

MICKEY MOUSE TANG

BY BOB RAYZAK



Mickey Mousetang is a pattern aircraft designed to take advantage of the current breed of high performance .40 cubic inch engines. Mickey's styling, a very liberally translated (i.e. Mickey Mouse) version of a racing P-51 Mustang has brought about its name.

In the air, Mickey Mousetang is a fast, sensitive, and neutral flier. Mickey is very streamlined owing to its general lines and a somewhat thin airfoil with a sharper leading edge than is normal for a pattern ship. At the same time the airplane shows no tendency to stall on landing approaches (one such stall per plane is all you usually get).

The tail-dragger arrangement may cause some concern to those who are used to tricycle landing gear. However, the wide stance main gear and the short steering moment of the mid-body tailwheel make the Mousetang very controllable on the ground both for taxiing and take-off. Besides, neither Mustangs nor Mousetangs look right with tricycle gear.

I have almost been convinced that for radio controlled flying Murphy's Law should be amended to read, "Even if nothing can go wrong, it eventually will." This cautious approach influenced the choice of the simple tail-dragger landing gear and dictated the use of a removable one piece engine cowl and tank compartment hatch. Removing this unit exposes the engine and tank to ready inspection and maintenance. The engine is side-mounted since such an arrangement minimizes vibration transmitted throughout the airframe. In addition, such a side-mounted engine is used since it certainly looks better than an upright engine while an inverted engine could idle unreliably. As luck would have it, all of this caution has proved justified. However, the removable cowl/tank compartment hatch, as originally held down, tended to be a bit too removable and would come loose in flight. The scheme presented here holds the unit firmly in place.

In spite of all this philosophizing, Mickey Mousetang is a fun airplane which can win in pattern contests (yes, even with a .40!). It can also be used to advantage as a Sport Pylon racer since it is fast and turns on a knife-edge quite well.

CONSTRUCTION

Mickey is not difficult to build and, if you like carving and sanding, will be fun when you get to completing the fuselage. The wing and tail surfaces are very straightforward. All wood used in the model can be the soft to medium grades without sacrificing needed strength. Hobbypoxy Quick-Fix glue was used, where practical, to speed building time.

WING:

Begin by cutting the foam cores, ensuring that the wing upper surface is perpendicular to the root and tip patterns. In this way, little truing-up will be necessary prior to joining the wing panels in the flat top wing configuration. Dihedral is formed by the root to tip taper on the bottom wing surface. Cut out the servo area, the full depth spar slot, and the maple landing gear block area. The latter two operations will leave a floppy section at the foam core leading edge which must be made rigid prior to sheeting the core. Epoxy soft ¼" square strips at the top and bottom of the spar slots to provide this strength. Epoxy the maple landing gear blocks and the ¼" sheet rear spars in place. Trim the wood and sand the cores smooth, vacuuming afterwards to remove all foam and balsa dust.

Cut a slightly oversize piece of 1/64" plywood to wrap completely around the wing panel. On the inside of the wing

skin mark the location of the wood pieces glued to the wing core. Apply epoxy on all wood to wood joints and a foam compatible contact cement on the wood to foam joints (Weldwood "Super" water soluble contact cement is excellent). After wetting the outside of the skin leading edge area with warm water, wrap the skin around the core from trailing edge to leading edge to trailing edge. Trim the plywood and sand the wing panels to final outline.

The wing panels should now be joined. First, cut a wing joiner from ¼" sheet balsa and groove each wing core root for the front locating dowel. Using a slow curing epoxy glue such as Hobbypoxy Formula 2, join the wing panels upside down on a flat surface. Tape the center section to contain the oozing glue. When this has cured, tack glue 3/8" x 1/4" strips to the trailing edge and razor plane and sand to shape. Glue on the fixed trailing edge pieces after mounting aileron horns at wing center. At this time, line the servo compartment with balsa. Glue on and sand wing tips to shape. Cut away plywood skin at the maple landing gear block grooves.

The wing locating dowel, 1/16" plywood leading edge face, ¼" rear hold down bolt hole, fiberglass tape reinforcing of the center section, and the scoop and fairing are not added until the basic fuselage structure is built.

Bend the main landing gear struts from 5/32" music wire and cut the skirts from 1/16" plywood. These skirts are attached with screws tapped into metal plates soldered to the struts.

TAIL SURFACES:

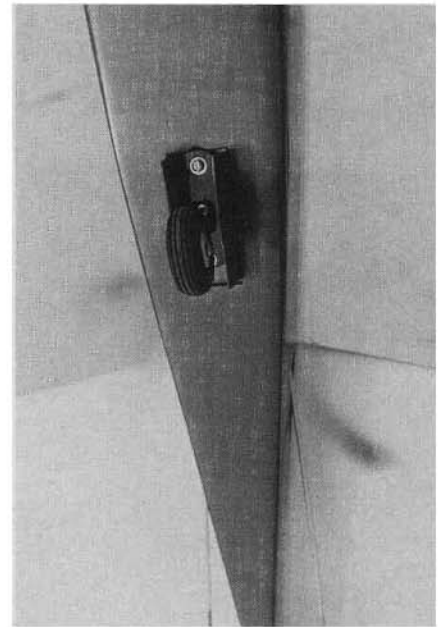
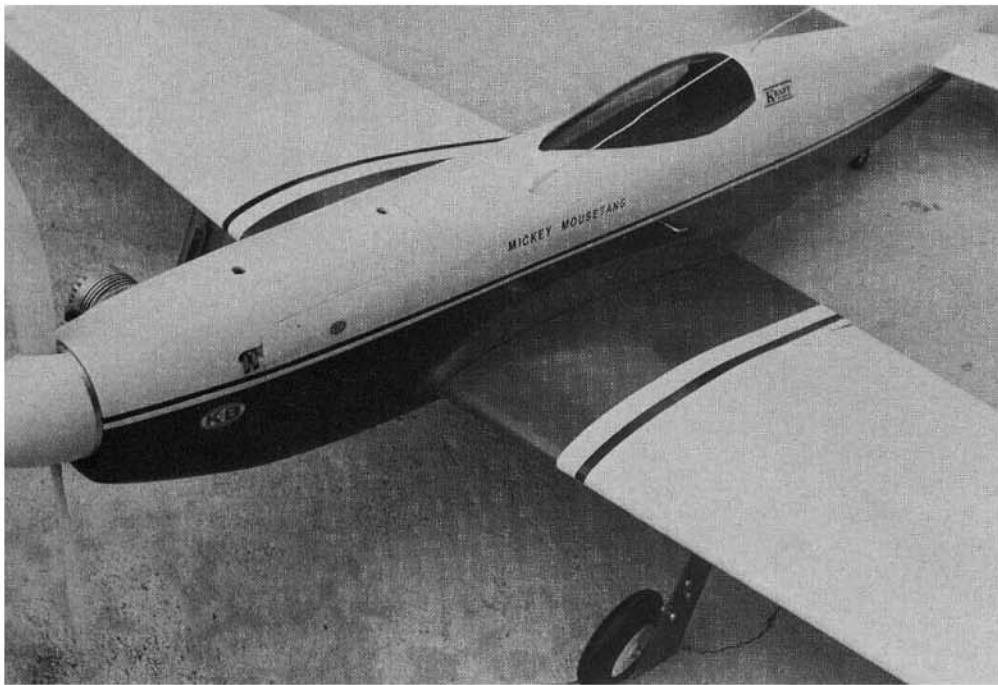
The fin and rudder are cut from ¼" sheet and sanded to the shape shown on the plans. The elevator halves are cut from Sig ¼" x 2" tapered stock and joined by ¼" dowel. Sand to the shape shown.

Build the stabilizer in a fashion similar to that used for the wing except that the stabilizer leading edge is a carved ¼" x 3/8" strip. The stabilizer halves are joined with their trailing edges on a flat surface.

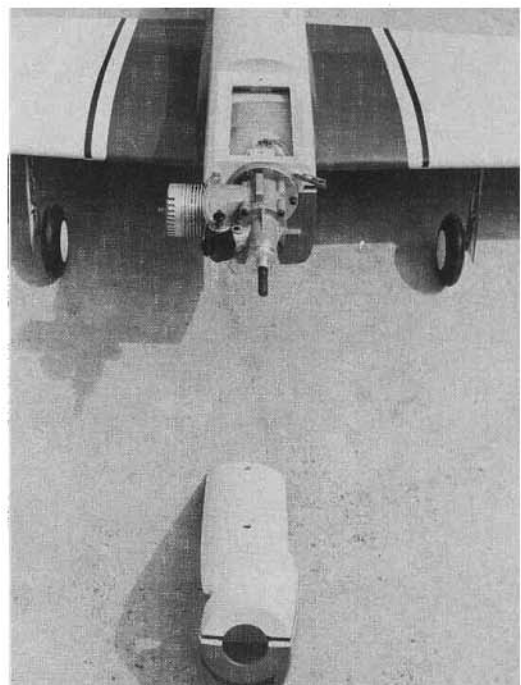
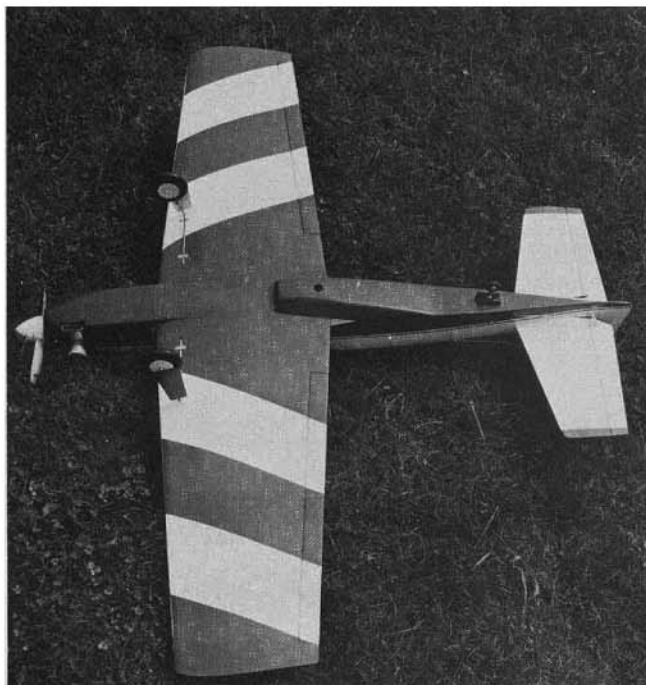
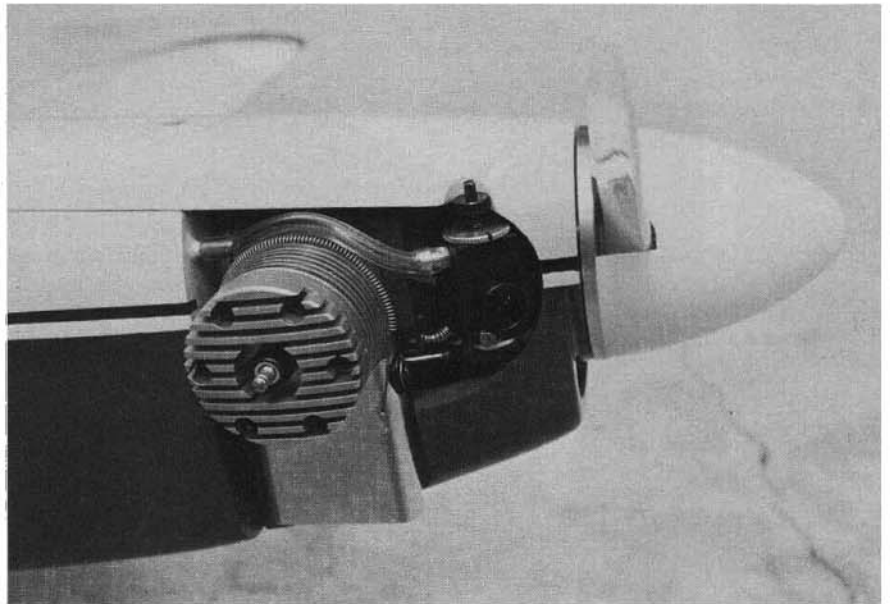
FUSELAGE:

Begin construction of the fuselage by cutting out all parts. Then assemble the left and right hand sides. Note that to simplify carving the fuselage to shape the plywood doubler is not carried to the top edge of the fuselage side. Also, notch the 1/8" x 1/4" bottom longeron now to accept the tail gear mounting plate later. Plan the location of rudder and elevator pushrods and cut appropriate slots in the sides. Drill all engine mounting holes, fuel line exits, and throttle cable holes before assembly. Also install blind nuts in the firewall and coat the tank compartment area of the fuselage sides and the firewall inside surface with epoxy glue. Assemble the sides and bulkheads upside down over the plans. The ¼" sheet tail reinforcing fill is not cut away at the stabilizer slot until the top planking is glued in place and sanded to shape.

Before closing off the fuselage top, glue in the ¼" plywood plate for the wing hold-down bolt. Align the wing to the fuselage and drill and tap this plate for the rear hold-down bolt. Glue in the 1/8" plywood bolt support disc, the leading edge locating dowel, and the 1/16" plywood face. Bolt the wing in place and hold it in alignment to ensure a proper fit for the locating dowel and plywood face. When this has cured, remove the wing and reinforce the wing center section with 1½" fiberglass tape applied with epoxy.



ABOVE: Front three-quarter view of Mickey Mousetang. **ABOVE, RIGHT:** Steerable tail wheel and dummy tail wheel doors. Wheel angle adjusts by moving base plate fore and aft. **RIGHT:** Engine and cowl detail. Photo shows K & B .40 FR installation. **BELOW:** Bottom view showing distinctive paint scheme and Mustang-like styling features. **BELOW, RIGHT:** Removable cowl and tank hatch allows complete access and inspection for engine and tank.



The 1/4" sheet rear deck pieces, 1/8" sheet front bottom planking, and the 1/2" front top sheet can be glued on now. Bevel the top of the fuselage sides to the line shown using the bulkhead views as a guide to correct bevel. This guide line curves up at the rear of the fuselage starting at the stabilizer leading edge to ensure proper fit of the rear deck side sheeting. Cut the fin slot after gluing on the rear deck top. Fit the 1/2" sheet cowl top and tank hatch and drill to accept 4-40 hold-down bolts and glue in 1/4" square by 1" maple blocks. Bolt this in place and glue on the engine cowl parts. Glue on the cowl nose ring with the engine and spinner back plate in place as a positioning guide.

Make the adjustable and steerable tail gear unit. The eyelets and 1/32" wire steering arm are soldered to the axle shaft. Other parts are joined with epoxy. Glue the 1/8" plywood mounting plate complete with 2-56 blind-mounting nuts to the fuselage bottom. Bolt the wing to the fuselage and build the fuselage portion of the dummy scoop. Using this as a guide, carve and drill the soft balsa scoop front and glue it to the rear of wing. Also, glue the leading edge fairing to the wing. Do not plank the bottom rear of the fuselage until the stabilizer and fin have been inserted. This will provide access for gluing. Do not attach the carved balsa wing fillets until the fuselage has been carved and sanded to final shape.

Remove the engine and wing from the fuselage, cut the rear portion of the Top Flite Kwik-Fli canopy to approximate fit and mark its outline on the fuselage top sheet. Carve and sand to shape the entire fuselage and cowl assembly except behind the wing on the bottom which has not yet been completely planked. Cement the canopy in place (the German cement, UHU Hart, is ideally suited to this job) after finishing cockpit details and drilling an air escape hole in the cockpit floor. The hole prevents the canopy from collapsing or popping off as the air contracts or expands with changing temperature.

ASSEMBLY

Cut away the 1/4" fill at the rear of the stabilizer slot. Bolt the wing to the fuselage and align and glue in the stabilizer and fin. Complete planking the fuselage bottom and glue on the wing fillets.

The wing must now be weighted to balance the side-mounted engine. For this procedure, assemble the airplane

including landing gear and ailerons (use masking tape strips to hold in place) but not the rudder. Drill a hole into the left hand wing tip and fill with glue and solder until the wing is level when the airplane is supported at the engine propeller shaft and the fuselage rear via an axially placed straight pin.

Now, apart from painting and radio installation, it remains only to cut hinge slots, install feed, fill, and vent tubes to the fuel tank, drill mounting holes for rudder and elevator horns and landing gear straps, and to perform other minor detail work on the Mousetang.

FINISHING

Mask the canopy to the paint line indicated on the plans to protect it from glue, dope and sandpaper. Also, mask off the desired fillet edges around the tail surfaces and fuselage joints. Excellent fillets can be made using a filled epoxy such as Metalset A4 manufactured by Smooth-On Inc., Gillette, N.J. Apply the filled epoxy to the canopy and fillet areas and smooth out with a finger which has been dipped in dope thinner. Remove the masking tape (except that on the canopy) and feather the epoxy into the wood. No further finishing will be required of such fillets, except for a light sanding to remove surface glaze.

For a neater looking job, finish the movable surfaces independent of the fixed surfaces. In fact, since the movable surfaces should not have any appreciable gap between them and the fixed surfaces, it is not possible to do a thorough paint job any other way.

Fill any dents, gouges, and seams in the wood surfaces with Hobbyepoxy Stuff straight from the can. When dry, sand all surfaces progressing to 400 grit wet-or-dry papers. Vacuum clean the wood and brush on three coats of medium strength clear dope. Let this dry for two or three days and sand down with No. 400 grit paper. Brush on as many coats of a mixture of dope thinner, clear dope, and Stuff (approximately equal portions by volume) sanded between coats as you feel is satisfactory. Spray on a sealing coat of clear dope. Let this dry for several days (if you have the patience) to see if any areas need further attention due to dope shrinkage. If not, spray on a primer coat of silver or light grey dope and then the primary finishing color.

Use cellophane tape to mask colors since it provides a much finer edge than regular masking tape. After paint trimming is complete, remove all masking and wet sand paint edges smooth. Apply lettering and numerals (I use "Letraset") and decals to suit and spray the entire airplane with a few coats of clear dope. The clear dope is necessary at this stage to protect not only the decals and lettering, but also the colored dope. Otherwise, even the mildest of fuels and after-the-flying-session cleaners will eat away at the finish in short order.

The plans are detailed for a K & B .40 R/C series 70F engine with a dMECO universal radial mount and rubber shock absorbing disc. Other arrangements could require modifications to the cowl.

There is ample room inside the airplane for the Kraft Series Seventy One airborne system with KPS-12 servos used in the original Mickey Mousetang. Servos such as the KPS-9 will not fit with sufficient clearance. I mounted the rudder, elevator, and throttle servos (two side by side, one across) in a tray at the very rear of the fuselage radio compartment. This gives plenty of room for the receiver wrapped in a long tube of foam. No severe balance problems are encountered with such a scheme yet the extra fuselage room made available allows easy removal of the tank (or battery pack under it) should this prove necessary.

FLYING

Balance the Mousetang at the point shown on the plans. Overall weight between four and one half and five and one half pounds will prove to be quite satisfactory for excellent flight performance. Initially set up the control surfaces as follows: ailerons - 1/4" up, 3/16" down (such differential is automatically obtained by using Rocket City No. .05 aileron links on the 3/32" wire horn which is vertical when at neutral); elevator - 3/16" up and down; rudder - 3/8" right and left. Such movement is more than ample. Use a 10-6 propeller for preliminary flight trimming.

Take-offs are normal as the Mousetang is not strongly affected by engine torque. The tail does tend to come up under full power ground acceleration, though, and up elevator is necessary

for lift-off. As flying experience is gained, try a different propeller such as an 11-5 in an attempt to achieve your goals for aircraft speed, acceleration, and maneuverability. Also, move the balance point further to the rear as you see fit. For dead stick landings use a long approach as the Mousetang tends to glide "forever" without the propeller drag at engine idle.

I would be happy to answer any questions and to hear of experiences you might have regarding Mickey Mousetang. Write me in care of R/C Modeler Magazine.

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