INTERNATIONAL ETCHELLS CLASS RULES

PERTAINING TO ONE-DESIGN CONTROL

AUTHORITY: INTERNATIONAL SAILING FEDERATION, ARIADNE HOUSE, TOWN QUA Y, SOUTHAMPTON, HAMPSHIRE, 3014 2AQ, UNITED KINGDOM
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NOTE:
(l) Where a National Authority has delegated to the Etchells National Association responsibili - ty for the administration of the Class, references herein to "National Authority"shall be deemed references to such Etchells National Association.
(2) In these rules "IECA" means the Interna-tional Etchells Class Association.

1. OBJECT OF THE CLASS RULES

The Etchells is a One-Design class. The rules, official plans and specifications are intended to ensure that the yachts of this class are as nearly as possible the same as regards shape and weight of hull, including the keel, rudder, spars and sails and that the equipment is simple, functional and dependable.

2. PROTECTION OF ONE-DESIGN

2.1 The hull, keel, skeg, rudder, standing rigging, spars and sails are strictly controlled while the running rigging and associated fittings, lifting eyes, tiller, and tiller extension, are not controlled, except as specified in these rules.

These rules shall be deemed to include the Measurement Form and measurement diagrams. Interpretations of these rules shall be given by the ISAF in consultation with IECA. In the event of a conflict between the rules, official plans, Measurement Form and/or measurement diagram the matter shall be referred to the ISAF.

NOTE:
(l) Builders and owners are strongly advised to refer to these rules, the builders specifica - tions and Etchells Plans for guidance.
(2) It is impossible to mention every suggestion that has been ruled illegal in the past, and to foresee every innovation which may be thought of in the future. Therefore when con - sidering anything in connection with the yacht or its sails or equipment [including use of exotic materials for any item] which is not clearly covered by the plans, specifications and/or rules, it must be assumed illegal unless prior approval has been obtained from ISAF through the IECA.

WARNING: Any yacht found to be altered contrary to these rules, official plans, measur ement forms, or measurement diagram, will have its Hull and Spars Measurement Certificate withdrawn forthwith.

2.2 Hull, Deck and Keel Moulds — All moulds for the hull, deck, seat, skeg and rudder shall be constructed solely by builders licensed for that purpose by the ISAF. Moulds and/or patterns for the construction of the keel shall be obtained only from a source approved by the ISAF. All moulds and patterns shall be numbered and issued only to builders licensed by the ISAF.

2.3 Alterations to moulds — No alterations shall be made to any moulds, official patterns or templates except that a non-slip surface may be incorporated in any place on the deck, or seat moulds.

2.4 Measurement of Moulds — Tolerances are given to allow for minor variations not inconsistent with good building practice and distortions through age but intentional variations within these tolerances are prohibited except as specifically permitted in Rule 2.3. Each

mould shall be measured prior to commencement of production and thereafter is subject to remeasurement at the discretion of the National Authority, the IECA, or the ISAF, by a measurer approved by the National Authority.

2.5 Building Licenses — Yachts shall only be moulded and/or completed by builders licensed by the ISAF. All applications for licences shall be made to the ISAF which may request the National Authority and others of the country concerned to report on the suitability of the applicant. The premises in which the moulding of the yacht is to take place shall be inspected by Lloyd's Register of Shipping or an equivalent Classification Society at the builder's expense and a copy of the report shall be forwarded to the ISAF. The ISAF shall then forward the application of suitable builders to the IECA for its approval.

2.6 Issue of Moulds — Application for the issue of moulds patterns and/or measurement templates shall be made to the ISAF which, in approved cases, shall coordinate with the IECA to effect delivery from the approved source.

2.7 Measurement of the Finished Yacht and Components thereof — All measurements concerning the hull, deck, keel, skeg, rudder, mast and boom shall be taken by a measurer or measurers approved by the appropriate National Authority before the hull, deck, keel, skeg, rudder, mast or boom leaves the premises of the respective licenced builder and except for measurements defined in Rule 3.6, 3.9.1 and 3.9.2, shall be of the finished yacht and its components. If a measurer considers that there has been any attempt to depart from the design or these rules in any respect he shall enter the details on the Measurement Form and/or diagram which shall be promptly forwarded to the National Authority. The National Authority shall withhold the Hull and Spar Measurement Certificate pending an examination of the case and shall grant a certificate only if approval is subsequently obtained from the ISAF.

3. HULL AND DECK CONSTRUCTION

3.1 Construction shall be of glass-reinforced polyester resin (GRP) in accordance with the official plans and specifications, except that local reinforcement as described below is permitted at points of stress concentration or high loadings. Such reinforcement shall not affect the strength or rigidity of the hull and/or deck. Local reinforcement shall be:

(a) As specified on the Construction Plan and

(b) Limited reinforcement in the way of the attachment of fittings to the hull, deck, cuddy, coaming, seat, bulkheads or knees. It shall consist of the addition of glass-fibre tapes and/or back-up plates of metal, wood, filler, resin, glass-fibre or any combination thereof and shall not exceed in area and the amount required for the prevention of local crushing or the fracture of the hull, deck, cuddy, coaming, bulkheads or knees. Reinforcement which either creates an additional structural member or connects two or more structural components of the yacht is prohibited. For example, a stanchion between the cuddy and the mast step in order to reduce the deflection is prohibited.

NOTE: Other examples could be given. Any question of whether a proposed reinforcement is a local reinforcement shall be sent, in the first instance, to the International One-Design and Technical Committee of the IECA.

3.2 Hull and Deck Assembly — The builder shall follow procedures and standards which ensure strict control of the One-Design shape. Specifically he shall install deck stiffeners, hull stringers, skeg, the forward and aft bulkheads, seat and all knees except the knees in the way of the chainplates, before the hull is removed from its mould. The deck shall be assembled to the hull with the hull in the approved mould or in an assembly jig approved by the ISAF. In either case the necessary support shall be given so that the hull profile and sheerline are as shown on the plans. Such support shall be approved by the ISAF. The chainplates with their associated knees may be installed before or after the hull leaves its mould at the discretion of the builder. The sequence of assembly operations not involving hull shape shall be at the builder's option.

3.3 Hull — The hull shall be measured by a measurer approved by the National Authority to ensure compliance with the Class Rules, which include the measurement diagram and Measurement Form. The official templates shall be applied, hull profile measured and all dimensions called for on the Measurement Form recorded.

3.3.1 Hull Length — The overall length of the hull excluding any stemhead fittings shall be not less than 9285mm and not more than 9300mm measured between perpendiculars at measurement points "A"and "C". Measurement point "A" shall be a tangent to the bow excluding fittings as indicated on the measurement diagram. Measurement point "C"shall be the intersection of the transom and counter extensions.

3.3.2 Bulkheads — Watertight bulkheads with watertight access hole covers as shown on the construction plan shall be fitted and shall be located not less than 2580mm and not more than 2780mm forward and not less than 2240mm and not more than 2440mm aft of Station 6. Watertight bulkhead access hole covers shall be in their proper position while racing and shall be positively fastened and incapable of accidental dislodgement.

3.3.3 "Cockpit sole" — Floorboards shall be readily removable and shall weigh not less than 15kg and not more than 20kg when dry. The top surface shall be positioned not less than 640mm and not more than 770mm below the theoretical deck edge at Station 6. The length shall be not less than 1780mm and not more than 1880mm; the forward end shall be located not less than 900mm and not more than 1100mm forward of Station 6, and the width may be carried to the inside surface of the hull but the overall width shall not be less than 810mm. The floorboards may be fastened in position at the keelson and at two locations on each side no more than 50mm from each end. At each fastening point the hull may be reinforced within an area of 75mm by 75mm and in accordance with Rule 3.1 (b). Flexible materials, such as tape or mesh may be used to bridge openings between the floorboards and the hull.

The floorboards, as shown on the plans, shall contact the hull with not more than five transverse members each having a maximum thickness of 35mm measured fore and aft, and with no two of them closer together than 250mm.

With the exceptions noted above, the design and material of the floorboards are optional. Floorboards shall not be removed while racing.

3.4 Deck — The deck shall extend unbroken from stem to stern with openings for mast port and cockpit. Any other openings shall be in accordance with Rule 3.7.

Dimensions of the deck cockpit and location of fittings shall conform with the Measurement Form and measurement diagram.

3.4.1 Mast por t — The location and size of the mast port as moulded shall be as specified on the Measurement Form. Devices for controlling the fore and aft position of the mast in the mast port above and/or below the deck are prohibited except that mast chocks (partner blocks) are required. Block and tackle and cleat arrangements or line led to a winch (but not a lever or mast ram) are permitted, but only to assist in changing the position of the chocks and for no other purpose. Mast partner blocks to provide sideways support to the mast shall be in place at all times. They may be attached to the mast port or to the side of the mast. If attached to the side of the mast, they may include a step in their design, which shall be a clearance fit above the raised side of the mast port when the mast is at rest with no tension on the standing rigging.

3.5 Rudder and skeg — The rudder and skeg shall be of GRP and shall be made only from official moulds. The method of construction shall be as specified on the official plans. The profile of the rudder and skeg shall be measured with the official template and shall conform to the dimensions and tolerances shown on the measurement diagram. The maximum thickness of the skeg and rudder (whichever is larger) shall be not less than 32mm and not more than 38mm.

In addition the maximum thickness of the rudder shall be determined along two planes drawn perpendicular to the trailing edge of the rudder. These planes are located 100mm and 250mm respectively (measured along the trailing edge) above the straight line intersection of the trailing edge and the bottom of the rudder. The maximum thickness of the rudder at any point along the 100mm plane shall be no more than 26mm and at any point along the 250mm plane shall be no more than 33mm. A straight edge applied to the surface of the rudder or skeg in any direction shall show no systemic concavities, except in the areas immediately adjacent to the rudder stock, immediately adjacent to the hull and along the leading edge of the skeg. Only minor local concavities shall be permitted in the skeg and rudder.

The rudder stock shall be solid material with a diameter of not less than 28mm and not more than 29mm. The rudder stock shall be located not less than 1890mm and not more than 1900mm from the transom measurement point "C" measured along the centreline of the counter to the aft edge of the rudder stock and not less than 2135mm and not more than 2145mm from the transom measurement point "C" to the aft edge of the rudder stock extended to the bottom of the gudgeon. Boats built before March 1, 1995, shall conform to the tolerances in existence before that date. The design of the rudder head, tiller and tiller extension is optional.

3.6 Keel

3.6.1 Manufacture and Weight — The keel shall be of lead cast in an official mould. The weight of the keel including all keel bolts, but excluding all coatings, shall be 959kg ± 6kg. The height of the lead shall be 871mm ± 17mm. The hull builder shall certify these two items on the Measurement Form. The lead keel shall have a constant horizontal section before and after any coatings are applied. However, for boats built before 1 December 1998, the weight of the keel including all keel bolts but excluding all coatings, shall be 970kg ± 17kg.

3.6.2 Keel Shape and Location — The keel may be coated with filler, paint, resin or glass-reinforced plastic. All measurements are to the surface of the keel including any coating. The horizontal sectional shape shall be constant between a point 845mm above the base of the keel and the bottom Vee sections and shall be controlled by one section template: E22Dec 98. This template shall be positioned at 54.2 degrees to the leading edge of the keel. The surface of the keel shall be no more than 3mm from the template, all the way around (not 0mm one side and 4mm on the other). The chord length, measured along the template, shall not be less than 1141mm and not more than 1150mm and the difference between the maximum and minimum measurements shall not exceed 5mm. The radius of the leading edge shall not exceed 10mm in the part of the keel controlled by the section template. With the leading edge of the keel at 54.2° to the horizontal, the underside of the hull on the centreline at Station 0 shall be 35mm±15mm higher than the equivalent point at Station 10. The chaingirth at Station 6 shall be 2175mm minimum, 2190 maximum. The distance from the intersection of the leading edge and the bottom of the keel to Point C shall be 4673mm±13mm. The distance from the intersection of the trailing edge and the bottom of the keel to Point C shall be 3613mm±13mm. The keel shall be fastened to the hull as shown on the construction plan with ten 16mm diameter stainless steel bolts. Boats built before 1 December 1998 shall conform to the tolerances for the the keel section and location in existence before that date unless Rules 3.6.3 applies.

3.6.3 Altered Keel — If the weight or shape (sectional or profile) of the keel is altered, a measurer approved by the National Authority shall submit an amended keel weight certificate to the National Authority which shall issue a new Hull and Spars Measurement Certificate. Any keel which is altered after 1 December 1998 shall thereafter conform to Rule 3.6.2 and template E22Dec98, even if the boat in question was built before 1 December 1998. An alteration to the keel is defined as any alteration regardless of the amount of weight or shape (sectional or profile) affected that is not a repair of minor damage or seasonal maintenance. The Keel Alteration Procedure shall be followed (see Rule 8.4).

3.7 Piercing of Hull Deck or Bulkheads — The deck hull or bulkheads may be pierced to permit free working of the rigging, but all holes piercing the forward and aft flotation compartments shall be filled, bushed or positively plugged to increase watertight integrity in the event of flooding. Unfilled holes in these compartments are prohibited. A hole shall be considered to be filled if the clearance around the rigging does not exceed 0.5mm. Watertight tubes installed in the flotation compartments for the passage of sheets, control lines or for other purposes are prohibited.

Self bailers and pumps with outlets below the deck lines are prohibited. Pumps with outlets on deck other than from a flotation compartment are permitted.

One drain hole in the bilge is permitted but shall be closed with a screw-in plug while racing. Drain holes in the bulkheads are permitted but shall be sealed and through bolted with a positively locking screw-in plug while racing.

The only access and/or inspection ports permitted in the forward or aft bulkheads are those shown on the construction plan.

3.8 Lifting Eyes — Two lifting eyes shall be located as shown on the plans.

3.9 Construction Weights — Hull builders shall deliver with each hull a "glass hull" weight certificate and a "bare yacht" weight certificate derived from a weighing device certified by the National Authority.

3.9.1 The Glass Hull — The glass hull is defined as: the glass hull with deck attached as it comes from the mould or jig including deck stiffeners, hull stringers, skeg with micro balloon fill, glassed in forestay and backstay fittings, the forward and aft bulkheads, chainplates, seat and knees but without the keel, keel bolts, keelson, micro balloon fill in the bilge, mast step, interior gel coat, floorboards, sampson post or console, tiller, rudder, bulkhead access hole covers and the partition aft of the seat. The glass hull as defined above shall weigh not less than 380kg.

3.9.2 The Bare Yacht — The bare yacht is defined as: the glass hull (as defined above) but with the keel attached and including micro balloon fill in the bilge, bulkhead access hole covers, interior gel coat, mast step, keelson, rudder and partition aft of the seat but excluding the floorboards, tiller and tiller extension, sampson post or console, spars and standing and running rigging with associated fittings. The bare yacht as defined above shall weigh not less than 1405kg.

3.10 Complete Yacht Weight — The official measurer shall weigh the complete yacht and enter this weight on the Measure-ment Form.

3.10.1 The complete yacht is defined as the yacht ready to sail including one set of sheets only,but excluding the following equipment: sails and battens, paddle, boom crutch, life jackets, hand pump(s), hand bailer(s), anchor and anchor line, mooring lines, fenders, lifting slings, tool kit and all other loose gear and personal effects.

The complete yacht as defined above shall weigh at least 1508kg.

3.10.2 Underweight Yachts — If the Complete Yacht Weight in dry condition is found to be less than 1508kg, the measurer shall ascertain the reason why and shall file a full report to the IECA as to why the yacht is underweight and how it was corrected. To correct the underweight condition, weight shall be added by permanently fixing weight, in the forward bilge sump, which when combined with the certified weight of the keel does not exceed 965kg and/or amidships and above the waterline plane and working towards the ends of the hull towards the bulkheads, place on both port and starboard sides one 305mm wide strip of 510gm/sq.m. glassfibre woven roving and polyester resin of sufficient length to add the required weight. If the first application is not adequate a second 305mm wide strip shall be placed above, not on, the first strip. The second strip shall be carried out towards the bulkheads only so far as necessary to add the required weight. This weight, when added, shall not increase the resulting Glass Hull Weight to exceed 400kg.

3.11 Alteration to Hull and Keel —

Grinding, planing, sanding and/or the application of putty fillers and coatings on the outside of the hull and keel is permitted, provided that it is undertaken only to fair local imperfections in the surface of the hull and keel or to improve the surface finish and provided that no part of the yacht is thereby caused to be outside the measurement tolerances specified in these rules, the Measurement Form, measurement diagram and the official plans.

4. SPARS — GENERAL

4.1 Serial Numbers — All masts and booms shall be legibly impressed with the ISAF authorized serial numbers. For the mast the numbers shall be within 150mm of the heel and on the boom within 150mm of the outboard end.

4.2 Construction — The material, method of construction and design of the spars shall be in accordance with these rules, official Spar Plan, Spar Measurement Diagram and Measurement Form. The mast, spreader and boom sections shall be extruded from extrusion dies approved by the ISAF. Masts, spreaders and booms shall be fabricated only by builders licensed by the ISAF.

The material for the mast, boom and spreaders shall be aluminium alloy to specifications 6061-T6 or HV-90WP or equivalent. No exotic materials shall be included in the alloy. The mast taper shall be in accordance with the Spar Plan and the Measurement Form.

The attachments of the spreaders, standing rigging and halyard sheaves shall be in ac-

cordance with the Spar Plan and Measurement Form. External tangs attaching the upper and lower shrouds to the mast shall be fitted; internal shroud attachments are prohibited. A functional main halyard lock located above the upper measurement band shall be fitted but its use is optional. A gooseneck which positions the boom in a permanently fixed location is permitted.

The boom shall be of constant section throughout and shall not be tapered or cut away or drilled except for providing entry for the mainsail footrope and for the attachment of fittings. Removal of the boom end plug is prohibited.

All fittings welded or mechanically attached to the mast and boom shall accomplish their specified and/or intended functions and shall be located in their specified positions. The detailed design of the fittings is optional provided that they are of the general types shown on the Spar Plan. If other types are used prior written approval is required from the ISAF through the International Etchells Class Association.

Sleeves of one metre or less may be inserted into the mast or of 1.3 metres or less into the boom in the vicinity of a break or fracture solely for the purpose of repair and may be fastened mechanically or by welding. Welded reinforcements which are in excess of those required to restore the local integrity of the mast are prohibited.

Internal and external repairs may only be made on masts and booms when broken or fractured or in the following circumstances. Either:

(1) The spar in question shows damage which will cause failure. Such damage shall have been caused by accident or in normal use. Or

(2) Masts or booms from the manufacturer concerned have shown a history of failure at the location of the intended repair.

No more than two repairs (sleeves or doublers) may be fitted to any one mast.

No more than one repair (sleeve or doubler) may be fitted to any boom.

Any external repair to the mast wholly or partly above a point 4360mm above the lower measurement band shall be no longer than 400mm.

No external sleeve shall be longer than 500mm.

Materials used for any sleeve or doubler shall be to the same specifications as those used in spar construction.

Procedure: Prior to commencing the repair the Fleet Captain and Measurer shall inspect the spar and agree that the spar is broken or fractured or that the repair is necessary under either category (1) or (2) above. On completion of the repair the same Measurer shall check the repair for compliance with Class Rules with particular attention to any attempt to change the bending characteristics of the spar with a repair larger than that required to restore local integrity, and report to the National Authority if the repair is not satisfactory.

4.3 Mast

4.3.1 Bent Masts — Permanently bent masts are prohibited. However, a permanent set due to distortion not exceeding 50mm between the upper and lower measurement bands is permitted.

4.3.2 Measurement Bands — Two measurement bands 25mm minimum width and of a colour contrasting with the mast shall be located as follows:

The upper edge of the lower band (measurement point "LB") shall be at a minimum of 725mm and a maximum of 740mm above measurement point "B" (theoretical deck edge in the plane of the mast). The upper surface of the boom groove projected to the mast shall not extend below this point and a stop shall be fixed to the mast accordingly.

The lower edge of the upper band shall not be more than 9906mm above the upper edge of the lower band. No part of the mainsail shall extend beyond the lower edge of the upper band.

4.3.3 Spreaders — Spreaders, after assembly on the mast may be rigidly attached or shall swing at the tips by not more than 75mm forward or 100mm aft of the athwartships plane at the centreline of the spreader socket when measured with 15kg applied at the tip of each spreader. Rigid spreaders shall be fixed within these same limits when measured with no weight attached**.**

4.3.4 Rigging — All standing rigging (including backstay wire pennant) shall conform with the Rigging Schedule. [See I.E.C.A. Yearbook 2000/2001 - page 94.] With specific exceptions

as noted elsewhere in these rules, running rigging and associated fittings, sizes, types and lengths are optional. The mainsail and headsail halyards may be of wire, rope, or wire and rope, and the spinnaker halyard shall be of rope and the diameters shall be not less than those shown in the Rigging Schedule. The halyards shall be led over sheaves or fairleads fixed in the positions shown on the plans.

4.3.5 Bare Mast Tip Weight —The mast, complete with all fittings but excluding spreaders, mast heel plug, and standing and running rigging shall have a tip weight of not less than 12kg. The tip weight is measured at the lower edge of the upper band with the mast supported horizontally at measurement point " LB".

4.3.6 Rigged Mast Tip Weight — The mast complete with all fittings and rigging shall have a tip weight of not less than 13kg. The tip weight shall be measured at the lower edge of the upper band with the mast supported horizontally at measurement point "LB" with:

(a) the halyards and spinnaker boom topping lift in their fully hoisted positions

(b) the slide on the spinnaker boom track shall be positioned at the lower band or if the lower end of the track terminates above measurement point "LB" at the lower end of the track

(c) excess slack shall be removed from the running rigging and the bitter ends placed on the ground

(d) excess slack shall be removed from the standing rigging and secured to the mast 50mm below measurement point "LB".

4.4 Boom

4.4.1 Permanently bent booms are prohibited. However, a permanent set, due to distortion not exceeding 25mm measured between the forward end of the boom and the measurement band is permitted.

4.4.2 Measurement Band — A band of contrasting colour shall be placed on the boom with its forward edge no more than 3530mm from the after side of the mast extrusion projected downwards and measured along the top of the boom extrusion.

4.4.3 Fittings and Rigging — Running rigging and associated fittings except as noted in these rules attached to the boom are optional.

4.5 Spinnaker Boom

4.5.1 The design and method of construction of the spinnaker boom are optional. The prohibition of the use of exotic materials for spars applies also to spinnaker poles.

4.5.2 The length of the spinnaker boom including end fittings shall not exceed 2895mm.

4.5.3 The point of attachment of the spinnaker boom shall be on the forward face of the mast, not more than 1525mm above measurement point "LB" and shall be capable of being moved on a track not less than 1220mm in length. This track shall be permanently fixed to the forward face of the mast. The spinnaker ring shall not exceed 95mm from the forward face of the mast to its forwardmost point.

5. SAILS

5.1 General

5.1.1 Sails shall be constructed and measured in accordance with the ISAF Measure-ment Instructions except where otherwise specified. They shall be measured in a dry state laid flat on a flat surface with just sufficient tension to remove wrinkles across the line of the measurement being taken. All measurements shall be taken as a straight line.

5.1.2 Definition — The term "sail" shall be taken to include the headboard, tabling, bolt and foot ropes (or tapes). It shall not include cringles which are wholly outside the sail. The terms "head," "tack" and "clew" shall be as defined in Rules 5.2.2, 5.3.2 and 5.4.2. The term "luff" shall be determined by the distance between the "head" and "tack" as defined in the above mentioned rules. The term "corner" shall be determined by the actual physical corner of the "sail" as defined above.

5.1.3 Material and Reinforcement — Sails shall be flexible, soft and capable of being easily stowed. The body of the sail shall be of woven polyester or woven Nylon. Minimum weights for sailcloth shall be as follows: main and jib - 250gm/m2 (5.83 oz. per U.S. sailmaker yard); spinnaker - 32gm/m2 (.75 oz. per U.S. sailmaker yard. *[Note: The Rule weights are of finished cloth in the hands of the sailor, not unfinished cloth.]*

Reinforcement of any fabric having the effect of stiffening the sail is permitted only within a distance from each corner of 150mm plus 7% of the length of the luff of the sail. Other reinforcement, as a continuation of corner stiffening or elsewhere comprising not more than two additional layers of material having the same weight as the body of the sail is permitted provided that it can be folded as described above and is not stiffened by the addition of bonding agents, close stitching or otherwise. Glued seams shall not be considered as stiffening provided that they can be folded as described above. Normal tabling at the edges of the sail is permitted provided that it is not stiffened.

Materials incorporating plastic film or aromatic polyamide fibres (Kevlar) are not permitted as a sail material either in the body of the sail or as reinforcement and tabling. Two-ply sails are permitted. A "two-ply" sail is defined as one in which the body of the sail comprises two layers of cloth of equal weight. Reinforcement of a "two-ply" sail beyond the limit of 150mm plus 7% of the luff length shall comprise not more than one further layer of cloth, also of the same weight as the body of the sail.

5.1.4 Windows — Up to three unwoven transparent windows are permitted in each of the mainsail and headsail, the total area of which shall not exceed 0.5m2 for each sail. Windows shall not be placed closer to an edge of the sail than 150mm.

5.1.5 Batten Pockets — The length of batten pockets shall be the maximum inside dimension, ignoring the effect of any elastic or other retaining devices.

5.1.6 Double Luffed Sails — Sails passing round a stay or spar and attached back on themselves by stitching, zipper or similar device are prohibited.

5.1.7 Emblem, Letters and Numbers — The sail number, letter(s) and class emblem shall be placed in accordance with RRS Appendix H. Letters and numbers shall be of the following minimum dimensions:

Height: 380mm
Thickness: 50mm
Width: 250mm (excluding number one and letter I)
Space between adjacent letters and numbers: 75mm

The official colours (as specified on drawing number 3MKB-14A-1) are those preferred. However other colours may be used except that gold shall only be used for the emblem of a yacht owned by a World Champion.

5.2 Mainsail

5.2.1 General

No part of the sail shall extend above the lower edge of the upper mast measurement band or beyond the forward edge of the boom measurement band. Cunningham tackle is allowed, but only to adjust the tension of the luff. Tackle, parallel to the boom, to tension the tack forward is not permitted. Luff and foot bolt ropes shall be attached along the entire length of the rope. The headboard, if fitted, shall not be higher at the aft upper corner than the forward upper corner.

5.2.2 Definitions

(a) The head point shall be the point on the forward edge of the luff or its extension level with the highest point of the sail.

(b) The clew point shall be the intersection of the leech and the foot bolt rope, ignoring any cut-out to accommodate outhaul fittings.

(c) The length of the leech shall be measured in a straight line from the head point to the clew point.

(d) Three leech measurement points and three widths are defined as follows:
the half leech point is found by folding the head point to the clew point;
the three-quarter leech point is found by folding the head point to the half leech point;
the upper leech point is the point on the leech 450mm below the head point.
Any hollow in the leech between adjacent battens shall be bridged with a straight line. The half-width, three-quarter width and upper width are the distances from each leech measurement point to the nearest point on the forward edge of the luff, including the bolt rope.

5.2.3 Measurement

The following are permitted dimensions in millimetres:

Leech	10425	maximum
Upper Width	342	maximum
Three-quarter Width	1400	maximum
Half Width	2267	maximum
Headboard, perpendicular to the luff	102	maximum
Bolt rope diameter, including covering	8	minimum

5.2.4 Battens

There shall be four battens in the mainsail, spaced equally ±80mm along the after edge of the sail, measured to the upper edge of each batten at the leech. No batten shall exceed a maximum length of 1300mm and a maximum width of 35mm. "After edge of sail" means the material of the sail itself, measured from the highest point on the leech to the bottom of the leech. Battens may be permanently attached to the sail or may be removable.

5.3 Headsail

5.3.1 General — Head, clew and tack boards are prohibited. The profile of the leech shall be straight or concave between each batten, between the head and the top batten and between the clew and the bottom batten, and shall not show additional curvature near width points. Foot roach shall be a fair curve. The forestay shall not be disconnected for the attachment of the headsail. The forward edge of the headsail luff or its extension when hoisted shall intersect the deck aft of, and not more than 50mm from the forestay. Luff wires or ropes shall not be permitted in a headsail.

5.3.2 Definitions

(a) *Head point* — The head point shall be taken as the highest point of the sail.

(b) *Tack point* — The tack point shall be taken as the intersection of the luff and foot.

(c) *Clew point* — The clew point shall be taken as the intersection of the leech and foot.

(d) *Top Width* — The top width is the distance between the luff or its extension and the leech or its extension, at the highest point of the sail, measured perpendicular to the luff.

(e) *Mid Foot* — The mid foot point is found by folding the sail so the tack point is over the clew point.

(f) *Foot lrregularity* — A fair curve in the foot of the headsail is defined and determined as follows: with the sail lying flat when the tack point is superimposed on any point along the foot, every point on the bottom edge of the folded portion shall lie within 25mm of some point on the bottom edge of the other portion.

(g) *Widths* — The three width measurement points are defined by dividing the leech into four equal lengths. Fold the head point to the clew point to give the half leech point, then fold the head point and the clew point to the half leech point to give the three-quarter leech point and quarter leech point. The widths are measured from each of these points to the nearest point on the luff.

5.3.3 Measurement — The following are maximum permitted dimensions in millimeters:

Top width	55
Luff length	7915
Leech length	7370
Head point to mid foot point	7700
Foot length	2540
Three quarter width	650
Half width	1275
Quarter width	1860

5.3.4 Battens — There shall be three battens in the headsail, each of maximum length 800mm and maximum width 35mm. Battens shall be positioned 40mm ±20mm below each of the width measurement points, measured to the top edge at the leech. Battens may be permanently attached to the sail or removable.

5.4 Spinnaker

5.4.1 General — The spinnaker shall be symmetrical in shape and construction about its centreline. Fittings shall be limited to head swivel and corner cringles or rings. Headboards are prohibited.

5.4.2 Definitions

(a) *Head point* — The head point shall be taken as the straight line intersection of the two leeches extended as necessary ignoring any hollow or round to the leeches.

(b) *Clew point*— Each clew point shall be taken as the straight line intersection of the foot and the leech extended as necessary ignoring any foot irregularity and clew cringle.

5.4.3. Measurement — All the following measurements shall be taken with just sufficient tension to remove the wrinkles across the line of measurement.

The distance from the head point to each clew point measured in a straight line shall be 8350 ±100mm. With the sail folded in half about its centreline, half cross width measurement points shall be marked on the leech and centrefold at 2745mm and 5485mm measured in straight lines from the head. The half cross widths between these two pairs of measurement points shall be 2525 ±100mm and 3055 ±100mm respectively. The half length of the foot measured in a straight line from the mid foot point to the clew points shall be 2645 ±100mm.

The distance (foot median) from the head point to the mid foot point shall be 9400 ±100mm. This measurement shall be taken with the sail opened out, laid on a flat surface, with just sufficient tension applied at the head and the centre of the foot to remove the wrinkles across the line of measurement.

5.5 Sail Acquisition, Registration and Use

5.5.1 Acquisition

(a) Each registered yacht may acquire in any manner no more than one mainsail, one spinnaker and two jibs in each calendar year, except for newly constructed yachts and used yachts as designated in paragraphs (b) and (e).
NOTE: The word "registered" has been interpreted to mean that the following three requirements must have been fulfilled: (1) the boat must have been completely measured and the measurement data submitted to the National Authority (2) the boat must be on record with the National Authority and have been issued an ISAF plaque; (3) the boat's owner or owners of record must be Active Members of the Etchells Class and have paid full international and national dues for that year.

(b) A newly constructed yacht entering a fleet may acquire in any manner no more than 2 jibs in any one calendar year, and up to 3 mains and 3 spinnakers during the first 2-calendar-year period, but no more than two of either during any one of those first two calendar years.

(c) A sail is deemed to have been acquired on the date upon which it was originally measured by an official measurer.

(d) Unexpended sail acquisition rights applying to a particular year shall not be carried forward to subsequent years. Sail acquisition rights apply to the yacht and not to the owner.
NOTE: No sail shall be used in a race unless it has been measured, accepted, and certified by the fleet or regatta measurer and it conforms with the sail acquisition rights for that yacht. A race is defined as any sailing competition of a local or higher level in which one or more Etchells start, and for which scores or standings are recorded, and/or for which prizes are awarded.

(e) If the owner upon purchase of a used yacht or upon discovery that a sail is lost/stolen or destroyed can demonstrate that he is in a noncompetitive position he may apply to his National Authority for an exemption. Such application shall be in a form and detail as required by the National Authority. The National Authority may grant an exemption on showing of non-competitive position. Such a grant shall be notified to the IECA promptly in writing by the National Authority.
NOTE:The following procedure shall be used:

(1) A new owner of a used yacht may be deemed to be in a non-competitive position provided he can demonstrate that all sails in any given category (main, jib or spinnaker) were acquired two full calendar years previous to the date of the yacht's purchase. The application for dispensation shall document the acquisition dates of all sails in the yacht's present inventory by submitting either a copy of the yacht's Sail Measurement Certificate or an appropriate letter signed by a measurer recognised by

the National Authority.

Upon approval by the National Authority the new owner of a used yacht may acquire only in the first calendar year of ownership, two sails of that category judged to be noncompetitive and none of the non-competitive sails shall be used for racing.

(2) In order to demonstrate to the National Authority that a sail has been lost/stolen or destroyed, the owner shall document the following in an affidavit signed by himself, his Fleet Captain and Fleet Measurer:

If lost/stolen:

(a) The circumstances of the loss or theft.

(b) The fact that the sail(s) was (were) the newest or latest in the given category (main, jib, spinnaker) of the yacht and not more than three years old.

(c) That the replacement is or will be as nearly as possible the same as the lost/stolen sail; i.e. it must come from the same sailmaker, be of the same cut, and same weight of cloth.

(d) Acknowledge that if the lost/stolen sail is found, it shall not be used for racing.

If destroyed:

(a) The destruction was from circumstances beyond the control of the owner.

(b) The destruction caused a rip or tear in the sail necessitating replacement of more than one-third of the material.

(c) The fact that the sail(s) was (were) the newest or latest sail in the given category (main, jib, spinnaker) of the yacht and not more than three years old.

(d) That the replacement is or will be as nearly as possible the same as the destroyed sail; i.e. it must come from the same sailmaker, be of the same cut, and the same weight of cloth.

(e) Acknowledge that the destroyed sail will not be used again for racing.

Unless all the above points are documented to the National Authority, the sail(s) shall not be replaced.

5.5.2 Registration

(a) Each sail shall be passed by an official measurer who shall sign and date the sail near the tack in indelible waterproof marking

Details (maker, serial no., category and date) shall be entered on the yacht's Sail Measurement Certificate by the Measurer.

(b) Any sail recutting resulting in an alteration to a sail requires remeasuring of that sail; but such recutting and remeasuring shall not constitute acquisition of an additional sail unless said sail is recut, redesigned, repaired or altered in a manner that 33 1/3% or more of the material used in the same is new or replaced. The said sail is then an "additional" or new sail within the meaning of Rule 5.5 and must comply with the requirements thereof.

5.5.3 Use

(a) No sails other than the approved headsail, mainsail and spinnaker shall be used and only one of each of these shall be hoisted at the same time.

(b) No more than two headsails, one mainsail and two spinnakers shall be carried on board while racing.

(c) At sanctioned regattas no more than one mainsail, two headsails and two spinnakers shall be presented for measurement and the same sails measured shall be the only sails used at that regatta.

A regatta is defined as an event sanctioned by a national or higher authority at which sails may be measured and the sail acquisition records inspected.

(d) The borrowing of sails is prohibited for use in sanctioned events. Any acquisition of sails must conform to Rule 5.5.

6. SAFETY EQUIPMENT

The following equipment shall be carried on board when racing:

(a) One life jacket or buoyancy vest (of pattern approved by the National Authority if required) for each member of the crew;

(b) one paddle of length not less than 1200mm;

(c) one hand operated pump and two buckets of not less than 9.5 litre capacity each, or two

hand operated pumps and one bucket of not less than 9.5 litre capacity;

(d) one anchor weighing a minimum of 3.5kg with sufficient chain if necessary to give a total weight of anchor and chain of not less than 5.5kg and not more than 9.0kg;

(e) 37 metres of 10mm diameter or larger anchor line, and a separate 25 metres of towing line of 12mm minimum diameter. Running rigging shall not be deemed anchorline or towline.

(f) Plus any additional safety equipment required by local or national laws.

7. PROHIBITIONS AND RESTRICTIONS

7.1 Crew — There shall be three or four persons on board when racing, and for any sanctioned event they shall sail throughout, and their total combined weight as measured wearing light clothing shall be no more than 285 kgs.

7.2 Wet Clothing — The total weight of clothing and equipment worn or carried by a competitor shall not be capable of exceeding 10 kilograms when weighed as provided in RRS Appendix J. This amends RRS 43.1(b) for the IECA. [Note: The 10kg includes footwear and other clothing below the knee.]

7.3 Lightening of the Hull — No stripping or lightening of the hull by means of cutting holes in knees, bulkheads, partial bulkhead or the seat or by the removal of material from the hull, deck, seat, bulkheads or partial bulkhead shall be permitted. An open hole(s) is permitted in the knees and/or seat thwart to permit the passage of running rigging, storage of spinnaker pole and/ or paddle and to provide access to the seat storage compartment. No open hole shall be located within 50mm of any edge of any knee or seat thwart except those holes carrying running rigging which shall not be within 25mm of any edge of the knee or seat thwart.

The total area of the open hole(s) located in a single knee shall not exceed 75cm^2. The total area of the open hole(s) in either the forward or after vertical athwartship seat member shall not exceed 250cm^2. The area of any one open hole passing running rigging through a knee or seat thwart shall not exceed 250cm^2 (i.e. maximum diameter of 50.5mm).

7.4 Hiking Devices — No rope, wire, rail, handhold or other special device shall be used by any member of the crew for the purpose of supporting his weight outboard of the sheerline. However the use of the headsail, spinnaker and/or main sheets held solely by the hands for hiking purposes is permitted. When hiking in the sitting position no part of the crew's body between the middle of the thigh and feet shall be outboard of the sheerline. When hiking in the prone position at least one full arm and one full leg shall be inboard of the sheerline.
NOTE: A shelf or bracket attached to the under side of the deck or top of the cuddy, extending aft from the aft edge of the cuddy, is considered a violation of Rule 7.4.
*Note: **Emergency Rule change Approved by ISAF July 2003** - Hanging on the mast or shrouds to promote roll tacking or gybing during a race is prohibited.*

A small block attached to the cleat shelf face extending not more than 75mm from the centreline of the boat for the purpose of a brace to prevent a crew member from falling or sliding inboard while trimming is permitted.

7.5 Kicking Straps, Vangs and Preventers — Kicking straps, vangs including "gate" or strut vangs and preventers are prohibited except those leading from the boom to the chainplates, or to the cabin top (as shown on the Construction Plan) and/or to the mast above the partners.

7.6 Mast Heel — Movement of the mast is permitted only in a fore and aft direction. The design of the plug at the heel of the mast and the shoe attached thereto is optional provided that the combined assembly of plug and shoe is attached to the mast step. Fore and aft movement while racing is prohibited.

7.7 Rotating Mast — Rotating masts are prohibited.

7.8 Bridge decks and Travellers — No bridge decks or travellers crossing the yacht's centreline are permitted other than the mainsheet traveller under the after end of the boom. This rule applies to, amongst other things, self-tacking headsails and vangs.

7.9 Forestay adjustments — The forestay shall not be adjusted except by means of a turn-

buckle attached to the stem fitting. Any changes to the mast rake while racing by any means except by the adjustment of the backstay, mainsheet, mast partner blocks, and/or vang are prohibited. The use of a separate line attached to the forestay or the head of the jib in order to remove forestay slack is prohibited.

NOTE: While sailing downwind with the jib lowered on deck, the following two methods of steadying the mast downwind are legal, and do not violate Rule 7.9 provided no slack is re - moved from the forestay:

1. *Unfasten the jib halyard from the head of the jib, attach it to the jib tack fitting, and then take tension on the halyard; or*
2. *Attach a separate line from the jib tack fitting to the head of the jib without unfasten - ing the halyard, and then take tension on the halyard.*

7.10 Access Hole Covers — Bulkhead access hole covers shall be in place while racing with all wing nuts and drain plugs in place and securely fastened.

7.11 Shroud Adjustment — Adjustment of shroud length shall be made only by means of turn-buckles attached to the chainplates above the deckline. The fore and aft position of the shrouds shall not be changed while racing.

7.12 Backstay Adjustment — The method of adjusting the backstay tension shall be optional, but the wire backstay pennant shall be led around the backstay sheave permanently fixed at the intersection of the transom and counter inside the hull.

7.13 Sheeting Arrangement — No sheeting arrangements shall pass through the sides of the hull. All other running rigging arrangements and associated fittings are optional with the exception of specific items mentioned elsewhere in these rules.

7.14 Special Navigation Devices — Devices transmitting and/or correlating data relative to wind direction or speed, or boat speed and location, by means such as, but not limited to electronic, mechanical, hydraulic or pneumatic, are prohibited. Depth sounders not piercing the hull may be permitted by National Authorities in races confined to yachts of their own nationality.

NOTE: This prohibition includes electronic digital compasses.

7.15 Console limitations — Length (not including fittings) shall not exceed 530mm at the top. Width (not including fittings) shall not exceed 220mm at the top. The top (not including fittings) shall be 50mm or more below the top of the coaming.

No exotic material shall be used.

The console shall not be attached so as to affect the rigidity of the hull.

For the purposes of this rule fittings are defined as any part which is attached to and is not an integral part of the console structure. Fittings shall not be attached to bases any higher than necessary to position the fittings for a fair lead.

8. REGISTRATION

8.1 ISAF Plaque — The yacht shall have an official ISAF plaque fixed approximately on the centreline of the forward face of the aft bulkhead. The builder's serial number and the number of the mould from which the hull came shall be permanently shown on the plaque. The ISAF plaque number shall also be cut into the keelson or moulded into the glass of the hull in the bilge area. The ISAF plaque serves as the building fee receipt.

8.2 Sail Number — The sail number shall be the boat's ISAF plaque number together with the national letters as required by the Racing Rules of Sailing. Until 1st March 2003, a boat may use sails bearing the number assigned to it before 1 March 2000 by its National Authority.

8.3 Measur ement Cer tificate — The Hull and Spars Measurement Certificate shall be obtained from the National Authority or, if the National Authority is not administering the class, from the IECA in the following way:

(a) in the case of a new yacht or one so substantially reconstructed or repaired as to require remeasurement by sending a Measurement Form properly completed and signed by the builder and an official measurer to the appropriate authority above.

(b) in the case of change of ownership by sending the invalid certificate to the appropriate authority as above. A copy of the certificate shall in each case be forwarded to the Etchells Class Association of the country concerned.

8.4 Keel Alteration Procedure

NOTE: The purpose of this procedure is to:

(1) ensure that the owner is aware of his responsibilities and makes the keel alteration in accordance with the class rules,

(2) ensure that the measurer is aware of his responsibilities and is notified of the pending alteration, and

(3) ensure that the owner's Fleet Captain is notified of the keel alteration and suspension of the Hull Measurement Certificate pending remeasurement of the keel and the reissue of the Hull Measurement Certificate.

An owner intending to alter the weight of his yacht's keel beyond what is considered a repair of minor damage or seasonal maintenance shall comply with the following procedure:

8.4.1 The owner shall notify his Fleet Captain and shall contact the National Authority for permission and instructions to alter the keel weight and shall submit the name of the official measurer to be involved.

8.4.2 The National Authority will advise the owner and the above measurer of the current Hull Measurement Certificate details and suspend the Hull Measurement Certificate during the alteration process.

8.4.3 Prior to the alteration the official measurer shall measure and record the Complete Yacht Weight.

8.4.4 The alteration shall be done in accordance with class Rules 3.6.1., 3.6.2. and 3.6.3.

8.4.5 In the case of an owner wishing to

(a) Remove lead from a heavy keel.

If the weight is removed by drilling hole(s), the location of the hole(s) shall be 430mm ± 50mm above the bottom of the keel and 405mm ± 100mm from the leading edge of the keel in the waterline plane. *[Note: The ODT interprets this section as also permitting planing the entire lead surface.]* The official measurer shall reweigh the boat to Rule 3.10.1, weigh and record the lead removed, and shall send the measurements to the National Authority on the IECA Alterations to Keel form with a recommendation as to whether a new Hull Measurement Certificate should be issued.

(b) Add lead to a keel that is less than maximum weight but not maximum chaingirth.

(1) Mark the 80mm girth measurement on both sides on the keel at Station 6.
NOTE: Refer Yearbook Measurement Diagram.

(2) Add lead to bottom of keel. This total keel weight not to exceed 965kg.

(3) The official measurer shall check all measurements and reweigh the boat to Rule 3.10.1.

(4) The measurer shall send the measurements to the National Authority on the IECA Alterations to Keel form with a recommendation as to whether a new Hull Measurement Certificate should be issued.

(c) Add lead to a keel that is heavy but not maximum chaingirth. Proceed as per 8.4.5(b) (1) (2). Then remove lead per 8.4.5.(a).

NOTE: The locations of the holes for the removal of lead shall be taken from the new keel bottom and leading edge. The removal of lead by any other method than per 8.4.5 (a) is prohibited. Finish up according to 8.4.5 (b) (3) & (4).

8.4.6 If the alteration complies with all rules, the National Authority shall issue a revised Hull Measurement Certificate to the owner. The owner shall inform the Fleet Captain that a revised Hull Measurement Certificate has been issued.

8.4.7 If any yacht is not measured after alteration to her keel and a new certificate issued in accordance with the above, the yacht is ineligible to compete as an International Etchells Class yacht.

9. OWNER'S RESPONSIBILITY

The owner shall be obliged to satisfy himself that the One-Design principle has not been violated and to do nothing during the course of his ownership to cause this principle to be violated.

No yacht shall be entitled to race as a bona fide Etchells unless:

(a) the owner holds a valid measurement certificate in his own name and

(b) the annual dues have been paid to his National Etchells Class Association or, if there is none for the owner's country, to the IECA.

10. REMEASUREMENT

(a) All certified yachts shall be liable to remeasurement at any time on protest or at the discretion of the ISAF, the IECA, a National Authority, or a Race Committee.

(b) If a builder is found to have signed a Measurement Form for a yacht that does not measure correctly he shall be liable to rectify the error and may have his licence as a builder withdrawn.

11. TRANSLATIONS OF RULES

The official language of the Class is English and the English text shall prevail in the event of a dispute over the translation.

OFFICIAL PLANS

3MKB — IA Lines Drawing
3MKB — 9G Keel Drawing
3MKB — IOG Construction Plan
3MKB — 14A Class Emblem (old E22)
3MKB — 14A-1 Class Emblem (new in 1997)
3MKB — 14F Sail Plan
3MKB — 15G Fittings Detail
3MKB — 25G-1 Spar Plan
3MKB — 25G-2 Spar Plan — Mast Details
3MKB — 25G-3 Spar Plan — Boom Details

TEMPLATES

4 Hull Section Templates
1 Keel Template: E22DEC98
1 Rudder/Skeg Profile Template

Effective: 1st March 2000
Previous Issue: 1998

International Etchells Class
Measurement Form

Authority: International Sailing Federation, Ariadne House, Town Quay,
Southampton, Hampshire SO14 2AQ Great Britain

IN ORDER TO OBTAIN A HULL & SPARS MEASUREMENT CERTIFICATE

1. The licensed builder shall obtain an International Class Fee Receipt (ISAF Plaque Number) from the International Etchells Class Association for each boat built.. This acts as a numbered International Class Fee Receipt. (Rule 8.1)
2. Application shall be made by the owner or builder to the relevant National Authority, or if the National Authority is not administering the class, to the International Etchells Class Association, for a Sail Number and Measurement Form submitting at the same time the proposed name of the boat and the ISAF Plaque Number.
3. A measurer appointed by the National Authority shall take all the measurements on this form. Further the yacht is required to conform with all Measurement and Class Rules even though the measurements are not required on this form. The measurer is required to certify on this form that the yacht conforms with the measurements, and to the best of his knowledge, the Measurements and Class Rules.
4. Items number 1—3, 5—47 inclusive shall be measured and the details noted on the measurement form before the yacht leaves the licensed builder's premises.
5. All measurements are in millimetres and kilograms unless otherwise stated.
6. The Original Measurement Form when completed, shall be forwarded by the owner to his National Authority (or the International Etchells Class Association if the owner's National Authority is not administering the class), together with any registration fee required, to obtain a Hull and Spars Measurement Certificate.

BEFORE SUBMITTING, PLEASE MAKE SURE THIS FORM IS PROPERLY COMPLETED

Name of Yacht . . . . Sail Number . . . .

OWNER'S NAME . . . . ISAF Plaque Number . . . .

Owners Address . . . .

Name of Owner's Club . . . .

Builder . . . . Builder's Code . . . .

Builder's Completion Date . . . . HIN # . . . .

Class Hull Number . . . . Mould Number . . . .

Mast Serial Number . . . . Boom Serial Number . . . .

Yacht Fitted out by . . . . Outfitter Code . . . .

Fitting Out Completed . . . .

Item	Rule	Measurement	Minimum	Actual	Maximum
		WEIGHT MEASUREMENTS			
1	3.6.1	Keel weight including keel bolts	953kg		965kg
2	3.9.1	Glass hull weight	380kg		
3	3.9.2	Bare yacht weight	1405kg		
4	3.10.1	Complete yacht weight	1508kg		

		HULL MEASUREMENTS			
5	3.3	Template at station 0	0		14
6	3.3	Template at station 3	0		14
7	3.3	Template at station 6	0		14
8	3.3	Template at station10	0		14
	3.3	Does sheerline lie between the marks on the template at:			
9		Station 0		YES/NO	
10		Station 3		YES/NO	
11		Station 6		YES/NO	
12		Station 10		YES/NO	
	3.3	Base line to hull centreline:			
13		Point “A”	1260		1290
14		Station 3	155		175
15		Station 6 (75mm from centreline)	135		160
16		Point “C”	660		685
17	3.4.1	Point “A” to centre of mast port	3800		3825
18	3.4	Point “A” to forward side of cockpit	4537		4567
19	3.3.1	Point “A” to point “C” (LOA)	9285		9300
	3.4	Point “A” to forward edge of chainplate:			
20		Port side	3810		3835
21		Starboard side	3810		3835
	3.4	Chainplate length:			
22		Port	260		266
23		Starboard	260		266
	3.4	Chainplate to outer edge of deck:			
24		Port			40
25		Starboard			40
	3.4.1	Mast Port size:			
26		Length	200		204
27		Width	98		102
28	3.4	Beam at station 6	2105		2125
29	3.4	Cockpit width at station 6	930		960
30	3.4	Cockpit length	2650		2680
31	3.3	Mast bury: point “B” to top of mast step	755		785
		Point “C” to:			
32	3.5	After edge of rudder stock at hull	1890		1900
33	3.5	After edge of rudder stock at bottom of gudgeon	2135		2145
34	3.6.2	Intersection of leading edge & bottom of keel	4660		4686
35	3.6.2	Intersection of trailing edge & bottom of keel	3600		3626
	3.6.2	Chaingirth at station 6:			
36		Port	2175		2190
37		Starboard	2175		2190
38	3.5	Rudder stock diameter	28		29
39	3.5	Does rudder profile comply with tolerances on template?		YES/NO	
40a	3.5	Greatest thickness of rudder or skeg (whichever is larger)	32		38
40b	3.5	Greatest thickness of rudder at 100mm plane			26
40c	3.5	Greatest thickness of rudder at 250mm plane			33
41	3.5	Skeg radius of leading edge			15

42	3.6.1	Height of lead	854		888
43	3.6.2	Height differential, Station 1 to Station 10 with keel 54.2° to horizontal	20		50
44	3.6.2	Keel template	0		3
	3.6.2	Keel:			
45		Length	1141		1150
46		Radius of leading edge			10
47		Keel bottom—vee section degrees	38°		45°
		SPAR MEASUREMENTS			
48	4.5.3	"LB" to top of spinnaker track			1525
49	4.2	"LB" to centreline of spreaders at side of mast .	3845		3875
50	4.2	"LB" to top of spinnaker halliard sheave (bottom of groove)			7575
51	4.2	"LB" to forestay intersection	7605		7635
52	4.2	"LB" to bottom of taper	7800		7950
53	4.2	"LB" to upper shroud attachment	8120		8140
54	4.3.2	"LB" to bottom of upper band			9906
55	4.2	Lower shroud attachment from centreline of spreader (above or below spreader)			60
	4.2	Spreader section:			
56		Fore and aft	47		49
57		Depth	18		20
	4.2	Spreader length from side of mast to centreline of shroud			
58		Port	760		780
59		Starboard	760		780
	4.3.3	Spreader swing:			
60		Port (fore and aft)			75/100
61		Starboard (fore and aft)			75/100
62	4.2	Spinnaker halliard extension			45
63	4.5.3	Spinnaker track length	1220		
	4.2	Mast section:			
64		Fore and aft	123		126
65		Athwartship	76		79
	4.2	Mast section at upper band			
66		Fore and aft	65		75
67		Athwartship	60		70
68	4.3.5	Bare mast tip weight (without spreaders, heel plug and rigging)	12kg		
69	4.3.6	Rigged mast tip weight (with rigging)	13kg		
	4.2	Main boom section:			
70		Depth	81		84
71		Width	65		67
72	4.4.2	Main boom: forward edge of band or end of boom (which ever is less) to after side of mast .			3530
73	4.3.2	Main boom:downhaul stop fitted		YES/NO	
74	4.5.2	Spinnaker pole: overall length including fittings .			2895
		FINISHED YACHT MEASUREMENTS			
75	3.4	Point "A" to forestay on deck	1290		1340
76	3.3.3	Floorboards weight	15kg		20kg

77	3.3.3	Do floorboard fastenings comply?		YES/NO	
78	3.3.2	Do access hole covers in watertight bulkheads and their fastenings comply with rule?		YES/NO	
79	3.7	Are there any unfilled holes in flotation compartments?		YES/NO	
80	4.3.2	Top of lower band, "LB", to point "B"	725		740
81	7.1.5	Do console limitations comply?		YES/NO	
82	3.3.3	Height of cockpit sole below deck edge at station 6	640		770

DECLARATIONS

1. To be signed by LICENSEDBUILDER moulding and assembling the hull and keel.
   I certify that
   (a) This yacht has been constructed from officially registered, numbered and measured moulds supplied from the source approved by the ISAF,
   (b) This yacht has been constructed in accordance with the Rules, Plans and Specifications of the International Etchells Class Association.
   (c) Keel Weight: Item 1, and Height of Lead: Item 42

   Name of Builder (*Block capitals*) . . . . . .

   Signature of Builder . . . . . Date. . . . . .

2. To be signed by Outfitter completing the yacht.
   I certify that this yacht is, to the best of my knowledge, built and fitted out in accordance with the Rules of the International Etchells Class Association.
   Name of Outfitter (print) . . . . . .

   Signature of Outfitter . . . . . Date. . . . . .

3. To be signed by the Official Measurer(s).
   I certify that I have measured the following items on this yacht, and that the particulars of this form are correct and that, to the best of my knowledge, this yacht complies with the Rules of the International Etchells Class Association at present in force, except as stated below:

   (a) Glass Hull Weight: Item 2
   Name of Measurer (print): . . . . . .

   Signature of Measurer: . . . . . Date: . . . . . .
   Measurer approved by: . . . . . .
   Comments:

   (b) Bare yacht Weight: Item 3
   Name of Measurer (print): . . . . . .

   Signature of Measurer: . . . . . Date: . . . . . .
   Measurer approved by: . . . . . .
   Comments:

   (c) Complete yacht Weight: Item 4
   Name of Measurer (print): . . . . . .

   Signature of Measurer: . . . . . Date: . . . . . .
   Measurer approved by: . . . . . .
   Comments:
   (d) Hull: Items 5—41 and 43-47
   Name of Measurer (print): . . . . . .

   Signature of Measurer: . . . . . Date: . . . . . .

Measurer approved by: . . . . . .
Comments:

(e) Spars: Items 48-68 and 70-73
Name of Measurer (print): . . . . . .

Signature of Measurer: . . . . . Date: . . . . . .
Measurer approved by: . . . . . .
Comments:

(f) Spars: Items 69 and 74
Name of Measurer (print): . . . . . .

Signature of Measurer: . . . . . Date: . . . . . .
Measurer approved by: . . . . . .
Comments:

(g) Finished Yacht: Items 75-82
Name of Measurer (print): . . . . . .

Signature of Measurer: . . . . . Date: . . . . . .
Measurer approved by: . . . . . .
Comments:

Keel Measurement Information

A. INSTRUCTIONS AND REQUIREMENTS
FOR USE OF ETCHELLS KEEL TEMPLATE: E22DEC98

1. The boat is braced and supported in position so that the keel centre-line is accurately vertical athwartships, and the bottom of the keel is approximately level. If the boat is measured on a trailer, the fore and aft trailer supports must be raised to obtain access to the keel bottom Vee sections.

2. Check that the leading edge of the keel is straight.

3. The offsets of the new keel are designed on a chord at an angle to the leading edge of 54.2°. Therefore, the template must always be applied at exactly this angle to the leading edge. An easy way to accomplish this is as follows. Make a right-angled triangular pattern (template) of sheet metal or plastic with dimensions of the sides 180mm and 250mm and the hypotenuse 308mm. It is recommended that the hypotenuse be very slightly concave between the ends to ensure that it makes contact with the leading edge without rocking. With this triangle held snugly against the leading edge of the keel, adjust the level of the boat so that the short (bottom) side of the triangle comes exactly level, by means of a spirit gauge (bubble level).

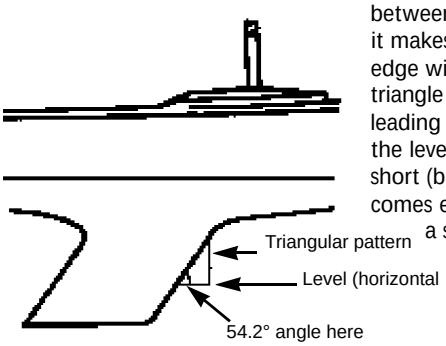

FIGURE A

4. After setting-up the boat per Figure A, determine the height differential, Station 1 to Station 10 (Measurement Form, Item 43). The procedure shown in Figure 3 can be modified to set-up the boat per Figure A, and Item 43 can then be found by $X_2 - X_1$.

5. The keel template is now applied, held horizontal both fore and aft and athwartships by means of a small spirit level resting on the template, at any station between a point 845mm above the base of the keel and the top of the bottom Vee sections (Figure 4). See Rule

3.6.2 for measurement items.

6. The template must be held firmly against the keel at the forward end, fitting snugly in the 10mm arc. That automatically centres the forward end. The after end of the template must also be centered.

7. Because of the thickness of the aluminium, the aft end of the template will touch first at the bottom face of the template, raising the top face slightly. To correct this discrepancy it is necessary to file the edge of the under side to an angle of about 54°, at the trailing edge only, so that the top face will be at the same level forward as it is aft.

B. PREPARATION OF KEEL TEMPLATES

The keel template is manufactured from aluminimum and is subject to oxidation and corrosion. An acrylic coating or equivalent should be sprayed on the template to retard oxidation. A stiffener should be fastened to both halves of the template to prevent any distortion from a straight plane when held horizontally. It is also recommended that a length of metal tape be attached at the aft end of the template. Figure 1 shows a tape attached to IYRU/ISAF 1976 template. The E22DEC98 template can be similarly prepared with a 9mm length tape.

C. LOCATING ST ATIONS 0, 6 AND 10

Station 0 is 1735mm from Measurement Point "A" (Figure 2), following the line of the profile. Station 10 is 1105mm from Measurement Point "C", following the line of the profile. Most boats have marks, indicating stations 0 (approximately 340mm below the boottop on the bow profile) and 10 (approximately 280mm below the boottop on the stern profile) moulded into the hull. To locate Station 6, see Measurement Diagram on page 97.

D. INSTRUCTIONS AND REQUIREMENTS FOR USE OF ETCHELLS KEEL TEMPLATE: IYRU/ISAF 1976

The boat is leveled so that the distances from the reference line to the underwater profile at stations 0 and 10 are equal or within 2mm (Figure 3). The reference line is the line on the transit/dumpy level or the height of the water of the water level. A spirit level is placed on the template in order to level the template. The forward point of the template shall always be in contact with the leading edge of the keel. See Appendix H for measurement items. The keel shall be measured at all waterplanes from 845mm above the bottom of the keel to the top of the Vee. Figure 4. The maximum thickness of the keel is measured with a large caliper.

E. LEADING EDGE RADIUS — BOTH TEMPLATES

If the radius of the leading edge is 10mm or less, the centreline of the leading edge will touch the centreline of the template. If the leading edge radius exceeds the maximum permissible tolerance (10mm), the centreline of the leading edge will not touch the template centreline (Figure 5).

F. MEASUREMENT OF FORE AND AFT KEEL LOCATION AND KEEL BOTTOM VEE SECTION

1. The boat does not have to be leveled for these measurements.

2. Measurement Point "C" is the theoretical intersection of the transom and the counter at the centreline (Figure 6). The "International Etchells Measurement Diagram" depicts the measurement from Measurement Point "C" to the intersections of the keel leading edge and trailing edge with the bottom of the keel. Both measurements are taken as straight lines. The leading edge intersection point must be offset perpendicularly from the centreline in order to avoid bending the tape around the keel (Figure 7). The keel intersection points are determined by extending the leading and trailing edges until they intersect the keel bottom

extension; any local humps or hollows shall be disregarded or bridged. To simplify the determination of the two theoretical intersection points, it is recommended a device be assembled consisting of two straight arms, approximately 450mm long, hinged together (Figure 8).

3. The keel bottom Vee section is measured by an adjustable protractor triangle or Vee templates. Dwg 3MKB-9G shows that the side of the keel meets the Vee at a sharp angle of 135° as viewed in cross section. Any rounding of this angle or of the bottom of the Vee shall not exceed 10mm in radius. These limitations and the Vee itself shall be checked along the length of the keel, except within 180mm aft of the theoretical intersection of the leading edge to keel bottom.

4. Measured from the theoretical intersection of the keel leading edge to the keel bottom, the profile of the forward bottom corner of the keel shall not be measured within a distance of 100mm up the leading edge and 125mm along the bottom edge.

Spar Reminders

SPAR DRAWING

A complete set of spar drawings is now available, mainly for the benefit of spar builders. Some of the items and notations may be of general interest, because they apply to all spars, including those now in use.

The luff and foot grooves shall be continuous throughout, except for specified sail entry cut-away. Saw cuts are prohibited.

Lightening holes and unused holes in masts and booms are prohibited. Unused holes 8mm diameter or less are to be filled with pop rivets or machine screws. Unused holes greater then 8mm diameter are to be filled with aluminum.

The mast heel plug and shoe are mandatory, but the design is optional provided that:(1) The measurement from bottom of mast heel plug to bottom of mast extrusion is 10mm ± 3mm.

(2) The measurement from bottom of mast heel plug to top of mast step does not exceed 25mm.

Anyone intending to install a nonstandard mast shoe assembly should consult Drawing 3MKB – 25-G-2 for limitations.

The length of the mast sail entry cut-away shall be 150mm ± 50mm. The top of the mast sail entry cut-away shall be 520mm ± 50mm from the top of the lower black band.

The boom sail entry cut-away shall not exceed 190mm in length, measured from the forward end of the boom extrusion. The outhaul track cut-away shall not exceed 267mm in length, measured from the aft end of the boom extrusion. An internal mainsheet system is permitted, provided that all entry and exit holes are within 400mm of the inboard or outboard end of the boom, except for one single sheave not more than 1800mm from the forward edge of the boom measurement band.

The length of the gooseneck track shall be 305mm + 71mm, - 136mm. The

length of the gooseneck track backing plate shall be 310mm + 71mm, - 142mm.

The IGC has approved the following addition to the spar plan as modification of the design of the jib/spinnaker halyard sheave box (optional):

1. An external doubler fitted to the forward section of the mast is permitted, with a maximum length of 400mm and a maximum width, measured around the forward side of the mast, of 100mm. The doubler shall not extend more than 200mm above the top of the spinnaker halyard exit slot.
2. An internal doubler fitted to the forward section of the mast is permitted with a maximum length of 650mm and a maximum width, measured around the forward side of the mast, of 100mm. The doubler shall not extend more than 350mm above the top of the spinnaker halyard exit slot.

In regard to the internal (not external) sleeving of masts (e.g., at deck level) or booms (e.g., at the vang) allowed solely for the purpose of repair of a break or fracture, see the end of Rule 4.2

Important: The main boom shall extend 115mm +35mm/-15mm (i.e., between 100mm to 150mm) beyond the forward edge of the black band measurement point, excluding the boom end plug. [Spar Drawing Measurement Item.]

Miscellaneous Procedures and Reminders

RECONSTRUCTION AND REPAIRS

Owners will please take note of the following when undertaking reconstruction or repairs of damaged hulls:

1. Repairs must be effected in a manner that restores (matches) the original structure without strengthening or stiffening it. Materials and methods of fastening must conform at closely as possible to what was in the original structure. If major structural repairs are undertaken, an owner is obligated to have the boat inspected before and after by a measurer who shall take appropriate remeasurements or weighings. You are reminded of Rule 9, Owner's Responsibility: "The owner shall be obliged to satisfy himself that the one-design principle has not been violated and to do nothing during the course of his ownership to cause this principle to be violated."
2. Bow stiffeners in some of the oldest boats have tended to pop off, partly because the stiffeners were initially manufactured straight, without any built-in curvature. These may be replaced by slightly longer stiffeners; but more important, the stiffeners should be pre-formed to fit the curvature of the inside of the bow. (For limitations, see Construction Plan 3 MKB–10-G, 9 Dec 1981.)
3. The only approved deck sandwich material is 12mm (1/2") balsa core.
4. Epoxy resin is not allowed in laying up the hull, or in laying up large sections of repair work. It is permissible only as an adhesive to join breaks or to assist in the attachment of fittings.
5. Keel alterations shall conform to Rule 8.4.

HEAVY BOATS

A boat that weighs more than the minimum may have acquired a few kilograms through water absorption, possibly as much as 10kg.

Boats that go more than 57kg over the minimum nearly always do so because the owner has added equipment. Raised floorboards, console, winches, pumps, elaborate sheet trimming apparatus, many coats of bottom or topside paint all, in the aggregate, add considerable weight. If you have a heavy boat, particularly an old one, you should always be concerned with making it weigh less, not more, by removing unused hardware, simplifying rigging, or any other legal means.

BAILERS

From time to time, requests come in from members about the possibility of installing an automatic hull bailer. Bailers are not currently allowed in Etchells. Some years ago, the ODT sought information about the best available bailers, and indicated a willingness to permit the installation of a bailer or bailers in one boat on a trial basis. To date no one has volunteered to make this performance test. If you are interested, please communicate with the ODT for details. Do not proceed with the installation of a bailer without first obtaining the necessary permission.