

IMOCA
OCEAN RACING
WORLD CHAMPIONSHIP

**INTERNATIONAL MONOHULL OPEN CLASS ASSOCIATION
I.M.O.C.A.**

OPEN 60' ISAF INTERNATIONAL CLASS

Class Rules - 2008

Version 1

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**INTERNATIONAL MONOHULL OPEN CLASS ASSOCIATION
IMOCA**

OPEN 60' CLASS RULES 2008

PREAMBLE:

The Monohull Open 60 feet Class was registered as “Recognised Class” by the INTERNATIONAL SAILING FEDERATION (ISAF) in 1998.

In 2001, the Open 60' Class has been registered as “International Class” by the INTERNATIONAL SAILING FEDERATION (ISAF).

The aim of these rules is to establish the restrictions, the exclusions and obligations which shall be respected by Open 60 foot monohulls when taking part in ocean racing events. This is to ensure that with respect to safety, standards are to an acceptable level and at least identical for all competitors.

However, these rules are always in evolution, and must be developed in such a way to encourage technological innovation in terms of speed, as well as the research and application of new technics in terms of safety at sea.

SECTION A - ESSENTIAL RULES

A.1: TYPE OF CLASS RULES

The Class Rules of Open 60' Monohull are of open type, which means that anything not specifically prohibited, limited or imposed is permitted.

A.2: ABBREVIATIONS

ISAF	International Sailing Federation
MNA	ISAF Member National Authority
IMOCA	International Monohull Open Class Association
ERS	Equipment Rules of Sailing
RRS	Racing Rules of Sailing
OSR	ISAF Offshore Special Regulations
COLREG	International Regulations for the Prevention of Collision at Sea
ISO	International Organization for Standardisation

A.3: AUTHORITY

A.3.1: THE INTERNATIONAL AUTHORITY

The international authority of the Class is **ISAF**

A.3.2: IMOCA

IMOCA has been granted in agreement with ISAF the responsibility for administering the Monohull Open 60' Class, and for working and publishing their Class Rules in collaboration with ISAF.

All Class procedures are defined in the Class Regulations.

A.4: IDENTIFICATION

The Class logo shall be placed on both sides of the mainsail, between the headboard and the sail number.

IMOCA shall allocate sail numbers.

The size of nationality letters and sail numbers – **Helvetica font in full letters** - shall be not less than:

Height:	500 mm
Space between letters:	100 mm.

A.5: ISAF ADVERTISING CODE

In accordance with paragraph 20.6.2 (ii) of the ISAF Advertising Code, the Class is registered category C for advertising.

A 2.30m diameter circle on each side of the bottom third of the mainsail shall be free of advertising. In case of special agreement of the Executive Council, this diameter can be increased to 3.00m, or a maximum surface of 7m², in which case dimensions will be then defined exactly.

A.6: LANGUAGE

A.6.1: OFFICIAL LANGUAGES:

English and French are the two official languages of the Class. In the case of any discrepancies due to translation, the Executive Committee will decide.

A.6.2: OBLIGATION AND PERMISSION:

The words “shall” and “must” are mandatory, the words “may” and “should” are permissive.

A.7: INTERPRETATION

Any request for interpretation of the Class Rules shall be made in writing and shall be dealt with as defined in the ISAF Rules and the Class Regulations Section C - 5.

In the case of any doubt about the conformity of a new system or about the accordance of any new process, a request or question can be lodged to the IMOCA Chief Measurer.

If he thinks necessary for safety reasons, he can refer to the ISAF Technical Committee, which is also required to keep the case strictly confidential. The answer to the request shall be made by post, as soon as possible.

Measurement or application procedures under these Class Rules may be clarified through amendments issued by the Technical Committee.

A.8: SPARE NUMBER

A.9: SPARE NUMBER

A.10: SPARE NUMBER

A.11: DATE OF APPLICATION / DURATION OF VALIDITY OF TEXT

■ These Class Rules are applicable from April 11th, 2008.

For some boats, special provisions are stipulated in an appendix to these rules.

■ Except in a matter of proven extreme urgency, and in such circumstance in consultation with the ISAF, no modification to the rules regarding essential structures and appendages (mast, keel, etc...) shall be made before the Annual General Meeting which closes the financial year 2008 (AGM April 2009).

SECTION B – HULL AND DECK

B.1: DEFINITION

Under this rule, a monohull is defined as a boat whose:

- Flotation plane at rest or under sail remains continuous in its transversal section.
- Hull depth in any transversal section shall not decrease towards the centre-line.
- The boat is symmetric.

B.2: HULL NUMBER – MODIFICATION

B.2.1: HULL NUMBER – ISAF REGISTRATION:

The hull number allotted by the Chief Measurer shall be moulded or engraved into the transom of the boat.

B.2.2: MODIFICATION:

Any modification to the boat made after the Class Certificate issue date, shall be declared in writing to the Chief Class Measurer, who will decide if new measurements are necessary or not.

Any modification made without following this procedure will invalidate the Certificate.

B.3: LENGTH OVERALL

LOA shall be greater than 59 feet (17,983m) but not exceeding 60 feet (18,288m).

The measurement of overall length includes the whole hull but not spars and fittings.

A spar or appendage (like a rudder for example) cannot have a planned element, out of the length over all, to artificially extend the flotation length, whose total actual area would be greater than 0,12m².

The combined fore and aft spars length shall not exceed the overall length of the hull by more than 6 feet (1.829m).

A boom, with or without sail, protruding aft, is considered to be a spar which shall be measured in the axis of the boat and in the most disadvantageous position.

A bowsprit protruding beyond the bow is considered to be a spar which shall be measured horizontally from the stem of the boat to the vertical point of its overall extremity when it is extended to its maximum point beyond the bow, in the axis of the boat.

B.4: DRAUGHT

B.4.1: DRAUGHT FOR OPEN 60':

Draught is limited to 4,50m in light equipment measurement trim.

B.5: STRUCTURE OF BOAT

B.5.1: STRUCTURAL FEATURE

The boat shall be constructed in such a way as to be able to withstand, without irreparable damage, the forces of nature which it is intended to have to face in the course of races classified by the **ISAF OSR** as category 0.

B.5.2: REPAIRS / MODIFICATIONS
Any significant repairs or modification of the boat shall be declared to the Chief Class Measurer.

B.5.3: COCKPITS
Attention is drawn to ISO 11812

a) General requirements:

Cockpits shall be:

- structurally strong
- self-draining quickly by gravity at all angles of heel
- permanently incorporated as an integral part of the hull
- essentially watertight (all openings to the hull must be capable of being strongly and rigidly closed).

A bow, lateral, central or stem well shall be considered as a cockpit.

b) Volume and bottom level of cockpits:

Designers are invited to consult articles 3.09.7 and 3.09.4 of the **ISAF OSR**, which shall apply.

c) Draining:

Cockpits shall be self-draining by gravity by using appropriated openings or adequate drains. At 0° of heel, and 0° of longitudinal trim, the cockpit draining time, when filled to the working deck, shall not be greater than 3 minutes. Draining time may be checked in real conditions or calculated by referring to ISO 11812.

Bilge pump outlet pipes or other pipes shall not be connected to cockpit(s) drains.

B.5.4: WATERTIGHT BULKHEADS

Any required watertight bulkhead shall be strongly built to take a full head of water pressure without allowing any leakage into the adjacent compartment.

a) Watertight bulkheads:

They shall:

- divide the boat in several volumes from stem to stern
- be transverse, at least 5 in number and create 6 watertight compartments with an access for a person
- be not more than 5 metres apart
- be watertight. The passage of various cables, pipes or ducts shall not compromise the watertight characteristic of the compartments.

The first forward watertight bulkhead shall be located within 15% of overall boat length and abaft the forward end of the waterline.

To be transverse means that a bulkhead intersects the hull in totality (from port to starboard planking) and deck.

The transom is not a bulkhead.

b) Crash box:

A watertight box, filled with closed cell foam, capable of being destroyed in a frontal collision without endangering the integrity of the boat shall be fitted at the bow.

B.5.5: WATERTIGHT ACCESS HATCHES

The boat shall be accessible from stem to stern by way of watertight hatches. These hatches shall permit complete access to the boat, from stem to stern and inversely, with any of the compartments flooded and without any of the other compartments becoming so.

These hatches shall have their closure mechanism permanently fitted.

B.5.6: ESCAPE HATCHES

The boat shall have two exits. One exit shall be located forward of the foremost mast (except where structural features prevent its installation). The second one shall be located astern,

allowing access to, and exit from, the boat, whatever its position in the water.

This hatch shall be situated above the water line, whatever the position of the boat, and be provided with a closing system with interior and exterior controls operating the same locking mechanism.

Appropriate devices shall be designed to ease exit from the boat on the deck or the hull in the event of a capsize, and equally return to the inside.

As substitute of the forward hatch, it is strongly urged to install a hatch on the cockpit floor whenever possible. This hatch shall be positioned in such a way that when the boat is capsized, it shall remain open without allowing any leakage into the hull when allowing a crew member to get through it.

B.5.7: COMPANIONWAY HATCH

A companionway hatch shall be fitted with a strong securing arrangement which shall be operable by one person from the exterior and the interior including when the yacht is inverted.

B.5.8: HATCHES

No hatch forward of the maximum beam station shall open in such a way that the lid or cover moves into the open position towards the inside of the hull (excepting ports having an area of less than 0.071m²).

Hatches shall be arranged as to be above the water when the hull is heeled 90 degrees. They shall be permanently attached, and capable of being firmly shut immediately and remaining firmly shut in a 180 degree capsize.

B.6: LAYOUT / EQUIPMENTS

Working deck definition: a working deck is all safely area, where any crew member is obliged to stand, or to cross frequently, or to go frequently in the aim of realising the usual manoeuvres necessary for sailing the boat. It may be several working decks, providing that the passage between two does not exceed 500 mm.

B.6.1: PULPITS, STANCHIONS AND LIFELINES

a) General requirements:

Attention is drawn to ISO 15085 norms.

Pulpits and stanchions shall be permanently installed. When there are sockets or studs, these shall be through-bolted, bonded or welded. The pulpit(s) and/or stanchions fitted to these shall be mechanically retained without the help of the lifelines. Without sockets or studs, pulpit(s) and/or stanchions shall be through- bolted, bonded or welded.

Stanchion bases shall not be situated outboard of a working deck. For the purpose of this rule a stanchion or pulpit base shall be taken to include a sleeve or socket into which a stanchion or pulpit tube is fitted but shall exclude a base plate which carries fixings into the deck or hull.

Pulpits, stanchions and lifelines shall not be made of Carbon fibre.

b) Pulpits:

Boats shall have a pulpit (bow) and a pushpit (stern).

The bow pulpit shall be forward the head stay. Pulpits may be fixed in part to the bowsprit.

The pulpit may not pass forward of the headstay, providing the gap between the forward upper rail and the head stay is not more than 300 mm.

In any case, a way of joining the two forward upper rails and crossing ahead the headstay shall be capable of being installed.

Lifelines arranged in accordance to vertical opening may be considered as an adequate substitute of the stern pushpit.

Upper rails of pulpits shall be higher above the working deck than the upper lifelines (minimum 600mm) and essentially the same height above the waterline as is the upper lifeline at the forward part of the cockpit.

No vertical opening shall exceed 380 mm in height.

Upper rails in bow pulpits may be openable but shall be securely shut whilst racing.

c) Stanchions:

Stanchions shall be straight and vertical.

However, within the first 50 mm from the deck, stanchions may be displaced horizontally (Cranked) from the point at which they emerge from the deck or stanchion base by not more than 10 mm, and they may be angled to not more than 10 degrees from the vertical from any point above 50 mm from the deck.

d) Guardwires:

Guardwires shall be "taut". As a guide, when a deflecting force of 50 N (5.1 kgf) is applied to a lifeline midway between supports, the lifeline should not deflect more than 50 mm.

Guardwires shall be supported on stanchions, and shall be continuous around a working deck. Lifelines may be substituted by horizontal rails in pulpits. Lifelines shall be permanently supported at intervals of not more than 2.20m and shall not pass outboard of supporting stanchions.

Provided the complete lifeline enclosure is supported by stanchions and pulpit bases effectively within the working deck, lifeline terminals and support struts may be fixed to the hull aft of the working deck.

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 150 mm.

Number and height:

There shall be at least two guardwires:

- The upper lifeline shall be at a height of no less than 600 mm (recommendation of 800 mm) above the working deck.
- The intermediate lifeline shall be not less than 230 mm above the working deck.
- No vertical opening shall exceed 380 mm.

Diameters, required material:

Lifelines can be stranded stainless steel wire of minimum 5 mm. Lifelines shall be uncoated and used without close fittings sleeving. Grade 316 stainless wire is recommended.

Lifelines made of synthetic materials (Spectra or Dynema) are allowed and shall be sleeved through the stanchions.

A lashing of synthetic rope may be used to secure lifelines at each end provided the gap it closes does not exceed 100 mm.

All wire, fittings, anchorage points, features and lanyards that together comprise the guardline system must at all points have at least the breaking strength of the required guardwire.

B.6.2: JACKSTAYS / CLIPPING POINTS

a) General requirements:

Jackstays together with attachment points and harness stops shall:

- enable a sole crew member to clip on himself before coming on deck and unclip after going below.
- allow whilst continuously clipped on, to move readily between the working areas on deck and in the cockpit(s), including being able to cross the deck athwartships, with the minimum of clipping and unclipping operations.
- enable two-thirds of the crew to be simultaneously clipped on without depending on jackstays.

Warning attention must be drawn on U bolts as clipping points, because they can lead to accidental unclipping of plain snaphooks.

b) Jackstays:

Jackstays shall be:

- fitted on deck, port and starboard of the yacht's centre line.
- attached to through-bolted or welded deck plates or other suitable and strong anchorage.
- made of, stainless steel 1x19 uncoated wire of minimum diameter 5 mm without any sleeving, or webbing of equivalent strength (20kN breaking load).

c) Clipping points:

Must be attached to through-bolted or welded deck plates or other suitable and strong anchorage points adjacent to stations such as the helm, sheet winches and masts, where crew members work for long periods.

B.6.3: TOE RAIL / FOOT STOP

A toe rail of minimum height 25 mm shall be permanently installed around the working deck, except around deck hardware fittings and at the vertical of the transom. The toe rail shall be fitted as close as practicable to the vertical axis of stanchion bases but not further in board than 1/3 the local half-beam.

B.6.4: HAND HOLDS / HAND RAIL

The following shall be provided:

- Adequate hand holds shall be fitted in the interior of boat so that crew members may move about safely at sea.
- The boat shall be equipped with a fixed handrail along the skirt or at the hull/transom junction, which acts as a grab-rail to facilitate climbing back on to the boat in the event of falling overboard.

B.6.5: BOW FAIRLEAD

A bow fairlead, or equivalent device, closed or closable and a cleat or other securing arrangement, suitable for towing shall be permanently installed.

B.6.6: NAVIGATION LIGHTS

Navigation lights shall:

- comply with COLREG 72
- be mounted so that they will not be masked by sails or the heeling of the yacht
- be mounted above deck level and should be at no less height than immediately under the upper lifeline

Reserve navigation lights shall be carried and comply with COLREG 72. They shall have an alternate wiring separated from the one used for the normal navigation lights.

Spare bulbs for navigation lights with incandescent lamp shall be carried, or for lights not dependent on bulbs, appropriate spares.

For boats with rotating mast, masthead navigation lights are forbidden, except if they remain in conformity with COLREG 72 whilst rotating.

- B.6.7: EMERGENCY STEERING**
Emergency steering shall be provided as follows:
An emergency tiller capable of being fitted to the rudder stock. This rule applies only in the case of a single rudder system.
Crews must be aware of alternative methods of steering the yacht in any sea condition in the event of rudder loss. At least one method must have been proven to work on board the yacht. A measurer may require that this method be demonstrated.
- B.6.8: MAST STEP**
The heel of a keel stepped mast shall be securely fastened to the mast step or adjoining structure.
- B.6.9: SEA COCKS AND VALVES**
Sea cocks or valves (quarter turn valves or knife valves) shall be permanently installed on all through hull openings below the water line except integral deck scuppers, shaft log, speed indicators, depth finders and the like, however a means of closing such openings shall be provided.
- B.6.10: BUNKS**
Two bunks shall be installed on board.
- B.6.11: COOKING FACILITIES**
A cooking stove permanently installed or securely fastened with safe accessible fuel shutoff control capable of being safely operated in a seaway.
- B.6.12: DRINKING WATER**
The quantity of drinking water on board at the start of a race shall be:
- at least 9 litres per person per 1000 miles in the absence of a water maker
- at least 3 litres per person per 1000 miles when a water maker is on board
- B.7: UNSINKABILITY**
- B.7.1: ESSENTIAL RULE**
In the event of all compartments being completely flooded, the boat shall remain unsinkable.
- B.7.2: UNSINKABLE VOLUME**
The boat shall possess a total volume for unsinkability, expressed in m³ not less than 130% of the boat displacement in m³:
- B.7.3: LONGITUDINAL DISTRIBUTION OF BUOYANCY VOLUMES**
These fixed volumes shall be approximately distributed proportionally among each watertight compartment.
The skipper, or his/her representative, shall supply a diagram of the unsinkable volumes.
- B.8: BALLAST, KEEL and DAGGERBOARD**
The use of any material with a density greater than 11.3 is prohibited (keel and/or bulb) for boat built after January 1st, 2006 (launch date, boat ready to sail).

Only one axis of mobility is authorized for keels.
Trimtabs as well as voluntarily deformable surfaces are prohibited for keels and daggerboards, except for fixed keels which can have a trimtab.
Symmetrical daggerboards can be moveable on two axes.
Only one axis of mobility is authorized for asymmetrical daggerboards.

B.8.1:**CANTING KEEL**

When the boat is equipped with a canting keel, this shall be capable of being manoeuvred manually from the inside of the boat, whatever her position in the water.

Appropriate keel angle device shall be in place on both sides and at all times to limit the canting of the keel to the value found when performing the initial heel test (10°). These devices shall be capable of being sealed.

For boats equipped with only one hydraulic ram, a specific locking device allowing the keel to be restrained along the axis of the boat shall be permanently installed.

B.8.2:**DAGGERBOARD(S)**

Centreboard and daggerboard trunks and the like shall not open into the interior of a hull except via a watertight inspection/maintenance hatch of which the opening shall be entirely above the waterline of the yacht floating level in normal trim.

B.9:**SEA WATER BALLAST**

The boat may be equipped with water tanks and associated permanently fitted plumbing. All ballast tanks shall be integral to and within the hull. This movable ballast shall be of sea-water only, to the exclusion of any other liquid.

It must be possible to fill, empty and transfer manually the water in the ballast tanks, whatever the position of the boat in the water.

SECTION C – RIGGING / SAILS

C.1: FUNDAMENTAL RULES

The boat must be properly rigged.
Shrouds shall never be disconnected.

C.2: CANTING MAST IN A LATERAL PLANE

Masts that cant in a lateral plane are forbidden.

C.3: HALYARDS

All masts shall have at least two halyards, each capable of hoisting a sail.

C.4: STORM and HEAVY WEATHER SAILS

a) Materials:

Aromatic polyamides, carbon and similar fibres shall not be used in a storm jib but spectra/dynema and similar materials are permitted.

b) The following equipment is mandatory:

A foresail of area inferior to 20m², made of strong highly visible coloured material. This sail shall have:

- Sheeting positions on deck.
- A strong securing method, which does not comprise or depend upon a luff groove device, for attachment to a stay. The use of a storm jib with a free luff is authorised.

C.5: ADDITIONAL RULES

C.5.1: POLES

When set in their most forward fixing position, they shall not extend beyond the vertical of the overall extremity of the authorised bowsprit.

C.5.2: FIXINGS OF RIGGING

The forestays, backstays, runners, lower shrouds, permanent or temporary, shall be connected to the boat within the surface delimited on the sides by the sheer line (as defined by the ISAF OSR), at the bow by the stem and at the stern by a line joining the aftermost points of the sheer line to port and to starboard.

C.5.3: FIXINGS OF TACKS AND CLEW-LINES

The fixing points of the tacks and clew lines of hoisted sails shall not be rigged outside and beyond the overall extremity of the authorised spars.

C.5.4: OUTRIGGERS

In a change to rule 50.3 of the RRS, the use of outriggers is allowed.

SECTION D – MINIMUM NORMS OF STABILITY

The first sentence of rule 51 of the **RRS** is replaced as follows: “Any shifting of weight with the aim of altering control or stability is permitted within the limits fixed by the current rules.”

Inside the boat, batteries excepted, all other heavy items capable of damaging the boat or injuring a crew member must be securely fastened to the boat at all time, except when being moved around.

Food supplies, water jerricans and one jerrican of fuel with a capacity of 20 litres, safety and deckgear and spares can be packed in boxes and moved around if securely fastened to the boat.

Sails can be moved around freely. Sail bags shall not be watertight.

Rule 52 of the **RRS** is replaced as follows: “With the exception of the manoeuvring and trimming of running rigging and spars, an energy source other than manual force may be used to manoeuvre the movable appendages of the hull, and for the emptying, filling and transferring the water of the ballast tanks.”

Boats shall satisfy the following minimum norms:

D.1: SELF-RIGHTING

During the measurement process, the skipper must physically demonstrate that the boat, once capsized, is capable of self righting without outside help.

This test is mandatory for the issue of the first Measurement certificate.

It is not mandatory for the renewal of the measurement certificate, except if significant modifications concerning the success of the test have been realised. This is left to the judgement of the Chief Class Measurer.

The Class Measurer shall issue for each test a detailed report describing the relevant operations necessary for self-righting. In case of change of skipper, a copy of this report shall be transmitted to the new skipper.

D.2: INITIAL HEEL ANGLE

From the vertical axis, due to the displacement of shifting weight: the amplitude from one extreme to the other, measured as described in F-3 shall not exceed 20°.

D.3: ANGLE OF VANISHING STABILITY (AVS)

This angle shall not be less than 127,5°.

This angle is calculated from the theoretical curve of stability, derived from measurements taken during stability test and from information by the designer.

The volume of the mast, which may be watertight wholly or in part, is not taken into account.

D.4: AVS WORST CASE (AVS_{wc})

The value of the AVS in the worst configuration (worst configuration of ballasts and keel, in light trim measurement condition) shall be greater or equal to 108°.

D.5: STABILITY CURVE AREA RATIO

The positive area under the stability curve shall be at least 5 times greater than the negative area.

SECTION E – NAVIGATION EQUIPMENTS

E.1: ENGINE

The engine is exclusively a diesel one with a power “standard breeder” of 37HP minimum, for all engines ordered from January 15th 2007.

a) General requirements:

- The engine shall be securely covered
- the exhaust, fuel supply systems and fuel tank(s) permanently installed
- The engine shall have adequate protection from the effects of heavy weather
- When an electric starter is the only method for starting the engine, a separate battery, the primary purpose of which is to start the engine, shall be provided.
- Each fuel tank shall be provided with a shutoff valve
- Flexible tank is not permitted as a fuel tank.
- The fuel (exception made of 20 litres, see section D) shall be stocked in fixed tanks. The transfer between the fuel tanks is strictly forbidden.

b) Propulsion unit:

It shall be located below the waterline, as close as possible to the axis of the boat, and shall neither retract nor fold away, nor located on a movable appendage. It shall be positioned permanently in the water flow running along the hull. Its diameter must not be lower than 425mm, blades open.

E.2: BATTERIES / GENERATOR

a) Batteries:

Shall be of a waterproof type or electrolyte gel type and shall not be moved during navigation. They shall be fixed in such a way as to be held fast, whatever the position of the boat in the water. They may be sealed into their compartments at the start of a race. All types of battery charger are allowed, except those relying on fissionable materials.

b) Generator:

A separate generator for electricity can be installed. However, when a separate generator is carried it shall be permanently installed, securely covered, have adequate protection from the effects of heavy weather. It shall have permanently installed exhaust and fuel supply systems and fuel tank(s), with shutoff valve(s). Flexible tanks are not permitted.

A portable generator shall never be operated inside a yacht.

E.3: COMPASS

A marine magnetic compass, independent of any power supply, shall be permanently installed and correctly adjusted with deviation card.

A compass in addition to that required above shall be carried on board.

E.4: MARINE RADIO / NAVIGATIONAL POSITION-FIXING DEVICE

The following, in good working state, shall be provided:

a) A 25W VHF marine radio transceiver-equipped with a fixed antenna.

An emergency antenna shall be carried on board.

b) A Sat Com transceiver.

c) A radio receiver capable of receiving weather forecast.

d) A GPS.

e) A standard C interfaced with GPS and equipped with the relevant software for polling and data reporting.

Its antenna must be attached at least 55 cm above the deck and unobstructed within a radius of 60 cm.

f) An echo sounder.

g) A speedometer.

h) Active AIS mandatory

E.5: NAVIGATION DOCUMENTATION

Navigational charts (not solely electronic), light list and chart plotting equipment shall be provided and appropriate to the specific race entered.

E.6: ANCHORS

Two ground tackles, with one of which shall be ready for immediate use, shall be carried on board.

The total weight of the two moorings shall be greater than 75 Kg.

E.7: FLASHLIGHTS

Shall be carried on board:

- A watertight high-powered flashlight or spotlight with spare batteries and bulbs.

- A watertight flashlight, with spare batteries and bulb.

E.8: TOOLS and SPARE PARTS

Tools and spare parts, including effective means to quickly disconnect or sever the standing rigging from the hull shall be provided.

SECTION F – SAFETY EQUIPMENTS

F.1: DURABLE STOWAGE CHART

A durable stowage chart shall be provided and shall be displayed in the main accommodation where it can best be seen, clearly marked with the location of the principal items of safety equipment.

F.2: DRAINING

The boat shall be equipped with a system of two permanently installed manual bilge pumps, one operable from above, the other from below deck, with a minimum capacity per pump of 4,5 litres per cycle and with a system of electric draining with a minimum total capacity of 3000 litres per hour. Both systems shall allow the emptying of each watertight compartment from the outside, whatever the position of the boat in the water, except the compartment for the batteries, which shall be emptied with a manual system.

No bilge pump may discharge into a cockpit unless that cockpit opens aft to the sea.

Bilge pumps shall not be connected to cockpit drains.

Bilge pumps and strum boxes shall be readily accessible for maintenance and for clearing out debris.

Unless permanently installed, each bilge pump handle shall be provided with a lanyard or catch or similar device to prevent accidental loss.

Two buckets of stout construction each with at least 9 litres capacity shall be carried on board. Each bucket to have a lanyard.

F.3: EMERGENCY WATER

At least 9 litres of drinking water for emergency use shall be provided in a dedicated and sealed container or container(s).

F.4: SURVIVAL FIXING POINTS

External solid anchorage points shall be provided in the vicinity of the aft escape hatch allowing the attachment of:

- the liferaft.
- the watertight container.
- individual grab bags.
- distress beacons.

F.5: LIFERAFTS

a) Liferafts:

Two life rafts shall be carried on board, one built to SOLAS norms outside, and one inside. One of the two life-rafts must be accessible whatever the position of the boat in the water. The inside one shall be able to pass through all openings in the watertight bulkheads and all escape openings including the transom escape hatch. The inside life raft shall conform at least with OSR category 1, and shall be constructed with an insulated floor and capable to be inflated at a temperature of -15° C.

When racing with crew, the total capacity of the two life-rafts shall permit the evacuation of the entire crew.

b) Stowage:

The SOLAS life raft shall be stowed either in a purpose-built rigid compartment, opening into or adjacent to the cockpit or working deck, or through the transom, and containing only this sole life raft, or in the cockpit, but not ahead than the companionway hatches of the cockpit. In the case of a compartment, it must be watertight or self-draining and have a cover capable of being easily opened under water pressure.

c) Deployment time:

The life raft end of painter shall be permanently made fast to a strong point of the boat.

d) Servicing and inspection:

Every life raft shall have a valid annual certificate, and a certificate (or copy) shall be kept on board.

Notwithstanding the specified servicing periods, the life rafts shall be carefully, frequently inspected externally, and taken for servicing if there is any sign of damage or deterioration.

F.6: LIFEBOUOYS

The following shall be provided within reach of the helmsman and ready for instant use:

- A lifebuoy with an automatic light and a drogue or a Lifesling with an automatic light (without a drogue).
- A lifebuoy equipped with a whistle, a drogue, an automatic light and a pole and flag. The pole shall be carried on board permanently extended, except that automatic extension (e.g. by compressed gas or spring action) is permitted provided the device activates fully in less than 20 seconds. The pole and flag shall be attached to the lifebuoy with 3 m off floating line. It shall be so constructed that the flag flies at least 1.8 m off the water.
- At least one of the lifebuoys shall depend entirely on permanent (e.g. foam) buoyancy.
- Each inflatable lifebuoy and any automatic device (e.g. pole and flag extended by compressed gas) shall be tested and serviced at intervals in accordance with its manufacturer's instructions.
- Each lifebuoy (or lifesling) shall be fitted with marine grade retro reflective material.

F.7: PYROTECHNIC SIGNALS

Pyrotechnic signals shall be provided conforming to SOLAS LSA Code Chapter III Visual Signals and not older than the stamped expiry date (if any) or if no expiry date stamped, not older than 4 years.

Shall be provided:

- 6 red parachute
- 4 red hand flares
- 4 white hand flares (SOLAS-norms recommended)
- 2 orange smoke flares

F.8: LIFEJACKETS

Each crew member shall have a life jacket conform to his relevant national regulations, and each life jacket shall be as follow:

- Equipped with a whistle
- Fitted with marine grade retro-reflective material
- Compatible with the wearer's safety harness
- If inflatable, regularly checked for air retention
- Have one spare air capsule
- Clearly marked with the yacht's name

- F.9: SAFETY HARNESS and SAFETY LINES**
Attention is drawn to ISO 12401 norms.
a) Safety harness:
Each crew member shall have a safety harness.
A crew member's harness and life jacket shall be compatible.
b) Safety lines (tethers):
Each harness shall be equipped with a safety line not more than 2 m long with a snaphook at each end. In addition, at least 30% of the crew shall each be provided with either a safety line not more than 1 m long, or a mid-point snaphook on a 2 m safety line.
Attention must be drawn on U bolts as clipping points, because they can lead unclipping plain snaphook. For this reason the use of snaphooks with positive locking devices is strongly recommended.
- F.10: SOFT WOOD PLUGS**
Soft wood plugs, tapered and of the appropriate size, shall be attached or stowed adjacent to the appropriate fitting for every through-hull opening.
- F.11: FIRE EXTINGUISHERS**
Fire extinguishers, at least two shall be provided, readily accessible in suitable and different parts of the yacht.
One shall be close to the engine.
- F.12: FOGHORN**
A foghorn shall be provided.
- F.13: RADAR and RADAR REFLECTOR**
The following equipment, in good working state, shall be provided:
a) Radar:
Radar fitted with power of 2KW minimum. The radar unit shall be fixed at a height of at least 5 metres above the water line.
b) A fixed active radar transponder (9.2 – 9.5 Ghz).
c) A radar reflector.
- F.14: EPIRBs**
Boat shall be equipped of two SARTSAT COSPAS 406 MHz Epirbs portable distress beacons, classified as long-life. These beacons shall:
 - include a 121.5 MHz transmitter,
 - be coded and registered with the name and MMSI number of the boat,
 - be tested and serviced at intervals in accordance with its manufacturer's instructions,
 - be fitted with a line at least 3 metres long of 1000 daN minimum breaking strain.
- F.15: EMERGENCY TRANSMISSION**
Boat shall be equipped with an emergency device which, whatever the position of the boat in the water, allows the erection of a VHF aerial and transmissions from the distress beacon and the radar transponder.
- F.16: WATERTIGHT HAND HELD VHF TRANSCEIVER**
A waterproof hand-held VHF transceiver, with spare batteries, shall be carried on board.

- F.17: PORTABLE TRANPONDER RADAR**
A radar transponder beacon (9.2 – 9.5 GHz frequency), portable and self-powered shall be carried on board. This beacon shall be fitted with a line at least 3 metres long of 1000 daN minimum breaking strain.
- F.18: FIRST AID MANUAL and FIRST AID KIT**
a) Manual:
A First Aid manual shall be provided. In the absence of a National Authority's requirement, the latest edition of one of the following is recommended:
- International Medical Guide for Ships, World Health Organisation, Geneva, or
- First Aid at Sea, by Douglas Justins and Colin Berry, published by Adlard Coles Nautical, London, or
- Le Guide de la médecine à distance, by Docteur JY Chauve, published by Distance Assistance - BP33 - La Baule Cedex, France. An English translation is available.
- b) First aid kit:**
A First Aid Kit shall be carried on board. It shall reflect the likely conditions and duration of the passage, and the number of people aboard the yacht. Before the start of a race, the skipper shall have undertaken at least once in the past five years a medical training reflecting the conditions of race. This training is strongly recommended for crew members.
It is strongly recommended to follow the prescription of Appendix C to the Class Rules.
- F.19: HEAVING LINE / THROWING SOCK**
A heaving line of 15m – 25m length shall be readily accessible to the cockpit, and a Speedline or equivalent style rope launch shall be on board.
- F.20: DIVING EQUIPMENT**
One diving bottle (e.g. Spare Air bottle) or equivalent shall be on board.
- F.21: YACHT'S NAME**
Yacht's name shall be on miscellaneous buoyant equipment, such as lifejackets, oars, cushions, lifebuoys and lifeslings etc...
Marine grade retro-reflective material shall be fitted to lifebuoys, lifeslings and lifejackets.
- F.22: PERSONAL EQUIPMENT**
The following equipment shall be carried on board for each crew member:
- One pack of mini flares and one personal location lights (either SOLAS or strobe), one shall be attached to, or carried on, the person when on deck at night.
- A foul weather suit with hood.
- A knife.
- A watertight flashlight.
- F.23: PERSONAL SURVIVAL EQUIPMENT**
Before the start of a race, the skipper shall have undertaken personal survival training at least once in the past five years. This training is strongly recommended for crew members.
One set of Survival Equipment shall be provided for each crew member to include:
- An immersion suit in accordance with Solas 74/83 standards and prEN 1913, which thermal insulation without liner shall be greater than 0.75 immersed Clo.

F.24: WATERTIGHT EMERGENCY CONTAINER

A watertight emergency container shall be carried on board.

It shall be fitted with strong handles and with a line of 1000 daN minimum breaking strain.

It shall contain at least:

- A watertight hand-held marine VHF transceiver with spare batteries
- An Iridium mobile phone with spare batteries
- A waterproof hand-held GPS with spare batteries
- A watertight flashlight with spare bulb and batteries
- A knife
- Cyalume type chemical light sticks
- Fluoresceine seamark
- A watertight strobe light with spare batteries
- 4 distress parachute flares
- 6 hand flares (3 red / 3 white)
- 2 floating orange smoke
- High energy food
- A survival blanket for each crew member

F.25: HULL MARKING

To assist in SAR location, sail number shall be displayed in a highly visible manner, once on the deck and once on each side of the hull. The sizes of the characters shall be not less than:

Height:	900 mm
Width:	600 mm
Thickness:	120 mm
Space between characters:	180 mm.

F.26: FLUORESCENT PAINT

To assist in SAR location:

- Keel(s), rudder(s), and at least a minimum of 2 m² of the bottom below the waterline shall be entirely covered with special fluorescent paint.
- At least 2 m² of the surface of the deck shall be covered with a brightly highly visible coloured paint.

APPENDIX TO THE CLASS RULES

A – SPECIAL PROVISIONS

1°) notwithstanding article B.5.4, boats launched before the 1st may 2000 may be equipped with only 3 watertight bulkheads, provided that in this case the boat has an unsinkable volume of 145%; or with only 4 watertight bulkheads, provided that in this case the boat has an unsinkable volume of 137,5%.

2°) notwithstanding article D.5, the positive area of the stability curve of boats launched before 1st January 1999 may be only 4 times greater than the negative area, instead of the 5 times greater as required in the class rules.

3°) notwithstanding article D.3, the angle of vanishing stability of boats launched before 31st December, 1996 may be less than 127,5°, provided that they have a GZ greater than 1,375 m (GZ : horizontal distance between the centre of gravity and the centre of the hull below the water line, as tested at 90°).

4°) notwithstanding article B.5.6, astern escape hatch, a different provision may be accepted for boats launched before 31st December, 1994, and on which the installation of such a hatch is physically impossible.

5°) notwithstanding article B.6.3, for boats built before 1st June, 2004, the toe rail may be installed only around the foredeck from abreast the mast (cf. OSR 3.17.1)

These authorisations are delivered only after request in writing to the Technical Committee.

B – APPENDIX TO THE CLASS RULE E.1

Non exhaustive list of standard commercial public brands with a power "standard breeder" of 37HP minimum:

Yanmar 3JH4

Lombardini LDW 1404

Nani diesel 4.150

Volvo D2-40

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