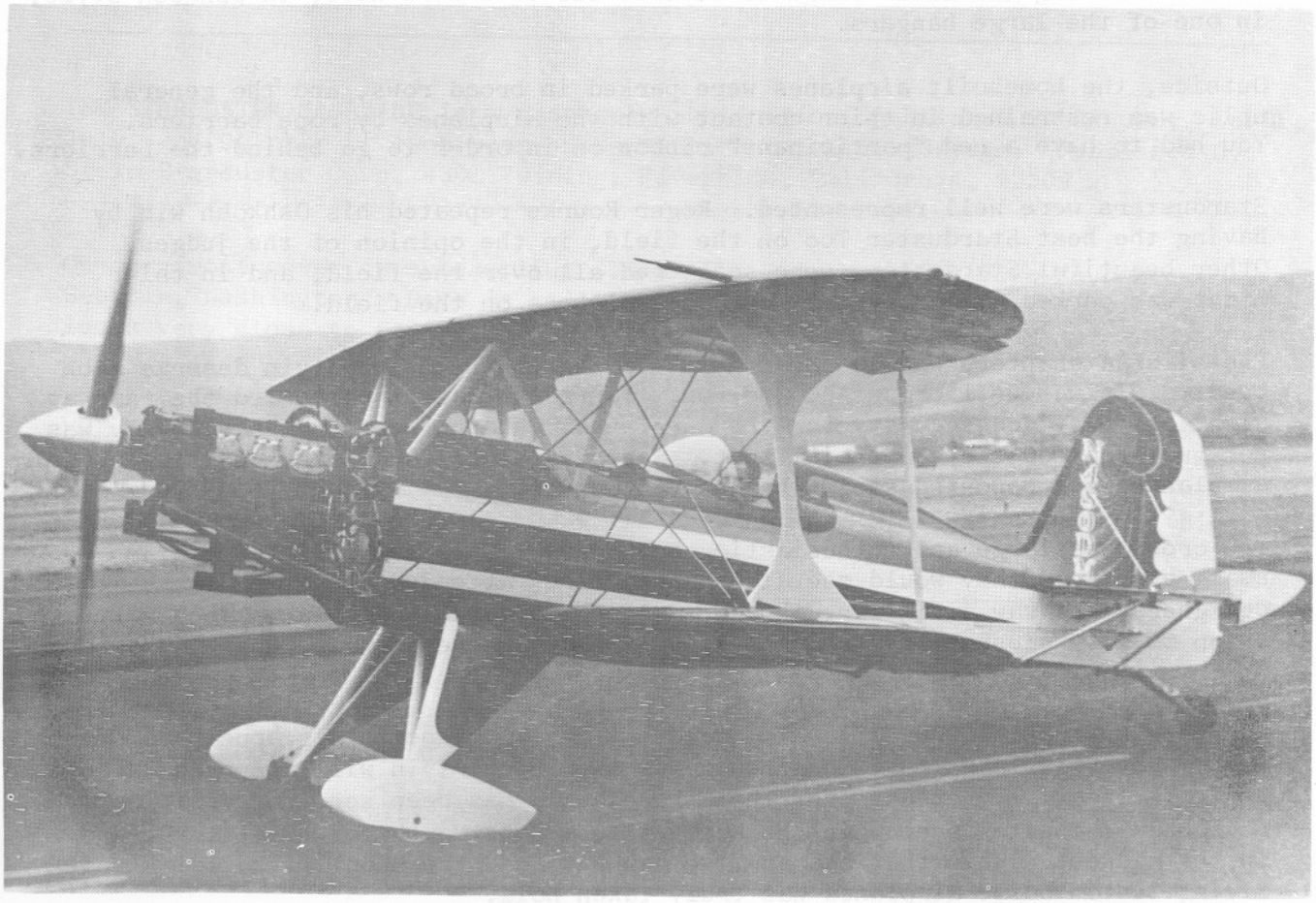
THE

Stardust er

APRIL 1978

MAGAZINE

DEDICATED TO THE ACTIVE HOMEBUILDER



PAGE ONE

With the success of the "SUN'N'FUN" Lakeland Florida Flyin, and the success this past weekend of the second Chino California EAA Regional Flyin, a trend is clearly established. Regional Flyins are going to get Bigger and bigger, and bigger. Chino Flyin was a miniature Oshkosh. EAA Headquarters people were there. Paul Poberezny was the featured speaker at the Saturday night banquet. A FLYIN QUEEN awarded trophies. Jack Cox and Golda were in evidence, wandering around talking to people and taking pictures.

Jim Appleby and his Fokker Triplane, and Eric Shilling flying my Nieuport 28 made thier debut as a WWl Dogfight airshow act. Happily, our side won, and the Nieuport now sports two black maltese crosses under the cockpit to celebrate Eric's two victories this past weekend.

A tent was filled with commercial vendors. Inside you could buy everything from parachutes and Gel Cel Batteries from Stolp Starduster, to welded sculpture portraying miniature airplanes from a well known artist, Van Gulder.

Forums covering the usual range of diverse subjects were held, in Oshkosh style, in one of the large hangars.

Outside, the homebuilt airplanes were parked in broad rows, and the general public was restrained in thier contact with the airplanes by rope barriers. You had to have a red "participant" ribbon on in order to go behind the barriers.

Stardusters were well represented. Roger Rourke repeated his Oshkosh win by having the best Starduster Too on the field, in the opinion of the judges. Other beautiful Stardusters were scattered all over the field, and in thier midst was parked my Acroduster Too, the only one on the field.

The six EAA chapters who cooperated in putting on the Chino Flyin deserve much credit. It was well organized and run. Young Air Cadets patrolled the ramp at night and provided security for the airplanes. Unhappily, adequate security was not provided for the commercial tent. Saturday night five metal sculpture model airplanes were reported stolen by Mr. Van Gulder.

The crowd was large and enthusiastic, both days. They saw all the popular small airplanes they would see at Oshkosh. They attended forums by the same designers, and saw a similar, though smaller, commercial display. They witnessed a top Quality airshow, featuring talent like Bob Heerendeen and Frank Sanders.

For people who find 2000 miles too far to travel, the regionals appear to offer much. Ray Stits says that in a few years the Chino Flyin will approach Oshkosh as it is today. We expect, now that the example has been set, for additional regional flyins to develop in the Northeast, in the Northwest (Seattle?), and in the midwest. When that happens, we can say that the sport of building and flying Custom built airplanes has truly taken hold.

April 1978

THE STARDUSTER MAGAZINE--DEDICATED TO THE PROPOSITION THAT THE ULTIMATE IN SPORT AIRCRAFT WAS REACHED WITH THE DESIGN AND DEVELOPMENT OF THE OPEN COCKPIT, TAIL DRAGGING BIPLANE--- AND THAT EVERYTHING ELSE HAS BEEN DOWNHILL---EVER SINCE.

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THE STARDUSTER MAGAZINE is a quarterly publication, published in January, April, July, and October of each year--Subscription rate--$5.00/year. Published by Stolp Starduster Corp, 4301 Twining, Riverside, California, 92509

On our front cover is a beautiful STARDUSTER TOO, built by Dave Maurer, of Seattle, Washington. Dave is still working on a cowling, but otherwise it looks very close to flying.

On our back cover is the outstanding STARDUSTER TOO now being offered for sale by Maynard Engle. An outstanding airplane, originally built by Chuck Tyler with the help of Morgan Schrack. It was then bought and rebuilt by Maynard. It is for sale because Maynard has about finished another STARDUSTER TOO, and figures it is time to let one go.

OUR TWO INFLATION FIGHTING POLICIES

1. WE GIVE 3-5 LBS OF SHORT LENGTHS OF TUBING FREE, WITH EACH SUBSTANTIAL ORDER. IT IS SUITABLE FOR WELDING PRACTICE. NO SIZE SELECTIONS.

2. A 10 % DISCOUNT WILL BE GIVEN TO CUSTOMERS WHO WALK IN AND SELECT THIER TUBING FROM THE SHORT LENGTHS RACK, PROVIDING NO CUTTING IS DONE. IF CUTTING IS PROVIDIED, REGULAR PRICES WILL PREVAIL.

- HORSEPOWER, SPEED & RATE OF CLIMB-

by jim osborne

BASIC DEFINITIONS

FORCE - A Push or a pull. No movement takes place. Example: A 550# elevator hanging on a cable.

Power - A force operating thru a distance. Example: A 550# elevator being raised 10 ft by a cable.

*HORSEPOWER - A force operating thru a distance during a given amount of time. Example: A 550# elevator being raised 10 ft in one second.

Horsepower=550 foot pounds per second
Horsepower=33,000 foot pounds per minute

$$*H.P.=\frac{550\#\times 10\text{ feet}}{550\text{ foot pounds per sec per H.P.}}=10\text{ H.P.}$$

Note the flexibility in the above definitions of horsepower. One horse power equals 550 foot pounds --- in one second. This can be 550 pounds of force moving thru one foot, in one second, or it can be 1# force moving 550 feet in one second, or anything in between.

Now that we have reviewed & tied down our basic definitions, let us consider how horsepower affects the performance of our airplane.

If we were designing a new airplane, we could use various formulas and methods to calculate the performance of our new bird, with a given amount of horsepower. However, we know from experience what a standard aircraft design will do with a given engine. So, lets see how easy it is to calculate what a Starduster Too would do if we changed engines.

Consider speed: A Starduster Too will probably fly around 125 M.P.H. at a 75% power setting on 180 H.P. What would it do if you changed engines, either up or down in power.

Drag and thrust(force) now enter the picture. Drag varies as the speed squared.

$$\left(\frac{V_1}{V_2}\right)^2=\frac{D_1}{D_2}$$

V=velocity in M.P.H.
D=drag in pounds

Now, if horsepower was proportional to drag, all we would have to do would be substitute HP_1 & HP_2 for D_1 & D_2, $ find V_2 by cross multiplication. Unfortunately, it is not quite that easy.

Consider thrust. It is the force in our horsepower equation. Remember that horsepower is a product of force times a distance per unit of time. It is the total derived from multiplying force times distance. Force can be any amount, provided the distance is such that the product equals available H.P. What this means is that the faster your airplane goes, the less thrust your engine is putting out.

Your 180 H.P. engine, at 75% power, is putting out 135 H.P. A prop that is 85% efficient will give you 115 usable H.P. 115 HP=63,250 foot pounds per second. A cruise speed of $125\text{ M.P.H.}=\frac{125\times 5280}{3600}=183.3$ feet per second.

183.3 feet per second x thrust = 63,250 foot pounds.

$$\text{Thrust} = \frac{63,250}{183.3} = 345 \text{ pounds}$$

Suppose you go into a dive, with your c/s prop still delivering 115 usable H.P., or 63,250 foot pounds of power per second. Suppose your speed exceeds red line & doubles. (Note: Don't do it - this is just for calculations.)

Now, your speed is 366.7 feet per second.

366.7 feet per second x thrust = 63,250 foot pounds

$$\text{Thrust} = \frac{63,250}{366.7} = 172.5 \text{ pounds}$$

Conclusion: On a given amount of horsepower, doubling your speed will halve your thrust. Doubling your speed will give you four times the drag. Therefore, doubling your speed will require eight times your previous horsepower.

Our horsepower - speed equation is therefore:

$$\left(\frac{V_1}{V_2}\right)^3 = \frac{HP_1}{HP_2}$$

Lets apply this to our average Starduster Too, with the 180 HP engine and 125 MPH cruise speed. Cruise speeds for 125 and 260 HP will be figured.

For 125 HP, $\left(\frac{125}{V_2}\right)^3 = \frac{180}{125} = 1.44$

$$(V_2)^3 = \frac{(125)^3}{1.44} = \frac{1953125}{1.44} = 1,356,336.8$$

$$V_2 = \sqrt[3]{1,356,336.8} = 111 \text{ MPH}$$

For 260 HP, $\frac{(125)^3}{(V_2)^3} = \frac{180}{260} = .6923076$

$$(V_2)^3 = \frac{(125)^3}{.6923} = \frac{1953125}{.6923} = 2,821,211.9$$

$$V_2 = \sqrt[3]{2,821,211.9} = 141 \text{ MPH}$$

From the above, we can see that changing H.P. doesn't affect speed much.

Now, let us examine H.P. and rate of climb. An airplane is just another weight to be lifted. A certain amount of H.P. is required in order to enable it to fly level. All H.P. over that amount is called excess H.P., and is available for climb.

Let us figure the H.P. required to make our typical Starduster Too fly straight and level. We start with 180 H.P., and 1500 FPM rate of climb.

$$R/C = \frac{\text{Excess H.P. x 33,000}}{\text{Gross Weight}} = 1500 \text{ FPM.}$$

$$\text{Excess H.P.} = \frac{\text{Weight x 1500}}{33{,}000} = \frac{1700 \text{ x } 1500}{33{,}000} = 77 \text{ H.P.}$$

Subtracting 77 from 180 gives us 103 H. P. required for level flight.

What R/C will 125 H.P. give us? This engine weighs about 35 pounds less than the 180 H.P. engine. Power required for level flight will hardly be affected.

$$R/C = \frac{(125-103)}{1665} \times 33{,}000 = \frac{22 \text{ x } 33{,}000}{1665} = 436 \text{ FPM.}$$

It is interesting to note that, with 125 H.P., more than 75% power is required in order to fly level.

With 260 H.P., add 120 Pounds.

$$R/C = \frac{(260-103) \text{ x } 33{,}000}{1820} = \frac{157 \text{ x } 33{,}000}{1820} = 2846 \text{ FPM.}$$

From the above, we may conclude that H.P. changes have small effect on speed, but great effect on climb. We may also conclude that any streamlining we do that will increase speed will also increase rate of climb, provided the weight increase is small. Why? Because any decrease in drag diminishes the H.P. required to fly straight and level. This gives us more excess H.P. for climb. Also note that R/C is inversely proportional to weight. Half the weight gives us twice the rate of climb. Keep it light. Climb out of sight.

JOHN HELTON AND ACRODUSTER TOO CONTINUE WINNING WAYS

As we go to press, John and the Acroduster return from an IAC sponsered Aerobatic contest in Delano, California. He returned with his second First place trophy in the ADVANCED category. He also won first place in ADVANCED in Borrego, California, Last Fall.

In winning, John and the Acroduster beat three single place Pitts, two double hole Pitts, and one Stephens Acro. John is now considering going unlimited. He says the Acroduster will do the maneuvers, and he is giving it serious consideration.

John was assisted at the contest by his lovely Daughter, Janet. who acted as pit crew, in addition to being a computer operator.

PERSONAL OPINION

BY ERIC SHILLING

In a recent issue of "Sport Aerobatics" an inspector was critical of the position of one of the airplanes fuel tank vent. The vent line was routed down the leg of the landing gear terminating at the axle, facing forward. He was afraid that it could get stopped up with mud or dirt. One may reach the conclusion that it should have been facing aft.

A friend of mine asked me to make the first few flights on a recently built Skybolt. I knew it to be a well built airplane, so said I'd be happy to oblige. On the day of the first flight, I made the usual preflight inspection as well as engine run up. After being satisfied that all was in order, I taxied out and made one slow speed taxi down the runway to check the tailwheel steering and braking action.

I then taxied back to the take off point and made a normal take-off, climbing to a safe altitude. I stayed within gliding distance of the field and proceeded to feel the airplane out. When I was sufficiently acquainted with it I descended for landing, but decided to make a high speed pass since I had been requested to test the smoke system as well.

During the descent I had throttled back to 15 " MP crossing the end of the runway at 180 MPH and about 200 feet AGL. Just as I came in with the throttle the engine quit with out a sputter. At this time I was about500 feet down the runway at 185 MPH. Much too fast to land on the remaining runway. I pulled up into a steep climbing turn. With the speed I had I felt sure I'd be able to make the 360. Wobbling like mad, the engine coughed a couple of times so I was able to make the runway and land. To use the pump I had to switch hands, the pump was on the right side. This took precious second, switching hands.

I had already decided that I was not going to spin in like so many pilot have done, trying to make the runway. I planned to stop the turn, regardless of my position if I found it impossible to make it and landstraingt ahead. fortunately this was not necessary.

Since the feel of the wobble pump was very soft, I was sure of vapor lock, so a check of the entire system was made. There was, I thought, a possibility that the engine driven fuel pump had vapor locked, as it was to hot to the touch. I felt that the vapor lock could have been due to the low fuel flowwhile the throttle was retarded, which let the fuel stagnate in the pump and then vaporize. With this in mind we decided to install a blast tube for cooling. The fuel drains were checked, no dirt but a little water came

of the main tank. Fuel lines were also disconnected to check for fuel flow. Every thing was O.K.

After a ground run on the engine, the fuel pump was running much cooler, so I decided to try again. After take off I again climbed directly over the field and leveled off at 5000 feet. I continued pulling high power and by making steep turns kept the airspeed down in an effort to induce hi-temperature, trying to see to see if the engine would vapor lock. It wouldn't. After an hour and 30 minutes I thought the problem had been solved so came in for a landing.

I then decided to take the owner up and let him fly the airplane. I again stayed within gliding distance, and after 30 minutes dove the airplane to 185 MPH to try a barrel roll. Just as I was bringing the nose up past the horizon, the engine quit. I set up a pattern for a dead stick landing and then tried the wobble pump. Vapor lock, no resistance at all on the hanble. This time not even a cough. As my airspeed dropped to normal speed for a power off glide, the engine stopped windmilling completely. Thanks to the very light weight Hoffman propeller, there was little or no flywheel action. As a matter of fact with this propeller the engine runs very fough, as it hasn't enough weight to pamper the power impulses from the engine. I don't think I like this prop much, for the engine really pounds.

After landing and turning off the runway, I sat for a few minutes and then tried starting the engine. I was able to build up fuel pressure and the engine started without trouble, so taxied back to the line. This time instead of leaving the check to others, I decided to check the airplane myself. I didn't get far, when I spotted the fuel tank vent and noticed it was facing AFT. I bent the soft aluminum tubing forward and then got in the airplane. I took it up to 5000 feet and dove it up to 200 MPH. NO VAPOR LOCK. The tank vent was the guilty offender all the time. Apparently what was occuring was that during climb and cruisenot enough vacuum developed to cause vapor lock, but during each dive the buildup was enough to do the trick, and vacuum would not bleed off quickly enough to allow the engine to start feeding fuel again before landing.

From this incident I recommend that if an airplane has more than one fuel tank 4 or 5 gal of fuel be put in the Aux tank just incase some fuel malfunction occures. If such happens you would be able to switch tanks and possibly get the engine running again. In this particular case it would have started running again as subsequent tests proved . Had there been fuel in the

in the center section I could have switched tank and had no further trouble.

For those of you that hesitate to put the vent forward, I want to point out, that if a tank meets part 23 of the FAR's (requiring pressure check to 2.5 lbs. per sq. in.) the tanks quite capable of withstanding 200 MPH. This represents 20.05 inches of water pressure or .7245187 #/ sq in.

While flying for the Flying Tigers in 1941 we were experiencing vapor lock when climbing from a tropical airport to 20,000 feet. I decided to try placing a airscoop on the common vent. after installing the scoop we had no more trouble..The factory came out with an identical fix.

The following could possibly come under, For what it's worth department. These are random thoughts on building airplanes. We are always concerned with safety, the other follows. Most of us are guilty of being lax when it comes toour own. Cockpit convenience, although normally not considered to be a safety item, can be. A Pilot, when fatigued, is not as good as a fresh alert one. How many of us have flown all 50 hours in the traffic pattern, so to speak, with no comfort problems. It isn't until we are on our first long X-country that we are aware of the uncomfortable seat and the many sharp protrudences jabbing our knees or legs. The only way to find out, while we are still able to do something about it , is get a very interesting book and spend an hour or two sitting in the seat. I guarantee you will find things that need to be changed.

Another item that can help alleviate fatigue is to brighten the cockpit area and instrument pannel. Years ago, most airlines found that either very light green or very light blue instrument pannel was restfull to the eyes. The constant changing contrast was found to be fatiguing. The lighter colors cut down on the constrast between outside and inside the cockpit. Most airplanes you look into are just short of being a black hole until your eyes accomodate to the darkness.

How many of you have tried to get out of you bird with your parachute on. Did you find it to be difficult. worse yet did it shock you to find out that it was actually impossible to get out. Have you made the cockpit enclosure for comfort forgetting about safety, yet you bought a bery expensive parachute. Perhaps the parachute is actuall a status symble, you wouldn't leave your thing of beauty. There are some that have and were damn glad that they did. Didn't regret using the chute a bit. They found theirself in a position where the chute was the only sensible choice.

This may sound ridiculous,try it sometime. Pour one quart of water in to your main fuel tank. Then drain the gascolator!!!No water. How about flying it now? Why not? You didn't get any water out of the gascolator when you drained it. Of course you wouldn't fly it. You don't know for sure though that when you refuel you don't have a quart of water in the tank. There was an accident at Van Nuys airport lately. The airplane crashed right after take off due to engine failure. You gessed it. Water in the fuel tanks. I wonder, if he had a tank drain did he use it?

At Stolp Starduster we make the tank with the provision of a fuel drain at the bottom for a quick drain fitting. We don't even have one on our airplane. It would be safer if we did, and used it.

Did you know that the ammeter actually tell you very little? A volt meter is much more practical.. It tells you the condition of the battery before you start, and how many volts the alternator is putting out. Your battery is much more concerned about voltage than it normally is about charging rate. If the voltage is too low your battery will not last as long as it should. If it is putting out too higha voltage the battery will be even shorter lived.

The Exhaust Temp guage. In my opinion it is much better than the CHT guage. It tells you what is happening, not what has happened. You can lean to roughness and the go toward rich, if you have guessed right you in luck.

A fuel pressure guage can give indications of impending engine failure under certain conditions. You might be able to make a precautionary landing.

The wobble pump handle should very ddfinately be on the left.

Enough for now. For what ever it's worth, perhaps I can come up with more next time

Eric

VACATION SCHEDULE

A reminder to our friends and customers that we will be closed for Oshkosh and Fon du lac this year, as is our yearly custom.

We close on Saturday, 29 july. We reopen for business on Monday, 14 August.

Get your orders in early. And pay us a visit at Oshkosh. This year we will have a Booth in the main display building, and one or two planes on the flight line.

-THE IMPORTANCE OF TENSION-

by jim osborne

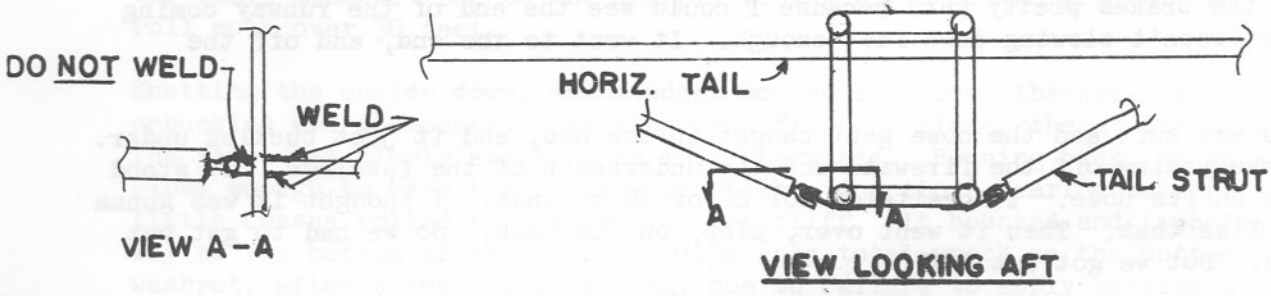
Many parts of an airplane are held together, or braced, by members which are axially loaded. Some, like wires, take tension only. Others, like tail brace struts, or cabane struts, take either tension or compression, unless they are adequately tightened in the first place, in which case they take only tension.

When such a member is installed with too little tension, vibration occurs. This vibration, or buzz, will weaken the member, or the fitting to which it is attached, in a hurry. Pretty soon the metal will crystallize and break.

In recent years we know of a vibrating landing wire cracking the strap fitting that projects from the firewall. We also know of a tail strut breaking the strap fitting projecting from the fuselage, and the cabane sway brace breaking the center fitting.

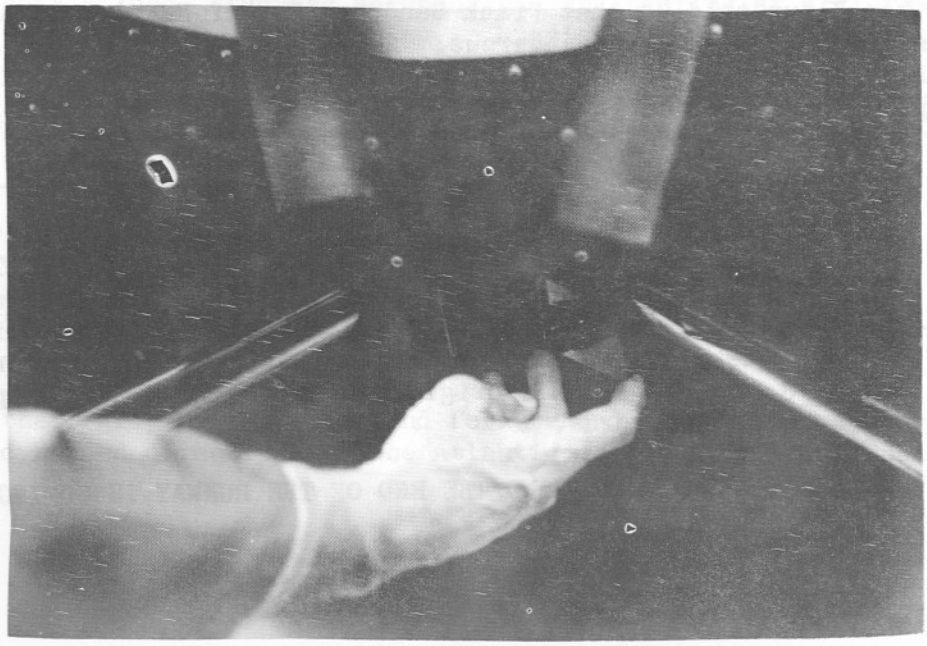
In every case there was little or no tension on the members involved. There was buzzing, vibration, and the associated rapidly reversed loadings. This leads to a very short fatigue life.

The word is, keep struts and wires tight enough so that vibration does not occur. If it does, over any appreciable time, you are likely to break something. In the case of the fuselage strap fitting broken by a tail strut, an additional factor was welding across the tab (see sketch). This anneals the metal and makes it less able to take loads. The break occurred right next to the weld.



SHOWING SPRING LOADED TABS ON MAYNARD ENGLES STARDUSTER TOO. THEY PERMIT LARGE LANDING GEAR DEFLECTIONS WITHOUT HARMING THE SHEET METAL WORK. VERY NEAT.

THIS IS THE TOO THAT MAYNARD HAS FOR SALE.



BD4 CRASHES DURING GROUND TAXI TESTS

The following incident is reprinted verbatim from the pages of CHAPTER 7 News Letter. It was written by editor RAYMOND L. GORDON, and is presented here with his permission. We believe it illustrates the danger of this type of testing. We continue to advocate the takeoff and get familiar with your new airplane at altitude type of testing. We believe it is much safer than the low and slow type of testing.

****** Klaus Heddergott had problems. After working on his BD-4 for the past six years, he put together one of the most perfectly made homebuilts I've ever seen. It was ready this month-- all rivets set, all paint glassed on without a run or a mistake. It was beautiful.

He decided to do taxi tests at Chino down runway 21. "I got it up to about 60 and everything felt pretty good. It controlled good. I got it up to 60 again and slowed it down and I got to the end of the runway. I turned around and came back-- I got it up to about 80. When I crossed 26, there's a kind of a shallow dip, and it went down and came up. When it came up it just catapulted me into the air. The next thing I knew, I was up 20 feet in the air and flying. It felt fine and stable just like it had taken off."

"I hadn't intended to fly, so I hesitated------ I didn't know whether to give it power and take off or bring it back down. I brought the power back to land."

"It didn't seem to come right down. It just floated. And made a couple of porpoises. I stood on the brakes pretty hard because I could see the end of the runway coming up. It just wasn't slowing down fast enough. It went to the end, and off the runway."

"The ground was soft and the nose gear caught in the mud, and it just buckled under. It ripped everything off the firewall and the underneath of the fuselage. It stood straight up on its nose. It hesitated for 20 or 30 seconds. I thought it was gonna stay there like that. Then it went over, plop, on its back. So we had to get out upside down. But we got out O.K."

"It tore up pretty good--- it"ll set me back a couple of years, probably. Wings-- tail--- everything is damaged."

Then Klaus told us that Frank Sanders (Hawker Fury) told him afterwards that high speed taxi tests are dangerous. He says that more people are killed and hurt in high speed taxi runs than is commonly known. And he added that anytime one of his planes is reworked extensively he just makes an easy takeoff. It's safer.. Something to think about.

We think the above is the most graphic first person depiction on a high speed taxi test accident that we have ever read. We think it also depicts perfectly the mental dilimna of the first hop test pilot. He had determined to do high speed taxi tests. He was NOT going to fly. When he inadvertenily became airborne he was in a quandry. To Fly, or land and stick to his original test program. He decided to stick with his original plans. With the unhappy results as narrated above in his own words.

WHEN YOU GET AIRBORNE, AND THE END OF THE RUNWAY IS COMING UP, FLY, DON'T LAND.

ACCIDENTS WITH A TWIST---by jim osborne

We have all read the accident report columns in various aviation publications. These reports are written in a grim, no-nonsense manner, and should suitably impress us with what sad results can come about because of poor planning, poor judgement, or poor piloting skill.

The following three accident reports are somewhat unusual. The results are to be deplored. But their manner of happening is unusual, bizaare, and even a little bit funny. They deserve to be shared. We hope you enjoy them.

1. The student pilot rented a Cessna 150 from the FBO at a small California airport, and decided to go sightseeing. He had about 15 solo hours. The beautiful San Gabriel mountains were within sight, just a few miles away. Without gaining sufficient altitude the student started flying around the edge of the mountains, and soon found himself in a classic situation. He was flying up a rapidly narrowing canyon, without room to turn around, and the ground was rising faster than the little Cessna could climb. Dead ahead the canyon ended in a vertical rock wall of perhaps 400/500 feet. At the top of the rock wall was a small mountain meadow, sloping up from the lip of the wall at an angle of 20/30 degrees.

Calling on every bit of horsepower that the straining engine could deliver, and pulling the wheel back almost in his lap, the student lifted the little Cessna over the rim of the Canyon, and made a perfect full power, full stall landing on the small meadow. Due to the sharply rising slope of the ground, the student didn't roll much over 30 feet.

Shutting the engine down, the student mopped his brow, thanked his lucky stars, unbuckled and dismounted. Walking away from the plane, the student glanced back. The plane was slowly starting to roll backwards. Running back, he managed to get close enough to have his fingers brush the wing tip. Nearing takeoff speed the little Cessna rolled backwards over the cliff. It bounced and impacted all the way to the bottom of the cliff, ending up a total wreck on the bottom. A complete washpot, after a beautiful landing, due to failure to apply parking brakes or to chock the wheels.

2. Two student pilots, both soloed, studying aeronautical engineering at a Florida College, decided to rent a Cessna 150 and go flying. Buzzing a nearby beach in the morning sun, they noticed a covey of beautiful young girls waving at them. The Beach was wide and clear and uncrowded. The impulse---the opportunity. No sooner thought of than done. They landed on the beach and spent several enjoyable hours getting acquainted with their pretty new friends.

Departure time. Buckled in the airplane, our students gunned the engine, only to find that the wheels were sunk so deep in sand that the plane wouldn't budge. The girls offered to push, but our heros waved them off. Both got out, one on each side, pushing with the doors open and the engine running at a good clip.

Suddenly the plane began moving. It was moving considerably faster than they had anticipated. They lost their grip on the plane and fell behind. It taxied sedately in a wide semicircle, and headed directly into the Atlantic ocean. Almost as soon

as it entered the water, the prop started churning water and throwing a 30' high roostertail. The drag of the water finally stopped the engine, and the Cessna came to rest in about two feet of ocean surf. The plane was resting on a sandy bottom, and our two fledgeling pilots and their girl friends were unable to get it back to shore.

Resigning themselves to the inevitable, thay hunted up a telephone and called the FBO. Lying just a little about the sequence of events, they nevertheless told the FBO that his airplane was in the drink. The FBO swore, and then called an outfit with tow trucks and arranged to have them pull his bird back to shore.

Two hours later, the tow truck finally arrived. By this time, the tide had come in, and the plane was sitting in water up to the wing. The truck driver let out his long cable, and our heros swam out and fastened it around the aft fuselage, just in front of the tail. Easing into the slack, the driver gave the truck full power. The wheels spun and buried themselves in sand. The plane didn't budge. Being used to dealing with difficult situations, the driver backed up and got a running start, Hitting the end of the cable, he felt a sudden jolt, but kept right on going. Behind him, the tail assembly came right out of the ocean. The rest of the plane stayed where it was.

Several days later, the rest of the much abused little airplane was finally dragged up on the beach and salvaged for scrap. A series of decisions involving poor judgement had dragged on to a final expensive conclusion.

3. This incident is one of ERIC SHILLING's War Stories. Pilots flying the hump, in World War Two, terminated at Kun Ming Air Force Base, China. Due to the volume of traffic, 3-4 hours would elapse between a request for takeoff and taking off. It was customary for the pilots to request takeoff clearance as they were landing. They would be given a priority number. They would unload, eat, refresh themselves, and then taxi slowly, in a long line towards the active. About one hour would frequently be spent in the taxi line, waiting for takeoff.

Our hero went thru the above procedure, and was temporarliy parked, near the head of the takoff line. He was sleepy and tired, and dozed off while sitting in the left hand seat. He dreamed he was flying the hump. The C-47 next to him started its engine runup. The drone of the engines penetrated our pilots dreams, and made them more realistic. They were as soothing syrup to his illusions. Of course, in his dreams the sound was that of his own engines.

The pilot in the next airplane finished his runup, and throttled back. The LACK of engine noise disturbed our hero, and he awoke with a start. He blinked suddenly awake to be confronted with no engine noise. Still thinking he was flying the Hump, he scanned the instrument panel and saw no air speed. Wham-- he slammed the control yoke full forward, hard enough to break the control stop. The yoke slammed into the instrument panel hard enough to break several vital and expensive instruments.

And that is the true story of the only C-47 flying the hump that was put out of action while it was standing still on the ground, waiting for takeoff clearance.

THE MAIN TROUBLE WITH THIS WORLD IS THAT SO MANY PEOPLE WILL NOT ADMIT THEIR FAULTS. I WOULD ADMIT MINE, IF I HAD ANY----

MANDATORY SA 750 DRAWING CHANGE

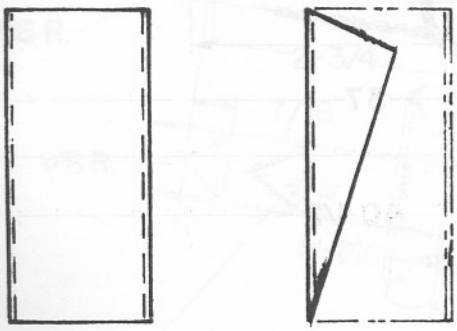
by jim osborne

Recently, the number 7 Acroduster Too to fly, with a total of five hours flying time suffered an engine failure over high rough mountainous terrain. during the forced landing the pilot reports he also suffered a loss of up elevator control during the landing flare. Due to good balance and trim, the pilot reports he still landed nose high, in a three point attitude. Due to the rough terrain, the airplane suffered heavy damage. The pilot suffered minor injury, due to the structural integrity of the airframe. The pilot got out and walked three miles to the nearest farmhouse for aid.

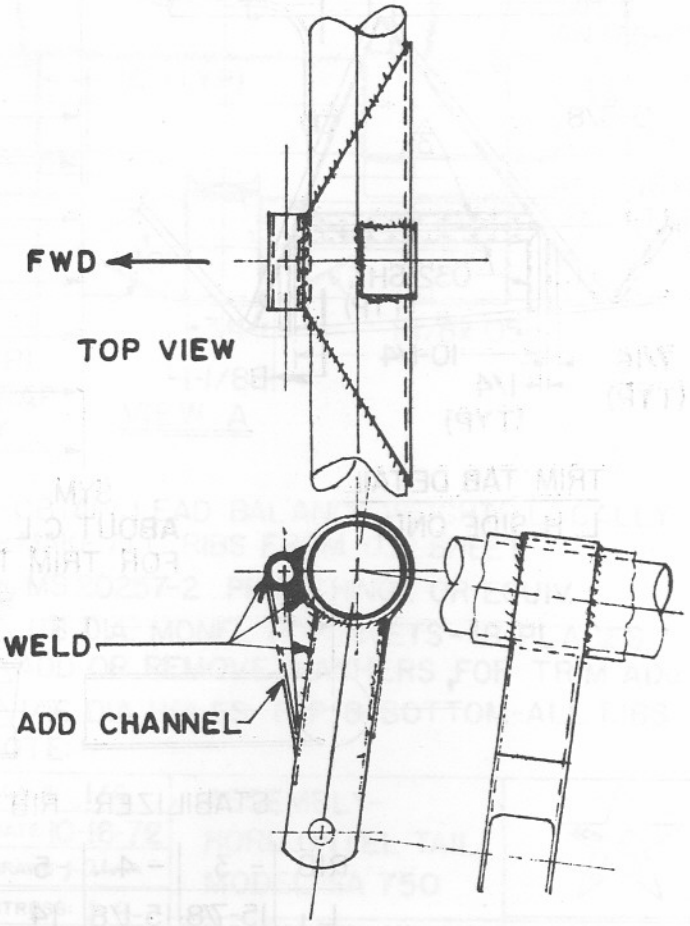
Upon examination, the engine was found to have thrown a rod. It had been bought as a used engine, from a crashed airplane. It had only thirty hours on it, and had appeared to be undamaged from the earlier crash. The elevator control horn had suffered a weld failure on the front where it attaches to the longeron. The weld had been done by the builder. It was shallow, and showed little penetration.

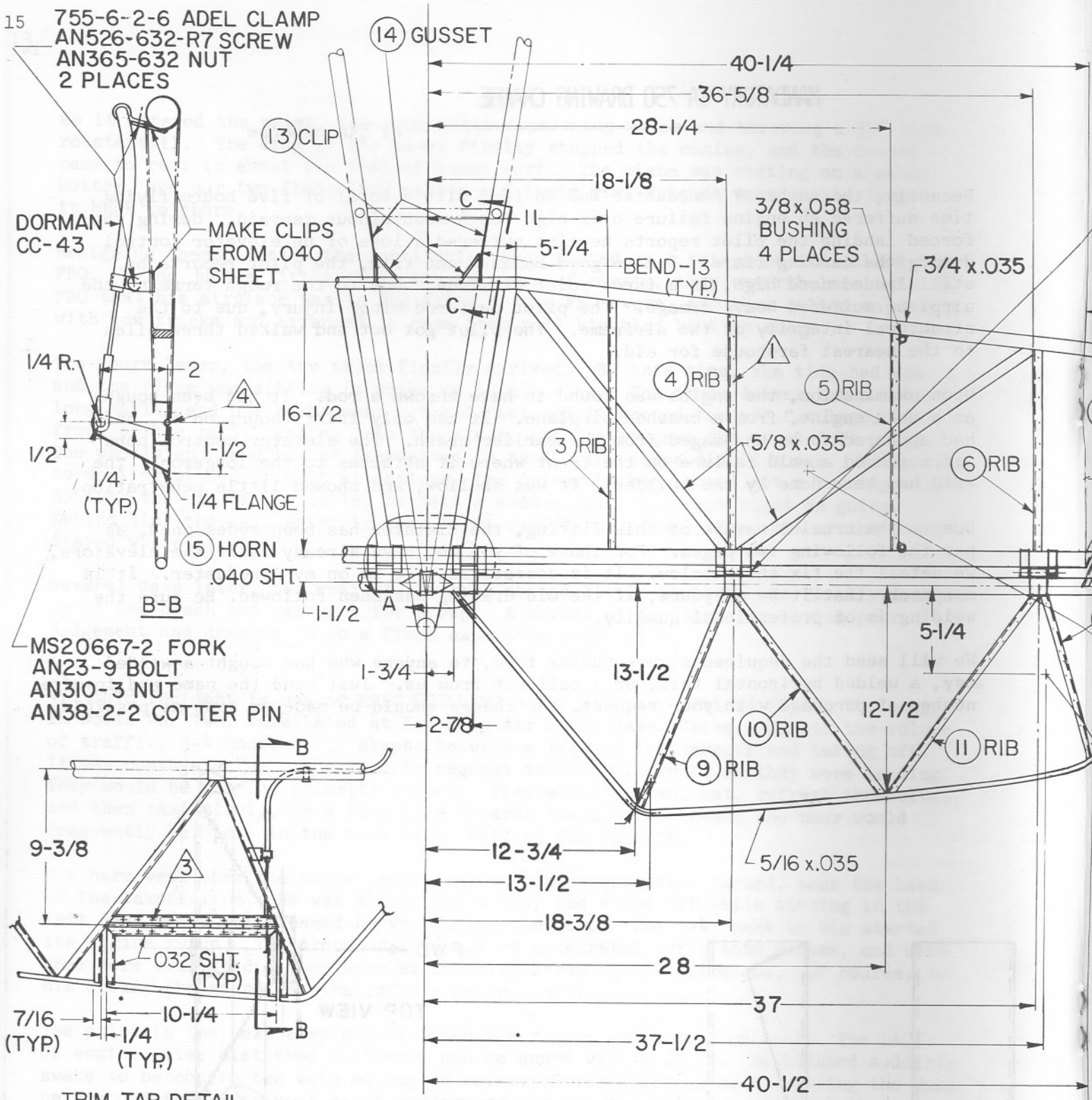
Due to the crucial nature of this fitting, the elevator has been redesigned, as per the following two pages. For those of you who have already built the elevators, we detail the fix shown below. It is acceptable. It is on my Acroduster. It is mandatory that it be on yours, if the old drawing has been followed. Be sure the welding is of professional quality.

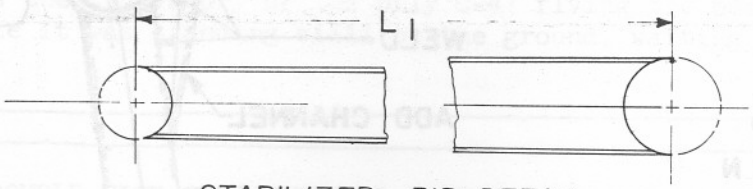
We will send the required square tubing free, to anyone who has bought a welded æssy, a welded horizontel tail, or a tail kit from us. Just send the name and invoice number of purchase with your request. The change should be made as soon as possible.



CHANNEL FITTING
FULL SIZE
MAKE FROM 3/4 x 3/4 x .049
SQUARE TUBING, 4130, COND. N

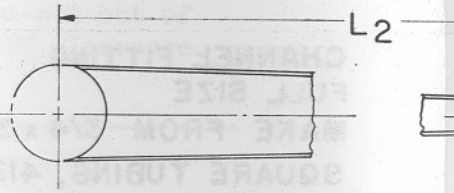






STABILIZER RIB DETAIL

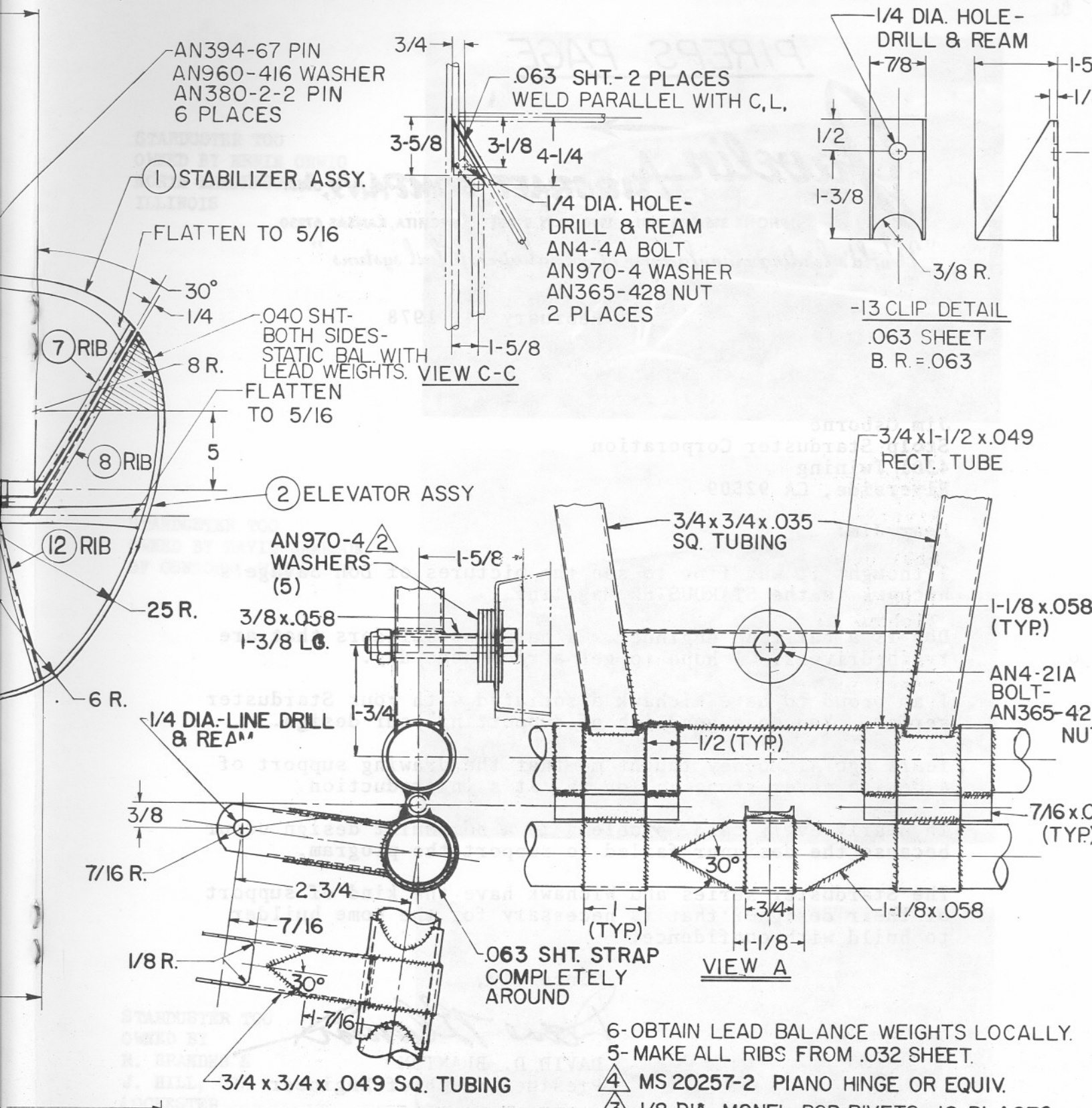
RIB	- 3	- 4	-5	-6	- 7
L_1	15-7/8	15-1/8	14	13	11-5/8



ELEVATOR RIB DETA

RIB	- 8	- 9	-10
L_2	13-1/8	14-1/2	15-3/4

REVISION "A" 5-18-78



6- OBTAIN LEAD BALANCE WEIGHTS LOCALLY.
5- MAKE ALL RIBS FROM .032 SHEET.
4 MS 20257-2 PIANO HINGE OR EQUIV.
3 1/8 DIA. MONEL POP RIVETS - 18 PLACES
2 ADD OR REMOVE WASHERS FOR TRIM ADJ.
1 1/16 DIA. HOLES - TOP & BOTTOM - ALL RIBS
NOTE:

DETAIL

0	-11	-12
3/4	5-1/2	10-3/4

SCALE: 1/4	ASSEMBLY- HORIZONTEL TAIL MODEL SA 750	ACRO DUSTER TOO
DATE: 10-16-72		
DRAWN: J. Osborne		
STRESS: J. O.		
CHECKED: J. O.	STOLP STARDUSTER CORPORATION 4301 TWINING, RIVERSIDE, CA, 92509	SHEET NO. 4

PIREPS PAGE

Javelin AIRCRAFT COMPANY, Inc.
PHONE 316/733-1011 1978 EASY STREET WICHITA, KANSAS 67230
"World's leading manufacturer of special aircraft fuel systems"

February 24, 1978

Jim Osborne
Stolp Starduster Corporation
4301 Twining
Riverside, CA 92509

Dear Jim:

I thought it was fine to see the pictures of Don Savage's Wichawk in the STARDUSTER Magazine.

Don is a railroad engineer. I have two builders that are train-drivers. I hope to get a ride some day.

I am proud to have Wichawk associated with your Starduster series. You do a good job of supporting your design.

Years ago Al Mooney taught me that the drawing support of a design never stops as long as it's in production.

In nearly every case, problems in a homebuilt design occur because the designer failed to support the program.

The Starduster series and Wichawk have the kind of support of their designer that is necessary for the home builder to build with confidence.

Sincerely,

Dave Blanton

DAVID D. BLANTON
President & Chief Engineer

DDB:ems

STARDUSTER TOO
OWNED BY ERNIE ORWIG
NORTH HENDERSON
ILLINOIS

STARDUSTER TOO
OWNED BY DAVID JAMESON
OF OSHKOSH, WISCONSIN

STARDUSTER TOO
OWNED BY
R. BRANDES &
J. HILL, OF
ROCHESTER
MICHIGAN

INTERNATIONAL AEROBATIC CLUB
I. A. C.

International Aerobatic Club

POST OFFICE BOX 229 HALES CORNERS, WISCONSIN U.S.A. 53130

Northridge, California
April 17, 1978

Dear Jim,

On behalf of the Officers and Board of the IAC, I just want to thank you for your donation of the Globe Gell-Cell Battery to the IAC membership contest. There will be an article in the next issue or the one thereafter with the names of the people who have so far contributed to the contest.

Saw John Helton last weekend at Mojave, and he is really flying the heck out of that Acroduster II. I don't think you could have a better man flying the machine than John, He does a beautiful job of putting the airplane through its paces.

Hope you can make it out to the contest at Mojave May 18-20. Hi to all the gang at Stolp-Starduster.

Sincerely,

Jim Rossi

STEVE WALTON
291 BLUE SKY DR
MARIETTA, GA 30067

22 FEB 1978

Dear JIM;

After six years and one month of Frustration, Scrounging, Saving, and finnally Accomplishment.
My labor of love took to the air, and all of the above Superlatives were more than worth it.
N- 84 SW flew Nov 20 1977 on a cold overcast ,dreary day, however when that flight was over it could have been 20 below zero and I wouldnt have noticed it.
I am an Airline Pilot (PAA) and have been flying for over 25 years. Believe me when I say I have never experienced a greater feeling of accomplishment as on that day.
I went with the theory of check and recheck, then line up as you would any other airplane and go.
By the time I had full throttle, I was airborn and climbing like a homesick Angel. The airplane seemed to be flying itself, however the first flight was cut short when I noticed the upper right aileron was vibrating some. This was corrected by turning the interconnect strut slightly.
The only other rigging we had to do was to add a trim tab to correct a slight wing heavyness. Everything else is rigged to zero.

Here are some of the Specs on N-84SW

Engine---Lyc 0540 61A-5 260 HP (OSCMH)

Prop ----- McCauley 84/52 Fixed pitch (NEW)

Both eng and prop are from a Piper Pawnee (See I could really call it a Duster) I obtained the Engine in Guatamala on one of my many trips through that country.

Covering ---- Stitts all the way. Finish coats Aerothane.

Gear is moved aft 4½ inches. Tailwheel Scott 8". A/C handles like a pussycat.

Full Upholstry.

Logo on fuselage was designed and painted by Robbie Lasiter, a very talented Commercial art student.

At present I have about 15 hrs on 84SW but as the weather improves we will go all out to have the time off.
I owe a lot of people rides, Without friends like Barry Halstead (N333Q which took best Biplane at Lackland Sun and Fun This year) And
Tom Kilkelly who should be flying his Tee by April, my airplane might still be sitting in the basement.
To those folks who are in the middle of their projects. Dont get discouraged, Because when you push that throttle for your first takeoff, be prepared for the most Accelerating experience of your life.

Yours Truly

Steve Walton

Dear Jim:

Enclosed is a photo of my newly completed Starduster. Up to this point it has taken me seven years and two months and some 3500 hours of labor. It has not flown as yet, but it is ready. At this writing, it is still too cold for flight testing.

The airplane is standard except for the following changes.

Cessna 170 gear, removeable cabanes, removeable seats, balanced rudder cable system, aileron hinge bearings, and both wings at 1^{o} positive incidence. The engine is a Lycoming O-435-1 with an alternator instead of a generator. The propeller is a Hartzell Hydro-selective. The full electrical system includes an Alpha 200 com-nav., a transponder, nav lights and strobe lights and landing light.

The empty weight is 1375 with the C.G. at 17.6. Fully loaded with fuel, pilot and passenger, chutes and 25 pounds baggage aft of rear seat it weighs 2000 with C.G. at 24.9.

Please continue my subscription to the magazine. Hope to see you at Oshkosh.

Sincerely,

H. R. Ehlers

February 28, 1978

Mr. Jim Osborne
Stolp Starduster Corp.
430 Twining, Flabob Airport
Riverside, Calif. 912509

Dear Jim,

After three and one-half years of the most intensive work on any project since college, my Steen Skybolt is flying and doing well. Many thanks for your helpful comments and fine service which contributed greatly to the success of the project.

The aircraft was built strictly from the plans; the only kit purchased was the wing fittings kit. The ribs I built up per the plans and, although they are pretty to look at, involved considerable investment in time compared to routed plywood ribs. A 260 hp. Lycoming 540 with a Hartzell constant speed propeller was used and specs for the airplane are (with no fairings in place yet):

Empty weight	1278 Lb.
Gross weight	2002 Lb.
Stall, indicated	55 MPH
Best ROC, indicated	100 MPH
Cruise 19", 2350 RPM, ind.	135 MPH
Approach, over the fence	80 MPH

The airspeed indicator, compared to another aircraft, appears accurate within the above speed range except, of course, for stall speed.

N39WB is covered with Ceconite and finished with Stits process from the clear thru Aerothane. It was my first experience at spraying any kind of paint and with the help of Don Stits and the advice of a good friend and excellent painter, Hal Houston, I managed to get the finish on to my satisfaction.

Although I have only a moderate amount of flight experience (about 500 hours in the past 5 years in a Citabria), I felt that with careful preparation it would not be unreasonable for me to do all of the test flying of the Skybolt. I read several articles by proponents of the liftoff-low flight-setdown school of throught but was always left with the nagging thoughts that my worst landings were made out of bad approaches. A landing immediately after liftoff is, to me, definitely a bad approach situation.

I mentioned this to Eric Shilling who gave me another point of view on first flights, referring me to an article he wrote for "The Starduster" in October 1975 on "First Flight". This method of flight testing, namely "be sure your airplane is rigged correctly then go ahead and fly it off watching for unusual control pressures at liftoff", makes a lot of sense to me.

On the day the airplane was ready for the first flight the weather was not with 2½ miles, 2500 foot ceiling, and drizzle. At 1:00 p.m. I went to lunch at Flo's not supposing that I would have a chance to fly. When I came out of the cafe at 2:00 p.m. - omigod! 10 miles and the ceiling had gone up! Uh-oh, looks like I might really have to do it now... no more excuses. The rigging, fuel and oil systems, weight and balance, and controls had been checked and re-checked by me and others.

Get into the airplane, buckle the chute, fasten the primary harness system and secondary belt, light the engine, and call Chino ground. Pat the butterflies in my stomach, hold knees still, and taxi out to the active. Is this for real ... maybe the mags won't check, or the prop won't cycle, maybe I should taxi back and ... not a chance. Everything checks and ... Oh man! They just cleared me for takeoff!

Bring in throttle slowly (dynamic counterweights) - good grief the tail's up and not yet full throttle ... feels light, liftoff - check airspeed - 85 MPH. Let it accelerate to 110 MPH, pull the nose up to hold, passing end of runway - begin left turn to stay over the airport. Looking for traffic, looking over my left shoulder to keep oriented with airport - the climb rate is unreal!

First mistake coming up: I believed the pilot (instead of checking weather) who, just prior to my takeoff, said the ceiling was 4000. At 3000 MSL while looking at the runway over my left shoulder I blasted into the cloud base! Airborne for about one minute in a brand-new untested aircraft and in the clouds. Power back, maintain rate of turn, and descend to VFR. Probably 15 seconds elapsed while in the fuzzy stuff, but it was long enough to realize the seriousness of my error.

The rest of the flight was more normal, and consisted of checking the handling and stall characteristics of N39WB. After about 20 minutes with the airplane I began to feel somewhat more relaxed and went back for a landing. I made a power off approach (yep, very steep descent, these biplanes) and three-point landing.

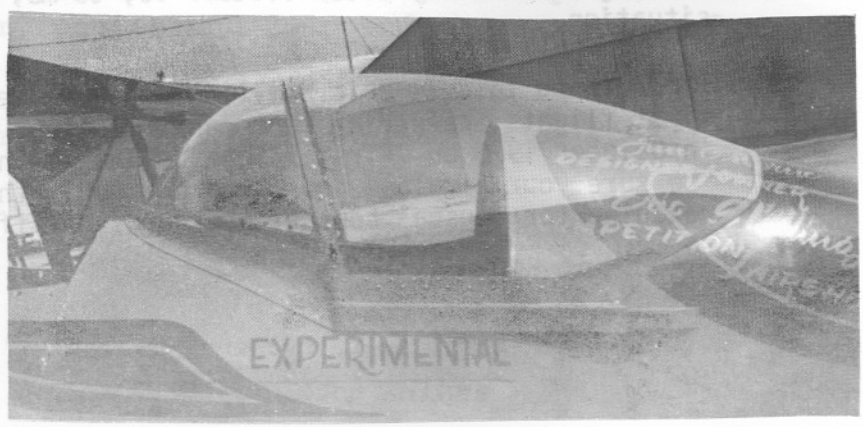
I highly recommend the "fly it off the get familiar with it" approach to first flights recommended by Eric. My first landing was uneventful (except for the ridiculous grin) and one of the best I have made in the airplane.

See you at the Flabob open house.

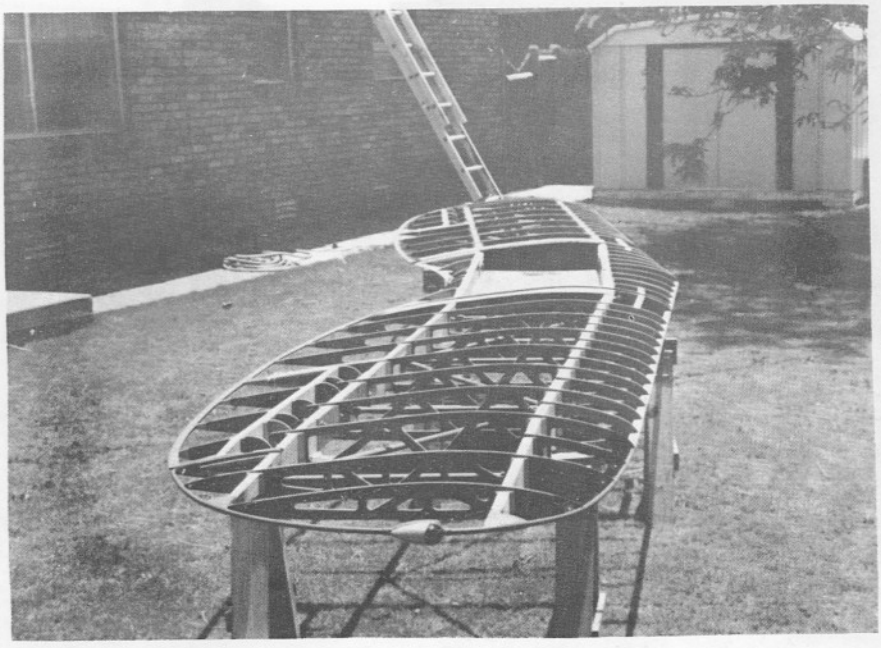
Best regards,

Bill

Bill Byles



"STARDUSTER" SLIDING CANOPY INSTALLED ON OUR ACRODUSTER TOO.



February 8, 1978

Mr. Jim Osborne
Stolp Starduster Corp.

Dear Jim,

Just for your own records, I am sending copies of photos on wings of my Starduster Too. I took them last summer when I put the three panels together in the backyard so I could see the "curves!" I am satisfied with the wings - now all I have to do is try to get them on the fuselage. They are now mounted on cabane struts with the fuselage in a jig for levelling. The wings are levelled and rigged and am now in process of building the I-Struts then the aileron torque rod. After this is done I am ready to put the engine on and start plumbing and wiring -- everything else is finished on fuselage except of course the skinning.

The plumbing is the phase that worries me because I have found no where much about proper plumbing and grade of material to use - but as they say perseverance conquers.

You know, if I could keep at it I could be flying this year.

Sincerely,

Joe Jordan
4006 Tulane Drive
Amarillo, TX 79109

A top quality Smith Mini-plane being built by Chris and Gary DeBaun of Riverside CA.

Joe Ruddy
117 E Monterey
Schaumburg, Ill
60172

Dear Jim,

Just received the invitation for the New Year's Eve party as we have been away on a little vacation. Sorry to have missed it, would have made a real effort to attend. Hope you do it again.

Since I talked to you last I got the Starduster Flying. There isn't much time on it, but so far no great problems. The weather here isn't too great for old men in open airplanes. It will probably be March before it flys again.

It took almost 6 years to build, but feel real accomplishment as I've had no previous experience in aircraft construction. Give all the credit to a terrific set of plans and advise when requested. As you can see from the enclosed picture it is another of those W-670 powered Stardusters...Sorry bout that.

During the construction there were a million small problems, but all of them worked out with some extra thought, a little research or help from an EAAer. Putting the finish on was a different matter. Stits Aero-thane was used and I had a very bad time with it. I realize you are a dealer and he is a neighbor, but that product nearly killed me. Then to add insult to injury Ray S. is told about my problem and he sends me a letter that I can only classify as idiotic. I thought enough of it to have it framed.

Haven't received any newsletter lately so imagine my subscription is defunct..... After checking it seems my last copy was Oct. 76. If you have any way of bringing me up to date please do so and bill me, if not please get me back on the list now.

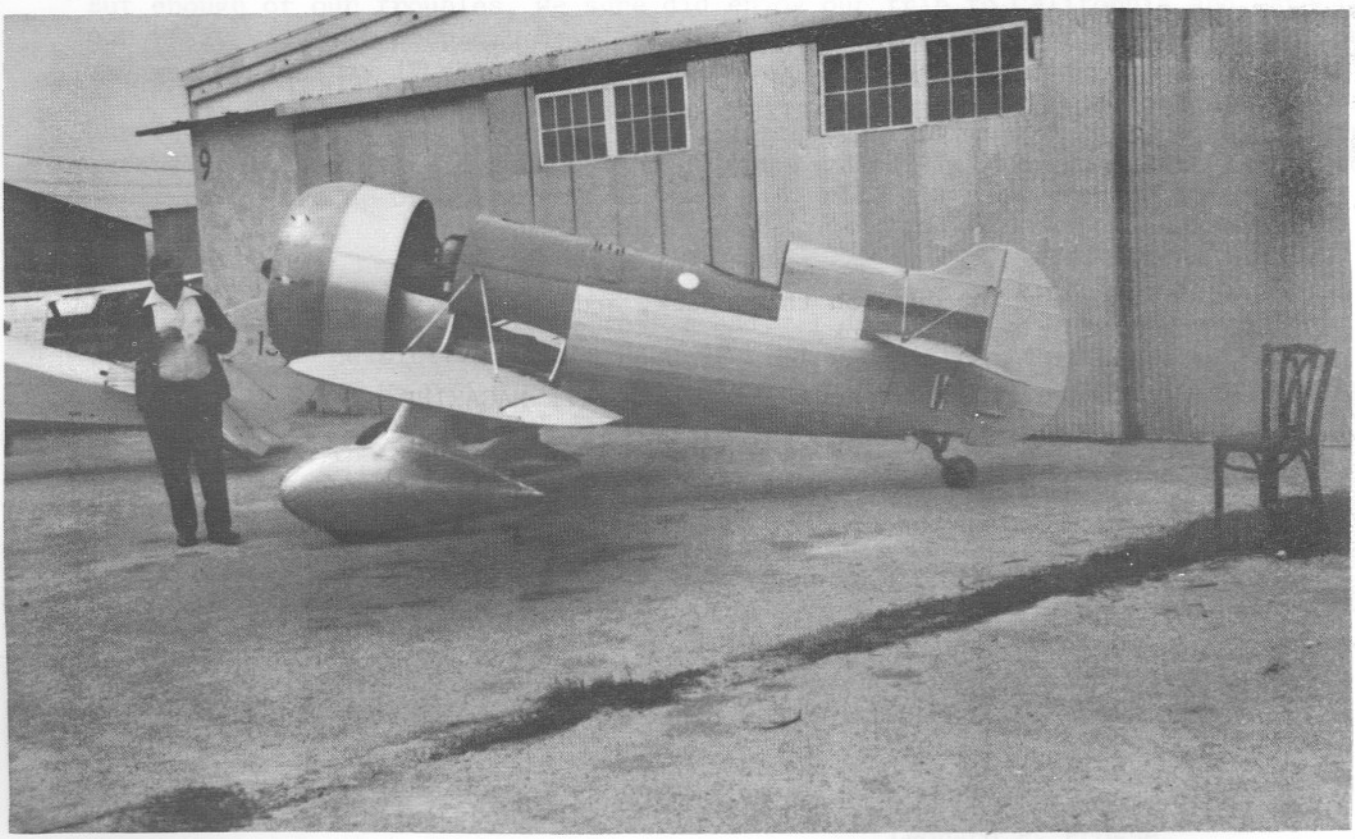
Thank you for your advise and prompt attention to orders for parts. Hope to see you and Eric again soon...

Sincerely,

Joe Ruddy

P.S. If you have any further info on that new battery you are handling, please send it along. I have regular 25 Amp behind pilot seat that will not quite turn the radial over.

EAA Director Bill Turner and his Brown Racer "Miss Los Angeles", as seen at the Flabob open house - Eric Shilling and Jim Osborne have recently joined the exclusive "I flew Miss Los Angeles" Club.



Bill Turners next airplane, the magnificent Gee Bee model Z. It is being built by Ed Marquardt and Bill - Scheduled to fly by Oshkosh.

STARDUSTER TOO BY KEN CASSENS, OF ALLENDALE, NEW JERSEY. FIRST FLIGHT ON 11-5-77. 200 H.P. LYCOMING, HARTZELL C/S PROP. EMPTY WEIGHT = 1150#.

Dear Jim,

As you can see by the date on this check, and the date on this note, I am a little behind on my paperwork.

Enclosed, please find my renewal for STARDUSTER MAGAZINE. Please start with the January issue.

Enclosed are some pictures of my STARDUSTER TOO. Information is on the back of one of them. I am in the process of building the new gear, and should be finished soon.

I am also in the middle of moving to a new home in New York State, so look for an -ddress change soon.

I hope everyone at Starduster had a happy new year, and wish you all the best for 1978.

Regards to all,

KEN CASSEN

Dear Jim,

Just a note to tell you how much I enjoy your "Starduster" magazine. It has been a big help, clarifing many areas of construction and supplying ideas. I especialy liked the article on rigging procedures you ran awhile back. Keep up the good work.

Also, have you seen the Skybolt on the cover of "Sport Aviation" (Feb. 78)? What do you think of the landing gear from a structural standpoint? It looks good and should reduce drag considerably, but I wonder if it could be installed on a Starduster. Perhaps you could do an article on different types of landing gear sometime.

Sincerely,

David Bose
Rt. 2
Hamburg, Iowa 51640

Hi Gang:

Am sorry at the delay in getting this letter off to you, but so much has happened since we were down there in April. Shortly after we were down there with the relative from Solana Beach, they came up here for a visit, this tied us up for a month. Then one of my married daughters was killed in a head on collision, as she had no husband, we had to look after her 10 year old daughter. We still haven't everything settled as yet and it will probably take another month.

But enough of our troubles, we sure did enjoy our trip to California and especially our visit with you people. My wife, Ruth, saw that Acroduster in Sport Aviation and wanted to know if that was the one she did the wing sanding on. We may be down that wa in a month or so, may be you can have some more work for her to do, our Too is getting ready for the covering stage. Saw the gas tank set-up in your latest newsletter and it sounds kind of complicated????? That newsletter is good, don't ever give up on it, everyone seems to write the same sort of comments regarding it.

The aileron fillet that you mailed to me and they sent back, forget about it, I have made do with the old one that I had. I am enclosing a Money Order for $5.00 to cover newsletter, don't know if I have a credit or not, but am sending the money anyway, we can sort it out later when I get down there. All the other instruments and goodies I got from you are all mounted and am looking to the day when I can get that machine in the air. You should have seen the fun I had getting by the security at San Diego on our way home, the girl took a look at all that cable and dials and had to call over a guy to look at it. Good job for me he was an ex Airforce man and knew right away what it was. We had to change planes at Chicago for Toronto and wouldn't you know it, three pieces of our luggage missed the plane and we had to wait three hours in Toronto for the next plane to show up. We did enjoy the whole trip though and again our thanks for the tour you gave us and we hope to see you again in the not too distant future.

Thanking you, I remain

Leonard P. Prowse
19 Lynwood Dr., Apt 309
Brantford, Ontario Canada

Dear Jim,

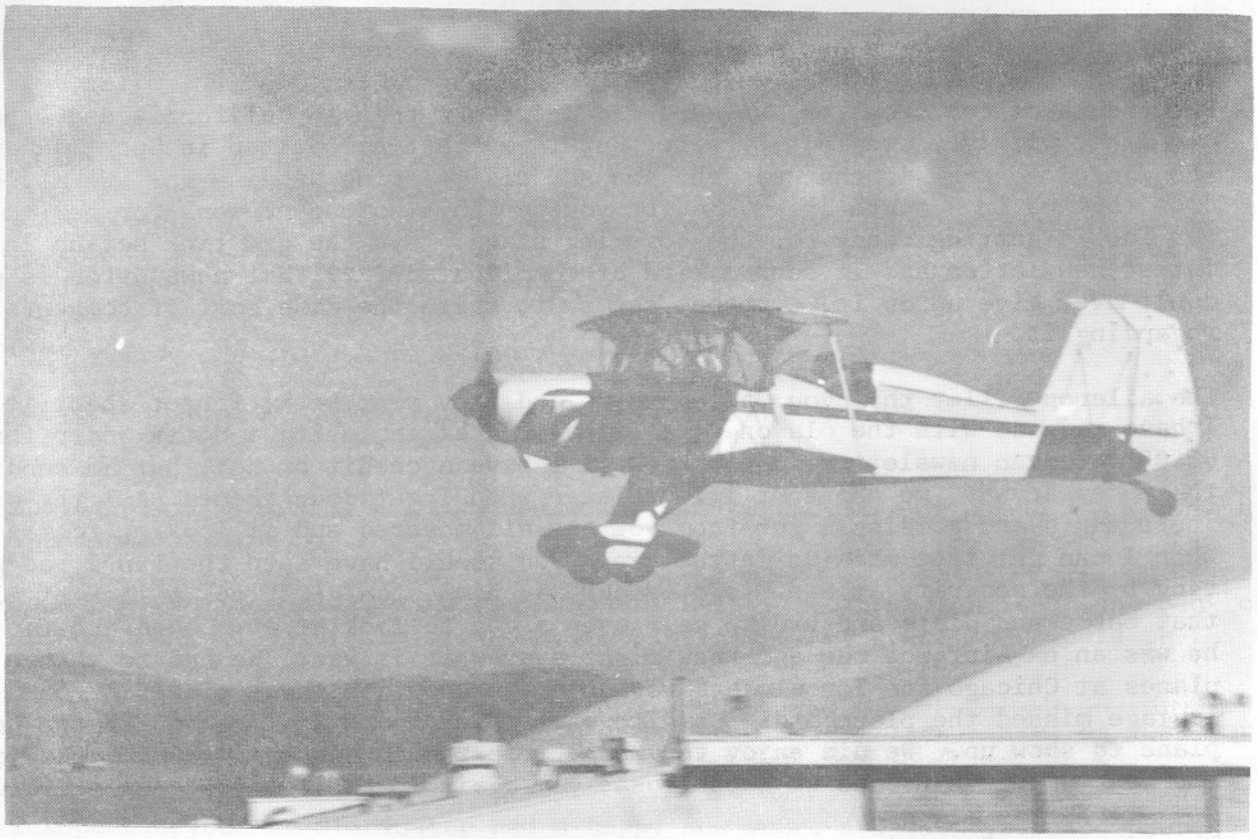
Made it home with my fuselage and other adult toys in good shape, inspite of some of the worst weather I've ever had to drive through. Kept hoping that if involved in an accident it would be my car that was damaged rather than the trailer and its cargo.

While waiting on the FAA inspector, I have been assembling my upper wing panels. Don't need the nose cowling yet, of course, but would like to have the tail wheel spring as soon as possible.

Please say hello to Hanako, Eric, Norman and Rusty for me. I really enjoyed my short tour at Flabob and again thank everyone for all the info and help.

Sincerely,

Halsey Hines
1020 NW 39th
Topeka KS 66618



A BEAUTIFUL STARDUSTER TOO, BUILT BY WAYNE MCLAUGHLIN OF WALNUT RIDGE, ARKANSAS. CURRENTLY OWNED AND FLOWN BY SEAN MACGREGOR, 2112 CAHAUENGA BLVD, HOLLYWOOD, CAL. FEATURES 180 H.P. LYVOMING WITH C/S PROPELLLER. A VERY CLEAN MACHINE

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BROCHURE $5.00
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NEW SPORT PARACHUTES--SEAT PACK OR BACK PACK-- ONLY 14#-THINNEST AVAILABLE. COLORS AVAILABLE ARE RED, GOLD, BLACK, BLUE AND ORANGE. BLACK TRIM-- INCLUDES CARRYING BAG OF MATCHING COLOR-- FAST DELIVERY -- ONLY $435.00 FROM "STARDUSTER" CORP.

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NEW MOUNTING RACK FOR GEL CEL BATTERIES-MADE OF 4130 STEEL-- MAY BE BOLTED TO FIREWALL-- ONY $45.00 FROM "STARDUSTER"

STEWART WARNER OIL COOLERS-CERTIFIED FOR AIRCRAFT USE
LIST PRICE- $160.00
OUR PRICE- #99.50
ORDER FROM "STARDUSTER"
USE TWO FOR 200+ H.P.

NEW GOGGLES-MADE IN GERMANY. HARD, NON-SCRATCH SFAETY GLASS. FITS PERFECTLY OVER GLASSES. ONLY $24.95 FROM STARDUSTER. SMOKED LENSES AVAILABLE FOR ONLY $12.95 PER PAIR.

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$5.95 FROM "STARDUSTER"

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