This is a brief write up on the installation of an anchor windlass for a 1999 H310. Hopefully, it may offer a few ideas to those with similar mounting setups. It doesn't detail HOW to mount it, so much as WHERE.

This installation procedure is quite different from what's covered in the Lewmar installation manual as the windlass for an H310 is mounted on a pedestal in the anchor locker. Lewmar's manual details mounting the windlass as a surface deck mount which drops the rode through the deck into the anchor locker (as shown above).

I decided to go the more complicated route due to the good possibility of leaking water around the various windlass fittings and into the V-berth below.

Some of the work gets a little detail oriented. A hobbyist's wood working shop is pretty much a must for this fabrication and installation ……… hand held router, table mounted router, drill press, table saw, hole saws, as well as a few other etceteras. Lacking these, a plastics fabrication shop will be able to make the required plastic part using the windlass body as a pattern. However, you'll still be on the hook for cutting and drilling the mount on your boat.

Fig. 2

This shows the windlass mounting pedestal located in the anchor locker above the V-berth. The surface of the pedestal is slightly sloped to the aft, in this case, about 4 degrees. This helps the windlass line up with the bow roller which is situated at a level higher than the windlass.

The gypsy with its housing are to be mounted on the top of this pedestal.

Fig. 3

This is the interior of the V-berth showing the fiberglass enclosure which will eventually hide the 12V windlass motor, relay and wiring.

Fig. 4

This shows the cover removed. It reveals the underside of the windlass mounting pedestal and in particular, the 3/8" aluminum plate which is glassed into the pedestal for additional strength. It is under this surface that the 12V motor will be mounted.

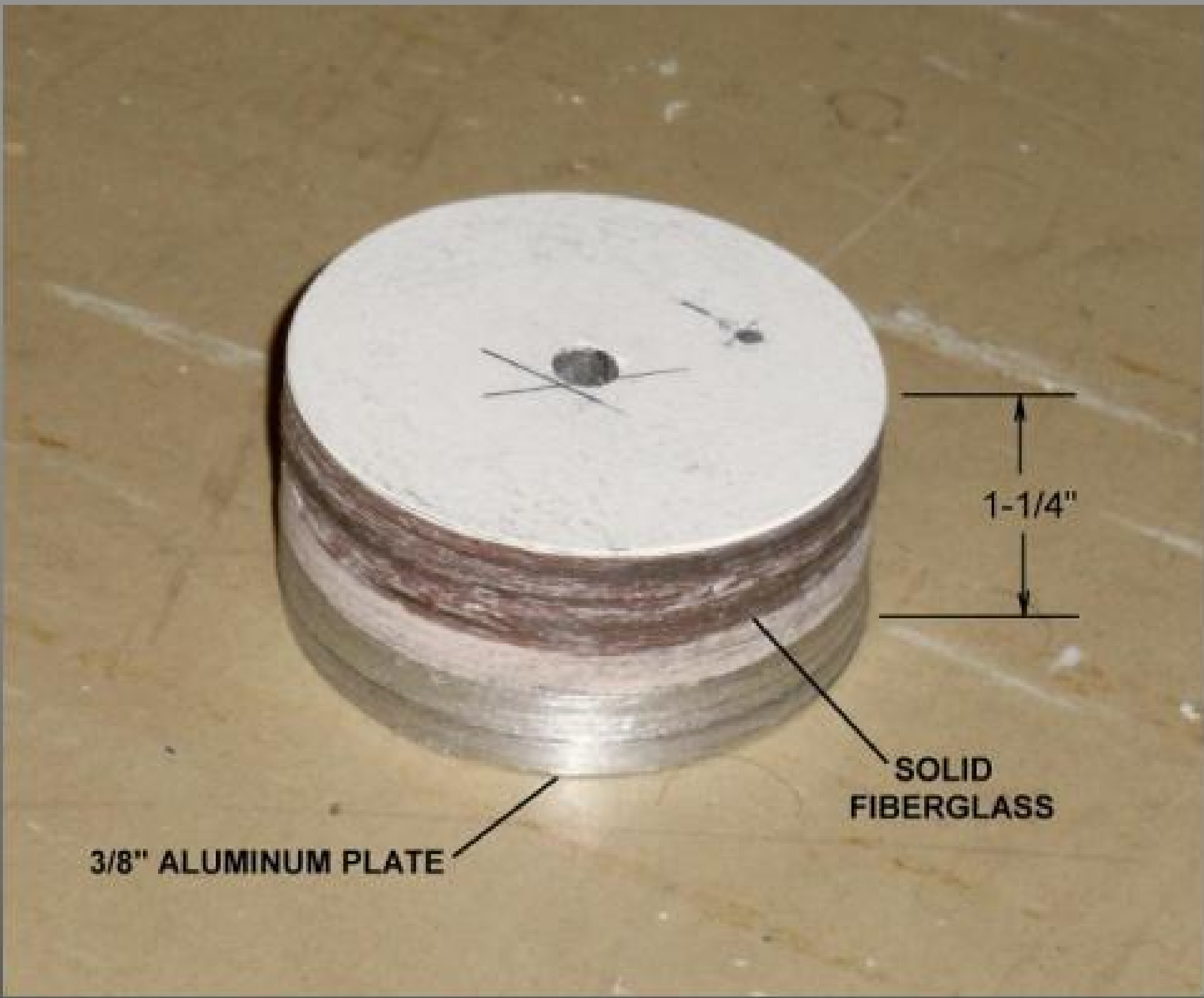

Fig. 5

This is a 2-3/4" plug that was cut from the pedestal. As seen here, the thickness of the pedestal is approximately 1-1/4" thick. The bottom is a 3/8" aluminum plate with solid fiberglass layers on top.

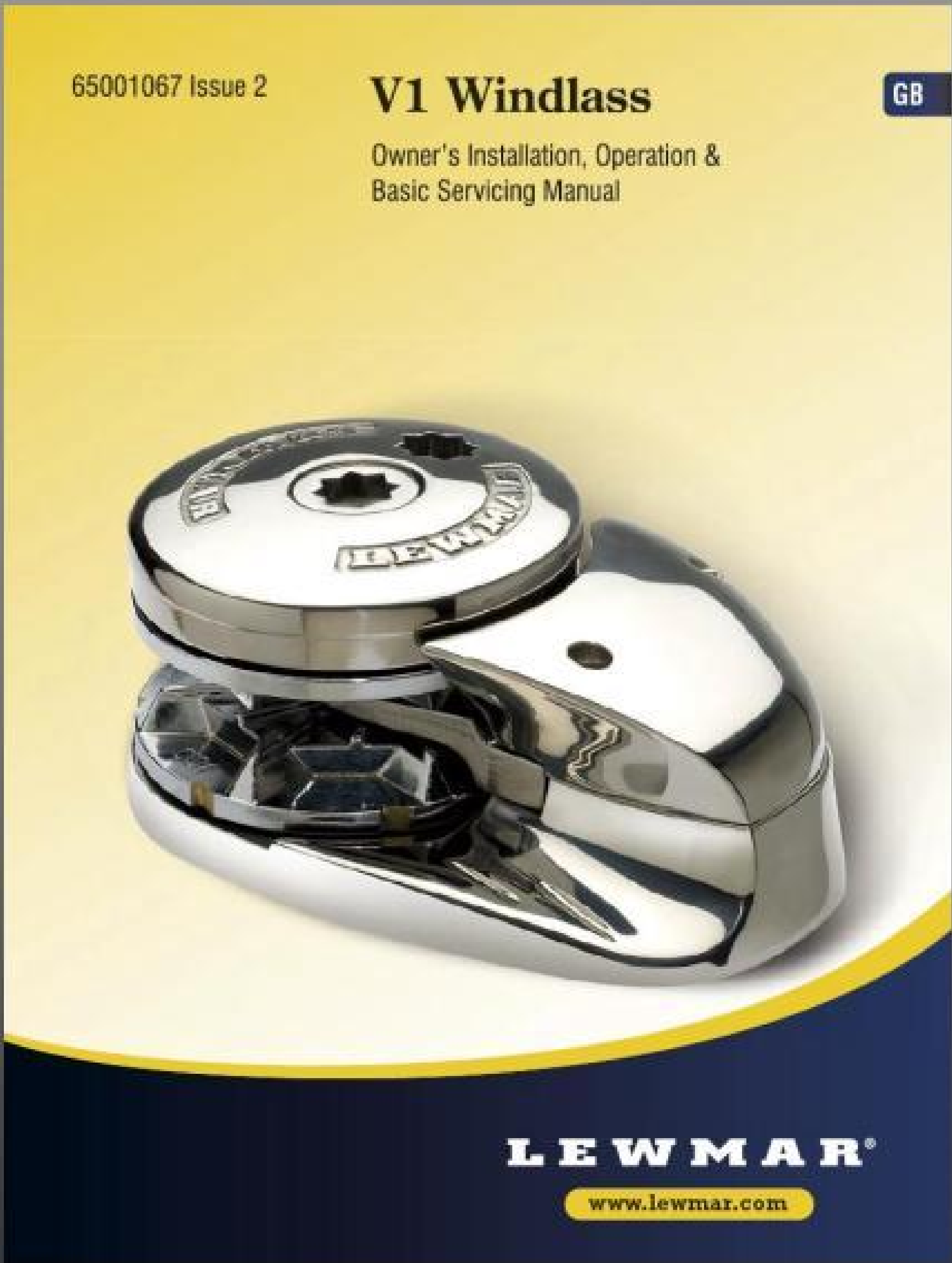

Fig. 6

The windlass chosen was the Lewmar V1. No special reason for choosing this brand, just that Lewmar has a good name and I was able to find a good price after a little searching on the internet.

3. How much pulling power should my windlass have?

Having selected a vertical or horizontal windlass and determined the size required using the chart on page 2, you can cross-check by using the following formula.

Please note this is an indication only. If in doubt please contact your Lewmar representative.

Total weight of ground tackle (anchor and rode) [ ] **x 4*** **=** **Pulling power required by the windlass**

* Working Load: Designed to allow prolonged anchor laying and retrieving. Use x4 for all horizontal windlass and vertical windlass up to V5. Use x2 for V6 and above.

V1/V2/V3 Specifications

MODEL	MOTOR POWER	MAX PULL		WORKING LOAD		MAX LINE SPEED		NORMAL CURRENT DRAW	CIRCUIT BREAKER	APP WEIGHT GYPSY ONLY		APP WEIGHT GYPSY/DRUM	
	Watt	kg	lb	kg	lb	m/min	ft/min	Amp	Amp	kg	lb	kg	lb
V1	700	454	1000	113	250	[illegible]	65	80	90	19	42	-	-
V2 12v	700	650	1433	163	358	21	69	80	90	19	42	22	48.5
V2 24v	[illegible]	760	1675	180	395	24	79	40	50	19	42	22	48.5
V3 12v	1000	890	1962	215	473	28	92	85	110	21.5	47	24.5	54
V3 24v	1000	1020	2248	243	535	30	98	[illegible]	90	21.5	47	24.5	54

Fig. 7

The above formula and chart were taken from the Lewmar windlass catalogue. According to the above Lewmar formula, my ground tackle weighing in at 83 lbs. is a little heavy for the V1 (83 X 4 = 332 lbs.). Lewmar seems to be extra liberal with factors of safety. Given that correct use of the windlass should never subject it to much more than 83 lbs, I figured the V1 should be able to handle the load comfortably.

As it turns out, puling in the full 300 ft. of rode in one pull results in minor heating of the motor and no sign of laboring.

Another reason for this choice is that the Lewmar V1 windlass is very common on the web and relatively inexpensive when compared to the V2 model which is rarely offered at a discount.

To date, I have had no problem with the V1 pulling power using proper windlass procedures, i.e. use an electric windlass as if it were an armstrong windlass.

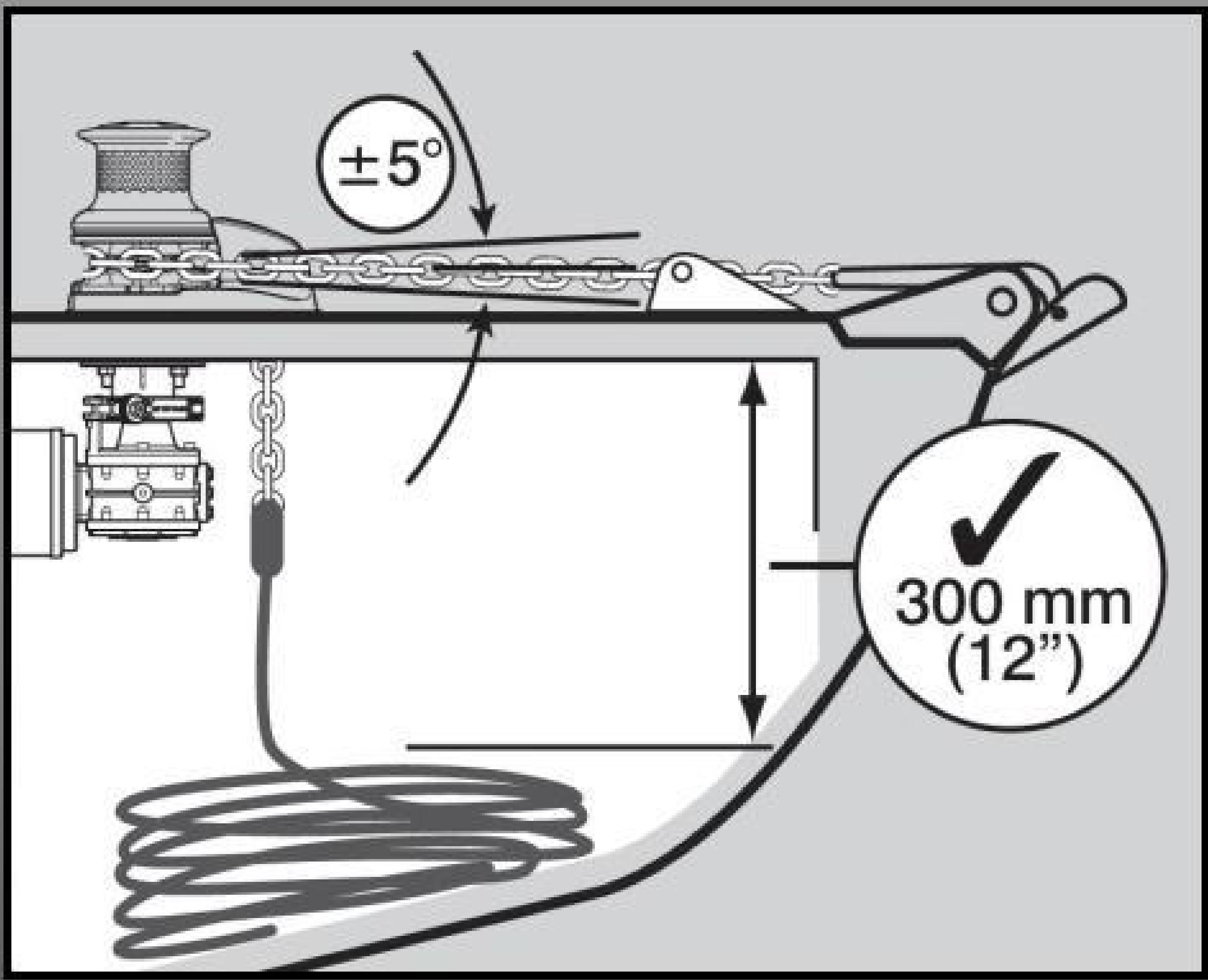

Fig. 8

The layout for the Lewmar V1 windlass in the installation manual shows it only as deck mounted with the 12V motor in the anchor locker as shown above. This is both good and bad. Good from the standpoint where you're not worried about leakage around the windlass as any water will drain back into the anchor locker. Bad from the standpoint where the motor (steel body) and electrical contacts are going to corrode over time because of the constant 100% relative humidity in the anchor locker. With mounting the windlass on a pedestal, as is the case with the H310, the windlass gypsy (which is inside the locker) is all SS and avoids corrosion and the motor and its electrical connections are mounted below in the dry V-berth.

Fig. 9

When we first look at the underside of the windlass, we see this is not going to be a reliable seal to keep water from leaking into the V-berth.

The 1/8" wide flanged surface around the black 2-5/8" diameter down tube is all that tries to prevent leakage into the V-berth through the 2-3/4" hole in the fiberglass pedestal in the anchor locker. Not a reliable seal when you consider that any leakage under here will wind up running down into the V-berth and under the mattress. And that could be embarrassing to explain away in the morning.

Notice also that the forward portion of the windlass must hang out over the front of the pedestal in order to remove or return rode to the locker. When combined with the backward slope of the pedestal ....the incoming rode means lots of water flowing under the windlass, backing up at the rear of the windlass, and possibly trying to leak down into the V-berth. Again, if this were deck mounted, not a problem, but here, not worth the risk of a wet, salty mattress with four weeks remaining in the cruise.

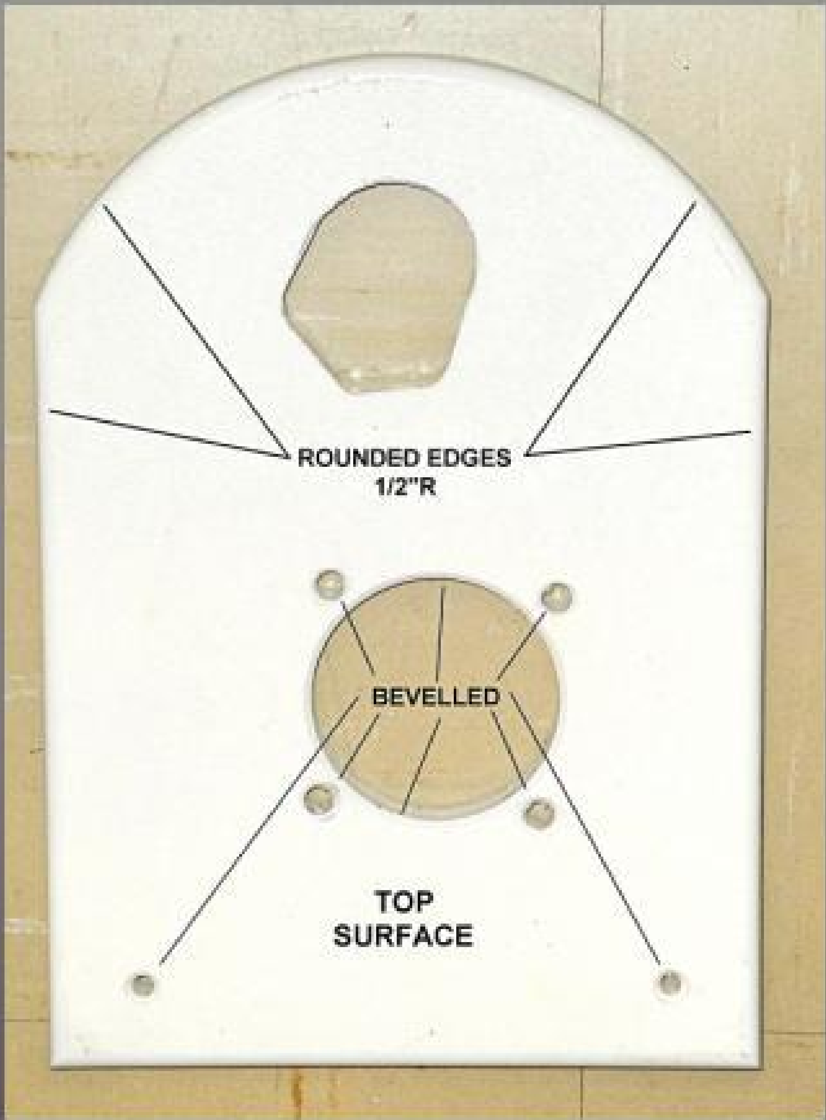

Fig. 10

In order to provide an enlarged seating surface for a better seal, a ¾' thick Starboard HDPE plate was sandwiched between the windlass and the pedestal. Where the enlarged sealing surfaces comes into play is not between the windlass and the plate (the windlass flanges are too narrow), but between the bottom of the HDPE plate and the top surface of the fiberglass pedestal. Once everything is in place and the bolts are being tightened, large hydraulic forces are generated between the large surfaces. This forces sealant between the outer diameter of the down tube and the inner diameter of the holes both in the HDPE plate as well as those in the pedestal.

All holes are beveled to provide a collection point for the pressurized sealant to feed both up and down into the gaps.

Fig. 11

Shown here is the underside of the plate which contacts the top of the pedestal. All holes in the plate which contact the pedestal are beveled to force sealant into the holes. With this many holes, a drill press is necessary to ensure a good fit. The irregular shaped hole at the top of the plate is routered with a ½" radius bit to make for a smooth entry of the rode into the windlass when the anchor drops under its own weight. This hole overhangs the front of the pedestal.

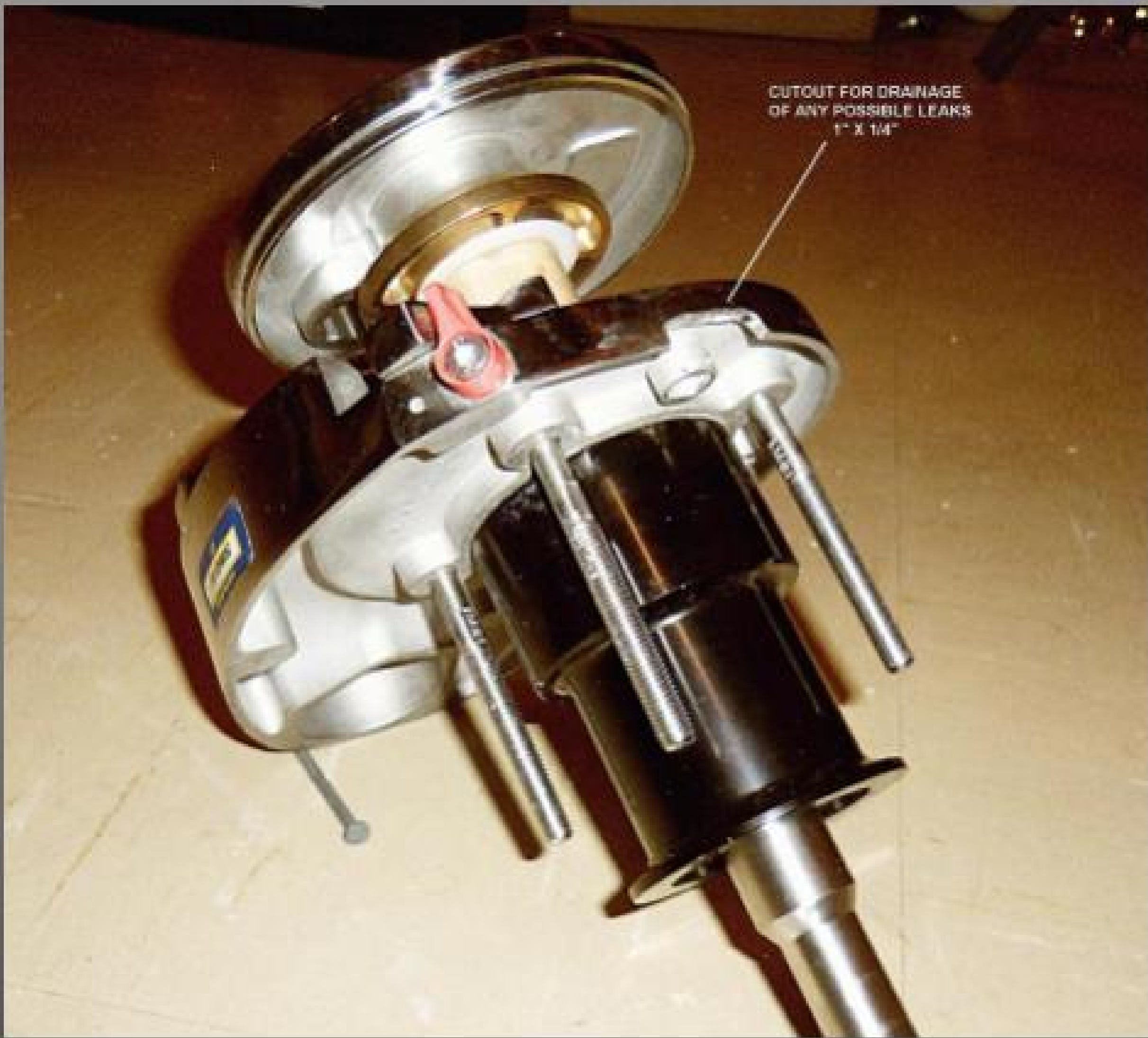

Fig. 12

One further measure here to avoid any possibility of water backing up against the interior rear of the windlass, is to grind a small drain slot at the rear of the windlass. In all probability, no water should get under here but in this case, just one more safety measure to avoid leakage. This slot is not visible when the windlass is mounted on the pedestal in the anchor locker.

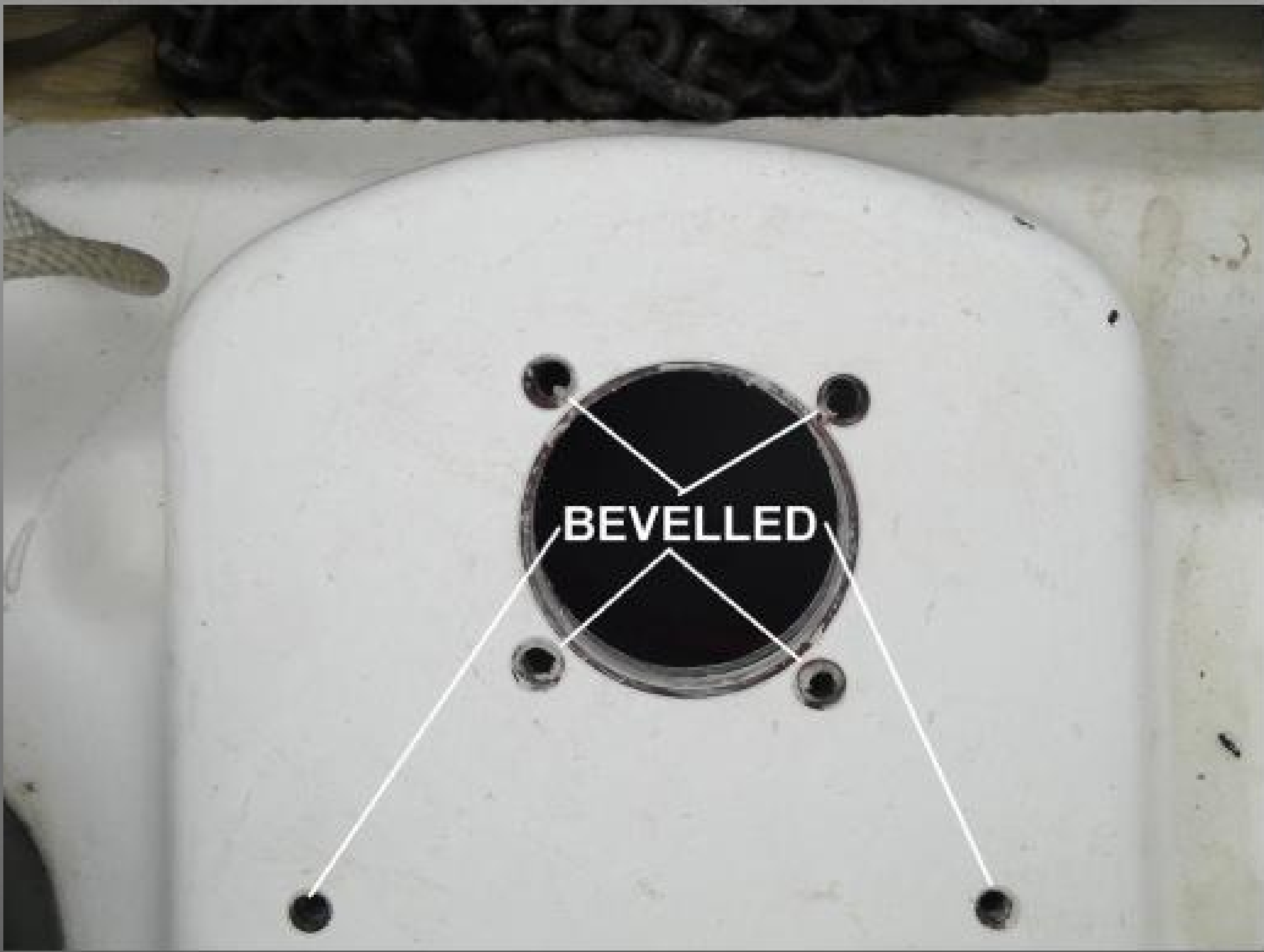

Fig. 13

Here the fiberglass pedestal has been drilled to receive the 2-5/8" dia. down tube as well as all mounting bolts. The rear bolt holes are just additional to ensure there is no lifting at the rear of the plate. These two holes should be in far enough to catch the 3/8" aluminum plate below. Again, all holes are beveled to assist in forcing the sealant down the holes and around the fittings.

The HDPE plate is used as a template for drilling the holes into the fiberglass pedestal. Thick double sided tape is used to hold the plate in place while the holes are being drilled.

The balancing act here is to ensure the windlass is not mounted too far forward so as to force the motor up against the inside of the pedestal OR too far back such that the rode is forced against the front of the pedestal.

Fig. 14

Here the windlass has been dry fitted on the Starboard plate to ensure everything goes together smoothly. The front cover of the windlass has been removed to show how the front of the windlass sits over the hole in the plate. The aft end of this hole will just protrude over the forward edge of the fiberglass pedestal in the anchor locker.

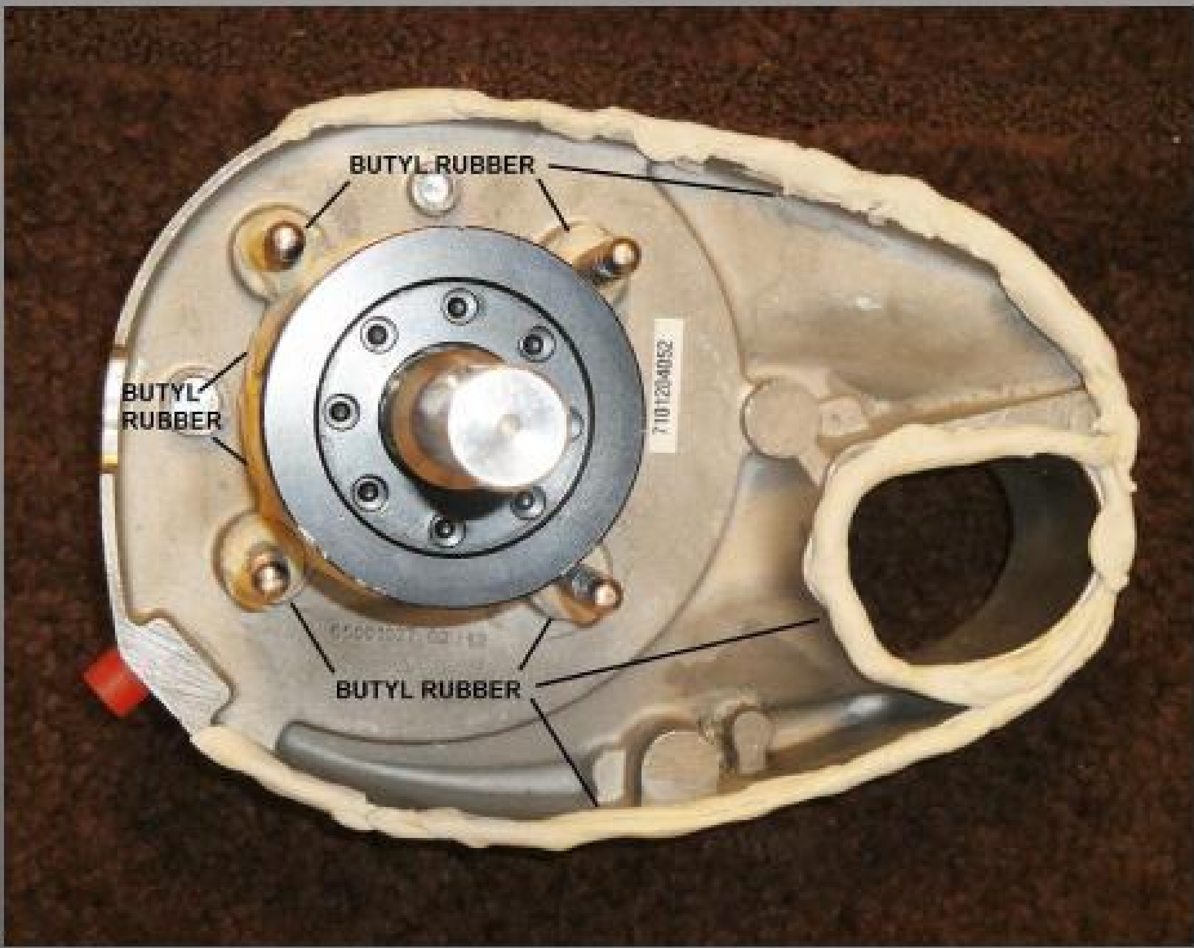

Fig. 15

The underside of the windlass is shown lined with butyl rubber sealant. As previously mentioned, we're not expecting a perfect seal in this upper area but two seals are better than one. No sealant is needed near the back end of the windlass housing due to the slope of the pedestal and we're trying to ensure drainage here.

Butyl rubber is used here for ease of application, stays in place, no rush to get it into position, and does the best above water line job of any sealant on the market. Did I also mention it's the cheapest sealant on the market and never dries out before you get to use it ? Never. Using anything else just doesn't equate.

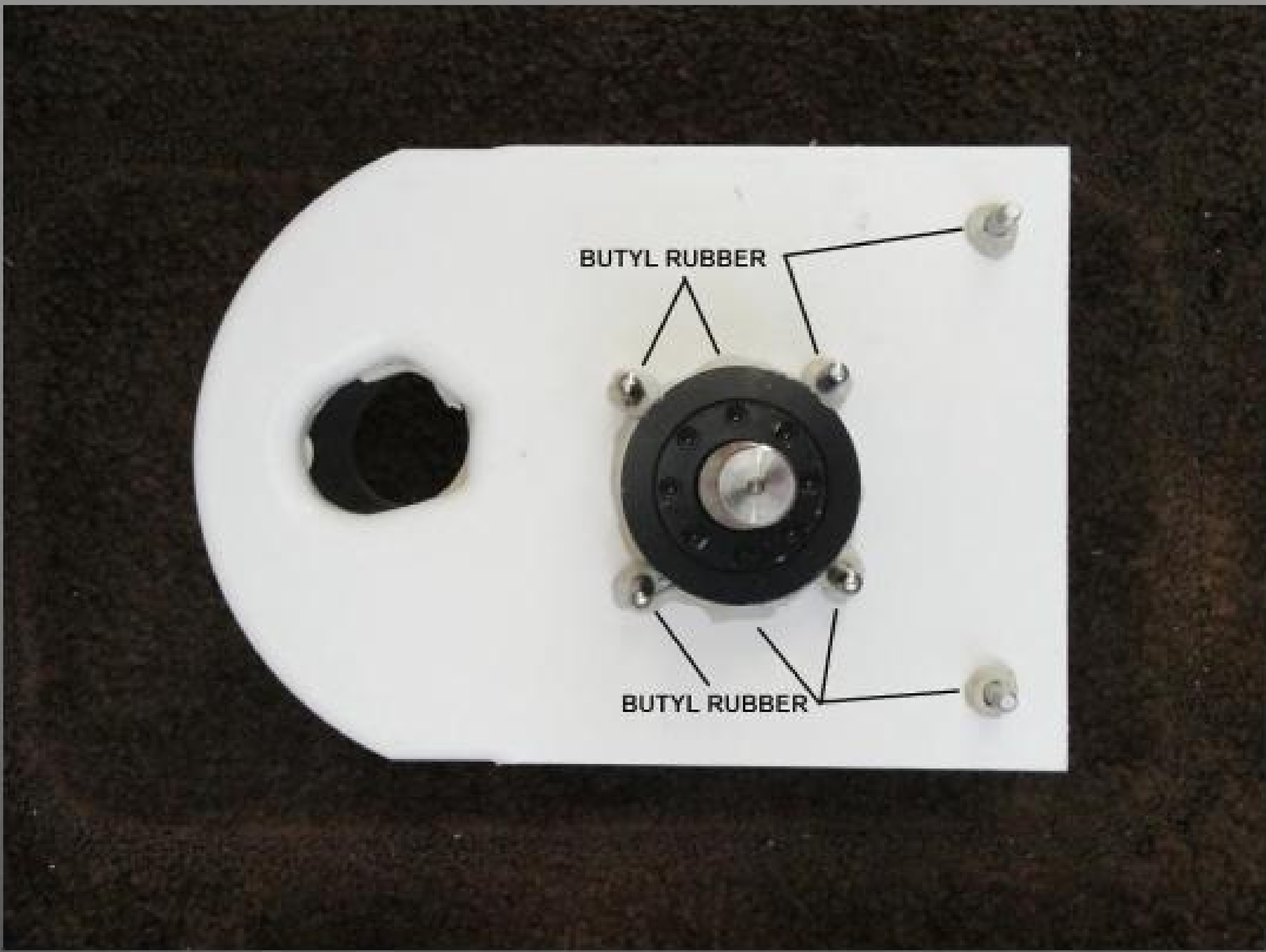

Fig. 16

The windlass with its butyl sealant has now been inserted through the holes in the Starboard plate and we're now looking at the bottom of the plate. Again, butyl rubber has been applied around all of the bolts and down tube. This will then be pressed on to the pedestal. It's here that we know we'll make the 100% reliable seal as the sealant is pushed both up and down around the bolts and windlass down tube.

Fig. 17

The windlass and Starboard plate have now been mounted on the pedestal and all bolts have been tightened over a period of several hours (while squeezing the butyl) until they can hold their torque. Butyl rubber can be seen oozing out from under the windlass where it contacts the plate. Not seen is the butyl rubber oozing out from under the plate where it contacts the pedestal. The hole in the windlass is flush with the forward edge of the pedestal. The cover of the windlass has been left off for clarity.

Fig. 18

This shows the windlass cleaned up, chain fed through the gypsy and the cover back in place. The UP and DOWN switches have been mounted to the right of the windlass.

An internal inspection of the switches shows them to be a little less than perfectly water tight under the rubber diaphragms. These were sealed with a bead of silicone sealant before screwing them into place.

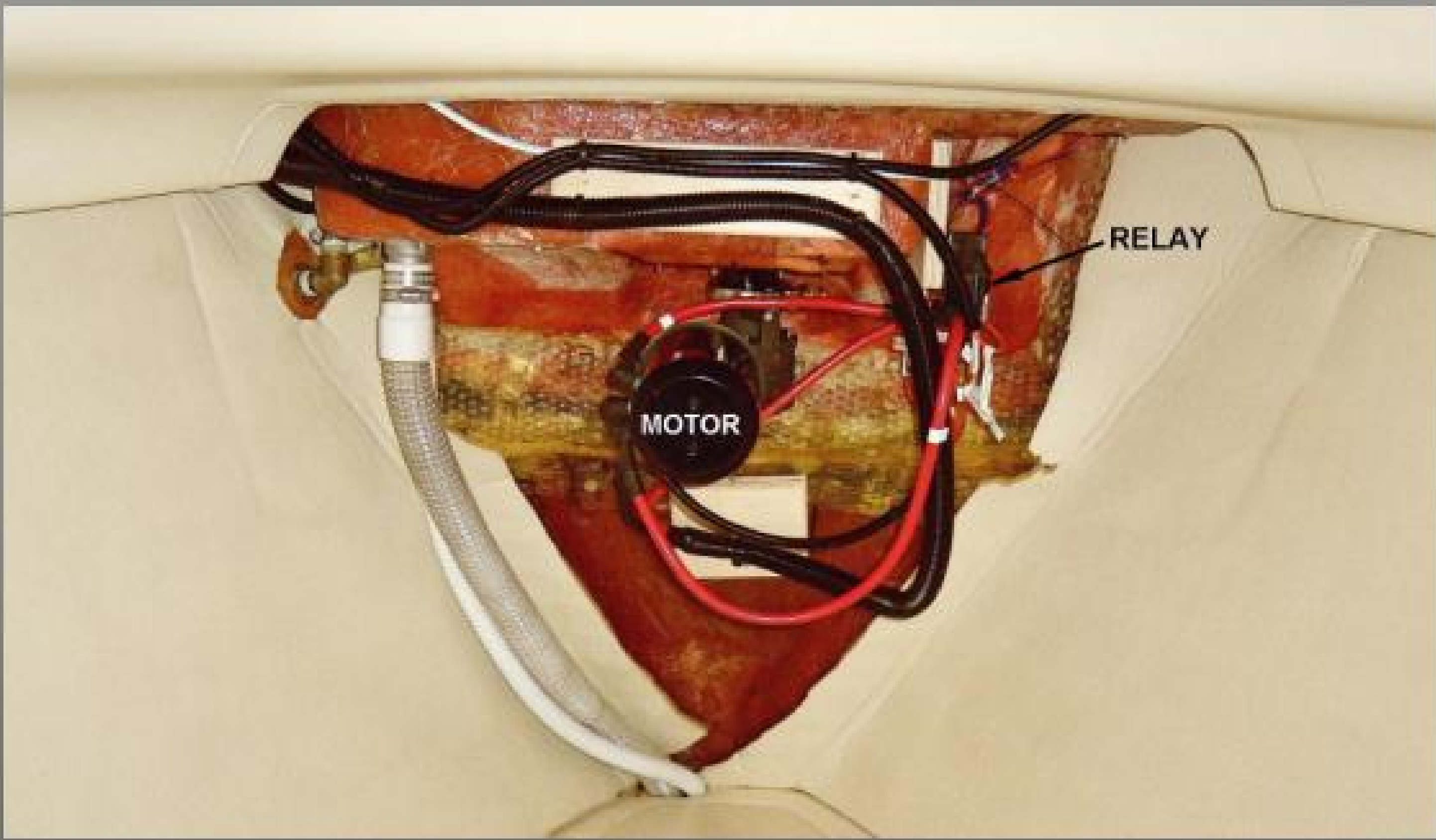

Fig. 19

The 12V windlass motor is in place and wired to the relay.

All heavy current carrying wire to the motor is 2 AWG while control wire to the relay is 16 AWG.

Fig. 20

The 12V breaker for the windlass is mounted below the 120V breaker for the incoming shore power. The back of the 120V breaker is fully covered to avoid possible contact with the 12V wiring.

Fig. 21

The power for the windlass relay is supplied from the 12V breaker labelled (you guessed it) WINDLASS.

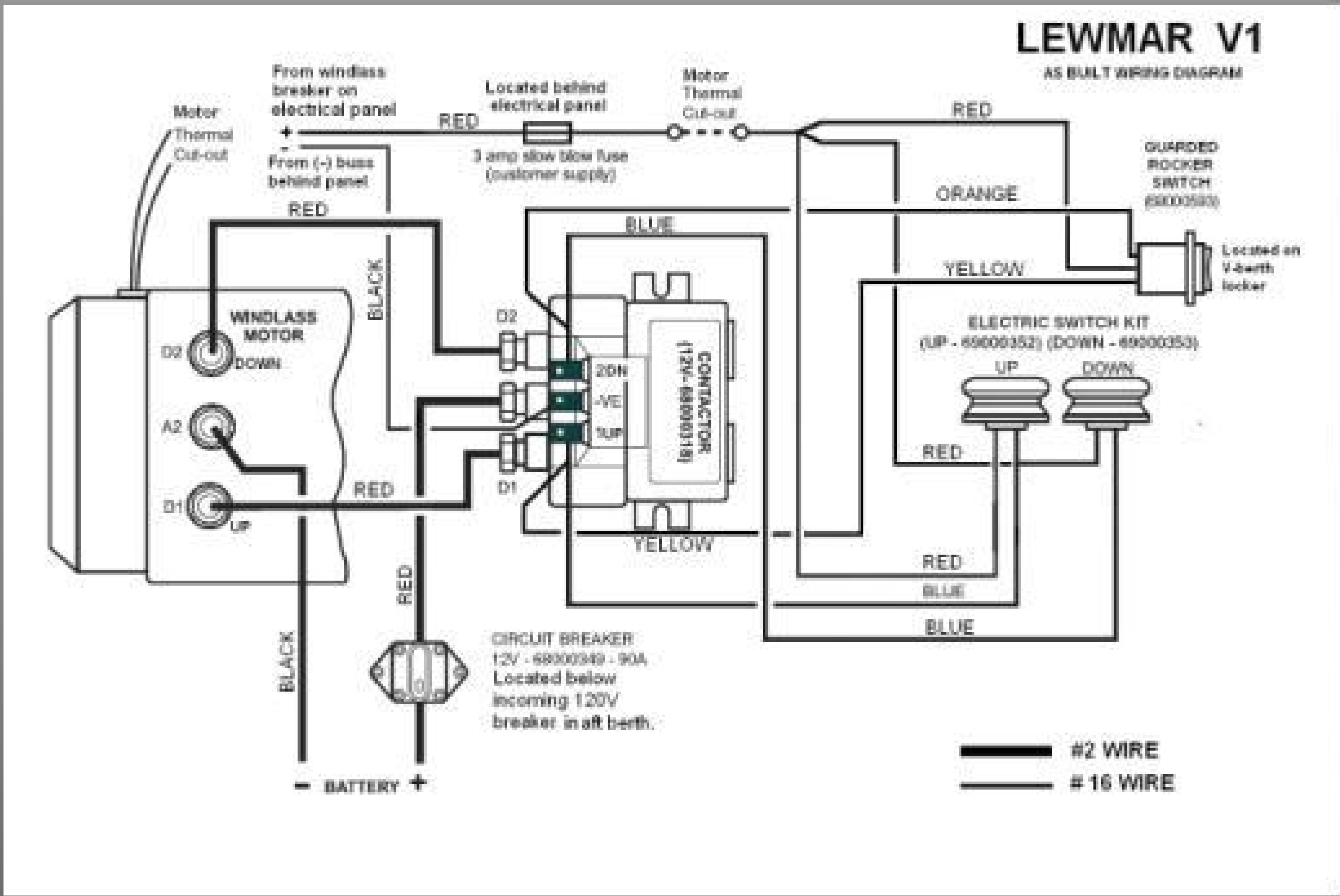

Fig. 22

This is the as built electrical diagram for the anchor windlass and its relay. The guarded rocker switch located on the V-berth locker is for redundancy in the event that either the UP or DOWN switches in the anchor locker may fail in the event of water intrusion.