UFO (Reprinted from the September 1977 issue of R/C Modeler Magazine) #698

It has been interesting to watch the evolution of pattern R/C aircraft over recent years. The changes we can all recall by flipping . through the pages of some old RCM magazines were brought about for more than appearance reasons alone. Though looks do undoubtedly play a part, there are several other more significant factors which have stimulated the on-going modifications we've seen/For example, probably one of the most easily remembered was the emergence of reliable proportional RC equipment. As a result, the airplanes no longer needed as much built-in stability so the maneuvers could be flown more accurately. And, proportional control of the surfaces made flying much smoother and more predictable. New, more powerful engines made it possible for the planes to fly faster. Then retracts made it possible to build cleaner pattern aircraft and designs were modified to take advantage of this new development. Effective fuel pumps increased the power of our engines and the airplanes flew at still greater speeds.

While pattern pilots have become more and more adept at making their planes respond in unbelievable ways, they have also continued to experiment with the design of their airplanes to take advantage of a new development or to try out a new idea about what might make this or that maneuver go better. Changes made in search of that elusive edge that hopefully will add a few points to their scores at contest time.

It's interesting to note that all of these factors seem to be kept in motion by re-occurring changes in the AMA-FAI contest pattern. New aircraft designs fly the pattern better and/or the pilots just get better at it. Changes are made in the pattern to make the contests more challenging. Then new designs are created to fly the new pattern and the pilots do the job better. Changes are made in the pattern, and on and on.

Joe Bridi's birds have evolved as have the aircraft of any of the pattern pilots who have been able to hang in there successfully over the years. First there was the Kaos; a pattern ship which, as far as we know, has been unsurpassed in pattern contest wins since it was first flown. And it can still be found flying in Class A successfully in many pattern contests. Then, when other pattern aircraft began to sprout retracts, and change-overs made in the Class D and FAI patterns, the Kaos became less competitive. Then came the Super Kaos; a cleaner, faster plane with retracts that flew the revised AMA-FAI pattern better. Contest wins proved the point.

More changes in the AMA-FAI pattern, coupled with the availability of pumps, created new demands on pattern aircraft. To meet these new challenges, the Dirty Birdy hatched to begin its history of contest wins for Joe and many other pattern fliers.

Now we present Joe's latest, the UFO. While at first glance this RC pattern aircraft seems to bear a very strong resemblance to the Dirty Birdy, several significant design changes underscore the fact that looks are only skin deep; this is really a new flying machine. Taking advantage of a pumper, retracts, and a tuned pipe, the UFO uses a swept-back wing and stabilizer for better roll characteristics. The stab is thicker to increase the drag at the back end to make the tail more stable in some of those near-stall maneuvers. Anhedral is used at the stab to keep it out of much of the wing turbulence for better control at lower speeds. The deeper fuselage makes retract installation easier. The increased side area at some critical points along the fuselage and larger fin and rudder help out in knife-edge flight. The thicker wing cross section — shades of the Kaos — makes for better constant speed flight in those big loops and diving maneuvers — and the longer fuselage offers increased stability. The UFO makes its debut to join the unending quest for perfection.

BUILDING NOTES

We're presenting the building notes for the UFO based on a couple of assumptions. First, because the aircraft is designed for the contest-minded pattern flier, we've assumed that the builder has already had experience in building and flying this kind of RC aircraft. It's a high performance model airplane designed to do a job; fly the AMA-FAI pattern. And it does that well! A second assumption we've made is that all of the wood parts are ready — that is, all of the pieces like the wing and stab ribs, bulkheads, fin, rudder pieces, elevator halves, and such, have already been cut out. Incidentally, the stick-on templates available from RCM will save you loads of time. We cut up some plans and stuck the pieces to the wood with rubber glue.

Getting back to the wood, you will probably find it hard to locate some of the sizes called out on the plans. Joe cuts his own wood and you may have to do the same, or substitute. We solved most of our problems by buying balsa pieces of the proper thickness and then ripping them to the correct width, or vise versa. The only real difficulty

we encountered was the 3/8" triangular stringers that run down the sides of the fuselage top block. Since the fuselage sides butt glue to them, the edge to which the fuselage sides butt glue must be 3/16" wide, not a sharp point. (See the front view of bulkhead #3 on the plans.) Cut the point off of one edge of the triangular stock and it's no longer 3/8" triangular stock! We just substituted 3/8" square stock for the stringers to save a lot of fooling around. If you decide to do the same, the ends of the aft top block cross brace will have to be cut square to mate with the square stringers.

The Fuselage:

Glue the fore and aft fuselage side pieces together using 5-minute epoxy. Add the 1 /16" ply doubler. The doubler will be 1 *14"* short of the bottom to allow for the 1/4" triangular stringer.

While the glue sets up, draw a top-to-bottom centerline on the back of bulkheads #1 and #3 down the length of the bottom side of the fuselage top block pieces and down the center of the fuel tank compartment top block. Draw a line across the top block at the location of the aft end of the fuel tank compartment top block, at the location of the cross braces in the servo compartment, and aft of station #3. Mark the location of bulkheads #2 and #3 on the inside of the fuselage sides.

With epoxy along the butt glue joint between the fore and aft fuselage top block pieces, pin them down on your building board with the centerline side up. Relieve the 3/8" balsa fuel tank compartment top block as necessary for your fuel tank. Work carefully or you may end up with a hole in the top of your fuselage when you sand it to shape. Glue the fuel tank compartment top block in place using epoxy adhesive.

Cut the 3/8" top block stringers to length. Relieve the inside aft ends as necessary and glue them in place. Before the adhesive sets up, add the cross braces in the area of the servo compartment, at station #3, and aft of station #3. Add bulkhead #2 and bulkhead #3, upside down, of course.

Working on the inside of the fuselage sides, glue the 1/4" triangular stringers in place. Relieve the back ends, as necessary, to allow the fuselage sides to glue together at the tail. Add the 1/4" x 1/4" balsa vertical support brace to each fuselage side aft of station #3.

Now to begin gluing the fuselage sides in place. Note that the fuselage sides are glued in place in two operations. First, the area from bulkhead #2 to the tail is glued down. Then, after some wood pieces are glued to the nose, the forward fuselage sides are glued in place.

Glue the fuselage sides onto the 3/8" stringers from the location of bulkhead #2 to the tail. Glue and clamp the sides to bulkheads #2 and
#3 and at the tail. Add the 1/4" triangular stock along the back of both sides of bulkhead #2 and a the cross brace that overlaps the top block glue joint. Add the 1/4" balsa brace between the bottom of the fuselage sides aft of station #3. Then add the 1*14"* balsa fuselage bottom.

Now to get all of the nose pieces glued in place. Cut and glue a $9^{5}/8$" long piece of 5/8" triangular stock onto each side of the top block in the area of the fuel tank compartment from the front of bulkhead #2 into the engine compartment. These pieces should be glued only to bulkhead
#2 and the top block at this time. Use bulkhead #1 as a guide to get the correct spacing of these pieces at the front end. Relieve them in the area of the fuel tank cut-out.

Next, prepare an engine mount rail alignment template. This piece is used to locate the rear of the engine mount rails so they will be level to each other and at the proper angle to provide 2° of down thrust. Use a carpenter's square to mark a scrap piece of 1/8" sheet balsa to a rectangle 3/4" high by 3^{1}/e" wide. Cut out the template and pin it to the" front of bulkhead #2 so it rests on the 5/8" triangular stock.

Now you're ready to glue bulkhead # 1 and the engine mount rails in place. First, though, decide whether you are going to use retracts or fixed gear. Drill the necessary holes in the bulkhead and install the blind nuts.

Put the hardwood engine mount rails in place into the notches in bulkhead #1. The aft end of the rails should be flat with the front of bulkhead #2 and rest on the alignment template. To find the proper location of bulkhead #1, use the two balsa fuel tank compartment bottom side blocks cut out to overlap the side of bulkhead #2 as a guide. The front of bulkhead # 1 should be flush with the front of these side blocks. When bulkhead #1 is properly located, mark its location on the top block and the engine mount rails.

Use epoxy to glue bulkhead #1 and the engine mount rails in place. The rails glue to bulkhead #1 and bulkhead #2. Clamp the rails to the fuselage sides and to bulkhead #1. Remove the template. Make sure that bulkhead #1 aligns with the center line on the top block. Double check the spacing with the bottom side blocks before the adhesive sets up.

Epoxy the front of the fuselage sides to the top block, to the hardwood engine mounts, to the 5/8" triangular stock, and to bulkhead #1. Clamp the sides to the engine mount rails and to bulkhead #1 to assure a good bond. Add the 1*14"* triangular stock pieces along the top and bottom of the engine mount rails. We ran them the entire length of the fuel tank compartment rather than short pieces as shown on the plans.

Before you glue the fuel tank compartment bottom side blocks in place, the inside top corner of each block will have to be relieved for wing dowel clearance. Note also that the bottom of these blocks should be cut to a straight line between bulkheads #1 and #2. Install the side blocks. Coat the inside of the fuel tank compartment with resin. Do not, however, get any resin in the areas that will glue to the fuel tank compartment bottom block.

After the resin has set up, install the nose gear bearing and the outer tubing for the nose gear linkage and throttle linkage. Mark and cut the 1" nose gear spring clearance hole in the bottom of the 5/8" balsa fuel tank compartment bottom block. Glue the bottom block in place.

Before the rest of the wood is glued in the nose, the engine mounting screw blind nuts should be installed in the rails. To mark the screw holes, while at the same time assuring a good fit for the spinner back plate; first make a rough duplicate of the 1/16" ply spinner ring out of a piece of 1/16" balsa sheet scrap. This will be used as a spacer.

Tack glue the spacer to the back side of your spinner back plate. Then, tack glue the ply spinner ring to the spacer. The spinner ring should align perfectly with the spinner back plate. Put the spinner back plate/spacer/ply ring assembly onto your engine. Add the prop and prop nut.

Make the cut-out as necessary for your engine. Put the engine temporarily in place onto the engine mounting rails so the ply spinner ring fits to the nose of the fuselage. Mark the location of the engine mounting bolt holes on the rails and drill the holes. Install the blind nuts.

Relieve the balsa motor mount support blocks for clearance of the blind nuts and motor mount screws. Seal the relieved area with epoxy then epoxy the motor mount support blocks in place. After the adhesive has set up, shave the bottom of these blocks flush with the bottom of the fuselage sides. Add the balsa chin block.

Cut the two 5/8" triangular stock pieces that are to be glued to the inside of the motor mount support blocks. The inside forward edge of each piece will have to be shaved a bit to fit into the space. Some of the triangular stock may also have to be relieved so your engine will rest flat on the engine mount rails. Glue these two pieces in place.

To glue the 1 /16" ply spinner ring in place, put some epoxy on the nose of the fuselage and onto the bottom half of the ply spinner ring. With the spinner back plate/spacer/ply spinner ring still mounted on your engine, temporarily bolt the engine in place. When the adhesive has set up, remove the prop from the engine and break the tack-glued spacer and spinner back plate from the ply spinner ring. Remove the engine from the fuselage. Add the 1 1/4" balsa spinner block, cross grain. Relieve the spinner block for your engine. Fill any gaps between the ply spinner ring and the fuselage with epoxy or with resin and micro-balloons.

Add the two 1*14"* ply wing hold-down plates and 1*14"* triangle stock supports inside the fuselage as shown on the plans. That completes the fuselage construction. The 1/32" ply wing fillet base and bottom dorsal fin will be added later.

The Stabilizer, Elevator, Rudder, and Fin:

In looking at the stabilizer construction detail you'll note that during construction the symmetrical ribs are supported by the leading and trailing edge through the use of unique rib alignment spars added to the leading and trailing edge. Because the completed stabilizer will have anhedral, both stabilizer halves are built separately. Both stabilizer panels are built over the same lay-out on the plans. However, when the right stabilizer panel is built, the bottom side of the root rib is angled toward the stabilizer tip. When the left stabilizer panel is built, the top side of the root rib is angled toward the stabilizer tip. An alignment template is provided on the plans to get the proper angle of the root ribs. Use 2 or 3 carborundum discs on your Moto-Tool to cut a 1/16" groove down the length of the leading and trailing edge stock. This groove is cut off-center to assure that the ribs will clear the surface of your work bench. Cut the leading and trailing edge to length. Glue the 1 /16" x 1*14"* rib alignment spars in place. Pin the I.E. and T.E. in place over the plans using the root and tip ribs for proper spacing. Glue ribs#1-#6 in place, using the anhedral gauge to align the root rib properly. Add the 3/32" x 3/8" balsa braces, the tip block, and the top sheeting.

After the adhesive has set up, remove the stabilizer panel from the building board. Turn it over and pin it down — blocking up the leading and trailing edges as necessary so the ribs and sheeting clear the building board. Add the bottom sheeting.

Build the other stabilizer half in the same way. Then, sand the leading edge, trailing edge, and sheeting in the

area where the stabilizer panels will join for the proper anhedral. Check the way the root ribs will mate. Add 5-minute epoxy and join the stabilizer panels, blocking them up, as necessary, for the proper anhedral.

Tack glue the elevators in place on the stab. Sand the stab tips, leading edge and elevator halves to shape. Break the tack-glued elevator halves free from the stabilizer and sand the leading edge of the elevator halves to shape as shown on the stabilizer side view. The elevator halves are hinged after the stabilizer is installed in the fuselage. A horn is used on each elevator half. Each horn is to be slanted 15° forward to equalize the response of the aircraft to up and down elevator.

For installation, the point at the center of the stabilizer leading edge will have to be sanded back about 3/8", leaving the flattened center piece inside the fuselage. Reinforce the stabilizer center joint with a 1" width of 4 oz. glass cloth and resin.

Glue the front and rear rudder pieces together. Add the pine insert for the rudder horn. Glue the forward, center, rear, and fin tip pieces together. Note that the center and rear fin pieces extend below the forward piece to fit into a slot cut into the fuselage top block for a strong joint.

Prepare the balsa sub fin. Add the 1/16" wire tail skid. At this point the stabilizer, elevator halves, fin, rudder, and sub fin are ready to install.

The Wing Panels:

Lay both pieces of the 1/2" x 1 *Vs"* balsa leading edge on your workbench with a 1 Va" side down. Draw a centerline down the length of the leading edge pieces. Draw a similar line down the trailing edge. Also draw a centerline down the wing ribs, from the front to the back. This takes some time, but it will help you build a straighter wing.

The right wing panel will be built first. Ribs #3 and #4 are notched for the main leading gear blocks. The notched edge of these ribs should be "down". If you're using retract gear, relieve the ribs, as necessary, for the retract gear mounting plate and gas tubes, wires, or linkage. Rib #1 will not be glued in place until you're ready to join the wing panels.

Pin down the 3/8" x 1/2" bottom spar. Pin rib #1 in place onto the spar. Pin and glue ribs #2-#11 to the bottom spar. Add the 1/4" x 5/16" balsa trailing edge, using the centerline on the ribs and trailing edge as a reference. When the adhesive has set up, block up the trailing edge of the wing so all of the rib centerlines are parallel to your building board. Sand the trailing edge to the rib contour/then add the 3/32" x 2" top trailing edge sheeting — but don't glue the I.E. sheeting to rib #1.

Glue the top spar in place to ribs #2-#11. Add the leading edge, making sure that the centerline on the back aligns with the centerline on the ribs. When the glue has set up, use your X-Acto knife or razor plane to roughly shape the top of the leading edge to the rib contour so the L.E. sheeting can be installed. Then sand the L.E. to the rib contour with your sanding block. The front of the leading edge should not be sanded to the final shape until after the top and bottom sheeting have been installed.

Add the top leading edge sheeting. After the adhesive sets up, trim the leading edge sheeting flush with the front of the leading edge. Add the 3/32" x 3/8" balsa capstrips on ribs #4-#11.

When all of the adhesive has set up, the wing is removed from the building board. The main gear blocks are to be installed next. Begin by adding the 1 /16" ply plates to ribs #3 and #4. Glue the short grooved block to the inboard side of rib #3. The grooved side is toward the rib. Add the long grooved main gear block and the pine block gusset at rib #4. Then a hole will have to be drilled through the long grooved block for the landing gear arm. To do the job, drill the hole down from the top side of the wing using the groove in the small block as a drill guide.

Add the 3/32" balsa top center section sheeting. Pin the wing back down on your building board, upside down. Block up the T.E. Shape the bottom side of the leading and trailing edge to the wing contour. Add the balsa bottom trailing edge sheeting and the capstrips. When the adhesive has set up, the wing panel may be removed from the building board. The bottom leading edge sheeting and center section sheeting will be installed later after the wing dowels are installed.

Follow the same general building sequence to build the left wing panel. When the left wing panel is built over the plans, however, the bottom side of the wing will be "up". That means that the notched edge of ribs #3 and #4 will be up. Do not install the bottom leading edge sheeting or center section sheeting.

Completing The Wing:

Align both wing panels blocked up as shown on the plans. Adjust the angle of the root rib on both wing panels so they'll mate for the proper dihedral. Glue the root rib to the spars and the sheeting. Trim the leading edge, spars, trailing edge

sheeting and top leading edge sheeting flush with the root rib. Then glue the wing panels together using 5-minute epoxy.

With the brass sleeve in place on the piano wire for the aileron torque rods, bend the torque rods to the proper shape. To provide differential throw, the aileron linkage arm of the torque rods should be bent back 4°-5°. During test flights, this angle may have to be increased or decreased slightly for maximum performance. Also, these arms must be in line with each other when the ailerons are at zero. Be sure you prepare one right and one left torque rod. Solder the torque rod ends onto the aileron servo arm. This is just a 1 1/2"-2" piece of brass tubing with half of it flattened. Drill the holes for the aileron linkage clevis through the flattened end and deburr the holes. Cut a notch down the length of the front edge of the balsa center section trailing edge pieces for the aileron torque rods. The aileron servo arm end of the torque rod should come up through a notch cut into each center section trailing edge piece about 3/4" from the center of the wing. See the plans.

File a notch in the trailing edge of each wing panel to permit the back and forth movement of the torque rod arm. Put some Vaseline around both ends of each torque rod sleeve and tack glue the torque rods in place in the center section trailing edge pieces. Then, making certain that the center section trailing edge pieces are aligned with the wing contour, and that the torque rods are centered on the wing trailing edge, glue the center section trailing edge pieces in place.

Add the 1/16" ply hold-down plate on the wing trailing edge with some 5-minute epoxy.

As preparation for the installation of the wing hold-down dowels in the leading edge of the wing, draw a line on the bottom back side of bulkhead #2 to indicate the location of the center of the wing dowel holes. Put the wing in place on the wing saddle so it is perfectly aligned. Drill small diameter pilot holes for the wing mounting bolts down through both the wing and the ply plates in the fuselage. Before the wing is removed from the wing saddle, transfer the marks made on the back of bulkhead #2 to the leading edge of the wing. Remove the wing from the fuselage.

Drill the clearance holes through the wing for the wing mounting bolts. While you have the drill ready, drill the two 1/4" holes through the center of the wing leading edge for the dowels. Drill and tap the holes into the ply plates in the fuselage. Put the wing back in place on the fuselage and install the two wing mounting bolts so they are snug. Turn the fuselage over and draw a line along both sides of the fuselage on the top side of the wing. These lines on top of the wing are to be used to install the 1/32" ply wing fillet base pieces. Using the line on the top of the wing as a reference, measure and draw a line parallel to each one, but 3/16" inboard of them. Then, tape each wing fillet base piece in place on the top of the wing so it lines up with the inboard line. Be certain that the tape, itself, will be clear of the wing saddle. Put the wing temporarily in place on the fuselage and check the alignment of the fillet base pieces. If they are okay, remove the wing from the fuselage and put a strip of masking tape down the wing so it butts up to the inboard edge of the ply fillet base pieces. This will prevent glue from seeping out from the ply pieces and fixing the wing permanently in place.

Do a final check of the wing incidence and alignment of the wing saddle. To glue the wing fillet base pieces in place, remove the wing from the fuselage and put a very thin coat of 5-minute epoxy on both wing saddles. This application should be very thin so the epoxy won't squeeze out and glue the wing to the fuselage! Bolt the wing down in place and push down firmly on the front center of the wing. Hold it there until the epoxy sets up. After the epoxy has hardened, remove the tape that holds the wing fillet base pieces to the wing, remove the wing bolts, and carefully remove the wing from the fuselage. Any gaps between the ply wing fillet base pieces and the wing saddle may be filled with epoxy. Add pieces of 1/4" triangular stock along the ply pieces. See the plans. Use 5-minute epoxy to glue the back ends of the fillet base pieces to the fuselage sides. Add some 1/4" triangle stock in this area as well.

In order to install the wing mounting dowels, bolt the wing in place onto the fuselage again. Slide one end of each of the dowels through the hole in the wing leading edge and into the hole in bulkhead #2. Glue the ply dowel support pieces in place onto each dowel. Glue the dowels to the leading edge and to the support plate. Add the false rib to the top and bottom of each dowel. Remove the wing from the fuselage after the epoxy has hardened and add the bottom leading edge sheeting and bottom center section sheeting.

Use your sanding block to shape the leading edge. For the desired flight characteristics, the leading edge should be blunt, rather than sharp. See the plans. Trim the leading edge sheeting, spars, and trailing edge sheeting flush with the tip rib and add the tip blocks. Sand to a sharp edge as shown.

Use 4 to 6 oz. glass cloth at least 5" wide with resin to reinforce the wing center section. Sand the ailerons to shape and drill the hole for the torque rod. Then, put the wing in place on the fuselage and glue the balsa wing fairing front, sides and bottom in place using 5-minute epoxy. Add resin and micro-balloons as a fillet on the bottom center section so it is flush with the bottom of the fuselage. The aileron servo well may now be cut into the top side of the wing. Add the 1/2" x 1/2" hardwood servo mounting rails.

Completing the Airframe:

Complete the stab cut-out in the fuselage by trimming the stringers as necessary. Mount the wing onto the fuselage. Then, with the fuselage right side up on your work bench, put the stabilizer in place into the stabilizer cut-out with the stabilizer in the anhedral configuration.

Check the alignment and glue the stabilizer in place with 5-minute epoxy. Fill the hole in the fuselage above the stabilizer leading edge.

With the fuselage right side up on your work bench (and the slot cut into the fuselage top block for the fin), glue the fin in place. To glue the sub fin in place, first pin the rudder to the fin. Then, use the rudder to align the back of the sub fin. The front of the sub fin should be centered on the fuselage bottom.

Finish sand the entire fuselage to shape. Sand the bottom wing fairing to shape. Complete the wing fillet by adding resin and micro-balloons to the ply plate. See the plans. Also use resin and micro-balloons to build a fairing at the stabilizer/fuselage joints and along the fin/fuselage and sub fin/fuselage joints.

Use 3/4 oz. glass cloth and resin on the fuselage, stabilizer, fin, rudder, elevator, and sub fin. Finish the area under the canopy and glue the' canopy in place. Use resin and micro-balloons to build a fairing around the canopy.

The wing may be covered with one of the plastic, heat sensitive covering materials or with silk and dope. When the fuselage and tail section is painted, it should first be primed with a light coat of K & B Primer. Then the color coat is to be added.

The elevator halves, rudder and ailerons may now be hinged. Cut the pushrod exit holes into the rear of the fuselage for the elevator and rudder pushrods. Two holes must be cut for the elevator pushrod.

The rudder and elevator pushrods may be prepared and installed at this time. Since the split elevator will need two rods and clevises at the rear, double clevis rods will have to be attached to the rear of the elevator pushrod. They are bent into a "Y" shape to exit the holes in both sides of the fuselage.

Resin the inside, bottom of the fuel tank compartment and the inside of the engine compartment. A piece of scrap balsa may be used to seal the inside of the nose gear spring clearance hole to keep out dirt and oil. Coat the balsa piece with resin as needed. Install the nose gear, nose gear steering arm and main gear. Finish the job by adding the nose gear linkage and throttle linkage.

The landing gear should be set up so the stabilizer — at the fuselage — is level and the wing incidence, in relation to the ground, is slightly positive.

Install the radio equipment. While the specific location of the C.G. for a pattern ship is a matter of personal preference, we recommend locating it as shown on the plans for your first flights. Flying the UFO:

There is only one characteristic of the UFO about which we want to alert you. The way the plane rests on the ground — with the stabilizer level and the wing slightly positive — is necessary for a smooth lift off. Otherwise, the plane stays on the ground far beyond its flying speed. When a little up elevator is given, the plane may then jump into the air into a steep climb. Adjust the main and nose gear as recommended. With this recommended adjustment, however, you will probably have to watch your speed at touch-down. Try to land the plane at too high a speed, it may want to lift off and fly around again!

That's about it. Good flying and happy landings.

UFO
Designed By: Joe Bridi

TYPE AIRCRAFT
AMA-FAI Competition & Sport

WINGSPAN
65 ¼ Inches

WING CHORD
10 3/4" (Avg.)

TOTAL WING AREA
692 Square Inches

WING LOCATION
Low Wing

AIRFOIL
Symmetrical

WING PLANFORM
Swept L.E.

DIHEDRAL, EACH TIP
1 5/8 Inches

O.A. FUSELAGE LENGTH
59 ¾ Inches

RADIO COMPARTMENT AREA
13” X (W) 3” X (H) 2 1/8”

STABILIZER SPAN
26 ¼ Inches

STABILIZER CHORD (Incl. Elev.)
7 1/2” (Avg.)

STABILIZER AREA
208 Square Inches

STAB AIRFOIL SECTION
Symmetrical

STABILIZER LOCATION
Mid-Fuselage

VERTICAL FIN HEIGHT
9 3/4” (Incl. Sub fin)

VERTICAL FIN WIDTH (Incl. Rudder)
10” (Avg.)

REC. ENGINE SIZE
.61 Cu. In. (10 c.c.)

FUEL TANK SIZE
14-16 Ounce

LANDING GEAR
Tricycle

REC. NO. OF CHANNELS
4 (5 w/retracts)

CONTROL FUNCTIONS

Rud., Elev., Ail., Throt.

BASIC MATERIALS USED IN CONSTRUCTION

Fuselage.....Balsa, Ply & Hardwood
Wing.....Balsa, Ply & Hardwood
Empennage.....Balsa
Weight Ready-To-Fly.....136 oz
Wing Loading.....21.7 Oz/Sq. Ft
….....includes wing & stab area