

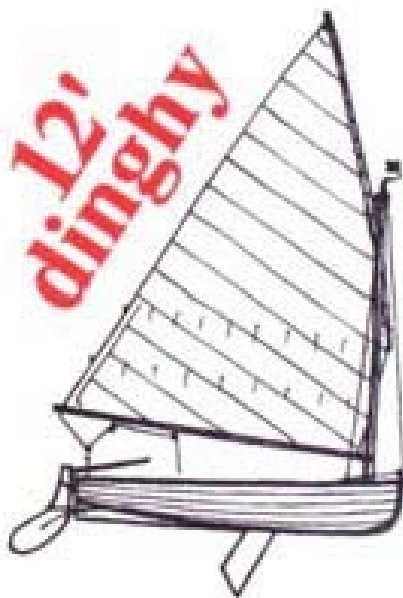
(ISAF RECOGNIZED)

12 foot Dinghy Class

CLASS RULES

Effective: Month 1, 200x

(cancels previous rules and interpretations)



INDEX

Index.....	2
INTRODUCTION.....	3
Part I – Administration.....	4
Section A – General.....	4
Section B – Boat Eligibility.....	7
B.1 CLASS RULES AND CERTIFICATION.....	7
B.2 CERTIFICATION MARKS.....	7
B.3 CLASS MEMBERSHIP.....	7
B.4 TAGS.....	7
Part II – Requirements and Limitations.....	8
Section C – Conditions for Racing.....	8
C.1 GENERAL.....	8
C.2 CREW.....	8
C.3 PERSONAL EQUIPMENT.....	9
C.4 ADVERTISING.....	9
C.5 PORTABLE EQUIPMENT.....	9
C.6 BOAT.....	9
C.7 HULL.....	10
C.8 HULL APPENDAGES.....	11
C.9 RIG.....	11
C.10 SAIL.....	13
Section D – Hull.....	13
D.1 PARTS.....	13
D.2 GENERAL.....	13
D.3 HULL SHELL.....	15
D.4 DECK.....	15
D.5 BUOYANCY TANKS.....	15
D.6 GUNWALE AND RUBBING STRAKES.....	15
D.7 BULKHEADS.....	15
D.8 THWARFS.....	15
D.9 ASSEMBLED HULL.....	16
Section E – Hull Appendages.....	17
E.1 PARTS.....	17
E.2 GENERAL.....	17
E.3 CENTREBOARD.....	18
E.4 RUDDER BLADE, RUDDER STOCK AND TILLER.....	19
Section F – Rig.....	20
F.1 PARTS.....	20
F.2 GENERAL.....	20
F.3 MAST.....	20
F.4 BOOM.....	22
F.5 STANDING RIGGING.....	22
F.6 RUNNING RIGGING.....	23
Section G – Sails.....	24
G.1 PARTS.....	24
G.2 GENERAL.....	24
G.3 MAINSAIL.....	24
Part III – Appendices.....	26
Section H.....	Errore. Il segnalibro non è definito.
H.1.1 CERTIFICATE.....	26

INTRODUCTION

This introduction only provides an informal background and the 12footDinghy Class Rules proper begin on the next page.

The 12footDinghy is a One-Design racing dinghy with an overall length of 3.66 m for a crew of one (two), designed in 1913 by George Cockshot.

12footDinghy by 1920 had been granted “IYRU international” status and was chosen as Olympic Class in 1920 with a crew of two and as Men's Single Handed Dinghy in 1928.

Class rules may evolve, while the intention is to avoid the use of costly, short-lived, risky or environmentally improper materials.

12footDinghy hulls, hull appendages, rigs and sails are measurement controlled.

12footDinghy hull shall be measured before leaving the manufacturer.

Rules regulating the use of equipment during a race are contained in Section C of these class rules, in ERS Part I and in the Racing Rules of Sailing.

Owners and crews should be aware that compliance with rules in Section C is not checked as part of the certification process.

PART I – ADMINISTRATION

Section A – General

A.1 LANGUAGE AND DEFINITIONS

- A.1.1 The official language of the class is English and in case of dispute over translation the English text shall prevail.
- A.1.2 The word “shall” is mandatory and the word “may” is permissive.
- A.1.3 The term "secured" shall mean held in place by positive means.
- A.1.4 The term "fastened" shall mean held in place with bolts or screws.
- A.1.5 The term "permanent" shall mean unable to be removed with simple tools, or fixed with glue or rivets. For limit marks, it shall mean unable to be removed and repositioned without destroying them.
- A.1.6 The term "alteration" shall mean a substantial change from the original condition.
- A.1.7 A dimension or other requirement in the text overrides the same in a Figure.
- A.1.8 All units are metric.
- A.1.9 All dimensions are in millimetres.
- A.1.10 Drawings generally show the transom to the left and the stem to the right, measuring is usually from left to right, but for practical reasons some drawings are tilted.

A.2 ABBREVIATIONS

- A.2.1 ISAF International Sailing Federation
- MNA ISAF Member National Authority
- I12DA International 12footDinghy Class Association
- N12DA National 12footDinghy Class Association
- ERS Equipment Rules of Sailing
- RRS Racing Rules of Sailing

A.3 AUTHORITIES

- A.3.1 The international authority of the class is the I12DA which shall co-operate with the N12DA in all matters concerning these **class rules**.
- A.3.2 Neither the ISAF, an MNA, the I12DA, a N12DA, a **certification authority**, or an official measurer are under any legal responsibility in respect of these **class rules** and the accuracy of measurement, nor can any claims arising from these be entertained.
- A.3.2 Notwithstanding anything contained herein, the **certification authority** has the authority to withdraw a **certificate** and shall do so on the request of the I12DA.

A.4 ADMINISTRATION OF THE CLASS

- A.4.1 The administering authority is the I12DA. Except as provided for under A.10.3, the **certification authority** is the N12DA of the boat’s owner. The N12DA may delegate part or all of its functions, as stated in these class rules, to a MNA.
- A.4.2 In countries where there is no N12DA or MNA, or where neither of these wishes to administer the class, its administrative functions as stated in these class rules shall be carried out by the I12DA or its delegated representatives.

A.5 ISAF RULES

- A.5.1 These **class rules** shall be read in conjunction with the ERS and RRS.

A.5.2 Except where used in headings, when a term is printed in “**bold**” the definition in the ERS applies and when a term is printed in “*italics*” the definition in the RRS applies.

A.5.3 These rules are complementary to the Building Specification Plan and Measurement Form.

A.6 CLASS RULES VARIATIONS

A.6.1 At Class Events – see RRS 87.1.d) – ISAF Regulation 26.5(f) applies. At all other events RRS 86 applies.

A.6.2 At other Open Events, the Notice of Race/Sailing Instructions may vary these class rules only with the agreement of the N12DA.

A.6.3 The sailing instructions, where possible, shall include the statement that the Class Flag shall be International Code Flag T (Tango).

A.7 CLASS RULES AMENDMENTS

A.7.1 Amendments to these **class rules** shall be proposed by a N12DA and are subject to the approval of the I12DA in accordance with the procedure as by Appendix H.4.

A.8 CLASS RULES INTERPRETATION

A.8.1 GENERAL

Interpretation of **class rules**, except as provided by A.8.3, shall be made in accordance with the class procedure as by Appendix A.4.

A.8.2 In case of discrepancy between these rules, the measurement form, measurement diagrams and/or the plans, the matter shall be referred to the I12DA.

A.8.3 AT AN EVENT

Any interpretation of **class rules** required at an event will only be made by an International Jury constituted in accordance with the RRS. Such interpretation shall only be valid during the event and the organising authority shall, as soon as practical after the event, inform the ISAF, the MNA and the I12DA of such interpretation.

A.9 INTERNATIONAL CLASS FEE AND HULL IDENTIFICATION PLAQUE

A.9.1 The hull builder shall pay the International Class Fee every hull built, whether or not it is subsequently measured and registered. Payment shall be made to the N12DA, which will transfer the agreed amount to the I12DA..

A.9.2 The N12DA shall, after having received the Class Fee for the hull, issue the Hull Identification Number, send the Hull Identification Plaque and a measurement form to the hull builder.

A.9.3 The Hull Identification Number shall not be changed.

A.10 SAIL NUMBERS

A.10.1 Sail numbers shall be issued by the **certification authority**.

A.10.2 Sail numbers shall be issued to all boats, in consecutive order starting at “1” for each National Authority.

A.11 HULL CERTIFICATION

A.11.1 A **certificate** shall record the following information:

(a) Class

(b) **Certification authority**

(c) Sail number(s) in accordance with A.10.

(d) Owner’s name and address.

(e) Hull identification (see D.1.4)

(f) Builder / manufacturer’s details

(g) Date of issue of initial **certificate**

(h) Date of issue of **certificate**

(i) Measurer's name.

A.11.2 Certification control shall be carried out only by **official measurers** appointed both by their MNA and the N12DA. An official measurer shall not perform certification control on any part owned, designed or build by him, or in which he is an interested party, or has a vested interest, except where permitted by these **class rules**.

A.12 INITIAL HULL CERTIFICATION

A.12.1 For a **certificate** to be issued to hull not previously **certified**:

(a) **Certification control** shall be carried out by the **official measurer** who shall complete the appropriate documentation.

(b) The documentation and **certification** fee, if required, shall be sent to the **certification authority**.

(c) Upon receipt of a satisfactorily completed documentation and **certification** fee, if required, the **certification authority** may issue a **certificate**.

A.13 VALIDITY OF CERTIFICATE

A.13.1 A hull **certificate** becomes invalid upon:

(a) the change to any items recorded on the hull **certificate** as required under A.11.

(b) Alterations to the position, number or mass of weight correctors,

(c) The use of equipment that does not comply, or that causes the boat not to comply, with limitations recorded on the certificate,

(d) Alteration or repair to items required by the measurement form(s) to be measured, other than permitted routine maintenance,

(e) A change of class rules that causes equipment in use to cease to be permitted, except as allowed under rule A.15.

(f) the date of expiry,

(g) withdrawal by the **certification authority**,

(h) the issue of a new **certificate**,

A.14 HULL RE-CERTIFICATION

A.14.1 The **certification authority** may issue a **certificate** to a previously certified **hull**:

(a) when it is invalidated under A.13.1(a) or (b), after receipt of the old **certificate**, and **certification** fee if required.

(b) when it is invalidated under A.13.1 (c), at its discretion.

(c) in other cases, by application of the procedure in A.12.

A.15 RETENTION OF CERTIFICATION DOCUMENTATION

A.15.1 The **certification authority** shall:

(a) retain the original documentation upon which the current **certificate** is based.

(b) upon request, transfer this documentation to the new **certification authority** if the hull is exported.

A.16 OLD BOATS

A.16.1 The following rules always apply: C.9.4, D.9 (except those related to ...).

A.16.2 Subject to A.16.1, a hull or other equipment not complying with current class rules, but complying with the class rules in force at a previous certification control, may retain certification, provided that the non-compliance does not give a racing advantage to the boat.

A.16.3 In particular, Rule A.16.2 can be applied with respect to centreboard pivot position, centreboard safety plate, centreboard weight, mast weight, gaff weight, mast centre of gravity.

A.16.4 Altered or renewed equipment shall comply with current **class rules** unless, in the opinion of the **certification authority**, this is unreasonable.

A.17 BOAT CATEGORIES

A.17.1 Category 1: 'Wood Classic'

A Dinghy 12 shall be defined as a 'wood' Dinghy when the boat, rudder and spars are made of solid timber, the veneers of which have been bonded with nails, screws and boil proof glue. The construction rules and plans are to as by Appendix K1

A.17.2 Category 2: FRP and Composite

a) A Dinghy 12 shall be defined as **FRP** (Fibre Reinforced Plastic), when the hull, bilge panels, topsides, transom, fore and aft main bulkheads, centreboard case sides, tank sides and decking are made from any combination of the following:

- Glass fibre cloth
- Polyester or epoxy resin

b) A Dinghy 12 may be defined as **Composite**, when the hull, bilge panels and the transom, fore and aft main bulkheads, centreboard case sides, tank sides, thwart and deck are made from any combination of the materials listed above, and or the following:

- Solid timber
- Plywood

The construction rules and plans of FRP & Composite are to as by Appendix K2

Section B – Boat Eligibility

For a **boat** to be eligible for *racing*, it shall comply with the rules in this section.

B.1 CLASS RULES AND CERTIFICATION

B.1.1 The **boat** shall:

- (a) be in compliance with the **class rules**.
- (b) have a valid hull **certificate** including **corrector weight** and related details as specified in C.7.2 and C.7.3.
- (c) have valid **certification marks** as required

B.2 CERTIFICATION MARKS

B.2.1 The **hull** shall carry the builder's plaque fixed as by D.2.5(a) and have a valid **hull card**

B.2.2 The **mast** shall carry a valid certification mark and have a valid **mast card**.

B.2.3 The **Centreboard** and **Rudder** shall carry valid certification marks.

B.3 CLASS MEMBERSHIP

B.3.1 The crew shall be current members of a N12DA.

B.4 TAGS

B.2.1 At championships or principal events the race committee may arrange for boats and/or sails to be partly or completely re-measured before racing. Parts measured shall be marked with a tag (sticker/stamp which may be signed and numbered by the Measurer). Tags of previous events shall be ignored.

PART II – REQUIREMENTS AND LIMITATIONS

The **crew** and the **boat** shall comply with the rules in Part II when *racing*. In case of conflict Section C shall prevail.

The rules in Part II are **closed class rules**. **Certification control** and **equipment inspection** shall be carried out in accordance with the ERS except where varied in this Part.

Section C – Conditions for Racing

C.1 GENERAL

C.1.1 Rules

(a) The following RRS 2005-2008 rules shall apply as amended below:

1. rules 44.1 and 44.2 are changed so that only one turn, including one tack and one gybe, is required..
2. In alteration to RRS 42:
 - I. If the average wind speed is above 10 knots, measured at deck level, the race committee may display Flag O before or with the warning signal to signal hat pumping, rocking and ooching are allowed after the starting signal. (change of RRS 42.2(a), RRS 42.2(b), RRS 42.2(c)).
 - II. After the starting signal, if the average wind speed is above 10 knots, measured at deck level, the race committee may display Flag O with repetitive sounds at any rounding mark to signal that pumping, rocking and ooching are allowed. This instruction applies to a boat after she has passed the mark. (change of RRS 42.2(a), RRS 42.2(b), RRS 42.2(c)).
 - III. If the race committee has acted under instruction C 1.1(a)(1) or C 1.1(a)(2) and the average wind speed becomes less than 10 knots, the race committee may display flag R with repetitive sounds at any rounding mark to signal that rule 42 applies as written in the RRS . This instruction applies to a boat after she has passed the mark.

(b) The 12 Foot Dinghy Class recommends that Race Officers postpone a race not started, or abandon a race that have started, in more than 5 minutes wind speed of 16 knots and above, measured at deck level.

(c) The ERS Part I – Use of Equipment shall apply.

C.2 CREW

C.2.1 LIMITATIONS

- (a) The **crew** shall consist of 1 or 2 person, each in contact with the boat.
- (b) At World, Continental, National or Regional Championship the **crew** shall consist of 1 person.
- (c) The minimum age of a **crew** is sixteen years on December 31st.
- (d) No **crew** member shall be substituted during an event without the approval of the Race Committee.

C.2.2 RESPONSIBILITIES

- (a) It is the **crew**'s responsibility to ensure that the **boat** and **personal equipment** comply with the **class rules** when *racing*.

C.3 PERSONAL EQUIPMENT

C.3.1 MANDATORY

- (a) The boat shall be equipped with **personal buoyancy** for each crew member to the minimum standard EN 393: 1995 (CE 50 Newtons).

C.4 ADVERTISING

C.4.1 LIMITATIONS

Advertising shall only be displayed in accordance with Category C of the ISAF Advertising Code, except as amended by C.4.2.

C.4.2 RESTRICTIONS

A competitor advertising is restricted to the outside **hull** shell aft of 1650 mm from the foremost point (fittings excluded) hull and may relate only to the ownership of the **boat**.

C.5 PORTABLE EQUIPMENT

C.5.1 FOR USE

(a) MANDATORY

- (1) One hand bailer and/or bucket, which shall be securely attached to the hull by a lanyard(s). The bailer or bucket shall have a minimum capacity of two litres.

(b) OPTIONAL

- (1) Additional bailers or buckets and one or more sponge.
- (2) One compass, which may be included in timing devices, and which shall be removable and not recess in any part of the hull. If electronic, only compasses with heading, heading memory and timing functions are permitted.
- (3) Electronic or mechanical timing devices which may include a compass, and which shall be removable and not recess in any part of the **hull**. Wrist watches with compass functionality are permitted additionally. No other electrical or electronic devices than those prescribed in C.5.1 and those required by an organizer and the I12DA to be carried by **boats** shall be permitted on board when *racing*.
- (4) Other equipment and fittings normally carried in **boats** such as flags, mechanical wind indicators, anchors and anchor warps, fenders, bags, bottles, manual recorders, writing equipment and spares.

C.5.2 NOT FOR USE

(a) MANDATORY

- (1) Towing rope of floating type minimum 8 m long of not less than 8 mm in diameter secured to the **mast**.
- (2) One oar or one paddle, minimum 800 mm long and with a blade area of minimum 0,04 m²

(b) OPTIONAL

- (1) Electronic navigation devices
- (2) One outboard engine
- (3) Additional paddles and oars and oarlocks.

C.6 BOAT

C.6.1 WEIGHT

The weight of the **boat**..... minimum
134 kg

The weight shall be taken of the **boat** fully rigged for sailing and in dry condition, but excluding **sails**, towing rope, **personal** and portable **equipment** excluding **sails** and all portable equipment as listed in C.5.

C.6.2 CORRECTOR WEIGHTS

- (a) Lead **corrector weights** shall be securely fastened to the **hull** if necessary to ensure compliance with D.9.2 and D.9.3. Corrector weights shall be visible to allow for inspection without the use of tools.
- (b) The total weight of such **corrector weights** shall not exceed 6 kg. The number, position and size of the hull corrector weights, and notes of other fittings (such as compasses and hiking pads) having a significant effect upon compliance with D.9.2 and D.9.3, shall be entered on the **certificate**.

C.6.3 FLOTATION

- (a) The **hull** shall have at least two flotation elements.
- (b) Flotation elements shall comply with ISO 12217-3¹ Annex C.
- (c) **Hulls** with air tanks as flotation elements shall additionally comply with ISO 12217-3 Annex D, by test or calculation, except that the largest air tank shall not be included as a flotation element.
- (d) It is the owner's responsibility to see that the flotation elements are kept securely fastened and fully effective when afloat. Hatch covers and drainage plugs for air tanks shall be kept in place at all times.
- (e) Buoyancy shall ensure that in the event of complete flooding, a fully rigged **boat** with intact buoyancy units will float approximately level.
- (f) If in doubt regarding compliance with C.6.3, an **equipment inspector** may order a buoyancy test, afterwards checking the tanks for significant leakage. If the buoyancy is deemed unsatisfactory, the **certificate** shall be withdrawn and not returned until satisfactory remedial measures have been taken.

C.7 HULL

C.7.1 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) The hull shell, decks, bulkheads, centreboard case, keel and double bottom (if fitted) shall not be altered in any way except as permitted by these **class rules**.
- (b) Routine maintenance such as painting and polishing is permitted without re-measurement and **re-certification**
- (c) If any hull moulding is repaired in a way that might cause Rules C.6.1 or D.9 to be contravened, an **official measurer** shall satisfy himself that the equipment remains within the rules. The **official measurer** shall also describe the details of the repair on the **certificate**.

C.7.2 WEIGHT AND WEIGHT DISTRIBUTION

After completion of **certification control**, if fittings or other items are moved in a way that might cause Rules D.9.2 and D.9.3 to be infringed, Rule A.13.1 shall apply and a new certification control under Rules D.9.2 and D.9.3 is required.

C.7.3 FITTINGS

- (a) USE

¹ EN ISO 12217-3:2002

Small craft – Stability and buoyancy assessment and categorisation – Part 3 : Boats of hull length less than 6 m

C 235 of 2002-10-01

- (1) Inspection hole covers and drainage plugs shall be kept in place at all times when racing.
- (2) All fittings, fastenings and local reinforcement for fittings shall be only for their normal purpose and shall not be used to increase the weight of the **boat**.
- (3) Except when specified otherwise or a system is optional, the direction of the control lines, sheets and ropes shall not be modified by means of shackles, rings, loops or holes in the boat.
- (4) Hiking pads, attached to but removable from the **hull** are permitted. They shall not extend outboard of the vertical plane of the gunwale rubbing strake.

C.8 HULL APPENDAGES

C.8.1 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) The centreboard and the rudder shall not be altered in any way except as permitted by these **class rules**.
- (b) Maintenance such as repair, painting and polishing is permitted without re-measurement and **re-certification**.

C.8.2 LIMITATIONS

- (c) Only one **centreboard** shall be used during an event, except when the **centreboard** has been lost or damaged beyond repair.
- (d) Only one **rudder** shall be used during an event, except when the **rudder** has been lost or damaged beyond repair.

C.8.2 CENTREBOARD

(a) USE

1. There shall be an arrangement to prevent the **centreboard** from opening the angle between the keel and it's aft edge more than 75 degrees.
2. There shall be an arrangement to prevent the **centreboard** from falling off if the boat is capsized..
3. There shall be an arrangement to prevent the **centreboard**, if lowered, from retracting completely if the boat is capsized and acting like a knife on the keel.

C.8.3 RUDDER

(a) USE

1. The **rudder** blade shall be pinned or bolted so that the **rudder** assembly shall be in its fully lowered position.
2. There shall be a fitting to prevent the **rudder** from falling off if the **boat** is capsized.
3. There shall be a fitting to prevent the **tiller** from slip off casing.
4. A **tiller extension** is allowed

C.9 RIG

C.9.1 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) Routine maintenance such as painting and polishing is permitted without re-measurement and **re-certification**.

C.9.2 LIMITATIONS

- (a) Only one set of **spars** and standing **rigging** shall be used during an event, except when a item has been lost or damaged beyond repair.

C.9.3 MAST

(a) DIMENSIONS

	minimum	maximum
1. distance of the upper neck of the halyard pulley of the spar from thwart	3.287 mm	3.307 mm
2. Limit mark width	9 mm	11 mm
3. Boom point distance from thwart	99 mm	101 mm

(b) USE

- (1) The **mast** shall be stayed by a couple of shrouds only and fitted in such a way that it will not come out of the step when the boat is capsized.
- (2) The **mast** shall pass through the thwart and shall be stepped in the mast step in such a way that any movement in any horizontal direction shall not exceed 5 mm, and any mast rotation shall not exceed 5 degrees.
- (3) Arrangements allowing rotation of the **mast** are prohibited.

(c) OPTIONS

- (1) A mechanical wind indicator may be fitted to the top or in front of the mast.

C.9.4 BOOM

(a) DIMENSIONS

	minimum	maximum
Limit mark width		3.580 mm
Boom Outer Point from aft edge line .....	... mm	... mm

(b) USE

- (5) The intersection of the aft edge of the mast **spar** and the top of the boom **spar**, each extended as necessary, shall not be below the upper edge of the mast **lower limit mark** when the boom **spar** is at 90° to the mast **spar**.
- (6) A rope shall be fastened to the boom jaws through two holes or through two eyes, and pass forward around the **mast**.

C.9.6 GAFF

(a) DIMENSIONS

	minimum	maximum
Limit mark width		3.580 mm
Gaff point distance from lower limit mark	1.290 mm	1.510 mm

(b) USE

- (1) The **gaff** shall be hoisted on an halyard fixed in any point inside the gaff point distance. The arrangement shall permit hoisting and lowering of the **sail** at sea.
- (2) A ring shaped rope may be fastened to the gaff lower edge and pass forward around the **mast**.
- (3)

C.9.8 STANDING RIGGING

(a) DIMENSIONS

	minimum	maximum
Shrouds length .....	... mm	... mm
Shrouds diameter	3,00 mm	4,00 mm

(b) USE

- (1) Both shrouds shall be of steel cord wire, with a strap laid around the mast head.
- (2) Rigging links and rigging screws shall not be adjusted.

C.10 SAIL

C.10.1 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) **Sail** shall not be altered in any way except as permitted by these **class rules**.
- (b) Routine maintenance is permitted without re-measurement and re-**certification**.

C.10.2 LIMITATIONS

- (a) Not more than 1 **sail** shall be carried aboard.
- (b) Not more than 2 **sails** shall be used during an event except when a **sail** has been lost or damaged beyond repair.

C.10.3 IDENTIFICATION

The national letters and sail numbers shall comply with the RRS except where prescribed otherwise in these **class rules**.

C.10.4 USE

- (a) The **sail** upper luff edges shall be fastened to fittings on the backside of the gaff spar. The internal girth of the eye bolts shall not be outside the **outer points** on the gaff spar.
- (b) The **sail** luff boltropes shall be in the gaff grooves or tracks at the backside of the gaff or fastened in any other way by a rope.

Section D – Hull

D.1 PARTS

D.1.1 MANDATORY

- (a) Hull shell
- (b) Deck
- (c) Thwarts
- (d) Buoyancy units or floorboards or double bottom
- (e) Gunwale rubbing strakes
- (f)

D.1.2 OPTIONAL

- (a) Bulkheads
- (b) Centreboard case athwartship stiffening struts
- (c) Mainsheet block and supports below sheer height
- (d) Keel bands
- (e)

D.2 GENERAL

D.2.1 RULES

- (a) The **hull** shall comply with the **class rules** in force at the time of initial **certification**.
- (b)

D.2.2 CERTIFICATION

- (a) The hull and centreboard shall be measured together, and details shall be recorded upon the measurement form and certificate as specified by Rule A.11. If a new centreboard

is fitted, then certification control is required under Rule D.9, and measurement under E.2.5 (b).

D.2.5 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) The hull shell, deck, thwart, bulkheads, double bottom, air tanks shall not be altered in any way except as permitted by these **class rules**.
- (b) Holes not bigger than necessary for the installation fittings and passage of lines may be made in the
- (c) Routine maintenance such as painting and polishing is permitted without re-measurement and re-**certification**.
- (d) If any hull moulding is repaired in any other way than described in D.2.3(c), an **official measurer** shall verify on the **certificate** that the external shape is the same as before the repair and that no substantial stiffness, or other, advantage has been gained as a result of the repair. The **official measurer** shall also describe the details of the repair on the **certificate**.

D.2.3 DEFINITIONS

- (a) The three major axes
- (b) Hull Datum Point
- (c) Baseline
- (d) Stations
- (e) Hull Length is

D.2.5 IDENTIFICATION

- (a) The hull shall carry the builder Plaque permanently placed in a visible spot on the centreboard case or on the transom inside.
- (b)

D.2.6 BUILDERS

- (a) The 12foot Dinghy may be built by any professional or amateur builder.
- (b) Professional builders of the 12foot Dinghy shall be only those holding a licence under the copyright of a NCA or the ICAA to manufacture and sell 12foot Dinghy kits and/or build and sell 12foot Dinghy boats.
- (c) There shall be two categories of Builders Licence:
 - i. - Category 1: Wood Traditional
 - ii. - Category 2: FRP & Composite(For definitions of 'Wood' and 'FRP & Composite' 12foot Dinghy see I12DCR Construction Categories)
- (d) A builder may only build 12foot Dinghies from those categories for which he is licensed.
- (e) An amateur builder shall be authorised to assemble or build not more than one 12foot Dinghy per annum. The boat shall be registered in the name of the assembler/builder and shall not be transferred to other ownership within six months of completion, without prior permission from NCA.
- (f) Professional builders shall be licensed by NCA and shall be responsible for supplying boats or kits complying with the 12foot Dinghy Class Rules. The builder shall, at his own expense, correct or replace any boat that fails to pass certification control, due to omission or error by the builder, provided that the boat is submitted for certification control within 12 months of purchase.
- (g) All moulds shall be approved by the ICA-NCA.

D.3 HULL SHELL

D.3.1 MATERIALS

- (a) The hull shell may be built from Wood, Plywood, Fibreglass
- (b) Glues and resin may be polyester or epoxy
- (c) The use of fibres not fibreglass is forbidden

D.3.2 CLASSIC BOATS

- (a) Shall be built only from solid wood

D.3.3 CONSTRUCTION

- (a) Appendix C1 shows the construction rules of Classic hull boats
- (b) Appendix C2 shows the construction rules of non Classic hull boats

D.4 DECK

D.4.1 MATERIALS

- (a) The deck shall be built from
- (b)

D.4.2 CONSTRUCTION

- (a)

D.5 BUOYANCY TANKS

D.5.1 CONSTRUCTION

- (a) Buoyancy equipment shall comprise of
- (b)

D.6 GUNWALE AND RUBBING STRAKES

D.6.1 MATERIALS

- (a) The rubbing strakes shall be of timber, plastic, aluminium alloy or any resilient material.
- (b)

D.6.2 CONSTRUCTION

- (a) The rubbing strake shall run unbroken on each gunwale.
- (b)

D.7 BULKHEADS

D.7.1 MATERIALS

- (a)

D.7.2 CONSTRUCTION

- (a)

D.8 THWARTS

D.8.1 MATERIALS

- (a)

D.8.2 CONSTRUCTION

- (a)

D.9 ASSEMBLED HULL

D.9.1 FITTINGS

(a) MANDATORY

The following fittings shall be positioned in accordance with the measurement diagram:

- (2) Stemhead fitting
- (3) Shroud plates
- (4) Headsail tracks
- (5) Mainsheet track with one traveller
- (6) Mast step
- (7) One inspection hole in each buoyancy tank, provided that the watertight integrity of the buoyancy tank is maintained and covers are capable of resisting accidental dislodgement.

(b) OPTIONAL

- (1) Halyard tensioners
- (2) Mainsail sheet blocks, fairleads and cleats
- (3) Mainsail Cunningham blocks, fairleads and cleats
- (4) Headsail sheet blocks, fairleads and cleats
- (5) Headsail Cunningham blocks, fairleads and cleats
- (6) Tiller lock
- (7) Toe straps not capable of extending outboard
- (8) Hand holds on/in deck
- (9) Stowage clips for paddle(s), spinnaker pole, sail bags and other equipment
- (10) Draining holes in buoyancy tanks, provided that the watertight integrity of the buoyancy tank is maintained and plugs are capable of resisting accidental dislodgement.
- (11) Magnetic compasses
- (12)

D.9.2 DIMENSIONS

The keel line shall be taken as the intersection line from transom to stem of the hull shell and the **hull** centreplane.

The sections shall be taken as vertical, transverse planes at the following positions:

Section 1: at ... mm from **hull datum point** as defined in D.2.3

Section 2: at ... mm from **hull datum point** as defined in D.2.3

etc.

The baseline shall be on the centreplane of the **hull** at the at following vertical distances:

at the **hull datum point** as defined in D.2.3: ... mm from the **hull** shell

at section ... : ... mm from the **hull** shell

	minimum	maximum
Hull length .....	... mm	... mm
Vertical distance from baseline to underside of hull shell;		
at section ...	... mm	... mm
at section ...	... mm	... mm

Vertical distance from baseline to underside of keel			
at section ... ..	... mm	.....	... mm
Beam of hull , excluding rubbing strakes and fittings, at sheerline;			
at section ... ..	... mm	.....	... mm
at section ... ..	... mm	.....	... mm
at section ... ..	... mm	.....	... mm
Longitudinal distance from hull datum point as defined in D.2.3;			
to intersection of keel trailing edge and hull .....	... mm	.....	... mm
to aft point of mast spar hole at deck .....	... mm	.....	... mm
Longitudinal dimension of mast spar hole .....			... mm
Longitudinal distance from hull datum point as defined in D.2.3 to centre of shroud plate holes .....	... mm	.....	... mm
Transverse distance between centres of shroud plate holes .....	... mm	.....	... mm
Gunwale rubbing strakes;			
depth .....	... mm	.....	... mm
width .....	... mm	.....	... mm
distances from transom and forward end of hull , excluding stemhead fitting, .....			... mm
Overall height of mast step .....			... mm
Mainsheet track;			
length .....			... mm
vertical height to top above ... ..	... mm	.....	... mm
Headsail track length .....			... mm
Inside diameter of buoyancy tank inspection holes .....			... mm
Inside diameter of buoyancy tank draining holes .....			... mm

D.9.3 WEIGHTS

minimum maximum

Hull weight kg kg

D.9.4 HULL CORRECTOR WEIGHTS

(a)

Section E – Hull Appendages

E.1 PARTS

E.1.1 MANDATORY

(a) **Centreboard**

(b) **Rudder**

E.2 GENERAL

E.2.1 RULES

(a) **Hull appendages** shall comply with the **class rules** in force at the time of **certification**.

E.2.2 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) Hull appendages shall not be altered in any way except as permitted by these class rules.
- (b) Routine maintenance such as repair and painting is permitted without re-measurement and re-certification.

E.2.3 CERTIFICATION

- (a) The **official measurer** shall **certify hull appendages** and shall sign and date the **certification mark**.
- (b) An MNA may appoint one or more persons at a manufacturer to measure and **certify hull appendages** produced by that manufacturer in accordance with the ISAF In-house Certification Guidelines.

(Or place Certification in E.3.2 and E.4.2 as below if different certification procedures should be used for different hull appendages.)

- (c)

E.2.3 DEFINITIONS

- (a)

E.2.4 MANUFACTURERS

- (a) The **hull appendages** shall be made by manufacturers licensed by ISAF.
- (b)

E.3 CENTREBOARD

E.3.1 RULES

- (a) The **centreboard** shall comply with the **class rules** in force at the time of the **certification**.

E.3.2 CERTIFICATION

- (a) The **official measurer** shall **certify centreboards** and shall sign and date the **certification mark**.

E.3.3 DEFINITIONS

- (a)

E.3.4 MANUFACTURERS

- (a) Manufacturers shall be licensed by the ISAF.
- (b)

E.3.5 MATERIALS

- (a) The **centreboard** shall be of
- (b) The **centreboard** shall be covered with
- (c)

E.3.6 CONSTRUCTION

- (a) The **centreboard** shall be manufactured from a pattern approved by the ISAF.
- (b)

E.3.7 FITTINGS

- (a) MANDATORY
 - (1)

(b) OPTIONAL

(1)

E.3.8 DIMENSIONS

minimum maximum

..... mm mm

E.3.9 WEIGHTS

minimum maximum

..... kg kg

E.4 RUDDER BLADE, RUDDER STOCK AND TILLER

E.4.1 RULES

(a) The **rudder** blade shall comply with the **class rules** in force at the time of **certification**.

(b)

E.4.2 CERTIFICATION

(a) The **official measurer** shall **certify rudder** blades and shall sign and date the **certification mark**.

E.4.3 DEFINITIONS

(a)

E.4.4 MANUFACTURERS

(a) Manufacturers shall be licensed by the ISAF.

(b)

E.4.5 MATERIALS

(a) The **rudder** blade shall be of

(b) The **rudder** stock shall be of

(c) The tiller shall be of

(d)

E.4.6 CONSTRUCTION

(a) The **rudder** blade shall be manufactured in a mould approved by the ISAF.

(b)

E.4.7 FITTINGS

(a) MANDATORY

(1)

(b) OPTIONAL

(1)

E.4.8 DIMENSIONS

minimum maximum

..... mm mm

E.4.9 WEIGHTS

minimum maximum

..... kg kg

Section F – Rig

F.1 PARTS

F.1.1 MANDATORY

- (a) **Mast**
- (b) **Boom**
- (c) Standing **rigging**
- (d) Running **rigging**
- (e)

F.1.2 OPTIONAL

- (a)

F.2 GENERAL

F.2.1 RULES

- (a) The **spars** and their fittings shall comply with the **class rules** in force at the time of **certification** of the **spar**.
- (b) The standing and running **rigging** shall comply with the **class rules**.
- (c)

F.2.2 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) **Spars** shall not be altered in any way except as permitted by these **class rules**.
- (b) Routine maintenance such as ... is permitted without re-measurement and re-**certification**.

F.2.3 CERTIFICATION

- (a) The **official measurer** shall **certify spars** and shall sign and date the **certification mark**.
- (b) No **certification** of standing and running **rigging** is required.
- (c)

F.2.4 DEFINITIONS

- (a) MAST DATUM POINT
The **mast datum point** is
- (b)

F.2.5 MANUFACTURER

- (a) No licence is required.
- (b)

F.3 MAST

F.3.1 MATERIALS

- (a) The **spar** shall be of
- (b)

F.3.2 CONSTRUCTION

- (a) The **spar** extrusion shall include a fixed sail groove or track which may or may not be integral with the **spar** but shall be of the same material.
- (b)

F.3.3 FITTINGS

(a) MANDATORY

- (1) Mast head fitting
- (2) Shroud tangs
- (3) A set of fixed spreaders
- (4) Mainsail halyard sheave box
- (5) Gooseneck
- (6) Kicking strap attachment
- (7) Heel fitting with ... sheaves for halyards
- (8) (13)

(b) OPTIONAL

- (1) One mechanical wind indicator
- (2) Compass bracket
- (3)

F.3.5 DIMENSIONS

	minimum	maximum
Mast length .....	... mm	..... mm
Mast spar curvature .....		... mm
<i>Or</i>		
Mast spar curvature at ... mm from the mast datum point as defined in F.2.3 .....		... mm
Mast spar deflection when loaded with ... kg at ... mm from the mast datum point as defined in F.2.3:		
fore-and-aft .....	... mm	... mm
transverse .....	... mm	... mm
Mast spar cross section between ... and ... ;		
fore-and-aft .....	... mm	... mm
transverse .....	... mm	... mm
Mast limit mark width .....	... mm	
Lower point height .....	... mm	
<i>(Not necessary if the lower point is the mast datum point.)</i>		
Upper point height .....		... mm
Lower point to upper point .....		... mm
Forestay height .....	... mm	... mm
Shroud height .....	... mm	... mm
Spinnaker pole fitting:		
height .....	... mm	... mm
projection .....	... mm	... mm
Spinnaker hoist height .....	... mm	... mm
Spreader;		
length .....	... mm	... mm
height .....	... mm	... mm

Distance from **mast datum point** as defined in F.2.3
to centre of gravity in condition as described in
ERS H.3.6 mm

F.3.16 WEIGHTS

minimum maximum

Mast weight kg

F.4 BOOM

F.4.1 MATERIALS

- (a) The **spar** shall be of
- (b) Permitted surface finish shall be of

F.4.2 CONSTRUCTION

- (a) The **spar** extrusion and shall include a fixed sail groove or track which may or may not be integral with the **spar** but shall be of the same material.
- (b)

F.4.3 FITTINGS

(a) MANDATORY

- (1) Two single sheave mainsheet blocks with attachments
- (2) Clew outhaul blocks and attachments
- (3) Kicking strap fitting
- (4) Gooseneck attachment
- (5)

(b) OPTIONAL

- (1) Not more than two wire strops for mainsheet blocks
- (2)

F.4.5 DIMENSIONS

minimum maximum

Boom spar curvature mm

Or

Boom spar curvature at ... mm from the
outer limit mark mm

Boom spar deflection when loaded with ... kg at ... ;

vertical mm

transverse mm

Boom spar cross section between ... and ... ;

vertical mm mm

transverse mm mm

F.4.16 WEIGHTS

minimum maximum

Boom weight kg

F.5 STANDING RIGGING

F.5.1 MATERIALS

- (a) The standing **rigging** shall be of stainless steel.
- (b)

F.5.2 CONSTRUCTION

(a) MANDATORY

- (1) Shrouds of ... x... “non faired” wire
- (2)
- (4)

(b) OPTIONAL

- (1)

F.5.3 FITTINGS

(a) MANDATORY

- (1) Shroud rigging screw
- (2)

(b) OPTIONAL

- (1)

F.5.4 DIMENSIONS

	minimum	maximum
Shroud length from ... to.....	... mm	... mm
Shroud diameter .....	... mm	

F.5.5 WEIGHTS

	minimum	maximum
.....	... kg	... kg

F.6 RUNNING RIGGING

F.6.1 MATERIALS

- (a) Materials are optional.
- (b)

F.6.2 CONSTRUCTION

(a) MANDATORY

- (1) Mainsail halyard
- (2) Mainsail sheet
- (3) Kicking strap
- (4) picco
- (5) orze

(b) OPTIONAL

- (1) Mainsail Cunningham line
- (2) Mainsail outhaul

F.6.3 FITTINGS

(a) MANDATORY

- (1)

(b) OPTIONAL

- (1)
- (2)

F.6.4 DIMENSIONS

minimum maximum
..... mm mm

F.6.5 WEIGHTS

minimum maximum
..... kg kg

Section G – Sails

G.1 PARTS

G.1.1 MANDATORY

- (a) Mainsail

G.2 GENERAL

G.2.1 RULES

- (a) **Sails** shall comply with the **class rules** in force at the time of **certification**.

G.2.2 CERTIFICATION

- (a) The **official measurer** shall **certify** mainsails and headsails in the **tack** and spinnakers in the **head** and shall sign and date the **certification mark**.
- (b) An MNA may appoint one or more persons at a sailmaker to measure and **certify sails** produced by that manufacturer in accordance with the ISAF In-house Certification Guidelines.

G.2.3 DEFINITIONS

- (a)

G.2.4 SAILMAKER

- (a) No licence is required.
- (b) The weight in g/m^2 of the **body of the sail** shall be indelibly marked near the **head point** by the sailmaker together with the date and his signature or stamp.

G.3 MAINSAIL

G.3.1 IDENTIFICATION

- (a) The class insignia shall conform with the dimensions and requirements as detailed in the diagram contained in ... and be placed in accordance with the diagram contained in
- (b)

G.3.2 MATERIALS

- (a) The **ply** fibres shall consist of
- (b) **Stiffening** shall consist of....
- (1) Cornerboards
- (c) **Sail reinforcement** shall consist of....

G.3.3 CONSTRUCTION

- (a) The construction shall be: **soft sail, single ply sail**.
- (b) The **body of the sail** shall consist of the same **woven ply** throughout.
- (c) The **sail** shall **not** have batten **pockets** in the **leech**.

- (d) The sail shall be constructed so that it can be reefed by means of slab reefing at two points adjacent to the **luff**, two points adjacent to the **leech** and four corresponding points in the **body of the sail**.
- (c) The following are permitted: Stitching, glues, tapes, bolt ropes, corner eyes, headboard with fixings, Cunningham eye or pulley, mast and boom slides, leech line with cleat, one **window**, tell tales, sail shape indicator stripes and items as permitted or prescribed by other applicable *rules*.
- (f) The **leech** shall not extend aft of straight lines between:
- (1) the **aft head point** and the intersection of the **leech** and the upper edge of,
 - (2) the intersection of the **leech** and the lower edge of and the intersection of the **leech** and the upper edge of below,
 - (3) the **clew point** and the intersection of the **leech** and the lower edge of the nearest.

G.3.4 DIMENSIONS

	minimum	maximum
Leech length .....	... mm	... mm
Quarter width .....	... mm	... mm
Half width .....	... mm	... mm
Three-quarter width .....	... mm	... mm
Upper width at upper leech point ... mm from head point .....	... mm	... mm
Top width .....		... mm
Weight of ply of the body of the sail .....	... g/m ²	
Primary reinforcement .....		... mm
Secondary reinforcement:		
from sail corner measurement points .....		... mm
for flutter patches .....		... mm
for chafing patches .....		... mm
at a reefing point adjacent to luff or leech .....		... mm
Tabling width .....		... mm
Distance from clew point to foot bolt rope .....		... mm
Distance from tack point to foot bolt rope .....		... mm
Seam width .....		... mm
Window area .....		... m ²
Window to sail edge .....	... mm	
Extension of headboard from head point .....		... mm
Head point to intersection of leech and centreline of uppermost .....	... mm	
Head point to intersection of luff and centreline of uppermost .....	... mm	
Clew point to intersection of leech and centreline of lowermost .....	... mm	

PART III – APPENDICES

The rules in Part III are **closed class rules**. Measurement shall be carried out in accordance with the ERS except where varied in this Part.

APPENDIX H.1 - CERTIFICATIONS

H.1.1 CERTIFICATE

- a) The **certificate** and attachment sheets shall be in the form annexed to these rules.
- b) The **certificate** should also record the identification numbers of **masts, booms, centreboards and rudders** found to comply with Section C of the rules when fitted to this **hull**.
 - i. If the certified **rudder** is available during certification control of the **hull**, it shall be checked at the same time, and compliance with Section C shall be recorded.
 - ii. An **official measurer** performing Equipment Inspections at a regatta should record compliance with Section C if practicable. He may rely on measurements made by his assistants.
- c) New **masts, booms, centreboards, rudders and sails** shall be certified as prescribed by rules A.15, B.1 and B.2.
- d) Where alterations to the certificate are necessary due to changes or new equipment, obsolete items shall be crossed through and new entries made, if necessary on attachment sheets which shall be kept with the certificate.
- e) Subject to rule A.15, the **certification** of older boats shall remain valid. Alterations, new weight information, other additions, and compliance with Section C of these rules shall be recorded on certificate sheets or attachment sheets in the form annexed to these rules.

H.1.2 MEASUREMENT FORM

The Measurement Form for the hull and centreboard shall be in the form annexed to these rules. It shall be properly completed, and retained with the certificate.

H.1.3 MAST CARD

The Mast Card prescribed by rules A.11 and F.2.2 shall be in a form approved by IFA. A suitable format is shown. Manufacturers are invited to use the reverse side of the Mast Card to record the bend characteristics of the mast.

H.1.4 CERTIFICATION MARKS

- a) Certification marks are required on the centreboard, boom and rudder. A certification mark may be an official measurer's mark, or a numbered sticker from the manufacturer, in a form approved by IFA.
- b) Manufacturers using in-house measurement in accordance with rules E.1.1 and F.1.1, are invited to provide numbered stickers complying with H.1.4 (a). These shall have space for the official measurer's signature or certification mark, date, and indication of whether Correctors were necessary (see example below). They may bear the manufacturer's advertising, subject to RRS 79 and Rule C.4.1.

H.1.4 (B)

SUITABLE FORMAT FOR A

MANUFACTURER'S STICKER

XXXXX 12foot Dinghy COMPANY

OFFICIAL MEASURER

DATE _____

CORRECTORS Y- N

IF YES WEIGHT AND POSITION OF EACH

The certificate shall include the following information. ISAF ICF plaque or sticker serial number, National letter(s) and sail number, Owner's name, address and club, Builder and date built, Name(s) of measurer(s) and date measurement completed, Hull weight, number and weight of correctors, mass moment of Inertia, position of hull centre of gravity, date of issue and issuing authority.

Weight Distribution

- (i) Any attempt to concentrate the weight of the hull is prohibited.
- (ii) The weight distribution, as defined by the fore and aft mass moment of inertia (I) and the location of the centre of gravity (CG) relative to the aft measurement plane, i.e. horizontal CG (CGH) and the underside of the hull on the centreline vertically below the CG, i.e. vertical CG (CGV), shall be determined, for the hull in the same condition as for weighing. 'I' shall be calculated from a radius of gyration (RG) measured using the method detailed on measurement diagram, sheet (vii) and the hull weight.
- (iii) If 'I' is less than 35.5kg/m² (which is the 'I' given by a radius of gyration of 888mm and a hull weight of 45kg) lead corrector weights, marked as in Rule 3.2.7, shall be securely fitted on the centreline, 50% forward of station 3 and 50% aft of station 10.
- (iv) The CGH shall be not less than 1500mm from the aft measurement plane.
- (v) The CGV shall be not less than 200mm above the underside of the hull on the centreline.
- (vi) If CGH and/or CGV is outside the limits specified lead corrector weights, marked and positioned as in Rule 3.2.7, shall be fitted.
- (vii) Corrector weights required to bring weight, weight distribution and centre of gravity within permitted limits shall be applied in that order. Weights required to correct weight distribution and centre of gravity shall be additional to those required to correct for weight.

WEIGHT DISTRIBUTION (SWING TEST) MEASUREMENT NOTES

1. The procedure for the swing test is based on the 'Lamboley Test' used by the International Finn Class.

The hull is suspended from brackets hanging from a transverse beam, which forms the swing axis. The brackets locate on the hull below the rubbing strake. The bracket design allows the hull to be supported at 2 different heights relative to the swing axis. The swing period is measured at each height.

2. The swing period may be measured using either:

- (i) a stopwatch with 1/100-second readout.
- (ii) an electro-optical device, such as a photoelectric cell linked to an electronic timer or microcomputer. These notes assume the manual, stopwatch method is used.

3. If the weight of the hull is not known, weigh the hull in conditions as defined in rule 3.2.7. Record as 'M' kg.

4. Suspend the hull, supported on the brackets in position S1 as shown in the diagram, so that it is level fore and aft in condition as for weighing. When level the height of the sheer line at the stem will be 380mm more than the height of the Aft Measurement Point (AMPt) above a level floor. Assuming a level floor the error in fore and aft level will be not more than 15mm in 3350mm, i.e. less than 0.5%. If the true sheer height at the stem is known, from either the measurement form or when the swing test is conducted as part of hull measurement, apply a correction to the 380mm height as follows:

Subtract 540 from the sheer height. Add result to 380.

e.g. sheer height = 530: $530 - 540 = -10$: $380 + (-10) = 370$

sheer height = 555: $555 - 540 = +15$: $380 + (+15) = 395$

Ensure that the suspension axis is at right angles to the fore and aft line of the hull. When it is, the distance from the aft end of each bracket to the transom will be the same. Mark the bracket position on the hull.

5. Measure:

(i) the horizontal distance from the vertical plane through the pivot point of the transverse beam and the transom. Record as 'CGH'.

(ii) the height of the support axis above the underside of the hull. Record as 'd'.

6. Set up a support post for a reference pointer close to the bow. Ensure it is just clear of the hull when the hull is swung.

7. Mark a level datum on the reference post aligned to a clearly defined mark or feature on the hull, e.g. the underside of the rubbing strake. Mark a swing start point on the post 50mm below the level datum.

8. Depress the bow to the start position and release. Allow at least 1 complete cycle for the system to settle.

9. Start the stopwatch as the bow passes the level reference. Count and time not less than 10 complete cycles. Record as 'TTI'.

10. Calculate the mean period for the number of cycles completed, e.g. record mean period as 'TI'.

11. Repeat steps 6 to 9 with the hull suspended on the brackets in position S2. It is important that the brackets are set at the same fore and aft position on the hull as for S1, using the marks made in the procedure of paragraph 4. Record mean period as 'T2'.

12. Calculations:

(i) Calculate the height of the swing axis (a) above the centre of gravity [CG] and radius of gyration [RG] by either:

(a) solving the following equations:

$$a = 0.2 \times b \times T2^2 + 0.04 \text{ RG} = \sqrt{(b \times T1^2 \times a) - a^2} \text{ where } g = 9.815$$

$$b \times (T2^2 - T1^2) + 0.4 \text{ PI} = 3.142$$

$$b = g / (4 \times \text{PI}^2)$$

$$= 0.2486 \text{ (constant)}$$

or

19/05/2006 18:21:00

2006 International Europe Class Rules page 32 of 32

(b) entering T1 and T2 in the tables in the Europe Measurement Manual.

Calculator and computer programs for calculating 'a' and 'RG' from 'T1' and 'T2' are given in the IYRU Measurement Manual.

(ii) Calculate the Mass Moment of Inertia (I) as follows:

$I = M \times RG^2$ where M is the mass of the hull

(iii) Calculate the height of CG above the underside of the hull (CGV) as follows:

$CGV = (d - a) \times 1000\text{mm}$

13. Record data on the measurement form.

APPENDIX H.2 - DIAGRAMS

H.2.1 GENERAL DIAGRAMS RELATING TO MEASUREMENT EQUIPMENT

(To be developed)

**H.2.2 DIAGRAMS RELATING TO APPENDIX H.3 (LAMBOLEY SWING TEST)
(TO BE ADAPTED)**

Diagram 20 - WEIGHT DISTRIBUTION

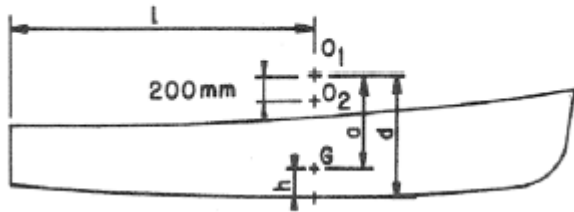
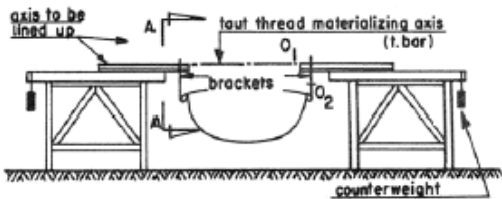


Diagram 21 - SETTING UP OF BOAT FOR OSCILLATION



CROSS SECTION A



Diagram 22 - Brackets

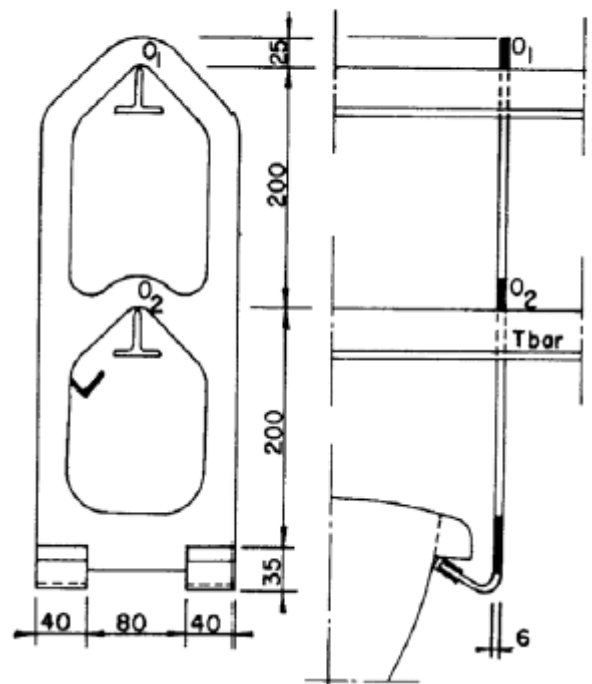
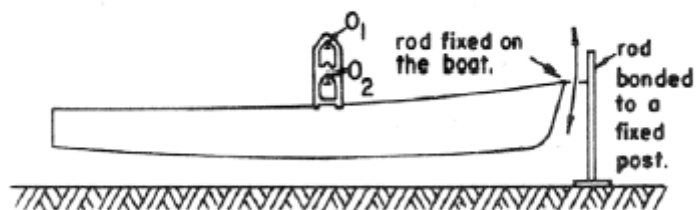


Diagram 23



APPENDIX H.3 - WEIGHT DISTRIBUTION AND CENTRE OF GRAVITY: PRINCIPLES

The degree of concentration of the weight in the boat is described by her radius of gyration. A boat with "light ends" has a short radius of gyration.

In Diagram 20, if "a" is the distance from the oscillation axis O₁ to the centre of gravity G, "ρ" is the radius of gyration, and "g" is the acceleration due to gravity, then the oscillating period T₁ is given by:

$$T_1 = 2\pi \sqrt{\frac{a^2 + \rho^2}{ag}}$$

We can measure T but we have two unknowns "a" and "ρ"; so we need two equations. Another is obtained by choosing a new oscillation axis O₂ exactly 200 mm lower:

$$T_2 = 2\pi \sqrt{\frac{(a - 0.2m)^2 + \rho^2}{(a - 0.2m)g}}$$

Hence by measuring T₁ and T₂ we may calculate "a" and "ρ".

The setting up of the axes O₁ and O₂ may be achieved with the equipment illustrated in diagrams 21 and 22. The brackets are designed to keep distance "a" short, to aid accuracy. The distance O₁ O₂ shall be correct to within 1 mm. (See Diagram 20 to 23.)

A calculator (or excel sheet) may be programmed to obtain the values of "a" and "ρ".

Pocket Calculator programme:

Input T₁ (sec) Input T₂ (sec)

Input b=0.2 (m) Input g (m/sec²)

Calculate $k = \frac{g}{4\pi^2 b}$

Calculate $a = b \frac{kT_2^2 + 1}{k(T_2^2 - T_1^2) + 2}$

Calculate $\rho = \sqrt{abkT_1^2 - a^2}$

Show or print a and ρ (m)

Check program with g = 9.81 m / sec² T₁ = 3.31 sec T₂ = 3.81 sec

Result should be a = 0.593 m ρ = 1.124 m

WEIGHT DISTRIBUTION AND CENTRE OF GRAVITY: PRACTICE

It is essential that the measurements be made in a sheltered place. The boat shall be hung from the brackets on axis 0₁, 0₂ and the periods of oscillation T₁, T₂ measured.

The distance "l" is measured parallel to base line from Station 0 (transom) to axis 0₁ (diagram 20).

The distance "d" can usually be measured from axis 0₁ to the underneath of the hull (excluding keelband) by means of a rule or tape passed down through the centreboard box (diagram 20).

If this is impossible, use the principle shown in diagram D.9.1 (Height of Mast Step).

It is wise to provide a protection under the boat but the boat shall not touch anything while oscillating.

The peak to peak movements of the bow shall remain between 200 mm and 160 mm during the time when the period of oscillation is measured. There shall be no twisting oscillations about a vertical axis. There shall be no movement of the supports.

The measurement of periods T₁ and T₂ requires most care.

It is recommended to operate in the following way:

two time keepers stand on either side of the boat, they shall start their stopwatches when the boat passes the rest position which is made easier with two rods placed opposite each other as in diagram 23; they count ten pitching periods and if they get the same result within 0.1s, the measurement is satisfactory (the result being thus 0.01s accurate).

Stopwatches accurate to 0.05s shall be used. If a stopwatch only accurate to 0.1s is used, twenty pitching periods shall be measured.

If correction is necessary to achieve permissible figures, record only the results obtained after correction.

(See Diagram 22 and 23.)

H.4 CLASS RULES AMENDMENTS

H.4.1 Proposals for amendments to these class rules may be submitted in time for circulation with the Association General Meeting Agenda, for consideration by I12DCA Council. Proposals may be submitted by I12DCA Executive members, by I12DCA Technical Committee, by N12DCAs and by a Jury.

H.4.2 Where rule changes of major significance are proposed, the I12DCA Executive may decide to hold a referendum of all paid-up N12DCA members.

H.5 CLASS RULES INTERPRETATIONS

H.5.1 The object of these rules is to establish a class of boats which is one-design in all matters that affect basic speed. The rules shall be interpreted in this spirit.

Since it is unlikely that these rules can cover in detail every possible eventuality, builders are strongly advised to clear doubtful points with the I12DCA Technical Committee before starting construction.

H.5.2 When points are referred to the Technical Committee, the T.C. Chairman shall:

- Provide an opinion; or
- Consult with the Technical Committee, who shall interpret the rules.

Technical Committee interpretations should be made by at least three members. If deemed appropriate, the interpretation should be submitted to I12DCA Council for ratification.

H.5.3 The Technical Committee shall be guided by:

- The body lines and section plan, year/version.
- The plans of the first carvel construction.
- The digitised tables of coordinates for hull sections, centreboard profiles, stem and rudder profiles, and for templates.

- The spirit of the rules.
- Standard practice in the 12foot Dinghy Class.

H.4.8 Where a builder or owner does not accept an interpretation of the Technical Committee the matter shall be referred to I12DCA Council.

APPENDIX I – CONSTRUCTION RULES AND DRAWINGS

I.1 WOOD CLASSIC CONSTRUCTION RULES

I.2 FRP & COMPOSITE CONSTRUCTION RULES

Effective:

Previous issues: