

ADVICE to Official Measurers FOR MEASURING INTERNATIONAL ONE METRE BOATS

For the purposes of these notes it is assumed that as well as doing the necessary checks and filling in the forms that lead to the issue of a **certificate**, you are following the MYA recommendation of checking for full conformity with the class rules: i.e. those in Section C including Sail Identification. The MYA's IOM CR Part II, Section C checklist covers all of these items.

DOCUMENTS NEEDED. (Available via the MYA Members Area Knowledge Base)

Note that except for headings, terms emboldened here have a precise definition in the ERS.

Current editions of:-

- The Equipment Rules of Sailing (ERS)
- **IOM Class Rules** (CR)
- The current Class Rule Interpretations. (List correct at 9th May 2014 but available on the IOMICA web site)
2002-IOM-2, 2003-IOM-1, 2003-IOM-2, 2003-IOM-3, 2003-IOM-4, 2003-IOM-5,
2004-IOM-1, 2004-IOM-2, 2004-IOM-3, 2004-IOM-2, 2004-IOM-3, 2004-IOM-4,
2004-IOM-5, 2005-IOM-5, 2010-IOM-1, 2011-IOM-1, 2011-IOM-1a, 2011-IOM-2,
2011-IOM-3, 2012-IOM-1, 2013-IOM-1
Go to MYA Knowledge Base > Technical documents > International One Metre
- 2013 MYA IOM Measurement forms (A more helpful alternative to the IOMICA forms, which includes the **IOM Certification Measurement Form**, **IOM Hull and Appendages Measurement Form**, **IOM Rig and Sail Measurement Form**, MYA form for IOM CR Part II Section C Checklist.)
- **IOMICA Additional Rigs Measurement Form.** (there is no MYA alternative to this)
- Racing Rules of Sailing (RRS) for reference to E8 and Appendix G for 'Sail Identification'
- MYA 2014 SSI 2.02 refer to MYA Sail Identification Marks Rules and Guidance (SIMRAGs)
Note that the MYA recommendations in SIMRAG, go further than the rules in the interests of improved clarity and readability.

EQUIPMENT NEEDED.

A **leech stiffening zone** template as shown in the class rules as diagrams in section H3.

Reasonable quality metal rulers and/or a tape to check dimensions.

Whilst a ruler is perhaps more comfortable to use, sails have dimensions up to 1620mm so it is likely you will use a tape rather than a ruler for some measurements. MYA recommend using a tape with metric divisions on both edges and to a European validated quality marked on the tape with (I I) in a surrounding curved ended box. UK manufacturer Frisco make one noted as UNI-MATIC UM3M.

If you do a lot of measuring you might consider making up 'Measuring Gauges'.

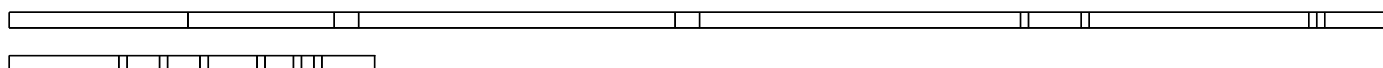
Using gauges or rods to check a sail is quicker as it is not necessary to refer to a table of dimensions. Half round wooden beading, approx. 20mm wide, is a cheap basis.

A coat or two of varnish helps to preserve them.

Mark on to suitable lengths the leading dimensions of the **sails**.

Two gauges are convenient for each size of **sail**. A long one 'vertical' dimensions and a short one for cross widths.

Dimensions should be labelled and the tolerance band marked where applicable.



You may find it useful to label the marks according to the old IOM diagram (included in this document) as it is more convenient to use than the lengthy descriptions given in the current rules. Note that the **rig** height (H in the diagram) is now replaced by a measurement from deck **limit mark to upper point**. Check your gauges from time to time to ensure that they remain accurate. In any case a long straight-edge or string is required to check that the jib **leech** attachment to **mast** is below the **headsail stay limit mark**.

A Measurement Tank.

A suitable design, produced for the MYA by Graham Bantock, is shown in the diagrams at the end of this document. Other designs for checking compliance with the **boat** floating in fresh water are, of course, possible.

Whatever design is used some means of adjustment to ensure compliance within **draft** limits is necessary.

The MYA design uses a hole to set the level the same every time.

It may be better to make this a long slot and to have an adjustable plate to form a weir to set the level during manufacture/calibration.

A gauge is needed to check the depth and the MYA design shows a 420mm needle mounted in a block. By *lowering* the water level until the needle just reaches the surface, very accurate adjustment can be achieved. Note that it *does not work if the level is raised* as surface tension pulls the surface down around the needle.

Another alternative is to have a reasonably bulky object that can be lowered or raised in the water to adjust the level each time a **boat** is put in the tank.

In that case a level gauge that can be seen when a **boat** is in the tank will be needed.

Another improvement is to have deeper tank and for the sliding block to have two levels (370mm and 420mm). The lower one must pass under the floating **boat** and the upper one must not.

Note also the removable end block in the MYA design which allows the **boat** to float freely for the **keel** depth check but brings the tank to exactly 1 metre for the length check.

An alternative to the special tank is a large tank with a sizing frame or template. (see diagram)

The frame is suspended in the tank and has limits that can be compared with the **hull**.

The water level indicators have sharp edges so that it is easy to judge when they just break the surface as they are raised (not lowered!) to position.

A mirror on a rod is useful for checking the **hull** depth against the limit.

When using such a frame some means of checking the **boat's** length is needed. One way is to place a lightweight sensitive bubble (spirit level) on an adjustable 'table' on the deck, somewhere near the centre of flotation to avoid altering the pitch of the **boat**, whilst the **boat** is floating. A small piece of liteply with a 3mm screw through it serves well. Adjust the table until the bubble is level.

The **boat** is removed from the tank and placed in a boat stand with the bow against a vertical surface. With the bubble on its table still in place, the **boat** and stand are adjusted to bring the **boat** back to the same attitude as when in the tank. Another gauge (see diagram), held horizontal by means of the bubble or any spirit level, is used to check the length.

Note that generally speaking you cannot check draft of the **boat** (bottom of the **ballast**) or the **hull** without floating the **boat**. Using the manufacturer's dimensions as a check is open to error.

Methods that float the **boat**, mark the apparent waterline ends and then use a jig to check depth are also prone to error. Such methods may just work for **boats** that are well away from the depth limits but builders and owners usually like to get close to the maximum draft.

Similar remarks apply to **boat** length.

Accurate, calibrated weighing equipment.

Once again many owners like to be very near to the limits.

Thus you need accurate equipment to achieve this. Just because the equipment has a digital read out, it does not mean that it is accurate. One brand of electronic scales in the past has been shown to read about 1% above the correct value. That means that a **boat** could be 40 grams under weight.

You should acquire or borrow a set of calibration weights that check the scales at the points important to the class rules. i.e. 75; 2100; 2500 and 4000 grams. Your local District Senior Measurer (DSM) will usually hold these. Alternatively, to calibrate your scales, use any weight similar to the weights to be checked, like for instance an IOM keel and get the weight verified at your local post office or other commercially accurate scales.

PROCEDURE.

When measuring a **boat** you should assume nothing.

Even if it is from a well-established supplier it may still not comply with the IOM CR and it is your job to check compliance.

By carrying out the checks necessary to fill in the **Boat** and **Appendages** and the **Rig/Sail** measurement forms you will have checked everything necessary for granting of a **certificate**.

The checks are usually very straight-forward. Most **boats** use standard arrangements and/or equipment, but you need to keep an eye open for something out of the ordinary that the owner wants to use. Some things may seem sensible from a practical point of view, but fall foul of the wording of the rule.

Only one measurement on the **hull** (the thickness of the bow bumper) is needed to grant a certificate but more needs to be done for a full check on compliance with the rules and the MYA recommends that this is always carried out to ensure that there is a level playing field even at club level.

The items that the MYA recommends checking are noted on an IOM CR Part II, Section C checklist, available from the MYA website (as noted in the list of documents earlier) or your local DSM. These include:

Check, and have adjusted if necessary, the **keel/ballast** weight.

Check, and have adjusted if necessary, the **rudder** weight.

If asked check, and have adjusted if necessary, that the weight of all rigs is closely the same.

Check that all equipment including **corrector weights**, battery, receiver, servo, winch etc. is in place

Check, and have adjusted if necessary, the weight of the complete **boat** in all rigs.

Put the **boat**, with its heaviest rig, in a tank to check **hull** and **keel** depths and **hull length**.

As noted in the section on tanks and frames above *you cannot do this accurately without a tank*.

Some designs are known to be very close to, or even outside, the limits. Such things as **hulls** that are a little over length, or rudders with swept back or curved trailing edges that protrude aft of the limit, are known. Hence the pitch attitude of the **boat** when being measured can be critical both to length and **draft**, particularly if the **bulb** is heavily raked upwards.

The sail dimensions should be measured as recommended in the ERS and ISAF International Measurer's Manual (IMM) section K. Essentially this requires that just sufficient tension be applied along the direction of measurement to remove creases and edges to be extended when corners are rounded or chamfered. The IMM is an extensive tome available on the ISAF web site.

[http://www.sailing.org/tools/documents/IMManual2013-\[14649\].pdf](http://www.sailing.org/tools/documents/IMManual2013-[14649].pdf)

It contains much more than we need so you don't need to read it. However your DSM will be familiar the relevant contents and will offer help if you need it

Don't forget to fill in the forms and sign and date the sails near the **tack!**

You'll need a pen with waterproof and preferably fade-proof ink and it's worth checking that it is indeed waterproof before signing the **sails!**

The **Boat** and **Appendages** and **Rig & Sail** measurement forms and the Section C checklist are used only to check the **boat**.

If encapsulated these forms can be re-used. However it is preferable to use paper copies so that they can be given to and retained by the Owner as useful reference to maintaining the boat's compliance.

Only the **Certification Measurement** Form is sent to the Registrar with an SAE for the return of the **Certificate**. Don't forget that your District Senior Measurer is there to help you and if there is ANY doubt about the compliance of any part of **hull, appendages, rig** or **sails** with the IOM class rules contact him in the first instance or if necessary the MYA Technical Officer.

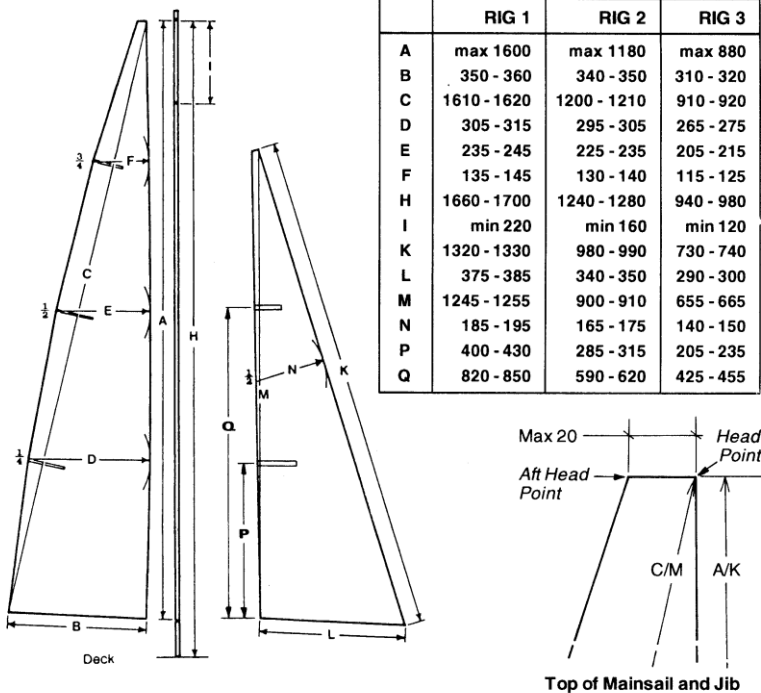
If adding an extra rig or replacement **sails** to a **boat** that already has a **certificate**, the sails need to be measured and signed. However the IOMICA Additional Rigs form needs to be completed only if the **certificate** does NOT have the all 3 boxes 1, 2 and 3 at the top of the **certificate** ticked off. If one or more of the boxes has not been ticked send the form together with the old certificate and an SAE, to the Registrar.

MYA Tech Team 2014-05-09.

1995 SAIL MEASUREMENT DIAGRAM for reference only to show how the alphabetically referenced dimensions relate to the current rules.

MEASUREMENT DIAGRAMS

One Metre Class Rules - Page 7

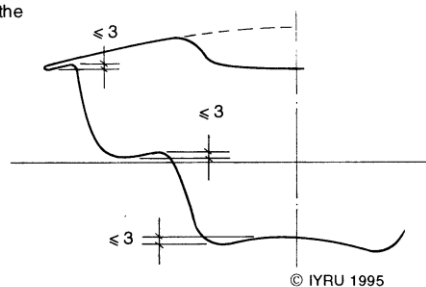


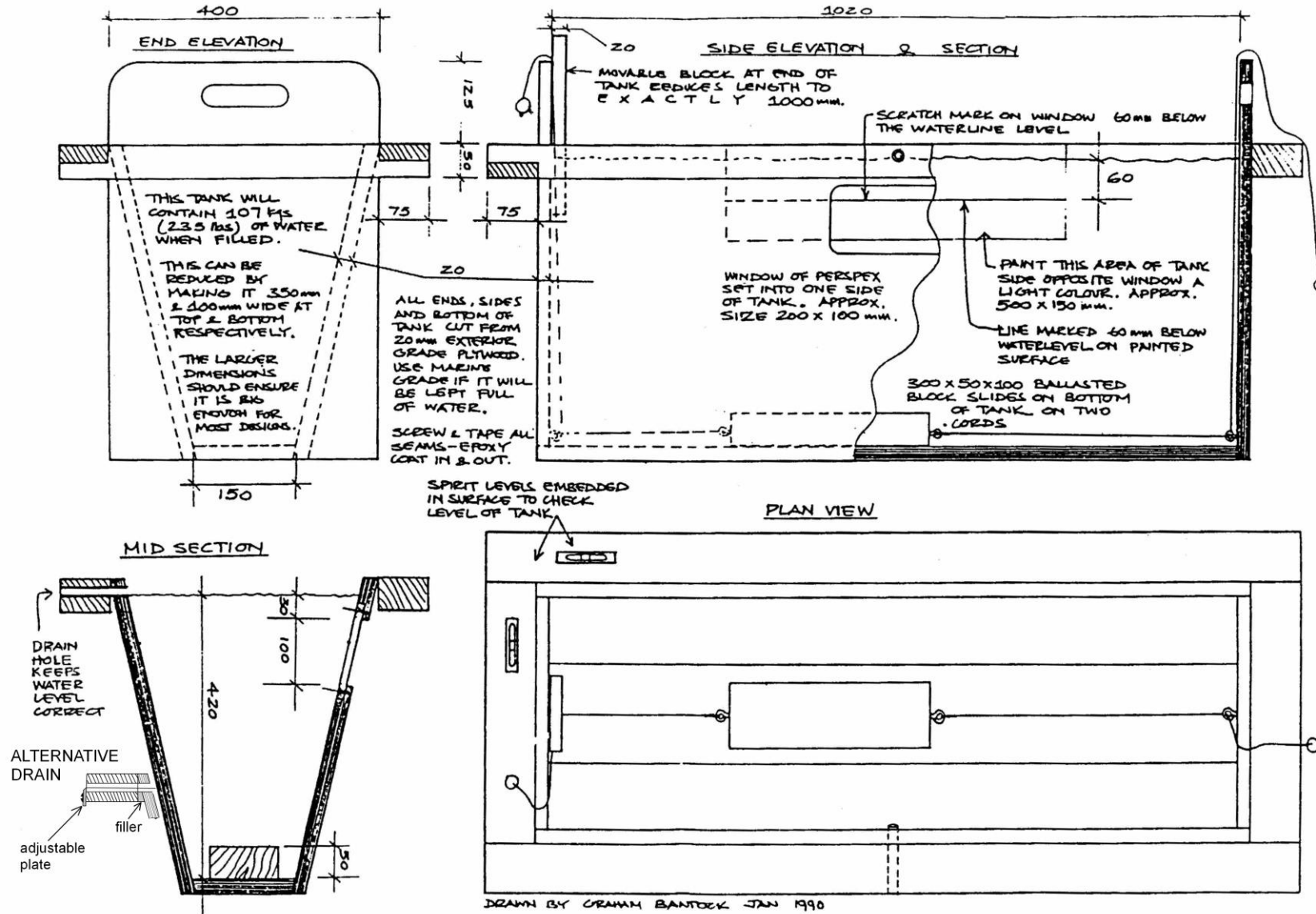
Rig Height, H

H shall be measured to the same point on the deck, adjacent to the mast, for each rig.

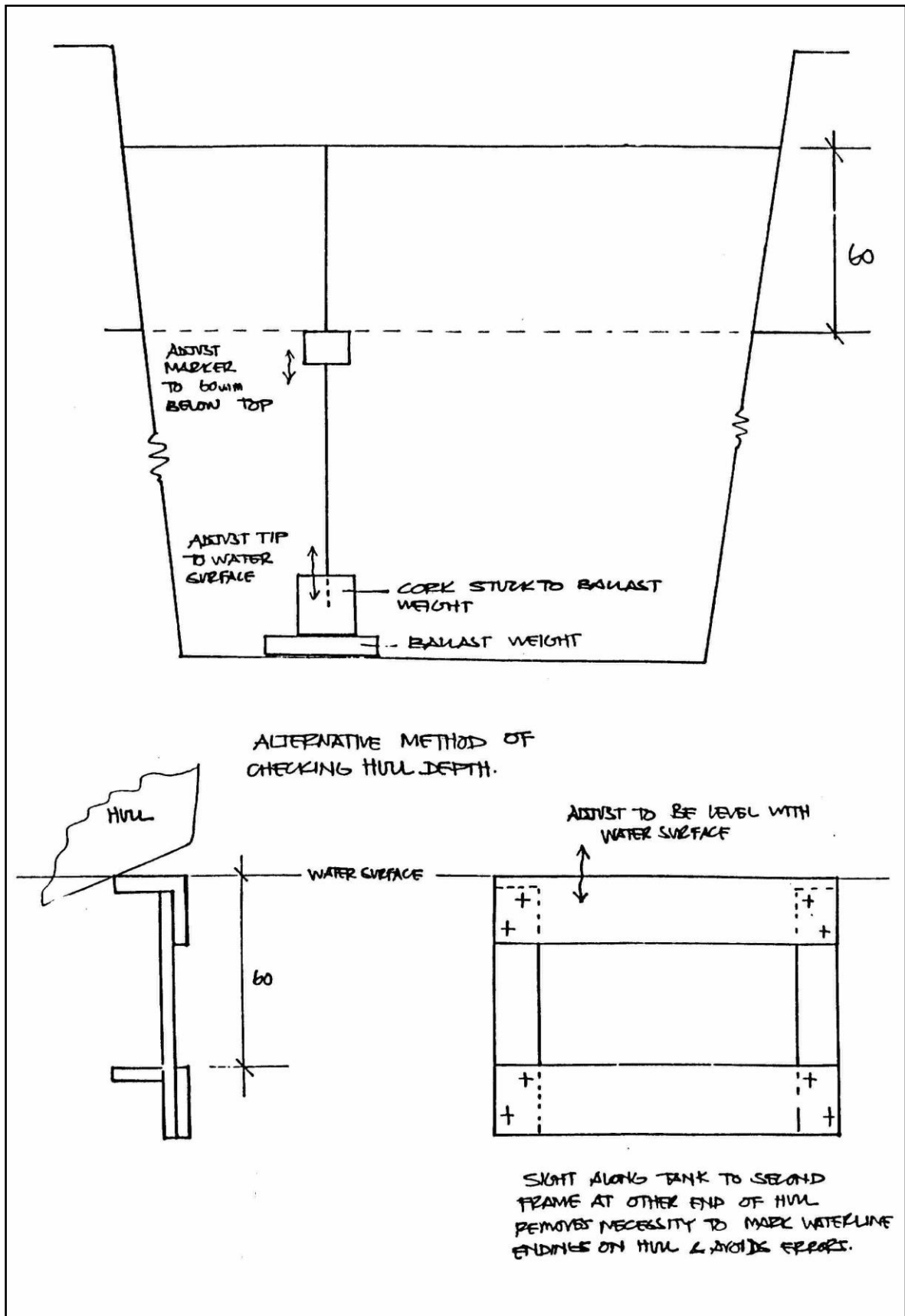
Construction 3.4.3

Hollows in the undersurface of the hull, tested transversely and parallel to the waterline, shall not exceed 3 mm.

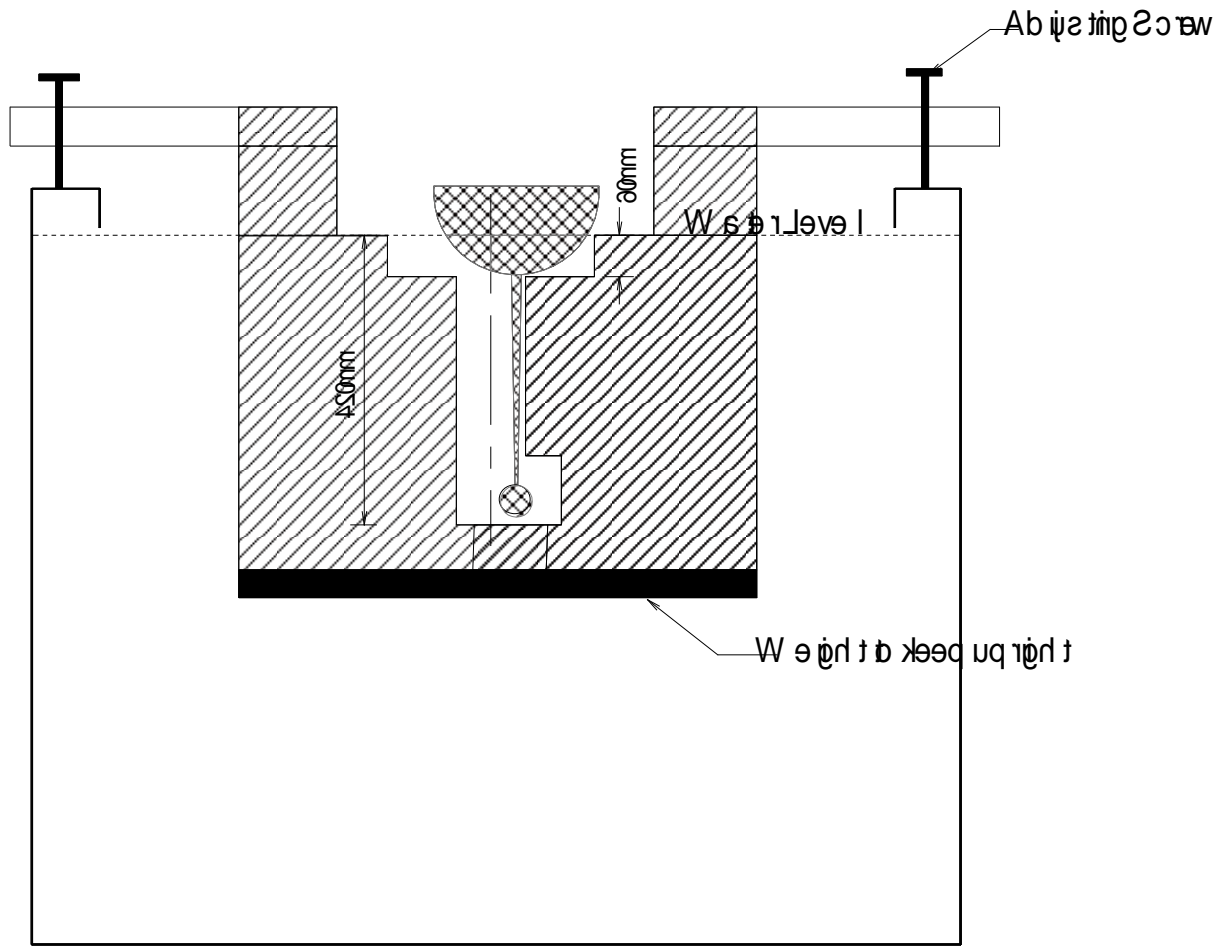




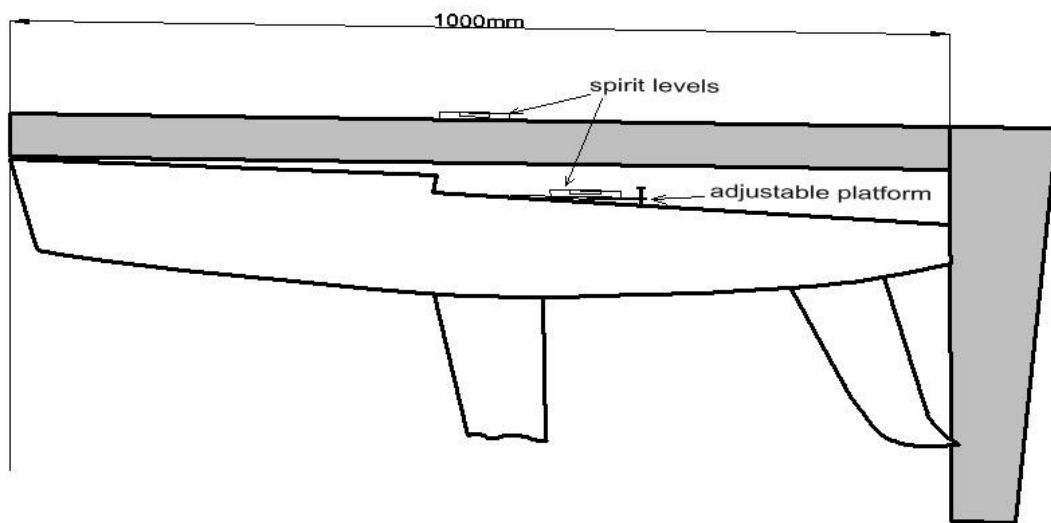
Measuring Tank



Method of setting water level and alternative hull draught gauge



Frame in large tank



Length Gauge