

An introduction to the PS2000 Club 420

by Ian Bruce, President and owner of Performance Sailcraft 2000 Inc.

I should start this off, for the benefit anyone who is considering the boat for racing, by assuring you that the PS2000 boat is not built and rigged to be faster than the two existing approved builder's boats but, at the same time, neither is it slower. I am the person who started the Laser and helped draft the first set of truly one-design rules in the sport of sailing and, as the third licensed builder in North America of the Club 420, maintaining the one-design character of the boat has been our number one priority.

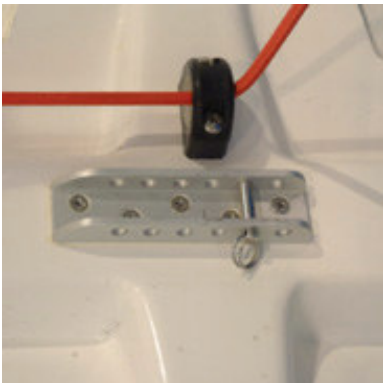
However, doing this has not prevented us from building what we believe to be a better constructed boat for BOTH the racing market and the institutional market. The details shown below are **only those that differ from the other manufacturers** and the pictures follow in the sequence of the Rigging Manual, which is also on this site as a PDF. I suggest you open the PDF and print the Manual – it will print quickly and easily on any printer.



■ The attachment point of the trap wires and shrouds to the hound fitting is shrink-wrapped to avoid snagging of spinnaker cloth particularly if the spinnaker blows back through the shrouds on a take-down.



■ Although ALL the rivets in the mast are either “closed end” or are filled with silicone, the shroud bolt is difficult to waterproof. This area of the mast between the dotted lines has been FOAMED after drilling, then re-drilled for the shroud bolt which is then put in with a sealant. The mast is absolutely waterproof.



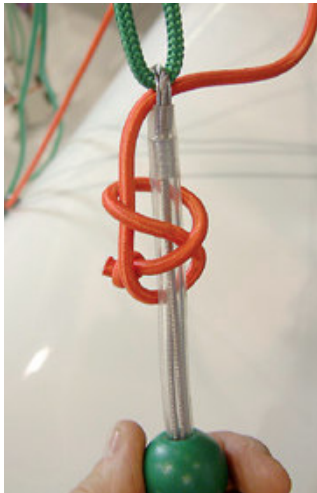
■ Next to the mast step you will notice a bullseye permanently mounted to the top of the web frame. It is for the topping lift shockchord retractor. We have done this instead of tying a block through a limberhole drilled in the web. We do not drill a hole in this structure as to do so exposes raw fibreglass to a great deal of moisture. The small amount of water trapped in front of the web can be sponged out.



■ The bow fitting is a solid, single piece as opposed to the two standard “L” shaped formed pieces and cannot be crushed when the boat is turned upside down or is being loaded on a trailer. Rope attachment is made easy with lots of space around the pin.



■ Shroud adjusters are attached to the deck with solid 1/4” bar eye straps as opposed to the normal, “L” shaped, bent plate. They will not bend or flatten and are attached with 1/4” machine screws and bolts, through the gunwale. The gunwale is reinforced, in the laminate, for the chainplate load and a “flat” area is moulded into the underside of the gunwale to allow for proper seating of the nuts and washers.

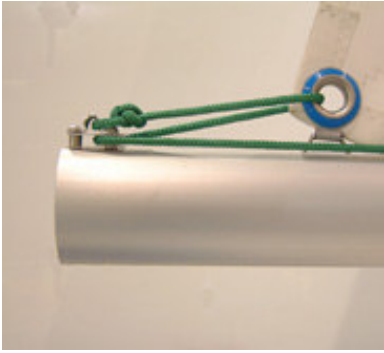


■ We do not offer the boat rigged with a trapeze ring unless specifically asked to do so and require a waiver signed by the purchaser. Trapeze hooks have been the cause of a spate of accidents, some fatal, and we offer a safer alternative in the form of the Bethwaite safety harness that does not use a hook but rather a ball engaged in a smooth, unsnaggable, quick release plate. The picture at left shows the method outlined in the manual for attaching the shockchord to the ball. The green rope is the height adjuster. The picture at right shows the plate, separate from its harness.

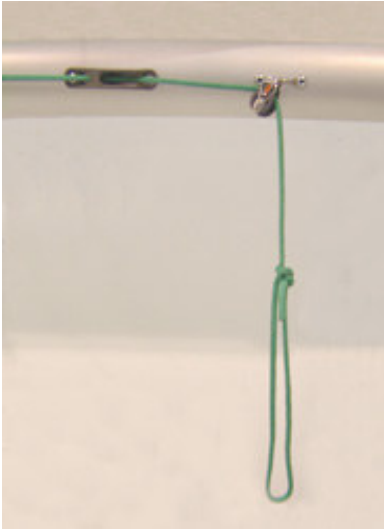


■ Mainsheet rigging is standard with the exception that the boom blocks are removable and are not captured by the boom bails. They are swivel blocks with the ability to lock out the swivel in any axis with a flat screwdriver





■ The outhaul has **NO FITTINGS ON EITHER SIDE OF THE BOOM**. This is **EXTREMELY** important as a fitting on the side can, (and does!), easily catch the forestay of another boat and take its rig down. The outhaul block is mounted on top of the boom and the deckstrap on top of that block.



■ The forward end of the outhaul is passed through a turning block after going through the cleat which allows the outhaul to be pulled on easily from either side of the boom. There is a little more friction pulling from the port side as the rope passes under the boom but it works and a little sunscreen on the rope makes it work even better!



■ This is a view looking up under the aft end of the C/B cap. The vang is standard 16:1 cascade terminating under the C/B case. However, attachment of the final part of the control to the C/B cap is made easy by the use of a deckstrap bolted onto the underside of the mainsheet block bolts which allows the line to be passed through the strap with a stopper knot at the end and a knot does not have to be tied, blind, under the cap. (Note spinnaker fairlead on back flange of cap)



■ Jib halyard is fairly standard with a single block and becket attached to the end of the wire. However, we use a bar becket and recommend passing the tail of the halyard through the becket (which is wide enough) a second time to produce a 5:1 instead of a 3:1 purchase. The bar becket does not squeeze the ropes together.



■ The Cunningham is rigged as a 4:1 purchase instead of the normal 2:1. This is done by dead-ending the rope in the provided groove under the Clamcleat on the starboard side, then passing it through a fairlead on the port side of the mast, then back to the cleat. N.B. The first two photos show the old style sail and its tack arrangement. The third shows the new sail - there is no tack grommet and the foot is attached to the mast track with a slug.



■ Centreboard, uphaul and downhaul are standard with the exception that the downhaul is attached to a trip cleat that will release if the board hits bottom. The release pressure is adjustable (you will find reference to this at the end of the Manual) but it is usually kept at the minimum.



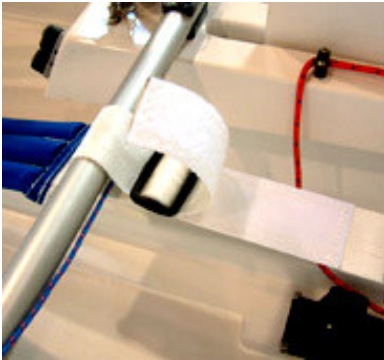
■ The final part of the 2:1 C/B uphaul is attached under the cap to the same deckstrap and in the same fashion as the vang, as seen here looking up under the C/B cap.



■ The bailer is plastic. We will not install metal bailers in any boat that can capsize and have the sailor come in contact with the bailer while sliding over the side. The sharp edges of a metal bailer can cause serious lacerations. (I have 16 stitches in my thigh from my Finn days!)



■ The traveller bar is a tube as opposed to the standard square section. This is much easier on shins and on hiking boots. The hiking straps are attached to the traveller bar with a loop in the strap.



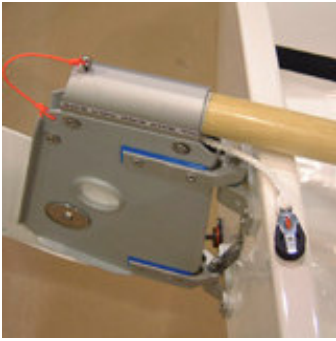
■. The loop also adjusts, by means of a buckle and Velcro, the tension on the FRONT portion of the strap. Tensioning of the aft section of the strap is done at the back end of the strap. An adjusting line controls the in and out position of the strap. See below.



■ The blue line adjusts the position of the straps in and out. The bracket that attaches the traveller to the side tanks does not have the normal sharp corner at the top of the bracket which can cause serious injury to a leg or, particularly, a knee. That corner is there in other boats because of the requirement to have holes for a pin to attach the bridle. Our bridle is attached to a deckstrap on the top of the traveller bar, which means our bracket has no need for a hole.



■ The rudder stock has a large lock-up nut which will hold the blade off the ground on shore. It is also tightened when sailing to make sure the blade is held firmly in the cheeks when lowered.



■ The downhaul uses NO WIRE OR SHOCKCHORD in the system. A Spectra core runs over the top spacer between the cheeks and under the lower spacer and into a hole drilled through the rudder (like the Laser). See picture at left. There is no



deckstrap attached to the blade – no deckstrap to pull out or split the rudder - and the operation of the downhaul is smooth, clean and positive. The Spectra chord ends spliced to the block.



■ A tensioning rope, dead-ended on the tiller cleat, provides a 2:1 advantage when passed through the block and back to a trip cleat. If the rudder touches the bottom, the trip cleat will release. Details of setting the release pressure are shown in the Manual. The minimum is all that is required. This removes all shockchord from the downhaul tackle and makes, together with the wing nut, a completely positive blade lock-down system

Other details not shown in Rigging Manual

■ All backing for the tank top and other high load fittings on the boat (e.g. the bow fitting) is done with aluminum plates in the laminate. Mounting is with machine screws that are TAPPED into the aluminum and require no bolts behind. If you cannot reach the underside of a fitting, the fastener is either a machine screw or a self-tapping screw, greatly facilitating the replacement of fittings.



■ The rear corners of other boats are a weak point as the gunwale is cut away at the corner and the rubbing strip stops short of the corner. As a result, this is a high-damage area. See picture at left of a boat in a local sailing program. The PS2000 boat has the total gunwale laminate going COMPLETELY AROUND THE CORNER and across the transom. The rubbing strip also goes around the corner. This makes for a very strong structure (like the Laser). It is shown at lower left and right, without and with rubbing strip.





■ There is a hollow, (class rule), raised box section that runs in the centre of the floor from the centreboard box back towards the transom. The top corners of this section are frequently seen in club fleets with stress and gelcoat cracks on the corners as this area is always being stepped on. We have put a very large radius on the top corners of the PS2000 box section and the laminate is heavily reinforced with woven roving.



■ The guy hooks, while appearing to be the same are, in fact slightly different. The standard fitting has the extension of the hook rod passing through the fitting and the gunwale. It is threaded for a nut on the underside. There is almost no leeway for the position of this hole through the gunwale as it has to land in the middle of the curved recess under the gunwale. The PS2000 fitting has the hook welded to the plate and a provision for 2 fasteners on the centreline of the fitting. This allows the fitting to be positioned FURTHER INBOARD, which is

important, because it is more protected by the gunwale. Both fasteners are bolted under the gunwale. These hooks are always being damaged.



■ The guy cleat is mounted on a solid base and bolted through the gunwale. On other boats, the cleat stands up on two plastic spacers leaving it vulnerable to damage as it is easy to bend the bolts going through the spacers.



■ The centreboard gasket area has NO ALUMINUM STRIPS, OR SCREWS, holding the gaskets in place. The screws invariably pierce the hollow keelson on either side of the C/B box inside the boat and, if the strip is banged, and the screw loosened, water gets into the hull. Removing and replacing screws is also a recipe for eventual leaking. Our gaskets are inexpensive Mylar and are held in place with a 3M 100% solids adhesive. Club or program staff can change them easily as we supply replacement strips with the adhesive already in place.

You just clean off the old stuff, remove the protective tape and glue down the new flaps. They may not last quite as long as the sailcloth but are far more easily replaced and do not kink like the sailcloth. The previous picture shows a pre-cut, fitted, mylar set showing the adhesive strips attached to the mylar, ready to install, with the protective tape in place.

■ The underside of the centrecase top is reinforced, for its full length, with ½” marine plywood which is glassed in place and then tabbed to the side of the box and to the outside flange of the cap. It provides excellent stiffness to the top as this is a heavily worked area. No picture.

■ The centreboard, down in the tip area, has a solid wood strip insert behind the leading edge so that, if the tip is bruised or broken, it is fairly easy to re-glass as you are not into soggy foam! No picture. There is simply no comparison between the quality of our foils and others!

■ We were asked by two coaches if we could not come up with something more efficient and more nautical looking than the present bow bumpers! After exhausting all manner of mouldings and pads, we decided to develop our own moulded bumper for the bow. It is a cast, two-part elastomeric urethane (Shore A 50 for those engineers amongst you!) that is resilient but very tough. It is cast to the exact shape of the bow and is the thickness of the gunwale overhang at the top, tapering down to about 3/8” at the bottom. It is carried far down the bow but is well shaped in the lower part to reduce wave impact drag. It is affixed with Sikaflex and without any fasteners through the laminate and can be replaced by any club or program staff. Two pictures are of a casting with a little black pigment to better show the shape and form. They are normally cast in white as in the third picture of a finished boat but a club or institution can have black, blue, green or fire engine red!

