

Brent's List of Common Screw-ups

There have been several common screw-ups on my boats that some builders been repeating a lot.

- Not using several coats of cold galvanizing primer immediately after blasting, before your epoxy. Doing this you get a bit more time to touch up dings and scrapes before it starts to rust. Cold galvanized primer doesn't chip.
- Not trimming or using stainless rod on all outside corners. Always put stainless steel handrails on the outside corners of the cabin sides, instead of slightly inboard, you reduce the amount of dings and chipped paint on the corners drastically. Trimming with stainless reduces your maintenance by up to 80%. Corners chip often, flat surfaces rarely chip.
- Some have extended the rudder post a foot or more above the bulwark. This completely screws up the option of inside steering by trim tab, or the extremely simple, well proven, and bullet proof self steering I've designed for my boats.
- When you weld the decks to the hull, the weld shrinkage pulls the decks onto the hull. When you weld 1/8th plate to 3/16th with 1/8th 7024, then try to break the weld, it always breaks on the 1/8th inch plate, well outside the weld. Keep this in mind when a welder tries to make your project into a make work effort for himself, putting his income ahead of your interests. Boats that are fully welded on both sides, with a full weld under the decks, tend to oilcan under the decks. I've seen this on several of my 36 footers when the sun is at the right angle, built by someone who is bent on turning the project into a make work project for themselves, and trying to maximize the number of hours they get out of the job.

With 1/8th 7024 on top, there is absolutely no benefit in welding the decks on both sides. This is particularly true of the bottom of the anchor well, which if welded both sides , will always oil can badly.

- Some have insisted on only two pintles on the trim tab, which makes it so flimsy that a six year old can easily pull the works out by hand. The third pintle makes it bullet proof.
- When a guy building a 36 wanted his stern tube and aperture put in and asked me how many hours it takes I said about three hours. He asked another guy, who has built a lot of my boats, and although he charges \$5 less an hour than me, usually takes more than twice as long as I do for any given job - he said it would take about 8 hours. He then told the fabricating shop to go ahead. The shop ended up taking 35 hours, at an hourly rate the same as I was charging, and the result was an abortion.

It is a mistake to assume that because someone quotes an hourly rate that is less, that the job will cost less, when the person giving the quote has a habit of taking twice as many hours or more to get the job done, and does whatever he can to maximize the number of hours he gets out of the job. This is sometimes the result of the fabricator having absolutely no cruising experience and wasting a lot of time on things that don't matter, and ignoring things that do.

- Offshore cruising experience can make a huge difference. Don't let a non-cruising amateur with no cruising experience redesign a well proven boat.
- Sandblasters always insist on blasting the whole boat to white metal even where the primer is good and will cause no problem, in order to maximize the cash they get out of the job. You have to keep a close eye on what they are doing, or you get a much higher bill than was called for. Steel fabricators sometimes do this too.
- Running the longitudinals the full length of the hull adds absolutely nothing to the strength of the boat. The extreme conic curve of the hull in the ends makes stringers totally redundant there, and can add distortion if they are welded after the hull is up. Any builder insisting they run the longitudinals the full length of the hull, has his own economic self interest in mind, not yours.
- Water on deck runs aft, and a big scupper at the aft end of the cockpit coamings will, along with a lifting eye at the LCB will handle any deck water you get. Making more scuppers serves no useful purpose, and simply makes using the decks for water catchment more difficult. The also may increase maintenance problems. The simpler you can keep things the better.
- The way I have designed cockpit coamings gives you a great, handy stowage space between the backrest and the coaming, the only safe place to put things down, where they won't get stepped on or kicked, like binoculars, sheet tails etc. Straight coamings with no place in the cockpit to safely put things down is a sure sign of lack of cruising experience in this particular design.
- I have designed the foreword lower shroud chainplate on the cabin side for a good reason. If you fly a staysail and sail the boat as a cutter, then the size of staysail you can fly is greatly increased, adding 3 ft to the foot of the staysail, giving it a lower aspect ratio, making the sheeting point less critical and giving you a useful size staysail. Although some may have no intention of flying a staysail, putting the chainplate in the proper position leaves your options open. People who fly this staysail say they not only point much higher with it, but sail a knot faster. It also leaves you one less shroud to duck under.

Athwartships the mast is adequately stayed by the aft lower shrouds. The foreword lowers stay the center of the mast fore and aft. The cabinsides,

being steel are far stronger than the shrouds. Thus this does nothing to weaken the rig in any way. Again, don't let anyone with no offshore experience re-design your boat.

- I put the handrails on the edge of the cabin side for a good reason. On my last boat I found the top corner of the cabin side a bad place for paint chipping, as I had very foolishly put the handrails inboard. I cursed that decision for years, and got it right on my current boat.

Of course anyone who hasn't maintained a steel boat over a long period of active use, or anyone whose boats have rarely left the dock, will be totally naive as to the importance of this. Don't let a naive builder make a maintenance slave out of you. This is steel boatbuilding, not imitation fiberglass building. The priorities are different.

- A friend had a naive builder make his cockpit coamings hollow to imitate a fiberglass boat. There was no access inside the coamings to allow him to paint and maintain it properly. For fiberglass this is not an issue, for steel it is a major issue. Fiberglass coamings were designed that way for cheap easy construction in fiberglass.

He ended up having to cut his coamings off and redo them in steel fashion, at great expense. This was another naive decision from someone with no long term steel boat experience.

- Over nearly 40 years of cruising I have found that one good mooring bit in the bow is all I have ever needed. With the anchor winch it makes a good level wind. I put the anchor rode on one side and crank, then shift it to the other side and crank some more. I have found having a mooring bit in the center to be an advantage with the anchor winch.

Any builder who puts two in is inventing a make work project to suck more money out of the owner at his expense, putting his pocket book ahead of that of the owner. Weight in the ends makes a boat more prone to hobby horse going to windward in a big swell, making the boat's pitching rhythm more in sync with bigger, longer waves.

- For that reason it is a huge mistake to put a 600 lb fuel tank in the stern of a boat. One builder insists on doing that, and was even so dense as to combine 600 lbs of fuel tank under the cockpit with an 800 lb diesel under the front of the cockpit. The boat sat very low in the stern, so what did he do. Attempt to try it again on his next boat. Maybe he went to church and prayed that it wouldn't float the same way next time, so figured he was safe.
- Anytime you put a weld on the inside of the hull skin, it raises a slight ridge on the outside. All it takes is about 15 or 20 minutes of grinding to eliminate them

and make a huge improvement in the appearance of the boat when painted. They disappear when you sandblast, then stand out like a sore thumb when the hull is painted.

One builder who told the owner that it didn't matter, ended up with a hull that lets you clearly see all the stringer welds from across the harbor when the angle of the sun is right.

He said "It is a steel boat so it should look distorted."

I've never seen that builder look at the ass of a pretty girl and say. "She needs a bit of cellulite."

- The big advantage of the single one piece hatch I've designed is that it lets you seal the boat completely something that is almost impossible with a two part hatch, yet one builder has been quick to abandon this advantage.
- I started out using a ½ inch by 4 inch flatbar to support the twin keels. I found it inadequate for stopping the keels from being driven up into the hull when you hit a rock at hull speed. I went to angle webs tied into a heavy angle floor between them. I have also been building a water tank between the keels, which makes them extremely strong. I have passed this info on to other builders who have ignored it, as they put their convenience ahead of the interests of the owner. One boat, whose owner I had advised on this and was ignored, hit a rock and the end of the keel was driven into the hull knocking him unconscious, and filling the boat with several feet of water, before he woke up.
- Builders who leave the central main water tank out, wasting an extremely useful space for tankage, leaving the tankage to be put elsewhere, higher up in the boat, taking away valuable storage space which is always at a premium on a boat. It also eliminates the huge structural advantage it gives to the support of the keels.
- Recessed portlights, while pretty, are another "make work at the owners expense" scheme by the builder.
- I always leave a gap in the lifelines between the front end of the wheelhouse and the shrouds, as it makes launching and retrieving a dingy far easier and quicker than lifting it over the lifelines, yet some builders seem to make a point of putting a stanchion and a cleat in this place to make sliding a dinghy thru it impossible.
- Another case of inexperience screwing things up out of sheer ignorance. Some people build the forehatch with a curve in it, meaning the hatch has to

be fully welded on one side instead of simply bent up. The difference in aesthetics isn't noticeable.

- One builder, who has built dozens of my boats, built a 26 with the twin keels pushed out to a foot wide, effectively making a couple of drogues out of them, because that made it more convenient for him to work on them. While the owner was disappointed with the performance the builder couldn't care less. Tough shit, he had his money. Be careful who you hire.
- When I did a bit of work on Gary Prebbles boat, I wanted to put the one inch stainless pipe nipple in the transom to enable him to use trim tab steering. Unfortunately I didn't have the threaded nipple, so I suggested he make sure it got done before painting.

Unfortunately Evan didn't believe in trim tab steering so he didn't want to give him the option. Having absolutely no experience with trim tab steering, he felt making it an option was good idea, preferring to push very primitive cable steering.

I wish I had simply welded in a straight piece of stainless one inch pipe at the right angle. Welding a threaded nipple on a piece of pipe already there would have been far easier, after painting and foaming, than what Gary ended up having to do.

- Going undersize on the center of the winch drum is another screw-up I've seen lately. 2 inch sch 40 is a minimum. A heavy load on a fouled anchor in a swell, could pull the end of the rode, bending the center of the drum. Another example of no experience.
- Given the tendency for the trailing edges of the twin keels to be driven up into the boat when they collide with a rock, and the fact that they are far enough back to be under the pilothouse floor in the 36, putting a 3/16th plate web across them would reinforce them without being in the way of anything. The top of this web could be T'd with a piece of ½ inch by 4 inch flatbar, making it extremely strong.

If they are not far enough back, then expanding the size of the gussets off the trailing edges of the twin keels may take the load far enough back.

I have tried to pass some of these points on to a guy who has built dozens of my boats, who has absolutely no offshore cruising experience, and been totally ignored, until I posted them here, informing his clients.

- Always check any of changes to the design with the designer, or the consequences are of your own making. Don't blame me for someone else's screw-ups.

- Another common screw-up is putting a longitudinal stringer along the outside of the centerline, but so close that it makes it impossible to put a big water tank top in without either having to remove the stringer where it would end up inside the tank, or having it inside the tank and impossible to get behind to paint.
- You could run the sides of the tank down vertically, but this makes a water trap that won't drain into the bilge sump.
- If you give yourself 6'-3" headroom in the trunk cabin then a flat floor would mean you would have to stand on a stool to see out of the wheelhouse. Not having a wheelhouse would mean freezing in the rain and snow or cooking in the sun when underway. That would be foolish. It would also drastically reduce storage space and floor space aft.

6'-3" headroom is no problem, as people who are 6'-6" have had no problem getting headroom without having to change the design in any way, except lowering the floor.

- Another common screw-up is using pipe for the leading edges of the twin keels or schedule 40 for the leading edge of the single keel. Anything under sch 80 for the leading edges of the single keel will dent deeply if you hit a rock at hull speed, even with molten lead poured in behind it. Half inch wall thickness on the leading edge pipe won't dent, no matter how hard you hit a rock.

With twin keels, Evan Shaler insisted on using pipe, long after I told him it was grossly inadequate, because it made the keels lighter and easier for him to work with. He couldn't give a rat's ass if they crumpled the first time you hit a rock. He'd have your money by then. Tough shit!

- If the trailing edges of your keels end up ahead of the wheelhouse, you could take the load further aft by putting a half inch plate gusset where the keels protrude 3 inches into the hull to a web across the hull further aft. This, with another gusset on the outside, would add a lot of strength. One could increase the strength of the attachment of this gusset to the trailing edge of the keels inside by lapping a couple of plates from the gusset onto the keels with an airtight weld all around, of course.

This shouldn't be needed with a 36 footer, as the aft end of the keels are far enough back to end up in the wheelhouse. It could be necessary on the 31.

- Another common screw-up is leaving out any means of getting back on board if you fall overboard, or if you have a twin keeler dried out at low tide. About 6

people a year in BC die when they fall off their boat and are unable to get back aboard.

For this reason the government has made a "Re-boarding device" mandatory on all boats in Canadian waters. I have always welded stainless rod rungs on the transom of any boats I have detailed, and a lower able boarding ladder on the transom, especially for twin keelers, as described in my book.

I have yet to see Evan put any means whatever to get back aboard any of the boats I've seen him build. I have encouraged him to do so, but he stubbornly refuses. I have watched his clients struggle with everything from tires to shipping pallets to get aboard while living in drying anchorages. The only twin keeler he ever owned spent it's entire life tied to a dock, except for a few day sails. Another example of hiring a total cruising amateur to make your decisions for you, (sometimes life and death decisions).

- One mistake I have often seen over the years is the use of Lexan for pilothouse windows, often by those who have seen it fog up on other boats. After about three years it begins to fog up, eventually making it impossible to see out of that beautiful seat with a view in the wheelhouse.

As I mentioned elsewhere, I just pounded a 6 inch round of plexiglass with a sledgehammer without breaking it. It took many hits with the hammer. I don't think the strength of plexiglass is an issue unless you go for huge picture windows. A friend in the plastics business told me that plexiglass has 25 times the impact resistance of standard glass.

Side windows are far more prone to breaking than front windows at sea. Tempered glass is a different story, and allows the use of a wiper, a huge advantage in rainy BC. I used 1/2" tempered glass for the front of my wheelhouse for this reason. I love the hand operated wiper. The only time it steams up is when I'm cooking, and it dries off quickly after.

I don't see any advantage in double paned glass. An extra 1/4" of foam in the hull will retain more heat. 3/8" glass has the same weight as the 11 gauge steel plate that you remove for windows. Anything thicker than that adds weight. I still prefer 1/2" tempered glass.

- My neighbor in one of my 36 footers has a two piece hatch, with a lift top. I have rarely seen him lift the top during the many years he has been living aboard. With the canopy above the hatch, the most he can lift it is the same height as the cupola on the hatch, the way I originally designed it. A one piece hatch can be easily made as watertight as the lid on a presser cooker. With a two piece hatch this is extremely difficult to impossible. It does make for extra wages for the builder though.

- When we first began building steel masts for 36 footers, we used 5½" OD tubing with a 11 gauge wall thickness. This worked well over thousands of miles of ocean cruising, and never threatened to be any problem. However it did become impossible to find, so we went for 6" OD (150mm) tubing. When I told people to go for 6" OD, some people bought well casing which is 6 5/8th OD with 10 gauge wall, which is much heavier. This is the stuff with grooves in the ends for connectors. As it was what they had, we built masts out of it. It worked out OK, a bit heavy for a 36, but most owners were happy. Several changed later to aluminum. When I asked one what the difference was, he said, "If it had been 6" OD it wouldn't have been worth changing, as the difference was minimal. With 6 5/8th it was marginally worth the effort and expense of changing. Another advantage is that 6" comes in 24 foot lengths, eliminating one scarf.
- Some builders have skipped using proper thru the mast sheaves in the mastheads, as I have designed, out of sheer laziness. This eliminates the option of using wire halyards, as the sheaves on blocks are too small to prevent metal fatigue. On my first boat I started out with rope halyards, and had a lot of problems with chafe, and stretch. In New Zealand I switched to wire and never looked back. I have got ten years and a trip to Tonga and back on a single galvanized wire halyard.
- On my first two boats. I made access to the bins under the bunks and the floor in the form of lift hatches. This is far more work than is necessary and makes it hard to find stuff hiding around corners, or to gain full access for maintenance. On my current boat I made the entire bunk top lift able, hinged on the outside, providing easy access to the entire area under the bunk. Unfortunately, I used small access hatches for the floor. I recently threw out the old floor, and made the entire floor lift able, eliminating the goofy little access hatches. This made insulating the underside of the floor much easier. With a water tank down there, you simply put a piece of Styrofoam down and close the lid on it. When it gets ratty, you lift the floor, take the old one out, put a new one down and close the lid.
- The front engine web and the angles supporting the engine should be sealed to the hull to keep any oil drippings in place, and not free to run the full length of the bilge. Sure, you expect your new engine to have no oil leaks, but one only has to look under relatively new, expensive cars to see how unrealistic this dream is. They all leak eventually.

When the boat heels in a knockdown, any oil can run around the ends of the engine web, which is why the angles supporting the engine have to be continued down to the hull with plate and fully welded, oil tight. One owner had vibration from his VW cause the paint to fail at the ends of the engine web, about three feet out from the engine, so had to continue the webs further

out, almost to the chine. This addition doesn't have to be more than a couple of inches deep.

- Anchor rollers six inches wide won't hold two big anchors side by side. I replaced my six inch wide one with an 8 inch wide one, a quick and simple job, once the roller was built. Now I can leave two 55 lb deltas there.
- Some people have been omitting proper mooring bits and chocks in the stern. I have seen one inch nylon spring lines break in a swell in Rarotonga. We should never be so naive as to assume we will find the totally sheltered harbors we enjoy at home, in the third world. "Yachtie" trendy, dainty little cleats have no place on an offshore cruising boat. Without adequate chocks, lines find the first thing available to cut themselves on, or trash a lot of other gear in the search. All lines and chocks need to be stronger than the thickest lines that will ever use them. If a tug has to pull you off a reef, and you don't have proper mooring bits, that is a problem. He isn't going to hand you a piece of half inch nylon braid as a tow rope. A 2 inch hawser is more likely. Not having bits to take it will be a serious problem.

[**Note:** Evan Shaler insists on forcing you to do things his way. In fact Evan has long insisted on doing almost all of the screw-ups I've listed here. It seems extremely difficult or impossible to convince him to do things properly. He often insists on redesigning the boat, based on his almost zero cruising experience. When someone stubbornly insists on redesigning a well proven boat, (the product of dozens of boats making many offshore cruises), and adding their input to the design it's a good idea to treat him as a last resort when looking for someone to help you build your boat - not a first choice.

The materials list I give is all you need to build a boat. Evan prefers to add a lot of extra materials to the list, as he finds it easier and more convenient to simply grab an extra sheet at the owner's expense and not have to plan material usage. More expense for the owner? Tough shit. His convenience is his first priority. I have seen an owner with a full sheet left over, which Evan could buy for a cut price for his own use.]

For a good steel boat builder talk to John Dearborn in Gibson's BC. He has a beautiful boat in the finishing stages in his shop right now. Totally fair, no filler needed. - **Brent**