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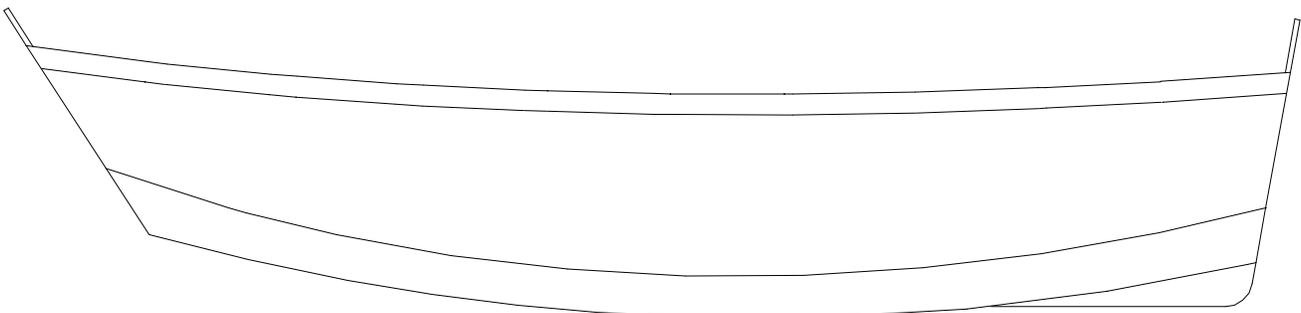
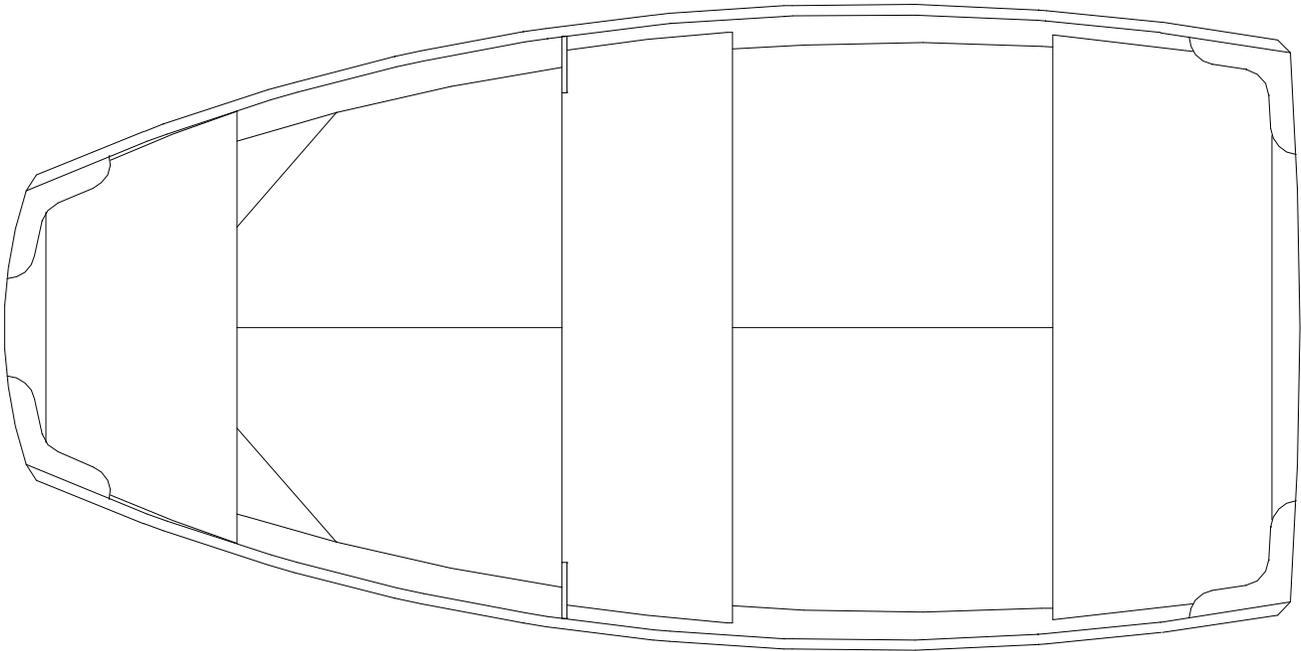
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D5

LOA: 2,39m Beam: 1,17m



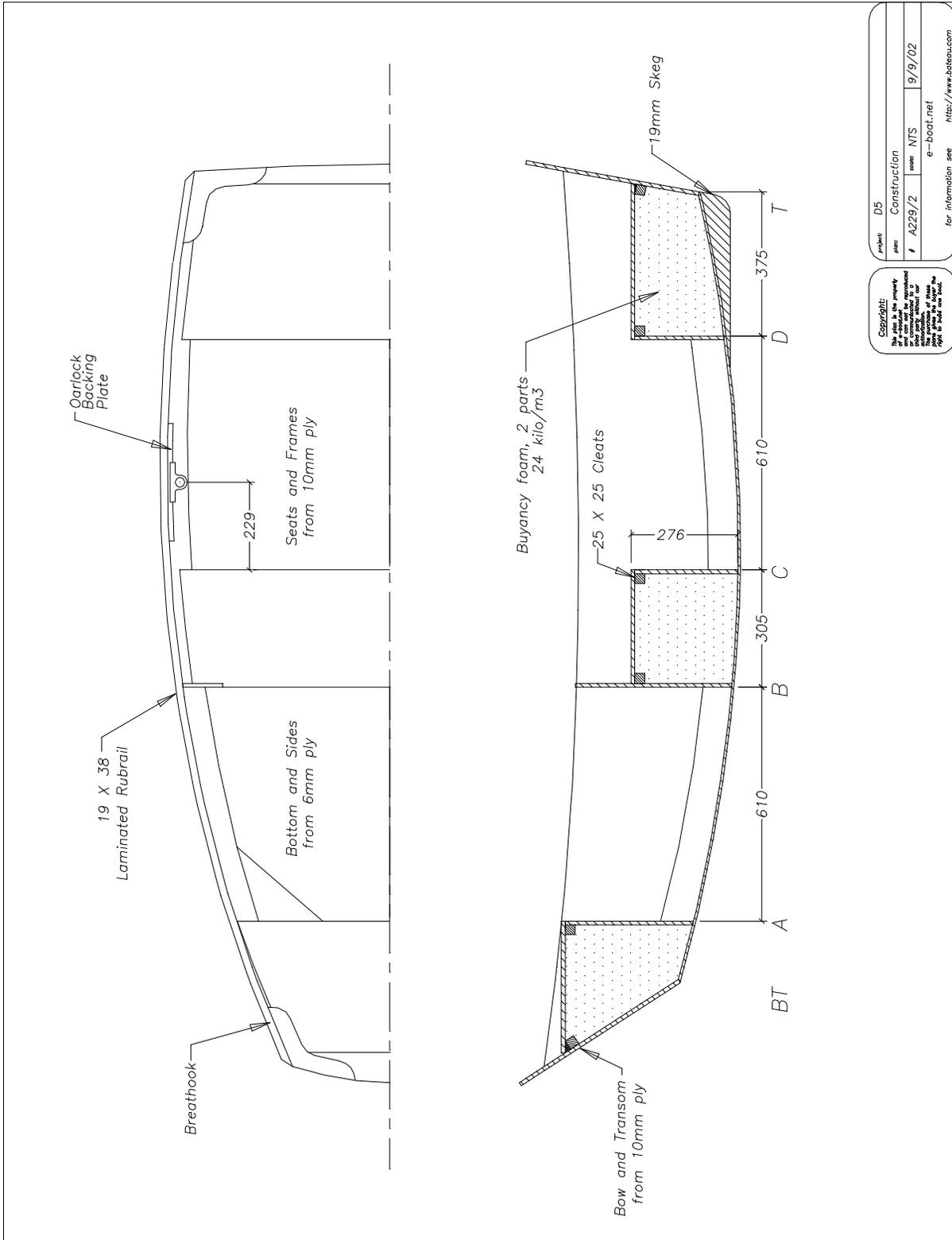
Large scale plans for this boat can be purchased online from bateau.com. The large scale version is printed on B and E size paper and includes full size patterns for the frames and transom.



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|--|--|--------------|--|
| Project: D5 | | Construction | |
| Date: 9/9/02 | | e-boat.net | |
| File: AZ29/2 | | NTS | |
| for information see: http://www.bateau.com | | | |

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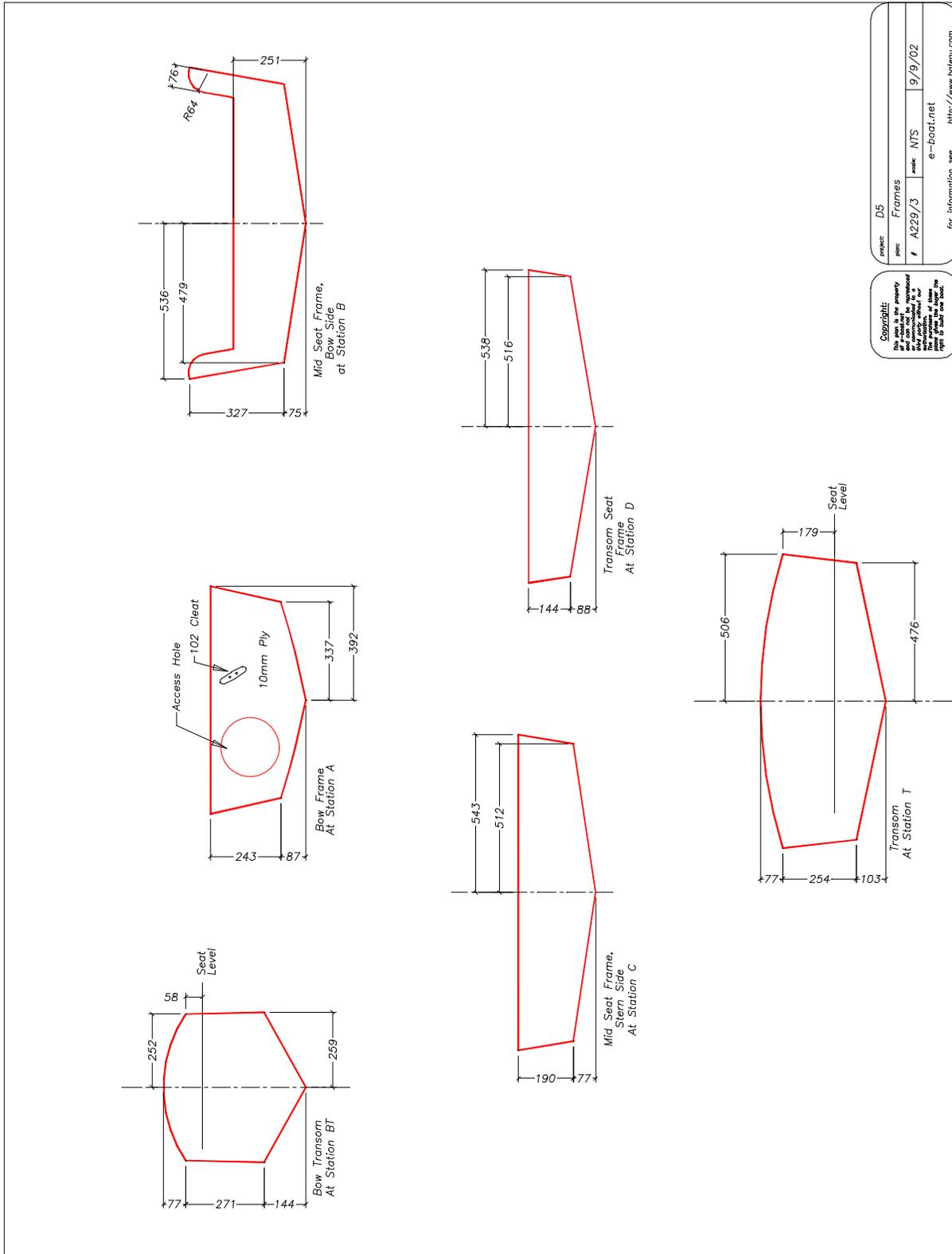


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| project: | D5 |
| part: | Frames |
| part #: | A229/3 |
| scale: | NTS |
| date: | 9/9/02 |
| source: | e-boat.net |

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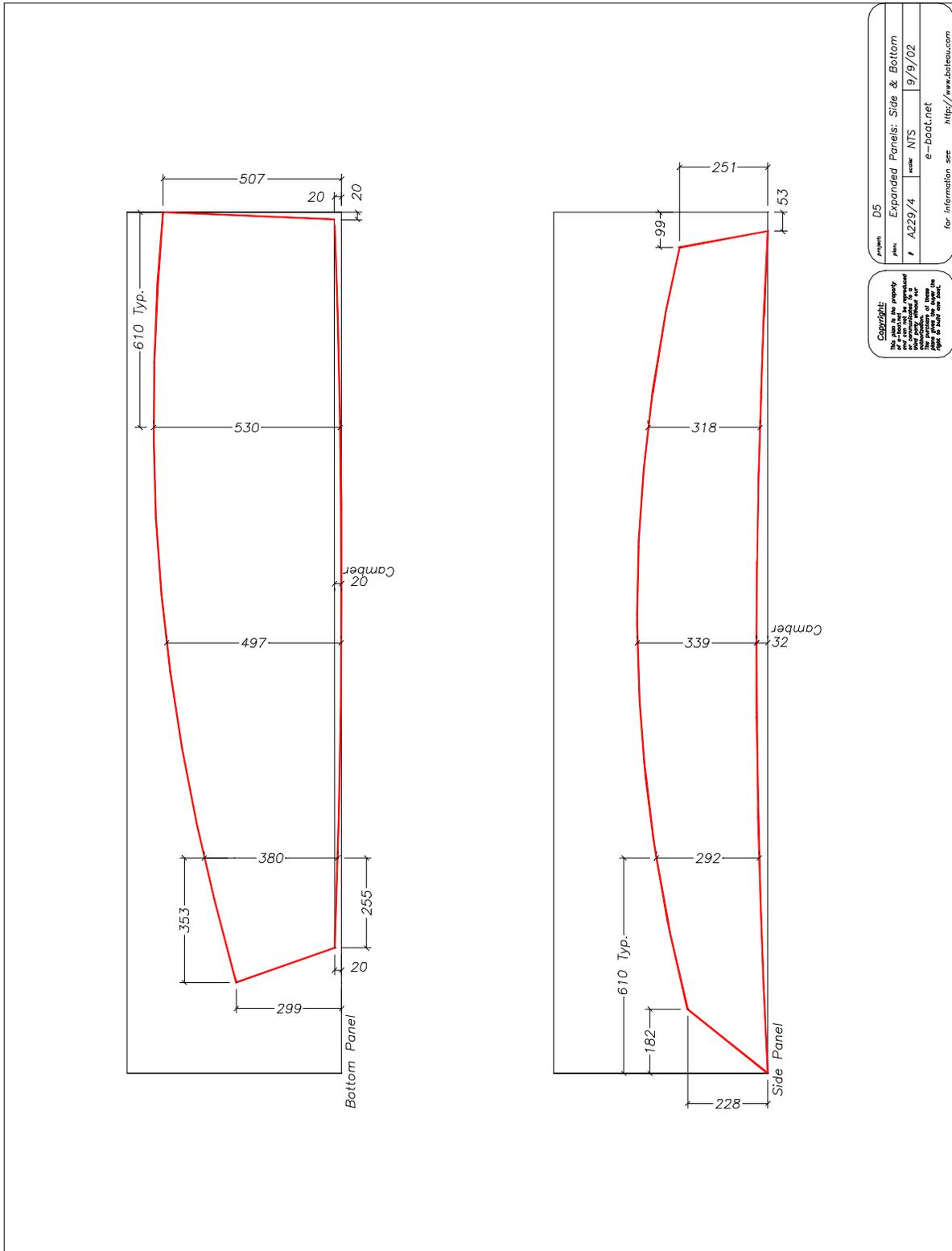


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Project: D5
 Expanded Panels: Side & Bottom
 Plan: A229/4
 Date: 9/9/02
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Assembly Schedule:

1. Install mid frames between sides approximately at center with temporary fasteners
2. Install bow and stern transoms between sides.
3. Install all other bulkheads (frames) and adjust distances.
4. Assemble bottom by laying the two sides on top of each other, loosely stitch the keel side.
5. Unfold the bottom.
6. Flip it over and install over the hull sides and frames. Check frame lines alignment and hull symmetry before stitching.
7. Tighten all stitches and flip the hull over.
8. Build outside fibreglass seams: see epoxy seams drawing.

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| project: | D5 | Assembly: | Schedule | Date: | 9/9/02 |
| plan: | A229/5 | scale: | NTS | e-mail: | e-boat.net |

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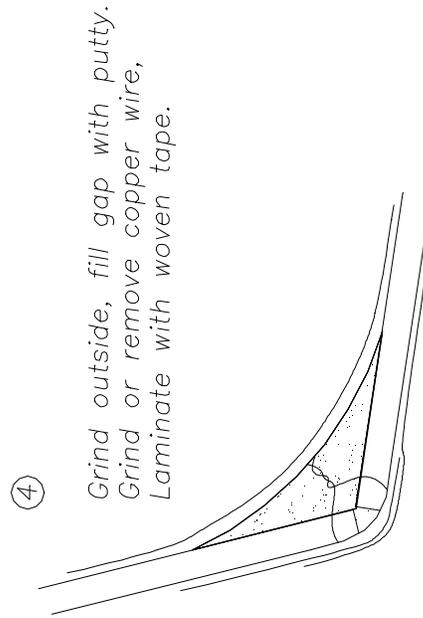
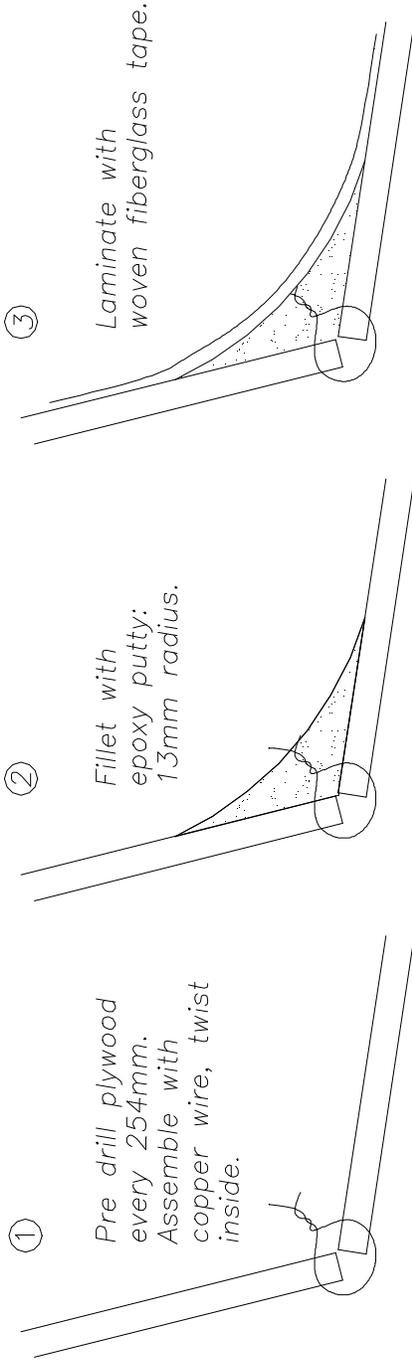
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Stitch and Glue procedure.



Lamination schedule:

All seams:
 Woven fiberglass tape
 400 gr/m², 102 wide, one layer each side.
 Optional:
 Bottom fiberglass, 152 up the sides
 fiberglass woven fabric, 140 or 200gr/m².

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| project | D5 |
| plan | Stitch and Glue Procedure |
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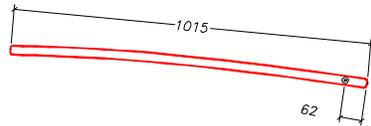


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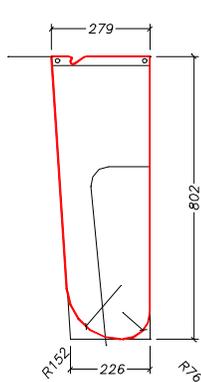
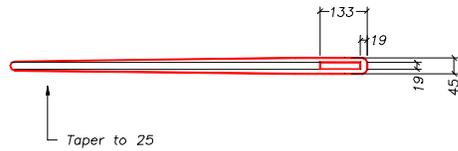
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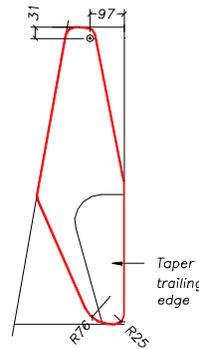
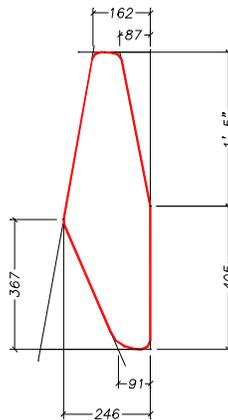
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Typical rudder and centerboard section max. width at 1/3



Rudder & Daggerboard from 2 layers 10mm plywood



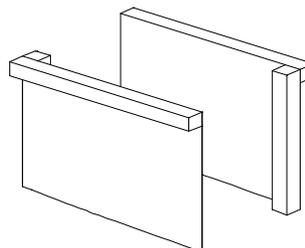
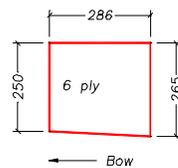
Daggerboard trunk:

1. Cut sides from 6mm ply

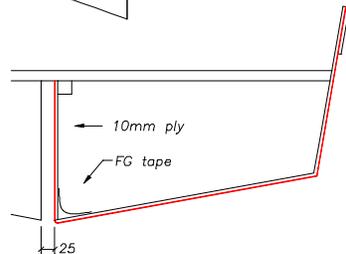
2. Assemble cleats and spacers as shown

3. Coat 2 halves with epoxy

4. Assemble two halves, use cleats 25 wide



5. Cut 25mm slot through bottom
6. Install trunk box in hull
7. Install two half forward bulkhead
8. Tape bottom and sides with FG tape and putty fillet
9. From outside, round edges of slot and coat with epoxy.



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| project | D5 | | |
| plans | Details | | |
| # | A229/7 | scale | NTS |
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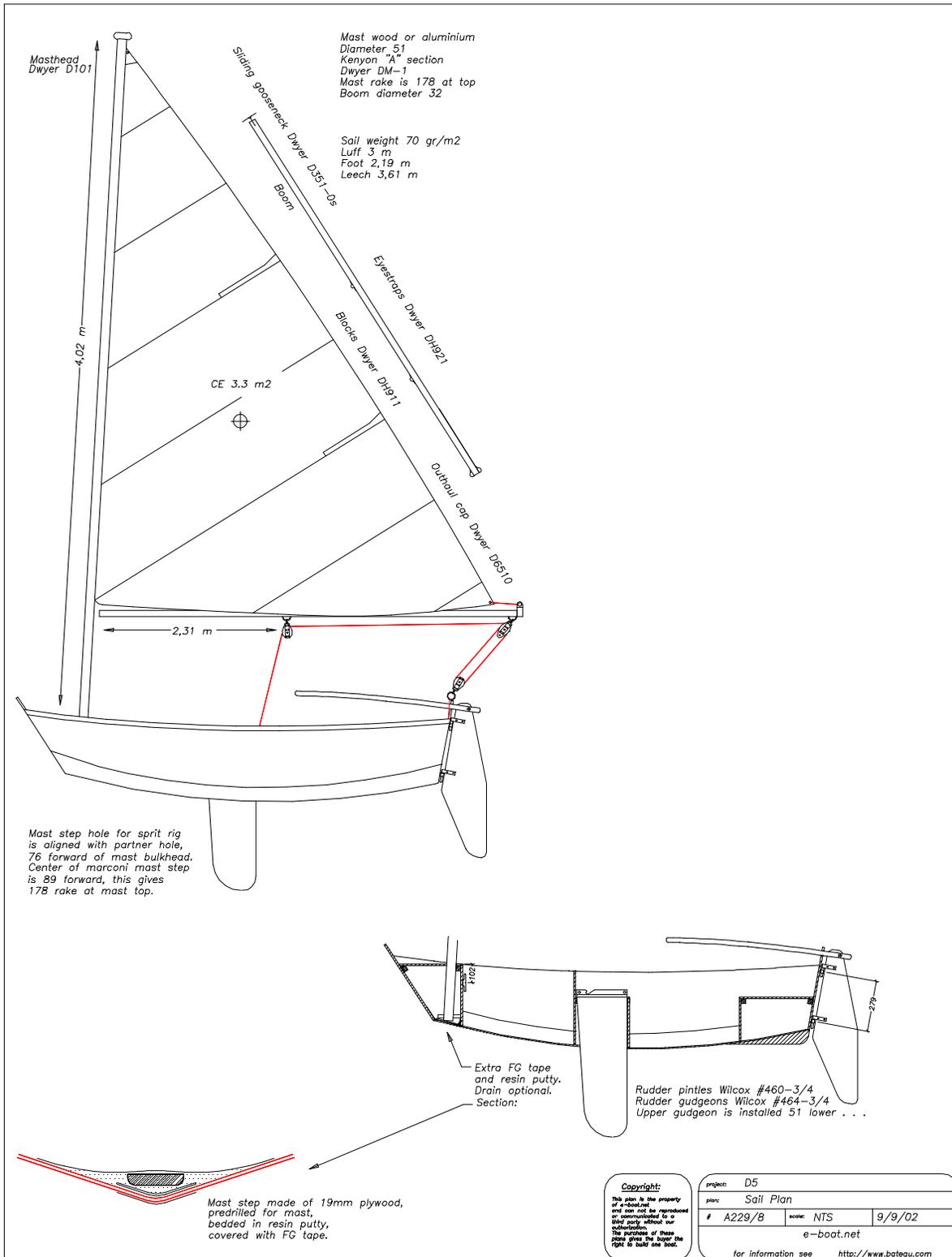


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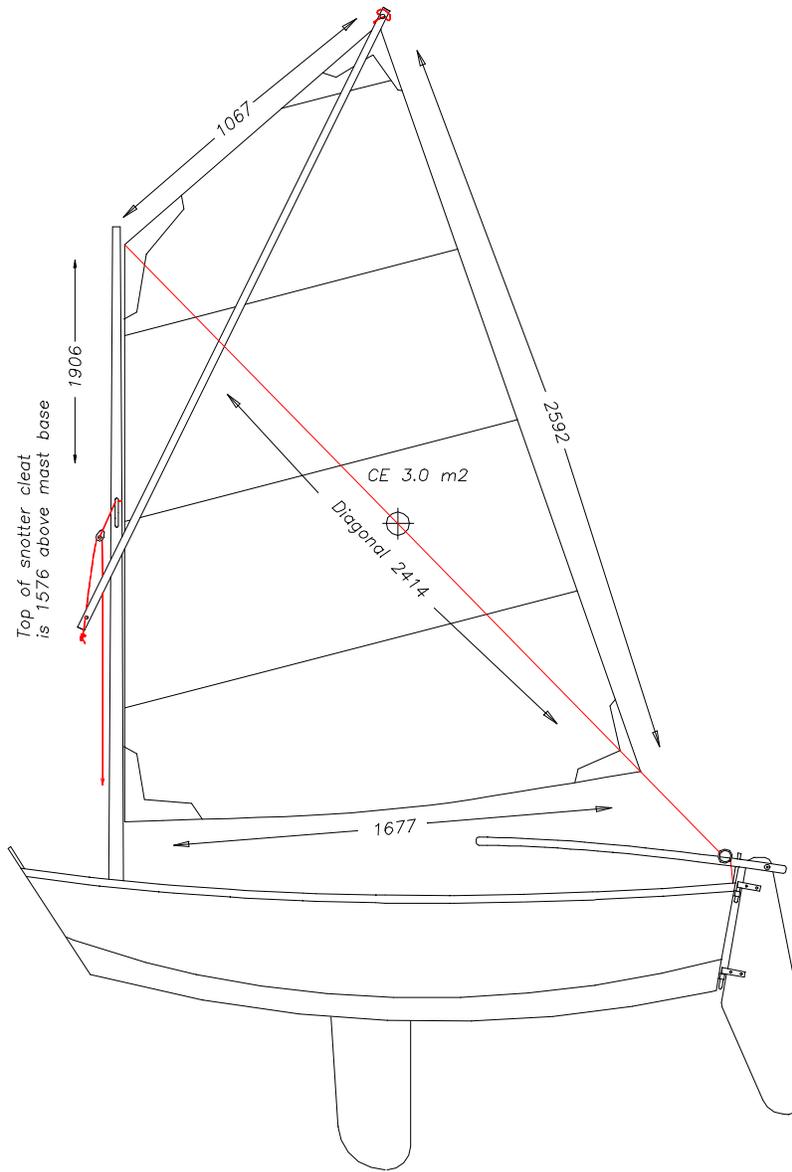


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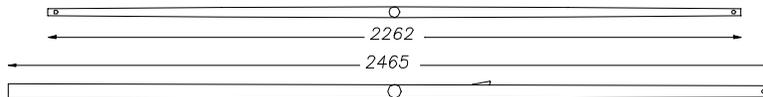
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Sprit, spruce, diameter 38 tapered to 25 each end.



Mast, spruce, diameter 51 tapered to 38 at top.

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| | | plan: Sail Plan | |
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These building notes are not a boat building course.

Our web site bateau.com features a large number of tutorials and help files about the methods used to build this boat. In addition to the material freely available, we recommend the following books:

- *Devlin's Boat Building*
- *Boat Building with Plywood by Glen-L*
- *Steward's Boat Building Manual*
- *The Gougeon Brothers on Boat Building*

Those books are a good introduction to boat building in general. The building method described in the Devlin book is close to our method but if there is any conflict between their specifications and ours, you must respect ours.

D5 Building Instructions:

BOM:

| | |
|--------------------------------|--|
| Plywood panels 1/4" (6mm): | 2 |
| Plywood panels 3/8" (9mm): | 1.5 |
| Fiberglass tape 9 oz. 4" wide: | 50 yds (200gr/m2, 10 cm wide, 1 roll, 45m) |
| Epoxy resin, gallons: | 1.5 (6 liters) |
| Fillers, gallons: | 0.5 (2liters) (fillers such as woodflour are acceptable substitutes) |

Some assumptions were made to calculate the quantities:

- ♦ A 10 - 15% waste factor for all materials is included in the BOM.
- ♦ The seats and frames can be taped with 6 oz. or 9 oz. Tape. (150 or 200gr)
- ♦ The resin use includes a complete coating (120 sq.ft./gal.) of the inside and outside of the hull but does not include the optional bottom fibreglassing.
- ♦ The resin calculation is based on a 40% glass content. Careful builders can reach 55 - 60%.

- Fillers are cheap: buy too much of it. Fillers such as these can be used: micro-balloons, wood flour etc.

- Not included in the BOM are fasteners, throwaway brushes, tools, cleaning products and paint.

Labor:

It should take the average person 20 hours to build the D5:

| | |
|--------------------------------|-----|
| Draw the panels on the wood: | 1 h |
| Cut the plywood: | 1 h |
| Drill holes for the stitching: | 1 h |
| Stitch the panels together: | 1 h |
| Fillet inside: | 1 h |
| Tape inside: | 1 h |
| Prepare outside: | 1 h |
| Tape outside: | 1 h |



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| | |
|-----------------------------------|-----|
| Put lids on seats: | 1 h |
| Tape seats: | 1 h |
| Foam seats: | 1 h |
| Install oarlocks, knees, rubrail: | 4 h |
| Prepare for paint (sand): | 3 h |
| Paint: | 2 h |

How to build

Read the complete text before you start, including stitch and glue and materials.

Important: print the plans before you read the building instructions. It is difficult to understand the description of the building procedures without looking at the drawings. The plans are very simple and much easier to understand than the text: "A small drawing is worth more than a long lecture" (dixit Napoleon Bonaparte).

Let's start!

Building sequence:

Side panels:

- Transfer the outline of the full size pattern to the plywood OR, transfer the dimensions from the expanded panels drawing to the plywood. Refer to the nesting drawing for the best use of your plywood sheets.
- Cut the first side panel.
- Using the first panel as a pattern, cut the second side panel keeping in mind that it must be a mirror image of the first one.
- Proceed the same way for the bottom panels.

Frames:

- Cut all frames and transoms from 3/8" (9mm) plywood. All dimensions given on the plans are true: there is no need to deduce the thickness of the plywood. The transoms can also be cut from 3/4" plywood or from 2 layers of 3/8".
- Our online tutorials describe how to cut notches in the frames at the chines if desired. These notches not only allow you to tape the seams in one piece but also act as limber holes. In this case, builders usually do not cut these notches: the seams are taped over the installed frames. As a result, the seats can be filled with buoyancy foam.
- Before assembly, drill holes for the stitches every 4" (10cm) at 3/8" (1cm) from the edge of the plywood. Always measure the holes location from the same corner or they will not correspond. Drilling is not necessary if you tape the panels together.

Assembly:

- The assembly drawing shows the most common assembly sequence.
- Start by stitching together the two side panels and the main frame (mid seat bow side). Align the marks on the side panels with the frame and fasten the frame to the side panels. Fastening can be done with screws or staples. Stitching or taping are other acceptable methods.



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- Next, insert the bow transom and the stern transom. While bending the side panels, the curve of the sheer will appear. You will have to install some support under the middle of the hull: CBS blocks, 2x4's or a sawhorse. Staple or stitch the side panels to the transom.
- Insert all the other frames between the sides, aligned with the marks. Fasten the panels to the sides.
- Check the hull for symmetry by measuring diagonals.
- Assemble the two bottom panels at the keel side with loose stitches. It is easier to assemble the bottom panels folded as shown and unfold them later.
- Install the bottom panels on the hull.
- Stitch or tape all sides, tighten the keel stitches.
- Flip the hull over and build the seams.

Epoxy seams:

(see our online tutorials about stitch and glue for details)

- After plywood saturation, build the putty fillets along the chines, around the transom and at the bow. If the structure is sufficiently stable, you can also build the fillets between the frames and the hull. If not, wait for the first seams to cure. The radius of the fillets should be 3/4 to 1". (20 to 25mm)
- Tape the seams with 9 oz cloth, 4 to 6" wide. (200gr/m², 10 to 15 cm wide)
- When the seams are cured solid, mark the bottom center line from the mid seat to the transom, drill 3 1/8" (3mm) holes on that center line: you will use these marks to install the skeg from outside. (The skeg can also be installed later)
- Install the skeg: pull it against the bottom with screws from inside. Epoxy glue. Fillet optional.
- Turn the hull over and build the outside epoxy seams.
- Turn the hull over again and install cleats for the seats on all frames and along the hull sides. While some of our plans show beveled cleats for the seats (sides), it is not necessary to bevel them as long as the gap between the cleats and the seat is filled with putty.
- Fill the gaps over the screws holding the skeg with putty.
- Install seat tops: glue on cleats with epoxy putty, staple. IF you build the sailing version, do not install the mid seat top before installing the daggerboard trunk. See the sailing version building notes.

Finish:

- Install breasthook and knees. Their exact shape and size is unimportant but you need at least some small ones. Knees are fastened from outside and epoxy glued to the sides. For extra strength, an epoxy seam can be built underneath, between the hull side and the knee or cleats can be used.



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- Epoxy laminate the rubrail from several layers of thin wood: 3 x 1/4" or 2 x 3/8", 1-1/2' high. (3x 6mm or 2x9mm, 40mm high) Thin layers of wood, plywood or battens, are easily kept in place during the cure of the epoxy with spring clamps. Work on the two sides at the same time to avoid uneven tension on the hull, which would result in an asymmetric hull.

- Install backing plates (pads) for the oarlocks. Made from scrap 3/8" (9mm) plywood. Their center should be at 9" (22 cm) from the edge of the seat.

Options:

- Buoyancy foam under the seats.

- Seats as storage boxes with lids.

- Painter eyebolt on backing plate, 3/8" (9mm) scrap ply in putty or hole for painter with stopper knot.

- Fiberglassed bottom: cover the bottom (and sides?) with the fiberglass or Dynel cloth, 4 oz. (100gr), before installing the skeg. The fabric should cover the chine with a 2" (5cm) overlap.

D5 dinghy – Sailing version

Notes:

1. The following building instructions must be used in conjunction with the D5 rowing version building notes. Cutting schedules for the hull shell are identical but you must install the daggerboard trunk before the seat top. See notes about the dagger trunk assembly. The top of the mid seat covers the daggerboard trunk but a slot allows the daggerboard to move up and down. See drawings of sail version plans for the exact dimensions. There is a cut in the transom for the tiller.

2. The complete set of plans is made of all the D5 drawings plus sail plans for a sprit rig and marconi and appendages drawings.

3. Be aware that the building of the sailing version options takes more time than to build the rest of the dinghy and that the cost of the rig and hardware alone is much more than the cost of the materials for the complete rowing version. A good solution if you want to save money on these items is to look at what a second hand ship chandler has to offer: I once found a complete set up for a small dinghy, mast, sail, rudder for \$ 50.00.

Building instructions for the sailing version:

Type of rig:

Two types of rig are proposed: a sprit sail version and a marconi sail. While the marconi sail is the most common, the sprit sail is a better choice: lower center of effort, easier and less expensive to build, easier to use. Many other rigs can be used: some builders have used small sailboard sails with a sprit and it works perfectly well. Respect the position of the CE and of the daggerboard; everything else can be adapted to suit your taste. Use common sense in choosing your



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rig: a tall rig on a thin mast used with a load of two persons in the dinghy will result in a quick dismasting. The dinghy should be sailed with a maximum one person on board.

The first drawing shows the marconi rig. Part numbers are given for a Dwyer mast but others can be used: you may find a used rig locally or cut a fiberglass sailboard mast to size. Don't use a wooden mast: too heavy for the marconi rig. Bring the sheet forward as shown and steer from the mid seat. Don't tie the sheet to a cleat: this is a very small boat and you should be ready to give some slack in a gust. The halyard cleat is on the forward bulkhead and not on the mast: in the case of capsizing, it will keep the mast in place. Cut the hole for the mast to the exact section of the mast: not all mast sections are perfectly round, the Dwyer for example is slightly oval. The sheet uses a traveler or sheet horse: this simple line passing through two holes in the transom and made fast with stopper knots.

The second drawing shows the sprit rig. While it looks more complicated than the marconi, it is not. It is more efficient downwind and performs well upwind: the optimist uses a similar rig. You can build it yourself from easily available wood. The sail is simple to make and any canvas maker can cut it: it's flat. The panels are shown horizontal but a vertical cut is more traditional: it was required for cotton sails that stretched much more than Dacron. The mast and sprit can be stored on board while rowing: they stick out but not in an unmanageable way. And it looks a lot better than the marconi rig.

The snotter is a simple line tied around the mast. The snotter halyard is tied to the front bulkhead cleat and pulls the snotter down but a small wooden cleat on the mast keeps the snotter in place. That cleat is a simple wedge epoxy glued to the mast. A block can be used in the snotter but a loop in the line with a thimble is sufficient. The tack of the sail is secured to the same cleat as the snotter halyard. The sail is lashed to the mast in a zig-zag fashion. The throat and the peak are tied respectively to the mast and the sprit by short lines with stopper knots or with a loop. A mainhalyard may be used but is not necessary considering the very small size of the rig. When setting the sprit, take up enough on the snotter to eliminate the wrinkles in the sail between peak and throat. Use a peak pennant for the ultimate traditional look: a long 4' (10 cm) and narrow piece of colorful light material sewn or tied to the peak of the sail. The mast and sprit can be made from good quality 2x4's, spruce without knots. Cut a 2x4 in half lengthwise and round it: a very inexpensive but good-looking rig. The sheer shows a painted sheerstrake. This is optional, read the remarks about embellishments at the end of these notes.

Appendages:

The tiller shown is made of laminated wood, 3/4" (18 mm) thick. The size of the slot for the tiller is critical if you want the tiller to sit at the proper angle: the forward side of the slot rests on the front of the rudder blade. Other methods to position the tiller can be used such as a cleat on the rudder blade. Other type of tillers can be used: I once made a tiller from an ax handle: strong and nice curves. Give the tiller more or less camber according to your taste but respect the length: it allows you sit on the mid seat and to tack without having to lift the tiller.

The dagger board has radii on the two sides: their shape is not critical. There is a notch for a shock cord that goes around the forward part of the mid-seat but some people prefer to glue a small vertical wedge on the side of the daggerboard. The purpose of the shock cord or the wedge is to keep the daggerboard down when you tack. Two holes should be drilled at the top of the dagger board: pass a line through them and you have a handle. The dagger board as well as the rudder should be profiled for better performance:



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a typical NACA section is shown. Round the forward face and grind the trailing edge where indicated: under the waterline. Coat with epoxy.

The rudder is built the same way. No size is shown for the bolt to the tiller: 1/4"(6mm) with large flat washers is sufficient. The dagger board trunk is the most complicated part of the boat but if you break the building process down step by step, it becomes easy.

-Cut the sides from 1/4"(6mm)ply as shown. The shape of the bottom is not critical: epoxy stitch and glue is a very forgiving building method. The strength will come from the epoxy/FG lamination, not from a close fit.

-Install the cleats: various sizes of wooden strips may be used but the inside width and the length of the daggerboard trunk should fit the daggerboard. The drawings show 1" (25 x25 mm) square section cleats. Some lateral play is built in to allow for the thickness of the epoxy coating on the two parts.

-After coating the two halves with epoxy, glue them together and you have a complete daggerboard trunk.

-The daggerboard case fits between the frames of the seat in the middle, see construction drawing.

-Cut the bottom of the boat: position the daggerboard case between the frames and mark the corners. Drill through the four corners from inside. Flip the hull over and cut between the four holes with a jig saw. Flip the hull again.

-Position the trunk over the slot and build a fillet with putty. The drawing shows a section through the daggerboard trunk with putty and FG tape. Use two layers of FG tape, staggered. During all this, keep the trunk straight with temporary battens if needed.

-Flip the boat again and finish the outside edge of the slot: round and coat with epoxy.

-A slot for the daggerboard must be cut in the seat top. When installing the top, bound it to the upper part of the trunk (cleats) with resin putty or 5200.

This completes the installation of the daggerboard trunk. It is a very stiff and strong structure, somewhat oversized but if you run aground full speed with the daggerboard down only your pride will suffer damage.

Construction details:

The forward bulkhead (mast bulkhead) and its top cover (mast partner) are made of 3/8" (9 mm) plywood and assembled as a seat: with cleats and laminated to the hull.

The hull is reinforced with one or two additional layers of FG tape under the mast step. A small wooden block, 3/4" (18 mm) scrap, drilled to the size of the mast is bedded in putty and covered with another layer of FG tape. The location of the hole for the mast is shown on the drawing: it must be aligned with the partner hole if you want a straight mast (sprit rig) or drilled 1/2" (12 mm) forward if you want some rake in the mast (marconi rig). A drain can be built in the mast step by laying a short piece of PVC pipe in the putty and cutting a limber hole in the bulkhead.



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The shape of the mid-seat top can be changed to your taste as long as it completely covers the daggerboard trunk. The proposed shape allows you to sit sideways in the boat when sailing but some

builders have used a half deck from the rear of the mid seat to the mast. In that case, cut an access hole (pie eye) in the deck.

The profile view shows the location of the rudder pintles and gudgeons. Line them up carefully and, if you space the pintles 11" (275 mm) on the rudder, space the gudgeons 11 1/2" (265 mm) on the transom. This will allow you to engage the lower pintle first and then the upper one. Nothing is more frustrating than to juggle with the rudder, trying to align the two pintles in a boat that's rolling and rocking. I don't show any way to secure the rudder: if you run aground, the transom angle and the radius at the bottom of the rudder blade should be sufficient to push the rudder out of the gudgeons without any damage.

The drawings show the dimensions for the bow bulkhead and the transom. Notice the slanted cleat and the round cut in the bow part. The opening allows you to store oars in the boat while sailing.

The transom is similar to the D5 transom except for the tiller cut. Modify the shape of the cut to your taste but respect the 6" (15 cm) minimum distance from the center or your tiller will hit the side! Two holes are drilled for the sheet horse but you can use the side knees to secure the sheet horse if you prefer.

A Note about Embellishments:

Use your imagination to imprint your own style on your boat: If you choose to build a boat yourself, it is clear that you want more than the cookie cutter look of the production boats. We propose several optional embellishments but feel free to add your own.

- ♦ Install the sheet horse with a decorative stopper knot.
- ♦ Give a nice camber to the tiller or cut it in a powderhorn shape.

Suggested color scheme for a classic look: ivory inside, dark green hull, black or varnished sheerstrake, varnished rubrail and tiller, buff sail,