

Spares and Repairs Underway

*If “it” quits working and you don’t have a spare or the **ability, materials and tools** to repair “it,” you need to be able to live without “it” for the balance of the voyage.*

Without question the best approach is to make absolutely certain that all systems are in excellent condition before you leave the dock. This discussion is about Plan B, how to cope when one of your systems fails to function.

What are the most critical systems on your boat?

- Those which would compromise the safety of the crew or vessel?
- Those which would materially affect your performance?
- Those which would make it uncomfortable?
- Those which would make the crew contemplate mutiny?

Some to think about:

- One of your crew members comes on deck and tells you the head pump doesn’t seem to be working. (almost every Pacific Cup)
- Your spinnaker pole just made a left turn at the forestay.
- The engine refuses to start (probably plugged fuel filters from the crap in the bottom of the tank); what are the consequences of not having electrical power? (Pacific Cup return)
- Your fresh water pump (manual or electric) has failed; how will you get water from your tanks?
- During a sail change the battery switch got bumped to “BOTH” and the watch forgot to charge last night; both batteries are dead and will not crank the engine. (Pacific Cup and Around Alone)
- The lower rudder bearing/packing has been leaking badly for several days requiring pumping with the manual bilge pump every 15 minutes; the pump diaphragm just split. (Pacific Cup)
- A crewmember washing dishes forgot to completely finish the job and all your spoons just went over the side with the dirty dishwater; you have no other utensils. (Volvo Ocean Race)
- What story will you share at the bar at Kaneohe Yacht Club?

Developing a strategy

If you take one spare of everything you will need a bigger boat.

The key is to:

- identify the most probable failures in each system crucial to a satisfactory completion of the voyage, and
- have the skill, tools and parts you need to repair them.

Systems: The bigger the boat, the more complex the systems, the higher the potential for failure. Bigger is better, but only if it works.

If you’ve attended the Offshore Academy sessions you should already have a good idea what you will want for the critical boat function items like hull, steering, rig and sails; consider these with extra care, a failure here is very serious. A broken steering cable, a failed gooseneck or a broken headstay will demand immediate attention, affect your performance in the race, and can threaten the safety of boat and crew.

Carefully consider your bilge pumps; your inspector will want to know that you have them, but won’t likely be there when you need to use them. During the first few days of the race you are likely to have more water on board than you’ve ever had before, and if you haven’t pulled up the floorboards and thoroughly cleaned the bilge the chances are that you will find the strainer or pump blocked with the remains of fleece that has accumulated there. Chances are that you rarely use those manual bilge pumps; if the diaphragm is more than a few years old, how long do

you think it will last when you really need it? Clean the bilge, rebuild the pumps, take along rebuild kits; boats have been known to have someone pumping for most of the voyage. The support systems like electrical, instrumentation, information, plumbing and refrigeration are less likely to threaten the safety of the boat and crew but will certainly reduce the fun and quality of life on board. If the engine won't run to recharge your batteries, what systems will you lose? Your propane stove probably won't function without power (unless you can bypass the solenoid), and freeze-dried food is said to not be very satisfying in cold water. Perhaps they will name this new diet after your boat.

Ask the professional. Whether it is your sail maker, diesel mechanic or boat yard, it is a good idea to get their opinion of what you are likely to need in the way of spares and tools.

Get your crew together and as a group discuss the following systems and identify the three most likely failures you could experience in each system. Once you have confirmed that the existing components you have identified are sound, insure that you have the skill, tools and material to deal with a failure.

- Hull
- Steering
- Rig
- Sails
- Navigation
- Instrumentation
- Electrical
- Communications
- Information
- Engine
- Plumbing
- Refrigeration

Unless your idea of fun is repairing essential boat components in the ocean, the strategy of taking along a repair kit for the head and not rebuilding it before you leave the dock, is not recommended. Rebuild it now; spares are not a substitute for sound systems.

Underway: *boats tell you when they are not happy.*

Trust me, most things make noise before they fail. Keep your ears open and when you hear a new or strange noise, check it out.

Take a walk around the deck and look at all of the connections and pieces at least twice a day. It is much better to catch something before it fails than to deal with it after it has.

If your boat has a wheel, someone needs to inspect the steering system and rudder bearings daily; put it on the daily checklist.

Redundancy: The ability of a system to keep functioning normally in the event of a component failure, by having backup components that perform duplicate functions.

Spare: kept in reserve especially for emergency use; "a reserve supply of food"; "a second spinnaker pole"; "spare parts."

Repair: restore by replacing a part or putting together what is torn or broken.

What you will need

This is a list from my boat Surprise, a Schumacher 46, and includes items we considered important for the Pacific Cup and for a two year cruise in the South Pacific. Smaller boats will have a much shorter list.

Tools:

- Rig severing tools
- Socket set
- Allen keys
- Wrenches: metric and SAE
- Screwdrivers: 4 Phillips, 4 flat
- Vice grips (3),
- Wire cutters
- Pliers: regular, channel, needle nose;
- Crescent wrenches (3)
- Hot knife
- Hammer
- Crimper/stripper
- Hacksaw and spare blades
- Multi-meter
- Jumper wires
- Soldering iron/torch/knife
- Drill and bits
- Banding tools and material
- Line splicing tools
- LED headlamp

Supplies:

- Batteries for whatever uses batteries
- Wire ties: small and large
- Engine oil.
- Shackles
- Cotter keys and rings
- Dielectric silicone
- Fuses
- Line: assorted sizes/lengths of Dynema core
- Chafe material for after guy and anchor rode
- Wire and connectors
- 3M 5200 Fast Cure
- Duct tape, Electrical tape, Blue tape, rigging tape
- Batten material
- Lubricants: Boshield, Tuff Gel, McLube
- Small can of acetone
- West epoxy kit
- Hose clamps; assorted sizes
- Spinnaker pole splint sections

(Make a list of what you bring and tape it to the top of the box; it will save a lot of time and frustration)

Spare Parts:

Pumps

- Parmax spares – water, bilge, shower, washdown,
 - 30617-1000 diaphragm kit
 - 30613-1001 valve kit
 - 37121-0010 Switch kit
- Edson – bilge pump Check valves & Diaphragm
- Henderson – head 2ea. Mk 5 Service kits
- Lavac – head Lid seals; Bowl gaskets

Belts

- PTO Belts #9290
- 9455 Engine
- refrigeration

Racor fuel:

large filters
small filters

Yanmar

Impeller
Seal for RWP
Fuel filter, Yanmar
Oil Filters
O-Rings for raw water pump
Dipstick O-ring

Sea Frost: Zincs (3)

Bulbs:

2ea 20W Halogen
2ea 5W Halogen – Reading lights
1ea 5 W Halogen 365510
2ea Aqua Signal 268359 – Masthead/navigation lights
2ea Aqua Signal 174466 – Mast/motoring light
1ea Aqua Signal 268383 – Foredeck light
1ea LED night light bulb.

Anchor shackle

B&G MHU cups and feather

Speedo kit

Autopilot rudder reference unit

Sail Repair

See Sally Honey's article at: www.pacificcup.org