NEW - Sports Scale Designs – 06/0710

Laser cut from our CAD files, using the same European wood as our kits they are hand crafted and beautifully covered in Profilm, again to our specification, and are supplied complete with scale decals, applied where appropriate, pre-drilled & painted aluminum undercarriage, epoxy glass parts, completed, painted ready to use.

These notes and pictures offer a little guidance where required. They are not intended as a blow by blow description of assembly as these designs are aimed at reasonably experienced modelers who will have their own preferences in many areas.

The pictures depict the 68” Extra however the techniques are the same on all of the Sports Scale designs.

These designs suit a wide variety of engines both in capacity and type. As such engine and radio installation will vary slightly depending on choice.

Assembly of these pre-built models is both straightforward and swift and should take no more than a few evenings.

Covering

The Profilm used is very tough, durable and both fuel and petrol proof. However due to the climatic differences between the Far East and the UK it may have slackened so the first task is to work your way around the model with your tacking iron carefully tightening the covering and ensuring that it is well attached to the wood underneath. Tare care over decals not to melt them as they are vinyl and won’t take the heat from the tacking iron.

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Tailplane:

The film over the tailplane slot should be cut and the edges sealed with your tacking iron before sliding the tailplane into position, ensuring that it is square to the fuselage and centered, and marking it at the fuselage side with a felt pen. Now remove the tailplane and trim the profilm from the center of the tailplane leaving the film 1 or 2mm over the line of the fuselage.

With the wings on the model the tailplane can now be glued in place using 1hr epoxy ensuring once again that it is parallel to the wing and square to the fuselage in the normal way.

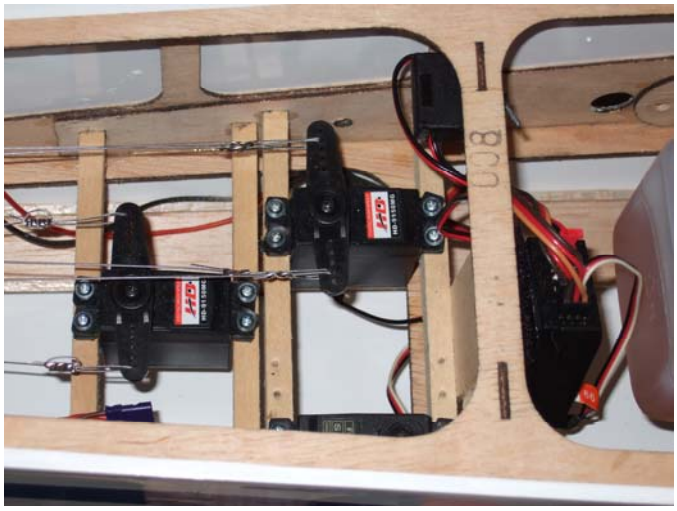
Hinging:

With the tailplane fitted you can now hinge the surfaces using the hinges provided. I use 1hr epoxy for this.

Control horns:

The control horns and flanges are cnc machined from 2mm Tufnol. The elevator and rudder horns are double sided while the aileron horns are single sided. The horns and flanges are simply epoxied into pre-cut slots in the surfaces with 1hr epoxy. It is worth keying the surfaces to be glued with some medium sandpaper before glueing.

When using lighter engines, i.e. 120 glow, Zenoah20 or DLE 30 it may be preferable to mount the elevator servo(s) in the cockpit area and use a closed loop to connect them as shown here. Either one or two servos can be used.



Alternatively there are mounting locations in the fuselage sides under the tailplane.

The rudder is also connected by closed loop.

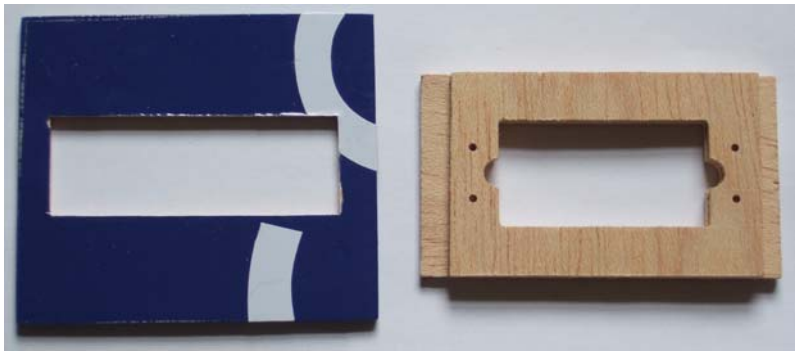
The closed loop exit positions can be seen the picture. I make the holes with either a small drill or a sharpened length of 2mm piano wire. The location is not critical as long as it passes through wooden structure.

In my model the rudder and elevator closed loop has no quick links or adaptors it is straight through the Tufnol horns. I bend the wire with pointed pliers the same thickness as the horns, twice through 90 degrees. The bent wire is threaded through the horns, it then stays relatively taught and stays that way. I fit the wire at the servo end first then at the rudder or elevator end. I pull the wire tight over the horn and mark the location of the hole with a fine point felt pen. I slip the crimp onto the wire then bend the wire a couple of mm shorter than the mark before slipping the crimp tube onto the wire, threading it through the horn and crimping it in the usual way.

Aileron servos

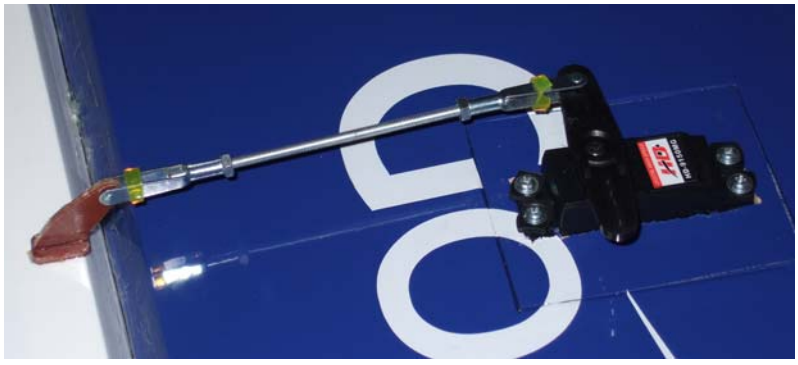
The aileron servo locations were originally intended for use with a closed loop setup with the servos mounted in the ribs. This proved to be a little awkward and a more standard mount was designed as shown.

Firstly laminate the two lite ply plates with medium cyano.



Now use the plates as a template to mark the underside of the hatch before cutting out the hatch to clear the servo. I like to cut the hatch with the servo in the middle and to clear the lugs of the servo as well so that the servo is slightly recessed.

The servo mounting plates can now be glued into the servo opening with 30min epoxy. They are positioned in the middle of the opening, using the hatch to check the position, such that the longer of the two plates is below the rails at the front and rear of the opening while the shorter plate is flush with them. This allows the hatch to then be glued in place with either epoxy or white glue.



The aileron servo, horn and linkage setup is very simple.

These pictures depict the 68” Extra wing however the technique is the same on all of the Sports Scale designs.

For extension leads I like to make up my own using a slightly heavier grade of wire and twist them tightly along their entire length. I have found this to be a simple and very effective form of interference rejection on even very long servo leads so it does no harm on medium length leads like these.

Now is a good time glue the M5 Nylon screws into the wing root ribs such that the threaded portion will pass through the fuselage side. You can then use the blind nuts backwards to secure the wings to the fuselage. This may seem a little odd but in use they can be tightened with a coin or key and are less likely to vibrate loose than wing nuts.

Undercarriage:

Undercarriage fitting is straightforward using the screws provided.

Wheels are fitted using M4x40 screws as axles with two normal nuts and a nyloc nut.

The axle passes through the wheel from the outside, with the nuts and washers as follows; washer, wheel, washer, 2 nuts, washer, undercarriage, washer and finally nyloc nut.

The spats are held to the undercarriage using the screws and blind nuts provided. I drill a hole through the undercarriage above the axle into the spat and then enlarge the hole in the spat to accept the blind nut.

On the Extra models there are also leg fairings. These may require some sanding inside to allow them to slide to the top of the undercarriage. I secure them to the undercarriage with either silicon or hot glue. Make sure they clear the fuselage at the top to allow for the undercarriage flexing.

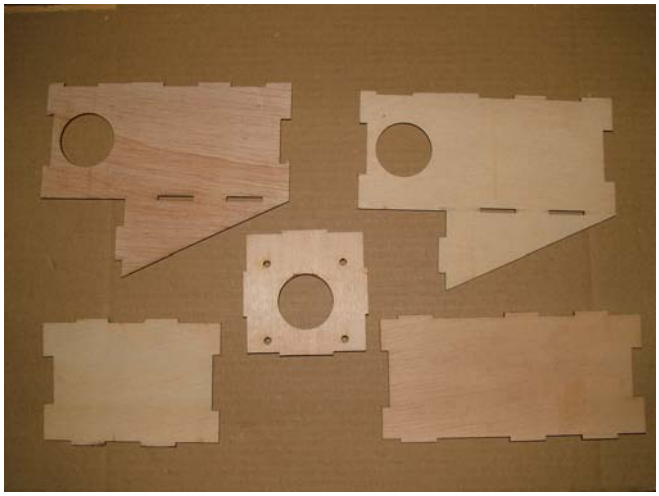
On the Cap designs the undercarriage is in the scale location. This gives excellent ground handling on very smooth surfaces with practically no chance of bounce or ground loop however on rougher surfaces it can give a tendency to nose over. If you do fly from anything other than very smooth grass or tarmac it is worth loosening the undercarriage screws and packing the rear edge to angle the wheels forward to reduce this.

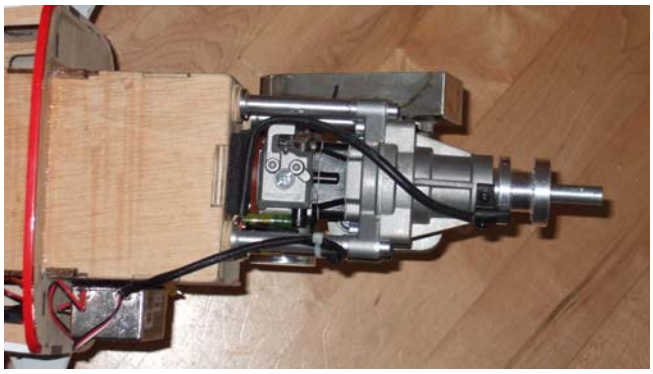
Tailwheel:

The tailwheel included is very simple and lightweight(similar to that shown) but in use is very robust and practical. You simply screw it to the bottom rear of the fuselage with the wire part bent horizontal along the bottom of the rudder. I bend this into a hook then loop a small rubber band between this and a small self tapping screw in the bottom of the rudder for steering.

Engine mounting:

The engine mounts on a simple five sided box similar to that shown. This is constructed in the same way as in the kit manual however the laser cutting provides a slightly greater tolerance in the joints allowing the use of good quality PVA adhesive or 1hr epoxy for the basic box but still using medium cyano for the bulkhead itself together with some small pieces of glass cloth and medium cyano reinforcement from the bulkhead to the box. This allows the bulkhead to break loose in the event of an 'arrival'. This helps dissipate a lot of the energy involved and can greatly reduce more significant damage to both the airframe and the engine. It is also a very simple and accurate repair job rather than a pile of matchwood!





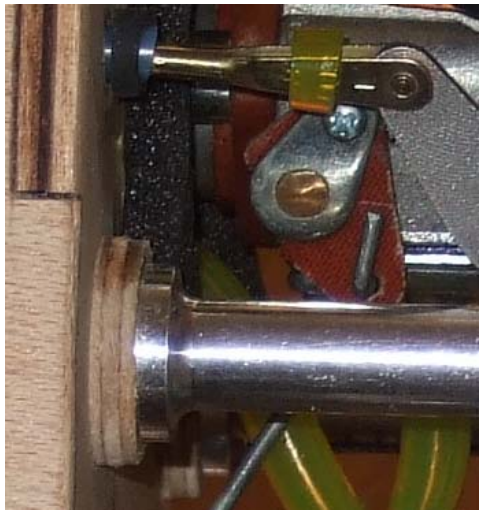
IMPORTANT: - Remember to put the engine box together with right thrust!

The box can be glued into the fuselage using the same good quality PVA or 1hr epoxy. I would suggest gluing the box together and gluing it to the fuselage at the same time. You can hold the joints together with a few pieces of masking tape while the glue dries.

On the 68" models the pre-machined holes line up exactly with four M4 tapped holes on the mounting plate of the Zenoah 26, crankcase on Zenoah 20 and standoffs on DLE30.

There is a spacer plate supplied for use with the Zenoah 20.

The engine box is the correct length for the ZG26 or DLE30 with 30mm standoffs. If fitting the newer rear intake version of the DLE30 which has 60mm standoffs you simply shorten the engine box by the required amount. I shortened mine by 25mm to allow a little more clearance for my spinner backplate. To do this simply measure back from each corner and mark with a pen. Draw lines between the marks to copy the cutouts at the front of the box. Now using a straight edge and scalpel score along these lines a few times to cut the box accurately.



This picture shows the choke setup on the DLE30 using a tufnol arm and length of 2mm pushrod. The rod exits the lower rear of the cowl and is easily operated manually.

Carb balance pipe can also be seen – but should not be kinked!

Engine mounting cont'd:

The fuselage is simply secured to the Zenoah 26 or Zenoah 20 using four short M4 screws from inside the engine box and is mounted inverted.

When fitting the Zenoah 26 the throttle servo can be mounted and setup as shown.

It is always worth applying a coat of fuel proofer to the engine box and bulkhead area.

*Old style 68" model shown.

A large cooling hole should be cut in the lower rear of the cowl together with suitable air inlet holes for air to pass over the silencer with a glow motor fitted.

On the Extra cowl the mounting ring is cut away between the fixings.

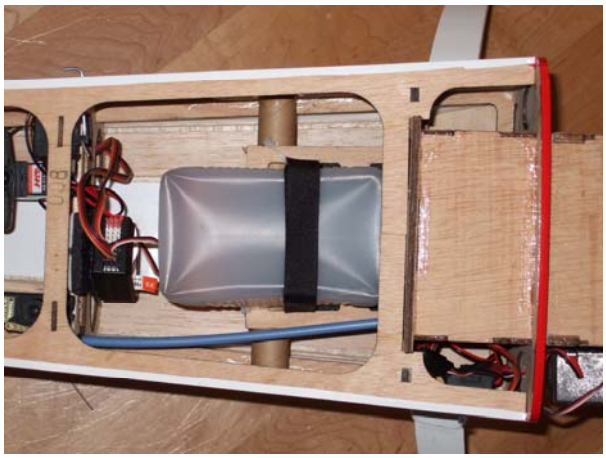
Always aim to have the exit area at least 4x the inlet area, remember petrol engines are air cooled where glow motors are primarily fuel cooled.

Any air passing the engine more than 2 or 3mm away is not cooling. A few pieces of scrap balsa or thin ply glued inside the cowl can make a huge difference by ducting the incoming air onto the engine and stopping it blowing past.

I generally only open up the exhaust side of the cowling at the front, keeping the other side – the carb side on the Zenoah engines, blanked off.

*Old style 68" model shown.

Fuel tank and radio installation:-



In the 68” models no tanks is supplied due to the wide range of suitable engine sizes and types.

When fitting the Zenoah 26 or DLE30 a 16oz petrol tank with screw cap and felt filtered clunk should be used while an 8z petrol tank is ideal for the Zenoah 20. This should be positioned above the c of g in the wing bay. A lite ply tray is provided which, in the Extra, can be glued to the inside of the engine box at the front and secured to the wing tube with tie wraps. In the Cap it can be glued to the brackets on the wing tube. The tank can then be secured to the tray with tie wraps and/or Velcro.

Basic setup:

As a stating point the c of g should be set on the wing tube.

Ailerons - 15mm up and down.

Elevators - 30mm up and down.

Rudder - 70mm left and right.

Please note: - When setting up controls try to avoid giving the surfaces a large mechanical advantage over your servos by using a small amount of servo travel to give full surface movement. This can allow surface flutter to set in at higher speeds.

I like to set them up with 16% negative expo on elevators and ailerons and around 25-30% on rudder.

They benefit from 15-25% up elevator mixed with rudder to prevent the nose from pitching down with rudder.

These models are very light and rigid which gives a nice crisp performance with very low stall speeds and easy handling while still capable of very advanced manoeuvres.

Remember take off, throttle back, relax and enjoy your scale aerobatic flying. Use the power to maintain constant speed in the vertical rather than to charge around like a pylon racer – a little airframe sympathy goes a long, long way, and looks so much better too!

Please email if you require any further assistance with the assembly of your model.

Happy landings!