

Module number: A 04 i

Last update: 19.09.14

Credits: ... points

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| Introduction | |
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| <p>Description of the subject</p> <p>Taking the mould of a boat consists in measuring an existing boat to trace its working drawing in order to rebuild it, to gather non-existing plans or to make reparations.</p> | <p>Required knowledge/skills</p> <ul style="list-style-type: none"> - understand the safety implications - Basic naval carpentry skills |
| | <p>Infrastructure requirements</p> <ul style="list-style-type: none"> - Clean and clear working environment |

| Objectives |
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| <p>At the end of this module, the trainee can:</p> <ul style="list-style-type: none"> - trace the working drawing of a boat from its hull |

| Sources and additional learning material |
|------------------------------------------|
| |

Required tools, machines and material

| | | | | |
|------------------------------|---------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------|------------|
| | |  | | |
| Tape-measure | Ruler | Grimachaille | Wood blocks and wood planks to prevent the hull from moving | |
| | | | | |
| Blank dimension table | Spirit level | Set square | Chalk line | Pen |

More information?

KNOWLEDGE

| Terms | Definition - Description - Explanation |
|-------|----------------------------------------|
| Term | Text |
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SKILLS

Step 1: Setting up of the hull.

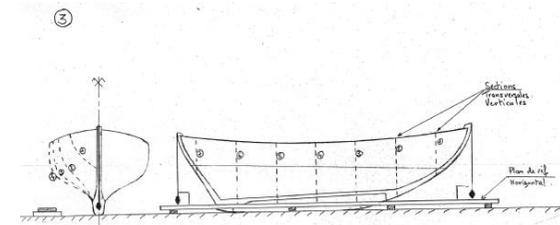
| Content | Key points | Visual aids |
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| <p>The shapes of a boat can be measured in any position of it (on the floor, lying on chocks, grounded on a block in a port...).</p> <p>However, we will try, in the best way possible, to facilitate the task and work in the best conditions, which will enable a time saving and more accuracy in the measuring.</p> <p>The ideal situation would be when the boat is lying on level ground (shipyard, shed, or garage) and placed more or less in its lines, that-is-to-say near its flotation position.</p> <p>If the hull is manoeuvrable, do not hesitate to take some time to place it in a favourable position, to pull it off the ground by wedging its keel with stocks (which will facilitate the measuring in the depth near the keel) and also to check its perpendicularity in longitudinal.</p> <p>The hull will be measured on one side only. You may choose starboard or port according to the easy access and to the potential distortions of the boat.</p> <p>Once this task is accomplished:</p> <p>Place planks on level ground in order to create a horizontal plane to absorb the irregularities of the ground, and get a horizontal plane as a reference.</p> <p>Bring down a plumb-line on the bow in the ship line and another on the sternpost, also in the line. If the hull is not perpendicular, take your time to adjust it.</p> <p>The boat is positioned that way in the space whatever its position on</p> | | |

the ground is.

The next step consists in determining transversal sections which will be more or less numerous according to the size of the hull and equally spread on its length.

They will be vertically traced on the hull with a chalk stick for instance.

At that stage, we can start measuring the longitudinal profile as well as the outline of the gunwale.



Step 2: Measurement of the longitudinal profile and of the gunwale.

Content

In order to restrict the potential mistakes, it is advised to trace the profile of the hull at scale, as we go along measuring.

On a piece of drawing paper, attached to a piece of plywood, trace at scale the parallelogram ABCD, which enables us to position the boat on the paper as it is in the space.

Take the distance of each section according to the point A, then for each one of them, the height of the deck line according to the horizontal plane of reference, as well as the half-width corresponding. We can now already trace on the plan the sheer and the outline of the gunwale.

Take several measures of the profile of the bow rabbet according to the vertical line AD, as well as their height according to the plane of reference.

Copy the points on the plan and trace the rabbet profile.

We will copy the dimension of the table of the bow for each point in order to get the profile of the bow.

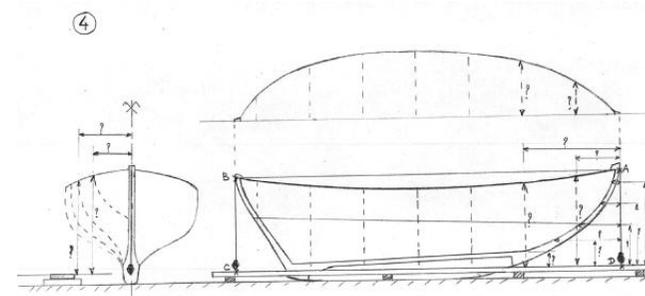
If it is a clinker planking, we will take as many measures as there are strakes in order to respect the division of the planking.

Do the same thing for the profile of the keel rabbet according to the horizontal plane of reference, for each section. As for the bow, we will copy the dimension of the table of the keel for each of the sections.

Take maximum care for the outline of the forefoot of the bow and of

Key points

Visual aids

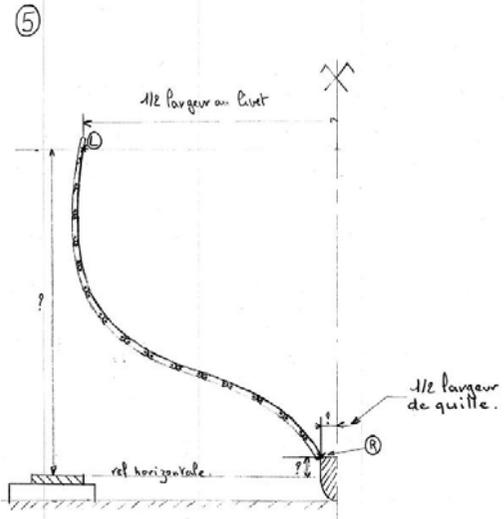


the rabbet.

Take these same measures when it comes to the sternpost.

Measure the height of the flotation for the bow and the sternpost, it will facilitate the positioning of the water lines for the ulterior outline. It will also be useful for the calculation of the centre of the bilges during the outline of the sail plan.

Step 3: Measurement of the vertical half-sections.

| Content | Key points | Visual aids |
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| <p>Several methods are possible for this operation. For the measurement of our ship, we will use a small wooden chain which elements are linked together with butterfly screw bolts.</p> <p>For each section to measure, we put the chain along the hull, following the vertical lines previously traced, so that it fits closely the exterior outline of the hull.</p> <p>Once well fitted, we trace on the chain the points of the deck line L and of the rabbet R of the half-section.</p> <p>Then all that remains is copying the whole on a plywood sheet big enough to receive the biggest half-section.</p> | |  |

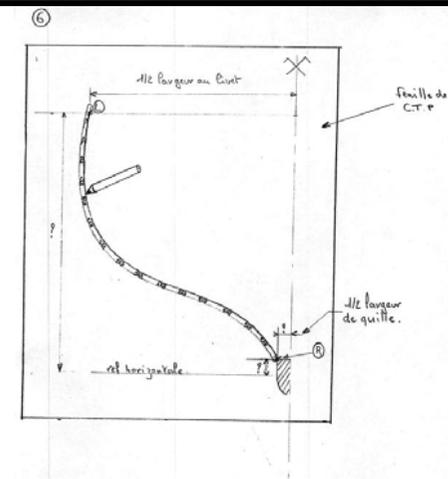
Then you do the opposite and lay the chain flat on the plywood sheet. Beforehand you need to copy the points R of keel rabbet and L of deck line, already measured during the previous step, so that you correctly position the chain.

That way, you trace the exterior outline of the planking following the outline of the chain.

Then you will need to copy at scale the different half-sections for the accomplishment of the plan of shape, after making the choice of the outline of the horizontal and vertical lines.

At that stage, the measurement is done. You now need to measure the structure, meaning the samplings of the elements of the structure and their specific positions to trace the structure plan.

You need to note as many dimensions as possible (do not hesitate to make a simple and detailed sketch) and to also take as many pictures as possible because during the drawing phase, it is not always possible to have access to the hull that we measured, and generally memory lapses are frequent.



Step 4:

| Content | Key points | Visual aids |
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| Text. | Text | |