

# The *Starduster* Magazine

February 2001



## In This Issue:

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# The *Starduster* Magazine

Vol. 31, No. 1 February 2001

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## Front Cover

*John Russell's Starlet SA500*

# President's Message

**W**ith another year completed it is time to look towards new challenges. We have been learning a lot about Starduster - the business and the aircraft. After flying a Starduster Too for over 3,000 hours, I thought I had a good handle on both of them. I have been building a set of wings for Gary Allegre and it has been a springboard for learning things about the Starduster Too on a big scale.

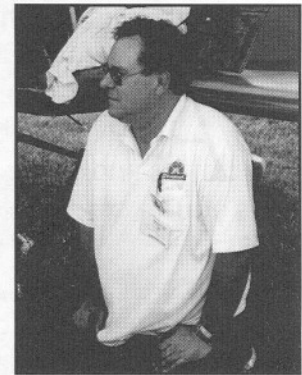
Building an airplane is a tremendous learning experience. It is not something you can learn in school or at work - it is far more. Since the original Starduster was designed, there have been many advancements in drafting and reproduction techniques. When I got involved in Starduster, one goal was to put the Starduster Too on AutoCAD. This would provide high quality prints and allow for corrections and updates that have been brought up over the years. A few months ago I thought we were there. We are now getting closer and the plans should be 100% up to my standards in the next two or three months. The wing side of this part of the drawings is nearing completion. We have just received our first set of CNC-routed ribs.

We are investigating a new battery. It weights 10 pounds and has 100 more cranking amps than a standard Gel cell. It is ° the size also. The standard battery weights about 23 pounds. Will let you know how it works in the next issue.

I will be writing more in regards to things we are reviewing and working on later

- hopefully in this issue.

After being with Starduster for awhile, the two items that stand out foremost in my mind are the great people associated with Starduster



and the extreme amount of time it takes to make things happen and happen right. There are some many different things that need to be completed and so little time.

I feel that it is very important that you get to enjoy the part of Starduster you are touched by. Whether it is building, repairing, flying, modifying, thinking about or just looking at a beautiful Starduster. Take care to make sure all is right, then enjoy it to the max!

It is also important to set goals for the year and then work towards fulfilling them. I did not get to one of my goals, which was to land at all airports within a certain radius of Oroville, but it is a goal for this year.

**H**ope to see you at the Oroville Open House (May 11-13), Bartlesville National Biplane Association Expo (June 1-2), Arlington (July 11-15), Oshkosh (July 24-30) or Copperstate (October 11-14).

Les Homan  
President

# From the Editor

## What's Black & White and Read all Over?

As you have noticed, *The Starduster Magazine* has reverted to all black and white without the color sections you've grown used to since January of 1998.

This decision was not made lightly, as we all enjoyed the color pictures of the airplanes. It was dictated by financial reasons.

We had originally hoped the magazine subscription base would grow large enough to support the additional high cost of providing color pages. As the number of copies printed grows, the cost per copy declines. Since the magazine has been mostly for the benefit of the Starduster family of owners and builders, it never gained the support of builders outside the family. In addition, with a limited subscription base, we were never able to interest advertisers to help offset printing costs.

At \$18 per year for a subscription, we actually lost money on each copy published.

So, instead of raising rates, we've decided to try to reduce costs and still bring you a high quality publication.

We'll be trying to add more general homebuilding ideas and technical advice that both Starduster and non-Starduster builders will benefit from.

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## New Editor

You may have also noticed that there is a new editor of *The Starduster Magazine*. Clay Gorton and Glen Olsen have done a wonderful job editing the magazine the past several years and are deserving of much respect and gratitude.

But, they deserved a well-earned break from the job, and so, we have moved the publishing

back to Starduster HQ in Oroville.

I know there is someone out there reading this who would love to take over as editor and do a better job than I can. Please let us know when you're ready!

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## Tardy Slip

Editing and publishing of the January issue was a new experience for us here in Oroville, and along with myself being sick the last two months, we're a bit late with the January issue. But, as always, the first time at anything is the slowest. We'll be full speed ahead for the April issue which will have more details on the Starduster Open House & EAA Fly-in May 11-13.

Ken Nowell  
Editor

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## Starduster Open House Make Your Plans Now! May 11-13, 2001

**The 21st Annual Starduster Open House and EAA Fly-in will be held Friday through Sunday May 11-13, 2001 at the Oroville Airport (OVE) Oroville California.**

Previous to 1999, the Open House was held the first weekend in May. In 1999 and 2000, we moved the date to the third weekend in May to try to avoid rainy weather - and it worked! Unfortunately, in 2000, that weekend also corresponded to graduation weekend at nearby California State University at Chico. All hotels and motels within 50 miles of Chico were booked and/or were charging double the normal nightly rates.

Chico State is again holding commencement ceremonies the third weekend in May, so, we have decided to move our Open House to the second weekend to avoid all the problems with accommodations we had last year.

Let's hope the weather is as nice as it's been the last two years!

More details and a registration form will be available shortly online and in the April issue of *The Starduster Magazine*.

# Starduster Too Update

We have been working on several fronts. Updating the drawings on AutoCAD has been the most noticeable. We have continued to improve the drawings, add options and make notes of the ways builders have made changes to the plans. An example is using 3/8" x 3/8" x .035 wall tubing for standoffs - same as the Acroduster Too.

Our new rib drawings presently being developed precisely locate the spar openings, among other improvements, in response to builder's questions and to make it easier to build the wings.

Another area we are presently studying is the fit of the main fuselage fuel tank. We are presently building several fuselages. Mounting the main fuel tanks into these fuselages will give us feedback to help eliminate any fit problem. We have also been watching the online bulletin board and are open to suggestions from builders. Back in 1979 when I received my fuel tank from Starduster, it took a while to make it fit. It was tight but did work. We have installed several tanks in various aircraft over the years without problems - tight, but they did work. We are looking closely at clearances near the lower diagonal braces, between these diagonals and bottom sump of tank (width) and fit at the back of main tank angled portion. Another area I have had problems with and which we will look at is the normal vent. When the tank is filled to the brim it likes to siphon lots of fuel overboard before the level gets below the vent. These improvements are presently being studied.

We will be adding at least two sheets of construction-related drawings and at least one sheet of pictures to the plans set in the next few months. These will be available separately at a modest cost.

Les Homan

# Saga of 4226Y January 2001

I rolled the tachometer over the 300-hour mark on the 4.3 liter V-6 on the way back from the Copperstate in October. I am now up to about 312 hours total on the V-6. It is still interesting to watch reactions. The most entertaining is the family type just wandering around looking at airplanes. A cowl door raised catches the guy's attention. All guys want to look under the hood. **What is this? It can't be! Hey Ethyl, this is just like the engine in our car, wow, they can put anything in these airplanes!** The aviation knowledgeable person is standing out front telling his friend and the two girls about how these types of aircraft are powered by 6 cylinder Lycomings - very proud he knows all this stuff. The other guy looks in the open cowl door, shakes his head and moves on. One of the girls says it looks just like the engine in my car. Mr. Know-it-all just walks on. Once in awhile a person comes along, looks in the cowl and becomes hysterical. **You can't do this! You can't put an auto engine in an aircraft! This has got to be stopped - where is the FAA? I need to report you and get this thing out of the air! It isn't safe to fly! Where are you from? How did you get it here?**

It is useless to try to answer. Facts have gotten in the way of their pre-conceived notions and they are gone, real gone. Isn't it a great world we live in? How did we ever move out of those caves?

If you were to ask me if I would do it again, the answer would be yes. Would I put one in another aircraft I was going to fly? Yes.

What are the best advantages? Ease of starting, cost of parts and fuel costs. What are the performance comparisons? I can only compare it to my 200HP fuel-injected Lycoming. I get approximately the same climb rate, same fuel consumption and same speeds. What do you

miss most about the Lycoming? Inverted fuel and oil. Do you do aerobatics with the V-6 and what type? I do everything I can think of and keep it positive. Loops and rolls and combinations thereof yield a lot of maneuvers. If you get negative, the engine seems to die. Not much different than a standard aircraft engine with no inverted fuel system.

I still have two areas to research. Exhaust system changes should provide more power and silencing. Also, I need to get more air through the radiator on hot days over 105 degrees.

Les Homan

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## V-star SA900

### *The new Sport Pilot Classification*

Stolp Starduster Corporation is looking closely at the upcoming Notice of Proposed Rulemaking (NPRM) which is expected to be published in early April and would relax the rules for pilots in a "Sport Pilot" category. This category would require written and practical tests, but no third-class medical exam, and would allow a pilot to operate and carry a passenger in VFR day-time conditions in an unpowered or light single-engine two-place aircraft.

A new subcategory to FAR Part 21 would create a means for most sport aircraft currently operating outside the limits of FAR Part 103, and weighing under 1,232 pounds and with a stall speed of 44 mph or less, to become licensed as experimental "light" aircraft to be operated by sport pilots. These "light" aircraft would not have to meet the 51-percent rule, which requires owners to build 51 percent or more of their aircraft.

Starduster's popular one-hole biplane, the V-star SA900, would fit into this classification:

- √ Empty Weight - 649 pounds
- √ Gross Weight - 1,000 pounds
- √ Stall Speed - 35 MPH
- √ Limit Load - +/- 6G @ 1,000 pounds

We would like to start production on ready-to-fly V-stars if and when this proposal passes. We'll keep you posted.

Ken Nowell

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## FAQ

**Q:** What is the maximum gross weight for a Starduster Too?

**A:** The maximum gross weight is 2200 pounds. The maximum aerobatic gross weight is 1704 pounds. This is the weight at which the design limits (+/- 6G) apply. As the weight increases the design limit decreases. If aerobatics at a higher gross weight are to be performed, then a new limit load must be calculated as follows:

$$\frac{1704}{\text{Gross Wt}} \times 6 = \text{New Limit Load}$$

**Q:** Can I put spades on my SA300?

**A:** Yes, if you have forward-mounted slave struts. It is not a good idea to install spades if the aircraft has rear-mounted slave struts.

**Q:** Should I use wood or aluminum trailing edges?

**A:** Wood trailing edges tend to break when stepped or leaned on. To repair, the fabric would have to be removed. Whereas the metal trailing edges will tend to only bend, not break under the same circumstances.

**Q:** My Starduster Too only has two ailerons. Why, and should I change it to four?

**A:** The Starduster Too SA300 evolved from the original Starduster SA100 which only has two ailerons. If you are planning to do a lot of aerobatics, the higher stick forces and slow roll rates with two ailerons might make it beneficial for you to rebuild to four ailerons the next time the wings are uncovered.

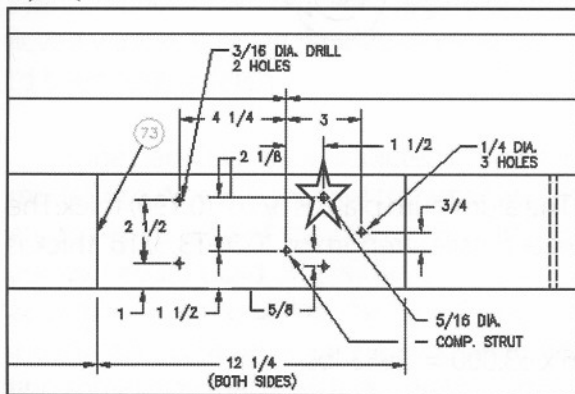
# SA300 Plans

## Correction

We have found that, on Sheet 4 (Wing Spars) of the Starduster Too plans, an incorrect hole diameter was called out on the Front Spar, Lower Wing where Part #43 attaches to the spar.

It called for the 5/16" dia. hole to be at the bottom of the spar, where in fact it should be at the top.

This drawing shows the correction made with the hole in question highlighted by a star.



## Construction Tip

We have found it much easier & quicker to pop rivet fabric to metal ribs in place of rib stitching. This can only be done on sheet metal ribs and is thus limited to the tail members of some Starduster aircraft.

There is a special large head pop rivet made just for this purpose available. this rivet does not require a washer.

To use this rivet, install the covering fabric and shrink with a hot iron. Then stick 3/8" reinforcing tape on the fabric directly over the metal rib flanges. Drill 1/8" dia. holes at 2"-3" spacing. Install and pull pop rivets. Cover with tape.

Pilot holes for installation of this rivet are called out on the tail structure plans for the Acroduster Too and V-star.

## The End of Streamline Tubing??

There have been recent inquiries regarding rumors that 4130 streamline tubing will soon be unavailable in the marketplace.

This is what we know at this time:

There was only one mill that was making 4130 steel tubing in non-round shapes. This mill notified distributors near the end of 2000 that they had stopped making streamline, small rectangle and small square tubing among other shapes.

One of Starduster's suppliers has assured us that they have a large stock of tubing available in the sizes Starduster aircraft require. But we were warned that, as the word got out, there could be shortages. For example their entire stock of a 3" streamline was recently purchased by one buyer.

The market for the streamline tubing has never been large enough to support more than one mill. A representative from Earle M. Jorgensen Company has told us that he is confident that one of the other mills will pick up the business some time in the future. It only requires the purchase of the dies from the defunct mill.

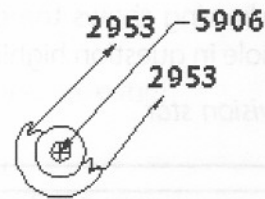
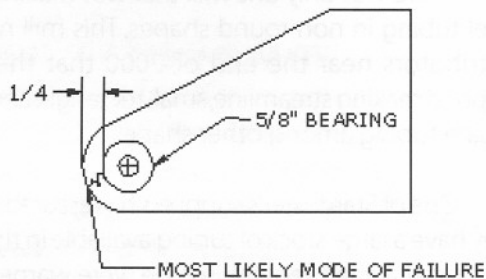
But, the timing of that happening is undeterminable and again we were warned that in the interim, there could be shortages and price increases as end users and/or distributors hoarded the shapes and sizes they need.

Starduster has ordered additional stock in the streamline, square and rectangle sizes needed to built the different models of Starduster aircraft.

We are confident that, notwithstanding a possible period of shortages, the supply of this tubing will once again be matched to demand.

# AILERON HINGE BEARING STRENGTH

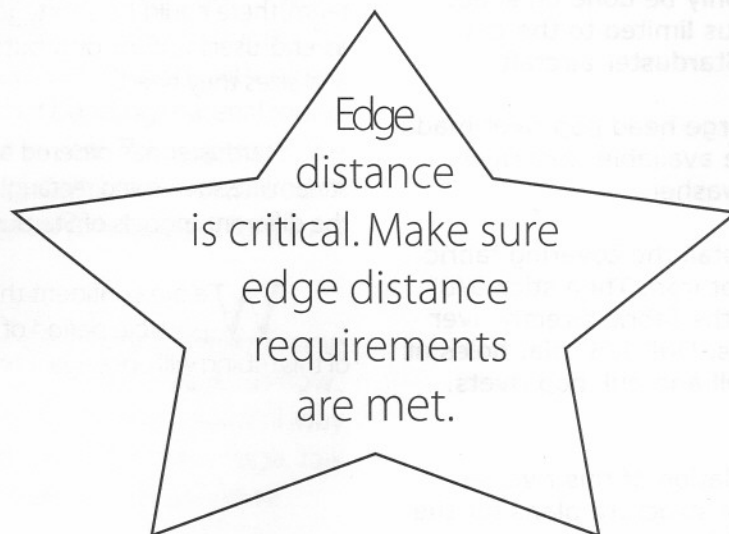
Several Starduster Too builders have asked about the strength of the wing portion of the aileron hinge if our 5/8" dia. bearings are inserted instead of a bushing.



The most likely mode of failure is pictured above. The aluminum plate is 3/16" (0.190) thick. The failure mode is tension. From MIL handbook 5, the ultimate tensile strength of 2024-T3, 3/16" thick, is 63,000 PSI.

$$\text{Ultimate load} = 1/4 \times 3/16 \times 63,000 = 2953 \text{ lbs.}$$

As shown above, maximum bearing load would be 5906 lbs. Since the max bearing load to be expected in service is on the order of 230 lbs., it can be seen that we have a tremendous margin of safety.





# ACRODUSTER TOO SA750

## PLANS SHEET INDEX\*

Sheet	Description	Revision	Date
1	General Arrangement		
2	Assembly - Fuselage Frame	"B"	1/6/75
3	Assembly - Landing Gear	"A"	5/28/81
4	Assembly - Horizontal Tail	"A"	5/18/78
5	Cabane Struts	"C"	6/17/80
6	Rudder Assembly Installation	"A"	8/19/74
7	Assembly - Lower Wing	"A"	9/24/74
8	Assembly - Upper Wing	"A"	10/28/74
9	Wing Spars - Lower Wing	"B"	9/21/74
10	Wing Spars - Upper Wing	"A"	11/8/74
11	Center Section	"A"	9/30/76
12	Wing Fittings	"C"	12/1/76
13	Wing Fittings	"B"	12/1/76
14	Spar Fittings	"A"	9/17/74
15	Root Rib - Lower, Upper & Center Section (long sheet)		
16	Rib - Upper & Lower at Ailerons (long sheet)		
17	Wing Rib (long sheet)		
18	Wing Rib	"A"	9/14/77
19	Wing Rib		
20	Wing Rib		
21	Wing Rib (long sheet)		
22	Wing Rib		
23	Wing Inserts		
24	Hinge Assembly	"B"	10/13/76
25	Butt Ribs, Handle & Clip - Center Section	"A"	9/5/76
26	Ribs - Center Section	"A"	9/15/76
27	Ailerons - Lower Wing	"A"	9/15/77
28	Ailerons - Upper Wing	"A"	9/14/77
29	Fittings - Aileron	"C"	9/21/77
30	Spar Fittings - Center Section	"A"	9/15/76
31	Bellcrank Installation Assembly		
32	Wing Tip Bows		
33	Tiedown Fittings		
34	Trailing Edges		
35	Controls Weldments		
36	Controls - Installation		
37	"I" Strut Installation (item #8 changed to 1 x 1 x .058)		
38	Aileron Controls Installation	"A"	1/11/77
39	Seats, Brakes & Tank Installation		
40	Fuselage Fairings		
41	Engine Cowl & Mount		
42	Final Assembly		

\* be sure you have the correct sheets for your project!

# Correspondence

Les,

My sincere apologies for the area code error in the October cover story on the Starduster Too.

The editor assigned to this story failed to follow standard procedure, which is to verify contact information on all our stories.

Sincerely,

Dave Martin, Editor

*Kitplanes Magazine*



Ciao from Italy

Hi guys! I don't know if you already know that in Biella, a small town in the Alps, a new wonderful SA 300 is getting airborne. We estimate few months in spring time. I will send pictures and details. Luigi and I (Andrea) can't wait to jump on it and fly. I will keep in touch.

Andrea Germanetti, Biella, Italy

Dear Sir,

Enclosed is Starduster Magazine #1 issue. You may already have one, but if not, enjoy! It's yours free.

I fly my SA-100 N22PF out of the NUT TREE airport as much as I can afford to and will one day stop by your office.

Sincerely,

Patrick A. Fitzpatrick - U.S.N. Retired, Citrus Heights, CA (VP-44, 3 June 1942, We spotted the Japanese fleet at Midway)



Thought you'd be interested in N750X's latest modifications....

- Total rebuild airframe-1999
- Front seat/controls removed
- Lightweight start/alt.
- Extra 300 wheelpants
- New Cleveland wheel/brakes
- Pitts type gear fairings
- New fabric/paint
- Now based in Miami, FL (TMB)

Dale Evans, Miami, FL

Director - 1999 & 2000 US National Aerobatic Chmps.

Hi,

My name is N2396X AND I CAN FLY.

When last I wrote, a hanger at the Madera Airport had become my new home. A lot has happened since then. My builder kept plugging away, even working nights after the family had gone to bed. On November 22, 2000 we were

great. Climb out was normal at 110 indicated and about 2400 rpm. I needed a lot of back pressure but that turned out to be a rigging hick-up in my tail. 1500 AGL and abeam of the numbers he pulled the power and made a decent at 100. Flair and ground roll were not as tough as he had expected [but I still have some surprises in mind



**SA750 N2396X Don Williams, Madera CA**

ready for the FEDS. They showed up on January 10 and after three hours it was all over with a clean bill of health. Only one cotter key was found not bent over. My builder was relieved but also a little scared because he knew that the point "where the rubber meets the road" was fast upon us. The following week was spent installing fairings and in general just fretting over stuff.

An instructor was found with a Pitts so he spent three hours in that, working the pattern and making life tough on the tower guy. On Super Bowl Sunday it all paid off. Was my builder turned test pilot nervous or scared? God yes, in spades. But we didn't kill each other. In retrospect it went pretty well. Ground roll and rotation went

for this old boy].

That's about all for now. As things develop I'll drop you a line. O, I almost forgot, the misses gave me a new name. MISS DESPITE. She thinks I got built despite her. Not so, it was despite all the problems, fears, and difficulties we all face. To all you airplanes out there waiting to be finished, may you get the wind in your face and the sun on your belly cause that's when the rear fun begins.

Adios,  
Miss Despite

Long time no talk, Ken.

Absolutely enjoying N62DS, although have taken it back in to my heated shop for the winter for repairs and changes. Have to shorten down the "squawk list" Could you send me any info on your 2 place canopy that Les was talking about at Wautoma. The last few flights in ND were pretty "cool" in more ways than one.

Thanks - Bob  
Bob Scarlett, Bismark, ND

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Hello from North Dakota.

I'm starting to get back into building on my Too after a couple of years of very little progress. A very worthwhile break though since our son turns two on Nov. 12.

Anyhow the reason for the letter was that I was wondering what your policy is on tech support and answering the many questions you must get and I know I will have.

A little update on where my project is at: I got a wing kit from Bill Clouse in 1995 and they are basically done for now with the ailerons hung, trailing edges on, everything all varnished and hanging on my shop wall. A couple of years ago my wife ordered a tubing kit from you guys and that's where I am at now. I tacked up one side of the fuselage and the other side is all notched up ready to go. Then the other night I got studying the plans and looking ahead to building the basic box and the questions started popping up. I have visited with Bob Scarlet a few times and am hoping to get together with him again and look at his and make notes on my plans but now that his is all done I don't know how deep inside I can get to see everything.

Do you ever take digital pics of certain areas and e-mail them? That would sure help me visualize things better. How about answering e-mail questions when I would need an explanation/clarification on something? I realize you probably get many questions every day and it

would be a full time job just answering them all, that's why I thought I would check on what your policy was.

On a different subject I find the articles on the V-6 TOO very interesting. How has it been working out? It grabs my attention because for the last two years I have had a job as an A&P Mech. at Dakota Aero Mfgs. in Devils Lake where we have been working with Orenda Recip. out of Canada on there certified 600HP turbo-charged V-8. We are doing the work for them [engine/systems installation etc.] on the Air Tractor 401 spray plane and they hope to have the STC soon. It has been a very interesting project and looks as though it will be a real performer. I have done a lot of the engine ground runs/tests on it and it is very smooth. I would love to fly it but it might be a bit more to handle than my old Citabria. Maybe some day.

If any of you are ever out this way and would like to check it out just give me a call. The plans are to have the plane at Reno NV in mid Dec. for the aerial applicators convention. I better leave it with that for now. Thanks.

Robert Engkvist, Esmond, N. Dak.

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Thank you Katherine Soudan, for your promptness in sending the information on Starduster airplanes. We have found a very nice Starduster II, and have put down a large deposit until we can complete the paperwork. We hope to take delivery by Oct. 30. This was our first time in a Starduster and we fell in love with the airplane. We look forward to our new relationship with the airplane and the corp. that developed it. Thanks again for the helpful info.

Allen Tuggle, Lake City, FL

Dear Ken,

It was suggested that I send along a photo of myself with my Starduster II which I purchased in march 2000.

It has been an unbelievable lifetime opportunity to fly and own such a great flying and beautiful airplane.

I purchased the A/C @ Screaming Eagle Aviation in Santa Paula, CA (March 2000) (TTAF 190 hrs.). The plane was previously owned by Dr. George Burica of Wisconsin and was built in San Diego, CA (1991) by Robert Northcutt with an O-470 (230 H.P.) & constant speed prop.

Because I had zero tailwheel time, I began my adventure with front & back-seat time in a Citabria and a Hi-performance checkout in a Cessna 180. These flight hours were followed with 12 hours of checkout in the Starduster with Rich Stowell of C.P. Aviation in Santa Paula, CA.

The aircraft is based at Sky Ranch Estates, Sandy Valley, NV and commutes to Corona, CA.

I can't say enough for the flight instruction received from Rich Stowell. I intend to do recurrent training with him annually for the first couple years (high air work and crosswind landings among other things).

A special thanks to:

The Starduster Corp. for their help with parts during the annual (June).

The professional & courteous people at Screaming Eagle Aviation and Santa Paula Airport (A very special place in Aviation).

Larry Tyson, CFI at Sunrise Aviation (SNA) for his Citabria instruction.

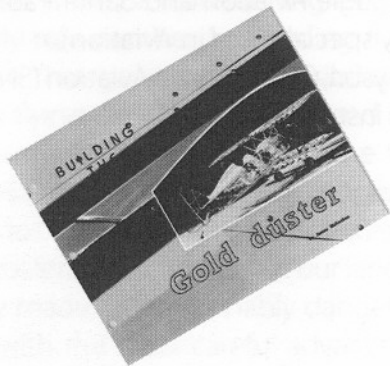
Regards,  
Charlie Betts, Costa Mesa, CA



**SA300 N52U Charlie Betts, Costa Mesa, CA**

Les/Ken:

We have been invited to put N363J, The Gold Duster, on static display during Tyndall AFB's open house and airshow March 24/25. It will be indoors in the "Kid's Hangar" promoting future EAA participation and general aviation good will. Outdoors will be "every" plane in the US military inventory plus flight demos including the USAF Thunderbirds.



Question: Do you have any simple flyers or other promotional literature of interest you would like to make available? We can expect each young kid to be accompanied by one or likely two VERY knowledgeable and savvy aviation buff parents who are potential buyers of Stolp products!! Let us know if you can help us with this affair.

Cheers,

Frank Gorham, Panama City, FL

BTW- Les/Ken, has anyone built an AcroDuster wing with the flying wire fittings buried beneath the skin ala Pitts? Do you have any guidance available for making fairings to clean up the current wire attach points, especially the I-struts?

---

Apreciado Clay:

Me he llevado una grata sorpresa al verme fotografiado en la primera página de la revista. Muchas gracias!, no puedes imaginarte lo que estoy presumiendo aquí.

En la ultima revista que ha editado

KITPLANES, viene un artículo sobre la Starduster que, aunque no entiendo muy bien el idioma inglés he apreciado que hay bastantes coincidencias con lo que yo he escrito del avión. ¿Lo has leído?, si no es así te aconsejo que lo hagas pues es muy interesante.

No sé muy bien cuando tengo que renovar mi suscripción, por favor dime cuando tengo que hacerlo.

Has muy pronto.

Saludos

Angel Jiménez, Madrid, Spain

Dear Clay,

What a great surprise it was to see my photograph on the first page of the magazine. Many thanks! You can't imagine what I am presuming from this.

In the last issue of KITPLANES, there is an article about Stardusters that, although I don't understand English very well, there seems to be a number of coincidences with what I have written of my airplane. Have you read it?

If not, I suggest that you do, it is very interesting. I'm not sure when I have to renew my subscription, please tell me when it is due.

With best wishes,

Angel Jimenez

(translation by Clay Gorton)

---

Hello, I recently unloaded a, hmm: 40% built Acroduster 1, from a rental truck. I drove 2974 miles. A gift from my brother in CA. It is now in my garage here in Raeford NC. The story is: That a guy named Cliff Anderson was building it back in the early 70s. Unfortunately he was killed. It sat in storage all those years. My brother acquired it from a friend of Anderson's. Now, my brother has given it to me. So now I look at this pretty bird in my garage. What do I have? The wings are nearly completed, covering and aileron work is still needed. I have a good couple years of work here. I have old photos of the com-

pleted version. I will start work as soon as I get plans and instructions. But I have some confusion as to what Co. built it. Was it Stolp or Aerovant? And I am lookin for a recent photo of an Acro1 presently flying. Is there one.?

Michael Dickerson, Raeford, NC  
mick0263@yahoo.com

---

This isn't a "completion" picture but rather a shot of the SA100 that I purchased in November, 1999. It was built and first flown in 1994 by John B. Snyder of Richardson, Texas. It's powered by a Lycoming O-320-E2D rated at 160hp. I flew it the 1,000 miles to my home in Lansing, Michigan in March, 2000 and have been having a ball with it ever since. With winter upon us and 20" of snow outside the hangar, I have it down for the condition inspection and some minor mods to the cowl. I plan to install a new set of louvers in the lower cowl and revise the carb intake to accommodate a Van's airbox. I've appreciated all the advice available on the Bulletin Board and the recent revisions to the layout. I'm looking forward to a visit to Wautoma having been weathered out in 2000!

Joseph Pirch, Okemos, MI



**SA100 N247L J. Pirch, Okemos, MI**

I just come for a ride on the net, and wish every pilot and builder in touch with "studer" airplanes (star, acro and other) a "bonne année et joyeux Noel" from France.

See you soon.  
François HEBRARD, Levallois Perret, France



**SA750 F-PYPF François Hebrard, France**

---

Ken,

Sorry about the delay in getting our e-brochure to you, if you recall we had a conversation in early January. I would be grateful if you have any ideas about the assistance the Stolp corporation could render with this project. The projected start date is April 2002.

At the moment we are organising our media package, but this should break down to a website, printed press, incidental coverage in the news and a four or five programme documentary series. In equivalent terms, this is worth potentially about £20-25 million in advertising to sponsors.

I look forward to hearing from you.

Regards,  
Dan Henry, North Yorkshire, UK

**See the story on Project Flying Gibbon elsewhere in this issue of The Starduster Magazine - ed.**

Dear Les,

I own the above referenced aircraft (Starduster Too N467C). I thought the following may be of interest for the Magazine. I purchased this aircraft 16 years ago (currently based in Northern IL (Poplar Grove Airport). The airplane first flew in the spring of 1971 (30 years ago). It has an IO360 with a Hartzel Controllable Prop, original cover, looks great and flies great.

Please let me know if this is of interest and I will write up a brief

history and send a photo for your consideration.

Thanks,

Paul Cusumano, Barrington, IL

---

To: Editor(s) Starduster Magazine  
People:

Enclosed please find two (2) articles submitted for the edification and enjoyment of your/our readers. The accompanying photographs are yours for the selecting... Ansel Adams, I'm not.

Les, fourth paragraph (President's Message - October Issue - Starduster Magazine), page three, says it all. As one who has benefited greatly from the pages of Starduster Magazine (perusing all structural photographs), my personal "Well Done" to Clay Gorton and Glen Olsen.

Oh, about those lower panel wing root fairings? I've decided it's cheaper to buy the aluminum by the pallet until I get it right.

Sincerely,

Craig M. Phillips, Rancho Mirage, CA

---

Ken,

Just a few pictures showing my progress with limited space.

I will be moving in May '01 to a home which will accommodate my needs.

Regards,

Gene Wright, Danvers, IL



**Remember, the success of this publication depends on material submitted by its readers.** Please continue to send us your photos and articles for inclusion. Correspondence and articles can either be emailed to [ken@starduster.com](mailto:ken@starduster.com) or mailed to:

The Starduster Magazine  
Attn: Editor  
129 Chuck Yeager Way  
Oroville CA 95965-9200

Photos should be sent as prints via US Mail to the above address. Please do not email photos that you would like included in the magazine - the resolution is too low for printing.



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# Homemade airplanes taking flight

By **KEVIN BATES**  
*The Capital-Journal*

John Clark taxied several hundred feet down the airstrip at Philip Billard Municipal Airport, gaining speed until he lifted off, with just a touch of wobble as he quickly gained altitude before circling for a landing.

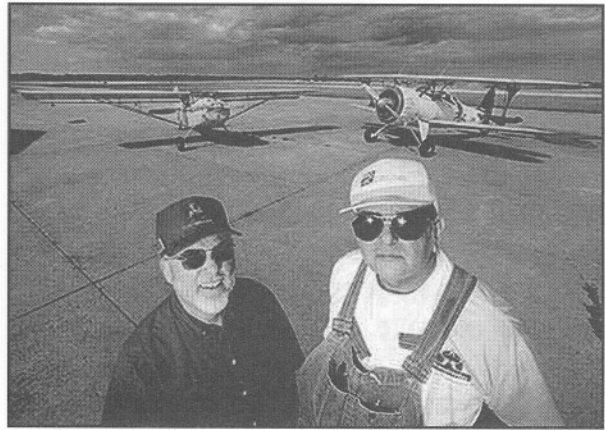
"I took my first airplane ride when I was 14," Clark said, "but I've been hooked all my life."

Clark's plane, a modified Starduster, rolled up the tarmac and toward the hangar, its 275-horsepower Jacobs circular engine throttling down and idling. Clark killed the engine, kidded about his luck in completing the same number of landings as takeoffs and then climbed out of the cockpit.

"That's the biggest thrill — getting down without bending anything," Clark said. "I fly for the fun of it. I've always liked flying and working on airplanes. I'll probably fly as long as I can walk to the airplane."

Clark's airplane, reminiscent of the small World War II-era bombers, contrasts starkly with the one belonging to Ron Simonds, another pilot at the airport. Simonds' plane, a Kit Fox Classic IV Speedster, is a smaller and more agile plane, one that can take off or land on a strip shorter than a football field.

"It's something I'm comfortable with," Simonds said, recalling his experience with similar aircraft he flew while living in Alaska. "It's a little faster, and it's easy to land on grass terrain."



Ron Simonds, left, and John Clark took inaugural flights in their airplanes earlier this month. Simonds built a Kit Fox Classic IV Speedster, left, and Clark put together a modified Starduster.

*Chris Ochsner/The Capital-Journal*

Clark and Simonds are two of 34 members of the Meadowlark Chapter of the Experimental Aircraft Association, and instead of purchasing their airplanes, each built one — Simonds from a kit and Clark from scratch. On June 3, each took an inaugural flight, just after the planes were certified flight worthy by the Federal Aviation Administration.

Simonds' and Clark's flights came after 2 1/2 and 11 years of construction, respectively. Simonds bought a kit, which furnished most of the raw materials, and Clark built his plane from parts he collected.

"I've had the blueprints since 1967, and I've been working on it since 1989," Clark said. "I sometimes wondered if I'd ever get done."

Clark remembered first yearning to become a pilot when he was a small child. His father made airplane parts in Kansas City, Kan., and when Army officers came to inspect the products, they would bring him small toys.

He acquired his student's license at 16 and

then spent all his money on hourly flight instruction in Lawrence, a short drive from his home in Tonganoxie.

In the late 1950s, as a Navy weapons officer on the USS Saratoga aircraft carrier, Clark armed the weapons carried by Navy pilots. He returned home after his discharge in 1964 and since has flown for pleasure.

Clark was part of a flyover for the funeral of Jeff William Howey, one of two Topeka police officers killed Tuesday in a helicopter crash. Howey was a friend of many of the pilots at Billard, where the Topeka Police Department's hangar is located.

"Jeff loved old biplanes," Clark said. "He was over here a lot."

Clark said his first time taking the Starduster up came as a surprise.

"The big thrill was the first time I flew it — unintentionally," he said. "I was just going to do a high-speed taxi, and the next thing I know, I'm off the ground."

Simonds eagerly anticipated getting his plane airborne. More than 1,400 hours of work paid off when FAA certifiers gave their OK, he said.

"The whole time you're building it, you're thinking about flying it," Simonds said. "And the closer I got to the finished product, the more enthused I got."

Simonds purchased his kit from Sky Star Corp. and began piecing the assortments together. The plane has a 29-foot wingspan, shorter than Clark's plane, and Simonds' engine — a modified Volkswagon Beetle engine — has as much displacement as one of Clark's cylinders.

The kit cost Simonds about \$14,000, but his

final investment figured to about twice that amount, he said. That is far below the price he would have paid for a similar, already manufactured plane.

Mike Kozubek, vice president of the local EAA chapter, said the organization, founded in 1953, uses the FAA classification "experimental," but he said the classification is misleading. It originated only because the planes were either built from scratch or were modified versions of already built models. The planes, he said, aren't unsafe or untested.

"It's a great sport," Kozubek said. "You don't have to own an airplane or even plan to build one. You just have to have a desire to fly and a love for aviation."

The EAA's national organization has launched the "Young Eagles" project, a push to get young people interested in flying. The goal is to give 1 million children their first plane ride by 2003. Nationally, the total is approaching 600,000, and locally, about 600 children have been taken up, Kozubek said.

Steve Stucky, an EAA member and a boom operator for the 190th Air National Guard, has been building an airplane, called a Verieze (pronounced "very easy") for the past 18 years. He has yet to acquire his FAA "experimental" certification, but he said he is looking forward to that day.

"Now, I'll get to be the pilot," said Stucky, who usually works in the rear of a KC-135 tanker. "I'll get a couple guys in the club to check it out before it's looked at because you want to be thorough."

Kozubek said anyone interested in joining, receiving information about the EAA or giving children their first airplane ride can call him at 286-1227 or Kevin Drewelow at 272-4916.

# Here's My Story

## From the Starduster Bulletin Board

One of our local homebuilders, Cliff Bond, a very accomplished aerobatic pilot found a Starduster for sale in Olympia Washington. We live in Baker City Oregon. I had traded another homebuilder a Acrosport 1 for drywalling his hanger. The Acrosport was stripped down frame and wings. Cliff said the Duster was a jewel and I should buy it. Soooo, I jump in my little C-150 for the 3 hour ride to Olympia. The plane was gorgeous!! Less than 400 hrs on frame and less than 200 on the engine (125hp), chute, jump suit, new prop (less than 2hrs on it), new radio\transponder, the list goes on. So I give the gentleman \$1000 to hold it for a couple weeks till I can get back. I have it annualed. Things look peachy.

*Whammmmm!! Heading to the left at a high rate of speed*

This is November in Washington, pretty cold. I taxi it around. Handles nicely. So I call tower for take off. Climb out is spectacular! You think and she responds. I follow Interstate 5 south. I drop down by a river and boaters and fishermen stand up and wave, I feel sooo cool.

Less than an hour and I land at Kelso, Washington to fuel and check fuel burn. Planes in the pattern and on the ground. I call intentions and FBO ask for a show. I reply I'm way too cold to put on a show. So I bring her in, no need to slip, she drops nicely. I'm thinking "this is cool"

Approach 65mph, steady, smooth, great. Three point at 60mph. Whammmmm!! Heading to the left at a high rate of speed. Right wheel off the ground and left wing tip inches off the ground. Iyeeeeee!! What is going on?? I punch the power, use the ailerons to level the plane and lift off before hitting the grass and the trees. All in front of an audience. She climbs great, like nothing even happened. Zips up to traffic pattern and

we try it again. 3 point at 60mph, Wow! so squirrely. It took everything I had to keep it on the runway!!

*Iyeeeeee!! What is going on??*

I taxi up to the Serve Yourself Pump to fuel. Push it back and go into the FBO to get warm and call my sweetheart to let her know how and where I was (what a girl!!!). No one said a word to me. I'm a little worried now. I check her out, crawl in (losing light) and cast off. Brakes engage when I even touch the rudders. Hmmmm, is this how they are? I don't remember this during my taxiing test. I wait my turn and taxi onto the runway, hard to keep straight. Power and we are off. Sure likes to fly.

Beautiful trip down the Columbia Gorge. Great day, a bit cold. Next stop The Dalles, Oregon to fuel. I'm ready this time. Steady, Steady, another 3 point at 60mph, yee-oww, try to keep this baby on the runway! Touch that left pedal and you are going LEFT. I keep her down and taxi for fuel. Hardly any right brake. It's OK I don't use brakes very often.

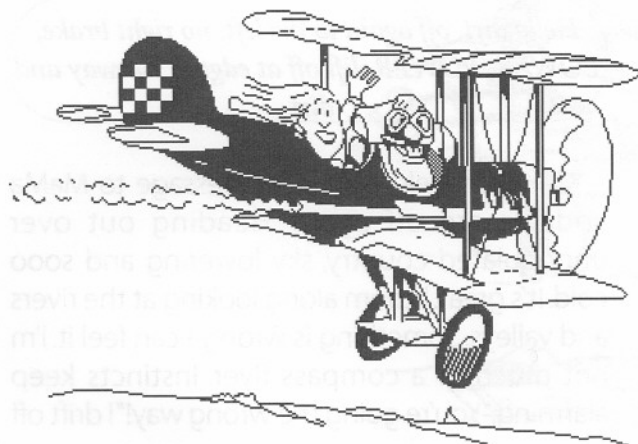
Some guys walk up and admire the girl. Yep, jus' picked her up. You want to buy her? Give me a call in the spring. If I had known the times that lay ahead.

*Hello dirt, off again to the left, no right brake, POWER, POWER, lift off at edge of runway and dirt.*

Full of fuel, potty stop, message to MaMa and we are off again. Heading out over unpopulated country, sky lowering and sooo cold. It's great. I zoom along looking at the rivers and valleys. Something is wrong. I can feel it. I'm not much of a compass flyer. Instincts keep alarming, "You're going the wrong way!" I drift off

the direction of my instincts. NO, I'm flying compass!! So, I look over to the left and low and behold a power plant. I look on the map. Hmmm, restricted airspace, real great. So the compass was not swung. I look at the mountains looming ahead, I think I'm losing fuel some how. Miles and miles to anywhere. That road looks nice. Too narrow for this squirrely bird. Pendleton!! I'll follow the base of the mountains to Pendleton Oregon. Sun is going down, gett'n real cold. There it is!! Pendleton Tower this is Starduster 1356 Wiskey, Landing Pendleton. Cool, winds calm, no aircraft, big runway. Final to runway 11, touch down at 60mph YEEEEEOOOOW!!!!!! Hello dirt, off again to the left, no right brake, POWER, POWER, lift off at edge of runway and dirt. Pendleton Tower this is Starduster Wiskey, I'm goin' around, right brake stick'n. Long pause, Starduster 56 Wiskey Pendleton Tower, No kidd'n, I thought you were goin' to eat some tullies there! Starduster 56 Wiskey, would you like to use 25? It's 150' wide. So 25 it is. But what do I do?? Full stall 16" above runway, bounce on and dislodge brake. It works!! But look out when your foot even touches that pedal! Starduster 56 Wiskey, would you like me to call a mechanic? Off to the shop. Hmm, hole in fuel line, case bolt missing, no right brake, stuck left brake, time for repairs. Let me know if you want to hear the rest of the story.

Don Fink  
don@oregontrail.net



## Landings - 1

### From the Starduster Bulletin Board

A little more grist for the landing mills: This summer a member of our EAA chapter chose to take his Bipe into a very narrow, very short field. It was apparently a kinda-paved former strip of county road about 25 wide, period. With tall grass on both sides he did not want to do the 3 pointer needed for the short runway. So, he opted for a wheelie and got caught by the perception problem we all have going into a runway much narrower than we usually see. i.e. he was lower than he thought, touched down early and hard. Result was a bad bounce, a broken gear, a wing nabbed by the high grass, a flip and a destroyed plane. The first obvious lesson here is to avoid the short and narrow strips when you can't see over the nose. I will leave lessons number 2 and 3 to others. (As we say, there but for the grace of god, go !!) Cheers,

Frank Gorham  
frankg38@juno.com

## Landings - 2

Sorry to be so late with my two cents...but I'm for the three pointer.

The secret to it...in my opinion...is the slip. You can see the runway all the way to the ground...about twenty feet from the ground release the rudder pressure. You then can use your periferal vision to see both sides of the landing area.

In my tweleve years of Duster flying, I've found that I can get into many tight places that I would never attempt with the wheel landing. Hope this helps..but like Gary says..it's only my opinion.

Don Lea  
admanlea@aol.com

# eStarduster

Starduster Corporation Online

[www.starduster.com](http://www.starduster.com)

If you haven't had a chance to visit Starduster's web site, you're missing out on perhaps one of the greatest resources we have to offer – the **Starduster Bulletin Board**.

The Bulletin Board, or more descriptively a discussion board, is where all people interested in aviation and homebuilt aircraft can exchange information and ideas.

The screenshot shows a Microsoft Internet Explorer browser window displaying the Starduster Bulletin Board. The browser's address bar shows the URL <http://starduster.com/wwwboard/>. The page features the Starduster logo and the title "Starduster Bulletin Board" with the tagline "An information forum for people interested in aviation and homebuilt aircraft." Below the header, there is a list of recent topics, each with a subject line, author name, and timestamp. The topics include discussions on elevator balance, SA750 aircraft for sale, engine choices, and SA750 construction. At the bottom of the browser window, the "Internet" status bar is visible.

**Starduster** **Starduster Bulletin Board**  
*An information forum for people interested in aviation and homebuilt aircraft*

- [Acroduster elevator balance](#) - **Frank Silveira** 13:11:35 02/01/01 (0) [ Post Message ] [ FAQ ]
- [Any Starduster II's in Florida...for sale?](#) - **Tim Bohan** 06:37:20 02/01/01 (0)
- [Any Starduster II's in Florida...for sale?](#) - **Tim Bohan** 06:09:14 02/01/01 (0)
- [Airplane and other metal stuff for sale](#) - **Lou Hagler** 11:33:49 01/30/01 (0)
- [engine choices](#) - **alan** 05:58:33 01/30/01 (6)
  - [Re: engine choices](#) - **Bob Dwyer** 20:54:37 01/30/01 (0)
  - [Re: engine choices](#) - **Bob Harris** 17:49:28 01/30/01 (0)
  - [Re: engine choices](#) - **Bill Falcon** 16:55:18 01/30/01 (2)
    - [Re: engine choices](#) - **Robert Bilyeu** 10:15:51 02/01/01 (0)
    - [Re: engine choices](#) - **Bob Scarlett** 09:04:44 01/31/01 (0)
  - [Re: engine choices](#) - **Gary DeBaun** 14:28:18 01/30/01 (0)
- [Cost, Time & Sequence to build SA750](#) - **Gordon Smith** 23:42:41 01/29/01 (2)
  - [Re: Cost, Time & Sequence to build SA750](#) - **Don Williams** 19:36:25 01/31/01 (0)
  - [Re: Cost, Time & Sequence to build SA750](#) - **John** 19:50:35 01/30/01 (0)
- [Another SA750 takes to the air](#) - **Don Williams** 20:58:25 01/28/01 (4)
  - [Re: Another SA750 takes to the air](#) - **Les Homan** 21:29:17 01/31/01 (0)
  - [Re: Another SA750 takes to the air](#) - **Gordon Smith** 05:42:27 01/31/01 (0)
  - [Re: Another SA750 takes to the air](#) - **Bob Scarlett** 06:21:05 01/30/01 (0)

## Recent Topics

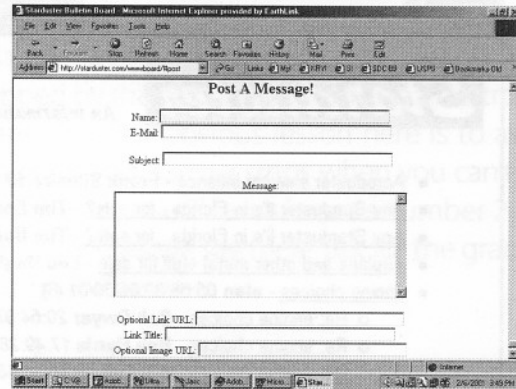
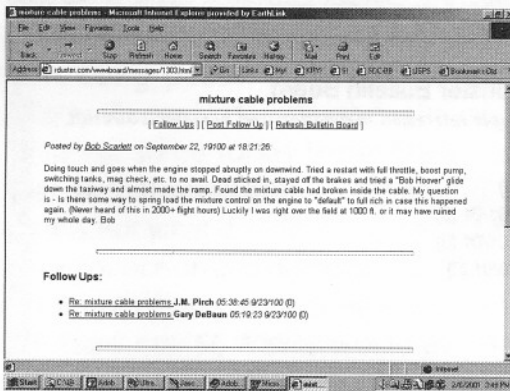
- Using wood instead of aluminum for leading edges
- Radial engines
- Tail wheel springs
- Windy cockpits
- Landing gear toe-in
- Fuel tanks
- People wanting to buy & sell Stardusters.

# How Do I Get There?

To reach the Bulletin Board, point your web browser to [www.starduster.com](http://www.starduster.com) and from the Home Page click on the Bulletin Board button.

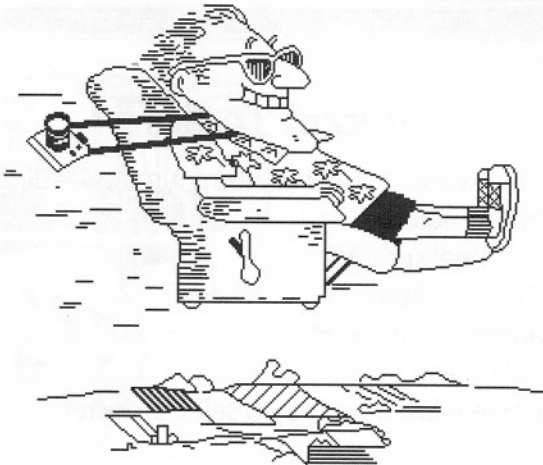
## Bulletin Board

From the main screen (pictured on the previous page), you can click on any of the headlines to read that article (and/or any followup comments) or post a comment or question of your own in the POST MESSAGE window.



We hope you enjoy the kinship of fellow Starduster owners and builders and find the Bulletin Board a useful and valuable tool.

Ken Nowell



# Project Flying Gibbon



Team Flying Gibbon has been born out of British adventuring spirit and goodwill, using an open cockpit biplane to circumnavigate the globe, with the aim of setting three world records and

a world first, and in doing so raising the profile and funds of ITDG.

The aircraft itself is a combination of simple technology in the airframe and the latest ultra-high technologies in the avionics and engine, blended together to give an aircraft in the mould of Intermediate Technology.

## The Aims of Team Flying Gibbon:

- To raise the profile of Intermediate Technology Development Group.
- To raise £1.5 million for ITDG.
- To establish three Guinness world records.
- To establish one world first.

## ITDG

*Intermediate Technology Development Group  
Practical Answers to Poverty*

Founded in 1966 by EF Schumacher, ITDG is now an international group of development organisations with charitable status. Its head office is in the UK, with regional and country offices in the three continents of Africa, Asia and South America. The group's annual turnover is over £11 million.

## The world records to break:

- 1 The youngest aircrew to complete an eastbound circumnavigation.
- 2 The fastest eastbound circumnavigation by an open cockpit biplane.
- 3 The fastest eastbound circumnavigation by an aircraft using a JET-A1 fuelled piston engine.

## The world first:

The first circumnavigation by an aircraft to use a JET-A1 fuelled piston engine.

## Record Guidelines FASTEST OVERALL CIRCUMNAVIGATION BY AIR

*This record is for the shortest elapsed time taken for a world circumnavigation by air.*

1 The time to be recorded is from when the wheels of the plane leave the ground at the airport of departure to when they touch the runway at the same airport at the end of the trip. Thus time on the ground during the circumnavigation is included in the total time.

2 The circumnavigation must consist of a traversal of 360° longitude and the journey must exceed a minimum distance of 36,787.599 km 22,858.754 miles, the length of the Tropic of Capricorn, as permitted by the FAI.

3 The attempt may be made eastabout or westabout.

4 A logbook must be maintained throughout the attempt.

5 The name of the organisation, company or person(s) making the attempt should be given, along with the date and place.

## The Aircraft



### Airframe

- **Stolp Starduster Too**, powered by a 230hp SMA SR305 Diesel Engine
- Smoke producer
- External fuel pod
- Oxygen supply

### Avionics Fit

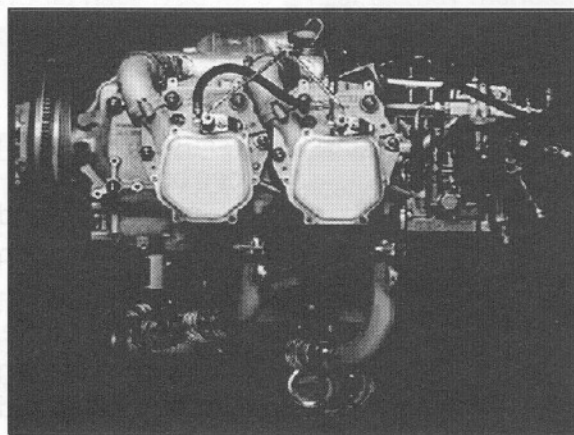
- Standard instrument panel
- Transponder
- UHF/VHF/HF Radios
- Traffic Collision Avoidance Detection system
- GPS moving map display with Nm/lb. best power range function
- Storm scope, weather detection system
- Dual intercoms
- Digital engine analyser
- Multi function display in the pilot's cockpit

### Survival Equipment

- Appropriate parachutes X2
- Maritime, polar, desert, jungle survival packs
- 406Mhz EPIRB Beacon
- 121.5Mhz ELT Beacons X2
- Watch GPS X2
- Handheld VHF X2
- 2 Single person life rafts (RAF type PSP packs)

Project Manager  
Daniel A.C Henry  
1, The Green, Galphay,  
Near Ripon, North Yorkshire  
HG4 3NJ UK  
Tel: 1765-658477  
Fax: 1765-658832  
Cell: 7880-564565  
Email: flyinggibbon@hotmail.com

## The SMA SR305



In January 1997, the Aerospatiale and Renault Groups created SMA to develop produce and market a JET-A1 fuelled engine for the general aviation market worldwide. This engine, the SMA SR305 is the first JET-A1 fuelled general aviation engine for the 200hp to 250hp power range, to be developed and to go into production anywhere in the world.

### *The engine was developed for a number of reasons:*

- To be more fuel-efficient and use a cheaper fuel than current piston engines of the same capacity.
- The limited availability of Avgas 100LL, the standard fuel of piston engines. (Avgas 100LL is programmed to be removed from the market within the next ten years.)
- In Europe, new anti-pollution regulations will prohibit the use of Avgas, which contains some degree of lead.
- Noise pollution has already led to regulation in most European countries creating severe limitations for the use of pleasure and training flights, which normally take place close to an airport which usually is located next to a city or town population.
- The SR305 is therefore a slower turning, quieter engine, yet it still maintains sufficient power for flight.



# SAFETY

Extracted from:

## *Scud Running: Discussing A Delicate Subject*

by Rick Durden

There's a right way and a wrong way to do anything. So it is with scud running, that time-honored practice of scooting under weather to get to a destination. Lately, though, the practice has gotten much more dangerous, partly because it's not being properly taught any more. While that may be a good thing, people are still finding ways to bend sheet metal at low altitudes. AVweb's Rick Durden shows you how to scud run, then shows why you shouldn't.

1. Select the altitude that gives the most visibility. This may be extremely low. Those who were trained in scud running learned that there were rules to be followed in order to survive. First of all, a pilot should fly at the altitude that allowed maximum visibility. It didn't take a genius to realize that the more one could see, the better. A pilot needed a usable horizon and had to be able to spot landmarks for navigation. Sure, that sounds basic, but it was the rule that had to be kept at the highest level of aeronautical consciousness. The condition of the cloud bases often determined how high one could fly. If the cloud bases were not well-defined, it was necessary to stay very low to get decent visibility, but then it became quite challenging to navigate because one just couldn't see much. If the cloud bases were well defined, it was best to stay as high as possible, so long as you had a horizon, thus simplifying navigation.

2. Minimum visibility is about two to three miles. When thinking back about the times Hack (an old-time vfr pilot) had arrived in the Super Cruiser under a low ceiling, I recalled that the visibility was never less than three or four miles. He explained that scud running in anything under three miles' visibility was extremely difficult and exhausting, thus, he would not plan a flight when the visibility was going to be that low. The fact that the ceiling was very low wasn't the variable

that concerned him. He wanted to be able to see some distance ahead. While he knew his way around, he always had his finger on his map. It meant he had to look inside the cockpit at the map with some frequency. At 120 mph he covered a mile every 30 seconds. He wanted to have at least 15 to 30 seconds available to him to look inside at the map, or, later, his GPS. If the visibility was much less than three miles he not only didn't have a decent horizon, he didn't have time to look inside the cockpit, look back out and make the transition involved from looking inside to looking outside (it can take several seconds) and then be able to react before hitting something that might loom out of the mist. The math is pretty simple: When flying at 120 mph in one-mile visibility, you have 30 seconds before you hit something that appears at the limit of the distance you can see ahead.

3. Get dual on a low ceiling and visibility day before scud running on your own. Hack looked at me and said that he has yet to meet a pilot, trained in the last 20 years, who was taken out by his instructor in two-mile visibility so the pilot could see just how terrible it is to fly in such conditions. In fact, he has met only a very few whose primary instructor insisted on them flying even one leg of a dual cross country at 500 feet or so above the ground. Interestingly, Hack said he believed that some pilots died trying an

unplanned scud run because they could not make the intellectual leap to understand just how little one can see when the visibility goes down and how terribly different the world appears than on a good VFR day. I thought about the times I've watched instrument students struggle through their first circle-to-land approach in two-mile visibility and found that again I was in agreement with old Hack.

4. If possible, have another pilot aboard to handle navigation. Hack's next rule was to try to have another pilot with him to help with navigation. He wanted someone who could read a map and keep him on the desired course. Hack wanted to look outside as much of the time as possible. Map and GPS reading and interpretation meant head-down time, every moment of which was perilous.

5. Plan the flight, completely. Hack firmly believed in the rule about planning a flight. Hack planned his flights. All of them. If he knew the weather met his own personal minimum visibility, he planned to fly under low clouds. He never departed with less than four miles' visibility. During our discussion of the flight-planning rule, Hack again remarked to me that most of the folks who were flying low in reduced visibility were doing so because they let themselves get forced into it. They didn't plan to do so in the first place. As a result they were merely reacting to a situation rather than being proactive and conducting something that was the result of some forethought. He asked me to recall some of the accident reports on scud running that I'd seen. A significant proportion of the pilots were instrument-rated and current. However, they had started out under VFR in weather that was shaky. On running into lowering ceilings, the pilot simply tried to go lower, without a definite plan. Once the visibility became less than about three miles, the awful end was pretty well ordained because the pilot was unwilling to climb, admit his problem and get an instrument clearance. Unfortunately, those pilots acted on the axiom, "it's better to be dead than embarrassed."

6. Know where the alternate airports are and how to get into each one. Part of Hack's flight planning was to note every single potential airport to which he could divert if the weather went bad. He noted the way into each airport, boldly circling terrain and obstructions on his chart. If something went wrong, he had several contingency plans in his back pocket.

7. Determine the minimum acceptable altitude over the terrain before departure. When learning to fly, Hack learned never to completely rely on his engine. As he looked for available airports along his route, Hack's flight planning included a review of the land over which he was going to fly. In the Midwest, he could land almost anywhere, so he could fly quite low and do just fine if the engine decided to take the rest of the day off. In more rugged terrain his idea of scud running sometimes meant he would go no lower than 2,000 feet above the rocks. When not following a highway or railroad for navigation, my friend would alter his course as needed to stay within gliding distance of suitable places to land.

8. Fly directly over the right lanes of divided highways. As the interstate system was developed, scud runners had a wonderful aid to navigation and safety. After a few head-on, mid-air collisions, over the median, pilots figured out that they should stay over the right lane. They also learned to stay directly over the pavement because some states built rest areas and towers in the medians.

9. Keep the airplane trimmed at all times. Experienced scud runners also knew they had to keep the airplane trimmed correctly at all times. They could not afford any altitude drift when their attention was diverted. They had to be able to hold altitude within plus or minus fifty feet without fail.

10. There are power lines across river valleys. Hack sometimes found that river valleys were helpful for navigation and freedom from towers (towers are built on high ground, for obvious reasons). But, after some scares with power

lines, he learned that it is very common for high tension lines to be stretched completely across river valleys, unmarked and invisible, with the supporting poles hidden by trees. He never flew below about 100 feet above the hills on either side of a river valley. As he spoke, I recalled my CAP cadet days when our wing commander died in a T-34 when he was flying low down a river valley and hit power lines.

11. Avoid towns and cities. My new instrument student also explained why he never flew low over any sort of a town or city: There was no place to land in an emergency and too many things stuck too far up into the air. Hack knew and could quote the FARs on minimum altitudes and admitted he was not always 500 feet away from persons or property, although he would only go closer than that if he could turn away and land should there be a problem. He also never flew over congested areas where the altitude requirement went to 1,000 above the tallest obstruction. He was pragmatic; he knew someone would turn him in. Interestingly, he had done his homework; he knew that heavy traffic on an interstate was considered a congested area.

**H**ack had lived by the rules of scud running. He planned his flights very carefully. He violated surprisingly few FARs, and then, not with any frequency. I came to respect Hack's perspective on VFR flying. He pointed out that more than once he had flown quite safely on winter days, below a 1,500-foot overcast with unlimited visibility, after watching me cancel a trip. I had refused to go because of ice in the clouds. It simply hadn't occurred to me to go VFR those days.

Despite superb flight planning and religiously abiding by the rules, Hack had stopped scud running. Something had changed. I wanted to know what it was.

### *An Experienced Scud Runner Watches the World Change*

**I**n the '60s, Hack noticed that TV transmission towers started to become more common in rural areas. He saw that the sectional charts didn't always keep up with the location of the towers, so he made notations on his charts of all the towers he saw. Then, towers taller than 1,000 feet started to be constructed. The guy wires for some of those monsters sometimes stuck out as much as 800 to 1,000 feet on each side, creating a very big, almost invisible, net in the sky. It got progressively worse in the '70s when line-of sight FM radio became popular.

By 1980, the stunning proliferation of very tall towers, even in the most remote areas, caused Hack increasing levels of discomfort, although he observed that they were lighted and the folks responsible for keeping the lights illuminated seemed to do so. The first time he saw a tower constructed with its guy wires crossing a major highway nearly gave him heart failure. The guy wires had neither lights nor balls on them.

In the 1990s, Hack watched the growth of cellphone towers carefully. He tried to keep track of those towers, but they multiplied at an astonishing rate, particularly along, and very close to, interstate highways. Over the last few years, he learned that the aeronautical charts were not required to illustrate towers below a certain height. In addition, if shorter than a certain height, towers are not required to be painted bright colors, as required of their taller relatives. He read the recent notification that the FAA is seriously considering not depicting towers under 600 feet in height on sectional charts, and came to the realization that the FAA simply doesn't give a tinker's damn about flight safety for those in the lower portions of our atmosphere. He also noted that, more and more frequently, those folks who were supposed to maintain tower lighting systems weren't doing their jobs.

The last straw came a few days earlier,

during a flight home, while giving a wide berth to the 1,100-foot tower several miles north. Looking carefully, Hack was able to pick it out against a gray sky. Angrily, he once again noted that the strobe lights on it weren't working. In a few more minutes, as dusk fell, the tower would become invisible.

That did it. Hack was used to flying low. He had been trained to do it safely. He followed all of the rules for scud running religiously, particularly rule number 1 regarding flying at the altitude that gave the best visibility, even if it meant flying very low. The ugly, and deadly, conundrum is that flying where the visibility is greatest (and it may be only a couple of miles, if that) too often puts one down where the incredible proliferation of towers on our landscape has simply made it unreasonably dangerous to be, even with the most careful advance planning. Simply stated, if you put the airplane where you can see the farthest, you are down where the towers grow, where they don't have to be depicted on the chart and where some of them are impossible to see against the prevailing background.

Hack told me that he will no longer fly VFR under 1,000 feet above the ground, during the day, unless he has five miles' visibility and he won't fly that low at night except to take off and land because towers are not being consistently illuminated. It seemed to him, he said, somewhat propitious to choose to end this millennium by ending scud running and to start the new one with an instrument rating.

*Good judgment comes from experience. Good experience comes from someone else's bad judgment.*

# Choosing a Save Altitude

By Bill Kelly

*Extracted from Aviation Safety*

*February 15, 1993*

I was out in the driveway, working on my car, when I heard the familiar droning sound of a small airplane. This one sounded close, so I ducked out from under the shading tree limbs to take a look.

Sure enough, a little Cherokee. And it was close no more than 500 feet above the ground. It was making tight circles centered about two blocks away. My driveway was right under the west edge of his orbit. Not enough noise to be bothersome (to me, that is, but maybe a pain to some non-aviator neighbors).

Just nice, tight, level turns. No aerobatics. No "Jazzing" of the throttle. After three or four orbits, the Cherokee leveled and headed to "Podunk Airport," five miles to the west. But he had to climb to get to pattern altitude.

Most of my neighbors probably didn't even notice the airplane. It was a sunny, warm Sunday here in central Florida. Several lawn mowers were running doing the final grass clotting before the so-called "wintertime." One neighbor had even been running his chain saw.

Besides, we get lots of these minor "buzz jobs." There must be some pilots living in the area who like to signal their arrival to the home folks. Here's what FAR 91.119 has to say about how low we can fly over other than congested areas: "An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle or structure."

### *Baseline Rules*

FAR 91.119 says that "no person may operate an aircraft...over any congested area of a city, town or settlement, or over any open air assembly of persons, [at] an altitude of [less than] 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft."

The exception is when you need to fly lower on takeoff or landing.

In my residential area, "ground level" is about 150 feet MSL. But there are "obstacles" such as a new five-story hotel and various radio and telephone relay antennas that stick up several hundred feet above ground level. That Cherokee pilot needed at least 1,300 feet on his altimeter to stay the mandated 1,000 feet from all obstacles.

But my biggest concern about that Cherokee pilot and all the other pilots who like to circle around their homesites is his ability to make a safe emergency landing in case of engine failure. Here's what FAR 91.119 has to say about that:

"No person may operate an aircraft [anywhere] below...an altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface."

That means you must at all times be able to glide to some area where you won't endanger people or property. That means do not count on an emergency landing on a residential road. Do not count on landing on a four-lane interstate or on a school's athletic field. Don't plan on an emergency touchdown alongside the chicken ranch hen sheds. You might hurt somebody or something on the ground.

### *Beyond the Regs*

Now, let's consider your safety when you operate even at the "minimum safe altitudes" prescribed in the regs.

What if the engine quits when you are only 500 feet above the ground? That gives you about one mile of horizontal glide distance, or time for a quick 180-degree turn before touchdown. That is not much time to select a "suitable" landing spot.

If that Cherokee pilot had lost his motor during the orbits over my house, he would not have found any "suitable" touchdown areas. He would have had to choose between a swamp area, several abandoned pit mines with steep ridges separating deep ponds of stagnant water, a highway under construction and covered with earth-moving and paving machines, suburban roads, three schoolyards and about 15 church and shopping mall parking lots. There wasn't much of a chance that Cherokee driver could have "ditched" without hurting someone on the ground or in his airplane, or doing some serious damage to something on the ground or to his airplane.

FAR 91.119 insists that you be high enough to ensure "no undue hazard to persons or property on the surface." It says nothing about being high enough to give your passengers a fair chance at survival. That probably would be covered under the "careless and reckless" provisions of 91.13.

### *Why Take Chances?*

Sure, you can't assure that there is always a suitable area for an engine-out landing.

You may be flying at night and unable to pick out the best area. You may be flying in IMC (instrument meteorological conditions) and unable to choose a landing area until at a very low altitude. You may be over endless mountain or swamp areas. In these situations, an emergency landing is likely to be a bad "crunch."

But there is no reason to take chances while flying in good daylight conditions. Why not try to always have a suitable touchdown area within gliding distance?

If you're flying over rough, unpopulated terrain, why not stay high enough to both see and be able to glide to the best available landing area?

Back in my basic training days, in a Cessna 120 and a J-3 Cub, my instructors insisted that I always have a suitable landing area in sight and within gliding distance.

Even over the Appalachians and Rockies, there are plenty of valley and river bed regions where you might be able to touch down with a minimum engine-out impact velocity. In rolling, forested hills, there are places where you could arrive gently into treetops and not directly into the side of a ridge.

You might even have to touch down into water, but don't count on that being any "softer" than level ground terrain, though it will probably be more gentle than flying directly into that Moun-tainside.

The FARs don't require that you fly high enough to preserve your own fanny in an emergency landing. Such a thing would be impossible to legislate, and thank goodness the FAA hasn't yet tried to write such a rule.

But it's only common piloting sense that you do your best to fly where you can make at least a partially successful touchdown (meaning, probably, major airplane damage but a minimum of personal injury).

### *Pick Your Terrain*

Over really desolate and rugged terrain, maybe the shortest loran, GPS or RNAV course isn't the best. Maybe a road map or the old faithful Sectional chart could show you more suitable terrain for your VFR flight.

Something close to the lowlands and civilization, maybe close to a decent roadway, would give you and your passengers a chance.

Sure, when you're flying into the "big city" airport, with its TCA or ARSA, you go where you are told to go, and at a prescribed altitude. Maybe you aren't always within reach of a "suitable" landing area. But that's only a very small percentage of your total flying time en route. And you don't linger over any one populated area very long.

So, please quit lingering at low altitude over my residential area on your way into Podunk Airport. There's no reason for you to be below Podunk's traffic pattern altitude before you even reach the airport traffic area.

If you're departing Podunk, please climb to

a minimum safe altitude before starting your circles.

I'm really not all that worried that you might land on my rooftop, and I really don't mind the slightly increased noise level. But I do worry about any pilot who would fly lower than a safe altitude over a heavily populated area.

What would such a pilot do if the engine quit? Would he head for the swamp or deserted pit mines and take his chances with the snakes and alligators? Or would he try for a residential street, schoolyard or shopping center parking lot?

Give yourself the best chance of a "minimum-injury/minimum-damage" crash landing. Get some altitude. Altitude means time in the air after an engine failure. And altitude means glide distance—probably at about a 10:1 ratio (with 1,000 feet AGL meaning close to 10,000 feet of horizontal distance, or close to two statute miles glide distance).

### *Time to Set Up*

Sufficient altitude also means time for an emergency downwind leg, base leg and short final.

Several years ago, a local pilot lost his Lake amphibian, and almost his life, when the engine failed at low altitude. He had been seen circling over an "other than congested area" at about 500 feet AGL.

Weather was good VMC (visual meteorological conditions), but the surface wind was blowing at approximately 20 knots.

When the engine quit, he headed for the nearest "suitable" landing area a short manmade lake left over from a pit mine. Unfortunately, he only had time for a straight-in approach and landed downwind, no-flaps, with a high airspeed and screaming ground (water) speed.

The little amphib tripped, flipped, broke up and sank. The pilot was thrown clear and swam ashore with severe injuries.

That little pit mine lake and other lakes

nearby, plus several open fields, would have provided decent touchdown areas into the wind if only the pilot had maintained a little more altitude.

The best bet is not to fly low over "unfriendly" terrain, especially populated areas, at low altitude.

**R**emember, you have a duty to protect those innocent citizens on the ground. You cannot land atop a house or schoolyard and injure the "innocents" or damage their property without being guilty of FAR violations. You may also face criminal charges.

Always consider the "what-ifs." For instance: What if the engine quits? Be ready to make the safest landing you can possibly make.

But even if you don't have an engine failure, you also should consider: What if somebody on the ground gets mad and reports me to the FAA?

The FAA is certainly not getting any "kinder and friendlier" about this type of thing. A loss of license or big fine could sure spoil your flying.

---

*LEARN FROM THE  
MISTAKES OF OTHERS...*

*YOU WON'T LIVE LONG  
ENOUGH TO MAKE THEM  
ALL YOURSELF.*

## In the Next Issue of The Starduster Magazine:



See the Stories on the  
STARDUSTER JUMP PATCH  
and "THE BULL"



# KEEPING DINNER ON THE TABLE

C.M. Phillips

Some time ago I sauntered into Harbor Freight, plunked down one hundred Yankee dollars and walked out with one of those foreign-born Beading/Rolling machines. Considering its origins, I'm quite pleased with its performance.

The unit comes equipped with a set of seven (7) dies, one of which, shears as the workpiece is fed, making radius cutting possible.

One small problem:

This machine comes with a cumbersome crank type handle (ala Model "A" Ford). At the bottom-of-the-stroke phase of turning the crank, the person (Guess Who?) doing the job of cranking is forced into an ungainly position which upsets the rhythm of feeding the workpiece.

This upsets the guy feeding the workpiece, who hollers at the one (Guess Who?) doing the cranking. Now, the one doing the cranking is tired of being hollered at and suggests what the guy can do with his lousy bead/roller, and while he's at it.....the Starduster, too!

Now, we can't have dissent in the workplace. We've got to find a solution... and Pronto.

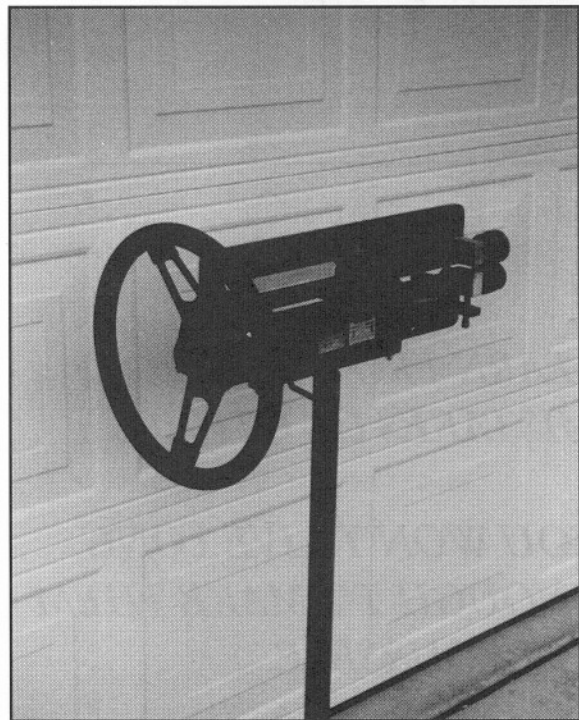
Brainstorm: Off to the local junkyard. Toss the man a few dollars for a fourteen-inch (padded, yet) steering wheel. Back at the bench, clamp that ugly crank into the vise and whack off the offending handle.

Next, drill-and-tap or drill right-on through, the hub with at least two (2) three-sixteenth machine screws and...voila! There you are, attach wheel to hub and slap that puppy back on the

machine.

Results: Precise control and speed of workpiece, no more need to holler at the "cranker" (Guess Who?), and love and kisses are once again back in the workplace. As a matter of fact, "the cranker" says the steering wheel is the second-best idea I've ever come up with. The Starduster? .. she's sticking with her original suggestion.

The manufacturer suggests you mount this unit in your bench-vise. I welded up a telescopic-stand and bolted the unit to the stand. With a couple of sandbags at the base, it ain't goin' no place.





# THE HOMEGROWN WHEEL

C. M. Phillips

For sometime, Sport Aviation magazine, as well as Norm Goyer's "Custom Planes" helped to unlock some of the mystery surrounding the craft of sheetmetal work. Now, it's STARDUSTER MAGAZINE'S turn.

Most interesting to the author, were articles and photographs concerning that amazing English Wheel. Since becoming involved with the "homebuilt movement," I'd often heard, but never seen, an English Wheel. I was beginning to believe it was like that "left handed monkey wrench" I'd been sent to fetch.

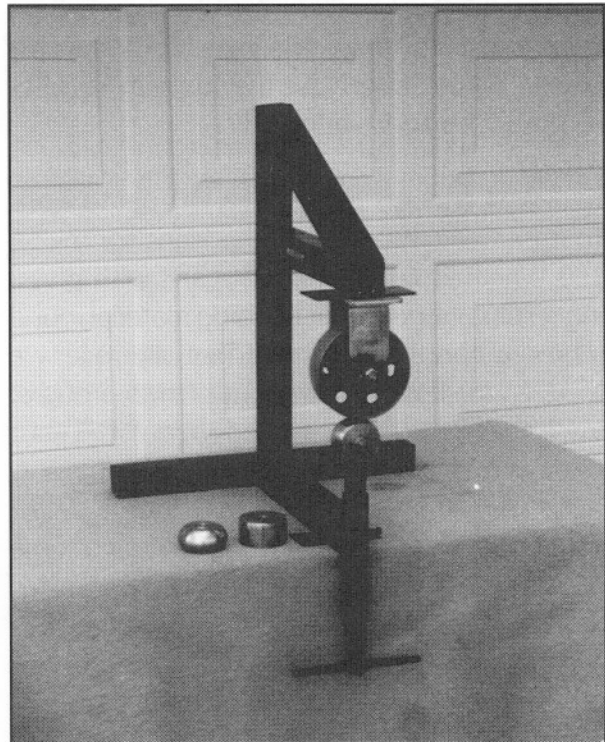
One particular issue depicted a "bench top model" of a Wheel. It seemed too small and others, too big. Study of the photos helped me to decide I could build one without plans, as well as eliminate some of the machining and moving parts. Since it requires machine lathe work, find somebody that does it, preferably someone that "owes you one". The author, having long lusted for a lathe, recently purchased a used machine and has himself a ball cluttering up the workshop floor with "chips".

A practical size for a bench top Wheel should have a throat depth of at least sixteen inches (16"). This dimension should allow a work piece of thirty-one inches (31") in width to be rolled through the machine. As constructed the author's Wheel weighs in at thirty-two pounds (32 lbs), is twenty-six inches (26") tall, twenty-two inches (22") wide and nineteen inches (19") deep. While not in use it stores easily out of the way, which is a bonus for us with a too crowded two car garage.

And get this! The large upper wheel (lower ones are called anvils) started life as a cast iron

caster, like the ones you see on the bottom of a dumpster! The anvils were sawed from a three-inch (3") piece of gray iron. If you don't have a power hacksaw.. farm it out! For openers the author gets by with just three anvils. As one needs more.. Since they were not planned to compete with Boeing, the anvils were not sent out for hardening. Considering the limited use expected for this machine, why bother. What can one expect for less than one hundred dollars?

Creativity was necessary in order to eliminate some machining and moving parts. The anvil stirrup is welded to the one-inch (1") square tube, that slips down the snug-fitting sleeve. The jackscrew consists of a length of three-quarter inch (3/4") Threadall. Three adjusting screws have been welded to the sides of the sleeve to control stirrup-shimmy. Simple, isn't it?



So one day, we are looking at the finished product clamped to our bench. Soon, growing tired of having only my thumbs to pass between the wheels, it was time to get some instructions.

Kent (The Tinman) White, puts out one video that leads you by the hand, titled "An American's View of the English Wheel". For one of Kent's catalogues:

KENT (THE TINMAN) WHITE  
TM TECHNOLOGIES  
POST OFFICE BOX 429  
North San Juan, California 95960  
Tel: (530) 292-3506 (M,T and F, 9 to 12)  
www.tinmantech.com

Repeated viewings of Kent's video left me confident that we were ready to take on some real live aluminum. The first lesson learned was that the tremendous pressure available will astound you. take it easy! The second lesson showed me that this little devil would pinch your "pinky".. Watch it! The third lessons showed that you should not try walking too soon...grab some scrap and crawl for a while. If you do screw up a piece.. Wheel it out! Like the Tinmam says, "It's so simple, it's aggravating."

Well, enough "baby" steps, let's get to work. To date we've Wheeled all the "skins" for my SA 100, Wheeled .040 aluminum parts with pleasing results...none of that bending material round a broom handle.. no sireee! That slip roller we were gonna build.. fugetaboutit. I'm so proud of my Wheel, I'm telling everybody about it. At least three or four times.

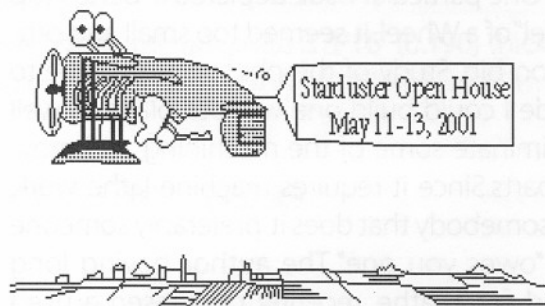
Currently, we are practicing Wheeling some of those gorgeous wing root fairings...you know.. the kind that twist and roll their beautiful way across the wing and around the fuselage. Talk about trying to walk before you can crawl!

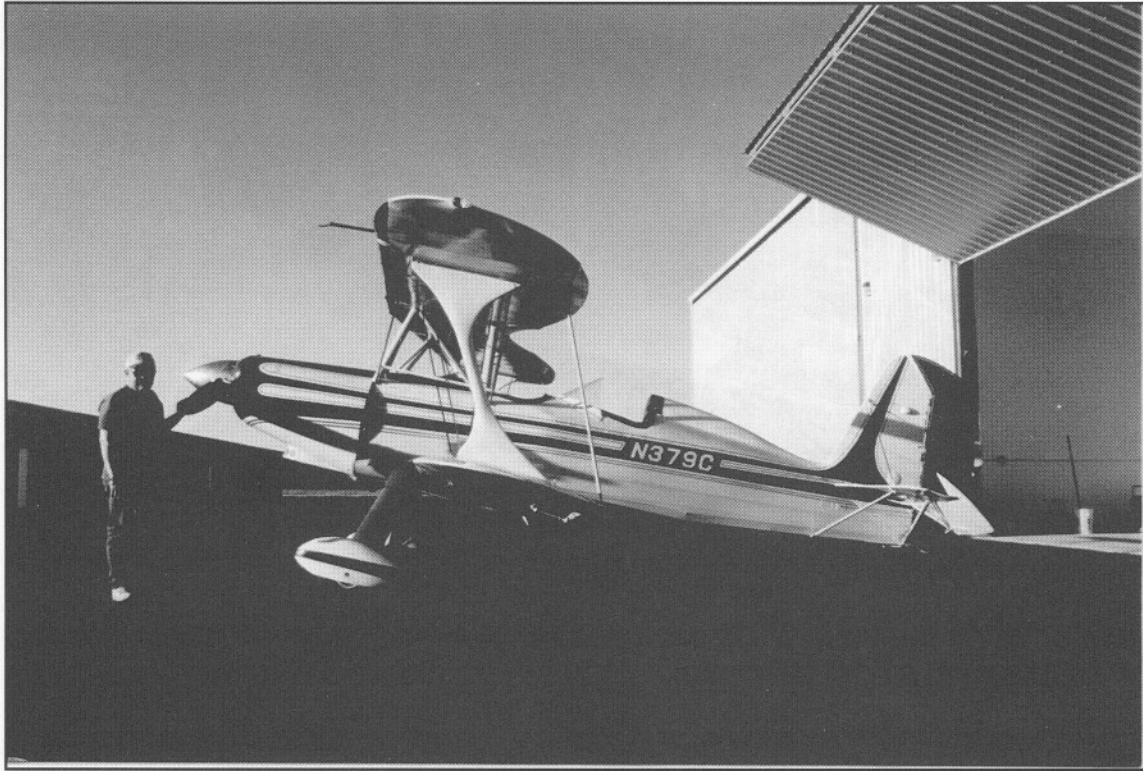
Of course, as soon as we Wheel out a decent looking copy of one of those beauties, somebody's is gonna have to aluminum weld it together (I already have the video).

Hopefully the photographs illustrating this article will suffice anyone wishing to build one of these marvelous devices. After all, this old, fat, one-eyed carpenter did it. If not, a business sized SASE to the author will get you a shop drawing and a material list.

Good luck and have fun!

C. M. Phillips  
45 Florentina Drive  
Rancho Mirage, CA 92270





*SA300 N379C Bob Harris, McMinnville, OR*

*SA300 C-GSVC Clyde Murray, Abbotsford, BC, Canada*





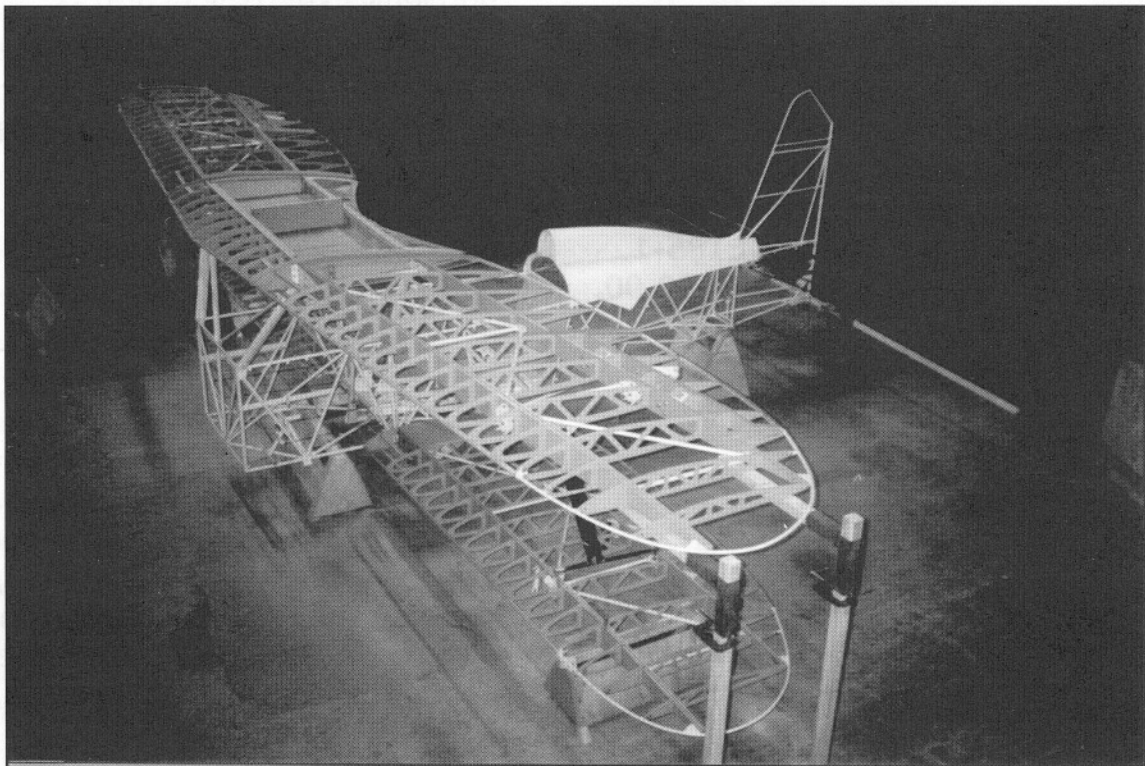
*SA750 Gene Wright, Danvers, IL*



*SA500 Bob Munch, Palm Bay, FL*



*SA300 N4226Y Les Homan, at Flabob Reunion with Mount Rubidoux in the background*



*SA300 Robert Warren, West Drayton, Middlesex, UK*

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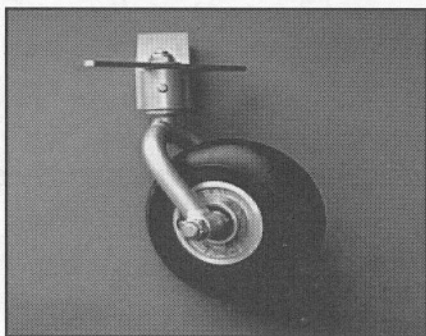
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## AFS EverShield



An Easy-To-Applly Glass-Like Finish With Many Incredible Protective Properties For Almost Any Aircraft Surface

You'll be amazed at this sprayable, wipable, dippable thin, clear liquid that cures to almost impregnable coating.

EverShield's protective properties boggle the mind. Examples: In tests it resists blow-torch heat (yes, blow-torch flame) above 2000°F It is impervious to virtually any chemical. It's excellent for hardness, flexibility, impact and scratch resistance, adhesion, and corrosion protection. It is unbelievably slick.

On any aircraft, EverShield has applications from nose cone to tail cone. Wiped on a prop, this incredible film sheds bugs, pebbles, salt spray, whatever. On an exhaust, it seals the metal from corrosion and by refraction reduces heat transmissions to cowling and elsewhere. On leading edges bugs slide off. Over the entire plane, the slick surface fortifies the boundary layer, reduces drag. (How many knots will your plane pick up with an EverShield finish?)

EverShield is a catalyzed treatment system that has been called liquid glass by some, liquid ceramic by others. It's non-hazardous (like all AFS products). Cleans up with water (or solvents). Grips most any surface, from stainless steel, to plexiglass, to paint.

Because this thin liquid covers so much surface per gram, the cost per square foot is trivial.

EverShield is a true breakthrough miracle coating. There's nothing comparable available. Once you use it you'll continue to find a myriad of applications. Better give it a try soon.

**EverShield - Clear - Coverage 55 sq ft  
2 oz kit \$ 35.00**

**EverShield - Clear - Coverage 111 sq ft  
4 oz kit \$ 65.00**

**EverShield - Clear - Coverage 223 sq ft  
8 oz kit \$ 95.00**