

Building Instructions

"Grimmershörn"



The motor vessel "Grimmershörn" was built in 1956/57 by "Hansa Stahl-und Schiffbau GmbH" at Köln-Deutz for the "Wasser- und Schifffahrtsamt Cuxhaven", the Waterways and Shipping Administration at Cuxhaven.

She was modified several times since and eventually rebuilt as a private yacht at the Rendsburg shipyards. The four-cycle Diesel of Daimler Benz with 500 HP gives the Grimmershörn a speed of 11.5 knots.

The 1/20 scale model was based on shipyard plans of the vessel in her original configuration, omitting all later modifications. The construction of the model is simplified by vacuum moulded components, diecut plywood parts and a plentiful fitting set, but nevertheless is modelling in a most satisfying form and not a simple assembly of ready made parts.

Building Preparations

- First remove the two centre pages of the german instructions, which illustrate several building steps.
- Then number all plywood parts with a soft pencil, guided by the reduced scale drawings of the diecut sheets on plan 2, and drill 2 mm diameter holes through parts 37, 40, 41, 42, 55, 68, 69 and 72 at all positions marked with pin pricks.
- Next remove all plywood parts from the sheets with a modelling knife, cut the small parts unsuitable for die cutting out of sheet 9 with a fret saw and then smooth the outlines of all plywood parts with fine grit sandpaper.
- Now remove all surplus material from hull 1 and bulwarks 34 and cut parts 141, 146, 149, 175 (bottom, top and breakwater) and the two halves of 176 out of the vacuum moulded ABS sheet. Next cut out lantern 120 and fifty window and porthole panes 152 from the moulded PVC sheet, leaving frames around all panes as shown in the side-view. Eventually arrange the parts for the different assemblies as hull, deck, superstructure etc. as per plan and parts list.
- Now check your stock of cements, glues and enamels as per following list:
- White Glue for most wood to wood joints,
- Epoxy Cement for waterproof wood to wood joints,
- Cyano-Acrylate Cement for wood and PVC to ABS joints, ABS Cement for all ABS to ABS joints,
- Stabilit Express for metal to ABS joints,
- Sanding Sealer to prepare all wood parts for painting,
- Polyester Surfacer to fill gaps and smooth extremely rough wood surfaces,
- Synthetic enamel in white, orange, dark red, light brown, light grey, dark grey and black, some Clear Varnish and Masking Tape to mark off the various colours.
- To colour the different ABS parts we recommend car spray enamel, most brands of which don't require any base or primer when sprayed onto any ABS surfaces. To make sure, first buy the smallest available can and try it on some scrap.
- To waterproof the inside of your model, seal and paint all wooden parts which are inaccessible after assembly right at the beginning, and only bare those portions later on which are needed for cement joints.

Hull Construction

- Cement keel 2 and fillet 4 together from four layers each, let cure and then sand their contours to shape, but don't round off their edges. Fit and cement keel 4 to hull 1 as shown in detail sketch 1 and let cure, and then drill a 7 mm diameter hole for stern tube 3 through the hull. Spot cement the stern tube in position, fit fillet 4 between Stern tube and hull, cement it to the hull only and remove the stern Tube for the time being.
- Fit rudder heel 5 to keel 2 and fasten it with mounting screws 6. Slide rudder shaft 8 through rudder heel 5, carefully align it true vertically and mark its position on the hull bottom. Drill a 5 mm diameter hole through the mark, slide rudder trunk 7 through this hole so that .5 mm of it protrude to the outside, align it with rudder shaft 8, cement it to the inside of the hull with generous amounts of Stabilit Express and let cure thoroughly.
- Assemble rudder from plates 9 and shaft 8 as per detail sketch 2 and side-view, let cure and then carve and sand the rudder plate to the streamline section shown in the bottom right hand corner of plan sheet 2.
- The installation of motor 14 is clearly shown in side and top view on plan sheets 1 and 2 respectively. Drill the holes for motor shaft and mounting bolts through motor mount 11 and cement cross brace 12 onto it. Bolt motor to mount and put it into the hull. Assemble shaft with stern tube, slide it in position and connect motor and propeller shafts with aligning tube 15. Carefully fit and align all parts, then cement motor mount 11 and gussets 13 to hull and each other and stern tube 3 to hull, keel and fillet. Let cure thoroughly and then remove motor, aligning tube and prop shaft until final assembly.

- Fit your RC equipment to base plate 17 as suitable for your equipment (See sample installation in top view on plan sheet 2), then fit base plate 17 into hull, fix it onto cross brace 12 with mounting screws 19, slide base plate bracket 18 in position and cement it into the hull.
- Next assemble frames 20- and 21 with braces 22, let dry and then fit and cement assembly into hull as shown in side and top view. Glue frame strips 24 onto battery support 23, exactly fitting your accumulators, let dry and then glue support onto frames and braces. To prepare deck 25 installation, first drill and file the four holes for the anchor chains at the marked positions, then cement hatch frame 26 under and hatch coamings 28 and 29 onto it.
- Next mask an 8 mm wide edge on top and bottom to protect it from paint, apply several coats of sanding sealer, lightly sanding between coats, and then brush or spray the top with light grey and the bottom with anyone enamel.
- Roughen the profiled PVC material for rubbing strakes 35 with 400 grit wet and dry paper all around for better adhesion of cement and enamel, then cut the pieces to size, carefully fitting the vertical to the horizontal parts, and cement them in position as shown in side-view. Please note that the vertical strakes leave a 2 mm gap to the hull flange for later application of rubbing strake 36.
- Drill the hull for hawse pipes 30, clamp the deck onto the hull and carefully file holes and pipes to a proper fit. Then remove pipes and deck again and put them aside for the time being.
- Fill the gaps between keel 2, stern tube 3 and fillet 4 with polyester Surfacer and use Surfacer as well to round out the corners between hull, keel and fillet, following the contours of the hull. Let cure and then apply several coats of sanding sealer to keel, fillet and rudder.
- Now find at least 40 clothes or similar clamps and then fit, cement and clamp the deck onto the hull flange. Whilst the cement is setting, cut the scuppers and the four smaller holes out of bulwarks 34. When the cement has completely set, remove the clamps and fit, cement and clamp the bulwarks onto the deck and let set thoroughly.
- To brush or spray the hull with enamel, first mask the upper part, beginning at the bottom edge of the waterline, and then apply dark red enamel to hull bottom and rudder and let dry thoroughly. Then mask the bottom of the hull, beginning at the upper edge of the waterline, and brush black enamel on the hull top including the bulwarks, leaving the inside of the bulwarks natural white. In case you prefer to spray the hull, mask off scuppers etc. from the inside, as well as the huge aperture between the hand rails before spraying.
- When all enamel has hardened thoroughly, sand the outline of deck and flanges of hull and bulwarks down until the profile of rubbing strake 36 fits over them. Scrape any enamel from the flanges and then cement rubbing strake 36 in position, beginning at the widest part of the hull, using an electric hair-dryer or heat gun to plasticize the material at bow and stern.
- Eventually fill and paint hatch cover 27, hawse pipe flange 31, manhole cover 32 and chain locker flange 33, let dry, cement hawse pipes 30, the two flanges and manhole cover 32 in position and keep hatch cover 27 for later.

Superstructure Construction

- Dry assemble and then spot cement together wheel-house rear wall 37, wheel-house floor 38, wheel-house partitions 39 and 40 and rear cabin roof 41 as shown in detail sketch 4. Glue side walls 42 in position, fix them with some wire tacks, put this sub-assembly onto the deck, glue all parts together from inside and weigh the sub-assembly down until thoroughly dry.
- Thereafter add cross braces 43 through 49 and superstructure front and rear walls 50 and 51 as shown in detail sketch 5 and side-view (part 44!). Put superstructure onto the deck again and weigh it down once more until all joints have dried thoroughly.
- Then carry on with cross braces 52 and 53, cabin roofs 54 and 68 and cross braces 56 and 57 as shown in detail sketch 6.

- Whilst the glue is drying, carefully fit wheel-house front walls 58 through 62 and cabin front walls 63 through 67 in position, bevelling bottom edges and sides as necessary, then glue them in position and let dry again.
- Sand the upper edges of the front walls flush with roof contours and then cement roof 55 with doubler 79 and roofs 69 and 70 in position. Let dry thoroughly and then sand the whole superstructure all over. When satisfied, assemble ventilation well from parts 71 through 75 as shown in detail sketches 7 and 8, let it dry, sand it all over and then cement it to the superstructure as shown in side-, top- and rear-view.
- Apply several coats of sanding sealer, lightly sanding between coats, and then finish off with white enamel inside and out.

Superstructure Equipment

- Assemble two lockers from parts 80 through 83 and 85 through 88 respectively, one equipment locker from walls 109 and top 110 and the emergency exit manhole from parts 105 through 108.
- Carve and sand funnel 76 as shown in the bottom left hand corner of plan sheet 2, drill two 9 mm diameter holes for exhaust 77 and mast holder 78 and cement same in position. Assemble the radar aerial from parts 142 through 144 and cement it to the bracket in front of the funnel when both parts have been painted.
- Make locker doors 84 and 89, wheel-house doors 90 with doublers 91, cabin doors 92 and locker doors 93 with cap strips 94. Thereafter assemble front and rear skylights from frames 95, side walls 96 and roofs 97 and 98 respectively.
- Carefully sand all parts, seal their pores, paint them with enamel of the appropriate colours and let them dry thoroughly. Then cement all parts in their respective positions to the superstructure.
- Next paint the inner edges of all windows and portholes as well as the frames of window and porthole panes 152 with dark grey enamel, let dry and then carefully cement the panes in their respective positions. Drill 2 mm diameter holes in the superstructure to mount rails, stanchions, steps etc. and cement bushes 132 into them. Then cut and bend the respective components from brass wire 133 as shown in side-, top- and rear-view marked with letters "A", "B" and "C", and solder them together as necessary. Clean the joints from flux and surplus solder paint the components with clear varnish and then cement them in their respective positions.

Now assemble the following equipment

- Life raft support from parts 99 through 101 and life raft 175 from two equal halves.
- Life belt support 102 with props from brass wire 133 and two life belts 181.
- Rubber dinghy support from parts 103 and 104 with rubber dinghy 176 from bottom, top and breakwater.
- Side lights from bases 134, shades 135 and 136 and lights 137. Searchlight from case 149, brackets 150 and base 151. Radar reflector from parts 147 and 148.
- Ventilator from tube 139, top 140 and head 141.
- Rear light from shade 118, light 129 and holder 131.

When ready, prepare the wooden parts with sanding sealer, sand them over and then finish them off with enamel, as well as ventilator 138, fog horn 145 and compass 146.

When the enamel on the rubber dinghy has dried, attach "reinforcement pads" (the black dots from the waterslide transfer sheet), let them dry and protect them with a thin coat of clear varnish. Thereafter pin prick the centres of the pads, cement one eyebolt 122 into each prick and then thread line 177 through the eyes. Eventually cement all parts and components in their respective positions.

Mast Construction

- Taper mast 111, yard 112 and gaff 113 with sandpaper. Drill the following holes through the mast: three of .6 mm diameter For eyebolts 122, three of 1.5 mm diameter For yard and gaff mount 114, aerial holder 119 and lantern holder 121, and three of 2 mm diameter for light holders 117. Then drill one 1.5 mm diameter Hole through yard 112 and one into the thicker end of gaff 113 for mount 114, and one .6 mm diameter hole into the thinner end of gaff 113 for eyebolt 122.
- Cut and bend three light holders 117, one aerial holder 119, one lantern holder 121 and one aerial 125 from brass wire.
- Sort out all aforementioned parts as well as two aerial mounts 115, light holder 116, light shades 118, top light 128, two signal lights 129, two signal lights 130, lantern 120, aerial 126 and anemometer 127. Put all parts onto the plan besides the mast side-view, compare them with the coloured picture on the box top and paint them in their appropriate colours. Eventually assemble all parts and fix them in their respective positions to the mast.
- Next make six dummy turnbuckles 125 from one brass tube, one closed and one opened up eyebolt 122 each, fix six corresponding eyebolts plus one for the topping lift to the superstructure, and then rig up the mast with shrouds, stays etc. from shrouded rubber band 123, so that it can be easily removed for transport, and eventually fix flag 180 to the topping lift.

Deck Equipment

- Drill one 2 mm diameter hole through the top and one 3 mm diameter hole through the side of each winch bearing plate 158 as shown in detail Sketch 14, then assemble the frame from base plates 157, bearing plates 158 and cross brace 159, let it dry thoroughly and then paint it with dark grey enamel. Paint axle 160, gears 161 and 164, axle sleeve 165 and cranks 166 with light grey enamel and then assemble the winch, taking the top-view as an additional guide.
- Make the eight bollards 154 and 155 from 8 and 10 mm diameter dowel, drill one 2 mm diameter hole through each of them, cement pins 156 in position and then paint the bollards with black enamel.
- To make the towing hook assembly, first fit hatch cover 27 together with stanchion 167 and base plate 168 to hatch and bulwarks at the stern, cement them together, and then assemble the hook proper from
- Parts 169 through 174, as shown in detail sketch 15. Paint the assembly with dark grey enamel, with exception of hook 171 and release handle 172, which should be painted black.
- Paint flagstaff 153 dark grey and cement it in position. Cement the winch in position also, cut anchor chain 179 in two halves and fix them to anchors 178. Then thread the free chain ends from the hawse holes in the hull through the hawse pipes, over the winch drums 162 and through flanges 33 into the hull, where they are fastened with epoxy cement. Then cement the bollards in position and eventually fit the towing hook assembly over the hatch into the stern.

Final Assembly

- Apply waterslide transfers 183 with names and home port to the hull at their appropriate positions, let them dry thoroughly and then protect them with a thin coat of clear varnish.
- Install prop shaft with propeller 182 into the grease filled stern tube, mount the rudder with tiller 10, install accumulators, motor and RC-equipment and connect everything as required by your equipment. The receiver aerial can be installed below the deck or be lead out through a small hole in the superstructure and stretched up the mast.
- When everything is installed, ballast the hull, with superstructure and mast in position, until it floats an even keel and immerses up to the waterline. When satisfied, secure the ballast in its position. Eventually check RC and motor for proper function and then your "Grimmershörn" is ready to be launched for her maiden voyage.

Parts List

Number	Description	Qty.	Material
1	Null	1	Vacuum Moulded ABS
2	Keel	4	Diecut Plywood 3 mm
3	Shaft c/w Stern Tube	1	Steel/Brass Tube
4	Fillet	4	Diecut Plywood 3 mm
5	Rudder Heel	1	Brass
6	Mounting Screw	2	Sheet Metal Screw 2,9x13
7	Rudder Trunk	1	Brass Tube 5x0,45x30 mm
8	Rudder Shaft	1	Brass Wire 4x140 mm
9	Rudder Plate	3	Diecut Plywood 3 mm
10	Tiller	1	Plastic
11	Motor Mount	1	Diecut Plywood 3 mm
12	Cross Brace	2	Pine 5x10x55 mm
13	Gusset	2	Diecut Plywood 3 mm
14	Geared Motor No. 42136	1	<i>not included in kit</i>
15	Aligning Tube	1	Brass Tube 5x0,45x50 mm
16	Coupling	1	Plastic
17	RC Base Plate	1	Diecut Plywood 3 mm
18	Base Plate Bracket	1	Diecut Plywood 3 mm
19	Mounting Screw	2	Sheet Metal Screw 2,2x8
20+21	Frame	1	ea. Diecut Plywood 3 mm
22	Brace	2	Pine 5x10x165 mm
23	Battery Support	1	Diecut Plywood 3 mm
24	Support Frame Strip	4	Obeche 5x5x930 mm total
25	Deck	1	Diecut Plywood 3 mm
26	Hatch Frame	1	Diecut Plywood 3 mm
27	Hatch Cover	1	Diecut Plywood 3 mm
28	Hatch Coaming	2	Obeche 3x3x650 mm
29	Hatch Coaming	2	Obeche 3x3x100 mm
30	Hawse Pipe	2	Brass Tube 11x.5x115 mm
31	Hawse Pipe Flange	1	Diecut Plywood 1,5 mm
32	Manhole Cover	1	Printed Plywood 1,5 mm
33	Chain Locker Flange	2	Brass
34	Bulwarks	1	Vacuum Moulded ABS
35	Rubbing Strake	1	Profiled PVC 1400 mm
36	Rubbing Strake	1	Profiled PVC 2500 mm
37	Wheel-House Rear Wall	1	Diecut Plywood 3 mm
38	Wheel-House Floor	1	Diecut Plywood 3 mm
39+40	Wheel-House Partition	1	ea. Diecut Plywood 3 mm
41	Rear Cabin Roof	1	Diecut Plywood 3 mm
42	Superstructure Side Wall	2	Diecut Plywood 3 mm
43-49	Superstructure Cross Brace	1	ea. Diecut Plywood 3 mm
50	Superstructure Front Wall	1	Diecut Plywood 3 mm
51	Superstructure Rear Wall	1	Diecut Plywood 3 mm
52+53	Superstructure Cross Brace	1	ea. Diecut Plywood 3 mm
54+55	Cabin Roof	1	ea. Diecut Plywood 1,5 mm
56+57	Superstructure Cross Brace	1	ea. Diecut Plywood 1,5 mm
58-62	Wheel-House Front Wall	1	ea. Diecut Plywood 3 mm
63-67	Cabin Front Wall	1	ea. Diecut Plywood 3 mm
68	Front Cabin Roof	1	Diecut Plywood 1,5 mm
69	Wheel-House Roof	1	Diecut Plywood 1,5 mm
70	Rear Cabin Roof	1	Diecut Plywood 1,5 mm
71	Ventilation Well Top	1	Diecut Plywood 3 mm

Number	Description	Qty.	Material	
72	Ventilation Well Front Wall	1	Diecut Plywood	3 mm
73	Ventilation Well Side Wall	2	Diecut Plywood	3 mm
74	Ventilation Well Rear Wall	1	Diecut Plywood	3 mm
75	Ventilation Well Spacer	6	Pine	5x5x280 mm total
76	Funnel	1	Obeche	20x50x80 mm
77	Exhaust	1	Brass Tube	9x0,5x25 mm
78	Mast Holder	1	Brass Tube	9x0,5x25 mm
79	Front Cabin Roof Doubler	1	Diecut Plywood	1,5 mm
80-82	Locker Wall	1	ea. Diecut Plywood	3 mm
83	Locker Top	1	Diecut Plywood	3 mm
84	Locker Door	1	Diecut Plywood	1,5 mm
85-87	Locker Wall	1	ea. Diecut Plywood	3 mm
88	Locker Top	1	Diecut Plywood	3 mm
89	Locker Door	1	Diecut Plywood	1,5 mm
90	Wheel-House Door	2	Diecut Plywood	1,5 mm
91	Door Doubler	2	Printed Plywood	1,5 mm
92	Cabin Door	4	Diecut Plywood	1,5 mm
93	Locker Door	2	Diecut Plywood	1,5 mm
94	Door Capstrip	2	Printed Plywood	1,5 mm
95	Skylight Frame	4	Diecut Plywood	3 mm
96	Skylight Side Wall	4	Pine	5x5x200 mm total
97	Front Skylight Roof	2	Printed Plywood	1,5 mm
98	Rear Skylight Roof	2	Printed Plywood	1,5 mm
99	Life Raft Support	2	Printed Plywood	1,5 mm
100	Life Raft Support	2	Printed Plywood	1,5 mm
101	Cross Brace	2	Obeche	3x3x105 mm
102	Life Belt Support	1	Printed Plywood	1,5 mm
103	Rubber Dinghy Support	2	Diecut Plywood	3 mm
104	Spacer	2	Obeche	3x3x170 mm
105	Manhole Side Wall	2	Diecut Plywood	3 mm
106	Manhole Rear Wall	1	Diecut Plywood	3 mm
107	Manhole Top	1	Diecut Plywood	3 mm
108	Manhole Cover	1	Printed Plywood	1,5 mm
109	Equipment Locker Wall	3	Diecut Plywood	1,5 mm
110	Equipment Locker Top	1	Printed Plywood	1,5 mm
111	Mast	1	Ramin Dowel	8x250 mm
112	Yard	1	Ramin Dowel	4x140 mm
113	Gaff	1	Ramin Dowel	4x80 mm
114	Yard and Gaff Mount	1	Brass Wire	1,5x25 mm
115	Aerial Mount	2	Printed Plywood	1,5 mm
116	Light Holder	1	Printed Plywood	1,5 mm
117	Light Holder	3	Brass Wire	2x90 mm total
118	Light Shade	3	Printed Plywood	1,5 mm
119	Aerial Holder	1	Brass Wire	1,5x25mm
120	Lantern	1	Vacuum Moulded PVC	
121	Lantern Holder	1	Brass Wire	1,5x20 mm
122	Eye Bolt	39	Brass Wire	
123	Shrouds, Stays etc.	1	Braided Rubber	1,5x1500 total
124	Turnbuckle	6	Brass Tube	3x1x15 mm
125	Aerial	1	Brass Wire	1,5x130 mm
126	Aerial	1	Ramin Dowel	4x20 mm
127	Anemometer	1	Brass	
128	Top Light	1	Ramin Dowel	4x5 mm
129	Signal Light	3	Brass	
130	Signal Light	2	Brass	

Number	Description	Qty.	Material	
131	Light Holder	1	Brass Wire	2x20 mm
132	Bush	72	Brass	2x0,25x3 mm
133	Rails, Stanchions etc.		Brass Wire	1,5x4500 total
134	Side Light Base	2	Diecut Plywood	3 mm
135	Side Light Shade	2	Diecut Plywood	1,5 mm
136	Side Light Shade	2	Diecut Plywood	1,5 mm
137	Side Light	2	Brass	
138	Ventilator Head	1	Brass	
139	Ventilator Tube	1	Ramin Dowel	10x60 mm
140	Ventilator Top	1	Ramin Dowel	12x12 mm
141	Ventilator Head	1	Vacuum Moulded ABS	
142	Radar Aerial Base	1	Brass	
143	Radar Aerial	1	Obeche	8x12x70 mm
144	Radar Aerial Brace	2	Scrap Obeche	
145	Fog Horn	1	Brass	
146	Compass	1	Vacuum Moulded ABS	
147	Radar Reflector	1	Aluminium Sheet	0,4x50x60 total
148	Radar Reflector Holder	1	Brass Wire	1,5x25 mm
149	Searchlight Case	1	Vacuum Moulded ABS	
150	Searchlight Bracket	2	Brass Wire	1,5x25 mm
151	Searchlight Base	1	Brass Tube	3x0,45x10 mm
152	Windows and Bulleyes	50	Vacuum Moulded PVC	
153	Flagstaff	1	Plastic	
154	Bollard	4	Ramin Dowel	10x27 mm
155	Bollard	4	Ramin Dowel	8x50 mm
156	Bollard Pin	8	Brass Wire	1,5x15 mm
157	Winch Base Plate	2	Diecut Plywood	1,5 mm
158	Winch Bearing Plate	2	Diecut Plywood	1,5 mm
159	Winch Cross Brace	1	Diecut Plywood	1,5 mm
160	Winch Axle	1	Brass Wire	3x50 mm
161	Winch Gear	1	Brass	
162	Winch Drum	2	Brass	
163	Winch Spool	2	Brass	
164	Winch Gear	1	Brass	
165	Winch Axle Sleeve	1	Brass Tube	3x0,45x31 mm
166	Winch Crank	2	Brass Wire	2x50 mm
167	Towing Hook Stanchion	1	Ramin Towel	10x45 mm
168	Towing Hook Base Plate	1	Diecut Plywood	3 mm
169	Towing Hook Rail	1	Brass	2x5x150 mm
170	Towing Hook Shaft	2	Diecut Plywood	3 mm
171	Towing Hook	2	Diecut Plywood	3 mm
172	Towing Hook Release Handle	1	Pine	5x5x27 mm
173	Towing Hook Doubler	2	Diecut Plywood	1,5 mm
174	Towing Hook Mounting Screw	1	Sheet Metal Screw	2,9x13 mm
175	Life Raft	1	2 Vacuum Moulded ABS Parts	
176	Rubber Dinghi	1	3 Vacuum Moulded ABS Parts	
177	Line	1	Nylon Thread	1x400 mm
178	Anchor	2	Plastic	
179	Anchor Chain	2	Browned Brass Chain	5x250mm
180	Flag	1	Silk	
181	Life Belt	2	Plastic	
182	Propeller	1	Plastic	
183	Name Plate etc.	1	Waterslide Transfer	
184	Drive Battery	2	6V/8Ah Accumulator	<i>not included in kit</i>



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