



**International Monohull Open Class Association 60'**  
**Non-profit-making association**

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## **INTERNATIONAL MONOHULL OPEN CLASS ASSOCIATION 60 FEET**

### **WORLD SAILING INTERNATIONAL CLASS**

# **Class Rules 2018**

(English version)



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**A VERTICAL BLACK SIDE BAR INDICATES SIGNIFICANTS CHANGES VOTED AT THE IMOCA GENERAL MEETING ON 04<sup>th</sup> DECEMBER 2017.**

**Rules concerned: A.10.6 (c), C.2.19, C.2.27, C.7.2 (b), C.7.3 (removed), E.2.1.d (ii) (removed), Appendix I.**

# INTRODUCTION

The **Monohull Open 60' (IMOCA) Class** has been approved by the INTERNATIONAL SAILING FEDERATION (WS):

- “Recognised Class” in 1998.
- and “International Class” in 2001.

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

The **IMOCA** Class Rules is of the open type, which means that anything which is not expressly forbidden restricted or enforced, is permitted.

However, these rules are constantly evolving, and must be developed in such a way as to favour technological innovation in terms of performance, and encourage research and application of new technologies in terms of safety at sea.

## CHAPTER I – ADMINISTRATION

### Section A – General Points

#### A.1 LANGUAGE & WS RULES

**A.1.1** The English and French are the two official **IMOCA** languages.

In the event of a discrepancy with regards to the translation, the French shall prevail.

**A.1.2** The words ‘shall’ and ‘must’ indicate something that is mandatory, the words ‘should’ and ‘may’ are permissive.

**A.1.3** With the exception of the **Appendices**, the titles of the paragraphs and the notes, the terms printed in:

- ‘**bold**’ refer to an ERS definition,
- in ‘*italics*’ refer to an RRS definition
- in ‘italics’ and ‘underlined’ refer to a definition contained in the **IMOCA** Class Rules.

**A.1.4** A definition in the singular includes the plural; a male definition includes the female.

#### A.2 ABBREVIATIONS & DEFINITIONS

##### A.2.1 ABBREVIATIONS

CRC	Class Rules Committee
COLREGS	International Regulations for Preventing Collision at Sea
ERS	Equipment Rules of Sailing
FFV	French Sailing Federation
ISO	International Organisation for Standardisation
MNA	WS Member National Authority
NDT	Non-Destructive material Test
OSR	The WS Offshore Special Regulations Offshore
RRS	Racing Rules of Sailing
WS	International Sailing Federation

## A.2.2 DEFINITIONS

**Central appendage:** It is the point(s) of attachment on the hull, which determine(s) whether an appendage is central or not. It is the position at rest and under the normal sailing conditions, which determines the possible symmetry of the system.

**Hull appendage:** (See ERS E.1.1)

**Boat:** The equipment used by the crew to take part in a race.

It includes: hull(s), hull appendage(s), ballast, rig, boat corrector weights but excludes structure(s), sail(s), fittings and all other items of equipment used, watertight hatches on the bulkhead and emergency exits, companionway(s), all other elements of equipment used, consumables, personal equipment and portable equipment.

**Light condition:** This configuration is the reference for determining the boat's longitudinal trim for calculating stability and water draught and air draught.

**Degree of freedom:** A "degree of freedom" is the possibility of making a translation or a rotation along or around any axis.

**Hull:** The hull shell including any transom, the deck including any superstructure, the internal structure including any cockpit, the fittings, and all corrector weights excepted notified exceptions define in the boat's definition.

**Daggerboard:** A **hull appendage** primarily used to affect leeway.

**Foil:** A **hull appendage** primarily used to produce vertical lift.

**IMOCA:** The Association, which manages the international OPEN 60' WS class.

**LOA:** "LOA" = distance between two planes perpendicular to the boat's plane of symmetry and its waterline plane via:

- the aftermost point of the hull.
- the point defined as being the foremost point of the hull (FWDHULL).

**Monohull:** A "monohull" such as that understood in the present rules is defined as a boat:

- with a single flotation plane at rest or under sail in normal sailing trim.
- of which hull depth in all transverse sections shall not decrease towards the centreline of the boat.

For this definition, the hull does not include its appendages (Article C.7 and Section E).

**Number of appendages:** An appendage being related to its point of attachment on the hull, it is the number of attachment points on the hull of each system, which determines the number of appendages.

**OPEN 60':** The name "OPEN 60'" indicates a monohull yacht, which measures a maximum of 60-feet in length (LOA) and satisfies the standards specified in the Class Rules published by IMOCA.

**Sea cock:** A "sea cock" in the sense given in article C.2.16, must be comprised as a "System enabling a through-hull fitting, which meets the requirements of the Class Rules".

**Working deck:** The "working deck" is an area defined by pulpits, stanchions and lifelines, where any crew member is obliged to stand, or to pass frequently, or to go frequently in the aim of going about the usual manoeuvres necessary for sailing the boat and maintaining it.

**Bow of the hull:** The "bow of the hull" is the end of the forward section of the hull in the hull's plane of symmetry.

**Keel:** The "keel" is the assembly of the keel fin and the bulb and shall be counted as a single appendage.

Rudder: A movable **hull appendage** primarily used to affect steerage and which shall not produce vertical lift other than that of a classical rudder.

Transom: The “transom” is the last structural element that connects the hull to the deck and/or the cockpit and closes off watertight compartment No.6.

Air draught: Vertical distance between the boat’s flotation plane and the highest point of the boat with a normal mast rake, the whole ensemble measured in light configuration.

Transverse: For a watertight bulkhead, to be transverse, means that a bulkhead intersects the hull in its entirety (from port to starboard sides of the hull) and deck.

Keel fin: The “keel fin” is a hull appendage primarily used to affect stability and leeway and a bulb is attached to it.

## **A.3 AUTHORITIES**

### **A.3.1 THE INTERNATIONAL AUTHORITY**

The international IMOCA authority is World Sailing.

## **A.4 MANAGEMENT OF THE CLASS**

**A.4.1** IMOCA has been granted, in agreement with WS, the responsibility for administering the Monohull Open 60’ Class, and for developing and publishing their Class Rules in collaboration with WS.  
IMOCA’s operating procedures are defined in its Class Regulations.

### **A.4.2 STANDARDISED IMOCA EQUIPMENT**

**(a)** In addition of standardized keel and mast and in order to contribute to enhancing the prestige of its image and its media coverage and favouring safety, the IMOCA Class Rules will be able to impose standard equipment packs, which shall kit out the boats.

**(b)** The Class Rules may be modified to integrate this equipment at the suggestion of the Executive Committee. This equipment may relate to:

- (i) (Reserve article) Propulsion – Energy**
- (ii) (Reserve article) Navigation (tracking, radar, detection...)**
- (iii) (Reserve article) Telecommunications**
- (iv) (Reserve article) Audio-visual equipment**
- (v) (Reserve article) Scientific equipment**

## **A.5 RESERVED**

## **A.6 MODIFICATIONS TO THE CLASS RULES**

**A.6.1** The Class Rules validated by the General Meeting are effective from the date specified during this General Meeting and through until the next General Meeting, which would modify the Class Rules in line with article A.6.5.

**A.6.2** RRS Rule 87 is applicable.

**A.6.3** Any modification to the Class Rules shall be subject to WS’s approval.

**A.6.4** Any modification to the Class Rules must be put forward to Members of IMOCA during the General Meeting by IMOCA’s Executive Committee, which presents the work of IMOCA’s Technical Committee.

**A.6.5** Except in matters of extreme urgency, no modification to the rules dealing with the basic structures of the hull, masts and appendages, may be made outside the General Meeting that specifically deals with the Class Rules and which takes place after the finish of each Vendée Globe.

**A.6.6** When a modification to the Class Rules leads to high costs and/or significant technical developments to the existing boats, the grandfather rule, when it is stipulated in the related articles, means that they are exempt of the obligation to conform to the new rule.

**A.6.7** In the event of a modification to the rule, boats benefiting from the grandfather rule are not allowed to make modifications, which contradict the aim of the new rule.

**A.6.8** If an immediate modification of the rules is required, the Executive Committee can decide on how it shall be applied. This modification becomes definitive after approval by the Members during the closest General Meeting.

## **A.7 INTERPRETATIONS OF THE CLASS RULES**

### **A.7.1 CLASS RULES COMMITTEE**

**(a)** The CRC is comprised of 3 people nominated by IMOCA's Executive Committee (see Appendix E):

- A person separate to any project,
- A naval architect not involved in an IMOCA project
- A WS representative specialised in regulations.

**(b)** The role of the CRC is defined in article A.7.2.

**(c)** The CRC's decisions cannot be appealed and cannot be contested by an event jury, including an international jury.

### **A.7.2 INTERPRETATION**

**(a)** Interpretation of the Class Rules must be done by IMOCA in consultation with WS.

**(b)** Any request for interpretation of the Class Rules shall be in writing, addressed to IMOCA's Chief Measurer, who passes it on to the CRC.

**(c)** Any requests for interpretation can only be made by IMOCA members.

However, within the context of its appointment, the CRC may, at its sole discretion, agree to a request for interpretation made by a non-member of IMOCA if he believes it to be in IMOCA's interest.

**(d)** In the event that there is some doubt as to the conformity of an innovative measure, the application of a process thus far not used or an interpretation, an interpretation request may be given to IMOCA's Chief Measurer who shall give it to the CRC which shall be bound by the strictest confidentiality.

**(e)** The answer to the request shall be in writing and sent by post, or by email, as soon as possible.

Any answer given by the CRC in response to a request shall be posted on the IMOCA website.

**(f)** The origin of requests is confidential in any case.

**(g)** Only the CRC can sign interpretations.

**(h)** Application procedures under these Class Rules may be clarified by the CRC.

## **A.8 SAIL NUMBERS**

**A.8.1** IMOCA allocates sail numbers.

The size of nationality letters and sail number figures shall be in Helvetica font – bold – and shall not be less than Height 500 mm and spacing of 100 mm.

## **A.9 RESERVED**

## **A.10 CERTIFICATION CHECKS AND EQUIPMENT INSPECTION**

#### **A.10.1 OPERATION**

- (a) The official IMOCA measurers are nominated by its Executive Committee on the proposal of IMOCA's Chief Measurer.
- (b) The official IMOCA measurers must adhere to the instructions set out in chapter H-1 of the ERS and be placed under the authority of IMOCA's Chief Measurer.

#### **A.10.2 OFFICIAL MEASURERS**

- (a) The list of Official Measurers is in Appendix E.
- (b) Solely the Official Measurers are authorised to carry out checks and tests, with the aim of issuing the IMOCA Measurement Certificate.

#### **A.10.3 CLASS MEASUREMENT PROCEDURES**

- (a) Skippers or their representatives wishing to have their boat measured in order to obtain an IMOCA Measurement Certificate must contact IMOCA's Chief Measurer (chief.measurer@imoca.org) and download the required documents listed in Appendix K-1 on the IMOCA's website (www.imoca.org) and shall have to give all to the Chief Measurer.
- (b) IMOCA's Chief Measurer will coordinate the exchanges of information between the measurers, the naval architects and the design office appointed for making the class measurement calculations.
- (c) Checks of any kind may be requested at any moment by IMOCA's Chief Measurer.
- (d) Every full member or associate member of IMOCA undertakes to agree to any checking of his or her boat at the request of measurers approved by IMOCA and International and National bodies.
- (e) Each measurement – unless it has been modified by IMOCA's Chief Measurer – must conform to the instructions set out in the ERS and/or the ISO standards in force.  
In the event of a discrepancy between the latter, IMOCA's Chief Measurer will decide which ones apply.
- (f) The IMOCA Chief Measurer outlines all the procedures and methodologies for measuring and calculating which are applied for the class measurement of the IMOCA boats, via a document available from IMOCA's office (contact@imoca.org) in the form of a measurement protocol.

#### **A.10.4 RULES FOR KEEL DESIGN IN APPENDIX A**

- (a) The keel manufacturer shall supply the Material Certification for the material used to IMOCA's Chief Measurer.
- (b) The materials must be delivered with their certificates of conformity.
- (c) Any zone must be able to be easily checked by hand and be in direct sight.

#### **A.10.5 INTEGRATION OF THE STANDARDISED KEEL IN THE BOAT**

All the criteria outlined in Appendix B may be inspected by IMOCA's Chief Measurer.

#### **A.10.6 KEEL INSPECTION**

- (a) Prior to the first launch of the keel, a NDT will be carried out as defined by IMOCA's Chief Measurer.
- (b) The test reports will be sent to IMOCA's Chief Measurer.
- (c) For an Appendix A or Appendix B keel, the validity of an NDT is a maximum of 4 years and must cover the entire year that the certificate is valid.  
For all other keels, an NDT dating back less than 2 years must be supplied to IMOCA's Chief Measurer.



#### **A.10.7 INTEGRATION OF THE STANDARDISED MAST ON THE BOAT**

All the criteria outlined in Appendix C shall be adhered to and may be inspected by IMOCA's Chief Measurer.

#### **A.10.8 MAST INSPECTIONS**

Each mast shall undergo an annual ultrasound inspection prior to being used.

An inspection certificate shall be given to IMOCA's Chief Measurer in order to obtain the IMOCA Measurement Certificate.

#### **A.10.9 SCRUTINEERING OF BOATS**

For a boat whose IMOCA Measurement Certificate has been issued over 4 years since the date the Renewal Measurement Certificate was requested, the skipper must provide a complete inspection report of the boat dating back as close as possible to the time the certificate was requested.

This complete inspection report must be:

- made by an expert with recognised expertise in the domain and carried out in good faith with the relevant means;
- presented to the Chief Measurer.

The Chief Measurer will refuse any complete inspection reports for the boat that he or she deems to be incomplete or carried out by an operator without a sufficient level of expertise.

#### **A.10.10 MAST MATERIAL**

Certificates of the batches of used fibre must be retained by the teams and placed at the disposal of IMOCA's measurers.

#### **A.10.11 SELF-RIGHTING**

**(a)** In order for the first IMOCA measurement certificate to be issued, the boat, once rotated through 180 degrees, must be capable of righting itself solely through the use of the movable ballasts and without outside assistance. This control may be done numerically.

**(b)** The Chief Measurer can request a real on-the-water test. In this case this test becomes mandatory.

**(c)** It is not mandatory for the renewal of the IMOCA Measurement Certificate unless significant modifications have been made which might affect the outcome of the test and the boat must satisfy the condition referred to in A.10.11 (a) at any time.

**(d)** IMOCA's Chief Measurer specifies the various operations to be performed during this test.

**(e)** The IMOCA measurer shall draft a detailed report for each test describing the operations necessary for righting the boat.

In the event of a change of skipper, a copy of this report shall be supplied to the new skipper.

#### **A.10.12 SERVICING AND INSPECTION**

**(a)** Each liferaft shall be serviced in accordance with the regulations in force for this liferaft and a certificate (or copy) shall be kept on-board.

**(b)** A meticulous exterior inspection of the liferafts must be carried out on a frequent basis and undergo an inspection by a specialist if any signs of damage or deterioration are observed.

#### **A.11 IMOCA MEASUREMENT CERTIFICATE**

#### **A.11.1 SAMPLE COPY OF THE IMOCA MEASUREMENT CERTIFICATE**

A sample copy of the IMOCA Measurement Certificate is available from IMOCA's office (contact@imoca.org) and/or IMOCA's Chief Measurer (chief.mesurer@imoca.org) as well as in Appendix K-2.

#### **A.11.2 LIMIT TO THE ISSUING OF MEASUREMENT CERTIFICATES**

(a) The issuing of the IMOCA Measurement Certificate is reserved for full members of IMOCA wishing to enter the boat into competition.

(b) Any full member who requests the issuing of an IMOCA Measurement Certificate on behalf of a third party outside IMOCA, without intending to enter the boat into competition, may be liable to disciplinary sanctions.

(c) The issuing of the IMOCA Measurement Certificate can only be done in the name of a yacht, whose skipper (or co-skipper) shall be a fully paid-up member of IMOCA.

**A.11.3** To participate in a race in IMOCA's event schedule, a boat must have a valid IMOCA Measurement Certificate.

**A.11.4** It is the responsibility of the skipper or his or her representative to provide all the necessary documents to draft the IMOCA Measurement Certificate.

#### **A.11.5 RESERVED**

**A.11.6** In case of an unforeseen event and/or exceptional circumstance making it impossible for a full member to comply with one or more provisions of the class rules, a full member may request an exemption from the application of one or more of such provisions of the class rules, in order to obtain an IMOCA measurement certificate allowing him to participate in one or several races of the IMOCA World Championship's current schedule.

**A.11.7** In the event of a request for an exemption from the application of one or more provisions of the class rules in order to obtain an IMOCA measurement certificate, a procedure must be followed, according to which the full member shall provide the Chief Measurer with all information he has. The Chief Measurer will then write a report to be submitted for the opinion of the President of the Executive Committee. Respect of sporting fairness as well as the full integrity of both the crew and the boat shall prevail, and the Chief Measurer will make his decision after having sought the opinion of the President of the Executive Committee. In case of a positive decision, the Chief Measurer will issue an IMOCA measurement certificate, subject to the full member's written waiver of all claims. This procedure is available at the IMOCA's office (contact@imoca.org).

#### **A.12 VALIDITY OF THE IMOCA MEASUREMENT CERTIFICATES**

**A.12.1** Any IMOCA Measurement Certificate may be withdrawn at any time by IMOCA's Chief Measurer.

#### **A.12.2 ANNUAL VALIDATION OF THE IMOCA MEASUREMENT CERTIFICATE WITHOUT MODIFICATIONS TO THE BOAT**

(a) IMOCA's Chief Measurer conducts the annual validation of the IMOCA Measurement Certificate on request of renewal IMOCA Measurement Certificate.

(b) In light of a declaration of non-modification of the boat, the checks and tests shall be deemed unnecessary.

(c) The cost of such a validation is fixed by IMOCA's Executive Committee.

#### **A.13 ESTABLISHING THE FIRST IMOCA MEASUREMENT CERTIFICATE**

(a) The new boat undergoes all the inspections and tests carried out by IMOCA's Chief Measurer to check she is compliant with the IMOCA Class Rules.

(b) The measurement procedures and the configurations during testing are fixed in accordance with rule A.10.

(c) The cost of a complete measurement certificate procedure is fixed by IMOCA's Executive Committee.

#### **A.14 SPECIAL FEATURES ASSOCIATED WITH THE FIRST IMOCA MEASUREMENT CERTIFICATE FROM 1<sup>st</sup> MAY 2015**

(a) The number of ballast tanks is limited to 4.

(b) The boat will be equipped with a mast and its rig, referred to as a standardised mast, will be selected from 2 possible configurations according to the attached definition referred to as Appendix C.

(c) For a boat having received a first IMOCA Measurement Certificate after 1 May 2013, articles D.5.1 and D.5.2 do not apply.

(d) The boat shall be equipped with a standardised keel fin and outlined in Appendices A and B.

(e) Article A.10.6 is applied in full.

(f) The boat shall have:

- been designed, built and maintained in compliance with the requirements of ISO 12215 Category A, as amended by the notified body ICNN, agreed by the Convenor of ISO WG18 and published on the IMOCA website;
- on board a certificate of IMOCA building plan review from ICNN;
- on board a declaration signed and dated by the builder to confirm the yacht is built in accordance with the plans reviewed by ICNN.

## **A.15 GRANDFATHER RULE**

### **A.15.1 FOR EXISTING BOATS**

(a) A boat issued with a measurement certificate prior to 1 July 2009 benefits from the grandfather rule, but it cannot increase the existing hull hollows, which have been previously authorised.

(b) A boat issued with an IMOCA Measurement Certificate prior to 1 May 2013 and wishing to access the rules specific to boats issued with their first certificate after 1 May 2013

1. shall be equipped with a keel according to Appendix A,
2. shall benefit from the grandfather rule regarding hull materials and the maximum beam BMAX,
3. shall retain its mast or use a non-standardised mast
4. shall adhere to articles A.14 (a) and D.5.6 (d),
5. may not apply articles D.5.1 and D.5.2.

(c) A boat issued with an IMOCA Measurement Certificate prior to 1 May 2013 may use a non-standardised mast. In the event that the mast is changed, the new mast may retain the same static moment as the previous mast, or should this static moment be reduced, it shall be greater than that of the standardised mast.

### **A.15.2 FOR THE MAST MATERIAL**

Boats issued with an IMOCA Measurement Certificate prior to 1 July 2009 are not limited in terms of the mast material, except in the event that a new mast is built after 1 July 2009.

## **A.16 RE-CERTIFICATION**

### **A.16.1 RESPONSIBILITY**

A checklist supplied by IMOCA and resuming each article of the class rules shall be signed off jointly by the measurer and the skipper or his or her representative and shall be revalidated in the drawing-up of a new certificate.

### **A.16.2 DRAWING-UP OF A MEASUREMENT CERTIFICATE AFTER MODIFICATION OF THE BOAT**

(a) Any modification to the boat after the date the IMOCA Measurement Certificate is issued shall be the subject of a written declaration to IMOCA's Chief Measurer, who will assess whether or not there is a need to conduct new measurements.

Any modification carried out without following this procedure will render the IMOCA Measurement Certificate invalid.

(b) The boat must undergo all the inspections and tests that IMOCA's Chief Measurer deems necessary, taking into account the declarations of the person requesting them.

## **A.17 CONSERVATION OF DOCUMENTS**

**A.17.1** The certification body must keep all documents it has relied on to issue the current IMOCA Measurement Certificate.

**A.17.2** IMOCA's Chief Measurer shall establish a detailed report of all the tests carried out to draw up an IMOCA Measurement Certificate.

A copy of this document must be sent to the skipper of the boat concerned.

**A.17.3** The data, measurements, documents and information that the official measurers collect for issuing the IMOCA Measurement Certificate are confidential.

This information is kept in the IMOCA database managed by IMOCA's Chief Measurer.

## **Section B – Eligibility**

A boat must satisfy the conditions of this section to be authorised to *compete*.

### **B.1 CLASS RULES AND CERTIFICATION**

**B.1.1** The boat must:

(a) Adhere to the IMOCA Class Rules in force.

(b) Have the required certification marks.

**B.1.2** Only skippers (or co-skippers) in possession of a valid IMOCA Measurement Certificate for their boat shall be allowed to compete.

### **B.2 MEMBERSHIP OF THE CLASS**

**B.2.1** Any natural person or legal entity that is the skipper or owner of an OPEN 60' may be a member of IMOCA.

**B.2.2** The skipper (or co-skipper) shall be a fully paid-up member.

In the event that the boat is chartered, the charter skipper must join IMOCA.

### **B.3 CERTIFICATION BODY**

For the hull and the other elements: IMOCA or its representatives.

## CHAPTER II – CONDITIONS AND RESTRICTIONS

### Section C – Conditions for racing

#### C.1 GENERAL POINTS

- C.1.1** The first sentence of rule 51 of the RRS is replaced as follows: “Any stacking with the aim of altering the trim or stability is permitted within the limits fixed by the current rules.”
- C.1.2** Inside the boat, all heavy items capable of damaging the boat or injuring a crew member must be securely fastened to the boat.
- C.1.3** Food supplies, water containers and one jerrican of fuel with a capacity of 20 litres, fittings and spares can be packed in boxes and moved around if, once in position, these elements are securely fastened to the boat.
- C.1.4** Sails can be moved around freely. Sail bags shall not be watertight.
- C.1.5** Rule 52 of the RRS is replaced as follows: “The boat’s standing rigging, running rigging, spars and movable hull appendages other than the keel, the rudder(s) and the filling, transfer or emptying of the ballast tanks, must be adjusted and operated only by the power provided by the crew.  
Any servo-control is prohibited other than for adjusting and operating the keel and the rudder(s).”

#### C.2 SAFETY EQUIPMENT

##### C.2.1 STOWAGE PLAN

A weatherproof stowage plan shall be provided and shall be displayed in the main compartment where it is most visible, clearly marked with the location of the key items of safety equipment.

##### C.2.2 DRAINING

(a) The boat shall be equipped with:

- (i) a system of two permanently installed manual bilge pumps and their associated hoses, one shall have to be operated above deck, the other from below deck, with a minimum outflow per pump of 1,3 litres/cycle;
- (ii) a system of electric draining with a minimum outflow of 2,400 litres/hour.

(b) Each system shall enable the emptying of each watertight compartment from outside it, whatever the position of the boat, with the exception of the compartment containing the batteries, which shall be drained manually.

(c) Bilge pumps and strum boxes shall be readily accessible for maintenance and cleaning.

(d) Unless permanently installed, each manual bilge pump handle shall be equipped with a lanyard or strop or equivalent safeguard system to prevent accidental loss.

(e) Two buckets of stout construction, each with a minimum capacity of 9 litres, shall be carried on-board. Each bucket must have a lanyard.

##### C.2.3 EMERGENCY SUPPLY OF DRINKING WATER

(a) A supply of drinking water for emergency use, stored in one or several containers, shall be on-board and sealed.

(b) It shall not be moved. It won’t be mobile and will be sealed.

(c) The quantity will depend on the duration of the race and the number of people on-board.

(d) It shall be specified in the Sailing Instructions for each event.

#### C.2.4 EMERGENCY ATTACHMENT POINTS

Solid external anchorage points shall be installed in the immediate vicinity of the emergency exit(s) allowing the attachment of:

(a) the liferaft

(b) the watertight container

(c) individual grab bags

(e) distress beacons

#### C.2.5 LIFERAFTS

(a) Two liferafts shall be carried on-board:

(i) One built to SOLAS standards and stowed outside in a container. It shall not be able to be used for stacking and will be sealed. This liferaft shall be equipped of SOLAS A pack. If it is impossible to put a SOLAS A pack inside the liferaft, a grab bag with water, food and pyrotechnic signals according to the difference between the A pack and the B pack for at least 4 persons, strongly tied to the liferaft, with at least the following quantities : 6 liters of drinking water, 2 kgs of energy food, 2 parachute flares, 3 hand flares, 3 floating smokes.

(ii) One conforming to the ISO 9650-1-A PACK 2 (<24h) standard inside.

It shall be able to pass through all watertight bulkheads providing access to all the possible ways out of the boat, including the transom escape hatch.

It shall not be able to be used for stacking and will be sealed.

(iii) When racing with crew, the total capacity of the two liferafts shall be sufficient for the evacuation of the entire crew.

#### (b) Stowage of the outside liferaft

This liferaft shall be stowed:

(i) either in a purpose-built compartment, opening into the cockpit, the working deck, or the transom, and containing nothing but this liferaft.

In the case of a compartment, it must be watertight or self-draining and have a cover capable of being opened under water pressure.

(ii) or in the cockpit, but not forward of the companionway hatches of the cockpit.

#### (c) Deployment

The end of the painter for the outside liferaft shall be permanently made fast to a strong point of the boat.

#### C.2.6 CREW OVERBOARD RECOVERY

(a) The following shall be on-board:

(i) A lifebuoy equipped with a whistle, a self-igniting light and a drogue, or a floating harness with a self-igniting light and without a drogue type "lifesling"

(ii) A lifebuoy equipped with a whistle, a drogue, a self-igniting light and a pole with a flag.

The pole shall be either permanently extended, or be capable of being fully extended automatically (e.g. by compressed gas or spring action in less than 20 seconds).

The pole and flag shall be attached to the lifebuoy with 3m of floating line.

It shall be so constructed that the flag sits at least 1.8m off the water.

(b) These 2 lifebuoys C.2.6 (a) (i) and (ii) shall be within reach of the helmsman and ready for instant use in double-handed and crewed races.

(c) At least one of the two lifebuoys C.2.6 (a) (i) and (ii) shall depend entirely on permanent (e.g. foam) buoyancy.

- (d) 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.
- (e) Each lifebuoy (or Lifesling) shall be fitted with marine grade retro-reflective material and marked at the boat name.
- (f) Each lifebuoy shall be equipped with a sachet of fluorescein dye.
- (g) A heaving line, no less than 6 mm (1/4") diameter, 15 - 25 m (50 - 75') long, readily accessible from the cockpit.
- (h) A recovery sling which includes a:
  - (i) buoyant line of length no less than the shorter of 4 times LH or 36m (120')
  - (ii) buoyancy section (horseshoe) with no less than 90 N (20#) buoyancy
  - (iii) minimum strength capable to hoist a crewmember aboard

### **C.2.7 PYROTECHNIC SIGNALS**

- (a) 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.
- (b) Shall be provided:
  - (i) 4 red hand flares
  - (ii) 2 orange smoke flares
- (c) These pyrotechnic signals shall be stowed in the watertight emergency container near the companionway.

### **C.2.8 LIFEJACKETS**

- (a) Each crew member shall have a lifejacket, which is compliant with the ISO 12402 – 3 (Level 150 N) or equivalent, including EN 396 or UL 1180 and also:
  - (i) equipped with a whistle and fitted with marine grade retro-reflective material,
  - (ii) compatible with the wearer's safety harness,
  - (iii) equipped with a crotch strap,
  - (iv) clearly marked with the boat's name or crew member's name,
  - (v) if automatically inflatable, the gas bottles shall be regularly checked. One spare gas bottle per lifejacket shall be on-board, and if appropriate, a spare activation head.
  - (vi) have an emergency position indicating light in accordance with either ISO 12402-8 or SOLAS LSA code 2.2.3
  - (vii) have a sprayhood in accordance with ISO 12402-8
  - (viii) have a PLB unit see C.2.15 ©, should be properly registered with the appropriate authority
- (b) A boat shall carry at least one spare lifejacket as required in rule C.2.8(a). « except C.2.8 (a) (viii) ».

### **C.2.9 COCKPIT KNIFE**

A strong, sharp knife, sheathed and securely restrained shall be provided readily accessible from the deck or the cockpit.

### **C.2.10 SAFETY HARNESS and SAFETY LINE**

Harnesses and safety lines shall conform to CE EN1095 or ISO 12401 standards.

#### **(a) Safety Harness**

Each crew member shall have a safety harness

#### **(b) Safety Lines (tethers)**

- (i) Each harness shall be equipped with a safety line not more than 1m long with a snaphook at each end.
- (ii) A mid-point snaphook on a 2-metre safety line is approved.
- (iii) Attention must be drawn to using U bolts as clipping points, because they can lead to the unclipping of plain snaphooks.

- (iv) For this reason, the use of snaphooks with positive locking devices is strongly recommended.
- (v) Safety lines shall have a coloured flag embedded in the stitching, to indicate an overload.
- (vi) A line, which has been overloaded shall be replaced.

#### **C.2.11 SOFT WOOD PLUGS**

Soft wood plugs, tapered and of appropriate size, shall be attached or stowed adjacent to the appropriate fitting for every through-hull opening.

#### **C.2.12 FIRE EXTINGUISHERS**

(a) At least two fire extinguishers shall be provided on-board (minimum capacity of at least 2kg each and ABC rated, CE 0029 or SOLAS 0029/03 approved), which are in date and readily accessible.

(i) One shall be close to the engine.

(ii) The other close to the companionway (less than 1.5 metres from the centre of the companionway hatch).

#### **(b) Fire Blanket**

Boat shall be equipped with a fire blanket adjacent to every cooking device with an open flame.

#### **C.2.13 FOGHORN**

A foghorn shall be provided on-board.

#### **C.2.14 RADAR AND ACTIVE RADAR TRANSPONDER**

The following equipment, in good working state, is mandatory:

(a) Pulse Radar with a minimum power of 2KW or Broadband Radar.

The radar unit shall be fixed at a height of at least 5 metres above the waterline.

(b) An RTE (Radar Target Enhancer) in compliance with ISO 8729-2 standard: 2009

#### **C.2.15 EPIRBs**

(a) Boat shall be equipped with two SARTSAT COSPAS Epirb portable distress beacons, classified as long-life (48 hours minimum autonomy) water and manually activated. These beacons shall:

(i) have two frequencies (406 MHz and 121.5 MHz),

(ii) be coded and registered with the name and MMSI number of the boat,

(iii) be serviced at intervals in accordance with the manufacturer's instructions,

(iv) be solidly attached with a line at least 3 metres long with a minimum breaking strain of 1,000 daN.

(v) They must be immediately accessible to the skipper, close to the companionway. They shall not move.

(b) An AIS personal location device for each crew member shall be on-board.

(c) A Personal Locator Beacon (PLB) for each crew member equipped with a dual frequency of 121.5 MHz and 406MHz shall be on-board.

#### **C.2.16 EMERGENCY TRANSMISSION**

(a) The boat shall be equipped with at least two sea-cocks, enabling a watertight installation with the boat inverted 180°:

(i) a VHF antenna;

(ii) a SARTSAT-COSPAS antenna, or any other position-indicating radio beacon;

(iii) an Iridium antenna;

(b) The 3 antennas listed above can be installed, one at a time;



(c) Checks shall be done ashore or, failing that, during the self-righting test.

#### **C.2.17 WATERTIGHT HANDHELD VHF TRANSCEIVER**

A waterproof handheld VHF transceiver, with charged batteries and spares, shall be carried on-board, in addition to the one in the survival container [see C.2.26 (c)].

#### **C.2.18 HANDHELD RADAR TRANSPONDER**

(a) A radar transponder (9.2 – 9.5 GHz frequency), handheld and battery powered shall be carried on-board. This transponder shall be securely attached with a line at least 3 metres long with a minimum breaking strain of 1000 daN.

(b) This radar transponder must be stored in the watertight survival container.

#### **C.2.19 DROGUE**

There must be a drogue suitable for an IMOCA60 on-board.

#### **C.2.20 FIRST AID MANUAL and FIRST AID KIT**

##### **(a) First Aid Manual**

A First Aid manual shall be on-board.

The latest edition of one of the following manuals is recommended by WS:

- 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, par Dr JY Chauve, published by Distance Assistance BP33 – La Baule Cedex France. An English translation is available.
- OR
- Skippers' Medical Emergency Handbook, First Aid at Sea, by Dr Briggs and Dr Mackenzie, published by Adlard Coles Nautical, London.

##### **(b) First Aid Kit**

A First Aid Kit shall be carried on-board.

The contents of the First Aid kit shall conform to the recommendations of the on-board manual.

It shall reflect the type of race and the number of people aboard the boat.

##### **(c) Emergency First Aid Kit for single-handed races**

During single-handed races, an emergency First Aid kit put together with what the skipper deems advisable for an emergency shall be located at the foot of the companionway, less than 1.5 m from the companionway entrance and be easily and quickly accessible.

It shall not be moved.

##### **(d) Medical Training**

Before the start of a race, the skipper (and co-skipper for double-handed races) shall have undergone medical training reflecting the type of race at least once in the past five years.

This training is strongly recommended for crew members for fully crewed races.

#### **C.2.21 RESERVED**

#### **C.2.22 DIVING EQUIPMENT**

The following shall be on-board:

(a) One Spare Air dive tank or equivalent, a minimum volume of 80 litres;

(b) A diving suit (full body) with gloves, flippers and mask.

#### **C.2.23 PERSONAL EQUIPMENT**

The following equipment shall be carried on-board for each crew member:

(a) A knife to be worn on the person at all times

(b) A waterproof flashlight

(c) One pack of mini flares and one personal rescue light (either SOLAS or strobe).  
One of these shall be attached to, or carried by each person when on deck at night.

#### **C.2.24 SURVIVAL TRAINING**

Before the start of a race, the skipper (and co-skipper for double-handed races) shall have undertaken at least once in the past five years personal survival training in accordance with WS standards.  
This training is strongly recommended for all crew members.

#### **C.2.25 PERSONAL SURVIVAL EQUIPMENT**

(a) Vacuum-packed warm clothing for each crew member

(b) An immersion suit for each person on-board shall:

- (i) conform to NF EN ISO 15027-1 standards, with a thermal insulation value without thermal underwear when immersed that shall be greater than 0.75 Clo (Category A).
- (ii) It shall be stowed in a bag attached to the foot of the companionway, less than 1.5 m from the hatch.

#### **C.2.26 WATERTIGHT EMERGENCY CONTAINER**

(a) A watertight emergency container shall be carried on-board. It shall be fitted with strong handles and a line with a minimum breaking strain of 1000 daN. It shall have inherent flotation, at least 0.1 m<sup>2</sup> (1 ft<sup>2</sup>) area of fluorescent orange colour on the outside, shall be marked with the name of the boat

##### **(b) Location**

This container shall be permanently stowed at the foot of the companionway, i.e. less than 1.5 m from the centre of companionway hatch. It cannot be stacked and it will be sealed.

##### **(c) Content**

It shall contain at least:

- A watertight handheld marine VHF transceiver with spare batteries
- An Iridium mobile phone watertight or with waterproof cover with spare batteries
- A watertight handheld GPS with spare batteries
- A watertight flashlight with spare batteries and bulb
- A knife
- Cyalume type chemical light sticks
- Fluorescein sea markers
- A strobe with spare batteries
- The pyrotechnic signals listed in paragraph C.2.7
- High-energy food of a minimum quantity of 10000 KJ
- A survival blanket for each person on-board
- The radar transponder listed in C.2.18

#### **| C.2.27 SAFETY TRAINING**

A compulsory training course for skippers and co-skippers on techniques, means of rescue and ocean safety will be organised by the IMOCA class. It will be organised over two sessions and will be presented in French and English.

### **C.3 ADVERTISING**

- C.3.1** In accordance with rule 20 of the WS Advertising Code, IMOCA skippers are permitted to display advertising on their boats.
- C.3.2** However, a circle measuring 2.30m in diameter on each side of the bottom third of the mainsail shall be free of any advertising.  
In line with the agreements reached by the IMOCA Executive Committee, the diameter of this circle can be increased to 3m, or a maximum surface area of 7m<sup>2</sup>, within value limits to be defined.
- C.3.3** The IMOCA logo shall be affixed on both sides of the mainsail, between the headboard and the sail numbers. IMOCA will provide this material.
- C.3.4** According to agreements made between IMOCA and the event organizers, aft dodgers tensioned along the lifelines on each side of the boat must be displayed in the harbour and when racing.
- C.3.5** On these dodgers, official promotional logos will be affixed in accordance with IMOCA's Executive Committee. IMOCA will provide this material.
- C.3.6** The marking plan is available from IMOCA's office (contact@imoca.org).

### **C.4 EQUIPMENT AND CONSUMABLES**

#### **C.4.1 ENGINE**

##### **(a) Performances to be achieved**

When motorised, the boat must achieve the following performance and these measurements must be able to be checked at a race finish:

- Traction value of 280 daN at a fixed boat (boat tied to the dock, traction measured with a dynamometer) for 15'.
- Generate a 5 knots speed at sea with a demonstrated range of 5 hours.

##### **(b) Engine type**

The engines can be either internal combustion or electric.

##### **(c) Special measures**

- (i) The elements that form an integral part of the engine cannot be removed or modified. However, they may be replaced on a like-for-like basis.
- (ii) It is possible to add to the 'standard' diesel engine, for example an extra alternator or a larger or additional alternator, and 'standard' diesel engine accessories

##### **(d) Internal combustion engines**

- (i) For internal combustion engines, solely standard series diesel engines (namely self-igniting via fuel compression) with a minimum 'manufacturing standard' power of 37 HP are authorised.
- (ii) The engine shall be securely protected.
- (iii) The engine shall be permanently installed in the boat and cannot be moved.
- (iv) The exhaust, fuel supply systems and fuel tanks shall be permanently installed.
- (v) The engine shall have adequate protection from the effects of heavy weather.
- (vi) When an electric starter is the only method for starting the engine, a battery or separate electric source, the primary purpose of which is to start the engine, shall be on-board.
- (vii) Each fuel tank shall be provided with a shutoff valve.
- (viii) Flexible tanks are not permitted as fuel tanks.

(ix) All the required fuel (with the exception of 20 litres, see section C.1.3) shall be stored in fixed tanks. The transfer of fuel between tanks is strictly forbidden.

**(e) Electric engine**

Electric engines are allowed. They can be prototypes.

- (i) The engine shall be securely protected.
- (ii) The engine shall be permanently installed in the boat and cannot be moved
- (iii) The batteries used for electricity supply of the engine shall be attached to the boat and cannot be moved.
- (iv) The engine shall have adequate protection from the effects of heavy weather.

**(f) Propeller**

It shall be located below the waterline, as close as possible to the boat's centreline, and shall be neither retractable nor foldaway, nor be located on a movable appendage.

It shall be permanently positioned in the water flow running under the hull with zero heeling angle.

(g) The engine controls (gears + engine speed) shall be within reach of the helming station on deck.

**C.4.2 BATTERIES / GENERATOR**

**(a) Batteries**

Shall be waterproof or electrolyte gel type and shall not be moved when underway.

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 fissile materials.

**(b) Generator**

A separate generator for electricity supply can be installed.

However, when a separate generator is carried on-board it shall be permanently installed, securely insulated and have adequate protection against 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.

A Fuel-Cell produces electricity, so it is a generator.

**C.4.3 CONSUMABLES**

It is forbidden to have fuel on-board and to use volatile petrol which needs specific ventilation.

**C.4.4 COMPASS**

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

(b) An additional compass to that required above shall be carried on-board.

**C.4.5 INSTALLATION AND NAVIGATIONAL EQUIPMENT**

**(a) ANTENNA MOUNTS**

It is strongly recommended to see to it that the antennas are mounted in one of the following ways:

(i) Either with an antenna mount outside the working deck at the back of the boat.

The height above the waterline shall not be less than 2 metres.

It shall not be used for anything other than an antenna mount for satellite positioning and communication equipment, VHF etc.

It shall not be structurally integral to the hull, the deck or the transom.

(ii) Or located in a protected zone on the coachroof or deck, elevated, and secured by a protective device fabricated with a material permeable to satellite, radar and radio waves.

**(b)** The following shall be on-board in good working order:

**(i)** A DSC capable 25W VHF marine radio transceiver, equipped with a fixed antenna.

**(ii)** Active AIS and navigational software which displays AIS targets

**(iii)** A masthead VHF/AIS antenna

The installation shall be controlled by a well-known organization for its expertise in the installation of such equipment (certified agency or accredited installer). This body should check the following conditions:

- The co-axial feeder cable should have the same impedance,

- The cable has not more than 40% power loss

These elements shall be certified in writing by that body.

This less older than one year older certificate of installation compliance shall be given to the Chief measurer to get an IMOCA certificate.

**(iv)** An emergency antenna for the VHF/AIS

**(v)** A Sat Com transceiver.

**(vi)** A GPS.

**(vii)** A SAT C interfaced with GPS and equipped with the relevant software for polling and data reporting. Its antenna must be on a mount a minimum of 55cm above the deck and unobstructed within a 60cm radius.

**(viii)** An echo sounder.

**(ix)** A speedometer.

#### **C.4.6 NAVIGATION DOCUMENTS**

Navigational charts, that are not solely electronic, list of lights and chart plotting equipment shall be provided and appropriate to the specific race zones entered.

#### **C.4.7 ANCHORS AND TOW LINES**

**(a)** There must be two sets of anchoring gear on-board.

The total weight of the 2 anchors and chains shall be greater than or equal to 75kg.

**(b)** Each set of anchoring gear shall consist of an anchor and chain.

**(c) Tow line:** each boat shall be equipped with two 18mm pre-stretched polyamide warps measuring 50m in length. These warps are to be used as anchor warps or two lines.

**(d) Location and sealing:** the anchoring gear must be ready to use: the anchor, chain and warp shall be sealed in the same location so that each part can be carried separately on deck.

The skipper, with the consent of the event measurer, shall decide the stowage location and sealing position, in such a way that the anchor can be deployed within a maximum of 3 minutes (anchoring gear ready on deck).

A demonstration for each set of anchoring gear may be requested.

#### **C.4.8 FLASHLIGHTS**

Shall be carried on-board:

**(a)** A high-powered watertight flashlight or spotlight capable of flashing with spare batteries and bulbs.

**(b)** A watertight flashlight capable of flashing with spare batteries and bulb.

#### **C.4.9 RESERVED**

#### **C.4.10 TOOLS and SPARE PARTS**

Tools and spare parts, including effective means to quickly disconnect the standing rigging from the hull shall be on-board.

### **C.5 BOAT DISPLACEMENT IN LIGHT CONFIGURATION**

### C.5.1 Configuration for the class measurement

The light configuration and associated conditions are described in Annexe G.

### C.5.2 Self-righting 180° test configuration

(a) Identical to the light configuration but without:

- (i) Mast(s), rig, boom(s), downhaul, headsail furler(s) and halyards, electronic equipment on deck such as the radome on the mount, antennas...
- (ii) Fittings permanently attached to the mast(s).

(b) Breather plugs for the diesel and for other fluids must be blocked.

C.5.3 IMOCA's Chief Measurer may specify a modification to these configurations especially for the **hull appendages** which in this case may have special configuration with integration into the numerical model before calculation. Any equipment listed in Annex G and which must be on board in light configuration shall be digitally added to the calculation model.

## C.6 BOAT

### C.6.1 GENERAL POINTS

The boat must be symmetrical.

### C.6.2 IDENTIFICATION

(a) A hull number allocated by IMOCA's Chief Measurer must be moulded or engraved into the boat's transom.

#### (b) Hull marking

To assist in SAR location, the sail number shall be displayed in a highly visible manner, once on deck.

The minimum size of the characters shall be as follows:

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

#### (c) Exterior hull marking

To assist rescue parties with gaining access to the boat, the area of the hull, which can be easily penetrated, shall be clearly marked in highly visible paint (orange, yellow or red). (See article D.10).

This area shall be easily accessible for a person arriving from the sea.

#### (d) Interior hull marking

To assist the skipper with getting out of the boat by means other than escape hatches, the area of the hull, which can be easily broken, shall be clearly marked with highly visible paint.

(e) To assist in SAR location, the keel, rudder(s), and a minimum of 2 m<sup>2</sup> of the hull below the waterline shall be entirely covered with special fluorescent paint and a minimum of 2 m<sup>2</sup> of the surface of the deck in one place shall be covered with a bright, highly visible coloured paint.

### C.6.3 MODIFICATION

#### (a) Modification of an existing boat

- i) An existing boat having the hull shape below the sheer (topsides + hull under the waterline) modified, across 50% or more of the surface area, shall be deemed to be a boat issued with its first IMOCA Measurement Certificate after 1 May 2013.
- ii) It shall satisfy all the Class Rules relating to a new boat.

- iii) The date the first IMOCA Measurement Certificate is issued for this boat defines the initial shape of the hull to be considered.
- iv) It shall not accumulate modifications concurrently over time beyond 50%.

(b) In the event of modifications to the hull, a boat issued with an IMOCA Measurement Certificate prior to 1 May 2013 shall adhere to article D.2.2.

Where it is impossible to adhere to this article and prior to hull modifications, it must receive authorisation from the IMOCA Chief Measurer to use materials specific to its hull.

#### C.6.4 WATER DRAUGHT

(a) The water draught is limited to 4.50m in light configuration, which is outlined in article C.5.1 a).

(b) The water draught is calculated from measurements on shore and when the boat is afloat.

#### C.6.5 REPAIRS / MODIFICATIONS

Any significant repairs or modification to the boat shall be declared to IMOCA's Chief Measurer.

### C.7 HULL APPENDAGES

#### C.7.1 GENERAL POINTS

(a) The use of any material with a density greater than 11.4 (keel and/or bulb) is prohibited for boats built after 1<sup>st</sup> January 2006 (launch date, boat ready to sail) and for boats built before this date when they change their bulb.

(b) Only one degree of freedom is authorised for keels.

(c) If one of the fundamental components of the canting keel is built after 1 July 2009, the whole canting keel is considered as having been built from that date.

(d) No combined movement (helical movement, etc.) is permitted.

(e) Trim tabs as well as deformable surfaces are prohibited for **hull appendages**, except for fixed keels, which can have a **trim tab**.

(f) Symmetrical and central daggerboards can be moveable on two degrees of freedom.

(g) Only one degree of freedom is authorised for asymmetric daggerboards.

(h) Effective from 1 January 2018, a foil shall be retractable using one degree of freedom and:

(i) A second degree of freedom may be used if and only if a set of two bearings is used to guide this appendage.

(ii) One of the two bearings shall be a non-adjustable bearing positioned close to the hull.

(iii) The other bearing may have a degree of freedom.

If it exists, this degree of freedom shall be a translation and shall limit the rotation of the foil to an angle of 5 degrees.

(iv) This angle is measured from the non-adjustable bearing positioned close to the hull.

#### C.7.2 LIMITING THE NUMBER OF APPENDAGES

(a) 5 for a boat issued with its first IMOCA Measurement Certificate after 1 July 2009.

- (b) For boats with more than 5 appendages at the time of the last certificate, which was issued within the time limit for the 2008 Vendée Globe, where a daggerboard-type appendage has been transformed into foil-type appendages, the number of appendages is limited to 5

### C.7.3 RESERVED

### C.7.4 DAGGERBOARD AND FOIL

Centreboard, daggerboard and foils cases and the like shall not open into the interior of a hull except via a watertight inspection/maintenance hatch, the opening of which shall be entirely above the boat's waterline in her normal trim.

### C.7.5 RUDDER

- (a) The number of rudders is limited to 2.
- (b) The lowest position of the rudder is its usual use mode and defines its 'maximum depth'. In any position for use other than 'maximum depth', it shall be demonstrated that the rudder has no influence on the water flow on and outside the hull.
- (c) The attachment points of the rudder(s) shall be fixed.

## C.8 RIGGING

### C.8.1 GENERAL POINTS

- (a) Boats must be properly rigged.
- (b) Shrouds shall never be disconnected.
- (c) **Integration of the standardised mast into the boat**  
The mast shall be integrated into the boat within the rules.  
The integration of the mast and its rigging remain the sole responsibility of the boat owner.

### C.8.2 AIR DRAUGHT AND MAST

#### (a) Air draught

- (i) For boats issued with their first IMOCA Measurement Certificate after 1 July 2009, air draught is limited to 29m.
- (ii) For all boats issued with an IMOCA Measurement Certificate before 1 July 2009 with an air draught greater than 29m, any change on the mast shall not increase this air draught.
- (iii) For all boats issued with an IMOCA Measurement Certificate before 1 July 2009 with an air draught lower than 29m, any change on the mast shall not increase this air draught to more than 29m.

#### (b) Side canting masts

- (i) Masts that cant sideways are forbidden.
- (ii) The mast must never cant to windward beyond the boat's centreline.

### C.8.3 DECKSPREADERS AND OUTRIGGERS

In a change to rule 50.3 of the RRS, the use of outriggers is allowed solely to support the rig and/or sail trim, and not for anything else under any circumstances.

## C.9 RESERVED

## C.10 SAILS

### C.10.1 NUMBER OF SAILS ON-BOARD

The number of sails on-board for racing is limited to 8.



## C.10.2 STORM and HEAVY WEATHER SAILS

### (a) Materials

Aromatic polyamides, carbon or similar fibres shall not be used in the storm jib, but Spectra / Dyneema and similar materials are permitted.

### (b) Compulsory equipment

A headsail, storm sail type, with a surface area of between 14 and 20m<sup>2</sup>, made of strong, highly visible coloured material shall be onboard.

This sail shall have:

- Sheeting positions on deck.
- A strong, secure system for attachment to a forestay, which must not contain or depend upon a luff groove device.

The use of a sail with a free luff is permitted.

## C.10.3 TACK AND CLEW FIXING POINTS

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

## Section D – Hull

### D.1 GENERAL POINTS

The boat shall be a monohull.

#### D.1.1 BOAT STRUCTURE AND SCANTLINGS

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 expected to face in the course of races classified by the OSR as category 0.

### D.2 HULL

#### D.2.1 MEASUREMENTS and CHARACTERISTICS OF THE HULL

(a) A boat issued with its first IMOCA Measurement Certificate prior to 1 July 2009:

The length overall (LOA) shall be greater than 59 feet (17.983m), but not exceeding 60 feet (18.288m).

The measurement of length overall excludes [except for items specified in D.2.1 (c)] all appendages and all fittings. To be excluded from the LOA, an appendage (a rudder for example) shall not have parts outside the boat's overall length, aimed at artificially extending the waterline length, whose total area would be greater than 0.12m<sup>2</sup>.

(b) A boat issued with its first IMOCA Measurement Certificate after 1 July 2009:

The LOA shall be greater than 59 feet (17.983m), but not exceeding 60 feet (18.288m) including the complete decked hull, equipped with all its appendages and with the rudder(s) in lowest position as mentioned in C.7.5 (c) and except equipment specified in D.2.1 (c).

(c) For all boats: Items not included in the LOA:

The spars shall not exceed the overall length of the hull by more than 6 feet (1.829m) in total, the fore and aft overruns added together.

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

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

Antenna mounts, a wind generator and a hydro generator, if the boat is equipped with them, shall not be included in the overall length of the boat.

#### **(d) Maximum beam Bmax**

The maximum beam shall not be greater than 5.85 m for a boat issued with its first IMOCA Measurement Certificate issued after 1 May 2013.

A boat which has its hull modified may not have its maximum beam increased beyond the value it had prior to modification, when its last certificate was issued, unless its maximum beam was less than 5.85 m.

#### **(e) Limiting the forward section of the hull**

The maximum beam, measured 1-metre aft of the foremost point used to determine the boat's length, shall not be greater than 1.12 m for a boat issued with its first IMOCA Measurement Certificate after 1 May 2013.

A boat which has its hull modified cannot have the section that is outlined above extended beyond the value it had prior to the modification, when its most recent certificate was issued, unless the beam of this section was less than 1.12 m.

### **D.2.2 LIMITING THE MATERIALS OF THE HULL**

#### **(a) Boats issued with a first measurement certificate after 1 May 2013:**

The hull of the boat less associated fittings and less all the corrector weights shall be built to conform to the following specifications:

- HR fibres are allowed and limited to the fibres listed below:
  - o Toray T800H
  - o Toray M30S
  - o Toray T700S
  - o Mitsubishi Rayon MR40
  - o Hexcel IM 7 (6k)
  - o Ternel T650/42
  - o Hexcel IM2A
  - o Mitsubishi MR60H
  - o Hexcel IM2C
  - o Hexcel AS7
  - o And any fibre having been accepted beforehand by IMOCA's Chief Measurer.
- Nomex core material or foam.
- Film adhesive minimum 300 g/m<sup>2</sup>.
- Non-adjuvanted resin (no nano-techs).
- Minimum weight of the materials 150 g/m<sup>2</sup>.

### **D.3 WATER BALLAST TANKS**

#### **D.3.1** The boat may be equipped with water tanks and associated permanently fitted plumbing.

All these ballast tanks shall be integral to and within the hull structure.

This movable ballast can only use water, to the exclusion of any other liquid.

#### **D.3.2** It must be possible to manually empty, transfer and fill the water in the ballast tanks, whatever the position of the boat in the water.

#### **D.3.3** IMOCA's Chief Measurer would appreciate it if several volumes connected by a hose are considered as one or several ballast tanks.

#### **D.3.4** The water must be able to circulate freely inside each ballast tank and be able to reach the lowest point of the ballast tank whatever the boat's position.

#### **D.3.5** The lowest part of each ballast tank must be accessible via an opening hatch.

### **D.4 INSUBMERSIBILITY**

#### **D.4.1 FUNDAMENTAL RULE**

In the event all compartments are completely flooded, the boat shall remain unsinkable.

#### D.4.2 INSUBMERSIBILITY VOLUME

- (a) The boat shall have a total insubmersibility volume expressed in m<sup>3</sup> equal to or greater than 105% of the boat's displacement in light configuration.
- (b) Taken into account in the calculation of this volume:
- (i) The combined volumes of the fixed waterproof items.
  - (ii) The volumes of the structural boxes when they are filled with closed cell foam.
  - (iii) Additional volumes of closed cell foam, which is non-detachable, laminated or glued directly onto the hull structure.

#### D.4.3 LONGITUDINAL DISTRIBUTION OF INSUBMERSIBILITY VOLUMES

- (a) These fixed volumes shall be distributed approximately proportionally in each compartment.
- (b) The skipper, or his/her representative, shall supply a set-up diagram of these buoyancy volumes.
- (c) There shall be sufficient insubmersibility for the aft escape hatch to be above the waterline when the boat is inverted, with the companionway hatch open, without the bulb or keel fin, with empty ballast tanks and with 400kg of equipment simulated in the longitudinal axis of the boat, 1,500mm in from the aftermost point of the boat.

#### D.5 MINIMUM STANDARDS OF STABILITY AND POWER LIMITATION

##### D.5.1 INITIAL HEEL ANGLES

*NOTE: See rule A.14(c)*

- (a) From the vertical axis due to stacking and the filling of ballast tanks in the most unfavourable condition: the amplitude from one side to the vertical shall not exceed 10°.
- (b) Each ballast tank must be completely filled or emptied, in the search for the most unfavourable condition.

##### D.5.2 ANGLE OF VANISHING STABILITY (AVS)

*NOTE: See rule A.14(c)*

- (a) This angle shall be more than 127.5°.
- (b) This angle is calculated from the theoretical stability curve derived from measurements taken during the stability tests and from information provided by the naval architect.
- (c) The buoyancy of the spars is not taken into account.

##### D.5.3 AVS WORST CASE (AVSwc)

- (a) The worst case for AVS is the angle at which the boat capsizes when its keel and ballast (filled) and is in its least favourable combination; the boat otherwise being in light configuration (apart from the relevant ballast tanks filled).
- (b) The value of the AVSwc in the worst case shall be greater than 108° for boats issued with an IMOCA Measurement Certificate before 1 July 2009.
- (c) For a boat issued with its first IMOCA Measurement Certificate after 1 July 2009 the value of the AVSwc shall be greater than or equal to 110°.
- (d) All boats issued with an IMOCA Measurement Certificate before 1 July 2009 with an AVSwc lower than 110°, any changes shall not lead to a reduction in AVSwc.

(e) All boats issued with an IMOCA Measurement Certificate before 1 July 2009 with an AVSwc greater than 110°, any change shall not lead to a reduction in AVSwc to under 110°.

(f) Buoyancy of masts and spars is not taken into account.

(g) AVSwc must be measured by IMOCA under the authority of IMOCA's Chief Measurer based on the theoretical stability curve obtained following measurements taken during the stability tests, information provided by the naval architect and measurements taken by the measurer.

#### **D.5.4 STABILITY CURVE AREA RATIO**

The positive area under the stability curve shall be at least 5 times greater than the negative area. Measurements must be done in light measurement trim.

#### **D.5.5 SPECIAL PROVISION**

Dispensation for article D.5.4, for boats launched before 1<sup>st</sup> January 1999, the positive area under the stability curve may be only 4 times greater than the negative area instead of the 5 times required by the IMOCA Class Rules.

#### **D.5.6 MAXIMUM RIGHTING MOMENT**

**(a) Boats issued with a first IMOCA Measurement Certificate after 1<sup>st</sup> July 2009 and prior to 1<sup>st</sup> May 2013:**

The maximum righting moment (RM) (all ballast tanks full on one side, including central ballast tanks if they exist, and movable equipment in extreme configuration on the same side, keel fully canted on the same side) shall be less than or equal to 32TM (tonne metre).

**(b) For boats issued with an IMOCA Measurement Certificate prior to 1<sup>st</sup> July 2009 with a RM greater than 32TM (tonne metre):**

Any modification to these boats shall not increase the RM.

**(c) For all boats issued with an IMOCA Measurement Certificate prior to 1<sup>st</sup> July 2009 with a RM less than 32TM (tonne metre):**

Any modification to these boats shall not increase the RM beyond 32 TM.

**(d) For a boat issued with its first IMOCA Measurement Certificate after 1<sup>st</sup> May 2013:**

The righting moment (RM) – all ballast tanks full on one side, including central ballast tanks if they exist, keel fully canted on the same side – shall be less than or equal to 25.5TM (tonne metre) at a 25° angle of heel.

The maximum keel cant angle shall be 38° on each side.

#### **D.6 COCKPITS**

**D.6.1** ISO 11812 standard applies (Watertight cockpits and quick-draining cockpits, design Category A).

**D.6.2** Furthermore, the following shall be adhered to:

A semi-permanent sill is allowed but it must conform to article 8.2.4 (Other requirements) of ISO 11812 and it must only open outwards.

#### **D.7 WATERTIGHT BULKHEADS**

**D.7.1** All required watertight bulkheads shall be solidly built to withstand direct water pressure without the slightest ingress into the adjacent compartment.

**(a) Watertight bulkheads**

**(i) They shall:**

- divide the boat into several compartments from stem to stern,
- be transverse, 5 minimum in number to create 6 watertight compartments with 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 watertightness of the compartments.

(ii) The foremost watertight bulkhead shall be located within 15% of overall boat length (2.74m) and aft of the foremost point of the waterline.

(iii) For boats issued with their first IMOCA Measurement Certificate after 1 July 2009, a watertight bulkhead must not stop at a ballast tank, a **hull appendages** case or any other part other than the hull and the deck.

(iv) The transom is not a bulkhead.

(v) Special provisions:

- Notwithstanding article D.7, boats launched before 1 May 2000 may be equipped with only 3 watertight bulkheads, provided that in this case the boat has a buoyancy volume of 145%; or with only 4 watertight bulkheads, provided that in this case the boat has a buoyancy volume of 137.5%.

#### (b) Crash box

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

### D.8 WATERTIGHT BULKHEAD DOORS

**D.8.1** The boat shall be accessible from bow to stern via watertight hatches, whatever the position of the boat. These hatches, where not permanently installed, shall be stowed immediately adjacent to their place of use, and be able to be rapidly installed.

**D.8.2** Once closed, these hatches must provide a watertight seal to the bulkhead regardless of where the water is and how much pressure it exerts.

**D.8.3** The hatches and their closing mechanisms must be able to withstand the pressure generated by water in a flooded compartment (refer to the study in Appendix I of the present rules, carried out by Bureau Veritas, about the pressure generated by the motion of a liquid mass in a compartment)

### D.9 RESERVED

### D.10 ESCAPE HATCHES

**D.10.1** For boats issued with a first IMOCA Measurement Certificate after 1 July 2009, the boat shall have at least two emergency exits of a minimum aperture of 0.20m<sup>2</sup> and of a geometry enabling the inside liferaft and a crew member to pass through in an immersion suit:

(a) One exit shall be located forward of the foremost mast.

(b) The second shall be located entirely within 500mm of the aftermost point of the boat and be above the waterline to enable access in and out of the boat whatever its position.

(c) When the boat is afloat and in light configuration the aft escape hatch shall be above the waterline allowing a person to go in and out of the hull.

(d) This hatch shall be equipped with a closing mechanism with interior and exterior handles operating the same locking mechanism.

(e) The materials of this hatch and its locking mechanism must be able to resist water pressure no matter what the state of the sea.

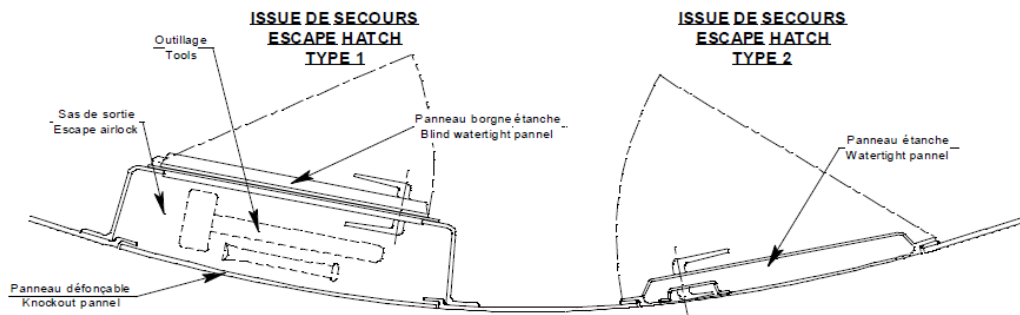
(f) There shall be appropriate handholds fixed to the boat to facilitate exiting the boat to get on the deck or the hull in the event of capsize, and equally to get back inside.

(g) An area or areas of the hull which can be pierced to enable people to get in and out shall be distinctively marked on the inside and outside of the hull [See C.6.2(c) and C.6.2(d)].

(h) In the event that the height of the transom is less than 900mm above the waterline when the boat is inverted in the conditions outlined in D.4.3 (c), it is mandatory to set up an escape airlock at the bottom or on the side of the hull.

(i) This device must enable the skipper to get outside without damaging the integrity of the hull, which must be understood to mean “maintaining the buoyancy of the hull-deck set, whatever the boat’s position”.

(ii) This integrity must be conserved, even after leaving the vessel.



If an escape airlock is set-up (Type 1), the interior panel, which ensures the hull’s integrity, must be able to be opened and closed, from both inside and outside.

In the event that there is just a single panel (Type 2), it cannot be a ‘knockout’ panel and must be able to handle from both sides.

(iii) It can, for example, comprise a blind watertight panel at the bottom of the hull and the necessary tools to stave in the hull to the right of this panel.

(iv) The siting of this panel can be identical to that of the markings specified in article D.10.1 (g) in as far as the panel and markings satisfy the Class Rules.

(v) Another solution is a completely watertight panel at the bottom or the side of the hull.

- This escape route shall be big enough to allow the skipper to get through with his or her liferaft.
- This device is designed to enable the skipper, in a critical situation (inverted and damaged boat), to actively prepare his or her evacuation whilst awaiting assistance.

(i) Boats issued with an IMOCA Measurement Certificate on 1st July 2009 shall either:

(i) Comply with article D.10 applicable to boats issued with an IMOCA Measurement Certificate after 1st July 2009, or

(ii) Present IMOCA’s Executive Committee with a detailed and well-argued solution for the installation of an emergency exit, which will give a ruling on its validity and will decide whether or not to authorise the installation.

## D.11 COMPANIONWAY HATCH

D.11.1 A companionway hatch shall be fitted with a solid and watertight closing mechanism, which shall be operable by one person from the exterior and the interior, including when the yacht is inverted.

## D.12 HATCHES

D.12.1 No hatch forward of the maximum beam shall open into the hull except hatches with a surface area of less than 0.071m<sup>2</sup>.

D.12.2 Hatches shall be position in such a way that they are always above the waterline when the hull is heeled at 90°. They shall be permanently attached, capable of being shut immediately and remaining firmly shut in the event of a 180° capsize.

D.12.3 The hatches, closing mechanisms and associated equipment must be capable of withstanding water pressure when the boat is inverted.

**D.12.4** Validation of the capacity of the hatches, closing mechanisms and hinges to withstand water pressure when the boat is inverted, must be performed via any relevant means, at the expense of the IMOCA's skipper.

### **D.13 FIT-OUT / EQUIPMENT**

**D.13.1** ISO 15085 standard – Prevention of man overboard and recovery, design Category A applies as a minimum, and is complemented by the specifications listed below, up to and including paragraph D.13.7.

**D.13.2** The working deck cannot be located more than:

- 0.50 metres inside a line defined by the extension of the flotation plane of the sheerline.
- 0.50 metres inside a line defined by the extension of the flotation plane from the aftermost points of the hull including between each sheer.

**D.13.3** A single break in the lifelines of a maximum of 0.50 metres on each side of the boat, normally measured at the lifelines, is permitted provided that there is a minimum overlap amounting to the size of the gap.

### **D.13.4 PULPITS, STANCHIONS AND LIFELINES**

#### **(a) General requirements**

- (i) Pulpits and lifelines shall be a minimum height of 600mm.
- (ii) There shall be at least two rows of lifelines.
- (iii) Pulpits, stanchions and lifelines shall not contain carbon fibre.

#### **(b) Pulpits**

- (i) Boats shall have a pulpit (bow) and a pushpit (stern).
- (ii) The pulpit may be in 2 parts and open provided that the opening between the pulpit and any part of the boat (a fixed non-releasable forestay is a part of the boat, releasable forestays are not taken into account for this part of the rule) is never more than 360mm.
- (iii) It is not possible to connect the 2 parts of the pulpit with a sheathed Spectra lifeline when the pulpit is made of 2 parts and open, and the opening between the pulpit and any part of the boat is greater than 360mm.
- (iv) The pulpit must have at least 4 points where it is permanently structurally joined to the deck of the boat.
- (v) Where a pulpit is split into two separate sections, each side of the pulpit shall have at least 2 points where it is permanently structurally joined to the deck of the boat.
- (vi) The pulpit shall enclose all the forestays, (including releasable ones and subject to article D.13.4 b) whose attachment point is on the deck of the boat
- (vii) Lifelines installed on stanchions may in part act as a substitute for the pushpit.
- (viii) Upper rails of pulpits and lifelines where they act as substitute for a pushpit shall be a minimum height of 600mm above the working deck.  
This level is defined in the area of the upper lifeline at the side aft part of the cockpit.
- (ix) Lifelines shall be entirely supported on stanchions and pulpits/pushpits.

#### **(c) Diameter, materials**

- (i) Lifelines can be made of stranded stainless steel wire with a minimum diameter of 5mm.  
Lifelines shall be uncoated and the end pieces must not have close-fitting sleeving.  
Grade 316 stainless wire is recommended.
- (ii) Lifelines made of synthetic materials (Spectra or Dyneema) are allowed and shall be sleeved through the stanchions.
- (iii) A taut lanyard of synthetic rope may be used to secure lifelines at each end provided the gap it closes does not exceed 100mm.
- (iv) All wire, fittings, anchorage points, fixtures and lanyards that together comprise a lifeline enclosure system must at all points have at least the breaking strength of the required lifeline wire.
- (v) The vertical opening between 2 lifelines must be less than 380mm.

### **D.13.5 JACKSTAYS / CLIPPING POINTS**

#### **(a) General requirements**

Jackstays together with clipping points and harness tethers shall enable:

- (i) an alone crew member to clip on before coming on deck and unclip after going back below.
- (ii) a crew member to move about freely between the working areas on deck and the cockpit(s) whilst being continuously clipped on, including being able to cross the deck from one side to the other, with the minimum of clipping and unclipping operations.
- (iii) two-thirds of the crew to be simultaneously clipped on without depending on jackstays.

Special care should be taken regarding the use of U bolts as clipping points, as they can lead to accidental unclipping of certain snaphooks.

#### **(b) Jackstays**

Jackstays shall be:

- (i) fitted on deck, to port and starboard of the yacht's centreline.
- (ii) firmly attached to the deck.
- (iii) made of uncoated 1x19 stainless steel wire without sleeving with a minimum diameter of 5mm, or webbing of equivalent strength (20kN breaking strain), or of UHMWP – Ultra High Molecular Weight Polyethylene rope (Dyneema or Spectra) with a breaking strain greater than or equivalent to 20kN.

#### **(c) Clipping points**

There must be clipping points 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 mast(s), where crew members work for long periods.

### **D.13.6 TOE RAIL / FOOT STOP**

(a) A toe rail with a minimum height of 25mm shall be permanently installed around the working deck, except in way of fittings and at the base of the transom.

The toe rail shall be fitted as close as practicable to the vertical axis of the stanchion bases and not further inboard than 1/3 of the local half-beam.

#### **(b) Special provisions**

For boats built before 1 June 2004, the toe rail may be installed only around the foredeck, from abreast of the mast.

### **D.13.7 HANDHOLDS / HANDRAIL**

The boat shall be equipped with:

- (a) Adequate handholds inside the boat so that crew members may move about safely at sea.
- (b) A fixed handrail all the way along the skirt or the hull/transom join, which acts as a grab-rail to facilitate climbing back on the boat in the event of falling overboard

### **D.13.8 BOW FAIRLEAD / CLEAT**

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

### **D.13.9 RESERVED**

### **D.13.10 NAVIGATION LIGHTS**

(a) Navigation lights shall comply with the COLREGs relating to sailing vessels under sail, motoring and at anchor.

(b) Navigation lights for sailing shall:

- be mounted so that they will not be masked by sails or by the heeling of the yacht.
- be mounted above deck level and at least at the height of the lower lifeline.

(c) The reserve navigation lights for sailing shall have the same specifications as the above-mentioned lights (which comply with the COLREGs) and be permanently installed.



- (d) They shall have a separate wiring system from the one used for the normal navigation lights.
- (e) Spare bulbs for navigation lights shall be carried, or for lights not dependent on bulbs, appropriate spares.
- (f) For boats with a rotating mast, masthead navigation lights are forbidden, except if they remain in conformity with the COLREGs when the mast is rotated.

#### **D.13.11 EMERGENCY STEERING**

- (a) Boats equipped with a single rudder shall carry an emergency tiller.
- (b) The crew must be aware of alternative methods of steering the yacht in any sea condition in the event of rudder loss.

#### **D.13.12 SEA COCKS AND VALVES – THROUGH HULLS**

- (a) Sea cocks or valves (quarter turn valves or guillotine valves) shall be permanently installed on all through hull openings below the waterline except integral deck scuppers, shaft log, speed indicators, depth sounders and the like.  
However, a means of closing these openings shall be on-board.
- (b) All boats must have at least two sea cocks, one on the forward section and the other on the aft or midpoint section of the hull, in the compartments of the boat, which are accessible when the boat is inverted, through which to fit antennas for safety transmissions as per article C.2.16.

#### **D.13.13 BUNKS**

Two bunks shall be installed on-board.

#### **D.13.14 COOKING FACILITIES**

A cooking stove permanently installed and accessible and securely fastened with safe, accessible fuel shutoff control capable of being safely operated in a seaway.

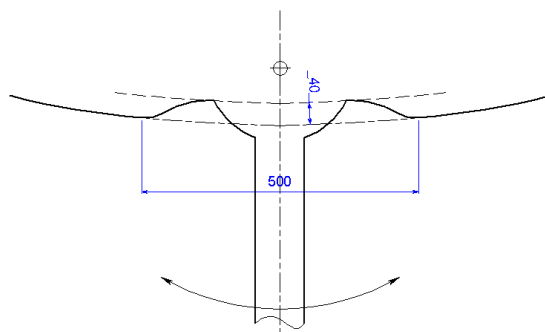
#### **D.13.15 DRINKING WATER**

- (a) A water maker capable of being operated manually and electrically shall be on-board.
- (b) It is the skipper's responsibility to ensure that there is enough drinking water for the duration of the race and the number of people on-board.
- (c) For races exceeding 5000 nautical miles, two water makers capable of being operated manually and electrically are mandatory.

### **Section E – Hull appendages**

#### **E.1 GENERAL POINTS**

- E.1.1** At the intersection between the canting keel and the hull, it is permitted not to adhere to the definition of monohull in this zone solely for technical reasons linked to the operation of this appendage.  
This zone shall be limited (maximum width of 500mm and a maximum depth of 40mm).  
A written agreement from IMOCA's Chief Measurer is mandatory to achieve this.  
The exclusion zone is limited to 500mm wide overall, from one side to the next, and a maximum depth of 40mm measured according to an offset of the faired surface of the hull, extended where necessary, compliant with the diagram below.



## E.2 KEEL

### E.2.1 ROTATING KEEL

**(a)** When the boat is equipped with a canting keel, this shall be manually operable from the inside of the boat, whatever her position in the water.

**(b)** Appropriate external end stops shall be in place on both sides to limit the cant of the keel to the angle determined when performing the initial heel test (10°) or at the angle determined by IMOCA's Chief Measurer. These end stops shall be sealable.

Stopping the keel hydraulically and/ or electrically is not considered an end stop.

Where there is a mechanical end stop at the end of the ram, supporting evidence shall be provided prior to the 10° test (drawing, measurements taken by the measurer prior to assembly etc.)

Failure to do so will result in IMOCA's Chief Measurer requiring a further visible end stop to be mounted.

**(c)** For boats equipped with only one hydraulic ram to operate the keel, a specific locking device allowing the keel to be locked in place on the boat's centreline must be permanently installed.

Effective from 1 January 2019, this device must comprise a rigid structure where the keel head and hull are interdependent.

A twin ram is considered to be a locking mechanism.

**(d) Grandfather Rule on the existing keels, applicable from 1<sup>st</sup> January 2014**

**(i)** Keels built prior to 1 May 2013 shall adhere to the 2012 Class Rules with its appendices.

**(e) For boats which have a new keel built from 1<sup>st</sup> May 2013**

**(i) Design rules**

The keel is made from a single piece of forged steel.

The architects and/or designers have to respect the design rules provided in Appendix A.

**(ii) Integration of the standardised keel in the boat**

The keel shall be integrated into the boat within the rules.

The integration of the keel and its canting system remain the entire responsibility of the boat owner, the latter having to take into consideration the elements, which are at his or her disposal and described in Appendix B.

All the rules that apply to the keel and the canting system are applicable, particularly all the information, recommendations and characteristics mentioned in Appendix B.

**(iii) Design evidence document**

The keel's certificate of conformity to these design rules and a design evidence document shall be supplied to IMOCA's Chief Measurer.

It comprises:

- The calculations for the loads in the different parts, which make up the keel and its attachment for the different load configurations and the safety factors incorporated in the design have been respected
- The properties of the materials used have been factored in
- The calculations of the flexion and torsion frequencies of the keel
- The position of the CG of the bulb and the axis of torsion
- And in general, all the elements enabling the adherence to Appendix A to be checked.

## **Section F – Rigging**

### **F.1 GENERAL POINTS**

#### **F.1.1 MAST MATERIAL**

- (a) Fibres permitted in the construction of a mast are limited to an upper longitudinal modulus.
- (b) M46J and HS40 fibres are permitted and represent the upper limit.
- (c) The average target value of the M46J fibre is 436GPa, measured using the ASTM D4018 standard method.
- (d) The average target value of the HS40 fibre is 455GPa, measured using the JISR 7601 standard method.
- (e) All fibres whose average longitudinal modulus target value is greater than M46J or HS40 are banned.

#### **F.1.2 BOOM**

- (a) The gooseneck shall be on the deck or have a pin, which can be easily removed in the event of dismasting.
- (b) Where this is not the case, a 6m long tube (2\*3 metres sleevable) must be on-board and able to be used to set up a jury rig.

### **F.2 STANDING RIGGING**

- F.2.1** The permanent or temporary forestays, backstays, runners and lower shrouds shall be attached within the area delimited by the sheerline on the sides, up forward by the bow and aft by a line joining the aftermost port and starboard points of the sheerline.
- F.2.2** There must be 1 fixed structural forestay, that is non-releasable and non-adjustable, whose attachment point on the mast (intersection between the forestay and the forward face of the mast) is situated in the top third of the mast.

### **F.3 RUNNING RIGGING**

- F.3.1** A spare halyard, which by its nature can be installed in the mast cannot be considered as an anchoring line ready for use and easily put together.

## CHAPTER III – APPENDICES TO THE CLASS RULES

### Appendix A: Keel design

#### Keel fin material

Forged stainless steel whose minimum requirements are:

Minimum resilience = 85J

0.2 % elastic limit: minimum of 800 Mpa

Minimum elongation: 12%

The following materials, which conform to the requirements listed above, are allowed:

- VG900i from Thyssen
- APX4 from Aubert et Duval
- And any material, which has been subject to prior approval from IMOCA's Chief Measurer

The keel manufacturer must provide IMOCA's Chief Measurer with the Material Certification for the material used.

#### Materials of the keel head pin and bolting of the bulb

High-strength stainless steel, Inconel 718 H or equivalent.

The materials shall be delivered with their certificates of conformity. It is advisable to make measurements of the mechanical properties of the sample materials.

The fatigue curves of the materials (stress-number of cycles) will be provided.

#### Geometric Constraints

Minimum keel head clamping lever: 450 mm

Degrees of freedom of structural element: only one, in rotation

No welding or bonding, the keel shall be cast in one piece

Cavities are permitted in the following conditions:

- The minimum width of a cavity equals: 30 mm
- The maximum depth of a cavity in mm is equal to: (twice the width of the cavity in mm) + (90 mm)
- The maximum depth of a cavity in mm is equal to: 210 mm (for a cavity 60 mm wide and more)
- Any area shall be easily controllable by hand and in direct sight
- No structural hatch for closing off cavities is permitted.
- No filling of any cavities with material of a density greater than 7800 kg/m<sup>3</sup>
- Hydrodynamic elements and non-structural fairings shall be able to be dismantled for inspection.

#### Proportioning event:

The XYZ reference is that of the boat (see Appendix K-1)

The bounding zones correspond with the zones for introducing stresses and are 3 in total:

- Keel head axis zone.
- Axis of keel rotation zone.
- Zone where the bulb attaches to the keel fin.

#### Case 1

Keel horizontal, 1g on the bulb + keel fin. Reaction at keel head blocked with the angles and degrees of freedom relevant to the hydraulic ram.

- Coefficient 5 Rp 0.2 minimum on the whole keel (See Note 1)
- Coefficient 6.5 Rp 0.2 minimum on bounding zones (See Note 1)

#### Case 2

- Grounding: vertical keel: 27 tons applied to nose of bulb according to the X axis

- A minimum coefficient of 1 for the material's breaking strain.

- Check that there is no overrun of the elastic limit on the bearings and bounding parts of the keel. (See Note 1).

- Combined case lateral + longitudinal: Keel horizontal; Reaction at keel head blocked with the angles and degrees of freedom relevant to the ram and/or emergency rams (choose the most unfavourable condition).

The following shall be applied: (Gravity Z\*2.5 + Gravity X) \* 2;

The X gravity shall be applied towards the bow of the boat then towards the stern of the boat.

- A minimum coefficient of 1 on Rp 0.2.

*NB-2: The required criterion is a globally elastic behaviour, that is, the absence of global residual deformation (of the residual deflection type on the keel fin) after discharge. The overruns of local elastic limits (in a fillet for example) are permitted.*

#### **Natural Keel Frequencies (keel fin+ bulb)**

The keel assembled on the boat, pin in place and hydraulic system connected and blocked in the axis, the natural frequency of the keel shall be greater or equal to:

- a- 3.4 Hz in torsion (Rot Z)
- b- 1.1 Hz lateral bend (Rot X)
- c- 4 Hz longitudinal bend (Rot Y)

Ratio of a/b > **2.7**

#### **Centre of gravity**

The CG of the bulb shall be forward of the axis of torsion of the keel fin.

#### **Keel calculation**

Finite element calculation of the control-volume type - linear domain with justification;

Recommendation by Tetra 6 meshing: 10mm globally down to 2mm locally in fillets and bounding zones

Blockage: 'bearing' type for the axis of rotation and head axis;

Aft bearing blocked in Fx + Fy + Fz

Forward bearing in Fy + Fz

Pin of keel head blocked to represent the angular components of the reaction ram.

The 0.2% elastic limit considered shall be a maximum of 800 Mpa for boats having an IMOCA Measurement Certificate issued prior to 1 May 2013.

#### **Documents to be supplied**

Mesh view

Lateral Deflection @ 1.G keel horizontal

Modal Deflections and natural frequencies

GLOBAL VIEW - VON MISES STRESSES

GLOBAL VIEW / PRINCIPAL STRESSES

LOCAL VIEW IN ZONES WITH A HIGH STRESS CONCENTRATION AREA AND BOUNDING ZONES

VIEW XZ PLANE @ CENTRELINE: VON MISES STRESSES

View in a 'horizontal plane' running through bearings

View in a 'horizontal plane' running through keel head axis

View in a 'horizontal plane' running through keel foot

View in a 'horizontal plane' running at mid altitude of the keel fin

View in a 'horizontal plane' running 200mm above the bearings

#### **Modification of the keel**

No change in the structural component of any or part of the keel (keel fin or bulb) can be made without repeating the calculation loop and making a new submission of the modifications to IMOCA's Chief Measurer

## Appendix B: Keel fin and standardised canting system

The following are included in Appendix B:

Appendix B-1: Standardised keel plans

Appendix B-2: Technical description of standardised canting system

Appendix B-3: Specifications for set-up and use of standardised canting system

The geometric plane of the keel fin indicating the weight, the centre of gravity and the zones for introducing stresses form part of Appendix B.

These documents, plans and lists of the different standardised elements are available at IMOCA's class office (contact@imoca.org).

The standardised keel fin conforms to Appendix A.

Each standardised keel fin shall be issued with IMOCA's conformity agreement.

A number will be allocated to this keel fin by IMOCA.

The bulb mass will be a maximum of 3100kg

The longitudinal keel angle must be between 4° & 9° in relation to waterline.

The maximum athwart ships keel angle is 38° on each side.

The plans outline the principles for attaching and connecting the different elements that make up the keel.

These principles must be adhered to.

The minimum penetration depth for the keel fin in the bulb, such as that detailed in the plans, shall be adhered to.

The assembly of the keel fin + bulb set on the boat shall adhere to the water draught specified in article C.6.4.

The keel fin may not be modified.

Solely the sections of hull below the waterline may be modified locally at the keel boss plate and bulb plate junction.

The provision comprises:

- The finished keel fin equipped with its fairings.
- The complete canting system connected to the keel head.

The provision does not comprise:

- The keel rotation bearings.
- The connecting bushings and locking pins for attaching the keel fin to the bulb.
- The bulb

The standardised set will be delivered with:

- Conformity report
- Specifications for set-up and use, which must be strictly adhered to.

The acceptance report will be drawn up by the authorised supplier and directed by the client (the boat owner and / or the skipper)

## Appendix C: Standardised masts

The standardised set, the geometric planes for the masts and the standing rigging indicating the weight and the CG are outlined in and form part of Appendix C:

- Appendix C-1 for the wing mast
- Appendix C-2 for the mast with spreaders

The plans contain the different geometric constraints to be adhered to for setting it up on the boat.

The specifications for set-up and use of the standardised set are outlined in and form part of Appendix C:

- Appendix C-3-A for the wing mast
- Appendix C-3-B for the mast with spreaders

These documents, plans and lists of different standardised elements are available from IMOCA's office (contact@imoca.org).

Each standardised mast shall be issued with IMOCA's conformity agreement.  
A number will be allocated to each mast by IMOCA.

The air draught is that defined in article C.8.2 (a)

There are two possible rig types:

- Wing mast with outriggers
- Fixed mast with spreaders

The static moments of both masts are identical and outlined in the specifications

The geometric constraints shall be adhered to.

Each mast will be weighed in a configuration outlined by IMOCA's Chief Measurer.  
The weight of the mast will be corrected to bring it up to the defined static moment.  
The siting of the corrector weight is outlined in the mast plans.

The standardised set will be delivered with:

- its conformity report
- its specifications for set-up and use, which must be strictly adhered to.

The acceptance report shall be drawn up by the authorised supplier and directed by the client (boat owner and/or skipper).

### Inspections and maintenance

The checklists and/or maintenance forms will be required for the issuing of the IMOCA Measurement Certificate and the mast must notably adhere to article A.10.8 of the IMOCA Class Rules.

## Appendix D to the class rule C.4.1

Non-exhaustive list of diesel engine brands with a “manufacturer’s standard” minimum power of 37HP:  
Yanmar 3JH4, Lombardini LDW 1404, Nanni Diesel 4.150, Volvo D2-40

## Appendix E: CRC / Measurers

### Composition of the CRC

Daniel Andrieu: Naval Architect

Grégoire Dolto: Naval Architect – Reporter on ISO standard structure - FIN

Simon Forbes: World Sailing

### List of IMOCA’s Official Measurers:

IMOCA’s Chief Measurer:

- René BOULAIRE: [chief.mesurer@imoca.org](mailto:chief.mesurer@imoca.org)

Official IMOCA Measurers:

- Zone Europe East Atlantic and Mediterranean:

Jean SANS : [jean.sans@wanadoo.fr](mailto:jean.sans@wanadoo.fr)

Manu GUEDON: [manuguedon@free.fr](mailto:manuguedon@free.fr)

- Zone New Zealand:

Jim MAC ELREA: [jmcelrea@xtra.co.nz](mailto:jmcelrea@xtra.co.nz)

## Appendix F: Standardised equipment packs (reserve article)



## Appendix G: Light configuration

Each equipment must be in its position for use in racing.

In each section below, a set of photos will be provided.

These photos have proof value for the measurement record.

The light configuration must be made under the responsibility of the skipper and/or his/her representative who must sign the light configuration check document (called the light configuration checklist).

Halyards, sheets, reef lines, etc., are those used in race in terms of diameter and length.

The checklist (defined above) refers (as the case may be) the elements in type, length, diameter, number, weight, etc

### ABOVE DECK:

#### Mast

Standing rigging

Fixed headstay.

Runners in normal position.

All running rigging brought back to mast foot.

All furlers and any associated running rigging associated.

Boom and all associated running rigging.

All fixed and/or movable deck equipment and hardware.

Lifelines, pulpit navigation light etc see D.13.10.

All fixed and/or movable equipment of the cockpit and companionway hatch.

VHF cables and antennas.

Operational radar.

All electronic and electric equipment and cables attached to the fit-out and all electric or other else powered equipment connected to the boat.

Fittings and equipment permanently attached to the deck and the mast(s).

Batteries, electric circuit, piping and hoses, plumbing.

All equipment shall be installed with their whole connections (example: 1 water-maker, 1 automatic pilot, one or more hydro-generators, etc.).

All accommodation and associated equipment.

Navigator seat if rigid system.

2 bunks installed.

Cooking stove installed and operational (including fuel tank).

### The following (at minimum) must be on-board and connected for normal use:

1 VHF 25W ASN.

1 AIS transceiver.

1 satellite transceiver (FleetBroadband minimum type, etc ...).

1 standard C.

1 echo sounder.

1 satellite tracking system (GPS, ...).

1 autopilot.

1 watermaker.

1 speedometer.

1 magnetic marine compass installed.

### The following must be outboard:

Sails.

Lazy-jacks from mainsail.

Flying hardware and rigging not specified above.

Anchors with ropes and chains.

Safety equipment.

Possible outriggers (spreaders, jockey pools, etc.).

All mobile equipment not connected or not connected to the boat.

All loading, fresh water cans and fuel (s), navigation equipment.

Clothing, refueling, personal effects, etc

## **Appendix H: Bureau Veritas Study** (into the pressure generated by the motion of a liquid mass in a compartment– Liquid Motion Analysis)

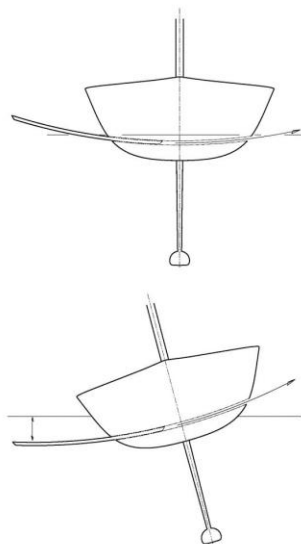
This document is available from IMOCA's office ([contact@imoca.org](mailto:contact@imoca.org)).

## Appendix I: Interpretations

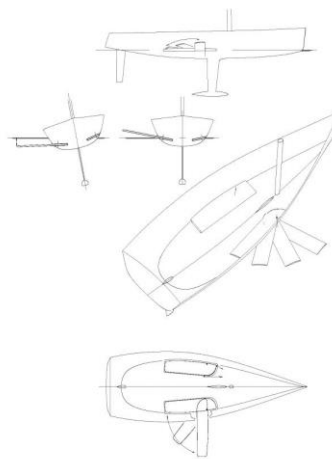
### INTERPRETATION: 2-2009/2014

#### **Question**

Are the 2 DSS systems proposed below compliant with the IMOCA Class Rules?



*"Single Sliding Foil"*



*"P & S Swinging arrangements"*

The request for interpretation leads the CRC to raise 5 questions concerning the systems suggested:

1. According to article A.2.2 **Hull appendage**, are the proposed systems considered to be appendages?
2. According to article C.7.1, is the "single sliding foil" system considered to be a "symmetrical and central"?
3. According to article C.7.1, how many axes of rotation are there on each appendage?
4. According to article C.7.2, how many appendages are there on each system?
5. According to article A.2.2 Monohull, do the proposed systems create additional "flotation planes"?

#### **Answers:**

1. Article A.2.2 **DEFINITIONS Hull appendage** (IMOCA) is a repetition of article E.1.1 (ERS) defining an appendage. The systems suggested do not contravene these rules and are thus appendages.
2. The system "single sliding foil" cannot thus be described as "symmetrical and central".
3. For each appendage in the two systems presented there is one axis of rotation.
4. The "single sliding foil" system presenting two attachment points on the hull must be counted as two appendages, even if physically it is the same element.
5. With the term "flotation plane" not being specifically defined in the Class Rules (IMOCA), it is up to the CRC to interpret whether an appendage creates or does not create an additional flotation plane. The CRC considers that the rudders, the canting keel, as well as the appendages of the existing fleet, before the application of the Class Rules 2009, do not, by their nature, create additional flotation planes.

Concerning future appendage systems showing different or innovative design characteristics, the naval architect is requested to demonstrate to the Chief Measurer that none of these appendages creates a second flotation plane under the conditions set down in Article A.2.2 Monohull.

In case of doubt the Chief Measurer will submit a report to the CRC which will decide.

**END OF THE INTERPRETATION: 2-2009/2014**

### INTERPRETATION 11-2010/2014

Within IMOCA Class Rule F.1.1 it is indicated that:

"No fibre with an average longitudinal modulus greater than 436 GPa is permitted in the construction of a mast for boats issued with their first IMOCA Measurement Certificate after 1 July 2009."

#### **Question 1**

Is the word "fibre" in the rule F.1.1 used as a generic term for a given product (M46J or HS40, for example), or should it be taken literally, as in any single fibre in a batch or product?

#### **Answer 1**

The CRC answers that the word "fibre" in Rule F.1.1 must be understood as being representative of a set of fibres marketed under a generic name, such as Toray M46J "fibre" or Mitsubishi HS40 "fibre".

## Question 2

In the event that the word "fibre" is understood as a set of fibres, grouped together under one term "fibre XXX", must one consider that the maximum limit imposed applies to the average (or nominal) measurement of "fibre XXX", or to any fibre from any batch?

### Answer 2

The CRC answers that the limit imposed by Rule F.1.1 then applies to all batches of the same product, and must be considered as the average (or nominal) value of the "fibre", although in each batch there may be a number of fibre units above this limit.

## Question 3

How do you measure the longitudinal modulus of a "fibre"?

### Answer 3

The Rule F.1.1 does not specify how to measure the maximum value of longitudinal modulus. The CRC believes that any means appropriate and bona fide, approved by the Chief Measurer, is satisfactory, including the commercial documentation of "fibres" and different measurement standards, which already exist and are recognised.

Considering the foregoing, the CRC answers: By all appropriate and bona fide means, approved by the Chief Measurer.

## Question 4

Are there tolerances to this limit?

### Answer

The Class Rules text indicates a value not to be exceeded, so there is no tolerance to the maximum value of 436 GPa, and no "fibre", within the meaning of the interpretation provided by that term in Response 1, can be allowed if the average (or nominal) value of its longitudinal modulus exceeds the limit imposed.

Considering the foregoing, the CRC answers: NO.

## END OF THE INTERPRETATION 11-2010/2014

## INTERPRETATION 18-2014

### D.2.2 LIMITING THE MATERIALS OF THE HULL

#### a) Boats issued with a first IMOCA Measurement Certificate **after 1 May 2013:**

The hull of the boat less associated fittings and less all the corrector weights, shall be built to conform to the following specifications:

- HR fibres are allowed and limited to the fibres listed below:
  - o Toray T800H
  - o Toray M30S
  - o Toray T700S
  - o Mitsubishi Rayon MR40
  - o Hexcel IM 7 (6k)
  - o Ternel T650/42
  - o Hexcel IM2A
  - o Mitsubishi MR60H
  - o Hexcel IM2C
  - o Hexcel AS7
  - o And any fibre having been accepted beforehand by IMOCA's Chief Measurer.
- Nomex core material or foam
- Film adhesive minimum 300g/m<sup>2</sup>
- Non-adjuvanted resin (no nano-techs)
- Minimum weight of the materials 150g/m<sup>2</sup>

## Question 1

Are Nomex or foam the only authorised core materials?

### Answer 1

With reference to the introduction of the Class Rules already cited, it appears that Nomex core and foam materials are expressly imposed, unlike the HR fibre, which is just "authorised".

By extension, it is the same for the adhesive films, the non-adjuvanted resins and minimum weight (see question 2 on this matter).

Considering the foregoing, the CRC answers: YES.

## Question 2

What is meant by the word "tissus" (materials), and what does "minimum weight" apply to?

### Answer 2

Considering the foregoing, the CRC answers: The word "materials" shall be understood as a fibre ply, whether or not it is composed of unidirectional fibres. The minimum weight imposed applies to this same fibre ply.

## **END OF INTERPRETATION 18-2014**

### **INTERPRETATION 20-2014**

#### **E.2.1 (d): Grandfather Rule on the existing keels, applicable from 1<sup>st</sup> January 2014**

(i) Keels built prior to 1 May 2013 shall adhere to the 2012 Class Rules with its appendices.

(ii) To respect sporting equity with regards the application of article E.2.1 (e), all the boats that retain their carbon or fabricated keel shall require a corrector weight fixed to the inside of the boat within a 1-metre radius around the boat's CG.

Carbon keel fin: 100kg

Fabricated keel fin: 50kg

#### **Question 1**

Can a "corrector weight" meeting the requirements of E.2.1 (d), have other functions or uses?

#### **Answer 1**

The Grandfather Rule E.2.1 (d) specifies a "corrector weight", which is used to offset a difference in mass between the old and new keels.

The introduction to the Class Rules states that "...boats that benefit from this grandfather rule are not allowed to make modifications which contradict the aim of the new rule".

It follows, that using a "corrector weight" for other uses, would infringe the "sporting equity" objectives, and "contradict the aim of the new rule".

Considering the foregoing, the CRC answers: NO.

#### **Question 2**

Is the density of a "corrector weight", as defined by rule E.2.1 (d), free?

#### **Answer 2**

This "corrector weight" is part of the keel system, as such it is subject to rule C.7.1 (a) limiting the maximum density of the materials used to 11.4.

The grandfather rule E.2.1 (d) requiring "sporting equity" and all keels manufactured before 1 May 2013, including those manufactured before 1<sup>st</sup> January 2006, are subject to this interpretation.

Considering the foregoing, the CRC answers: NO.

## **END OF INTERPRETATION 20-2014**

### **INTERPRETATION 21-2014**

#### **D.7 WATERTIGHT BULKHEADS**

**D.7.1** All required watertight bulkheads shall be solidly built to withstand direct water pressure without the slightest ingress into the adjacent compartment.

a) Watertight bulkheads:

i) They shall:

- divide the boat into several compartments from stem to stern
- be transverse, a minimum of 5 in number to create 6 watertight compartments with 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 watertightness of the compartments.

#### **Question**

In the case of a watertight bulkhead which although structurally continuous, is not flat in a transverse plane, can you consider the centre of area of the watertight bulkhead as the reference point for the measurement defined in Class Rules D.7.1 (a)?

#### **Answer**

Article D.7.1 (a) requires that the watertight bulkheads are "not more than 5 metres apart".

This measurement is a limit not to be exceeded.

The rule applies to any part or element of a watertight bulkhead.

Considering the foregoing, the CRC answers: NO.

## **END OF INTERPRETATION 21-2014**

## **INTERPRETATION 24-2014**

### **A.2.2 DEFINITIONS**

Monohull: A monohull such as that understood in the present rules is defined as a boat:

- with a single flotation plane at rest or under sail in normal sailing trim.
- of which hull depth in all transverse sections shall not decrease towards the centreline of the boat.

For this definition, the hull does not include its appendages (Article C.7 and Section E).

### **ANNEXE I. INTERPRETATIONS**

#### **INTERPRETATION: 2-2009**

5. With the term "flotation plane" not being specifically defined in the Class Rules (IMOCA), it is up to the CRC to interpret whether an appendage creates or does not create an additional flotation plane. The CRC considers that the rudders, the canting keel, as well as the appendages of the existing fleet, before the application of the Class Rules 2009, do not, by their nature, create additional flotation planes.

Concerning future appendage systems showing different or innovative design characteristics, the naval architect is requested to demonstrate to the Chief Measurer that none of these appendages creates a second flotation plane under the conditions set down in Article A.2.2 Monohull.

In case of doubt the Chief Measurer will submit a report to the CRC which will decide.

#### **Question 1**

Has the configuration of appendages called "Single Sliding Foil" described in the Interpretation 2-2009, been accepted by the CRC as complying with the Class Rules?

#### **Answer 1**

It being understood that at the time of the Interpretation 2-2009:

1. The system called "Single Sliding Foil" could not be likened to the appendages of the existing fleet, prior to the implementation of the 2009 Class Rules;
2. The "Single Sliding Foil" system fell within the category of "future systems and having different or innovative design features"

The result was that the Designer had to demonstrate to the Chief Measurer that this appendage does not create a second water plane.

Interpretation 2-2009 makes clear that it is the Chief Measurer, and not the CRC, which must be convinced of the absence of a second water plane, and therefore accept or not the system to conform to the Class Rules. The CRC will not intervene except in cases of doubt of the Chief Measurer who will then consult the CRC.

To the knowledge of CRC, this request was not initiated by, or on behalf of, the Chief Measurer, who has not had to rule.

**To the question asked, and considering the foregoing, the CRC answers: No.**

#### **Question 2**

Provided that the innovative appendage that we (the authors of the question) study, has the only purpose to generate hydrodynamic lift and not hydrostatic, should we consider this appendage piercing the free surface, creates an additional water plane, while appendages of boats dating from before 2009, piercing the free surface, are not considered as generating an additional water plane?

#### **Answer 2**

It is not for the CRC to decide, at this stage, if a system creates, or not, an additional water plane. This is for the Chief Measurer to decide after studying the system. If in doubt, as stated in the Interpretation 2-2009, the Chief Measurer will report to the CRC, which will decide.

However, in order to guide the Chief Measurer and Designers, in accordance with the Class Rules and ERS, CRC states that an appendage creates by itself, an additional water plane only if it would be considered as a hull and not an appendage. That is to say, having volume and dimensional features to classify it as an additional hull. It is in the study of a precise, documented request on a case by case basis, that the Chief Measurer will make a ruling.

**To the question asked, and considering the foregoing, the CRC answers: No answer.**

#### **END OF INTERPRETATION 24-2014**

## **INTERPRETATION 25-2014**

**Specifications for the set-up and use of the standardised spreader mast with spreaders (or standardised wing mast with outriggers)** Subject /Description This document is referred to in appendix C-2013 of the IMOCA class rules. It summarises the criteria to be adhered to in the setting-up and use of the standardised mast with spreaders (or standardised wing mast with outriggers). It refers to general criteria and in particular: - Certain operations studied - The limitations for use of this type of rig. In this way, the text discusses the sail combinations studied, the main stresses on the rig and information about the safety factors in the tube.

**Preamble about the standardized mast with spreader (or standard wing mast with outriggers)** No modifications to all or part of the standardized mast with spreaders (or wing mast) can be made. In the event of force majeure, repairs can only be made to the rig upon formal consent from IMOCA's Chief Measurer. The repairs shall not alter the mast's mechanical properties.

### Question

Does a boat receiving a measurement certificate after 1 May 2013 have the right to make changes (structural or cosmetic changes) to the rig called "standardized mast" while respecting the characteristics defined in "Annex C-2013 standardized masts"?

### Answer

The Class Rules are the same regardless of the type of "standardised mast", whether "wing" or "spreader", the CRC will use, in this interpretation, the term "standardized mast" generically. The Preamble of the "Specifications for the set-up and use of the standardized mast" states: « No modifications to all or part of the standardized mast can be made. » The Rule does not make a difference between changes called "structural" or "cosmetic", it follows that any change in whatever nature, should be prohibited.

However, the CRC considers that in the absence of the terms « rig » and « mast » in the Class Rules definitions, it should refer, on this occasion, to those given by the Equipment Rules of Sailing (ERS) : Section F – Rig Definitions F.1 GENERAL RIG TERMS F.1.1 Rig The spars, spreaders, rigging, fittings and any corrector weights. (...) F.1.3 Spar The main structural part(s) of the rig, to, or from which sails are attached and/or supported. F.1.4 Spar Types (a) MAST A spar on which the head or throat of a sail, or a yard, is set. Includes its standing rigging, running rigging, spreaders, fittings and any corrector weights, but not running rigging and fittings that are not essential to the function of the mast as part of the rig.

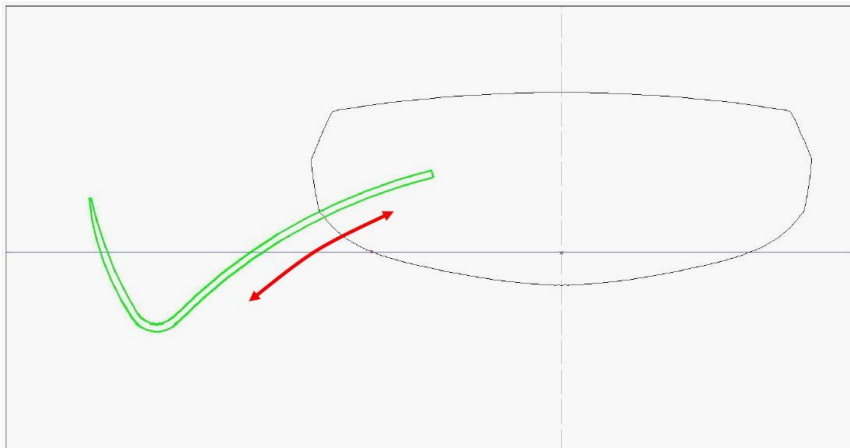
The result is that the elements of "running rigging and fittings that are not essential to the function of the mast as part of the rig" while noting the Class Rules, are not affected by restrictions, limitations or prohibitions related to standardized mast.

**To the question asked, and considering the foregoing, the CRC answers: No, to the exclusion of anything that could be defined as "running rigging and fittings that are not essential to the function of the mast as part of the rig".**

**END OF INTERPRETATION 25-2015**

### INTERPRETATION 26-2015

#### Question 1 :



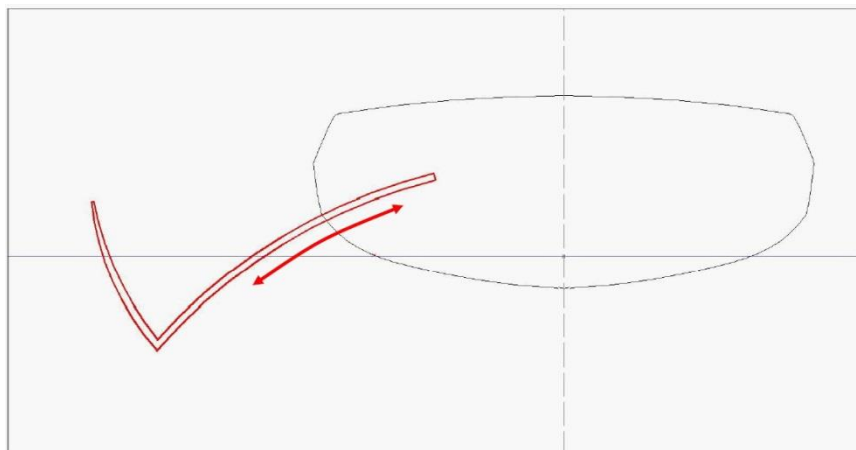
Système Appendice #1

Called "Système Appendice # 1" the foil shown in green on the previous image.

One degree of freedom for the extension / retraction of the appendage (red arrow). The movement is a rotational movement.

- Does this system of appendages comply with the rules of the IMOCA class?
- According to Article 7.2 C, what is the number of appendages of this system?

**Question 2 :**



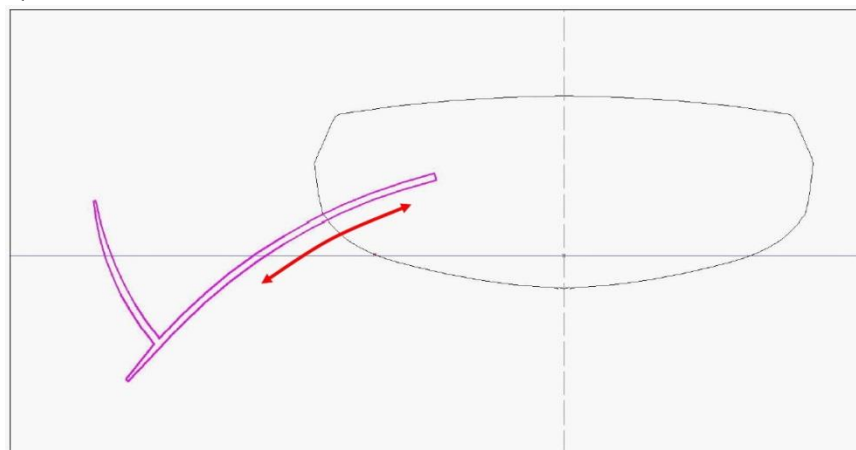
*Système Appendice #2*

Called "Système Appendice # 2 system" the foil shown in red on the previous image. It is in one piece and has no articulation between the two parts.

One degree of freedom for the extension / retraction of the appendage (red arrow). The movement is a rotational movement.

- a. Does this system of appendages comply with the rules of the IMOCA class?
- b. According to Article 7.2 C, what is the number of appendages of this system?

**Question 3 :**



*Système Appendice #3*

Called "Système Appendice # 3" the foil shown in purple on the previous image. It is in one piece and has no articulation between the three parties.

One degree of freedom for the extension / retraction of the appendage (red arrow). The movement is a rotational movement.

- a. Does this system of appendages comply with the rules of the IMOCA class?
- b. According to Article 7.2 C, what is the number of appendages of this system?

**Answer**

The three questions have been grouped.

CRC, through interpretations # 2 and # 24 has already answered these questions, it is appropriate to refer to them. In addition, and in light of rule changes appeared since, CRC draws attention to respect of the rule I.1 of Annex C-2, regarding righting moments.

**To the questions asked, and considering the foregoing, the CRC answers: Already answered**

**END OF INTERPRETATION 26-2015**



## **INTERPRETATION 27-2017**

### **D.1.1 BOAT STRUCTURE AND SCANTLINGS**

*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 expected to face in the course of races classified by the OSR as category 0.*

**A.14 (f)** The boat shall have:

- been designed, built and maintained in compliance with the requirements of ISO 12215 Category A, as amended by the notified body ICNN, agreed by the Convenor of ISO WG18 and published on the IMOCA website;
- on board a certificate of IMOCA building plan review from ICNN;
- on board a declaration signed and dated by the builder to confirm the yacht is built in accordance with the plans reviewed by ICNN.

*In OSR, category 0 is defined as:*

#### **2.01.1 Category 0**

MoMu,0

*Trans-oceanic races, including races which pass through areas in which air or sea temperatures are likely to be less than 5 degrees Celsius other than temporarily, where yachts must be completely self-sufficient for very extended periods of time, capable of withstanding heavy storms and prepared to meet serious emergencies without the expectation of outside assistance.*

*Otherwise, OSR states:*

#### **3.03 Hull Construction Standards (Scantlings)**

MoMu0,1,2

**3.03.1 a)** A yacht of less than 24m in hull length (measured in accordance with ISO 8666) with Age or Series Date on or after 1<sup>st</sup> January 2010 shall have:

- been designed and built in accordance with requirements of ISO 12215 Category A\*
- on-board a build plan inspection certificate from a notified body recognised by WS.
- on-board a declaration signed and dated by the builder to confirm the yacht is built in accordance with the plans reviewed by the Notified Body.

#### **Question**

*Do the Class Rules imply that OSR rule 3.03 is to be adhered to?*

#### **Answer**

*Article A.14 (f) of the Class Rules, as drafted and motivated, has its origin in Article 3.03.1 a) of the Offshore Special Regulations (OSR). However, the CRC notes that*

*1. The Class Rules modify the application of Article 3.03.1 (a) of the OSR by designating the ICNN as the only Classification Society recognized by World Sailing (WS), and limit the provisions of ISO 12215 Category A in the document "Publication relating to Article A.14 (f) of the IMOCA Class Rules".*

*2. The Class Rules do not explicitly refer to either Article 3.03.1 (a) or the OSR.*

*3. In interpretation 19-2014, the CRC had already noted a possible source of conflict with race organizers regarding OSR and Category 0. Consequently and in order to remedy this for the future, the CRC recommends IMOCA to amend, at the earliest opportunity, the Class Rules by making reference to OSR 3.03.1. Compliance to OSR 3.03.1 should be explicitly mentioned, even if, Class Rules introduce some modifications and/or restrictions, as now.*

***In the meantime, to the question asked, and considering the foregoing, the CRC answers: No***

## **END OF INTERPRETATION 27-2017**

## **INTERPRETATION 28-2017**

*The rule **A.14 SPECIAL FEATURES ASSOCIATED WITH THE FIRST IMOCA MEASUREMENT CERTIFICATE FROM 1<sup>st</sup> MAY 2015 (d)** states: "The boat shall be equipped with a standardised keel fin and outlined in Appendices A and B."*

*The rule **E.2.1 ROTATING KEEL (e)** states: " For boats which have a new keel built from 1<sup>st</sup> May 2013...*

#### ***(ii) Integration of the standardised keel in the boat***

*The keel shall be integrated into the boat within the rules.*

*The integration of the keel and its canting system remain the entire responsibility of the boat owner, the latter having to take into consideration the elements, which are at his or her disposal and described in Appendix B.*

*All the rules that apply to the keel and the canting system are applicable, particularly all the information, recommendations and characteristics mentioned in Appendix B."*

#### **Question**

*Shall a boat asking a first IMOCA measurement certificate after 1<sup>st</sup> May 2015 have to be equipped with the canting system mentioned in Appendix B?*

#### **Answer**

*The entire canting system is an integral part of the standardized keel, which means that all the obligations that apply to the standardized keel also apply to its canting system.*

***To the question asked, and considering the foregoing, the CRC answers: Yes.***

## **END OF INTERPRETATION 28-2017**

## Appendix J: Website of different documents

<http://www.ffvoile.fr/ffv/web/services/arbitrage/RCV.asp>

<http://www.sailing.org/>

<http://imoca.azimut.net/fr/index/> Identification




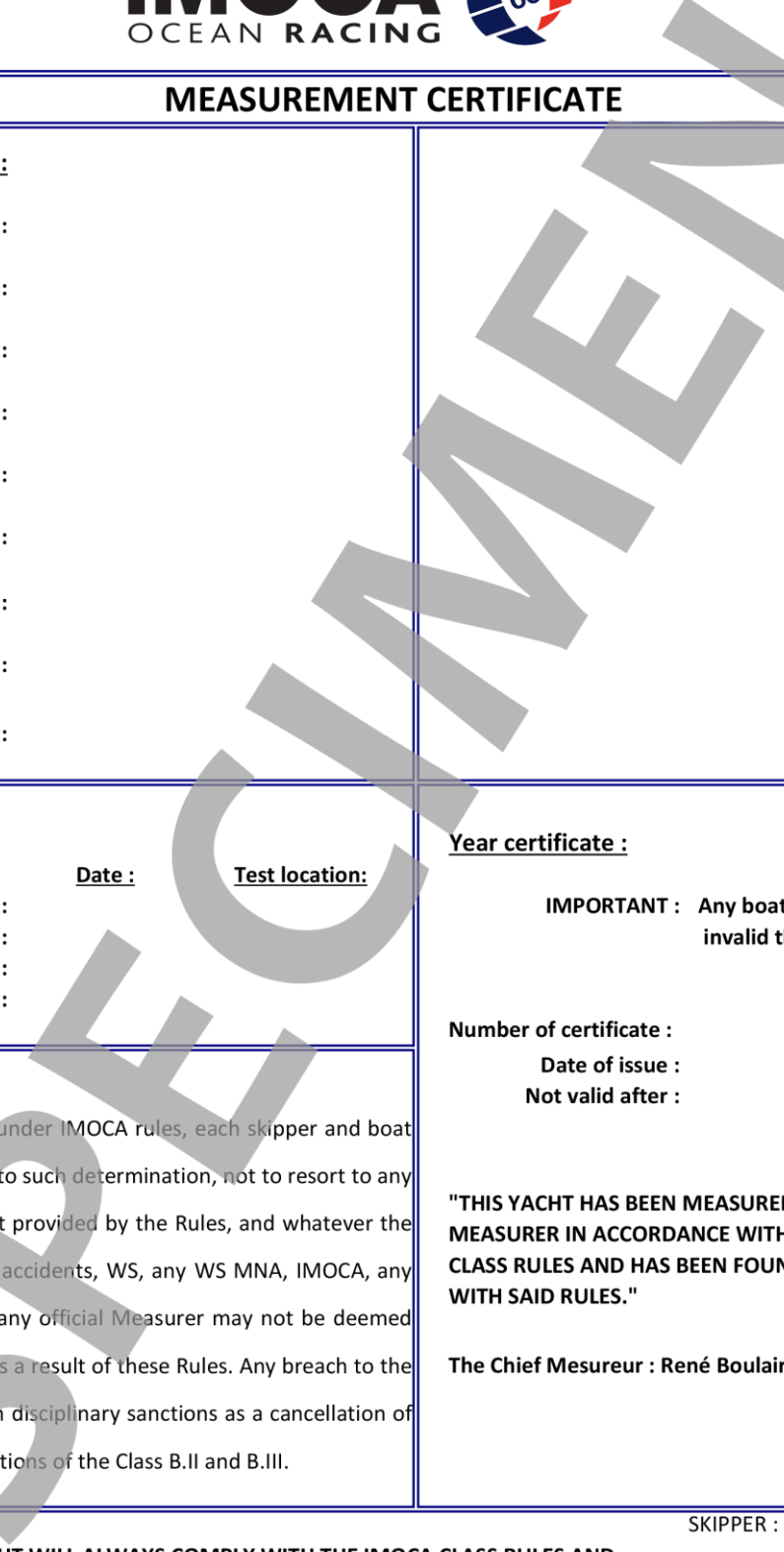
## Appendix K: Mandatory documents and IMOCA Measurement Certificate

### Appendix K-1: Mandatory documents

For the 3 models requested below, all numeric data provided must use the same XYZ reference:

- The 3D surface model showing only the watertight shell of the boat (decked hull excluding appendages), including in it all the flooded AND floodable volumes, in the form of a file in IGES format with trimmed NURBS surfaces (IGES 144 entities). The file for this model shall not exceed 8Mb.
- The 3D surface model showing only the inside walls of the ballast tanks, the axis of rotation of the keel, the axis of the keel head with the middle point of the clevis, in the form of a file in IGES format containing the trimmed NURBS surfaces (IGES 144 entities). The file for this model must not exceed 1Mb.
- The 3D surface model showing only the outside faces of the appendages (head included for the keel), in the form of a file in IGES format containing the trimmed NURBS surfaces (IGES 144 entities). The file for this model must not exceed 2Mb.
- Drawings relating to the flooding of the various watertight compartments according to the configuration of article D.4 of the IMOCA Class Rules sat 0° and 180°, showing the position of the escape hatches. In the event of D.4.3(c), the height of the transom above the water will be indicated.
- Drawing showing the set-up of the volume of the insubmersible materials accompanied by a table summarising the elements as well as the characteristics of the closed cell foam taken into account for the calculation of buoyancy.
- Drawing showing the location of the ballast system plumbing, with description of each ballast tank (dimension, volume, centre of gravity)
- The technical drawing of the canting keel system in position so that the boat is in a theoretical trim of 0° and 10° when this is necessary (2D digital format).
- The document attesting to the density of the bulb.
- For masts built after 1<sup>st</sup> July 2009, the document attesting to the correct materials being adhered to in the mast (Article A.10.10 and F.1.1).
- For boats built after 1<sup>st</sup> May 2013, the document attesting to the correct materials being adhered to in the hull (according to Article D.2.2). It comprises the list of different materials used.
- For keels built after 1<sup>st</sup> July 2009, the design evidence document.
- For keels built after 1<sup>st</sup> May 2013, and the certificate of conformity (table summarising the calculation data) according to the model provided by IMOCA's Chief Measurer (chief.mesureur@imoca.org).
- For all keels built after 1<sup>st</sup> July 2009 (whatever the building date), the report from the non-destructive material test (NDT) (according to article A.10.6).
- For all masts (whatever the building date), the annual ultrasound inspection certificate.
- The complete inspection report of the boat according to the article A.10.9.
- The IMOCA document "Hull Construction Declaration" signed by the relevant parties.
- Any additional document deemed necessary may be requested by IMOCA's Chief Measurer.

## Appendix K-2: IMOCA Measurement Certificate

  	
<b>MEASUREMENT CERTIFICATE</b>	
<p><b><u>Name of the boat :</u></b></p> <p><b>Race name of the boat :</b></p> <p><b>Skipper :</b></p> <p><b>Owner :</b></p> <p><b>Sail number :</b></p> <p><b>Launched date :</b></p> <p><b>Port of registry :</b></p> <p><b>Hull number :</b></p> <p><b>Architect :</b></p> <p><b>Builder :</b></p>	
<p><b><u>Stability :</u></b></p> <p><b>180° Test :</b></p> <p><b>90° Test :</b></p> <p><b>10° Test :</b></p> <p><b>Last calculation date :</b></p> <p><b><u>IMPORTANT</u></b></p> <p>By participation in a race under IMOCA rules, each skipper and boat owner agree with respect to such determination, not to resort to any court or other tribunal not provided by the Rules, and whatever the circumstances of possible accidents, WS, any WS MNA, IMOCA, any IMOCA representative or any official Measurer may not be deemed to bear any legal liability as a result of these Rules. Any breach to the IMOCA Rules may result in disciplinary sanctions as a cancellation of membership under Regulations of the Class B.II and B.III.</p>	
<p><b><u>Date :</u></b></p> <p><b><u>Test location:</u></b></p>	<p><b><u>Year certificate :</u></b></p> <p><b>IMPORTANT :</b> Any boat modification invalid this certificate</p> <p><b>Number of certificate :</b></p> <p><b>Date of issue :</b></p> <p><b>Not valid after :</b></p> <p><b>"THIS YACHT HAS BEEN MEASURED BY THE OFFICIAL MEASURER IN ACCORDANCE WITH THE APPLICABLE IMOCA CLASS RULES AND HAS BEEN FOUND TO BE IN COMPLIANCE WITH SAID RULES."</b></p> <p><b>The Chief Mesureur : René Boulairé</b></p>
<p><b>SKIPPER :</b></p> <p><b>"I CERTIFY THAT THIS YACHT WILL ALWAYS COMPLY WITH THE IMOCA CLASS RULES AND ACKNOWLEDGE THAT ANY BREACH TO SAID RULES WILL INVALIDATE THIS CERTIFICATE"</b></p>	

## Appendix K-3: Demand of renewal IMOCA Measurement Certificate

This document is available from IMOCA's office (contact@imoca.org).

## Appendix L: Hull Construction Declaration

We the undersigned:

- (forename, surname).....owner of the OPEN 60'
- (name of the boat).....(Boat")
- (forename, surname)..... skipper of the Boa

We declare upon our honour that the Boat has been built in accordance with the IMOCA Class Rules, and notably the measures set out in article D.1.1, which holds that:

*"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 expected to face in the course of races classified by the OSR as category 0".*

We acknowledge that the Boat's measurement certificate is issued by IMOCA on the strength of the present declaration duly signed.

We expressly agree to all the notes aimed at in the Boat's class measurement and notably the following:

"By participating in a race under these rules, each participant and each boat owner agrees in respect of such a conclusion not to lodge an appeal to any court or other tribunal not provided for by these rules, whatever the circumstances of potential accidents, WS, any member of WS, any member of the national body, IMOCA or any official IMOCA measurer, may not be considered as legally responsible because of these rules. Any infringement of the IMOCA rules may lead to *disciplinary sanctions, such as the cancellation of the member's subscription provided for in the articles in sections B.II and B.III of IMOCA's Class Regulations.*

Signed in ....., on .....

\_\_\_\_\_  
The owner  
(signature)

\_\_\_\_\_  
The Skipper  
(signature)

## Appendix M : Contacts



**International Monohull Open Class Association 60'**  
**Non-profit-making association**

Headquarters: Fédération Française de Voile - 17 rue Bocquillon - 75015 Paris - France

### **Contact IMOCA**

#### **HEADQUARTERS**

IMOCA – C/o FFV - 17, rue Henri Bocquillon – 75015 PARIS – France

#### **OFFICE**

IMOCA – 7, rue Honoré d'Estienne d'Orves – 56100 LORIENT  
+33 (0) 631 435 627

President – Antoine MERMOD: [president@imoca.org](mailto:president@imoca.org)  
Executive Officer – Guillaume EVRARD: [guillaume@imoca.org](mailto:guillaume@imoca.org)  
General Administration / Coordination of Communications  
& Team Liaison – Marine LE TEXIER Kerduel: [contact@imoca.org](mailto:contact@imoca.org)  
Chief Measurer – René BOULAIRE: [chief.measurer@imoca.org](mailto:chief.measurer@imoca.org)

IMOCA website: [www.imoca.org](http://www.imoca.org)

### **Other contacts**

Contact the International Sailing Federation

#### **World Sailing**

General Secretariat

Email: [secretariat@sailing.org](mailto:secretariat@sailing.org)

Simon FORBES – Technical Manager

Email: [simon.forbes@sailing.org](mailto:simon.forbes@sailing.org)

