



**THE ROYAL PRINCE ALFRED YACHT CLUB**

# **CRUISING REGULATIONS**

Governing Cruising in  
Monohull, Multihull & Trailable Yachts

Amendments to this document will be published on the  
RPAYC website at [www.rpayc.com.au](http://www.rpayc.com.au)

## DOCUMENT HISTORY

Version	Changes	Date
Trial Version		02 Jul 07
Version 1.0	General update based on comments received on Trial Version	19 Jul 08
Version 2.0	General update	31 Mar 15
Version 3.0	General update	01 Jul 17
Version 4.0	Update to Medical Kit – Panadeine Alternatives	01 Jun 18
Version 5.0	Storm and Heavy Weather Sails - update	21 Jun 18
Version 6.0	Updates to keel-hull attachment, engine, batteries, bilge pumps, batteries, spotlight, radar reflector, emergency steering – based on WS OSR 2020-21	07 Apr 20
Version 7.0	Multiple relaxations to Inshore requirements to better align with the AS Special Regulations (Blue Book)	21 Jun 20

Proposed amendments and comments on *The RPAYC Cruising Regulations* are welcomed and should be addressed to the RPAYC Sailing Manager. Amendments will be posted on the official RPAYC website ([www.rpayc.com.au](http://www.rpayc.com.au)) as they are issued.

## INTRODUCTION

The Club's prime objective in terms of on-water risk management is to identify the risks associated with on-water activities and mitigate these risks and their consequences so that the residual on-water risk is as low as is reasonably possible.

In the cruising context, the mitigation of foreseeable risk and consequences is primarily achieved through the application of standards, information, advice and requirements contained in this document, the RPAYC Incident Management Plan, Cruise Management Plan, Notice of Cruise and other cruising event instructions which may from time to time be promulgated.

*The RPAYC Cruising Regulations* is based on the *World Sailing Offshore Special Regulations* which assume that a boat meeting the regulations will be fully crewed and, in all other respects, be suitably equipped to race off-shore within the limitations of the prevailing weather and sea conditions and the safety category with which the boat, its equipment and its crew comply.

Cruising boats, unlike racing boats, usually sail with a minimum of crew, often two, and are not restricted by either the racing rules of sailing or the acceptance of increased risk to achieve a competitive edge and are not as schedule-driven as racing boats. The risk profiles of racing and cruising consequently differ in many areas just as they are common in many others. The maritime environment can be harsh on boats, equipment and crews, irrespective of whether a boat is racing or cruising.

The safety of a boat and her crew is the sole and inescapable responsibility of the Person in Charge who must do his or her best to ensure that the boat is fully found, thoroughly seaworthy and manned by an experienced crew who have undergone appropriate training and are physically fit to face bad weather.

Notwithstanding this responsibility, the Marine Safety Act 1998 (NSW) imposes a specific legal duty on all those participating in the operation of recreational vessels together with the passengers on that vessel to take 'reasonable care' to protect themselves and others from harm, including to not intentionally or recklessly expose others to unnecessary risks.

The Australian Sailing Special Regulations Part 1 Section 1, Regulation 1.01.3(f) states that an organising authority that is conducting a cruising event may develop its own safety guide to cruising, vary the Special Regulations at its discretion by stipulating alternative requirements that are appropriate for the event's circumstances.

It is with the above considerations in mind that the *RPAYC Cruising Regulations* have been amended and are endorsed by the RPAYC Board.

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## SECTION 1 SCOPE, RESPONSIBILITY & DEFINITIONS

### 1.01 PURPOSE AND USE

1.01.1 This document defines the minimum standards and requirements for cruising boats in the following areas:

- Structural features, stability, and fixed equipment;
- Portable equipment and supplies;
- Personal equipment;
- Medical kits; and,
- Training.

1.01.2 These Cruising Regulations do not replace, but rather supplement, the requirements of governmental authority. They are not applicable to boats participating in racing events which are governed by the Australian Sailing Special Regulations Part 1.

1.01.3 Use of a letter ('O', 'L', 'S', 'I') designates the category of cruising event for which the item is mandatory. The letter 'R' is a recommendation, based on experience and sound seamanship, that owners adopt the higher standard.

1.01.4 Sailing vessels and crews complying with the standards and requirements defined in the Australian Sailing (AS) Special Regulations for racing boats must comply with the standards and requirements herein if they intend to participate in RPAYC cruising events.

1.01.5 The use of the feminine or masculine gender shall be taken to mean either gender.

### 1.02 RESPONSIBILITY OF THE PERSON IN CHARGE

1.02.1 The safety of a boat and her crew is the sole and inescapable responsibility of the Person in Charge who shall do their best to ensure that the boat is fully found, thoroughly seaworthy and manned by an experienced crew who have undergone appropriate training and are physically fit to face bad weather. He or she must be satisfied as to the soundness of hull, spars, rigging, sails and all gear. He or she shall ensure that all safety equipment is properly maintained and stowed and that crew members know where it is kept and how it is to be used. Attention is drawn to Regulation 2.04 that specifies the crew experience required for some events. He or she must also nominate a person to take over the responsibilities of the Person in Charge in the event of his or her incapacitation.

1.02.2 The establishment of these Cruising Regulations, their use by an event organising authority, and the inspection of a boat under these regulations does

not in any way limit or reduce the complete and unlimited responsibility of the Person in Charge of the boat.

- 1.02.3 The Person in Charge of the boat owes a duty of care to the crew and other participants in the activity where there is a reasonably foreseeable risk of harm or injury to them as a result of their actions. Similarly, crew members owe a duty of care to each other. Legislation (Civil Liability Act 2002 (NSW) requires that reasonable steps be taken to reduce the likelihood of injury to crew members and other participants as a result of those risks which are foreseeable. Similarly, the Marine Safety Act 1998 (NSW) imposes a specific legal duty on all those participating in the operation of recreational vessels together with the passengers on that vessel to take 'reasonable care' to protect themselves and others from harm, including to not intentionally or recklessly expose others to unnecessary risks.
- 1.02.4 The Person in Charge of the boat is solely responsible for deciding whether or not the boat under his or her command should participate, or continue to participate in an event.

### 1.03 DEFINITIONS

- 1.03.1 The following definitions are used in this document:

<b>Aka</b>	The aka of a multihull is a structural member that connects the central hull to an outrigger.
<b>Ama</b>	A multihull outrigger
<b>Beaufort Scale</b>	An empirical measure that relates wind speed to observed conditions at sea or on land. (See Table 10)
<b>Buoyancy</b>	Must be achieved by the use of: <ul style="list-style-type: none"><li>• Semi-rigid or rigid non-absorbent material permanently fixed into the hull.</li><li>• Dedicated empty sealed compartments which may be fitted with screw-in drain plugs or an inspection port but which must remain closed whilst participating in an event.</li><li>• Inflated airbags, permanently sealed and fixed below decks.</li></ul>
<b>Coaming</b>	Includes the transverse after limit of the cockpit over which water would run in the event that when the boat is floating level the cockpit is flooded or filled to overflowing.
<b>Cruising</b>	A non-competitive, non-time based, on-water sailing activity.



## Section 1

<b>Event</b>	An on-water cruising activity that is organised and coordinated under the auspices of the RPAYC.
<b>Event Organiser</b>	The RPAYC Cruising Committee, or a properly constituted Cruising sub-committee tasked to organise an on-water cruising event in accordance with the regulations contained in this document.
<b>Hatch</b>	The term hatch includes the entire hatch assembly and also the lid or cover as part of that assembly (the part itself may be described as a "hatch").
<b>Heavy Weather</b>	Bad, or foul weather, characterised by rough seas, stormy, windy and uncomfortable conditions.
<b>Inshore Waters</b>	Any open stretch of water extending laterally along the coast up to and including 2 nm seaward from the coast. It also includes bar entrances and waters designated as partially smooth waters or equivalent by each State / Territory marine authority.
<b>Lifeline</b>	Wire line rigged as a guardrail / guardline around the working deck.
<b>LOA</b>	Length overall not including pulpits, bowsprits, bumpkins etc.
<b>LWL</b>	(Length of) Loaded Waterline.
<b>Monohull</b>	A hull in which the hull depth in any section does not decrease towards the centreline.
<b>Permanently Installed</b>	Means the item is effectively built-in by bolting, welding, glassing etc. and may not be removed while participating in an event.
<b>Person in Charge</b>	A person authorised by the owner or operator of the boat to exercise command and otherwise take charge of the boat and its crew during the event.
<b>Safety Line</b>	A safety line, also known as a tether, is used to connect a safety harness to a strong point.
<b>Seaworthiness</b>	The seaworthiness of a vessel, in broad terms, is the ability of the vessel to provide safety, and comfort for her crew in all weather conditions. The concept of seaworthiness should not only be considered in storm survival conditions, because vessels can be lost in moderate conditions as well as in storms. The effects of fatigue in construction materials and rigging could result in failure in moderate winds, and crew fatigue due to extreme motion could result in errors of judgment, or exhaustion, long before a dangerous situation need otherwise have developed. Collision for instance can occur at any time, and accounts for the loss of many boats.

<b>Securely fastened</b>	Held strongly in place by a method (e.g. rope lashings, wing-nuts) which will safely retain the fastened object in severe weather and sea conditions and a 180 degree capsize and allows for the item to be removed and replaced whilst participating in an event.
<b>Severe Weather</b>	Any dangerous meteorological phenomena with the potential to cause damage, serious social disruption, or loss of human life
<b>Sheltered Waters</b>	Those waters sheltered from the extremes of the sea by reefs, headlands or islands. This is to be interpreted as the ocean swell having been broken and that there is limited fetch. Sheltered waters may include harbours, estuaries and lakes but excludes waters inside the Great Barrier Reef.
<b>Sheerline</b>	The line of curvature of the deck, fore and aft, as viewed on the beam.
<b>Stability</b>	Stability is defined as the tendency of a vessel to return to an upright condition after it is inclined by external forces: wind, seas, weight shifts, and other factors.
<b>Static Safety Line</b>	A safety line (usually shorter than a safety line carried with a harness) kept clipped on at a work-station.
<b>Storm</b>	Force 10 on the Beaufort Wind Scale, with wind 48 to 55 knots, and seas with very high waves (6 to 9 metres) with overhanging crests; sea takes on a white appearance as foam is blown in very dense streaks; rolling is heavy and visibility is reduced.
<b>Working Deck</b>	Any surface on which the crew might stand in order to work the boat and its sails in a seamanlike manner. The working deck includes the cockpit.
<b>Vaka (or Waka)</b>	The central hull of a trimaran.

1.03.2 The use of "shall" and "must" are used in the context of mandatory requirements; "should" and "may" are used in the context of recommendations and are permissive.

1.03.3 The word "yacht" must be taken as fully interchangeable with the word "boat".

## 1.04

**ABBREVIATIONS**

<b>ABS</b>	American Bureau of Shipping
<b>AMSA</b>	Australian Maritime Safety Authority
<b>AIS</b>	Automatic Identification System
<b>AG</b>	Australian Gas
<b>AS</b>	Standards Australia
<b>CPR</b>	Cardio-Pulmonary Resuscitation
<b>DSC</b>	Digital Selective Calling
<b>EN</b>	European Norm (signified by use of a CE symbol)
<b>EPIRB</b>	Emergency Position-Indicating Radio Beacon
<b>GMDSS</b>	Global Maritime Distress & Safety System
<b>IMO</b>	International Maritime Organisation
<b>ISAF</b>	International Sailing Federation (now World Sailing)
<b>ISO</b>	International Organisation for Standardisation
<b>MMSI</b>	Maritime Mobile Service Identifier
<b>ORC</b>	Offshore Racing Congress
<b>PLB</b>	Personal Locator Beacon
<b>SOLAS</b>	International Convention for Safety of Life at Sea
<b>USL</b>	Uniform Shipping Laws

## SECTION 2 APPLICATION & GENERAL REQUIREMENTS

### 2.01 CATEGORIES OF EVENT

- 2.01.1 Four event categories are defined in this document. These events range from long-distance ocean cruises which may be sailed under extreme and adverse conditions where outside assistance may be unavailable for extended periods to shorter duration events sailed in sheltered waters. Each category has its own requirements and applicable standards.

The event organising authority must select the category most suitable for the particular event and in doing so consider the likely prevailing weather and sea conditions over the route. Requirements may be added to a particular category but may not be deleted from them.

- 2.01.2 **Ocean (O):** These are generally trans-oceanic events, where boats must be completely self-sufficient for extended periods of time, capable of withstanding extreme weather and sea conditions and be prepared to meet serious emergencies without any expectation of external assistance. Examples of Ocean events include, but are not limited to, sailing between mainland Australia, New Caledonia, New Zealand, and Lord Howe Island.
- 2.01.3 **Long Coastal (L):** These events usually consist of a series of offshore and coastal passages (legs) sailing by day and by night where boats must be self-sufficient for at least seven days, capable of withstanding storms and heavy seas and be prepared to meet serious emergencies without any expectation of external assistance in less than 48 hours. A passage from Eden to Hobart (East Coast) is an example of a Long Coastal event.
- 2.01.4 **Short Coastal (S):** These events usually consist of one or more coastal passages, by day and by night, where boats must be prepared to meet emergencies without the expectation of external assistance in less than 24 hours. Cruises from Pittwater to Sydney Harbour, Port Hacking and Port Stephens, and from Wollongong to Jervis Bay are examples of Short Coastal events.
- 2.01.5 **Inshore (I):** These events are usually held in sheltered waters, or under conditions similar to those experienced in sheltered waters, during daylight hours, and involve passages less than two miles offshore. Boats must be prepared to meet emergencies without the expectation of external assistance in less than two hours. Cruises in the Pittwater and Broken Bay areas are considered examples of Inshore events. Where an Inshore event includes a bar crossing the boat and crew must comply with legislative requirements.

### 2.02 INSPECTION

- 2.02.1 A boat must be inspected / audited for compliance with these regulations annually and may be required to demonstrate compliance to a person appointed by the event organising authority at any time. Should the boat or crew be deemed non-compliant with the RPAYC Cruising Regulations by the

event organising authority then the boat may be refused the opportunity to participate in an event.

2.02.2 In the following list a letter (O, L, S, I) indicates that the item is a mandatory requirement for a particular cruising category. The letter 'R' indicates that the item is recommended..

**2.03 GENERAL REQUIREMENTS**

2.03.1 All required equipment must function effectively and be:

- a. Regularly checked, cleaned and serviced;
- b. Readily accessible;
- c. Of a type, size and capacity suitable and adequate for the intended use and displacement of the boat; and,
- d. Stowed in conditions in which deterioration is minimised when not in use.

2.03.2 Heavy items (e.g. more than 10 kg) such as:

- a. Ballast, tanks, water ballast tanks and associated equipment, must be permanently installed; and
- b. Heavy movable items such as batteries, stoves, gas bottles, toolboxes, and anchors and chain cable must be securely fastened.

**Note:**

Items weighing less than 10kg may also cause damage and injury if the items are not adequately secured or stowed. It is strongly recommended that all loose gear be secured and/or stowed before proceeding to sea.

	OCEAN	LONG COASTAL	SHORT COASTAL	INSHORE
a. Regularly checked, cleaned and serviced;	O	L	S	I
b. Readily accessible;	O	L	S	I
c. Of a type, size and capacity suitable and adequate for the intended use and displacement of the boat; and,	O	L	S	I
d. Stowed in conditions in which deterioration is minimised when not in use.	O	L	S	I
a. Ballast, tanks, water ballast tanks and associated equipment, must be permanently installed; and	O	L	S	I
b. Heavy movable items such as batteries, stoves, gas bottles, toolboxes, and anchors and chain cable must be securely fastened.	O	L	S	I

**2.04 CREW EXPERIENCE**

2.04.1 The number of crew as shown below, including the Person in Charge, must have completed at least one event of the category entered or an equivalent passage. Evidence of such participation must be provided if requested by the event organising authority.

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## Section 2

- a. At least two crew members.
- b. At least one crew member.

<b>O</b>	<b>L</b>	<b>R</b>	<b>R</b>
		<b>S</b>	<b>I</b>

## SECTION 3      STRUCTURAL ASPECTS, STABILITY & FIXED EQUIPMENT

		OCEAN	LONG COASTAL	SHORT COASTAL	INSHORE
<b>3.01</b>	<b>STRENGTH OF BUILD, BALLAST AND RIG</b>				
3.01.1	A boat must be:				
a.	Soundly constructed;	O	L	S	I
b.	Properly rigged and ballasted;	O	L	S	I
c.	Well maintained;	O	L	S	I
d.	Fully seaworthy in all respects; and,	O	L	S	I
e.	Suitable for the event in which it intends to participate.	O	L	S	I
3.01.2	Hulls must be watertight and, particularly with regard to hulls, decks and cabin trunks, be capable of withstanding solid water and knockdowns and must comply with the regulations herein. Shrouds must never be disconnected at sea unless disconnection is necessary to free a damaged spar.	O	L	S	I
<b>3.02</b>	<b>WATERTIGHT INTEGRITY OF HULL</b>				
3.02.1	A hull, including, deck, coach roof, windows, hatches and all other parts, must form an integral, essentially watertight unit and any openings in it must be capable of being immediately secured to maintain this integrity.	O	L	S	I
3.02.2	Centreboard and daggerboard trunks and the like must not open into the interior of a hull except via a watertight inspection or maintenance hatch of which the opening must be entirely above the waterline of the boat floating level in normal trim.	O	L	S	I
3.02.3	Boats with movable keels or centreboards must have a positive non-friction device which will prevent the keel or centreboard from moving in the event of either a knockdown or a capsize.	O	L	S	I

### 3.03 HULL CONSTRUCTION STANDARDS

- |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |   |   |   |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.03.1 | A boat's structural strength must be commensurate with the intended service of the boat, taking into account the maximum anticipated loads.                                                                                                                                                                                                                                                                                                                                                                                          | O | L | S | I |
| 3.03.2 | Boats must be competently designed and built in accordance with good boat building practices and appropriate design and construction standards and rules used by the marine industry. These standards and rules include those promulgated by the American Bureau of Shipping (ABS), Lloyd's Register of Shipping (LRS), International Organisation for Standardisation (ISO), Bureau Veritas (BV), Det Norske Veritas (DNV), Germanischer Lloyd (GL), Standards Australia (AS), and the Australian Maritime Safety Authority (AMSA). | O | L | R | R |
| 3.03.3 | Any significant repairs or modifications to the hull, deck, coach roof, keel or appendages, must be certified by an appropriately qualified professional naval architect or professional engineer as not reducing stability below appropriate standards or reducing structural integrity or otherwise causing the boat to be unfit for purpose.                                                                                                                                                                                      | O | L | S | R |
| 3.03.4 | It is strongly recommended that the keel and keel-hull attachment arrangements are inspected at least every five years, after an unintentional grounding and whenever the boat is slipped.                                                                                                                                                                                                                                                                                                                                           | R | R | R | R |
| 3.03.5 | An appropriately qualified person should conduct an internal and external inspection after each unintentional grounding.                                                                                                                                                                                                                                                                                                                                                                                                             | R | R | R | R |

### 3.04 STABILITY – MONOHULLS

Attention is drawn to ISO 12217-2: *Small craft -Stability and buoyancy assessment and categorization - Part 2: Sailing boats of hull length greater than or equal to 6 m.*

- |        |                                                                                                                           |   |   |   |   |
|--------|---------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.04.1 | A yacht must be designed and built to resist inversion.                                                                   | O | L | S | I |
| 3.04.2 | A yacht must be compliant with the minimum stability or stability / buoyancy index requirements as set out in Appendix E. | O | L | S | R |

**Note:**

Compliance with Appendix E does not guarantee that a yacht will, in fact, resist capsize or self-right in all sea conditions.

### 3.05 STABILITY – MULTIHULLS

Attention is drawn to ISO 12217-2 :*Small craft - Stability and buoyancy assessment and categorization - Part 2: Sailing boats of hull length greater than or equal to 6 m*, the Australian Transport Council National Standard for Commercial Vessels Part C Section 6 and ISO 12216: *Small craft – windows, portlights, hatches, deadlights and doors – strength and watertightness requirements.*



## Section 3

- |        |                                                                                                                                                                                                                                                                                                                |   |   |   |   |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.05.1 | A multihull must be designed and built to resist inversion.                                                                                                                                                                                                                                                    | O | L | S | I |
| 3.05.2 | Adequate watertight bulkheads and compartments (which may include permanently installed flotation material) in each hull (vaka and amas) must be provided to ensure that a multihull is effectively unsinkable and capable of floating in a stable position with at least half the length of one hull flooded. | O | L | S | I |
| 3.05.3 | Any required watertight bulkhead must be strongly built to take a full head of water pressure without any leakage into an adjacent compartment.                                                                                                                                                                | O | L | S | I |
| 3.05.4 | Every hull without accommodation must be divided at intervals of not more than 4m (13ft 3") by one or more transverse watertight bulkheads.                                                                                                                                                                    | O | L | S | R |

### 3.06 EXITS

#### 3.06.1 Monohulls

- |        |                                                                                                                                                                                                                                                                                         |   |   |   |   |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.06.1 | Boats must have at least two escape exits. One exit must be located forward of the foremost mast. In very unusual circumstances, e.g. cat-rigged yachts, where structural features prevent its installation forward of the mast, an alternative escape exit location may be acceptable. | O | L | S | I |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|

- |        |                                                                                                                                                                                                                                   |   |   |   |   |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.06.2 | The minimum clearance dimensions of a monohull escape hatch are 450 x 300 mm or 450mm diameter or when the escape hatch is not circular, there must be sufficient clearance to permit a fully clothed crew member to pass through | O | L | S | I |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|

#### 3.06.3 Multihulls

- |        |                                                                         |   |   |   |   |
|--------|-------------------------------------------------------------------------|---|---|---|---|
| 3.06.4 | Each hull containing accommodation must have at least two escape exits. | O | L | S | I |
|--------|-------------------------------------------------------------------------|---|---|---|---|

- |        |                                                                                                                                           |   |   |   |   |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.06.5 | Each hull which contains accommodation must be provided with a viable means of escape in the event of inversion and in the event of fire. | O | L | S | I |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|

- |        |                                                                                                                                                                                                                                     |   |   |   |   |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.06.6 | The minimum clearance dimensions of a multihull escape hatch are 450 x 300 mm or 450mm diameter or when the escape hatch is not circular, there must be sufficient clearance to permit a fully clothed crew member to pass through. | O | L | S | I |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|

- |        |                                                                                                                                                                                           |   |   |   |   |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.06.7 | A catamaran fitted with a central nacelle and in the case of trimarans, the vaka, must have on the underside the means by which all persons on board can hold on and/or clip on securely. | O | L | S | I |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|

- |        |                                                                                                                                                                        |   |   |   |   |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.06.8 | In a multihull of 12m LOA and greater each hull which contains accommodation should have an escape hatch for access to and from the hull in the event of an inversion; | R | R | R | R |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|

3.06.9	When a multihull is inverted each escape hatch should be above the waterline.	R	R	R	R
--------	-------------------------------------------------------------------------------	---	---	---	---

### 3.07 HATCHES & COMPANIONWAYS

3.07.1	A hatch forward of the maximum beam station must not open in such a way that the lid or cover moves into the open position towards the inside of the hull. Ports having an area of less than 0.071m <sup>2</sup> are acceptable.	O	L	S	I
3.07.2	A hatch, window or port fitted forward of the maximum beam station, located on the side of the coachroof and opening into the interior of the boat, and of area greater than 0.071m <sup>2</sup> must be clearly labelled and used in accordance with the following instruction: "NOT TO BE OPENED AT SEA".	O	L	S	I
3.07.3	A hatch must be:				
	a. Located such that it is above the waterline when the hull is heeled at 90 degrees to the horizontal. Hatches over lockers that open to the interior of the boat are included in this requirement.	O	L	S	I
	b. Permanently attached to the hull.	O	L	S	I
3.07.4.	All hatches must be capable of being immediately shut and clipped and remaining shut in the event of a 180 degree capsize.	O	L	S	I
3.07.5	A companionway hatch extending below the local sheerline is not permitted in a boat with a cockpit opening aft to the sea.	O	L	S	I
3.07.6	A companionway hatch extending below the local sheerline must be capable of being blocked off up to the level of the local sheerline and must continue to give access to the interior with blocking devices (e.g. washboards) in place.	O	L	S	I
3.07.7	A companionway hatch must be fitted with a strong securing arrangement, operable from above and below, with the hatchway blocked, and the boat inverted.	O	L	S	I
3.07.8	Washboards (or blocking devices) must be capable of being retained in position in the hatchway with the companionway hatch in both the open and shut positions.	O	L	S	I
3.07.9	Washboards (or blocking devices), whether or not in position in the hatchway, must be secured to the boat (e.g. by lanyard) whilst at sea to prevent them being lost overboard.	O	L	S	I
3.07.10	Washboards (or blocking devices), must be readily removable to permit exit in the event of an inversion.	O	L	S	I

### 3.08 COCKPITS

Attention is drawn to ISO 11812: *Small craft - Watertight cockpits and quick-draining cockpits.*

## Section 3

- |        |                                                                                                                                                                                                            |   |   |   |   |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.08.1 | Cockpits must be structurally strong, self-draining quickly by gravity at all angles of heel and permanently incorporated as an integral part of the hull.                                                 | O | L | S | I |
| 3.08.2 | Cockpits must be essentially watertight, that is, all openings to the hull from the cockpit and cockpit lockers must be capable of being sealed and secured.                                               | O | L | S | I |
| 3.08.3 | A bow, lateral, central or stern well is considered a cockpit for the purposes of 3.08. Anchor and other lockers fitted with a hatch are not considered "wells".                                           | O | L | S | I |
| 3.08.4 | In cockpits opening aft to the sea, structural openings aft must be not less in area than 50% maximum cockpit depth x maximum cockpit width.                                                               | O | L | S | I |
| 3.08.5 | For monohulls, at least two drains, each with a minimum unobstructed opening diameter of 25mm must be fitted. ISO11812 requirements will determine the minimum number and size of cockpit drains required. | O | L | S | I |
| 3.08.6 | For multihulls, the minimum drain size, after allowance for screens, is 20cm <sup>2</sup> per m <sup>3</sup> of cockpit volume.                                                                            | O | L | S | I |

### 3.09 SEACOCKS

- |        |                                                                                                                                                                                                                     |   |   |   |   |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.09.1 | Seacocks (hull valves) must be permanently installed on all through-hull openings below LWL except for integral deck scuppers and instrument through hulls (shaft logs, speed sensors, depth sensors and the like). | O | L | S | I |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|

### 3.10 PLUGS

- |        |                                                                                                                                                                                                                                                                                                               |   |   |   |   |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.10.1 | Soft wood, rubber or synthetic material plugs, tapered and of a suitable size, must be attached by a lanyard to the hull fitting for every through-hull opening fitted with a sea cock or valve. Plugs must be of sufficient size to cater for failure of the complete fitting where it attaches to the hull. | O | L | S | I |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|

### 3.11 MAST STEP

- |        |                                                                                                                                                                                                                                                                            |   |   |   |   |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.11.1 | The heel of a keel stepped mast must be securely fastened to the mast step or adjoining structure. If the heel is not securely fastened and the mast somehow slips or jumps off the step then it can easily punch a hole through the bottom of the hull and sink the boat. | O | L | S | I |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|

### 3.12 PULPITS, STANCHIONS AND LIFELINES

Attention is drawn to ISO 15085: *Small craft - Man-overboard prevention and recovery.*

3.12.1	Where lifelines are not fitted or are not continuous the crew must wear safety harnesses which must be attached at all times when a crew member is outside the cabin and the boat is underway in other than "Sheltered Waters".					R
3.12.2	Lifelines must be "taut". When a deflecting force of 40N is applied to a lifeline midway between supports of an upper or single lifeline, the lifeline must not deflect more than 50mm for an upper or single lifeline and 120mm for an intermediate lifeline. This measurement is taken at the longest span between supports/stanchions that are aft of the mast.	O	L	S	I	
3.12.3	<b>Monohulls</b>					
	The following must be provided:					
a.	A bow pulpit forward of the headstay (however for yachts under 8.5m the bow pulpit may be aft of the headstay provided the forward upper rail is within 405mm of the headstay) with vertical height and openings essentially conforming to 3.12.	O	L	S	R	
b.	Bow pulpits may be open but the opening between the pulpit and any part of the boat, including the forestay, must not exceed 360mm. This requirement may be checked by presenting a 360mm sphere inside the opening.	O	L	S	R	
c.	A stern pulpit (pushpit) with vertical openings conforming to 3.12.6. Lifelines may be fitted in place of a pulpit.	O	L	S	R	
d.	Lifelines supported on stanchions, together with pulpits, must form an effectively continuous barrier around a working deck with the aim of minimising the risk of crew falling overboard. Lifelines must be permanently supported at intervals of not more than 2.2m and must not pass outboard of the supporting stanchions.	O	L	S	R	
e.	Upper rails of pulpits at no less height above the working deck than the upper lifelines as in 3.12.6.	O	L	S	R	
f.	Any opening upper rails in bow or stern pulpits must be secured shut whilst underway unless conforming with 3.12.3.(a)	O	L	S	R	
g.	Bow and stern pulpits and stanchions must be permanently installed. When there are associated sockets or studs, these must be through-bolted, bonded or welded. The pulpit(s) and/or stanchions fitted to these must be mechanically retained without the use of the life-lines. Pulpits and/or stanchions without sockets or studs must be through-bolted, bonded or welded.	O	L	S	R	
h.	The bases of pulpits and stanchions must not be further inboard from the edge of the appropriate working deck than 5% of maximum beam or 150mm, whichever is greater. A toerail is considered part of the working deck.	O	L	S	R	
i.	Stanchion bases must not be situated outboard of a working deck. For the purpose of this rule a stanchion or pulpit base must be taken	O	L	S	R	

to include a sleeve or socket into which a stanchion or pulpit tube is fitted but must exclude a baseplate which carries fixings into the deck or hull.

- |    |                                                                                                                                                                                                                                                       |   |   |   |   |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| j. | Lifeline terminals and support struts may be fixed to the hull aft of the working deck provided the complete lifeline enclosure is supported by stanchions and pulpit bases effectively within the area of the working deck.                          | O | L | S | R |
| k. | Lifelines need not be fixed to a bow pulpit if they terminate at, or pass through, adequately braced stanchions set inside and overlapping the bow pulpit, provided that the gap between the upper lifeline and the bow pulpit does not exceed 150mm. | O | L | S | R |
| l. | Stanchions must be straight and vertical except that:                                                                                                                                                                                                 | O | L | S | R |
|    | i. within the first 50 mm from the deck, stanchions must not be displaced horizontally from the point at which they emerge from the deck or stanchion base by more than 10mm, and                                                                     | O | L | S | R |
|    | ii. at any point above 50mm from the deck stanchions are not to be more than 10 degrees from vertical.                                                                                                                                                | O | L | S | R |

#### 3.12.4 Multihulls

When due to the particular design of a multihull it is impractical to conform to the regulations regarding pulpits, stanchions, and lifelines, the regulations for monohulls must be followed as closely as possible with the aim of minimising the risk of crew falling overboard.

- |    |                                                                                                                                                                                                                                                                                                                                                                                                  |   |   |   |   |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
|    |                                                                                                                                                                                                                                                                                                                                                                                                  | O | L | S | I |
| a. | <b>Trimaran</b> - a bow pulpit on the main hull (vaka), with lifelines around the vaka supported on stanchions. The lifelines may be discontinuous where there are nets or crossbeam wings outboard of the main hull.                                                                                                                                                                            | O | L | S | R |
| b. | <b>Trimaran</b> – where a net joins the base of a bow pulpit on the vaka, an additional lifeline from the top of the pulpit to the forward crossbeam at or outboard of the crossbeam mid-point.                                                                                                                                                                                                  | O | L | S | R |
| c. | <b>Trimaran</b> - at a main or emergency steering position on an ama with or without a cockpit, lifelines protecting an arc of 3 metres diameter centred on the steering position. (When measuring between lifelines taut, undeflected positions must be taken for this purpose).                                                                                                                | O | L | S | R |
| d. | <b>Catamaran</b> - lifelines from bow to stern on each hull. A catamaran without a forward or aft crossbeam must have transverse lifelines at the extremity of the net forward and aft. The transverse lifelines must be attached to bow and stern pulpits or superstructure. A webbing, strop or rope (minimum diameter 6mm) must be rove zig-zag between the transverse lifelines and the net. | O | L | S | R |

#### 3.12.5 Lifelines - height, vertical openings, and numbers

Lifeline arrangements must conform with the requirements in Table 1

below:

**Table 1: Lifeline Arrangements**

LOA	Minimum Requirements	Category			
Under 8.5m	Taut double lifelines with the upper lifeline not less than 450mm above the working deck.	O	L	S	R
8.5m and over	Taut double lifelines with the upper lifeline not less than 600mm above the working deck.	O	L	S	R
All	All Intermediate lifeline(s) must be fitted so that no vertical opening exceeds 380mm.	O	L	S	R
All	The intermediate lifeline must be not less than 230mm above the working deck.	O	L	S	R

**3.12.6 Lifelines - minimum diameters, required materials, and specifications**

- |                                                                                                                                                                                                                                                                                                                                                 |   |   |   |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| a. Where lifelines are fitted they must be stranded stainless steel wire of minimum diameter as shown in Table 2 below. Lifelines must be uncoated and without close-fitting sleeving.                                                                                                                                                          | O | L | S | I |
| b. The term "uncoated" means that the wire must not be coated with any product that is moulded to the wire. The application of a loose sleeve to uncoated wire is permitted provided that air can circulate along the length of the wire between stanchions, it is regularly removed for inspection, and the wire remains in good condition.    | O | L | S | I |
| c. Notwithstanding 3.12.6 (a) and (b) above, where lifelines are coated or do not exist the crew must wear lifejackets (at least Level 150) and safety harnesses which must be attached by tether to a clipping point or jackstay at all times when a crew member is outside the cabin and the boat is underway in other than sheltered waters. | O | L | S | I |
| d. Lifelines should be made from Grade 316 stranded stainless wire.                                                                                                                                                                                                                                                                             | R | R | R | R |
| e. A taut lanyard of synthetic rope may be used to secure lifelines                                                                                                                                                                                                                                                                             | O | L | S | I |

provided the gap it closes does not exceed 100mm. These lanyards must be replaced at least annually.

- f. All wire, fittings, anchorage points, fixtures and lanyards must comprise a lifeline enclosure system which has at all points at least the breaking strength of the required lifeline wire.

O L S I

**Table 2: Lifeline Wire Diameter**

LOA	Minimum Wire Diameter	Category			
Under 8.5m	3mm (1/8")	O	L	S	I
8.5m to 13m	4mm (5/32")	O	L	S	I
Over 13m	5mm (3/16")	O	L	S	I

### 3.13 MULTIHULL NETS OR TRAMPOLINES

3.13.1 The word "net" is interchangeable with the word "trampoline". Nets must be:

- a. Essentially horizontal;
- b. Made from durable woven webbing, water permeable fabric, or mesh with openings not larger than 5 cm (2 ins) in any dimension. Attachment points must be designed to avoid chafe. The junction between a net and a boat must not present any risk of foot trapping under normal operating conditions at sea;
- c. Solidly fixed at regular intervals on transverse and longitudinal support lines and must be fine-stitched to a bolt rope;
- d. Able to carry the full weight of the entire crew either under normal operating conditions at sea or in case of inversion; and,
- e. Each tie point of the net must be individually tied and not continuously connected to more than four attachment points per connecting line.

O L S I

O L S I

O L S I

O L S I

O L S I

#### 3.13.2 Trimarans with double crossbeams

3.13.3 A trimaran with double crossbeams must have nets on each side covering the:

- a. Rectangles formed by the crossbeams (aka), vaka and amas.

O L S R

- |    |                                                                                                                                                                                                                                                                                                                          |   |   |   |   |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| b. | Triangles formed by the aft end of the central pulpit, the mid-point of each forward crossbeam, and the intersection of the crossbeam and the central hull.                                                                                                                                                              | O | L | S | R |
| c. | Triangles formed by the aftermost part of the cockpit or steering position (whichever is furthest aft), the midpoint of each after crossbeam, and the intersection of the crossbeam and the vaka; except when cockpit coamings and/or lifelines are present which comply with the minimum height requirements in 3.12.6. | O | L | S | R |

#### 3.13.4 Trimarans with single crossbeams

- |    |                                                                                                                                                                                                                                                      |   |   |   |   |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| a. | A trimaran with single crossbeams (aka) must have nets between the vaka and each ama; and,                                                                                                                                                           | O | L | S | R |
| b. | On each side between two straight lines from the intersection of the aka and the ama, respectively to the aft end of the pulpit on the vaka, and to the aftermost point of the cockpit or steering position on the vaka (whichever is furthest aft). | O | L | S | R |

#### 3.13.5 Catamarans

On a catamaran the total net surface must be limited:

- |    |                                                                                                                                                                                                                                 |   |   |   |   |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| a. | Laterally by the hulls; and,                                                                                                                                                                                                    | O | L | S | R |
| b. | Longitudinally by transverse stations through the forestay base, and the aftermost point of the boom lying fore and aft. However, a catamaran with a central nacelle (non-immersed) may satisfy the regulations for a trimaran. | O | L | S | R |

### 3.14 TOE RAIL OR FOOT-STOP

- |        |                                                                                                            |   |   |   |   |
|--------|------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.14.1 | A toe rail of minimum height 20mm must be permanently installed around the foredeck from abreast the mast. | O | L | S | R |
| 3.14.2 | A toe rail is not required on multihulls.                                                                  | O | L | S | I |

### 3.15 TOILET

- |        |                                                                                                                                                                                                             |   |   |   |   |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.15.1 | A toilet, which may be a fixed installation or a portable toilet, must be securely installed inside the boat.                                                                                               | O | L | S | I |
| 3.15.2 | The onboard systems for the storage and discharge of both black (toilet) and grey (shower, sink etc.) waste must comply with the environmental regulations and legislation applicable to the cruising area. | O | L | S | I |

### 3.16 BUNKS

- |        |                                                                     |   |   |   |   |
|--------|---------------------------------------------------------------------|---|---|---|---|
| 3.16.1 | Bunks, securely fastened and sufficient for all of the crew must be | O | L | S | R |
|--------|---------------------------------------------------------------------|---|---|---|---|



fitted.

- 3.16.2 Bunks should be suitable for use at sea. Fixed bunks for at least half the crew should be fitted with either lee cloths, or restraining devices where necessary. Lee cloths should be capable of restraining a bunk occupant on any point of sail. **R R R R**

**Note:** It is recommended that bunks meet the following guidelines: **R R R R**

a. For boats with an LOA 8.5m or greater, each berth should be at least 1.9m in length measured to the inside of any structure of the berth, bulkheads or partitions surrounding the berth. The minimum width measured in a similar manner to length at the top surface of the mattress should be 0.6m measured at 1/4 of the berth length.

b. For boats with an LOA less than 8.5m the minimum length should be 1.83m and minimum width should be 0.55m.

c. For all boats the minimum width of a double berth measured as above should be twice that required for a single berth.

d. The foot and head ends of berths may taper as required by the hull shape.

e. With all berths in the horizontal position, the minimum clearance above any mattress at the centerline over half of the length of the berth should not be less than 0.5m.

f. Mattresses of a size covering the entire surface should be fitted to all berths; they should be of a thickness not less than 0.03m for soft bottom berths. For hard bottom berths the minimum thickness should be 0.1m for boats of LOA 8.5m or greater and 0.075m for boats with an LOA of less than 8.5m. Minimum mattress density should be 8kg/ m<sup>3</sup>.

### 3.17 GALLEY

- 3.17.1 A cooking stove capable of being safely operated in a seaway must be installed. **O L S R**

**Note:** Microwave ovens fixed in a horizontal plane may not function satisfactorily in a seaway.

- 3.17.2 A cooking stove, where installed, must be securely fastened, and fitted with a safe and accessible fuel or power shut-off control device. **O L S I**

- 3.17.3 Gas stoves must be fitted and maintained in accordance with the relevant Australian Gas Association (AGA) Standard such as AS/NZS 5601.2 – 2013 (Gas installations - LP Gas installations in caravans and boats for non-propulsive purposes). **O L S I**

**Note:** Any boat with gas equipment installed must have a current gas compliance certificate when its ownership is transferred.

### Section 3

3.17.4 It is recommended that onboard gas systems include a combustible gas detection system and automatic shut-off device. **R R R R**

**Note:** Fitting and maintaining carbon monoxide detectors and alarms is a good way to minimise the risks of carbon monoxide poisoning. Carbon monoxide sensors monitor the level of the gas and make an alarm sound before carbon monoxide levels become hazardous.

3.17.5 A sign reading "**REMEMBER TURN OFF GAS AT BOTTLE**" must be displayed near any gas appliance. **O L S I**

3.17.6 Gas is only permitted for cooking. It is not permitted for heating or other purposes onboard. The use of petrol (or any fuel with a flashpoint below 60°C) for lighting, cooking or heating is prohibited. Methylated spirits, kerosene and lamp oil are acceptable for use as cooking and lighting fuels. **O L S I**

### 3.18 WATER TANKS AND POTABLE WATER

3.18.1 At least two independent potable water tanks must be permanently installed, or in the case of bladders, securely fastened, and these must be capable of being discharged through a pump. **O L R R**

3.18.2 If the water pump is dependent on the electrical system for operation then an alternative means of extracting potable water from the tank / bladder supply must be provided. **O L R R**

3.18.3 The total volume of potable water carried must not be less than that required to supply 3 litres per day per crew member for the duration of the passage. **O L R R**

3.18.4 A leak in any one component of the potable water system must not result in the loss of more than two thirds of the total water volume carried. **O L R R**

3.18.5 At least 10 litres of potable water, additional to that required in clause 3.18.3, must be carried in a dedicated container, or containers. This water is for emergency use. This minimum requirement is based on 1litre of drinking water per person per day and should be increased according to the duration of the passage and the number of crew. **O L S I**

### 3.19 HAND HOLDS

3.19.1 Hand holds must be fitted below decks so that crew members may move about safely at sea. **O L S R**

### 3.20 BILGE PUMPS AND BUCKETS

3.20.1 No bilge pump may discharge into a cockpit unless the cockpit opens aft to the sea. Bilge pumps must not be connected to cockpit drains. Bilge pumps must be adequately sized and fit for purpose. **O L S I**

## Section 3

3.20.2	Bilge pumps must have a 25mm minimum bore on the suction line	O	L	S	I
		O	L	S	I
3.20.3	Bilge pumps and strum boxes must be readily accessible for maintenance and for cleaning out any debris.				
3.20.4	For monohulls, there must be two permanently installed manual bilge pumps, one operable above, the other from below deck.	O	L	R	R
3.20.5	For multihulls, there must be one permanently installed manual bilge pump.	O	L	R	R
3.20.7	Multihulls must have provision to pump out all watertight compartments except those filled with impermeable buoyancy	O	L	S	I
3.20.6	At least one manual bilge pump must be carried and this must be operable, from either above or below deck.			S	I
3.20.9	All required permanently installed bilge pumps must be operable with all cockpit seats, hatches and companionways shut and must be provided with permanently fitted discharge pipe(s) of sufficient capacity.	O	L	S	I
3.20.8	All removable bilge pump handle must be secured to the boat by a lanyard.	O	L	S	I
3.20.9	Two buckets of stout construction each with at least 9 litres capacity must be carried. Each bucket must be fitted with a lanyard of length no less than the distance between the uppermost lifeline and the waterline at the point of maximum beam.	O	L	S	I

### 3.21 COMPASS

3.21.1	A marine magnetic compass independent of any electrical power supply must be permanently installed and correctly adjusted.	O	L	S	R
3.21.2	A spare magnetic compass independent of any power supply for its operation and capable of being used as an emergency steering compass must be carried.	O	L	R	R

**Note:** A mini hand bearing compass is unsuitable for use as an emergency steering compass.

### 3.22 NAVIGATION LIGHTS

3.22.1	Navigation lights must be fitted that conform to the International Regulations for Preventing Collision at Sea (IRPCAS), (Part C and Technical Annex I) and must be shown as required by those regulations.	O	L	S	R
3.22.2	Navigation lights must be mounted so that they will not be masked by either sails or the heeling of the boat.	O	L	S	R

### Section 3

- |        |                                                                                                                                        |   |   |   |   |
|--------|----------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.22.3 | Reserve navigation lights, capable of being quickly mounted with a power supply independent of the boat's main supply must be carried. | O | L | S | R |
| 3.22.4 | Spare lamps for other than the reserve navigation lights must be carried except for those lamps with multiple LED arrays.              | O | L | S | R |

### 3.23 ENGINE AND FUEL

- |        |                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |   |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.23.1 | Engines and associated systems must be installed in accordance with their manufacturers' guidelines and suitable for the size and intended use of the boat.                                                                                                                                                                                                                                                                   | O | L | S | I |
| 3.23.2 | An inboard propulsion system, which may be internal combustion or electrical based, must be capable of maintaining a minimum boat speed in knots of 1.8 x square root of LWL (m).                                                                                                                                                                                                                                             | O | L | R | R |
| 3.23.3 | The propulsion system must be capable of maintaining a minimum boat speed in knots of 1.8 x square root of LWL (m). Where an outboard engine is fitted it must be securely fastened / mounted at all times.                                                                                                                                                                                                                   |   |   | S | I |
| 3.23.4 | Inboard engine-based propulsion systems and electrical generators must be installed so that when running, they can be securely and effectively protected against heavy weather. Any associated cooling, exhaust and fuel supply sub-systems must be permanently installed and also protected from the effects of heavy weather. Internal combustion engines must be fitted with at least one permanently installed fuel tank. | O | L | S | I |
| 3.23.5 | The minimum volume of fuel carried must be sufficient to meet battery charging and propulsion requirements for the anticipated duration of the cruise, or the current leg of the cruise and be capable of achieving a boat speed in knots of 1.8 x square root of LWL (metres) against a 12 knot headwind for these durations.                                                                                                | O | L | S | I |
| 3.23.6 | Notwithstanding the above it is recommended that the minimum volume of fuel to be carried at the start of a passage should enable the boat to motor the following distances:                                                                                                                                                                                                                                                  |   |   |   |   |
| a.     | 200nm                                                                                                                                                                                                                                                                                                                                                                                                                         | O | L |   |   |
| b.     | 100nm                                                                                                                                                                                                                                                                                                                                                                                                                         |   |   | S |   |
| c.     | 20nm                                                                                                                                                                                                                                                                                                                                                                                                                          |   |   |   | I |
| 3.23.7 | Fixed fuel tanks must have a shut-off valve or cock fitted either at, or as close as is physically possible, to tank outlets except when it is not possible for fuel to escape should the fuel supply line fracture or leak.                                                                                                                                                                                                  | O | L | S | I |
| 3.23.8 | Fixed petrol fuel tanks must be metal, vented to the open air, be electrically grounded, and have the filler positioned so that spillage and fumes cannot enter the boat.                                                                                                                                                                                                                                                     | O | L | S | I |

### Section 3

- 3.23.9 Diesel fuel tanks must be either metal or another material certified as suitable by either the tank fabricator or material supplier. **O L S I**
- 3.23.10 For inboard engine systems, fuel lines must be metal, clipped rigidly in place and with a flexible connection between the fixed line and the engine. A flexible line may be used throughout provided that the material and terminals are designed for that purpose. **O L S I**
- 3.23.11 In the case of petrol engines the flexible fuel line must be fire resistant and coded by the manufacturer as such (e.g. with a red stripe). **O L S I**
- Attention is drawn to the installation standards required by AS1799.3: *Small Pleasure Boats Code - General Requirements for Yachts*.
- 3.23.12 For an outboard engine-based propulsion system any remote fuel tanks and fuel lines must be as supplied by the manufacturer or built to a recognised National Standard and branded as complying with that standard. **O L S I**
- 3.23.13 Remote fuel tanks must be secured on the upper deck or in a separately ventilated compartment draining directly to sea. **O L S I**

### 3.24 MARINE COMMUNICATIONS

- 3.24.1 Marine transceivers must be fitted with the frequencies or channels specified in the table below plus any frequencies or channels required by the event organising authority. **O L S I**
- 3.24.2 Operators of maritime ship stations, other than those operating solely on 27 MHz frequencies, are required to hold a relevant Australian marine radio operator's certificate of proficiency, or an equivalent overseas qualification. The minimum requirement for HF operation is the Marine Radio Operator's Certificate of Proficiency (MROCP); for VHF operation, a Marine Radio Operator's VHF Certificate of Proficiency (MROVCP) is required. **O L S I**
- 3.24.3 Marine transceivers must be permanently installed and, as a minimum, be capable of operation on the channels and frequencies as shown in Tables 3 and 4 below.

**Table 3: HF Communication Frequencies / Channels**

Type	Frequencies / Channels	Licensed Operators	Category			
HF	At least 4125, 6215, 8291	2	O	R	R	R

Type	Frequencies / Channels	Licensed Operators	Category		
HF		1	L	R	R

Table 4: VHF Communication Frequencies / Channels

Type	Frequencies / Channels	Licensed Operators	Category			
VHF	At least 12,16, 22, 67, 71, 72, 77, 73, 80	2	O	R	R	R
VHF		1	L	S	I	

- 3.24.4 A permanently installed HF transceiver must be fitted and have:
- a. A suitable HF antenna system;
  - b. A dedicated HF emergency antenna.
- 3.24.5 A permanently installed VHF transceiver must be fitted and have:
- a. A rated output power of 25 watts.
  - b. A masthead antenna.
  - c. A dedicated emergency antenna.
- 3.24.6 In addition to the installed VHF transceiver, a waterproof hand-held VHF transceiver and associated battery charging equipment, or spare batteries, must be carried.
- Note:** It is recommended that the hand-held transceiver be capable of operation on one or more aviation frequencies including 121.5MHz. This will enable communications between the boat and aircraft on SAR duties, not all of which have maritime VHF.
- 3.24.7 The effective operation of radio communication systems must be checked by test transmissions immediately prior to an event.
- 3.24.8 A radio receiver capable of receiving weather bulletins must be carried.
- 3.24.9 A satellite telephone is an acceptable alternative to the HF

O	L		
O	L		
O	R		
O	L	S	I
O	L	S	I
O	L	S	R
O	L	S	I
O	L	R	R
O	L	S	I
O	L	S	I
O	L	R	R

transceiver at 3.24.4 Satellite phones should be connected to the main power or have at least one fully charged spare battery.

- |         |                                                                                                                                                                                                                                                                                                                                                                          |   |   |   |   |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.24.10 | A fully charged mobile telephone must be carried.                                                                                                                                                                                                                                                                                                                        | O | L | S | I |
| 3.24.11 | It is recommended that HF and permanently installed VHF transceivers be DSC capable.                                                                                                                                                                                                                                                                                     | R | R | R | R |
| 3.24.12 | It is recommended that installed DSC HF/VHF are programmed with an assigned MMSI (unique to the boat), be connected to a GPS receiver and be capable of making distress alert calls as well as sending and receiving a DSC position report with another DSC equipped station. Periodically a test call should be made to AMSA which should be automatically acknowledged | R | R | R | R |

### 3.25 AUTOMATIC IDENTIFICATION SYSTEM (AIS)

**Note:** AIS uses digital radio signals to broadcast almost 'real-time' information between vessels and shore-based stations via dedicated VHF radio frequencies. This information is used to identify and track AIS equipped vessels in the surrounding area and to provide fast, automatic and accurate collision avoidance data.

It is not mandatory for all vessels to be fitted with AIS transceivers and therefore not all vessels in the cruising area will be displayed as AIS contacts.

Regulation 19 of SOLAS Chapter V - Carriage requirements for shipborne navigational systems and equipment requires AIS to be fitted aboard all ships of 300 gross tonnage and upwards engaged on international voyages, cargo ships of 500 gross tonnage and upwards not engaged on international voyages and all passenger ships irrespective of size.

An AIS receive-only unit enables contact data to be displayed; own ship data is not transmitted to other vessels. An AIS transceiver transmits and receives AIS data, and enables other AIS-equipped vessels to receive contact information such as position, course, and speed.

- |        |                                              |   |   |   |   |
|--------|----------------------------------------------|---|---|---|---|
| 3.25.1 | An AIS transceiver (Class B) must be fitted. | O | L | R | R |
|--------|----------------------------------------------|---|---|---|---|

### 3.26 BATTERIES

- |        |                                                                                                                                                                                                                                         |   |   |   |   |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 3.26.1 | Batteries must be of a sealed type. Flooded lead acid batteries, or wet cells, are unacceptable.                                                                                                                                        | O | L | S | R |
| 3.26.2 | When the primary propulsion engine can only be started with an electric starter, a battery dedicated for that purpose must be fitted. The dedicated battery must be able to be isolated from other uses to preserve power for starting. | O | L | S | I |

**3.27 BAROMETER**

- 3.27.1 A barometer, not dependent on boat's electrical power or batteries for operation, must be fitted.

O L S R

**3.28 HULL IDENTIFICATION**

- 3.28.1 Boats must have on both sides, or on the transom, in legible characters a minimum of 50mm high:

O L S I

- a. The boat's name.
- b. The state registration number (Height of digits and letters must be 100mm in NSW).
- c. The name of the club, or home port which may be abbreviated.

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- 3.28.2 To assist in SAR location:

- a. Boats should have at least 1 m<sup>2</sup> of highly visible colour (e.g. DayGlo pink, orange, or yellow) as far as possible in a single area on the coachroof and/or deck where it can best be seen.
- b. Multihulls should have a solid area of highly visible colour (e.g. DayGlo pink, orange, or yellow) of at least 1m<sup>2</sup> on the underside (hulls or nacelle), which is visible when inverted.
- c. Monohulls should have an area of highly-visible colour on each underwater appendage.

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## SECTION 4 PORTABLE EQUIPMENT & SUPPLIES

### 4.01 FIRE EXTINGUISHERS

4.01.1 Where there is any form of auxiliary engine or naked flame onboard, fire extinguishers that are readily accessible and mounted in suitable and different parts of the boat must be carried as follows:

- a. at least two serviceable fire extinguishers with a minimum rating of 1A:10B(E) or equivalent.
- b. at least one serviceable fire extinguisher with a minimum rating of 1A:10B(E) or equivalent.

4.01.2 A fire blanket must be mounted near every cooking device with an open flame. It should be used in the first instance on cooking fat fires.

4.01.3 Fire extinguishers are to be inspected and, if necessary, serviced by a competent person either at the time interval specified by the manufacturer of the extinguisher or at least annually.

**Note:** Fire extinguishers should be inspected at least every six months. All extinguishers other than carbon dioxide have a pressure gauge indicating their state of charge, and a security seal on the trigger. They should be free of corrosion, and recharged if the seal is broken or the gauge is not in the green sector of the scale. The nozzle should be checked to ensure that it is clear. A dry chemical extinguisher should be taken from its bracket and shaken to prevent the powder inside from compacting. A carbon dioxide extinguisher needs to be checked by weight and recharged if there has been a loss of more than 10 per cent of the net weight.

### 4.02 ANCHORS

**Note:** The nature of the holding ground together with the water depth, amount of swinging room, sea conditions, tidal range and proximity of other vessels will largely dictate the most effective anchoring system - the type of anchor, its size, and the make-up and length of anchor cable. Scope (length of cable x water depth) is a major factor in determining the holding capability of an anchor and, generally, the larger the scope, the greater the holding capability.

4.02.1 An anchor or anchors must be carried according to Table 6 below.

OCEAN	LONG COASTAL	SHORT COASTAL	INSHORE
-------	--------------	---------------	---------

O	L	S	R
---	---	---	---

			I
--	--	--	---

O	L	S	I
---	---	---	---

O	L	S	I
---	---	---	---

O	L	S	I
---	---	---	---

- 4.02.2 The bitter (inboard) end of the warp or chain cable must be secured to a structurally strong point in the boat prior to deploying the anchor.

O L S I

**Notes:**

Anchor and cable arrangements such as those shown in Tables 7 and 8 are indicative of those commonly specified by Classification Societies and boat designers. AS2198-1983: *Anchors for Small Boats* is relevant.

Chain cable should be manufactured in accordance with BS 6405: *Non-Calibrated Short Link Steel Chain (Grade 30) for General Engineering Purposes: Class 1 and 2 or equivalent*. The minimum breaking force should in no way be construed as a safe working load.

**Table 6: Anchor Requirements**

LOA	Detail	Category			
		O	L	S	I
Any	The specification of anchor, chain and rope must be in accordance with relevant class rules or the rules of a recognised Classification Society (e.g. Lloyd's Register, DNV, etc.)	O	L	S	I
8.5m and under	At least one anchor, together with a suitable combination of chain and rope, all ready for immediate use	O	L	S	I
8.5m and over	At least two anchors, together with a suitable combination of chain and rope, at least one ready for immediate use.	O	L	R	R

**Table 7: Anchor Cable (Rode) Length**

Minimum length of chain	Plus length of warp or chain	Detail	Category			
			O	L	S	I
10m	50m	Primary anchor and cable	O	L	S	
5m	45m	Primary anchor and cable				I

Minimum length of chain	Plus length of warp or chain	Detail	Category			
2m	40m	Secondary anchor and cable	O	L	S	

Table 8: Minimum Ground Tackle Details

Displacement	LOA	Anchor (High Holding Power)		Chain	Warp	Warp Size (Suggested)	
		Plough Type e.g. CQR	Spade Type e.g. Danforth			Poly. (Silver)	Nylon
kg		kg	size	mm	kN	mm	mm
Less than 815	Up to 6m	4	8S	6	9	10	10
816 - 2500	Up to 8m	7	13S	6	9	10	10
2501 - 4300	Up to 9m	9	22S	8	20	16	12
4301 – 6550	Up to 11m	11	22S	8	30	20	14
6551 - 9500	Up to 13m	15	40S	10	39	24	16
9501 - 13600	Up to 15m	20	65S	10	39	24	16
13601 - 20400	Up to 17m	25	65S	13	45	26	18
20401 - 27200	Up to 19m	34	80S	13	45	26	18
27201 and over	Over 19m to be certified	45	80S	14	60	32	20

### 4.03 SPOTLIGHTS AND FLASHLIGHTS

- 4.03.1 At least three flashlights (spotlights, torches or lanterns) of a water resistant floating type, with spare batteries and bulbs (if they can be replaced) must be carried. One of the flashlights must be suitable for searching for a person overboard at night and for collision avoidance.
- 4.03.2 At least two flashlights of a water resistant floating type must be carried.
- 4.03.3 A watertight, high-powered spotlight, suitable for searching for a person overboard at night and for collision avoidance with spare batteries and bulbs (if they can be replaced) must be carried.

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### 4.04 FOGHORN

- 4.04.1 A foghorn or sound signaling device must be carried. It is recommended that it be capable of operation without reliance on a pressurised gas supply.

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### 4.05 RADAR REFLECTOR

- 4.05.1 A radar reflector must be carried. Attention is drawn to ISO 8729: *Ships and marine technology - Marine radar reflectors*. If a radar reflector is octahedral it should have a minimum diagonal measurement of 456mm, or if not octahedral should have a documented Root Mean Square RCS (Radar Cross Section) of not less than 2m<sup>2</sup> from 0-360° of azimuth and ±20° of heel. The minimum effective height of the antenna above water is 4.0m.

O L R

**Note:** The use of a reflector, whether it be active or passive, is not a guarantee of detection or tracking by a vessel using radar.

### 4.06 NAVIGATIONAL CHARTS AND BOOKS

- 4.06.1 Navigational charts (not solely electronic) for the cruising areas and chart plotting equipment must be carried.
- 4.06.2 Charts must contain details of likely ports of refuge.
- 4.06.3 A list of lights or navigational charts which show details of lights likely to be visible from the cruising area must be carried.
- 4.06.4 A copy of the current "International Regulations for the Prevention of Collision at Sea" must be carried in either hard or soft copy. AMSA Marine Orders - Part 30: *Prevention of collisions* is relevant.
- 4.06.5 A current copy of "The RPAYC Cruising Regulations" must be

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carried. The copy may be in either “soft” or “hard” format.

4.06.6 An RPAYC emergency contact sticker

#### 4.07 GLOBAL POSITIONING SYSTEM (GPS)

4.07.1 A GPS receiver must be permanently installed. This may be incorporated in an Electronic Position-Fixing System such as a multi-function display or chart plotter.

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4.07.2 A second GPS which is hand held and water resistant, with spare batteries, must be carried.

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#### 4.08 DEPTH SOUNDER

4.08.1 A calibrated depth sounding instrument must be permanently installed and the display must be visible from the helm.

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#### 4.09 LOG

4.09.1 A speed and distance measuring instrument (not reliant on GPS) must be permanently installed. The display must be visible from the helm.

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#### 4.10 RADAR

4.10.1 An active radar set must be permanently installed. The set may be a pulse (magnetron) unit with not less than 4kW Peak Envelope Power (PEP) and an antenna unit with a maximum dimension not less than 533mm; or, a Frequency Modulated Continuous Wave (FMCW) Broadband Radar™ unit.

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4.10.2 The radar antenna unit must remain functionally horizontal when the boat is heeled.

O R R R

#### 4.11 EMERGENCY STEERING

4.11.1 An emergency tiller capable of being fitted to the rudder stock must be carried except when:

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- a. the principal method of steering is by means of an unbreakable metal tiller; or
- b. when there are two independent methods (e.g. tillers, wheels) of controlling a rudder, neither of which shares components with the other except for the rudder stock.

4.11.2 Crews must be aware of alternative methods of steering the boat in any sea condition in the event of rudder loss. At least one alternative method of steering must have been proven to work on board the

O L S R

boat and may be required to be demonstrated.

#### 4.12 TOOLS AND SPARE PARTS

4.12.1 Tools and spare parts, including an effective means to disconnect or separate the rigging from the mast and hull must be carried onboard.

O L S I

4.12.2 Boats must carry sufficient reference documents, spares and the necessary tools to enable routine and emergency engine oil, drive belt and filter change-outs. Spares should include fuel filter(s), drive belt(s), engine oil, and water pump impeller(s), and any associated seals and gaskets.

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4.12.3 A bosun's chair or climbing harness must be carried.

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4.12.4 A sharp knife capable of cutting high modulus fibre lines, sheathed and restrained, must be located in or near each cockpit.

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#### 4.13 BOAT'S NAME

4.13.1 The boat's name must be marked on or otherwise fixed to miscellaneous buoyant equipment. As a minimum this equipment includes lifejackets, cockpit cushions, lifebuoys, danbuoys, and lifelines.

O L S I

4.13.2 Where a lifejacket is the personal equipment of a crew member it must be marked instead to identify the owner. Preferably this should be the name of the owner and a contact telephone number.

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#### 4.14 RETROREFLECTIVE TAPE

4.14.1 Marine grade retroreflective material must be fitted to lifebuoys, lifelines, liferafts and lifejackets.

O L S I

#### 4.15 EPIRB

4.15.1 A 406 MHz Electronic Position Indicating Radio Beacon (EPIRB) registered with a national registration authority must be carried.

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- a. An EPIRB complying with 4.15.1 is required for all passages of 2 or more miles offshore.

I

4.15.2 The number of EPIRBs carried on board must not be less than the number of liferafts carried. The EPIRBs may be packed in a liferaft or stored in a dry, clearly visible location near the companionway.

O L S I

4.15.3 EPIRBs must be:

- a. Serviced in accordance with the manufacturer's instructions;
- b. In date with regard to battery expiry;

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## Section 4

- |                                                                 |         |
|-----------------------------------------------------------------|---------|
| c. Regularly tested to ensure they are working; and,            | O L S I |
| d. Registered in the boat's name.                               | O L S I |
| 4.15.4 Crew members must be trained in the operation of EPIRBs. | O L S I |

**Note:** It is strongly recommended that non-GPS EPIRBs be replaced with GPS capable 406 MHz EPIRBs as soon as practicable. Registered GPS capable 406 MHz beacons provide a signal that may be received within seconds by satellites and provide a location accuracy of 120 m. Calculating the position of non-GPS beacons will typically take 90 minutes (but could take up to 5 hours) and the position is only accurate to 5 km.

Further information may be found on the AMSA website:

<http://beacons.amsa.gov.au/>

### 4.16 LIFERAFTS

- |                                                                                                                                                                                                                                                    |     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 4.16.1 Liferafts designed and constructed in accordance with Appendix A and capable of carrying the entire crew must be carried.                                                                                                                   | O L |
| 4.16.2 The liferaft must be stowed so that it can be readily removed and launched regardless of whether or not the boat is inverted.                                                                                                               | O L |
| 4.16.3 A liferaft must be stowed either:                                                                                                                                                                                                           |     |
| a. In a transportable rigid container on the working deck or in the cockpit; or,                                                                                                                                                                   | O L |
| b. In a purpose-built rigid compartment opening into or adjacent to the cockpit or working deck, or opening through a transom, containing liferaft(s) only, provided that:                                                                         | O L |
| i. Each compartment is watertight or self-draining (self-draining compartments will be counted as part of the cockpit volume except when entirely above working deck level or when draining independently overboard from a transom stowage); and   | O L |
| ii. The cover of each compartment is capable of being easily opened under water pressure; and                                                                                                                                                      | O L |
| iii. The compartment is designed and built to allow the liferaft to be removed and launched quickly and easily; or                                                                                                                                 | O L |
| c. Packed in a valise not exceeding 40kg in weight and securely stowed below deck adjacent to the companionway.                                                                                                                                    | O L |
| 4.16.4 Liferafts of more than 40kg weight should be stowed in such a way that they can be dragged or slid into the sea without significant lifting. The boat end of the liferaft painter should be permanently secured to an onboard strong point. | R R |
| 4.16.5 On a multihull, the liferaft stowage must be such that the liferaft can be readily removed and launched regardless of whether or not the boat is inverted.                                                                                  | O L |

- 4.16.6 Each liferaft must have a valid current certificate from the manufacturer or an approved servicing agent certifying that it has been inspected, that it complies with the design and construction and equipment standards defined in Appendix A and stating the official capacity of the liferaft which must not be exceeded. The certificate, or a copy, must be carried onboard the boat. When a manufacturer so specifies, a raft may be externally inspected (i.e. not unpacked) and certified by the manufacturer or an approved servicing agent.

**Note:** There are risks associated with long-term storage of liferafts in adverse weather conditions when boats are not in use. Owners should consult manufacturer's recommendations for care and stowage of liferafts.

Liferafts are vulnerable to serious damage when dropped (e.g. from a boat onto a marina pontoon) or when subjected to the weight of a crew member or heavy object (e.g. an anchor). Damage can be caused internally by the weight of the heavy steel CO2 raft inflation bottle abrading or splitting neighbouring layers of buoyancy tube material. Every valise-packed liferaft should have an annual certificate of servicing.

A liferaft should be serviced if there is any sign of damage or deterioration (including on the underside of the pack). Persons in charge should insist on great care in handling liferafts and apply the rules **NO STEP** and **DO NOT DROP UNLESS LAUNCHING INTO THE SEA**.

O L

#### 4.17 GRAB BAG

- 4.17.1 A grab bag must be carried and its contents are to be appropriate for the cruise and drawn from those listed at Appendix A
- 4.17.2 It is recommended that a grab bag be allocated to each liferaft. A grab bag should have inherent flotation, be a DayGlo colour on the outside, be marked with the name of the boat and have a lanyard and clip.

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#### 4.18 LIFEBUOYS

- 4.18.1 A lifebuoy with a self-igniting light and a drogue, or a lifesling, equipped with a self-igniting light, fitted with marine grade retroreflective material and marked with the boat's name must be carried.
- 4.18.2 The lifebuoy, or lifesling as described above, must be accessible by the crew on watch and ready for immediate use.
- 4.18.3 In addition to 4.18.1, one lifebuoy equipped with:
- A whistle, a drogue, a self-igniting light; and
  - A pole and flag. The pole must be either permanently extended or be capable of being fully automatically extended (not extendable by

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O L S R

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O L R R



hand) in less than 20 seconds. The pole is to be attached to the lifebuoy with at least 3 m of floating line and is to be of a length and so ballasted that the flag will fly at least 1.8 m above the water.

- 4.18.4 When at least two lifebuoys (and/or lifeslings) are carried, at least one of them shall depend entirely on permanent (e.g. foam) buoyancy. **O L R R**
- 4.18.5 Each inflatable lifebuoy and any automatic device (e.g. pole and flag extended by compressed gas (such as in a man overboard module) must be tested and serviced at intervals in accordance with its manufacturer's instructions. **O L S I**
- 4.18.6 The colour of a lifebuoy other than lines, fittings and retroreflective material, must be a safety colour in the yellow to red range. **O L S I**

#### 4.19 PYROTECHNICS (FLARES)

- 4.19.1 Pyrotechnic Signals conforming to AS 2092: *Pyrotechnic Marine Distress Flares and Signals for Pleasure Craft* or a higher standard (SOLAS Life Saving Appliance [LSA] Code Chapter 111: *Visual Signals*) must be carried and stored in waterproof container(s). The age of all required pyrotechnics must not exceed the manufacturer's expiry date marked on the items. **O L S I**
- 4.19.2 Irrespective of the minimum requirements shown below, the numbers and types of flares must conform to state legislative requirements for the cruising area. **O L S I**
- 4.19.3 It is recommended that at least one Electronic Visual Distress Signal Device (EVDS) otherwise known as a rescue laser flare (red or green) be carried **R R R R**

**Table 8: Pyrotechnic (Flare) Requirements**

Red parachute flares (LSA 111 3.1)	Red hand flares (LSA 111 3.2)	White hand flares (See note)	Orange smoke (LSA 111 3.3)	Category
6	4	2	4	<b>O</b>
4	4	2	4	<b>L</b>
	2	2	2	<b>S</b>
	2		2	<b>I</b>

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**Note:** Specifications (except colour and candela rating) should comply with the SOLAS LSA (Life Saving Appliances) Code Chapter 111 3.2

## 4.20 HEAVING LINE

- 4.20.1 A floating line that is readily accessible to cockpit, with a buoyant object at one end and of 15m - 25m length must be carried and be readily accessible on deck. The “throwing sock” type is recommended.

O L S I

## 4.21 STORM & HEAVY WEATHER SAILS

**Note:** It is strongly recommended that the boat designer and sailmaker be consulted to determine the most effective size and materials for storm and heavy weather sails and to ensure that they are fit for purpose. The purpose of these sails is to provide safe propulsion for the boat in severe and heavy weather conditions. The sail areas referred to below are maxima. Smaller areas are likely to suit some boats according to their stability and other characteristics.

R R R R

### 4.21.1 High Visibility

All trysails and storm jibs should be of highly visible coloured material (e.g. DayGlo pink, orange or yellow) or, must have a highly visible coloured patch of at least 20% of the area of the sail added on each side to assist visibility and identification in extreme conditions. A multihull with a rotating wing mast used in lieu of a trysail should have a highly-visible coloured patch on each side of the mast.

O L R R

### 4.21.2 Materials

Aromatic polyamides such as kevlar, and carbon and similar fibres must not be used in the construction of a trysail or a storm jib but spectra / dyneema and similar materials are permitted.

O L R R

### 4.21.3 The following must be provided:

- a. Sheeting positions on deck for each storm and heavy-weather sail.
- b. Each storm jib should have a means to attach the luff to the stay, independent of any luff-groove device.
- c. A storm jib of area not greater than 5% height of the foretriangle squared, and luff maximum length 65% height of the foretriangle. The storm jib may be furlable.
- d. A heavy-weather jib (or heavy-weather sail in a boat with no forestay) of area not greater than 13.5% height of the foretriangle squared if a storm jib is not carried. The heavy weather jib may be furlable.
- e. It is strongly recommended that a heavy weather jib have a means to attach the luff to the stay independent of any luff-groove device.

O L R R

O L R

O L R

O L S R

R R R R

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f.	A storm trysail capable of being sheeted independently of the boom with area not greater than 17.5% mainsail luff length (P) x mainsail foot length (E) or mainsail reefing to reduce the luff by at least 40% must be carried. The storm trysail must have neither headboard nor battens, however a storm trysail is not required in a boat with a rotating wing mast which can adequately substitute for a trysail.	O	L		
g.	Either a storm trysail as above or a mainsail reefing system to reduce the luff by at least 25%.			S	
h.	Either a storm trysail or a mainsail reefing system to reduce the luff by at least 12.5%.				R
i.	In a boat with an in-mast furling mainsail, the storm trysail must be capable of being set while the mainsail is furled.	O	L	S	
j.	A trysail track should allow for the trysail to be hoisted quickly when the mainsail is lowered whether or not the mainsail is stowed on the main boom.	R	R	R	R
k.	Sheets must be permanently attached to the storm jib and trysail by sewing or splicing, not by J clips.	O	L	S	
l.	For multihulls where it is impractical to rig a trysail the mainsail must be capable of being reefed by at least 40%.	O	L		
4.21.4	It is strongly recommended that an inner forestay be provided, either permanently installed or readily set up, on which to set the storm jib.	R	R	R	R

**Table 9: Minimum Sail Requirements (Monohull and Multihull) – Summary**

Sail	Category			
	O	L	R	R
Storm jib (may be furlable).	O	L	R	R
Heavy weather jib (may be furlable).	O	L	S	R
Trysail or mainsail reefing or furling to at least 40%.	O	L	R	R
Mainsail reefing or furling to at least 25%.			S	R
Mainsail reefing/furling to at least 12.5%.				R

**Note:** There are many times when the potential severity of the weather and sea conditions is unclear and the choice between setting either storm or heavy weather sails is difficult.

## Section 4

The adage: "reef early and reef deep", should be followed at all times. If there is any possibility that the weather may deteriorate then it is recommended that sail be reduced at the earliest opportunity, especially when sailing short-handed.

The use of a storm trysail rather than a heavily reefed mainsail in strong wind and uncomfortable sea conditions may improve crew comfort and safety, especially at night.

Wind speed information is usually defined as the equivalent speed at a standard height of 10m above open flat ground. The table below shows the wind descriptions used by the Australian Bureau of Meteorology.

**Table 10: Wind Descriptions (Beaufort Scale)**

	<b>Descriptive term</b>	<b>Units in km/h</b>	<b>Units in knots</b>	<b>Description on Land</b>	<b>Description at Sea</b>
0	Calm	0	0	Smoke rises vertically	Sea like a mirror.
1-3	Light winds	19 km/h or less	10 knots or less	Wind felt on face; leaves rustle; ordinary vanes moved by wind.	Small wavelets, ripples formed but do not break: A glassy appearance maintained.
4	Moderate winds	20 - 29 km/h	11-16 knots	Raises dust and loose paper; small branches are moved.	Small waves - becoming longer; fairly frequent white horses.
5	Fresh winds	30 - 39 km/h	17-21 knots	Small trees in leaf begin to sway; crested wavelets form on inland waters	Moderate waves, taking a more pronounced long form; many white horses are formed - a chance of some spray
6	Strong winds	40 - 50 km/h	22-27 knots	Large branches in motion; whistling heard in telephone wires; umbrellas used with difficulty.	Large waves begin to form; the white foam crests are more extensive with probably some spray
7	Near gale	51 - 62 km/h	28-33 knots	Whole trees in motion; inconvenience felt when walking against wind.	Sea heaps up and white foam from breaking waves begins to be blown in streaks along direction of wind.
8	Gale	63 - 75 km/h	34-40 knots	Twigs break off trees; progress generally impeded.	Moderately high waves of greater length; edges of crests begin to break into spindrift; foam is blown in well-marked streaks along

	Descriptive term	Units in km/h	Units in knots	Description on Land	Description at Sea
					the direction of the wind.
9	Strong gale	76 - 87 km/h	41-47 knots	Slight structural damage occurs -roofing dislodged; larger branches break off.	High waves; dense streaks of foam; crests of waves begin to topple, tumble and roll over; spray may affect visibility.
10	Storm	88 - 102 km/h	48-55 knots	Seldom experienced inland; trees uprooted; considerable structural damage.	Very high waves with long overhanging crests; the resulting foam in great patches is blown in dense white streaks; the surface of the sea takes on a white appearance; the tumbling of the sea becomes heavy with visibility affected.
11	Violent storm	103 - 117 km/h	56-63 knots	Very rarely experienced - widespread damage	Exceptionally high waves; small and medium sized ships occasionally lost from view behind waves; the sea is completely covered with long white patches of foam; the edges of wave crests are blown into froth.
12+	Hurricane	118 km/h or more	64 knots or more	Very rarely experienced - widespread damage	The air is filled with foam and spray. Sea completely white with driving spray; visibility very seriously affected

**Note:** The wind pressure increases from 119 N/m<sup>2</sup> at 27 knots to 372N/m<sup>2</sup> at 47 knots.

## 4.22 SAIL NUMBERS

4.22.1 Sail numbers and any associated letters used to identify a particular boat must be carried on mainsails, trysails, storm jibs and heavy weather sails so that the numbers are clearly visible. Other sails should be similarly marked.

**O L R R**

4.22.2 Letters and sail numbers must be in capital letters and Arabic numerals, be clearly legible and of the same colour. The sizes of characters and minimum space between adjoining characters on the same and opposite sides of the sail should be related to the boat's overall length as shown in Table 7 below. Where this is not possible they should be as large a size as practicable.

**O L S I**

Table 11: Sail Numbers and Letters

LOA (m)	Minimum Height (mm)	Minimum Spacing (mm)
3.5 - 8.5	300	60
8.5 - 11	375	75
over 11	450	90

- 4.22.3 A separate piece of dacron or heavy-duty material with the boat's sail number on it must be carried. It must be capable of being displayed across the deck or along the lifelines when none of the numbered sails is set and it must be complete with eyelets and lashings. The size and spacing of the numbers must conform to those used on the boat's sails. Use of this identification banner enables search and rescue units to rapidly identify the boat in a distress situation.

O L S R

#### 4.23 HALYARDS

- 4.23.1 No mast must have less than two halyards.

O L S I

#### 4.24 DROGUE, SEA ANCHOR

- 4.24.1 A drogue or alternatively a sea anchor or parachute anchor should be considered. (Appendix D refers).

R R R R

#### 4.25 RETRIEVAL OF CREW FROM THE WATER

- 4.25.1 Boats must be able to demonstrate equipment and a method by which crew may be assisted back on board.

O L S I

#### 4.26 DISTRESS SHEET

- 4.26.1 A standard orange sheet 1.8m x 1.2m with a black "V" or black square above a black circle, with lanyards attached, must be carried.

O L S I

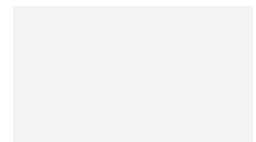
#### 4.27 STOWAGE CHART

- 4.27.1 A durable stowage chart must be displayed in a clearly visible position inside the boat. It must be clearly marked with the location and name of principal items of safety equipment as a minimum.

O L S I

## Section 4

These principle items include fire extinguishers, first aid kit, lifejackets, harnesses, tethers, flares, EPIRB, grab bag, tools, bosun's chair, emergency steering and PLBs



### 4.28 BOOM

4.28.1 Any boom that traverses a cockpit should be at least 1.9m above the cockpit floor.

R R R R



## SECTION 5 PERSONAL EQUIPMENT

		OCEAN	LONG COASTAL	SHORT COASTAL	INSHORE
<b>5.01</b>	<b>LIFEJACKETS</b>				
	<b>Note:</b> Lifejacket requirements vary between the States and Territories and it is recommended that before purchase and use it be established that the lifejacket is acceptable under local law.				
5.01.1	Each crew member must have one lifejacket complying with AS4758-2008 (minimum Level 150) or AS1512-1996 Type 1 (not less than 150N), or an equivalent or more stringent overseas standard such as ISO 12402 – 3 (Level 150) or ISO 12402-2 (Level 275). Bulky inherently buoyant lifejackets that are donned over the head (known as “Mae West” type) are not acceptable	O	L	S	I
5.01.2	Lifejackets as above shall be designed to securely suspend an unconscious person face upwards at approximately 45 degrees to the water surface in accordance with ISO 12402-3, <i>Personal flotation devices -- Part 3: Lifejackets, performance level 150 -- Safety requirements</i> .	O	L	S	I
5.01.3.	The Level of the lifejacket worn is to be consistent with the crew member's physical size and weight.	O	L	S	I
5.01.4	It is strongly recommended that lifejackets be fitted with a splashguard / sprayhood.	R	R	R	R
5.01.5	A lifejacket complying with 5.01.1 must be worn by each member of the crew:				
a.	When on deck between the hours of sunset and sunrise;	O	L	S	I
b.	When on deck and the boat is two or more miles offshore;	O	L	S	I
c.	When alone on deck;	O	L	S	I
d.	During bar crossings; and,	O	L	S	I
e.	At times of heightened risk (e.g. true wind speed is above 25 knots, visibility less than 1 mile).	O	L	S	I
5.01.5	It is strongly recommended that that non-swimmers, each child aged 12 or under, and elderly persons or people with a medical condition that might impair their mobility, wear a lifejacket at all times when the boat is underway.	R	R	R	R



## Section 5

5.01.6	On a boat without lifelines complying with the requirements of 3.12, a lifejacket complying with 5.1.01 must be worn by each crew member whilst on deck.	O	L	S	I
5.01.8	A combined lifejacket and safety harness may be used provided both the lifejacket and harness are compliant with their respective standards.	O	L	S	I
5.01.9	Each lifejacket must be fitted with marine grade retroreflective tape, a whistle, and either a crotch strap or thigh straps.	O	L	S	I
5.01.10	Each lifejacket should have a light attached.	R	R	R	R
5.01.11	Each inflatable lifejacket must be checked and serviced annually or at such other interval as prescribed by the manufacturer. This check must include bladder air retention, gas bottle date and weight, connection and activation arrangements, and signs of chafe and wear to the bladder, stole and harness. Formal records of servicing must be retained onboard.	O	L	S	I
5.01.13	Each non-inflatable lifejacket must be checked at least annually for serviceability (e.g. check for chafe and wear, damage to fasteners, discolouration of material, and damage to flotation pads).	O	L	S	I
5.01.14	Each boat must carry:	O	L	S	R
a.	At least one spare lifejacket in addition to the number of lifejackets required by 5.01.1	O	L	S	R
b.	At least one gas inflatable lifejacket spare cylinder and one rearm kit.	O	L	R	R

**Note:** Users of inflatable lifejackets should read the maintenance instructions provided with them and undertake more frequent checks for lifejackets that are regularly wet. Most lifejacket distributors and manufacturers provide service details on their websites.

## 5.02 SAFETY HARNESSSES, LINES & TETHERS

5.02.1	Each crew member must have a personal safety harness and safety line (tether). The tether length must not exceed 2m.	O	L	S	R
5.02.2	Each safety harness and line must comply with AS 2227: <i>Yachtsmen's Safety Harnesses and Lines</i> ; or an equivalent overseas standard such as ISO12401: <i>Small craft -- Deck safety harness and safety line -- Safety requirements and test methods</i> , and must incorporate a mark of compliance with the standard.	O	L	S	R
5.02.3	A crotch strap or thigh straps must be fitted to each safety harness.	O	L	S	I
5.02.4	Crew members should carry a personal knife capable of cutting a safety line (tether) in an emergency.	R	R	R	R
5.02.5	At least 30 % of the crew must, in addition to the above, be provided with either a safety line (tether) not more than 1m long; or, a 2 m	O	L	R	R

## Section 5

tether, with a manufacturer-fitted positive locking mid-point snap hook.

- |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |   |   |   |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 5.02.6  | Before embarking on a passage each crew member should adjust his / her personal harness to fit comfortably.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | O | L | S | R |
| 5.02.7  | Pad eyes, eye plates and other fixtures used as clipping points for tethers must be attached to through-bolted or welded deck plates or other suitable and strong anchorage points adjacent to frequently occupied locations such the helm, sheet winches and masts.                                                                                                                                                                                                                                                                                                                      | O | L | S | R |
| 5.02.8  | Plain, single action, snap hooks must not be used in any tether, static safety line, or jackstay system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | O | L | S | R |
|         | <b>Note:</b> U-bolts or eye plates can cause plain snap hooks to "capsize" or "roll-over" when rotated on one leg of the u-bolt so that the hook "gate" bears against the other leg and opens. This occurrence is known as "roll-over reversal" and is a known cause of death and injury.                                                                                                                                                                                                                                                                                                 |   |   |   |   |
| 5.02.9  | Clipping points, together with jackstays and static safety lines must be located and fitted in such a way as to enable:                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | O | L | S | R |
|         | a. Crew members to safely clip on before coming on deck and to unclip after going below;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | O | L | S | R |
|         | b. Crew members moving between the working areas on deck and the cockpit(s) to so do with minimal tether clipping and unclipping; and,                                                                                                                                                                                                                                                                                                                                                                                                                                                    | O | L | S | R |
|         | c. At least two-thirds of the crew to be simultaneously clipped on without use of jackstays or static safety lines.                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | O | L | S | R |
| 5.02.10 | In a trimaran with rudders on the amas, adequate clipping points that do not constitute any part of the deck gear or the steering mechanism must be fitted to enable the steering mechanism to be reached by a crew member whilst clipped on.                                                                                                                                                                                                                                                                                                                                             | O | L | S | R |
|         | <b>Note:</b> A safety line and safety harness are not designed to tow a person in the water and it is important that the shortest safety line length possible be used with a harness to minimise or eliminate the risk of a man overboard or suspended upside, especially when working on the foredeck. The 1 m safety line or the midpoint snap hook on a 2 m line should be used for this purpose. The diligent use of a properly adjusted safety harness and use of the shortest line practicable are regarded as by far the most effective way of preventing man overboard incidents. |   |   |   |   |

### 5.03 JACKSTAYS

- |        |                                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |   |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|
| 5.03.1 | Jackstays must be attached to through-bolted or welded deck plates or other suitable and strong anchorage points fitted on deck. Jackstays should be arranged to port and starboard of the boat's centreline to provide secure attachments for safety harness tethers. Jackstays must extend far enough aft to allow crew to clip their tethers on to the jackstay without leaving the cockpit. | O | L | S | R |
| 5.03.2 | Jackstays must have a breaking strength of 20kN (4500lbf) and be                                                                                                                                                                                                                                                                                                                                | O | L | S | R |

uncoated and non- sleeved stainless steel 1 x 19 wire of minimum diameter 5 mm (3/16”), webbing, or HMPE line.

5.03.3 All fastenings and lashings for jackstays must have an equivalent strength to that of the jackstay. **O L S R**

5.03.4 Stanchion bases must not be used as strong points for the attachment of jackstays. **O L S R**

**Notes:** For a jackstay lashing using 4mm line (typical breaking load 400N) the number of turns to equate to the strength of the jackstay will be  $2,000 / 400 = 5$  approx.

It is suggested that the lashing be finished with a rolling hitch and a figure eight in the tail to keep the knot from loosening.

Jackstays should be inspected annually for wear and chafe and stowed out of the sun when not rigged.

**5.04 PERSONAL LIGHTS**

5.04.1 A personal location light (either a strobe or complying with SOLAS LSA 2.2.3, must be carried by, or attached to, each crew member on deck at night or in conditions of low visibility. **O L S I**

**5.05 PERSONAL CLOTHING**

5.05.1 During heavy, wet and/or cold weather, crew members on deck should wear clothing that will protect them from hypothermia. **O L S I**

5.05.2 Crew members must be clothed such as to afford protection against the extremes of weather and temperature at all times. **O L S I**

**5.06 PERSONAL LOCATOR BEACONS**

5.06.1 A 406Mhz Personal Locator Beacon (PLB) registered with a national registration authority must be carried by or attached to each member of the crew when on deck. **O L R R**

5.06.2 Crew members are to be trained in the use of PLBs. **O L R R**

5.06.3 It is strongly recommended that non-GPS PLBs be replaced with GPS capable 406 MHz PLBs as soon as practicable. **R R R R**

**Note:** Emergency Position Indicating Radio Beacons (EPIRB), are used on boats and Personal Locator Beacons (PLB's) are used on persons. PLBs are not a substitute for EPIRBs when adhering to State and Territory marine regulations.

## SECTION 6 MEDICAL

		OCEAN	LONG COASTAL	SHORT COASTAL	INSHORE
<b>6.01</b>	<b>GENERAL REQUIREMENTS</b>				
	<b>Note:</b> The skills and training of crew and the quantities and types of medical supplies to be carried will depend on a number of factors including the number of crew, individual state of health, the duration and location of the passage, the level of access to external assistance and the approach to risk management onboard.				
6.01.1	The Person in Charge must be able to demonstrate that the level of first aid skills and training amongst the crew is adequate to competently render first aid and that the boat has onboard the range and scales of medical equipment and supplies to deal with the medical emergencies and conditions most likely to occur on the passage.	O	L	S	I
6.01.2	The Person in Charge of the boat is responsible for onboard medical risk planning and management. The most likely medical emergencies and conditions to require treatment during a passage include: <ul style="list-style-type: none"> <li>• Pain relief - mild moderate and severe</li> <li>• Sunburn</li> <li>• Dehydration</li> <li>• Seasickness</li> <li>• Diarrhea / Constipation</li> <li>• Flesh bruises, wounds,</li> <li>• Damage to eyes, digits, limbs and ribs.</li> <li>• Strained muscles</li> <li>• Burns – minor and severe</li> <li>• Cardiac emergencies</li> </ul>	O	L	S	I
6.01.4	It is the responsibility of individual crew members to inform the Person in Charge of any medical condition or ongoing treatment that may affect their capabilities as a crew member. Similarly, it is the responsibility of the Person in Charge to inform the crew of any medical condition that may impair his or her capabilities as the Person in Charge.	O	L	S	I
6.01.5	All crew members must know where medical equipment and supplies are stored. The location of all medical items must be shown on the boat's stowage chart which must be displayed in a prominent position in the boat (e.g. chart table, saloon)	O	L	S	I
6.01.6	The Person in Charge must demonstrate that the scope and currency	O	L	S	I

of the medical reference information carried on board is adequate for the likely emergencies and medical conditions noted above. All crew members must be capable of seeking external medical assistance by phone, radio or other means and relevant instructions must be readily available.

## 6.02 MEDICAL KITS

6.02.1 As a minimum, boats must carry:

a. *Ship Captain's Medical Guide* (21st edition or later), or the *International Medical Guide for Ships* (W.H.O), or an equivalent publication. O

b. *First Aid at Sea*; Douglas Justins, Colin Berry; Adlard Coles, or *First Aid - Authorised manual of the St. John Ambulance Assn. In Australia* (current edition), or *Advanced First Aid Afloat*; Peter F. Eastman MD, or *The Authorised Manual of the Australian Red Cross Society*. O L S I

6.02.2 Boats must be equipped with a Medical Kit of which the contents and their storage reflect the guidelines of the recommended manual, the likely conditions and duration of the passage, and the number of people onboard the boat. O L S I

6.02.3 At least two members of the crew must hold a current Senior First Aid Certificate, **or** equivalent, **or** be a practising medical practitioner. O R R R

6.02.4 At least one member of the crew must hold a current Senior First Aid Certificate, or equivalent, or be a practising medical practitioner. O L R R

**Note:** It is strongly recommended that if injectable items are to be carried, that the members of the crew trained in first aid have additional training in the use of injectables. The Person in Charge of a boat is also recommended to review the specific circumstances of the boat, the cruise to be undertaken, the weather and sea conditions likely to be experienced and the time before medical assistance could be available to determine if this minimum level of first aid training is appropriate or whether further training is required.

6.02.5 The medical requirements listed in Table 11 below are the minimum. It is therefore recommended that if there is any possibility that special medication is needed for any crew member then that crew member should obtain medical advice before the event and provide any necessary medication. R R R R

6.02.6 Items in the medical kit must be increased on a pro-rata basis when there are more than six crew members onboard. O L R R

6.02.7 The medical kit must be stored in a waterproof container(s) which must have the contents listed so as to be visible without opening the container and must contain as a minimum the items as shown in the table below. O L S I

6.02.8 All required items must be "in date" for the duration of the cruise, The expiry date marked on any item must not be passed. O L S I

6.02.9	Most prescription medication must be stored at a temperature of 25° C or less. As the temperatures inside a boat during the summer months can exceed 50° C it is recommended that all prescription medication be replaced annually.	R	R	R	R
6.02.10	One of the more common brand names of the generic product is indicated in brackets and the quantities for each category are indicated under the category column in the Table 11 below. Alternate pharmaceuticals in equivalent amounts and having similar action to those stated are acceptable.	O	L	S	I
6.02.11	<b>WARNING</b>  <b>IN AN EMERGENCY, MEDICAL ADVICE SHOULD FIRST BE OBTAINED FROM THE COAST RADIO OR BY CONTACTING A DOCTOR BY PHONE OR RADIO. THIS IS PARTICULARLY IMPORTANT:</b>	O	L	S	I
a.	BEFORE ADMINISTERING PRESCRIPTION DRUGS.	O	L	S	I
b.	BEFORE ADMINISTERING ASPIRIN OR NITROLINGUAL SPRAY FOR A SUSPECTED CARDIAC EMERGENCY (OTHER THAN WHEN USING THE VICTIM'S PERSONAL MEDICATION).	O	L	S	I
c.	TREATING AN EYE INJURY.	O	L	S	I
d.	TREATING SEVERE PAIN.	O	L	S	I
e.	TREATING DIARRHOEA WHERE THE PATIENT ALSO HAS A FEVER.	O	L	S	I
f.	TREATING SEVERE BURNS.	O	L	S	I
6.02.12	<b>THE ADMINISTRATION OF ALL PRESCRIPTION DRUGS GIVEN UNDER MEDICAL ADVICE MUST BE DOCUMENTED IN THE BOAT'S LOG AND WITNESSED, DETAILING THE DOCTOR'S NAME, TREATMENT ADMINISTERED, DATE AND TIME.</b>	O	L	S	I
6.02.13	<b>Communication Options</b>	O	L	S	I
	Seek help whenever you need advice and especially when you are <b>concerned</b> or <b>alarmed</b> .				
a.	To speak with a Doctor in an emergency, contact your own GP or the Royal Flying Doctor Service via mobile phone:				
	<ul style="list-style-type: none"> <li>• NSW, VIC, TAS (24 Hour Medical &amp; Emergency calls) Call Broken Hill Base: 08 8088 1188</li> <li>• Queensland (24 Hour Medical &amp; Emergency calls) Call Cairns Base: 07 4040 0500</li> </ul>				
b.	Call "Healthdirect" - a 24 hour government funded phone service				

operated by nursing professionals who provide clinical advice, triage and assistance to find services: 1800 022 222

- c. If outside mobile range contact Marine Rescue via VHF to arrange ambulance or other assistance; provide position (lat and long) and nearest coastal town.
- d. RFDS may also be contacted directly via HF but is not recommended unless an HF channel connection has been arranged by a third party e.g. Marine Rescue (See <http://www.flyingdoctor.org.au/Communications/HF-and-UHF-Radio-Frequencies> for available frequencies).

Figure 1: Triage / Risk Assessment 1

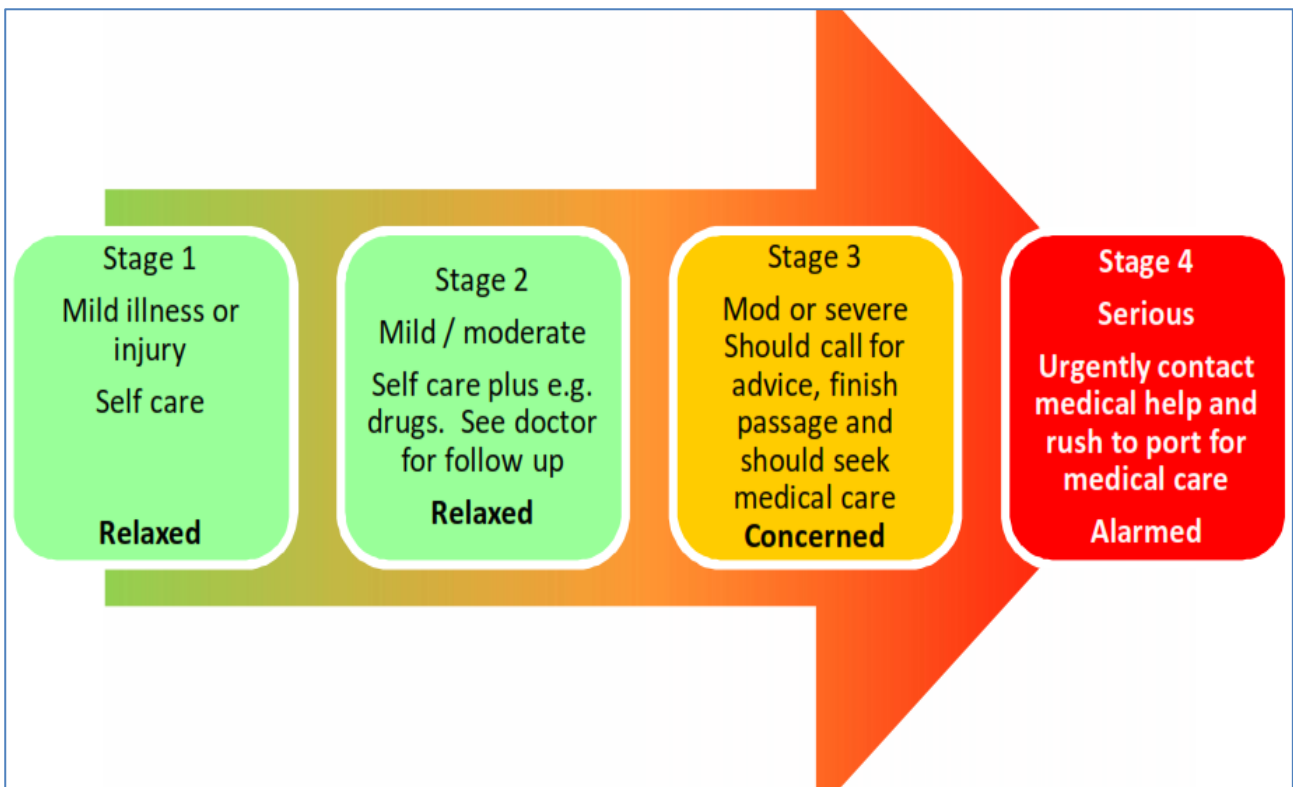


Figure 2: Triage / Risk Assessment 2

Some examples of illness to concern you	Some examples of illness to alarm you
<ul style="list-style-type: none"> <li>• Unwell with vomiting or diarrhoea for 24 hours</li> <li>• Visual disturbances, not migraine</li> <li>• Severe rash</li> <li>• Cut / laceration from dirty source or needing stitching</li> <li>• Severe flu like symptoms</li> <li>• Fever &gt;38°C</li> <li>• Eye, ear infections or pain</li> <li>• Continued breathing difficulties from asthma / bronchitis</li> <li>• Past history and current history of serious illness</li> </ul>	<ul style="list-style-type: none"> <li>• Chest pain lasting more than 5 minutes</li> <li>• Breathing difficulty and having difficulty talking</li> <li>• Collapse or altered consciousness</li> <li>• Facial or limb weakness</li> <li>• Bleeding which is or has been hard to control</li> <li>• Spinal or head injury</li> <li>• Unable to urinate</li> <li>• Eye injury</li> <li>• Severe pain</li> </ul>

(Extract from Dandenong Casey General Practice Association triage tool)

Figure 3: RFDS Body Chart

Describe briefly who you are , where you are, what is wrong and what has happened in time order. Then what the major problem is now.

If there is pain or injury you can use the RFDS chart below to identify the location of the pain or injury.

For contacting VMR have a proforma ready near your phone, giving the details they always want.

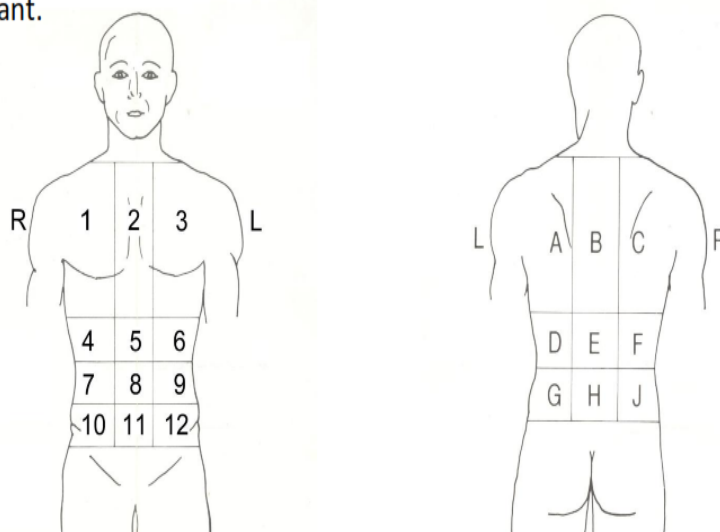




Table 11: Medical Kit Items

Medical Item		Notes		CATEGORY			
				OCEAN	LONG COASTAL	SHORT COASTAL	INSHORE
*		Ask a pharmacist for this medication.					
* *		Requires a prescription.					
* * *		Mandatory only when required by notice of cruise for long ocean passages.					
FOR VARYING DEGREES OF PAIN				Quantity			
<b>Mild Pain</b> Paracetamol 500mg. (Panadol) or Ibuprofen 200mg (e.g. Nurofen)				40	40	20	20
<b>Moderate Pain</b> ** Codeine 8mg + Paracetamol 500mg (Panadeine)  Non-prescription alternatives to Panadeine include products containing paracetamol or ibuprofen (an anti-inflammatory), or a combination of both such as Maxigesic, Mersynofen and Nuromol.				40	40	20	
<b>Moderate to Severe Pain</b> Codeine 30mg + Paracetamol 500mg (Panadeine Forte)				20	20	R	
<b>Very Severe Pain</b> ** Oxycodone – 5mg (Endone) or  ** 30mg suppositories (Prolodone)				20			
*** Morphine injections 10mg/1ml				10			
<b>Opioid Overdose</b>  *** Naloxene Hydrochloride ampoules 400 mg/ml				5			

## Section 6

<b>CARDIAC EMERGENCIES</b>				
Soluble Aspirin (Disprin)	20	20	20	20
Nitrolingual Spray (Anginine)	1	1		
<b>FOR WOUNDS, LIMBS AND HYPOTHERMIA</b>				
Butterfly Steristrips (Strips of 5)	10	10	5	5
Disposable Gloves	20	20	20	10
Crepe bandages 75mm x 1.5m	2	2	2	2
Crepe bandages 100mm x 1.5m	2	2		
Triangular bandage	1	1	1	
High Absorbency non-adherent dressing (e.g. Exu-Dry)	10	10		
Low Absorbency non-adherent dressing/plain gauze (e.g. Melolin)	10	10	5	2
Band-aids	20	20	20	20
Adhesive tape 50mm x 2.5m (Leukoplast)	1	1	1	1
Roll, cotton wool	1	1	1	1
Antiseptic skin solution (Betadine) 15ml	1	1	1	1
Antiseptic cream with Lignocaine HCL (e.g. Medcream)	1	1	1	
Thermal/space/mylar/ emergency blanket	2	2	1	1
<b>FOR EYES</b>				

## Section 6

Normal saline (for washing) – 250ml	1	1	1	
Normal saline (for washing) – 30ml				2
** Chloramphenicol eye ointment 1% 4 mg	1			
Sterile eye patches	5	5		
<b>ANTIBIOTIC</b>				
<b>Severe infection</b>				
*** Ciprofloxacin 500 mg (e.g. Ciproxin, C-Flox, CiloQuin, Piprol, Profloxin)	14			
<b>For infection</b>				
** Cephalexin 500 mg tabs (e.g. Keflex)	20			
<b>Fungal skin infection</b> Clotrimazole cream (e.g. Lamisil, Daktarin)	1	1		
<b>FOR BURNS</b>				
<b>Superficial burns</b>				
Solugel wound dressing 100gm (e.g. Solosite, Duoderm Gel, Purilon)	1	1	1	1
<b>Severe burns</b> Cover with a non-adherent dressing and obtain hospital treatment as soon as possible.				
** Silver sulphadiazine cream 100 g (e.g. Flamazine)	1			
<b>SUNSCREEN</b>				
30+ SPF 250ml	1	1	1	1
<b>FOR DIARRHOEA / GASTRIC</b>				
Anti-diarrhoea treatment (pkt) - (e.g. Imodium, Lomotil)	1	1	1	

## Section 6

Antacid tablets (pkt) or liquid (bottle) (e.g. Mylanta, Gaviscon)	1	1		
<b>FOR DEHYDRATION</b>				
Gastrolyte 4.9g sachet - pkt of 10	1	1		
<b>FOR SEASICKNESS</b>				
Some form of seasickness remedy must be carried. It should be noted that all types available may produce drowsiness and/or disorientation. In the case of severe sea sickness the use of suppositories is strongly recommended				
Travel/seasickness tablets (e.g. Avomine or Travacalm)	10	10	10	
** Prochlorperazine suppositories (e.g. Stemetil) 25gm	5			
<b>FOR ALLERGY</b>				
Known allergy sufferers should carry their own auto-injector (e.g. EpiPen, Anapen) or similar and advise the crew of its location and method of administration.				
** Antihistamine 25 mg tablet (e.g. Phenergan)	15	25		
** Adrenaline ampoules 1:1000	5			
<b>INSTRUMENTS</b>				
Scissors, stainless steel	1	1	1	1
Thermometer, clinical	1	1	1	
Forceps, splinter, stainless steel	1	1	1	1

**Section 6**

Safety pins, assorted sizes	10	10	10	10
Disposable 2 ml syringes/ 23G x 1 1/4 inch (Only if * * * items carried)	20			
Alcohol swabs for injection preparation	10	10		
Malleable or fixed splints appropriate for arms and legs (e.g. inflatable, SAM, Flex-All)	1			
CPR mask or 6 Face shields	1	1	1	1
*** Stapling kit / wound glue	1			

## SECTION 7      TRAINING

### 7.01      SAFETY & SEA SURVIVAL COURSE

7.01.1 At least 50% of the crew including the Person in Charge must have undertaken training and received a Certificate of Competence in both theoretical and practical sessions in accordance with the YA Safety and Sea Survival Course (SSSC), or a Course of no less a standard acceptable to the event organising authority that covers as a minimum, the following topics. It is strongly recommended that all crew members do likewise:

- 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
- provision of assistance to other craft
- hypothermia
- SAR systems
- operation of communications equipment
- weather forecasting
- pyrotechnics – flares

7.01.2 The SSSC Certificate of Competence has a five year validity period. Revalidation should be achieved by completing an AS accredited update course.

### 7.02      ONBOARD TRAINING

Crews must practice onboard safety exercises at regular intervals including the drill for man-overboard recovery.

OCEAN	LONG COASTAL	SHORT COASTAL	INSHORE
O	L	R	R
R	R	R	R
O	L	S	I

## SECTION 8 APPENDICES

### APPENDIX A LIFERAFT SPECIFICATIONS

#### GENERAL DESIGN AND CONSTRUCTION

Liferaft (s) capable of carrying the entire crew must be carried and these must comply with the construction requirements of Regulation 15 of the International Convention of the Safety Of Lives At Sea 1960 (SOLAS) LSA code 1997 Chapter IV or later version except that they are acceptable with a capacity of four persons and may be packed in a valise.

#### EQUIPMENT

Each raft must have at least the following equipment, properly stowed and secured so as to be available undamaged after launch and inflation.

- One sea anchor or drogue (attachment line should not be less than 15m) attached so that the entry point to the raft is leeward. Compliance with either ISO 17339: *Ships and marine technology. Sea anchors for survival craft and rescue boats; or an equivalent specification*, is recommended.
- One safety knife.
- One bellows or hand pump for hand inflation that is of one piece, ready for use and does not require assembling.
- One water resistant torch (signalling) together with one spare set of batteries and one spare bulb in a waterproof container.
- One heliograph mirror.
- One bailer easily identifiable as such.
- One sponge per person.
- One repair outfit complete with six emergency buoyancy tube leak stopping plugs capable of repairing punctures in buoyancy compartments.
- One buoyant rescue quoit attached to at least 30 metres of buoyant line.
- Four red hand-flares and two smoke signals.
- Two red parachute flares.
- One signalling whistle.
- Potable water, at least 0.5 litres per person.
- One tin of emergency rations per person.
- Two tubes of sun cream (SPF 30+)
- Five plastic bags, not less than 450mm x 300mm per person.
- A clearly legible operational instruction card describing the operation of the liferaft and its contents. This may be either waterproofed or stencilled on the inside of the canopy or on the inside of the buoyancy compartments.
- A USL Coastal Pack First Aid Kit.
- A hand operated water maker is recommended for "Ocean: and "Long Coastal" category events.
- Two buoyant paddles with handles.
- Six anti seasickness tablets for each person.

- One waterproof copy of the illustrated table of life-saving signals referred to in Regulation 38 of Chapter V of SOLAS 1997.
- One waterproof copy on how to survive in the life raft.

The above equipment must be packed in bags capable of holding the contents comfortably so that they do not burst out when opened in difficult conditions. The closure must be by a plastic zip or velcro along the side and not at one end. The bags must be securely fastened to the inside of the raft.

### **GRAB BAGS**

Grab bags should be readily accessible. The following contents should be considered for inclusion and should be appropriately packed and waterproofed.

- At least two red parachute and Two red hand flares and cyalume type chemical light sticks
- A waterproof handheld GPS
- A SART (Search and Rescue Transponder)
- A GPS capable 406MHz EPIRB
- Water in re-sealable containers or a hand-operated desalinator plus containers for water
- A watertight handheld marine VHF transceiver plus a spare set of batteries
- A watertight flashlight with spare batteries and bulb
- Thermal protective aids or survival bags
- Two safety tin openers (if appropriate)
- A first-aid kit including sunscreen and anti-seasickness medication
- A daylight signalling mirror
- Some high-energy food
- A handheld satellite telephone with waterproof cover and internal batteries
- A strobe light
- Medical supplies (including spare glasses) for pre-existing medical conditions of any crew member
- A laser rescue flare (Electronic Visual Distress Signal Device (EVDSD))



## Appendix B                    MAN OVERBOARD RECOVERY

### ADVISORY APPENDIX

#### QUICK STOP AND THE LIFE SLING (OR SEATTLE SLING) RECOVERY METHODS

When a crew member goes over the side recovery time is of the essence. In an effort to come up with a recovery system that is simple and lightning quick, the US Yacht Racing Union Safety at Sea Committee, the US Naval Academy Sailing Squadron, the Cruising Club of America Technical Committee and the Sailing Foundation of Seattle, Washington, joined forces to conduct extensive research and sea trials. The result of their collaboration is the "Quick-Stop" method of man-overboard recovery.

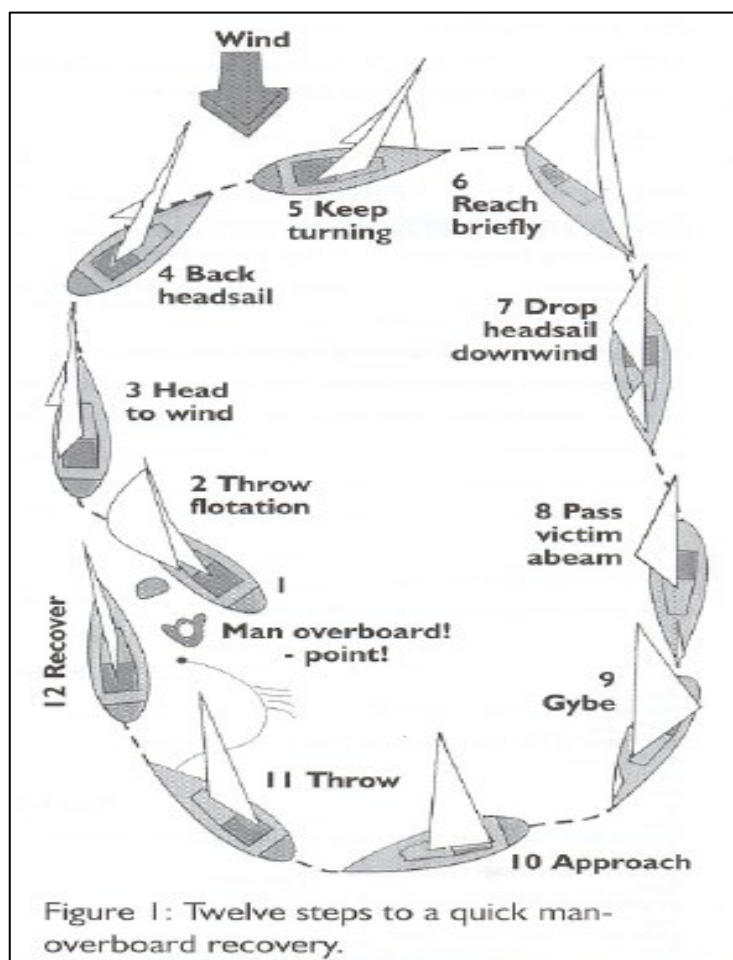
The hallmark of this method is the immediate reduction of boat speed by turning to windward and then manoeuvring slowly, remaining near the casualty. In most cases, this is better than reaching off, then gybing or tacking and returning on a reciprocal course.

#### QUICK-STOP PROCEDURE

1.     **Shout "man overboard"** and detail a crew member to spot and point to the casualty's position in the water. The spotter should not take his eyes off the casualty (see Figure 1 below).
2.     **Provide immediate flotation.** Throw buoyant objects such as cockpit cushions, life rings and so on. These objects may not only come to the aid of the casualty, but will "litter the water" where he went overboard and help your spotter to keep him in view. Deployment of the pole and flag (danbuoy) requires too much time. The pole is saved to "put on top" of the casualty in case the initial manoeuvre is unsuccessful.
3.     **Bring boat head-to-wind** and beyond.
4.     **Allow headsail to back** and further slow the boat.
5.     **Keep turning with headsail backed** until wind is abaft the beam.
6.     **Head on beam-to-broad reach course** for two or three lengths then go nearly dead downwind.
7.     **Drop the headsail** while keeping the mainsail centred (or nearly so). The jib sheets are not slacked, even during the dousing manoeuvre, to keep them inside the lifelines.
8.     **Hold the downward course** until casualty is abaft the beam.
9.     **Gybe.**
10.    **Approach the casualty** on a course of approximately 45 degrees to 60 degrees off the wind.
11.    **Establish contact** with the casualty with heaving line or other device. The US Naval Academy uses a "throwing sock" containing 75 feet of light floating line and a bag that can

be thrown into the wind because the line is kept inside the bag and trails out as it sails to the casualty.

12. **Effect recovery** over the windward side.



### Quickstop Under Spinnaker

The same procedure is used to accommodate a spinnaker. Follow the preceding instructions. As the boat comes head-to-wind and the pole is eased to the head stay, the spinnaker halyard is lowered and the sail is gathered on the fore deck. The turn is continued through the tack and the approach phase commences.

### Quickstop in Yawls & Ketches

Experiment with your mizzen sail. During sea trials, it was found best to drop the mizzen as soon as possible during the early phases of Quick-Stop.

### Quickstop Using Engine

### Check for trailing lines!

Use of the engine is not essential, although it's advisable to have it running in neutral, during Quick-Stop in case it is needed in the final approach.

## SHORTHANDED CREWS

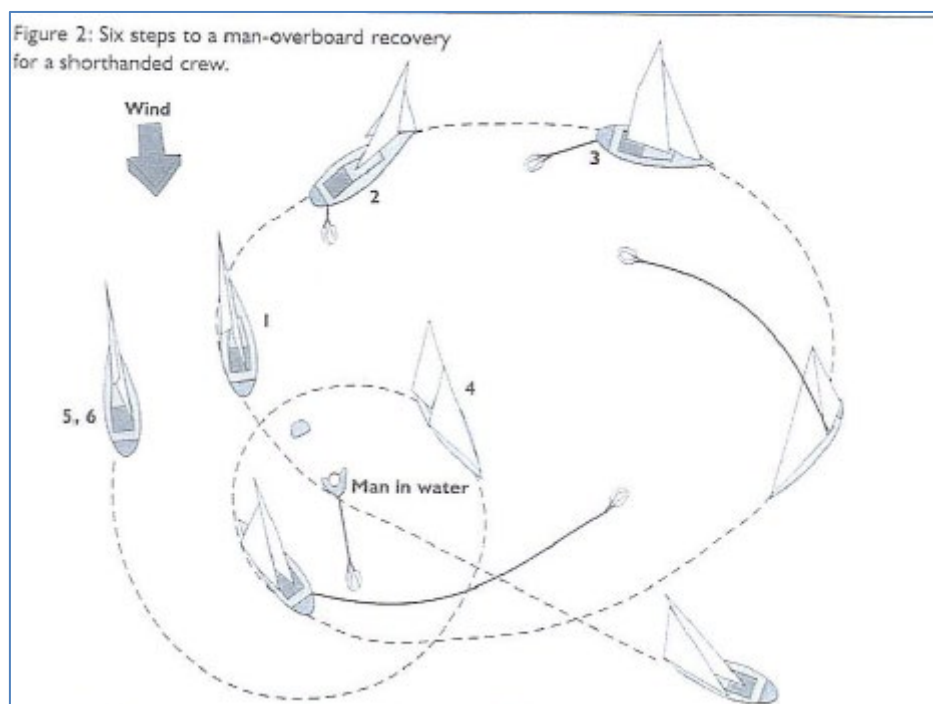
When there are only two people sailing together and a man-overboard incident occurs, the remaining crew member may have difficulty in undertaking the recovery alone. If the victim has sustained injuries, then recovery onboard may be almost impossible. The Quick-Stop method may

## Section 8

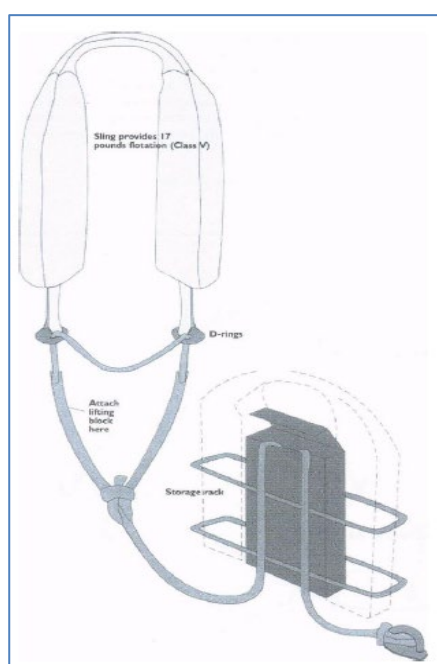
be used by a singlehander, with only one alteration to the procedure: the addition of the "Lifesling", a floating horsecollar device that doubles as a hoisting sling. The Lifesling is attached to the boat by a length of floating line three or four times the boat's length.

When a crew member falls overboard the recovery should proceed as follows:

1. A cushion or other flotation is thrown into the water while the boat is brought IMMEDIATELY head-to-wind, slowed and stopped.



2. The Lifesling is deployed by opening the bag on the stern pulpit and dropping the sling into the water. It will trail astern and deploy the line.



3. Once deployed, the boat is sailed in a wide circle around the casualty with the line and sling trailing. The jib is allowed to back from head-to-wind, increasing the rate of turn.

4. Contact is established with the casualty by the line being drawn inward by the boat's circling motion. The casualty places the sling over his head and under his arms.

5. Upon contact, the boat is put head-to-wind again, the headsail is dropped to the deck and the main is doused.

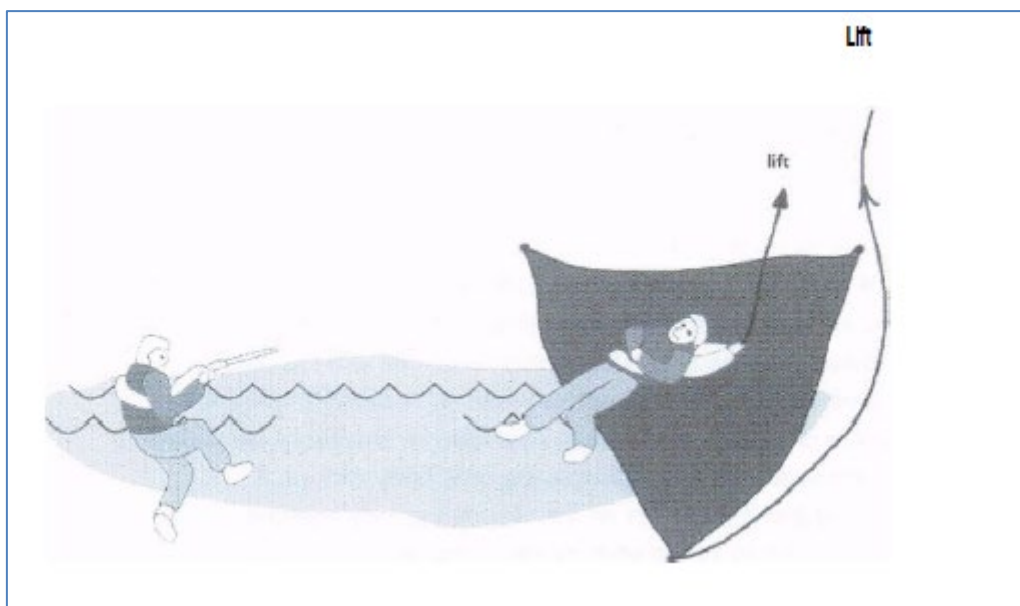
6. As the boat drifts slowly astern, the crew begins pulling the sling and the casualty to the boat. If necessary, a cockpit winch can be used to assist in this phase, which should continue until the victim is alongside and pulled up tightly until he is suspended in the sling (so that he will not drop out). A horizontal lift is preferable when there's a choice.

## PARBUCKLE DEVICE

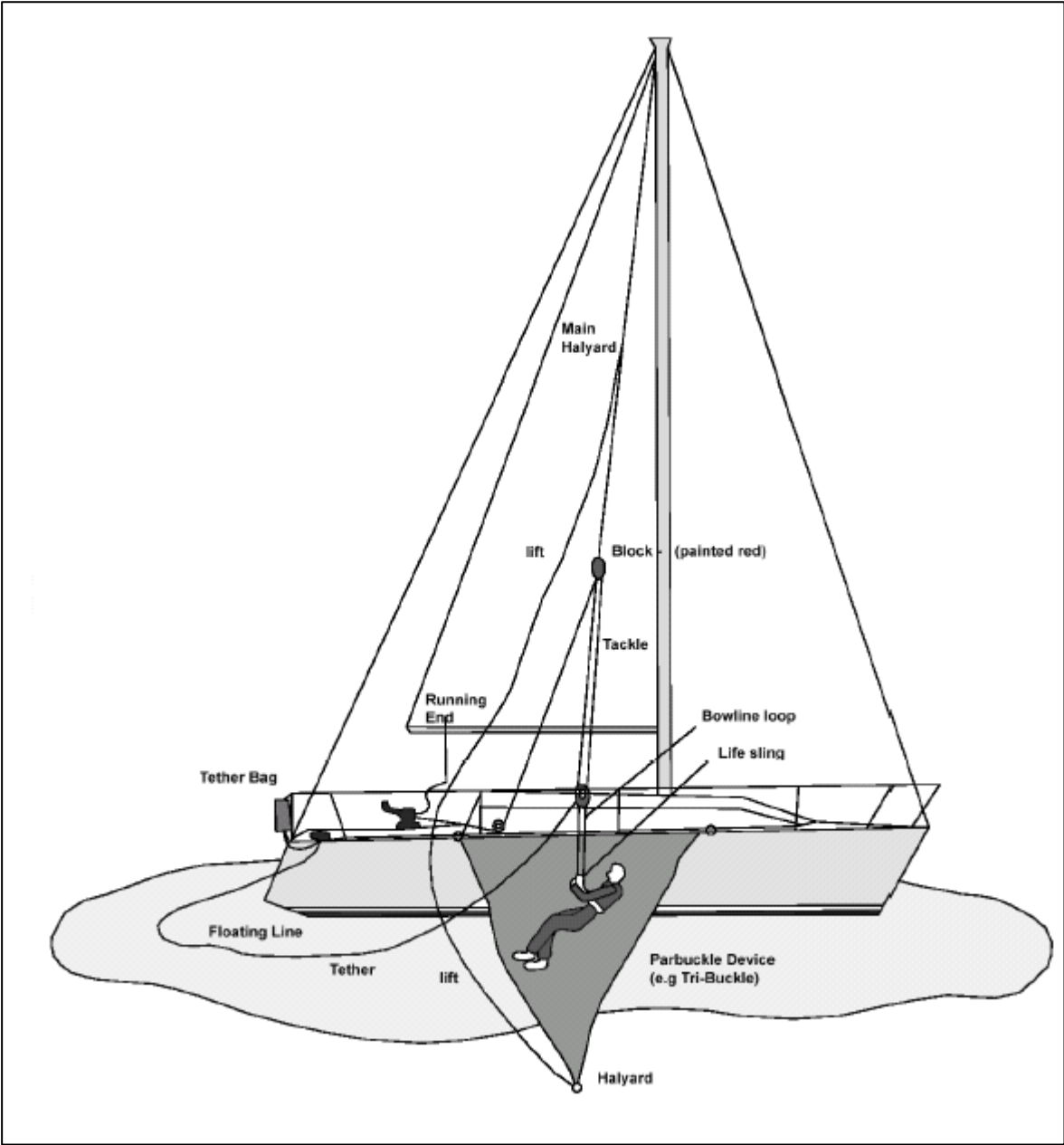
This is an alternative to the hoisting rig. A patent version is known as the Tribuckle. Another version is rectangular, like a climbing net. The net, or triangle of strong porous material, is clipped to the toe rail, the triangle top or net extremity clipped to a halyard extension. The casualty is dragged or otherwise positioned into the triangle or net then rolled onto the deck by hoisting the halyard. Hypothermic aftershock may be minimised by this method which keeps the casualty essentially horizontal.

## THE HOISTING RIG

**Note:** Since the hoisting rig was developed, more evidence has emphasised the value in keeping a casualty horizontal particularly after long or hypothermic immersion. A parbuckle or horizontal lift is highly desirable (see below).



1. With the floating tether line, haul the casualty alongside, preferably on the windward side, from amidships to the quarter, wherever there are available cleats and winches.
2. Pull up on the tether line (with winch assistance, if necessary) to get the casualty's head and shoulders out of the water and cleat it. The casualty is now safe.
3. Attach a three- or four-part tackle to the main halyard, haul it up to a pre-determined point, about 10 feet above the deck or high enough so that the casualty can be hoisted up and over the lifelines. Cleat the halyard.
4. Attach the lower end of the tackle to the (previously sized) loop in the tether line that passes through the D-rings of the sling.
5. Reeve the running end of the tackle through a sheet block or snatch block on deck and put it on a cockpit winch. Hoist the casualty aboard by winching on the running end of the tackle.



## APPENDIX C            HYPOTHERMIA

### For information only

#### WHAT IS IT?

Hypothermia is a condition in which exposure to cold air and/or water lowers body core temperature. Death can result from too low a brain and heart temperature.

#### WHY BE CONCERNED?

Hypothermia, even mild cases, decreases crew efficiency and increases risk of costly accidents. Proper planning against hypothermia can avoid accidents.

#### PREVENTION

Wear warm clothing and a lifejacket/harness and have proper foul-weather kit for all crew. Dry suits are excellent. Insulate all areas of the body, especially the high heat-loss areas such as the head, neck, armpits, sides of chest and groin. Keep warm and dry, but avoid sweating; wear layered clothes.

Other preventative measures include:

- Rotate the deck watch frequently.
- Get plenty of rest, prevent fatigue.
- Eat and drink normally, *no alcohol*.
- Prevent dehydration; watch urine colour (drink more if the colour becomes more Intense/darker).
- Avoid seasickness.
- Take into account special medical problems of crew members.
- Regularly train crew in Man Overboard recovery.
- Have two or more crew trained in CPR (Cardio-pulmonary Resuscitation).

#### SURVIVAL IN COLD WATER (under 75°F, 25°C)

**If the boat is in trouble**, put on dry or survival suits if carried. Radio for help; give position, number of crew, injuries, boat description. Make visual distress signals. Stay below if possible. Remain aboard until sinking is inevitable.

**If going overboard**, launch life raft and EPIRB (Emergency Position Indicating Radio Beacon). Take grab bag, visual distress signals and waterproof hand-held VHF. Get into raft, stay out of water as water conducts heat out of the body 20 times faster than air. Remain near boat if practicable.

**If in the water**, crew should stay together near the boat. This makes everyone easier to find, helps morale. Enter life raft, keep dry suit or survival suit on if worn.

**If not wearing dry suit or survival suit**, make sure you wear a lifejacket, keep clothes and shoes on for some insulation and flotation. Keep hat on to protect head. Get all or as much of body out of water as soon as possible - into raft or swamped boat or onto flotsam. Avoid swimming or treading water, which increases heat loss. Minimise exposed body surface. A splashguard accessory on the

lifejacket greatly improves resistance to swallowing seawater and also accommodates involuntary "gasping" when plunged into cold water.

### **WARNINGS**

First aid for severe and critical hypothermia is to add heat to stabilise temperature only. Rapid re-warming, such as a hot shower or bath, may prove fatal; it will, at least, cause complications. Allow the body to re-warm itself slowly. Wrap casualty in a thermal / space blanket. Body core temperature lags behind skin temperature during re-warming. Keep the casualty protected for extended period after apparent full recovery or medical help arrives.

**Many hours are required for full return to normal temperature even though the casualty may say she has recovered.**

Always assume hypothermia has occurred in all man overboard situations in which the casualty has been exposed for more than 10-15 minutes. Casualties may also be suffering from near drowning, thus needing oxygen. Observe the casualty for any signs of vomiting.

In a helicopter rescue, protect the casualty - including the head - from rotor blast wind chill.

### **HYPOTHERMIA FIRST AID**

#### **ALL CASES**

- Keep casualty horizontal
- Move casualty to dry, shelter and warmth
- Allow to urinate from horizontal position
- Handle gently
- Remove wet clothes - cut off if necessary
- Apply mild heat (comfortable to your skin) to head, neck, chest and groin - use hot water bottles, warm moist towels
- Cover with blankets, thermal/space blanket or sleeping bag; insulate from cold — including head and neck
- Report to a doctor by radio

#### **MILD CASES**

- Primary task is to prevent further heat loss and allow body to re-warm itself
- Give warm, sweet drinks - no alcohol - no caffeine
- Apply mild heat source to stabilise temperature and/or re-heat to point of perspiring
- Keep casualty warm and horizontal for several hours

#### **MODERATE CASES**

- Primary task is to prevent further heat loss and allow body to re-warm itself
- Give warm, sweet drinks if the casualty is fully conscious and able to swallow without difficulty - no alcohol - no caffeine.
- Apply mild heat source to stabilise temperature and/or re-heat to point of perspiring. Keep the casualty warm and horizontal for several hours.
- **Have the casualty checked by a doctor**

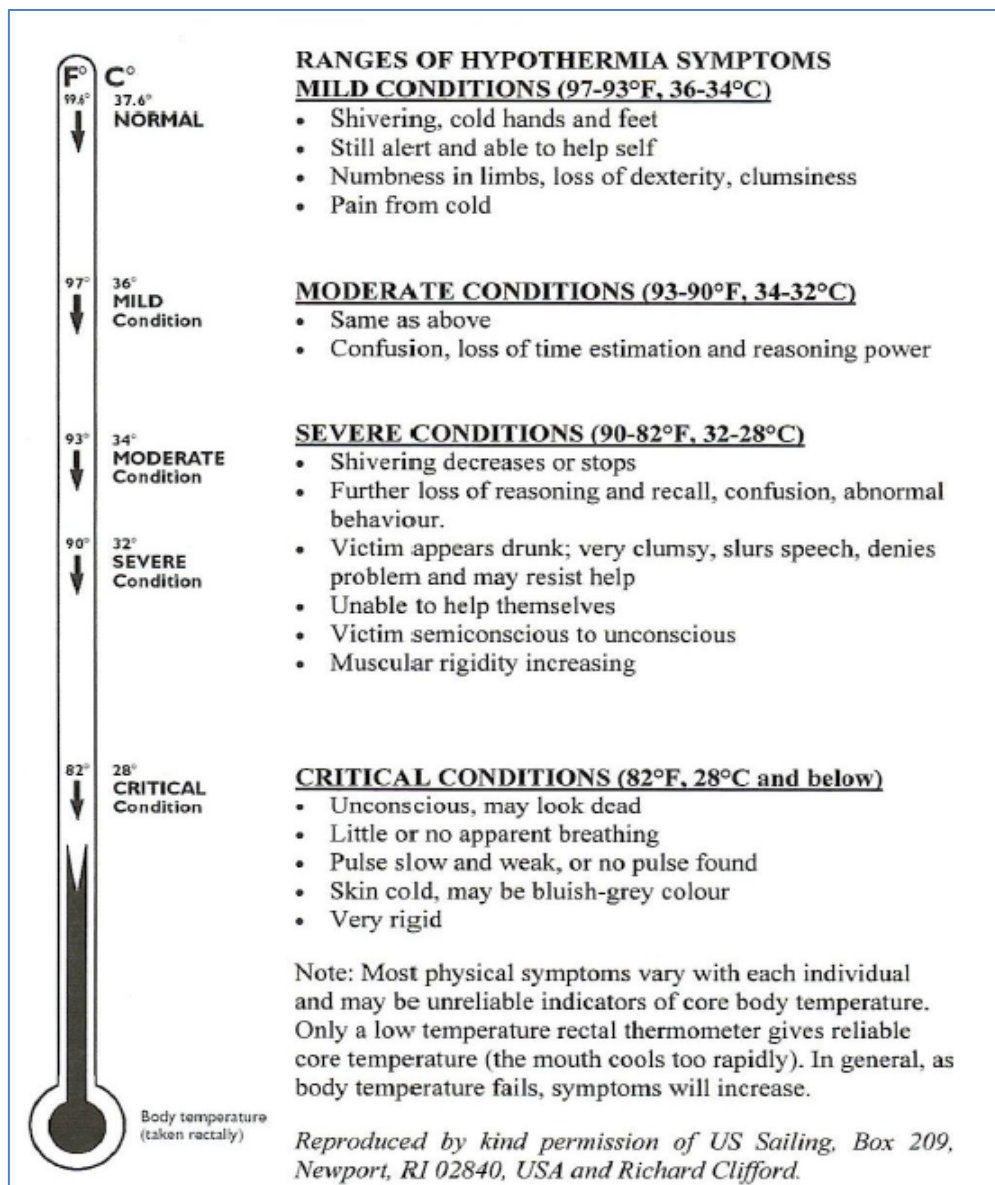
#### **SEVERE CASES**

- Obtain medical advice as soon as possible using your radio.
- Assist the casualty, but avoid jarring her as rough handling may cause cardiac arrest or ventricular fibrillation.
- No food or drink should be given.

- Observe for any vomiting and be prepared to clear airway.
- Ignore any pleas of "Leave me alone, I'm OK" - keep a continuous watch over the casualty.
- Lay casualty down in bunk, wedge in place, elevate feet, keep immobile; no exercise.
- Apply external mild heat to head, neck, chest and groin, keep the body temperature from dropping, but avoid too rapid a temperature rise.

### CRITICAL CASES

- Always assume the patient is revivable; live hypothermic casualties may often look dead so don't give up - pulse very difficult to feel, breathing may have stopped.
- Handle with extreme care
- Tilt the head back to open the airway; look, listen and feel for breathing and pulse for one to two full minutes
- If there is any breathing or pulse, no matter how faint or slow, do not give CPR, but keep a close watch on vital sign changes
- Stabilise temperature with available heat sources, such as naked chest to back warming by other crew member (leave legs alone)
- **If there is no breathing or pulse for one or two minutes, begin CPR immediately. Do not give up until the casualty is thoroughly warm - alive or dead.**
- Medical assistance is imperative - hospitalisation is necessary.





## APPENDIX D DROGUES & SEA ANCHORS

For information only

### TERMINOLOGY

The term "drogue" generally describes a device dragged from the stern of a vessel. The vessel with a drogue deployed continues to make steerage way through the water but at reduced speed. The term "sea anchor" generally identifies a device streamed from the bow of a vessel whose drift is slowed or halted by the action of the sea anchor.

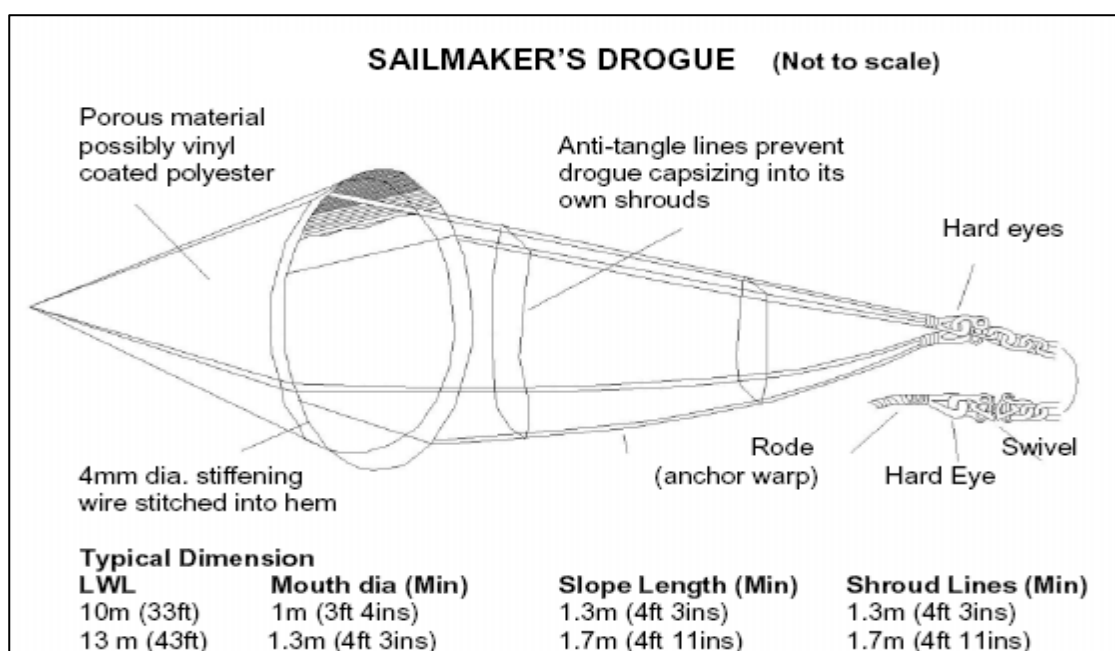
### LIFERAFTS

Every liferaft has a sea anchor supplied as part of its equipment. A sea anchor is critical to the safe use of a liferaft and significantly reduces the probability of liferaft capsizing. Its secondary function is to limit drift. A spare sea anchor may be carried in a grab bag. Sea anchors in liferafts should comply with ISO 17339: *Ships and marine technology - Sea anchors for survival craft and rescue boats*, and the opportunity should be taken at service intervals to ensure compliance with this standard.

### DROGUES ON YACHTS

Research and testing associated with drogue deployment has repeatedly shown that the use of a drogue can prevent typical yacht forms from being slewed sideways and rolled in heavy breaking seas.

Deployment of a drogue in heavy weather will likely result in green water breaking over the stern of the yacht, so all openings into the hull must be shut and secured.



### SEA ANCHORS ON YACHTS

The most common form of sea anchor for yachts is the "parachute" anchor whose design was originally based on that of aviation parachutes. Specialist manufacturers have accumulated a considerable volume of data which demonstrates the effectiveness of the device which can enable a vessel to take seas bows-on, reduce drift to the order of one knot, and resist capsize.

Bridle lines led to port and starboard main winches can provide emergency steering. It is recommended that any sea anchor or drogue be obtained from a specialist supplier / manufacturer.

### REFERENCES

The references below may prove useful when considering storm tactics and emergency steering solutions.

<http://para-anchor.com/reports/tech.report.136.pdf>

<http://www.seabrake.com/>

<http://seriesdrogue.com/vs/>

<http://www.christinedemerchant.com/anchor-drogues-documents.html>

<http://bermudarace.com/wp-content/uploads/2013/11/Steering-without-a-Rudder.pdf>

[http://www.worldcruising.com/content/S633301403351990000/Managing\\_Emergencies\\_Rudder\\_Failure\\_wcm25.pdf](http://www.worldcruising.com/content/S633301403351990000/Managing_Emergencies_Rudder_Failure_wcm25.pdf)

<http://www.bethandevans.com/pdf/emergencyrudder.pdf>

## APPENDIX E STABILITY

### INTRODUCTION

Stability can be defined as the tendency of a vessel to return to an upright condition after it is inclined by external forces such as wind, seas, weight shifts, and other factors.

Ultimate (Latent) Stability is the resistance to capsize and heel. One of the best predictors of ultimate stability is the "angle of vanishing stability" (AVS) or the angle to which a boat can heel and still right itself.

A dinghy will have a stability range of about 80 degrees; an inshore cruising boat should have a stability range of at least 100 degrees; and, an offshore cruising boat of at least 120 degrees. Boats which have a vanishing stability angle of less than 140 degrees may be left floating upside down once capsized. Boats with a higher angle will usually right themselves. Compliance with these AVS figures does not guarantee that a boat will resist capsize or self-right in all sea conditions.

The 1998 Sydney to Hobart Race Review Committee report noted:

"There is no evidence that any particular style or design of boat fared better or worse in the conditions. The age of yacht, age of design, construction method, construction material, high or low stability, heavy or light displacement, or rig type were not determining factors. Whether or not a yacht was hit by an extreme wave was a matter of chance."

### REQUIREMENTS

A cruising boat can demonstrate stability and compliance with 3.04.2 in one of two ways:

- if the boat has an IMS certificate (current or expired), that certificate could be used to demonstrate compliance. If the certificate is not current, more information may be required to verify that the information therein remains relevant (i.e., if the boat has had significant changes made to it, the certificate may no longer be valid); or
- if the boat has no such certificate, it may demonstrate compliance with other standards and information which the Event Organisers deem acceptable. This could be design and build information about the boat, showing a GZ curve and the angle of vanishing stability (AVS). If it is a production boat, satisfactory stability information and applicable standards may be obtainable from the manufacturer.

ISO 12217-2: [*Small craft – Stability and buoyancy assessment and categorization – Part 2: Sailing boats of hull length greater than or equal to 6m.*] may be used as a guide to the boat's general suitability for cruising categories as follows:

Boats participating in Ocean category events must have an IMS Stability Index of 115 or greater; or comply with ISO 12217-2 Category A, except that the STIX number must be a minimum of 35.

Boats participating in Long Coastal category events must have an IMS stability index of 110 or greater; or comply with ISO 12217-2 Category A.

## Section 8

Boats participating in Short Coastal category events must have an IMS stability index of 103 or greater; or comply with ISO 12217-2 Category C.

**Note: Compliance with ISO 12217-2, or any other standard, does not guarantee total safety or total freedom of risk from capsize or sinking.**

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