

Mister Mulligan R/C Scale Model Instructions



CONTACT INFORMATION

The Mister Mulligan was designed by
M.K. Bengtson

Manufactured and Distributed by:

Bengtson Company

e-mail: sales@aerodromerc.com

Web Site: www.aerodromerc.com

MISTER MULLIGAN

Thank you for purchasing the Mister Mulligan model for electric flight.

THE MODEL

A semi scale adaptation of the Mr. Mulligan, this model is designed to be easy to build and exciting to fly.



POWER SET UP

MPJet 25/35-20 brushless motor in a 4.4 to 1 gearbox, 10 KAN 1050 cells, Jeti 30 amp ESC, APC 11-7E prop.

R/C GEAR

A four function mini receiver and four micro servos are all that are required.

Model Specifications:

More than 145 laser cut parts

- Scale:** ~1/9
Channel: R/E/A/T
Wingspan: 48"
Wing Area: 385 sq in
Weight: 38 oz
Power System: MPJet 25/35-20 brushless motor in a 4.4 to 1 gearbox
Prop: 11x7 APC E
Wheels: Balsa & plywood, Neoprene foam tires
Airfoil Type: Flat bottomed
Cowl: Vacuum formed cowl included
Spinner: N/A
Decals: Available on website
Covering: Oracover, Solite or Polyspan
Prototype By: Brian Allen



Replacement cowls Available on line

BUILDING THE MODEL

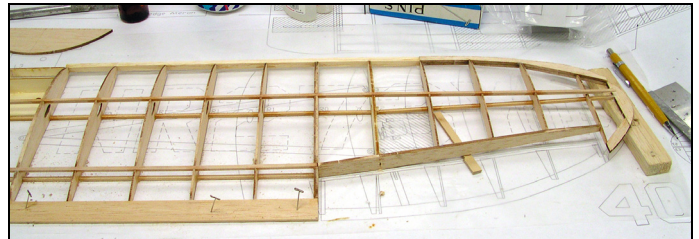
BEFORE STARTING

A note about the photos: The photos were taken of a prototype and the parts supplied may look slightly different from them. However, the concepts illustrated are the same.

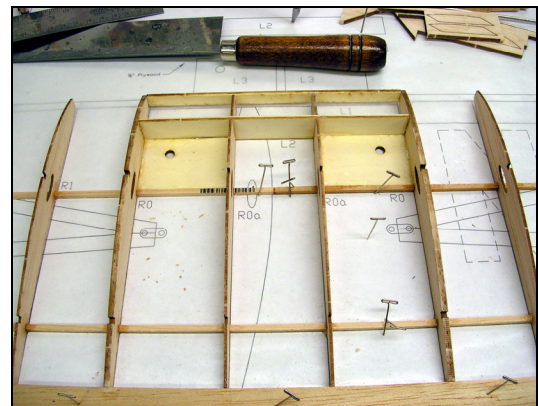
WINGS

Wing Construction

Pin down, over the plan, the t/e, spars and wing tip, gluing as required. Add the leading edge stock after the basic frame is done as the stock is inserted in a rotated fashion. Add the wing tips and align the front tip along the center of the leading edge. Sand the leading edge stock to be rounded and meet the ribs.



Wing Construction pinned down, over the plan, the t/e, spars and wing tip, gluing as required.



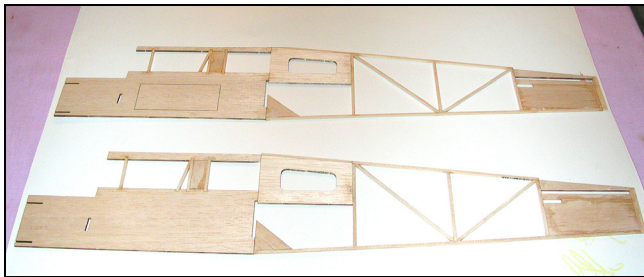
Sand the leading edge stock to be rounded and meet the ribs.

FUSELAGE CONSTRUCTION

The fuselage is built as two separate box structures, the front sheet area and the rear built up section, which are then joined over the plan. This system not only keeps each stage simple, but it also helps to ensure a straight fuselage.

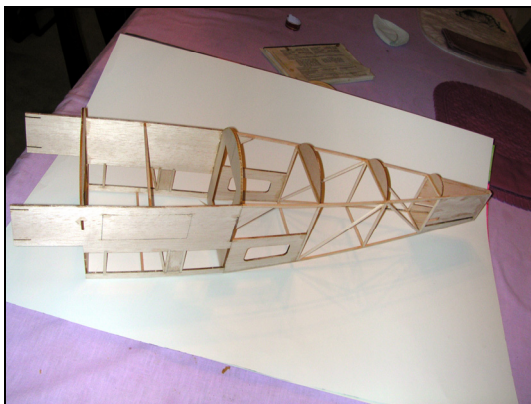
Building of the Right Side of the Fuselage

Begin by building two rear fuselage frames over the plan and allow to dry. Select hard balsa or basswood for the longerons. Build one frame and let it dry, then turn this over and build the other frame on top of it. Now they should both be identical. Use some thin polyethylene sheet between the assemblies to prevent them sticking either to the plan or to each other. Note: the side, which has the battery hatch, should be the only side with the diagonal window member. (photo below shows it in both sides).

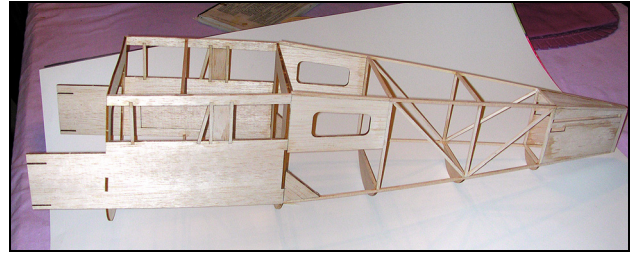


Note: the side, which has the battery hatch, should be the only side with the diagonal window member. (Photo shows it in both sides).

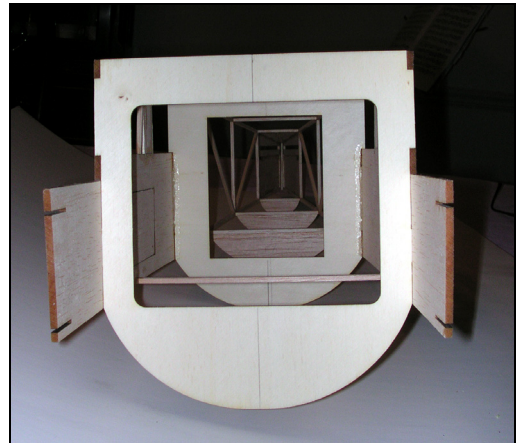
Join the two frames over the plan with cross braces and the tailskid mount. Check, check and check again that this and ALL other structures remain perfectly aligned.



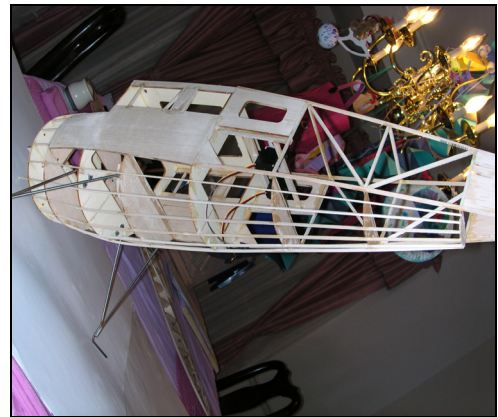
Building the Fuselage



Building the Fuselage



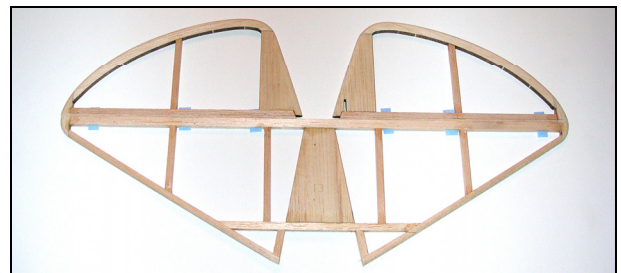
Building the Fuselage



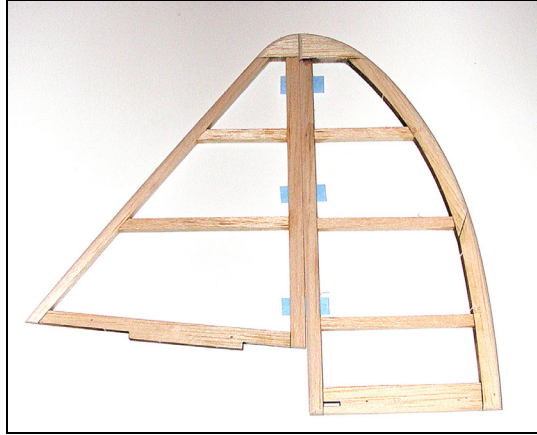
Building the Fuselage

TAIL SURFACES

Lay out and glue parts of the tail surfaces on the plans.



Tail Surfaces



Tail Surfaces

Join the elevators with the 1/8" dowel joiner. Sand the tail parts, rounding off all edges. Don't add the horns or hinge the surfaces until after covering is complete.

LANDING GEAR

The landing gear is fashioned from two sections of 1/8" music wire. The two pieces are lashed together with brass or copper wire and soldered securely. The gear is attached to the fuselage before covering. The rear wire is secured with 1/4" balsa and epoxied in place.

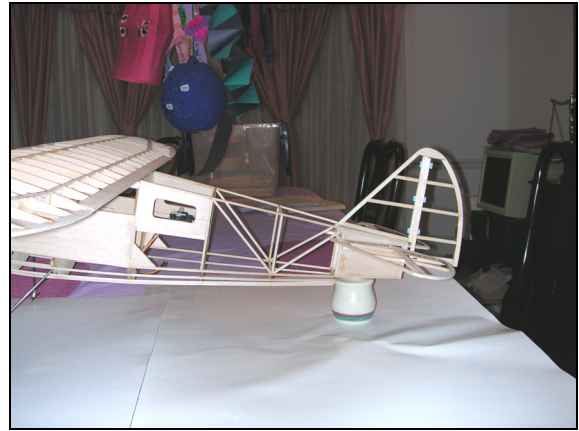
The wheel pants are made from laminated balsa and sanded to shape.

Attach the pants by silver soldering a strip of 1/32" brass (1/4" by 1 1/4") to a 1/8" wheel collar then drill a hole at each end of the strip for a 2-56 SHCS. Set two 2-56 blind nuts on the inside of the pant side and screw the strip in place and attach it to the LG with the collar



Landing Gear

COVERING



Ready to cover

Any lightweight covering material can be used. Oracover or Polyspan make a good choice. This prototype was covered in Solite.

Mister Mulligan vinyl decals are available from:

Callie Graphics

PO Box 2332

Edgewood, NM 87015-2332

(505) 281-9310

info@callie-graphics.com

WHEELS

Gluing the ply sides on the 1/4" balsa core makes the basis for the wheels. Use the brass hub for alignment. Epoxy the hubs in place and add a sufficient amount of epoxy around the base of the hub to reinforce the connection of the hub to the ply. Plywood reinforcing hubs are provided that are to slip over the brass tubing as shown. Alternatively, gluing an additional 1/2" square piece of scrap 1/8" balsa with a hole drilled in the center can be substituted. Next, CA glue the neoprene cording together to form a "tire". Use thin CA sparingly as the CA bonds very aggressively to the rubber. Press the CA wetted ends together for an instant bond. The best way to align the ends is to glue them while they are in place on the wheel. Then attach the tires to the wheels and CA in place. A thin bead of CA around the rim makes for a secure tire.



Wheel assembly

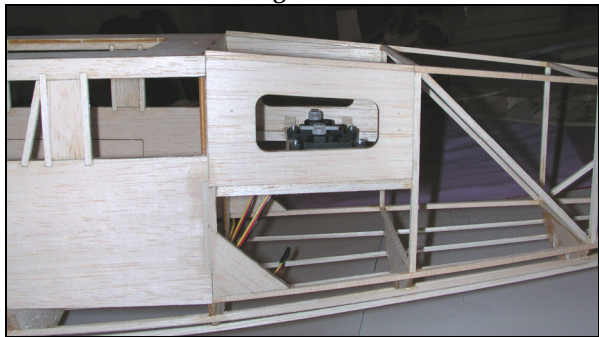
INSTALLING THE RADIO CONTROL GEAR

Servo Bay

It is as well to get the bulk of your R/C gear fitted at this stage, and also the motor.



Fitting R/C Gear



Fitting R/C Gear

Battery Tray

After all the above has been placed, mount the battery tray and use the battery position to balance the model as shown on the plan.

ASSEMBLY

Wing

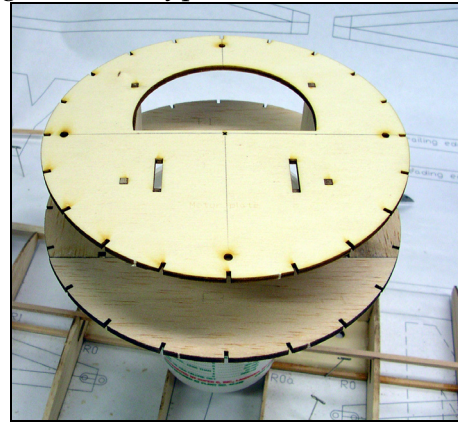
This model was designed to be a one-piece model. Epoxy the wing accurately onto the fuselage. Use 5-minute epoxy for this task. Allow epoxy to set.

Adding Detail Of Control Horns On The Pushrod Ends

Slip the control horns onto the wire pushrod ends and, with both the servos and the control surfaces centered, glue the horns into their slots.

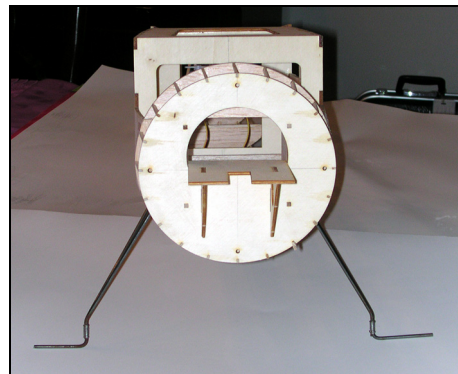
Motor mount

There are two mounts included. One for a Mini-Olympus type 2.33:1 gearbox and another for a rolled ply tube mount for general-purpose motor mounting. The first type is shown here.

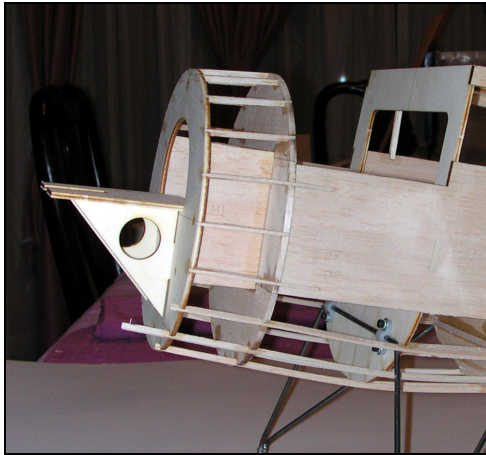


Mini-Olympus type 2.33:1 gearbox mount

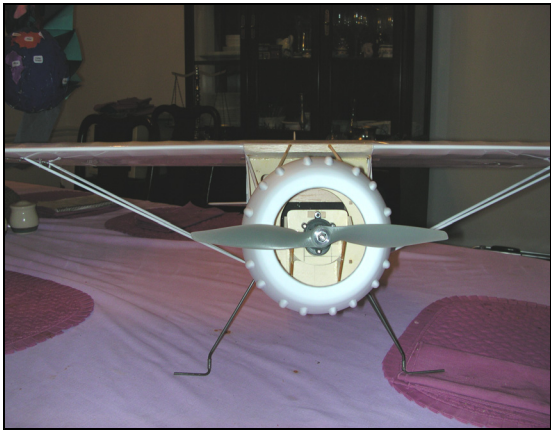
First assemble the front of the fuselage with the motor mount plate and the other plate made from F1, F2 and F3. Use M1 and M2 to connect these two plates. Add the motor mount and triangular supports (mini-oly version) Add 1/8"x1/16" bass stringers as appropriate. Attach the assembly to the fuselage by slightly bending the 1/8" balsa sides to meet. Use short sections of stringers to secure the fit. Then add bottom stringers. Sand to shape. This process makes the cowl section alignment automatic.



Motor Mount Detail



Motor Mount Detail



Motor Mount Detail

Balance The Model

Balance the model at the point shown. It is best to position the battery to do this operation.

FLYING

Prototype builder, Brian Allen says, "Charged her up (10 cell KAN 1050) and she was off the ground in 25 ft. Climbed out ever so nicely and required a couple of clicks of up and a clock or two of right (think I have a slight twist in the wing). My test pilot Ron flew her for five minutes, mostly at half throttle and he looked absolutely superb in the air. Threw in a couple of loops and a few stall turns for c's and g's. The plane tracks very straight with no tendency to drop off to one side and no squirrely traits. Rudder is very effective at max throw, elevator ok at about 50% max throw and the ailerons are sluggish so we probably have to turn them up a bit. Plane is not twitchy at all. Power off glide is flat and slow, does not want to slow down, and seems to want to glide forever. Landing was at just a bit over idle and he

came in nice and slow and flat for a perfect two pointer.
Final set-up. AUW about 38oz using MPJet 25/35-20 brushless in 4.4 to 1 gearbox, 10 KAN 1050 cells, Jeti 30 amp ESC. Two HS-81's for elevator and rudder (pull-pull on rudder, pushrod on elevator) and two HS-55's on ailerons. APC 11-7E prop. Solite white covering.

A great flying plane. Easy to fly, tracks straight and looks simply great in the air. "

Let the model gain altitude slowly off the runway. Applying too much up elevator at slow speeds asks for a stall. Make your turns gently as tight turns risk tip stalling in any model. Don't expect the elevator to make the model climb. Think of the elevator as a device to change the attitude of the model. The wing and airspeed ultimately make the model climb. Often down elevator applied at stalling can avoid a major crash. The most important details for proper flight operations are:

CG location. Tail-heavy models never fly well or at all.

Down and right thrust

Straight and non-warped wings.



Mister Mulligan

CONTACT INFORMATION

Distributed by:

Bengtson Company

E-mail: sales@aerodromerc.com

Web Site: www.aerodromerc.com