



## **THE FIREBUG CLASS RULES**

**January 2004**

### **INTRODUCTION**

#### **0.1 The FireBug Philosophy**

The FireBug is a 2.4 m (8-0") build-it-yourself yacht intended to provide opportunities for as many people as possible, especially children, to enjoy amateur boat building, sailing in their own boat and share the excitement of yacht racing. Based on the principle 'keep it simple, keep it cheap' this boat is the ideal introduction to the wonderful world of building boats and sailing. The designer, New Zealander John Spencer said of the FireBug, "I think it is the best boat ever for learning."

#### **0.2 These Class Rules**

These rules are not unduly restrictive for amateur builders and are primarily intended to ensure that all boats be similar in sailing capability and that costs remain low. It is critical to the success of the FireBug as a club racer that all boats wanting to compete in regattas are similar in performance. Good rules also prevent older boats from becoming obsolete.

It is also important that the boats have sufficient controls and adjustments to enable nice handling and competitive racing, yet avoid unnecessary complexities. The limitations on equipment keep costs down but in no way make the 'Bug a budget boat. It is more a matter of, 'Properly designed boats do not need fancy and expensive gear to make them sail well.'

#### **0.3 New Documentation dated June 2003**

During 2003 the plans, including the full size patterns, were re-drawn and the building instructions re-written to improve clarity for builders, incorporate some structural changes and clear up some areas where misunderstanding was occurring. The structural changes simplify the building process and also the materials list yet none of the changes is expected to significantly affect the hull weight or sailing ability. Any reference in these rules to the 'Plans', 'Building Instructions', 'Full Size Patterns' or 'The Documents' may relate to either set of documentation with preference given to the most recent.

**0.4 Basic Plan Compliance;** The boat must generally comply with the construction details shown in the plans and building instructions. Total disregard to the standard details will make a boat ineligible as a Firebug. Genuine construction errors by amateur builders and isolated non-compliance items will be considered on their merits. Communication at an early stage is recommended.

**0.5 Disputes;** The spirit of the 'FireBug Philosophy' will at all times be to the fore should any rule compliance disputes arise. Rule bending, continued use of non-complying gear or manipulative use of tolerances in an attempt to get the boat sailing faster for the purpose of winning races will not be permitted. Persistent infringement may result in disqualification without warning under these introductory clauses alone. Communication at an early stage is recommended.

**0.6 Measurement;** It is suggested that if possible, boat measurement should take place well prior to the event to avoid possible problems or disputes on the day.

## **1. THE BASIC HULL**

### 1.1 Construction

The Firebug hull is to be constructed from timber and plywood. With the exception of the bottom, which is to be a minimum thickness of 9mm, ply is to be 4 mm thick minimum, all of a conventional type suitable for boat building.

### 1.2 Basic Hull Shape

The hull shape must be in accordance with the plans and building instructions. The basics are: The maximum overall length is to be 2390 mm. The slope in the bow is to be 20 mm. The maximum beam at station (3) is to be 1208 mm. Maximum hull depth at (3) is to be 413 mm. The bottom is to be 600 mm wide (less bevelling off) for the full length of the boat and not vee'd in any way. The deck is flat. The cockpit bulkheads and stern are to be at 90 degrees to the deck.

1.3 Tolerances; Tolerance on maximum length is +5 or -15. For all other dimensions over 1000 mm a tolerance of + or - 15 mm is permissible. For dimensions under 1000 mm + or - 6 mm. For chines, gun'ls etc + or - 3 mm. For centreboard and rudder blade thickness + or - 2 mm. The maximum allowable 'hog' in the deck is 10 mm. Any exceptions to these tolerances will be specified in the section of these rules relating to that item. No accumulation of tolerances is permissible. No manipulation of tolerances is permitted, ie tolerances are to accommodate isolated building indiscretions and are not intended to allow hull shape development. Measurement checks will ignore any local radiusing, ie on gunwales etc.

1.4 Weight; The hull, in dry condition, complete with permanently attached fittings must weigh more than 40 kg. Un-natural concentrations of weight are not permitted. The plywood type (species) must be the same throughout ie not heavy for the bottom and light for the remainder. An 'angle of balance' test may be introduced without notice to counter such practices.

Hulls that weigh light must be corrected with equal weights attached centrally to both the forward and aft girder and in such a position that they can easily be checked through the inspection ports.

Permanently attached fittings include; chainplates, cleats, gudgeons, block on centrecase, stack straps, mast step, inspection ports, coamings, bridle and centreboard band.

1.6 Cockpit; No automatic bailers, drain holes or false floors are allowable. A limber hole through the girder is permitted. The cockpit is to have sides as shown on the plans to ensure in a capsize any water in the cockpit empties out. Any inspection ports or lockers are to be air tight when the boat is sailing to ensure the integrity of the buoyancy system. A plastic bailer attached with a lanyard must be carried.

1.7 Coamings Cockpit coamings to deflect water from entering the cockpit are permitted. Maximum height 50 mm. Recommended material: 12 mm timber. Folding down is OK but must be in raised position if racing. Coamings are to be attached in the mast/chainplates area.

1.8 Inspection Ports; Plastic inspection ports (nominal 125 mm inside diameter recommended) are required in bulkheads 2 and 4. Ports of any size are optional in the cockpit sides.

1.9 Lightning Holes; The only lightning holes permitted are those in the bow and or the stern. No hollowing out is permitted.

1.10 Ballast; Ballast is not permitted.

1.11 Carlins The minimum finished flat face of the cockpit carlins including ply is to be 50 mm.

1.12 Rubbing Strips and Lifting Handles; Rubbing strips, in wood (max width 12 mm) or plastic, and lifting handles are permitted provided they are not shaped in such a way that they enhance the performance of the boat.

1.13 Plywood Overhangs; Plywood extending beyond the face of the stern, bow or sides is not permitted.

1.14 Tow rope; A 6.5 m tow rope of 8 mm floating rope is to be permanently tied or spliced in place on the forward chainplate. This rope can also be used as a safety line when passed through the side chainplates, bridle eyes and back to the forward chainplate.

1.15 Wind Indicator; A wind indicator may be mounted on the foredeck.

## **2. THE RIG**

2.1 Mast; The approved mast is to be the Fosters F4 aluminium section in its unadulterated form except for the removal of the track to the gooseneck, ie no tapering, lightening, squeezing out of shape, permanent bend, reduction of the wall thickness or cutting of the track is permitted. A mast bend test may be carried out if it is suspected that a particular mast is unusually bendy. The maximum length including the base plug is to be 4200 mm (tolerance -10 + 0). The gooseneck is to be attached so that the centre of the pin is 500 mm from the end of the mast. Fore and aft movement of the lower end of the mast whilst sailing is not permitted.

Masts may be fabricated in two parts and permanently joined with a sleeve.

2.2 Boom; The approved boom is a drawn aluminium tube 44.45 mm outside diameter x 1.42 mm wall thickness. The maximum overall length 2100 (tolerance -10 + 0). The saddles for sail attachment are to be centred 12 mm and 60mm from the boom ends respectively. The saddles may be of stainless steel or plastic. The stainless steel saddle may have a ferrule fitted.

The gooseneck bolt hole is to be central through the section.

The saddles for block attachment are to be positioned approximately above the bridle and centrecase blocks. The cleats for sail adjustment are to be positioned approximately 400 mm from the boom ends.

2.1.a Wooden mast and boom; Wooden spars work fine on the 'Bug but due to the possible speed advantage obtainable 'tuned wooden spars' are not eligible for regatta racing.

2.3 Gooseneck; The gooseneck is to be fixed in the horizontal plane so that the mast rotates with the boom. No exaggerated rotating is permitted. The gap between the after face of the mast (track removed) and the forward end of the boom is not to exceed 25 mm.

2.4 Masthead and Halyard; The masthead fitting is not to raise the halyard more than 40 mm above the top of the mast. The attachment of a wind direction indicator is permitted. It is recommended that the halyard be internal. Either way it must cleat on the mast as shown so the sail can be lowered from the boat. Halyard locks are not permitted.

2.5 Hounds and Stays; To allow the mast to rotate freely, the stays are to be attached to the mast by way of a saddle on the forward face, 2800 mm (+ or - 25 mm) from deck level. Stays are not

to be adjustable while sailing. Stays are to be attached to the chainplates with a cord lashing, and a shackle if desired. Sidestay adjusters are not permitted.

2.6 Kicker; The kicker is a double purchase cord. Low stretch eg 'spectra' 4 mm cord is recommended. The cord attaches to the mast washer, then passes through the forward block saddle on the boom, back through the mast washer, then to a metal cleat on the deck. A single length of heavier cord would also be acceptable. No blocks, sheaves or levers are allowed. It is not intended that the kicker be adjustable when sailing except by using the mainsheet system.

2.7 Mainsheet Bridle; The mainsheet bridle is to be cord or rope attached by knots to saddles or plastic eyes fixed no more than 50 mm from each corner of the stern. The amount of slack is optional but no adjustment while sailing is permitted.

2.8 Boom Bungee; A shock cord may be looped between the boom and forward chainplate to hold the boom forward whilst sailing down wind.

2.9 Adjustment strips on spars; Stick-on graduated reference strips may be attached to the mast and boom as a tuning aid.

### **3. CENTREBOARD, RUDDER & TILLER**

3.1 Centreboard; Material - wood. The centreboard length is to be 900 mm, width 230 mm and thickness 19 mm (tolerance on thickness + 0 or – 2 mm) with a timber grip. The portion of the centreboard projecting below the boat is to be shaped to an aerofoil section. Lightweight timber, eg cedar core, and fibreglass coating is not permitted. A plywood centreboard is acceptable only with a glass coating. Plywood on its own is not strong enough in some situations.

3.1a Centrecase Top; The centrecase top is to be 19 mm thick timber approximately to the shape on the drawings.

3.1.b Centreboard bungee; A bungee (shockcord) band is to be stretched around the centrecase and centreboard so that the centreboard holds in place during a capsize. This cord may pull forward against the board or aft. A length of plastic tube is permitted on the band to stop jamming. Also a clip and cord needs to be in place to prevent the centreboard from floating away during a capsize. It is MOST IMPORTANT that the centreboard doesn't become detached from the boat unintentionally.

3.1.c Centrecase Slot; The slot in the centrecase is to be 21 mm wide (tolerance + or - 2 mm) and 260 mm fore and aft for the entire depth, ie no fairing pieces or rubber bits are permitted.

3.2 Rudder Stock; Material - wood. The stock is to consist of three layers of 19 mm timber with a vertical dimension of 360 mm on the forward face.

3.2.a The Rudder Blade; Material - wood or plywood. A fibreglass coating is permitted. Lightweight core materials eg cedar or foam are not permitted. The blade length is to be 600 mm, width 200 mm and thickness 19 mm (tolerance on thickness + 0 or – 2 mm) shaped to an aerofoil section.

When attached to the hull and fully down no less than 425 mm of the blade must project below the stern. The rudder blade should pivot up in the manner shown on the documents and down to near vertical, preferably with a hold down cord as detailed.

3.3.a Tiller; Material - wood. The tiller is to be an integral part of the rudder stock. The recommended length is 600 mm from the face of the stock and the forward end should be about 170 mm clear of the deck when attached to the boat. Actual dimensions may be varied to suit the needs of the individual.

3.3.b Tiller extension; The tiller extension may be wooden or aluminium tube connected to the tiller with a screw, metal or plastic connector. A retaining clip may be used to keep it in place on top of the tiller when not in use.

3.4 Gudgeons; The gudgeons and rudder assembly must be such that the gap between the rudder blade and the hull be not more than 100 mm with the rudder aligned straight ahead.

3.5 Rudder Retaining Clip; A safety clip must be in place to prevent the rudder from becoming detached from the boat unexpectedly. It is MOST IMPORTANT that the rudder does not unintentionally detach from the boat in a capsize.

3.7 Stack Straps; Stack (hiking) straps may be modified to suit the individual skipper. Trapezes are not permitted.

## **4. THE SAIL**

4.1 Cloth Type; The sail is to be manufactured to the details shown on the sailplan from 4 oz dacron. Any colour combination is permitted.

4.2 Battens; The top batten is to be full length. Two only other battens are to have a maximum length 600 mm. Battens are to be located at the positions shown on the sail plan.

4.3 Dimensions; The sail luff is to be 3600mm and foot measurement 2000 mm. Refer to the sailplan for additional dimensioning and detailing. Measurement checks are to be carried out with a 5 kg tension in the fabric in the direction of the measurement.

At no time are the sails to be stretched beyond the attachment points on the mast and boom.

4.4 Bolt Rope; The bolt rope is to be conventional cord. Bungee or shock cord is not permitted.

4.5; Class Insignia; The Firebug insignia is to be shown back to back on both sides of the sail in any distinctive colour(s).

4.6 Registration Number; Each boat must display a proper sized registration number on both sides of the sail in any distinctive colour(s).

4.6.a Registration; Registration fees must be fully paid up with FBHQ. Registration numbers are issued with each set of drawings and once issued can not be reissued.

4.7 Outhaul; The sail clew is to be attached to the boom with cord. The outhaul cord ties to the saddle on the boom, up through the sail clew, back through the saddle then into a cleat on the boom. No blocks or additional purchases are allowed. It is not intended that the outhaul be adjusted whilst sailing. The saddle may be plastic or stainless steel with a ferrule. The cord may have a plastic knob. A clew tie down cord is to be used in conjunction with the outhaul. The tie down cord simply ties through the clew and around the boom reducing the load on the outhaul and keeping the boom up.

4.8 Downhaul; The sail tack is to be attached to the boom with a cord. The cord is to tie to the saddle on the boom, up through the sail tack, back through the saddle and then into a cleat on

the boom. No blocks or additional purchases are allowed. It is not intended that the downhaul be adjusted whilst sailing. The cord may have a plastic knob. No additional luff adjustment (eg cunningham eye) is allowed.

4.9 Reefing Points; Reefing points are permitted and should be used whenever the breeze is up, especially for the inexperienced sailor. The first reef is to be at a distance of 450 mm from the foot. A second reef at 900 mm (ultra docile mode) is optional for training but not to be used while racing.

4.10 Telltales; Sail telltales are permitted.

4.11 Windows; Windows in the sail are not permitted.

4.12 Mainsheet System; The mainsheet is to be set up as shown on the plan, ie at least 3 blocks located at the points shown and a bridle. Cam cleats and ratchet blocks are permitted. A dropper to prevent the skipper being caught in the mainsheet is also permitted.

4.13 One Sail per Regatta; Only one sail can be used in any one regatta.

## **5. SAFETY REGULATIONS**

The boat must be used in compliance with the Yachting New Zealand's Safety Regulations for centreboard boats. A copy of these regulations can be obtained from YNZ or FBHQ. Additional safety gear may need to be carried to comply with club rules to cope with specific local conditions.

It is MOST IMPORTANT that all sailors wear an approved flotation vest when on the water.

## **6. CLASS NAME**

This dinghy is to be known as the 'FireBug', 'Bug', 'FireBug 2.4' or 'Spencer 8'. Credit for the design is to go to John Spencer, for development and promotion Peter Tait at FBHQ.

## **7. COMMERCIAL INVOLVEMENT**

Any person or organisation wanting to get commercially involved with the FireBug is advised to contact Peter Tait at FBHQ. Permission must be obtained and in some cases a written agreement concerning royalties will be required. Copyright for the design and documentation is held by Peter Tait.

## **8. CREW**

There is no restriction on age, weight or number in the crew. Clubs at their discretion however may divide the fleet, Junior, Senior etc.

## **9. CLASS ADMINISTRATION**

As the class becomes established an owners' association(s) may be formed to provide a central/local administration. To ensure that a splinter group with its own agenda does not get away from the basics, it is intended that FBHQ have power of attorney over any decision relating to the design, the plans, class rules or the basic philosophy.

## **10. RACING, TROPHIES etc**

Initially racing is to be limited to club, provincial and island regattas (see 10.1 below). For the provincial and island regatta only those who normally sail a FireBug and live in that particular province or island will be eligible. This is intended to prevent fast sailors from out of the district or from other classes taking big trophies out of the hands of the regular sailor and generally to avoid the high costs and hoopla that is associated with some racing classes. Regattas should also include social activities to ensure an all round 'fun' event.

### **10.1 INTERNATIONAL REGATTAS**

There is considerable interest both locally and from overseas in a sponsored International FireBug Regatta open to all FireBug owners. This may be a club calendar event but may also be an independent occasion at a specifically selected venue and date to ensure good fleet numbers and the best chance of suitable weather and conditions. It is envisaged that the Regatta would be a well organised event featuring both racing and social activities and attracting considerable publicity for the class and any clubs involved.

An addendum to these rules specific to such a Regatta will be issued prior to the event.

### **11. GENERAL SAFETY**

Attention is drawn to the fact that both the sea and boat building workshops can be dangerous places. Remember - care is required at all times.

### **12. DISCLAIMER**

FBHQ and the promoters of the FireBug disclaim every and any responsibility for injury or damage that may occur to persons or property as a consequence of building or sailing the FireBug dinghy. All actions and decisions relating to safety must be the responsibility of those present at the time.

### **13. SUPPORT:**

Excellent support in the form of advice, publicity, technical assistance and shopping discounts, has come from various companies within the marine industry. Many thanks to: Doyle Sails, Fosters, The Rigging Shop, International/Epiglass, Australian Amateur Boat Builder Magazine, RWO Performance Sailing Equipment, Plytech, Unitec School of Boatbuilding, Sealine Marine, CRC.

And also thanks to the following individuals for their enthusiastic support: Steve Ashley, Ray O'Brien, Chris Spooner, Geoff Entrican, Gordon Caley

### **14. FUTURE CHANGES:**

These rules will continue to evolve for better clarity and also to close loopholes which may be exploited by 'rule benders' seeking more speed. However please feel free to make suggestions or forward ideas etc.

Items coming up for discussion include:

- Regatta entries from overseas

These FireBug Class Rules are prepared and maintained by;

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See more at: [www.firebug.co.nz](http://www.firebug.co.nz)