

Skip
MODEL
DESIGNS
International
44% Pitts Challenger 2

Thank you for purchasing the Skip Model Designs 44% Pitts Challenger 2.

If you have any issues, questions, concerns or problems during assembly, please contact us :

Hello@skipmodeldesigns.co.uk

SAFETY in Assembly

During assembly of this aircraft, you will be asked to use sharp knives and hobby adhesives. Please follow all safety procedures recommended by the manufacturers of the products you use, and always follow these important guidelines:

- ALWAYS protect your eyes when working with adhesives, knives, or tools, especially power tools. Safety glasses are the best way to protect your eyes.
- ALWAYS protect your body, especially your hands and fingers when using adhesives, knives, or tools, especially power tools. Do not cut toward exposed skin with hobby knives. Do not place hobby knives on tables or benches where they can roll off or be knocked off.
- ALWAYS have a first-aid kit handy when working with adhesives, knives, or tools, especially power tools. ALWAYS keep hobby equipment and supplies out of the reach of children.
- SAFETY in Flying! This is NOT a toy! It is a very high-performance RC airplane capable of high speeds and extreme manoeuvres. It should only be operated by a competent pilot in a safe area with proper supervision.
- ONLY fly your aircraft in a safe, open area, away from spectators and vehicles and where it is legal to fly. NEVER fly over an unsafe area, such as a road or street.
- NEVER fly near overhead power or utility lines. If your airplane ever becomes stuck in a line or a tree DO NOT attempt to retrieve it yourself. Contact the authorities for assistance in retrieving your aircraft. Power lines are DANGEROUS and falls from ladders and trees CAN KILL!
- Never fly too close to yourself or spectators.
- Spinning propellers are DANGEROUS! Never run your motor inside a house or building with the propeller attached Remove the prop for safety. • • • Always fly within your control.
- Always follow manufacturers instructions for your radio system.
- Always preform a pre-flight check of your aircraft to be certain of the aircraft's airworthiness.
- Always obtain proper insurance before flying. Always fly model aircraft in accordance with the Academy of Model Aeronautics (AMA) Safety Code and BMFA/ LMA. Please visit These websites easily found in major search engines.

Limits of Responsibility

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Required Items

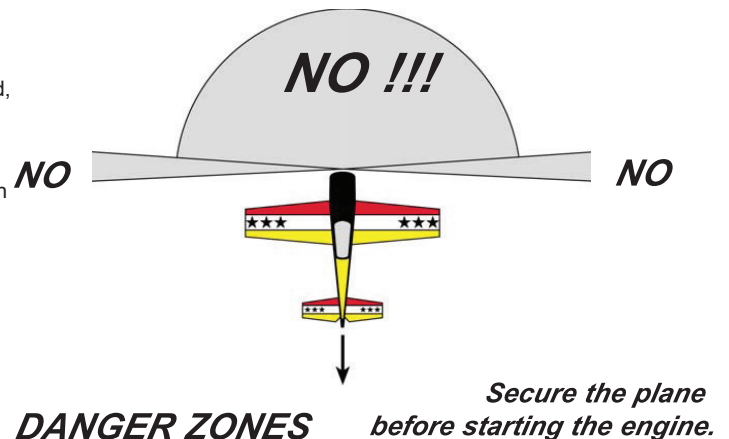
- Masking or painters tape
- Hobby knife with #11 blades.
- Fresh 30 minute & 15 Minute epoxy.
- Plenty of both Medium and Thin CA.. Activator can also be used.
- Electric drill with an assortment of small drill bits.
- Small flat head and Phillips head screw drivers.
- Standard and needle nose pliers.
- Hammer, Hacksaw and other basic Hobbist Tools
- Metric ball driver or allen key set.
- Sanding block and sandpaper. Hobby Plane
- 8 x 15kg (min) torque Digital Servos.
- 1 x standard size servo for the throttle.
- 5" Spinner
- 100cc to 150cc (120cc Recommended gas engine) and recommended prop.

Make sure that the plane is secured properly when you start up the engine. Have at least 2 helpers hold your plane from the tail end or from behind the wing tips before you start the engine. Make sure that all spectators are behind, or far in front, of the aircraft when running up the engine.

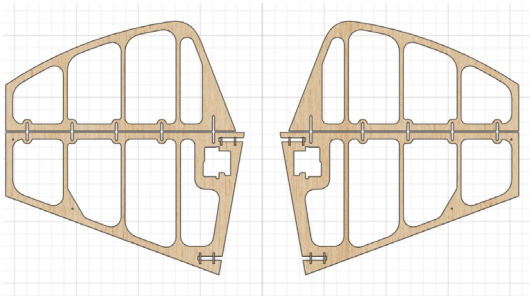
Make sure that you range check your R/C system thoroughly before the first flight. It is absolutely necessary to range check your complete R/C installation first WITHOUT the engine running. Leave the transmitter antenna retracted, and check the distance you can walk before 'fail-safe' occurs. Then start up the engine, run it at about half throttle and repeat this range check with the engine running.

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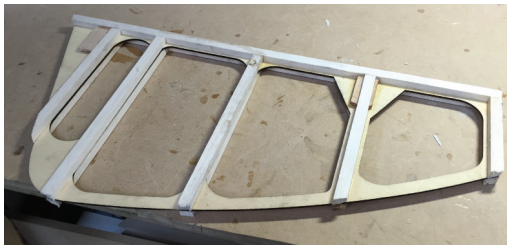
Check for vibrations through the whole throttle range. The engine should run smoothly with no unusual vibration. If you think that there are any excessive vibrations at any engine rpm's, DON'T FLY at this time and check your engine, spinner and propeller for proper balancing. Due to the models construction (Been Light) it is very important to have everything running smoothly.



With Any model build, It is important to test fit components together before gluing (Where applicable). 5 Minutes test Fitting can save hours of Unpicking.



9.5MM Balsa
3MM POPLAR PLY CORE
9.5MM Balsa



To build ANY COMPONENT of this model, Please make sure you have a large enough area to work safely, and that your work bench for the next few months is clean, tidy and most importantly FLAT

First Part of the build is the elevator and Stab(The most simple parts to build on the model)

Inside the kit you will find 4 Parts which are made from 3mm Poplar Ply (They look like the attached picture In Shape)

These are the cores of the elevators and stab.

To Begin the build, Put all the parts flat on a Board and find the 6.5mm x 9.5mm Balsa Strips and the 6.5 x 9.5mm Spruce strips

When building the elevator and stab. You have to do 1 side of the elevator and Stab at a time (DO NOT, Keep turning the parts over as this could warp the elevator and stab)

The spruce strips are for the REAR of the elevator Stabs & rudder fin..

*

We recommend you glue the spruce with 30 minute Epoxy.

1 Strip of 6.5mm x 9.5mm Spruce will do both sides of 1 Stab. Glue the 6.5mm x 9.5mm Spruce Strip upwards, so that the 6.5mm Side sits flat to the 3mm Core.

After you have glued the spruce to the rear of the stab, It is the matter of cutting and Sticking the Balsa Strips to the Stab and elevator..... We used Super-glue for this. Again the 6.5mm Side of the Balsa sits flat on the core Please Glue all Balsa wood to the elevator and stab Like image shown

We have marked on the Plywood core where the reinforcement blocks are to be placed for the Steelwork and Horn Blocks and also the rear tube support. The Horn Blocks and Steelwork Blocks are made of a balsa sandwich. 6.5mm then a piece of 3mm Ply..

Once one side of the elevator and Stab is complete, flip the elevator and stab over and repeat the entire process again ensuring the elevators are kept flat.

When the Elevator Stabs are complete, Drill the Holes in the Steel work Reinforcement Areas with a 3mm Drill

The rear of the elevator is made up by cutting 22mm Strips of 2.4MM balsa wood. You will need 5 Strips per elevator Trailing Edge and Stab Leading EDGE.

Soak The Balsa with water and apply to TE of elevator using aliphatic resin or White Glue. Set to one side and allow to dry. When dry round to shape, at the same time round LE of stab.

The Front of the Elevator is to have a 45% chamfer to each side. This will give you 45 Degrees Of Movement, Please Adjust to your Flying Style, But we do not recommend more than 50 Degrees or less than 30 Degrees. as this is a very sensitive surface.

The Hinges for the Elevators are Made by Robart. Simply drill through the pre market holes and test fit the hinges in place at this point. Do not glue in place. This will be done at the final fit of the model after covering

Drill through the Balsa wood mating surface on the elevator stabs and Insert the 8mm Carbon tubes in to the designated cut outs on the elevator stabs and holders. There are also .. These are glued in place with epoxy..

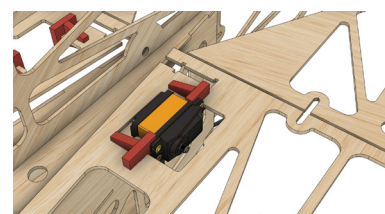
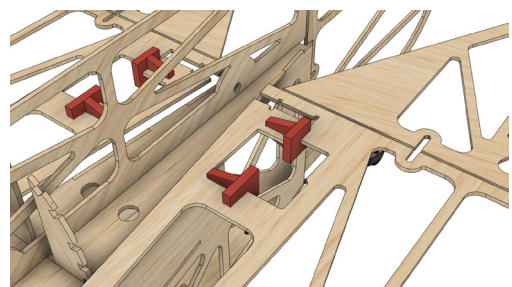
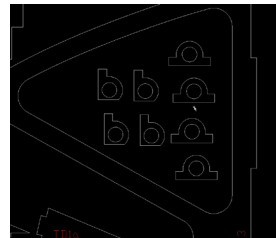
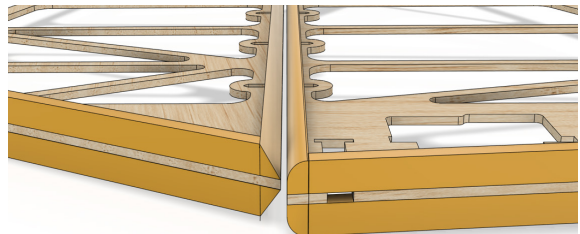
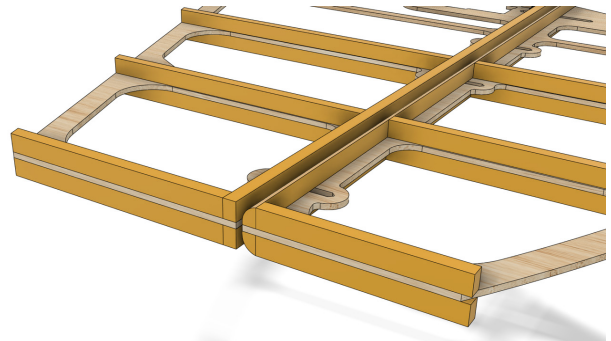
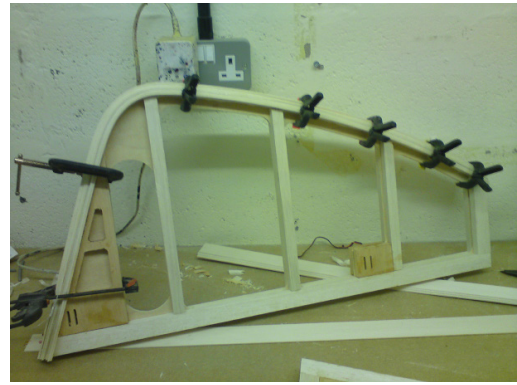
Ensure a good glue joint between the elevator stabs and the Carbon, We recommend gluing both sides to ensure a strong bond
These act as the antirotation pins on elevators.

Trim off any excess by simply sanding this off.

The Elevator Servo blocks are made from 6mm ply (S1,S2 & S3) there orientation is shown in the photos use Epoxy to glue in place. At this point we recommend test fitting the servos and drilling the Blocks as it will make it easier to assemble the model later.
A Small Hatch will need to be made which sits on the outside of the model to access the servo from the underside when covered

The Elevator Front edge is made up by gluing a strip of 6.5mm Balsa to the front

At this point the elevators and stabs can have a pre-final sand as they are complete.



The Rudder Construction is similar to elevator using the same 6.5mm x 9.5mm Spruce and 6.5mm x 9.5mm Balsa. However, the Rudder and Fin is only 16mm Thick, So the orientation of the Balsa and Spruce changes to lie on the 9.5mm Side. finished thickness is 16mm

The Fin Rear is to have the Spruce Glued to it with epoxy. Do NOT CUT EXCESS OFF. You will need approx 300mm to extend past Fin at bottom which will fit in to fuselage later (Please see photo for reference of what me mean!)

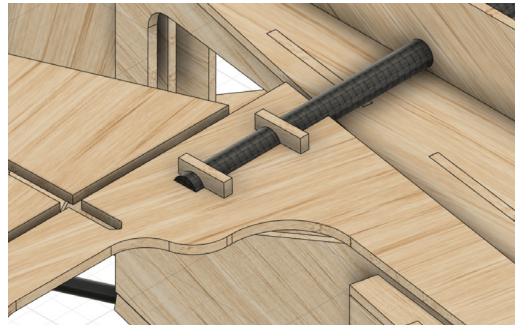
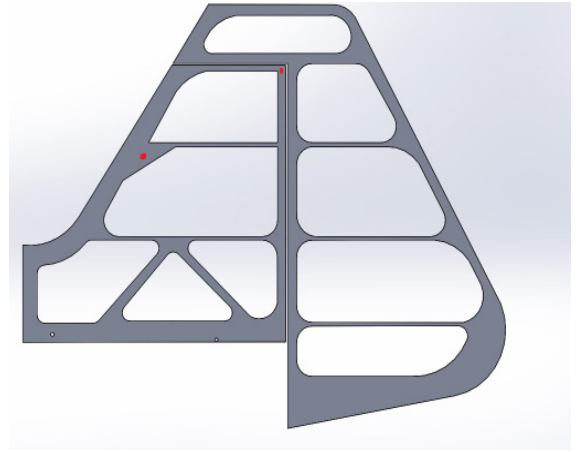
Please note : At base of Fin there are 2 holes of 8 mm diameter, these correspond to the holes in horizontal stab set to 1.5 degrees of incidence. It is important you drill these holes as you cover them with balsa strip otherwise you will lose location of rear stab

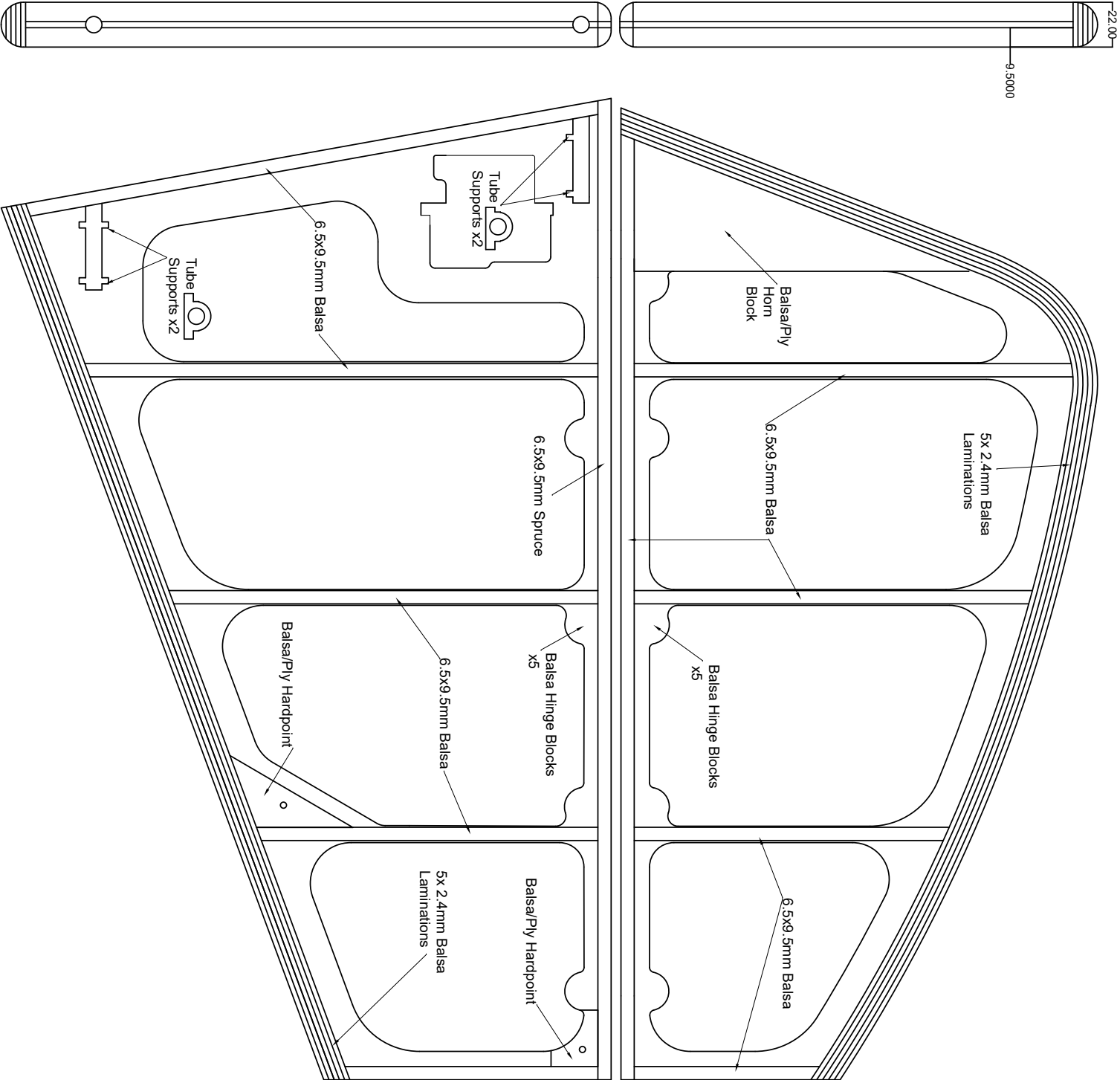
The Hard point parts and horn Block is made from 6.5mm Balsa.

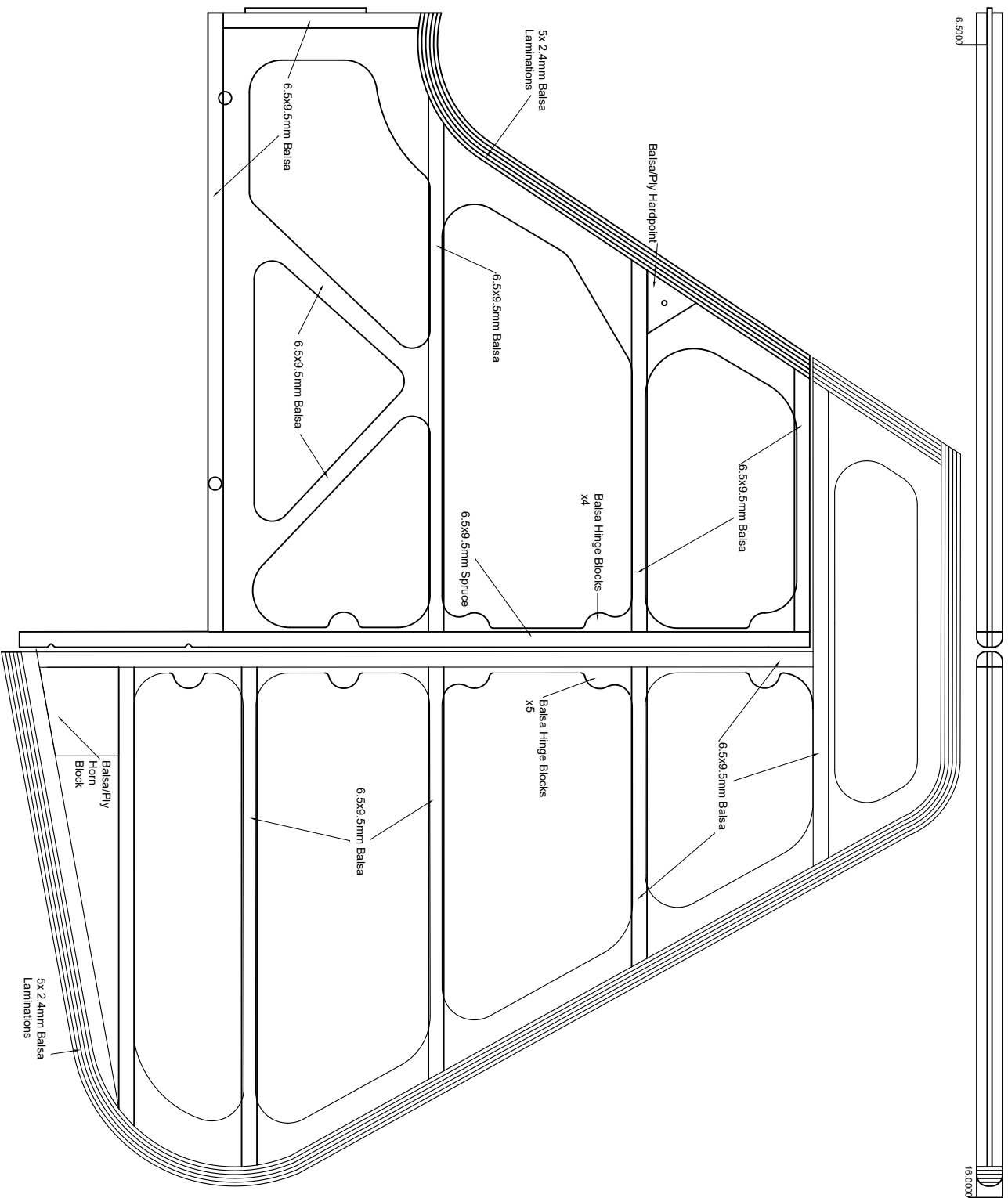
Again. the TE, TOP LE OF stab and rudder is to be made up of 5 Strips of 18mm, 2.4mm balsa which is to be wet and Glued.. Once dry, these are to be rounded.

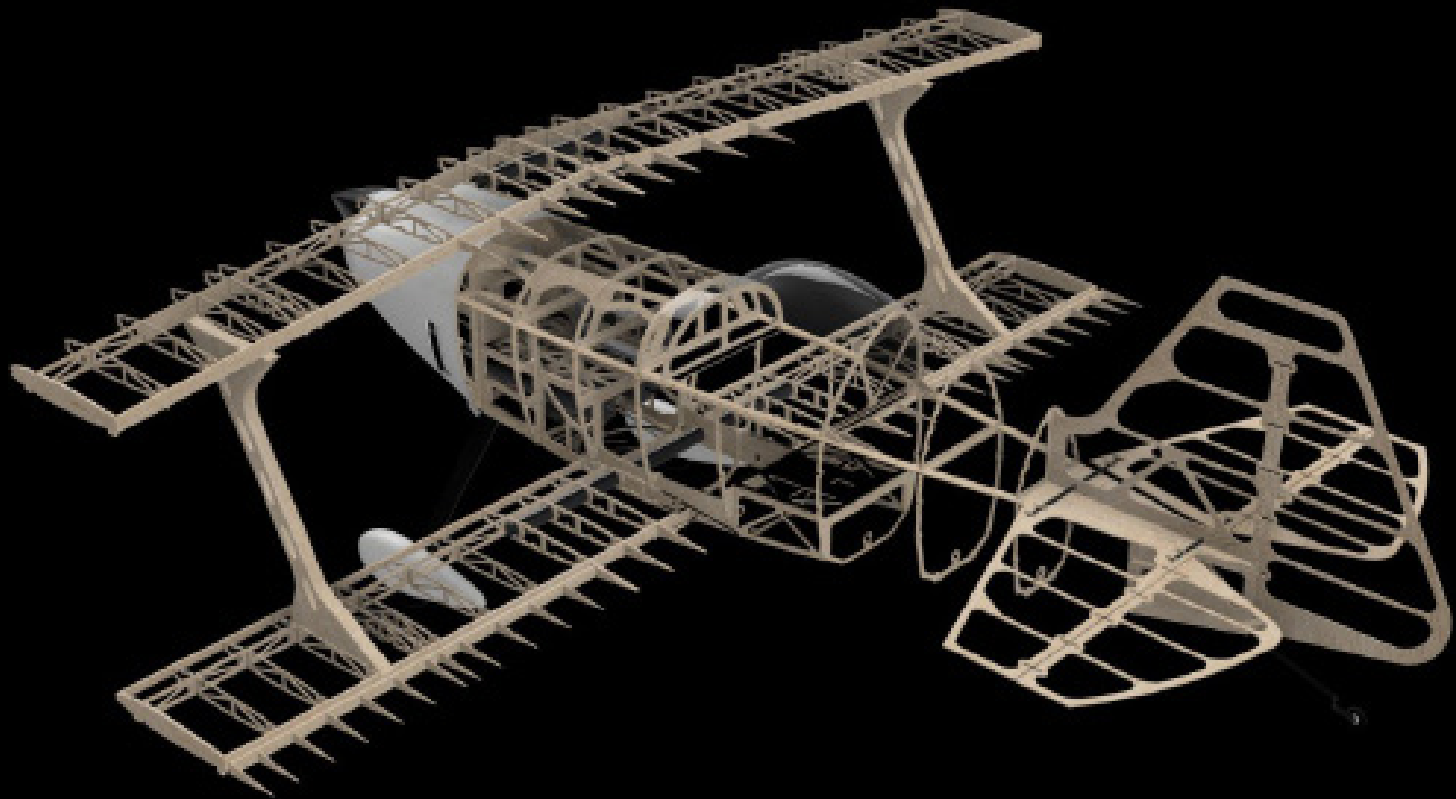
Once you are happy with this... Put the elevators and rudder to one side.. Sit back... and admire the first completed parts of your 44% Challenger 2...

Pretty Cool Right?










Skip
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44% Pitts Challenger 2
Fuselage Assembly

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Info@skipmodeldesigns.co.uk Or 0844 818 0290 10am-5pm GMT Monday thru Friday.**

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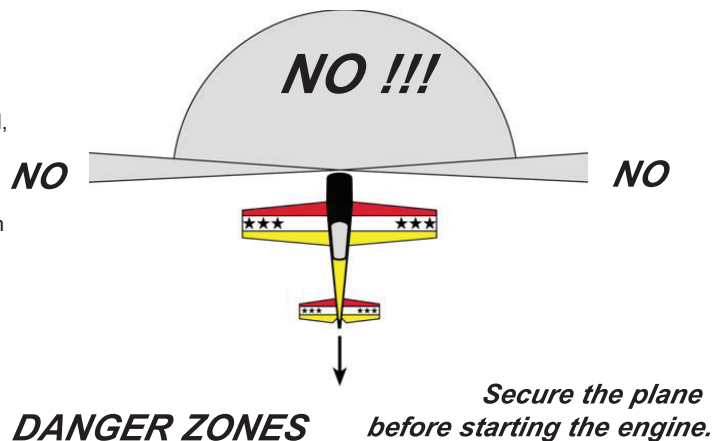
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In The fuselage, You will find alot of parts Labeled with acronym's. Once you get the hang on how they are labled, and meanings like SD (Servo Doubler), MUCP (Main UnderCarriage Plate) it will be easy.

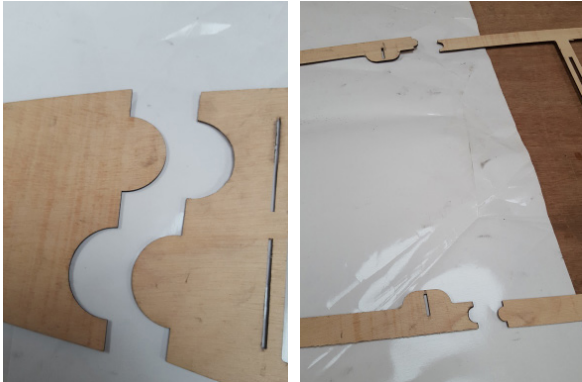
So you have built the elevators and rudder? Congrats.. If not... Go back and start the build with easy parts :D

The fuselage is relatively Simple..... Other than the first 4 Ribs... PLEASE be very patient when building the front end of the model!. All Parts **DO** go together.. But are an extremely good fit.. You will require a Rubber Hammer

We could have made this part a little sloppy going together, however, all the forces of the undercarriage, Wing wires and engine all go through these parts!.

We accept everyone will curse us when putting this together!..... But its for the good of the model!

The first 4 ribs are a while away...So lets start off with some easy bits first.



First of all. You need to join a few parts of the fuselage together.

FS (Fuselage Sides)
Fuselage Top (3mm Ply).

The fuselage top can be glued together with Superglue

FS Should be glued together with Epoxy.

These parts can only be glued together 1 way



Ok.... So we may have lied about not doing the first 4 ribs first, We thought we would put your mind at ease..... Then Jump Straight in to it!..... Element of surprise :)

Next you are on to the first 4 ribs. There is an order for this to go together correctly.

We highly recommend dry fitting all these parts first to make sure you understand how this all goes together....

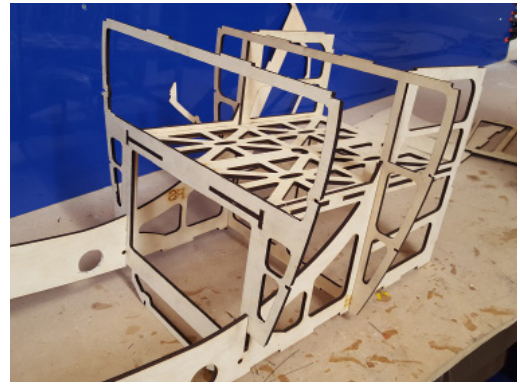
You will need. A wood file.... A hammer...And 30 Minute Epoxy...

Lets Start.

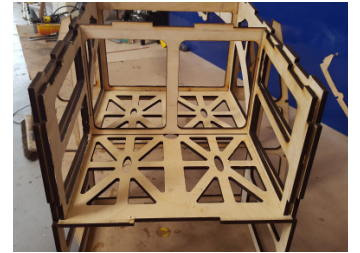
Firstly, Find F2 AND both fuselage Sides, Glue mating faces to F2 AND wipe Excess off.... While the glue is still setting. You need to get the Fuel Tray In Place (Labelled FT)

You may need to chamfer the locking tabs on the Fuel Tray to get in place... The fuselage Sides will bend slightly to the Fuel Tray in place!

While Everything is still gluing.
You need to put F3 in place.
Again Glue all with 30 Minute epoxy.
Ensure a good fit is achieved



You now need to add the Fuselage Side Doubler (Labelled MUPDS)
Again Glue with Epoxy and Clamp in place
Make sure everything is a positive Fit.



Once all Glue has gone off.

You can Now add the MUPD (Main Undercarriage Plate Doubler)



Now all of these parts have gone off. You need to add the main Uc Plate (MUCP)

You need to Use 30 Minute Epoxy and plenty of clamps...
Glue all mating faces and all of the UCPD. then Put the MUCP in





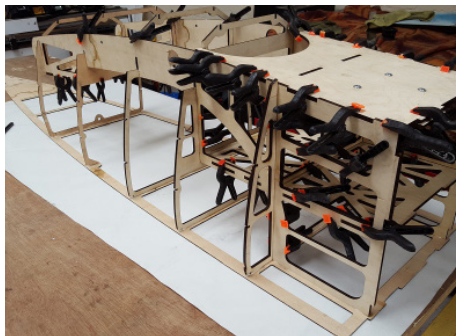
Now the Final Part of the Front End Assembly.

F1. This is probably the trickiest Rib to get in place. You will need to angle the bottom Slots to get the MUCP AND UCPD through.

Use 30 Minute Epoxy on all mating faces... A hammer is useful at this point to make sure it all goes in place... Use clamps to hold in place while Gluing.



You can now add.. F4, F5 and F6. Please use epoxy



It is now time to mount the whole front end structure to the 3mm Fuselage Shape.

Again Use Epoxy to do this on all mounting faces. Make sure it is done on a flat surface! This is very important as will make the plane very accurate in Knife Edge,



Once all Glued. Add F7 & F8 to fuselage 3MM Shape (Super Glue is fine for this)

Make sure these Formers are GLUED at 90 Degrees to 3mm Fuselage Shape

You now need to add The Rear UC Plate Sides, F9 AND RUCP (Rear Undercarrage Plate)

(***** Attention***** In the kit, you will find we have taped 3 parts to the Rear UC Cover, these are for your Elevator servos.. please take note of these parts, as you will need to glue back on when you have balsa stringers in place (All small parts are found in a small box in your kit))

Use 30 Minutes Epoxy to do this.. Clamp in place while Gluing



Once Done, You can add the Servo Tray (ST) and Servo Tray Support (STS) this fits between F5 AND F6

Epoxy is recommended, However Medium CA Will be fine



You need to get the 6 x Spruce Strips in place.

The spruce strips are 6.5mm x 5mm x 1820mm

You need to keep the Fuselage weighted Down and add these Spruce Strips to these notches in fuselage. See picture Below.

Where a Rib is, you may need to slightly notch the 6.5mm Side of the spruce to fit the Ribs (Or open the Ribs Slightly to fit snug) Use epoxy to glue in place. In a perfect world, you will not need to do this, However, when the spruce is cut at mill, It can vary by up to 1mm!

Please imagine the whole assemble is the correct way up

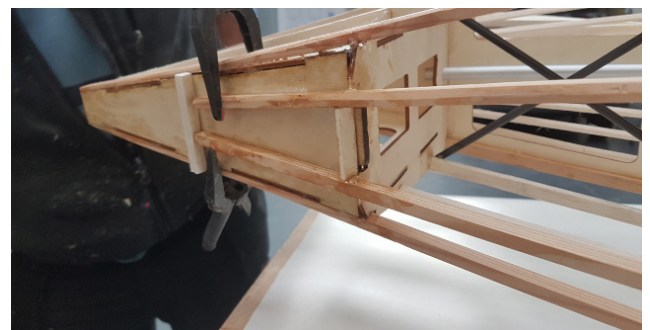
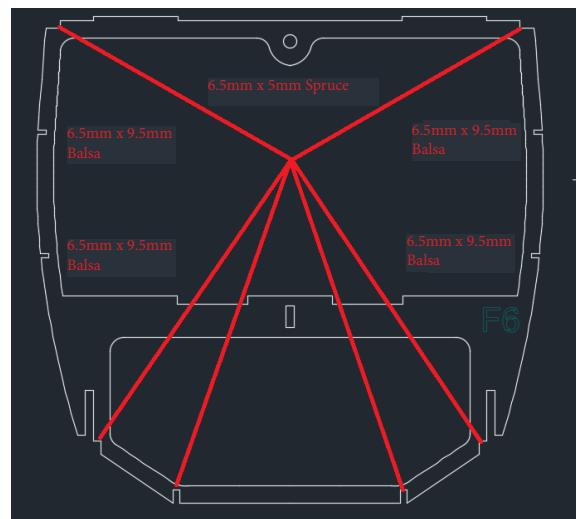
The 2 Bottom Spruce Strips Go from F2 and extent past F9.(Shown in picture) we finish the end with a scrap piece of balsa from the Elevators. This just helps with covering once shaped. The Lower Right Spruce and Lower Left Spruce Finished as F3, There is a notch in the MUCP for the spruce to fit in to and end. The Top Spruce extends the length of the fuselage.

!!!!!! Important !!!!!!!

The Top Spruce Strips must Sit flush with the Fuselage 3mm Shape from F9 TO F6.

Between F6 AND F1 you must make sure the Spruce strip Sits 2.4mm Inside the 3mm Fuselage Shape. This is for Sheeting Purposes Later.

Once in place. You can now add the 6.5mm x 5mm Balsa Stringers to the fuselage



Once all Has glued! You can Flip the fuselage over and Admire you boat Hull... She is a Mighty Fine vessel.. But needs a mast to catch the winds!



Time to start Building the Top of the fuselage.

Glue in place F2A, F3A and F4A With Epoxy.

When you have these in place. you can also slide in the 2 TWM (Top Wing Mounts).. Glue all with Epoxy.

It is worth while test fitting the 1m Bottom phenolic tube in the fuselage. The holes may need a little sanding to make sure the phenolic slides in. DO NOT Glue in place. As when you align the wings you may need to adjust.



In the Kit. You will find 3 Ribs Taped Together and 2 X CA These 3 ribs are for the Turtle Deck.

CA is to get the angle for the First Rib at cockpit.

The other 2 Ribs are to be glued at 90 Degrees to fuselage.

Super Glue is fine for Gluing these parts in place.



Once in place. You now need to glue the Rudder stab in place..

The Rudder Needs to Be at 90 Degrees to 3mm Fuselage Shape and perfectly aligned. We assume as a builder, you understand how to do this correctly and the importance of the Rudder Fin to be in place correctly.

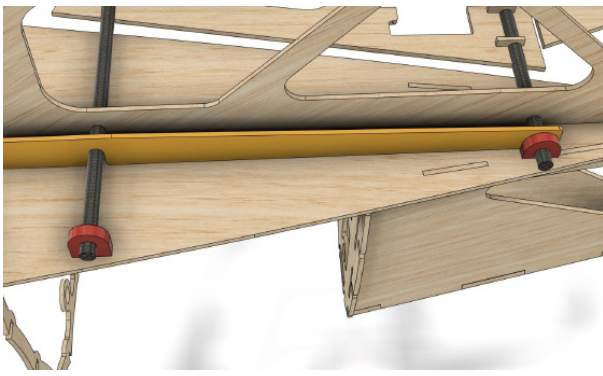
We highly recommend using a laser level to get the stab 100% True.



You will need to notch the 3mm Fuselage Top to fit the spruce and also Chamfer the Spruce you left extended to fit in the rear of the fuselage.. It Must attach to the Rear Undercarriage Plate. Pack if required.

It will also be worth Slightly Chamfering the Rear Undercarriage Plate Sides so the Spruce fits snug.

Use 30 Minute Epoxy on all mounting surfaces.



In the Kit, there is also 4 Parts Called STM. These parts are used to set the Elevator Angles

Put the 8mm Carbon through the Stab AND through STM Both Sides.

In the Kit you will also find 2 x Alignment tool for the Elevators. This is placed against F8

With all 4 STM and The 2 x Alignment tool in place. This should align the elevators perfectly

Tac Glue STM in place with super glue. The Tool can now be removed.

It is now worth sliding both elevators on the the model to ensure they fit correctly.

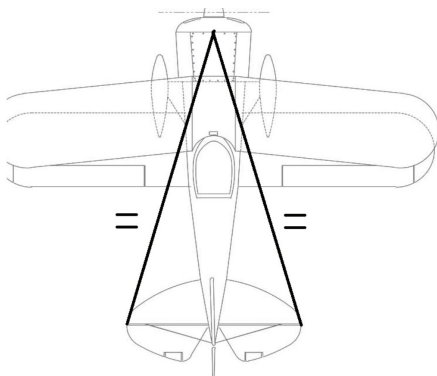
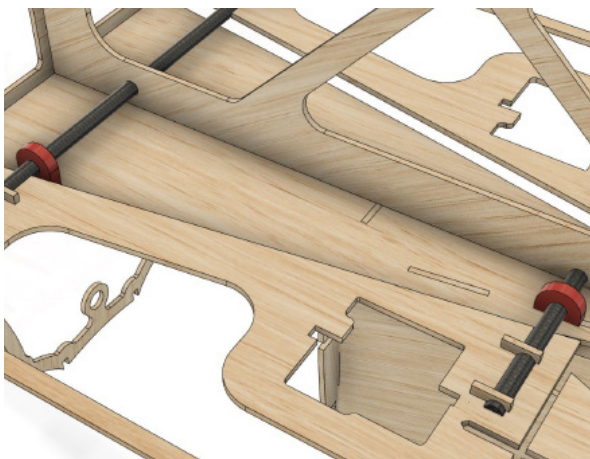
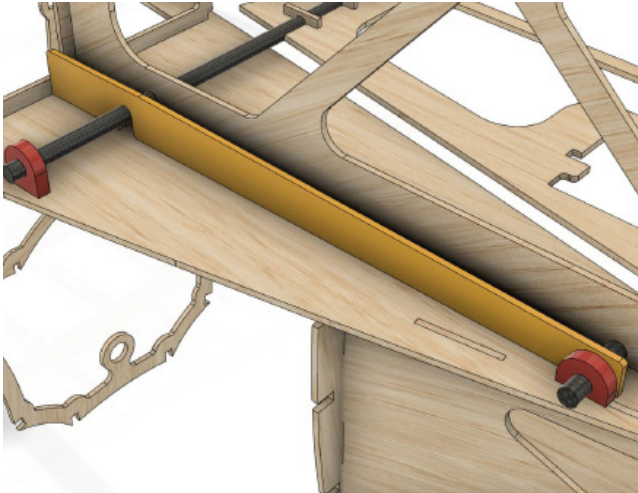
Trim the 8mm carbon flush with the Rear UC Sides.

Slide in the 6mm Carbon Tubes and slide the elevators in to place.

You will need to cut down the 6mm carbon to size so that that they fit the fuselsg and Tails correctly.

Take Measurements from 2 known places to ensure the elevators are the same.

Once satisfied that everything is correct. STM Can now be perminantly glued in place.



Time to add balsa Stringers :)

You can add the 2.4mm x 2.4mm Balsa Stringers to the front Top and the turtle deck.. Make sure you extent the 2.4mm x 2.4mm Balsa Strips past F8 top to the end of the Fin. This will help with sheeting. Super Glue is A great choice for gluing Stringers in place.

You will also need to add a balsa strip to the rear around the Carbon poles like the image shows. This is where the tails will meet the fuselsge, so a hard fit is required.



You should have very few parts remaining in your kit of parts for the fuselage. The one part should be what we called as the POWERBOX Royal shelf. This part will have the Skip Model Designs Logo and your name on it (If you have requested your name on it)

This part Glues on place on the First Balsa wood stringer above the rudder tay just forward of the Rudder servo mount (See photo on cockpit frame below to see).
Between F4 AND F5

The canopy Frame is very simple to assemble.. Find all remining parts and add greece proof paper to the cockpit area. This is to prevent the canopy frame sticking to the body.

Clamp all of cockpit frame in place. Use superglue to fix each rib in palce. Add pieces of balsa (Scrap pieces of 2.4mm x 2.4mm) between C1 and C2 to aid with sheeting.

In our kits, we do not give a shape for the canopy frame sheeting, This is due to the PITTS model having many shapes of canopy hatch. You can customise this part to suit your requirement. However, please make sure what you are doing will suit the canopy shape.

Undercarriage and steel work location is detailed on the plan..

You can now start sheeting the Fuselage :D . Sheet the model as the picture shows for now. you will need access to TWM later in the build. You will sheet this setion when the top wings are aligned.

You need to fully sheet the rear Turtle deck and the front end of the model... You will need to get a good fit on the elevator stab to the turtle deck Simply sand down the elevator stab to get a snug fit.

We have supplied all 2.4mm Balsa for this.

Please note. We have added 6mm Carbon cross section on this model. This is an optional extra and is not included in kit... However, you do need to add the Small section of balsa in the lower section at rear of model so that the close loop cable will exit the plane neatly. (Shown in Picture)

While you are sheeting the front and rear of the model. It my be worth thinking of your colour scheme. You may need to add few strips of balsa wood to the Spruce, Or Balsa Stringers so that you can join 2 or 3 colours of covering as the rear of the model is open,

The Engine box is pre assembled in the kit. All that is required is to Take apart and glue together. The box is mounted to F1 Using captive nuts, Bolts and washers.. The captives nuts mount to the engine box and the bolts screw through F1.

Wasn't that bad right?

Time to move on to wings!. These are fully annotated and Pictured plans. Take your time!



PHOTO SHEET (NOT IN ORDER OF BUILD. ONLY FOR REFERENCE)

