Safety Equipment Requirements

Note: Organizing Authorities may add or delete items based on the conditions of their specific races.

Effective Date: March 1, 2023, version 2023.0 valid through December 31, 2024

1	**Overall**
1.0.1 Definition	**Ocean: Long distance races, well offshore, where rescue may be delayed**
1.1	The Safety Equipment Requirements establish uniform minimum equipment and training standards for a variety of boats racing in differing conditions. These regulations do not replace, but rather supplement, the requirements of applicable local or national authority for boating, the Racing Rules of Sailing, the rules of Class Associations and any applicable rating rules.
1.2 Responsibility	The safety of a boat and her crew is the sole and inescapable responsibility of the "person in charge", as per RRS 46, who shall ensure that the boat is seaworthy and manned by an experienced crew with sufficient ability and experience to face bad weather. S/he shall be satisfied as to the soundness of hull, spars, rigging, sails and all gear. S/he shall ensure that all safety equipment is at all times properly maintained and safely stowed and that the crew knows where it is kept and how it is to be used.
1.2.1 Responsibility, Investigations	Should there be an incident during a race the Organizing Authority or US Sailing may conduct an investigation to determine the facts of the incident and provide recommendations. By participating in a race conducted under the SER, the person in charge, each competitor and boat owner agrees to reasonably cooperate with the organizing authority and US Sailing in the development of an independent incident report.
1.3 Inspections	A boat may be inspected at any time by an equipment inspector or measurer appointed for the event. If she does not comply with these regulations, her entry may be rejected or she will be subject to a protest filed by the RC. A Violation of the Safety Equipment Requirements may result in a penalty other than disqualification.
1.4 Equipment and Knowledge	All equipment required shall function properly, be regularly checked, cleaned and serviced, and be of a type, size and capacity suitable for the intended use and size of the boat and the size of the crew. This equipment shall be readily accessible while underway and, when not in use, stored in such a way that deterioration is minimized.
1.5 Secure Storage	A boat's heavy items such as batteries, stoves, toolboxes, anchors, chain and internal ballast shall be secured.
1.6 Strength of Build	A boat shall be strongly built, watertight and, particularly with regard to hulls, decks and cabin trunks, capable of withstanding solid water and knockdowns. A boat shall be properly rigged and ballasted, be fully seaworthy and shall meet the standards set forth herein. A boat's shrouds and at least one forestay shall remain attached at all times.
1.7 Watertight Integrity	A boat's hull, including, deck, coach roof, windows, hatches and all other parts, shall form an integral watertight unit, and any openings in it shall be capable of being immediately secured to maintain this integrity.
1.8 Scantlings	Hull Construction Standards - Scantlings with plan review approval - (See Appendix)
2	**Hull and Structure**
2.1.1 Hull Openings	A boat's companionway(s) shall be capable of being blocked off to main deck level (sheerline). The method of blocking should be solid, watertight, and rigidly secured, if not permanent.
2.1.2 Hull Openings	A boat's hatch boards, whether or not in position in the hatchway, shall be secured in a way that prevents their being lost overboard.
2.1.3 Cockpit	A boat's entire cockpit shall be solid, watertight, strongly fastened and/or sealed. Weather-tight seat hatches are acceptable only if capable of being secured when closed.
2.1.4 Cockpit Drains	A boat's cockpit drains shall be capable of draining six inches of water in 5 minutes. One square inch (645mm2) of effective drain per eight square feet (0.743m2) of cockpit sole will meet this requirement.

2.1.5.1 Cockpit Volume	A boat's maximum cockpit volume for cockpits not open to the sea, including any compartments capable of flooding, to lowest points of coaming over which water can adequately escape, shall not exceed 0.06 x LOA x Max. Beam x Freeboard aft. The cockpit sole shall be at least 0.02 x LOA above LWL.
2.1.6 Through Hulls	A boat's through-hull openings below the waterline shall be equipped with sea cocks or valves, except for integral deck scuppers, speed transducers, depth finder transducers and the like; however a means of closing such openings shall be provided.
2.2.1 Stability	The boat must have a stability index greater than or equal to 115, or meet the requirements of ISO 12217-2A
2.2.3 Stability	A boat with moveable or variable ballast (water or canting keel) shall comply with the requirements of Appendix K.
2.3.1 Head	A boat shall be equipped with a head or a fitted bucket.
2.3.2 Bunks	A boat shall have bunks sufficient to accommodate the off watch crew.
2.3.3 Stove	A boat shall have a stove with a fuel shutoff.
2.3.3.1 Fire Blanket	A boat shall have a fire blanket adjacent to each stove.
2.3.4 Water Storage	boats shall carry water as required by the Notice of Race such that a single failure of a tank or delivery system will not allow the loss of more than half the water.
2.3.5 Hand Holds	A boat shall have adequate hand holds below decks.
2.4.1 Lifelines	A boat's deck including the headstay shall be surrounded by a suitably strong enclosure, typically consisting of lifelines and pulpits, meeting the requirements in 2.4.2 to 2.4.8.
2.4.2 Lifeline Stanchions	A boat's stanchion and pulpit bases shall be within the working deck.
2.4.3 Bow Pulpit	Bow pulpits may be open, but the opening between the vertical portion of stanchion pulpit and any part of the boat shall not exceed 14.2" (360mm).
2.4.4 Lifelines	Lifelines shall be uncoated stainless steel wire. A multipart-lashing segment not to exceed 4" per end termination for the purpose of attaching lifelines to pulpits is allowed. Lifelines shall be taut.
2.4.4.1 Lifeline Deflection	Lifeline deflection shall not exceed the following: a) When a deflecting force of 9 lbs (40N) is applied to a lifeline midway between supports of an upper or single lifeline, the lifeline shall not deflect more than 2” (50mm). This measurement shall be taken at the widest span between supports that are aft of the mast. b) When a deflecting force of 9 lbs (40N) is applied midway between supports of an intermediate lifeline of all spans that are aft of the mast, deflection shall not exceed 5” (120mm) from a straight line between the stanchions.
2.4.5 Lifeline Stanchion Spacing	The maximum spacing between lifeline supports (e.g. stanchions and pulpits) shall be 87" (2.2m).
2.4.6 Lifelines	Boats under 30' (9.14m) shall have at least one lifeline with 18" (457mm) minimum height above deck, and a maximum vertical gap of 18" (457mm). Taller heights will require a second lifeline. The minimum diameter shall be 1/8" (3mm).
2.4.7 Lifelines	Boats 30' and over (9.14m) shall have at least two lifelines with 24" (762mm) minimum height above deck, and a maximum vertical gap of 15" (381mm). The minimum diameter will be 5/32" (4mm) for boats to 43' (13.1m) and 3/16" (5mm) for boats over 43' (13.1m).
2.4.8 Toe Rails	Toe rails shall be fitted around the foredeck from the base of the mast with a minimum height of 3/4" (18mm) for boats under 30' (9.14m) and 1" (25mm) for boats over 30'. An additional installed lifeline that is 1-2" (25-51mm) above the deck will satisfy this requirement for boats without toerails.

2.4.9 Lifelines on Trimarans	Trimarans are exempted from the lifeline requirement where there is a trampoline outboard of the main hull, except that a lifeline must run from the top of a bow pulpit to the forward crossbeam at the outboard edge of the bow net or foredeck. Catamarans with trampoline nets between the hulls are exempted from the lifeline requirement. All catamarans are exempted from the need for pulpits and lifelines across the bow.
2.5.1 Dewatering pumps	A boat shall have a permanently installed manual bilge pump of at least a 10 GPM (37.8 liter per minute) capacity and which is operable from on deck with the cabin closed with the discharge not dependent on an open hatch. Unless permanently attached to the pump, the bilge pump handle shall be securely attached to the boat in its vicinity via a lanyard or catch. A bilge pump discharge shall not be connected to a cockpit drain. The bilge pump shall not discharge into a cockpit unless that cockpit opens aft to the sea.
2.5.2 Dewatering pumps	A boat shall have a second permanently installed manual bilge pump of at least 10 GPM (37.8 liter per minute) capacity, operable from below deck, meeting the same criteria as above.
2.5.4 Emergency dewatering pump	A boat shall have either fixed or portable electric pump(s) to remove ingress water from any compartment. This pump shall have a minimum rated capacity of 3,000 gal/hr, be operated by battery, main engine power or a separate engine. If portable electric-powered, power cables shall have connectors suitable for connection to the boats electrical system and have sufficient hose to discharge directly overboard or into the cockpit. A combination of permanently installed and portable pumps may be combined to meet the above requirement.
2.6 Mast and Rigging	A boat shall have the heel of a keel-stepped mast securely fastened to the mast step or adjoining structure.
2.7.1 Mechanical Propulsion	A boat shall have a mechanical propulsion system that is quickly available and capable of driving the boat at a minimum speed in knots equivalent to the square root of LWL in feet (1.81 times the square root of the waterline in meters) for 10 hours.
2.7.3 Mechanical Propulsion Installation	The boat's engine and generator installation (if so equipped) must conform to ABYC, ISO, or U.S. Coast Guard standards.
3	**Safety Equipment**
3.1.1 Lifejackets	Each crewmember shall have a life jacket that provides at least 33.7lbs (150N) of buoyancy, intended to be worn over the shoulders (no belt pack), meeting either U.S. Coast Guard or ISO specifications. Alternatively, each crewmember shall have an inherently buoyant off-shore life jacket that provides at least 22lbs (100N) of buoyancy meeting either U.S. Coast Guard or ISO specifications.
3.1.2 Lifejacket Features	Life jackets shall be equipped with crotch or leg straps, a whistle, a waterproof light, be fitted with marine-grade retro-reflective material, and be clearly marked with the boat's or wearer's name, and be compatible with the wearer's safety harness. If the life jacket is inflatable, it shall be regularly checked for air retention.
3.1.4 Harness	Each crewmember shall have a safety harness and compatible safety tether not more than 6'7" (2m) long with a minimum tensile strength of 4500 lb. (20kN). The tether shall have a snap hook at its far end and a means to quickly disconnect the tether at the chest end.
3.2.1 Jacklines	A boat shall carry jacklines with a breaking strength of at least 4500 lb. (20kN) which allow the crew to reach all points on deck, connected to similarly strong attachment points, in place while racing.
3.2.2 Clipping Points	A boat shall have adequate clipping points or jacklines that allow the crew to clip on before coming on deck and unclip after going below.
3.2.3 Deck Safety	Multihulls must have jacklines or attachment points that are accessible when the boat is inverted.
3.3.1 Navigation Lights	A boat racing between sunset and sunrise shall carry navigation lights that meet U. S. Coast Guard or applicable government requirements mounted so that they will not be obscured by the sails nor be located below deck level.

3.3.2 Navigation Lights	A boat shall have a second set of navigation lights that comply with US Coast Guard or applicable government requirements and which can be connected to a different power source than the primary lights.
3.4 Fire Extinguishers	A boat shall carry fire extinguisher(s) that meets U.S. Coast Guard or applicable government requirements, when applicable.
3.5 Sound Producing Equipment	A boat shall carry sound-making devices that meets U.S. Coast Guard or applicable government requirements, when applicable.
~~3.6.1 Smoke Flares~~	~~A boat shall carry two SOLAS orange smoke flares not older than the expiration date.~~
3.6.3 Hand Flares	A boat shall carry four SOLAS red hand flares not older than the expiration date.
3.6.5 Raft Flares	Boat flares stored inside of life rafts may not be used to satisfy the flare requirement.
3.7.1 Crew Overboard Sling	A boat shall carry a Lifesling or equivalent man overboard rescue device equipped with a self igniting light stored on deck and ready for immediate use.
3.7.2 Crew Overboard Equipment	A boat shall have a man overboard pole and flag, with a lifebuoy, a self-igniting light, a whistle, and a drogue attached. A self-inflating Man Overboard Module, Dan Buoy or similar device will satisfy this requirement. Self-inflating apparatus shall be tested and serviced in accordance with the manufacturer's specifications. These items shall be stored on deck, ready for immediate use, and affixed in a manner that allows for a "quick release".
3.7.3 Throw Line	A boat shall have a throwing sock-type heaving line of 50' (15m) or greater of floating polypropylene line readily accessible to the cockpit.
3.7.4 Throwable Device	A boat shall carry a Coast Guard or applicable government approved "throwable device". If the device carried under 3.7.1 or 3.7.2 satisfies this requirement, then no additional device is needed.
3.8.1 Fixed Mount VHF	A boat shall have a permanently installed 25-watt VHF radio connected to a masthead antenna by a co-axial feeder cable with no more than a 40% power loss. Such radio shall have DSC capability, have an antenna of at least 15" (381mm) in length, be connected to or have an internal GPS, and have the assigned MMSI number (unique to the boat) programed into the VHF.
3.8.2 Handheld VHF	A boat shall have a watertight handheld VHF radio or a handheld VHF radio with waterproof cover. This radio shall have DSC/GPS capability with an MMSI number properly registered to the vessel.
3.8.4 VHF Emergency Antenna	A boat shall have an emergency VHF antenna with sufficient coax to reach the deck, and have a minimum antenna length of 15" (381mm).
3.9 AIS	All boats shall have an AIS Transponder, sharing a masthead VHF antenna via a low loss AIS antenna splitter. An acceptable alternative is a dedicated AIS antenna that is a minimum of 0.9 meters long, mounted with its base at least 3 meters above the water, and fed with coax that has a maximum 40% power loss. AIS requirement for Coastal is effective January 1, 2024.
3.13 Weather	A boat shall have a method of receiving weather information in addition to the fixed mount and hand held VHF radio.
3.14 GPS	A boat shall carry a GPS receiver.
3.15 Crew Overboard Button	A boat shall carry an electronic means to record the position of a man overboard within ten seconds. This may be the same instrument listed in 3.14.
3.16.1 EPIRB	A boat shall carry a 406MHz EPIRB that is properly registered to the boat. This device shall be equipped with an internal GPS.
3.17 Knot Meter	A boat shall have a knotmeter and/or distance-measuring instrument.
3.18 Depth Sounder	A boat shall have a permanently installed depth sounder that can measure to depths of at least 200 ft. (61m).

3.19.1 Compass	A boat shall have a permanently mounted magnetic compass independent of the boat's electrical system suitable for steering at sea.
3.19.2 Second Compass	A boat shall have a second magnetic compass suitable for steering at sea which may be handheld.
3.20 Charts	A boat shall have non-electronic charts that are appropriate for the race area.
3.21 Alternate Sail Numbers	A boat shall have the ability to display sail numbers and letters of the size carried on the mainsail by an alternative means when none of the numbered sails is set.
3.22 Plugs	A boat shall carry soft plugs of an appropriate material, tapered and of the appropriate size, attached or stowed adjacent to every through-hull opening.
3.23 Anchor	A boat shall carry one anchor, meeting the anchor manufacturer's recommendations based on the yacht's size, with a suitable combination of chain and line.
3.24.1 Searchlight	A boat shall carry a watertight, high-powered searchlight, suitable for searching for a person overboard at night or for collision avoidance.
3.24.2 Flashlights	A boat shall carry a watertight flashlight for each crewmember with spare batteries in addition to the above.
3.25 Medical Kits	A boat shall carry a first aid kit and first aid manual suitable for the likely conditions of the passage and the number of crew aboard.
3.26 Radar Reflectors	A boat shall carry an 11.5" (292mm) diameter or greater octahedral radar reflector or one of equivalent performance.
3.27.1 Buckets	A boat shall carry two sturdy buckets of at least two gallons (8 liters) capacity with lanyards attached.
3.28 Safety Diagram	A boat shall post a durable, waterproof diagram or chart locating the principal items of safety equipment and through hulls in the main accommodation area where it can be easily seen.
3.29.1 Emergency Tiller	A boat shall have an emergency tiller, capable of being fitted to the rudder stock.
3.30 Spare Parts	A boat shall carry tools and spare parts, including an effective means to quickly disconnect or sever the standing rigging from the hull.
3.31 Identification	All lifesaving equipment shall bear retro-reflective material and be marked with the yacht's or wearer's name. The exception would be for new equipment or rented equipment (e.g. life rafts) that would require the unpacking of sealed equipment in order to meet this requirement. The boat name shall be added during the first servicing of any new equipment.
3.32 Cockpit Knife	A boat shall carry a strong, sharp knife, sheathed and securely restrained which is readily accessible from the deck and/or cockpit.
3.33.1 Mainsail Reefing	A boat shall have a mainsail reefing capable of reducing the luff length by at least 10%.
3.33.2 Trysail	A boat shall carry a trysail, with the boat's sail number displayed on both sides, which can be set independently of the main boom, has an area less than 17.5% of E x P, and which is capable of being attached to the mast. Storm sails manufactured after 01/01/2014 shall be constructed from a highly visible material. A mainsail with a reef of at least 50% of P is an acceptable substitute for a trysail.
3.33.3 Heavy Weather Jib	A boat shall carry a heavy-weather jib (or heavy-weather sail in a yacht with no forestay) of area not greater than 13.5% height of the foretriangle squared.
3.33.4 Storm Jib	In addition to the sail required in 3.33.3, a boat shall carry a storm jib not exceeding 5% of the yacht's I dimension squared, an equipped with an alternative means of attachment to the headstay in the event of a failure of the head foil. Storm sails manufactured after 01/01/2014 shall be constructed from a highly visible material.
3.35 Halyards	A boat shall not be rigged with any halyard that requires a person to go aloft in order to lower a sail.
3.36 Boom Support	A boat over 30' LOA (9.14m) shall have a means to prevent the boom from dropping if support from the mainsail or halyard fails.

3.37 Emergency Water	A boat shall carry 1 gallon (3.785 liters) per crewmember of emergency drinking water in sealed containers in addition to any other water carried aboard the boat and it shall be aboard after finishing.
3.39 Life Rafts	A boat shall carry adequate inflatable life raft(s) designed for saving life at sea with designed capacity for containing the entire crew. The raft shall be certified by the manufacturer or manufacturer-authorized inspection certificate as compliant with ISO 9650-1, or SOLAS, or ISAF (if made before 2016), or ORC (if made before January 1, 2004). Each raft shall be stored in such a way that it is capable of being launched within 15 seconds. Boats built after 01/06/2001 shall stow each life raft a deck-mounted rigid container in watertight or self-draining purpose-built rigid compartment(s) opening adjacent to the cockpit or the working deck. Boats built prior to 01/06/2001 may alternatively stow each life raft in a valise not weighing over 88 lbs. securely below deck and adjacent to the companionway. Life raft(s) shall hold current manufacturer-authorized certificate(s) of inspection.
3.40 Life Rafts	A boat shall have a grab bag with a lanyard and clip for each life raft. The grab bag shall have inherent flotation and be of a bright fluorescent color containing at least an EPIRB, and a watertight handheld VHF radio. The VHF radio and EPIRB need not be in addition to the prior requirements.
4	**Skills**
4.1.1 Emergency Steering	A boat's crew shall be aware of multiple methods of steering the boat with the rudder disabled, and shall have chosen and practiced one method of steering the boat with the rudder disabled and be prepared to demonstrate said method of steering both upwind and downwind.
4.2 Man Overboard Practice	Annually, two-thirds of the boat's racing crew shall practice man-overboard procedures appropriate for the boat's size and speed. The practice shall consist of marking and returning to a position on the water, and demonstrating a method of hoisting a crewmember back on deck, or other consistent means of reboarding the crewmember.
4.3.1 Safety at Sea Training	At least 30% of those aboard the boat, but not fewer than two members of the crew, unless racing single-handed, including the person in charge, shall have a valid Offshore or International Offshore Certificate from US Sailing, or the equivalent from another national authority.
4.4 Crew Training	As required in 1.2 above the person in charge shall ensure that all crew members know where all emergency equipment is located and how to operate the equipment. In addition, the person in charge and crew should discuss how to handle various emergency situations including Crew Overboard, Grounding, Loss of steering, Flooding, Fire, Dismasting, and Abandon Ship.
4.6 Crew Training	Lifejackets as described in 3.1.1 – 3.1.3 should be worn by all crew on deck in any conditions where recovery may be difficult. It is recommended that lifejackets be worn by all crew on deck unless the person in charge has indicated that they may be set aside.