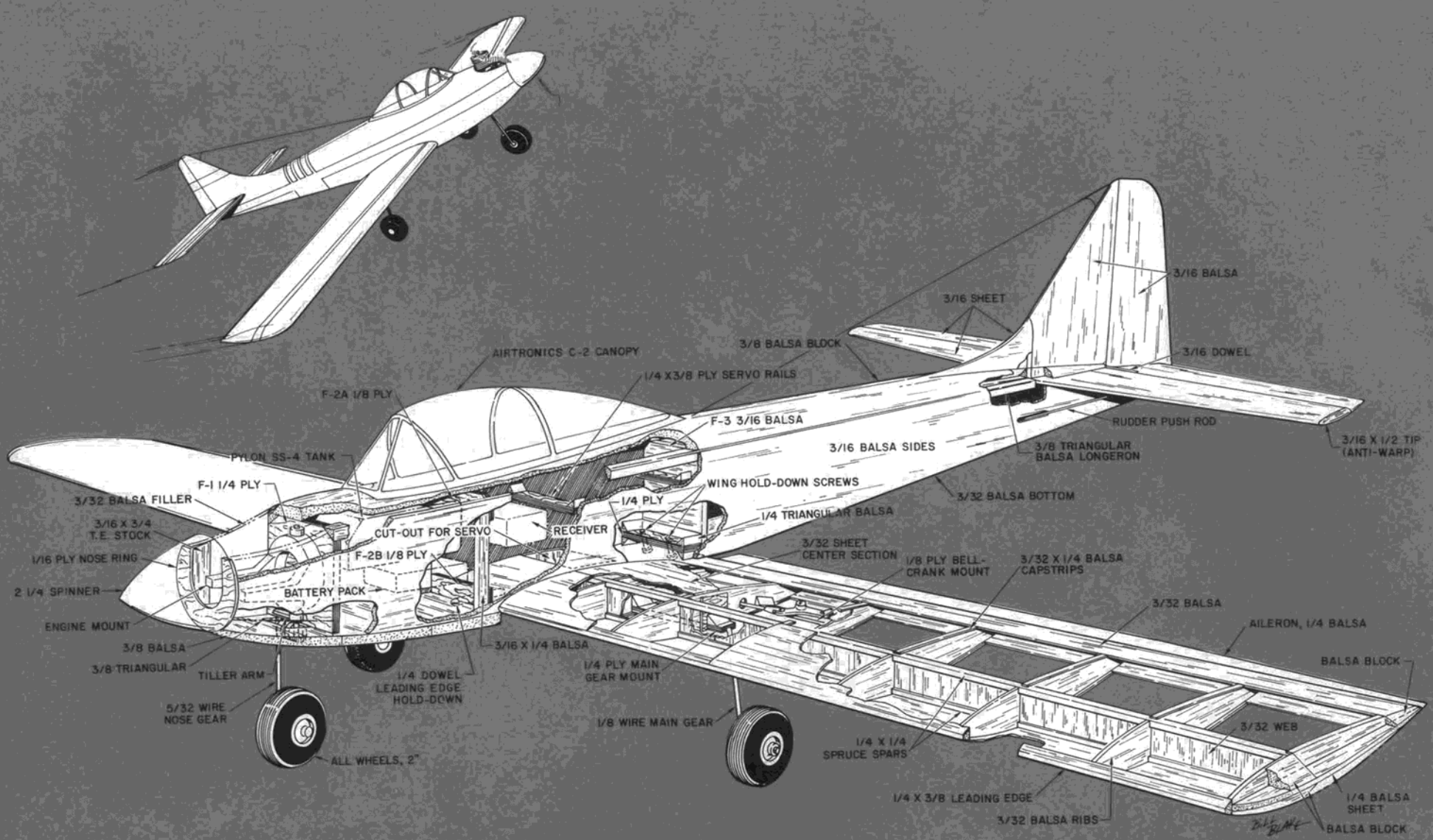
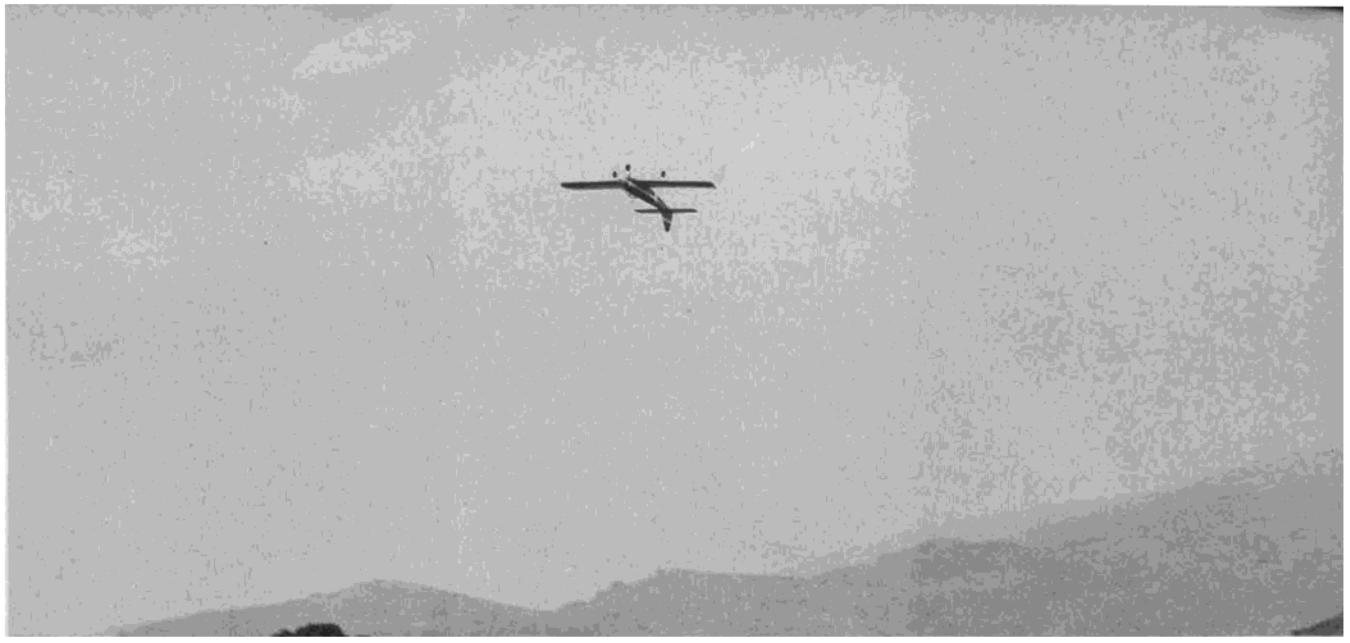
don dewey's New Era III



RCM NEW ERA III

SPORT PATTERN AIRCRAFT

Technical Art by: BILL BLAKE



FLIGHT TESTS BY CARL MAAS
PHOTOS BY
MARSHALL HOBART
BARBARA NORTON

RCM NEW ERA III
Designed By: Don Dewey

TYPE AIRCRAFT
Sport-Pattern
WINGSPAN
44.6 Inches
WING CHORD
9⅛ Inches
TOTAL WING AREA
400 Square Inches
WING LOCATION
Low Wing
AIRFOIL
NACA 2412 Modified
WING PLANFORM
Constant Chord
DIHEDRAL, EACH TIP
1/2 Inch
O.A. FUSELAGE LENGTH
39 Inches
RADIO COMPARTMENT AREA
(L) 8⅛" X (W) 2½" X (H) 3"
STABILIZER SPAN
19 Inches
STABILIZER CHORD (incl. elev.)
5.3 Inches (Average)
STABILIZER AREA
100 Square Inches
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Top of Fuselage
VERTICAL FIN HEIGHT
5½ Inches
VERTICAL FIN WIDTH (incl. rudder)
7 Inches Maximum
REC. ENGINE SIZE
.19-.25 Cubic Inch
FUEL TANK SIZE
4 Ounces
LANDING GEAR
Tricycle
REC. NO. OF CHANNELS
Four
CONTROL FUNCTIONS
Rudder, Elev., Ailerons, Throttle
BASIC MATERIALS USED IN CONSTRUCTION
Fuselage ..... Balsa, and Ply
Wing ..... Balsa, Spruce and Ply
Empennage ..... Balsa
Weight Ready-To-Fly ..... 48-56 Ounces
Wing Loading ..... 18 Oz./Sq. Ft.

PLANS, TEXT, AND CONSTRUCTION PROTOTYPES BY LEE RENAUD
CUTAWAY BY BILL BLAKE

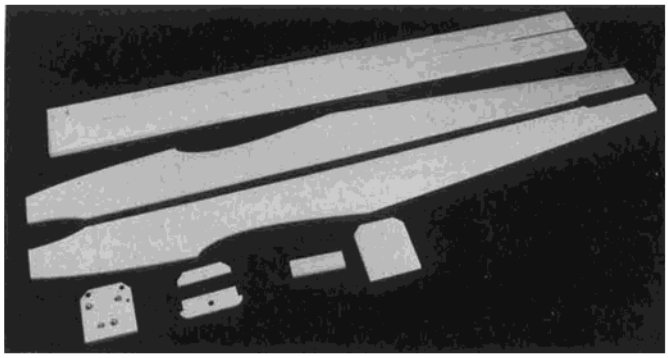
● Several years ago, Chuck Cunningham and I developed a low wing, .15 powered aircraft which was designed to utilize the then new miniaturized radio equipment. Up until the introduction of the New Era I, small aircraft of this size had either exhibited squirrely flying characteristics, or too heavy a wing loading due to the heavier radio equipment we had used until the introduction of this smaller R/C system. Since that little ship eliminated both of these problems, and flew more like its larger cousins, we dubbed it the New Era I since it ushered in a new dimension in small plane performance. In the ensuing months and years, the New Era I became one of the top five most popular designs ever presented by R/C Modeler Magazine — even today it ranks in the top ten in plan sales month after month.

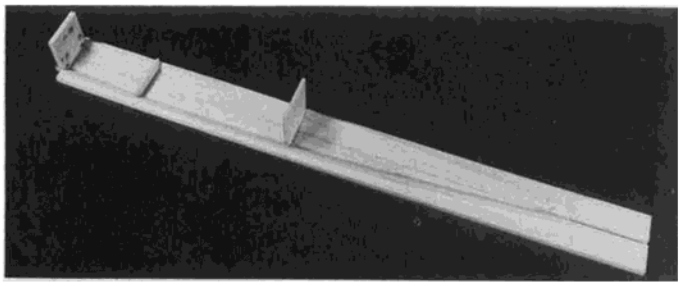
A year or two after the introduction of the New Era I, we incorporated the same design characteristics into a larger aircraft which was called the New Era II. This was powered by a .40 engine and, while of a larger physical size, exhibited all of the same flying characteristics of the smaller version. It grooved well, had an exceptionally slow landing speed, and performed most of the maneuvers with ease. All and all, both aircraft were excellent machines both from an ease of construction standpoint, their inherent ruggedness, and their overall performance as general sport aircraft.

However, during the past two years, we have been experimenting with the original design of the New Era I, changing airfoil sections, nose and tail moments, control surface areas, control surface throws, power loadings, wing loadings, and the like, attempting to come up with a vastly improved version of the original New Era I which would compete virtually in all respects with the .60 pattern ships. All prototypes utilized the .19 to .25 displacement engine for the economy both in engine size and fuel consumption. In addition, this size aircraft is far easier to transport and has the added plus of being able to be flown in a somewhat smaller area than the screaming .60 fuel guzzlers. Two engines were chosen around which this aircraft would be designed — the extremely powerful Veco-Lee .19 engine with Perry carburetor and the extremely quiet Veco muffler, and the equally powerful OS Max .25 engine and muffler. Both of these little powerplants have an extremely high power output with exceptional idling characteristics. The OS Max .25 and its muffler are available in virtually all hobby shops. The Veco-Lee .19 is available for $57.00 from Clarence Lee, 7215 Foothill Blvd., Tujunga, California 91042.

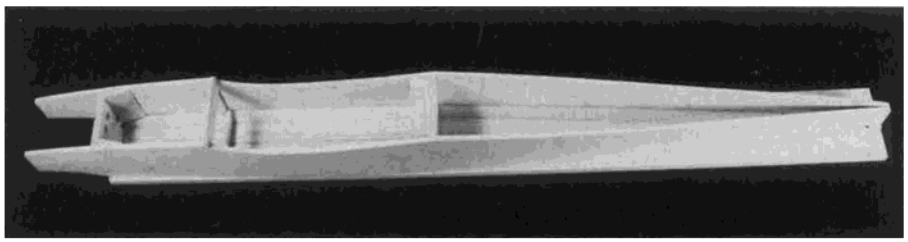
During the design stages of the New Era III, several people were involved. I began by noting the characteristics of the New Era I which we wished to retain in the new design, while Bill O'Brien added a list of changes which he felt would improve the overall flying characteristics. As the design progressed to the first flying prototypes, Carl Mass, an extremely proficient flier, tested the prototyes and made several changes to the evolving design.

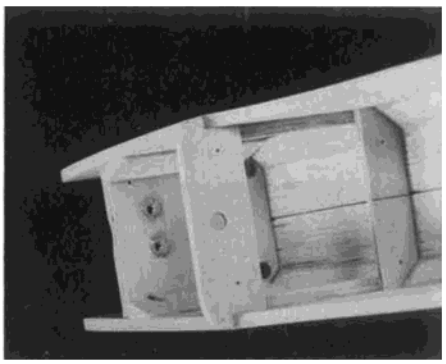
The finalized design of the New Era III was achieved after two years of experimentation and test flying. As you can see from the fuselage outline, the nose and tail moments have been lengthened over the original New Era I, the airfoil has been changed and, for those of you who would care to check it out, this is the same airfoil used on the Acro-Star biplane. It not only greatly improved the flying capabilities of



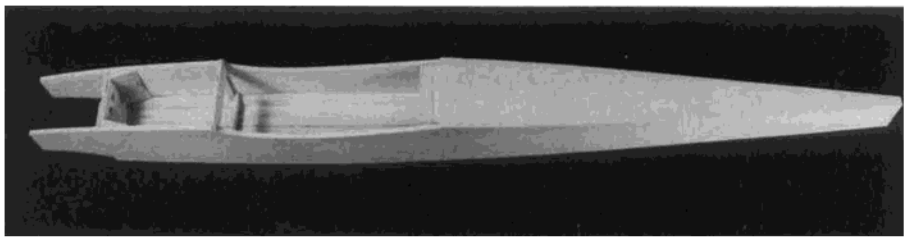


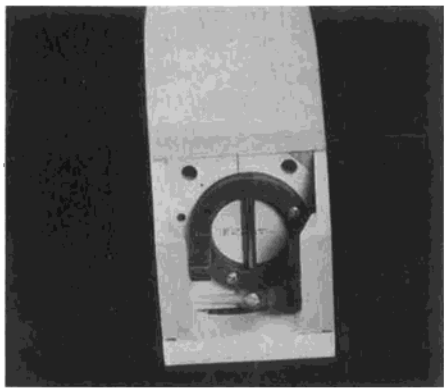
Construction begins by gluing formers and corner strips to top block.



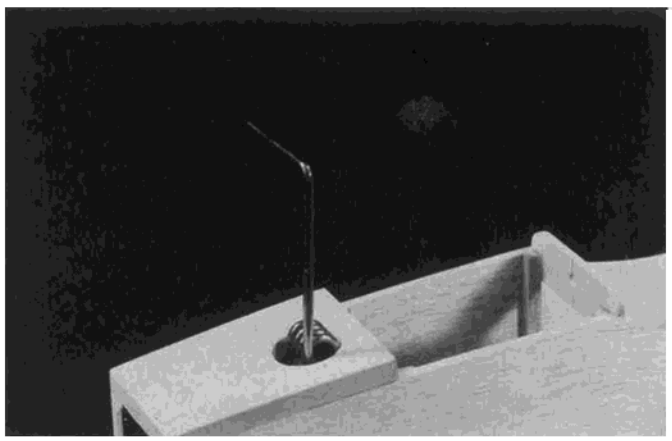


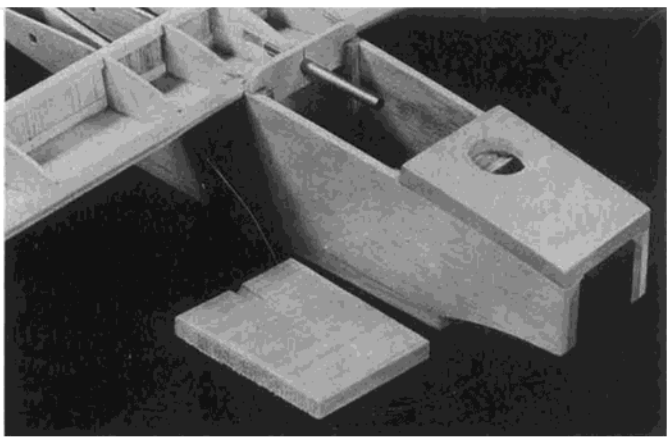
ABOVE: Fuselage sides are in place and ready for the bottom sheet. The top block has not been trimmed yet. RIGHT: Close-up of firewall and Former 2B.





ABOVE: Ready for chin sheet. Aft bottom sheet installed and top block trimmed. RIGHT: Engine mount installed and nose trimmer for spinner ring. Tiller bar below mount.





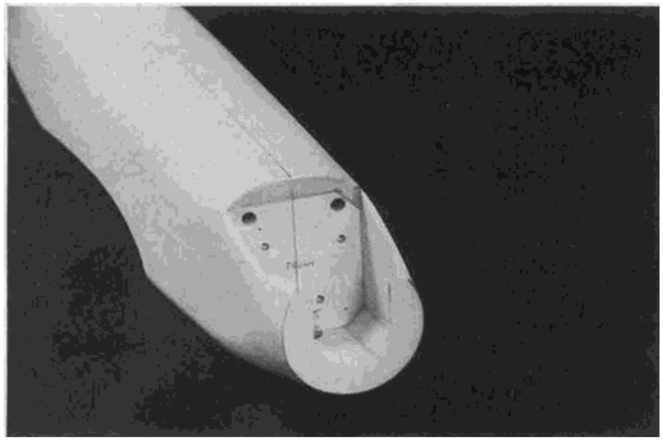
Forward chin sheet in place. Note how nose gear coil fits inside hole.

Using brass tube to drill hole in wing L.E. for hold-down dowel.

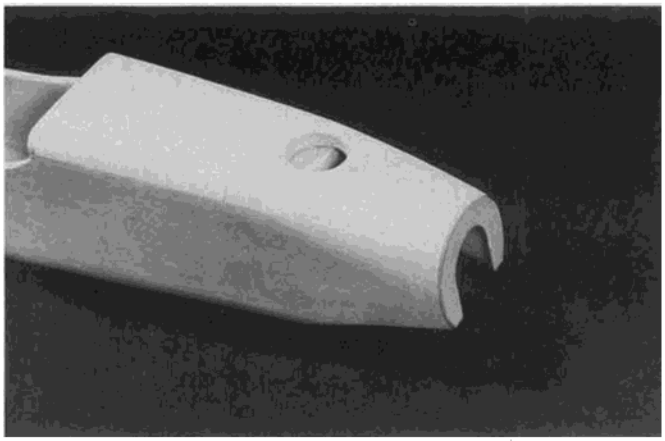
the New Era III, but the slow landing characteristics were still retained. You will also notice that the ailerons are slightly thicker than the trailing edge of the wing which, if you'll go back a few issues in RCM, will explain to you why the aileron efficiency of the New Era III is so great and will also explain its rapid, but precise, roll rate.

You will find that the wing construction has been completely changed from the original New Era I which has increased its rigidity by utilizing shear webs to lock the D-tube construction and add fantastic torsional stiffness. The fuselage is quite simple and utilizes no doublers but a more rounded top deck for overall appearance. The nose is roomy and the engine can be mounted upright for convenience with a sidewinder mount optional for overall appearance if you prefer.

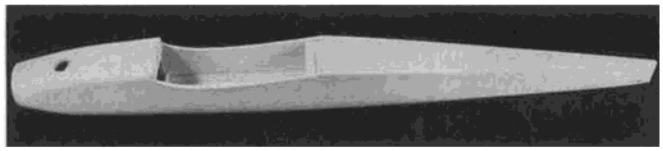
With regards to the final prototypes, and their flight performance, I can only say that we have never, in all the ships we have



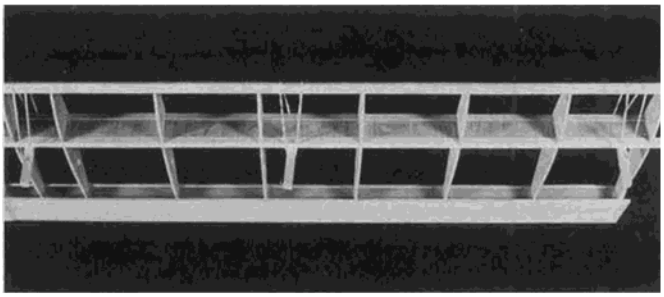
Nose ring in place and fuselage contours shaped.

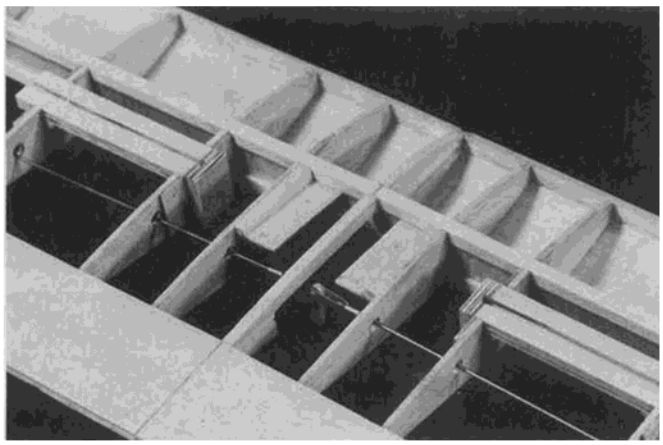


Detail of chin area after shaping. Note how 3/8" triangle seals tank compartment.

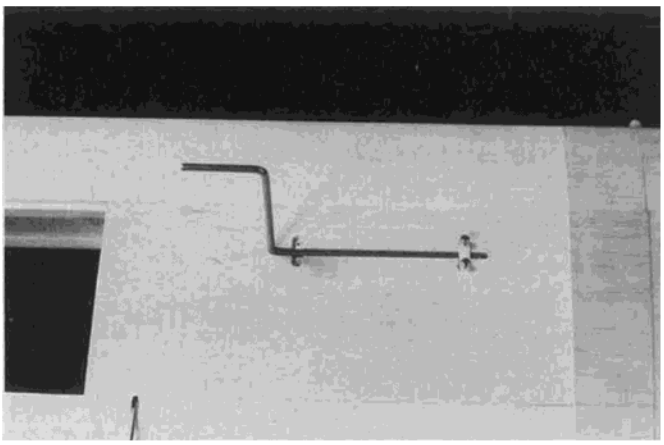


ABOVE: Fuselage complete and ready for tail feathers.
RIGHT: Method of installing L.E. with rubber bands.



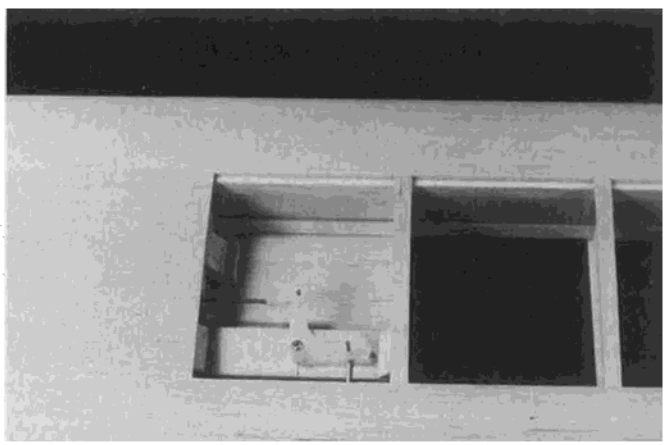


Center section before installing bottom sheet. Aileron servo and pushrods in place.

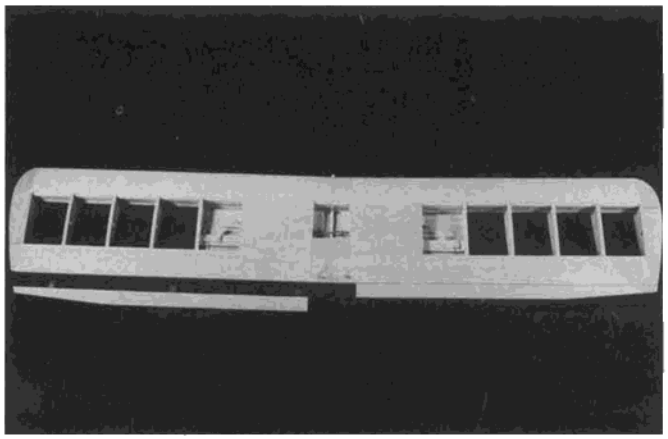


Main gear in place. Note slots in sheeting for gear and retainers, as well as aileron link.

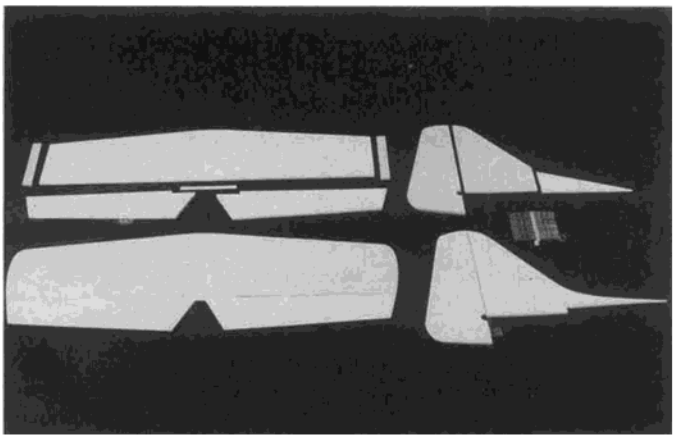
Detail of aileron servo compartment. Du-Bro solder links connect ailerons to servo arm.



Aileron bellcrank. Note that link to horn is installed in middle hole.



Completed wing ready for covering.



Tail surfaces before and after shaping and assembly.

tested and flown, found a ship of comparable size and power that could equal the New Era III. Carl Maas, during the final test flights stated quite simply that it could equal almost any .60 powered competition stunt aircraft that he had seen or flown. In fact, the local fliers watching Carl put the New Era III through its paces, were waiting in line to take their turn at the stick. Each of them agreed that this .19 to .25 powered ship was the equivalent to their .60 powered pattern aircraft, and each of them asked for a set of the plans.

If you decide to build the New Era III, and we hope you will for it will truly amaze you with its spectacular performance, I hope you will keep in mind that this is definitely not a beginners aircraft. Although capable of sustained low speed flight, it is an extremely fast ship requiring the reflexes of a trained R/C pilot. This machine **grooves** — it goes exactly where you point it and will do each and every maneuver that you call upon it to perform from sustained knife edge flight to vertical maneuvers of any type. Yet, you can slow it down, and drag it in nose high at a landing rate so slow that you will find it almost impossible to believe that it is still airborne. I strongly recommend that you set it up with minimum throws on the control surfaces (particularly the ailerons) until you have completed the first few trim flights. If you don't and have excessive control surface movement, you are going to be doing square vertical eights and consecutive axial rolls faster than you can count them!

Since I don't draw plans during the design of an aircraft due to the fact that, if I did, no one, including Dick Kidd, could decipher the hen scratches, and, following the excitement generated by the New Era III in the Southern California area, Lee Renaud built three additional prototypes for the series of construction photographs which accompany this article and drew the plans and wrote the construction notes which follow. For those of you who would prefer building from a kit than from plans, the New Era III will be kitted by Airtronics in the near future and available at your local hobby shops. However, if you are a scratch builder and want to be the first kid on the block to have a .19 to .25 powered aircraft that can fly circles around the big fuel gulpers, order the plans for the New Era III from RCM's Plan Service and let's get started on the construction. At this point, we'll turn the article over to Lee Renaud for his construction notes:

PREPARATION:

Pre-cut all parts to make a personalized custom kit before starting construction. The wing leading edges are most easily cut on a table saw, but can be shaped from 1/4'' x 3/8'' stock. The landing gear trunnions can be laminated from strips of 1/8'' ply if you can't dado the slots in the 1/4'' ply as specified on the plans.

The wing ribs are cut by stacking 1⅜'' x 8'' balsa rectangles between two ply templates and carving to outline. Sand flush with the surface of the template, notch for the spars, and drill the 1/4'' diameter hole while the ribs are stacked. Cut the shear webs from 3/32'' sheet trimmed 2-24/32'' wide. Cut the empennage from medium 3/16'' balsa sheet, using 4'' stock if possible. The fuselage sides should be medium weight straight grained sheet as well matched as you can find. The top block is light to medium balsa. Lay out a centerline on the block and cut the 3/16'' wide slot for the fin aligning the slot carefully. Lay out the former locations using the plan as a guide and draw lines across the inside surface. Cut the firewall and other formers to shape and you are ready to start.

CONSTRUCTION:

This model is definitely not for the beginner so the following instructions highlight the assembly sequence without detailing all techniques. Most of you who will build the New Era III have very definite building habits so if you don't like it our way try your own approach. This is a very simple ship to build and only one or two steps are critical in sequence.

Our prototypes were built with Hot-Stuff, 5-minute epoxy, Hobbypoxy I, contact cement, and a little bit of Wilhold. Use any or all of these adhesives as you prefer. A good straight building surface at least 8'' wide and 45'' long is a must. Grab the pins, masking tape, Handi-wrap, or waxed paper, clear the debris off your bench, and let's get started!

WING:

We used a hinged plywood board so that both panels could be built at the same time. The RCM Wing Jig can also be used by drilling holes in the ribs for the rods and setting the jig up for the proper dihedral angle. There is 1/2'' dihedral under each tip so set your board or jig up accordingly. If you don't have a hinged board or jig, then build one panel flat and when it's dry, prop the tip up 1'' and build the second panel on the first panel.

1) Check that the trailing edge sheet edge is straight and trim the back edge with a straight-edge, if necessary. Pin the sheet in position, butting the center joint tightly.

2) Place scrap 1/4'' square jig blocks under the bottom spar and install the tip rib and first rib near center. Use the rib notches to locate the spar. Note that the aft edge of the rib is inset 1/8'' from the trailing edge.

3) Install the rest of the ribs and shear webs working inboard from the tip. Use the shear webs as spacers to align the ribs and hold them perpendicularly. Check that the bellcrank mount fits properly between the ribs but don't install yet. Be sure that the top of the webs are flush or slightly below the bottom of the spar notch. Trim the center webs to size and finish installing all ribs. Cut out the 3/16'' center rib to suit your servo and install. Add the 1/4'' x 1'' T.E. stock fillers.

4) Install the top spar gluing securely to the top of the shear webs. Check that the spar is flush with the top of the ribs and that the bottom spar is resting on the 1/4'' square shims.

5) Apply Hobbypoxy Formula I to the aft edge of the top trailing edge sheet and to the rib surface in contact with the sheet. Place sheet in position and use a 1/4'' x 1/2'' or similar strip as a pressure strip at the trailing

edge. Pin through the strip and sheet into the work surface. This will provide a dead straight trailing edge. Don't use water soluble glues for this joint as they will cause curling or warping. Use weights or pins to hold the front edge of the sheet firmly against the ribs.

6) Apply glue to the front end of all ribs and install the leading edge. Use rubber bands looped over 2''-3'' lengths of 1/4'' square scrap placed behind the spars to secure the leading edge while drying. Remove the bands when dry.

7) Install the top leading edge sheet starting at the spar and working toward the leading edge. We prefer to use contact cement to install this sheet as it eliminates pins and drying time. When the glue has dried you can remove the wing from the work surface.

At this point we suggest that you lay the wing aside and begin fuselage construction. This will permit installation of the forward hold-down dowel before the bottom wing sheet is applied.

FUSELAGE:

1) Lay out and drill all holes in the 1/4'' plywood firewall, F-1. The throttle pushrod location shown on the plans is correct for the Veco .19 but may be shifted to suit the particular engine you select. Scoop a 1/16'' deep recess in the forward face of the firewall under the engine mount to clear the boss on the tiller arm. Install the #4-40 blind nuts on the aft face and epoxy in place. the aft face and epoxy in place.

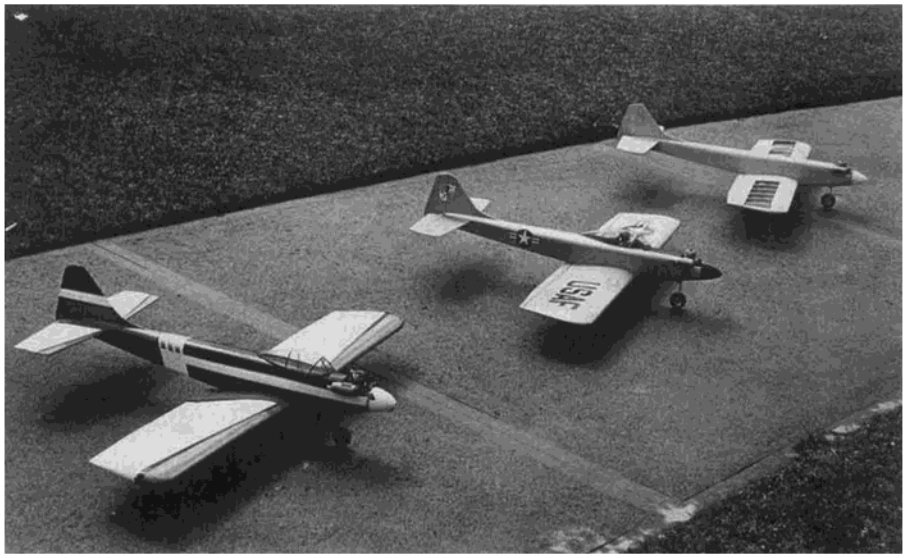
2) Pin the 3/8'' sheet top to your work surface. Draw a vertical centerline on F-1, F-2A and F-3 and glue the formers in position aligning the center lines carefully and using a small square or triangle to check that they are square. **NOTE:** Be sure that the firewall is angled to provide the proper right thrust offset.

3) Apply glue to one edge of the 3/8'' triangular stock top longerons and glue to the top block. Use pins to hold in position and check that the outer edge is aligned with the edge of the formers. Let dry thoroughly.

4) Taper the inner face of the sides where they come together at the tail to provide increased gluing surface. Apply glue to the edges of the formers and triangle stock and to the top edge of the sides and install both sides. Use pins and/or masking tape to hold sides tightly against the formers and to hold the tailpost together.

5) Install the 3/16'' x 1/4'' verticals forward of F-2A and epoxy F-2B in place. Add the 1/4'' x 1'' T.E. stock reinforcements behind F-1. Epoxy the 1/4'' ply aft hold-down plate to the face of F-3 and to the sides and add the 1/4'' triangular stock reinforcements. Install the 3/8'' triangular stock crosspiece behind F-1 and along the sides forward of F-1.

6) Remove any pins inside the fuselage between F-3 and the tail. Cut the aft bottom sheet from 3/32'' stock and install, starting at F-3 and working toward the tail. When this sheet has dried, the fuselage can be removed from the work surface and the top and bottom sheet trimmed flush with the sides.



Don Dewey's original OS .25 powered New Era III in foreground. Lee Renaud's Veco-Lee .19 prototype in center, ready-to-cover proto at rear.

7) Lay out the mounting holes for your engine on the mount, positioning the engine as far rearward as possible. Temporarily install the mount on the firewall and install the tiller arm and nosegear. Note that you will have to cut 1/4'' off of the end of the tiller arm and carve the triangle stock to clear the tiller arm and pushrod. Cut a 1'' diameter hole in the forward chin block sheet and drop over the nosegear strut. Check for proper clearance around the strut coils and epoxy forward chin sheet in place.

8) At this point, the forward wing hold-down should be installed. Sharpen the end of a piece of 1/4'' O.D. brass tubing to act as a drill and check the fit through the hole in the bulkhead F-2B. Carve and sand the wing leading edge in the center where it contacts the sides and position the wing on the fuselage. Hold the wing tightly in position making sure that the center joint is aligned with the hole in F-2B. Rotate the tubing through F-2B and drill through the wing leading edge. Check that the hole lines up with the slot in the center wing rib and temporarily install the 1/4'' diameter hold-down dowel. Check alignment again and set the wing aside while you finish the fuselage.

9) Mount a prop and the spinner on the engine and drop it into the mount. Mark and trim the sides so that there is a 3/32'' to 1/8'' gap between the spinner backplate and end of the sides. Cut the 1/16'' ply nose ring to shape and epoxy to the nose using the spinner to align the ring properly. Add the 1/4'' x 1'' T.E. stock reinforcements and the 3/32'' sheet fillers to the top edge of the engine compartment. Trim the top edge of the right side to clear the muffler, if necessary. Remove the engine and mount.

10) Mix a batch of Formula II

Carl Maas fires up original New Era III. This photograph, as well as color photos and inverted flight shot on page 50 taken at RC Bees field.

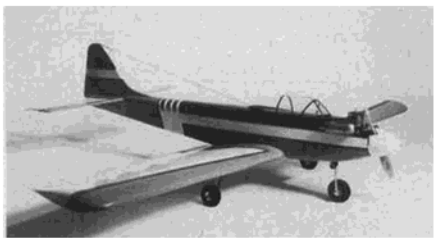
Do not brush glue on the vertical or horizontal stab if you want to Solarfilm or MonoKote there. In fact, I usually protect these balsa parts with a strip of masking tape at the fuselage join lines to avoid getting glue on them. If you are going to finish them using the Hobbypoxy glue method, go ahead and coat them right along with the rest of the fuselage. Picture No. 6 shows what your bird ought to look like now. Next, allow the glue to cure completely just as you did in the first step.

When you come back to go to work you will find, to your dismay, that your project appears to have been painted with a light coating of grease. Run to the kitchen and get your wife's dishwashing liquid (Ivory Liquid works best) and wash the glue down with a mild solution of this liquid — whatever it may be — then rinse with clear water. This is an important step — do not eliminate it.

Next, coat the fuselage and empennage, if you are coating the latter, with another coat of glue and allow to cure. By the way, each coat of glue should be as thin as you can brush it on. Heating the mixed glue helps to thin it and allows easier brushing and thinner coats. When this coat is completely cured, wash it and rinse it the same way you did coat No. 2. If you are Solarfilming or MonoKoting the flying surfaces, it is a good idea to apply the films prior to the last coating so you can mask off the edge of the film 1/6'' from the fuselage and have the glue seal the edge of the film. The canopy should also be glued on prior to the last coat of glue. You can sand an area that will be under the canopy and finish with enamel prior to gluing it on. Mask off the canopy before applying the last coat of glue. Pull the tape off as soon as you have brushed the glue on and remask it prior to painting. If you are finishing these surfaces with glue, then this step is unnecessary.

The last step is sanding. Use 80 grit garnet paper and sand the fuselage until it is smooth and any dimples disappear. Do a bit of final sanding with 180 grit No-Fil silicone carbide paper and you are ready to paint. I spray Hobbypoxy paint in 2 coats, sanding after the first coat with 180 silicone carbide paper but careful brushing will also produce a very creditable job. I always brush the trim color and mask with the cheap brand of 3M cellophane tape. The ''stays clear'' variety separates from the cellophane and is a real bear to get off the painted surface. The lead photo shows the finished model with Solarfilmed wing and stab, white Hobbypoxy sprayed on in two coats as indicated in the instructions, and Hobbypoxy black brushed on as trim. The black is edged with gold trim tape.

The result is a very handsome, very durable, model and the whole process was very easy to do. When you are finished with your Hawk 460, grab the fuselage and squeeze — you will be amazed at the strength. Then, gaze down the gleaming side of that sturdy fuselage. I think you will agree that you have produced the best fuselage you have ever done. □



NEW ERA III

Hobbypoxy or resin and coat the inside of the engine and tank compartments and inside face of the chin sheeting. Install the rest of the chin sheet and lay the fuselage down right side up while the epoxy dries. This completes the construction of the fuselage which is now ready for final carving and sanding. We prefer not to shape the top block until the wing and tail surfaces have been completed as the square surfaces provide better alignment references.

COMPLETING THE WING:

1) Use 5-minute epoxy to install the 1/16'' plywood landing gear plates aligning with the rear edge of the top spar and lower surface of the ribs. Be sure to locate the plates properly. When dry, trim the balsa flush with the notch in the plates and check fit the trunnion blocks. File or carve a chamfer on the inboard edge of the slot in the trunnions to clear the radius on the gear leg before installing the trunnions. Epoxy the trunnions and the 1/4'' triangle reinforcements in place making sure that the bottom surface of the trunnion is flush with the ribs. Slip the gear leg in place and install the vertical block sighting from the wing tip to be sure the gear leg is perpendicular to the rib surface, and that both gear are aligned. Remove gear.

2) Drill a 1/8'' diameter hole in the bellcrank mounts and press in a #2-56 blind nut. Install bellcranks on the mounts and cut and bend ends and insert the 1/16'' diameter music wire aileron pushrods through the holes in the ribs. Insert the pushrod into the bellcrank and glue the mount between the ribs using the pushrod to locate the mount fore and aft. The aft edge of the mount should be flush with the ribs. Add the 1/4'' triangle reinforcements. Cut a slot in the bottom trailing edge sheet to clear the Nyrodapter link to the aileron horn. Note that this link is located in the middle hole in the bellcrank arm.

3) Install the 1/16'' ply servo rails and 3/16'' x 1/4'' reinforcements. Note that the forward edge of the rail rests on top of the bottom spar. Locate and mount the aileron servo and hook up the pushrods to the servo. We have found that using two Du-Bro solder links #112 modified by cutting off the pin side of one link and hooked together with the remaining pin is the easiest way to connect the pushrods. Check servo action now and be sure that the right aileron moves up on a right turn command. You don't want reversed aileron control with this ship!

4) Install the bottom leading edge sheet and the center section bottom sheet. Run a 1/8'' drill through the landing gear vertical block and bottom sheet to locate the inboard end of the landing gear slot. Cut the slot for the gear legs and cutouts for the retainers in the bottom sheet. Drill 1/16'' diameter holes for the retainer screws in the trunnion blocks. It's a good idea to pre-install the self-tapping screws now so that if the screwdriver slips it won't punch holes in your covering. Slot for aileron links.

5) Install the top center sheet trimming the servo cutout before installation. Trim the leading edge, spars, and sheet, flush with the tip rib and add the 1/4'' tips. Cut and install the forward and aft tip blocks. Install all cap strips. When dry, carve tips to final contour, shape the leading edge and sand entire wing.

6) Wrap the entire center section with fiberglass or nylon tape at least 2'' wide. Secure the tape with epoxy or resin. We used C/G 2½'' nylon tape and Hobbypoxy Quick-Prep on the prototypes. Since no dihedral braces are used to join the panels, this wrap is essential for proper wing strength.

7) Insert the leading edge dowel and position wing on the fuselage. Check the fit of the wing saddle and be sure that the wing is properly aligned in all planes. Drill through the wing and fuselage hold-down plate with a 5/32'' diameter drill aligned perpendicular to the lower surface of the wing. Remove wing and tap the plate #10-32 for the hold-down bolts. Use a 13/64'' diameter drill to enlarge the holes in the wing to clear the bolts. Reinstall the wing and check for proper alignment.

8) Trim the tapered tip on the ailerons and reshape the stock to a sharp trailing edge. Bevel the leading edge of the aileron as shown on the plans. Cut hinge slots and insert hinges. Note that the outboard hinge is trimmed down. Hold the ailerons against the wing trailing edge to locate the slots and slot the trailing edge. Temporarily install ailerons and check for free operation.

TAIL SURFACES:

1) Install the 3/16'' x 1/2'' anti-warp tips on the stabilizer, and shape tip contour when dry. Epoxy the 3/16'' diameter dowel joiner to the elevators using the trailing edge of the stabilizer for alignment. Bevel the leading edge of the elevator. Cut slots for hinges in the stabilizer and elevator and install hinges in the elevator. Insert hinges into the stabilizer but do not glue in place.

2) Use a razor plane to taper the elevator. Plane only one face then block sand using the stabilizer as a ''handle.'' Round tips and stab leading edge. By joining the stabilizer and elevator this way all edges can be blended easily and the risk of hinges poking through the surface is minimized. This technique also eliminates the bulges caused by inserting the hinges after covering.

3) Bevel the leading edge of the rudder and join to the fin as described above. Taper the rudder and sand all edges except the fin leading edge where it joins the dorsal fin.

COMPLETING THE FUSELAGE:

Before carving the top block, tack glue a 3/16" x 1/2" spacer in the aft end of the stabilizer and fin slots. These spacers will support the aft end of the top block during shaping and prevent the ends from breaking during handling.

2) Draw a centerline on the top as a guide while shaping. Use a razor plane or knife to slab off the corners of the top block and sides, then start shaping the contour. Follow the cross section on the plan for the proper contour. Block sand until the edge of the 3/8" triangle stock is just visible. Taper the aft top surface starting at the forward end of the dorsal fin following the side view of the plans. Round these corners smoothly. Shape the aft bottom sheet corners with a coarse sanding block since a knife will tend to gouge out the cross-grained sheet. Carve and sand the nose and chin area rounding the corners to fair smoothly with the nose ring and Former F-2B. Cover the engine intake and exhaust parts and wrap the spinner with a couple of layers of masking tape. Temporarily install the engine and use the spinner as a guide for final shaping.

3) Mount the wing on the fuselage temporarily and remove the spacers from the slots. Insert the stabilizer into its slot and sight from the front to check alignment with the wing. When satisfied, epoxy stabilizer in place, checking alignment in all planes very carefully. Slip the fin into the fuselage slot and seat firmly on top of stabilizer. Trim the lower surface of the dorsal fin to fit tightly against the top and glue to the fin. Remove from fuselage and shape dorsal top outline and sand contours into fin. Cut hinge slot in aft end of fuselage and glue fin and dorsal to fuselage and stab. Check alignment and be sure the fin is seated on the stab. Temporarily mount rudder and elevator horns and attach surfaces.

4) Check the direction of movement of your servos and lay out and install all pushrods. We used .062 diameter music wire for the throttle and nosegear running in 1/8" O.D. nylon tubing. The rudder and elevator pushrods used were Su-Pr-Line NyRods. Cut holes through the sides and F-3 to suit your installation. Be sure that the rudder pushrod exits through the left side.

5) Trim canopy base to roughly fit the fuselage. Wrap 120 sandpaper around fuselage and sand canopy for final contour. If you plan to add cockpit detail, make up the parts now and fit to the fuselage contour. A Williams Brothers 1½" scale pilot is the right size for this aircraft.

This completes the construction of your RCM New Era III. Go over the airframe again with fine sandpaper filling any dings or cracks with Dap or Hobbypoxy Stuff and you are ready to cover.

COVERING AND FINISHING:

We suggest that you assemble the whole aircraft and give all surfaces a final alignment check before starting covering. It's a lot easier to correct any problems before finishing the model. Check the landing gear alignment, saddle fit, wing and tail alignment once again and you will be confident of success on the first flight.

The secret of performance of this size model is light weight. Resist the urge to pile on a super finish with many coats of primer and paint. In our opinion the only way to finish your New Era III is with one of the plastic film coverings. Properly done, this will provide a beautiful finish with minor weight increase. The structure is very rigid and strong so any of the film coverings may be used.

Cover the bottom of the wing first then add the aileron horn links. Check aileron operation and cover the top of the wing. If using MonoKote, covering the tips with a separate piece will make the job easier. The bottom rear fuselage is covered first then a piece of material is applied to each side and wrapped around the top and seamed at the center. Complete the fuselage covering, then cover the tail surfaces and ailerons. Trim to suit.

FINAL ASSEMBLY:

Now permanently install all control surfaces and control horns. Make up pushrod ends and attach to control surfaces. Install tank and engine mount, all gear and wheels and connect the nosegear pushrod. Mount engine permanently and hook up pushrod to throttle arm. Position the radio equipment so that the completed model balances as shown on the plans. Install servo rails to suit, and mount the servos. Make up the inboard pushrod ends, check control movement and you are ready to go flying.

Insofar as the flying characteristics of the New Era III are concerned, these were covered in the introduction to the article. Use your normal check-out procedures for trimming out a new pattern ship and have at it! If you've built the New Era III according to the preceeding instructions, and without deviating from the plans, you'll find that it will far exceed your expectations for this size ship. In fact, we're willing to bet that its performance, coupled with its overall economy and ease of construction and transportation, will have you hanging that .60 powered pattern ship on the wall for a while.

Good flying. □

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