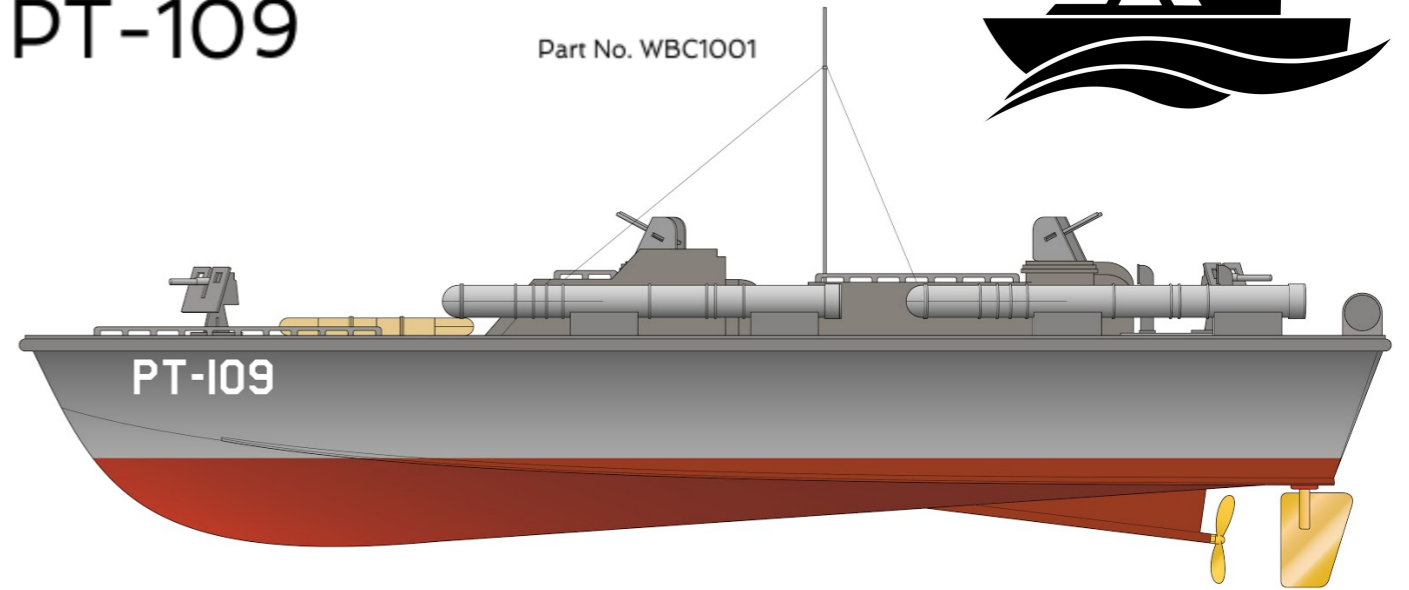
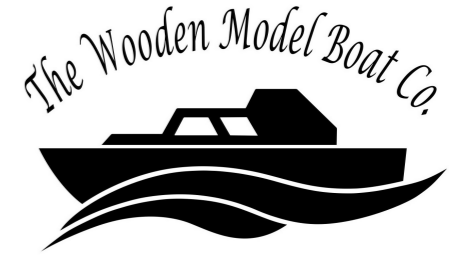




Patrol Torpedo Boat PT-109

Part No. WBC1001



Specification

Length	410mm
Beam	120mm
Height	195mm
Finished weight	535g

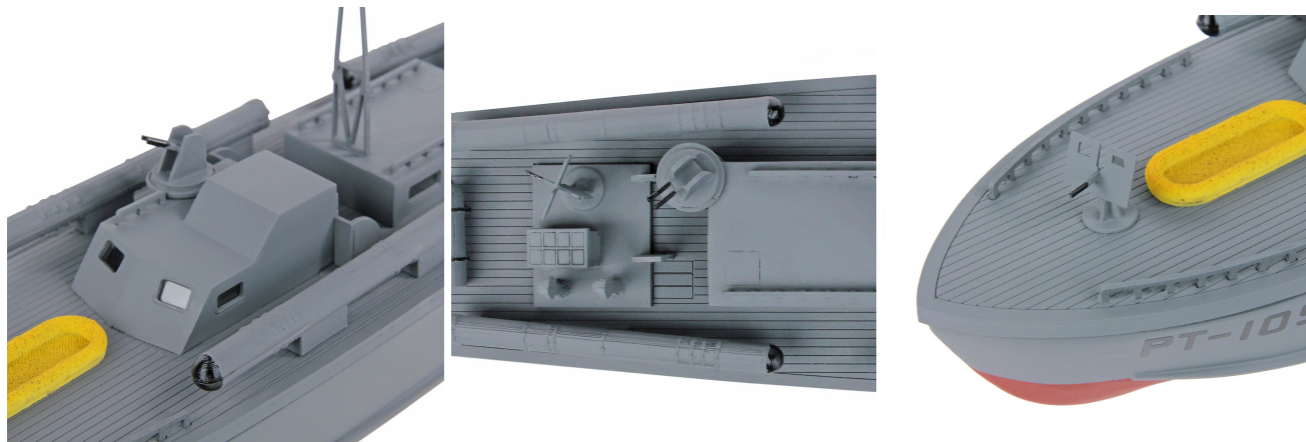
Recommended Running Gear

Motor	280 brushed
Speed controller	15A marine
Battery	7.4V 1100mAh LiPo
Prop shaft	150 x 2mm threaded
Propeller	30mm M2 brass
Rudder	33 x 22mm
Coupling	Neoprene tube
Radio	2.4GHz 2-ch proportional
Servo	Mini or micro

WELCOME ABOARD!

Thank you for purchasing a PT-109 Patrol Torpedo Boat kit. Typical of the boats in the PT-103 class, built for the U.S. Navy between 1942 and 1945, PT-109 is famed for having been commanded by future U.S. President John F. Kennedy. PT-109 met its end in the Pacific Theatre after a collision with the Japanese Destroyer Amagiri in which Kennedy's actions to help save his surviving crew earned him a Navy and Marine Corps Medal. PT-109 embodies classic PTB characteristics and we sincerely hope you'll enjoy many satisfying hours building, displaying and operating this model.

Here at the Wooden Model Boat Company we pride ourselves on producing traditional model boat kits that build quickly and accurately into delightful semi-scale replicas, each as happy cruising on the lake as it is adorning the mantelpiece at home. Using precise laser-cut balsa and ply parts, coupled with a semi self-jigging / interlocking hull frame, there's little that can go wrong during construction of your model, providing you closely follow these instructions. Whether you plan to build your PTB for two channel radio control or static display the process is very similar, as are the glues and materials you'll require to finish and waterproof the boat (see Recommended Materials). If you're new to model boat building allow a quiet 30 minutes to read these instructions carefully and to familiarise yourself with every part in the box, its function and when it's required in the assembly sequence.



JPerkins.com



LIST OF PARTS

You will find the following parts in the box. Please check the list carefully and contact your retailer if anything is missing. Use this list in conjunction with the drawings of the laser-cut parts at the end of this manual.

Part No.	Description	Quantity	Material
1	Frame	1	3mm ply
2	Frame	1	3mm ply
3	Frame	1	3mm ply
4	Motor mount beam	1	3mm ply
4a	Motor mount bracket	1	3mm ply
4b	Motor mount nut (M3)	2	Mild steel
4c	Motor mount bolt (M3)	2	Mild steel
4d	Motor mount washer (M3)	2	Mild steel
5	Frame	1	3mm ply
6	Frame	1	3mm ply
7	Servo and battery tray	1	3mm ply
8	Transom	1	3mm ply
9	Keel	1	3mm ply
9a	Keel doubler	4	1.5mm balsa
9b	Keel trebler	2	1.5mm ply
10	Deck support	1	3mm ply
11	Chine stringer	2	3mm sq. ply
12	Gunwale	2	6 x 3mm ply
13	Stern skin	1	1.5mm ply
14	Rudder support	3	3mm ply
15	Bottom skin	2	1.5mm balsa
16	Side skin	2	1.5mm balsa
17	Bow profile blocks	28	3mm balsa
18	Bow deck coaming	1	3mm ply
19	Forward deck coaming	2	3mm ply
20	Aft deck coaming	2	3mm ply
21	Stern deck coaming	1	3mm ply
22	Spray rails	2	3mm sq. ply
23	Deck frame	1	3mm ply
24	Toe Rails	2	1.5mm ply
25	Wheelhouse/cabin side (port)	1	1.5mm ply
26	Fwd cabin side (rear)	1	1.5mm ply
27	Fwd cabin side (starboard)	1	1.5mm ply
28	Fwd cabin internal support	1	1.5mm ply
29	Wheelhouse side (starboard)	1	1.5mm ply
30	Fwd cabin roof	1	1.5mm ply
31	Fwd cabin side (starboard)	1	1.5mm ply
32	Fwd cabin side (front)	2	1.5mm ply
33	Deck	1	Printed 1.5mm ply
34	Deck magnets	2 (4 pcs)	6mm diameter
35	Wheelhouse cover	1	1.5mm ply
36	Wheelhouse backplate	1	1.5mm ply
37	Wheelhouse front	1	1.5mm ply
38	Wheelhouse rear flank	2	1.5mm ply
39	Wheelhouse flank extension	2	1.5mm ply
40	Fwd cabin rail	1	1.5mm ply
41	Aft cabin side (port)	1	1.5mm ply
42	Aft cabin side (starboard)	1	1.5mm ply
43	Aft cabin side (rear)	1	1.5mm ply
44	Aft cabin side (front)	1	1.5mm ply
45	Aft cabin roof	1	1.5mm ply
46	Aft cabin rail (port)	1	1.5mm ply
47	Aft cabin rail (starboard)	1	1.5mm ply
48	Stern deck plate	1	1.5mm ply
49	Skylight side	2	1.5mm ply
50	Skylight front	1	1.5mm ply
51	Skylight rear	1	1.5mm ply
52	Skylight cover	1	Printed 1.5mm ply
53	Gun turret	2	Plastic
54	Gun turret flange	2	1.5mm ply
55	Machine gun base	2	1.5mm ply
56	Machine gun mount	4	1.5mm ply
57	Machine gun barrel	2	1.5mm ply
58	AA gun base	2	1.5mm ply
59	AA gun mount	2	1.5mm ply
60	AA gun barrel	2	1.5mm ply
61	AA gun shield	2	1.5mm ply
62	Aft shield	1	1.5mm ply
63	Rear turret flank	1	1.5mm ply
64	Mast	1	1.5mm ply
65	Torpedo tube top	4	Printed plastic
66	Torpedo tube base	4	Printed plastic
67	Vent	2	Printed plastic
68	Smoke generator base	1	Printed plastic
69	Smoke generator top	1	Printed plastic
70	Life raft	1	Printed plastic
71	Cabin windows	1	Perspex
72	PT-109 paint mask	1	Vinyl
73	Stand end plates	2	3mm ply
74	Stand name plates	2	3mm ply

GENERAL INFO: STICK WITH US!

As one of the UK's leading model and hobby distributors the team here at J Perkins are acutely aware that quality tools and materials play a vital part in the successful completion of any model build. Fortunately our staff are active modellers too, so we're very fortunate in being able to both supply and thoroughly recommend the perfect glues, paints and materials that are needed to complete your PT-109 to a very high standard. We can do this because we've built one too. Actually, more than one!

RECOMMENDED TOOLS & MATERIALS

The following is a list of the recommended materials you'll need in order to complete the model as depicted on the box and in the accompanying drawings and photographs (see jperkins.com).

Description	J Perkins Part No.
Excel K2 Hobby Knife	EXL16002
Excel K5 Razor Saw	EXL55001
Small crosshead screwdriver	-
Guild Lane Paintbrush Set	-
Soldercraft 40W Soldering Iron	5538867
Soldercraft Lead-free Solder	5538855
Radiant Heat-shrink Tube	RDNAO618
Needle-nose Pliers	EXL55561
MD Aliphatic White Glue	MDP5524821
ZAP Epoxy (15 min)	5525782-1
ZAP Canopy Glue (for the windows)	5525725-1
MD Super Filler	MDP5524830
500-Grit Sandpaper	-
800-Grit Sandpaper	-
1200-Grit Sandpaper	-
Sanding block	-
Guild Lane Sanding Sealer 60ml jar)	GLDCEX1100060
Guild Lane High Build Primer (400ml aerosol)	GLDCEX0960400
Chroma Enamel Matt Red (400ml aerosol)	GLDCHR6301
Chroma Enamel Matt White (400ml aerosol)	GLDCHR6500
Guild Lane Satin Fuel Proofer (400ml aerosol)	GLDCEX1310400
Low-tack double-sided tape	-

GENERAL INFO: IMAGES & VIDEO

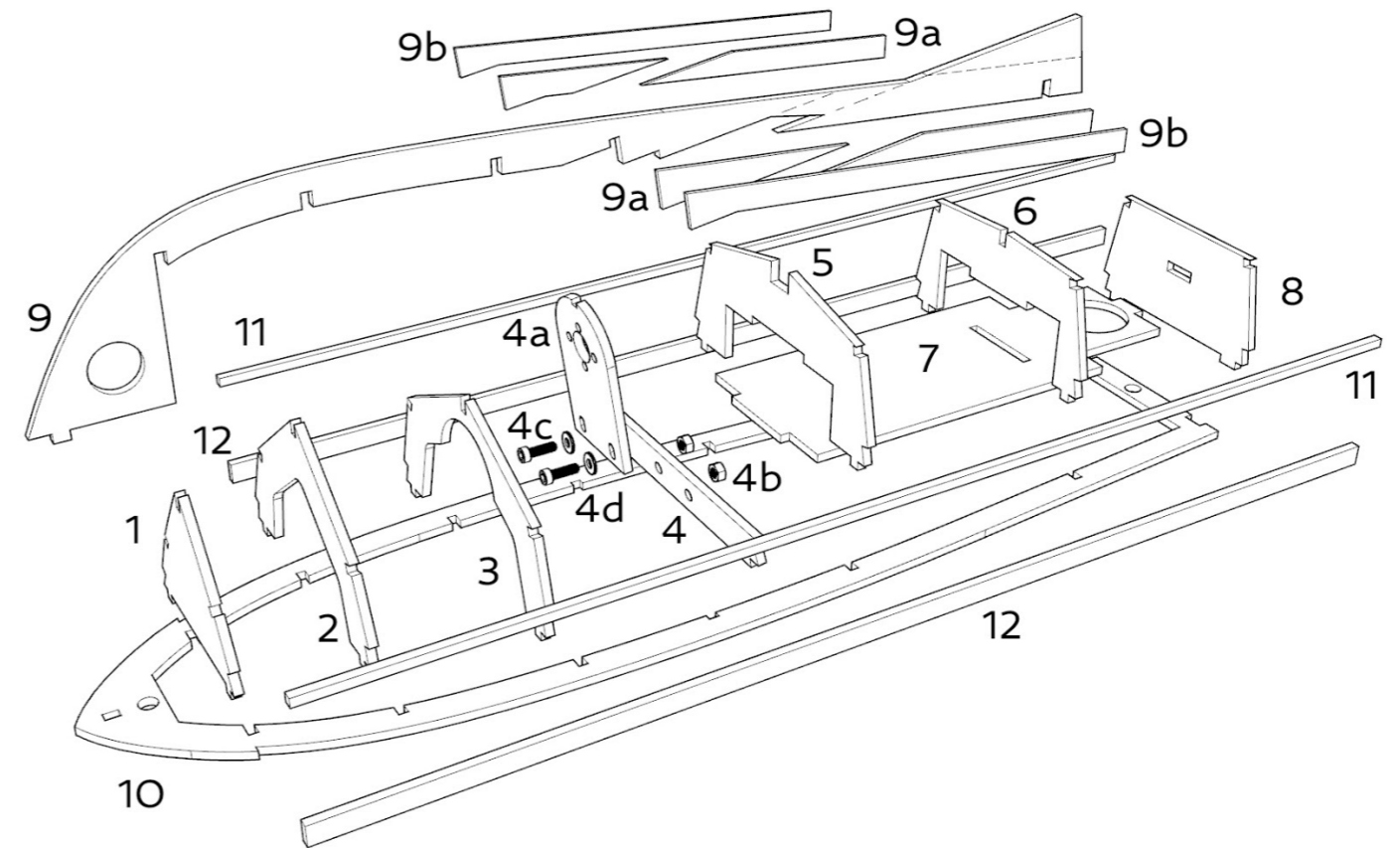
For reference, a series of useful images detailing the finished model, along with a video of the PT-109 on the water, can be found on our website at jperkins.com. We hope you find this useful and encourage you to send images of your own model when it's finished; we'd love to see them.

STEP-BY-STEP

This assembly manual is divided into four sections: 1. Hull Frame Assembly; 2. Hull Skins & Profiling; 3. Deck Substructure; 4. Deck, cabin & fittings; 5. Finishing; 6. Motor & Radio Installation. All sections are supported by a build sequence whilst stages 1, 2, 3 & 4 are additionally supported by an exploded illustration (with numbered parts) for easy identification. To avoid painting yourself into a corner please follow these steps in precise order. Find yourself a clear, flat and solid surface for assembly and make sure you have all the components, glues and materials necessary to complete a stage before starting it.

Section 1: Hull Frame Assembly

Note that the hull frames are assembled upside-down on a solid, flat surface.



1. Locate all the parts shown in the illustration above, along with the stand parts (73 & 74) and give all the brown, laser cut edges a light sanding to aid glue adhesion. Glue the stand end plates (73) to the stand nameplates (74) and leave to dry. Temporarily attach the deck support (10) to your flat building surface using six or eight small pieces of paper-thin low-tack double-sided tape. This will ensure that no twisting occurs during assembly of the frames and keel.
2. Glue frames 1, 2, 3, 5 and 6 vertically into their respective locations and leave to cure.
3. Take the four keel doubler pieces (9a), orientate them correctly, then glue two each side of the keel (9) adjacent to the marked propeller shaft slot which is indicated by double dotted lines. NOTE! Parts 9a must be located 1.5mm lower (in the direction of your building board) than the keel line, this to allow the 1.5mm bottom skin (attached later) to sit flush with the keel. Now glue one of the two keel treblers (9b) on one side only, directly over the top of parts 9a, lay the keel on your building board and apply weights to 9b until cured.
4. Lift the keel, flip it over and, using a razor saw, very carefully cut through part 9 (only) to open out the propeller tube slot. Be very careful not to cut into part 9b. Keeping the keel absolutely straight, glue the second keel trebler (9b) in position (to mirror the first) and clamp until the glue has fully cured.
5. Dry fit the keel, check it for accuracy, then remove, add glue and refit.
6. Glue the angled transom (8) in position.

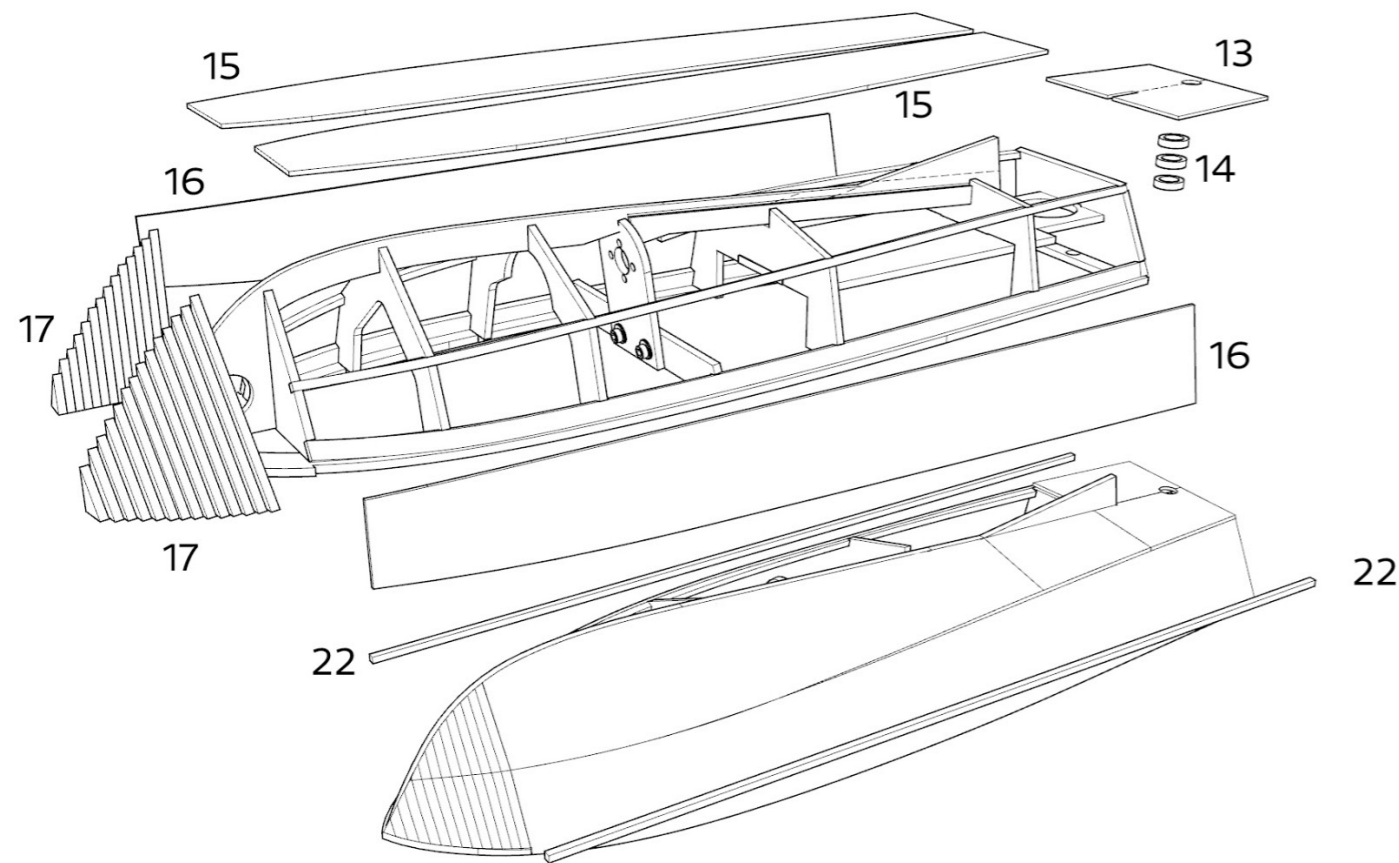
7. Glue the chine stringers (11) in position from frame 1 to frame 8 and add the gunwales (12). Leave the assembly to properly cure, then carefully remove the completed frame from your building board.

8. Using the supplied M3 nuts, bolts and washers (4b, 4c & 4d), bolt parts 4 and 4a together then glue part 4 (only) between frame 3 and 5, as shown. Do not glue 4a to the keel as this will need to be removed in order to fit the motor at a later stage.

9. Glue the servo and battery tray (7) in position atop part 5 & 6.

Section 2: Hull Skins and Profiling

Fitting the hull skins is by far the most challenging part of any boat build, however with care and attention it can also be one of the most rewarding. The old proverb 'measure twice, cut once' very much applies here. In other words, plan thoroughly before you take action. In this instance that means, carry out a dry run before fitting the parts, know in advance which glue you're going to use, work out how you plan to apply the skins and how you intend to hold the parts in place while the glue is setting. Make sure you have all the required tools and materials to hand and then...



10. Locate the three rudder support rings (14), glue them cleanly and accurately together, then glue them to the inner surface of the stern skin (13), in perfect alignment with the hole for the rudder tube. When set, glue part 13 in position with the forward edge located exactly half way over frame 6.

11. Check the bottom skins (15) for fit, mark the inner surface with the position of frames 1, 2, 3, 5 and 6, then apply contact adhesive to the marked lines. Apply contact adhesive to the mating

part of frames 1, 2, 3, 5 & 6 and leave for 10 minutes to dry. Dampen only the outer surface of the bottom skins (15) with water (to assist in bending the wood - See TOP TIP: WETTING WOOD), apply aliphatic white glue to the mating edges of the skin and hull, then carefully position each skin and press into place. If the forward edge of the skins prove difficult to attach to frame 2, use medium cyano and kicker to finish the job.

TOP TIP: WETTING WOOD

Wetting balsa sheeting on one side softens the wood fibres and acts as a plasticiser which encourages increased flexibility in the wood and allows the drier / stronger fibres (on the opposite side) to induce a bend in the direction of the dry side. Gentle heat from, say, a household iron, has a similar effect.

12. Check the outboard edge of the bottom skin and trim any overlap of the chine stringer. Locate the side skins (16), check for fit and mark the inner surface with the position of frames 1, 2, 3, 5, 6 and 8, then apply contact adhesive to the marked lines. Apply contact adhesive to the mating part of frames 1, 2, 3, 5, 6 and 8 and leave for 10 minutes to dry. Dampen only the outer surface of the side skins, as before, apply aliphatic white glue to the mating edges of the skin and hull, then carefully position each skin and press into place. If the forward edge of the skins prove difficult to attach to frame 2, use medium cyano and kicker, as before.

13. Trim the hull skins flush with frame 1, locate the bow profile blocks (17) and glue in position.

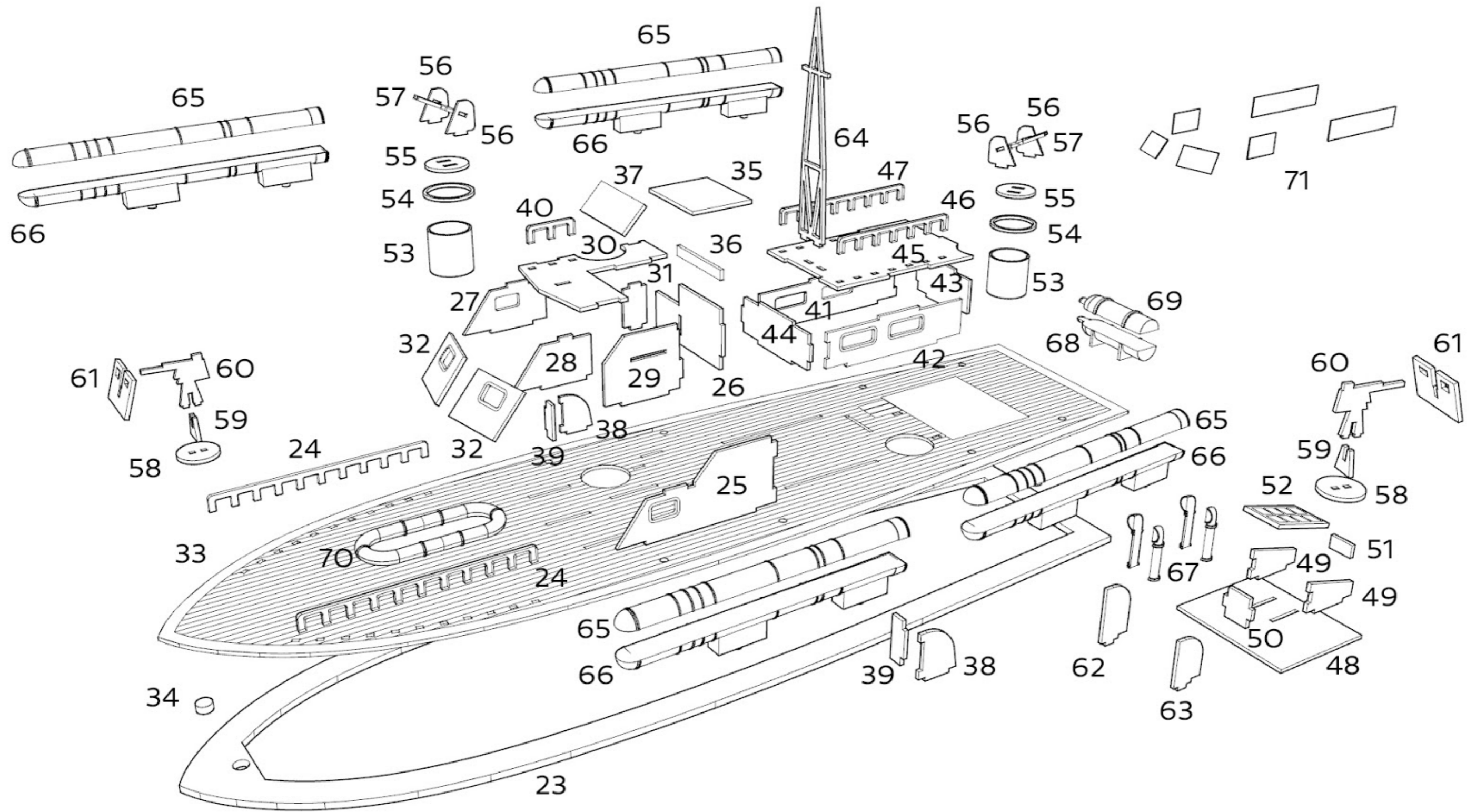
14. Use sandpaper to shape and profile the bow blocks and sand the hull to a finish ready for waterproofing. Pay particular attention to the chine lines, transom and bow, and use lightweight filler as required.

15. Locate the spray rails (22), cut a slope in the leading edge, and glue accurately to the lower edge of the side skin, following the line of the chine (the junction of the bottom and side skins).

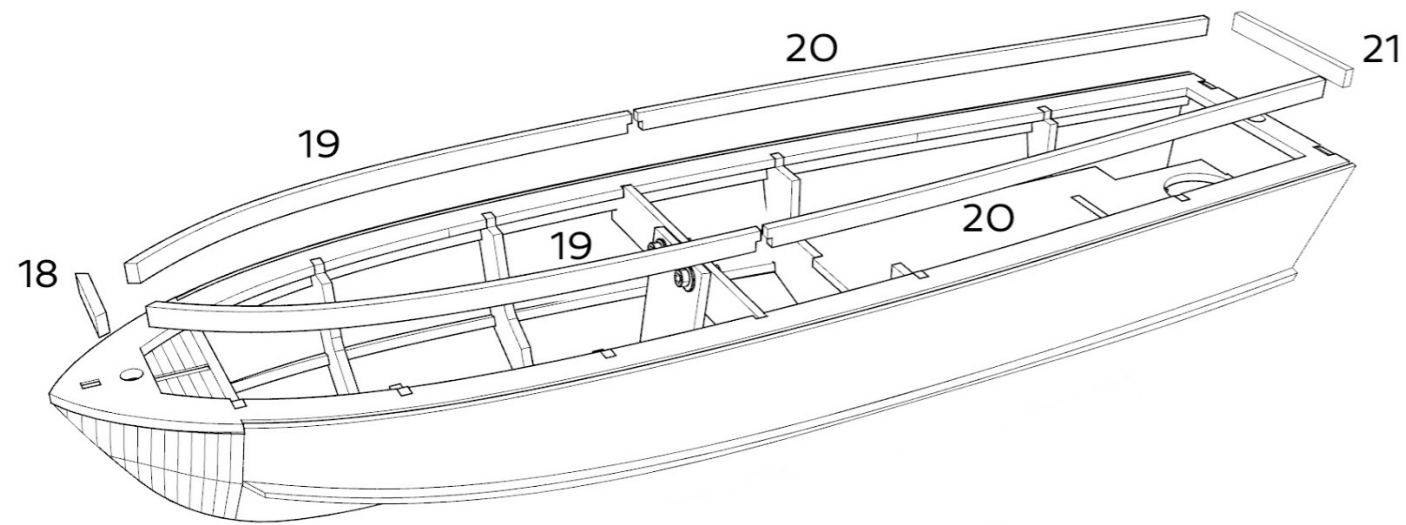
GENERAL INFO: SPRAY RAILS

Don't ignore the spray rails. These are a significant feature of many semi-displacement and planing hulls, particularly the latter. Their function is primarily two-fold, firstly to generate additional lift, and secondly to divert spray away from the hull, which reduces resistance and has the additional benefit of keeping the decks dry.

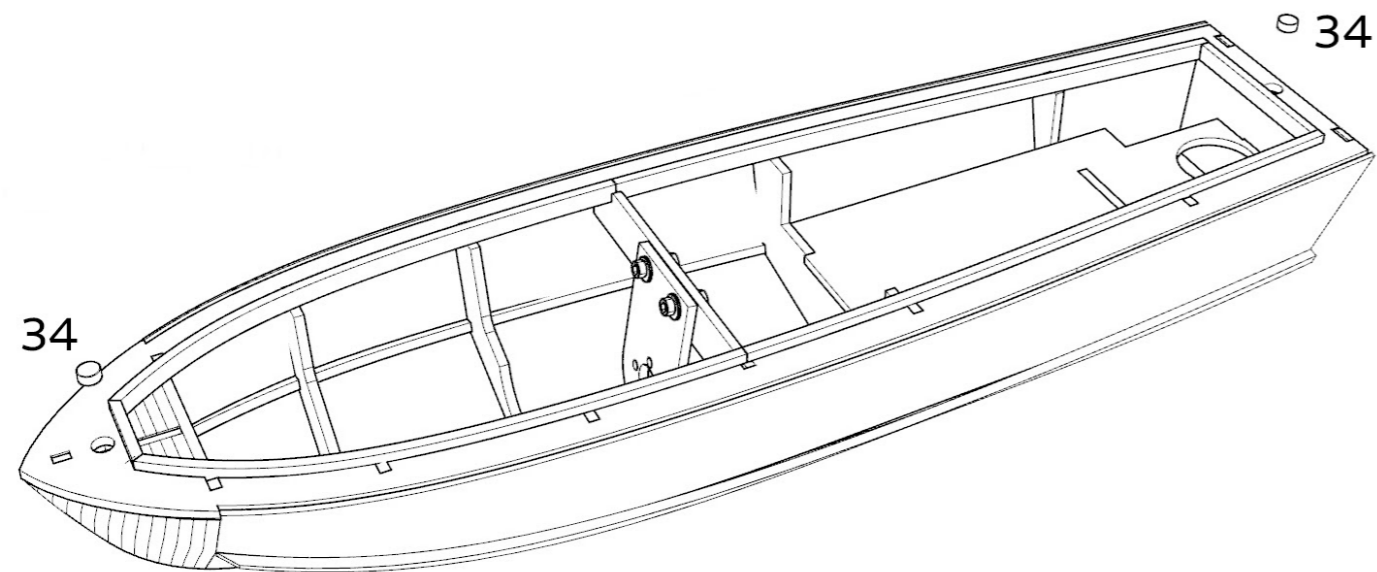
Deck Assembly Schematic – Read in conjunction with Section 4



Section 3: Deck Substructure



- 16. Locate the deck coaming parts (18, 19, 20, 21) and glue in position as shown.



- 17. Locate the deck magnets (34) and separate into north and south poles. Glue two units with identical poles into the deck support (10).

Section 4: Deck Assembly

- 18. Locate the parts shown in the illustration above and give all the brown, laser cut edges a light sanding to aid glue adhesion. Temporarily attach the deck frame (23) to your flat building surface using six or eight small pieces of paper-thin low-tack double-sided tape. This will ensure that no twisting occurs during assembly.
- 19. Locate the printed deck (30) and glue this accurately in position on the deck frame. In order for the deck to clip snugly onto the hull it's essential that the deck frame (23) remains absolutely

flat during this process. If necessary use suitably heavy weights to hold the edges of the deck down while the glue dries.

- 20. Glue the toe rails (24) to the bow section of the deck.
- 21. Assemble the forward cabin / wheelhouse using parts 25, 26, 27, 28, 29, 30, 31, 32, 35, 36, 37 & 40. NOTE! Do not glue the forward cabin and wheelhouse to the deck until both the deck and cabin have been painted and the cabin windows glazed.

SCALE TIP: WHEELHOUSE DETAIL

Fitting the wheelhouse cover (35) is optional, indeed for scale accuracy you may choose to leave this off (PT-109 had an open wheelhouse) and add some basic detail, such as a console, ship's wheel, seat and cabin door.

- 22. Glue the wheelhouse flank parts (38 & 39) together and attach to the deck.
- 23. Assemble the aft cabin using parts 41, 42, 43, 44, 45, 46 & 47. NOTE! Do not glue the aft cabin to the deck until both the deck and cabin have been painted and the cabin windows glazed.
- 24. Locate the skylight parts 49, 50, 51 & 52, assemble as shown then glue to the stern deck plate (48). Build both AA guns using parts 58, 59, 60 & 61. Glue one AA gun to the bow and the other to the stern deck plate (48). Glue the two plastic vents (67) to the stern deck plate noting their correct orientation. NOTE! Do not glue the stern deck plate to the deck until both items have been painted.
- 25. Assemble the two machine gun turrets using parts 53, 54, 55, 56 & 57 and glue in position on the deck.
- 26. Glue the four torpedo tubes together using parts 65 & 66 then follow suit with the smoke generator using parts 68 & 69. NOTE! Do not glue the torpedo tubes or smoke generator to the deck until all items have been painted.

Section 5: Finishing

In this section we'll make the boat waterproof and prepare for final installation of the radio control and running gear.

- 27. Unbolt the motor mount bracket (4a) and attach your chosen 280 brushed motor. Refit the bracket / motor and slide your propeller tube into the hull. Accurately align the tube with the motor shaft in both the vertical and horizontal planes, then permanently glue the shaft in place using 15-minute epoxy. TIP! To guarantee alignment use a small piece of tight-fitting neoprene tube to link the motor and shaft. When the epoxy has set, remove the motor.
- 28. Trial fit the rudder tube, adjust as required (it should be absolutely vertical), then remove it for refitting after the hull is painted.
- 29. Apply two generous coats of Guild Lane sanding sealer to the hull, battery tray (7) and all wood parts that require painting, including the deck and cabins. Leave to dry between coats and

sand after each coat with 800-grit (or similar) paper. If necessary, repeat until you're happy that the wood has been suitably sealed. Apply one generous coat of Guild Lane High Build Primer to the hull, lightly sand with 1200-grit paper and check for imperfections. Fill as necessary using lightweight filler, sand, re-prime then sand again until the hull, deck and fittings are deemed suitable for the top coat.

- 30. Add top coats to suit your chosen colour scheme, not forgetting to spray the torpedo tubes, life raft and smoke generator. The prototype uses the same Guild Lane High Build Primer as a top coat, with Guild Lane Matt Red enamel below the waterline (see Recommended Materials).
- 31. Delicately paint the glazing panels on the skylight cover (52) then apply the self-adhesive PT-109 decals to the bow and press firmly in place.
- 32. Seal all the painted surfaces and fittings with two coats of Guild Lane Satin Fuel Proofer (see Recommended Materials).
- 33. Glue the window glazing (71) on the inside of the forward and aft cabins using ZAP Canopy Glue (see Recommended Materials).
- 34. Glue the forward and aft cabins permanently to the deck then attach the mast and fit the rear deck plate assembly. Add the torpedo tubes, smoke generator, life raft, aft shield and rear turret flank. Mast bracing wires can be added using black cotton thread as desired.
- 35. Locate the remaining deck magnets (34) and glue them firmly into the circular pockets in the deck frame (23) making sure that the correct polarity orientation is observed.

Section 6: Motor & Radio Installation

We recommend the Planet TS2+2 two-channel radio system for the PT-109. Designed specifically for boat and car modellers the stick-style system is equipped with two primary channels (throttle and rudder) and two auxiliary channels which you may find useful on other boats as you explore the hobby further. In this respect the TS2+2 combo also includes a future-proof 6-channel receiver and a very competitive price tag. Visit jperkins.com for details and pricing and pick one up at your local model shop.

- 36. Refit the motor then join the motor shaft and propeller shaft using tight-fitting neoprene tube. NOTE! You may need to shorten the prop shaft by cutting a small length from the non-threaded end.
- 37. Fit the propeller and refit the rudder (making sure the waterproof O-ring seal is in place between the rudder tube and hull), then tighten the rudder tube nut and washer against the top of the radio tray.
- 38. Attach your servo to the servo and battery tray (7) using double-sided servo tape and use a piano wire pushrod to link it to the tiller arm.
- 39. Use double-sided servo tape to attach your receiver (forward of the rudder servo), then test the model for balance, in water. Establish the ideal location for your chosen 2S LiPo battery then attach it using hook and loop tape. Check for leaks and rectify.

HAPPY CRUISING

The PT-109 drives well in most conditions but, like all small model boats, excels in calmer water and looks very much the part, displacing a satisfying bow wave and leaving a tidy wake. Steering is positive and with the 280 motor / 2S LiPo combination the speed is beautifully matched to the type. Don't be tempted to over-power it. The PT-109 has a semi-displacement (rather than a planing) hull and is not designed for out-and-out speed. Drive it like the fast attack PTB it resembles and not only will it handle better, it'll look fantastic.

We hope you've enjoyed building this model and are suitably enthused to try other boats in the Wooden Model Boat Company range.

LASER-CUT PARTS

Use these drawings to help identify the various laser-cut and printed parts that are included in your kit.

