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TENDER “FRITZ”

PLANS

By Bernd Kohler

K-designs

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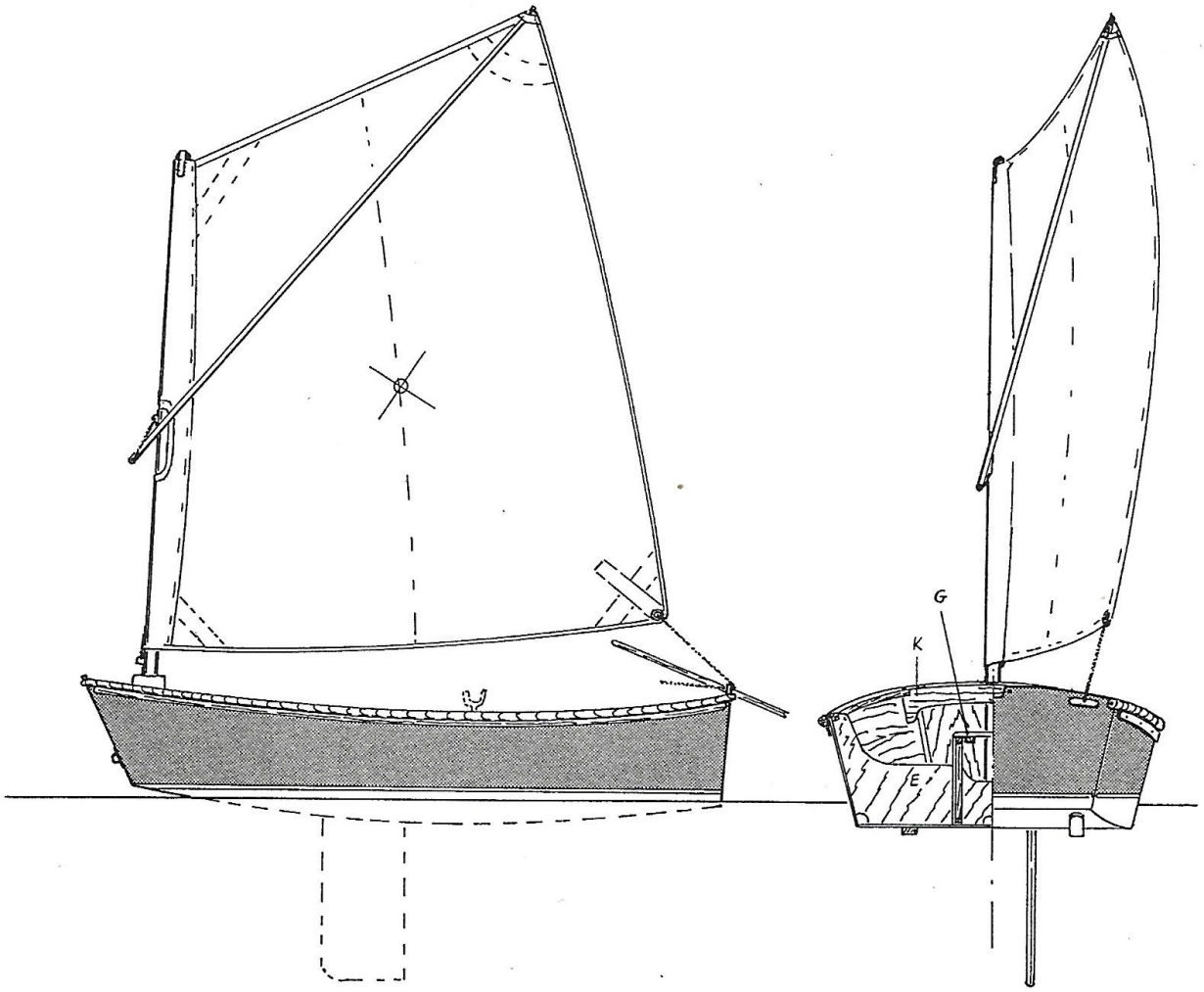
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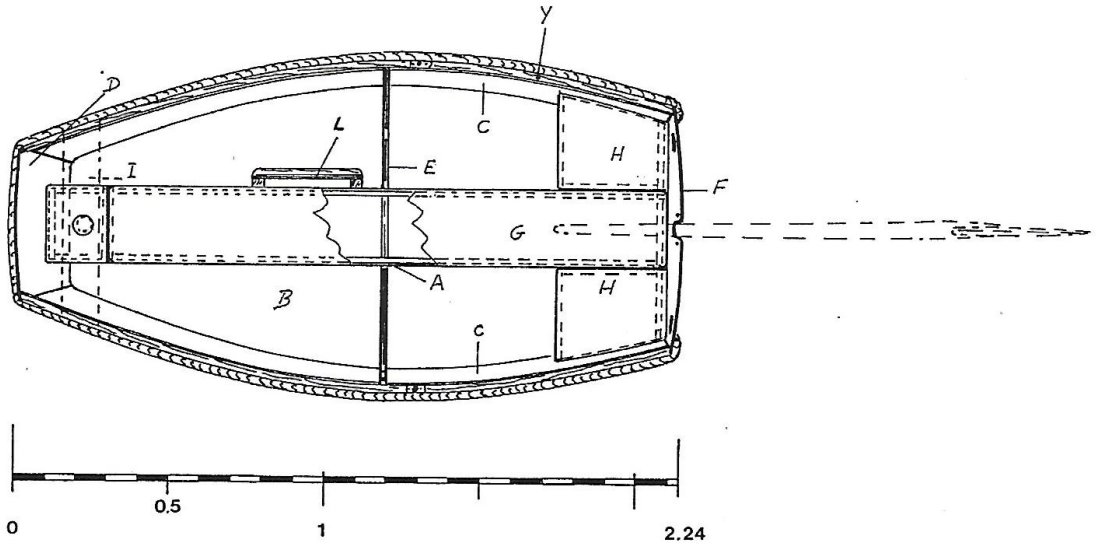
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Here is an easy to built small dinghy. 2 m (almost 8 feed) long with a weight of 18 kg (60lbs light). The boat served us well on our 11 year journey on our PELICAN catamaran. I could row it till wind force 7 when we where at anchor. And we where more for anchor as in a port. So four shopping, going out, fun we had to use the tender. I never sailed the boat, or used an outboard it was rowing. The plan shows a rig. If you build it as a tender it is not necessary to build the the daggerboard or daggerboard case.

HOW TO BUILD THE BOAT

For the construction of the boat only use only waterproof glued plywood

1. Start by marking all plywood parts.
How this works is shown on drawing 4 above.
Example piece part A.
a. Mark station distances O to 13 on the plywood plate. See
drawing 3 part A.
b. Mark the station lines with a square.
c. The station distances (for example station 8, distance 293mm) on the line
to mark.
d. Drive in nails just below the intersections.
e. Pull a piece if bendy wood over the nails. Draw the line with a pencil.

f. Saw out the part.
Now mark and cut out the seat sides A, the side plankings parts C and the bottom B as described above.

2. The make the parts E, flat stem D and transom F according to drawing 3.

3. Make cover G and seat parts.
4. Impregnate all parts once with epoxy. Use a window cleaner or foam roller.
Sand after curing to remove the upstanding wood fibres.
5. Glue 18X18mm slats around the "inside" of the (see drawing 3). Glue I epoxy with approx. 10% fused silica.
Fasten the slats with 3X2Omm screws. After curing remove the screws.

Pre-drill screw holes with 1.5 or 2mm drill. Screw the screws partly in.
Apply glue and fasten the screws
In this way you can work slow and without any mess.
Depending on the temperature, the processing time of Epoxy is
between 20 and 40 minutes. It still not cured. This takes about 64 hours.
The mixing ratio of epoxy and hardener must be precisely adhered to.
This depends on the manufacture. In the following is a construction
description for a simple proportional scale.
This is about 1% precise and makes calculation unnecessary (the most well-known error when working with epoxy)
6. Make the back seat, the wood stringers as shown in drawing 3.----------
as on drawing 3 from the parts A.
7. Make all other parts
Screw the parts dry together.
Check for correct angle with a big triangle (see Fig. 2 "X"). To the
bottom, spent and parts must connect evenly. With
tighten the screws. The transom measured 120mm from the centreline
secure the parts. (114 mm from centreline if the shaper
Glued slats to the mirror (see drawing 3)).
Also fix the stem part to the formers (distance from the formers to
centreline also 120mm. Always check corners!
8. Remove transom, apply adhesive to adhesive surfaces and again
secure. Now remove the framing, apply glue and fasten,

do the same with the stern. After curing,24 hours, remove the screws.

9. Adjust Steven and transom at the bottom (see drawing 4).
1O Fasten bottom plate B on the transom and the stern. To the
mark the position of the parts and bulkhead E on the inside. Remove the
bottom.
Holes for fastening the parts and truss E, drill (midway between the marked
lines).

l1.Apply glue to all parts. Fasten screwing first at the bottom.
Let cure for at least 24 hours, then remove the and screws.
Saw or plan the bottom opposite the stem for a good fit.
12. Bevel the sides of the bottom, the stem and the transom
so that the “planking” fits (see also drawing 3 and transom details).
l3.Fasten planking to transom and stem with screws.

ATTENTION: Drill vert precise with a 1.5mm drill.

14. Remove over-standing material from the planking towards the stem.

l5.Remove side panels, apply Epoxy glue and fasten the screws.

16. Remove screws after curing. At the chines tape plastic tape as shown in drawing 5. Turn boat over and apply Epoxy glue to the chine corners.

l7.Around the bottom, transom / planking apply fillets
(mixture of Epoxy / fused silica and glass bubbles) (radius approx
25mm), see also drawing 5.

18. Impregnate the Boot for the second time completely with Epoxy (Epoxy
with approx. 3% fused silica to prevent sagging.

19.Install the superstructure to the aft seat edges. Fit the seat parts H
(drawing 1) and mount. Fit the top of the bench seat to the side parts. Apply
fillets to the bottom of the seat between planking and bench.

2O.Mount/glue the upper stringer as shown in drawing 1 Y.

21 Remove 300mm from the lid G. Glue to the stem side of the forward part. If the box should be locked, glue 3 18 x 18 mm wood pieces with 6mm plywood reinforcement as shown in drawing 6.
Close the lid with an eye bolt and lock.
Glue 18 x 18mm wood strips to the top of the seat on the inside (see drawing 3 part).
Place a cross bar and a piece of plywood on the back side
(see drawing 6). Drill a slot for the eye-bolt in the front. Then
impregnate the lid 3 times with epoxy.
22.On the inside of the stem glue a piece of plywood 9mm. Dimension 6Ox6Omm. To enforce the area for the eye bolt.

23. Turn boat over and round off slightly on all sides (see drawing 5) and impregnate with Epoxy until no Epoxy is absorbed any more.
24.Cover the outside of the boat with 120 g / m2 fibreglass fabric. First the stern and transom, the bottom and finally the side planking.
Overlap the fabric about 100mm on all sides.

HOW TO APPLY THE FIBREGLASS CLOTH
Cut the fibre glass cloth to fit the boat with an overlap of 100mm
Make marks with a soft pencil. Roll up the glass fabric

Apply Epoxy to the hull. The glass fabric,
Put the glass fabric to the hull, starting at the sides. Apply Epoxy, use a squeegee to get all air inclusion out of the fabric.

D this on the whole boat. After coating, the fabric must be translucent but without showing white spots. The fabric should also not "swim" on the epoxy (too much epoxy).
Air bubbles or too much epoxy can pressed out with a squeegee.

ATTENTION: Do not use a bleed roller for this work.
These do damage the tissue

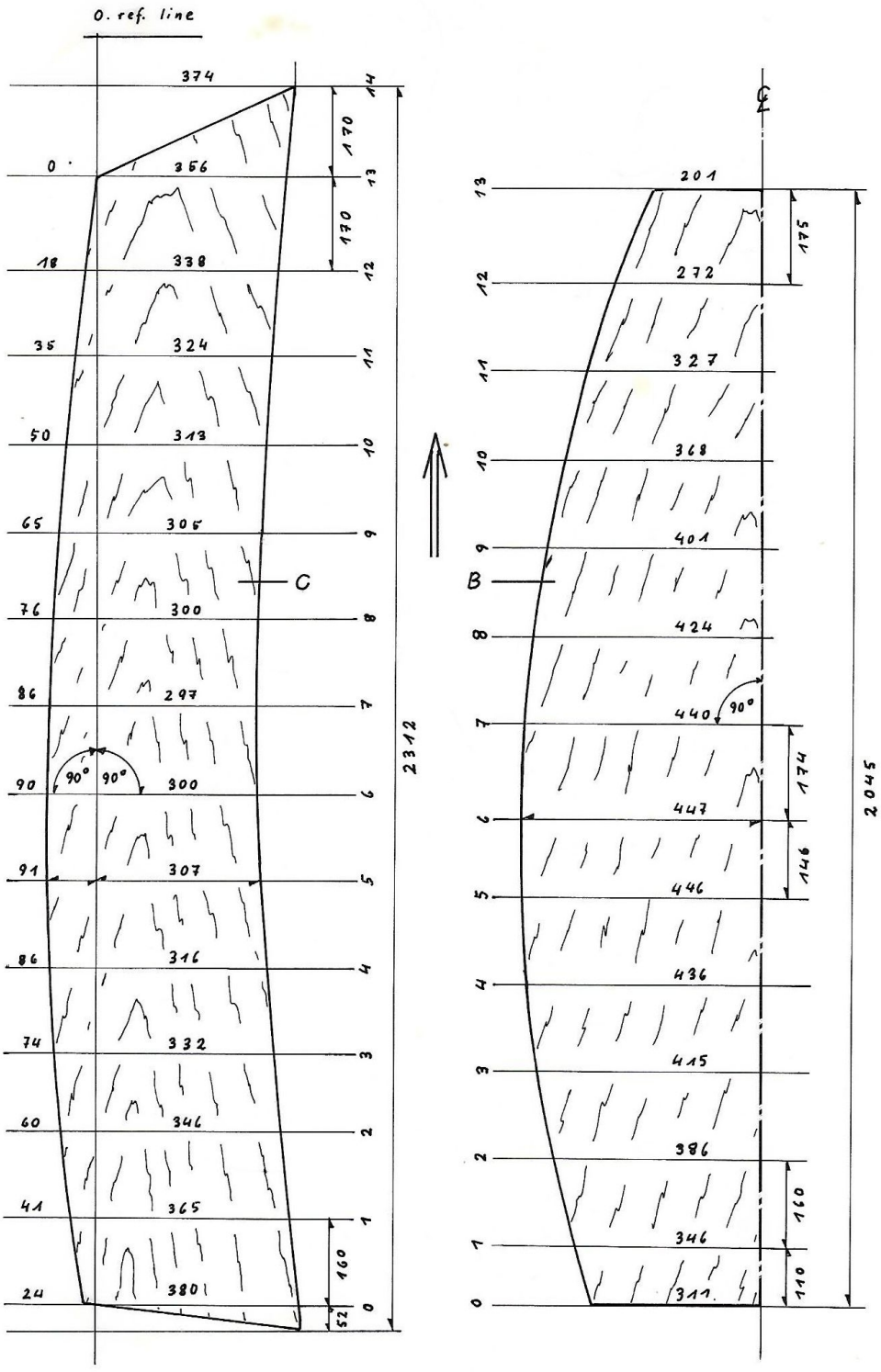
After approximately 4 hours remove over standing glass fabric parts with a knife. Let cure for an other 24 hours.
Apply a not too thick filler (Epoxy / fused silica/ glass bubbles) to fill the structure of the fabric and others irregularities.
d. Apply Mahony outer stringer. When the boat as a support boat
It is useful to use a 24mm rope as a bumper

Mount the mahogany slats 22mm under the deck side.
Finish the boat with D.D. or PU lacquer. Install the eye bolt. Mount the row locks.
Experiment for best position of the row locks.

The transom is strong enough for a 2 HP outboard engine.
Engine.

SAIL PERFORMANCE

To be able to sail you also need the dagger board case, the mast support and the mast foot are made. Mast foot and mast support are depending on the chosen rig. Drawings 4 and 6 show how things can be made
In addition to the drawn spritsail, other sails can be used till 4 m2
Make the dagger board case from 6mm plywood (see drawing 3 part L, dotted lines). Glue 18Xl4mm Mahogany pieces at the front, top and back.
The the case 80mm measured from the bulkhead on the side A of the the seat. Do this before applying the bottom. At the bottom apply a fillet and reinforce with two glass fabric strips.
Make the dagger board from 9mm plywood, length 780mm. The shape can be done with a belt sander (for profile see drawing 4). This is only one side of the profile (scale 1 2 1).Glue the pieces together. Cover the daggerboard with glass fabric (l2Ogr/m2).
Have fun



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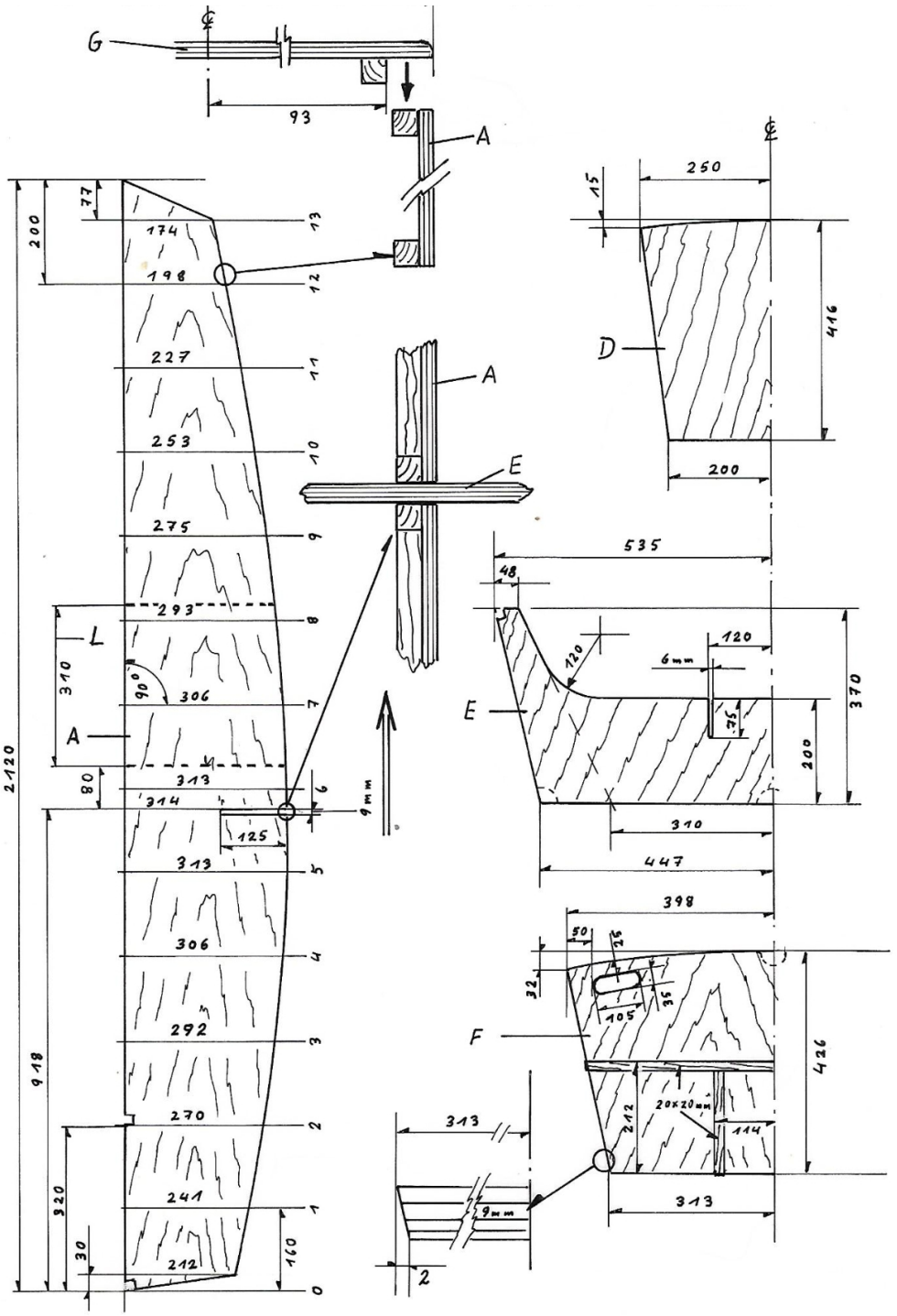
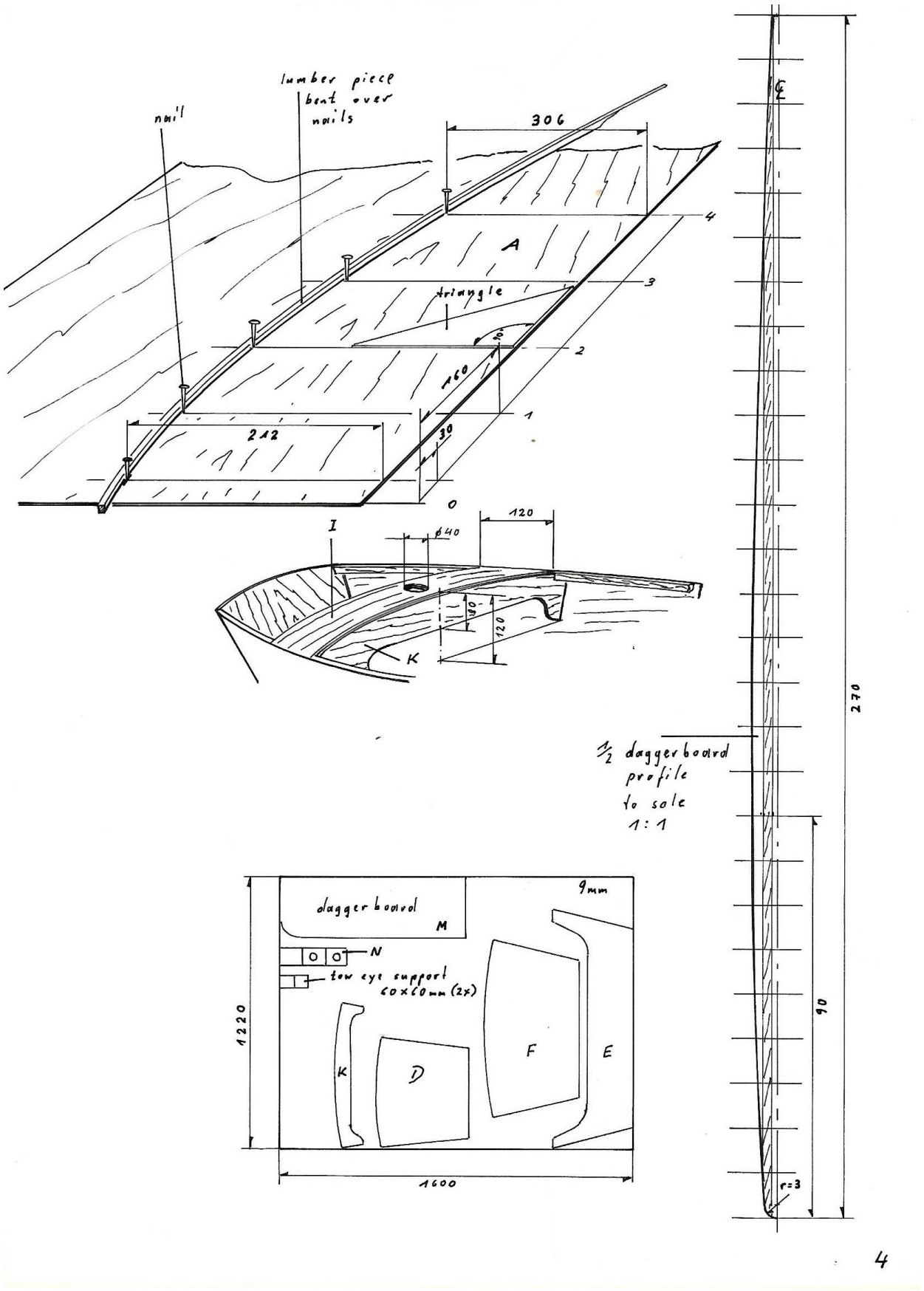
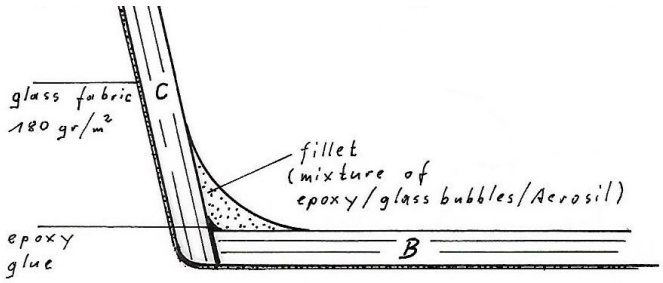
dimensions

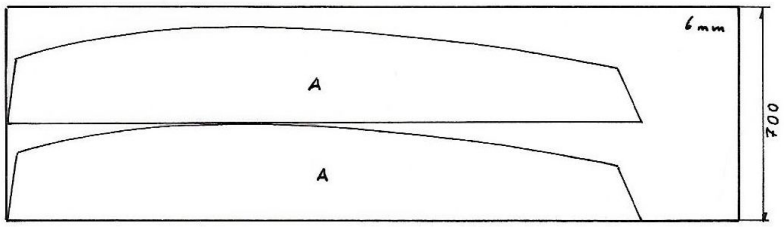


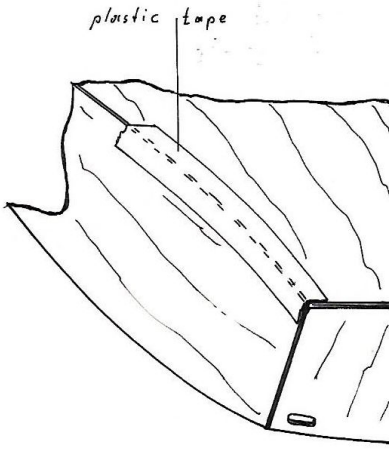
No. 3 Center piece and some details

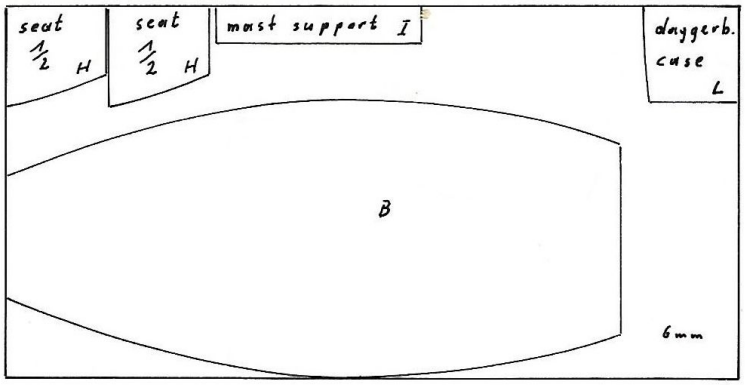


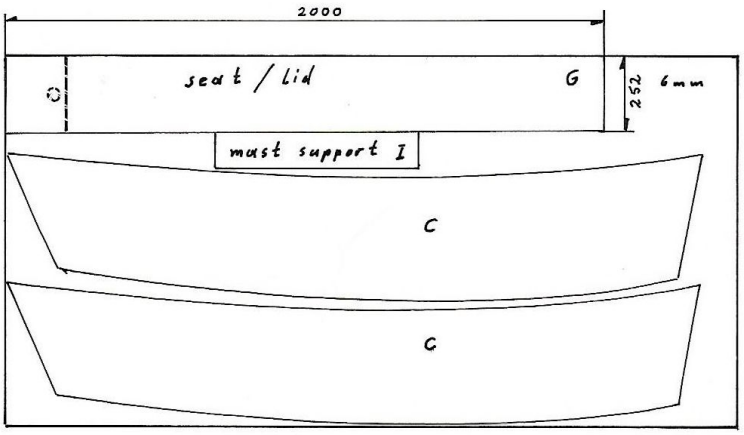
No 4 Lofting and dimensions part

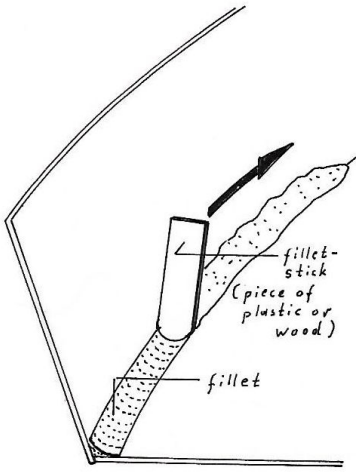




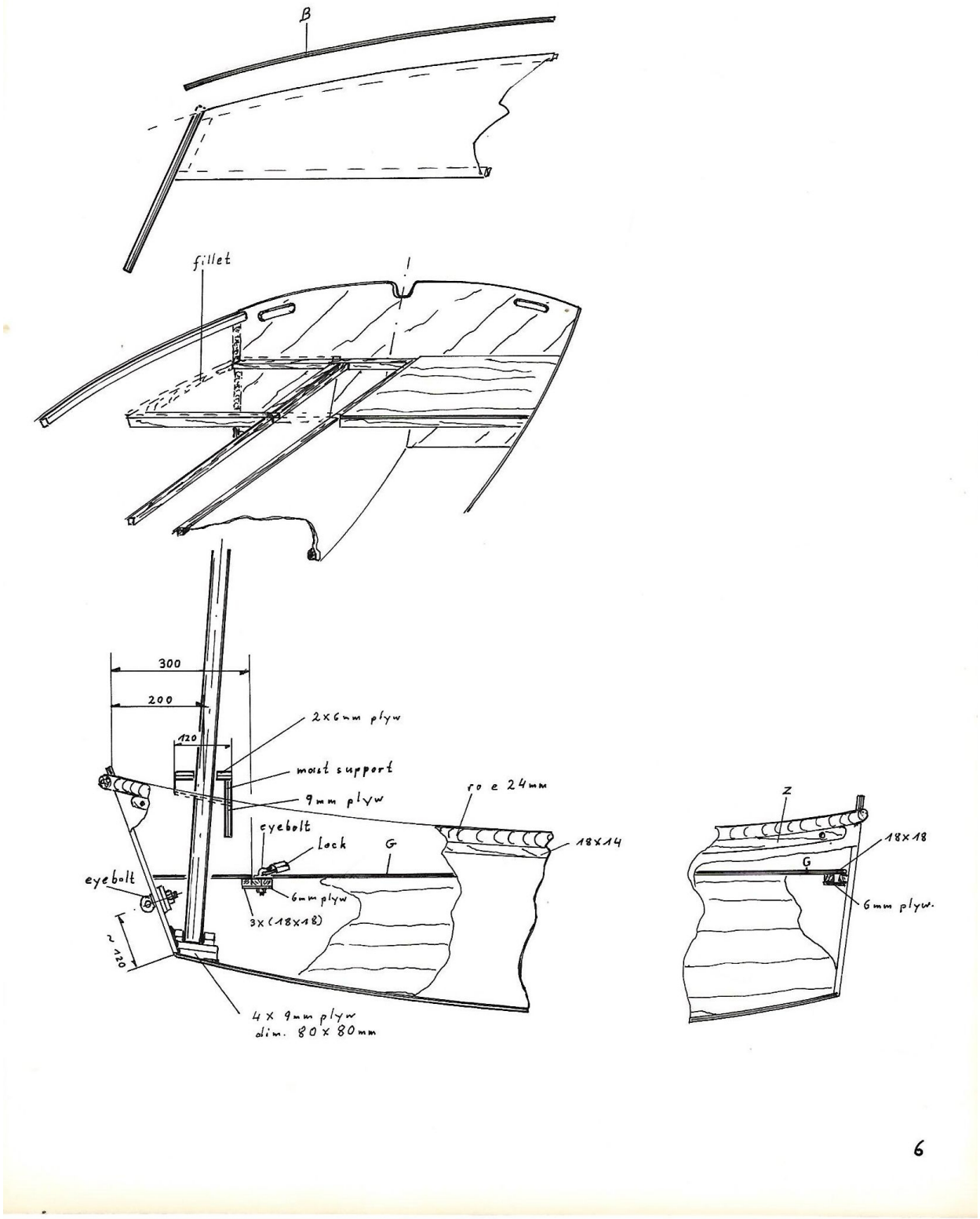








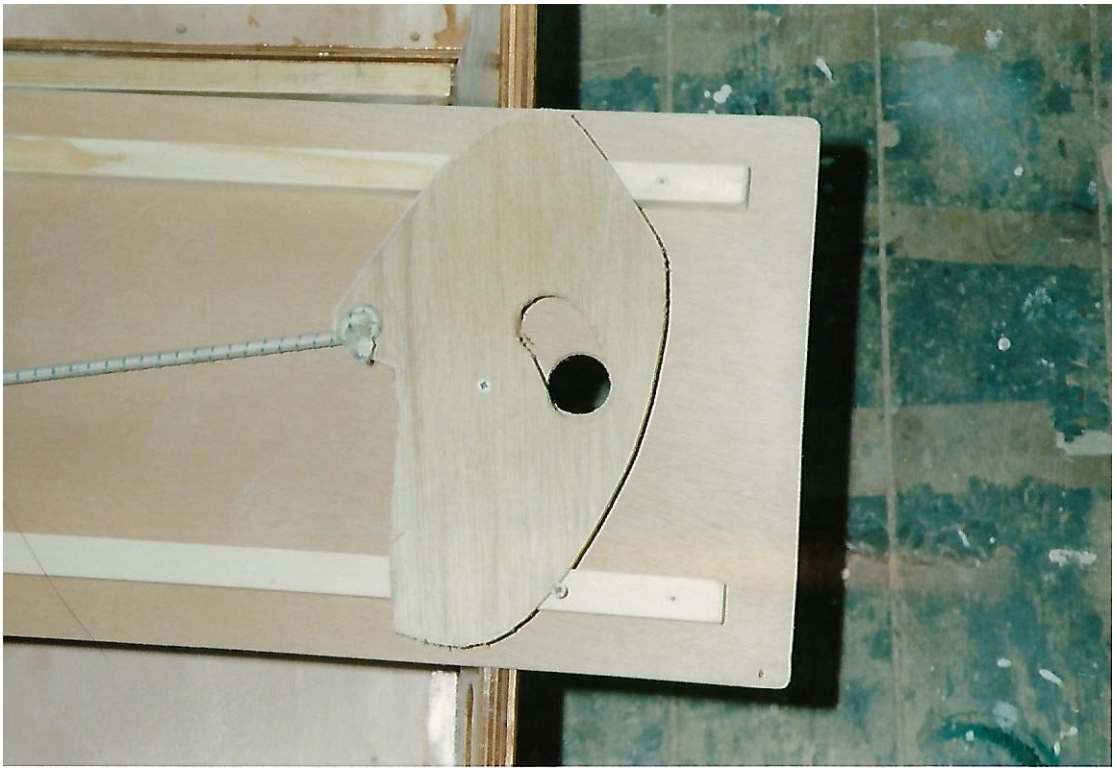
No. 5 Material cut and fillets



No. 6 mast step some details

Construction

Bottom view before Epoxy and glass cloth



Lock

Ready without oar locks

FRITZ on our PELICAN

LIST OF MATERIAL

Material	Dimensions	Pieces	Remark
Plywood			
Triplex 6mm	2,5 x 1.22 m	3	A/B/C/G/H/I
Multipl.9mm	2,5 x 1.22 m	1	D/E/F/K/N/M
Fir	18 x 18 mm	18 m	inside stringers
Mahogany	18 x 14 mm	10 m	outside stringers
Screws	3 x 20 mm	100 stk	remove after curing
Epoxy + hardener		5 kg	all Epoxy work
Fused silica		0,2kg	for filler additive
Glass bubbles		0,5kg	filler additive
Glass cloth	120gr/m2	5 m2	covering
Pu lack		2 kg	
Rope	24mm	6m	
Pat eye	medium	1 piece	

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As many will know I design mostly catamarans and some other unusual boats. My plans are available at Duckworks https://www.duckworksmagazine.com/04/s/new.htm
or K-designs https://www.ikarus342000.com/index.htm