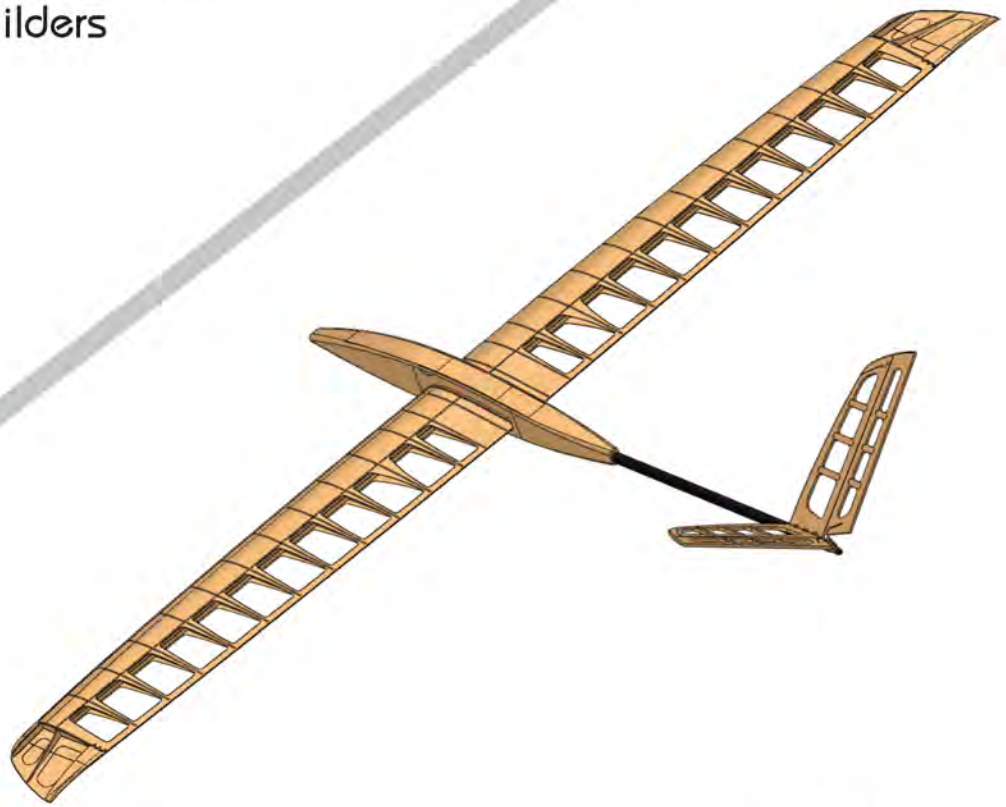
Z55v2

Construction & Setup Guide

For Intermediate to Advanced Builders

DESIGN BY

Kevin J. McDonald



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Z55 Contents

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Z55 Legends & Tips

Adhesives:

The Z55 has been designed to take advantage of Cyano based adhesives and modern epoxies. However, several substitutes are available such as high grade wood and resin glues. Whether you use Cyano based adhesives, or your preferred adhesives, throughout construction, the drop chart above will guide you to the quantity of adhesive and the viscosity required for a given operation. Very little adhesive is required to build this kit, and a fine nozzle is recommended for all viscosities. Weight is critical to the light air performance, so be conservative when building.

The viscosity chart is important due to the ability of adhesives to wick to adjacent areas. Several operations require thick viscosities so as not to allow the adhesive to find its way to unwanted areas. It also corresponds to cure times. Some operations require you have a longer working time, so read ahead and prepare for the next operation.

Throughout this guide you will see the No Accelerants icon. Plywood retains residual chemicals, and the use of accelerators will cause many problems for subsequent operations.

No Accelerants

Accelerator

Do Not Glue

Silicone Adhesive/Sealant

Follow the glue guides:

The Z55 is a complex structure. Don't be tempted into taking shortcuts or substituting glue viscosities.

Special tools:

Several parts are included to aid in the precision construction of the Z55. In addition, you should have handy a small triangle or square approximately 3 inches on the longest side. A small fine tooth saw, and sandpaper with a selection of blocks and pads.

Separating Laser cut parts:

Use a sharp #11 blade. Cut both sides of the small bridging tab connecting the wood parts to the sheet. Trying to cut all the way through on only one side will require more work, and result in less precision cuts.

Electronics:

Thoroughly test all electronics before installing. Removal of any component after installation is difficult. The recommended electronics have been chosen based on reliability and robustness. However, testing and centering before installation is a must.

Sanding & Fitting Laser cut parts:

Carefully sand the cut (Black) surfaces with 400 grit . You do not need to remove the black, just sand to remove the cut tabs, and render a cleaner surface for the adhesive.

Laser cutting systems share the same tolerance limitations common to all CNC equipment. Wood also varies in thickness. Therefore, you may find it necessary to sand or file some parts to get a flush or aligned fit, while other parts may seem a bit loose. Test fit everything before you apply adhesive.

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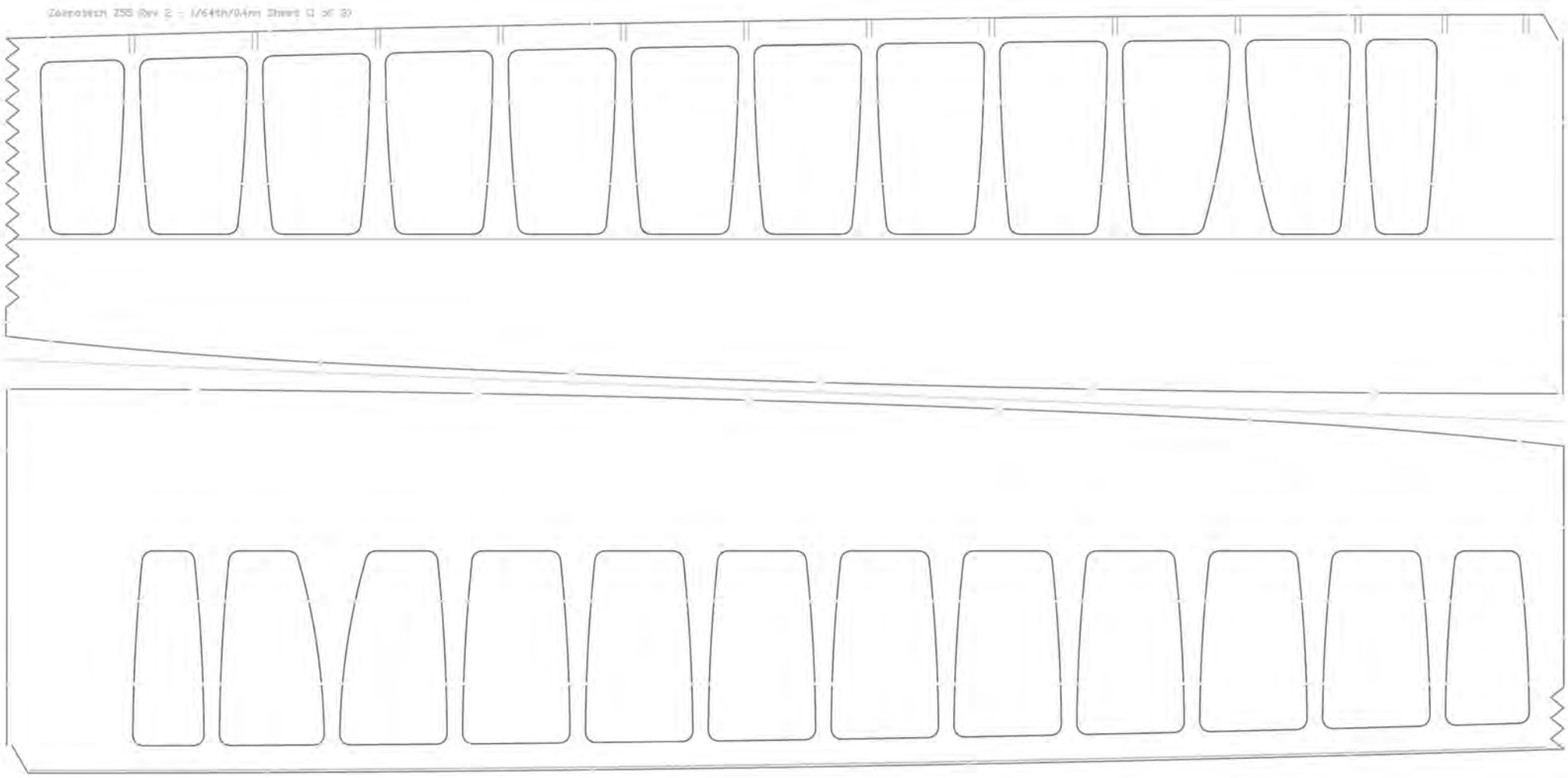
Z55 Part Identifier XC1

Wing Skins (Sheets 1(Right) & 2(Left) of 3) 0.4mm / 1/64th Ply



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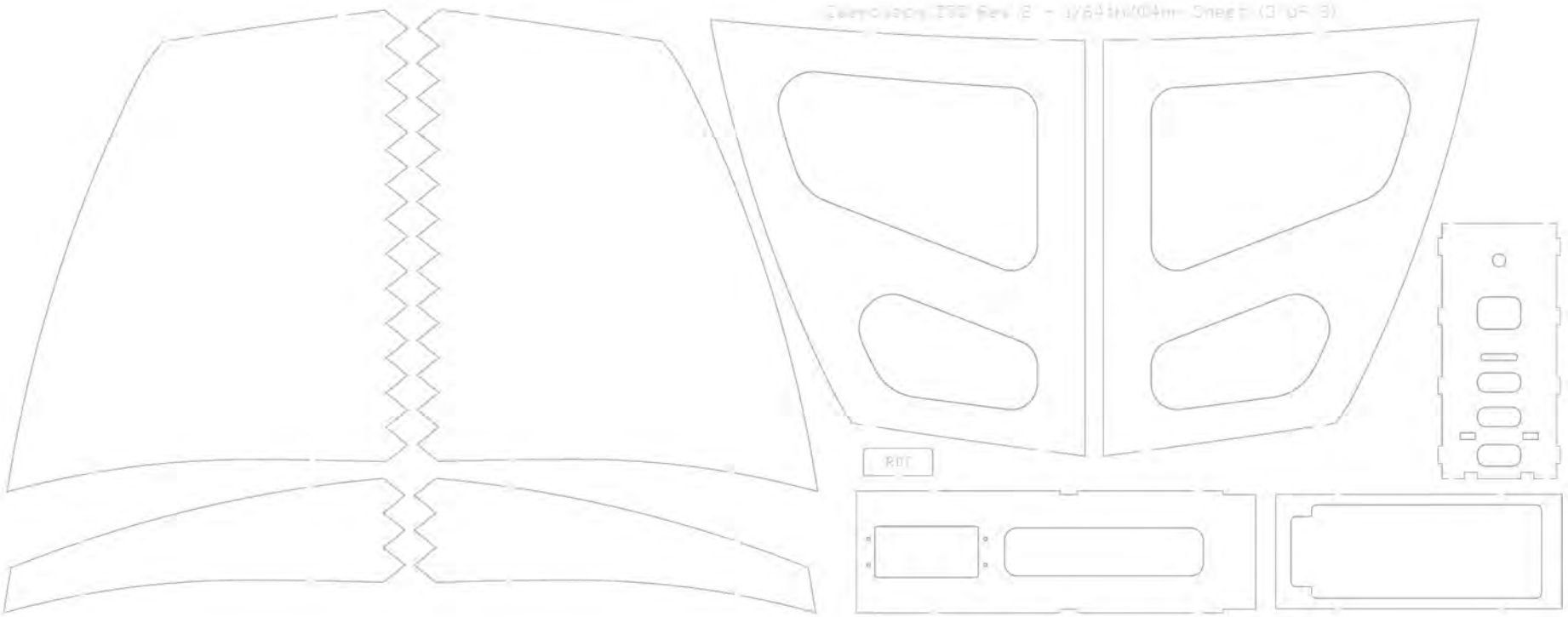
Z55 Part Identifier XX2

Misc. Parts (Sheet 3 of 3) 0.4mm / 1/64th Ply



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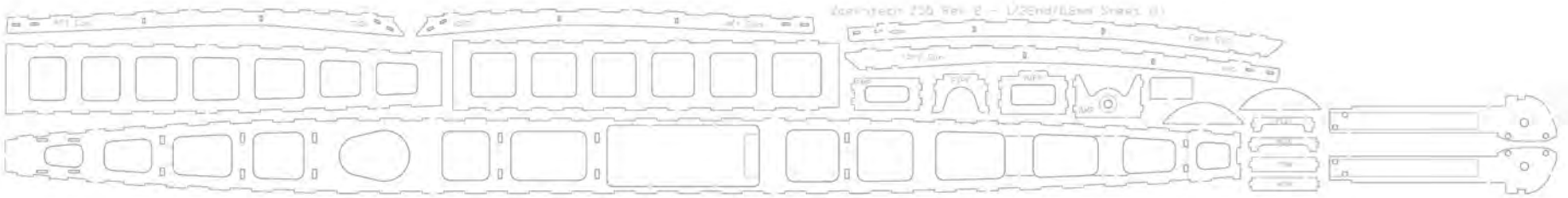
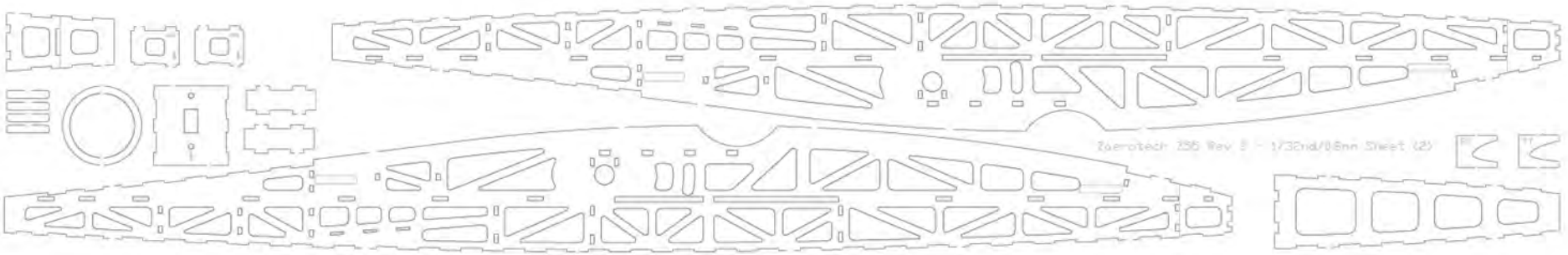
Z55 Part Identifier 003

Misc. Parts (Sheet 1 of 2) 0.8mm / 1/32nd Ply



Misc. Parts (Sheet 2 of 2) 0.8mm / 1/32nd Ply



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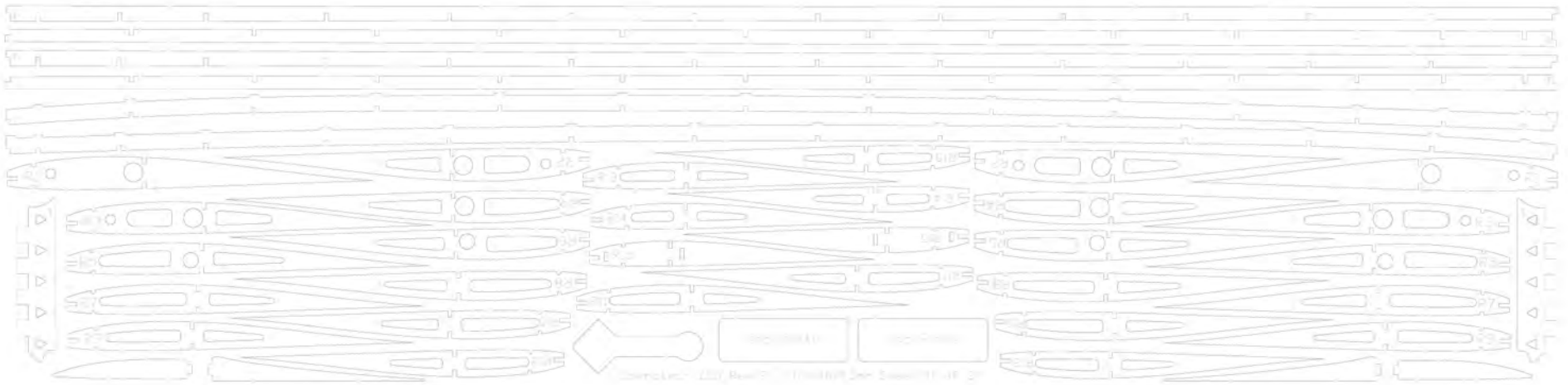
Z55 Part Identifier XC4

Misc. Parts (Sheet 1 of 2) 1.5mm / 1/16th Ply



Misc. Parts (Sheet 2 of 2) 1.5mm / 1/16th Ply

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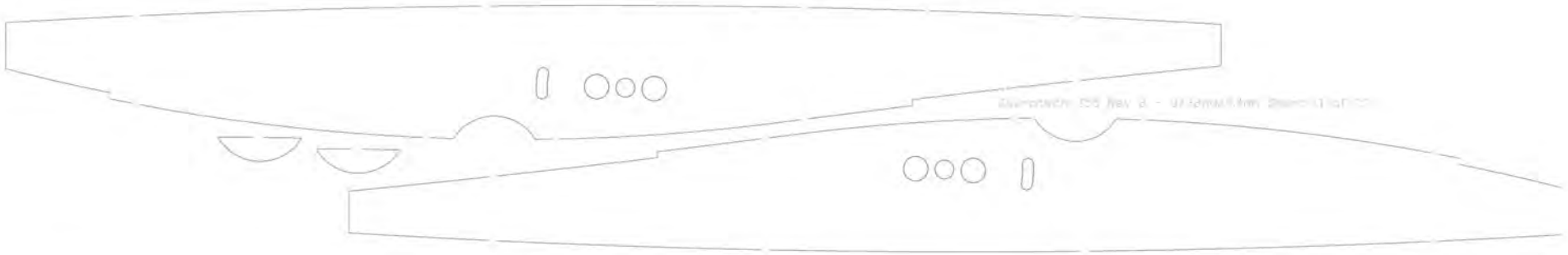
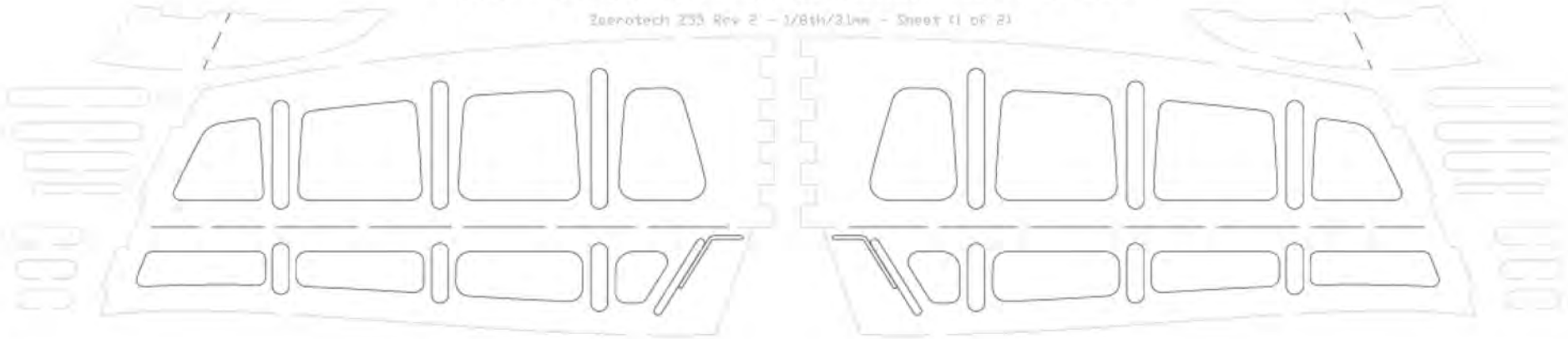
Z55 Part Identifier 005

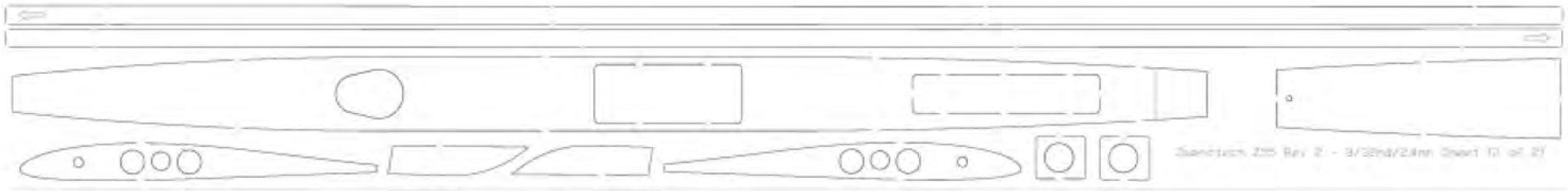
Misc. Parts (Sheet 1 of 1) 2.4mm / 3/32nd Balsa



Misc. Parts (Sheet 1 of 2) 3.1mm / 1/8th Balsa



Misc. Parts (Sheet 2 of 2) 3.1mm / 1/8th Balsa



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Z55 Part Identifier XC6

(The Odd Stuff)

	(1) Tail Hinge Tape 53 x 18mm (Laser-Cut Kevlar)
	(8) Magnet 3/8" x 1/16" (2) Magnet 1/4" x 1/16"
	(2) Nose Block, Outer / (1) Center (Laser-Cut Balsa)
	(8) Cap, Magnet (Laser-Cut Balsa)
	(2) Wing Tip Block (Laser-Cut Balsa)
	(2) Tail Ball Capture Doubler (Laser-Cut Ply)
	(1) Tail Latch Spring .75 x 13mm / .030" (Carbon Rod)
	(4) Indexing Dowel 2mm Dia. (Wood)

(Hardware)

	(2) Tail Control Wire (1 Left / 1 Right)
	(2) Wing Drive Plate (Delrin)
	(2) Wing Drive 2-56 Rod (Steel)
	(2) Clevis 2-56
	(2) Small Ball Link / Socket / Nut
	(2) Large Ball Link / Socket
	(2) Wing Drive Pin (Copper)
	(2) Wing Drive Roller Short (2) Roller Long (Blk Nylon)
	(1) Tail Latch Pivot Tube (Aluminum)

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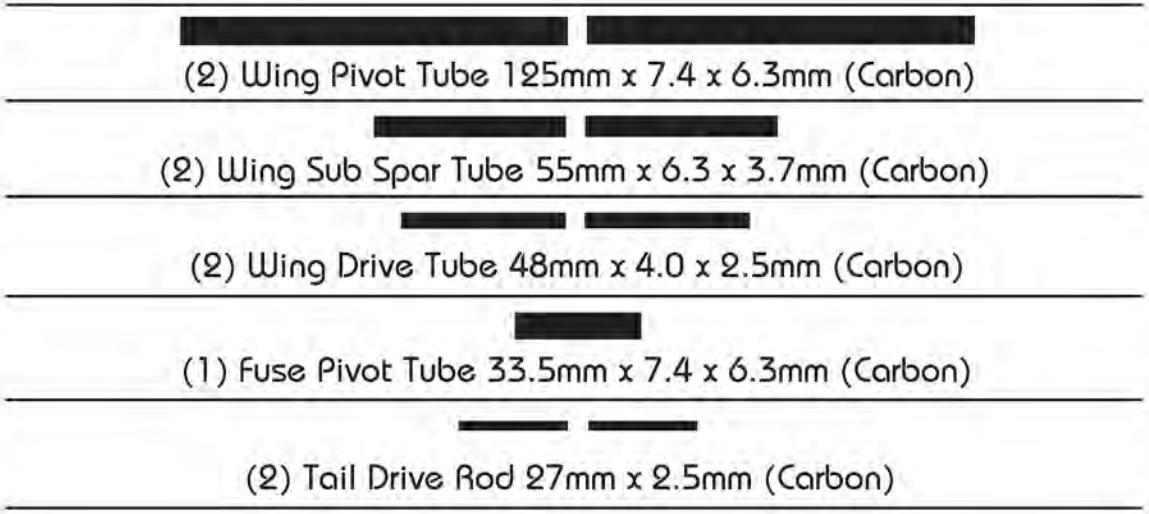
Z55 Part Identifier 007



(Rod & Tube)

(The Long Stuff)

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Z55 Tail Group Construction

Before you can build the tail group, you will need to lightly sand all surfaces to remove burrs and laser cutting residue. Use no coarser than 320 grit for all sanding and blocking. A small blade file will help in some operations.

What you will need;

1. 320-400 grit high quality sandpaper

2. A small blade flat file approx. 2mm x 6mm

3. Wax from a candle or paraffin for dry lubrication

4. Clamps and rubber bands

Click on the button to start the eDrawings application for 3D viewing of the assembly.

If you have difficulty starting the application, you can navigate to the "3D" folder on the DVD, and either;

1. Start the executable file "3D_Tail-Group_V2.exe"
or
2. If you have eDrawings already installed, open the file "3D_Tail-Group_V2.easm"
or
3. Install the eDrawings application and open the easm file

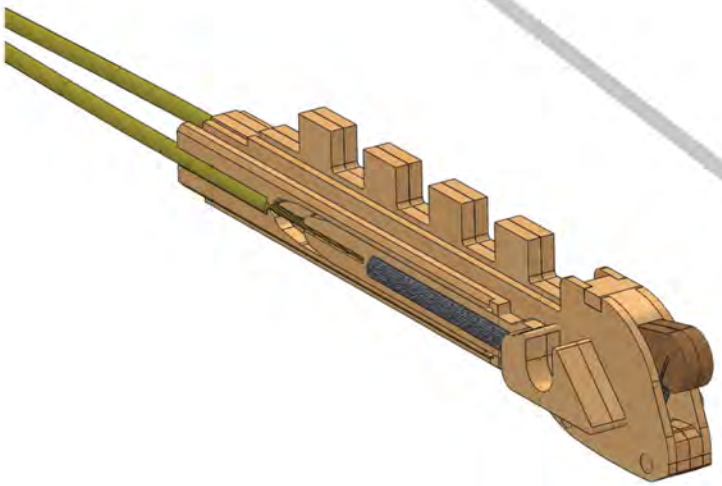
The latter two choices will allow viewing the assembly in color, and is preferable.

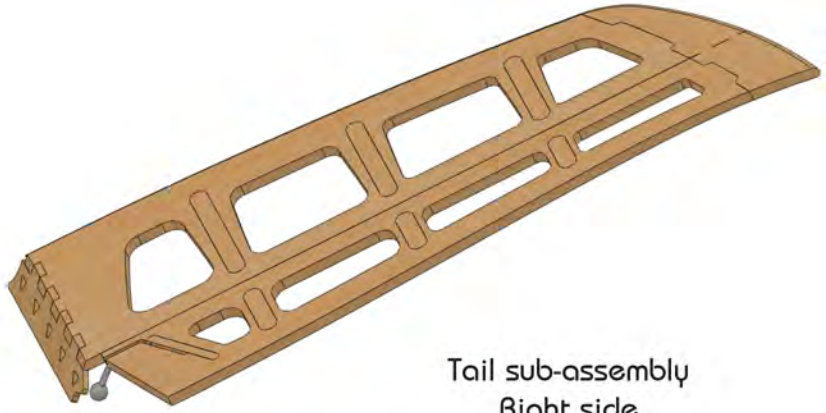
Z55 Tail Group 1.1

The Tail group is divided into two sub-assemblies. The first, tail surfaces. The second, the drive cassette.

The tail surfaces are straightforward, and assemble with a minimum of effort.

The drive cassette on the other hand, is a somewhat precision assembly, and care must be taken to achieve proper alignment.





Tail sub-assembly
Right side

Shown as completed in section 2

Drive cassette sub-assembly

Z55 Tail Group 1.2

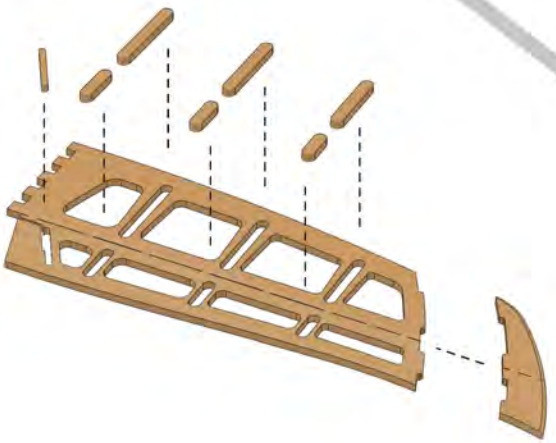
CA

Accelerator

1.5mm /.060 Carbon Rod

Assemble both left and right Stabs and Elevators.

When finished, sand all surfaces in preparation for covering.



Insert the Stab Splines 1 through 7, as well as the Tip, and CA them in place.

1

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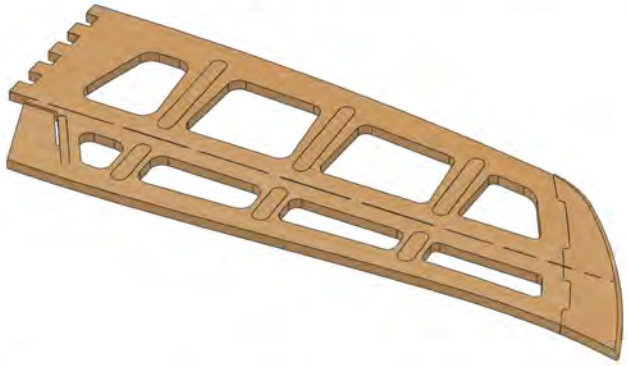
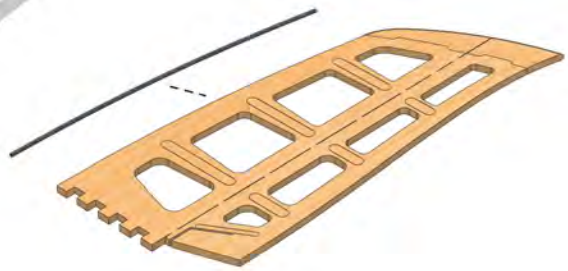
Shape a symetric section, with the high point a few millimeters forward of the Stab/Elev separation.



Sand the entire Stab/Elev surface to approximate a fair entry using the carbon LE as a guide. Then shapen up the TE.



Force the carbon LE to the forward curve, and lightly clamp in place.
CA the entire contact run and let cure.

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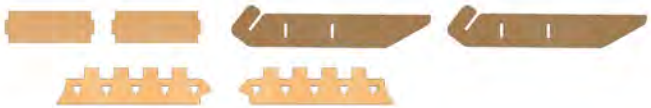
Z55 Tail Group 1.3



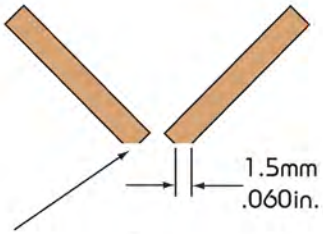
Assemble the tail jig, & prepare the Stabs for installation of the Blades.

Assemble the tail jig with GAP. Use the Right Angle tool to square it up. If it's not flat, squared and near perfect, the tail will be out of alignment as well.

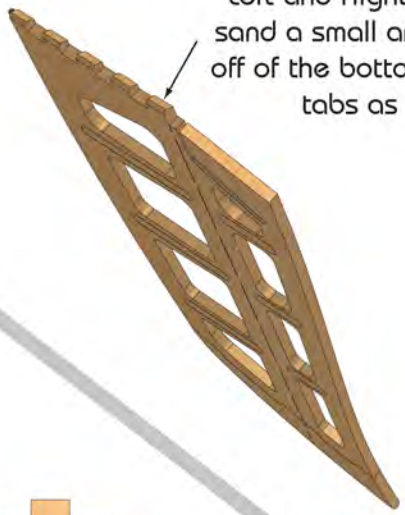
1

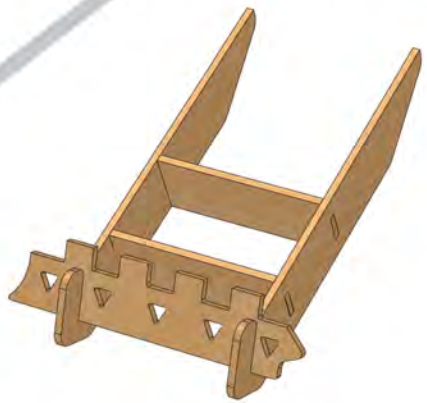
2

3

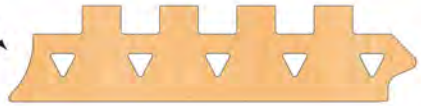


Determine which Stabs will be Left and Right. Mark them and sand a small amount of material off of the bottom of the indexing tabs as illustrated.





Forward end



Set the Tail Blade into the jig as shown. Do not glue. Note the forward end.

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Z55

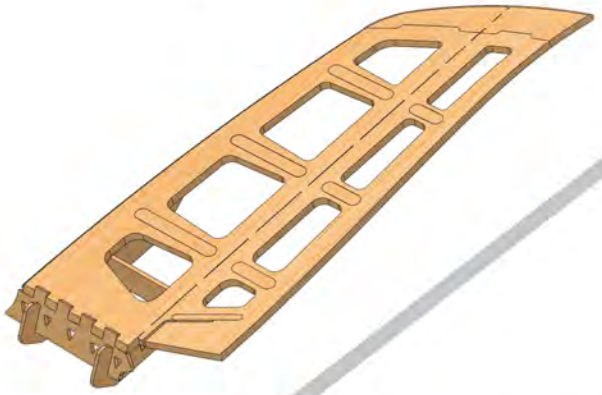
Tail Group 1.4

CA GAP Accelerator

Install Blades onto Stab halves.

Set the Tail Blade into the jig as shown. Do not glue. Now set the Stab on the jig and slide it down to index with the Blade's indexing tabs. Turn the assembly over and make sure the Jig's spanwise legs are parallel with the Stab to Elevator laser kerf.

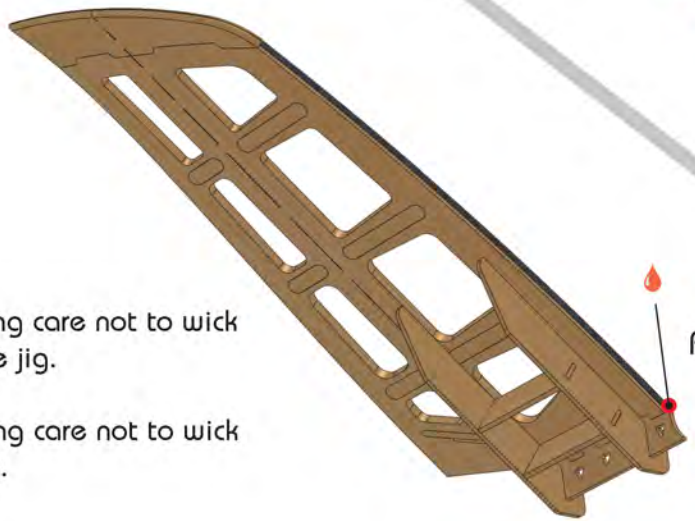
1



2

CA all points of contact, taking care not to wick any CA into the jig.

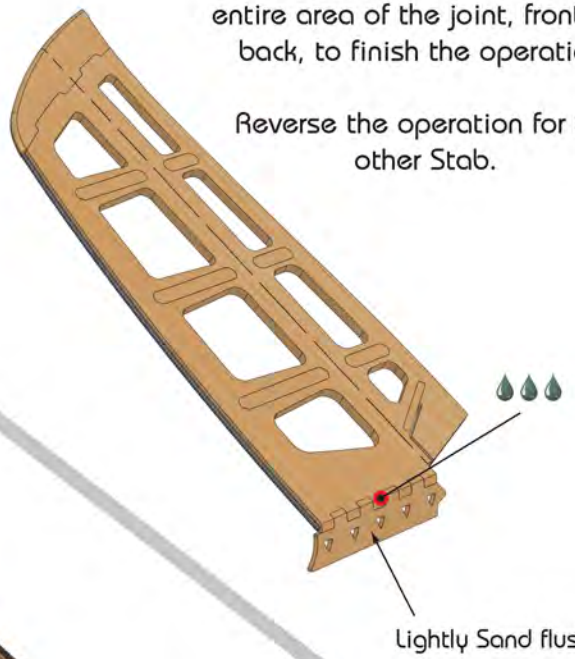
CA the back side, again taking care not to wick into the jig.



3

Remove the Jig, and sand the excess balsa off of the Stab where it protrudes past the Blade's inside face. GAP the entire area of the joint, front and back, to finish the operation.

Reverse the operation for the other Stab.



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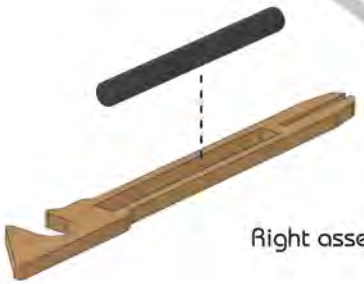
Z55 Tail Group 1.5

Build the Drive Plate sub-assembly.

Before assembly, mark parts as left and right. The carbon rod installs slightly taller than the wood parts, so take care to reverse the operation for each set of parts.

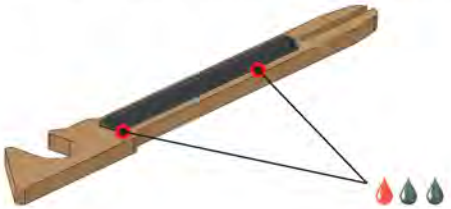
Prepare a flat work surface with wax paper.



Right assembly shown

Fit the carbon rod into the Drive Plate. Sand the rod until it drops into the slot with little resistance, Make sure both parts fit flush on the work surface. You will make a left and right version.

CA the rod in place, then follow up with GAP.



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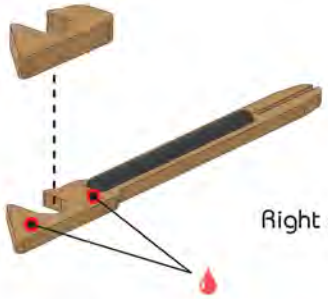
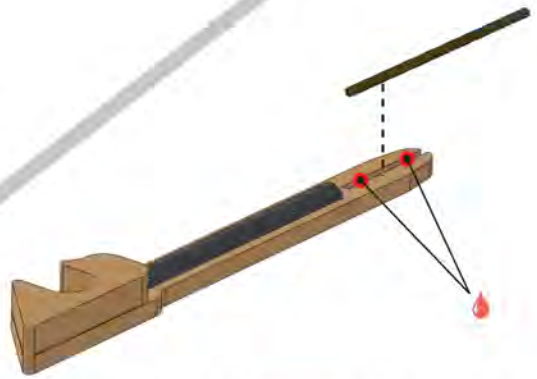


Right assembly shown

3



Remove the Long cable from it's tube. This is the right ruddervator cable, and must be fit to the right assembly.

CA the cable into the foreward slot in the Drive Plate, and follow up with GAP. Lightly sand the assembly again to ensure a smooth flush side, and remove any sharp edges on the top side.

Reverse the operation for the left assembly.

Fit the Ball Capture doubler and align it to the Drive Plate. CA in place. Follow up with GAP.

Lay the completed assembly on a sheet of 400-600 grit sandpaper, and gently rub it back and forth to smooth the back surface. Do this only for the flush side. Do not sand the rod down on the top side yet, just smooth the butt ends to remove sharp edges.

Reverse the operation for the left side set of parts.

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Z55 Tail Group 1.6

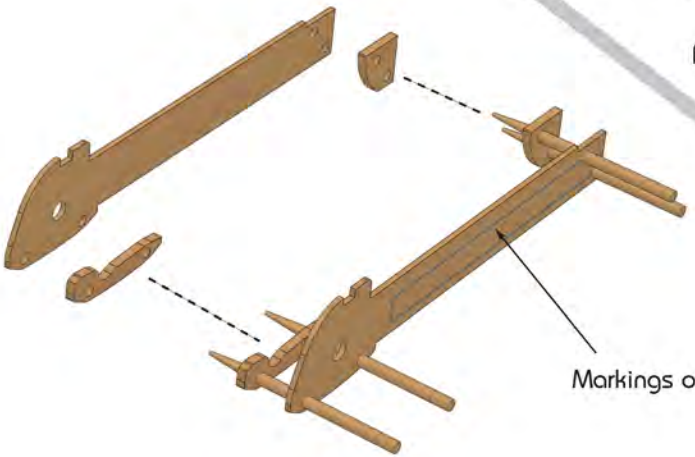
Build the Tail Drive Box assembly.

Note that the Box Sides have a laser marking on one side. These markings should be on the outside of the assembly.

Sand all part edges to remove laser residue.

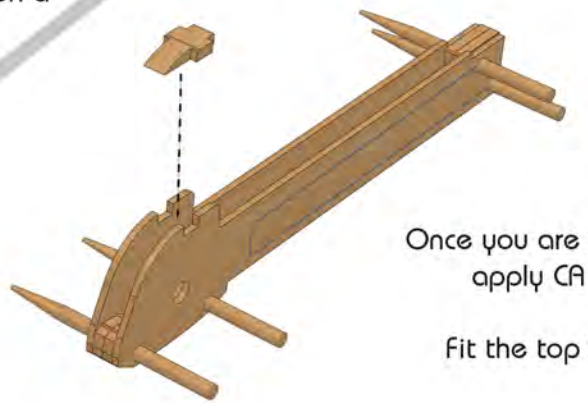
Prepare a flat work surface with wax paper.

1



Fit the Standoff parts as illustrated. Twist the Dowels as you drive them into all the elements of the assembly. Use small clamps to hold pressure on the parts as you check all angles on a flat surface.

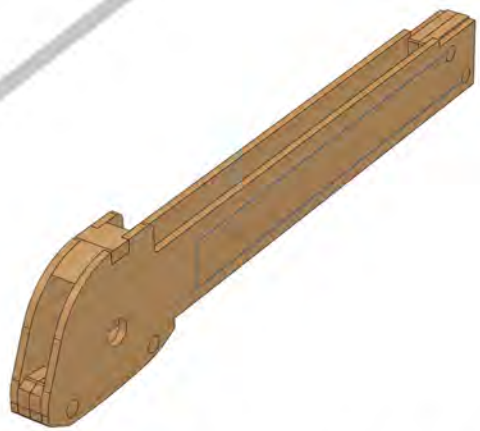
2



Once you are satisfied the assembly is square, carefully apply CA to all points of contact. Work slowly.

Fit the top Standoff as illustrated and CA in place.

3



Cut the dowels flush with the Box Sides, taking care not to damage the surface. Lightly sand the sides with 400 grit to produce a flush, smooth surface. Do not sand off the laser markings.

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Z55 Tail Group 1.7

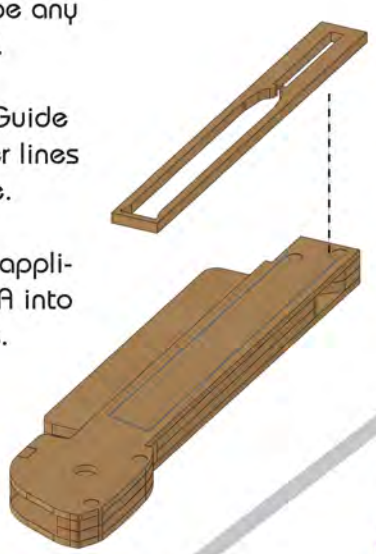
1.5mm / 1/16th Ply Gap Plates

Install the Drive Plate Guides.

Lightly sand and test fit the two Gap Plates into the Cassette. They should be snug, without stressing the box. Wax both plates completely, then wipe any excess wax off.

Carefully align the Guide Plate within the laser lines on the Box Side.

CA in place with an applicator. Do not wick CA into the Gap Plates.



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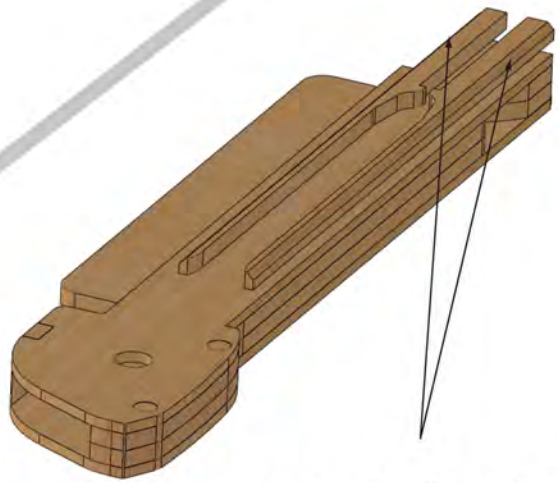
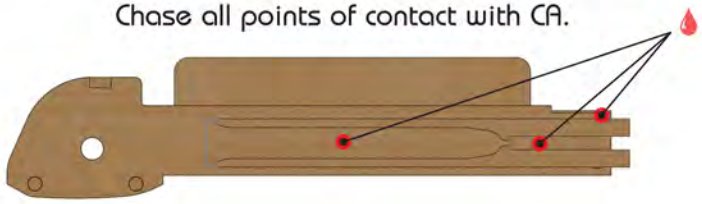


Sand a chamfer on both the top and bottom edges of both Guide Plates as indicated. You will fine tune this later, so don't overdue it.

Carefully cut at the indicated points, and lightly sand the raw cuts.

Chase all points of contact with CA.



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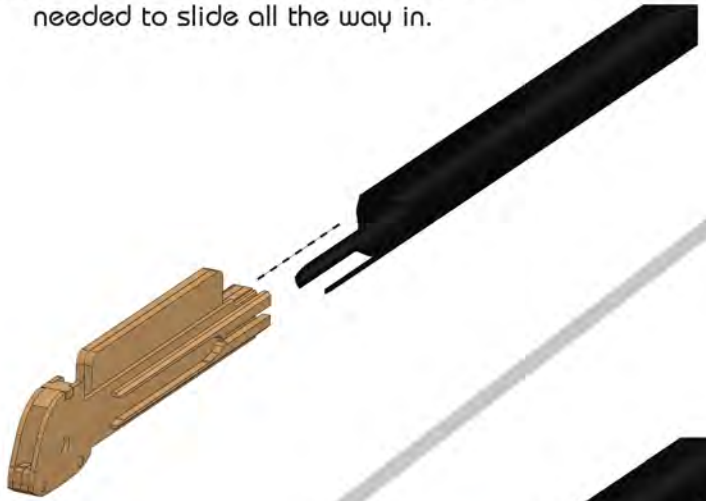
Z55 Tail Group 1.8

Fit the Cassette to Boom.

Careful alignment is critical in the following steps.

Carefully slide the Cassette into the end of the Boom. Note that it will hang up immediately on the Guide Plates. Sand the chamfers until the cassette slips snugly up to the foreward Standoff. Then sand the foreward end as cylindrical as needed to slide all the way in.



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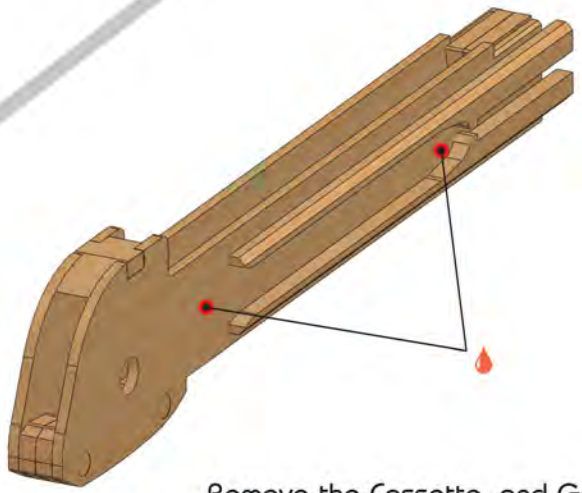
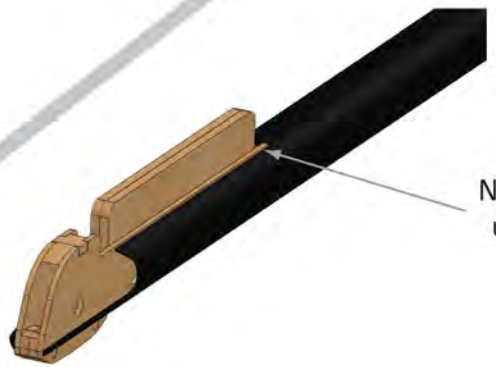
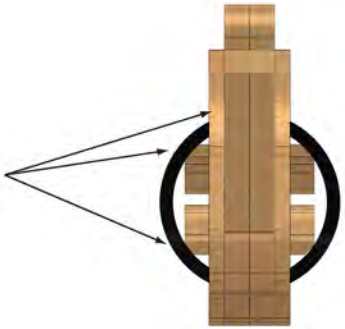


Remove the Cassette, and Gap Plates. Chase all points of contact with modest amounts of CA. Lightly sand the entire assembly with 400 grit to render a smooth finish.



Note the areas where you will need to concentrate your attention.



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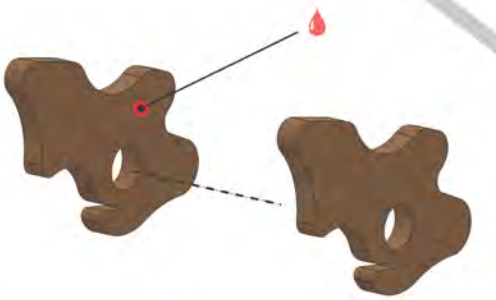
Z55 Tail Group 1.9

Build the Spring Latch & test fit the Pivot.

Careful alignment is critical in the following steps.



Carefully align the two Spring Latch Plates, and CA together.

Follow up with a coating of CA to seal and strengthen the latch.

Lightly sand the entire part with 400 grit.

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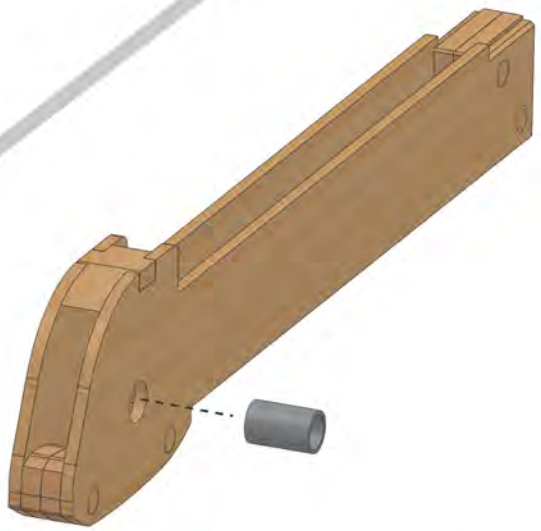
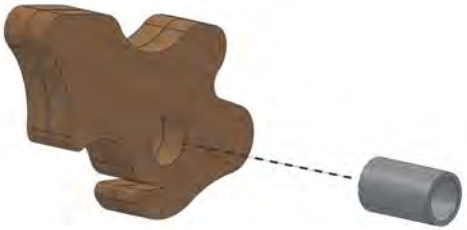
3



Test fit the aluminum Pivot Tube into the Box Sides. File or size the holes to allow the tube to twist in with minimal effort, but still snug.



Test fit the aluminum Pivot Tube into the latch. File or size the hole to allow it to rotate with minimal slop.

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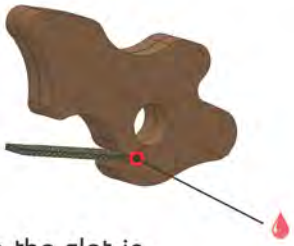
Z55 Tail Group 1.10

0.4mm / .020 G-10 Strip

Fit the Latch Spring & note the function.

Careful alignment is critical in the following steps.



1

Fit the G-10 Spring Strip into the slot in the Latch Plate. Align and square up, then CA in place.

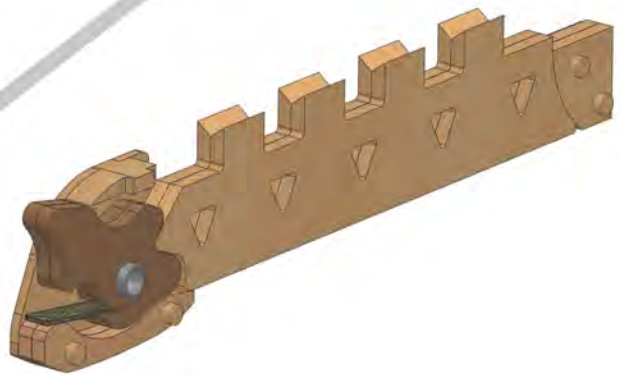
Follow up with a good CA fillet at all points of contact.

2

The function is fairly simple. The Latch Plate is spring loaded to lightly grip the Tail Blades. Pushing the Latch down, partially ejects the blades.

To load the Tail: Push down on the latch, and slide the Blades in, foreward ends first. Pivot the tail-end down, while pushing foreward, until you feel the Blades contacting the lower jaw of the Latch. And finally gently push the Tail down until the latch pops up.

3



In the event of a crash, the latch will allow the tail to eject, and minimize the chance of damaging the tail and boom.

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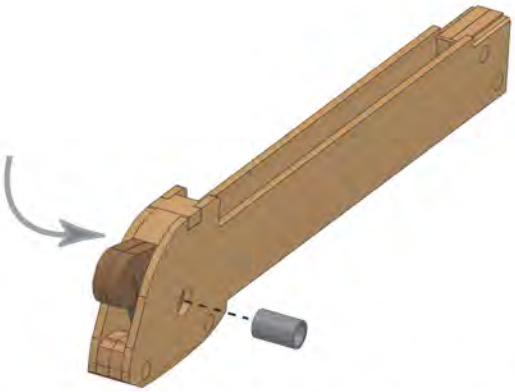
Z55 Tail Group 1.11

Fit the Latch & Cable Tubes.

Careful alignment is critical in the following steps.

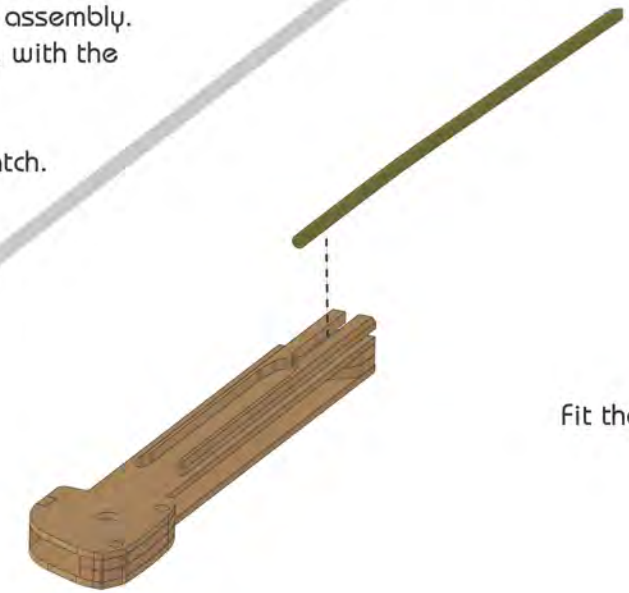
1



Fit the Latch Plate from the aft end, and slip the Pivot Tube through the assembly. The Latch should rotate freely, with the Tube a snug fit.

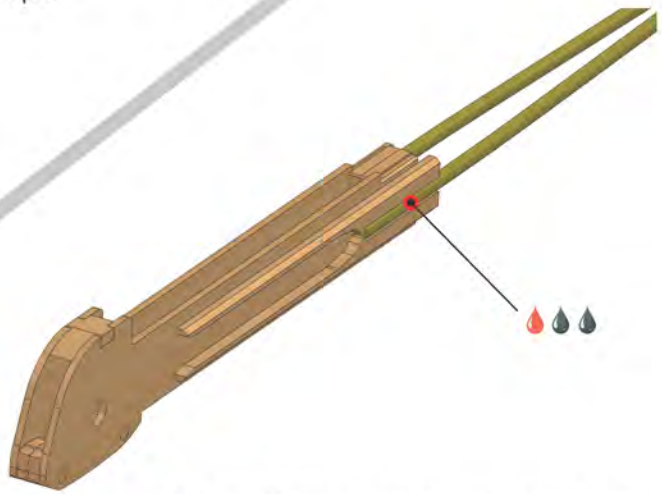
Remove the Tube and Latch.

2



Fit the Long cable into the forward slot as illustrated.

3



CA in place, and follow up with GAP.

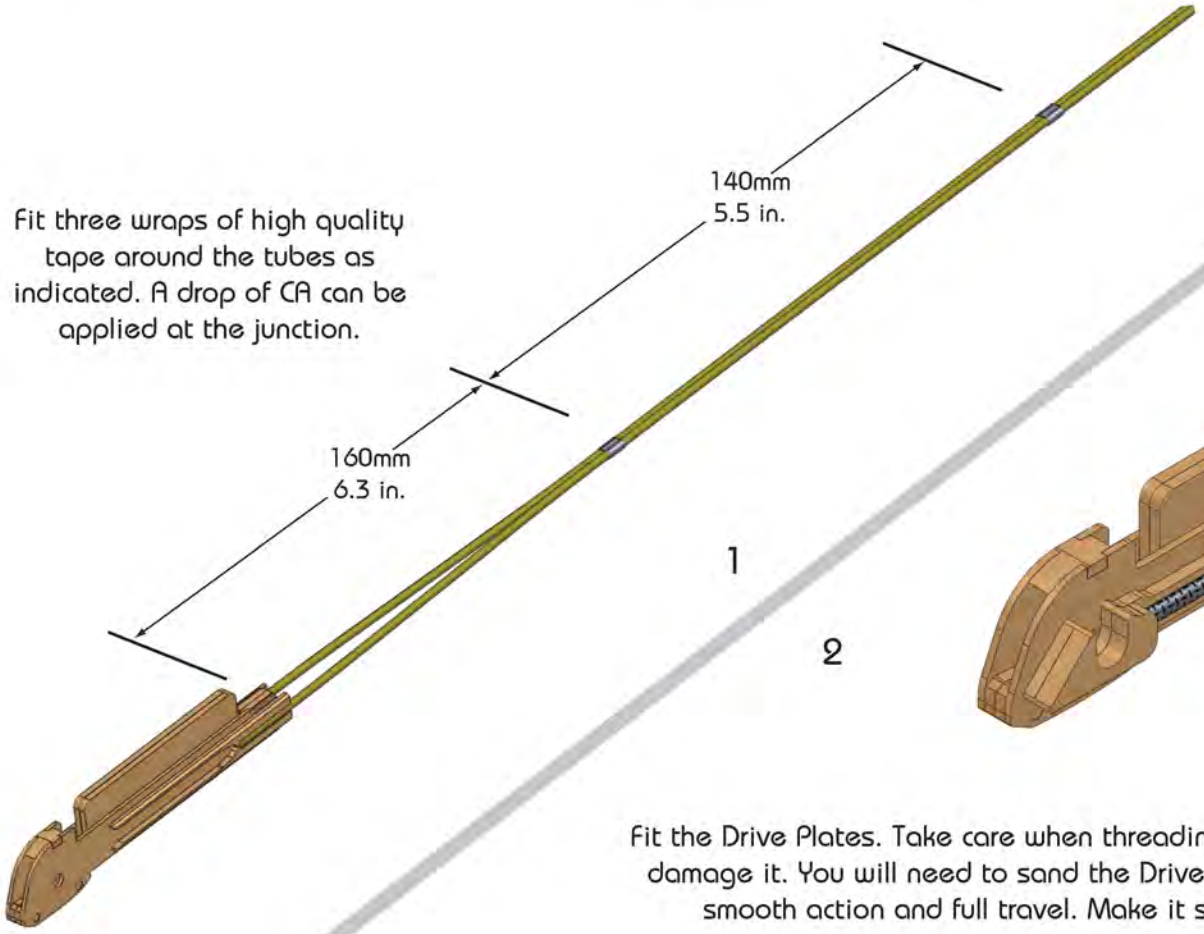
Repeat with the Short cable on the other (Left) side.

Z55 Tail Group 1.12

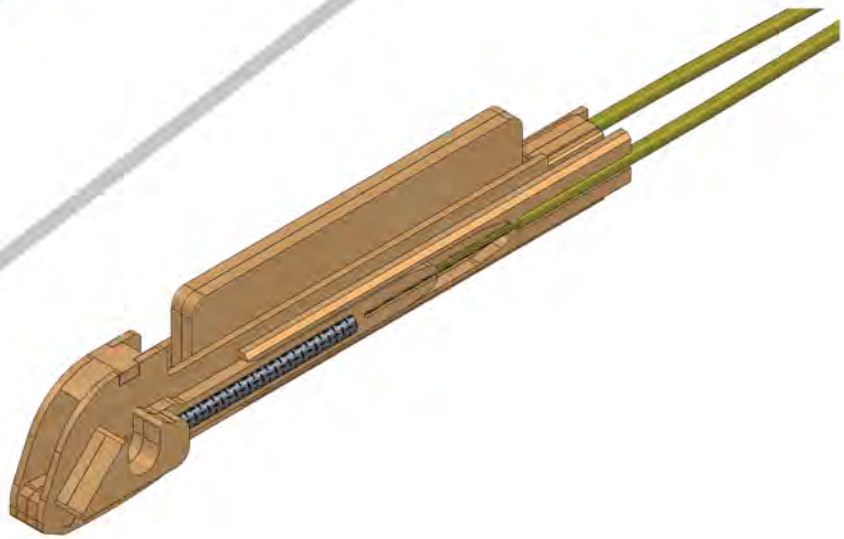
Tape the Cable Tubes and fit the Drive Plates.

Careful alignment is critical in the following steps.

Fit three wraps of high quality tape around the tubes as indicated. A drop of CA can be applied at the junction.



1

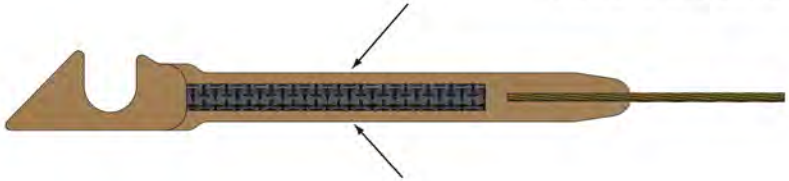


2

Fit the Drive Plates. Take care when threading the cable through the tube, so as not to damage it. You will need to sand the Drive Plate as indicated below, so as to get a smooth action and full travel. Make it smooth, without slop. Take your time.

Once satisfied, lightly sand the entire Drive Plate with 400 grit.

Remove the Drive Plates and set aside.



Z55 Tail Group 1.13

Fit the Cassette & Adjust the Drive Plates.

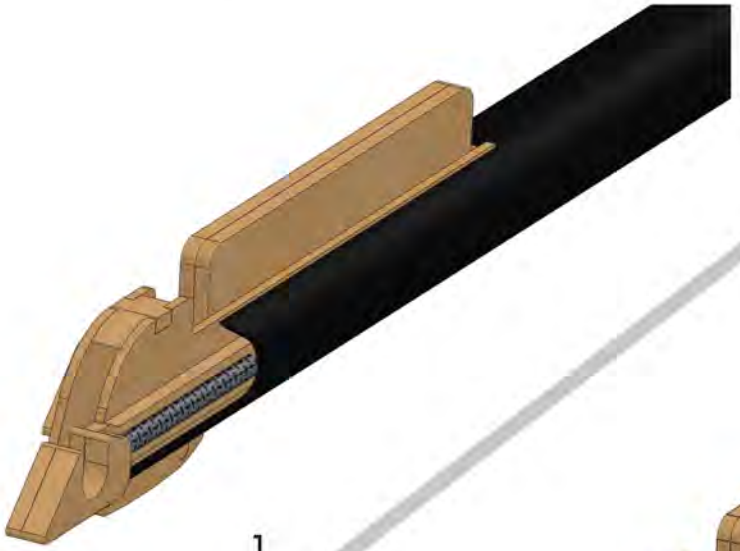
Careful alignment is critical in the following steps.

Fit the Drive Cassette with the Gap Plates installed. Seat the Cassette fully into the Boom.

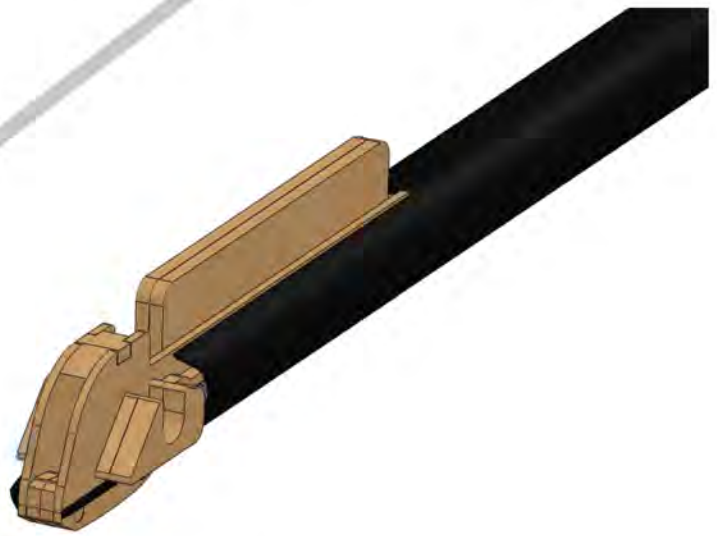
Carefully thread a Drive Plate and Cable into the Tube. You will do this blind, but with a light touch, the cable will find the hole easily.

Note that the Plate hangs up at the point where the Drive Plate Rod and Boom meet.

Lightly sand the Rod for clearance as indicated in step 2.



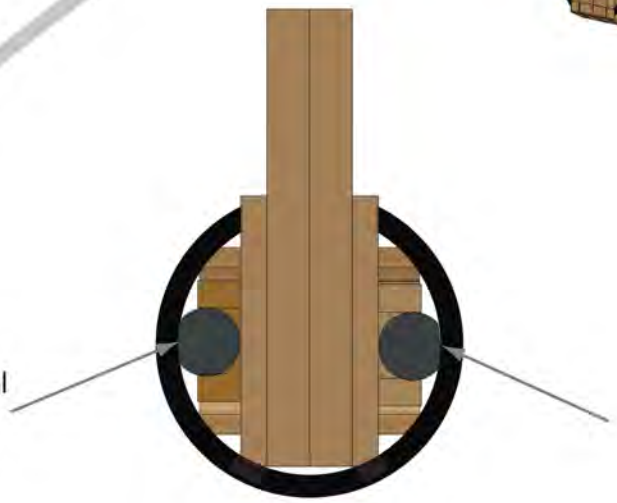
1



2

Sand the Rod face until it slides all the way to the foreward stop. You want this to be a precision fit. The carbon-on-carbon contact will act as a lubricant to help smooth the action, as well as limiting slop in the mechanism. Take your time.

Sand a small amount of material off the outside face of the Rod.



Z55 Fuselage Group Construction

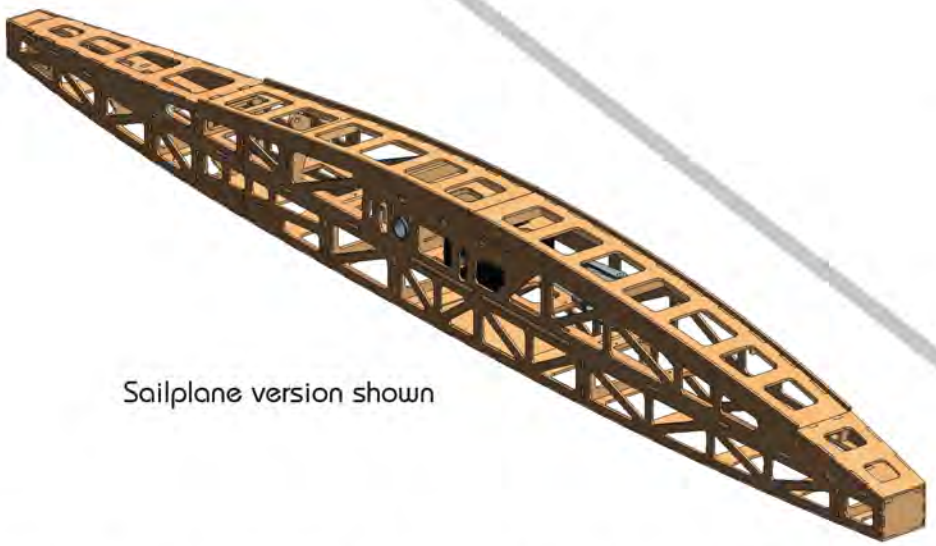
Before you can build the Fuselage group, you will need to lightly sand all surfaces to remove burrs and laser cutting residue. Use no coarser than 320 grit for all sanding and blocking. A small blade file will help in some operations.

What you will need;

1. 320-400 grit high quality sandpaper

2. A small blade flat file approx. 2mm x 6mm

3. Clamps and rubber bands



Sailplane version shown

Click on the button to start the eDrawings application for 3D viewing of the assembly.

If you have difficulty starting the application, you can navigate to the "3D" folder on the DVD, and either;

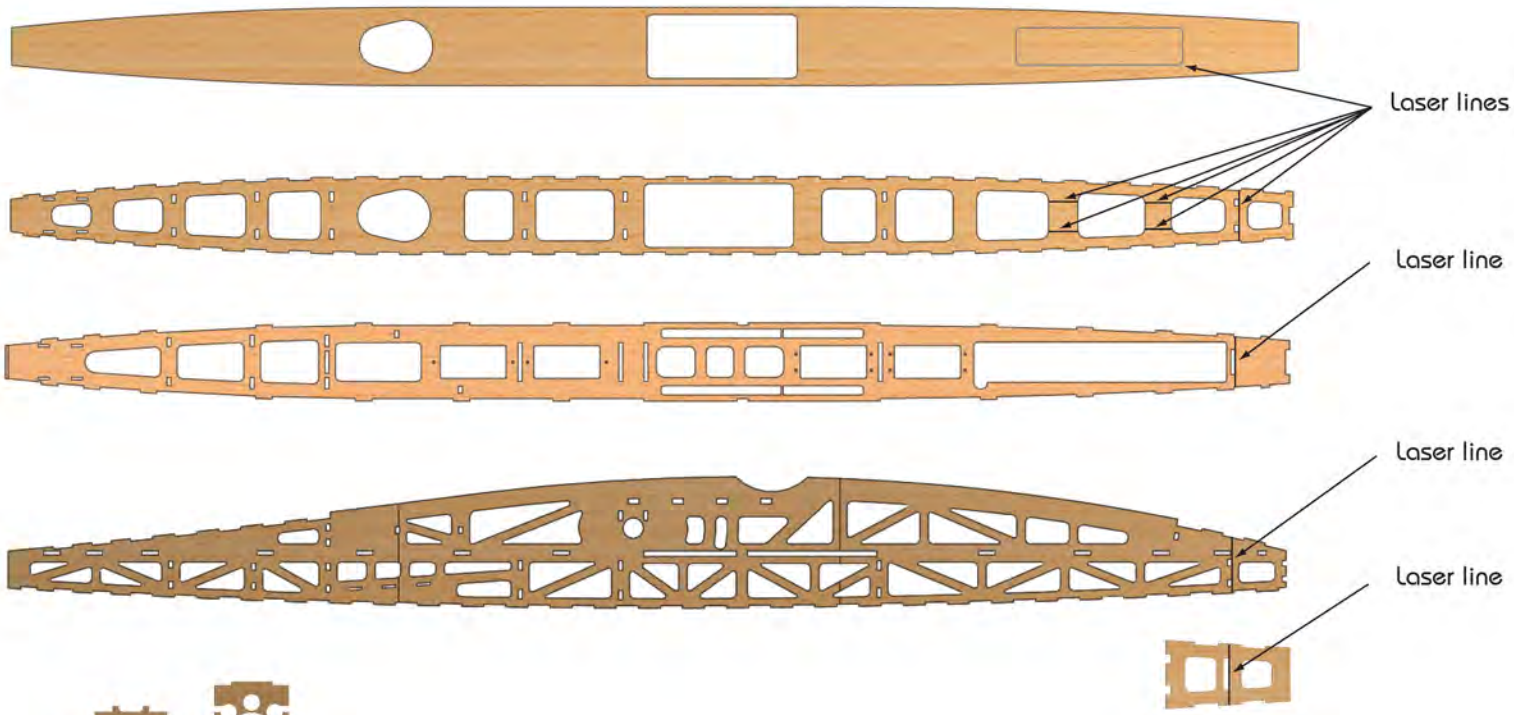
1. Start the executable file "3D_Fuse-Group_Z55_V2.exe"
or
2. If you have eDrawings already installed, open the file "3D_Fuse-Group_Z55_V2.easm"
or
3. Install the eDrawings application and open the easm file

The latter two choices will allow viewing the assembly in color, and is preferable.

Z55 Fuselage Group 2.1

Determine which version you will build.

Sailplane
or
Warmliner



For the sailplane version, no modifications are necessary

For the warmliner version, cut the five parts shown above on the laser lines, and substitute F1e for the sailplanes F1 former, as well as the Foreward Top Balsa Caps

Z55 Fuselage Group 2.2

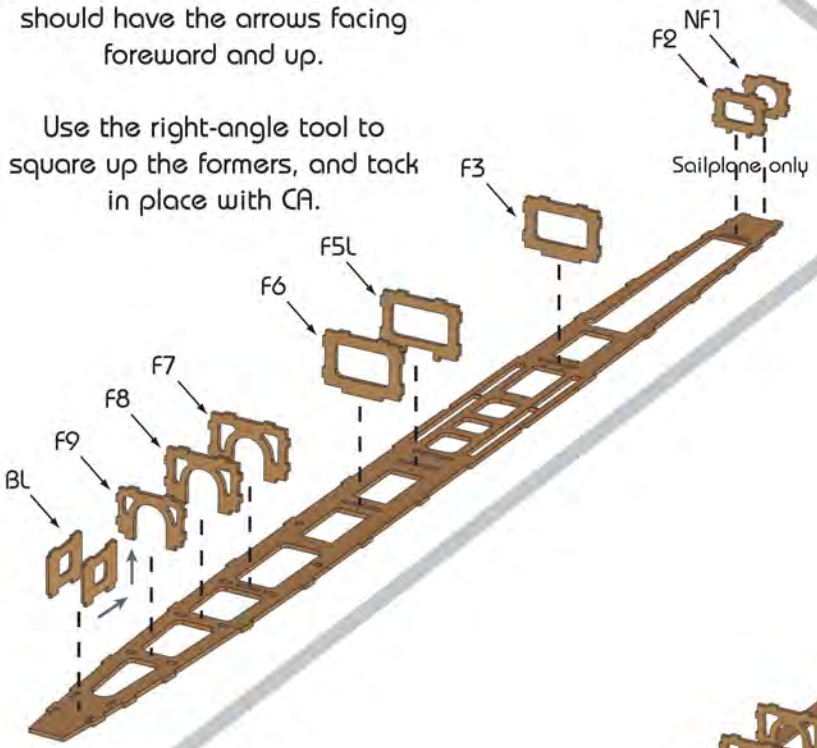
Horz Spine

Spine Doubler

Lay the Horz Spine on a flat surface, with the laser markings facing down.

Install the formers as illustrated, omitting NF1 and F2 for the Warmliner version. The BL plates should have the arrows facing foreward and up.

Use the right-angle tool to square up the formers, and tack in place with CA.



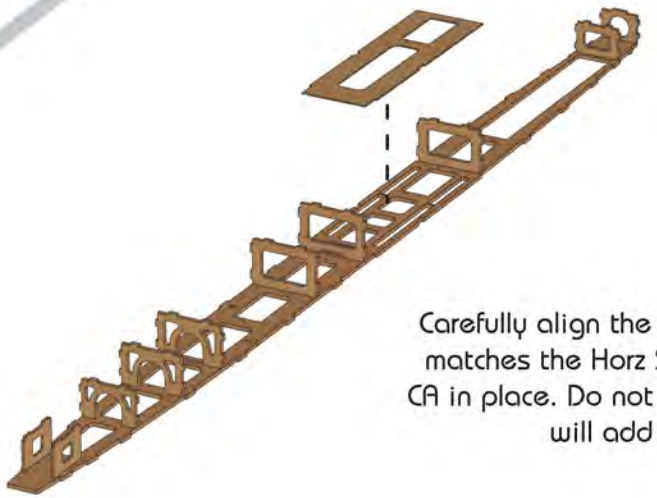
1

2

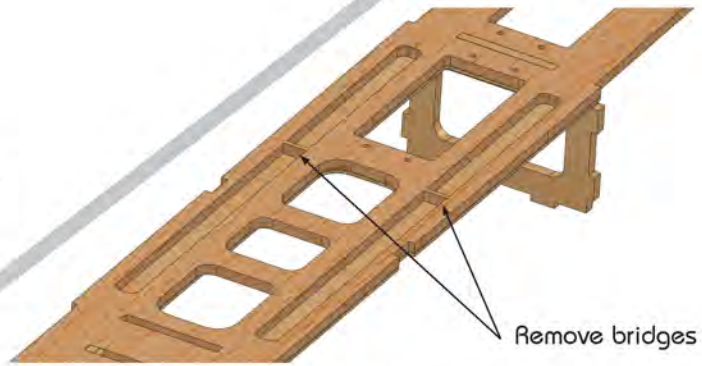
3

Install the formers and Spine Doubler

Both versions



Carefully align the Spine Doubler until it matches the Horz Spine perimeter, and CA in place. Do not use excessive CA, you will add more later.



Turn the assembly over and remove the shoring bridges. Use a sharp X-acto knife to cut them out, and sand or trim the sides with 400 grit, to make a smooth transition.

Once the slot is smooth, CA the entire inside perimeter and sand smooth with 400 grit. Do not remove more material than is necessary to render a smooth, hard on the bottom and side surfaces.

Z55 Fuselage Group 2.3

CA

Bottom Ply Cap

Magnet
6.35mm
.250 in.

Plate Doubler

Lower Plate

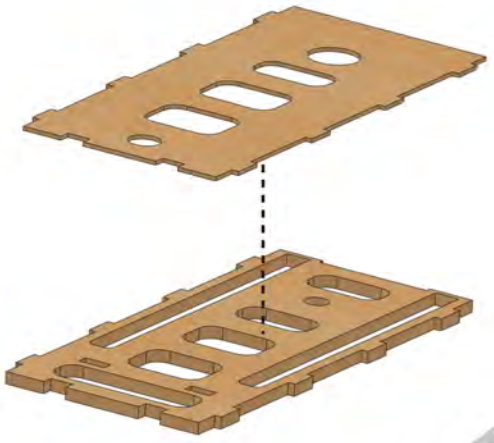
Rx Door Doubler

Install Doublers and Canopy Magnet

Both versions

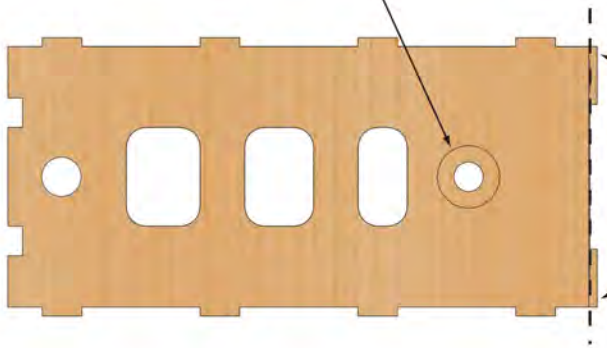
1

Fit the Upper Plate Doubler to the Lower Plate. Take care to properly align the two before applying CA.



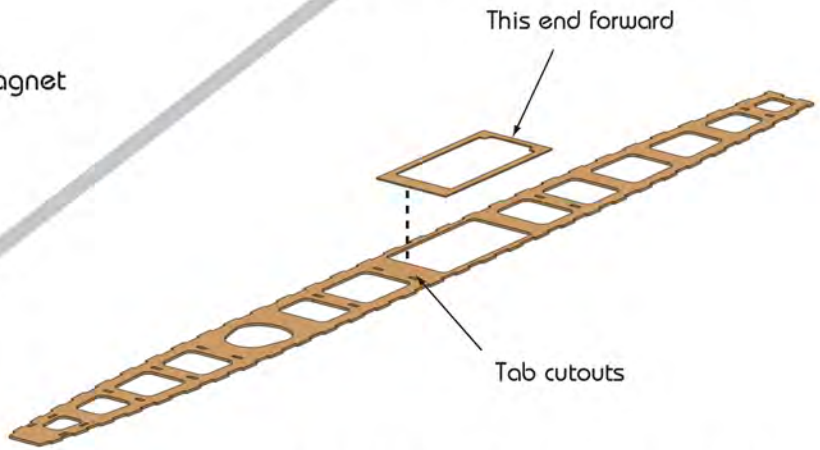
2

Fit the canopy magnet into the recess, and CA in place.



Cut the shoring bridges as indicated. Then turn the assembly over and CA the entire perimeter of the drive slots. Lightly sand the slots as before, to render a smooth finish.

3



Fit the Rx Door Doubler to either side of the Bottom Ply Cap, and CA the entire perimeter. The aft end of the plate should come up to, but not cover the former tab cutouts as indicated.

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Z55 Fuselage Group 2.4

Motor Plate

Canopy Guides

Side Ply Doubler
(2) required - Parts are identical

Install Side Ply Doublers
Both versions (ePower version shown)

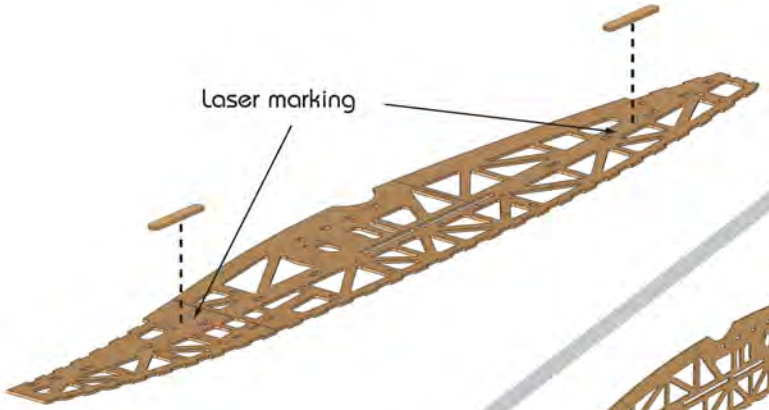
Install Canopy Guides
Both versions

Install Motor Plate
ePower Warmliner only

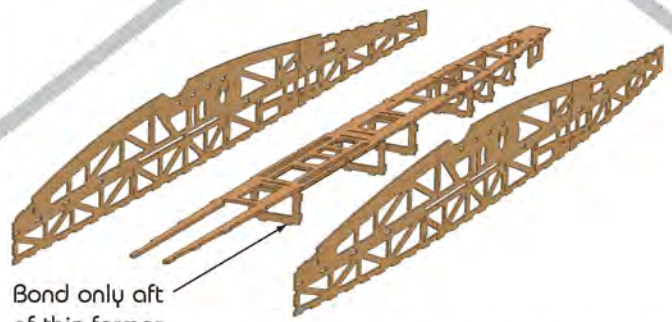
Fit the Canopy Guides to the inside of the Side Ply Doubler. Stick each Guide with a #11 blade, and position it precisely inside the laser marking. CA in place.

Install two per side.

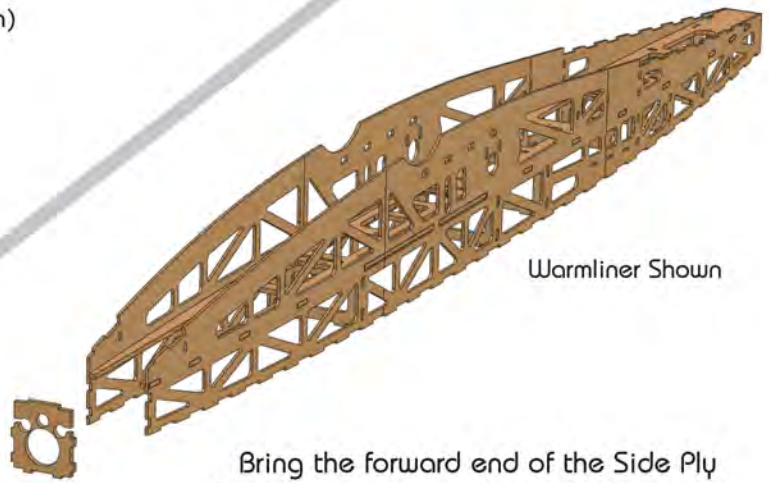
1



2



3



Warmliner Shown

Bring the forward end of the Side Ply Doublers together to meet the Horz Spine, while fitting the F1e Motor Plate for the warmliner version, or up to F1 for the sailplane version. Align the parts, making sure the structure is properly square, and Tack all remaining points of contact.

Test fit the Side Ply Doublers, making sure all tabs lock into their respective holes. Start from the long mid slots. Once satisfied, clamp or use rubber-bands to hold the assembly, while you ensure good alignment, with no twists fore to aft.

Tack only the Horz Spine-to-Side Ply points of contact, being careful to stay flush near the long Drive Plate slots.

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Z55 Fuselage Group 2.5

Switch Plate

Bottom Ply Cap

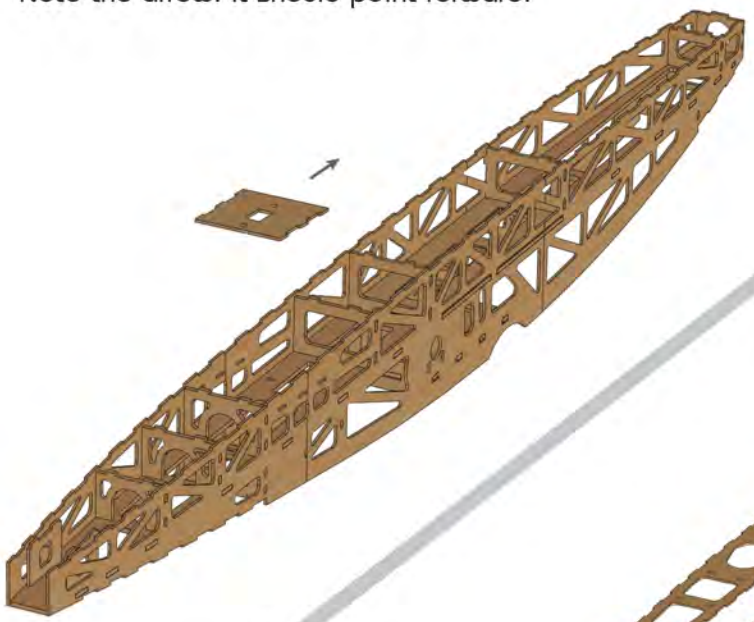
Remove for ePower option
or LiPo battery

Install Switch Plate
Both versions (Sailplane version shown)

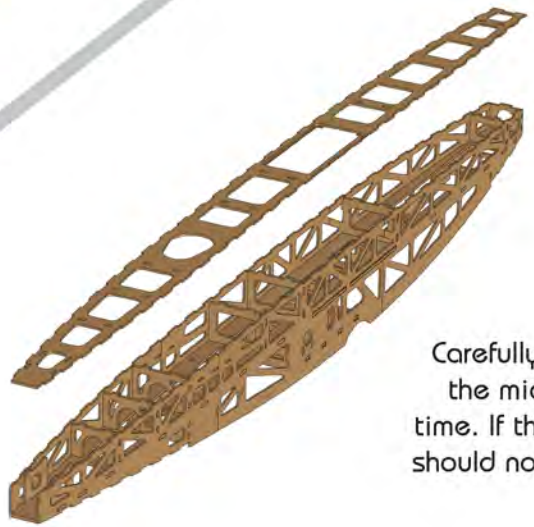
Install Bottom Ply Cap
Both versions (Sailplane version shown)

Install the Switch Plate by angling it in, and tweaking the Side Ply Doublers.

Note the arrow. It should point forward.



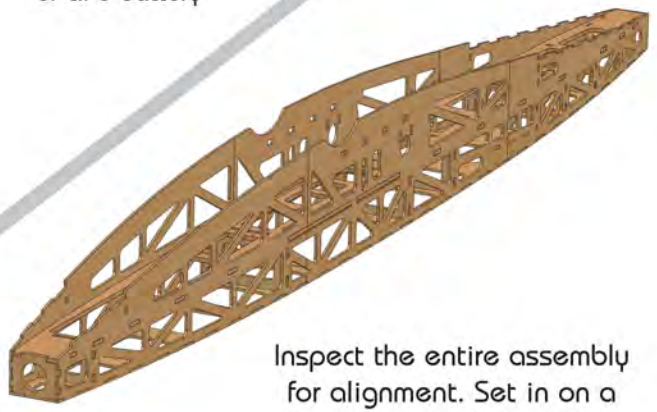
1



2

Carefully fit the Bottom Ply Cap. Work from the middle, out to both ends. Take your time. If the build alignment is good, the tabs should not need any trimming. Tack all points of contact.

3



Inspect the entire assembly for alignment. Set in on a flat surface and check that the sides are square.

Since the entire assembly is only tacked, you should be able to tweak it, or force small twists out while re-tacking affected areas. Once you are satisfied, hit all points of contact with both CA and Gap to form a final bond of the entire structure. Let cure.

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Z55 Fuselage Group 2.6

Completed Upper Drive Frame

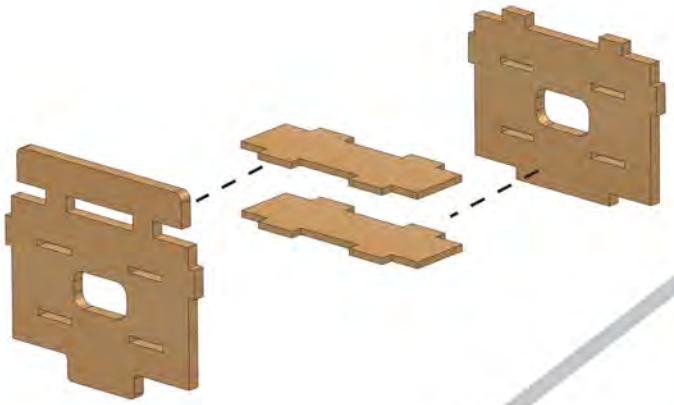
Tie Plates

F4U

F5U

Assemble and install Spar Box & Drive Frame
Both versions

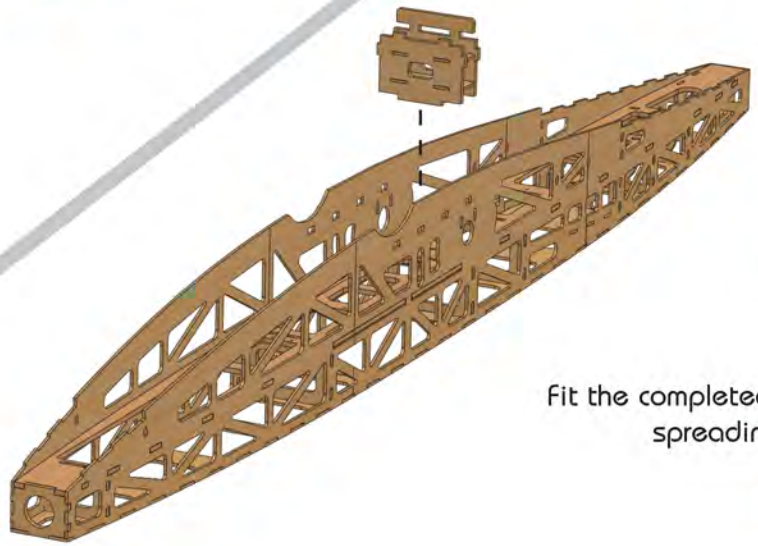
Assemble the four parts below, squaring them up to form a box structure, and Tack all points of contact with CA.

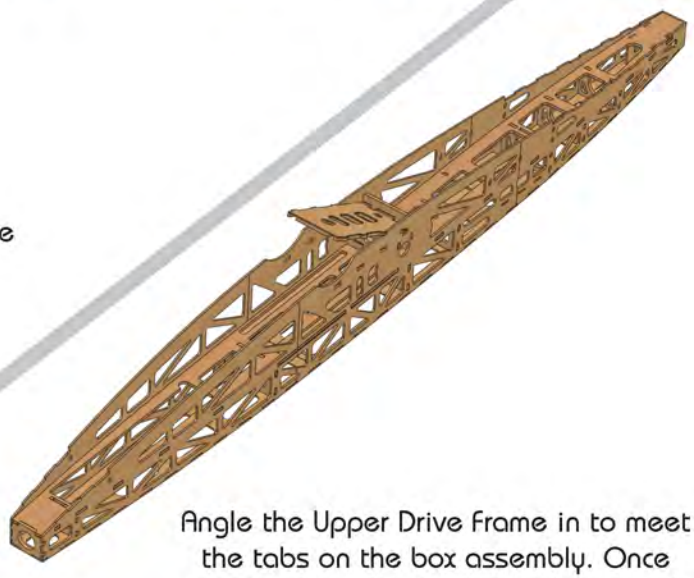


1

2

3





Angle the Upper Drive Frame in to meet the tabs on the box assembly. Once engaged, angle the frame down, and engage the remaining tabs to the Side Ply Doubler.

Check alignment as before, and tweak the assembly until you are satisfied.

Tack the entire assembly, and follow up with GAP to form a final bond.

Adhesive

Fit the completed box assembly into position by spreading the Side Ply Doublers

Do not glue

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Z55 Fuselage Group 2.7

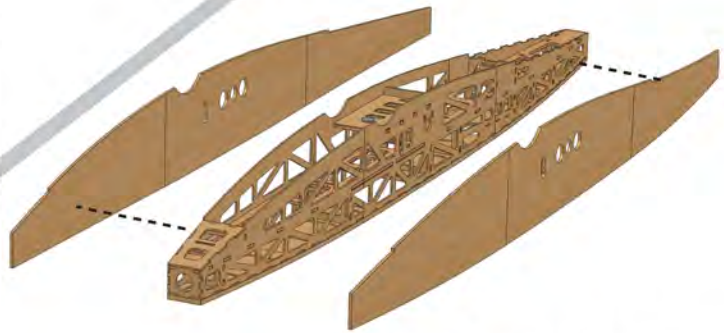
Side Balsa Cap
(2) required - Parts are identical

Bottom Balsa Cap

FCI ACI F2U
Sailplane only

Aft Ply Cap Fore Ply Cap

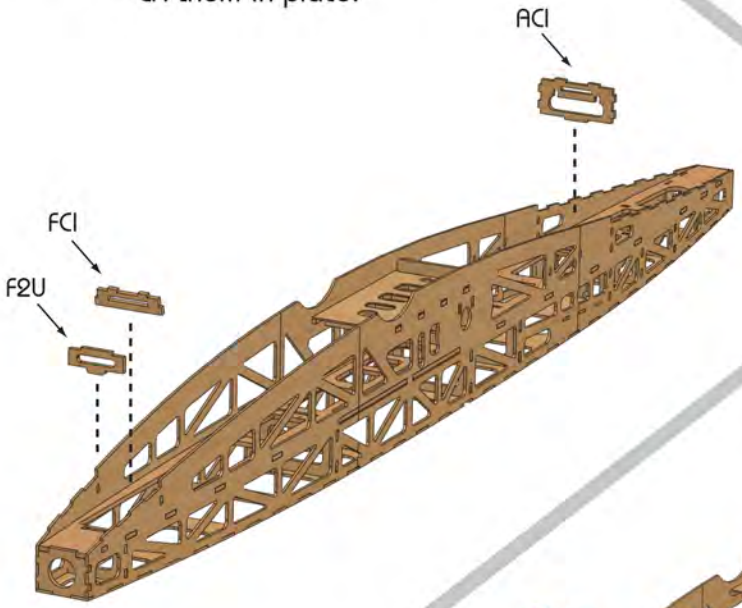
Install upper Formers & Caps



Sand the sides of the completed assembly to flush all tabs, as well as the Bottom Balsa Cap, and prepare the surfaces for bonding.

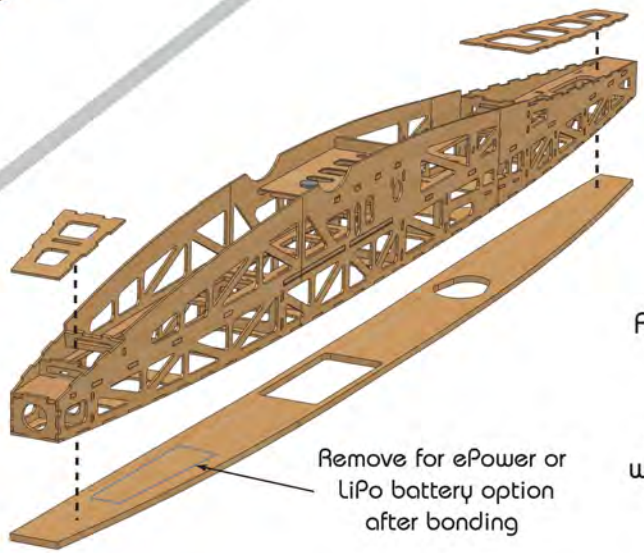
Align and install the Side Balsa Caps. Use the same bonding method as the Bottom Balsa Cap. Take care to align the wing drive cutouts perfectly to those on the Side Ply Doublers.

Fit the remaining formers, and CA them in place.



1 3

2



Remove for ePower or LiPo battery option after bonding

Fit the Forward and Aft Ply Cap, and CA in place.

Install the Bottom Balsa Cap with SLOW, 30 minute epoxy, or a water based wood glue.

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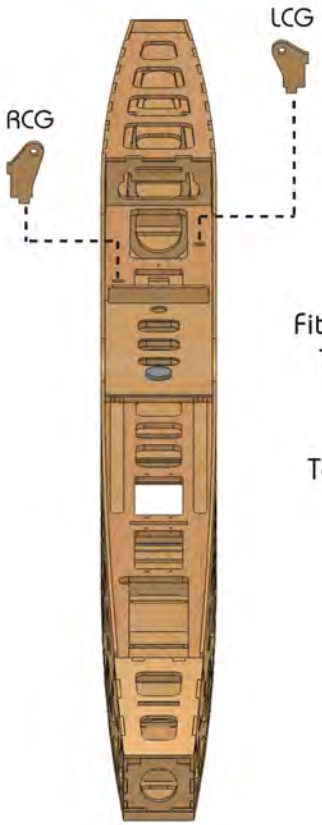
Fuselage Group 2.8

Boom

RCG LCG



Install Cable Guides & Boom

Fit the right and left Cable Guides. The taller Guide is in the right, forward position.

Tack in place, and follow up with GAP, to make a final bond.

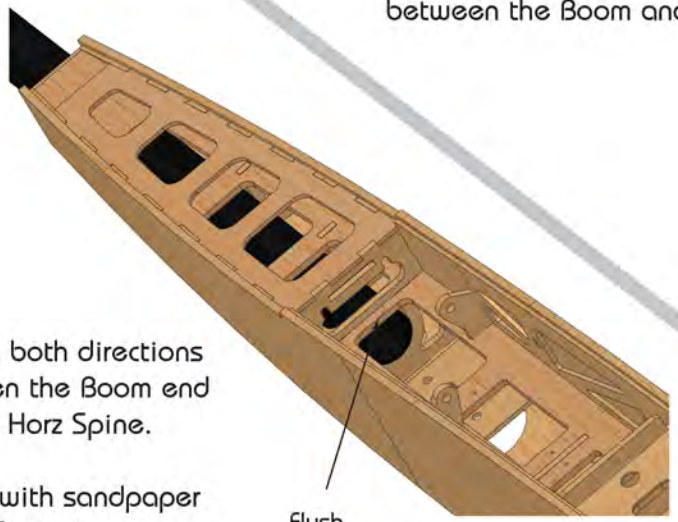
1

2

With the fuselage squared up to a flat surface, set a scale on the flat area at the end of the Boom. Twist the boom until the scale is parallel to the surface.

Apply a few drops of GAP to the area of contact between the Boom and Formers #7,8 & 9

3



Test fit the Boom. Insert while twisting it in both directions of rotation. Pass each Former, and stop when the Boom end is flush with the indicated cutout in the Horz Spine.

If the fit is too tight, use a wooden dowel with sandpaper bonded to it, and lightly sand the Formers.

Z55 Fuselage Group 2.9

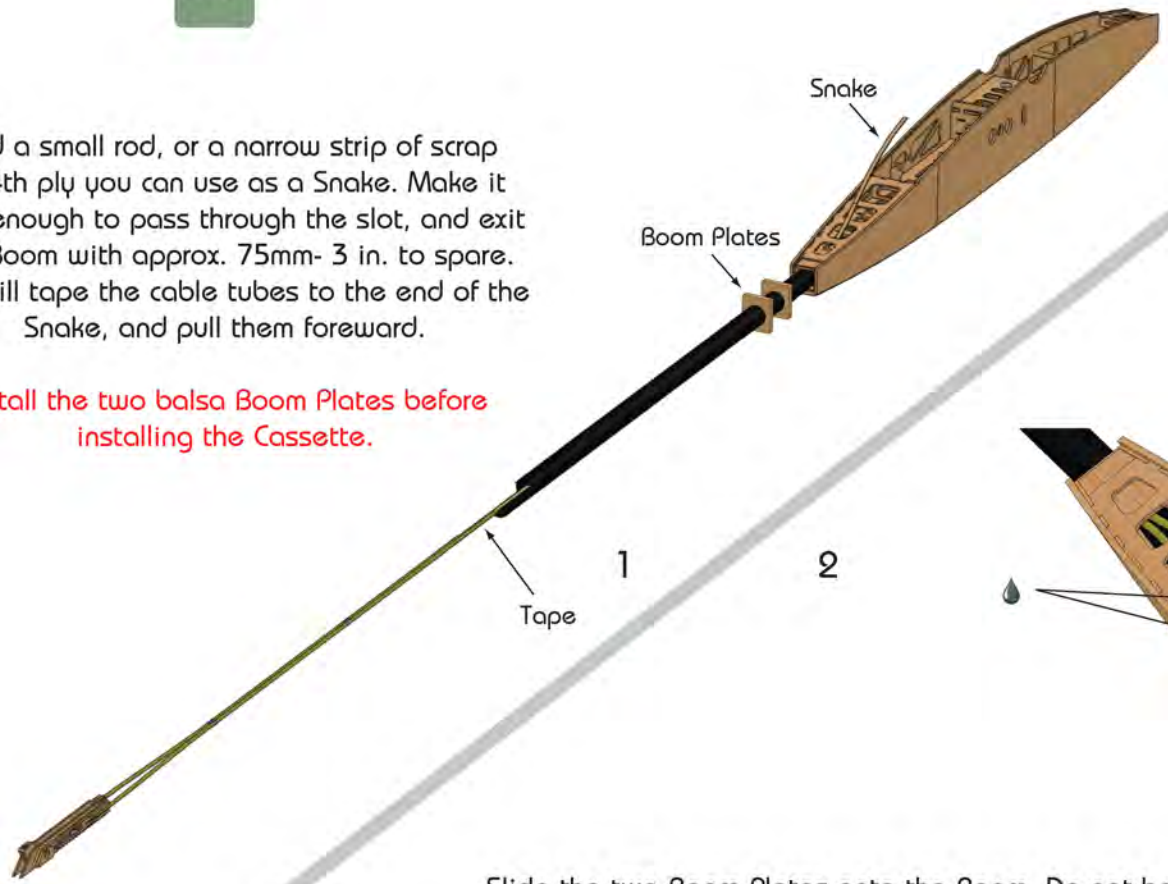
GAP

Install Drive Cassette & Boom Plates

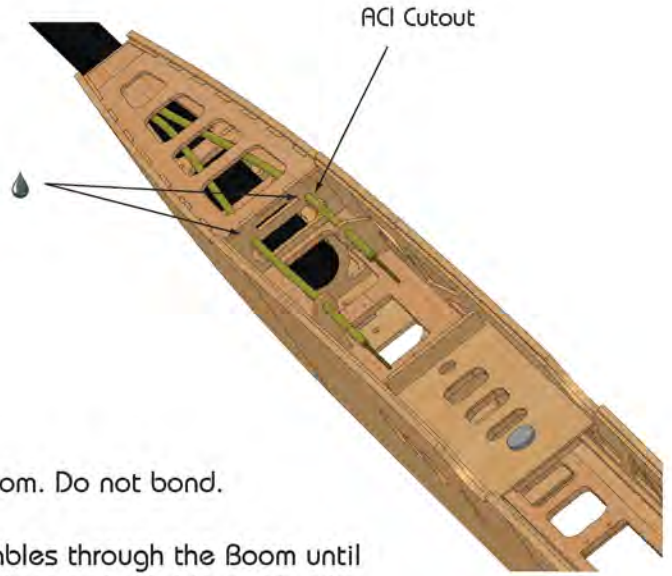
Balsa Boom Plates

Find a small rod, or a narrow strip of scrap 1/64th ply you can use as a Snake. Make it long enough to pass through the slot, and exit the Boom with approx. 75mm- 3 in. to spare. You will tape the cable tubes to the end of the Snake, and pull them foreward.

Install the two balsa Boom Plates before installing the Cassette.



1



2

Slide the two Boom Plates onto the Boom. Do not bond.

Tape the cable ends to the Snake, and pull the cables through the Boom until they exit the foreward slot. Remove the tape, and route the cables under the Aft Ply Cap. Thread the cable tubes through their respective Cable Guides. You'll need to align the Cassette while doing this.

Once the Cassette is fully seated, and the cables are through their guides, seat the cable sleeves into the cutouts on Former ACI. Apply a drop of GAP at the ACI to cable tubes connection, but not at the foreward cable guide.

Z55 Fuselage Group 2.10

Fuselage Pivot Tube

Wing Rod/Tube

Align and install Pivot Tube

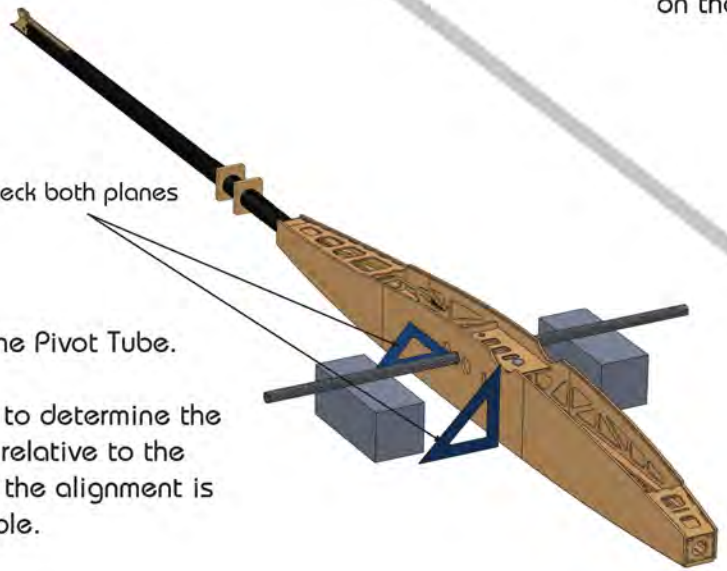
Fit the Fuselage Pivot Tube. It should be a snug fit, but should allow a small amount of adjustment.

1

2

Remove the Pivot Tube and apply a small amount of SLOW or epoxy to the inside contact points in the Fuselage Box, and a thin coating on the outside of the Tube.

Check both planes



Slip the Wing Rod through the Pivot Tube.

Use a square and setup blocks, to determine the alignment of the Pivot Tube, relative to the fuselage. Tweak the Tube until the alignment is as close as possible.

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Fuselage Group 2.11

GAP

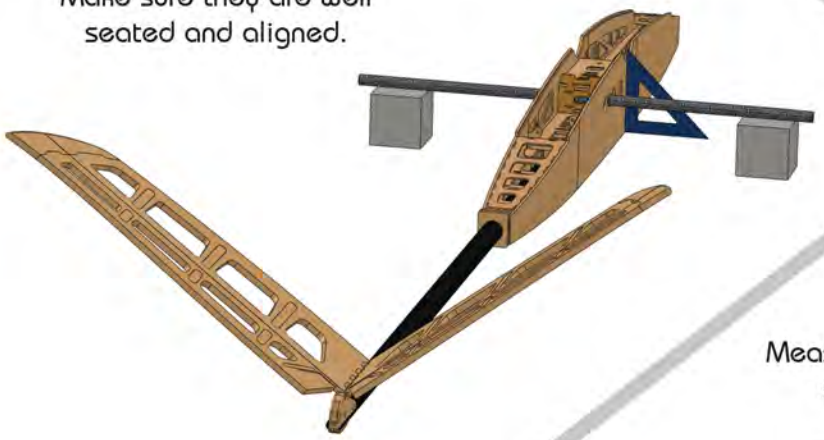
Accelerator

Bond the Cassette

Fit the Stab halves into the Cassette, and press down till seated.

See the setup section for technique.

Make sure they are well seated and aligned.



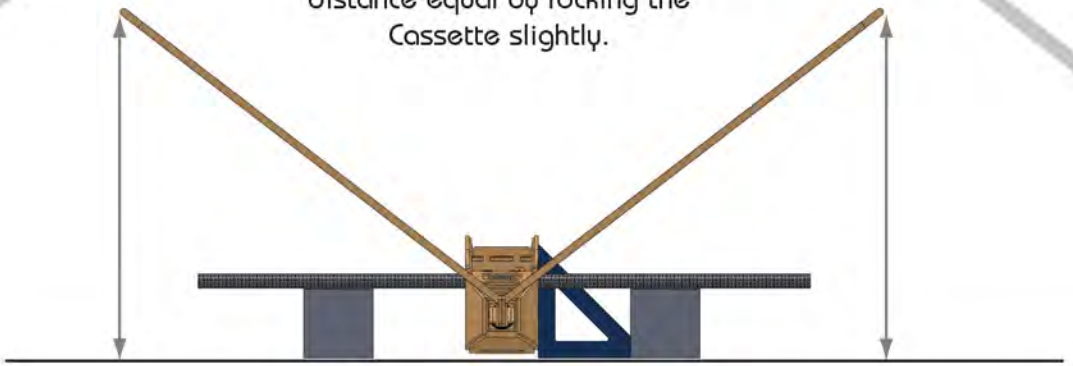
1

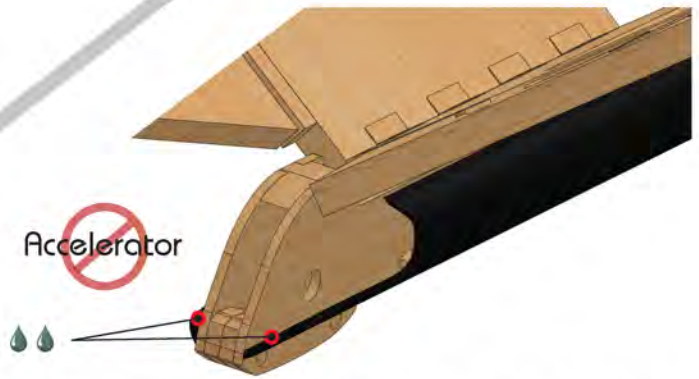
2

3

Measure the distance between the surface and each Stab tip.

Tweak the Stabs to get this distance equal by rocking the Cassette slightly.





Apply GAP to the aft tabs of the Cassette. Allow the GAP to form a strong fillet around the Box Sides, but not wick into the latch area or Drive Plate Guides.

Let fully cure. Do not use accelerator, Remove the Stabs.

Z55 Fuselage Group 2.12

Bond the Cassette

Take care not to wick adhesive into the latch or vertical sides of the Cassette Box while performing the following operations

1

Fit the Gap Plates into the Cassette.

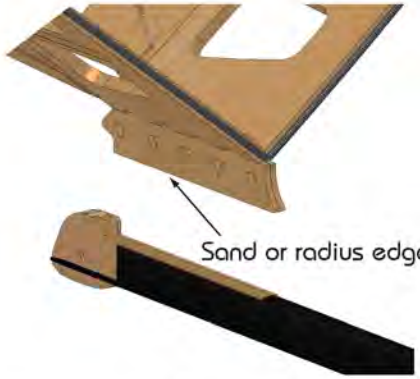
Apply GAP (with a fine applicator) to the indicated red line on both sides, and let it wick slightly into the vertical surface of the Boom.

Work slowly, using the Gap Plates to apply pressure to the joint.

2

With step 1 fully cured, apply a small fillet of GAP at the point of contact between the bottom of the Box Side and Boom. Do both sides, and keep the fillet as small as possible.

Let cure completely. Do not use accelerator



3

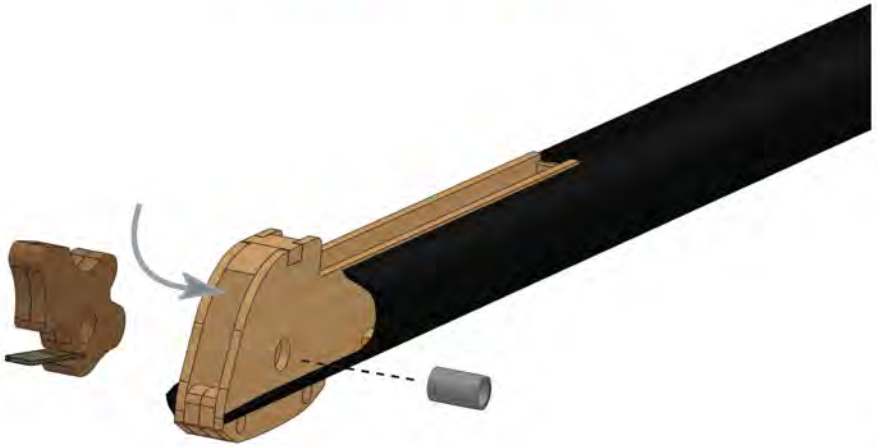
Fit the Stabs again. If they resist or will not seat, check the sides of the Cassette Box for adhesive. If the sides are clean, chamfer or sand a small angle on the bottom outside edge of each Tail Blade.

Z55 Fuselage Group 2.13

Finish the Cassette assembly.

GAP

Accelerator



Set the Tail assembly aside, and move on to the Fuselage build.

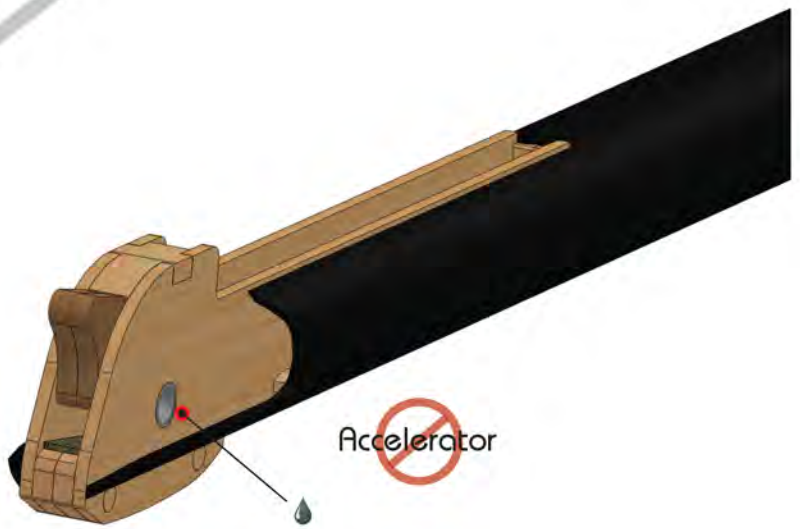
1

Remove the Drive Plates & Gap Plates.

Fit the Latch, and insert the Pivot Tube.

Flush the tube to either Box Side, and make sure the Latch rotates freely.

2



Dab a small amount of GAP where the Tube and Box side flush. Use just enough to form a seal, no more.

Lightly sand both sides with 400 grit, and rub a light coat of wax on the surfaces. Apply wax to the back of both Drive Plates.

Z55

Fuselage Group 2.14

CA GAP

9.5mm - 3/8th in. Magnets

Inner Nose Block Outer Nose Blocks

Balsa filler Discs

Aft Balsa Cap

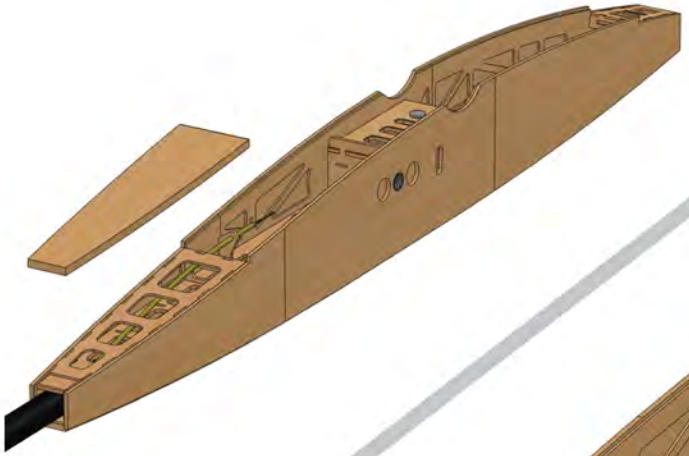
Fore Balsa Cap

Sand the top surfaces of the Side Balsa Caps until they are flush with the fore and aft Ply Caps.

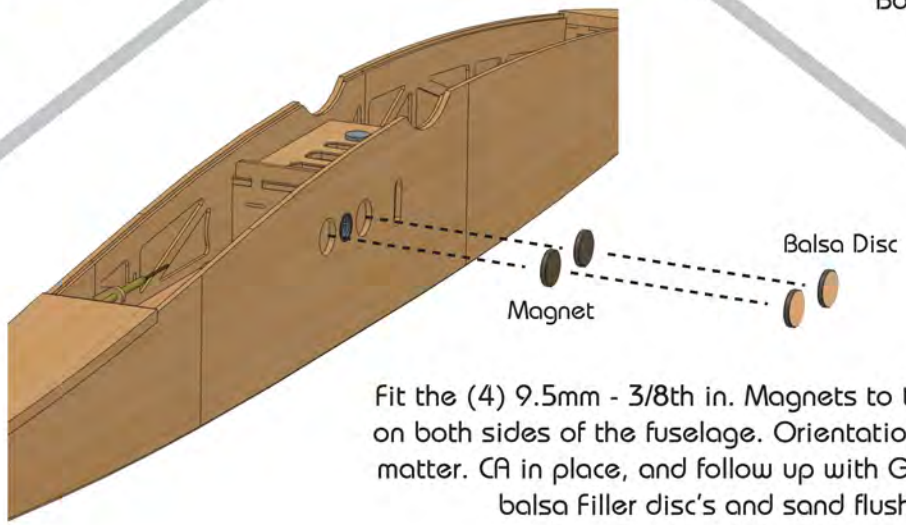
Bond both fore and aft Balsa Caps to the Ply Caps.

Install Balsa Caps & Magnets

1

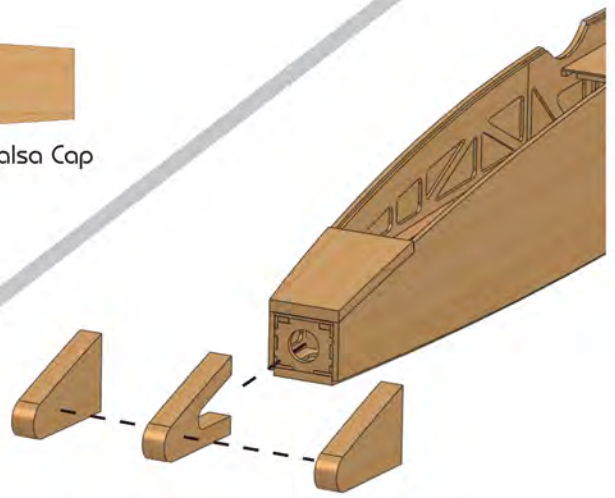


2



Fit the (4) 9.5mm - 3/8th in. Magnets to the bosses on both sides of the fuselage. Orientation does not matter. CA in place, and follow up with GAP. Fit the balsa filler disc's and sand flush.

3



Bond the three Nose Block parts together.

Sand the face of F1 until all Caps are flush.

Bond the completed Nose Block to the Fuselage.

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Z55 Fuselage Group 2.15

Composite Tape

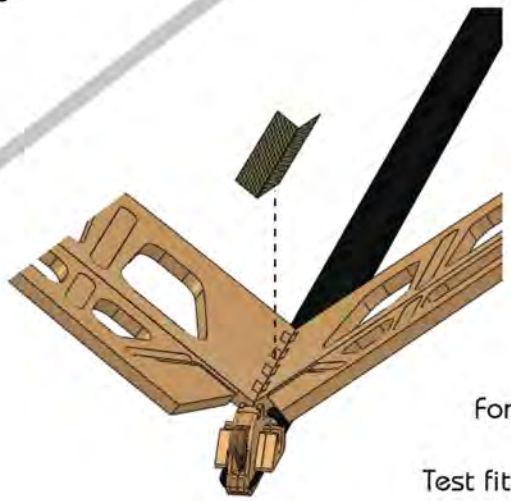
Finish the Stab fit

A 30 minute epoxy is recommended to bond the tape to the Stab halves.

The composite Tape used in the following operation forms a living-hinge. In addition to strengthening the tail assembly, it helps align the stabs when loading and unloading them into the Cassette.

Do not use epoxy or any adhesive that is thin enough to wick into adjacent areas, as it may bond the two Tail Blades together. If you are confident to use release agent, you can apply it to the inside faces of the Tail Blades.

1

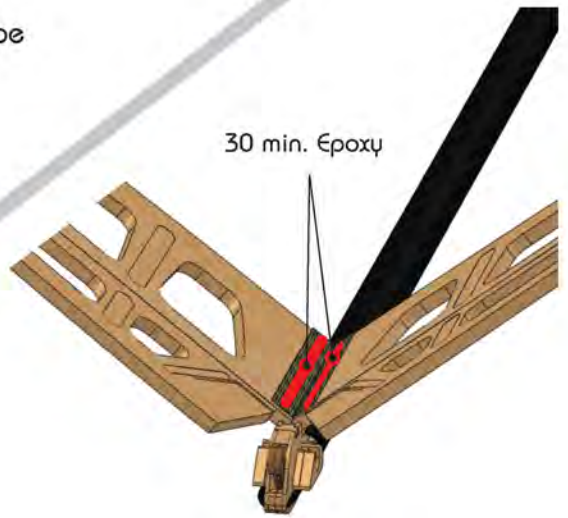


2

Form a crease in the composite Tape.

Test fit the Tape, and when satisfied, smooth the Tape into position.

3



Apply the adhesive in moderate amounts to get a bond to the stabs, without wicking into the gap between the Tail Blades.

If in doubt, remove before full cure. Check that the Stabs hinge, and replace in the Cassette.

Z55

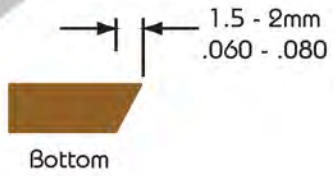
Fuselage Group 2.16

GAP

Elevator Wires

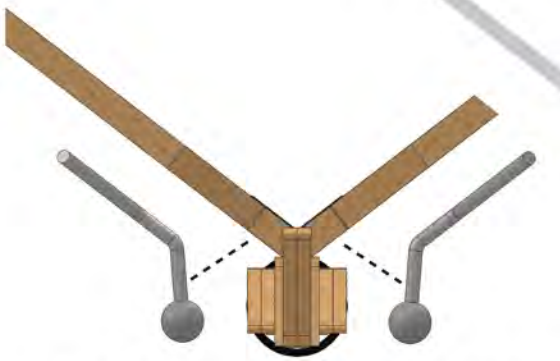
Fit & Bond the Elevator Control Wires, separate and finish the Tail parts

Very little, if any, adjustment of the wire angle should be necessary. Do not attempt this unless you are positive the angle is off.



Sand a chamfer on the bottom foreward edge of the Elevator as indicated.

Do this for both Elevators, finish sand, and cover.



1

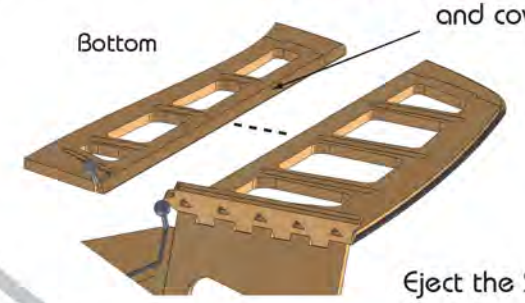
2

3

Load the Latch, its Pivot Tube, and the hinged Tail assembly.

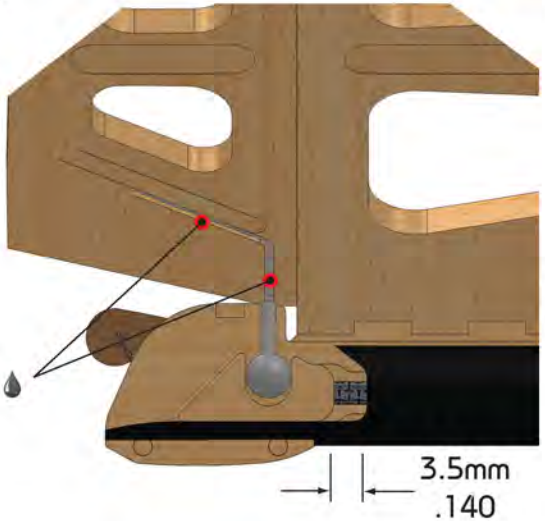
Set the balls into the Drive Plate slots (cups), and press the wires into their respective slots in the Elevator.

Tweak the wires until they rest evenly in the cups.



Eject the Stab assembly, and separate the Stab from the Elevator, by cutting along the laser kerf.

Follow up on the Wires with GAP, to form a good fill and fillet around the Wire to Elevator connection.



With the Drive Plates in the position indicated, the wire should drop vertically from the Elevator, as shown.

Apply GAP to both sides of the Elevator as indicated. Only enough to lock the position.

Do not drip or wick adhesive onto the Drive Plate.

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Z55 Fuselage Group 2.17

CA GAP

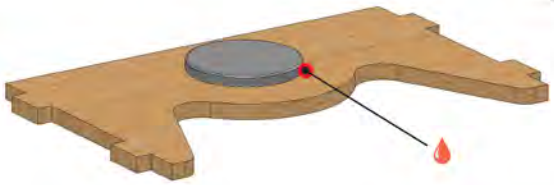
Fore Canopy Ply Cap

Fore Canopy Side Frame

FIPF AMP FCB2 FCB1

6.35mm - 1/4 in. Magnet

Foreward Canopy Build



Determine the proper magnet orientation. Find the attractive side by testing it on the mating magnet on the Upper Drive Frame. Mark the side facing up. This side will face up in the AFP part above.

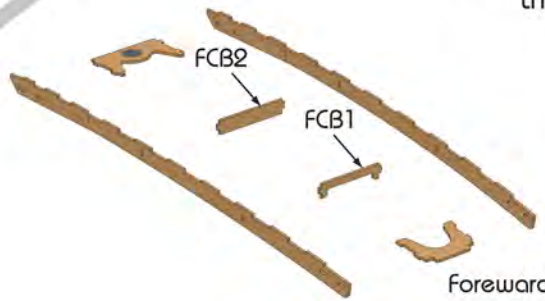
Lay the Aft Magnet Plate on a flat surface. Fit the magnet flush with the work surface, and inside the laser marking. CA the points of contact.

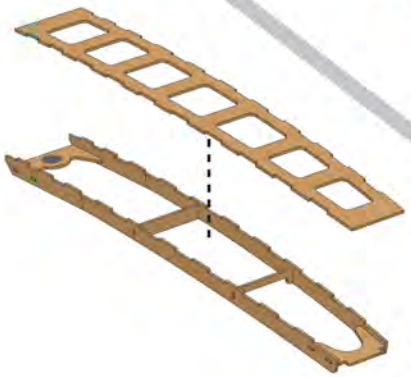
1 3

2

Tack the assembly together, starting with the main framework.

Fit and Tack the Ply Cap to the frame.

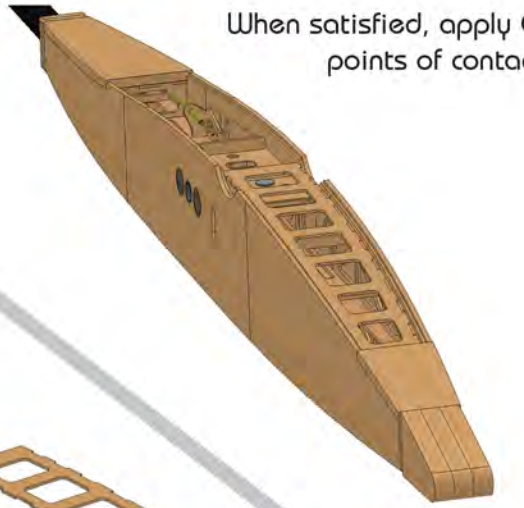




Tweak the frame until it sits flat and square in the fuselage.

If needed, sand the sides of the frames to get equal clearance on both sides.

When satisfied, apply GAP to all points of contact.



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Fuselage Group 2.18


Aft Canopy Ply Cap


AIPF


FMP

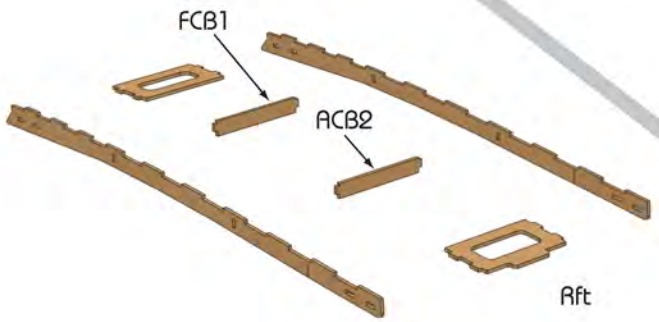

ACB2


ACB1


Fore Canopy Side Frame


Aft Balsa Cap


Foreward Balsa Cap



Aft Canopy Build, Balsa Cap bonding

Fit the Grip Tabs to the Foreward Canopy frames. GAP in place.

See the end of this section for the ePower & LiPo options.

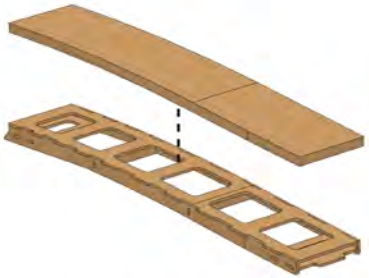
Sand the entire fuselage. There is ample material to radius the top and bottom, but do not remove material from the sides.

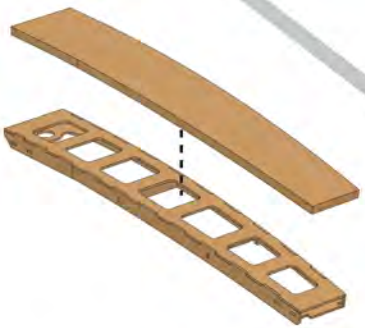
Follow the same procedure to assemble the Aft Canopy.

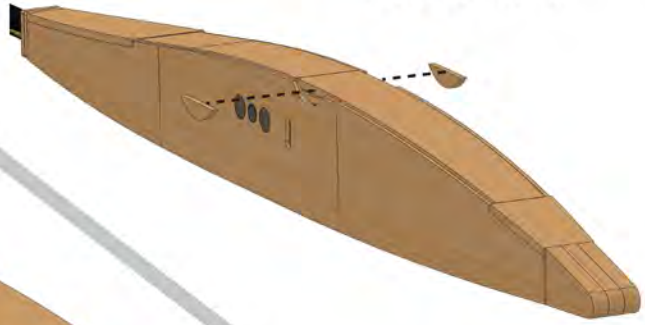
1

2

3







Bond the Balsa Caps to the Canopy frames. They are cut to close tolerance, so take care to align them properly. Use SLOW or epoxy.

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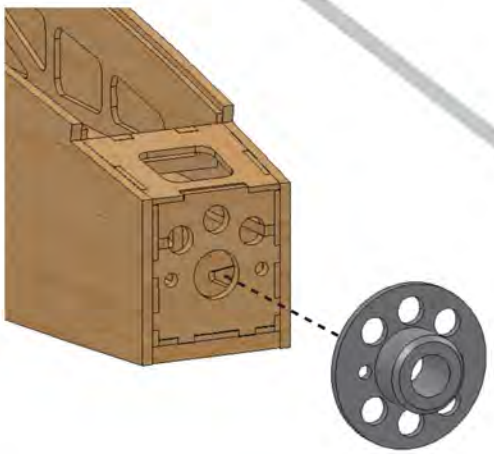
Fuselage Group 2.19

ePower option

The Z55 has been designed to handle brushless motors up to 100 watts. It is recommended to use the "Specialty Brushless compact 380" unit shown, as performance and power consumption are very well balanced.



1

Fit the motor mount by either fastening with screws. Alternately you can use CA & GAP, or epoxy. Once the balsa Caps are fit, all four quadrants of the mount can be bonded, eliminating the need for fasteners.

3

Sand the face to prepare it for the Motor Ring. Test fit the Ring and motor. Center the ring to the spinner perimeter, and mark the face.

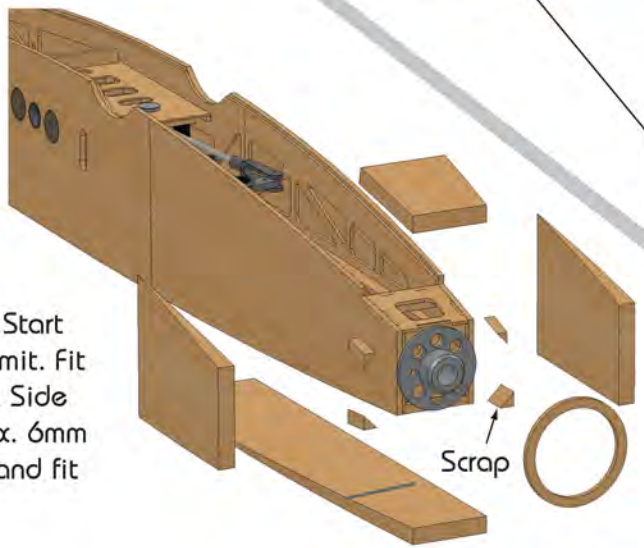
Remove the motor, align the Ring, and CA in place. Follow up with GAP.

Finish sand the fuselage.

Mark perimeter

2

Fit the large balsa blocks to the fuselage. Start with the Top Cap to establish the forward limit. Fit the Bottom Cap next, noting the laser line. Side Caps next, Then cut some scrap balsa approx. 6mm x 6mm - 1/4 x 1/4in., to use as filler blocks and fit to the inside corners of the Caps.



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Fuselage Group 2.20

LiPo battery option for sailplane & Rx door assembly

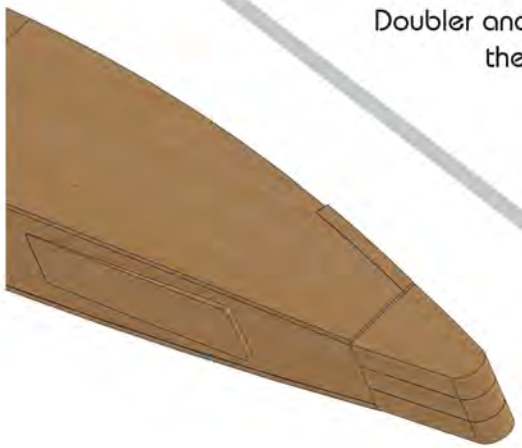
This option will allow the use of small 2S lithium polymer pacs. With the recommended 800ma 2S "FlightPower" unit, the "Compact 380" with a "Castle Creations Thunderbird 9", gave (25) 10-second, full power bursts. In the sailplane version, you can expect approx. twice the reliable flying time compared to the NiMH pac.

Your times may vary.

1

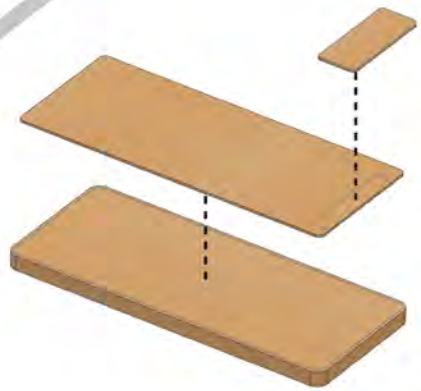
Refit the Bottom Cap cutout, so that the aft end is flush to the Bottom Cap, and the foreward end is pushed away from the surface the indicated distance.

2



Sand the protruding end flush.

3



Fit the Rx Door Doubler to the balsa Rx Door. Note the laser lines. CA in place.

Fit the Indexing Tab to the Rx Door Doubler and CA in place. Again, note the laser perimeter.

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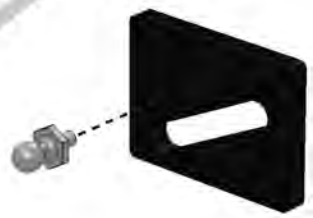
Z55 Fuselage Group 2.21

Drive Plate Ball Link

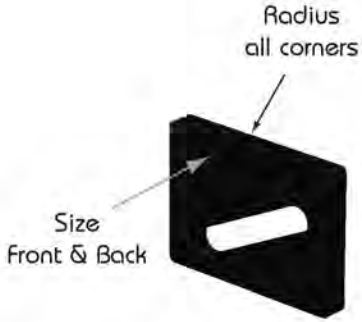
Drive Plate preparation

Proper preparation of the Drive Plates is essential to smooth and reliable operation



Screw the Ball Link into the hole in the Drive Plate. Tighten till snug, and no more.

Reverse the side for the second Plat/Ball assembly.

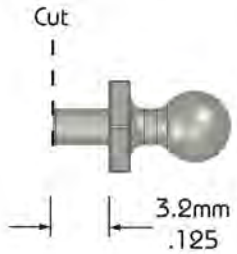


Lay a sheet of 400 grit sandpaper on a flat surface. Rub the Drive Plate on both sides to remove surface inconsistencies.

Lightly radius all sharp corners, especially the top and bottom.

1 3

2



Cut both Ball Links to the length indicated. Deburr the end so it will thread into the Drive Plate.

Fit the Plate into the drive slots in the fuselage, and try to slide it aft. If its snug, it is most likely the thickness. Inspect the upper surface where it engages with the slots. There are likely shinny marks, indicating the plate needs to be slightly thinner. Sand again on the flat surface, and radius the corners top and bottom. Smooth action is more important than slot width. If the slot is too close a fit for the Drive Roller (Tube), the drive may stall under high wing loadings. Intuitively, you might think that any play, or slop in the slot, will cause inaccuracies in the drive, or induce a vibration. However, the drive is under a slight preload, and the Drive Roller, favors one side of the slot or another under most conditions, depending on the dynamic load. Concentrate on smoothing the action, while taking care to only remove enough material to achieve that goal.

Z55

Fuselage Group 2.22

Socket Threaded Rod

Fit Drive Plate assemblies

Right Roll shown

HS-65MG

0.39 - 0.43 in.
10 - 11mm

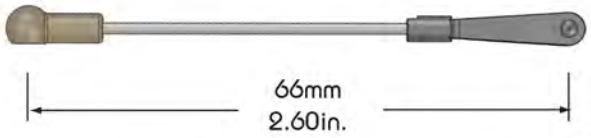
Parts of the fuselage have been removed to clarify operation.

Possible collision

44mm
1.75in.

Before connecting the servo arms, reduce the travel of the servo's in the Tx programing. This will limit the possibility of collision between the arm and rod.

Later, you will program the travel to guidelines.

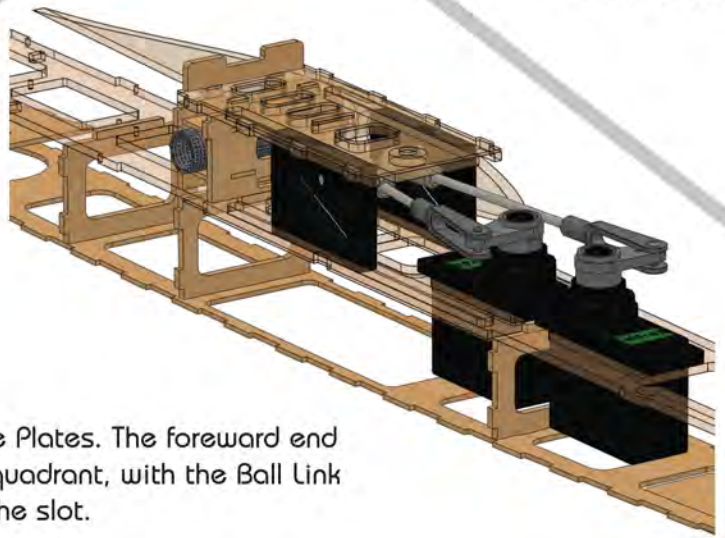


66mm
2.60in.

Fit the clevis, rod and socket, and adjust the clevis to Ball distance as indicated.

1 3

2



Note the orientation of the Drive Plates. The foreward end of the drive slot is in the lower quadrant, with the Ball Link foreward of the slot.

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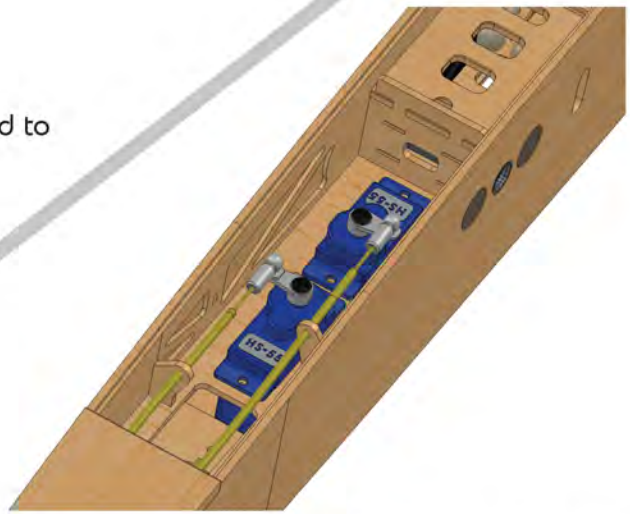
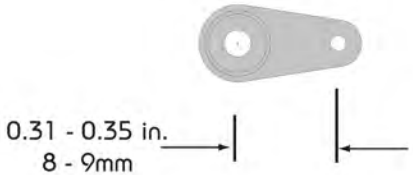
Fuselage Group 2.23

Fit Ruddervator linkage

Parts of the fuselage have been removed to clarify operation.



HS-55



Before connecting the servo arms or linkage, reduce the travel of the servo's in the Tx programing to 50%. This will limit the possibility of collision of the drive cassette components.

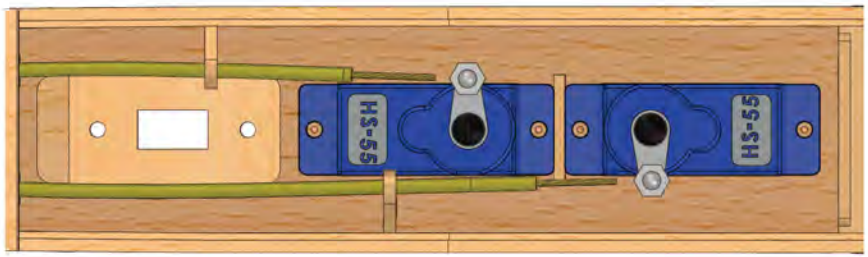
1 3

2

Center the servo arms.

Wick a small amount of CA into the Socket cavity, and fit it to the cable. Immediately snap the Socket onto the Ball, and turn the Socket square to the servo arm.

Test fit the Sockets to determine proper cable length. With the servos centered, and the Drive Plates in the Cassette centered, cut the cable if needed.



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Z55 Wing Construction

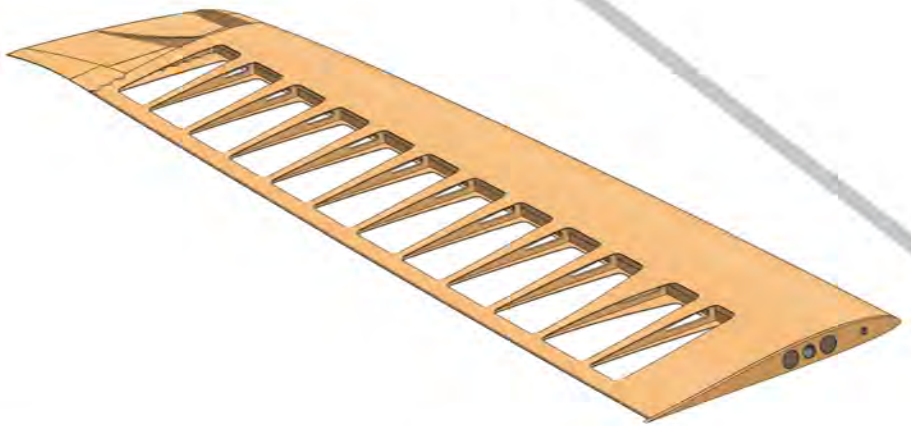
Before you can build the Wings, you will need to lightly sand all surfaces to remove burrs and laser cutting residue. Use no coarser than 320 grit for all sanding and blocking. A small blade file will help in some operations.

What you will need;

1. 320-400 grit high quality sandpaper

2. A small blade flat file approx. 2mm x 6mm

3. Clamps and rubber bands



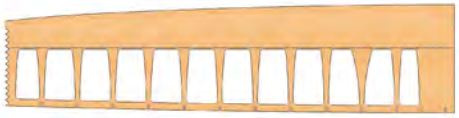
Click on the button to start the eDrawings application for 3D viewing of the assembly.

If you have difficulty starting the application, you can navigate to the "3D" folder on the DVD, and either;

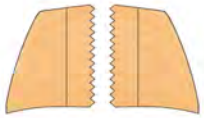
1. Start the executable file "3D_Wing_Z55_V2.exe"
or
2. If you have eDrawings already installed, open the file "3D_Wing_Z55_V2.easm"
or
3. Install the eDrawings application and open the easm file

The latter two choices will allow viewing the assembly in color, and is preferable.

Z55 Wing Construction 3.1


Bottom Skin


Top Skin


Bottom Extension


Top Extension

Prepare a building board with a sheet of wax paper, or other non-stick medium.

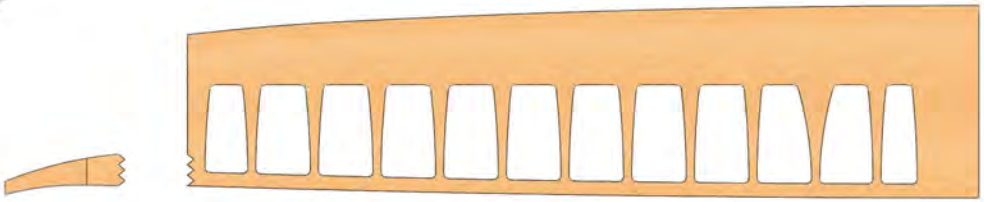
Decide which wing skins will be left and right. Inspect, and select each side to determine the best surface. Mark with a pencil.

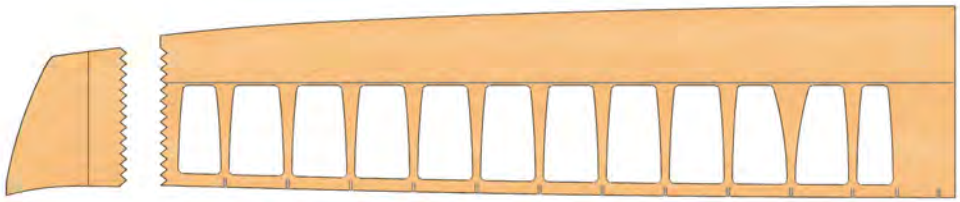
Pin the Wing Skins to the building board, and follow up by mating and pining the Extensions.

Wipe enough SLOW, or 30 minute epoxy along the matching sawtooth line to fill any gaps, and let cure. Clean up any excess adhesive.

Pre bond the skins

1





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Wing Construction 3.2

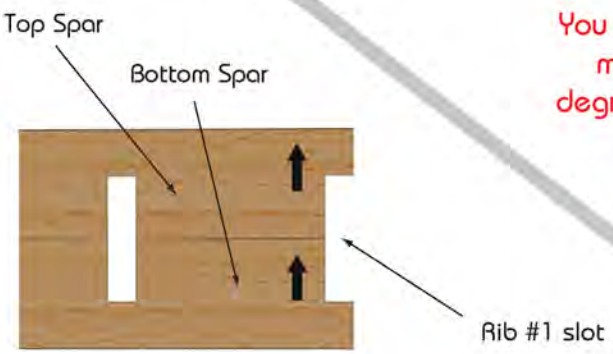
Z55

Accelerator

Lay the Spar

Lightly sand all parts

You may choose to build the wing using specialized methods. If so, tip washout should be set at 1 degree. The following method allows for washout to be set during covering.

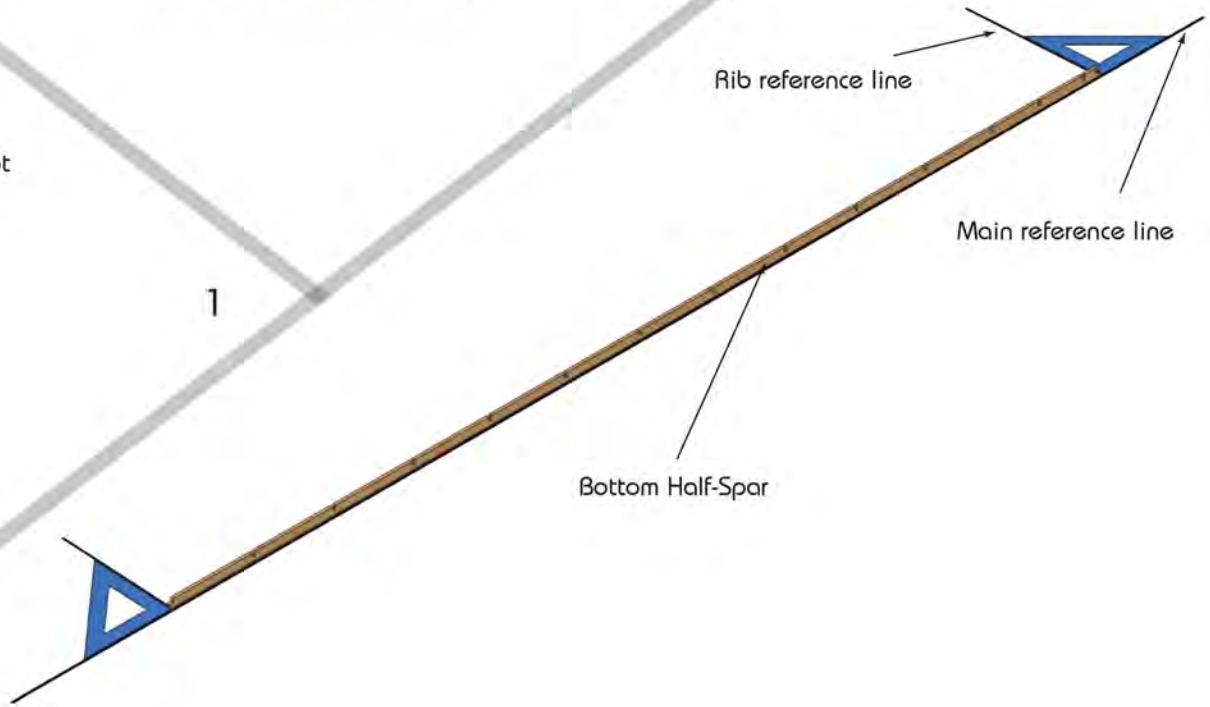


Each wing utilizes a single ply Spar. Each Spar is made up of two half-spars. These half-spars are laser marked with an arrow, at the Rib-1 location.

You will start out by selecting a bottom half-spar, and build from there.

Remember to build Left and Right wings.

1



Prepare a building board with a sheet of wax paper, or other non-stick medium.

Using a permanent marker, draw a line approx. 75cm - 30 in. long. This will be the main alignment reference for framing the superstructure.

Lay the bottom Spar on the line, and using a square, draw a line perpendicular to the main reference line. Do this for both ends of the Spar. Ribs 1 & 15 will align to these lines.

Z55 Wing Construction 3.3

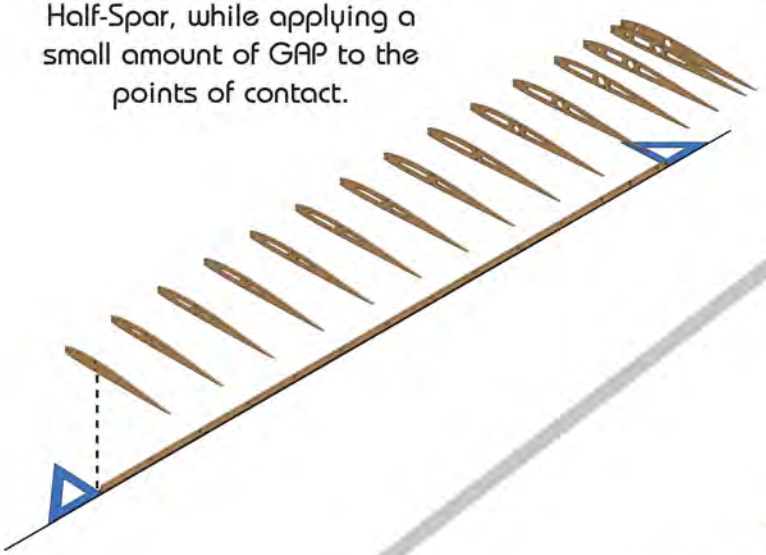
Install the Ribs

Lightly sand all parts

Use modest amounts of adhesive in the following steps. All joints are to be tacked at this time.

Fit Ribs 1-15 into their respective slots. Both Ribs 1&15 will not be fully captured.

Use the right angle tool to square each rib to the Bottom Half-Spar, while applying a small amount of GAP to the points of contact.



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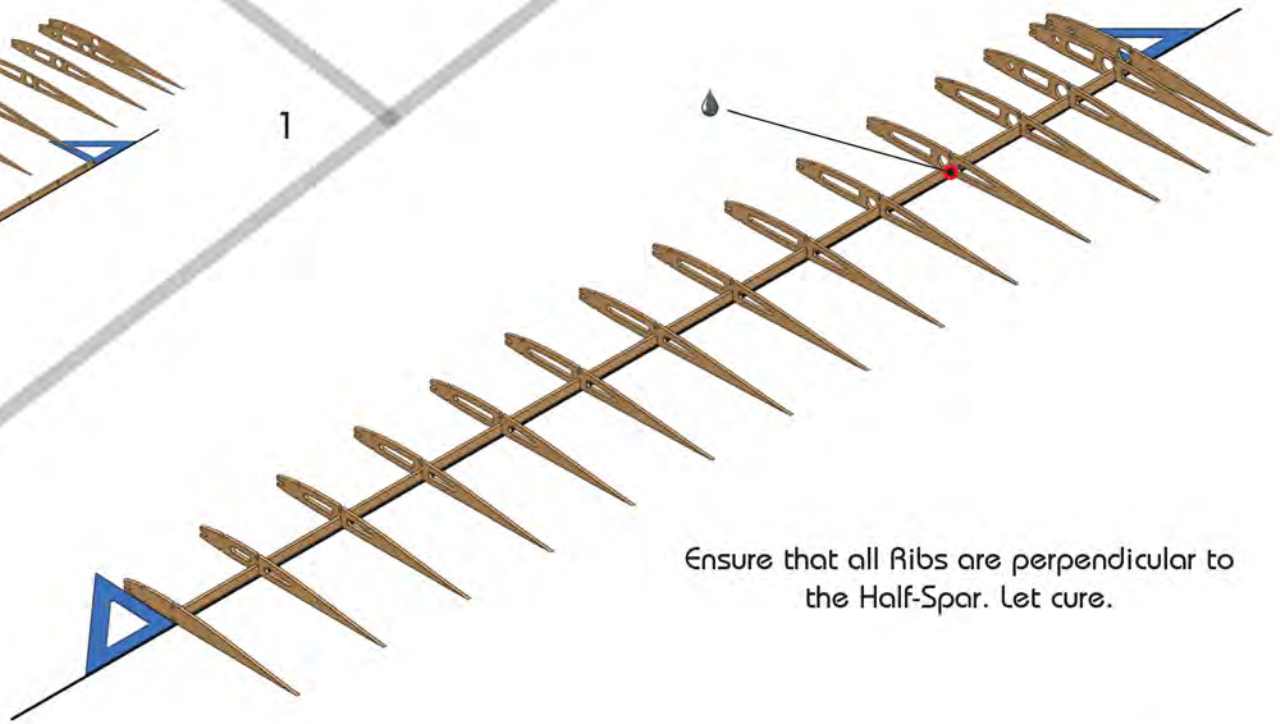


Ensure that all Ribs are perpendicular to the Half-Spar. Let cure.

Z55 Wing Construction 3.4

Accelerator

Lay the Top Half-Spar

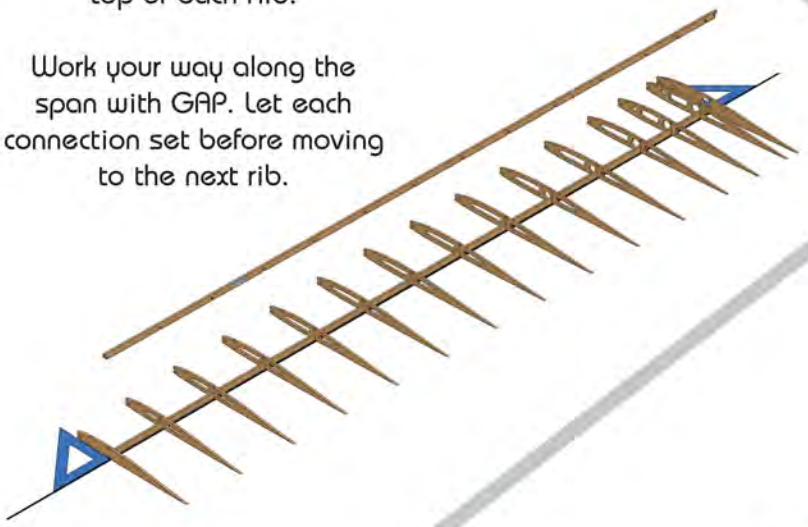
Lightly sand all parts

Use modest amounts of adhesive in the following steps. All joints are to be tacked at this time.

Fit the Top Half-Spar, taking care not to snap it. Lay it into the slots from root to tip, working each connection with a light touch.

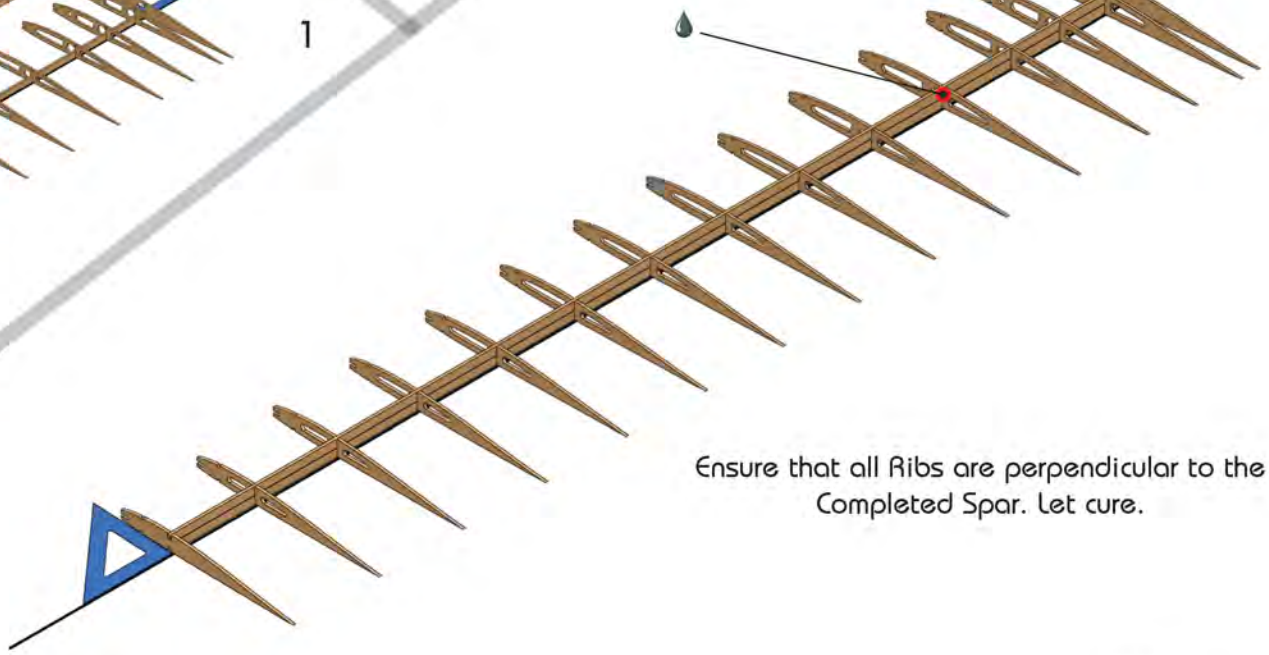
Check that it flushes with the top of each Rib.

Work your way along the span with GAP. Let each connection set before moving to the next rib.



1

Up arrow at root



Ensure that all Ribs are perpendicular to the Completed Spar. Let cure.

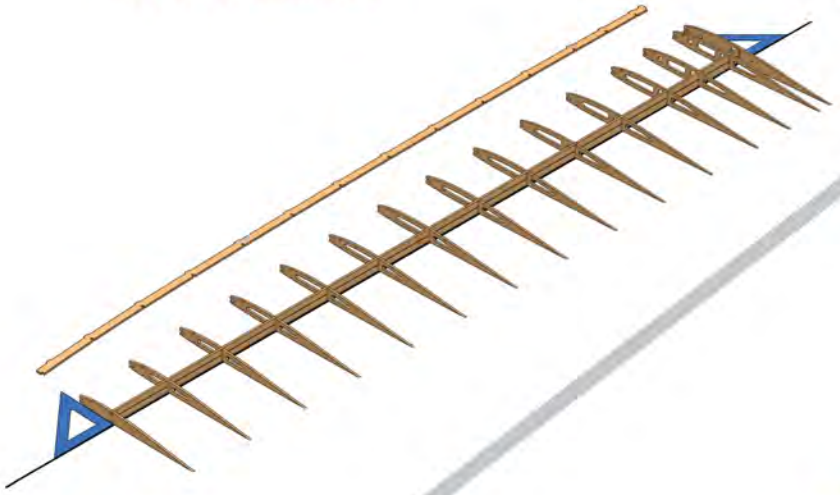
Z55 Wing Construction 3.5

Fit the Sub-LE

Lightly sand all parts

Fit the Sub-LE, working from root to tip. Ensure that each connection is fully seated.

Not not use adhesive



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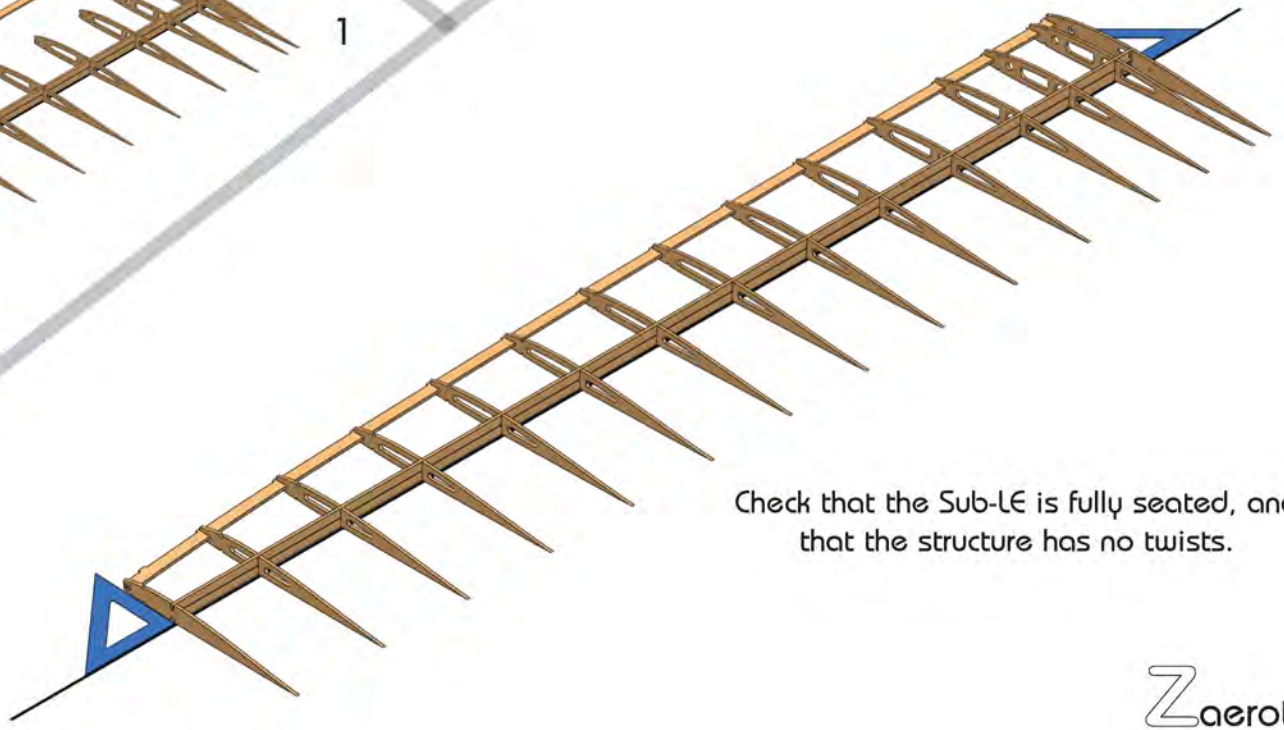


Check that the Sub-LE is fully seated, and that the structure has no twists.

Z55 Wing Construction 3.6

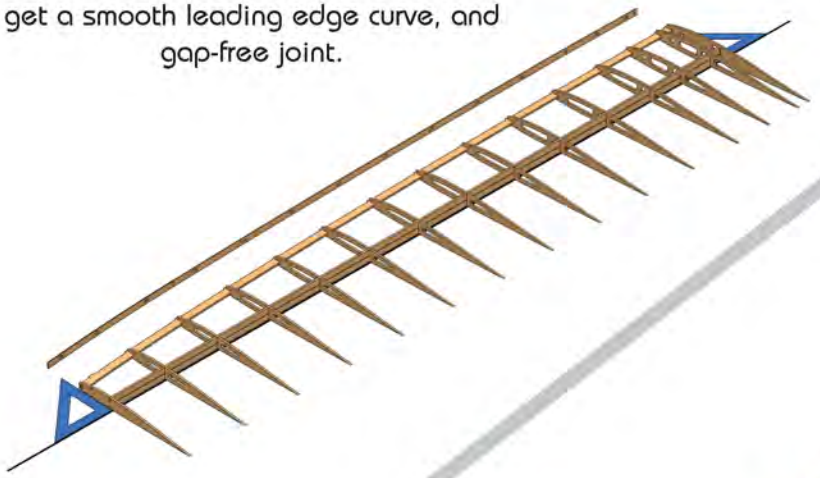
Install the Sub-LE Cap

Lightly sand all parts

Use modest amounts of adhesive in the following steps. All joints are to be tacked at this time.

Fit the Sub-LE Cap, Engage each tab into the slot from root to tip.

The Cap should contact each Rib. The relation between the Cap, Sub-LE and Rib can be tweaked a bit, in order to get a smooth leading edge curve, and gap-free joint.



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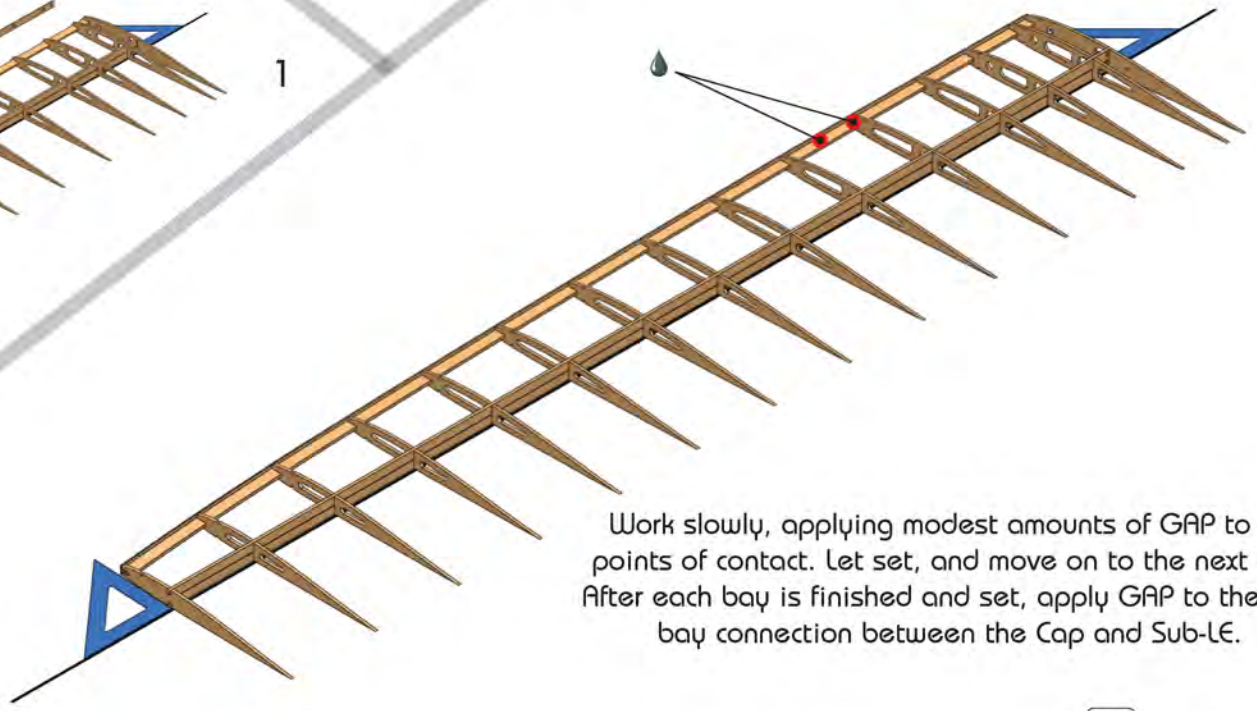


Work slowly, applying modest amounts of GAP to all points of contact. Let set, and move on to the next Rib. After each bay is finished and set, apply GAP to the mid bay connection between the Cap and Sub-LE.

Z55 Wing Construction 3.7

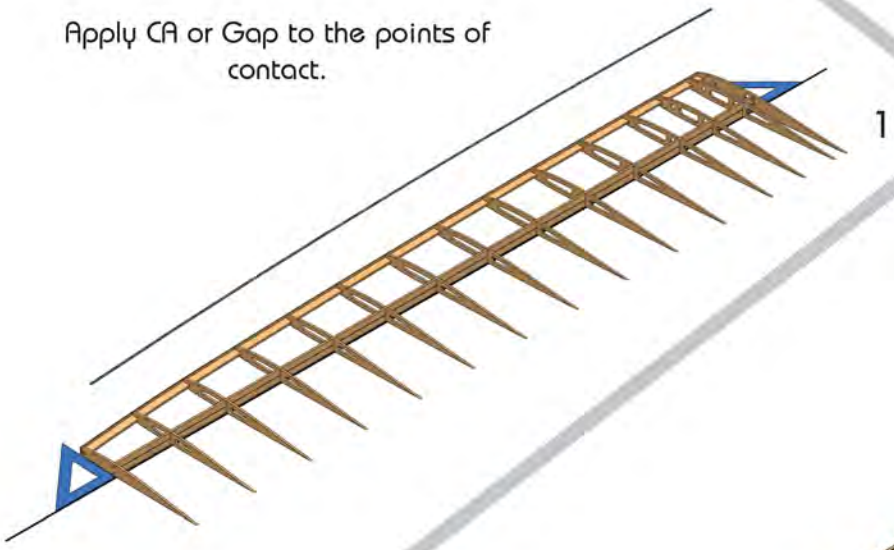
Install the Top & Bottom Stringers

Lightly sand all parts

Use modest amounts of adhesive in the following steps. All joints are to be tacked at this time.

Fit the Top Carbon Stringer. Check that it flushes to the top of the rib. Use a small round file to adjust the cutout if needed.

Apply CA or Gap to the points of contact.



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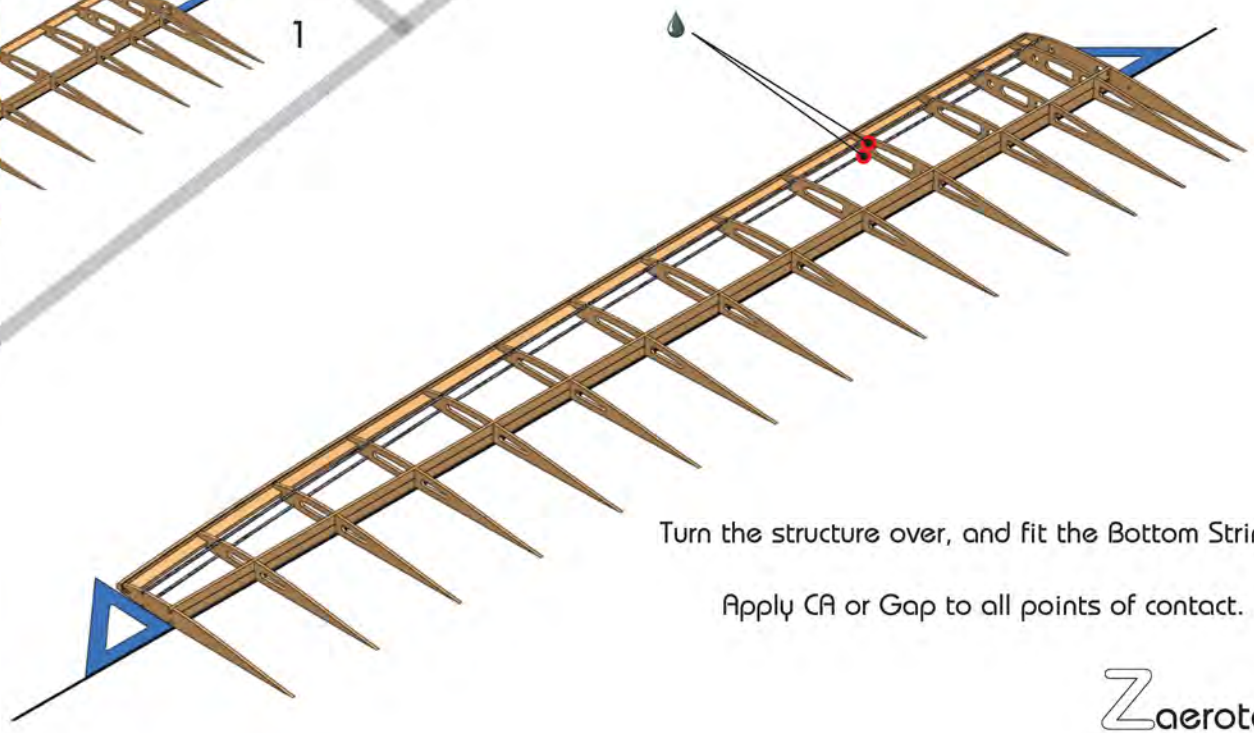

Turn the structure over, and fit the Bottom Stringer

Apply CA or Gap to all points of contact.

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Z55 Wing Construction 3.8

Accelerator

Install the Balsa LE Sub-Cap

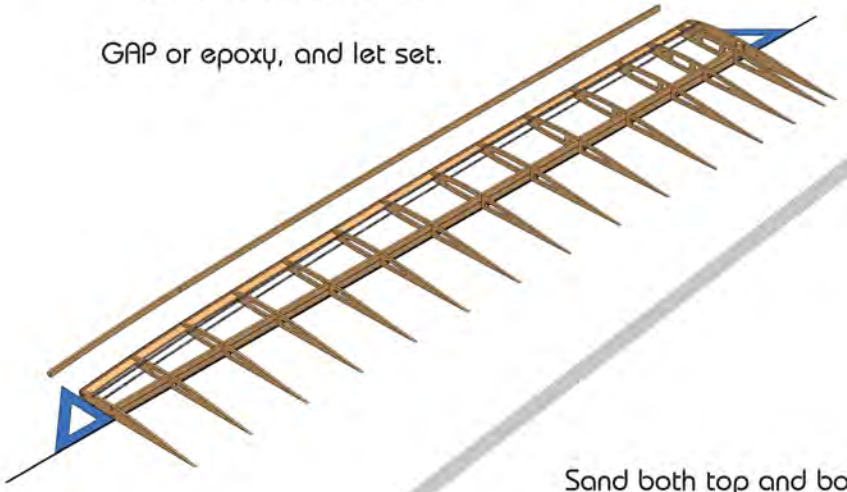
Lightly sand all parts

Use modest amounts of adhesive in the following steps.
All joints are to be tacked at this time.

Fit the Balsa LE Sub-Cap, noting the laser marking with an arrow pointing to the root.

Align the Cap very carefully, matching the LE Cap's profile.

GAP or epoxy, and let set.



1

Sand both top and bottom of the Balsa Cap, to approximate an extended curve of the foil/rib section.

Take care not to sand flats into the Cap between Ribs. This will cause scalloping. You want to sand a natural curve that will allow the Wing Skin to bond, and form a smooth, fair curvature. The same technique and attention you will give the leading edge is important.

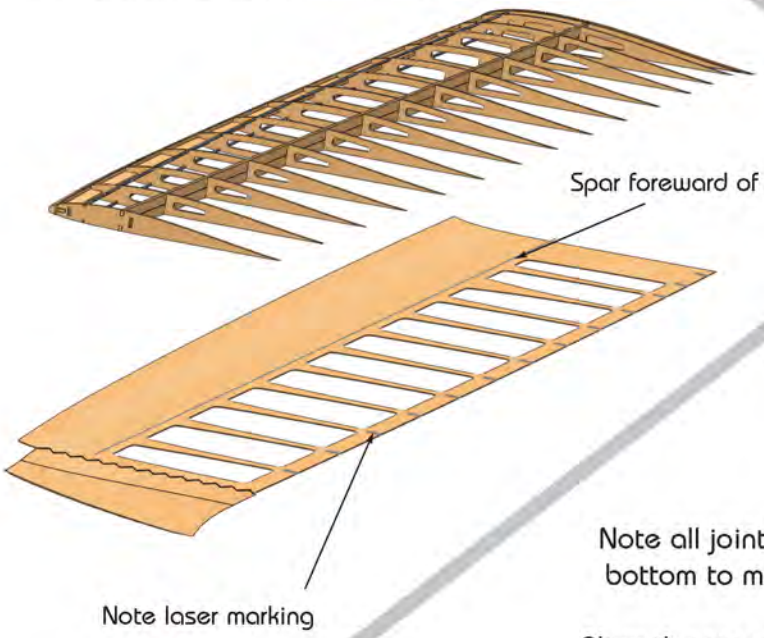
Z55 Wing Construction 3.9

Install the Bottom Wing Skin

Lightly sand all parts

Use modest amounts of adhesive in the following steps.
All joints are to be tacked at this time.

Test fit the structure by laying it on the Bottom Wing Skin. Align it to the laser markings, with the Spar foreward of the spanwise line.



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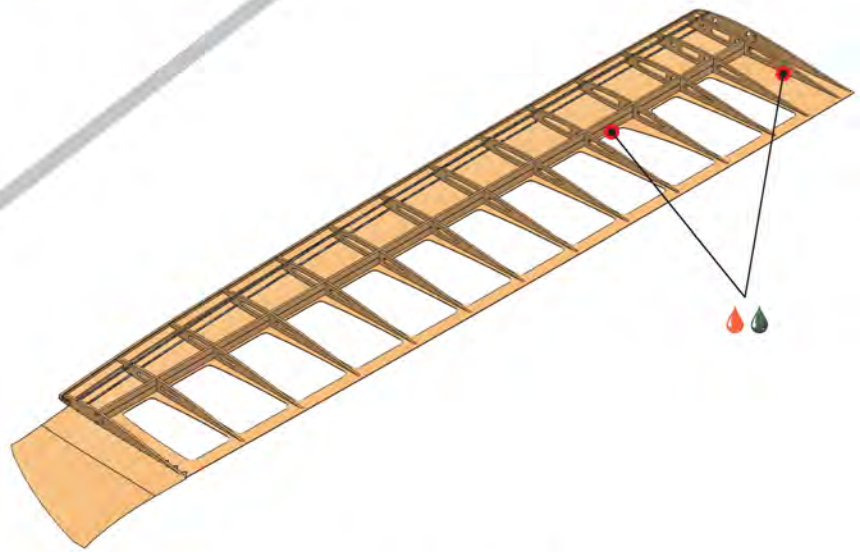


Note all joints on the bottom surface of the structure. Lightly block-sand the bottom to make sure the Ribs, Spar and Stringer are flush with each other.

Align the structure on the Bottom Wing Skin, and Tack the aft end of Rib #1 to the Skin. Tack only up to the Spar, and make sure it is flush with the fuselage edge of the Wing Skin.

Move to Rib #2, and Tack it as well. Move toward the tip, always checking ahead. You can use pins or setup blocks to hold proper alignment. Tack the Spar between each set of bonded ribs as you go.

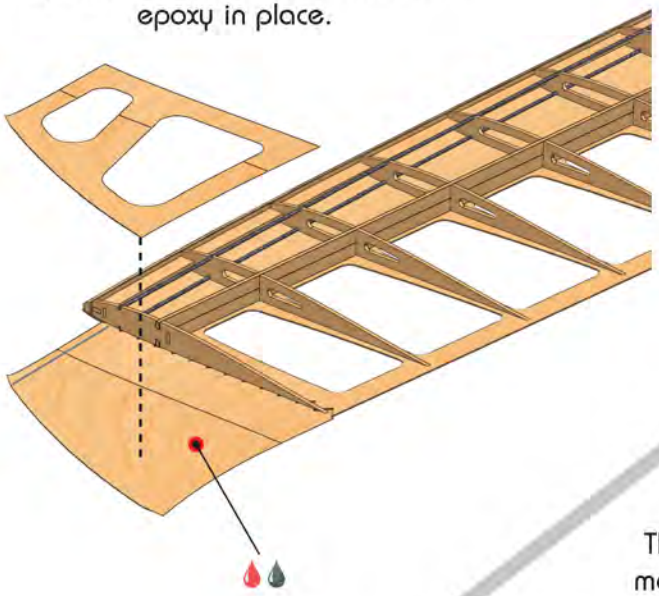
Z55 Wing Construction 3.10

Accelerator

Install the Tip Doubler & foreward Skin bonding

Lightly sand all parts

Fit the Tip Doubler, noting the laser line. Bring the foreward edge of the Doubler up to this line, and butt the inside edge up against Rib #15. CA, GAP, or epoxy in place.



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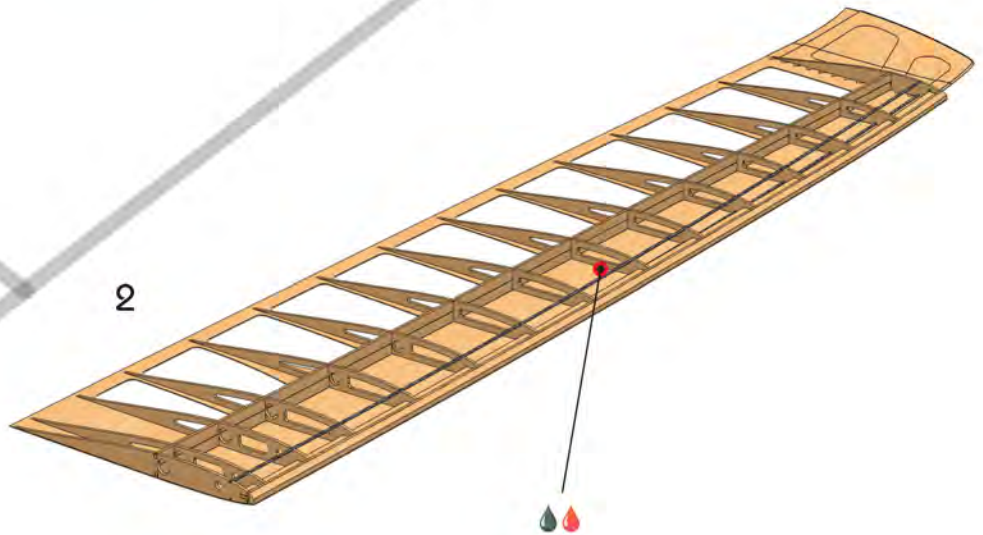


2

There are many methods for attaching the foreward Wing Skin. One popular method is to pin the wing down, with the pins aft of the Spar. Then space up the foreword edge of the skin until it contacts the Ribs and balsa Sub-LE. Another is to use clamps or clothespins to clamp the skin against the Sub-LE.

Regardless of the method you use, be careful not to apply pressure too far aft of the Sub-LE, or between Ribs, as you will cause scalloping of the Skin.

Use SLOW, GAP or epoxy to bond the Skin, Stringers and Sub-LE. Work from the middle out to the Tip and Root. Work slowly and make sure the skin fully contacts the Ribs without gaps. Work one bay at a time.

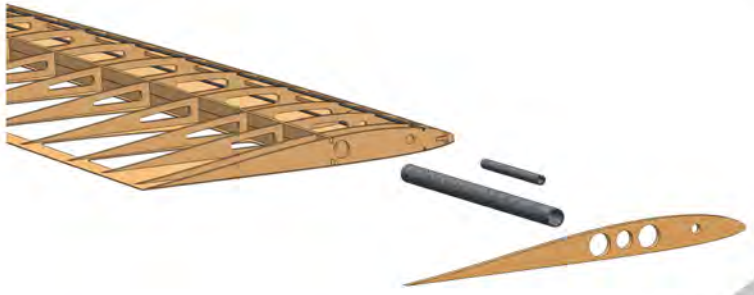
Z55 Wing Construction 3.11

Accelerator

Install the Pivot Tube, Drive Tube & Sub-Spar

Lightly sand all parts

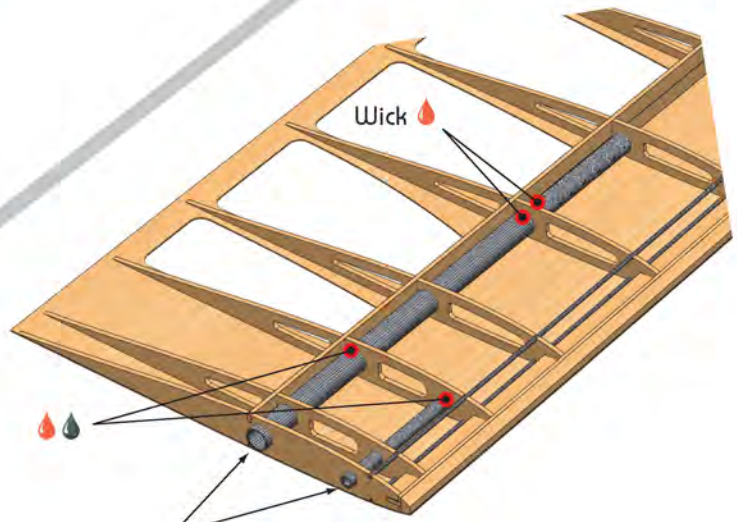
Fit the Pivot Tube and Drive Tube. Use the Balsa Rib Cap as a gauge for spacing the ends of the tubes out from Rib #1.



1

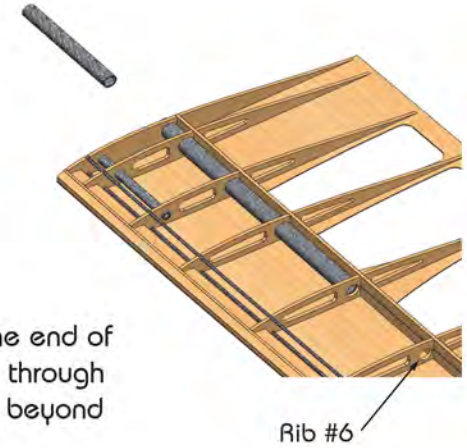
Do not glue the Balsa Rib Cap

2



Wick a moderate amount of CA into the Pivot Tube to Sub-Spar connection at Rib #5. Then CA all points of contact between the Tubes and Ribs.

Follow up by applying GAP to all points of contact in the entire assembly, to form a final bond before installing the Top Wing Skin.



Insert the Sub-Spar through the end of the Pivot Tube. Pass the end through Rib #6 approx. 6mm - 1/4 in. beyond the Rib face.

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Z55 Wing Construction 3.12

Accelerator

Install the Top Skin

Lightly sand all parts

There are several ways to bond top skins. The preferred method is to use a slow curing adhesive applied to all points of contact, then using clamps and soft weights to apply light pressure to the skin while curing.

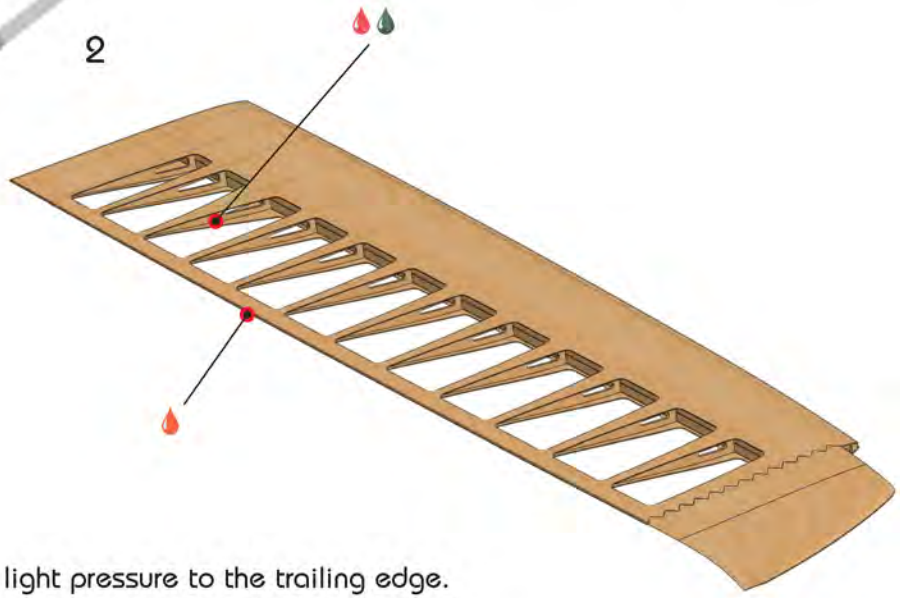
The method here is a bit primitive, but does work.

Lay the assembly on top of the Top Wing Skin. Note the laser line inboard of the trailing edge. Bring the Bottom Wing Skin's trailing edge up to the laser line, and make sure the root edge of the skin is flush with Rib #1.

1

2

Rolling the wing forward, Tack the skin where it contacts the Ribs and Spar. Work slowly from the middle, and make sure the ribs make full contact as you bond them.



Once the assembly is aligned, apply light pressure to the trailing edge. Bond the two skins together along the edge of the Bottom Skin, where it rests on top of the Top Skin.

Z55 Wing Construction 3.13

Accelerator

Install the Top Skin & Tip treatment

Lightly sand all parts

There are several ways to bond top skins. The preferred method is to use a slow curing adhesive applied to all points of contact, then using clamps and soft weights to apply light pressure to the skin while curing.

The method here is a bit primitive, but does work.

Using a long application nozzle on your slow cure adhesive, apply an adequate amount of adhesive to all Ribs, Stringer and Sub-LE.

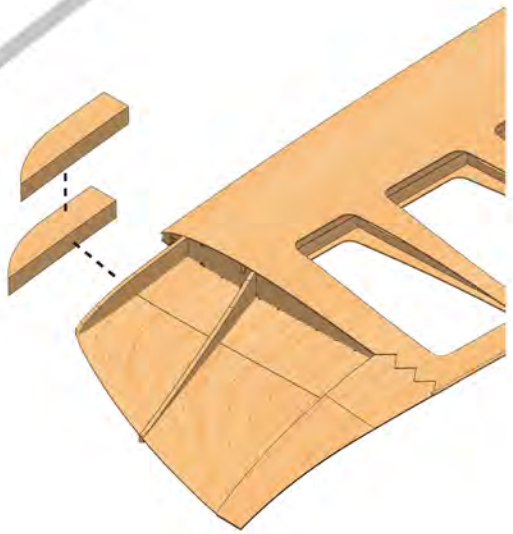
Use clamps or clothespins to clamp the leading edge of the Top Skin to the assembly. Take care that all contact is solid.

Again, take care not to cause scalloping.

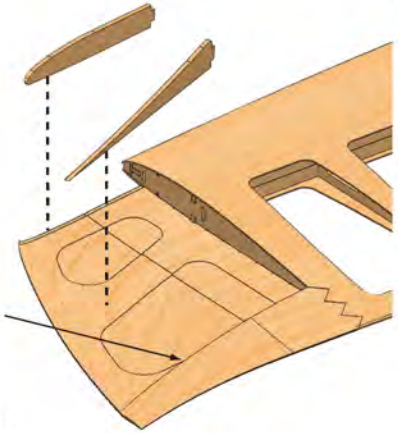
1

2

3



Fit the Tip Blocks and GAP in place.



Press the foreward edge of the top Skin extension down to meet the lower Doubler. CA or GAP the connection about a third of the way from the tip. Look for a nice fair curve to form, with the tip warping slightly up.

Fit the two Tip Struts as indicated, and CA them in place. Follow up with GAP to form a final bond.

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Z55 Wing Construction 3.14

Install the Leading Edge Cap, Root Cap & Magnets

Lightly sand all parts

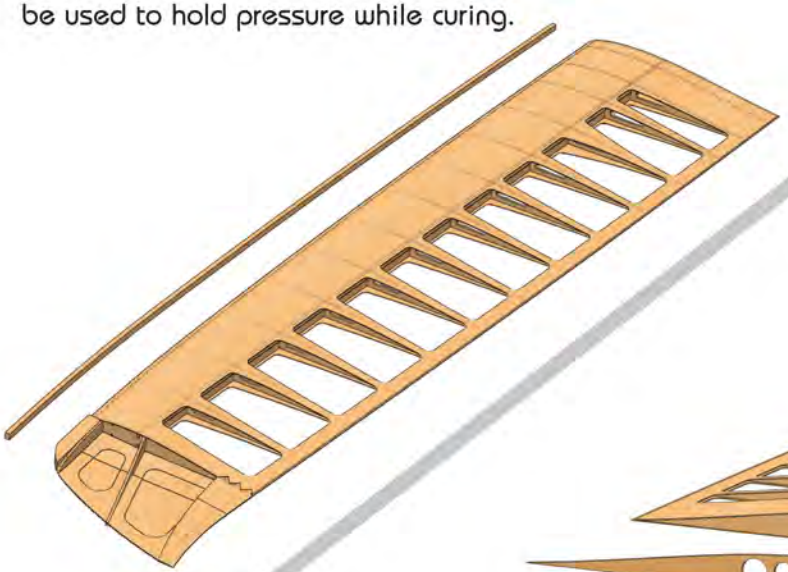
Balsa filler Discs

Fit each remaining magnet to the magnets in the fuselage, to determine orientation. Mark the outside surface of the magnets with a permanent marker while they are attracted to their mates. The mark will represent the side of the magnet that will contact Rib #1 when fit to the Root Cap. The unmarked side will face out, toward the fuselage.

Sand the front face of the Balsa Sub-LE where the Wing Skins slightly overlap. Sand this face until all material is flush and a fair curve has been established.

Bond the Basswood LE Cap to the face with GAP or SLOW. Low tack tape can be used to hold pressure while curing.

1



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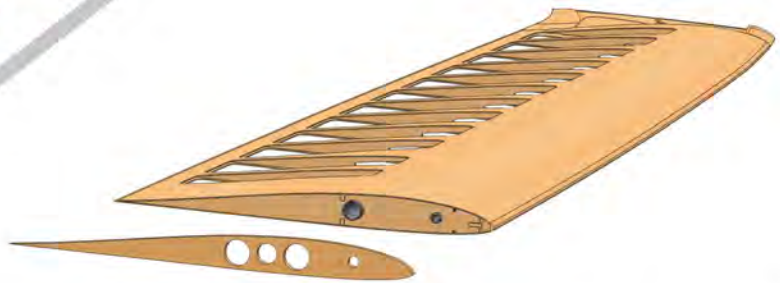

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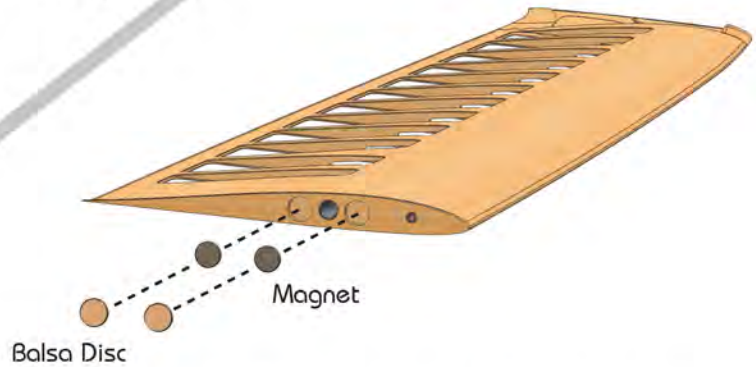

Bond two of the remaining magnets into the cavities of the Root Cap. Make sure they are fully seated, and have adequate adhesive. Fit the balsa filler discs.

Sand the root face of Rib #1 to prepare it for the Balsa Root Cap. Take care around the carbon tubes, as they take more attention to flush to the rib.

Bond the Balsa Root Cap to the face of Rib #1.

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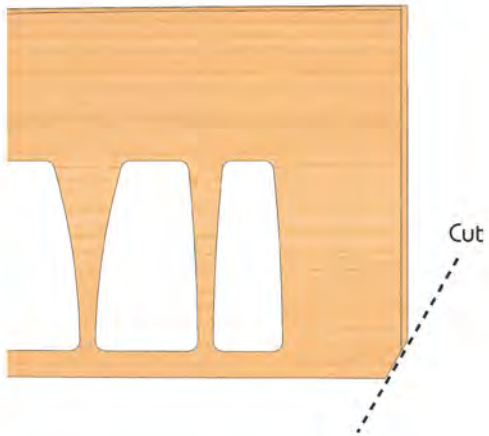
Wing Construction 3.15

Finish the Wing and cover

After completing the following steps, finish sand the entire wing. Use the leading edge templates to help determine the proper shape.

Cover the wings with a good quality film and graphics.

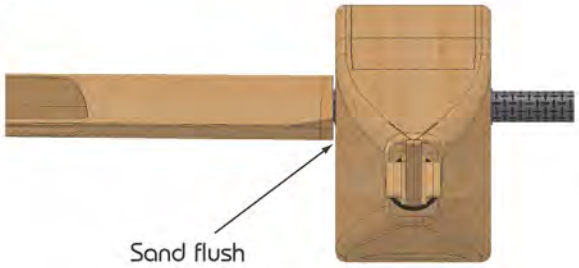


Sand an angle approximating the indicated line, This will help save the fuselage and wing trailing edge in the event of a crash.

1

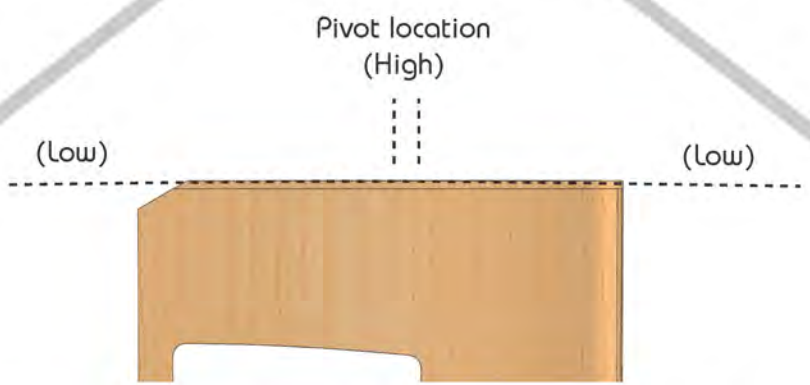
2

3



The wings have a small amount of dihedral, so the Root Caps need to be sanded to match the angle of the fuselage relative to the wing.

There is enough material on the Cap to allow several attempts, so take your time.



The smooth action of the wing pivot is dependant on the contact between the wing root and fuselage. You want to sand the Root with a slight curve, so that both LE and TE do not contact the fuselage. Any high-point near the LE or TE, will cause drag when the wing pivots.

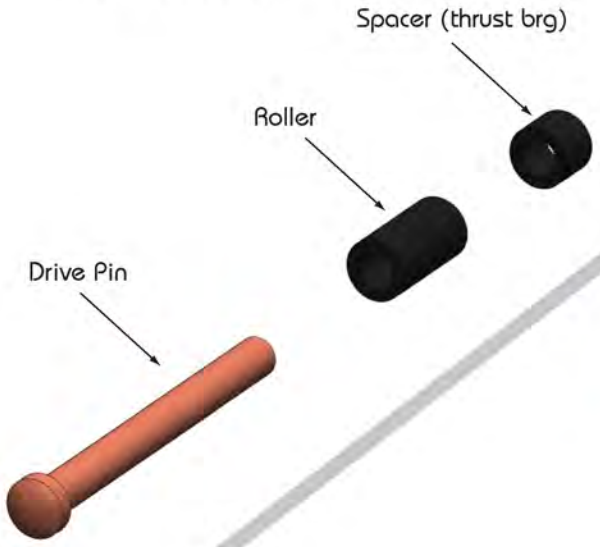
Z55 Wing Construction 3.16

Fit the Drive Roller system

The Drive Roller assembly consists of a copper Pin, a nylon Roller, and a nylon Spacer.

The copper Pin is slightly undersize for the rollers. Cut a small piece of scotch tape, and roll it onto the pin to get an acceptable clearance.

The wings should be covered at this point. Covering was removed here for clarity



1

2

Fit the Roller and Spacer onto the Pin. Dab a small amount of silicone adhesive onto the end of the Pin, and in the Drive tube. Insert the assembly into the wing, and push it in until the Spacer hits home against the Drive Tube.

3

Allow the silicon to fully cure, then twist the Roller to free it. Turn it a few times to work it free from any residual adhesive.

Z55

Setup / 4.1

All wingerons share a common structural element. The wing pivot system. And flying wingerons has always entailed an extra level of attention when landing. The very nature of most mechanical systems used to allow the wing to rotate, is one that concentrates the structural loads to a very tight area of the fuselage and wing root structures.

Although light, the Z55 is typical of most wingerons. It requires precise landings and avoidance of wing strikes. To help keep things together, the Z55 has been designed with a weak-link wing retention system. This system is as simple as a pair of magnets that allow the wings to separate on impact or a hard landing, In the event of a very hard strike, the pivot tube will snap. Beyond that, fuselage damage, and finally, wings.

In addition to the wing system, the tail is designed to separate in the event of a nose-plant. Like they say, "It isn't the speed, its that sudden stop". So to keep the mass of the tail from adding to the G's the boom must contend with on impact, the tail simple separates and flutters away.

Wing twist direction (rear view)

Control throws

Ruddervator	Up	10mm - 0.39 in. Max. - Measured inboard
	Down	8mm - 0.31 in. Max. - Measured inboard

Take care not to overdrive the tail surfaces, causing collision in the Cassette.

Wing	Up	12mm - 0.47 in. Max. - Measured inboard
	Down	5mm - 0.18 in. Max. - Measured inboard

Achieve the deflection differential by adjusting either the servo travel or differential in the Tx. Take care not to overdrive the Drive Roller.

Zaerotech

Z 55

Setup / 4.2

As can be seen in the illustration, the Drive Plate is not centered when the section is at cruise incidence. If you are using the HS-65MG servos, and the links are set to the specified distance, the section should be at +.7 degrees. This will be a good start. You can dial incidence in and out via the Tx programing, and I recommend you experiment with settings up to +1.5 degrees, and down to 0 degrees.

To get the proper movement from the Drive system, adjust your travel or differential feature until full stick in either direction moves the plate to the furthest extent of travel. You want to see differential of at least 2:1.

It is also recommended that you dial approx. 40% exponential to dampen the roll authority around center stick for normal flight.

Z55

Setup / 4.3

Set the CG between 49 - 55 mm / 2.16 - 2.38 in. from the root leading edge. I encourage you to experiment with the CG and share your experience. No doubt, the Z55 will find an evolution in settings over time. Your opinion and contribution toward that evolution, is valued by Zaerotech and myself.

Foreward of the battery, F1 allows access to the hollow NoseBlock. If CG adjustment is necessary, pour lead shot into the cavity and seal with epoxy.

Thank you for purchasing the Z55

Enjoy

Kevin J. McDonald

Zaerotech

Z55

Setup / 4.4

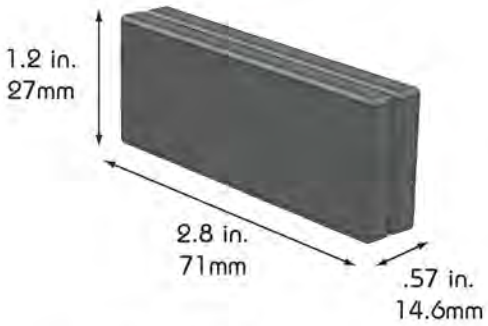
Electronics

The Z55 has been designed to take advantage of a 6V, 650ma NiMH Rx pac. The same cells can be configured for 4.8V by eliminating the foreward cell.

In addition, the sailplane version (Normal for Warmliner) can be built to accommodate an 800ma 2S LiPo pac.

6V 650ma 2/3rd AA NiMH pac

4.8V 650ma 2/3rd AA



800ma 2S LiPo pac

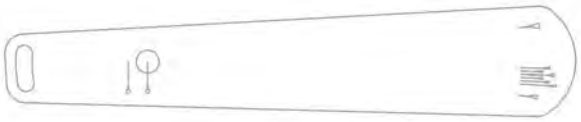
Servo's are critical for the proper operation on the Z55's controls. Although the servo cutouts are sized for Mini servos, it is mandatory to use metal geared servo's of no less than 25oz./in.

Recommended servo's

Wingeron Drive / HiTec HS-65MG
Min. 25oz./in. - Metal gear

Ruddervator / HiTec Hs-55
Min. 15oz./in.

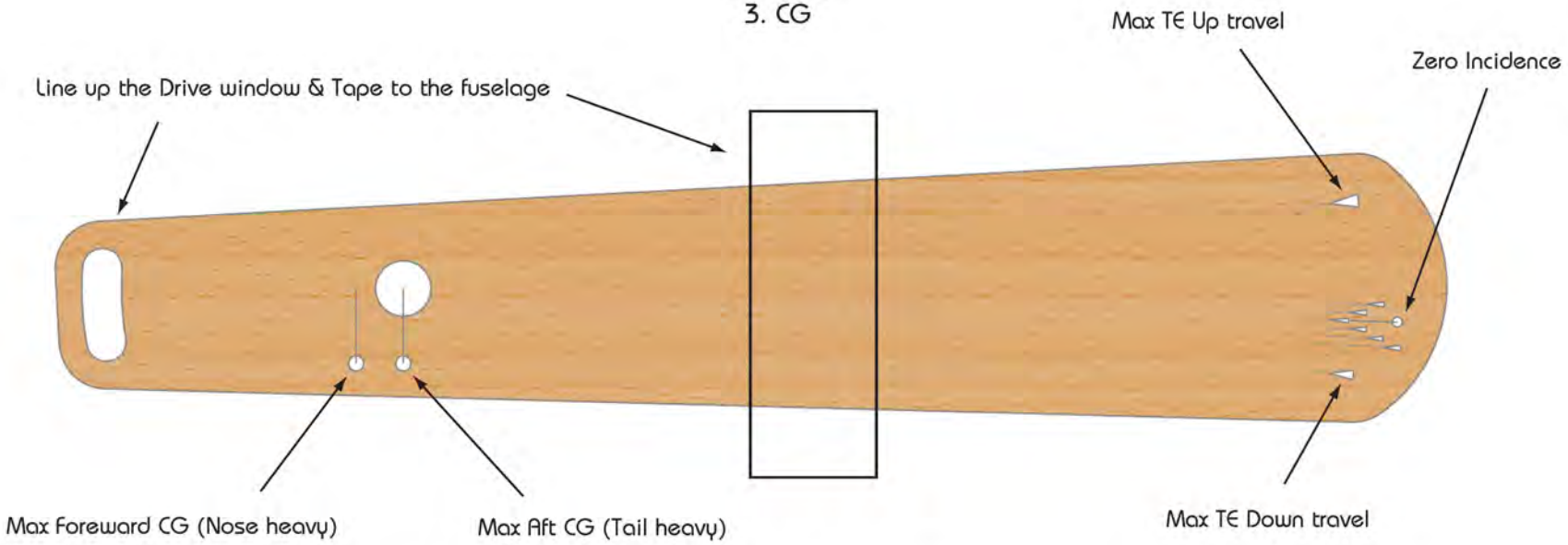
Zaerotech



Incidence Gauge

The Incidence gauge is intended to aid you in setting up the following;

1. Incidence
2. Travel
3. CG



Once both gauges are taped to the fuselage, adjust both wings to zero incidence.

Adjust the travel of both wings to the max extents indicated. This will be done in the Tx, normally with the aileron differencial parameters.

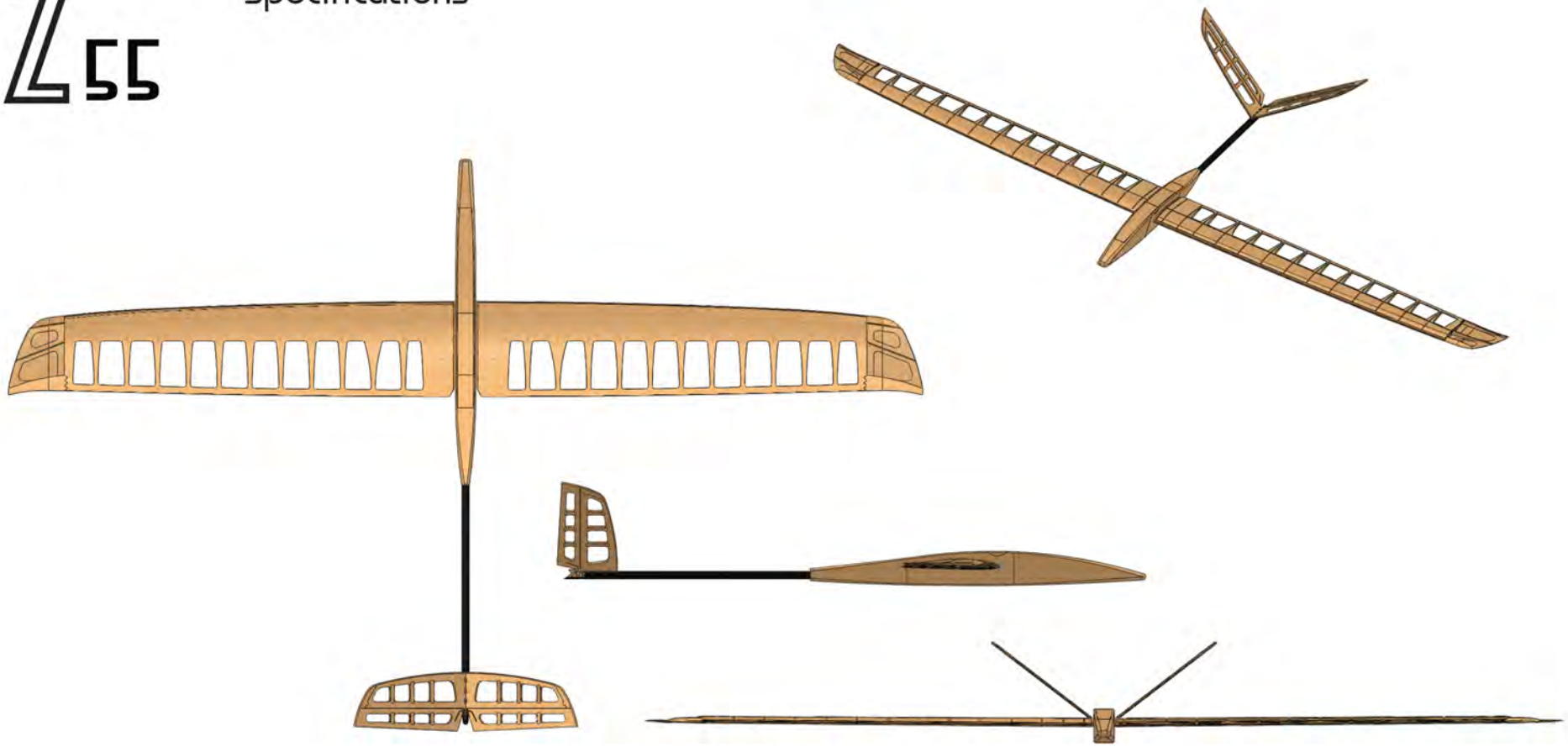
Once all travel adjustments are done, use the flap parameter to adjust incidence in flight. Normal cruise should be adjusted to one arrow below zero. Landing can be adjusted as much as four arrows below, and speed can be adjusted to the upper arrows. Each arrow is 1/2 a degree.

Note that incidence changes may affect max travel. Always check that travel is limited to the max extents, and that no collision of the Drive Roller to Drive window occurs by overdriving the Drive Plate. Remove the wing to visually verify the travel extents.

Mark the CG locations on the bottom of each wing, remove the gauges, and adjust CG to taste.

Z55

Specifications



Span 55 in. / 139.7 cm
LOA 31.38 in. / 79.7 cm
Area 295 sq. in. / 18.6 sq. dm
FW 15.0 oz. / 425 gr.
WL 7.3 oz./sq.ft. / 22.3 gr./sq. dm

Micro servos and receiver
Recommended -
(2) HS-65MG - Wing
(2)HS-55 - Elev
2.4ghz Rx

Zaerotech