

Starduster

MAGAZINE

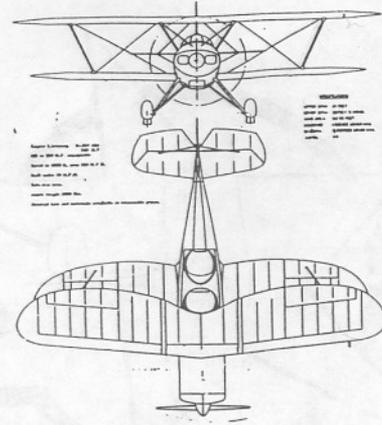


Dedicated to the
ACTIVE Homebuilders

APRIL 1992



OFFICE HOURS
 OPEN Most days about 9 or 10
 Occasionally as early as 7, But **SOMEDAYS**
 as late as 12 or 1.
 WE CLOSE about 5:30 or 6
 Occasionally about 4 or 5, But
 Sometimes as late as 11 or 12.
SOMEDAYS or afternoons, we
 aren't here at all and Lately
 I've been here just about all the time,
 Except when I'm someplace else.



APRIL 1992

I am enjoying the emotions of a youngster waiting for Christmas - our "Starduster" Open House gives me great pleasure. There is an unexplained sense of satisfaction I get when we get together and enjoy the sights, sounds and performance of the fruits of your labor. There is no way I could describe my feelings, that come, on the Sunday afternoon when you are all on your way home - the hanger empty, very clean, but always little things that will remind me of someone, is left behind.

Again the gratifying satisfaction is unexplainable -
 Thanking you all in advance.

Till Next Time
 "B.C."



***** BE ADVISED *****

I have already been warned by airport management, "That the Starduster Open House is getting bigger every year - and we need to watch our crowd control and airplane management." The FAA will also be on site and will probably assign a aircraft traffic manager as well as crowd control personel. So all we have to do is fly by the rules and be courteous of other airport users.

See Ya
 B.C.

APRIL 1992

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TABLE OF CONTENTS

PRESIDENTS COMMENTS	2
ODDS & ENDS FROM YOUR EDITOR	4
EDITORIAL - AUTO ENGINES IN A/C	6
SUSPICIONS CONFIRMED	10
ARE YOU HIGH ON NYQUIL	11
TRIVIA	12
STARDUSTER HISTORY	13
STITS COVERING NOTICE	15
LYCOMING FLYER	17
LETTERS PLUS AD NOTES	24
INSTRUMENT FLIGHT IN A S/D TOO	31
TECHNICAL TIPS - TORQUE VALVES, PROPS & WHEELS	33
STARDUSTER OPEN HOUSE	34
ATTENTION OWNERS & BUILDERS OF S/D/ AIRCRAFT	37
CLASSIFIED	38

We would like to thank all this issues contributors and respond to one and all for some interesting information and photos.

FRONT COVER - N55JF owned by Bradely Lloyd 722 Candidus Ave. Woodbury Heights NJ 08097. Originally built by Jerry Fackerl and recently rebuilt by Brad. I think this airpane is still for sale?

BACK COVER - N96576 and your editor Dave Baxter 5725 S.W. McEwan Rd. Lake Oswego Oregon 97035. Picture taken 10 NM Southwest of Jackson Hole Wyoming from N4226Y by Les Homan on our return trip from Oshkosh.

SUBSCRIBE TO STARDUSTER MAGAZINE. PUBLISHED FOR PEOPLE BUILDING OUR AIRPLANES. TECHNICAL INFORMATION, NEWS AND PICTURES. PUBLISHED FOUR TIMES A YEAR. SUBSCRIPTION RATE IS \$12.00 PER YEAR, \$18.00 PER YEAR FOR OVERSEAS MAILINGS [EXCLUDING CANADA]. 1992

THE EDITOR IS ALWAYS LOOKING FOR TECHNICAL TIPS AND EDITORIAL CONTRIBUTIONS TO THIS MAGAZINE. WHICH IS DEDICATED TO THE HOME BUILDER AND SPORT AIRCRAFT ENTHUSIAST. PLEASE INCLUDE YOUR NAME, ADDRESS, TELEPHONE NUMBER AND YOUR "N" NUMBER ALONG WITH ARITCLE SUBMITTED.

ODDS & ENDS FROM YOUR EDITOR

Problems with Aviation and Aircraft Ownership

In 1968 Lou Stolp sold N1300S the second Starduster prototype to Ralph Rina for \$12,000, I thought it was a fortune at the time. Today a good Starduster Too is worth about \$30,000 and the prices are slowly climbing. The point is that every year it gets a little more expensive to fly. As costs increase, flying time decreases, and for some they quit fighting the battle and sell their airplanes. For others the cost of biennial, medical and aircraft rental become to much of an inconvenience to deal with so they bail out. Resulting in fewer people left to shoulder the burden. Which in turn raises the prices for those of us who are left.

This last year 1,021 light aircraft were manufactured, which is a decrease of about 11% from the previous years figures. Of these aircraft only 613 were piston powered. Many of these aircraft were exported, along with a good number of used aircraft, further reducing the General Aviation fleet even more.

Here in Oregon the registration fee was recently increased, as well as expanded to include older aircraft. This restructuring occurred because there are no new aircraft being sold, resulting in little revenue being derived for the State Aeronautics Division.

But what was of chilling interest to me during our January EAA meeting was the topic of the guest speakers. They were from FAA Flight Service and they were invited to explain the benefits of FSS with their new automated weather reporting system. We now have only two manned stations in the state. The rest are all automated. I personally feel that although their service is good the accuracy is not.

During their presentation they displayed several charts and graphs. One of these graphs really emphasized to me, the decline that is occurring in general aviation. The graph in question was the number of calls the FSS

received each month requesting weather briefings, and each month showed a steady decline. They seemed to think it was due to people using their home computers to access the information. But I don't think so, how many of you are using your home computers for weather briefings? Not many I would guess, as most pilots want to talk to the briefer.

The recent article written by Richard Collins in AOPA magazine shows quite vividly the accuracy of forecasting. The article also included the concern of legal action [I.E. Lawsuits against the weather briefers as to actual weather]. In addition he mentioned that while on a recent flight that the controller read an ominous message. A sigmet was out for hazardous weather over the area and apparently the hazard was moderate to severe turbulence. However none was encountered, by not only him but other aircraft flying over the same route. After making his pilot report wondered if it would be noted, because it did the unthinkable, it reported conditions better than forecasted.

It appears that weather forecasts where someone is accountable, like everything else in the litigious society have become based on covering every eventuality instead of making a best effort at predicting the weather.

So when the weather is really bad pilots will discount the forecast as well as the pilot reports. The point is, we are not getting the accurate information that we need.

The other real problem regarding the liability issue, and not just in aviation is over the last 7 years numerous responsible Tort reform bills have been introduced to limit the liabilities of parts and aircraft manufacturers. But not one has passed. The Trial Lawyers Association have persuaded key members of Congress to derail the process in every case. They of course do not realize that if things keep going in the direction they are headed there won't be any cases to litigate. This will not only cook our goose but theirs as well. I certainly do not mean to say that all lawyers are out to make a quick buck as there are many ethical and knowledgeable ones, but it certainly appears that they are in the minority.

The lawyers that litigate aircraft accidents can certainly take comfort in the fact that no one has been injured or killed in a 1986, 1987, 1988, 1989, 1990 or 1991 Cessna 152, 172 or 182 as none have been manufactured since 1985. They are certainly protecting us from ourselves.

In spite of all this gloomy editorial, interest in aviation, I.E. Learning to fly and building homebuilt aircraft continues to increase. The will to do both is still very strong.

After writing this editorial, I have received two letters that soften the blow immensely. One letter was from an 18 year old college student who is pursuing a career in aviation and working on his instrument rating. He was frequently asked what airline he wanted to work for, pilots and non-pilots alike were amazed at what his answer was. He wants to work in General Aviation, he believes it to be an exciting and enjoyable field to become involved in. It is people like this who keep aviation alive. Thanks David G. Coleman Winnetka Illinois.

The other letter was from Simsbury High School's Aerospace education program. The school has been, and is building a Starduster Too. They have been at it for over 6 years and have received awards from not only the FAA but from the Connecticut State Board of Education. This is a real, and wonderful effort to promote aviation but also involves youth and the fact that they are building a Starduster can't hurt. Thanks to the school board, Mr. Mox, Mr. Jablonski and of course past and present students. A Letter and pictures of the students as well as their Starduster Too project appear elsewhere in this issue.

D.C.B. Editor

EDITORIAL

Auto Engines in Aircraft

Little did your editor realize, when he wrote about auto engines in Stardusters, that it would generate so much controversy. A number of readers took me to task over my comments in the January 1992 issue of Starduster Magazine. I certainly did not mean to imply that there is no hope for this type of conversion, and perhaps meaningful solutions are just around the corner. But my main concern was for builders to fully understand that at the present time most of these auto installations leave much to be desired, and many of the advertised claims are not accurate.

However if any of our readers know of a successful conversion (meaning 500hrs+), and especially in a biplane, I would like to hear from you. I will accept and print any comments regarding this subject. I would be more than happy to change my opinion if the information received, is close to or better than existing Lycoming aircraft engine performance figures (I.E.- Fuel Burn, Weight, Horsepower and Cost).

I cannot comment in depth on all items regarding auto engine conversions, as it would take every issue of Starduster Magazine for the next 2 years and still not answer all the questions.

Again, I must qualify myself, I am not an automotive engineer or machinist. My knowledge and background is only as a mechanic in autos, aircraft and fire trucks. For those of you who know me, I have been a fire department mechanic for the last 18 years. So my comments and opinion are based only on that experience.

Basically I will talk about what I consider to be the five main problems with auto engine conversions.

As I see it they are:

- 1.) Gear Reduction
- 2.) Weight
- 3.) Horsepower
- 4.) Fuel Induction
- 5.) Ignition

The end result is of course what we want, performance and reliability. The point was made that aircraft engines have problems and fail too. But due to the fact that more airplane engines are in use compared to auto conversions, the reliability factors can be interpreted in many ways. What does reliability mean to you? What will you accept?

I have written to, and called to talk with, Bob Ely N107UP a Ford Javelin V-6 Starduster Too Builder and pilot. His comments were interesting and he seems to be a knowledgeable and fine individual. The recent article about his airplane in the Ford Javelin Newsletter stated, the airplane had over 200 hrs on it, and that over 2/3rds of that time was doing aerobatics. It also mentioned that it has a 2 to 1 reduction drive unit and swings a 84x67 inch prop. Other than the fact that he had done a lot of different types of aerobatics there were no other details in the article performance wise. I do not know whether this was coincidental or that the readers of the Javelin Newsletter are just aware that the 230 ? V-6 actually produces it in a converted state.

By the time you read this issue of Starduster Magazine you may have already read the story in the March 1992 issue of Sport Aviation regarding Bob Ely's Starduster Too N107UP. Bob told me that he would be more than happy to write a more indepth article after I read the one in Sport Aviation, and that he would comment in detail about anything of interest that is not covered in the article.

During our phone conversation he made the comment that he, accepted the auto coversion for what it was, and did not expect more than it was capable of giving. So for him it appears to be doing the job. With this in mind I will try and give my opinion briefly in each of the five areas.

1.) Gear Reduction - Gears or Belts? Most gear reduction units are heavy, complex and expensive. Some of the more notable light aircraft gear reduction units were the G0300 by Continental, and the G0435 & 480 by Lycoming, these I believe were the planetary type.

I do not know whether the Prowler or the Geschwender conversions used this or a link belt chain drive. But at any rate they are reasonably complicated and expensive, at least for most builders.

The flexible cog belt used on the Javelin Conversion as well as several other installations seem to offer a fair compromise. The price and weight are acceptable and they appear to be reliable. However this type of conversion seems to lack delivered horsepower. Another problem with cog belts are excessive RPM. Some of these conversions are run way over the manufacturers RPM recommendations in order to get near the needed horsepower.

For many years the ultra light people were not very successful with gear reductions and then Rotax came along so that almost all ultra lights are powered by that engine. The Kit Fox although not an ultra light uses this engine as its main power plant. On the other end of the spectrum is the well written article by Doug Haley regarding big horsepower V-8's converted for aircraft use (Sport Aviation July 1991). If you are truly interested in auto conversion this is one article you should read in detail as it is knowledgeable and well written. But the fact remains that this conversion even with all aluminum components is still heavy and costs as much as a new Lycoming. My point is the technology exists to produce a gear reduction to accomodate 200hp engines that is light, efficient and is reasonably priced, but so far has not.

2.) Weight: This is the only thing that continues to be a major problem for all aircraft designers, manufacturers and builders. It is true that not all the weight comes from a big engine. However many homebuilders feel that Wow, now I have this big engine I can install anything else. The result is poor performance, or the builder who weighs 275 lbs and is worried about one or two pounds on a single item. Most pilots understand that its not like a car where you can just throw anything in the trunk and as long as your rear bumper doesn't drag you are on your way. Most homebuilders are notorious for over building, very seldom do builders equal the prototype aircraft in empty weight.

A fine example of this is the original Starduster Too N94505 weighed 1000 lbs empty. Of course it had no electrical, no center section fuel tank, and no frills.

A typical well built weight conscious Starduster Too with electrical avionics, center section fuel tank and a four cylinder Lycoming average weight is around 1250 lbs empty. But this is a useful, go anywhere airplane by today's standards. What every builder has to ask himself during the building process is - Do I really need this? Can it be made lighter? These words should be used constantly during construction.

3.) Horsepower: Actual, Real, Delivered or Wishful. The rated horsepower of auto conversions is a subject that leaves much to be desired and unless the engine is run on a Dyno after conversion the actual horsepower produced results in a very gray area. Even after the engine is converted installed and will produce the desired horsepower, if a mistake is made by installing a propeller with the incorrect pitch or diameter, performance will suffer. I personally think this has been some of the problem.

In my opinion the best all around engine is the 200 hp Lycoming, it gets the most horsepower for the least amount of weight, that is of course with a light well thought out airplane of 1200 lbs or less.

4.) Fuel Induction: Float carb, pressure carb, Ellison throttle body, automotive throttle body, and fuel injection. Which one for you?

The automotive fuel management systems throttle body computer controlled systems, offer fantastic efficient, and performance controlled fuel metering. However no one seems to be using them thus far. I am not sure what the reason. Perhaps cost, complexity or not having the proper control unit for the wide range of atmospheric conditions aircraft operate in. I would suspect liability has some part in its absence in this area. There may also be some problem with auto type fuel systems in their ability to make ice. This is one thing that has concerned operators of the Ellison throttle body. However they, Ellison recommends that carburetor heat be installed with there unit. There are many RV's with Ellisons and float carburetors that have no alternate air or carb heat period. Most of them use differential air and draw from inside the cowling for their source of heat rather than from a muff.

Automotive float type carburetors leave much to be desired and aircraft carburetors aren't much better. The pressure carburetor works very well and can be flown upside down. but is very expensive to overhaul. So in my opinion Port fuel injection offers the best for auto conversions or aircraft engines.

5.) Ignition : Magnetos or Electronic Ignition, or one of each. Magnetos have been around since the turn of the century. Today they are quite reliable with better materials and bearings that offer continuous operation under severe conditions. They of course do not offer the flexibility and efficiency that computer controlled auto engine ignition systems do.

The biggest reason why electronic ignition systems have not been incorporated in aircraft is liability.

No manufacturer wants to expose himself to higher liability insurance premiums as well as litigation over new innovative ignition systems. Because if there were problems with their new systems it would immediately insure lawsuits to be filed.

The ideal most efficient and redundant would of course be one of each. It is really a shame that some of these systems cannot be adapted to aircraft engines, but do have many possibilities on auto conversions.

Along with ignition systems a few words should be said about fuel. Aviation low lead, as opposed to auto unleaded. I believe that aviation fuel has a limited future, because of the environment, along with the fact that it becomes a small part of most oil companies refining profit. This makes it very expensive to produce in limited quantities. What I believe is, that there will become one fuel for all internal combustion engines. Our only hope is that the proper additives will be blended to help performance. I.E.- Octane as well as limiting vapor lock and component problems. There are a number of aircraft using auto fuel through S.T.C.'s. But, that fuel must meet proper specs and fuel systems must be modified accordingly. So at the present time automotive "pump" gas does not solve the problem.

Many people want to believe that the automotive conversion for aircraft use is the cheapest and easiest road to follow. There is an auto conversion in the current issue of Kit Planes Magazine as there have been many over the last 10 years. But they never seem to be the same one, and never seem to print real word horsepower ratings and gallons per hour fuel burn.

I am not saying it can't be done because I believe it can. All I'm saying is that for me, no current conversion exists that I would put in my airplane and go flying around the country, with the same confidence I have in my 180 hp O360-A2A Lycoming, but hey thats just my opinion.

I would love to spend a great deal of time on this subject, but as editor of Starduster Magazine and with limited time and space I feel that my view on this subject has been well expressed, and as I said earlier, I only wish for builders contemplating auto engine conversion alternatives to be aware of the problems.

The goal as I see it would be to produce an engine that would make 200 hp, weigh 200 lbs or less, accept a constant speed prop, incorporate redundant computer controlled electronic ignition system, burn 6 to 7 gph or less and cost under \$5,000 with all accessories ready to bolt on. This would not only be a great engine for a Starduster but would be a super engine for all homebuilts.

D.C.B. Editor

COMMENTS

Suspicious Confirmed !

Why Nothing Ever Seems To Get Done By Legislators

It's refreshing to see that some people in this country still have confidence and a belief in what our forefathers intended our form of government to be. Speaking as a pilot and a person that walked into Congress (elected 1984) off the main street of a small, rural Iowa town, it is my unfortunate duty to burst the wonderful perception of government. We are all the subjects (victims?) of minority rule.

The collective paranoia of members of Congress that they might upset, offend, anger, disappoint, or, worst of all lose a vote, from any and all groups that feel they are "mistreated" or are "denied a right," has led to a litany of legislation and regulations that is slowly strangling our country to death.

Why is the general aviation business in such dire straits? A primary reason is manufacturers are plagued by a minority that is willing to sue them over anything that a clever lawyer can contrive as "product liability." The net result being that the majority is denied the privilege of purchasing an American-made light aircraft.

Washington D.C., is a city of "ists." Environmentalist, feminists, socialists, rightists, leftists, extremists, populists, humanists- the list goes on and on. Each "ist" has an agenda that is pursued with vigor, financed by truckloads of money, and promoted by professional lobbying organizations.

The predominance of "ists" has brought us up to a point of living under minority rule and fear of minority uprisal. Don't offend anyone. Don't question a plea from anyone. Don't allow anyone even a slim chance to get hurt. Don't put anyone in a position of having to take a risk. Don't allow anyone to fail (the savings and loan fiasco, for example).

In a society where no one is allowed to fail, no one can ever succeed. Recently a young man from the Soviet Union, asked me, "Why is your country rushing towards socialism when in my country we just had a revolution to be what America used to be." The minority pleads, and the majority bleeds.

Keep the faith. Hopefully, enough people like you will come to their collective senses and stop this before it goes much farther. The future of our children is at stake.

James R. Lightfoot AOPA 453918
Member of Congress

Are You High On Nyquil?

Air transportation workers are subject to random drug testing by the FAA. The following information came from a construction magazine and was reprinted by the ABATE newsletter in California.

Many false drug screening results have been brought about by the use of Legal over-the-counter medications. The following list is a partial list of substances that can cause a false/positive indication.

- * Advil, Nuprin, Mediprin, Motrin, Rufen (also at risk are persons with a bladder or kidney infection or liver disorder) can show up as Marijuana.
- * Nyquil, Vicks Inhaler, Contact, Sudafed, diet pills, heat and asthma medications and several nasal sprays can show up as Amphetamines.
- * Amoxicillan (Antibiotic, tonic water, and herbal teas can show up as Cocaine.
- * Elavin, Benadryl, Soma, Norflex, Phernergan can show up as Methadone.
- * Dilantin and Phenobarbital can show up as a Barbituate.
- * Phenergan, Vicks Formula 44, tonic water and poppy seed rolls can show up as Heroin.
- * Contact, Dristan, Nyquil, Halls Mentholated Cough Drops, Terpinhydrate, many cough medicines can show up as Alcohol.

If you are using any of these preparations and are required to take a drug screening test, notify the person and/or company conducting the test.

* Editor's Note *

As a side note to non-prescription drugs, when you take your flight physical Do Not write on the application anything about side effects or problems you are having medically unless you are certain they are valid. The same holds true when answering questions from your medical examiner. Any minor confession can be construed as a valid medical problem, resulting in either denial of your medical certificate or at least prolonging its issuance along with costly medical evaluations to prove that you really are fit to fly.

D.C.E. Editor

Dave Baxter
5725 S.W. McEwen Road
Lake Oswego OR 97035

Are You High On Drugs?

TRIVIA OF INTEREST?

Who are the youngest and oldest Starduster Pilots?

Janet Helton - Soloed Jim Osborne's 260 hp Acroduster Too on her 16th birthday.
Gene Burnett or Eric Schilling - Both flying Stardusters into their 70's.

Who is the youngest Starduster Owner?

Steven R. Parsons of Loves Park Illinois is the owner of N239DF and is 23 years old.

Who is the highest time Starduster Pilot?

Maynard Ingalls - Over 1500 hrs in Starduster Toos.

Who owns the Starduster with the most total time?

Al Pietch or E.B.Marble? N5464
Once owned by Maynard Ingalls and now owned by E.B Marble now has over 1700 hrs on that airplane.

Who has flown the longest distance?

Oscar Bayer N490B - Arryo Grande California to Anchorage Alaska and return.
Bill Lynch N135WL - Shawnee Kansas to Anchorage Alaska and return.
Patty & Maynard Ingalls N38PM - San Joses California to the Bahamas to New England and return.

Who has the longest non-refueled flight? In statute miles.

Maynard Ingalls N38PM - Frazier Lake CA to Phoenix AZ.

Who has the shortest?

Gordon Moore N103GM - When he let a high time jet pilot fly his Acroduster Too and he put it on its back during take-off.

Who has flown the most IFR? Max Bennett N76GS.

Who has the most night landings in a Starduster?

Who has had the most dead stick landings in a Starduster?

Who has had to bail out more than anyone else? John Helton?

Who has done the most aerobatics in a Starduster?

Al Pietch, John Helton, Eric Schilling or Peter Cavallo.

Trivia, D.C.B. Editor

Handwritten signature: Beverly E. Olsen

MAJOR CHANGES IN POLYESTER FILAMENT YARN & FABRIC WEAVING TECHNIQUES

The following information is published to answer many questions from aircraft owners and mechanics, and alert all interested parties to possible inadvertent use of nonconforming polyester fabric to cover aircraft.

In 1967, Stits Aircraft introduced style D-103 fabric (The "D" was for DuPont Dacron). Thread count was 66 x 66, weight was 2.7 ounce per square yard and strength was over 96 lbs. per inch width. It was woven from DuPont Type 56, 150 denier filament yarn. D-103 fabric has been our most popular style.

DuPont Type 56 filament yarn in denier size 70, 150 and 250 with a nominal tenacity rating of 4.6, 4.6 and 5, respectively, was to the textile industry what douglas fir lumber is to the home construction industry. It was the standard, and widely used in many styles of fabric.

Necessitated by the current economic slump, DuPont ceased production of Type 56 filament yarn at Wilmington, North Carolina in October 1990, and transferred the filament melt spinning to their plant in Kenston, North Carolina. The 70, 150 and 250 denier, Type 56 filament yarn produced at Kenston have been assigned new merge numbers (polymer formula), and now have a nominal tenacity rating of only 4.2, 3.9 and 4, respectively. The tenacity rating is a gauge of breaking strength in grams per denier which also affects the elongation. The denier is the weight in grams for 9000 meters of a single filament.

Our tests on fabric samples woven from DuPont 150 denier filament yarn with a 3.9 tenacity rating proved that it is not possible to pack enough threads into a weave style to pass the FAA required maximum elongation tests specified in TSO C15d/AMS 3806C for fabric to replace Grade A cotton. The maximum elongation allowed is 16% in the warp and 11% in the fill direction at 70 lbs. per inch when tested per ASTM D 1682 specs. The minimum strength is 80 lbs. per inch warp and fill. Excess elongation will allow the fabric to balloon between the ribs and cause cracking and checking in the fabric coatings as the fabric stretches under flight loads.

In the past decade new design water jet looms have become popular in the fabric

weaving industry because they produce fabric at a higher rate with fewer weaving flaws and broken filaments. To prevent mildew in the rolls, the wet fabric is dried with a stream of hot air or high temperature steam as it comes off the loom. The high temperature also shrinks the polyester greige up to 5%, which subtracts from the minimum 10% shrink capability needed for aircraft fabric when installed on an airframe and heat applied to taut the fabric.

Polyester fabric run on a water jet loom and otherwise qualified as an aircraft quality fabric, will develop acceptable tension at 350 only if it is installed with no slack. However, depending on the percent of shrink during the drying procedure, elongation under a load will be increased. Tests reported in our manual and demonstrated in our video tape, show that the further the fabric is shrunk to gain tension, the higher the elongation.

One large mill has advised that they are now weaving fabric using current production 150 denier DuPont, Type 56 filament yarn on water jet looms for two aircraft fabric suppliers.

We want to assure our customers that we do not use DuPont Type 56, 150 denier filament yarn produced at the Kenston plant and our fabric is not woven on water jet looms. Our new style P-103 ("P" for polyester) is woven from higher tenacity filament yarn and replaces D-103. Thread count is 68 x 68 and strength is over 115 lbs. per inch. U.S. Testing Co. reports show the elongation at 70 lbs. is under 10% warp and fill. Tension at 350 F is 29.28 ounces per inch width.

A 3 foot square section of any fabric in question, should be sent to a test lab for strength and elongation evaluation in accordance with ASTM D 1682 methods. U.S. Testing Company has offices in all major cities. Discovering the fabric is not suitable after covering is a lot more expensive than the \$300. to \$500. cost for a test report before covering.

STITS POLY-FIBER AIRCRAFT COATINGS

P.O. Box 3084
Riverside, CA 92519
Phone (714) 684-4280



STARDUSTER HISTORY

NS01S

The First Starlet

This airplane showed up during the summer of 1968 in Rockford Illinois, which was the previous site of the EAA convention. The airplane caused almost as much of a stir as did N1300S the second Starduster Too prototype. No one was prepared for such a sleek, sexy and colorful airplane. Lou had painted it purple with the traditional white stars and stripes, and although a high wing parasol, it had the unmistakable Starduster lines. The reason why it stood out so much was, up until that time most VW powered airplanes were fairly stubby and unattractive, and by contrast the Starlet was very sleek and racey.

The SA-500 Starlet used the same N-6 airfoil as the Starduster Too. It had a 25 ft. wing span with 87 sq.ft. of wing area. The sweep back was 9° degrees and the airplane weighed only 450 Lbs empty. The projected cruise speed was 90 mph. However this speed was never attained with the original VW engine. Some of the early VW conversions left much to be desired performance wise, along with not having the proper propeller made the first flight very interesting.

The airplane was only flown about 6 times with this engine and the pilot was Glenn Beets, and as I recall the climb, cruise and stall were all in the 70 mph range.

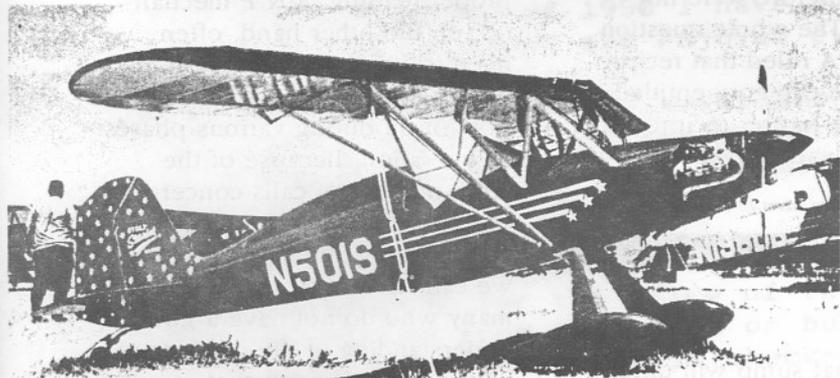
Lou had been working with the Revmaster people and they were going to build him an 1800 CC VW engine that was to produce 50 hp, as the original had only produced 35 hp. It was unfortunate that the 2100 CC version was not available at the time, as it probably would have produced the desired performance numbers.

This all became a moot point as a friend of Ralph Rina's, offered to buy the Starlet. But Lou would not sell it to him in its present state. With the installation of an 85 hp Continental that produced the desired performance numbers, the sale took place shortly thereafter.

I do not recall the name of the individual who bought it, but the last known registered owner of NS01S was Gary L. Ozenne, 12446 S Henlo #B, Hawthorne CA 90250. The person who originally bought it was from the Hawthorne area so it could be one and the same. NS01S S/N #1 still appears on FAA registry. But some of the information about this airplane is inaccurate, as FAA ID codes show it as N101JA another Starlet registered to Holt A. Farley of No Plainfield New Jersey. The Starlet could have been wrecked, sold or re-registered with a new N number. Do any of our readers know if this airplane still exists? or of its whereabouts?

This is the continuing story of NS01S, the very first Starlet SA-500 S/N #1.

Dave Boxler - Starduster History



VW Powered Stolz Starlet at '68 EAA Convention



Gangly as a newly foaled colt, the new Stolz SA-500 "Starlet", N-501S, brings a new look to the homebuilt aircraft field.



FLYER

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Williamsport, PA 17701

TEXTRON Lycoming

The Aviation Fuel Outlook

Recent Congressional Legislation aimed at stiffening environmental regulation has created a scramble for information in the general aviation public. As usual, various interpretations of the printed word and outright speculations have resulted in confusion.

What Happened?

Congress recently passed amendments to strengthen the 1970 Clean Air Act. One of the amendments specifies that after 1992, no more off road engines requiring leaded gasoline may be sold. The key issue here was exactly what type of vehicles would be covered by the "off road" definition. Certainly chain saws, lawn tractors and dirt bikes fell into this category, but what about aircraft? Critics pointed out that in the original Clean Air Act, aircraft engines were treated separately and distinctly from the off road category, and therefore were not intended to be covered under this requirement. The whole question was resolved on September 4, 1991 when the EPA ruled that reciprocating aircraft engines are not included under the category entitled "off road". This means that, at least for the immediate future, reciprocating aircraft engines may still be operated utilizing a leaded aviation gasoline.

Please turn to Page 2, Column 2

How Much is Enough?

How much oil does my engine need? When should the oil level be checked? Questions like these continue to be asked of Textron Lycoming Service Engineers. Depending upon the specific engine model being discussed, the answers to the questions may not be exactly the same in all cases, but there are some points which may help those who have questions like these.

The oil used in a wet sump engine is stored in the sump which is attached to the bottom of the engine. The size and

shape of that sump will differ with the various engine models. Because of this, the dipstick to be used must be calibrated for a particular engine model. Further, the dipstick is usually calibrated for the aircraft model in which the engine is used. Most aircraft do not sit exactly level, and the aircraft attitude while at rest will affect the reading obtained on the dipstick. To get an accurate reading, it is important that inflation of the landing gear struts be exactly as specified, and that the dipstick provided with

Please turn to Page 3, Column 3

Oil Flow — Screens, Filter, Cooler, and Pressure Relief

The flow of oil through a Lycoming reciprocating aircraft engine is known to be a necessary function during the operation of the engine. Pilots are often not at all concerned about how this function occurs, as long as the oil pressure and oil temperature indicators show a proper reading. A & P mechanics, on the other hand, often need to know how the system works and what parts control the flow of oil during various phases of operation. Because of the large number of calls concerning this subject which are received by Lycoming Service Engineers, we can be sure that there are many who do not have a good understanding of the oil system.

It is not surprising that many A & P mechanics do not have a firm grasp on the operation of the oil system. There is room for a great deal of confusion since there are two basic systems and several variations on each of these.

Except for the screens, filter, and oil cooler, the flow of oil through the engine is completely pre-determined by the designed engine running clearances and by the passages which are drilled in the crankcase and accessory

Please turn to Page 4, Column 1

Notice

Before you call or write the factory with any question about your engine, be prepared. If your question is about your engine, the *engine serial number* and the *complete model designation* are necessary. This is the absolute minimum of information needed to access any records Lycoming may have. Any other data you can provide may also be helpful in answering your questions. Hours on the engine, overhaul or modification information, and maintenance history are examples of items it would be well to have in hand before initiating a call to Textron Lycoming. When your question deals with spare or superseded parts, you should request help from aftermarket sales. Maintenance assistance is the responsibility of the Service Engineers. Being prepared before dialing will help you to reach the proper party more quickly and to attain the information you need more efficiently.

AD Notes of Interest

AD 91-08-07 and Textron Lycoming Service Bulletins No. 494 and No. 497 address the installation of new, restricted fuel pump vent fittings in turbo-charged engines with AN drive type fuel pumps.

AD 91-14-22, Textron Lycoming Service Bulletin No. 475A, and Service Letter No. L163C address crankshaft gear modification and assembly procedures. These procedures are required during engine overhaul, after prop strike or other sudden stoppage, or whenever crankshaft gear removal is required.

Do Engines Survive Without Lead?

The automotive industry has already been down the road of conversion to unleaded fuels. One of the problems which they encountered was with valve seat recession (wear of the valve seat) when using unleaded fuel. This could also affect aircraft engines. Apparently the lead acts as a lubricant between the valve and valve seat, cushioning the impact of the valve on the valve seat. Their solution was to use a harder valve seat material. Today, this is not an issue in automobile engines. Lycoming reciprocating aircraft engines already use a high quality material for valve seats. A test program conducted by the FAA Experimental Test Center, using unleaded fuel in a Lycoming engine, showed no significant valve seat recession. The country of Sweden has operated its general aviation low compression engine fleet on unleaded aviation fuel for the past eight years with no adverse consequences. To confirm these results, Lycoming procured a sample of unleaded aviation gasoline. A series of comparative endurance tests were conducted to document wear characteristics. No significant difference in valve/valve seat wear was noted between engines run with leaded and unleaded aviation gasolines.

To summarize the unleaded issue:

- Are aircraft engines included in the "off road" category?
 - EPA has ruled that aircraft engines are not included.
- Will present valve seats in Lycoming engines be acceptable for use with unleaded aviation fuels anticipated for the future?
 - Test data indicate yes. When we must progress to unleaded fuels, existing valve and seat materials are satisfactory.

Any Other Fuel Issues?

Most definitely. The fuel specification for aviation gasoline, ASTM D-910, was developed many years ago for high performance engines which, for the most part, do not exist today. Aviation fuel utilizes the cream of the petroleum barrel to meet its fairly simple formulation. With the competitive situation which exists today with fuel stocks, the cost of Avgas will continue to be substantially higher than Autogas. Ironically, energy and environmental concerns are now forcing tighter controls on Autogas. The formulation process, additives, and vapor pressure characteristics are being scrutinized and changed. The automotive fuel of the future will be a different product than the fuel which is available today.

Another recent amendment to the Clean Air Act prohibits the sale of leaded motor gas after 1995. Although aviation fuel is not directly affected by this legislation, it will be the only leaded fuel type remaining after enactment. It is easy to predict the refining and distribution problems which will result when a high volume of unleaded fuel must share the stage with a very low volume of leaded aviation fuel. Separation of storage facilities, processing facilities, and transportation systems will be required. In the long term, this factor will be unfavorable for both the availability and cost of aviation gasoline.

What Should the General Aviation Industry do to Deal With Its Impending Future "FUEL CRISIS"?

There is a definite need to develop a new aviation fuel specification which will be more compatible with future motor fuel blends.

Aviation Fuel Outlook . . . Continued

Keep in mind that future motor fuels will be substantially changed in areas which concern the aviation industry today, such as additives and vapor pressure. Regardless of claims, there have been and continue to be problems with the use of today's Avgas in aircraft. The wider tolerance in vapor pressure and use of additives and alcohols in the composition of avgas have resulted in sudden operational and long-term material compatibility issues. Until these issues are resolved, avgas users will continue to evaluate the effect of these differences and changes on their engines and aircraft.

As motor fuel stocks are better controlled, a new aviation fuel specification must be developed which is more compatible with the new formulation practices, and yet still acceptable for our more stringent requirements. Aviation gasoline consumption represents less than one quarter of one percent of the total gasoline usage in the United States. To exist in the 21st century, it is imperative that Avgas be more consistent with future motor fuel stocks. Economically or logistically, Avgas cannot continue to be a specialty product.

Textron Lycoming is participating with the General Aviation Manufacturers' Association (GAMA) on the ASTM J2 Fuel Committee to

Please turn to Page 7, Column 1

Changing the Oil

It has been said that "changing the oil is the least expensive method of maintaining an aircraft engine." The reports received from Lycoming engine owners over the years have affirmed the truth of this statement. Although the addition of a filter in the oil system helps to reduce dirt which causes wear; water, acids, and lead sludge still accumulate in the oil. This contamination of the oil can lead to sticking valves and deterioration of metal surfaces inside the engine. To avoid these problems, regular oil changes which remove the contaminated oil are necessary. The oil change recommendations of Service Bulletin No. 480 apply with any oil which is chosen for use; whether a mineral based AD oil as defined in Textron Lycoming Service Instruction No. 1014, or a synthetic oil as approved by Textron Lycoming Service Letter No. L229. The recommendations stated in Textron Lycoming Service Bulletin No. 480 are:

A. 50-hour interval oil change and filter replacement for all engines using a full-flow filtration system.

B. 25-hour interval oil change and screen cleaning for all engines employing a pressure screen system.

C. A total of four months maximum between oil changes for either of the systems listed under A and B.

The recommendations of SB 480 assume the aircraft is being operated from a paved runway under normal operating conditions. For operation from a dirt strip where conditions are dusty, or for aircraft used in Agricultural Applications, more frequent oil changes may be necessary.

An item often missed in the routine of oil change maintenance is the checking and cleaning of the suction screen which is located in the sump. This should be done at each oil change, regardless of the change interval which has been selected.

How Much? . . . Continued

the engine for a particular aircraft model be used with that aircraft. Even with everything above just as specified, it is still difficult to get an accurate reading with some engine models. With the O-540-J and L models, for example, the slow, deliberate insertion of the dipstick into the tube is helpful in obtaining an accurate reading.

While an engine is running, the oil is continuously being pumped through oil supply passages to all locations which must be lubricated and cooled. It will take several minutes for the oil to drain back into the sump after engine shut down. Therefore it is a good idea to wait several minutes (10 minutes will probably do) after shut down before attempting to check the oil level.

What oil level is satisfactory for flight? This is a question with many answers. It depends on the particular engine and the length of flight being planned. As indicated earlier, each engine model is equipped with a sump designed for that engine as it is used in a specific aircraft model. Many Lycoming four-cylinder engines are equipped with an eight quart sump and six-cylinder engines are often equipped with a 12 quart sump. Owners of these engines frequently maintain the oil level at one to two quarts below the full mark. Unless these engines are known to be using excessive quantities of oil, these oil levels will probably be adequate for most normal flights.

A second group of Lycoming engines come equipped with smaller sumps. A number of four cylinder models have a six-quart sump. Several six-cylinder models have oil sumps which hold as little as eight quarts.

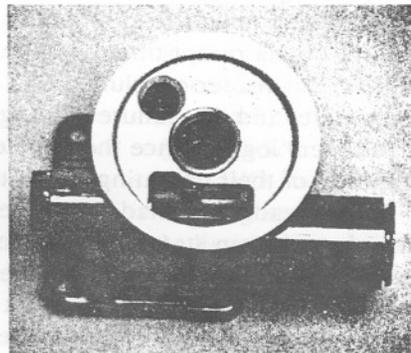
Please turn to Page 6, Column 1

housing during engine manufacture. This flow of oil serves three purposes. First, it lubricates, but cooling the engine by carrying away the heat generated by combustion is a second purpose which is often just as important. Many engines, particularly those which are turbocharged, have oil squirts in each cylinder which are designed to direct cooling oil on the back side of the piston. And finally, the oil cleans the engine by picking up dirt and depositing it in the screens or filter, or by keeping that dirt in suspension until the oil is changed.

The oil which has done its lubricating, cooling, and cleaning flows by gravity back to the oil sump. From the sump, the oil pump pulls oil through the suction screen. This screen will filter out large particles of carbon, dirt, or metal. The pump then forces the oil through one of the two basic systems. In each of the two basic systems there is a valve which forces the oil through the oil cooler when the valve is seated, or allows the oil to by-pass the cooler when the valve is open. Lycoming engines were originally equipped with a By-Pass valve which was controlled by a spring. Referred to as a spring and plunger type, it functioned as a result of the amount of pressure in the oil system. The spring controlled by-pass system was superseded by a system controlled by a Thermostatic Oil Cooler By-Pass which reacts to oil temperature changes.

Operation of the spring controlled By-Pass system is the result of thick oil which causes an increase in differential pressure across the by-pass valve and causes the by-pass valve to be open, thus by-passing the oil cooler. As the oil warms up, oil viscosity and pressure in the

system are reduced allowing the by-pass valve to close and forcing oil flow through the oil cooler. Although the By-pass valve helps the engine to warm up more quickly by routing cold oil around the oil cooler, its primary function is for system safety; should the oil cooler become plugged for any reason, system pressure will rise and the differential pressure across the by-pass valve will again cause the valve to open. This by-passes the oil cooler and prevents a possible rupture of the cooler and loss of oil.



Oil Filter Adapter

The Thermostatic Oil Cooler By-Pass Valve was designed to provide better control of the engine oil temperature while also maintaining the safety of the oil system by by-passing oil around an oil cooler which is plugged for any reason. The thermostatic oil cooler by-pass valve may be used on engines which use the pressure screen system and on engines which have a full flow oil filter. For most engine models an oil filter also requires an oil filter adapter. While the oil is cold, this system allows oil to flow through the oil filter without passing through the oil cooler. As oil temperature rises to approximately 180 degrees Fahrenheit, the valve closes and forces oil to pass through the oil cooler. The oil then returns to the accessory housing where it is

routed through the oil filter adapter, the filter, and then again through the filter adapter, accessory housing and finally into the crankcase.

The oil filter is another part of the system where blockage could cause serious problems. For this reason an oil filter by-pass is built into the oil filter adapter, or in the case of engines utilizing a dual magneto, into the accessory housing. These by-pass valves are a built-in safety feature which activate as a result of excessive pressure in the oil filter. The oil filter by-pass is not adjustable.

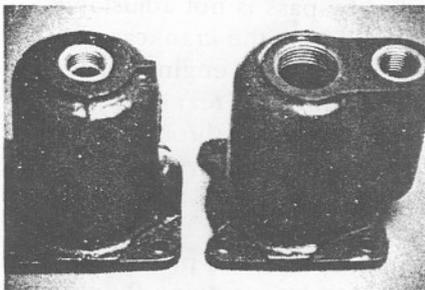
Oil enters the crankcase of most Lycoming engines near the top of the right rear cylinder where it passes through the pressure relief valve. There are three types of pressure relief valve. With either the short or long dome valve, pressure is adjusted by removing the dome and adding or deleting washers which are located under the controlling spring. There is also a third style pressure relief valve which may be adjusted with the twist of a wrench or screw driver.

An individual looking for the pressure screen housing may not find exactly what he or she is looking for since there are two possible variations. The housing for the pressure screen may have one hole facing the rear of the engine. This housing is used on engines incorporating a spring and plunger to control oil flow, and the single hole will be used for the oil temperature probe. Another style pressure screen housing has two holes facing the rear of the engine. The small hole is used for the oil temperature bulb connection, and a Thermostatic Oil Cooler By-Pass Valve is installed in the large hole.

Even more attention to detail may be required when an oil

Oil Flow . . . Continued

filter is installed. The pressure screen housing must be removed and the oil filter adapter installed in its place. With the oil filter adapter installed, either a spring controlled by-pass valve installed in the accessory housing just above the adapter, or a thermostatic by-pass valve installed in the bottom of the adapter may be used to control oil flow to the oil cooler. Because of the better oil temperature control, use of the thermostatic oil cooler by-pass valve is preferred by Textron



Pressure Screen Housings

Lycoming. For engines shipped from the factory with an oil filter, and requiring an oil cooler in the aircraft installation, it is standard procedure for Textron Lycoming to supply a thermostatic by-pass valve. The hole in the accessory housing which is provided for a spring controlled by-pass valve is capped with a plug. A hole on the top of the adapter is provided for the oil temperature bulb.

One case of confusion over the possible variations of this installation was documented in the November 1990 issue of Light Plane Maintenance. The owner of a 1976 Cessna 172 could not determine why oil temperature in his engine tended to be high during hot weather. Upon examination, he found that the filter adapter had a plug installed instead of a Thermostatic By-Pass Valve. This led to an article entitled "The Case of the Missing

Please turn to Page 7, Column 3

A Review of Old Wives Tales

Tale Number One — *"The most likely time for an engine failure to occur is at the first power reduction after takeoff."* Every individual who pilots an aircraft has probably heard this statement at some time. Is it a true statement? We will venture a guess and say that perhaps it may have been at some time in the distant past.

Several years ago this question was asked of me and it led to questioning some FAA employees and a number of other pilots about where the justification for this statement might be found. After several weeks of poking into this subject, it was finally necessary to conclude that we could find no justification — that it was simply an "Old Wives Tale."

A letter which recently came from a Flyer reader takes this one step further. First it appears that there are many who continue to repeat this tale. This caused our reader to delve into the subject a little deeper — perhaps a little more scientifically than I did. Our reader studied a computer readout which had data on incidents of engine failure over a recent three year period. Based on the material in that report, this reader concluded that engine failures during takeoff are quite rare, and that failures during cruise are far more common. This does seem logical since the engines of fixed wing aircraft run a majority of their operating life in the cruise power range.

Our reader also had a very believable theory about how this tale may have gotten started. He wrote, "It seems likely to me that this idea got started when twin engine flight instructors would simulate an engine out during takeoff — right about the time that the student put his hand on the prop control to reduce power. ... Gradually the idea was propagated that this was the most likely time for an engine failure when in reality it was a likely time for an instructor to simulate a failure."

From these two searches for justification — with none being found in either case, I believe it is fair to conclude that "the idea of an engine failure being most likely to occur at the first power reduction after takeoff" is in fact an old wives tale. For the sake of safety, lets stop repeating this false tale and start promoting the idea that we should be ready to deal with power failure at any time.

A second Old Wives Tale which is still being promoted by some individuals involves the constant speed propeller and goes like this: *"The RPM in hundreds should not be exceeded by the manifold pressure in inches of mercury."* Referred to as a "squared power setting" (i.e. 2400 RPM x 24 inches of MP), it appears that this tale may be the result of a carry-over from some models of the old radial engines which were vulnerable to bearing wear at high power settings. Changes in engine design along with improved metals and lubricants permit changes in the operation of modern flat, opposed cylinder power plants.

Any pilot who believes that squared power settings continue to be necessary should be urged to read and understand the information in the Pilot's Operating Handbook (POH). While there are limits to the power which should be taken from most engines, particularly those which are turbocharged, the combinations of RPM and MP listed in the power charts of the POH have been flight tested and approved by the

Please turn to Page 7, Column 1

While these smaller sumps provide a very adequate oil supply, there is less margin for error. The pilot must be more dedicated to carefully checking oil levels and filling the sump as needed. For engines with these smaller sumps, one quart below the full mark may be adequate for a short flight, however any flight of extended duration should begin with the oil level at the full mark.

One problem which sometimes occurs with engines having smaller sumps is overfilling at the time of oil change. The Pilot's Operating Handbook should be consulted to determine the oil sump capacity. When the filter is changed, an additional amount of oil — possibly as much as one quart — will be required to bring the reading up to the full level. This should be checked after the engine has been run following the oil and filter change.

Finally, some Pilot's Operating Handbooks may give a minimum safe quantity in the discussion of oil levels. These numbers, in some cases as low as two quarts, must be taken in the proper context. What this indicates is an oil level which might possibly be found after flight when a great deal of oil has for some reason been used or lost. As one might expect, this minimum oil level can be extremely attitude sensitive. However, if the dipstick does not show an amount below the minimum safe level stated, it is unlikely that engine damage has resulted from the unusually low oil level. Obviously, no flight should ever be initiated with only a minimum safe quantity of oil in the sump.

This brief discussion of "How Much is Enough" may help those aircraft owners who have had questions on this subject. But

Please turn to Page 8, Column 1

Service Bulletins, Letters, Instructions Published from March 1, 1991 to August 31, 1991

The service publications listed below are those which have been issued most recently. We strongly recommend that a complete set of these publications be maintained by all maintenance organizations which work on Lycoming reciprocating engines. A subscription may be obtained through any Textron Lycoming distributor or directly from the Textron Lycoming Product Support Department. Call or write for a copy of Textron Lycoming Service Letter No. L114 which provides a listing of available publications, prices, and ordering instructions.

Service Bulletins

- 240L Mandatory replacement of parts at normal overhaul — All Textron Lycoming reciprocating aircraft engines.
- 369I Engine inspection after overspeed or overboost — All Textron Lycoming piston engines.
- 456D Replacement of oil pump impellers with change of compliance time to "within 100 hours, next annual inspection or overhaul, whichever comes first." — Applies to O-235, O-320, IO-320, LIO-320, O-360, HO-360, IO-360, HIO-360, VO-360, IVO-360, AIO-360, LIO-360, O-540, and IO-540 with limiting serial numbers and models as specified in this bulletin. Note: AD 81-18-04 applies.
- 498 Reprint of Precision Airmotive Corporation Service Bulletin MSA-2 — O-235, O-290, O-320 series engines.
- 499A Installation of one-piece exhaust pipe kit (05K21503) — TIO-540-S1AD.
- 500 Reprint of Lear Romec Service Bulletin No. 3402 — All Textron Lycoming engine series with applicable fuel pump models and serial numbers listed in this publication.
- 501A Recall of piston pin Part No. LW-14077 — Models and serial numbers of all engines affected and shipped from Textron Lycoming between June 18, 1991 and August 5, 1991 are listed following the text of the bulletin.

Service Instructions

- 1187G Supplement No. 1 provides curve No. 13495-A which replaces curve No. 13495 on page 8 of 9. — TIO-540-AF1A engines.
- 1343A Set screw for propeller governor idler shaft — O, IO, LIO, AIO, AEIO-320 series; O, LO, IO, LIO, AIO, AEIO, TO, TIO-360 series; O, IO, AEIO, TIO, LTIO-540 series; IO-720 wide cylinder flange engines equipped with a front crankcase mounted prop governor.
- 1448 Supplement No. 1 gives proper installation of crossover pipe supporting hardware and heat shield — TIO-540-AE2A engines.
- 1453 Replacement of oil filter converter plate gasket — All Textron Lycoming dual magneto engines and TIO-541-E & TIGO-541 series engines.

Service Publications . . . Continued

- 1454 Parallel valve rocker arm installation — All Textron Lycoming engines incorporating parallel valves except O-235 series, O-290 series, O-320-H series, and O, LO, TO-360-E series. Note: Service Bulletin No. 477 and AD 87-10-06 apply.

Service Letters

- L163C Recommendations regarding accidental engine stoppage, propeller strike, loss of propeller blade or tip — Applies to all Textron Lycoming opposed series aircraft engines.
- L229 The use of MOBIL AV 1 synthetic lubricating oil in Textron Lycoming reciprocating aircraft engines — Applies to all Textron Lycoming opposed cylinder aircraft engines.

Aviation Fuel Outlook . . . Continued

initiate the development of a new fuel specification for an unleaded aviation fuel. An initial fuel specification guideline has been developed by the GAMA fuels committee and will be presented to the American Society for Testing and Materials (ASTM). This proposed fuel will have the highest octane possible to minimize the need to modify engine models. For instance, if the minimum octane level of future unleaded Avgas was 98 octane, very little would need to be done to accommodate this fuel in existing installations. This work has just been initiated and will require several years until a final specification is completed. Testing, certification, and production will further delay introduction of the new fuel at the pumps until the latter part of this decade.

The EPA has positively stated that they do not have plans today to eliminate the lead in aviation fuel. The present fuel, 100LL, should be available for general aviation use for at least the next decade. However, it is time to act to protect the general aviation industry for the decades to come. It is also important for general aviation to be socially responsible and share solutions for environmental and energy problems.

In summary, there is reason for general aviation to be concerned about future availability of 100LL aviation gasoline. Some of this threat stems from environmental legislation and some from very real energy issues. If the industry acts promptly and effectively today, it will head off a crisis in the future. Textron Lycoming has initiated action to accomplish those tasks which must be done to meet near term requirements and ensure long term availability of a compatible aviation gasoline. As events unfold and this situation is clarified, Textron Lycoming will use every available means to keep customers informed.

Old Wives Tales . . . Continued

airframe and powerplant engineers. For example, if the POH chart lists 2200 RPM and 26 inches of MP as an approved power setting, pilots should not be apprehensive about using that setting if it meets their needs.

Isn't it strange that some bits of information come to be believed by large segments of a population even when they are untrue? The two issues discussed above are good examples. Will it ever be possible to get all of our fellow pilots to reject the two false ideas outlined here? Let's keep trying.

Oil Flow . . . Continued

Bypass Valve". Engines delivered to Cessna for this model year were delivered with a pressure screen housing and a spring controlled oil cooler by-pass valve. When the aircraft manufacturer provided an oil filter as an option, the adapter and filter were installed at the aircraft manufacturer's plant, but the original spring controlled by-pass valve was retained and installed in the accessory housing. As stated in Textron Lycoming Service Instruction 1008B, installation of a thermostatic oil cooler by-pass valve will provide better control of the engine oil temperature. This aircraft owner did achieve better control of his oil temperature by modifying his oil system to include a thermostatic by-pass valve instead of the spring controlled one.

There is one more possible variation to the flow of oil which may be found with a Lycoming engine. Some air frame manufacturers have utilized small engine models without an oil cooler. At the request of these airframe manufacturers, these engines are not machined to accommodate an oil cooler. Individuals who acquire these engines for use in their home built aircraft may need an oil cooler to keep temperatures within operating limits. This can be accomplished by utilizing an adapter — Lycoming part number 62418. Utilization of this adapter will allow the engine to be used and the oil to be cooled, but there are limitations. An oil filter cannot be installed, and only the one-hole pressure screen housing can be used. This limits the system to use of a spring controlled oil cooler by-pass valve which is installed in the adapter.

There are several bits of

Please turn to Page 8, Column 2

Safety Tip

If your field overhauled Textron Lycoming engine is equipped with parallel valve cylinder heads which have been reconditioned, it is subject to the inspection recommended in Service Letter No. L228. Field inspections have revealed that the cylinder-head exhaust port area on some parallel-valve cylinders reconditioned in the field may be prone to cracking. These fine cracks are difficult to detect visually, and therefore a dye penetrant must be used. If cracking is evident, Textron Lycoming advises replacement of the cylinder-head/barrel assembly. See Service Letter No. L228 for more detail about how to conduct the inspection.

information which may be helpful to those who have now acquired a better understanding of the Lycoming engine oil system. Lycoming Service Instruction 1008B gives instructions for installation of a Thermostatic Oil Cooler By-Pass Valve on engines which have a pressure screen housing and no filter. Special Service Publication (SSP) 885-1 gives instruction for the installation of engine mounted oil filter kits. And finally, a kit (Number 05K21437) for a remotely mounted oil filter has been developed. Instructions for the installation of this kit are not complete as this article is being written.

The Service Engineers at the Lycoming factory receive many calls about the oil system and its many possible variations. The material presented here is intended to help answer many of those questions.

Safety Tip

Textron Lycoming Service Bulletin No. 489A requires inspection of the oil suction screen at each oil change. In those fuel injected six cylinder engines which incorporate Oil Sump Baffle Assembly P/N LW-13383, reports from the field have disclosed that in some instances vertical deflectors on the Baffle Assembly have been loose. If a rivet is found in the suction screen during the normal oil change, the baffle assembly must be removed and replaced. In recently assembled engines, an improved riveting procedure is used to eliminate the loose rivet possibility.

How Much? . . . Continued

always remember, the Pilot's Operating Handbook is the authorized source of information about your airplane.

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LYCOMING

FLYER

November 1991 • Issue No. 51
Editor: Ken W. Johnson

N369TT Owned and Built by
Tom Tschida
5450 Audobon Ave #206
Invergrove Heights MN 55075
0-470 Continental White w/green
and black trim



LETTERS

Col. Corles
82 South Street
Rydalmere NSW
Australia
15 January '92

Dear Bill,

Just a quick letter to renew my subscription for the "Starduster Mag". I have enclosed two travelers cheques, should be O.K.

Still working on my Starduster Project, will take photos to show you, should be over in May for the Starduster Fly-in.

Keep up the good work and give my regards to all at Flaboh.

Regards,

AD issued on new and rebuilt Continental 360 engines

OKLAHOMA CITY, Oklahoma — The FAA has issued an emergency airworthiness directive ordering that new and recently rebuilt Continental 360 series engines be checked for faulty cylinder assemblies before the next flight.

FAA officials who issued the "priority letter" AD said such orders that virtually ground airplanes until mechanics inspect them are extremely rare.

Officials said the AD applies to more than 1,500 cylinders, the bulk of which are known to have gone into a total of 192 engines. The engines using those cylinders are the TCM IO-360 series, the TSIO-360 series and the LTSIO-360 series, all manufactured by Teledyne Continental Motors.

According to the AD, the suspect cylinder assemblies were manufactured during

the seven-month period between June 1 and Dec. 30, 1991.

Jerry Robinette of the propulsion branch of the FAA's Atlanta Aircraft Certification Office said 35 of the engines due for inspection are new and 157 were rebuilt.

In addition, Robinette said, the AD covers 400 "spare" cylinders that apparently have not yet been installed in engines.

The AD was issued Jan. 17, after two pilots experienced failure of their 360 series engines, one immediately after takeoff and another during a pre-takeoff engine run-up. Neither incident involved injury to the pilot.

According to the AD, both failures stemmed from poorly cast cylinder heads that caused interference between the rocker arm shaft and the side of the rocker arm box wall.

The interference caused the rocker arm

shaft hold down-stud to lose tension and eventually break.

The AD requires the inspection of engines with less than 50 hours time in service. If an engine with the suspect assemblies has operated satisfactorily for longer than that, it is assumed that the cylinders are not defective, Robinette said.

"If it is going to fail, it is going to fail quickly," said Robinette, noting that one of the engines with a defective cylinder failed after only two hours in service and the other failed after six hours.

According to the AD, 360 series engines are commonly installed on Cessna 337, T337 and P337 series planes; the Cessna 172XP; the Mooney M20K; and Piper PA-34-200T, PA-34-220T, PA-28R-201T and PA-28RT-201T aircraft.

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(703) 667-0158 - FAX



Bill Clouse
Starduster Corp.

Dear Bill,

Enclosed is a cheque for \$24 to cover a subscription to the Starduster Newsletter for 1991 and 1992. Please send the back-issues to my office address, above.

Since completing the rebuild of our Starduster N610BJ in the summer of 1990 I have put about 150 hours on it without incident and enjoyed every minute of it.

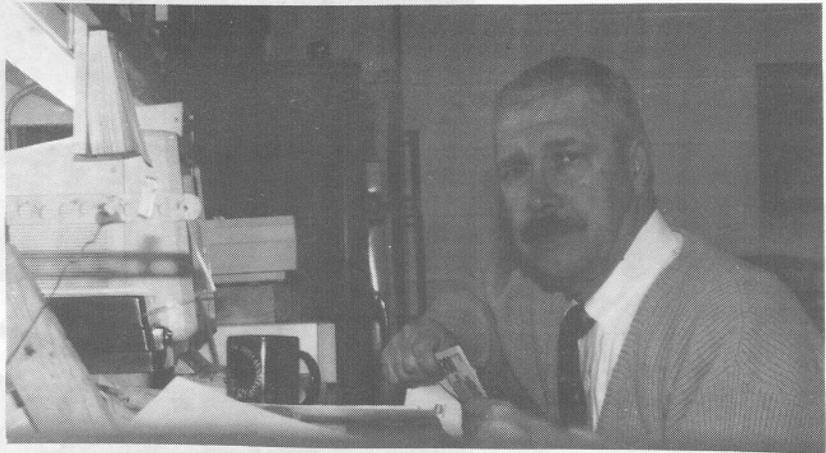
I have used the aeroplane to check-out a number of local Starduster builders and have also performed the first flights of two newly built aircraft in the Washington DC area.

I am always happy to give rides or instruction in the Starduster for the price of the gas so if you have any enquiries from this area or builders who would like a general or an aerobatic check-out, feel free to give them my number.

Best regards

Steve Beaver.
CFI

August 19, 1991



STOLP STARDUSTER CORP.
4301 Twining Flabob Airport
Riverside, California 92509

Dear Bill,

With the closing of the 1990-91 school year, the Simsbury High School's Aerospace Education has once again made great progress in the building of its Starduster Too. During the six years of construction this year proved to be a very prosperous one. The class from last year, which received an award from the FAA, left us with well constructed wings and a bare fuselage. This year, we are proud to say next years class will be receiving a work of art that looks like an aircraft. This year we worked hard to hang the wings, set-up the ailerons, paint the fuselage, and added many parts to it.

In the 45 minutes of class, the 15 students must overcome complex problems, as you may have experienced, and produce precise work. The instructor, Mr. Jablonski, has lead this years class to the Celebration of Excellence Award which was given by the Connecticut State Board of Education. I have also enclosed a picture of our airplane.

Sincerely,

Troy W. Mox

Troy W. Mox

Late Classifieds

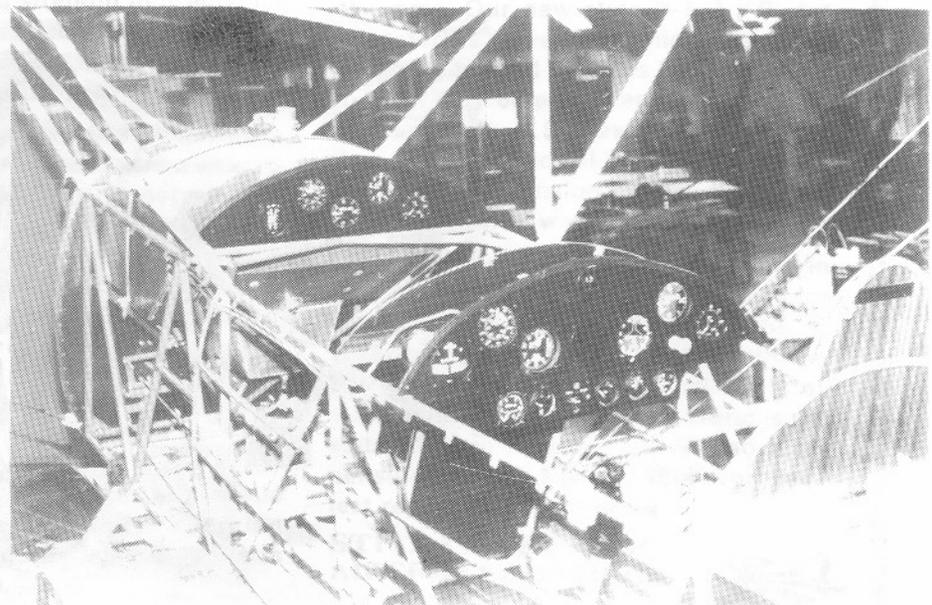
STARDUSTER TOO PROJECT, signed off for cover 0435-Lycoming
190 h.p. Prop C/S no logs misc. parts. \$8,000.

PITTS SIS PROJECT, wings tail tru silver some instruments,
no engine or flying wires. \$5,000. Frank White (503)630-4972



Simsbury High School Class of 91,92
Aerospace Education Program

bottomleft-right Aimee Farland, Ryan Piano,
Picasso Akiri, John Betts, Second
row left-right Greg Gould, Derek Conlin,
Chad Rutledge, Jeff Prowda, Greg
Kennedy, Aaron Stepler. Back row Mike Burke



Starduster Too Project

In the past decades new design water jet
looms have become popular in the fabric

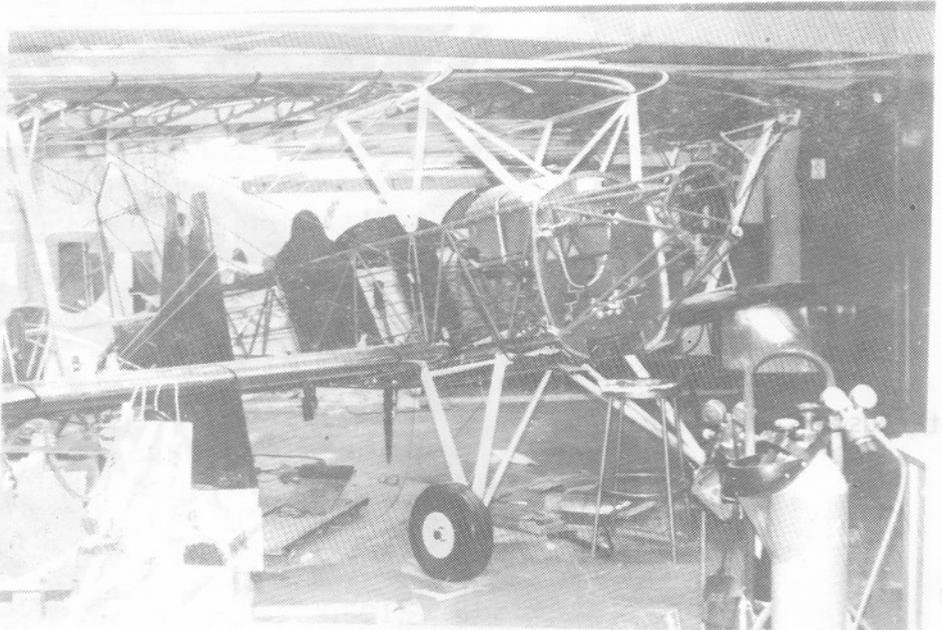


Simsbury High School Class of 91,92
Aerospace Education Program

bottom left John Vollinger, Ryan Piono,
Chad Rutledge, Second row left - right
Tom Scannell, Damon White, J.J. Worrell,
Chris "Guido" Gaidos, Greg McGee,
Matt Bradshaw back row Roger Torre



Starduster Too Project



LETTERS

Michael Mattei
685 Briergate Way
Hayward, CA 94544
February 12, 1992

Dave Baxter
5725 S.W. McEwan Rd.
Lake Oswego, OR 97035

Hello Dave and Family,

How are you doing? How is the family? I had this tape made, its the video from Oshkosh taken on our last trip. You can edit out some of the mistakes, some of the video shows your airplane in flight. Hope you enjoy it. I am also sending you an updated photo of my Acroduster Too, engine mounted, most of the cowling completed, very hard to get a nice tight fit up front. I am looking forward to Flabob this year. I'll be flying with Les Homan this year hope to see you there. Well Dave keep in touch, watch your six! and remember "It doesn't get any better than this."

See You Soon,

Michael Mattei



Dave Baxter
5725 S.W. McEwan Road
Lake Oswego OR 97035

December 23, 1991

Dear Dave,

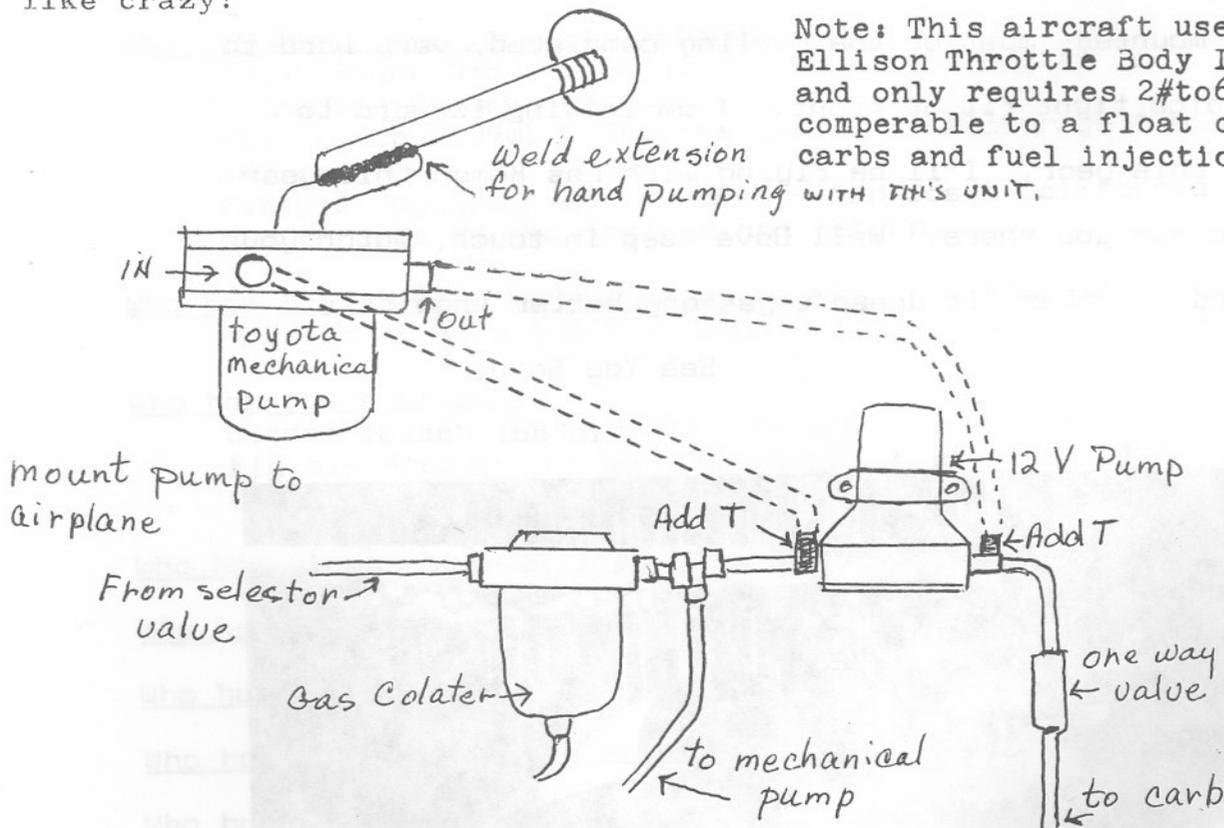
I read with interest your article on Fuel Systems. I am on my fifth electric fuel pump on my Acro Duster II. I've had two Mallery pumps and two Piper type pumps, a Fauset and a Airtex. The Airtex is on the plane at this time and seems to be working fine. All five pumps have a total working time of about fifteen minutes. The only time I use them is when I swich tanks. They all mounted below the fuel tank and the hook up is the same as your Schematic on page 13 in October 1991 magazine. The last pump went out on me over Flagstaff Arizona on our way back to Salt Lake from the Copper State Fly In, in Prescott.

It was a real pleasure to see a lot of the old gang there including Bill Clause our "Prez". We had a lot of fun together and Bill gave me alot of good tips on the Acro Duster II.

Anyway, back to the fuel pumps. I don't know why they won't work, and I wouldn't trust them for a five minute flight! What I did to solve the problem was to take an automotive mechanic fuel pump, in my case it was a pump off a 1970-71 Toyota 4 cyl. which has $\frac{1}{8}$ " pipe threads so you can use A/N fittings and mount it in the rear cockpit.

Here is a diagram of the way I installed mine, and it pumps like crazy!

Note: This aircraft uses an Ellison Throttle Body Injector and only requires 2#to6# lbs PSI comperable to a float carbs,press carbs and fuel injection wont work WITH TH'S UNIT.



See page 13 October 1991 Star Duster Magazine.

Note: Re tap Toyota fuel pump inlet and outlet with $\frac{1}{8}$ " pipe tap.

Sincerely, Glen Olsen

N34LG



INSTRUMENT FLIGHT IN THE STARDUSTER II

Max Bennett
N76GS

Today is the day of your annual cross country trip to Oshkosh. Reservations checked, bag packed (one half of what you need, then divide by 2), Starduster oiled, gassed & polished, sectionals and approach frequencies on board, weekend pass in hand duly stamped by your wife, and your airport is IFR and calling for 400 and 1/2 for the next 6 weeks. Boy!, if I only had an instrument rating, you might be saying.

Well, why not ? There are a lot of reasons why not. The instrument rating itself is a comprehensive knowledge base calling for the study and at least a temporary retention of meteorology, navigation, instrument design, and regulations before the first instrument instruction flight. The flight instruction necessarily requires the pilot to be under the hood while sorting out the sometimes conflicting inputs from instruments, nav receiver, your instructor, and, of course, from your inner ear. This one is usually wrong.

A gyro-equipped panel is necessary to keep the bright side up while in a cloud. At least one communications radio is required, as is an approved nav set. Most lorans do not presently conform to minimum instrument flight standards. If your destination airport requires an ILS approach you need a glide slope receiver & indicator and marker beacon receiver as well. Remember, if you are not flying with a full deck of these goodies you will quickly get into trouble flying into lowering ceilings and visibilities. Non-precision approaches, typically VOR type, can only get you down to 500 to 800 feet over the airport. A 400 ft. broken layer may ruin your day. Of course you have enough fuel to fly to your alternate airport, plus 45 minutes. You do, don't you?

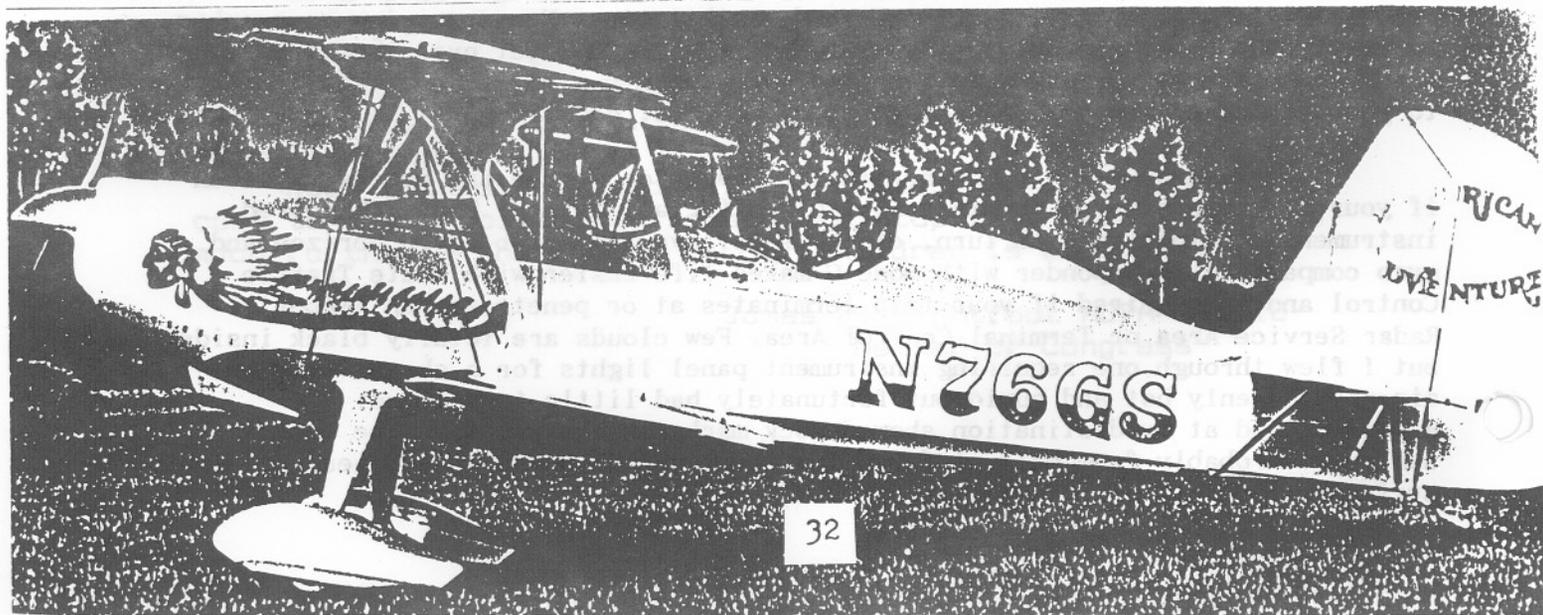
3 working nav lights and a rotating beacon or strobe are necessary, even if your flight starts or terminates within official daylight hours. Required instruments include rate of turn, clock, sensitive altimeter, gyro horizon and gyro compass. A transponder with mode C makes life easier with Route Traffic Control and is required if your trip terminates at or penetrates an Airport Radar Service Area or Terminal Control Area. Few clouds are totally black inside, but I flew through one requiring instrument panel lights for a short time. The air was suddenly hot and humid but fortunately had little turbulence. A walk-around at my destination showed pock marks in the paint on the leading surfaces, probably from hail. I found that biplanes have many, many leading surfaces.

Your flight will be at odd or even altitudes with minimum altitude restrictions so you will commonly be navigating at 3000 to 8000 feet in the east & higher in the west. Outside and inside air temperatures are pretty much the same in a Starduster - you can expect an uncomfortable ride unless protective clothing is worn, including boots and gloves. For those too drivers with open cockpits (the way Lou Stolp intended it), the blast of air curling off of the top wing will be aimed directly at your neck. Over the last 6 years my trip to Oshkosh required warm pants, jacket, neck protection and helmet at IFR altitudes while the ground temps were well above 80 degrees. When the ground temps are below 50 degrees, you can expect stiff fingers (difficult to write) within 1 hour. At the end of 2 hours you will be shaking uncontrollably and your com transmissions will be distorted. As long as the flight proceeds as planned you can survive but what if center wants you to climb for traffic spacing? Or gives you a routing change or hold? The only answer is more goodies in the form of a canopy and heater. And perhaps a larger engine to pull all this stuff off the ground.

Once your Instrument Rating is firmly in hand and your biplane is loaded with expensive gizmos you are not off the official hook. Proficiency and equipment checks are periodically required. 6 hours of logged instrument flight are required each 6 months with 6 instrument approaches. Your altimeter, static system and transponder/mode C have to be checked every 2 years; a VOR check every 30 days. The airworthiness certificate and current registration must be on board.

A casual scan through the paragraphs of Part 91 of the Federal Air Regs that I have waltzed you through should bring out the realization that Uncle Sam does not want you mucking around in controlled airspace without demonstrated skills and a commitment to stick to the rules of the road.

OK, OK, is there anything on the PLUS side that would justify all this time, effort and expense? Well, there is the hard-won capability to depart your home base when the local weather is the aforementioned 400 and 1/2 for the next 6 weeks. It is also much easier to enter the Oshkosh traffic pattern from an IFR flight because of the normal IFR spacing. And finally there is the realization, while flying in IFR conditions in an open cockpit biplane, your flying is completely devoid of boredom. You have become a true soulmate to the airmail pilots of the '20s.



* **FIXED PITCH PROPELLER INFORMATION** From the Cessna 150-152 News: (excerpts)

McCauley:

There is no recommended overhaul for fixed pitch propellers. They shall be reconditioned or repaired as required for blade surface conditions. The propeller mounting bolts torque should be checked at least once a year for metal props. Propeller mounting bolts should be penetrant inspected whenever the propeller is removed from the engine for reconditioning or repair.

Sensenich:

Recommended overhaul period for fixed pitch propellers is 1000 hours. More frequent reconditioning is advisable when minor repairs and accumulated scratches and nicks are numerous. I have found that Sensenich propellers gradually tend to bow forward from normal use...

Fixed Pitch Propeller Bolt Torque-Metal

McCauley

3/8 in bolt,	25 - 30 ft-lbs,	300 - 360 in lbs.
7/16 in bolt,	40 - 45 ft lbs,	480 to 540 in lbs
1/2 in bolt,	55 - 65 ft lbs,	660 - 780 in lbs.

Sensenich

3/8 in bolt,	23 - 25 ft-lbs,	280 - 300 in lbs.
7/16 in bolt,	40 - 45 ft lbs,	480 to 540 in lbs
1/2 in bolt,	60 - 65 ft lbs,	720 - 780 in lbs.

Check all prop spinner plates for cracks. To my knowledge, there are no repairs allowed on spinners or spinner plates.

When sending a prop with a spacer for repair, please include the spacer. The prop and spacer are a matched pair and should be balanced together. Do not use a screwdriver or chisel to drive between the prop and spacer as this damages the two milled surfaces.

Check the aircraft tires and struts for proper inflation. When power is applied, the nose strut and tire compress, bringing the prop tips closer to the ground which allows the prop to pick up loose material in its path.

A log book entry is required when installing a reconditioned or replacement propeller. Be sure that the maintenance release is placed in the aircraft logs.

TORQUE VALUES FOR CLEVELAND WHEELS: Dean Diebel, Orlando, FL. asked us about torque values for Cleveland wheels. Since we didn't have the answer, he contacted the manufacturer and provided us with the following:

BEARING PRELOAD: Torque wheel nut to 50 ft. lbs. to set the bearings. Back the wheel nut off to 0 ft. lbs., then re-torque wheel nut to 10-15 ft. lbs. (no side play)

BRAKE CALIPER SLIDE PINS: Lubricate with either dry graphite or by silicone lubricant, spray etc. The point brought out here is to avoid using a lubricant which will attract dirt/sand, etc.

TIE BOLTS: Recommended safety wire is #32. These bolts secure the brake pad onto the caliper.

WHEEL BEARINGS: These come satisfactorily packed generally, but if more grease is desired or if the bearings are being repacked, a lithium base grease is satisfactory.

The Annual Starduster Open House's 12th Anniversary

Mark
Your
Calendars
For

When = MAY 1st, 2nd, & 3rd 1992

Where = Flabob Airport, 4301 Twining
Riverside, California 92509

Why = Eat, Drink & Share Stories

We want to fill Flabob with biplanes,
Starduster's Aeroduster's, V-Star's, Starlet's
or anyother homebuilt enthusiast. We want you
here with your airplane. What's really
happenings is its our 12th anniversary. Come
join us for a weekend of fun. Trophies to be
awarded to winning aircraft.

**RIVERSIDE—RUBIDOUX; FLA-BOB. RIR. 764'. 3N. 33°59.3'N
117°24.5'W. (714) 683-2309. Att days. F80-100. S5. KPRO
1440, 2140/4. Ctn: 1340' MSL mtn 1/2 mi SE. Birds over Indfill SE.
Stray dogs. No ultralghts. Poles ry 6. P-Ins rys 6 & 24.**

CTAF
U-122.8

TPA
Days-1404 MSL
Nghts-1800 MSL

ARSA
ONTARIO

FSS: ONTARIO
(LC) 825-0749

VOR FREQ RAD NM
PDZ 112.20 039° 7
RAL 112.4 028° 3

Blue Lagoon Avtn (U)
684-8844 Park
Chv 80-100

Riverside Actt Repair
369-8493 Maint

T's Avtn
687-5750
Maint

Lasley Avtn
683-9421 Maint

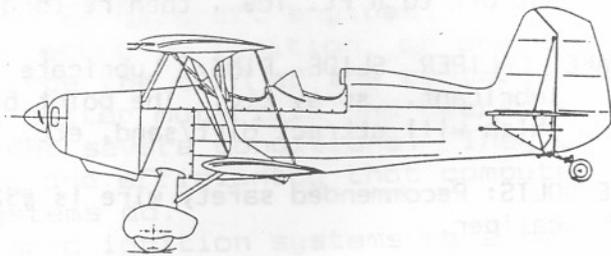
Ed Marquart
683-9582 Maint

Park

Fla-Bob Cafe
683-2309
Park

Adm
Air Exec
683-3963
Maint

L3200

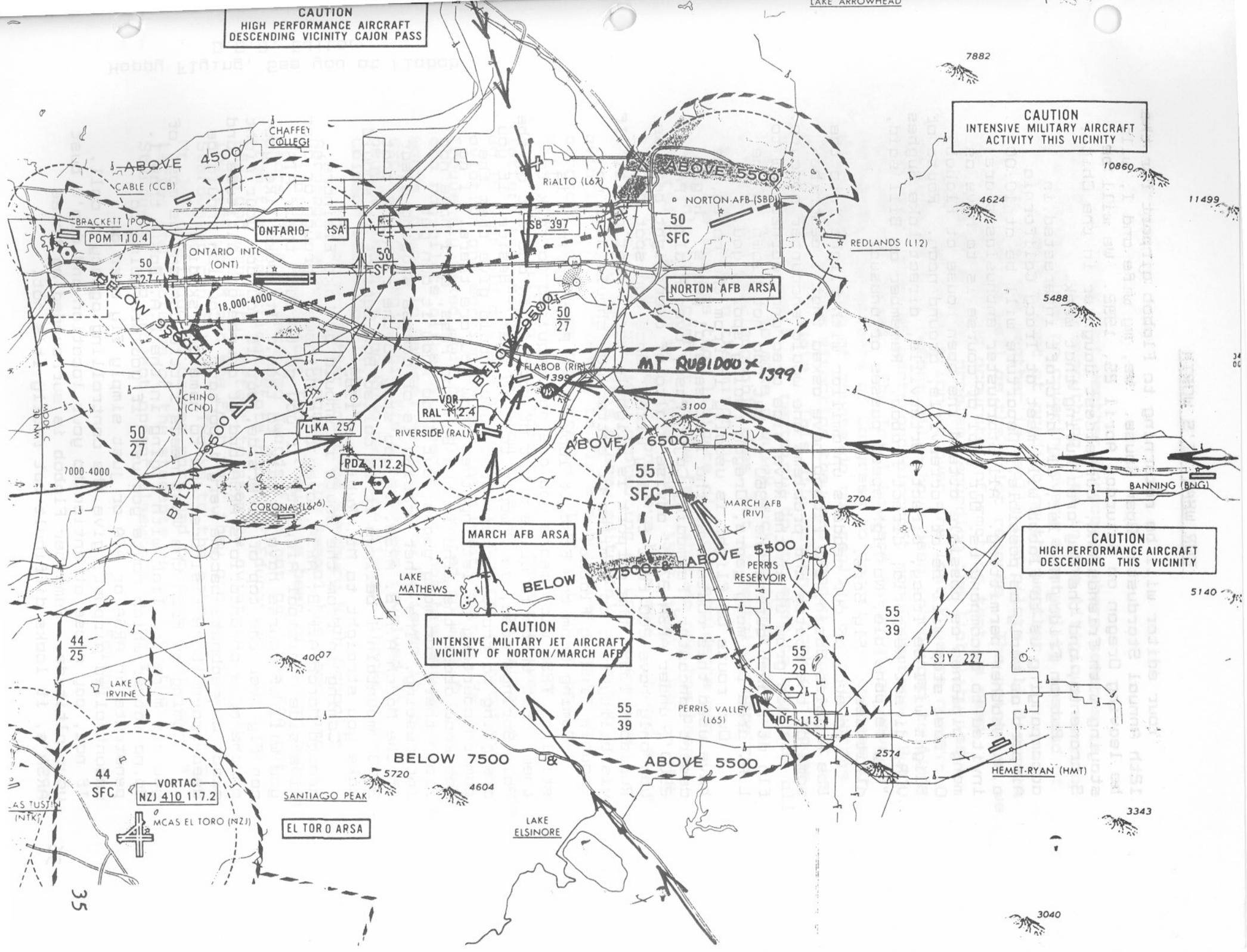


CAUTION
HIGH PERFORMANCE AIRCRAFT
DESCENDING VICINITY CAJON PASS

CAUTION
INTENSIVE MILITARY AIRCRAFT
ACTIVITY THIS VICINITY

CAUTION
HIGH PERFORMANCE AIRCRAFT
DESCENDING THIS VICINITY

CAUTION
INTENSIVE MILITARY JET AIRCRAFT
VICINITY OF NORTON/MARCH AFB



7882

10860

11499

4624

5488

34 00

MT RUBIDOU * 1399'

BANNING (BNG)

5140

MARCH AFB ARSA

MARCH AFB (RIV)

PERRIS RESERVOIR

SIY 227

PERRIS VALLEY (L65)

HEMET-RYAN (HMT)

3343

3040

SANTIAGO PEAK

LAKE ELSINORE

EL TORO ARSA

VORTAC (NZJ) 410.117.2

MCAS EL TORO (NZJ)

44 SFC

BELOW 7500

ABOVE 5500

55 39

55 39

55 29

BELOW

ABOVE 6500

55 SFC

MARCH AFB ARSA

LAKE MATHES

RDZ 112.2

LKA 257

CORONA (L66)

50 27

CHINO (CND)

18,000-4000

ONTARIO INT (ONT)

ONTARIO

POM 110.4

CABLE (CCB)

ABOVE 4500

CHAFFEY COLLEGE

RIALTO (L67)

NORTON AFB ARSA

50 SFC

ABOVE 5500

NORTON AFB (SBD)

REDLANDS (L12)

RIVERSIDE (RAL)

FLABOB (RIV) 1399

50 27

50 27

SB 397

44 25

LAKE IRVINE

4007

AS TUSTIN (INTK)

35

FOR WHAT IT'S WORTH

Your editor will be returning to Flabob airport for the 12th Annual Starduster Open House. We, my wife and I, will be leaving Oregon on Saturday April 25, 1992. We will be staying with friends and, our eldest daughter in the Chico, Sacramento, and the Bay area during that week.

But on Friday May 1st, all aircraft interested in accompanying us to Flabob will meet at Tracy California Airport as early as possible. Departure will be at 10:00 a.m. weather permitting. All Starduster enthusiasts are invited to accompany us. Our goal of course is to have as many biplanes as possible attend the open house at Flabob. Our fuel stop will be at Porterville, around noon. Route of flight will be Tracy, direct Porterville, direct Lake Hughes VOR, direct Hesperia, direct Flabob. Remember as Bill said, "Fly responsible, No high speed passes or unusual altitudes". Fly Safe.

Several of our readers unfamiliar with flight into the Los Angeles Basin, and Flabob have asked that I describe some of the routes and problems one would encounter enroute.

I did grow up in the Riverside area and learned how to fly at Flabob during the 1960's, but had not flown in the L.A. area for many years, Oregon really spoils you.

Our route of flight is usually in from the north, we have used this route over the last several years. High desert Lancaster, Palmdale, Cajon Pass, over Rialto TPA 2500', under ARSA 2700' advise Rialto of overflight because you only have 200 feet to play with. Once you spot Mt. Rubidoux 1399' the airport is slightly north west of it. If visibility is 5 to 7 miles or better you should have no trouble finding Flabob.

Coming from the East it looks like Palm Springs is still a TRSA wich means you are not required to talk to them. But there is quite a bit of traffic in and out of the Palm Springs area, so I would talk to them. Besides if you are going to transit their area, you should give them the common courtesy of letting them know you are there. I do not know about the wind in the Banning Pass, as I have not flown there for many years, but I do know it can get interesting. The other problem is of course staying clear of the March A.F.B. ARSA. If you stay to the right of that 3100' mountain I believe it is called Box Springs, it should take you straight to Mt. Rubidoux 1399'.

Coming in from the South it should be Lake Elsinore, around March A.F.B. ARSA, over Lake Mathews, through or over Riverside Municipal Airport. If you go through their ATIA you will of course have to talk to them. It looks like you can fly over the top of Riverside, but if you do, your right on the edge on Ontario's ARSA and of course you altitude and exact whereabouts become very important. Caution should be used around Lake Elsinore, due to numerous skydivers.

Coming in from the West needs little comment as most of you are more familiar with flying in the L.A. Basin than I. So no matter which route you use, if you are going to penetrate an ARSA or ATIA or just simply fly over an uncontrolled airport, give the controlling agency a call. If not, pay close attention to your location and don't bust your altitude. Remember Flabob is surrounded by three ARSA's, it looks difficult but really it's not.

Happy Flying, See you at Flabob
D.C.B. Editor

"ATTENTION"

Owners and Builders of the Starduster single & two place, Starlet, V-Star, and the Acroduster single & two place models. Your editor, after years of not actively pursuing publication of Starduster History is now continuing to compile a history of all Starduster designed aircraft since 1957. This information will be added to the original Starduster History first printed in 1986.

It is my hope that enough information will be received so that a second printing can take place.

So what I need are N numbers, engine make, weight & balance, name & address of owners & builders, aircraft information, colorful pilots and unusual incidents, as well as a picture of your airplane. All respondents will be first on my list to receive copies of the second printing of Starduster History at a substantially reduced rate.

Listed below are some Starduster & Acroduster items that are still available and may be of interest to you.

Starduster Too & Acroduster Too Items Available List

Starduster History [first printing 1986], approximately 100 pages, with color pictures and information about one of the all time favorite homebuilts biplanes. Softbound \$29.95

Misc. Video Tape of Starduster Too's. Homemade - some good quality some poor. \$25.00

List of names and addresses and the N numbers of all Starduster Too's currently registered with F.A.A. \$15.00

Copy of Stardusters International News Letter 1970 thru 1974. (19 issues) \$25.00

Starduster Magazine - Back issues from 1991 available. \$3.00 each.

List of names, addresses and N numbers of all Acroduster Too's currently registered with F.A.A. (also some builders) \$5.00

Copy of Magazine articles and pilot report on the Acroduster Too. \$5.00

Copies of all Acroduster Technical Tips, Plan Revisions, and articles on the Acroduster Too that have appeared in Starduster Magazine. (1975 thru 1987). \$10.00

Along with the items listed above, your editor has recently acquired the rights and the original Masters of Ivan Clede's beautiful cutaway drawing of the Starduster Too. At the present time I am only able to offer a 18" x 24" black and white poster of this incredible drawing. However I am currently attempting to have them printed once again in color. I should no by the next issue of Starduster Magazine what the price will be. B&W 18"x24" Starduster Cutaway \$5.00

CLASSIFIEDS

ADVERTISING CLOSING DATES : DECEMBER 1, MARCH 1, JUNE 1, & SEPTEMBER 1.
CLASSIFIED ADVERTISING RATES : \$3.00 PER COLUMN INCH, MINIMUM CHARGE \$3.00.
MAKE CHECKS PAYABLE TO STOLP STARDUSTER CORPORATION. THANK YOU.

STARDUSTER TOO N42LP 180 fixed pitch, new full instrument panel, King 155 Nav Com, Full 2 place canopy. Asking \$28,000 call Bill at hm(714)597-9967 wk(714)597-7821.

ACRODUSTER TOO Basic fuselage - tail, horizontal verticle surfaces and landing gear material. Asking \$3,500 call Marcus at (208)529-8070.

'77 STARDUSTER TOO 260 hp Lycoming, 486TTAF, 486SMOH, inverted oil/fuel, NAV/COM, Loran, Mode C, transponder, in tercom, excellent inside/out. Award winning showplane Nov.91 annual. \$38,000 - (919)655-3830 nights.

1981 ACRODUSTER TOO, 235 hrs TTA, 300+ HP Lyc. IO-540, 167 SMOH, constant speed prop, Christen inverted fuel/oil system, sight gauge, gell cell battery, two place canopy, Haigh tail wheel,ELT, Terra TXN-960 Nav/Com, EGT/CHT. Aircraft is in excellent condition. asking \$37,000 call (508)994-5957 eve.

ACRODUSTER TOO FUSEALGE welded up with vertical stabilizer and rudder. No landing gear or horizontal stabilizer. Primed and ready to paint. \$995. Days (404)275-3880 nights (404)694-4162.

STARDUSTER TOO 350 SMOH 225 Cont., Aeronca Chief 65H, 350 hrs. STOH, Zenair CH150, acro kit, wings and center section complete. Trade all three for Pitts or like aircraft. Call (803) 877-2804.

1986 STOLP STARLET 56TTAE, 0-235, 1C, damaged husband says must sell. Iowa (712)297-7117.

STARDUSTER I 920TT, 340 SMOH, Lycoming 0-320, 150 hp, inverted oil/fuel, smoke, removable canopy, no electric, Comm radio, spring gear, \$12,800. Call (919)237-8586 home, (919)399-4630 work.

WANTED ACRODUSTER TOO project with welded fuselage. Quality must be excellent. Call (615)885-1206.

STARDUSTER TOO 470TT, \$18,000. (707)578-5389 call after 6:00 p.m. weekdays and anytime weekends.

STARDUSTER ONE, 1981, 150TT, IO-320 with inverted oil & fuel, A&P built, transponder with encoder, NAV/COM, remote cmpass. For sale or trade \$18K with engine, \$13K without engine. Gary (310)694-3098 California.

ACRODUSTER ONE project, fuselage on gears, wings ready for cover, engine mount 150-200 HP, \$7,500 in parts. Asking \$2,600. Call (914)986-4444 or (914)856-4440.

STARDUSTER TOO 80% COMPLETE, brand new FWF zero time 180 hp 0-360 A1G6 from factory. All sheet metal work done, ready for cover, all flight instruments new, new controllable prop, spinner, new wheel pants and tires. (412)533-3911.

Beautiful STOLP V-STAR, \$10,000 cash or trade (805)942-0428.

1987 STARDUSTER TOO 180 hp Lycoming 80TTAE NavCom, intercom, dual controls and instruments, a true "9" in and out. \$28,500 OBO. (601)773-9889 days (601)773-2900 nights.

STARDUSTER TOO, professionally built, 820 TTAF&E, A10-360-A1A inverted systems, spades canopy, KX-175, transponder/encoder, NDH, sell/trade Pitts S1S \$28,000 (806)797-4138.

STARDUSTER TOO PROJECT, fuselage on gear, tail feathers complete, 3 wing center section parts for 4th T-deck. Make offer, OK (405)227-2760.

STARDUSTER TOO PROJECT, fuselage complete, tail feathers done, have wing kit. excellent work, materials to finish. Call Garold at (816)582-2233.

STARDUSTER TOO 240 hp Cont., 985 hrs. TSCMO, project over 50% complete. Most parts available to finish. (904)771-0484.

STARDUSTER TOO PROJECT over 90% complete, all covered, 0-470 engine, prop included. Asking \$9,500 (805) 688-8939 days; (805) 687-5636 eves.

ACRODUSTER TOO IO-540, 850 SMOH, 250 TTAF, Christen inverted oil and fuel. Edo-Aire 720. Two security chutes. Beautiful inside/out. \$40,000 (714)661-8380 eves.

CANOPIES - Acrodusters & Stardusters. custom canopies from 3 view drawings. THE AIRPLANE PLASTICS CO., 8300 Dayton Rd, Fairborn, OH 45324. Call (513)864-5607 or send a SASE for information.

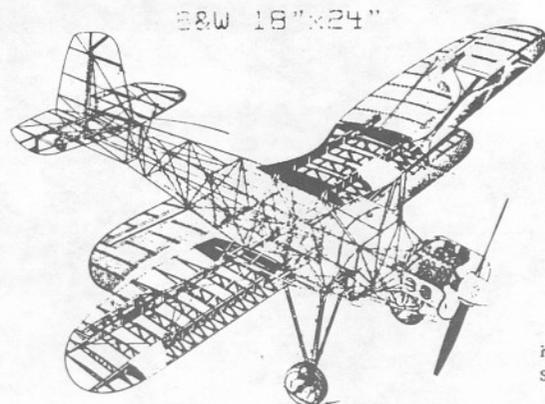
AS ALWAYS YOUR ORDERS WILL RECEIVE OUR PROMPT ATTENTION, QUALITY PRODUCTS AND WORKMANSHIP AT A COMPETITIVE PRICE.

STARDUSTER TOO I STRUT & WING ROOT FAIRINGS - Also modified nose bowl and turtledeck. Functional designs that improve performance & appearance. All parts quality hand laid fiberglass. Call or write AEROWERKS, 1105 Shady Oaks Dr., Denton, TX 76205, (817)381-0754.

STARDUSTER SA-100 Lycoming 0-290G (125HP) with new Warnke "almost C/S prop" 225TTAF, 100 SMOH. Non electric but 90 channel with gel cell battery (and charger). Fun airplane, outstanding appearance. Hangared Redlands. \$9,750 (714) 794-2420. Ask for Steve.

WANTED STARDUSTER TOO FLYING WIRES, I have 5 flying and landing wires and need 10. Does anyone know of a wrecked Starduster Too where some of the wires are salvageable. Contact Dan Baxter (503) 639-8792.

Buy your aircraft needs from STARDUSTER CORPORATION, much hardware and material, Bill Clouse a good guy to buy from. VISA now accepted. (714)686-7943 or 1-800-833-9102.



Starduster Cutaway \$5.00

STARDUSTER HISTORY DAVID C. BAXTER
(503) 639-8792

5725 S.W. McEwan Rd. Lake Oswego, OR 97035

