the new MAULE Skyrocket


Classic lines - 74" Maule in generic scale scheme

I have had a love affair with this aircraft for many, many years. Not only do I love its looks with its striking features and subtle curves, I also love its incredible versatility and functionality. Indeed this makes a model which in my opinion has something for everyone...

With its fantastic STOL capability thanks to huge flaps and crow braking, it makes an ideal glider tug, camera ship, floatplane, trainer, sports or 3D aerobatic model!

The full-size aircraft has had many variants over the years. I have taken what I consider to be the most interesting features and combined them into a sports scale design, initially in three sizes supporting engines from 0.40 glow to 80cc petrol.

Turn down the movements, drop a touch of flap and you can waft around the strip crop dusting. Then, turn them up and mix in the flaps with the ailerons and its crisp aerobatics!

Incorporating a large lipped cooling exit in the cowl combined with cutaway formers and ducting makes for ideal engine cooling in a hard working tug or 3D aerobatic model.

As with all of our Pre-built models the Maules are built from European plywood, which we have shipped to the factory. All parts are laser cut from our cut files.

Should you ever need it we can supply spare parts right down to individual wooden components.

glens models
scale aerobatics

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This manual covers all three sizes of Maule;

Span	74"	92"	111"
Area	950sq.ins	1500sq.ins	2100sq.ins
Length to front of cowl - depending on engine fitted.	51.5" - 54"	64-67.5"	77-81"
Engine	40-120 glow - ZG20	ZG26, ZG38 or ZG45.	ZG45, ZG62 or ZG80.

Engine and radio requirements;

74” – Will fly well with anything from a 0.40glow to Zenoah ZG20 petrol engine. Prototypes were flown with standard Futaba 3001 servos on all surfaces. There is no requirement for more powerful servos.

92” – Zenoah ZG26, 38 or 45. Again standard servos will suffice however more powerful servos will give crisper response.

111” – Zenoah ZG45, 62 or 80twin. This really requires high torque servos. Ideally 5kg or above on each surface.

Covering.

The covering is Profilm, (Oracover). It is very tough, durable and both fuel and petrol proof.

The generic scheme is easy to customize to your own requirements.

The colours are White, Dark Blue and Turquoise.

The covering may have slackened due to the climatic differences between the Far East and the UK so the first task is to work your way around the model with your tacking iron and heat gun carefully tightening it, ensuring that it is well attached to the wood underneath. I like to do this by warming the film with the heat gun and pressing the film down with a soft cloth, working my way over all solid areas.

All of the trim is also Profilm (Oracover), so take care not to distort it with too much heat.

The ailerons and flaps are hinged with composite material sandwiched in balsa. This makes a very free and completely sealed hinge line. Due to this the controls require less movement than you might expect and response stays crisp right down to the very low stalling speed.

It is worth paying particular attention to the film on top of and below the hinge. Raising the aileron and tightening the underside of the hinge and then holding the aileron down while warming the top of the hinge serves to ensure that the film is securely attached and cosmetically attractive.

Assembly notes:-

The following is not intended as a blow by blow instruction manual. Instead this series of notes cover what I consider to be the less obvious and unusual areas.

Additional information is always just an email away so please don't hesitate to contact me.

The notes will be continually updated and expanded. I will publish updates on the web site for you to download. Particular areas such as engine installation and throttle linkage suggestions together with information on various adaptations will also be included.

The cockpit area has been kept clear to make the model as versatile as possible. A kit for an alternative hatch is being developed to include a glider tow release system with servo mount for each size of model. Details will be on the web site as these become available.

Contents:-

Wings:-

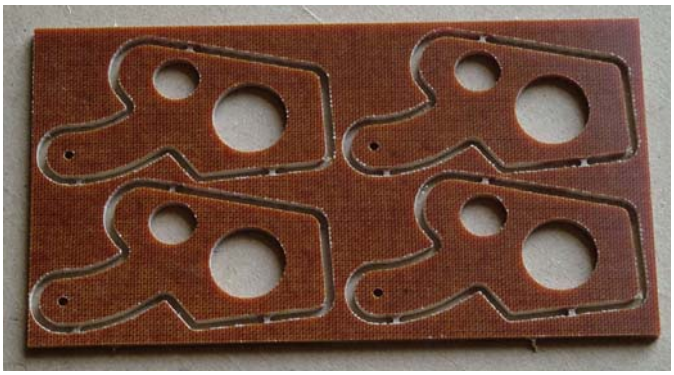
Once you have ironed the film around the servo boxes cut the film with a very sharp modeling knife or scalpel and tidy the edges with the tacking iron. Go around the fillets in the corners of the servo boxes with some medium cyano to secure them.

It is a good time to cut the film over the holes at the root where the servo leads will pass through.

There are holes in the false trailing edge for the pushrods to pass through as well as slots in the ailerons and flaps to accept the cnc machined Tufnol horns. These should also have the film removed.

It is necessary to elongate the slots in the aileron leading edges to accept the Tufnol horns. The horns should go in until they are flush with the surface of the leading edge of the aileron or flap.

The horns can now be glued in place. It is worth roughening and cleaning the faces of the horn to be glued before using medium cyano or 60 minute epoxy to secure them…

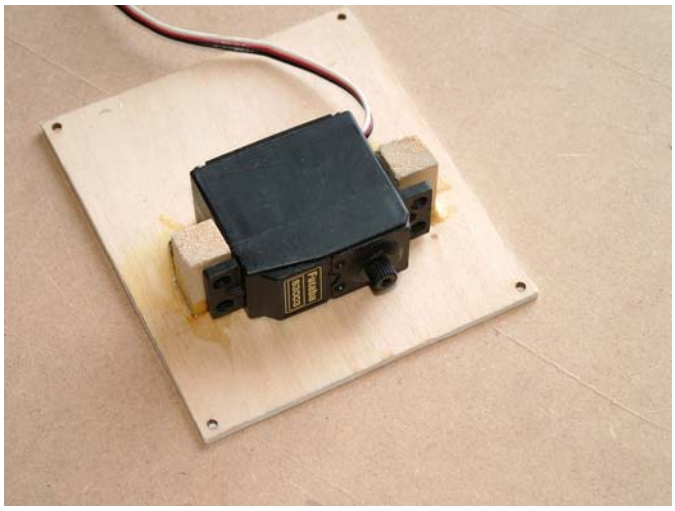


Aileron and flap horns.

The aileron and flap servos can either be fitted into the reinforced rib cutout or on the hatches supplied with mounting blocks fitted. If using the hatches with mounting blocks then go around the joints with some medium cyano.

The servo leads need to be extended to reach the fuselage using your preferred method.

Servo mounted in rib



Servo mounted on hatch

Simple joggle at servo end of 2mm pushrod.

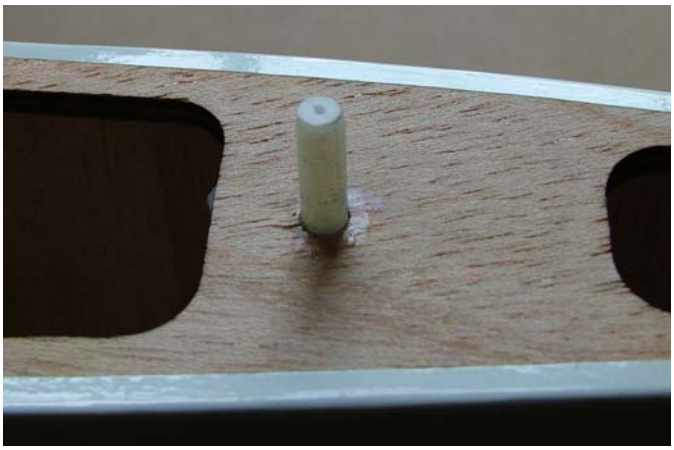
The aileron and flap linkages on the 92 and 111” models are fabricated from a length of 3mm threaded rod with an M3 metal clevis at either end with an M3 nut to lock them.

On the 74” model M2 rods are used with an M2 metal clevis and M2 lock nut at the horn end and a simple joggle at the servo end.

The hatches are secured with the self tapping screws provided. It is worth drilling a 1.5mm hole for the screws in the corners

of the servo boxes using the holes in the hatches as a guide.

Tip - Screw the screws in and then remove them and the hatches and run a few drops of thin cyano into the holes to reinforce them.



Wing bolt

At the root of the wing the wing bolt is glued into the root rib from inside the wing with a few drops of medium cyano.

Fuselage:-

Go around the various openings in the fuselage and cut the film with a very sharp modeling knife or scalpel before tidying the edges with the tacking iron. This includes the openings at the wing location, windows, bottom hatch, elevator servo cutouts and the tailplane slots. Go around the fillets in the corners of the hatch openings with some medium cyano to secure them.

Wings secured with M5 T-nuts.

Offer the wings up to the fuselage on the carbon wing tube and secure them with M5 T-nuts.

The wing struts attach to the fuselage using metal brackets which fit through small slots in the fuselage sides and are held with self tapping screws into the undercarriage mounting plate.

Tip - Screw the screws in and then remove them and the brackets and run a few drops of thin cyano into the holes to reinforce them.

Wing strut brackets

On the 74” model the wing struts are prefabricated from hardwood.

These are fixed to the brackets on the fuselage using M4 x 12 screws, washers and nyloc nuts. They are fixed to the hardwood blocks in the wings using self tapping screws. You will need to bend the metal ends of the struts slightly to align them with the wing.

Tip - Screw the screws in and then remove them and the struts and run a few drops of thin cyano into the holes to reinforce them.

Hardwood struts on 74” Model

On the 92 and 111” models the struts are streamline section aluminium. They are fitted together and held to the brackets on the fuselage with M4 x 12 screws, washers and Nyloc nuts.

Struts fitted to fuselage on 92 and 111”

They are fixed to the wings using U brackets. These brackets are fixed to hardwood blocks in the wings with self tapping screws and the struts are fixed to the brackets using M4 x 25 hi tensile, (black) screws washers and nyloc nuts.

Struts fitted to wing on 92 and 111”

Tip – Use short lengths of fuel tube between the strut and the bracket to prevent it from rattling in use.

Tailplane:-

The tailplane on the 74” model is in one piece and fits through a pre-cut slot in the fuselage.

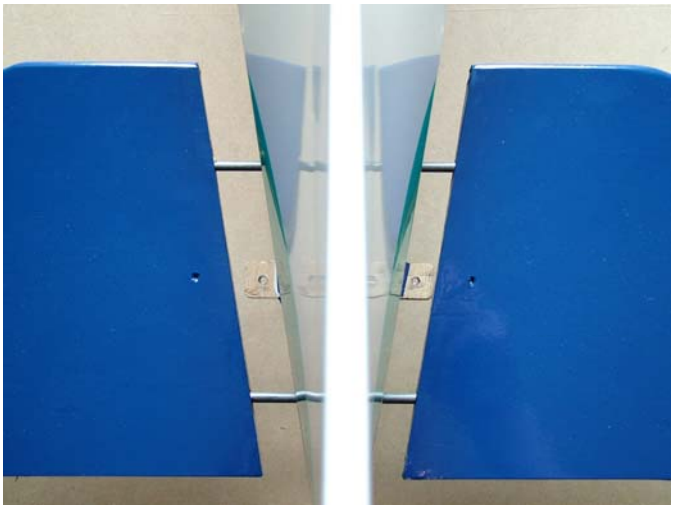
Slide the tailplane into position, ensuring that it is square to the fuselage and centered. Mark it at the fuselage side with a felt pen. Remove the tailplane and trim the Profilm (Oracover) from the center of the tailplane leaving the film 1 or 2mm over the line of the fuselage.

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.

Tailplane struts on 74” model

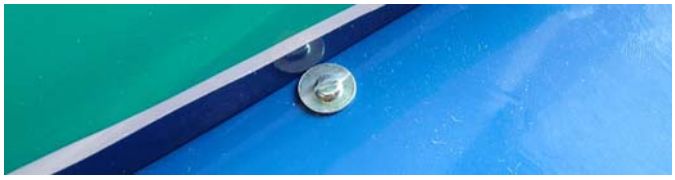
On this model the tailplane struts are carbon fiber tube. There are oval holes laser cut in the tailplane to accept these. Drill holes in the fuselage sides for the other end and secure the struts with 1hr epoxy.

On the 92 and 111” models push the existing T-nut out of the plywood tab under the tailplane and replace it with the M3 one supplied.



Tailplane halves on 92 and 111”

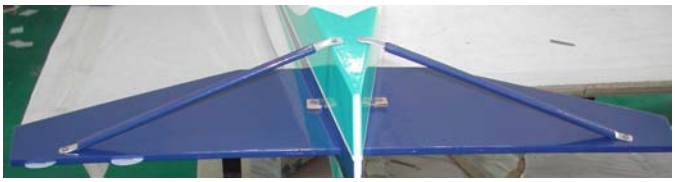
The tailplane halves can be pushed together onto their carbon fiber tubes. They are held in place using the M3 screws and penny washers supplied.



Tailplane halves secured with M3 screws and penny washers on 92 and 111”

The tailplane struts on these models are prefabricated Profilm (Oracover) covered hardwood with metal ends. They are secured to the tailplane halves with M3

screws, penny washers and nyloc nuts and are secured to the fuselage bottom with self tapping screws. Bend the ends to fit flush.



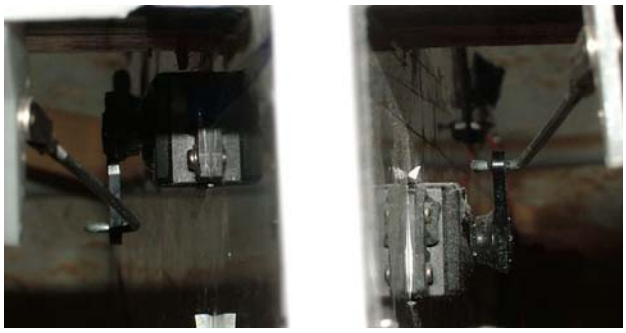
Tailplane struts on 92 and 111”

The elevator servos are mounted in the fuselage sides at the rear of the model on all sizes except the 74” model when using a lightweight glow engine. In this case, a single servo can be mounted on the rails inside the fuselage and connected with a Y-pushrod.

There are openings already machined in the fuselage sides which simply require lengths of 6mm spruce to be glued as servo bearers at either end of the opening.
On the 74” Model pushrods are made up from 2mm rods with a simple joggle at the servo end and M2 metal clevises and M2 nuts on to a single horn on the elevator.

Double horns and ball links on 92 and 111”

The 92 and 111” models use lengths of 3mm threaded rod with M3 metal clevises and M3 nuts at the servo end and ball links at the other held between double horns on the elevators with M2 screws nuts and washers.



The servos are staggered so that one is above the other.

On the upper servo take the pushrod from the lower side of the servo arm and do the opposite on the lower servo. This allows you to use a simple Y lead to connect the servos as the elevators will operate in the same sense.

As with the aileron and flap servos 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.

Both elevators and rudder are hinged with cyano hinges as standard however alternative heavy duty pinned hinges are supplied with the 92 and 111” models as an option.

If you decide to use these you will have to widen the hinge slots and recess them in the usual way before fixing in place with 1hr epoxy.

The rudder is controlled by closed loop. The 74” model uses M2 metal clevises, nuts and M2 adaptors while the 92 and 111” use M3 ball links held between double horns on the rudder with M2 screws, nuts and washers at the rudder end and M3 adaptors, nuts and metal clevises at the servo end. The rudder servo is mounted on the hardwood bearers in the middle of the fuselage.

Undercarriage:-

The undercarriage is fixed with 3x M4 x 20 screws, washers and T-nuts.

The axles on the 74” model are M4 x 40 screws with washers, plain nut and nyloc. On the 92 and 111” model they are M5 x 40. On these you will need to drill out the wheel hubs to fit the axles.

The tailwheels are simple commercial items.

Engine mounting:-

The engine mounts on a simple five sided box. The laser cutting provides a slightly greater tolerance in the joints than cnc machining 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!

Each model is supplied with two engine boxes, one long and one short. The Maule has a long nose and short tail moment. The long boxes are for use with the smallest glow engines in the range and the shorter ones are for use with petrol engines. You can of course shorten the longer boxes to suit engines in the middle of the range.

IMPORTANT: - Remember to put the engine box together with right and down 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 74” model a mount is supplied for use with the smaller glow engines in the range. The bulkhead supplied has two sets of holes; one set line up with the holes in the engine mount while the other lines up with suitable M4 tapped mounting holes in the back of the Zenoah ZG20.

M4 x 20 screws, washers and T-nuts are provided to fix the glow engine mount. The engine mount needs the mounting holes drilled to clear the M4 screws before being fitted to the bulkhead.
If fitting the ZG 20 you will have to either cut down the M4 x 20 screws a little or use shorter ones. The ZG20 is fixed by removing the backplate mount and screwing into it from inside the fuselage. Use a little threadlock on the screws.

On the 92” model the bulkhead again has two sets of holes. One set of holes suit the ZG26 which can be fixed from inside the

fuselage with short M4 screws with a little threadlock. The second set of holes line up with the standard radial mount supplied with the Zenoah ZG38 and 45.

On the 111” model the bulkhead is machined to suit the Zenoah ZG45 and ZG62.

The throttle servo can be mounted on the servo rails inside the fuselage and operated by a snake or close by the engine with a short pushrod.

Cowl:-

The cowl fits over the fuselage and is secured with at least 8 self tapping screws into the fuselage sides.
With shorter engine boxes the top and sides of the cowl are cut to length however the air exit on the bottom of the cowl is left intact.

General:-

The various hatches are simply held with self tapping screws. Go around the fillets in the corners of the hatch openings with some medium cyano to make sure they are secure.

The windscreen can be trimmed with white film or insulating tape and pinned, screwed or glued in place.

The glazing is trimmed and glued in place. Again, there are many ways of tackling this and I will update the manual with various ways of doing this.

The cockpit area has been kept as clear of obstructions as possible to make the design as versatile as possible.

In the 74” model a glow tank is included and will fit inside the engine box with a little packing around it.

If you choose to use the ZG20 then you can mount your tank below two lengths of 12mm square balsa or similar glued across the cockpit area on the c of g.

In the 92 and 111” models again two lengths of balsa glued across the cockpit area on the c of g is ideal to fix the tank to.

The c of g is in the middle of the wing tube. From there it can be adjusted to taste. The Maule has a long nose and relatively short tail moment so it’s always worth trying to keep weight towards the rear if fitting a heavier engine.

Control movements are not critical I will add some more setup info soon with sample setup ideas.

I will also include a few flying notes. The flying qualities are really interesting with everything from low, slow, crop dusting through fairly precise aeros and on to some tail slides and torque rolls, not to mention the tremendous fun you can have with it’s short take off and landing characteristics!