

Falco Builders Letter



Giovanni Nustrini over the mountains of New Zealand.

A Family Affair, the Nustrinis and the Falco

by Giovanni Nustrini

Flying with Dad in his Falco was for me, like hopping in and out of the family car, such were the frequency of flights when I was a child. I remember when I was very, very young, sitting in the seat beside my Dad, too small to see above the dashboard, (I had learned to keep it level by looking at the wing tip!) watching in total fascination as we lifted high into the sky when my Dad, soon after take-off was frantically turning the wheel between us... in my mind, that wheel was vital... it made us go up! I had the feeling of complete freedom and safety in the extremely noisy, avgas-smelling familiar cockpit because I knew when it was time to go down I would see Dad spring into action, again with that wheel between us, winding and winding, this time in the other direction, to bring us back gently down to Earth. I later learned that that was the undercarriage going up and down... (!) he took the electric motor out for lightness...

ERNA, as he was known (yes, "he": you should all know that Falcos are all "boys"), was the fairest of all the Falco's in the land. The whole family would pile into the Falco and accompany Dad and Mum to Race days. As a young family we were essential in the final preparation...we would be issued with rags and would crawl around all of the underside of the Falco while Dad and Mum made the final preparations for the race. Attending the Race days was just a part of life for us, (an exciting part!) just as it would be for the whole family to attend

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and support any event such as motor racing day. That's how I grew up. When I was a wee bit older... old enough to see out the windscreen, I would accompany Dad, as his time-keeper and navigator in the races. Only now, as a pilot, I understand so much of what he was doing and why. On one particular occasion, the "Giro di Sicilia" (a race around the island of Sicily), Dad calculated that he would get more speed if he went around a cape rather than over the land, so off we went, low on the water (by low, I mean a few feet) to make the most of the ground effect, full throttle (I don't think ERNA knew any different), and he told me: "Giovanni, you keep an eye on those instruments"—oil temp and cylinder temp—"If you see them going into the red, tell me."

"Tell me" is easier said than done, the noise in that plane was so loud! The intercom and headphones were too heavy so, I had to kick him on the side with my fist! Sure enough the temps did go up, he did not see them as he was busy keeping the plane just off the water, the seagulls moving away from us. So as instructed, I pointed at the instrument and kicked him: no answer. He kept flying totally oblivious to my call. So I kicked him again. Nothing. The temperatures still in the red. I kept kicking. Eventually he pulled the nose up a bit, gained a few feet for safety and with two fingers he "unpeeled" the red tape on the glass of the instrument, and moved it further along the scale. Problem fixed!

We did not win that race, but I remember that we achieved an incredible average speed so that the handicap was destroyed as usual. I think that race is the only one he never won!

In Italy, the speed racing was governed by a handicap system since the aircraft were all so different. The handicap was initially based on the weight, power, wing area, etc., but as time went by and my Dad went faster and faster they decided to alter his handicap rating basing the changes on the previous races results. What happened was that the faster he went the worse his handicap was, and therefore in the end it became almost impossible to win a race, even though he was doing some incredible speeds.



This Mustang belonged to Mr. Giorgio Billi, who owned the airline company for which Luciano Nustrini was operations manager as well as chief pilot. They flew Russian Yak-40's, and Luciano had the use of the Mustang pretty much whenever he wanted, so any excuse was good to go out and fly it. I have countless flights in that plane, it's a shame I was so young. All I remember was the incredible weight of the helmet in those tight turns and aerobatics. My father first learned to fly in the Italian Air Force, in Harvards, then went straight into Mustangs. He loved the Mustang, and kept saying that the Mustang and the Falco were the two most beautiful aircraft ever designed.—Giovanni Nustrini

Nice memories, and nice stories that will accompany me forever.

As time passed and our family moved to New Zealand, ERNA of course came too. The engine was dismounted and the rear third of the fuselage detached, to allow ERNA to fit in the container. We had the tail section standing up on the footpath under our apartment in the center of Florence while we loaded the car and the boat into the 40ft container. I remember that a dog passed by, looked at it, lifted a leg, and decided to do its business there! I guess once ERNA was a tree...



Giovanni in his favorite flying hat.

Once it arrived at Ardmore, we put the Falco together in the aeroclub hanger. Dad stood back with his hands on his hips and announced "I am going to go and give it a good shake!" "Can I come, too?" I asked. He said: "No". He went up and God only knows what he did to it to make sure that ERNA was still in good shape after the re-assembling.

Luciano Nustrini, of course, knew his plane intimately, and being the only person ever



to pilot his plane, he would know instantly if anything needed a slight adjustment.

If you look closely at the canopy in one of the photos you will see that the top portion of the canopy has been re-glued in place. That happened after the Florence Flood in 1967, I was three. ERNA got submerged like all the other planes at Florence Airport. The Airforce offered to fix them all up for free, but they had to be taken to Pisa Airport for that. Dad did not want to take ERNA apart so he decided that he should see if it was worth fixing before going any further. What did he do? He drilled some holes under the wings to let the water out (many years later when he had it recovered and the skins were pulled off we found a lot of "silt" from the Arno River inside the wings...), started him up, and went flying. He came back with a hole in the canopy and a large piece of perspex in the cockpit. What happened? Simple: he wanted to make sure ERNA was still flyable to its limit, so he put him in a dive, way passed VNE, and it popped. I have only learned this story a few years ago. He was a very special sort of pilot!

With the arrival of ERNA to New Zealand came the re-certification process which would eventually see the Falco renamed ZK-RNA. With New Zealand's



Grandfather Alfredo Nustrini in the Mustang.

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beaurocracy, which in the 80's was running well behind the rest of the world (very different today), the Falco was to undergo a frustrating time, due to the negative and painful response from the then Department of Civil Aviation who were not easily convinced that the aircraft could be certified because of the extensive modifications and therefore the huge difference between the certificated design of Frati and what my Dad came up with after years and years of tinkering.

Perhaps they were not aware that Stelio Frati was well ahead of his time, that his design was well in advance of anything being manufactured at the time, and that ERNA was the ultimate example!

The beaurocracy was too short-sighted to see that Frati had designed a perfect machine in 1954, and that this example was the single best maintained racing aircraft in the world. They even asked him to put a "no smoking during take off" sticker! Dad was the only one to fly this plane, he did not smoke, but he had to put the sticker on!

It was during this time that I started my own flying career as a pilot, but I did not settle in NZ at this time, and went back, now with my own family, to live in Italy.

Always in the very depths of my mind, I had a dream to one day, own my very own Falco, because I knew that Dad would never let me fly his Falco on my own (ERNA was truly a tricky machine... I remember that one day he asked a friend of his, Romano Loli, to fly ERNA from somewhere back to Florence—Romano was a F104 Starfighter instructor... He did land successfully, but after taxiing to the hangar where Dad was waiting, even before he hopped out of the plane he handed the keys to Dad and said "Luciano, do not ever ask me to fly your plane again.").

I remember that one day that dream came to the foremost of my mind when I went on my first solo in 1983 with the Auckland Aeroclub, because I knew the only plane to fly was a Falco.

As with any passion I worked hard toward my goal, taking over Dad's dream to show people a completely new and exciting way of aviation, with Tecnam. Every hour of experience I gained in the Tecnam's I knew would be valuable for when I would

Top: Luciano Nustrini on the Mustang. Center: The original I-ERNA with a 135 hp engine. Bottom: Pulling Giovanni out of I-ERNA.

be flying my own Falco. And so it was.

It did not take long for my ears to hear of a Falco lying idle in a lonely hangar in the remote South Island of New Zealand. Being such a small country it did not take long to track down the owner and arrange a meeting with him, not to ask him to sell his beloved Falco, but just to see the machine (well... that was my excuse anyway!). I had not seen a Falco since Mum and Dad very sadly died in ERNA on the 6th of February 1999 in an accident that still today unfortunately leaves a lot of questions unanswered.

It was an emotional moment to see the familiar passionate lines of Frati's hand. The owner offered for me to sit in it, and although he was very protective of it, I could instantly feel this Falco was in desperate need of some care, who better than I, I thought! Apart from George Richard's Falco in my hanger not yet ready to fly but very, very close, TBD was the only flying one in the country, and I wanted him... and even more I wanted to fly him!

As he pulled the doors shut, I knew I would be back soon to collect this lonely Falco from its isolation.

The birth of this Falco was in May 1980, just before we moved to NZ together with ERNA. Syd Jensen put many years of work into his machine, with his friend, Mr. Zeger van Klij. They worked 12 hours a day, six days a week until they ran out of parts and had to wait for Sequoia to produce the next steps of the kit set.

In the end it took Syd eight years to finish this wonderful machine. Unfortunately due to poor health Syd was unable to realise his dream of flying his Falco and therefore entrusted TBD to Graham Hodge in Christchurch, where it had a relatively relaxed eight years in his care.

Syd's love of speed had travelled through his hands as he built TBD. I believe TBD is one of the lightest Falcos ever built.

He was the first person to register a home built plane in NZ because of the price of flying in this country meant it was out of reach for most. He had time in the airforce and was also part of the NZ motor racing team.

Although Graham had flown the Falco, I knew deep down that he had to keep his promise to Syd, the creator, and who could fly it with more enthusiastic frequency than me? After all, I was born in a Falco



Top: Giuliani Nustrini polishing I-ERNA. Note wooden prop and early cowling mods. Center: Giovanni covering the Falco. Above: Francesca, Giovanni, Stefania, Giuliana with Lapo in her lap, Barbara and Luciano behind the camera.



Top: Little Nustrini's in the Falco. Center: Giovanni and I-ERNA.
Above: Start of a race.

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and have some sort of 'imprinting'—when I see one I start following it!

My dream began to turn into a reality... talks with Graham resulted in a cheerful change of hands that Syd no doubt would have approved of. The day came to pick TBD up, myself and George Richards arrived by Boeing and went straight to the hangar to meet Graham, obtain the necessary type ratings and eat his picnic lunch.

The owner very sadly parted with the Falco, and very soon after first hearing of it, George and I took TBD home to the hangar at Ardmore where ZK-SMR, George's nearly finished Falco, was waiting for some company.

That evening TBD landed at Ardmore, just at civil twilight, after many social stops up the country. I pulled him up and parked him in the very same hangar where ERNA lived, and so it was time to start work on my Falco.

When I took delivery of TBD, he needed a lot of TLC, both on the looks and on the actual airframe and engine, so what started as a simple 100-hr check turned out to be a top overhaul of the IO-360, removal of a whole lot of ancient radio equipment, replaced by more modern and lighter avionics and comms. He was all white, in fact, different shades of white! I could not resist the temptation of painting it the same colour that George had planned for his: yellow!

Then came the time to fly! Having spent a life flying ERNA with Dad, I expected a nasty, tricky, non-forgiving but fast machine. I was actually quite nervous!

Well, well, the surprise came. What a teddy bear. What a simple, sweet, and easy machine it was! I could not believe how it responded honestly to everything I wanted him to do—a dream aeroplane! Certainly nowhere near as fast as ERNA, but showing all the potential for a considerable increase in speed.

Take-off is very straight forward, just full power, and you can feel the incredible acceleration, and then up, gear up, flaps up, and nose up and more and more. It felt like I was going up vertically! I turned to crosswind and then downwind where I met with a number of Cessna 172's operating with students almost non-stop at my airfield. Speed increases and increases until in no time I am doing 160 kts, the 172's just going backwards on my left! I was clear of

the circuit pointing towards the coast into the blue sky with 25/25 and 165 kts. Not bad I thought! Still far from the almost 200 kts of ERNA. How did Dad do it? I am afraid we will never know.

I opted not to replace the trim tabs on the rudder and aileron as I really like the clean lines, so I use rubber bands going from the stick and from the rudder pedal to the center consol. Looks basic, but it works. After all, my father won the World Championship with that system I thought!

On to some turns, gentle at first but not for long as the Falco really wants to be pushed all the way, so steeper and steeper until I felt I was inside a blade cutting the air.

The stability and incredible control of the Falco are unique. You put him in a turn, and he stays there. Perfect. He knows how to fly.

I have now realized that *he* is teaching me the finer techniques of speed, of control, *he* knows it all. You just have to learn and 'listen' to him through the stick. He will tell you everything!

After a few minutes of 'playing' it was time to come back and to land: the landing, I was always made very aware of landing ERNA as he did not like low speed. I expected the same from TBD, but no—even more docile that I thought! Easy, responsive even at 70 knots, then 65, a bit of power on the flair, and then gently down, back on land. Truly awesome. I wish Dad was here to fly my Falco!

I now have about 50 hrs with him, and I am starting some gentle aerobatics. Again, beautiful, responsive and perfect.

Frati, you have designed the ultimate flying machine!

A few weeks ago I took my son, Alessandro (eight years old), up for his first flight in a Falco. Obviously he loved it, and after we landed and I saw the sparkle in his eyes, I suddenly realised that this was a very special day: the fourth generation Nustrini had flown in a Falco—Alfredo my grandfather, Luciano, Giovanni and now Alessandro!

After much deliberation, and hours upon hours of thought, followed by work from myself and a dedicated team, and with the wonderful support, help and inspiration of George Richards, TBD now enjoys a very fulfilling life with me, and he looks so proud to be new again and where he belongs, in a loving Falco family.



From Syd Jensen's machine to the first flight. Being a Nustrini, he had to sit on it.

Switch Hitters

This Editor's Letter appeared in the July/August 2002 issue of more magazine. Susan Crandell is married to Steve Wilkinson.



I make more money than my husband does—as he would be the first to tell you. His ego-free ease with the subject is just one of many things I love about him. And while there's no doubt that our 24-year marriage has motored past the typical number of rough patches, who makes what has never been a big deal. From my side, at least, this is due in large part to a particular reward of our setup, one that handily trumps any day-to-day complaints.

The professions we've chosen—he as a stay-at-home freelance writer, me as a report-to-the-office-every-morning editor—have meant that in the hours I spent rolling to work on a commuter train, Steve built an entire airplane in our barn.

I know that if I had been the one at home, nothing of that magnitude would have happened; I'd probably have whiled away all that free time reading novels and riding my bicycle. Along the way, he also served as on-duty parent for our daughter, Brook, giving her a whole host of experiences I wouldn't have had the inclination, never mind the ability—to share.

He taught her how to construct a wind tunnel for the science fair one year. He ignited her interest in racing by rebuilding a sports car she now takes to the track. But to me, the big thing was watching him tackle the airplane, a project of almost incomprehensible complexity. He built the tail section first and, as I recall, he built it three times.

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Top: Steve Wilkinson, Sara Scott, Brook Wilkinson, George Stanley and Kakee Scott. All of the young ones have now graduated from college, and Brook is now an editor at Popular Science. Above: Susan, Brook and Steve in New Zealand.

He mastered enough electrical engineering to connect a spaghetti-tangle of wires behind the panel so that every last light, switch and radio worked perfectly (I don't even want to think about how many times he did that). He overhauled the engine, spreading shiny metal parts all over our cellar floor, each one carefully labeled.

And over the six years that the Falco took shape, he taught our daughter a philosophy you can only teach by action, never with words: that perseverance is every bit as important as intelligence, and that you should never, ever think small. When things weren't going right, he also boosted her vocabulary in some creative new ways, but that's another story.

Steve and I used to be rare birds in our trading-places roles. But these days, women earn more in nearly one out of three two-salary marriages.

At *more*, we were curious about how women in their forties and fifties are handling it. These women are at the height of their earning power, but they mostly hail from traditional Dad-as-breadwinner families. Writer Priscilla Grant found couples willing to talk, and talk frankly, in "The Breadwinners". I think you'll find what they have to say about power and money and love surprising and enlightening—no matter who in your family buys the baguettes.

Susan Crandell
Editor-in-Chief

The Glider

Part 21 of a Series

by Dr. Ing. Stelio Frati
translated by Maurizio Branzanti

50. Fuselage Design

Having approximately designed both the top and side views of the fuselage at the beginning of the project, we should now sort out the shape of the various sections required for construction. Having fixed the fundamental shape, considering all the space needed by accessories, it is now the time to proceed with the streamlining of the fuselage, in other words to design a fuselage that is aerodynamic and still compatible with the construction requirements.

We should first explain the process of streamlining. If we consider a body of revolution—a body obtained by rotating a curved line around an axis—its sections will be circles. In a case like this, it will be sufficient for the single generating line to be streamlined in order for the entire body to be streamlined.

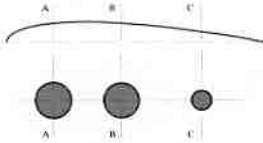


Figure 8-12

Similarly, a body whose sections are of any shape but similar to each other, and aligned on a common straight axis passing through a fixed point in each section, the body will be streamlined if any of the generating lines are streamlined.

Therefore a fuselage of an elliptic shape, where the ratio of the axis of the ellipses of the various sections is constant, and these ellipses are aligned on an axis drawn through a characteristic point to them (for example one of the foci, or its center) will be streamlined as long as any of the parameters, such as one axis, is streamlined. The same stands true for a fuselage of rectangular shape, where there is a constant ratio between the two sides and where the sections are aligned at the intersection of the diagonals.

Generally though, the various sections are not similar and the ratio of the axis of the ellipses or the sides of the rectangular are not constant. Also the line to which the sections are referred to is not linear, but curved downwards, like in the front part of the fuselage.

In such cases, is no longer sufficient that only one of the parameters, like a generating

line, to be streamlined. We have to verify the streamlining of different parameters and of the sum and the ratio on all of them.

In practice, this type of design work is accomplished in this manner: First the top and side views of the fuselage are drawn, taking into account all the necessary space requirements. Then the fundamental shape of the cross-section and the longitudinal variation is fixed. Then a simple solid body of the desired shape is defined, where its sections are geometrically determined. To this base body, other simple shaped bodies, for cockpit, wing connections, etc., are superimposed.



Figure 8-13

Thus having outlined the fuselage, that is, having defined the various parameters, width L , and the various heights, relative to a common base line or ground plane, we now proceed with their streamlining.

We verify the process by means of a design trick, where the curves are exaggerated. Thus, we design the fuselage with a scale of 1:10 longitudinally and 1:4 or 1:5 transversally.

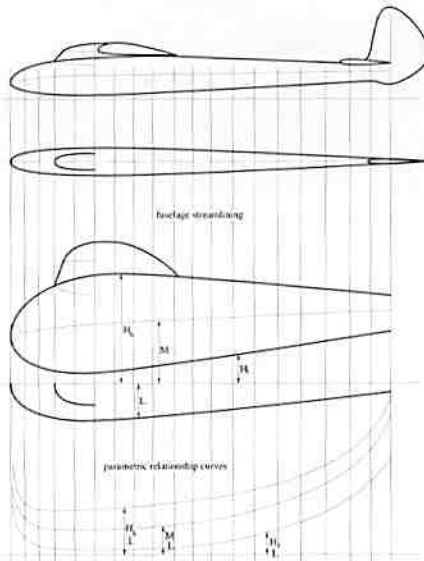


Figure 8-14

In any case, the ratio between the two scales will be adopted on a case-by-case scenario, according to the particulars of the design. Generally, these curves will exaggerate any irregularity or errors in the data points, and corrections will then be made.

We will return to the design of the sections, once more, with these corrected values, to check that we are still meeting the necessary requirements of space and aerodynamics. The same streamlined design of the various parameters will also serve to extract the changing dimensions for the outline of the cross-sections of the fuselage itself.

Streamlining of fuselages when the sections are not geometrically defined. When the sections of a fuselage are not geometrically defined, a streamline study is no longer possible since the required parameters are missing.

We then turn to the *water line* concept, so called because of its extensive use in boat design and construction.

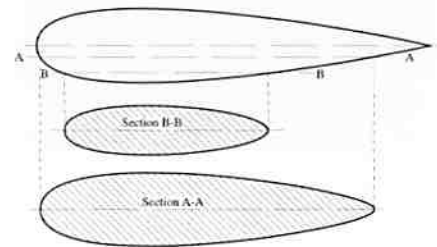


Figure 8-15

This consists in slicing off parallel sections of the body under study, and verifying that the intersection shape is streamlined.

It's not necessary for the sections to be aerodynamic, as in the case of Section A-A, because the laminar flow around the body is not parallel to the axis.

Design of the Sections. We have seen that the easiest method of streamlining the fuselage is achieved when the shape of its sections are geometrically identifiable. We are not going to describe all the various sections employed in fuselage design, since the designer will adopt the best suited design for the requirements at hand and based on the best aerodynamics, construction methods and space requirements.

We will like to point out though, a type of section, that is simple and practical, both in its design form and in the streamlining of its parameters. This type is brought about by means of parabolic curves, constructed with the tangential method, seen earlier in the design of the wing tips. With this kind of construction, we can achieve most types of fuselage shape sections, from almost circular rounded shapes to ones that are sharp-cornered on the lower section or even on both sections, as it occurs in the aft portion of the fuselage.



Gordon Cook and friends give his Falco a little time in the Canadian sunshine.

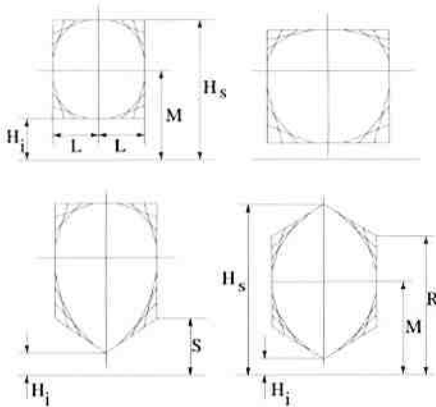


Figure 8-16

To streamline a fuselage with such sections, it is necessary to streamline the various parameters that define the section, such as the width L and the various heights H in relation to the plane of construction, and the ratios of these with the width itself. We can easily see that it is not possible to give a fixed rule for this type of design, since one would have to study in specifics the most convenient and necessary streamlining of the parameters for each fuselage type.

In the case, as an example, where the sections are the arcs of a circle, one would have to streamline the circle's radii, their centers and the ratio among them. It will then be the design itself that will suggest, case by case, which will be the parameters to be examined.

What we have briefly described is not to be used as a rule, but rather as a basis for the study of this very important work of fuselage design.

51. Empennage Design

What we have seen in the wing design also applies in the empennage design. Even in the tracing of its airfoils, the procedure used is similar to that one of a wing with a constant airfoil. The empennage's airfoil, in

fact, is always symmetric and bi-convex, and also it never has a twist.

In reality, it is often convenient to taper the airfoil in thickness, but the variation is on the same airfoil. Generally the thickness goes from 10% - 12% where it attaches to the fuselage to 6% - 8% at the tips. The variation has to be linear for both the horizontal and vertical section.

52. Design of Movements of the Mechanical Controls

We have seen in the last chapter how to lay out the various controls. The actual movements of these controls is of fundamental importance and should now be considered. Let's have a few examples that will allow us to make some observations.

Let's suppose we have two levers, l_1 and l_2 , hinged on their axis at their half-way point, and placed at a distance L . The levers are straight, of equal length and connected to each other at their extremes by cables of equal length, in such a way that the angle between the cables and the lever's axis is 90° . Under these conditions, the levers will then be parallel to each other.

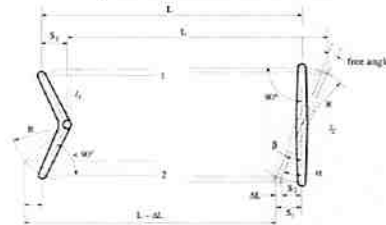


Figure 8-17

Let's rotate lever l_1 in the direction show by an angle a . The amount of movements for both the cables is the same, since the lever's arm are the same. Therefore the other lever, l_2 will rotated by the same angle a , and the tension of both the cables will remain the constant since the distance L did not change.



Figure 8-18

Let's now consider lever l_1 bent backwards as in Figure 8-18, with the angle between the cable and the lever's arm is less than 90° , and the second lever still being straight, with its arm being of equal length to the first lever. Rotating the first lever clockwise by a certain angle, we notice that the lever's movements at its extremes, in the direction of the cables, is not the same but is greater for the top cable, S_1 than it is for the bottom cable S_2 .

Since lever l_2 , is controlled by the lower cable which moves by S_2 , its rotation angle will not be equal to the one for lever l_1 . Also, and more importantly, the top cable will slack, since the movement S_1 of lever l_1 is greater than the top movement of lever l_2 . Consequently, the top cable will slack by a quantity equal to the difference between the movements of lever l_1 , S_1 and S_2 :

$$\Delta L = S_1 - S_2$$

Due to this slack in the top cable, lever l_2 has freedom to further rotate even though lever l_1 remains stationary. It will rotate until the top cable is taut—resulting in the bottom cable becoming slack.

In conclusion, we can say that at every position away from neutral of lever l_1 , there is no single corresponding position for lever l_2 , but lever l_2 may rotate between angles a and b that correspond to movements S_1 and S_2 . Similarly, if lever l_1 is kept stationary, lever l_2 can rotate by the same angles.

If we would use this system in the control system of an aileron, for instance, the aileron, when off its neutral position where both the cables are equally taut, will be free to move back and forth by a certain angle even though the control lever is kept secured. Under these conditions, the aileron will start to vibrate with consequences that are easy to appreciate.

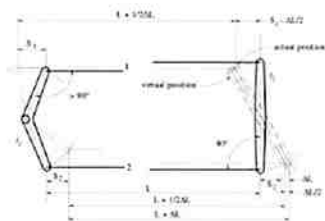


Figure 8-19

A third consideration is having a lever l_1 bent forward, with an angle between the lever's arm and the cables greater than 90° as shown in Figure 8-19.

In this case, a rotation of lever l_1 off its neutral position will result in a movement S_1 greater than S_2 , and since the top cable is controlling lever l_2 , l_2 will move by the same amount S_1 in both its top and bottom arm. This will have the tendency to also move the bottom cable by the same amount, S_1 , but the bottom portion of lever l_2 only allows that cable to move by S_2 .

This will follow with an over-tensioning of both cables, resulting in a general hardening of the entire system.

From this examples we can draw an important conclusion. *In a closed-circuit cable transmission system, in order not to experience slacks or over-tensioning in the system when off its neutral position, it is necessary that the angle between the cable and the lever's arm, to which the cables are attached, be of 90° , when in the neutral position.*

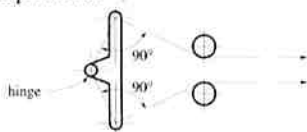


Figure 8-20

It is important to notice that at times, due to the construction, the hinged portion of the lever is not on the lever's axis itself, but placed outside. Therefore, in a more generic way, we can say that the 90° angle has to be between the cable and the radius drawn from the center of the lever's rotation to the point in the lever to which the cable is attached.

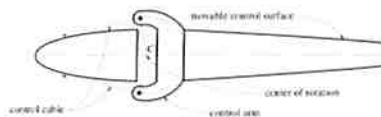


Figure 8-21

For this reason, the levers that control the various moveable surfaces assume strange forms at times.

Rigid Controls. So far we have talked about controls where the transmission of movement is accomplished by means of cables. If instead, the transmission of movement is obtained by means of rods, since these can work in tension as well as compression, the system is not required to be closed, with two arm levers and two cables, but a single arm lever is sufficient to transmit the movement in both directions.

N747SF flight to Australia: El Arish (Egypt), Bahrain, Muscat and Calcutta.





With rigid controls we also eliminate the inconvenience of having slack or hardening of the systems in the conditions we have seen when the angles between levers and cables are not at 90° . The inconvenience of the non-equal angular rotation, between the moving lever and the moved lever does remain, if the angle is not 90° . This inconvenience though, does not lead to serious consequences as we have seen earlier.



Figure 8-22

Often, there is the requirement of not having equal angular rotation of the moving lever in respect to the moved lever. Such is the case in the differential controls of the ailerons. As we already know, in the case in the lateral handling of an aircraft, it is necessary to have the up-going aileron move at a greater angle than the down-going aileron. This is accomplished by having angles, between levers and connecting rods, different from 90° . A simple, and very commonly-used scheme of this type of control is shown in Figure 8-23.

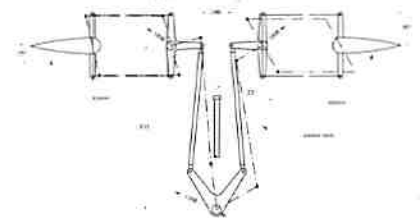


Figure 8-23

To the torsion rod there are attached two levers forming an angle of 30° and with a turning radius of 150mm. The angle of movement of the control stick, also attached to the torsion rod, is 25° on both sides. The angular movement of the ailerons results in a down-position of 15° and in an up-position of 30° . The differential ratio is 1:2, a normal value for gliders.

We will not elaborate too much on these topics, even though they are of fundamental importance. What is important is that an idea was given that may serve useful in the orientation of the study of these mechanisms. Also we cannot give many examples, since each aircraft requires its own particular study. These mechanisms are tied to the particular architecture, construction demands and the final use of the aircraft. This is an area, in a way, where the designer can indulge in his own whims, and because of this, we have at times seen solutions that are very ingenious, but also often which are more complicated than necessary.

Indonesian Islands, Darwin, Alice Springs, and over Melbourne.

It Really Happened— Finally!

The third anniversary of the 12th Annual West Coast Falco Fly-In was held October 11-13th at the Brenham Municipal Airport in Brenham, Texas, about 50 n.m. northwest of Houston. This was our (Russell and Rives) third attempt to host the Fly-In. The events of 9/11 forced the cancellation of the 2001 event and Hurricane Isidore caused the cancellation of the Fly-In this year on September 26-29.

Karen, Bill and I decided that we would not be denied our place in the sun (ha!) so scheduled the fly-in one more time for October 11-13. On October 8th, Brenham experienced a seven-inch rainfall (seldom happens there) which completely isolated the airport for 24 hours. However, by Friday the weather had cleared and the fly-in went on as scheduled. (If any of you are short of rain you know now who to contact.)

Four Falcos were in attendance; Nason, Quinn, Russell and Rives. The Nasons had planned to arrive about mid-day Thursday but were delayed by fog in Midland, Texas (Fog in Midland? That's like snow in Coober Pedy, Australia.) and didn't make it until about 7 p.m. The Quinns were delayed also by IFR weather on Friday in Dallas.

Friday, Richard Dickerson, Tom and Cynthia Langston, John McClay and Larry and Jane Weldon arrived and received their chance to inspect and fly the Falcos. All were overwhelmed by the experience, of course, and numerous comments were heard about returning home and accelerating the building of their projects.

On Friday evening, we gathered at the Rives' ranch (113 acres of fire-ant pasture) just west of Brenham for dinner hosted by Russell and Rives.



Young Eagle in a Falco: Katie Riehe, seven years old, and her first airplane ride is with Cecil Rives, ten times her age, but only twice as wise!



Top: Darcy Lefsrud and Bill Russell. Above: Wayne Rampley, Darcy Lefsrud and Anna Jarowiz, Bill and Louisa Russell, Cecil Rives, Jane and Jim Quinn, Karen Rives and Dave Nason.

Saturday, Brenham Airport celebrated the grand opening of its new terminal building and restaurant. Some 200 airplanes flew in including a contingent of the Confederate Air Force; a B-17, British Spitfire, P-63 Kingcobra, Douglas Skyraider and five AT-6 Texans. Our Falcos were on display and received considerable attention. "I can't believe it's wood" was heard time and time again.

During the day, Darcy Lefsrud and Anna Janowicz, Wayne Rampley and Kevin Southwick arrived and were given rides and indoctrination. They'll never be the same again! That evening we retired again to the ranch for sustenance and fellowship. (That's B.S.ing and hangar lies for those of you in Coober Pedy.)

Sunday morning the group was treated to a pancake breakfast by Rives, the master chef. High praise was given to him by all.

Farewells at the airport and it was over.

Again, the time seemed too short for all the flying and socializing.

I should add that Fred Doppelt, Dean Malmstrom, and Dan Dorr were in the Houston area just after we cancelled the fly-in on September 25th. Bill and I met them at West Houston Airport where they inspected our Falcos and were given rides. Fred expects to do the first flight in his Falco shortly and Dan should be flying his sometime next year. Dan has graciously offered to host the fly-in next year in California—time and place to be announced.

Lastly, I would be remiss (and in a hell of a lot of trouble, too!) if I didn't recognize the effort and devotion put forth by my wife, Karen. In spite of all the delays, disappointments, and cancellations she never wavered in her determination to bring the fly-in to a successful conclusion. It would not have been possible without her.

—Cecil Rives

London Falco Party

by Alfred Scott

It was a small group, but we all had a great time in September at the Falco get-together at Alan and Jenny Powell's. For many of those in attendance, it was their first time to meet each other.

Dick Marks is the most advanced builder, with 17 sailboats under his belt, he's been working on the Falco and is about a year from finishing. Walter Monk is a new builder and has been helping out checking our new Falco plans. Andrej and Irma Cakmak came all the way from Geneva, Switzerland, for the party. Now that's enthusiasm.

Mike and Sue Ahern were there, along with potential builder John Wignall. Angus and CB Buchanan came. Young and unassuming, Angus had always struck me as way above average, and I couldn't tell you why, but evidently others sensed the same thing. Angus is now CEO of a publically held shipping company, and thus doesn't have as much time for Falco building as he would like.

We were honored to have James Gilbert there. There was a time when James was the only aviation writer out there extolling the virtues of Stelio Frati airplanes. I first heard of the Falco in an old *Air Progress* article by James, and he also had a chapter on Frati in his book, "The Great Planes". When we first got started with the Falco, I needed some photography and I asked James if he would do a flight report on the Falco.

James was busy with *Pilot* magazine, and he didn't want to do it, but rather than saying so, he quoted me a 'go-away' price, something that seemed so high that I wouldn't even consider it. But it seemed reasonable enough to me, so I gave him an immediate go-ahead. How many Falcos are now painted red because James said he thought they should be painted Ferrari Red, and laid that quote on us about "One of them red Eytalian things" from *The Thomas Crown Affair*?

Since then the Falco has regularly appeared on the pages of *Pilot*, through Steve Wilkinson's articles and with collaboration between Mike Jerram who did 'Pilot Notes' where we both had a lot of fun with outrageous stuff that appeared there and in our 'Sawdust' column. In writing about Frati, Steve Wilkinson once wrote "There aren't many Stelio Frati's left, in this age of anonymous airplane designers."



Top: Sue Ahern, Irma and Andrej Cakmak and Mike Ahern. Above: James Gilbert

The same can be said of James Gilbert, in this age of shallow publishers and blow-dry editors. Says Steve, "I just heard from Mike Jerram, who told me that years ago, James Gilbert had said to him, and art director David Tarbutt, that if he ever sold the magazine, he'd do something for them in lieu of a pension, since they were freelancers and he couldn't legally set up a pension plan. Nothing more was said, no contract or anything. The day after James sold the magazine and before he'd even banked the check—sorry, cheque—from Archant, he mailed to Mike and David checks for 100,000 pounds. As Peter Garrison said when I told him this, 'It's easy to make promises, harder to write checks.'"

We all took a tour of Alan Powell's plans-built Falco project out back, eleven years in the making. Alan now works for the local government, but before that he worked in the anti-terrorism unit in London. Alan won't go into details, but one ear is substantially lower than the other, and his present face is courtesy reconstruction surgery by his old employers. It's a rough business that he used to be in, and he had a bad experience back then.

Jenny Powell was so excited to host the event, that she spent the three weeks leading up to the party ignoring a persistent pain in her abdomen, and she was in intensive care with a burst appendix when we arrived for her party. Now, would Cecil Rives or Bill Russell do that for Falco builders?

She was a very sick lady, and I'm happy to report that Jenny is out of the hospital and is on the mend. A month after the party, Alan reported "She is progressing slowly, and I see little improvements daily, as they say 'slowly, slowly, catchee monkey'! She is still very weak, but being a fighter is determined to get well as quickly as possible. We had a short car trip yesterday, for a change of scenery and to see if she could manage a ride in the car. It worked out okay, but she was very tired after stopping in a little Italian restaurant for a coffee."

"As for your idea in respect to my 'previous activities', I don't have a problem with leaving it to others' imagination, but no, I don't want to go into details. Feel free to exercise your imagination. You couldn't even get near the truth!"

Construction Notes

Dan Dorr reports: "The other day I talked with the folks at Sky-Tec. They confirmed what I already knew—that they don't make a starter that will fit our IO-360-B1E because of solenoid interference problems. And the IO-360-B1E we order from Lycoming comes with a Sky-Tec starter (I assume that the IO-320 has the same problem, but I don't know for sure).

"I learned that a Magnafite starter with an inline solenoid will fit, and I was about to order one. But, in my conversation with Sky-Tec, they told me that in about 90 days they will have a new starter available with an inline solenoid that should fit.

"They told me they would take a straight exchange for the starter I already have, which will save me a few hundred bucks. It will take them a little longer to get the new starter certified and on the market, but since I'm a homebuilder, they said I should be able to get one directly from Sky-Tec in about 90 days."

From Hardy Vad: "I hope that you can find time to answer a question, even though it concerns a Laverda Falco. The forward aileron control cables on my Falco is routed on top of diagonal members of the forward ribs from Sta. 2 outside the rib supporting the landing gear, until Sta. 2 before it attaches to the bellcrank. (The straight line from the hole in the solid rib at the gear, to the bellcrank runs below all the rib diagonals.) Is this a normal 'derouting' to avoid excessive tension in aileron cables, when the wing flexes?"

The Series I, II and IV Falcos all use the same aileron control cable design that we use with our kits. The cables connect the control stick to the aileron bellcrank as a direct connection, and there are two pulleys located on the wing rib at Sta. 2 to accommodate for the change in the direction of the cables required by the dihedral of the wing. The cables should go in a straight line from the control stick to the cable, and then in a straight line from the cable to the aileron bellcrank.

If I understand you correctly, the cables do not do this, instead they go 'up and over' a part of one of the wing ribs. This is a mistake and the cables should be re-routed for a straight-line connection.

The Series III Falcos had a different design, with a pushrod from the control stick to a bellcrank at wing rib No. 2. I have no idea why.—*Scoti*



Top and above: Larry Weldon's Falco takes shape.

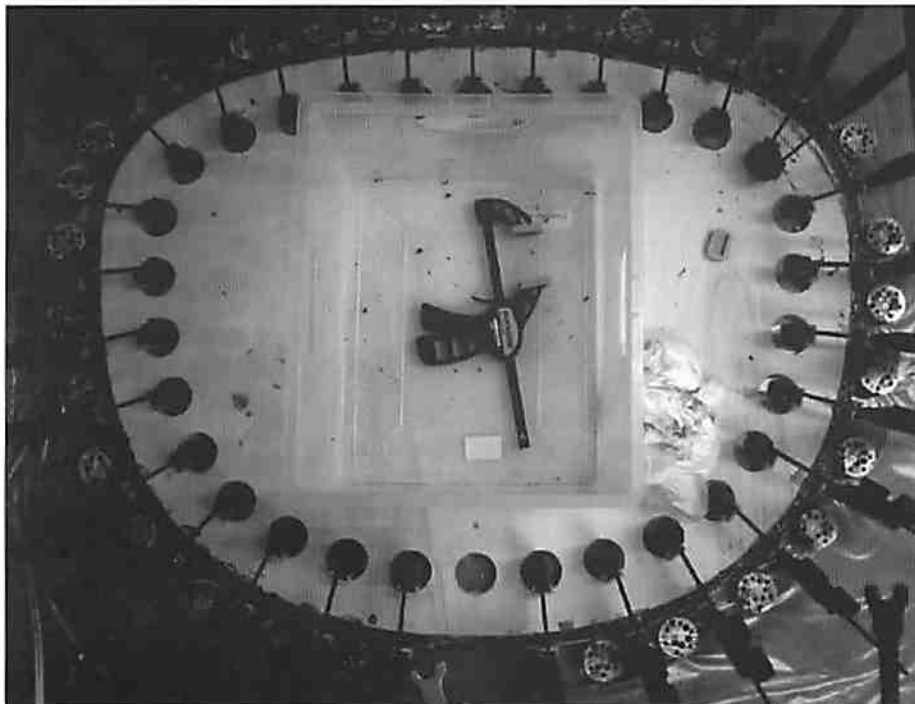
From Dan Dorr: "The plans and electrical system manual show three connections to the oil pressure instrument (connected to terminals labeled IGN, SPLY, and WPR respectively). The instrument I have has two terminals labeled SND and IGN. How should they be connected?"

We had a change in the oil pressure sender, and I've never gotten around to getting the plans/revisions updated. But it's simple. On the instrument, connect IGN to the main bus to bring power to the instrument (you can join this up with the other IGN terminals on the instrument cluster. And the SND terminal it connected to the terminal

on the oil pressure sender. The oil pressure sender is grounded to the engine by the act of installing it in the engine.—*Scoti*

Also from Dan, "The plans show the transistors on the back of the instrument panel with three terminals. My kit has transistor bases with two terminals (two more if you count the ones connected to the mounting screws), and when I plug in a transistor, two more terminals protrude from the back. So I have four (or six) connections. How do I attach the three wires?"

All T03 type transistors are the same and have three terminals. One is the case and



Top: George Richards has the cowling on. Above: Niels Kinning laminates.

the other two are the wires that come out of the transistor body. When you mount these to the transistor base, they are automatically connected to the transistor base, and you hook the wires to the transistor base. This is shown in one of the detail drawings of the electrical kit. Note that there was a revision on the labeling of the terminals of the transistor base. —Scoti

Cecil's Fuel Line. Recently I removed the fuel injector nozzles from my engine (IO-360-B1E) for cleaning as part of my annual inspection. After installing them back in the engine I performed a leak-test by turning on the electric fuel pump. The injectors

showed no sign of leakage but to my surprise I noticed a small spray of fuel being vented from the fuel pressure line that connects the fuel distributor or "spider" to the bulkhead fitting at the rear left side of the engine baffle. The fuel was being deposited directly on the #4 cylinder head! The leak was coming from the fitting at the end of the 1/8" o.d. aluminum line where it connects to the bulkhead fitting.

Thinking that the fitting had loosened for some reason, I applied a wrench to the fitting to tighten it. As I did the line popped completely out of the fitting and lots of fuel sprayed out! I turned the fuel pump off and

removed the fitting. It seems that the line had parted inside the fitting and was probably caused by vibration even though the line was supported midway by clamps just like the fuel lines to the fuel injector nozzles are supported.

My solution to the problem was to replace the aluminum line with a flex line. The flex line is also encased in a fire sleeve. The line measures 12 3/8" from the end of one fitting to the end of the other fitting. This arrangement seems to me to be a much safer and reliable connection. I mentioned the incident to Bill Russell who decided to inspect the line on his Falco. He also found a crack although the line has not completely parted. He has replaced his with a flex line as well.

I have about 430 hours on my Falco and Bill has a little over 100. It would appear that an inspection of this line would be a prudent thing to do. Let Sequoia know if any more cracks are found.—Cecil Rives

Magneto Harness Woes. I have just replaced the Slick magnetos on 63KC as the old ones were close to their projected life. I purchased (from Aircraft Spruce) a Slick kit (K-4567) which is the one designated for the IO-360-B1E engine. The kit includes the magnetos (#4370 and #4373), new wiring harnesses and eight Autolite spark plugs (UREM38). For those of you contemplating a similar purchase be forewarned! The wiring harnesses are way too long! For instance, the wire to the top plug on the #1 cylinder is two feet longer than the one on the old harness that I am replacing. All the other wires are proportionately longer as well. These new harnesses are labeled M-2983 (l.h.) and M-2984 (r.h.) and come in a box labeled M-4006.

If you don't want to have coils of ignition wire hanging all over your engine compartment you need to obtain an M-1795 (l.h.) and an M-2992 (r.h.). They come in a box designated M-4001. These harnesses are what I have had on 63KC since I completed it, and they are a perfect fit.

When I discovered the long harnesses in the Slick kit, I tried to get Aircraft Spruce to exchange them. After a week of pleading with them I was finally told to contact Unison (Slick) for the exchange. Unison cheerfully agreed to the exchange and within a few days I had the correct harnesses in my hands.

I suppose one might be better off buying the mags, harnesses and plugs as separate

items rather than purchase the kit even though it's probably more expensive. Regardless, don't give up; there are shorter harnesses available.—*Cecil Rives*

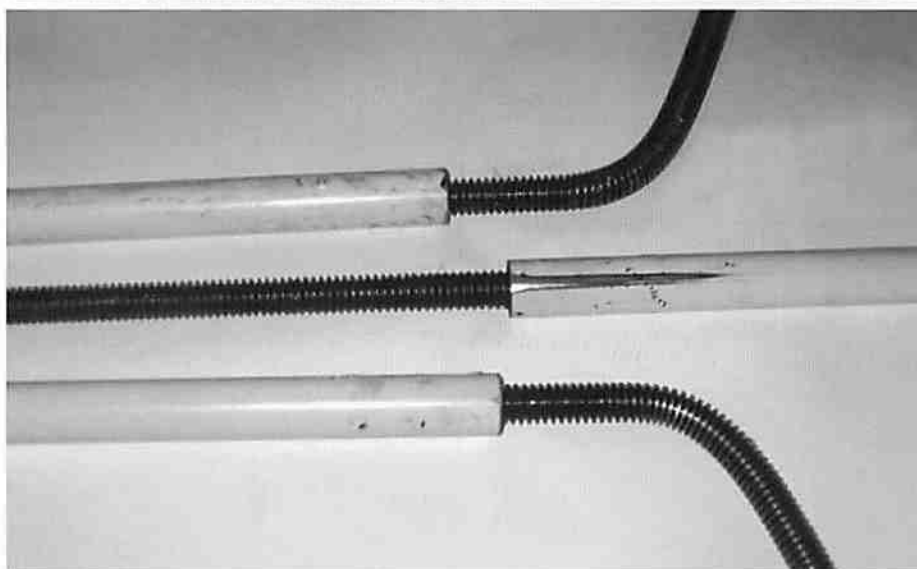
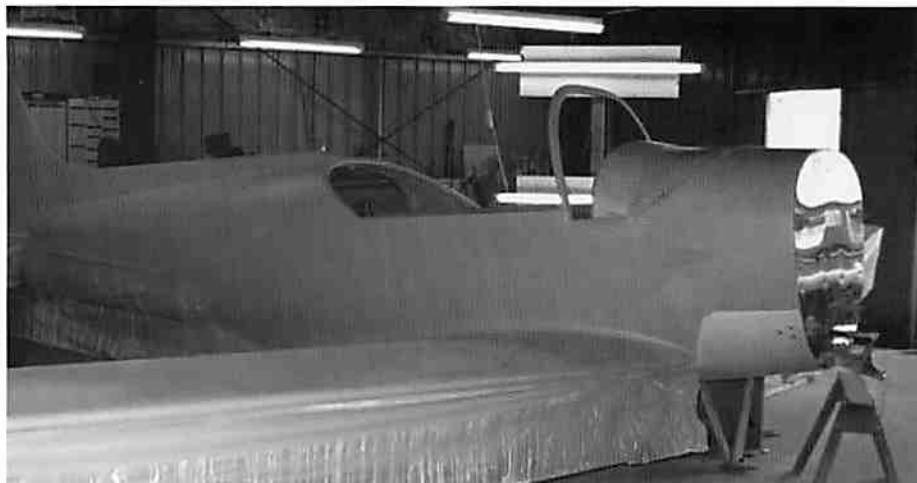
Screwjack Wear. In September, John Harns was forced to make a wheels-up landing in his Falco. It did very little damage to the airplane, but it curled the tips of the propeller and caused some abrasion to the nose gear trunnion and right wing tip. At the time of the accident, he was shooting a practice ILS, dropped the gear but did not get a green light, and the landing gear circuit breaker popped.

John tried to turn the emergency crank, but it would not budge. He made three flybys at the airport, and the tower said the landing gear was down, but a pilot flew in formation with John and reported that the nose gear was in a trail position and not fully extended. The main gear looked like it was fully extended.

John put it down on the airport at midfield. He shut the engine off before touchdown but could not stop the propeller from windmilling. The right gear collapsed, then the nose gear and then the left main. The airplane slid for about 300 feet and rode on the hubcaps of the main wheels. The cowling was scraped, and the nose gear door was torn off. They picked the Falco up with a military bomb jack and managed to poke a couple of holes in the wing and horizontal tail in the process.

The main gear screwjacks were badly bent. The nose gear screwjack appears to have frozen, and after the accident the screwjack could be pushed through the screwjack sleeve with hand pressure. John took the gearbox out, and it was all operating normally. At the time of the accident, the Falco had 1300 hours. John also mentioned that the nose gear drag struts have a lot of play, and he plans to add sleeves to the bolt holes, but he doesn't think that this had any role in the accident.

John sent us the screwjacks and screwjack sleeves. It's apparent on inspection that the bronze inserts in the screwjack sleeves are badly worn. The main gear screwjacks have about .020" of end-play, and they are very loose and free to wobble side-to-side. John said that he never had any chatter in his system. It appears that the nose gear screwjack sleeve experienced much greater wear, so that on gear extension, the threads climbed and seized, then on landing the screwjack completely pushed through and sheared off the remaining threads.



Top: Neil Aitkenhead paints his Falco. **Above:** John Harns's screwjacks.

When we screwed one of John's screwjacks into a new screwjack sleeve, the end-play completely disappeared, thus it appears that the wear is confined to the bronze inserts of the screwjack sleeves.

The screwjacks use a 1/2-10 acme thread, class 2G, which will result in end-play that is barely noticeable when new. The male threads have a flat crown of about .040-.050", thus an end-play of .020" would indicate that the threads are about half-way worn through. A visual inspection of the female threads is difficult and misleading, because even when new, it is difficult to see a flat crown on the threads, thus we recommend measuring the end-play and the side-to-side play or wobble. To measure the end-play, hold a ruler against the screwjack sleeve, and move the screwjack to the limits, and note these on the ruler.

Because this could happen again, we will be issuing a service bulletin requiring inspection and replacement of the screwjack sleeves on evidence of excessive wear, and also recommending maintenance procedures which will reduce the wear.

Before we do this, we would like to get a base of data on the wear that you are seeing in the field. Please measure the end-play of your screwjacks and report this to us, along with the number of hours on the airplane/screwjacks.

In the case of John's Falco, the airplane had been operated from a hard-surface runway, and only rarely from a dirt or grass airstrip. However, it is often dry and dusty out west (John lives in Idaho) and an accumulation of grit on the screwjacks would contribute to wear.

Until we have some statistics, our recommendation is to immediately inspect the screwjacks for end-play if the airplane has 500 hours or more, and to inspect for end-play and looseness of the screwjacks at each annual inspection. If the screwjacks have .020" of end-play, then we recommend replacing the screwjack sleeves.

To maintain the screwjacks, we recommend cleaning and lubing the screwjacks at each annual. It is highly probable that much of the wear is caused by dirt and grit becoming embedded in the screwjack grease.—*Alfred Scott*

Susan's Corner

This is going to be short and sweet this time, guys. I've got way too much piled up on my desk to spend much time writing. I'm still trying to get the brake cylinders and parking brake valve assemblies in stock, that so many of you are waiting patiently for (maybe not so much patiently, but waiting none the less).

The Oyster Festival Fly-In was a lot of fun, as usual. Our weather was great... cool and clear, although rain and snow in other parts of the country prevented several builders from coming down that had planned to attend, so we didn't have quite as many in attendance as we had hoped for. But those of us that were there had a very nice time.

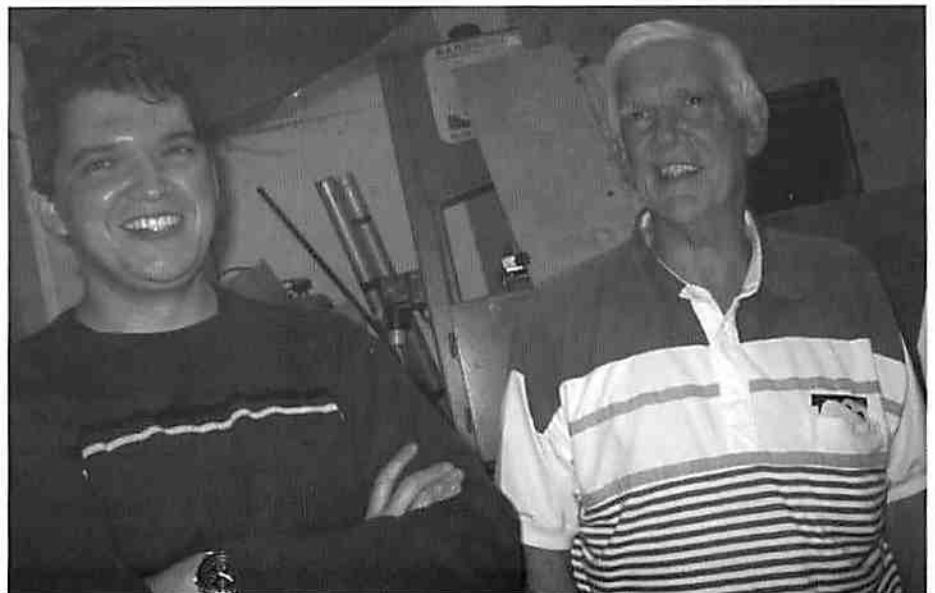
I have just recently received a new shipment of the seat belt harness assemblies and at the same time have had a clear (red and white), dome-like button with the Sequoia logo made to go right in the center of the latch base (which will also cover up the screw in the center of the base). These red and white buttons are really pretty cool and have a sticky back, so they can actually be stuck anywhere. (I have one on the front of my computer and another one on the windshield of my Blazer). They're about an inch and a half in diameter, and we're attaching them to all the new seat belt harness assemblies, as well as enclosing one with this builder letter. If you'd like an additional one, please just let me know.

It's been a busy past few months here, not only for business but also for me personally as well. I had some reconstructive surgery on my foot back in the beginning of October, so I'm still clumping around in a big steel boot, which has slowed me down much more than I'd like. Hopefully by the holidays I'll be able to get back into a real live shoe.

That's it for now guys. As usual, keep us posted on your Falco building progress and keep sending us pictures when you get them.—Susan Stinnett



Alan Powell, host of our London Falco Party in September.



Top: George Barrett lifts off at the Oyster Fly-In. Center: Never satisfied, Andrea has painted his Falco again. Above: Walter Monk and Dick Marks at the London party.

Mailbox

It must be a strange feeling that you are responsible for a community of people? As you pointed out, many of whom you know through disembodied net contact and telephone. Therefore to check them out in person is clearly an interesting experience....

For my part, it was a pleasure for CB and I to meet both Meredith and yourself. On day one, kit one, you feel a bit of an outsider to such a well established collection of people who have been talking for (many!) years either in support or frustration. This is evident through the Builders Letter. Gradually, having made a few parts you have some experience to share yourself and become more an insider—therefore to meet other people in the flesh, for me, was a new stage in the club!

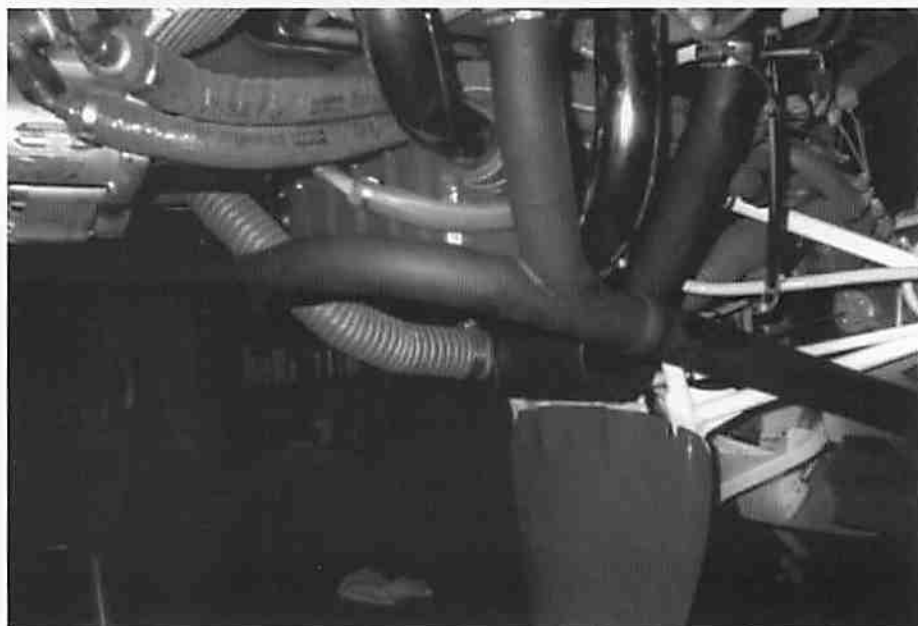
CB was somewhat daunted at the prospect of spending a few hours with a gang of folk destined to spend the evening comparing tyre pressures! However, what neither of us had quite computed is the fact that all Falco builders must be slightly unusual—to undertake the mountain climb you clearly have to have some wild streak hidden away, then to keep going possess a resilience of phenomenal proportions—hence those still in the race are not so run of the mill. Friday proved just that—the distance travelled to be there in itself a measure of the people involved.

Thank you interrupting your holiday to get together. I hope at some point I have a good enough excuse to head your way.

*Angus and CB Buchanan
Biddenden, Kent, UK*

I am considering building a Falco and was browsing the Sequoia site when I came across the article and photos of the USS Kitty Hawk. I read the article, viewed the photos, and then decided that it all looked and sounded amazingly like the day I had just spent at work. Ironically, I am a US Navy carrier pilot currently stationed in Japan flying C-2 Greyhounds on/off the USS Kitty Hawk. The article evidently was written quite a few years ago when the Kitty Hawk was homeported in San Diego, but she has since moved on to the Western Pacific as the Navy's only Forward Deployed aircraft carrier with her embarked air wing, Carrier Air Wing Five.

Please feel free to post this on your site as you wish, and I welcome anyone who would like to chat on the topic. (I may soon need to 'chat' in depth if my wife and



Top: Angus Buchanan and Alan Powell. Above: Bill Russell's exhaust pipes.

I decide to build one of these sweet looking Falcos...)

*Jeff Bearden
bearden@ata.attmil.ne.jp*

I'm sorry to inform you that I-SAMA has had an accident on September 13 killing the two on board. At the moment we still do not know the cause. The pilot in command (Luigi Giordano) despite his young age (29) was a very skilled one, an airline pilot on Airbus 320 with more of 1,000 hours of aerobatic on Frati planes and Sukoi, (he was going to an airshow with I-SAMA) and also had just completed an Acroduster that was supposed to fly next week. The biggest piece is 50 cm long, it seems it has impacted with a very high speed, although the plane had been refu-

eled and the accident happened three or four minutes after takeoff, there's been no fire at all.

*Andrea Tremolada
Milan, Italy*

The project is coming along quite well, it's sitting on the gear now for the first time. It was upside down for several months while I fitted the wheel well and gear doors, sanded, mounted the pitot tube mast, sanded, fiberglass, and sanded. Oh, and did I mention I did a lot of sanding! The underside is now ready for paint.

I found a method of applying the fiberglass that works very well. I cut the cloth to shape placed on the plywood and on that I applied the epoxy. With the epoxy spread



Top and above: Gayl Boddy and his Falco—they get regular visits from Per Burholm.

thinly over the glass, I placed a piece of 4 mil plastic over the glass cloth and squeegeed out the excess epoxy. This gave a smooth-as-glass surface except where there were imperfections in the plastic. A little sanding and some sanding filler took care of these. The secret is to not bite off too big an area since the epoxy will start curing before you're finished the operation. I speak from experience. Also, it takes less epoxy than you would think to wet out the glass cloth.

*Gord Cook
Surrey, BC, Canada*

I sent pictures of my Falco project, in February, which you put on your website. This is an update set. I took pictures of the project with the tail feathers on, before I

started to do most of the skinning. The tail light is not in the rudder because I am waiting to get a tail light.

I have the skin on, up to frame 3 on both sides. I soaked the skin from frame 8 to frame 6 and frame 6 to frame 3 for 24 hours each and used outside C-shaped clamps (the shape of the frames) at each frame. I let them dry 48 hours, then scarfed and final fitted them. They came out nice—meaning I am satisfied. I also installed the dorsal fin. I will be doing the standard canopy for head clearance.

I have the baggage compartment and the battery compartment almost complete. The tail is varnished inside to frame 8. The exhaust ports are in behind frame 1.

Per your request is a picture of this old man and his ship. I took the Falco on as a project, but Per Burholm says that it will soon be ready to fly. Then what?

I have read the newsletters you publish, they make the project a lot easier. The construction manual and drawings are very complete and easy to follow. I have reviewed a lot of homebuilt aircraft drawings, and none is more complete than your Falco.

I am an electro-mechanical designer and drawing checker by life-long trade. I started drawing "Corn Bore Sprayer Units" for Piper Cubs in 1949 and am still doing mechanical packaging drawings. I have seen a lot of drawings, and none are better than yours!

*Gayl Boddy
Santee, California*

I talked to Dave Nason about the ceramic coating of the exhaust stack and on his recommendation I removed them to send to Performance Coating in Auburn, Washington. When I removed the stacks I noticed a half-circle on the nose gear riser of the engine mount right where the heat muffler is located. Evidently I had not trimmed the stainless steel shroud around the heat muffler back far enough and as the engine started and/or ran the edge of that shroud came into contact with that riser (being on side of the braces that hold the nose gear).

I have since had the abrasion TIG welded and after inspection it was not deep enough to warrant a sleeve. Just wanted to alert other builders who may not have trimmed their shroud back far enough to check their engine mounts.

Enclosed are some snapshots of my exhaust stacks that I had ceramic coated. Dave Nason was telling me that it really improved the level of heat in his cowl. The cost was \$130.00 plus shipping.

There are several colors available and the reason Dave and I chose the satin black was because they would guarantee 2000°F with no chipping or cracking. I feel that since this aircraft is so high cowed this will help in the heat buildup inside the cowl since the ceramic coating supposedly cuts down a great deal on radiated heat. I sent the exhaust stacks up on Monday and received them back on the following Wednesday, which was UPS blue going and brown on the return; not a long down time at all. Some of the guys who are building might want to look into this.

*Bill Russell
Houston, Texas*

My Falco is going strong, with approximately 650 hours now. We had a couple of interesting trips this year, first to Berlin in May to ILA 2002 where we shared a stand with Extra and a second to the Old Timers Fly-In at Schaffen-Diest, Belgium, where there were nine Falcos lined up, six originals and three Sequoia Falcos from the U.K. Stuart Gane won the best Falco as you might have guessed, and probably to the chagrin of our Italian neighbours who had three of the originals although they made an impressive arrival in formation. Old Timers refers to the aircraft and not the pilots.

Neville Langrick

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I am in the process of obtaining an Australian airworthiness certificate for 747SW. We had several minor squawks and one major squawk, since repaired. I'm currently waiting for the instruments to be recalibrated for the southern hemisphere so I can put the instrument panel back.

Bob Hendry

Parkdale, Victoria, Australia

When I first met you, I told you that building a Falco was not the number one priority in my life, raising my family was. Over the last sixteen years I have worked on my Falco on a fairly consistent basis, but I have also worked very hard on my family. This year marks the culmination of my work with my family as I have watched both children graduate from college and now watch my daughter get married to a fine young man and my son leave for graduate school in Galveston, TX.

I have enjoyed all of the hours in the shop working on the Falco, but I have enjoyed, even more, the many hours I spent playing, talking, reading, working, and participating with my children.

I still look forward to my dream of flying a Falco I built with my own hands. There will be much more time to work on it now that my children have flown off on their own. As I continue to work on the Falco and derive the unique pleasure of creating such a beautiful machine, I can reflect with happiness on the unique pleasure of participating in the growth and development of two wonderful and beautiful human beings. I am sure I will have more to report as the Falco building stage of my life moves into high gear.

*Dean Malmstrom
Cedar Hills, UT*

I hope that you are all going strong at Sequoia! In June, on holidays, I visited with my wife, an Italian Falco "pope" (expert) in



Top: George Barrett in formation with Al Aitken.

Above: Peter Barrett, Nancy Aitken and George Barrett.

Italian Florence region (beautiful Borgo San Lorenzo, 27 km from Florence—see Luigi Aldini's web site). His name is Signore Aldo Modi. What a kind gentlemen and real "man of knowledge" for Falcos, and other aircrafts also he works with his nephew. (Philippe?), in their Aviamodi company (tel & fax: 055/8408809 e-mail: aviamodi@tin.it). You might put this information on your website for the European Falco owners. They also have a 800m grass runway, if you call there before, they might help if you have a problem in Italy with your Falco, or eventually park your plane while you visit Florence.

*Andrej Cakmak
Geneva, Switzerland*

I have moved ahead with plywood installation and will deal with that item later. Skinning is turning out delightfully well—

seems to have dealt with compound curves. Have been fighting 90° plus days for at least six weeks—usually have to quit working by noon.

Mel Olson was at the regional fly-in at Longmont and his Falco looks great as repaired and repainted. He brought me some 2mm plywood last week by pickup and saw my project. He and Wanda are very nice people. As he looked he kept saying "I want to build another one." Oh, to be 25 years younger!

Mel gave us a pretty exciting buzz early last Sat. morning—nice to go out and see a Falco instead of an RV for a change. Dean Hall flies by quite often but never straight and level. Mel's Falco is fast!

*Jack Lange
JRLFalcoworks@aol.com*