

WELCOME TO THE PT SKIFF MANUAL

This manual covers the building of a rather detailed and sophisticated boat. The PT skiff is carefully engineered and lightly built. The advanced wood /epoxy techniques used in the construction of this boat have the potential to allow not only a very strong boat for it's weight, but also the possibility of it having a very long life span. We have taken the writing of this manual very seriously as we see the importance of these boats maintaining their integrity; not just for now, but long into the future.

We encourage you to read the manual, or at least scan it all the way through before starting to build. We also encourage you to take the most care in the beginning of the project. If you are tempted to cut corners, the best time to do that would be after the hull is assembled. It's like building a house in that if the frame is not built straight and square, the rest of the project will be more difficult.

There are places in the manual (such as assembling the hull) that stress alignment over and over, but there are also areas that talk about labour saving shortcuts.

We hope that our focus on maximizing strength and longevity will not be taken lightly.

The PT Skiff was designed in metric and you will need a metric tape measure to build the skiff, but there's little measuring involved. Most of the measuring relates to screw lengths and spacing and 2"x4"s and 2"x6"s etc. These measurements are all given in feet and inches. We find that reading manuals that combine both forms of measurement difficult and this is why the manual talks in feet and inches.

Techniques described in the manual are initially very detailed. Repeated techniques are later described in less detail. It is assumed that you are, by then, well acquainted with how to do things like preparation before gluing or filleting, taping, clean up, etc.. so keep in mind what you learn early on or refer back to earlier descriptions.

We built two boats to compile this manual due to a few design and construction changes from the first boat to the second. Even so, questions come up where an explanation falls short or an instruction is simply missing. While some builder's may just 'figure it out', feedback is very important for locating these gaps that got missed in the numerous proof reading sessions. Feedback & questions should be submitted by email. Particularly urgent questions can be phoned in, keeping in mind that we are not staffed for full time tech services and are probably in the shop building the next prototype. Check our website and blog for information and updates as well.

FIBERGLASS

The PT Skiff is glassed (fiberglass cloth) on both the inside and outside of the hull. This does magical things for the strength of the lightweight plywood **and** for the longevity of the boat.

Much of the rest of the boat is glassed (almost all exterior surfaces), and **most of this glassing** happens **before** the parts are assembled, while they are flat on the bench. This is easily done before assembly and because all these pre-glassed parts are sanded flat while still on the bench, there is much less finish work after assembly.

The console and driver's seat box are glassed **after** assembly (because of the puzzle joints in these parts). Glassing these areas of the boat will demonstrate how much easier it is to **pre-glass** parts before assembly when the parts are lying flat on the bench.

An option would be to triple coat these exterior parts of your boat and only glass tape the edges. These parts don't receive the kind of wear that the seat tops, soles, and exposed frames get.

There are three weights of cloth used on the PT Skiff.

For those not buying the glass kit from us, we give the weights, types, amounts used, and areas used.

4 oz is used on all the vertical and horizontal surfaces; Framing, seat tops, tank lid, sole, side decks, foredeck etc. (45ft x 50")

6 oz is used on the **inside** surfaces of the hull panels. (32ft x 50")

8.9 oz. # 7725 is a weave of cloth developed for composite aircraft construction. It is stronger and takes less resin to saturate and fill coat. This cloth is used for glassing the outside of the hull and taping the chines. We cut two 19' 3" long pieces for glassing the hull and put these on the roll before adding another piece 15ft long for the chine taping. (54ft X 50")

FILLERS

There are four fillers (for thickening epoxy) used in the building of the PT Skiff.

These fillers are usually used in combination with other fillers to achieve desired properties.

We offer a mixed gallon of fillers, the combination of which offers the right properties for all the structural fillets, but you will need all of these fillers separately as well.

The fillers needed are:

406 Colloidal Silica, 407 Low Density filler, 404 High Density filler, and 410 Microlight (the numbers are West System reference numbers)

The mixed gallon sized container consists of; two parts 406 silica, two parts 407 low density, and one part 404 high density. This quantity is enough for all the structural fillets.

Other epoxy supplies are listed in the epoxy section of the manual.

POWER TOOLS

This kit requires some of the usual hand power tools. The ones that are specific to this kit are listed below.

Router. This kit is dependent on a router and a laminate trimmer router is the best for the job. PHOTO 4889

These routers are small enough to do delicate work, can cut close to inside corners, and cost very little. The only part of this job where a larger router would be nice is when cutting out the cradle forms.

Router bits PHOTO 4887 from left to right:

3/8" round over bit

1/4" round over bit

3/16" round over bit

Bottom bearing flush cutting bit

The top bearing bit (far right) is only used for one job and can be done without (see page 27)

Random orbit sander. One with a firm 6" pad. Vacuum dust collection is good.

Table saw. Really helpful for cutting alignment blocks, etc.

Heat gun or hair dryer. Hair dryers are cheaper and possibly better for the job.

Hot melt glue gun. Essential.

Vacuum cleaner

HAND TOOLS

Block plane & way to sharpen it

Japanese pull saw

Snap-off blade knives and plenty of blades

Wide chisel (1 1/2" or so)

Plenty of small clamps

A chain saw file or rat tail file



PHOTO 4889



PHOTO 4887

Materials to buy at the hardware store:

-3 sheets of 4'x8' particle board for table & cradles.
(see page 26 for explanation on building the cradle)

-Two 2"x6" (1 1/2" x 5 1/2") 10 ft long for the building cradle. Pick out the straightest ones you can find.

-Six 8 ft 2x4"s for cradle legs etc,

-1", 1 1/2", 2" & 2 1/2" drywall type screws. (box of each)

-Plastic sheeting (~3 mil)

-2" insulation foam for flotation, (pages 163 & 168)

-Metal yardsticks. One 4' long & 2" wide, and one 3' long & 1 1/2" wide

--See Appendix I at the back of manual for basic consumables list. (pg 259)

HULL PANEL ASSEMBLY

ASSEMBLY TABLE

A long flat table is needed for assembling parts. This can be very simple, two 4x8 sheets of 3/4" particle board screwed to 3 straight pieces of lumber.

This table will be 16' long, and the lumber pieces can be 2 x 4's or 2 x 6's of the same length.

The table can be set on three equal height sawhorses, or on another shorter table, as shown in the photo # 1.

Buy 3 sheets of 3/4" particle board as you will use the 3rd for the cradle forms and the pressure plates.



ASSEMBLING HULL PANELS

Refer to drawing #5 to see hull panel arrangements.

Puzzle joints are a wonderful thing, but they require care when gluing **and** when assembling & disassembling dry.

The puzzle joints provide longitudinal alignment. In other words, the profile shape of your finished hull panel depends on a tight fitting puzzle joint. If your puzzle joints are too tight, getting them apart can be difficult.

Loose chips and burrs left from machining should be removed from the puzzle joints with a piece of 3-M scrubbie and, if needed, light sandpaper before assembly.

To disassemble a puzzle joint, slide a stick under the panel next to the joint and lightly pound (with your fist) on the adjacent panel. Wiggle one panel up and down if needed.

If you are planning to bright finish the inside of your boat, you can choose (somewhat) which side of the panels face inward by laying the panels out mirror image. PHOTO #2 →

There are 4 hull panels per side.

The panel that meets the keel is panel #1, the upper most panel is #4.



Appendix I Consumables:

EPOXY (recommend 2x 5gal kits from West System with 1x slow hardener and 1x fast)
 Fiberglass (described in the introduction)
 Peel Ply (min 3yards)
 Epoxy Materials

Suggested amounts in parenthesis should get you well into the project or better.
 (listed alphabetically)

- abrasive pads: 3M Scotch-Brite #07447 (x10)
- brushes: acid(x20)
- brushes: 1" & 2" chip brushes (x10 and x24 respectively)
- brushes: narrow and wide foam brushes for tipping
- flexible & notched spreaders (check if we have included these in your kit. We do when we can)
- paper mixing cups 12oz (-You will need lots of 12oz paper coffee cups for smaller batches.)
- paper mixing cups 32oz. (x20)
- paper towels and cotton rags
- protective gloves (a box)
- quart sized freezer ziplock bags (a box)
- roller covers: Yellow foam type (x15 2packs) & short roller handle
- sand paper: sheets of 80, 100, 120 & 150 grit (x15 each)
- sandpaper: longboard sheet abrasive 40 grit (x10)
- spray adhesive (x1)
- syringes for epoxy (x12)
- tac rags (x1-2)
- TAPE: 2" plastic packing tape
- TAPE: fine-line and masking
- WD40 or cooking spray (such as PAM)

Flotation Foam for under the side decks: We strongly recommend 1" Polyethelene closed cell foam. A good source we found was at Ire-Tex.com in Oregon. One 4'x9' sheet did the job. See page 230. For under the back seat and foredeck, common insulation foam from the hardware store worked fine.

Deck plates

Following are the deck plates we used. Another builder chose a larger forward access hatch.

6" Deck Plate screw out x2 for back seat (white)(Beckson DP60-W-C)

8" Deck Plate screw out x1 for bow (Beckson DP80-W)

4" Deck plate screw out x1 clear (Beckson DP40-w-c) For ballast tank inspection.

Waste deck fill with keyless cap x2(Seadog 357034) (black plastic)