World Sailing Offshore Special Regulations

Structural Plan Review Scheme
– World Sailing Recognised Notified Bodies –

Introduction and Aims

This document sets out the procedures, scope and responsibilities of World Sailing and World Sailing recognised notified bodies with the World Sailing Offshore Special Regulations Structural Plan Review Scheme. A World Sailing recognised notified body is expected to comply with the requirements and agreements set out in this document and, where possible, their notified body Quality Management System.

The aim of the World Sailing Offshore Special Regulations Structural Plan Review Scheme is to implement compliance with the requirements of World Sailing Offshore Special Regulations 3.03 – Hull Construction Standards (Scantlings), [www.sailing.org/specialregs](http://www.sailing.org/specialregs).

The objective of the scheme is for World Sailing together with World Sailing recognised notified bodies to provide certification to designers, builders and/or owners to show compliance with specific parts of the International Standard ISO 12215: Hull Construction – Scantlings specified within the scope below.

Scope

The scope of the plan review consists of application and calculation to the following parts of ISO12215 – Small Craft – Hull construction and scantlings:

| ISO 12215 Part 5: Design pressures for monohulls, design stresses, scantlings determination |
| All parts and annexes where applicable to design category A (“ocean”) – Sailing Craft |
| ISO 12215 Part 8: Rudders |
| All parts and annexes where applicable to design category A (“ocean”) – Sailing Craft |
| ISO/DIS 12215 Part 9: Sailing Craft - Appendages |
| All parts and annexes where applicable to design category A (“ocean”) |

Plan Review ISO Standard Criteria:

a) The boat shall show complete compliance with the above ISO standard parts.

b) In all applicable cases the ISO standards should be applied as the minimum.

c) Any proposed interpretation of the ISO standard shall be made through a World Sailing Recognised Notified body as confirmed by World Sailing and in consultation with all World Sailing Recognised Notified Bodies. If agreed such interpretation shall then be notified to all World Sailing Recognised Notified Bodies and made publicly available on the World Sailing website. Agreed interpretations shall be applied by all World Sailing Recognised Notified Bodies until such a time that interpretation is withdrawn or invalid.

d) In January 2020 the EU Commission harmonised EN ISO 12215 :2019 “Small craft - Hull construction and scantlings - Part 5: Design pressures for monohulls, design stresses and scantlings determination”. The date of withdrawal of the EN ISO 12215-5:2018 has been extended until 30 June 2021. Until then both standards give the Presumption of Conformity.

The versions of ISO standard to which the boat is assessed shall be agreed between the client and Notified Body and shall be stated on the Certificate Identification Number Request Form under ‘Yacht Details’.
Scope of Structural Review
The areas of the yacht that shall be reviewed are those detailed within the standards mentioned above and shall include the following as a minimum:

- Hull shell including bottom, side, deck, cockpit and superstructure
- Primary structural stiffening members including floors, girders etc.
- Bulkheads including watertight and integral tank boundaries
- Rudders, including stock, bearings and blade
- Appendages including attachment and blade
- Keels including all load cases, fins, backing plates and bolting arrangements and keel floors

This is not an exhaustive list and any areas of the boat’s fixed structure may be assessed by the recognised notified body.

Designer/Builder Plans
The designer shall submit plans showing scantlings, arrangements, and details of the main and fixed parts of the hull structure including the areas listed above. The plans shall include principal parameters and data for the yacht to complete the calculations to ISO 12215
For FRP construction, the plans shall include complete laminate schedule information including the following:

- ply specification, ply weight, ply orientation, fibre material
- resin information
- if sandwich construction; core information shall be supplied
- if ply test information is available; ply fibre content and thickness
- if mechanical test data information is available; minimum mechanical properties of the laminate

The following shall be documented along with the structural keel design:
- Welding symbols according to ISO 2553 [Welding and allied processes — Symbolic representation on drawings — Welded joints] and shall include reference to ISO 12215-6 Annex C ‘good welding practice’.
- Material specifications
- Fabrication tolerances according to ISO 13920 [Welding. General tolerances for welded constructions. Dimensions for lengths and angles. Shape and position] or IACS rec 47 [International Association of Classification Societies Rec47 Shipbuilding and Repair Quality Standard.]
- Inspection notes and documentation requirements shall be specified e.g.:
  - 100% visual inspection (“VT”)
  - 100% Liquid penetrant (“PT”) or Magnetic Particle Test (“MT”) on all external welds
  - 25% PT or MT on internal welds
  - PT or MT on specific (high stress) areas as called up on drawing and/or provided by notified body
  - 100% of PT or MT external surface, if keel is milled down
  - Post-weld inspection carried out >48hours after completion of welding

The installation of the keel shall be documented by ‘Construction Notes or Instructions’ in a written form (possibly assisted with sketches or detail drawings) as follows:

- the principles and specifics of the installation of the keel to the hull shall be described. The following aspects shall be highlighted:
  - Installation general principle (positive fit “plug head”); face-to face T-Flange; canting keel; lift keel; etc.)
- Building tolerances: Address required shape fit between Keel and hull structure, corrective measures for possible deviations to be given
- Installation specifics:
  - Dry fit and consequential measures for mismatch of under-/over size
  - Material specifications for bedding compounds if used
  - Washer plate shape including rounding corners and chamfered bottom specifications, fit and bedding requirements
  - Bolt torque
  - Bolt and lug diameter tolerances
  - Bolt and pin securing measures
  - Corrosion protection measures, if applicable
Calculations
The plan review shall include independent calculations by the notified body of the areas listed above. These calculations may be by hand, spreadsheet or by an ISO 12215 program. The designers/builders submitted calculations shall not be taken as the only proof of compliance.

Quality Procedures
The recognised Notified Body World Sailing plan review procedures shall reflect the accredited Notified Body ISO quality management procedure.

Certification
There are two forms of certification:

a) Series production: where several boats of the same type are produced in accordance with the plans and therefore each yacht will not require individual review and certification
b) Custom or unique boat where the boat is a one of a kind yacht or a series production yacht that has been built or modified such that it is not in accordance with the plans of that series.

World Sailing will maintain a list of yachts reviewed under the scheme on its website with certification information. If the yacht is a series type production there will be a single entry for that type of yacht with a link to a certificate for an owner or builder to make a hardcopy. The owner then signs the declaration including the CIN/HIN of their particular yacht. For a unique yacht the certificate will not be published on the website and certificates will be issued direct from the World Sailing recognised notified body upon compliance with the review requirements.

The recognized notified body should return digital copies of series production certificates to World Sailing but are free to give them to individual owners on their request. Unique or custom certificates should be returned to the original enquiry source or their nominated individual.

Procedure
The procedure from initial enquiry through to certification for structural plan review scheme is detailed in the following flow chart.
Notified Body

Initial Enquiry

Is boat a recognised series production that has already been reviewed?

Yes

Refer to WS website for certification

No

Perform notified body WS review

Notify WS and Refuse certification until rectified

Does the boat comply?

No

Send certificate to initial enquirer or nominated individual

Yes

Request WS certification identification number

Supply boat particulars to WS

Pay WS certification fee

Generate appropriate certificate with WS identification number

Send digital certificate to WS

World Sailing

Initial Enquiry

Refer to list of WS recognised notified bodies

Yes

Refer to WS website for certification

No

Perform notified body WS review

Does the boat comply?

Yes

Request WS certification identification number

Supply boat particulars to WS

Pay WS certification fee

Generate appropriate certificate with WS identification number

Send digital certificate to WS

World Sailing

WS assign certification identification number

WS add boat data to database

WS send invoice to notified body

WS supply certification identification number

WS add boat data to WS website

WS publish certificate on WS website

Does the boat comply?

Yes

No

Notify WS and Refuse certification until rectified

Is certificate series production?

Yes

No

Send certificate to initial enquirer or nominated individual
Agreement and Responsibilities

1. World Sailing Responsibilities

1.1 List of Recognised Notified Bodies
   a) World Sailing will maintain a list of recognised notified bodies.
   b) World Sailing will list all recognised notified bodies on their website with appropriate contact details.
   c) All enquiries for World Sailing Plan Review will be referred to the recognised notified body list.
   d) World Sailing will review the list on an annual basis unless there is any change or issue with a particular notified body.

1.2 Auditing and Accreditation
   a) World Sailing will ensure that recognised notified bodies have regular independent audit and maintain a quality system. No physical auditing will take place by World Sailing but evidence of accreditation body auditing will be required.

1.3 Certification
   a) World Sailing will maintain a list on its website of all boats or boat models that have undergone World Sailing plan review by a recognised notified body.
   b) Upon payment and supplied details of particulars of boats (shown in Appendix A), World Sailing will supply the recognised notified body with a unique identification number.

1.4 Termination
   a) World Sailing may terminate the recognition of a notified body at any time with 2 months notice unless there is a breach of the responsibilities or agreement at which time it may be terminated immediately.

2. World Sailing Recognised Notified Body Responsibilities

2.1 Auditing
   a) The recognised body will maintain their notified body accreditation and have periodic independent audits.
   b) The recognised notified body will provide World Sailing with evidence of periodic audits.

2.2 Fees and Certification
   a) The recognised notified body will pay World Sailing a fee of £250.00 per year to maintain World Sailing recognised status.
   b) World Sailing will issue the recognised notified body with boat certification upon payment. The recognised notified body will issue physical certification to each boat reviewed under the scheme. Samples are provided in Appendix B.
   c) For each boat certified the recognised notified body will provide World Sailing with the particulars detailed in Appendix A of this document.
   d) For a unique boat certified there will be a fee of £50.00 in return for an exclusive World Sailing certificate identification number that should be shown on the certificate.
   e) For a production boat certified there will be a fee of £250.00 in return for a series production World Sailing certificate number that should be shown on the certificate.
   f) The recognised notified body will maintain a list of every boat certified together with the World Sailing unique identification number.

2.3 Termination
   a) A recognised notified body may terminate its recognition status at any time with 2 months notice unless there is a breach of the responsibilities or agreement at which time it may be terminated immediately.
Appendix A – Certificate Identification Number Request Form

The following particulars are to be supplied to World Sailing by World Sailing Recognised Notified Bodies before a certificate identification number can be issued:

**WORLD SAILING RECOGNISED NOTIFIED BODY CERTIFICATE IDENTIFICATION NUMBER REQUEST FORM**

<table>
<thead>
<tr>
<th>NOTIFIED BODY DETAILS</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Name of Notified Body</td>
<td></td>
</tr>
<tr>
<td>Name of contact</td>
<td></td>
</tr>
<tr>
<td>Telephone number</td>
<td></td>
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<tr>
<td>Email address</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>YACHT DETAILS</th>
<th></th>
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<tbody>
<tr>
<td>Does the yacht comply with the ISO Standards set out in the scope of the World Sailing plan review scheme?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>ISO 12215 Part 5: Design pressures specify version:</td>
<td></td>
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<tr>
<td>Is the certificate type a Series Production (yes/no)</td>
<td></td>
</tr>
<tr>
<td>Designer</td>
<td></td>
</tr>
<tr>
<td>Builder/Manufacturer</td>
<td></td>
</tr>
<tr>
<td>Yacht Design name</td>
<td></td>
</tr>
<tr>
<td>Yacht Name (if known)</td>
<td></td>
</tr>
<tr>
<td>Hull length</td>
<td></td>
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<tr>
<td>Mass of displacement $m_{LDC}$ (kg)</td>
<td></td>
</tr>
<tr>
<td>Mass of the ballast keel $Q$ (kg)</td>
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<tr>
<td>Major Construction material (e.g. glass sandwich)</td>
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<tr>
<td>Other notes (e.g. modifications to standard specification)</td>
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