



# Happy Hunter

## Assembly and operating instructions

Congratulations on your decision for the Happy Hunter. This kit is designed for the advanced model builder. Some experience in ship modeling is expected during the construction of this model. Also the equipment of the building kit allows the more experienced model builder to equip the model with own ideas, extensions and special functions.

### Technical specifications

Overall length:	approx. 1035 mm
Overall beam:	approx. 235 mm
Draught:	approx. 120 mm
Displacement:	approx. 9500 g
Scale:	1 : 50

**Please see the separate sheet for details of adhesives and essential items not included in the kit.**

**Refer to the main catalogue for details of tools and aids to building.**

**Notes on the Fittings Set, No. ro1107, and the Power Set, No. ro1108**

These two sets are required to complete a scale model

ship which is capable of running. We strongly recommend that you obtain these sets before you start construction, as certain parts have to be installed during the initial stage of building.

### Sequence of assembly

The Happy Hunter is designed for the advanced modeller.

We therefore assume that the builder has considerable experience, and the instructions do not describe preparatory work in detail, such as separating laser-cut parts, drilling holes, cutting strip and rod material to length, painting individual components etc.

Some sections are only sketched in, and are intended just as a suggestion and motivation for your own ideas.

In general terms the sequence of assembly follows the numbering of the kit components.

Please read through the whole of the building instructions before you start building, referring to the Parts List, the illustrations and the plans. You should have a clear understanding of each stage of construction before you start work on the model.

In the interests of clarity, many parts and sub-assemblies are shown in their unpainted state in these instructions, although some detail photos show painted components on the finished model.

### **Vacuum-moulded parts**

Sand the cut edges smooth after cutting out the vacuum-moulded components.

Drill the holes in the vacuum-moulded parts at the marked points, using the sizes of drill stated in the illustrations.

### **Laser-cut parts**

Don't separate the laser-cut parts from their sheets until they are needed for the procedure currently in hand.

Bound into the centre of these instructions you will find a set of identification drawings which will help you locate particular parts. You may wish to separate these drawings.

When gluing parts together ensure that punched points are still visible, and accessible for drilling.

Don't discard scrap sheet, strip and rod material immediately, as it may be needed later for making small parts. All joint areas must be sanded before the glue is applied, to provide a mechanical "key" for the adhesive. Use only those adhesives specifically recommended in the instructions.

Observe the instructions supplied by the adhesive manufacturers.

When using DELUXE Fusion Acrylit or UHU Acrylit please note that you should not apply thick fillets of resin; it is always better to apply this adhesive thinly and spread it out.

Use DELUXE Fusion Acrylit or UHU Acrylit for all glued joints in the hull through which water might penetrate (rudder bushes, propeller shaft tubes etc.). In these cases a fillet of glue should be applied round the parts.

After applying glue, use spring clamps, screw clamps or strips of adhesive tape to hold the parts together. Small quantities cyano-acrylate adhesive, "cyano" are best applied on a pin or a length of thin wire.

Where railing stanchions and similar parts have to be soldered, use a hot iron and hold it on the joint for as brief a time as possible, otherwise the excess heat could damage the adjacent plastic parts (superstructure, platforms etc.). Alternatively you might prefer to make up simple jigs for bending and soldering the railing components away from the model itself.

Clean all soldered joints thoroughly. Metal parts must be rubbed down using fine abrasive paper and de-greased before being painted.

Soldered joints involving electrical cable and connectors must be insulated individually using pieces of heat-shrink

sleeve.

Directions such as "left-hand" and "right-hand" are as seen from the stern of the model, looking forward.

All dimensions in the text and in the illustrations are stated in mm.

### **General information on painting**

To prevent wooden parts absorbing water, they must be given two or three coats of sanding sealer before they are installed.

Gaps which form between the plastic components can be made good with a plastic filler paste, e.g. DELUXE Perfect Plastic Putty, then sanded back carefully.

Plastic parts to be painted should be wiped with white spirit (not cellulose thinners) before paint is applied. Try not to touch the cleaned surfaces before painting. We recommend that you give the hull a coat of primer and rub it down carefully before applying the final colour finish.

If you wish to obtain a high-quality painted finish with neatly defined colour panels, it is essential to paint the parts separately: Every component which is to be a different colour should first be prepared, then trimmed carefully to fit on the model, then painted, and only glued or otherwise attached to the model when the paint is dry.

If any part has to be painted more than one colour, the joints must be masked out using clear adhesive tape or PVC tape - don't use paper masking tape! The tape must be removed again when the paint is just touch-dry; do not allow the paint to dry completely before peeling it off.

Joint areas of parts already painted must be sanded before glue is applied.

The instructions inform you when particular parts have to be painted before you continue with construction. Otherwise you should paint the model at your own discretion.

Use only acrylic or synthetic enamel paints for this model. Types designed for brush and spray application are equally suitable.

If you have the facilities to apply a sprayed finish using a spraygun and compressor, we recommend two-pack car paints; use the same range of paints throughout the model. We suggest that you copy the colour scheme shown in the kit box illustration.

### **RC system**

We strongly recommend that you install the specified RC system components. If you intend to use items other than those suggested, you can still use the arrangement shown on the plan, but you may have to make allowance for minor differences in component sizes.

Connect the radio control system, set all the transmitter sticks and trims to centre, and switch it on briefly. This sets the servos to neutral from the outset.

All electrical connections inside the hull must be arranged in such a way that they cannot come into contact with any

water which gets inside the boat.

## Auxiliary working systems

The Happy Hunter is large enough to accommodate numerous auxiliary working systems. You may wish to install a working lighting system, crane, anchor winch, towing gear, radar, siren, horn and bow thruster.

These instructions describe the installation of the working systems at the appropriate point. We recommend that you fit the working systems at an early stage, as installing them later may be much more difficult due to restricted access.

Notes on the Parts Lists

PS = included in the Power Set

FS = included in the Fittings Set

### Plan texts for „Happy Hunter“ - Plan sheet I

Ringed number	Text
1	Stabilizer
2	View of roller box
3	View of hawse grating
4	Section A - A
5	Hook mechanism
6	Rudder compartment escape hatch
7	Oil tank access hatch
8	Aft bulkhead escape hatch
9	Main mast tool locker
10	Freshwater tank hatch
11	Forecastle deck hatch
12	Anchor winch mechanism
13	Jib mechanism
14	Hook mechanism
15	Rotating mechanism
16	View of towing gear
17	Rotating mechanism, bottom view
18	View of large hawser crossbeam
19	View of small hawser crossbeam
20	Edge lightly peened over
21	Detail „x“, scale 5:1
22	Capstan
23	View of aft bulkhead
24	Jib support
25	Stern lamp for towing manoeuvres
26	Jib mechanism
27	Main deck
28	Ramming shield
29	Hook with lead shot
30	Forecastle deck
31	Hydraulic crane
32	Jib arrangement from top
33	After deck
34	Ventilation shafts
35	Gangway
36	Anchor winch
37	Clear
38	Yellow
39	Stranded cable, 0.3 m.m. Ø
40	Thread, 0.2 m.m. Ø
41	Hollow rivet

### Plan sheet II:

Ringed number	Text
1	Bridge deck
2	Starboard view of superstructure
3	Boat deck
4	Section B-B
5	Aft view of superstructure
6	Port view of superstructure
13	Catapult
14	Plan view of superstructure
15	Guide pulley
16	Left-hand funnel
17	Exhaust pipes
18	Right-hand funnel
19	Aft view of wheel house
20	Top deck
21	Port view of wheel house
22	Section of inflatable boat and wire hoop
23	Removable hatch
24	Fore mast
25	Antenna
26	Radar drive
27	Main mast
28	Lamp fitting
29	Half height of lamp
30	Compass
31	Searchlight
32	Top deck plan view
33	Radar mechanism
34	Anchor mechanism
35	Rotating mechanism
36	Jib mechanism
37	Hook mechanism
38	Lead-acid battery 6V / 12 Ah
39	Battery 4.8V
40	Battery 6V
41	Speed controller
49	Bending jig for main mast railing, top view
50	Red
51	Green
52	Clear
53	Silver

### Texts to sketch 132

CWL	=	waterline
Bauunterlage	=	base board
Bleistift	=	pencil
Klemme	=	clamp
Schraube	=	screw
Holzklötz	=	wood block
Höhenverstellung	=	height adjustment

## Boatstand

Part No.	Description	Material	Size in mm	No. off	Notes
S-1	Base plate	Ply wood	5, laser-cut	1	plate 8
S-2, S-3	Hull support	Ply wood	5, laser-cut	1 each	plate 8
04	Support strip	Foam rubber	6 x 4	2	Not included

**Assemble the boatstand from parts 01 - 03 and glue the joints. The foam rubber strips for protecting the painted hull are not required until later - Figs. 1 - 2 slightly different.**

## Preparing the hull, power system

Part No.	Description	Material	Size in mm	No. off	Notes
1	Hull	ABS	3, vac.-moulded	1	
2	Keel in-fill piece	Balsa	8 x 100 x 103	1	Oversize
3	Kort nozzle	Plastic	Inj. moulded	1 each	Left / right
4	Propeller shaft tube	Brass	6 O.D. x 267	2	
5	Support	ABS	1.5, laser-cut	1	plate 1
7	Speed controller support	ABS	1.5, laser-cut	1	plate 1
6, 8	Speed controller support former	ABS	1.5, laser-cut	1 each	plate 1
9	Speed controller support side	ABS	1.5, laser-cut	2	plate 1
10	Speed controller support former	ABS	1.5, laser-cut	1	plate 1
11	Motor bulkhead	Ply wood	3, laser-cut	1	plate 9
12	Support former	Ply wood	3, laser-cut	2	plate 9
13	Electric motor	---	Ready made	2	PS
14	Motor mounting screw	Steel	M4 x 10	4	PS
15	Washer	Brass	4.3 x 9 x 0.7	4	PS
16	Capacitor	---	100 nF	4	PS
17	Capacitor	---	47 nF	2	PS
18	Cable	---	1.5 mm <sup>2</sup>	1	PS, overlength
19	Cable	---	1.5 mm <sup>2</sup>	1	PS, overlength
20	Connector	---	Ready made	2 - 4	Not included
21	Coupling	Aluminium	4 / 5 Ø x 17	2	PS
22	Grubscrew	Steel	M3 x 3	4	PS
23	Lubricating tube	Brass	4 Ø x 0.4 x 55	2	
24	Propeller shaft	Steel	4 Ø x 300	2	
25	Collet	Brass	4 I.D.	2	
26	Grubscrew	Steel	M3 x 3	2	
27	Locknut	Brass	M4	2	
28	Propeller	Plastic	60 Ø, inj. moulded	2	L.H. / R.H.
29	Bottom rudder bush	Plastic	Inj. moulded	2	
30	Countersunk screw	Steel	2.2 Ø x 6.5	4	Self-tapping

- Cut out the hull 1 along the marked lines, leaving 1 - 1.5 mm excess at the areas marked with arrows. The remainder should be sanded back until the marked lines are still just visible.
- Trim the keel in-fill piece 2 to fit and glue it in place - Figs. 3 - 6.
- Cut the slots for the Kort nozzles, and drill the holes for
- the propeller shaft tubes and the rudder bushes.
- Cut out the hole for the bow thruster, working just inside the marked lines - Figs. 7 - 9

## The power system

Note: the whole power system and rudder system are initially assembled and aligned inside the model. Only then are these parts glued to the hull.

The motors can be controlled using either one speed controller or two. Separate motor control provides greater manoeuvrability of the finished model.

Photos 17 and 18 show the motors wired together to a single controller; if you wish to install the version with two controllers, refer to the wiring diagram on Plan II. Please study this before starting construction, and attach the appropriate cables and connectors to the motors.

- Fit the Kort nozzles 3 and stern tubes 4 - Fig. 11.
- Assemble the speed controller support from parts 5 - 10 as shown in Figs. 12 and 13.
- Temporarily fit the speed controller support and the motor bulkhead assembly 11 / 12 in the hull - Figs. 14 and 15.
- File a flat area in the shafts of the motors 13 to accept

the coupling grub screws 22. Fix the motors in place using the screws 14 and washers 15.

- Fit the suppressor capacitors 16 and 17 to the motors, and wire them together using the cables 18 and 19. Fit insulating sleeves on the capacitor pins before fitting them (Fig. 17). Solder the connectors 20 to the motor wires. Fit the shaft couplings 21 and the grub screws 22 - Figs. 16 - 18.
- Carry out a test-run of the motors; they must rotate in opposite directions (contra-rotating propellers). If this is not the case, reverse one motor by swapping the wires over at the motor terminals.
- File the underside of the lubricating tubes 23 to fit on the stern tubes 4, and solder the parts together. Drill a 3 mm Ø hole into the stern tubes, working through the lubricating tubes. Carefully remove all the drilling

swarf - Fig. 19.

- File a flat section in the propeller shafts 24 to accept the coupling grub screws 22.
- Fit the collets 25 / 26 and engage the propeller shafts; don't tighten the grub screws at this stage.
- Fit the locknuts 27 on the propeller shafts and run them to the end of the threaded section. Adjust the position of the propeller shafts so that they rotate freely. When you are satisfied, tighten the grub screws 22 and position the collets 25 - Figs. 20 - 22.
- Screw the propellers 28 on the propeller shafts, and tighten the locknuts 28 against them.
- Attach the bottom rudder bushes 29 to the Kort nozzles using the countersunk screws 30 - Fig. 23.

### The rudder system

Part No.	Description	Material	Size in mm	No. off	Notes
31	Rudder and shaft	Plastic	36 x 70	2	Inj. moulded
32	Washer	Brass	3.2 Ø x 9 Ø	4	
33	Rudder bush	Brass	3.2 I.D. x 45	2	Tubular rivet
34	O-ring	Rubber	2.7 Ø	2	
35	Tiller	Plastic	180°	2	Inj. moulded
36	Collet	Brass	3 I.D.	2	Machined
37	Socket-head screw	Steel	M3 x 10	2	
38	Servo support plate	ABS	1.5	1	Laser-cut
39	Servo	---	Ready made	1	Not included
40 A	Servo mount base	Ply wood	3, laser-cut	1	plate 9
40 B	Servo mount supports	Ply wood	3, laser-cut	4	plate 9
41	Rudder pushrod	Steel	1.5 Ø	1	One Z-bend
42	Rudder pushrod	Steel	1.5 Ø	1	One Z-bend
43	Threaded coupler	Steel	M2	2	
44	Clevis	Steel	26 long	2	
45	Speed controller	---	Ready made	1 / 2	Not included
46	Connector	---	Ready made	2 / 4	Not included
47	Auxiliary system battery	---	---	1	Not included
48	Velcro tape	Plastic	Overlength	2 each	Hook / Loop
49, 50	Drive battery support former	ABS	1.5, laser-cut	1 each	plate 1
51	Battery support base plate	ABS	1.5, laser-cut	1	plate 1
52	Reinforcing strip	ABS	3 x 3	3	As plan
53	Drive battery	---	-	2	Not included
54	Cable	---	1.5 mm <sup>2</sup>	1	PS, overlength
55	Spade connector with insulator	---	4.8 x 0.7	4	Not included
55a	Spade connector with insulator	---	6.3 x 0.7	5	Not included
56	Cable	---	1.5 mm <sup>2</sup>	2	PS, overlength
1B - 3B	Bow thruster	---	Set	1	Not included

- Fit the washers 32 and the bushes 33 on the rudders 31, slide them into place and engage them in the bottom bushes 29 - Fig. 25.
- Fit an O-ring 34, a second washer 32 and a tiller assembly 35 - 37 on the top end of each rudder shaft - Figs. 26 and 27.
- Check the alignment of the entire power system and rudder system inside the hull: the shafts and propellers must rotate freely and smoothly. Ensure that the rudders are exactly parallel when viewed from the side and from underneath. The propeller shaft tubes must not be under stress. If necessary file out the 6

mm holes in the shaft fairings until this is the case. It may be necessary to file back the central Kort nozzle strut slightly - see arrow in Fig. 23.

- Glue the speed controller support assembly against the keel in-fill piece, and glue the motor bulkhead to the speed controller support. Glue the Kort nozzles in the hull, and the stern tubes in the shaft fairings.
- Check that the rudders rotate smoothly, but without any tendency to slip out of the bottom bushes 29. Glue the rudder bushes in place.
- Sand back the keel in-fill piece to the point where it ends at the same height as the Kort nozzles inside the

hull. Snip off the front arm of the right-hand tiller - Fig. 27.

- Glue the servo support plate 38 to the keel in-fill piece and the Kort nozzles, in the position shown on the plan.
- Fit the rudder servo 39 in the servo mount 40 A + B, and place the mount on the servo support plate, but do not secure it at this stage. Set the servo to centre and move both rudders to the "straight ahead" position. Align the tillers carefully, press them down lightly and tighten the sockethead screws 37.
- Connect the system using the pushrods 41 - 44. Align the servo, and attach the servo mount to the servo support - Figs. 28, 29.

## Bow thruster

- Assemble the bow thruster 1 B as described in the instructions supplied with the set.
- Suppress the motor using the suppressor set 168, and solder the cables 2 B to the motor.
- Tape the bow thruster tubes 3 B together, and trim the holes in the hull to obtain as snug a fit as possible. Take care to set the bow thruster horizontal - Figs. 35 - 37.
- Assemble the bow thruster inside the hull, align it carefully and mark the excess length of the outer tubes.
- Shorten the tubes at the marked points and glue them to part 1 B. Glue the bow thruster in the hull, taking great care to make the joints watertight. Sand back the excess tube length flush with the hull - Figs. 38 - 41.

## The after deck

Part No.	Description	Material	Size in mm	No. off	Notes
57, 58	Frame	ABS	1.5, laser-cut	1 each	plate 3
59	After deck	ABS	1.5, laser-cut	1	plate 2
60	Deck girder	ABS	1.5, laser-cut	2	plate 3
61	Deck girder	ABS	1.5, laser-cut	1	plate 3
62,63	Hatch cover	ABS	1.5, laser-cut	1 each	plate 1
64	Swivel latch	Plastic	Inj. moulded	12	
65	Countersunk screw	Steel	2.2 Ø x 6.5	12	
66-69	Frame side panel	ABS	1.5, laser-cut	2 each	plate 1
70	After deck support girders	ABS	2 x 2, as plan	2	
71	Reinforcing rail	ABS	3 x 3, as plan	1	
72	After bulkhead	ABS	1.5, laser-cut	1	plate 2
73	Support rail	ABS	2 x 2, as plan	1	
74	Door	ABS	1, laser-cut	1	plate 7
75	Companionway wall	ABS	1.5, laser-cut	1	plate 3
76	Companionway wall	ABS	1.5, laser-cut	1	plate 2
77	Reinforcing rail	ABS	3 x 3, as plan	5	
78	Front roller box wall	ABS	1.5, laser-cut	1	plate 2
79	Roller box doubler	ABS	1.5, laser-cut	1	plate 2
80	Roller box cover	ABS	1.5, laser-cut	1	plate 2
81	Roller box side panel	ABS	1.5, laser-cut	2	plate 2

- Note: while you are working on the after deck please take care not to assemble it the wrong way round.
- Mark the position of the frames 57 and 58 on the underside of the after deck 59, and glue them in place.
- Glue the deck girders 60, 61 in place leaving 3 mm spacing to the edges of the deck - Fig. 43.
- Trim the hatch covers 62, 63 and fit them. Fit the swivel latches 64, 65 - Fig. 44.
- Glue the frames 66, 67 and 68, 69 to the underside of the hatch covers - Fig. 45.
- Attach the deck support girders 70 just below the upper marked line in the hull. The butt joint should be located in the centre of the transom - Fig. 46.
- Clamp the support girders to the hull, ensure there are no gaps, and glue them in place by running drops of cyano along the joints.
- Cover the installed RC and power system components to protect them. Trial-fit the after deck, trim it as

required, and glue it in place. Sand the hull down flush with the after deck in the stern area - Fig. 47.

## After bulkhead and roller box

- Cut the reinforcing rail 71 to a length of 211 mm, and glue it in place - Fig. 49.
- Glue the support rail 73 to the inside of the after bulkhead 72, and stick the door 74 on the outside - Figs. 50, 51.
- Trim the after bulkhead to fit, and glue it in place - Fig. 52. - Glue the companionway walls 75 and 76 in place together with the trimmed reinforcing rails 77 - Fig. 53. It is a good idea to paint the interior of the companionway grey at this point, as it will be inaccessible later.
- Assemble parts 78 - 81 to form the roller box - Figs. 54, 55.
- Glue the completed roller box centrally to the after deck, allowing for the thickness of the stern bulwark 82, which will be fitted later - Fig. 56.

## Stern bulwark

Part No.	Description	Material	Size in mm	No. off	Notes
82	Stern bulwark	ABS	1, laser-cut	1	plate 7
83	Bulwark section	ABS	1, laser-cut	2	plate 7
84	Handrail	ABS	2 x 2	2	
85-89	Aft bulwark stanchion	ABS	1, laser-cut	2 each	plate 7
90	Aft bulwark stanchion	ABS	1, laser-cut	18	plate 7
91	Aft bulwark stanchion	ABS	1, laser-cut	2	plate 7
92	Large starboard oil cradle	ABS	Inj. moulded	1	FS
93	Large port oil cradle	ABS	Inj. moulded	1	FS
94	Small starboard oil cradle	ABS	Inj. moulded	1	FS
95	Small port oil cradle	ABS	Inj. moulded	1	FS
96	Roller Beech		8 Ø x 47	1	
97	Roller fairing	Obechi	3 x 8 x 35	2	
98	Main deck	ABS	1.5, laser-cut	1	plate 3
99	Deck superstructure coaming	ABS	1	1	Vac. moulded
100	Removable hatch coaming	ABS	1	1	Vac. moulded
101	Foreship bulkhead	ABS	1.5, laser-cut	1	plate 4
102	Reinforcing rail	ABS	3 x 3	2	As plan
103	Deck girder	ABS	2 x 2	2	As plan

- Position the stern bulwark 82 flush with the opening of the roller box, align it carefully and tack it to the roller box in the centre with a little cyano.
- Curve the bulwark towards the hull on both sides, and tack it in place until just short of the ends.
- Mark the cut line on part 82, cut the bulwark to size, but do not glue it finally - Fig. 57.
- Cut the scuppers and hawses from the bulwark sections 83. Glue parts 83 butting up against the after bulkhead, at the same time applying a thin coating of UHU acrylic - Fig. 58.
- The trimmed stern bulwark can now be glued in place permanently.
- Carry out any final trimming of the scuppers and hawses, referring to the plan in the stern area - Fig. 60.
- Trim the handrails 84 to fit, tack them in place, then run drops of cyano along the joints to fix them permanently - Figs. 60, 61.
- Sand the stern bulwark and the hull sides flush with the handrails, and round off the handrails on the inside - Fig. 62.
- The next stage is to trim the bulwark stanchions 85 - 91 to fit, and glue them in place. It is best to break out the parts only as they are required, as this helps to avoid confusing them. The bulwark stanchions which are not located in front of the scuppers should be bevelled on the right-angled side: see the view entitled "Hawser bar".
- Glue the individual stanchions in place as shown in the plan view on Plan I - Fig. 63.
- Trim the large oil cradles 92, 93 and the small oil cradles 94, 95 to fit and glue them in place - Fig. 65.
- Trim the roller 96 to fit in the roller box, and glue it in place. Sand the roller fairings 97 to final shape, trim them to fit accurately (no gaps) and glue them on both sides - Figs. 66, 67.

## The main deck

- Place the coamings 99 and 100 in the main deck 98 from the underside. Note that the rear coaming 99 should be fitted leaving a 2.5 mm gap to the rear edge of the deck. Glue the coamings in place.
- Cut out the openings in the coamings when the glue has set hard.
- Attach the reinforcing rails 102 to the foreship bulkhead, and glue it to the top of the deck, maintaining the 2 mm clearance - Figs. 69 - 71.
- Cut the deck girders 103 to length and tack them to the hull step by step. The girders must fit exactly between the marked points for the stringers, which will be fitted later. Take care to keep everything symmetrical on both sides.
- Fit the main deck and trim it to fit, but don't glue it in place; it is not installed permanently until the mechanical systems for the auxiliary working systems have been fitted - Fig. 72.
- Drill the 6 mm Ø holes at the marked points in the hull sides for the portholes 377.

## Assembling the crane

Part No.	Description	Material	Size in mm	No. off	Notes
1 K	R.H. crane outrigger	ABS	Inj. Moulded	1	
2 K	L.H. crane outrigger	ABS	Inj. Moulded	1	
3 K	Outrigger pulley	ABS	Inj. Moulded	1	
4 K	Hydraulic ram	ABS	Inj. Moulded	1	
5 K	Idler drum	ABS	Inj. Moulded	1	
6 K	Spigot	ABS	Inj. Moulded	1	
7 K	Rear bar	ABS	Inj. Moulded	1	
8 K	Centre bar	ABS	Inj. Moulded	1	
9 K	Front bar	ABS	Inj. Moulded	1	
10 K	Hydraulic cylinder	ABS	Inj. Moulded	1	
11 K	Guide tube	Brass	4 O.D. x 75	1	
12 K	R.H. crane post	ABS	Inj. Moulded	1	
13 K	L.H. crane post	ABS	Inj. Moulded	1	
14 K	Vent pipe	ABS	Inj. Moulded	1	
15 K	Hydraulic motor	ABS	Inj. Moulded	1	
16 K	Operator's stand	ABS	Inj. Moulded	1	
17 K	Operator's desk	ABS	Inj. Moulded	1	
18 K	Ladder	ABS	Inj. Moulded	1	
19 K	Crane pulley	ABS	Inj. Moulded	1	
20 K	Hook	ABS	Inj. Moulded	1	
21 K	R.H. hook block	ABS	Inj. Moulded	1	
22 K	L.H. hook block	ABS	Inj. Moulded	1	
23 K	Drum	ABS	Inj. Moulded	1	
24 K	Crane column	ABS	Inj. Moulded	1	
25 K	Crane plinth	ABS	Inj. Moulded	1	
26 K	Washer	Brass	4.3 Ø x 9 Ø	1	
27 K	Collet	Brass	4 I.D.	1	
28 K	Grubscrew with cutter tip	Steel	M3 x 3	1	
104	Guide tube	Brass	1 Ø x 0.6 Ø x 80	1	
105	Bevel gear	Brass	11.2 Ø	1	FS
106	Grubscrew with cutter tip	Steel	M3 x 3	2	FS

- Refer to the detail drawing on Plan I and photos 73 - 85. The crane should be assembled following the sequence of the part numbers.
- Parts 3 K - 5 K must be free to move.
- Glue the guide tube 104 to the top end of the tube 11 K only; take care to cut the tube to the correct length.
- Glue the tube 11 K in the right-hand crane post 12 K. Assemble the crane outrigger 1 K - 9 K, place it in the right-hand crane post, and glue the left-hand crane post 13 K on top.
- Install parts 14 K - 18 K as shown in photo 79.
- When assembling the crane hook ensure that the pulley 19 K and the hook 20 K are free to move.
- Glue parts 23 K - 25 K together. Place the completed crane plinth on the guide tube and check that it swivels smoothly.
- Fit the completely assembled crane through the hole in the main deck, and glue the crane plinth to the deck.
- Secure the crane using parts 26 K - 28 K, ensuring that it rotates freely. Fix the spur gear 105/106 to the

tube 11 K.

- Note: the next stage is to assemble the mechanical parts for the auxiliary working systems. We recommend that you start by fitting the suppressor sets 168 to the miniature geared motors. Solder the connecting leads to the terminals at the same time. Note: a connector 187 should be fitted in the crane swivel mechanism.



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**Crane swivel mechanism**

Part No.	Description	Material	Size in mm	No. off	Notes
107	Base plate	ABS	1.5, laser-cut	1	plate 5
108	Side panel	ABS	1.5, laser-cut	1	plate 3
109	Motor support	ABS	1.5, laser-cut	1	plate 4
110	Motor, geared 500 : 1	---	---	1	Not included
111	End-support	ABS	1.5, laser-cut	2	
112	Shaft	Brass	2 Ø x 41	1	
113	Worm gear	Brass	10 Ø	1	FS
114	Grubscrew with cutter tip	Steel	M3 x 3	2	FS
115	Washer	Brass	2.2 I.D.	2	
116	Coupling sleeve	Plastic	1.0 I.D. x 20	1	
117	Block	Ply wood	5, laser-cut	1	plate 8
118	Self-tapping screw	Steel	2.2 Ø x 9.5	2	
29 K	Tubular rivet	Brass	3 Ø x 4	1	

- Refer to photos 86 - 88 and the detail drawing of the swivel mechanism.
- Glue the side panel 108 and the motor support 109 to the base plate 107. Install the geared motor 110.
- Assemble parts 112 - 115 and connect the shaft to the motor using the coupling sleeve. Check that the parts line up correctly and rotate freely, then glue the end-support in place.
- Fit the obechi block 117 flush with the top edge of the side panel.
- Place the completed mechanism on the underside of the deck and align it with the spur gear 105. Adjust the position of the spur gear if necessary until it is central relative to the worm gear. Glue the block 117 to the edge of the hatch only.
- The mechanism is wired up at a later stage.
- Fit the tubular rivet 29 K in the underside of the tube 11 K, and secure it with a drop of cyano. File the rivet flange back flush with the end of the tube.

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**The towing mechanism**

Part No.	Description	Material	Size in mm	No. off	Notes
119	Base plate	Ply wood	3, laser-cut	1	plate 9
120	Former	Ply wood	3, laser-cut	1	plate 9
121	Brace	Ply wood	3, laser-cut	1	plate 9
122	Tube	Brass	2.2 Ø x 3 Ø x 40	1	
123	Servo mount	Ply wood	3, laser-cut	4	plate 9
124	Servo	---	---	1	Not included
125	Pushrod	Steel	1.5 Ø x 180	1	One Z-bend
126	Profiled rail	ABS	3.5 x 9 x 101	4	plate 3
127	R.H. support	ABS	1.5, laser-cut	1	plate 3
128	L.H. support	ABS	1.5, laser-cut	1	
129	Switch	---	---	1	Not included
130	Self-tapping screw	Steel	2.2 Ø x 9.5	2	

- Refer to the drawing of the towing mechanism on Plan I and photos 89 - 95.
- Glue parts 119 - 121 together. Glue the tube 122 to the former 120, and cut a 5 mm slot in it as shown.
- Glue each 2 of the servo mount parts together, pre drill the holes for servo screws. Place the servo mount 123 in position, and fit the servo 124 in the mount.
- Cut down a cruciform servo output device and connect the pushrod 125 to it. Slip the pushrod in the sleeve 122 and attach the output arm to the servo. - Check that the system works properly: at one end-point the pushrod must clear the gap between the tubes; at the other end-point it must close it reliably.
- Glue the profiled rails 126 to the inside of the supports 127 and 128, leaving a gap 3.5 mm wide. Ensure that the rails are parallel to each other.
- Offer up the completed rails to the towing mechanism.
- Drill the 2.3 mm Ø holes for the screws, and fit the screws temporarily.
- Glue the assemblies 126, 127 (right) and 126, 128 (left) in the hull. Fit the towing mechanism and check that it is correctly positioned.

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**Crane outrigger mechanism**

Part No.	Description	Material	Size in mm	No. off	Notes
131	Base plate	ABS	1.5, laser-cut	1	plate 6
132	Motor support	ABS	1.5, laser-cut	1	plate 4
133	Motor, geared 1000 : 1	---	---	1	Not included
134	End-support	ABS	1.5, laser-cut	1	plate 3
135	End-support	ABS	1.5, laser-cut	1	plate 4
136	Worm gear shaft	Brass	2 Ø x 43	1	
137	Worm gear	Brass	10 Ø	1	FS
138	Grubscrew with cutter tip	Steel	M3 x 3	5	FS
139	Coupling sleeve	Plastic	1.0 I.D. x 18	1	
140	Side panel	ABS	1.5, laser-cut	2	plate 2
141	Drive shaft	Brass	4 O.D. x 45	1	Tubular rivet
142	Collet	Brass	4 I.D.	2	
143	Grubscrew	Steel	M3 x 3	2	
144	Bevel gear	Brass	11.2 Ø	1	FS

Refer to the detail drawing on Plan I and photos 96 and 97.

- Glue the motor support 132 to the base plate 131 at rightangles, and install the motor 133.
- Assemble the lower drive unit 134 - 139, engage it, align it carefully and glue the end-supports 134 and 135 to the base plate.

- Fit the drive unit and the spur gear 144 together, fit it on top and align it carefully. Ensure that the spur gear engages centrally with the worm gear.
- Glue the side panels 140 to the base plate.
- Drill a 1 mm Ø hole in the drive shaft 141.

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**Hook mechanism**

Part No.	Description	Material	Size in mm	No. off	Notes
145	Mounting plate	ABS	1.5, laser-cut	1	plate 3
146	Motor flange	ABS	1.5, laser-cut	1	plate 3
147	Gusset	ABS	1.5, laser-cut	2	plate
148	Motor, geared 400 : 1	---	---	1	Not included
149	Actuating disc	Aluminium	16 Ø	1	

Refer to the detail drawing on Plan I and photos 98 and 99.

- Assemble the motor bracket from parts 145 - 147 and glue the joints.
- Fit the motor 148 and the actuating disc 149, 138.

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**Anchor winch mechanism**

Part No.	Description	Material	Size in mm	No. off	Notes
150	Mounting plate	ABS	1, laser-cut	1	plate 7
151	Chain drum disc	ABS	1.5, laser-cut	2	plate 6
152	Drum hub	Plastic	15 x 13 x 20	1	
153	Collet	Brass	2 I.D.	2	
154	Grubscrew	Steel	M3 x 3	2	
155	Axle	Brass	2 Ø x 55	1	
156	Base plate	ABS	1.5, laser-cut	1	plate 3
157	Motor flange	ABS	1.5, laser-cut	1	plate 3
158	End-support	ABS	1.5, laser-cut	2	plate 3
159	Side panel	ABS	1.5, laser-cut	2	plate 2
160	Gusset	ABS	1.5, laser-cut	2	plate 3
161	Motor, geared 400 : 1	---	---	1	Not included
162	Coupling sleeve	Plastic	1 I.D. x 20	1	
163	Self-tapping screw	Steel	2.9 Ø x 9.5	2	

Refer to the detail drawing on Plan I and photos 100 to 102.

- Glue the discs 151 centrally to the drum hub 152.

- Fit the axle 155 so that the collets 153, 154 can be positioned accurately; glue the collets to the discs only.
- Glue the base plate 156 to the motor support, install the motor 161 and fit the end-supports 158 on the anchor drum unit. Couple the parts using the sleeve 162

and glue the end-supports to the base plate. Attach the side panels 159 and the gussets 160.

- Screw the completed anchor winch to the mounting plate 150 using the self-tapping screws 163.

- Drill a 1 mm Ø hole in the drum.

### Radar drive unit

Part No.	Description	Material	Size in mm	No. off	Notes
164	Motor support	ABS	1.5, laser-cut	1	plate 5
165	Motor, geared 1000 : 1	---	---	1	Not included
166	Spacer block	Ply wood	5, laser-cut	2	plate 8
167	Self-tapping screw	Steel	2.2 Ø x 6.5	2	
168	Suppressor set	---	---	6	Not included

Refer to the detail drawing on Plan 2 and photos 103 and 104.

selftapping screws 167.

- Screw the motor 165 to the motor support 164. Fix the spacer blocks 166 to the motor support using the

All the completed drive systems are installed in the hull once the RC system has been fitted and the auxiliary working systems have been wired up.

### RC installation and wiring

Part No.	Description	Material	Size in mm	No. off	Notes
169	Receiver	---	---	1	Not included
170	Receiver battery cradle	ABS	1.5	1	Vac. moulded
171	Receiver battery	---	---	1	Not included
172	Y-lead	---	---	3	Not included
173	Relay	---	---	1	Not included
174	Wire	Brass	1.5 Ø	2	
175	Spade connector	---	6.3	2	Not incl. ro4039
175a	Distributor	---	---	3	Not included
176	Charge lead	---	---	1	Not included
177	Relay	---	---	1	Not included
178	Extension lead	---	---	1	Not included
179	Bow thruster speed controller	---	---	1	Not included
180	Spade connector	---	---	2	Not included
181	Sound module	---	---	1	Not included
182	Bass loudspeaker	---	---	1	Not included
182a	Bass loudspeaker housing	ABS	1.5	1	Vac. moulded
182b	Self-tapping screw	Steel	2.9 Ø x 6.5	4	
183	Multi-Switch decoder 16	---	---	1	Not included
184	Decoder servo lead	---	---	2	Not included
185	Transistor reversing module	---	---	4	Not included
186	Servo lead with plug	---	---	1	Not needed
187	BEC lead with socket	---	---	1	Not incl. 67522
188	Self-tapping screw	Steel	2.2 Ø x 6.5	6	
189	Servo lead	---	---	1-3	Not included

### RC system installation and wiring, wiring plan on Plan II, Figs. 105 - 111

Note: please refer to the instructions supplied with the electronic units before carrying out the wiring procedures. Use servo extension leads where required to connect the individual RC components.

#### The full wiring system consists of three power circuits:

- 4.8 V (receiver battery, No. 171) for receiver, servos and decoder.
- 6 V (battery, No. 47) via a relay for bow thruster, lighting, and geared motors for auxiliary working systems.
- 12 V (drive batteries, No. 53) via a relay for drive motors and sound module.

- The 6 V and 12 V power circuits are switched on and off using relays which are connected to the receiver. The circuits are switched automatically when the receiving system is turned on and off using the slide switch 129.

#### Base functions

- Attach the receiver 69 and the receiver battery cradle 170 using Velcro (hook-and-loop) tape, and fit the receiver battery 171 in the cradle. Connect the battery to the receiver using the switch harness 129 and the Y-lead 172.
- Withdraw the red wire from the receiver connector attached to the speed controller 45; it is not required when a BEC system is employed.

- Connect the rudder servo 39 and the speed controller to the receiver. If you are using two speed controllers, connect them to separate channels.
- Connect the towing servo 124 to the receiver using another Y-lead 172.
- Carry out a test of the rudder system, the drive motors and the towing servo.

### Relays and charge leads

- The relay 173 for the 12 V power circuit is installed next: solder a length of 1.5 mm brass wire 174 in a spade socket 55 and connect it to terminal 1. Connect a spade plug 175 to terminal 3 using a second piece of brass wire 174. Connect terminal 1 to battery positive (+), and terminal 3 to the positive terminal (+) of the speed controller. Locate the white wire attached to the relay, and connect it to the vacant socket. Connect the relay to the receiver using the Y-lead attached to the receiver battery.
- Connect the positive wire of the charge lead 176 to relay terminal 2, and connect the negative wire to the battery negative (-) lead.
- Use the spade sockets 55a and the distributor 175a to connect the 12 V consumer units to the battery.
- Check that the drive motors work properly.
- Locate the white wire in the receiver lead attached to the relay 177 (for the 6 V power circuit), re-connect it, and connect the relay to the Y-lead of the towing servo. Cut through the red positive wire in the extension lead 178 and connect it to relay terminals 1 and 3. Connect the extension lead to the auxiliary system battery 47.

### Bow thruster

- Locate the battery lead attached to the bow thruster speed controller 179 and connect it to the extension lead 178 using a third Y-lead 172. Connect the motor to the speed controller using the spade connectors 180.
- Withdraw the red wire from the receiver lead attached to the speed controller. Connect the speed controller to the receiver, and install the controller and relay in the model using Velcro tape.
- Check that the system works properly.

### Sound module

- Connect the sound module 181 to the receiver. Sound module power supply: connect the positive wire to the relay 173 using spade connectors, and connect the negative wire directly to the negative terminal of the drive battery.
- The control wire for the speed-dependent diesel sound should be connected to one drive motor. Install the loudspeaker 182 and its housing 182a using the self-tapping screws 182b. Connect the loudspeaker 182, then fix the parts to the base plate 53 using

Velcro tape.

- Check that the system works properly.

### Multi-Switch decoder

- Power supply to the consumer units connected to the Multi-Switch decoder 183: make up a connecting lead 184 from two servo leads as shown in Fig. 108. Connect the decoder to the Y-lead 172 of the speed controller 179, and connect the receiver lead to the receiver.

**! Do not activate the decoder memory function - cut through the link.**

### Connecting the consumer units

- Connect the transistor reversing modules 185 to the three mechanisms which operate the crane. Fit a connector system 186 and 187 between the swivel mechanism (already installed) and the associated reversing module. Fix the outrigger and hook mechanisms to the towing mechanism base plate 119 using the self-tapping screws 188. The transistor reversing modules can be secured using Velcro tape.
- Slide the towing mechanism into place, complete the electrical connections between the modules and the decoder, and check that the system works properly.
- Connect the anchor winch mechanism to the decoder 183 using a transistor reversing module. Position the anchor winch assembly in the hull, align it and glue it in place.
- The radar motor and the lighting system should not be installed and connected until the superstructure has been completed. The cables 189 are used for these connections.
- Fix all the installed components securely, deploy the cables neatly and bundle them together using cable ties. Gluing the main deck to the hull Use cyano for all the glued joints in this section, unless stated otherwise.
- Lay the main deck on the hull and position it flush with the after bulkhead 72; align the companionway opening over the side walls. Tack the deck to the support rail 73 with a few drops of cyano.
- Tack the main deck to both sides of the hull, working from front to rear, pressing the hull sides inwards against it at the same time.
- Glue the deck and the foreship bulkhead in place permanently by allowing drops of cyano to run along the joints.

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**Forecastle deck and bulwark**

Part No.	Description	Material	Size in mm	No. off	Notes
190	Support rail	ABS	2 x 2 x 45	1	
191	Forecastle deck	ABS	1.5, laser-cut	1	plate 4
192	Chain halyard tube	Brass	7 Ø x 6.2 Ø	2	Overlength
193	Bulwark section	ABS	1, laser-cut	2	plate 7
194	Handrail	ABS	2 x 2 x 450	2	
195	Bulwark stanchion	ABS	1, laser-cut	17	plate 7
196	Bulwark stanchion	ABS	1, laser-cut	1	plate 7
197-200	Bulwark stanchion	ABS	1, laser-cut	2 each	plate 7
201	Floor support	ABS	1, laser-cut	4	plate 7
202	Base	ABS	1, laser-cut	2	plate 7
203	Bulwark gusset	ABS	1, laser-cut	4	plate 7
204	Bow bulwark	ABS	1.5	1	Vac. moulded
205-210	Bulwark stanchion	ABS	1, laser-cut	2 each	plate 7
211	Bulwark fairing	ABS	1, laser-cut	2	plate 7

**The forecastle deck, Figs. 112 - 114**

- Cut the support rail 190 to length and glue it in place centrally as shown.
- Trim the forecastle deck 191 to fit and glue it in the hull. Sand the rear edge flush with the foreship bulkhead.
- Drill the holes for the chain halyard tubes 192. Fit the tubes, trim the ends and glue them in place. Apply a watertight fillet of Stabilit-Express where the tubes meet the anchor hawses. Sand back the top end of the tubes flush with the forecastle deck.

**Main deck bulwark, Figs. 115 - 120**

- Cut out the scuppers in the bulwark sections 193. Trim the bulwark sections to fit accurately in the hull (no gaps), and glue them in place using Stabilit-Express.
- Cut out the scuppers in the hull itself to final size.

- Trim the handrails 194 to fit, glue them in place and round off the edges slightly.
- Trim the bulwark stanchions 195 - 200 to fit, bevel the right-hand angled edge slightly, and glue them in place at the marked points.
- Glue the floor supports 201 in place, and glue the bases 202 to them. Trim the gussets 203 to fit and glue them in place.

**The bow bulwark, Figs. 121 - 124**

- Trim the bow bulwark 204 to fit neatly (no gaps). Cut the hawse holes at the marked points.
- Fit the bulwark on the hull, align it carefully and tape it in place on the outside. Glue the bulwark in place by running cyano along on the inside.
- Trim the bulwark stanchions 205 - 210 and the bulwark fairings 211 to size, and glue them in place as shown.

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**Removable main deck hatch, Figs. 125 - 127**

Part No.	Description	Material	Size in mm	No. off	Notes
212	Hatch base	ABS	1.5, laser-cut	1	plate 6
213	Hatch side panel	ABS	1.5, laser-cut	2 each	plate 5
214	Hatch side panel	ABS	1.5, laser-cut	2 each	plate 2 + 3
215	Corner strip	ABS	4 x 4 x 11	4	

- Drill 1.2 mm Ø holes in the hatch cover as shown.
- Note: the next step is to glue the side panels 213, 214 to the hatch; check first that the hatch cover is the right way up.
- Glue the corner strips 215 in place.
- Clean up the completed hatch and place it temporarily on the model

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**Hull stringers and stabilisers, Figs. 128 - 131**

Part No.	Description	Material	Size in mm	No. off	Notes
216	Fore-and-aft stringer, after deck	ABS	2.9 x 6.5 x 910	2	Rounded
217	Fore-and-aft stringer, main deck	ABS	2.9 x 6.5 x 480	2	Rounded
218	Fore-and-aft stringer, foredeck	ABS	2.1 x 4.5 x 150	2	Rounded
219	Vertical rails	ABS	2.1 x 4.5	30	As plan
220	Fairing	Pine	3 x 8 x 10	2	
221	Ram guard	Plastic	40 x 18	2	FS
222	Stabiliser	ABS	3.5 x 7 x 325	2	L-section

The stringers should be glued in place aligned with the hull markings.

- Cut the fore-and-aft hull stringers 216 - 218 to exact length in pairs, and bevel the ends as shown on Plan I.
- Glue one stringer 216 in the centre of the transom. The next step is to tack the stringer in place; it should finish flush below the scuppers as it curves forward, and rest on the hull at the marked points.
- Run cyano along the stringer to fix it in place permanently.
- Attach the second transom stringer 216 and the fore-and-aft stringers 217, 218 in the same manner.
- Cut the vertical rails 219 to length to suit the model, and trim them to fit between the stringers. Cut the ends to a half-round shape to fit the stringers.
- Sand the fairings 220 to shape. Cut the ram guard components 221 to size as shown on Plan I, trim them to fit between the fairings, and glue them in place.
- Cut the stabilisers 222 from L-section strip as shown in the detail view (Plan I), and glue them to the hull at the marked points.

#### RAL colour key

7012	Basalt grey
9010	Pure white
2004	Pure orange
1018	Zinc yellow
5017	Transport blue
8003	Earth brown
3013	Tomato red
9011	Graphite black
6001	Emerald green
9006	White aluminium

- Prepare the hull ready for painting.
- The construction waterline (CWL) also represents the dividing line between the upper hull and the underwater hull in terms of colour. Measure off the waterline from the plan, and mark it on the centre of the hull at bow and stern.
- Make the jig shown in Fig. 132; this is used to mark the waterline on the hull.
- Support the boatstand in such a way that the marked CWL points are the same height above the flat base. Mark the waterline all round by sliding the marking jig round the hull. The hull can now be painted.

#### Painting the hull and the removable hatch

We recommend matt-finish synthetic enamel paints for this model.

#### The hydraulic crane linkage, exploded drawing on Plan I

Part No.	Description	Material	Size in mm	No. off	Notes
223	Braided steel wire	Steel	0.3 Ø x 600	1	
224	Tubular rivet	Brass	1.2 O.D. x 2	1	
225	Running cable	Thread	0.2 Ø x 1000	1	FS
226	Hook	Brass	1 Ø	1	As plan
227	Ball, bored 1 mm Ø	Lead	8 Ø	2	

- Remove the towing mechanism from the hull.
- The cable which raises and lowers the hydraulic crane is made from the braided steel wire 223. Thread the wire through the tube 104 from the top. Solder the projecting bottom end to the drive shaft 141.
- Install the towing mechanism in the hull once more.
- Move the crane to the idle position. Pull the braided wire down and secure it with the tubular rivet 224. Test the system, and cut off the excess wire length when you are satisfied.
- Cut the running cable 225 to a length of 1000 mm, thread it through the tube 11K from the top, and run it through the oval opening in the bulkhead 121. Attach the cable to the actuating disc 149.
- Run the upper end of the cable to the crane as shown on the plan, and attach the prepared crane hook assembly to it.
- **Note:** the crane is suitable for lifting loads weighing up to 40 g, e.g. the inflatable boat mounted on the removable hatch. If you wish to do this, make up a crane hook from parts 226 and 227 as shown in the detail sketch. If you intend to set up the Happy Hunter as a static display model, fit the scale crane hook instead.

The next step is to fit out the decks. We suggest that you make and prepare all the individual components, paint them separately, and then attach them to the model in the positions shown on the plan.

#### The anchor winch, Figs. 133 - 136

Part No.	Description	Material	Size in mm	No. off	Notes
228	Split pin	Brass	1 Ø x 15	1	
229	Anchor winch base plate	ABS	3, laser-cut	1	plate 10
230	Gearbox housing	ABS	3, laser-cut	2	plate 10
231	End-support	ABS	3, laser-cut	2	plate 10
232	Anchor winch shaft	Brass	2 Ø x 57	1	FS

233	Gearbox cover	Resin	13 Ø, cast	2	FS
234	Anchor winch hawse	Brass	3 Ø x 3,5	2	FS
235	Brace	Spruce	2 x 5 x 12	1	FS
236	Connecting piece	ABS	4 x 4 x 10	1	FS
237	Lever	Brass	Mod. stanchion	1	FS
238	Brake spindle	Brass	1 Ø x 22	2	FS
239	Brake stand	Brass	Mod. stanchion	2	FS
240	Brake band	ABS	2 x 41.5	2	Rest of ABS
241	Handwheel	Plastic	7 Ø	2	FS
242	Sprocket	Aluminium	15 Ø, machined	2	FS
243	Anchor capstan	Aluminium	12 Ø, machined	2	FS
244	Chain stopper	Plastic	Ready made	2	FS
245	Chain stopper crank	Brass	1 Ø	2	As plan
246	Anchor chain	Metal	2.2 x 150 2.2 x 1300	1 each	FS
247	Hall anchor	Metal	Ready made	2	FS

- Drill the appropriate holes in the base plate 229, the gearbox housing 230 and the end-supports 231.
- Assemble the gearbox housing, the end-supports and the base plate, together with the winch shaft 232, and glue the parts together.
- Attach the gearbox cover 233 and the hawses 234. Cut the brace 235 and the connecting piece 236 to shape and glue them in place.
- Make the lever 237 by shortening a railing stanchion, and glue it in a 1.2 mm Ø hole in the connecting piece 236.
- Shorten two railing stanchions above the central ball to make the brake stands 239. Fit the brake spindles 238 in the stands 239 with 2 mm projecting, set the parts at right-angles and solder the joints.
- Cut the brake bands 240 to a length of 41.5 mm, and pierce holes with a thick sewing needle at a point 2 mm from the ends. Drill 1 mm Ø holes in the handwheels 241.
- Attach the sprockets 242 and the anchor capstans 243 in such a way that the shaft 232 rotates freely.
- Attach the brake bands, the brake stands and the handwheels.

- Glue the completed anchor winch on the forecastle deck, lining up the hawses with the chain halyard tubes.

### The chain stoppers

- Glue the two-part chain stopper 244 together, and drill out the 1 mm Ø hole for the chain stopper cranks.
- Make the cranks 245 from 1 mm Ø brass rod, and glue them in the chain stoppers to form a mirror-image pair.
- The anchor chains 246 are required for aligning the chain stoppers. The right-hand anchor is operated by connecting the chain to the winch mechanism, whereas the left anchor is static, i.e. it cannot be operated.
- Run the right-hand chain into the hull from above, and attach it to the drum on the mechanism using the split pin 228. Wrap the chain around the right-hand sprocket, and thread the chain stopper onto it. Route the chain down and attach the Hall anchor 247 to it using a short piece of thread.
- Attach the anchor and the chain stopper on the left-hand side using a 150 mm length of chain.
- Glue the chain stoppers to the base plate 229 and the forecastle deck as shown in the plan view.

### The hawser deflector bars, Figs. 137 - 139

Part No.	Description	Material	Size in mm	No. off	Notes
248	Small hawser deflector bar	Brass	2.57 x 0.5 x 4.22	1	Oval, as plan
249	Large hawser deflector bar	Brass	2.57 x 0.5 x 4.22	1	Oval, as plan
250	Small hawser bar support	Brass	1.5 Ø	2	As plan
251	Large hawser bar support	Brass	1.5 Ø	2	As plan
252	Large return roller	ABS	Inj. moulded	2	FS

- Bend the hawser deflector bars 248 and 249 to shape from the oval brass tube supplied, as shown in the detail view. Trim the deflector bar 249 to fit on the model; the top edges should end flush with the handrails.
- Cut the hawser bar supports 250 and 251 as shown on the plan, and solder them to the bars (away from the model).
- Drill 1.5 mm Ø holes for the bar supports in the after deck, and glue the prepared hawser deflector bar assemblies in them.
- Glue the large return roller 252 to the bar 248.

**Figs. 140 - 144 show the sprues containing the injection-moulded parts required for the following stages.**

**Hatches and toolbox, Figs. 145 - 147, Plan I**

Part No.	Description	Material	Size in mm	No. off	Notes
253	Hatch frame 43 x 43 x 15	ObABSechi	1.5, laser-cut	4	plate 6
254	Tension frame	ABS	1, laser-cut	1	plate 7
255	Spacer plate	ABS	1.5, laser-cut	1	plate 2
256	Cover	ABS	1, laser-cut	1	plate 7
257	Hatch cover	Resin	15 Ø cast	1	
258	Handwheel	Plastic	7 Ø	1	FS
259	Hatch round	ABS	14 Ø x 11	1	
260	Hatch cover	Resin	15 Ø cast	1	
261	Handwheel	Plastic	7 Ø	1	FS
262	Hatch box 16 x 16 x 12	ABS	1.5, laser-cut	4	plate 6
263	Hatch floor	ABS	1, laser-cut	1	plate 7
264	Hatch cover	Resin	15 Ø cast	1	
265	Handwheel	Plastic	7 Ø	1	FS
266	Box 16 x 22 x 12	ABS	1.5, laser-cut	4	plate 6
267	Cover	ABS	1, laser-cut	1	plate 7
268	Hatch block 18 x 18 x 12	ABS	1.5, laser-cut	4	plate 6
269	Sliding hatch	ABS	1, laser-cut	1	plate 7
270	Handle	Brass	0.7 Ø	2	As plan
271	Latch bolt	Brass	0.7 Ø	2	As plan
272	Hatch block 22 x 22 x 10	ABS	1.5, laser-cut	4	plate 6
273	Tension frame	ABS	1, laser-cut	1	plate 7
274	Spacer plate	ABS	1.5, laser-cut	1	plate 2
275	Hatch cover	ABS	1, laser-cut	1	plate 7
276	Davit brace	ABS	1, laser-cut	1	plate 7
277	Davit	ABS	Inj. moulded	1	
278	Handle	Brass	0.7 Ø	2	As plan

The hatches consist of ABS laser cut sides or short pieces of tube, fitted with additional laser-cut ABS components; the parts should be glued together using cyano. Make up the individual hatches according to the detail drawings on the plan.

- Glue together the oil tank entry hatch from parts 254 - 258, and place it on the hatch 62.
  - Assemble the rudder compartment escape hatch from parts 259 to 261, and glue it on the after deck in the position shown in the plan view.
  - Use parts 262 - 265 to make the after bulkhead escape hatch, and glue the hatch in place as shown on the plan.
  - Glue the cover 267 on the toolbox 266. The box cannot be installed until the superstructure has been completed.
  - Make up the freshwater tank hatch from parts 268 -
271. Drill the 1 mm Ø holes for the handles 270 and the latch bolt 271. Bend parts 270 and 271 to shape from pieces of brass tube, and glue them in the holes.
- The forecastle deck hatch is assembled from parts 272 - 278. Before gluing the tension frame 273 in place, drill the 3 mm Ø hole for the davit 277. Brace the davit with the davit support 276. Drill 1 mm Ø holes in the spacer plate 274 for the two handles 278.
  - Glue the completed hatch to the forecastle deck.



**Fitting out the after deck and the forecastle deck, Figs. 145 - 152, Plan 1**

Part No.	Description	Material	Size in mm	No. off	Notes
279	Hawse barrier	ABS	Inj. moulded	1	
280	Two-part hawse	ABS	Inj. moulded	2	
281	Hawser pulley	ABS	Inj. moulded	2	FS
282	Hawser block	ABS	Inj. moulded	2	FS
283	Small return roller	ABS	Inj. moulded	2	FS
284	Double cruciform bollard	ABS	Inj. moulded	11	FS
285	Towing complex	ABS	Inj. moulded	1	FS
286	3" Smith brake	ABS	Inj. moulded	2	FS
287	Brake shoe	ABS	Inj. moulded	2	FS
288	Stub	ABS	Inj. moulded	2	FS
289	Elbow fitting	ABS	Inj. moulded	2	FS
290	Front connection	ABS	Inj. moulded	4	FS
291	Oil valve	ABS	Inj. moulded	4	FS
292	Rear oil connection	ABS	Inj. moulded	4	FS
293	Mechanical valve	ABS	Inj. moulded	1	FS
294	5" valve	ABS	Inj. moulded	2	FS
295	Gooseneck	ABS	Inj. moulded	6	FS
296	Guard cradle	ABS	Inj. moulded	2	FS
297	Vertical guard	ABS	Inj. moulded	2	FS
298	Capstan gearbox	Aluminium	Machined	2	
299	Capstan drum	Aluminium	Machined	2	
300	Axle	Brass	2 Ø x 22	2	
301	Fire extinguisher box 5 x 10 x 13	Ply wood	5, laser-cut	1	plate 8
302	Shield	foil	0.4 x 38 x 23	2	not included
303	Return pulley	Aluminium	6 Ø x 2	4	
304	Pulley pin	Brass	2 Ø x 4.5	4	

- Drill the holes for the hawse barrier 279 in the hatch 63. Glue the two-part hawses 280 in the barrier, and position this assembly on the boat (see Fig. 182 for the components).
- Drill the holes in the roller box 78 - 81 and glue the hawser pulleys 281 and the hawser blocks 282 in place.
- Glue the return pulleys 283 to the bulwark. Remove the base plates of the double cruciform bollards 284, which are glued to the main deck bulwark. Glue all the bollards 284 in place in the positions shown.
- Glue parts 285 and 286 in place.
- Drill the appropriate holes in the after deck. Position parts 287 - 295 as shown in the plan view and the detail views.

**The capstans**

- The capstans are assembled from parts 296 - 300; note that the end of the axles 300 must be splayed slightly before fitting. Glue the capstans 298 - 300, the guard cradles and the vertical guards 296, 297 on the deck.

**Parts 301 - 304**

- Apply the decal "F" to the fire extinguisher box, and glue it to the after bulkhead.
- Cut the towing winch compartment shields 302 to a length of 23 mm. Cut slots in the after bulkhead as shown in the detail view, and glue the shields over the openings.
- Install the return pulleys 303 on the forecastle deck using the pins 304. Splay one end of the pins and cut them to length after fitting them. Apply a fillet of DELUXE Fusion Acrylit or UHU Acrylit round the projecting ends.

**The funnels, Figs. 153 - 159**

Part No.	Description	Material	Size in mm	No. off	Notes
305	Internal funnel wall	ABS	1.5, laser-cut	2	plate 2 + 6
306	Lower centre floor	ABS	1.5, laser-cut	4	plate 6
307	Floor	ABS	1.5, laser-cut	2	plate 6
308	Funnel shell	ABS	1.5	1 each	L/R, vac.
309	Funnel fairing	ABS	1.5, laser-cut	2	plate 6
310	Large exhaust pipe	ABS	10 outer Ø x 7	4	
311	Small exhaust pipe	Brass	4 outer Ø x 7	4	
312	Large air shaft	ABS	1, laser-cut	4	plate 7
313	Small air shaft	ABS	1, laser-cut	1	plate 7
314	Funnel door	ABS	1, laser-cut	2	plate 7

315	Draught flap	ABS	1, laser-cut	4	plate 7
316	Aerial holder	Brass	1 Ø x 19	1	
317	Door latch	Brass	1 Ø	8	As plan
318	Handrail	Brass	1 Ø	6	As plan
319	Split pin	Brass	1 Ø x 15	1	

Please note that you must make one right-hand and one left-hand funnel.

- Glue the floors 306 and 307 to the funnel walls 305. Note the markings for the exhaust pipes on the upper floors.
- Glue these units in the funnel shells 308. Trim the funnels, and sand the inside faces flat.
- Glue the funnel fairings 309 in place, angled as shown.
- Make the exhaust pipes from the brass rings 310 and 311 and glue them together.

- Glue the doors 314 to the funnels.
- Bevel the front face of the draught flaps 315 at the top. These parts should be painted before they are glued in place.
- Glue the aerial holder 316 to the left-hand funnel.
- Drill 1 mm Ø holes for the door latches 317 and the handrails 318. Bend these parts to shape and insert them. Fit the split pin 319 on the handrail for the right-hand funnel.
- Apply the self-adhesive decals "a", "b", "p" and "r".
- The completed funnels should not be glued in place until the superstructure has been completed.

### The superstructure, Figs. 160 - 166, Plan II

Part No.	Description	Material	Size in mm	No. off	Notes
320	Boat deck	ABS	1.5, laser-cut	1	plate 4
321	Front panel	ABS	1.5, laser-cut	1	plate 4
322	Front side wall	ABS	1.5, laser-cut	2	plate 5
323	Transverse wall	ABS	1.5, laser-cut	1	plate 5
324	Partition wall	ABS	1.5, laser-cut	1	plate 4
325	Side wall	ABS	1.5, laser-cut	2	plate 5
326-328	Aft wall	ABS	1.5, laser-cut	1 each	plate 5
329	Brace	ABS	1.5, laser-cut	1	plate 3
330	End wall	ABS	1.5, laser-cut	1	plate 3
331	Companionway brace	ABS	1.5, laser-cut	1	plate 5
332	Companionway support	ABS	1.5, laser-cut	1	plate 3
333	Air shaft wall	ABS	1.5, laser-cut	2	plate 3
334	Door	ABS	1, laser-cut	2	plate 7
335	Angled wall	ABS	1,5 laser-cut	1	plate 4
336	Bridge deck	ABS	1.5, laser-cut	1	plate 5
"V"	Template	ABS	1.5, laser-cut	1	plate 2
337	Bridge deck bulwark	ABS	1.5, laser-cut	1	plate 4
338	Navigation lamp bracket base	ABS	1.5, laser-cut	2	plate 4
339	Lamp bracket side panel	ABS	1.5, laser-cut	2	plate 4
340	Lamp bracket back panel	ABS	1.5, laser-cut	2	plate 4
341	Lamp bracket top panel	ABS	1.5, laser-cut	2	plate 4
342	Handrail	ABS	2 x 2 x 290	1	
343	Bulwark stanchion	ABS	1, laser-cut	5	plate 7
344	Reinforcing strip	ABS	3 x 3	11	As plan

- Glue the walls 321 - 324 to the underside of the boat deck 320.
- Glue the partition wall 324 in place, noting the 1.5 mm spacing on both sides.
- Glue parts 325 - 335 in place as shown.
- If you are fitting auxiliary working systems, cut the oval opening in part 336.
- Place the bridge deck 336 on the superstructure and align it in such a way that it projects by the same amount on both sides. Mark the centre. The bridge deck must not rest on the wall 335; it should butt up against its rear edge. The bridge deck bulwark 337 will be glued on part 335 at a later stage.

- Glue the bridge deck in place using DELUXE Fusion Acrylit or UHU Acrylit.
- Set the bulwark 337 central and glue it in place using the template "V".
- Make up one right-hand and one left-hand navigation lamp bracket from parts 338 - 341.
- Glue the lamp brackets in place.
- Trim the handrail 342 and the bulwark stanchions 343 to fit and glue them in place. Cut the eleven reinforcing strips 344 to length and glue them to the inside of the superstructure, referring to the detail view on Plan II.

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**The wheelhouse, Figs. 167 - 172, Plan II**

Part No.	Description	Material	Size in mm	No. off	Notes
345	Wheelhouse floor	ABS	1.5, laser-cut	1	plate 5
346	Fore-and-aft wall, aft	ABS	1.5, laser-cut	2	plate 5
347	Aft wall	ABS	1.5, laser-cut	1	plate 3
348-349	Aft transverse wall	ABS	1.5, laser-cut	1 each	plate 5
350	Fore-and-aft wall, front bottom	ABS	1.5, laser-cut	2	plate 5
351	Transverse wall, bottom	ABS	1.5, laser-cut	1	plate 5
352	Fore-and-aft wall, front top	ABS	1.5, laser-cut	2	plate 4
353	Transverse wall, top	ABS	1.5, laser-cut	1	plate 6
354	Door frame	ABS	1.5, laser-cut	4	plate 5
355	Wheelhouse door	ABS	1.5, laser-cut	2	plate 5
356	Top deck bulwark	ABS	1.5,	1	vac. moulded
357	Top deck	ABS	1.5, laser-cut	1	plate 6

- If you intend to install auxiliary working systems, cut the oval opening in part 345.
- Assemble the wheelhouse on the wheelhouse floor 345 using the walls 346 - 351. Trim the upper fore-and-aft walls 352 and the transverse wall 353 to fit, and glue them in place. Repeat the procedure with the doors 354, 355.
- Trim the underside of the top deck bulwark 356, sand it flat, and glue it to the top deck 357. Cut away the top area of the bulwark as shown.
- The superstructure components cannot be glued in place until the wheelhouse has been painted and glazed.

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**The air shafts, detail drawing entitled "Air shafts", Plan I, Fig. 201**

Part No.	Description	Material	Size in mm	No. off	Notes
358	Air duct	ply wood	5, laser-cut	2	plate 8
359	Air duct	ply wood	5, laser-cut	1	plate 8
360	Side panel	ABS	1, laser-cut	5	plate 7
361	Side panel	ABS	1, laser-cut	1	plate 7
362	End panel	ABS	1, laser-cut	2	plate 7
363	Small end panel	ABS	1, laser-cut	1	plate 7
364	Air flap	ABS	1, laser-cut	2	plate 7
365	Small air flap	ABS	1, laser-cut	1	plate 7

- Assemble the air shafts from parts 358 - 365.
- Take the air ducts 358 and 359 and sand them to shape.
- Drill holes in the side panel 360 and 361 and trim the parts to fit. Glue the panels 360 - 365 to the air ducts.
- Glue the completed air shafts to the superstructure.

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**Assembling the superstructure, Plan II**

Part No.	Description	Material	Size in mm	No. off	Notes
366	Aft wheelhouse wall glazing	Plastic transp.	0.5, laser-cut	1	plate 11
367-370	Wheelhouse glazing	Plastic transp.	0.5, laser-cut	2 each	plate 11
371	Upper transverse wall glazing	Plastic transp.	0.5, laser-cut	1	plate 11
372	Wheelhouse glazing	Plastic transp.	0.5, laser-cut	2	plate 11
373-375	Superstructure glazing	Plastic transp.	0.5, laser-cut	2 each	plate 11
376	Aft bulkhead door glazing	Plastic transp.	0.5, laser-cut	1	plate 11
377	Glazed porthole	Brass	6 Ø x 8 Ø	20	rivet
377A	Porthole glazing	Plastic transp.	0.5, laser-cut	2	plate 11

- The individual superstructure sub-assemblies should be painted at this stage.
- Glue the glazing panels 366 - 375 in place, following the sequential numbers marked on the plan. The glazing panel 376 should be attached to the inside of the aft bulkhead door.
- Apply UHU akrylit to the wheelhouse, glue it to the bridge deck and position it carefully. Glue the top deck on the wheelhouse. Glue the completed toolboxes 266, 267 to the top deck.
- Fit and glue the portholes 377 in the hull and stripes of glazing behind. Take care that the glazing at the portholes are glued well that the hull is water tight.

**Fitting out the removable hatch, Figs. 173 - 175, Plan II**

Part No.	Description	Material	Size in mm	No. off	Notes
378	Boiler pipe	Metal	22 Ø x 59	1	
379	Boiler end panel	Resin casting		1	
380	Boiler end panel	Resin casting		1	
381	Instrument panel	ABS	1, laser-cut	1	plate 7
382	Instrument panel support	ABS	1, laser-cut	2	plate 7
383	Boiler support	ABS	3, machined	2	plate 10
384	Boat support	ABS	1.5, laser-cut	4	plate 5
385	Inflatable boat	Resin casting		2	FS
385 A	Inflatable boat transom	ABS	1.5, laser-cut	2	plate 5
386	Transport bar	Brass	1 Ø x 80	1	

- Fit the boiler end panels 379 and 380 on the boiler pipe. Glue the instrument panel 381, 382 to the boiler. Place the boiler on the boiler supports 383, and glue this assembly on the hatch.
- Drill two 1 mm Ø holes at the balance point of the rear inflatable boat to accept the transport bar 386 as shown in the detail view. Bend the bar to shape and insert it in the holes.
- Glue transom 385 A to the back of inflatable boat 385.
- The purpose of the bar is to enable the crane to raise the inflatable boat and lower it to the water. But the boat is not floatable. Place the inflatable boat on the boat supports.
- Glue the supports 384 for the inflatable boats 385 on the hatch and the boat deck 320. Glue the front inflatable boat in place.

**Deck and superstructure fittings, Figs. 176 - 181, plans I and II**

Part No.	Description	Material	Size in mm	No. off	Notes
387	Outrigger support	Brass	0.2 x 3 x 17	1	
388	Brace	Brass	2.2 Ø x 3 Ø x 42	1	
389	Lamp plinth	ABS	Inj. moulded	1	
390	Lamp mast	ABS	3 x 3 x 45	1	
391	Companionway	Plastic	Overlength	6	As plan
392	Ladder	Brass	Overlength	7	As plan
393	Spacer pin	Brass	1 Ø	8	As plan
394	Deck lamp	Aluminium	Machined	2	FS
395	Deck lamp stand	Brass	1 Ø	2	As plan
396	Light shaft	ABS	Inj. moulded	1	
397	Latch	Brass	1 Ø	2	As plan
398	Glazed porthole	Brass	6 Ø x 8 Ø	1	
399	Pulley console	ABS	Inj. moulded	4	
400	Return pulley	Aluminium	Machined	4	
401	Washer	Brass	2.2 I.D.	4	
402	Lamp console	ABS	Inj. moulded	1	
403	Liferaft	Plastic	Inj. moulded	2	FS
404	Catapult arm	Brass	1.5 Ø	4	As plan
405	Catapult foot	Brass	1.5 Ø	4	As plan
406	Catapult strut	Brass	1.5 Ø	2	As plan
407	Lifebelt	Plastic	20 Ø	8	FS, inj. moulded
408	Gangway brace	ABS	1 laser-cut	8	plate 7
408a	Gangway grid	Brass	1 Ø x 90	7	

**Outrigger support and stern light**

- Assemble the outrigger support from parts 387 and 388, and glue it in the 3 mm Ø hole in the removable hatch.
- Remove the cylindrical spigot from the lamp plinth 389. Sand the rear corners as shown, and glue the plinth to the tube 390.
- Glue the tube in the 3 mm Ø hole, ending flush on the underside. The method of fitting the stern lamp is described in the section entitled "Lighting".

**Companionways, ladders and deck lamps**

- Cut the six companionways 391 to length as shown on the plan, bevel their front faces and glue them in place. The companionways on the removable hatch should be glued to the edge of the hatch only; don't glue them to the deck.
- Cut five ladders 392 to length for fitting to the superstructure, the wheelhouse and the aft bulkhead. Bend them as required, drill 1 mm Ø holes for them and insert them in the holes. The ladders should not be glued in place until the railings have been completed.

- Make one ladder for the main mast and one for the foremast. Solder overlength pieces of brass wire to them to form the spacer pins 393, then shorten them to 4 mm. The ladders are not required until the masts have been assembled.
- Drill holes in the deck lamps 394, bend the deck lamp stands 395 to shape and glue them in the holes. Drill 1 mm Ø holes in the deck and glue the deck lamps in the holes and to the handrail.

#### Light shaft, return pulleys, stern lamp console, lifebelts, gangway, liferaft support

- Attach the brass wire latches 397 to the light shaft 396, and glue the glazed porthole 398 in place. Glue the completed light shaft to the boat deck.
- Fit the pulleys 400 and washers 401 on the pulley consoles 399, but glue the washers in place only - not the pulleys.

- Glue the pulley consoles and the lamp console 402 in place as shown on the plan. The method of fitting the stern lamp is described in the "Lighting" section.
- Glue the two-part liferafts 403 together.
- Bend the four catapult arms 404 to shape. We recommend that you make a simple jig for bending these parts.
- Solder the catapult feet 405 to the catapult arms, and solder the catapult struts 406 in place.
- Glue the catapults and the liferafts to the superstructure.
- Attach the lifebelts 407 to the superstructure.
- Make up the gangway from the braces 408 and the lengths of brass wire 408a, and glue it to the rear of the superstructure.

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#### The foremast, Figs. 182 - 185, Plan II

Part No.	Description	Material	Size in mm	No. off	Notes
409	Foremast	ABS	Inj. moulded	1	
410	Cradle	ABS	Inj. moulded	5	
411	Foremast strut	ABS	Inj. moulded	1	
412	Yard block	ABS	Inj. moulded	2	
413	Angled yard block	ABS	Inj. moulded	2	
414	Ship's bell bracket	Brass	0.7 Ø	1	As plan
415	Ship's bell	Brass	Ready made	1	FS

- Glue together the injection-moulded parts 409 - 413 to form the foremast, following the sequence of the part numbers.
- Hold the prepared ladder against the foremast, mark the position of the pins 393, and drill 1 mm Ø holes at the marked points. Glue the ladder in the holes.
- Bend to shape the bracket 414 for the ship's bell 415. Drill a 0.7 mm Ø hole, glue the bracket in it, and attach the ship's bell.
- Drill a 2 mm Ø hole in the superstructure and glue the foremast in it.

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#### The mainmast, Figs. 186 - 191, Plan II

Part No.	Description	Material	Size in mm	No. off	Notes
416	Platform	ABS	Inj. moulded	1	
417	Railing stanchion	Brass	25 high, 3 holes	9	FS
418	Rail	Brass	0,7 Ø	1	As plan
419	Rail	Brass	0.7 Ø	2	As plan
420	Lower mast section	ABS	Inj. moulded	1	
421	Radar plinth	ABS	Inj. moulded	1	
422	L.H. mast strut	ABS	Inj. moulded	1	
423	R.H. mast strut	ABS	Inj. moulded	1	
424	Radar platform	ABS	Inj. moulded	1	
425	Mast	ABS	Inj. moulded	1	
426	Navigation frame stand	ABS	Inj. moulded	1	
427	Navigation frame	ABS	Inj. moulded	1	
428	Lower signal yard	ABS	Inj. moulded	1	
429	Yard block	ABS	Inj. moulded	9	
430	Upper signal yard	ABS	Inj. moulded	1	
431	Aerial rod	Brass	1 Ø x 140	1	
432	Aerial base	ABS	Inj. moulded	1	
433	Aerial cap	Glass	3.5 O.D.	1	FS, bead
434	Foghorn	Plastic	Inj. moulded	2	FS
435	Signal yardstrut	Brass	0.7 Ø x 20	2	
436	Radar arm	ABS	Inj. moulded	2	FS

437	Radar housing	ABS	Inj. moulded	2	FS
438	Drive shaft	Brass	1 Ø x 140	1	
439	Spacer sleeve	Brass	1 Ø x 1.5 Ø x 8	1	
440	Coupling sleeve	Plastic	1 I.D. x 18	1	

- Bend the railing stanchions 417 for the mast platform 416 at an even angle. It is best to use a jig for forming the rails.
- Bend the rail 418 (1 mm Ø) and the rails 419 (0.7 mm Ø) to shape, but leave them overlength for the moment. Thread the railing stanchions onto the rails.
- Position the railing on the platform, align it carefully, and solder the rails to the stanchions. Position the rail joints so that they are concealed inside a railing stanchion.
- Glue the mast components together following the sequence of the part numbers. Please note: align the left and right mast struts 422, 423 before gluing them. Glue the navigation frame 427 in the frame stand 426, then install the assembly.
- Bend the signal yard struts 435 to shape from 0.7 mm Ø brass wire, glue them to the signal yard, and solder them to the upper rail.
- Attach the ladders 392, 393.
- Cut down the upper radar arm 436 to its final length of 40 mm. Glue the upper radar arm and the housing 437 to the radar platform 424.
- Attach the drive shaft 438 to the lower radar unit, and install it on the plinth 421 together with the radar housing 437.
- Drill the hole for the drive shaft in the top deck. Fit the mast and glue the mast feet in place.
- Connect the radar drive system as shown on Plan II, using the spacer sleeve 439 and the coupling sleeve 440. Glue the joints.

### Handrails and railings, Figs. 192 - 200, Plan II

Part No.	Description	Material	Size in mm	No. off	Notes
441	Handrail	Brass	1 Ø	11	As plan
442	Handrail stanchion	Brass	1 Ø x 15	16	Split pin
443	Railing stanchion	Brass	25 high, 3 holes	67	FS
444	Top rail	Brass	1 Ø	14	As plan
445	Rail	Brass	0.7 Ø	28	As plan
446	Struts	Brass	1 Ø x 15	13	Split pin

**Note:** in the interests of clarity the handrails and the individual railing components are shown set up on a bare superstructure and wheelhouse.

The following handrails are made from the 1 mm Ø brass wire:

- Aft wheelhouse (aft view of wheelhouse).
- Companionway at bridge deck to removable hatch (starboard view of superstructure).
- 5 x on the superstructure (starboard, port and aft views of superstructure)
- 4 x companionways from forecastle deck to main deck.
- Make up the handrails from the lengths of brass wire 441 and the stanchions 442 (split pins) and place them on the model.

### Gluing the funnels in place

- The funnels should be glued to the superstructure in such a way that the parts form a unit, i.e. the funnels can be removed together with the superstructure. The funnels can be tacked to the superstructure directly on the model: place the superstructure on the boat, position the funnels and tack them in place with a few drops of cyano. Remove the superstructure, then apply more cyano to the glued joints.

### The railings

- The railings are assembled in several sections: they consist of the railing stanchions 443, the upper rails 444 (1 mm Ø brass wire) and the middle and lower rails 445 (0.7 mm Ø brass wire). The bridge deck railing requires the additional struts 446 (split pins).

### The following railing sections have to be assembled:

- Top deck - two sections
- Bridge deck with integral handrail - 1 section
- Boat deck - 6 sections
- Removable hatch - 1 section
- Main deck - 4 sections

Note: some of the upper rails terminate as handrails which end at the appropriate ladders. Leave these rails overlength initially.

Drill all the 1 mm Ø holes in the decks and in the bulwark for the railing stanchions and split pins.

- Assemble all the railing sections as shown on the plan, and fit them on the model. Separate the rails where they meet the ventilators 358, 359 on the boat deck, and terminate them in the ventilators themselves.

**Whip aerals, flagstocks, compass, searchlights, telephone aerial, towing cable, self-adhesive decals, spare anchor, lighting, Figs. 201 - 207, Plan II**

Part No.	Description	Material	Size in mm	No. off	Notes
447	Plinth	Plastic	Inj. moulded	3	
448	Whip aerial	Brass	1 Ø	3	As plan
449	Whip aerial cap	Glass	4 O.D.	3	FS, bead
450	Flagstock brace	Brass	0.7 Ø	1	As plan
451	Flagstock	Brass	1 Ø	1	
452	Dutch national flag	Fabric	Ready made	1	FS
453	Flagstock cap	Glass	4 O.D.	1	FS, bead
454	Compass cowl	Plastic	Inj, moulded	1	FS
455	Compass housing	Beech	8 Ø x 21	1	
456	Searchlight	Metal	Ready made	2	FS
457	Searchlight plinth	Spruce	8 x 8 x 12	2	
458	Signal halyard	Thread	0.2 Ø	10	FS, as plan
459	Dockyard flag	Fabric	Ready made	1	not included
460	Telephone aerial	Thread	0.2 Ø, 2-part	1	FS, as plan
461	Towing cable	Thread	1 Ø x 2500	1	FS
462a-x	Self-adhesive decals	---	---	1 Set	
463	Spare anchor	Metal	Ready made	1	not included
464	Anchor bracket	Brass	1 Ø	1	As plan
465	Lamp	Plastic	5.4 Ø x 12, inj.	5	FS
466	Steamer lamp	Plastic	5.4 Ø x 12, inj.	8	FS
467	Clear bulb	---	3 Ø, 6 Volt	10	FS
468	Red bulb	---	3 Ø, 6 Volt	4	FS
469	Green bulb	---	3 Ø, 6 Volt	1	FS
470	Flexible cable	---	0.07 mm <sup>2</sup>	1	Not included
471	Heat-shrink sleeve	---	2.4 Ø	1	Not included
472	10-pin connector	---	---	1	Not included

- Assemble the two whip aerals for the top deck from parts 447 - 449. Note that the wires 448 are of different length, as shown on the plan.
- Make up the flagstock from the brass wire parts 450 and 451, and attach it to the top deck as shown in the plan view. Fit the Dutch national flag 452 and the cap 453 on the flagstock.
- Assemble the compass (parts 454, 455) and the searchlights (parts 456, 457) and glue them in place as shown.
- Tie the signal halyards 458 to the yard blocks, and the signal yards on the foremast and mainmast. A dockyard flag 459 could be set at the same time.
- Run the telephone aerial 460 on the port side from the mainmast block to the foremast block. Extend part of the aerial to the aerial holder 316 on the funnel.
- The towing cable 461 is supplied as a length of thread about 2500 mm long; tie a loop in each end, wrap the ends with thread and secure the loop ends with a drop of cyano.
- Run one end of the towing cable through the opening in the aft bulkhead and into the hull, where it should be connected to the towing mechanism. Coil up the other end and position it on the after deck behind the hawser bars.
- Bend the anchor brackets 464 to the shape shown, and use them to attach the spare anchor 463 to the aft superstructure wall.

**The lighting system**

- Install the bulbs 467 - 469 as shown in the "Lamp assembly" diagram on Plan II. Note the correct location of the coloured bulbs. Extend the connecting wires 470 to suit, and run them downward. The bulbs should be wired up in parallel. We recommend that you install a 10-pin connector 472 in the wiring harness to enable you to remove the superstructure at any time. The stern lamp should also be connected using a plug and socket.
- Position the lamps 456 and 466. Glue the navigation lamps in place after fitting the bulbs from the underside.

**Note on lighting system**

The wiring diagram shows the method of connecting the bulbs to the three unused Multi-Switch channels.

If you wish to install a scale lighting system, at least one additional electronic switching facility is required. The separate sheet entitled "Lighting system" shows how the individual groups of lamps are wired together and connected to the individual channels.

Your model is now complete.

## Checking the working systems, trimming

### Checking the working systems

Check once more that the motors run in the correct directions (contra-rotating propellers), and test the steering system carefully. Check each of the installed auxiliary working systems in turn.

Assemble the model completely, ready to run, and place it in the bath (preferably half-full of water). Add lead ballast until the boat floats evenly at the marked waterline. Check all round the hull: the model must not list (lean to one side). Use lead sheet or lead shot as trim ballast. When you are confident that all is well, fix the lead ballast inside the hull so that it cannot possibly shift.

Charge up the batteries, and your new model is ready for its maiden run.



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