By-Law 1: Rules
(Parts one to five inclusive)

Valid from 1 October 2001. Cancels all previous rules and interpretations.

HISTORY: The following rules have been amended since 1 January 1998:

1 January 1998: Rule 3(b) allow the tail of the boom vang to be tied anywhere on the boat except to another line; Rule 4(b) prohibit the use of permanent ink pens or similar to mark numbers and national letters on the sail; Rule 12(c) allow the ends of any line to be whipped to a maximum length of 20 mm; Rule 12(d) allow a retaining line attached to the transom drain bung and the gudgeon; Rule 13(d) amended to clarify how to seal a self bailing device; Rule 13(f) allow bent vang key and methods of retaining key in boom; Rule 13(h) confirm that outhaul fairleads may be replaced with a cast metal fairlead of identical size and shape; Rule 13(i) stainless steel mainsheet eye strap may be replaced with a soft strap; Rule 19(c) clarify the use of bushing material; Rule 22 electronic and digital compasses prohibited.

1 October 2001: Rule 3 "Control Lines and Fittings" was completely rewritten to allow a limited number of extra blocks to replace loops in the boom vang, cunningham and outhaul and to allow the outhaul to be led to the deck. Replacement "builder" supplied fittings are allowed for the cunningham deck fairlead and cunningham cleat to which blocks and cam cleats can be attached. Other rules have been renumbered and amended to reflect these changes. In view of the reduced friction in the new control line systems a mandatory mast retaining line is now required (rule 3 (b) xi). For increased security an optional hole in the top rudder pintle may be drilled to take a pin or clip (rule 15 (h)). A spring or ball is permitted between the traveller blocks (rule H 2). The Advertising rule 10 has been updated to reflect the 2001 changes in the Racing Rules of Sailing.

INTRODUCTION

The principle of the Laser Class Rules is that no changes to the boat are allowed unless they are specifically permitted by the class rules.

The English text of the Laser Class Rules shall govern.

PART ONE

OBJECT

The Laser is a strict one-design dinghy where the true test, when raced, is between helmspersons and not boats and equipment.

FUNDAMENTAL RULE

The Laser shall be raced in accordance with these rules, with only the hull, equipment, fittings, spars, sail and battens manufactured by a licensed builder in accordance with the Laser design specification (known as the Construction Manual) which is registered with ISAF.

No addition or alteration may be made to the hull form, construction, equipment, type of equipment, placing of equipment, fittings, type of fittings, placing of fittings, spars, sail and battens as supplied by the builder except when such an alteration or change is specifically authorised by Parts 2 or 3 of these Rules.

HULL IDENTIFICATION

All Lasers shall have an identification number moulded into the deck under the bow eye or into the transom, which shall be either the sail number or a unique production number.

Lasers with sail numbers from 148200 shall display a unique ISAF Building Plaque that has been purchased by the builder from the International Laser Class Association. The plaque shall display the sail number of the boat issued by the International Laser Class Association and shall be permanently fixed in the rear of the cockpit by the builder.

DEFINITION OF BUILDER

A Builder is a manufacturer that has a building agreement from Bruce Kirby or Bruce Kirby Inc. to build the Laser and has rights to use a Laser trademark and has been approved as a Laser Builder by each of the International Sailing Federation and the International Laser Class Association.

PART TWO

1. MEASUREMENT DIAGRAMS

The measurement Diagrams are part of these Rules.

The spars, sails, battens, centreboard, rudder, and the placing of fittings and equipment shall conform to the Measurement Diagrams. The measurement tolerances are intended to allow for necessary manufacturing tolerances and shall not be used to alter the design.

2. MEASUREMENT

In the case of a dispute alleging non-compliance with the Construction Manual, the matter, together with any relevant information, shall be referred to the Chief Measurer of the International Laser Class Association at the International Office who shall give a final ruling in consultation with an ISAF Technical Officer.

In the case of a measurement dispute on the hull, spars, sail, battens, centreboard and rudder, rigging, type of fittings and equipment and the placing of same not explicitly covered by these Rules, Measurement Diagrams and Measurement By-Laws the following procedure shall be adopted:-

A sample of 10 other boats shall be taken and measured using identical techniques. The dimensions of the disputed boat shall be equal to, or between the maximum and minimum dimensions obtained from these 10 boats. If the boat in question is outside these dimensions the matter, together with any relevant information, shall be referred to the Chief Measurer of the International Laser Class Association at the International Office, who shall give a final ruling. If any of the dimensions of the sample are considered to be unusual, all relevant information shall be referred by the Class Association to the ISAF.

3. CONTROL SYSTEMS, CONTROL LINES AND FITTINGS

(a) Control System Definitions

The Cunningham, outhaul, vang, traveller and mainsheet are the control line systems..

For the purpose of the definitions, a **Standard** fitting is a fitting or block that is supplied with the Laser in accordance with the Fundamental Rule.

"Optional" fitting is a fitting or block that replaces or is additional to a standard fitting, as allowed by these Rules, and may be obtained from any supplier.

"Builder Supplied" fitting replaces a standard fitting, and is supplied only by the Builder, as allowed by these Rules.

"Turning Point" is a sheave (pulley) in a block, rope loop, rope loop reinforced with a thimble, the outhaul fairlead, shackle, part of a fitting, sail cringle, mast or boom around which a moving control line passes, **except that** the cunningham fairlead, the "Optional " blocks attached to the "Builder supplied" deck block fitting, the cunningham clam cleat, the optional cam cleats attached to the "Builder Supplied" deck cleat base **will not be counted** as "Turning Points" in (e) i. and (f) i.

(b) Control Lines and Fittings

i. Control lines shall be natural or synthetic rope, except that aramid fibre (e.g kevlar) is not permitted for the boom vang or cunningham control systems.

ii. Control lines shall be of uniform thickness and shall not be tapered except for the purpose of a splice within 100mm of a dead ending at a fitting.

iii. In a control line system where more than one control line is permitted, lines of different diameter shall not be joined together.

iv. "Optional" blocks allowed in a cunningham, vang or outhaul control system, shall have a sheave diameter of minimum 15mm and a maximum of 30mm.

v. "Optional" blocks shall only have single or double sheaves, and may include a becket, a swivel and/or a shackle. Thimbles shall not exceed 40 mm in length.

vi. The plastic fairleads and plastic clam cleats may be replaced. n the same position with an identical size and shape fitting made of metal.

vii. The plastic cunningham fairlead may be replaced with one of the same type which has a stainless steel insert, and has the same screw hole positions.

viii. "Builder Supplied" Deck Fittings (Deck Block Fitting and Deck Cleat Base)

(a) The cunningham fairlead may be replaced in the same position with a "Builder Supplied" deck block fitting for attaching two single "Optional" blocks for the deck led cunningham and outhaul systems.

(b) The "Optional" deck blocks may be supported with a spring, ball, plastic tube or tape.

(c) The cunningham clam cleat may be replaced in the same position with a "Builder Supplied" deck cleat base for attaching two "Optional" cam cleats (cunningham and outhaul) which have fixing hole centres of 27mm. The two cam cleats may include a bridge and a fairlead with or without rollers on the aft exit.

(d) The cunningham fairlead, the "Builder Supplied" deck block fitting and the "Optional" blocks attached to it, the cunningham clam cleat, the "Builder Supplied" deck cleat base and the "Optional" cam cleats attached to it, shall not be used for tying a control line, or as a "Turning Point".

ix. Rope loop handles covered with plastic/rubber tube and/or tape may be included anywhere on the free end of a control line.

x. The free ends of different control lines (except mainsheet) may be tied together and/or tied to any deck fitting or the centreboard, the centreboard handle or a rope loop used to attach a retaining line. Free ends of control lines shall not be tied to shockcord (except mainsheet).

xi. To secure the mast in the event of a capsize, a loose retention line or shockcord (that will allow 180 degree plus mast rotation) shall be tied/attached between the cunningham fairlead or the deck block fitting and the mast tang or gooseneck. Clips, hooks, shackles and balls may be used to attach the retention line.

(c) Mainsheet

i. The mainsheet shall be a single line, and be attached to the becket of the aft boom block, and then passed through the traveller block, the aft boom block, boom eye strap, forward boom block and the mainsheet block. After the mainsheet block it shall be knotted. The mainsheet shall not be controlled aft of the forward boom block except to facilitate a tack or gybe.

ii. The tail of the mainsheet may also be knotted or tied to either the base of the mainsheet block, the hiking strap, the hiking strap support line, or the hiking strap shockcord.

iii. The mainsheet block may be replaced by any type of single block with or without an internal or attached jamming device, and mounted in the position shown on the measurement diagram. the block may be supported by a spring, ball, plastic tube or tape.

iv. One mainsheet clam or cam cleat of any type may be mounted on each side deck in the position shown on the measurement diagram.

(d) Vang

i. The vang system shall be between the mast tang and the boom key fitting and shall be comprised of the vang cleat block, the vang key block, a maximum of two control lines, loops and/or "Optional" blocks for additional purchase with a **maximum of 7 "Turning Points".**

ii. The vang cleat block shall be attached directly to the mast tang, or to an "Optional" swivel that shall be attached to the mast tang.

iii. A shackle may be used to attach the vang cleat block or the swivel to the mast tang.

iv. The swivel, shackle or swivel/shackle combination shall not exceed 80 mm in length when measured under tension.

v. The vang key block may be fitted with a spare key.

vi. The key may be straight or bent, and it may be held in the key way with either tape, elastic or velcro.

vii. The vang key block may be replaced with an "Optional" vang key block which may have a spare key.

viii. "Optional "single blocks may be attached to one or both sides of the vang cleat block, using a clevis pin or bolt

through the attachment hole in the vang cleat block.

ix. The mast tang hole may be drilled to take a larger pin.

x. "Builder Supplied" Vang Cleating Fitting

a) The vang cleat block may be replaced with a "Builder Supplied" vang cleating fitting which incorporates "Turning Points" and a cam cleat.

b) The fitting shall be attached directly to the mast tang.

c) The fitting shall not be modified in any way.

Note:The "Builder supplied" vang fittings wil be introduced before 31 December 2001. Details will be announced on the International Laser Class website www.laserinternational.org and circulated to all districts.

(e) Cunningham

i. The cunningham system shall consist of a maximum three control lines, "Optional" blocks or loops for purchase with a **maximum of 5 "Turning Points".**

ii. The cunningham control line shall be securely tied to any of the mast, gooseneck, mast tang, the swivel, the shackle that may be used to attach the vang cleat block or the swivel to the mast tang, or the cunningham attachment point on a "Builder Supplied" vang cleating fitting, and shall pass at least once through the sail tack cringle before passing only once through the deck fairlead and the clam cleat..

iii. Additional purchases may be obtained using rope loops, "Optional" blocks and using any of the boom, sail tack cringle, gooseneck fitting, mast tang, shackle attaching vang cleat block or swivel, the swivel, or the cunningham attachment point on a "Builder Supplied" vang cleating fitting.

iv. Deck Block Fitting and Deck Cleat Base

The cunningham control line shall pass only once through the cunningham "Optional" single block attached to the "Builder Supplied" deck block fitting and the "Optional" cam cleat attached to the "Builder Supplied" deck cleat base.

(f) Outhaul

i. The outhaul system shall consist of a maximum of two control lines, "Optional" blocks or loops for purchase and a **maximum of 6 "Turning Points**"

ii. The outhaul control line shall be tied to either the end of the boom, the outhaul fairlead, the sail, or a quick release system, and shall pass at least once through the boom outhaul fairlead.

iii. Additional purchases may be obtained by forming rope loops in the line or adding "Optional" blocks to the line, and/or using the outhaul fairlead, the outhaul cam cleat, the boom, the mast or gooseneck fitting.

iv. An "Optional" block may be attached to the clew of the sail or to a quick release system, or be part of a quick release system.

v. An "Optional" block may be tied (using an additional line to those noted in 3(f)i) at the mast/gooseneck junction (maximum 100 mm from centre of gooseneck bolt) or shackled to the gooseneck fitting. (The gooseneck may be inverted.)

vi. A shockcord may be attached between the outhaul cleat and the clew of the sail, the clew tie down, the optional block at the clew, or the quick release system for use as an inhaul.

vii. Shockcord and/or rope loops (rope loops may be part of the control line) can be tied around the boom and/or the outhaul control lines to retain the outhaul lines close to the boom.

viii. Deck Led Outhaul System.

a) When led to the deck, an "Optional"" single block shall be tied (using an additional line to those noted in 3(f)i or the same line as refered to in 3(f)v) at the mast/gooseneck junction, (maximum 100 mm from centre of gooseneck bolt) or shackled to the gooseneck.

b) The outhaul control line shall pass only once through the outhaul "Optional" single block attached to the "Builder supplied" deck block fitting and the "Optional" cam cleat attached to the "Builder Supplied deck cleat base.

c) The boom outhaul clam cleat shall not be removed.

(g) Clew Tie Down

i. The clew of the sail shall be attached to the boom by line or strap around the boom and through the sail cringle or by an optional quick release system attached to a line or strap around the boom.

ii. The clew tie down may be passed through simple balls or tube/tubes to reduce friction.

(h) Traveller

i. The traveller shall be a single line. It shall be rigged as a simple closed loop through the traveller eyes and the free end passing through the traveller cleat.

ii. A spring, ball or tape may be used between the traveller blocks.

4. SAIL REGISTRATION NUMBERS (For Laser Radial and 4.7 sail number positions please see part 4)

(a) For Lasers up to sail number 148199, the sail number is a number moulded into the deck under the bow eye or into the transom, or shown on a plate attached to the rear of the cockpit.

For Lasers with sail numbers from 148200, the sail number shall be displayed on a unique ISAF building plaque fixed in the rear of the cockpit.

(b) All numbers shall be in accordance with the Racing Rules of Sailing except as amended by these rules in respect of type, positioning and minimum dimensions:

Height 300 mm.

Width 200 mm (excluding number 1).

Thickness 45 mm.

Space between adjoining numbers minimum 50 mm.

Sail numbers shall be regularly spaced.

Numbers on the starboard side shall be placed above those on the port side.

Each sail number digit shall be of one colour only.

The sail numbers shall be solid and easy to read.

After 1st March 1998 - sail numbers and national letters shall only be adhesive numbers. The use of permanent ink pens or similar to mark numbers and national letters on the sail is prohibited.

(c) For sails with numbers above 153000 and sails purchased after 1st June 1993 the sail numbers shall be glued or sewn on each side of the sail, with the bottom of the numbers on the starboard side of the sail placed along a line parallel to and 400 mm (+ or - 12 mm) below the seam at the middle batten pocket. The bottom of the numbers on the port side of the sail shall be placed on a line 400 mm (+ or - 12 mm) below and parallel to the bottom of the numbers on the starboard side of the sail. The starboard sail numbers shall commence 100 mm (+ or - 12 mm) from the leech and the port side numbers shall end 100 mm (+ or - 12 mm) from the leech.

(Refer to sail number application diagram for procedure for applying sail numbers.)

(d) Sail numbers from 131000, sails purchased after 1st June 1993 and new sails stamped “New Numbers” shall have numbers that are clearly visible with the last four digits of the number in one dark, distinctive colour or black and any preceding numbers in a different, contrasting, distinctive colour (red is recommended).

(e) Exceptions to this Rule are permitted:

i. when the hull and/or sail are provided by the organisers for an event and after approval of the International Laser Class Association, the numbers on the sail used for that event only may be single, double or triple digit numbers.

ii. in the case of a Laser borrowed or chartered for a specific event, and after written approval from the Race Committee, a competitor may use a sail with numbers that are different to the sail number allocated to the hull. The sail number used shall be the sail number allocated to the competitor’s own Laser. When the competitor does not own a Laser, the number used on the sail shall be the number of the Laser chartered.

iii. when a sail is damaged during a series and Rule 7 (d) applies the sail number may contravene Rules 4 (a) and (e) ii only when written permission for a sail number change is given by the Race Committee.

(f) National Letters, if required, shall conform to the same type, size, spacing and requirements as sail numbers (refer rule 4(b), (c), (d) and (e)) and shall be positioned as follows (also see diagram):

The letters on the starboard side of the sail shall be placed along the top edge of the seam below the bottom batten pocket (+ 12 mm) and on the port side of the sail along a line 400 mm (+ or – 12 mm) below and parallel to the letters on the starboard side. The starboard letters shall commence 100 mm (+ or – 12 mm) from the leech and the port letters shall finish 100 mm (+ or – 12 mm) from the leech. The letters shall all be the same colour.

5. MAST

No mast which has a permanent bend shall be used at any time.

6. CLOTHING AND EQUIPMENT (for Laser Radial and 4.7 rigs please see part 4)

(a) In alteration of RRS 43.1 (b) the maximum total weight of competitors’ clothing and equipment shall be 9 kg.

(b) Competitors shall not wear or carry non floating clothing or equipment which in total weight exceeds 500 grammes dead weight except protective sailing clothing.

(c) For the purposes of weighing clothing and equipment as required by RRS Appendix H three coat hangers may be used instead of a rack.

7. SAILING REQUIREMENTS

(a) The Laser shall be raced with either one or two persons aboard.

When two persons race a Laser they shall race together throughout the entire race or series of races without alternating at the helm.

(b) The rudder shall be maintained in the full down position except whilst racing in water less than 1.5m deep unless otherwise specified in the sailing instructions.

(c) No part of the helmsman or crew may be placed forward of the mast while racing.

(d) Sails

In a series of races a sail shall not be changed for another unless written permission for an individual change is obtained from the race committee. Written permission shall only be given in the event of a sail damaged beyond repair or damaged to the extent that it cannot be repaired before the start of the next race in a series. In the event of a change the damaged sail shall not be used again in that series even if it is subsequently repaired.

For the purpose of this rule, a series is deemed to be two or more individual races which count towards an overall points total.

(e) Centreboard and Rudder Blade

i. A wood centreboard or rudder blade shall not be used on a hull that was originally supplied with a non wood centreboard or rudder.

ii. A line or shockcord shall be tied or hooked through a small hole in the upper forward corner of the centreboard and tied or hooked to the cunningham fairlead, the mast, the bow eye, or looped back to the centreboard from these fittings to prevent loss of the centreboard in the event of capsize.

8. HULL COATINGS

The use of slowly soluble applications which might alter the boundary layer characteristics of the hull are prohibited.

9. CLASS ASSOCIATION MEMBERSHIP

No person is permitted to race a Laser in any Fleet, interFleet, District, or other sanctioned event unless at least one member of the crew is a current member of the International Laser Class Association (a member of a District Laser Association duly established in accordance with the Constitution is a member of the International Laser Class Association).

10. ADVERTISING

For the purposes of RRS 79 and ISAF Regulation 20.4.2 (a) Advertising Code Category C shall apply to the Laser, Laser Radial and Laser 4.7.

PART THREE
OPTIONS AND EXCEPTIONS TO PARTS ONE AND TWO

11. HULL FINISH

(a) Waxing, polishing and fine wet and dry sanding of the hull is permitted, provided the intention and effect is to polish the hull only. Polishing/sanding shall not be used to remove mould imperfections.

(b) Sanding and refinishing of the hull with the intention or effect to lighten the hull or improve the performance, finish, materials or shape beyond the original is not permitted.

12. TRANSOM DRAIN BUNG

A retaining line may be attached to the transom drain bung and the gudgeon.

13. SELF BAILER

A self-bailing device as supplied only by the builder may be added. The bailer may be sealed with tape, filler or glue along its edge where it joins the hull and at the screw hole. Filling the screw hole level with the flat surface of the bailer is permitted. Fairing the flat surface of the bailer to the hull shape or changing the profile of the bailer is not permitted.

14. CENTREBOARD

(a) A rope handle passing through not more than two holes of maximum diameter 12.5 mm above a line drawn from the bottom of the centreboard stop, parallel to the top of the centreboard is permitted.

(b) The trailing edge of the centreboard may be sharpened by sanding the blade between the trailing edge and a line 100 mm parallel to the trailing edge, provided the distance between the leading edge and the trailing edge of the blade is not reduced.

(c) Surface refinishing of the centreboard is permitted provided the original shape, thickness and characteristics are not altered.

15. RUDDER

(a) The trailing edge of the rudder blade may be sharpened by sanding the blade between the trailing edge and a line 60 mm parallel to the trailing edge, provided the distance between the leading edge and the trailing edge of the blade is not reduced.

(b) Surface refinishing of the rudder blade is permitted provided that the original shape, thickness and characteristics are not altered.

(c) The rudder bolt may be replaced with a larger diameter bolt no greater in diameter than the existing hole in the rudder blade (9.5 mm). The diameter of the bolt head, nut and any washers shall not exceed 20 mm diameter.

(d) To achieve the maximum 78 degree rudder angle relative to the bottom edge of the rudder head, the leading edge of the blade may be cut away where it touches the spacing pin.

(e) To restrict the rudder angle to maximum 78 degrees relative to the bottom edge of the rudder head, the lower forward spacing pin shall be wound with flexible adhesive tape.

(f) The rudder pintles may be fitted with spacers to lift the rudder head to allow the tiller to clear the deck at the transom.

(g) The rudder downhaul line may have multiple purchases.

(h) A hole may be drilled in the top rudder pintle and a pin or clip inserted in the hole to prevent loss of the rudder.

16. TILLER

(a) The tiller and tiller extension are not restricted in any way except that the tiller:

i. shall be capable of being removed from the rudder head.

ii. shall be fitted with a cleat for the downhaul.

iii. shall, except for normal wear caused by the traveller rope, be straight along its topmost edge between a point 30 mm in front of the forward edge of the rudder head and the cockpit end of the tiller.

(b) The tiller may be fitted with an “anti wear” strip or tube of not more than 200 mm in length placed above the level of the straight edge required by 16 (a) iii and only where the traveller crosses the tiller.

(c) The use of a tiller retaining pin is optional.

17. HIKING STRAP

(a) The hiking strap may be substituted with any type of non-stretch material and it may be padded.

(b) The hiking strap may be fixed to the cockpit at the forward end by wrapping the strap around the mainsheet block plastic pressure plate or by using both the centreboard friction attachment plate and the mainsheet block plastic pressure plate.

(c) The hiking strap supporting line between the aft end of the hiking strap and the eye straps on the aft face of the cockpit may be rigged in any manner so that the hiking strap is fixed or adjustable.

(d) A shockcord may be attached between the aft end of the hiking strap and to either the traveller cleat, or the hiking strap eye straps at the aft end of the cockpit.

18. BOOM

(a) A metal sleeve supplied by the builder of maximum length 900 mm may be fixed inside the boom. The sleeve shall not extend aft of the point 1220 mm from the front end of the boom (including plug).

(b) The stainless steel mainsheet eye strap between the two blocks on the boom may be replaced with a soft strap.

19. MAST

(a) To prevent abrasion of the mast step, a tube or collar of uniform thickness not exceeding 1 mm may be placed around the entire circumference of the lower mast or the mast step cavity. The tube or collar shall not extend more than 10 mm above deck level.

In addition, a disc of uniform thickness not exceeding 1mm in thickness may be placed in the bottom of the mast step.

(b) The mast or mast cavity may be lubricated.

(c) Tape or other bushing material may be applied to both the plastic end cap, the collar of the upper mast and the upper mast to ensure a snug fit. The tape or bushing material may only be used on that portion of the plastic parts that

actually slide into the lower section and/or between the upper mast and the collar and it shall be a uniform thickness around the circumference. Taping or bushing material above the collar to fair the collar into the mast is prohibited.

20. INSPECTION PORTS

Inspection ports not exceeding 153 mm internal diameter may be installed on the deck or in the cockpit to provide access to the hull cavity, provided that any inspection port is fitted with watertight threaded covers (any bayonet mounted parts are deemed to be not threaded). Storage receptacles are permitted underneath hatch covers.

21. CLIPS AND STORAGE BAGS

Clips, ties or bags to stow or secure safety or other equipment may be used on the deck, in the cockpit, or around the mast.

22. COMPASS

One compass is permitted mounted on any part of the deck or the cockpit provided that the hull cavity is not pierced by anything other than the fasteners. Compasses shall not be fitted to inspection ports. Electronic and digital compasses are prohibited.

23. WIND INDICATORS

(a) Wind indicators may be attached as desired provided the sail is not cut and the buoyancy qualities of the hull and mast are not impaired.

(b) Ribbons, wool or similar wind indicators may be attached to the sail.

24. TAPE

The use of flexible adhesive tape or similar is permitted to secure shackle pins and clips, and to bind sheets, lines and rigging, except that tapes shall not be used to construct new fittings or modify the function of the existing fittings.

25. SAFETY EQUIPMENT

Any additional equipment required by an international, national or other governing authority for safety purposes may be fitted or carried provided it is not used in contravention of the FUNDAMENTAL RULE.

26. REPAIRS AND MAINTENANCE

(a) Repairs and preventative maintenance to the sail, hull, deck, centreboard, rudder, mast, boom or any fittings and fixings may be carried out without violation of these Rules provided such repairs are made in such a way that the essential shape, characteristics or function of the original are not affected.

(b) In the event of the failure of any fittings, or the replacement of fittings as authorised by these Rules, the fitting or the replacement shall be the same type as the original and shall be placed in a position conforming to the Measurement Diagrams.

(c) Preventative maintenance shall include the replacement of fastenings with alternatives and the reversing of spars provided that the fittings are replaced in accordance with the Measurement Diagrams (tolerances shall not be used to alter the position of fittings) and that any holes in the top section of the mast are permanently sealed with a rivet or similar to maintain the buoyancy of the mast.

(d) Sail panels and luff sleeves shall not be replaced.

(e) Except as required to facilitate a major hull repair, the foam floatation blocks shall not be removed or replaced. When required to be removed to facilitate a major hull repair, the replacement floatation equipment shall have an equal volume to that removed, and shall be of a size that it cannot pass through a square hole of 220 mm sides. Foam blocks shall not be replaced with air filled cubicontainer bottles.

PART FOUR

LASER RADIAL RIG AND LASER 4.7 RIG OPTIONS

Part 4 of the Laser Class Rules shall be read in conjunction with the remainder of the Laser Class Rules.

When the Laser Radial or the Laser 4.7 rigs are used the Rules of Parts 1, 2, 3 and 5 of the Laser Class Rules apply except where specifically amended by Part 4.

27. LASER RADIAL

(a) The Laser Radial sail and bottom mast as supplied by a licensed Builder shall conform to the measurement diagrams which form part of these Rules.

(b) The Laser Radial rig may be used in any Laser regatta subject to the conditions in 27 (c) and any restrictions in the Notice of Race and Sailing Instructions.

(c) The Laser Radial rig may only be used in District Championships and higher level regattas when prescribed in the Notice of Race and Sailing Instructions.

(d) In a series of races a Laser Radial rig shall not be changed for a Laser or Laser 4.7 rig. A series is 2 or more races that count towards an overall points total.

(e) SAIL REGISTRATION NUMBERS

Rules 4(c) and (f) shall be amended to read as follows:

4(c) For Laser Radial sails with numbers above 153000 and sails purchased after 1st June 1993 the sail numbers shall be glued or sewn on each side of the sail, with the bottom of the numbers on the starboard side of the sail placed along a line parallel to and 400 mm (+ or - 12 mm) below the underside of the middle batten pocket. The bottom of the numbers on the port side of the sail shall be placed on a line 400 mm (+ or - 12 mm) below and parallel to the bottom of the numbers on the starboard side of the sail. The starboard sail numbers shall commence 100 mm (+ or - 12 mm) from the leech and the port side numbers shall finish 100 mm (+ or - 12 mm) from the leech.

(Refer to sail number application diagram for procedure for applying numbers.)

4(f) National Letters, if required, shall conform to the same type, size, spacing and requirements as sail numbers (refer rule 4(b), (c), (d) and (e)) and shall be positioned as follows (also see diagram):

The top of the letters on the starboard side of the sail shall be placed on the bottom edge of the bottom batten pocket and its extension (+ 12 mm). The starboard letters shall commence 100 mm (+ or - 12 mm) from the leech. The top of the letters on the port side shall be placed on a line 400 mm (+ or - 12 mm) below and parallel to the

bottom of the letters on the starboard side of the sail. The port letters shall finish 100 mm (+ or - 12 mm) from the leech. The letters shall all be the same colour.

(f) CLOTHING AND EQUIPMENT

Rule 6(a) shall be amended to read as follows:

6(a) For the purposes of RRS 43.1 (b) the maximum total weight of competitors clothing and equipment shall be 8 kg.

28. LASER 4.7

(a) The Laser 4.7 sail and bottom mast as supplied by a licensed Builder shall conform to the measurement diagrams which form part of these Rules.

(b) The Laser 4.7 rig may be used in any Laser regatta subject to the conditions in 28(c) and any restrictions in the Notice of Race and Sailing Instructions.

(c) The Laser 4.7 rig may only be used in District Championships and higher level regattas when prescribed in the Notice of Race and Sailing Instructions.

(d) In a series of races a Laser 4.7 rig shall not be changed for a Laser or Laser Radial rig. A series is 2 or more races that count towards an overall points total.

(e) SAIL REGISTRATION NUMBERS

Rules 4(b) and 4(c) shall be amended to read as follows:

4(b) On Laser 4.7 sails all numbers shall be in accordance with the Racing Rules of Sailing and shall be of the following minimum dimensions:

Height 225 mm.

Width 150 mm excluding No.1.

Thickness 40 mm.

Space between adjoining numbers minimum 50 mm.

Sail numbers shall be regularly spaced.

Numbers on the starboard side shall be placed above those on the port side.

Each number shall be one colour only.

The numbers shall be solid and easy to read.

4(c) For Laser 4.7 sails with numbers above 153000 and sails purchased after 1st June 1993 the sail numbers shall be glued or sewn on each side of the sail, with the bottom of the starboard numbers placed along the top edge of the seam below the middle batten pocket (+ 12 mm). The bottom of the numbers on the port side of the sail shall be placed on a line 350 mm (+ or - 12 mm) below and parallel to the underside of the starboard numbers. The starboard side numbers shall commence 100 mm (+ or - 12 mm) from the leech and the port side numbers shall end 100 mm (+ or - 12 mm) from the leech.

(Refer to sail number application diagram for procedure for applying numbers.)

(f) MAST

Rule 5 shall be amended to read as follows:

5 The Laser 4.7 bottom mast is supplied with a pre-bend aft of approximately 5 degrees. The pre-bend shall not be increased or decreased. No top mast that has permanent bend in it shall be used at any time.

(g) CLOTHING AND EQUIPMENT

Rule 6(a) shall be amended to read as follows:

6(a) In alteration of RRS 43.1(b) the maximum total weight of competitors' clothing and equipment shall be 7 kg.

PART FIVE

29. AMENDMENTS

Amendments to these Rules shall be approved by each of:

(a) the World Council

(b) the Advisory Council

(c) at least two thirds of the membership replying in writing to the International Office of the Class in response to a postal ballot published by the International Office of the Class. Only those postal votes returned to the International Office within 6 months from the date of publication of the rule change shall be valid, and

(d) the ISAF.