

Cargo Proa Prototype

Building Blog

AUGUST 2021 #1

Now that the main components (except the wings for the masts) are built, it is loose end time. Lots of little jobs finishing everything off. Best described by 95% finished, 95% to go. I decided to simplify things and save some money (the carbon pultrusions have almost doubled in price since we bought the first ones) and start off with a 2 section telescoping mast rather than 3. Means beefing up the top section we have built so it will function as a second section, which I did most of this week.

There is a pretty good chance that we will be getting Wisamo inflatable sails. A few more hoops to jump through, and the usual financial issues, but looking good. Should know in September. Meanwhile, we will keep playing with the wing rig because it is interesting. We are also looking at making it tail controlled. This may also work on the inflatable sail.

Other loose ends tied up:

We bonded in the lower mast supports, an unpleasant job grinding in an enclosed space, then glassed in the ring frame and wrapped the deck bearing in carbon tow. These could have been (and will be next time) included in the infusion. Fortunately they weren't as the mast design changed significantly between then and now. The reinforcing is preparation for a hull lifting test to check the mast and beam strength, the hulls' torsional stiffness and the connections. We tried a reverse lift (caught aback) and decided to change from lashing to 40mm dia carbon pins, which also hold the beam struts in place.

Built a mould and section of the rubbing strake for the tender, still looking for a suitable material to make it into a fender.

Laid up the chocks for the mast/beam interface which was one of the 'worry about it later' jobs. It looks like they will work.

Rob R has been playing with wing prototypes and the best way to build them, I have been working on the telescoping and weighing up wing mast/sail, 2 piece and 10 piece solid wings with and without a tail and a flat sail lashed to the mast with Chinese style sheeting. A lot of variables, hopefully the decision will be made by Michelin/Wisamo. Rob R also made a test assembly for my ultra

simple rudder kick up system I have been 'perfecting' for the last few months. Took one look at it and simplified it! A lot. I wasn't sure whether to laugh or cry. Looking forward to testing it next week.

The new hinges for the toybox work well. We made a glass and bog hatch garage which is pretty basic, but should be thief proof and watertight. When I get time to use the UQ sewing machine, I will build a pram hood over the hatch so watertight won't be a problem.

The ww hull is now closed up, 'just' got to make it pretty enough to paint. Apart from sanding, bogging and patching a few holes this involves moving it away from the shed wall. Fortunately, it is still light enough to do this by sliding one end then the other. We then need to tip it over to fair and epoxy/copper the bottom, which will be an interesting test of the structure, particularly the deck which is unsupported until we know where the frames for the solar panels go.

Unstepped the masts and removed the beams solo, which was a little nerve wracking. Once the masts were out, the beams were resting on the lee hull and the ww hull was heeled 20 degrees. I had to get it level to remove the beams. Lifted one beam about 6"/150mm (some of which was spacer compression which will be eliminated when the tapers are added to the beams) and the other one started to lift, which was surprising and gratifying as I was unsure of the torsional stiffness of the windward hull. Looks like it will do the job. However, this is a complicated way to remove the beams, so we chopped off the top of the case, making fitting and removing much easier. They may be lashed in or the tow replaced, depending on how often the boats will be disassembled.

Lashing will please the Marshallese, who replaced my tapered beams in sockets with traditional lashings (almost, they used nylon fishing twine) after the beams slipped out in an early test. The plan was for the trampoline, mainsheet and stay pressure to hold them in place. Would have worked except we sailed without the tramp, broke the leeboard lashing and got a tow in, but the tow boat put us wrong side to the wind and the rig fell down. No mainsheet or stay and out the beams

popped. Quick thinking by one of the crew meant nothing broke, but it was a lost cause. They are now building another one, which is great news.

I've been asked to speak at a conference for traditional and modern boat builders, with emphasis on zero emissions and locally built, situation suitable vessels. Some interesting people have been invited, it should be an informative couple of days.

A group of switched on Fijian business people and academics (SSTI, see attached) have offered to do all the ground work for a trial route from Suva to the islands to the east and south. This is a huge load off me and should ensure there are no cultural, legal or procedural missteps. The routes consist of short hops, max of about 100 kms/70 miles. These routes will show us what works and what doesn't and should reduce what was intended to be 3 years of demonstrating into 6 months. All going well, the next step is to set up a boat building facility in Fiji and start producing them, followed by a shipping company to start using them. SSTI are actively seeking funds for both ventures. It is astonishing how many grants are available and how many boxes the cargo proa ticks on those grants. They are also getting interest from other parts of the Pacific, in particular the Solomon Islands.

SSTI reckon launching in Fiji is a better idea than launching here from a PR point of view. They have an assembly and launch site arranged on the shore of Laucala Bay (east of Suva) which they want to make into the Pacific green shipping hub, including sail training and boat building, are talking to the Minister about import duty and to shipping and trucking companies about reduced rates. The components will fit in 2 containers, cost about \$9,000 from door to door. This is less than the cost to get the bits trucked from the build site to a boat ramp, rent while we assemble it, some more to launch it and a lot to get the safety gear required for the trip to Fiji. Plus a considerable payment and copious paperwork to the Aus authorities for registration.

SSTI are supplying a couple of Navy6 electric outboards, at least 5 sq m of solar panels and 4 x Blue Lithium batteries. One motor will go on the tender, not sure about the other, yet. They will be enough for motoring in no wind and for maneuvering in tight spots. A big step up from the cheap second hand outboard I was intending to use.

Dec 1 in Fiji is looking possible, maybe launch by the end of the year, but probably not. Trial routes begin in April.

Fit out decisions are coming up which makes me realise how out of touch I am with developments. The minimum the boat will need is a chart plotter/gps, AIS, tracker, VHF and nav lights. These will either be second hand/cheap if I have to buy them, or top of the range in terms of durability if someone else does. Any suggestions welcome.



Beam socket reinforcing



Carbon struts supporting the beam and mast



Ready for fore deck



Strut to deck



Tow wet out



Struts 2



Winch table



Tow wet out machine



AUGUST 2021 #2

The push is on to get the hull beam connections to a stage where we can test the strength by lifting the WW hull with ropes attached to the mast tops. Carbon tow is being added to high load points, parts already built are being cut off or discarded, and design changes are coming fast and furious. Both beam end attachments have changed, the masts have changed significantly, rudder mounts and wing sails are still prototypes and constantly evolving.

While the construction continues Rob has been making progress with marketing and sponsorship which will also change our launch plans. Although it all seems a bit chaotic the end result seems to be a shortening of the time left to go on this stage of the build. I'm avoiding details in this update because things are changing so fast, and I'm not sure what Rob is ready or able to comment on. I'm sure he will answer any questions in due course, keeping in mind he is pretty busy right now 😊

Rob Rassy



Disassembled



Mast mods



Beam strut attachment



Beam to mast fillers



Mast support



Prototype wing section



wing on mast 1



Reassembled



Wing on mast 2



Rudder case mods