BUILDING INSTRUCTIONS FOR BLACKBURN BUCCANEER S2

VERSION 1

BY MARK DOUGLAS

LASER CUT "SHORT" KIT

BLACKBURN BUCCANEER S2

HI THERE
I DESIGNED THIS BLACKBURN BUCCANEER S2 ORIGINALLY JUST FOR MYSELF, THE ORIGINAL WAS/IS A GREAT SUCCESS WHICH IS WHEN SOME GUYS ON THE FORUMS ASKED ME TO RELEASE IT AS A KIT. WE ARRANGED SOME BETA BUILDS WITH SOME MODELLERS WE KNOW TO IRON OUT ANY KINKS, AND FINALLY HERE IT IS. WE HOPE YOU LIKE IT AND ENJOY BUILDING AND FLYING IT AS MUCH AS I HAVE.

IT'S A "SHORT" KIT FOR EXPERIENCED BUILDERS AND FLYERS, DESIGNED BY A SHED DWELLING PLANE NUT FOR OTHER SHED DWELLING PLANE NUTS, AND FOR THIS REASON SOME PARTS AND METHODS ARE LEFT TO THE BUILDERS DISCRETION, THE KIT ITSELF IS DESIGNED TO BE A "FRAMEWORK" AS NEAR TO SCALE AS POSSIBLE, WHICH IS THEN PLANKED IN 3MM BALSA.(IF YOU'VE NEVER DONE PLANKING BEFORE, YOU'LL BE AN EXPERT BY THE TIME YOU'VE FINISHED THIS MODEL!) WHICH CAN BE SKINNED AND COVERED IN WHICHEVER MANNER YOU PREFER,
THE PROTOTYPE WAS FINISHED USING 2oz GLASS CLOTH AND EPOXY FINISHING RESIN ON THE FUS, AND 1oz GLASS CLOTH AND EPOXY FINISHING RESIN ON THE WINGS AND TAIL SECTION.

iT'S ALSO LEFT TO THE BUILDER TO DECIDE WHICH HARDWARE TO USE SUCH AS SERVO'S, POWER SYSTEMS,WING JOINS, HINGEING, HATCH LATCHES ETC. ALTHOUGH I'M ALWAYS AVAILABLE TO OFFER ADVICE IF IT'S NEEDED.

THE PROTOTYPE HAS NO UNDERCARRIAGE, AND USES A "DOLLY" FOR TAKE OFF, USE THE EMAIL ADDRESSES BELOW IF YOU WOULD LIKE DETAILS OF THE DOLLY.

I WOULD DESCRIBE THE BUCC'S FLYING PERFORMANCE AS SCALE JET LIKE, WITH PLENTY OF POWER AVAILABLE FOR LOW FAST RUNS AND STUNNING CLIMB OUTS JUST LIKE THE REAL DEAL!, IT'S STABLE AND MANOUVERABLE WITH A GOOD ROLL RATE AND ENOUGH RUDDER AUTHORITY TO TIDY UP THOSE BANKING TURNS, ALTHOUGH i THINK KNIFE EDGES ARE BEST LEFT TO THE STUNT PLANE FLYERS!
I'M AN "ADEQUATE" FLYER AT BEST, AND I FIND THE BUCC COMFORTABLE TO FLY, IT WON'T BITE IF TREATED WITH A BIT OF RESPECT, WHICH I'M SURE YOU WILL DO BECAUSE ITS A BIG INVESTMENT IN BUILD TIME.

DON'T FORGET TO HELP OTHERS WHO FOLLOW ON AFTER YOU BY POSTING YOUR BUILD ON ONE OF THE MODELLING FORUMS, IT'S HOW THIS WHOLE PROJECT GOT TO YOU IN THE FIRST PLACE! AND YOUR IDEAS AND SOLUTIONS TO THE TRICKIER PARTS OF THE BUILD GO TOWARDS ENCOURAGING OTHERS AND KEEPING SCRATCH AEROMODELLING ALIVE.

IF YOU NEED ANY FURTHER ADVICE/DIRECTION NOT AVAILABLE IN THESE INSTRUCTIONS CONTACT MARK DOUGLAS BY EMAIL AT
markdouglas33@mail.com

WELL, THANKS FOR BUYING THIS KIT AND GOOD LUCK

REGARDS

MARK

PARTS SUPPLIED IN THE STANDARD KIT

ALL THE RIBS FORMERS AND SHAPED PARTS, LASER CUT.

PARTS NOT SUPPLIED IN THE STANDARD KIT (BUT AVAILABLE ON REQUEST)

BALSA SHEET FOR PLANKING
TAKE OFF DOLLY

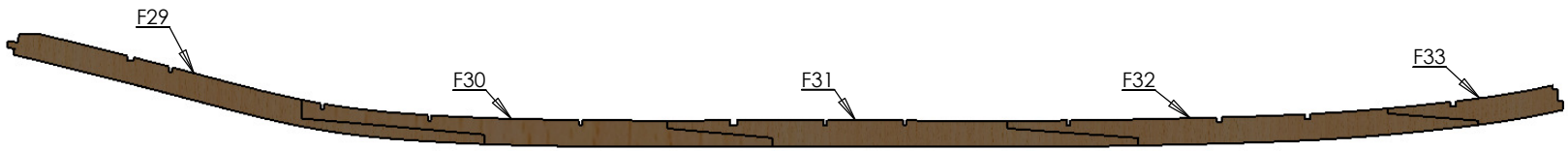
FACTS AND FIGURES (BASED ON THE ORIGINAL PROTOTYPE)

SCALE	1:10
WINGSPAN	1350mm
LENGTH	1925mm
WING AREA	5 Ft.Sq
WING LOADING	33Oz/Ft.Sq
ALL UP WEIGHT	10lb 4oZ
STATIC THRUST (CALCULATED NOT TESTED)	9.6lb

EQUIPMENT USED IN THE PROTOTYPE, (RECOMMENDATIONS ONLY)

EDF'S..... 2 X 76mm LANDER 6S FANS @1600W EACH
BATTERIES.....POWER - TURNIGY NANOTECH 6S 6000mAh 25-50C LiPo
RECEIVER PACK - 5CELL VAPEXTECH NiMh 2100MaH
ESC'S.....JP ENERG 85A
SERVO'S.....AILERONS/FLAPERONS - HITEC HS225 MG
RUDDER - HITEC HS225 MG
ELEVATOR - HITEC HS125 MG
RADIO GEAR.....SPEKTRUM

1: ASSEMBLE BOTTOM SPINE FLAT ON THE BENCH

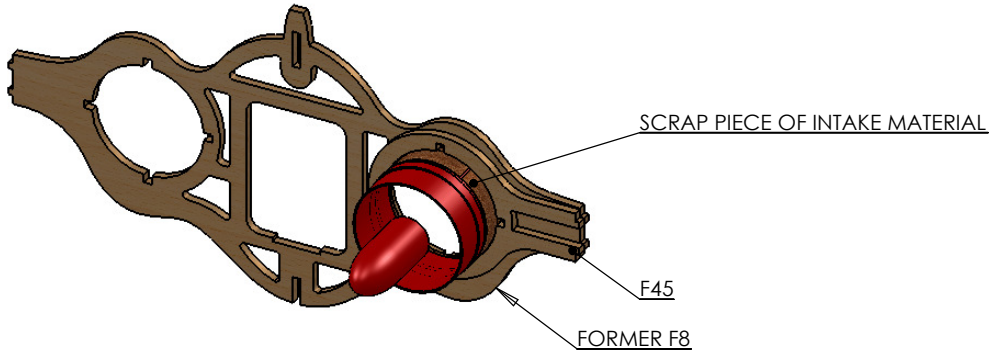


2: SETTING BOTTOM SPINE UP TO BEGIN FUSELAGE ASSEMBLY

DRAW A STRAIGHT LINE APPROX. 1500mm ALONG THE BENCH/BUILDING BOARD, AND USING SCRAPS FOR SUPPORT, TEMPORARILY FIX THE BOTTOM SPINE STRAIGHT AND VERTICAL ALONG THE LINE USING HOT GLUE/TAPE/PINS OR WHATEVER WORKS FOR YOU

THINGS TO CHECK BEFORE GOING FURTHER

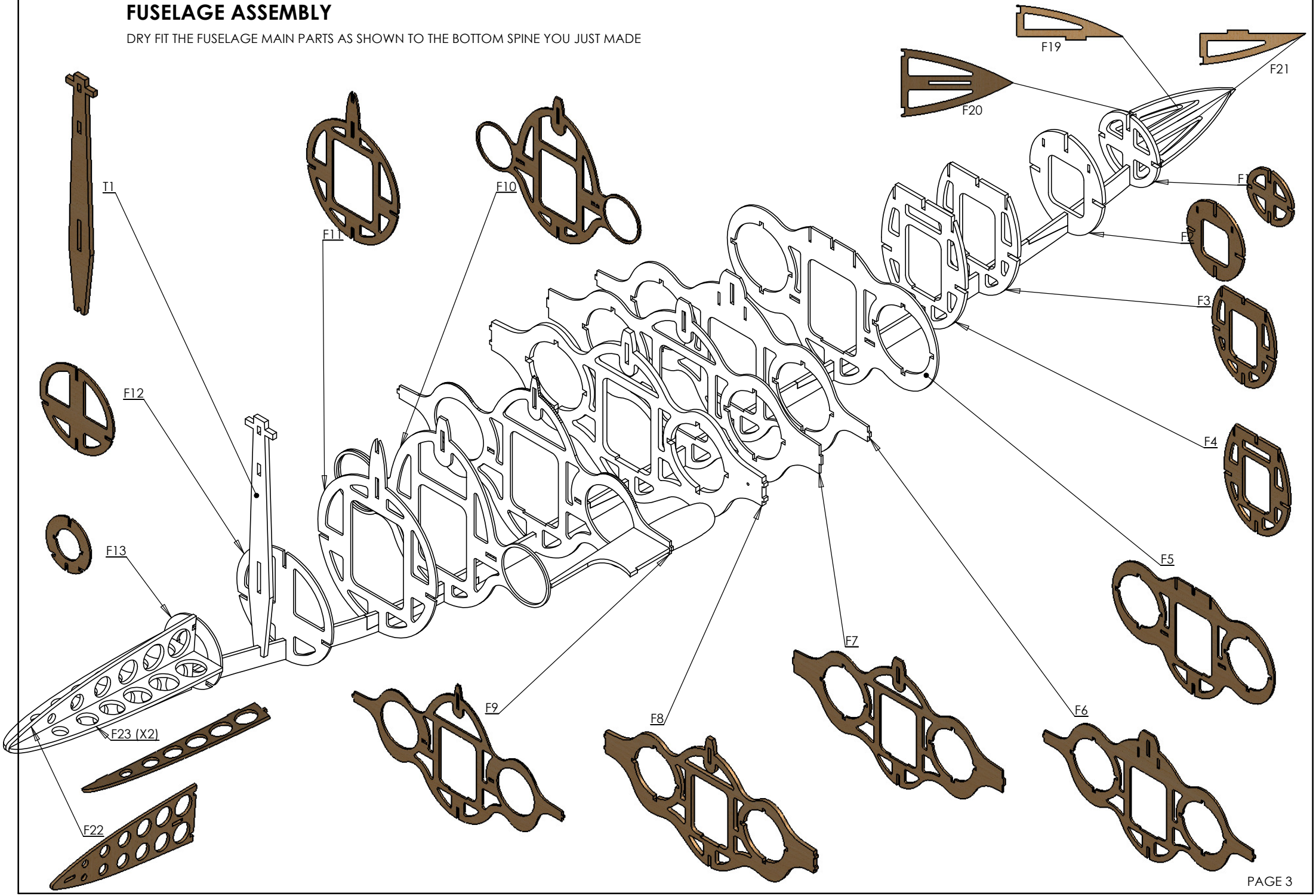
1. MAKE SURE THE FANS YOU'RE USING ARE A SNUG FIT IN THE FAN HOLE ON FORMERS F5 TO F8 AND THE FAN SUPPORT RINGS. TO DO THIS WRAP A PIECE OF WHATEVER YOU'RE GOING TO USE FOR THE INTAKE DUCT (1/64TH PLY, PLASTIC SHEET, STRONGE CARD ETC.) AROUND THE FRONT SECTION OF THE FAN, AND MAKE SURE IT ALL FITS IN THE HOLE AS SHOWN

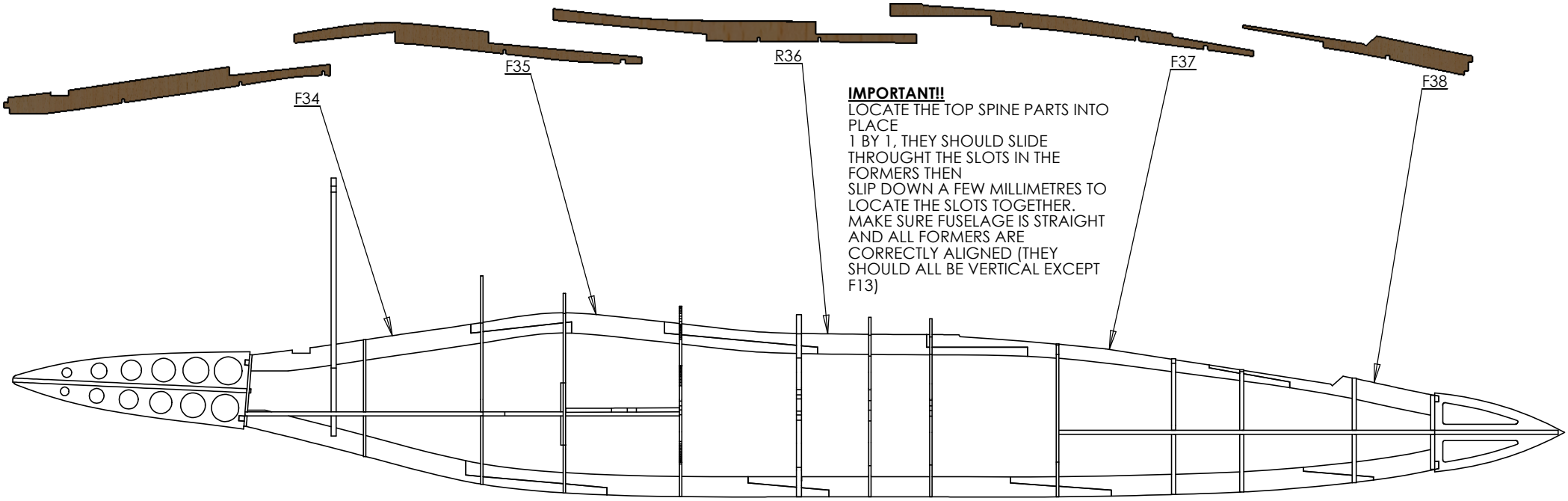


IF ITS TOO TIGHT YOU'LL NEED TO OPEN THE HOLE SUFFICIENT TO GET THIS FIT, IF ITS TOO LOOSE NO PROBLEM YOU CAN TAKE UP ANY SLACK LATER

FUSELAGE ASSEMBLY

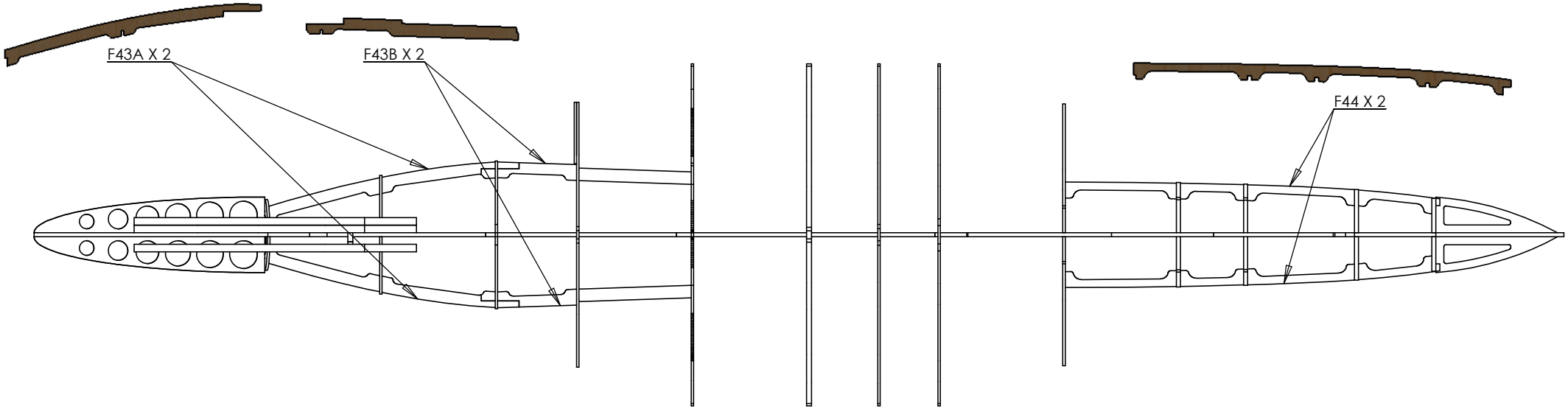
DRY FIT THE FUSELAGE MAIN PARTS AS SHOWN TO THE BOTTOM SPINE YOU JUST MADE





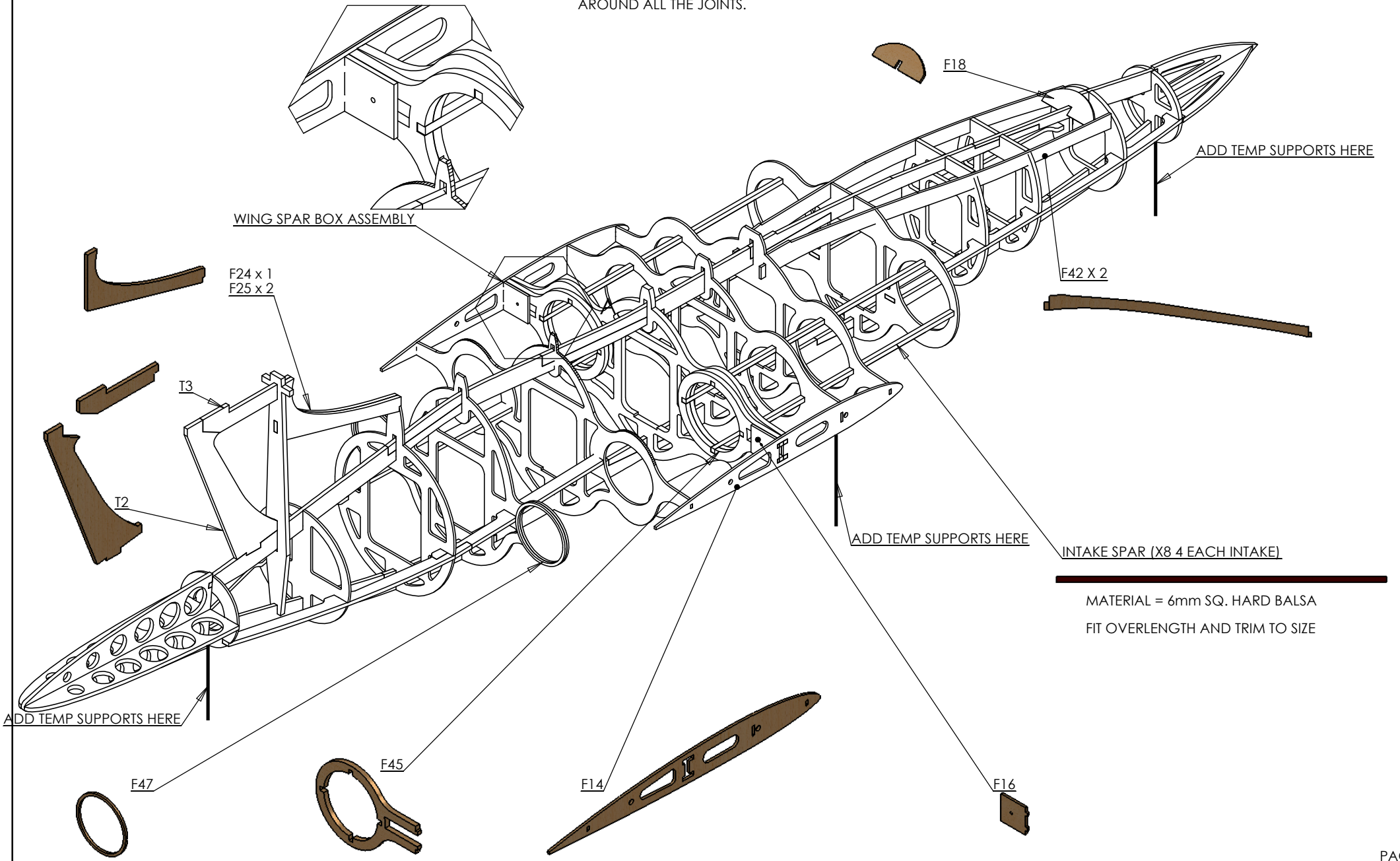
IMPORTANT!!
LOCATE THE TOP SPINE PARTS INTO PLACE
1 BY 1, THEY SHOULD SLIDE THROUGHT THE SLOTS IN THE FORMERS THEN
SLIP DOWN A FEW MILLIMETRES TO LOCATE THE SLOTS TOGETHER.
MAKE SURE FUSELAGE IS STRAIGHT AND ALL FORMERS ARE CORRECTLY ALIGNED (THEY SHOULD ALL BE VERTICAL EXCEPT F13)

SIDE VIEW



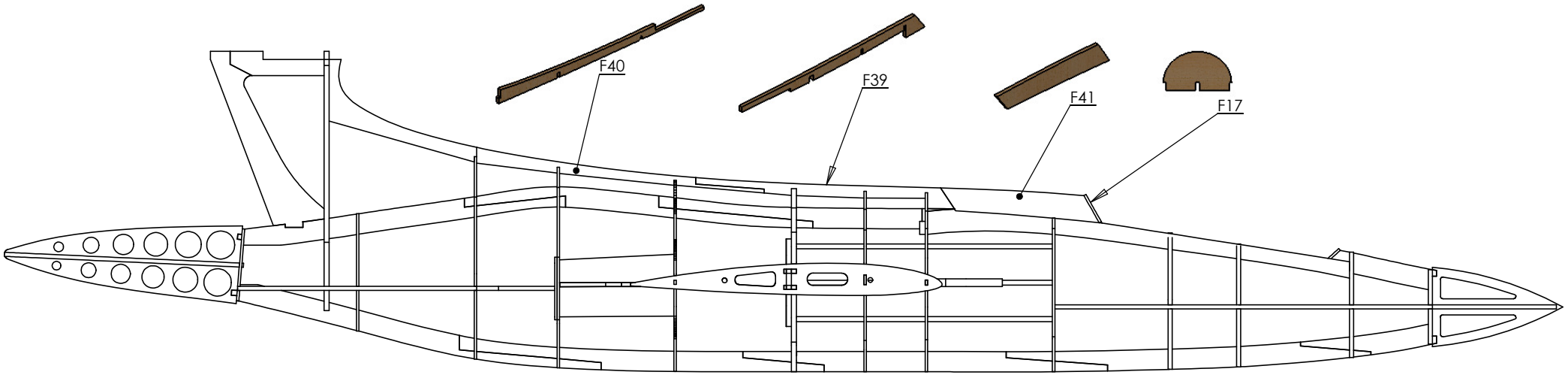
PLAN VIEW

ONCE THESE PARTS ARE ADDED TO THE ASSEMBLY, ADD SOME TEMPORARY SUPPORTS IN THE POSITIONS SHOWN AND WHEREVER ELSE IS NECESSARY, AND USE THEM TO MAKE ANY ADJUSTMENTS NEEDED TO GET EVERYTHING RUNNING TRUE AND LEVEL.
RE-CHECK EVERYTHING AGAIN, MAKE SURE EVRYTHING IS LOCATED PROPERLY IN ITS SLOT, THEN CHECK EVERYTHING AGAIN.
WHEN YOU ARE COMPLETELY HAPPY THAT EVERYTHING IS OK, RUN CYANO AROUND ALL THE JOINTS.



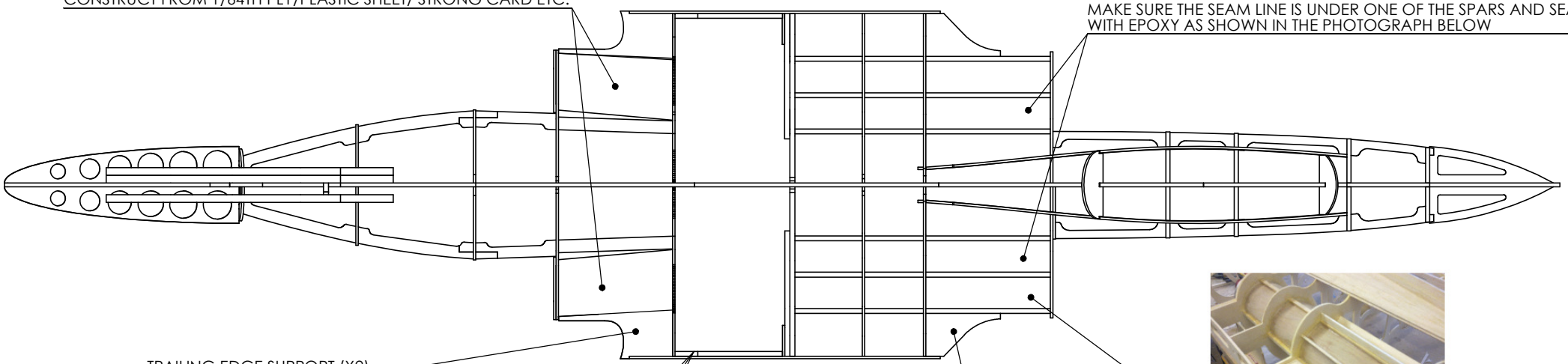
MATERIAL = 6mm SQ. HARD BALSA

FIT OVERLENGTH AND TRIM TO SIZE



OUTLET TUBES
CONSTRUCT FROM 1/64TH PLY/PLASTIC SHEET/ STRONG CARD ETC.

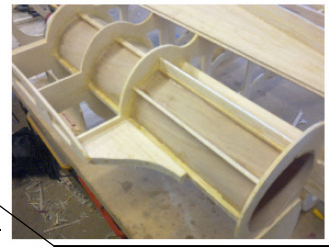
INTAKE TUBES
CONSTRUCT FROM 1/64TH PLY/PLASTIC SHEET/STRONG CARD ETC
MAKE SURE THE SEAM LINE IS UNDER ONE OF THE SPARS AND SEAL WITH EPOXY AS SHOWN IN THE PHOTOGRAPH BELOW

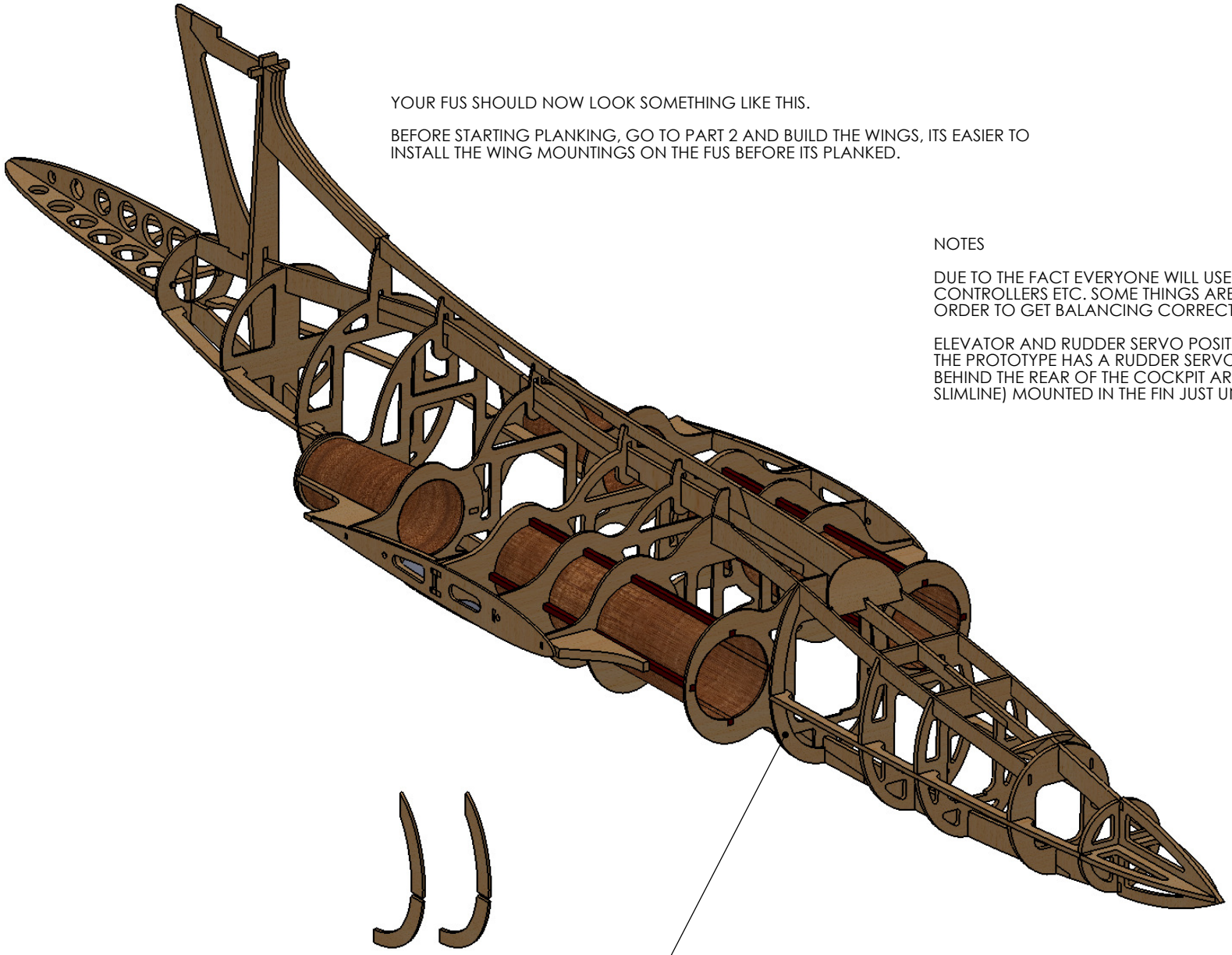


TRAILING EDGE SUPPORT (X2)

SPAR REINFORCEMENT PLATE (X2)

LEADING EDGE SUPPORT (X2)





YOUR FUS SHOULD NOW LOOK SOMETHING LIKE THIS.

BEFORE STARTING PLANKING, GO TO PART 2 AND BUILD THE WINGS, ITS EASIER TO INSTALL THE WING MOUNTINGS ON THE FUS BEFORE ITS PLANKED.

NOTES

DUE TO THE FACT EVERYONE WILL USE DIFFERENT BATTERY SET-UPS, SERVOS, SPEED CONTROLLERS ETC. SOME THINGS ARE LEFT TO THE BUILDERS DISCRETION IN ORDER TO GET BALANCING CORRECT.

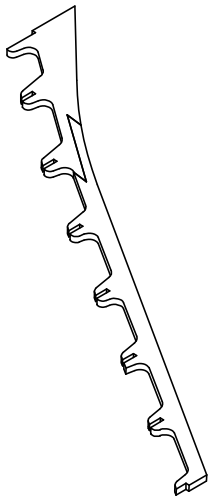
ELEVATOR AND RUDDER SERVO POSITIONS ARE LEFT TO THE BUILDERS DISCRETION, THE PROTOTYPE HAS A RUDDER SERVO CONNECTED BY SNAKE, POSITIONED JUST BEHIND THE REAR OF THE COCKPIT AREA, AND AN ELEVATOR SERVO (HITEC SLIMLINE) MOUNTED IN THE FIN JUST UNDER THE HORIZONTAL STAB.

FUS PLANKING GUIDE FORMERS

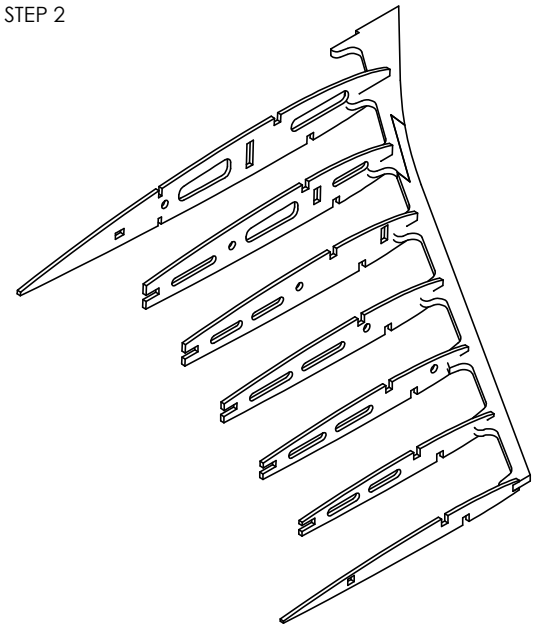
FIT THESE TO THE FRONT FACE OF FORMER F5 TO GIVE THE PLANKING SOMEWHERE TO FIX TO.

WING ASSEMBLY

STEP 1

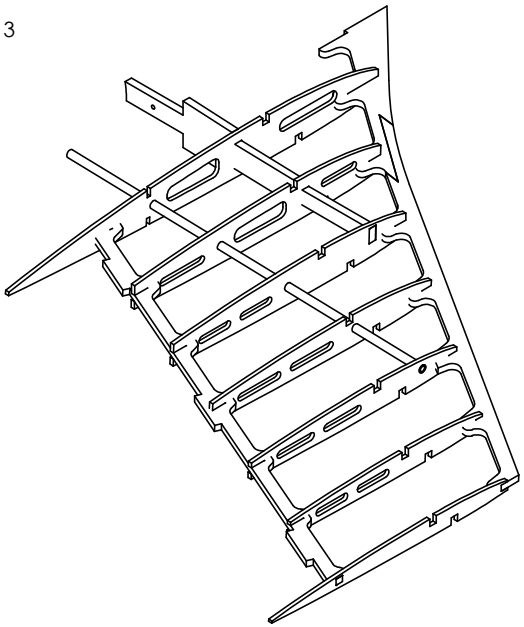


STEP 2



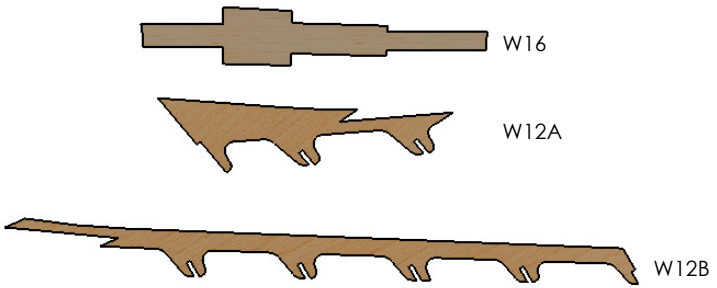
DRY FIT ONLY!

STEP 3

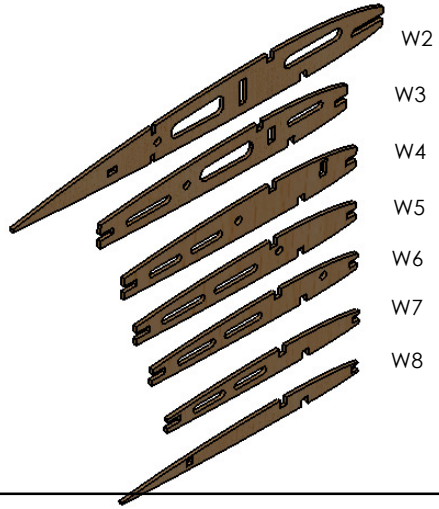


DRY FIT ONLY!

ASSEMBLE WING LEADING EDGE AS SHOWN AND GLUE TOGETHER



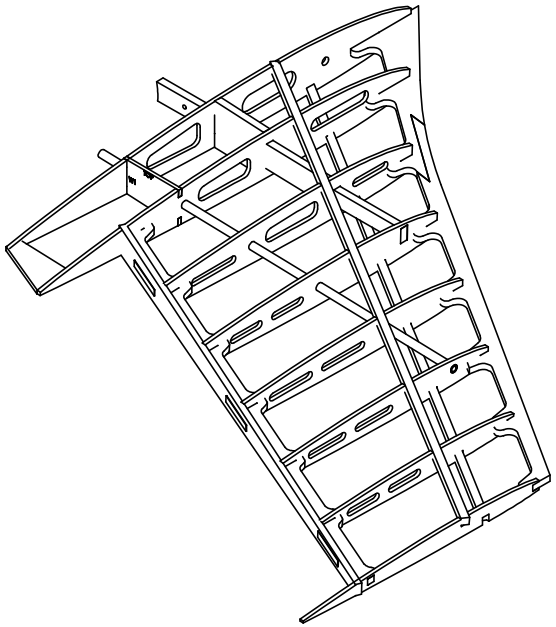
ATTACH WING RIBS TO LEADING ADGE AS SHOWN



1. ATTACH FALSE TRAILING EDGE AS SHOWN
2. SLIDE 350mm X 6mm HOLLOW CARBON SPAR (NOT SUPPLIED)INTO PLACE. FINISH FLUSH WITH R6
3. SLIDE 6MM PLY STUB SPAR INTO PLACE AS SHOWN

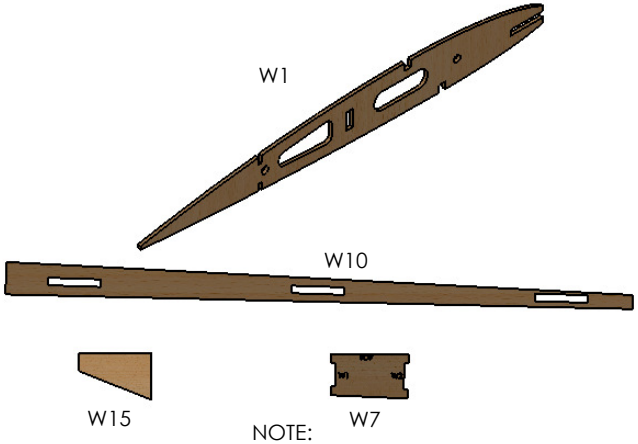
W13

STEP 4



DRY FIT ONLY!

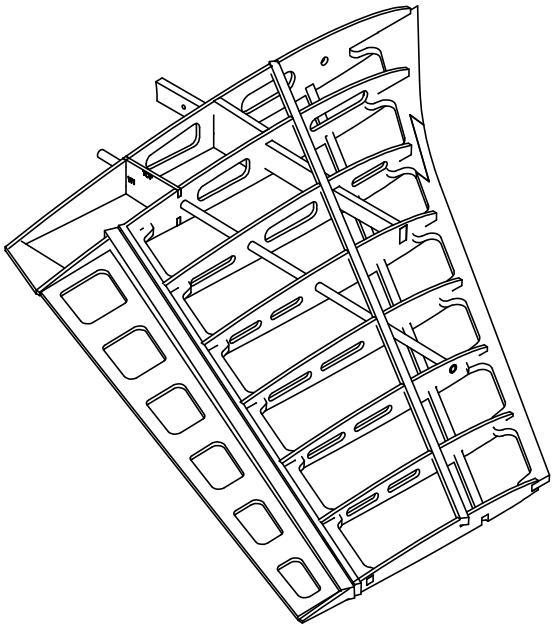
1. ADD FORMER W1
2. TRIM THE NOTCHES FOR THE TOP AND BOTTOM 6mm SQUARE HARD BALSA SPARS TO ALLOW THEM TO FIT AT THE CORRECT ANGLE, AND SLOT THEM IN PLACE.
3. ADD WING TRAILING EDGE AS SHOWN
4. ADD SPAR SUPPORT W7 AND TRAILING EDGE TRIM W15 AS SHOWN



NOTE:
THIS PART HAS THE SAME NAME AS WING RIB W7, DON'T GET THE 2 MIXED UP!

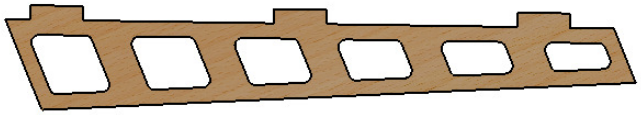
WE'LL CHANGE THE NAME IN LATER VERSIONS

STEP 5

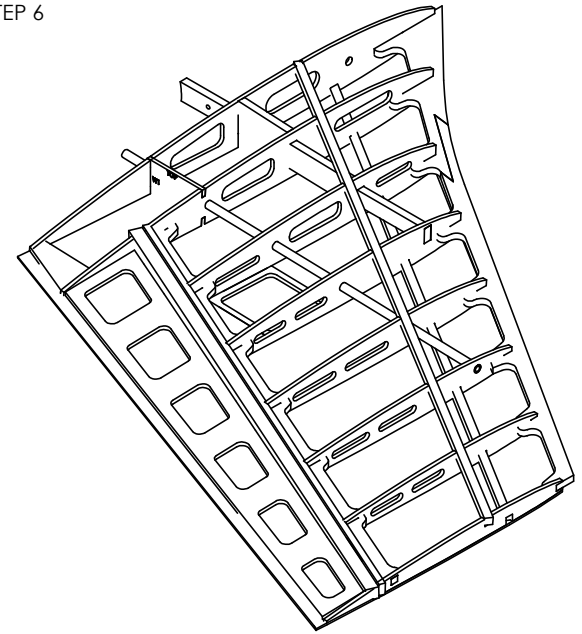


TIME TO START GLUEING

1. GLUE AILERON LEADING EDGE W11 AND CENTRE PROFILE TOGETHER W14, AND TRIM TO FIT BETWEEN R2 AND R8 AS SHOWN,
2. IF YOU WANT TO SKIN THE WING AND AILERONS AT THE SAME TIME ADD SOME 3mm BALSA PACKING PIECES TO THE FRONT OF THE AILERON LEADING EDGE AND TACK GLUE THE AILERON IN PLACE ON THE WING TRAILING EDGE. ADD SOME SCRAPS TO THE ENDS OF THE AILERON AND SAND TO MATCH THE WING PROFILE. MARK THROUGH THE SKIN FOR THE CUT LINE FOR THE AILERONS, AND CUT THEM OFF AFTER GLASSING. THIS IS THE METHOD SHOWN BECAUSE ITS HOW THE PROTOTYPE WAS MADE.

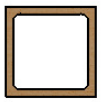


STEP 6

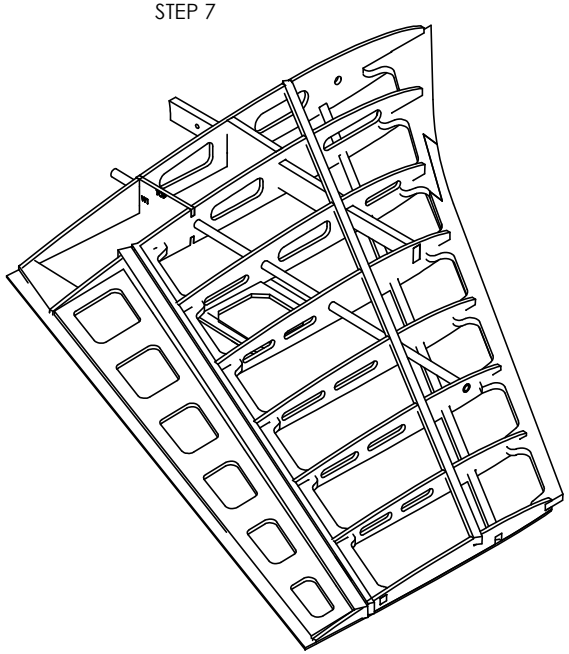


TIME TO START GLUEING

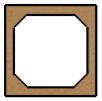
1. MAKE SURE ALL THE PARTS ARE A GOOD FIT IN THEIR SLOTS, LAY THE ASSEMBLY ON A FLAT SURFACE TO MAKE SURE THERE ARE NO WARPS, AND RUN CYANO INTO ALL THE JOINS, (WITHOUT GLUEING TO THE FLAT SURFACE!!)
2. SKIN THE BOTTOM SECTION OF THE WING USING 1.5mm SOFT OR MEDIUM BALSA
3. LAY THE SERVO HATCH FRAME IN YOUR PREFERRED POSITION BETWEEN 2 FORMERS AND DIRECTLY ONTO THE INSIDE OF THE BOTTOM SKIN, **BUT DONT GLUE IT IN YET!** CAREFULY CUT ROUND THE OUTSIDE OF THE HATCH FRAME THRU THE WING SKIN AND REMOVE THE SQUARE OF BALSA YOU'VE JUST CUT OUT TO LET THE FRAME SIT FLUSH IN THE SKIN.



STEP 7

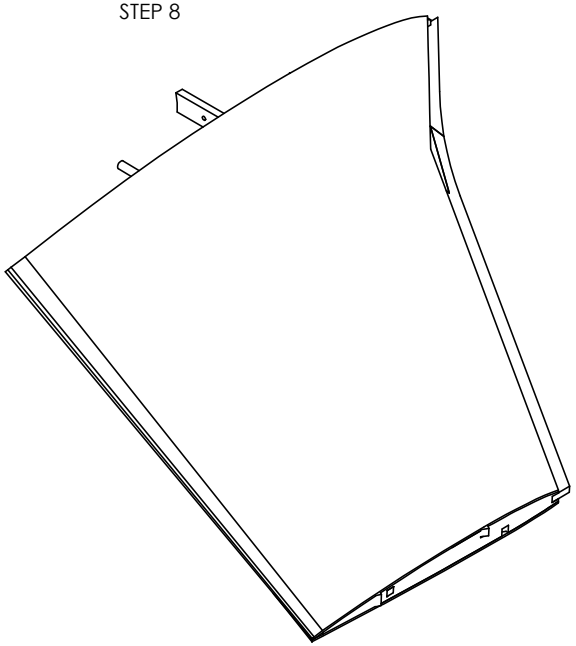


LAY THE SERVO HATCH BACK PLATE IN POSITION DIRECTLY OVER HATCH FRAME S1 AND RUN THIN CYANO ALL ROUND IT TO MAKE SURE EVERYTHING'S GLUED TOGETHER



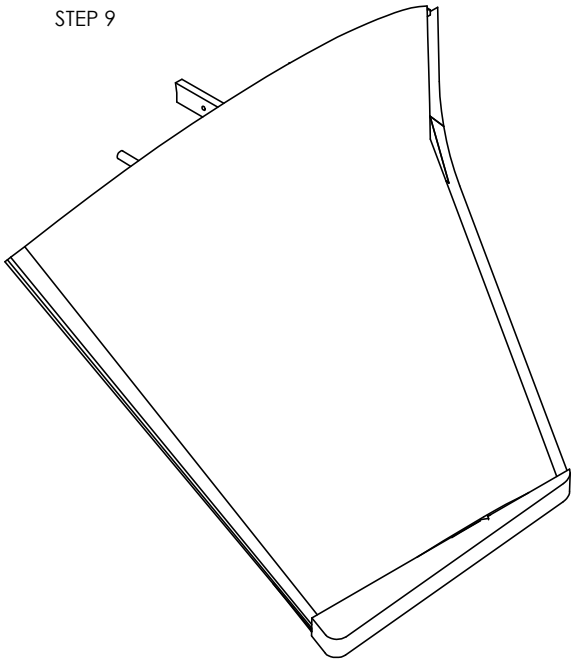
S2

STEP 8



ADD THE TOP SKIN

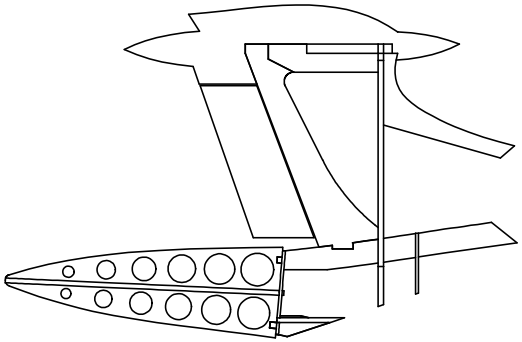
STEP 9

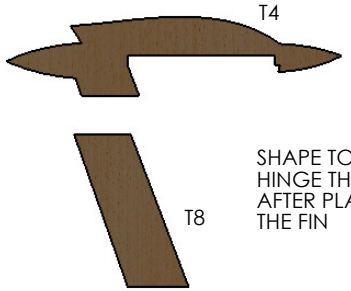


1. ADD THE TIP BLOCKS W8/W9, (THE ONLY DIFFERENCE BETWEEN THEM IS THE THICKNESS)
2. INFILL THE LEADING EDGE WITH SCRAP BALSA
3. SAND EVERYTHING TO SHAPE,
4. CUT THE AILERONS OUT AND CHAMFER THE LEADING EDGE.
5. MAKE THE LEFT WING IN THE SAME WAY

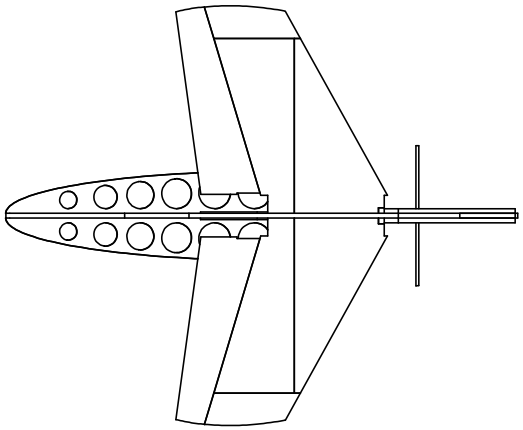
W8 / W9

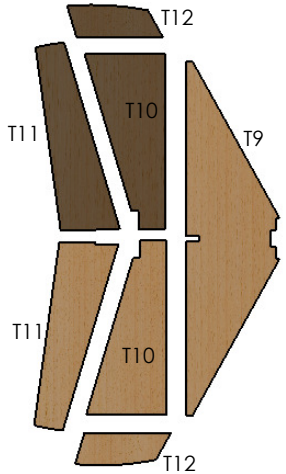
FIN/RUDDER PARTS

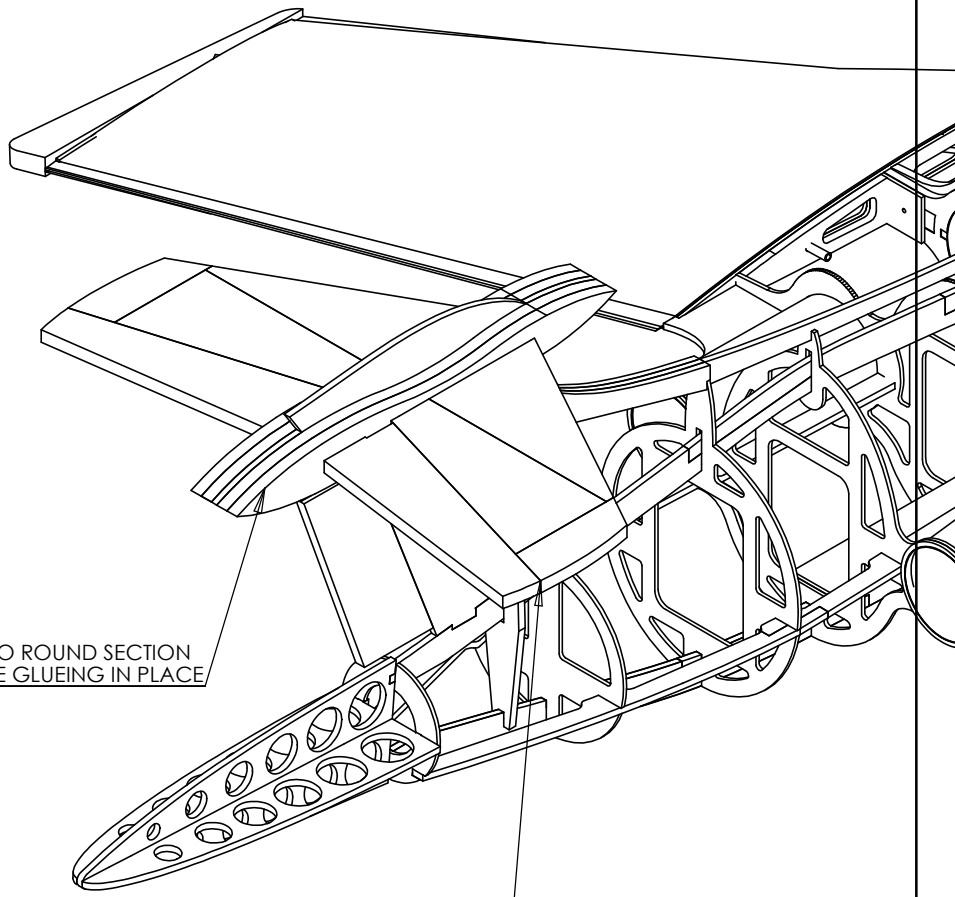




SHAPE TO FIT AND
HINGE THE RUDDER
AFTER PLANKING
THE FIN



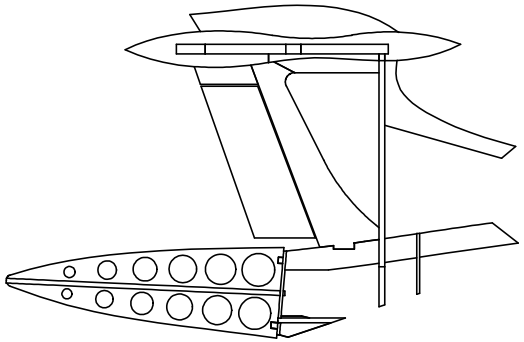


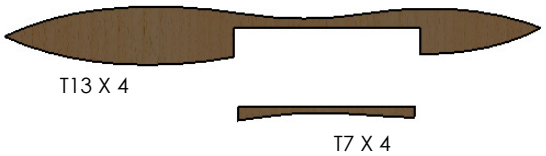


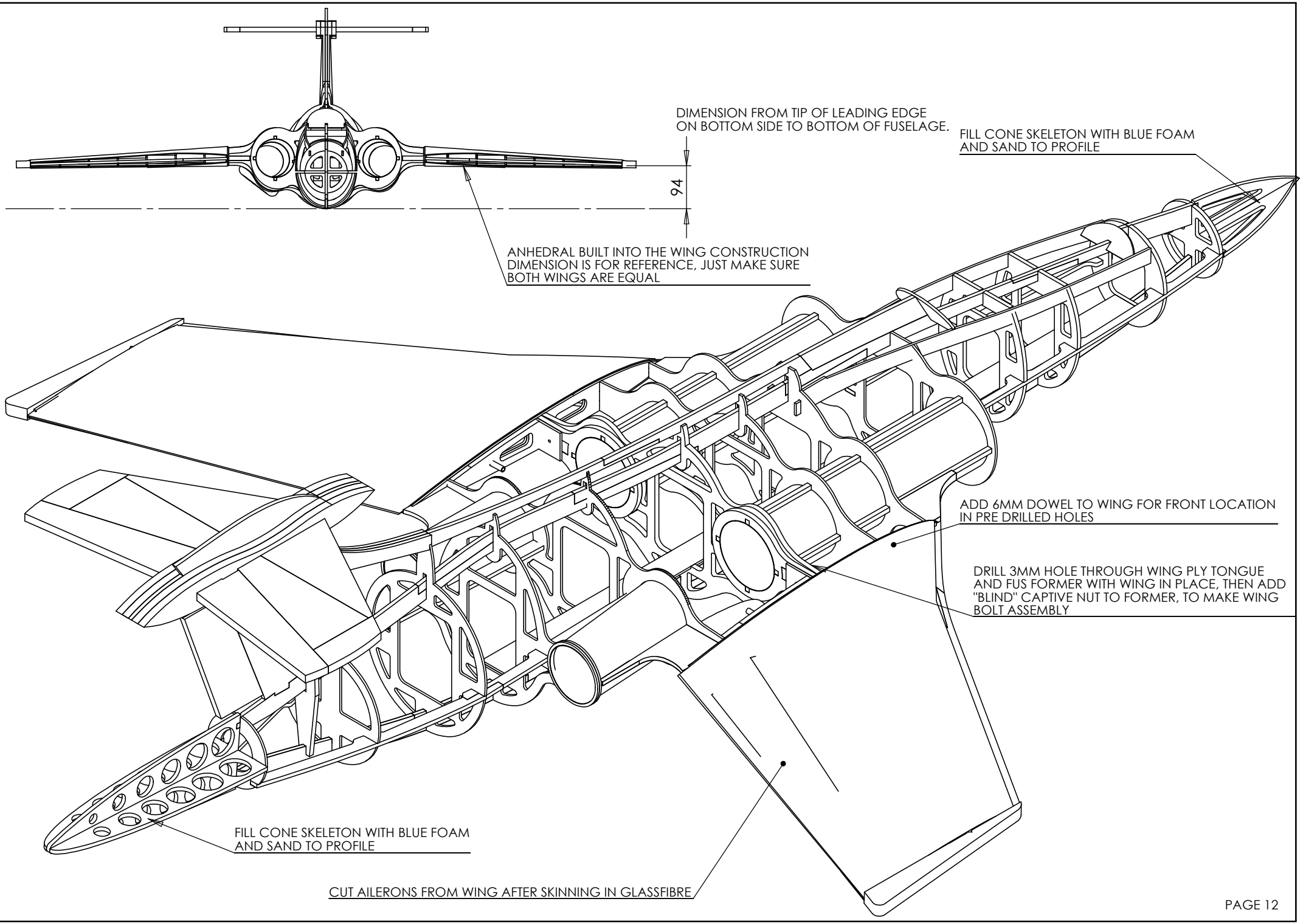
SAND TO ROUND SECTION
BEFORE GLUEING IN PLACE

SAND ALL TO AEROFOIL BEFORE GLUEING IN PLACE

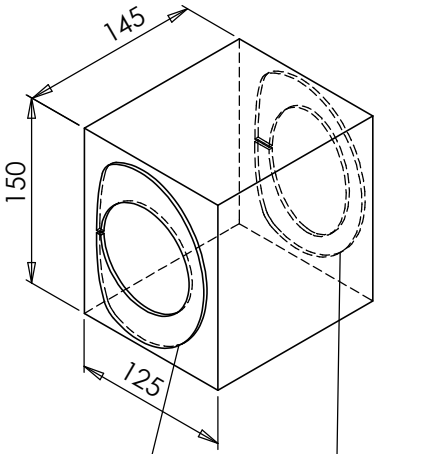
FIN/RUDDER PARTS

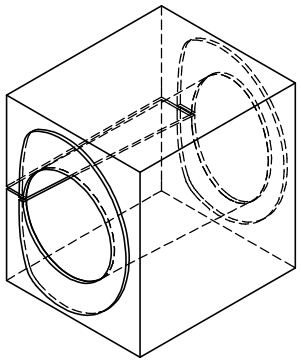




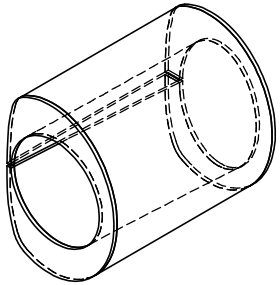

DIMENSION FROM TIP OF LEADING EDGE
ON BOTTOM SIDE TO BOTTOM OF FUSELAGE.
94
FILL CONE SKELETON WITH BLUE FOAM
AND SAND TO PROFILE
ANHEDRAL BUILT INTO THE WING CONSTRUCTION
DIMENSION IS FOR REFERENCE, JUST MAKE SURE
BOTH WINGS ARE EQUAL
ADD 6MM DOWEL TO WING FOR FRONT LOCATION
IN PRE DRILLED HOLES
DRILL 3MM HOLE THROUGH WING PLY TONGUE
AND FUS FORMER WITH WING IN PLACE, THEN ADD
"BLIND" CAPTIVE NUT TO FORMER, TO MAKE WING
BOLT ASSEMBLY
FILL CONE SKELETON WITH BLUE FOAM
AND SAND TO PROFILE
CUT AILERONS FROM WING AFTER SKINNING IN GLASSFIBRE

MAKING THE INTAKE NACELLES



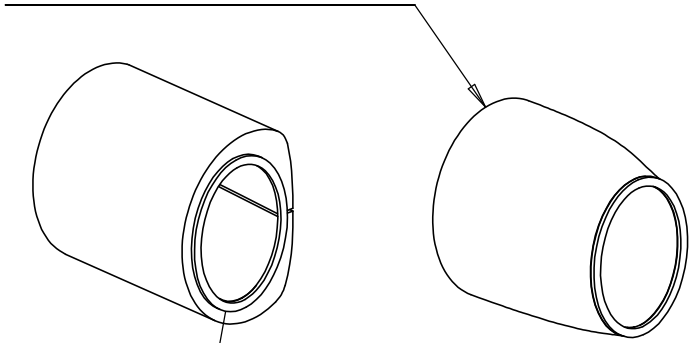


1. HOT WIRE OUT THE CENTRE SECTION TO FORM THE INLET DUCT

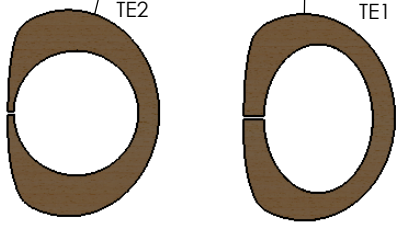


HOT WIRE OUT THE OUTER SECTION TO FORM THE GENERAL SHAPE OF THE NACELLE

AVOID SANDING THIS EDGE UNTIL THE INTAKE IS IN PLACE AND THE FUSELAGE IS PLANKED

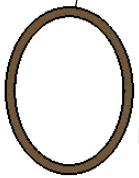


1. SAND TO SHAPE USING THE INTAKE RING AS A GUIDE.
2. GENTLY ROUND OFF THE INTAKE RING

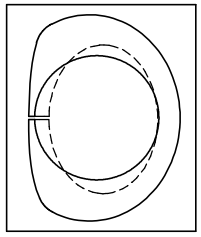


NOTE
THIS PART IS LABELLED T1
THE SAME AS FIN SPAR T1,
DON'T GET THE 2 MIXED UP.

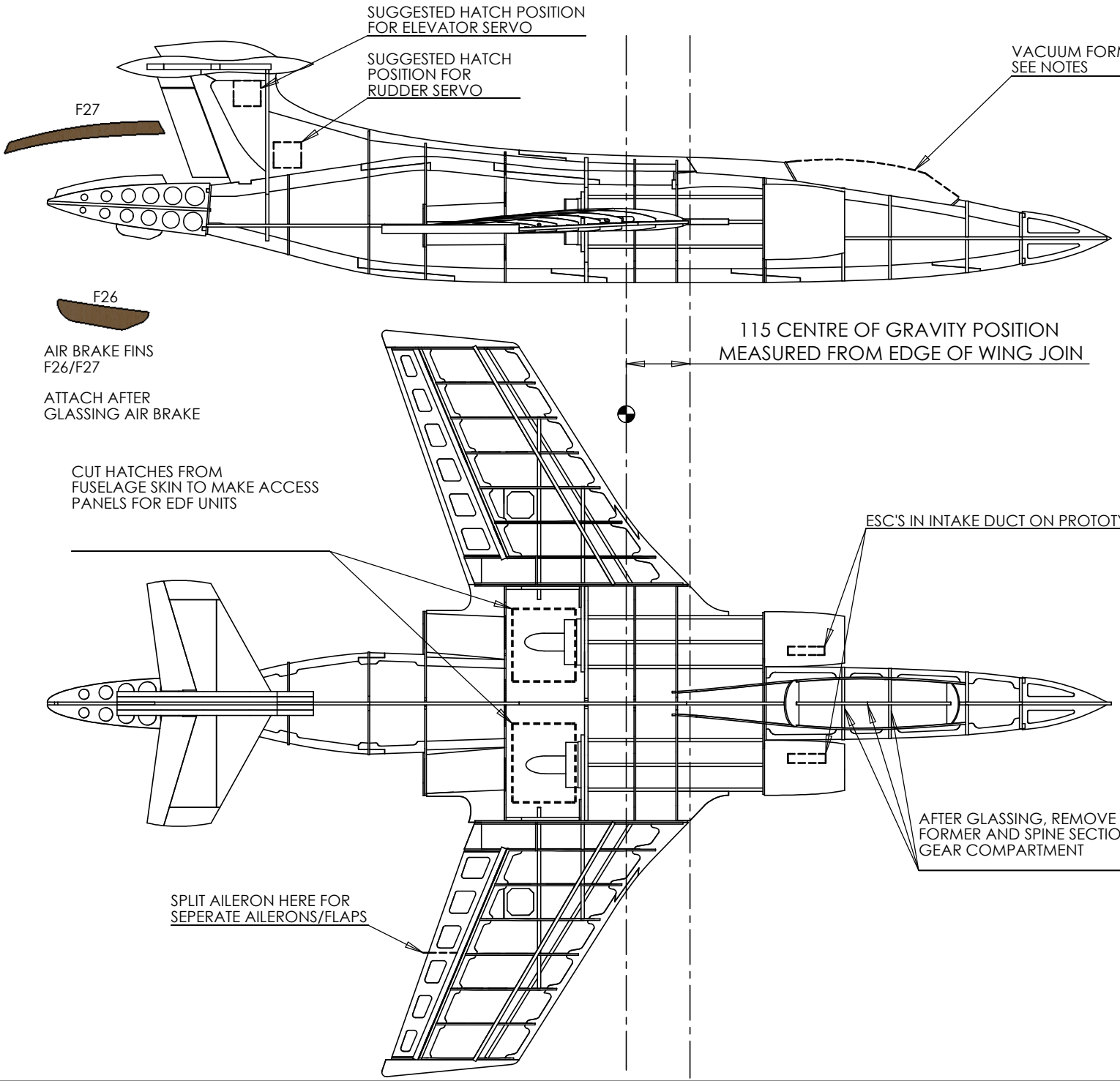
LATER VERSION WILL BE CORRECTED



GLUE THE INTAKE RING F48 IN PLACE



1. CUT FOAM BLOCK TO SIZE SHOWN
2. CUT A SMALL SLOT IN BOTH TEMPLATES IN POSITION SHOWN TO ALLOW HOT WIRE INTO CENTRE SECTION
3. USE DOUBLE SIDED TAPE OR A COUPLE OF DROPS OF HOT GLUE TO FIX TEMPLATES ON EITHER SIDE OF THE BLOCK AS SHOWN. GET THEM AS ALIGNED AS POSSIBLE



IF YOU HAVE ANY QUESTIONS REGARDING BUILDING, PLEASE CONTACT
markdouglas33@gmail.com

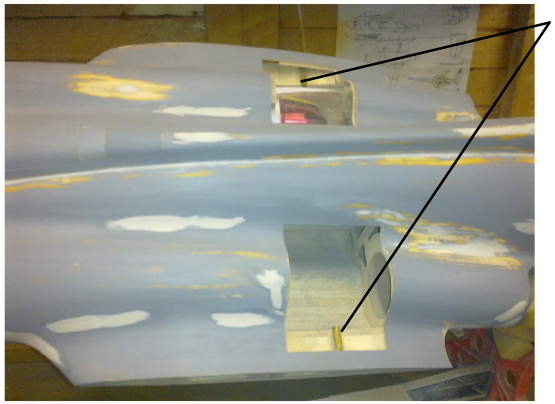
NOTES

ADDITIONAL ITEMS AVAILABLE

- VAC FORMED CANOPY
- EXTRA SERVO HATCH ASSEMBLIES (HANDY FOR ELEVATOR /RUDDER/FLAPS)
- HOT WIRED FOAM INTAKE BLANKS
- BUILD INSTRUCTIONS FOR TAKE-OFF DOLLY
- LASERED PARTS FOR TAKE -OFF DOLLY
- DECAL SET

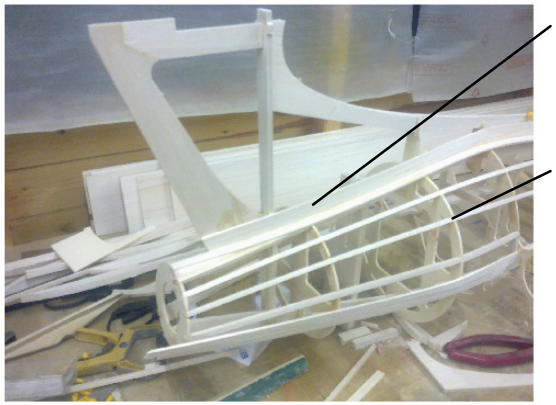
CONTACT
markdouglas33@gmail.com

DETAILS NOT SHOWN IN ASSEMBLY



I ADDED A SMALL PIECE OF BRASS TUBE THROUGH THE WING FORMER AND HEAVILY GLUED IT IN PLACE AS A MOUNTING TUBE FOR THE WING CARBON SPAR.

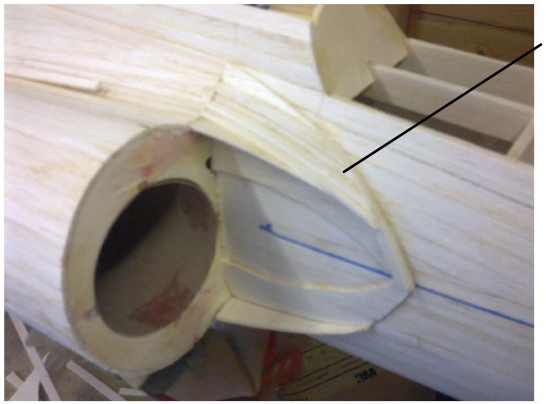
THE ACCESS HATCHES FOR THE FANS WERE MARKED 6mm IN FROM FORMERS F8 AND F9, AND 25mm FROM THE WING ROOT FORMER, AND 20mm OR SO IN FROM THE FAN WHEN LOOKING STRAIGHT DOWN ON THE PLANE FROM ABOVE.



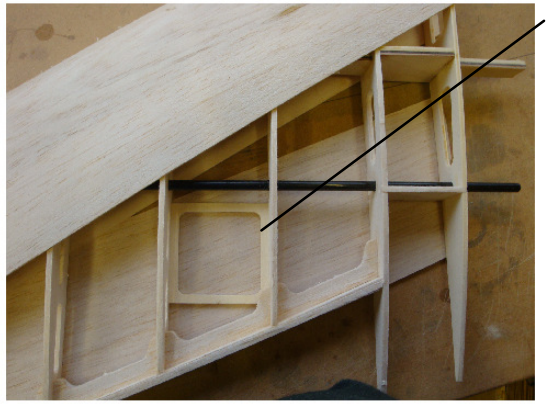
TO START THE PLANKING I RAN THE FIRST PIECE VERTICALLY ALONG THE SPINE FOLLOWING THE CURVE, IT REALLY HELPED DEFINE THE SHAPE AND GIVE A GOOD STARTING POINT. TAKE AS LONG AS YOU NEED TO GET THIS PIECE RIGHT AND THE REST JUST FOLLOWS

I ADDED A FEW STRINGERS BUT TO BE HONEST I DON'T THINK IT NEEDS THEM AND THEY WERE FIDDLY.

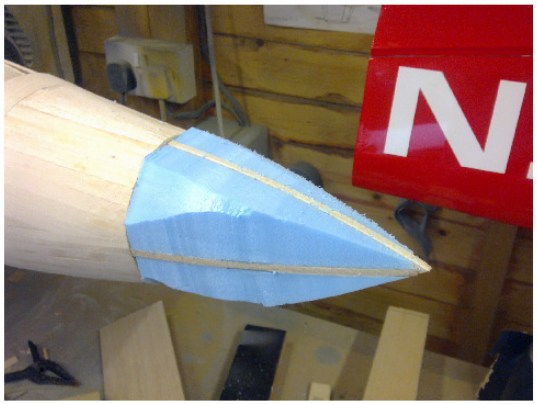
THE EXHAUST SHIELDS, (MY NAME FOR THEM, NOT A TECHNICAL TERM), WERE MADE WITH SCRAPS AND SANDED IN ONCE THE FUSELAGE WAS PLANKED THEN BLENDED IN WITH FILLER



AFTER SHAPING THE FOAM INTAKES I MADE THIS BLEND WITH SCRAPS AND SANDED TO SHAPE. ONCE EVERYTHING WAS GLASSED I DID A FINAL BLEND WITH FILLER. THERE'S PROBABLY AN EASIER WAY TO DO THIS BUT IT WORKED OK.

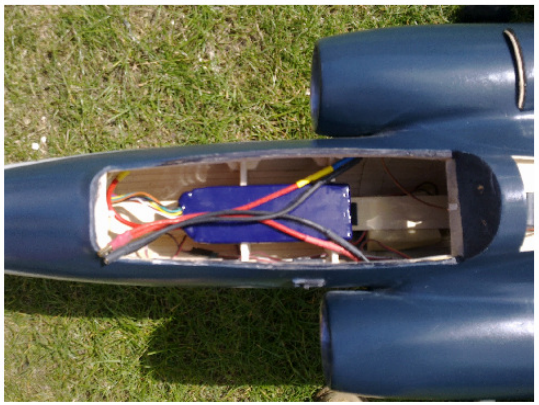


A GOOD SHOT OF POSITIONING THE SERVO HATCH FRAME, THE WING SKIN UNDERNEATH IS CUT AWAY, THEN THE FRAME "LET IN" TO SIT FLUSH WITH THE OUTER FACE OF THE SKIN.



A GOOD SHOT OF THE NOSE CONE BEING MADE, THE FOAM IS SANDED DOWN TO THE CORRECT SHAPE USING THE BALSA FRAME AS A GUIDE

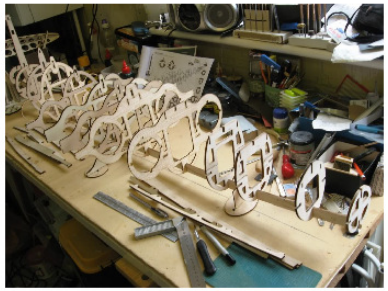
I MADE THE FUEL PROBE FROM A PIECE OF PLY WITH A TUBE GLUED ONTO IT AND BLENDED IN WITH FILLER. THE VALVE A THE END WAS AN OLD PROP ADAPTOR,AND IT LOOKED THE PART.

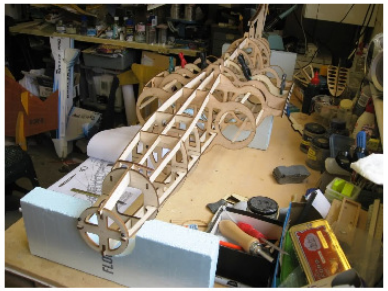


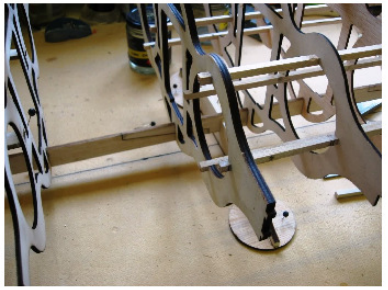
BATTERY POSITION ON THE PROTOTYPE:
6S 6000mAh TURNIGY NANO-TECH NESTLED SNUGGLY BETWEEN FORMERS F3 AND F4. THERE'S PLENTY OF ROOM FOR ADJUSTMENT EITHER FORWARD OR BACK SO IT'S PROBABLY A GOOD PLACE TO START FOR YOUR BATTERY PLACEMENT

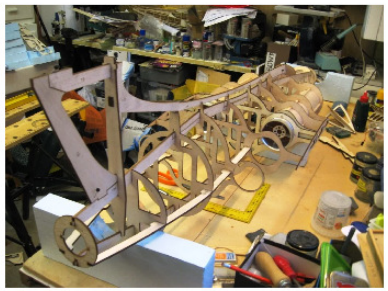
BERTS BUILD

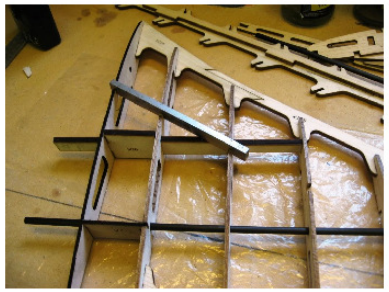
BERT DID ONE OF THE "BETA" BUILDS, HERE'S SOME PICTURES FROM HIS BUILD THREAD, TO GIVE YOU SOME GUIDELINES AND INSPIRATION. YOU CAN FIND BERT'S THREAD ON THE RCMF WEBSITE AT WWW.RCMF.CO.UK TITLED "ANOTHER BUCCANEER S2 BUILD"
HIS THREAD CONTAINS SOME GOOD TIPS AND TRICKS FOR ASSEMBLY.

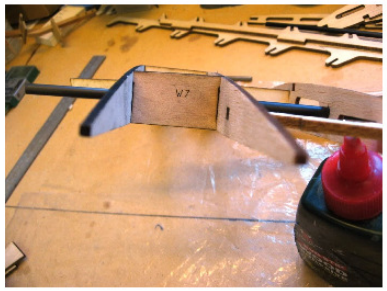












NICK'S BUILD

NICK IS ANOTHER OF OUR BETA BUILDERS WHO'S DONE A GREAT JOB,HERE'S SOME PICTURES FROM HIS PROJECT. HE WIRED HIS BEFORE PLANKING, WHICH I WISH I HAD DONE!