

1. PLANNING.....	02/03
Manage Your Rally Online at www.worldcruising.com	02/04
Rally Website – Get Involved!	02/08
2. SAFETY EQUIPMENT	02/11
Safety Equipment Inspection.....	02/12
Choosing a Liferaft	02/13
World Cruising Club Safety Equipment Requirements.....	02/25
3. CREW.....	02/31
Choosing Crew	02/32
Crew Training	02/35
4. PERSONAL PREPARATIONS.....	02/39
Keeping In Touch.....	02/40
Personal Health.....	02/41
Travel Insurance.....	02/43
Clothing Choices	02/45
5. BOAT PREPARATIONS.....	02/47
Think About...What Goes Wrong.....	02/49
Useful Additions.....	02/51
Suggested Books	02/54
Electric Shore Power.....	02/56
Power Management on Long Passages.....	02/57
Electronics on board.....	02/61
Spares and Useful Parts.....	02/63
Cooking Gas.....	02/64
Water Management.....	02/65
Medical	02/67
Dressing Overall.....	02/68
Pets Onboard	02/68
6. OFFSHORE PASSAGE TIPS	02/69
Fuel and Water Planning	02/70
Provisioning.....	02/75
Pre-Passage Checks	02/80
Rigging Checks	02/84
Ocean Sailing Tips.....	02/91
Fishing	02/97
Sailing with Children.....	02/98
Watch Keeping	02/99
International Clearance	02/101

About the Preparation Section

This part of the Rally Handbook has been designed to help you prepare for an offshore passage, no matter how long.

Boats in our rallies sail around 1.5 million nautical miles each year, and we've drawn on this knowledge to bring you some useful tips and advice.

You may be confident about making an ocean passage, or you could be contemplating your first proper offshore voyage - whichever describes you as a sailor, there will be information in this section that will help make your rally experience more enjoyable.

Share with your crew

It is a good idea to share this information with your crew - the more prepared all of the crew are, the more likely you all are to have a happy and successful voyage.

All sections of the Rally Handbook can be downloaded in PDF form from the Members Area by logging-in and going to 'Event Information'.
www.worldcruising.com/membersarea

Each section can be downloaded as separate PDF files, and the Preparations section is subdivided into chapters to make the files smaller and easier to share.

The Preparations section of the Rally Handbook has been broken-down into several parts:

Planning: pages 3-10

The activities you are likely to do just after you've joined the rally, including a general checklist, how to use the features on www.worldcruising.com and sources of help.

Safety Equipment: pages 11-30

We require that your boat carries certain types of safety equipment. The section details what these are, how to select safety equipment, and includes a checklist to ensure that your equipment is suitable for the rally.

All of this equipment will be thoroughly checked before the departure, so it is worthwhile ensuring that you have what is required before you get to the start of the rally.

Crew: pages 31-38

You may already know your crew, or you may be looking for crew to join you on the rally. This section includes advice on choosing crew, the training that we expect the crew to have undertaken, and issues around visas and crew changes.

Personal Preparations: pages 39-46

This section covers the personal issues involved in taking part in the rally, from staying in touch with home to deciding what clothing to buy. We also look at personal health and insurance.

Boat Preparations: pages 47-68

These are the issues that you need to address before leaving your home port, including considering what could go wrong, how to manage power on long passages, using shore power, gas, holding tanks and suggested spares.

Offshore Passage Tips: pages 69-101

These are recommendations and suggestions that you are likely to need on passage and for your pre-departure planning. This includes water and fuel planning, provisioning, managing garbage, strong wind sailing, downwind sails, fishing and managing equipment failure.

1. PLANNING

This section looks at the immediate actions you need to do once you join the rally. You will need to keep coming back to these pages as you update your boat information and invite crew.



Useful Planning Checklist

Questions	Notes
Have you read through the Rally Handbook?	
Have you shared the Rally Handbook with your crew?	
Do your crew know how to update their personal information (address, passport details, next of kin) on the Member's Area? see page 5	
Check and update your boat information on the Members Area. See page 6-7	
Add a boat description, photograph and links to your boat website. See page 6	
Arrange for email capability at sea, via SSB and PACTOR modem or satellite phone . See Communications Section for details	
Update your at-sea email address and sat-phone number (if onboard) on your boat information page. See page 7	
Order the charts and nautical books you will need for navigation. See pages 54-55 and Local Information Section for details for charts and pilot books	
Order any courtesy flags/ensigns you will need for the countries visited and your onwards cruising.	
Do you have a full set of signal flags for dressing the boat in port? See page 68 for details	
Have you ordered official rally polo shirts? More information in rally newsletters, and see the Member's Area	
Have you spoken to your boat insurance company about your planned cruising?	
Have you considered options for returning home? <ul style="list-style-type: none">• Returning with a rally see www.worldcruising.com• Independent cruising• Professional delivery crew see www.pydww.co.uk• Boat transport by ship see www.petersandmay.com	
Do you need to schedule work on the boat with your boatyard or other specialist company? Don't leave this too late!	
Have you advised the marina at the rally start port of your ETA? See Local Information for contact details	

Manage Your Rally Online at www.worldcruising.com

The World Cruising Club website is your first source of information about all the rallies, with details of important dates, boat entry lists, news and logs.

Log in to the website to access rally-specific information in the **Members Area**; available to all skippers, captains and rally crew.

In the Members Area you can:

- Update your personal information, including preferred name, emergency contacts and passport details ([My Profile](#)).
- View all of the rallies you have entered as a boat owner or crew, manage your crew list, purchase crew spaces and update your boat information ([My Rallies](#)).
- Read and download the Rally Handbook, newsletters and important forms ([Rally Information](#)).

- Read exclusive rally news for participating skippers and crew
- View your financial history with World Cruising Club, make payments, print a statement ([My Account](#)).
- Read and download useful cruising documents, reports and advice ([Documents & Info](#)).
- Find quick links to our partners for special offers for rally participants.
- Get help online, all day, every day ([Support](#)).
- Buy discounted marine supplies and services and take advantage of special offers for rally participants.

How to Sign In

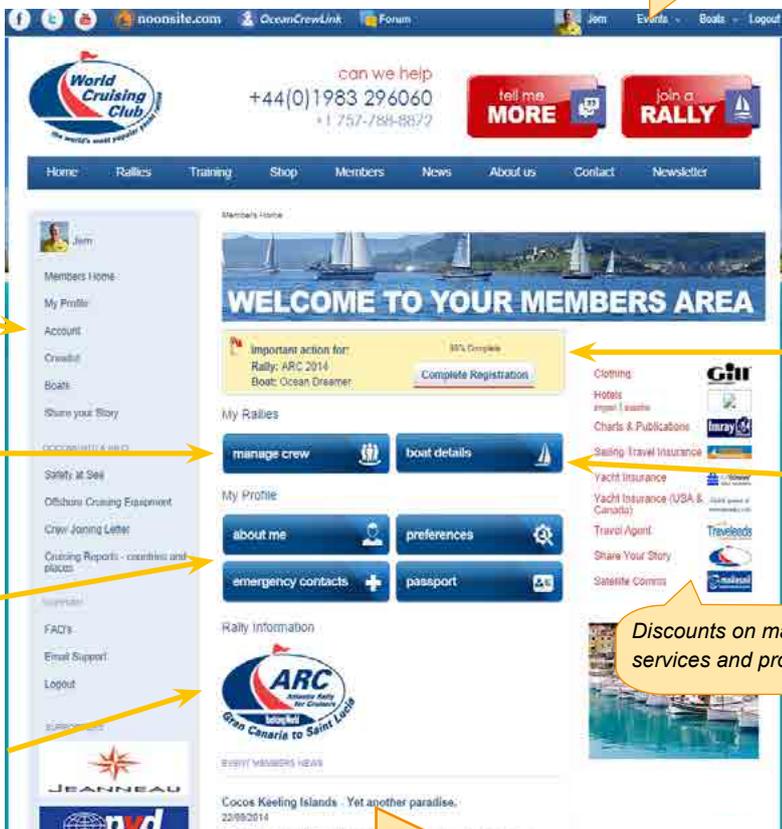
Click on the [Sign in](#) icon, top right menu. If you don't have a password, or have forgotten it, just click the buttons and you will be sent a new password by email. Check your inbox and junk items folders.

Members Home Page

This is what you will see when you sign in.

Quick links to your events and boats

- View statements and pay online
- Manage the crew list
- Update your personal details
- Click on the rally logo to download rally handbooks, useful documents and order forms



Actions to be completed

Edit your boat details - add photos and weblinks

Discounts on marine services and products

Read the latest rally news

Important actions for skippers and boat owners

Manage your crew

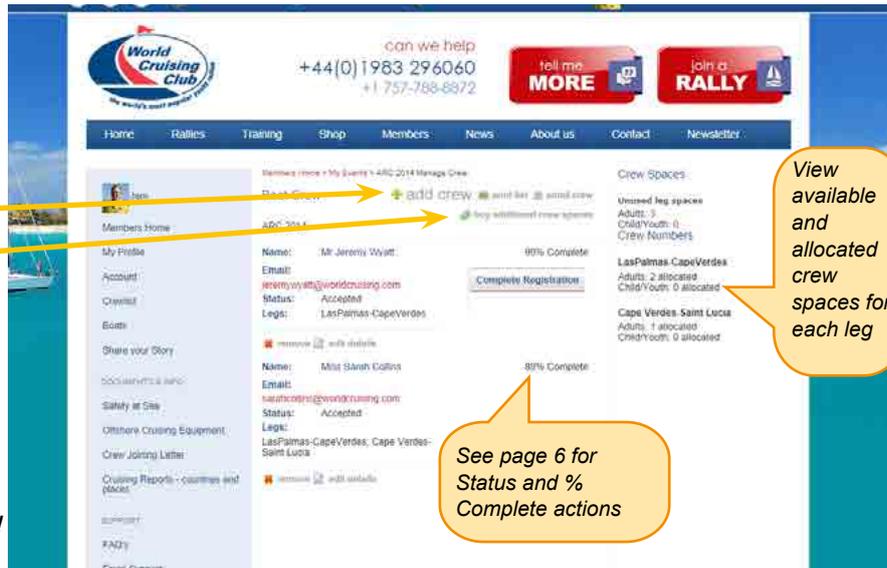
Click **Manage Crew** button, then the **Crew List** button for your boat

Add available crew

or buy additional crew spaces for extra crew

View your crew and check if they have completed their personal details (% Complete)

You can also email your crew - useful for reminders!



can we help
+44(0) 1983 296060
+1 757-788-6872

Home Rallies Training Shop Members News About us Contact Newsletter

Members Home > My Profile > ARC 2014 Manage Crew > Crew

add crew

View available and allocated crew spaces for each leg

See page 6 for Status and % Complete actions

Add crew

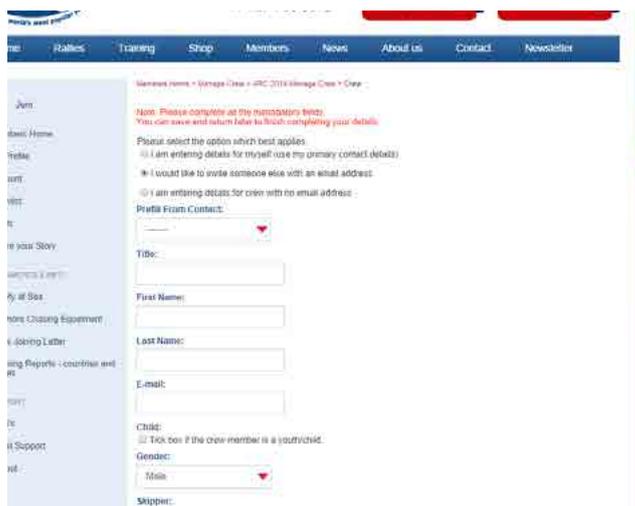
Add yourself (as skipper/owner).

This page shows your personal details

Invite someone else with an email - this will send an automatic invitation email for the crew to accept, then they can enter their own personal details.

This is the best way to add crew.

You can also enter details for crew with no email but the crew will not be able to edit or view the information



Members Home > My Profile > Mr Jeremy Wyatt

add crew

Emergency Contact

First Name: Michael

Last Name: Wyatt

Relationship: Father

Telephone Number: United Kingdom(+44) 118 447158

Address: 57 Broomfield Road

Town/City: Bournemouth

Region/State:

Post/Zip Code: BH11 7DP

Country: United Kingdom

Save Cancel

IMPORTANT!
Complete all your passport information and full contact details for your emergency contact person (next of kin)

Buy crew spaces

If you have no unused crew spaces, you will need to **buy additional crew spaces** before you can add crew to your crew list. You can do this online, including secure payment.

Buy crew spaces for the whole rally, or for individual legs



Purchase Crew Spaces for ARC 2014

Step 1: Select Rallies Step 2: Buy New Crew Step 3: Payment Step 4: Confirmation

Do you want to:

Purchase Crew Spaces For The Whole Rally

Distribute Crew Spaces For Individual Legs

Crew Status Explained

Invited - the person has been sent an email by the website inviting them to join the crew list (see Add crew, page 5), but has not yet responded. Ask them to check their email inbox and junk items and to follow the actions in the email.

Accepted - the person has responded to the email, but has not yet confirmed their personal details.

Declared - all of this person's details are correct. All crew must be '**declared**' before the start of the rally. Crew can update and confirm personal details to declare by clicking on the **Complete Registration** button on the Member's Homepage

Important actions for all crew

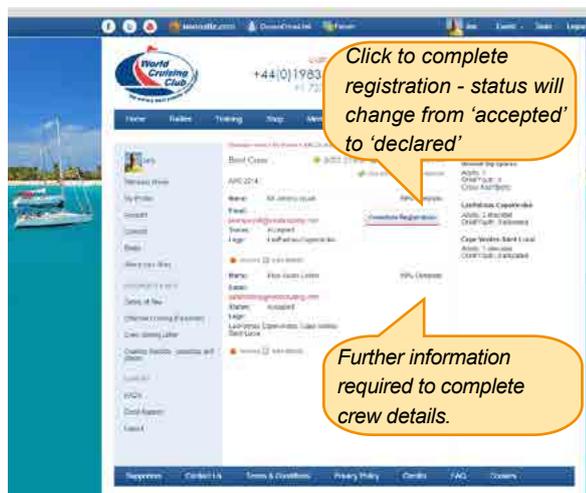
Declaring

Once all your personal details are correct, including passport information and emergency contacts, the crew name will show **99% Complete** ✓

The crew must change their status from Accepted to Declared by clicking on 'Complete Registration'. If there is less than 99% Complete, the crew needs to go back and provide more information before registration can be completed.

Click **Complete Registration** to submit all information and stop any further automated reminder emails.

To provide more information, click on **edit details**.



Important actions for boat owners/skippers

Update your boat details

Every rally boat has a specification and a profile. Access these by clicking on the **Boat Details** from the Member's Homepage

Edit specification - update information about the boat and sails which allow us to calculate the handicap for fun competition between Cruising Division boats (see page 7). It also includes information about safety and communications equipment that **must** be completed before the start.



Edit profile - upload photographs of your boat, provide a description and links to your website, boat email or blog pages. The more information you provide, the more fun your followers at home (family and friends) will have.

The profile (right) is for Skyelark, published on the World ARC website. This is what visitors to the site will see, including being able to search the logs that Skyelark's crew have posted during the rally.



Boat Specification

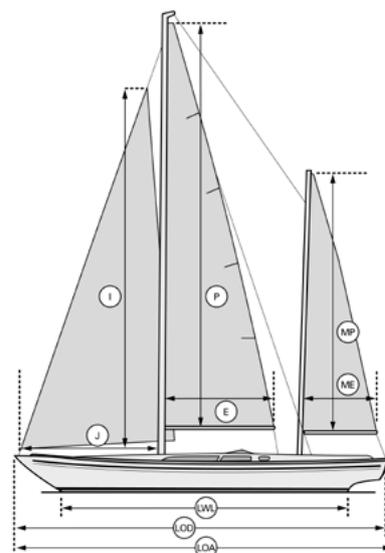
It is important that you complete the boat data information well before the start of the rally via www.worldcruising.com

- We communicate with boats at sea by email, so it is vital that we have your boat's correct at-sea email address.
- We provide information about your boat and its communications and safety equipment to the Coastguard and other authorities.
- The boat and sail dimension information is used to calculate the handicap for Cruising Division competition.

Please add your boat data via the [Members Area](#)

Click on the boat name in [Boat](#) then [Edit Specification](#)

The help notes are also available online in English, German, French and Spanish.



Yacht make & model	Yachttyp u. Konstrukteur	Voilier type/marque/modèle	Marca del yate y modelo
Flag	Flagge	Pavillon	Bandera
Rig (sloop/ketch etc.)	Rigg (Slup/Ketsch etc.)	Gréement (sloop/ketch etc.)	Aparejo (balandra/queche etc.)
Year built	Baujahr	Année de construction	Año de construcción
LOA Length: Overall	Länge: über alles	Longueur: Hors-Tout:	Eslora: Total:
LOD on deck	Deck	de coque:	en cubierta:
LWL Waterline	Wasserlinie	Flottaison:	Línea de flotación:
Beam	Breite	Largeur BAU:	Manga:
Draught	Tiefgang	Tirant d'eau:	Calado:
Hull material	Rumpfmateriale	Matériau de la coque:	Material del casco:
colour	Rumpffarbe	couleur	color
Type of keel	Typ des Kiels	Type de quille	Tipo de quilla
(long/medium/fin/centreboard)	(lang/mittel/Finnkil/Kielschwert)	(longue/medium/fine/dérive)	(larga/mediana/fin/otras)
Displacement: design	Verdrängung: vorgesehen	Déplacement: design	Desplazamiento:diseño
Displacement: present	Verdrängung: aktuell	actuel	real
Sail Measurements (Not Areas)	Segelabmessungen (Nicht Flächen)	Dimensions Des Voiles (Pas surface)	Medida De Las Velas (No Areas)
I: Foretriangle	I: Vorsegel	I: Triangle avant	I: Triángulo de proa
J: Foretriangle	J: Vorsegel	J: Triangle avant	J: Triángulo de proa
P: Mainsail	P: Großsegel	P: Grand Voile	P: Mayor
E: Mainsail	E: Großsegel	E: Grand Voile	E: Mayor
mp: Mizzen	mp: Besan	mp: Artimon	mp: Mesana
me: Mizzen	me: Besan	me: Artimon	me: Mesana
Spinnaker/Parasailor	Spinnaker/Parasailor	Spinnaker/Parasailor	Spinnaker/Parasailor
Cruising chute	Blister	Beenaker	Cruising MPS
Jib furling	Rollgenua	Benois à enrouler	Foque con enrollador
Mainsail furling	Rollgroß	Grand voile à enrouler	Mayor con enrollador
Sail number	Segelnummer	Numéro de la voile	Numéro de velas
SSB Radio Callsign	SSB (KW) Rufzeichen	Radio BLU Indicatif	Indicativo de Radio SSB
Satcoms: type	Satellitenkommunikation Typ	Communication par satellite: Type	Satcoms: Tipo
Sat C ID Nr	Sat.C ID Nr:	Sat C ID Nr:	Sat C ID Num
Sat. Tel. Nr.	Sat.-Tel. Nr:	Nr.Tél. satellite	Num.Tel. Sat
Boat email address at sea	Boot E-mail auf See	Courrier électronique à bord	Email de la embarcación en el mar
MMSI Number	GMDSS Nr:	Numéro MMSI	Número MMSI
EPIRB: make	EPIRB: Marke	Radio-Balise: (marque)	EPIRB: marca
EPIRB I.D. Nr.	EPIRB I.D. Nr:	Radio-Balise: Numéro	Núm. EPIRB I.D.
Liferaft: make	Rettingsinsel: Typ	Radeau de survie: marque	Balsa salvavidas: marca
year	Baujahr	année	año
last service date	letzte Inspektion	dernière révision	última fecha de uso
Capacity	Zugelassen für.	Capacité	Capacidad

Rally Website – Get Involved!

There are many ways that you and your crew can get involved with the rally online – adding photos of your boat; sending daily logs and photographs; adding links to your own yacht website.

Daily Logs and Photo Gallery

During the rally you can send daily logs and images from the boat directly to the rally website via email, enabling friends, family and supporters to share in your adventures.

You will receive a unique email address to send your blogs and photographs, and these will be posted to the website by the rally team.

Our software will resize images, but for web resolution it is best to resize to 640x480 pixels (approx 100-200kb) - this will be cheaper on your airtime too!

Full details on how to send your logs and photos will be provided before the rally starts.



Share Your Story

Do you have a story to share with other boaters? For example: Interesting boat or crew, working onboard or retiring, start of a new life aboard or taking a sabbatical, or even raising money for charity. Tell us your story and we'll share it with the local and national media. Log in to the Members Area and select 'Share your story'

www.worldcruising.com/MembersArea

Your Privacy

Once entered, crew information will be visible to the skipper, but not to the other crew. Crew members can only see their own details, plus the names and email addresses of their fellow crew. We value your privacy and all details are stored in an encrypted form, to industry standards.



For Friends and Family

Following the boats online

When satellite trackers are fitted to the boats, regular position reports will automatically be displayed on the Fleet Viewer on the rally website.

The Fleet Viewer provides an overview of boat locations; daily distance sailed; and distance to the next port.

The interactive map allows users to show tracks, zoom in and out, and select individual boats or groups to display. Basic windspeed information can also be shown, so you have an idea of the conditions that the boats are enjoying.

The Fleet Viewer is located on the upper left side of the screen on the rally pages. You can also download a YB Races app for Apple and Android devices.



Social media

Friends and family can post messages of

support and ask each other questions on the rally Facebook pages. These are kept up to date with the latest photos and news from the rally.

Rally Facebook Pages

WCC	www.facebook.com/worldcruising
ARC	www.facebook.com/arcally
World ARC	www.facebook.com/worldarc
ARC Europe	www.facebook.com/arceurope
ARC Portugal	www.facebook.com/arcportugal
Caribbean 1500	www.facebook.com/carib1500
ARC DelMarVa	www.facebook.com/arcdelmarva

You can also follow us on Twitter @arcally and @carib1500 during the rallies.

Sources of Information

Preparing for a rally can be a daunting task, but there are plenty of sources of help.

World Cruising Club

First, contact World Cruising Club:

Our main office in the UK

Tel: +44 (0)1983 296060

Email: mail@worldcruising.com

Skype: wccmail

Open: Monday-Friday 0900-1730 UTC

120 High Street, Cowes, Isle of Wight PO31 7AX

World Cruising Club USA

Isabelle Tremblay

Tel: +1 (757) 788-8872

Email: carib1500@worldcruising.com

World Cruising Club European Representatives:

Germany Astrid & Wilhelm Greiff

Tel: +49 (0)9533 8733

Email: buero-deutschland@worldcruising.com

Noonsite.com

Noonsite.com is an online resource for cruising sailors, with details on most ports worldwide and discussion forums for cruisers. www.noonsite.com

OceanCrewLink.com

If you need extra crew, advertise your sailing 'opportunity' for free and search the crew database. www.oceancrewlink.com

Bluewater Cruising Clubs

These membership associations provide support for their members, who are mostly long-distance cruisers. Support may include newsletters and information about cruising destinations and equipment, and networks of members around the world who can offer local support.

[Ocean Cruising Club](http://www.oceancruisingclub.org) www.oceancruisingclub.org

[Seven Seas Cruising Association](http://www.scca.org) www.scca.org

[Cruising Club of America](http://www.cruisingclub.org) www.cruisingclub.org

[Ocean Seglings Klubben](http://www.osk.org) www.osk.org

[Trans-Ocean eV](http://www.trans-ocean.eu) www.trans-ocean.eu

National Authorities

Most countries have a national authority that looks after the interests of sailors, and may run training courses, databases of approved marine companies or offer legal advice. The authority is usually a member of the World Sailing (formerly ISAF).

[World Sailing](http://www.sailing.org) www.sailing.org

[World Sailing Offshore Special Regulations](http://www.sailing.org/documents/offshorespecialregs)
www.sailing.org/documents/offshorespecialregs

[World Sailing OSR Sea survival training](http://www.sailing.org/classesandequipment/offshore/sea_survival.php)
www.sailing.org/classesandequipment/offshore/sea_survival.php

[Australia](http://www.yachting.org.au) www.yachting.org.au

[Austria](http://www.segelfverband.at) www.segelfverband.at

[Belgium](http://www.belgiansailing.be) www.belgiansailing.be

[Denmark](http://www.sejlsport.dk) www.sejlsport.dk

[Finland](http://www.spv.fi) www.spv.fi

[France](http://www.ffvoile.org) www.ffvoile.org

[Germany](http://www.dsv.org) www.dsv.org

[Ireland](http://www.sailing.ie) www.sailing.ie

[Italy](http://www.federvela.it) www.federvela.it

[Netherlands](http://www.watersportverbond.nl) www.watersportverbond.nl

[Norway](http://www.seiling.no) www.seiling.no

[Russia](http://www.vfps.ru) www.vfps.ru

[Spain](http://www.rfev.es) www.rfev.es

[Sweden](http://www.svensksegling.se) www.svensksegling.se

[UK](http://www.rya.org.uk) www.rya.org.uk

[USA](http://www.ussailing.org) www.ussailing.org

[Other nations](http://www.sailing.org/about-isaf/mna) www.sailing.org/about-isaf/mna

[IRC racing certificates](http://www.ircrating.org) www.ircrating.org

Marine Trade Associations

Marine trade associations may be able to recommend equipment suppliers and boatyards in their countries.

[France](http://www.fin.fr) www.fin.fr

[Germany](http://www.dbsv.de) www.dbsv.de

[Italy](http://www.uncina.net) www.uncina.net

[Netherlands](http://www.hiswa.nl) www.hiswa.nl

[Sweden](http://www.sweboat.se) www.sweboat.se

[UK](http://www.britishmarine.co.uk) www.britishmarine.co.uk

[USA](http://www.nmma.org) www.nmma.org

[Other nations](http://www.icomia.com/members) www.icomia.com/members

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www.oceansafety.com
info@oceansafety.com

USA


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MOB retrieval

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with being seen

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for furling headsails

2. SAFETY EQUIPMENT

This section covers the World Cruising Club Safety Equipment Requirements that apply to every World Cruising Club rally.

The section looks at choosing and using safety equipment, followed by a handy check list for preparing for your safety equipment inspection.



Useful Safety Checklist

Questions	Notes
Does your liferaft comply with WCC requirements? See page 14	
Does your liferaft have an over 24 hour equipment pack, either in the raft, or in a grab bag? See page 17	
Do each of your crew have a lifejacket-harness that complies; with a whistle, light, sprayhood, crotch strap and safety line/tether? See pages 20-21	
Do you have the correct man overboard equipment? See page 22	
Is your safety equipment clearly marked with the boat's name?	
Have you practiced man overboard recovery with your crew? How will you get the casualty back onboard the boat? See page 23 for suggestions	
Have you thought about your abandon ship grab bag contents? See page 24 and 30 for recommendations	
Use the checklist on pages 25 to 30 to ensure that you comply with all parts of the World Cruising Club Safety Equipment Requirements. You won't be allowed to start the rally otherwise!	
Have you practiced or discussed emergency scenarios with your crew? <ul style="list-style-type: none"> • Man overboard, including recovery see page 23 • Fire • Sinking • Dismasting see page 90 	
If you want training, these topics should be covered by a Sea Safety course (page 35), or buy a good book (see page 54-55)	
Do your crew need training in: <ul style="list-style-type: none"> • First aid • Sea survival (liferafts etc) • Communications equipment • Navigation • Sailing skills 	
It is a recommendation that the skipper and at least one crew have undertaken formal training in the past 5 years (page 30) More information on crew training on page 35-36	

Requirements

The WCC safety equipment requirements have been drawn up to ensure the minimum level of safety for yachts participating in World Cruising Club events. The World Sailing (ISAF) Offshore Special Regulations have been used as a guideline to compile these regulations. See www.sailing.org/documents/offshorespecialregs/index.php

These safety equipment requirements do not override any greater safety requirement demanded by the yacht's national or flag country, maritime authorities or appropriate regulatory bodies.

Safety Equipment Inspection

Before the rally starts, every boat will have a safety equipment inspection, checking that all of the mandatory equipment required in the WCC Safety Equipment Requirements is onboard and suitable for use.

The check lists on [pages 25-30](#) will help you to ensure that you are ready.

Extra Paperwork

In addition to the safety equipment, we will also want to see:

- Proof that your liferaft complies with one of the three approved types (ISO 9650, ISAF or SOLAS A, as explained on [page 14](#). This may mean providing a copy of the liferaft certificate, or a letter from the manufacturer.
- A copy of your boat's insurance certificate
- And for boats in the Racing Divisions only, a copy of the IRC certificate.

Getting Help

If you are unsure about any aspect of the regulations, please contact us:

UK: Tel: +44 (0)1983 296060
mail@worldcruising.com

USA: Tel: +1 (757) 778-8872

Germany: Tel: +49 (0)9533 8733

It is much easier to sort out possible problems months before the rally starts!

The Inspection

When you check-in for the rally, you will be able to book a time for your inspection. It is a good idea to do this as soon as possible, so that any problems can be sorted out in good time.

On the day of the inspection:

- Put all of the small equipment, like first aid kit, lifejackets/PFDs, flares and grab bag on the saloon table.
- Get the emergency steering system out of the locker and be prepared to demonstrate.
- Find all paperwork, such as insurance certificates and liferaft certificates.
- Make sure that your jackstays/jacklines are fitted.

The inspection will take around 40 minutes, but may take a lot longer if you are not prepared.

The inspector will check every item on the list, including ensuring that items are secured properly and ready to be used. This will include testing the EPIRB.

The inspector will make suggestions for improving your safety set-up, and will explain any issues or 'failures'.

Can I 'Fail' Inspection?

If you do not have suitable equipment installed correctly to meet the WCC Safety Equipment Requirements, then you will not pass your inspection. The inspector will explain the problem with you and talk through the solutions.

This usually means making some simple improvements, like putting the boat's name on the lifebuoys or buying a lifejacket sprayhood. The inspector will come back and re-check until he is satisfied. Ultimately, the inspector can stop the boat from participating in the rally.



Choosing a Liferaft

A liferaft is designed to be used as the last resort; when you need to escape from your boat because of fire or sinking. The liferaft is designed to help shipwrecked sailors to survive while waiting for rescue. Using a liferaft won't be an enjoyable experience, but it may save your life.

Even with EPIRBs, AIS beacons, SARTs and modern voice communications, it may take some time before your distress call results in a rescue. The contents of your liferaft will help to keep you alive, and to attract the attention of your rescuers. **We require all liferafts to be packed with enough food, water and equipment for more than 24 hours.** You may need to supplement the standard pack of your raft with extra equipment and water.

Features of a Modern Liferaft

Your liferaft will be built to the standard you have selected - either ISO 9650, ISAF or SOLAS. This is a minimum design standard, and it is worth looking for rafts that provide more features, as these are more likely to perform best when needed the most. As well as the standard features, look for the following:



Canopy opening:
large enough to allow access wearing lifejackets, but easy to close with cold hands

Brightly coloured:
canopy, tubes and underside for better visibility

Strong grab lines:
all around the inside and outside of the raft

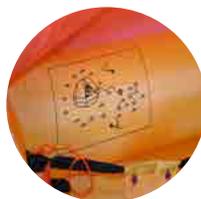
Step (rigid or inflatable) to make boarding easier.

Pull-in ladder extends across the raft floor

Ladder under raft to help righting in case of capsize

Fully-fitted insulated floor

Clear instructions:
these are printed as a diagram directly onto the raft



Self-inflating canopy, brightly coloured with internal and external lights and retro-reflective tape.

Look-out port for ventilation and watch-keeping



Multiple oversized and strongly secured ballast pockets for better stability

Good sized, securely affixed drogue
CO² bottle secured out of the way



Comprehensive emergency pack with quality contents. Pack and contents should be easy to use with wet, cold hands

More information on liferaft specifications can be obtained from

ISO: <http://tinyurl.com/buy-iso9650>

World Sailing OSR: <http://www.sailing.org/documents/offshorespecialregs/index.php>

Your liferaft manufacturer

Types of Liferaft

When making a liferaft choice for an offshore passage, there are several questions to consider; not only whether to hire or buy, but also additional raft features, number of people and stowage.

Offshore liferafts are constructed with two main buoyancy tubes, whereas a coastal liferaft usually only has one, making the offshore liferaft more stable and buoyant. The contents of liferafts also vary, with packs for offshore rafts being more comprehensive.

The choice of liferafts available in the market place can be bewildering. Whichever raft you choose for participating in a World Cruising Club rally, it must conform to one of the following standards:

World Cruising Club Safety Equipment Requirements. A liferaft shall be either:

- i. An 'ISO Standard 9650' Type 1 Group A raft with service Pack 1 (>24 hours) or equivalent contents; or
- ii. ISAF liferafts manufactured before 2016 until replacement is due at end of service life, plus food and water equivalent to (i) above; or
- iii. A commercial SOLAS model - (LSA Code 1997 Chapter IV) containing a SOLAS A pack.

See the World Sailing website [www.sailing.org/rules] for the full text of the World Sailing Offshore Special Regulations (OSR).

ISO 9650 Liferaft

Maximum three year service interval

Type 1 Group A with Pack 1

ISO 9650 is the international standard for small craft liferafts, established in 2005. The correct ISO raft for World Cruising Club rallies is the Type 1 Group A. This raft is designed for offshore conditions, and inflates in air temperatures between -15°C and +65°C.



Ocean Safety Ocean ISO liferaft

The raft shall be equipped with service Pack 1, providing supplies for more than 24 hours. The items in Pack 1 can be packed with the liferaft, or in a separate grab bag (abandon ship bag).

The benefits of the ISO 9650 raft are:

- boarding step and ladder system for easier entry
- double floor for better insulation
- comprehensive pack of equipment and food/drink

If your ISO liferaft is packed with a less than 24 hour pack, you will have to pack the extra rations and equipment in a grab bag to meet the required standard. See page 17.



Rafts can be round, as well as rectangular.
Winslow Global Rescue ISO9650-1

ISAF Liferaft

Annual service required

Offshore Special Regulations Appendix A Part II (2006-2007)

ISAF liferafts are very similar to ISO 9650 liferafts. The correct ISAF raft for World Cruising Club rallies is compliant with Appendix A Part II. This raft is

designed for offshore conditions, and inflates in air temperatures between -15°C and +65°C.

The standard ISAF liferaft is not packed with food or water or many flares, and these will have to be packed separately in a grab bag (abandon ship bag). We require that the ISO 9650 Pack 1 is used as a guide. See page 17 for the list.



Lifeguard ISAF liferaft

The benefits of the ISAF raft are:

- designed for yachts sailing offshore
- boarding step and ladder system for easier entry
- however, the ISAF raft lacks the food and drink rations and flares found in the ISO 9650 more than 24 hour liferaft

Please note that from 01 January 2012, ORC/ RORC liferafts built to the earlier ISAF standard Appendix A Part 1 are no longer accepted by World Cruising Club.

SOLAS Liferaft

Annual service required

LSA Code 1997 Chapter IV with Solas A pack

SOLAS liferafts are usually found on commercial boats, or on charter boats. The correct SOLAS raft for World Cruising Club rallies is compliant with LSA Code 1997 Chapter IV or later, with a Solas A pack. This raft is designed for commercial boats and has a comprehensive pack of equipment. The raft inflates in air temperatures down to -30°C, making it suitable for high latitude sailing. These rafts are often too large and bulky to be easily stored on a sail boat, but versions for yachts are available.

The raft shall be equipped with a SOLAS A pack, providing supplies for more than 24 hours. The items in the SOLAS A pack can be packed with the liferaft, or in a separate grab bag.

The benefits of the SOLAS raft are:

- Comprehensive pack of equipment and food/drink with SOLAS A pack
- Inflates in more extreme temperatures, making it suitable for high latitude cruising
- Double canopy for greater comfort.

However, SOLAS rafts are usually larger and heavier than ISO or ISAF rafts and can be hard to stow onboard boats under 15m (50').

If your raft has a SOLAS B pack, you will need to bring it up to the SOLAS A pack standard by putting the additional water, food and equipment in the grab bag (abandon ship bag).

Self-righting Liferafts

Self-righting rafts are available, these have a double top tube which create a righting moment when the raft is capsized. They are more expensive than standard rafts, but



Lifeguard self-righting liferaft

worth considering if you are unfit or unlikely to be able to turn the raft over by yourself in case of capsize or inverted launch.

Liferaft Contents

The contents of the liferaft will vary, depending upon which type you choose. As an example, a standard leisure liferaft will only contain: a bailer, pump, paddles, repair kit, sponge, survival instructions, a set of leak stoppers, 30m throwing line, signal card, safety knife, and a sea anchor. Offshore, you will need a more robust liferaft and extra equipment for keeping the crew alive and comfortable and to signal to rescuers, which is why we set minimum standards for liferaft contents.

If you have an ISAF liferaft; an ISO 9650 raft with a less than 24 hour pack; or a SOLAS B pack; you will need to supplement the contents with extra rations and/or equipment to meet the WCC Safety Equipment Requirements.



Typical ISO less than 24 hour pack

Use the [table on page 17](#) and the list of contents provided with your raft to help you decide what extra equipment you need. This extra equipment can be packed in the raft, or in a separate grab bag (abandon ship bag) and is in addition to any equipment you are required to have on the boat.

SOLAS A Pack Because it is designed for commercial boats, the SOLAS A pack is the most comprehensive. Many liferafts are sold with a SOLAS B pack - you will need to upgrade this to a SOLAS A pack or ISO 9650 Pack 1. If you choose an ISAF raft, you will need to add water, food and flares to comply with WCC Safety Equipment Requirements.



Extra equipment needed for a >24 hour pack

The table on page 17 will give you an indication as to the minimum likely contents of various raft types. This information will be extremely useful in forming the basis of what to pack in your grab bag. It is important to note that pack contents can vary slightly so do check with your agent to get an accurate inventory.

Most good service agents will welcome you to watch your raft being serviced, and this is a good way to understand what your raft and its equipment really look like. Don't forget that you can ask for extra items to be packed in the raft. Useful additions might include spare glasses, medication, copies of passports/ship's papers and so on.

The emergency pack contents should be seen as a minimum level of equipment, and it is always worth packing more rations, flares and other equipment into an extra grab bag (abandon ship bag). See page 24 for more suggestions for grab bag contents.

Liferaft Rations

The food and water rations provided with liferafts have been carefully designed to provide a minimum level of sustenance. Water rations now usually come in easy-open plastic bags, rather than tin cans. It is important to have a marked drinking cup so that the water can be rationed, and an infant's drinking cup is a good idea, as it will prevent the water spilling. The

recommendation is no water for the first 24 hours, then 0.5 litre per person per day. This half litre (approx 1 pint) should be split into three drinks, one each at sunrise, midday and sunset. Children and the injured/sick will require water during the first day.

The more water you carry in the raft or grab bag, the more comfortable you will be. You can carry a hand watermaker in the grab bag instead of extra water.

The food rations usually come in a foil wrapped block of hard biscuits, and provide a total of 10,000 KJ per person. Again, you can add to this supply with extra foods, either packed in the grab bag or as last-minute grabs, but try to pick foods that will not increase thirst (boiled sweets, tinned fruit, energy bars and tinned condensed milk).

Thermal Protective Aids (TPAs)

All liferafts must have at least two thermal protective aids onboard, or in the grab bag.

These may vary from a simple foil blanket or aluminiumized polythene bag that is wrapped around the casualty to stop wind chill, to all-in-one aluminiumized polythene suits.

You may choose to carry immersion suits instead of simple TPAs.

Get to Know your Liferaft

It is a good idea to see your liferaft inflated, and if possible, to try using it in a swimming pool as part of an organised demonstration or sea safety course. Understanding how big (or small) it is for the number of crew that may have to use it; the quality and range of the equipment packed in the raft; the time it takes to inflate (3 minutes at 20°C is the World Sailing standard); and what it feels like to board a fully-crewed liferaft wearing your lifejacket are all useful experiences and will help you to make decisions if you ever have to abandon your boat in an emergency.

The best way to learn about liferafts is attending a World Sailing Safety at Sea course with a practical water-based session. Some liferaft manufacturers offer useful familiarisation courses.

Ask your service agent if you can watch your raft being serviced - this is also a good opportunity to have extra items packed into your raft, such as medication, spare glasses, or copies of passports.

Liferaft Contents Table

The table shows the typical contents of the ISAF, ISO and SOLAS liferafts that meet WCC Safety Equipment Regulations. The actual contents may vary slightly between manufacturers, so check what your raft contains.

Make sure that your liferaft pack meets one of these standards, by either buying the right pack, or adding extra rations/equipment to a grab bag.

These lists will help you to decide what extra equipment you should pack in your grab bag (abandon ship bag) to supplement the liferaft contents.

*Please note that items in **RED** are required to supplement a <24h ISO 9650 pack to make it >24h.*

Abbreviations: pp = per person for the number of people rated in the raft, so a 6-man liferaft will contain 6 seasick bags as a minimum.

Item	ISAF Part II	ISO 9650 Pack 1 > 24h	Solas A
Bailer	1	1	1
Pump	1	1	1
Paddles	2	1	2
Repair kit	1	1	1
Sponge	1pp	2	2
Survival instructions	1	1	1
Leak stoppers	Set	Set	Set
Throw line 30m	1	1	1
Signal card	1		1
Safety knife	1	1	1
Sea anchors	1	1	2
First aid kit	1	1 (not in <24h)	1
Whistle	1	1	1
Torches/flashlights	2	2 (only 1 in <24h)	1
Spare batteries & bulbs for torch		1	1
Signal mirror	1	1	1
Anti-seasick pills	6pp	6pp	6pp
Seasick bag	1pp	1pp	1pp
Thermal TPAs	2	2 (not in <24h)	2 (only 1 in SOLAS B)
Scissors			1
Fishing kit			1 (not in SOLAS B)
Waterproof notebook	1		
Radar reflector			1
Tin opener			3 (not in SOLAS B)
Graduated drinking cup			1 (not in SOLAS B)
Red hand flares	3 - Put 3 more in grab bag	6 (only 3 in <24h)	6 (only 3 in SOLAS B)
Parachute rocket flare	None. Put 2 in grab bag	2	4 (only 2 in SOLAS B)
Floating smoke flare			2 (only 1 in SOLAS B)
Water rations	None. Put 1.5 litre pp in grab bag	1.5 litre pp (not in <24h)	1.5 litre pp (not in SOLAS B)
Food rations	None. Put 10,000 KJ pp in grab bag	10,000 KJ pp (not in <24h)	10,000 KJ pp (not in SOLAS B)

Liferaft Stowage

There are many different ways of stowing a liferaft. Valise (soft bag) liferafts should be protected from water, chafe and heavy weights - they should never be used as a seat. A dedicated cockpit locker or an accessible and secure location below decks may be best for this type of raft.

Canister (hard case) liferafts can be mounted on deck or on the stern rail, usually in a purpose-made cradle. Don't install where the raft will be used as a step - this will break the seal and allow water to get into the raft, causing corrosion.

The **WCC Safety Equipment Requirements** state that the raft must be stowed so it can be ready to launch within 15 seconds. If a liferaft is stowed in a locker, the locker should be dedicated to the stowage of the liferaft and nothing else that may hinder access to the liferaft or cause damage to it should be kept in the locker. Boats with externally-mounted canister liferafts can have a hydrostatic release on the cradle lashing, so that in the event of a sudden catastrophic sinking the liferaft would automatically be launched.

The release mechanism works on water pressure - within 4 metres, an integral sharp knife cuts the lashing and the liferaft will float free from its cradle, although it is still attached to the boat. As the boat sinks, the liferaft painter line will be stretched and the liferaft will inflate. A weak point in the line will break to ensure the liferaft isn't pulled down with the boat.

The hydrostatic release mechanisms usually have to be replaced every two years.



Stowing options for canister liferafts



Buying a Liferaft

When you are deciding which liferaft to buy or hire, try to see as many as possible so you can make a comparison. Boat shows are often a good place to see lots of rafts from different manufacturers.

It is worth getting information from as many sources as possible. Search out comparative tests published by boating magazines or other third-party journals. These should be unbiased.

Some manufacturers have taken the additional step of gaining accreditation from a 'notified body', such as RYA or Bureau Veritas, third-party confirmation that the product meets the required standard.

Servicing

Liferafts need to be serviced by an approved agent. ISO 9650 canister packed liferafts should be serviced at least every 3 years. SOLAS, ISAF and rafts over 10 years old require annual servicing. Yachts racing under World Sailing rules (or in the ARC Racing Division) with a valise raft will also require an annual service, as valise-packed rafts are more easily damaged.

During a service the raft will be inflated and the fabric and construction checked for corrosion and damage. The gas bottle will be refilled or replaced as necessary, and the pack contents checked and replaced if they are out-of-date. Liferafts that no longer meet the standard will be condemned.

Try to watch your liferaft being serviced, as this is a good opportunity to see what it looks like when inflated, and to view the contents. You can usually add extra small items to the raft when it is being repacked, such as boat's papers, spectacles, medication or an EPIRB or SART.

Your liferaft will need to be within service period for the duration of the rally. Keep your service certificate on board the boat, as it will be needed for the safety equipment inspection before the rally start.

Safety Equipment Review

Your safety is our prime concern. In the next few pages you will find useful information on safety equipment with some requirements and recommendations on what to carry on board.

The rally Safety Equipment Requirements are printed as an easy [checklist on pages 25-30](#), helping you to prepare and to ensure you have everything on board. These include more information on mandatory safety equipment requirements for the event.

Whilst working through the list, it is a good opportunity to check all your safety equipment is in good working order, has current certification (where appropriate), and is stored in the best place on board. The rally Safety Equipment Requirements will be used as the basis for the pre-start safety equipment inspection.

EPIRB

Emergency Position Indicating Radio Beacon

All yachts participating in the event are required to carry at least one **floating, water or manually operated 406MHz EPIRB also operating on 121.5MHz**.

When activated, either automatically or manually, the 406 MHz signal is picked up by the COSPAR-SARSAT satellite system and forwarded to a ground monitoring station, and the rescue authorities are informed. The 121.5MHz signal is used by the rescue authorities to pinpoint the distress location. A 406 MHz EPIRB registered after 2015 shall include an internal GPS.

The EPIRB must be correctly registered with your home authority, with up-to-date vessel details and emergency contact information. Contact your local Coastguard authority or EPIRB manufacturer for advice.

Personal locator beacons (PLBs) carried by the crew do not replace the requirement for a yacht's EPIRB.



Flares

All yachts are required to carry pyrotechnic flares and a **minimum of: 4 red hand held (2 of which may be eVDS); and 2 orange float smokes** (required for World Sailing Offshore Special Regulations Category 1). Whether they are carried in the raft or grab bag, the liferaft flares are in addition to those above.

Each flare must be in date for the duration of the rally and not older than four years from the date of manufacture. Yachts that are going long term cruising should consider departing with a complete new set of flares, as it can be expensive and difficult to replace them once en route.



Whilst no longer a requirement, keeping white collision warning flares to hand for the watch on deck is a good idea whilst the yacht is at sea. Ideally they should be stowed (perhaps in spring clips) within easy reach of the helmsman, in a waterproof position. Many yachts stow them just inside the main companionway hatch.

All other pyrotechnic flares **must be kept in a waterproof canister**, prolonging their life and ensuring their operability at the required moment.

Passive Radar Reflector

All boats must be visible to shipping, even if there is a power failure onboard. **All boats must carry a passive radar reflector with a radar cross section of 10m² or more.** Passive radar reflectors require no power, and can be traditional 'octahedral' type or cylinder type. The Echomax inflatable reflector is accepted, however "Tube" radar reflectors are NOT acceptable. The **reflector can be mounted permanently on the mast, or hoist on a halyard to a minimum of 5m (15') above deck.**



Lifejackets

There are a wide range of lifejackets available with designs to suit all body shapes and budgets. Modern gas inflated combined lifejacket-harnesses are a far better choice than the older style permanent buoyancy type, as they are comfortable enough to wear at all times. A lifejacket that is comfortable is more likely to be worn; a lifejacket in a locker will not save your life.



The international standard is ISO 12402. Lifejackets and buoyancy aids are graded by flotation capacity (in Newtons or lbs.) The normal levels are 50, 100, 150 and 275N. 50 and 100N jackets are only considered as buoyancy aids or lifejackets for children.

The 150N jacket is the minimum standard for offshore sailing. 275N lifejackets are designed for commercial applications when the wearer is carrying heavy tools or also wearing a survival suit. They are bulkier and heavier than 150N and not recommended for general cruising.

Where national flag regulations require inherently buoyant PFDs to be carried, an offshore inflatable lifejacket/harness shall also be carried.

There shall be a lifejacket/combined harness for each member of the crew.

Gas inflated jackets have three main operating systems:

1. Manual pull

- CO² canister is fired by pulling the cord.
- Full buoyancy in approximately 5 seconds.
- Can also be inflated orally.

2. Auto inflate (salt tablet activated)

- Operates within 5 seconds of immersion.
- Mechanism pierces canister, inflating lifejacket in approximately 5 seconds.
- Can also be inflated as manual version.

3. Auto inflate (hydrostatic activation)

- This works by water pressure, only operating when submerged in 10cm (4-5") of water.
- No accidental inflation by spray or humidity even in extreme conditions.
- Cylinder is mounted on the inside of the lifejacket inflation chamber.
- Can also be inflated as manual version.

Extras for Lifejackets

Many high quality modern lifejackets come with crotch straps and a sprayhood as standard, but these can also be bought separately and retro-fitted.

It is a requirement that crotch straps are fitted as they keep the man overboard floating higher in the water by keeping the inflated bladder down and preventing it rising over the head. This is safer and more comfortable.

It is a requirement that sprayhoods (face shields) are fitted. These can be bought separately. When a casualty is in the water the legs act as natural drogues, orientating the body such that it lies facing the oncoming wind and waves. This can quickly cause the casualty to be overcome and possibly drown over time through water inhalation.

Spray hoods are not designed to be worn day-to-day, but specifically by the casualty in the water.

It is strongly recommended that each lifejacket is fitted with a personal AIS MOB device to aid in faster, accurate recovery of a crew overboard.



In addition to crotch straps and spray hoods:

Lifejackets should have a light, a whistle and retro reflective strips. Each lifejacket must be marked with the name of the yacht or owner of the lifejacket.

It is a requirement that each lifejacket have a safety tether not more than 2m (6'6") long with a snap hook at each end and an additional snap hook placed at the mid-point of the line to provide one short and one longer tether.



The yacht should have strong clipping points attached to through-bolted or welded deck plates in positions close to the helm and companion-way, so that crew can clip on before coming onto deck and unclip after going below.

Lifejackets for Children

It is preferable for children to wear permanent buoyancy lifejackets. These can be fitted with a light, retro reflective strips, and marked with the boat name, and usually have a crotch strap as standard.

Younger children find permanent buoyancy jackets more comfortable, and they also offer some protection from knocks and bumps.

Children weighing over 40kg (88lb) should be wearing a 150N lifejacket, either inflatable or permanent buoyancy.

It is not possible to obtain sprayhoods for child-size lifejackets, and these are not expected as part of the safety equipment inspection.



Lifejacket Maintenance

Lifejackets are often dumped and left at the bottom of some damp locker and generally lead a tough life. When needed they may be found not to work, which is too late.

As part of your preparations before the start of the rally, all life jackets should be given a thorough overhaul.



Lifejackets should be serviced annually, ideally by an authorised agent. However you too should carry out frequent checks and maintenance to your lifejacket. Below is a list of some of the more important checks that should be completed.

1. Inflate orally and leave overnight
2. Check outer jacket for wear or tears
3. Clean zippers and lubricate with Vaseline
4. Check stitching and clean off salt
5. Check bladder for abrasion especially behind the bottle, the join to the outer skin and in folds
6. Check light and expiry date, blow the whistle
7. Check reflective strips
8. Check cylinder is not loose (common problem) and is the correct size
9. Check firing mechanism

It is important to carry re-arming spares for inflatable lifejackets, especially for yachts that are going long term cruising. It can be expensive and difficult to find spares, as Europe and America use different thread systems.

The skipper should have clear rules about when lifejackets are to be worn. Modern self inflating compact lifejackets are much more comfortable to wear and are therefore more likely to be worn for a greater part of the time.

Retro Reflective Tape

All modern foul weather clothing has this fitted as standard; the tape greatly enhances the visibility of the wearer to a third party and adds to safety at sea.

The Safety Equipment Requirements **require retro-reflective tape to be fitted to all lifebuoys and lifejackets.**

The tape can be bought on a roll or in pre-cut patches.

Man Overboard Equipment

Each yacht is **required to carry lifebuoys (liferings)** to aid in the event of a man overboard situation. The choice of devices can be broken down into four main categories:

1. Traditional lifebuoy/lifering
2. Traditional lifebuoy connected to a Danbuoy/MOB pole
3. Recovery Sling
4. MOB Module

A **danbuoy** or **man overboard (MOB) pole** is a large floating pole carrying a flag and light, which clearly indicates the casualty's position. MOB poles come in a variety of designs, including inflatable units.

Due to the various combinations allowed in the rules, the area of man overboard equipment has traditionally caused most problems during the safety checks. Owners have had to waste a huge amount of time running back and forth to chandleries to buy new equipment, whistles and retro reflective tape. **It is well worth spending the time now to get it right.**

The Regulations specifically state that each yacht shall have the following:

1. One lifebuoy/lifering with a drogue, or a recovery sling (without a drogue), with a self igniting light and whistle attached, and
2. One lifebuoy, or MOB module (eg Jonbuoy or Switlik MOM), equipped with a whistle, drogue, a self igniting light and a pole and flag (danbuoy/MOB pole)
 - At least one lifebuoy or recovery sling should have permanent (eg foam) buoyancy
 - Inflatable lifebuoys/danbuoys should be tested in accordance with maker's instructions.
 - Each lifebuoy or recovery sling shall have the boat's name marked on them and must be fitted with marine grade retro reflective material.

At least one item is required from both Box 1 AND Box 2 below, with the required specifications of whistles, tape etc. where indicated.

1. Choose one of these options:

i. Lifebuoy 1 with:



Name of vessel
 Reflective Tape
 Whistle
 Light
 Drogue

..... OR

ii. Recovery Sling with:



Name of vessel
 Whistle
 Light
 Reflective Tape

+
AND

2. Choose one of these options:

iii. Lifebuoy 2 with:



Name of vessel
 Reflective Tape
 Whistle
 Light
 Drogue
 Danbuoy (MOB pole)

..... OR

iv. MOB Module:



eg Jonbuoy or Switlik
 MOM
 In service date

Recovering a Man Overboard (MOB)

While the priority is prevention of a man overboard situation occurring through the use of rigid safety policies, you must consider what to do in the event of it happening. Many crews routinely practice getting back to a man overboard, far fewer consider the possible difficulties in getting them back onboard.

There are various methods to achieve this and all have pros and cons. The important thing is to securely attach the victim to the yacht while you consider your options.

The type of method used will depend on many factors, not least of which are:

- the ability of the casualty to help themselves
- the size of the yacht
- the size and strength of the crew
- weather conditions

Whichever method you choose to use, it would be well worth practicing it before you leave, even if it is from the dockside.



Recovery Options

1. One option is simply hauling the casualty back onboard under the guardrails, or at the transom, using the boarding ladder. Beware of using the transom in anything but calm conditions.
Hauling a wet heavy body is hard work and will require strong crew. Passing a loop of rope over the side may let the casualty get a foot hold and enable him to help.
2. Using a **block and tackle system** similar to a mainsheet system works well. It can be stored ready to go in a convenient place. One end can be attached to either a halyard or the end of the boom with a snap shackle. The other end has two safety lines attached to act as a lifting strop. If using the boom instead of a halyard it helps to raise it up beyond its usual position first. It also helps to try and brace it to reduce movement. All this takes time.
The tail (fall) can be pulled by hand, such as with a mainsheet, or led back to a winch for

additional power. The advantage of using a block and tackle instead of just a halyard, is that it provides huge mechanical advantage. Using just the halyard on a normal winch is extremely hard work.

3. A **storm jib** can be used by attaching the luff along the deck and the clew to a halyard.

The victim is then rolled up the side of the yacht. Trying to sink the sail below the victim can be tricky. There are more sophisticated commercial versions of the storm jib recovery system available, such as www.mobmat.com



4. With an unconscious casualty in the water it is well worthwhile **launching the dinghy** into the water, or in the absence of this, the liferaft. This will give the rescuer a stable platform from which to work and enable swift recovery of the MOB out of the water.

5. **Rescue sling** devices are widely available in most chandleries. These are basically a helicopter lifting style strop attached to a long line, which in turn is attached to the yacht. By circling the MOB he can grab the sling and be brought alongside the yacht. The strop then provides an ideal lifting device if attached to a halyard. However as with the system above, it will be extremely hard work to lift a wet heavy man with just the halyard and it's still worth considering a block and tackle in addition to the rescue sling, to make life easier.

6. A **MOB module** acts almost like a personal mini-liferaft with a MOB pole, light and lifting points for hoisting the casualty back onboard. These are normally mounted on the stern rails and are activated by pulling a lever on the casing, inflating the module so it floats clear of the yacht. This device does require a fully conscious casualty able to get into the module, and must be serviced regularly.



Grab Bags

The WCC Safety Equipment Regulations require every boat to have a grab bag (abandon ship bag) for every liferaft onboard, containing items to help improve rescue, make your time in the liferaft more comfortable, and to help once you are rescued.

If your liferaft contents require upgrading with extra rations or equipment to meet the ISO 9650 Pack 1 over 24 hours or SOLAS A content lists (see table on page 17) then you will need a grab bag for this equipment too.

It is extremely important to have a good grab bag. What you pack in it will to a large extent depend upon what type of liferaft you have and what it already contains.

The grab bag should be:

- brightly coloured, waterproof and able to float
- marked with the boat's name
- fitted with lanyard to attach to raft
- duplicated to number of rafts carried:
2 rafts = 2 grab bags

Store the grab bag where it is easily accessible, and make the location known to all crew. Keep another empty bag nearby for 'last minute' grabs.

What to Include

In order to choose the correct items in your grab bag it is a good idea to place them into one of the four survival priorities categories:

1. Location
2. Protection
3. Food and Water
4. Medical

Clearly location items must be top of the list as quick location and rescue will mean not having to rely on the equipment in the other categories so much, or even at all.

Note – Items in blue may already be in the raft pack. Check the liferaft contents table and check quantities as you may still need to add more.



1. Location

406 EPIRB / SART / waterproof handheld VHF / waterproof handheld GPS / waterproof flashlight / strobe light / cyalume sticks / extra flares / radar reflector / signals card / signal mirror (heliograph) / fog horn

2. Protection

Sun cream / heat (or chill) packs / inflatable cushion / fold down bucket / moist hygiene wipes / diving mask / gaffer tape / second sea anchor / thermal protective aids (TPAs) / decent bailer / liferaft repair kit / sponges

3. Food and Water

Extra water (only fill bottles to 80%) / fishing kit / extra food rations (non thirst provoking) / graduated drinking cups / child's no-spill drinking cup / collapsible water container for collecting water

4. Medical

Prescription medicine / sunburn cream / inflatable splints / enema kit / anti-emetics / first aid kit / extra sea sick pills and bags

'Last Minute' Grabs

These are items that you will probably need on board the boat, and so aren't convenient to keep permanently stored in the grab bag. They can be 'last minute grabs' that you collect as you abandon the boat. It is a good idea to keep laminated copies of passports and ship's papers permanently in the grab bag. These may include: passports / ship's papers / credit cards and money / binoculars / sat phone / mobile (cell) phone / wet-weather gear / lifejackets (if not worn) / immersion suits / man overboard danbuoy / SSB receiver / spare clothing / sextant and tables / spare clothing / sunglasses / charts / compass / lighter / multi purpose tool / pack of cards / towels / waterproof notebook and pencils

World Cruising Club Safety Equipment Requirements

2017

The WCC safety equipment requirements have been drawn up to ensure the minimum level of safety for yachts participating in World Cruising Club Events. The World Sailing Offshore Special Regulations (OSR) have been used as a guideline to compile these regulations. See <http://www.sailing.org/documents/offshorespecialregs>

These safety equipment requirements do not override any greater safety requirement demanded by the yacht's national or flag country, maritime authorities or appropriate regulatory bodies.

Yacht owners considering taking fare paying guests or crew should consider the implication in relation to their national or flag regulations as required by the appropriate proper authorities.

For rallies with a racing division only:

Division II (Racing) is run under World Sailing Offshore Special Regulations for Category 1 and these Safety Equipment Requirements.

For World ARC yachts:

Equipment or service dates should not expire within the first six months of the start of the Rally. Your safety equipment inspector will be able to advise you about where to renew these items subsequently.

Please visit the Members Area where you will find this information in French, German, Italian, Spanish, and Russian.

The requirements are in two sections:

Section One - Mandatory Safety Equipment Requirements

This equipment must be carried and all items will be sighted during the safety equipment inspection prior to the start. Failure to comply may lead to disqualification from the Rally.

Section Two - Recommended Safety Equipment

Whilst equipment in this section is not mandatory the organisers strongly suggest that all the recommendations in this section are complied with. The Safety Equipment Officer will be available to discuss points made in this section during his inspection.

General Requirements

It is the entire sole and inescapable responsibility of each skipper to ensure that all necessary safety precautions whatsoever are taken in respect of himself the crew and the yacht.

All safety equipment that requires regular servicing must be in date, at the start of the Rally, and remain in date for the duration of the Rally. (The Test Certificate for the liferaft will be inspected during the Safety Equipment Inspection).

All safety equipment carried must:

- i. be of type, size and capacity commensurate with the size of yacht and crew
- ii. function correctly
- iii. be easily accessible

Each crew member must be fully conversant with the operation of all safety equipment carried and know its stowage positions.

Section One - Mandatory Safety Equipment Requirements

Liferaft

A purpose made, self inflating, liferaft of sufficient places to carry all the crew shall be either:

- i. An "ISO Standard 9650" Type 1 Group A with service Pack 1 (>24 hours), or equivalent made up of service Pack 2 (<24 hours) and a grab bag, or
- ii. An ISAF liferaft manufactured before 2016 until replacement is due at end of service life, plus food and water equivalent to (i) above, or
- iii. A SOLAS (LSA Code 1997 Chapter IV or later) containing a SOLAS A pack

If not fitted externally with a hydrostatic release, each raft shall be capable of being at the lifelines ready to launch within 15 seconds.

If a liferaft is stowed in a locker that locker will be dedicated to the stowage of the liferaft and will not have stowed in it anything else that is likely to hinder access to the liferaft or cause damage to it.

Each liferaft shall have a valid inspection certificate from the manufacturer or approved servicing agent, valid for the period of the Rally. The certificate, or a copy, shall be carried on the yacht. SOLAS/ISAF service annually. ISO service max. three year interval.

VHF

A VHF radio transceiver having a rated output power of 25W and capable of working on all standard international channels must be fitted.

An external cockpit extension speaker should also be fitted to the set.

The radio shall have a masthead antenna, and

An emergency antenna shall also be carried.

Long Range Communications Equipment

An SSB radio (with pactor modem) or satellite communications system capable of sending and receiving email messages whilst at sea.

This paragraph only applies to World ARC, ARC, ARC+ Cape Verdes, ARC Europe, ARC USA, ARC Pacific & ARC Caribbean 1500.

World ARC yachts must be equipped with an SSB.

EPIRB (Emergency Position Indicating Radio Beacon)

A floating, water and manually activated approved EPIRB transmitting on 406MHz and 121.5MHz, correctly registered with the appropriate home authority. A 406 MHz EPIRB registered after 2015 shall include an internal GPS.

(Personal locator beacons PLBs carried do not replace the requirement for a yacht's EPIRB)

Passive Radar Reflector

Permanently mounted in, or capable of being hoisted to, a position at least 5m (15') above deck. (Where fitted, a Radar Target Enhancer does not replace the requirement for a passive radar reflector)

All radar reflectors must have a documented RCS (radar cross-section) of not less than 10m². Smaller cylindrical reflectors do not meet this RCS requirement.

AIS (Automatic Identification System)

An AIS receiver shall be fitted as a minimum. A transponder is strongly recommended for long distance rallies.

World ARC yachts must be equipped with a transponder

Flares

Shall be pyrotechnic SOLAS compliant, not older than the stamped expiry date, or four years from date of manufacture, for the end date of the event. Pyrotechnic flares to be stowed in a watertight container, with protective gloves and goggles, with as a minimum:

4 red hand held flares (2 of which may be eVDS)

2 orange smoke

Crew Overboard Recovery

Within reach of the helmsman for instant use:

1. One lifebuoy with a drogue, or a recovery sling (without a drogue), with a self-igniting light and whistle attached, **and**
2. One lifebuoy, or a MOB Module, equipped with a whistle, drogue, a self-igniting light and a pole and flag (a danbuoy) [see diagram on page 22](#)

At least one lifebuoy or recovery sling should have permanent (eg foam) buoyancy. Every inflatable lifebuoy and danbuoy shall be tested at intervals in accordance with its manufacturer's instructions.

Each lifebuoy/recovery sling shall have the yacht's name painted on them and must be fitted with marine grade retro-reflective material and throwing line.

Throwing line (floating) 15–25m (50–75') length, readily accessible to cockpit

Bilge pumps

One manual bilge pump securely fitted, operable from on deck with companionways and hatches shut. (It is recommended that a second manual bilge pump, operable from below decks, is also fitted).

Unless permanently fitted, bilge pump handles shall be provided with a lanyard, securely attached, and catch, or similar device, to prevent accidental loss.

Navigation lights

Navigation lights must be fitted so that the yacht shall, at all times, comply with the International Regulations for Preventing Collision at Sea. Two independent sets of navigation lights are required. **Battery-operated handheld torches/flashlights are not acceptable.** (LED navigation lights are known to fail, and consideration should be given to carrying spare units)

For example, the primary set (bow and stern lights)

For example, the secondary set (masthead tricolour)

Spare bulbs of correct wattage shall also be carried for non-LED navigation lights

High powered search light

A watertight high-intensity heavy duty searchlight powered by the ships' batteries, instantly available in the cockpit for use on deck. The searchlight shall be capable of continuous use. If rechargeable, the searchlight shall be capable of operating whilst being charged.

Spare bulbs for search light

Continued over



Lifejacket/combined harness

There shall be a lifejacket/combined harness provided for each member of the crew.

Where national flag regulations require inherently buoyant PFDs to be carried, an offshore inflatable lifejacket/harness shall also be carried.

Each lifejacket shall have:

i. A whistle

ii. A light

iii. Be marked with the yacht name (or lifejacket owner's name)

iv. Retro-reflective tape

v. A crotch (or thigh) strap

vi. A sprayhood/face shield

vii. A safety line not more than 2m (6'6") long with a snap hook at each end and an additional snap hook, placed at a point of the line to provide one short and one longer tether.

Spare re-arming kits and gas bottles appropriate for each make of lifejacket onboard shall also be carried

Clipping points

Attached to through-bolted or welded deck plates, or similar, in positions close to the helm, and to enable crew to clip on before coming on deck, and unclip after going below.

Heavy equipment

All heavy equipment (ie anchor, batteries, gas bottles and stoves) shall be firmly secured to prevent damage from possible knockdown or capsize.

The following equipment shall also be fitted/carried:

Emergency grab bag (for suggested contents, see Appendix 1)

Nautical almanac

Navigational charts (not solely electronic) and pilots for the route

A recognised secondary or alternative method of navigation

Securely fitted taut double lifelines/guardrails around the entire deck

Jackstays/jacklines along port and starboard side decks

Anchor of sufficient weight plus a suitable combination of chain and rope

Fire extinguishers (at least two)

Fire blanket (secured near the galley)	<input type="checkbox"/>
Companionway washboards to be capable of being secured shut and with lanyards (to prevent accidental loss when removed for access or with the main hatch open).	<input type="checkbox"/>
Bungs or softwood plugs – securely attached/stowed adjacent to each fitting to enable any through hull fitting (below and above waterline) to be closed off	<input type="checkbox"/>
A watertight high powered torch/flash light with spare batteries and bulbs	<input type="checkbox"/>
Emergency tiller or secondary steering device	<input type="checkbox"/>
Hacksaw and spare blades, bolt croppers or a suitable method for cutting-away rigging	<input type="checkbox"/>
First aid kit and manual	<input type="checkbox"/>
Fog horn	<input type="checkbox"/>
Buckets (at least two) of stout construction and fitted with lanyards; capacity to be at least 2 gallons (9 litres)	<input type="checkbox"/>
Echo sounder and boat speed/distance log	<input type="checkbox"/>

Section Two - Recommended Safety Equipment

It is highly recommended that the following equipment be carried:

PLB's or AIS Beacons for individual crew members	<input type="checkbox"/>	Four white hand held anti-collision flares – of which one stored ready for use	<input type="checkbox"/>
Dinghy and oars	<input type="checkbox"/>	Mast step. The heel of a keel-stepped mast should be securely fastened to the maststep or adjoining structure	<input type="checkbox"/>
Handheld VHF transceiver	<input type="checkbox"/>	Drogue or Sea Anchor. A drogue (for deployment over the stern), or alternatively a sea anchor, or parachute anchor (for deployment over the bow)	<input type="checkbox"/>
Sextant and tables	<input type="checkbox"/>	A safety equipment location chart in durable waterproof material, visible for crew and clearly marked with the location of principal items of safety equipment.	<input type="checkbox"/>
Storm jib	<input type="checkbox"/>	It is highly recommended that each person on board carries a knife at all times whilst at sea	<input type="checkbox"/>
Storm trisail or 3rd reef in mainsail	<input type="checkbox"/>		
A second manual bilge pump operable from below deck	<input type="checkbox"/>		
White parachute flares (to provide illumination for Search and Rescue)	<input type="checkbox"/>		

Appendix 1 - Recommended Grab Bag Contents

A yacht is to have a grab bag for each liferaft with the following **recommended** contents, which need not be additional to the items required by the Safety Equipment Requirements.

The grab bag offers a suitable place to stow items where they will be quickly found and readily carried to the liferaft.

A grab bag should have inherent flotation, be marked with the name of the yacht, and have a lanyard and clip.

Recommended Grab Bag Contents:

- second liferaft sea anchor and line
- two safety can openers (if food/water rations carried are in cans)
- waterproof hand-held VHF transceiver
- watertight flashlight with spare batteries and bulb
- EPIRB
- first aid kit, including sunscreen and medical supplies for pre-existing medical conditions
- graduated plastic drinking vessel for rationing water
- two Cyalume-type sticks or two watertight floating lamps
- one daylight signalling mirror and one signalling whistle
- additional high energy food
- additional drinking water in a dedicated and sealed container, or a hand operated desalinator, plus containers for water
- string, polythene bags, seasickness tablets

Appendix 2 - Recommended Crew Training

It is recommended that the skipper and at least one crew member should have undertaken training within the five years before the start of the rally in both theoretical and practical sessions in the following subjects.

World Sailing OSR recommend that all crew members do likewise.

Recommended Training Subjects:

- care and maintenance of safety equipment
- liferafts
- storm sails
- fire precautions and fire fighting
- damage control and repair
- heavy weather – crew routines, boat handling, drogues
- man overboard prevention and recovery
- giving assistance to other craft
- hypothermia
- first aid
- search and rescue systems
- using communications equipment (VHF, GMDSS, satcoms etc.)
- weather forecasting

3. CREW

This section considers the real 'engine' of the boat - the team that will sail onboard. Your crew may be family or friends that you sail with regularly, or new people onboard only for the rally. It is important to consider how the team will work together, training they may need, and the logistics for getting crew to the right place.

Need crew? Visit OceanCrewLink.com



Useful Crew Checklist

Questions for the Skipper	Notes
Who will be sailing onboard?	
Have you booked the correct number of crew places for the rally?	
Have your crew completed their online registration and 'Declared'? See pages 5-6	
Does your insurance policy cover you for this number of people onboard for the rally route?	
Do you need to find more crew? See page 32 for suggestions or visit www.oceancrewlink.com	
If you have crew who haven't sailed together before, have you arranged a get together and/or test sail?	
What will you do if some of the crew don't like each other?	
Is your liferaft large enough for the proposed number of crew? See pages 13-16	
Do you have enough lifejackets/PFDs onboard, one for each person? Do crew need to provide their own lifejacket/PFD?	
Do your crew need training in: <ul style="list-style-type: none"> • First aid • Sea survival (liferafts etc) • Communications equipment • Navigation • Sailing skills 	
It is recommended that the skipper and at least one crew have undertaken formal training in the past 5 years (page 30) More information on crew training on page 35-36	
Do any of your crew have special needs? See page 37 <ul style="list-style-type: none"> • Diet? • Allergies? • Health or medical issues? 	
How will you manage any special needs during the rally?	
Will any of your crew be flying in to join the boat in port? See Skipper's Letter on page 33	
Do any of your crew require visas? Are their passports in-date? See the country pages in the Local Information section for more details	
How will costs be shared onboard, and have all crew been informed? What happens about unexpected costs, like breakages?	
When will crew be arriving onboard? When will they be leaving the boat?	
Will hotel accommodation need to be booked for any ports?	

Choosing Crew

Inviting new crew onto your boat is exciting and can lead to long and fruitful friendships. If things aren't managed carefully, there is also the possibility of misunderstandings and arguments, so think carefully about what you want to do.

Define your crew needs

Decide the **level of sailing experience** you are looking for in potential crew - an 'expert' or a willing learner? Don't forget that you will all be living together in cramped conditions, so personality can be as important as sailing skills.

Be honest about your own sailing skills, cruising ambitions and the quality of your boat.

Little things are important too. If you don't like people smoking on your boat, or only prepare vegetarian food, then make this clear up-front and it will save embarrassment later.

Check the paperwork – make sure your boat insurance policy covers you for the right number of crew, and that crew joining and leaving the boat overseas have the correct visas and onward flight tickets. If you are charging crew for the passage rather than just sharing costs, then check that your insurance company doesn't consider you to be commercially chartering, as this may have further implications.

Consider all aspects of safety carefully. Is the liferaft big enough, and do you have the correct number of lifejackets? Define your rules about wearing lifejackets and make sure new crew are familiar with all the safety equipment and that you practice man overboard and other drills.

Define crew responsibilities – will everyone be expected to cook, clean and stand watches?

Get Together

Getting along with all the crew is vital for everyone on board. The best way to get to know people is to have a trial sail together before starting the voyage. If it isn't possible to sail together first, then try to meet up, or at the very least Skype so you can 'see' each other. Have lots of phone conversations to get to know each other, and to answer all questions.

Most new crews end in long term friendships, but sometimes people just don't get along. If this happens, address issues in an open and fair way before problems start. Having written agreements in advance can help in some cases. Above all, be prepared to be flexible and adaptable!

Money

Agree the financial arrangements in writing before setting sail. Most crews agree to share living costs such as food, fuel and mooring fees, with individuals paying their own travel and onshore costs and the owner paying for maintenance and repairs. But sometimes the owner pays for everything, and sometimes the crew pay a passage fee.

The financial agreement may affect how the crew works together – if a crew pays a passage fee or daily rate, are they part of the crew or on holiday? If the owner pays for everything, are the crew effectively employees?

Owners charging a fee rather than shared costs could legally be considered to be chartering, which could have implications for boat insurance and even the level of safety and communications equipment onboard. Check with your insurance broker and with your national sailing organisation.

Changing crew and travel plans

Select crew who can be flexible in case of a delayed start or longer than planned passage. Beware of air tickets that cannot be changed.

Secure crew at least 6-8 weeks before departure and have some alternatives.

Circulate an itinerary and contact information among crew and their families. Plan crew changes to avoid long transfers and extra costs. If you change your plans, keep everyone informed in a timely manner.

Travel management company, **Traveleads**, are familiar with WCC rallies and offer advice and cost-effective travel for participants. T: +44 (0)113 242 2202, arcsailing@traveleads.net, www.traveleads.co.uk

Finding Crew

Use www.oceancrewlink.com to find sailors interested in ocean passage-making. It is free to register a crewing opportunity on your boat, and you can filter the crew by level of experience, nationality and other useful factors.

You can also ask in your local sailing club, get referrals from sailing friends, or use a fee-based service.

Whatever method you use, get to know your crew before setting sail!

Pre-Departure Safety Briefing

No matter how experienced your crew, a safety briefing by the skipper is an essential part of crew training prior to the start of any sailing voyage. **Skippers will be required to sign a declaration prior to departure stating they have conducted a pre-departure safety briefing with all crew members**, considered possible contingencies, and methods to avoid, minimize or cope with emergencies.

The pre-departure safety briefing must include:

- training drills for man overboard, abandon ship, dismasting, fire, flood, loss of rudder/steering and the use of storm sails;
- stowage and use of all safety equipment (in particular lifejackets, flares, EPIRBs, fire extinguishers, liferaft, MOB equipment, first aid kit, grab bag);
- the procedure for making a correct MAYDAY call, including giving the yacht's position;
- passage and pilotage plan for the crossing.

In addition, it is recommended that the skipper should:

- discuss the Safety Equipment Regulations with the crew;
- discuss who takes on the skipper role should the skipper be incapacitated or victim of a man-overboard incident;
- review the medical status of crew members taking medication, including seasickness remedies;
- assign a ship's medic;
- review safety harness, life jacket and safety line procedures to be used, issuing each crew member with their own lifejacket and ensuring it is fitted correctly;
- review cooking stove and other fire and explosion hazards;
- review flooding control procedures;
- review man aloft (mast climbing) procedures;
- urge each crew member to constantly think about safety and the consequences of every action.

Immigration Issues

Skipper's Responsibility

Crew arriving by boat at a destination are the responsibility of the skipper. This means that if your crew are leaving the boat, they need to have an onwards air ticket or funds available, otherwise the skipper will be responsible for the cost of repatriation. This is particularly important if you decide to pick-up casual crew on the dock just before departure.

If crew are leaving the boat, they should be 'signed-off' so they are no longer the skipper's responsibility. This is done by visiting the immigration authorities with the crew member and his papers, including passport and onwards tickets.

Skipper's Letter

Crew arriving by air on a one-way ticket may need proof that they will be leaving the country on the boat. This is easily done by providing a 'skipper's letter' for crew to present to the immigration authorities on arrival.

This letter should state that the named person is joining the named yacht in a specific port, and that the skipper/master accepts responsibility for that person leaving the country onboard the boat. The letter should be signed by the skipper. [Log on to the website worldcruising.com](http://www.worldcruising.com) (See Member's area > Documents & Info > Crew Advice) to download a pro-forma 'Skipper's Letter'. Don't forget to give the signed letter to crew before they fly.

Passports

While passports are a personal responsibility for each crew member, the skipper needs to check that all passports are in-date and comply with immigration requirements of any countries to be visited, as crew arriving by boat are the responsibility of the skipper.

See the Local Information section for more details, or go to the country pages on www.noonsite.com

Visas

Details of visa requirements are covered in the Local Information section of this Handbook.

www.noonsite.com is also a comprehensive resource, or contact the closest embassy or consulate of the country concerned.



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Crew Training

Proper training is good preparation for any sailing voyage. Skippers should ensure that their crew are properly prepared for the ocean passage. If the crew is prepared, the skipper will experience less stress during the passage and everyone will have more fun. The skipper has a duty of care towards his or her crew. No matter how much gear you put on your boat, it's the experience of the skipper and crew that makes for a safe voyage.

Formal Training

Formal qualifications or specific crew training classes are not required to participate in our rallies, however it is **recommended that the skipper and at least one of the crew have undertaken a range of formal training in the last five years.** This should include:

- care and maintenance of safety equipment
- liferafts
- storm sails
- fire precautions and fire fighting
- damage control and repair
- heavy weather – crew routines, boat handling, drogues
- man overboard prevention and recovery
- giving assistance to other craft
- hypothermia
- first aid
- search and rescue systems
- using communications equipment (VHF, GMDSS, satcoms etc.)
- weather forecasting

Sea Survival Training

Safety and survival at sea can be achieved with careful planning and preventatives. Formal sea survival and sea safety training is about considering the worst-case scenario, and learning damage limitation skills and emergency management.

The one or two day World Sailing sea survival course is an excellent introduction on how to use a liferaft correctly and how to handle an emergency situation at sea. The basic sea survival for small craft course is offered in many countries, and a full list of World Sailing recognised courses can be found at http://www.sailing.org/classesandequipment/offshore/sea_survival.php

The training will include man overboard and abandon ship procedures; a practical session with a liferaft and other safety equipment is invaluable. The experience will give you greater confidence in an emergency situation and in the capabilities of your safety equipment. If possible, join a course with a practical session in a swimming pool so you can learn about using lifejackets and liferafts.



Maritime First Aid/Medical Training

When heading off on a lengthy offshore passage, a cruising sailor needs to focus on 3 key areas:

- Basic medical skills
- Communications
- Medical supplies ([see page 67](#))

A number of training centres offer a range of medical training geared toward the offshore sailor. These courses aim to familiarise you with handling emergencies like lacerations, burns and fractures. In addition, you will learn about marine-related emergencies, such as hypothermia and drowning. Training will provide you with the confidence and skills to treat common ailments as well as life threatening emergencies, including how to stabilise a crew member with traumatic injuries, and take history and observations using a first aid and medical care system.

With a knowledgeable crew, safe and effective treatment can then be made with assistance from Radio Medical Advice via SSB radio, VHF relay, or satellite communications. Contacting the MRCC (Maritime Rescue Coordination Centre) **Radio Medical Advice** provides the opportunity to liaise with a doctor 24/7.

Carry a good medical book designed for sailors, such as the Ship's Captain's Medical Guide (ISBN 9780115516580) which will guide your first-aider through the treatment process. A online version is available for free download at <https://www.gov.uk/government/publications/the-ship-captains-medical-guide>

Training Centres

There are hundreds of yachting training schools worldwide offering blue water training, both theoretical and practical. To aid you in your search for the right course we have listed below relevant international websites and addresses.

Training in the UK

Hamble School of Yachting is our UK-based training partner, and they offer special courses and discounts for rally participants.



Hamble School of Yachting

www.hamble.co.uk Tel: +44 (0)23 8045 2668

The RYA website has a complete list of UK establishments offering a variety of yachting associated courses, including courses with affiliated centres in Europe, North America and Australia.

Royal Yachting Association

www.rya.org.uk Tel: +44 (0)23 8060 4100

Training in the USA

J/World Annapolis



www.jworldannapolis.com

Tel: +1 (410) 280-2040

J/World Annapolis is our US training partner, they are familiar with our rallies and will be able to assist with training advice.

US Sailing

www.ussailing.org Tel: +1 (401) 683 0800

US Sailing offers a range of training from basic cruising to offshore passage making.

www.sailingcertification.com

Note: The classroom-only Safety at Sea Seminars are not the same as the World Sailing sea survival course, and the additional second day of practical training is highly recommended. See www.ussailing.org/education/safety-at-sea/

Training Internationally

Most national sailing authorities will offer accredited training courses suitable for offshore sailing. Contact your national authority to find details of training centres close-by.

Canadian Yachting Association

www.sailing.ca Tel: +1 (613) 545 3044

Deutscher Segler Verband

www.dsv.org Tel: +49 40 63 20 090

Fédération Française de Voile

www.ffvoile.org Tel: +33 14 06 03 7 00

Koninklijk Nederlands Watersport Verbond

www.watersportverbond.nl Tel: +31 30 75 13 700

Norwegian Sailing Federation

www.seiling.no Tel: +47 21 02 97 10

Other countries via World Sailing website

www.sailing.org/about-isaf/mna/

Details of World Sailing sea survival courses worldwide: www.sailing.org/classesandequipment/offshore/sea_survival.php

Ocean Sailing Seminar

The World Cruising Club Ocean Sailing Seminars are two day courses that provide an in-depth look at the issues involved in planning and preparing for an ocean passage.

Topics include offshore communications, rigging maintenance, choosing sails, AC/DC power management, first aid at sea, windvane and autopilot systems, safety equipment and weather forecasting.

The seminars are not formal training courses, but are an excellent planning aid. They also provide an opportunity to meet other participants, and to have one-to-one discussions with lecturers.

www.worldcruising.com/training

Qualifying Passage

It is a requirement that the skipper and at least one member of the crew undertake a non-stop offshore or coastal passage in the boat that is going to be used for the rally. Details of the length of the qualifying passage are included in the rally Conditions of Entry.

This voyage is a shake-down for the boat and crew, and should highlight any training needs for the crew and work required for the boat. As such, it makes sense for as many of the crew as possible to have undertaken the qualifying passage.



Crew Health

As skipper of a yacht it is your responsibility to know what medical conditions, if any, that your crew may have. It's not just medical conditions like epilepsy, angina or diabetes that are important, but any medication taken on an ongoing basis may affect other drugs that need to be given in an emergency situation.

Food or drug allergies are important on a boat. If these are known, then care can be taken when provisioning, for example, to avoid nuts.

If crew have special medication for known conditions, such as an EpiPen (Epinephrine Auto-Injector) for extreme allergies, tablets for angina etc, then the rest of the crew need to know where these are stored and how to help administer them in an emergency.

Discuss health, allergies and medication with each crew individually, and complete the table below. Include the full name of any medication and its dosage.

If medication is not stored in the ship's medicine box, then note where it will be kept. This table needs to be accessible to all crew in an emergency, but be aware that this is a sensitive subject for many people. It may be a good idea for the affected crew member to explain their condition and treatment to the other crew, to dispel any anxieties or embarrassment.

General Wellbeing

It is worth remembering that for some people being at sea can be very stressful, while for others it is a relaxing experience. This may affect their general wellbeing, or any underlying medical conditions.

Encourage crew to have everything they need when they arrive onboard. Even something as trivial as a spare pair of spectacles can make the difference between an active crew member and someone effectively incapacitated.

Remember time zone changes when taking medication.

Crew Health Form

<i>Crew Name</i>	<i>Condition</i>	<i>Medication/Treatment</i>	<i>Notes</i>

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4. PERSONAL PREPARATIONS

Some elements of preparing for the rally are the responsibility of the skipper, and some are collectively managed by the crew as a whole. Some preparations are personal to individual crew, such as travel insurance, clothing choices, personal health and staying in touch with home.



Useful Personal Checklist

Questions	Notes
<i>Have you updated all of your personal information on the Member's Area of the website and 'Declared'? See pages 5-6</i>	
<i>Do you need a passport for the rally, and any onward cruising? If so, is your passport in date?</i>	
<i>Do you need any visas for the rally or onwards cruising? See Local Information section and www.noonsite.com</i>	
<i>Do you have suitable travel insurance with medical coverage?</i>	
<i>Have you arranged to have any vaccinations you may need for the rally or onwards cruising?</i>	
<i>If you haven't sailed together as a crew before, have you arranged a get together and/or test sail?</i>	
<i>Do you know how costs will be shared onboard?</i>	
<i>Is the skipper providing your lifejacket, or do you need your own? Does it comply with the Safety Equipment Regulations? More information on lifejackets/PFDs on pages 20-21</i>	
<i>Do you need training in:</i> <ul style="list-style-type: none">• First aid• Sea survival (liferrafts etc)• Communications equipment• Navigation• Sailing skills	
<i>It is recommended that the skipper and at least one crew have undertaken formal training in the past 5 years (see page 30) More information on crew training on pages 35-36</i>	
<i>Do you have any special needs?</i> <ul style="list-style-type: none">• Diet?• Allergies?• Health or medical issues?	
<i>Have you explained these fully to the skipper?</i>	
<i>Have you sorted out what clothing you are going to need? Don't forget you will need shore-going and smart clothes too! See page 45 for information</i>	
<i>Have you arranged to do your banking online, and do you have overseas emergency contacts for your bank and credit cards? See page 40 for information</i>	
<i>Do you need a mail forwarding service, or can you access all bills and mail online? See page 40 for information</i>	
<i>Do you need to book any flights/transport to the start or from the finish?</i>	
<i>Do you need to book any shore-side accommodation?</i>	

Keeping In Touch

Top tips for managing your life at a distance

Laptop or tablet. A must for any modern cruiser, but do think about backup in case it is damaged or stolen; a portable hard drive is a good option, or use online folder backup like dropbox.com. A small **portable printer** may also be useful.

Web email. A web-based email (Hotmail, Yahoo, Gmail) that can be accessed worldwide from any computer makes it easier to collect mail.

Back up documents via cloud services. E.g. Dropbox, googledocs, iCloud.

Getting online. The boat may have limited capacity for sending and receiving emails, so use internet cafes or buy a local mobile connection. A **WiFi booster** can be invaluable in marinas or anchorages with weak wifi coverage.

Digital camera. When sending pictures as email attachments or for uploading onto a photosharing website, 640x480 pixels is usually good enough quality, and keeps the file size to 100-200kb.

Banks and Money

- You will need to manage your money whilst away, so make sure you can access your bank account and statements online.
- Contact your bank and credit card providers so they know which countries you will be visiting, and that you will be making frequent overseas transactions.
- Ensure you have a contact telephone number for your bank that you can use from overseas – local rate or toll-free numbers often don't work outside your home country.
- Check that you can pay any regular bills, including credit cards online. Don't forget tax bills!
- Some banks require authorisation to act on faxed instructions. Check with your bank.
- Be aware of web scams – clear viewing history on public machines; change passwords regularly; don't click on links in emails, but always retype in the browser address line.
- Have more than one type of card (Visa and MasterCard). Note that American Express is not always accepted.

- Cash - plan ahead, as its often easier to pay with cash, and cards are not always accepted at fuel docks or restaurants.
- Keep a supply of US dollars and Euros onboard in case you arrive when banks are shut, or are a long way from the mooring.
- Keep small denomination notes for buying items in remote locations where change may not be available for large value notes.
- Have a wallet containing some out of date cards and a few dollars to act as a decoy in case of burglary or theft.

Calling Home

Mobile phone coverage is good in most ports. Check with your service provider for call charges, as it may be more cost-effective to buy a local SIM card. Make sure your phone is 'unlocked' and can be used on different networks. Some **satellite phone** call charges are similar cost to making an international call by mobile phone - check with your service provider.

Calling cards allow you to dial from local phones and often offer cheap international calls. In most countries you can also buy phone cards which are used instead of coins in public phones.

VoIP Call home via the internet. This works well anywhere you have a broadband internet connection. Best known is Skype www.skype.com. These services are free if calling another user on the same network, and offer very cheap calls to international telephone numbers.

Mail

There will be items that you have to receive via the regular mail. Think about what address you will use whilst you are away. Remember, some organisations will not send to a PO Box number. There are specialist companies that offer a forwarding service for cruisers:

UK: **Ship to Shore** www.shiptoshore.co.uk

USA: **St.Brendans Isle** www.sbimailservice.com

Receiving Mail

Usually a mailing address will be included in the Local Information section for each port, but if in doubt, ask the Rally team. Ask anyone sending you mail to ensure it is correctly and clearly addressed, including your boat's name.

Personal Health

The risks to health while travelling will vary between individuals, countries visited, activities planned while travelling, length of stay and general health of the traveller. Many of the problems experienced by travellers, such as unsafe food and contaminated water, accidents, sunburn and insect bites, cannot be prevented by vaccinations and other preventive measures need to be taken.

Personal Medication

If you require ongoing medication, ensure that you have enough supplies for the duration of the cruise, and that it will be in-date for that period.

If you have a medical condition or allergy that may require emergency treatment, make sure that you have suitable quantities of the medication with you, and that at the very least, the skipper knows what it is, where its stored, and how it should be administered.

Don't forget that you will rely on your crew mates to provide you with emergency care, so be honest and open about any conditions.

If you have medical or health issues, discuss your sailing plans with your Physician or Doctor, who may be able to offer advice. They may also be able to provide information documents that can be shared with the skipper and rest of the crew about conditions such as epilepsy, diabetes, asthma and heart conditions.

Vaccinations

We recommend that you have a current Tetanus vaccination before leaving home.

Talk to your Physician or Doctor about other vaccinations - ask specifically about Typhoid, Polio and Hepatitis A. Tell your doctor about your onward cruising plans, to ensure you get the right shots. Allow sufficient time before travel to ensure that the vaccinations have reached full effectiveness. This time period varies with each vaccination, and qualified medical advice should be obtained for the countries on your intended route.

Vaccinations for extended cruising

If you are intending to continue cruising or to travel further inland, then ask an infectious disease specialist about the specific areas to be

visited before you leave home. Information from:

British NHS www.fitfortravel.nhs.uk

US CDC wwwnc.cdc.gov/travel

Canadian PHAC www.phac-aspc.gov.ca

Malaria Seek local medical advice before departing from one port about the conditions at the next port of call, since advice on malaria prophylaxis changes frequently.

Yellow Fever This mainly occurs in tropical rainforest areas of South America and Africa, so it is unlikely that sailors would encounter it. However, vaccination certificates can be required in Panama, Ecuador and Brazil. As the vaccination is highly effective and gives protection for 10 years it may be worth having this injection, especially if you plan to travel inland during visits to Ecuador or Brazil.

Staying Healthy

For staying healthy onboard the maxim should be "prevention is better than cure". Ensure that good personal and boat hygiene is maintained, since the two greatest health hazards when travelling world-wide are mosquitoes and unsafe food and water.

Simple precautions will help maintain health:

- **Prevent mosquito bites** by fitting screens for hatches; burn coils at night, and use insect repellent sprays in the evening.
- Remember that in tropical climates food spoils quickly, so to **avoid stomach upsets**, take care over preparation of food and drink, keeping left-overs, and food hygiene.
- In the salt water environment **cuts and insect bites easily become infected**, and can take a long time to heal. Always disinfect and keep dry (if possible). Persistent wounds may need antibiotics.
- The tropical sun is strong, so take care not to **burn or dehydrate**. Wear hats and use high-SPF sun lotion liberally.
- Take precautions to avoid **galley accidents** such as burns and scalding - avoid cooking in rough weather, wear waterproof trousers when handling full pans, and use a pressure cooker or pan with tightly-fitting lid.
- Be careful to **avoid injury** on deck and below when the boat is sailing, and use lee-cloths and handholds. Foot and hand protection is also important.



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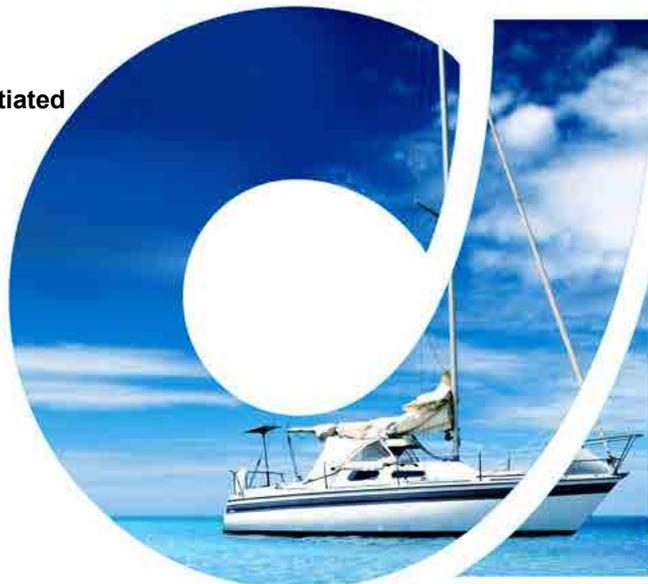


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Immigration Issues

Passports

It is essential to have a valid passport. Some countries require that the passport is valid for at least six months after the date of arrival in the country, so please check the expiry date.

If you are worried about the expiry date of your passport, consider renewing it before you leave home. If you are undertaking an extended cruise extra spare pages in your passport are a good idea. We estimate one side for every one or two countries to be visited.

It is a good idea to photocopy and scan all passports and visas as well as other important ships documents. This can save time when clearing Immigration, and is invaluable in an emergency or if the originals are lost.

Crew Joining Letter

It is recommended that all crew joining yachts who arrive on a one-way air ticket should carry a signed letter from the skipper stating that the person will be joining the yacht in a specified port and that the skipper accepts responsibility for ensuring he/she leaves the country with that vessel. This can save time on arrival, especially where a connecting flight has to be made to reach the yacht. Copies of such letters in English, Spanish and French are available by logging-on to the rally website www.worldcruising.com (See Member's area > Documents & Info > Crew Advice) to download a pro-forma 'Skipper's Letter'.

Visas

You may need a visa for the countries you are visiting, or for your onwards cruising plans. See the [Local Information](#) section of the Rally Handbook for visa requirements, see www.noonsite.com, or contact the Embassy of the country concerned.

It is generally easiest to obtain visas in your home country before starting cruising, but check the period of validity and any restrictions.

Travel Insurance

We recommend that the skipper and all members of the crew have a minimum level of travel insurance to at least provide basic medical cover for emergency treatment.

When taking out a travel insurance policy, pay

particular attention to the conditions of treatment and repatriation. There are a number of excellent tailor-made policies that provide a wide range of benefits, depending on whether you are the boat owner or crew. These include:

Bishop Skinnerwww.bishopskinner.com

Topsail Insurance ...www.topsailinsurance.co.uk

Pantaenius www.pantaenius.co.uk

Specialist brokers tend to offer more helpful advice than general travel or insurance agents. If buying an off the shelf travel policy check that sailing is not specifically excluded as a 'dangerous sport'.

European Union citizens - EHIC

Outside of the European mainland, some countries are outposts of European Union member states, and EU citizens can obtain reciprocal health care free of charge, although it may be necessary to pay and claim back. Ensure you have obtained your European Health Insurance Card (EHIC) before travelling.



Giving Gifts

If you are cruising to more remote communities, it is nice to give gifts as a thank you for the hospitality shown. Popular gifts include pens, pencils, colouring crayons, exercise books, balls and children's toys. You can also give something back to the community by inviting children onboard to learn about your yacht and how you live, visit a school to give a talk or meet the children, or organise a rubbish clean-up.

There are websites that help to put travellers in touch with local charitable projects, so you can make useful donations of your time or specific items. Sources of information include websites like www.stuffyourrucksack.com and the Embassies/Consulates of the countries to be visited.



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Clothing Choices

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It is possible to experience all kinds of weather on a long passage, especially when sailing in blue water. Squalls or frontal systems may bring big seas, rain and spray; and tropical sailing has a high potential for sunburn and heatstroke.

It's important to have a variety of kit available to keep you comfortable during the changing conditions you will meet. Space is normally at a premium aboard, so choosing your kit carefully to make sure everything works well together is critical. Modern technical clothing is generally quite versatile and you can use many items for multiple purposes.

Clothing for Temperate Sailing

In temperate waters you are likely to experience wet and windy conditions. It's important to have complete wet weather protection and a layering system will help you to stay warm and dry, even during the most difficult and challenging moments.



Layering Guide

Technical clothing can be thought of in three layers, each with their own specific function.

1. The next to skin **base or wicking layer** is designed to move moisture away from the skin, keeping you dry and warm after bursts of activity. The base layer forms the foundations of the whole clothing system, so it is imperative that it's right. Many base layers also offer UV protection so double as sun-protective layers in warmer conditions.
2. The **mid layer** is designed to be worn over a base layer and under an outer layer. Mid layers provide thermal benefits and are highly breathable to assist the movement of moisture to the outer layer. Constructed from fibres that do not absorb water, they dry quickly and keep you warm. There are a

variety of mid layers designed to work in all conditions, and many can be used as outer layers in lighter conditions.

3. The **waterproof outer layer** is your shield from the elements so it needs to be able to perform in the toughest of conditions. Aim for outer layers that are totally waterproof, windproof and include features designed to aid both comfort and performance. High levels of breathability in outer layer garments helps moist air to escape.

A combination of wicking baselayers, versatile mid layer insulation and protective outer shell will keep you warm, dry and able to perform no matter how demanding the conditions become.

Lots of Choices

It's a good idea to take along a selection of base and mid layers. Baselayers are always worn next to the skin so if you're working really hard and generating moisture when you go on your next watch you may want to put on a fresh garment. Baselayers are quick drying, but a lot can be said for changing baselayers reasonably frequently and washing them when possible- your crewmates will thank you for this! The temperature and windchill will dictate what kind of mid layers you need. It's a good idea to have a number of options to choose from which can be used independently or together in extremely cold circumstances. These can range from microfleece tops and trousers, through to waterproof and windproof garments with technical synthetic insulation.

Clothing for Tropical Sailing

In tropical conditions you won't need so many layers. What will be crucial, however, is

good protection from the sun. The sun's rays are particularly fierce at sea, when you are exposed for long periods of time and reflections from the water mean harmful UV can come from every angle.

There are shorts, t-shirts and polo shirts available which offer UV protection built into the fabric. These fabrics also wick moisture, so can form part of your layering system for cooler conditions,





making them a very versatile and useful part of your kit bag. You also need to consider headwear, a peaked cap or wide brimmed

hat is essential to protect your face and eyes and make sure to have a pair or two of comfortable sunglasses to hand (consider what you would do if your favourite pair disappear overboard!). Choosing a polarised pair will help to reduce glare and reflections from the sea.

Foot and Hand Protection

Rain or shine, wind or calm another important consideration on board is protecting your extremities.

Protection for your hands is vital as a rope burn or other damage at sea can drastically reduce your ability to function as a useful crew member. You may want a choice of gloves as what you will need for sailing in tropical conditions is very different to what you would use for a night watch in the northern Atlantic. A pair of lightweight sailing gloves are essential for common tasks on board like rope handling and sail changes but you may also want a warmer option for overnight watches, especially in cooler conditions.

In temperate waters, a good pair of waterproof seaboots is vital; breathable boots will be more comfortable over a longer period of time. Even in the tropics, consider what you will wear on your feet – it is easy to slip and twist an ankle, or to break a toe by stubbing it on deck hardware.



Care of Performance Fabrics

Traditionally the advice on washing technical fabrics and especially waterproofs has been to hand wash using old-fashioned soapflakes in order to not damage the membranes and

coatings. With new cleaning products and gentler wash settings available on many machines it's easier to care for your waterproof garments. You can buy specialist aftercare products to help you look after your technical kit – don't use general biological detergents.

Re-proofing spray applies a durable water resistant coating to any fabric, adding a breathable water resistant coating on the surface.

How to Order Gill Clothing in Europe

You can order Gill products and take advantage of your World Cruising Club 15% member discount by logging-on to the [World Cruising Club website](#) and clicking on the 'Clothing' link within the Members Area. This will take you through to a special area of the Gill website, where you can see details of the product range and order your kit. Delivery is straight from the Gill warehouse to your address, and most orders will be despatched overnight.

All Gill products come with a guarantee against defects in materials and workmanship giving you confidence to enjoy your ocean sailing experience in warmth and comfort no matter what the conditions may be.

Special Occasions

Don't forget to check the rally schedule to see whether there are events or activities that require specific clothing - there may be a 'smart-casual' dinner or a fancy-dress costume party.

Smart-casual usually means long trousers and a shirt for men, and ladies may choose to wear a dress. If you are going cruising for a long period, there may be times you want to 'dress-up' for dinner and go to a nice hotel or restaurant which may have a dress code.

Team Clothing

Rally-branded team clothing will be available to buy - this can be embroidered with your boat's name as a memento. Order online at <http://shop.worldcruising.com>



5. BOAT PREPARATIONS

This section will consider how to prepare the boat for the rally, including suggestions for equipment that may be bought specially for long-distance cruising. It also includes top tips for making the boat comfortable at sea.

Don't forget that Section 2, Safety, covers all of the mandatory and recommended safety equipment that the boat should carry. [See pages 11-30.](#)



Useful Boat Checklist

Questions	Notes
<i>Check and update your boat information on the Members Area. See page 7</i>	
<i>Add a boat description, photograph and links to your boat website See page 6</i>	
<i>Arrange for email capability at sea, via SSB and PACTOR modem or satellite phone See Communications Section for details</i>	
<i>Update your at-sea email address and sat-phone number (if onboard) on your boat information page See page 7</i>	
<i>Go through each area of the boat and think 'rolling' - what will make life easier and safer when the boat is heeled or rolling?</i> <ul style="list-style-type: none">• Galley• Heads/toilet• Main living cabin/saloon• Sleeping cabins	
<i>Will you need to protect against insects - for example mosquitoes and cockroaches?</i>	
<i>Do you need to consider the security of boat and equipment if you are leaving the boat for any period?</i>	
<i>Is your shore power the correct voltage for the countries you will be visiting? Do you need a transformer? Is your shore power cable long enough? More information on shore power on page 56</i>	
<i>Have you considered options for power generation at sea?</i> <ul style="list-style-type: none">• Alternator• Generator• Solar, wind or towed generators• Other? <i>More information on pages 57-59</i>	
<i>Have you got the right spares onboard? See page 63 for information</i>	
<i>Will you be able to get the right cooking gas (propane/butane) while cruising? See page 64 and the Local Information section for suppliers en route</i>	
<i>Do you need a holding tank (black water tank)? See page 65 for information</i>	
<i>Is your first aid kit adequate, and have you appointed a 'ship's medic'? See page 67 for information</i>	
<i>Do you need to schedule work on the boat with your boatyard or other specialist company? Don't leave this too late!</i>	

Think About...

Early in the planning phase of the rally, look critically at your boat and decide whether you need to make any modifications, or replace any of the gear. Don't forget that you will be cruising after the rally too! These are some suggestions:

Rigging:

If your mast and rigging is more than 10 years old, your insurance company may request replacement.

Whatever age the rig, get it checked by a rigger (see page 84)

Sails:

Are they up to a long passage, or are they well-worn and need replacement?

Do you have strong-wind sails?

Do you have downwind sails?

Do you have a robust reefing system?

(See page 91)

Steering system:

Check the rudder bearings and steering cables/chains for wear.

Test the emergency steering

Propeller:

Check the stern gland

Consider fitting a rope cutter

Back-ups:

Doubling-up systems like bilge pumps and fuel filters provides a back-up in case of failure.

What would happen if you had no electricity - could you still reef, navigate, pump the bilge or have lights?

Consider your options in 'worst-case' scenarios.

Power:

Do a power audit (see page 57) - do you have enough battery capacity?

How will you generate power on passage?

Any shore power issues? (see page 56)

Tools and spares:

Do you have comprehensive spare parts for all the systems onboard?

Do you have manuals/handbooks onboard?

Do you have a good tool box, with lots of choices?

(See page 63)

Communications:

If you are fitting SSB or sat phone, get it installed professionally well before the rally to ensure that it is working properly.

Safety:

Do you need extra safety equipment (see page 25-30) - where will it be stowed?

Create an equipment stowing plan

Water:

Do you have enough tank capacity (see page 73)

Consider separating water tanks to avoid water loss or contamination

Do you want to fit a watermaker?

Consider manual pumps in the galley and heads to save water

Consider a salt water pump in the galley (See page 65)

Provisions:

Create a provision stowage plan.

Anchor:

Do you have the right anchor, chain/rope and windlass for long term cruising?

Seacocks:

Check the through-hull fittings for corrosion.

Fit each seacock with a bung/plug.



...What Goes Wrong

Even after a comfortable season of cruising, an offshore passage can exert new demands on the boat, stressing parts not tested during short coastal cruises and day sailing, such as spinnakers and spars. It is a good idea to review some of the key equipment failures that may occur on extended passages prior to departure.

By considering potential problems now, in relation to your own boat, you will be able to judge if you are well prepared to avoid the most common problems at sea. Make sure you have the appropriate spare parts ([see page 63](#)).

On many rallies, problems experienced by boats include:

Rigging

On long downwind passages, damage to the spinnaker pole and its track may occur, when the forces of day after day poling out a foresail or spinnaker take their toll. Likewise, booms may break due to badly positioned preventers, or if the boom dips in the water when rolling down wind.

Total loss of the mast is very rare, but chainplate and rigging terminal failure is more common, and unless this is managed promptly the mast may come down.

Damage to running rigging like halyards is very common - all due to chafe.

See [pages 82-88](#) for tips on checking and repairing a rig at sea.

Sails

If your sails are several seasons old, get a sailmaker to check the stitching and cloth. Sail cloth is degraded by UV light as well as by general use, and weakened cloth can easily tear.

If you are planning trade wind sailing, then be prepared for squalls, which can bring a big increase in wind speed and direction, often leading to ripped sails.

Steering

Loss of steering through damage to the steering cables or chains, or by failure of the autopilot are relatively common. This can be caused by general wear and tear on old parts, under specified equipment or poor boat handling.

Less common is the loss of the rudder due to

weakened rudder bearings or collision, but it does happen. Check your steering system carefully, and consider what would happen if the rudder was broken or dropped out - apart from anything else, this would leave a large hole in the bottom of the boat!

Your emergency steering system will be checked during the safety equipment inspection.

Electricity

Inability to charge the batteries, leading to loss of power is relatively common. This is most often caused by a failure in the charging system. While a broken main engine is hard to fix at sea, taking preventative measures such as checking fuel filters and impellers, and having a spare alternator are common sense. Having an alternative generation system will allow the batteries to charge, even if the engine won't run ([see page 59](#)).

If you have a boat with original wiring, it would be worth having an electrician check the cabling, as damaged wiring can be a common cause of fire.

At first thought, a lack of electricity seems a minor inconvenience, but the reality means no GPS, no communications, no navigation or domestic lights, no powered winches, no autopilot, and on some boats, no way of getting water out of the tanks. On a 500NM+ passage these can have a serious impact on the crew and outcome of the voyage.

Take a critical look

Take a critical look at your boat, or ask a surveyor or a boating friend to take a look with you. Look at every part of the boat and every system and think "what is the worst that could happen?" and "how would I fix that problem?"

Don't forget that passage-making is equivalent to several years worth of 'normal' sailing: multiply the passage time by 24 (hours), then divide by 6 (hours) to work out how many 'normal' day sailing days the passage equates to - a 10 day passage equates to 40 days of 'normal' sailing at 6 hours per day.

This is probably equivalent to 2 or 3 years of weekend cruising for most boats and crews.

Now, ask yourself, is your boat and gear 'up to it'?

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Useful Additions

Even if you have been cruising for a long time or even living aboard, you will need to go over your boat carefully to ensure that it is ready to go offshore. Preparation is key, and there is no substitute for testing everything.

Down Below

Cupboard doors: install catches/locks so that doors stay shut when the boat is heeling over.

Galley: make a chopping board that fits snugly into the sink.

Cooking gas/Propane: if you are cruising outside your normal area for a period, check availability of your type of cooking gas – it may not be possible to buy butane or propane in some places. Consider fitting a dual-fuel system. Carry spring balance/scale for checking the weight of refilled bottles. Note that propane bottles older than 10 years old or in poor condition will not normally be refilled.

Handy items: put a knife, flashlight and white collision flares just inside the main companionway hatch. Use spring clips or a net bag.

Handholds: do you need to fit additional ones to make moving around down below easier and safer while on passage?

Heavy objects: secure batteries, floorboards, books etc properly - think rolling.

Holding tanks: if you are going to fit a black water or holding tank, fit one with a large capacity to avoid having to empty too often.

Insects: place bug/cockroach traps in bottom of lockers and bilges, and attach bug screens or mosquito nets to opening hatches.

Laptops: fit Velcro to laptop and the saloon table/nav area to secure when at sea.

Lee cloths: are they deep and strong enough for your largest crew member?

Non-slip/skid matting: cut to fit the saloon table and galley work top surfaces. Handy to have non-skid mats which can be used around the boat.

Night vision: put red lights in saloon, galley and toilet areas

Oven: make safe by putting a retainer inside to keep dishes in place when the oven is opened and heeling over. Put a crash bar across the

stove to avoid nasty accidents. Dig out those pot holders and invest in a pressure cooker (no spillages of hot food/liquid).

Radar: even in areas where fog is unusual, radar can be useful for picking up trade wind squalls on passage.

Storage: store pans with paper towel in-between to prevent rattling and damage to non-stick. Invest in a roll of non-slip/skid matting.

Upholstery: you may consider protecting your upholstery with removable, easy clean covers while on passage.

Ventilation: is there a good flow of air through the boat? Try a range of windscoops and consider fitting small 12v fans by bunks and in the galley.

Water: install a salt water pump in the galley and manually operated fresh water pumps in the heads/toilet and galley to save water.

Consider twin water tanks that can be isolated to avoid contamination.



On Deck

Anchor chain: extra-long chain 100m or 300'+ gives you more options when anchoring, and more security in rough weather.

Cart/trolley: a small collapsible cart is a must for gas bottles, diesel cans and provisions in port.

Deck shower: best way to shower when in hot temperatures and good for after swimming. Cheaper option is a solar shower, easy to store.

Dinghy: you may want to tow your dinghy on short passages. Make a strong bridle with permanent lines to your aft cleats so you don't lose it! If stowing your dinghy on davits during passages, raise the dinghy as high as possible and secure carefully to avoid chafing.

Drinks: put bottle holders (try bicycle water bottle clips) around cockpit for convenience.



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Strong gloves: protect your hands when handling anchor warps, chains (and flares).

Heat/Sun: invest in a good bimini and sun awning that covers the cockpit and cabin roof. Keep a garden plant spray bottle with water in the fridge – lovely for spraying on your face to cool off.

Shore power: bring a selection of shore power electrical adaptors with you (e.g. splitters, doublers, 32 & 16 amp plugs). See later sections on Power Management and Shore Power.

Think 'easy': set your boat up so it can be sailed by the weakest crew member.

Water: an easily stowed flat packed reel of hose, dedicated to fresh water, with a selection of tap/faucet fittings will prove useful.



Security

Ashore: take sensible precautions ashore and beware pickpockets and petty thieves. Leave high value items on the boat, or securely on your person. Some people use money belts.

Dinghy: buy a heavy-duty combination lock and wire to padlock ashore and to boat. If you don't have davits, rig a three or four point lifting strap to hoist the dinghy up at night.

Main hatch: Install a lock that can be operated from below deck to secure at night when onboard.

Money: if keeping money on board, split it up and hide it in different places.

Motion detectors: consider a small battery-operated model with a noisy alarm.

Outboard: some suggest painting this funky bright colours to deter thieves. Use a strong outboard lock.

Paperwork

Ship's papers: keep a photocopy of your

passport, boat registration, boat and personal insurance papers and your credit cards in your grab bag (abandon ship bag).

Equipment list: have a list of equipment on board with serial numbers.

ID: carry plenty of passport photos.

Boat stamp: getting an ink stamp designed and made for the boat is fun, and can be useful when completing some official forms.

Visiting cards: like business cards, these are a great way of reminding people of your name, your boat name, at-sea email address, website and call sign.

Miscellaneous Luxury Items

Breadmaker: nothing beats fresh bread!

BBQ/grill: keeps the smells out of the galley.

Cockpit beanbags: greatly increase comfort when on passage and protect the knees!

Communication: walkie-talkies are cheaper than handheld VHF's, smaller and easier to carry and use. Great if one crew member goes ashore for shopping and needs to call back to the boat.

Fishing rod and lures: always a fun pastime and saves visiting the local fish market.

Hard bottom dinghy: for extended cruising, particularly in areas requiring anchoring, an inflatable dinghy with 4hp motor just won't cope. Consider also the largest outboard you can handle and a good sized dinghy anchor.

Laundry: highly recommended is a hand wringer/mini washer for wet clothes. See www.lehmans.com.

Snorkelling gear: great for fun but also for checking the anchor, freeing nets off rudder, cleaning the waterline etc.

Visitors book: excellent memento of your trip.



Suggested Books

The pilot books and charts for the rally ports are included in the Local Information section. These books will help with planning for a cruise, and will provide information while onboard.

Don't forget that you can save 10% by ordering your pilot books and charts through our online shop at www.worldcruising.com/shop

Pilot Books

Ocean Passages and Landfalls

ISBN 9781846231551 by Rod Heikell and Andy O'Grady. Cruising routes of the world with passage planning information and information on key harbours.

Medical and Provisioning

Ship Captain's Medical Guide

ISBN 9780115516580 by MCA. The medical 'bible' for all sailors, this is the standard book carried on all merchant ships.

International Medical Guide for Ships: Including the Ship's Medicine Chest

ISBN 9789241547208 by World Health Organization. 3rd Edition. Advice for designated first-aid providers on how to diagnose, treat and prevent the health problems of seafarers on board ship.



Doctor On Board

ISBN 9781574092981 by Dr. Jurgens Hauert. Hands-on fully illustrated guide to handling first aid on board. Includes a useful list of suggestions for the first aid kit.

First Aid at Sea ISBN 9781408157039 by Douglas Justins and Colin Berry. Written by doctors with extensive sailing experience is easy to use.

The Boat Galley Cookbook

ISBN 9780071782364 by Carolyn Shearlock and Jan Irons. Practical 'how to' advice on every aspect of food onboard, including recipes. More information at theboatgalley.com

Care and Feeding of the Sailing Crew

ISBN 9781929214341 by Lin and Larry Pardey. Arranged as a provisioning and cooking programme for a 50-day voyage under different weather conditions.

The Voyager's Handbook

ISBN 9780713684773 by Beth Leonard. An inspirational and comprehensive handbook for all aspects of the cruiser's life.

Radio and Navigation

Celestial Navigation for Yachtsmen

ISBN 9781408132128 by Mary Blewitt. This classic guide to celestial navigation includes worked examples related to current tables. Also available as an ebook: ISBN 9781472906762

Reed's Astro Navigation Tables

ISBN 9781472930521 (2017) Annual publication of astro-navigation tables for yachtsmen.

List of Radio Signals

UKHO NP281 [1] - Europe, Africa & Asia
UKHO NP281 [2] - Oceania, Americas & Far East

HF Radio Email for "Idi-Yachts"

ISBN 9780971564015 by Marti Brown. HF radio email.

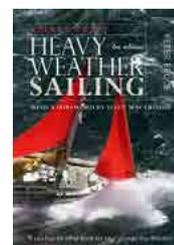
Weather and Sailing

G1 RYA Weather Handbook (Northern Hemisphere) ISBN 9781905104178

G33 RYA Weather Handbook (Southern Hemisphere) ISBN 9781905104093 Both by Chris Tibbs. Meteorology for mariners in a clear and easy to follow guide.

Heavy Weather Sailing

ISBN 9781472923196 by Peter Bruce. Includes techniques and expert advice from the great sailors of our time. Includes sections on catamarans. Also available as an ebook: ISBN 9781472928191

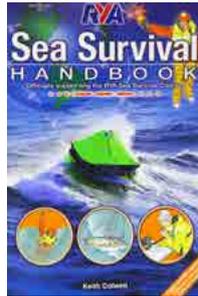


Handling Storms at Sea

ISBN 9781408113486 by Hal Roth. A five point gale strategy set out in a clear authoritative analysis.

Sea Survival Handbook

ISBN 9781906435967 by Keith Colwell. Complete guide to survival at sea from the RYA, including using liferafts.



Boat Safety Handbook

ISBN 9781906435530 by Keith Colwell. Advice on all aspects of boat safety and safe boating from the RYA.

Maintenance

The Boat Data Book

ISBN 9781472907974 by Ian Nicholson. Contains invaluable information for anyone living aboard and maintaining their yacht. Available as an ebook: ISBN 9781472908957

The Boatowner's Mechanical and Electrical Manual

ISBN 9780071790338 by Nigel Calder. Includes minor and major repairs of electrical systems, engines, electronics, steering systems, pumps, cookers, spars and rigging.



Marine Electrical & Electronics Bible

ISBN 9780713682670 by John Payne. Provides owners with all the information they need to select, install, maintain and troubleshoot any electrical or electronic system on a boat.

Skipper's Onboard Diesel Guide

ISBN 9780713676181 by Hans Donat. In handy splash-proof format it is a reference to all types and sizes of marine diesel engine.

The RYA Book of Outboard Motors

ISBN 9780713675757 by Tim Bartlett. Covers both two and four stroke outboard engines. Includes a fault-finding section.

Safer Offshore: Crisis Management and Emergency Repairs at Sea

ISBN 9780939837908 by Ed Mapes. How to deal with almost every possible emergency at sea.

The Splicing Handbook

ISBN 9781408141977 by Barbara Merry. Techniques for splicing all types of ropes.

Fun Reading

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ISBN 9780981517100 by Capt. Alex Blackwell & Capt. Daria Blackwell. www.whiteseahorse.ie/publishing/HappyHooking.html

Whales, Dolphins and Seals

ISBN 9780713670370 by Hadoram Shirihihi. Identify wildlife during the passage and further afield.

Sea Fishing

ISBN 9781408187951 by Jim Whippy. Expert tips and techniques for yachtsmen and sea anglers. Available as an ebook: ISBN 9781408187968

Secrets of Sailboat Fishing

(eBook). Highly recommended. \$4.99 at sailboat-cruising.com/secretsof-sailboat-fishing.html

Barefoot Navigator

ISBN 9780713674293 by Jack Lagan. An unusual and fascinating exploration of the skills of navigation. Available as an ebook: ISBN 9781472903266

The Practical Skywatcher's Handbook

ISBN 9781408157466 by David Levy & John O'Byrne. Advice on how to read the night sky

Lesson Plans Ahoy!

ISBN 9780982771440 by Nadine Slavinski. Lead your children through relevant, fun, hands-on learning experiences that link to national and state curricula (US). Available from Amazon.com

Yachtsman's Ten Language Dictionary

ISBN 9780713684407 by Barbara Webb. This multilingual dictionary, specifically geared to yachtsmen, has now been expanded and now includes English, French, German, Dutch, Danish, Italian, Spanish, Portuguese, Turkish, Greek

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The US National Geospatial-Intelligence Agency has a wide range of free download information. See <http://msi.nga.mil/NGAPortal/MSI.portal> and click on 'Publications'

Electric Shore Power

First of all, always remember that high voltage can kill! If you have the slightest doubts about what you are doing, call in an experienced marine electrical engineer.

Shore power supplies around the world will vary in voltage and reliability. Being able to “plug-in” when in a marina, or even stern to a dock, has become increasingly important for cruisers today such as the demands of domestic appliances fitted onboard modern cruising yachts. A reliable generator and good alternative energy sources will help avoid the constant need to “be connected”, which is also essential for remote cruising or self-sufficiency.

Where shore power is available it will come in different forms and through varying connectors. Having the ability to step up or down the voltage to that required onboard is useful.

Battery Charger

As a minimum the battery charger fitted should be one that can accept multiple voltages (110/120 or 220/240) and 50Hz or 60Hz; this will at least allow the batteries to be charged, and for low voltage (12/24v) appliances to be run while connected to shore power.

Inverter-Transformer

Fitting an inverter-transformer to either step up or down the shore power to your normal voltage will enable “ring-main” appliances to be run onboard; be aware that inverters do not change the cycles (Hz) and this will remain as supplied from the shore power (50 or 60 Hz). Not all appliances will run with the wrong cycles, and great care should be taken (microwaves are one such appliance).

Connectors

Around the world there seem to be as many different shore power electrical connectors as countries visited! The best way to cope with this is to have a short “necklace” of about 1m in length that has a female socket for your standard shore power cable at one end, and bare wires at the other, thus enabling different plugs to be wired as required. Some marinas will have plugs available for rent, but in others they will have to be bought. It is a good idea to have as full a selection of plugs available as possible, with some conversion necklaces already made up.

Shore Power FAQs

What are the different types of voltage used around the world?

European style 220/240AC is NOT THE SAME as US 220/240AC.

European voltage is 220-240v 50Hz single phase or 380-400v 50Hz 3 phase.

US voltage is 110v 60Hz, or 220-240v 60Hz twin phase (2 x 110-120v).

Never attempt to plug a US wired boat directly into European style dock outlets, or European wired boats into US style outlets. Always check the supply first.

Do I need a transformer?

Whilst not essential it is a good idea to have one to enable standard voltage appliances to be run onboard while connected to shore power. Transformers can change 220v AC to 110v AC, or vice versa, but it must be an ISOLATION TRANSFORMER. Marinas sometimes rent transformers.

Transformers cannot change 50Hz to 60Hz. They will deliver Hz as supplied from the shore power. Some equipment is sensitive to a change in the frequency (Hz), so it is always a good idea to check the handbook of AC equipment to see if it can run on both 50 and 60 Hz.

Any other problems I should know about?

Some US boats can have problems with electrolysis due to the common practice in the States of bonding the neutral and ground wires together. If you are unsure about this and don't want your prop to fall off, get the system checked.

What should I carry to help me to connect to shore power when available?

- The primary shore power lead should be at least as long as the boat plus 5m (15'). This will enable you to connect when bow or stern to the dock.
- An extension cable of 15m (50') or more – for those difficult to reach power supplies.
- Short connection necklace, with female socket on one end, bare cable for alternative plugs on the other end.
- For European yachts: European 16A to 32A (or 32A to 16A), and 16A or 32A to 63A.
- For US yachts: standard female socket to: European 32A, European 63A, USA sockets.

Power Management on Long Passages

Prepared with assistance from Marlec Engineering, experts in renewable energy www.marlec.co.uk

Managing your electrical power when sailing offshore is important, never more so than on modern yachts equipped with all the luxuries which make life more comfortable at sea – autopilots, refrigeration, watermakers and electronic navigation.

Generating power for an extended period during an ocean crossing, or cruising away from marinas will require a different attitude than coastal cruising where a fresh supply of diesel fuel is close-by. Managing your battery power, and generating the electricity needed to recharge them will be more of a challenge than simply turning on the engine.

Therefore your power management on board has to be approached systematically. You should start by calculating the power consumption of your yacht's systems. In this example, we have looked at a typical cruising yacht, at 13.4m (44') LOA, with a crew of four.

Power Audit: energy consumed in 24 hours

Consider all electrical items, and calculate their daily usage to find the daily power requirement.

$A = \text{Amps}$ $Ah = \text{Ampere Hours}$ $W = \text{Watts}$

Navigation Equipment

Computer	5A
Chart plotter	0.5-3A
Instruments	0.5-1.5A
GPS	1A
Radar	4-8A
Autopilot	0.5-30A

To reduce power consumption, use night or power-save mode on chart plotters and dim the lights of instruments. You can also just turn on plotters and computers when needed.

Autopilot power consumption varies depending upon load on the system – balance your sails to help the autopilot, and hand steer when possible.

Navigation assumed daily use: 112 Ah

Communications

SSB receive	1.5-2A
SSB transmit	25-35A
VHF receive	0.7-1.5A

VHF transmit	5A
Satellite phone	0.1-2A

Communications assumed daily use: 18 Ah

Domestic Electricals

Tri-colour light (1 x 25W)	1-1.7A
Separate lights (3 x 25W)	3A
Spreader lights	8A
Domestic incandescent light	1.5-3.5A
Domestic fluorescent light	0.7-1.8A
Refrigerator	5-7A
Pumps - freshwater and bilge	5A
Watermaker	10A
CD player/stereo	1A
Cabin fan	0.2-1A

To reduce fridge power consumption, increase the insulation and use a water-cooled heat exchanger - this can limit the duty cycle of the refrigerator compressor to 25% and of the freezer compressor to 50%.

Ensure incandescent lights are turned off, and consider switching to low-power LED lights.

Domestic assumed daily use: 70 Ah

Luxury Equipment

Also consider high-usage equipment such as air conditioning and freezers – these haven't been included in this calculation.

Energy consumed in 24 hours

According to our example, the equipment would take:

Navigation	112
Communications	18
Domestics	70
Total daily requirement:	200 Ah

Thus 200 Ah out of the battery in a 24 hour period. This energy has to be fed into the battery again to avoid a deeply discharged battery.

Battery Capacity

If we were to discharge the batteries to 30% of capacity before recharging, we would require 500Ah (12V) battery capacity.

If we were to discharge the batteries to 75% of capacity before recharging, we would require 750Ah (12V) battery capacity.

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Recharging the Batteries

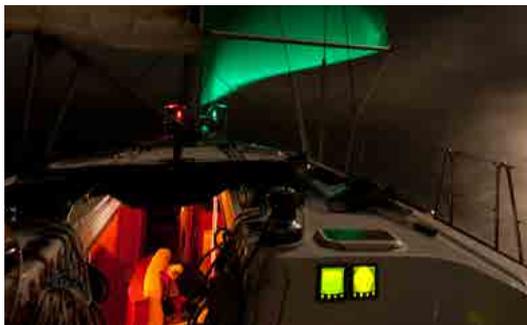
With the main engine

An engine will normally have a 14V 60A alternator fitted. This means that the alternator will deliver 60A maximum at 6000 rpm. Suppose that the diameter ratio between the engine pulley and the alternator pulley is 2:1, then the main engine would have to run at 3000 rpm to attain 60A charging current. In practice this is a little high, producing too much noise. For generating current an engine is generally regulated to 1000 to 1500 rpm. The charging current will then be 40% to 80% of the rated values, i.e. 30 to 50A. This would then mean 4 hours of engine generating per day. Not an attractive proposition!

Making engine charging more efficient

Here several immediate complications arise. The charging current might now become so high that parallel connection of the service battery and the starter battery using the familiar Bosch relay or equivalent is no longer possible, because the relay contacts could fuse together. Therefore, a charging current isolator would need to be used, and the alternator or the alternator regulator would need modifying.

By installing a second equally sized alternator you can reduce the daily engine running time to 2 hours. If you still think that's too long or if you cannot install a second alternator, alternative energy sources may be looked at.



Alternative Electricity Generation

Diesel Generators

For larger yachts these are the most efficient way to generate electricity. They use much less fuel

than a main engine, are quieter and can be set to automatically come on when required. The units come in a range of power outputs to suit most needs. However, like all mechanical equipment, they do require regular servicing. It is only too easy to forget this, when the unit is tucked away out of sight in an enclosed sound proof cabinet.

Popular brands of installed diesel generators include Fischer Panda, Onan, Westerbeake and Matervolt. Some yachts use small petrol/gas generators. Although cheap to buy, these are not recommended for offshore cruising due to dangerous exhaust gases and the combustible nature of the fuel, which for safety should be carried on deck.

While generators are reliable, they are often the most common high value item to fail during a passage. Therefore, don't forget the alternate power sources if you do not want to go without your home comforts.

Solar Panels

These can provide a useful boost to your charging capacity, however, when judging the output of solar cells you have to consider in what area and under what conditions you are sailing. For example, in the Mediterranean summer you can expect approx. 20Ah per day from a 50W panel. In the UK summertime, you can expect approx. 12Ah per day from the same sized panel.

It is important to mount the panels facing the sun however when sailing, mounted flat on the deck will give best all round performance. Be aware, some solar panels are made using glass which will break if walked on. Specialist non-glass marine panels are available, recommended for on deck use.

Wind Generators

A wind generator will produce 40 to 80Ah per 24-hour period. Traditionally, they could be noisy but modern designs are much quieter. They work best with strong apparent winds, for example, lying at anchor in an open marina. Where current consumption on board is low, solar cells and a wind generator can make a considerable contribution and drastically reduce the necessity for using the engine to generate power. Even on somewhat bigger yachts, solar cells and/or wind generators are also very suitable for charging up the batteries and keeping them charged.

Hydro-generators (propshaft or outboard)

Under sail extra current can be generated using a propshaft alternator (disadvantage: increased water resistance and wear and tear), or using a small water alternator, transom-hung or towed. This enables about 12W, or 1A to be generated per knot of speed through the water, i.e. 40 to 100Ah in a 12V battery per 24-hour period.

The rope towed hydro-generator has been widely used for 20+ years. However, modern transom hung hydro-generators (Watt&Sea type) are significantly better, as they overcome the difficulties of handling a long towing line, especially when the wind increase. The drag of the towed type is also much higher than transom hung types, causing noticeable loss of speed.

The Watt&Sea transom hung hydro-generator has performed well in the ARC and World ARC and comes recommended by several past participants due to minimal drag and excellent power output. Other transom hung types are Duo-gen and SAFE.

Conclusion

Solar cells (1m²) and a wind generator (1m diameter) together or a towed generator - if you can live with the disadvantages - (say 60W at 5 knots speed through the water) deliver almost 1.4 kWh = 100Ah per 24-hour period. The contribution of this energy is therefore insufficient for total requirements, but it can reduce engine generation to a very acceptable 2 hours per 24-hour period when under sail (assuming the smart use of navigation equipment).

A good book, such as the [Boatowner's Mechanical & Electrical Manual](#) by Nigel Calder (ISBN 0713672269) or [Marine Electrical & Electronics Bible](#) by John Payne (ISBN 9780713682670) will help you to manage and understand power onboard. See [pages 54-55 for more book ideas](#).

Power Management Top Tips

- **Always start with a full battery.** Start charging the batteries by running the engine the day of your departure even if you haven't used much energy yet.
- Always start the engine for charging the batteries in the evening to support the power consumption during the night-time hours.
- Try to avoid running the engine to charge batteries while crew is sleeping. But if further battery charging is needed during the night, run the engine during watch changes.
- Always **fill up the fridge to its maximum**, even if it means packing with bottles of water.
- Turn the fridge thermostat down low when the engine is running, and up afterwards.
- Charge laptops and electrical items like the sat phone when the engine is running.
- **Balance the boat to reduce strain on the autopilot** or hand steer to reduce power consumption, particularly at night.

Low voltage troubleshooting

- How many hours has it been since you last charged the batteries?
- Is anything running that shouldn't be?
 - Water pump or bilge pump
 - Inverter - TV/stereo
 - Lights left on
 - Autopilot working too hard
- Look at the Amp meter; is there a high current draw?
- What's the charge voltage?
If it is 14 Volts:
 - Likely the alternator/charger is OK
 - Check for loose connections
 - Check water in the batteriesIf it is less than 14 Volts
 - Likely problem - alternator/regulator/charger
 - Check belt – broken or slipping
 - Check alternator and regulator
 - Make sure charger is ON
 - Check circuit breakers on charger

Electronics on board

This section was prepared by leading marine electronics provider, Raymarine. Visit the Raymarine Service and Support web pages at www.raymarine.co.uk

Demand is usually very high for local electronics agents and support staff on site before the rally. Last minute issues and final software updates may be able to be handled as part of your preparations, but larger jobs such as reinstallations and rewiring should be undertaken well in advance. It is important that you do not leave your electronics set up or checks until the last minute, but spend quality time now checking and testing your electronic systems.

Visit the Raymarine Service and Support web pages at www.raymarine.co.uk/view/?id=773

For:

- Download of instruction manuals
- Product Registration
- Frequently Asked Questions
- Repair and Warranty
- Software Updates
- Locate a Raymarine Dealer



Top Tips

- The key to satisfaction is selection! **Choose the right product** in the first place, decide what you want it to do and for how long; is it just an auxiliary or is it a replacement crewperson?
- All electronics are susceptible to power surges and spikes, so **good supply and power management** is essential. High resistance connections, thin cabling, dirty fuse holder contacts will all cause operational problems – if in doubt, double up on cabling.

- Carefully **calculate battery capacity versus power consumption** and ensure that electronics are not on same circuit as winches, A/C or other heavy current devices. As autopilots become larger, they become more susceptible to power 'brown-outs' than smaller units.
- Battery connections are critical as high resistance connections will drop volts and lead to constant power shortages for the autopilot.
- Wiring may look very neat and tidy, BUT if it is TOO tight, it will stretch and may fatigue on a boat and lead to random or intermittent connections, ventilation must be adequate to allow for control of temperature and humidity around the electronics and connections should be easy to access for maintenance.
- Compasses are the heart of any good autopilot system and the better the location the better the performance – if the compass is in a bad position, no amount of calibration will improve the performance of the pilot.
- The ideal position for the compass is at the pitch and roll centre, however, this will often mean that other equipment will affect the compass, so move it aft, outboard and up. Watch out for cabling carrying other signalling data, high voltages or high current, Loudspeakers, engines and keels. Height above a deviating source has a better effect at reducing deviation, than horizontal distance, but too high will induce roll errors. Avoid mounting near the bow to avoid shock from the boat ploughing into a head sea.
- Be wary of wiring runs too, the cabling should avoid being bundled with powerful signal cables as interference can be picked up and send erroneous messages to the computer leading to poor steering performance. The below decks units are splashproof, but not submersible, so mount above the potential bilge water line!
- **Look for obvious issues**, untidy cabling, poor mounting/support for equipment, these are all indicators of a potential problem.
- **Make sure cabling is tidy** and well supported – but not stretched tight, follow cable runs looking for stress points and damaged insulation.

- **Check the autopilot drive unit** mounts are secure and no signs of cracks in gel coat on the local area suggesting stress.
- **Lubricate mounting bolts** to avoid corrosion and ensure all locking pins are secure.
- Ensure all crew know where the compass is to avoid placing deviating items nearby, (tools, tins, electronic equipment, etc ...)
- **Always swing compass every year** as the deviation signature of the boat will change from time to time.
- **Clean all deck mounted displays and equipment** regularly to avoid build-up of salt and corrosion – use only tepid fresh water – avoid solvents and abrasives at all costs!
- **Check security of connections and cables** to eliminate poor connections and high resistance joints and contacts due to corrosion.
- **Check voltages** to avoid voltage drops, ensure batteries are in good condition and regularly maintained – batteries may have a good voltage when equipment is turned off, but may not hold a charge and will quickly discharge.
- **Ensure access** is available to equipment for future servicing.
- **Update all serial numbers in log book** and keep the information on board the boat
- **Sketch out the installation** of what equipment is mounted where, it can save hours if all junction boxes and connections are logged down and located
- Sketch out as much as possible the installation cable runs, cable colour coding and ideally identify cable ends so they can easily be identified.
- **Make sure your warranty cards are completed** and stamped and warranties registered on the website or cards are returned to Raymarine.
- **Check all calibration settings**, sea-trial the boat and ensure you are confident in the operation of the equipment, record all calibration settings in the log book.
- **Read the manuals** – it can save hours of frustration!!
- **Plugin 12v multisockets** for USB devices.
- Small inverter for laptop

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Spares and Useful Parts

This section was first written by round-the-world skipper Julian Wilson, and has been updated by Bill King of professional yacht delivery company PYD www.pydwww.co.uk

Most boat systems have items designed to wear down, corrode or break. Smaller parts will self-sacrifice in the name of saving the whole. These are generally the 'serviceable' parts.

What spare parts to carry?

Both budget and available space can significantly constrain quantities of spare parts stowed aboard a cruising yacht. In an ideal situation, if something breaks it is replaced with a new one rather than repaired. This is often impractical for many reasons, but it also somehow defies the cruisers' ethos of being self-sufficient at sea and recycling. The spares you carry can be the difference between a good trip and a bad one.

It's well worth considering keeping a few major items in your spare parts locker. For instance, how much easier is it to replace an entire water pump whilst on passage than to strip down the broken one and mess about with impellers or diaphragms? However, this is often far from practical and can be expensive. Repairs are nearly always best done in harbour where there is less motion.

There are three main categories of spares:

- 1. Safety:** Items that allow your yacht to float and go in the direction you want it to go in, therefore parts for the maintenance and repair of sails, engines and bilge pumps.
- 2. Comfort:** Spares for maintenance of onboard cooking facilities, fresh water pumps and toiletry needs.
- 3. Luxury:** Parts for non-essential items that make for a more pleasant cruise, such as fishing tackle spares.

Many spares will fall into more than one category, but you have to decide necessity over cost - spare autopilot or just a spare drive?

If there is the budget and space then you may like to consider the list of 'essential' spares below. This has to include a complete toilet pump. Nobody likes to dismantle a toilet pump at sea.

Easier to unbolt the old one and install a new one - only ten minutes of unpleasantness. Put the broken pump into a couple of plastic bags and store it for servicing ashore, where it can be stripped, sanitised, repaired and made ready for the next occasion. Well worth the investment!

Extended cruising spare parts list:

- Toilet pump complete.
- Toilet pump service kit.
- Fresh water pump complete.
- Fresh water pump service kit.
- Engine and generator spares: impellers, fan belts, anodes, filters (air, oil and fuel).
- Engine and generator oil (for 2 complete oil changes each). Hydraulic fluid.
- Autopilot spares, belts, motors etc.
- 2 large snatch blocks and 2 large snap shackles. Other assorted spare shackles in sizes used aboard, eg. for mainsheet and kicker/vang tackle.
- Sail repair: sticky backed Dacron/polyester (large sheet), 3 rolls spinnaker tape and sail repair kit, including plenty of needles, waxed thread, a sailor's palm and whipping twine.
- Spare ropes of various lengths for use as sheets, halyards, mooring lines etc.
- Watermaker service kit with chemicals and oil.
- Spare gas regulator and 1m gas hose.
- Spare lifejacket gas cylinders (minimum one per life jacket) plus spare lights.
- General: good handful of hose clips, nuts, bolts, washers, screws, cotter pins, split pins, contact and epoxy glue, cable grips (size suitable for repairing steering cable) and shackles, gasket glue, tubes of silicone, gaffer tape and self-amalgamating PTFE tape.
- Electrical spares: fuses, bulbs (for navigation lights), wire, connectors and multimeter. Spare batteries for flashlights, handheld GPS. Soldering iron and solder wire. Can of WD40.
- Diesel biocide.
- Gas powered hot knife, for sealing rope ends, tears in synthetic fabric etc.
- High capacity manual pump with long hose.
- Sta-Lok emergency rigging kit.
- Spare winch handles and keys for tank caps.

Cooking Gas

Propane is the cooking fuel for most American-made marine appliances.

In Europe, butane (blue bottles) is the fuel normally used for marine appliances. Butane bottles can be exchanged one for one, or refills can be arranged.



Dual-fuel stoves

Butane has different burning characteristics from propane. Check with your stove manufacturer to find out if you can use either gas and if adjustments are necessary. Having a system that can handle both types of gas is a good idea if sailing for long periods beyond home waters.

Refills

Butane bottles/tanks should never be refilled with the same amount of propane as propane is at a higher pressure.

Filling gas bottles in different countries can be problematic, and the easiest solution in certain areas of the world may be to buy a local bottle.

If you are considering extended cruising, or know you will be visiting an area with a different gas system than that onboard, leave home with new gas bottles of both types (propane and butane), as once cruising it is likely to be your own bottles that will be refilled, rather than exchanged. Have a good selection of regulators and fittings for your bottles on board, as having the right fitting may make the difference between getting gas and not. Consider a multi-country adaptor kit available from www.whayward.com, or European adaptor sets from www.svb24.com. In some ports either butane or propane can be refilled, but not both, hence the importance of running a dual system.

Gas bottles can usually be filled just about anywhere, but any older than 10 years old will not normally be accepted for refill. For this reason it is important to keep bottles in good condition, and to treat any surface rust when it appears.

Plastic/Fiberglass bottles canisters are lighter and rust-free.

For information on refilling options during the rally, see the [Local Information](#) section.

Ocean Crew Link



Specialising purely in ocean sailing opportunities, OceanCrewLink.com is an online directory of sailors and sailing opportunities, which aims to connect boat owners with offshore sailing crew.

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Water Management

Water is undoubtedly one of the vital things to plan for. **As a minimum you should allow 2 litres (2 quarts) of drinking water per person per day, and up to 3.5 litres in warm weather.**

In a survey of round the world yachts, the average water consumption worked out at 14 litres (3.7 US gallon) per person per day. However on the boats that did not have watermakers, the average consumption was only 7 litres (1.8 US gallon) per person per day. It was also clear that boats with pressurized water systems used much more water.

Watermakers



Watermakers have made a great difference to water consumption and have brought in a

whole new era of water management. The latest generation of reverse osmosis watermakers are very effective and reliable, but if you have one you should still plan to start with full tanks and use the watermaker to top up at regular intervals - just in case of failure.

Have your watermaker installed professionally, and talk to the manufacturer about how to maximise output. Watermakers work better in warm water than in cold, so you should find output increasing just when you need it.

Water Onboard

See [page 70](#) for a water planning guide.

Plan to start the passage with full tanks, but it is sensible to carry a reasonable amount of water in additional containers - ideally plastic containers - both to extend the supply and to act as a reserve in the event that something contaminates the main tanks or they leak. The large plastic bottles of drinking water available in most places are preferred by many as the water has a better taste. When carrying water in additional containers, don't fill them completely full, as they will then float if thrown overboard in the event of an emergency.

You can reduce water consumption by fitting a salt-water pump in the galley and using it for the initial washing of crockery, pots and pans, but you may want to rinse with fresh water. Seawater

should be diluted if it is used for cooking as it is saltier than the general requirement for cooking.

Boats with more than one tank should have their tanks on separate systems so that the tanks can be isolated from each other. Use one tank at a time so that a leak in the system won't lose all your water.

It is also a good idea to turn off pressurized water systems and rely on manual pumping fresh water. This has two benefits: firstly it reduces consumption; and secondly, in the event of a leak, it prevents all your fresh water being automatically pumped straight into the bilge.

If you don't like the taste of tank water, fit a charcoal filter before the cold water tap - these are easily bought from hardware stores.

Educate your crew in simple water saving techniques, such as not running the shower or tap continuously when washing or cleaning teeth. Using a mug for teeth cleaning and a face cloth can cut down water consumption dramatically!

Holding Tanks

Some countries require that boats are fitted with a holding tank for black water (or sewerage). Where possible, a good capacity tank should be fitted, to give crews more time between pump-outs. Having to leave a pleasant and secure anchorage just so the holding tank can be emptied is annoying! Grey water (sink and shower waste water) tanks can also be fitted.

Please ensure that your crew are aware of the need to use shore-side facilities for toilets, showers and clothes washing wherever possible. Recycled toilet paper will break down more quickly than 'luxury' toilet paper, and consider using ecologically-friendly cleaning and washing soaps.

Many countries have laws stating that the discharge of sewage within the 12nm territorial limit is an offence, and some also regulate the discharge of grey water. If in doubt, use pump-out stations where these are available, or discharge more than 5nm offshore. Never discharge black or grey water over the side in sheltered waters, close to land, in non-tidal waters, or within protected or restricted zones.

For details on different country regulations, please see www.noonsite.com



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Only a few offshore sailing events in the world offer the spirit that we like to refer to as the Lagoon attitude: A great ambiance and an unforgettable experience, with the benefits of a first class organization in terms of preparation and safety. Lagoon is proud to be a partner of the Atlantic Rally for Cruisers!

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Medical

Prepared with the assistance of Ian Hardy B.Pharm M.R.Pharm.S, the 'First Aid Pharmacist'
www.seamedic.co.uk

The skipper/owner has a legal duty of care for the crew, and is ultimately accountable. It is highly recommended that the boat has a copy of **The Ship's Captain's Medical Guide** (ISBN 9780115516580) or an international equivalent. Remember that medical advice can be sought from Radio Medical Advice via MRCC/coastguard.

First Aid Kits

These are some general suggestions for the boat's first aid kit:

- Alcohol-free moist wipes
- Gauze sterile swabs
- Pocket face mask for mouth-to-mouth
- Assorted sticking plasters, including knuckle/finger plasters
- Surgical tape
- Large adhesive wound dressings
- Medium (120x120mm) sterile dressings
- Large (180x180mm) sterile dressings
- Adhesive suture strips (steri-strips)
- Sterile eye pads
- Eye wash - 0.9% saline solution
- Finger bandages
- Triangular bandages
- Elasticated crepe bandages
- Gel burn dressings
- Non-latex gloves
- Scissors, tweezers, safety pins etc
- Foil blanket
- Thermometer
- Instant ice and heating packs
- Splints (such as SAM Splints)
- Emergency dentistry kit
- Pre-threaded suture kit

In addition to the main first aid kit, it is worth having an extra small daily kit for use on deck and for taking ashore. In more remote countries, take a sterile treatment kit ashore in case emergency medical care is required and you are unsure of local hygiene. This should include sterile syringes, intravenous cannula and suture kit.

Complete kits can be purchased from specialist suppliers in Europe:

www.medaire.com
www.bluewatersupplies.com
www.seadoc.de

In USA: www.adventuremedicalkits.com
www.e-firstaidsupplies.com

Medicines

You should seek advice from your Doctor before deciding which drugs and preparations to carry onboard. As an aide memoire, the following types of medicines are useful:

- Painkillers of different strengths (suppositories are more effective than oral pain killers)
- At least two different types of broad-spectrum antibiotic - check penicillin allergies
- Laxatives (glycerine suppositories)
- Diarrhoea relief
- Antacids if required
- Rehydration salts - electrolyte balanced
- Sea sickness preparations
- Muscle relaxants
- Fast acting oral antihistamines
- Pre-loaded adrenaline syringe for anaphylaxis
- Anti-malarials (if required for cruising area)
- Common cold remedies
- Preparations for thrush/vaginal infections

External Preparations

- Antiseptic preparations
- Antibiotic ointment
- Hydrocortisone ointment
- Eye drops (antibiotic and anti-inflammatory)
- Ear drops (hydrogen peroxide type)
- Anti-inflammatory gel
- Local anaesthetic gel
- Anti-fungal preparation

Buying Medicines

The best practice for obtaining medicines for the boat's stores is direct from a pharmacy. The skipper/owner has authority to purchase drugs for the boat. Write a letter with full contact details, boat details and the drugs required, and take it to a pharmacy with the boat's registration papers and skipper/owner's passport. Local laws may vary, but this will be the best starting point.

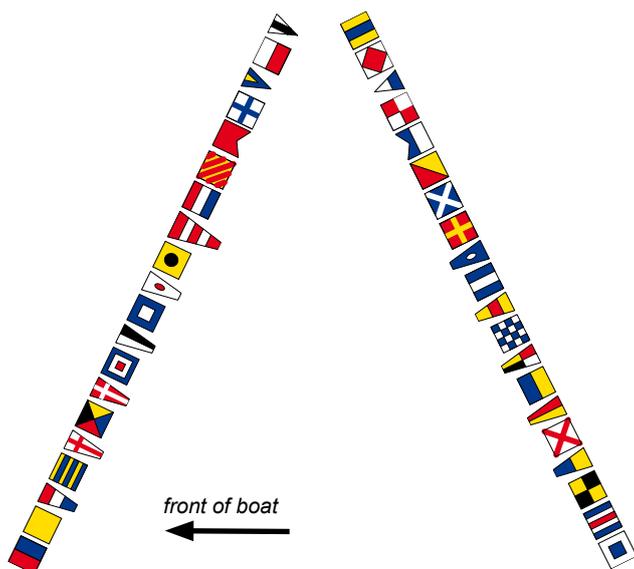
Dressing Overall

All rally yachts are asked to dress overall (decorate the boat with signal flags) while in port to create a festive atmosphere and to show respect to our hosts.

You will need at least one full set of international signal/code flags to dress your boat. The correct sequence of flags for dressing overall is below, and it is also usually listed in manuals of seamanship or nautical almanacs. When putting your flags together, remember that they should all be the correct way up, so you need to work from the top of the mast downwards. Rigging downhauls is a good idea.

From forward to aft:

E, Q, p3, G, p8, Z, p4, W, p6, P, p1, I, Code/AP, T, Y, B, X, 1st Sub, H, 3rd Sub, D, F, 2nd Sub, U, A, O, M, R, p2, J, p0, N, p9, K, p7, V, p5, L, C, S



Pets Onboard

It is possible to cruise with pets, but entry requirements and quarantine laws vary around the world, and it will require significant forward planning. Local officials may not be used to yachts arriving with pets, and obtaining the necessary health certificates en route can require forward planning. Some remote places will have no official able to process entry for a pet, and so the animal will not be allowed ashore.

Vaccination and treatment certificates from a vet are usually required to obtain a health certificate and import permit/license, and treatment often has to be proven within a fixed period of time. Import licenses are usually required to be lodged in advance of arrival.

We recommend that you seek advice from officials in the countries you intend to visit as soon as possible. There is information on the rally ports in the [Local Information](#) section, or visit www.noonsite.com for information on regulations for individual countries.



Firearms (Guns)

It is strongly recommended that yachts do not carry firearms on board. A daily radio net will be run on all legs and local Coastguards will be informed of our route. Therefore the organisers feel that the need for firearms is minimal, especially as in the majority of countries that the rally visits, firearms have to be delivered ashore to be bonded by customs or police.

Skippers will be responsible themselves for seeing that the firearm regulations in various countries are complied with. This matter will not be dealt with by World Cruising Club staff.

For information on local regulations, see www.noonsite.com

6. OFFSHORE PASSAGE TIPS

This section contains practical suggestions for undertaking a long passage, with a focus on 'life onboard'.

Included are tips for provisioning (providing food), and ensuring that water and fuel quantities are appropriate, daily checks to keep the boat sailing, and dealing with breakages.



Useful Pre-Departure Checklist

Questions	Notes
Are you happy with the quantity of fuel you will carry? See page 70-71	
Are you happy with the quantity of water you will carry? See page 73	
Have you got a provisioning plan? See page 75	
Do all the crew know how to deal with garbage/rubbish? See page 79	
Have you decided on a watch keeping schedule? See page 99-101	
Have you practised at-sea rigging checks, and do the crew understand the importance of these? See page 88-89	
Do you have a sail plan for all conditions, including downwind sailing and strong winds? Have you tried-out different sail plans to see what works on your boat? See page 91-93	
Do you have a strong-winds strategy? Have you tested your reefing system? Have you tested your storm sail options? See page 91	
Are you going to try to catch fish to supplement your food? See page 97 for tips	
Have you practiced emergency drills with your crew?	
Questions for the week of departure	
Have you prepared a passage plan? Legal requirement under SOLAS Reg 34	
Have you completed the Pre-departure briefing with your crew? See page 33 - you will be asked to confirm this in writing	
Are fuel, water and gas/propane tanks full?	
Have you got all provisions/food and water onboard?	
Monitor weather patterns	
Final pre-start checks: <ul style="list-style-type: none"> • Safety equipment all set-up and ready • Spares • Rig and sails • Navigation and communication equipment 	
Begin taking sea-sickness medication at least 24 hours before planned departure	

Fuel and Water Planning

These fuel and water planning top tips come from Rick and Julie Palm, circumnavigators, experienced cruisers and past managers for the ARC Caribbean 1500 rally.

The amount of fuel and water that you will carry will depend on the length of the passage, the tank capacities of your boat, the equipment you have onboard, how many crew you have onboard, and how you run your boat on passage.

This chapter sets out some simple hints to help you plan.

Prudent Planning

Distance

While the rhumb line distance of any passage can be calculated by a quick look at the chart, it is unlikely that you will actually sail this distance. With wind shifts, tacking upwind or sailing the angles downwind, you will certainly sail much further. 15% further is realistic, and 20% further is prudent.

Adding 20% to the calculated passage distance will give you a cushion when planning. This cushion should enable you to carry enough fuel to charge the batteries, motor (for a period) if the winds fall light, and have enough to motor into the harbour.

Boat Speed

Be realistic when determining the number of miles your boat will cover in an average day. It is unlikely that you will be sailing at theoretical hull speed. You may not want to push your boat hard for the entire trip (it's hard on the boat and crew), or you may experience conditions that reduce your boat speed, like a difficult wave pattern.

Days on Passage

Estimated passage time = Distance (including 20% cushion) ÷ realistic boat speed

This may be longer than you first thought!



Fuel Planning

To develop a fuel management strategy, you must quantify the 'usable' fuel capacity of the boat, and understand the rate at which fuel is consumed by the engine in cruising conditions. This information is not in the manual, it comes from experience with your boat.

Useable fuel

Your boat specification will include the capacity of the fuel tanks, but depending upon where the exit hose is located, the usable capacity may be 15% less. To calculate the usable capacity of the tanks, run each tank down until it is close to empty (or until the engine shuts down, if you are happy to bleed the fuel system). When you refill the tank, note the exact amount of fuel that can be added – this may be the same or less than the manufacturer's capacity. This is your 'useable' fuel. Have a spare fuel filter ready after this!

Efficient engine operation

To determine the most efficient speed to run your engine when the boat is equipped and loaded for extended cruising, calculate your boat speed at various RPMs.

1. With a correctly calibrated speed log and on a calm day with flat seas, motor at the lowest recommended operating RPM for your engine. Note your boat speed once the boat has stabilised. Increase your RPM by 250 RPM and note the speed again. Repeat until you reach the maximum recommended RPM.
2. Next, add fuel consumption to the matrix, using the information provided in the engine manual. Using the speed and fuel consumption information, you will be able to calculate the engine speed/RPM at which you can motor the greatest distance on a quantity (litre/gallon) of fuel, and the amount of fuel that will be consumed for any given RPM and boat speed.
3. Verify your assumptions by starting with a full tank and running the engine at cruising RPM for several hours. At the end of the run, refill the tank and note the quantity of fuel used. Divide the quantity of fuel used by motoring time to give usage per hour, and compare with the earlier calculations. Repeat, using different RPMs.

4. You will be able to create a table showing the RPM with boat speed, estimated fuel used, actual fuel used and miles per litre/gallon for each 250RPM increment.

Motoring range

Using the data you have collected, you can calculate the motoring range at the most efficient speed for the quantity of fuel carried. Many cruisers extend their range by carrying extra fuel in containers.

Fuel Management on Passage

Review fuel usage and motoring time every day. Some hints for adjusting your strategy:

- Have you motored for more than your calculated allowable daily motoring distance in the past 24 hours?
- Based on the forecast conditions, do you anticipate motoring more than your daily motoring distance in the next 24 hours?
- Are you powering into waves, using more fuel than motoring in flat seas?
- Are you running the generator more or less than you planned?
- Have you saved fuel in the past 24 hours by not using the motor as much as planned?

Based on your answers, you can recalculate your fuel requirements to meet your actual situation. For example, you can answer questions such as:

- Can I afford to motor at 6 knots at a higher RPM for 4 hours to get into port before dark?
- Should I use less fuel and slow down, waiting to enter port in the morning?
- If I lower my engine speed by 500 RPM and have to motor for 24 hours, what will be the impact on my fuel consumption, and how far will I travel?

If you are concerned about your fuel level, transfer the fuel needed for the generator to a separate tank.

Practice restarting the engine if it runs dry – manually priming an engine offshore can be difficult.

If you run your tank right down, have a spare fuel filter ready, as the old one will get very dirty.



Sample fuel management plan

Useable tank capacity	600 litres	
Extra fuel in containers	100 litres	
Total fuel onboard		700 litres
Reserve for emergencies	10%	70 litres
Calculated length of passage	10 days	
Generator required	2 hours per day	
Total generator hours	days x generator hours	20 hours
Generator fuel use	2 litres per hour	
Generator fuel requirement estimate	hours x fuel use	40 litres
Fuel for propulsion	total - reserve - generator	590 litres
Fuel use at efficient RPM	5 litres/hour	
Total number motoring hours possible at efficient RPM	fuel for propulsion ÷ fuel usage	118 hours
Boat speed at efficient RPM	5 knots	
Estimated range at efficient RPM	speed x motoring hours possible	590 miles
Average allowable motoring distance per day	Estimated range ÷ length of passage	59 miles

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Water Planning

Water is the most critical element of passage planning. If you run out of water you may face a life-threatening situation. Good drinking water is vital for health.

A recommended minimum for drinking water is 2 litres per person per day, rising to 3.5 litre per person per day in the tropics/hot weather, or where the crew are seasick or physically labouring hard.

This doesn't include fresh water used for washing or other domestic chores.

You may choose to carry a large number of water bottles and soft drinks to make up a majority of the drinking water requirements. This provides a buffer if you are unable to use your watermaker, or if the water in the tanks is undrinkable or tainted. Most cruising boats can accommodate large numbers of bottles under bunks or under the floorboards.

Having a large proportion of your water requirement in bottled form makes auditing usage easier, whether you are trying to encourage your crew to drink more, or keeping tabs on a dwindling supply. Use large bottles with a hand pump.



Water management tips

- **Educate your crew** in water saving techniques for personal washing – such as using a mug of water to brush your teeth and a wash cloth to clean your face
- **Fit foot pumps** in the heads/bathroom and galley and switch off the pressure water system. This stops water going straight down the drain
- **Fit a salt water pump** in the galley, or use a bucket, and wash the dishes in salt water, finishing with a fresh water rinse
- **Limit the number of showers** taken – ration people to 1 shower every X days (you decide!)
- Alternatively, **shower in salt water** with special soaps and shampoos, and finish with a quick fresh water rinse.
- Talk to your watermaker manufacturer about the most efficient way to build water capacity
- Remember that if you rely on a watermaker, it may break down. You also need fuel to run the watermaker
- Consider how you could **capture rainwater** for showers, or for refilling the tanks. Beware not to contaminate the tanks with salty run-off water.

Sample water management plan

Drinking water: 2 litres minimum per person per day	Number of people x 2 litres (minimum)	Total
Fresh water shower: estimate 8 litres per shower	Number of scheduled showers x 8 litres	
Fresh water washing for people and dishes: estimate 5 litres per person	Number of people x 5 litres	
Total estimated water consumption	Sum above	
Add safety factor of 10%		
Total water requirement	Sum above	
Water tank capacity		
Extra water to be carried in bottles		
Extra water to be carried in jerry cans		
Total water capacity	sum above	
Total water capacity - total water requirement	If this is negative, you have a problem!	



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Provisioning

The countries visited on World Cruising Club rallies all have populations that sustain themselves and eat well. If you are considering long term independent cruising, you may find that this isn't always the case.

The range and price of available food supplies does vary from country to country, and some ports will be better than others for major reprovisioning. It is a case of buying what is for sale, and then menu planning accordingly. A visit to the local produce market is always worthwhile, and often an opportunity to try new ingredients and recipes.

As well as availability and price, transport is an important issue when provisioning. A small foldable cart/trolley will help in transporting heavy items like bottles of water, and sometimes local traders are happy to deliver to the dock if this is arranged in advance.

Provisioning away from home should be fun!

Rather than treat it as a chore, provisioning is an ideal opportunity to explore a port, to meet the local people in the market and shops, and to have a go with the local language.

As you relax into the bluewater sailing routine, you will think and worry about accurate provisioning less and less. You will learn what is important, and how to make-do without specific foodstuffs. However, it is a good idea before every long passage to get the crew together to discuss and plan menus. A well-fed crew is a happy and efficient crew!



Planning How Much to Take

- Don't forget propane/gas and water supplies when planning menus. If you are low on gas, don't use the oven or boil large pans of water.
- Ask crew if they have dietary requirements, likes, dislikes or allergies.

- Be prepared for fridge/freezer breakdown and include canned and dried foods.
- Make a menu plan for 3 meals each day based on your estimated days at sea, and allow 20% extra for a slow passage. Take into account climate changes during the trip and therefore the type of food you want to eat.
- Work out quantities per person multiplied by the number of crew: eg 250g (½lb) of meat per person per meal, 500g (1lb) of pasta/rice/couscous for 6 people, 1 tomato pppd (Per Person Per Day) etc.
- Allow at least 2 litres (2 quarts) of drinking water pppd. In reality however you will probably consume as much as 3.5 litres of liquids pppd, especially if temperatures are high, the weather is bad and physical demands are greater, or if dehydrated as a result of seasickness. Water, tea, coffee and soft drinks are all included in this total.
- Don't forget to budget for snacks, fruit, cookies, tea bags, coffee and condiments.
- Don't rely on catching fish unless you have successful fishermen onboard. Count fresh fish as 'extra' meals that save you from dipping into the freezer or can store.

Storage

- Work out a stowage system and stick to it! Bear in mind that most places on a boat may get wet at some time.
- Use water-tight containers whenever possible - ziplock bags and plastic containers in place of store packaging. No cardboard - it can contain cockroach eggs. Stick labels on all re-packaged foods and drinks.
- Allocate specific lockers and under-floor areas for particular items (label the doors if it helps) and draw a plan, so everyone on board knows where to find things.
- Prevent movement, abrasion and noise by using pieces of foam, plastic bags, paper towel, cloths or plastic bottles to jam between packages, cans and glass jars. Pack paper towel between cooking pans to prevent rattling on passage and damage to non-stick.
- Do not be tempted to take delivery of cardboard boxes on deck (they carry cockroach eggs) and get rid of any cartons, drinks trays, and excess

cardboard packaging ashore.

- Carefully wash and dry fruit and vegetables before stowing to remove bugs.
- Overhead nets (soft mesh) are great for hard fruit and vegetables - apples, oranges etc.
- Folding plastic storage crates in dark well-aired lockers work well for soft fruit and vegetables. Stop bruising by packing tightly, and put paper towel between layers.
- Check fruit and vegetables daily, remove and use mouldy or overripe stock.
- A snack basket with enough fruit, chocolate, cookies etc for one watch at a time will help ration treats.
- Vacuum pack fresh meat to increase its keeping time. Small domestic machines cost around US\$300, or ask the store.
- Wash and dry eggs and stow in plastic egg crates. No need to refrigerate or varnish; normally last 3 to 4 weeks. Test eggs by sniffing the shell. Avoid cardboard egg boxes.



Fridges and freezers

- Assume your fridge or freezer will break down!
- Help it to work efficiently by keeping the door open for as short a time as possible.
- Don't overwork it by adding lots of warm items at once. For example, try to eat immediately most of any fresh fish caught, rather than chilling or freezing it.
- A fridge, freezer or coolbox will work more efficiently if it is full. Pack with bottles of water or even empty cartons if necessary.
- Organise the fridge with baskets for each meal: a breakfast basket containing milk, yogurts, eggs, bacon; a sandwich basket containing bread, butter, cold meat, cheese; a condiments basket and so on. This saves time and mess as crew can simply take out the basket they need.

- Organize frozen meat or meals in colour coded bags: yellow = chicken, red = beef, green = curry etc, and clearly label.
- Lots of items we refrigerate at home don't really need chilling: Ketchup, mustard, jam, peanut butter, hard cheese, eggs, dried meats will be OK if stored in a locker and checked carefully before use.

Cooking

- Don't forget propane/gas and water supplies when planning menus. If you are low on gas, don't use the oven or boil large pans of water.
- If you have a strict menu plan make sure that everyone knows, otherwise a volunteer cook may use more than one meal's rations.
- The cook's job can be a chore; some boats rotate the role with all taking a turn.
- If you have access to lots of electricity onboard then a microwave, breadmaker or electric cooker/oven like a Remoska can be a quicker and more efficient way to cook. These aren't designed to be used on a rolling boat; put them somewhere where they can't tip-over or spill.
- A pressure cooker is a quicker way to cook than open pans. It will save a lot of gas, and use less fresh water.
- Cup measures are easiest to use on a boat. Find a suitable recipe book and baking recipes.
- Check more than one pan will fit on the stove top at a time, otherwise change your recipes!



Hot spills can cause serious burns!

- If you have to cook hot food in rough conditions, wear waterproof trousers and boots to protect from hot spills.
- Secure pans to the stove with pot holders/clamps.
- Buy an oven shelf with a retainer bar to stop hot pans falling out when the door is opened.
- Pressure cookers are safer to use in rough conditions, as the tight-fitting lid stops spills.
- Feed the crew in batches, rather than trying to handle large, hot pans.

Shopping

- There are shops everywhere so don't stock up for a year. Experiment with local food - it should be part of the fun!
- On arrival at a new port, check the local shops and markets, and find out if any of them like to receive orders in advance. Warn them of your departure date.
- Try before you buy; there is nothing worse than buying quantities of something you have never tried and find you don't like.
- Whole grain bread lasts well, as does partially baked bread. Or consider flatbread/tortilla wraps instead as they last well and take up less space.
- Plan meals with couscous or rice to save boiling lots of water.
- Don't forget to buy some special things for onboard celebrations like 'half way' or 'land ahoy' parties.
- **Fresh produce rough guide:**
 - Will last 3 weeks:** potatoes, onions, garlic, squash, cabbage, beets. Apples, oranges, lemons, limes
 - Will last 2 weeks:** carrots, cucumber, zucchini, pineapple, pears, grapefruit
 - Will last 1 week:** avocado, hard lettuces (iceberg, romaine), eggplant/aubergine, peppers, tomatoes, cauliflower, broccoli. Bananas, melon.
- **Measures rough guide:**
 - 1kg (1000g) is just over 2lbs (actually 2.2lbs).
 - 1 litre (1000ml or 100cl) is about a US quart.
 - There are 4 litres to 1 US gallon (4.5 litres to an Imperial gallon).



Pre-departure Preparations

- Three days before departure make sure you have enough propane/butane for cooking. A spring balance is useful for checking cylinders.
- Three or four days before departure buy all non-perishable foods (cans, bottles, and dried goods); label and stow.
- Do your big fresh shop one or two days before departure. If possible, avoid chilled fruit and vegetables unless you have space to keep it cool in your fridge.
- Prepare and freeze as many meals as you can before you leave the dock. Include rough-weather one-dish meals that can be eaten from a 'doggy' bowl with just a fork or spoon. Freeze individually in bags - these will stack easily.
- To save time and water, cook pasta, drain and add a tablespoon of olive oil before freezing - just add to stews.
- Prepare snack bags for each crew member in advance, allowing a mixture of snacks for night watch during the passage. This helps rationing.
- The day of departure, prepare easy meals like sandwiches or hot soup in flasks, so that your first day/night at sea is easy.

Useful Galley Items

- Plastic/styrofoam egg boxes.
- A chopping board that fits into the sink.
- Special green plastic bags for keeping vegetables and fruit fresh in the fridge.
- Overhead netting (small, soft mesh hammocks) for fruit and vegetables.
- Non-skid matting to stop plates from slipping.
- Large plastic 'doggy bowls'. Easy eating with no spills in rough weather.
- Thermal mugs for keeping drinks hot or cold.
- Salt water pump for rinsing dirty pans.
- Vacuum/Thermos flasks for hot drinks for the night watch - this saves noise below when the off-watch is sleeping.
- Lots of paper towels for mopping kitchen and engine spills, and for stopping pots rattling.
- Steriliser fluid/tablets for ensuring drinkable tank water and deep cleaning the galley.



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Disposal of Rubbish/ Garbage at Sea

Cooking will probably create more waste on a cruise than any other activity. Dealing with packaging and food waste is an issue on long passages, especially in hot weather.

Remove as much packaging as possible before bringing food onboard. Lots of foodstuffs have extra packaging that has no function and can be removed and left ashore. Cardboard can also hide cockroach eggs.

Modern packaging materials can take years to breakdown in seawater and create both visual pollution and a serious danger to sea life.

Turtles, dolphins, fish and sea birds die when they mistake our rubbish for a meal, or become entangled in discarded plastic bags.

Drinks cans take 100 years to breakdown, plastic bottles and bags take 450 years, fishing line and electrical (cable) ties take over 500 years and even orange peel takes 2 years.

Wash dirty food packaging in seawater, crush it as small as possible and store in plastic crates in a deck locker. Make a can-crusher from two pieces of wood. Well-rinsed rubbish should not smell!



Home made can crusher

All marinas and boatyards have garbage disposal facilities and many now have recycling facilities. Ask about the local recycling arrangements and use these whenever possible. Don't forget that very small communities may have limited resources to handle volumes of rubbish, so it may be better to carry it a bit further until you reach somewhere with better facilities. If your rubbish is going to be buried or burned on a beach, maybe you could live with it a bit longer?

Most cruising destinations take great pride in the quality of their local environment and may have laws restricting garbage disposal at sea. If in doubt – don't do it! For information on general advice see www.thegreenblue.org.uk and on local restrictions visit www.noonsite.com

What goes over the side...

US Federal law covers disposal of waste in US territorial waters. This is a good guide for boats operating anywhere in the world, where no other specific regulations exist.

Less than 3M offshore	<i>only fresh fish/parts, grey water (not black or toilet water)</i>
3-12M offshore	<i>only trash ground to less than 1 inch - no plastics or packaging</i>
12-25M offshore	<i>no plastics or packaging</i>
More than 25M offshore	<i>no plastics</i>

Managing Sea Sickness

Sea sickness is no joke; some people suffer really badly, unable to stand a watch or rise from their bunks. These people are at risk of dehydration and should be helped with sips of water or rehydration fluids.

Seasickness can leave your crew depleted, so encourage everyone to take precautions - find out which remedies suit you before departing on a long passage.

It takes most people around three days to acclimatise to life onboard, so take it easy for the first few days. You're on holiday!

- Avoid alcohol and fatty foods the day before departure.
- Start anti-seasick medicines 24 hours before departure, and continue as prescribed until you have acclimatised.
- Plan plain meals for the first few days at sea.
- Dehydration can be a real problem in hot climates and also on long passages. Treat with plain water or rehydration fluids.
- Sugar and salt are important – boiled sweets, some salty crisps (potato chips), or add sugar to plain water. Fresh ginger in hot sugar water, or ginger cookies are also good for settling the stomach and cleaning the palate.

Pre-Passage Checks

Recommended by Professional Yacht Deliveries Ltd
www.pydwww.co.uk



Based on the experience of many hundreds of yacht deliveries worldwide, pyd professional skippers adhere to a simple but systematic checking system that can easily be applied by cruising yachtsmen.

Read this in conjunction with the rigging checklist for a thorough pre-departure check.

On Deck

Start at the stem and work aft, checking the following items thoroughly:

- **Bow rollers** rotate freely, rubber not damaged or split. Stem plate is fitted securely to bow, with no cracks or signs of movement. Anchor lock pin is not bent and locks correctly in place, preventing forward motion of anchor on bow roller. Pin must be secured to the stem plate by a captive chain or lanyard.
- **Anchor** is of correct size for the boat and serviceable – not bent or cracked. Anti-kink rotating shackle at head fitted securely to chain and properly seized with wire. Anchor rode (chain/nylon) is depth marked and properly secured to hard fitting in the chain locker – pull it out and check! Ensure that the drains in chain locker are free of rubbish, so you're not carrying an extra ton of water at the bow in a seaway (it happens all too often). Check the chain locker bulkhead is watertight and not cracked at hull joints.
- Check function of **anchor windlass** in both directions – does the chain actually fit the windlass? Are the deck switches or hand-held control box serviceable and water tight? Remember to turn the circuit breaker off when not in use – the windlass can remove fingers in a moment if carelessly left active.
- **Pulpit rails** are securely fitted to the bow and not bent or weakened.
- All **deck cleats** and **fairleads** in good order.
- Examine **roller furling drum** for salt corrosion and check it operates correctly in unfurling and furling the foresail. Check the furling line is attached securely to drum and not chafed at any point in its run.
- Check the **foresail** tack is fitted securely to the furler drum and any webbing straps are sound and not worn or likely to fail. Unfurl the sail and check condition of luff, leach and foot, followed by tack, head and clew, then the leach tension line and clamp. Are the tell-tales all there and visible from the cockpit? Is the UV sacrificial strip in good order – be honest, does it need to be replaced?
- Are the **foresail sheets** properly attached, free of chafe and long enough for downwind work? If stiffened by age and salt, do they need to be washed, or should they be replaced?
- Check that the bases of all **stanchions** are securely pinned and stanchions themselves are not bent and weakened. Ensure that all **guardrails/safety lines** are properly secured at both ends, bearing in mind that the aft end usually terminates in a lashing. Any access points should be closed with the correct folding clips at all levels.
- All **deck hatches** and **port lights** must close tightly against their seals and be lockable from within. Carry out water integrity test with a direct hose – are you prepared to put up with wet upholstery and bedding on a long ocean passage? If not, sort out that faulty seal now!
- Ensure for safety of the crew that port and starboard **jackstays/jacklines** are fitted that run to the extremities of the yacht, fore and aft. Replace any jackstay that looks perished or UV degraded and replace their terminal fittings if in any doubt at all – it's your life and others that rely on them.
- Check that deck **dorade vents** are screwed onto their mounts properly and you have blanking caps available on board to seal them, if necessary.
- At the **mast**, check function and security of all fittings, winches, boom gooseneck and reefing controls. All rollers within the boom should spin freely and all reefing lines

- must run correctly. Check the mast gaiter is watertight and not damaged and all electrical cables have watertight grommets where they go through the deck.
- Check all **halyards** and the topping lift are correctly reeved to minimise friction and chafe. Are the lines in good condition and attached securely to their sails or the boom, as appropriate? Where led aft to the cockpit, are the lines arranged logically on their brakes and labelled clearly?
 - Examine the **boom vang/kicker** tackle for function and security. If the vang is hydraulic, check there is no fluid leakage from the seal – does it need to be replaced? Check the boom condition over its whole length and security of the topping lift. Check all lazy jacks and mainsail stack pack are correctly set up and all lines are free of chafe.
 - Hoist or unfurl the **mainsail** – check condition of luff, leach and foot, followed by tack, head and clew, then the leach tension line and clamp. Check all battens are fitted, not cracked or broken and correctly secured in their pockets. Are there any spare battens aboard? Check reefing system functions as it should, without undue effort in operation. If it's stiff in operation, track down the source of friction and try to adjust the lead by moving the turning blocks, if possible. Remember: friction = chafe = gear failure!
 - Bring all other **sails** on deck, take out of their bags and check them for condition, cleanliness, correct fittings (blocks, sheets etc) then re-stow ready for use. This applies to all sails from cruising chutes and spinnakers down to the smallest trysail.
 - Check all **water** and **fuel tank filler caps** are fitted with a captive chain and achieve a tight seal when screwed down.
 - Check the **backstay** adjustment system.
 - Check the function of all **winches** and ensure their caps are secure. Check power winches work under power and manually. Consider the wisdom of turning the winch power supply off at night, to avoid inadvertent winding on the wrong winch and ripping a sail to shreds as a result. Again, it happens all too often, so please be warned.
 - Switch on all **cockpit instruments** and confirm they function correctly in all modes, particularly the log, depth and wind speed/direction readouts. Do all the instrument lights work and dim as they should?
 - Check the main **steering compass** carefully for working condition: is the glass clear and free of scratches and no air bubble within? Does the light work? Check for any gross error with a hand bearing compass. Has the compass been swung, and is there such a thing as a deviation card?
 - Run the **engine** up to working temperature – it should start easily and not belch black smoke, other than a blue wisp on start up. Is coolant water egressing steadily from the exhaust (unless a dry exhaust system is fitted)? Does the gearbox engage smoothly into forward and reverse without a jarring clunk? Do the temperature gauge and rev counter both function correctly? Does the decompression toggle (or other engine kill switch) stop the engine without over-run?
 - Is the **steering wheel** secure on its spindle, without excessive play? Do you know the number of turns lock-to-lock and is the central position marked by a lashing on the wheel? Does the wheel lock or clamp work when required and does the autopilot engage and disengage instantly?
 - Check all **man overboard recovery systems** are correctly fitted and serviceable (see pages 25-30 for safety equipment regulations). Is there a well-rehearsed and practical system for getting the MOB back aboard? (see page 23)
 - Clear out unnecessary items from the deck **lockers** to make more space – do you really need 3 deck brushes?
 - Check all GPS sensors, **antennas** and other communication equipment are secure.
 - Check that bow and stern **navigation lights** function correctly and are secure and not obscured by a dinghy or other equipment. Check the masthead light and steaming lights and replace any bulbs while still moored up. Check there are no obviously corroded wires or terminals – worth a quick spray with WD40. Lenses should be clear and free of cracks.

Below Decks

Again, start at the bow and work aft, checking the following items thoroughly:

- No obvious **leaks** from the chain locker bulkhead or deck hatches / port lights.
- All **seacocks** are identified and operate freely. A tapered softwood bung/plug should be attached close to each seacock for use in sealing the hole in an emergency
- Lift the **speed log** and check the impeller is clean, and ensure it spins freely. Re-fit the log and check that the blank is secured nearby.
- Check the **depth gauge** transponder is fitted securely and all cables are secure and free from corrosion.
- Lift the **floorboards** and check condition of all bilges – are the limber holes clear, preferably with a through chain fitted for clearing debris (the inevitable match sticks and sweet wrappers)?
- Does the **heads/toilet** pump operate correctly and flush the bowl without back flow? Are all the crew well versed in its use?
- Check that all **fire extinguishers** are in-date and of the correct type for their application. A fire blanket should also be mounted close to the cooker in the galley area.
- Check the integrity of the **gas** supply piping from cylinder to cooker and that all solenoids and cut-offs function correctly. Ensure the crew know the correct sequence for switching the stove on and off, so gas is burnt off and not left in the pipes to leak into the bilges to possibly explode.
- Check all **navigation instruments** at the chart table are operating correctly and the main chart plotter has the correct cartridge and the passage waypoints are entered in advance and checked. While alongside, check that the chart plotter shows the exact position on the berth as a confidence measure. Do you have all the necessary electronic charts, paper charts and pilot books for the whole passage? If radar is fitted, does it display correctly on the plotter and overlay as necessary? Check the AIS settings are at the appropriate level – just the relative speed, course and separation.

- Do one **VHF radio** check and then accept that it works. Check that the MOB function works on the radio, if integrated with GPS. Is your VHF callsign clearly displayed on a label for all users to see? Is there a script for the MAYDAY message readily available, if required?
- Check the **engine** and its systems thoroughly – when was it last serviced? Are all oil and fluid levels correct and clean? Is there sufficient spare oil, hydraulic fluid, grease etc? Are the spare water pump impellers, belts, fuses, fuel and oil filters correct for the engine type?
- Check the engine and domestic **batteries** are stowed securely and terminals are greased and not corroded. If they are not the gel type, ensure you have a supply of distilled water for topping up the batteries. Do they hold a healthy charge or are they tired and need replacement (the alternative is having the engine running for hours every day to keep enough juice in the batteries for the navigation lights and instruments).

No check list can be exhaustive, as all boats are different but the above list should certainly provide a good basis for a cruising skipper to build upon.

A professional delivery skipper and crew will take a full day to work through this sequence of checks at good speed, so it will probably take a full weekend for a private owner and helpers.



02. Rally Preparations

Troubleshooting

When systems fail offshore, look for the simplest fix first. Don't forget to take with you:

- Manuals and wiring diagrams - electronic versions downloaded from the internet.
- A good set of tools
- Spare parts (see page 63)
- Extra oil and fuel filters
- A good sail repair kit

Sails and Rigging

Before you leave the dock:

- Perform a rig inspection or have it inspected by a professional rigger (see page 84-87)
- Replace old standing rigging if necessary
- Service mast sheaves
- Check for areas where running rigging and sails will chafe
- Set up and test staysail stay and running back stays (if fitted)
- Set up and try whisker/spinnaker pole
- Tape cotter pins; wire-tie shackles
- Service all blocks and winches
- Replace sheets and halyards as necessary
- Set-up and try all reef lines

At sea:

- Look for chafe every day
- Do Jerry's daily rig check (see page 84)
- Worry about anything that ends up on deck. like bits of screw or broken pins
- Watch out for winch over-rides

Steering System

Before you leave the dock:

- Inspect the steering system
- Test the rudder bearings and check the seals
- Check and lubricate cables and pulley system
- Check autopilot electrical and mechanical connections
- Order spare parts
- Test the emergency steering system

At sea:

- Listen to your autopilot. If it is straining, balance the boat to relieve the stress on the system.

Refrigeration System

Before you leave the dock:

- Check raw water system and pumps
- If you can't keep the freezer frozen at the dock, it will never stay frozen at sea
- Check refrigerant level or have a refrigeration specialist check it for you.
- Learn how to bleed the water lines

At sea, if it stops working:

- If the raw water pump is not running, substitute another pump
- Bleed the system if you suspect an air lock
- Check the site gauge for loss of refrigerant
- If you can't fix it, keep the fridge closed as much as possible to retain the cold. Then have a huge feast!

Engine/Generator/Fuel Systems

Before you leave the dock:

- Learn how to bleed the system and change the impellor
- Clean the fuel tanks and heat exchanger
- Check and replace O rings on filler caps

At sea:

- In rough weather run the engine twice a day.
- If no fuel is getting to the engine, change the fuel filters and bleed the engine.
- If the engine is overheating, check the raw water pump and change the impellor.
- Check fuel filter and filter bowl - if the filter is dirty, change it. If there is water in the filter bowl, drain it. Refill filter assembly with clean fuel
- Check for cracks in the fuel line

Rigging Checks

Recommended by Jerry 'the rigger' Henwood, a Gosport, UK-based professional rigger who visits the ARC fleet in Las Palmas every year www.jerrytherigger.co.uk

As Jerry 'the rigger' Henwood says: "Rigging tends to be the forgotten part of a yacht. It's made of stainless steel and aluminium, always looks the same, you have to climb it to see it all, and it just gets on with it and does its job - until the mast falls down!"

After the hull, the rig - mast, standing rigging (stays) and running rigging (halyards and lines) - is the most important part of a sailing boat. Whether you are crossing an ocean or sailing in the harbour, you need to take as much care of the rig as any other part of the boat.

Rig Planning

At the planning stage, ask yourself whether the rig is 'up for it'; is it suitable for your plans? Talk to your insurer about your sailing plans - if the mast and standing rigging is more than 10 years old, it may have to be replaced before making a major offshore passage.

Find a good rigger and pay for a rig inspection. Tell him what your plans are, and ask what changes or improvements he suggests. You can always get a second opinion. Ask the rigger lots of questions about your rig, its possible weak points, and recommended maintenance.

Three Minute Check

The three minute rig check is a great way to familiarise yourself with your rig. Do the three minute check before you leave the dock, and at every change of watch while you are sailing. Everyone on board should have a go - spread the knowledge! You need three things for the check:

1. **Eyes:** Does everything look right? Look for split pins, cracks, rust, chafe and wear.
2. **Fingers:** Feel for broken strands and distortion on every swage or wire-to-terminal join. Check the tension of stays.
3. **Binoculars:** Look up the mast at spreaders, mast head, furling gear - does everything look right?

Start at the stern and walk slowly around the deck checking all bottlescrews, chain plates, clevis pins and swaged terminals - anything attached to the mast or rigging.

What are you looking for?



Check your standing rigging wire where it enters the swage. Is it nice and smooth? The most common place for standing rigging to break is just inside the swage. As it is inside you cannot always

see it, but you can feel it. Run your hand over the wire for about 100mm to 150mm above the swage. If you shut your eyes you remove the visual sense and increase your sense of touch. A lumpy wire at this point could indicate a broken strand. Push each strand in turn, if it moves it is broken. If you are in port have the wire and the opposite wire replaced - replace in pairs to keep the rig balance correct. If you are at sea follow the guidance in the Rigging Repairs At Sea section ([page 86](#)).

- Check that the 'legs' of split pins are opened at least 20 degrees each, otherwise they're not working!
- Check that key rings are taped so they can't be accidentally pulled open
- Check that shackles are seized with monel wire to stop them opening (plastic cable ties also work)



Remember, it only takes a few moments to walk from the cockpit to the shrouds so that you can feel them. These few moments could be the difference between finding a small problem that is repairable and losing the rig over the side.

Don't forget to check deck gear like sail sheet tracks, blocks, boom ends and rope lines. Once you are back to your starting point, check along the centreline. Then, using the binoculars, inspect the spreaders and mast head from every angle.

This quick check can really pay dividends: *"We have instituted a formal twice daily rigging check. This afternoon a gimlet-eyed crew member spotted that the split pin holding the clevis pin at the lower end of the forestay, although present and correct and properly splayed, was actually well on the way to wearing through (it was new with the rig 12 months ago). We changed it at sea (heart in mouth), and once extracted were able to see that it clearly would have failed at some time in the future with probably catastrophic results."* Log from ARC2010 boat *Vulcan Spirit* Hallberg Rassy 53

Use Jerry the Rigger's [check sheet on page 87](#), or make up your own version to suit your boat.

Going Aloft



It is a good idea to climb your mast for an up-close inspection on a regular basis. Before you consider climbing the mast, check it with binoculars first. Get used to climbing the mast when tied up to the dock before trying it at sea, and try different methods until you find one that

suits you and your crew. It doesn't always make sense to send the lightest person up the mast, as they may not have the strength or skill to fix a problem.

Climbing the rig at sea is obviously potentially dangerous, and Jerry recommends wearing rubber boots for leg protection, and a climbing, bicycle or canoe helmet for head protection at sea. Wear a climbing harness or a special

mast seat/harness (bosun's chair) and tie on the halyard plus a spare in case of failure.

Start at the bottom, and working up, using your eyes and fingers: check the halyard sheaves, look for chafe, split pins, cracks, rust, wear and signs of broken strands in wire rigging. Check that mast stay fittings and spreaders are correctly aligned.

Top Tips

- Check your rigging regularly – problems can occur suddenly or develop slowly.
- Even with regular inspections, it is easy to miss hidden rigging problems in swages or chain plates.
- Don't risk leaving port if you suspect a rigging issue; problems are easier to solve in port.
- Take advice from riggers and boatbuilders, but don't be afraid to get a second opinion.

Rigging Maintenance

Lubrication

All of the moving parts should be able to move! If they don't – start with hot water. It may be just seized up by salt and general dirt. If this does not work, move onto penetrating fluids. Lastly, dismantle the item.

Service all the sheaves in the mast. If they don't turn, work out why and fix the problem. If they have developed an oval shaped center hole, renew them. Spray the bearing surfaces with a dry Teflon or Silicon spray. They should move easily when pushed by a finger.

Undo one rigging screw at a time, counting the number of turns as you go, remember to keep the top still whilst you turn the body, this will enable you to tension the rigging back to its original state. Clean the threads with a brass wire brush. Lubricate the male and female parts of the threads with 'Selden Rigging Screw Oil' before reassembly.

Winches

Winches require looking after. They take an enormous amount of strain and allow us to handle sails with ease. All the major manufacturers have booklets that can be purchased or downloaded

from the internet. These give clear instructions which if followed make a task that looks difficult quite straightforward.

Dismantle the winch. Lay the parts out on a clean cloth in the order of removal. Thoroughly clean each piece. Check its condition, look for cracks and chips. Replace any part that is damaged. Paying particular attention to the springs and pawls. Smear a thin coating of 'winch or gear grease' onto all the surfaces regardless of whether they come into contact with another part. Re-assemble and then test.

When carrying out the winch service always replace the springs with new ones. Each spring is very small and only costs about 35p/50¢. Change them; it is all that makes your winch work...

The Boom

The part most often found at fault on a boom is the wear washer. This is a nylon washer that goes between the boom gooseneck toggle and the mast bracket. You may not have one, it will have worn away! Check all of the fittings that are attached to the boom.

The Spinnaker Pole

Make sure that the piston ends are freely moving. Check the trip lines for chaff. If you have a telescopic pole make certain that the telescopic section slides freely and that the locking parts are in good condition.

The Boom Preventer

When sailing downwind there is a risk of an unintentional gybe. You should use a boom preventer line. Please notice that this line must be lead from the aft end of the boom forward, through a block and back aft – to enable quick adjustment if required. If you place the line further forward on the boom, you will break the boom if you broach. It will also help when the boat is rolling in a big swell and/or light winds.

Shackles

Extract from an ARC yacht's log: *"Over the last few days a number of shackles holding various pulleys, ropes and wires have mysteriously worked themselves loose."*

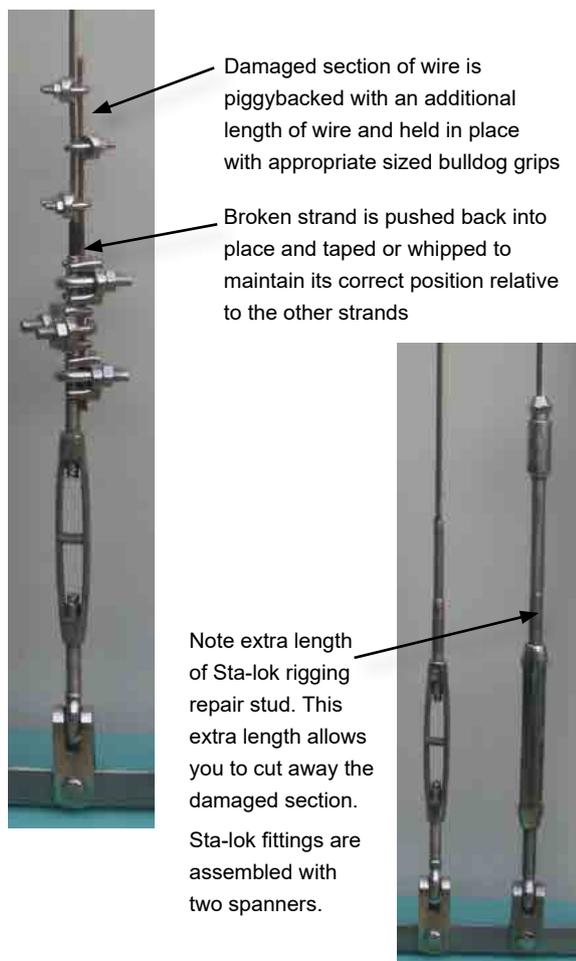
Prevention is better than cure. If you seize all of your shackles, they will not come undone. Buy yourself a couple of rolls of monel seizing wire.

Repairs At Sea

As soon as you notice a problem with the standing rigging, make the problem side the lee side of the rig. Brace the mast with spare halyards and then drop your sails. Do not let your sail flog.

There are three main methods of repair.

1. Carry a spare set of rigging.
2. Carry some lengths of wire and a supply of Bulldog/cable grips. Use these to bridge the damaged area.
3. Carry a set of 'Sta-lok' rigging repair terminals. These can be seen at www.stalok.com
4. Specialist rope rigging repair kit ([Colligo Marine](#))



Jerry's Rig Checklist

Date of inspection:

Boat Name:

Type:

To be checked	Check	Comments	Date Solved
1. Mast Section		Mast Make:	
2. Head Box			
3. Heel			
4. Mainsail Track			
5. Mainsail Gate			
6. Winches/Pads		Number of:- On Deck: On Mast:	
7. Cleats/Clutches			
8. Halyard Exits			
9. Spreader Brackets			
10. Spreader Tips			
11. Kicker/Vang Brackets			
12. Gooseneck			
13. Backing Plates			
14. Terminals			
15. Sheaves			
16. Spinnaker Blocks			
17. Spinnaker Pole			
18. Masthead Light			
19. Anchor Light			
20. Steaming Light			
21. Deck Light			
22. VHF Antenna			
23. Radar			
24. Radar Reflector			
25. Anemometer			
26. Furling System		Rope Size: Make:	
27. Main Furling System		Rope Size: Make:	
28. Main Boom		Make:	
29. Stemhead Fitting			

	Check	Size	Type	Age	Date Solved
30. Forestay					
31. Inner Forestay					
32. Backstay					
33. Cap Shroud					
34. Intermediate Shrouds					
35. Forward Lower					
36. Aft Lower					
37. Baby Stay					
38. Running Backstay					
39. Main Halyard					
40. Genoa Halyard					
41. Topping Lift					
42. Spinnaker Halyard					
43. Spinnaker Pole Uphaul					
44. Flag Halyard					
45. Kicker/Vang Tensioner					
46. Reefing Lines					
47. Main Outhaul					
48. Guard Wires/Lifelines					
49. Jack Stays/Lines					
50. Main Sheet System					
51. Genoa Sheets					
52. Lazy Jacks					

Managing Rigging Failures

Have you thought of plans for your own vessel should the worst happen?

Cruising yachts often experience strong winds. Minor damage to your rigging during a passage is not uncommon; extensive damage is unusual. To understand common rigging failures, we thought it might be helpful to give you some examples from rallies from the last few years. These failures can occur during normal sailing conditions, and are not necessarily the result of a sudden squall or mistake by the crew:

Spinnaker pole track

Spinnaker pole track failure is relatively common when downwind sails are being used day after day. There are huge forces at work where the pole joins the mast, and these can cause the track to shear away.

Hallberg Rassy 42E *Fenix II* was enjoying close-reaching conditions in strong winds under Parasailor – possibly the wind was too strong for the angle, but the fun of sailing was too much temptation. *“Suddenly there was a mighty bang and the spinnaker collapsed. The 32mm pole T track had peeled-off the front of the mast and was bent in a knot, with the pole pushed aft. We had to mend the track, so we carefully thought through the forces - most is simply pushing the track against the mast, but the key was stopping the track from twisting. We cut off a short piece of track and fitted it with two 1m ‘wings’ made of cut-off bits of the track and pieces of timber. The track was attached to the mast in the right position for poling the genoa. Finally we braced the ‘wing ends’ with Dyneema rope to the boom gooseneck on both sides to stop the track turning sideways.”* This temporary lash-up lasted for the remaining 6 days to Saint Lucia.



Beneteau 50.5 *Ariane* was forced to continue under reduced sail when the mast track for the whisker pole failed - overnight the pole had sheared four bolts off of the track, pushing the track 2cm out of alignment. The crew devised a solution by lashing the car to the track both fore and aft and athwartships, and were able to continue with one-third of the genoa sheeted to the now-repaired pole.

Spreaders

3 Drifters, a Beneteau Oceanis 50 suffered damage to the port upper spreader. A crewman had gone aloft to repair a spinnaker halyard, and while inspecting the rig, noticed a sizable crack at the spreader base. To support the compromised rig, a second backstay was fitted from the masthead using a spare halyard and a line led from the spreader tip to the port bow cleat.

Forestay

Moody 422 *Thor VI* was fitted with a removable inner forestay before the start of long-term cruising. The inner stay was intended to provide a dedicated stay for a storm jib or in case of problem with the furling genoa. In the south Atlantic the main forestay broke at the top terminal, possibly due to an incorrect terminal fitting being used. When the forestay broke, the inner forestay was rigged and a spare halyard taken forward to the bow roller to support the mast. Eventually the forestay and foresail were removed, and halyards used to act as temporary forestays. The boat continued for around 1800nm under this improvised rig.



Chainplates

Chainplate failure can be sudden and catastrophic. Often unseen corrosion caused by water ingress weakens the stainless steel, and the plate fails where the bolts pass through.

Sometimes substandard stainless steel is an issue. The only remedy is to replace the chainplates and bolts when the standing rigging is renewed.

Jeanneau Sun Odyssey 45 *Liberty* suffered a roller furling failure that prevented the genoa from furling. This was immediately followed by a chain-plate failure of a forward lower shroud.

The broken furling drum was lashed in place with light line, duct tape and a screwdriver, thereafter forcing the crew to roll the sail by hand. A running repair was made for the shroud by lashing a spare halyard between the bow and midships cleat, creating a temporary chain-plate. The shroud was then tied down to the jury chain-plate, tensioning it with a block and tackle.



Westerly Oceanlord *Quasar IV* was mid Atlantic when the crew noticed a creaking sound from the lower aft shroud, but could see no problems. Four days later, at night, the chain plate bolts sheered with a bang, leaving the mast wobbling around. A quick solution was

needed so a short length of 10mm braid was pushed up through the hole in the deck, around the bottom of the shroud, pushed back down below with both ends then knotted. A second piece of line was attached to the shroud with 4 hose clamps run through a spare deck block and back to a winch. The aim here was to reduce the

tension on the deck loop by pulling down on the shroud. After about 6 hours the 'chainplate' rope had stretched, so it was shorted, then replaced after about 500nm. The boat managed 1200nm with the shroud held in place with rope.

Failed chainplates: When there are no suitable alternative anchor-points on the deck to which jury shrouds could be attached, one idea is to bypass the chain-plates. On a fin keel boat flake all the anchor chain on deck, cut it into two lengths and drape one length over the stern working it back to the end of the keel and one over the bow working it back to the front of the keel. With the ends brought up either side and shackled to spare wire or cord which could then be attached with respectively bulldog clips or rolling hitches.

Boom

Boom breakages are relatively common in a downwind ocean passage, sometimes caused by badly placed preventers, the boom dipping in the sea as the boat rolls, stress cracks on old sections or damage to the gooseneck fitting. A gradual crack appeared on Gib'Sea 51 *Adrienne's* boom, which worsened until the boom 'snapped'. The crew rigged the mainsail to fly loose-footed, by attaching a sheet system to the clew, with lines lead to each quarter, in the same way that a trysail would be rigged.



But don't have nightmares...

Very few yachts that have entered a World Cruising Club event have ever lost their rig, in large part due to pre-rally rig inspections and daily, routine rigging checks during the passage.

Remember the rigger's motto: Look after your rig!

Dismasting

Saving the Rig

If it is possible to save some of the rig, or the break is high enough to make a 'stump' mast, then it may be possible to make a jury rig from the remaining sections of spar, halyards and cut-down sails.

The crew of C&N 83 *Mustang* managed to create an effective rig when their mast broke above the first spreaders, luckily leaving a good 'stump' mast and the boom intact. This rig was stayed using halyards, and a sail cut down to fit, and the boat was able to continue to Saint Lucia.



Stevens 47 *Aurora* was dismasted the first night out from land, and the crew was able to get the entire rig back onboard and then motored back to Tortola, where everything could be safely sorted out.

Cutting Away the Rig

When the worst happens, and you need to cut the rig away, you will need tools that will do the job quickly and efficiently. Remember, a mast can quickly knock a hole through the side of a yacht. Either get the mast back on deck quickly so that you can make a jury rig, or get rid of it.

Good wire cutters, not bolt croppers, are not cheap, but they are effective. Go to see your local rigger and look at his cutters. Try them out on an old piece of wire that is the same diameter as your largest wire. Then imagine that the boat is rolling violently. Are you or your crew strong enough to use them? These are not cheap to buy,

but they are an essential safety item. They are like your life raft; you hope you have wasted your money and bought something that you will never use. But, if you do need it, you are going to be really pleased that you bought quality.

A few years ago Yachting World magazine commissioned Chris Tibbs to do a test of rigging cutters. Chris, incidentally, was once dismasted in the Southern Ocean. Here's what he found:

Bolt croppers: An average (rusty!) set of bolt croppers severed 1x19 wire with great difficulty and only if you rested one handle on deck and put all your weight on the other, but they would not cut rod rigging.

Hacksaw: Hacksaw blades are effective, but it is hard to hold the rigging firm and you'd need to keep a significant number of clean new blades as they blunt quickly, but they are cheap.

Cable cutters: Felco cable cutters - These £350/\$550 cutters (the largest, the C112 would be the best) are effective, but there is a special technique of resting one handle on the deck and bouncing on the other. They left a nice neat edge that would fit a Sta-Lok or Norseman terminal, but Chris didn't feel they would work easily on a heaving deck and he didn't manage to cut through rod.

Ratchet cutters: Baudat mechanical ratchet cutters require less force to cut the wire, and can be used one-handed. Cost approx £200/\$300 for 8mm.

Other: A battery-operated angle grinder may also do the job, but could be dangerous to use in rough conditions.

The most effective options:

Hydraulic cutters: Such as those from Holmatro, price about £1000/\$1500. Chris had used hydraulic cutters to cut away his rig in the Southern Ocean. In the test it took him 8 seconds to sever 1x19 wire and 13 seconds for rod. Easy to use and a good, clean cut.

Explosive cutters: Shoot-it explosive cutters (£500/\$800) operate with cartridges that fire a piston into the wire. Very quick and effective, and very impressive with rod rigging.

Whatever device you decide will work best, ensure that it is securely attached to you with a lanyard, so it can't be lost overboard when the boat rolls.

Strong Wind Sailing Tips

Reefing

As part of your crew training program, be sure every person on board can reef and un-reef the main, preferably by themselves. Reef early and often to achieve a more comfortable (and usually faster) ride and reduce strain on your autopilot.

When the mainsail is reefed, there will be a stress line between the tack and the clew, which will put pressure on the sail fabric. Bear in mind that your sails are not designed to withstand the constant and prolonged stress of being reefed - they will stretch, so test out reefing positions to ensure the best possible sail shape and best rope leads. Test the reefing lines to deal with potential chafing points on sails and line, as they can wear through very quickly. You may want to upgrade the reefing lines.

Trysail

In very strong winds, you may choose to set a trysail in place of a triple-reefed main. It is best if the trysail can be set on its own mast track. You may be able to set your trysail using the boom, or flying from deck blocks with the boom lashed down securely. Test it out at the dock first.

Roller Furling Foresails

Furling headsails don't work efficiently when well-reefed, and changing a roller jib at sea can be difficult and even unsafe. Having a cutter rig, or a removable inner forestay onto which a staysail can be set will help overcome the inherent problems of a single forestay and roller jib.

Traditional Foresails

Having traditional foresails in strong winds can be an advantage as they are easier to hoist and lower, however a crew member does need to be on the foredeck.

If fitted, ensure that the piston hanks are well lubricated and working. Mark the lead positions for each sail on the deck.

Storm Jibs

A storm jib needs to have sufficient shape to drive the boat forward - it's not just a piece of triangular canvas. It is a good idea to test storm

sails with other combinations of sail to see how the autopilot copes. Storm jibs usually need a different sheet lead and to be set on a tack stop - check how it sets before you really need it!

There are several ways to hoist the storm jib. If you have traditional foresails, you can simply hank the sail onto the stay above the lowered foresail or hank it onto a separate cutter forestay.

If you have furling gear then setting a storm jib is a little trickier. You can take the headsail down if the wind speed is not too strong, or you can use one of the sail systems that fit over the furled foresail. This not only acts as an easy way to attach a storm jib but it also stops the furled genoa from unfurling.

Leave the sheets attached to storm sails when stored, so they're ready to go.

Heaving-to

Heave-to when you need to settle the boat down. The boat will slow down, usually moving forward at about 1 to 2kn, but with a significant amount of drift, so be sure you have plenty of sea room. When hove-to the boat's motion is quieter and more comfortable. This is an effective technique in rough weather, but also is helpful if the crew needs more rest or if it is difficult to cook in the galley or undertake repairs. Heaving-to is a simple procedure. Practice it on a calm day first.

1. Sheet in the mainsail tightly
2. Tack the boat without releasing the jib
3. When you finish the tack, the main is set as usual, but the jib is set against the wind with its clew to windward - 'backed'
4. Lastly, turn your steering wheel all the way to windward and lock or lash it in position.



Trysail practice in the marina

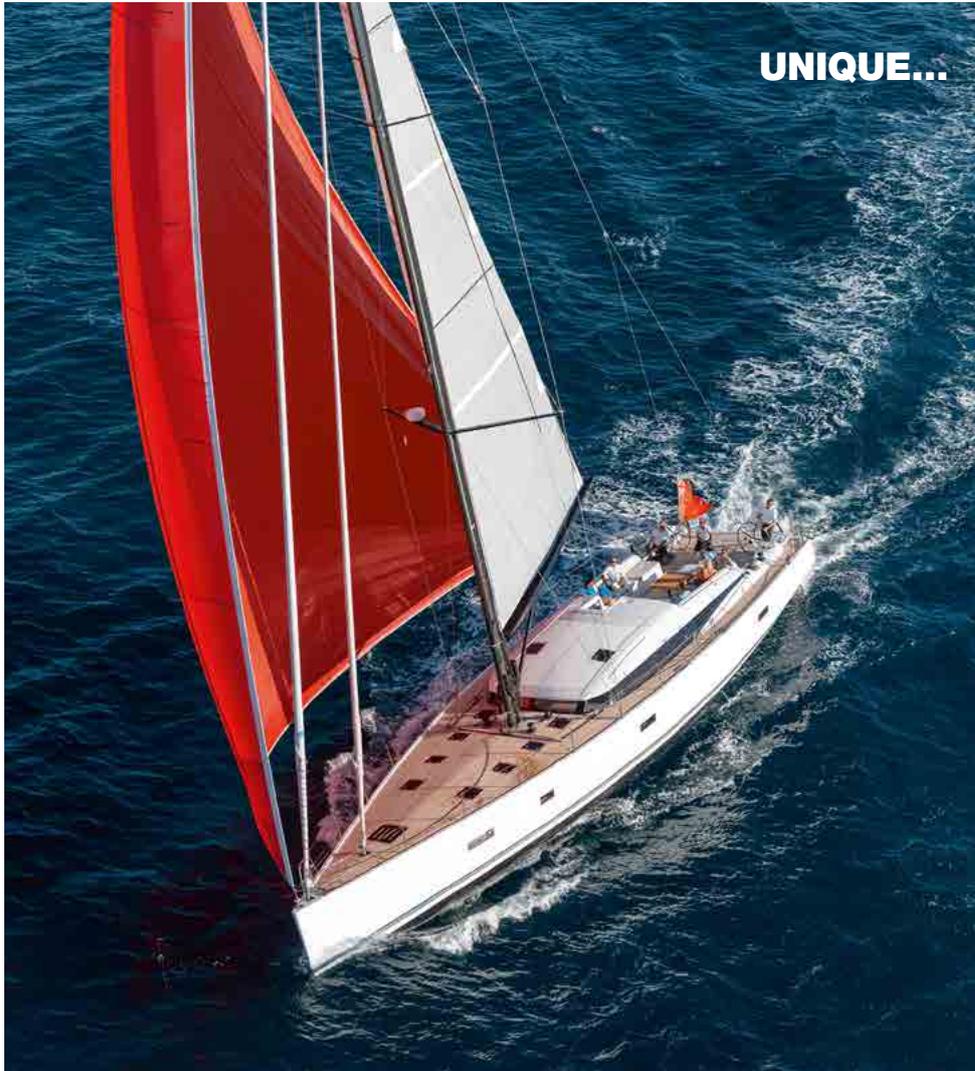


Photo Nicolas Claret

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Ocean Sailing Tips

Chafe

When sailing downwind the apparent wind drops so you need to increase your sail area to compensate. However, with more sail area and waves from astern, sudden forces can be exerted on the whole rig, so it is an idea to wear gloves at all times when handling ropes.

Once out at sea with 15 to 25 knots of consistent trade winds, the boat will start to roll with the waves coming on the aft quarter. This is when the chafe will begin. Chafe will occur everywhere that two items can rub together. There are potential chafe points all over the boat, but especially at the end of the spinnaker pole and at the top of the mast where halyards roll into the mast. Chafe is not just restricted to sheets; it can also occur where sail cloth rubs against any standing rigging and where sails touch other sails - a spinnaker rubbing against the furled headsail.



Spinnaker sheets: To prevent the spinnaker sheets from chafing in the end of the pole ensure that the sheets are covered with a cloth, leather or suede. Sheets should also be checked every day and if the sacrificial band is worn then replace it. It is cheaper to replace the cover than the actual line. Bear in mind if you attach your sheets to the tack rings of the spinnaker with shackles, they may wear-away the tack ring over a long passage. Tying the sheets allows worn line ends to be cut and shortened (assuming you began with long-enough sheets!)

Masthead: To keep halyard chafe at the masthead to a minimum, ensure that the halyards line up correctly with their sheaves. If they are out of alignment then the halyard will run to the side causing a chafe point.

Blocks on deck: As with the masthead, the lead of the line into the block is very important. If the line is not fed correctly then the block cannot follow the direction of the pull and will not

only chafe the line, but it will also not do its job properly.

More chafe prevention:

- Stabilize the rig and prevent movement as much as possible.
- Put the mainsheet traveller to leeward.
- Tighten the boom vang/kicker.
- Add chafe patches to the main sail. wherever it touches the rig. This should also be done for the first reef position.
- Protect any ropes at risk of chafe with a sacrificial cover, such as hose pipe.



Choosing Your Sails

When choosing what sails to use for an ocean passage, the first and most important factor to consider is the material you want them to be made from. Spectra, Kevlar and Carbon do not like flogging (flapping), and as hard as we all try to stop this happening, it will happen at some point. This disadvantage is the same with laminated sails. If they flog they will be more likely to delaminate in patches. It is advisable to ensure that there is a good percentage of Dacron in the sail, which will ensure durability and will also make the cloth easier to handle.

Your sails will be in use for long periods. Multiply the passage time by 24 (hours), then divide by 6 (hours) to work out how many 'normal' day sailing days the passage equates to - a 10 day passage equates to 40 days of 'normal' sailing at 6 hours per day. Add in the effect of the sun, which being close to the equator is much more intense than at higher latitudes, and you can see why the wear on sails is so much greater for ocean voyaging.

UV Degradation of Sails

Many sailcloth materials are degraded by UV light, and sails that have been used for periods in the tropics, or have been left on furling gear or booms, are likely to be affected. UV degradation causes the fibres of the material to weaken, which means panels may split or stitching unravel. Check all of your sails thoroughly as part of your rally preparation.

Waves and Heeling

When reaching or running in ocean seas, you should rig a boom-end preventer (not mid-boom) in case of accidental gybe. Lead the preventer as far forward as possible and ensure that the control line and the kicker (vang) can be easily released from the cockpit if the boom end hits the water.

This also applies to the headsail if you have a pole rigged and the boat is rolling. Ease the downhaul (foreguy) and tighten the pole topping lift (uphaul) to prevent the pole from touching the water. Alternatively use higher cut headsails if you have them.

Downwind Sail Plans

Prepared by Thomas Wibberenz, professional skipper and experienced offshore sailor of both monohulls and catamarans, who has been involved with the development of the Parasailor2 spinnaker. Thomas is also an examiner with the German Sailing Association and an adviser on fitting out cruising yachts for long distance sailing. thomas@pointsofsail.de

Poled-out Genoa and Mainsail



Sailing wing-on-wing is common for cruising boats sailing downwind. The furling headsail is poled-out using

a securely guyed pole fixed to the mast and the mainsail is secured by a boom-end preventer. It is often necessary to reef the mainsail to balance the forces more evenly. This combination can be quite roll-inducing as the wind force is acting in different ways on each sail.

Sailing with a Gennaker



To ensure the best speed out of the gennaker (or cruising chute) downwind it should be flown high; adding a purchase at the tack will make the curve of the sail easier to control. It is also good to lead the sheet further forward to keep the windward luff towards the middle of the

boat. You could use a tacker to keep the tack close to the headsail.

Twin Poled-out Headsails



For boats with two forestays, a common downwind configuration is to pole-out two jibs, one each side of the boat. The main is then stowed away. This gives good vision ahead and keeps the clews well clear of the water. This works best when each

headsail is on a separate stay, allowing both to be easily furled while keeping the poles firmly guyed. Try to have a gap as wide as possible between the sails in order to minimize rolling.

Twistle Rig

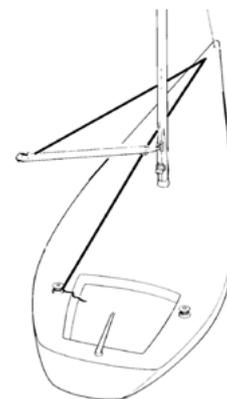
The twistle rig comprises twin high cut jibs poled-out either side of the boat. Rather than being attached to the mast, the poles are joined together at the inboard end with a universal joint, controlled by the topping lift (uphaul) and downhaul.

The poles can move with the motion of the boat, minimizing rolling for some boat designs, and the high cut jibs give excellent visibility. However, the twistle rig requires extra long poles that can be difficult to stow. The rig can also be difficult to set up in a rolling sea.

Main Boom Preventer

In downwind sailing offshore, a boom preventer should be set to avoid accidental gybes. The preventer line must run from the end of the boom forward through a block then back to the cockpit to enable quick adjustment.

Fitting a two-part line, where one part stays permanently attached to the boom, makes it easier to set the preventer. Do not fit the preventer mid-way on the boom as this can cause the boom to break if dipping during a role.



Setting a Pole

A pole is essential for downwind sailing, either set off the mast, or via a bowsprit for an asymmetric sail. Using a pole stowed via a mast track makes handling the pole easier, but does add weight higher up the mast. Another option is a telescopic pole which is easier to stow. Carbon poles offer very light weights making them easy to lift, but are expensive relative to metal poles. Always secure the pole with a fore-guy, an aft-guy and an uphaul. This means a headsail can be furled quickly when needed, whilst the pole left securely in place. Ensure that the sheets are pulled tight against the pole jaws to reduce chafe. Asymmetric sails used downwind tend to be flown with the tack loose, therefore a tacker may be needed to pull the sail back towards the forestay

Spinnaker Sailing

When using a spinnaker you will only get laminar air flow from a wind angle of 140 degrees or less. With a wind angle of 140 to 180 it will be purely resistance sailing and the spinnaker will be ineffective. The spinnaker top will use the mast as a lever and will pull



the bow down and the rudder out of the water. The sheets will try to turn the boat around due to being led aft. Another disadvantage of the spinnaker when the wind is behind 140 degrees, is that the mainsail is blocking half of the sail as well as the exit for the wind out of the spinnaker. If you try to reduce this by pulling in the sail it will increase the heeling which in turn will make it harder for the helmsman.

To make spinnaker sailing more productive, let the halyard down about 1 to 3 inches to get the sail away from the main. Use the pole to lead sufficient air into the spinnaker and stabilize the sail, which can be further helped by using the topping lift (uphaul) and downhaul to their full potential. Try sailing without the mainsail with just the spinnaker up. It will be quieter, the mainsail will not be exposed to the sun or chafed, and the airflow over the boat will be better and the rig less twisted.

Some spinnakers will cause rolling because the air will try to escape from the sail and will find a side and produce an eddy which will unsettle the

sail, making the boat roll more. This may make the spinnaker collapse or even broach. A broach can sometimes be followed by a loud reopening bang and a ripped sail, or at worst a lost rig, and is therefore to be avoided at all cost.

Retrieving the Spinnaker

To get the spinnaker down is often the hardest part of flying the sail. To make it easier, use a spinnaker sock (also called a snuffer) and let the sheet go in stages until the sail flaps. When the sail flaps pull down the sock and secure the dousing line on the deck.

Not only is it under control, it is ready to use again right away.



Parasailor

The Parasailor is a spinnaker with a huge 'hole' in the upper part that means no induced rolling as the wind can escape centrally, and effectively creating a security valve for too much wind. The specially designed wing



creates lift, keeping the bow up and stern down. As air is forced through the wing, it pushes out the shoulders of the sail, very much like a sail batten, keeping it flying in lulls and allowing the sail to refill slowly without the bang and jerk associated with traditional spinnakers, preventing stress on the rig and your nerves! Autopilots can work easily with the sail and it will fly from 100° to 180°. Based on technology from the sport of paragliding, it is produced to aviation standards giving a durable and UV-resistant sail that can be flown with or without a pole. The complex design does make the sail significantly more expensive than a conventional spinnaker, but the wing enables it to be flown as both a lightwind and heavy spinnaker.

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Najad 460



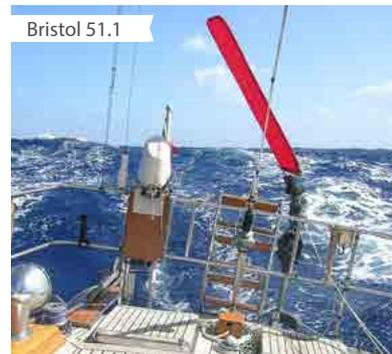
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STEERING THE DREAM

Fishing

Fishing is a fun way of supplementing your diet. Buy a good how-to book that includes fish identification charts for your sailing area. Some good cookbooks may also be useful!

As well as your chosen method, you will need some cheap, strong gardening gloves for handling the line, a gaff (stick with a hook on the end), sharp filleting knives, a squeeze bottle filled with cheap rum or other alcohol, and a fish tray to keep the deck clean.



Method 1: Trolling a line

A simple system is to troll a hand line from the transom and run a piece of bungee cord from the line to the boat. When a fish strikes, the cord takes the strain. The fish fights until it is sufficiently tired for you to hand-line it into the boat. Bring in the line so that you finish up with a huge loop trailing behind you in the water. You then gaff the fish aboard, release the lure back into the water and continue to fish. If you ignore the procedure and leave the loops of line on deck, you risk becoming entangled in the line.

Method 2: Rod and reel

If you want a bit of sport, you will need a quality rod with a reel which holds at least 600m of 50lb line, a rod holder and a selection of lures.

Remember, you have no way of easily slowing down quickly to fight the fish, so if you do find a monster, don't try to fight it; give it your best and then cut the line. A large marlin and a yacht are not the best of soul mates. You may have the gear to land the fish, but anything over 200lb will have too much meat to store and take too long to eat.

The biggest mistake made by sailors is to use 100m of very heavy line - length of line is important, not the weight. A fish can do 40 knots from a standing start; couple this with a yacht doing 6 knots in the other direction and you will quickly come to the end of 100m. The speed and

power of even a 50lb fish will easily snap a 100lb line. The art is to use a much longer line with the reel set to slip at 30% of the line weight (using a 50lb line the drag should be set for no more than 16lb). The fish should be allowed to run against the drag setting - only when the fish stops taking line should the fight begin.

Getting the fish onboard

Once you have the fish within your sights you will need to get your gaff ready to hook the fish in the gills and bring it aboard. If using a rod, keep the lure and fish in the water until the fish is gaffed, or you can risk the fish getting away at the last minute.

With any luck the fish will be pretty tired by the time you are ready to haul it aboard, however don't let this fool you. Your priority will be to kill the fish as soon as possible. Land the fish in a confined space (preferably the cockpit sole) and wet the decks first to help with cleaning up.

Make the fish instantly docile by squirting cheap alcohol into its gills, then cut directly through its spine. Limit mess by using a plastic fish tray, or hang it over the back of the boat by its tail to drip overboard.

Fish will freeze well, although freshly caught fish put straight into your freezer may overload the system. Instead try ceviche, sashimi, drying, marinating and of course, eating it every night for dinner. Take a variety of recipes!

Fishing Top Tips

- **Don't fish at full moon.** Sea patterns change and it is unlikely you will catch anything three days either side of full moon.
- Two hours after sunrise and two hours before sundown is best.
- Look for **signs of birds feeding** or floating objects; both tend to mean smaller fish which in turn attract bigger fish.
- Try a **pink lure for dull days** and a **green lure on brighter days**, and bait the hook with a flying fish.
- **Don't troll the line too close** to the boat as fish don't like to go into the boat's wake.
- **Vary the length of the line according to your speed;**
5 knots = 55m line out, 7 knots = 75m

Expert fishing tips at sailboat-cruising.com/handline-fishing.html or purchase the e-book.

Sailing with Children

Safer at Sea



The number of small children who take part in the ARC and other rallies says a lot about the positive approach of their parents. Naturally, there will always be apprehension about the safety of taking your children across the ocean, but as long as you make sure the children understand the

importance of safety, and set firm ground rules like making sure the children always have their lifejackets on, it should be a fantastic experience. As one parent from ARC2010 put it: *"To be honest, once I was happy that the boat was secure and the kids understood the importance of safety, it was probably a safer environment than on land – at least I knew where they were the whole time!"*

Children are Adaptable

Another concern prior to leaving is often whether the children will get bored with their limited space onboard. Many parents comment that in fact, the kids adapted to the small space quicker than adults (don't forget how good it can be to make a den!) and often found them to be better behaved at sea than when in port. Leah (aged 3) on *Leahnis* (NOR), built Lego towers and got terribly irritated by the waves, which made her creations fall apart all the time. Finally she got used to it and started laughing instead of getting frustrated. Such is life on the ocean, for both adults and children. You get used to it and make the best of it!



Tips from Parents

- Talk to other parents when you arrive in port to discuss your feelings and ideas – parents (and children) are usually keen to share their experiences.
- **Get them involved:** Make kids really feel they are an essential part of the crew – add their names to the watch system (even if realistically they won't be doing much), involve them in the cooking and cleaning, steering and sail changing if possible. Try to keep a good daily structure.
- **Don't over-estimate the amount of schooling** the kids will get done on the crossing - most complete very little if any, so if you are concerned, try to get ahead with schoolwork before you leave port. Remember that kids won't like to write if the boat is rolling.
- **Plan alternative learning activities** – teach them about the weather, the stars, fish and other sealife.
- **Take surprises and lots of games**, but remember they have to be able to be played when the boat is rolling! Plenty of DVDs are also a good idea.
- Make sure **everyone eats together** for at least the evening meal.
- Consider taking **another crew member** who is capable of doing watches on their own.
- School teachers or even friends may not understand what you are planning to do, or may have strong opinions about it. **Try to get involved with your child's school** as early as possible, so teachers and the other children know what is happening, learn the positive effects of it, and know how they can follow your journey on the rally website.
- Most importantly, **take things slowly** and be patient; trying to make a passage in the quickest possible time won't always mix well with having children onboard!

Some useful books with advice on sailing with children of all ages, including schooling afloat and adjusting to life back on land:

Lesson Plans Ahoy ISBN 9780982771402 by Nadine Slavinski

Cruising for Cowards ISBN 9780969769057 by Liza Copeland

Watch Keeping

Taking care of the crew and the boat on passage

If this is your first long offshore passage, it can be difficult to know where to start with devising a watch keeping schedule that will work for everyone for such a long time.

Following are some initial questions that when answered, will help shape the watch schedule:

1. Will everyone stand equal watches or will one person have other responsibilities and stand a limited schedule, such as a cook or captain?
2. Is there a regular watch pattern, such as predawn squalls, that suggests when to schedule experienced crew?
3. Do weather conditions and experience suggest single person watches or pairing up?
4. Will the crew use an autopilot or windvane, or will they hand steer, which makes it difficult to stand a watch longer than two hours?
5. Does the route come close to major shipping lanes?

Though some watch schedules are more relaxed than others, taking care of the ship and crew is always the primary responsibility. On watch this means checking the gear for wear and damage, monitoring the course, looking for other craft, navigating to avoid hazards, adjusting sails for changing conditions or anticipated shifts, knowing when to ask for help and staying alert. Off watch this means sleeping; fatigue is a dangerous affliction and can be blamed for many human errors. The off-watch crew members are responsible to sleep so they will be well rested for their watch, when called for assistance or if conditions deteriorate, necessitating shortened watches and less sleep.

It is not uncommon to have a new crew member on a passage, and since each boat has its own *modus operandi*, it is wise to have a written passage protocol as even regular crew will benefit from seeing their routine in writing. In addition to watch responsibilities, the passage protocol should address when harnesses should be worn, whether to wake an additional person for sail changes, under what conditions to take in

sail, under what conditions to stay in the cockpit if alone on deck and when to call the off watch crew on deck. It should also state how frequently log entries should be recorded and positions plotted.

With moderate conditions and a crew of three or more it is easy to create a schedule that keeps an alert watch on deck at all times while allotting adequate off watch time to stay well rested. Many seasoned passage makers agree that four hours is the maximum time that someone can stay alert during a night watch, and many find three hours much more manageable. It is important to also assign a standby so that the person on watch knows whom to wake if they need help.

Fixed Watch Schedule

In a fixed schedule, A would be on standby for the first two hours of B's watch and C would be on standby for the last two hours, and so forth. Usually, dinner is the only shared meal of the day as many choose to catch up on sleep through the morning.

Rotating Watch Schedule

In the rotating schedule the short watches from 1500 to 1900 alter the schedule, turning a fixed schedule into a rotating one. These short watches can also serve as a social time. The basic rotating schedule can be adjusted to incorporate different watch lengths. One variation has four-hour watches from 0600 to 2200 and two-hour watches during the darkest part of the night. A variation with longer watches has six-hour day watches and three or four hour night watches. An informal watch can also be introduced to correspond with dinner, ensuring that the whole crew get together every day, which can be a surprising rarity at sea.

Shifting Watch Schedule

Though complex at first glance, the shifting schedule is a favourite of crews that include those who like fixed watches as well as those who prefer to rotate. Each person shifts between two watches, but remains in the same half of the night and has a minimum of six hours off between watches. If a cook is on board, they can be relieved of all day watches and prepare lunch as well as dinner.



Crewed watch system ideas

	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	0100	0200	0300	0400	0500	0600	Cook	Dishes
Fixed schedule	A			B			C			A			B			C			A/B	B/C						
Rotating schedule	A			B			C		A		B			C			A			A	C					
	B			C			A		B		C			A			B			B	A					
	C			A			B		C		A			B			C			C	B					
Shifting schedule for four	A			B			C			A			B			C			D			D				
	B			C			D			B			A			D			C			A				
	A			D			C			A			B			C			D			B				
	B			A			D			B			A			D			C			C				

Watchkeeping for Doublehanders

Although three or four crew would be nice, many cruisers prefer to head offshore as a couple. With a double handed crew, it can become difficult to maintain a proper watch while avoiding fatigue and sleep deprivation. More than other crews, doublehanders need to take advantage of each other's natural cycles as some night owls have no problem staying alert in the early hours, while others naturally rise before the sun. While one person might be able to function on just five hours of sleep, but need to get it all at once, the other might need much more, but be able to get it in catnaps through the day.

Below are two examples of double-handed watch schedules. Those who like short watches and have mastered the art of catnapping swear by the three-two-one system. Longer night watches get easier with experience and some boats adopt a three-four-five schedule that they like. Many doublehanders, and some larger crews, keep an informal watch during the day, which works well if the burden does not always fall on the same diligent person.

	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	0100	0200	0300	0400	0500	0600	
Three-two-one	A	B		A		B		A		B		A		B		A		B		A		B		A	
Three-four-five	A			B				A					B						A			B			

Staying Alert

In the middle of the ocean there are often days when there is little to do. However a cargo ship steaming at top speed can travel from beyond the horizon to your position in less than 20 minutes. As a result, every boat must find a balance between staying alert and relaxing.

Because of the tendency to lose track of time, many sailors regularly stand watches with egg timers, stop watches or alarms to remind them to check the horizon every 10 minutes or so.

Patented product like the Watch Commander have taken the egg timer one step further. The Watch Commander can be set from three to 27 minutes and emits a gentle beeping until the reset button is pushed. If the timer is not reset, within one minute or so the beep will become a siren, alerting the rest of the crew.

Every boat and crew will have different watch keeping procedures, and flexibility is a key to all successful systems. In developing watch keeping procedures it is important to make sure everyone knows the system, feels comfortable carrying out their watch responsibilities and can sleep well knowing their crewmates can do the same.

International Clearance

Each country has its own requirements, and it is important to get up-to-date advice. Countries visited on the rally are covered in the Local Information section, otherwise www.noonsite.com is continually updated with the latest requirements.

Port of Entry

When visiting a country for the first time, you will have to clear-in at a port of entry before going to any other locations. Flying the yellow Q flag is a request for clearance.

Customs

The Customs official will clear the boat in or out of the country, and check for duty-payable goods. They may have additional tasks such as checking for prohibited or restricted items (firearms, drugs or fruit for example). They usually have the power to confiscate any prohibited or restricted items permanently or until departure, and they may require duty-payable items (such as liquor or tobacco) to be sealed in a locker with official tape.

Customs officers will need to see your official clearance papers from your last port, plus your original boat papers and a crew list.

Immigration

Immigration officers are chiefly concerned with the clearance into and out of the country of the people onboard your boat. In some countries officials may want to meet each crew member, or to ask them to complete an arrivals card. Other countries may just require the skipper to represent all of the crew.

In countries where visas are required in advance of travel, Immigration officials will want to see each passport and visa. In countries where visas are issued on arrival, the Immigration officials will issue these. Usually each passport is stamped.

If you have crew departing the boat and travelling on by other means, take them to the Immigration official to be 'signed-off' the boat.

Quarantine

The Quarantine department protects the bio-security of the country by ensuring that inbound vessels do not import prohibited materials, which can include pets/animals, foods, plants, souvenirs or items made

from natural materials. Prohibited materials will be confiscated and usually destroyed.

Health Officer

The role of the Health Officer is to ensure that the crew is free from notifiable diseases. Where it exists, this role is often combined with that of Quarantine. A limited number of countries require the crew to be checked before being allowed ashore.

Port Officials/Harbour Master

These are concerned with clearing your boat into the port, and ensuring that the correct mooring fees, light dues and buoyage fees are paid. You may have to visit the port officials first to show that you have paid the harbour dues before Customs will clear the boat into the country.

Departure Clearance

You will usually have to revisit Customs and Immigration before departure to obtain your clearance for your next destination.

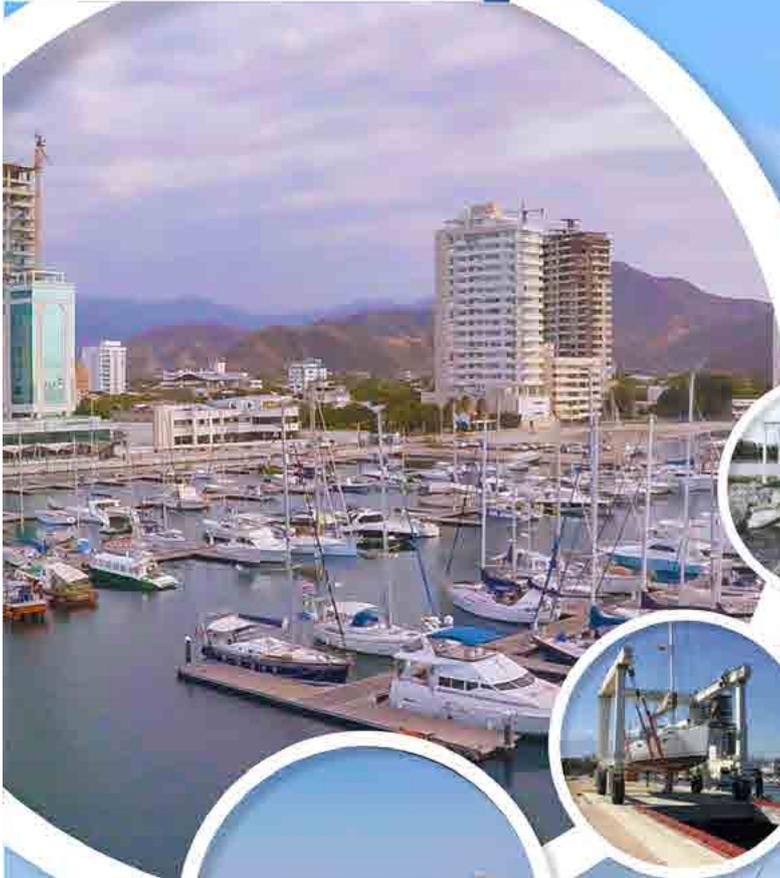
Tips for Dealing with Officials

- Almost all officials are extremely hospitable and are proud to welcome you to their country.
- Be polite; they're only doing their jobs and you are on holiday.
- Corruption is rare; assume the person you are dealing with is as honest as you are.
- Dress appropriately. It is more polite to wear a clean shirt than dirty shorts and a bare chest.
- If officials visit the boat, make them comfortable and offer them a soft drink.
- Be patient. If you are clearing in ashore you may have to visit multiple offices.
- Clearance is often a lengthy process that involves large amounts of paperwork and lots of repetition.
- Carbon paper can make completing multiple forms a lot easier, and photocopies of passports and boat papers, and extra passport photographs can smooth the process.
- A boat ink-stamp or visiting card makes a nice touch, often appreciated by officials.
- Research in advance so you know what to expect. Check www.noonsite.com, read the pilot book and ask other cruisers.



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