"MERCURY"

Construction

Fuselage

Begin the model by first constructing the two sides of the square inner fuselage (one on top of the other). Be sure to select HARD ¼" sq. balsa for this. Use medium hard for the diagonal bracing. When the sides are dry, remove from the plan and separate with a razor blade. Proceed to build up your square construction using a set square to check for accuracy. The next step is to cut out all the formers from 3/32" medium balsa sheet and ¼" marine ply. Bind the U/C tubes to their respective formers.

When dry, slide the full formers over the fuselage frame to their respective stations and glue in position.

The undercarriage is next. This is made from 5mm dia. piano wire for the front leg and 3mm dia. for the rear leg. The axle being part of the rear leg. Make sure the wheels rotate independently. The axle makes taking off from long grass impossible.

Now the undercarriage ply strengthening plates, these are cut out from 1/16" marine ply and are slipped down the inside of the square construction and slotted over the actual undercarriage tubes. They are then glue very securely in place, as they will have to come in for a great deal of stress during landing and take-offs. (Use epoxy)

Then gusset each corner round the undercarriage tubes with triangular pieces of 1/8" sheet balsa. Now add the tail.

The two hardwood engine bearers can be made from 3/8" x ¼" beech hardwood. (I would prefer to use ½" x 3/8")

Drill each one to take the engine bolts and carefully slide them into the fuselage in their appropriate positions. Incidentally, the width between the bearers will vary slightly with different engines, so measure up for your individual power plant.

The engine accessories can now be added, fuel tank, throttle etc. The battery box is cemented to the floor of the cabin. Fit suitable servo mountings, Throttle, Elevator & Rudder. Linkages should be established before the fuselage is planked. Add 3/8" dowel wing retainers before planking and gusset as shown. Covering the fuselage with 1/8" medium strips requires patience and care. The designer found it best to start with ¼" wide strips on the top rear half of the fuselage. These strips should be tapered off to 1/8" wide at the rear. In applying the rest of the planking, use 1/8" x 5/8" or even ¾" wide strips on the lesser curves. Where the curves become more pronounced decrease the width of the planking strips to 3/8". Add the strips symmetrically to avoid distortion. Use small modelling pins to hold the strips in place while the glue dries. (PVA is best here) When the planking is finished, fill any gaps with car body filler and sand smooth, cut out the window and windscreen apertures and sand off the edges.

The undercarriage may be faired and fitted with spats. There remains very little to do now on the fuselage apart from the tailplane platform made from 1/8" sheet with the grain running laterally.

Wing

Outer Panels.

Ribs are cut from 3/32" balsa. Two main spars of 3/8" sq. 2 rear spars of ¼" sq. Leading edge 3/8" sq. Trailing Edge 1/4" x 1" with 1/16" x ¼" cap strips on ribs.

The first step is to cut out all the ribs and notch them for the spars etc. Next assemble spars, leading edge, trailing edge and ribs, and glue all joints. Then come the boxes to take the hardwood centre section spars. These are formed by webbing the first four bays each side of front and rear spars with 3/32" hard sheet having removed the rib portion between spars. This forms two hollow boxes in each wing panel for the centre section spars to slide into. Next, complete the panels by sheeting the outline with 1/16" sheet from the leading edge back to the front spar top and bottom. Trailing edge forward to rear spar top only, carrying on round root and tips. The final job is to cap strip the ribs and face the root ribs with 1/32" ply.

Centre Section

First make the four spruce spars and fit them into the boxes. These should be a tight fit – but not so tight that you have to get two or three other club members to help dismantle your wing. Mark each spar for its respective box. Now trim off for length and shape and splice together using 3/32" marine ply each side and screwed on with a few ¼" brass wood screws and bolts where shown. When these are set (Use Epoxy) Cut out two ribs CS1 (ply and balsa). Laminate and fit on spars. Now slide the spars into two wing panels and make sure your line up is absolutely correct. If this is so, glue the two CS1 ribs in position flat up against the end of the root ribs on each outer panel. Follow up with ¾" sq. leading edge and ¼" x 1" trailing edge and 16. Now add the retaining hooks, sheet this with 1mm marine ply and leave to set, then slide off the outer panels.

Tailplane Assembly

This is perfectly straightforward and needs very little explaining. Cut spar trailing edges and tips from hard ¼" stock and ribs from quarter grain 3/32" sheet. The spars should be exceptionally hard balsa. Assemble. Add fuselage fairing blocks and sand smooth all joints.

Cowling

This can be made in a variety of ways, but the easiest way the author has yet found is as follows:

Obtain some medium soft lengths of ¼" x 6" wide balsa and laminate. Leave for 48 hours to dry. Then carve out to fit over the engine and mounts – being careful not to hollow out too far. Then shape off the outside to conform with the fuselage outline. Use a stock spinner.

Covering

The model can be covered in Solartex, this is as close as you can get to the original Jap Silk.

Flying Instructions

Flying is quite straightforward. Double check the C of G, battery charged, fuel tank full, control movements going the correct way, all the usual checks and off you go. The original was a free flight model so it should fly very well with little input.

Updated: Colin Usher March 2014