

FIAT G.55 CENTAURO

By Paul Byrum

*Tired of the ordinary warbird?
This unique Giant Scale aircraft will stand out at any R/C flying site.*

Introduction:

The Italian Air Force entered WWII with the Macchi 202 as its first line fighter. The next generation was planned to be the Macchi 205, the Reggiane 2005, and the F.I.A.T. (Fiat) G.55 "Centauro." Only small numbers were produced before the government fell in 1943. Germany occupied industrialized northern Italy

inside a Spitfire. Our best chance to evaluate the Fiat's design is to build and fly large radio controlled models of the type.

The proportions of the Fiat are amazingly similar to a modern pattern model. Notice the long tail moment, the long nose, and the low thrust line. The forward bend in the leading edge simplifies landing gear installation; and with the gear up, it's very clean and



and tried to continue aircraft production, but aircraft factories were fat targets for Allied medium and heavy bombers.

The Fiat G.55's are all gone now. They exist only in some dusty books and the dim memories of a few old men who flew them 50 years ago. Nevertheless, it is an interesting airplane. The G.55 was powered by a 1450 hp Daimler-Benz (Mercedes) DB605A inverted V-12 supercharged engine, the same as the Messerschmitt 109G. Well-armed with three 20mm cannons and two .50 caliber machine guns, the Fiat was capable of 400+ mph and could turn

streamlined. The outline of the model presented here is very close to scale except for a slight enlargement of the horizontal tail. How does it fly? Smooth and groovy and is very stable on landing approach. Rudder corrections are seldom needed in flight. With the 2° of wing wash-out, there is no tendency to tipstall or drop a wing during a stall.

Anyone who can fly a Top Flite or Byron's Warbird will have no problems with this Fiat. Ours has flown with the A&M 2.6 and the Walker 3.2 (now Precision Eaglet). With the 3.2 engine it's very fast



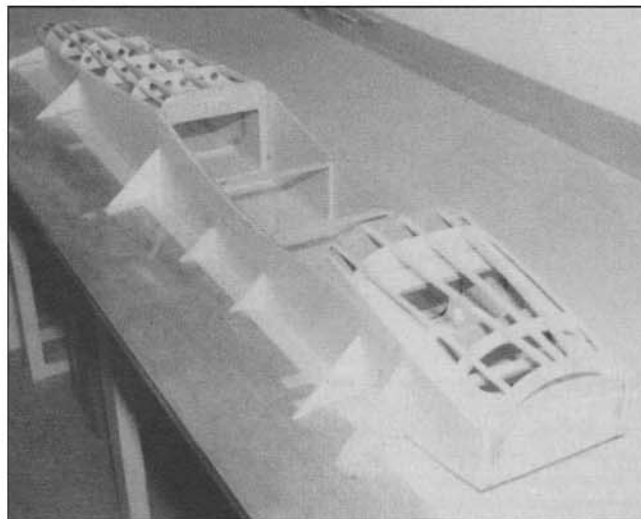
and does great vertical rolls. Any more power probably would be too much. A Quadra 35, 42, Zenoah 38 or a Webra Bully would be fine.

We used the Likes Line 1/5 size landing gear, modified by Likes for a larger diameter pivot pin (1/4"). It has worked so well that, starting the fourth flying season, there are no scratches on the belly. Our Fiat has a fixed tail wheel, but the airplane tends to be nose-heavy and a retract shouldn't add any weight. The Likes Line is located at 1601 Airport Drive, Mechanicsburg, PA 17055.

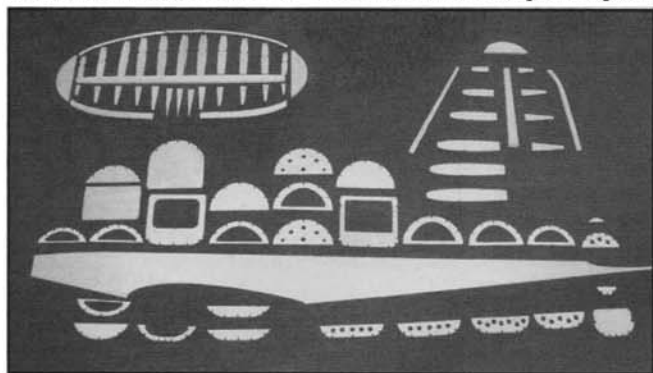
Whatever brand of landing gear is selected, the length of the strut from bottom of wing to axle should be 6-15/16" when no weight is on the gear. We used Williams Bros. 4-1/2" Smooth Contour wheels.

Fuselage construction uses slab sides and strip planking. Strips may appear to be tedious, but the process seems to be over before you know it. It helps to have the sides and strips about the same density balsa wood. Use Pica "Gluit" for all exterior planking and

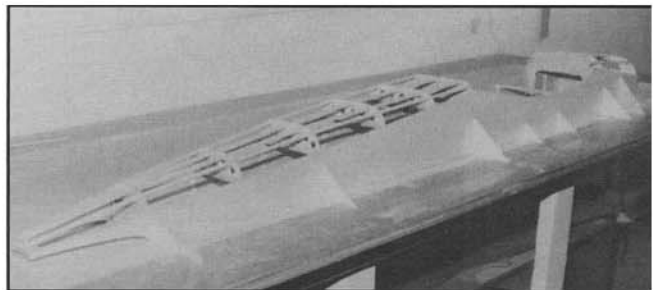
sheeting. This white wood glue is sandable and doesn't leave ridges after sanding. You will notice all flying surfaces use a false leading edge, which enables one to get a smooth, rounded leading edge quickly and easily. The NACA 2415 airfoil is dependable, stable,



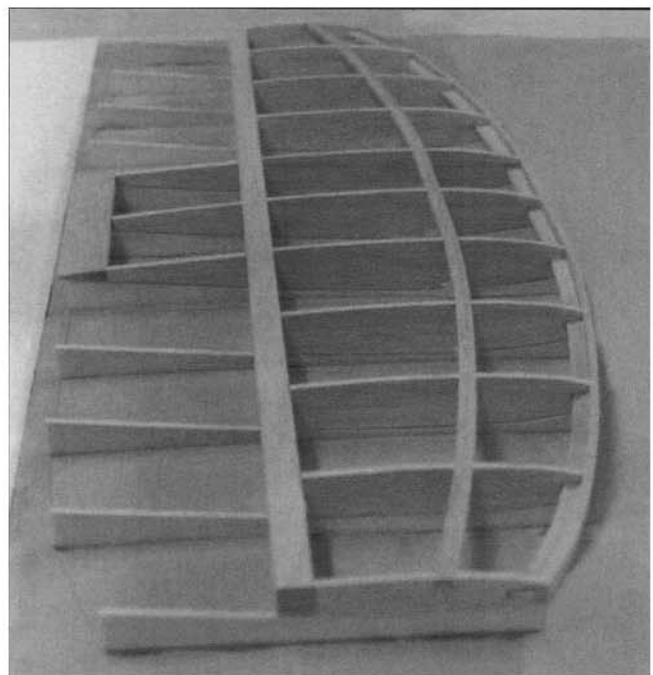
The basic fuselage box is built flat on the shop table.



Start construction by cutting out a kit of parts.



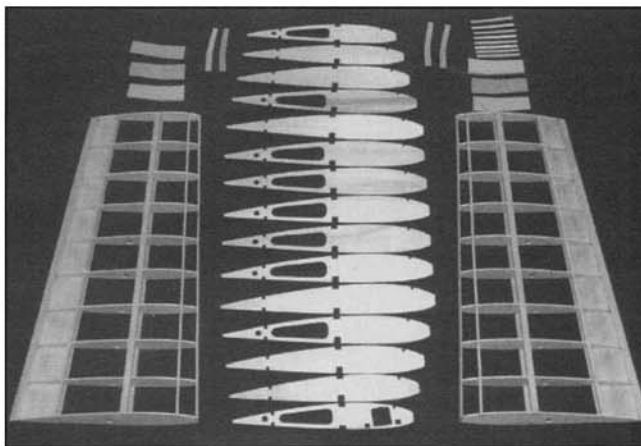
No fuselage jig is required since the fuselage can be built accurately over the plan.



After the stabilizer is framed up, the elevators can be built in the same jig.



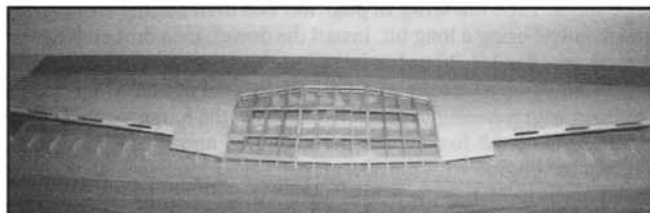
Patterns are provided for a simple jig for the horizontal tail.



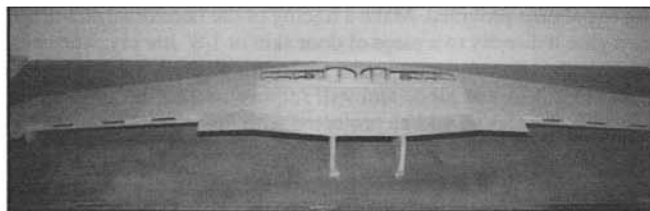
Outer wing panels have been framed up and the other wing parts cut out. Final assembly of the wing starts now.

and aerobatic. The tail surfaces use the new SD 8020 airfoil, which was wind tunnel developed to make the tail do its job better. Flaps were not used on the original model but are shown on the plans. As used on the full-sized Fiat, they are of the simple split flap design and should look good extended when the model is on final. We cover the model with Dan Parson's fiberglass and followed his included instructions exactly. As is often done these days, we recommend all parts be cut prior to construction. Most of the bulkheads and some of the ribs are 1/8" lite ply. Where specified, use high quality birch 5 ply.

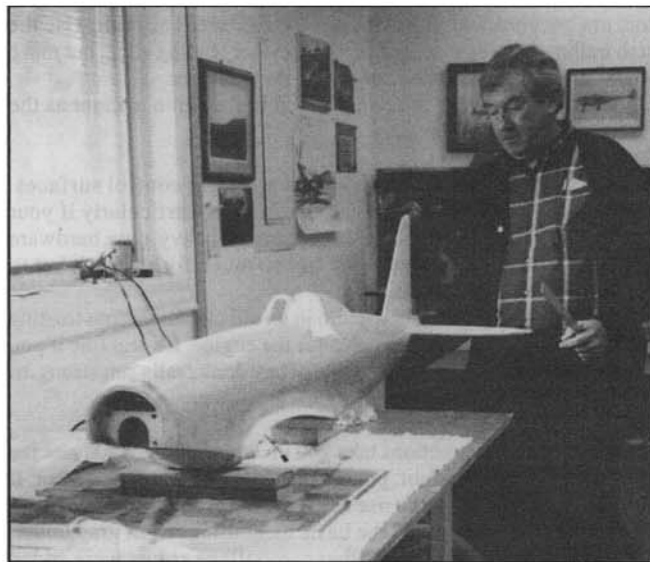
CONSTRUCTION



Outer panels are pinned to the board, and center section is built between them. Easy!



After construction of the top side is complete, the wing is turned over, placed in jig blocks and sheeted. This locks in the 2° washout.



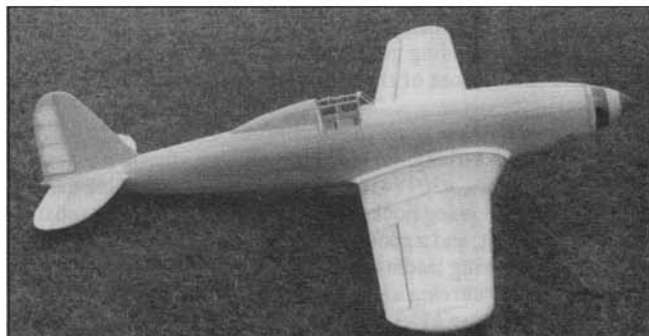
Although the Fiat is 1/5 scale, compact size permits building in a small shop.



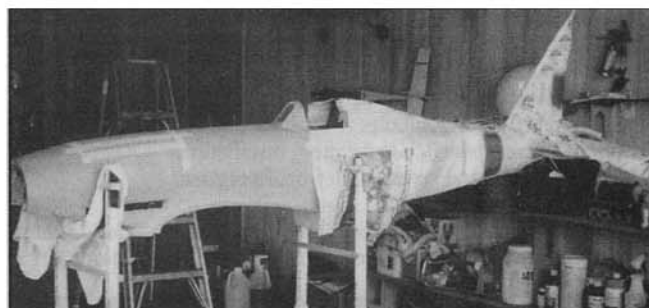
Graceful lines of the Fiat G-55 attract attention at giant scale fly-ins.

Wing:

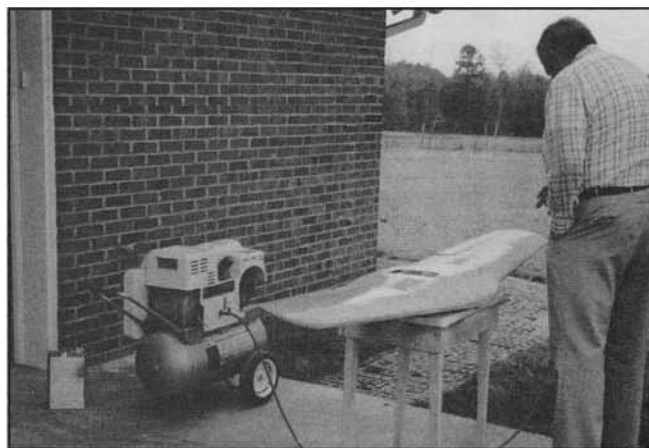
Buy the best spruce you can for the spars. Good spruce is characterized by many rings close together and by the grain being parallel the length of the strip. Use an 8' x 2' building board that is flat and true. Build the outer panels first. After the wing plan has been affixed to the board, nail down the jig pieces (patterns provided), and cover all with wax paper. Be careful and accurate during each step of the wing process. Lay lower trailing edge sheet on the jig pieces, then glue on the lower rear spar and the little 1/8" lower aileron spar. Pin the lower main spar in position and add wing ribs and false leading edge. If you intend to include wing flaps, use a



Long tail moment, evident here, helps the Fiat to groove like a pattern plane.



PVC stand holds the Fiat for painting of interesting Italian markings.



Spraying the first coat of camouflage on wing. K&B epoxy paint used and recommended.



Final assembly is most enjoyable.

minimum of glue in the indicated flap area since that part of the sheeting will be cut away. Add the top spars. Sheet the top of the panel and allow to dry, then remove from the board.

Nail the center jig pieces and pin bottom main spar (doubled) to the plan. Add rear lower sheeting, rear lower spar, ribs, and dihedral braces DB-1 and DB-3. Now, join left and right panels to the center. Add top spars, DB-2's and sheet. Looks great, doesn't it? After it is quite dry, remove it and the jig pieces from the board.

Now firmly fix the center final jig pieces over the outboard number one rib locations. Just as firmly, fix the outboard final jigs over rib number 14 positions. Place the wing framework upside down on these jig pieces. Add aileron servo mounts and flap control linkage at this time. When you are satisfied that everything is square and true, add the landing gear trunions, double glue all the joints, and plank the bottom of the wing. This will lock-in the 2° tip wash-out.

Using a razor saw, remove the ailerons. Add the 1/2" leading edge to each. Add triangular stock to the wing aileron pocket. Fit large Robart hinges, #309 (4 to each aileron), but don't glue them in yet. Fiberglass the wing pocket with Parson's cloth. When satisfied with the aileron fit, and a good fit is essential, remove the ailerons.

The forward wing leading edges are now attached, as well as the wingtips. I enjoy carving and use a long X-Acto blade in the large holder. To sand, I use 11" 1x4 lumber blocks and sheets of 80, 150, and 320 paper progressively.

Landing gear fairings have a hard life, so make 'em tough. Cover the area of the wing where they will be located with Saran Wrap. Lay on at least five layers of 6 oz. cloth slightly oversized. When the epoxy hardens, cut the fairings to match the pattern provided. This ensures correct contours.

Carefully cut out the landing gear wells. Drill and tap the maple trunions for 10-32 nylon bolts to attach the Likes electric retracts. Complete the servo/switch and battery installation.

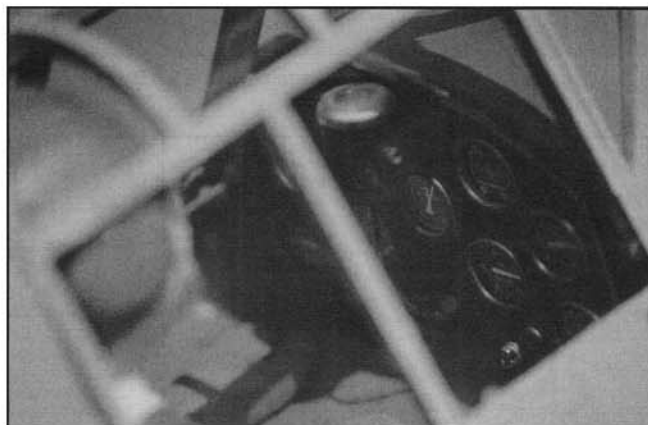
Reinforce dihedral breaks with 6 oz. fiberglass.

Fuselage:

This conventional construction is started by making left and right sides complete with doublers, longerons, and uprights.



Pilot figure should be the same scale as the aircraft (1/5) to give a better scale representation.



Cockpit interior adds a little class to a good-flying model.

Assemble the basic frame upside down over the plans. Notice that the fire wall is reversed on the plans so that **right thrust** will result. Use epoxy glue. Bar clamps (Sears has a nice selection) help bend the fuselage sides to the front bulkheads. While the frame is pinned to the building board, add bottom bulkheads and stringers. The engine access hatch is built in place and cut free after planking. Remove fuselage from the board and fabricate a simple cradle to hold it firm while working on the top. Critical formers, that is 14B, 6, and 4, are reinforced with strips of 6 oz. fiberglass and epoxy where they meet the sides. Add top bulkheads and stringers. Now, the fuselage is a smooth, streamlined shape. If a bulge or a valley is observed, something is wrong. Fix it before planking.

The maple wing attach blocks are glued and doweled to the fuselage sides. Tape the wing in position and drill for the front wing attach dowel using a long bit. Install the dowel, then drill and tap the rear blocks for 1/4-20 nylon bolts. At this time, the rather simple radiator may be added. Wing fillets are formed of epoxy and micro balloons with the wing in place. Don't forget the Saran Wrap.

Final-sand the fuselage with the engine and spinner in place. Protect the engine with masking tape. The spinner, which adds so much to the model, is the 5-3/8" Mosquito unit from Gene Barton, 11640 Salinas, Garden Grove, CA 92643.

Tail:

Start with the jigs. The tail jig pieces are 1/8" lite ply, cut according to patterns provided. Make a tracing of the horizontal stabilizer, then glue it directly to a piece of door skin or 1/8" lite ply, whatever. Glue the jig pieces exactly on the rib location. The horizontal stabilizer is built in one piece and will require two copies of each jig piece. The pieces should be protected with Scotch tape so that glue will not adhere. The jig can be pinned or nailed to our building board so it will be plumb and true. Pin and glue the stab trailing edge, spars, ribs, and false leading edge in place. Add the top spars and plank the top of the stab first in the center, then on the leading edge back to the spars, then the remainder. Remove the stab from the jig, turn it over, pin it in, and plank the other side.

Remember the stabilizer is planked with 1/16" balsa; the elevators are covered with fabric as per the full-sized aircraft. Use the stab trailing edge as a pattern for the elevator leading edge, but make it 1/8" thicker to follow the contour of the stabilizer.

The fin and rudder are constructed in the same manner as the horizontal stabilizer/elevators.

Radio Installation:

Be sure to use coreless servos on all flight control surfaces. Avoid using a metallic pushrod to the engine, particularly if your engine has electronic ignition. I recommend heavy-duty hardware and 4 x 40 pushrods throughout, not so much for strength but to reduce the chance of flutter.

I prefer to check out a new radio in an old clunker before trusting it in a new scale model; same goes for the engine. It's real fine if you can get familiar with the engine first. They don't really run strong 'til about ten hours of running anyway.

Finish:

Dan Parson's instructions take you up to the paint. Make sure the glass is sealed. If in doubt, put on an extra coat of thinned resin. It weighs less than paint. We use K&B epoxy primer -- one coat and wet sand. Next we sprayed the basic camouflage light gray under, with desert sand on top. The other camouflage colors were added using a loose mask to give a soft color line. The insignia was then added. Using K&B, we have a problem with overspray when mixed



Completed model, ready to fly.

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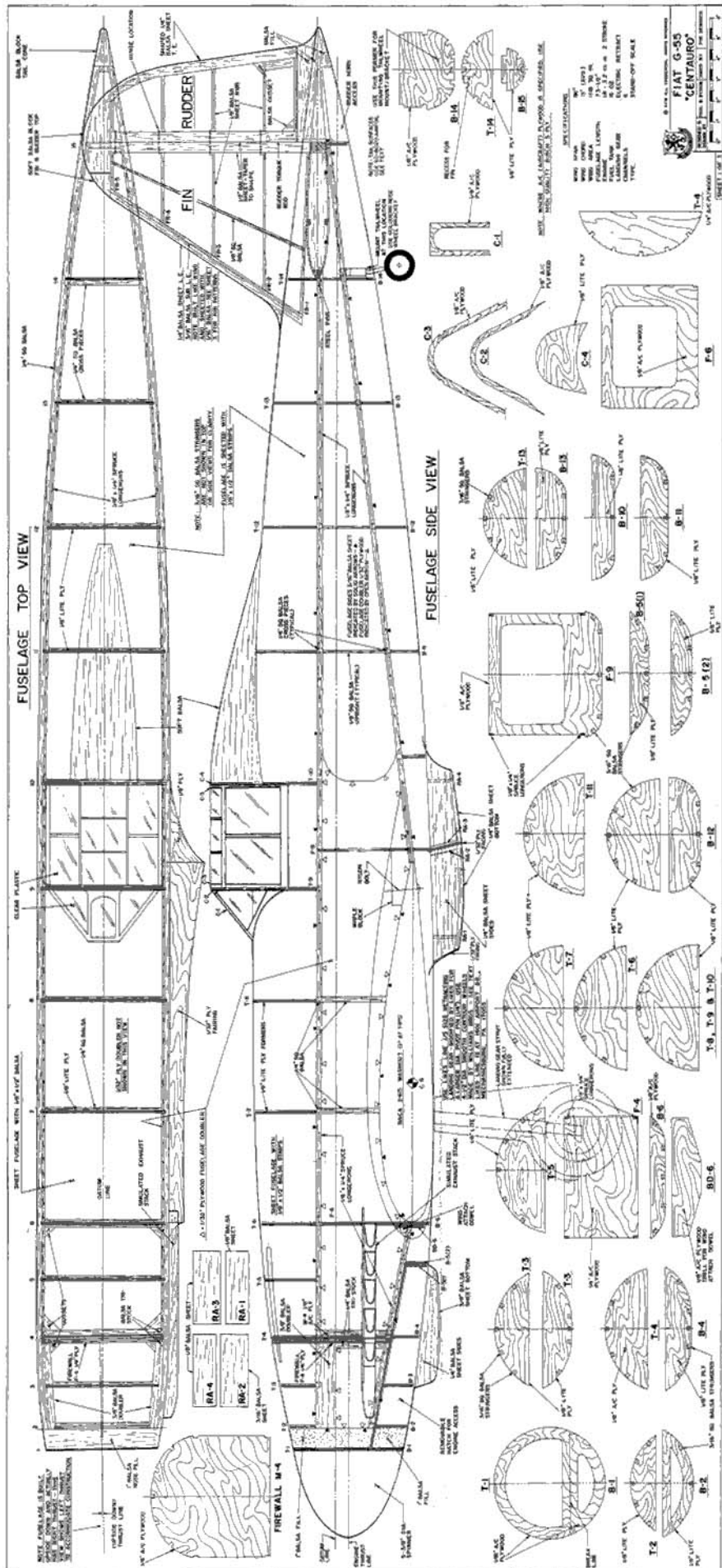
Designed by:
Paul Byron Lt. Col. Ret.
TYPE AIRCRAFT
Sport Scale
WINGSPAN
86 Inches
WING CHORD
13 Inches (Avg.)
TOTAL WING AREA
1118 Sq. In. (Approx.)
WING LOCATION

Low Wing
AIRFOIL
Semi-Symmetrical (NACA 2415)
WING PLANFORM
Double Taper
DIHEDRAL, EACH TIP
3-1/2 Inches
OVERALL FUSELAGE LENGTH
73-1/2 Inches
RADIO COMPARTMENT SIZE
Ample
STABILIZER SPAN
27 Inches
STABILIZER CHORD (inc. elev.)
9-1/4 Inches (Avg.)
STABILIZER AREA
250 Sq. In.
STAB AIRFOIL SECTION
SD 8020
STABILIZER LOCATION
Center Of Fuselage
VERTICAL FIN HEIGHT
11-1/8 Inches
VERTICAL FIN WIDTH (inc. rud.)
10-1/2 Inches (Avg.)
REC. ENGINE SIZE
1.8-3.2 Cu. In. 2-Stroke
FUEL TANK SIZE
16 Ounces
LANDING GEAR
Conventional (Retracts)
REC. NO. OF CHANNELS
6
CONTROL FUNCTIONS
Rud., Elev., Throt., Ail., Flaps, Retracts
C.G. (from L.E.)
6-3/4 (at fuselage)
ELEVATOR THROWS (at widest point)
1-1/4" Up — 1-1/4" Down
AILERON THROWS (at widest point)
5/8" Up — 1/2" Down
RUDDER THROWS (at widest point)
2" Left — 2" Right
SIDETHRUST
1-1/2° (RT)
DOWNTHRUST/UPTHRUST
NA

BASIC MATERIALS USED IN CONSTRUCTION
Fuselage Balsa, Ply & Spruce
Wing Balsa, Ply & Spruce
Empennage Balsa & Spruce
Wt. Ready To Fly 320 Oz. (20 Lbs.)
Wing Loading 41 Oz./Sq. Ft.

as directed. Instead, we use 60% Part A (color) and 40% Part B (hardener). After mild weathering, gunsmoke, engine exhaust residue, etc., are added, mask off the canopy and put on a coat of flat clear. The full-scale aircraft had wider canopy than canopy fairing. Apparent mismatch was a design feature to assure cockpit ventilation in hot climates.

Many attractive color schemes and accurate drawings of the Fiat are contained in



Regia Aeronautica, Vol. 2 by F. D'Amico and G. Valentini. This is another excellent Squadron/Signal publication and is available at hobby shops at a low price.

The Messerschmitt 109 in Italian Service, 1943-1945, also by F. D'Amico and G. Valentini, has some good pictures of the Fiat and graphic layouts of Italian insignia. It also has the interesting story of how the Italian fighter pilots transitioned from the three fighters mentioned previously into the Me109 and the surprising problem that arose. Published by Monogram Aviation Publications. Check libraries or shops that specialize in plastic scale models.

Flying:

Get used to taxiing with full-up elevator. Setting 1° of toe-in improves ground handling. On the Eaglet 3.2, an APC 20 x 10 three blade seems right. It looks great and runs very quietly. We customized the Slimline muffler by sawing off one end and capping it off — still very quiet.

Flying is really a lot of fun, but I have noticed something about the landing approach. The airplane is so steady and controllable on final approach that you can let yourself get into a high sink rate situation. Hard on the gear, so make it easy on yourself and use a fast idle on the engine. Make a faster, flatter approach. It is safer and looks better.

If you have a good-looking fighter plane, it's a lot of fun to attend one of the WWII meets like "Wings Over Delaware," "Warbirds Fly-In" at Warner Robins, Georgia, and the "Rally of Eagles," at Fort Walton Beach, Florida. We have flown the Fiat in fighter gaggles of nine or ten airplanes, and it's really exciting.

I would like to thank Robert Sommerville for the 3-views, cutaways, and other data from his extensive library. I also want to show appreciation to Galon Williams, B-17 pilot and computer whiz, for all the help he gave during the design phase.

I would be glad to try to answer any related questions. Please send an SASE to Paul Bryum, 110 Brandon Way, Simpsonville, SC 29681-4914.

**From
RCModeler
July 1997**

