

Marston Pterodactyl - Build Log - Part Seven

Well, I have clocked up almost a year of flights and I had my first major 'incident' today. I have quite a few hours on the 'dactyl now, because it flies so well it normally gets a few outings a week.

While flying in fairly windy conditions I got a bit clever during landing and a gust of wind picked up the 'dactyl and it "beaked in". 🤪

I have to admit that it didn't sound to good and I thought that it might have sustained a broken neck.

However, it looks like the damage is:

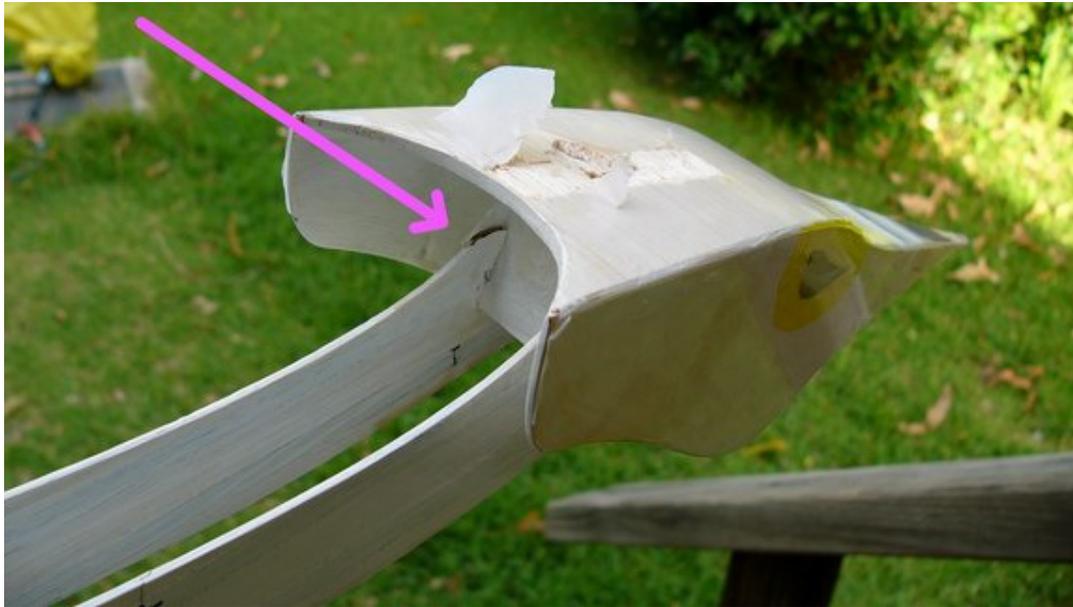
- the crest was knocked off;
- there is some damage to the ply parts of the neck;
- some cracks in the CF strips on the neck;
- and one of the wing tips is slightly cracked.

Actually nowhere near as bad as I thought it would be. The 'dactyl is much stronger than I thought.

Also there is some wear and tear to the coverings, especially where the sides meet the bottom of the body. This gets a bit of wear during landings.

So the 'dactyl is in the repair shop for a few days for some surgery and also to tidy up the areas that have worn with use.

Tim



The crest is knocked off, also there is some damage to the ply.



Here is one of the cracks in the CF - this will require some work to fit.



This is the wear and tear on the side of the body.

Erik,

I don't think that I would do much that is different from my original construction.

- Keeping it light is I think really important. Without another 'dactyl to compare mine to it is perhaps a little difficult to say conclusively, however, I am glad I kept a strict watch on the weight. As it is the 'dactyl doesn't quite soar as well as I expected, however, on a day with reasonable lift it is fun to soar. Then again, it isn't designed as a glider...

- Perhaps I should have sanded a bit more off the tails. Although, they have proved to be strong, and even

in the recent incident (when the nose went in and the 'dactyl' landed upside down) the V-tail was not damaged at all.

- The neck is an obvious structural issue. The CF is definitely a requirement, the instructions suggest a tube - I used CF strips either side of the ply. If I was doing this again I would probably increase the width of these strips, mine are 5mm wide. A little bit more width and the neck would probably have survived this incident. Clearly you don't want the neck to snap along where it joins the head / body as this would be very difficult to repair - so what has happened is actually the easiest type of repair.

- The tape is a good idea along the bottom. However landings appear to touch down just on back end of the front 'neck' blocks. So whatever one puts here is going to get worn away on landing. So in the end this is probably just one of those places that are going to show wear.

Tim



This is the touchdown point on the other side of the body, you can see where the covering gets worn away..

Hi Tim,

I think i might pay some more attention to the ply after CG. I might slim the trailing edges down a bit or add some extra holes. Is the ply really needed here because a glassed balsa strip would be much lighter. I might go for thinner balsa on te tail with CF and make the tail boom a little shorter (?).

I might plan a thin ply/balsa sandwich construction on the neck with copper leads+CF in between the layers. I think the head might be filled with LiFe cells or Lipo instead of lead. Hope not the rescale the head.

As for the fuselage, I'd like to add a single wheel in front to reduce the wear.

I have been using multiple outrunners on a single controller which is fine. I think the Het-rc typhoon 6/15 would be suitable for this plane and half the weight of an innerrunner.

Unfortunately, my DX7 is horrible for programming claw flaps. are the flaps highly recommended or is

she able to land when coming in very low?

Thinking about an easier wing spar too. I have a friend which is an experienced glasser (made an F16 out of 23 moulds, full fibre before he sold the plugs to Het-rc). He might have some ideas.

Think my current project (Jepe Piranha) is ready within a week or so (knock on wood 🙏)

grtz, Erik

Erik v. Schaik,

For flaparons:

```
[PROG.MIX1]
GEAR-> GEAR ON
RATE:-> 0%
-100%
SW:ON
OFFSET: 0
```

For spoilerons:

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[PROG.MIX2]
AUX2-> 0%
-90%
SW:ON
OFFSET: 0
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When the GEAR switch is thrown to engage flaps and/or AUX2 is thrown to deploy spoilers, it is an all or nothing action. Flaps and/or spoilers are zero or max deflection. By varying %'s in the mixes, you can determine how much travel you want. The "100%" and "90%" in the above examples are not hard and fast. Dial in to your taste.

On another subject, I have built the small Depron Pterodactyl. Maiden resulted in a smash up. Repairs have been made. Will toss again one day.



Erik,

I will do the best I can...

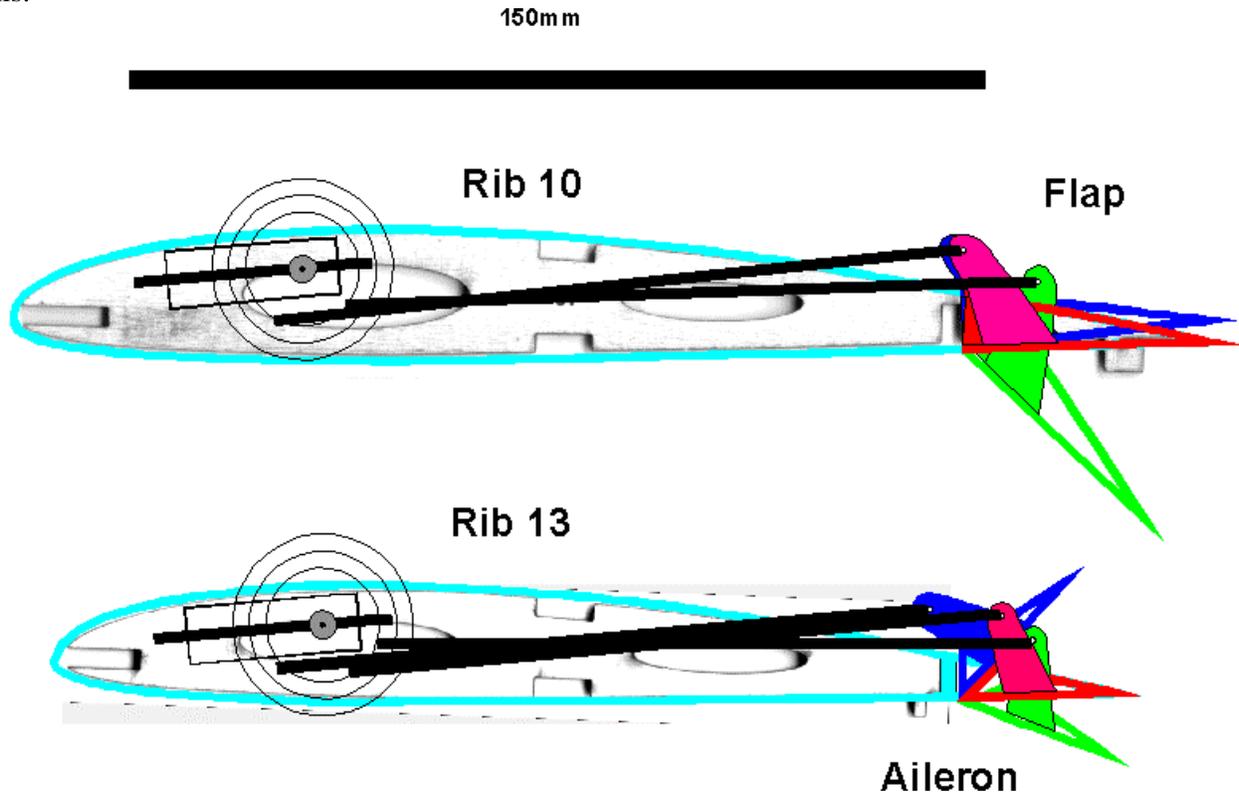
Also, what I did was not exactly as per the instructions...

Quote:

Originally Posted by **Erik v. Schaik**
Can you post some pics of the servos and linkages.

Some of this is a bit difficult because almost everything is inside the wing now...

Most of the information on the servos and linkages starts at post #98 in this thread. The geometry is like this:



I decided I wanted the control horns on the top, see below for a picture of what this looks like on my 'dcayl'.

Quote:

Like to see pics of the hinges too.

The way that I hinged the flaps & ailerons is attached below. The ailerons are a simple bottom tape hinge - the surface has a flat bottom. The flap was more tricky, I used a simple tape hinge on the bottom in the central area of the flap, and because it has a curved bottom I found I needed a special hinge at each end of the flap. These are the 'two bits of tape' stuck together in the middle so that the sticky side of the tape 'swaps' over. One sticky part sticks to the flap and the other onto the wing - these 2 bits of tape stop the flap from dropping down. I don't know if I am explaining this very well...

Quote:

When the flaps are only deployed DOWN for approx 10 degrees will this be adequate for slowing down in a gentle way?

I have attached two photos of the flap settings that I use. These are photos at the inboard (widest) section of the flap and show how much movement I have. I generally only use the smaller setting, the large setting I use occasionally (only when the power is off).

I also have some down flap coupled in on the same side as the down aileron.

Quote:

Please explain how to sheet the front part of the ribs. Pics show ribs 9-19 first (to keep the outer part flat) and ribs 1-9 after this to build in some washout?
why is the sheeting not rib 8-19 and 1-8 ? rib 8 is a big stress area, rib 2 too.

I don't quite understand what you are asking here. How I did this is covered from post #144 onwards, I don't know exactly what 'pics' you are referring to.

When I look back at my construction images it looks like I did 1-7 (bottom) first, then 8-19 (bottom), then 1-7 (top), then 8-19 (top). With the section 7-8 being done after the motor mounts are installed.

My wing was constructed just using the standoffs on the ribs - no additional washout was involved. The reason I did the bottom sheeting first was to ensure that I kept the wing the correct shape.

As to the stresses involved, I am sure that you are correct about rib 8 - but I couldn't work out any other way to get it done!

Quote:

why are the notches on the flap ribs behind the hinge and the ailerons in front of the hinge?

I have no idea 😊 (Perhaps an email to Ron Marston may help?) Although to keep the wing construction correct this means that want to leave the flap ribs in place as long as possible...

I suppose it also permits the wings to be constructed without flaps if you want to, because the ribs are all ready to go.

Looking back at the photos of the sheeting, I removed the flap ribs prior to sheeting. This probably seemed to be a good idea at the time - but I can't remember why...

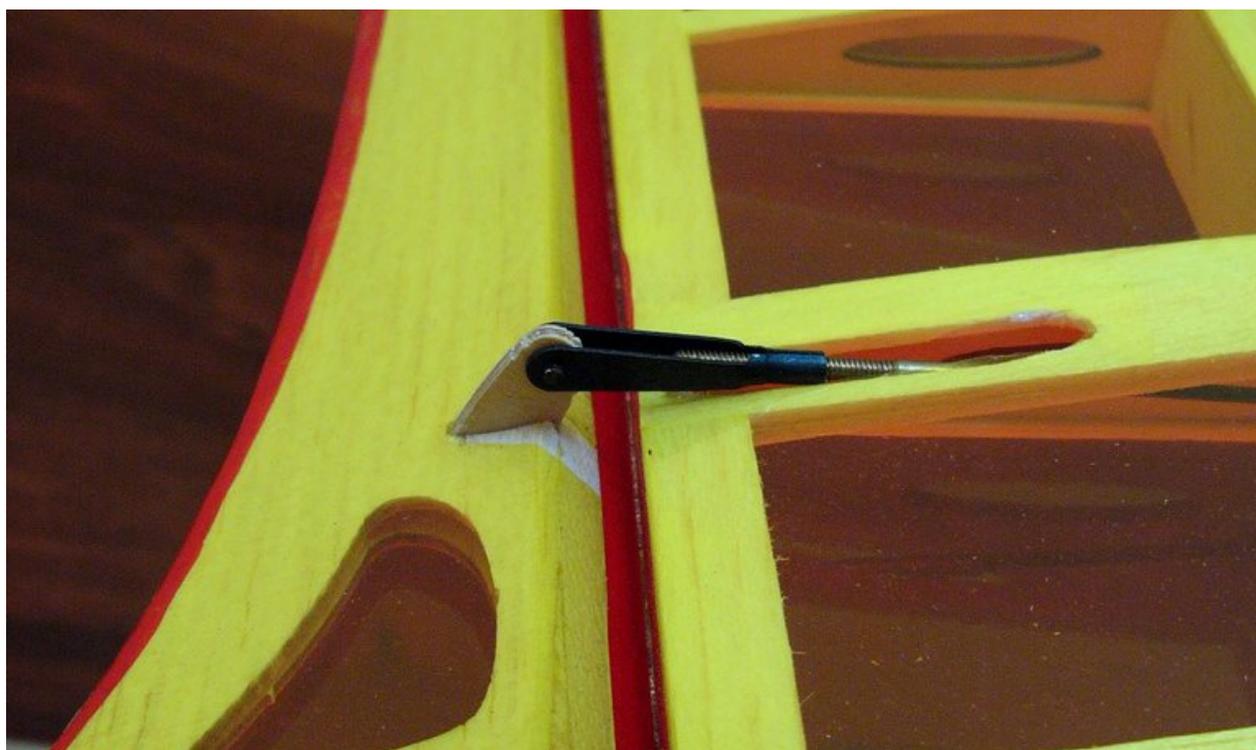
Actually, the only other idea that comes to mind is that perhaps this is to assist in building the correct washout into the flap. One of the problems that I had with the flap construction was building the flap so that it fitted correctly at the TE with respect to the aileron and inner wing. Perhaps I missed something here when I did my construction - it has just occurred to me that perhaps a slightly different construction system for the flaps will get the alignment 100%. (The ailerons are easy because the bottom is flat...) So my flaps were built 'free hand' and one is 100% correct, the other (that I don't show people) has a few mm of error on the outboard TE.

Of course all of the above is assuming that I knew what I was doing when I did all this a few years ago... I did try and document why I did everything the way I did as I went along... but there is a limit to what one can record.

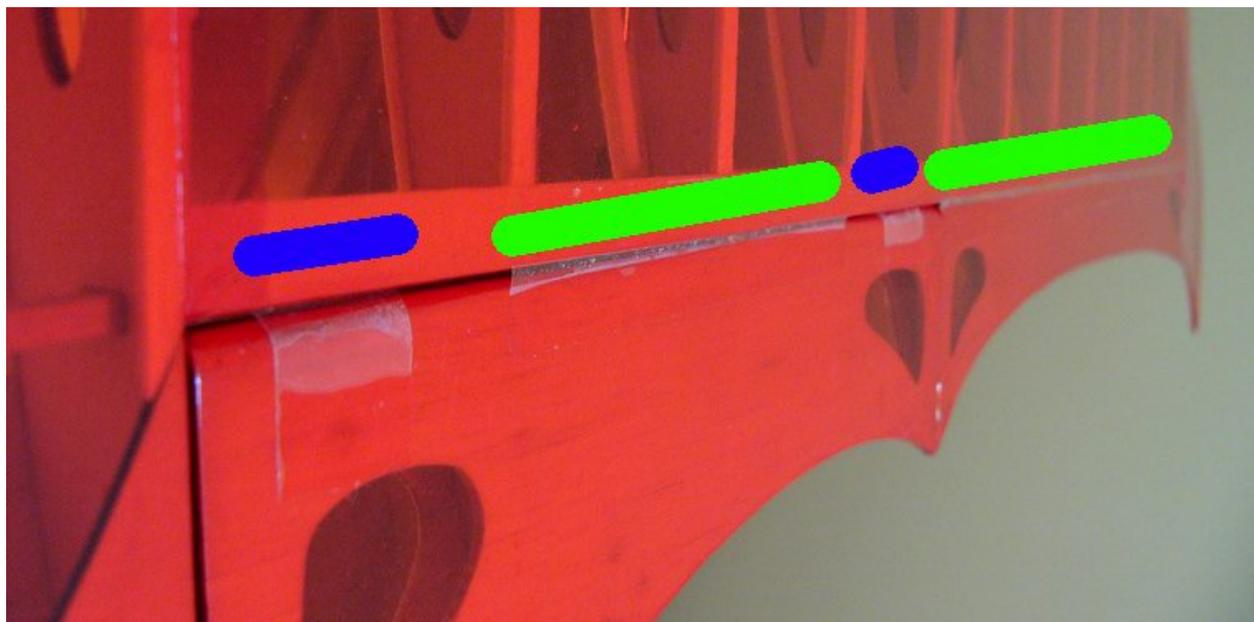
Tim



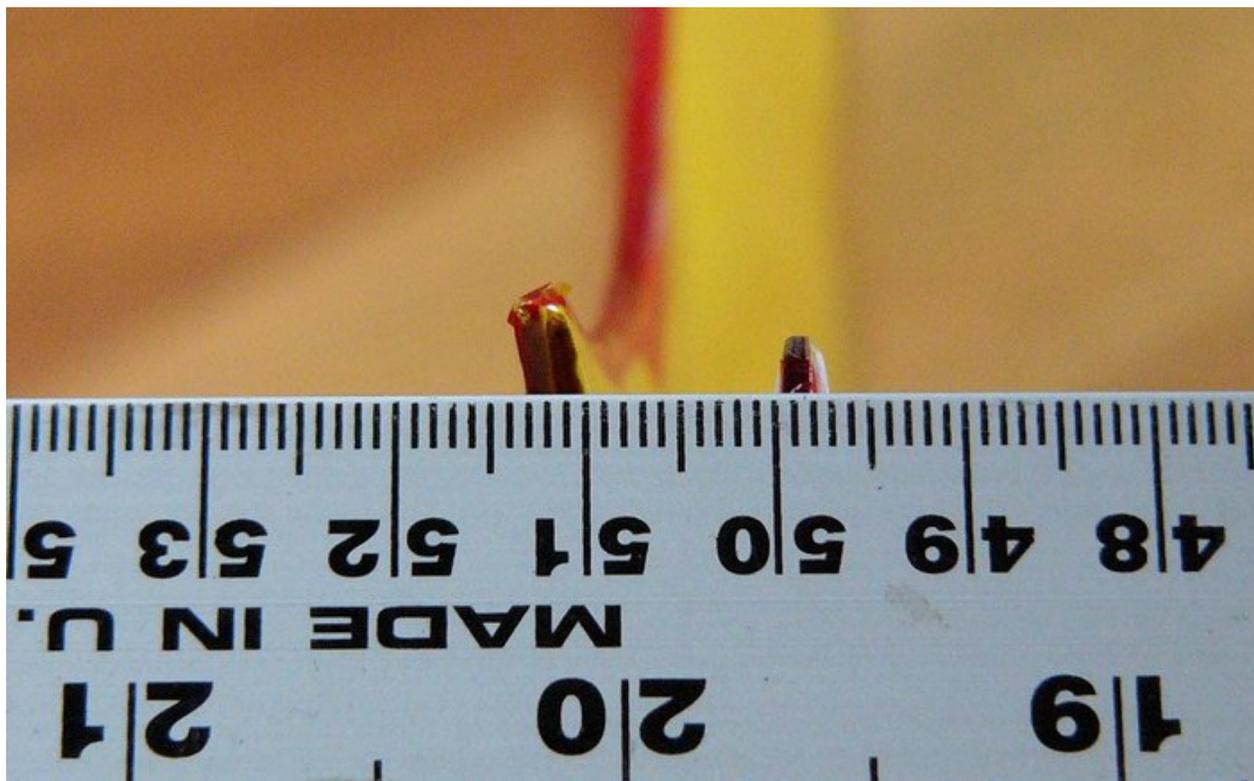
Control horns on the top of the wing.



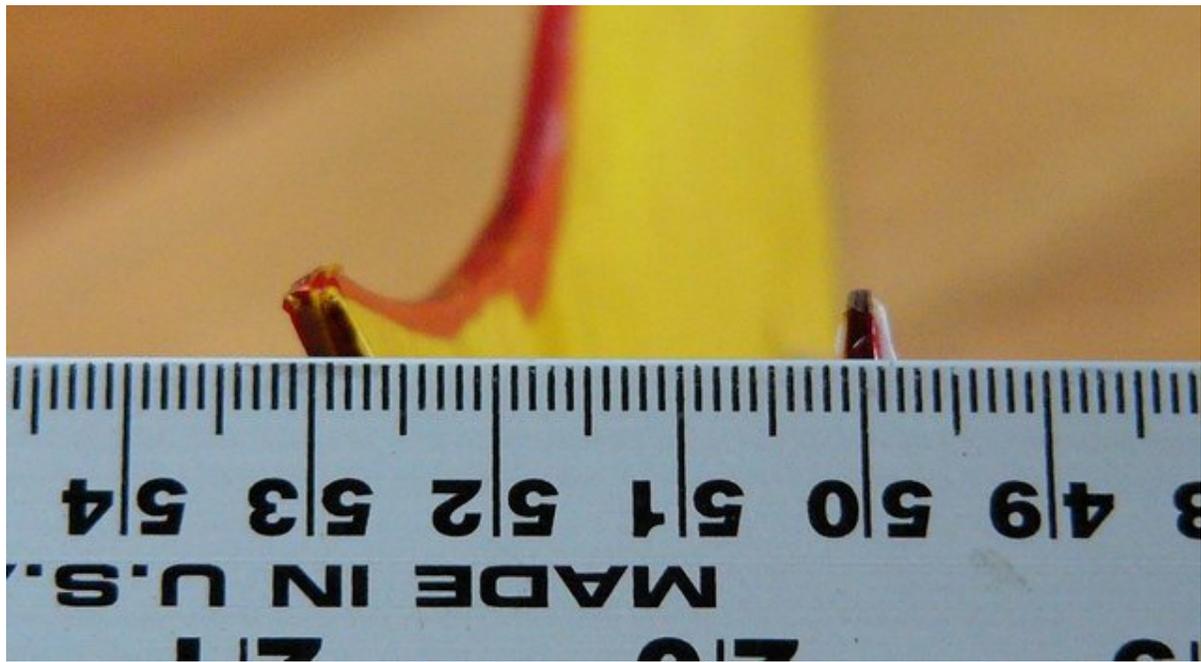
Aileron horn, tape hinge on lower side, bevel on the top side.



The hinging. Green is simple tape on the bottom, blue are the bits to keep the flap correctly aligned.



'Small' flap movement.



'Large' flap movement.



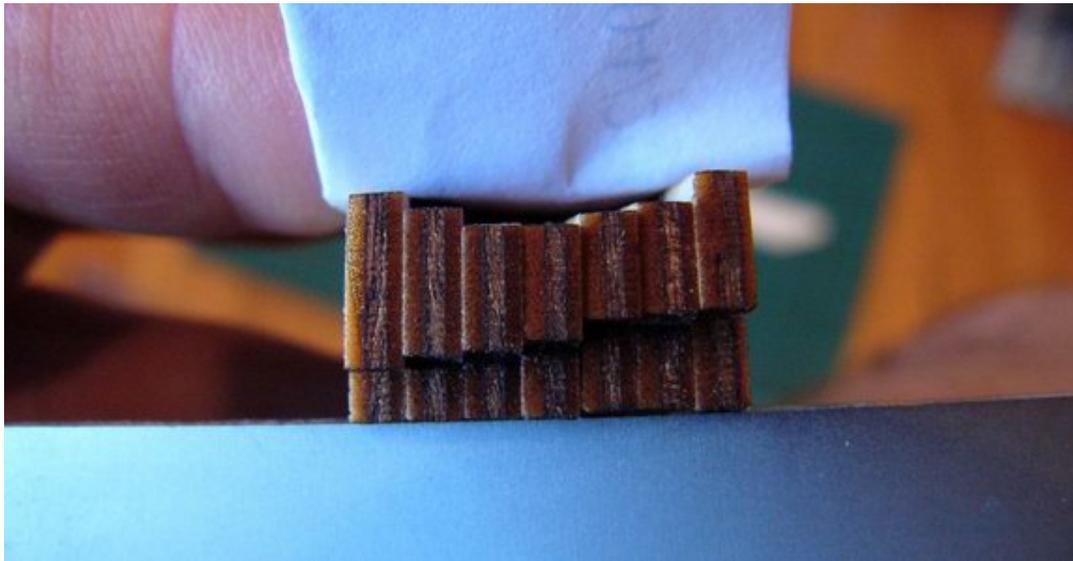
Ptero colours.jpg - 82.7 KB - Views: 165
Posted by: [KiwiKid](#) on Dec 16, 2008 05:45 PM

Hi Erik,

A very nice looking wing!

"Spruce" must be a different timber in Australia - your timber is quite a different colour and much more flexible than what I have. There is no way that I could have bent the "spruce" that I have the way you have done it.

This is what the tail end of my ribs looked like (my notes say ribs 13-19 with 13 on the right - I have checked this against the scanned images of the ribs that I have and this appears to be correct.). Rib 19 is definitely the 'tallest' of the 13-19 group.



The thickness of the TE definitely varies across the length of the aileron - and it is thicker at rib 19.

If you look at this photo it also appears that the TE of rib 19 is slightly higher than the TE spar. There is a gap between the top of the TE spar and the 'sheeting'. (This was my 'test fit' aileron to check what was going to happen with the wing tips...)



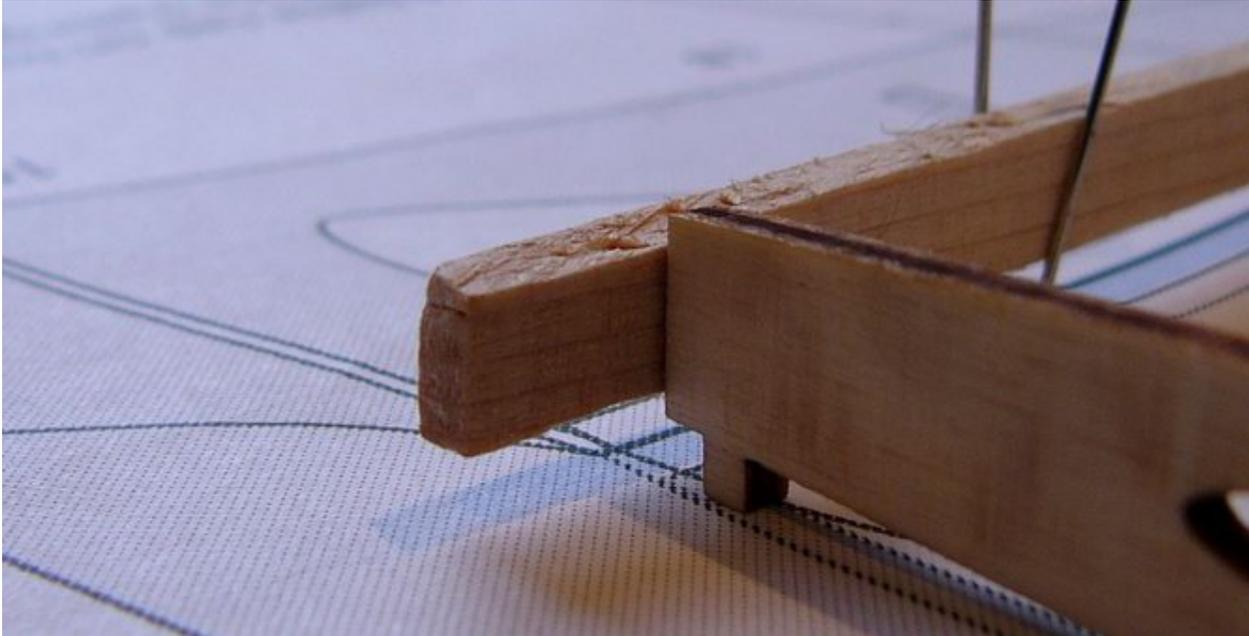
Posts #89 and #97 show that I added some additional balsa to the TE spar to get the required height. (Green is added balsa, red is sanded area). I can't find any record of this, but I am certain that I aligned the bottom of the TE spar with the bottom of the TE of the ribs. So all the adjustment was on the top of the TE (either sanding or adding material).



I have attached a 'rear' shot of the aileron, I hope that you can see the TE of the wing (at the aileron join) and you can see the varying thickness.

I hope that helps,

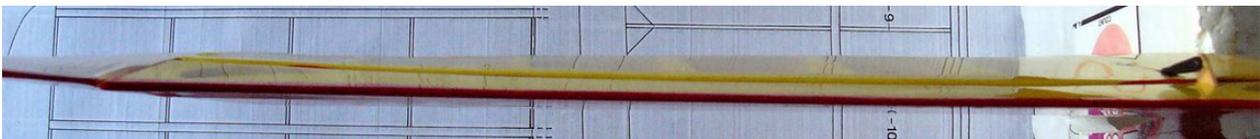
Tim
(Off to fly my Pterodactyl in a few hours...)



Yep, this is rib 19 and the TE spar. Definitely the rib is taller than the spar.



Evidence that I put balsa on top of the TE spar between ribs 18 & 19 and also between ribs 12 & 13. You can see the different colour of the balsa...



This is my finished wing from the rear, you can see the thickness vary along the aileron.

The end.

Yes Tim it is developing "character".

Keep at it, I like your proposed colour scheme.

You realise that this is going to scare the hell out of birds for miles around?

Why is it I hear "Beep Beep" in my head when I look at the side view? 🤖

- Roger

Ha Ha, it might happen Roger. Have you seen this vid:

<http://www.drfly.de/momo.wmv>

If I go for the mouth opening mod I must remember to shut it on landing 🤖

When I get my ptero finished (in about a year) I think I might go for an authentic colour scheme over doped tissue - bit like these gliders 🇩🇪🇩🇪

KiwiKid







motors not installed

