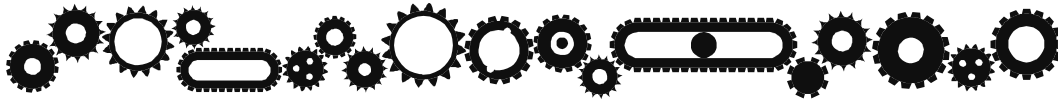


ENGINE SPARES LIST



- **Alternator:** Carry a spare alternator, carefully wrapped so moisture can't get to it. Balmar alternators have an optional offshore spare parts kit, an excellent investment. If at all possible, select an alternator that has an external voltage regulator, instead of one where the regulator is either built in or fastened on to the alternator which often results in premature failure because of the high operating temperature inside a sailboat engine room.
- **Belts - Alternator and Water Pump:** Replace before leaving; keep the old belts as spares; and buy another set if the old belts showed any signs of wear. Rubber belts have a limited shelf life.
- **Diesel Fuel Conditioner- Bactericide:** Carry at least six pint bottles per year. By adding this each time you fill your main tank or jerry jugs, you'll prevent an algae or bacterial gel from forming in your tanks and keep your injectors burning cleaner.
- **Fuel Filters – Engine:** Change as per engine instructions, or at least one replacement cartridge per 100 engine hours for every filter. There should be a minimum of two cartridge-type (Racor, Fram, Dahl, CAV type) filters before the injector pump. Every 5 hours visually check the glass sediment bowl for water or dirt.
- **Fuses:** Even if your house circuits have circuit breakers, your engine may have a replaceable fuse and holder mounted on or near the engine or near the wiring harness. Carry a spare.
- **Gasket Sets:** Include head gaskets, intake and exhaust manifold gaskets and water pump gaskets.
- **Injector Nozzles:** If your engine is over 10 years old, has over 1000 hours on it, smokes excessively or is hard to start, take the fuel injectors out and have them cleaned and tested. Consider carrying a set of spare injector nozzles.
- **Manuals - Engine, Transmission and Numbered Parts:** List: Don't plan on being able to find parts easily once you leave the U.S. Get to know the parts distributor/dealer for your engine before you leave; ask them for their advice of which spare parts you should take for extended cruising. Some manufacturers (Perkins) have separate parts lists for coastal and long-distance cruisers.
- **Oil:** Carry enough oil for at least five engine and transmission oil changes. If you ever have a problem and get salt water into the engine, you'll need to change the oil and filter at least three times, running the engine briefly in between changes to get the salt and moisture out. Don't carry oil in one-quart paperboard containers with the metal ends, as may chafe or rust through. At West Marine, COSTCO, auto parts stores and fuel distributors it is possible to buy engine oil in 1 or 5-gallon plastic jugs, an efficient way to carry and store oil. Before purchasing, check your engine and transmission manuals to determine the exact type of oil that is best for your engine. Don't plan on finding engine oil meeting marine diesel engine specs in every country. Use your old plastic oil containers to hold the oil until you get to a port where you can find a place that can recycle it. Don't pour it overboard or into the soil, where it will work it's way into the ground water or ocean.
- **Oil Filters:** Change as per engine manual or every 100 hours. Average engine use while cruising full time is 300 to 600 hours per year. So, for a two-year cruise take at least six filters. This is much easier and less expensive than trying to track down the filters in foreign ports.
- **Perkins 4-107, 4-108 Engines with Borg Warner Transmissions:** Replace the transmission oil cooler before departing and carry the old cooler as a spare. This unit rarely gives problems in temperate climates, but can corrode through in 1-2 years in tropical waters, allowing saltwater into the engine crankcase, resulting in expensive major repairs. It is very difficult to repair the oil

cooler, so the best remedy is to have a spare and change it the minute you see any signs of sea water in the engine oil (grey foamy muck in the breather cap or dipstick).

- **Starter Motor:** If your boat is over 8 years old or has over 1000 engine hours, take the starter off and have it checked. Have new brushes installed, keeping the old brushes for spares. Starters are good for many years of service, but can't stand salt water dripping on them; so make sure that your engine room is free of leaks and keep all terminals clean and coated with Lanocote or Vaseline.
- **Stuffing Box:** If you have a traditional-style packing gland, buy an extra coil of packing material of the right diameter. If your stuffing box uses neoprene seals, plan on replacing one set per year.
- **Stern Bearing:** When you haul your boat out before leaving, check the stern bearing for excessive play and replace if necessary. Carry a spare stern bearing. After relaunching, check for engine alignment.
- **Thermostats:** On some engines, you may find it necessary to replace thermostats yearly in tropical conditions, so carry one spare per each year you plan to cruise. To check that a thermostat is working, remove it from the engine, place it in a pan on the stove and heat until it opens. A candy thermometer can be used to check the opening temperature.
- **Voltage Regulator:** If you are fortunate enough to have an external regulator instead of one mounted in or on the alternator, carry a spare. Even better, replace it with an advanced regulator like Balmar's Max Charge or ARSIII so that you can manually adjust the rate of charging of your batteries, lessening engine time.
- **Water Pump Impellers:** Replace existing impellers yourself before you leave. When the impeller fails you'll inevitably be the furthest away from a mechanic. Carry two impellers per year and replace them yearly, even if they aren't worn out. When they are worn out the blades will fall off and may clog part of your cooling system. If you have the money and the storage space, consider buying a complete spare pump assembly.
- **Zincs:** Find out if your engine has sacrificial pencil zincs in the cooling system, and if it does, replace them if they are eroded and plan on one spare set per year. For both engine zincs and external hull and prop zincs, expect much faster disintegration in tropical waters. If you presently need to replace your zincs once a year in temperate waters, plan on twice a year in the tropics.

