

Viva il Falco!

(Part I) **A speedy Italian lightplane for either contest work—there's even a military version—or for weekend fun. The building plans are the most elaborate this magazine has ever presented.**

By John S. Shenk Photos by the author



My search for a scale aircraft which combined aesthetics with speed and aerobatic performance was ended when I discovered the Italian SIAI Marchetti Super Falco. Primarily because the plane has not had much exposure in this country, scale enthusiasts have apparently overlooked this tempting subject. The flowing lines, the big canopy, trike gear and the generally pleasing contours of the Super Falco are just too good to be true. A fringe benefit is that this hot little Italian civilian aircraft is also available as a military machine (with slight modifications). Rake the rudder hinge line back, add some sexy tip tanks, and you have a full-blown camouflaged fighting machine. The SF 260 is made available to military powers as either a trainer (SF 260 M), or a COIN (counterinsurgency) fighter, gunnery practice ship or surveillance aircraft (under either the "Warrior" or "Sea Warrior" labels). Numerous nations have purchased the SF 260, so there is a plethora of national markings available and some distinctive military paint schemes.



The Falco family sort of offers the best of all worlds to the scale modeler. You can go either military or civilian (including aerobatic, as depicted by the model presented here), and I even recently saw a photo of a stretched-nosed turbo version of the SF 260! To me, this looked like the perfect candidate for a 1/4-scale project. I envisioned a model with about an 80-inch span, with a gross weight in the 16-pound range. It would optimize the larger .80-1.20 glo or gasoline (non-chainsaw) engines. After checking the size of the cowl, it was ascertained that even the larger powerplants, such as the Tartan Twin and Quadra, would fit. This project was just too good to pass up!

Before discussing the details of the modeling project, let's look at the full-sized Falco. The aircraft is distributed in the U.S. by the Sequoia Aircraft Corporation (900 West Franklin Street, Richmond, VA 23220). I wrote to them and, for \$10, received a number of brochures with color photographs, dimensions, speci-

fications, and even a small three-view. These sales brochures will provide essential information to anyone building the Falco, and I strongly recommend sending for them. A couple of years ago, the company released the plane as a homebuilders' project. There are over 200 being built in some 20 countries around the world. If you really want to go whole hog, you could purchase the full-size building plans from Sequoia (they are rather expensive), and execute an exact-scale Precision version of the Super Falco. The model plans presented here were expertly done by Bob Sweitzer, and they are a faithful reproduction of all of the external dimensions of the Super Falco (more on these exceptional scratchbuilders' plans later).

The Falco's designer was Stelio Frati. He was born in Milan, Italy, in 1919. Frati had established a reputation for designing lightplanes which possessed astonishing speed and power. The first Falco (Hawk) was flown in 1955. The F.8L Series I (with the 135 hp Lycoming engine)

was the first production model. The final version was the Super Falco Series IV, with the 160 hp Lycoming engine. That's the version we are concerned with here. Stelio Frati has the reputation of being the world's best designer of high-speed light aircraft. He can get more out of an engine and wing than any other designer.

The F.8L Super Falco (which is the current homebuilt version) is a side-by-side two-seater. It offers a combination of high-speed cross-country travel, with complete aerobatic capabilities. The huge cabin is comfortable, with plenty of head room and unobstructed visibility under that bulbous canopy expanse. The Falco is capable of unlimited inverted flight, and can execute the full range of aerobatic maneuvers when outfitted with the Christen fuel and oil system. The Super Falco can reach 200 mph in level flight at full power, and will cruise at an amazingly efficient 180 mph at 75 percent power . . . all on a 160 hp engine. One look at the streamlined contours



The author obviously didn't want to get grass stains on the wheels of his freshly-completed Falco, so he used a blanket! The model is a nice size, even though it is 1/4-scale.

of the airframe shows why the plane can achieve such phenomenal statistics.

The letter sent to prospective homebuilders by Sequoia's president, Alfred Scott, states: "If you don't want to build a Falco, don't go for a ride." My comment is: "If you don't want to build a 1/4-scale Falco, don't read Sequoia's literature."

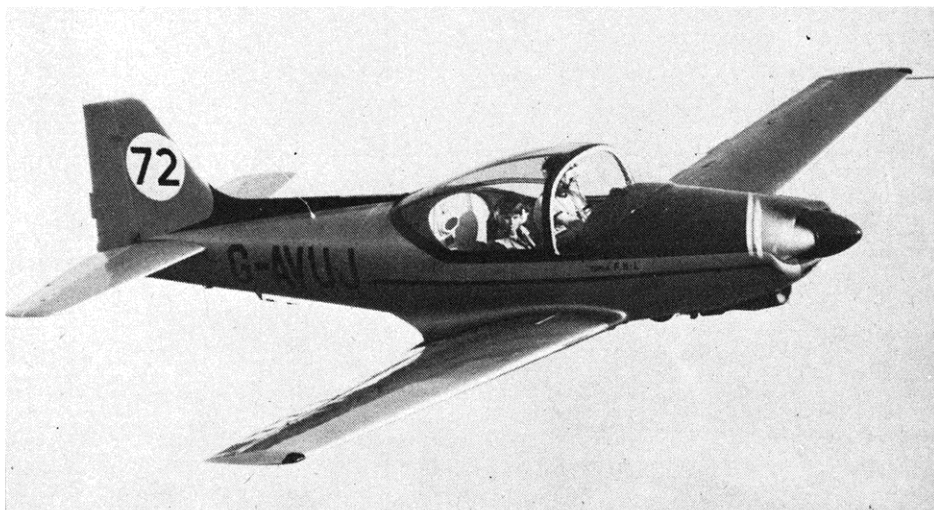
A number of unknowns had to be solved before the 1/4-scale Falco could emerge. First, a strong, durable tricycle landing gear had to be found. A phone call to Dave Platt solved this problem. Dave said that, if I was willing to make the necessary modifications, his retracts should do the job. I'll give the details on the mods to Dave's gear elsewhere in this article.

The second unknown was the engine. Since I didn't have much experience in designing models, I really couldn't project the final weight of the Falco. I sort of "guess-estimated" that a Quadra would handle it, assuming that too much power wasn't a disadvantage in so large an aircraft . . . especially since it was supposed to be aerobatic. To avoid potential confusion, I must interject a note of explanation here. The model shown in the photos is the prototype, which turned out to be totally over-engineered. It came out weighing a phenomenally heavy 21 pounds! Even the Quadra was groaning at that weight.

However, the expert hand of Bob Sweitzer went to work on my drawings. He revamped the structure, and trimmed about seven pounds off the gross weight. As shown on the plans, the Super Falco will build in the 14½-17-pound range. That would be spectacular with a Quadra! So, as you read through this article, please bear in mind that the plane shown on Bob's plans is a vastly improved version of my original heavyweight. The Editor has carefully combed my manuscript to make sure that all of my building comments correspond with the revised plans, but, if there's a conflict, the drawings are definitive.

We can't say enough about Bob Sweitzer's skills as a draftsman. He took what was, at best, a sketchy set of "working" drawings and turned

The fuse, ready for planking. Strength is achieved with reinforced longerons running the length of both sides.



Michael Slazenger's full-size Super Falco, which the author copied. The plane is used in aerobatic competition, thus the #72.



them into one of the most extravagant model plans I've ever seen. When I began unrolling the four-sheet plan set, I couldn't fit them on my building board, and I had to use the length of the living room floor in order to see the entire sheet. Three of the sheets measure some 11 feet (!) long, and they contain all of the building information, including some superb isometrics on assembling the fuse. The fourth sheet has all of the markings and paint scheme of the aerobatic Falco which I modeled. There's even a full-size view of the cockpit interior. The drawings, as shown here, are still in an incomplete stage, and Bob plans to add a lot more detail.

Bob is selling the plans for \$43.50 a set (this includes postage, mailing tube, complete list of building materials and a three-view). Add \$4.00 for Air Mail, and \$18.00 for overseas orders. By the time you read this article, a fiberglass cowl and a molded canopy will be available. For ordering, or information, write to: R/C Sweitzer Enterprises, P.O. Box 834, Hillsboro, OR 97123.

I also wondered if so large a canopy could be hand fabricated, and then be made to open and close. I had to undergo the drudgery of inconveniencing two other people to help me drape pull that huge bubble canopy. Lucky for all of you, Bob Sweitzer is currently working on a mold, so that you'll be able to order yours already done. Among all of the unknowns, one thing was an absolute certainty . . . I would finish the Super Falco in the festive aerobatic trim of Michael Slazenger's machine, which is based in Dublin, Ireland.

The Super Falco presented a real challenge from a design, construction and engineering point-of-view. Each of the unknowns envisioned at the beginning of the project were solved as construction proceeded. As new or unexpected problems arose, new solutions and/or compromises were found. The final product is a very sturdy aircraft, as the flight report will reveal. As a Stand-Off Scale project, it is a sure winner. The Sweitzer plans have exact scale outlines and, if you are a Precision Scale perfectionist, the brochures provided by Sequoia will give you ample documentation (plus, the availability of full-size homebuilders' plans).

The Falco is not a gargantuan model, compared to today's behemoth 1/4-scale machines. It's more the semi-compact package we have come to associate with the .90-sized,

1/5th-scale models (yet, it is a true 1/4-scale rendition). The 79-inch span wing builds in one piece, but the plane still fits comfortably in any compact car. On the flight line, the Super Falco appears just as large as most giant-sized models, primarily because of that huge canopy and the rotund fuselage.

If you just can't seem to get turned on by a model this size, look into the Waco Meteor kit which is available from Circus Hobbies. For all intents and purposes, it is the twin brother of the Falco, and it is a superb kit. I realize that there are those who don't like to scratchbuild, so the Circus Hobbies kit is the perfect answer. With a little ingenuity, you could kit-bash the Circus Meteor and convert it to the SF 260 military version of the Falco.

Since the Falco is retract and flap equipped, it can hold its own in any contest environment. Depending on the "mind set" of your judges, you may want to make some quick mods and opt for the military version, to keep you in contention with the fighter jocks. Add some radar pods (maybe some gunnery ordnance for strafing passes) and you should be able to get some high static and flight scores. If the judges are into flight maneuvers in your area, do the aerobatic version and simply outfly anything else on the field.

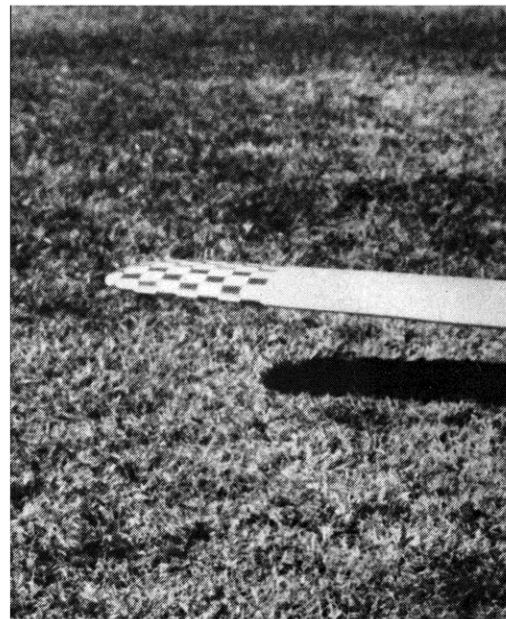
Let's get going with the building procedures. One look at the plans will tell you that this is not a beginner's project. The construction is not complex, but there are a lot of pieces to be glued together. Getting that fuselage straight isn't something for someone who hasn't had some building experience. Let's get started.

FUSELAGE CONSTRUCTION

Bulkheads F-2 through F-8 are plywood, with balsa top sections. All remaining formers are cut from 3/16-inch sheet to save weight. If you really wanted to do the job right, the new Magna-Lite carbon fiber composites which Bob Violett is marketing would be an excellent material for the formers. You could probably save at least a pound by going to this material.

The lower formers are glued in a crutch, as are the top formers, then the two shells are joined along their lateral seams. Longerons, with webbing reinforcement, provide longitudinal stability and warp resistance.

Mark all of the bulkhead positions on the 1/4-inch sq. longerons, then



mount formers F-1 through F-14, using clothespins to hold them in place. Carefully check the alignment as you glue them. Cut the 3/16-inch sheet webbing into two-inch strips and glue it inside the longerons. Note that the entire structure is shimmed above the building board by 3/16-inch spacers. To save time, you may want to make a duplicate copy of the top plan view, so that you can be building both the top and bottom sections of the fuse simultaneously.

The nose gear provided by Dave Platt requires a number of modifications. First, the leg length must be altered to match the configuration shown on the plans. Secondly, a 6-32 screw is added to the pivot block, and a corresponding 110-degree slot is cut into the leg, to permit greater retraction swing. Then, 1/4-inch down from the pivot block, a 3/32-inch piano wire is inserted through the leg, at right angles to the wheel. This wire is 1 1/2-inch long, with right angle bends 1/2-inch from both ends. To these arms are soldered 1/2-inch lengths of 1/8-inch brass tubing. These tubes serve as the tiller arms for the steering pushrods. If you really don't feel like butchering a set of Dave's gear, then Airways Retracts is making a special set of gear for the Super Falco. Order these direct from: Airways Scale Retracts, 5778 Sky Meadow, Riverside, CA 95209. You can order either a nose gear and/or the mains.

Note that the engine and nose gear are mounted on a cantilevered "box," to position the prop in the correct location ahead of the cowl. This box must be built extremely sound, with plenty of beefy wood

and proper glue joints. The plans currently show only the basic box, which also houses the fuel tank. However, it was decided that, especially for the larger .90 and 1.20 twins, additional reinforcement to help dampen any vibration would be advisable. Therefore, the plans which will be shipped to modelers will show large gussets and diagonal braces to tie the box into the firewall along the sides. This will totally eliminate any oscillations which may occur in a sideways direction from the mass

of the engine's piston. Treat the dimensions of the box as relative, depending on the overall length of your particular engine. Verify the position of the spinner and prop before cutting out these parts. Chain saw engines will probably not need any box at all, being mounted right to the firewall.

Also, if you opt for anything larger than the 16-ounce tank shown, then the box will have to be altered accordingly. The plans show the tank permanently enclosed, but I recom-

mend allowing access to the tank through F-3. Simply tie a string onto the neck of the tank, and let it dangle out the back of the box. To remove the tank, just give a tug on the string. This same method also works well for battery packs in tight places.

Insert the 3/8x1/2-inch nosewheel rails in place, then drill the retract mounting holes and install the nose

This view of the SF 260 shows small winglets on the inside faces of the tip tanks. Barely visible is small radio mast halfway along the dorsal fin.



unit. Check the operation of the nose gear, and remedy any binding. Locate the position of the throttle servo and mount it. If you are using an ignition engine, be sure to mount a kill switch.

The plans show two degrees of right thrust. This is not ironclad, however, since some engine/prop combinations will give less (or more) torque (or P-factor). You may wish to start with 0-degrees of side thrust, then shim accordingly after some initial test flights.

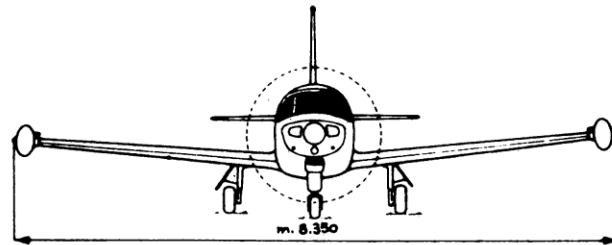
Now is the time to decide whether you want a full-blown cockpit interior. This model has such a huge canopy that it looks very barren if the interior is left undone. A separate plan sheet shows the instrument panel, and even an interior side view of one version of the Falco. It is a good idea to rough in the cockpit interior at this time, but don't do a permanent installation. Only after the fuse is planked should all of the components be finalized and permanently installed.

Covering the fuse with balsa sheeting can now be undertaken. Before commencing, fit the cowl, and be sure that F-2 is a proper match for the contours (allow 3/32-inch for the thickness of the sheeting, of course). Begin planking at the nose section.

Turbo version of the SF 260 shows elongated nose. This shot gives a good perspective of the swept fin on the military version of the Super Falco, as well as the tip tanks.

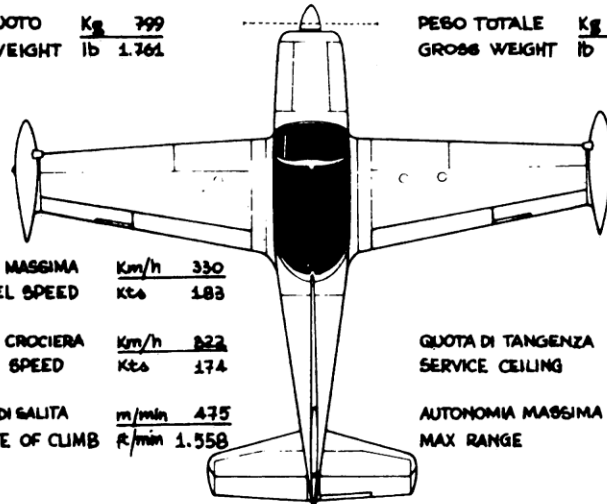
SF. 260

LYCOMING O540-E4A5 260 hp



PESO AVUOTO $\frac{\text{Kg}}{\text{lb}}$ $\frac{799}{1.761}$
EMPTY WEIGHT

PESO TOTALE $\frac{\text{Kg}}{\text{lb}}$ $\frac{1.400}{2.425}$
GROSS WEIGHT



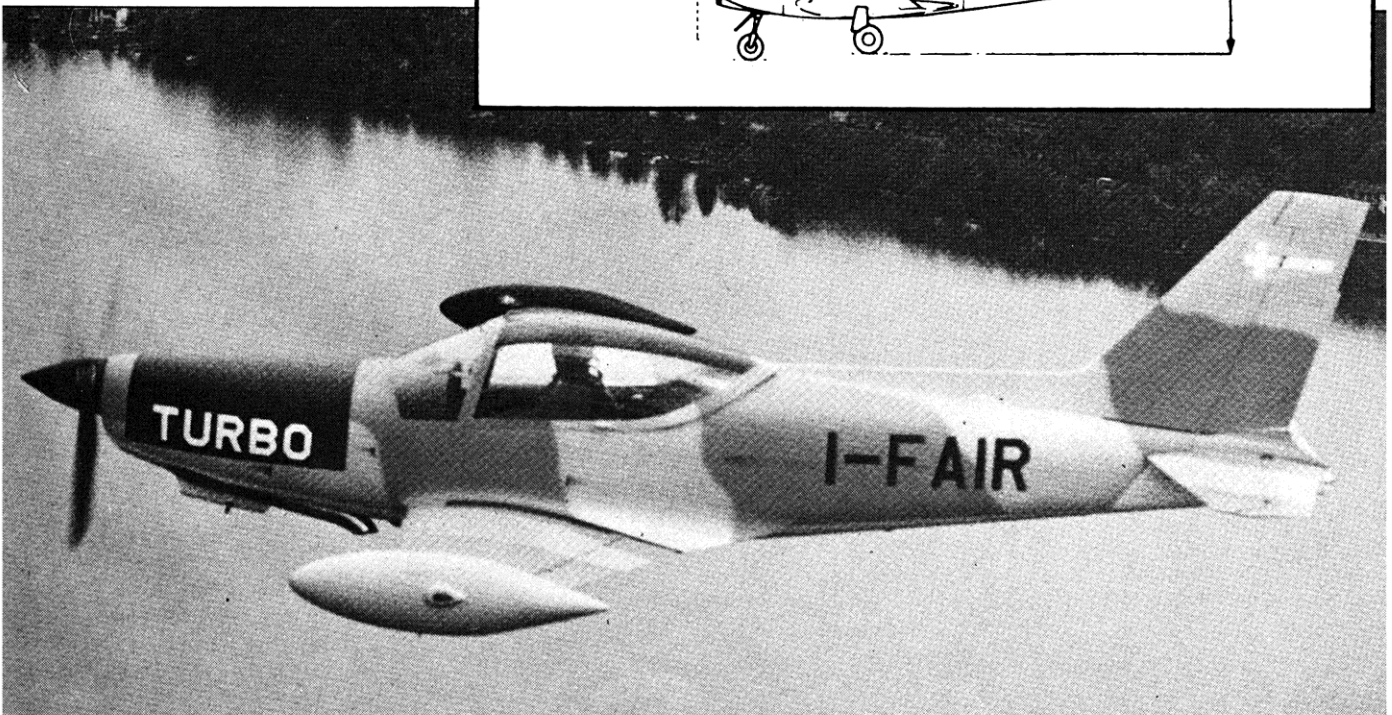
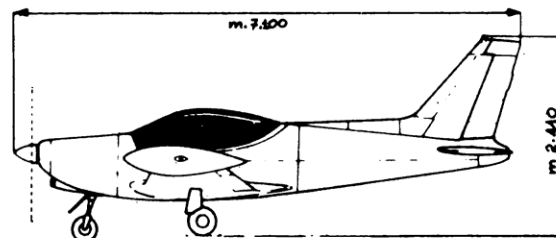
VELOCITA' MASSIMA $\frac{\text{Km/h}}{\text{Kts}}$ $\frac{330}{183}$
MAX LEVEL SPEED

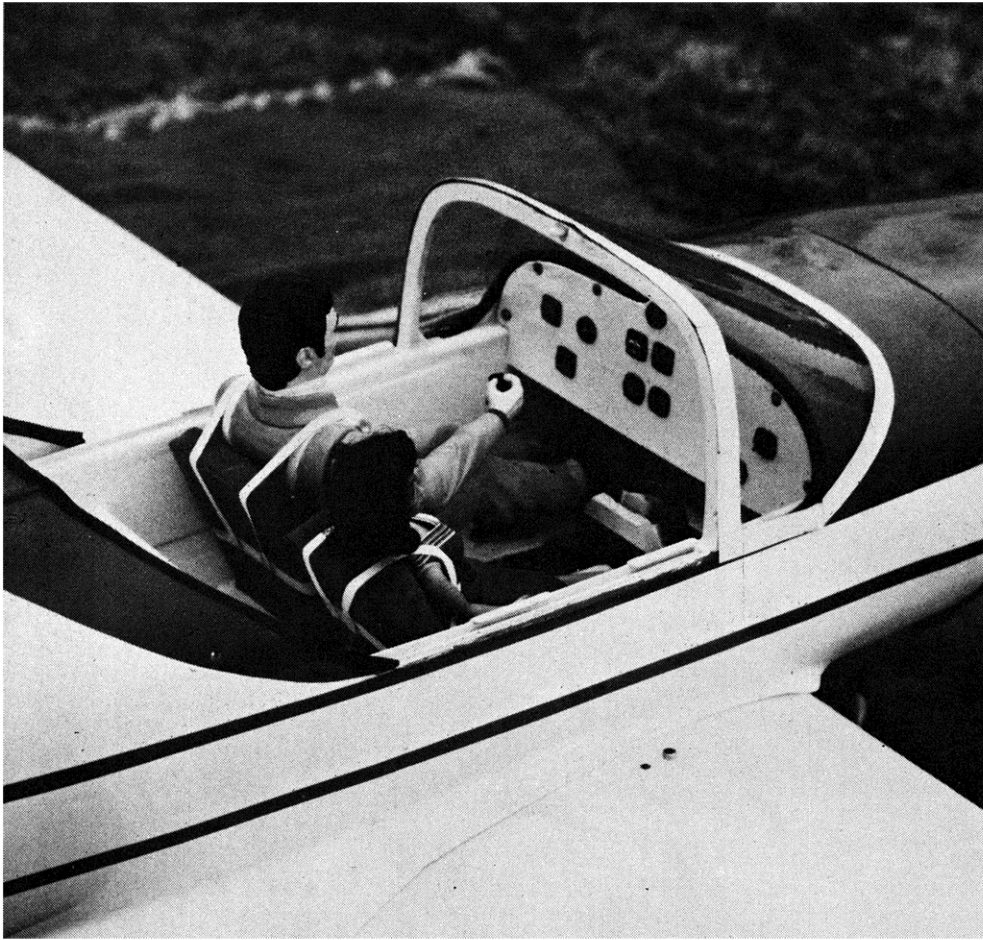
VELOCITA' CROCIERA $\frac{\text{Km/h}}{\text{Kts}}$ $\frac{322}{174}$
CRUISING SPEED

VELOCITA' DI SALITA $\frac{\text{m/min}}{\text{ft/min}}$ $\frac{475}{1.558}$
MAX RATE OF CLIMB

QUOTA DI TANGENZA $\frac{\text{m}}{\text{ft}}$ $\frac{4.665}{15.300}$
SERVICE CEILING

AUTONOMIA MASSIMA $\frac{\text{km}}{\text{nm}}$ $\frac{1.650}{890}$
MAX RANGE





The canopy has been removed to expose the full cockpit interior. Bob Sweitzer is making canopies and cowls available. Pilot is Du-Bro's figure, and lady friend is Barbie.

Depending on the hardness and grain of the balsa, you may have to resort to hot water and ammonia in order to get the wood to flex in some tight spots. The best method is to pin or tape the wet wood in place and allow it to dry. Once dry, the part can be trimmed and then glued in place. Pre-sanding the balsa before application will avoid that "scalloped" look which results when sanding over formers. Only a light touch-up sanding should be necessary once the sheeting is in place.

Once the fuse is fully sheeted, trim the area of the cockpit and finalize the cockpit interior. If you are going to have a removable, sliding canopy, then you may want to wait until the model is entirely painted before doing the interior. If the cockpit will be permanently closed, then wait until just before attaching the canopy to do the interior (and make sure that no little parts will come loose later from engine vibration!).

On my prototype, the stab and fin were built right onto the fuselage, before the sheeting was applied. This is tricky, since it is easy to get a

twisted stab. You'll want to use the more traditional method of building the stabs flat on a building board. Select very light balsa for these parts, especially that solid balsa dorsal fin, which is over a half-inch thick at the base. Note that scale cantilevered hinges are used. If you are building the SF 260 military version, then you'll have to refer to your documentation to establish the proper rake for the fin.

There's enough room inside the tail cone to conceal the stab control horn, as well as the actuation mechanisms for the rudder. You'll only want to be this meticulous when building the Super Falco for contest work, of course. Using two pushrods or cables to the rudder, to dampen any possible flutter during high-speed aerobatics, is a good idea, but it's not mandatory. If you put all of the control connections inside the tail cone, be sure to allow inspection hatches.

Before finalizing the positioning of the stab on the fuse, it is a good idea to build the wing and fit it to the fuse. That way, you can get all of the alignment problems taken

care of at once. Unfortunately, because this article is running so long, we're going to have to delay the wing construction until next time. If you are an experienced builder, you should have no trouble figuring out the wing. The only potentially tricky part is the fitting of the gear and their doors, since the Falco has its wheels on the outside of the struts. The Falco's wheels protrude from the wing about 1/2-inch in the retracted position.

By the time you get that information packet from Sequoia Aircraft Company, and get the plans from Bob Sweitzer, the second installment of the Falco should already be out. See you back here in the February 1984 issue for Part II. □

ROBERT C. SWEITZER
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The last installment (December '83) of the SIAI Marchetti Super Falco began the construction, and left off with the completed fuse. For those who missed the article, I strongly urge you to look it up, for once you see those superb plans by Bob Sweitzer, you'll find it impossible to pass up modeling this Italian lightplane. The Falco is one of those rare aircraft which is fully aerobatic. With a package like that, you can do anything from serious contest work to aerobatic competition with the Falco.

Since it's 1/4-scale (79" span wing), it is a good selection for the

Circus/Circus aerobatic schedule. As a scale model, the versatility of the Super Falco is unparalleled.

Lest the modeler be misled by some of our comments about the close resemblance of the SF 260 military series, with its elegant tip tanks and armament capabilities, modifying the F8.L to the 260 rendition would definitely involve more than simply reshaping the contour of the fin and rudder. The fuse on the 260 has a differently shaped tail cone, the canopy rake is not at all the same and the 260 has a metal wing (the F8.L, being a homebuilt, has a wooden wing). The fact that a 3-view of the SF 260 military version appeared with the first part of this article should not be construed as documentation for the Sweitzer plans. As can be seen, the proper 3-views to match the plans are presented here.

The whole issue of the F8.L and the 260 gets even more confusing. In the May, '72 issue of AIR PROGRESS, James Gilbert gives a

splendid flight report on the F8.L. He mentions that the SF 260 was imported into the U.S. as the Waco Meteor, having been granted FAA certification (one even won a race in its class, being flown by Mary Knapp). Look for the article, in this issue of SCALE R/C MODELER, on the Waco Meteor version of the plane, as made available from the Circus Hobbies kit.

Gilbert then goes on to report that his test machine, a Series III Falco,

was built by Aeromere (one of several companies which built F8.Ls at one time or another, including a motorscooter manufacturer!). None of these production versions were ever imported, however, and the Falco only exists in the U.S. as a homebuilders' project.

If you plan to use the Gilbert article for documentation—the aircraft is fire engine red—you'll find a great shot of the instrument and cockpit controls. The joysticks shown scale r/c modeler 43

Viva (Part II) il Falco!

The conclusion of our presentation of this superb Italian homebuilt lightplane. Sleek, sassy, and fully aerobatic, too!

By John S. Shenk Photos by the author

in the photo were a carryover from the SF 260's military heritage. Gilbert was impressed with the aerobatic potentials of the plane. He compares the ailerons to the Spitfire's, and states: "The Falco feels so crisp in roll that you cannot resist the temptation to go rolling all around the sky."

Further documentation on the F8.L can be found in the October, '82 issue of AOPA PILOT magazine.

That big cowl lends itself to just about any power source, from an .80, through the 1.20 twins, to the smaller chain saw engines. The full-size plane could hit nearly 200 mph, so installing a hefty powerplant would not be out of line.

WING CONSTRUCTION

The wing is built-up and fully sheeted. There's no reason why the root and tip ribs couldn't be transformed into templates for a foam core (note that only 1/16" sheeting is used on the built up wing, and that probably wouldn't be sufficient for a foam core). The plans show both wing panels, to facilitate construction. While my original model had bellcranks to actuate the flaps, Bob Sweitzer wisely modified this to a torque rod arrangement, which is much simpler and more positive.

I noticed that the plans show wheel well cutouts which are a very tight tolerance to the wheel diameter. I'd suggest relieving the appropriate ribs somewhat, to allow some extra space here. The retracts can either be Dave Platt's (modified as we'll discuss later), or the Airways Scale Retracts' version.

I built my wing on a jig, which simplifies things. If you don't have a building jig, I'd urge you to buy or make one, otherwise you'll have to go through the painstaking process of making small alignment tabs on the bottom of all of the ribs. Observe that the ribs differ in thicknesses and types of materials, so follow the plans closely as you trace the ribs.

The flaps and ailerons are fabricated as separate components from the wing, with lots of tiny riblets to keep you on your toes! Be especially careful when sheeting these subassemblies, to not induce any warps. The aileron hinge system is rather unique. The Robart hinge points are installed so that their pivot points are below the surfaces, and aft of the more normal hinge line. This allows the ailerons to establish an aerodynamic differential, as the blunt nose of the aileron droops down into the slipstream when the aileron is deflected upward.



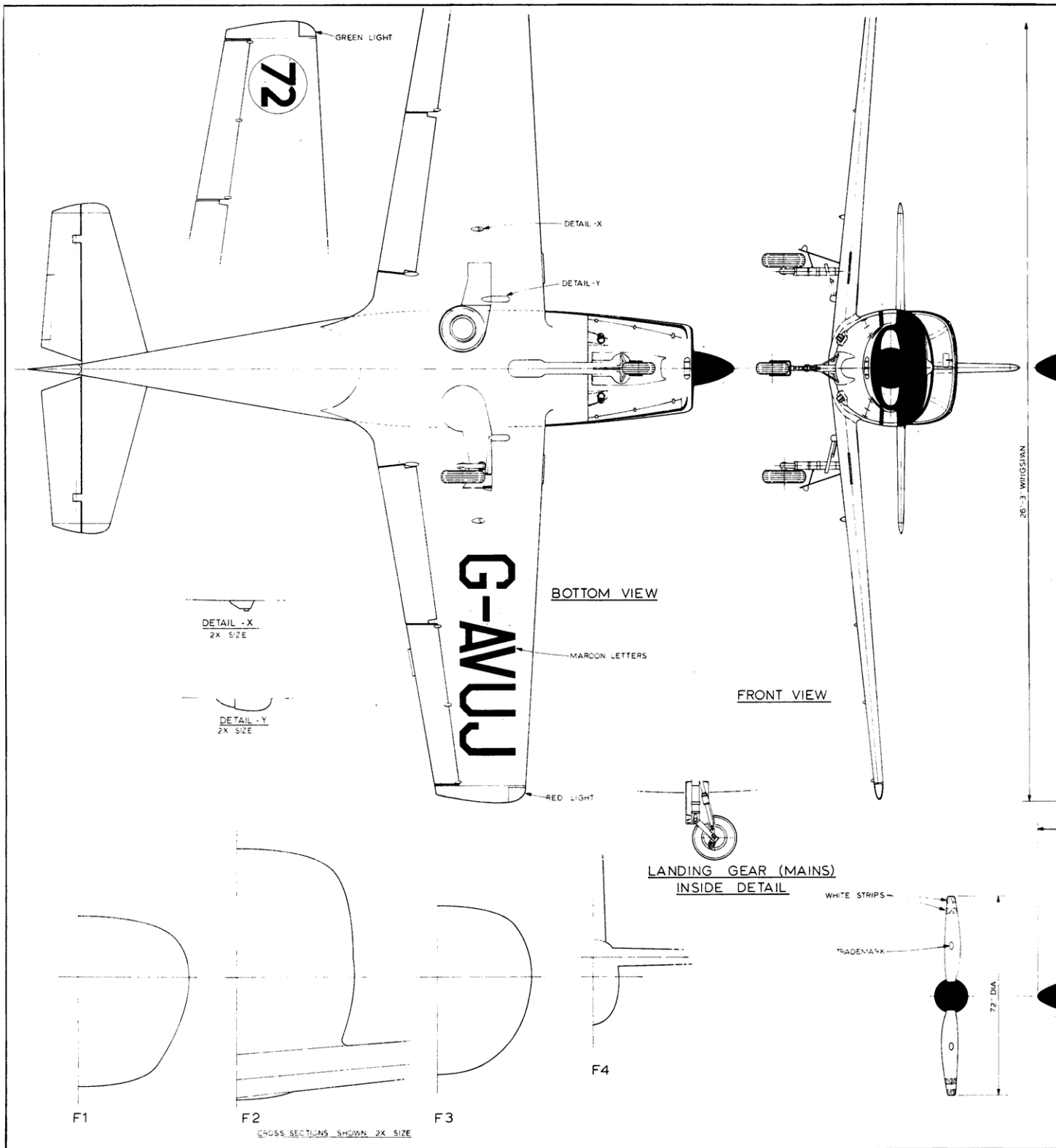
The author's creation proved that the design could fly, even at an extreme gross weight.



The Super Falco has the classic elegance of a well-designed lightplane. Frati is a master of the clean line and minimal drag.



Detail of the track for the sliding canopy. Bob Sweitzer has a molded canopy available.



The resultant drag equalizes the drag which occurs on the opposite aileron. The Sparmann, and many other aircraft have utilized this system. Be sure to keep the geometry of this system correct. The ailerons should be mass balanced, especially if high-power aerobatics are contemplated. Use the hinge point pivots as the reference point to establish the aileron's C.G.

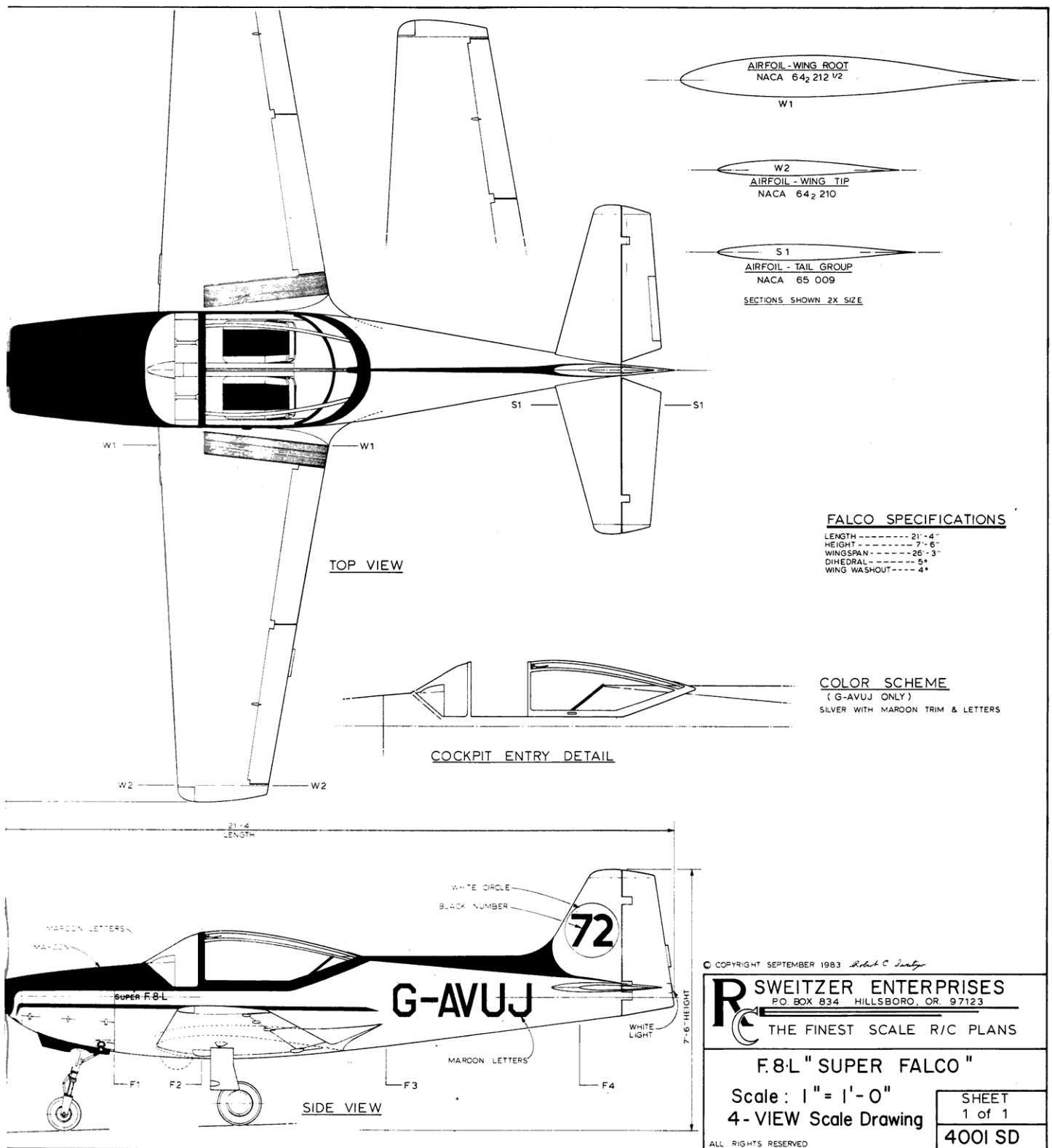
When setting up the wing on the jig, be sure to mount the ribs so
46 scale r/c modeler

that there is four degrees of wash-out at the tips. The model has superb stall characteristics, and the washout doesn't hurt the aerobatics. Note the small leading edge turbulator strips on the inboard area of the wing. These small triangles are there to ensure that the center section of the wing stalls before the tips . . . don't neglect to install them.

Those three spars may look like excessive overbuilding, but they are necessary to give the wing proper

torsional rigidity. The sheer webbing on the main spars does most of the work of absorbing the flight loads, so do a neat job of fitting and gluing these.

The retracts supplied by Dave Platt must be extensively modified for the wings. The wheel leg is completely disassembled, then the internal spring is cut in half. The outer gear strut is cut to 3 1/4", while the inner strut is shortened to 3-1/8". Note that these dimensions are only



approximations taken from my original drawings. Please check the gear against the Sweitzer plan to ensure the correct total strut length. A new hole must be drilled in the leg 1" from the spring, and a new drive pin inserted. Drill a new hole at the top to provide for the spring retaining pin. Be sure to insert a 1/16" pin in the nylon pivot block to keep the wheel from rotating.

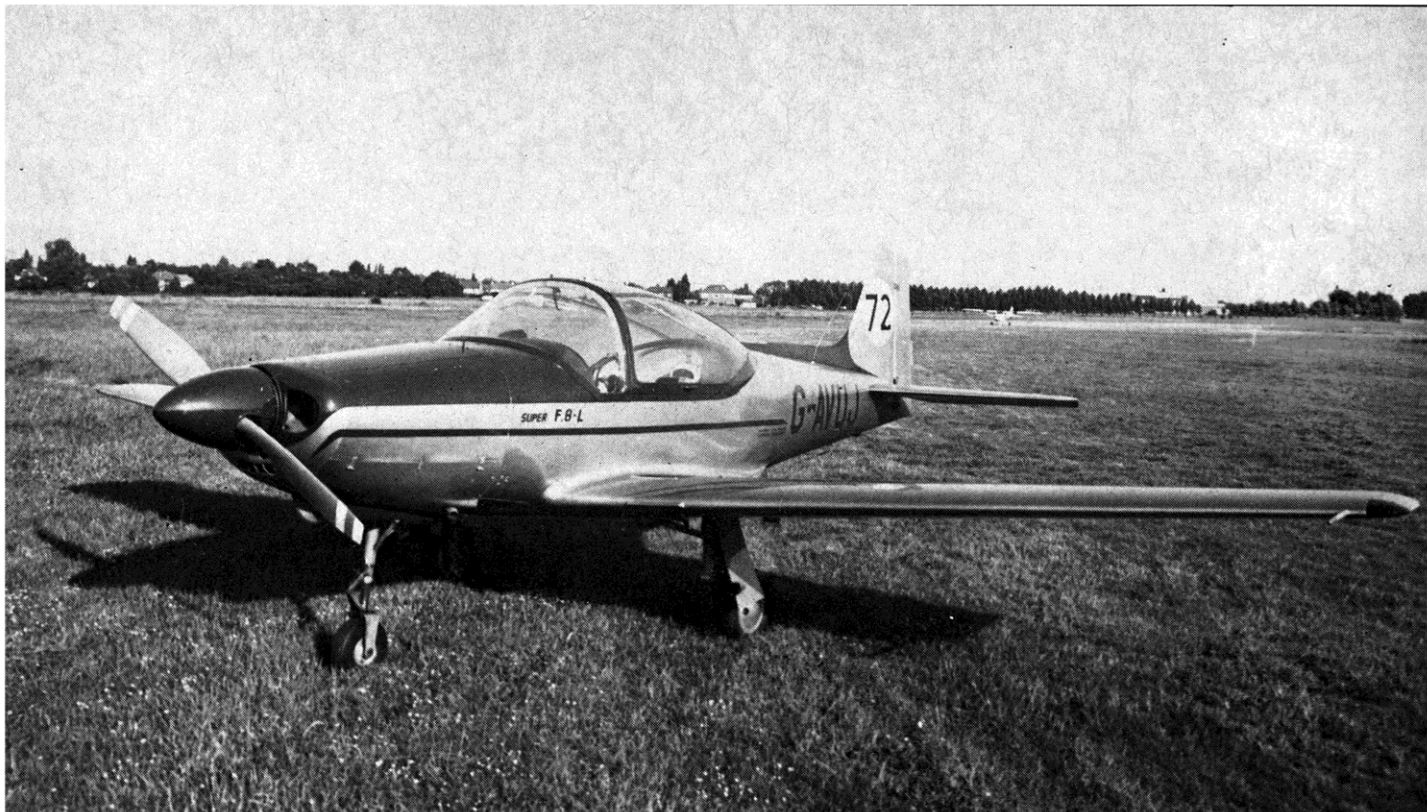
Also, let me point out that, if you have opted for the Airways Scale

retracts, the mounting rails will have different dimensions. It is easier to fit the retracts with the wing taken out of the jig, or at least turned over in the jig. More information on the Airways Retracts can be obtained from them at 5778 Sky Meadow, Riverside, CA 92509. Phone (714) 788-5556 (eves.).

Be careful that the retract chassis does not protrude above the ribs. The wing is so thin at this point that the wheel cannot be fully hidden.

Don't be surprised if the wheel hangs out of the wing by about a half inch . . . that's the way the full-size plane is! The wheels are mounted on the outsides of the struts, which is just the opposite of what you'd expect.

Check to see that the wheels are perpendicular to the ground with the gear down. You may have to change the angle of the mounting rails slightly to get this just right. The Robert wheels will last much longer



Michael Slazenger's full-size Falco regularly competes in aerobatic competitions. Plane is from Dublin, Ireland.

and run truer if 6/32" brass bushings are installed on the hubs.

Cut out the wheel wells and line them, being sure to allow sufficient clearance for the wheels, as mentioned previously. The strut covers are made from 1/16" ply and are hinged at W-13. Use a 1/16" music wire whisker to actuate the door. A Du-Bro ball-link is attached to the door, and this connects to a brass tube which is bound with cord, then epoxied to the strut. This will give you an adjustable connection, so that you can get the door to close flush. When the retracts are working perfectly, sheet the bottom of the wing.

The wing is now turned right side up and placed back in the jig. Notches will have to be cut in the bottom sheeting to accommodate the jig rods. Now fit the retract air supply and all of the servos, as well as the linkages for the control surfaces. Double check that everything is secure and that there is no binding.

Just as we did on the fuse, it's a good idea to pre-sand the wing skins before applying them. The less sanding you have to do to the wing once it's sheeted, the better the finish will look. Note that the flaps should not be attached permanently to the wing until after the entire structure is painted. Being a homebuilt, you can expect that the prototypes have

top-notch finishes, and shine like sports cars.

Now is the time to position the wing on the fuse and, after checking the alignment, install the 1/4-20 mounting bolts. The stab can now be attached, using the wing for reference.

The cabin interior should be roughed, and at least the walls permanently mounted. If you have opted for a sliding canopy, install the 1/16" spruce guide rails (details for a sliding canopy are not shown on the plans. Glue a 3/16" x 1/16" spruce guide to the inside of the fuse. Install a 2" piece of 1/16" ply as a cap at station F-5, and install another 2" further aft. On the canopy, itself, glue a 3/16" x 1/4" spruce strip, which has been notched to fit over the 1/16" rail. This canopy rail begins at F-5A, and extends aft for 2", then is interrupted for 2", after which another rail segment is attached. These canopy rails fit under the 1/16" ply caps on the guide inside the fuse, when the canopy is closed.

When the canopy is complete, make the 4-40 bolt attachment shown at the top of F-5 and F-5A. Drill holes at the rear of the canopy, as shown on the plans. Epoxy a blind nut on the inside of the cabin, so that the canopy can be held tightly to the body in the closed position.

If you have decided to use a Quadra or comparable chain saw engine for power, then an 18-8 prop

is a good place to start. The spinner is a C.B. Associates 3" one.

Radio installation in these large models is a matter of some confusion to modelers. It's difficult to decide whether heavy duty servos are needed, or whether standard ones are sufficient. I don't have all of the answers, so I can only convey what I used. My six channel Kraft is configured with eight KPS-14 and two KPS-15 servos. The KPS-15s are used to steer the nose wheel and rudder. The other servos are interconnected also with Y-cords, with two servos on flaps, one servo for each aileron, and two servos to drive the elevator. I do not have any of them rigged on some of the override devices I have seen, but that wouldn't be a bad idea. Extension cords are needed for the throttle and nose gear servos. There's plenty of room in that cavernous fuse, even with a full-blown cockpit interior. I used the throttle trim to actuate the kill switch for the chain saw engine.

FINISHING

The Falco can be finished in a number of ways. The prime consideration is to keep the weight to a minimum. On an airframe this big, it is very easy to add an additional two pounds without even realizing it. Pay particular attention to things like resins and primers, both of which add a tremendous amount

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Viva il Falco!

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of unwanted weight. My model was done with one coat of K & B Super Pox resin, two coats of auto primer, and a final color coat of K & B paint. The red trim is done by mixing red and orange until it matches red Monokote. To keep weight at a bare minimum, I covered the wing, rudder and elevator with white Monokote. The red checkerboard is red Monokote, as is the lettering.

The seats for the Du-Bro pilot (Fred) and girlfriend Barbie are made from 1/8" balsa, covered with the type of carpet used in doll houses. Fred's military parachute must be removed before he can sit correctly in the Falco. Both occupants are held in place with white elastic cord harnesses.

The white trim around the canopy and windshield is made from a piece of .015 white plastic. A length of 3/16" black rubber tubing is used around the instrument panel and around the aft area of the cockpit, for combing.

When I sat Fred at the controls and hefted the Super Falco onto the scales, it registered 21 pounds. Since Bob Sweitzer has taken a

deft hand to my original drawings and has re-engineered several areas, the projected weight of the plane is 14½-17 lbs. Set up the aileron and elevator travels for about 20 degrees up and down. The rudder swings 25 degrees left and right, and the flaps should lower at least 50 degrees. These are only starting reference points for trim, and you will undoubtedly change some of the throws to suit your style of flying.

FLYING

I was surprised that the Super Falco fit with ease in my Dodge Aspen station wagon. I headed for the flying field, going over my three simple rules for a successful first flight. Rule No. 1 is to have an experienced pilot do the flying. You should sit back and watch. Rule No. 2 is to check your radio system several times *before* heading for the flying field. Rule No. 3 is to run the engine *at home* until you have a totally reliable top end and perfect idle.

The first flights were not as trouble free as I had hoped they would be. Bob Grove is our club's resident

test pilot, and he did the honors. The first takeoff attempt indicated excessive left thrust in the engine, so I had to go back home and re-do the mount.

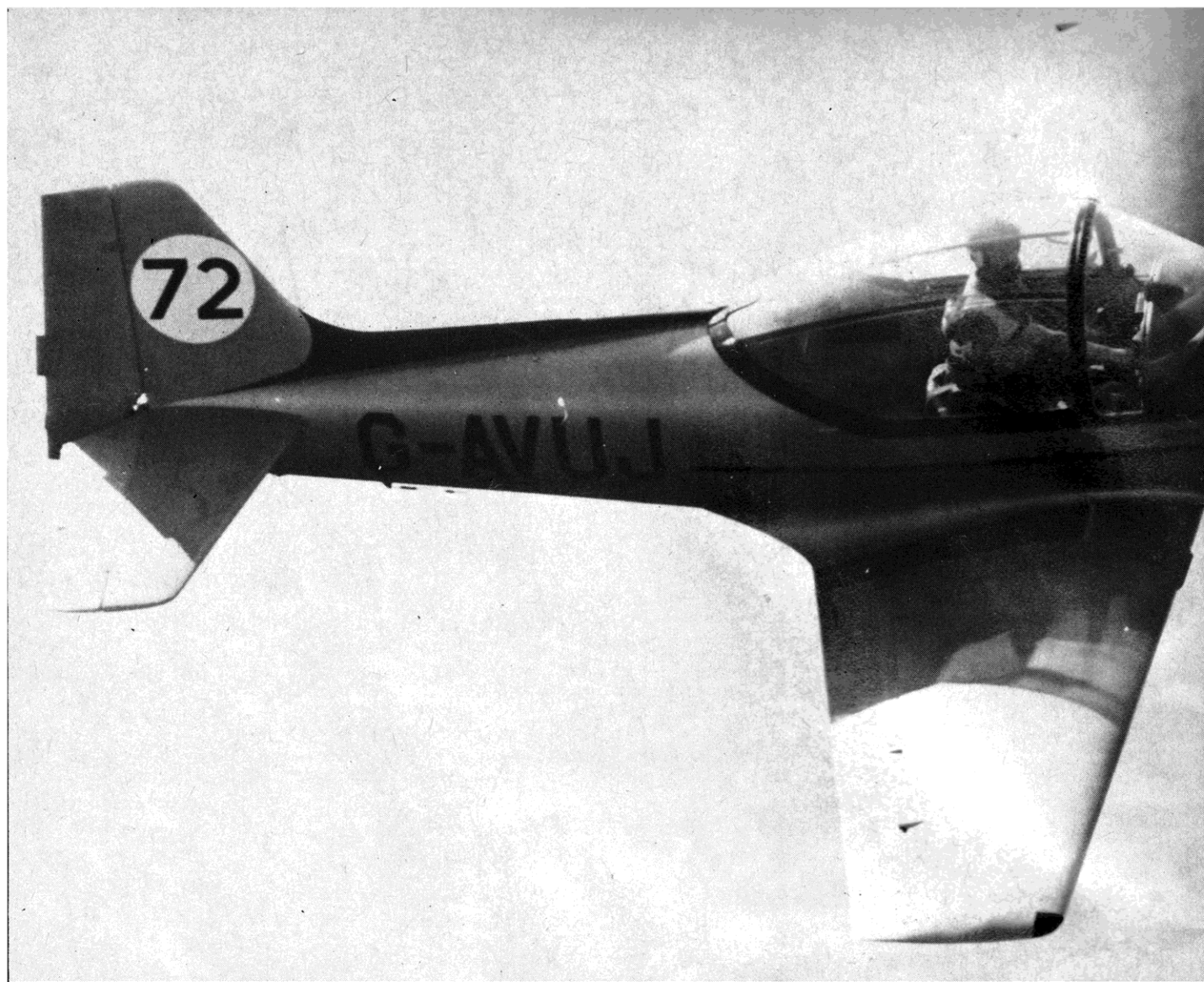
The second attempt was very nice, at first. With the flaps lowered about a third, the Super Falco was airborne in less than 100 feet. It climbed out like the proverbial homesick angel, and Bob made several passes over the field. On the fourth flyby, the throttle went haywire. All other controls were normal, but Bob couldn't get enough power to make it back to the field. The Falco sunk unceremoniously into a corn field!

When we got to the crash site, I was shocked to see that the plane had suffered very minor damage. All damage was only cosmetic, and the structure was sound . . . quite a surprise for a 21 pound airplane impacting some rather unyielding corn. We discovered that engine vibration had wrenched the throttle servo out of its mount.

We headed back to the field a few weeks later. This time, the takeoff was picture perfect. The flight was going along just great. Bob was even doing some axial rolls when, suddenly, the engine went sour. Bob was able to get the Falco back to the runway, but with the engine humming at high idle, the plane overshot and again dumped into the



With checkerboard rudder and wing tips, the Super Falco makes an attractive model.



cornfield. There was so little damage that we were ready to fly almost immediately, but only after I again reinstalled the miscreant throttle servo. It had again vibrated loose!

After some quick fixing of that throttle servo, Bob racked up three very successful flights on the Falco that afternoon. Because the prototype weighed 21 pounds, the aerobatics were somewhat limited, and the Quadra is just not enough of a brute to haul such weights through the verticals. Of course, by knocking off some 4-6 pounds by building the Super Falco according to the Sweitzer plans (and even more weight savings if you use special materials such as Magnalite), you can expect some pretty astonishing performance. I'd do my best to cram the biggest powerplant I could shoe-horn into that cowl . . . you just can't have too much horsepower when doing aerobatics. If you are going for scale contest work, a nice-sounding twin four-cycle might be the ticket. The Tartan twin has been gaining a lot of acceptance as a compact

and powerful powerplant.

Landing the Falco requires careful control of the engine speed. The glide slope is definite, especially with the flaps fully lowered, so use the throttle to control sink rate and glide angle. I can't really give you a fair evaluation on this point, because the wing loading on my ship is so inordinate that nothing would apply to a lighter plane. I suspect that, at 14½-17 pounds, the model will actually tend to be somewhat of a floater. The flaps are very effective, so practice using them at safe altitudes.

Those who say that big airplanes don't fly better have obviously never had the sheer pleasure of flying one. The Super Falco is rock solid, and grooves better than any other model I've ever flown. There's none of the "bumpiness" or jittery motion often found with smaller models. Being larger, the plane establishes a realistic scale speed much more efficiently than a smaller ship, *i.e.*, it can fly at a more authentic-looking speed without getting dangerously behind

the power curve. The Reynolds Numbers really pay off here, and you can feel a decided solidity to the model as you put it through its paces. The loops are like on rails, and even windy gusts don't get the Falco off course.

On the other hand, I must admit that even giant-size airplanes have their drawbacks. Too large a model can really be a hassle to handle. They get very awkward to assemble at the field, and often require an assistant just to launch. These very large planes just lumber around the sky, and what they call aerobatics is a farce. As much as I admire these behemoths, they turn out to be only mediocre when it comes to a weekend of fun flying.

The Super Falco is an excellent compromise of large size and superior performance. It's big enough to handle well and to make a good presence in the air, but it's not oversized and clumsy. The trike gear makes it very docile on the runway. Those big flaps contribute to the very predictable takeoff and landing

characteristics. Combine all of this with some good aerobatic performance, and you've got a model which is actually a pleasure to take out for an enjoyable session of sport flying.

You may have entirely different reasons for modeling the Falco, such as the simple sheer beauty of its flowing lines. But, whatever your reasons, do model this plane. This is one model it would be a mistake not to build! □

FULL-SIZE PLANS FOR THE SUPER FALCO ARE AVAILABLE FROM: R/C SWEITZER ENTERPRISES, P.O. BOX 834, HILLSBORO, OR 97123. PRICE IS \$43.50 (INCLUDES FOUR PLANE SHEETS, 3-VIEW, MATERIALS LIST, SENT IN A MAILING TUBE). AIR MAIL ADD \$4.00, AND OVERSEAS ORDERS ADD \$18.00. THE 3-VIEW IS AVAILABLE SEPARATELY FOR \$5.00. WRITE FOR PRICES ON A FIBERGLASS COWL AND MOLDED CANOPY.

SEQUOIA AIRCRAFT WILL SEND COLOR BROCHURES AND OTHER DOCUMENTATION INFORMATION FOR \$10.00. WRITE TO: SEQUOIA AIRCRAFT, 900 W. FRANKLIN STREET, RICHMOND, VA 23220.