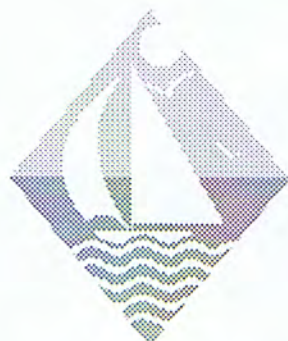


CIRRUS BUILDERS ASSOCIATION

Published by Rick Mills & Tom Logan

Circulation 40


CBA
Summer 1994
By Tom Logan.....

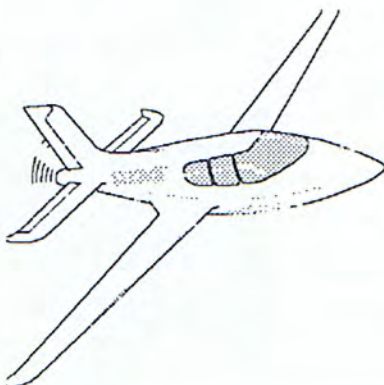
Loss of a Fellow Airman and Builder

Most kit builders are now aware of the unfortunate loss of Craig Baldwin and his son, Steve, in a landing accident. We, as builders, can appreciate Craig's aviation spirit and can but extend our sympathy to his family.

Friends of CBA

We are pleased to have two unusual and exciting contributions in this issue from friends of CBA.

From Test Pilot Jim Patton we have the first of a series of articles on the original test flights of the VK30. Most of Jim's aviation career has been dedicated to the develop-



ment of safe flight characteristics for a wide variety of aircraft and his willingness to share his expertise with us is greatly appreciated. From German native and now US citizen, Mr. Adam Braun, we have a report on his recent visit to the Grob aircraft manufacturing facility in Mattiese, Germany. Adam is a professional engineer and has a continuing interest in pusher configured aircraft. As some of you have seen in various aviation magazine, Grob has developed a Cirrus look-alike in its GF200. Our own Rick Mills supplied the landing gear components for the GF200 Prototype.

The Big Move

Our friend and pioneer Cirrus builder, Al Corey, has made the big move, taking his completed Cirrus from his shop in Hadley, MI to the DuPont Lapeer Airport in Lapeer, MI. Total highway distance traveled was about 15 miles with police escort lights flashing and residents along the way turning out to stare. Al was truly the pioneer kit builder as he

had the first kit following the preproduction units. Al built most of his plane from a stack of faxes. He got the instructions simultaneously as they were being written in Baraboo.

New Wing Development

For the next issue of the Newsletter, we hope to have a comprehensive update on the replacement wing Cirrus is developing for the VK 30. Preliminary indications are that the new wing will have an all-graphite spar, be 100 pounds lighter than the original and will not include cruise flaps.

Video Newsletter

By Rick Mills....

What do you think about a video newsletter supplement? A picture is worth a thousand words, what's a video worth? The idea is to have Cirrus builders video the progress of their project, then send in a 20 min. video. We will copy all video to a master, make copies then once or twice a year send the copies to all builders.

Can anyone help! What are the associated cost in copying and mailing. How many builders have access to a video camera.

Are you interested, would you be willing to supply a tape. What do you think the cost should be???. Let me know...

Rick Mills
3098 East Normandy Park
Apt D1
Medina, Ohio 44256
216 723-4615

Letters to CBA

Jim Patton

11684 W. Bayshore Dr
Crystal River, FL. 34429



Dear Tom:

This is to offer some general comments about the Cirrus that you can include in your newsletter, if you like.

First, a bit about me. I've found that pilot opinions and comments are better interpreted and understood if you're able to put them in context by knowing something of the commentator's background. Since your Newsletter readers are probably EAA members or have access to the Sport Aviation magazine, the easy way to do this is to refer them to page 39 of the April 1994 issue, the "about the Author" blurb following my report on the Cozy IV. Just one correction: In the last sentence, Jack Cox stated that I've make the first flight on 155 different types. Actually, no more than 4 or 5. At NASA, we used the term "first Pilot" to mean what the FAA calls "Pilot in Command"; so the way my flight records, the ones I sent Jack Cox, are labeled caused the misnomer. I have flown 155 different types of aircraft as First Pilot (PIC), but only a few of them on their first flight.

The Cirrus

On June 29, 1987, Jeff Viken, then with Cirrus, sent me a letter with photos enclosed of the fuselage, wing and tail shells. He'd heard from friends at Langley that I'd just retired, and wanted to know if I was interested in working with them. After my initial response of, "You're four young engineers and you're building a WHAT!?", I went to see them; after a couple of visits, I was impressed enough with their capabilities and approach to go on their team as test pilot, though I had other projects as well.

Even simple, conventional aircraft built by large, established companies have plenty of bugs to work out during development; the Cirrus is a complex, unconventional airplane. The airplane and the company started together. To me it's been amazing to see the relative smoothness of development for the Cirrus. There have been problems, certainly, but during my time with the Company (1987 through 1991), the problems were either solved or pushed far enough away from the normal operating envelope to disappear as an immediate safety issue.

The early bugs I encountered had to do with engine operation (starting, cooling, vibration, etc.) and with adjustment of nosegear steering. When everything seemed in hand, I did four high-speed taxi and liftoff sessions to get a feel for acceleration and then evaluated response to control inputs during short crow-hops. Here's my rough notes on the 4th session, conducted about sunset on 2/10/88. "Ended the 4th taxi/short hop session breaking rod-end on nosegear strut after flight to 4-10 ft. for several hundred ft.—airplane response very good—for this slow speed, felt very good. Trim was 1/2 between neutral and full NU (noseup). Retarded throttle somewhat at 80-85 mph, then made step elevator aft input and held until airplane flew off. Got higher than intended and slower than I wanted to be, resulting in higher sink rate at touchdown than normal. Nosegear slapped down and sheared the bolt at the rod-end. Probably good thing it happened—team replacing strut with welded fixed strut. Also removing and inspecting propeller drive torque tube and clutch—they are impressive!" I should add that the flaps were at the nominal takeoff setting. Also two unique characteristics of the Cirrus became obvious during these tests: (1) It handles crosswinds exceptionally well; tends to heel just a little away from the wind, but tracks straight down the runway, requiring a bit of aileron into

Letters to CBA

the wind and very slight opposite rudder; this is true on takeoff roll as well as landing rollout. (2) due to the thrustline above the CG, its pitch vs. power change is the opposite of most airplanes (reducing power gives a gentle pitchup); so if one didn't allow for that when making a flare and a simultaneous power reductions, a high flare could result.

FIRST FLIGHT

The team finished their work the previous night and the morning of 2/11/88, concluding with engine runs to verify proper drivetrain clutch operation and checking everything over carefully. Cloud cover was OK, but we had winds gusting to 25 knots directly across the runway, left to right. I accepted that; we'd had the same conditions on our high speed taxi/short-hop runs, with absolutely no bother. Part of my preparation for first flight was due to the novel engine drive train system, although it's a good idea for all such flights; Jeff Viken worked out an estimated best L/S glide speed with takeoff flaps and gear extended, which was to be a fixed configuration for the first several flights. As I recall, it was 110 mph. Guessing at the sink rate, I chose a deadstick landing pattern (360 overhead) with 3,000 ft. overhead and 1,500 ft. base positions. With a tape recorder on the ground as well as one in the cockpit, a video camera mounted inside, and with Dale Klapmeier chasing in the Glasair, I took off, watching engine/prop RPM's for possible clutch slippage, as well as all those other things. The flying qualities after liftoff offered no surprises; everything was nice and proportional in control forces and airplane responses. Flying a pearshaped pattern to be able to make the field as soon after takeoff as possible, I climbed to about 6,000 ft to feel the airplane out further between stall buffet and 120 mph, remaining above the field. The worst thing was cold air (COLD!) blasting in through the unsealed nosegear strut opening. After about 1 hour, the planning paid off; the engine just faded away. No response to throttle at all. So I started setting up for a deadstick landing approach. Now and then there'd be a slight response to throttle input, but not enough to count on. Everything went fine and touchdown was in the first 1/4 of the runway. Turned out the problem was a leaking line in the "spider" fuel distributor, causing automatic shutdown of the other lines (if memory serves). I tell this story to make several points: (1) Include every possible, conceivable detail in your advance planning; you'll still miss some, but I guarantee it pays off. (2) Make detailed flight cards (plans) for the first few flights. Later, when the envelope is expanded, make alternate cards for contingencies like unexpected weather conditions, etc., but DON'T decide on the spur of the moment to do something that you haven't carefully thought out on the ground. (3) No matter what kind of single engine airplane you fly, be aware of the importance of ENERGY MANAGEMENT if your engine goes sick or dead. The 360 overhead gives you plenty of chances to make corrections to hit the "high key" (overhead) and/or the "low key" (180 base). Each key has an altitude corresponding to the performance level of the subject airplane.

I'll talk some more in subsequent Newsletter.

Jim Patton

From Sport Aviation Magazine:

About the Author

Jim Patton is a native Texan who learned to fly as a civilian in 1945, then became a Naval aviator in 1949. He was a night attack carrier pilot while on active duty and a fighter pilot in the Navy reserve until 1966. In 1956, he received a degree in aeronautical engineering from the University of Colorado, and worked for two years as a flight test engineer for Chance Vought. He became a certified test pilot for the FAA following his work at Chance Vought and graduated from the Navy Test Pilot School in 1960. In 1966, Jim switched from the FAA to NASA where he was a research pilot/engineer... and chief of aircraft operations at NASA Langley from 1968 until his retirement in June of 1987.

Throughout his career, Jim has been a specialist in deep stall and spin testing and has carried that experience over into his present work as an independent flight test pilot, FAA Designated Engineering Representative (DER) and consultant. In recent years, he has tested a number of new homebuilt designs, making the initial flight and subsequent development testing of the Cirrus, deep stall flight testing of the Velocity... and, now similar work on the Cozy Mark IV.

Jim now lives in Crystal River, FL and enjoys his Starduster II. He holds an ATP and is rated in aircraft from sailplanes to Boeing 707's. He has made the first flight on 155 different aircraft types (See correction in Jim's letter) and has done flight work on an additional 68 types.

Letters to CBA

Mr. Tom Logan

Subject: Visit to the Grob Co. in Mattsies, Germany.

Dear Tom:

Adam Braun

Fayetteville, North Carolina

May 22, 1994

During my recent visit to Germany, April 23 through May 6th, I took the opportunity to visit the Grob aircraft factory.

The Burkhart Grob Lust-Und Raumfahrt GMBH & Co, KG is located near the village of Mattsies in a pictorial setting of rolling hills with the Alps in the background. Approximately 85 miles from Munich, it was a pleasant drive for me.

Grob produces gliders, G-115 two seat trainer types, GF200 four seat business aircraft besides high altitude surveillance type military aircraft. Before I go into the description on what I saw, I would like to let you know that the facilities were planned with one thing in mind... to produce composite type aircraft. Heavily subsidized by the Bavarian/Federal government, it shows. It is a first class facility!

Dr. Konrad Lewald, Sales Manager, was my guide. The Manufacturing buildings are super clean, painted white, to give their associates the best possible working environment. Molds and lay-up tables are orderly spaced with most associates in white aprons busily assembling the various components. Grob uses basically three types of fabric; aramid fiber, fiberglass and kevlar to build its aircraft. The two component epoxies are stored overhead in 55 gallon drums. Dispensing is to scales for proper hardener/epoxy mix.

Grob makes all its own hardware, except for standard commercial parts such as rims, discs, brakes, etc., which all are of US manufacture. Radios are Bendix/King. I was told that the idea is to use standard commercial parts to make replacement/repair of the equipment easier throughout the world.

Back in the laminating/molding process, I observed Grob using negative molds which are highly polished and to the final dimensions. The first step for them is to spray clearcoat into the molds, then comes the fabric which is already prepared with epoxy. The next step is to cover the mold with a sheet of rubber which in turn is secured with an o-ring around the perimeter of the mold. After this is completed, vacuum is applied and the rubber sheet presses the laid up fabric into the mold. After a curing time of approximately 48 hours in an oven at 180 degree F, a highly finished product emerges. There was so much to observe. I came away totally convinced that this is the way of the future and that high tech is present in Mattsies, Germany.

Grob demonstrated their GF200 a look-alike of the Cirrus VK30, by having the test pilot show us a high speed takeoff, three touch and go's, a high speed flyby and on the last flyby he inverted the plane and showed us an inverted loop!! Beautiful!!! What a show!! I noticed that the plane had a five blade prop. High pitch noise emitting from the plane-- a negative.

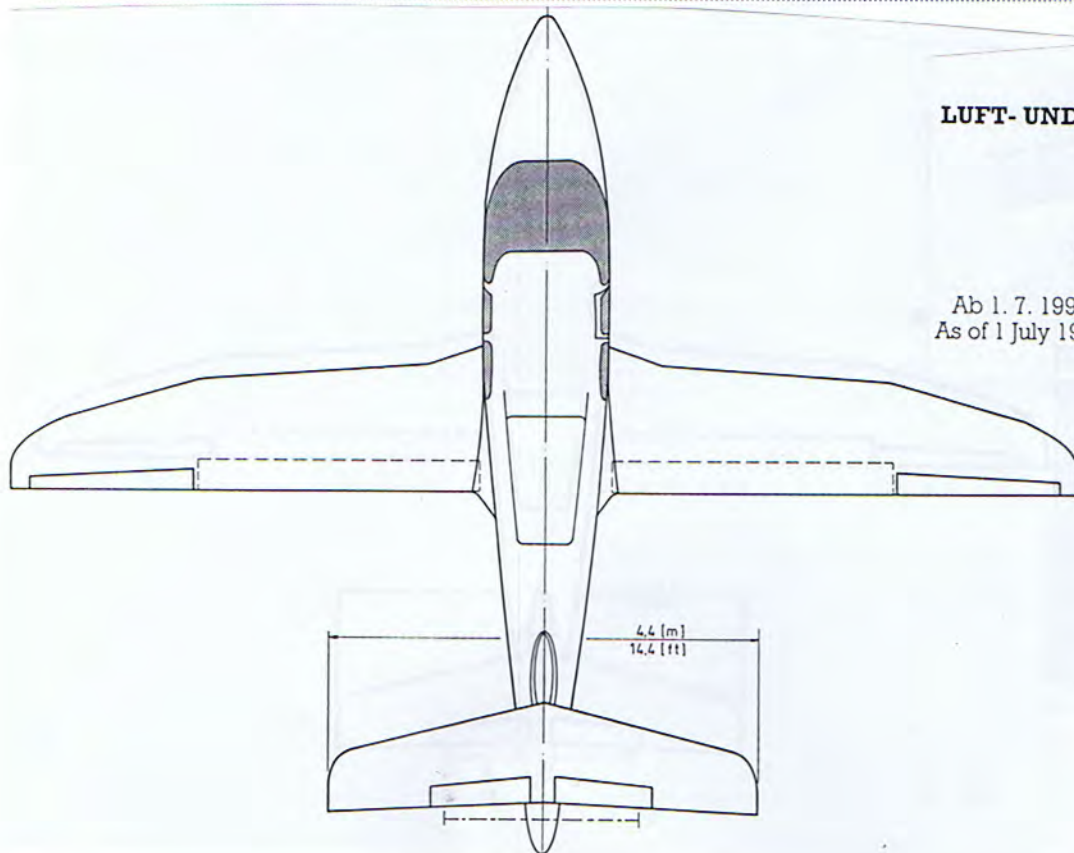
Tom, enclosed please find some literature I received from Grob. In closing please let me thank you for your hospitality while visiting your VK-30 project in Canfield.

Best regards

Adam Braun

(Ed. note: A subsequent discussion with Adam revealed that the GF200 non-pressurized version has been certified by the German FAA and that Grob has firm orders for 7 airplanes for delivery in Europe starting in early 1995. The selling price is in the \$250 to \$350 thousand range. A pressurized version is now under development utilizing the Continental liquid cooled TSIO-550. They are looking for better performance and higher speed)

Letters to CBA



**BURKHART GROB
LUFT- UND RAUMFAHRT GMBH & CO. KG**

Postfach 1257

Am Flugplatz

8939 Mattsies

Telefon (08268) 998-0

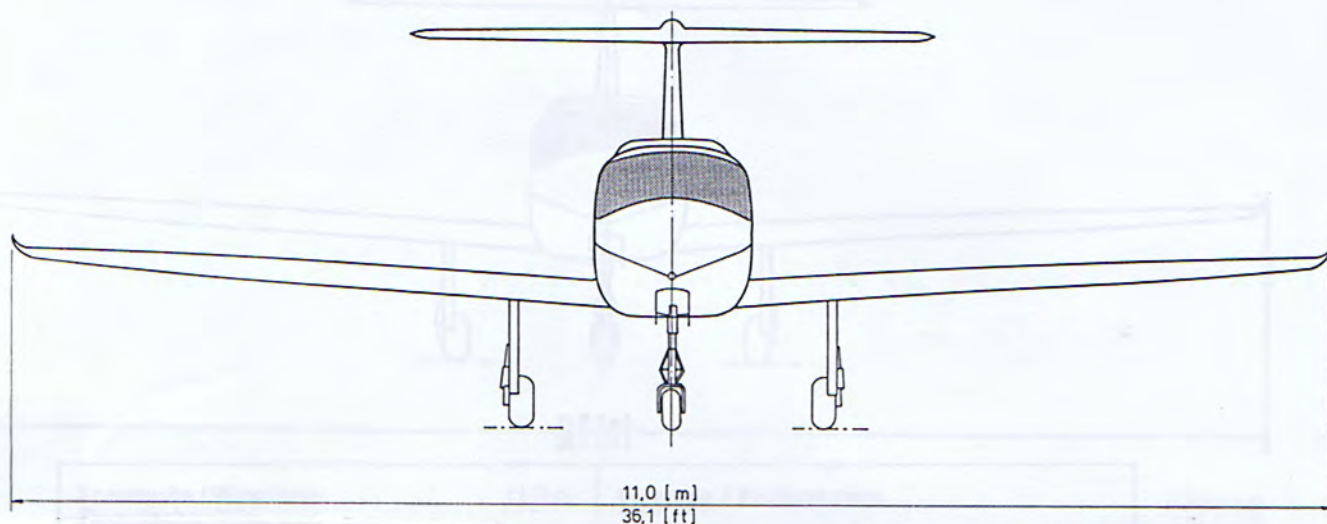
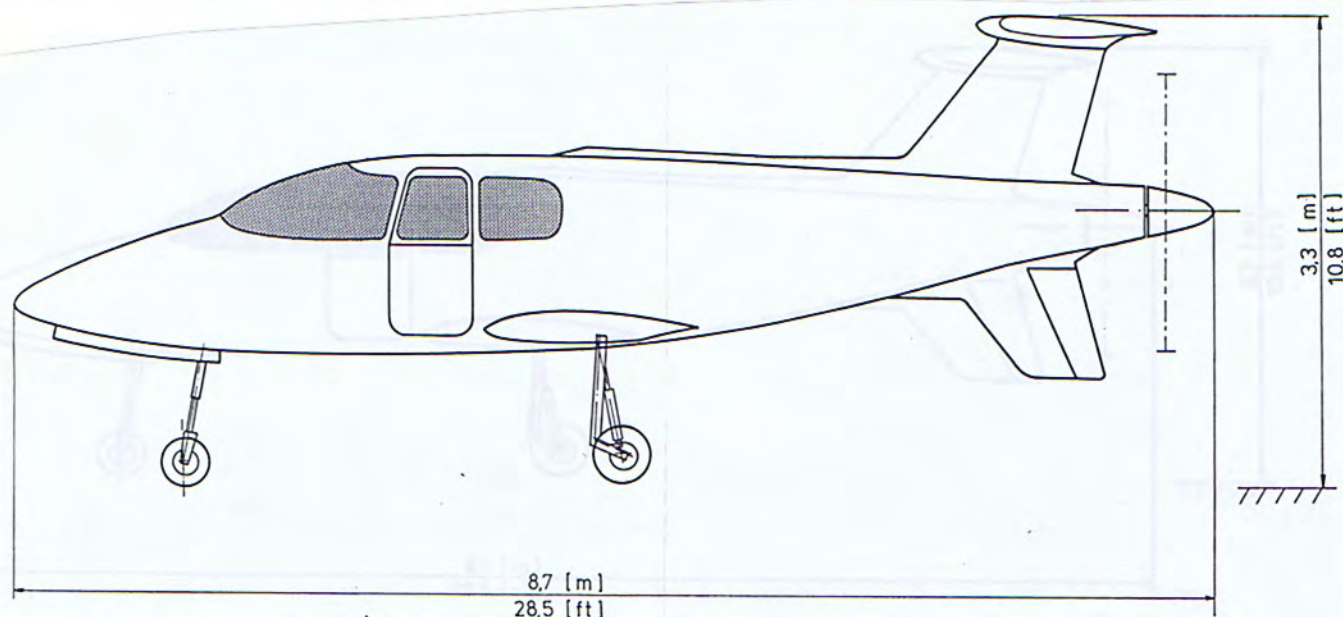
Telefax (08268) 998-124

Telex 539623 grobf d

Ab 1. 7. 1993: Postfach 1257 · 87712 Mindelheim.

As of 1 July 1993: Postfach 1257 · 87712 Mindelheim.

Letters to CBA



Spannweite / Wing span	11.0 m
Flügelfläche / Wing area	12.5 m ²
Flügelstreckung / Aspect ratio	9.69
Rumpflänge / Fuselage length	8.7 m
Höhe / Height	3.3 m

Massen / Masses

Max. Abflugmasse /	
Max. take-off mass	1600 kg
Max. Zuladung / Max. payload	580 kg
Kraftstoff / Fuel capacity	252 kg/350 l
Gepäck / Luggage	50 kg
Max. Flächenbelastung /	
Max. wing loading	128 kg/m ²

Triebwerk / Powerplant

Lycoming TIO-540	
Leistung bei 2575 RPM /	
Engine power at 2575 RPM	270 PS (BHP)

Leistung / Performance

(MSL, ISA)	
Max. Reisegeschwindigkeit /	
Max. cruising speed	370 km/h (200 kt)
Reisegeschwindigkeit, 75% /	
Cruising speed, 75%	335 km/h (181 kt)
Steiggeschwindigkeit /	
Rate of climb	6.2 m/s (1220 ft/min)
Startrollstrecke / Take-off run	370 m
Landerollstrecke / Landing run	332 m
Reichweite 75% / MSL	1810 km (977 nm)
Max. Range 75% FL 200	2020 km (1091 nm)
45 min. Reserve	

Sitze / Seats

1 + 3



Tom Westenberg

Dear Cirrus Builders,

My hat goes off to Rick Mills and Tom Logan for organizing the CIRRUS BUILDER ASSOCIATION and newsletter respectively. So far I've read and enjoyed both issues cover to cover. With the exception of Craig Baldwin and Urs Villager, I've not had the opportunity to communicate with other builders. I can only hope this publication can endure the test of time and bring us all a little bit closer so we might possibly grow to become an alliance of proud Cirrus builder/owners. I personally look forward to the day when we can attend shows like Oshkosh or Sun 'n Fun with each of us not only attending, with our VK-30's, but knowing the majority of our elite group on a first name basis. I'm also looking forward to the exchange of good information and the exchange of both good and bad experiences. Most of all I'm looking forward to the camaraderie I'm sure will come from an open line of communication between all. My enthusiasm is as high for this publication as it is for my own VK-30.

My interest in the Cirrus stems back to October 1986 when I found myself in Padukah, Kentucky with my friend, and now co-builder Steve Schultz. At the time we were performing a hang gliding exhibition show. I remember it as if it were yesterday. Steve, (another friend of ours), Cliff, and I were browsing through the hotel gift shop. Cliff was over by the magazine rack and called our attention to a magazine with the Cirrus on the front cover. Based on his comments it was obvious Cliff had prior opportunity to read up on the airplane. Among his many comments, I remember "this is one awesome airplane." He went on with more of the specifics for some 5 or 10 minutes. Needless to say Steve and I were totally engrossed. There we were, three guys with a level of enthusiasm a mile

high. Unfortunately our financial resources fell a little short of the kit price. We set our dreams and goals as high as our level of enthusiasm. At that point we did what anybody else without enough money would have done, that's right, we put the magazine back and proceeded with our show. At the end of the day I went back and bought the magazine.

Here we are today, March 21st, 1994 approx. 7 years later. Our dreams and goals were now attainable. In September of 1991 we purchased our first Cirrus VK-30. The 25th off the production line destined to be N3733E. We were the proud owners and couldn't wait to get started building. Steve, Dan (another partner), and I attended the Cirrus Builder Assistance Program in late September 1991. Upon completion of that week we packed up and with a flatbed trailer we brought our airplane home.

Since then it's been 2 1/2 years of weeknights, weekends and an astonishing amount of hours. According to our records we've now accumulated about 2,500 total hours. During this time we've managed to complete our fuselage from nose access doors, control surfaces, hydraulics, bulkheads, floor ribs etc. It took most of the first year to get us to that point. The second year was mostly spent building our wing. Today the completed wing stands off to the side of our workshop. The flaps, cruise flaps, ailerons, tips, lights, hydraulics, gear legs, uplocks, fuel sumps and more have all been completed, installed and in most cases been made operational. What a feeling of accomplishment when you can sit in the cabin, push the pedals, and watch the rudder move, operate the elevators or actuate the flaps. If we don't have to replace some of the actuators, due to either over testing, or demonstrations, I'll be surprised!

I think our most memorable occasion came this past May 6th. On that day we organized a group of a dozen or so of our friends and inserted our wing for the first time. Within a week we had the wing located and secured to the attach points. A day later, our enthusiasm again was overflowing. We raised the airplane from its cradle, installed its gear and lowered it to the floor. Before we knew it our menagerie of parts... became an airplane! For us, all the long, late hours of determined work instantly paid off. Grinning from ear to ear we walked around our plane astonished with what had transformed before us. It was only a matter of weeks and the wing was re-

moved from the fuselage. With the wing back in its stands and the fuselage in its cradle we started our engine installation. After lengthy consideration we choose the Continental IO-550-G to power our plane. As of today we've had the engine in and out 5 or 6 times to locate the mount, and are now proceeding with the fireproofing section. I'll take vinylester resin over phenolic resin any day! Steve has been in the cabin for about 3 weeks now and we don't expect him out for at least another month or so. He's working on seat belt attach points, arm rests, nose gear well cover, cabin ventilation & heat, panel location and the glare shield.

We hope to be in our hangar this fall for final assembly and putting on the finishing touches and preparing it for static and runway testing by this time next year. With any luck we anticipate flight sometime in early '95. As far as I'm concerned, that's when the fun really begins!

All of us here at the shop look forward to meeting and talking with you all soon. We would like to offer an open invitation to all the members of the CBA to stop in anytime you're in our area (perhaps on your way to Oshkosh).

HAPPY BUILDING !

Sincerely,

Tom

Tom Westenberger
4623 N. 124th Street
Butler, WI 53007

Phone;
(414) 781-5484 Shop
(414) 691-3733 Home
(414) 781-5420 FAX



Cy & Jim Mehling



Rick-

13 APR '94

As I write you an update on our activities, I must express our regret that we were unable to meet many of you at Sun 'N Fun '94. We have had this gathering as our goal since we started building our Cirrus three yrs ago. We were ready to go, the airplane was in top shape and shined like the three million dollar estimated value. We chose to accept Cirrus Design's wishes that we keep it on the ground and thus did not attend the show. Hope to see all of you in '95.

I would like to correct our text in ref: the S-Tec Autopilot servo drum brackets in the last newsletter. The pictures shown are correct, but in the text the roll and pitch brackets were reversed. The actuating rod attaches directly to the capstan for the roll servo, whereas on the pitch servo you use the S-Tec bracket and drill a new hole in 'bd of the existing hole.

When checking for hyd leaks, we note that the L/G fluid (transmission fluid) is easy to wipe clean, whereas the hyd fluid (brake sys and oleo struts) gets very sticky and is difficult to wipe off. We found avgas works good to remove that.

We found, while rebuilding the NG oleo strut that the fixed nose gear door would not allow the scissors to pass center, so we trimmed it about 3/4". This condition only with a flat strut.

On our IO-550G, we found the throttle was not tight enough, although it appeared to be, but it slipped during the first hrs of eng run. We really had to torque it down hard to keep it from slipping.

We installed the main fuel delivery screens and fittings in

the sump of the fuel tanks, only to realize later that we would be sucking any water or debris into the pump. We put short standpipes on the screens to cure the problem. If you installed the fittings on the bottom of the wing and then added a lower sump to the wing for draining, you would not have this problem.

On this engine, with the mixture in cutoff and the boost pump on, you will pass fuel into the cylinders, Dennis told us this was normal and indeed the engine works just fine.

When preoiling this engine, we removed the top plugs and used the starter. We got oil pressure in less than 30 seconds. We put perhaps a half pint of oil in the drain port of the tail housing before installation. All told, after the preoil and an engine run with prop exercise a few times, we used about 10 qt oil to get the dip stick to read 8 qts.

If you have to open the center section of your wing to do any work be sure and check the location of the fuel drain holes in the front spar. Our wing had the holes about 3/4" above the lower spar cap. This would allow over time quite a significant buildup of water and junk in the bottom of the fuel tank. We installed some foam in the center section forward of the spar and then poured resin in to raise the floor of the fuel tank up to the bottom of the holes. We ended up adding about 4 cups of resin before the floor of the tank was level with these drain holes. We were afraid that the trapped water would not cross over into the sumps (and thus go undetected) until there was a substantial amount of water in the tank.

Our fuel tanks hold just over 110 gals. When full, the expansion from night to daytime will cause the vent to drip or run fuel, making a nasty green stain under the wing from the vent to the landing gear. The same occurs with uneven ground level when parking with anything over about 90 gals. In severe conditions the caps will leak also with an overfull tank. We have a policy of never filling the tanks beyond 80 gal. unless we are fueling just before flight.

We installed a rudder tab (fixed) for trim purposes. You could rig the nose steering springs (by making new cables) after determining the out of rig in flt, but we like the fixed tab. The down position of the cr. flaps are rigged for any out of trim on takeoff. After a few takeoffs, when you are careful to have exactly even fuel load, you can lower one flap a turn or two at a time until no ail deflection is needed on takeoff.

With two pilots and no baggage, we run the pitch trim motor about 3 sec. from full nose up for takeoff. With a full gross takeoff we use full nose up trim for liftoff about 70 kt.

Our speed brakes were returned to the factory for mods after they kept coming up in cruise flt. They now stay down OK, we did have further problems in that we could not get them to retract after deployment. We found that one was dragging on the wing hole and another was dragging on a clevis pin shaft connecting the two blades. We found that you must put strong hand pressure toward the tail to check the clearances, simulating the air load in flt. The travel is adjusted via the turnbuckles in the wheel well. (We installed these, but I am not sure they came with the kit.) Then further adjustment is made by loosening the tiny allen screws on the cams on the motor and moving the cams, one for the up limit, one for the down limit.

We like a little safety cord we installed on the pilot seat that connects the seat to an eye screwed on the seat track to keep the seat from sliding back on T/O if the latch fails. We have only 1" of foam on the pilot seat cushions plus a little for sculpturing. Any more and we run out of headroom with the seat in the lowest position. We installed clips on the sidewall for the shoulder harness when not in use, otherwise they hang down the center aisle when getting in or out of the cockpit.

We use the Whelan combination strobe and nav lites on the very edge of the wingtips, with the two white aft facing nav lites included. This makes a complete system that complies with FAR's. We sliced off a portion of the wingtip equal to the width of the lamp assy and made a flat vertical surface to mount the lamp assy's on. We have limited clearance in the hangar and they prevented decreasing that tip clearance. If you want enclosed flush mounted lights, you are going to have to have a much more complicated system with additional lamps on top and bottom of the tail (strobes) and another tail nav lite on the rudder to comply with the FAR's.

We installed marine vent blowers for fresh air and cabin heat and we love them. We installed a plain homemade shutoff valve for the htr with an outlet between the rear psgrs under the seat, another between the pilot's rudder pedals with another valve leading to a 1" tube to a home-made defroster tube to the glare shield. This system is toasty warm in all the cold wx we have encountered. The defogger will clear the fog inside the windshield very promptly on the ground in damp wx.

We may have already told you about the profuse fuel tank leaks we had. Some of these did not show up, only after a few days with the tank full. First we had a two tank system installed, but Cirrus did not adequately seal the center bulkhead in the tank. I tried to seal it when I opened the tank for other reasons, but was not successful in totally

sealing it. We had numerous pinhole leaks in the center section, which we sealed by adding a couple layers of cloth on the outside surface. All the wing attach fittings leaked which we sealed with the rubber two part goop that Cirrus furnished. A couple miniscule leaks developed near the leading edge, which I sealed with a couple applications of resin. Finally, with the tank full to the top, take a peek at the end ribs thru the tip area. We had big leaks in both ends and required a lot of dexterity with long bent handle brushes to make additional laminations where the leaks were discovered. You cannot see these leaks visually, you have to feel and guess where they are. Like everything else you have done in building your Cirrus, you will figure out a way to overcome things like this.

We are awaiting the return of our pitch servo for what we hope is the final speed adjustment from S-Tec. They tell us they have a large file on our installation, we shall furnish them with any additional info we come up with to close out this installation. Never even having seen the Cirrus or a picture of one, the S-Tec folks have been absolutely top notch guys as far as we are concerned.

In spite of all the advice we have been able to garner, we have gotten nowhere trying to eliminate the fan noise from the VHF and VOR. We did find our Magellan was part of the problem, and Magellan has a new prototype set that we tested that takes care of that part of the problem. They claim all GPS sets have this problem in composite airplanes only and they are the only ones doing something about it.

We have installed bungee cords paralleling the actuator motors for the stab trim and the cowl flap to prevent the creep we encountered, but have not test flown the a/c to determine effectiveness.

Attn Cirrus factory: We have been unable to make any hard landings since we built the airplane to test the G loading of the wings. But Jim says he has hit his head HARD on the ceiling in moderate turbulence a couple of times. Does this count???

From Jim:

Thanks for the suggestions from the avionics shop concerning our fan and GPS noise causing the VHF radios to perform poorly. I have installed a ground strap (using bonding strap) directly from the instrument panel to the ground lug going directly to the battery. I also installed bonding strap from the alternator case, alternator filter and

mag filters directly to the rear ground bus. I also moved the #3 cable connecting the front and rear ground busses from the aft end of the front ground bus to the forward end of the ground bus and attached it directly to the lug going directly to the ground battery post.

The GPS noise on the VHF radios is apparently a defect caused by Magellan taking some shortcuts in their design. We finally got them to admit that the problem we had was known at the factory to occur on "plastic" airplanes (their description) since there was too much noise being emitted through the faceplate (plastic). We had a prototype unit for a week from Magellan that had a metal faceplate which worked fine - no evidence of any noise on the other radios. They are going to be incorporating this change into the next version which will have the IFR certification, due out some time this Summer.

At this point I think we have to find someone who understands the noise being generated by the Hayden fans and how to get rid of it. I can get the same noise on a hand-held King KX-99 outside of the hangar with the fans running. I do not think at this point that my problem is related to grounds, but is instead some sort of RF interference. The Hayden technical people are of no use - they talked to me several times but had no ideas.

Some comments about flying our Cirrus:

We are able to answer the question - will a Cirrus carry ice? The answer is yes - but it is not recommended as something to do on a regular basis. I would say it is neither better nor worse than my Mooney 201. The Mooney - which had a laminar flow wing - would lose about 5-10 knots of airspeed anytime we flew in rain. We would also lose airspeed as soon as a trace of ice showed up on the wings. Any amount over 1/4" would cost about 10-15 knots of airspeed, and at 3/4" we were down to 100-110 knots IAS (normal cruise in my 1982 201 at 7500' with full throttle and 2400 RPM was about 135 kts IAS). Our Cirrus indicates about 162-165 knots at 7500' with full throttle and 2400 RPM.

We were returning from a trip to Ottawa, Canada, a few months ago and got an opportunity to test the Cirrus ice carrying capability. We flew VFR from Ottawa to Syracuse, NY to clear customs, but the weather from Syracuse down to Doylestown, PA was calling for 2000' ceilings in the Pocono mountains. Allentown PA had 5000' ceilings, but I would rather be on top or in the clouds IFR than poking around the hills in marginal VFR conditions. In addition the surface temperatures were in the mid to upper 40s, there were IFR airports every 40 miles on the flight plan, so these were the escape hatches we could use if the ice got to be too much. The bottom line is that the airplane does not tolerate ice well

- as would be expected from such an efficient wing. We picked up about 1" over 45 minutes of flying across the hills at 7000'. Finally we decided to ask for a higher altitude when we heard someone ahead of us on the airway reporting no ice at 8000'. By this time we were only about 30 miles from Allentown, which was still reporting a 4500' ceiling and 45 degrees surface temperature. We tried hard, but could not get the airplane to climb an inch above 7000', without letting the airspeed go below 100 knots. Finally the controller asked us if we were going to leave 7000' and we had to admit that we could not climb any higher. Instead he told us to maintain 7000' for just another 10 miles and he would be able to give us a descent to 4000', which we in fact did. Several interesting things about this trip: 1) we got very little ice on the windshield during the whole time we were in the clouds (the Mooney iced over the windshield right away so we knew as soon as we were picking up ice). 2) Without any stall strips or fences around the wingtip nav lights it is difficult to determine how much ice you are carrying on the airplane. You will know you have ice when you see the airspeed decaying below the normal cruise numbers. Other than taking some of the red stripes off of the prop we could not find any permanent damage from our ice encounter.

Cruise Flaps ?

We never heard anything from Cirrus in their flying of any of the prototypes exactly how much the cruise flaps contributed to performance. With all of the other things we have been testing, particularly the autopilot problems, it has been difficult to see exactly what the cruise flaps add to the performance of the airplane. I made a trip to Boston last week and flew up there about 6 AM in perfectly smooth air. I got the autopilot to settle down in pitch and proceeded to play with the cruise flaps after coupling the GPS to the autopilot for a straight line to Boston. I tried the cruise flaps in the full down position in cruise and noted the indicated airspeed. I then raised the flaps in the shortest bursts on the switches I could manage (we have individual panel-mounted switches for the cruise flaps and have one position gauge with selector switch for the cowl flap, wing flaps and left and right individual cruise flaps). I found that with the cruise flaps set about 30% up from their full-down position I could get 5 to 7 knots extra airspeed. Raising them above this setting slows the airplane down until above 60% up (from full down) the airspeed is back down to 5-7 knots slower than the fastest setting. I have not had enough time in a steady climb in smooth air to see what setting is best for climb, we have been raising them

to about this same 30% setting after leaving the traffic pattern. There is certainly no hurry to raise them after take-off since they seem to only induce a slight pitch change with retraction in climb.

We have also discovered the value in increasing the wing area via extension of partial flap when flying at traffic pattern or terminal area speeds. I leveled off at traffic pattern altitude on a bumpy day with three of us on board and managed to end up about 200' too low for the downwind leg at our airport. With full down cruise flaps, but no wing flaps, at 110 knots it seemed no amount of power would get us back to pattern altitude. When the senior partner (flying co-pilot) suggested half flaps we had no trouble climbing back to pattern altitude. Moral - fly this airplane like an airliner. When operating in the terminal area the cruise flaps should be full down (this keeps the nose down in level flight), but use partial flaps (I think half flaps) anytime you are really slowing down in the traffic pattern. I am used to not using flaps until after the gear is down on downwind, but this airplane needs more wing area at slower speeds, and the flaps were designed to do just that on the first half of travel. After the first half of travel the drag increases appreciably, but the first half will give you more lift than drag at slow speeds.

Latest Autopilot News - We have installed the modified pitch motor (modified from -P7 to a -P5) which runs faster than the P7 version. We have 90K ohms in the pitch circuit gain and the airplane maintains level flight when in altitude hold. In a turn the airplane loses 60' or less and comes back to the original altitude if the turn is stabilized long enough and on rollout it gains about 60' before coming back down to its assigned altitude. Constant rate climbs and descents are perfect. One caution for builders who are using a pitot tube out on the wing with a static source on the back side of the tube. We could not get the autopilot to settle down initially - it kept an altitude sometimes, other times it would hunt up and down about 75', especially when disturbed by turbulence or resetting the stabilizer trim. I tried several things to isolate the problem and discovered that selecting the alternate static source solved the problem. Apparently there is enough "noise" in the static line to the outside source that the super-sensitive altitude-hold module has a difficult time sensing a steady pressure. We solved the problem by venting the autopilot altitude hold module to the cockpit and leaving the rest of the static system connected to the outside static port. Incidentally, we have not made up an alternate static table yet, but we did observe that the altimeter jumped 200' higher when using the alternate static source at 165 knots IAS. We need to make a chart showing the altitude and airspeed errors at various air-

speeds and configurations.

18 MAY '94

Editor- SPORT AVIATION, AOPA PILOT, US AVIATOR-

N94CM PLACED IN INDEFINITE STORAGE

Jim and Cy Mehling's Cirrus VK-30, as pictured in the June issue of Sport Aviation at the Winchester, VA. Flyin will no longer be seen at area Flyins or Young Eagles Activities due to insurmountable obstacles placed in our path by the Insurance Industry. It will be placed in indefinite storage soon.

As you know there are only a few underwriters available to us pilots and builders. The one we are with presently has chosen not to renew our type airplane in less than a month, ignoring the Commonwealth of PA requirement for 60 days notice. This reminds me of the last insurer we had while under construction who promised to change our policy to cover flight, then refused to do what they had promised when the day arrived for first flight.

Of the remaining companies, one will write liability only, the other wants \$35/hr for full coverage, but both have placed us in the HIGH PERFORMANCE CATEGORY with requirements that we cannot possibly comply with. This Cirrus VK-30 was mistakenly placed in this category. It does not fly in the Flt Level or even the oxygen req. altitudes. It is not pressurized, being powered by a normally aspirated Cont. 280HP engine. It cruises at near 175KT at 65% power and stalls under 60KT. Any Bonanza or Cessna 210 pilot could be checked out in it in 2 hours.

We are trapped by the requirement for annual recurrent training. This training, being done on a Professional Basis is on a par with Corporate Learjet recurrent training, costwise. (Near \$7000 for Jim and I). The company chosen by the kit builder to do this training has no qualified instructors who are current in the Cirrus. There are no airplanes available for these instructors to regain their currency. The factory prototype is down for modifications and the ins. co. we have will not allow Jim and I to qualify ANYONE in our airplane. They will not waive these provisions for any

reason whatsoever. This attitude is the same we have with the lawyers, FAA etc.

I recall reading that EAA, the warbirds, FAA all got together and designated experienced pilots to help each other learn to fly and maintain proficiency with each other. This would certainly be in order for homebuilders, but this is prohibited by our ins. policy.

Our pilot experience spans a combined 75 years and covers dozens of airplanes from Cubs to Staggerwings to Cessna and Beech twin turboprops. I have 3800TT ASMEI, INST, COM. with 50+ hrs in the VK-30. Jim has 4200TT ASMEI, ATP, INST, FORMER CFII WITH GOLD SEAL AND 50+ hrs in the VK-30.

We have a very Major investment in time, money and patience in this airplane.

The FAA and NTSB did it to Bob Hoover, the Insurance companies did it to us, and believe me, someone will get you soon, too.

Best Regards,
CC: Falcon Ins.
Rollins, Hudic, Hall Ins
Avemco
Cirrus Design
EAA Chap. 176 TTN,NJ
U. S. Aviator.

28 MAY last update- 94CM

As I write this, Jim is in Canada with our airplane. The autopilot is performing fine. We had thought we would want auto stab trim on autopilot, but since we have the system working, the trim lights come on seldom and the wheel trim sw work just fine to put the trim warning lights out, so we will not pursue that for the moment.

The shock cords we put on the stabilizer cowl flap stopped the creeping actuators we had there. We found some shock cords that were adjustable at an auto store.

We had a minor oil leak on the tail housing after having the seals replaced a couple of times. That oil leak seems to have gone away, what a blessing.

Recently discovered a fuel stain on the M L/G trunion at the main spar web. Dale K. says no problem, Cirrus will remove and reseal at time of Spar Mod.

Having batted zero in trying to remove the electronic noise caused by the eng. cooling fans, I have made a couple brackets and levers to act as brakes on the fans to stop them in flight with the switches OFF. I have received a 14' push pull control to activate them, but did not have time to install it yet. We have high hopes for this system and know when these fans are stopped we will get 1) better range on the VOR. 2)improved range and clearer VHF coms and 3)clear up the mishmash storm indications on the stormscope.

The letter I wrote to SPORT AVN. etc concerning the grounding of our Cirrus was intended to stir up the industry. Jim and I feel the Cirrus in our case is NOT a so called HIGH PERFORMANCE HOMEBUILT. This is a category established by the ins. industry and others and requires an a/c inspection (approved by them) and recurrent training which is extremely expensive and given by instructors who have minimal experience on the Cirrus. I am happy to report that we were able to obtain full coverage (at a bit higher premium than last year) from John Shimer of AVEMCO. He is a homebuilder and flies the Skybolt he built. He was very sympathetic to our plea. I later contacted two other companies to inform them, we got coverage and they were astounded, they said they had contacted the same underwriters and they could not write it for us and therefore were losing business and they were going to look into this. This is just what we had hoped for and pray that we can get this a/c removed from that category so that all Cirrus builders will not have to go thru what we did.

BEST REGARDS, *Cy*



Dave Doucette



David and Diane Doucette
457 Rolling Timber Trail
Kettering, Ohio 45429

Rick Mills
3098 E. Normandy Park Apt D-1
Medina, OH 44256

Dear Rick:

The following is my contribution for the horizontal installation for the next newsletter.

One of my recent challenges has been installation of the horizontal stabilizer. I will not enter into a long discussion of the relative merits of the Cirrus' way of installing the horizontal. You sophisticated engineering types probably have lots of ideas on how to improve their design.

My goal was to use their design but make a few minor improvements that I believe will greatly enhance the functionality.

When I read the instructions I really thought that fifteen hours was way too conservative an allowance for installing the horizontal. There seemed to be only a few hours work involved. I even had the aluminum parts pre made by Ron at Cirrus so I thought I was only a few hours away from completion. A year later and I'm still toying with this installation.

Most of you other builders probably were smart enough to make the parts really symmetric and are better at drilling round holes than I am. I never noticed nor did I plan for any washers in the bolting together of the horizontal attach brackets and the large bearings in the horizontal ribs. Well, in case you might of had similar experiences let me share my problems then my solution.

My first problem was drilling symmetric round holes in the mounting brackets. I thought I had good holes but on careful inspection they were my usual oval ones. Add to that the fact that most AN4 bolts are actually undersized at about .245 instead of .250 inches and you can have quite a bit of play in the attachment.

My second problem was that of wear and tear in the attach bracket 0.25 inch pivot hole. I felt uncomfortable that the holes in the attach brackets would elongate under the stresses in the twisting and turbulence of flight. I won't even go into my discomfort about the use of KP bearings in the first place. But I've been led to believe that the bearings are fine and my discomfort about the bearings is related to my lack of engineering skills. Oh Well!!! In any case if the holes elongate I felt that there would be the potential for vibration and further elongation.

The third problem is the amount of variance of position of the bolted together assembly given the several through holes holding the assembly together. Part of the problem is trying to drill lots of these holes with the attach bracket in the airplane and drilling these holes medial to lateral inside the tail of the airplane. I didn't have any way of angle drilling with great accuracy.

My fourth and last problem was in bolting the whole thing together with appropriate numbers of washers to make the spacing proper. How many washers can you drop for each one that is placed correctly ?

Now for my solutions. You may want to follow along with your chapter on horizontal installation. First though, a word about round holes, drill bits, center drills, and drill bit sizes. I've learned a lot about machining and wish I knew a lot more. Here are some pointers I learned:

1. A drill bit never drills a round hole
2. A drill bit rarely is the size stamped on the side. It is usually off by several thousands of an inch.
3. A digital caliper is essential for telling bolt diameters, drill bit diameters, and various other thicknesses in building this airplane.
4. A center drill is essential for marking and guiding the place where the drill bit will drill the oval hole.
5. A reamer will convert the slightly undersized oval hole to a round hole of the proper diameter.
6. The most impressive drill press is only as good as the bits in the chuck and the operator running the machine.
7. If you remove a piece to be drilled from the machine, it is difficult to put a second piece in the machine and expect the same hole placement unless you have a fool proof way to have a reference point that is the same on each piece. A digital readout and an edge finder is a minimum.
8. It is close to impossible to make symmetric parts with well aligned round holes using the

methods described by the instruction manual.

On page two of the instructions there are dimensions for the various bracket parts. My inboard and outboard brackets needed to be about 3/8" to 5/8" longer than shown. To drill the holes shown each part was placed in a milling machine and the top edge was used as a reference. With the edge finder set to zero at that edge the two 1/4" hole centers were marked with a centering drill then drilled with a slightly undersized bit, then reamed to 1/4" exactly. This created holes that were truly symmetric, round, and aligned. More will be said about the holes that are 6 5/8" down from the top.

I was never able to align the other holes that held the bracket together using the instruction manual method. Instead, with the original pieces I drilled the four 3/16" holes using the milling machine as follows:

By using the same hole pattern, perfect alignment is assured. The criticism to this method is that there is little play fore and aft once the horizontal is installed. It is, therefore, essential that the horizontal attach bulkhead is installed perpendicular to the long axis of the fuselage.

The second problem was elongation and potential wear and tear of the pivot hole. To fix this problem shoulder bushings were made. This also alleviated the need for washers to get the proper spacing once the brackets are bolted together.

If you add up the total thickness of the total bracket it is as follows:

Outer bracket	0.25"
Shim	0.375"
Angle bracket	0.125"
0.75 BETWEEN BRACKETS	
Shim	0.25"
Inner bracket	0.25"
Total thickness	1.25"

The thickness of the bearing installed inside the horizontal measured at the inner race is .486". If you take the total thickness between the inner and outer brackets minus the bearing thickness you get $0.75" - 0.486" = 0.264"$ to split on each side with washers. A thick washer is about 0.056" thick and a thin washer is about 0.031" thick. So you need roughly two thick and one thin washer on each side of the bearing. Even super gluing washers together makes this difficult to install. And remember the instructions didn't even mention washers at all.

Using a pressed in shoulder bushing makes this installation much easier. See **figure 1** for dimensions of the shouldered bushing made out of 4130 steel. The finished parts are shown in figure 2.

I believe this installation is much more acceptable in capturing the inner race of the bearing, protecting the hole from problems with wear, and make assembly in the airplane much easier.

Incidentally, I had the folks at Cirrus measure some things on Prototype III and this is what they got:

Pivot point to inside bottom fuselage skin 9.25"

Bottom of horiz. to bottom inside fuselage skin 6.625"

These numbers help when you are inside the tail and doing some measuring. This also gives you some idea of the margin of error since the instructions show only 5.5" from the bottom of the horizontal to the outside fuselage skin. Incidentally, the fuselage skin in this area is nominally 3/8" thick.

I used the Cirrus method to shim the horizontal in the correct position. I used quick release clamps to hold the horizontal with its' brackets to the horizontal attach bulkhead. With the fuselage level I used a water level at each tip to assure level. If you recall some geometry and more specifically

proportional angles you find that moving any one attach bracket about 0.1" results in the horizontal tip moving about 1.0".

With the fuselage exactly perpendicular to a wall I was able to determine that my horizontal was not exactly perpendicular to the fuselage (off by 0.5"). By putting two or three layers of glass on one side of the front of the horizontal attach bulkhead I was able to make it exactly perpendicular to the fuselage.

I am indebted to Rick Mills for his machining expertise and advice and for printing this article. I would be happy to answer any questions about these modifications.

David J. Doucette

Flange Bushing (Dave Doucette)



Figure # 1

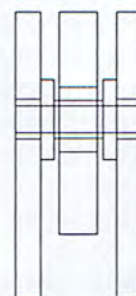


Figure # 2



Al Corey



Al Corey's VK 30 Moves to Airport

by Tom Logan...

While on a business trip to Detroit area, I had the chance to visit with Al Corey at the DuPont Lapeer Airport in Lapeer, MI. Al has spent all his building time on his Cirrus at his shop over in Hadley, which is about 15 miles away. He thus had to move the plane by trailer to the airport.

Al reports that he had to take the end out of his building to get the plane outside and then commissioned his carpenter friend to handle the rest of the move. A cradle was built, a three-axle trailer with vintage farm tractor attached was secured, all highway permits and police escort were arranged and the move set for Mother's Day Sunday. Al says they had fog to start with, but as the caravan of 5 police

cars, plus 20 or so well wishers, got underway, the sun broke through and they had a beautiful day for the 3 hour trip to the Lapeer Airport.

With the airplane safely moved, Al has completed the reassembly of the landing gear, cruise flaps, ailerons, wing tips and prop. The engine was first run the week of June 1st. Al started with 7# of shot in the clutch and gradually added shot at the rate of 3 oz. per time to get a smooth running engine/drivetrain combination. There was a problem in getting a reading off the RPM sender located at the prop. The first sender was wiped out by an errant piece of safety wire, the 2nd sender was wiped out by a too flexible mount which allowed the sender to contact the prop bolts, the 3rd sender was defective from the factory, and now the 4th sender is in place ready for test. Al mumbled something to the effect that, "At \$60 a pop for sender units, getting a prop RPM reading isn't coming very cheap."

The first taxi test is now complete. Steering is a little mushy, brakes work OK, and the engine starts and runs smoothly. Speeds of 10 M.P.H. have been tested. Al estimates that he has another 30 days of systems checkout and another thorough inspection before he is ready for first flight.

Al has encountered another problem which must be resolved before first flight and which is of interest to all Cirrus builders. The State of Michigan requires that all aircraft have a personal liability and property damage insurance policy in effect before first flight. Al looked to his insurance carrier for his Twin Comanche, but got turned down. Al is currently exploring alternative insurance carriers, but as yet does not have a solution to the problem.



BUILDERS NEWS



Association Business

Newsletter Financial Statement



The cost of publishing the Cirrus Newsletter is paid for by voluntary contribution from Association members.

Contributions to date.
\$ 420.00

Expenses to date:

Jan 94. \$ 68.24
Apr 94. \$137.84
Jul 94. \$ 95.00 (est.)

Account Balance (7/15/94)
\$ 118.92

Note: The actual cost of the April issue was \$ 320.38. However \$ 182.54 was paid by individuals for color printing. Payments for color printing are not counted as a contribution to CBA.

Disclaimer

The Association is intended to be an information transfer media which will facilitate the direct communication between individual Cirrus Builders. That means that there is no intent by the newsletter coordinator (Rick Mills and Tom Logan) to edit any information, to endorse any product or equipment, or make any judgments on any builder's project. Articles or other news items will be published in their full, original text with the author identified.

It is important to state that the Association is not a technical reference for Cirrus kit parts, or construction or aircraft operation manuals supplied by Cirrus. ***Cirrus Design is the sole and final authority on these items.***

Cirrus Builders Association

Newsletter is published by:

Tom Logan
9276 Youngstown Salem Road
Canfield, Ohio 44406

Rick Mills
3098 East Normandy Park
Apt. D1
Medina, Ohio 44256

Cirrus Newsletter

is composed on:

Gateway 486DX2-66 (IBMCompatible)
Microsoft Word 6.0
Aldus PageMaker 5.0
Aldus PhotoStyler 2.0
AutoCad 12
Hp Laser Jet II
Hp Scan Jet IICX

Please submit files:

3 1/2 or 5 1/4 disc. (ASCII text format)
Include a type written hard copy of your article, or submit your article typed or clearly printed.

Photos!!!!

To include photos, Black & White (NO CHARGE) color \$ 1.50 per page X's circulation.

Call in advance for total circulation.

Please include a photo of yourself with your article. A closeup black & white glossy works best.

Newsletter Publication Dates



Fall

Oct. Issue
Mailed Sept.15
Deadline Sept.1



Spring

April. Issue
Mailed Mar.15
Deadline Mar.1



Winter

Jan. Issue
Mailed Dec.15
Deadline Dec.1



Summer

July. Issue
Mailed June.15
Deadline June.1

Deadline dates are for articles submitted on IBM compatible disc. Please add two weeks for typed or hand written articles. Send photos and graphic work as early as possible.

Cirrus Video Newsletter

supplement???. If you're interested in helping with a builder's video newsletter and have access to video copying equipment, please give me a call.

Rick Mills 216 723-4615

Classified Add

For Sale! (1) Cirrus VK-30 Horizontal Stabilizer complete. Ready to install, including elevators. Counter weights have not been installed. Save 3 months of work or more!! Call Jeff Dodridge (619) 480-2330

Welcome New Cirrus Builders Association Members!

Alan R Shaw
Merick Co., Inc.
WP 16-100
WestPoint, PA 19486
(215) 652-7400

Darren Worden
PO Box 416
Mecca, CA 92254
(619) 396-2313
(619) 396-2116 X-12

GENERAL AVIATION

Cirrus VK-30 rights offered for sale

Cirrus Design is offering to sell the rights to its VK-30 kitplane for \$4.5 million. The Duluth, Minnesota-based company says that it has received expressions of interest from companies in Canada and China. The price includes Cirrus' own VK-30 prototype.

The Duluth, Minnesota-based company halted the VK-30 programme after selling 28 kits. Cirrus is now concentrating on development of type-certificated general-aviation aircraft using aerodynamic and structural technologies pioneered with the all-composite pusher-propeller VK-30.

The company has already sold the rights to its first new design, the single-turboprop ST-50, to Israeli company Isravation. Cirrus is building the ST-50 prototype and will unveil the five-seat, Pratt & Whitney Canada PT6A-135A-powered aircraft at the Oshkosh show in July.

Isravation, meanwhile, is

building two turboprop-powered VK-30s from kits to gain production experience before beginning work on the larger, pressurised ST-50.

Cirrus will close its Barraboo, Wisconsin, kitplane plant when the last VK-30 parts are shipped to customers. The company says it will only consider selling the programme to a buyer outside the USA. Cirrus will unveil at Oshkosh details of its plans to produce aircraft at its new Duluth site. □

Dimona plans four-seater

Canada's Dimona Aircraft, manufacturer of the Austrian-designed DV-20 Katana trainer, plans to develop a new four-seat light aircraft. Details of the aircraft will be released at the Oshkosh show in July and Dimona plans to have the new DA-40 flying before the 1996 Oshkosh show.