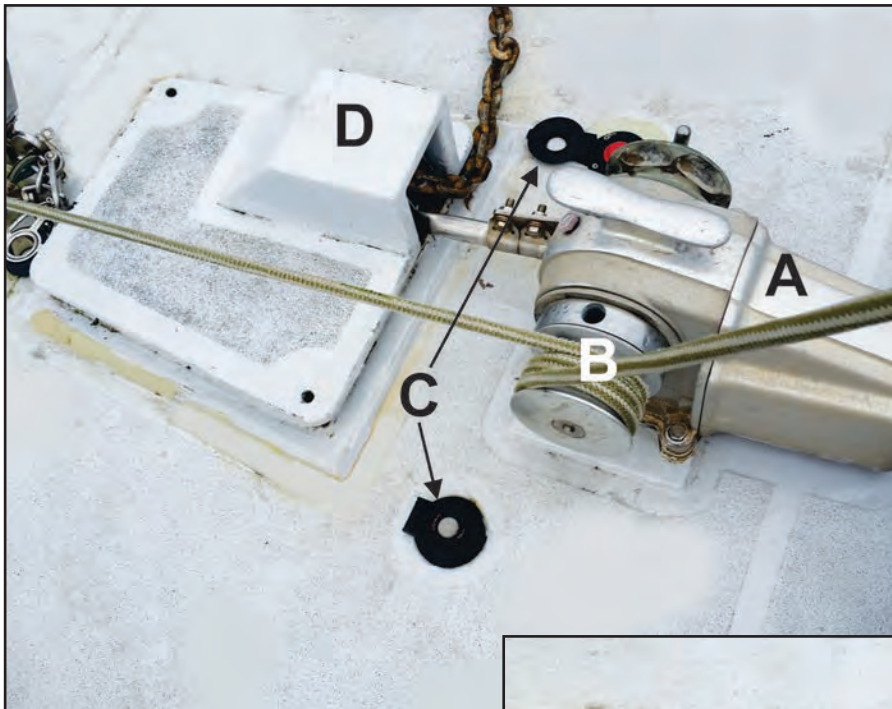
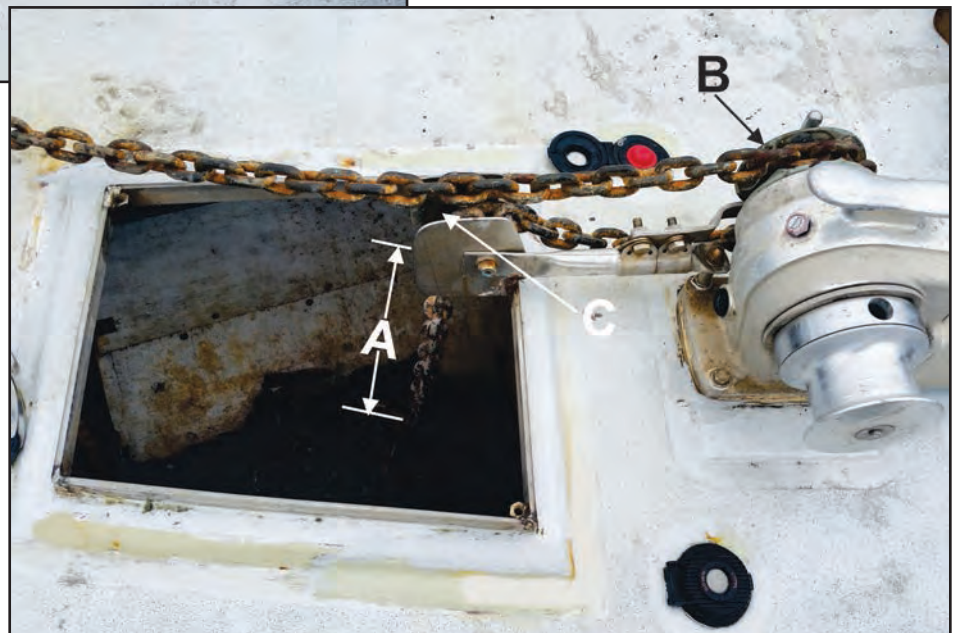


Figure 1 (left): 'A' Horizontal windlass. 'B' Warping drum. 'C' Foot switches. 'D' Water tight cover that only allows water in from aft.

Figure 2 (below): 'A' The fall. 'B' The wildcat- in this case with a more secure 180° turn. 'C' Roller to create greater turn on wildcat needs at least a 16 inch fall with this installation.

superior charging systems, and better batteries, just to name a few. We often remember the "good old days," but the windlass is a case for, "Look how far we have come!"

It would be remiss not to mention the safety that the windlass brings to boating. When you need to get the hook up quickly, it is tough to beat the tireless windlass. Picking up the anchor to reset, and getting your boat the right distance from others in a crowded anchorage, can both be done almost effortlessly. A windlass can also be used for things other than raising anchor: warping into the dock or lifting



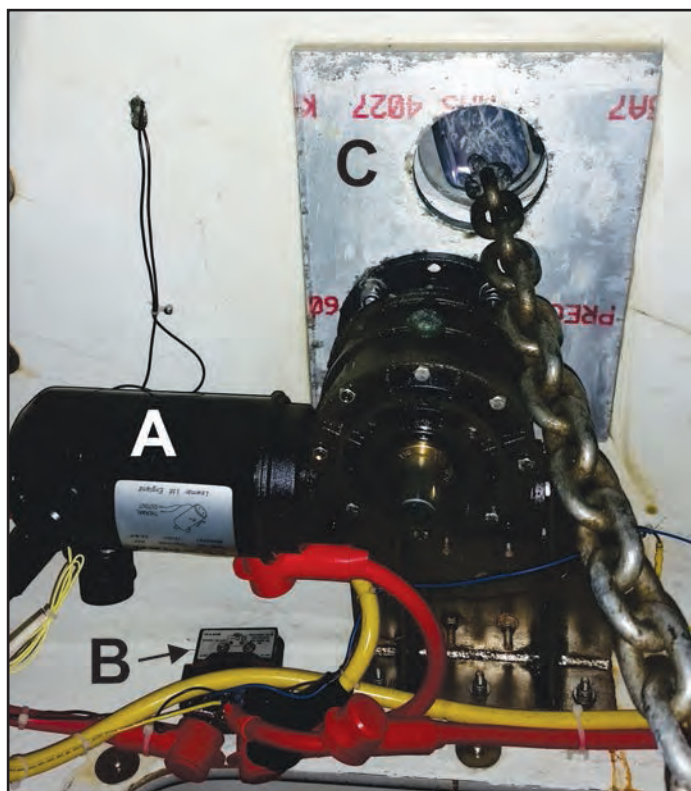


Figure 3: 'A' Under deck mounted electric motor. 'B' Switch control box. 'C' Backing plate.

What kind of windlass best fits your boat will be based on how much weight you are trying to lift, the layout of your boat, and how you wish to use it. The size is based on the total weight of the anchor and rode on the boat. This is known as the 'working load.' The working load must be less than a 1/4 of the max load of the windlass. So, a 1000 lb windlass is only sufficient if the total weight of the anchor and rode is 250 lbs or less.

The term windlass technically only refers to a horizontal winch, a vertical one is actually a capstan. Horizontal windlasses have the advantage of being self-contained units that can efficiently bring in the anchor rode over a 90° turnaround the wildcat and requires a minimum fall of only 12 inches. If you are using the warping drum, they are easy to use from a standing position (Figure 1). The disadvantages of a horizontal windlass are that it must be closely aligned to the bow roller to feed properly, and they tend to take up more deck space.

A vertical windlass, or capstan, will normally have the motor mounted below the deck (Figure 3), which should free up deck space, as well as lowering its center of gravity and making it

easily pulled from several different horizontal angles with a more secure 180° turn around the wildcat (Figure 4). It requires a longer fall of at least 16 inches. It's important to note that when we measure the fall, this is the distance the chain falls from the deck when all the chain is up and piled in the boat, not the distance from the deck to the floor of the anchor locker (Figure 2). When using the warping drum on a vertical windlass, you may need to kneel on the deck to get the line coming off the drum at the right angle.

In considering how to mount the windlass, we like to avoid hawse pipes where the rode needs to enter the anchor locker at an angle. The chain will try to jam in them as you bring it in. We need either a straight fall or the chain should travel to a roller in the opening where you can get to it (Figure 2). By taking the chain to a roller on a horizontal windlass you can get a more secure 180° turn around the wildcat, but then you need at least a 16 inch fall, just like a capstan. You also want to keep the distance between the bow roller and the wildcat as short as practical, since the tendency for the chain to oscillate, or swing up and down, in this space is increased as it gets longer. If the best spot (one that is furthest forward and on the center line, or in line with

the roller) is not flat, a fairing plate will be required (Figure 4), as well as a backing plate.

One way to get the fairing plate to mimic the shape of the deck is to use thickened epoxy. Start with an aluminum plate that is cut to fit the bottom of the windlass. (Normally, we use a minimum of 1/4" thick, but on smaller windlasses you might get away with 3/16".) Lay it on the deck in the proper position and cover the deck with a layer of wax paper with a couple of inches of margin all around it. The mounting holes for the windlass should already be drilled, but more about that later. Mix thickened epoxy with a strengthening filler and apply enough to fill under the plate completely, with it horizontal on the deck. Now, push the plate into position and create a fillet around the plate with your gloved finger. The wax paper will keep it from bonding to the deck and you should be able to break the bolts loose by turning them. If the filler will be very thick around some of the bolts, you can wrap them with Teflon tape to prevent the epoxy from adhering. Most fiberglass boats will have a cored deck. This will compress when you tighten the bolts and allow water to get into the core. You will need to remove the core around each bolt and reinforce them as you would when mounting any winch (See our article from the April

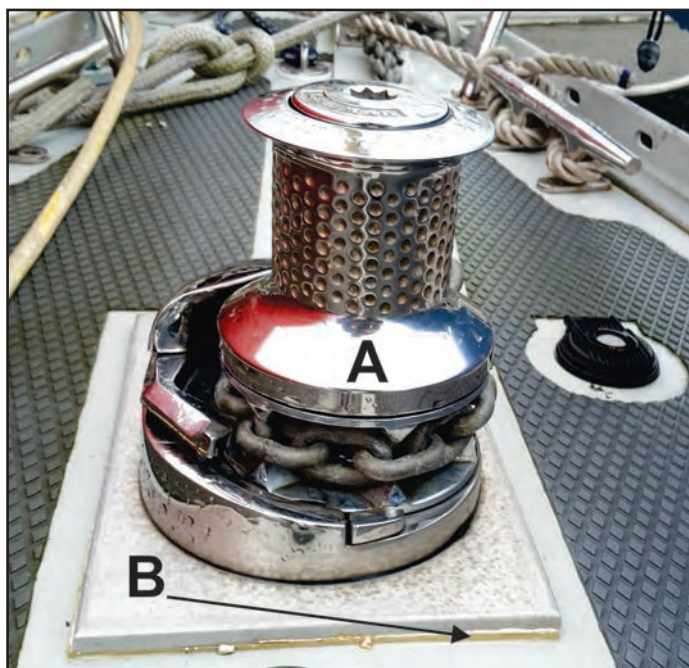


Figure 4: 'A' Capstan. 'B' Fairing block- in this case formed out of thickened epoxy.

2011 issue of *48° North*, "Mounting Winches"). Whenever possible, use a plate under the deck to back up the bolts securing the windlass (Figure 3), but if that is absolutely not possible, use instead large, thick fender washers.

The electrical part of the installation includes using the appropriate size wire from the battery to the windlass as well as the appropriately-sized breaker to protect the windlass and wire. Remember, when measuring the distance for calculating the wire gauge, it is the whole length from the battery to the windlass and back to the battery. The switch box that controls the direction of the windlass should be mounted close to it, but in a place where it will not get wet or suffer from moisture (Figure 3).

The last pieces of this are the switches that you use to get the windlass to do what you want it to. These can be foot switches mounted where you can conveniently look over the side to see where the rode is tending (Figure 1), or a handheld unit that allows you more freedom of movement, but the latter is more vulnerable to getting banged around and must be stowed or plugged in/unplugged. There is another choice that is not so common on sailboats, but should at least be given consideration: a switch back near the helm. While normally not ideal, because you can't see where the rode is tending, it might be handy if you are short-handed in that moment.

There are a few add-ons that are important. At a minimum, you'll need a cover for the entry hole for the rode. This will reduce the amount of water down below, especially if you are pushing into seas and have green water over the bow (Figure 1). The next is a wash down system to keep the mud and seaweed back where it came from, (we wrote about this in the November 2013 issue of *48° North* in our article, "Installing an Anchor Wash Down System.") This becomes critical on boats that store their rode inside the living space versus in a sealed anchor locker because of smell and mess.

Another handy piece of equipment is a chain pawl. (See *48° North* June 2014 "Installing a Chain Pawl: A Windlass Alternative") When the pawl is engaged, it allows the chain to move only toward the windlass. With this

you can take the chain off the wildcat, or if you are just beginning the chain-part-of-your-rode, you can release the tension on the line and move the chain to the wildcat.

Now you can start planning your windlass installation.

1. Make sure it is powerful enough for your ground tackle.

2. Figure out where will be the optimal placement and which type will work best in the available space and set up.

3. Plan the fall and how to secure the windlass to the deck.

4. Locate the best placement for the

switches and the control box.

5. Layout the wire runs to minimize length and the breaker protection location based on access for service. You may want to install a dedicated battery for the windlass to shorten the wire run.

Once it is all laid out, proceed with getting your new windlass in place and functional so that you can use it in all your sailing adventures.

Jack and Alex Wilken are experienced boat builders and have cruised extensively. They hold USCG Captain's Licenses and are the owners of Seattle Boat Works.

AUTHORIZED SERVICE CENTERS



GRAND BANKS



HUNT YACHTS



THE HINCKLEY COMPANY*

Seaview Boatyards are proud to be the local service and warranty centers for three of the world's highest quality boat builders - Grand Banks, Hunt and Hinckley. We understand the responsibility that is inherent in our relationships with both the boat builders and their customers and we strive to provide the quality customer service they deserve.

- Refit & Restorations
- Electrical Systems
- Mechanical Systems
- Electronics
- Engine Work
- LP & Topside Painting
- Hull Extensions
- Fiberglass Repairs
- Rigging and Furlers
- Metal Fabrication
- Woodworking
- General Maintenance
- CAD & 3D Printing



SEAVIEW WEST

At Shilshole Bay Marina / 55 Ton

206-783-6550

west@seaviewboatyard.com

SEAVIEW NORTH

At Squalicum Harbor Marina / 165 Ton

360-676-8282

north@seaviewboatyard.com

SEAVIEW YACHT SERVICE FAIRHAVEN

In the Fairhaven District / 35 Ton

360-594-4314

fairhaven@seaviewboatyard.com

www.seaviewboatyard.com