

## A Brief History...

Mixed political and history blog

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### **The Restoration of a Cal 40**

The first look at the boat showed what we getting ourselves in for. The owners were an elderly couple who had owned it for 12 or 13 years. They had done extensive cruising but were now too old (87) to take it off the mooring. I don't think it had been off the mooring in several years. The husband hated to sell but said his wife refused to go on the boat with him anymore. We bought it on the spot. I promised him we would take him sailing once we had restored it. I had no idea how long that would take. Fortunately, he is still with us and we took the two of them to see it a couple of months ago. We bought the boat in November 2004, took it to a yard where it stayed seven months, then it was finally finished about May of 2007.



The blue hull paint was in poor condition. The engine ran but leaked oil. The mast paint was flaking off, the winches were frozen. Most of the gear was inoperable.



The interior was in fair condition except for old, mildewed cushions that would have to be replaced. The engine box, a heavy awkward thing at best, had been cut and modified to fit an engine that was too big for the space. It would have to go. There was a lightweight racing ladder that was tubular steel with teak treads. With a small modification, that is our ladder today. The wiring was old and the panel needed replacing. I had a new lightweight engine box built.



The engine controls were old and were on the wrong side for the new engine we ordered. That would have to be switched. Also, I like the Morse sailboat controls, which allow the two handles to be removed when sailing. Unfortunately, Morse doesn't make them anymore but I found a set in Minney's Chandlery.



The cabin was filled with obsolete electronics, like the old VHF radio above the pilot berth.



The galley was OK and the pressure water worked but the fittings were old and the water tank looked like it needed replacing. We took the stove home and cleaned it up. It was CNG and, for reasons that are a mystery to me, CNG has fallen out of favor as a stove fuel in boats now. It is far safer than Propane, although it does not have as high a specific heat. Propane requires a sealed box for the tank with electric controls as it is heavier than air and will collect in the bilge if a leak develops. Getting a new regulator, as the old one had a broken gauge, turned out to be difficult. Ironically, the only source for CNG equipment anymore is the company, [Corp Brothers](#), that was owned by Avery Seaman, the former owner (before it was brought west) of the boat. His family still owns the company and his granddaughter promised to send some photos of the boat when it was in their family. They haven't arrived yet.



My daughter is standing in the aft cockpit. Behind her are large vents for the lazarette, which are mounted on a Dorade box. They looked like line snaggers. The main sheet rigging was in poor condition and I reregged that completely. The traveller was replaced with a new Harkin model.



The cockpit bulkhead was full of old instruments that no longer worked. They had to go but the holes needed filling. We pulled the mast, intending to refinish it, and hauled the boat. Mike Jr and I worked for weeks stripping off all the gear. The old engine, a Pathfinder diesel, went to the Boy Scouts. The V-drive was not salvageable and was junked. The winches were chromed bronze and were frozen. I took them home and worked on them, eventually trading them to Minney's chandlery for credit on Barient 28 stainless winches. The mast was corroded at the base and under a couple of winch pads so I junked it (It's at Minney's) and bought a new mast. We kept the old boom as it was not original. My biggest mistake was not replacing the toe rails but we didn't know how badly the hull-deck seam leaked until a year later. Mike and I spent months stripping gear and filling holes in the deck. I took the lazarette hatch home, removed the Dorade box, and filled the holes with glass. The forward hatch remained but I eventually replaced it with a Lewmar hatch about a year later. We did not find any rot in the core although some of the commissioning was a bit sketchy. It had survived seven Bermuda races when it was owned by Avery Seaman. George Griffith had sailed four of those races aboard and he later told me that he always arrived a few days early to check out the boat. He brought fiberglass tape and resin with him and usually wound up retabbing some of the bulkheads. The Bermuda race, which crosses the Gulf Stream and is usually upwind, is hard on hulls. About 30 years ago, a production boat drove the mast step right through the hull in the severe seas of the Gulf Stream. Many fiberglass hulls are laid up in two halves and later bonded together. That mast compression load split the hulls. The Cal 40 has a steel beam under the step so the load is not on the hull there. I'll describe the truss arrangement of the rig later. It was a big innovation that allowed Lapworth to design a light hull in the days when fiberglass was a new material. The mast was another matter. It was going to be more expensive to refinish it than to replace it since I was going to have all new rigging anyway.





It shows old wire halyards and sheaves plus it had a reel winch that was almost impossible to get off. We saved the roller furling gear but the rest went to Minney's.



The spreader tangs were corroded and the tip fittings could not be opened to change the shrouds. They were junk.



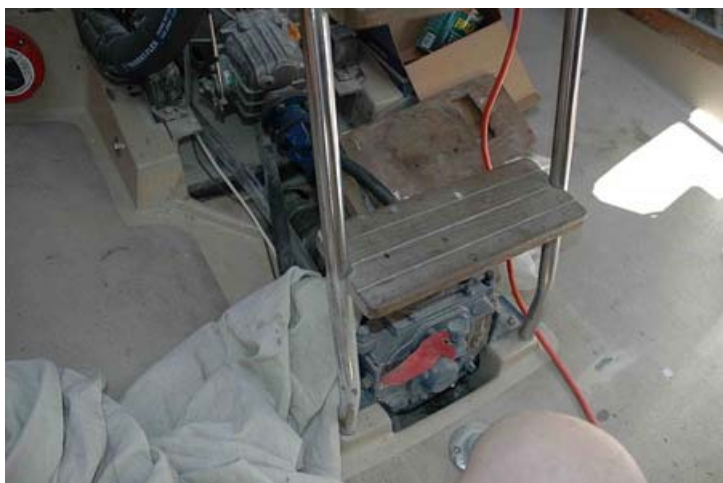
We took everything mechanical off the boat and, with a couple of exceptions, gave or threw it away. Here is the engine bed with the old engine and v-drive gone. The cushions are all gone. We wouldn't have them in the boat while we were working anyway, but I took the old ones to [a foam place that does good work](#) in San Clemente and they used them for patterns for the new ones. Those wound up in storage for a year.



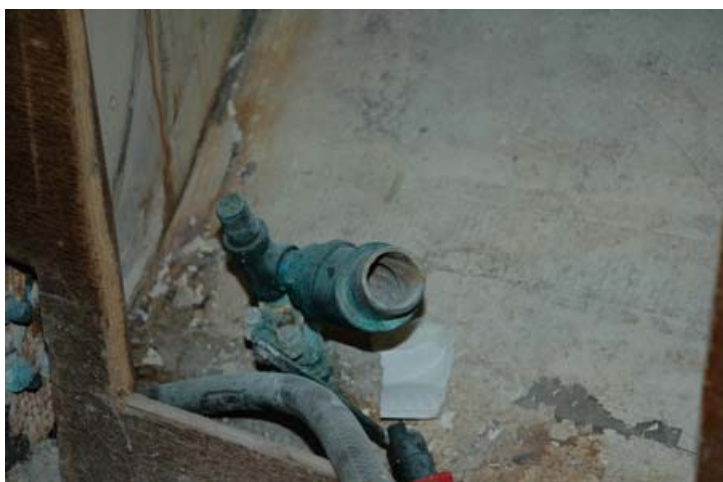
The engine bed shows both engine and v-drive gone. This exposes the inner end of the shaft log, the bronze tube that holds the shaft. The inner end has a packing gland or, as we chose, a “dripless gland” to seal off the sea. The metal plug to the right is a fill cap for a racing tank that had been installed in the bilge. It held about ten gallons but had been disconnected and a tank fill cap below decks is illegal anyway. We had to cut the tank up with a Sawzall to get it out. The engine mounts were too far apart for the new Yanmar 3YM diesel so the yard fabricated new ones from angle extrusions. The two hoses, one a white hose and the other oil stained clear plastic, are bilge pump hoses. We stripped out all the hoses and all the wiring, completely rewiring the boat. The water tank was original and the fittings were bad so I had a new one made. As it turned out, [the metal shop](#) we chose had built all the tanks for Cal boats back in the 60s when they were across the street in Costa Mesa.



The new engine is installed and the new engine mounts can be seen below and to the left. Our steel ladder is also in the picture. The first photos of the engine bed showed an ancient corroded automatic battery charger. It is now gone and replaced by the coolant reservoir and a fuel filter. The back of the new engine control panel is above. The engine instruments are to port allowing room for additions in the future.



The new v-drive is seen beneath the bottom step of the ladder. The yard made a mistake in ordering the v-drive as the old engine had a one-to-one gear ration in the transmission. The Yanmar does not have a one-to-one option and the engine we installed had a 1.67 to 1 gear ratio. Unfortunately, the v-drive had been ordered with 1.67 ratio, as well. It had to be shipped back to Walter and rebuilt as 1 to 1 and returned. One concern was the tabbing of bulkheads to the hull.



Here you can see the space beneath the head vanity cabinet. The thruhull for the sink drain and the head water intake is seen in the center. It was replaced before launching along with most of the others. The bulkhead, which carries the load from the port chainplate, attaches here to the hull. This bulkhead is also attached to the beam by several steel plates welded to the beam and bolted to the bulkhead. The plates can't be seen here.



Here the debris from scraping the hull is gone and the area of the bulkhead tabbing can be seen clearly. The tabbing was loose and has been removed. One of the plates that attaches the bulkhead to the beam is shown at the left side of the photo. This tabbing was replaced before the thruhull was replaced and other work done that would have obstructed access to the area.





Here, tabbing from an aft bulkhead to the deck is seen and is disrupted. This is the area where the genoa track was (We removed it and filled the holes) and the load on the deck has pulled it up from this half bulkhead, which is just forward of the ice chest. This area was also ground down and retabbed.



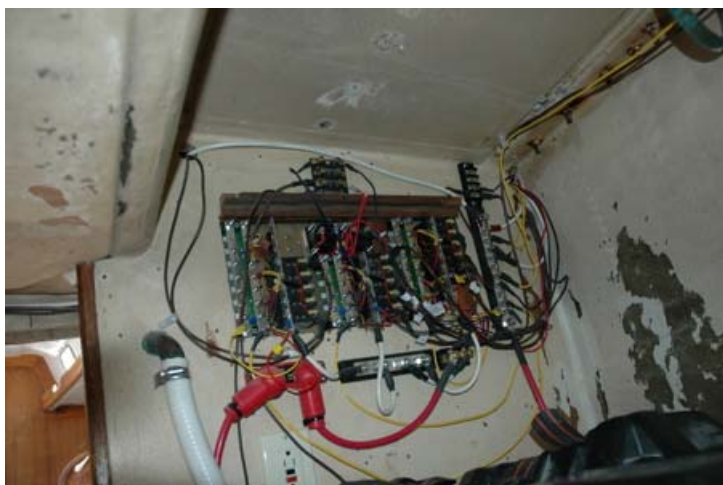
Here, another area on the starboard side, is seen with disruption of the tabbing from bulkhead to deck. This is adjacent to the starboard chain plates. It was ground down and retabbed.



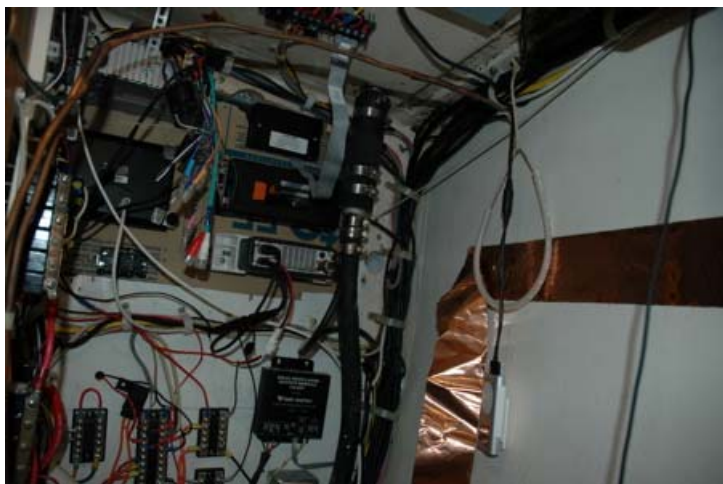
Once all the structural issues were dealt with, the boat was rewired. I copied Fin Beven's suggestions shamelessly. He sent around a list of his own rewiring project and I used it as a reference, along with a couple of boat electrical guides. The best is [Charlie Wing's book](#). I ordered a new Blue Sea panel.



Here is the new panel in place. It is actually two panels mounted side by side. This should be sufficient for our needs for a while.



Here, the rear of the panel can be seen with wire harnesses. If you think this is complicated, the wiring of Fin Beven's Radiant is seen below.



Fin's panel is quite a bit more complicated plus his batteries are mounted in a different location allowing the use of more of the bulkhead for wire harnesses and buss bars. The entire hull had to be stripped on the inside and all the battens that lined the hull where bunks were located were removed. These were taken home, sanded and varnished. The hull was scraped and sanded and any glass repairs were completed. The battens were left off until the wiring job was nearly complete.





With the battens removed, the hull was exposed and could be scraped and sanded. After glass repairs were completed, the hull was painted with two coats of Kilz primer and two coats of Sears Kitchen and Bathroom paint. This paint is supposed to resist mildew.



The starboard bow also proved to have the worst leak site in the hull-deck seam. A closeup is seen here and running a hose on deck would produce a flood below. This was not fully appreciated until the hull had been painted. I was also not eager to learn what the yard would charge to replace the toe rails. Both toe rails were cracked at a point opposite the forward end of the deckhouse. My theory is that this was a result of the Bermuda Races with flexing of the deck and hull where the reenforcement of the deck stiffness, which is increased by the cabin sides, ends. The leak site is marked with green tape. I tried squirting caulk in there but only the toe rail job would fix it. That came a year later.



The battens all went home where they were sanded and varnished with four or five coats. Then they waited for the other jobs to be done. Eventually, the interior got sanded and painted. The glass repairs were done. The battens were replaced once the wiring was almost done.



Here, the v-berth area was painted and the battens are being replaced. The leak was still not fixed but that would come. The hull was painted by the yard all in one weekend. We had been delayed by a rainy winter, but it was June and the weather improved.



Here the deck is painted and the masking removed. The hatches were painted separately and replaced on the boat.



The hull is now white and the boot top a series of blue-red-blue stripes that I have had on my boats for 40 years. For bottom paint, I chose [Pettit Vivid White](#), which [Practical Sailor](#) says is the only white bottom paint they have tested that doesn't yellow.



Once the boat was launched, we stepped the new mast and it was ready to commission. I had new bow and stern pulpits made by a company in Costa Mesa. The stanchions were made by Railmakers and the lifelines by another company whose name I don't have at the moment.



We pulled out of the travel lift slip with the mast still being rigged and set up. Later that day, we took the boat up Long Beach where I had sublet Wendy Siegel's slip while she was off in Transpac. Once the boat was safely tucked away in Long Beach, we flew to Hawaii for the finish of Transpac 2005.





In Honolulu, we spent a lot of time at Hawaii Yacht Club, which does a wonderful job with the race in spite of almost no help from the state, which owns the marina at Ala Wai. The marina is in terrible shape but while there we got to see a sight that has not been possible since 1969. There, rafted in front of Hawaii Yacht Club are 13 Cal 40s. There were 14 entered but Tim Lessley had alternator problems that forced him to withdraw soon after the start.



Here the boat sits in Wendy Siegel's slip with lifelines and stanchions added. We sublet until she was almost back, then moved the boat to Wilmington. By the year end, it was home in Cabrillo Marina adjacent to LA Yacht Club where she lives today.



Here the boat sits in the Cabrillo Marina. A sail cover has been added and work was ongoing on the interior. It would still not be ready to sail until the spring of 2006.

#### **The toe rail project.**

The toe rail was cracked at the forward end of the cabin on each side and there was a serious leak in the hull-deck seam that required

repair. Wendy Siegel had done a repair before the 2005 Transpac but her toe rail was in better shape than ours. They had raised the starboard toe rail to access the seam and Duncan had repaired the seam by sealing it with fiberglass and then the toe rail was replaced and resealed.



The old rails were in poor condition so they were removed and discarded. Here the tracks had been removed and bolts taken out. The rails were lifted and the holes all sealed along with the seam.

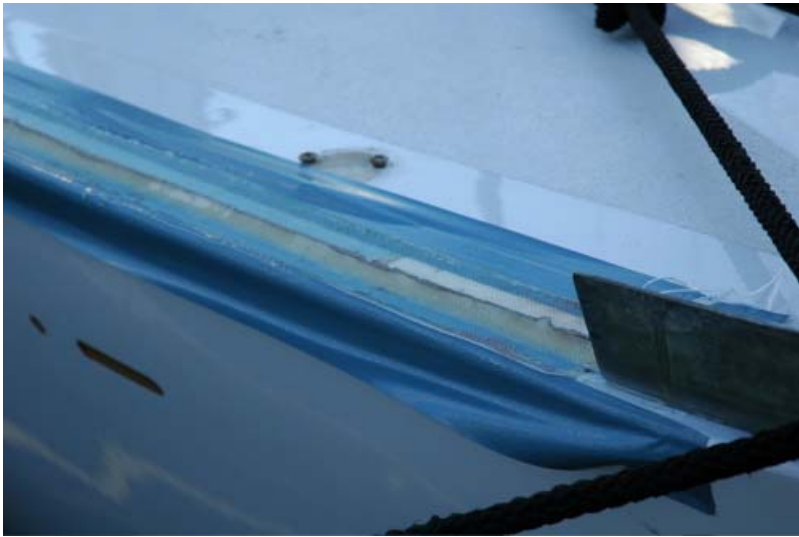


The stanchions and pulpits had been removed. The seam area was cleaned up and the seam and bolt holes were sealed with epoxy putty.



The seam was then covered with glass tape after masking the hull and deck on either side.

The tape held down the epoxy putty and reinforced the deck beneath the new teak rails.



The finished seam with tape applied and masking about to be removed is seen here. The next step is to dry fit the toe rails. All the holes have been sealed so new bolt holes will be drilled.



The new teak rails were assembled by the ship's carpenter and milled to accommodate the seam, which is raised on the deck side. Beneath, the seam is overlapped for strength. We did not add any reinforcement below decks.



The joint is now sealed and ready for the new teak rails. The masking tape is removed and the rails are dry fitted. This is just another view of the photo above.





The rails are attached at the bow and bent to fit the curve of the hull.

First they are dry fitted and holes drilled for the new bolts.



The rail is bedded with caulk and the bolts are tightened down.



Once the new rails are complete, the stanchions and pulpits are replaced. The leaks are sealed and the polished tracks, cut to about half

the original length, are replaced. The bolts are covered with teak plugs. The came the varnishing. The carpenter sealed the rails with epoxy sealer and we added about 8 coats of varnish over the next two months. Some touch-up painting of the hull was required where the glass tape showed at the edges of the teak toe rail.



By the summer of 2007, she was ready for Catalina. The sunshade is rigged and the spinnaker pole rigged as a flopper stopper. The interior was virtually finished although the holding tank still needed a bit of work.

How does it look a year later ?



The cabin is complete. Here is the engine box and ladder. The panels covering the bulkhead are in place.



The starboard pilot berth shows the new cushions and the refinished wood.



This photo show the new engine box and ladder. The top of the engine box is Formica and adds storage but can be removed and the entire box lifted off to allow access to the engine. The top step of the ladder is wider to keep grandchildren from falling through.





The head shows the storage cubbyholes and the new toilet. The valve to the right of the toilet is to direct outflow to the holding tank or into the sea. There is a loop in the water intake line for the head that is visible on the left side of the vanity counter top and beneath the storage cabinet. That was placed there because the previous toilet had a tendency to fill with sea water when the sea cock was open. The new toilet does not do that and the loop has since been removed. The sea cock was left open at anchor because it is the drain for the sink. We had no trouble with backflow from the joker valve but the intake valve was not preventing the toilet from filling and could have sunk the boat.



The V berth shows the new cushions plus bolsters beneath the shelves on each side. A wood piece fills in the opening to make the vee-berth a triangle. Ahead of the berth is the anchor chain locker that is large enough to crawl into but is left empty. The boat had a small windlass and a chain stowage hawse pipe when I bought it. Those holes in the deck were filled.

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