

# Falco Builders Letter



How to get a 10' bird through a 9' door. Jonas Dovydenas's Falco is birthed.

## First Flight: Steve Wilkinson

One of the delights of being in the Falco kit business for the last six years has been having Steve Wilkinson as a builder. Like so many other builders, Steve has become a good friend, but he's also a writer and has written so much about the process. You've read all his articles, but they are but a small percentage of the letters and faxes that make up a six-and-three-quarters-pound file of correspondence. (If all our builders wrote as much, our correspondence files alone would weigh more than three Falcos.)

And the neat thing is that Steve's letters are often as wonderful as his articles. Thus, I've not been looking forward to Steve's first flight with any enthusiasm, as it would bring an end to an era when I could arrive at work to find the fax machine with his familiar "SW" signature at the base of a frozen fountain of paper.

So I thought it might be interesting to let you 'see' the first flight of Steve's Falco by wire-tapping our fax machine (Steve has one of those *other* brands of computers,

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## First Flight: Jonas Dovydenas

On Memorial Day Sunday, June 2, Sequoia Falco number 30 took to the air. This one belonged to Jonas Dovydenas and the first flight was made by Easy Al Aitken.

Jonas began his Falco at roughly the same time as Steve Wilkinson six years ago, and he worked on the airplane in fits and spurts, taking large blocks of time off for other activities, including two trips into Afghanistan to photograph the war. At some point in the process, Jonas realized that the construction was not going as quickly as he would like and that—while

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## Falco-issimo

by Bernard Chabbert

*The following is a translation of one chapter of the book *Manche et Manette (Stick and Throttle)* by Bernard Chabbert, published by Air Press, 14 Cite de l'Ameublement, 75011 Paris, France and available from them for 120 FF + shipping—VISA cards accepted. Many thanks to Marcel Morrien, Richard and Catherine Clements, and Robert Cumberland for translating the chapter.*

—Alfred Scott

On the left side of the instrument panel, there is a dial labeled: *indicatore di velocita*.

Airspeed indicator in English. The figures on the dial go to 400, the marks continue to 450. The units are kilometers per hour. It's not usual, instruments reading that high. There's also a red line painted on the glass, at 383 kph, and a placard on the instrument confirming that this is the Vne. Speeds like that apply to 700 hp twins, you say.

*Ma no, str...zo!*

This is an *Italian* airplane, idiot, and Italian machines are made to go fast, *capito?* Moreover, this Italian machine is the golden standard of pure performance and elegance in a sporting design. Anglo-Americans even have a phrase for machines like this: "One of them red Italian jobs." It's a Falco, a Frati Falco.

Go ahead, tip your hat: Stelio Frati is passing. If you want to place him in the ranks of contemporary Italian engineer-designers, you must evoke names like Bertone, Gandini, Forghieri, Colombo, Chiti—those who work on cars. But they're not prejudiced in Italy. Airplanes, automobiles or motorbikes, the moment it's mechanical and it moves, it can become Art. Among Italian works of the twentieth century to be found in future museums, there'll be Ferraris, Lancias, Alfas, Agusta motorcycles, and at least one Falco.

If you are a violinist, you've dreamed of  
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## Steve Wilkinson

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and the type looks weird):

23 May 1991. The Teterboro MIDO is going to make me do a 40-hour test flyoff on the Falco. The inspector—one John Donaldson—is, though very pleasant and friendly, being very sticky about this. Unfortunately, Mattituck placed prominently in the engine logbook the following statement, as a result, I assume, of having put the 45-degree injector elbow on the engine: "This engine has been modified out of its original type certificate data sheet and should no longer be considered a type-certificated engine. It is approved only as a modified IO-360-B1E for experimental use."

I don't care an enormous amount one way or the other, being always able to resort to what you once called "Black & Decker time."—SW

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22 April 1991. The barn is empty, cavernous. The airplane is at Dutchess County Airport (Poughkeepsie), in a hangar yet. Tower, nice long runways, approaches, etc. We moved it Saturday, with a crew of eight wonderful people, some of whom I didn't even know. One was a professional rigger, used to dealing with immense objects. Another was a recently retired state trooper who would have been invaluable, I'm sure, if we'd had any wide-load problems crossing the Newburgh-Beacon Bridge. A third was somebody who'd been towing heavy trailers "for 45 years," he said. A fourth was Dave Noland. And so on. Everything went off without a hitch, though I was a wreck. Eventually, I had to go off and do idle tasks—making lunch for the group, cleaning up tree limbs that had to be cut, etc.—while more competent people such as Jim Catelano handled jobs like loading the airplane on the trailer.

We even had the Cornwall Police stop traffic to allow our caravan out onto Route 9W, and a convoy of six cars, a truck, and a large van towing the trailer wended its way to the airport.

The hangar was arranged by Mark Reichin (who'll be doing the first flight), and belongs to somebody else I don't even know, whose airplane is being annualized. We



### Steve's Falco has a new home.

have it for several days and then will be given ramp space, I understand, at a nearby A&P shop. Engine's hung, airframe's together, control surfaces are on... I now know why I built an airplane all by myself, though: having four people running around "helping" with the assembly is infinitely more trouble than it's worth. Only two are competent, so I've sent everybody else away.

They keep asking things like, "When will it be ready to fly?" I've taken to telling people who ask, "That's like asking me when I'm going to fuck Kim Basinger: maybe tomorrow, maybe next week, maybe next year, maybe never. I don't know." Be amusing if I beat Jonas, though.—SW

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8 June 1991. The FAA inspected the airplane on the sixth—a team of two inspectors from Teterboro. One was a young man being broken to harness, the other his boss, who came along to watch over his shoulder. I had been cautioned by my friend Montaine Mallet, one of the French Connection CAP-10 aerobatic team, that it was necessary to leave something, anything, undone so that the inspector could find at least one "fault" and thus not explode from terminal frustration. (Montaine deals with Teterboro constantly, since they have smoke systems and the like to get approved, and they assemble and certificate all the CAPs sold in the U.S.)

I knew the Teterboro MIDO was big on placarding the canopy with open/close instructions, so that was my lure, and indeed the inspector took it, demanding a placard that will read "handle forward to open, aft to close." (I can't ignore it, since the Teterboro office requires an actual on-site final inspection too, after my 40 hours are flown—or Black-and-Deckered-off.)

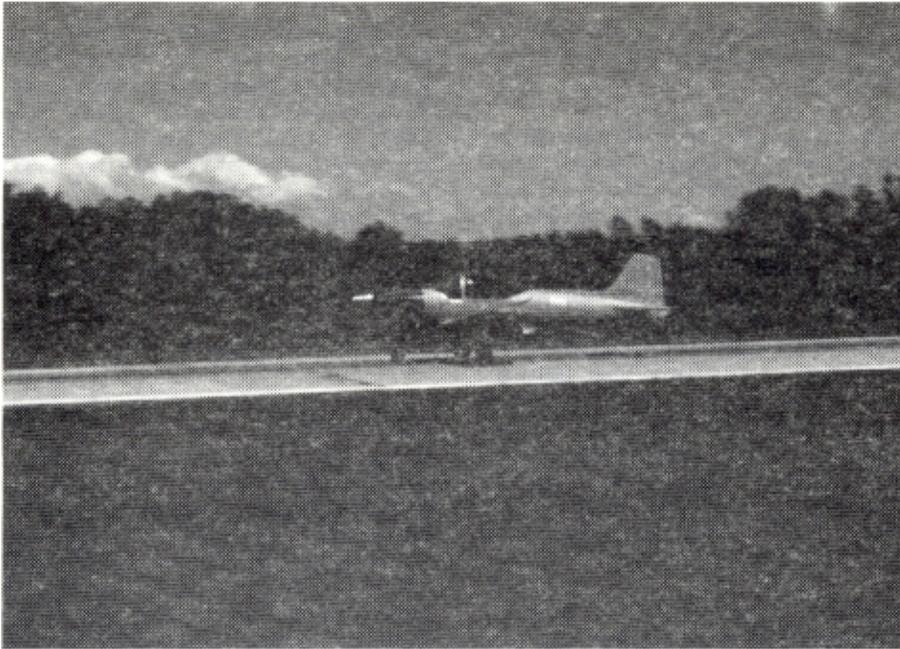
The inspector also wanted me to remove the engine's data plate and alter it to record that it was no longer an IO-360-B1E but a Wilkinson, but fortunately his boss told him to back off—said that was rather unnecessary.

With perfect weather forecast for the next day, a Friday, we immediately scheduled the first flight

The Falco Builders Letter is published 4 times a year by Sequoia Aircraft Corporation, 2000 Tomlynn Street, Richmond, Virginia 23230. Telephone: (804) 353-1713. Fax: (804) 359-2618. Publication dates are the 10th of March, June, September and December.

Subscriptions: \$12.00 a year, \$15.00 overseas. Available to Falco builders only.

Articles, news items and tips are welcome and should be submitted at least 10 days prior to publication date.



*Mark Reichen on the takeoff roll of the first flight.*

for the morning. As you know, I'd already arranged with my good friend Mark Reichen to do the test flight. I have 2,700 hours and 130 different aircraft types logged over the last 25 years, so I have no doubt that I could have made it around the pattern, but I have very little time during the past two years. And I really believe that currency, not total time, is the heart of proficiency. Reichen is a 4,000-hour singles-and-twins pilot who probably does 500 hours a year and flies his Mooney (and a variety of other types) with the familiarity of a commuter driving his station hack.

Still, Mark approached the job with caution. He and I had already broken in the brakes, and then he made about 10 high-speed runs up and down Dutchess County's 6,000-foot main runway (not all at once but about half of them during an earlier test session). The advice of Mattituck's Mahlon Russell, by the way, was to break in our Cermichromed engine on straight mineral oil and not to listen to the "street advice" that it was okay to use Phillips XC right from the start. He also said to change the oil and inspect the filter after the ground runs and before the first flight, which we did.

Another Mattituck proviso: run a newly overhauled engine as long as you want, at high power settings and assuming the head and oil temps stay in the green, but if you do shut it down, don't for any reason restart until the cylinders are

cool enough so that you can hold your hand against them.

On the last taxi runs, Mark got "good air," as the skateboarders say, and flew in ground effect. He then taxied back and took off, climbed to 3,000 feet with the gear down—I'd removed all the doors—flew around that way for a while and then retracted the rollers. He put about 45 minutes on the airplane and even got a chance to use the Northstar loran to record a groundspeed of 160 knots inboard from the Kingston VOR, this on a virtually windless day, no gear doors, at 3,000 feet and a power setting of 24 squared. The airplane doesn't seem to have a heavy wing and flies just fine. (Today I calculated a TAS of 164 knots at 3,000 feet, 24"/2400, full fuel and with the three basic gear doors back in place. Seems reasonably fast.)

Mark cycled the gear three times and for some reason had to crank it down manually the last time—no popped breaker or anything, it just wouldn't come down electrically. I haven't had such a problem since.

Our only other problems are that the engine is running very rich and that the fuel flow gauge is inop. It is obviously the instrument's fault, since there's fuel in the line and air pressure applied to the line by mouth makes the gauge work... backward. In flight, the fuel-flow needle points to something like 20 inches of manifold

pressure, and the meter movement has obviously been messed up.

That means that of the four instruments bought from IFR, three of them have been faulty in one way or another and all of them took many months to be delivered. The ASI arrived with its needle lying in the bottom of the gauge, the g-meter was of some oddball World War II shape that required modifying the panel cutout extensively, and now the fuel flow is a piece of dreck. Anybody who deals with that miserable company gets what they pay for: junk.

The emotional content of the first-flight event was oddly mixed for me. I sensed the airplane would fly perfectly well, having felt it get light and responsive during my own taxi tests, so seeing it fly was not as big a thrill as others might assume. I found myself talking about mutual racer friends with an acquaintance of Mark's—a race-car builder from Boston—while the airplane was flying around, while a visitor from the local EAA chapter avidly taped the proceedings for that night's chapter meeting. (He also told me, predictably, that he couldn't understand how any normally hung male could bear to let somebody else make the first flight in an airplane they'd spend six years building. "Like letting somebody else screw the woman you've spent six years chasin'," he said. Yeah, right.)

Then, interestingly, I had mixed feelings about flying it myself. Mark and all the bystanders peeled off and left me with my sweating little airplane in the hangar, and I uncrowled it, put the gear doors back on, wiped off and tightened the couple of tiny oil leaks, found other make-work tasks to do... and pattered around safe in the knowledge that my biennial had lapsed and I wasn't legal or insured to fly it anyway.

Then, just as I was about to leave the airport, a friend who had promised to give me a biennial sometime during the weekend showed up, and we went out and did it, in a borrowed 150. Now I'm legal. Do I fly the Falco? Wait till tomorrow? It's getting late, Susan will be home soon... but we're not doing anything tonight anyway. There won't be enough fuel... but the gauges indicate both tanks half full. I ought to wait for a new

day... but in the stillness of late afternoon, the airport is quiet, windless, virtually untrafficked. I'm out of excuses.

I rolled the Falco out, closed the hangar doors behind me, fired up... and one final distraction arose. Across the taxiway sat a 182 that had been parked about 15 minutes earlier by a young couple carrying beachbags and the looks of new lovers. As I sat in the cockpit waiting for the temps to come up, I realized the 182's strobes were silently winking away. I shut down, walked across the taxiway, found the Cessna's door unlocked, and every switch in the airplane still on. (That must have been some... uh, trip.)

All I did was go once around the pattern, gear up and then back down, but what an unexpected thrill. All my "it's just another airplane" and "building's the fun part, flying's just a hole in the sky" posturing evaporated the instant the Falco lifted off, and I found myself sitting in that wonderful fishbowl, holding those incredible controls. With the 180-hp engine, torque is enormous on takeoff, for a lightplane, and it really pulls hard to the left on the roll. With a narrow runway, you'd really want to feed in the power carefully. I found myself climbing out at a normal angle at something like 110 knots and couldn't resist pulling it up at what seemed like about a 45-degree angle to get a normal climb speed. Nor could I resist squaring the pattern with 60-degree banks. And the approach and landing are so stable and controllable, with that soft, inimitable power-off whistle I've noticed in several Falcos now, that you do it once and then feel you could put this thing into a tennis court.

I have to admit, it was a thrilling little ride.--SW

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10 June 1991. After just three hours of operation, the exhaust system is beginning to burn through the cowling, at the point where the left-hand pipe is closest to the fiberglass. A dime-sized spot is browning, as seen from the outside, and the cowling is tangibly "soft" just after shutdown. Unless you have a better idea, I'm going to insulate the area with a double layer of Fiberfrax, a rectangle about 4x8 inches, glued

in place with woodstove silicate gasket cement (supposedly good to 2,000 degrees).

This is happening even though my pipes are wrapped with that Thermacon (or whatever it's called) insulating tape, which is really amazing stuff: you can literally touch the exhaust pipes right up at the ports a minute or two after shutdown. So I think you either need to specify that builders do something to insulate that area as an integral part of assembling the cowl, or modify the cowl design slightly with a bump of some sort to put the fiberglass slightly farther away from the metal. As I recall, it's happening right at the tailpipe ball joint.

Speaking of bumps, you might be interested that there seems to be no need for a rocker-box bump on my left-hand cowling door to accommodate the 180-hp engine. Either it's a smoother engine than others or there's enough room for it to rock around on startup and shutdown. It does, by the way, seem to rock substantially less than, for example, Jim DeAngelo's engine, though I do use the technique of running it to 1,000 rpm before I pull the mixture to idle cutoff, which is supposed to make for a smoother shutdown.

An unexpected benefit of the Falco: Susan went for her first ride yesterday afternoon and adored it. So much so that she said, "You know, I think I might like to get some dual and start flying again with this airplane." She hasn't had the slightest interest in flying in at least 10 years, and she never touched the Comanche's controls.--SW

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11 June 1991. I'm awed by the speed of this thing. Took it up to 7,500 today and at a power setting of 21.5" and 2,400 rpm—not particularly carefully leaned since I haven't calibrated my EGT yet and it's reading almost off-scale—got a TAS of 194 mph with only the three basic gear doors and my ratty nonpaint job. Maybe Karl Hansen isn't fibbing.

The tower, incidently, said that my radios "sound better than 95 percent of the airplanes based here—really amazing, like you're sitting next to us." Wonder if it has to do with the antennas, since the radios are the same KX-165 and -155 everybody else is using.--SW

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17 June 1991. Interesting: Mark came back from a flight recently and

### Steve Wilkinson

*"Me with my Italian-components bike, in front of the airplane, in full Greg LeMond getup, the point being that like any good yuppie scum, I ride my bicycle 46 miles round trip to fly my \$74,000, 10.5-gph airplane in order to save a gallon and a half of gasoline plus a 75-cent bridge toll."*



said that he was just beginning to run out of elevator authority on landing with full flaps. I worked out the weight-and-balance numbers and the CG came out at literally exactly 68.64 inches, which is your published forward limit.

Flew against some acquaintances who have a small-engine (225 hp) Debonair on Saturday. They were humping along at cruise at 2,500 feet when I formatted on them, and I had to pull the throttle back into the gear-warning horn to try and stay abeam and was still creeping past them. (Admittedly, the horn comes on at 17 inches.) I called and told them and they laughed and said, "Yeah, and we've shut our engine down, hah hah." Pushed the transmit button and nodded my head down so the boom mike was near the horn. The reply was, "Aw, don't tell us that."

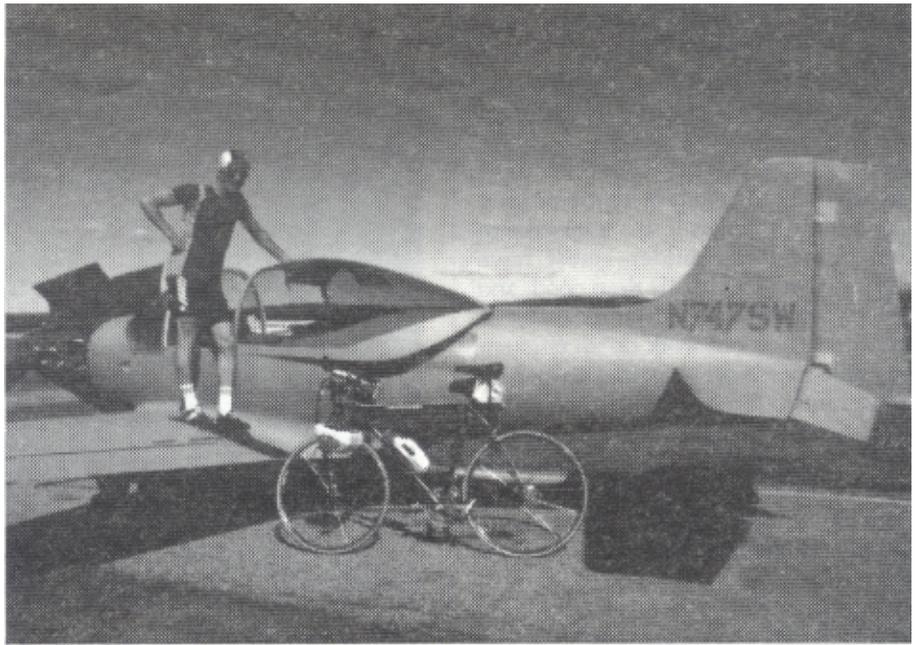
The cowling insulation did no good at all. The exhaust burned right through the Fiberfrax and continued to ventilate the cowl, so you're right, as usual: a blister is the only solution.

I'm surprised at the amount of ram-air pressure that's on the induction side of the air filter—i.e. air that has already made its way through the filter. The other day, I taped closed my alternate-air door on the funnel that leads to the SCAT hose. I didn't want to have to continually hook up and unhook the actuator cable every time I removed the lower cowling, so I simply used two large pieces of duct tape, figuring that if anything, the engine would be sucking air at that point, tending to pull closed the door in any case. (It's mounted to manually open outward rather than springloaded to be sucked inward.)

To my surprise, the door was blown open, against the grip of the duct tape, during the next flight, making it clear that there's considerable air pressure in there.

File under Trivia.

I did some shots for the newsletter—mostly me with my Italian-components bike, in front of the airplane, in full Greg LeMond getup, the point being that like any good yuppie scum, I ride my bicycle 46 miles round trip to fly my \$74,000, 10.5-gph airplane in order to save a gallon and a half of gasoline plus a 75-cent bridge toll.—SW



And so it goes and has gone for six years.

For those of you who have tuned in late, Steve Wilkinson is a Harvard-educated writer, having been only one of seven to be selected for Archibald MacLeish's creative writing class. Out of college, he went to work for *Cosmopolitan* magazine, switched over to *Holiday* magazine, where he worked for a while. One day somebody suggested that he do an article about learning to fly, so he took his lessons, soloed, bought an Alon Ecoupe and promptly jumped ship for *Flying* magazine, where he was a part of the wonderful crew of writers that Bob Parke assembled. He was the editor of *Car & Driver* for a while—until David Davis decided he wanted his old job back—and then Steve moved back to *Flying*, where he became Executive Editor and married *Flying's* talented Managing Editor, Susan Crandell.

Fired by Dick Collins in a basically dull-vs-interesting personality clash ("the best thing that ever happened to me") Steve became a free-lance writer and his articles have appeared in *Air & Space*, *Connoisseur*, *Pilot*, *Working Woman*, *Condé Nast Traveler*, and many others. (The way I figure it, with what Steve gets paid to write articles for these magazines, our files must be worth more than his plane.) Steve also works with a crew that does a lot of documentary films that he writes—many of them such stupid self-serving promos that Steve can't even remember writing the five of his films which were proposed for Academy Awards—and many other writing jobs, most relating to the automobile industry.

Steve, Susan and their daughter, Brook, live in Cornwall-on-Hudson, New York, just down the Hudson from West Point. Steve works in his studio at home and enjoys the role of househusband while Susan Crandell commutes to the big apple where she is Executive Editor of *Travel & Leisure*.

For the record, Steve's Falco, N747SW, is the 31st Sequoia Falco to fly and has a 180 hp engine. The canopy, of course, is the standard, non-Nustrinified tall one. The paint scheme is presently cat-puke beige, and sometime this fall Steve will paint it in the final scheme—a 1960's Italian Air Force fighter paint scheme: grey overall with black on the top of the cowling, red-white-and-green rondelles and red elevator and rudder. All the external placards will be in Italian, and the N-numbers will be hidden under the horizontal tail. The sole survivor of the Free Italian Air Force's notorious *Squadron Marina*.

Steve has always maintained from the beginning that his only interest in the Falco was the experience of building it. Once it was finished, he'd probably just sell it. I've always found that hard to imagine, and so far Stelio Frati's skill at designing seductive aircraft is having an effect. Who knows what the future holds for Steve and the Falco? Maybe he'll sell it in a couple of years. Or maybe he'll fly it until he's ninety-five. I don't have a clue, but I do know that for the last six years, he's enriched the lives of us all. Thank you, Steve. It's been a wonderful time.

—Alfred Scott

## Jonas Dovydenas

*Continued from First Page*

he enjoyed building the plane—what he really wanted was to get the bird in the air.

Jonas started talking about hiring a homebuilder to help him on the project. I told him I thought it was a mistake to look for a homebuilder—most have learned more bad habits than good, and are essentially slow-working hobbyists who can't turn out work on an efficient schedule. Instead, I suggested he look for a machinist. On first blush, that might seem absurd, but machinists are used to working from drawings and are trained to turn out work quickly and efficiently. And in the depressed Northeast, there must surely be lots of machinists out of work.

So Jonas ran an advertisement in the local paper, the Berkshire Bugle, for a machinist for a 'special project'. Keith Fox answered the ad and was a well-qualified machinist. Then Jonas told him the project was to build a wooden airplane. Keith was a little brain-scrambled by this revelation, but quickly settled down when he started looking at the blueprints and the partially completed Falco. The more he thought about it, the more interesting the project became, and he quickly signed on.

From then on, the project proceeded smoothly, with Keith working at a steady schedule, and with Jonas working part-time on it. One of the advantages of this sort of arrangement is that there's always something going on, and Keith's activity on the project made Jonas keep up his pace as well.

*Al Aitken prepares for the first flight as Bob Bready looks on.*



Finally, this spring the airplane was finished, and it was down to the last minute engine-installation and final-inspection process. Jonas bought a factory-new IO-360-B1E and had the engine converted over to the configuration we use. He ran into substantial problems with the injector. The engine ran very rich, and after much ado, head-scratching and telephone calls, he finally found that the idle mixture thingamajig was misaligned on the shaft, apparently at the factory.

With this problem out of the way, the final inspection went along without a great deal of difficulty. Jonas had long since decided to let Al Aitken to the first flight. For one thing, Jonas was not qualified to be test-flying a new airplane, and Al has been anxious to do a first flight in a Falco for some time.

For those of you who don't remember, Al Aitken is a graduate of the Patuxent River Test Pilot school. That's a course that our government charges over \$700,000 tuition to other governments to give to their pilots, and surprisingly Al Aitken had never done a first flight of an airplane before.

Anyone who thinks that a test pilot is a white-scarfed, hot-shot, hormones-for-brains macho type has simply never met a test pilot of the modern school. They approach their craft with well-thought-out plans to minimize risk, and apply the lessons of years of experience on how to get the airplane into the air and back in the safest possible manner.

The adage is "Plan the flight, and fly the plan." Never deviate from your plan of what to test. Thus, Al had worked it all out as to what would be tested and in what order. Each item was listed on the flight test card and checked off. The final inspection of the airplane and fixing little squawks took most of the day. High speed taxi tests showed the airplane to be a normal Falco, with elevators and ailerons which were amply effective before liftoff speed.

Then late in the afternoon, Al finally took the Falco out to the end of the runway and took off. A good first flight is an uneventful, boring affair, and this flight was everything you could ask for in that regard. All of the handling and stall tests showed it to be a normal Falco, with good stall warning and no untoward characteristics. Jonas and Bob Bready watched as Al brought it down and landed. Jonas said it was so smooth you couldn't tell when the tires touched the ground.



**Keep 'em on their back.** *There wasn't actually anything wrong with the airplane, but this is something real men just have to do.*

Dusk was approaching and since Al had to leave early the next day, he took Jonas up for a short flight to familiarize him with the plane.

With Al gone, the problem remained to fly off the hours on the plane and to continue the flight testing. Jonas needed 5 hours in a complex airplane before he could fly the Falco and still be blessed by his insurance company. Local instructors showed no interest in flying an airplane that had only flown one hour, so finally Jonas got five hours of instruction in a Piper Arrow, and then started flying the Falco.

Jonas had already flown in the Corporate Disgrace as well as Jim DeAngelo's Falco, so he knew what sort of handling to expect. I've seen people grossly over-control the Falco at first, but Jonas did not have that problem.

"It's a ridiculously easy plane to fly," says Jonas. Particularly after flying the Arrow. "A bigger pig has never been made. It's under-powered. There's not enough elevator and rudder authority so it's difficult to land in a cross wind. With the Falco, you can put it right on the numbers, and it seemed very natural from the beginning."

With the Arrow you have to shove on the pedals on a cross-wind landing, but with the Falco you just apply pressure. "It's an intuitive thing. You get the feel of it, and that's what you do. I don't know how much rudder I've giving it."

N873DX has a 180 hp engine and weighed

in at 1,125 lbs in all-black primer. Jonas says, "It's amazing how it accelerates—more like a car than an airplane." Initial climb is about 1500 fpm, and "It's astonishing how quick you can reach five, six thousand feet." Jonas gets a steady 1000 fpm at 90 knots and 25/2500.

The Falco has a slightly heavy right wing, and Jonas says that if you slow it down gradually, you can reach a 1000-fpm descent but that it will not stall. It settles down at 50 knots and sinks like crazy with the engine idling, but it does not have enough elevator authority to stall. Give it a little power to blast some air over the tail, and it will stall easily.

For some reason, Jonas says he doesn't have enough elevator trim. There's supposed to be 30mm of travel in the system, and he only gets 24. This causes him to run out of up-trim in a climb, but it trims out all right in level flight.

Jonas has been flying the Falco with no gear doors and hasn't made any careful notes on the speed. He remembers getting roughly 150 KIAS at 7,000' with 2400 rpm and full throttle. When I last spoke to him, he had 13 hours on it, and he continues to find the Falco a delight—"That's the easiest f—ing airplane to fly I ever saw."

With Steve Wilkinson's problems with instruments from IFR, I asked Jonas about his experience. He said, "I had less bad luck. They took forever to ship the instruments, but my only problem is with the fuel pressure gauge. It has a built-in extra 1/2 psi, which I don't care about. In the beginning, it used to peg the fuel pressure

needle on takeoff, but now it doesn't do that any more. I don't know why, and I didn't do anything to fix it. The other instruments work fine."

He has also had some minor problems with his battery or regulator. Jonas got some sort of sealed deep-discharge battery and after 15 minutes the voltage goes to 14.1 to 14.9 volts. He thinks it might be with the special voltage regulator that came with the battery. His engine has a lightweight starter, which saves 9 lbs and which cranks the engine over faster than a standard starter.

Jonas is the second Lithuanian Falco builder to fly—Tony Bingelis is the other—and was actually born in Lithuania, though he left at the age of five when Stalin's army marched in. Jonas's father was a well-known writer and political leader who was sentenced to death *in absentia*. Today, Mr. Dovydenas is alive and well, and he lives just down the road from Jonas and Betsy in Lenox, Massachusetts, also home for the famous Tanglewood summer home for the Boston Symphony.

Jonas and Betsy's house is a wonderful old Berkshire 'cottage', originally built in the early part of the century as an escape from the summer heat for NYC tycoons whose idea of a cottage included a living room that would easily enclose the average cottage of normal proportions. I arrived there one night a day earlier than planned, bummed a ride from the airport and arrived to find the house with all the lights off and—in this day of triple-dead-bolts and burglar alarms—the door wide open and a sign in the window that said "Dovydenas. Please come in." I did, helped myself to a beer and read a book until Jonas and Betsy wandered in.

That's the way it is there, and when I woke up the next morning I met in the upstairs hall a lost Lithuanian revolutionary who had wandered in during the night and settled into one of the third-floor bedrooms.

Right now Jonas is flying off the required twenty-five hours and is looking for someone to paint the plane. There may be a problem in getting it painted by Oshkosh, so it's always possible Jonas will bring it out in black primer. I asked Jonas what color he was going to paint the Falco, and he said he was thinking about "yeller".

—Alfred Scott

## Goings On at Sequoia Aircraft

I've been slaving away making wing rib pieces, and all I have to say is that this is the slowest, most boring work yet on the wood kits. The basic jigs are all done, and what I am doing now is making the fixtures for cutting all of the braces.

The number of cuts that you have to make is astonishing. We're making enough ribs for fifty planes, and that means that on wing rib No. 4, for example, where there are 44 separate cuts, you need 22 cutting fixture (two cutting setups on each fixture) and you have to make 4400 cuts for just one rib. And then you figure out that for all 14 ribs plus Sta. 2-1/2, you have something over 60,000 cuts to make.

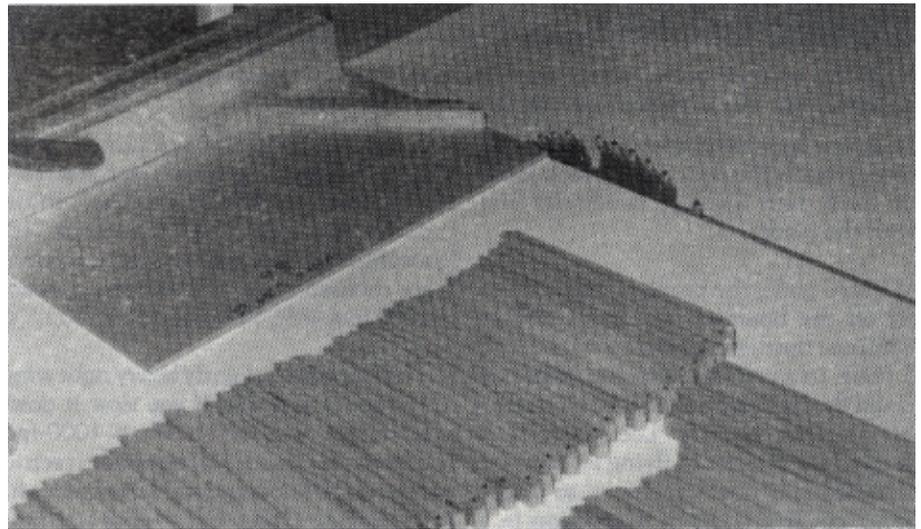
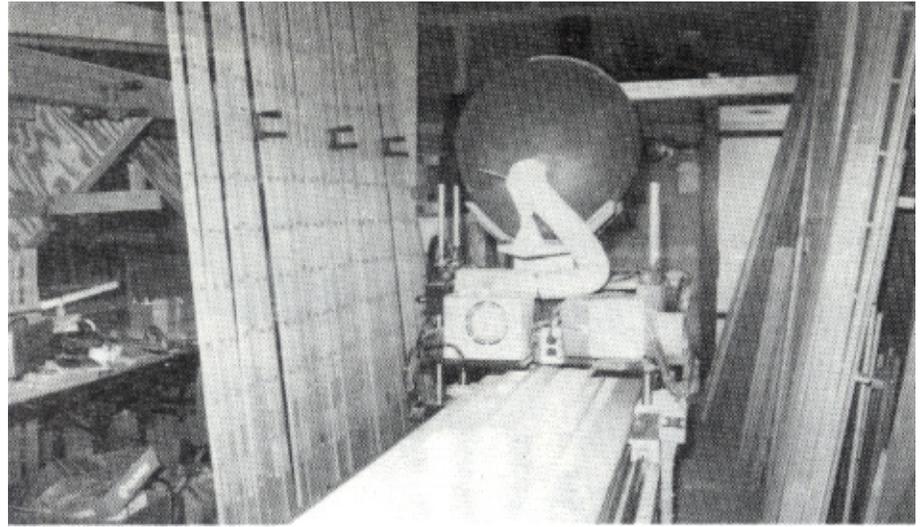
The methodology is relatively simple and straightforward. The only things new here are the four-way cuts on the diagonal braces, and because of the camber of the wing, the parts are not symmetrical. I worried a lot about how I would handle this complexity, until it finally hit me to use a single black magic-marker dot at the upper end of each piece to 'key' the part. As you cut the pieces, you have to be very careful to keep the pieces from flipping over, but it works very well.

The mindless repetition is difficult to describe—and maybe you don't want to know. I'd say there is more work in cutting the pieces for a single wing rib than there is in any of the spars, including the main wing spar. Assembly shouldn't be a big deal, and that's where the payoff is for all the precision cutting.

The secret of making the wood kits is 'one-a-day'. It only takes me about 45 minutes to make the rounds at the various assembly tables. I only have a few days left, and I will have finished 50 sets of tail spars and 20 sets of the 'other' wing spars. We'll be shipping the last batch of wing spar kits in a few days, and then will begin on the next batch. It should all go quicker in the future because all the auxiliary spars are done.

Due to pressure from Craig Bransfield, I've recently done some more work on the under-wing tanks. These are intended as bolt-on tanks for fools who want to fly the Atlantic. I worked on the overall design for a while, until I felt I had arrived at a decent scheme, and then fired it off to Dave Thurston to do a proper job of it.

I had hoped to accomplish the attachment



*Top: Gonzales tapers the aft wing spars.*

*Bottom: A cutting fixture for a wing rib brace.*

with just two bolts, but Dave barfed all over that idea. The bolts are in tension, the least desirable loading, and the critical design consideration is fatigue, not structural strength. If one of the bolts were to fail in flight, it would not be a nice situation.

We've designed the installation to accept 20 gallons under each wing, and the intention is that the tanks will be have electric transfer pumps. Thus, you will simply burn fuel from the front tank, and when it gets low, hit a switch to move fuel from the underwing tanks to the front tank.

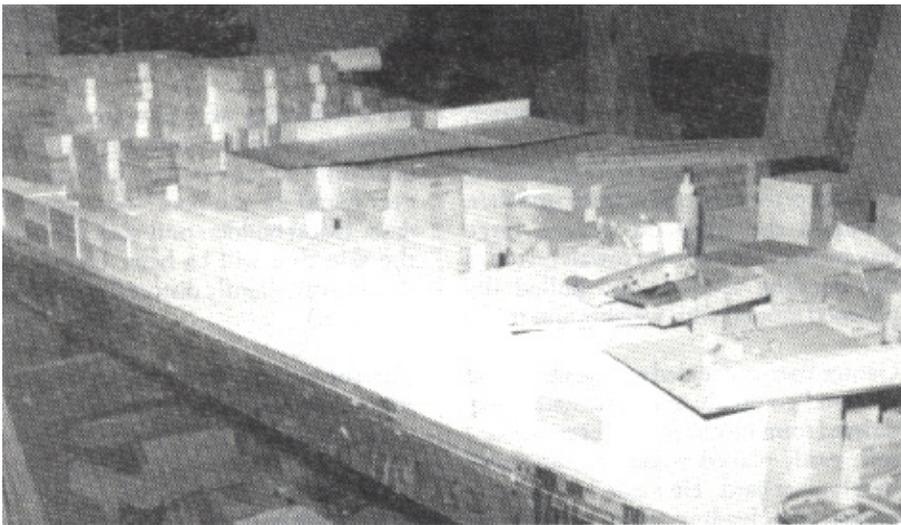
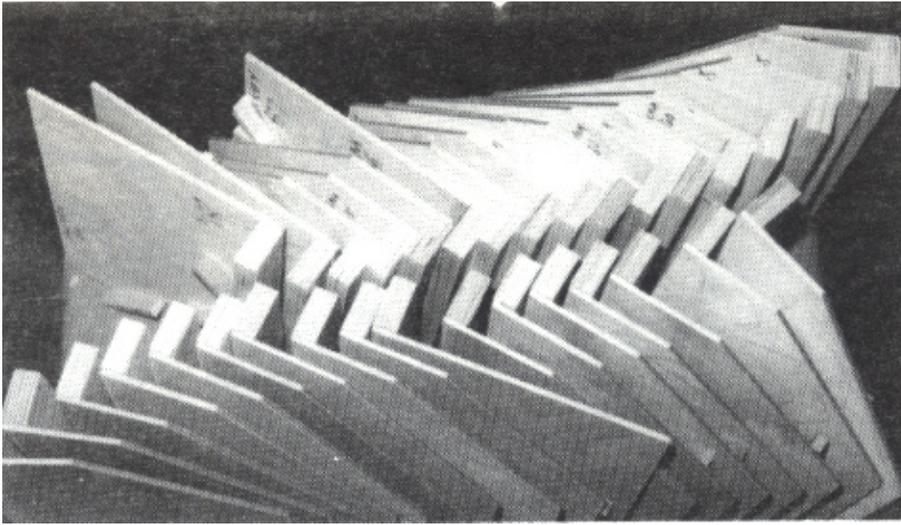
From the standpoint of structural attachment, the ideal location of the tank is just inboard of station 4, but this creates an interference problem with the gear doors. This means that the tank must be located just outboard of station 4. The attachment fitting will bolt through the main wing spar with four bolts—much like the landing gear fittings—through

a block between the upper and lower spar caps.

This means that if you want to install such a tank, you must plan for it from the very beginning. You'll need a solid block of spruce installed in the spar from 90mm outboard of station 4 in to the existing block at station 4.

The attachment at the forward wing spar requires no modification to the forward wing spar, but does require that the wing rib have solid spruce for 25mm forward and aft of the forward wing spar. This is because we need to bolt through the ribs to reach some anchor plates that carry the loads into the forward wing spar. Structurally it's fine, but it's all rather messy on the construction of the wood parts. If you want to do this installation, drop me a note, and I'll send you a sketch of what you have to do.

It's going to be very difficult to install all this on a wing that's well under way or



**Top:** These are the cutting fixtures for two wing ribs.

**Bottom:** Spruce for wing ribs 5 to 14.

which is finished, but nothing's impossible, of course, for the builder who's willing to tear things up and rebuild things.

With more and more builders installing full landing gear doors on the Falco, I've decided it's time to fix the problem with the retraction gearbox. Our present A-model gearbox works fine and brings the gear up in about 7 seconds. It'll take care of the normal gear leg doors, and the nose gear doors. But the clamshell doors for the nose gear bay and the main wheel well doors add substantially to the loads on the system.

I had earlier designed a 13-second B-model for Karl Hansen, which he has been using for years. It easily brings the gear up and barely strains in the process. Our 7-second A-model brings the gear up very quickly, but the electrical load increases dramatically during the last half of the retraction, and often as not pops the circuit breaker on the last turn or two before the gear is completely up.

It seems like only a slight change in the gearbox might make the difference, and I designed a 9-second C-model gearbox for Terry Smith. This provided about 20% more power, but the experiment failed. Terry made and installed the system. And after flying with it for a while and fiddling with the system, he concluded he could see almost no difference in the problems.

With the 13-second system working so well and with the 9-second system failing to have the muscle, it's possible that an 11-second system might do the trick, but I'm tired of fooling with it and can't see that a possible two seconds is worth the effort of designing, installing and testing yet another design. So I've decided to go ahead and make up a batch of pieces for the 13-second B-model.

There are only four components that are different: the upper housing, the lower housing and the two change gears within the gearbox. The P/N 520 gearbox that sits on the aft face of the main wing

spar is unchanged—the part that we're changing is the P/N 530 gearbox that attaches to it. We use the same motor in either case.

For those of you with full gear doors and our A-model gearbox, we'll be offering an exchange program. Since I don't yet know the cost of the new parts, I haven't decided on the price, but what I would like to do is offer this at minimum cost, or perhaps a free exchange. You'll keep your motor, and switch the disconnect assembly from your old upper housing to the new upper housing. This means that you'll have to push out a roll pin (we'll supply the special punch needed for that), and move the disconnect assembly to your new gearbox. You would return the gearbox housing and old change gears to us.

For this scheme to work so that you can change the gear ratio on your gearbox at minimum cost, we will be using the returned pieces in new kits. This means that everyone has to agree not to get snooty about receiving a used housing. The motor and disconnect will always be new, and the parts that will have been used before really don't wear out in the use that we give them. The housings have an infinite life, and the needle bearing will probably need replacing every fifty years or so, and thus are not worth talking about.

I hope this is agreeable to everyone. We will have a little instruction sheet to cover the exchange of the pieces, which is easily done. The parts are being made now, and we don't have a timetable for when the parts will be available, but I would guess it would be around the end of July. Please let Brenda know if you are interested in changing the gear ratio. We only have a limited number of roll pin punches and thus will be able to have a limited number of exchange kits in process at any one time. Please also let us know how urgently you need the pieces, since we would like to give preference to those who are flying.

So from now on, specify the 7-second A-model gearbox if you are going to use an 'open-air' landing gear setup, and the 13-second B-model gearbox if you are going to use full gear doors. And if you can't make up your mind, don't get too worried about it, because we'll probably always have the conversion kits available to switch either way—wonderful, agreeable folks that we are.

—Alfred Scott

## Construction Notes

It's been interesting to hear some of the complaining about the difficulty of welding the pieces on the fuel tanks. Steve Wilkinson grouched about the difficulty he and his welder had experienced, until I explained to him that what he experienced is simply standard fare for making tanks. I'm so inured to the difficulty, and so is our welder, that I failed to prepare some of you for the difficulty involved. It's what we live with all the time, and you just have to get used to the fact that tanks are difficult things.

Stephen Friend faxed us from Australia that he had actually removed the bottom from the front tank so that he could clamp the hat-section braces in place when welding. (His fax arrived, curiously enough, upside-down, which we attribute to the change in hemisphere.)

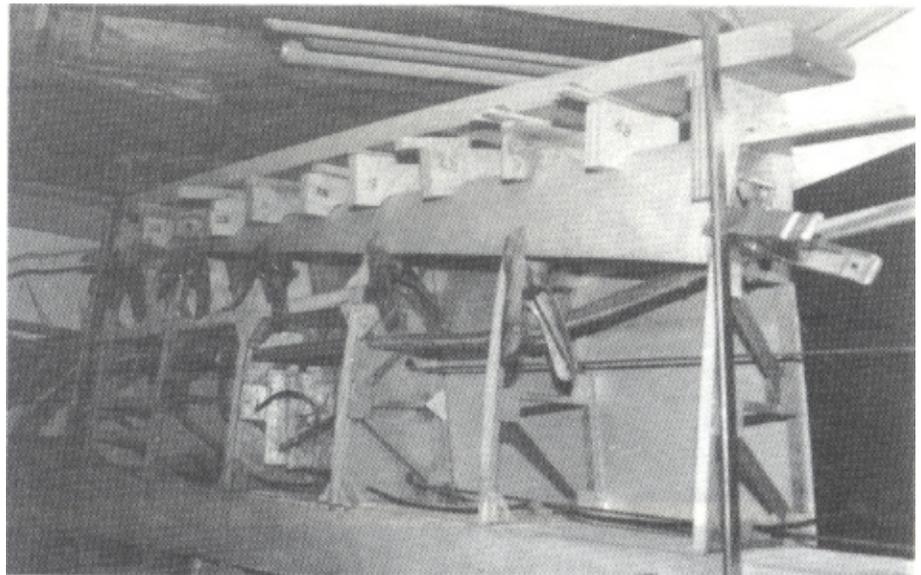
Welding the hat-section braces on the tanks is difficult, and the aluminum tends to walk all over the place and pull away from the brace when you are welding. You can't 'stabilize' the bottom of the tank by pressurizing the tank, because it will just blow a hole once you get the aluminum molten. You can, however, shove a stick down through the filler cap to press the bottom against the brace.

You'll also find that there's a consistent problem with pin holes, particularly on the hat-section-to-bottom welds, and it's perfectly acceptable to just coat a pin hole with epoxy.

George Barrett stopped by the other day to pick up some kits, and he got to talking about the process of building the wing, which he has just finished. He pointed his finger at me and said that a major omission of the construction manual has to do with the installation of the cove ribs and cove skin on the aft face of the aft wing spar. He had read in this newsletter that the way to do that was to install the ribs and skin on the aft wing spar before you begin the assembly of the wing.

That way you can do it on the table, and it's very easy to do. Do it on the wing—like Howard Benham did, chuckle, chuckle—and you've got a real bear of a job on your hands. So everybody go mark up your construction manual with a note about this. Anytime you can do it on the table, it's better than doing it on the wing.

We seem to have unending variations on methods to bend the plywood for the wing



*John Devoe skins the wing.*

leading edge. Most involve water, steam or a combination of both. Joel Shankle had prebent his skins by soaking the edge of the plywood in water and then clamped the plywood over a large broomstick. He kept wet towels on top of the bending section, and pulled the plywood around with weights and ropes.

George Barrett decided to pick up on that idea and go one better. He made long, tapered form blocks from Obege wood, a soft, easily-planed wood recommended by a lumber yard. He made a trough and soaked the leading edge part of the plywood for two days, then dumped the water out, boiled about 4 gallons of water and put this in the trough with the plywood. He left the plywood in the hot water for about 15 minutes, then clamped the skin over the form.

He said the key was working the alignment out, and he used an index line to accomplish this. The clamping was done with two boards. George said the system worked out beautifully and that the skins just dropped right on the wing. George has written up a full description of the method, and we'll include it in the next builders letter.

Cecil Rives bent his skins on the wing with steam. He tried using a pressure cooker with a hose to play the steam on the wood, but the pressure cooker kept turning over, wouldn't put out the volume of steam and kept burning his fingers. He finally went out and bought a Black & Decker 'Steam Works' wallpaper remover. This little devil costs about \$36.00, and Cecil says it worked wonderfully for him.

Like everyone, he presoaked the skins in

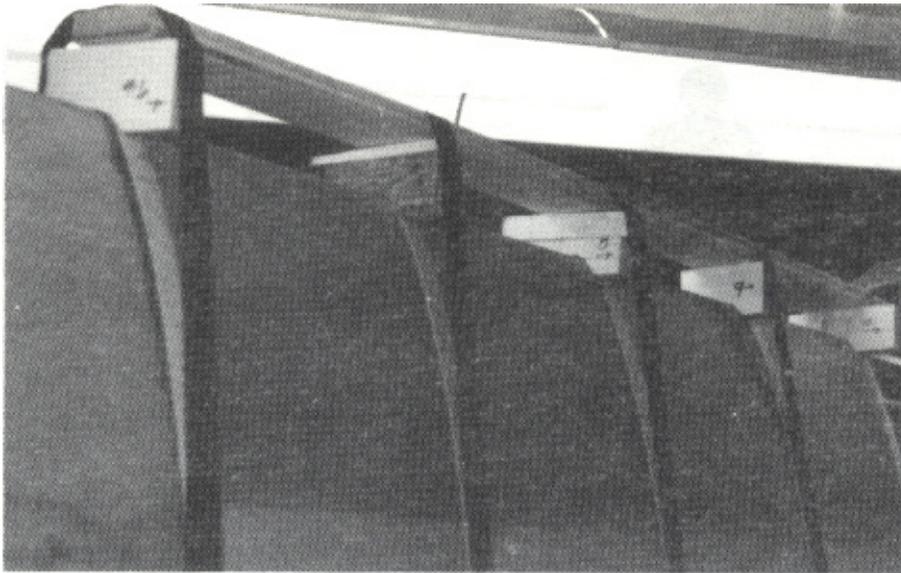
water until they were saturated. He just threw the plywood into his swimming pool until it sank—"The only use I've ever found for the pool"—in about two days. (Most builders only soak the part of the skin that will be bent, because the soaking can slightly distort the rest of the plywood.)

Then he used the Karl Hansen method of the one-by-one strip of wood with nails in it, but he bolted it in place rather than glued it, because he had a strip pull loose on him once. He used the normal long strip on the outside, and then put shorter backing strips on the inside. These were short so they would fit between the ribs, and he used four to five quarter-inch bolts at each section between the ribs.

With all this clamped in place on the wing, he wrapped the giant inner-tube rubber bands in place and then took the steamer and started playing steam over the leading edge. He said it worked fine and that the skin just slowly pulled around and settled into place as the steam hit the plywood.

While George Barrett was here, I got a chance to wag my finger back in his face. George was starting to develop a bad case of access panel disease. He read somewhere that you have to rotate your pulleys at frequent intervals and wanted to put access panels for the Falco aileron cable pulleys. What is certainly true of a Cessna where the cables take 90° bends is not true of the Falco's aileron controls, where the cables only take a five-degree bend. You'll need to rotate the pulleys every 40 years or so.

And then he started looking at the



*And here's the other side.*

flap torque tube and couldn't figure out how you've ever get the bolts out of the mounting plate if you wanted to remove the torque tube. Wait a minute George. Stop. It's very easy to rationalize yourself into all kinds of imagined needs for access panels. And before you know it, you will have a military airplane—a flying assemblage of access panels. Keep this kind of thinking going, and you'll turn the wonderfully integral structure of the Falco into Swiss cheese. Don't do it.

It's far better to install the absolute minimum number of access panels that we show on the drawings, then fifty years from now when someone wants to replace the aileron cables and rotate the pulleys, let them cut a hole and repair the skin when they're through—assuming they're still growing trees at that time. Simply put, there are parts of the Falco that you have to get at with such phenomenally long intervals that it's far better to not provide an access panel at all. Syd Jensen even omitted the slot in the bottom of the wing to permit you to remove the landing gear—not all that crazy a move since most Falcos never have the gear out.

Recently a number of builders have asked me about the notes in Chapter 14 of the construction manual about 'grounding other metal parts'. I seemed to recall that this was primarily an ADF/loran requirement only. But I wasn't sure, so I wrote Jim Weir, world-famous stealth-antenna designer. Jim replied:

"I bond metal parts for a whole bunch of reasons.

"1. If, for whatever reason, the metal part is in 'quasi' contact with another metal

part and by moving the metals parts they make and break contact, there will be the goldurndest static display in the ADF that you can imagine, together with the loran breaking lock for no apparent reason. Now think about all the metal parts that are in "slide" contact with another—control cables on the horn, foot pedals in their bushings, and the like. Now think about that 160 hp vibrator up front sending out pulses every 40 Hz or so, and you have the ideal setup for mechanical resonances driving the ADF and loran just plain batty. (VOR/LOC/GS/VHF COM/MKR not so much.) Finding this problem on the ground or on the bench is well nigh impossible, since it is the aircraft in flight, bending and tweaking and vibrating that is the source of the noise.

"2. If you are near a fairly decent bolt of lightning, you can get field strengths of up to 10 kV/meter. What this means is that a wire one meter long will have 10,000 volts from end to end. This lightning-induced spike will pretty harmlessly go away from a grounded metal part, but an ungrounded part can hold that potential (like a big capacitor) for a while. Not only that, but the bigger the metal piece, the more charge it will hold—and I'd really rather not it build up to the point where it will arc to a fuel line. This isn't a problem in a metal ship where all the wires are electrostatically shielded by the fuselage; a plastic or wood airplane is another matter entirely.

"3. The final point is that the more pieces of metal you can get for your ADF or loran ground plane, the better off you are. The wavelength for loran is on the order of two miles, and drops to 200 yards at the top end of the AM broadcast band (1600

kHz.). No way you will ever approach a fraction of the wavelength for the kinds of airplanes you and I fly, but you've gotta do the best you can."

So it's mainly an ADF/loran thing.

And while we're on the subject of antennas, Steve Wilkinson faxes, "We're getting an odd intermittent-transponder situation in which the Falco disappears from ATC's scope, then reappears just fine if you lift a wing—I don't remember if Mark said toward or away from the antenna, which in this case was Quonset Approach. It's happened several times. Some kind of antenna blanking?" I'll be jiggered if I know, but I'll ask Jim Weir at Oshkosh. Anybody else notice this phenomenon?

When installing the universal joints on the shafts of the retraction system, Nick Broussard was confused by the tiny holes already drilled in the universal joints. He thought that perhaps they might be pre-drilled pilot holes for the taper pins—but they seemed to be so poorly drilled, way off from where they should be.

Oh dear. This is one of those little things that people in the business take so much for granted that they forget that others don't know about them. The little holes are called 'witness holes' and you find them on universal joints, certain types of rod-end bearings, and other devices that are intended to be installed over a shaft. The witness hole is simply an inspection hole so that you can peek in and see that the shaft is inserted all the way in. That's all it is, just an inspection hole. (When you come across something like this that confuses you, don't be afraid to ask. Remember, there are no dumb questions—just dumb answers.)

Stephen Friend discovered a little snafu on the elevator trim tab cables. We've used a Morse Red-Jacket cable for years, and recently switched to another brand that's a little lighter weight. The new cable is black, and in the process of switching brands and working out the equivalent part numbers, somewhere we made a mistake and bought three-inch stroke cables instead of the required two-inch stroke cables.

We've ordered new cables and will be sending out replacements. But if by chance we miss you, please let us know. If your cable is red, it's fine. If your cable is black and has a three-inch stroke, it needs to be replaced.—*Alfred Scott*

## Falco-issimo

Continued from First Page

playing a Stradivarius one day, just as pianists dream about the Steinway, vast as an aircraft carrier, on which Bernstein interpreted the Rhapsody in Blue. If you're an aviator—not just a pilot—you've wanted to fly a Falco, or you will want to some day; after having seen one, caressed it with your eyes, your first...

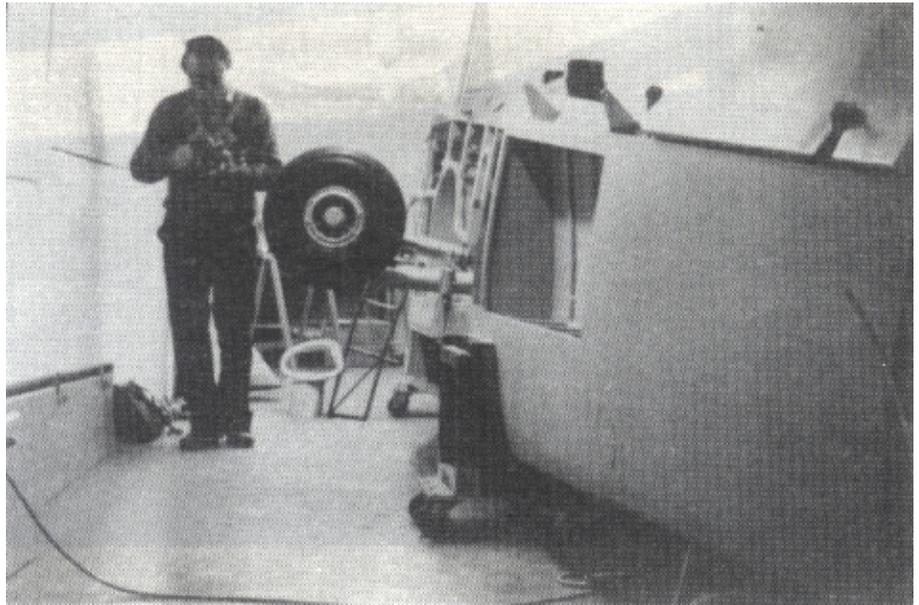
In the Seventies, you could have bought an old Falco for 50,000 French francs [\$10,000]. Then, we found it tiny, tight, noisy—too fighterlike to be a respectable touring aircraft. Today, at the end of the Eighties, you'd have to pull together ten times as much cash to buy a Falco, in any condition. In 1999, they'll be five times as expensive. I speak here, obviously, of true original Falcos, those built in small numbers in the Fifties and Sixties by companies like Laverda (which it seems still has the tooling). Since then, Falcos are built by homebuilders, certainly superb, but not original in the collector's sense of the term. Anyway, there are practically no Falcos for sale....

In the Seventies, I flew a Falco based on a superb airfield in a valley near the Alps. At that time, the instructors of the club considered that it wasn't enough to be capable and to want to fly it, but also worthy to climb the steps of a temple reserved for the initiated.

The expression, "casting pearls before swine" takes on its full meaning when one speaks of flying a Falco. It's not very difficult, no, rather it is subtle, nuanced. It's better, then, to keep such an airplane for true lovers of flying—and that explains why so few aero clubs bought Falcos.

In the nose, there's 160 hp. For such a small airplane, it's a lot. When you see how Frati cowed the engine, you'll want to burn all the other airplanes on the ramp. It's awful to see that they still build flying machines with noses like cauliflowers when the machinery of the Falco is housed in such a refined profile. The best of it is that the cowling is no harder to open than any other, and it cools as well as any normal airplane.

The Falco is wood, all wood. But it could have been made of ivory, the surface is so smooth. You're wide-eyed, starting to walk around it, figuring out how it's made. It's made like the Mosquito—of molded wood—and it's an assemblage of three sections.



**Looks like a Falco under construction, right? Wrong, note the fuel tank bays and the strange metal "Y" between the wheel wells. This is the Frati Cobra jet being re-built in France by Charles Bezard in France.**

The front, with the engine—for the fourth series, a 160 hp Lycoming with constant speed propeller. It was made by Laverda, builder of motorcycles, boats and... house trailers. Earlier series, made by Aviamilano and Aeromere, had 150 hp and fixed-pitch props.

That's followed by the biggest chunk of the airplane, the center section with the wing and cockpit, constructed like a boat hull, and of a quality that has nothing to do with ordinary cabinet work—it's violin-making. From Michelangelo to Frati, the Italians are artists.

And to finish, there is the rear fuselage, a spindle of great purity that ends in triple petals made by tail surfaces of the same construction.

The Falco is very precisely made by the most expensive—both in man-hours and knowledge—methods known. As it happens, these methods are also the most elegant, and above all, the strongest. Have you ever tried to crack a walnut with your fingers, without hitting it? The Falco is a streamlined walnut with 160 hp in the nose, light as a classical guitar and solid as a mountain. Of course, it is *aerobatic*, with an ultimate limit of 9 g's, for example. You gaze around the cockpit while trying to restrain yourself from saying "Amen" after every third dial.

*Va bene:* It's a Falco, yes, but it's also an airplane. On the right, the instructor has carefully explained how everything should be. You check the parking brake

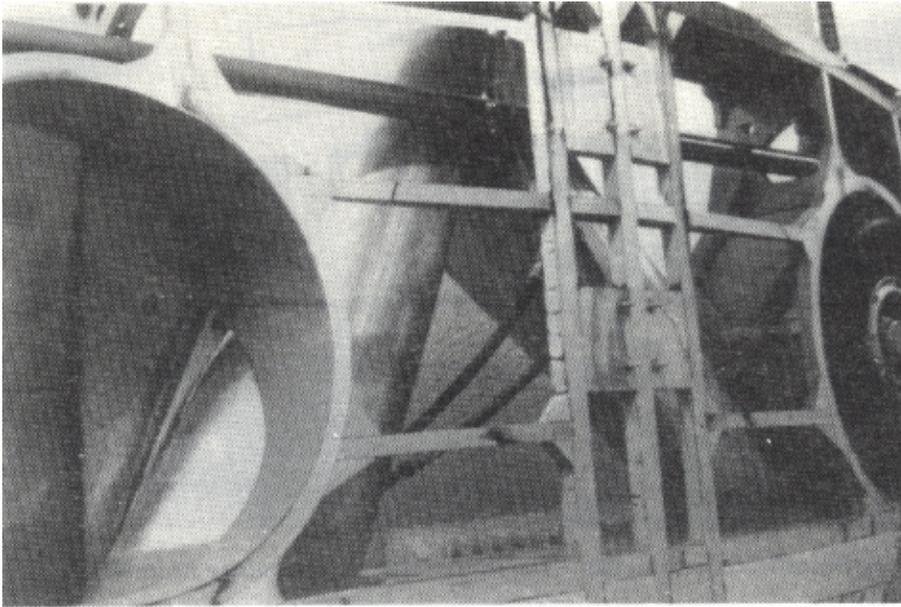
before firing up, and that's the first surprise. Frati is without doubt a great airplane designer, but he has never noticed how a man is designed, physically and psychologically. The Falco braking system proves it.

On the left, under the instrument panel, there is a big horizontal handle. Normally, a handle is pushed, or it's pulled. Not this one. To make it work, you must put two fingers on it and push it downward very hard. This puts both main gear brakes on at the same time. There is no differential, left-right braking. Hmmm.

Now to set the parking brake. Pump this handle down a couple of times, and then pull on a knob placed above the lever that resembles the piston of an enema pump like the one the set designer of the Comedie Francaise still has, for *Le Malade Imaginaire*. Strangely, the piston stays pulled out. It must work. Especially since the instructor seems happy.

You look for the primer. No pump. It's like a car. So you shout, "Clear," turn the key to both magnetos, give the throttle a couple of pumps to squirt fuel into the cylinders, and hit the starter button. *Brammm*. It's started. The noise is intense but agreeable. Nothing like the clattering and bangings of modern airplanes made of thin aluminum sheet. It's smooth, powerful, flat. If you wear a headset, it's even bearable.

Let's go. First the parking brake. Push in on the enema pump piston, jiggle the



handle under the panel a couple of times to make sure, and the airplane's rolling. Brake test: push down on the lever, and the airplane vaguely pretends to slow down a little. Got it—brakes were invented right *after* the Falco was built. To leave the ramp by the paved taxiway, I have to turn. Push on the right pedal to steer the nosewheel, which is supposed to be connected to the rudder, and the airplane will make a vague curve that way. Whoa! It doesn't turn sharply, you have to anticipate far ahead. Rolling over a little joint in the pavement makes you think you just drove off a curb. As far as suspension systems go, the Italians have always liked their sports cars to be directly connected to the road. But an airplane isn't made to drive, it's for flying.

For my part, I prefer airplanes that fly well and have a hard ride on the ground to those that ride like Cadillacs and fly like paving stones. Oh, yes, those exist. But let's stop psychoanalyzing the Falco on the ground and get it into the air.

End of the runway. Checklist. Try the controls. You wiggle the stick, and find it hard to believe that there are surfaces at the end of the linkage, it's so light. You need to look at the wings and the tail feathers to be reassured. Yes, they're out there, and they move. Immediately, anxiety—what's it going to be like in the air, with transparent controls? It'll be necessary to be gentle, gentle... And since there's nothing left to check, there's nothing to do but spring into action. Let's take off.

The visibility is phenomenal. You have a superb view of the runway, ahead and to the sides, and you advance the throttle

deliberately, without braking. The airplane starts instantly in the dull fracas of the engine, accelerating like a Group B Lancia rally car, straight ahead like a jet. By the time the throttle is full on, you're already at 100 kph! You're a little stupefied, you let a second pass and force yourself not to pull back, not even press the stick aft, to take off. Think, "I'll take off," the thought runs along your arm to two fingers delicately poised on the grip, and the Falco flies away, straight as a string. Bring the wheels up, hit the switch, and the cockpit erupts with the sound of a palace coup—it's the flap warning horn. "Ignore that," shouts the instructor from my right. The *indicatore de velocita* climbs like an arrow. You want to hold 160. You think 160. Fingers tremble. The nose rises, rises, and the needle stops exactly at 160. Adjust the engine and the prop. One eye on the rate of climb—God of the skies! With two big guys aboard, with a half tank of fuel, it climbs at a constant 1200 feet a minute, the airplane firmly on its trajectory, spirited as a Ferrari under the two fingers.

You climb, you think about things like "right turn, 45 degrees bank angle," and the Falco swings right at 45 degrees. Or "level off," and zip, you're there. It doesn't obey you, it's an extension of the pilot. And it never goes farther than you ask it.

With behavior like this, right away you find yourself exploring the airplane in a peaceful corner of the sky. 30 degree turns? Ridiculous. Uninteresting. 45 degrees? Easy. The ball stays glued in the center of its tube the whole time. A 90 degree bank? Let's go. Index finger presses the stick perpendicular to the horizon, and your buns are welded to

the seat. Tighter? A millimeter more aft stick, a little more g, another millimeter, you feel your cheeks start to sag, another millimeter, your elbows are heavy. Okay, boom, you reverse in the other direction! And in two seconds, as though on rails, the Falco finds itself in the same turn, but in the opposite direction. It's bewilderingly easy. It's the simplest flying, the purest that one can imagine. This airplane with the reputation of being touchy is, in fact, unbelievably docile. Yes, it is hypersensitive, but not hysterical. It obeys. It's faithful. It only does what you ask of it. And it does it instantly. An Alphajet is like a Renault R5 alongside this.

Never has an airplane so well deserved the nickname "little fighter." So, let's fight. We're in level flight, at 270/280 kph (cruising at 24 inches and 2,450 rpm; the performance of a good commercial airplane with twice the power). A little back pressure, hold it. Some g force, the nose climbs, climbs in the pure, clear skies above the edges of the Alps. Very softly, I roll to the right, the wing descends, and we make a beautiful chandelle.

Let's do that again. The right wing lowers until it points at the greenery far below, and the sun bursts into the cockpit, warming the face and hands. Turn slowly, and the nose tips down, very softly. I don't touch the engine, still at cruise power, and we drop into a slight dive—the airplane on the invisible rails of a gigantic scenic railway, scaled to the Alps that are visible in profile, twenty kilometers farther on, under the sun. The *indicatore de velocita* rises, but... it's rising quickly! Stop all this poetry. Reach for the throttle.

The instructor stops my hand. "No. Leave the nose down. Let it go."

"How far shall I go?" I ask.

"Vne."

All the way to the redline, then. It accelerates continuously, peacefully, a little frightening.

Three hundred and fifty kilometers. I've never gone so fast in a little single engine airplane in a shallow dive. It's not all that fast, in absolute terms, but in flying, everything's relative.

Toward 360, I bring the nose up, very, very gently. Despite my care, I feel the airframe load up, as in a real fighter. The

cowl comes back to the horizon, the airframe whistles a little. It keeps 360 kph without effort, flowing through the air with grace, like a salmon. Most other airplanes jostle the atmosphere to force a path through it, using a lot of power and energy. I mumble a few comments, and the instructor laughs.

“You should know Frati’s test pilot pushed the Falco up to 600 kph!”

Evidently, I’d forgotten. [So has Frati. Don’t believe this.]

It took a good two minutes for the speed to fall to 290, where it stayed with cruise settings. Consumption is then around 30 liters [7.9 gallons] per hour. It’s sublime. The design of this airplane dates to 1955, and not only is it an exceptional beauty, but also its performance beats everything made since, even by Frati!

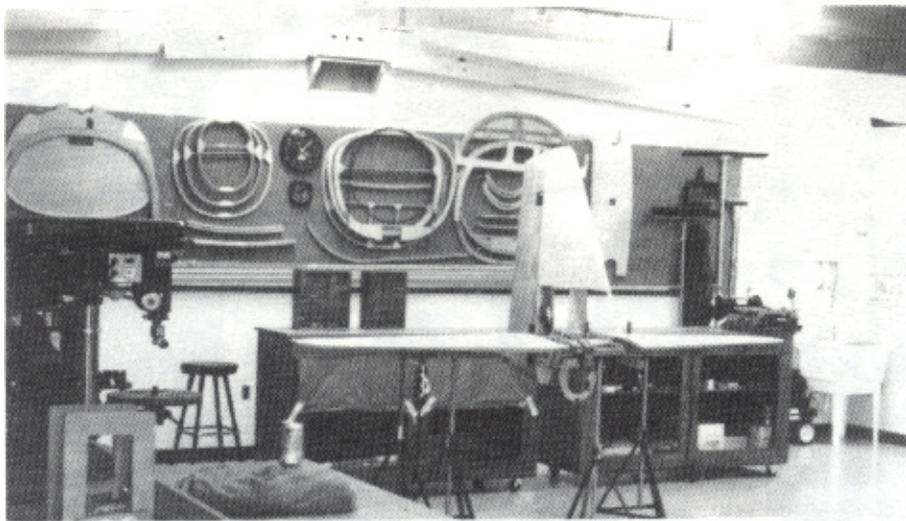
But there you are. Since then, engineers have emphasized making airplanes easier to fly, safer at low speeds, harder to stall, harder to spin inadvertently—pure performance sacrificed to safety. And I said as much to the instructor, who laughed again. “Oh, yeah? Let’s explore slow flight, steep turns and all that tra-la-la...”

I slowly pulled the power off completely, not letting the Falco lose altitude. And I went at least fifteen kilometers to get down to 130 kph. I squirmed in my seat. With these tiny wings, thin as knife blades, it’s going to stall sharply. Be alert. I started to drop the flaps and the gear, but the instructor stopped me.

“No, leave it clean. It’s sportier.”

That’s what worried me.

3,000 feet. The engine murmurs, I hold the nose high, on a slope of at least 20 degrees, and I wait for the aerodynamic cataclysm. The ball is centered. The speed falls. 105 kph. Nothing. Then suddenly there’s the impression of being machine-gunned with tiny bullets—more of a vibration than a shudder. The nose comes down by itself in the line of flight and stays there. That’s all. Ah, I had the stick back just a little, I still held it there, but there was at least 20 centimeters to go. Okay, another centimeter back. The nose rises just a little, more bullet strikes, the nose shrugs, and bang, we’re back in level flight. Good, I try again—stick back a little, bullets, a little stall. One ought to be able to continue like that for a long time. It’s amusing, I’m not even afraid now. I now understand that Frati,



**Craig Bransfield’s new hangar. You think Craig’s a compulsive neatnik?**

in making this airplane, has succeeded in squaring the circle. Of course, if you yank the stick back with both hands, bawling like a logger, the Falco’s going to depart like a cracked whip. But you’d have to be a little nuts, doctor.

So I’ll play a nut case. I haul it back brusquely, the nose climbs, and *bam*, the Falco’s gone, the left wing moves down, my right foot does, too, in the next half-second, by reflex. In the back of my skull a little voice says, “You’re going to spin, dummy!” But no, the foot has brought the wing back up at the same time as the hand has moved the stick a few centimeters forward. The Falco flies, descending slightly at 100 kph, straight as a die. Ticklish, this Falco, but not vicious. Certainly not. Beside me, the instructor’s laughing. This airplane makes him happy.

There’s nothing left to do but land this Milanese jewel. Directly above the field, downwind, power back, I let the speed fall to 170 kph, put the gear down and in the process set 20 degrees of flap and 20 inches of manifold pressure. Level flight. The airspeed needle is exactly on 160. I verify that the wheels are out by looking at each wing—when the gear goes down, little red plates the size of a franc rise above the wing surface. They’re up. The airplane is all set up. I feel a little nervous, but the instructor is watching the trees and pastures slide by our wings. He’s sightseeing. Good, that’s reassuring. I turn onto base.

160 kph is a little faster in the pattern than most light airplanes. Let’s slow down, toward 130 for the stall speed of 100, just as the book says. 13 inches. Full flaps. Prop full fine pitch. 145 kph. A touch of power to lock that in. And

with a finger, the last turn.

It’s a dream, this airplane. A prosthesis for flying. You don’t have to know how to fly. It’s enough to look where you want to go, and it goes there.

Lined up on the runway, I leave the trickle of power that seems necessary. We slide down rails. Little gusts don’t even have time to tip the airplane; I kill them instantly with tiny pressures. We pass the threshold at two meters. Round out, stick back a finger’s width, and I gently remove the last trace of power.

The nose rises a little, the airframe whistles, it... *thump*. The wheels touch. Life is gone instantly. The nosewheel descends. Touches. Nothing left but to brake.

Ah, that’s right. The brakes. Okay, don’t brake. It doesn’t matter, it’s a long runway. The instructor speaks.

“Hell of an airplane, no?”

I’ve heard all kinds of things about the Falco. And I continue to hear all sorts of stories, of the “this airplane is a booby trap” variety.

So much the better. Let’s hope that lots of people keep repeating it, that it’s very, very difficult to fly. Very, very vicious. Let’s not hold back anything. That way, there’ll be room for the others, those who know—who know that the Falco is the archetype of Airplane, without doubt one of the five or six ultimate airplanes ever built, along with the Spitfire, the Jungmeister, and.... And?

In any case, *bravissimo*, Signore Frati!

## Sawdust

• Out the window. We get all sorts of weird calls, but the other day we heard from a guy on 14th Street in New York who wanted to build the Falco in his 6th floor shop. The principal requirement was that the plane fit through a three-foot by six-foot window so the piano movers could extract the thing when it was finished. A T-18 and a Volksplane had already made this trip, and Eugene Baum wanted the Falco to be the next. And on the price of the plans, he wanted to know if we had any discounts for 'a fellow aviator'. Sadly not, said I, explaining that all our customers were fellow aviators. Ah well, said Baum, "I had to ask. I'm Jewish."

• Airparteid? We just shipped some kits to Brian Nelson and Fannie Hendricks in South Africa, and that enlightened government wants to slap a 25% duty on the seats because "they're not part of the airplane". What are they supposed to do, kneel?

• G. Washington is passé—*Jackie Kennedy* slept here. Watch the October TV listings for the NBC mini-series, "A Woman Named Jackie", currently being filmed here in Richmond and with Meredith Scott in a couple of bit parts. They needed a house to be 'the Kennedy compound' in Hyannis, and our Cape-Cod style house is it. So when you see Jackie wake up and ask if "we won the election", that's our bed she's in, and all the scenes of them watching the election returns are at our house. As irony would have it, I've met the lady—years ago when I had a summer job pumping gas at the Hyannis airport—and I always found her to be the nicest of the Kennedys.

• Sometimes it pays to be over thirty. Special thanks Ben Owen at the EAA for pointing out a little-known section of the FAR's that exempts Falcos from having to use 12-inch letters. Section 45.22B applies to "small U.S. registered aircraft for which an experimental certificate has been issued for operation as an exhibition aircraft or as an amateur-built aircraft and which has the same external configuration as an aircraft built at least 30 years ago". The regulation is intended to allow antique airplanes and replicas of antiques to be operated in the original paint schemes. Thus the numbers must be at least 2 inches high, and may even be on

the fuselage under the horizontal tail.

• Forsaking all others... well *kinda*. What's with the Italians and the curious "extra virgin" terminology they use on olive-oil cans? Like, you know, what does it really *mean*, and does it apply to young Italian ladies as well as salad oil? It sure sounds like the moral equivalent of a used-car sign. Maybe it has something to do with the daughters of Mafia dons, where you're not even supposed to ask.

• Benchmark for all. Now there's one more reason to finish your Falco. Let us know that you're flying, and we'll send you a complimentary copy of Benchmark to handle the performance flight testing—and in a couple of hours you can duplicate the same analysis and charting that only a couple of years ago would have required months of agonizing work by several engineers. It's interesting. It's fun. And it's free only to Falco builders who've gotten their traps in the air.

• Congratulations to Charles Gutzman who walked away with Grand Champion Plans-Built at Sun 'n Fun. Charles didn't know he had won until he got home and received the certificate in the mail. He also got away before any of the EAA photographers could get some good air-to-air shots of the plane. They finally got together a couple of weeks ago at Oshkosh for a photo session. The photo plane was a 182 which they flew at 80 knots where the Falco is not happy. At the end of the video session, Charles was supposed to do a little wing-waggle, and on the second wing-up, the Falco went *down*—Charles was paying so much attention to flying formation that he didn't notice that he was right on the edge of a stall. Anyway, it all made for some interesting footage.

• The Second Annual West Coast Falco Fly-In will be held at beautiful McCall, Idaho, on September 6, 7 and 8, and hosts Jim and Judy Slaton have a full weekend of interesting activities planned, so be sure to attend. Falco builders are very welcome, and Jim promises that any of you who have not flown in a Falco will have the opportunity to do so. For details, contact Jim and Judy Slaton, P.O. Box 562, 443 Rio Vista, McCall, Idaho 83638. Telephone: (208) 634-3016.

• Falcos are excessively welcome at the El Dorado, Kansas, fly-in on July 6, with Fly-In chairman Howard Benham prepared to

trade his dog, cat, wife or *whaddyawant?* for a ride in a Falco. Charles Gutzman plans to attend, so any of you midwest stragglers who have never seen a real, red Falco should contact Howard & Marty Benham at (316) 788-7723 for details.

• I didn't do it. Apologies to all, especially real designers, for the 'high priest of aircraft design' description of me in the Flight Computing catalogue. I didn't have nuttin' to do with that.

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## Brenda's Corner

The only thing that makes time pass faster than a ninety day note is Oshkosh. I know! I know! I said I wasn't going this year, but somehow I seem to be making plans to head to Wisconsin.

Reservations are suppose to be made by July 1, at the Paper Valley. But since you probably won't receive this in time, if you are interested in a room, give me a call, and I will see what I can arrange. No promises, but I'll try. Of course, if anyone is interested in coming to Richmond and driving the van to Oshkosh, you can have my room (and I'll pay for it).

The Falco forum will be held on Tuesday, July 30, at 10 AM in tent number 6. The Falco builder dinner will be that evening at Martini's Restaurant in the Midway Motor Lodge in Appleton. The bar opens at 7:00 and dinner will be served at 8:00. The menu will be the same as the last few years—prime rib and either some sort of chicken or fish for all you healthy people. Stop by the Falco booth and tell us how many to expect. Plus, we usually have a few people without vehicles, so if you can give someone a ride to and from Appleton, it would be a big help. Let us know how many you have room for in your car.

We have one modified front fuel tank that we are willing to sell at the old price. It has a few pin-hole leaks, and we would rather not send it back to the company that makes the tanks for us. The price is \$1,275.00. Any takers?

We are finally getting the electrical kit back in stock. It has taken over a year to get everything in stock. It's been a mind-boggling experience for me. We appreciate the patience of everyone who has been waiting for bits and pieces. We should be sending everything out within the next two weeks.—*Brenda Avery*

## Mailbox

Gwen and I were touring eastern New York State and western Massachusetts, Airstream in tow, when we decided to accept an invitation to see a Frati-designed wind machine at Pittsfield, MA. Parked in the far corner of a hangar, it looked for all the world like a stealth fighter in its nearly black primer and orange-red tail numbers. Minutes later, sitting in the sun on the tarmac, the Falco of Jonas Dovydenas sat in the saucy stance of most of the European examples—W.L. 0 and MSL in parallel. Pretty bird. If seeing a newly hatched Falco doesn't set you on fire, your wood is wet.

*John Brooks Devoe  
Stratham  
New Hampshire*

Stabilizer, elevator, fin and rudder completed. Wing ribs nearly completed. Will begin with the spars for the wing in the middle of May. Thank you for your excellent support.

*Shahid Choudry  
San Jose  
California*

At this time, all of the empennage is complete, all of the fuselage bulkheads have been constructed, all of the wing spars with the exception of the main spar have been constructed, and I am well into manufacturing wing ribs. The main spar will have to wait until I can construct it outside. I can't convince anyone of its intrinsic value as a pure and esthetic art form and therefore take its rightful place between the living room and dining room for construction. Glue on the carpeting is also frowned upon.

I would like to take this opportunity through your newsletter to personally thank John Harns, who has become somewhat of a mentor to me, and to Dr. Ben Burgoyne and Ray Purkiser, whom I was privileged to meet and have lengthy conversations with concerning Falco construction. They allowed me to crawl through, in and around their beautiful Falcos at Arlington last years. Thank you. Falco people are nice people!

*Dan Martinelli  
Montrose, B.C.  
Canada*

Although I've not been in touch much, I am beavering away at the Falco, when pressure of business permits. Since purchasing the plans, I have managed slow but steady progress, apart from having to take one year out due to business getting in the way.

To date progress is as follows: All tail group rib and spars fabricated, all wing ribs fabricated, aileron/flap spars fabricated, and all but three fuselage frames fabricated. I expect to have all woodwork components, apart from the main spar, fabricated this summer. Metalwork progressing also. All alloy hinges/brackets 95% complete. The instrument panel and centre console are finished. I did these on the digital read-out milling machine without any problems, but I wouldn't like to take on the job by just measure, punching and drilling. All the alloy components for the control system are finished. Rudder pedals, control columns, etc., all under way. I attend a night class in model engineering. This gives me access to a full machine shop which includes CNC lathes/mills, a small foundry, TIG welding, heat treatment, etc. This has allowed me to take on the manufacture of components which I would otherwise never have even contemplated.

I have also finished all the fittings for the fuel tanks. I was just about to have the tanks fabricated, when you began your tests on the tanks, so I'm holding off on these until you come up with a final solution.

I have a similar space problem to Bjoern Eriksen. I'm working out of a single garage (and it's still got a car in it!). I reckon that while the project is beside the house, I am more likely to just nip, cut and do the odd bit here and there. Once I move it, to get more space, I'll be less inclined to go and travel to it.

They say that this is the hardest way to build a plane, building all the bits, without trying to build an airframe, or something that really looks like a plane, which can fire the enthusiasm when you're feeling low, but I think this must be the view of people looking on, who fail to see progress. As the builder, each little bit made is another step forward, another component ticked off the list, and the progress is obvious.

I think the Falco plans must be almost unique in being very detailed, allowing this approach to be taken. Every other set of plans I've seen, have left a lot of the detail installation work to the imagination and ingenuity of each builder, meaning that a lot of components have to be made on an as-required-at-installation basis.

*Gary Montgomery  
West Lothian  
Scotland*

44 with 4 kids, 4 weeks to 11 years. Lynn wanted a baby, I wanted a Falco. The compromise: name baby Falco. His name is Brian. This is the short version. Patience, I'll be there in due time.

*Thomas C. Cherry  
Vacasville  
Connecticut*

I have now flown 40 hours with my Falco and all CAA restrictions have been lifted. The aircraft still performs very well, and I regularly get 160-170 kts TAS on IFR flights at FL 100 with 60-65% power. On 100nm trips I, in fact, keep the flying times of our Dash 7!

In late March, I flew the Falco to Sandane, Norway, and visited Jan Waldahl. He is well underway with the engine installation, but I think he still has some months to go. My Falco is scheduled for a rather intense fly-in season, with Cranfield in England as the best known. Maybe you will see us at Oshkosh this year, too, but this has yet to be settled.

*Bjoern Eriksen  
Bodoe  
Norway*

In the last builders letter, Stephan Wilkinson wanted to know if anyone who has been through the FAA licensing routine had an appropriate checklist. I haven't been inspected, but I found a little book that has all of the required information. It is *How to License a Homebuilt Aircraft*, by Paul Bergen Abbott, published by The Abbott Co., Indianapolis, Indiana. I got mine from Sporty's, Batavia, Ohio, for—if I remember right—about eleven or twelve dollars, and to me it was well worth it. Like all good things, the writer of the book got a little confused with the radio station license. The addresses and form numbers are all correct, but he says the license is free. The FCC doesn't know that—they charge \$35.00.

*Allan W. Hall  
Vista  
California*

*One of the earliest articles to appear on the Falco was written by Ray Foster, editor and publisher of the long-defunct Aviation News, and Ray did much, behind the scenes, to help me in the early days when I was just getting started. Ray recently moved to the east, gave me a call, and I sent him a stack of brochures, a bunch of old newsletters, and the package of information about the EAA audit. I thought you might be interested in the letter he sent back:*

Thank you for the wonderful package of Falco information. It certainly provided an entertaining and enlightening afternoon's reading. And, of course, it bought back a lot of memories—particularly to that time in the mid-60s when James Gilbert and the unruly band you mentioned were staffing *Flying* magazine.

In those days, I was living in New York, running *Pulp & Paper* and *Pulp & Paper International* magazines, and spent many a pleasant hour in the company of those fellows. Several of them have been friends ever since.

Amusingly, immediately after that period, James introduced me to my former wife, and I extolled his virtues when, in a pub in London, he was first wooing the lady who was to become *his* former wife. Is there justice?

I'm glad to see that the wonderful Falco is prospering and proliferating in this sad era of look-alike polyunmentionable-dianoguanolate airplanes.

I am both impressed and amused by your contest of wills with EAA. Impressed, because your scholarship has been first-rate, although I would hardly have expected less of you. Amused, because I thought everyone knew about Paul P. and his merry band—at least, I believe all of the aviation journalists were aware of the goings-on.

Whenever a non-profit organization, its directors, and its leader describes the organization's property in personal terms, i.e. "*Paul's* airplane," and whenever that organization employs a high percentage of the founder's family members, it becomes apparent that it is a personal operation—one merely taking advantage of 501c status.

And, if, over the years, that organization does not maintain adequate accounting records, no audit can ever determine exactly what has transpired. Considering their personal liability, I am surprised that the directors of the two EAA corporations did not more fully exercise their fiduciary duties. But, on the other hand, considering the old-boy net that runs these enterprises, I should not really be surprised.

I'm sure that the directors thought that no one would ever raise a question about the propriety of the organizations and their leadership. My impression was

always that EAA was the P. family's personal fiefdom, and that it was run exclusively for their benefit—the members be damned!

Paul's drinking problem was always obvious to me, as was his taste for the ladies, his high living at the membership's expense, and his proprietary views regarding EAA and its assets.

Your view of Tom is more charitable than mine. I always thought that he and Paul were the perfect "good cop-bad cop" team, and that they had perfected, better than most, this routine.

EAA is an enormously valuable property, and it is interesting to contrast its management and operation with that of the National Association for Stock Car Auto Racing (NASCAR.) NASCAR was also started by the members of one family. In this case, it was Bill France and his progeny. Unlike EAA, however, NASCAR has always been run as a professional organization, and at every level, the organization is run by competent, dedicated professionals. The results that they have achieved are impressive!

In my opinion, until EAA matures and acquires professional management, it is destined to remain an "amateur-hour" organization. One wonders what provisions have been made for management succession, assuming that Paul will die one day, and that Tom may well meet the fate of too many equally-skilled aerobatic pilots. I don't see a hint of any professional infrastructure, nor any provisions for continuity when and if the current team is no longer available.

Ray Foster  
Alexandria  
Virginia

*This is a good time to give you a report on the EAA one year after the audit. In the operation of the organization, I have seen nothing but improvements. Financial disclosure to directors and to the membership is now exactly as it should be—see the May issue of Sport Aviation for the annual reports of both the Experimental Aircraft Association and the EAA Aviation Foundation. Three cheers! The magazines are dramatically improved in both format and content—I read all of Tom's "Homebuilders' Corner" columns and find them interesting. The sexual harassment has stopped, and the very talented middle management, previously hindered more than helped by Paul, is now free to do a much better job.*

*And the directors, whose passive role was such a critical part of the problems that existed, seem determined to henceforth exercise a stronger voice and do the job that directors are supposed to do. There are still elements of the old-boy network of Paul-loyalists, and this is the EAA's weakest link. I recently asked for director Verne Jobst's dismissal for his little merchandise caper at last year's Oshkosh. They investigated it and concluded—wrongly, I believe—that it was a misunderstanding and that Jobst was not stealing. I think it was a whitewash by the inner circle, and I believe most directors think so, too—indeed a number of them were openly muttering that "This is nothing new, Verne's been pulling this stunt for years."*

*The 'defining moment' of Tom's leadership, though, will come at this year's election of directors. There is a long list of interesting candidates, and it's time for some change in leadership and to seek out directors who can do a better job of leadership, who have concern for the employees, and who have a better sense of fiduciary responsibility—and to turn away from the old-boy network of cronies. Most interesting—and the litmus test for cronyism—will be how things play out for directors Lance Zellers and Verne Jobst, both up for re-election.*

*Lance Zellers is the director who demanded Paul's resignation because of the very serious sexual harassment that Paul had been visiting on a female employee at the EAA. This sort of thing is always difficult when it involves the founder of an organization, and I can understand that many of the directors were not emotionally prepared to deal with such a painful subject, but I can't condone Jobst's actions. He showed absolutely no interest in the plight of the employee, nor any interest in the accuracy of the charge (now understood by all to be completely accurate). Instead the red-faced Jobst led a highly personal attack on Zellers, the gist of it being "How dare you say such things about Paul." The other directors, many of whom had privately supported Zellers, were intimidated into silence. Lance Zellers, a Marine infantry officer with two tours in Vietnam, described the meeting as "The worst two-and-a-half days of my life."*

*So it will be interesting to see if this quintessential crony—with his baggage of zero-interest in the welfare of employees and penchant for late-night 'shopping' at the EAA shops—is returned to the board, and whether the one director who stood up for the employee is dismissed. If that happens, it will be a sad day for the EAA. I would like to urge everyone who has an opinion on this to write Tom and let him know how you feel.*

—Alfred Scott

I am in danger of getting an inferiority complex reading about all of you braggarts who are going to have the best aircraft ever built. I am awestruck at Marcello's jiggling, I am filled with admiration of all you bums waxing poetic about your creations, about the filling, about the paintwork. I am delighted that John Devoe used sky hooks like I did.

But I must represent, surely, many, many builders who stand back and say, "S—t! It would have been better had I done it *this* way. Don't get me wrong, I am pleased with it, but I can see so many faults with it. Maybe it's because I am critical, and I know it's never going to be perfect." I suspect that there are many out there like me.

As regards mirror-smooth finishes—forget it. Someone tells me he had his looking glorious, took it out into the fresh air and it showed every rib, (apologies to Someone, this might be an exaggeration). I suspect that conditioning is a load of bull, perhaps that's putting it rather strong, where humidity can vary between supersaturated to bloody dry. Maybe we should sheet with fibreglass.

I would like to fly mine, not to have an incestuous relationship. Let's face it, as sure as God's in Govan, it's going to catch hangar rash and all you perfectionists are going to suffer agonies as a result. One of the builders flew his Falco unpainted, I can understand that guy.

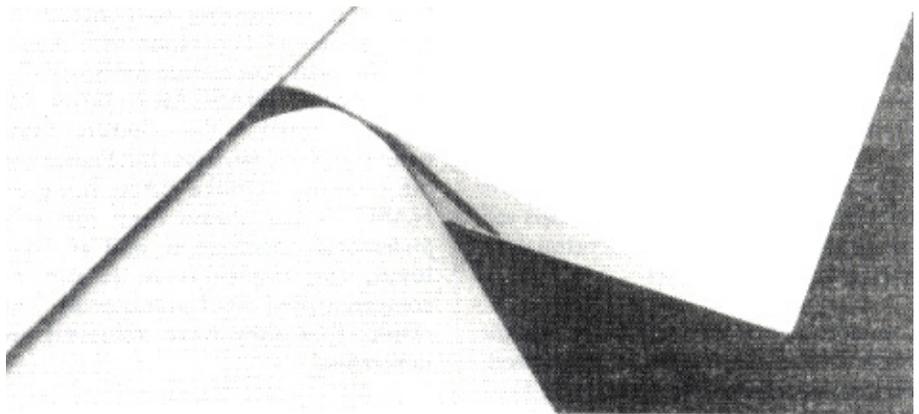
I console myself with the knowledge that not so long ago pilots were pleased to see the white cliffs of Dover with right and left wings that varied in span and incidence, theoretically inadequate rudders, and landed using engine power, elevators having been lost somewhere along the way. There's hope for me.

May I say, in addition to your overkill on tank strengthening, which I have little doubt will work, that the recommended tank straps give no support whatsoever to the underside of the tanks. Must fuel tanks be quite so ugly?

*Charles Wagner  
Glasgow  
Scotland*

*Yes, they must. It is written.—Scoti*

Just a note to let you know what is going on with N660RH and enclose a picture of my flap setting indicator that I can use without burying my head in the cockpit in the traffic pattern. This is a strip of



**Top: Rex Hume's 180 hp Falco. Center: Rex's flap indicator. Bottom: Pat Harns and Margarete Hume endure it all with grace at the Yakima Air Fair.**

fine line tape on the inboard end of the aileron and the 'first notch' setting. You just look out the window.

My airplane is the one with a 180 hp engine and a metal cowling. I cruise at 200-205 mph. I peg the rate-of-climb at 2000 fpm on takeoff.

The other picture was taken at the Yakima Air Fair in May. John Harns and I arrived

in the traffic pattern at the same time, unplanned. John was on straight-in and had to go around because an FAA King Air was going to land on top of him. I was on left downwind with an F-16 on my left wing. The field had just reopened after Snowbird practice. Anyhow, it was a great show, and we had lots of good comments on the Falcos.

*Rex Hume  
Williams, Oregon*