

Boat Tools: What to Put On Your Boat, From Day Sailing to Live Aboard

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In the fall of 2003 my wife and I headed south with our Cal 39, “Judith Arlene”. We went down the east coast, through the Bahamas and Turk and Caicos to the Dominican Republic, on to Puerto Rico and followed the chain of islands down to Grenada. We took another season to come back up the Eastern Caribbean and home to New Jersey. Before we left on the trip we spent a lot of time thinking about what to bring, and what to leave behind. I came out of it with some opinions about what tools and parts to carry on a boat.

I have three lists here, “The Basics”, “Short Cruise or Vacation”, and “Extended Cruise or Live Aboard”. They are only suggestions. You have to decide how much you want on your boat. Adding unnecessary weight to your boat will only slow it down and make it less fun to sail. There is a list of items and some thoughts on them. I’m not a tool snob. There’s a place for cheap tools. I’ll recommend when it’s worth spending a little more. Hopefully you’ll find something useful.

On a day sail, you’ll want some basic safety items. On a vacation or summer cruise you might want a little more. If you’re heading off to the Bahamas, Caribbean or beyond, you really need to be self sufficient.

There is an old joke “The definition of cruising is fixing your boat in exotic places”. It’s an extremely true statement. An added feature of those exotic places is that they lack skilled technicians, facilities, and replacement parts. If you are in the Exumas and your regulator fails, the closest replacement may be back in Florida. A friend had their regulator fail in the Dominican Republic. We rented a car, drove to a major city and spent the whole day chasing from one lead to the next and never came up with a new regulator.

Talk to people who have the same boat or same engine you do. You can learn something from everybody. You may gain some valuable insight into some idiosyncrasies, problems to watch for, tricks to make maintenance chores easier, specialized tools, or spare parts to keep at hand. A friend had the same engine in his boat as I did in mine. He mentioned the “Perkins Take to Sea Kit”. It contains just enough of the basic parts that you might need to keep your engine going should something fail. It turns out that it’s no longer available, but if you have the list, any good parts dealer can assemble the kit for you. Later, I was talking to another friend, whose boat also had the same engine. He had spent a couple of years living on his boat, and he had spent a lot of time on the ICW. He said “You know the ICW can be hard on a boat. You spend a lot of time running at high RPMs and the vibration can fatigue some things. For example, you will probably have an injector line crack. It will probably be this one right here. “. Sure enough, one day the engine started running funny. It was the exact line he pointed to. I had the spare, and shortly we were back on our way.

One day my friend was telling me how he dropped some critical part over the engine and it naturally fell down into a difficult spot. He tried and tried to get it, but it seemed the only way was to remove some engine components that he didn't feel comfortable tackling himself. Finally he reluctantly called the diesel mechanic. The mechanic drove out to the boat, took one look, pulled out a very long pair of needle-nose pliers, plucked out the piece and handed it to him, along with a bill for his minimum charge. I went out and bought some very long-needle nose pliers.

Spare Parts

What good is having the right tool without the right part? Carry spare parts. If you don't know what to do with the part, chances are there is somebody nearby who does.

I'm most comfortable carrying a lot of hardware and spare parts. This is a partial list of spare parts I carried as a live-aboard: One alternator, one alternator rebuild kit, two regulators, four engine belts (my engine uses one), a dozen each of fuel and oil filters, one fuel lift pump, two injectors, one set of fuel injector lines, three impellers, one thermostat and gasket, one water pump, all the gaskets, o-rings, seals needed for those parts, one head rebuild kit, one fresh water pump, one control box for the electric windlass, pieces of hose for the sinks and head and connectors, pieces of heater hose for the engine, small odd blocks of wood, refrigerant and gizmos to maintain the refrigerator, two momentary switches, two toggle switches, boxes of spare bulbs and fuses, one spare breaker, jar of hose clamps, sandpaper, epoxy, a hardware store of stainless screws, electrical bits, clevis pins, cotter pins, shackles, chain shackles for the anchor, bolts to re-bed a stanchion...

Spare Engine Parts

The "Take to Sea" kit for my engine includes:

- Fuel Lift Pump
- One Injector
- One long Injector Fuel Line (It could replace any one of the 4 if needed)
- Impellor
- Thermostat and Gasket
- Water Pump
- All the necessary gaskets, O-ring, washers, seals, etc.

It's not too bulky, but it should be enough to get you in should something fail.

The Perkins "Take To Sea Kit" for my engine includes a spare water pump. What it doesn't tell you is that you need a machine shop to press the pulley off the old pump and onto the new pump. If you are going to carry that pump you need to also get a spare pulley and have it pressed onto your spare pump. When your pump dies and you change it, you can take your next opportunity at a machine shop to remove your old pulley and press it onto your next spare pump.

I'm not an ace mechanic or an electrical engineer. Sometimes I found it useful to swap a suspicious part with one that I knew worked. A regulator is small and light. It is easy to carry a couple of spare regulators. I also carry a spare alternator and one rebuild kit. I try to carry a good spare that I've actually used. That way, when I'm looking for the source of a problem, I can replace the regulator or alternator with the knowledge that I'm replacing them with a fully functional part.

Make sure that things like spare filters and belts are the **correct** ones before you need them. Yeah, I've done that one too.

Spare Cable and Cable Clamps and Rigging Bits - Keep a few of the U-shaped cable clamps in different sizes. A piece of your old lifeline could be used with the clamps to temporarily repair a broken lifeline. Your backstay is your longest piece of standing rigging. If you carry a spare you'll have it if you need it, or with the cable clamps you could jury rig any of the others.

Spare Electrical Parts –

The rubber weather seals on buttons dry out, crack and let water in. Then they die. What would you do if your starter or kill button quit? What if your main battery switch quit?

Give some thought to what the "Show Stoppers" on your boat might be. In the Caribbean you could sit someplace for a month and a half waiting for some part to arrive.

At the least put together a small electrical kit with cutters, crimpers, multi-meter, fuses, bulbs, crimp-on connectors and terminals, electrical tape and wire ties.

Tool Storage

Tool bags seem like the perfect thing for a boat. They just don't seem to work in practice. They are always dark inside. Things settle to bottom. It gets to be very hard to find what you're looking for. Better to use a couple of small plastic tool boxes. It's easier to see and organize. I do use a big tool bag for some of my heavy bulky things. Tool rolls are real nice on a boat. You might find them cheaper, but you could go to Amazon and type in "Tool Roll" to see what's out there. "Bucket Boss" and "Duluth Trading Co." have nice ones. You could set one up with the tools you reach for the most or one for wrenches or screw drivers. When you open them up, everything is in plain sight and it doesn't roll around.

Lists of Tools and Parts to Keep on Your Boat

The Basics

- ___ 1) Rigging Knives & Sharpener
- ___ 2) Adjustable/Crescent Wrench
- ___ 3) Vise Grips
- ___ 4) Screw Drivers
- ___ 5) Fuel/Oil filters and the tools to change them
- ___ 6) Spare Belts and the tools to change them
- ___ 7) Spare impeller and the tools to change it
- ___ 8) Spare oil and coolant
- ___ 9) Electrical Kit – with spare bulbs, fuses, connectors and electrical tape
- ___ 10) Allen Wrenches – Metric and SAE

Short Cruise or Vacation

The above plus:

- ___ 11) Hack Saw and spare blades
- ___ 12) Bolt/Cable Cutters
- ___ 13) Hammers - Ball-Peen & Small Sledge
- ___ 14) Sail Repair Tape
- ___ 15) Drift Pin - or something to knock out clevis pins under load (to free rigging)
- ___ 16) Spare bulbs, fuses, crimp-on terminals and connectors
- ___ 17) Multi Meter and some electrical tools
- ___ 18) Sewing Supplies
- ___ 19) Spare hose clamps- in a variety of sizes

Extended Cruising or Live-Aboard

The above plus:

- ___ 17) Spare engine parts
- ___ 18) Spare rigging
- ___ 19) More tools, to your taste
- ___ 20) Repair supplies: Caulks, Adhesives, Epoxy, Sandpaper
- ___ 21) Inverter
- ___ 22) As much hardware and spare parts as you are comfortable carrying

Tools

Awl – Buy a rugged awl. It can be used for starting holes or lining up holes when assembling something. If you have a grinder, grind the tip to four flat surfaces coming to a point. Cool the tip in water as you go so that you don't take the temper out of it. Now it's great for starting holes in wood, just push and twist. You don't have to beat it with a hammer, and it's cutting a hole, not just splitting the grain. It will also ream out small holes, even in soft metals.

Tip: When you open a can of paint or varnish, use your awl to poke holes in the bottom of the groove that the lid sits in. The paint or varnish will drip back into the can rather than clogging up the groove, and the can will reseal better.

Battery Pack, Jumper – In case you or someone else ends up with dead batteries and can't start the engine. If you carry one, keep it someplace safe and don't forget to check it/charge it occasionally.

Belt Tension Gauge – This takes the guesswork out of tensioning the belt on your engine. It's particularly important for those of us that have put a high capacity alternator on our boats. Belt Tension Gauge, NAPA Part Number: NBH KR1 Price: \$13.99. This is a very simple, easy to use tool. If your belt is too loose, it slips, gets hot and wears out faster. If it's too tight, it puts added load on your bearings, gets hot and wears out faster.

Block Plane - If you do much woodworking, a good block plane is very versatile and doesn't take up much space.

Bolt/Cable Cutters- If you're going to carry one for emergencies, make sure it's a good one. I carried a pair of bolt cutters on my last boat for years. One day I tried to actually cut a heavy piece of stainless rigging with it and the jaw shattered. Big cable cutters are expensive, but they work. Know what you need to cut your rigging, cable or rod, quickly in an emergency. Remember that if the mast comes down in bad conditions, it could quickly hole your boat. There are hydraulic cutters and cutters that take a gun powder charge available. You might consider a small set of cable cutters for making things like wire halyards or lifelines. In an emergency, if the bolt/cable cutters fail you, the hacksaw with all those spare blades you're carrying might get you through.

Calipers - The plastic ones don't rust. General makes a nice one. General No.7210.

Chisel, Floor and/or Electrician's Chisel - This is a stout, blunt, steel chisel, about 2 ½" wide and 10" long. It's sometimes useful for prying, or as a lever to move something heavy. Use this with your 4# sledge and you can separate or lift just about anything.

Chisels, Wood - If you don't want to carry a set, you might carry a couple. Maybe something like a 3/8", and 1"

Clamps - Many people like to carry a heavy C-clamp. Among other things, it can be used to help set a zinc on the shaft when you have to change it underwater. I have a couple of Jorgensen 3700 bar clamps. They have a 2 ½" throat. One end slides and locks on the bar. They come 6" to 36". I carry 2 of the 6 inchers.

Cotter Pin Puller - This looks like stout, badly bent awl. I've found it handy for aligning things during assembly, prying pulling and twisting. It's even good for pulling cotter pins.

Crimper for Heavy Electrical Cable - There is a kind that you whack with a hammer. It's relatively cheap, light, small, and does the job. I've seen the lugs fail on cables that looked great. It's good to be able to make or repair your own cables.

Dental Tools - A couple of these can be very handy. Be careful, they are very hard and very

sharp. Sometimes useful for getting out O-rings in awkward positions, but that hard steel can easily scratch softer metals.

Dremel - I have a couple of Dremels. They are great sometimes, but I didn't carry one on the boat. The only problem with Dremels is that people often ask more of them than they were designed for. There is a nylon coupling between the motor and the arbor. Ask too much of it and the coupling breaks.

Drill, Angle Attachment for - Cheap(\$10-\$15) from a discount tool place. Doesn't take up much space, and sometimes handy. Angle drills can be handy, but good ones are expensive. For general use, they can be more awkward to hold and it's harder to sight and hold a straight hole.

Drill, Hand Drill (Manual) - The little plastic ones from Fiskars are nice to have on the boat. They are small, light and they really work. Even if you are using a power drill for example, you might find it handy to have a countersink in the manual drill and not be changing bits constantly.

Drill, Cordless - Very convenient, and nice to have, but if you get into something serious, you'll still wish you had a plug in drill.

Drill, Electric - Less convenient, but if you have an inverter, a gutsy little 3/8 drill doesn't take much space.

Tip: You'll notice the Jacobs drill chuck has three key holes in it. If you are doing something serious, use all three holes. Tighten the 1st, then the 2nd, then the 3rd. You'll notice the chuck gets a little tighter with each one. You're less likely to have the drill spin in the chuck and end up with a burr on the bit.

Tip: Normally in drilling metal you want to use some kind of oil. It acts as a lubricant and it keeps the drill bit cool. Tool steel is tempered to make it hard, allow it to get too hot and "burn", the bit loses its temper becomes softer. You have a compound problem with stainless. When stainless is allowed to get hot, it "case hardens". The surface of the stainless steel becomes very hard. So what happens is the drill bit gets soft and the stainless steel gets hard. When the driller becomes harder than the driller you have a problem, but then you know this if you've ever spent 14 hours trying to make a little hole in a piece of stainless steel. In stainless keeping the work cool is more important than keeping it lubricated. I once got in a discussion with a fellow who work in a stainless fabricating shop. He said they used a lot of denatured alcohol (what you use in an alcohol stove, please be careful!). I've tried it. It seems to work well.

Drill, Step Bits - These are the cone shaped bits that step up from one size to the next. They can be expensive, but there are inexpensive versions available from the discounters. I've got some of both, but the cheap ones have been fine. Each bit will cover several sizes. If you are trying to enlarge a hole, normal bits will grab and tear. These will center in the hole and enlarge it smoothly. There is a little bevel between the steps, so it doesn't leave sharp edges. They don't work well with a manual drill. They need the speed of a cordless or electric drill.

Feeler Gauges - The little disk type is great for the spark plugs in your dinghy. You may want to carry a set of the blade type for rocker arms etc. A good steel set dies pretty quickly in a boat. You can get them in brass and they will last longer.

Files - A couple of files are a good idea, 6" or 8", a fine flat and a coarse 1/2 round.

Grease Gun - Lubromatic, Jiffy Luber LUB 30195 about \$16.00. This is no bigger than a screw driver and screws onto the end of a tube of grease. Use Lubriplate No. 130-AA in the 10 oz. tube. If you have a feathering or folding prop, you need to grease it. Many boats have zerk fittings for the rudder. The outboard for your dinghy probably has zerk fittings for the steering.

Grease - Many types of grease don't do well in salt water. "Lubriplate No. 130-AA": is good

for feathering/folding props and most other things that would have a zerk fitting.

“Lanocoat” : is great at resisting salt water and preventing corrosion. It’s a pretty good barrier between dissimilar metals. Use it on things like chain shackles or electrical connections. Rub it into things like adjustable wrenches and vice-grips to keep them working nicely.

“Super Lube” - This synthetic grease stays clean and isn’t affected by salt water. It says on the tube, “Highly lubricious, clear and non-toxic, excellent dielectric, impervious to salt water, temperature range -45 F to +450 F”. I have found it great to keep zippers working, and the hinges on the spare glasses that get stashed away, and the snap on the dog’s leash. It’s great on sheaves and hatch dogs, anything you’d like to moving and clean. It’s also a great winch grease, eliminating the need to carry one more single purpose item.

Grinder, Angle Grinder - I didn’t carry one even when I was cruising, but I thought I’d make a couple of comments about them. When I was cruising, I carried a strong 3/8 drill that I could power with the inverter. I figure that with that and the right angle adapter I could do some cutting with it if I needed to. An angle grinder is a great boat tool though. If you’ve never used one be very careful. It can do a lot of damage very quickly! Ever try to remove a thru-hull that’s been bedded with 5200? With a cutting wheel on the angle grinder you can cut it off flush with the inside of the boat. Hit it, and it will fall out. Ever try to use a hacksaw over your head to cut off protruding bolts? The angle grinder will just zip them off. Just be very careful and use your safety glasses. The kind with the paddle switch can be nice sometimes, but if you’ve never used one be very careful. When working in close quarters, it’s too easy to bump that switch and have the thing take off o you.

Grinder, Electric Die Grinder, or Roto Zip - This looks like a big Dremel. I have a cheap electric die grinder that I bought from a discount tool company. It takes a 1/8” or 1/4” collet. It has a cheap little clear plastic base so that you can use it like a roto-zip. I guess you could even put a router bit in it to use as a small router or laminate trimmer, but I mostly use it as a grinder.

Caution: These things can spin at 30,000 rpm. The 1/4” collet can take a grinding point like you might use in a drill. If you take something designed to spin at 700rpm and spin it at 30,000, it will explode! Wear your safety glasses!

Hack Saw - Get one that has captive parts. You don’t want a critical part to fall in the bilge while you’re changing the blade. It’s easy to carry a lot of spare blades. Aside from the hacksaw’s other uses, it’s an essential piece of safety equipment. It can cut through rigging when other things fail.

Hammers - Leave the claw hammer at home. A ball-peen hammer is a useful thing to have on the boat. It’s a good general purpose hammer. A nail/claw hammer has a hardened face on it. It’s meant for driving nails and is not intended for striking hard metal. I also like to carry a 3 to 4 lb. sledge hammer. This may sound funny, but you can spend a lot of time banging things up with a small hammer when a simple “tap-tap” with the big guy will do the job without leaving any marks. It also requires less swinging room to be effective, and it’s more effective if you need to swing a hammer under water. Need to change a zinc in the water? You can set the two halves up tight by backing up the zinc with one hammer, tapping with the other, then tighten the screws. The big hammer is useful for backing up things you need to pound on. It can also use it as an anvil.

Tip - If you need a gasket that you don’t have, here’s an old mechanic’s trick. Lay some gasket material over the surface that needs the gasket. With the ball end of a ball-peen hammer tap the gasket material along the edges of the object. It will cut you a perfect gasket.

Ice Pick - Handy like the awl, but thinner. Boat builders and such use to keep a lot of ice picks around. Need to draw a long fair curve on a piece of wood? Take a long batten or flexible strip of wood, stick an ice pick in the wood at either end of the batten. Put the batten up against the ice picks. Push in the middle until the batten takes the curve you want. Stick an ice pick in the place you were pushing. Now trace your line along the batten. If you have a pattern on a piece of paper and want to transfer it to a piece wood, lay the pattern on the wood, poke through the pattern in as many places as you need to, remove the paper and connect the dots. Like the awl it's great for lining up holes during assembly. A sharp ice pick is also a great thing for cleaning out clogged files.

Inspection Mirror - A swivel mirror on an extension handle. I like to carry a little round one and one of the larger ones. The larger ones are nice, but the mirror always seems to get broken in a boat tool box. The little round one is sometimes useful, and seldom breaks.

Inverters- You can get something like an "800 watt, 1600 peak" inverter cheap from the tool discounters. That's big enough to operate most power tools you're likely to use. You'll need to use heavy cables, and mount it someplace where it can get air to cool it. Some folks will tell you to spend a fortune on a fancy inverter so that it won't harm your computer. The salt air and water are going to kill your computer long before the inverter does. You can get inexpensive little inverters that will just plug into a cigarette lighter, and would be enough to run a laptop, or charge batteries for cordless tools.

Knives, Rigging - An essential piece of safety gear! There are a lot of very nice expensive ones out there. Davis makes good inexpensive ones. Serrated blades will stay sharp longer in tough synthetics. Straight blades are easy to sharpen. An inexpensive knife sharpener will keep them serviceable. Put a lanyard on them. Shackle keys and marline spikes are nice. If you have marline spike, it should lock in position. Stray sheets and dock lines get wrapped around props and need to be cut. You can get an override on a winch that can't be undone under strain. I once had to cut my anchor rode. It was a new anchor, 40' of new chain and a new rode, but I had no choice. Have a few, have them sharp, and know where they are.

Multi-Meter - Good for checking voltage. An audible continuity tester is useful. An extra length of wire and alligator clips can be useful. Radio Shack sells a small one that closes up in its own case about the size of a cell phone. More sophisticated ones also contain a temperature sensor.

Palm & Needles and/or Speedy Stitcher & waxed twine - If I were going to carry just one, I carry the needle and palm, but the "Speedy Stitcher" is very cool. Don't bother with the knock-offs. The ones I've seen don't compare. I never thought much of these until I watched a friend using one several years ago. It's easy to use and does a lock-stitch, like a sewing machine. It's great for repairs.

Patternmakers Rasp - Don't turn up your nose because of the word "rasp". This is a very serious tool, unlike any rasp you've used. It is made by Nicholson and costs about \$30 to \$50 without a handle. It's great woodworking tool! It cuts fast and smooth. The #49 is a little courser and the #50 is a little finer. I prefer the #49 for most things.

Tip: As with other files you use for woodworking, wrap some tape around the tip. It gives you a little something extra to hold onto, and keep you from inadvertently marring anything.

Pipe Wrench, Big - It won't be used often, but it's nice to have when you need it.

Plastic Milk Jug - Cut up a plastic gallon milk jug and stash some pieces away. That plastic is dense, hard, abrasion resistant and easy to cut. Mounting a piece of stainless hardware on aluminum? Cut a piece of this to go between the aluminum and the stainless. You'll get less

electrolysis. Need to have a line pass over the corner of your cabin top and its causing abrasion? Cut a piece of this and put it in the spot with blue tape. Need to have a port removed for a while? Tape a piece of this over the hole. It will keep your boat dry during the project.

Pliers & Cutters - I don't find regular pliers or electricians pliers very useful on a boat. I'd rather have a couple of sizes of "Channel Locks", needle-nose and Vice-Grips . Diagonal cutters are nice to have.

Polarity Tester - The little guy with three prongs and three lights. They cost about \$10.00. You plug it into a receptacle and the lights tell you if there is power and if the polarity is correct. The polarity is a safety issue, but it's also easy to carry around looking for receptacles that actually work before you bother dragging around extension or shore-power cords.

Pop-Rivet Gun – A Pop-Rivet gun and some stainless rivets can be useful for bimini, dodger, and hardware repairs.

Punch, Automatic Center Punch - The kind you push in, it pops, and it make a little punch mark. You can start a drill in the hole without wandering or use it for layout (No one else will see the mark, but it won't wipe off.)

Putty Knife - Get one with a thin, flexible blade going through the handle, so that it will tolerate being tapped with a hammer. Use sandpaper, a grinder, or a concrete floor to remove the sharp corners, round them a little. Use sandpaper to sharpen and thin the end a little. The rounded corners do two things. It will keep you from accidentally gouging things when using it as a putty knife. It's also now a great tool for cutting through something like 5200. Cutting 5200 is kind of like cutting rubber, if you wet the blade with water it will slice through it easier. If you have a deck fitting that's on with 5200, use your putty knife with the sharpened blade and rounded corners to cut the bond between the deck and the fitting. Tap it with a hammer and wiggle it to drive it through. Don't forget that if you get nicks in the blade it will leave marks on your work. Set it on a little block of wood and use some sandpaper to make it smooth again.

Sail Repair Tape - Great stuff for emergency sail repairs, and it works.

Saw, Japanese Style Pull-Saw - I really like the Shark Saws. The Trim/Detail saw (10-2205) is about 14 ½" long. It's compact and versatile, double sided, fine and finer. The 10-2440 is longer, 22" long, one side cross cut and one side for ripping.

Saw, Saber Saw - In addition to wood and metal blades, add some diamond blades for fiberglass. They will make a fine cut, and fiberglass kills all the other blades.

Screw Drivers - Have good, but not heirloom quality screwdrivers. They will take a beating. You want to be able to beat on them now and then and feel ok about it. When a screw is frozen or the head is bugged, a good pounding can set the head into the screw and crack the screw loose. Learn to synchronize your twist with the beat.

Screw Driver, Big - A big (16" or so) screw driver can be handy. It can be used as a big screw driver or a lever/pry-bar. Old-time mechanics use to use a big screw driver as a stethoscope. When looking for a noise, hold the handle to your ear and probe with the tip.

Screw Drivers, Precision Set - A set of small screw drivers is handy for electronics, or repairing your glasses, or other little surprises.

Sockets - For going offshore, long term cruising or live aboard, take a 3/8" set. For a short cruise or vacation a ¼" set is usually all you need. You won't need ½" sockets unless it's for something specific. Get some "wobble extensions". Universals just fall limp and make it very hard to get the socket into that inaccessible spot you're trying to reach. "Wobble extensions" give enough support to get where you're going, but still give you the flexibility you need. If you're going to

carry a 3/8 set, you might want a stubby ratchet. A piece of steel electrical conduit about 16" or so would be light and easy to carry. It could slip over your ratchet handle, and might be that little bit of extra leverage you need. Consider some deep sockets. Personally, on the boat, I usually prefer the ratchets that have the little lever to change directions. If your hand is in an awkward spot, it makes it easier to change direction, or tell which position it's in. Having the button to release the socket is also a nice feature.

Swage Tool & Sleeves - The simple little kind that you work by tightening two bolts works great, is relatively cheap, and compact.

Taps & "Easy Outs" - Just a couple of sizes can be handy sometimes. For example you might have a bolt strip in mast or boom fitting. A 1/4" hole might be tapped out to take a 5/16" screw.

Thread Locker - Medium Strength #24240 BLUE. DO NOT USE the red "Permanent Strength" stuff. It seems like most of life's problems are caused by one of two things, either something was supposed to move and it didn't, or something wasn't supposed to move and it did.

Torque Wrench - This may be the only tool I carried and didn't use. However, you could very easily end up far from civilization needing to retorque or remove and replace your head. If you bring a torque wrench, take the old type, not the "clicker" type. You want the one with a pointer on the end of a long rod. The "clickers" are very sexy, and these days they can be had for cheap, but they can be frail, if they get dropped, or if something gets corroded, the tool could lie to you, and you wouldn't know if it's lying.

Vise - I was given a Zyliss-Vise as a gift. I didn't think I would find it especially useful, but it turned out to be a great thing to have on the boat. It's aluminum so I wouldn't beat on it, and I didn't use all the things it's suppose to be able to do, but just as a general purpose vise it was great. Many cruisers mount a metal vise on the inside of a locker. You'll need to find a spot that works on your boat.

Vise Grips - Everyone likes to joke about them, but they can be real life savers. Get good ones. The cheap knock offs really don't work the same. A small needle-nose is handy, as is small standard one, and of course a regular 7" to 10". When you're working on deck, your favorite one will find a way to unexpectedly spring loose and launch itself overboard. A 6' length of light line will come in handy. Tie one end to the vise-grip and one end to the boat. For example; you need to remove and rebed a lifeline stanchion without a second pair of hands. Clamp vise-grips on the nut inside the boat, then go up on deck and undo the bolt. If you have a pair for all four nuts inside the boat, you can go up on deck and loosen or tighten them all in one trip

Wire Cutter/Stripper/Crimper - A stout basic one works fine. The fancy ones work well too, your preference.

Wire Ties - Carry a variety of colors and sizes. Color coding is sometimes handy. They can be good for lots of things. For seizing shackles, they'll hold the pin securely, but you can cut them off quickly with a knife. I use them as markers on my chain anchor rode. They pass through the windlass. I do them in pairs; two for the first increment, four for the second increment, change colors and repeat. I keep the code on the inside of my anchor locker. If I ever see an odd number of ties, I know I lost one, and where it came from. Use a couple of them to seize an eye in shock cord.

Tip: When you use wire ties don't just nip the tail off. That little nub can be very sharp and give you a nasty cut. Either leave the tail long, or if you nip it off cut it flush with a knife.

Wrenches - Think about what you want to carry on your boat. Aside from the normal wrenches, I've found it nice to have a cheap set of stubby wrenches. Ratcheted wrenches are nice, but I

didn't feel like carrying another set of wrenches. I do carry one ratcheted wrench. It fits the bleeder screw that is a real knuckle-buster on my boat. You might want to carry a couple of flare-nut wrenches. When you're working on something like injectors and injector lines, you're less likely to bugger up nuts.

Wrenches, Adjustable/Crescent Wrench - This seems like a simple tool, but it pays to buy good ones. Cheap ones slip and don't hold their adjustment. A bit of grease in the adjusting screw will keep them working nicely. It's nice to have a few, at least a 10" and 6", a 12" can be nice to have sometimes. I like to keep a short lanyard on them, so I can put them over my wrist. A large adjustable wrench is handy, but here's something to keep in mind. The big wrench is adjustable down to a small size. It allows you to put too much force on a small nut or bolt, so be careful. If you look at a set of wrenches the big ones are long and the small ones are short. They are sized so that a normal person doesn't apply too much force for the size of bolt. Keep it in mind when you use the big adjustable wrench.