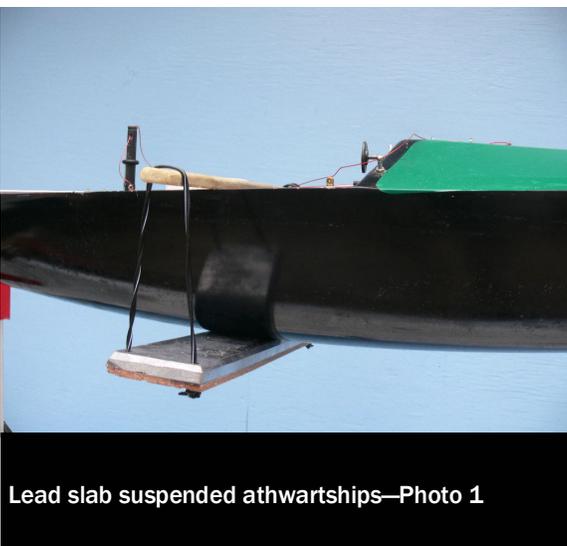


The Sweat Equity IOM All Purpose Fin Jig

By Lawrie Neish

One of the joys of building an IOM comes near the end of the process when it all comes together and the fin is fitted and, along with the ballast bulb, dephed. All of this presents a problem for the builder striving to achieve the maximum draught and an accurate angle of inclination of the ballast bulb and still stay within the limits set by the class rule. With the Western Sweat Equity IOM fleet approaching thirty boats, this exercise has been faced more than a few times by the finishers, and the results are the subject of waterside conversations - "I see you are trying a forward raked fin" and "Well it may be vertical but it sure does not look it." or "If they are both vertical then why don't they line up" During one session fin and bulb setting up session, while helping and using jerry rigged props and shims and reluctant tape measures, I thought there just had to be a better way of approaching the job. I sketched out what I thought would work and the following week Bevan Wrate, whose IOM was being worked on, brought back the device. Using it for the first time produced a series of minor changes and additions and a further modification allowing it to fold for transporting. Barry Fox in Victoria has produced another one with some variations which suit his approach to the problem.



Lead slab suspended athwartships—Photo 1

There are two basic steps in the process as we do it - establishing the bulb position to give the desired water line and the setting up of the bulb and fin with the hull.

It should be noted that few IOM's finish up being built precisely as the designer intended and so it is important to find the "as built" waterline. This is important with the IOM as everything is referenced back to the waterline and of course it is also important to know where the bulb has to be positioned to achieve the desired waterline. How to achieve this presents a problem and the first thought is that the house bathtub would be convenient to use, but unfortunately, with a fin and bulb in place and the overflow stopped up, there is more than a little danger of a flood and holes in the ceiling.

A second problem is to accommodate the flotation of the lead bulb and fin which is included in the buoyancy of the finished boat. As a solution to this second problem we cast a lead slab approximately 320 x 75 mm. This, along with a piece of wood epoxied to it to simulate the fin, weighs 2.5 Kg. The thickness of the lead is arrived

slightly over weight and planed down with an ordinary hand plane or filed to the precise weight. A dreadnought file works best as a file but these are not common. Allowance has to be made for epoxy and fairing etc. The use of this device compensates for the "flotation" of the fin and bulb. Its use is simple - it is suspended athwartships under the hull as shown in photo #1. With the mast and rig, together with batteries and radio etc in place and the total weight brought to

at least the minimum sailing weight of 4 Kg., the fin/bulb simulator can be slid along the hull to achieve the desired waterline. The centre of the fin simulator gives the COG of the bulb relative to the hull used in the next step. It should be noted that the rudder, being normally at the extreme stern end of the waterline, has a significant effect and it should either be in place, or taped under the hull, at its normal location.

Using this method requires comparatively little water in the bath tub, and unless the ceiling is unusually low, the mast can be carried in its normal position. Having the simulator suspended under the hull keeps the boat upright. The operation can also be conducted in a Measuring Tank and it is easier to see what you are doing with it. If all else fails, a simple wooden trough, lined with polythene, can be fabricated to serve, though, unless it is on saw horses, it is hard on the knees!



The Setup Jig—Photo 2

The Setup Jig

The actual jig is quite simple. (See photo #2) It consists of two folding uprights at either end of a base board. The base board must be straight and flat or capable of being brought to this state. The uprights when in use are each held by a stay to prevent unplanned folding. One of the uprights has a 100 mm diameter sighting hole. The uprights have an extension block on the outside surface

at the top. Two 10 mm gauge blocks are used in conjunction with the extension blocks. Each upright has a shaped support which slides on the upright and is used to steady and level the hull.

The height of the extension blocks above the base, plus the gauge blocks, minus the height the bulb car presents the bulb (see below) and should be slightly less than 420 mm.

The base and uprights have a dadoed 3 mm groove along the centre of the base and the inner surface of the uprights. The groove in the base is to guide the bulb "car" allowing it to stay in alignment as it is slid along the base. The grooves in the uprights allow the vertical alignment of the fin to be checked visually and are a convenient indicator of centre.

The bulb car (See photo #3) is a



The Bulb Car—Photo 3

rectangle of plywood with two same size V-blocks at the ends and two guide pins to locate it in the groove in the base of the stand. The two V-blocks are carefully aligned with the groove and, in conjunction with the supports, give the 420 mm depth

The ballast bulb tapers along its length and, by placing the bulb in the V of the blocks, its angle of inclination can be altered depending how it is positioned. As all of the SE IOM's use a standard bulb, it is simple to find the position to give any angle and relate it to the overhang at either end. I use the front end. As the bulb is slid back and forth in the V-blocks, the bulb describes an arc and its angle changes. The bottom

of the bulb changes very little in height in doing this, but this should be checked.

Use

Having established the water line and the required position of the bulb centre of gravity (marking this on the bottom of the fin), and having decided the inclination of the bulb, and knowing the centre of gravity of the bulb, you can proceed.

Set the car with its guide pins in the groove. Place the bulb in the V-blocks with the appropriate overhang to give the desired inclination with the fin slot up. Place the sighting bar in the slot and, viewing through the hole in the stand, sight this for vertical against the groove in the other upright. This places the bulb symmetrically in the V-blocks. (See photo 4). When set up, slide the car and bulb to one side while the hull is set level.

Place the hull on the supports and, using the sliding supports in conjunction with the 10 mm gauge pieces on the extension blocks, set the water line level, using the top of the groove in the supports, or the marked centre line on the extension blocks to centre the hull at each end. Sometimes the rudder may have to be removed from its bush do achieve this.

Lift the hull off the stand and fit the fin in its box and replace on the stand sliding the bulb car into position to receive the fin into the slot. Check that the hull is centred and at the gauge height, and the bulb has the correct over hang with its centre of gravity at the mark on the fin. Check through the sight hole in the stand and make certain the fin is aligned with the groove in the other support. (See photo #4) If all the checks are satisfactory then just add the epoxy and stand back and



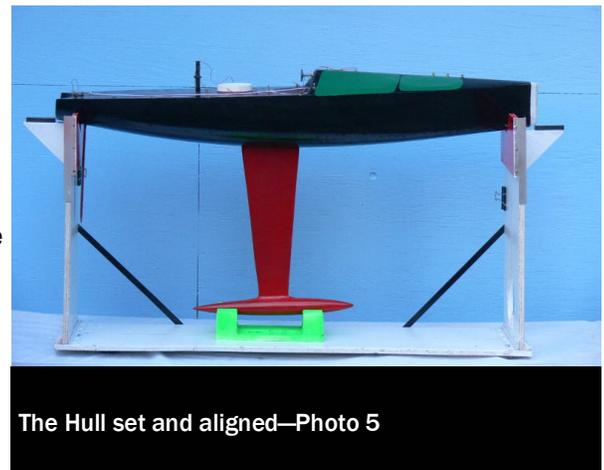
Bulb set in the V Blocks—Photo 4

admire your work. (See photo 5) The sexy model is Black Agnes. On Saltspring at this stage, we retire for Aileen's cookies and a cup of Earl Grey tea.

Other uses of the stand

The stand can be used as an aid to fitting the fin. With the hull set up to its waterline, squares or protractors can be used to achieve the desired fin position relative to the water line by using the base as a reference.

With all of the above, the stand does not have to be level as it is self contained, but by levelling the stand and supporting the hull on it at its water line, a plumb bob can be used to set the mast vertical or to what ever rake desired.



The Hull set and aligned—Photo 5

IOM All Purpose Fin Jig—Parts list

There is nothing magical about most of the dimensions and there is considerable flexibility with all with the exception of the height of the supports the height of the gauge blocks and the height at which the bulb car supports the bulb above the base. The original was made totally out of scrap and recycled plywood.

Stand

Base - Plywood	1 @ 19 x 300 x 1000
Supports - Plywood	2 @ 12 x 300 x 450
Bow and stern shaped supports	2 @ 12 x 300 x 125
Extension blocks	2 @ 40 x 50 x 100 (ex)
Gauge blocks	2 @ 10 x 20 x 50
Braces (steel)	2 @ 3 x 12 x 350
Shaped support guides	4 ex 1" aluminium angle
Piano hinge	2 @ 300 x 36 hinge
Sundry screws and machine screws	

Bulb car

Base - Plywood	1 @ 12 x 125 x 220
V-blocks	2 @ 50 x 40 x 125
The V's are 90 degrees and 45 mm on the hypotenuse (the open top)	
2 nails for guide pins	
Sighting bar	1 @ 8 x 20 x 400 The 8 dimension will have to be varied to give a snug fit in the fin slot

Devil is in the Details

By Barry Fox

Spring is coming and the Devil is in the details. I know that some of you will think that this is just normal but for some of the newer skippers among us maybe it will be a good reminder.

I had been busy with some other boats and projects and had not sailed my "good" boat for some time. When I first put it back on the water I was immediately reminded why I like it. It went quite well compared to the boats I had been sailing.

After a couple of outings, I had become used to its handling again and I thought there was something not quite right. I made a few small adjustments and it did respond but somehow it wasn't quite as crisp as it had been.

So I spent a whole afternoon just going through all the systems. Checked and re-oiled all the turning blocks, checked

the winch travel, checked each rig (on the boat) and discovered lots of things that were out, just a little. My winch travel was just a few mm shy of full travel. The masts were just a degree or so off centre. The shroud tension was almost right. The sails had just a few mm too much draught in them. The jib downhaul was a bit too tight. And somewhere along the line the rudder must have taken a bump and was a few degrees off line with the keel fin. So I tightened here, loosened there, straightened this and that and presto the boat sprung to life again.

Now I've done all this before but it seems that I surprise myself every time I do it. If you have the boat going well one day, finish, pull the rig off to travel and then put it back the next day without making any changes, well, it will have changed. Maybe not much but it will have changed.

Unless you keep on top of the boat all the time it just starts to get a bit more out of tune until you all of a sudden (or so it seems) find that the boat has become a dog. My boat is seldom a

dog but it can be less than brilliant. So the point of the message is to keep after your settings and actually get back to measuring them (your eye lies by the way) as frequently as you can and then the boat is just terrific.

- Barry Fox

The 2nd Annual All Island RC Sailing Series

By Barry Fox

A year ago we put the final touches on a 4 regatta series covering Vancouver Island and surrounding areas. All four events were well attended by the IOM community and also enjoyed some support from the Soling skippers. Following that successful event it is nice to make the series enduring by announcing the 2nd Annual edition.

This year we are able to return to all the previous locations and add one more so we have 5 events scheduled now.

The premise of the series is that they are one day events and cause skippers spread out all around the area to get together at each other's venues to compete. In addition we enjoy some good competition from a few mainland skippers who come over to take in the events as well. We were going to try to include one event in the Vancouver area this year but just couldn't quite make it happen. It sounds like we may have awoken some interest though and hope to have something take place outside of the Series later this year and then maybe grow the Series next year to include one or more events in those areas.

Each event is scored so that everyone gets points for being there and then each competitor receives points for finishing ahead of how ever many boats they beat out. We allow one event to be dropped so if you can't make all of the events you aren't automatically out of the running. It seemed equitable enough last year as it rewards both attendance as well as performance.—Barry Fox