

GREEK TRIREME, 480 B.C.

Scale: 1/72

Length: 515mm

Width: 180mm

Height: 220mm

HISTORY:

The model represents a Greek Trireme from the age of battle of Salamis (480 B.C.). The crew were 170 oarsmen and about 30 warriors. Under favourable conditions, trireme could fly at up to 12 miles per hour. The major weapon of the trireme was a bronze ram which penetrates the side of enemy vessels. Main propulsion was rowing. Sails were used only for lasting longer voyages. During battle the sails and the mast were lay down and the ship was powered only by oars.

Recommended tool list:

- 1) Modeler's knife or scalpel
- 2) Mini drilling machine
- 3) Drill bits 1mm and 2.5mm
- 4) Selection of abrasive paper
- 5) Scissors
- 6) Pliers
- 7) Clothes pegs or crocodile clips
- 8) Pencil
- 9) Rule
- 10) Set of needle files
- 12) Sewing machine
- 13) Electric plank bender

Before you begin:

Before you begin to build the model it is necessary with a vengeance read building instructions and plans. Also chronology of assembly steps is necessary to keep. You check if the parts go together before you glue it respectively you make any corrections with sandpaper. During the gluing, painting, lacquering and at work with another chemical materials is necessary well ventilated in your working room. You cut the parts from sheet until actually required for fitting. You cut by knife only in direction off ward your body so that you head to injury risk.

Coloring:

The antique Greek ships have had the hull sealed by resin, whereby they have obtained the black color. The board sides might have been colored in red. Big eye was painted on every side of the forward. The deck was in natural color of wood. The paints for plastic models or a special paint for wood is possible to use for painting this model.

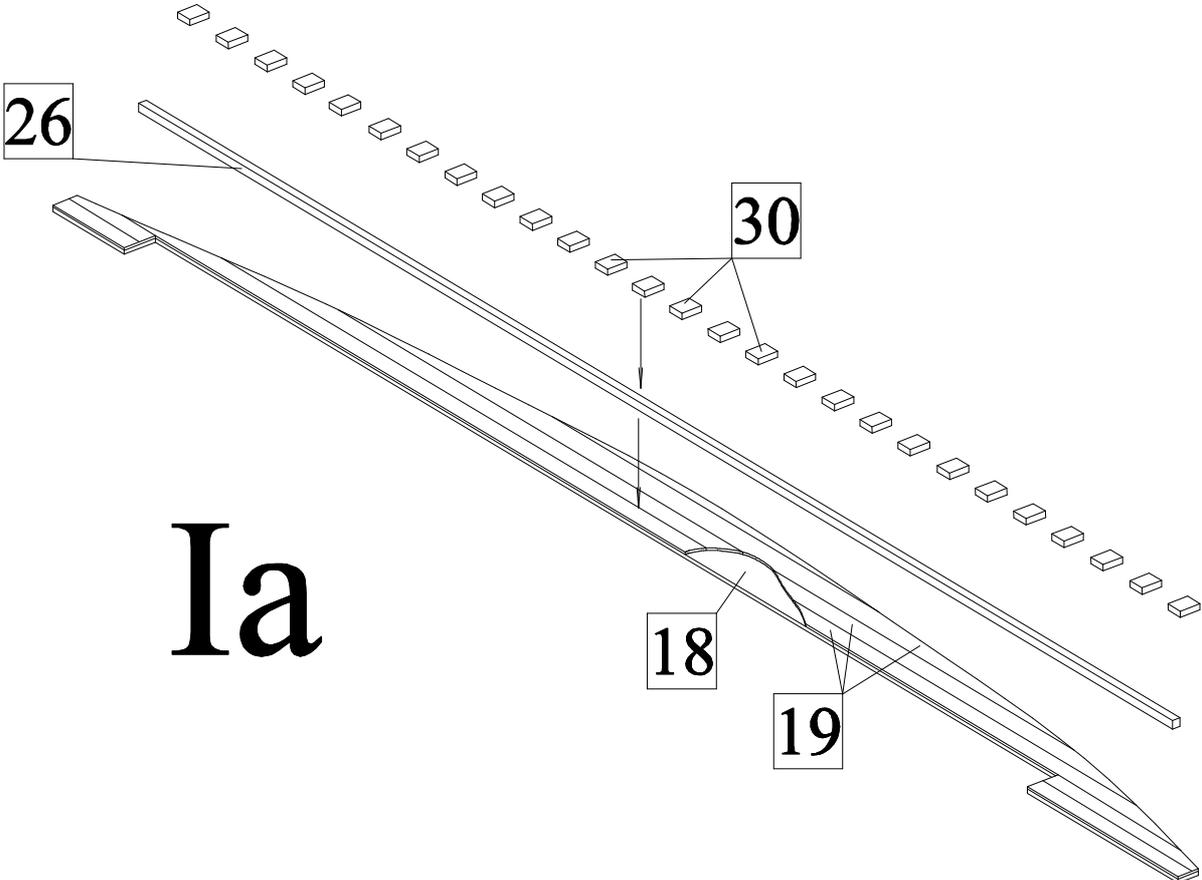
Bending of wooden strips:

The Wooden strips will be more flexible if you will boil it in hot water about 10-15 minutes. You can bend the strips along any cylindrical area but ideal is using of special plank bender (it would be best to use electric plank bender). If you need to do very small radius so you must bend it in more steps.

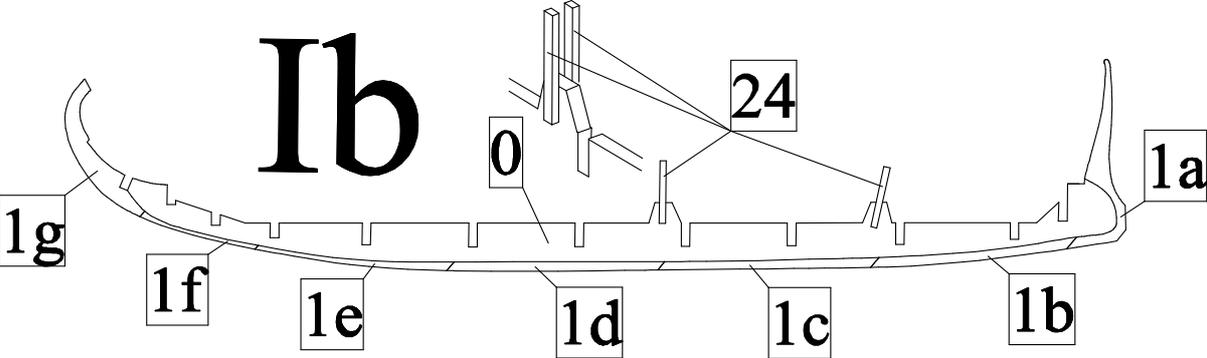
Model building process:

I) Framing:

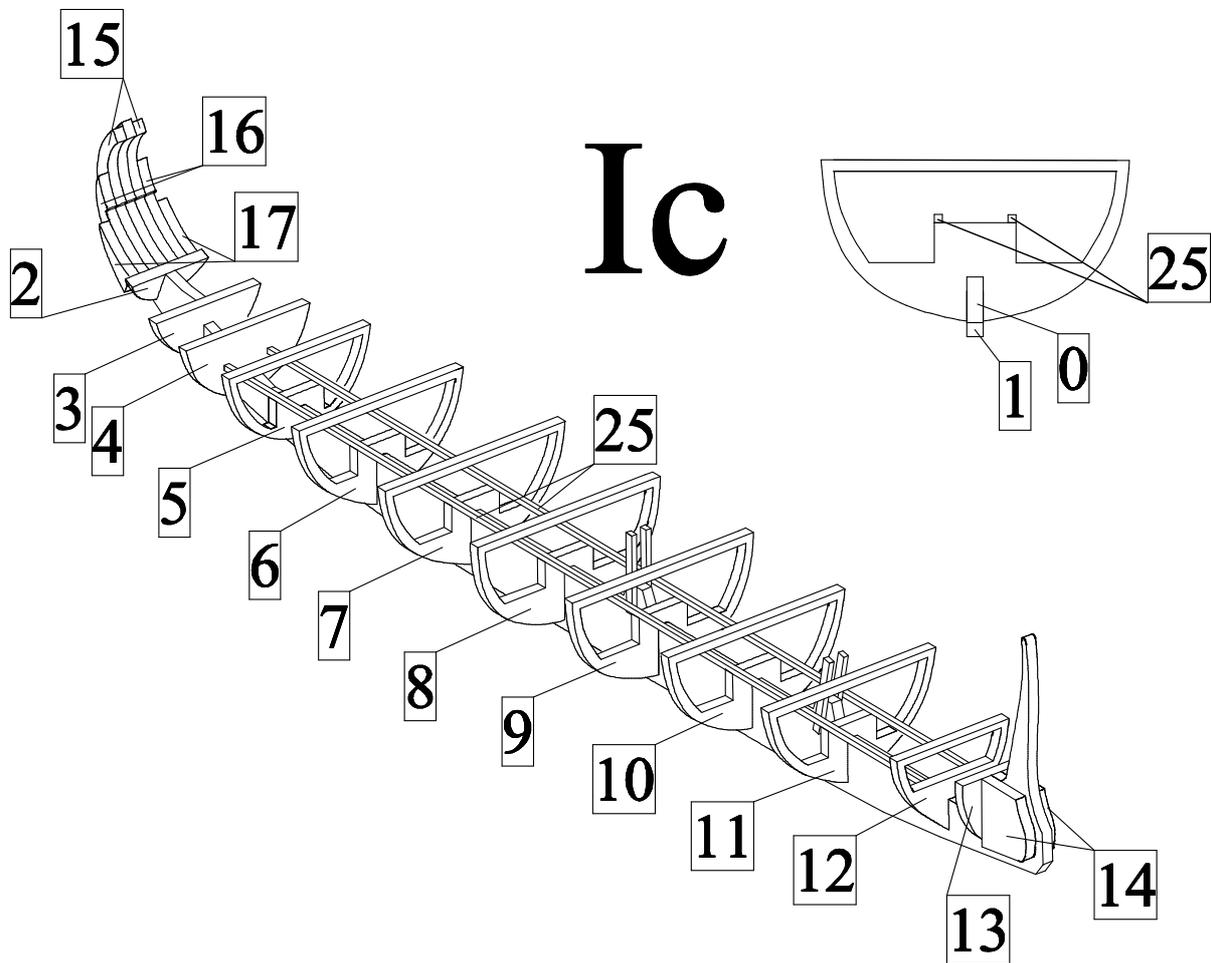
a) Lower deck: First a deck 18 planking by strips 19. Then glue a beam 26 to the deck. To the beam 26 glue also seats of rowers 30. Lower deck is shown in 1:1 scale in the plan 1.



b) Glue parts of keel 1a-1g to the part keel 0. Then glue to the keel also mast reinforcements 24. The keel is shown in 1:1 scale in the plan 1.

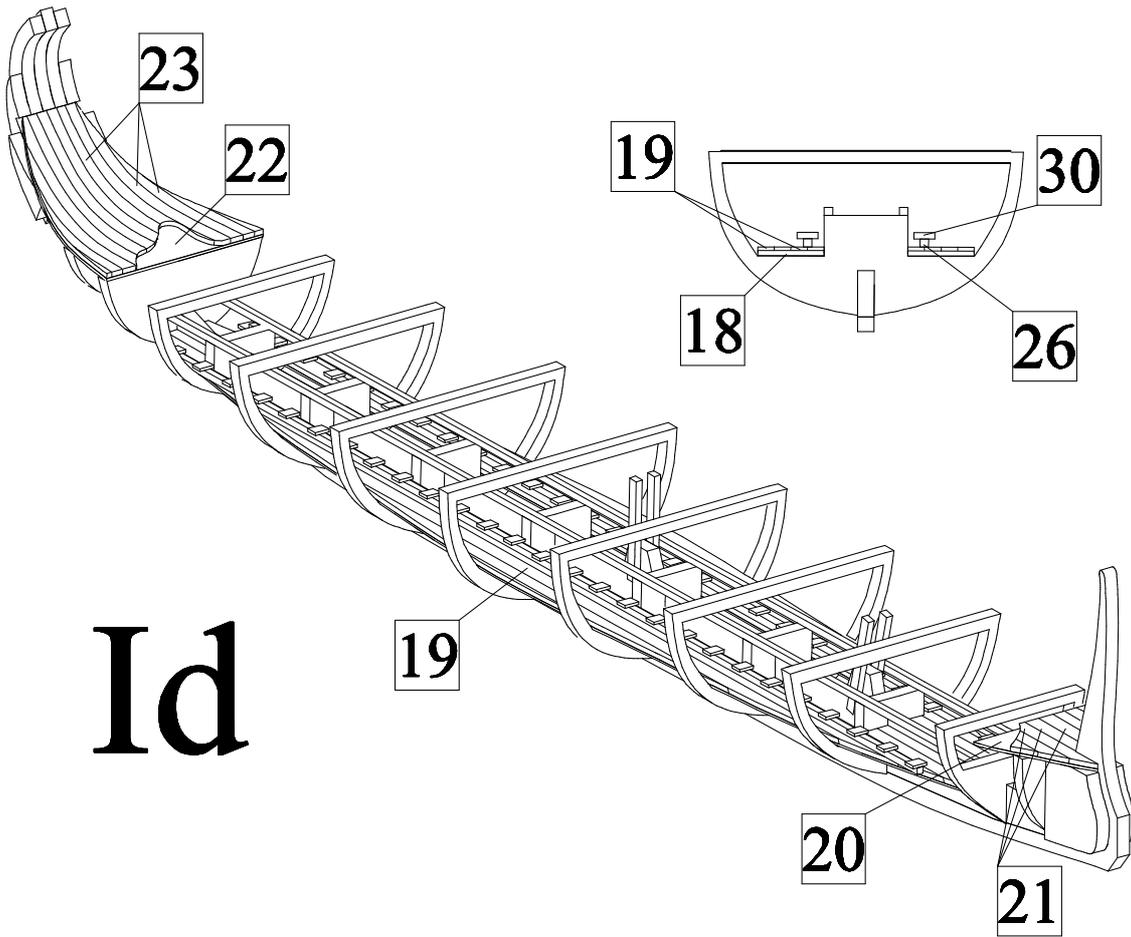


c) To the keel glue frames 2-13. Make sure that the frames and keel keep a right angle each other. Then glue to the frames 4-12 reinforcement beams 25. Then glue reinforcements 14 to the bow and reinforcements 15-17 to the stern.

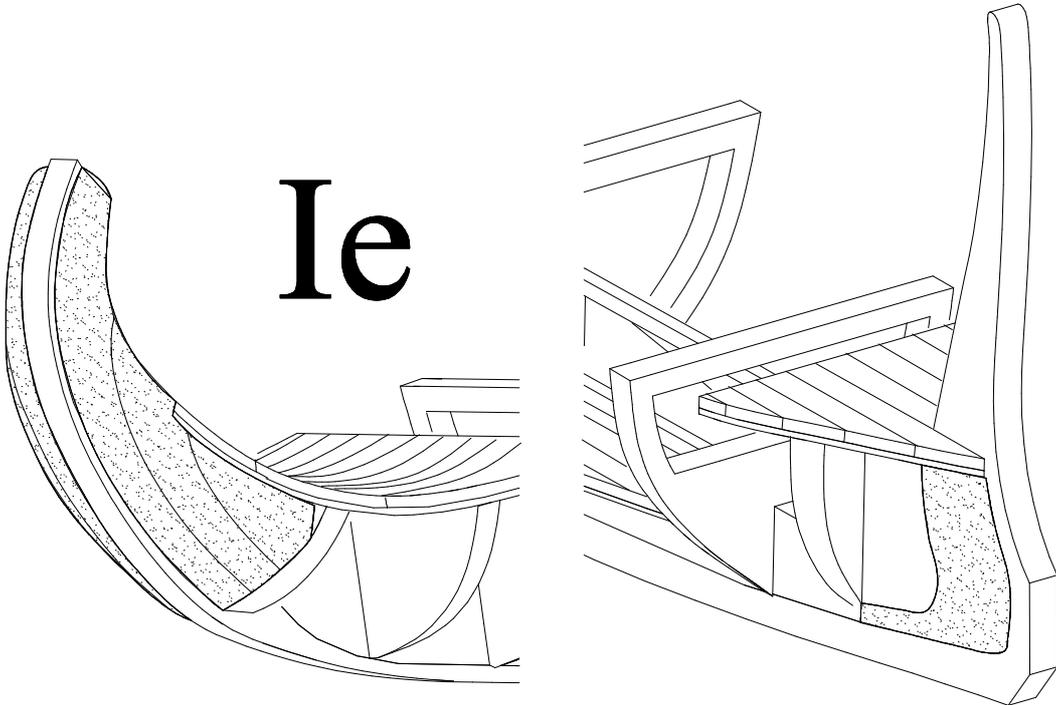


d) Run the Lower decks 18 thru the frames 5-11 and then glue the decks to the frames. Glue a deck 20 to the bow and then planking it by strips 21. Then glue a deck 22 to the stern and planking it by strips 23.

e) Sharpen by a sand paper the bow and stern reinforcements 14-17 into required shape.



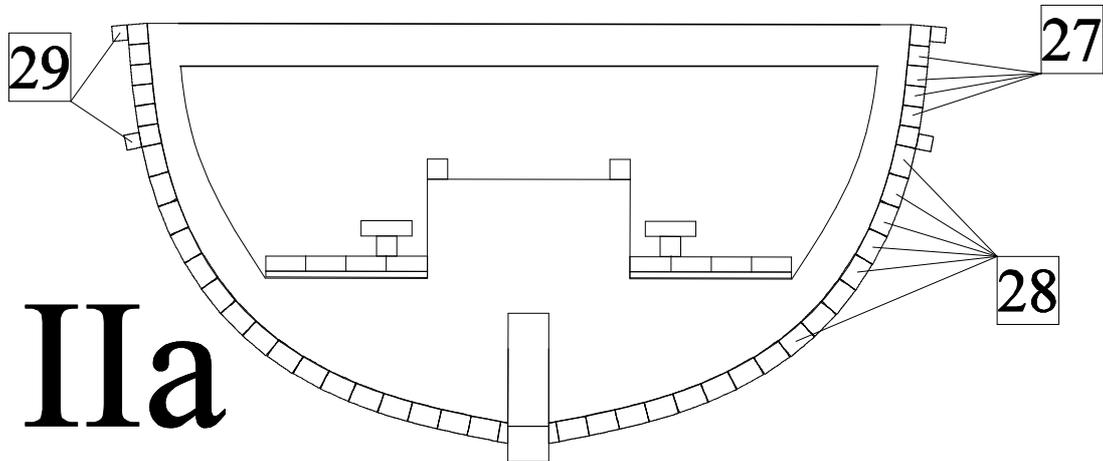
Id



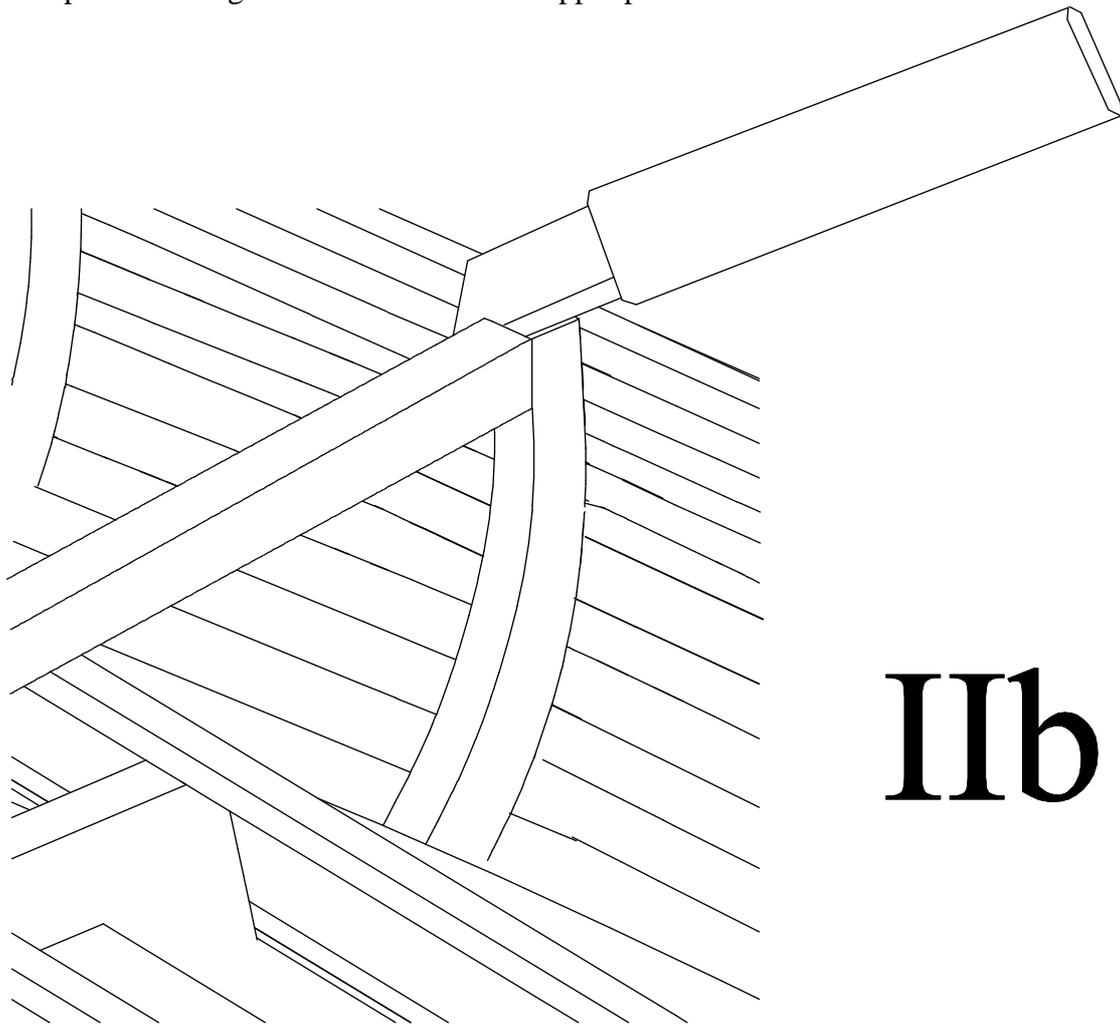
Ie

II) Hull planking

a) Before planking bend the strips into required shape (A procedure of the strip bending is described in a start of this document). Start the planking from upper edge of the hull with strips 27 (first six strips 2x2mm). Rest of the planking make by strips 28 (strips 2x3mm). Then glue to the hull also wales 29. The hull is shown in 1:1 scale in the plan 1.



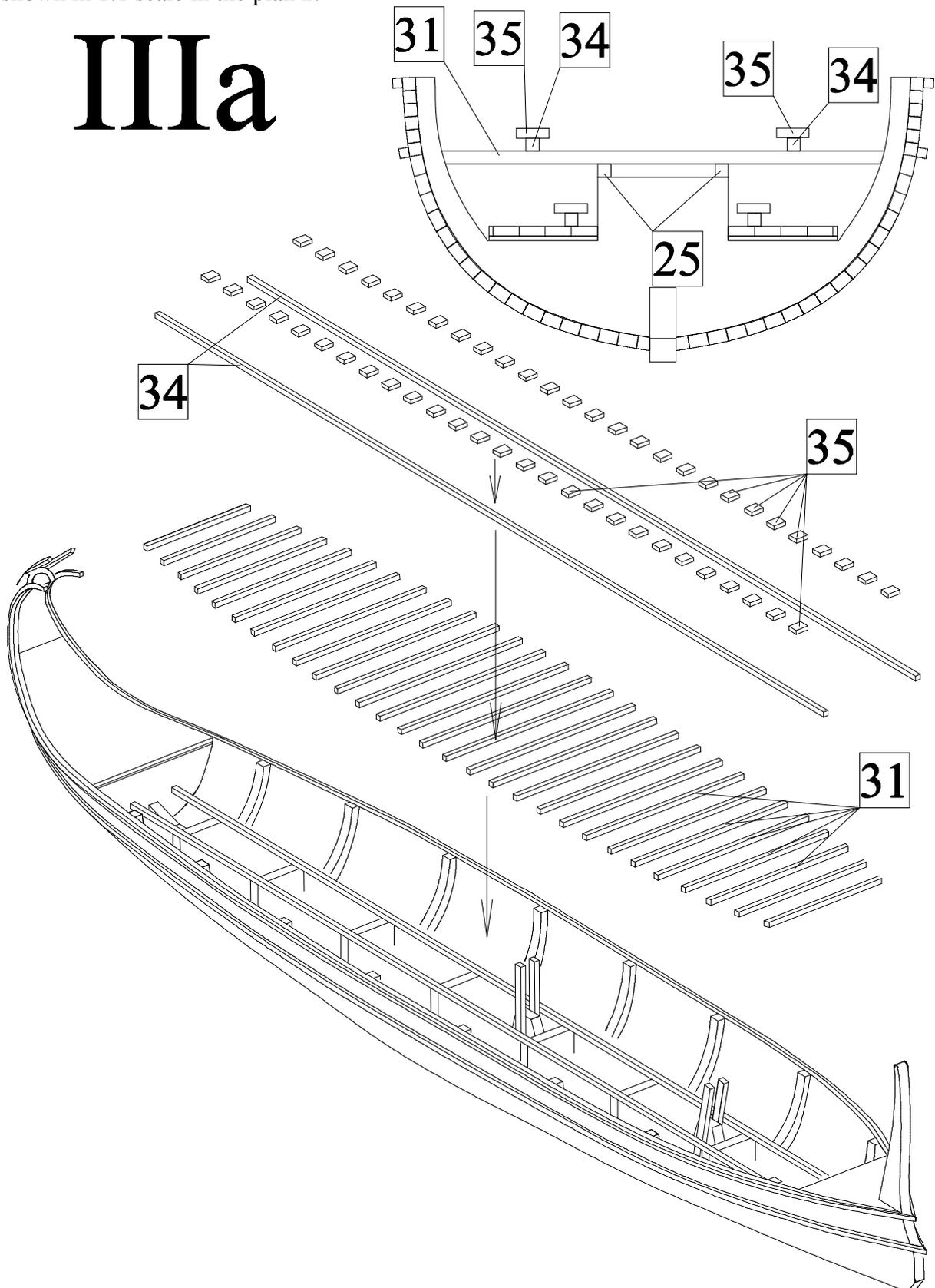
b) After perfect curing of an adhesive cut out upper parts of the frames 5-12.



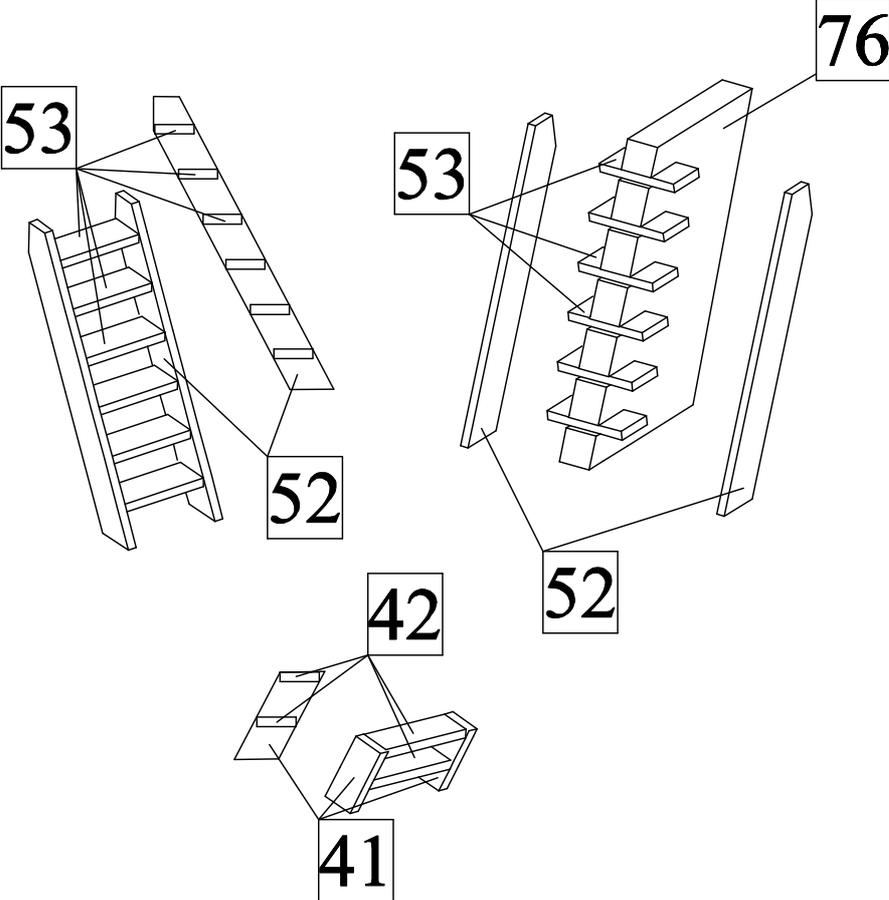
III) Inner structures:

a) To the longitudinal beams 25 glue transverse beams 31. Then to the transverse beams glue longitudinal beams 34 with seats of rowers 35. Exact location and dimension of the beams is shown in 1:1 scale in the plan 2.

IIIa

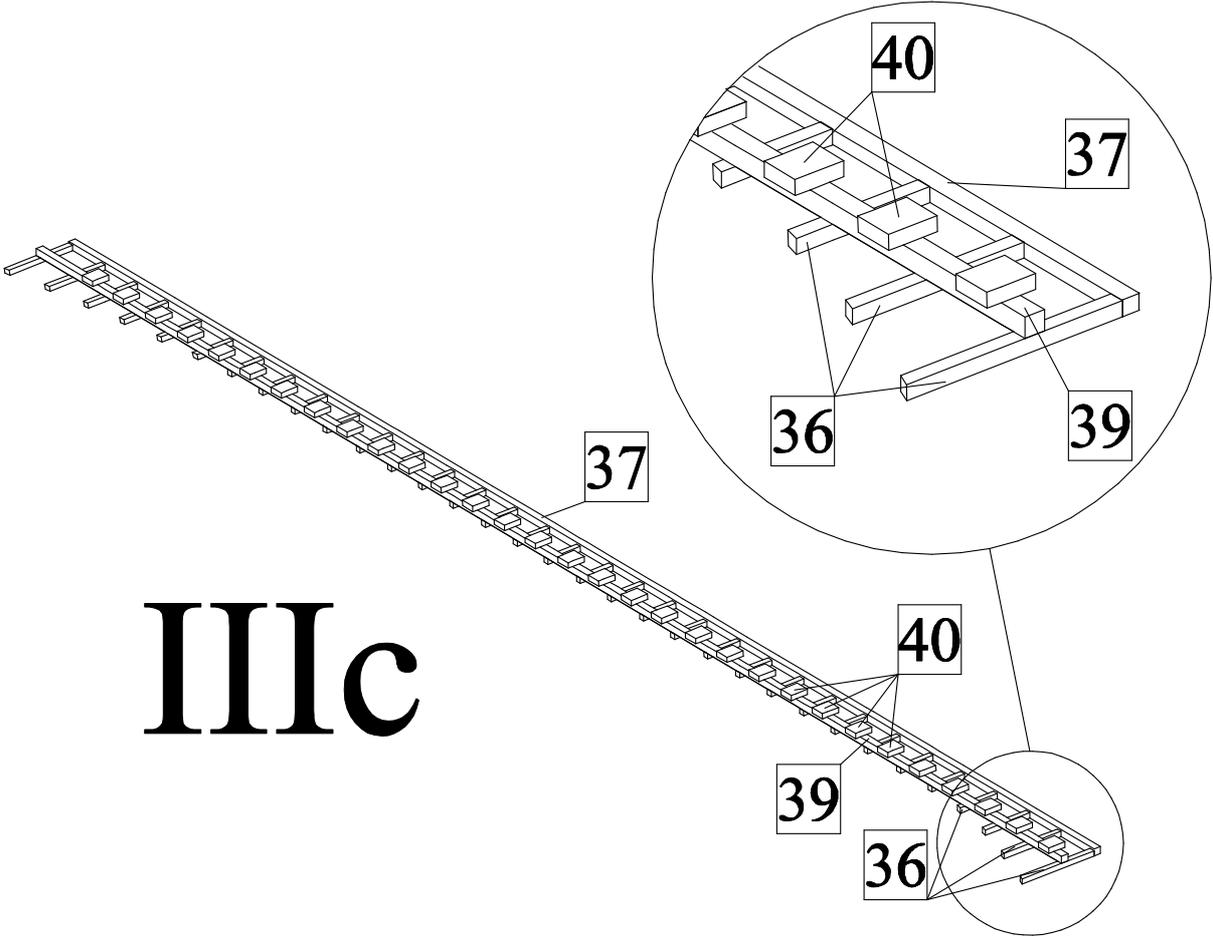


b) Make stairs from parts 41,42 and 52,53. For the production of the stairs use a preparation 76.



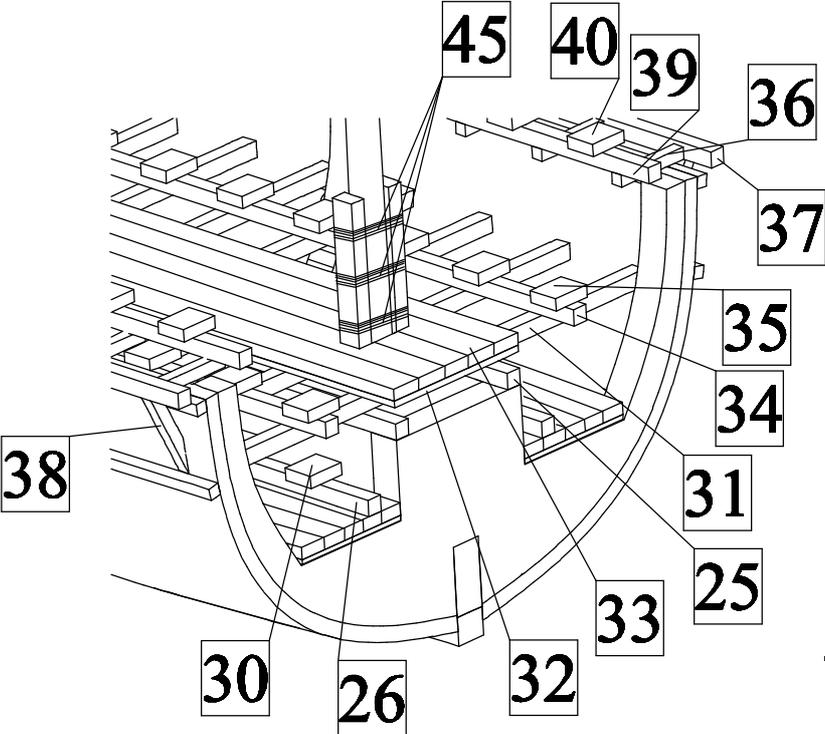
IIIb

c) Make a last row of seats of rowers. The last row is set on transversal beams 36. First glue to longitudinal beams 39 the transversal beams 36. Then glue to the beams 36 longitudinal beams 37. Then glue to the beams 39 seats of rowers 40. Finally glue the whole construction to the hull and reinforce it by beams 38. The whole construction of the last row of seats of rowers is shown in 1:1 scale in the plan 2.

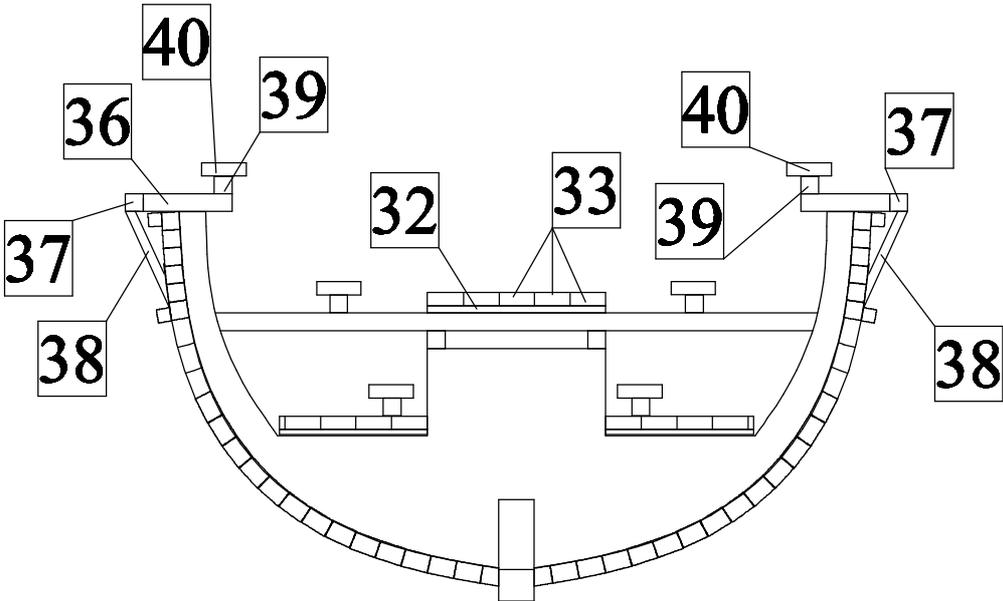


IIIc

d) To the transversal beams glue a deck 32 and planking it by strips 33. Then glue to the deck on bow and stern the stairs (made from parts 41 and 42). Then make from dowels a main mast 43 and a fore mast 44. Then tie both main and fore mast to the mast reinforcements 24. The main mast and fore mast are shown in 1:1 scale in the plan 3.

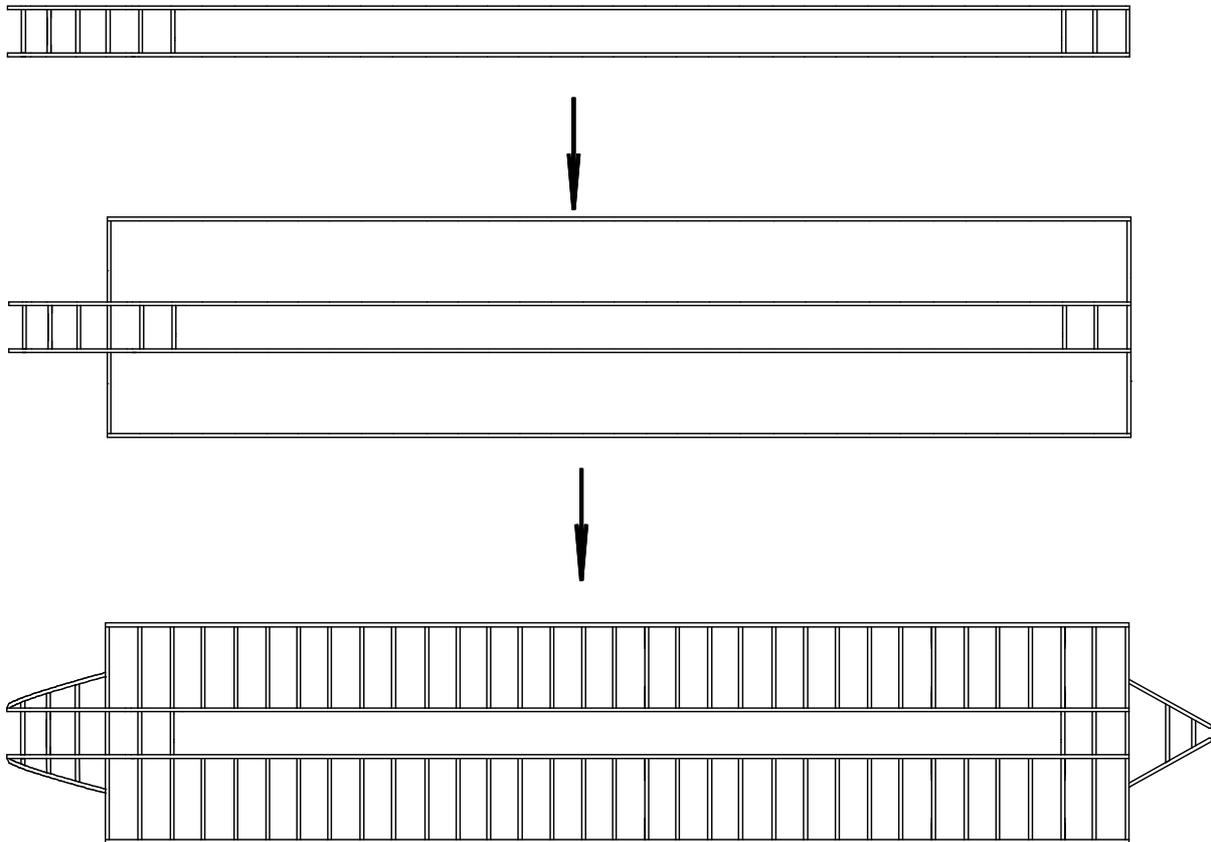


III d



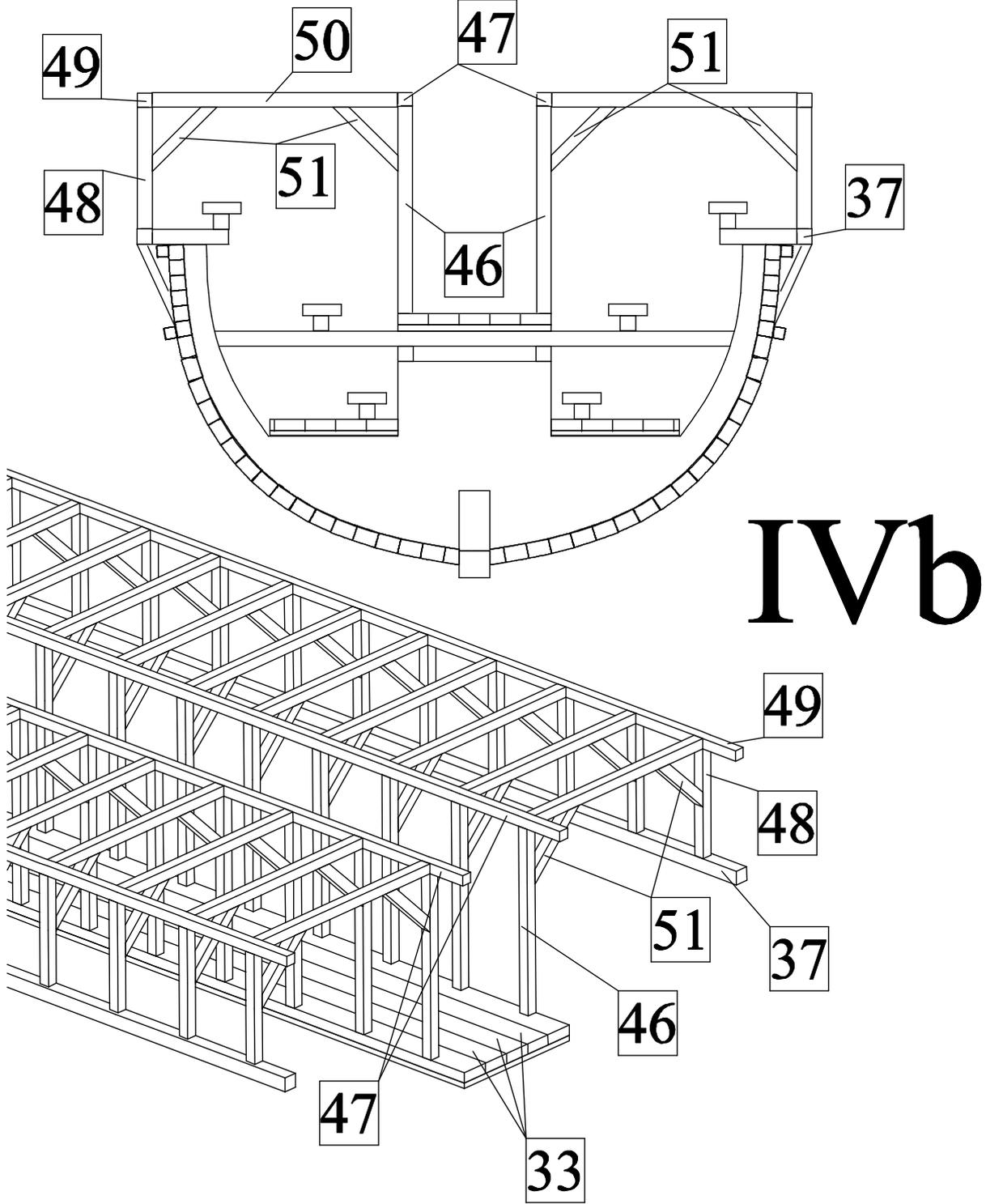
IV) Superstructure:

a) First make a skeleton of the upper deck. The skeleton of the upper deck is shown in 1:1 scale in the plan 2. You can proceed after the figure below.



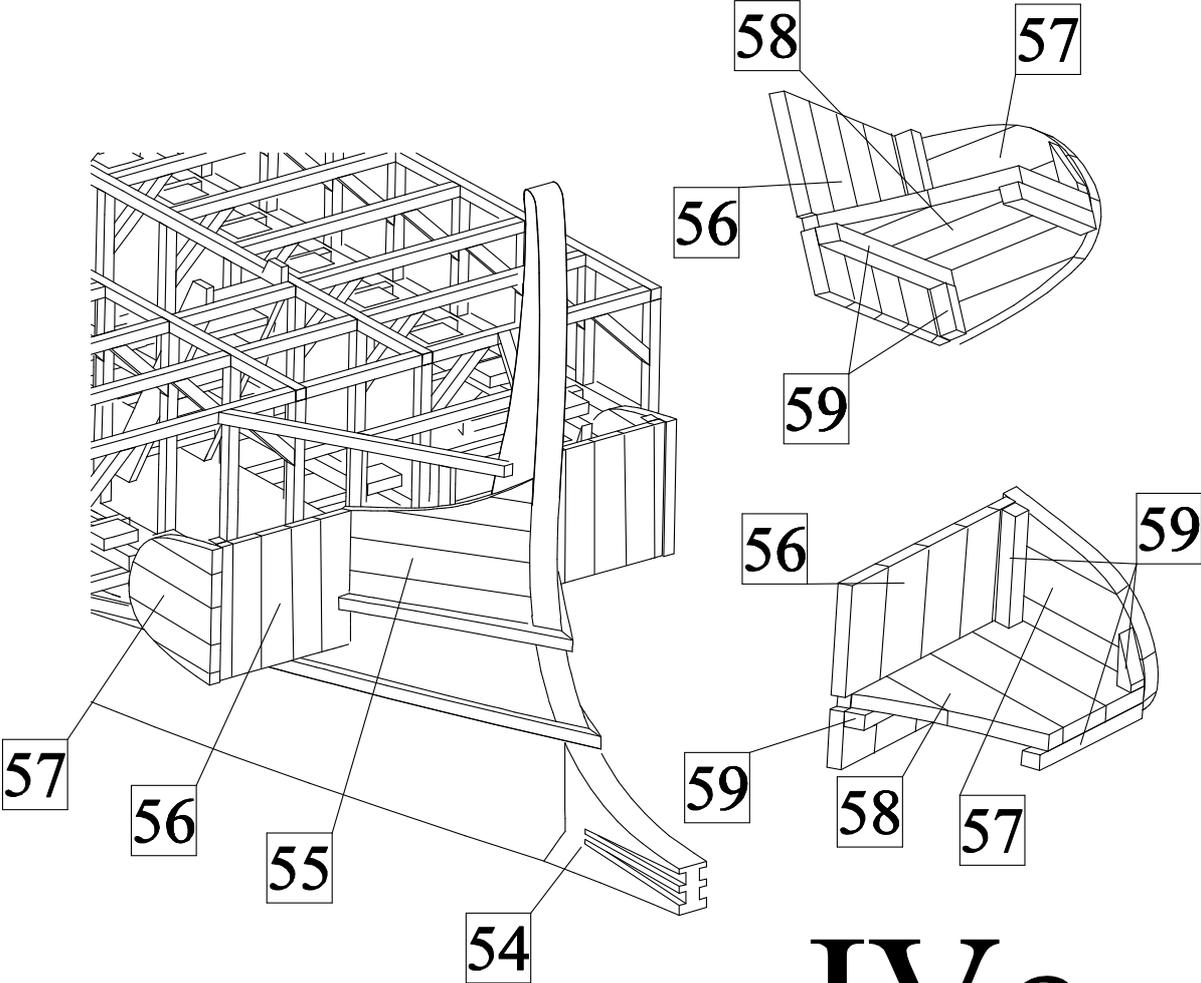
IVa

b) First glue beams 48 to the longitudinal beams 37. Then glue the skeleton of the upper deck to the beams 48. Then glue also rest of beams 48 and 46 to the construction. Finally reinforce the construction by reinforcement beams 51.



IVb

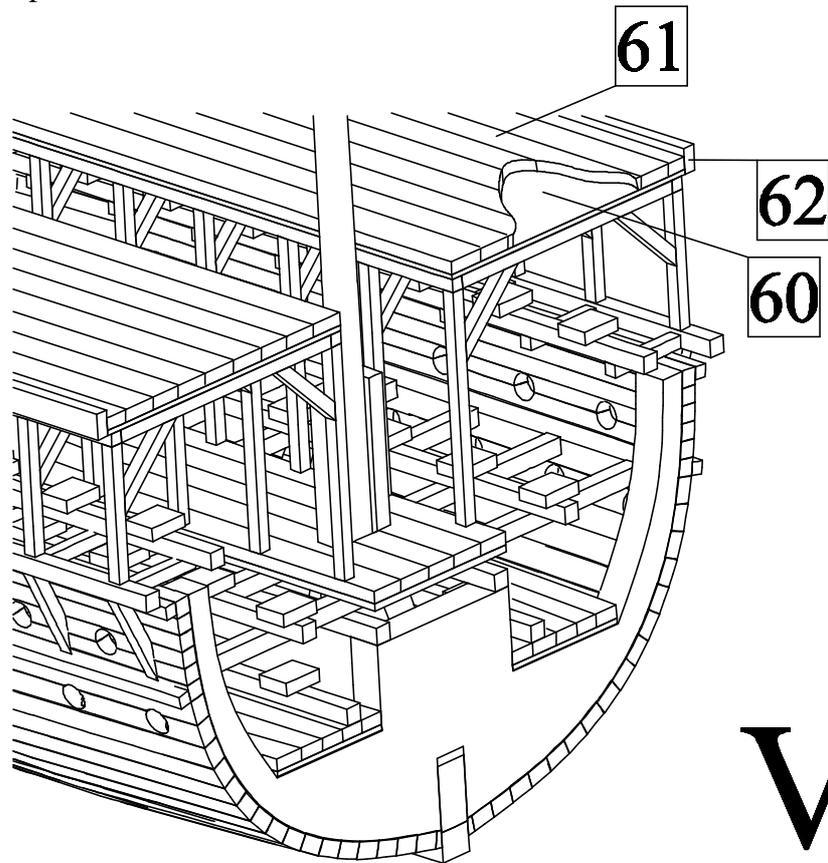
c) Glue a ram 54 to the bow. Then make epotis and bow barrier from strips 55-59. Then to the bow and stern glue stairs (made from parts 52 and 53). Position of the stairs and dimensions of the bow barrier and epotis are shown in 1:1 scale in the plan 2.



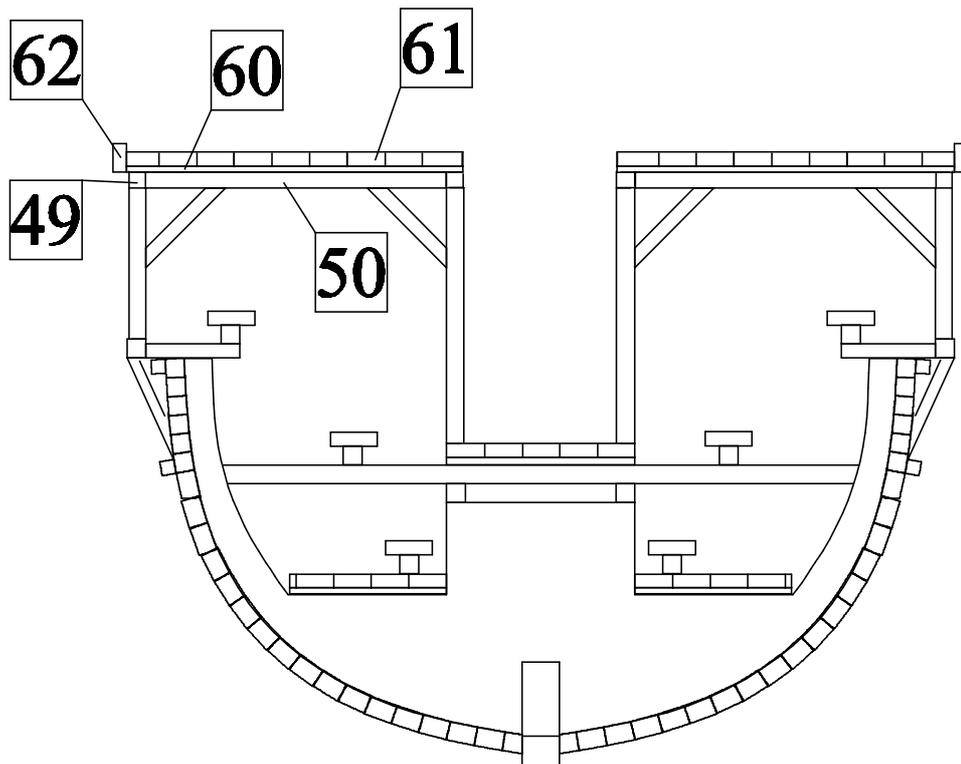
IVc

V) Upper deck:

a) To the superstructure glue an upper deck 60 and planking it by strips 61. Then border the upper deck by strips 62.

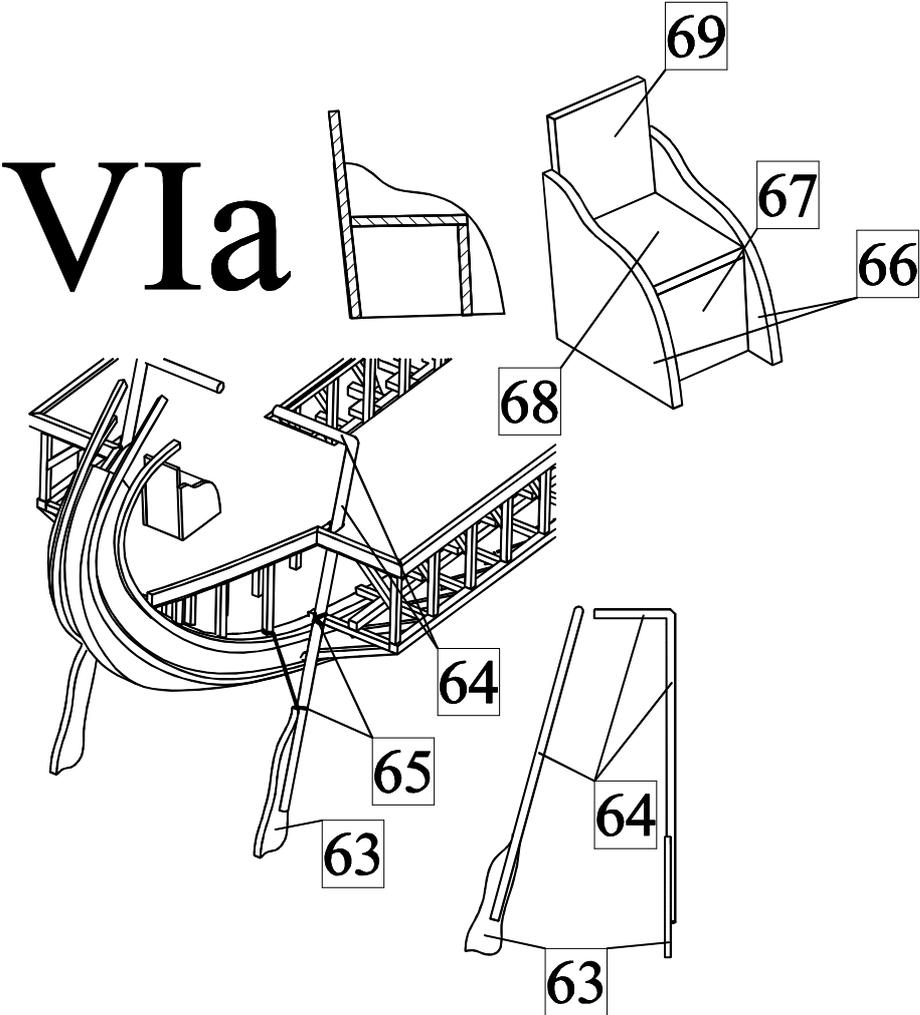


Va



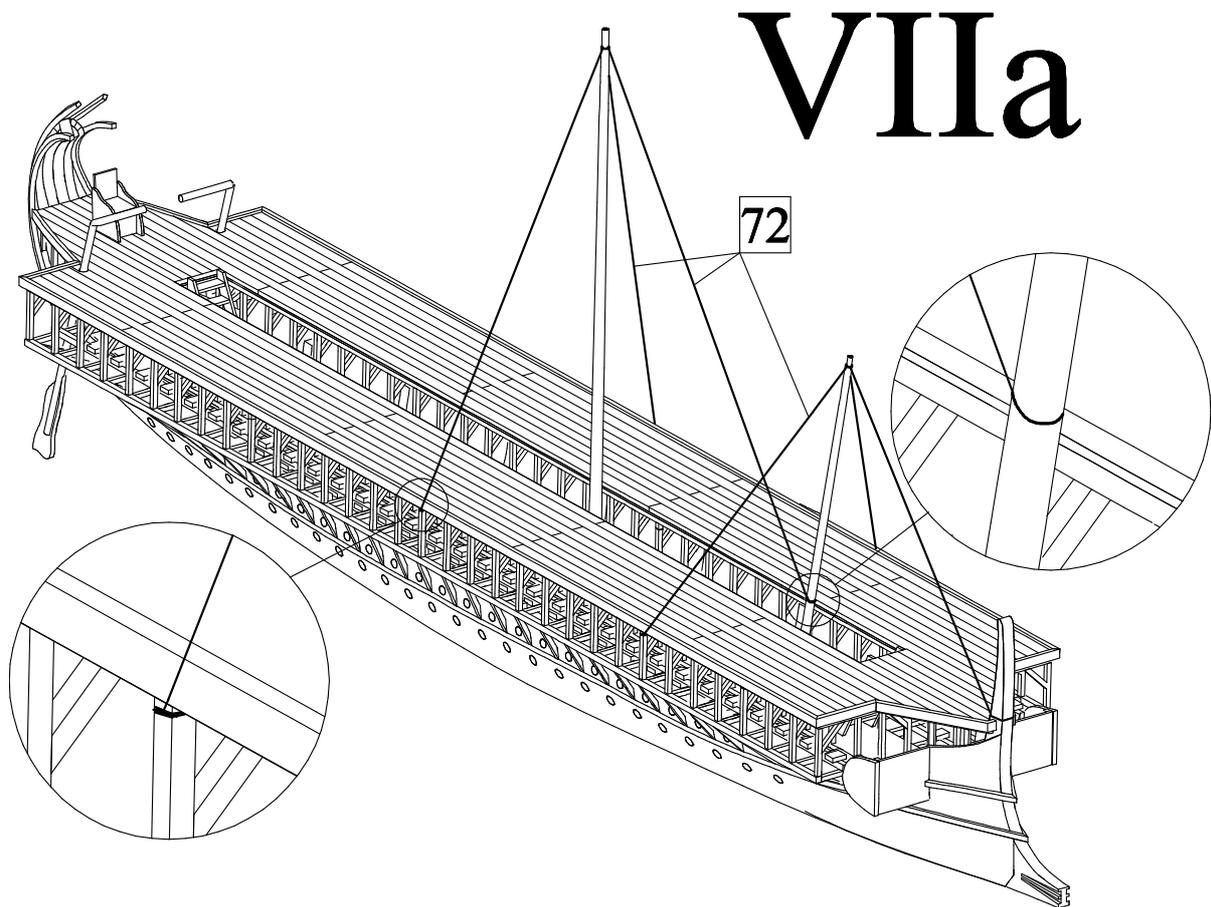
VI) Details:

a) From parts 66-69 make a chair of commander of the ship. Then glue the chair to deck on a stern. The commander chair and its position is shown in 1:1 scale in the plan 3. The make a steering oars. First glue a blade of the steering oar to a dowel 64. Then run the steering oars through holes in deck on the stern of the boat and tie the steering oars to the hull and superstructures like it is shown below. Then glue to the steering oars also handles. Steering oar is shown in 1:1 scale in the plan 3.



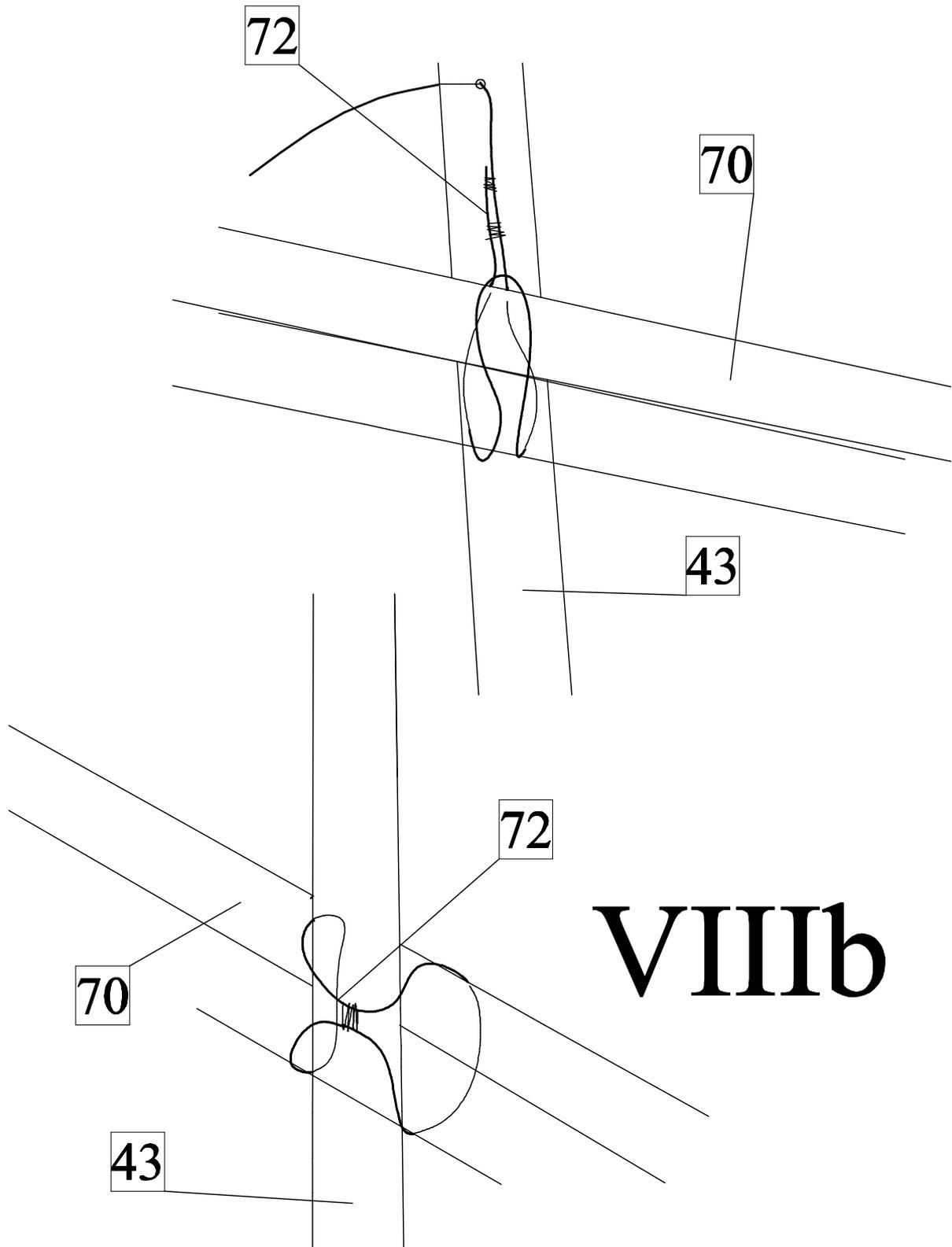
VII) Standing rigging:

a) The main mast tie by three ropes, two of them tie to beams 48 and third rope tie to the fore mast. The fore mast tie also by three ropes, two of them also tie to beams 48 and third rope tie tie to a stem. A scheme of the standing rigging is shown in 1:2 scale in the plan 3A.



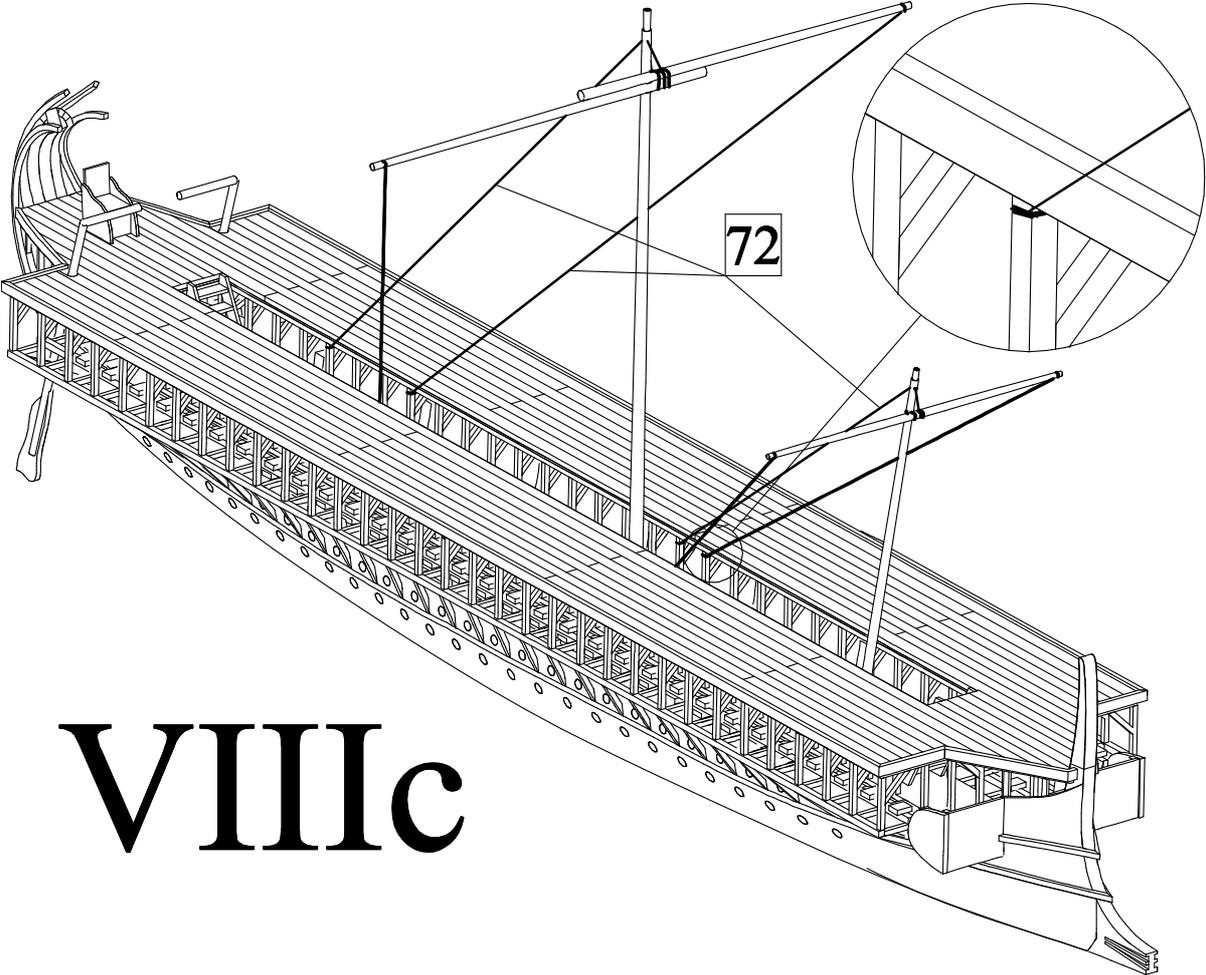
VIII) Yards and running rigging:

- a) From dowels make a main mast yard 70 and a fore mast yard 71. The main mast yard is compound from two parts which are tied together by rope 72. Both of the yards are shown in 1:1 scale in the plan 3.
- b) To the yards tie ropes for their raising and lowering 72 and run the ropes 72 through holes in the masts. Then tie the yards by rope 72 to the masts.



VIIIb

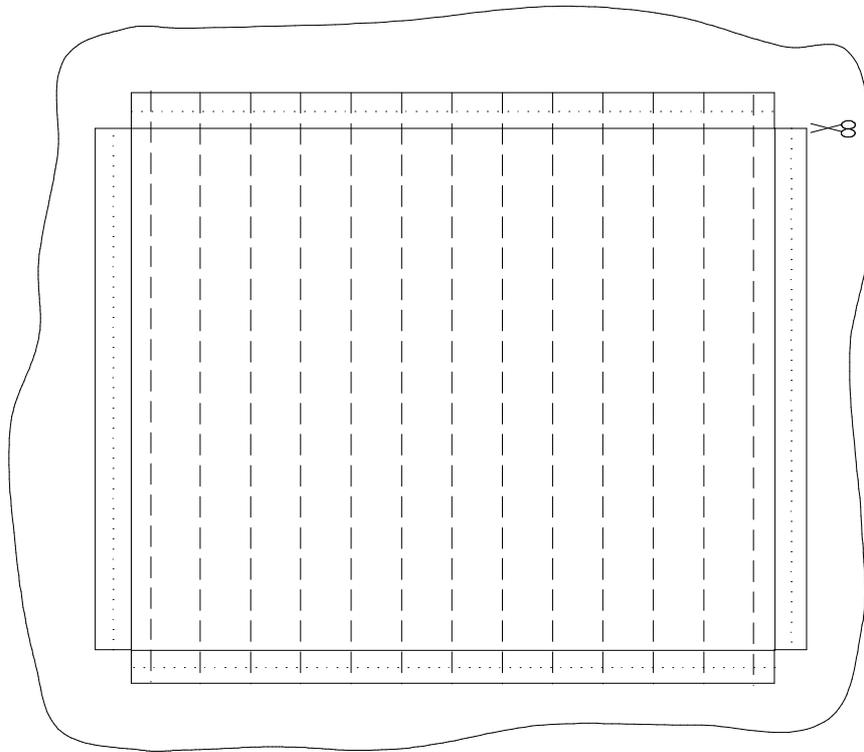
c) Free ends of the ropes for their raising and lowering of the yards tie to beams 46. To the ends of the yards tie ropes 72 for controlling of yard elevation and the free ends of the ropes tie to beams 46. A scheme of the running rigging is shown in 1:2 scale in the plan 3B.



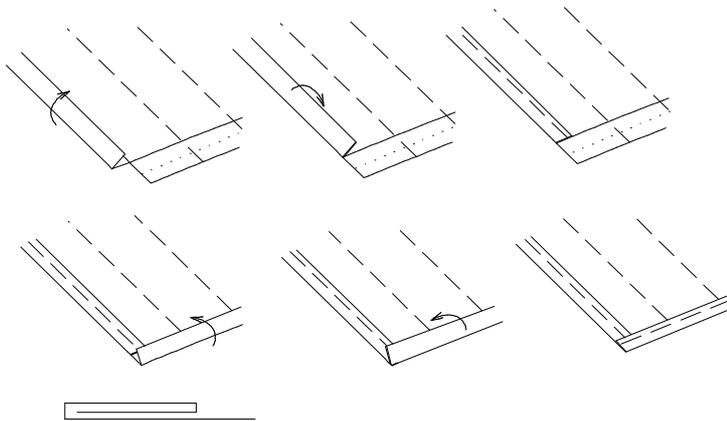
VIIIc

IX) Sails:

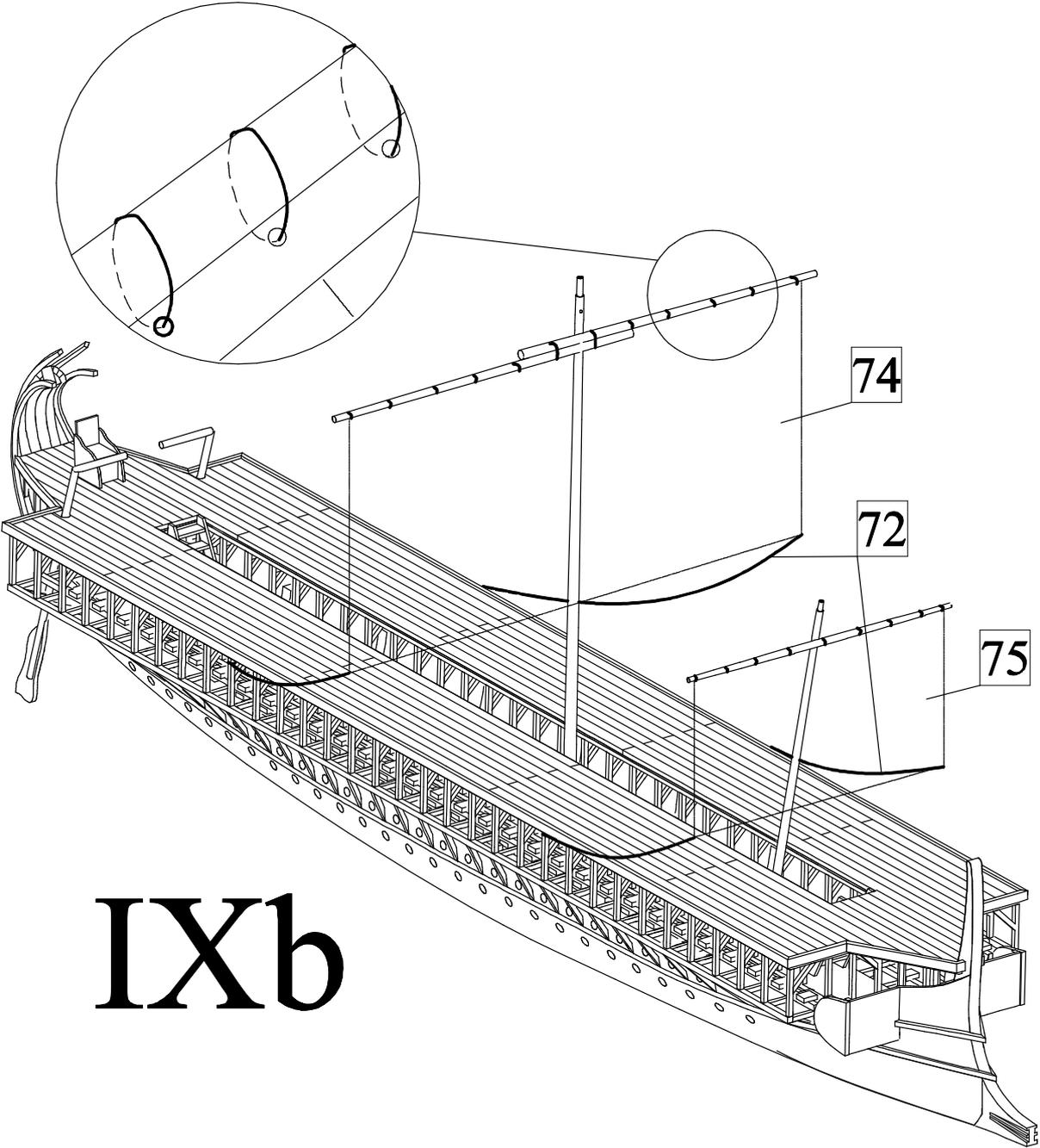
a) On the cloth draw by pencil contours of a main sail 74 and a fore sail 75. To the border of the sails add about 10mm for fell. By the pencil draw on the cloth also seams which divided the sail into simple segments. Then scissor the sail with fells and sewn it like it is shown below.



IXa

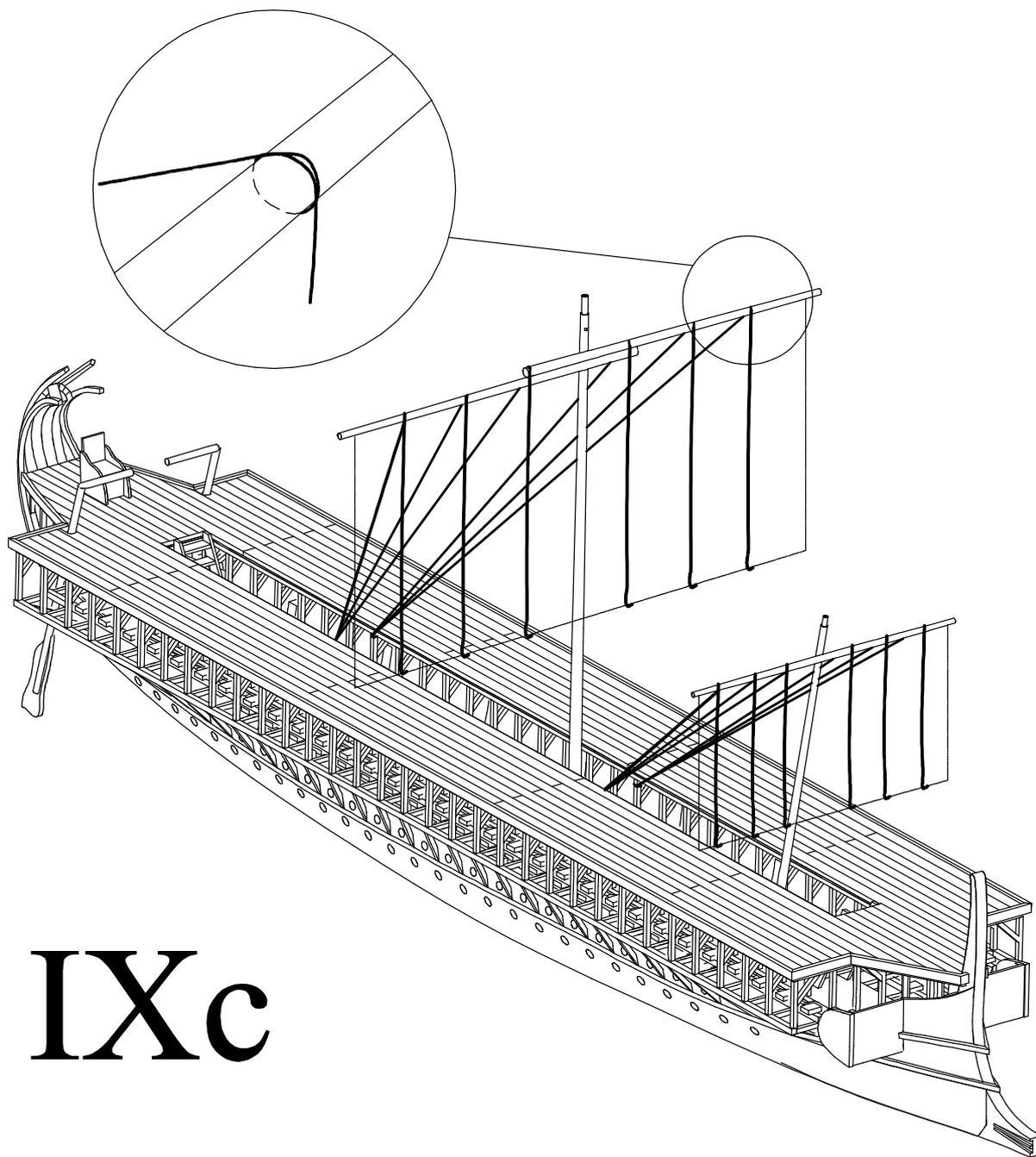


b) The complete sails 74 and 75 tie by ropes 72 to the yards. Then lower edges of the sails tie by ropes 72 to beams 48.



IXb

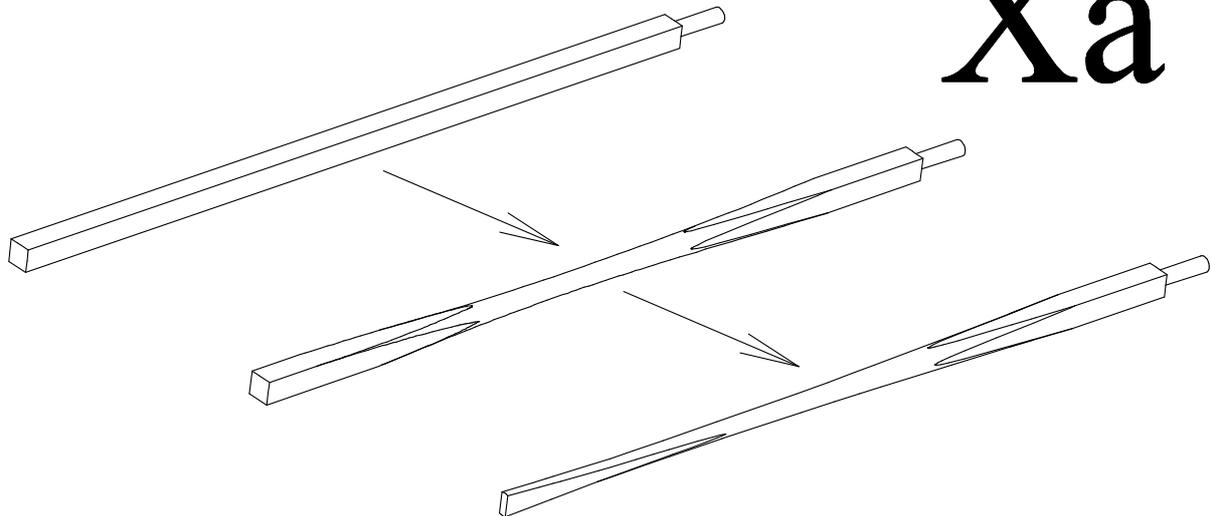
c) To a lower edge of the sails tie ropes 72 for raising and lowering of sails. Then run the ropes around yards and tie them to beams 46. A scheme of the sails is shown in 1:2 scale in the plan 3C.



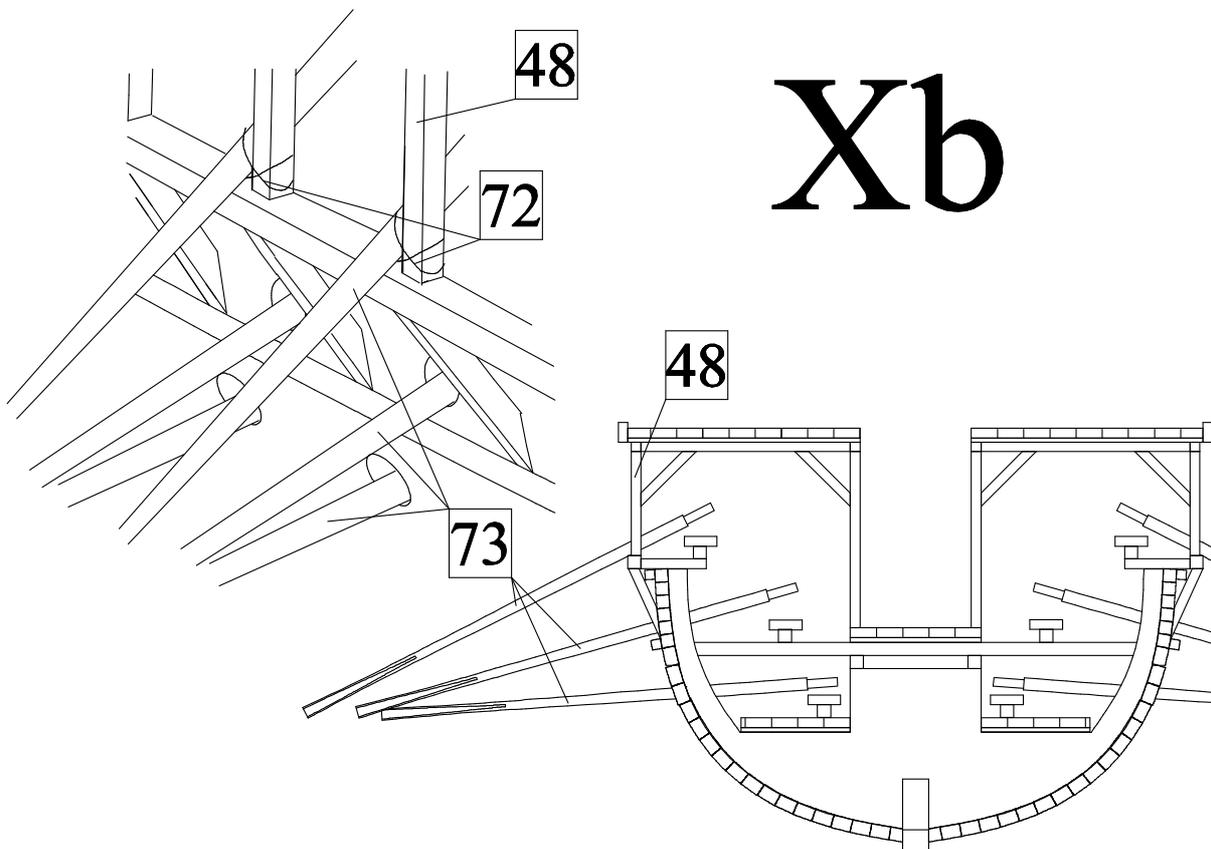
IXc

X) Oars:

a) From strips 2x2mm make oars 73. First sharpen by needle file a handle on one end of the oar. Then by sand paper sharpen middle part of the oar into circular cross-section. Finally sharpen a blade of the oar. The oar is shown in 1:1 scale in the plan 3.



b) The oars install on the ship. Two lower rows of oars run through the holes and drop by adhesive. An upper row of oars tie to beams 48 and then drop them also by adhesive.



Part list:

0	Keel	plywood 4mm	1pc
1a-1g	Keel	wood 4mm	1pc
2-13	Frames	plywood 4mm	1pc
14	Reinforcements	plywood 4mm	2pcs
15-17	Reinforcements	wood 4mm	2pcs
18	Deck	plywood 1mm	1pc
19	Deck	veneer 0,6mm	1pc
20	Deck	plywood 1mm	1pc
21	Deck	veneer 0,6mm	1pc
22	Deck	plywood 1mm	1pc
23	Deck	veneer 0,6mm	1pc
24	Mast reinforcement	strip 2x3mm	40pcs
25-26	Beam	strip 2x2mm	90pcs
27	Planking	strip 2x2mm	90pcs
28	Planking	strip 2x3mm	40pcs
29	Wales	strip 1x1mm	8pcs
30	Seats	strip 1x4mm	4pcs
31	Beam	strip 2x2mm	90pcs
32	Deck	plywood 1mm	1pc
33	Deck	veneer 0,6mm	1pc
34	Beam	strip 2x2mm	90pcs
35	Seats	strip 1x4mm	4pcs
36	Deck	strip 2x2mm	90pcs
37	Deck	strip 2x2mm	90pcs
38	Reinforcement	strip 1x1mm	8pcs
39	Beam	strip 2x2mm	90pcs
40	Seats	strip 1x4mm	2pcs
41	Stairs	plywood 1mm	4pcs
42	Stairs	plywood 1mm	4pcs
43	Main mast	dowel 4mm	1pc
44	Fore mast	dowel 3mm	1pc
45	Rigging	rope 0,5mm	10m
46	Beam	strip 2x2mm	90pcs
47	Beam	strip 2x2mm	90pcs
48	Beam	strip 2x2mm	90pcs
49	Beam	strip 2x2mm	90pcs
50	Beam	strip 2x2mm	90pcs
51	Reinforcement	strip 2x2mm	90pcs
52	Stairs	plywood 1mm	4pcs
53	Stairs	plywood 1mm	12pcs
54	Ram	cast	1pc
55	Bow barrier	strip 1x4mm	4pcs
56-58	Epotis	strip 1x4mm	4pcs
59	Epotis	strip 1x1mm	8pcs
60	Deck	plywood 1mm	1pc
61	Deck	veneer 0,6mm	1pc
62	Deck	strip 2x3mm	40pcs
63	Rudder oars	plywood 1mm	2pcs

64	Rudder oars	dowel 2mm	1pc
65	Rigging	rope 0,5mm	10m
66	Chair	plywood 1mm	2pcs
67-69	Chair	plywood 1mm	1pc
70	Main mast yard	dowel 3mm	1pc
71	Fore mast yard	dowel 2mm	1pc
72	Rigging	rope 0,5mm	10m
73	Oars	strip 2x2mm	90pcs
74	Main sail	cloth	1pc
75	Fore sail	cloth	1pc
76	Preparation for stairs	plywood 4mm	1pc

