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March 10, 1983

Dear Falco Builders:

We recently sent out a shipment of drawings which you should have received by now. With this letter, we are enclosing some additional new drawings. You may note that some of these new drawings replace old drawings which are now being eliminated. The eliminated drawings are those which have been effectively replaced by other drawings or which are not being used by anyone, such as the mechanical landing gear indicators. Naturally, you may want to keep the old drawings.

The instrument panel arrangement is probably new to most of you, although some of you have seen some drawings at Oshkosh or when I was in Europe last summer. It is very difficult to describe the work that has gone into this thing. I would have laughed if someone had told me that I would spend over 3000 hours of design work on the panel, throttle quadrant, left hand throttle modification, electrical system, pitot-static system, vacuum system, engine controls, and other related systems... but that is what it has taken.

This is a good time to discuss the instrument panel design concept that we have here. There is no absolutely one correct way to do this sort of thing. The physical requirements loom quite large, and all of these are not apparent. Obviously, you have a limited amount of space in which the panel may go. The forward fuel tank limits the space behind the panel, so while the normal instruments and some VOR indicators will clear the tank, the fittings on the instruments must be selected so that you do not have hose clamps rubbing against the tank, and the tank must have a recess for the radio stack. There is also the question of what you plan to put in the panel. A VFR-only panel is quite simple, but almost every Falco builder I have talked to has summed it up like this: "I don't necessarily plan to install complete IFR equipment right away, but I would like to be able to." The more you put in the panel, the tighter it gets. There is also the matter of maintenance, and this is very important. Because of the tank, there is no way to work on the instrument panel without taking something out. If you don't think that is important, just talk to your local A&P mechanic!

There are several solutions. The original production Falcos were built with a tubular steel cross-member, and the radio stack, and each side of the panel was removable. All of the original electrical devices (switches, circuit breakers, lights, etc.) were jammed into a

small box. There was a tube welded through the front tank for some wires and the tachometer cable. It is a genuine nightmare. I took 2 hours just trying to take my panel apart to replace some instruments. Also, the design did not contemplate any growth, so while the initial concept might have had some merit, the addition of radios and instruments had wires running all over the place. The result was that you had to "de-wire" the airplane to get the panel out. The same goes for the removal of the front fuel tank. It is a bag of worms beyond belief, and I still have a few things on my panel that I have yet to hook up because of all the work it takes to sort through all of the spaghetti.

Another concept is to mount an aluminum base to the panel which carries the switches and circuit breakers, with the upper parts of the panel removable. Tony Bingelis and Herbert Mueller have done this sort of thing. On first glance, this looks quite good, but the method has some real limitations if you want to put a lot of equipment in the airplane. The lap joints take up a fairly small amount of room, but this makes a really significant difference in what you can put in the panel. More importantly, the wiring behind the panel must be considered, and you will end up with a lot of connectors behind the panel. Tony's hinged panel is very clever, but the gyros are fairly long. This means that you have to place the gyros where they must be to swing out, not where you might want them.

I do not mean to criticize the panel designs of Tony Bingelis, Herbert Mueller, or any others, but I don't believe they would serve the needs of what builders have been telling me they want. Many of you may think that the installation of all of the equipment shown is more than you might do, but it has been the experience of many pilots that once you get an airplane with good range and cruising speeds over 150 mph you soon find yourself making longer trips and running into weather. How many Bonanzas or Mooneys do you see with VFR-only panels?

The instrument panel design that I have settled on is a one-piece panel. In any design work, the really hard work is keeping things simple, and this is particularly true of the panel. There will be many small things which may mystify you at first, and you will find yourself wondering if you might make a little change. The placement of the alternate static source might seem arbitrary, but the placement of the static line between the G-meter and the turn & bank is important, not to mention clearance with the left hand throttle torque tube, and removal of the engine instrument cluster. The tachometer cable similarly fits into only one place. The lip on the forward face (anti-pilot side) is jammed full of electrical devices. I could easily write fifty pages on the considerations that went into the design... the reasons for placing the audio connections and two landing gear circuit connections on the terminal block on the right side of the airplane -- instead of the left... the selection of switches, lights, relays and other devices... the graphic design of the panel and instrument markings... and so on. I think that very few of you will understand and appreciate all of this until you have actually put the thing together and then pull it out of the airplane a few times to work on

maintenance problems. I also suspect that you will not be able to envision the actual appearance of the panel until you see it put together, with all instruments in, and with the panel painted and marked. The instrumentation drawing is overly-detailed on purpose to give you a taste of the feel of the panel, but it does not really show what a very classy looking panel this really is. I will probably set up a panel in the booth at Oshkosh this year so that you can see what I am talking about now. In the meantime, I would only caution you not to go off on your own direction without looking very carefully at what is shown on the drawings. I have just finished a drawing for the vacuum system in which one "detail" is a completely detailed view of the front face (anti-pilot side) of the panel.

For those of you who will be installing our panel before I have the time to sit down and write out a complete construction manual, I have a few notes to offer at this time. The first step is install the nose gear bay cover, then you bolt the instrument panel to the center console and place these in the airplane and drill the holes for the panel through fuselage frame No. 3, and you install the screws at the base of the center console. The channel-nuts for the panel are installed. All of the instruments should be trial fitted to the panel and any modifications required should be done. These should be very few in number, but you will need to make a cut-out for the knob on a four-cylinder EGT and the G-meter. The corners of the radio stack opening must be sharp corners. If you plan to install a DME, Fuelgard, or OAT, then these holes should be cut now. It is a very great mistake to wait until later since you will really screw up the paint job on the panel. The ignition switch hole will require some work with a half-round file to finish out the tang (which keeps the ignition switch from rotating, and this will mean that the panel marking for "off" will be accurate information).

When you have all of these things done, then you can proceed with painting the panel. I have done some experimentation with various paint colors for the panel, and a model airplane paint, Pactra No. 20017 "Asphalt", is the best looking color that we have found. If you want to make the panel really classy, then the bezels, knobs, post lights, etc. may be painted with this same paint. If this sounds extreme, take a look at the panel of a Cessna Citation on which this is done judge for yourself. One other color we tried was Krylon All-Purpose Gray 1318 spray primer. This color is very similar to the Citation panel, but it is a little too light for our taste.

After the paint is dry, the panel markings are applied and the panel is sprayed with a clear matte protective coating. You should be very careful to first experiment with the protective coating on a piece of scrap since the coating is a lacquer and will give you a speckled white finish if sprayed when the humidity is high! The throttle quadrant is rather simple to assemble, but the friction of the phenolic spacers is lower than that of the nitril-cork washers with the result that you should cement the phenolic spacers to the aluminum parts before you rivet the brackets in place. You may want to use screws (instead of rivets) to hold the quadrant brackets in place. You will find that the quadrant cover is difficult to remove with the .25" wide slots for the

levers, and I found that they needed to be widened for .100" clearance on each side of each lever, but this should not be done until the quadrant is completely assembled since the slots will have to be adjusted a little side-to-side to accurately match the levers. Once the thing is finally assembled, you will find that you will rarely have to remove the quadrant cover. Even so, this is how it is done. The knobs are removed and the throttle lever is placed in a "nearly full throttle" position, the prop lever is placed in the middle of its throw, and the mixture lever is placed in a "nearly full lean" position. The quadrant cover is lifted and twisted, and a screwdriver must be used to pry the mixture lever over slightly. You should practice this a number of times before you do the final paint job on the quadrant cover. I showed the quadrant cover held in place by sheet metal screws, but this proved very difficult, and I think No. 8 machine screws will be much easier. The rest of the panel installation should be self-explanatory once you get into the installation of the wiring and working from the electrical drawings which we will be sending out.

I have continued to work on the detail drawings for the electrical system, and there is still much work to be done before they can be considered final. The detailing is very extensive and should make the installation of the electrical equipment a relatively simple matter for those of you who have never done this sort of work before. We have the drawings for the paint schemes nearly finished now and expect to have them finalized in about three weeks. Any of you who need these drawings now should drop me a note, and we'll get you out some advance prints. We did these paint scheme drawings for Dave Aronson who now has his Falco painted, complete with all striping. I have done some work on the installation of the wing tip strobes, and this will require a change in the tip light openings. I will be incorporating this in the plans, but in the meantime if you need to know what to do, send me a note, and we will send you a sketch of what is required. At some point we will have the plexiglas wing tip lights made up, and these will probably be incorporated in the wing equipment kit. In your latest package of drawings, you will note the installation of the pitot tube differs from that used on the original production Falcos, so you may ignore the blocking shown for the pitot tube shown on the wing drawings.

Please also note on the new nose gear drawing that the AN44 eye bolts have been replaced with a special eye bolt and a "stop" has been shown. This is one of those embarrassing situations where I have to eat my own words! There is a problem with the nose gear lower ring nut hitting the lower torque link. I found this problem some time ago and wrote Mr. Frati. I didn't like his solution at all but after a year of looking at the silly thing, I can't figure out a better way. We have the new parts being made now, and they will be sent out to all of you who have purchased the nose gear kits and incorporated in the nose gear kits in the future. I have been really amused by the fact that not a single Falco builder has discovered this problem.

You will note a change in the price of Kit No. 815-1 which is the result of the addition of some parts we had planned to put in a subsequent kit, so the price change is the result of additional parts and not a price increase for the same parts. Francis Dahlman of

Trimcraft has decided to price the wing spar kit at \$3,600.00, which I know is welcome news. Many of you have said that you have problems finding the tapered reamer needed for the taper pins used with the screwjacks. The best source of these is Travers Tool Company, and we have a listing in the price list. You will find that this company is a very good source for drills, reamers, dies, taps, etc.

I have decided to combine the previously announced pitot-static and vacuum system kits with the instrumentation kit. Kit No. 815-3 will include the tachometer, tachometer angle drive, tachometer cable, engine instrument cluster, vacuum gauge, and all hoses, fittings and components for the pitot-static and vacuum system. We will not include the vacuum pump or the heated pitot. This kit will also include all of the hardware needed for the installation of all of the instrumentation in the instrument panel.

The past few months have seen a lot of articles on the Falco. Sport Aviation had articles on Tony Bingelis's Falco and a very nice article on Larry Wohler's Falco. The Brazilian magazine Motor Three had a full color article on a flight in our Falco at Oshkosh along with photographs of Larry Wohler's and Nustrini's Falco. It appears to be an excellent and complementary article, but unfortunately it is in Portugese. My limited Spanish allows me to get something of the gist but is not sufficient. If any of you would like to tackle the translation, please let me know and I'll send you a copy. Also, the English Popular Flying Association magazine has a cover photo of Peter Hunter's Falco on the cover. Some of you might have seen the advertisement for Mooney's "Military Aircraft" which has run in Flying and AOPA Pilot. That's our canopy on the airplane.

In his article, Tony Bingelis mentioned that his screwjacks were chattering. These screwjacks are ground threads, and they will run smoothly only if lubricated with grease. There is nothing wrong with them, and you will get chattering on the lead-screws of any milling machine if the threads are not greased.

I must again bring up the subject of dangerous modifications. I recently became aware of a Falco builder who was planning to install a model airplane servo as an "electric trim" on his Falco. I had earlier talked to the builder about the modification, and I thought I had convinced him to abandon the idea. I'd like to discuss this type of modification and our policy regarding such changes.

Modifications to the elevator tab design of high speed aircraft are potentially very dangerous. They are insidious things since builders with little experience will not fully appreciate the dangers involved. Many such changes are proposed by builders who have been around homebuilt aircraft for a while working on slower aircraft, and they naturally assume that what worked on a 150 mph ship will work on the Falco. What they do not understand is the nature of flutter, the risk of which increases with speed. Many of you remember the problems with elevator tab flutter with the Cessna Conquest, so my description of what happens in the event of elevator tab flutter will not seem like science fiction. The system that is shown on the Falco has been flying

for over twenty-seven years without problems. Any change in the actuation (such as a model airplane servo, which are flimsy little things) runs the risk of flutter. While elevator tab flutter would probably occur at high speeds, it can also occur at normal cruise speeds, as it did in the case of the Conquest. You have almost no warning; there is a sudden violent shaking in the tail, usually ending in a second or two, at which time the elevator and stabilizer is torn from the airplane. The result of this is obviously fatal.

I have talked to Dave Thurston about this several times. Dave, as many of you know, is an extremely experienced aircraft designer with nearly 40 years of design of aircraft. He was in charge of design teams at Grumman Aircraft designing such aircraft as the F6F Hellcat, F9F Panther, F11F Tigerjet, the supersonic Rigel missile, and three Grumman light planes. Dave designed the Colonial Skimmer, which you all know as the Lake Amphibian, the Thurston Teal amphibian, the Trojan/Seafire amphibian, our Sequoia and Kodiak aircraft, as well as doing consulting work on a large number of commercial aircraft projects. Dave is a "D.E.R." (designated engineering representative) of the FAA which means that he has the authority to approve modifications on type certificated aircraft. Dave is also the engineer on who we depend for engineering on the modifications that we have done on the Falco. In addition to all of these qualifications, Dave is highly respected as an engineer who knows what he is talking about. To confirm that my fears were not unfounded, I just called Dave and told him about the modification. Dave's first words were "Jesus Christ!", and he went on with a description of the flutter problem that I have given above. Dave agrees that this is one of the most dangerous things that you can do with your airplane.

I realize that homebuilders tend to be rugged individuals and come in varying degrees of intelligence, so there will always be those builders who will listen to no one. The question then arises about what to do about the plans builder who is building a killer airplane. This came up once before, and I decided that on a policy which we have in effect. If a builder engages in a modification of a Falco which we consider potentially dangerous (such as the elevator tab modification) or which is potentially embarrassing to the Falco program (such as the modifications of the landing gear retraction system), then we will refuse to allow the name Falco to be used in connection with that aircraft, and we will refuse to sell any components for use on that airplane. I also make a policy of notifying the FAA inspectors that the modification is potentially very dangerous. Because of the problems with the Cessna Conquest, the FAA is very sensitive to elevator tab flutter problems, and it is likely that they will concur with our opinion and require a change in the system before signing off the aircraft for flight. Additionally, our paint schemes and logos may not be put on the modified aircraft.

I have made a point of not mentioning the names of the builders who have engaged in this sort of thing, since I am not trying to embarrass anyone. I am only interested in the safe operation of our aircraft. I have had the recent experience of meeting the family of such a builder. The children were about the same age as my two girls.

All of the family is proud of the airplane being built (and it is a very nicely built airplane), and their hero has little conception of the danger involved in his modification. I stood there looking at this family and thought about the likely events of the future; the accident, the funeral, the questions, the investigation, the letters, the pain, the financial burden on the family... and the lawyer. I will be asked if I knew of the modification and of its danger, and what did I do about it? Think about this. If you are thinking about such a modification and don't agree with me, at least show this letter to the members of your family who will have to live with the results of your decision. This is sobering talk. When you think of homebuilding you probably think of people having a great time with their airplanes, but you should also remember that a lot of lives are lost to stupidity, ignorance and optimism.

I remember that after the last builder letter on this subject I got a lot of letters from builders. I was very encouraged by the reaction of builders. Except for the builder who was engaged in the modification, the response was 100% in favor of my position. Typically, the builders understood the potential dangers involved in the modifications and did not want such an airplane called the same name as their aircraft. Their Falcos were going to be built according to the plans, and they did not want the crash of "John Doe's Falco" to reflect on the reputation of their airplane or on its potential re-sale value. I'd like your comments on this, and I'd like to publish a sampling in our "Mail Box", so please let me hear from you on this subject, what else we might do, or whatever comments you might have.

Sometimes these things have a happy ending. In this case, the builder in question has agreed to go back and install the system shown in the drawings. This has occurred just as we are doing the final revision of this letter. He is not particularly happy about having to do the extra work, for which I do not blame him, but I'm thankful that in this case the builder was at least reasonable enough to go along with us. Many thanks.

Occasionally we hear from a builder who reports that he is missing a few plans sheets. In the process of revising some construction manuals here, we discovered the same thing. Please check to see that you have the correct drawings, and let us know what you are missing. With the drawings enclosed with this builder letter, you should now have the following plans sheets:

A1-25, 29-31

AA1-3

B1-17

C1-8

D1-18

E1-9

EE1-23

F1-6

FF1-37

G1-25

GG1-145

I have just finished the drawings for the vacuum system installation and pitot-static system installation. The vacuum system was surprisingly difficult to design. It is one of the simplest systems in the airplane, and a bumbling idiot could not take more than an hour to install the entire system. The problems that I encountered were primarily caused by the physical limitations of the space we have to work with. I would like to take this opportunity to discuss the design of the vacuum system.

First, I have decided to show only a dry vacuum pump system. You could install a wet pump, but these pumps are very heavy, they require an oil separator, and the system continually bathes the bottom of your airplane with oil. I have such system on my Falco, and the bottom of the airplane is always coated with oil. There is much controversy over dry vacuum pumps. The systems installed in the Cessna P-210 has been extremely unreliable, but this system is used to power the de-ice boots. It is quite clear that the pumps are not large enough for such loads. A number of aircraft use a pressure system -- the Bonanza is one -- and this type of system is somewhat troublesome. The type of system that we have in the Falco has not been as troublesome as these other systems. It is extremely important that the system be properly installed and maintained. The vacuum pumps depend on a high flow of air through the instruments to cool the pump. This requires hoses of the proper size and special fittings. The use of standard AN-type or nylon Nylo-Seal fittings can create line losses equal to 10 extra feet of hose per fitting. In looking into the matter, I have been surprised at the number of production aircraft that have improperly installed systems. The system as we have designed it meets the Airborne requirements to the letter. The standard Airborne vacuum filter assembly did not fit behind the panel, and we designed a filter assembly that will fit but which uses the Airborne filter. Airborne strongly recommends the use of a differential vacuum gauge. This is rarely done on production aircraft, but we have such a system. The advantage of a differential gauge is that suction pressure indication will drop off when the air filter requires replacement. Without such an installation, the suction gauge would still indicate proper suction, even though the gyros have absolutely no air flow through them.

We have also specified clear tubing throughout. There are many reasons for using such tubing instead of the rubber hoses frequently used. The hoses must be perfectly clean on the inside as dirt or contamination will cause immediate failure of the pump. It is possible to cut the inside of the rubber hoses when pushing them on the fittings, and the loose particles of rubber will cause immediate failure of the pump. With age, the rubber hoses start to crumble on the inside, and a recent article in The Aviation Consumer told of a pilot who had to overhaul his gyros after the hoses did such a number. Even if you have a filter, if you operate in a salty environment the hoses and instruments will become lined with salt. With the clear tubing, this is easy to spot. An exhaust tube is important on the vacuum pump to protect the pump from being contaminated with solvents during engine wash-down. Before a vacuum pump fails, they usually start to throw a lot of carbon. If the exhaust tube is clear, this is easy to spot. I believe that most of the problems that people have been having with dry



vacuum pumps are the predictable result of poor installation and poor maintenance. A friend of mine, Art Patstone, had the Airborne vacuum pump in his Messerschmitt Monsun go out after about 1,000 hours, despite the fact that the system is improperly installed (too small lines and incorrect fittings). He replaced the pump, but the replacement pump lasted only a few minutes since he had dirt in the lines, which he had not seen. This just illustrates the importance of proper installation and maintenance. I think the dry vacuum pump is a genuine advance in design over the wet pump. The problems that people are having with the P-210 system will result in better pumps. I understand that EDO is developing a large-capacity pump for the P-210 which will be ultra-reliable. Such developments can only benefit us.

In the months ahead, I will be working on a number of remaining design problems. I will do a new drawing for the nose gear retraction installation to show the installation of the limit switches. I am about half-way finished on the exhaust system. I will be completing the electrical system drawings. Most of my time will be taken up with drawings for the engine installation. I plan to tackle the induction system. I want to use a Brackett air filter, and this will likely be a challenging problem since there are so many types of engines going into the Falco. I will also be working on the engine control cables, which again will be complicated due to the engine variations. I plan to work out the final details on the cowling. I want to make sure that the cowling will accomodate the 180 hp engine. A landing light must be worked out, and the air scoop must be coordinated with the induction air filter installation. A nose gear door seems to be a must. There are a lot of minor details to be worked out, such as cabin heat, carburetor heat, alternate induction air, oil cooler installation, etc. As you might imagine, these things take time to work out.

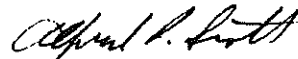
Those of you who plan to make your own instrument panels from our semi-finished blanks should be advised that we only have a few of the S/F 841-10 and S/F 831-2 in stock, and these might not last long. The latest drawing for the trim tab control system shows a new part, P/N 786A, and this part is being made now and will be shipped (along with the new longer screws) to those of you who have purchased this kit.

Beginning with this letter, we are beginning a "Question & Answer" section at the end of the builder letter. This section will include some questions that we get from builders which might give you some ideas of what to do... and what not to do!

It's time to start thinking about Oshkosh. We will have our booth in the usual place. There will be a forum on the Falco on Monday, August 1 at 10:30 AM. We will have our annual Falco builders dinner at the Midway Motor Lodge in Appleton at 8:30 on Tuesday, August 2. There is a very good possibility that Dave Aronson will have his Falco there. Dave, Syd Jensen, and the Chilean Air Force look like the next to fly, with a number of builders coming on strong behind them. Dave's Falco will be an airplane that I think you will all be interested to see. It will be the first Falco built entirely from our kits, it will have one of our paint schemes, it will have a complete IFR panel, it will have

the Nustrini canopy, and it is a very beautifully built airplane. At this time, Dave has the plane on the gear and has the airframe finished and painted. Remaining work includes the instrument panel and consoles, instrumentation, engine installation, cowling installation, hookup of engine controls, fuel system, exhaust system, and electrical system. If Dave does not make it to Oshkosh, it will be because I have not been able to do all of the work necessary at this end. I think we are going to make it, and I certainly plan to work toward that goal.

Sincerely,  
SEQUOIA AIRCRAFT CORPORATION

  
Alfred P. Scott  
President

#### ROLL CALL

Please send in your progress report on a separate piece of paper and not as part of a letter as these entries go into a separate file. Please give your name and builder number.

626. Jan Waldahl. Fuselage, tail and wing finished and ready for plywood skins. Have started skinning the fuselage. Presently working on the flaps and ailerons.

641. Mike Pepper & Peter Grist. Fuselage frame complete, rear section including fin, stabilizer, rudder and elevator complete and skinned and detached from forward section and jig. Installation of main spar imminent.

686. Ron Rios. Main spar 50% complete. All ribs complete. All other wing spars including flap and aileron complete. Elevator, rudder, stabilizer and fin complete. All aluminum fittings complete. Fuselage rings station 1, 2, 7, 9, 10 & 11 complete. Expect to start assembly around April.

#### MAILBOX

All my wood necessary to complete my Falco came from Aircraft Spruce & Specialty one week before I had to move my plane from the warehouse. I am not happy with the service. It was ordered February 1, 1980, and it arrived July 1982. During this time, no letter or any statement on the delay was ever sent to me. Only my persistent phone calls got answers. To add insult they shipped it to a wrong address in a different state, and I had to move it! One different note though is the wood is first class stuff. Order now if you want it by the end of this decade.

That instrument panel looks terrific. Don't change a thing. Eagle kit buyers, eat your heart out!

Jerry Preiser

Thanks for the demo flight. The airplane handles as your articles have described, and I was not at all disappointed. I hope to be able to true out at 200 mph with care on the weight and finish.  
Buzz Glade

## QUESTIONS & ANSWERS

Q: Do you recommend the use of an encoding altimeter or a remote encoder?

A: The encoding altimeter is lighter and initially cheaper. The installation is easier since all of the wiring is on the instrument panel. In our electrical system, the wires are provided for the remote encoder, so the wiring is not a major problem. The principal problem arises during annual inspections and certification of the system for IFR. Most shops can check the standard altimeters, while encoding altimeters must sometimes be shipped off for certification. Altimeters must be frequently replaced if out of calibration, and this is usually easier and cheaper if the altimeter is a basic non-encoding type. For these reasons, we think the remote encoder is the best choice. If you are going to use the new King KT-79 transponder (which displays the encoder altitude -- serving as a back-up altimeter) you should check to make sure that the remote encoder is compatible with this transponder.

Q: I am installing the diagonal frame No. 2 shown on sheet C8. Is there any harm in extending the frame inside the longeron and gluing this to the forward face of frame No. 3 for greater strength?

A: There is a problem. The instrument panel installation requires a single-bolt channel-nut, and this change would create a problem. This can be seen in drawing No. 157 (sheet A31) or in drawing No. 158 (sheet A27). This last drawing will be issued at a later date.

Q: The bronze rollers on the nose gear steering arm (P/N 620) do not contact P/N 663 rocker arm on the top of the nose gear. Is something wrong and can the steering of the nose gear be increased to more than 15°?

A: Nothing is wrong with the installation. The rocker arm should contact the vertical tubes of the steering arm about halfway up from the rollers. This is an ingenious piece of design whose operation is not obvious at first glance. The rollers are part of the centering mechanism. If the nose gear is turned to the right and you have the controls crossed up with some left rudder, the rollers will contact the rocker arm and align the nose gear with the steering arm while the gear is being extended. Increasing the steering angle would not allow this mechanism to work in all cases and would cause the nose wheel to jam in the nose gear bay.

Q: I'll ask you again to work with me and take a "can do" attitude in regard to changes. After sending him a copy of Sta 14 (coordinates and drawing) I've heard no more from Rattray (re: their wing tip tanks). Current thinking is that the Falco looks much like a P-51, and tip tanks would spoil that effect. The addition of a pair of fake longerons (to look like a radiator scoop) smoothed up and streamlined (with nothing in the center) will enhance that effect. Couple that with the squaring up of the surface ends, the profile would approach that of an "adolescent Mustang" (which I call it, anyway). To obtain the range I think I need, the addition of "dropable" belly tanks just outboard of the wheel pivots would also add to the effect.

Your letter and Tony Bingelis's Falco article in Sport Aviation both state that the wheel will not retract fully flush

with the under surface of the wing. What would happen if the landing gear bottom were rotated 180° so that the wheels are on the inside of the leg? There would be some problems but I'm sure they could be worked out.

The nose gear does not retract completely, either. Is there any way the mounting could be raised to bring that wheel clear up flush so doors may be added? This would accomplish a two-fold purpose. The attitude of the aircraft, on the ground, would be nose-down, requiring a positive action on the part of the pilot to pop the nose wheel off and then become airborne. This can also be accomplished by a reduction of air pressure in the oleo, but I don't think I want to go that route.

I still want a wheel instead of a stick. How about either a bicycle sprocket and chain encased in an oval tubing sticking up in place of the shown stick, with a "wheel" to operate the ailerons. An extension to the bottom, below the pivot, would operate the elevators. The other alternative is a pair of push-pull drill rods operated by a bellcrank attached to the wheel.

Back to the wheel retraction: how about a "half-Y" yoke to the wheel axle to move the wheel inboard a bit and put it higher into the belly when retracted?

I am having problems with the Stanley left-handed rule. (I'm right-handed) about which I've written to Stanley Tool Co.

A: We have no comment on these modifications.

Enclosures: F.8L Falco Price List, March 10, 1983  
Revision Supplement No. 83-1B  
Plans Index, March 10, 1983  
Drawings: FF13B, FF14B, FF15C, GG27A, GG28B, GG29C,  
GG40C, GG41A, GG42A, GG49B, GG50B, GG57A,  
GG58A, GG59A, GG60A, GG61A, GG79A, GG91A,  
GG92A, GG95A, GG96A, GG97A, GG100A, GG116A,  
GG128-145.