

Assembly Instructions for the ALTONA model boat, Order No.: 2146, Id. No.: 58434

The "ALTONA" is a semi-scale model of a steam launch.

All the parts which are difficult to make, such as hull, stern, rudder, deck, superstructure, toplight and funnel are supplied in the form of extremely high-quality GRP mouldings.

The Fittings Set includes many metal and injection-moulded plastic parts which make it much easier and faster to complete the model.

Two possible variants can be built: for electric power or for steam engine.

The model is not suitable for the beginner to modelling, as it calls for a certain minimum level of manual modelling skill.

For the steam-powered version some experience in handling steam engines is advisable.

Auxiliary working systems, such as lighting, steam whistle etc., can be installed; details are left to the builder's discretion.

Specification:

Overall length approx.	1315 mm
Beam approx.	305 mm
Overall height approx.	500 mm
Total displacement max.	17 kg
Scale	1 : 20

Important Safety Notes

You have acquired a kit which can be assembled into a fully working RC model when fitted out with suitable accessories. However, we as manufacturers have no control over the way you build and operate your RC model boat, nor how you install, operate and maintain the associated components, and for this reason we are obliged to deny all liability for loss, damage or costs which are incurred due to the incompetent or incorrect use and operation of our products, or which are connected with such operation in any way. Unless otherwise prescribed by binding law, the obligation of the GRAUPNER company to pay compensation, regardless of the legal argument employed, is excluded. This includes personal injury, death, damage to buildings, damage due to loss of business or turnover, interruption of business or other direct or indirect consequent damage whose root cause was the operation of the model. The total liability in all cases and under all circumstances is limited to the amount of money which you actually paid for this model.

This model boat is built and operated at the sole and express responsibility of the operator. The only way to avoid injury to persons and damage to property is to handle and operate the model with the greatest care and consideration at all times.

Before you run the model for the first time please check that your private third-party insurance covers the operation of model boats of this kind. If in doubt, take out a special insurance policy designed to cover modelling risks.

These Safety Notes should be kept in a safe place. If you ever dispose of the model, be sure to pass them on to the new owner.

Guarantee conditions

The guarantee covers replacement of any parts which can be shown to exhibit manufacturing faults or material defects within the guarantee period of 24 months from the initial date of purchase. No other claims will be considered. Cost of transport, packing and freight are payable by the purchaser. We accept no liability for damage in transit. When you send the product to GRAUPNER, or to the approved Service Centre for your country, you must include a clear and concise description of the fault together with the invoice showing the date of purchase. The guarantee is invalid if the component or model fails due to an accident, incompetent handling or incorrect usage.

The following points are important and must be observed at all times:

- This model is not suitable for young persons under 14 years of age.

- **NEVER** operate the model when there are persons or animals in the water, as the boat constitutes a considerable injury hazard.
- Ensure that there are no people standing close by the bank when you are operating the boat. If you make a mistake at the controls, or if a fault should occur, the model could slide up the bank and injure anyone in the vicinity. Inform spectators of the risk, and ask them politely to leave the primary hazard zone.
- Never run your model in protected sites, animal or plant sanctuaries or sites of special scientific interest (SSSIs). Check with your local authority that the stretch of water you wish to use is suitable for model boats.
- Never run the boat in salt water.
- Never run the boat in adverse conditions, e.g. rain, storm, strong wind, choppy water or strong currents.
- Before you run the model check that the radio control system is working reliably, and that all connections are secure.
- Dry batteries must never be recharged. Only batteries marked as “rechargeable” are safe to recharge.
- Before each session, check that the batteries are fully charged, and that the range of the radio control system is adequate.
Ensure that the frequency you intend to use is not already in use by other modellers. Never run your boat if you are not certain that your channel is free.
- Read and observe the instructions and recommendations supplied with your radio control system and accessories.
- Do not carry out any work on the drive train unless you have already disconnected and removed the battery.
- When the drive battery is connected, keep well clear of the area around the propeller, because it constitutes a serious safety hazard. Make sure any spectators do the same.
- Do not be tempted to exceed the recommended operating voltage. Higher voltages may cause the motor or speed controller to overheat, and the electrical cables may even melt. If this should happen, the model could easily be completely ruined.
- Check that all the drive train components work smoothly and freely. This applies in particular when the boat is running, as leaves and other debris may get caught in the power system components. The motor, speed controller and rudder servo could then be ruined by overloading.
- Ensure that the servos are not mechanically obstructed (stalled) at any point in their travel.
Dry cells and rechargeable batteries must never be short-circuited. Do not allow them to come into direct contact with water.
- Allow the motor and the speed controller to cool down after each run. Don't touch the hot parts.
- Remove the rechargeable batteries if the model is to be transported, or will not be used for a long period.
- The lead-acid battery which powers the motor must not be stored in the discharged state. Charge the battery before storing it, and recharge it at regular intervals if you have to leave it unused for a protracted period.
- Do not subject the model boat to high levels of humidity, heat, cold or dirt.
- Secure the model and your RC equipment carefully when transporting them. They may be seriously damaged if they are free to slide about.
If you have to operate the boat on moving water (e.g. a river), please bear in mind that it could drift away downstream if a fault were to occur.
- If you have to salvage the model, take care not to risk your own life or that of others.
- Take particular care to ensure that the boat is completely watertight, as it will sink if too much water enters the hull. Check the model for damage before every run, and ensure that water cannot penetrate through the shaft bearings.
- Avoid water getting inside the boat by sealing it carefully before each run. For example, apply adhesive tape all round the hatch cover to prevent it shifting.

Care and maintenance

- Clean the model carefully after every run, and remove any water which penetrates the hull. If water gets into the RC components, dry them out carefully and send them to your nearest GRAUPNER Service Centre for checking.
- Clean the model and transmitter using suitable cleaning agents only. Ask your model shop owner if you are not sure what to use.
- Lubricate the propeller shaft at regular intervals.
- If the model will not be used for a long period, dismantle all the moving parts (propeller shaft etc.), clean them and re-lubricate them.

Notes on assembling the model

- Before you start building the model, please take the time to study the plan and read right through the instructions, using the Parts List as an aid. In general terms the instructions and the parts list reflect the sequence of assembly.
- Please bear in mind that many tools can be dangerous if misused or handled carelessly.
- The best method of cutting out the vacuum-moulded ABS parts is to use a pair of Lexan shears (e.g. Order No. 26), although it is often possible simply to use a sharp modelling knife (e.g. Order No. 982). Cut the parts oversize at first, so that you can sand them back to final size when they are required.
- Keep the scrap ABS material, as it is required later for making various small items.
- All wooden parts should be sanded smooth before they are fitted, and given several coats of GLATTFIX sanding sealer (Order No. 207) to waterproof them.
- The electric motor must be suppressed by fitting a 470 nF capacitor (Order No. 3588). Solder the capacitor across the motor terminals to form a bridge.
- Deploy all electrical cables neatly, without crossing them over. Take great care to avoid any bare positive wire touching any negative wire.
- Be sure to use cable which is capable of carrying the high currents which flow when the boat is operating.
- Deploy the receiver aerial as far away as possible from any high-current cables (at least 3 cm).
- The shaft system must be lubricated; be sure to use only a type of grease or oil which does not soil or contaminate water (grease: Order No. 570).
- Before gluing parts together it is important to clean the joint surfaces carefully. This is best done by sanding lightly, followed by wiping with a non-greasy liquid detergent or methylated spirit ("meths"). The same applies to all surfaces which are to be painted, as this improves the paint's adhesion considerably.
- Recommended adhesives for joining particular materials:

Material - material

Wood - wood
Wood - metal
Metal - metal
ABS - ABS
ABS - metal
Rubber - wood

Suitable adhesives

UHU hart, white glue
Stabilit express, UHU plus
Cyano-acrylate, UHU plus
Cyano-acrylate, Stabilit express, UHU plast
Cyano-acrylate, Stabilit express
Cyano-acrylate

Read the instructions supplied with the adhesives. Be sure to observe any special notes in the instructions regarding particular adhesives. If you are using acetone, methylated spirits or any other solvent as a cleaning agent, special safety measures are necessary. Read the instructions supplied with these materials.

Assembly instructions

1. The first step is to assemble the boatstand from parts 2, 3 and 4, so that you have a stable support for the hull, part 1, from the outset. The end supports for the hull should be lined with self-adhesive foam tape, part 5, to avoid scratching the painted surfaces. It may be necessary to trim the front and rear supports to obtain an accurate fit.
2. Glue the stern, part 6, to the hull using Stabilit express: insert the stern tube, part 11, through the hull and the stern to ensure correct alignment. The joint lines can then be filled and sanded smooth.
3. The rudder bush, part 8, takes the form of a 33 mm length of 6 / 5.2 mm Ø brass tube. Glue one pivot sleeve, part 9 (brass tube, 5 / 4.2 Ø x 5 mm), in each end of the bush using cyano. Slip the prepared rudder bush onto the shaft of the rudder blade, part 7, then temporarily install the whole assembly at the stern end of the hull, as shown in the drawing. Make any adjustments required to obtain a close fit, check that the rudder swivels smoothly, then glue the rudder bush to the hull. It is no longer possible to remove the rudder once you have completed this stage.
4. The next step is to install the stern tube and shaft, part 11, together with the stern bulkhead, part 12.
5. Before gluing these two parts in place, the base plate, part 14, should also be trimmed to fit together with the mounting blocks, part 15. Temporarily install the steam engine or electric motor, so that you can align the propeller shaft properly in conjunction with the shaft coupling, part 48a. Satisfy yourself that all these parts line up correctly before gluing the stern tube and the stern bulkhead to the hull permanently.

6. If you wish to remove the propeller shaft, please note that it can only be withdrawn forward, because the rudder can no longer be removed. This applies unless you come up with a different method of securing the rudder.
7. The mounting blocks can now be glued securely in place, reinforcing the joints with glass cloth and resin. We suggest that you attach the base plate to the blocks using wood-screws, so that it can be removed again at any time if necessary. However, you may prefer to glue it in place permanently.
8. The RC installation plate, part 13, can now be fitted. We recommend that the receiving system, i.e. the servos and pushrods, should be installed at this early stage, as shown in the drawing. For the electric version you will need one servo (usually included in the set) and a speed controller. For the steam-powered version you require an additional two servos to control the steam engine. If you intend installing a steam engine, please bear in mind that the engine funnel must be located in the exact centre of the boat's funnel.
9. Mount the servos on the RC plate using suitable servo mounts (not included in the kit). When you have completed all the installation work inside the hull, you can glue the main deck, part 16, in place, taking care to make the joints completely sound and watertight.
10. The openings for the hawse pipes, part 17, and the chain pipes, parts 18, are first drilled using a small bit, then gradually opened up to an oval shape using a round file until the pipes are an exact fit. Cut the pipes to follow the contours of the hull sides before gluing them in place.
11. The next step is a little tricky: cutting the scuppers (oval openings which allow water to drain off the deck) in the bulwark. Three holes should be drilled or machined out on each side, by drilling downward at an angle from the inside of the hull, as shown in the cross-section on the plan. Three 5 mm Ø holes side by side produce an opening about 15 x 5 mm in size, which can then be opened up to final shape using files or similar tools. Use a flat file to finish off the scuppers, trimming them to the exact shape shown in the drawing.
Tip: it is easy to damage the deck when drilling the holes, so lay a piece of 0.5 mm brass sheet on the deck and push it up against the bulwark; this acts as a support for the drill bit.
12. The eight cable hawses, part 21, can now be made from ABS and trimmed to fit in the bulwark at the marked points. File out oval openings in the bulwark, so that the outer and inner halves of the cable hawses meet in the middle.
13. The 46 bulwark stanchions, parts 19, and the reinforcements, parts 20, are supplied as slightly overlength laser-cut parts. Trim each one individually to fit against the bulwark, as shown in the drawing.
14. Cut the bollards, parts 22, to length from 10 mm Ø tube. Cut the transverse bars, part 23, from 3 mm Ø aluminium rod, and glue them to the bollards together with the ABS caps, part 24, as shown in the drawing. The support plates, parts 25, are laser-cut ABS parts, and should be glued to the bulwark as shown in the drawing.
15. Attach the bow bollard, part 27, and the transverse bar, part 28, to the bow section 26.
16. Assemble the stern platform, part 29, and the stanchions, part 30, as shown in the drawing; these parts are cut from 5 x 2 mm and 6 x 6 mm mahogany strip.
17. Solder together the framework, part 33, for the awning, part 31, and attach it to the bulwark (do not glue it). Secure the awning framework by soldering the washers, parts 34, to the framework as shown on the plan.
18. Glue the lamp platform, part 35, to the awning framework using cyano.
19. Parts 36 to 41 are ready-made parts, and are included in the Fittings Set. The anchor winch is slightly more difficult to make, but it is supplied with its own assembly instructions.
20. The tyre fenders, parts 42, are assembled from pairs of vacuum-moulded ABS shells, which should be cut out carefully and glued together. Attach them to the cleats, parts 43, on the bulwark stanchions using the retaining lanyards, parts 44.
21. Each of the seat benches, parts 45, is assembled from six laser-cut ABS parts, then clad with the longitudinal mahogany strips, parts 46, and the transverse strips, parts 47.
22. The final stage is to attach the propeller, part 48, to the propeller shaft.
23. The hawsers, parts 49, should be coiled up neatly as shown in the drawing, and glued to the deck.
24. The next step is to prepare the GRP superstructure, part 50, by cutting all the openings for the portholes, the toplight, the pressure ventilators, the funnel, the windows, the doors and the sliding hatch, as shown in the various sketches on the plan.
25. At this point we recommend that you complete the internal cladding of the wheelhouse, using parts 106 to 110. These parts are all supplied as slightly oversized laser-cut 2 mm mahogany panels, to allow for the fact that the laminating process tends to produce a finished moulding of varying thickness. There are only two means of compensating for the irregularity: you can either machine out the corners using a rotary milling cutter, or trim the individual mahogany parts to fit. Neither solution is exactly easy or pleasant work, but the result is worth it, because the finished wheelhouse looks very impressive.

Please note that all the windows and door sections must be an accurate fit over the openings in the wheelhouse; aim to leave a projecting 1 mm flange of mahogany, in order to provide a support for the glazing panels, parts 105.

26. When this work is complete, the glazing panels, parts 105, and the window frames, parts 99 and 100, can be prepared and installed. The glazing panels are 46 x 28 mm in size, and should be trimmed to fit individually. The window frames are cut from 1 x 5 mm and 2 x 3 mm mahogany strip wood.

The two doors, parts 103, are each assembled from two identical 2 mm laser-cut parts. Trim the glazing panels to fit from the rear. Make the door window frames, parts 105, from 1 x 5 mm mahogany strips, and trim them to fit from the front. The door should be slightly narrower than the frame in order to leave space for the door hinges, parts 113a. The door frame, parts 101 and 102, is made from 1 x 5 mm and 2 x 3 mm mahogany strip.

27. The wheelhouse floor, part 109, can either be left loose, so that it can be removed from underneath, or glued in place permanently. To dissipate the warm air and provide a supply of fresh air to the burner, you may wish to install one or two cooling fans, Order No. 1950, in the wheelhouse floor; this is left up to you. The fan(s) are powered by a 12 V / 0.5 Ah battery which can be installed in the space forward of the wheelhouse. Fit a switch, e.g. Order No. 4160.1, in the circuit, and you can switch the fans on manually when the steam boiler is heating up, and then again at the conclusion of each run. Of course, the wheelhouse doors must be left open during all runs, otherwise the fans will be unable to move air as required; as an alternative you could leave several windows open.

28. Cut the openings in the toplight, part 51, for the toplight covers, parts 52, and glue them permanently to the superstructure. Drill 12 mm Ø holes in the toplight covers for the portholes, parts 53.

If you are installing a steam engine, you should omit the porthole glazing to allow the warm air to escape freely. For the same reason four or all six of the toplight covers should also be left open, as shown in the drawing.

Make up the hinges, parts 54, from 0.5 mm ABS, and bend them to shape by hand. The toplight covers should also be fitted with handles, parts 55, and struts, parts 56.

29. Each of the companionways, parts 57, can now be assembled from five laser-cut ABS parts. In the same way assemble the three-part sliding roof, part 58.

The two companionway doors, parts 59, are assembled from laser-cut parts and fitted with the portholes, parts 60. Complete them by adding the door handles, parts 61, and the hinges, parts 62, which are made up from brass wire as shown in the drawing.

30. The pressure ventilators, parts 64, and the portholes, parts 65, are supplied as ready-made parts, and should be fitted in the positions shown in the drawing.

31. The pressure ventilators, parts 66, are supplied as vacuum-moulded ABS parts. Cut out the parts, join them, fill the joint lines, and attach them to the bases, parts 67, which are cut from aluminium tube. To ensure that the pressure ventilators are securely mounted, reinforce each one on the inside of the superstructure with a mounting ring, part 68.

32. The steps, parts 69, and the mounting brackets, parts 70, are supplied as laser-cut parts which are glued to the superstructure as shown in the drawing.

33. Make up the handrails, parts 71, 72 and 73, from 1.5 mm Ø brass rod as shown in the drawing.

34. The sliding hatch, part 74, is a laser-cut part, and is designed to be mounted in guide rails, parts 75, made from channel-section brass strip. The hatch should be left open while the steam-powered version is operating. Bend a handle, part 76, to shape from brass rod, and attach it to the sliding hatch to enable it to be moved to and fro.

35. The angled hatches, parts 77, and the latch levers, parts 78, should also present no problems. They can also be fitted in the "open" position if you wish.

36. The lifebelts, parts 79, are supplied as ready-made plastic components; mount them on the lifebelt supports, parts 80. The latter are laser-cut ABS parts, and should be bent to final shape by hand to allow the lifebelts to be fitted.

37. Attach two portholes, parts 81, to the front face of the superstructure.

38. The funnel, part 82, is supplied as a ready-made GRP moulding. Two threaded rods, parts 83, have to be glued or glassed in on the inside, exactly in the centre, as shown in the drawing (see section D-D). These make it possible to attach the funnel really securely to the superstructure using two M2.5 nuts and two washers.

39. Parts 84 to 90 are all made up from brass tube or 0.5 mm brass sheet, as shown in the drawing, and require no further description.

40. The flagstock, part 92, takes the form of a length of 4 mm Ø beech dowel, fitted with a truck (top knob), part 95. Glue a mounting tube, part 93, in the base, part 94, at an angle to accept the flagstock. The flag, part 97, is a ready-made item, and should be attached to the flagstock using a lanyard, part 98, and two rings, parts 96, as this system allows the flag to be run up or down at will.

41. The forward doors, parts 112, consist of laser-cut mahogany parts, and are framed with a door frame, part 111, which is made from 2 x 3 mm mahogany strip wood. The door hinges, parts 113, and the door handles, parts 115, are made from brass rod as shown in the drawing. Make up the door fitting plates, parts 114, from 0.5 mm brass sheet.
42. The steering wheel, part 116, is a ready-made item, and is fitted on a mahogany steering console, part 117; the latter should be glued to the front internal cladding of the wheelhouse.
43. A cornice, part 118, can now be cut from 4 x 4 mm mahogany and attached all round the top edge of the wheelhouse. Cut the top flange, part 119, from 3 x 5 mm mahogany and glue it in place.
44. The navigation lanterns, parts 120, are supplied as ready-made components, and are mounted in lantern brackets assembled from three laser-cut parts. The lantern brackets are glued to the outside edge of the roof on either side, with short supports, parts 122, cut from 4 mm Ø beech dowel on the inside edges.
45. Making the lamp mast, part 123, is a slightly more complicated task. The base is a 6 x 6 mm strip of mahogany, with four laser-cut mahogany parts glued all round on the outside; these are the reinforcements, parts 124. Sand these parts down to nothing towards the top, as shown in the drawing.
46. Glue two lamp platforms, parts 125, to the front face of the mast, together with the lamp consoles, part 126, which are laser-cut mahogany parts. The mast lamps, parts 129, are fitted on top of these assemblies.
47. The transverse beam, part 127, is fitted on the mast from above, with a ring, part 130, at either end. Right at the top the mast terminates in a two-part truck made of mahogany, whose top face should be rounded off neatly.
48. The mast is mounted in a three-part mast console, part 131, which is assembled from laser-cut ABS components. Secure the mast using two M2 screws, parts 132, and two nuts, parts 133.
49. The loudhailer, part 134, is a ready-made item, and should be glued to the roof of the wheelhouse.
50. Make the aerial, part 135, from brass wire, and mount it on the roof in an aerial base, part 136, which is made from brass tube.

Painting

General notes

- If you wish to apply a brush-painted finish, it is really essential to use high-quality modelling paints. We suggest that you ask your local model shop or a specialist paint supplier for recommended paint types. As a basic rule we only recommend the Graupner colour paint series, as we know that they have been tested on a very wide variety of base surfaces.
- Be sure to use ONLY paints of the same type and make, otherwise they might react with each other, either dissolving the earlier coat, or causing unsightly bubbling. Be particularly careful when combining spray can paints with types designed for brush application; always check on some scrap material that the materials are compatible with each other.
- To obtain good paint adhesion sand the surfaces lightly beforehand using fine wet-and-dry paper (600-grit to 800-grit). Remove all traces of grease from the surfaces using a non-greasy liquid detergent or meths. Try not to touch the cleaned parts again before you paint them, as the perspiration in your skin also contains grease which will soil the surface once more.
- Small parts are best attached temporarily to a piece of wood using double-sided adhesive tape before painting. Apply the paint, allow it to dry, then remove the finished parts again before attaching them to the model.
- If you are using spray paints, carefully mask off all areas which are not to be painted. Seal all holes too, as the fine mist of paint penetrates every opening, no matter how small.
- Read and observe the instructions supplied by the paint manufacturer.

Colour scheme

We recommend that you finish the boat in the colour scheme shown in the kit box illustrations, but you can also use any other scheme you wish. Apply the self-adhesive decals as shown in the pictures.

Operating the model

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If you intend to operate the boat with a steam engine installed, it is important to run-in the power plant on the bench before installing it in the model. This is particularly important for adjusting the flame height accurately: open the gas regulating valve just to the point where the flame burns cleanly, without any yellow coloration, and without soot formation. One gas fill provides around 25 minutes of running, although for safety's sake you should either refill the gas tank earlier than this, or keep the boat close to the bank after about 15 - 20 minutes' running. When the flame goes out, the steam engine stops immediately, and this could present you with problems in salvaging the boat. Open the regulating valve slightly when re-filling the tank, as the liquid gas will force the air in the tank out due to its lighter weight. The tank is full when liquid gas squirts out of the nozzle. Don't forget to check the water level in the boiler.

Using an exhaust steam condenser helps considerably to prevent the model becoming soiled with a mixture of condensed water and oil. Remember to empty it after every second or third run. For more details concerning the operation of the steam engine please refer to the operating instructions supplied with the power plant.

Parts List - ALTONA

Part No.	Description	No. off	Material	Dimensions in mm
1	Hull	1	GRP	Ready made
2	Front boatstand support	1	Plywood	Laser-cut 6 mm
3	Rear boatstand support	1	Plywood	Laser-cut 6 mm
4	Boatstand connecting piece	2	Plywood	Laser-cut 6 mm
5	Boatstand lining strip	1	Adhesive tape	Order No. 741
6	Stern	1	GRP	Ready made
7	Rudder blade and shaft	1	GRP	Ready made
8	Rudder bush	1	Brass	6 / 5 Ø x 33 mm
9	Pivot sleeve	2	Brass	5 / 4 Ø x 5 mm, overlength
10	Tiller	1	Plastic	Ready made, Order No. 2400
11	Stern tube and shaft	1	Brass and V2A	Ready made, Order No. 327.215
12	Stern bulkhead	1	Plywood	Laser-cut
13	RC installation plate	1	Plywood	Laser-cut
14	Base plate	1	Plywood	Laser-cut, 6 mm
15	Mounting block	2	Beech	25 x 25 x 17 mm
16	Main deck	1	GRP	Ready made
17	Hawse pipe	2	Aluminium tube	10 / 9 Ø x 75 mm, overlength
18	Chain pipe	2	Aluminium tube	7 / 6.2 Ø x 25 mm, overlength
19	Bulwark stanchion	46	ABS	Laser-cut
20	Reinforcement	46	ABS	Laser-cut
21	Cable hawse, two-part	8	ABS	Vac.-moulded
22	Bollard	12	Aluminium tube	10 / 9 Ø x 50 mm, overlength
23	Transverse bar	13	Aluminium rod	3 Ø x 25 mm, overlength
24	Bollard cap	13	ABS	Laser-cut
25	Support plate	6	ABS	Laser-cut
26	Bow section	1	ABS	Laser-cut
27	Bow bollard	1	Aluminium tube	10 / 9 Ø x 85 mm, overlength
28	Transverse bar	1	Aluminium rod	3 Ø x 25 mm
29	Stern platform	1	Mahogany	5 x 2 x 1000 mm overall
30	Stanchion	5	Mahogany	6 x 6 x 18 mm
31	Awning	1	Fabric	450 x 300 mm
32	Awning retaining cable	1	Thread	0.8 Ø x 2000 mm
33	Awning framework	1	Brass rod	2 Ø x 4000 mm overall
34	Washer	8	Plated brass	2.2 Ø x 4.5 mm
35	Lamp platform	1	ABS	Laser-cut
36*	Stern light	1	Plastic	Ready made
37*	Flagstock	1	Plastic	Ready made, Order No. 316.2
38*	Flagstock base	1	Plastic	Ready made
39*	Anchor winch	1	Plastic	Ready made
40*	Anchor	2	Metal	Ready made
41*	Anchor chain	2	Metal	250 mm
42	Tyre fender, two-part	10	ABS	Vac.-moulded
43*	Cleat	10	Plastic	Ready made

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44	Fender retaining lanyard	10	Thread	0.8 Ø x 1000 mm overall
45	Seat bench, six-part	7	ABS	Laser-cut
46	Fore-and-aft bench strip	28	Mahogany	5 / 2 x 100 mm
47	Transverse bench strip	21	Mahogany	5 / 2 x 22 mm
48	Propeller	1	Plastic	Ready made, Order No. 2311.98
48a	Shaft coupling	1	Plastic and metal	Ready made, Order No. 346
49	Hawser	4	Thread	1.5 Ø x 2000 mm overall
50	Superstructure	1	GRP	Ready made
51	Toplight	1	GRP	Ready made
52	Toplight cover	6	ABS	Vac.-moulded
53*	Porthole	6	Plastic	Ready made, Order No. 305.2
54	Hinge	12	ABS	30 x 3 x 0.5 mm, as plan
55	Toplight handle	6	Brass rod	1 Ø x 15 mm, as plan
56	Toplight cover strut	4	Brass rod	1.5 Ø x 20 mm, as plan
57	Companionway, five-part	2	ABS	Laser-cut
58	Sliding roof, three-part	2	ABS	Laser-cut
59	Companionway door	2	ABS	Laser-cut
60*	Porthole	2	Plastic	Ready made, Order No. 305.2
61	Companionway door handle	2	Brass rod	1 Ø x 10 mm, as plan
62	Companionway door hinge	4	Brass rod	1 Ø x 8 mm, as plan
63	Handle	2	Brass rod	1 Ø x 10 mm, as plan
64*	Pressure ventilator	2	Plastic	Ready made, Order No. 304.2
65*	Porthole	10	Plastic	Ready made, Order No. 305.2
66	Pressure ventilator, two-part	2	ABS	Vac.-moulded
67	Pressure ventilator base	2	Aluminium tube	16 / 15 Ø x 70 mm, overlength
68	Ventilator mounting ring	2	Plywood	Laser-cut, 4 mm
69	Step	16	ABS	Laser-cut
70	Mounting bracket	32	ABS	Laser-cut
71	Handrail	2	Brass rod	1.5 Ø x 50 mm, as plan
72	Handrail	2	Brass rod	1.5 Ø x 60 mm, as plan
73	Handrail	2	Brass rod	1.5 Ø x 30 mm, as plan
74	Sliding hatch	2	ABS	Laser-cut
75	Guide rail	6	Brass	Channel section, 2.0 x 2.0 x 500 mm overall
76	Handle	2	Brass rod	1.0 Ø x 2.0 mm, as plan
77	Angled hatch	2	ABS	Laser-cut
78	Latch arm	4	Brass rod	1 Ø x 10 mm, as plan
79*	Lifebelt	2	Plastic	Ready made, Order No. 300.33
80	Lifebelt support	2	ABS	Laser-cut, as plan
81*	Porthole	2	Plastic	Ready made, Order No. 305.3
82	Funnel	1	GRP	Ready made
83	Threaded rod	2	Steel	Ready made, 2.5 Ø x 80 mm
84	Exhaust steam pipe	1	Brass tube	6 / 5 Ø x 270 mm
85	Steam pipe support	2	Brass	40 x 3 x 0.5 mm
86	Steam whistle	1	Brass tube	6 / 5 Ø x 15 mm
87	Tube	1	Brass tube	5 / 4 Ø x 80 mm
88	Support	1	Brass	50 x 3 x 0.5 mm
89	Lever	1	Brass	12 x 3 x 0.5 mm
90	Shaft	1	Brass rod	1 Ø x 10 mm
91	Cable	1	Thread	0.8 Ø x 100 mm
92	Flagstock	1	Beech	4 Ø x 150 mm
93	Mounting tube	1	Brass	5 / 4 Ø x 12 mm
94	Flagstock base	1	Beech	25 x 10 x 2.5 mm
95	Truck	1	Beech	7 Ø x 2 mm
96	Ring	2	Brass	Ready made, Order No. 315
97*	Flag	1	Fabric	Ready made
98	Flag lanyard	1	Thread	0.8 x 400 mm
99	Window frame	10	Mahogany	2 x 3 x 180 mm overall
100	Window frame	10	Mahogany	1 x 5 x 160 mm overall
101	Door frame	2	Mahogany	2 x 3 x 300 mm overall

102	Door frame	2	Mahogany	1 x 5 x 260 mm overall
103	Door, two-part	2	Mahogany	Laser-cut, 2 x 2 mm
104	Door window frame	2	Mahogany	1 x 5 x 120 mm
105	Glazing	12	Plastic	150 x 200 x 0.5 mm overall
106	Front internal cladding	1	Mahogany	Laser-cut, 2 mm
107	Rear internal cladding	1	Mahogany	Laser-cut, 2 mm
108	Side internal cladding	2	Mahogany	Laser-cut, 2 mm
109	Wheelhouse floor	1	Mahogany	Laser-cut, 2 mm
110	Support rail	2	Spruce	100 x 5 x 5 mm
111	Door frame	2	Mahogany	2 x 3 x 260 mm
112	Forward door	2	Mahogany	Laser-cut, 1 mm
113	Door hinge	4	Brass rod	1.5 Ø x 8 mm
113a	Door hinge	4	Plastic	Ready made, Order No. 67
114	Door fittings plate	4	Brass	12 x 4 x 0.5 mm, as plan
115	Door handle	4	Brass rod	1.0 Ø x 15 mm, as plan
116*	Steering wheel	1	Wood	Ready made
117	Steering console	1	Mahogany	6 x 6 x 50 mm
118	Roof cornice	1	Mahogany	4 x 4 x 440 mm overall
119	Top flange	1	Mahogany	3 x 5 x 450 overall
120*	Navigation lantern	2	Plastic	Ready made
121	Lantern bracket	2	ABS	Laser-cut
122	Lantern bracket support	4	Beech	4 Ø x 4 mm
123	Lamp mast	1	Mahogany	6 x 6 x 200 mm
124	Reinforcement	4	Mahogany	Laser-cut, 2 mm
125	Lamp platform	2	Mahogany	Laser-cut, 2 mm
126	Lamp console	2	Mahogany	Laser-cut, 2 mm
127	Transverse beam	1	Mahogany	Laser-cut, 2 mm
128	Lamp mast truck, two-part	1	Mahogany	Laser-cut, 4 mm
129*	Mast lamp	2	Plastic	Ready made
130	Ring	6	Brass	Ready made, Order No. 315
131	Mast console, three-part	1	ABS	Laser-cut
132	Lamp mast retaining screw	2	Plated brass	M2 x 15 mm Order No. 704.15
133	Nut	2	Plated brass	M2, Order No. 710
134*	Loudhailer	1	Plastic	Ready made
135	Aerial	1	Brass wire	1 Ø x 100 mm
136	Aerial base	1	Brass tube	2 / 1 Ø x 20 mm

Parts marked with an asterisk (*) are ready-made items; they are not included in the kit, but in the Fittings Set, Order No. 611

as plan = make these parts as shown in the drawing

The following items are also required (included in the kit)

- 1 decal sheet
 - 2 washers, 2.8 / 7.0 Ø x 0.5 mm, Order No. 560.8
 - 2 nuts, M2.5, Order No. 707
 - 8 pushrod connectors
 - 8 nuts, M2
 - 8 grub screws, M3
 - 4 threaded pushrods, M2 x 225 (rudder / steam engine control)
- })
}) funnel mounting
})

The following items are also required (not included in the kit)

Motor and accessories, electric version

- 1 motor, SPEED 900 BB Torque 12 V, Order No. 6373
- 1 motor bracket, Order No. 1711
- 1 drive battery, 12 V / 10 Ah, Order No. 2592
- 1 speed controller, NAVY V40R, Order No. 2875
- 4 retaining screws, 2.9 Ø x 13, Order No. 746.13
- 4 washers, 2.8 / 7 Ø, Order No. 560.8

Motor and accessories, steam version

- 1 steam engine system, »Power 500«, Order No. 1944
- 1 exhaust steam condenser, Order No. 1944.1
- 1 gas tank, Order No. 1944.4, and 1 gas regulating valve, Order No. 1944.5
- or
- 1 RC regulating valve, Order No. 1944.50, and 1 gas canister (available from DIY shops)
- 4 mounting screws, 2.9 Ø x 9.5, Order No. 5877.10
- 4 self-tapping screws, 2.9 Ø x 19.0, Order No. 746.19

Recommended accessories, radio control system

mc-12, 40 MHz, Order No. 4725

Servos

Electric version

- 1 servo, C 5077, Order No. 4103, rudder
- 1 servo mount, Order No. 3948

Additional items for steam engine version

- 2 servos, C 4041, Order No. 3916
- 2 servo mounts, Order No. 3948, steam engine control

1	Lateral view
2	Longitudinal section and electric fitting
3	View without deck and steam engine, installed
4	Drive battery 12 V / 10 Ah
5	Gas tank
6	Gasregulator valve
7	Steam boiler
8	Steam engine
9	Exhaust gas condenser
10	Top view
11	Bow view
12	Stern view
13	Assembly