

# Tools and spares you shouldn't be without

Plan your inventory to keep you cruising when the season starts. Rachael Sprot explains the tools and spares we really need on a boat

**H**ow many 13mm spanners does a girl need in her tool box? Well, at least four it turns out.

We were halfway across the Atlantic bound for St Lucia on our Clipper 60, *Bluejay*, when the flexi-coupling on the generator failed.

The crew consisted of me, a professional first mate and eight amateur

## ABOUT THE AUTHOR



**Rachael Sprot**, a former director of the adventure sailing school Rubicon 3, is a Yachtmaster Instructor with an impressive number of sea miles logged – latitudes from Lofoten to St Lucia.

sailors of mixed ability. Engineering fell to me, and in this instance, I needed two 13mm spanners. Lucky I set off with three then isn't it?

The unfortunate thing about luck is that it runs out. The first one disappeared over the side early on in the voyage. When the second clattered into the bilge of doom I was left with my third and final spanner and the dreaded adjustable wrench – and so a 10-minute job became a half-day affair. To add insult to injury I had two 14mm spanners in the wrap winking at me mischievously.

'It's all right for you,' I muttered, 'you've never done a day's work in your life.'

Of all the things I worry about when setting off for the season, the inventory is one of the foremost in my mind. Offshore cruising has a way of helping you

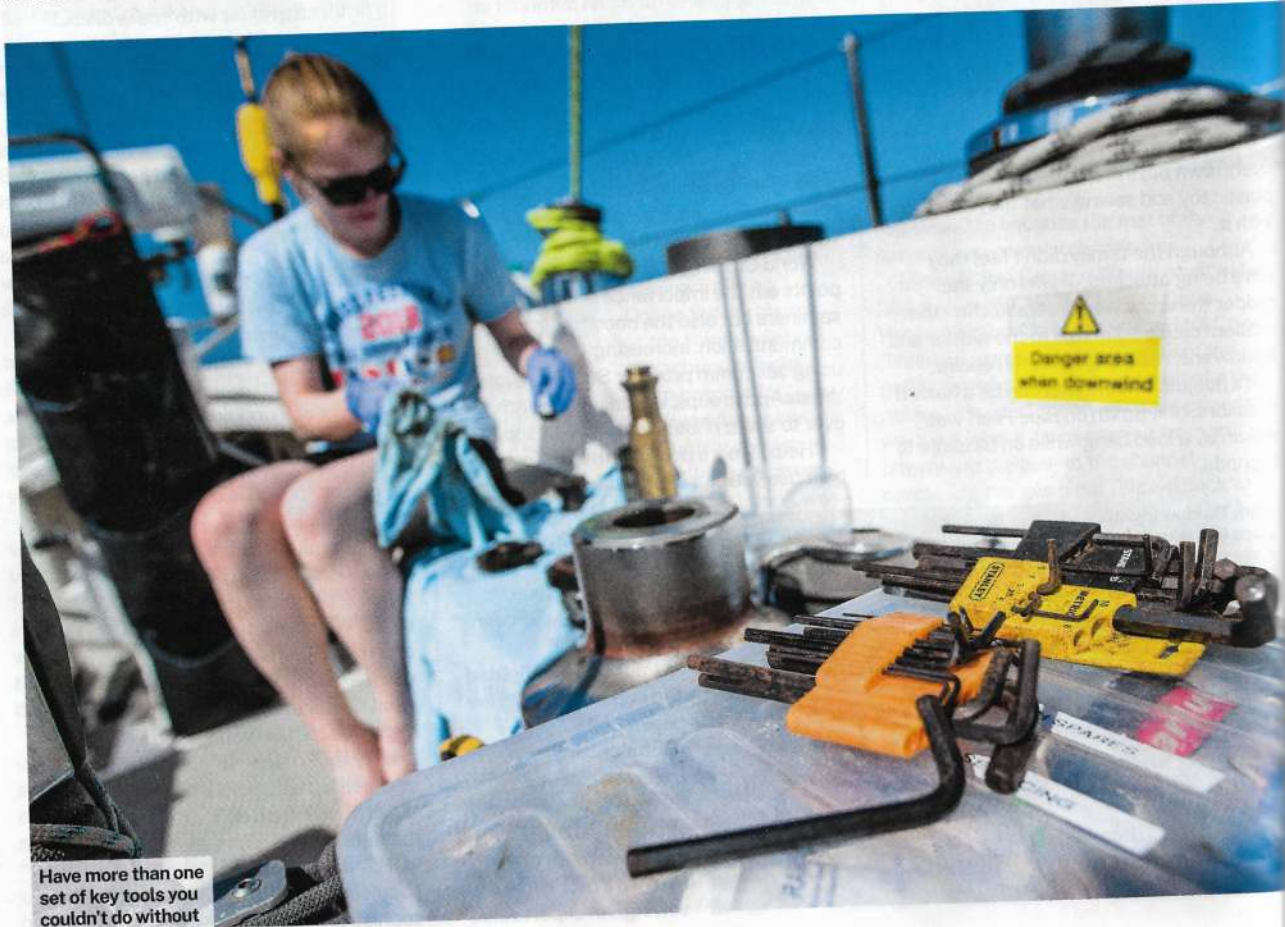
Double up on important spanner sizes such as 8, 10, 13 and 17mm



recognise what's important in life – salient spanner sizes included.

When I was at Rubicon 3 our vessels carried everything from epi-pens to angle grinders yet somehow there's always an item that you didn't know you needed until it's too late.

My initial attempts at setting up the fleet inventory was a bit like Supermarket



Have more than one set of key tools you couldn't do without



ou  
ut  
ts.  
n a boat



Spares are useless without the right tools and skills to fit them

Sweep: you end up with a trolley load of buy-one-get-one-free offers but no chopped tomatoes.

It has taken time to refine and improve it. Slowly each item on board has been weighed against three criteria: how critical it is; how likely it is to fail; and how hard it is to come by.

**Critical systems**

The secret to cruising is that you can do without most things once you're out there. For many critical systems you can't carry a spare anyway - like your standing rigging or your rudder. But there are lots of things you wouldn't leave without in the first place, and these are the things that you need to identify.

Sure, you can cross the Channel without your loo if you have to, but you wouldn't carry on and explore Brittany on a bucket and chuck it policy. Don't just think of your inventory in terms of what might go wrong at sea, think of what will stop you putting to sea in the first place.

Identifying critical systems is easier said than done though. The main engine is universally essential, but most yachts also rely heavily on electrics and electronics. Domestic systems are often overlooked in the process of identifying critical spares. Could you cope without your fridge, oven or running water for a week? We now carry spare gas regulators (they always fail in a closed position - safe but annoying), fridge thermostats and a fresh water pump as their failure has a huge impact on life on board.

It helps to follow this process when identifying critical spares:

- Methodically consider each system on board. Decide whether you would carry on cruising if it failed. This is quite personal, and one person's 'essential' will be someone else's 'luxury'.
- Consult the manual for your critical systems, identify which parts could fail and which spares you want to carry.

**What's essential?**

Sometimes it's not economic or practical to carry spares. If you're selecting a yacht for long-distance cruising you need to look for redundancy in areas where you can't carry spares: paper charts and a

**PREPARING FOR GEAR FAILURE**

With Rubicon 3's fleet of expedition yachts covering around 60,000 miles each year between them, I learned the hard way which systems are likely to fail. They broadly fall into two categories: things that should or shouldn't move; and things that should or shouldn't be wet.

**Things that should move**

Anything which has moving parts can eventually wear out. Pumps and electric motors are two of the most common pieces of equipment to fail. A seized electric motor isn't serviceable at sea, so we carry spares and swap out the whole unit. It can be expensive investing in spare water pumps, starter motors and alternators, but if you're cruising remotely you'll save money in the long run by not having to ship parts around the world.

The rubber parts of diaphragm pumps will also degrade over time, becoming brittle.

**Things that shouldn't move**

There are many things on board which aren't designed to move, but with time, corrosion and frequent loading and unloading become loose. Deck hardware, spars and standing rigging are often susceptible to crevice or galvanic corrosion.

These items are expensive and difficult to replace so your best approach is to maintain them well, ensure that you have redundancy in the system and carry materials for jury-rigging.

Having a supply of soft shackles and a length of Dyneema will provide a short-term solution to many issues.

Chafe is always an issue. A spare halyard could be used for many different jobs. Hoses and electrical cables in engine bays are often damaged too. A cheap hose connector



A collection of Dyneema soft shackles and loops is useful to have on board

can be used to join damaged sections and lengths of electrical cable could get you out of trouble.

**Things which should be wet**

Any impeller-driven pump needs to run wet. A blockage on the inlet will result in a shredded impeller, so spares are essential. Wherever possible, carry the full pump service kits.

These include paper gaskets, spare cover plate screws in case you drop one in the bilge and a seal kit, as well as the impeller. Other things needing lubrication include windlasses, winch parts, the stern gland and rudder bearings.

You can't always carry spares for all of these but regular servicing will identify parts which need replacing before they fail.

**Things which should be dry**

The biggest cause of electrical failure on a yacht is corrosion from the damp, salty environment. There's only so much we can do about this once we're out there: the time when you notice your deck fittings are leaking usually isn't the time to start re-bedding them.

You need a good supply of cable terminals, waterproof grease and (dare I say it?) duct tape, so that you can stem a leak and make good any corroded connections until there's an opportunity for a longer-term fix.



The difference between carrying a spare impeller and a whole service kit

Julian and Patricia Morgan



in life - salient

our vessels  
pens to angle  
re's always an  
you needed until

etting up the  
Supermarket







Replacing a worn kicker swivel on an ocean passage

handheld GPS in case your chartplotter fails; beefy chain plates and spare mast-head halyards to replace standing rigging; ways to charge your batteries should your engine fail.

Some items on board are almost impossible to source in the average chandlery. The more expensive engine spares are one of them: alternators, starter motors, head gaskets. They may not be things you'd replace yourself, but they are things a good mechanic could fit for you if you can provide the parts.

It's easy to forget the accessories which make up the whole job, focussing on the big-ticket items. If you're changing out an injector you also need to replace the copper washer it sits on. Wherever possible carry the spare part and its accompanying accessories like O-rings and gaskets.

It's worth having a supply of emergency 'bodge it' items like plywood, Sikaflex,

epoxy and glassfibre matting. Underwater setting epoxy is particularly useful, for obvious reasons... If you're cruising remotely ask your local GRP specialist to put together an emergency pack for you.

### Self reliance

The spares you carry need to reflect what's available on shore. In the Solent you can source most things within 24 hours; in Northern Europe, the Med and the Caribbean you're never too far from a good chandlery, but it may be a few days away. Once you venture further afield to the high latitudes, South America or the Pacific you need to be much more self-reliant.

To help you identify which spares you need, we've grouped them by three areas: coastal, where you have good facilities ashore; offshore, where you may be a few days away from support; and remote, where



Alternators and starter motors are not easily found in the average chandlery


it might take weeks for parts to arrive.

The most important thing you carry isn't your spares, however, it's your tool kit and your skillset. Without them many of your spares will be useless. Invest in the right training and equipment and it'll save you time and money in the long run.

If there's one thing I've learnt about the inventory though, it's that it will never be complete.

We can never carry everything we need for all the disasters we might face, but ingenuity and imagination will often provide what our stores cannot. After all, the wisdom of the inventory is not knowing what we do need but removing what we don't. Anything superfluous makes the important stuff harder to find.

Sailing is an exercise in minimalism: consciously and unconsciously when we set off from land we've already made the edit. There's no room for sentimentality on board, we take with us what we need.

So start your tools and spares inventory by making a pile of what you don't need and you'll start to see what's important. I'm starting with those 14mm spanners. 



Domestic systems for cooking and heating can be equally as important as mechanical systems

SPAR

COAS

Engine

- Fuel f
- Belts
- Impel
- Oil fil
- Rela

Plumb

- Hose

Riggin

- Shack
- Needl
- palm
- Waxe
- Leng
- Adhes
- patch

Electri

- Select
- Cable
- crimp
- Cable
- Navig
- Cabin

Dinghy

- Dinghy

Consu

- WD40
- Duct
- Sand
- White

OFFSH

Engine

- Fuel l
- Leng
- riggin

TOOL

COAS

Hand t

- Scre
- Span
- adjust
- Basic
- Allen
- Pliers

Hand t

Hand t

Hand t

Hand t

Hand t

Hand t

Hand t

Hand t

Hand t

Hand t

Hand t

Hand t

Hand t

Hand t

Hand t

Hand t

Hand t

Hand t

Hand t



## SPARES CHECKLIST

### COASTAL

#### Engine and generator

- Fuel filters
- Belts
- Impellers
- Oil filters
- Relays and fuses

#### Plumbing

- Hose repair kit

#### Rigging and sail repair

- Shackles
- Needles and sailmakers palm
- Waxed thread
- Length of webbing
- Adhesive sail repair patches

#### Electrical

- Selection of fuses
- Cable terminals and crimpers
- Cable ties
- Navigation light bulbs
- Cabin light bulbs

#### Dinghy and outboard

- Dinghy repair kit

#### Consumables

- WD40
- Duct tape
- Sandpaper
- White spirit/thinners

### OFFSHORE

#### Engine & generator

- Fuel lift pump
- Length of fuel hose (for jury rigging into a jerry can)



Carry spare shackles and inspect them regularly

- Raw water pump service kit

#### Plumbing

- Heads service kit
- Bilge pump service kits
- Hose connectors and jubilee clips for common hose sizes (1/2in, 3/4in, 1in, 1 1/2in)
- Grey and black water pump/macerator service kits
- Push fit connectors and fittings for any rigid pipe

#### Domestic

- Gas regulator

#### Rigging and sail repair

- Mainsail sliders
- Soft shackles
- 2-3m of Dyneema

#### Electrical

- Selection of wire in various sizes

- Shore power plugs and connectors
- Choc-block connectors
- Fuses for all electrical equipment

#### Dinghy and outboard

- Spark plugs
- Fuel filters

#### Consumables

- Sikaflex
- Marine grease
- Rust penetrant spray
- Anti-corrosion compound (Duralac)

### REMOTE

#### Engine and generator

- Starter motor
- Alternator
- Comprehensive full engine gasket kit
- Injectors and washers
- Propeller
- Engine mounts

### Plumbing

- Fresh water pump
- Grey and black water pumps/macerators
- Length of hose for each essential system, normally 1/2in, 3/4in, 1in, 1 1/2in
- Selection of through-hull fittings and ball valves

### Domestic

- Cooker and hob valves and thermostats
- Fridge and freezer thermostats
- Heater glow plugs and filters

### Rigging and sail repair

- Large piece of Dacron cloth
- Halyard-length of line
- Swivel and snatch blocks

### Electrical

- Inverter
- Coaxial cable connectors
- Battery terminals
- Length of battery cable, crimp connectors and large crimpers

### Dinghy and outboard

- Water pump service kit
- Oil filter
- O-rings and gaskets for draining oil

### Consumables

- Corrosion-guard spray
- GRP repair kit
- Epoxy

## TOOLS CHECKLIST

### COASTAL

#### Hand tools

- Screwdrivers
- Spanners and adjustable wrenches
- Basic socket set
- Allen keys
- Pliers

- Oil filter wrench
- Hacksaw and blades
- Stanley knife and blades
- Tape measure

#### Electrical kit

- Multimeter
- Crimper



A hacksaw has many uses on board

- Side cutting pliers

#### Power tools

- Drill and drill bits

### OFFSHORE

#### Hand tools

- Small electrical screwdrivers
- Double up on key spanner sizes
- Comprehensive socket set with extension bars
- Torx set
- Mole grips
- Files
- Mallet
- Rubber mallet

#### Electrical kit

- Amp clamp meter

### Power tools

- Heat gun
- Work lamp

### REMOTE

#### Hand tools

- Taps, dies and Heli-Coil sets for common sizes
- Large adjustable wrench
- Stilsons
- Wire brush selection
- C-clamps and vice
- Vernier calipers

#### Electrical kit

- Soldering iron and flux

### Power tools

- Angle grinder and discs
- Jigsaw
- Gas-powered blow torch

parts to arrive. What thing you carry isn't it's your tool kit and them many of your is. Invest in the right and it'll save you the long run. I've learnt about the that it will never be everything we need we might face, but ration will often res cannot. After all, inventory is not need but removing thing superfluous stuff harder to find. ise in minimalism: consciously when we ve already made the for sentimentality on as what we need. s and spares inventory what you don't need e what's important. I'm 4mm spanners. **PBO**