

Morane Saulnier Type 'L'

R/C Scale Model Instructions



CONTACT INFORMATION

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MORANE SAULNIER TYPE 'L' 36"

Thank you for purchasing the Morane Saulnier Type "L" model plans for electric flight.

The Morane Saulnier series of Type L, parasol monoplanes saw much active service during the early years of WW1. Not only did she appear in various guises, from single seat fighter to two-seat artillery spotter, she was also used by many different nations. Therefore, it is possible to build the model either with or without a wing cut out, as a single or two seater and with wheels or skis. It is even possible to finish her in German colours because the Pfalz parasol monoplane was almost identical in appearance. This must have made it somewhat confusing for all concerned.

THE MODEL

Never intended as a highly accurate scale model, this rendition of the 'L' was designed to be an easy to build model that would also be just as easy to fly. To this end, a small amount of non-scale dihedral has been incorporated into the design.

Although quite small, and thus easily manageable, she also has the advantage that the wings may be removed for transport or, heaven forbid, repair. The rigging does not have to be fitted; it serves no purpose other than cosmetic, but does add greatly to the realism of the finished model.

SPECIFICATIONS

More than 125 laser cut parts

Scale:	1/12
Channels:	R/E/T
Wingspan:	36"
Wing Area:	208 sq in
Weight:	13 oz
Power System:	Geared 4:1; 280/300
Prop:	x 7
Wheels:	Balsa and plywood with Neoprene foam tires NOTE: These are not the spoke wheels shown in the photo above.
Airfoil Type:	Flat bottomed
Cowl:	Built up balsa and plywood
Spinner:	N/A
Covering:	Litespan, Polyspan
Decals:	Available on the on website

Kit can be constructed as a Pfalz A.1

EQUIPMENT REQUIRED

Quite obviously, with a model as small as this one, the equipment required to power and control is also going to have to be both small and light. However, that doesn't mean that it has to be expensive. With the vast range of radio gear available these days, it is no trouble to locate micro servos and receivers at very reasonable prices. Much the same is true of geared 280 size motors,

lightweight battery packs and electronic speed controllers.

The prototype model performs very well using a Kavan geared 280 unit, two 9 gram servos, a mini receiver and a 5 amp rated ESC. The battery pack may be either 6 or 7 cells, and either Ni-Cads or NiMHs, with NiMHs giving greater duration for a given battery weight. The prototype used a 7 cell pack of 580 mAh NiMHs.

COWL

We'll begin construction here simply because this item will require several lots of sealing and sanding, to remove the wood grain, before it is ready to paint and fit to the model. Do try not to add too much weight during this process.

Start by wrapping the thin ply strip around former C1, gluing with CA as you proceed. Now, accurately align C2 in the assembly and glue, again using CA adhesive. Finally, C3 is glued to the front of the cowl and allowed to dry.

Now we get to the messy part, the trimming and sanding to shape. Remember to trim C2 to match the shape of C3, and then it's time to set about that sealing, sanding, more sealing and more sanding. Carry on until ALL the wood grain has disappeared, and then the cowl may be painted to match your chosen colour scheme.

FUSELAGE

The fuselage is built as two distinct sections, the front sheet area and the rear built up section. Once both these structures are at the basic box stage, they are joined over the plan using the drawing as a guide to alignment.

Starting with the rear section, make up two identical side frames over the plan and allow to dry completely. Next, once again working over the plan, join the two sides with the cross braces. Ensure that the structure is perfectly square, and allow to dry. Although not strictly scale, you will note that in this view (from above) there is no curve to the longerons. It was felt that this minor deviation was a small price to pay for eliminating the possibility of unequal curvature of the fuselage sides – straight fuselages fly better.

A small tip here is to pin the side frames down at the front only, both rear ends being packed up by the correct amount using one, equal width, piece of wood. Then, your tail surfaces will stand a more than fair chance of ending up level, once the hinge tube is bound and glued in place.

Fit the tailskid mounts, and the supports for the optional fixed fin, and then set your rear fuselage to one side, in a safe place, before moving on to the front fuselage section.

Bind c/s strut A to F1, but do not completely glue the bindings at this stage. Also glue B and C to F2 and F3,

packing with scrap balsa to ensure that they don't pull away from the formers. Yet again working over the plan, join the two sides with formers F1, F2 and F3. Ensure that everything is straight AND square before allowing to dry. Now the two sections of the fuselage may be joined. I'm sorry to keep stressing this point, but, assemble them over the plan and ensure that your fuselage really is straight and square.

Since the radio bay hatch provides access for binding the u/c wires in place, it results in a neater finish if this task is left until after the bottom of the fuselage has been covered. Therefore, our next job is to fit all the lower surface balsa fill pieces and cockpit floor sheet. Bind and solder up struts A and B, also the rearward facing ends of strut C and then glue the bindings holding A to F1. Now F1A and F2A may be added, followed by the top-decking sheet.

Your fuselage is now ready to be given its' final trim, and lightly sanded overall. Just as with the main u/c, tailskid parts G and H should be bound in place only after the bottom of the fuselage is covered. They may be bound and soldered at their apex, but the tailskid itself must NOT be fitted until during the assembly stage. Forget this point and you will find your rudder extremely difficult to fit – for extremely difficult, read IMPOSSIBLE.

TAIL SURFACES

If you've been looking for a rest, this is it. The tail surfaces are very easy to build. Note that the fin is optional, and was only fitted to a few machines, however, it does greatly increase the vertical tail area.

Build the tail surfaces over the plan, using sheet and strip balsa, ensuring that you don't clog the hinge wire slots with glue. Cut the horn slots, and then sand the components overall, rounding off all edges.

Epoxy the hinge wire into one elevator, slip on the hinge tube and glue on the other elevator. I stress the use of epoxy at this juncture because CA is far too likely to run into the hinge tube. A hinge tube that doesn't hinge is worse than useless.

Temporarily fit the skid and, using an over length piece of hinge wire, use that to get the tube in at the correct angle. Remove wire and skid, position rudder around tube and fit hinge wire. Finally fit the skid permanently, gluing the end of the hinge wire into the drilled hole.

Fit the horns after covering.

WINGS

Begin this final building sequence by notching the spars to fit over the tips, and then taper the spars from the outermost rib position. Notch the trailing edges to take the wing ribs and then pin down the spars and trailing edges over the plan. Glue the wing ribs in place,

ensuring that while the root rib leans in slightly, to allow for dihedral, all other ribs are upright. Add the leading edge and tip pieces, noting that the front of the tip is level with the bottom of the leading edge. Glue in place the balsa fill at the wing cut out, the part rib and the block into which the wing bracket and pylon will fit. Allow to dry, and then trim and sand the wings.

Trim the slots to accept the ply dihedral braces, and then join the wing panels. With one panel pinned flat to the board, pack up under the other wing as indicated. Allow drying, giving a final sand and then drilling the holes for the wing brackets and the pylon. These are fitted after covering.

WHEELS

Find the wheel parts. Use a brass tube to center the 1/32" ply rim plates on the 1/4" balsa wheel core. Add the 1/8" ply collars. Massage the Neoprene foam cording into a circle, and then CA glue the ends together. Take time to get it into a smooth joint. Roll the Neoprene tire onto the balsa core. CA glue the Neoprene to the 1/32" rim plate. Use the CA sparingly, as it really adheres well to the Neoprene.

Transfer the spoke cone pattern on the plan to heavy card stock (make 4). Cut out the circle. Use a ballpoint pen to score each line on the back to make an impression of "spokes". Fold the paper along the crease lines to exaggerate the raised lines. Cut one spoke line to the center and overlap to the next spoke line to make a cone, using white glue. The inside cone may be attached to the wheels. The outside cones may be attached at this point if wheel collars are to be used. Alternatively, after installing the wheels on the axle, a washer may be soldered to hold the wheel in place and then the cone is attached. This method makes a very scale appearance.

COVERING AND FINISHING

Use your favourite lightweight covering material, Litespan being a good choice. Make sure, whatever covering you use, that you don't induce any warps during the shrinking stage.

National markings, and all other paintwork may be applied using modelling enamels. Although such detail as a pilot figure and side access panels will add to the 'feel' of the model, be very careful not to add too much weight. These small models rely on lightness for their success, and detail can soon add a lot of weight.

Downloadable decal outlines are available on-line at <http://www.aerodromerc.com/decals.htm> for printing on decal paper.

ASSEMBLY

Begin assembly by making up the tube brackets into which the strut ends will fit. Glue them into the wing in

such a way that the struts will be held closely to the lower surface of the wing. This step is important because it determines the incidence of the wing. Bind the u/c wires in place, and bind and solder them to the axle, then add upper and lower pylons.

The rudder wire is NOT a tailskid brace. The skid is firmly glued into its sheet balsa mount and is plenty strong enough without bracing. More importantly however, **DON'T UNDER ANY CIRCUMSTANCES** glue the hinge wire into the rudder or you won't be able to attach the rudder to the model - the elevator hinge tube will be in the way. Notch and drill the rudder parts to take the tube before assembling them, and then take care not to fill the notches with glue. Even if you do fill the occasional one, you'll still have the others to act as guides while clearing the blockage with a piece of wire. This means that you stand a more than fair chance of getting the notches in the right place for accurate alignment of the rudder. It also means that the rudder can be fitted **AFTER** it is covered. When you come to assemble this area of the model, simply slip the wire up through the rudder to the elevator tube position, position it on the model, trapping the rudder tube in the process, and then slide the hinge wire home in the rudder. Now fit the skid, glue the hinge wire into it and glue the rudder hinge tube in place on the fuselage so that the rudder is at 90 degrees to the tailplane. Just make sure that the wire isn't glued to the rudder or you'll have a model that only flies in a straight line. Here's a tip when hinging the elevators. Fit the wings to the model first, and bind the elevator hinge tube in place but don't glue the bindings yet. Fit the elevators, and because you didn't glue the bindings you still have a little play in the hinge tube to allow alignment with the wings. Line the elevators up with the wings and then glue the bindings.

Bind and glue the elevator hinge tube in place, making sure that the elevators align with the wings. Also, during this operation, bear in mind what was said earlier about glue in the hinge tube - it is to be avoided at all costs. Temporarily slip the rudder hinge tube onto the tailskid and use the skid to ensure that the tube is correctly aligned as you glue it in place. Remove the skid, position the rudder and slide the skid back into place in both the rudder and the hinge tube. Now, and only now, may it be bound and epoxied to the tailskid pylon.

The radio bay hatch is a simple ply plate, retained at the front either by a tape hinge, or a ply tongue. It is secured at the rear by a wire in tube catch, as shown.

Although the model doesn't need the rigging, it certainly adds to her charm. Use either fishing line, or elastic thread, with each piece passing right through the

wing. Attach them to the rigging hooks with very small fishing swivels and then, should you wish to remove the wing, it is easily achieved by unhooking the rigging and springing the struts out of their respective brackets.

INSTALLATION

To mount the motor, glue the ply patches to the front of the mount blocks and drill them to suit your motor unit. Screw the motor to the blocks, and glue the blocks firmly to F1, with the body of the motor fitting into the pre-cut hole. Glue the cowl in place once the motor is fitted.

The receiver and ESC are fitted to the fuselage sides using servo tape, whilst the servos are screwed to ¼ square balsa rails across the fuselage. Although positions are shown on the plan, they are only approximate. Use the weight of the battery pack to aid with balancing the model, and then secure it in your favourite manner. If your pack is removable, do ensure that it is replaced in exactly the same position each time. Linkages are from light wire pushrods with z bent ends. Another little tip is to fit the pushrod to the servo end first. Then, with both servo and control surface centred, slip on the control horn and glue it into the control surface. Using this method, exactly precise wire bending isn't required.

FLYING

Before even thinking about flying your model, check that she balances correctly, you have a fully charged battery and that all the control surfaces move in the right direction. Set up your model to have ¾" throw each way on rudder, but absolutely no more than 3/8" each way on elevator. These throws may always be adjusted to suit your flying style after the model has been trimmed out.

With care, the model will take off under her own power, but do be ready to counter any swing using rudder. Hold in some up elevator until she is moving, and then ease it off until she builds up speed. At this point, a little more up elevator will see her flying.

Whilst perfectly happy just cruising gently around, the model is capable of mild aerobatics. She does a nice line in stall turns, and can even be persuaded to loop.

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