

July 1979

THE  
EVERY

# Starduster

JULY 1979

MAGAZINE

DEDICATED TO THE ACTIVE HOMEBUILDER



ding (Fondulac) and one second place, out of five starts, perhaps we don't even give away anything in performance.

PAGE 1

DESIGN PHILOSOPHY



At Oshkosh this summer, several customers and potential customers commented on the structural strength and weight of the Acroduster Too as opposed to the strength and weight of the Pitts and the Christen Eagle. The commenters were mainly concerned that the Acroduster appeared to be a little heavier than the other two airplanes.

This is true. The Acroduster Too is a little heavier, and one hell of a lot stronger than either of the two other airplanes.

How can that be, you may ask, when all three airplanes advertise a "G" limit loading of plus or minus six "G's"? Easily. An airplane design can just meet the design limit load, or it can meet it with a substantial safety margin.

It has always been my design philosophy that the airplane as a whole must meet certain strength criteria, but that the fuselage should be the strongest part of the airplane. The reason is, that the fuselage is where the pilot and passenger live. My own personal feeling is that the fuselage should not collapse in a crash until compressive forces hit around 40 "g"s. In case of a crash landing, that gives the crew a reasonably good chance of surviving. If it collapses at 9 or 10 "G"s, it may meet FAR's, but I would hate to put it down in rough terrain.

All of our airplanes are designed to the same philosophy. In all of them, the fuselage is extremely strong and crash worthy. You may never need this strength, but I am happy to know it is there.

One of our customers crashlanded an Acroduster Too in mountainous terrain when he suffered an engine failure. He suffered only minor injuries and got out and walked three miles for help. The wings and landing gear were torn off, but the fuselage survived the ride in one piece, and virtually intact. No collapsing of structure occurred in the seat areas.

An Acroduster One suffered an engine failure and was dropped into a grain field from a height of 75 to 100 feet by the pilot who stalled out crossing some high tension lines. The fuselage hit hard enough to completely flatten the gear, bounced into the air turned over, and landed upside down. Distance traveled was 20'. Estimated G forces was plus and minus 20-25. The fuselage was intact and the pilot was unhurt.

Because of these, and similar incidents involving Stardusters, we will continue to overbuild in the fuselage areas. We pay a very small weight penalty to give you what we believe are the safest high performance biplanes in the sky today. And with our ACRODUSTER TOO's record last season of 4 first place wins (including Fondulac) and one second place, out of five starts, perhaps we don't even give away anything in performance.

July 1979

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

TABLE OF CONTENTS

PAGE ONE, EDITORIAL----- 1

CRASH ANALYSIS-SAN DIEGO PSA-CESSNA CRASH----- 3

CREDITS AND WARRANTIES----- 7

PRODUCT INFORMATION----- 9

STARDUSTER TOO DRAWING ERRORS-PARTIAL LIST-----13

ACRODUSTER ONE FLOWN BY ITALIAN AEROBATIC CHAMP-----14

TECHNICAL UPDATE-----15

PIREPS PAGE-----17

CLASSIFIED ADS-----30

This magazine is not copyrighted, except as noted. Permission is hereby given to reproduce any part of it, except as noted, for the benefit of Sport Aviation, providing credit is given to the publisher, STOLP STARDUSTER CORPORATION.

The STARDUSTER MAGAZINE is a quarterly publication, published four times a year. Subscription rate is \$6.00 per year. Published by STOLP STARDUSTER CORPORATION, 4301 Twining, Riverside California, 92509. Phone (714) 686-7943

DENNIS MERRITT, of Las Vegas, Nevada, makes an exciting low level pass over Flabob Airport. To get the picture, look at the front page.

On our Back cover is Sr. ALDO LOCATELLI, of Milan, Italy. Aldo is the National unlimited Aerobatic champion of Italy, and his airplane is the ACRODUSTER ONE that he built, and is pictured with.

OUR TWO INFLATION FIGHTING POLICIES--

1. We give 3-5 pounds of short length tubing free, with each substantial order. Suitable for welding practice only. Sorry. No size selections will be made.
2. A discount of 10 per cent will be given to walkin customers, who select thier tubing from our short lengths rack, providing no cutting is done. If cutting is provided, regular prices will prevail.



CRASH ANALYSIS-SAN DIEGO PSA-CESSNA CRASH

BECAUSE OF THE RELEVANCE OF THIS CRASH TO GENERAL AVIATION A NOTED AND EXPERIENCED AIRLINE PILOT WAS ASKED TO COMMENT ON THIS CRASH. HE WRITES FROM HIS VIEWPOINT AS AN AIRLINE CAPITAN. HE ALSO WRITES UNDER AN ASSUMED NAME.

-----

Dear Jim,

You asked if I would write an article for STARDUSTER MAGAZINE giving my thoughts and impressions of the San Diego accident from the standpoint of an Airline Pilot who hsa remained active in general aviation.

I am not sure that anything I have to say will be of any interest, but here it is, for what it is worth.

1. OBSERVATIONS:

A. Airline flying is instrument flying. The smooth, precise flight that is demanded by the paying public requires the use of instrument guidance rather than the less precise visual attitude guidance. Even in general aviation we use instrument guidance to a great degree (airspeed, altitude, heading, vertical speed, etc.) We humans are just not capable of the precise measurements that instruments produce for us.

B. The act of airline piloting is being automatically accused by many segments of general aviation of never looking out of the cockpit. This is ridiculous!! We are not suicidal, and we are well aware that even though we may be on a fully controlled IFR Flight Plan, if we are in visual conditions it does remain our responsibility to see and avoid. As a matter of fact, even when on solid IFR we do a good deal of looking outside, and I can personally assure you that I would not be writing this now, or building my STARDUSTER TOO, if I had not been doing so on five occasions during the past 38 years!!

C. Our modern Jet cockpits are not very great examples of "omnivision". The glass areas have been kept to a minimum for structural reasons, and the posts necessary to retain strength in corners, etc, do a lot of blocking. The pitch-up angle necessary in slow-flight approach regimes of modern Jet aircraft and the cut-off angle of glare shields precludes much seeing down closely over the nose. If we raise our seats to compensate, it puts us at an awkward angle for sighting above, as well as out of place for monitoring instruments (A/S, ALT, V/S, etc.) and completely out of position for proper landing flare and touchdown. I have seen pilots adjust their seat height just before touchdown, and accidentally slip to the bottom adjustment, where all they could see was their horrified reflection in the face of the attitude indicator!! This is not very conducive to smooth landings, or low blood pressure.

D. I have observed that when I fly VFR, I see every aircraft that I see. I have no way of knowing how many I did not see!! Under IFR control I am constantly being given radar traffic advisories. Many of these I never do manage to spot even though the conditions are VFR, and the direction, speed, and attitude are called out by



the controllers. This is a nagging and worrisome fact to all instrument pilots, whether general, military, or airline. It becomes so repetitive that it may lead some to make only a cursory glance for the indicated traffic, and then duck back inside their shell, instead of continuing the task of spotting that elusive target!! Many factors contribute to this inability to spot traffic. Perhaps the greatest culprit is the lack of background contrast over a city by day, and the merging of steady burning running lights into the lights of a city by night. Couple these with speed, angle, attitude/distance relationships, and you can have the lower and slower traffic appearing to be stationary; therefore not recognized as essential traffic. Strobe lights, day or night, are a great help, and my STARDUSTER will be covered with them.

E. Airline Pilots- as a group, generally feel their responsibility to the traveling public's comfort and safety so greatly that they tend to consider themselves as having prior rights to the airways and airports, to the secondary exclusion of other branches of Aviation. The majority of them have a narrow view of, and very limited knowledge of, any but their own little branch of Aviation!! Probably 85% of airline pilots have nothing to do with Aviation other than flying their autopilots-oops, excuse me- their trips!! They make little or no attempt at consideration or understanding of other sectors of aviation, now that they "have it made"!! BUT- there is that remaining percentage who are truly in love with their chosen profession and all of Aviation. They constantly strive to improve their skills, and freely circulate and impart their quite considerable knowledge to others through instruction, writing, hangar flying, etc. They are into ballooning, soaring, parachuting, aerobatics, flight school operations, designing, home building, etc. A large percentage of the previously mentioned 85% do not even look up when an airplane goes overhead!! Can you imagine such an attitude?

2. IMPRESSIONS: (Pertaining to San Diego accident)

A. Both ships were being controlled by the same agency. Each had a right to the airspace they were occupying. However- the 727 had accepted a "visual approach" to runway 27, subject to continuing visual contact with the Cessna, which he had reported having in sight.

B. The 727 was at 6 to 7 o'clock to the Cessna, so the Cessna could hardly be expected to spot the 727. It is true that the Cessna had been assigned a heading of 070, but it had eased to the right to 090. Whether this was an inadvertent change as seen often in training, or possibly a discretionary "easing" to the right to remain a little farther away from the "seven o'clock traffic" closing on him from the left rear will never be known. The NTSB did not think it was a significant factor, but I believe it to be the MOST SIGNIFICANT FACTOR IN THE ACCIDENT!! Had the Cessna been tracking the assigned heading of 070, it is unlikely that both aircraft would have arrived at the same spot at the same time.

C. The 727 crew was criticised for not reporting the loss of visual contact. Within the time frame existing, I do not believe this to be a valid criticism:

- 1. It naturally takes a number of seconds to determine that you really have lost visual contact.

2. After these seconds tick by, and you do advise that visual contact has been lost, there is further delay (and closure) while a suddenly reallerted controller tries to determine a course of action which may, at best, be too late and too ineffective.

D. The Copilot was flying. The Captain was handling the communications. Here is the possibility of a real distraction!! As Captains, we are charged with the responsibility of training our crew. Generally this works very well. Many times, particularly on the more senior trips and larger equipment, the Copilot is as qualified and competent as the Captain. I have no direct knowledge of the particular circumstances or personalities involved in this case, but I have seen times when such intensive training has been necessary that the Captain has not been able to devote any more than minimum necessary time to "outside activities". Anyone who has done any instructing will understand the necessity of allowing a "trainee" to paint himself into a corner in order to duly impress him. Continuing operational training is a fact of airline flying, and a degree of distraction is always present. The extent of that distraction depends upon such factors as temperament, pride, experience, competence, etc.

E. The 727 crew as criticised for Cockpit conversation, not only between the working crew, but also by the dead heading crewmembers. While it is true that this can be a distraction at times, it is also true that professionals, well trained and qualified in their operational areas can execute their normal duties while conversing. How many times have you continued to converse with your passengers in an auto, while threading your way through heavy freeway traffic where the tolerances are considerably less, and the serious incidents more sudden and frequent than in the air? This is exactly what showed on the voice recorder, and, just as you would do on the highway, when things became tight enough to require silence and complete attention, all conversation stopped, except the essential conversation.

F. The 727 overran the Cessna at a closure speed of approximately 100 knots. (200 K vs 90-100 K)

G. The 727 was attempting to avoid any contact (physical) with the Cessna.

H. The Cessna's principal contribution was (1) Being there!!  
(2) Flying a course 20 degrees to the right of assigned course.

I. The principal blame, in the short run, lies with the 727 crew and the controlling agency which issued sloppy, if not faulty, visual limitation procedures without any real time possibility of backup if visual contact was lost, with two aircraft operating at the same potential altitudes in exactly the same block of airspace.

J. The principal blame, in the long run, lies with past and present Aviation: General, Military, Airline, because we have empirical knowledge of aircraft occupying the same space in which we are flying at the same time, and we even know to a great extent their altitude, heading, airspeed, type, and distance. Yet we go hurtling past without ever spotting them!! WE ARE TO BLAME-For accepting the increases in aircraft performance while compromising on the narrowed fields of vision. WE accepted the procedures that took



so much control (directly and indirectly) out of the cockpit and placed it into the hands of agencies on the ground, where it is so often mis-used, mis-applied, mis-understood, and mis-taken. One prime example is these very visual approach procedures of which we were talking. They were designed principally to relieve the controllers of the pressures and responsibilities for the final 5 to 8 minute segment on final approach to a controlled airport by a mix of IFR and VFR traffic to avoid the necessity of a complete IFR Approach Procedure. They have built-in traps for both sides, as so amply illustrated at San Diego.

Another example is the elimination of spin recovery demonstrations on flight tests for a pilots certificate. Because a combination of a manufacturer being unable to completely certify his new aircraft for spins, and the fact that a politician's wife was unable to get her tickets because "spins simply abhor me", spins were deleted from the flight tests, and have been "biting people where they sit" ever since.

WE- are the ones who have allowed this misdirection and control by agencies and personnel who have never operated in our environment, and have only a textbook understanding of it's many complexities.

I would dearly love to be left alone to fly my STARDUSTER anywhere I want, at any time, in any weather that I desire. This is not possible, so certain restrictions are imposed and accepted. However, I wish to be able to get my two cents worth of advice in as an actual operator in this regime, instead of being passed off by quick, legaleagle moves in the pretense of "public protection" by these bureaucratic, self serving agencies!!

We are slipping into the same morass that our European neighbors have slipped into a number of years ago, and who envy our great freedoms to fly, but who warn us of the steady and increasing rate that erosion of these freedoms is taking place.

Jim, I warned you that I might get up on a box and start talking loud and long. There is much more to be said, but for once I will allow discretion to be the better part of valor-- and will shut up!!

My warmest personal regards to you and Hanako and all of the great gang you have assembled at Starduster Corp.

Sincerely yours,  
C. HAMILTON FRANKLIN  
UNORGANIZED AIR LINES  
LOS ANGELES, CALIF.

-----  
We at STARDUSTER wish to thank Mr. Franklin for his well thought out and well written article about a very timely subject.

However, we wish to state that the views presented are Mr. Franklin's own, and do not necessarily represent the viewpoints of any of us at STARDUSTER corporation.

CREDIT AND WARRANTIES

by jim osborne

I have, on occasion, been embarrassed by having to explain to a customer our credit or warranty policies. Therefore, I would like to make the following explanation a matter of public record.

CREDIT - STARDUSTER operates on a very tight cash flow basis, and primarily as a "pay when sold" type cash business.

However, there are many customers who find it more convenient to pay once a month, and we have arranged a procedure to accomodate these people. In the case of a customer who is making a lot of purchases it is also to our advantage to bill once a month.

We ask the potential credit customer to fill out a standard credit application form. This is then referred to a recognized credit agency, and, usually within a week, the customer is set up with a charge account.

Limitations are: (1) \$500.00 maximum limit on account. If you have a large order in, which will run over this, you will be asked to pay down to this amount. (2) No credit is extended outside the contiguous 48 states. If you live outside the country, your order must be paid for before shipment. This sometimes poses an inconvenience, and we apologise for it. But past experience has pointed out the necessity for this rule.

On accounts which are not paid within 30 days, there is a 1-1/2% monthly carrying charge. We are sorry to have to do this but money is very expensive nowadays, and on accounts over 30 days old, this must be paid. Failure to pay this carrying charge will result in closure of the account.

Likewise, accounts unpaid for over 90 days will result in closure of the account. Full legal efforts will then be made to collect such accounts.

In this era of rising inflation, we are forced, by the policies of our suppliers to make the price of what we sell contingent on the price at time of delivery. This primarily applies to flying wires and propellers. Both Hartzell and Macwhyte bill us at the price at time of delivery. They will accept orders at the current price, but when the order is delivered, some three or four months hence, the price is the price at time of delivery. Therefore, we can only accept orders under the same set of rules. Lycoming has a different policy. They will accept and confirm an order at today's price. If a higher price is in effect at time of delivery, the lower confirmed price is what we pay. Therefore, if you order an engine, you can be sure of the price. If you order a prop or flying wires for delivery at a future date, then you may be billed an additional amount to cover interim price increases. We are sorry about this, but it is the real world today. We have to live with it, just as you do. And we don't like it either.

WARRANTIES - STARDUSTER primarily operates, as do all retail businesses, on the Manufacturer's warranty. Things we build, we stand behind. This applies to items like gas tanks, engine mounts



and exhaust sets, welded assemblies, and prefabricated components of all types. This is the simplest warranty to service. We built it. We fix it, if it isn't right.

In case of other small purchases, it is our policy to deal with the manufacturer for the customer. For example, in the case of defective batteries, we apply the manufacturers warranty, and replace the battery for the customer.

In the case of big ticket items, like engine and propellers, the warranty is best handled directly by the customer. Both Lycoming and Hartzell have a reasonably good reputation in this respect.

When an item is returned for credit, the situation is evaluated. If the item returned is defective, we will replace it, or correct the defect. A full refund is given if requested. If it is otherwise returned for good reason, full credit is given. However, if the item is returned simply because the customer changed his mind, we feel justified in charging 15% restocking charge. This partially pays for the expense involved in making a sale, and putting the item back in stock.

-----  
July 11, 1979

TO: ALL HARTZELL PROPELLER, INC. CUSTOMERS

SUBJECT: ADVANCE NOTICE OF PRICE INCREASE

Following an analysis of manufacturing, labor, and material costs it has been found necessary to adjust our prices accordingly.

In adjusting prices we are doing everything possible to stay within the established economic guidelines. With this in mind our increase will be a total of seven and one-half percent (7.5%) for the year of 1979.

All prices will be adjusted at time of delivery after August 15, 1979 the effective date of our price increase.

Printed price lists will be available within the next few weeks and mailed to you as soon as possible. If you should require additional copies please inform this office of the number needed.

We thank you for your continued confidence in the Hartzell product.

Yours truly,

HARTZELL PROPELLER, INC.

*Jim Reedy*

Jimmie A. Reedy  
Product Support Manager

JAR:kls

PRODUCT INFORMATION

1. EXHAUST STACK INSTALLATION: This is pretty straight forward, and nobody has much trouble--until they go to install the tail pipes.

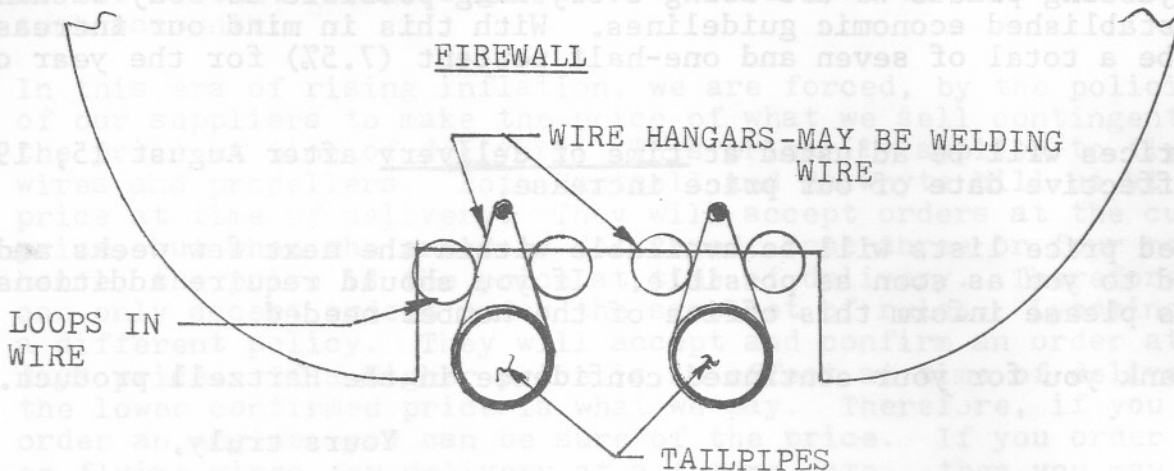
As of now, let it be known that the tail pipes cannot be simply cantilevered off the back of the headers. If they could be, there would be no slip or ball joint installed. As a matter of fact, I have seen tail pipes made integral with the headers and just hanging out in space at the back end. These installations are usually good for a maximum of 10 hours. Two or three hours is more likely. The weight of the tail pie bounced up and down by engine vibration will crack out the tail pipe in short order, usually in the vicinity of where the slip joint is placed.

With the tail pipe installed in the slip joint, it is necessary to support the aft end of the tail pipes. These supports are not part of the exhaust system as purchased.

The rear tail pipe support must be both flexible and strong. Do not weld a tab on the tail pipe and attach to a hanger. The tab is too rigid and will have a short life. Use a steel clamp around the tail pipe. Clamp a piece of flexible and heat resistant material to the pipe and attach to firewall. Since the engine vibrates and moves around so much, the tail pipe must be free to move also, but within constrained limits.

Do not fasten the two pipes together rigidly and mount them as a unit. Each pipe must hang, and be free to move, individually.

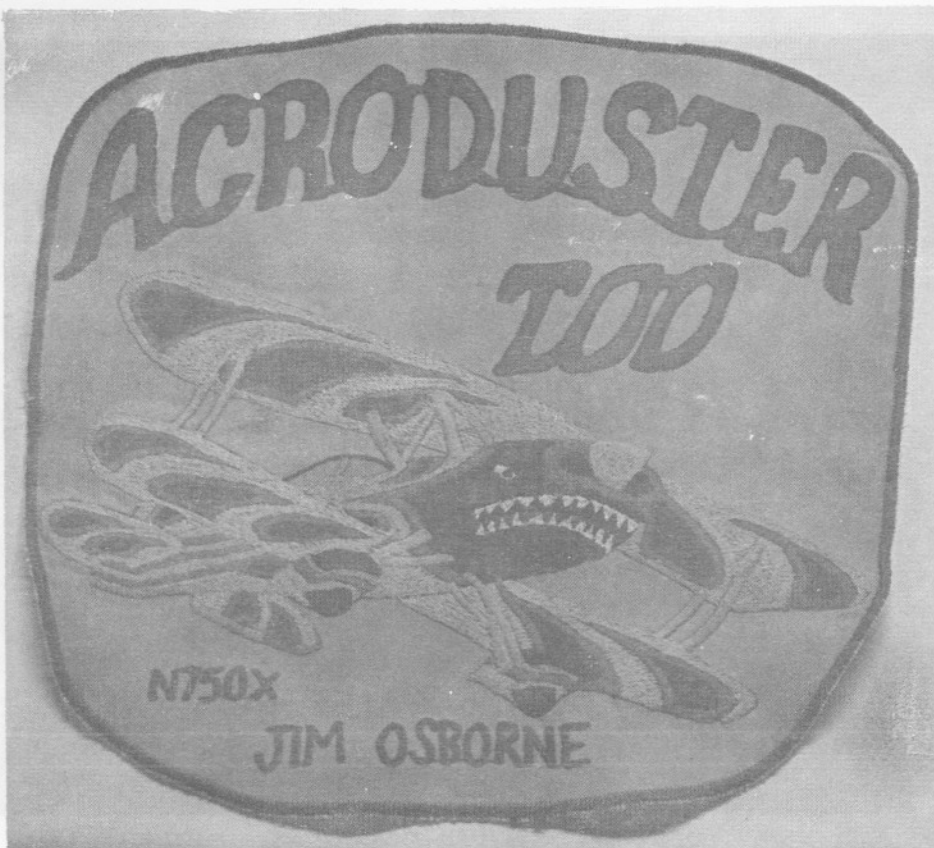
Wire hangars, if properly made and installed give good results. Below is the installation on our Acroduster Too.



One last point. If your system has the header and tail pipe held together with two tabs and a bolt, do not tighten up the bolts. The connecting links must be free to move in relationship to each other and the bolts. Remember, on exhaust installations, hang loose.



2.



LARGE BACK PATCH-  
 CUSTOM BUILT- SEND US  
 A PICTURE OF YOUR  
 AIRPLANE, YOUR "N"  
 NUMBER AND THE NAME YOU  
 WANT ON YOUR PATCH. IT  
 WILL BE MADE IN FULL  
 COLOR. SIDE, FRONT OR  
 TOP VIEWS, \$29.95

QUARTERING VIEW, AS  
 SHOWN, \$49.95.

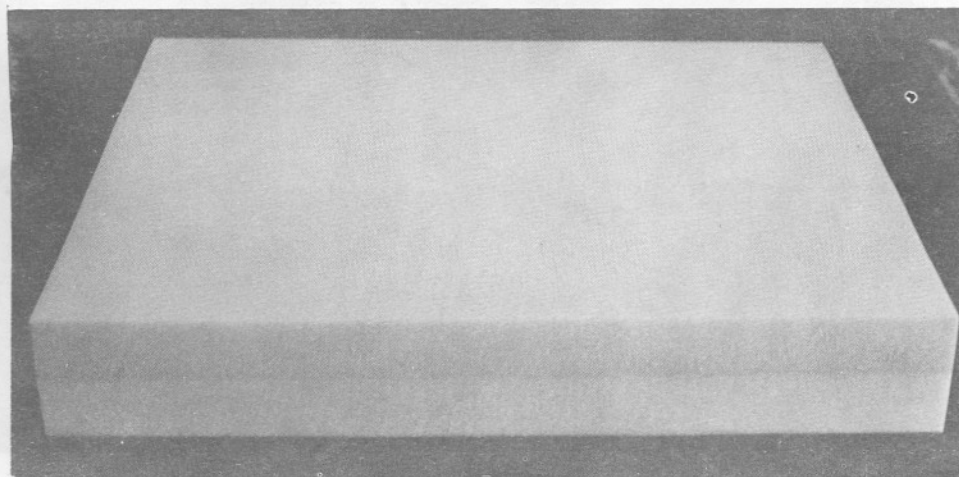
3



SAMLL STARDUSTER PATCH  
 FOR SHIRTS, CAPS, OR  
 SLEEVES. AS SHOWN:

\$4.95

4



TEMPRA FOAM CUSHIONS-  
 MAKE FOR AN EASY END.  
 USED FOR ASTRONAUTS  
 COUCHES AND WHEELCHAIR  
 SEATS- DUAL DENSITY  
 FOAM. THE BEST THERE IS

\$19.95.

- 5- Our genial Nieuport Ace holds up our 5-point suspension seat belt. As pretty a package as you are likely to see---

And the price is a modest \$75.00



- 6- Serve drinks to your friends with glasses showing your favorite air-planes. They come in either beverage or cocktail sizes.

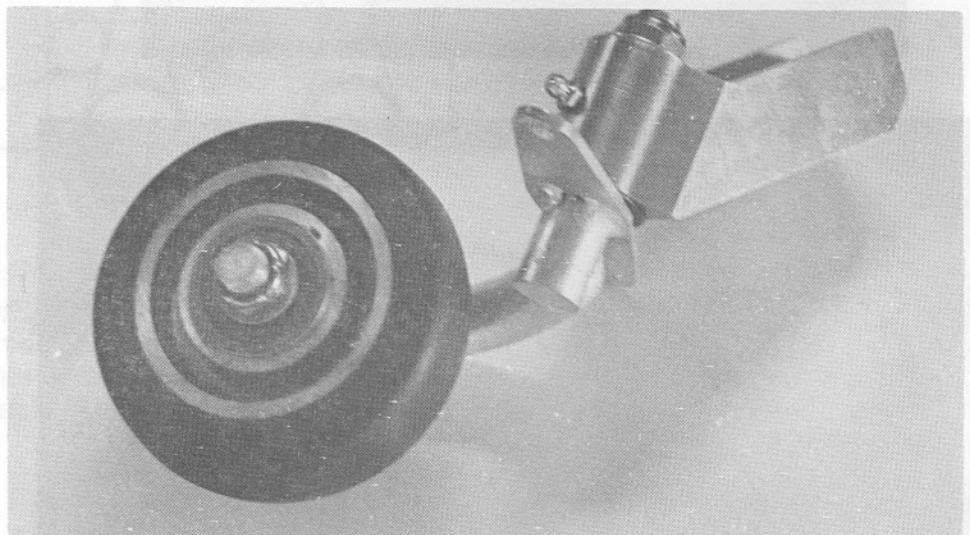
\$9.95 per set of glasses or Coasters.



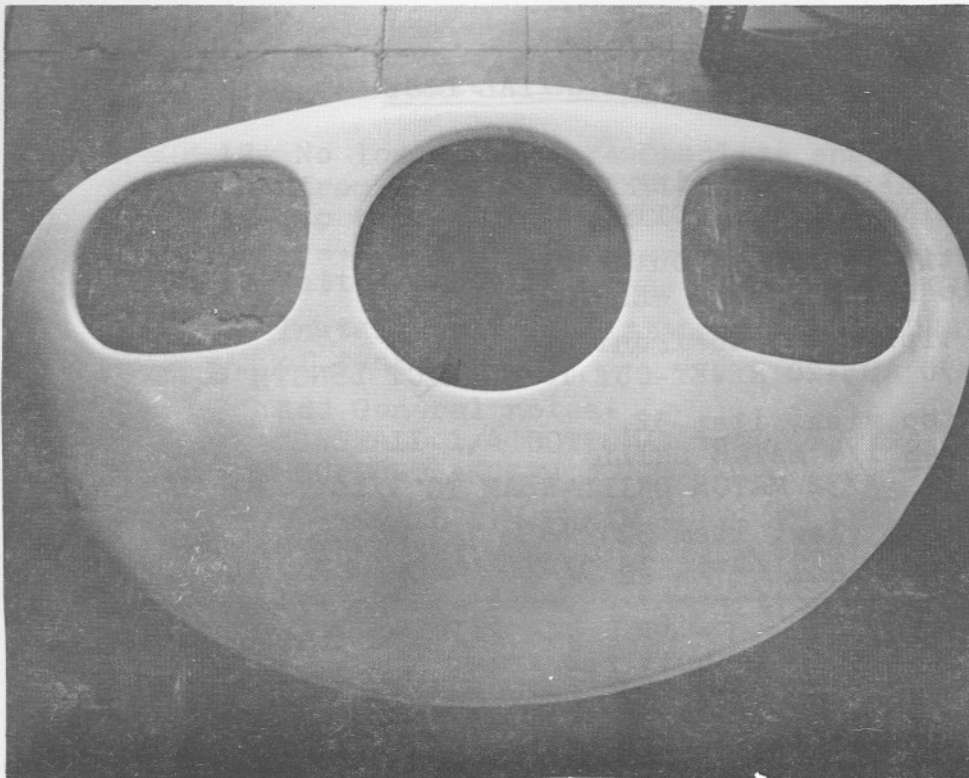
- 7- Our new light weight tail wheel- for air-planes with a light rear end.

Stearable-\$49.95

Full swivel-\$79.95







8- We have a new smooth three hole nose bowl.

It has been used on our Acrodusters for several years, and we prefer it to the more traditional open bowl, sported by most Stardusters.

Reasons are (1) Stronger because of center bracing.  
(2) Less drag

Only \$45.00 picked up  
\$50.00 packed



9- New T Shirts-----

Shown with Acroduster Too on front or back.

Come in small, med, or large, in mens, ladies, or childrens style.

Available also with Starduster Too on front or back.

Printed in full color.

\$6.00 each



STARDUSTER TOO DRAWING ERRORS-PARTIAL LIST

PAGE 2- Upper left, front spar in wing walk area.  
Add note-"NAILING STRIP, (BOTTOM ONLY)"

Upper right, tipbow tab to outer rib.  
Add note;"3/16 DRILL BEFORE WELDING"

Upper right, tipbow tab to front spar.  
Add note:"AN470 AD5-20 RIVET-CUT TO CORRECT LENGTH"

Lower right, top view, item 32.  
Change note: WAS 1/4 MATCH DRILL  
IS 5/32 MATCH DRILL-REAM TO 3/16

Lower right, side view, item 32  
Change Dimension: WAS 1/2 , IS 3/8

---

PAGE 3- Upper left, front spar in butt rib area.  
Add note:"NAILING STRIP, TOP AND BOTTOM"

Upper right, tipbow tab to outer rib.  
Add note;"3/16 DRILL BEFORE WELDING"

Upper right, tipbow tab to front spar.  
Add note: "AN470 AD5-20 RIVET-CUT TO CORRECT LENGTH"

Lower right, hole in -131.  
Change hole size: WAS 3/16 IS 1/4

Lower right, Width dimension, X-section of item 131  
Change dimension: WAS 1/2 IS 5/8

Lower right, addition to bottom note over title block  
Addition shown in parenthesis: ---TOP WING BEND 132 &  
133 6 degrees (AND REVERSE 131 SO THAT IT POINTS DOWNWARD)

---

PAGE 4- Left side, butt ends of all wing spars:

Add note to all hole callouts: "MATCH DRILL TO WING FITTINGS"

---

PAGE 6- Add to general notes:

"MATCH DRILL AND REAM ALL IDENTICAL FITTINGS"

"DRILL & REAM ALL 5/16 WING MOUNTING HOLES ON FINAL ASSEMBLY"

---

PAGE 10- Lower right, bottom vertical rudder dimension:

WAS 10 IS 8

---

PAGE 13- Approximate center- Reversing bar shown upside down.  
2" (Ref) should be 2-3/4"

---

PAGE 14- Replaced with new drawing on 11-5-75

---

PAGE 16- Replaced with new drawing on 9-1-76

---

PAGE 17- No longer issued- Obsolete engine mount. Buy ready made from STOLP STARDUSTER CORP. If used, dimension from firewall to prop flange should be changed. WAS 40-5/8 IS 43-5/8

---

PAGE 20-Bottom Center- Change tank dimension: WAS 19-7/8 IS 20-3/4

Install weld in fitting for QUIK DRAIN bottom rear center of tank.

Add General notes:

"INSTALL 1/4 BOTTOM PLYWOOD AFTER INSTALLATION OF TANK SUPPORT ANGLES."

" INSTALL 1/4 DRAIN HOLES IN REAR CORNERS OF BOTTOM OF TANK BAY. ALSO IN EACH TRAILING EDGE BAY, AFTER COVER."

Left side, lower center: change callout as shown.

WAS .062x1x1 ANG 2024 T3 IS .062x1-1/4 x 1/14 ANG 2024 T3

---

#### ACRODUSTER ONE FLOWN BY ITALIAN AEROBATIC CHAMP

We were delighted to learn from ALDO LOCATELLI recently that he is the reigning Italian aerobatic champion. The news came direct from him on his most recent visit to Los Angeles in his Lear Jet.

Aldo won the championship last September against 21 other contestants from all over Italy and several foreign countries. Planes entered included Pitts single place machines, and all the hot European machinery, such as CAP 20's, the new Zlins, and the Swiss Acrostar.

Aldo brought us a magazine containing an article on him and his Acroduster, and it was highly favorable. However, it was written in Italian, and the only translation we have is very loose. But the pictures were nice, and the magazine is of higher quality than similar aerobatic magazines in this country.

Aldo says he is going to win again this September, and I understand he is an odds on favorite to do just that.

It is with pleasure that we run a picture of Sr. Locatelli and his airplane on the back cover of this issue. We extend to him our most heartfelt congratulations and best wishes.

---

#### JANET HELTON SETS NEW RECORD-YOUNGEST PILOT

At 20 minutes past midnight on June 29, 1979, JANET HELTON continued her record setting habit by becoming the youngest pilot ever to get a private pilot's license. FLAVIO MADARIAGA, owner and flight examiner of FLABOB AIRPORT gave Janet her flight test and signed her brand new ticket. Congratulations, Janet.

ENGINE MOUNTS- We have built thousands of engine mounts, and we have never had a problem with any of them--until last week.

We received a call from a STARDUSTER TOO builder who had bought and installed one of our mounts. He had put 80 hours on it. After an Aerobatic contest, he was giving the engine compartment a close visual inspection and noticed a broken top cross piece on the engine mount. This is the curved piece on top of the mount ring.

This was not a dangerous break, as the engine itself acts as a connecting member for the two sides of the mount. Nevertheless, breakage of this member allows for excessive side movement of the engine, and could lead to later trouble.

We ask all builders who have our mounts installed to examine their engine mount closely, paying particular attention to the top, cross member of the mount ring. If you should find it broken, please get in touch with us.

The chances are good that if this is an isolated break, the material or welding technique was at fault. If more breaks are reported, then we will have to modify our engine mount design.

You can help. Report any broken mounts. Thank you.

-----

NITROUS OXIDE INJECTION SYSTEMS- Back in World War II, some of the warplanes, notably the ME109, had a power boost system that consisted of a pressurized bottle of liquid nitrous oxide and an injection system that injected the liquid and additional appropriate amounts of gasoline.

Power output of an engine has always been limited to the amount of oxygen (usually contained in air) that could be ingested by the engine, and matching amounts of fuel.

Supercharging, either turbo or mechanical drive, increases the amount of airborne oxygen available and thus raises the attainable horsepower.

Liquid nitrous oxide contains about 30 percent oxygen, and, since it is in liquid form, a vast increase in available oxygen is theoretically incurred.

Of course, matching amounts of gasoline have to be supplied. Otherwise, the engine would burn an extremely lean mixture, and the pistons would burn up in just a few seconds.

It is obvious that great care must be taken to insure that the amount of gas metered to the engine is in exactly the right proportions, and also to see that the extra gas and the nitrous oxide both reach the engine at exactly the same time and that there is also simultaneous cutoff.

Another limitation on the use of nitrous oxide is that every bottle contains not only liquid N. oxide, but also gaseous N. oxide. Since we only want to feed the liquid to the engine, we can only



feed from the bottom of the bottle. By mounting the cylinder at a 45 degree angle, feed can be accomplished both in a horizontal position and from a vertical position. You cannot feed, however, from both positive and negative "g's". You also cannot feed going straight down.

Horsepower available from the use of the bottle is limited only by the lack of judgement of the user. You can easily double, or triple your power output. Of course, the more power pulled, the more chance of blowing up your engine. We settled for an extra 100 H.P. from a nominal 260 H.P. Lycoming.

Our system, as developed and tested by us, featured an 8 pound empty weight cylinder that would normally carry 4 pounds of N. oxide mounted in the baggage compartment, at a 45 degree slant, immediately behind the pilot. In order to use the system, a charged bottle had to be installed, and the bottle shutoff valve opened. A lockout solenoid then had to be turned on, and the prop pitch control had to be fully forward. Low RPM's were not wanted. When all this was done, a blip switch on the control stick would activate two solenoids which would feed both gas and N. oxide to the engine. The distance from the solenoid to the injection point was exactly equal in both lines.

When activated, the system gave an extra 100 H.P., regardless of throttle setting. From full throttle in a climb it would give an extra 100 H.P. From idle on the ground it would immediately increase RPM's to give an extra 100 H. P.

Very quickly we learned that one shortcoming was the extremely short time the system would work without recharging. Something like 15 seconds would exhaust the system.

By chilling the bottle, we managed to double the running time. First we chilled the bottle in dry ice. We were then able to stuff over 8 pounds of N.oxide in the bottle and raise our burn time to 30-40 seconds. However, as the bottle warmed up on the ground on our second attempt, the safety seal broke and super cold N. oxide gas filled the baggage compartment. It was so cold that it cracked all the paint on the outside of the compartment.

If a bottle had broken in the air, the pilot would most probably have whiffed some of the air and been made dopey or put to sleep.

We then tested the bottles by chilling with water ice, and pumping 6 pounds into the container. No ruptures were experienced, and 20-30 seconds running time were experienced in the air.

However, our overall assesment of this method of increasing H.P. is negative. It is expensive, adds about 25 pounds to the weight of your airplane, requires a great deal of careful handling, and poses some danger, to the airframe, engine, and also the pilot,

We do not recommend its use, and we will not be selling installation kits.



# International Aerobatic Club

POST OFFICE BOX 229

HALES CORNERS, WISCONSIN U.S.A. 53130

Northridge, California

April 9, 1979

Dear Jim,

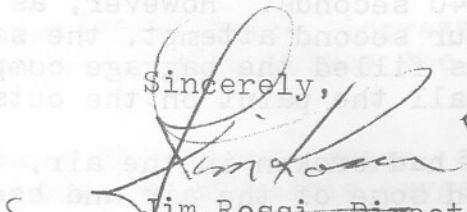
The IAC membership contest is over, and the winner of the Globe Gell Cell battery that you donated is:

Ann Matthesius  
56 South Paula Street  
Laurel, Maryland 20810

You may send the battery directly to her, at the above address.

On behalf of the Officers and Board of the IAC, I want to thank you for helping us in this effort

Sincerely,

  
Jim Rossi, Director  
Membership Chairman

**"Dedicated to Safety and Education in Sport Aerobatics"**

Division of Experimental Aircraft Association



WHEAT - OATS - SOYBEANS - UPLAND PRAIRIE HAY - SEED - MILO - CORN

Stolp Starduster Corp.  
 Attn: Mr. Jim Osborne, President  
 4301 Twining, Flabob Airport  
 Riverside, California 92509

Dear Jim;

In keeping with your request, I am enclosing a picture of our STARDUSTER TOO, N777KL, which was first flown March 25, 1979.

We now have 25 hours on it and my release by the FAA should be coming in by mail this week. The MKC GADO inspectors were here yesterday, May 17, and seemed to be pleased with the airplane. Head temperature on #4 of the O-360-A1A is running 420 in cruise and 450 in climb, and I have been unable to reduce this so far. Do you have any suggestions? Or, are these temperatures acceptable? The rate of climb is not what I had hoped for, but the airplane is a pleasure to fly.

Mazie and I hope to take N777KL to the Braniff Retirees Spring Flyin on May 28, at Dallas. With Mazie in mind, I am working on the rudder/brake pedal extension which we discussed via telephone. Have it on paper so far, and will forward information on the design when they are installed and tested.

Would you please rush to me one left replacement lense for my Rallye Uvex goggles. I was in the process of cleaning the lenses, and one of them popped out and fell on the concrete floor. Want to use them on the trip.

Sincerely,

*Karl*  
 KARL LIPSCOMB

Ed. Note. It is with pleasure that I announce that Karl and Maxie's airplane was the winner of the best STARDUSTER TOO award at Oshkosh.





ABOVE IS PICTURE OF CARL AND MAZIE LIPSCOMB, OF LAMAR, MO. AND THEIR BEAUTIFUL NEW STARDUSTER TOO. BELOW IS ANOTHER VIEW OF THIER VERY FINE MACHINE. CARL'S LETTER IS ON THE PRECEEDING PAGE.



June 21, 1979

Stolp Starduster Corp.  
Riverside, Ca., 92509

Gentlemen:

I am now the proud owner of a STARDUSTER ONE (C-GJCK) which I finally completed in the middle of April. However, my test pilot would like to see the weight and balance envelope before test flying it. Please send it to me, RUSH, with the Stress Analysis.

I will need the S/A and the plans in order to have the Aerobatic restrictions lifted by the E.A.A. Technical committee after 50 hours flying time.

My plans were destroyed by accident. I wonder if it would be possible to borrow a set from you, which I would return after the committee is finished with same. If it is possible, tell me what would be the cost for those. In the meantime I would appreciate receiving the S/A and the W/B envelope "RUSH". I will mail you a cheque (U.S. Funds) by return mail.

Thanking you in advance, I remain,

P. P. LASNIER  
194-45th Avenue  
St-Eustache, Quebec  
J7P 3H2 Canada

EDITORS REPLY: Congratulations on finishing an increasingly rare and valuable airplane.

Weight and balance in all flying configurations dictate that the C.G. should fall between 0" and 7" in front of the leading edge of the lower wing.

We do not have a stress analysis on the Starduster One. To the best of my belief and knowledge, none was ever run. Like many fine airplanes, the Starduster One was designed and built by an experienced mechanic and builder who used experience, comparison, building standards, and cut and try, to complete this design. The success of this method is attested to by the fact that the Starduster One has been used by many airshow pilots with complete success. But, sorry, there is no stress analysis.

I am sorry your plans were destroyed by accident. I am doubly sorry because we cannot replace them for you, either by loan or by sale. I hope you can find another "One" builder who will lend or sell you a set of plans. In order to facilitate this, I am publishing your letter. Can anyone help this man?

30 May, 1979

Dear Hanako and Jim,

I would like to take this opportunity to thank you for your pleasant and rapid service over the past couple of years. It was always reassuring to be able to depend on such a competent organization.

My skybolt flew on 1 May at Oceanside airport with me at the controls. All test flying after that flight has been relatively uneventful.

Sincerely,

BEN TREADWAY

---

PSC 3252 36th TFW  
 APO, NY 09132  
 30 May, 1979

Stolp Starduster Corp.  
 4301 Twining, Riverside, Ca.

Dear Jim,

Now that the dust has settled from our latest move, I find that somehow my Stolp Starduster Catalogue has failed to show itself. May I request another?

The article in January Issue about building the wooden wing is excellent. MORE: MORE:

My congratulations to you and your staff for such an entertaining and informative magazine.

Sincerely,

JAMES B. CAVANAUGH

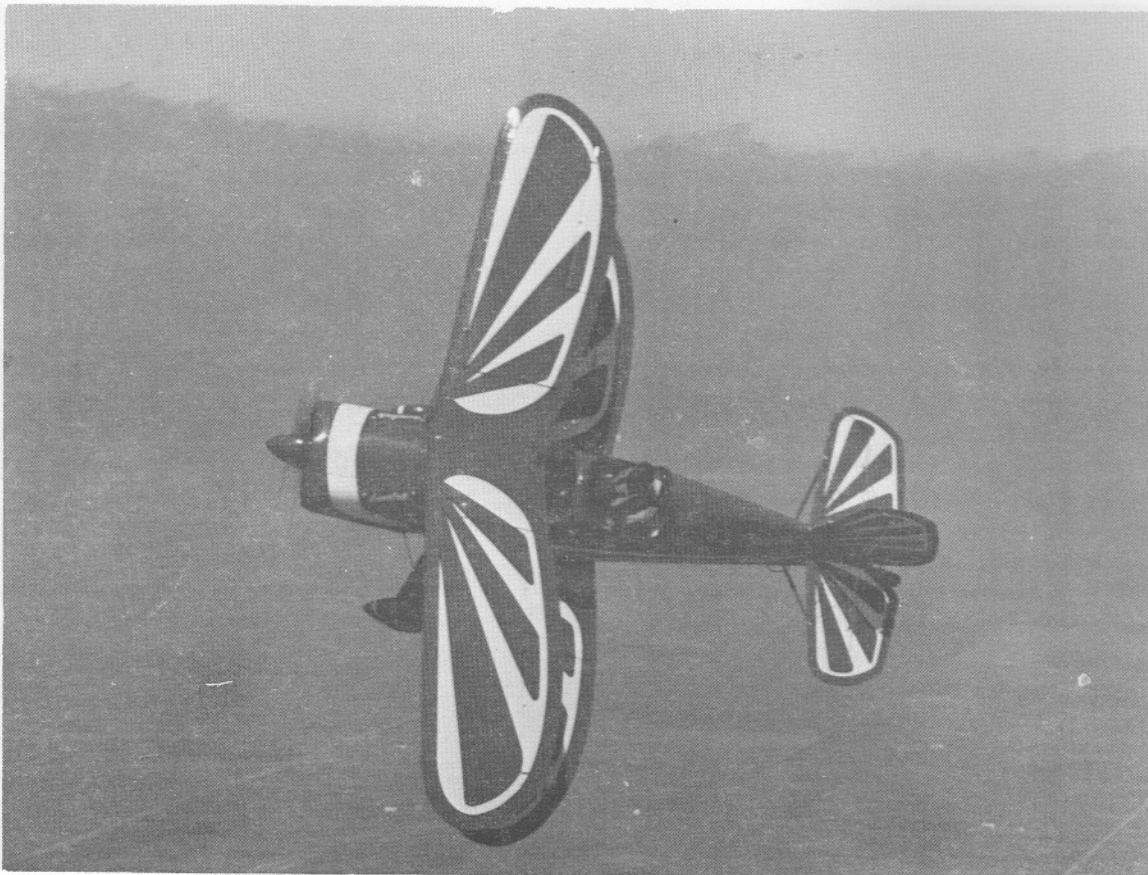




DANTON • MICHIGAN 45187

TWO PICTURES OF CAPT BEN TREADWAYS BEAUTIFUL NEW STEEN SKYBOLT.  
BEN FLIES OUT OF OCEANSIDE, CALIFORNIA, BUT CALLS GEORGIA HOME.





TWO PICTURES OF RON POWERS AND HIS WELL KNOWN ACRODUSTER TOO "MARMALADE". THE NUMBERS ARE NOW ON THE TAIL. MARMALADE WAS A TROPHY WINNER AT OSHKOSH, LAST YEAR.





Dear Jim,

I have recently purchased a set of plans from you, for a STARDUSTER TOO. I chose to build the SA300 since plans had been offered for several years, and would be "Debugged". Well, I was wrong, and I have made several costly errors in terms of time and money, due to mistakes in the plans. I recently purchased all existing back issues of your "STARDUSTER" magazine, hoping to find corrections in it. To my disappointment, corrections were not published.

As a first time homebuilder, it is hard enough to build an aircraft with correct plans. May I suggest that two items in your plans be updated?

1. Make all dimensional or parts list call out corrections.
2. Add assembly notes where required. For example, the spar to fuselage butt fittings should have a note, "DO NOT DRILL ATTACH HOLES UNTIL ASSEMBLY".

If possible, would you please inform me of any errors that you know of in your Starduster Too plans. Your help would be GREATLY appreciated.

SINCERELY,

LARRY McDONALD  
7530 CHICHESTER  
CANTON, MICHIGAN 48187

---

I wish to thank Larry for writing such an informative and timely letter. I also wish to apologise to him and to other builders who may have suffered from errors in the plans we sell.

In my experience, I have found that even the best of plans contain errors, and nothing takes the place of intelligent scrutiny of the plans before you start building. Nevertheless, it is a fact that the STARDUSTER TOO plans have not been debugged as thoroughly as they should have been. This is partly because I did not design the STARDUSTER TOO and was not as familiar with the plans as I am with my own designs, and partly because of the tremendous amount of time a debugging program would consume. A debugging program ideally means redrawing the plans. And I have done that with several of the STARDUSTER TOO drawings. I am in the process of redrawing the wings. I hope to have this job done by the end of the year. Then, hopefully, will come the rest of the airplane.

In the meantime, on page 13 of this issue, you will find a list of the errors in STARDUSTER TOO drawings that I am presently aware of.

If any readers would like to add to this list in the next issue, his donation will be gratefully accepted.

I wish to extend my thanks to M. F. CLIFF, of San Ramon, California for his help in compiling this list of errors.

JIM OSBORNE



Hello to all,

Let me begin by saying how much I enjoyed the articles on how to build a wing, in the recent Starduster Magazines. These two articles answered a multitude of questions for a Rookie Homebuilder like myself.

However, I still have a couple of questions, if you have a spare minute.

The article refers to grinding the wing fittings on a machine. I have always thought this was a no-no due to heat stress in the aluminum possibly causing cracks, and also due to deposits of the grinding wheel in the aluminum. Am I just confused?

I am also wondering, since the drag truss tubing is plugged air tight, is it necessary to treat the inside of the tubing for corrosion?

I'm going to "TEMPO" primer on the wing fittings. I'm wondering, if I use "TEMPO" on the wing tips, trailing edges, etc, will I have any problem later using STITS covering? (I.E. will the glue be compatible with the Tempo brand primer?)

And finally, I've been reading some scary stories about AN bolts in various magazines. Have you experienced any problems with your products. In other words, do you still recommend the AN components called for in the plans, or do you suggest various substitutes? NAS or MS?

Thanks for the time. Please find enclosed order and check. As usual, if this is not enough, feel free to bill me for the rest

Keep up the good work.

PAUL WOOD  
1419 Tremont St.  
Greenville, Texas  
75401

Ed. Reply-- I wish to thank Paul for writing such a cogent letter, and asking such relevant questions. Also, thanks for his kind words pertaining to the wing articles.

If you grind the aluminum fittings down on an endless belt, or large rotary wheel, they will not get hot enough to change the temper. You can't hold them if they get that hot. Normally, hand hold the piece being ground so that grind marks run parallel with the edge, not across the edge. When it gets too hot to hold, dump it in some convenient water and cool it off. After it is ground, finish off the edges with a fine file, or fine wet or dry sandpaper or emery cloth. At this time inspect the edge carefully for any foreign matter imbedded in the aluminum. It is unlikely that you will find any.

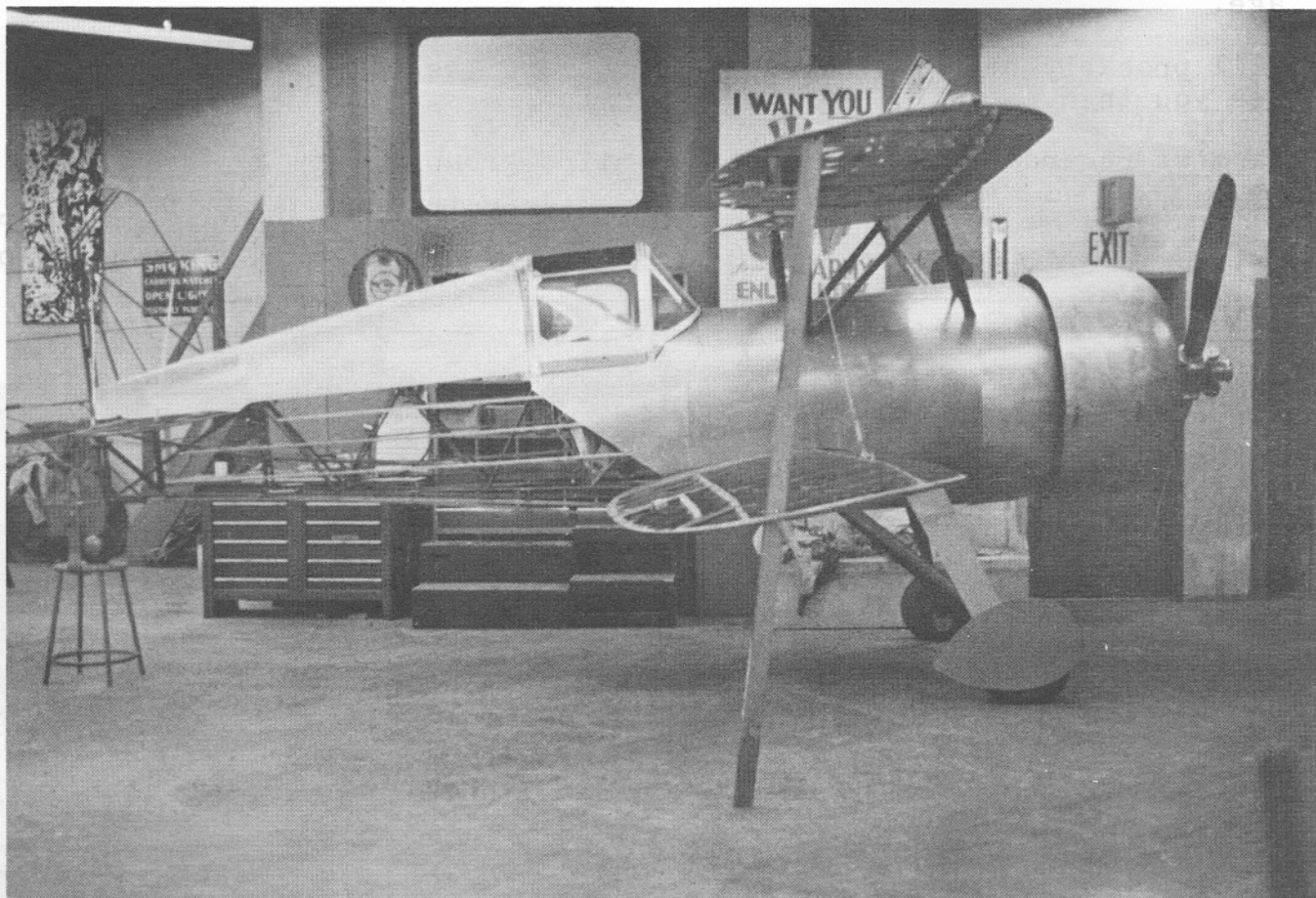
It is not necessary to treat the inside of the drag truss tubing, or any tubing for that matter, if it is air tight. If no air or moisture can reach the inside of a tube, there will be no corrosion.

C.F. HENDERSON  
1531 San Pablo Drive

STITS covering usually gives good results. However, in order to insure good results, use it over STITS products. I would not use STITS covering over TEMPO paint. Instead, use STITS epoxy primer and Aluma-thane enamel under Stits covering.

We have not had any trouble with our AN hardware. We buy only from a reputable manufacturer. We do not sell surplus hardware. There is no difference between AN and MS hardware. MS is just a later designation for what used to be called AN hardware. Many of us still call it AN hardware, although the correct designation is now MS. The main difference between AN (MS) hardware and NAS is in tolerance. NAS hardware is held to closer tolerances. It is also available in higher strengths, although it may not be any stronger. We still recommend the hardware called out on the plans, providing you buy it from us. Bought elsewhere, we don't know what you might have.

Thanks again for your letter. Cordially, Jim



A MOST UNUSUAL AND BEAUTIFUL STARDUSTER TOO BEING BUILT IN NEW YORK CITY, NO LESS. THIS NAVY FIGHTER REMINDER IS BEING BUILT BY JOHN DARREN, OF 51 BANK STREET, NEW YORK CITY, 10014. POWER PLANT IS A 245 H.P. JACOBS. THE COWLING OF THE ENGINE AND THE TREATMENT OF THE FUSELAGE FAIRINGS GIVE PROMISE OF AN OUTSTANDING AIRPLANE. THAT CUSTOM BUILT COCKPIT CANOPY FAIRLY BREATHES "MACHO".



C.F.HENDERSON  
 1531 San Pablo Drive  
 Lake San Marcos, Ca  
 92069

Daer Jim,

I am enclosing two items-

1. My check for \$3500.00 to cover the remaining balance on my engine order and to once more get my account a "little bit ahead". Wish I could get furthur ahead at this time, but this stupid strike has disrupted my well laid plans for the moment.
2. A list of the flight and engine instruments that I plan on installing in my Starduster.

The list is for you to check. If any changes are evident to you, please let me know what your recommendations would be.

It will be exciting to have the engine arrive. Of course the petroleum situation may preclude doing anything with it but "hanging it on the wall"but in the meantime I will enjoy "looking and dreaming". As a matter of fact, "looking and dreaming" seems to be more and more of a pastime for me these days--and at such an early age.

Will probably be up to Flabob again toward the end of the month. See you then.

Warmest regards to Hanako and the entire group.

Sincerely,  
 Hank Henderson, O.U.P  
 (Old, unemployed Pilot)

A NICE LOOKING  
 ROUND ENGINED  
 STARDUSTER TOO.  
 OWNED & FLOWN  
 BY DICK PEARSALL,  
 135 CLAYBURN  
 PONTIAC, MICH.  
 48054  
 WARNER 165 H.P.  
 SUPER SCARAB ON  
 THE FRONTEND.  
 FIBERGLASS BUMP  
 COWL-SENSENICH  
 WOOD PROP.





STEVE ULLRICH  
7801 Woodale Way  
Citrus Heights, Ca, 95610

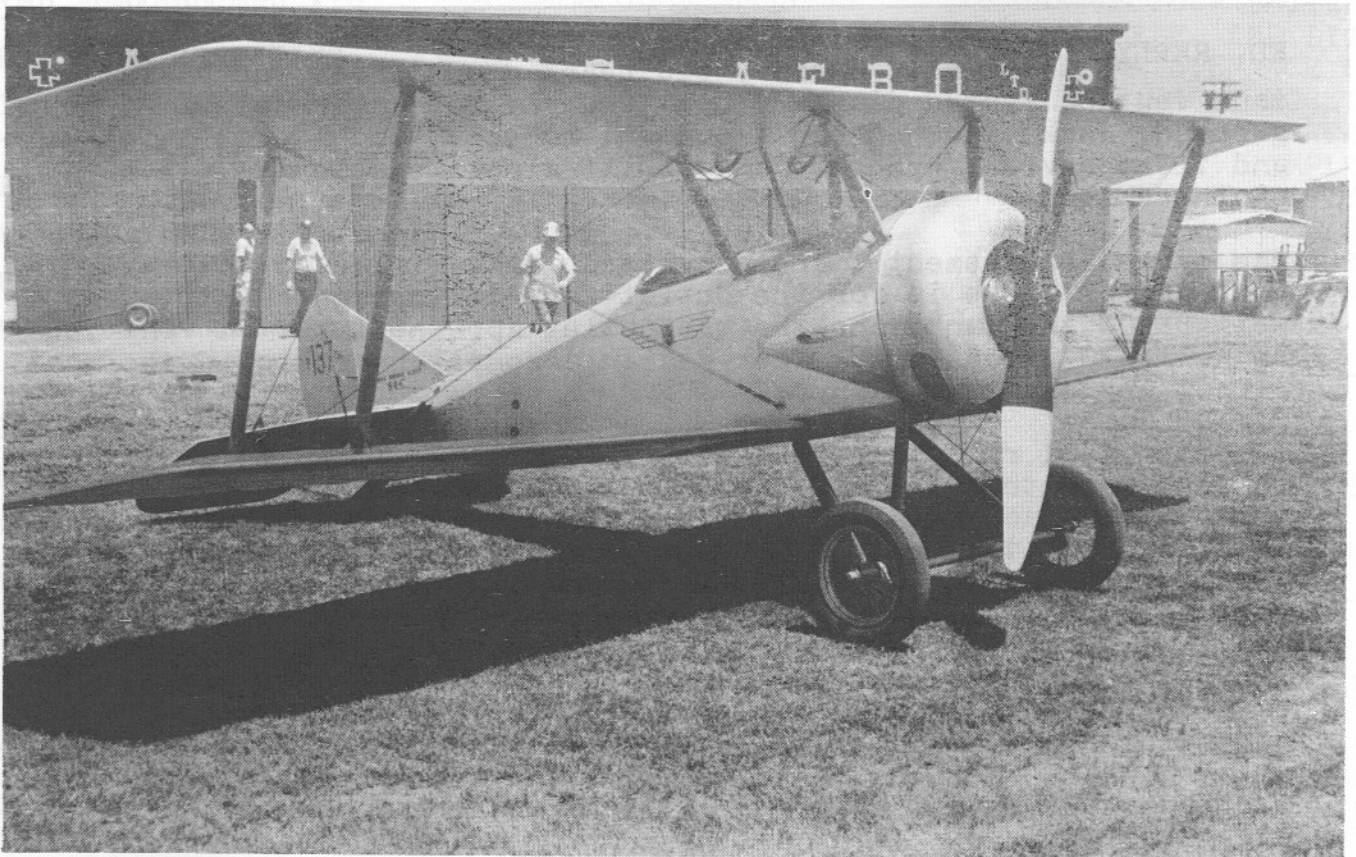
Dear Jim,

Enclosed is check for the Sa300 Aileron-Bellcrank-Wing controls (push-pull tubes), and center section compression struts. I will have my father pick them up in two weeks or so, before Oshkosh.

I really am glad to see that STARDUSTER MAGAZINE is printing some excellent articles on wing construction. (How to build a wooden, fabric covered wing.) For someone like me, with very little home-built experience, it's like coming into the sunlight after groping in the dark. Hopefully, in future issues, we can see more on center sections, mating wings to aircraft, etc. Lots of pictures really help. Probably the ultimate would be one on welding your airframe.

Well, have a good time at Oshkosh. Wish I could go too.

Steve

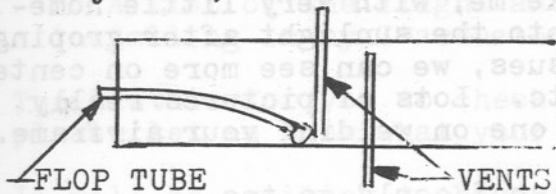


ANOTHER OF THE FABULOUS WORLD WAR ONE FLYING MACHINES, BASED AT FLABOB AIRPORT. THIS THOMAS MORSE SCOUT WAS BUILT BY RAY COCKING OVER A FIFTEEN YEAR TIME SPAN. IT HAS MANY ORIGINAL T-M PARTS, ALTHOUGH THE FUSELAGE IS WELDED STEEL IN PLACE OF WOOD. THE ENGINE IS A GENUINE TURNAROUND ROTARY. IT IS QUITE A SIGHT TO SEE AND HEAR THIS MACHINE BLIPPING A BUZZING AROUND OVERHEAD. NOTICE THE SIZE OF THAT PROP WHICH TURNS AROUND 1300 RPM. THE ENGINE IS ONLY 80 H.P.

JACK HUFFMAN  
 P.O.Box 1092  
 Barstow, Ca., 92311

Dear Jim,

Just received the latest STARDUSTER MAGAZINE. Am thoroughly enjoying it, as usual. I'm writing more out of curiosity, than anything else; about your gas tank venting article. Let me preface my comment by admitting that I know from nothing about fuel systems. My question is, is it not practical to use the system of venting we used on aerobatic control line models? As you probably know, that looked like this:



With this setup, it matters not if the tank is upright or inverted.

Of course, perhaps this is already what is in use. If so, forget the whole thing.

Regards,  
 JACK

ED. REPLY: It really does my old heart good to see our basic tank venting system diagrammed so clearly and accurately. As you guessed, Jack, I am an old U-control modeler, and I must have built and flown several hundred tanks built almost exactly as you have pictured above.

The prime requirement for an inverted tank, filled so admirably in your sketch above is for the outlet for the upright vent to be well BELOW the tank, and the the outlet for the inverted vent to be well ABOVE the tank. Your design accomplishes this in the most direct and simplest manner.

On some small real tanks the venting schematic looks very similar to your U-control design. The main difference, generally, is that it is more practical to rout the upright vent out the top of the tank and down to its low outlet OUTSIDE instead of inside the tank. This design is typical of the PITTS and STEEN SKYBOLT. It works well enough for relatively small tanks.

On larger tanks, such as is used on STARDUSTER AIRCRAFT, the tank is required to be baffled to prevent fuel sloshing around, and this makes the classic system unworkable. We then go to a two tank system, which consists of a main tank and a smaller, inverted tank. Our vent system is then arranged so that the main tank vents only under positive "G". The small inverted tank is vented either under positive or negative "G". This complicates the venting somewhat, but if you study our tank design I think you will agree we have done it in as simple a manner as possible.

If you see something we have missed, and can come up with a simpler and therefore superior system, please let me know. I am always on the lookout for a way to improve our products.

JIM



# Classified Ads

ADVERTISING CLOSING DATE: JANUARY 1, APRIL 1, JULY 1, OCTOBER 1.  
CLASSIFIED ADVERTISING RATE: \$3.00 PER COLUMN INCH-MINIMUM CHARGE \$3.00  
MAKE CHECKS PAYABLE TO STOLP STARDUSTER CORP. THANK YOU.

## FOR SALE

"STARDUSTER AIRCRAFT"  
PATCHES--THE BEST WE  
HAVE SEEN. 3-/12 x 4  
MAXIMUM SIZE-TOP HEAVY  
OVAL SHAPE. PICTURE  
OF A STARDUSTER TYPE  
AIRPLANE FRONT VIEW-  
WITH "STARDUSTER AIR-  
CRADT" SOURROUNDING  
PICTURE. ONLY \$4.95

NEW CUSTOM SERVICE  
AVAILABLE FOR STAR-  
DUSTER AIRPLANE OWNERS  
CUSTOM MADE BACK PATCH  
WITH A PICTURE OF YOUR  
AIRPLANE, YOUR NAME  
AND YOUR "N" NUMBER.  
SEND PICTURE, NUMBER,  
AND NAME DESIRED ON  
PATCH. ONLY \$29.95.

PARACHUTES-PARACHUTES  
The best Available---  
SEAT PACK OR BACK PACK  
ONLY 14 #- MADE TO FIT  
YOU. COLORS AVAILABLE  
ARE RED, GOLD, BLACK,  
BLUE, AND ORANGE----  
ALL WITH BLACK TRIM-  
INCLUDES CARRYING CASE  
OF MATCHING COLOR---  
LOW SPEED, NON-ADJUST-  
ABLE CHUTE, WITH CAR-

RYING CASE, \$460.00.  
FOR AN ADJUSTABLE HAR-  
NESS, IN CASE SEVERAL  
PEOPLE WILL BE USING  
CHUTE, PLEASE ADD \$20.00.  
FOR A TEMPER FOAM SEAT  
CUSHION IN PLACE OF STD  
CUSHION, PLEASE ADD \$19.00.  
ABOVE IS FOR LOW SPEED  
(150 M.P.H.) CHUTES. ALSO  
AVAILABLE ARE STD CATE-  
GORY CHUTES. NON-ADJUS-  
TABLE, WITH CARRYING  
CASE, \$530.00. ADD \$20  
FOR ADJUSTABLE HARNESS  
AND \$19.00 FOR TEMPER  
FOAM CUSHION. ORDER  
FROM STARDUSTER CORP.

BUILD AND FLY THE WORLDS  
EASIEST-TO-BUILD AND  
HOTTEST PERFORMING AERO-  
BATIC BIPLANE-- THE ACRO-  
DUSTER ONE--  
BROCHURE----\$5.00  
COMPLETE KIT--\$5950.00

NEW GEL CEL BATTERIES--  
MAKES OTHER BATTERIES OB-  
SOLETE- 12 V.-28 A.H.--  
NO SERVICING-NOTHING TO  
SPILL--DOES NOT HAVE TO  
BE ENCLOSED IN A BATTERY  
BOX- REDUCED IN PRICE-  
ONLY \$49.95, plus \$3.00  
PACKING CHARGE-- FROM  
STOLP STARDUSTER CORP.

New Mounting Rack for Gel  
Cel Batteries--Made of  
4130 Steel-- May be bolted  
to firewall--Only \$45.00  
from "STARDUSTER"

A SPECIFIC FOR A SORE  
RUMP- NEW "T" FOAM CUSHIONS

NOW MADE FROM TWO LAYERS  
OF DIFFERENT DENSITY NASA  
DEVELOPED FOAMS-- USED  
FOR THE ASTRONAUTS COUCHES  
AND WHEELCHAIR PATIENTS.  
YOU NEVER FELT IT SO  
GOOD-- \$19.95 from  
"STARDUSTER" CORP.

SAVE 18 POUNDS ON YOUR  
ELECTRICAL SYSTEM INST-  
ALLATION-- INSTALL SOLAR  
PANELS FROM "STARDUSTER"  
TO CHARGE YOUR BATTERY.  
NEAT, SIMPLE, AND LITE  
WEIGHT. MAINTENANCE FREE.  
ALMOST NO DRAG. MOUNT  
ON WINGS OR OTHER NEARLY  
FLAT SURFACE. SIMPLE &  
EASY TO INSTALL. ONLY  
\$249.50 FOR TWO CELLS,  
COMPLETE WITH INSTRU-  
CTIONS. IN STOCK. IMMED-  
IATE DELIVERY.

SIGTRONIC INTERCOM SYS-  
TEM. REMOTE MPUNTING. THE  
BEST UNIT FOR BIPLANES.  
MOUNT ANYWHERE. ONLY  
\$144.50, FROM "STARDUSTER"

COFFEE MUG--HI QUALITY  
COLOR PICTURE OF ANY OF  
OUR AIRPLANES ON IT, TO-  
GETHER WITH YOUR FIRST  
NAME AND THE "N" NUMBER  
OF YOUR AIRPLANE-- SEND  
\$5.95 TO "STARDUSTER".

STEWART WARNER OIL COOL-  
ERS. CERTIFIED. USE TWO  
FOR 200 H.P. ENGINES  
LIST PRICE-\$160.00  
OUR PRICE-ONLY \$99.50





ABLE CHUTE, WITH CAR- HUMP- NEW "T" FOAM CUSHIONS

ADVERTISING THE  
CHARACTER AND  
MAKE THE  
"STARDUSTER AIRPLANE"  
PATCHES--THESE  
HAVE BEEN  
MAXIMUM SIZE-TOP  
OVAL SHAPE. 3-1/2"  
OF A STARDUSTER  
AIRPLANE FRONT VIEW  
WITH STARDUSTER  
CRAFT SURROUNDING  
PICTURE. 3-1/2"  
NEW CUSTOM SERVICE  
AVAILABLE FOR STAR-  
DUSTER AIRPLANE OR  
CUSTOM NAME BACK PATCH  
WITH A PICTURE BY YOUR  
AIRPLANE, YOUR NAME  
AND YOUR NUMBER  
SEND PICTURE NUMBER  
AND NAME DESIGN OF  
PATCH ONLY \$2.95.

PARACHUTE  
The best  
GREAT BACK FOR  
ONLY \$1.95  
YOU, 100% COTTON  
ARE RED, GOLD, BLACK,  
BLUE, AND GRANGE---  
ALL WITH BLACK TRIM-  
INCLUDING STRAPING ON  
OF MATERIALS  
LOW SPEED, NON-ADAMS