

Custom Step-by-Step Victoria R/C Sailing Yachts by OMSA
revision August 14, 2007, Chapter A

Okanagan Model Sailboat Association, Kelowna, B.C. Canada



[Forward to Step-by-Step Chapter B](#)

[Return to Step-by-Step Menu](#)

[Download Printable Chapter A \(Adobe PDF file\)](#)

Your Tool Box

The construction of your Victoria racing sailboat will only require a few basic tools including:

1 oz of cyanoacrylate glue (c/a glue), from hobby shop
1 tube of "Goop Marine" or "Amazing Goop" by Eclectic Products Inc.
a set of small screwdrivers: flat blade and philips head,
a needle nose pliers, cutting pliers,
an electric drill
a hobby knife
a ruler or tape measure
a hack saw
a round file and a flat file

drill bits: particularly a 1/16" and a #40 or 3/32" bit

Do yourself a favour and buy a couple of new drill bits for your project.
They will make your project much more enjoyable.

Step A1: Display Stand



Stand back and admire your work.

Construct the boat display stand. It will serve as a building platform for your Victoria. Laminate the supplied plywood pieces together and let dry for a few hours under pressure. Almost all of us **use the common white carpenter's glue** that can be found in most homes. When dry, lightly sand the 4 pieces and assemble.

The pieces should lock together solidly with a bit of persuasion..

Once assembled it now easy to spray paint the entire

very nice.....

unit. The supplied soft foam tubing will be split lengthwise with a scizzors and installed onto the tops of the cradle and cut to length.

Step A2: Hatch opening

The first operation on the hull is to **cut out the hatch opening** from the top of the deck as per the supplied instruction in the manual. A sharp modeler's knife (Xacto blade) works very well for this. Note that there appears to be two concentric slots that would accept your cutting knife. The cutting slot that make the larger hatch opening is the correct one.

Take your time so you don't find yourself missing a finger in the process. You will need most of your fingers to sail your boat.

Once the hatch opening is made, it is an easy modification to make the opening rectangular by sawing out the four corner pieces with a hack-saw blade, which makes your future work easier and even saves 3 grams of weight. This procedure is permissable under the class rules.

[Victoria Class Rules Revision 9.0 \(January 2007\)](#)

5. HATCH AND HATCH OPENING

5.1 Hatch cover, including the hatch slides, may be replaced with an alternate hatch cover. Material and shape of an alternate hatch cover is left to the skipper's discretion.

5.2 The hatch opening shape is left to the skipper's discretion, but may not exceed 5 15/16 inches (150mm) in length and 3 9/16 inches (90mm) in width.



Step A3: Installation of the sheet fairleads.

The object here is to guide the control lines (sheets) with minimum friction while attempting to keep water



outside the boat where it rightfully belongs.

Note: To prevent your drill bit from "augering" into the plastic hull, start with a small drill (1/8") and slowly work your way up to the large drill to match your beads.

If your fairleads are too small, you will find considerable resistance to the movement of the sheets when the wind is up. There are specially designed fairleads available through model boating suppliers that work well, but some are fairly heavy.

Get out your portable drill and make two holes in the deck for the two large beads (also known as sheet fairleads) that guide the lines (sheets) for the main boom and the jib boom (jib club).

The hole for the **jib sheet fairlead** is drilled at the point on the deck about 2.5 " ahead of the mast step. There is an existing spot on the deck at this point. Carefully drill and enlarge the hole with a round file to accept a plastic bead of your choice and glue the bead into position so that it is **equally above and below the deck**. This arrangement guides the line through the deck with a minimum of friction and wear.

One solution is to use a plastic fairlead bead available from **LONGBOW** Racing Yachts (part of their basic hardware kit) and requires a 21/64 " hole in the Victoria deck.



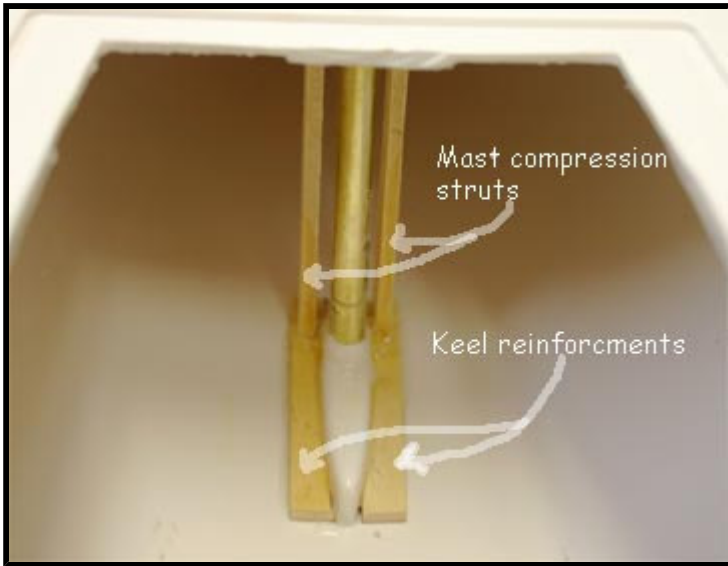
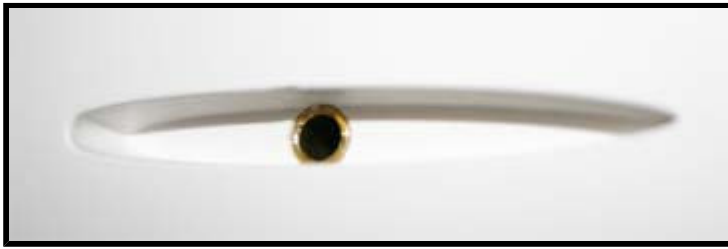
The hole for the **main sheet fairlead** is placed 1/2" to 3/4" rearward from the forward edge of the cockpit. It is important to place this hole on the centre-line of the hull.

Press fit your plastic fairlead into place with a touch of c/a glue to make sure it doesn't move.



A4: Keel tube installation

Now your Victoria is ready for the installation of the keel tube. Insert the brass



This keel-support reinforcement spreads the load of the heavy keel as well as providing a secure "pad" for the mast step support following next.

keel tube in place from the underside of the hull, after ensuring that the deck and hull holes will accept the brass tube. The hull openings always need a small amount of cleaning up with a small round file, **but the keel tube should fit very firmly**. The keel tube must not protrude down into the space intended for the keel but instead should be just even or flush with the upper and lower surfaces of the hull. The deck surface should also be seen to be "flat". **Don't glue the keel tube in quite yet**. It will get secured in step A5.

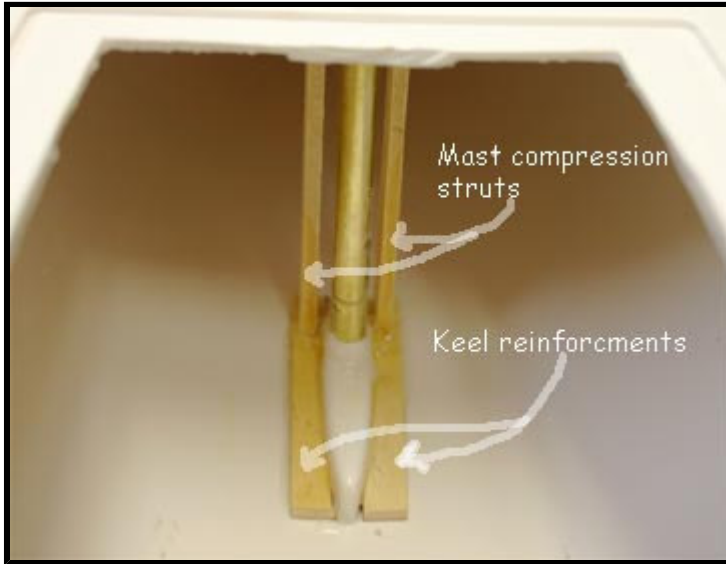
Strengthen the hull surrounding the forward portion of the keel molding with a couple of 5/16" by 2 1/2" light plywood gussets made from the left-overs from your display stand material. **Shape the two gussets to contact the sides of the keel molding in the bottom of the hull and glue in place making solid contact with the keel mold**. We like to use a slow curing adhesive marketed as "Amazing Goop" in the USA or "Goop Marine" in Canada which is available at almost all hardware stores and made by "Eclectic Products Inc". **This "goop" fills in any gaps, sets up to be quite hard and sticks better than anything we have ever seen (including epoxy)**.

Step A5: Mast Step Support

Next **add a couple of light plywood supports between the upper deck and the newly installed keel/hull gussets** so as to support the area around the mast step. One 1/4" wide piece on each side of the mast step extending down to the front portion of the keel gussets should do fine. **These**

Now that the mast step supports have been fitted, you can secure the supports in place at the same time as you secure the keel tube with a small amount of "Goop". Put a bit of goop on a small piece of scrap wood to reach in and **apply the goop the base of the keel tube and to the base of the mast step supports**. After 1-2 hours, turn the boat upside down and apply some goop to the top

compression struts are placed forward of the keel tube, beside the mast step. Fine tune the length of each piece to fit snugly in place.



of the keel tube and mast step support. **Leave the boat upside down to setup for another couple of hours, while you go to the refrigerator and pour yourself a cool one.**

Use adequate ventilation while curing. The "Goop" will **set up hard overnight**, and sticks amazingly well to the hull and plywood. (sticks better than epoxy and is easier to work with)

If these pieces are not included in your design, the boat's deck will take on a serious bow when the mast shroud lines are tightened. The intent is to keep the deck flat even when the mast is under pressure from the shroud lines.

Again, use some discretion to keep the overall weight in check. It all counts...

Step A6: : rudder and tiller arm.

Install the rudder tube as per the supplied Victoria instruction manual. The hole in the hull and the deck invariably need to be reworked a bit to accept the brass tube that will eventually contain the rudder post and the plastic deck insert. Glue in place with c/a glue or with "Goop".. C/A glue sets up infuriatingly quickly when you are trying to install the rudder tube, so "test-fit" the tube carefully, prior to gluing in place.

To avoid a nasty surprise, check that no glue accidentally ended up inside the rudder tube.

Before installing the rudder into the rudder tube, **examine the "flat spot"** at the top of the rudder shaft. If you don't feel that it is quite square with the rudder surface, feel free to alter the flat spot with a flat file. This will help you with the rudder alignment later. You may also be able to rotate the shaft inside the rudder with a pair of pliers.

Spread a thin coating of grease or "Vaseline" on the rudder shaft before inserting into the rudder tube for the final time. This will help prevent corrosion.

Also, our group always plays it safe and **installs a "safety wire"** on the rudder shaft. The wire of choice is the small diameter (.015") nylon-coated stainless steel wire marketed as "Tiger Tail". We will use up the remainder of the wire when we start to rig our mast. Without a small safety wire the



rudder will fall to the bottom of your sailing pond if the tiller screw either stripped or worked loose.

The wire is run through a very small hole (1/32") drilled through the extreme top of the rudder shaft and then looped through the closest hole in the rudder tiller arm and crimped together with a 1/8" length of 1/16" outside diameter aluminum tubing which is available at your local hobby shop and at many hardware stores. This 1/16" O/D aluminum tubing will also get used extensively when we start to add the mast rigging wires and is included in the [LONGBOW Victoria rigging line kit](#).

Step A7: Keel and keel-bulb

Now that the keel tube is installed, check for an easy fit of the keel into the hull opening..

The upper end of the keel always fits too tightly into the hull opening and will need some work with a file to the sides of the very top part of the keel in order to match the taper of the receiver in the bottom of the hull. The keel should fit into the hull deep enough to just "bottom out" in the hull opening. The will bury almost all of the thinner top portion of the keel in the opening.

Next, fit the keel bulb to the keel as per the supplied Victoria construction manual with the factory-supplied two black screws. **For now, don't epoxy the bulb to the keel quite yet.** The keel bulb seems to align itself better if the front screw is tightened up first, then the rear one.

Fasten the keel assembly to the Victoria with the factory-supplied knurled nut and washer. **Do not permanently fasten the keel to the Victoria hull with glue or epoxy.** The keel might need to come off the hull at some point if it gets damaged or if you wish to ship your sailboat any distance.

Under the Victoria class rules, there is a procedure for ensuring that the overall length of the keel is no more than 7 inches as measured from the bottom of the hull to the bottom of the keel bulb. This is measured at a point on the hull immediately aft of the the keel.

Victoria Class Rules Revision 9.0 (January 2007)

6.5 The keel depth with keel attached and secured in its recessed mounting slot in the hull, shall not exceed 7

inches (177.8mm) in depth measured, perpendicular to the waterline, from the point where the trailing edge of the keel fin intersects the hull to the bottom of keel bulb.

Now check that the keel bulb is aligned with hull and refit the keel bulb if necessary. A number of Victorias have shown up at the pond with the keel bulb sloping tail-high a few degrees. Once you are content that the lead bulb is aligned with the hull of the Victoria, you may remove the lead bulb from the keel and mix up some epoxy for the inside of the bulb and reinstall the bulb securely with the two black screws. The epoxy will squeeze up and out of the bulb where you can remove the excess and **with a fingertip, smooth out the epoxy where the bulb joins the keel.** Fill the screw holes with epoxy as well and you are finished. After the epoxy sets up well (1 day), the excess epoxy covering the screw holes may be filed off smooth *and then you may wish to spray paint the keel bulb to cover up any blemishes.*

I highly recommend that you sharpen the trailing edge of both the plastic keel and the plastic rudder to improve the drag characteristics of both items. This is very easily done with a flat file. Here is the class rule (3.4) that applies.

Victoria Class Rules Revision 9.0 (January 2007)

3. FAIRING AND FINISHING

3.1 The hull, deck, keel and rudder shall be as supplied by the KIT. No modification to shape, contour or maximum thickness shall be allowed except as expressly provided by these rules.

3.2 Hull, keel or rudder mold marks and surface imperfections may be filled or removed by sanding, polishing or painting provided the original surface contour is not altered.

3.3 The deck may not be made thinner by sanding, but may be sanded in preparation for painting and any new or existing holes or recesses in the deck may be filled with any material and faired flush with the immediately adjacent deck surface.

3.4 The trailing edge of the keel fin or rudder may be sanded to a sharp edge provided the outline shape and maximum thickness of the fin is not changed.

3.5 Keel mounting screw holes and damaged areas of the keel bulb may be filled or removed by sanding provided the original bulb profile, shape and thickness is not altered.

3.6 Rudder profile corners shall not be rounded in excess of a 1/8 inch (3.2mm) radius.

Finally, wipe on a thin coating of grease or "Vaseline" on the shaft of the keel bolt to prevent corrosion. This is very important to do, as the keel may need to be removed someday for repairs or for transporting to a regatta. Insert the keel into the hull for the final time and install the keel nut on the top of the keel shaft.

At this point, "Northern Dancer" weighed in at 1610 grams (or 3 pounds 8.8 ounces) , with 432 grams more to go to reach the minimum allowable weight of 2042 grams.

Our group has a digital scale but your local post office is always available and they might enjoy weighing something interesting for a change.

Step A8: rudder push-rod exit seal



Note : Rather than using the stock plastic exit guide, it is preferable to use the Du-Bro rubber push-rod seal here (part # 3108) as it allows the rudder servo to be placed further rearward due to the large opening in the seal. (see chapter B for more servo details). This seal is included in the LONGBOW Victoria hardware kit.

The round hole for the rudder push-rod needs to be enlarged with a round file to accept the Du-Bro 3108 seal which is then trimmed to fit and slipped into place without the supplied plastic mount or rubber O-ring. It shouldn't even be necessary to glue the rubber seal in place, as it can fit very securely on its own.

Step A9: Hatch cover rail

Glue the rail in place with a few drops of C/A glue, while pressing firmly into place for 20 seconds.

A warning. Some people get a nasty reaction to the fumes from C/A glue. I sometimes do my c/a glueing outside the shop where the ventilation is much to be preferred.

Most of our builders use the LONGBOW hatch cover made from .020 styrene which will save no less than 16 grams of weight. This is a huge amount. This hatch cover is included in the basic LONGBOW Victoria hardware kit.

If the heavy stock hatch cover is used, the edges of

This seems as good time as any to test fit and install the hatch cover rail.



the hatch cover will need to be sanded thinner to allow the hatch cover to slide in smoothly.

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, James Anderson, Kelowna B.C., Canada,

[Forward to Step-by-Step Chapter B](#)

[Return to Step-by-Step Menu](#)

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