SESSANTA 60 Assembly instructions.

Aeroic Sessanta 60” A high-performance model glider for slope soaring, designed by Dr. James D Hammond.

Thank you for purchasing the Aeroic Sessanta 60. The design goal was to extend the flight envelope of my previous 60” designs such as Genesis and Sunbird, while delivering a high-performance versus cost package. The model is now flown worldwide and has gone through rigorous development and testing by some of the best pilots in our sport. We hope you enjoy it - whether you like to fly the right way up or not. 😎

Picture by Jogvan Hansen

Kindly note:

Sessanta 60 like al Aeroic airframes is a high-performance sports model and deserves really careful installation just as you would with a top end competition model. So just like the latest breed of racers it's very slim and only just big enough to fit all the components. Before starting installation please tidy up and cover your workbench with an old towel or a similar protective covering. You don't want to scratch your lovely new, shiny model.

Adhesives: Please use only Cyano glue for tacking, only epoxy (at least 30-minute type or preferably 24-hour curing type) as an adhesive, and epoxy with fused silica (Cabosil) or cotton flocking etc. as a filler.

Important: Under no circumstances use 5-minute type epoxy for this airframe and if you have any please find someone you don't like and give it to them. 🤫

What hardware comes with the model:

- Glass canopy
- Glass servo covers Servo support plate (fuselage)
- small parts, clevises included
- Pre-assembled wiring harness

What's needed to complete the model:

Ballast:

The Sessanta 60 can have up to 6 slugs of 19mm (3/4”) round brass bar in the fuselage. Slugs are 19mm diameter by 35mm long. Fully loaded the Sessanta 60 can carry nearly 650g of ballast.

Radio gear:

The Sessanta 60 radio installation was designed around budget 8 mm wide wing servos. However, you will notice that the servo access holes in the wings have been made large enough so that any 8mm ‘Thin Wing’ servo, such as the can easily be installed. Note that the new IDS system works very well indeed for the Sessanta wing installation but it does mean removing the built-in G10 control horn with a Dremel tool or similar, or using the installed horns for IDS works too.

Note: 10mm servos are really too big for the ailerons but will fit in the flap bay.

For the fuselage, the servos can be installed in either the fuselage up front in the radio bay or at the back in the fin via the access hatch - depending on your preference. Personally, despite the slight weight penalty at the back of the model, I prefer the rear installation as it gives direct drive with much less slop.

Assembly Instructions

Wings:

The servo installation is standard for this style of moulded glider and it is possible have a flush installation to give a cleaner wing. Start by preparing the clevises. As manufactured M2 clevises are too big, they need to be slimmed down so that they will fit under the shrouds, use

a Dremel (or similar tool) fitted with a small grinding wheel to do this.

Clevis modifications – use a Dremel type tool.

At the servo end you can either use a clevis or a very neat solution is to use IDS hardware (Not supplied). If you intend to use a clevis at the servo end then it will need to be scalloped out so that it does not foul the servo output shaft. (Remove red shaded area)

Built-in Horns: The horn geometry allows a small arm and by using nearly all of the servo travel you will have all the recommended throws required. Mechanically, this is much better than longer arms that you have to rate down the travel and provides greater torque and less mechanical play. As a guide, you will probably need 11mm of linear pushrod movement for the flaps and 7mm of linear movement for the ailerons. Depending on the servos used, this should mean that the flap servo needs a 7.5mm arm radius and the ailerons need a 5mm arm radius.

Note: To prevent the pushrod fouling the shafts the arms are set at 2 clicks off centre for the ailerons towards the TE and one click for the flaps.

Note: If the IDS system is to be used then please carefully follow the manufacturer's installation guide but remember that the built-in control horns will have to be replaced by the IDS type spoons.

Important: Install the servos in the servo trays before gluing into the wing. There is a good possibility that the screws might be a bit too long and you could screw them right through the wing. After the servos are screwed into the servo frames – check the undersides and file down any screw protrusions. Keep those screws!

Important: Before you epoxy the servos in, remember to set the output horns correctly i.e. ailerons 2 splines towards the TE and flaps one spline towards the TE.

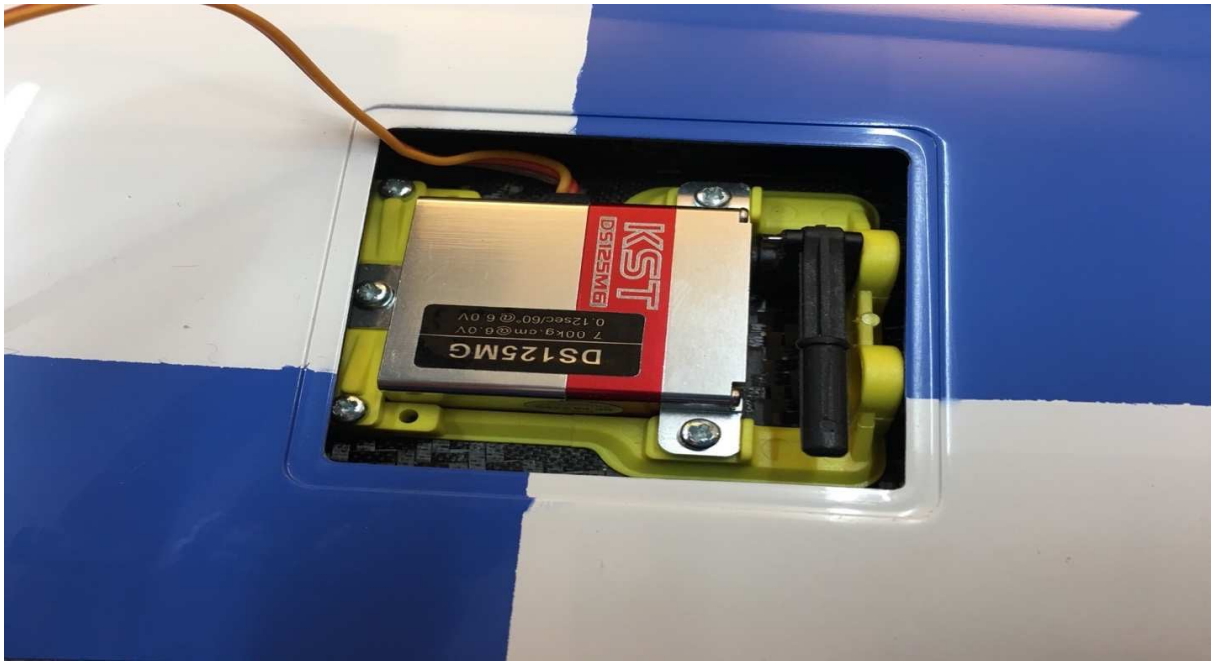
Important: Before fitting the wing parts of the wiring loom, check that the loom functions properly by connecting it outside the wing. (Once installed it is far harder to rectify any faults) Then fit into the wing.

Wing Servo Mounting: Use coarse grit sandpaper to roughen up the inner wing surfaces where the servos frames will be epoxied to, and also the undersides of the servo fames. If you are using 12mm thick servos then these should be installed right under the forward edge of the access cutout. If you are using 10mm thin wing type servos then you should not encounter any real installation problems. Whatever servos you choose, do ensure that that both flap servos (and

both aileron servos) are in the same position thus ensuring that the pushrods will be the same length.

Once the servos are epoxied into position measure and cut 2mm threaded rod to length and test. When satisfied with the operation of the wing servos, secure the clevises at each end with epoxy. This will allow adjustment later, if needed, by breaking the epoxy joint.

IDS servo mounting.



Fuselage:

Nose weight: Start by making the lead nose weight. Fill a container (e.g. a small plant pot or a paper cup) with damp sand or plaster of Paris. Tightly wrap the fuselage nose with aluminium kitchen foil or saran wrap. Then insert nose and foil in sand/plaster and push it down ensuring a close fit and support. Then **remove the fuse** leaving a good impression to cast your nose weight.

Method: Melt lead in an old pan and with the plant pot/sand/cast on the scales weigh out approximately 150g. You'll need approximately 175g so a bit over will allow for shaping with a file to get a good fit inside the nose. Do not forget to flattened the tip as the inside laminate here will stick in a bit.

VERY IMORTANT: Do not try to cast lead into wet sand, or plaster. It will immediately erupt and you could easily be badly burned. Put the cup in an oven and cook it at 60 degrees (60 degrees F) for at least half an hour before using – preferably dry out overnight.

Pour in the lead and allow to set, then cool. Leave it for an hour before removing.

Neat lead weight.

Note: Whatever you do, **DO NOT** cast the nose weight too heavy. Leave it light so that weight can be easily added later, but only enough to suit your flying style.

Alternative nose weight method: An alternative to casting lead is to use 2 or 3mm diameter lead shot in a tiny plastic bag, but again – leave it slightly light.

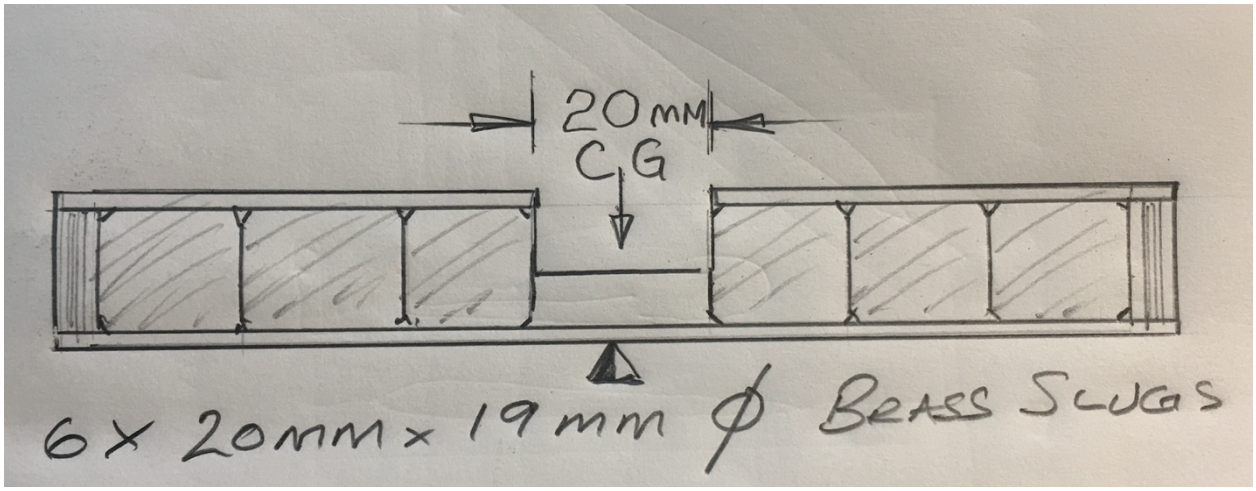
Important: Please do not epoxy the nose weight into the nose yet. Wait until you have the CG more or less right so that you don't have to dig any weight out (NOT recommended)

Radio Tray: A radio tray adds structural strength to the nose, so even if you want to mount your servos in the rear of the model, it's still a good idea to use a 3mm plywood or G10 glass fibre radio tray. Many people like to mount the batteries and receiver on or around a radio tray and it can also be extended back to the ballast tube to provide more strength. The tray will need the long edges filed/sanded to a slight bevel and the whole thing including the inside of the fuselage walls will need to be cleaned with alcohol or another solvent before epoxying in.

Note: This is a structural member so please don't use 5-minute epoxy for fixing. Use at least a 30-minute type, and preferably a 24-hour cure epoxy. People have told me that they have used Gorilla epoxy with some success but I have never tried it.

Ballast tube: At both ends roughen 10mm on the inside of the tube and using 30-minute epoxy, epoxy in a ply disc.

Note: The length of the tube needs to be long enough to fit in 8 slugs plus the ply retaining discs. Slug size is 19mm or 3⁄4’ diameter by 35mm long:



Ballast Tube: The middle of the tube needs to be marked on the fuselage for the correct CG.

CG marking: With a pencil, mark on the outside of the tube the exact centre. On the fuselage, place some masking tape and put a mark on it at a point 70mm aft of the leading edge. When the tube is eventually epoxied in, the marks on the tube and fuselage need to line up.

Ballast tube/CG Balance: Now mark where the front edge of the ballast tube begins. The radio tray cut out for the ballast tube is positioned at this mark. **(Do NOT epoxy in yet!)**

Fuselage wiring:

Note: It’s better to take your time with siting the wiring to make sure it’s neat and tidy. There is nothing worse than the inside of the model looking like a bird’s nest and it’s also much harder to find and fix and faults should any occur. Label your loom servo plugs for best practice.

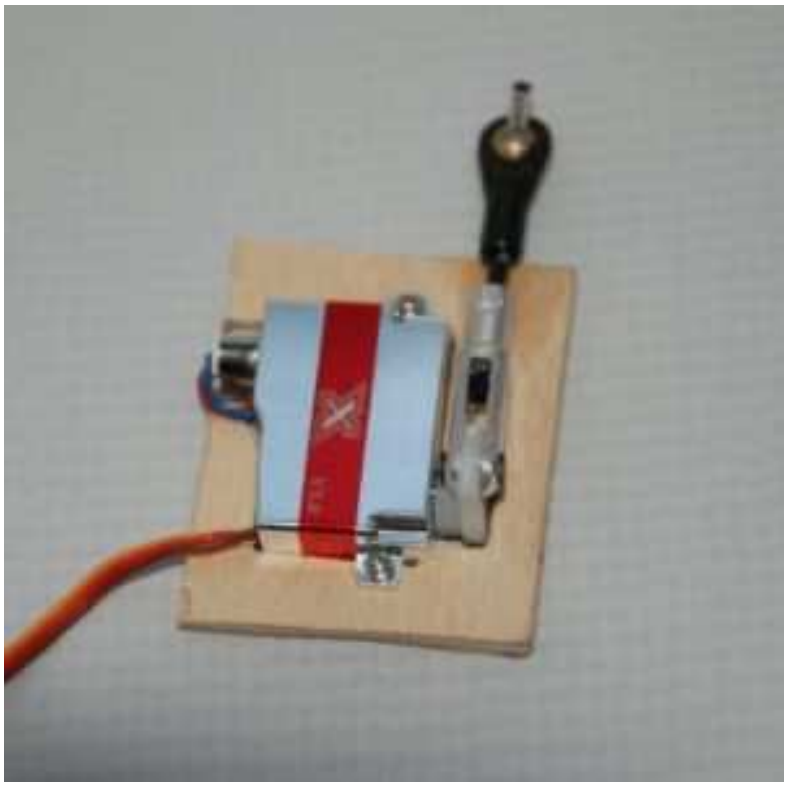
Test and site your loom: Prepare the fuselage wiring loom, and test it live with the servos. Epoxy the plugs into the wing root receptacles, and site the 4 leads so that they go neatly alongside the ballast tube. At the front of the fuselage, roughen up the areas where the radio tray and ballast tube will sit.

Servo in Fin Method:

Servo trays: You will need some commercial 8mm servo trays, or alternatively you can make your own. Any 8mm or smaller servo can be fitted. You might want to

consider the use of a metal geared servo because should the gears become damaged, replacing them may not be easy.

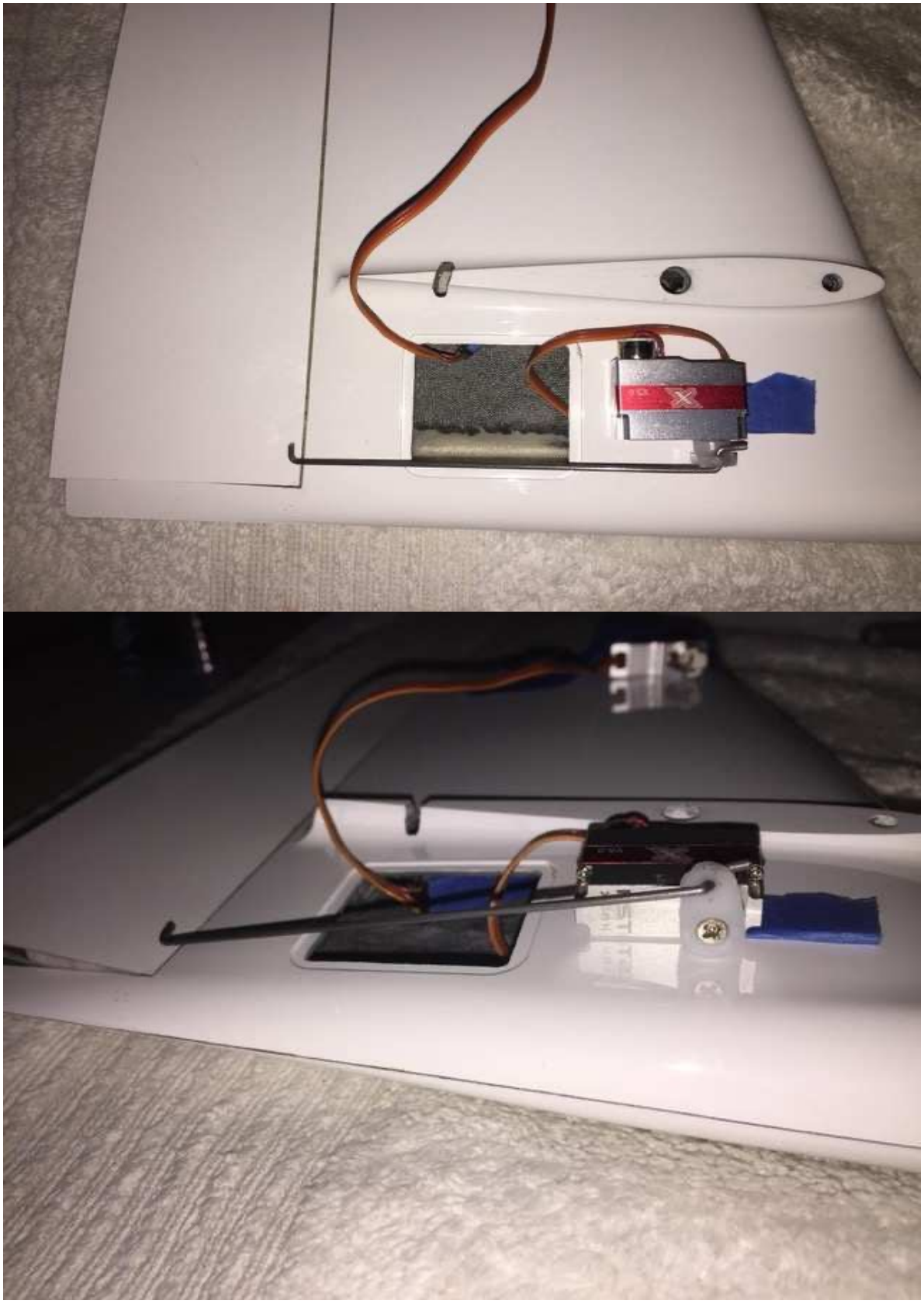
Home-made: It's really not too hard to make you own DUAL servo tray to fit in the fin. I.e.: a plywood platform with two servos mounted on it on their own removeable frames.



Elevator servo – note the ball soldered to the actuator wire tube.

Important: Test fitting: In order to make sure that the positioning is correct, test fit your chosen servos with the pushrods and actuators all loosely installed before epoxying in.

Note: The rudder servo should be installed before the elevator servo.



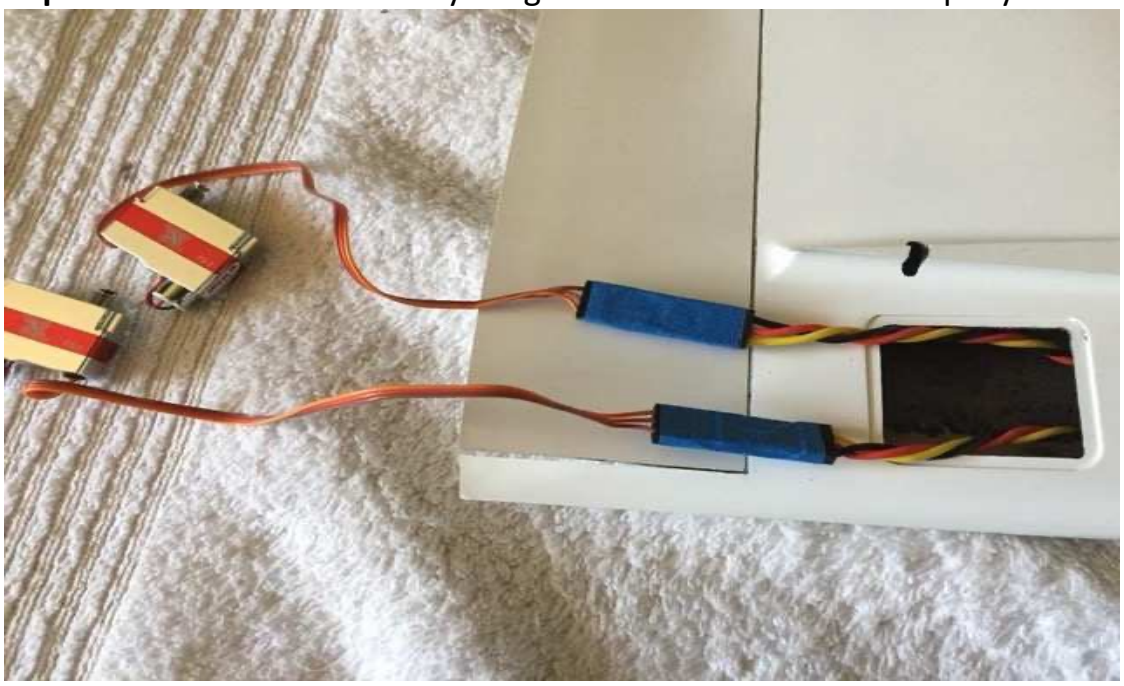
Rudder servo: Mount the rudder servo on its frame and cut the wire to the correct length as shown in the picture. With the servo checked as in the neutral

position, epoxy the servo and frame into the front of the fin, just slightly in front of the servo hatch.

Elevator servo: Use the provided 2mm ball link with the ball soldered in to the centre of a 2mm ID. tube. This acts as a sleeve for the 1.5mm elevator drive piano wire. You need a 4.5mm servo arm and a short pushrod with a 90-degree z-bend. Check the servo is centered and then fully fit the pushrod and test before gluing into position.

Important – check again: Before the epoxy has set, fit the tailplane, check with the radio on that the elevator is centered and that the servo is in the correct position as trying to adjust the pushrod length once the epoxy has set is rather difficult. When the epoxy is set check for a 'bind free' elevator operation and make any adjustments if necessary. Extend the servo lead and route it beside the ballast tube along with the rest of the loom before you epoxy the radio tray etc. in place.

Important: Please check everything one last time before the epoxy is finally



Final Assembly – This is a stick-up!

Important: Slow setting epoxy will give you the necessary working time to get everything lined up and true and will provide the best adhesion. Please don't use 5-minute epoxy. If you have any, please find someone you don't like and give it to them.

Pre-gluing Checks:
Nose weight: Check the weight once again, for a start CG of 70mm and make sure its slightly light.

Radio Tray: If you are using one; make sure that the radio tray is not too tight a fit and that it does not introduce any distortions which might cause a slight widening

of the fuselage sides at the wing leading edge position. Test by fitting the wings and checking the fit of the wing root to the fuselage sides.

Remove the radio tray and ballast tube.

Picture by Jogvan Hansen.

Final Assembly:

Nose weight/Ballast tube fixing: Epoxy in the nose weight. When it is set, epoxy in the ballast tube, remembering to line up the CG position pencil marks on the tube and fuselage.

Radio Tray Fixing: Finally, if you decide to use one, fit the radio tray, it should be approximately 12mm below the edge of the fuselage at the centre of the canopy area (the height may vary according to servos used). Draw a line on the inside of the fuselage with a pencil as a guide. What I tend to do is to "tack" the tray in using a few dabs of thick Cyano so that I can check everything before adding the epoxy.

Radio tray bonding (If used): If you decide to mount the rudder and elevator servos in the fuselage, you can cut a simple radio tray to your own design. It needs to be 3mm thick to add structural strength but it won't be doing much if it's not bonded properly. Working methodically, you will be able to do a neat epoxy fillet, but do try to ensure a good joint to the ballast tube and fuse with the tray. Once the tray is installed, fit the servo or servos and connect them to their pushrods. The servo arms only need to be 6-7mm long (centre of arm to centre of hole). You will have to scallop the clevises again.

Balancing: Fit the receiver and battery. You may have room for a switch but if not then plug the battery directly into the receiver. With the model fully assembled add lead to balance (do not forget to check the lateral balance)

Final pre-test flight balancing: Assemble the whole model as you would when ready to fly and test the CG position. Add lead shot or small lead weights until the CG is in the desired position. It's better to go a bit forward for first flights and I recommend 85mm to start. After that you can add or remove weight to suit your flying style.

Flying set up: A set up guide from one of our test pilots is set out below. It's quite safe, especially the CG setting, most flyers have only varied from this setting by a few mm.

Happy flying!

Flying Setup information

CG = 70 mm from the leading edge – note: CG can go back as far as 75mm.
Movements (Flaps/Ailerons measured from the inboard edges):

Mode Control Normal flight:

Ailerons: +12mm -8mm.

Elevator: +/- 8mm.

Rudder +/- 45°

Thermal: Normal flight movements plus: Flap -1mm

Speed: Normal flight movements plus: Flaps +1mm Ailerons +1mm

Flaperons: Normal flight movements plus: Ailerons +13mm -7mm. Flaps + 5mm -3mm

Landing: Normal flight movements plus: Flaps -85° Ailerons +14mm Elevator -5mm

Have Fun!