

MUSTANG STUNTER



The Mustang Stunter has some features that may be new to some of you - mainly the molded ABS plastic parts and the foam core wing. To understand all of the construction requirements, read the complete instructions and study the drawings carefully before beginning. Having a knowledge of the construction steps will make clear where several building operations may be accomplished at the same time. While one part is drying, another part can be started.

Any references made to the left and right refer to your left and right as if you were seated in the cockpit. References to inboard mean towards the center of the flight circle and references to outboard mean away from the center.

IMPORTANT NOTE: Use only Sig Core Bond, Sig Epoxy Glue or Sig-Bond glue on the foam wing cores. Model cement, Sig-Ment, dope and fiberglass resin will all attack and destroy foam. For gluing the wingskins to the foam core, Sig Core Bond will work the best. Don't use Foam Bond as it isn't intended for use over such a large area. If you use any product other than those listed, test them on a scrap of foam before use on the wing.

1. PREPARING THE FOAM CORES

Sand any slight irregularities from the foam core with a large sanding block of medium-light grade sandpaper. Sand lightly and carefully to avoid making a flat spot in the airfoil.

2. MAKING THE WING SKINS

The 1/16" x 3" x 24" balsa wing sheeting must be edge-joined to make four one-piece wingskins for the top and bottom surfaces of both wing halves.

(a.) With a long straight edge, true-up the edges of the 1/16" sheeting, where necessary, so that the sheets fit tightly together with no gaps.

(b.) Tape 6 sheets tightly together with masking tape on one side.

(c.) Turn over and open up the joints - the masking tape on the other side serves as a hinge.

(d.) Put a bead of Sig-Bond glue in the seam and close the joint. Lay the sheets flat, scrape off the excess glue, weight down, and allow to dry thoroughly.

Note on the plan that the wing skins should be attached to the cores with wood grain running parallel to the wing trailing edge. A diagram shows how two skins are obtained by cutting the edge-joined sheets apart diagonally on the dashed line. Make a second edge-joining of 6 sheets, but cut these apart diagonally in the direction opposite to the first set. This will give you two more skins to be paired with the first set so that the smooth glue seams under the tape can be glued against the cores.

3. APPLYING THE WING SKINS

Proper application of the balsa skins to the foam core requires a perfectly smooth and flat surface. Apply one side at a time. Sig Core-Bond is recommended for gluing the wing skins to the foam core. This is a special adhesive, light and strong, that will not attack foam when used as directed. Apply a thin, even coat to the wing skin and to the foam core. Allow it to dry completely - at least one hour. The Core-Bond must be dry for good adhesion. Lay the wing skin on a flat surface. Place the trailing edge of the foam core down near the edge of the wing skin. Make sure that it is properly aligned before contact is made because it cannot be removed and replaced. Press down along the trailing edge and roll the wing core forward on the wing skin with a rocking motion. Turn it over and rub down the skin, starting at the trailing edge and working forward, staying parallel with the wingspan and with the wing resting on the high point of the airfoil in the area of the strip being worked down. Trim the edges of the wing skin to fit the core.

4. COMPLETING THE WING PANELS

(a.) Sand the leading and trailing edges square with a large sanding block.

(b.) Glue on the 1/4" x 3/4" leading edge.

(c.) Glue on the 1/8" x 3/8" trailing edge.

(d.) Cut out the 1/16" sheeting over the landing gear block cavity.

(e.) Epoxy the plywood anchor block to the hardwood landing gear block. Install this assembly into the cavity in the foam wing. Use enough epoxy to fill in any cracks between the blocks and the foam.

(f.) Carve and sand the leading and trailing edges to the contour of the rest of the wing.

(g.) Sand the entire wing with a sanding block.

5. BELLCRANK ASSEMBLY

(a.) Mount the 3" nylon bellcrank to the 1/8" plywood floor. The hole for the mounting bolt should be in the center of the plywood floor.

(b.) Attach the leadouts to the bellcrank.

(c.) Thread the leadouts through the leadout holes of the inboard wing panel. Bending over the end of the leadout cable will enable it to slide freely through the leadout holes.

(d.) Epoxy the plywood bellcrank mount in place in the inboard wing panel.

(e.) Install the flap pushrod and make sure that the

controls work freely up to this point. If necessary, use a rat-tail file to enlarge the leadout holes at the center section so that the leadouts and bellcrank won't get snagged by the foam.

(f.) Cut a channel in the outboard wing panel from the bellcrank cavity to the trailing edge, to clear the flap push-rod.

6. JOINING THE WING HALVES

Use epoxy glue to join the wing halves. Be certain that no twist between the halves is built into the wing when they are joined. Coat the outside surface of the joint thoroughly with Sig Epoxy Glue and reinforce the seam with a strip of fiberglass cloth.

7. SHAPING THE FLAPS

(a.) Trim the flaps to size shown on the plan. Sand them to proper shape. Install the flap control horn.

8. HINGING THE FLAPS

Hinge the flaps to the wing with the hinges provided, or if you prefer, use Sig Nylon Pinned Hinges. For best control response keep the gap between the wing and flap as narrow as possible without putting a bind on the movement of the control surface. The flaps should be able to move freely from 45 degrees up to 45 degrees down.

(a.) Cut slots with a razor knife into the flap leading edge to receive the hinges.

(b.) Glue the hinge into the slot with Sig Epoxy Glue. The Kwik-Set (5 minute) epoxy is ideal for this job.

(c.) After the hinges have dried in the flaps, repeat the process to attach the flap to the wing.

9. WING TIPS

(a.) Tack glue 1-1/2" x 1-1/2" x 7-1/2" balsa blocks to each wing tip.

(b.) Carve and sand to shape.

(c.) Remove them carefully and hollow out to about 3/32" wall thickness. An X-Acto router blade in a large handle works best for this.

(d.) Epoxy the leadout eyelets into the inboard wing tip.

(e.) Epoxy 1 oz. of weight into the outboard wing tip.

(f.) Glue the tips permanently back to the wing and touch up with a sanding block.

10. FUSELAGE SIDES

The internal framework of the fuselage is built directly on the 1/8" balsa printed fuselage sides. Note that there is a right and a left side.

(a.) Cut the fuselage sides from the sheets along the heavy, undotted lines. The dotted lines show the construction to be added.

(b.) Glue the 1/32" plywood doublers to the inside of each fuselage side. Note on the plan that the doublers extend 1/16" above the fuselage sides. This is to reinforce the plastic top deck which will be added later.

(c.) Epoxy the 3/8" x 1/2" motor mounts flush with the top of the doublers.

(d.) Glue on the 3/4" x 1/2" x 1" balsa nose blocks.

(e.) Glue the 1/8" x 1/4" balsa stringers to the top and bottom of each fuselage side. Note that these stringers also extend past the fuselage sides in the areas where the plastic deck and scoop will be added later.

(f.) Glue on the 1/2" balsa triangle.

(g.) Cut the 1/8" x 1/4" vertical braces to length and glue in place.

11. JOINING THE FUSELAGE SIDES

The construction of the fuselage allows the Veco tank to be removable. A removable tank can be repaired or replaced, in the event it should develop a leak, without having to cut apart the entire nose section.

(a.) Epoxy plywood formers F-1A and F-2 in place on one of the fuselage sides.

(b.) Epoxy the other fuselage side to F-1A and F-2. Use the top view of the fuselage on the plan to make certain that the sides are parallel and square.

(c.) Glue the former F-1B in place at the location shown on the plan.

(d.) Place the tank in the fuselage. Working through the bottom, glue a piece of 1/4" balsa to former F-2 at the rear of the tank. The balsa should be tight against the bottom of the tank in order to provide a snug, wedged fit when the tank is later removed. Be careful not to get any glue on the tank itself.

(e.) When you fly the airplane, wedge a piece of scrap foam or balsa between the bottom of the tank and former F-1B to keep the tank in place.

(f.) Trim the 1/8" x 1/4" bottom stringer slightly at the rear of the fuselage to enable the sides to come together.

(g.) Glue the sides together at the rear.

(h.) Cut 1/8" x 1/4" cross pieces and glue in place. Make certain that they are proper length so that your fuselage matches the top view on the plan. If it doesn't, the plastic parts may not fit properly.

12. ENGINE MOUNTING

The plan calls for 1° to 2° of engine offset. While this is difficult to measure in degrees, the main point is that an excessive amount of outthrust is not required. However, be very certain that no intrust is incorporated which could be disastrous.

(a.) Drill through the motor mounts to install your engine. Don't forget to allow room for the 1/8" plywood nose ring that goes behind the spinner.

(b.) Epoxy the 4-40 blind nuts in place.

(c.) Glue the 1/8" plywood nose ring to the fuselage.

13. TAIL WHEEL ASSEMBLY

(a.) Lay the 1/16" tail wheel wire in place on the 1/16" plywood mount. Drill a series of small holes through the plywood on both sides of the wire.

(b.) Lace the wire to the plywood with copper wire.

(c.) Glue the tail wheel assembly in place in the fuselage. Use epoxy glue and smear some of it over the copper lacing to keep it from unwinding.

(d.) Glue the 1/8" and 1/4" balsa sheets to the bottom of the fuselage, however, don't shape them yet.

14. PREPARING THE TAIL SURFACES

(a.) Shape and sand the stabilizer and elevator parts.

(b.) Install the 3/32" elevator joiner wire in the same manner as the flap horn.

(c.) Hinge the elevators according to section 8.

15. FINAL ASSEMBLY

(a.) With razor saw, carefully cut through the fuselage sides and bottom so that the fuselage bottom under the wing can be temporarily removed.

(b.) With the fuselage upside down, lay (but don't glue) the wing in the wing cut-out. Replace the cut-away portion, gluing it only to the fuselage and not to the wing. The wing should be free to move at this point. Splice a piece of scrap balsa over the seams.

(c.) Center the wing in the fuselage. Measure from the trailing edge of the wing tips back to the end of the fuselage and shift the wing until both the distances are the same. When satisfied with the alignment, epoxy the wing to the fuselage permanently.

(d.) Install the elevator pushrod to the flap and elevator horns.

(e.) With the control linkages thus hooked up and the wing flaps in neutral, slide the tail assembly forward or backward until the elevators are also neutral.

(f.) Epoxy the stabilizer to the fuselage. Before the epoxy hardens, check the alignment of the tail in relation to the wing from both the top and front views.

16. MOLDED PLASTIC PARTS

(a.) Install the plastic top deck and lower scoop with Sig-Ment glue. Avoid large beads of cement which may warp or distort the plastic. Don't force the plastic parts tightly against the protruding stringers and doublers. Doing so would distort the shape of the plastic parts so much that it would be impossible to shape the fuselage properly. Refer to the cross sections on the plan. Masking tape and small pins are a great help in getting the pieces properly placed before the glue dries.

(b.) Trim the front of the plastic top deck flush with the front of former F-1A.

(c.) Glue on the 1" x 2-3/8" x 3" balsa top nose block.

(d.) Hold the cowling in place. Mark the wood around the outside for use as a reference point when shaping that area.

(e.) With a long bladed modeling knife (X-Acto # 26 blade), shape the wooden fuselage parts to blend with the plastic parts. Trial fit the cowl occasionally to see that you don't carve too far.

(f.) When the fuselage is roughly to shape, finish the job with a sanding block. Use very fine sandpaper when coming into contact with the plastic parts so that they won't get deeply scratched.

17. VERTICAL TAIL SURFACES

(a.) Make a fairing from 1/4" scrap balsa and glue it in place between the elevators.

(b.) Join the fin and rudder with 1/4" offset to the right. When dry, shape and sand the assembly.

(c.) Glue the fin and rudder in place.

(d.) Cement the dorsal fin in place and sand it to blend into the fin leading edge.

18. LANDING GEAR ASSEMBLY

(a.) Drill into the end of the landing gear block with a 1/8" drill. Be careful that the drill does not go through the top of the wing.

(b.) Insert the torsion arm of the landing gear wire into the holes. File any burrs off the arm to get it to go smoothly into the hole.

(c.) The landing gear wire is held in place with nylon retaining straps and screws. Two straps are supplied for each landing gear.

(d.) With scissors, cut the landing gear covers from the .030" ABS plastic sheet. You will be able to get two covers from the 3-3/8" x 3-3/8" sheet supplied.

(e.) The landing gear covers are fastened to the landing gear wire with strips of Celastic fabric. First, for good adhesion, sand the wire lightly and clean off any oil residue with dope thinner. Dip the Celastic in butyrate dope thinner and let the excess run off. Place it over the wire and work it down tightly against the plastic covers. As the thinner evaporates, the Celastic will become rigid, and later can be sanded and painted.

19. FINISHING

All of the plastic parts may be painted with Sig Super-coat dope. It isn't necessary to put any base or filler coats on the plastic parts. Care should be taken not to apply heavy, wet coats of color dope to the plastic. Put on light coats and allow them to dry thoroughly before applying a second coat. Do not use paints other than dope without first testing their compatibility with the ABS plastic on a scrap piece.

All wood parts of the model should be covered with silkspan. Overlap the silkspan about 1/8" onto the plastic top deck and lower scoop. Covering the entire model not only strengthens the wood but gives the model a better finish with less work involved.

It isn't necessary to have elaborate paint spraying equipment to put on a good finish. If you brush, just be sure to thin the dope or sanding sealer until it flows out smoothly. Many paint jobs are ruined by trying to brush dope without thinning properly. I thin my color dope for brushing about 40% (40% thinner, 60% dope) and the sanding sealer at least half that much.

The wood parts are first prepared with two brushed on coats of Sig Lite Coat (low shrink) clear dope. Sand each coat when dry. The bottom of the wing is a good place to start covering. Cut a piece of silkspan about 1" larger than half of the wing. Dip in water and apply. Work around the edges, pulling out all the wrinkles and stretching it smooth. Brush around the edges with clear dope and it will soak through the covering and adhere to the dope underneath. After drying, trim off the edges with a sharp razor blade. Redope any loose edges that have not completely adhered. The rest of the wing and tail surfaces and fuselage are done in identical fashion.

Apply two coats of clear dope to the covered parts. Sand lightly with fine sandpaper. Apply a coat of Sig Sanding Sealer.

When dry, sand the majority of sanding sealer away with fine sandpaper. Hold the model up to a light occasionally while sanding and you can see the low spots appear. If you can't sand these spots away without sanding into the silkspan, then you need another coat of sealer. Remember that the purpose of the sanding sealer is only to fill in the low spots, not to build up the high ones. With thorough surface preparation, two coats of Supercoat Color Dope will usually give good coverage.

20. CANOPY

The ideal method for painting the framing on the canopy is to put light, thin coats on the inside and outside simultaneously. This will help keep the plastic from warping.

The canopy is held onto the top deck with Sig Ment glue and/or vinyl plastic tape. Sig-Ment should be used sparingly, as too much can soften the plastic and make it warp.

21. DECALS

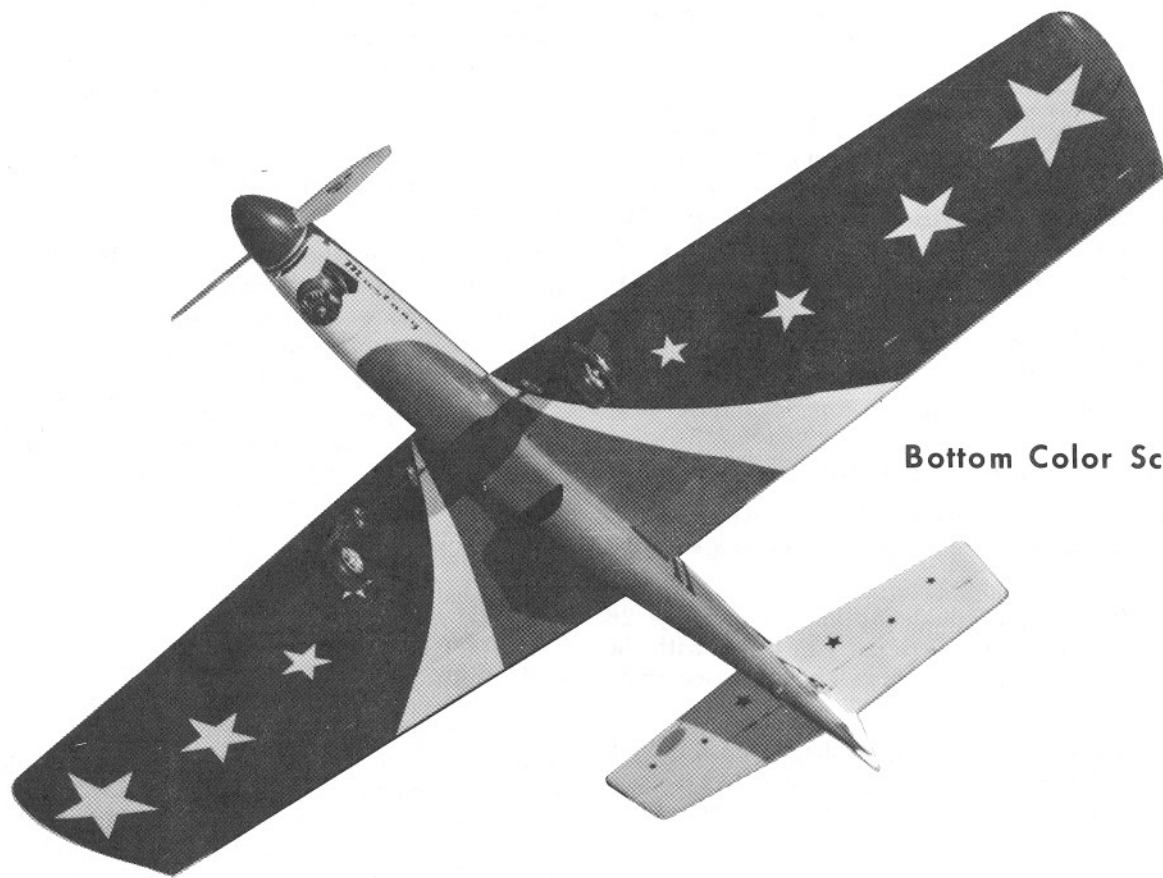
Cut the decals from the sheets leaving about a 1/16" clear border.

Dip the decals in water for a few seconds, remove and allow the moisture to soak into the backing to completely loosen the glue. Don't slide the decal off too soon or it may tear. Slide about 1/4" of decal at the bottom over the edge of the backing and align on the surface. Hold the decal and carefully slide the backing from underneath. Use a small piece of sheet balsa as a squeegee to remove excess water from under the decal.

The decals are fuel proof with most fuels but will dissolve in dope or cement. Do not try to dope over the decals. Some types of clear fuel proofer may be used over the decals to increase their durability but test them in advance before applying.

22. BALANCING

The Mustang Stunter should balance on the point shown on the plan. It is actually a personal preference exactly where the CG should be. A more rearward CG will make the plane more sensitive to control movements and less stable. A forward CG will make it more stable and easier to fly. Each flyer has a different point at which a model will have the blend of maneuverability and stability to suit him. In no case should you attempt the first flight with the CG farther than 2-1/2" back from the wing leading edge at the fuselage. Fly the Mustang on .015 braided control line cable, 60 feet long.



Bottom Color Scheme