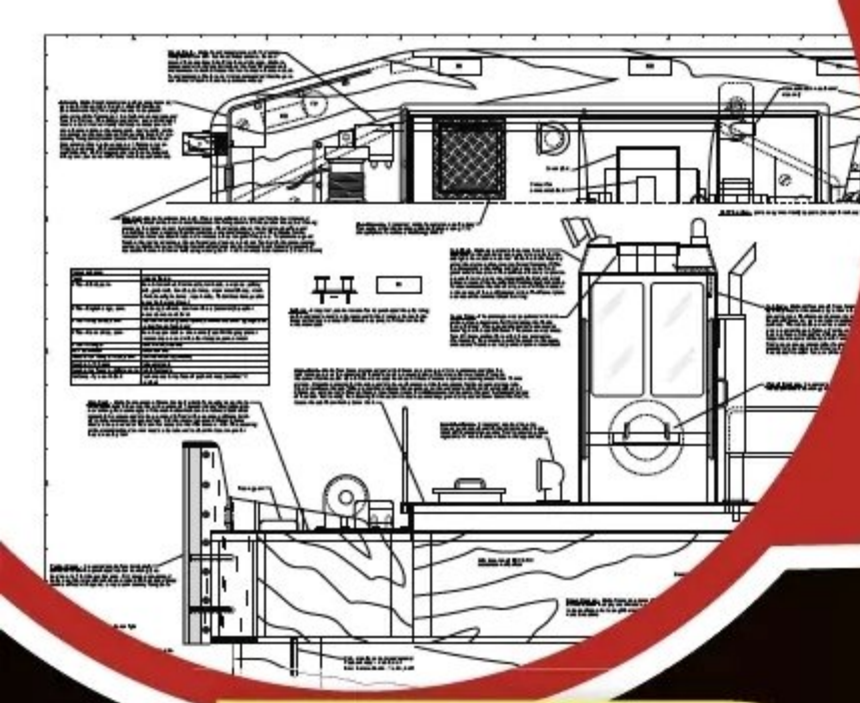




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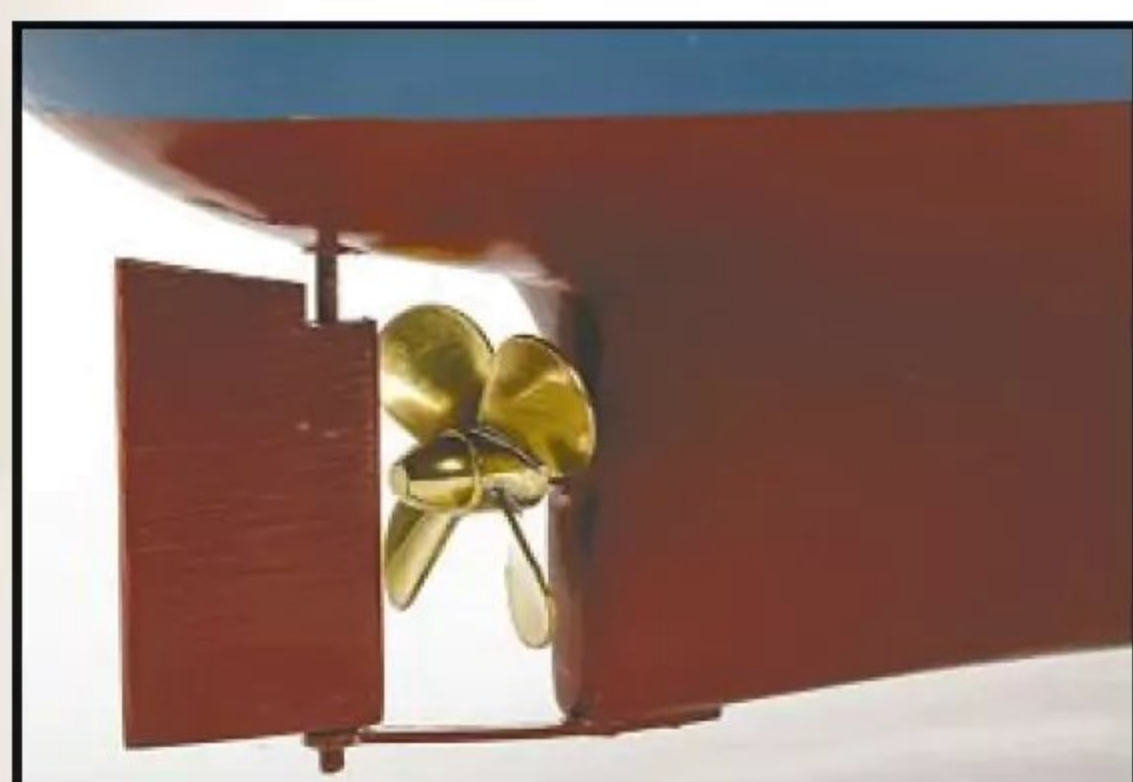
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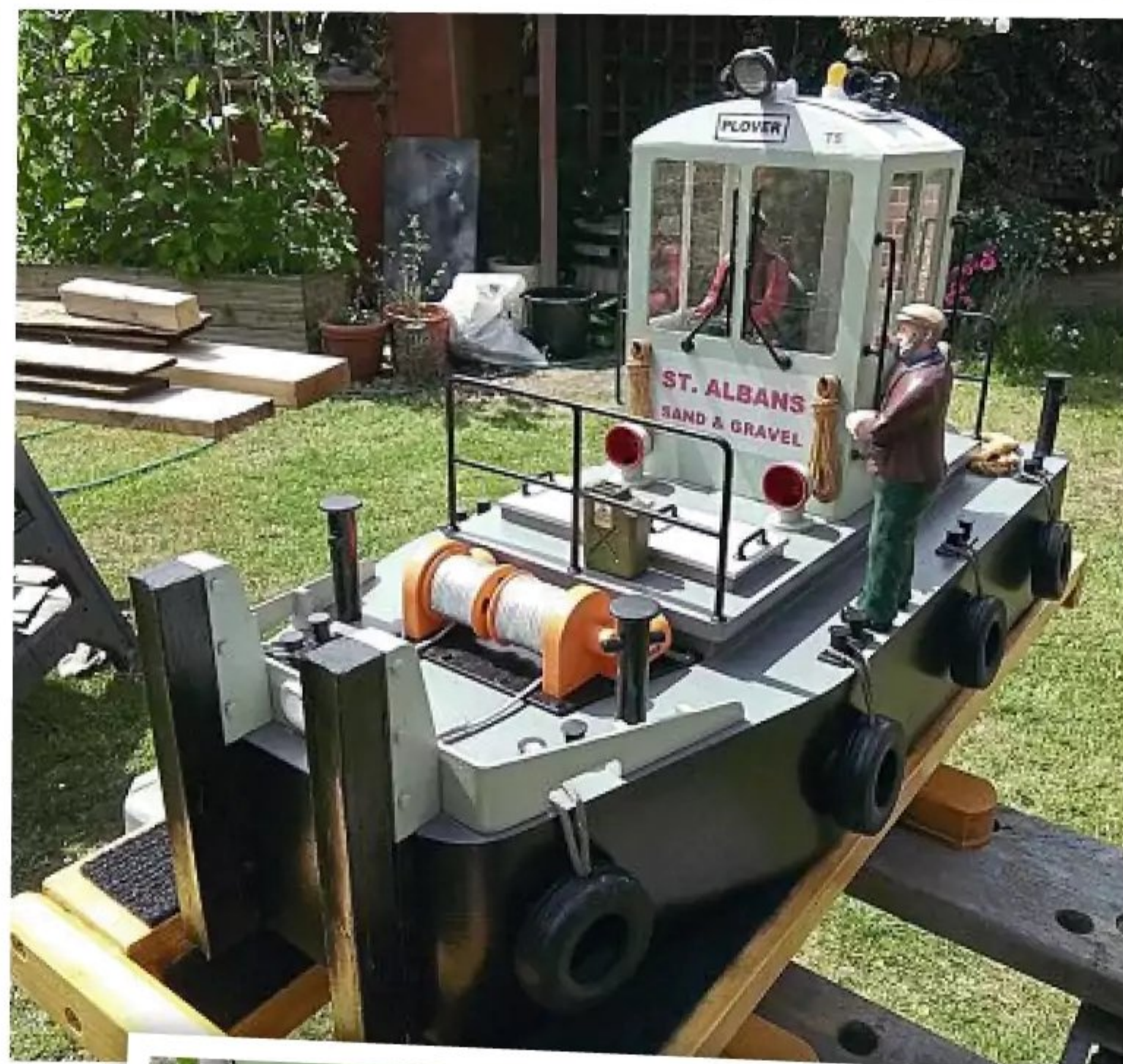
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Just three of the reasons why you won't want to miss the December issue

I've always adopted the philosophy that when things go wrong it's far better to hold your hands up rather than use them to try and cover your backside! So, after reading all the Model Boats website forum comments about the Glynn Guest mini plan for a simple landing craft featured in last month's issue, which due to a misunderstanding was published in the wrong format, I can only say *mea culpa* and extend my sincerest apologies to all. To rectify the matter, you will this month find the plan view reprinted horizontally across the centre spread, with the various parts appearing on the reverse of these pages – as originally intended by Glynn. We've added in scale bars, too.

Now suitably red-faced, I am, therefore, super grateful to David Marks, whose free full-size pull-out plan and build guide for the gravel pit tug *Plover* are also included in this issue, for his highly detailed instructions and above and beyond support throughout the preparation process. Likewise, it's been a real pleasure collaborating with all our other marvellous contributors, and, of course, all of you who have submitted such impressive and fascinating material for the Your Models/Your Letters section of the magazine (please keep your input coming).

Finally, although mentioned before on numerous occasions, may I just remind you that all feedback, whether positive or negative, is highly appreciated and valued, and where possible your suggestions are taken onboard, so please don't hesitate to get in touch. Enjoy your read!

Lindsey



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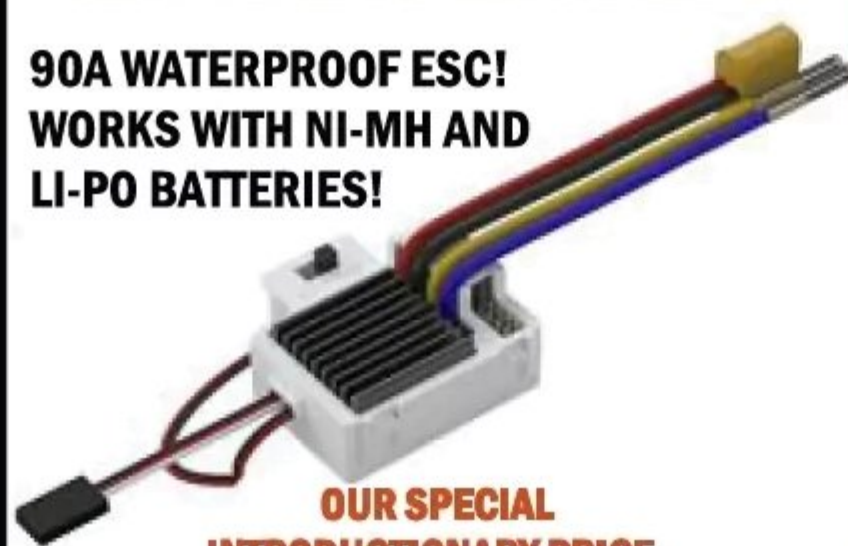
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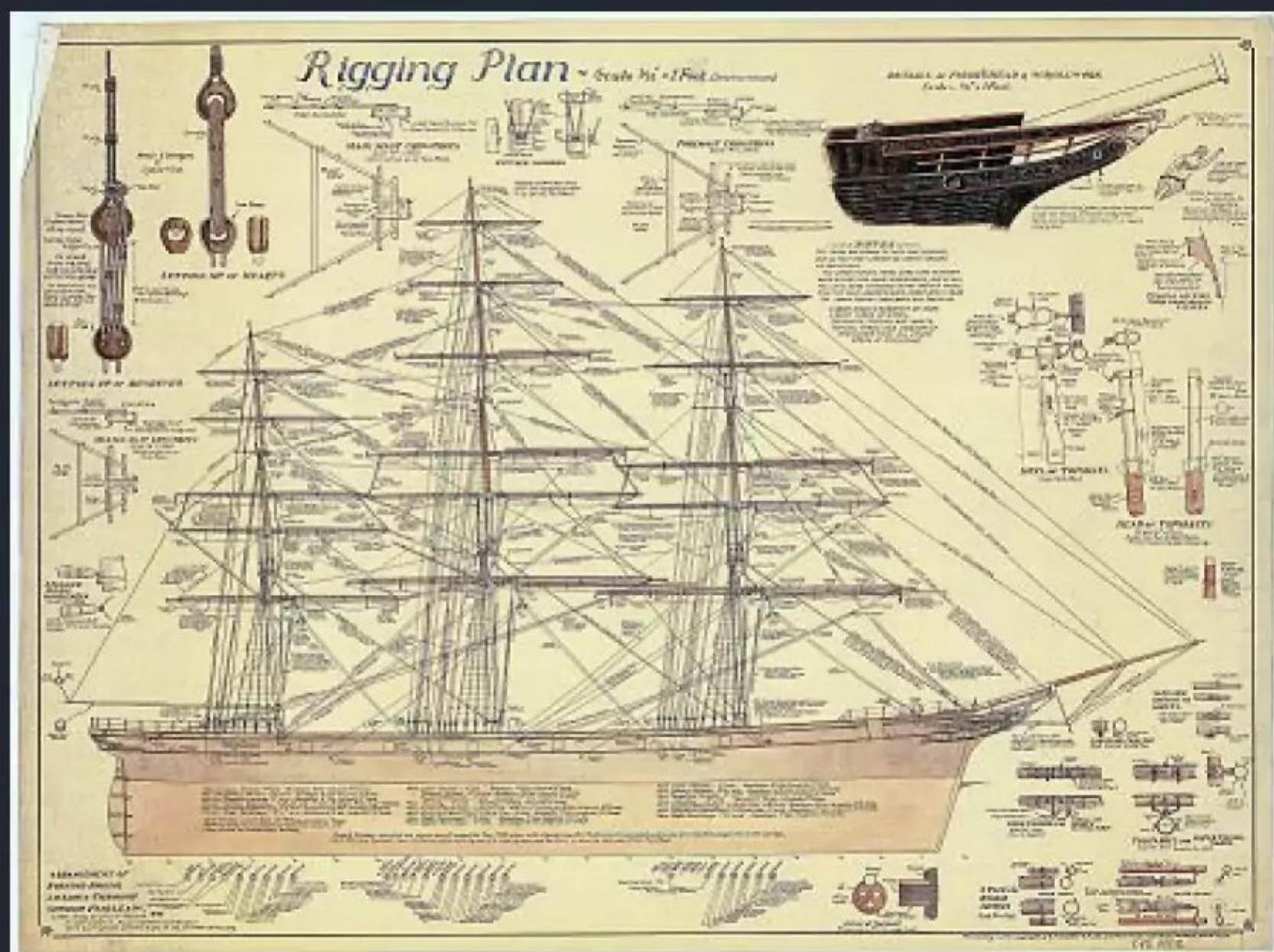
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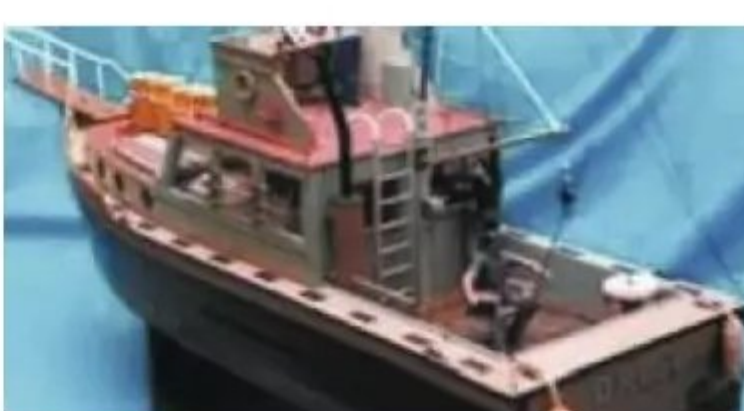
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If you have a news story for these pages, please contact the Editor, Lindsey Amrani, via e-mail at editor@modelboats.co.uk

OBITUARY

John Maxwell Hemmens

We are sad to report that John Hemmens, whose model steam engines many of you will be familiar with, passed away in the early hours of September 5, 2023.

John started his original business in the early 1970s as a cottage industry from his garden shed, later moving manufacture to a Nissen hut on a World War II aerodrome near the village of Brieghton, East Yorkshire, where he went on to employ around 30 staff.

It was not long, though, before the business had outgrown this building, so in the early

'80s it was relocated to a 5000 sq. ft unit in Thorganby, York, which became known as the 'Steam Gallery'. During this manufacturing period John produced of over 20 different models, including replicas of Stephenson's locomotion Rocket and many other fine engines, as well as dozens of accessories. He later diversified into model boat kits (which were his last ongoing projects, sadly mostly unfinished, although some boat kits were delivered to patient/loyal customers).

The business was wound

down in scale in the early 2000s, with John opting to work alone once again from a workshop in his garden. Up until January this year, he was, at the age of 87, still active there, although by this stage long-term illness had really taken its toll. Unbeknown to all but close family members, in the decade leading up to his passing he had quietly battled through health conditions, including cancer, yet proudly and

stubbornly refused to give up or give in.

We are sure you will wish to join us in sending our deepest condolences to his wife, Janet, as well as his daughter, two sons and four grandchildren.



John Hemmens (centre fore), his daughter and two sons show off some of his wonderful work back in the early days when the business was still very much a family-run affair.

OUT AND ABOUT

SCALE ModelWorld

Scale Model World 2023

The IPMS(UK) Scale Model World show, this year celebrating its 60th anniversary, will return to the Telford International Centre at St Quentin Gate, Telford, Shropshire TF3 4JH over the weekend of November 11/12, 2023. Attractions will include thousands of models on display, talks and demonstrations, plus numerous club and trade stands to browse.

The show will open from 10am to 6pm on the Saturday and 10am to 4pm on the Sunday. Please note tickets, priced at £23, are only available online at Scale Model World 2023 – TIC (tictelford.com), with no sales on the door. This admission price will include free entrance for two under 16s per paying adult, while those who are disabled will be allowed one free ticket for an accompanying carer.

Charity Model Makers Show

The Sleaford & District Model Railway Club's Charity Model Makers Show will this year take place at St. George's Academy, Sleaford Road, Ruskington, NG34 9BY on November 18. In this new and larger venue, the show, in aid of Lincs and Notts Air Ambulance and LIVES and sponsored by B&H Models, Digitrains, Bridgman Brows, and Elaine's Trains, will feature more displays/trade support than ever before, and offering ample free parking.

Although being run by a model railway club, the show will embrace all styles and

genres of model making, including model boats.

The venue is wheelchair friendly, and refreshments will be available to purchase throughout the day.

Admission, between 10am and 4pm, will be charged at £5 for adults, while under 16s will be permitted to enter free of charge (provided they are accompanied by an adult).

For further details, call Sleaford & District MRC's Charity Exhibition Manager Eddie King on 07821 618718 or email cem.sleafordmrc@yahoo.com



A cheque presentation by Sleaford & District MRC members of the funds raised at the 2021 Model Makers Charity Show, which amounted to a whopping £4,188.52p.



Although organised by a model railway club, the Charity Model Makers Show embraces all aspects of modelling, as evidenced here by just a few of the model boats being displayed by the Boston Model Boat Club at a previous event.

CHARITY MODEL MAKERS SHOW

**10:00 - 16:00
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ADMISSION
£5.00 Adults
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OUT AND ABOUT

Phillip Warren's Matchstick Model Ships exhibition

From 11am to 4pm on October 21-23 there will be another chance to view Phillip Warren's amazing collection of Matchstick Scale Model Ships at the Fleet Air Arm Museum, RNAS Yeovilton, Ilchester, Somerset BA22 8HW. This exhibition will include many of the iconic aircraft carriers used by the Royal Navy from all eras.

Philip Warren first began to build the model warships that would become his matchstick fleet in June 1948, starting with the Royal Navy's then newest destroyer HMS *Scorpion*. This was then followed by another destroyer, a cruiser, a battleship and eventually an aircraft carrier. The models improved in accuracy and detail over the years, incorporating many moving

parts, gun turrets, radars, missile launchers, helicopter rotors and swing wings all using matchstick spindles and hinges. No other materials have ever been used in the construction of Philip's fleet and all of his models have been painted by hand. The collection of 525 ships and 1,000 aircraft includes ships of the Royal Navy, United States Navy and many other nations, illustrating the development of warships from the end of World War II right up to the present day.

Admission to the exhibition is free with a valid museum ticket, although it is advised to book museum tickets in advance. For more information, email fleetairarm.enquiries@nmrn.org.uk or telephone 01935 840565.

MS Mercantic Crew Edition

Billing Boats' 1:50 scale kit for the freighter MS *Mercantic* (Ref. BB424), originally introduced into the range back in 1964, has now been completely updated, taking advantage of the very latest in production technology, including the use of laser-cuts parts. To celebrate this upgrade, a limited edition first batch of just 300 kits (orders are now being taken) known as the 'Crew Edition' will include a complementary blue beanie with *Mercantic*

insignia – although thanks to the generosity of the Billing Boats' crew, you will have the chance to win one of these snug and stylish hats, together with an Excel Deluxe Ship Modellers Tool Set in next month's issue – see page 74. We will be bringing you more on this kit, including a full build review guide, in a future issue.



Yeovil Model Show

This year's Yeovil Model Show will take place on October 22 between 10am and 4pm at the Westfield Academy, Stiby Road, Yeovil, BA21 3EP. Admission to show, featuring thousands of models (including boats, ships, etc) and a large number of trade stands, will be charged (cash only) at £5 for adults and £2.50 for accompanied under 16s (there will be no charge for children under 5 years of age). Free parking will be available and the venue itself is wheelchair friendly. Hot and cold refreshments will be served throughout the day and there will also be plenty of free children's activities at this family friendly event.

For further details, phone/text Ken

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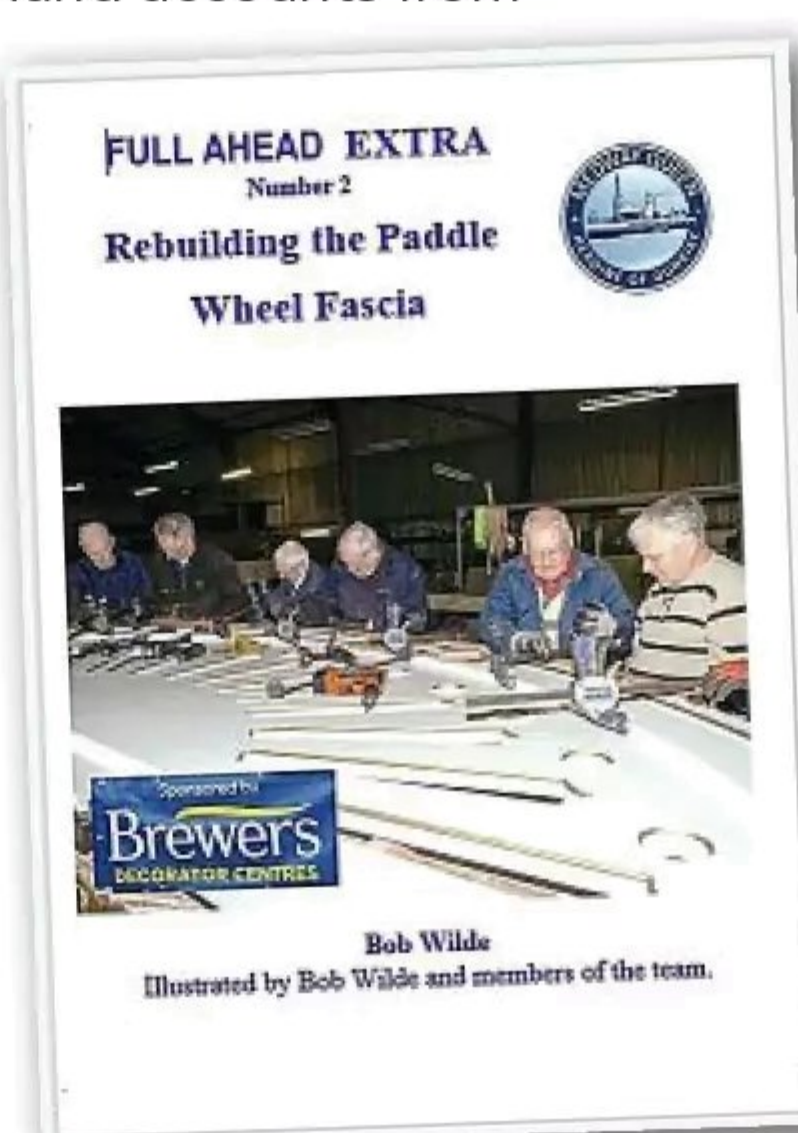
The Medway Queen Preservation Society has just announced its latest Full Ahead Extra booklet. The Full Ahead Extra series are booklets in the same format as the MQPS members' magazine *Full Ahead*, but with more pages and dealing with a single subject in detail. What's more, unlike the regular quarterly magazine, the 'Extra' booklets are available for sale to members and non-members alike, at just £3 per copy.

The first, published two years ago in 2021 and titled *Life on Board*, provided first-hand accounts from

the days when the *Medway Queen* was used on excursion service. This second publication presents a detailed account of the construction and installation of the starboard paddle box fascia. Written by Bob Wilde, who headed the team, and illustrated with over 50 colour photographs taken by Bob and other workshop team members, it gives a very detailed account of this sub-project in the restoration of *Medway Queen*.

The new publication can be purchased at the Medway Queen Visitor Centre during opening hours on Saturdays or ordered via the online shop at www.medwayqueen.co.uk. If you don't have internet access but would like to obtain a copy, you can send a cheque for £3 made payable to 'Medway Queen Preservation Society' to Pam Bathurst at 37 Kent Road, Margate. CT9 3SW, together with an A5 stamped self-addressed envelope.

Now available to purchase, the Medway Queen Preservation Society's latest booklet in the Full Ahead Extra series.



Soviet Motor Gunboats of World War II

Scheduled for release on November 23, this new title provides a compelling account of the heavily armed and highly mobile Soviet river gunboats which took on the Germans during World War II.

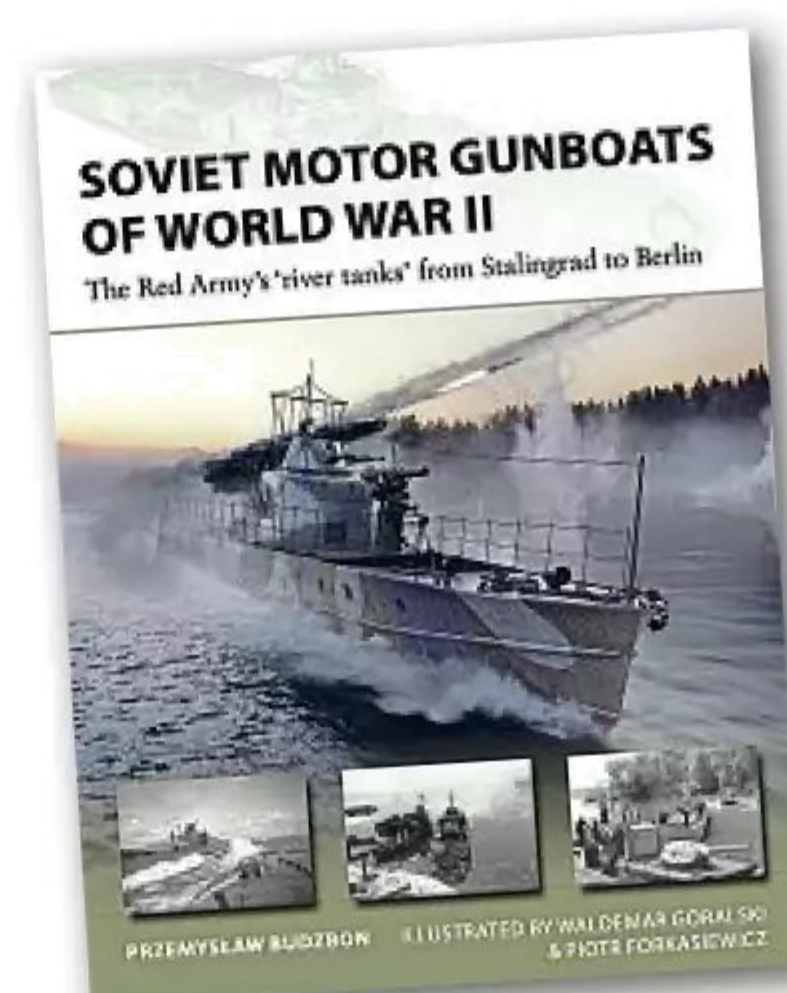
Russia's enormous river system has long been its highway; as early as 1908, the Tsar's armies were developing armoured riverboats that brought tank-like mobility, firepower and survivability to Russian battlefields.

The book, the first history of these vessels in English, explains how this concept led to one of the most remarkable naval weapons of World War II, the Soviet 'river tank', or Armoured Motor Gun Boat (AMGB). Highly mobile, capable of carrying

up to 20 infantrymen directly into action and providing immediate firepower from their tank turrets, machine guns or Katyusha rockets, their military value was widely recognised. They were versatile enough to be used in naval landing operations off the Gulf of Finland, the Azov Sea and the Black Sea, and their capabilities were prized by local commanders.

Using meticulously researched new colour profiles, rare photos and spectacular artwork, author Przemyslaw Budzbon uncovers the history of river warfare on the Eastern Front, and the boats that played such a key part in the fighting.

Published in paperback format under ISBN 9781472857217 and carrying an RRP of £12.99, a saving of 10% can be made when pre-ordering directly from www.ospreypublishing.com. Alternatively, orders can be placed through all good bookstores.



She's everything. He's just Ken!

Lady Jane

Peter Koch-Osborne explains how combined interests drove him to come up with the concept for, and build of, this gorgeous steam launch



She's everything. He's just Ken!



I've always had an interest in steam, ever since my trainspotting days, my Mamod toy steam engine and my enthusiasm for model railways. More recently, however, I have also rekindled my interest in model boat building with *Rosemary*, the slipper launch (see the March 2023 issue of *Model Boats* and the *Amphicar* (featured in the March and July 2023 respectively). Why not, it therefore occurred to me, combine my interest in steam and model boats with a steam launch.

My choice is usually to scratch build as it takes longer and is less expensive, therefore offers more modelling time per £££s spent; I should probably explain my Yorkshire roots ('Ow much?!). Also, the beauty of a freelance model is that it gives the opportunity to create and modify design as work progresses.

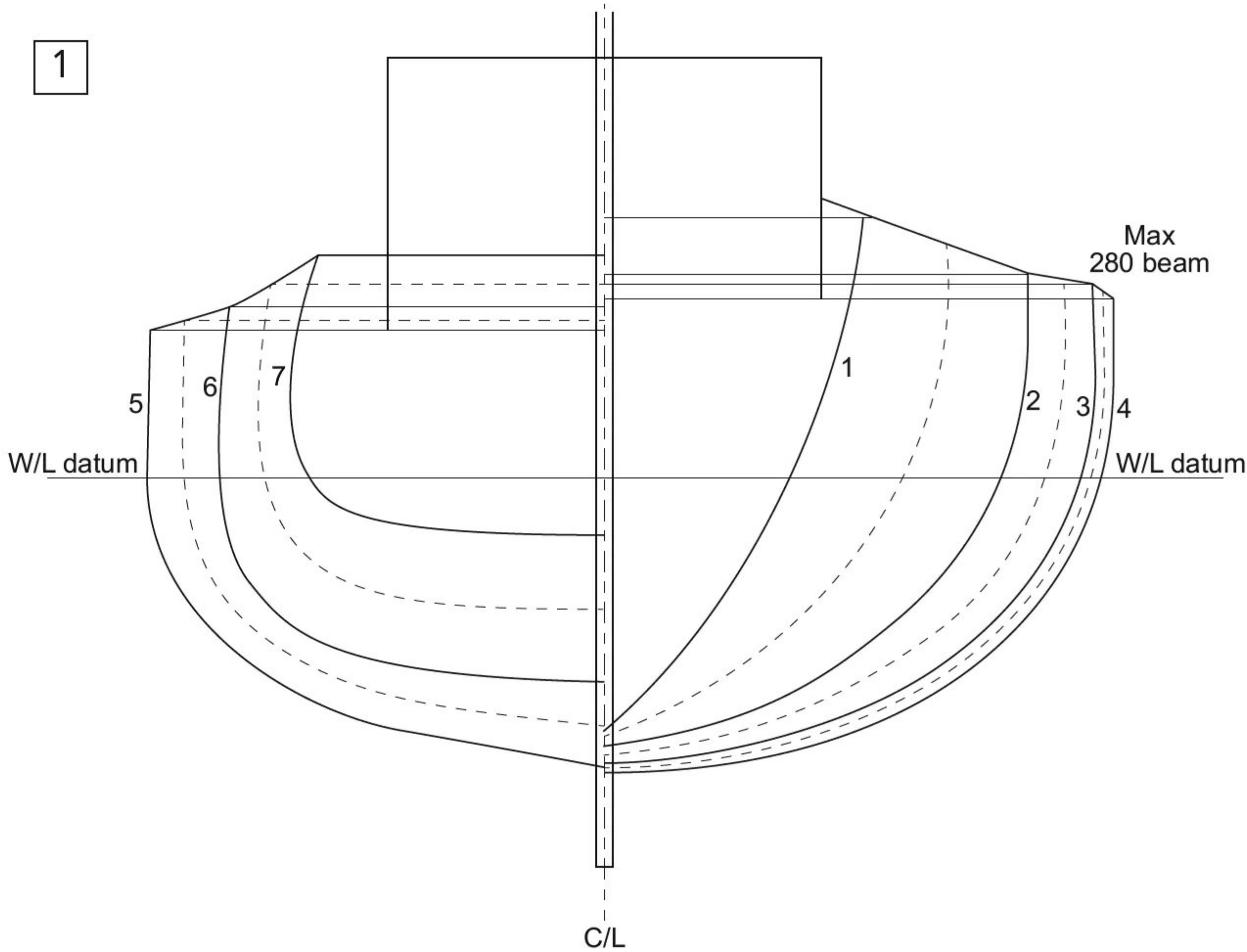
With this project, a few design parameters were decided upon at the outset. The recent sale of some model railway items allowed me to justify lashing out on a 3½-inch Pendle gas fired boiler and a rather neat Microcosm twin cylinder slide valve engine at the 2023 Harrogate show. My machining skills are not up to building an engine from scratch and I lack the facilities to build such a large boiler. The chosen horizontal boiler would keep the centre of gravity low.

I opted to build to around 1:6, which would give a 980 mm long open launch of 300 mm beam. This would allow the degree of detail I enjoy creating, and Ken (Barbie's boyfriend) would conveniently reinforce the scale of the model.

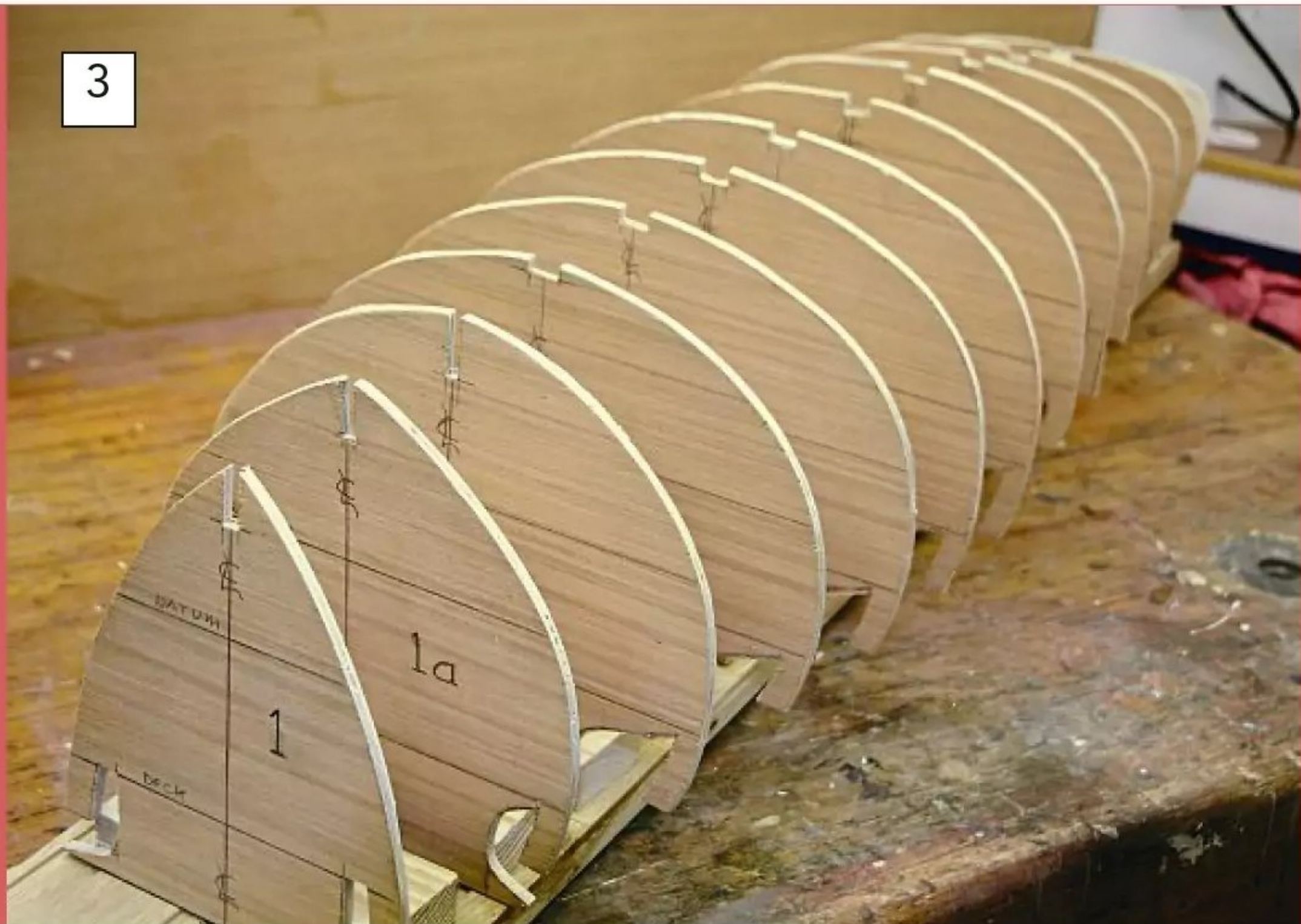
Work on the steam plant started later and overlapped time-wise with the hull build, but for the purposes of this article I will describe the building of the lightweight hull first.

The hull

I needed a set of hull lines. An internet search provided a set of seven (numbered 1-7) cross-sectional lines for a hull with an attractive shape. These were re-drawn on



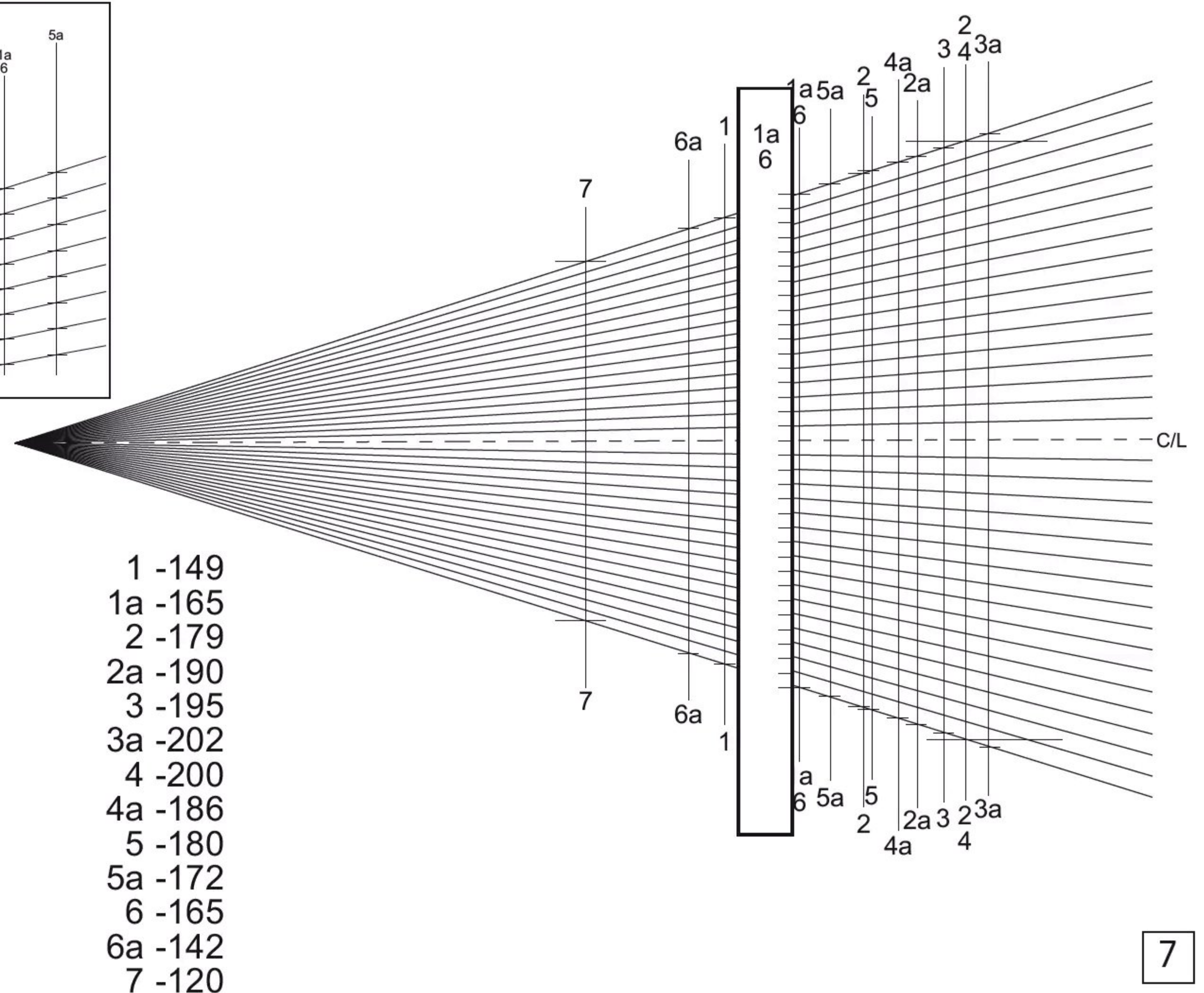
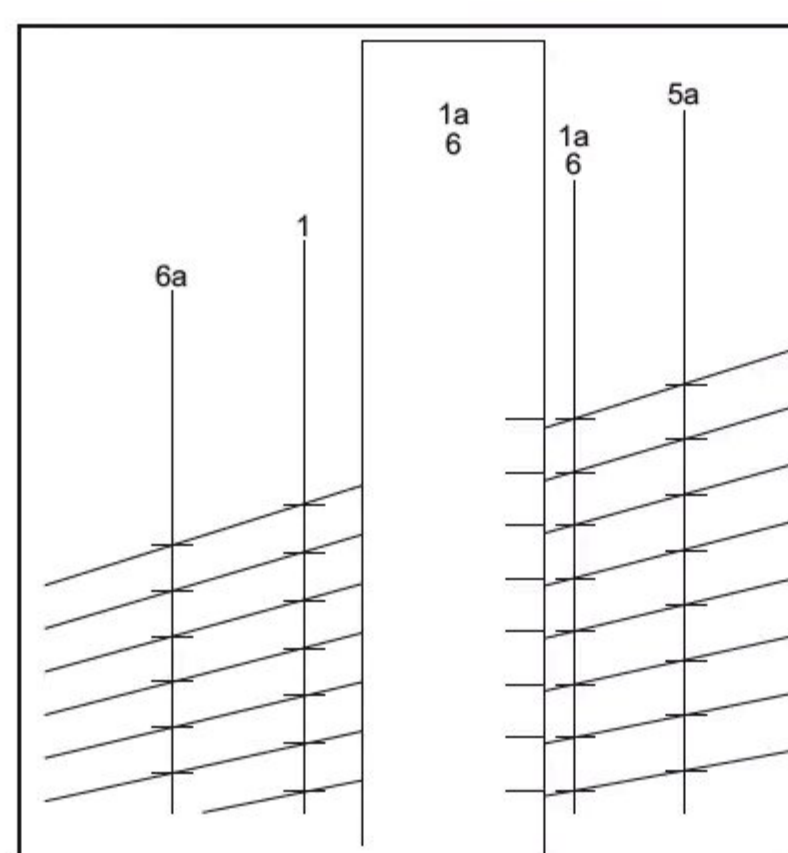
“The beauty of a freelance model is that it gives the opportunity to create and modify design as work progresses”



"This involved much squinting along the length of the vessel!"

a grid at the size required. The uneven spacing of the cross-sections was 'stretched' to provide a length of just under a metre, which would allow 1 metre planks to be used with very little wastage. The hull lines were interpolated to provide intermediate lines: 1a, 2a, 3a, etc (shown dotted in **Photo 1**). Each was marked out on cheap 5 mm ply, with a centre line and horizontal datum line incorporating a web of waste material above each template, to be removed later. These were cut out on my band saw. The twelve formers were screwed to heavy timber blocks (see **Photo 2**). A false transom was set at the appropriate angle. A scrap piece of oak floorboard was used as a base onto which timber blocks were screwed from the underside, but, again, not glued, as they had to be released later so I could check everything remained in line and was square where it had to be (see **Photo 3**); this involved much squinting along the length of the vessel!

The keelson was then fitted (see **Photo 4**), together with the ribs. Each rib comprised two laminations of 4 mm x 2 mm beech, some of which had to be steamed to fit the curve. These were pinned to the keelson and tied to the formers at the gunwale, but not glued as the entire hull would later be lifted off. **Photo 5** shows the keel at the bow, together with infill timbers to receive the twisted garboard strake and subsequent planks. **Photo 6** depicts the provision made for the prop shaft through the keelson. At this stage, the steam plant and prop shaft were part assembled and offered up to make sure everything lined up, but more on that later!



Planking

The next task was the planking. This was to consist of no fewer than 64 6 mm x 2 mm mahogany planks running the full length of the hull, with no infill planks, no end joints, and all ending up at the gunwale parallel to the gunwale capping rail. Planking started with the garboard planks, two either side of the keel, which had a steamed twist at the bow. Each plank would be tapered to each end using a mini block plane; here's how:

A measurement was very carefully taken from the keel/garboard plank to the gunwale at each former – 1, 1a, 2, 2a, 3, 3a, etc – and carefully noted.

A horizontal line was drawn on my drawing board halfway up a sheet of A3 paper (see **Photo 7**).

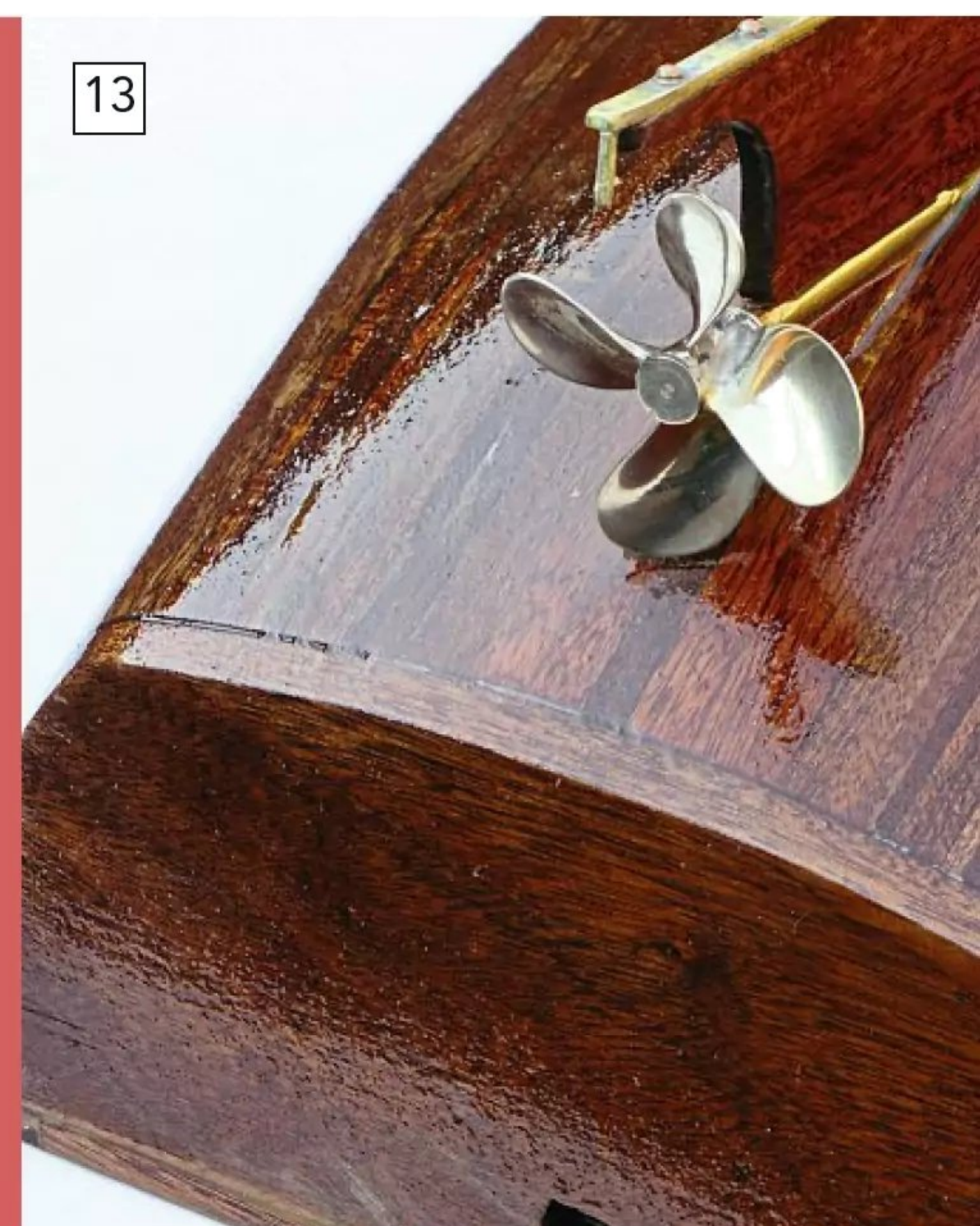
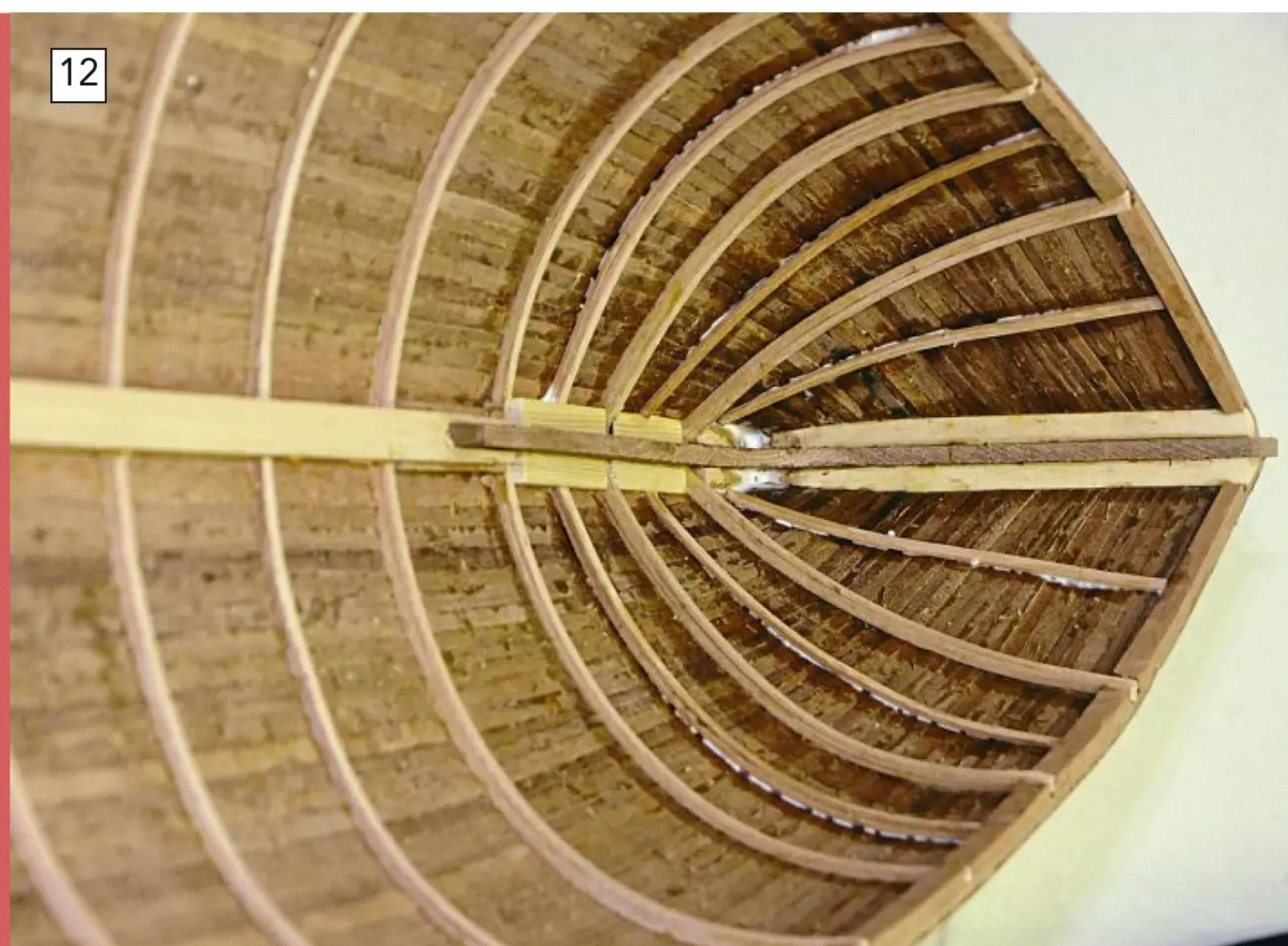
The longest measurement, taken from the index former 3a, was positioned vertically, and the actual width of each plank (6 mm) marked with the number of planks required, half above and half below the centre line. This worked out at 32 planks each side of the keel. Note: only at position 3a would no tapering/narrowing of the planks be required.

These points were drawn to a common point on the centre line (left) of the chart.

The measurement of each former, from keelson to gunwale, was set vertically against the chart (again, see **Photo 7**). This gives the width of each plank at each former position.

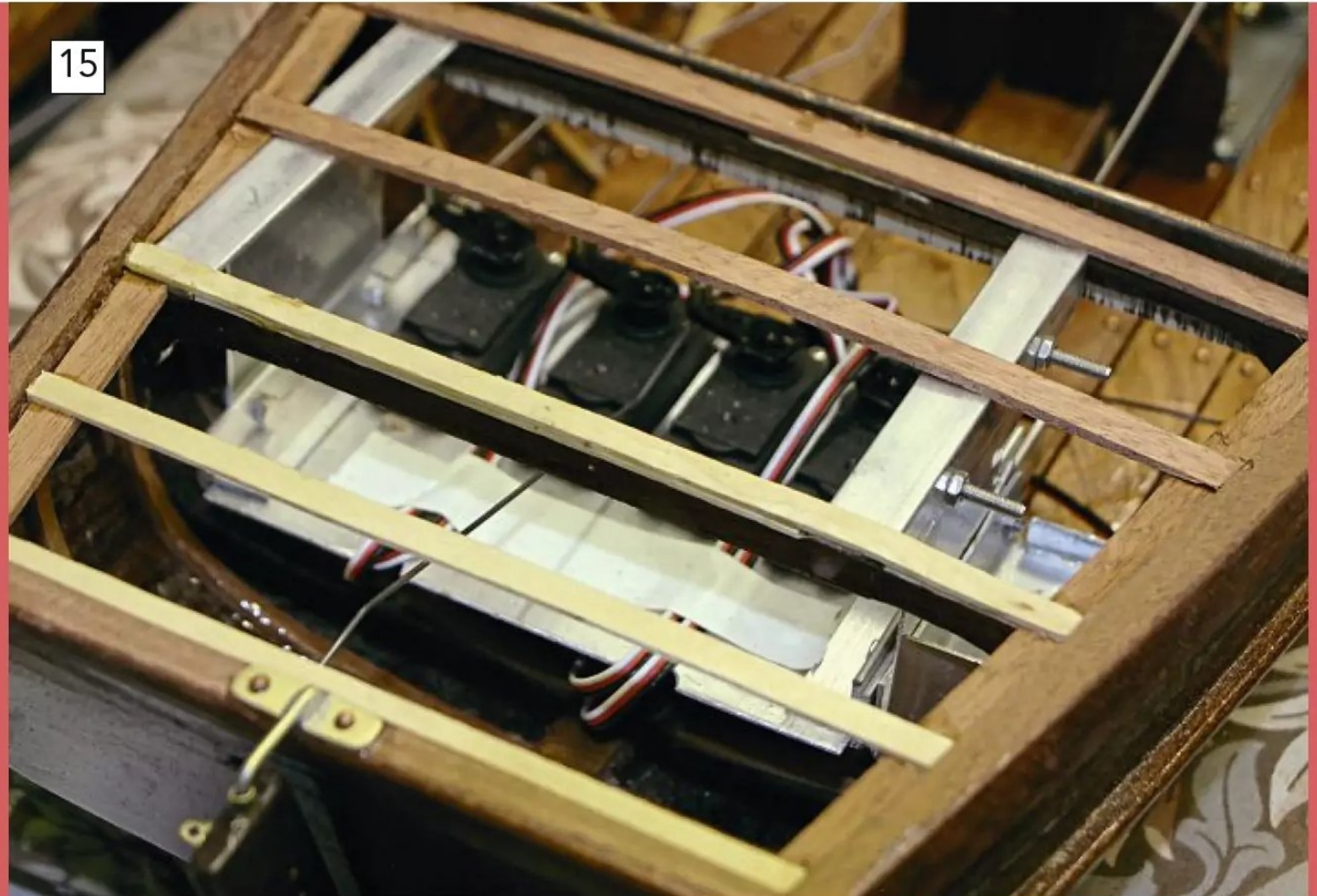
A narrow strip of paper was then set against each of the vertical former lines and the plank width positions marked off (see inset to Photo 7). This was repeated for each former.

Each paper strip was used to transfer the plank width/spacing on to each side of each rib (see **Photo 8**).





14



15

"This further reinforced the skin of the hull and magically vanished after another three coats of yacht varnish"

Every fifth plank mark was marked more heavily to prevent the planking getting 'out of step' with the marks and allowing corrections to be made as work progressed (see **Photo 9**).

Quite a procedure! A space was left for the external part of the keel to be fitted later. The planks were all tapered to each end to line up, as nearly as possible, with the marks on the ribs. **Photo 10** shows a start having been made, with one plank fitted at each side per session, allowing the glue to set before proceeding.

Photo 11 depicts the planking progressing and the external keel being inserted into the slot left for it between the first two garboard planks. Note the provision for the propeller tube.



After about eight weeks of fitting the planks and waiting for the glue to set after every two(!), these were trimmed to length and the hull was eased off the formers. I now had something that looked like a boat. After much sanding, however, I became concerned about the vulnerability of the light 2 mm thick planks, and also the ribs looked too far apart, despite adding extra between each hull line. The solution was to order more 2 mm x 4 mm beech strip and 'spring' intermediate ribs into place between keelson and gunwale (see **Photo 12**). The top rail and rubbing strake were then added.

At this stage I decided the external hull should be protected as work proceeded. Firstly, the internal hull was given two coats of a waterproofing and strengthening two-pack clear epoxy resin, encapsulating the keelson and ribs. The external surface was given a thorough but careful sanding and an initial coat of yacht varnish. The second coat incorporated a very fine glass fibre mesh; this further reinforced the skin of the hull and magically vanished after another three coats of yacht varnish. More light sanding, then a further ten or so coats of yacht varnish lightly sanding after every two or three coats. A final polish and I was pleased with the result – it is just a pity that nearly all of it will be under the water and out of sight (see **Photos 13 & 14**).

Radio installation

At this point the four servos were installed on a 'drawer' arrangement to allow future access under the fixed deck; I did not want removable hatches in either of the decks. This was made as an aluminium 'drawer' with aluminium angle as 'runners'. In extremis the whole assembly could be slid out for attention after releasing two 3 mm bolts. Piano wire push/pull rods were installed from the servos to the steam plant controlling the throttle, reversing gear and whistle. A fourth servo operates the rudder. The radio receiver



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sits on the floor under the rear seat and the battery holder fits in an aluminium cradle next to the servos (see **Photo 15**). With the radio installation tested, attention could return to completing the hull.

Back to the hull

I had some offcuts of 5 mm thick mahogany and these were fashioned into floor supports and deck supports using my band saw. The floor, with an aperture for the steam plant, was constructed from 2 mm thick mahogany sheet cut into 20 mm strips and glued to the floor cross beams (see **Photo 16**). The copper rivets were later used as fixings and are cosmetic only.

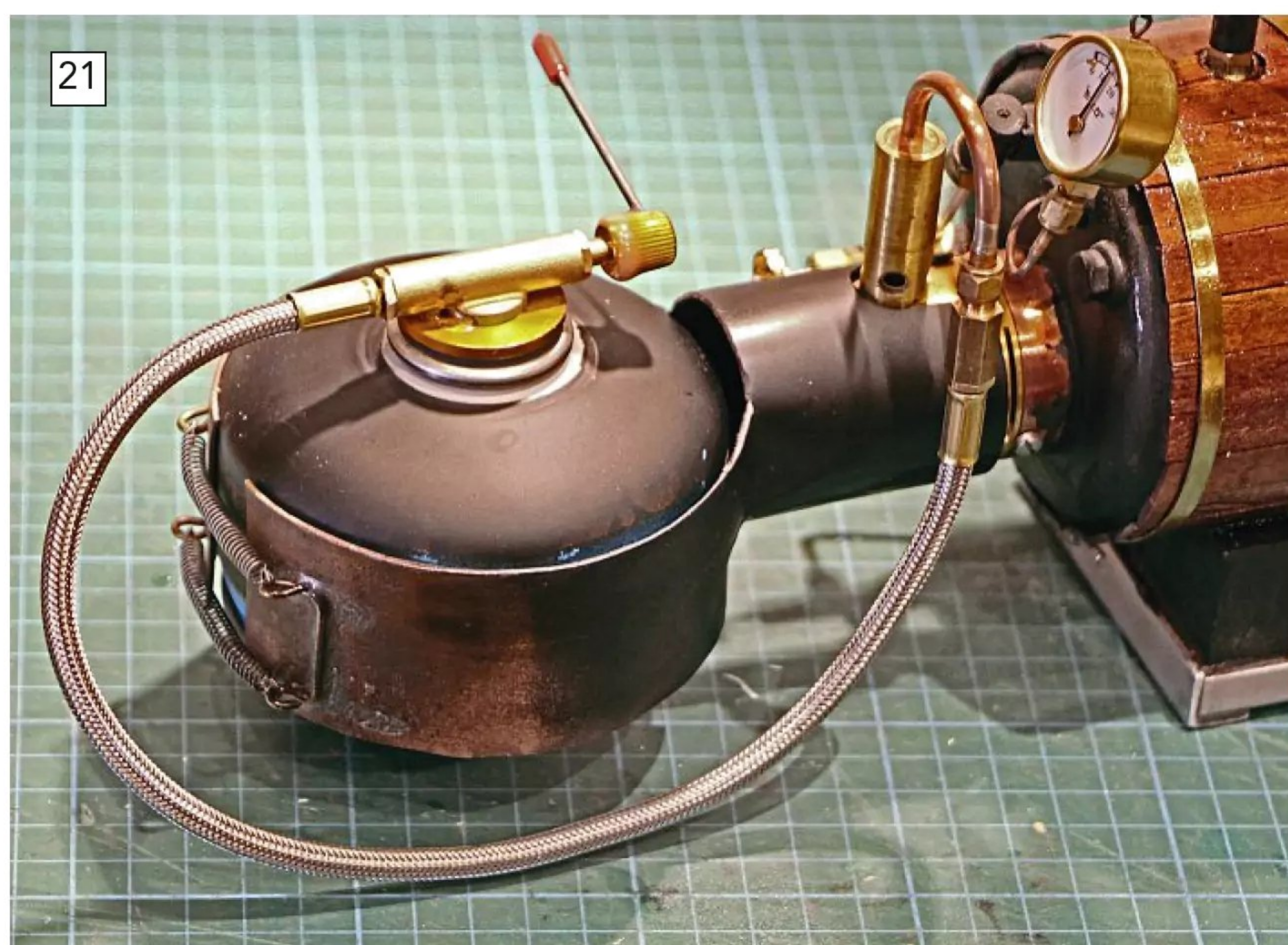
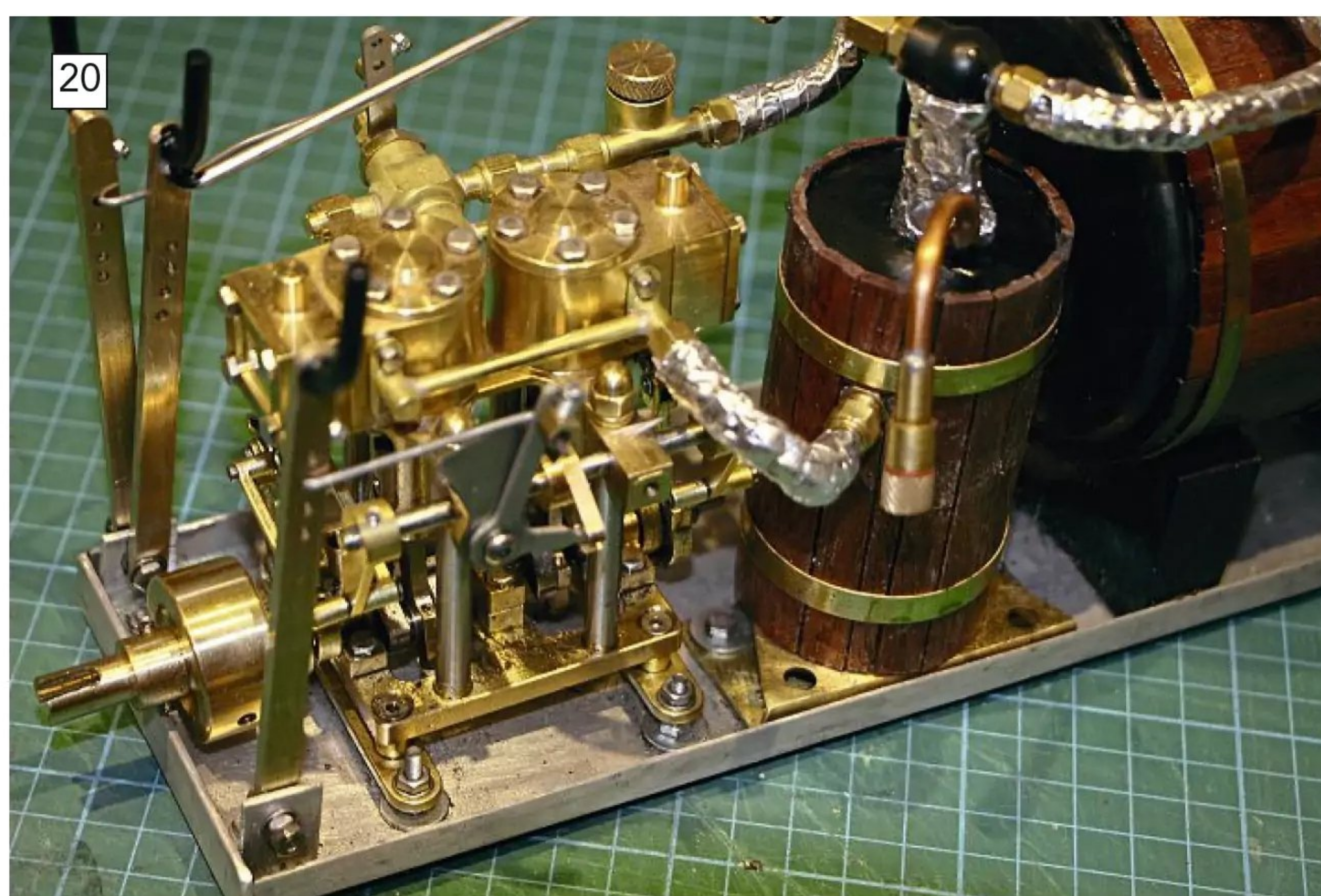


"I wanted a plant that would, once warmed up, self-start and reverse"

More 5 mm mahogany was used for the final capping rail above the gunwale and the decks planked in 12 mm x 2 mm mahogany and lime, used alternately to create the striped effect (see **Photos 17 & 18**).

Two cleats were turned from brass on the lathe, soft soldered and fixed to the foredeck and stern decks with epoxy resin.

Removable seats and the wheel assembly were then fabricated and arranged to fit Ken. The use of a figure is, I feel, essential to visually reinforce scale. A driverless steamboat just wouldn't look right! Details such as fish boxes (spare lime planking); fire buckets (2-pack epoxy measuring pots); fenders, etc. were also added.



The steam plant

This is based on the above-mentioned Pendle 3.5" horizontal boiler and the rather neat Microcosm twin cylinder slide valve steam engine. I wanted a plant that would, once warmed up, self-start and reverse. The plant is fitted onto a 16-gauge aluminium tray, black painted oak blocks supporting the boiler. The boiler is insulated with mahogany planks and brass boiler bands in the traditional way (see **Photo 19**).

An oil separator was soft soldered out of a bit of spare 42 mm copper tube and arranged to prevent oil being discharged with the exhaust steam. Dummy levers provide Ken with a means to control the plant; in practice these shorten the servo pull/push rods and provide an additional means to adjust the throw from the servos, with provision to unhook the control rods (see **Photo 20**).

I elected to use commercial gas cylinders as these would hide under the foredeck. However, steam tests proved that the gas containers would need warming to keep the evaporation rate of the gas high enough.

A gas tank warmer was made from a single piece of 42 mm copper tube which, after much annealing and hammering, was made a sliding fit over the burner, taking care not to block the air intake vents. The copper then wraps around the gas tank, the springs ensuring a close fit. The degree to which the conductor/heater is pushed over the burner governs the degree of tank warming (see **Photo 21**). The standard control knob was fitted with a lever to give both easy adjustment and a visual indication of how far the gas valve is turned on. Time will tell if performance is sufficient in cold ambient temperatures.

I weigh the gas containers and record consumption setting this against the run time. This will give me an accurate (I hope!) idea of gas consumption for future steam-ups.

A 'bath test' proved that some ballast was needed, so various spare lumps of scrap steel and lead were hidden under the decks, encapsulated and fixed in place with clear epoxy.

The launch

The day came for the maiden voyage. All went well, apart from some 'operator errors' (me turning the gas off!) and a faulty pressure gauge. The model looks fine out on the pond at Windermere Model Boat Club. Look out Barbie, Ken's got a new love interest! ●



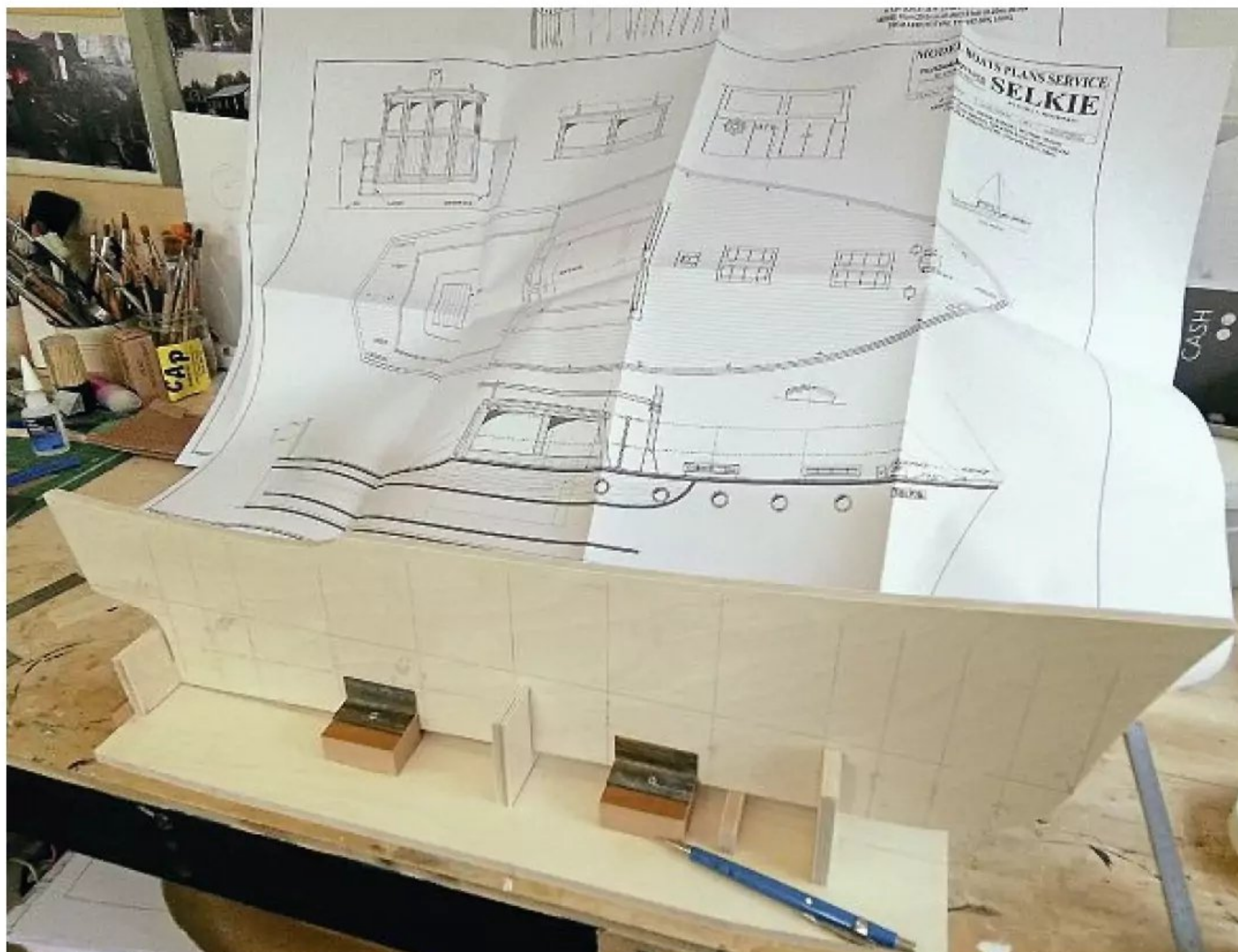
Yes, Sir!

SIR JOHN

John Mileson joins the 'League of Gentlemen'!



*Sir John leaving harbour for
the first time at Wicksteed
Park pond.*



Sheet 1 of the Sarik plans, showing the top and side elevations. In the foreground is the keel and longitudinal bulkhead mounted on a temporary board.

As I haven't had a television for more than five years now, when looking for some evening entertainment I often resort to Sarik's website and browse through the hundreds of model boat plans. While recently doing this, one plan in particular appealed to me, mainly because it didn't look too difficult. This was for Selkie - a 'gentleman's' launch.

Duly ordered, when the plan arrived a few days later I was a little taken aback, for there were no dimensions on the side and top elevations, and the sections through the boat meant little to me.

I am sure constructing a launch from these plans would cause little distress the experienced builder, but, while I enjoy scratch building, as an enthusiast amateur I realised I may have bitten off more than I could chew with this project.

Concerned, I pondered simply using the plans for drawer liners, but that may have aroused some suspicion I'd been wasting money again. There was, therefore, no choice but to study the plans more closely and attempt to make a start. After all, one of the beauties of scratch building is that should things go completely pear-shaped, resulting in the whole project having to be scrapped, the expenditure will have been minimal.

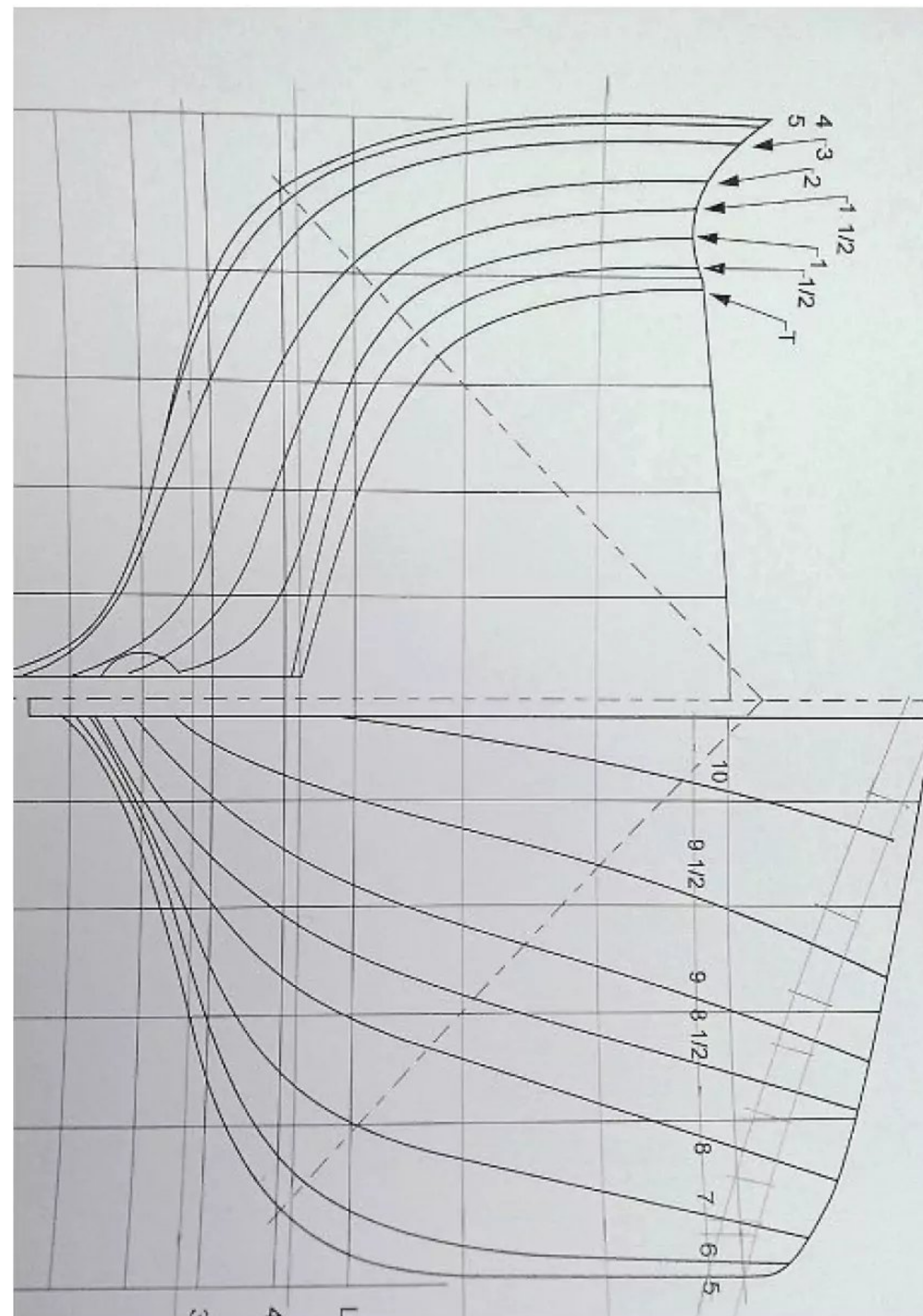
A bridge too far?

Not really knowing which type of wood to order, I opted for birch-faced plywood in a range of thicknesses, from 9mm down to 1mm. This came from SLEC.

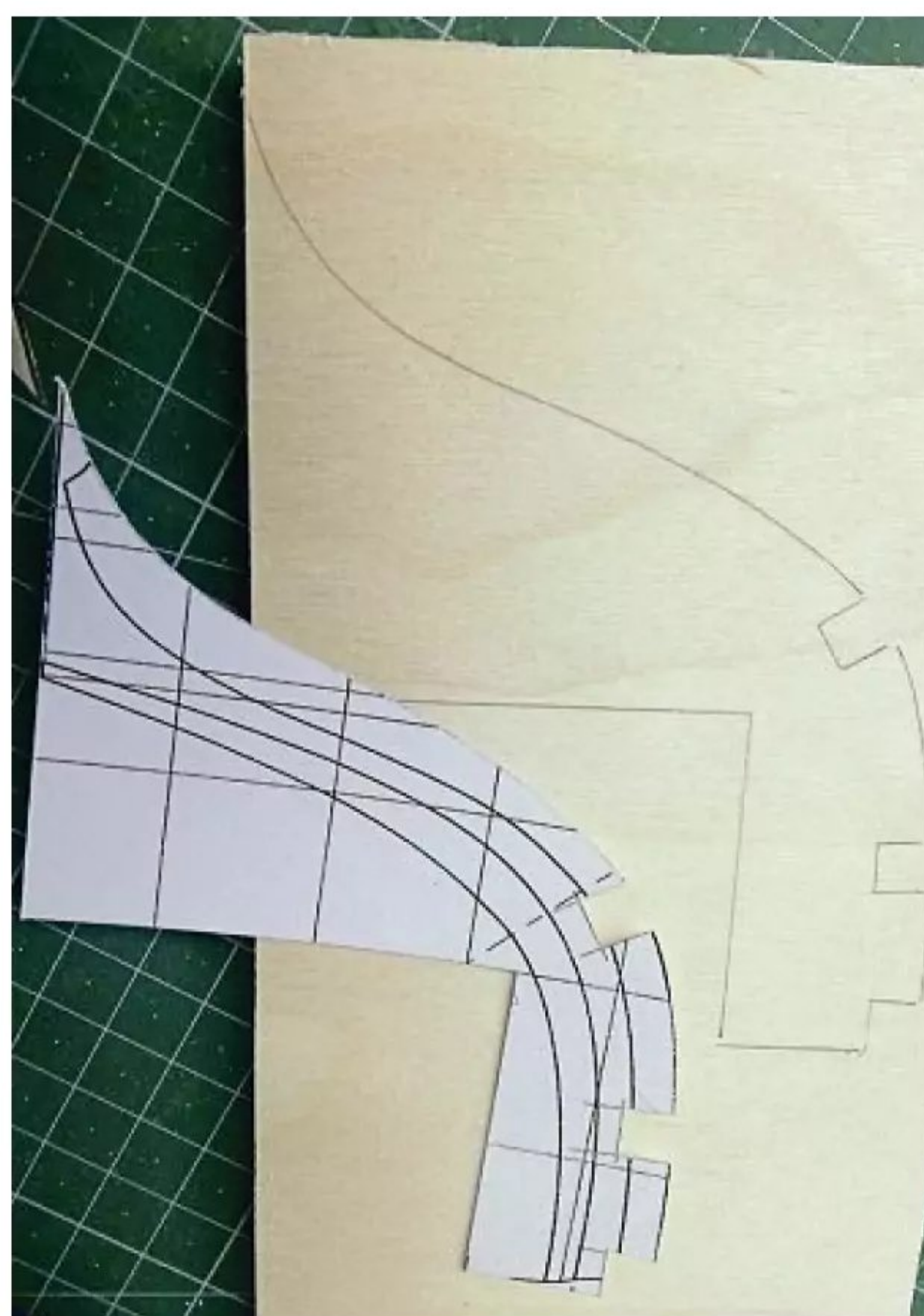
Using the skills gained during my childhood when tracing onto what was then grease proof paper – although in this case proper tracing paper was employed – I traced the outline of the keel and main longitudinal bulkhead. Turning this tracing over, the outline was then scribbled over with a soft pencil and transferred to some 9mm ply.

I ended up with the profile of the boat, i.e., the side elevation, but of course this did not show where the bulkheads, propellor shaft, motor and rudder were located. The position

"This really was where help from the plan ended. Time to mull over my next move..."



The bulkheads on plan, prior to photocopying each onto card.



One of the card templates John created for a bulkhead, the outline having been transferred onto the plywood. Each bulkhead was made up from two halves prior to assembly on the keel, rather than using the traditional slot construction.

of the bulkheads was transferred from the top elevation (plan) to the plywood. This, however, really was where help from the plan ended. Time to mull over my next move...

The drawing showed dozens of lines which I eventually realised were the cross-section of the bulkheads. So, I photocopied, onto card, each of the bulkhead outlines; the idea being to cut these out from the card and use



Drilling through the keel for the rudder shaft was a tricky job. The bed on the bench drill was turned through 90°, and the keel clamped to it.

them as templates for the 6mm bulkheads. Deep joy! Self-congratulation, though, was short-lived, as it dawned on me that I hadn't considered the 'open' hold required for the motor and shaft, plus the cabin and cockpit. So, having cut all of these outlines out on my bandsaw, I found myself, once again, out of my depth. Could this project be 'a bridge too far'?

“To justify this rash statement, for the next hour, I sat on the cold floor with the bits of plywood spread out before me, giving the appearance of having high-minded academic thoughts”

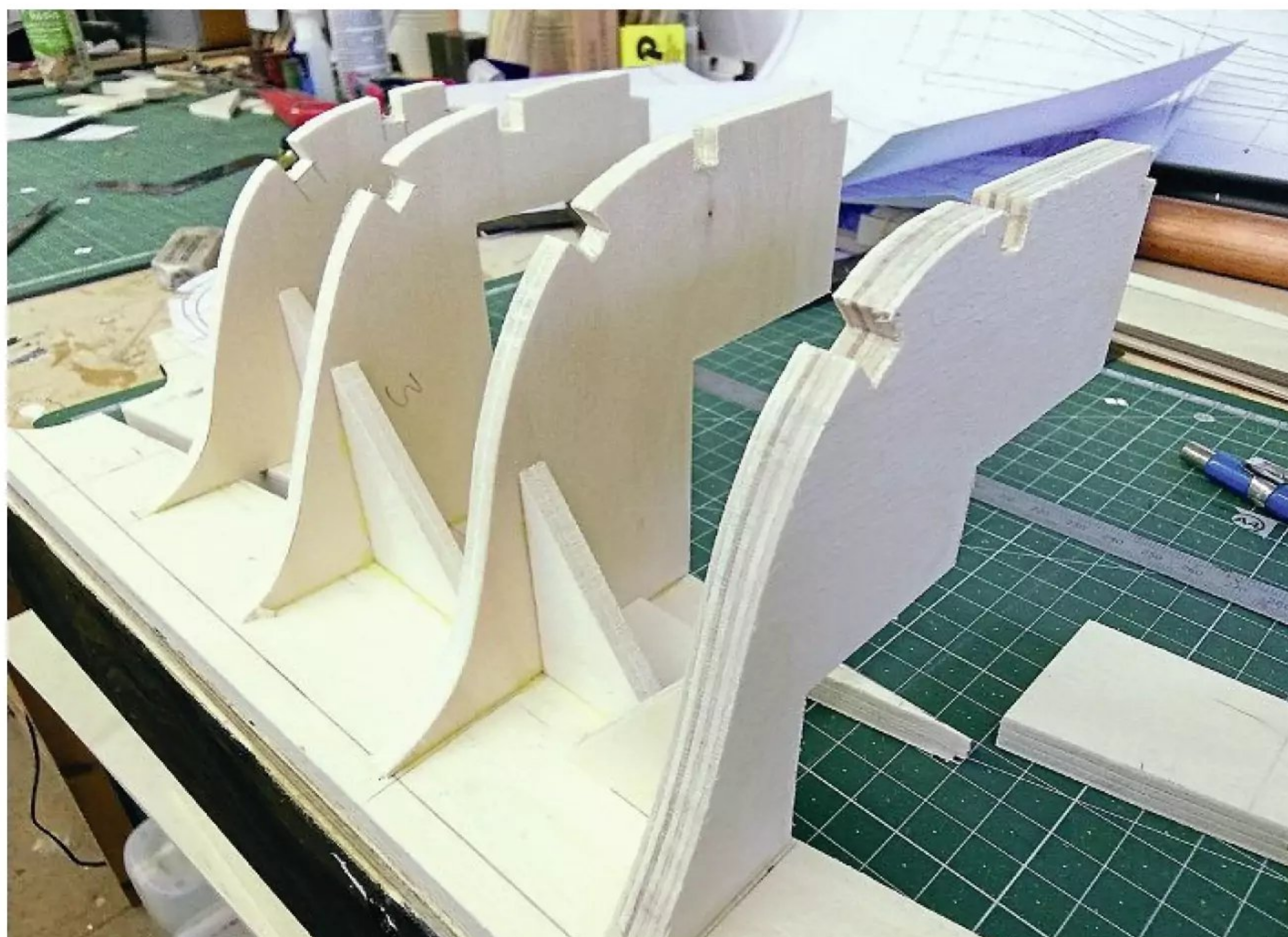
Cover blown

These bits of plywood I had cut out were, therefore, temporarily stowed away where prying eyes would not see them, thus avoiding any embarrassing questions, while I pondered what to do next. For the next few days, I pottered about my shed, and even did a bit of gardening (this always gains house points!). During this time, I decided, as we are fortunate enough to have a wood burning stove – which has in the past devoured many of my mistakes, leaving no forensic evidence – these latest pieces of plywood should be consumed by Dante’s inferno. Eventually, removing the plywood from its secure hiding place, I attempted to sneak across the garden with it, only to be foiled! The problem I have that is my wife has the uncanny superpower of always being able to detect I am up to no good. “Why are you taking those bits of wood into the cottage?” I knew if I hesitated in replying suspicion would be raised, so quick as a flash I blurted out “Just taking them into a better light to study them!”. To justify this rash statement, for the next hour, I sat on the cold floor with the bits of plywood spread out before me, giving the appearance of having high-minded academic thoughts. In the end the plywood was returned to the shed, my cover had been well and truly blown!

When the going gets tough/rough...

With little to lose, I guessed where each bulkhead would need to be cut to allow for the open ‘hold’. As it happened, it turned out reasonably well. No, let’s be honest, it was rubbish – something detected only when final assembly took place.

As can be seen from the photographs, construction followed a fairly traditional course. Except, in my case, the plank on frame construction is mainly ‘filler on plank’.



Once all the bulkheads’ ‘halves’ had been cut out on the bandsaw, each was glued onto the keel, with a fillet added for strength.



The completed keel with all the bulkheads attached.



The planks for the ‘plank on frame’ construction, cut from 1.5 mm plywood.



Lashings of P38 filler were spread over the outside of the lower half of the hull. The inner hull was then coated with a generous layer of resin to fill any cracks on the inside. It was easier to resin coat the lower half at this stage, as access would be limited when the remaining planks were added to the top half.

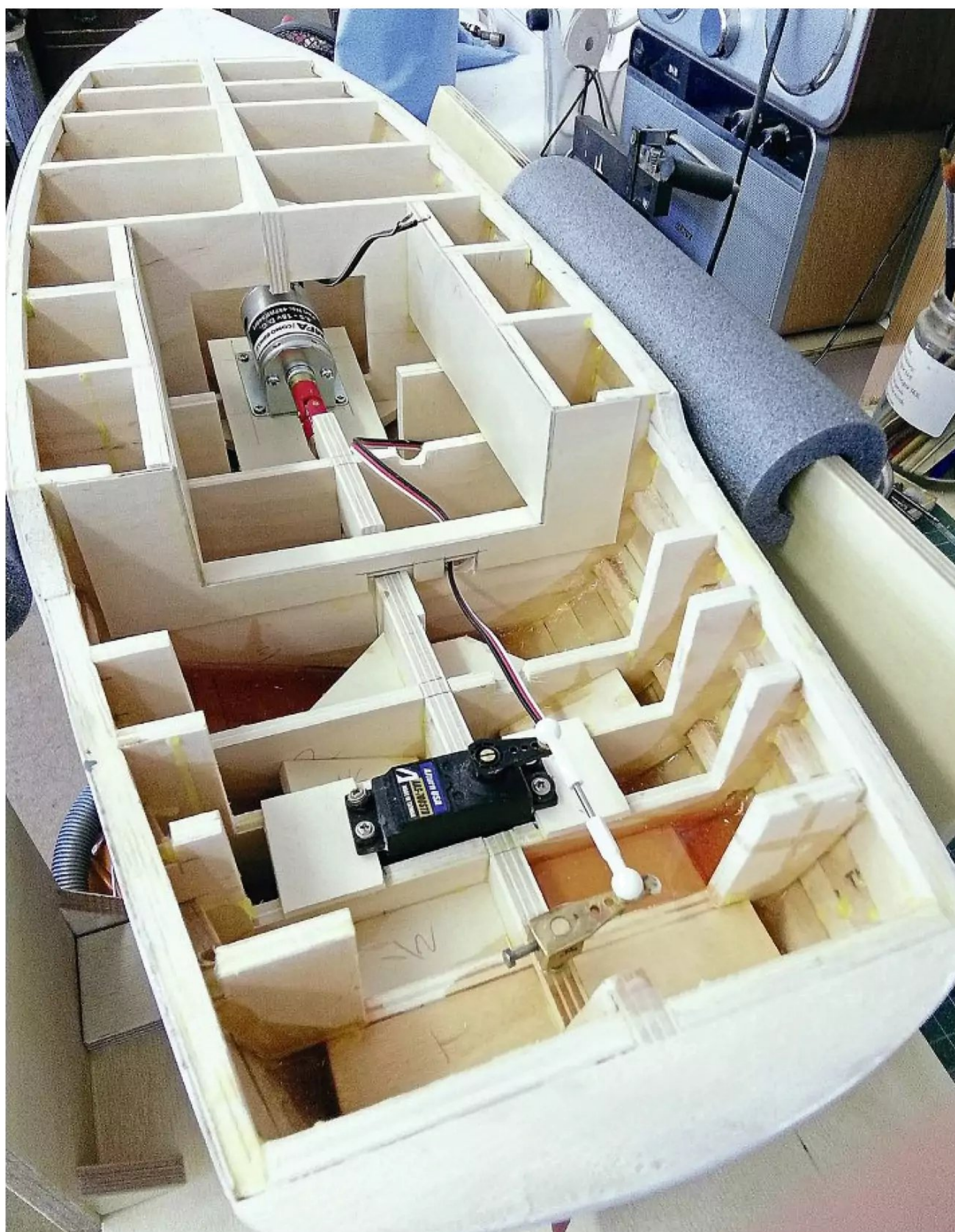


Blocks of balsa wood glued to the bow and stern. These were crudely cut to shape using a hacksaw blade. Not a pretty sight!

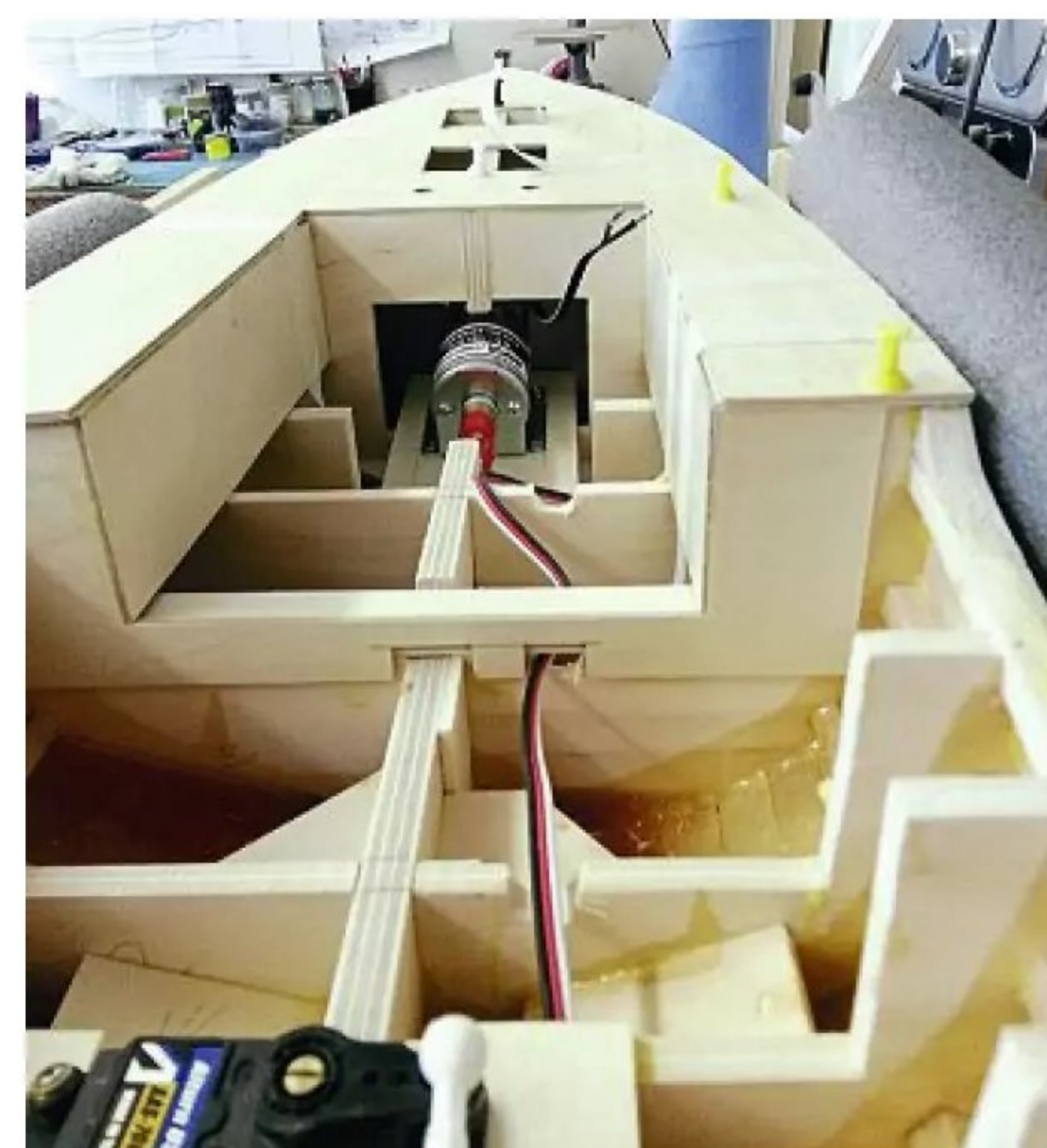


The bow having been roughed out prior to filling, and final shaping.

“Teak works, cuts and finishes beautifully”



With the hull complete, the motor, propellor shaft and steering gear could be installed and tested. The orange colouration visible between the bulkheads is resin.



This shot of plywood base for the foredeck and the interior sides of the cabin illustrates the start of the ‘cladding’.



The rear and side decks in place. The side decks have a rather seductive curve to them. According to the plan they should have been parallel!



Starting to put the finishing touches to the 'topside' of the launch. The planking for the deck is 1.5mm birch-faced plywood cut into strips 7mm wide. The coloured wood panelling is cut from teak. All are glued on with superglue, which John has found does not discolour the original wood and cannot be seen once varnished.



The cabin was made from strips of teak. The roof, seen here being glued on, was made from two layers of 1mm plywood.



While the plan showed two separate removable hatches, John decided to just make the one.

With lumps of balsa wood stuffed in all the remaining slots between the bulkheads, the whole boat's appearance was pretty crummy. I always seem to have trouble getting a nice smooth surface, particularly on the balsa. Despite numerous coats of sanding sealer, primer, undercoat and topcoat, the finished surface remained pitted and rough!

Having fitted a plywood deck, both fore and aft, the next job was planking these decks. I quite enjoyed this bit. Deck planking was made from strips of 1.5mm ply, bonded onto the sub deck with superglue. I figured that, even if some of this glue got on the planks, and the skin of my fingers, it would not discolour the finished surface.

The rear deck fittings, i.e, the seating area and the cabin, were made from strips of teak cut from a piece of old 1970s' furniture. Teak, now I believe not readily available, works, cuts and finishes beautifully. So, when I get the chance, I look around junk shops for old teak furniture to cut up.



Left: The sails, which are non-functional and for decoration only, were made from draughtsman's linen. This is now, John believes, a rare commodity, but is ideally suited for model sails. It marks out and cuts easily, and once the edges have been sewn is just washed for a pure linen look. The sail on the right shows the linen in its original state, and on the left having been washed but not pressed.



Right: The rear cockpit, complete with table and bench seating.



“This really is the perfect material from which to make conventional sails”

All the fittings were made from scrap pieces of brass, aluminium and wood, and while admittedly none were particularly to scale, thankfully they did look alright when assembled on my launch.

At least one job proved a breeze... Many years ago, as an apprentice in the drawing office at Vauxhall, we used ‘draughtsman’s linen’ on which to draw the designs. The surface of the treated linen was exceptionally smooth. It had to be really, because we were using ‘Indian ink’ and bow pens. This was an acquired skill. As it happened, my chum Les had ‘purloined’



The sails having been attached to the rigging and shown lowered, as they would have been when motoring into harbour.

some of this linen and had passed some of it on to me for the purpose of making sails. Although here the sail would be non-functional, this is really the perfect material from which to make conventional sails. Once a sail has been cut and sewn, it simply needs to be popped in the washing machine with your clothes and it will come out looking like pure linen.

Gentleman’s relish

The final coats of paint on the hull were brush painted, using Phoenix Enamel paints.

Admittedly, it took several coats to try

and cover up the rough finish of the hull, but the end result viewed from afar is quite satisfactory.

Although somewhat out of my depth, I enjoyed building this gentleman’s launch – which I’ve named Sir John, to reward to myself for all the patience and commitment put in. Yes, there was the occasional very un-gentlemanly outburst of expletives, but only while working alone within the confines of my shed, so I figure that doesn’t count! Maybe I’m just a sucker for punishment, but the truth is I find scratch building very satisfying – even though it doesn’t always go according to plan! ●

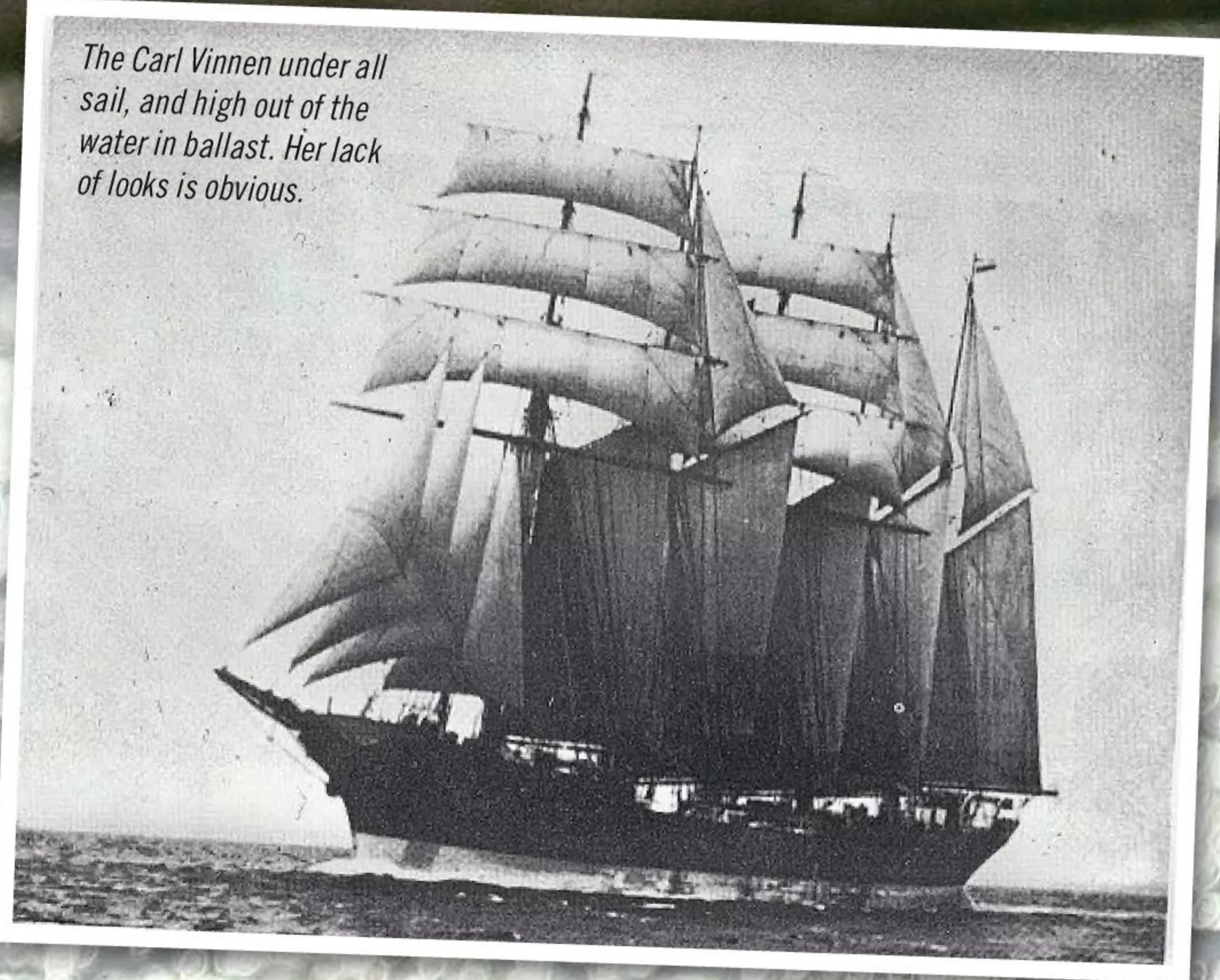


PULLING THE STRINGS

Curious to see how a model square-rigger with both braces and sheets on one mast could be controlled, **Nev Wade** decided to find out...

A sparkling, summer day.

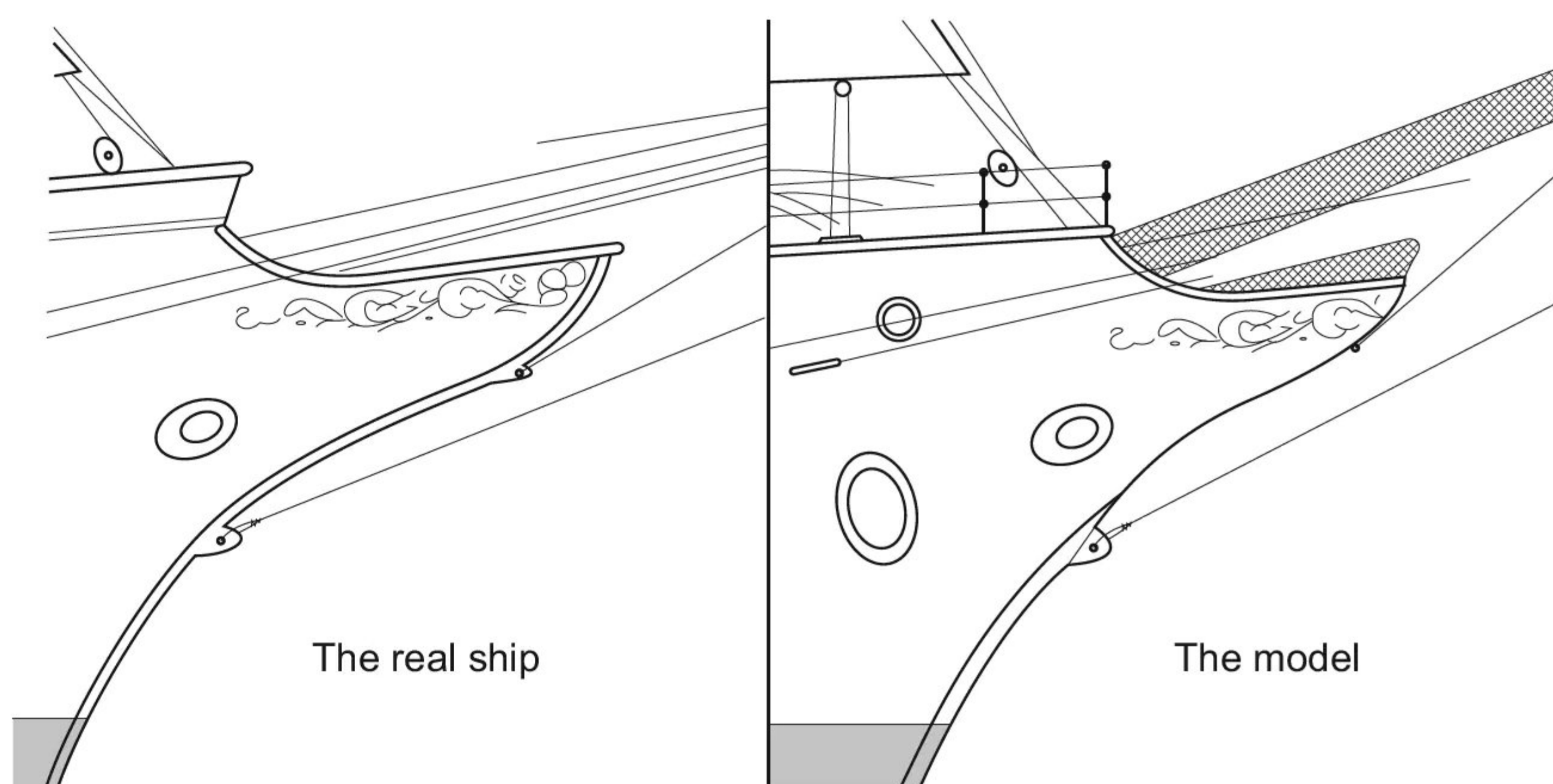
The Carl Vinnen under all sail, and high out of the water in ballast. Her lack of looks is obvious.



Controlling the sails of a model sailing boat is all about pulling lines, to manipulate sails. On yachts it's simple: pulling 'in' and letting 'out' 'sheets'. On a square-rigger it's more complicated: pulling 'in' one side, as you let 'out' the other side of 'braces'. All these lines have to pass up, through decks, in order to reach the sails. The braces pass either side of a mast and the sheet in front of it and, when that's all you have to contend with, it's relatively simple. But what if you had to deal with both braces and sheets on one mast? Could you so arrange matters that the lines didn't interfere with one another? What would sailing a model of a vessel where square sails and fore and afters were so mixed be like? All the above intrigued me enough to consider building a model on which sail control was mixed in this way, and having decided to have a go there was only one real ship on which to base the model.

An 'ugly' schooner

In November 1938, the four masted barque *Moshulu*, then the world's largest surviving sailing ship, was in the South Atlantic, outward bound from Belfast to South Australia. She passed another sailing ship, heading north, which didn't acknowledge her. To the crew of *Moshulu*, the stranger's men seemed "a friendly lot ofs". One of them reportedly remarked: "Why should they be happy in such an ugly ship and going to Bremen in the wintertime?" The other ship was the *Carl Vinnen* and in this article I shall focus on her story, and on the peculiarities of my model of her.



Nev's alterations to the bows.



The hull almost complete.



Off the building board, with the sheerline cut.

After World War I, the German shipping industry was all but destroyed, along with the rest of the country's economy. The Vinnen company was among many ship owners ruined by the war, who were trying to rebuild their fleets. To that end, it built five sister ships of a rig previously never seen. The objective was to create a fleet of ships which could be run with small crews on the route from Bremen to the River Plate, and the ships that were built were unique. There is no accurate name for their type, the best description of them that I've seen is that they were "five masted, two topsail, schooners", and their names were, "*Carl, Werner, Adolf, Christel and Susanne Vinnen*". They were built between 1921-22 and were 262 feet long with a beam of 44 feet. They were each fitted with a MAN diesel engine of 350 bhp, and had wireless and echo sounding equipment, both revolutionary for their day. *Adolf Vinnen* was lost, wrecked near the Lizard in 1923 on her maiden voyage, and the rest traded between the wars. I have no information on the fates of the other ships, but *Carl Vinnen* spent World War II in Gibraltar, where her MAN diesel was much admired, a peculiar distinction for a sailing ship.

“The Vinnen company was among many ship owners ruined by the war, who were trying to rebuild their fleets. To that end, it built five sister ships of a rig previously never seen”

Carl Vinnen was almost saved by Heinz Schliewen after World War II, when he tried to convert her into a sail training ship, along with *Passat*, *Pamir* and *Moshulu*, but his bankruptcy ended the enterprise, and she was instead broken up. These ships were a blind alley, and, as noted, were thought of as ugly by sailing ship sailors. But their design was quite unique and, with several previous square-riggers behind me, modelling one of them became of increasing interest to me.

Why build a model of an ugly ship?

Well, they were oddballs, and, having sailed other model sailing ships, I fell to wondering how they would sail. With their largely fore and aft rig, they should come to windward more readily than a proper square-rigger, which would make them more amenable to sailing on a pond. Their rig would, of itself, be a challenge to operate in miniature. Having square (across the ship) and fore and aft (along the ship) sails mixed up in such close proximity on the five masts would need some ingenuity in arranging all the necessary lines. The challenge became ever more alluring, but there remained the ugliness of the ships.



Painted and with the 8.2kgs sailing keel fitted.

Studying pictures of the real vessels to try and pin down the problem with their looks, it dawned on me that the issue lay with their bows. They were massive, and not at all graceful, with the angle of the bowsprit only serving to emphasise that still further, as it was almost horizontal.

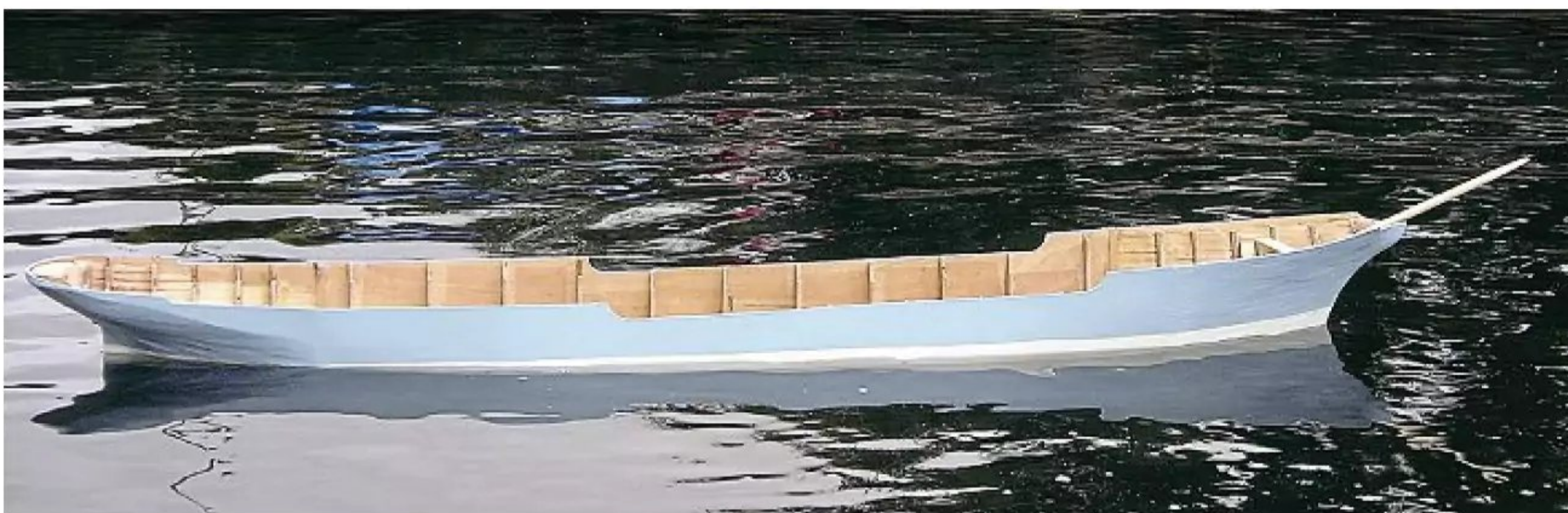
As model-builders we are the gods of the small worlds we create, so I decided to claim some ‘poetic licence’ and alter the bow of my model and will take my chances with the purists!

Building the model

I’m not going to cover all aspects of the build. What I will do is describe, in some detail, some of the less obvious bits, most particularly to do with control. Before we get to that though, I will mention some of the spade work.

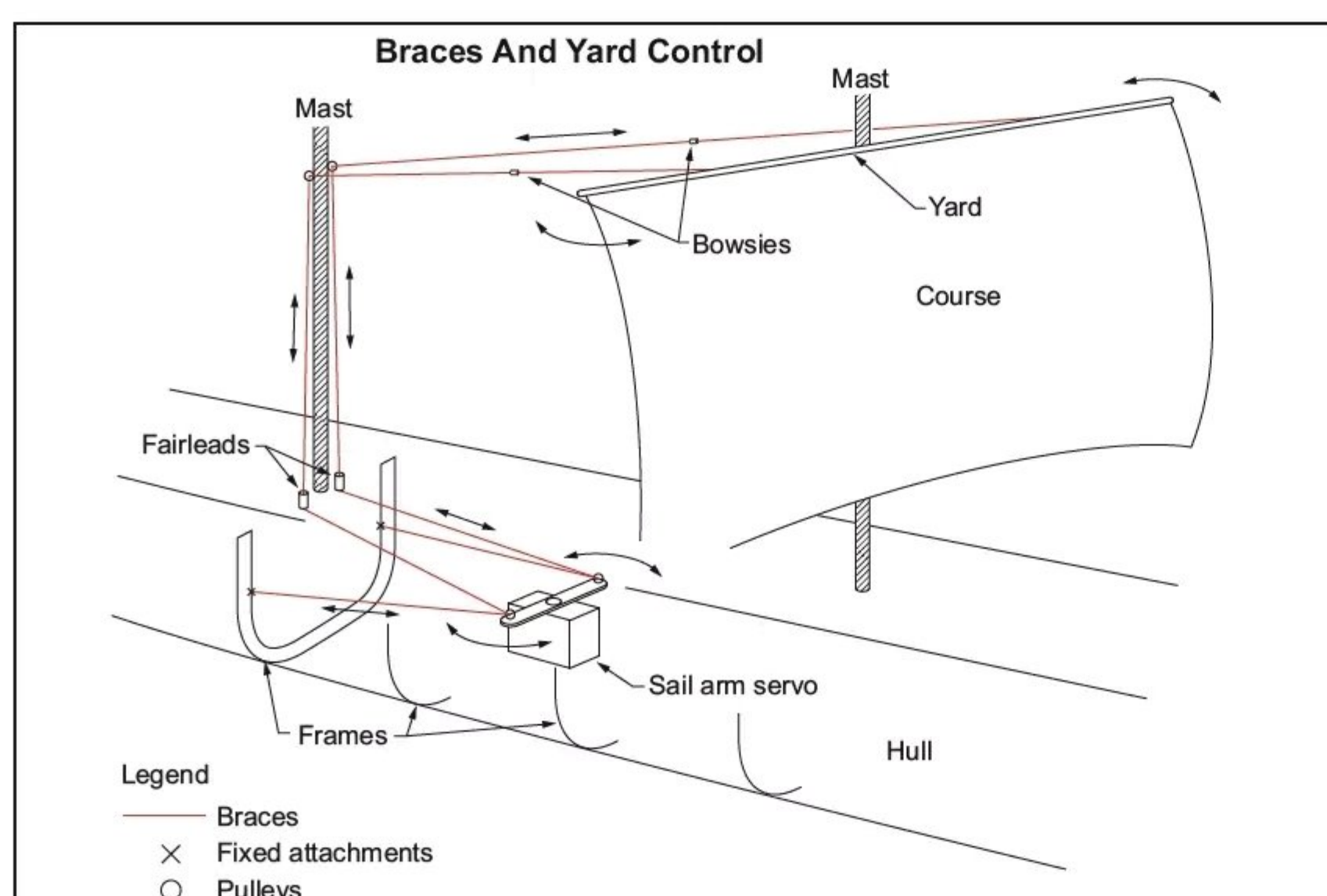
I gleaned enough information from the internet to draw my own plans, which I then had copied to make full-size for a model 1450mm long from bowsprit end to stern rail, with a beam of 200mm. That gave a model of approximately 1:68 scale, with a mast height (keel to main truck) of 720mm. The hull was built upside down on a building board, using plywood from a DIY shop for the frames, thin ply for as many of the ‘straight, flat’ parts as possible, and 8 x 2 mm limewood strip for all the curvy bits. The interior keel was suitably strengthened to allow the fitting of three 8mm diameter bolts from which to hang a removable sailing keel made from aluminium plate and lead strip. In the end, the sailing keel weighed 8.2kgs.

The interior of the hull was fibre-glassed for extra strength, and a rudder of approximately ten times scale size was made and fitted. The extra rudder size is indispensable for effective steering. When the time came, ‘false’ decks were made from thin ply, into which were cut hatches, to suit the electrics installed below, and the whole lot was planked, again with 8 x 2 mm limewood strip.

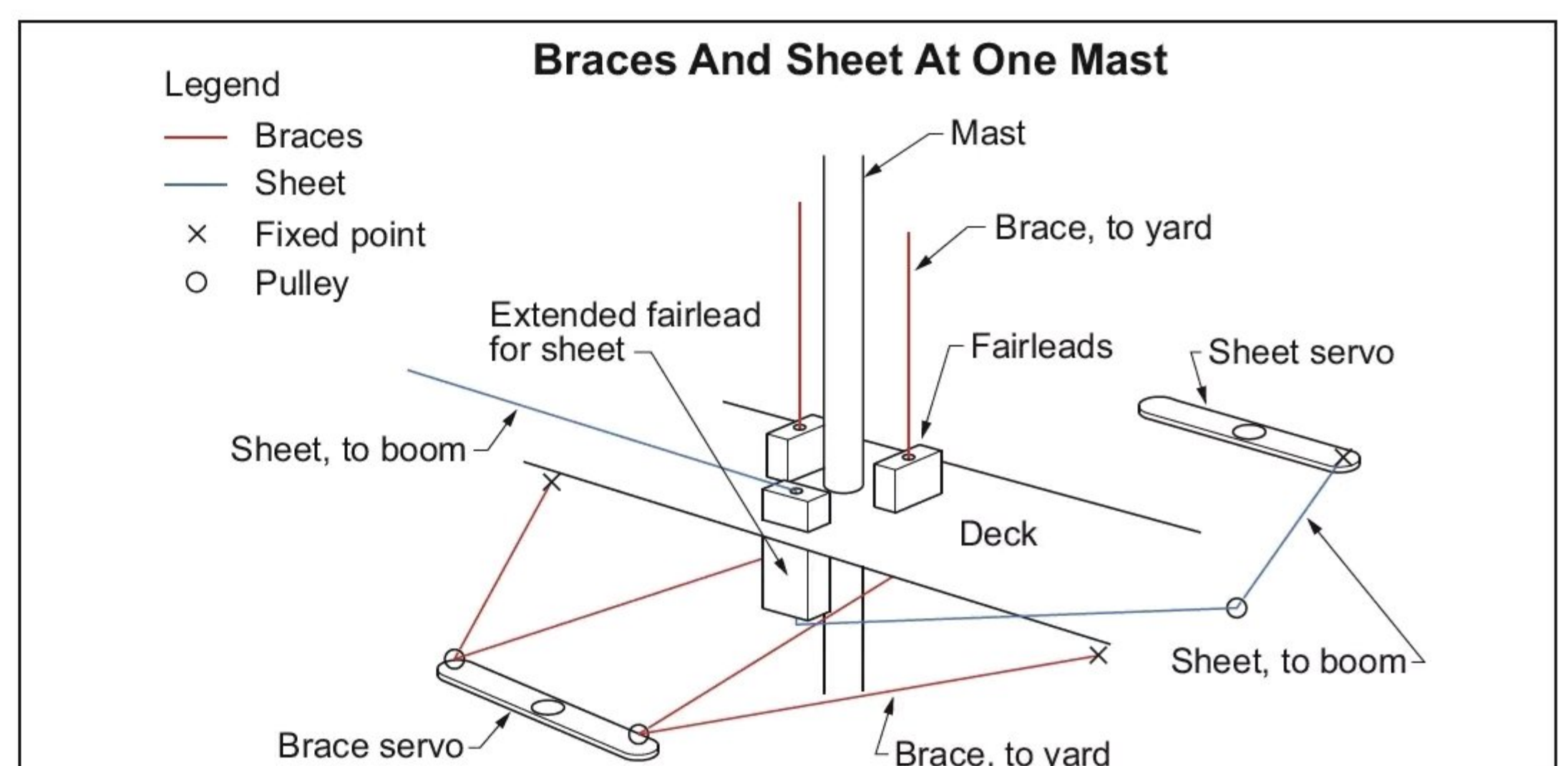


The trim trial.

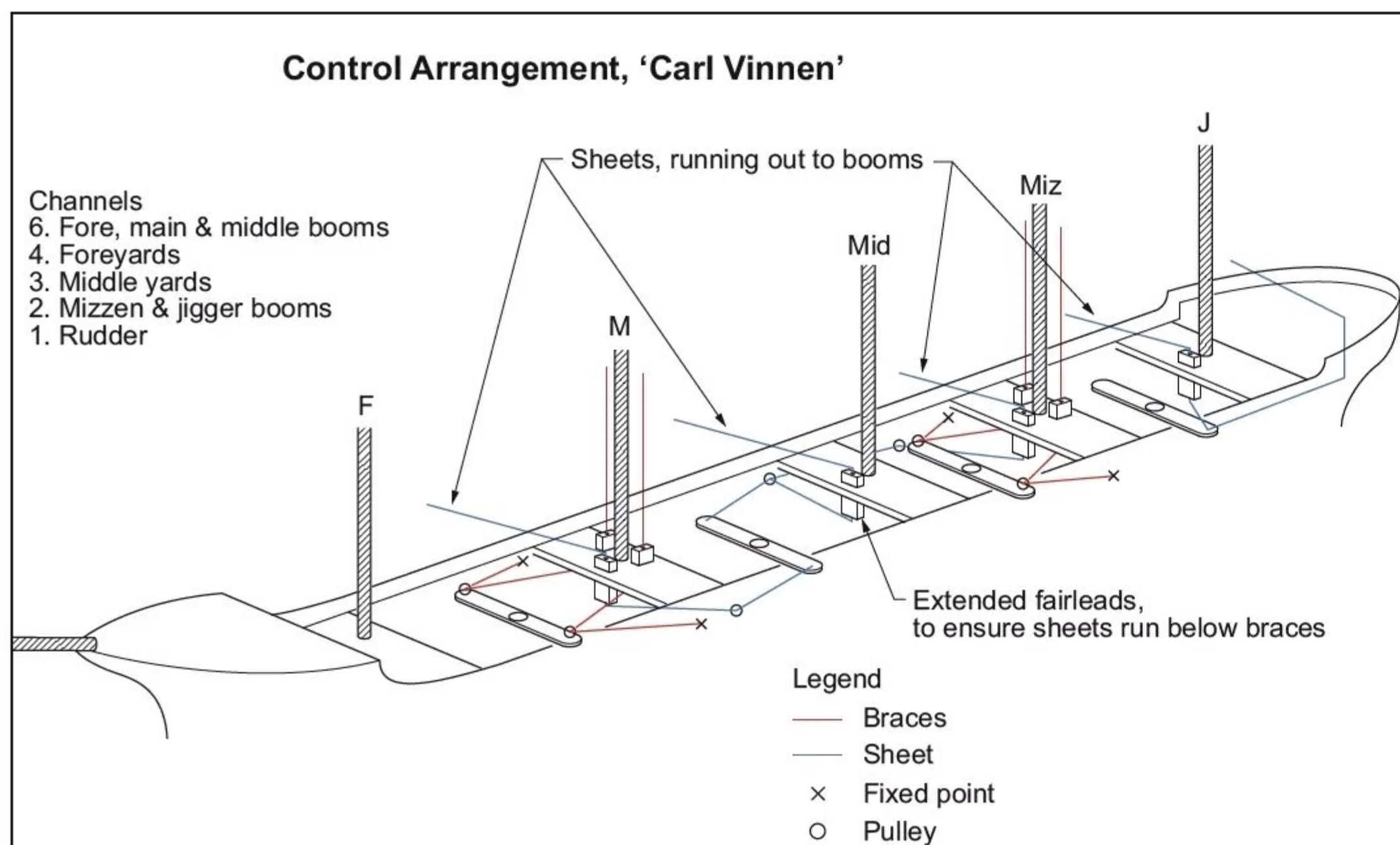
“They were oddballs, and, having sailed other model sailing ships, I fell to wondering how they would sail”



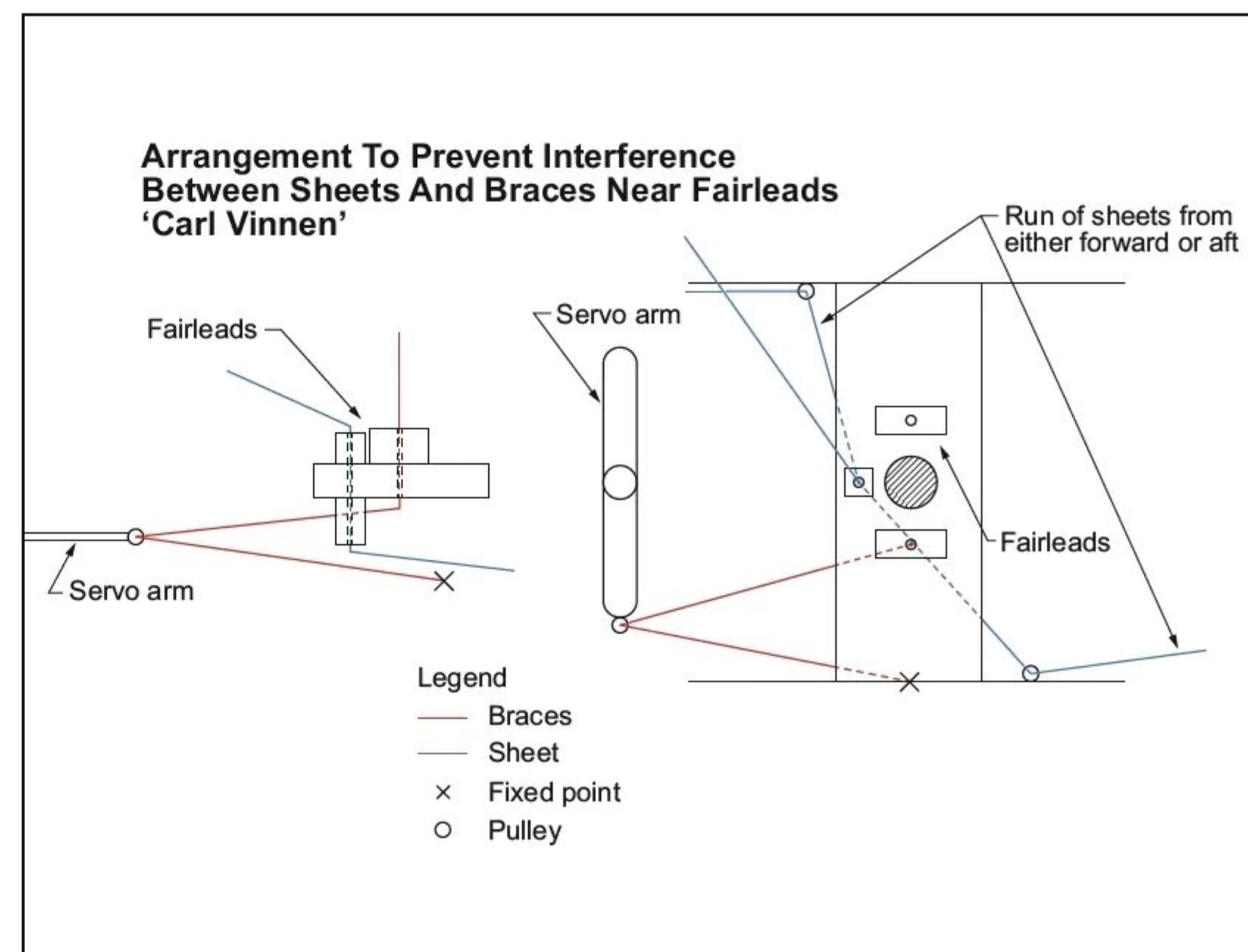
The method whereby rotation of the servo arm is translated into rotation of a yard.



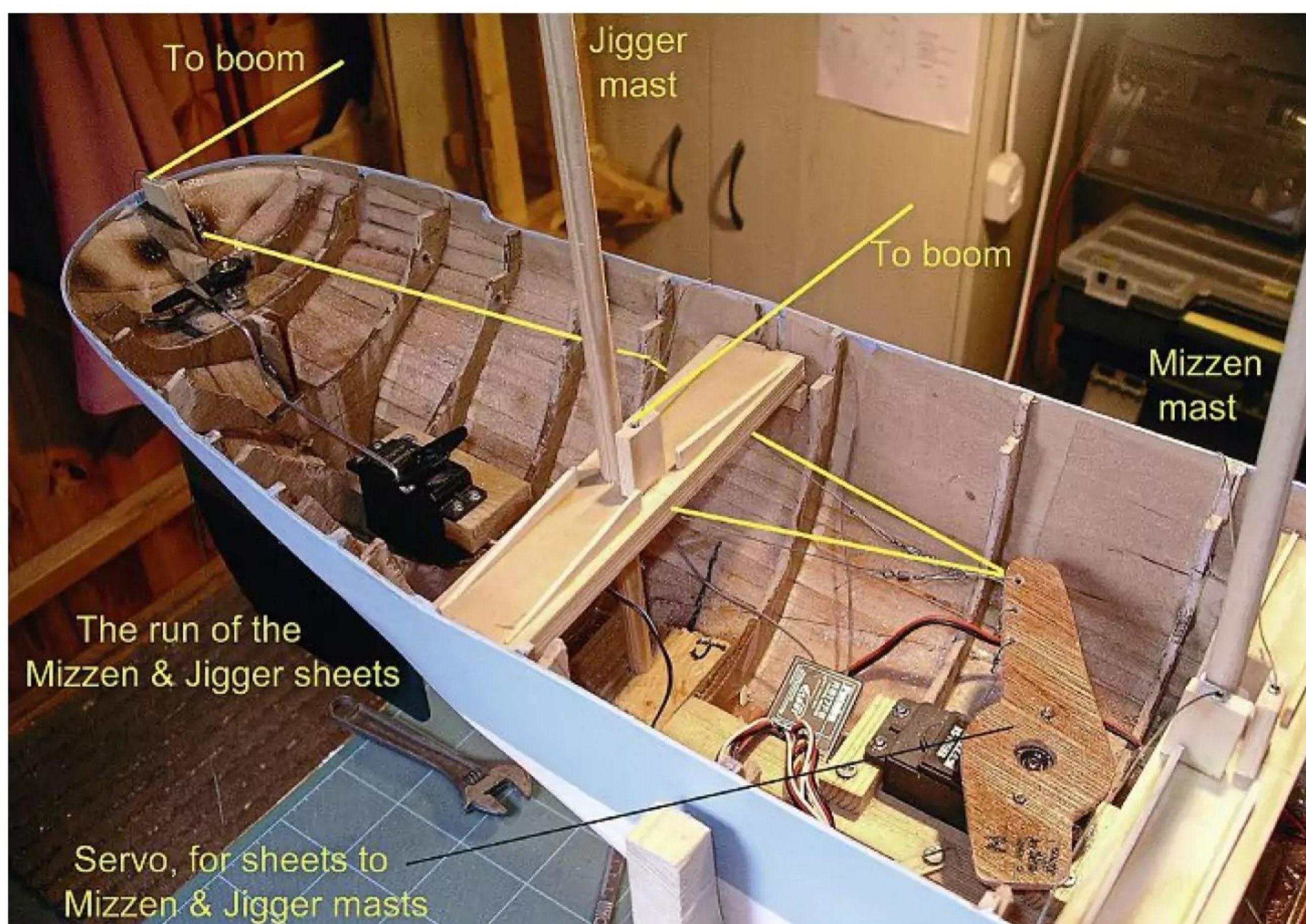
The way in which a sheet, coming from one servo, is separated vertically from braces, coming from another servo, at the same mast, by the extension of one fairlead further below the deck.



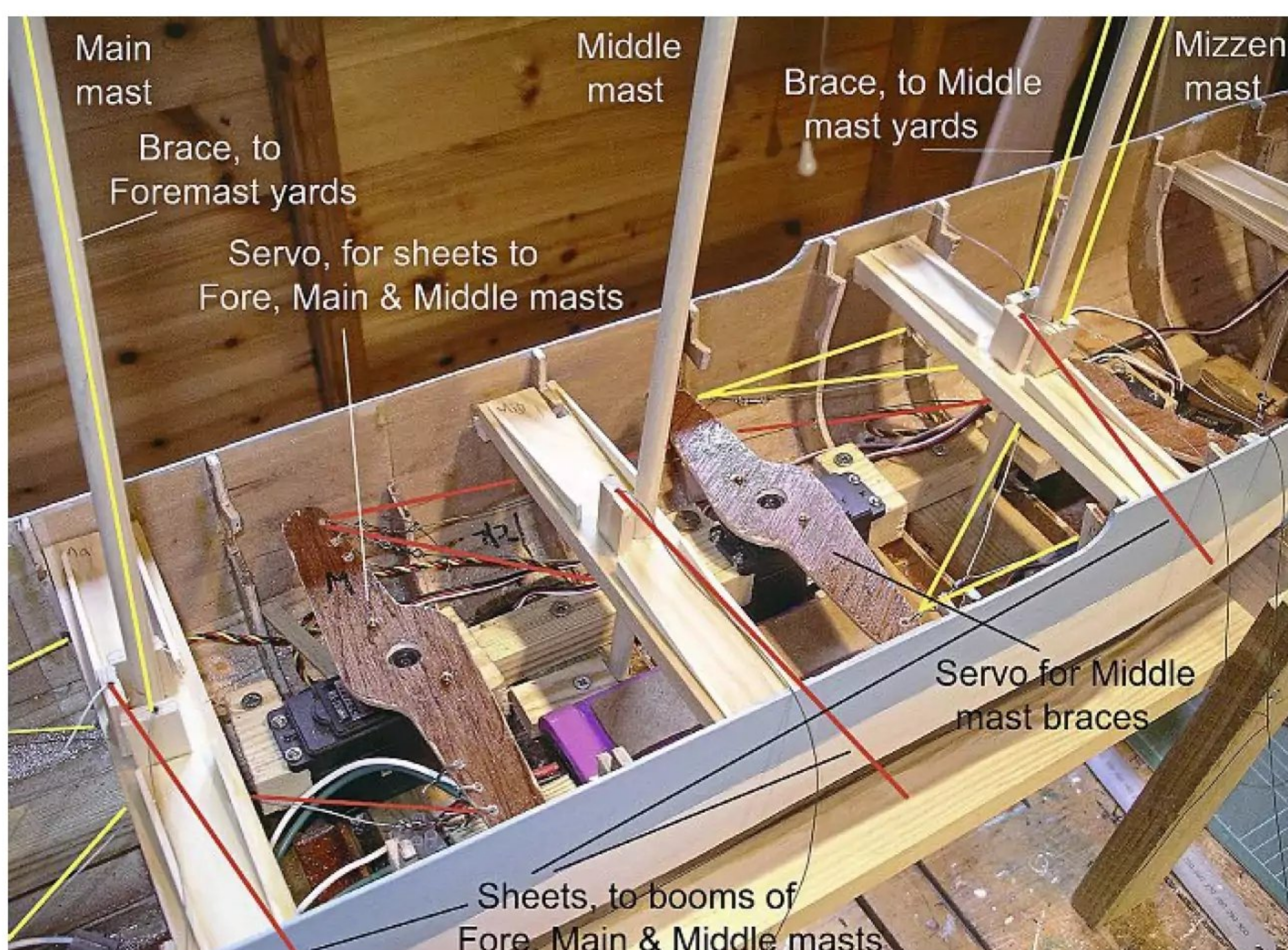
The general arrangement of all servos apart from that for the rudder.



Detail of the vertical separation of a sheet and a brace at one mast.



The run of the mizzen and jigger sheets.



The layout of three sheets, from one servo, and two sets of braces, from two servos. The foremast brace servo is out of the picture to the left.

After building and fitting deckhouses and hatch covers, to make the model fully watertight, the masts and spars were made from simple dowel. Sails were made from 'Ripstop nylon', and suitable standing rigging was set up, which finished off the vessel, along with all the paraphernalia of lifeboats, deck furniture and crew

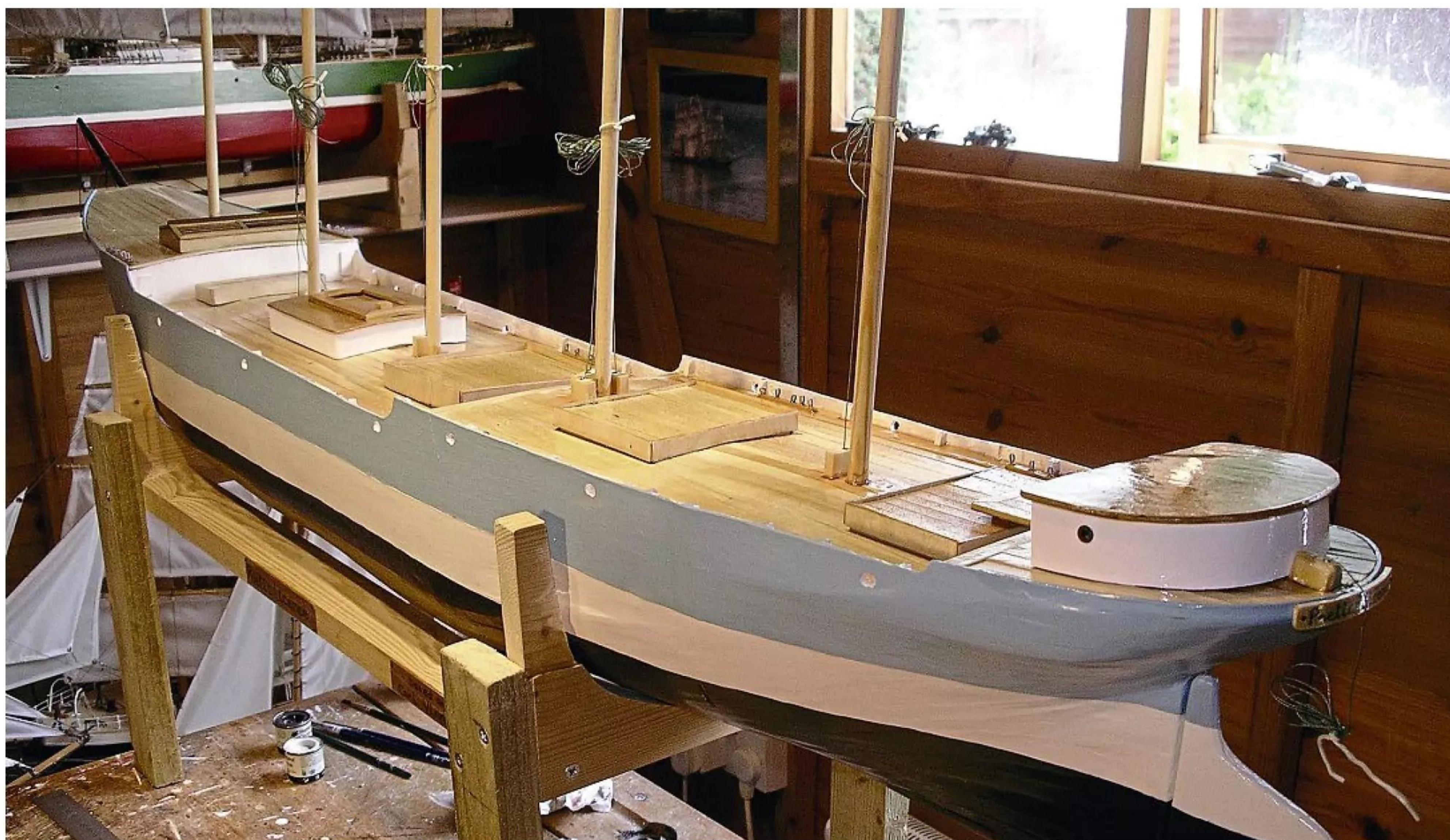
Control: the heart of the matter

On this model there are two sets of topsails on yards on the fore and middle masts to be controlled separately, and five sets of fore and aft sails, one per mast. My practice with square sails (in this case, the two sets of topsails) is to have those on the foremast controlled by channel four (left-hand stick, left/right) of my six-channel system. On this model I decided to control the square sails on the middle mast with channel three (left-hand stick, up/down) to put all square sail control on the left-hand stick. The only stick on my transmitters to retain spring loading is that for the rudder; on all the rest, the sticks remain where they are put.

Channel one is required for the rudder, which left only one stick-controlled channel, number two. With five masts worth of fore and afters to control, I decided to put those on the mizzen and jigger masts under the control of channel two (right-hand stick, up/down) and leave those on the fore, main and middle masts to the toggle switch of channel



The extended fairlead for a sheet in front of the mast, and the two fairleads for braces on either side of it. The wooden cross-piece across the centre of the picture is the "thwart" that supports the deck and locates mast and fairleads.



Decks planked and sealed, and hatch covers and deck houses fitted. The "wheelhouse", unique to these vessels, can be seen on the small poop.

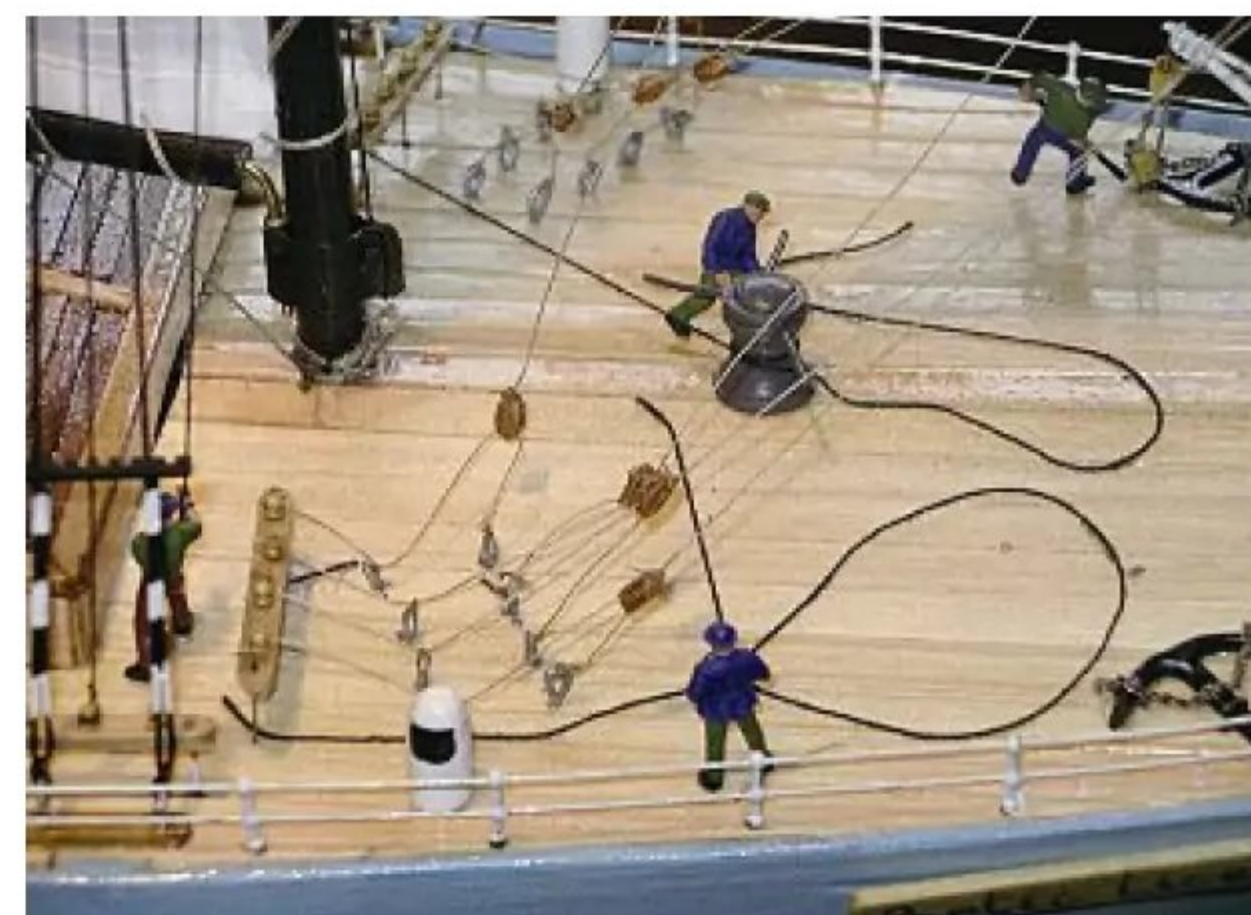
six. The reason for this is that more accurate control of the aftermost fore and aft sails is a help with steering, those in the middle of the vessel being almost exclusively there to provide forward motion, where 'in' or 'out' is sufficient.

I operate yards by using sail arm servos with centrally pivoted arms, arranged so that as one side of the arm pulls in its brace, the other side lets out the opposing brace. The detail of the layout for the foremast is as follows. A brace, let's say the port one, made from fishermen's 'braid', was tied to a hull frame by the port side of the main mast. It was then run forward and led through a pulley (made from a fishermen's snap link) attached to the end of the servo arm. From there the brace was led to, and up through, a fairlead on the port side of the main mast. The brace then continues up the main mast until it is at the height of the yard it is to control (in this case, the lowest of the three topsails on the port side of the foremast). There it was sent around a ring screw used as a pulley and across to its yard arm, where it was fed through another fishermen's snap link attached to the port yard arm, to finally be led back across to a bowsie about halfway between mast and yard. There it was tied off, to allow individual adjustment of the length of the brace.

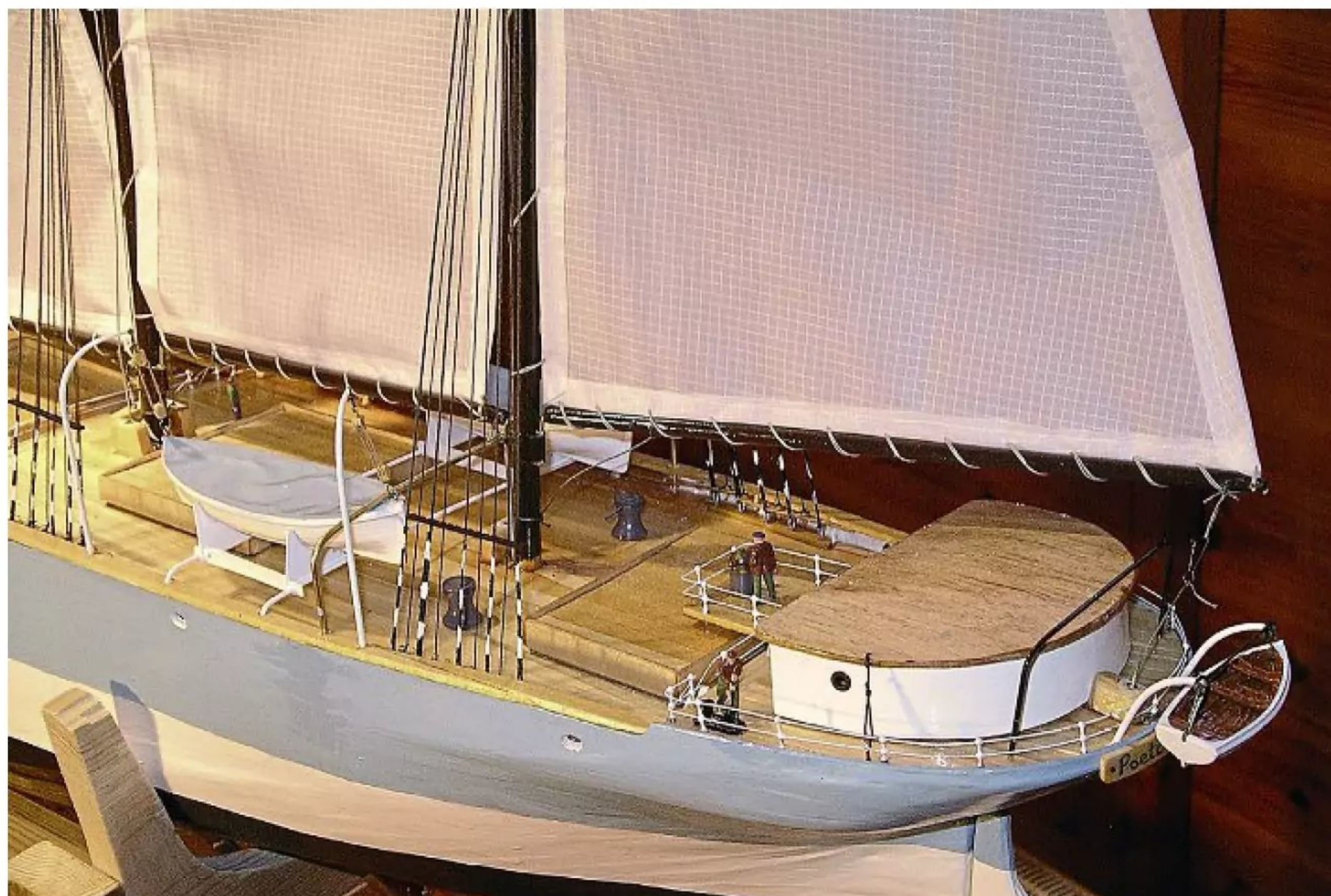
There are several points to note if you ever want to have a go yourself. First is the fact that the brace is not tied to the servo arm. Attaching it to a hull frame and running it through a pulley on the servo arm gives a multiplying pulley system, which slightly increases the amount of travel of the brace in relation to servo arm movement. It isn't much



'False decks' and hatches fitted, a view looking forward from the stern.



Detail of the fo'c'sle head, with capstan and head sheet pin rails prominent.



Aft, with the lifeboats and the Captain's gig. The gig must have been taken inboard before venturing to sea!

“There are several points to note if you ever want to have a go yourself”

extra, but you need to get yards to brace round to within 30-degrees of the centreline of the model in order to make effective progress to windward, and every little does help with this. The use of the fishermen’s snap links enables the easy disconnection of the brace at either end of the system. Over the years, you will need to change them. The bowsie is vital for fine adjustment of each brace. Finally, you can attach your braces in from the ends of the yardarms to increase the amount by which you can brace them round.

The process was repeated on the starboard side, for the starboard brace, and a similar process was then undertaken for the yards on the middle mast. In this case the braces were attached to a frame by the mizzen mast, and, after being run to the servo and round its snap link, were sent back to the mizzen mast and run up that en route to the middle mast yard.

I stepped my masts by locating them in a block each on the interior keel of the hull. I also built ‘thwarts’ to support the decks, and so arranged matters that each mast went through a hole cut in its ‘thwart’ to locate and secure it. On these ‘thwarts’ I glued strip wood, shaped to give camber to the decks, and it was also through these ‘thwarts’ that I fixed my fairleads. I made them from rectangular dowel, with brass tube glued inside it, to actually carry the lines through the decks. For the fairleads, which carry the braces described above, each fairlead was fixed on top of a ‘thwart’, with the brass tube



The sun is shining and the lee rail is under. Great fun sailing like this!

set into the top of it. It is simple, and it works well. On this boat, however, there are now complications.

Besides the braces for the yards, there are also sheets to pull ‘in’ or let ‘out’ the booms of the fore and aft sails, which are on all five masts. The principle is just the same as that used in a simple yacht. The wind pushes against a sail, which pulls against a line led to a servo under the deck. The servo is used to do the pulling ‘in’ and letting ‘out’. The only difference here is that two servos (channels two and six) have to control five booms. As mentioned above, channel six controls the booms on the fore, main and middle masts.

Its servo is a sail arm, mounted between the main and middle masts. It is just like the ones for the braces, and it also has a centrally pivoted arm. The sheet for the foresail was attached to the port side arm, and was led forward to a fairlead on the forward side of the main mast. Because the sheet has to cross the port side brace as they both make their way to their fairleads, I extended the sheet’s fairlead downwards so that the two lines can cross without interference. The beauty about all these lines, both braces and sheets, is that there is rarely any slack line in the system, so as long as the lines are separated vertically there is no problem with tangling.



Soon some sail will have to come off! Reaching the limit in 25mph winds. This is on a small pond in Sheffield, where the waves cannot get very high.

This is a still from one of the videos mentioned at the end of this piece. Five sails have been removed to cope with winds in excess of 25mph, and, on the large open lake at Tynemouth, the waves are a scale 7m high. This is the limit.



The sheets for the main and middle masts were attached to the starboard side of the servo arm and run via under deck pulleys to their fairleads. The sheet for the main mast goes through a fairlead in front of the middle mast – no need for anything complicated here as it is the only line going through a fairlead in this location. The sheet for the middle mast goes through a fairlead in front of the mizzen mast, using the same set-up as that at the main mast, keeping this sheet separate from the middle mast braces.

The sheets for the mizzen and jigger masts are operated by a sail arm mounted between the mizzen and jigger masts. The sheets were run aft on the port side to simple fairleads in front of the jigger mast for the mizzen boom and at the stern for the jigger boom. I know it sounds complicated, and it did take some working out, but, if you look at the drawings, and the pictures, I hope you can follow, as it was great fun to design and make.

So, having provided myself with the wherewithal to control this press of sail, how did it go in practice?

Sailing an ugly ship

If you have the wind from aft on a square-rigger and you put the yards 'square' across the vessel she will move forwards. If you have the wind on the port side and you put the yards on the port tack (with the port side yard arms forward) the vessel will also move forwards. It's the same with the wind from starboard, you just need the yards on the starboard tack then. For the fore and aft sails, things are just as they would be on a yacht, the wind will push against the sails and move the vessel forwards; all you have to do is decide how far out to let the booms go.

Armed with this knowledge, sailing Carl Vinnen is relatively simple. If the wind is from astern, the yards are squared, the booms

"She's a large model, with a big, heavy sailing keel, so can stand plenty of wind and waves"

let out and away she'll go. It isn't long before the opposite bank of a pond starts to loom, however, so, at that point, we will have to turn, towards the wind, and start to 'beat', that is to make progress to windward. The yards on fore and middle are braced round on to the appropriate tack, let's assume port, and the sheets of the five fore and aft sails are pulled in, which will allow us to come closer to the wind. Like this, the model will sail in a 'balanced' manner, hands off. Remember, there are no spring-loaded sticks, except for channel one, for the rudder.

Eventually, we will run out of water again and the model will have to be 'tacked', turned, across the wind to get the breeze from the other side. In our example we are on the port tack, so we will turn hard to port. As she swings across the eye of the wind, we'll brace the square sails on the middle mast right round on to the starboard tack. The foremast square sails will now be 'caught aback' (with the wind from in front). Like this, they will push round the bows until success with the manoeuvre is assured. When this point is reached, the foremast yards are also braced round on to the starboard tack and the little vessel will gather way on the new tack.

Depending on how close to the wind we wish to sail, we'll have the fore and aft sails pulled in in the case of fore, main and middle masts (remember, they're on the toggle



Pitching into a head sea.

switch of channel six), or controlled part way out on the mizzen and jigger. The sails on the after two masts are also used when tacking. They are pulled in, the better to push round the stern to help with the turn across the wind. The vessel can also turn away from the wind by letting out the fore and aft sails and bracing the square sails as the turn is made, to keep them, more or less, at right angles to the wind.

Sailing Carl Vinnen is as simple as that. She's a large model, with a big, heavy sailing keel, so can stand plenty of wind and waves. Being mainly fore and aft rigged, she can sail closer to the wind than a proper square-rigger, which is good, but, if you throw all the yards aback, she doesn't stop in her tracks as a square-rigger model can do, which means you have to avoid 'emergency stop' situations!

All in all, this was an interesting build, resulting in a very different boat to sail; one that attracts lots of interest and prompts plenty of comment due to her unusual rig. If you'd like to see her on the water, I've included the links below:

<https://www.youtube.com/watch?v=4S2txf67wLc>
<https://www.youtube.com/watch?v=0nLDhQVDzUM>
<https://www.youtube.com/watch?v=8WJHN8NpT7k> ●

"Having provided myself with the wherewithal to control this press of sail, how did it go in practice?"



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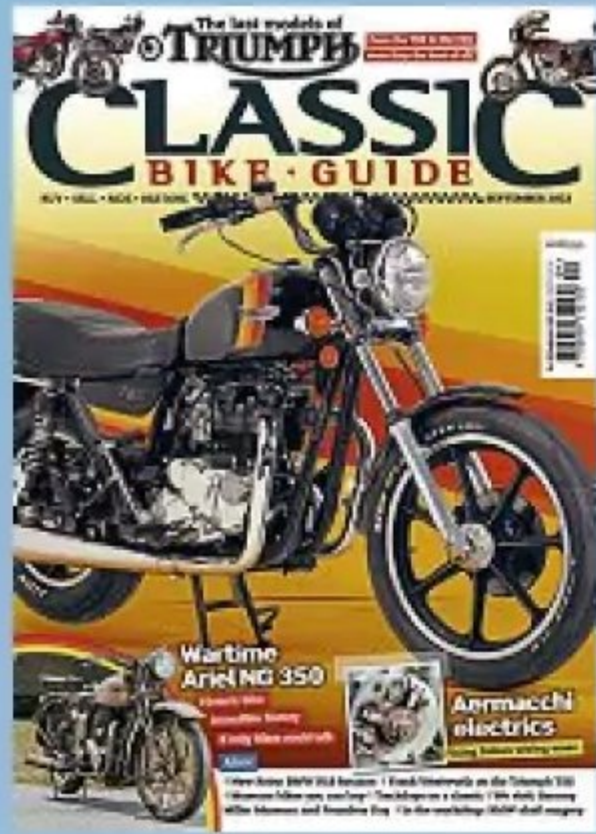
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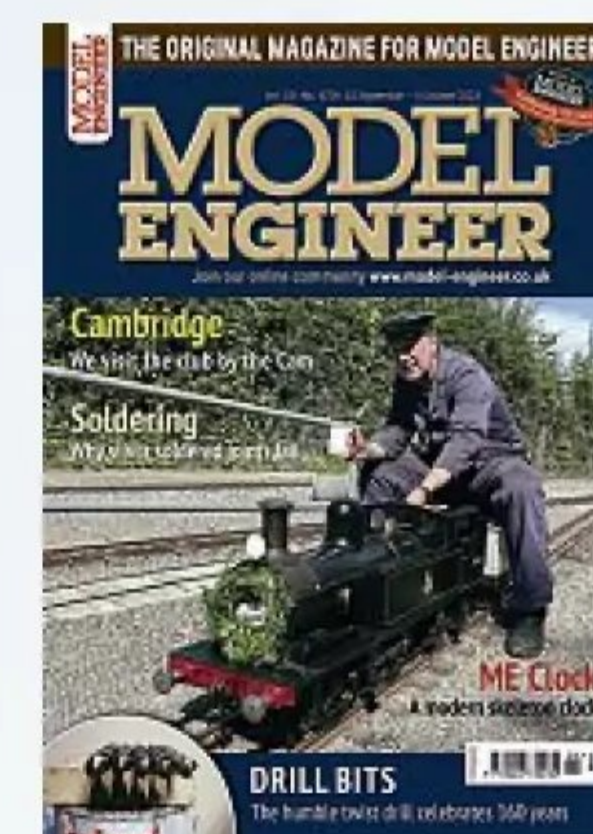
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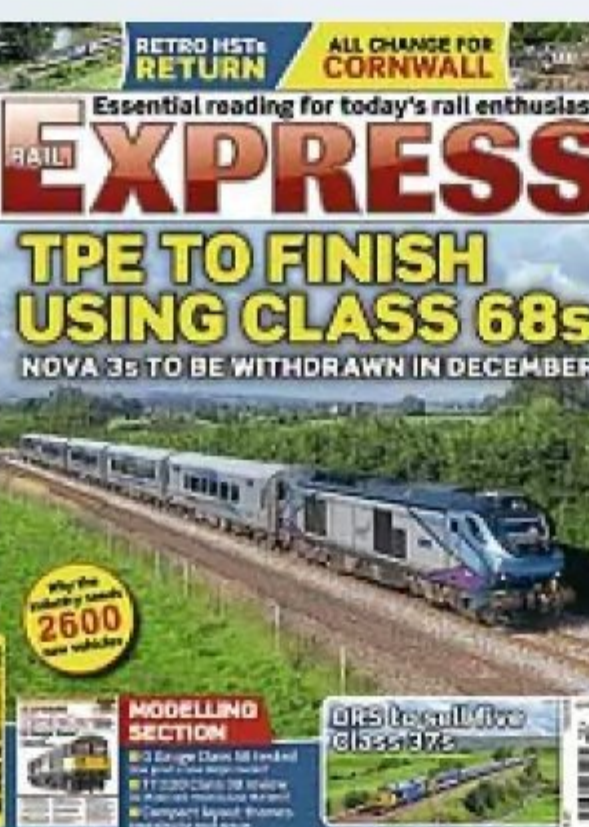
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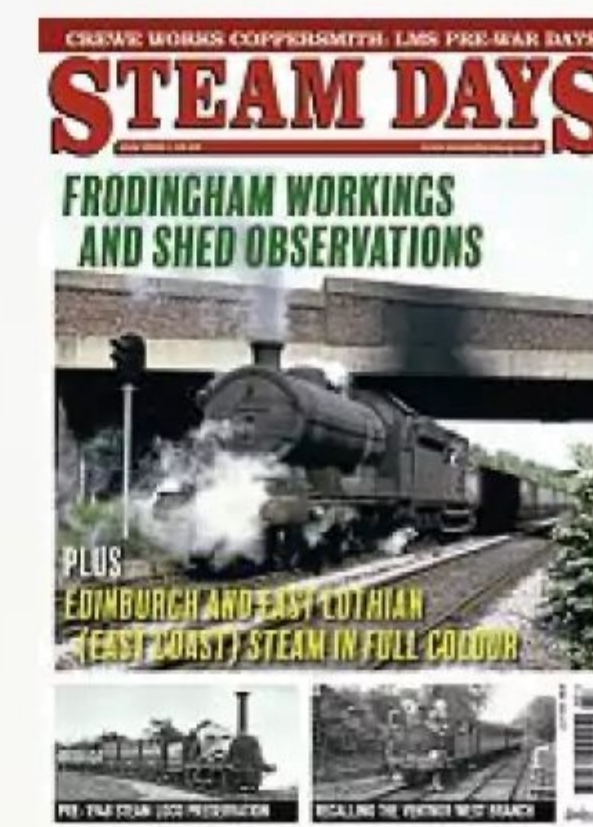
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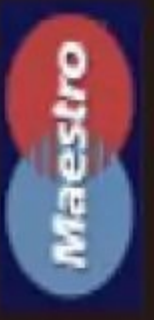
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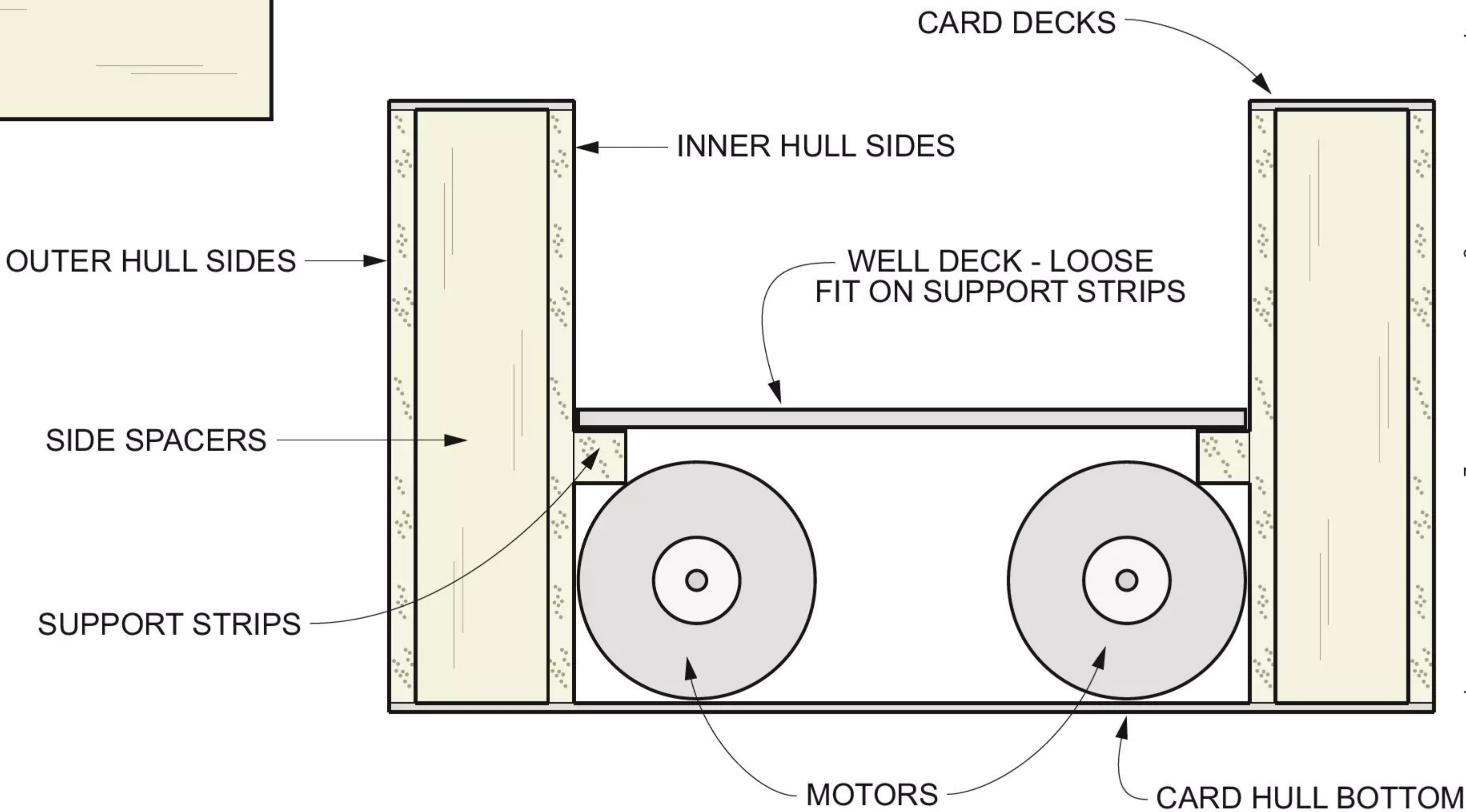
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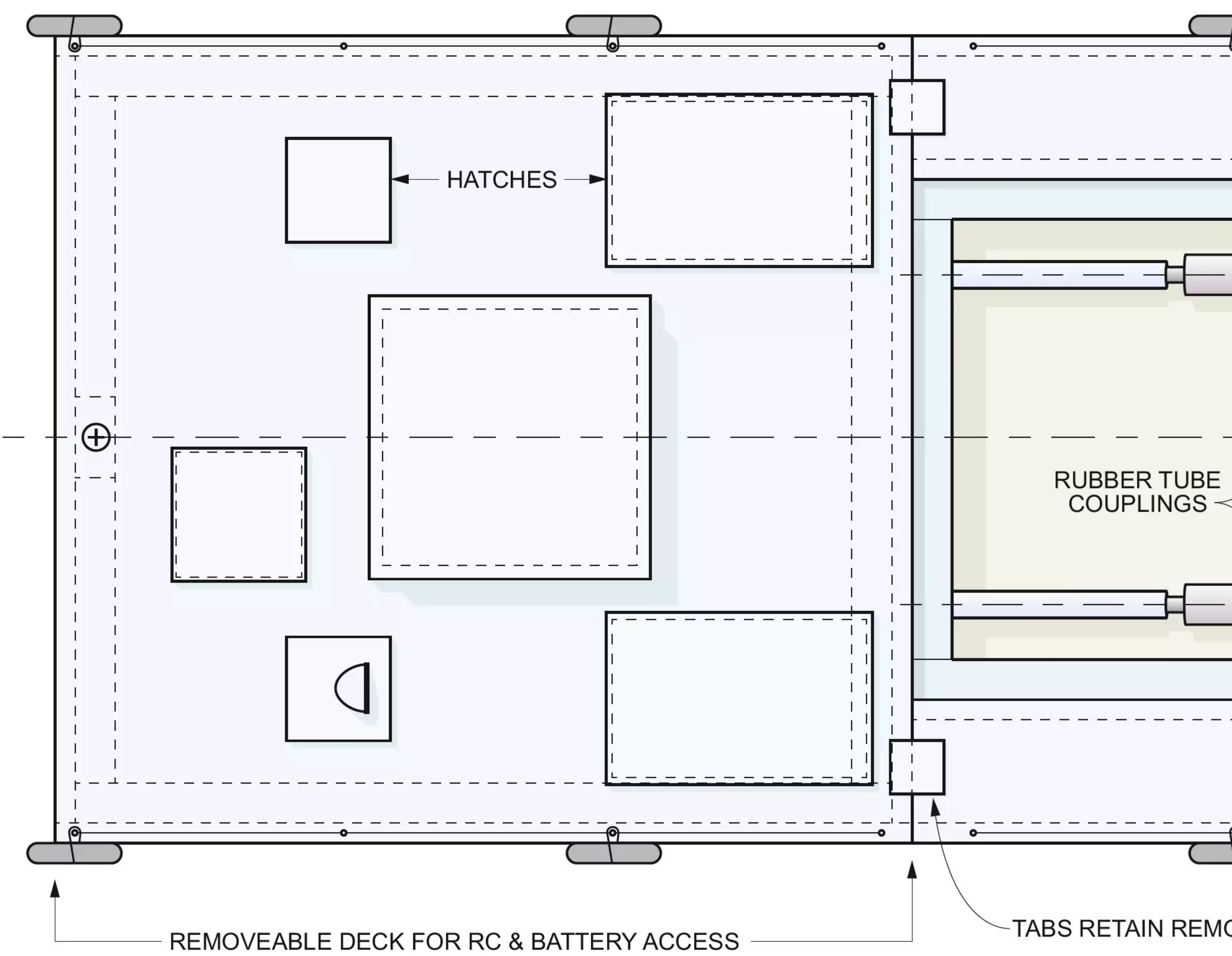
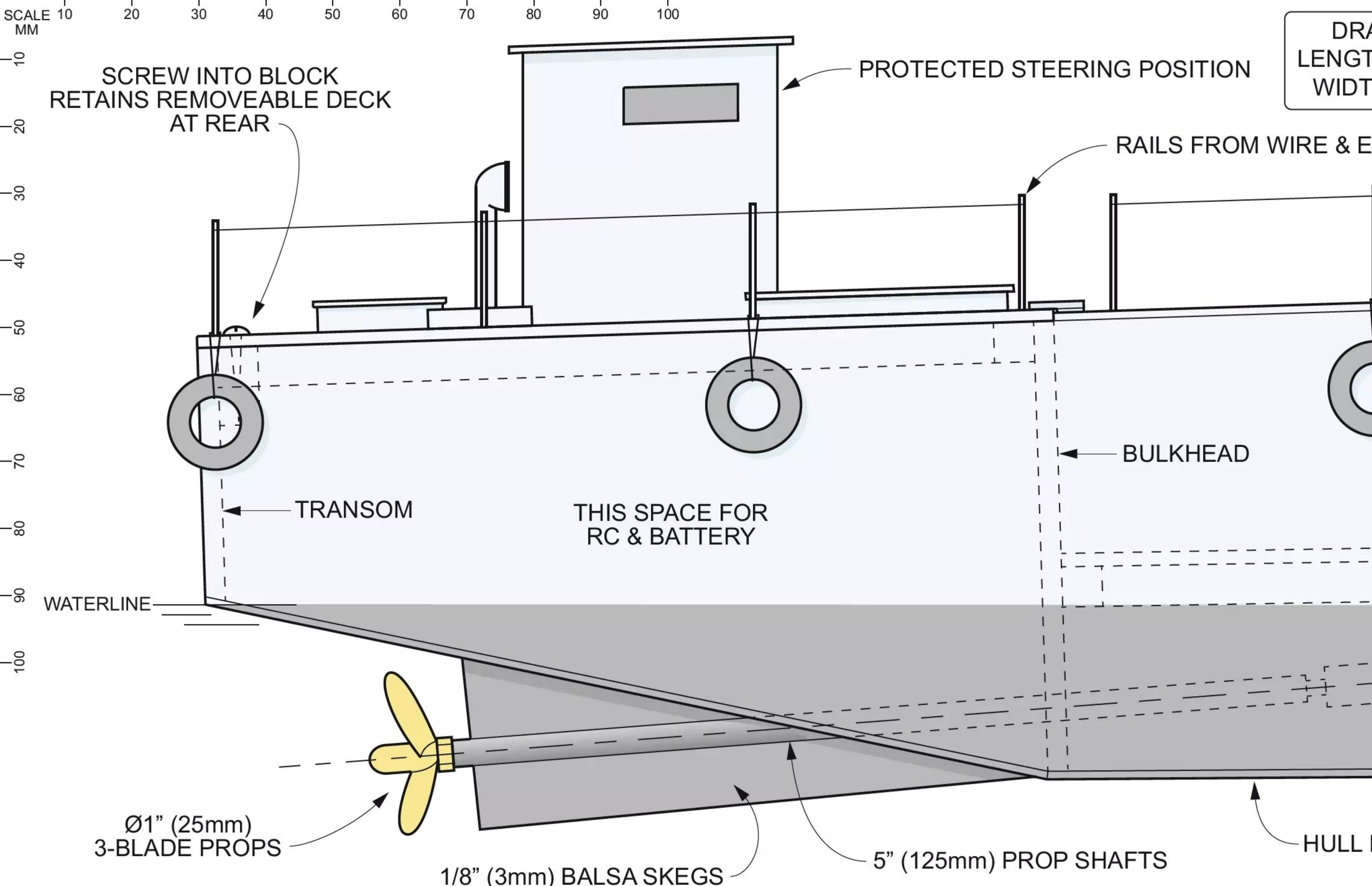
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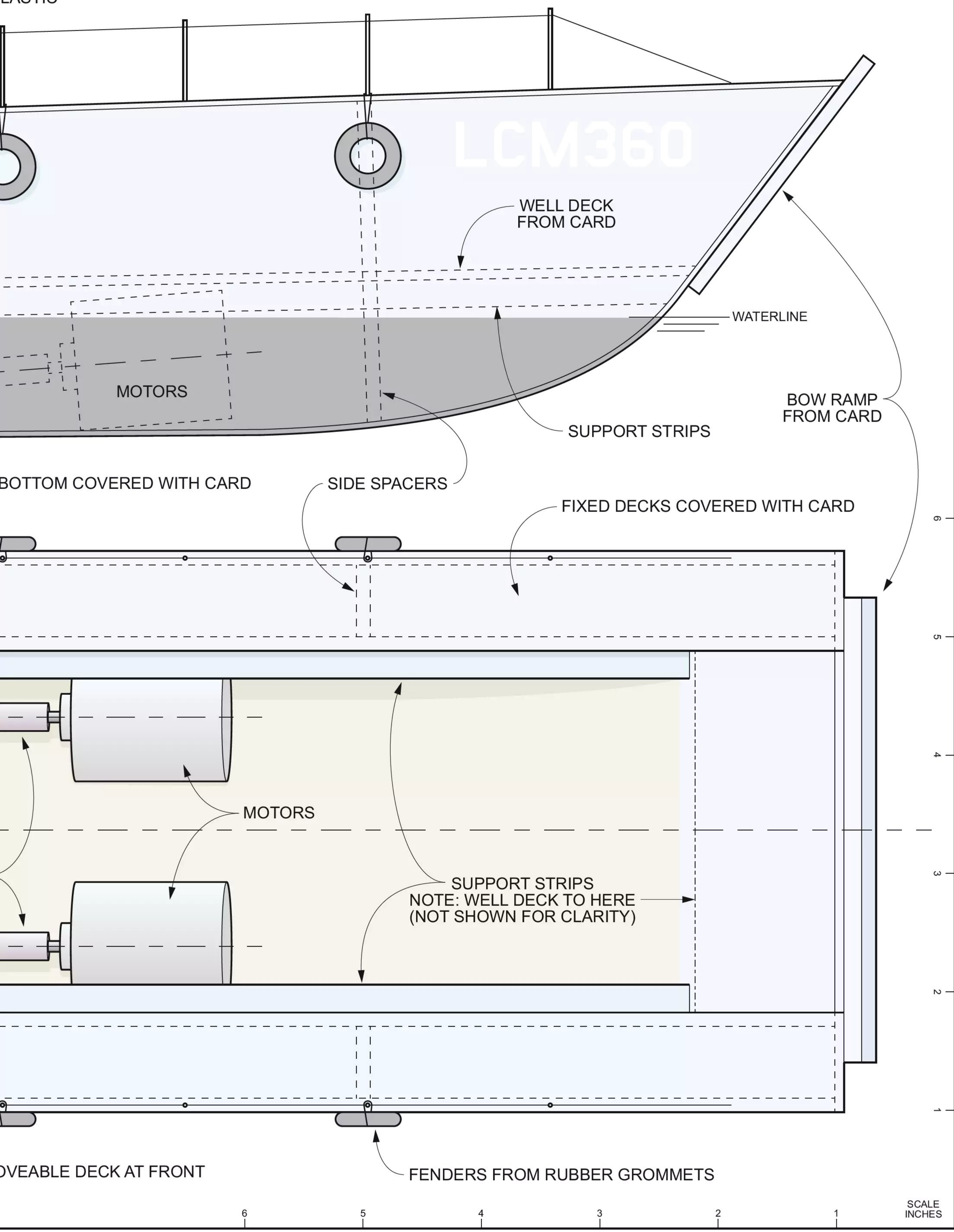


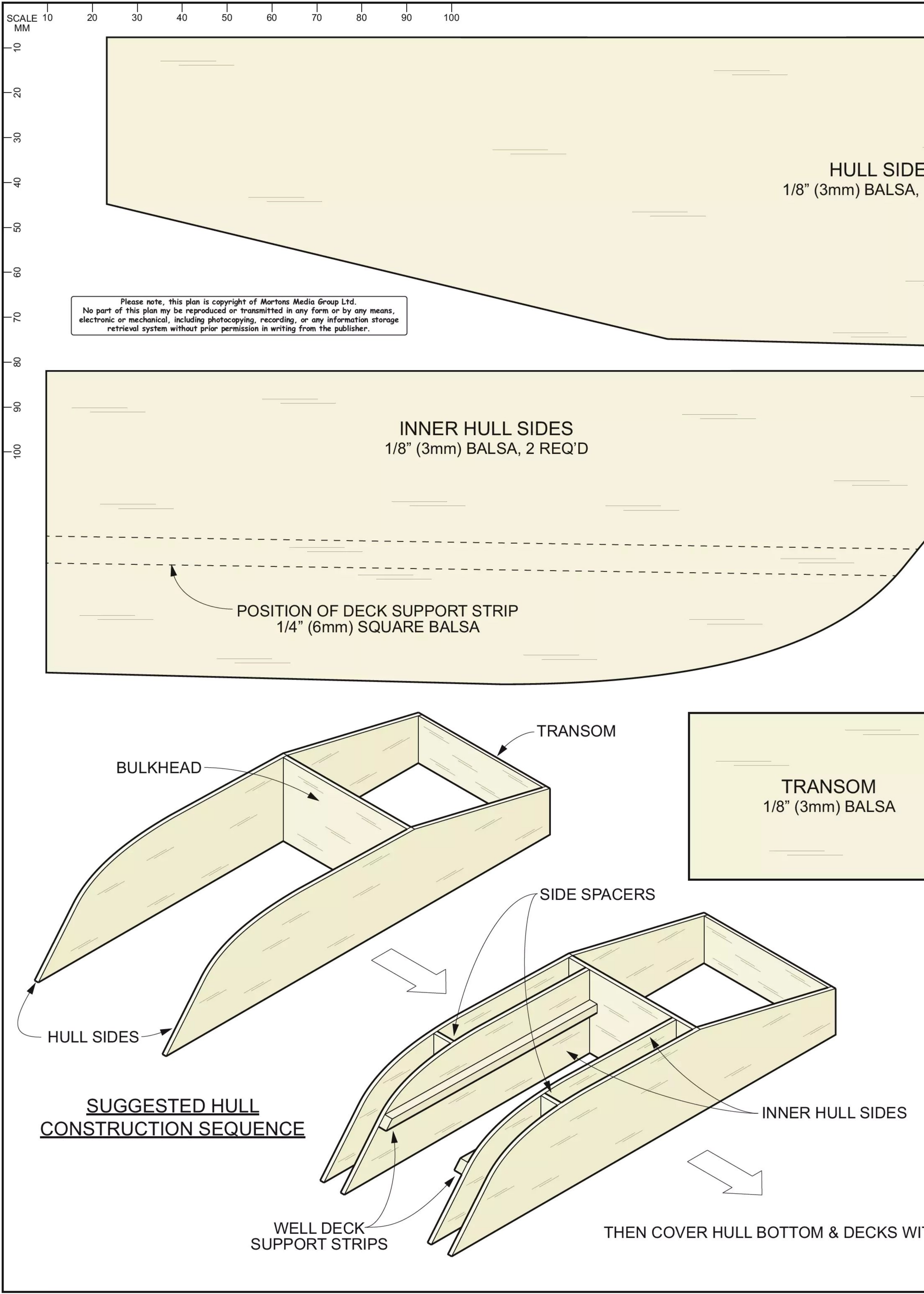
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PLOVER, **THE GRAVEL** **PIT TUG**

David Marks provides an accompanying guide for the neat, easy-build model that can be created from this month's free plan

“I wanted my model to incorporate a Kort nozzle for steering, something many vessels of this type use to increase manoeuvrability”

The Model Boats Winter Special 2019 (see **Photo 1**) featured a free plan for a freelance pusher tug called *Boston Lock*, which reminded me of the gravel pit tugs that operated close to my home back in the 1950s and '60s. These were the more conventional tow tugs, but all had tall cabs (like *Boston Lock*) which made them appear top heavy. The design of *Boston Lock* was fairly basic, so, as suggested in the build description, I enhanced the design and increased the size to make it suitable for a 1:12 scale figure, resulting in a model with overall length of 580 mm and beam of 233 mm. The colour scheme chosen was influenced by that once used by the St. Albans Sand & Gravel Company for its road vehicles and the vessel was given the name *Plover*. The build notes that follow reflect the 'lessons learnt' during construction.

I wanted my model to incorporate a Kort nozzle for steering, something many vessels of this type use to increase manoeuvrability. Luckily, an offcut of 50 mm* domestic plastic waste pipe proved a suitable size, with a bore of 52 mm which allowed me to use a 50 mm propeller, which in turn influenced my choice of motor, batteries etc. (*N.B. 50 mm/2 inch is used for identification purposes; the actual outside diameter is 56 mm.) So, work commenced, with the rest of the design evolving as construction progressed.

Construction materials

For the hull assembly, including the main deck, I used birch ply, plus some softwood. For the upper deck, cab and most of the fittings I switched to styrene, often called Plasticard. If you haven't used styrene as a modelling material before, may I suggest

a very good book on the subject, *Making Model Boats with Styrene* by Richard Webb; this can be purchased from Sarik Hobbies, via 'Supplies' on the Model Boats website.

Specialist tools

The tools used (see **Photo 2**) were those I've purchased over the years specifically to support my model boat building. The hot air gun (300W) was employed to bend the styrene but had originally been purchased for fitting heat shrink sleeving when undertaking wiring. The bending tools used when forming the brass rod for the safety rails, etc, are produced by the American manufacturer Du-Bro and marketed under the trade name E Z Bender; these are available from UK outlets. Prior to forming bends in brass, it is advisable to anneal the area of the bend to stop the material from fracturing, hence the little Butane torch.

In a few places in the text, you will note that to produce a certain feature I have used a 'bit of tooling'. This tooling is made from off-cuts of material (usually wood) to make the job easier and hopefully achieve the desired result(s). To overcome the arguments of 'Is it a jig or is it a fixture?' – actually it's neither, it's simply a *bit of tooling*!

For all the main modules of the build, e.g.,

cab, hull, etc, the notes on the plan detail the component parts of each one. I will therefore use these building notes to explain how I went about the construction.

Kort nozzle

The purpose of the M3 female thread within the saddle and the corresponding male thread on the end of the rudder shaft (see **Photo 3**) is to facilitate final assembly. With



“For the hull assembly, including the main deck, I used birch ply, plus some softwood. For the upper deck, cab and most of the fittings I switched to styrene, often called Plasticard”



the 50 mm prop fitted, the Kort nozzle can be assembled over the prop, and finally the rudder shaft connected with a little cyano added to the thread.

The hull and main deck

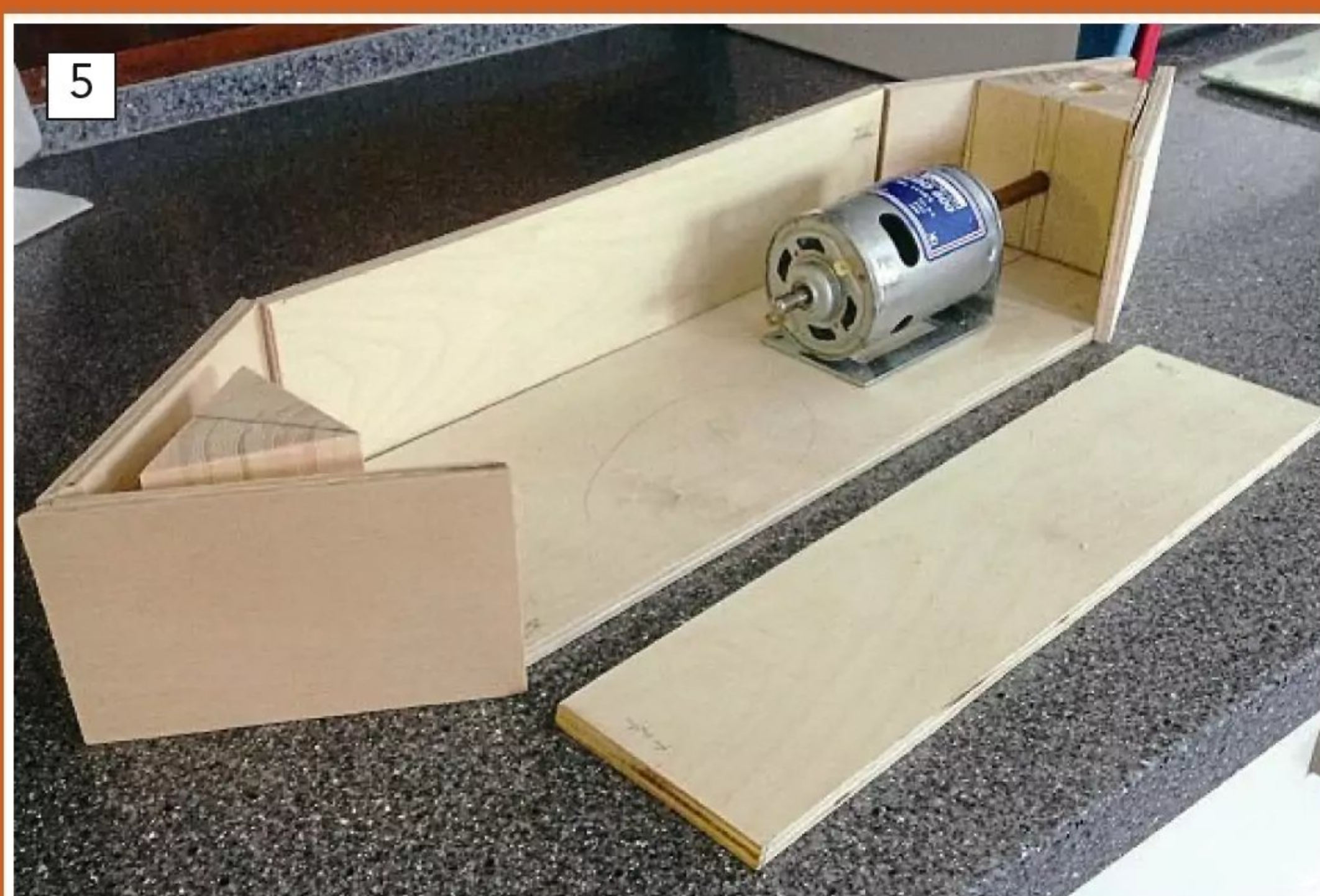
Here we're looking at some basic carpentry, with the base pieces for both the lower hull and main hull cut to size, then weighted/clamped down onto a flat building board and the side pieces built around them (see **Photo 4**), thus ensuring that the joint lines are out of sight. The bow and stern blocks are then

“Prior to forming bends in brass, it is advisable to anneal the area of the bend to stop the material from fracturing”

added, with the latter drilled to accept the propellor shaft (see **Photo 5**).

For the four radiused corners (soft wood blocks) of the main hull I used 'rebated' joints for extra strength; this method requires adding small fill-in pieces made from scrap ply on the underside of each corner piece (see **Photo 6**). If cutting a rebate is not your thing, then some strategically placed

pieces of scrap ply attached to the softwood will achieve the same goal. The cut-out in the base of the main hull was produced undersize, so that it could be trimmed flush with the inside of the lower hull following assembly. Lower and main hulls were brought together and assembled with stainless steel wood screws to augment the adhesive. I cut the main deck from 6.0 ply to sit inside



“If cutting a rebate is not your thing, then some strategically placed pieces of scrap ply attached to the softwood will achieve the same goal”

the lip of the main hull (see **Photo 7**) but with a 1.6 mm capping piece added to over-sail the outer edge of the main hull, thus making the joint line as discrete as possible. The cut-out for the upper deck was then made and the coaming fitted, and I also made the cut out for access to the rudder.

The fitting of the main deck was not undertaken at this stage as I wanted to leave the hull assembly open until the last possible moment to provide easy access when fitting the motor, receiver, ESC, etc. Also, as construction progressed, I made cardboard templates of the areas where sheet lead could later be placed for ballasting in order to get the model low enough in the water. I knew that *Plover* (being flat bottomed) would need a lot of ballasting and the prototype consumed 4.0 Kg of sheet lead, mainly located in the lower hull.

The upper deck

For access to the motor, battery pack, etc, this needs to be easily removable but also a snug fit on the coaming of the main deck. To achieve this, I covered the outer faces of the coaming in thin card (cereal packet) held in place with Sellotape (see **Photo 8**). The build of the upper deck was undertaken in situ around the coaming (see **Photo 9**) and when complete the card was removed and the resulting gap provided the correct degree of fit.

The upper deck has its own coaming, to provide a location for the cab, plus two more for the lift off hatch covers which provide access to the battery charging point and on/off switches for the motor, lights, etc.

Cab body

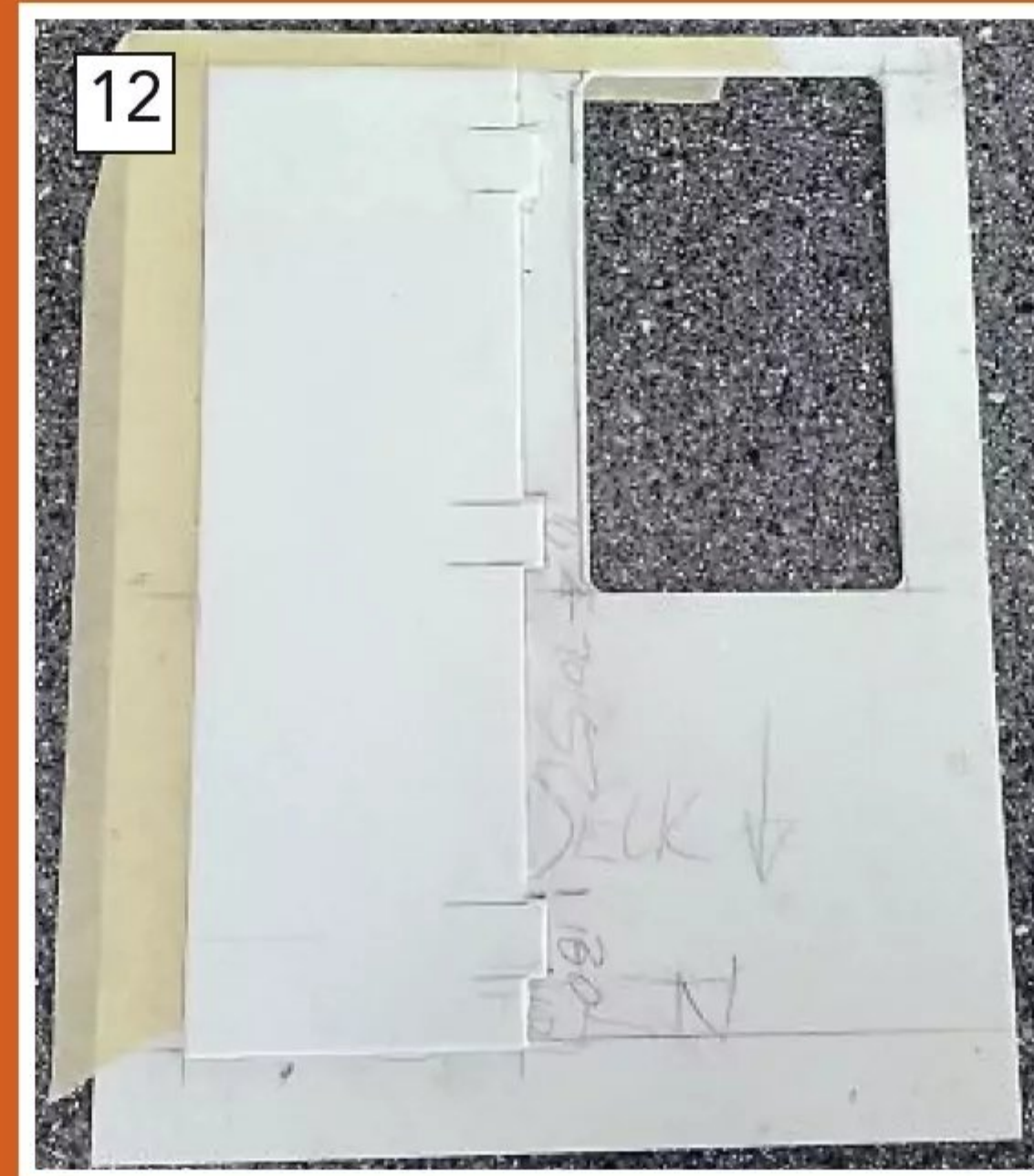
This needs to be a snug fit on the coaming of the upper deck. A dummy coaming in softwood, 1.0 mm larger than the actual



coaming was, therefore, created (see **Photo 10**) and the four panels making up the cab body built around it. This gave a 0.5 mm gap all round, and being made of softwood did not react with the liquid solvent. The port/starboard panels are identical so were made as a pair, held together with double sided tape (see **Photo 11**). The bow and stern panels followed, made as a pair for the starboard windows, then separated. The access door was fitted to the stern panel (see **Photo 12**) and the remaining window

apertures were cut out on both panels. The panels were then dry assembled on the dummy coaming, held together with masking tape and the joints solvent welded. Once set, the assembly was carefully removed and subjected to a trial fit on the upper deck coaming. I then added a length of 6mm square styrene tubing to each internal corner, which not only reinforced the joints but would also provide access (a conduit) for the wiring for the internal and external cab lights.





Cab roof

This was made as a stand-alone item and only fixed to the cab body once the wiring runs for the lights had been installed. I made the cab ceiling in two parts. Firstly, I cut a piece of 1.5 mm styrene so that it was a snug fit inside the upper lip of the cab. This was then backed with a piece of 0.75 mm styrene made slightly bigger than needed, fixed in place with cyano and, once this was set, placed in position and trimmed back to match the cab. The ceiling requires two holes for 5 mm LEDs to illuminate the inside of the cab and a short length of 3A connector block for all the cab lights. Using the cab ceiling as a base, I then commenced on shaping the two softwood formers for the curved and angled parts of the roof (see **Photo 13**). I also formed a conduit (with a round file) in each corner, plus one in the middle to accommodate wiring for the lights (see **Photo 14**). Angled faces were clad with 1.5 mm styrene before attaching them to the cab ceiling with two brass screws per side, plus some Deluxe Materials Super Phatic adhesive to seep into the joint. Softwood strips were added along the port/starboard edges of the ceiling, again, using Super Phatic, and once set, sanded back to match the curvature of the roof. The curved roof was then clad in styrene using two layers of 0.75 mm material, allowing the first one time to set before adding the second. I considered this two-layer approach would be better than trying to form one 1.5 mm layer over the curve. Excess material was then



trimmed back before the centre area was cut out to gain access to the 3A connector block (previously mentioned) and for undertaking the wiring (see **Photo 15**). Finally, the cover plate was made, commencing by cutting a piece of softwood to fit the roof cut-out and sanding to match the roof profile. The centre of the softwood was cut out (to clear the connector block), then the profile was clad with 0.75 mm styrene. From laminated styrene I made the two mounts for the roof light and the antenna base before attaching them to the roof and cover plate.

Pusher knees and pads

I purchased some rubber square-edged U moulding of suitable size to form the pusher pads, so the pusher knees were made using birch ply and softwood to accommodate this material (see **Photo 16**). This involved making a bit of tooling and, using a Swann Morton scalpel with a new/sharp blade, cutting the U moulding to length; this resulted in a very precise, crisp cut and the effort of making this tooling proved well worth the effort (see **Photo 17**). To give some detail to the pusher knees, I added some dummy fixing bolts fashioned from the tops of some 8BA brass hex head screws fixed with cyano.



Bulwark

Here, a strip of 2.0 mm styrene, 25.0 mm wide and about 25.0 mm over length was cut. Again, a bit of tooling was made so that the two angled sections of the bulwark would be symmetrical. The main features of this tooling are shown (see **Photo 18**) with a 'target line' marked to illustrate the desired profile of the component. The styrene was clamped against the fixed block, the area of the bend heated with the small hot air gun (previously mentioned) and the bend generated by moving the pivot block. Styrene has a large amount of 'spring-back' and therefore once

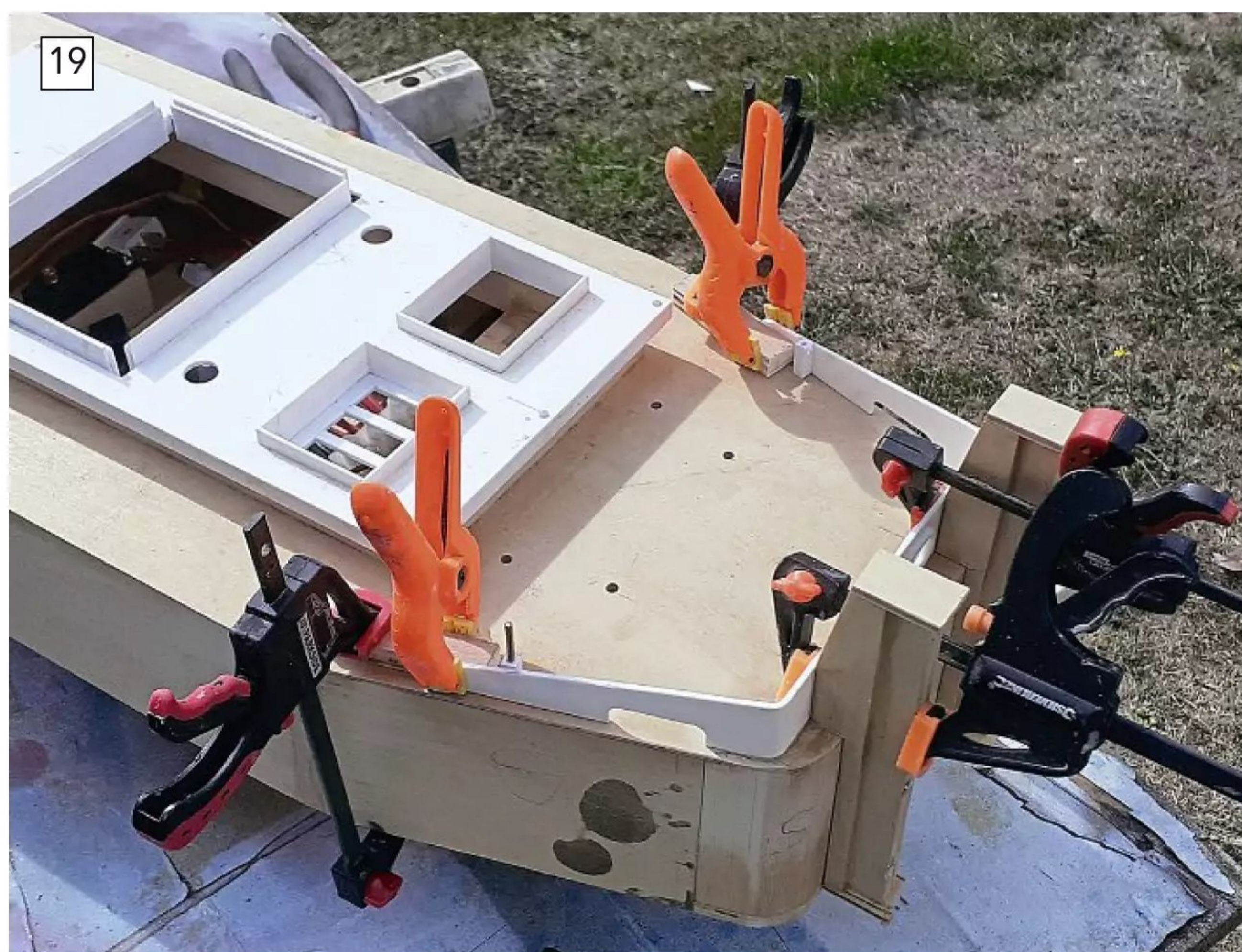


cooled and the pivot block moved away, the bend angle greatly decreased. This was overcome by 'over-bending', i.e., moving the adjustable stop block a little further round and bending again, then repeating as necessary until the bend (in its relaxed state) matched the target line. Following this, leaving the adjustable stop block in place, the bulwark (complete with one bend) was flipped over, and the second bend generated.

In addition to producing the two freeing ports, cut-outs were needed for the two cable fairleads. Again, as I'd done with the pusher knees, dummy fixing bolts (four) were fitted. Also, along the inner faces of the bulwark, dummy supports were fitted, one either side of the freeing port(s) and a third equi-spaced towards the cab. This third support contained a brass pin to retain the end of the bulwark on the main deck. Using a piece of brass of the correct diameter, I filed a point on the end (like a wood nail) and used this, plus a small hammer, to produce a centre point to guide a drill of the correct size (see **Photo 19**). It took some time to get the position(s) correct, as the bulwark runs close to the edges of the main deck, so symmetry was of utmost importance. When fitting the bulwark to the model, there is sufficient flex in the styrene for it to fit with the pusher knees already in position, and no adhesive required.

Deck winch

Pusher tugs normally feature a winch to position and retain the dumb vessel against the pusher pads. I had a rough idea of what



I wanted and via eBay I obtained two plastic reels which resemble cotton reels, which I think are intended for young children to use for counting, colour identification, etc. The bore diameter of these was 5 mm, so I made a shaft from a piece of M5 studding (threaded rod) in stainless steel. The remainder of the winch was fabricated from

laminated styrene, plus some small pieces of brass rod to replicate hydraulic pipes (see **Photo 20**). A couple of M5 nuts held the assembly together during construction but were substituted for two pieces of 10mm diameter plastic, each containing a blind M5 hole, upon completion. From eBay, I purchased some sewing cord of 2 mm diameter in metallic silver to simulate the winch hawsers (wire cables), hence the 2.5 mm diameter hole (identified with an arrow) drilled in each plastic reel through which the sewing cord could be threaded. The two reels were assembled with the drilled holes inboard (and close to the deck) so that the sewing cord could be knotted and the knot hidden in the void in the reel. Between the winch and the main deck is a plinth made from 2 mm styrene. To make the painting stage easier, I decided that the winch would have location dowels (four in number) going through the plinth and then into the deck. I also added some dummy fixing bolts to the plinth, as I did with the pusher knees.





Tow hook

I decided *Plover* should also have the ability to tow dumb vessels. This was achieved by incorporating a tow hook, which was made from laminated styrene to a design cribbed from a tug called *Plaudit* (a David Metcalf design) which I had previously modelled. Once fitted, this tow hook also conveniently disguised the cut-out in the stern area of the main deck used for access to the rudder shaft. Again, I added some dummy fixing bolts.

You will note that the tow hook includes a latching device which needs to have a strip of styrene formed into a shape like a stirrup and embracing the body of the tow hook. So, yet another *bit of tooling* was produced (see **Photo 21**) with the diameter of the wooden dowel matching the width of the tow hook body, which in my case was 10 mm. At room temperature, I found that the styrene easily formed around the dowel to produce a shape like a hairpin, but when released suffered with 'spring-back'. I therefore held the styrene in place with a wooden block and gently heated it with the small hot air gun used previously so that when released it retained the desired shape.

Exhaust

This was made from pieces of 8.6 mm diameter styrene tube and a piece of 15 mm plastic plumbing pipe for the silencer section. I chose to trim down some wooden dowel to fit inside both sizes of tube, this then held in place with cyano. At each joint I inserted a small diameter brass rod to act as reinforcement, plus a piece of brass rod to locate into the upper deck. For realism's sake, I decided that the exhaust should have at least one fixing bracket to the cab; a potential stumbling block here, however, was that I wanted the cab to be easily removable. After some thought I decided that a bracket fitted between the upper face of the silencer and the dog-leg part of the exhaust would work. So, a suitable bracket was made by forming a piece of 1.5 styrene into an 'L' shape and then drilled to accept the 2.0 mm brass rod between the two parts. The two lower sections of the exhaust, therefore, can be held together with cyano, but the upper section needs to be removeable.

Safety rails, grab handles, etc

These were all made from brass (mainly rod) as detailed on the plan and joined with soft solder. For all items I made up a *bit of tooling* to hold the individual component parts in the correct relationship to each other while they were soldered, and, wherever possible, used the same tooling to drill the location holes for the item (see **Photo 22**). The completed safety rails (see **Photo 23**) hopefully demonstrate the benefits of the time taken to produce the *bit of tooling*.

Cab interior

This was populated with a driver/steerer sitting on a seat in front of a steering wheel and control panel. As the cab is detachable, I fitted a lift-out cab floor by fitting a support strip around the inner lip of the coaming, which allows the floor to drop into place. Both the driver's seat and the steering column/control panel were made from styrene, and the driver needed to be on a raised plinth. To allow a pathway for the sound generated by the sound module via a 100 mm speaker, I cut a 25.0 mm hole under the driver's seat and a slot in the plinth upstand. The levers on the control panel were made from coloured mapping pins.

Cab, final assembly and fitting

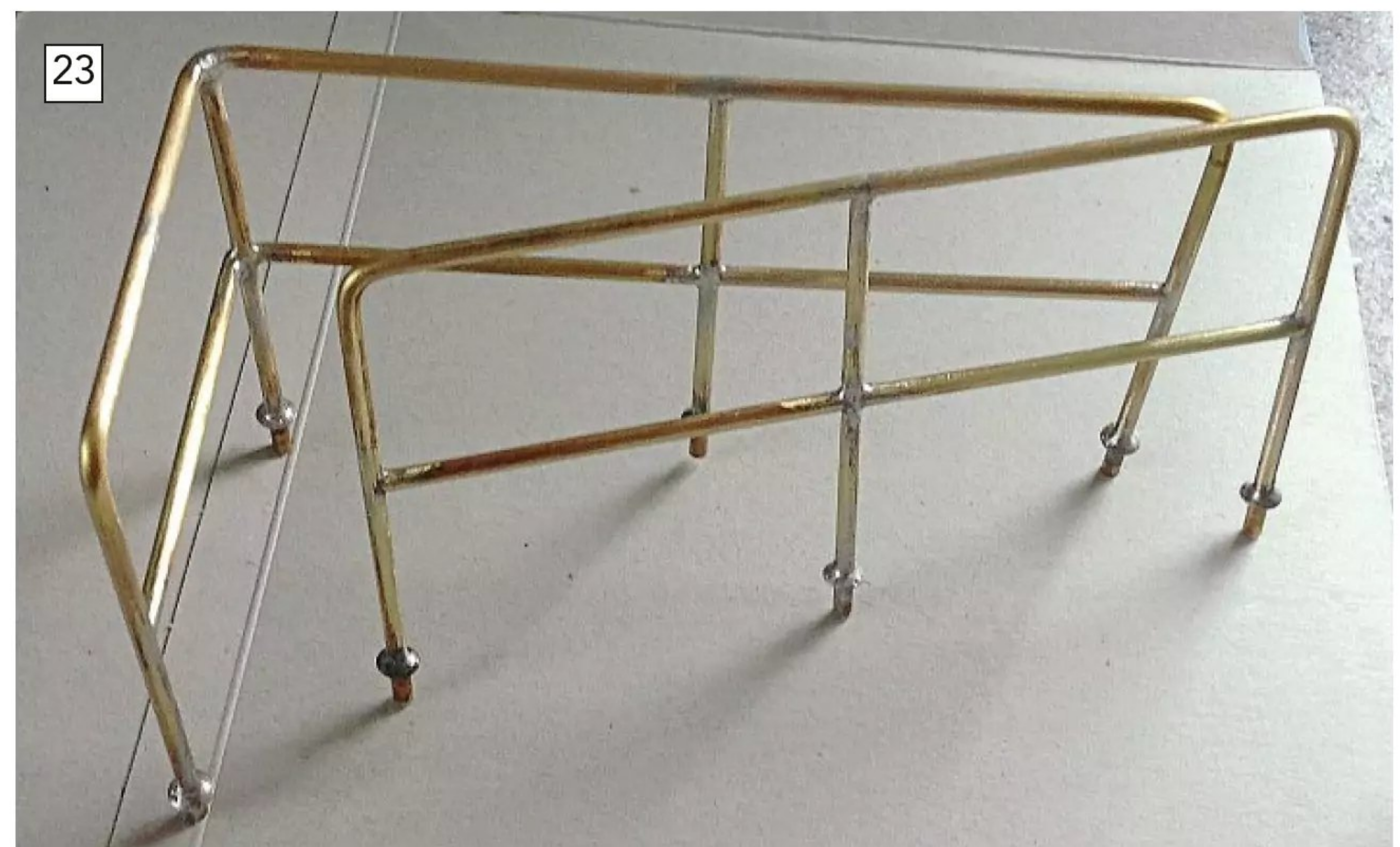
After inserting the wiring runs for the cab lights, I joined the body of the cab to the cab roof using cyano and filled and fettled the joint using Isopon P38, plus some Deluxe Materials Plastic Filler, and did the same with all the other styrene items.

Decals

These were all produced utilising 'Word' on my home computer and printer. Decal paper needs to be purchased to suit the printer type, i.e., ink jet or laser, and in clear or white, dependent upon the colour of the decal and the colour of the background to which the decal is to be attached. There is lots of information available on the internet, YouTube, etc, as this is a process widely used by the modelling fraternity. Also, a very good article on the subject entitled DIY Decals by Armando Loni appeared in the July 2012 edition of *Model Boats*.

Glazing

I used 1.0 mm clear acetate sheet in four pieces, with the piece containing the door cut as if the door window is partially in the down position. This allows a passage for the sound produced by the sound module.





A special adhesive (normally referred to as Canopy Glue/Cement) is required when fixing clear acetate to a model, as the use of cyano will make your acetate go 'milky'.

Painting

Many modellers (myself included) use Halfords car paint for their models. However, as requirements for my vision of the colour scheme here were fully met by the range of colours available from Wilko, I decided to give its rattle cans a try. Also, these were found to be Satin straight from the can, as opposed to Halfords paints being Gloss. Most modellers will be aware that it's best to select all your colours from the same brand when finishing a model, as sometimes one brand of paint will react with another. That said, if considering the use of any paints you're uncertain about or not familiar with, I'd strongly recommend trialling them on a test piece first. For Plover, I sealed a scrap piece of plywood with non-shrinking dope and then applied the paints and lacquers in the order in which they were to be used. No problems at all; in fact, I was very pleased with the performance of the Wilko paint.

Electrics

As a minimum, for all model boats you will need to connect up the batteries, motor, ESC, etc, plus the receiver and servo. Modellers may also want to include items such as sound modules, bow thrusters, etc. I always like to draw myself a basic wiring diagram, commencing with the power source (batteries) and then 'walking through' the complete set-up, bearing in mind many items are 'polarity critical', meaning that if you get it wrong it's a replacement item or a costly repair. For items such as the ESC it's advisable to match the connections fitted by the manufacturer so that, for example, the item can be removed for use on another model. All joints, e.g., wire to a spade terminal, should be soldered, and, if you make use of terminal blocks (a.k.a. choc-strips), as most modellers do, remember that these are designed for wires with solid cores.

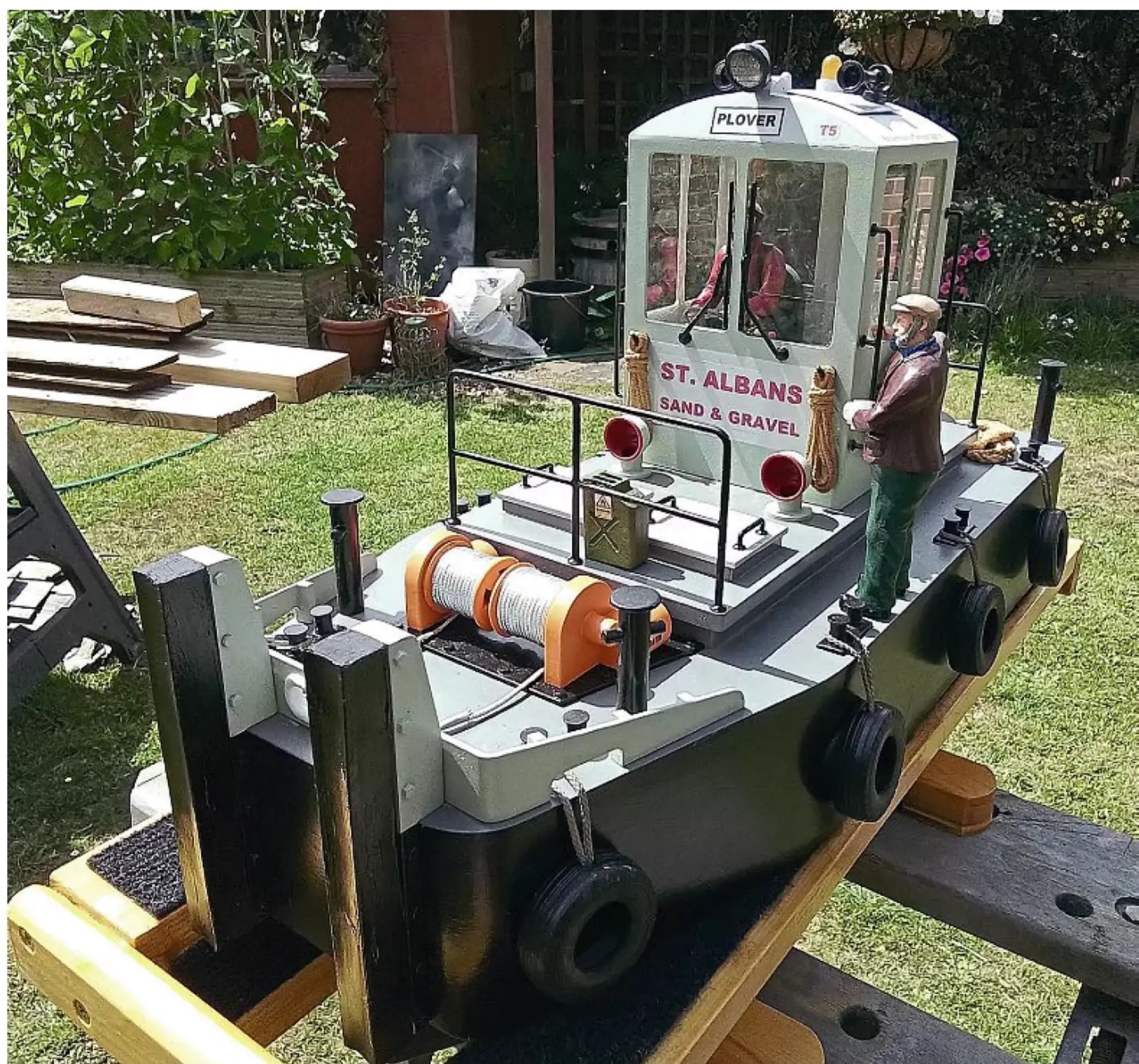
For the multi-strand wires used in our models it is best to solder, often referred to as 'tinning', the end of the wire so the connection

"A special adhesive (normally referred to as Canopy Glue/Cement) is required when fixing clear acetate to a model, as the use of cyano will make your acetate go 'milky'"

is solid. On the subject of terminal blocks, Component Shop can supply 'pluggable terminal blocks' (in two different ratings), allowing sections of wiring to be quickly detachable. I made use of this on Plover for the wiring going to the lighting in the cab. I equipped the prototype with three items from the Action Electronics range, marketed by Component Shop, as defined on the plan.

Stand

From some off-cuts of PAR timber, a stand was made for Plover – this consisting of two inverted L shaped members sitting under the upper hull and along the flanks of the lower hull, with strips of self-adhesive carpet tile used to protect the paintwork (see Photo 24)





Ballasting

With the model basically complete, it was time to undertake a dunk test. Stage 1 went OK, i.e., *Plover* didn't sink or capsize, but the 'freeboard' was well in excess of the 30mm max that I wanted to achieve. So, from my local Wickes, I purchased a roll of lead flashing (Product Code 241450) and loaded the available areas in the lower hull, plus some in the upper hull. The lead was easily cut on a band saw (but a hacksaw or tin snips will achieve the same result) and the individual pieces were held in place with some cheapo Lidl two pack epoxy. As the lake where I now sail has plenty of calm water areas, I ballasted the hull to give 20 mm of freeboard amidships, with a slight bow-up, stern-down stature. If the water where you sail, tends to be a bit on the 'choppy' side then increase the freeboard.

While in the dunk tank with all the deck clutter and two crew figures added I undertook a quick manoeuvrability check, i.e., ahead, astern, turn to port and starboard

“For those of you who have never scratch built before, I believe Plover would be a great starting point, as there's nothing particularly difficult to tackle in terms of construction”

(all in the limited space available) and I was very pleased. With some models going astern can be a problem – not so with *Plover*, she steered straight and with no loss of power or any hesitation, so my design of the lower hull must have been OK.

Next came some proper lake trials at my local Chantry MBC in Kent. Again, *Plover's* manoeuvrability proved excellent and, due to the Kort type rudder (or nozzle) fitted, the model turned almost within its own length (see **Photo 25**).

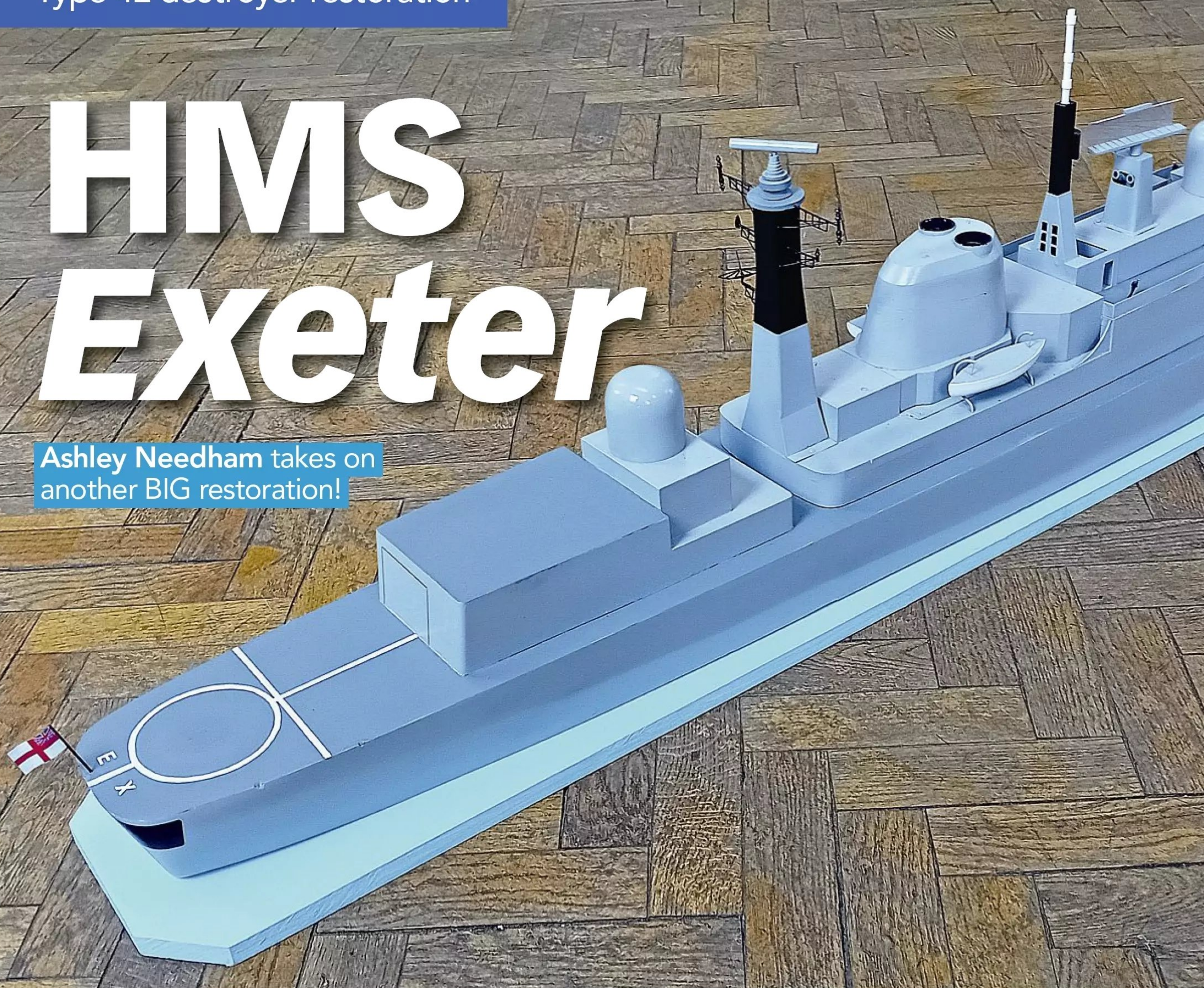
No fears for first timers

For those of you who have never scratch built before, I believe *Plover* would be a great starting point, as there's nothing particularly difficult to tackle in terms of construction.

Finally, you may be wondering why the name *Plover* was chosen. Well, I was looking for a link to St Albans and noted that the river flowing through the town is the Ver. I am not sure of the origin of this name, but the Romans built a large settlement on its banks and called it *Verulamium*. So, looking for a suitable name incorporating Ver, I ended up with *Plover* which I knew was a wading bird, habituating areas of shallow water. Indeed, two of the four members of the *Plover* family common to the UK, the *Ringed* and *Little Ringed Plover*, inhabit gravel pits. So, I think *Plover* is an appropriate name for a gravel pit tug. But once you've completed your build, you can, of course, personalise it with a name of your own choosing. ●

HMS Exeter

Ashley Needham takes on another BIG restoration!



I run a dance band, a 15-piece big band in the Glen-Miller style, and we rehearse in the premises of a Sea Cadet unit, TS Saumarez in Teddington. It's a nice big hall featuring a fair few large windows, and, as you might expect, there are plenty of ship models displayed on the window ledges, ranging from home-made sorts up to very nicely made and cased warships.

Just behind where I usually sit, there had, for as long as I can remember (and I've been going there for 30-odd years!) been a very large (77 inches x 8 1/2 inches) Batch 1 Type 42 destroyer in almost solid wood, and it had always struck me as a bit of an oddball. Considering its size and weight (it's very heavy), it was clearly not something someone would have just 'knocked up' for a bit of fun, and to boot it was a waterline model. It was dimensionally correct but hadn't been finished off. The outside had been sanded to produce a very nice smooth finish, with the merest thin coat of all-over pale grey paint on. The deck had been painted in a slightly darker grey, which I suspect had been splashed on sometime later. It wasn't detailed beyond

the very basics and was lacking both radar scanners and its centre pole mast (see **Photos 1 & 2**).

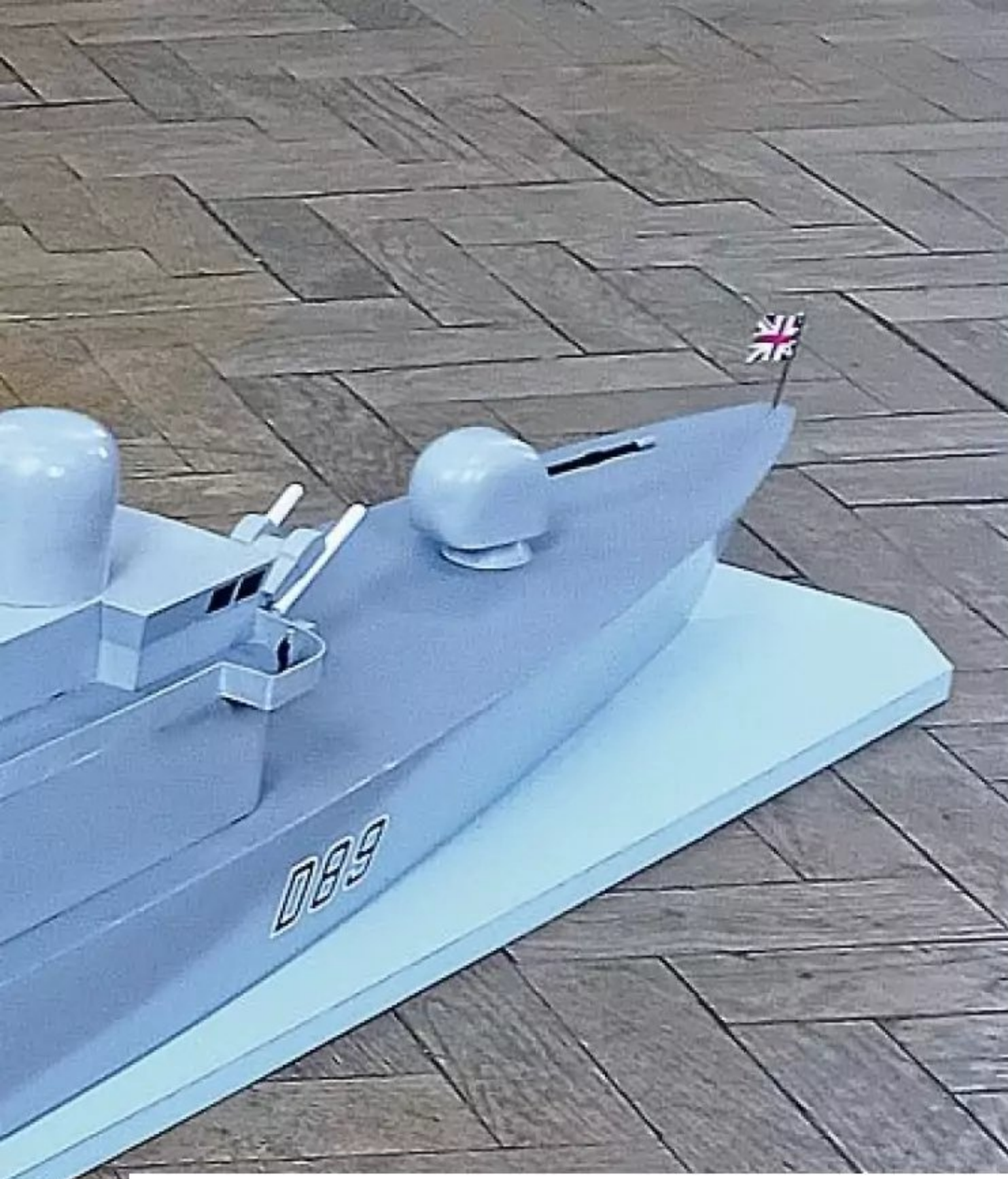
Over the years I constantly found myself staring at the beast and thinking how, with a suitable paint job and a couple of added bits, it could look very smart. And so it came to pass that after one rehearsal, when I had less stuff to carry, I snuck it home for a bit of TLC! Yes, yes, I told the Unit C.O! While informing him of the impending theft, the C.O. happened to mention he'd been told it was a test model that had been made when they were designing the Type 42 destroyers, although he couldn't verify this fact.

Cough, cough... Dusting and sanding

The ship was covered in grime, years of dust and 'whatever' (see **Photo 3**). Once unloaded and placed on a Workmate on the patio, it was time to get dirty... or do I mean clean? I broke out the bucket, soapy water and sponge for some serious cleaning, and soon discovered the sponge was turning white as I was busy sponging away. It appeared the very top layer of paint was more like a

whitewash, and water soluble. Underneath this there appeared to be a slightly darker grey, which was waterproof, and was probably the sanding sealer coat. Eventually, though, the monster was clean and I took stock.

The model was actually in two parts, as the centre cabin section lifted off. Turning it upside down revealed the construction method: two very substantial 60mm deep baulks of wood had been glued together after cutting out the centre (see **Photo 4**) and then screwed to a thick 22mm deck before being shaped. The upper works were either solid, as per the hangar, or, again, thick planky bits glued, hollowed out a bit and screwed up, while the main mast and a couple of bits were in metal, bent up and screwed in place (see **Photo 5**). The really odd find, however, was the brass tubing and box contained under the (removable) funnel block sticking out under the removable centre section (see **Photos 6 & 6A**). Access to this was via a centre cut-out in the deck (see **Photo 7** – with **Photo 8** showing the relative thickness of the deck plank) of the ship with the centre block removed.



“While informing him of the impending theft, the C.O. happened to mention he’d been told it was a test model that had been made when they were designing the Type 42 destroyers”





“Then it dawned on me that it was just possible the anecdote about the ‘development model’ might be more than just a rumour”

This was a substantial construction and completely unwarranted in ‘just’ a model boat. I mean, why? And then it dawned on me that it was just possible the anecdote about the ‘development model’ might be more than just a rumour, and the thing had been made to test the airflow over the model, and in particular the flow of the exhaust gasses from the funnel? Why else would you go to such lengths to make a brass (smoke?) distribution system? It would explain the solid heavyweight construction for the entire vessel for wind tunnel use, and the lack of detail despite the effort that had gone into producing the model. After all, they wouldn’t be that interested in railings or bollards or any small ephemera. It would also explain the lack of paint, just a quick splash to seal the wood and turn the model a light grey. I rather think the model would have been equipped with a main radar scanner and centre mast at some time, and that these had simply gone missing over the years.

To work...

Outside, on the Workmate and in a light breeze I started to give the model a good sanding down and after a minute or so a nasty thought struck me. Given the age of the thing, likely 50 years (ish), it may have been painted with a lead-based paint. So I changed tactic and used wet’n’dry paper, wet of course, so that dust would not be an issue. A bit of water on the boat wouldn’t cause any harm given the solidity of its construction. Sanding took literally 15 minutes or so as the wood was already finished to a very fine surface, and there was hardly any paint left on it!

Structurally there were no repairs needed, barring refixing a bit of bulwark on the centre section (in brass sheet) by clamping and using superglue and Araldite. I didn’t want to fill any of the joint cracks or screw holes, as I felt this was part of its character (see the funnel area in **Photo 5** and compare with the same area simply cleaned and painted in **Photo 9**,



which also gave a clue as to the method of construction). In any event, over time the filler was bound to loosen and I didn’t want to do the job again. Given the fine wood finish and the large surface area I thought that rattle can spray paint would be best, no brush marks and no extra sanding, so I purchased a large tin of grey primer from a well known automotive shop and used its entire contents on the model – sides, deck and superstructure (see **Photo 10**). I had intended to use the grey primer as the topcoat but it didn’t look quite right, so two ‘standard’ size tins of Ford Polar Grey were purchased, and most of the model was sprayed with this, again completely using up the two tins. Finally, a slightly darker grey acrylic paint was mixed and applied to the deck, bridge roof and hangar roof only, the other areas remaining Polar grey while the two ships’ boats were painted white (see **Photo 11**).



Missing parts

In view of the minimalistic build, I limited the extra bits to just the main radar scanner, the missing centre comms/ELINT mast, the rear 992 radar head and two ‘bumps’ above the missiles (these represented the swivelling missile carriers, missing on the model). Aluminium mesh is my go-to for



“I started to give the model a good sanding down and after a minute or so a nasty thought struck me...”

type 1022 radar aerials, and a 120mm strip of wood, slotted a bit to represent the feed horns on the real thing, had a section of bent and curved mesh added. This was drilled for a central pivot and a strip of balsa added on top to represent the Cossar 1010 transponder radar. Job done! There was no need for anything fancy for the 992 radar: a bit of dowel cut and drilled for a pivot was all it took. In the middle, a strip of wood drilled to take a dowel length up top and a section of split dowel mimics the centre mast. There were no other holes or brackets to suggest anything else was missing and, given the (assumed) use the model was designed for, I didn't want to start adding anything else.

Detailing, and I use the word loosely, consists of black paper windows for the bridge, black painted quarterdeck cut-outs at the stern, and helicopter landing markings on the flight deck (for this I used a compass to draw two circles, which were then hand painted – a reasonable job, not perfect, but effective enough at viewing distances). Lastly, the matter of the pennant number had to be decided upon, as this would be the finishing touch for the repainted vessel. I asked the C.O. if the unit had any particular ship associations, specifically any Type 42 connections but, in this instance, there were none. He suggested, however, that perhaps a suitable candidate might be HMS Exeter, the

last surviving type 42 Falklands war veteran, and so it was Pennant No. D89.

There was just one other thing, and that was the lack of a base. To have a waterline model sat on a concrete windowsill seemed wrong somehow. To the rescue came my neighbour, who had several thick 22mm sheets of MDF to hand, and I purloined one length, cut it down to a 7 ft length and sliced it with a circular saw into a 10 inch (850mm) wide strip. I then cut the corners off diagonally and painted it all over with a light blue emulsion. It makes all the difference, as it not only adds colour but makes more sense of the half-hull.

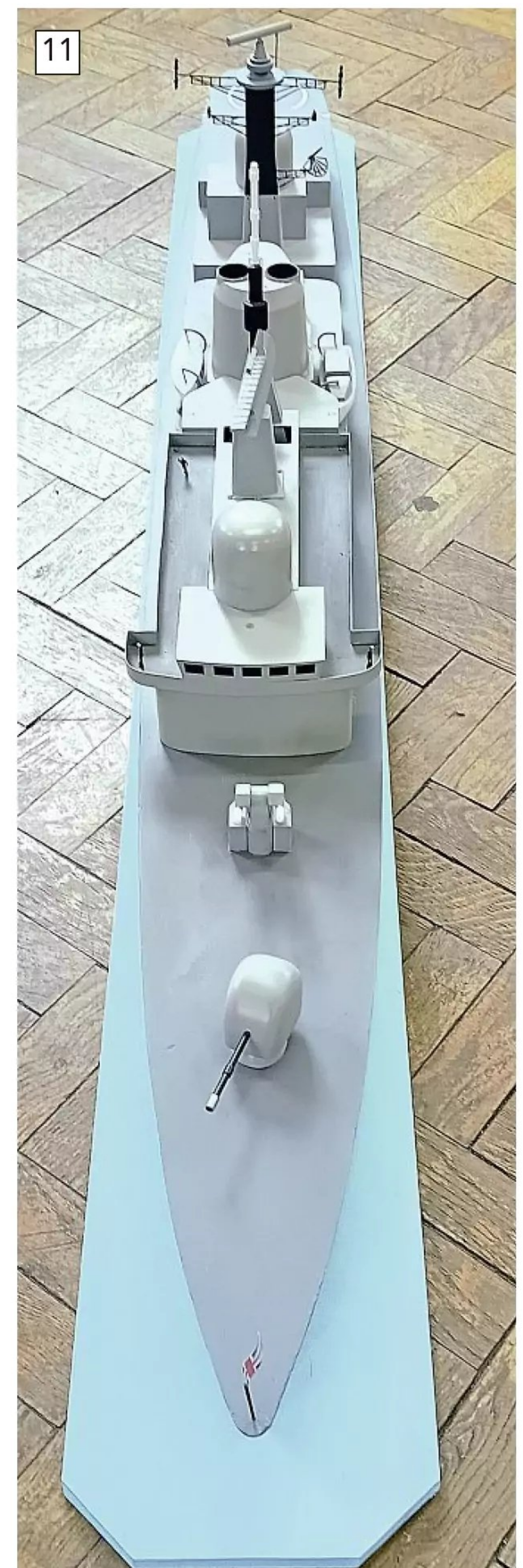
The grand launch

Once the model was completed, I took it down to the unit's weekday parade night and set it upon a trestle table for everyone to see. It's fair to say they were suitably impressed by the fairly drastic change in appearance, having previously seen it as a grey ghost ship for so many years.

So, there we have it, a nicely finished model worthy of some serious shelf space (as it's a whopper!), and possibly a model of historic merit?

In the mood...

There are a number of other wooden models on the shelves which, just possibly, may similarly go missing for a few weeks.... ●





Richard Simpson makes the case for investing in a milling machine

I was having a general 'potter' in the workshop the other day when it occurred to me that we have never had a look at the milling machine in any sort of depth in Boiler Room. Since purchasing mine many years ago I wouldn't say it's been used as frequently as many of my other machine tools, but I do know I would be lost without it. I think milling machines are viewed by many as specialist, and not necessary for

the majority of modelling tasks, so of no great interest. While my intention is not to persuade anyone otherwise, I do think a brief overview of the subject is in order.

When I was at college a milling machine was not really heard of. Flat surfaces were generated on metal parts by what was known as a 'Shaper', which to be honest looked more like a large and heavy rock crusher and had huge potential for

removing chunks of your fingers and hands if not treated with the utmost of respect. Not surprisingly, milling machines grew in popularity as they were developed to the point where they become available for home hobby use. Nowadays you can even buy all sorts of computer-controlled automation that facilitate the creation of parts that would have been unthinkable in a domestic setting just a few years ago.

What is a milling machine?

At first glance, a milling machine looks very similar to a pedestal drill, with a table for the job to be secured and a motor mounted in a head unit with a handle for raising or lowering it, so let me explain the difference...

A pedestal drill has the drive head incorporating the motor driving the spindle, to which is attached either a chuck or a taper socket for larger drills. The unit illustrated in **Photo 1** has an underslung motor to enable speed to be changed by adjusting the

"Since purchasing mine many years ago I wouldn't say it has been used as frequently as many of my other machine tools, but I do know I would be lost without it"



A cheap and cheerful pedestal drill, very useful for home workshop use but limited in so far as not being designed to take sideways forces on the spindle.



The details of a high-speed steel milling bit. Designed to cut on the bottom flat face as well as the sides, this tool is intended to move horizontally, thereby generating a finely machined flat surface.



“At first glance, a milling machine looks very similar to a pedestal drill, so let me explain the difference...”

Right: Surprisingly, a recognisable 10mm Jacobs type three jaw chuck. Consequently, any milling bit up to 10mm in diameter can be used.



It's worth allowing for a good quality vice when you buy a milling machine. A tilting vice is especially useful for a milling machine as it saves a lot of hassle when setting up a cut at an angle on a work piece.

Left: A good sized home hobby milling machine. Machines such as this can even be rigged up for computer control, but for most modellers manual operation will be fine.

drive belts inside the top cover, and its sole purpose is to move the drill bit – which is line with the spindle only – up and down, making use of the forces generated while drilling. You will find that many small pedestal drills only have a single bearing on the spindle, this being a thrust bearing in better quality machines. The job is clamped in a vice, which is bolted to the table and manually positioned to sit below the spindle. The main thing to always bear in mind with a pedestal drill is that it is not designed to withstand sideways forces.

Looking at the milling machine, starting with the tool bit itself, we see that it has a flat end and cutting edges along its sides (see **Photo 2**). It, therefore, is designed for sideways motion, which can be mastered by moving the table accurately in both 'X' and 'Y' planes. Consequently, the head of the milling machine is much more robust and resilient to sideways forces on its spindle. Normally, two bearings are fitted on the spindle to maintain its position during use. You can lower the milling machine head by a handle as well as being able to move the head assembly up and down, so the unit can also serve as a pedestal drill.

All of the above, however, boils down to one important fact: a milling machine can be used as a pedestal drill, but a pedestal drill cannot be used as a milling machine. Some people purchase a pedestal drill assuming it's a cheap way to get a milling machine but soon find the machine fails (usually the bearing gives way); consequently, they end up thinking that milling machines are a waste of money. While I started off my own workshop with a pedestal drill, I soon advanced to a milling machine when I realised that this machine could do far more. I sold the pedestal drill to offset the cost.

Choosing a milling machine

You will invariably have to balance the cost against what you want from the machine. An all singing and dancing unit with computer control, which can do everything bar making you a cup of tea, is all very well and good, but you probably won't need most of its capability, or the small mortgage you'd have to take out in order to go 'top end'.

I bought mine with the idea that it was going to last me a lifetime, so I wanted it to be of reasonable quality and of a size suitable for most model sized tasks, while not



Speed control will vary from unit to unit. This one uses electronics for quick and easy speed control, but some use gears and some use pulleys.

“An all singing and dancing unit with computer control, which can do everything bar making you a cup of tea, is all well and good, but you probably won't need most of its capability”



Plan your entire working area paying attention to lighting and accessibility. An LED angle poise lamp can be moved to either the lathe or the milling machine.

costing a fortune. I decided, therefore, that computer control was simply unnecessary. Having studied all the available units around (some 18 years ago now), I settled on a Chester unit (see **Photo 3**). With the risk of sounding like Goldilocks, I had ruled out a variety of larger and smaller units and this one seemed just right. It also conveniently used a 10mm chuck, so was capable of handling all the drilling tasks I'd previously used my pedestal drill for (see **Photo 4**). I also invested in a good vice to bolt to the table (see **Photo 5**) that could be tilted as required, and was pleased to discover that the speed was infinitely variable from a handy dial on the side of the head (see **Photo 6**). Having considered many machines, it was reassuring, too, that spare parts for this machine were readily available, particularly from the USA, so I should be able to keep it running for many years to come.

I would heartily recommend visiting a model engineering show if you are in the market for such a machine, as you should be able to see more than one unit and compare prices, quality and features all at the same time from more than one supplier.

Setting up the milling machine

Firstly, you will need space around the unit to access the controls and give clearance for the

work, as well as a firm, rigid table to bolt it to. I decided to bolt my milling machine to the end of the workbench where the overhead lighting was very good, and access was easy. The job of attaching the machine was as simple as drilling through the thick beech ply table top and fitting four long Allen headed bolts. The table is a steel framed unit, so is extremely rigid, and the table top is 25mm thick ply, so there is no flex in it (see **Photo 7**).

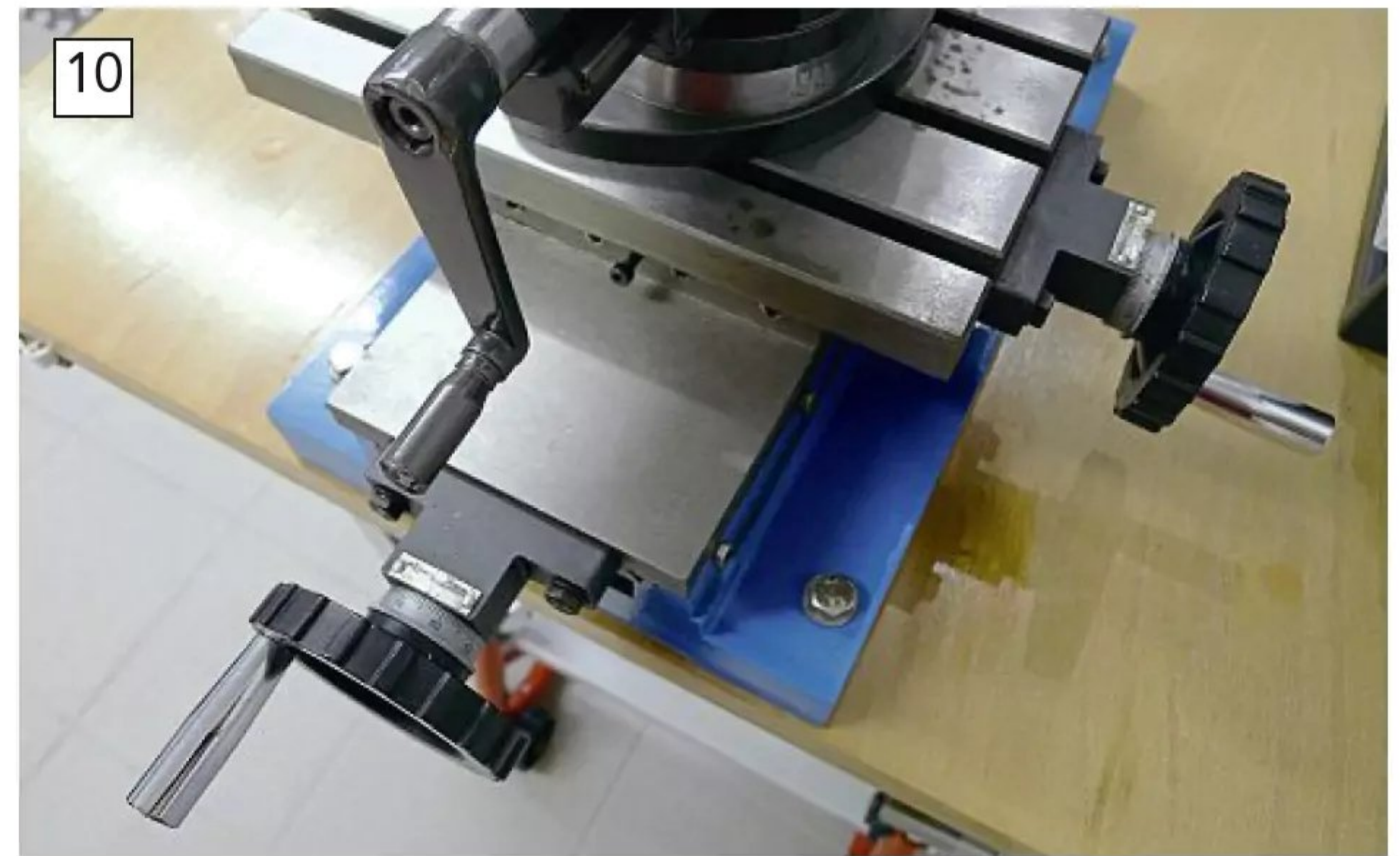
When it came to the power supply, one thing that bothered me was the fact that the power cable had to go to the connection on the head of the machine. This meant that sufficient slack was needed in the cable to allow full movement of the head. What I wasn't happy with then, however, was that, when the head was in a low position, there was slack power cable sat on the workbench. The potential for getting this trapped or caught up with tools or metal parts was a concern. The more I thought about the idea of sprung pulleys or weights under the table, the more I didn't like the possibilities. Then it dawned on me that kettle flex was a ready-made sprung cable capable of taking high power. I must admit the length of cable required was eye-wateringly expensive, and this was 18 years ago, but it did the job perfectly (see **Photo 8**). This was then connected into a dedicated fused supply which serves only the three machine tools (see **Photo 9**). So, with the



If Richard remembers rightly, this kettle flex cost around £10, which he found a bit staggering at the time. There's no doubting it does the job perfectly though.



A fused supply feeds the lathe, the milling machine and the grinding wheel, and sits neatly below the workbench.



'X' and 'Y' table movement is controlled by a fine threaded screwed handwheel. You need to be able to comfortably hold each wheel, as you may be moving the table very slowly and steadily for a few minutes.

milling machine bolted to the table, power supply fitted, and the area cleared, it was time to have a test run.

Using milling machines

As with all machine tools, there are a couple of basic safety aspects to consider. Always wear some form of eye protection (either safety spectacles or safety goggles) and clear the area of all other items that have a potential to get caught up in the rotating tool. Loose shirts and ties are probably not as much an issue as they were in Barnes Wallis's days, but the thinking should still be there. Clamp the job securely in the vice, taking care to set it up in the appropriate attitude, and make sure you can operate the table comfortably throughout travel. You can check this by moving the table with the 'X' and 'Y' table hand wheels (see **Photo 10**).

Most small milling bits simply clamp into my 10mm chuck, although they are usually machined with a flat when used with quick release holders as well. Don't clamp with unnecessary extension as this puts greater stress on the bit. With the tool bit in the chuck, the height of the head can be adjusted to the required level, and then the head must be clamped. Most milling machines will have finely adjustable height, usually by means of a threaded adjuster (see **Photo 11**), but, when at the right height, the head must be fixed to prevent any movement. This usually involves sort of pinch bolt arrangement on the head to completely lock it (see **Photo 12**).

Start the motor and set the appropriate speed. If in any doubt here, you won't go far wrong by starting with the appropriate drilling speed for the diameter of the tool bit and then slowing it down a little. Too fast will cause judder, as well as swarf flying off in all directions!

When you move the table and start the cut, feel the pressure and take note of the sound of the motor. The biggest problem is taking too deep a cut or too fast a feed. Both are obvious. Start slowly and carefully until you get a real sense of the appropriate rate



Head height is adjusted by another handwheel and a fine thread, making for very accurate positioning.

at which to feed the table. If you overload the tool you will cause flexing of the tool bit, which will eventually fail. To generate a neat flat-bottomed cut, gently does it. Once you've completed the pass, move the table along with a slight overlap of the first cut and bring the table back again. You can cut in either direction, as there's no difference, and once you've made a few cuts you should be rewarded with a flat, even, finely finished surface.

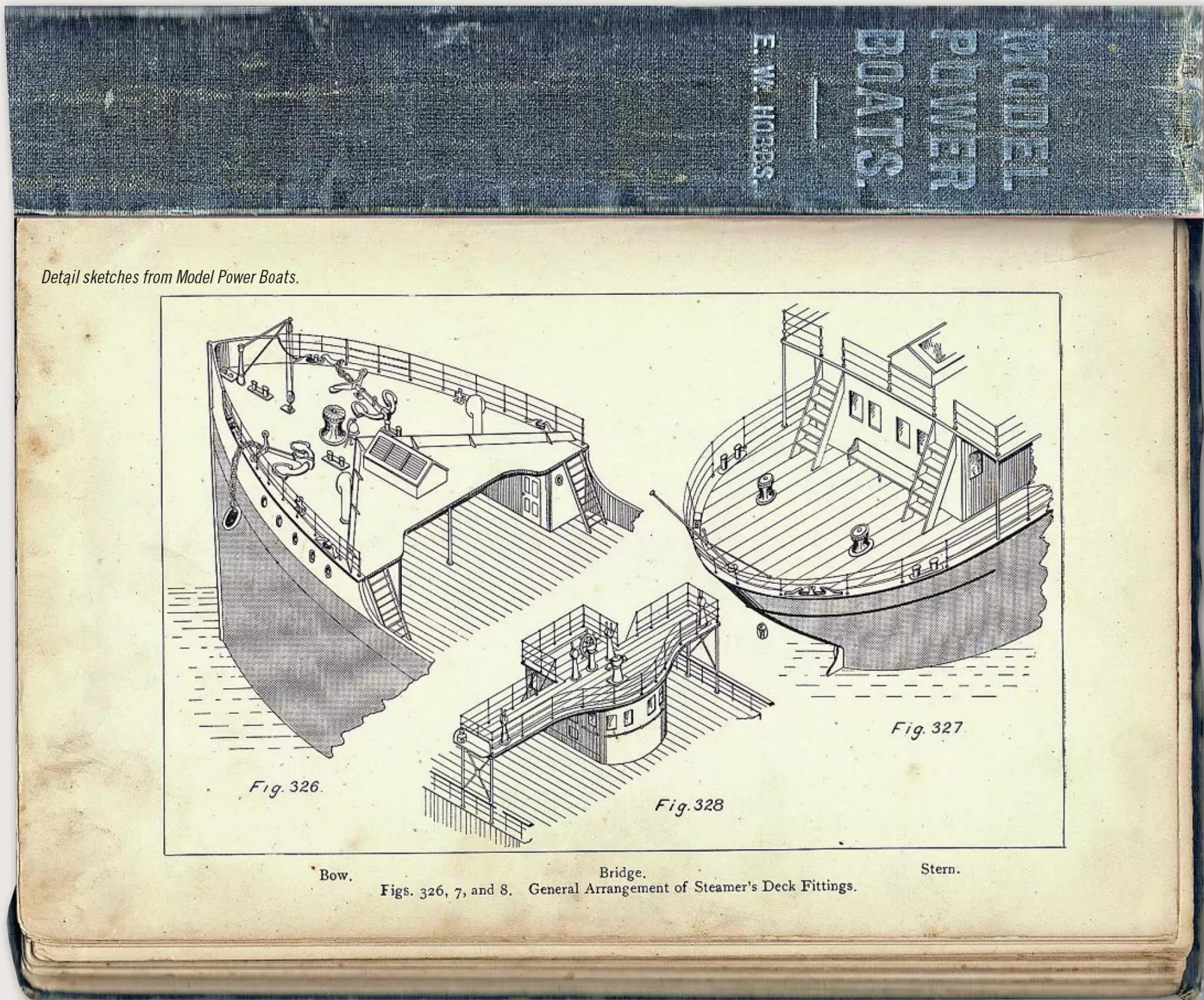
When it comes to using the machine as a pedestal drill, all the same procedures and precautions apply. In this case, though, you set the head height to just above the job – do not, however, lock it. The head can then simply be moved up and down with the side handle (again, see **Photo 12**).



Once the head is at the height you want, it should be locked by the pinch bolt on the spindle. The side handle is for when you are using the machine as a pedestal drill, when the head remains unlocked.

Conclusions

If you think you will be modelling for many years to come, a milling machine is something worth considering. It will do everything a pedestal drill will do and lots more, as well as generating flat surfaces on a piece of metal. I've used mine for cutting plastics and resin as well, so it is an incredibly versatile piece of kit. Yes, milling machines can look expensive when compared to a cheap pedestal drill, but it all depends on your future plans. If you fancy making your own engine, fittings, or even modifying or repairing bits and pieces, a milling machine will be a very useful addition to your workshop. Even for just general modelling use, it's a very flexible machine tool to have at your disposal. ●



COLLECTABLES CATCH-UP

John Parker updates us on his ever-expanding collection of model boating memorabilia

It's been a while since I shared details of my latest acquisitions, so for those of you who share my fascination with the history of the hobby, here goes...

Vintage outboard motors

Fuji 061 outboard

The Japanese Fuji company made a couple of different models of I.C. powered outboards in the 1960s based around its model aircraft engines, and an example of the Fuji 061 has come my way. It has an air-cooled .061cu. in. or 1c.c. engine driving a two-bladed

propeller of about 25mm diameter via a flex drive shaft that resides within the nicely die-cast leg unit, which can be opened for servicing.

Wrapping around the crankcase of the motor and partly enclosing the flywheel and starting pulley is the fuel tank; this example lacks its fuel metering needle but otherwise looks in good condition. With swivel and tilt adjustment provided, installation was straightforward. This must have represented a very quick and easy way to power your boat, requiring virtually no work to be done on the hull. How easy they were to start I do

not know, but I imagine they must have been noisy in operation as there was no means of fitting an efficient muffler, a characteristic that must have contributed to the decline in their popularity.

Mitsuba outboard

This little outboard was sent to me by D. Stewart following my article in the March 2023 issue. It was made by the Japanese Mitsuba company in the 1970s and has a Mabuchi RE-14 motor driving the 3-blade 22mm prop through 2:1 gearing. It is more of a toy really, but it does have the nice scale



Fuji 061 outboard, right side.



Fuji 061 outboard, left side.


Mitsuba
outboard.


Mitsuba packaging.

“The early history of the German Marx-Luder company remains obscure, but some recent internet auction wins have helped clarify things for me”

appearance of a Yamaha 55 horsepower model and was noteworthy for coming in two versions, Type A and Type B, with right- and left-hand props respectively. This was so that a pair could form a complete package for powering a scale speedboat kit that Mitsuba also made. The modeller was “required to load A-type to the right side and B-type to the left side”. Presumably this configuration of outwardly rotating propellers was found to provide better results.

Early Marx motors

The early history of the German Marx-Luder company remains obscure, but some recent internet auction wins have helped clarify things for me. The company first seems to have made a mark (pardon the pun) in the 1950s with its Uniperm and Duoperm motors, yet the packaging of these early motors, which bear all the hallmarks of later Marx-branded motors such as precision brush gear and high efficiency, carries no reference to the Marx-Luder name, just the model of motor. The motors too, bear only the model name and “Made in Germany”. It is only when you strip one down that you might see the name Marx on the inside of one of the mouldings.

Taking the smaller Uniperm first, this appeared in about 1955 or 1956 in two versions, for 6-volt or 12-volt operation. It had a conventional configuration of one permanent field magnet each side of the armature but was enclosed in a neat plastic housing 33mm wide held together with tiny brass screws, with an on-off-reverse lever on one end. My example is branded Aristocraft, as the American distributors gave it their own designation and supplied it in a colourful box, on which attributes are listed as including copper-graphite brush gear and ball bearings. Certainly, its smooth and

reliable operation found favour with other manufacturers, who used it, for example, in early powered R/C servos or in the Pyro Motor Unit (see Flotsam and Jetsam, May 2023 issue).

It was also used in the first Neptun outboard and in this form was also later sold as a Graupner product (No. 414) which did identify Marx as the maker. Here the Uniperm sits on top of a grey plastic representation of an outboard with its switch uppermost. It was early days for the plastic industry and to be honest the outboard does not look very convincing, having a rather toy-like appearance. But it was well engineered, having stainless steel internal shafting and 3:1 bevel gears driving a large propeller. The propeller is of mixed construction, having metal blades but a plastic hub; I think this dates my example as early production, perhaps 1955 to 1957, for later ones changed to a red plastic one-piece propeller. One disappointment is that the housing is glued

together, with no means of disassembly. I managed to pry the top cover off mine but that was as far as I dare go – not that there was any need, for after a little light lubrication, the outboard works fine.

The first Duoperm (not to be confused with the later 1970s’ Duoperm) was essentially a larger version of the Uniperm, measuring 45mm wide and weighing 82 grams. Like the Uniperm, it was made in 6- and 12-volt versions, providing 1200 and 600 rpm per volt respectively, with a maximum allowable current drain of 1 amp for the 6-volt version. An interesting feature of the Duoperm was its availability in a geared version (“mit Getriebe”), a forerunner of the later Richard and Pile geared motors Marx was to become well known for.

This took the form of an inline clear-moulded gearbox that allowed any of the five ratios (1:2, 1:4, 1:8, 1:16 or 1:32) to be selected via finger-tip operated tabs on each side of the gearbox, the whole motor-



Uniperm and box in American Aristocraft branding.



Rear view of Uniperm showing Forward-Off-Reverse switch.

gearbox assembly being mounted on an elongated base. Gearing was essential in most motor applications yet difficult for users to arrange; they must have welcomed this flexible solution to the problem. Boat modellers, for example, could just treat the unit as a longer motor and try the different ratios to see which one was best at driving their propeller; most of the lower ratios would likely result in an improvement in efficiency.

In practice the detent position for each of the gears is a little hard to find to find on my 65-year-old example, resulting in some false neutrals, but generally the arrangement works smoothly and quietly. The box warns you that "Getriebe nur im Lauf shalten!" or that the gears should only be shifted while running – they are plastic and may be subject to breakage if excessive force is used to engage stationary gears. In typical German fashion, the gearbox is held together with tiny screws like the motor and may be dismantled for servicing; with three shafts and a multitude of gears though, I was not game to do this.

UK modellers may have remained unfamiliar with these early motors as I believe they lacked wide distribution in England. That was to change when Marx adopted a ring magnet design for its motors, replacing the Uniperm and Duoperm in 1960 with the Monoperm, the start of a much more famous and widely distributed range of motors that now proudly carried the Marx brand name.

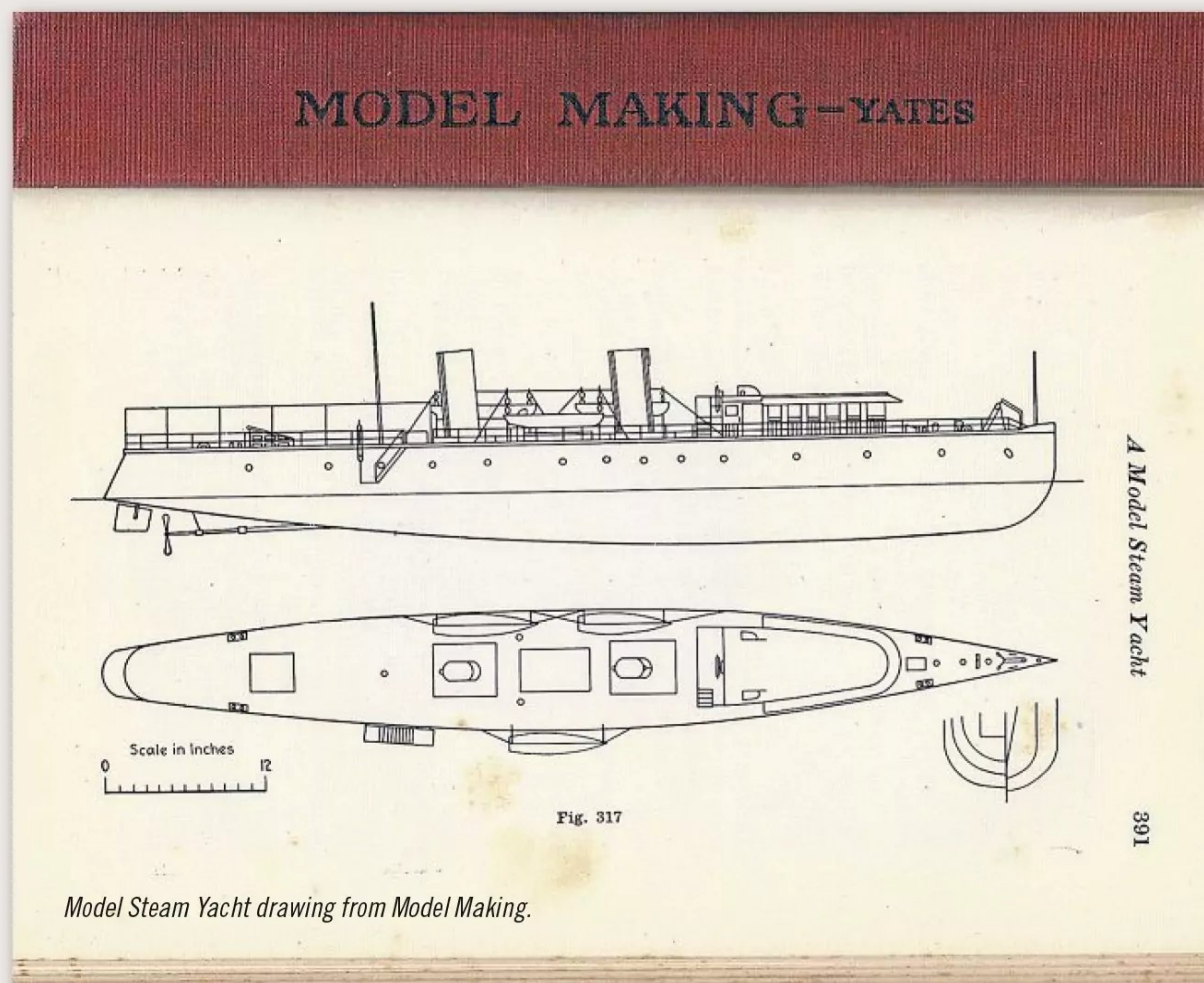
Books

I was pleased to add a couple of vintage books to my library recently, obtained as part of a 'job lot' for the equivalent of just a few pounds.

Model Making by Raymond Francis Yates is an enlarged later (1921) edition of the book I reviewed in the August 2021 issue of *Model Boats*. The extra material consists of another

seven projects, some only described briefly. Of these, it was the Model Steam Yacht that stood out for me; an elegant design with a forward passenger cabin and exposed wheelhouse behind in the Herreshoff tradition. The intended powerplant was a steam engine with a flash boiler, but the builder is warned that electric propulsion would be less risky in such a narrow hull. The problem of lifeless funnels could then be overcome, we are told, by the simple expedient of burning some oily waste in "smudge boxes" at their base...

The second book is *Model Power Boats* by E.W. Hobbs. I had long had this book in facsimile form, but it was good to get an original, albeit slightly scruffy, version, if only for the better reproduction of the drawings and photographs. It is an important early work (published before World War I) by Percival Marshall, with a great deal of theory and practice within its 330-odd pages. Hobbs



Uniperm powered Neptun outboard.

later rewrote the work, following much the same format, for a book of the same name published by Cassell in 1929. I reviewed this edition in the July 2021 *Model Boats*. ●

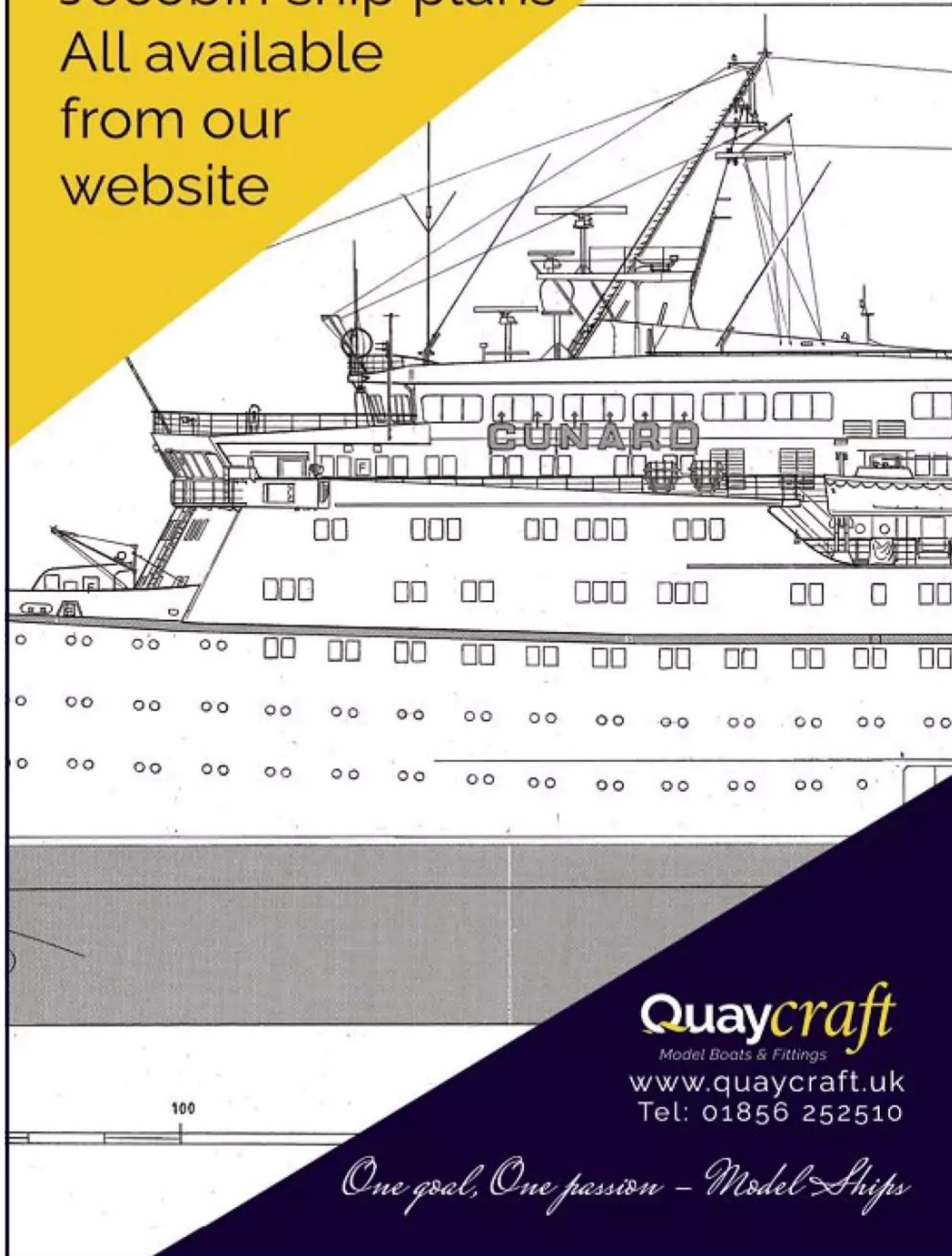


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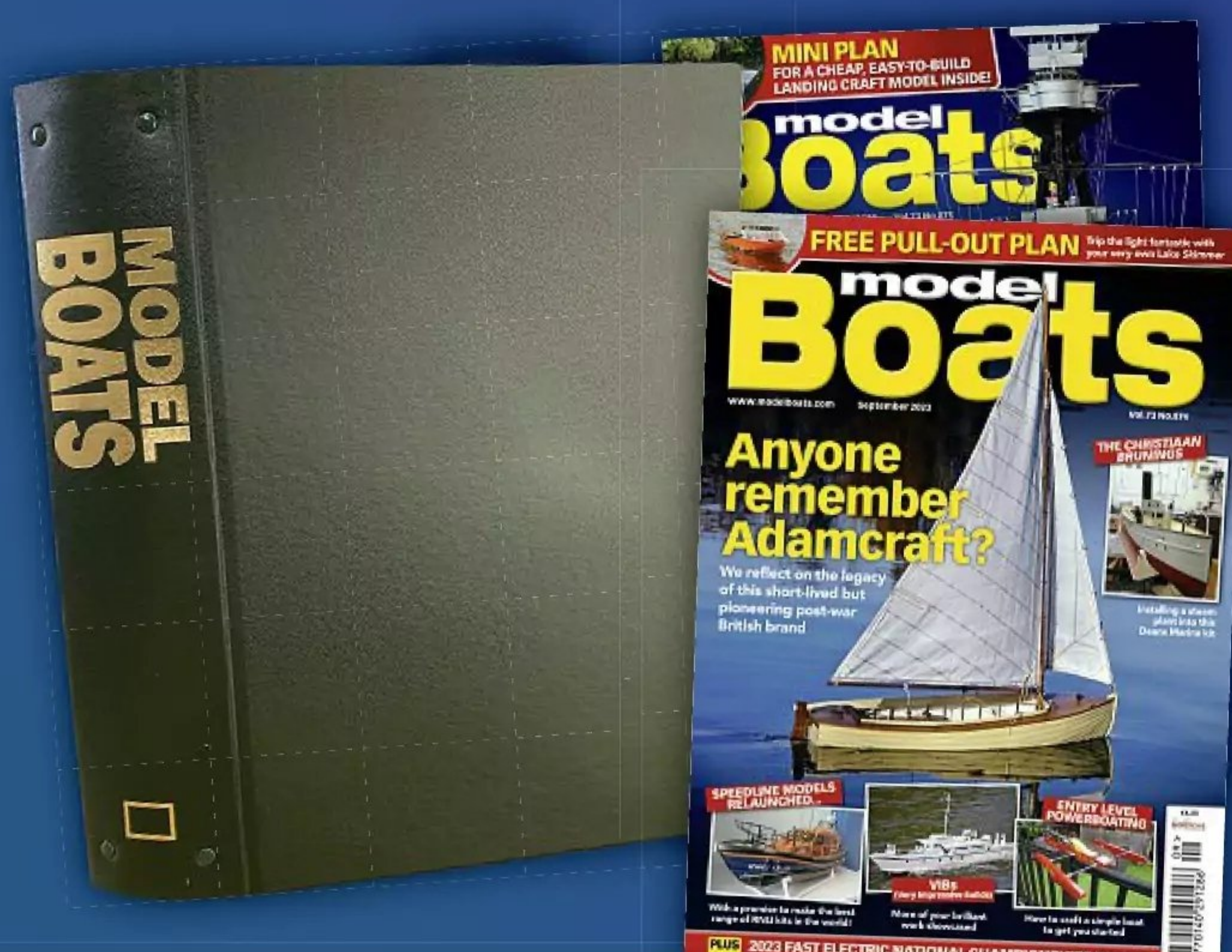
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SMALLER AND YET SMALLER STILL...

Dave Wiggins looks back at the innovations that revolutionised miniaturisation

Starting in about 1962 the first tentative attempts at truly proportional control systems, both analogue and digital, began to emerge on either side of the Atlantic. Much valuable work was done in the USA, often propelled in one way or another by those who had worked on the fringes of the American space programme or for one of NASA's contractors, thereby gaining exposure to the very latest electronic engineering techniques of the era, principle among these being the rapidly advancing application of the then revolutionary semiconductor 'transistor' – a device that was to eventually change our world.

The first few proportionals, staggering advances in control capability though they were when compared with vibrating reed control, were very expensive, as well as being bulky, calling for large models with powerful engines in order to show what they were capable of. Sets like the F&M Digital-5, Bonner Digimite, Space Control or Orbit analogue and others of the very early 1960s are all in this category – sets that I term 'first generation' proportional radios.

Such was the cost of these first efforts that they were limited to aircraft use at first; aero modellers always being possessed of better funding than model boaters. After the initial flush of excitement, model flyers became desirous of lessening the weight and bulk of airborne radio gear in order to be able to fly smaller and less difficult to transport aircraft that featured more compact engines boasting greater horsepower per cc. The rate of progress made by both engine builders and electronic designers in the mid-'60s was impressive, as better and better semiconductors permitted advances in control capability year after year as the '60s led us into the '70s.

Progress with receivers

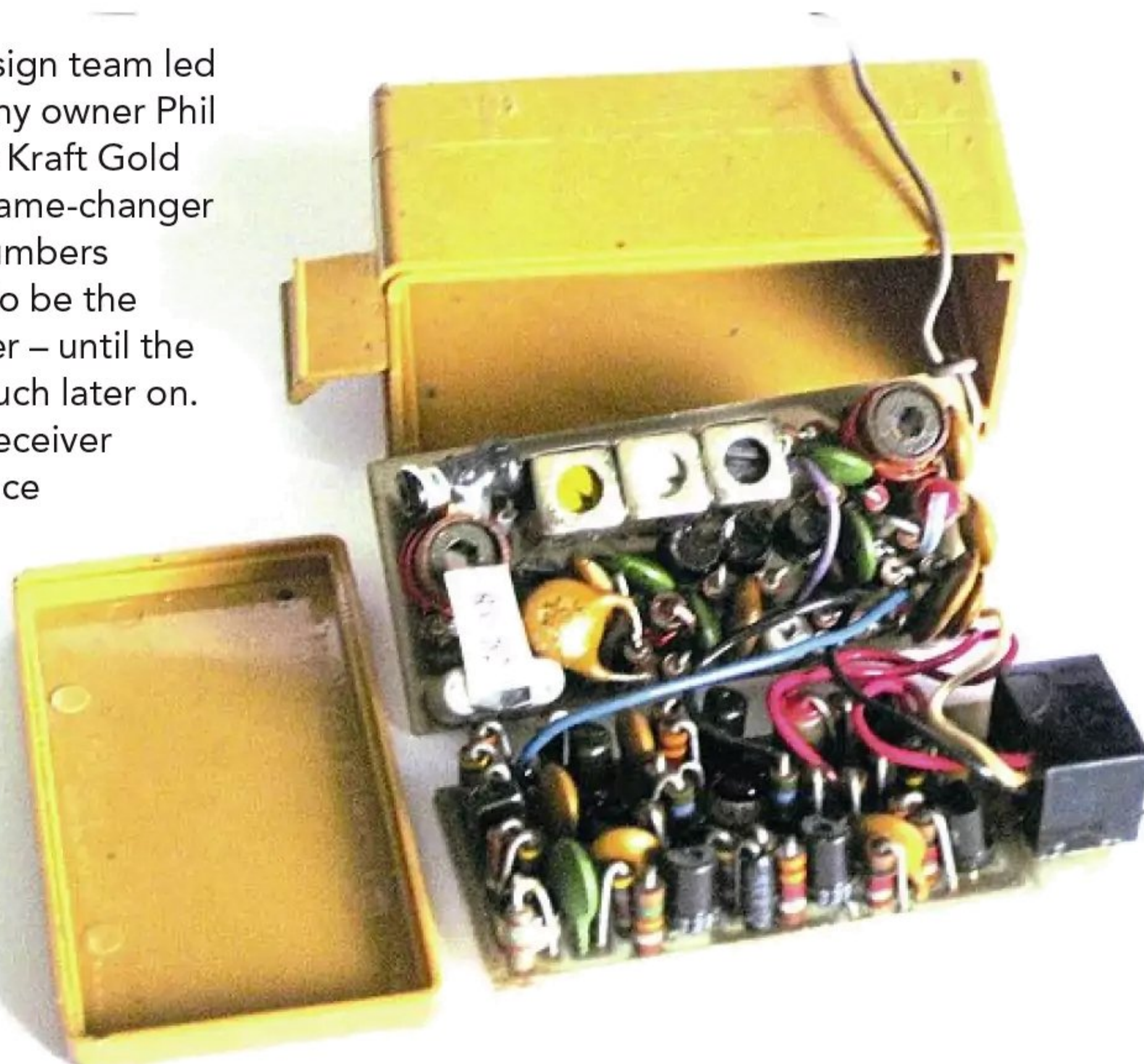
To illustrate this, let's look at some of the receivers and servos manufactured by the two biggest manufacturers out in the USA, starting from about 1968 through to the mid-'70s. My first example is the receiver from what was, without a doubt, the world's smallest, most capable and best received set of the late-'60s – an outstanding radio in every respect – the Californian Kraft 'Gold



A 4-channel example of Kraft's 'gold medal' radio receiver of 1968.

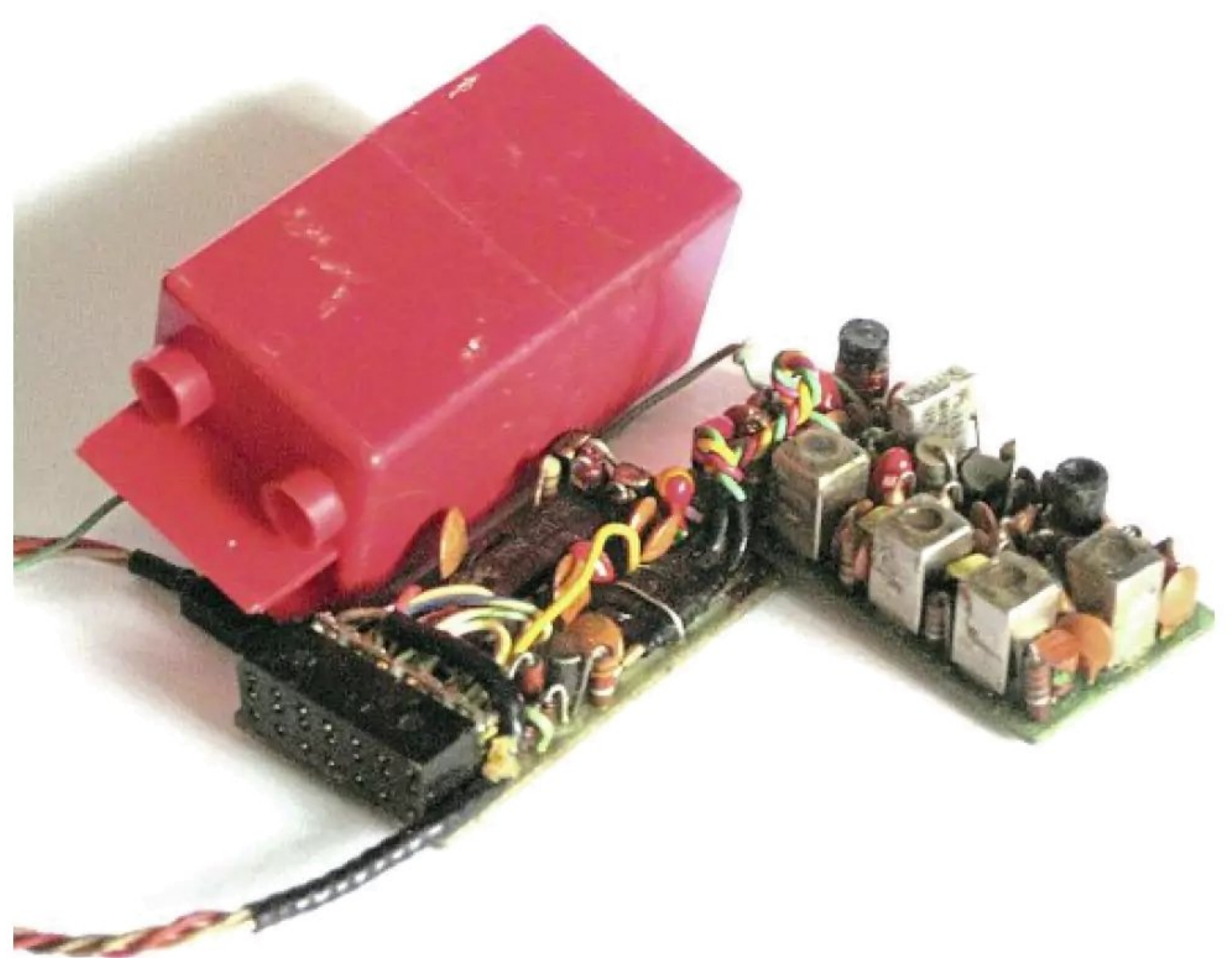
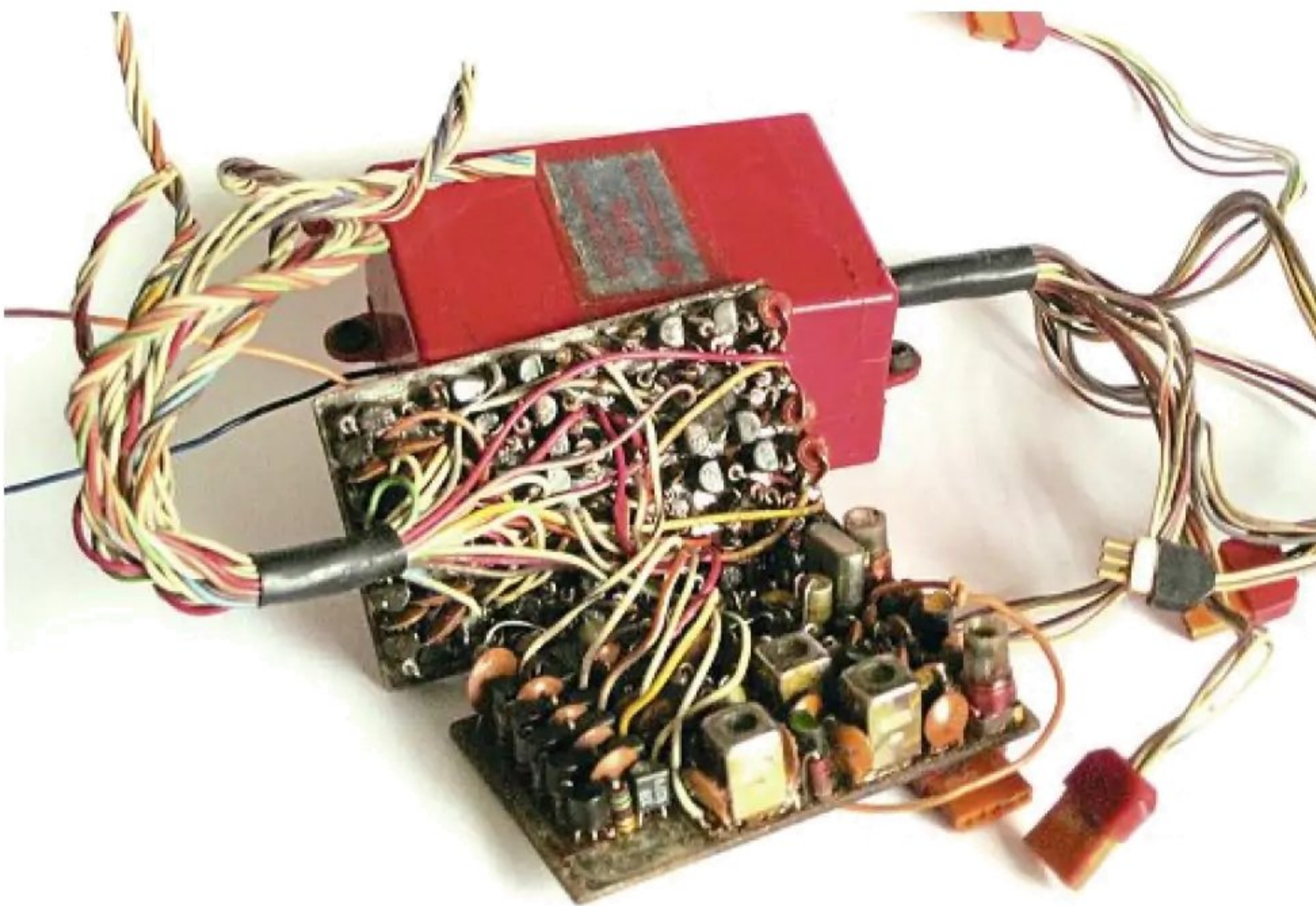
Medal Series' coming from a design team led by Jerry Pullen (who was company owner Phil Kraft's first Chief Engineer). The Kraft Gold Medal was nothing less than a game-changer and it sold worldwide in huge numbers as a result, setting Phil Kraft up to be the world's biggest R/C manufacturer – until the Japanese entered the market much later on.

Size wise, the 4-channel GM receiver pictured was a staggering advance on the bulky metal cased receiver offered with the first Kraft proportional set – tiny indeed for 1968 – featuring a twin circuit board layout divided into R.F. (Radio Frequency) and decoder, both on flow soldered PCB's that sat side by side in the small moulded nylon case. The 4-wire connector blocks used (missing on my example) were as good as Kraft's assembly quality, being silver-plated 'Brunners'. The component density used was tight and,



The receiver that immediately followed the Gold Medal – Kraft's commercially successful 1970/71 design.

“Much valuable work was done in the USA, often propelled in one way or another by those who had worked on the fringes of the American space programme or for one of NASA's contractors”

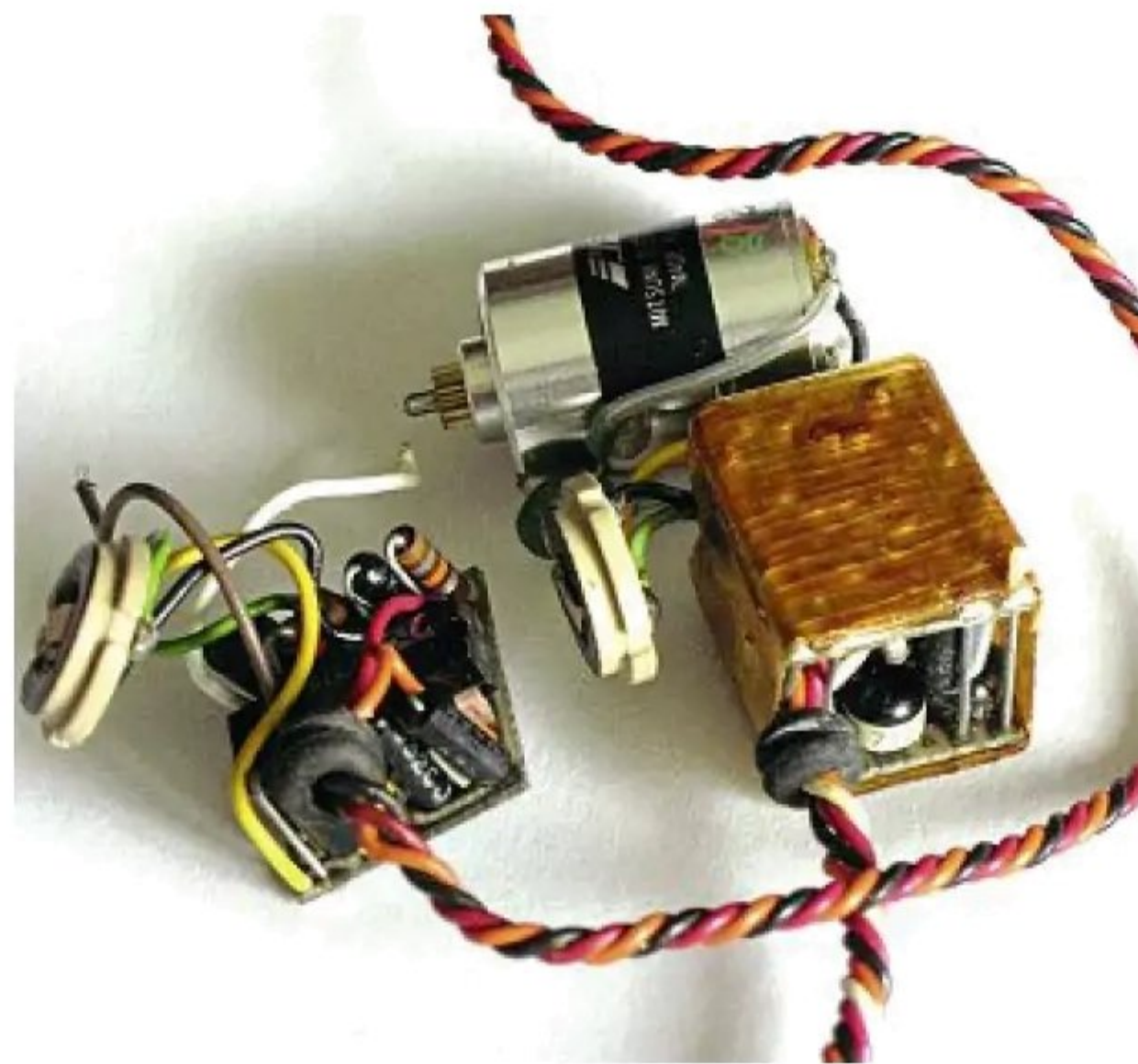


Above and right: E/K Logictrols first attempt at a 'miniature' receiver had discrete 'SCS' circuitry.

from long experience, not easy to service. These first miniature American radios were of course all fixed frequency sets, having a soldered quartz crystal on one's chosen 'spot', and the decoders were discreet and of 4-wire configuration (then quite modern), with a centre tap needed on the 4.8-volt NiCad packs and servos supplied.

A competitive and similar product was manufactured by E.K. Logictrol Inc (EK stood for Elliot and Krause) in Texas, and the receiver I illustrate came with the first wave of this firm's digitals to make it over here, courtesy of go-ahead importer Henry J. Nicholls & Son of London. If anything, the component density is even tighter than that used by Kraft and was definitely a nightmare to repair. This task was made more difficult by the E/K factories use of an encapsulation product, which, while a good idea from a vibration support point of view, was bad news for service technicians. That said, the early Logictrols were nicely made sets and their receivers used Silicon Controlled Switch (SCS) semiconductor devices for its decoder, plus some of the first gold-plated crimped connectors then seen.

In the space of a very few years Kraft Systems Inc had advanced further still in the miniaturisation of its digital airborne components, as my next Kraft receiver demonstrates. Its third generation Rx set a pattern for all modern R/C gear, with its built-in 'block' connector soldered direct to the decoder printed circuit board (pcb), thus eliminating a great many soldered joints in the old-style cable forms needed when using flying leads. The matching connectors fitted both to Kraft servos, and their power packs were of an all-new crimp (no solder) design provided by the late engineer Joe Martin, who traded as 'Multi-Con' (Multi Connector) in addition to working as a consulting mechanical engineer for Kraft Systems (who by then had relocated into a brand new factory at Vista, California). The example I show is circa 1972, and its decoder still features 4-wire electronics, all of discrete



An as-new example of the first version of Kraft's KPS12 micro servo, plus a later I.C. amplifier upgrade.



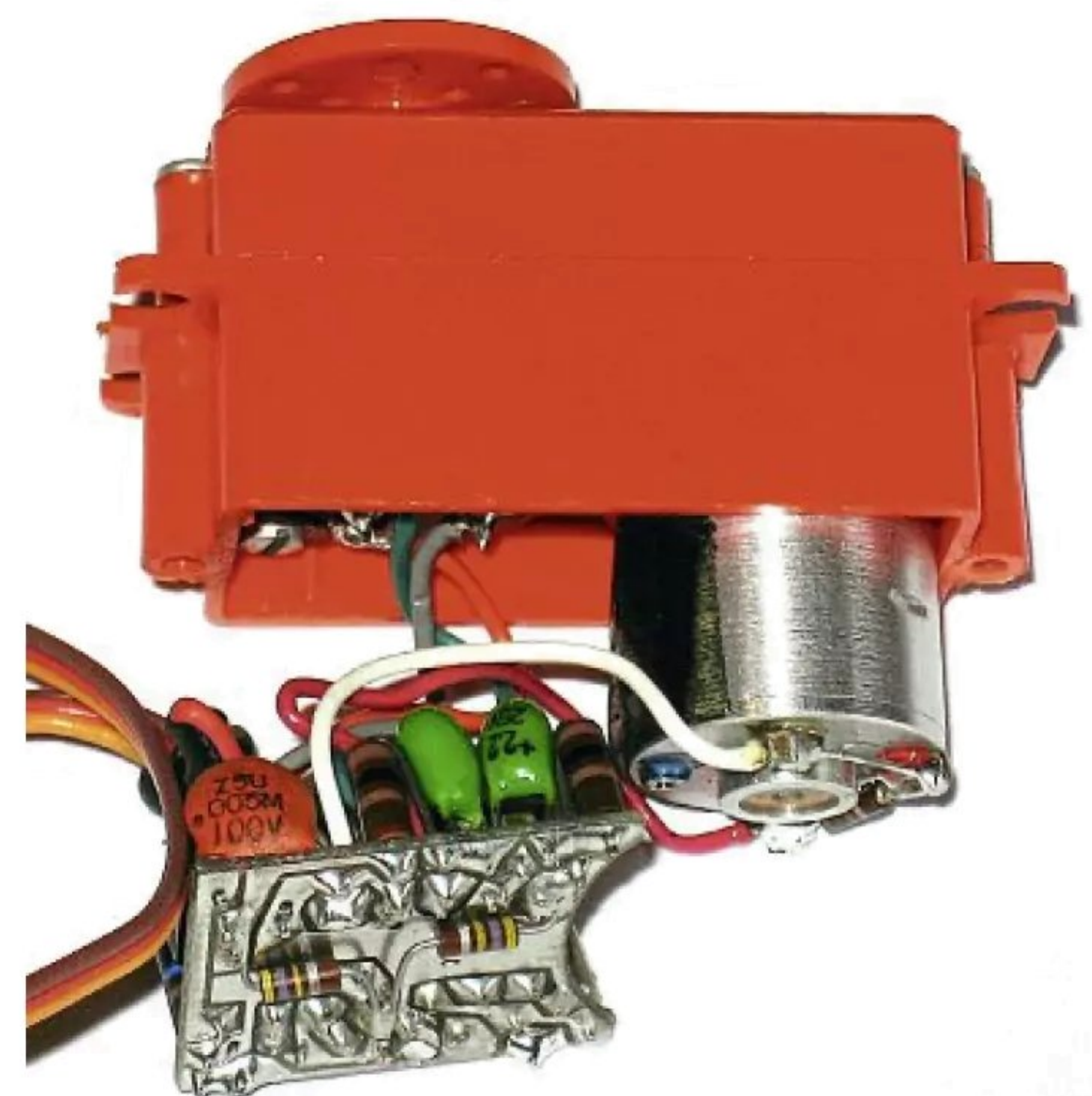
Dave's example of a Logictrol 'Super-Mini' micro servo.

"It's difficult to see very much difference between Kraft and Logictrol flight electronics judging by these two receivers from the mid-'70s, so one has to wonder just who was watching who!"

configuration – the last of its kind to be offered by the company before Kraft went over to 3-wire circuitry.

By 1972 this board was being replaced by an improved and simplified integrated circuit panel as exciting new custom 'chip sets' became available from Texas Instruments, and 3-wire electronics – a superior innovation from competitor E/K Logictrol - became universal right through the R/C industry.

As I say, other top American companies were keeping up with such advances, and I illustrate the comparable miniature offering from designer Bob Elliot for Logictrol in Texas. Mr Elliot is credited with the design of the very first 3-wire servo electronics and his competitive receiver also has an I.C. decoder chip (as just mentioned), in a receiver made by E/K c.1975 or so. It's difficult to see very much difference between Kraft and Logictrol flight electronics judging by these two receivers from the mid-'70s, so one has to wonder just who was watching who!



A restored, pristine example of an Orbit PS4D micro servo, seen in an 'Micro Avionics' orange case.



Eventually, even transmitters got the 'tiny' treatment – this 2-channel set from RS of California being a great example.

American 'micro' servo advances

If any one part of a 1970s' radio control set most benefited from extreme miniaturisation it was the model feedback servo. The first such units had been seriously large items in steel cases, often being modified 'reed era' mechanisms from Bonner, though Howard Bonners own first proportional (the 8-channel Digimite) set used an all new plastic moulded and ball raced linear servo of his own design, which was an astonishing item for its time.

All of the very first proportional servos (Kraft, Bonner, Orbit, etc) were bulky, heavy units. As in other areas, along with Orbit Electronics, it was to be Kraft Systems that set about modernising servo design, with its first two efforts at progressing from the big metal types being nylon-cased units it called the KPS-9 (with dual linear + rotary output) and the rotary only KPS-10. Orbit did much the same thing, introducing its PS3D linear/rotary servo, which proved a big seller, following on from its successful PS2 mechanism. I will be sharing more PS2D pictures in a future column.

The Kraft KPS-10, designed, I believe, by Chuck Hayes, can, in particular, lay claim to being the first truly miniature servo anywhere in the world, and his mechanics consequently sold in very large numbers on both sides of the Atlantic.

But even smaller servos still were soon to come from California. Introduced in 1971, the diminutive Kraft KPS12 rotary servo was, at the time of its introduction, easily the world's tiniest. The first batches built for the 1970/71 series radios from Kraft had the staggeringly clever twin PCB/all discreet 4-wire amplifier illustrated, followed up by the custom integrated circuit/ single-deck version that replaced it in 1972. I used the latter items myself – owning a 6-channel Series: 72 Kraft outfit at the time (still got it!) – and was very happy to be using these in my boats, but the KPS12 was not a universally loved servo, with

“These three large American makers fought it out for international sales, inevitably focussed on who had the ‘smallest’ or ‘lightest’ bit of kit, but many marine purchasers were wise enough to realise that tiny was not always best”

many preferring the bigger twin-rack KPS11 or the later KPS14 and 15 duo that replaced the 11 and 12.

All of these nylon-cased Kraft servos were much used, as were similar units designed by Orbit Electronics (its PS2, PS3 and PS4 listed in order of diminishing size), by many other smaller radio manufacturers around the globe, who clearly saw no point in 'reinventing the wheel' with such nicely engineered, reliable mechanisms available off the shelf Stateside.

Down in Texas, to go with its new line of 'modern' sets called the 'Super-Pro' and 'Champion' (both of which were imported into the UK by a firm called Crescent Models) E/K Logictrol also bought out a micro servo, and I illustrate one alongside a pound coin for size comparison.

These three large American makers fought it out for international sales, inevitably focussed on who had the 'smallest' or 'lightest' bit of kit, but many marine purchasers were wise enough to realise that tiny was not always best.

And finally, even our Transmitters became smaller...

By the late 1970s even the R/C transmitter was getting the 'tiny' treatment. The leaders in this area were undoubtedly Cannon Electronics (Bill Cannon), but I illustrate a really very small 2-channel unit made by RS (Real Small) Systems of California for use, primarily, with the then famous Hobie 'Hawk' glider, but just as usable in the marine arena (if one could tolerate single stick control, that is), as well as a tiny 3-channel Tx by



Another very small transmitter was this 3-channel unit from Orbit Electronics/Santa-Ana.

Orbit Electronics. The RS servos were very small too, as I illustrate. The only thing holding back the further miniaturisation of our transmitters was the set of 8 'AA' size NiCad batteries then required for adequate transmitter power. Nowadays, 'AAA' size Ni-Mh cells equal or exceed the capacities of 1970s' era pen-cell Ni-Cads by a significant factor.

Back to Blighty, and Sprengbrook...

Next time around I will be looking at one of the 'bigger' names in our own British R/C industry – Sprengbrook of Brighton. ●

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Your Models

Whether you're highly skilled and experienced or completely new to the hobby, you're definitely invited to this launch party! So please keep the contributions coming by emailing your stories and photos to editor@modelboats.co.uk

African Queen

I was very pleased to see Richard Simpson's review of Billing Boats' *African Queen*, as I have been working on the *Queen* for almost two years now. After a long period of not building any models, this has been a challenging new start for me, and so I concur that the kit is not best suited to absolute beginners.

I've integrated some special functions, which in themselves proved tricky due to the restricted construction space I have available to work within. My boat now incorporates an audio unit that will follow the electric motor's speed and simulate the sound of a full-sized engine and a steam whistle. I've also equipped her with a steam generator

and gas lantern with a flickering LED. The rudder is controlled by a sail winch. After various attempts, I now use a thread made of dental floss.

My version is supposed to represent the boat in as new shipyard-built condition, without the canvas for an improvised sunshade.

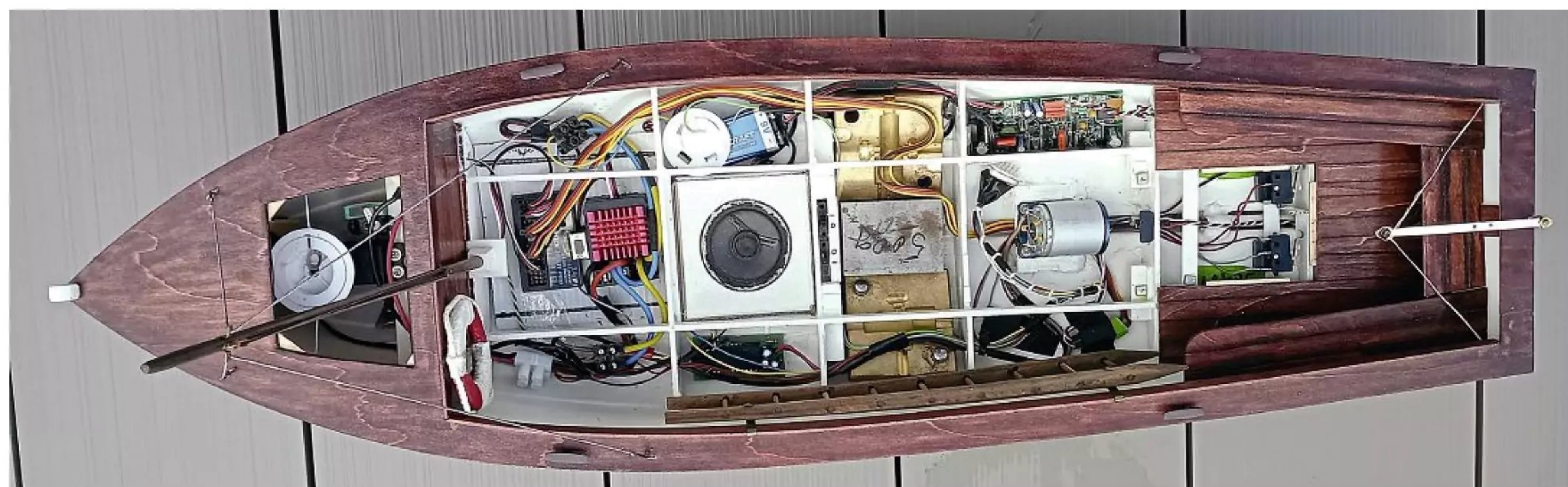
I am already looking forward to the second part of Richard's review.

**ARNO LAUBROCKDORTMUND
GERMANY**

As Charlie (a.k.a. Humphrey Bogart) would say: "Just look at her... She actually practically sparkles". Fantastic work, Arno. Ed.



Arno's build of the African Queen, which represents the boat in as new from shipyard condition and features an electric motor, steam generator, flickering LED gas lantern and sound effects.





Adamcraft dinghy

I was delighted to read John Parker's article about Adamcraft in the September issue of Model Boats. Somewhere around 1949 my father took me to Gamages where there was an Adamcraft boat being built and I persuaded him to buy the kit, which I believe cost around £4. Unfortunately, however, it turned out to be just too complicated for me to build at that time.

Fast forward 67 years and I acquired another Adamcraft kit, still in its original army shell tube. The deal was done on the understanding that when built Russell Potts (President of the VYMYG) would sail her. I kept the promise but trying to sail her with R/C proved difficult. However Russell's own Adamcraft boat had a modification in the form of a straight dagger board, and he kindly made one for me. On her first outing she had sunk. Recovery was, fortunately, straightforward, but I could see this happening again, so I decided to fit a canopy. This idea came from Sir Earnest Shackleton's rescue boat the *James Caird*. While sailing her on Frensham Pond, Roger Stollery happened to see her and suggested I try a Footy fin with ballast – something I have used this ever since. My Adamcraft dinghy is the original 18-inch model with

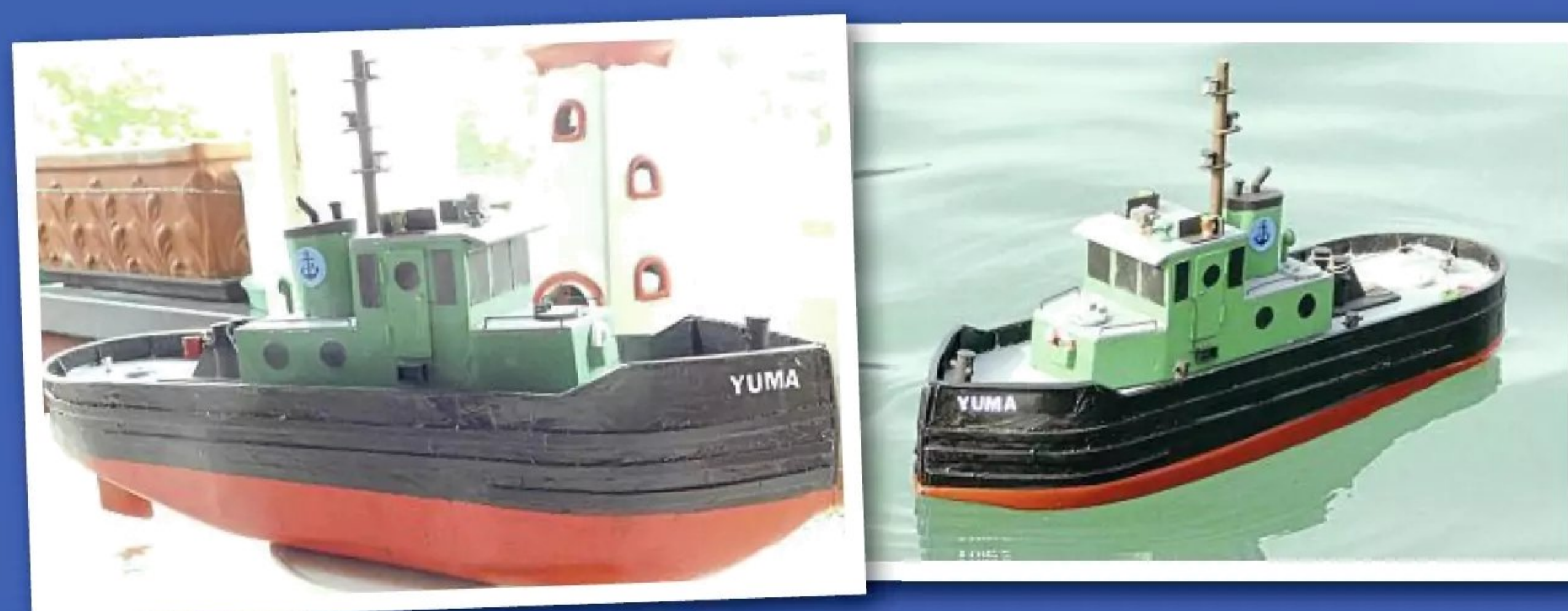


Yuma, a model Lorenz based on the Glynn Guest US Army ST tug mini plan in the December 2022 edition of Model Boats. Lorenz, however, opted to use plywood to reinforce the hull and as the material from which to build her superstructure, and to great effect.

Yuma

I am sending your photos of *Yuma*, a model I built from Glynn Guest's mini plan for a US Army ST harbour tug. I, however, reinforced the hull with 1 mm plywood. The superstructure was also constructed from plywood. The resulting model weights 975 grams and measures 38cm in length 38 cm and 11 cm in width. My photo shows *Yuma* on her maiden voyage.

LORENZ SCHMUKI
INTERLAKEN, SWITZERLAND



single sail; later models were 21-inch and had a jib. I have to say a big thank you to Tony Schlaeppli, the Frensham Pond Radio Sailing Club photographer, for taking the shots of my model I am sending you.

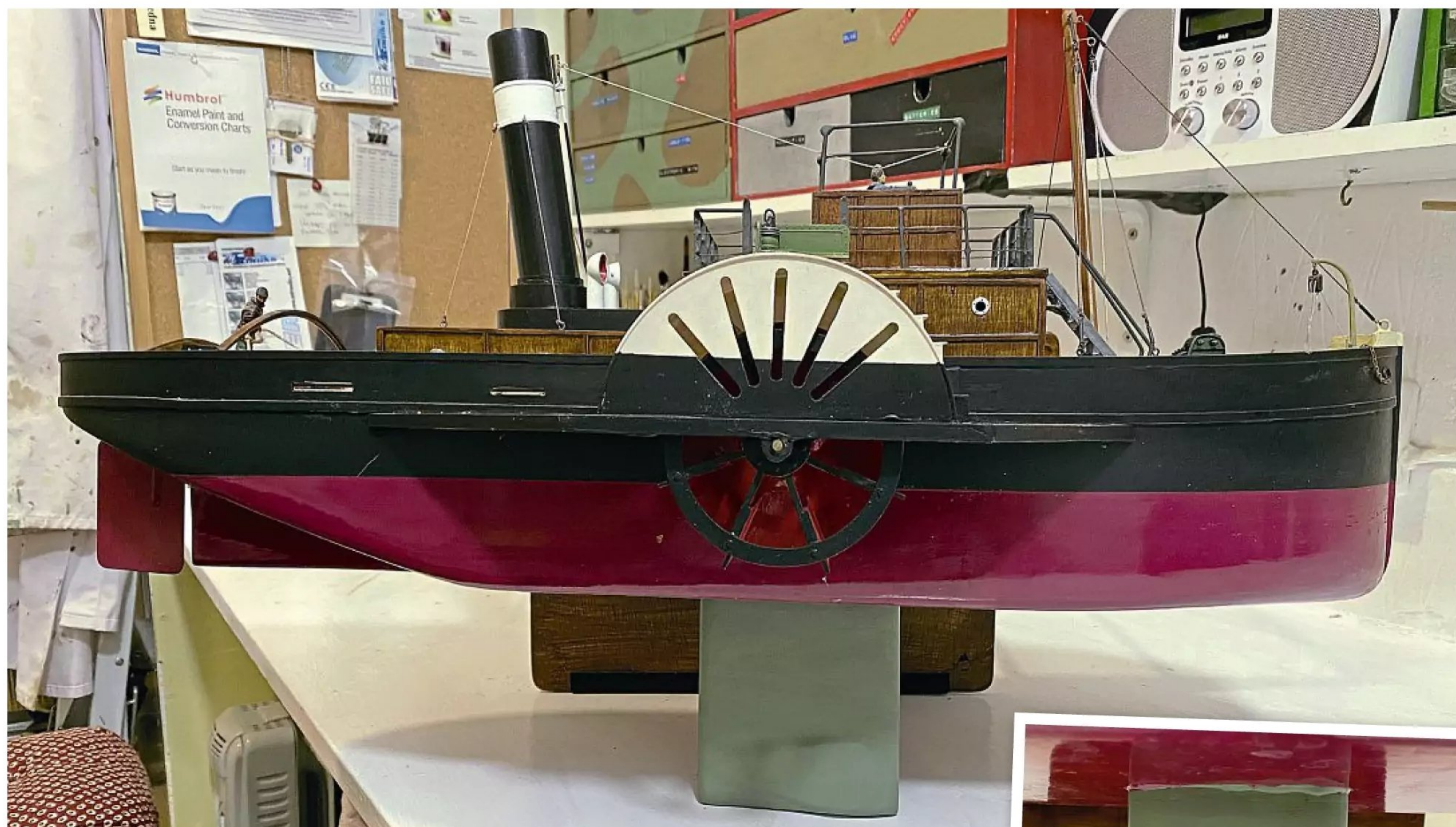
PETER WALLIS
EMAIL

Fabulous photos. I would imagine Tony really enjoyed taking these, as this classic beauty is

such a photogenic subject. Thanks for sharing them, and indeed the innovations, tips and tricks that have got her sailing so serenely so for you.
Ed.

Below: Peter Ellis explains the modifications he made to this classic Adamcraft dinghy, which as you can see, now sails beautifully. Images courtesy of Tony Schlaeppli.





Paddler perseverance pays off

The October issue was another great edition, with a nice spread of articles. The feature by Mike Payne was really interesting. I came across virtually all the problems he found, and my solution and paddler history follow...

I had always fancied building a paddle steamer, but the drive line problems always seemed daunting to me. Then I saw the plan for *Eccleshall* (June 2014) by Glynn Guest. It was the perfect solution. He had once again provided a good plan for an easy to build model, together with full details of the driveline, motor size, gearbox and battery voltage required, as well as instructions for paddle making. This plan, therefore, went straight on to my future build list, although admittedly it was a few years before I actually got round to building it.

The first trial resulted in the same little problem that Mike Payne found. The model would dig one paddle in and start to turn sharply. I decided then to put a keel on her. After a lot of research and many complex mathematical calculations I came up with a keel size of four and a half inches deep and

four inches wide. Amazingly I had a piece of quarter inch plywood exactly the right size! I removed all the lead from inside the boat, weighed it, then laminated some lead sheet on the bottom of the keel. I used about six ounces less weight on the keel to allow for some internal ballast if necessary for trimming. Some plastic padding and a bit of sanding and rounding off corners and it was ready. It is held to the bottom of the hull by means of a long self-tapping screw from inside and a layer of slow cure epoxy glue. I painted it in a grotty green colour to match the water in the lake.

In this state the boat performs beautifully. She is safe in virtually any conditions, except in very high winds (the wind gets under the paddle boxes and lifts one side of the boat up in the air). The only other substitution I have made is to change from a 7.2-volt pack to an 8.4 pack. I prefer the extra power to be available when doing rescue work.

The plan for *Eccleshall* is a perfect basis for a paddle tug model. I modified the superstructure and added a few details using



The keel added to Harry's charming paddler, based on the Glynn Guest plan for Eccleshall.

a selection of the many wonderful drawings and pictures in my copy of the book *British Steam Tugs* written by P.N. Thomas.

I hope this might inspire others to try a paddler. They are great to sail and look magnificent on the water.

HARRY HITCHENES
EMAIL

Delighted you found Mike's feature so interesting and that Glynn's plan and build guide proved so helpful, Harry. You've done a lovely job – proof it can be done and an inspiration indeed. Ed.

Even more Titanic

In the October issue of *Model Boats* you kindly included my scratch-built model of the *Titanic*, details of which were forwarded by Headway Sussex on my behalf. May I please, however, point out that overall length of the model is, in fact, 8ft, not 5ft.

JOHN WEBBER
EMAIL

Thanks so much for this erratum/update, John. Ed

Right: John Webber's massive 8ft long model of SS Titanic.





Stan built this model from a Dumas kit, but super detailed and finished in a paint scheme based on the Texaco tug Havoline.

Havoline

Although I have always favoured rather large models, I recently decided to build the small Dumas Tug, which is only 18-inches in length. The build proceeded very smoothly but I did find I needed to change various items during its construction. These included a new prop shaft and prop, and new brass stanchions to replace the brass pins supplied in the kit. The main problem I found was most of the plastic supplied, this didn't include the hull, was vac formed PVC, which I found very difficult to glue (use Superglue if you want). My solution was to use all the original parts as a template and make my own parts from plastic card. Power was supplied by a small 7.4 lipo battery, a small MFA brushed motor and 2-channel radio.

I have based my model on a Texaco tug *Havoline*. The model looks very similar, and I have painted it in the Texaco colours. This is far better than the dull grey the model should be painted in. The emblem on the funnel took quite a few attempts to get it right. The paint scheme was applied by airbrush, using Humbrol enamel paints.

**STAN
REFFIN
EMAIL**

*Lovely work as always, Stan.
Ed.*



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Clark Salisbury's Lake Skimmer, a plan and build guide for which appeared in the September 2023 issue of Model Boats.

A seductive proposition

Having in the past subscribed to the magazine off and on over the years, while recovering from surgery last autumn I once again took out a subscription. I have never been a lover of fast skimmer boats or speed boats as such, so in the September 2023 issue I was surprised to find myself being seduced by Clark Salisbury's *Lake Skimmer*. I completely understand why Clark believes it is possibly the most beautiful model boat he has ever designed, as it's the most beautiful skimmer boat I've ever seen. Although I don't know if I will ever actually build a model of it, I have already mentally built it a number of times in my head!

What an inspirational article and pull-out plan. I look forward to seeing others' versions of this wonderful model on the water and in the pages of *Model Boats*.

I am really enjoying the magazine and the well-balanced contents. Keep up the good work, it is appreciated.

**PATRICK O'SULLIVAN
NORTHANTS**

*Thank you so much for your kind words. I am really glad you're enjoying your subscription, Patrick. I am sure Clark will be delighted to read your thoughts on his lovely Lake Skimmer design, too.
Ed.*



The RNLI stand at this year's Kirklees MBC Autumn Open Day. Image courtesy of Andrew Moorhouse.

Fundraising thanks

Thanks to Stan Reffin and his fellow club members, the RNLI was able to raise £160.31 at the Kirklees Model Boat Club's Autumn Open Day – £33.81 coming simply from donations. We are much obliged to the Club for its ongoing generosity, support and good-humoured camaraderie at these pleasurable events.

RNLI MIRFIELD BRANCH

Steam yacht model identification

Page 69 of the September issue featured a letter from John Kirwan, wanting to identify an old model of a steam yacht. Having done research into steam yachts for my model of the Ena (see the June 2023 issue of Model Boats), this piqued my interest, so I did some more research.

Most steam yachts of the late 19th/early 20th century had a similar style, and not many survived far into the 20th century. However, this model has some distinctive features, including a foremast rigged, uncommonly, as a topsail schooner, which narrows the field down. This led me to the SY Adele, built by Hawthorne & Co in Leith, Scotland in 1906, for a Henry Dutton in South Australia.

The Adele was well known because she served as HMAS Franklin in World War I and as HMAS Adele in World War II. The RAN (Royal Australian Navy) website and the Australian War Memorial website have a good amount of information, including photos. The RAN website lists her as schooner rigged and has photos showing square sail yards on her foremast (and her mainmast, but I note that her rig changed through her career). The other features in common with the model include the finely



Thanks to some canny research by Chris Kershaw, the vessel on which John Kirwan's mystery model based may well have been identified.

chiselled counter stern, the length of the deckhouse, the size and location of the bridge, and the large ventilators near the funnel.

If John's grandparents had a connection with the Navy or with Australia, this would increase the likelihood of a match, and further warrant restoration of the model, which would have looked very fine in its younger days.

If John runs a search for 'Steam Yacht Adele' (not SY Adele because that will bring up a modern sailing yacht) he will find information on military, military history

and state library websites (not to mention Wikipedia).

It would be nice to know whether John's family has a link with the real vessel.

**CHRIS KERSHAW
MELBOURNE, AUSTRALIA**

Just wow! I am absolutely amazed you managed to unearth all this information - thank you so much, Chris. I have forwarded your email on to John, but I am publishing your kind response anyway as I am sure other readers will find the results of your research equally as fascinating. Ed.

Shipbuilding memories shared

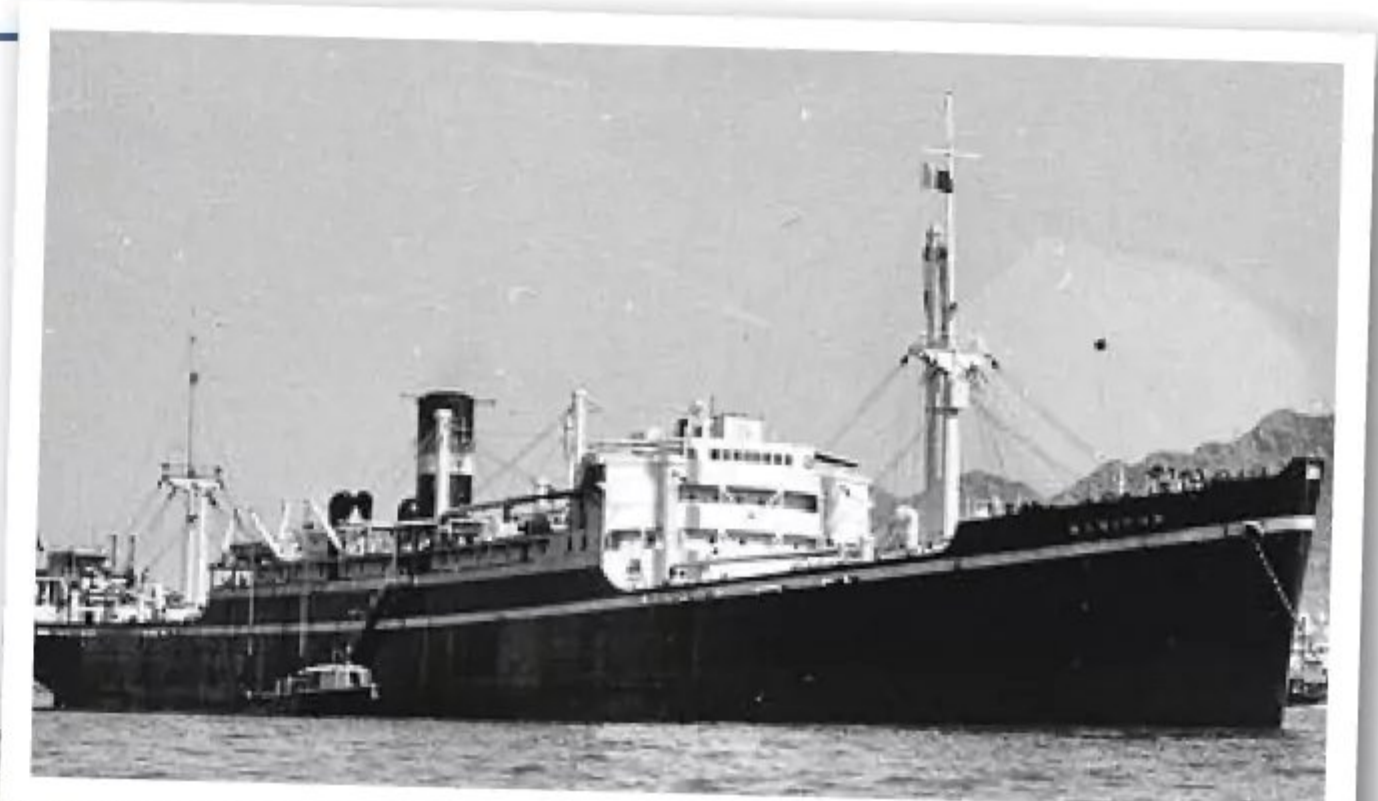
I was most interested to read Victor Croasdale's account of his sojourn at Kincaids of Greenock in the September issue of Model Boats. I served my marine engineering apprenticeship in the 1950s more less next door with Scotts' Shipbuilding & Eng. Works. Us Scotts' lads tended to look down our noses a bit at Kincaid's - mere engine builders!

Scotts' history dated back to 1711, and over the years had built (and continued to build until its demise) submarines, destroyers, frigates and cruisers, etc for the Admiralty, as well as cargo, cargo passenger, bulk carriers, tankers, gas carriers and floating drill ships, along with engines, both steam and diesel.

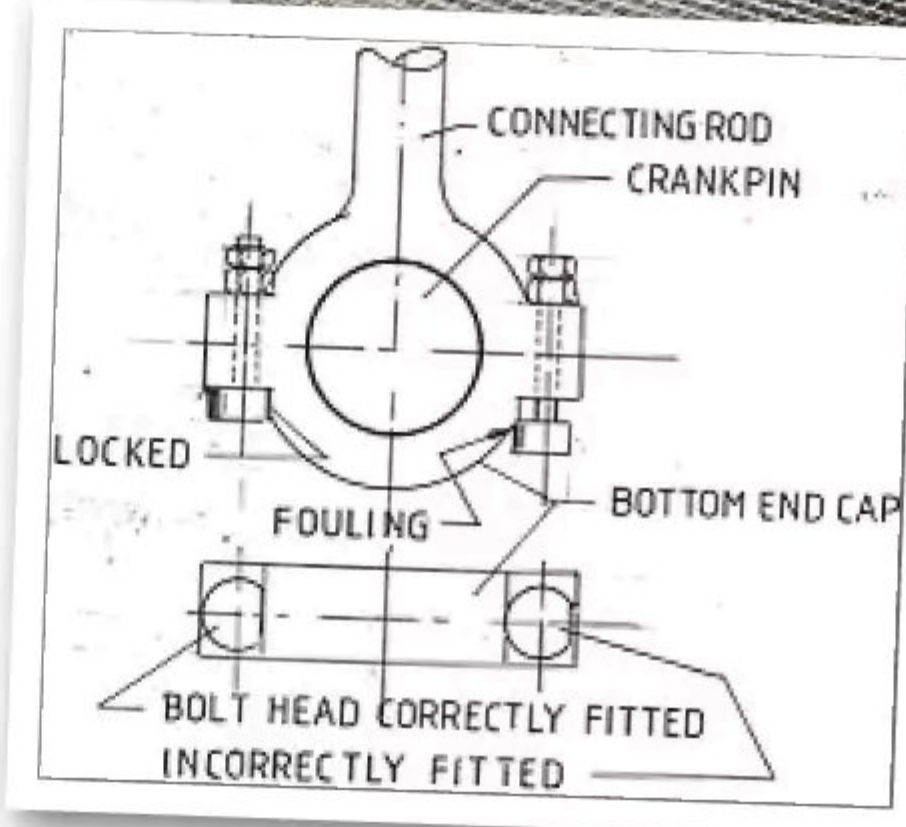
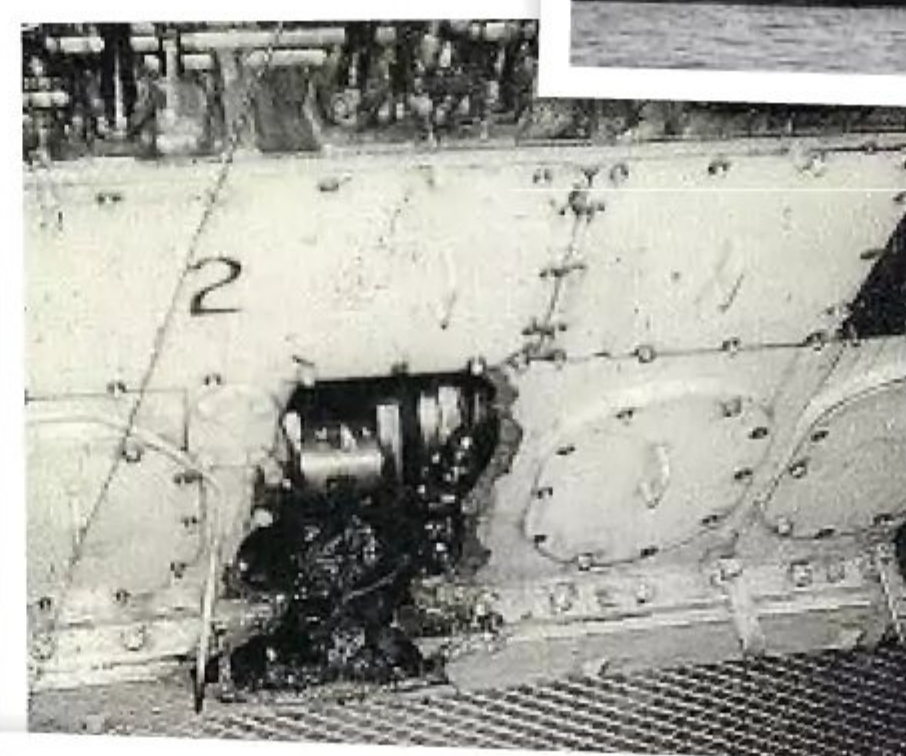
I am sending you a photo I took from my boat of the Loch Lomond on the Clyde during builder's trials. She had been launched in 1974 by Chas Connell,

Scotstoun, Glasgow, and was a sister ship to Victor's Loch Maree. Both ships were built for joint ownership by the builders and J. & J. Denholm.

While writing, the following may also be of interest to the technical and engineering fraternity, and here the old adage "for the want of a nail..." comes to mind. While lying overnight at Aden outward bound on SS Manipur with main engines shut down, we were wakened with the ship literally shaking and all lights dimming. Cue mad rush to engine room, where we were met with some loud expensive noises and bits of metal pinging around. In fact, on the on load running diesel generator one of the pistons was still shooting out the side of the engine, which was literally wrecked. The reason? During overhaul prior to this voyage by a shore-based engineering company, they had



Remembering a serious 'incident' onboard SS Manipur, and with the old adage "for the want of a nail" in mind, Jim Pottinger provides a sketch showing the correct and incorrect orientation of a bolt head and the results of getting this wrong!



fitted one of the bottom end bolts 190 degrees out of true, with result that in an effort to fit the nuts on this bolt they had grossly over tightened them, with the catastrophic results, a totally ruined engine. My sketches show correct and incorrect orientation of a bolt head.

**JIM POTTINGER
EMAIL**

Thanks so much, Jim. I always love reading your recollections - you've certainly led a life less ordinary -and seeing your wonderful photographs. Ed.



Loch Lomond on the Clyde during builder's trials.

Dr. Bintcliffe's dinghy

Regarding Dr. Bintcliffe's letter in the October issue, his lovely dinghy is the slightly larger International 14ft dinghy counterpart to the International 12ft dinghy represented by Adamcraft's kit. The plan originally appeared in the July 1948 *Model Mechanic* magazine (forerunner to today's *Model Boats*) and *The Model Boat Book* provides a good guide to building from the plan, which I am pleased to say

is still available from Sarik Hobbies as Plan No. MM153. It is an ambitious model (the schedule of materials runs to 71 items) and is more advanced than the Adamcraft kit in that the hull, once built clinker fashion over its stocks, doesn't rely on retaining any frames to hold its shape.

I don't know if the plan's designers and Harvey Adam knew each other; both plan and kit appeared at around

the same time but that could be just coincidence as both were models of well-established classes of boat built with traditional methods.

JOHN PARKER
EMAIL

Thanks, John. Much appreciated. Ed.

*Right: Dr. Bintcliffe's charming International 14ft dinghy, plans for which originally appeared in the July 1948 *Model Mechanic* magazine.*



Rawdon MBC Open Day

On August 19 Rawdon Model Boat Club opened its gates in Larkfield Road, Rawdon, Leeds. LS19 6EQ, for the second Open Day of 2023. We were blessed with a bright, sunny, albeit very windy (with very strong gusts at times) day. If you sail model yachts, you will have an idea of how strong the wind was if I tell you that the IOMs were using their 'B' suits!

We welcomed in excess of 100 visitors over the course of the day. Club members staged a model yacht race (IOM) and a Club500 race to entertain everyone. Other club mates put on a demonstration of Fast Electric boats in a Tail Chase around the buoys! Exciting stuff! We were also visited by a representative of the RNLI, who brought along a full-sized RIB lifeboat, which we just managed to squeeze through the gates and onto the lawn.

I would, therefore, like to thank everyone who worked so hard to make the day such a success, including the two local model shops, Modelsport Otley and The Model Shop Leeds, who so generously donated raffle prizes.

We also hosted a photographer from the Yorkshire Post and two freelance photographers, Neil Terry and Asadour Guzelian. You may have seen Neil's photos in the October edition of *Model Boats*. Asadour is the enterprising chap who got down into the water to take his photos!

Since the open day I have launched a new website for Rawdon MBC. I'm still waiting for Google to 'index' the site, but it is now live. Please use this link sites.google.com/view/rawdonmodelboatclub and tell me what you think!

MIKE CRITCHLOW
EMAIL

OUT AND ABOUT



Early morning on the day of Rawdon MBC's August Open Day.



Welcome to

RAWDON

Model Boat Club

Est. 2003



sites.google.com/view/rawdonmodelboatclub

Rawdon MBC's new website is now live.

Above and left: Freelance photographers, Neil Terry and Asadour Guzelian, at work.



The RNLI full-sized RIB lifeboat on display – after managing to squeeze it through the gate!



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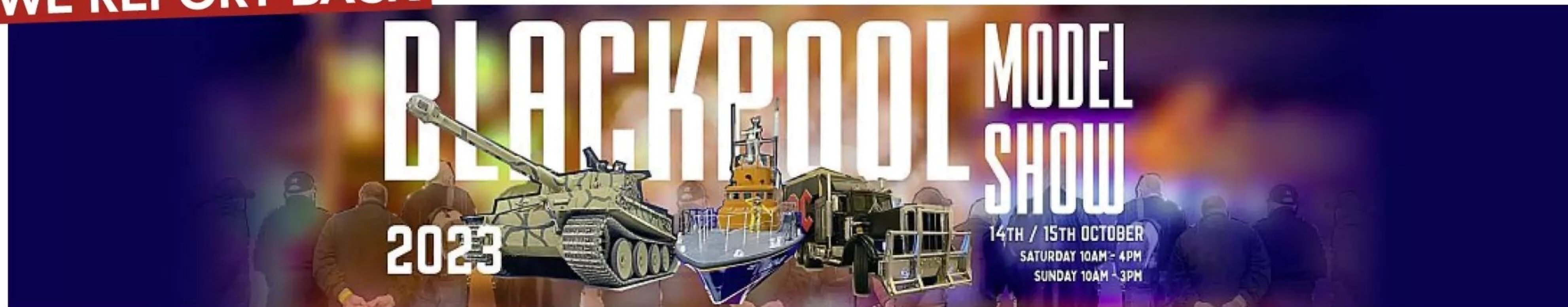
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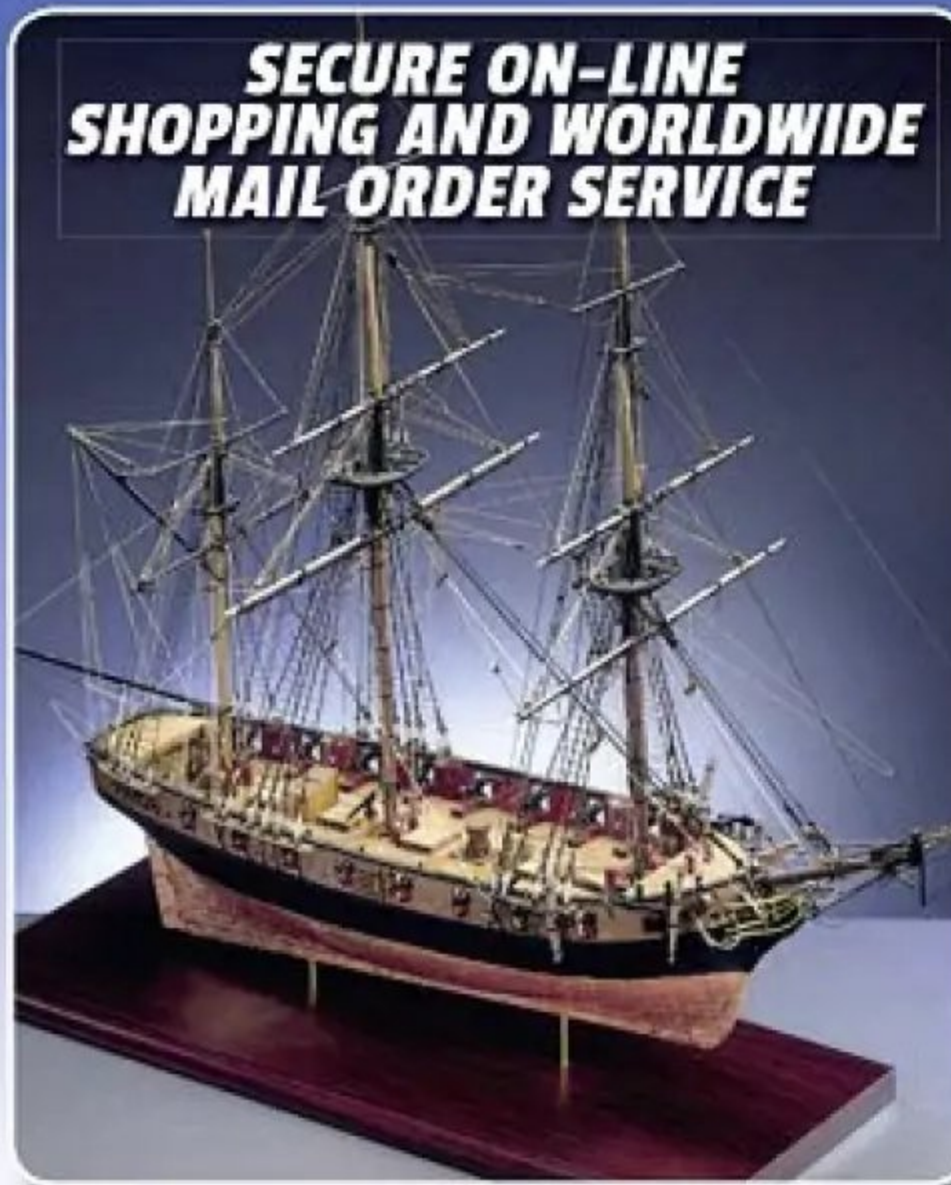
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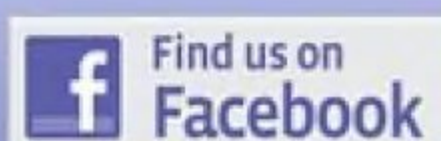
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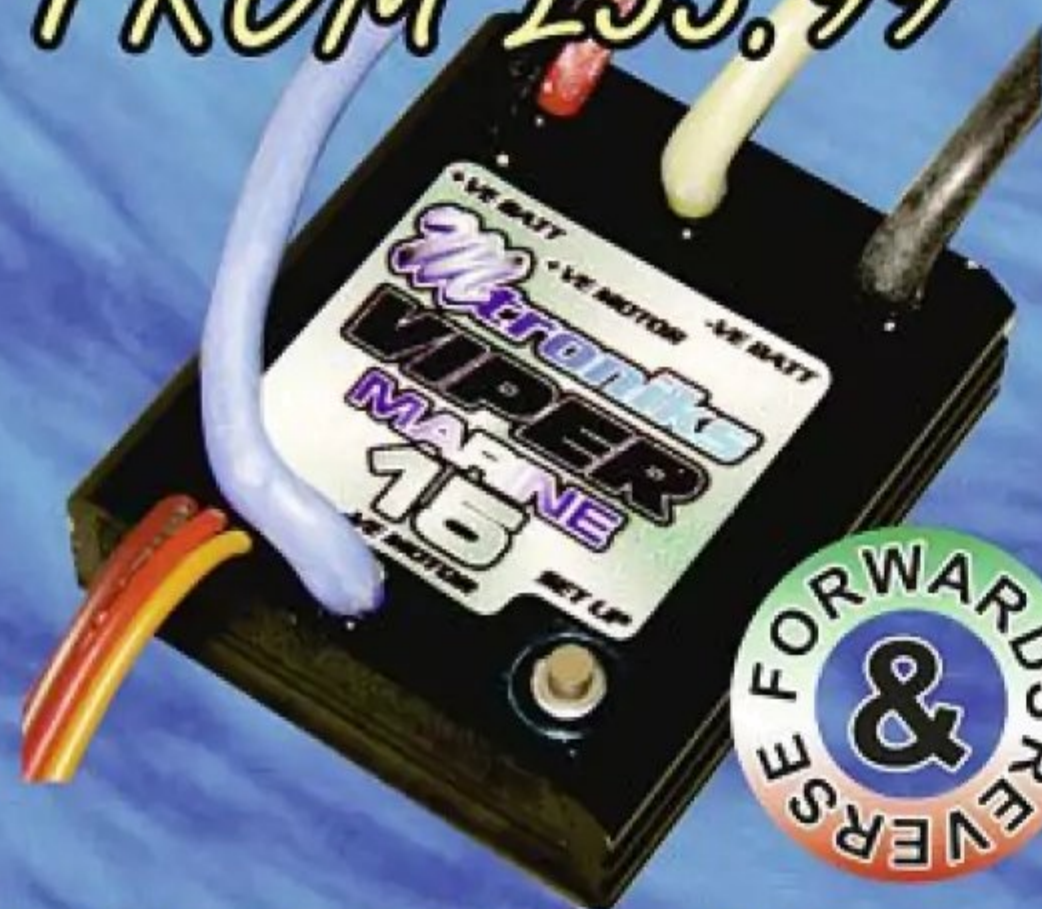
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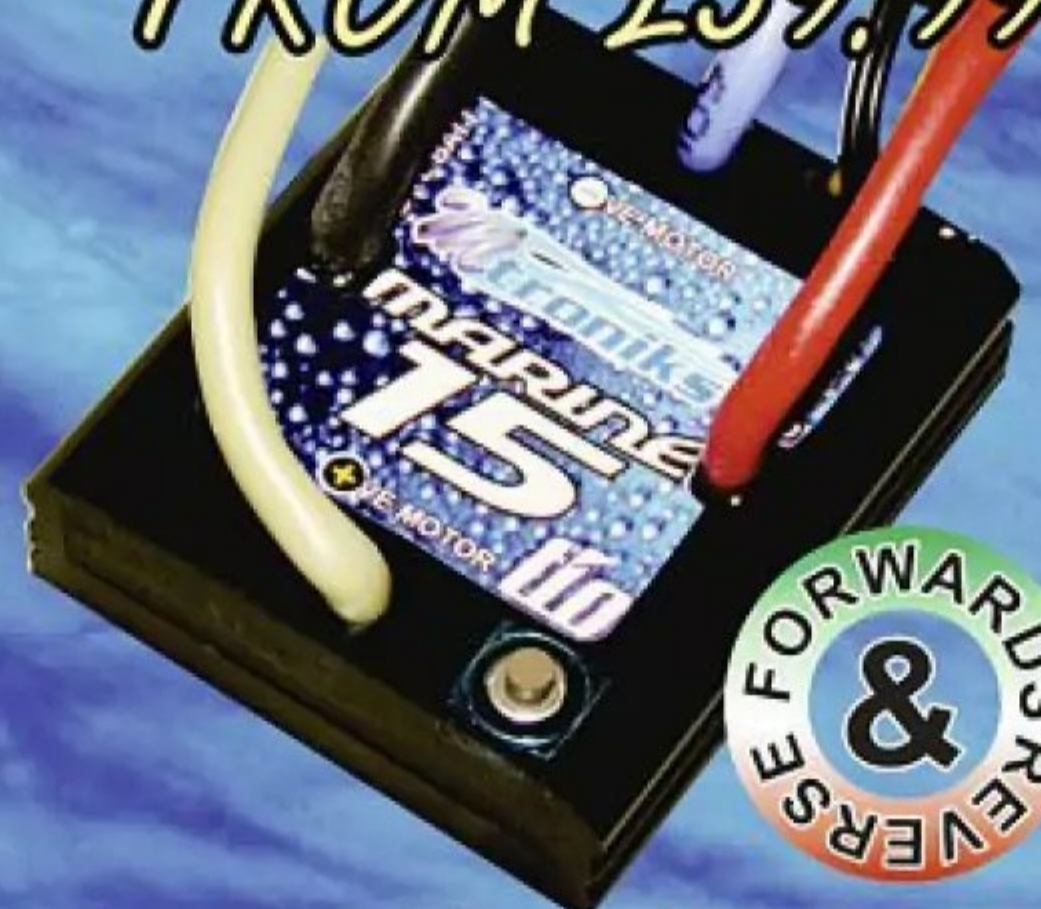
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Winch Plinth - Make from 2mm styrene with 11 dummy fixing bolts from 8BA hex head brass screws, located around the periphery & held in place with cyano. Make in conjunction with the deck winch as the four Ø4mm dowels are common to both & locate the two items on the main deck. To aid painting of both items it is recommended that they are not affixed to each other on a permanent basis

Bulwark - Make from 2mm styrene plus some 4mm sq. styrene for the uprights & a pair of cable fairleads (see hardware list). An upright needs to be placed either side of the freeing port & a further one equi-spaced from the first two. The short upright (i.e. nearest the cab) needs to be drilled vertically to accept a brass pin to fit into a location hole in the main deck. Additionally, at the two points on the centreline of the pusher knees, fit two dummy fixing bolts (total 4) made from 8BA hex head brass screws, these to have approx. 15mm protrusion fitting into approx. Ø3.5mm clearance holes in the pusher knees. Hold dummy bolts in place on bulwark with cyano, but do not affix bolts into the pusher knees

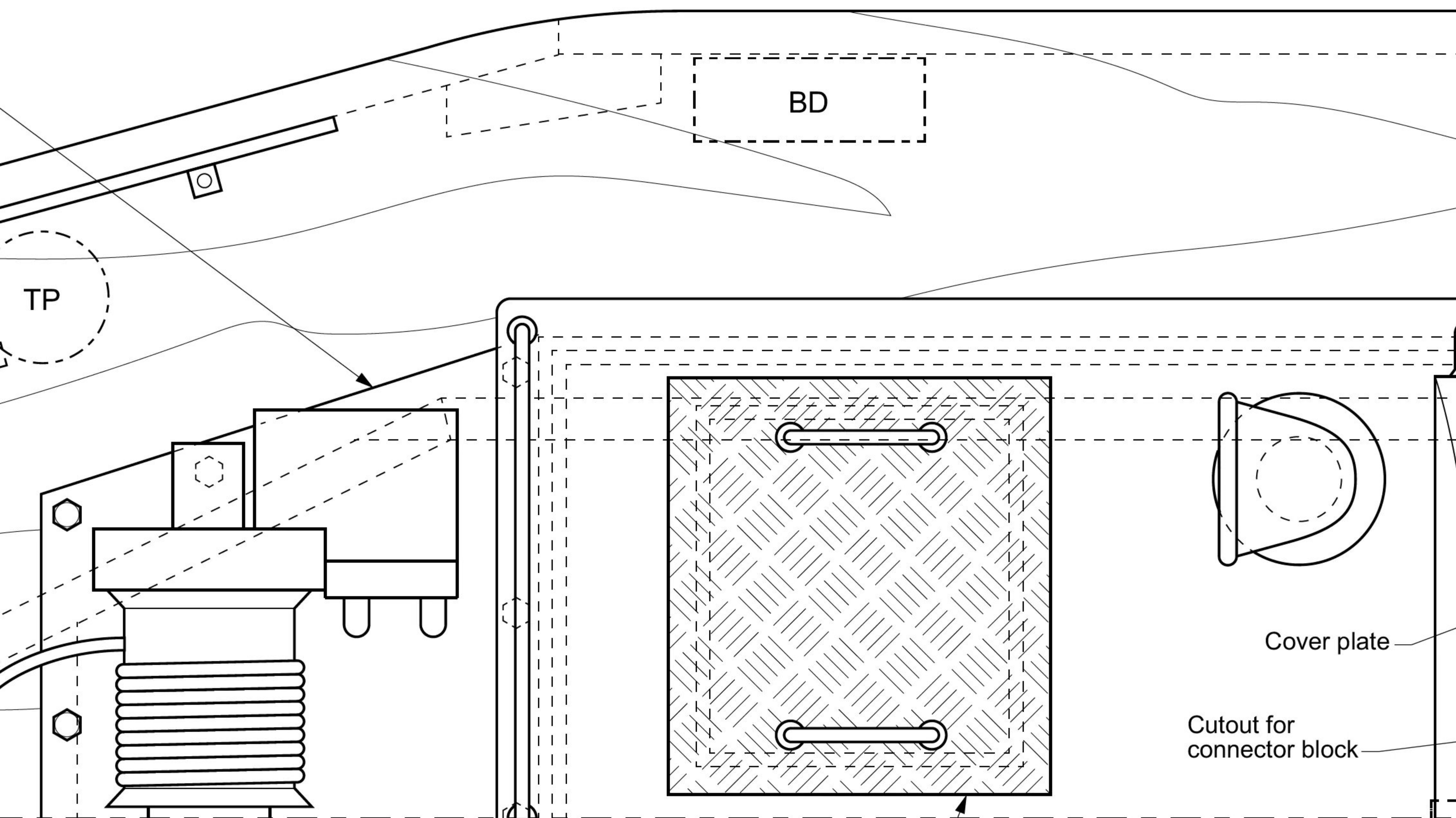
Main Hull - Make from 6mm birch ply. Also, some softwood is required for the four radiused corners, a block at the bow to accommodate the fixing screws for the pusher knees, & stiff pieces at the joints on port & starboard sides. The design shows the hull sides built around the hull base, thus ensuring that the joint lines are not normally in view. The blocks for the radiused corners are shown rebated to increase the strength of the joints. To promote a good finish to the radiused corners the softwood used needs to be knot free & with the grain running vertically. Make the cutout for the lower hull undersize to be trimmed back following assembly. Assemble the main & lower hulls using wood glue & 4 x 30 stainless steel screws (1 bow,

Colour scheme	
Paint	Area or feature
Wilko - Black, satin	Main & lower hull, Kort nozzle, tow hook, tow posts, safety rails, grab rails, handles, bollards, wiper arms/blades, winch plinth, headlight, horns, rope hooks, lifebelt brackets, pusher knees below deck level
Wilko - English sage, satin	Cab body, bulwark, cowl ventilators (exterior) & pusher knees above deck level
Wilko - Grey skies, satin	Cab roof including cover plate, antenna mount & signage box on bow face of cab body
Wilko - Storm skies, satin	Main & upper decks - alternatively use Wilko grey primer undercoat protected with clear lacquer, satin or matt
Wilko - Orange	Deck winch, lifebelts
Matt aluminium	Hatch covers
Humbrol or Tamiya - Red, satin	Cowl ventilators (interior)
Humbrol - 113 matt	Exhaust stack
Humbrol or Tamiya - White, satin	Cable fairleads
Halfords - Tyrewall black	Pusher pads & top face of pusher knees (marked 'X' on plan)

Main Deck - Make from a piece of 6mm birch ply which fits snugly inside the lip of the main hull, & then top this with a piece of 1.6mm birch ply of suitable size to overhang the outer edges of the main hull which can be trimmed back after

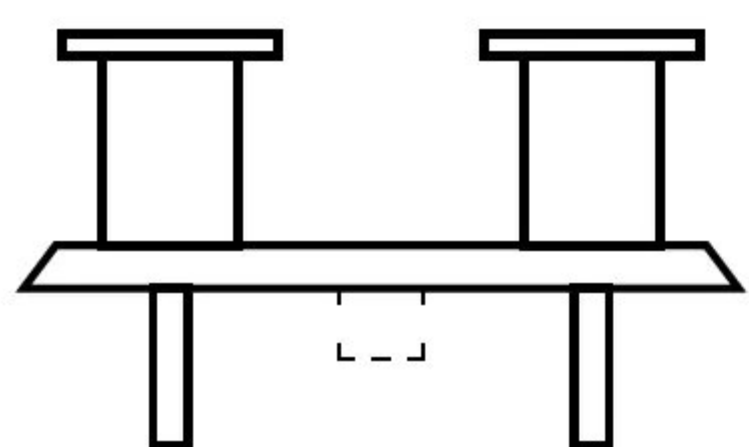
Bollards
on the upper hull
horns drilled into the main hull

Upper hull
item is made from
the cutout of the
styrene sheet fitted
6.3mm thick
of the main hull
located



Hatch Covers - 2 required, make from styrene so the body fits snugly within the coaming. Make the tops using 1:12 chequerplate from Mac's Mouldings M343

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2 stern)

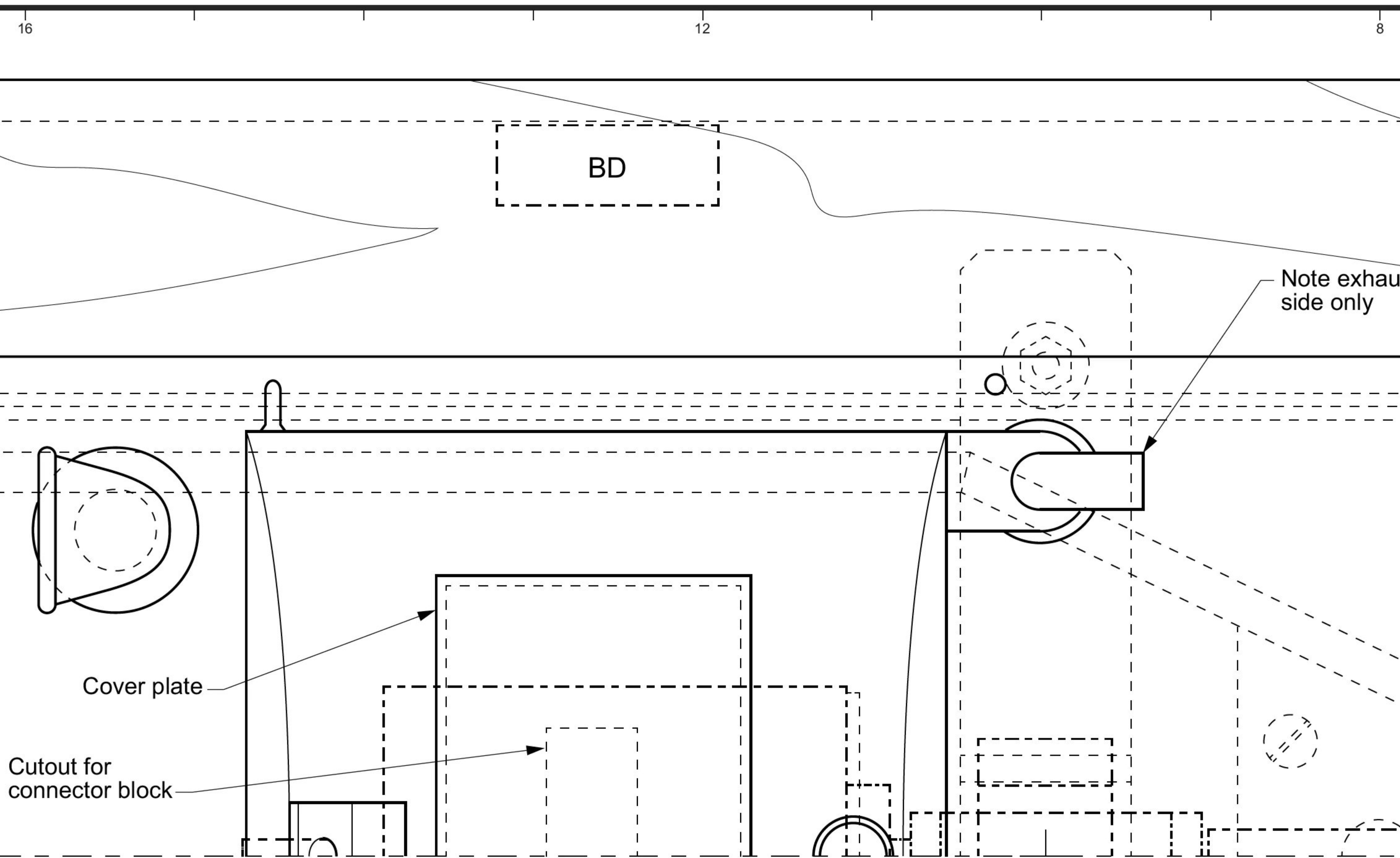


- 8 required, see hardware list. As purchased the plastic lug underside needs to be removed & the 2 indents beneath the drilled out to accept Ø1.6mm brass pins, to fit location holes main deck

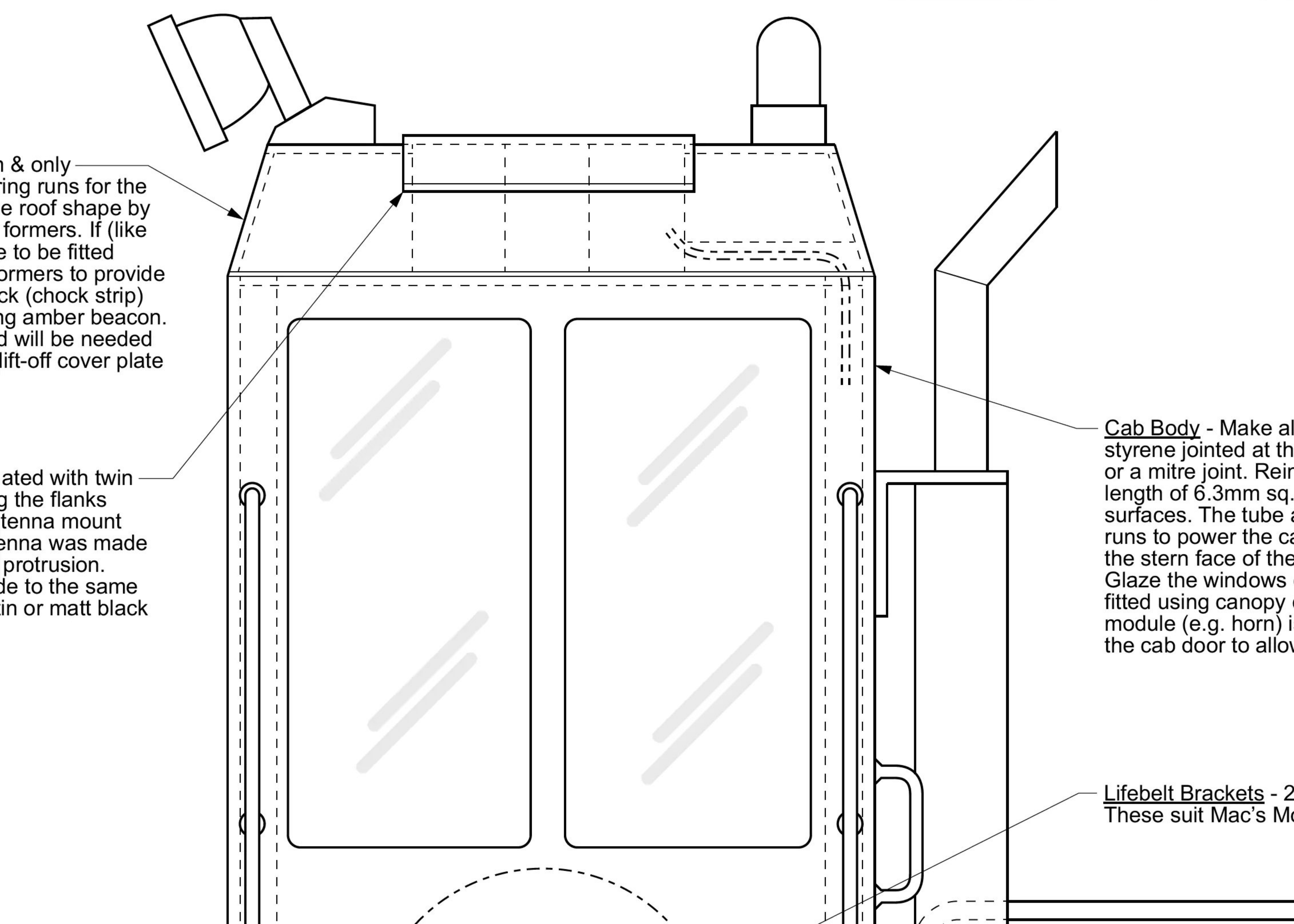
Cab Roof - Make as a stand-alone item & only assemble to the cab body once any wiring runs for the cab lights have been installed. Make the roof shape by using thin styrene sheet over softwood formers. If (like the prototype) roof and/or cab lights are to be fitted groove the underside of the softwood formers to provide a route for wiring runs to a terminal block (chock strip) & also a route to the headlight & flashing amber beacon. To accommodate the chock strip, a void will be needed in the centre of the roof formers with a lift-off cover plate to conceal the terminal block & wiring

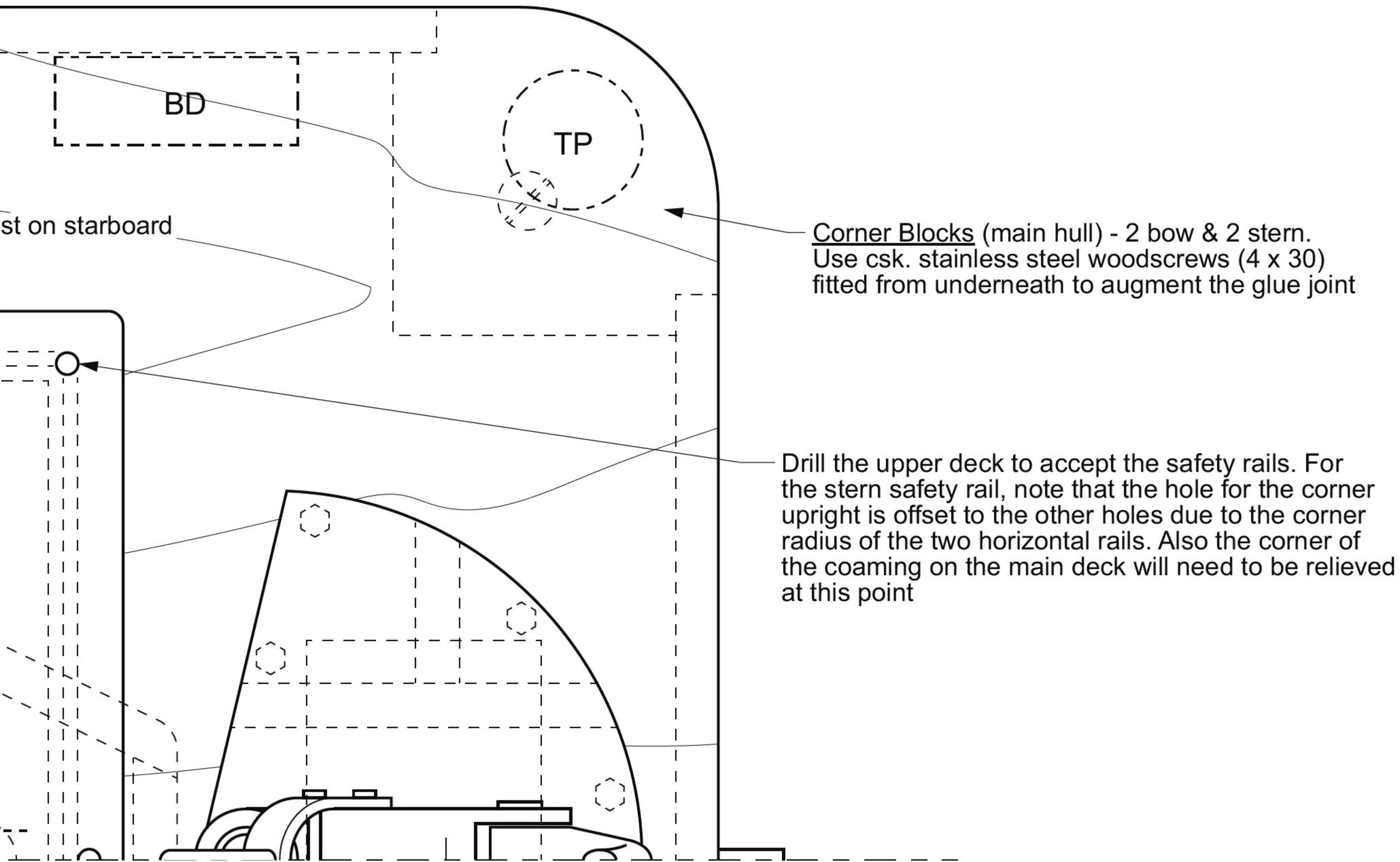
Cover Plate - The prototype was populated with twin air horns (see hardware list) fitted along the flanks facing forward. Also, a cone shaped antenna mount 8mm high with base Ø6.5mm. The antenna was made from Ø1.6mm carbon fibre with 25 mm protrusion. Alternatively, the antenna could be made to the same dimensions from brass rod, painted satin or matt black

Deck - Make from 2mm styrene edged with 6.3mm sq. styrene rod. It is recommended that this is made to suit the coaming of the main deck to ensure a snug fit between the two items. Produce cutout for the cab & also for the two access hatches. All three cutouts require a coaming made from 1.5mm styrene. Note the coaming for the cab needs to have clearance at the four corners for the square styrene tube to reinforce the cab. Where possible reinforce the coamings on the underside of the deck using offcuts of 6.3mm sq. styrene rod, although there is insufficient room for reinforcement adjacent to the port & starboard edges of the deck. Additionally, the coaming for the cab will need a secondary styrene strip added 2mm below the first, to support the cab floor which is 2mm thick



Half Plan View - port side symmetrically open





opposite (except for exhaust)

Model Boats

PLOVER

FREELANCE GRAVEL PIT TUG

BY DAVID MARKS

PLAN No: MM2172	No. OF SHEETS: 1 OF 2	First published in Model Boats November 2023
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l four panels from 2mm thick
e corners by either a lap joint
nforce each corner by adding a
styrene tube to adjacent internal
also provides a conduit for wiring
ab lighting. For the vent panel on
e cab use Mac's Mouldings M294.
of the cab with 1mm clear acetate
cement after final painting. If a sound
s to be fitted to the model, 'half glaze'
w free exit of the sound

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Model dimensions at 1:12 scale
Lenght O/A = 580mm
Beam = 233mm
Freeboard = 30mm max.

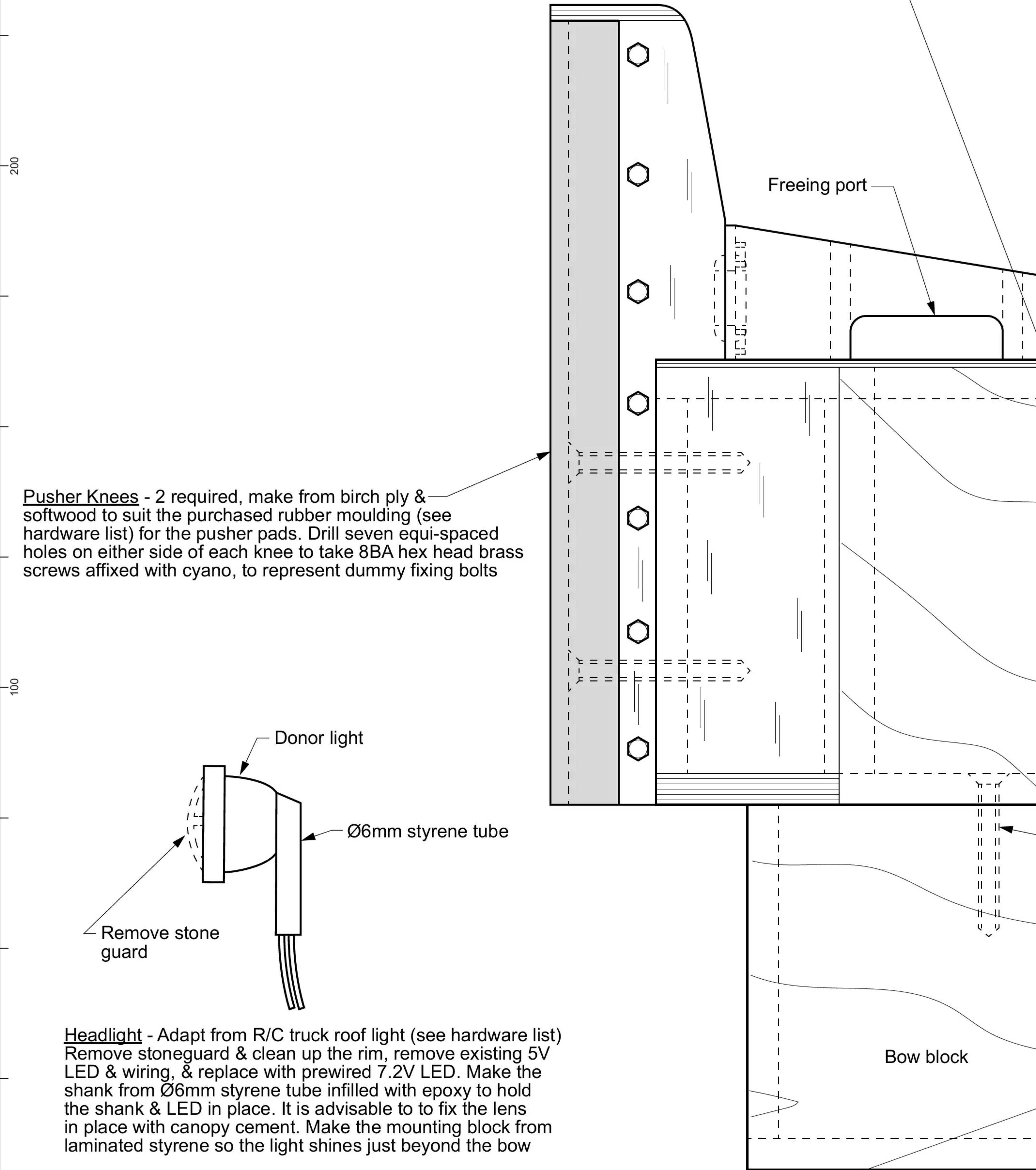
required, see brass metalware.
ouldings M299

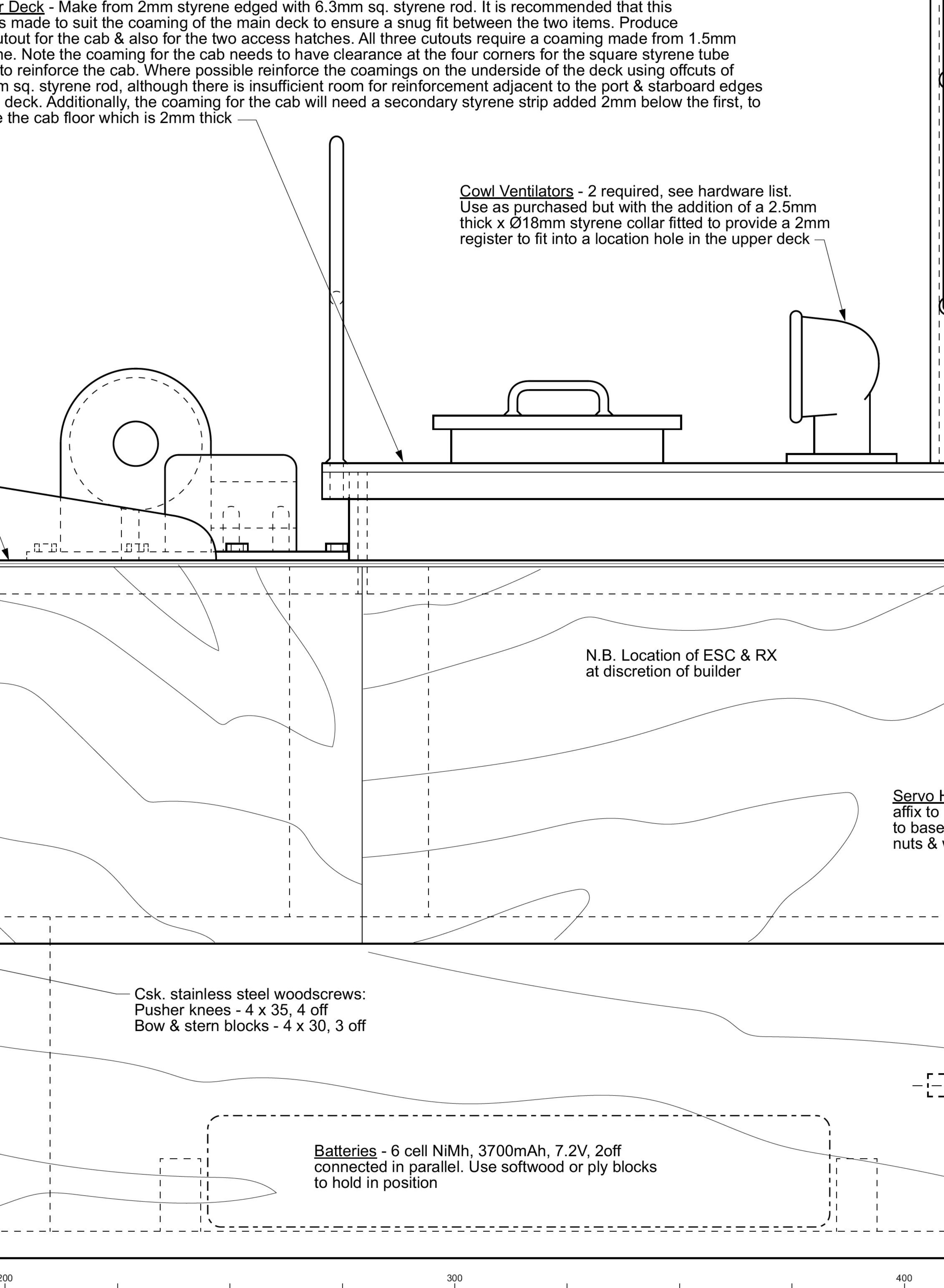
- Towing Hook - Make from styrene commencing with a 60mm x 32mm location

Humbrol or Tamiya - White, satin	Cable fairleads
Halfords - Tyrewall black	Pusher pads & top face of pusher knees (marked 'X' on plan)

Upper
item is
the cu
styren
fitted
6.3mm
of the
locate

Main Deck - Make from a piece of 6mm birch ply which fits snugly inside the lip of the main hull, & then top this with a piece of 1.6mm birch ply of suitable size to overhang the outer edges of the main hull, which can be trimmed back after assembly. A cutout needs to be produced & fitted with a coaming of 2mm birch ply to accommodate the upper deck. A further cutout approx. 60mm x 32mm needs to be provided at the stern for access to the tiller arm etc. N.B. The coaming at the stern/starboard corner needs to be relieved to clear the location pin for the stern safety rail





Lifebelt Brackets - 2

list.
2.5mm
de a 2mm
er deck

rx

Steering servo

Steering linkage -

Rudder

Servo Housing - Make from scrap 4mm ply & softwood, —
affix to 9.5mm thick ply or softwood crosspiece & attach
to base of main hull using M5 stainless steel csk. screws,
nuts & washers

Huco coupling

Motor - Torpedo 800

Stern bl

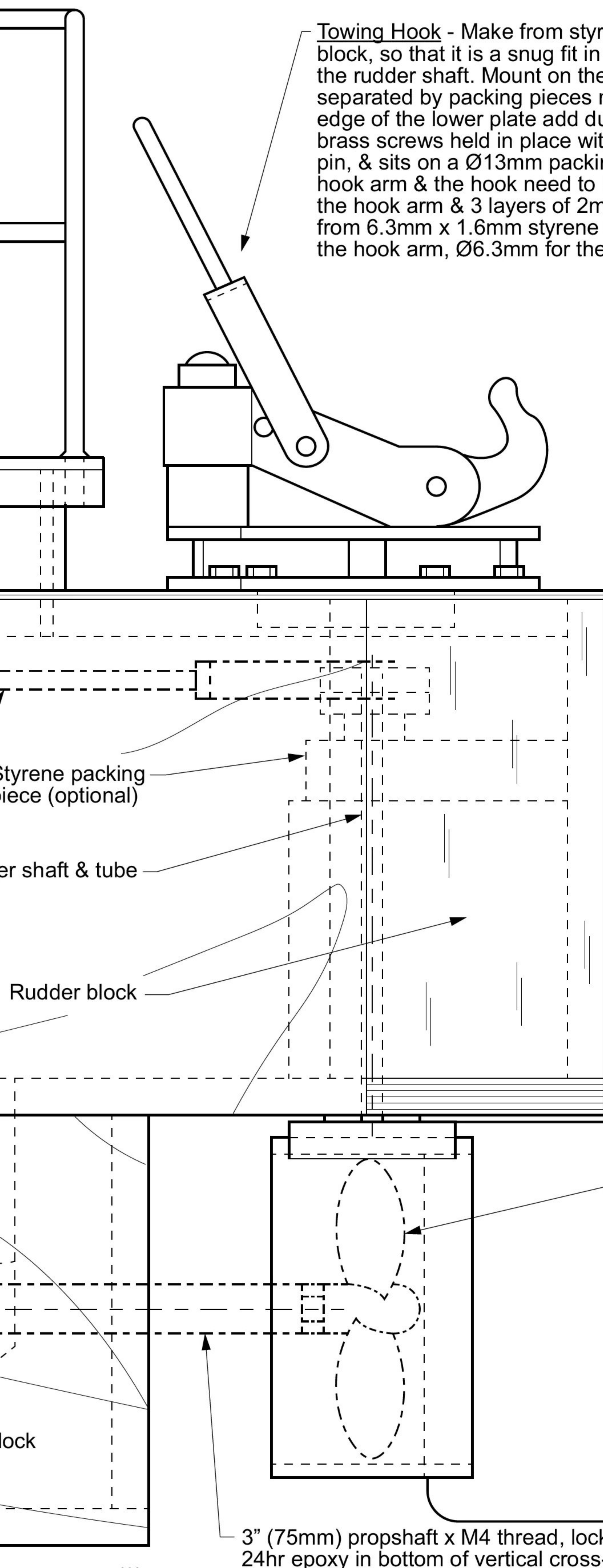
Port Side View

400

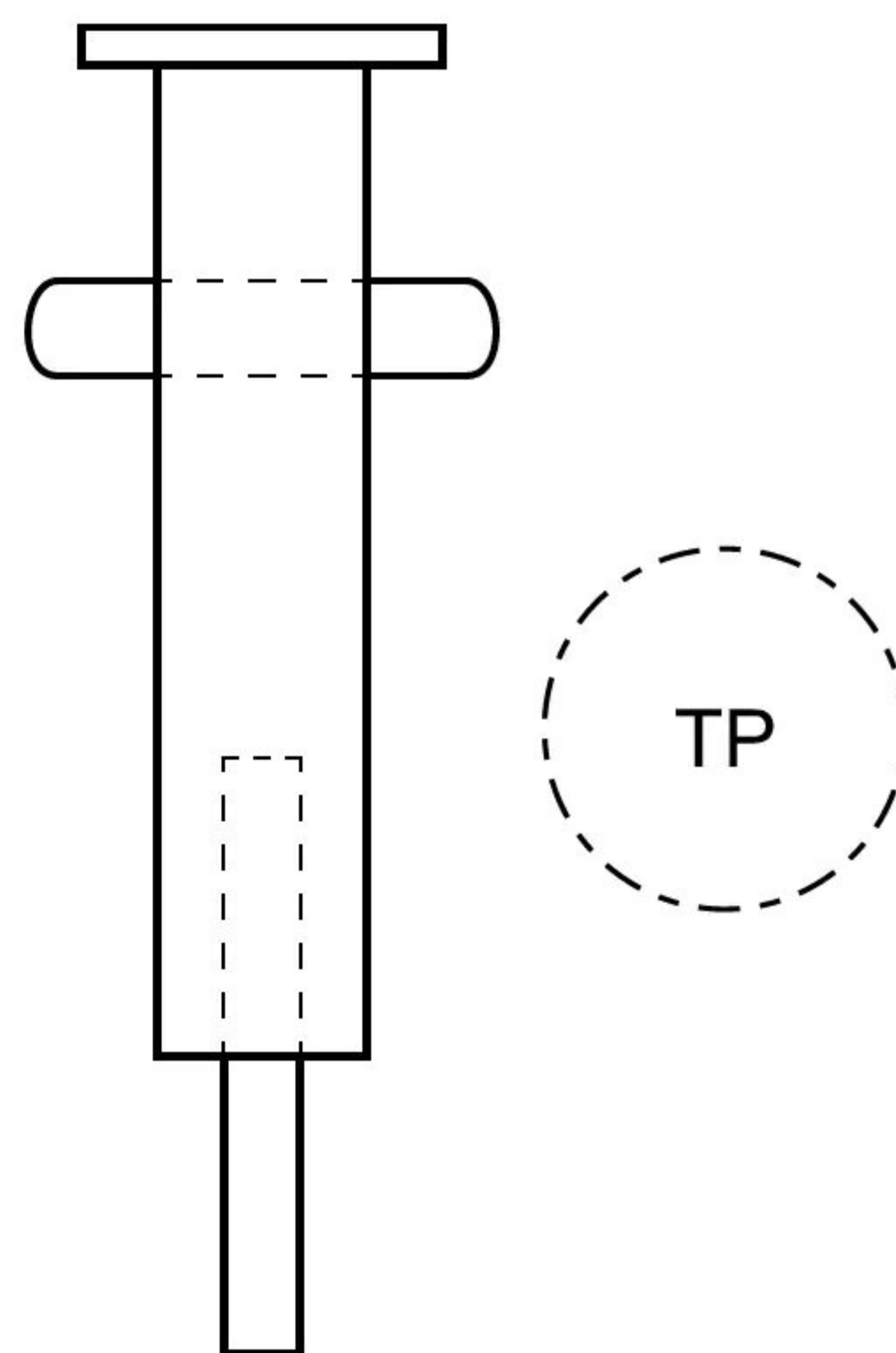
500

required, see brass metalware.
mouldings M299

Model dimensions at 1:12 scale
Length O/A = 580mm
Beam = 233mm
Freeboard = 30mm max.

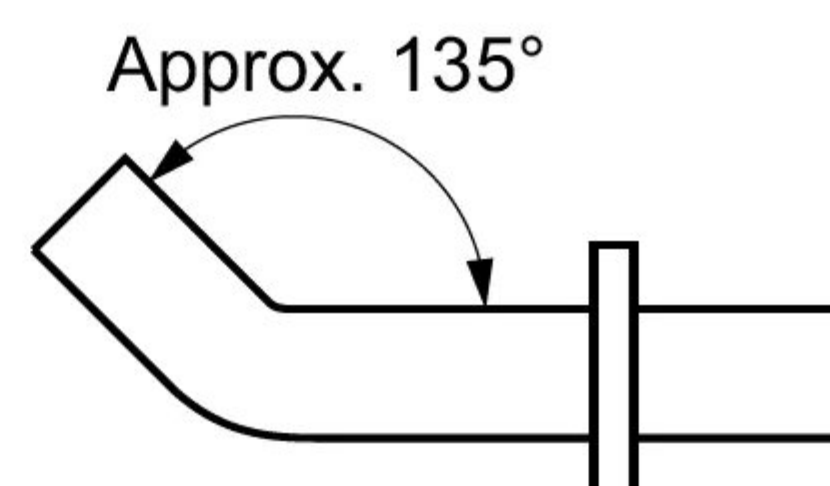


Towing Hook - Make from styrene commencing with a 60mm x 32mm location block, so that it is a snug fit in the cutout in the main deck providing access to the rudder shaft. Mount on the block a quadrant assembly consisting of 2 plates separated by packing pieces made from lengths of 6.3mm sq. rod. Around the edge of the lower plate add dummy fixing bolts (8 off) made from 8BA hex head brass screws held in place with cyano. The cranked hook arm pivots on a Ø6.3mm pin, & sits on a Ø13mm packing piece with a Ø10mm locking ring on top. Both the hook arm & the hook need to be made from laminated styrene, 5 layers of 2mm for the hook arm & 3 layers of 2mm for the hook. Make the latching device for the hook from 6.3mm x 1.6mm styrene strip with a Ø3mm operating arm. Three pins fit through the hook arm, Ø6.3mm for the hook pivot & Ø3.1mm for the pivot & stop of the operating arm



Tow Posts - 4 required, make from Ø11.3mm styrene tube infilled with wood dowel. Capping piece is 2mm thick styrene & crosspin from Ø5.1mm styrene rod. A Ø4mm brass pin needs to be fitted into the base, to fit into a location hole in the deck

Prop - Ø50mm L/H



Detail of Rope Hook - scale 2:1
2 required, see brass metalware, these require the brass rod to be formed to an angle of approx. 135° (not 90°). To suit Mac's Mouldings M203

3" (75mm) propshaft x M4 thread, lock in position with 24hr epoxy in bottom of vertical cross-drilled hole

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Headlight mounting block

Wiper blade & arm assemblies

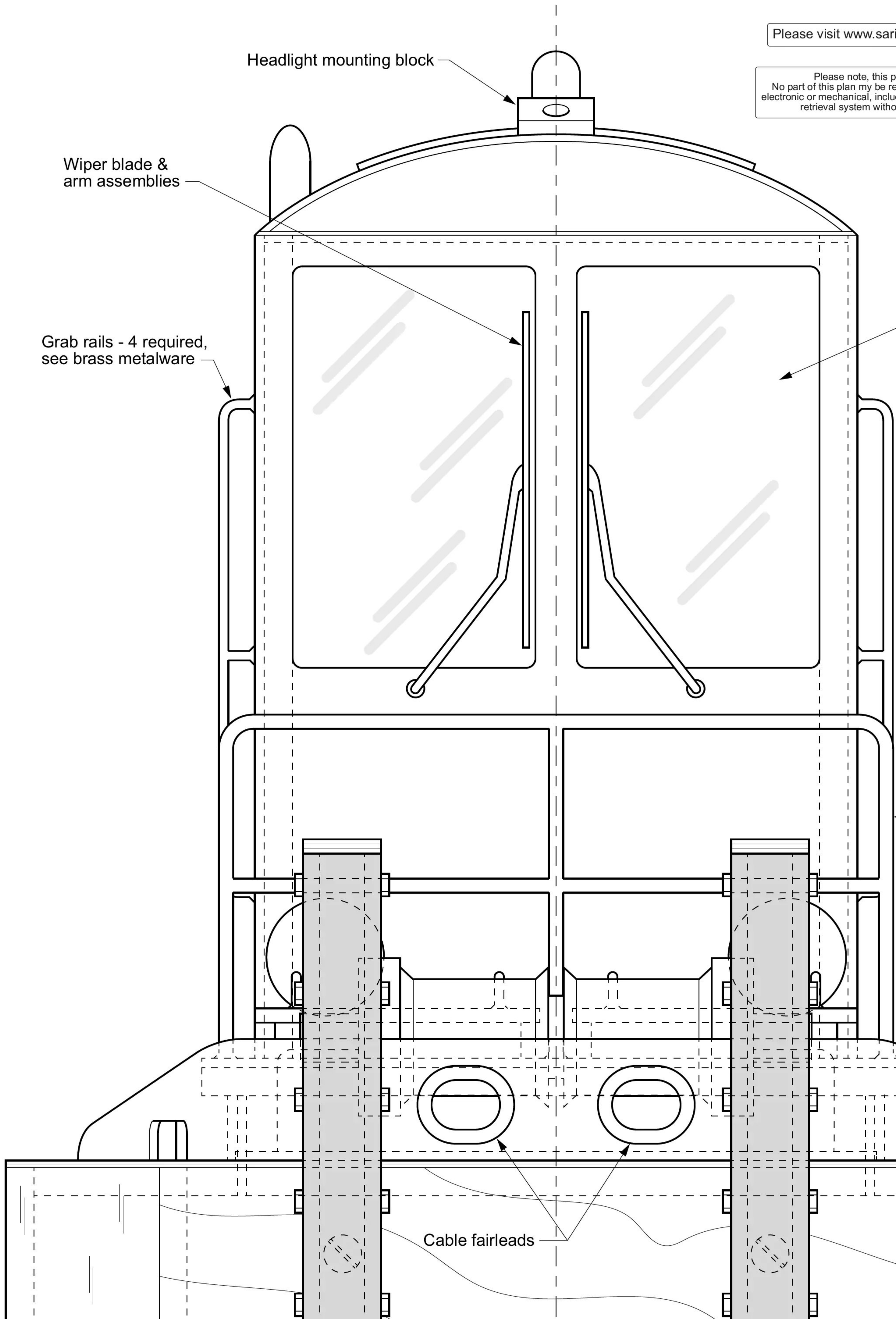
Grab rails - 4 required, see brass metalware

Cable fairleads

500

400

300



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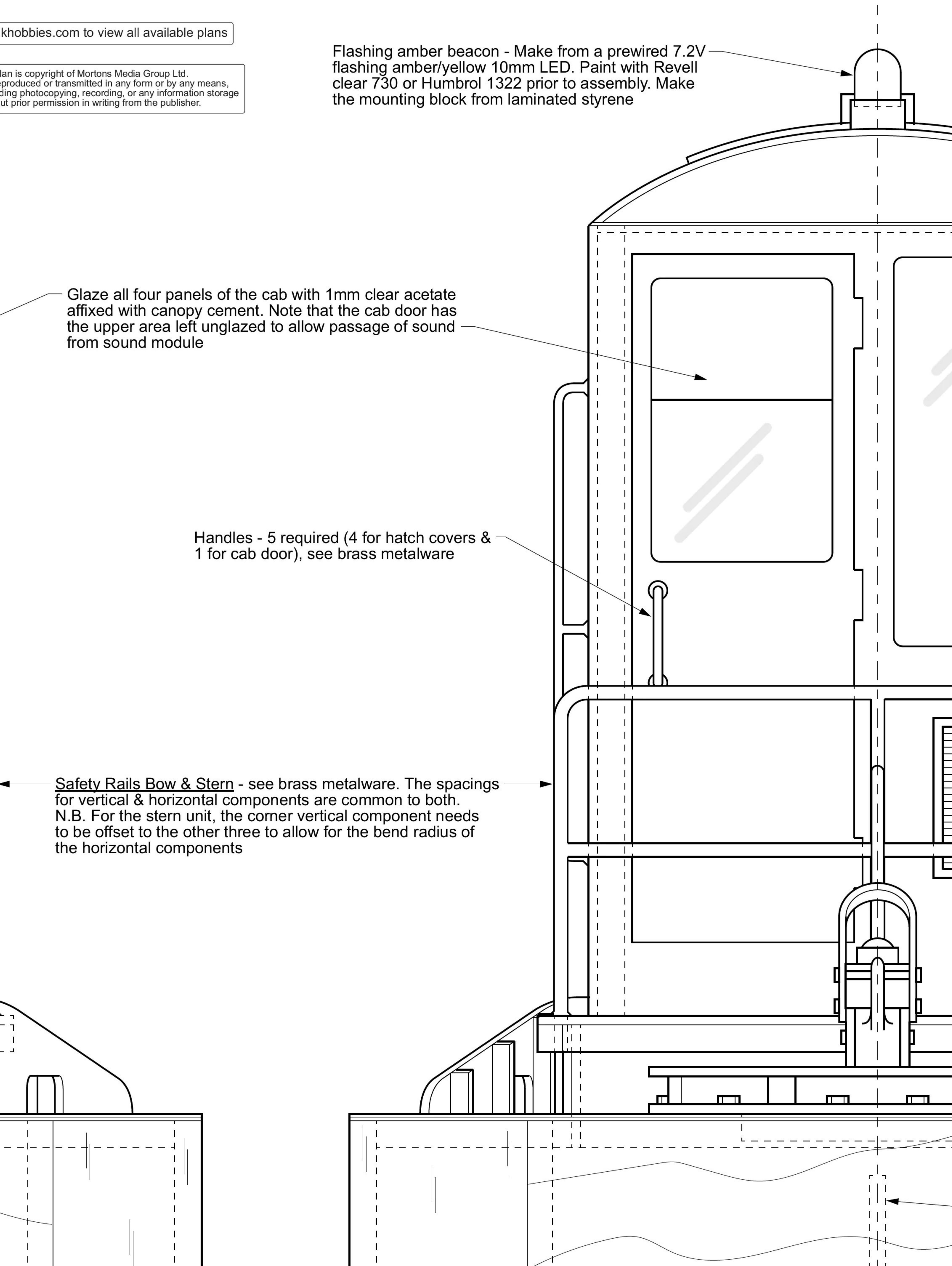
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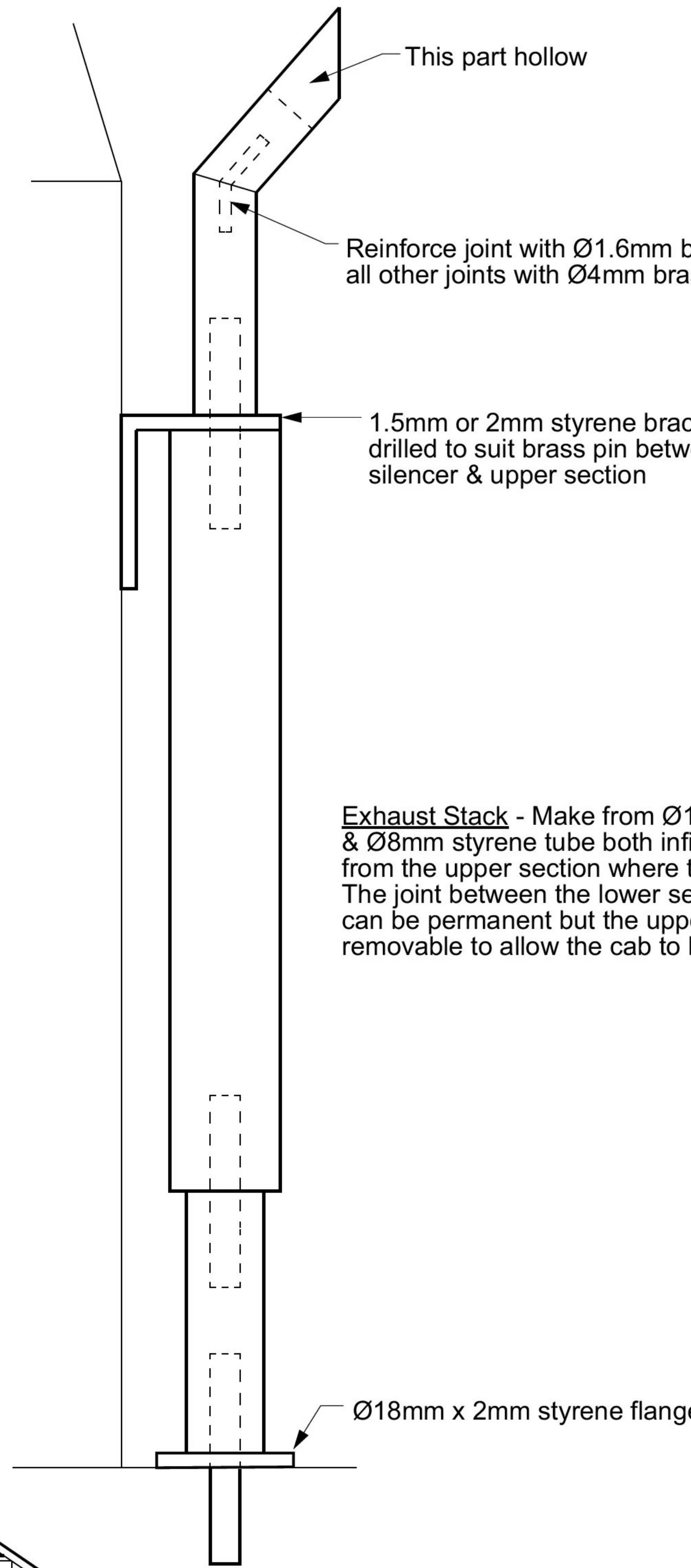
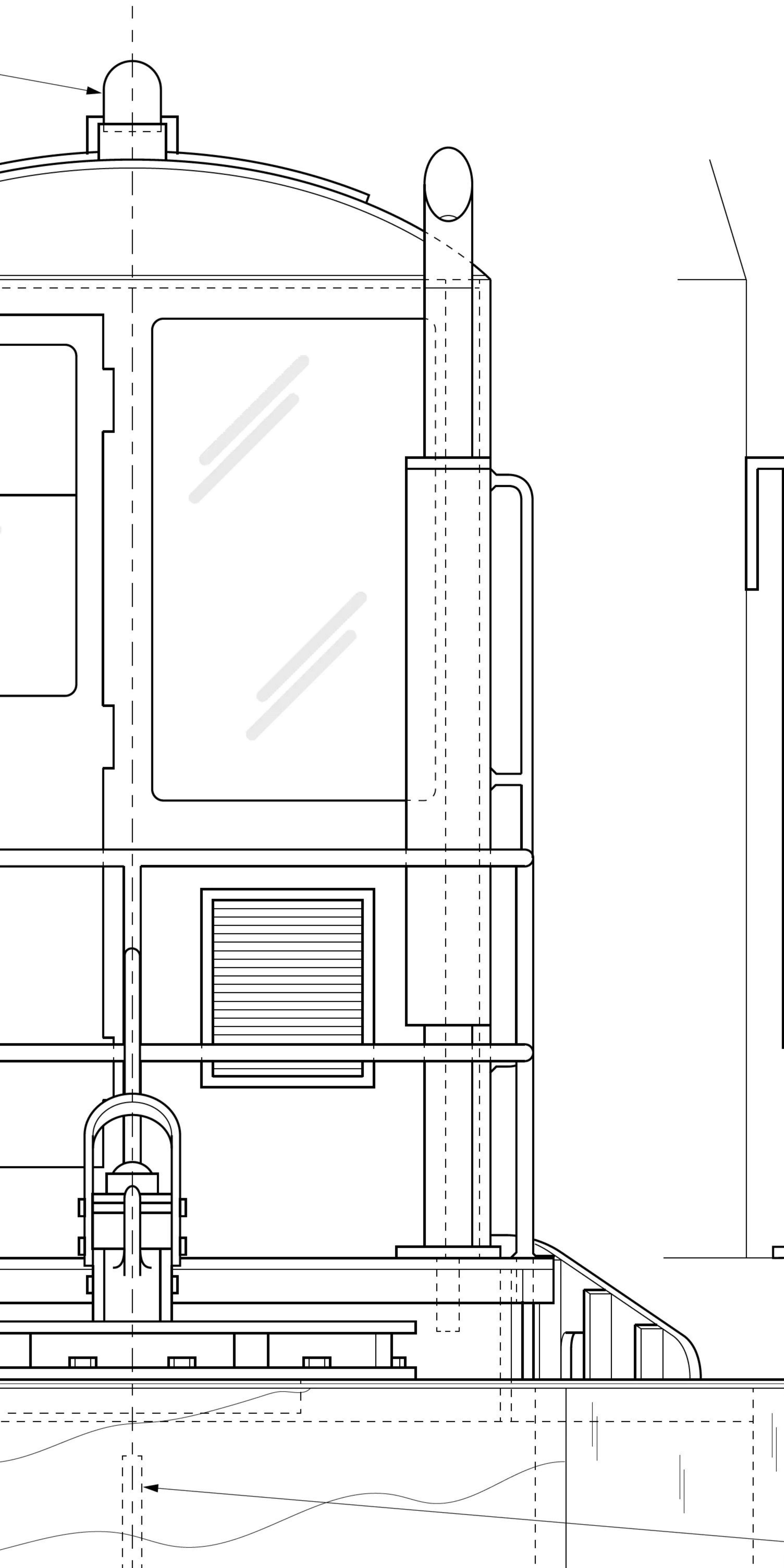
Flashing amber beacon - Make from a prewired 7.2V
flashing amber/yellow 10mm LED. Paint with Revell
clear 730 or Humbrol 1322 prior to assembly. Make
the mounting block from laminated styrene

Glaze all four panels of the cab with 1mm clear acetate
affixed with canopy cement. Note that the cab door has
the upper area left unglazed to allow passage of sound
from sound module

Handles - 5 required (4 for hatch covers &
1 for cab door), see brass metalware

Safety Rails Bow & Stern - see brass metalware. The spacings
for vertical & horizontal components are common to both.
N.B. For the stern unit, the corner vertical component needs
to be offset to the other three to allow for the bend radius of
the horizontal components





Exhaust Stack - Make from Ø1
& Ø8mm styrene tube both infi
from the upper section where t
The joint between the lower se
can be permanent but the upp
removable to allow the cab to l

Rudder Shaft - Make from Ø
running in a Ø7/32" rudder t

Boats

PLOVER

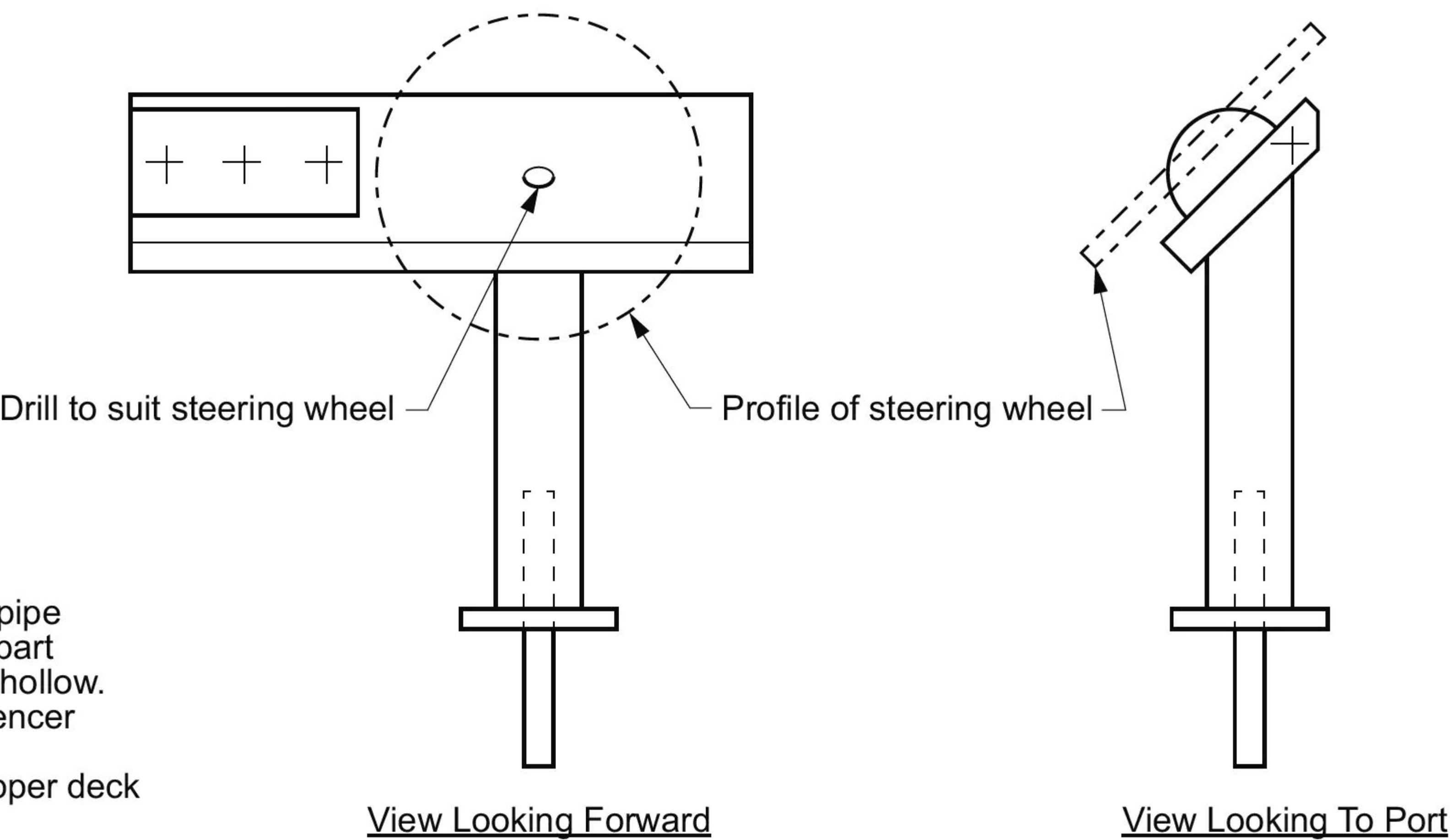
FREELANCE GRAVEL PIT TUG

BY DAVID MARKS

PLAN No: MM2172

No. OF SHEETS: 2 OF 2

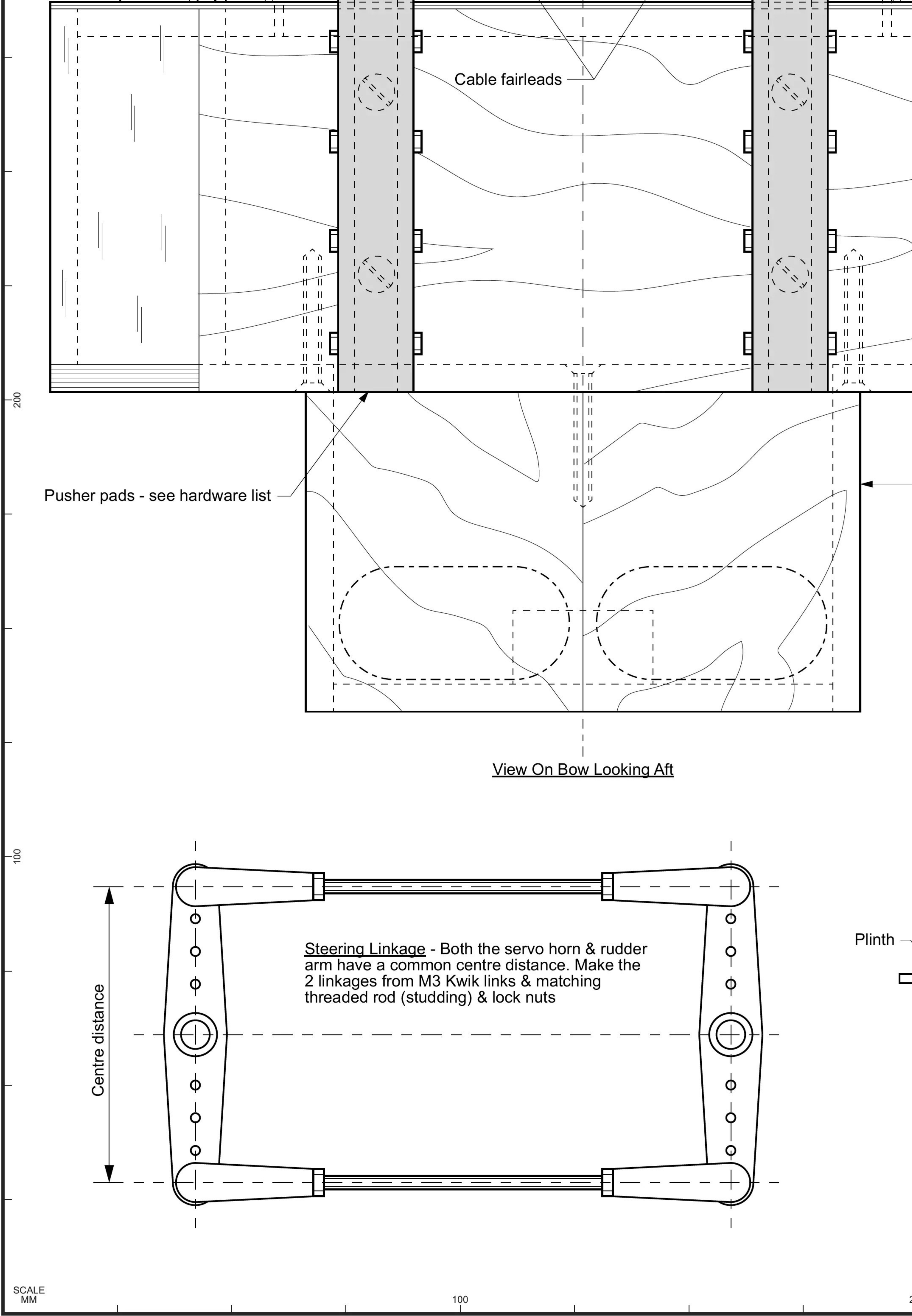
First published in
Model Boats November 2023

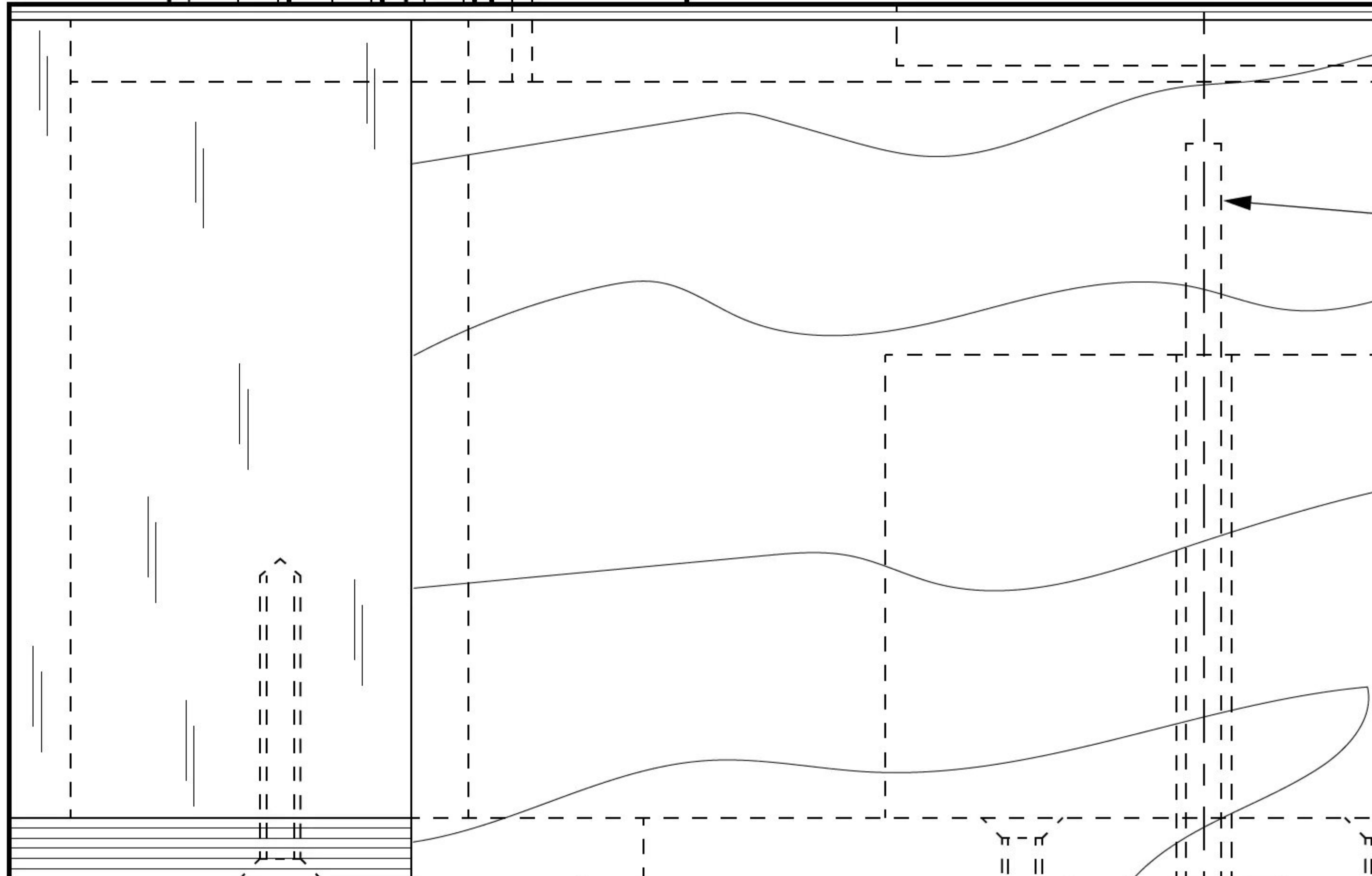
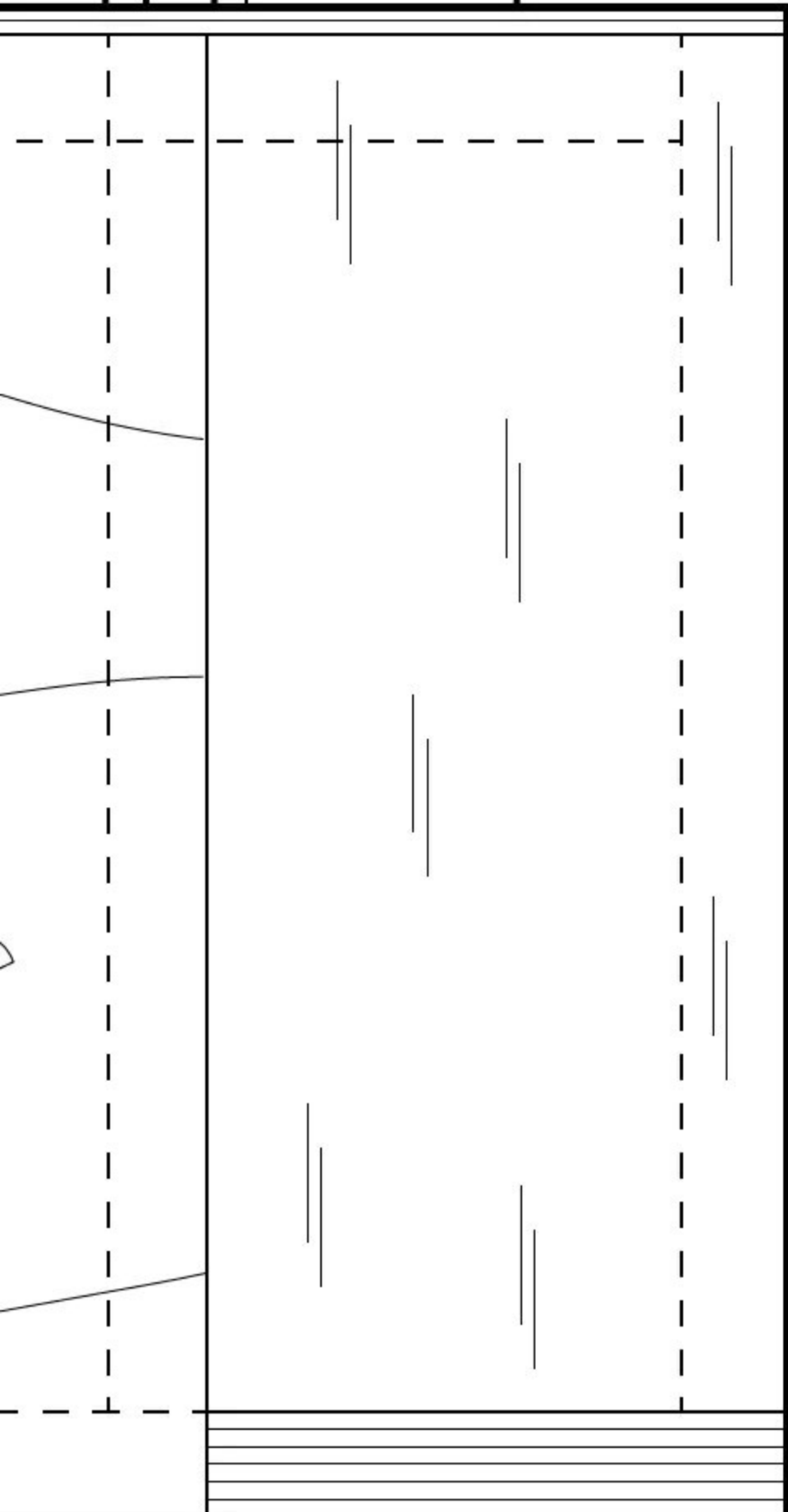


Driver's Control Panel - Make the pillar from Ø8mm styrene tube infilled with wood dowel to take Ø2.3mm brass pin. Make the panel from 2 x 2mm laminated styrene, & for the raised section use Ø12.7mm styrene tube infilled with wood dowel & end faces clad with scrap thin styrene. Control levers are coloured map pins (Ø3mm head) fitted into 3 drilled holes on the raised section to represent winch controls, & 1 on the starboard end of the panel to represent fwd/rev control

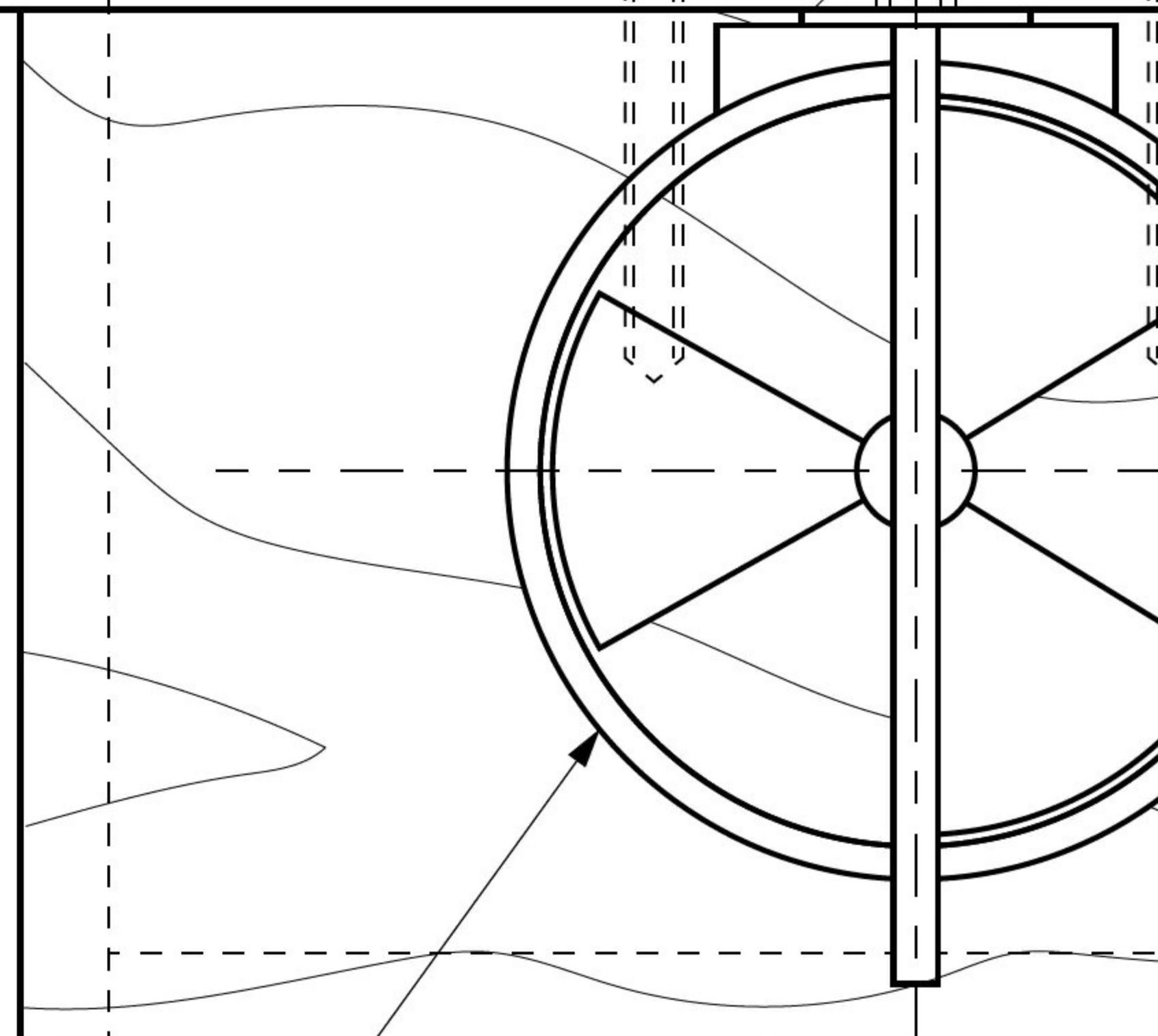
Brass metalware				
Description	Quantity	Brass rod Ø	Brass washer (fixing flange)	Brass strip
Safety rail (bow)	1	3.2mm (1/8")	M3	-
Safety rail (stern)	1	3.2mm (1/8")	M3	-
Grab handles (on cab)	4	2.35mm (3/32")	8BA	-
Door & hatch handles	5	2.35mm (3/32")	8BA	-
Rope hooks	2	2.0mm	M2 or 9BA	-
Lifebelt brackets	2	2.35mm (3/32")	8BA	6.3mm x 1.6mm
Wiper blade & arm	2	2.0mm	M2 or 9BA	3.2mm x 1.6mm

Hardware List	
Supplier	Item
Component Shop	Motor - MFA/Como Drills Torpedo 800
	Battery - NiMh 7.2V 3700mAh
	2 off connected in parallel
	Action Electronics sound module

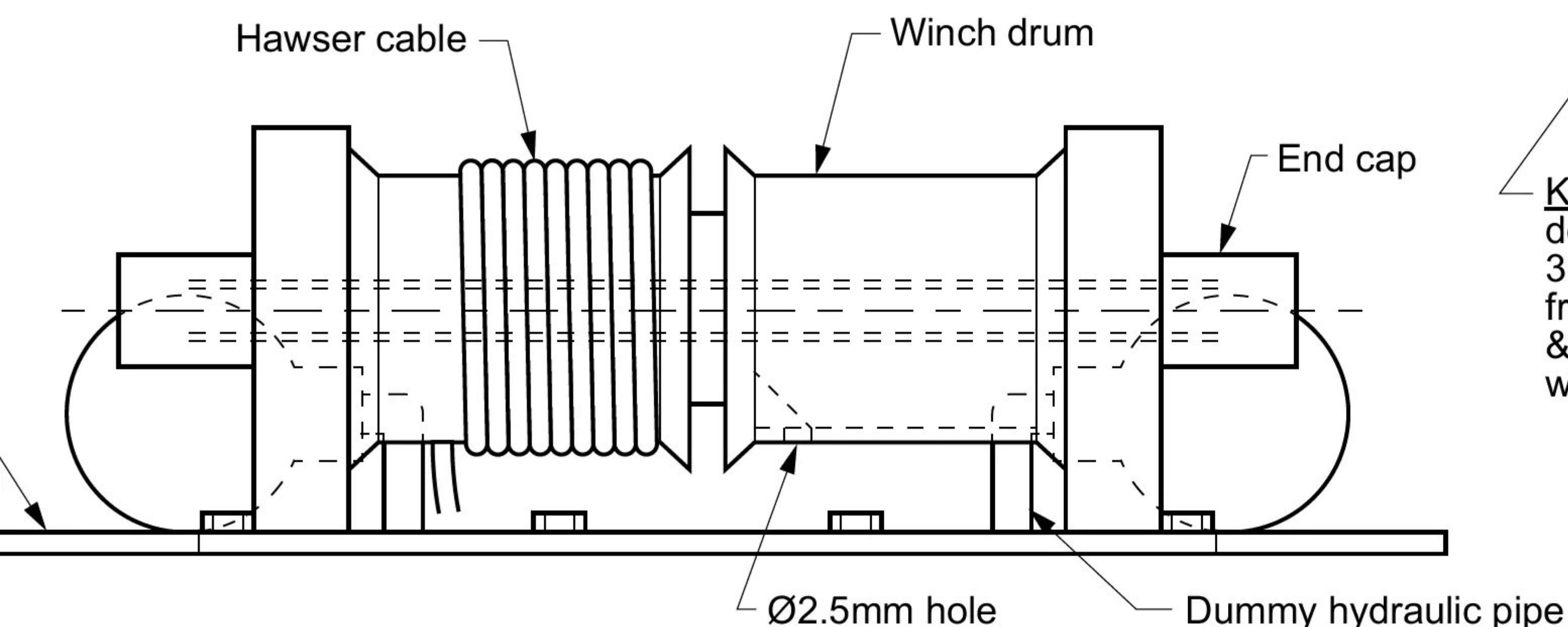




Lower Hull (sub assembly to main hull) - Make from 6mm birch ply plus some softwood for the bow & stern blocks, & also stiffening pieces at the joints on the port & starboard sides. The design shows the hull sides built around the hull base, thus ensuring the joint lines are not normally in view. Using the standard bracket supplied with the motor, use 4 off csk. stainless steel machine screws through the base to hold the unit in position. A hole Ø8mm needs to be drilled through the stern block for the propshaft & a vertical cross-hole of approx. Ø13mm provided to form a well for epoxy resin, needed to hold the propshaft in position



View On Stern Looking Forward

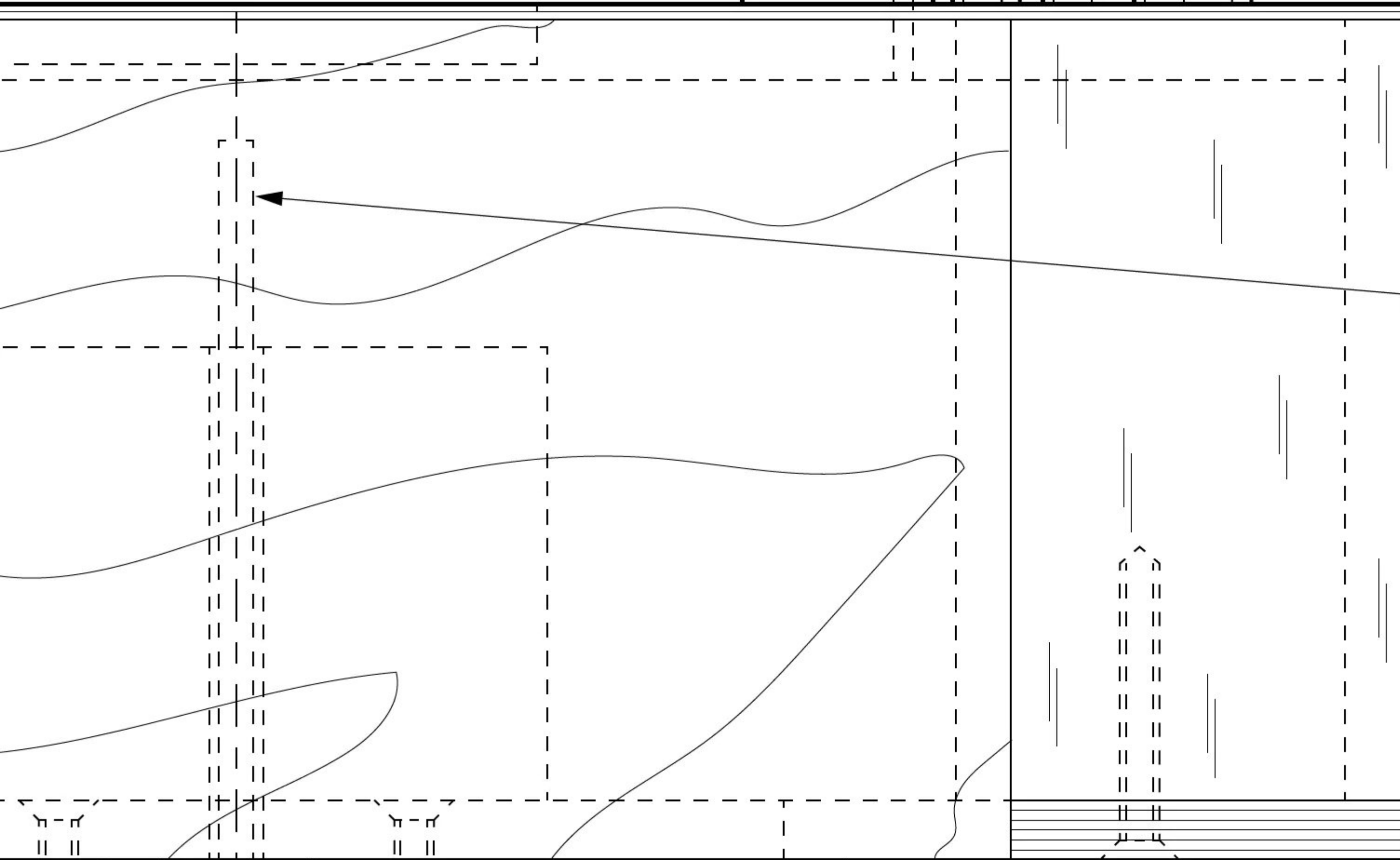


View From Front Looking Aft

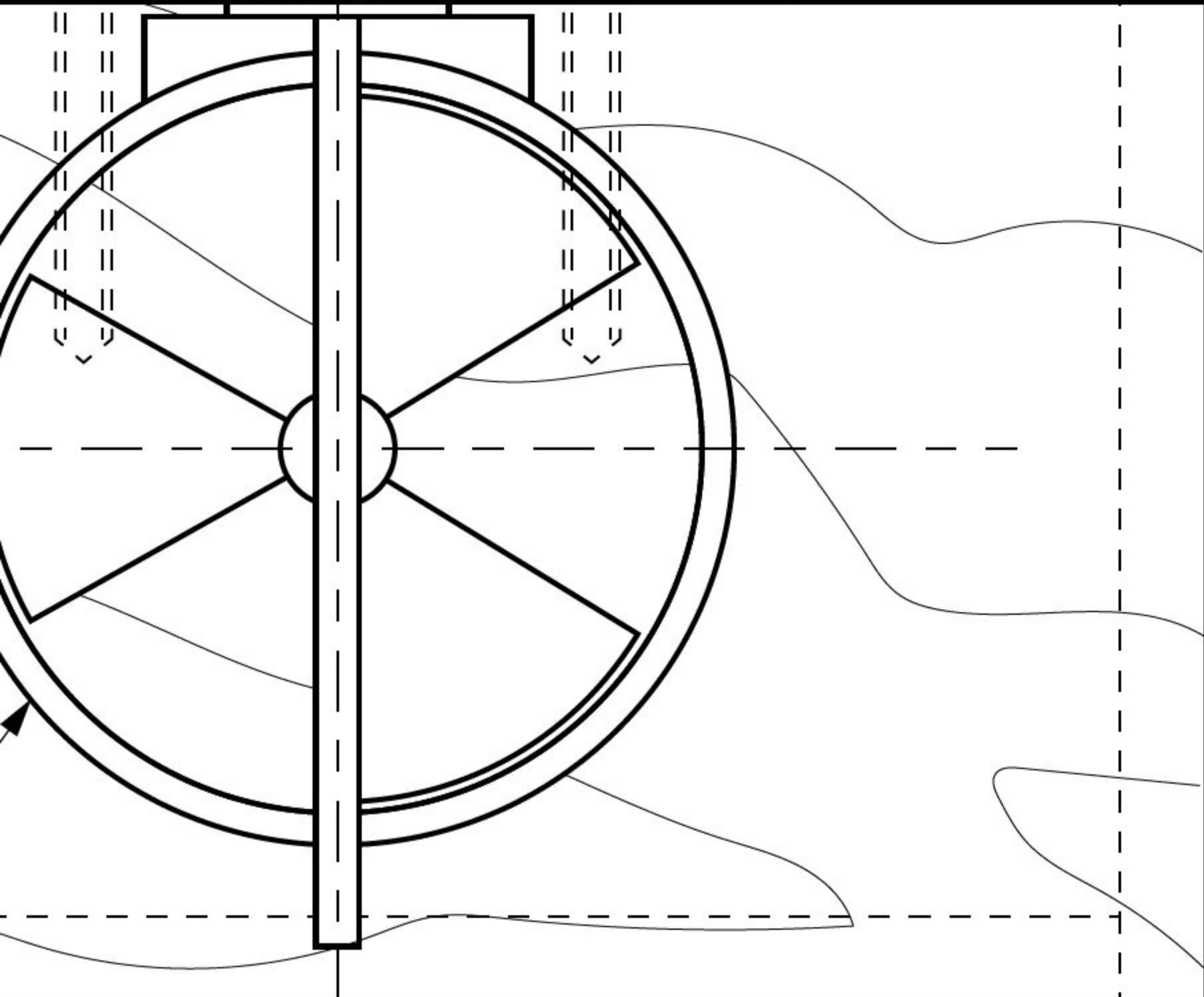
Kort Nozzle - Make from Ø56mm (2 1/4") domestic plastic waste pipe, & blades from 3mm thick laminated styrene. The saddle is from laminated styrene, drilled & tapped M3 & topped with an M5 stainless steel repair washer to clear the end of the rudder shaft

Deck Winch - The two winch drums (see hardware list) have a Ø5mm bore so the main components of the assembly are located on a spindle from M5 stainless steel studding, & held in place with two Ø10mm end caps with an M5 blind tapped hole. Make all other items from laminated styrene, apart from the 4 dummy hydraulic pipes from Ø2mm brass rod. N.B. At the inboard end of each winch drum a Ø2.5mm hole is drilled to accept the hawser cable, with the end knotted & hidden in a void in the moulding. The two drums can be populated with hawser cables as desired. For details of the cables see hardware list

Driver
4 layers
the joint
Make
section

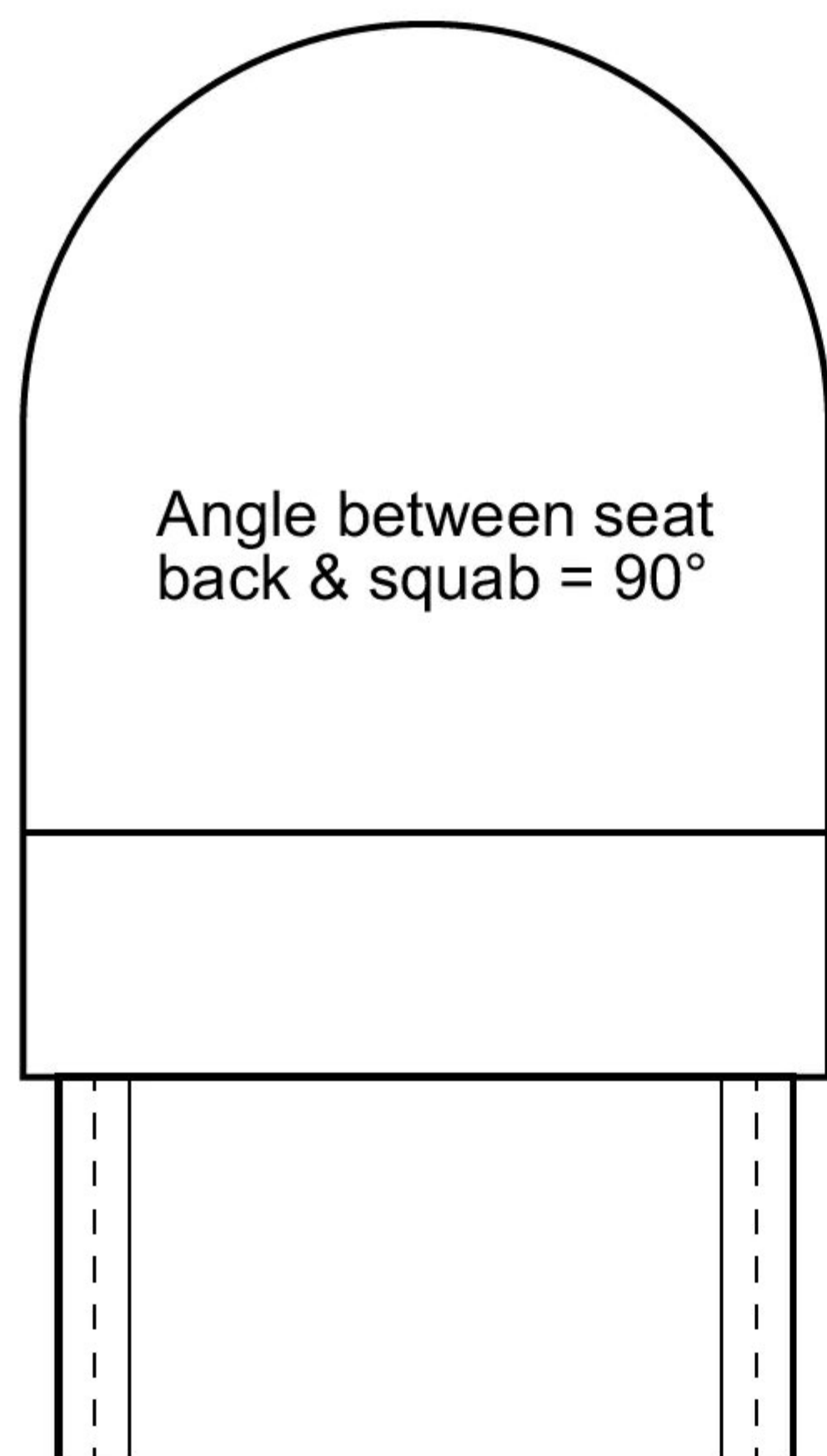


Rudder Shaft - Make from Ø7/32" rudder tube running in a Ø7/32" rudder tube. The fitting nozzle needs to be via an M3. On the underside of the hull a stainless steel washer. The washer a metal to metal contact between the matching washer on the



View On Stern Looking Forward

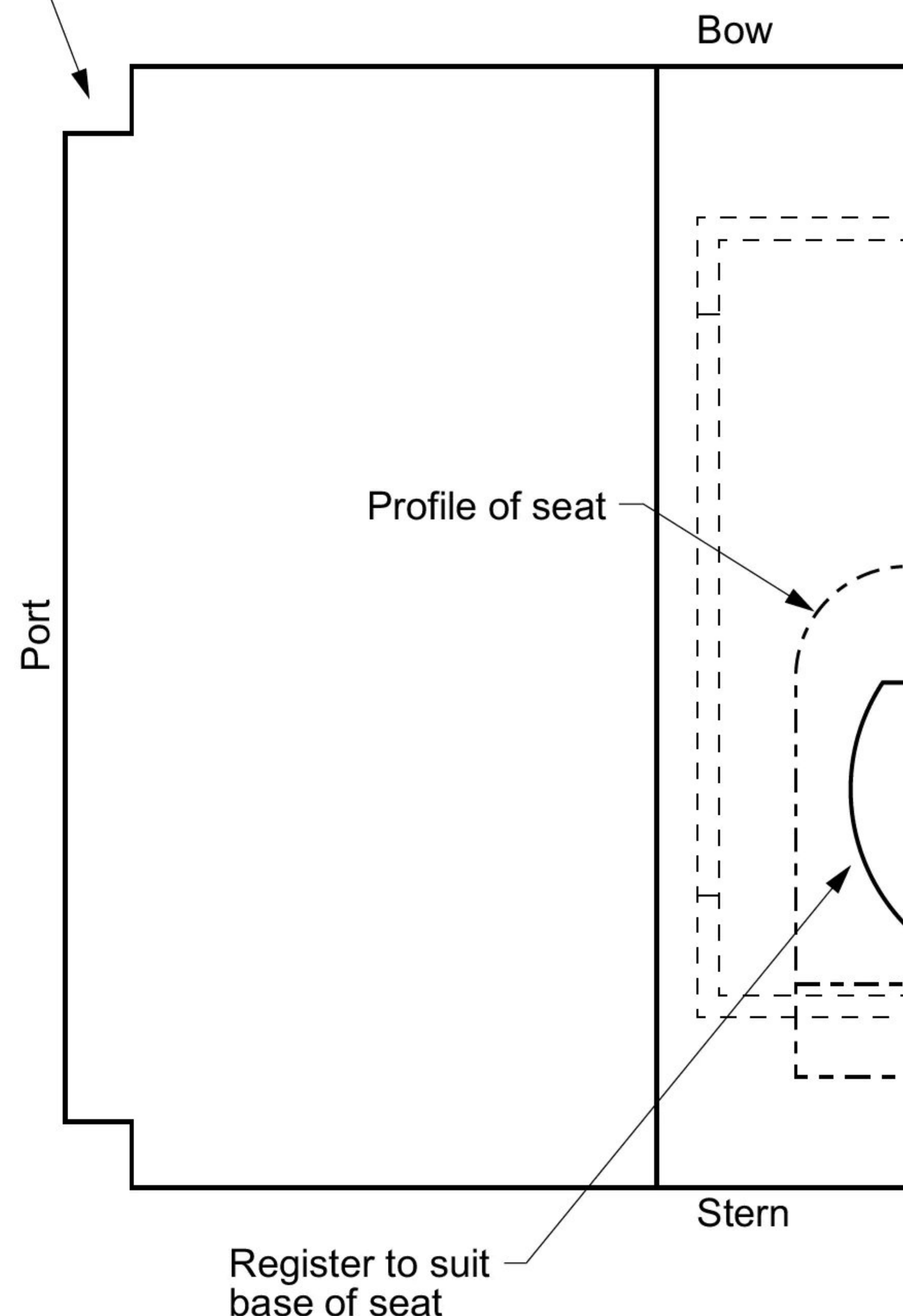
Make from Ø56mm (2 1/4") domestic waste pipe, & blades from laminated styrene. The saddle is made from styrene, drilled & tapped M3. The base is made from M5 stainless steel repair plate. The end of the rudder shaft



Angle between seat back & squab = 90°

Driver's Seat - Make from laminated 2mm styrene, back from 4 layers & squab from 7 layers. It is advisable to reinforce the joint between back & squab with brass or styrene pins. Make base from Ø40mm domestic waste pipe with front section cut away to allow passage of sound from sound module

Cab Floor - 2mm styrene to fit inside lip of coaming of upper deck, with corners removed to suit the square section tubes reinforcing the cab

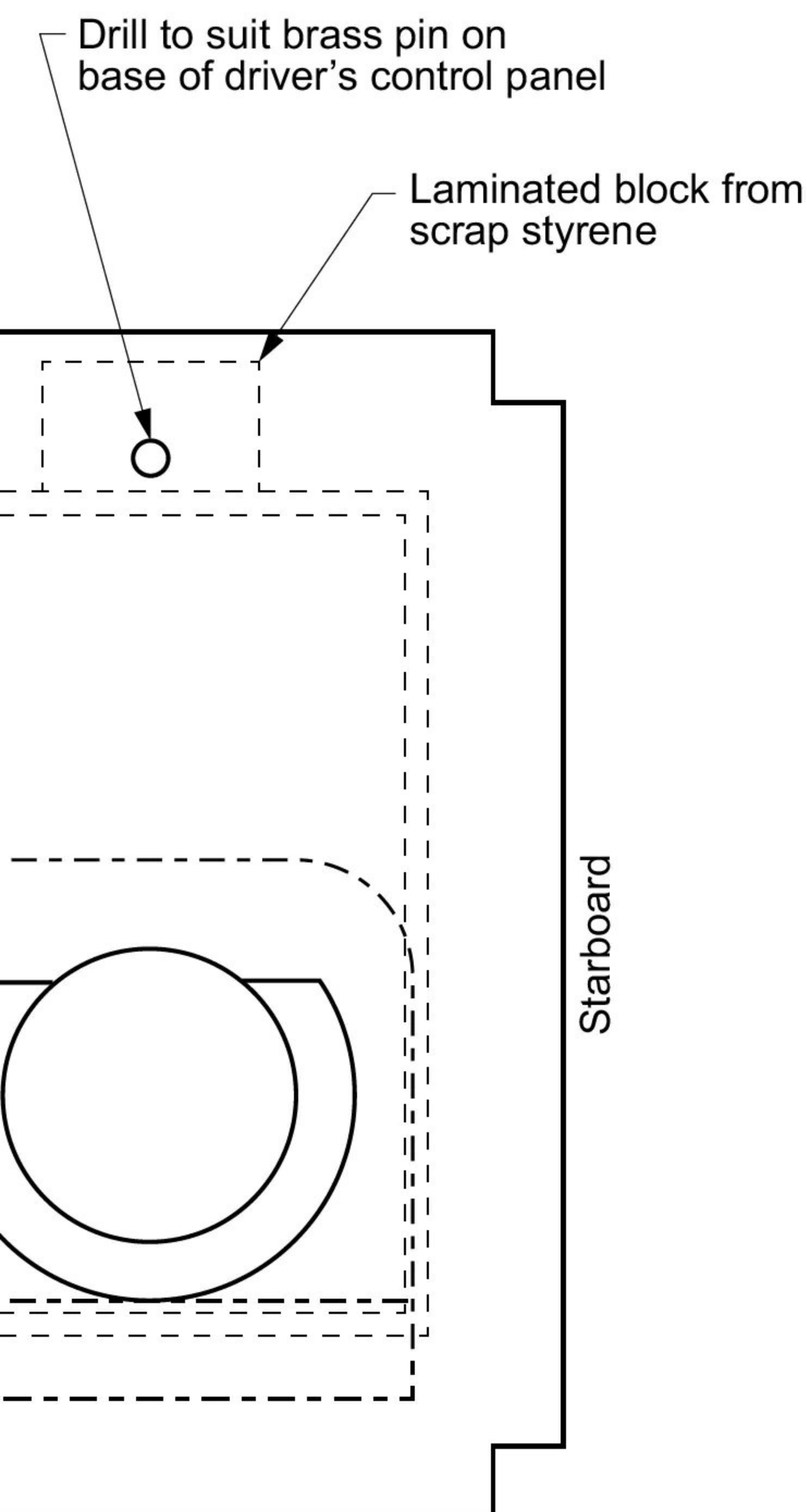


Profile of seat

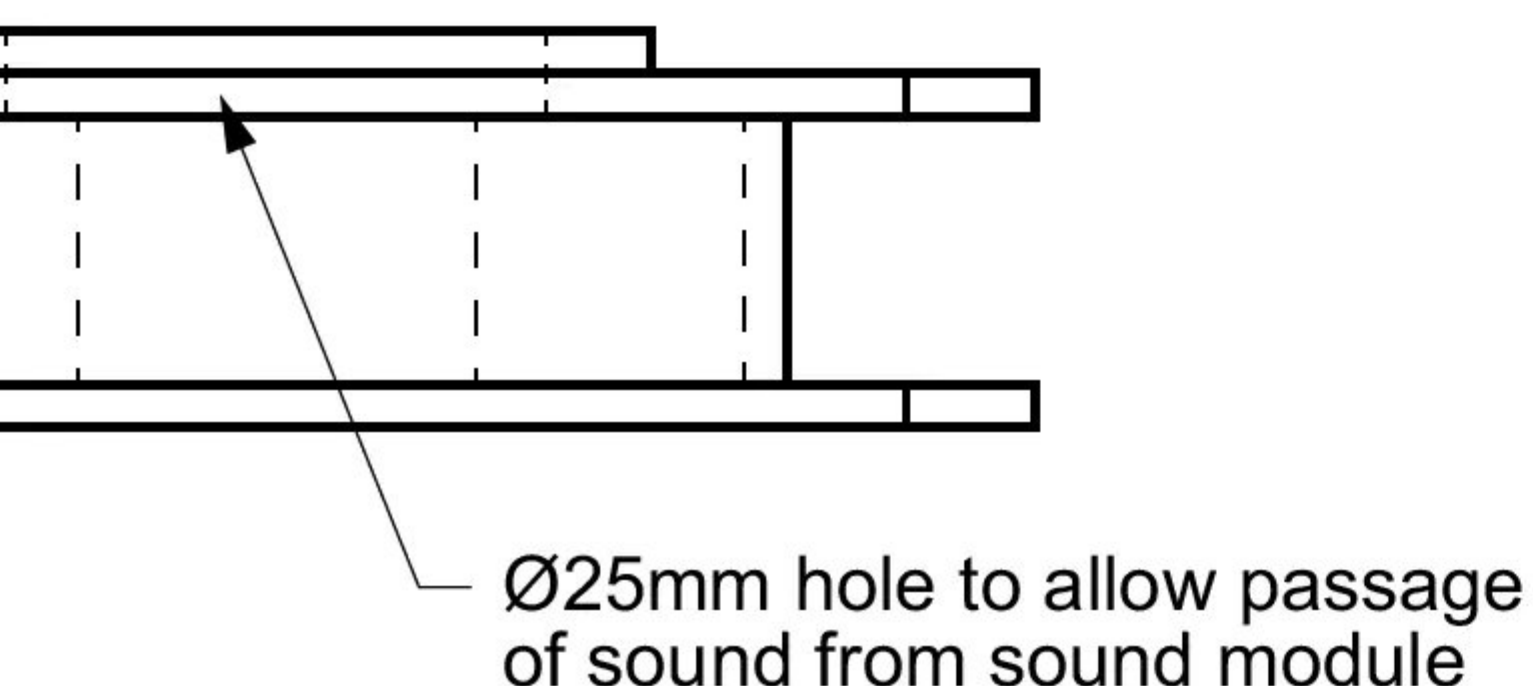
Register to suit base of seat

Cut slot in this section of upstand to allow passage of sound from sound module

3/16" brass rod
tube, housed in
into the Kort
3 male thread.
affix an M5
washer provides
ween the hull &
Kort nozzle



Raised area to suit 1:12 scale
figure used on prototype



Hardware List	
Supplier	Item
Component Shop	Motor - MFA/Como Drills Torpedo 800 Battery - NiMh 7.2V 3700mAh 2 off connected in parallel Action Electronics sound module remote switches etc. Connectors, fuse holders switches etc.
Hobbies	Mtronics 25A ESC
The Metal House Stonehouse, Gloucestershire via Ebay	16 x 16 (fits 10 x 10 protrusion) rubber 'U' channel square edge trim seal (pusher pads)
SHG Model Supplies via Ebay	Propshaft 75mm (3") with M4 thread Huco coupling Double bollards 33mm, 8 off Rubber tyres used for hull fenders M3 Kwik links, 4 off Ø3/16" brass rod + Ø7/32" brass tube from K&S Metals range for rudder shaft & tube Brass rod, strip etc. for brass metalware
Cornwall Model Boats	Caldercraft cable fairleads #R1406 Caldercraft cowl ventilators #BR55 Styrene rod, tube etc.
Mac's Mouldings	Lifelbelts, cab vent grill & items of deck clutter
Mountfleet Models	1:12 scale figures
Trustleaf via Ebay	Plastic cotton reels 31 x 31 (as hawser drums for deck winch)
Sew Wicked via Ebay	Polyester satin sewing cord, silver 2mm (as wire rope for deck winch)
Hobby Inn via Ebay	R/C truck roof lights (modified for headlight)
Mark's Model Bits	Air horns, 2 off #AH002, 38.5mm long
Various suppliers via Ebay	Prewired LED's, flashing & non flashing (for cab lights, headlight & flashing beacon), styrene sheet large sizes, M3 & M5 studding, stainless steel wood screws, brass washers

Action Electronics	
Item I.D	Description/remarks
P57	Twin horn sound module
P115	Remote switch, single output non latching, for operating P57 (twin horn) via transmitter
P44	Remote switch, twin output, output 1 set to latching, for operating roof flashing beacon, output 2 set to latching, for operating cab lights & headlight
100mm (4") speaker	For use with P57