

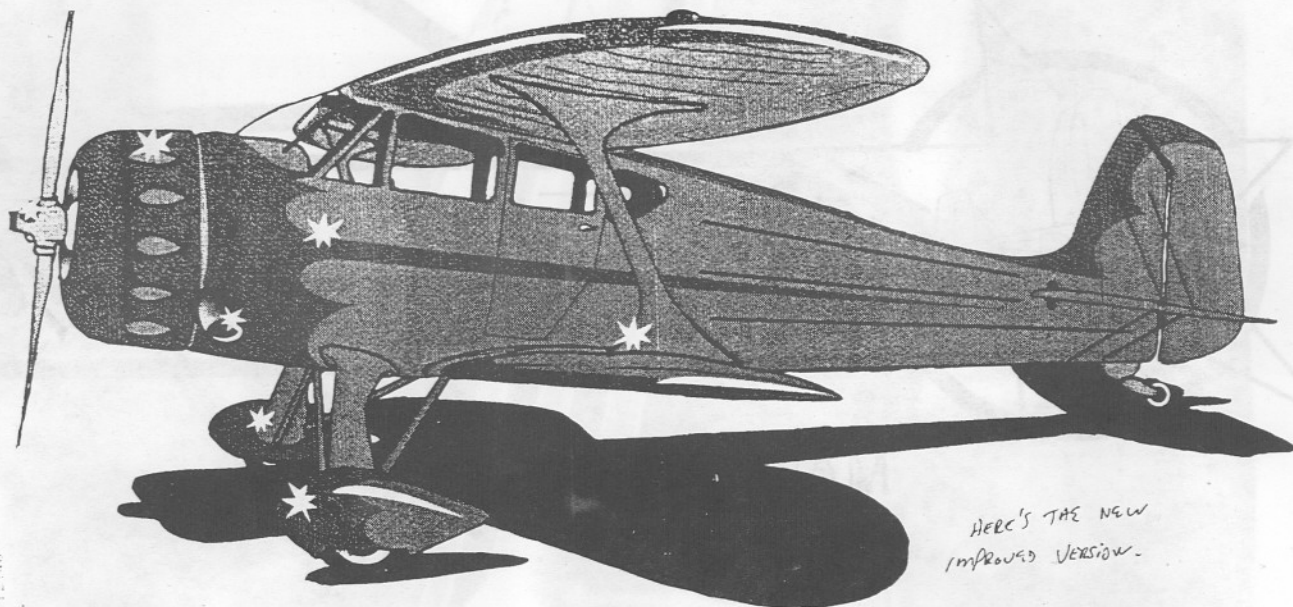


MAGAZINE



Dedicated to the  
ACTIVE Homebuilders

OCTOBER 1991



## Starduster Executive

### PREZ COMMENTS

HAD A GREAT TIME AT OSHKOSH 91 - CAN TRULY SAY THAT AFTER 18 VISITS - ALWAYS A PLEASURE TO MEET OWNERS & BUILDERS I USUALLY ONLY GET TO TALK TO ON PHONE - TUES. NITE AT ACEE DUCEE IS ALWAYS THE HIGHLIGHT OF MY TRIP TO OSHKOSH. THIS YEAR WAS THE BEST.

PROGRESS ON THE "EXECUTIVE" IS SLOW-ROB HARRISON IS DOING ENGINEERING WORK AND IS SOON TO BE DONE WITH RIB DRAWINGS-ELLIPTICAL TAPERED WINGS-HOPEFULLY AT MAY OPEN HOUSE WILL HAVE WINGS UNDER CONSTRUCTION & FUSE ALSO.

ROB HARRISON, MAN OF MANY HATS-STAR DUSTER II BUILDER OWNER-ACRODUSTER II BUILDER-ATTORNEY, AERONAUTICAL ENGINEERING CONSULTANT ET AL, MOST OF ALL WILLING TO HELP WITH "THE EXECUTIVE"

MY CONGRATS TO THOSE WHO RECEIVED AWARDS & PERSONAL THANKS TO ALL THAT CAME TO OSHKOSH & OUR GATHERING OF FRIENDS ALREADY LOOKING FORWARD TO MAY 92 OPEN HOUSE.

THANKS FOR ALL YOUR SUPPORT IN STARDUSTER CORP & YOUR CONFIDENCE IN ME.

"B.C." PREZ

-B.C.-

THIS MAGAZINE USES MATERIAL SUBMITTED BY IT'S READERS. SOME ARTICLES OR STATEMENTS MAY NOT BE IN AGREEMENT WITH STOLP STARDUSTER CORPORATION OR IT'S EDITOR. INFORMATION AND ARTICLES USED ARE AT THE READERS RISK AND STARDUSTER MAGAZINE ASSUMES NO LIABILITY.

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

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FRONT COVER - N300AD A beautiful 300 hp Acroduster Too by Lowell Slatter 656 Monts Vista, Twin Falls, Idaho 83301. Picture taken at NW EAA Fly-in in Arlington, Washington.

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BACK COVER -N96576, Anna Peebles, your editor. Picture taken at Oshkosh 1991, just prior to our flight together. What a pretty young girl who will certainly grow up to be a real heartbreaker.

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SUBSCRIBE TO THE 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 MAILING (EXCLUDING CANADA). 1992

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THE EDITOR IS ALWAYS LOOKING FOR TECHNICAL 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 ARTICLES SUBMITTED.

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## ODDS & ENDS FROM YOUR EDITOR

I would like to begin my comments by asking all of you owners and builders to contribute any building or flying tips that may be of interest to our readers. Your editor will except and print anything along these lines that would be helpful to other people building or flying the Starduster line of aircraft.

On another note, I have been asked by many prospective builders about buying half finished projects. Many times when purchasing a project you can buy at yesterdays prices and get the labor thrown in for free. However there are several things to consider before purchasing an unfinished airplane such as a Starduster or Acroduster. When deciding whether to buy a particular project one should take along a builder or an A & P who is familiar with steel tube welding and wood wing construction. His knowledge could save you untold troubles, along with evaluating the quality of workmanship, amount of hardware, instruments, wheels & brakes, sheet metal, and other miscellaneous items.

The title of the aircraft should also be considered, it is very important to purchase a project that has never been titled. The main reason for this is so that your name can appear on the title as the manufacturer. This is very important, as the manufacturer you are intitled to apply for a Repairmans Certificate, this allows you to be able to do all the required work (I.E.) annual inspection, as well as minor maintenance or major repairs and grants you the authority to sign the log books within the scope of FAR Part #43, using your Repairmans Certificate #number, just like any other A & P. However your certificate is only good for the aircraft built by you. This in its self is a substantial benefit over owning a Standard Catagory Aircraft.

Several people have called to relay problems encountered with FAA Field Service District Offices regarding registration of half finished projects that had recently been purchased. The only initial contact you should have with FAA FSDO is to have them send you the packet of information on building and registering your homebuilt aircraft. You shouldn't offer construction details as to the percentage of construction completed. The bill of sale should read "Aircraft Parts and Material". Many FAA FSDO inspectors assume that if the wings are built and the fuselage is welded, that you are 75 percent done, when nothing could be further from the truth. Bill Clouse on several occasions has had to write notarized statments to the effect that even this much work does not constitute 51%, and when comparing the Starduster projects to some kits its easy to see why. The percentage of aircraft completed is subject to interpretation and is a grey area, judgement call from one FSDO to another and can be substantially different even between inspectors at the same Field Service District Office!

The very first thing you should do after purchasing the project is apply for an N# number, because all correspondence is based on that number.

After receiving the number, the application for registration should then be filled out and sent in. The sooner the better, as this will help establish you, as the builder long before the aircraft is finished. Having the title in your name will also be of great help during the inspection and review of your paperwork prior to your first flight.

Another grey area subject to interpretation is just who the builder is. If builder "A" starts and completes only 25% of the aircraft and then sells it to builder "B" who then completes 25% more and then sells it to builder "C" who completes the remaining 50% and flies the aircraft, who is the real builder? The information packet states that 51% must be built by the amateur builder for education and recreation, and obviously must be a judgement call by the inspector.

The best way of course would be not to mention builder "A" or "B", as to some inspectors interpretation no one built 51% so theoretically the aircraft is not eligible to be registered to anyone. But by getting a bill of sale for "Aircraft Parts and Materials", keeping track of all items purchased, and by all means keeping a builders log of work you have done, along with pictures of you and your dog in the uncompleted fuselage are the best way to insure legal ownership as the builder of a homebuilt biplane.

EDITOR - D.C.B.

#### Aviation Accidents Down, Or Are They Really?

The number of General Aviation accidents has continued to decline according to the most recent N.T.B.S. statistics. There were 687 general aviation airplane accidents during the first six months of this year. That is 183 fewer accidents than the first half of 1990. That shows more than a 20% decrease from last year and a 25% decrease compared to the first half of 1989. Fatal accidents declined to 151 in the first half of this year, compared to the 166 in 1990 and the 179 in 1989 for the same period.

The question is are we really flying safer, Are we being more careful, Are we doing a more complete preflight, Are we maintaining our aircraft better, Or are we just luckier? I don't think we are, in my opinion, its just that there are fewer General Aviation aircraft flying than in the past. The reasons for that being as follows; the expense, restricted airspace, more expensive and sophisticated equipment, and the more subtle view of government as well as politicians believing that we are not needed. Thus nothing meaningful is being done to help General Aviation. As each pilot and aircraft owner quits or sells his airplane the cost goes up for the few of us that are left, and the opposition to the high cost and to government restrictions goes down. But unless all facets of aviation unite and go down the road together we won't survive, and as Russ Stone once said, "Don't run into each other and don't crash. This in it self will help General Aviation immeasurably".

EDITOR - D.C.B.

## BIRTH OF AN AD

The Airworthiness Directive, or what is usually referred to in aviation language as simply as AD, is an amendment to Federal Air Regulation Part 39. Once issued, AD's have the force of law and they remain in force until superseded or revoked. The AD is written against all types of aeronautical products. Unfortunately an AD often requires inspections and work which would not be necessary if all aircraft owners and maintenance personnel had been utilizing the information provided in publications made available by Lycoming.

As we look back about ten years to the beginning of this case, let us hope that what is written here will be a lesson in safety for aircraft owners. Over the years the Lycoming Flyer has stressed many times that use of manufacturer publications is absolutely essential to maintenance practices which lead to safe flying.

When an aircraft or engine part develops an unexpected problem during its period of field use, or engine part develops an unexpected problem during its period of field use, and the manufacturer becomes aware of that problem, there are several publications which can be used to communicate this information to maintenance facilities. Which publication is used depends upon the urgency of the situation. A Lycoming Service Bulletin is printed in red, and always indicates a high degree of urgency. The information and procedures provided in a bulletin must be observed for safety reasons, and therefore are considered by the manufacturer to be mandatory. Service Instructions and Service Letters give maintenance information with somewhat lower levels of urgency. The Service Letter is the least urgent of the three. Although there are many good maintenance facilities, it is unfortunate that there are those which either do not have the necessary publications available or do not take the information seriously. Although owners are ultimately responsible for the airworthiness of their aircraft, some choose to save a few dollars, and risk their lives until an AD makes a recommended procedure or part mandatory. When an AD covering a particular product has been issued, most owners take action to comply.

To begin this review of events, we go back to May of 1982 when Lycoming Service Bulletin No. 240K was issued. This bulletin deals with the parts of a Lycoming engine which are to be replaced at overhaul. Where a product improvement is to be incorporated, it is often recommended that it be done at overhaul. In the case of a four-cylinder engines with a rear mounted governor, this publication clearly stated that the aluminum elbow which connects the propeller governor oil line at the front crankcase should be replaced with a steel elbow at overhaul. Engines have been found in service today which were overhauled in the field and which still have the aluminum elbow. This is an indication that someone was not aware of the bulletin or simply chose not to comply. They reuse the old aluminum elbow. The subject of this propeller governor oil line was addressed again in Part II of service Instruction No. 1435 which was issued in April of 1986. As a product improvement, the line was to come equipped with a steel nut which could join the steel elbow previously discussed. The instruction also has a drawing which shows where the line is attached to the engine and that it is to be supported with clamps. Failure to support the line as shown can lead to a chafed or broken line, oil loss, and possible engine failure. It has become evident that many individuals working on these engines do not have the information provided in this service instruction, or do not understand the need to correctly clamp and support this type of line. These

examples of poor maintenance practice have been found in the course of accident investigations.

Accident investigators were finding that some Lycoming engines with rear mounted governors had indeed failed from oil starvation; the oil had been lost because a break in the propeller governor oil line. Investigations also revealed that the breaks were occurring in engines where the propeller governor oil line was not supported like recommended. In all cases, one or both of the Textron Lycoming supplied governor oil line clamps and/or supports, which had been installed at the plant, were missing. Maintenance records indicate very poor attention to detail in several of these cases. In one case the steel line failed and was replaced, but the supporting clamps were still not installed. In another case, a broken clamp was removed from the line, but it was not replaced. The accidents which resulted from these poor maintenance practices are ones that could have been prevented.

In the interest of safety, it was necessary to get the attention of those who were not following good maintenance practice. Utilizing the publication which would show the most urgency, Lycoming instead issued Service Bulletin No.488 in September of 1989. Entitled "Propeller Governor Line Support", Service Bulletin No.488 required an inspection of the Propeller Governor Oil Line on all four-cylinder engines with rear mounted governor within the next 25 hours of operation, and at overhaul.

The engine failures which have resulted from improper maintenance of the propeller governor oil line are unfortunate reminders of importance of compliance with manufacturers publications. Because there were too many who failed to follow these instructions voluntarily, it became necessary for the FAA to issue Airworthiness Directive 90-04-06 in February of 1990. The AD is the law and should be complied with. It requires an inspection of the propeller governor oil line within 25 hours of operation. Any damage found, or improper installation of the support clamps, even if no damage is found, would require that that line be changed. It also requires that aluminum fittings used in installation of the line be removed from service and replaced with the steel fittings which Lycoming has been recommending for years.

For the information of those concerned, FAR 91.163 places the primary responsibility for maintaining the airworthiness of an aircraft, including compliance with Airworthiness Directives, upon the owner or operator. In addition, FAR 91.173 also requires aircraft owners and operators to maintain records which include the current status of applicable ADs. In spite of those requirements, and more than a year after AD 90-04-06 was issued, accident investigators have recently found an aircraft in which there was no compliance with this AD. It is also interesting to note that this aircraft had its annual inspection in the interim.

For those individuals complying with AD 90-04-006, the information Supplement 1 to Service Instruction 1435 may be of interest. This supplement authorizes the use of flexible hose in place of the existing stainless steel tube assembly for the propeller governor oil line on engines with rear mounted governors. It further states that "Textron Lycoming teflon hoses with steel braiding and firesleeving conforming to FAA ISO-C53A - Type 'D' specification must be used for this installation." The supplement provides part numbers for various hose lengths which may be needed and it also provides installation instructions.

There is a message in all of this. Use of manufacturer publications is vital to aircraft safety. Overhaul manuals, parts catalogs, and the service letters, instructions, and bulletins provide the data needed to accomplish maintenance on an aircraft or engine. These Lycoming publications, their cost, and ordering instructions are found in the latest version of Service Letter No.L114. Some shops which maintain aircraft do not have a publication library for reference. Others do not use the reference materials. In still other cases, an owner may be advised of a manufacturer recommendation, and choose to ignore it because of the cost. In the interest of safety, the person or shop doing maintenance on an airplane should have and use the necessary reference materials; owners should insist on it, and they should also accept recommendations which are made to enhance their flying safety. Attention to this detail of aircraft ownership may serve a two-fold service: (1) saving your aircraft from damage and yourself from embarrassment, and (2) possibly helping to eliminate the necessity for the issuance of additional Airworthiness Directives.

Lycoming Flyer April 1991 - Issue No.50

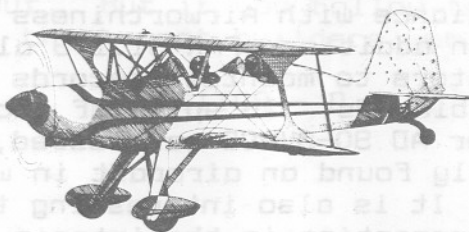
Editor : Ken W. Johnson

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### **TEXTRON Lycoming**

Williamsport Plant  
Textron Lycoming/Subsidiary of Textron Inc.  
652 Oliver Street  
Williamsport, PA 17701 USA  
717/323-6181



## SAFETY TIPS

Aircraft owners should understand that Textron Lycoming considers compliance with Service Bulletins to be MANDATORY. If your fixed wing aircraft is powered by a Lycoming piston engine, the requirements of Service Bulletin No.388A should not be overlooked. For fixed wing aircraft, inspections begin at mid-point of engine service life, as recommended in Lycoming Service Letter 201. There are two purposes for this critical inspection procedure. The first is to determine if wear has caused excessive exhaust valve guide clearance. Excessive valve guide clearance may eventually cause the exhaust valve to break. The second purpose of the inspection is to determine if there has been lead carbon buildup in the exhaust valve guide, which, has resulted in insufficient valve guide clearance. Too little clearance between the valve stem and guide may result in a sticking valve. These kinds of failure are preventable if aircraft owners will require SB 388A be complied with at the appropriate inspection intervals, and that appropriate log book entry attest to compliance with the Service Bulletin.

[How should you operate your aircraft? The Pilots Operating Handbook is the final authority!]

## SERVICE BULLETINS, LETTERS, INSTRUCTIONS PUBLISHED FROM DECEMBER 1, 1989 To FEBRUARY 28, 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 aircraft engines. A subscription may be obtained through any Textron Lycoming distributor or directly from 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:

- 369H Engine inspection after Overspeed or Overboost - All Textron Lycoming piston engines.
- 411B Adapter Kit for Magneto Isolation Drive - Certain O-360-A3A, A4A, A4J, and IO-360-B4A engines. See Bulletin for serial numbers and ship dates.
- 475A Crankshaft Gear Modification and Assembly Procedures - All Textron Lycoming Direct Drive Piston Aircraft Engines except: O-320-H, O-360-E, LTO-360-E and TIO-541 series engines.
- 488A & Supple- Propeller Governor Line Support - All Textron ment 1 Lycoming four-cylinder engines with rear mounted governor. Corrects part number in Piper Aircraft Corporation note on page 2 of 2.

- 489A Oil Sump Baffle Assembly Inspection - All Textron Lycoming six-cylinder fuel injected engines which incorporate Baffle Assembly P/N LW-13383.
- 491A Inspection of Exhaust Transition Bolts - TIO-540-AE2A engine installed in Piper Malibu Mirage Aircraft. See bulletin for serial numbers to which Part I and Part II apply.
- 492 Redesigned V-Band Coupling for Tailpipe Installation - All TIO-540-AE2A engines with serial numbers up to L-9156-61A and also L-9158-61A and L9159-61A.
- 494 Installation of Restricted Fuel Pump Vent Fitting - TIO-540-C1A, -E1A, -G1A, -H1A, -AA1AD, -AB1AD, AF1A series with serial numbers to an including L-9244-61/61A.
- 495 Reprint of Precision Airmotive Corporation Service Bulletin MSA-1 - Subject : Replacement of composite floats with metal floats. - All Textron Lycoming piston aircraft engines employing Marvel-Schebler carburetors.
- 496 Reprint of Lear Romec Service Bulletin 101SB019 - Subject : Rotary Fuel Pump - Relief Valve Diaphragm Replacement - All Textron Lycoming engine series with applicable fuel pump models and serial numbers listed in this publication.
- 497 Installation of new, restricted Fuel Pump Vent Fittings in AN Drive Fuel Pumps - See bulletin for engine models affected and fittings to be used.

#### SERVICE INSTRUCTIONS

- 1098E Propeller Flange Bushing Location - All Textron Lycoming direct drive engines.
- 1125B Alternate Crankcase Parting Surface Sealants - All Textron Lycoming Opposed Cylinder Engines.
- 1334A Crankcase Tappet Bore Repair - All Textron Lycoming reciprocating aircraft engines.
- Supplement 1 Adjustment of the Linkage Rod between the Fuel Injector and the Variable Pressure Controller - TIO-540-AE2A.
- 1442 Improve Oil Filter Bypass Valve - All Textron Lycoming piston engines with dual magneto accessory housing.
- 1447A Light Weight Starter Installation Instructions - All Textron Lycoming direct drive piston engines except the IO-720 and those engines with alternators or compressors mounted on the left side.

- 1448 Installation of Tailpipe Heater Muffler Covers -  
TIO-540-AE2A engine installed in Piper Malibu  
Mirage aircraft.
- 1449 Installation of Roadmaster Turbocharger (46A21184)  
TO/TIO-360-C1A6D; TO-360-F1A6D.
- 1450 Alternate Connecting Rod Bolt and Torque  
Application - Textron Lycoming engines using  
Connecting Rod Assembly P/N LW-11750 or Connecting  
Rod Assembly P/N LW-13865.
- 1451 Alternator, Starter and Compressor Installation -  
All TIO-540-AE2A engines.
- 1452 Reindexing of Prop Flange Bushings - O-360-C1G  
engines installed in Christen Husky aircraft with  
serial numbers up to and including L-32584-36A.

### SERVICE LETTERS

- L201C Recommended Time Between Overhaul Periods - All  
Textron Lycoming Piston Aircraft Engines.
- L228 Cracking of Cylinder-Head Exhaust Port - All field  
reconditioned, parallel-valve cylinder heads.

The above information was supplied by the  
April 1991 Issue of Lycoming Flyer.

# AVCO LYCOMING CERTIFICATED AIRCRAFT ENGINES

SSP 977

DECEMBER 1977

Suffix '3' on VO-540 model designation indicates six third order counterweights.

Suffix 'S' on O-540 and IO-540 model designation indicates one fifth and one sixth order counterweights.

Suffix '6' on four cylinder model designation indicates one sixth and one eighth order counterweights.

Suffix '6' on six cylinder model designation indicates one sixth and five third order counterweights.

Suffix 'D' on model designation (4th or 5th character) indicates dual magnetos in single housing.

\* - No longer in production.

\*\* - O-480-1 with piston cooling oil jets will have suffix A after serial number of engine.

#### CODE

A - Aerobatic	I - Fuel Injected	O - Opposed Cylinders
AE - Aerobatic Engine	L - Left Hand Rotation	S - Supercharged
G - Geared	Cr - Crankshaft	T - Turbo-supercharged
H - Helicopter	M - Drone	V - Vertical

The digit "1" in the displacement designation (TIO-541) indicates model has integral accessory housing.

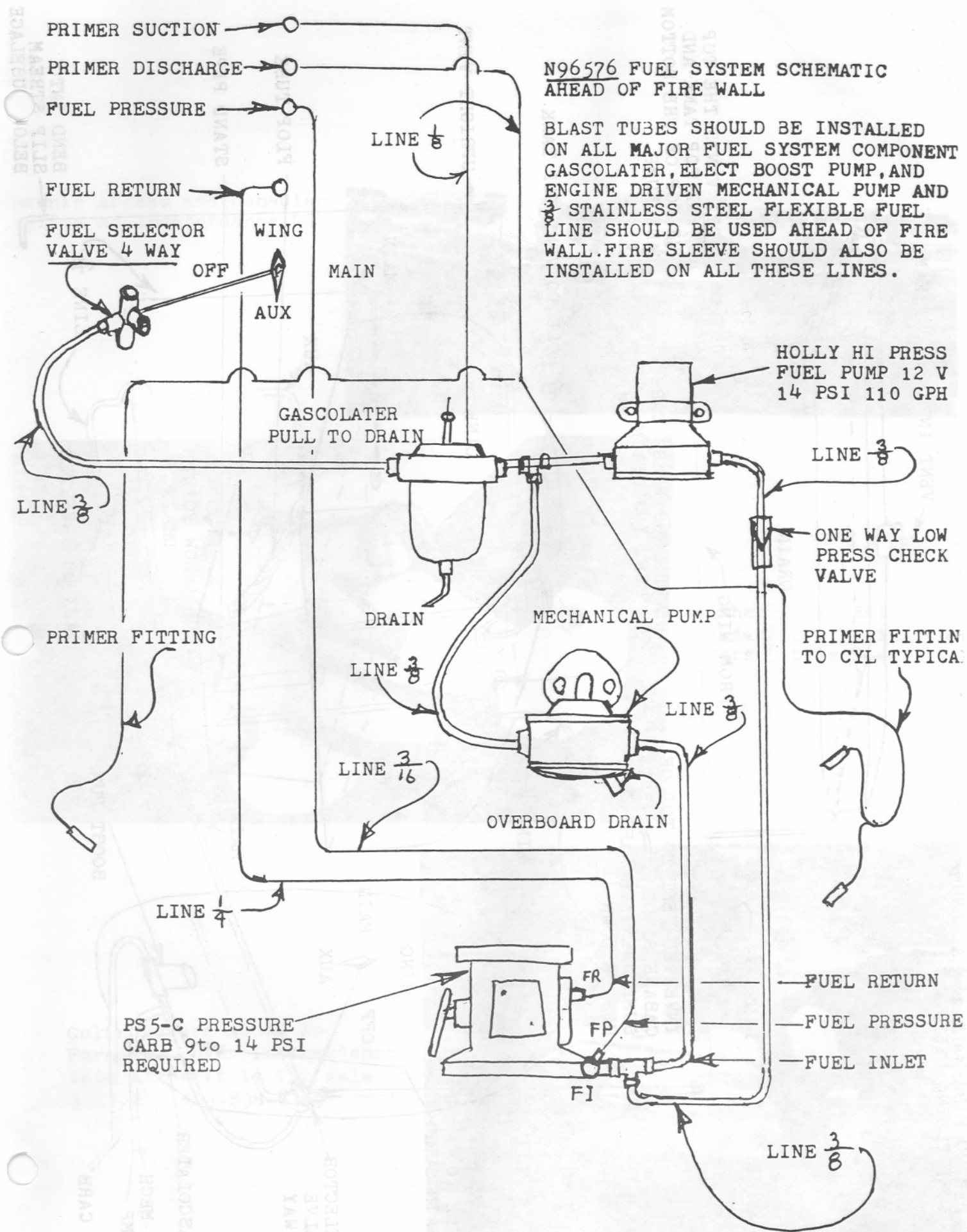
### Fuel Systems

Many of you builders and new Starduster owners are unaware of the fuel system schematic or to the details of how it works. In the October 1977 issue of Starduster Magazine Jim Osborne wrote a fine article titled "Your Starduster Gas Tank". It is quite informative on how the factory fuel tank works and for those of you who would like a copy, you can write to either Bill Clouse or your editor. But please include some postage.

The parts of the fuel system that I'm going to talk about are the gascolator and the electric boost pump. It is recommended that not only the selector valve be behind the firewall but that the gascolator and electric boost pump be there as well. Finding a place for them below the floor and at the lowest point, and away from the landing gear, and bungee truss, presents numerous installation problems. So I chose to go with the traditional mounting ahead of the firewall. This has worked quite satisfactorily for over 400 plus hours. However my installation is somewhat different than most. Everyone will agree that heat is the cause of most fuel problems. Most engine installations have their exhaust pipes exit through the lower rear cowl cutout, and if you mount your gascolator and fuel pump boost on the firewall they will be right above the exhaust pipes. I have a modified Mooney exhaust system and for those of you that are unfamiliar with it, all four pipes enter the muffler with two on each end. The muffler is ahead of the oil pan, and has a 3" single exhaust pipe that exits on the right-hand side approximately 12" aft of the nose bowl.

I like this installation because it is quiet, and has a good heat muff and exits up front. With this system it keeps the heat away from the firewall. I also have two 10" x 6" louvers on the top of the cowling just aft of the magnetos that help let the hot air out of the cowling accessory section. So I felt that with this system you could mount the gascolator and the electric fuel boost pump on the lower part of the firewall and have it work satisfactorily, and as previously stated it has.

However what I did not say is that I have just recently installed my third "Holly" electric fuel pump. The first one was operating okay but started leaking through the vent because of a bad seal, it had been on there a year and had approximately 150hrs on it and had exhibited evidence of seeping for some time. The second pump just recently changed went well over 200hrs and the electric motor actually burnt up, but again there had been evidence of it seeping. So after purchasing a third pump, I install it only to find out it leaked without even turning it on. I then called Holly technical services. The representative I talked to said it shouldn't do that, and he went on to explain that the seal could have been installed improperly or damaged during installation, (I of course did not tell him I was using it on an airplane, and if you are in the same position tell who ever that your installation is on an off-road vehicle. As most people do not think of off-road as being up there in the clouds). He then told me to return it for another one which I did, and installed the same on my airplane. Upon checking the installation directions



**N96576 FUEL SYSTEM SCHEMATIC  
AHEAD OF FIRE WALL**

BLAST TUBES SHOULD BE INSTALLED ON ALL MAJOR FUEL SYSTEM COMPONENT GASCOLATER, ELECT BOOST PUMP, AND ENGINE DRIVEN MECHANICAL PUMP AND 3/8 STAINLESS STEEL FLEXIBLE FUEL LINE SHOULD BE USED AHEAD OF FIRE WALL. FIRE SLEEVE SHOULD ALSO BE INSTALLED ON ALL THESE LINES.

HOLLY HI PRESS  
FUEL PUMP 12 V  
14 PSI 110 GPH

LINE 3/8

ONE WAY LOW  
PRESS CHECK  
VALVE

PRIMER FITTING  
TO CYL TYPICAL

MECHANICAL PUMP

LINE 3/8

OVERBOARD DRAIN

LINE 3/16

LINE 3/8

DRAIN

GASCOLATER  
PULL TO DRAIN

MAIN

WING  
AUX

FUEL RETURN

FUEL SELECTOR  
VALVE 4 WAY

OFF

FUEL PRESSURE

PRIMER DISCHARGE

PRIMER SUCTION

PS5-C PRESSURE  
CARB 9to 14 PSI  
REQUIRED

FUEL RETURN

FUEL PRESSURE

FUEL INLET

FI

FP

FR

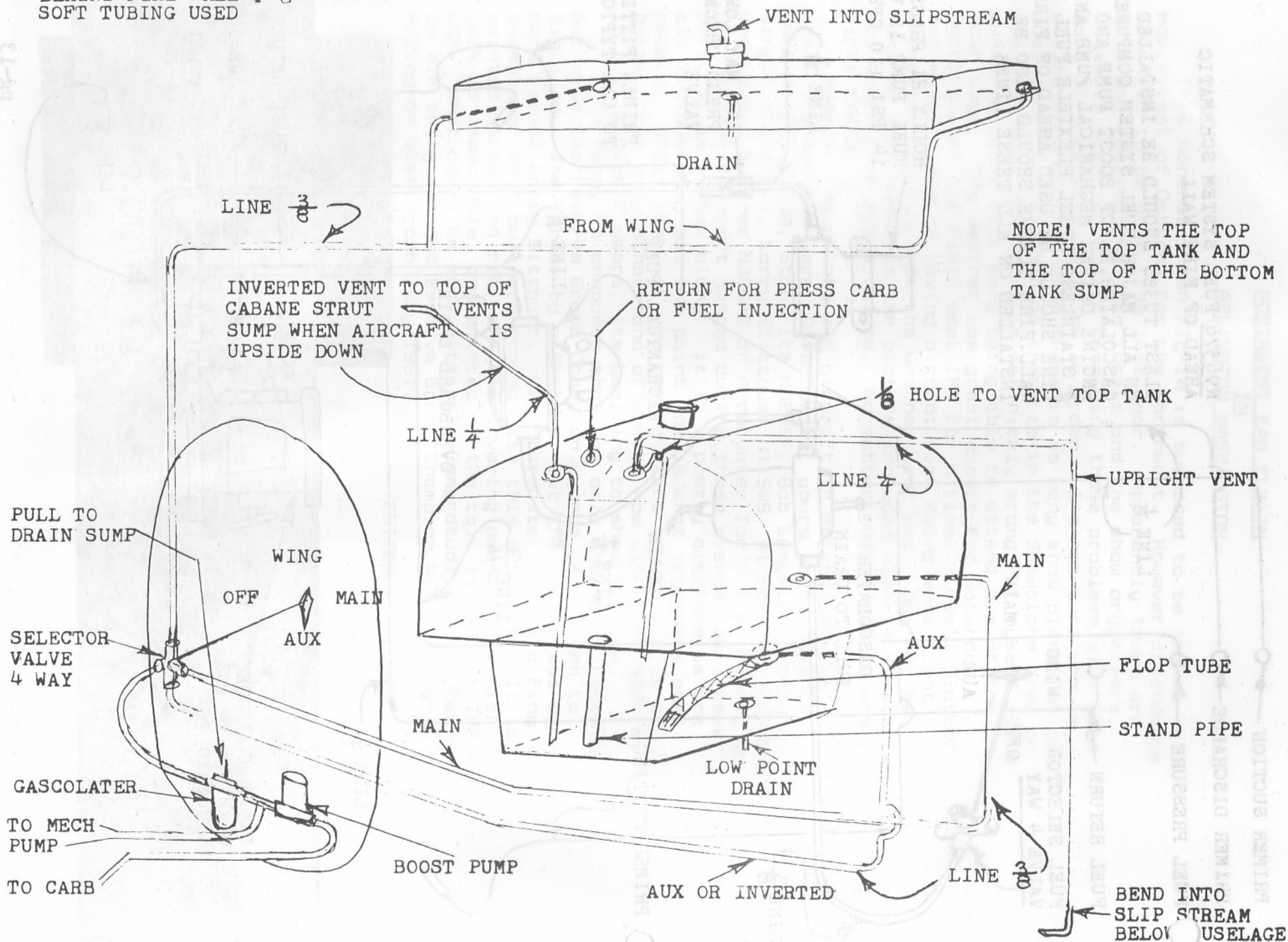
LINE 3/8

LINE 1/4

PRIMER FITTING

LINE 3/8

N96576 FUEL SYSTEM SCHEMATIC  
BEHIND FIRE WALL  $\frac{1}{4}$  &  $\frac{3}{8}$  ALUMNUM  
SOFT TUBING USED



carefully, it stated to install the pump away from any high temperature areas such as exhaust systems. I have since added a heat shield and blast tube in hopes that the seal will live longer. There are several things about boost pumps in general that should be mentioned and about the "Holly" pumps in particular. Pumps should be capable of pumping the required fuel flow to the engine for normal flight operations, so that when your mechanical fuel pump dies you will be able to get home on your boost pump or in other words be a continuous duty pump. They should also be able to free flow fuel when not running. As for the Holly pump, after having several of them apart they appear to be a well constructed pump, the wear point being the seal, and apparently pressure along with the high temperature is what kills the seal. So the point is, that I have now spent over \$300 on fuel boost pumps over the last several years and my recommendation is to always read the instruction very carefully, because thinking you know what you are doing and actually knowing can be two different things. I now have enough money invested in fuel boost pumps that I could have bought a "Dukes" fuel pump but with their current problems, maybe not.

EDITOR - D.C.B.

\* \* \*

Included with this article are two fuel system schematics one is for behind the firewall and the other is for systems ahead of the firewall. This is what I did on my Starduster Too N96576 and is illustrated here for the benefit of all owners and builders. Some of you may find your fuel system is somewhat different than mine, which only goes to show that other combinations will work. I also suspect that some of you will take exception to some of the things I've done. Like using a four-way selector valve to select fuel from the wing tank rather than just draining it into the main. There are pro's and con's to doing it either way. The other thing is bringing the flop tube in from the rear of the sump as opposed to the firewall side. Not being much of an aerobatics pilot was part of the consideration for me. But by shortening the flop tube and being more interested in servicability access than out an out unlimited inverted flight, the results have made me happy.

EDITOR -D.C.B.

## Safety

Several items of interest have come to my attention recently regarding safety, and I feel that they should be passed along to all builders and pilots.

The first thing to be noted are problems that some people have had with their electrical fuel boost pumps failing. One of our readers stated that some models of the "Dukes" fuel pump have experienced failure. It is my understanding that the impellar disintergrated sending pieces into the carb inlet, which restricted fuel flow to the carb. Apparently this has happened to more than one pump. I do not know which make, model or serial numbers are effected but if you have a "Dukes" fuel pump the impellar should be inspected, and perhaps the pump manufacturer should be contacted for details.

Along with this article, mention should be made regarding every component in the fuel system, all parts of the fuel system need to be inspected for wear and tear. Statistics show us that a very large percentage of all light plane engine failures are fuel related. Jammed, loose or disconnected, improperly softied throttle mixture controls, collapsing or loose induction system parts, turned up regularly, air filters that broke up and got sucked in, broken carb heat flapper valves that would be sucked in, induction hoses that collapsed. Or just about every part that could get loose and be ingested did.

Loose, broken or rotted fuel lines, or fuel lines that had been routed to close to hot exhaust also caused engine failure or vapor lock. Fuel selector valves broken or indicating the wrong tank added to engine failures.

But by far, fuel system contamination, either by water or other foreign material was the number one known cause of engine failure.

The real mystery is the unknown cause of engine failure. Almost 30% of all engine failures that end up in an accident, the cause was never determined as to why the engine failed to run properly.

Another item in the fuel delivery system is the fuel flow venting, and cooling. One should time the flow into a bucket to make sure it meets the required specifications, and all fuel lines in the engine compartment should be insulated with fire sleeve. Cooling tubes should go to both pumps and gasqualter, but most important is the fuel venting system. One should know and understand how your system works as well as to check the vents before every flight.

EDITOR - D.C.B.

## STARDUSTER HISTORY

N5462

### The First Acroduster Too

During the time I worked for Lou Stolp in the late 1960's, Lou mentioned the possibility of an aerobatic design called the Acroduster. Most of us did not take him seriously as he had never been an advocate of aerobatics, and still isn't. However a TWA captain named Morgan "Bud" Schrack convinced Lou to do the basic engineering drawings on a two place version of the Starduster Too that was fully aerobatic; it was to be about 10% smaller and was rated to withstand 10 G's positive or negative. The intent was to retain the Starduster Too's look but with aerobatic capabilities. Lou felt that Morgan was going to do it anyway, so he thought it should be done right.

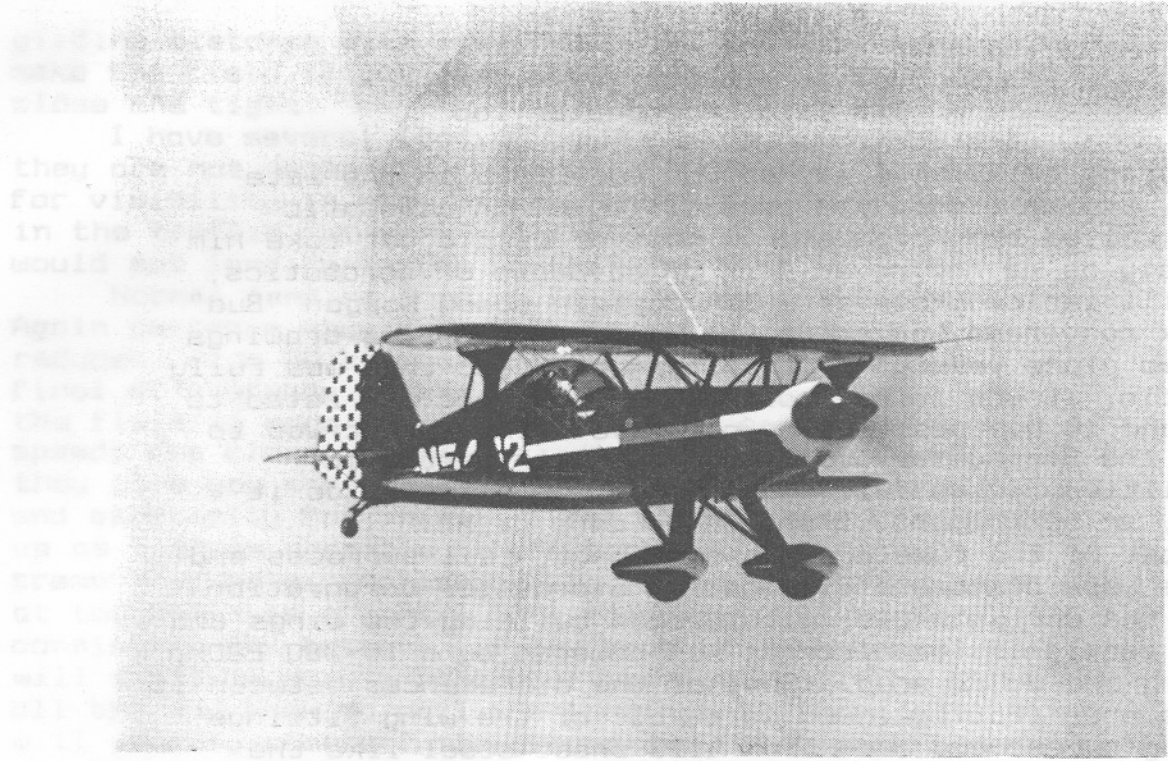
Most of the fuselage, landing gear, tail surfaces and cabanes were built and finished at Starduster Corporation during the early 1970's; with Morgan building the wings and center section. The aircraft was powered by a IO-360 200hp Lycoming and a C/S prop. Some of the differences between it and the ones that followed were; all of the wing fittings and drag tubes were made from 4130 sheet steel like the Starduster Too, the latter were made out of aluminum, and the prototype also had three aileron hinges. The airfoil was NACA 63A012, and the empty weight was 1127, the aircraft climbed 2100 fpm at 75% power and at 4000" the indicated airspeed was 142 mph. All the aerobatic test flying was done by Bob Herendeen; who was Morgans first officer at TWA during that time, a most capable aerobatic pilot in his own right.

The airplane proved to be very cabable, all maneuvers were done easily. Both inside and outside, stalls were sharp but predictable spins were conventional and easily recoverable. Although it had a powerful resemblance to the original design, the Super Starduster was a much different airplane.

During the mid 1970's, after owning the airplane for several years and also being involved with Frank Christen's Eagle (That was soon to be offered to the kit building public), Morgan sold the airplane. The new owner was Allen Campbell of Jacksonville Florida and apparently Allen was very happy with the airplane and its aerobatics ability, as he had it for over ten years. In the mid 1980's the airplane was sold once again; the current owner is listed as Lee Vanoss Nashua NH.

Morgan, after a long career with TWA and a successful retirement passed away from cancer in 1983. He would be pleased to know that the airplane is still in one piece and capable of doing all that he had hoped it would. The airplane was registered as the Stolp & Schrack Super Starduster Too and was the prototype and very first Acroduster Too.

EDITOR - D.C.B.



N5462 Over Southern Calif  
early 1970s Photos by  
Bob Herendeen



N5462 The first Acro Duster  
Too And Morgan (Bud ) Schrak  
Fla-Bob Airport early 1970s

David C. Baxter  
5725 S.W. McEwan Rd.  
Lake Oswego, Or. 97034

2-5-91

Dear David,

I received your letter and my application for the Starduster Magazine is off to Riverside.

I'm sure glad to see that you are taking over the task. I have missed the magazine since Bill stopped printing it.

In some of the past issues I had a few articles that were presented, rudder loop system, rudder trim tab, elv. stops and baggage compartment. Nothing important, just little things to make things work alittle better.

Boy, your Starduster sure looks like a gem. Can't wait to see it.

If and when you ever get over here and I'm not around, which happens alot, there will be a business card in front of the hanger doors. My home phone number will be on it. I'm only five minutes away. So give me a call.

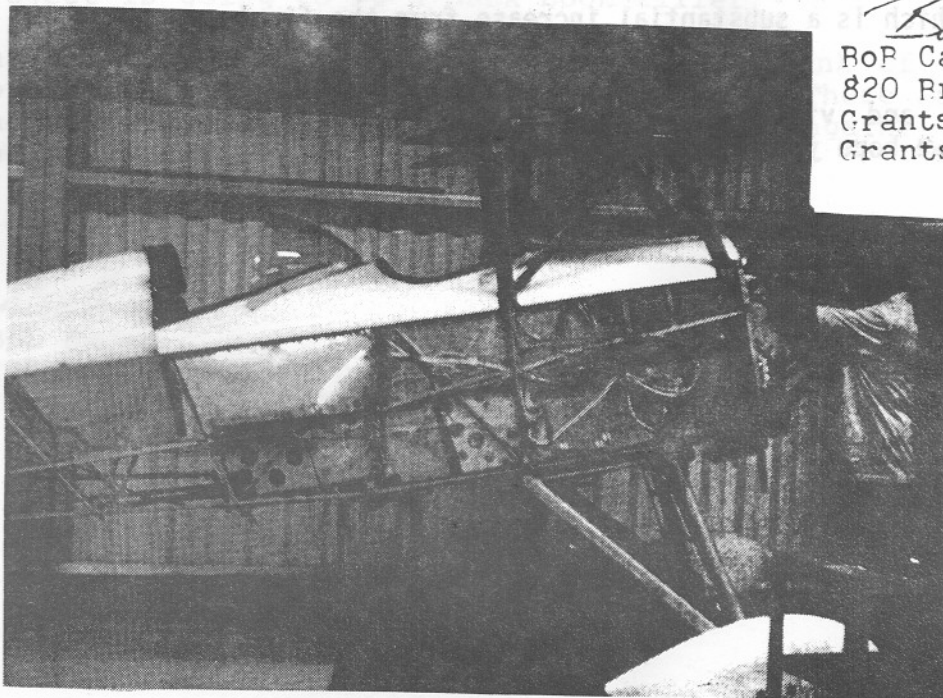
Here are some pictures of my TOO and hanger. We had an air fair here last summer. Turned out real nice everyone had a good time. Maybe we could have a Starduster or too here this this summer? I'll let you know when.

Well not much more to yak about so I'll say adios for now and hope to see you soon.

Sincerely,

*Bob Caravas*

BoP Caravas  
820 Brookside Plvd.  
Grants Pass Airport  
Grants Pass, Or. 97526



# TRANSWESTERN HELICOPTERS, INC.

Scappoose Industrial Air Park • P.O. Box R • Scappoose, OR 97056  
(503) 543-3121 • (503) 226-4731 • Telex 151405 • FAX (503) 543-5296

August 8, 1991

Dave Baxter  
5725 SW McEwan Road  
Lake Oswego, OR 97035

Dear Dave:


The Second Annual Airport Appreciation Day was a success! We enjoyed seeing your Starduster Too on the flight line - congratulations on receiving the People's Choice award! You certainly do have a beautiful airplane.

We were delighted that there was such a variety of aircraft available for display. The registration log indicates that there were over 30 types of aircraft on the field at different times during the day, ranging from a 7/8 scale replica 1916 Nieuport II to a 1991 Bonanza, which is a substantial increase from the first year.


Everyone, participants and visitors alike, seemed to have a wonderful time, and we hope you enjoyed the activities during the day. Again, thank you.

Sincerely,

TRANSWESTERN HELICOPTERS, INC.



Elizabeth (Betsy) Johnson  
President



John C. Helm  
General Manager

EKJ:d1

# 1990 WRIGHT BROTHERS AWARDS

July 1, 1991

Dear Dave,

I was thinking about you and Stardusters so I thought I'd drop you a note. Laura and I are heading for Flabob on the 4th to pick up the fuselage that we bought at the party in May. I had Bill do the cabanes, landing gear, seats, horizontal stabilizer mounts, and tailspring mounts for me. My welding is getting better, I suppose, but not good enough for me to bet my life on just yet.

On the homefront, the lower right wing and center section are done and the lower left wing is about 80% finished. I'm not particularly eager to do the upper panels as the sweepback makes them look a tad easy to screw up. I suppose that this is rather silly since I've come this far. . . .

Before too long, I'll have to get serious about looking for an engine. I've definitely decided against an IO-540. They're smooth, help the cg, and are killers at the gas pump; I only see the AVGAS situation getting worse as time goes on. I've toyed with the idea of an O-320/160hp but think that the result would be a "dog" performance-wise, and I'm not enamored with the aardvark looking nose that would result with the proper length engine mount. Any thoughts on 160hp in a Starduster? I suppose that narrows the choice to a 180hp, O or IO-360. I wouldn't have a Continental and the O-435(?) Lycomings are too heavy. The real bottom line is that, unless I get very lucky, this part of the project is going to be a bank book killer.

That's about all the Tucson news I can think of. I'm looking forward to the next "Starduster Magazine." There are a lot of us who are very glad that you got that going again. Take it easy and fly safe!

Sincerely,

*Bob*

Bob Dwyer  
2941 No Rio Verde Dr  
Tucson Arizona 85716-3544

# 1990 WRIGHT BROTHERS AWARDS

A very successful Wright Brothers Awards presentation was once again held in July 1990. The recipients of the awards were presented the prestigious trophy by Wilkinson Wright, Grandnephew of Wilbur and Orville Wright, at their home, in Hawthorne Hill Ohio. Assisting Mr. Wright was Paul Poberenzy, Founder and Chairman of the Experimental Aircraft Association.

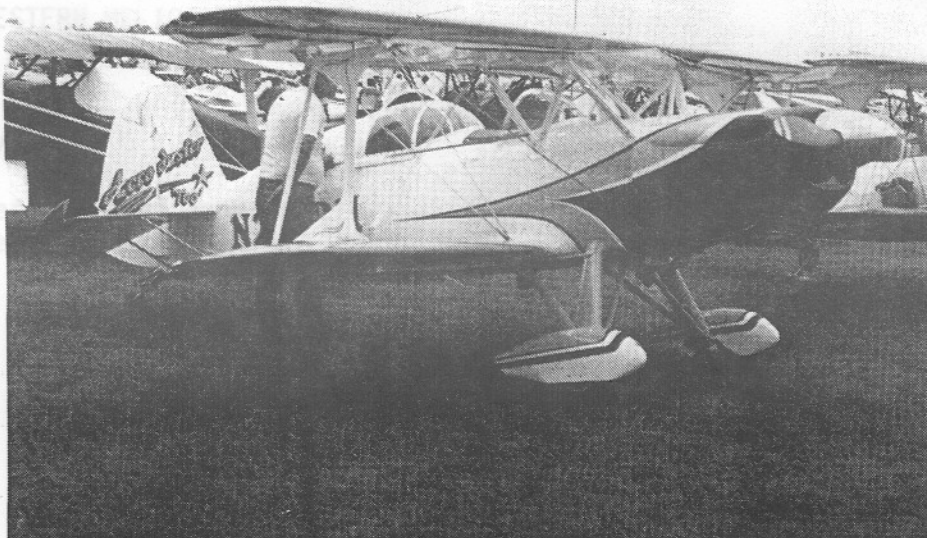
On hand to give personal tours of the Wright home was Mrs. Ivonette Wright Miller, niece of the Wright brothers, and her husband, Harold, was a World War I fighter pilot.

Following the awards program, the attendees visited the original 1905 Wright Flyer with a "hands-on" viewing and narration by Wilkinson Wright.

The Wright Brothers Invitational Awards, showcasing ten of the best sport aircraft in the nation, is sponsored by the Dayton area EAA Chapters. The selection process begins in early spring with 100 representative Chapters being asked to vote on what they consider the 10 most popular homebuilt aircraft designs. The original designers of these aircraft are asked to nominate the best example of their respective designs. The builder of that aircraft is then asked to attend the Dayton Airshow, display his machine and be honored as one of the sport aviation's master craftsmen. An honor to both the designer and the builder.

We at Starduster Corporation and Starduster Magazine, would also like to offer our congratulations for a job well done, to Robert Hammond of Tonawanda New York, for his beautiful Acroduster Too N236RH. It is a sincere tribute to be picked for this prestigious award, and his airplane should be an example to all builders of Starduster aircraft.

Editor



NOTE: Technique, speeds and skill vary with early or late landing gear models as well as light and heavy airplanes.

### TAILWHEEL LANDINGS AND THE STARDUSTER TOO

Several months ago I along with several other EAA members were asked to chair a panel regarding the flying characteristics of a tail wheel aircraft. The panel consisted of one pilot who just recently soloed up to and including a pilot who had several thousand hours in DC 3's. I certainly cannot claim to be a high time tail wheel pilot with only 600 hrs in this type of aircraft, but due to the high accident rate with all tail wheel aircraft and the fact that the Starduster Too is no exception, I thought it prudent to explore some of the reasons.

I will also do some comparisons to tricycle gear aircraft. Some of these comparisons are quite surprising.

For those of you contemplating buying or flying your newly finished Starduster Too. A tail wheel check out should be a must. Citabrias are probably the most accessible, Cubs and Champs help, but if you can get some time in another Starduster Too with a competent pilot or instructor that would be the best.

Flying the Cub or Citabria from the back seat also helps, spending a lot of time on the ground with slow and fast taxis, along with turning the aircraft will also help, "S" turns are a must. As sooner or later you will certainly chop a hole in something or someone.

Getting familiar and comfortable is a must, using a knowledgeable and qualified instructor who is current and familiar in this type of airplane is also a must. Just because they have an instructors certificate does not mean they are qualified.

Few flight schools offer initial training in tail wheel aircraft and insurance is much higher for those who do. Also insurance is more expensive for those who own and fly this type of aircraft as opposed to tri-gears.

I will talk some about takeoffs. But during takeoffs tail wheel airplanes suffer more accidents than do tri gears. I think the causes are more due to power failure and because they are older, or tailwheel aircraft represent more risk as opposed to tri-gears which tend to be in most cases, newer aircraft.

But in our case the homebuilt aircraft, first time pilot, and pilots with long periods of inactivity, coupled with the aircraft that have been setting for equally long periods of time tend to be the culprits.

Takeoffs! I tend to use the conventional approach, I.E. : Stick neutral power on gradually to full power gradually push the stick forward 60 kts to 70 kts indicated rotate climb 80 kts at approximately 1000 fpm or at a respectable angle. Flying it off at three point is okay to but at high hot altitudes is not practical.

Traffic Patterns : I prefer to fly a more exact pattern fairly close in. Taking special care to look out for other traffic. As we all know power off

gliding distance with biplanes means you will barely make the field if you lose your engine so keep it in close and tight.

I have several landing lights on my airplane and they are not necessarily for night landings, but are for visibility in high density traffic areas as well as in the traffic pattern. If I had it to do over again I would put landing lights in the wing tips as well.

Normal landing 3 point In light wind conditions : Again patterns should be kept in close speed is reduced, from 90 kts to 80 kts downwind. Base and final at a steady 80 kts. Short final 70 kts and after the field is made reduction to idle. Actual touchdown speeds are closer to 55 kts. Wide runways are best as they give you more reference for peripheral vision also and especially for initial first flights one should be up as high as possible in the cockpit, this is of tremendous help. Achieving the lowest possible speed at touchdown is a must. Your landings will be more consistent and better. If you have too much speed it will still go on all right but when you pull the stick all the way back to nail the landings the main gear will usually come off the ground and, at higher speeds it will fly again. Roll out and directional control are easily maintained with light rudder applications again, on landing, feet should be off the floor and ready for anything during a normal 3 point landing in light wind conditions no brakes should be required, but with relaxed complacency. The Starduster along with any other tail wheel dragger will bite with inattention. No two landings are the same, as for wheel landings I add approximately 10 kts more of indicated airspeed during the approach. I also trim the airplane for positive nose down.

The secret to good consistent wheel landing is to fly the airplane on, just kissing the runway. The instant the wheels touch backpressure is released, and if this can be done, beautiful wheel landings are the result. Practice of course improves your ability to make good wheel landings.

Crosswind Landing : Experience, skill, and technique combine to make safe crosswind landings. My Starduster seems to handle up to 10 kts direct crosswinds with little difficulty. 90 degree crosswinds of more than 10 kts and gusting crosswinds are a different matter and require good piloting decisions. The question, is my ability and experience up to it? This is where wheel landings can be of great help. But the best advice I can give is, if you don't think you should try to land you probably shouldn't.

Most crosswind landings will of course not be 90 degrees and will be more in the area of 10 degrees to 45 degrees. This again will be up to the pilot, to make good safe decisions based on conditions and experience.

This is one reason I have 46 gallons of gas in my airplane, so I can go somewhere else to land, where hopefully the wind is blowing down the runway.

The day of course will come when a landing must be made in a strong crosswind and past experience will be the difference between a safe landing and an unplanned trip into the weeds. The worst condition is generally a crosswind from the left. If an accident happens it will almost always be with a left crosswind.

### Comparisons : Tri Gears to Tailwheels

#### Interesting facts :

- Tail wheel aircraft do suffer more accidents during takeoffs, but tri gears suffer more accidents during landing than do tailwheels by over 7 percent.
- Tailwheel aircraft suffer more accidents during low altitude buzz job passes and low altitude flight than do tri gears.
- Tri gears run out of gas more often than tailwheels by more than 9 percent.
- Tri gears have more weather related accidents than do tail wheels, probably because many tailwheel aircraft are not I.F.R. equipped.
- Undetermined causes were just about even.

Of course many tailwheel aircraft work for a living and as spray planes, fish haulers and banner towers plus the fact they operate in rougher and shorter fields make them more accident prone than there tri gear brothers.

So in retrospect, don't fly in bad weather, if you think you should turn back, you should. No mid airs, don't run out of gas, if you think you need gas you do. No low altitude buzzing, and most of all don't crash. If you adhere to these things you will be a much safer pilot as well as beat the odds.

EDITOR

### **STARDUSTER TOO SA-300**

Make:	Starduster Too
Model:	SA-300
Engine(s):	180 HP Lycoming O360-A2A
Wingspan:	Upper 24 Ft., Lower 22 Ft.
Length:	19 Ft. 5 In
Height:	8 Ft. 2 In
Gross Weight:	1704 lbs.
Structure:	4130 steel tubing, wood wings, fabric covered
Seating:	Two (tandem)
Air Speed:	120 mph
Fuel Capacity:	47 gallons
Fuel Consumption:	8.5 gph
Owner/Operator:	David C. Baxter
Date of Manufacture:	May 1989



## FLY-INS AND STARDUSTER AIRCRAFT

### NORTHWEST STARDUSTER OPEN HOUSE INDEPENDANCE OREGON JUNE 29TH AND 30TH 1991

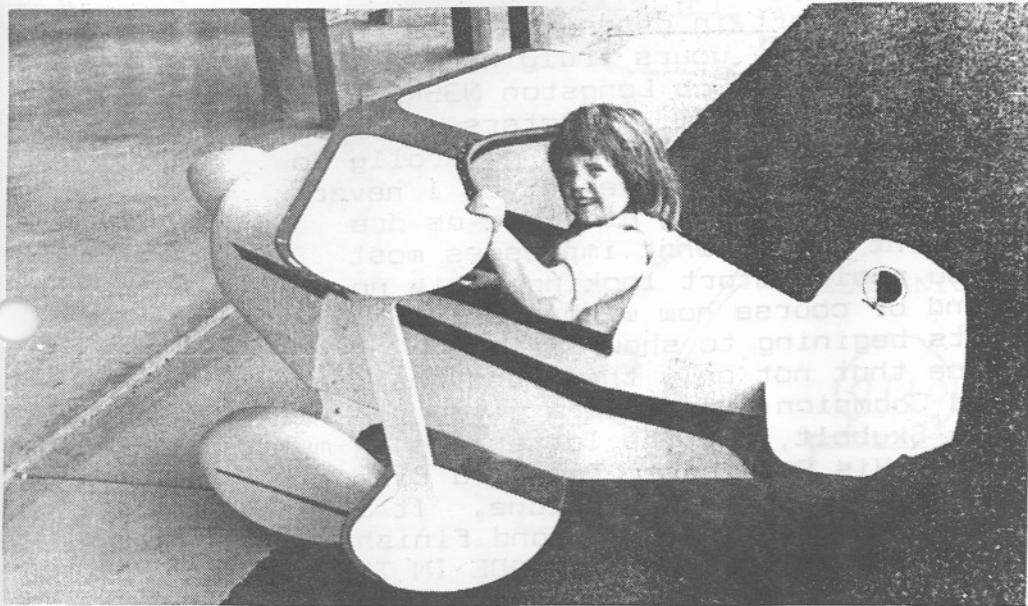
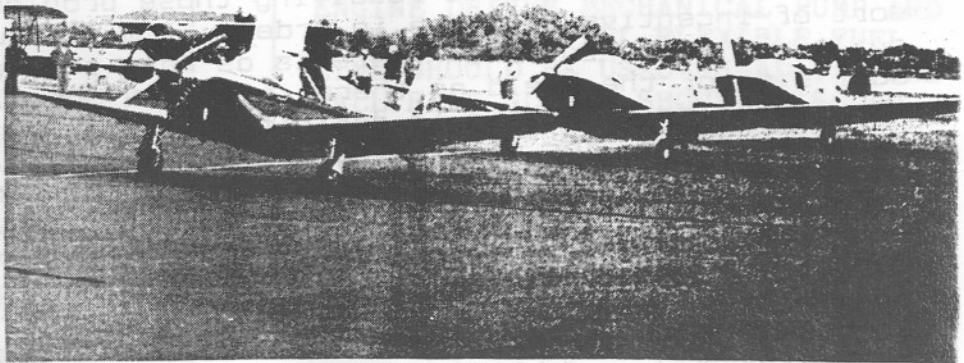
This open house was held in conjunction with the annual Independance Airport Fly-in, which is located approximately 50 miles southwest of Portland Oregon. Colin Powers and your editor were the promoters of this event. The weather of course did not cooperate, Friday was bad, Saturday was worse, and Sunday was fair at best. During our trip down Friday from Hillsboro, visibility was 3 to 5 miles and at an altitude of 300' to 700' feet. However once in the Independance area the weather did improve, as it did late each afternoon. I was quite surprised as bad as the weather was, that there was still such a great turnout for all types of aircraft. As for the number of Stardusters that showed, we had five which wasn't to bad considering the weather, that in its self was quite remarkable. Colin & June Powers treated early arrivals to some wonderful B.B.Q. Chicken Friday night. My good friend Les Homan and his wife Mary had planned on attending and got as far as Mt. Shasta before turning back. He later said that he couldn't go under, over or around so he just went home. Those who did show up were of course Colin Powers, Your editor Dave Baxter, Al Petersen, Cliff Lamb, and Scotty Smith. Scotty & Chris had flown down Friday to Tillamook Oregon to be on hand for the breakfast there Saturday morning and ended up being the only airplane there. However the weather did clear up enough for them to get out late that afternoon, by backtracking to Astoria and down the Columbia Gorge and once they were east of the coast range, they were able to head south to Independance. We were also able to make several formation fly-bys during the weekend. Don Thompson [Colin's Brother-In-Law] owner of a beautifully restored Swift created some good natured competition by stating there would be more Swifts in attendance than there would be Stardusters. As it turned out it was a draw as 5 Swifts also attended. Even though we tried to count both sets of wings on our biplanes, and even my little 3 year old granddaughter Heather tried to help by piloting Colins pedal powered miniture Starduster Biplane. But Don and the Swift crew would have none of it. Dennis and Erin Arbeau showed up with their beautiful polished Swifts, His & Hers. Dennis was also able to fly with the Canadian Precision Flying Demonstration Team, and although not an air show act was quite impressive. The spaghetti dinner Saturday night was sold out, with over 300 people being served, and inspite of bad weather a good time was had by all.

1st place went to Colin Powers N686H  
2nd place went to Cliff Lamb N548CL  
3rd Place went to Al Peterson N84AP  
Farthest Distance Flown went to Scotty Smith N4316

Other Starduster owners and builders in attendance were :  
Bob Spittles of Tillamook Oregon, Bob Leader of Fruitland Idaho, Gary Zollman of Pendelton Oregon, Frank White of Estacada Oregon, Wes Morton of Salem Oregon, and Larry Holman of Canby Oregon. By the way the Monday and Tuesday following this event was the best weather they had seen in over three weeks. [Wouldn't you know it !]

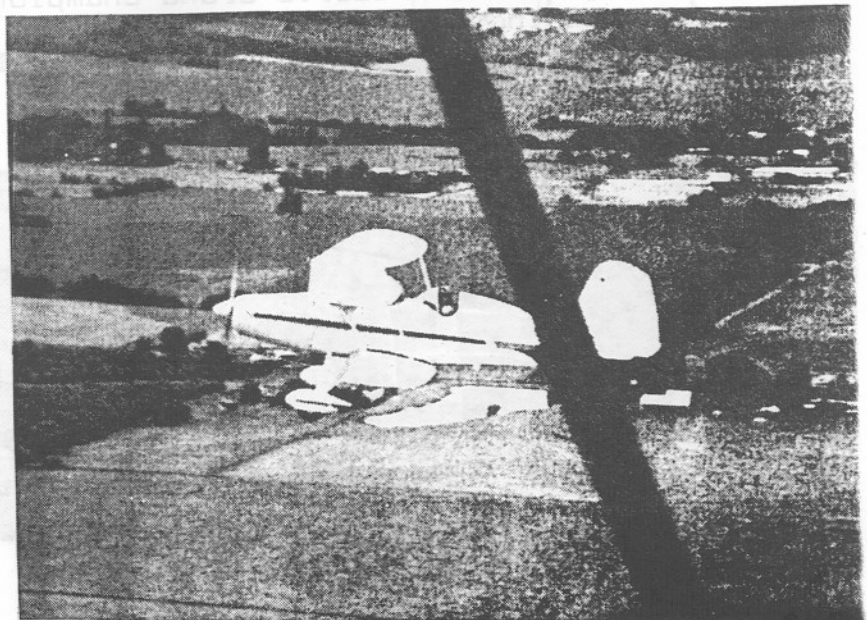
EDITOR - D.C.B.

Dennis Arbeau and Canadian  
Swifts at Independence OR



Heather Marie Editors  
Granddaughter Flying Col  
Powers Little Starduste

Colin Powers N686H in  
Formation over Independence  
this Aircraft is for sale  
\$ 23.000 503-838-0329



NORTHWEST EAA FLY-IN  
IN  
ARLINGTON WASHINGTON

This Northwest EAA Fly-in is supposed to be the equivalent of Oshkosh for the Northwest. However attendance appeared to be down from last year. Apparently there are some bad feelings between locals and the show organizers. It would seem to me that resolving those problems with some sort of incentive would be in order. I'm not sure who is guilty of what, but when there is as many show planes on the east side of the field as there is in the Showplane area on the west side something is definitely wrong. I myself had a wonderful time, for only being able to attend two of the four days. The weather was great except for Saturday morning when the field went IFR for a time. Lowell Slatter and myself were up having a great time doing some tight formation fly-bys when the weather went bad. Boy did he make me look good, as the picture included with this article was taken from his airplane. No matter what I did he was right there.

Some of the pilots and aircraft in attendance with their Stardusters were: Dave Baxter, yours truly N96576, Dave Mahre N480DM, Stan Fitz N328SF, Bob Longston N35RL (a single place SD), Larry Stittauer N115WS, Al Peterson N84AP and Lowell Slatter N300AD an Acroduster Too. I generally do not have my aircraft judged during these events, as I never built it as a show plane. It is a pretty airplane as are all Stardusters, but the paint job is what impresses most people. After that, if you really start looking it is no better than many others and of course now with over 400hrs, in little over 2 years, its begining to show its age.

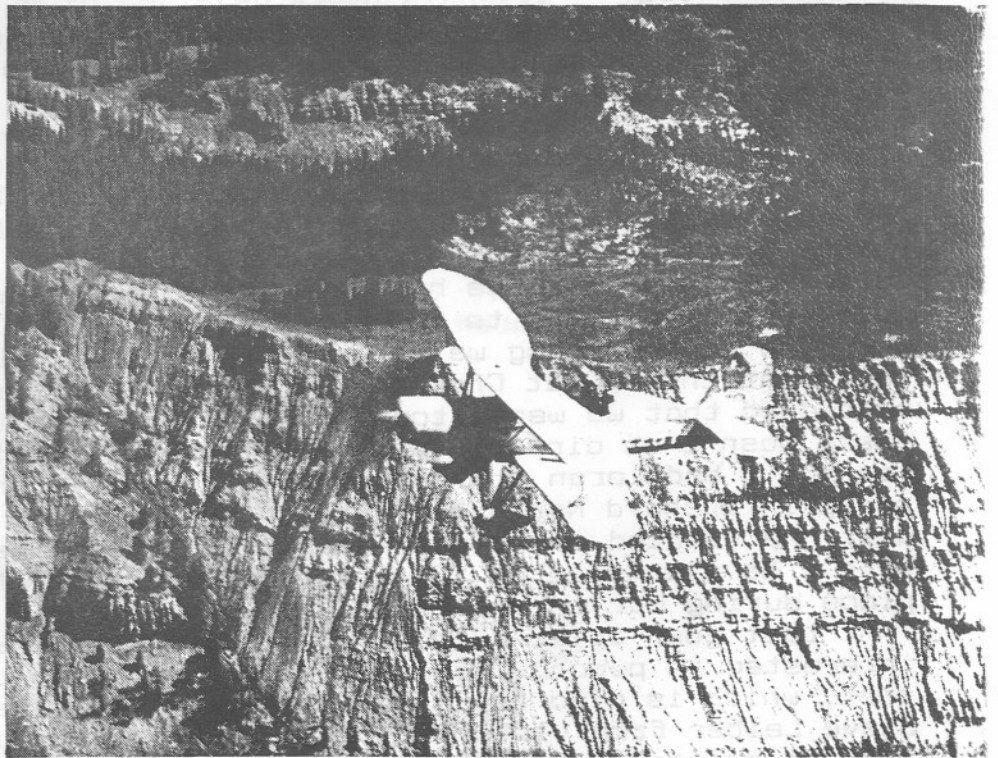
I am happy to announce that not only the Grand Champion but also the Reserve Grand Champion awards were given to biplanes. The former by a Skybolt, but the latter was by my good friend Larry Stittauer. His Starduster Too is a fine example of what builders can do with this airplane. It is painted maroon and red, and the covering paint and finish work is impeccable, and painted on the tail is MADE IN THE USA. What could be more fitting. Congratualtions to Larry on him being awarded Reserve Grand Champion N/W EAA Fly-in, Arlington Washington July 1991.

EDITOR - D.C.B.





N115WS Owned & Built by  
Larry Sittauer Reserve  
Grand Champion N/W EAA  
Fly In Arlington WA 1991



N4226Y Les Howmans  
Airplane Photographed 40  
Miles East of Jackson  
Hole WY on our return  
trip from Oshkosh taken  
from N96576 Aug 1991



N96576 In tight formation  
over Arlington 1991 Photo  
taken from N300AD Lowell:  
AcroDuster Too

## OSHKOSH 1991

Our trip to and from Oshkosh was as usual GREAT. The weather was incredible, the best yet. Les Homan came up to Oregon from the Bay Area, so that we could go east to Oshkosh together. Believe me this is what its all about. From Portland our first leg of the journey took us to Walla Walla Washington, at this fuel stop we met with Del White a local Starduster Too builder who invited us over to take a peek at his project. Then we were off to Corvallis Montana to look at the one and only Super Starduster One owned by Ormand Lavoie a retired Delta Captain, for being in his 70's he can really fly that airplane. We landed on his private grass strip that runs right into his front yard, what a beautiful place. Later that evening we had a wonderful dinner with Ormand and his wife Darla. We stayed overnight in Hamilton Montana for fuel and a meeting with Tom Regan, the owner of a recently completed Starduster Too.

The next morning we were off early going to the southeast to Idaho Falls for our next fuel stop. From there we were onto Thermoplis Wyoming, our route took us over the Tetons and by Jackson Hole, where there was some lightning and thunderstorm activity reported; but this was easily avoided. Our next stop was Chadron Nebraska, which had unfavorable winds and gave us inconsistent Loran readings which made for an unusually long hop. By the time we were able to land we had over 7hrs in the air so far and were more than ready to call it a day.

The next morning we were off to Orchard Nebraska. The fellow at the FBO at Chadron was somewhat concerned when I mentioned that we were stopping in Orchard, he told us that there wasn't an airport there. But we knew better, as both Les and I had Loran coordinates for Bruce Fletchers Duster strip in Orchard Nebraska. Bruce as always was the perfect host, he treated us to a wonderful meal compliments of his wife. He also sold us 100 octane fuel cheaper than any place during our entire trip.

Last year at Oshkosh I met a fellow there who was interested in purchasing a Starduster or a biplane, of some sort, which is also how I met Bruce, at any rate his name is Steve Leiber from Victor Idaho. Steve did buy a biplane, a homebuilt Great Lakes. Earlier this year Steve started out on a Cross-Country flight, and ended up in Kearny Nebraska with engine trouble. Fortunately in time for Oshkosh, he was able to get it fixed and meet us at Bruce's.

After food, fuel and conversation we were once again off, this time to Beatrice Nebraska for another fuel stop and weather check. Our next stop was to be Lawrence Kansas, the weather was not encouraging, so a quick call to my good friend Gene Burnett confirmed that the weather was good at least down to Lawrence Kansas where he lived.

From Orchard to Beatrice we had three biplanes flying together, but from Beatrice to Lawrence we only had two again, as Les went on ahead to visit his mother and brother in Fort Scott Kansas. Our next stop was the Bar "G" ranch 4 miles north of Lawrence Kansas for a quick visit with Gene Burnett. He apologized for not being able to put us up, as they were remodeling the bunk house. We then flew to the Lawrence Municipal airport where Gene picked us up and took us to the local motel and later to dinner.

He also picked us up the following morning for breakfast on a return trip to the airport, what a wonderful gentleman, Starduster people are great. Later that morning we waited for Les and Mike to show up from Fort Scott, Steve and I fueled and were flight planned. Apparently the weather was marginal as they had some pretty heavy rain showers and poor visibility from Fort Scott to Lawrence Kansas. We then launched in a three ship flight with our next stop in Ottumwa Iowa, from there it was to Portage Wisconsin. However at Portage FSS, said there was thunderstorm activity over Oshkosh, so we had to wait about an hour, and then were able to land Wednesday evening making it a three day trip from Oregon to Oshkosh.

Oshkosh was, as everybody who has ever been there knows, is quite a place with more interesting things to do and see than time to do them. The most interesting thing was of course the 1930's air racing display with replicas and some of the original airplanes on display. The real show stopper was the Gee Bee R-2 replica by Steve Wolf and Delmar Benjamin. What a beautiful piece of workmanship along with a big chunk of aviation heritage, it is truly beautiful. Several weeks after Oshkosh I stopped by Creswell Oregon where Steve has his shop to talk with him one on one. They plan on flying the Gee Bee soon, and have airshow appearances scheduled for next year. The airplane should be ready to fly perhaps by the time you read this; and if anyone can do it there are no more capable hands than Steve Wolfs.

Another interesting thing was the Flying Tiger display, as they had several surviving A.V.G. Pilots on hand giving talks and answering questions regarding those interesting years, as well as having four P-40's on display.

But the most wonderful thing at Oshkosh at least for me, was finally being able meet and go flying with Anna Peebles. The young girl from Fond Du Lac Wisconsin who wrote to me after seeing a picture of my airplane in Sport Aviation. After returning from the airshow Thursday, a message was waiting from Anna's dad, and a quick call confirmed that a meeting would take place Sunday during Oshkosh. On that Sunday after some brief shyness, it was as if we were family that hadn't seen each other in a long time. Anna's parents John and Barb along with Anna and her little brother Joeseeph felt right at home, with Joe and Anna spending a great deal of time in my airplane and in Les's.

Somewhat surprising Anna asked both Les and myself several interesting questions about our airplanes, the equipment and about our trip there. We had hoped to go flying after the airshow but the weather did not permit, so we decided to try again Tuesday night after the airshow. This time the weather was favorable and our flight was able to take place, it lasted about 45 minutes and although she couldn't see out of the airplane very well, [even with extra cushions], she seemed to have a wonderful time, and if we do it again next year I will make sure she is able to see better.

Following our flight we made a trip into Oshkosh with Anna's family for the Starduster banquet at the Acee Ducee. We arrived a little bit late but after being able to fly with Anna it didn't seem to matter at all. Well over 60 people attended the banquet at the Acee Ducee, it was great to once again visit with old and new friends.

I was quite surprised to be awarded the "Designers" award again this year and also a special award from Bill Clouse for my support of Starduster Corporation, its history and for editing Starduster Magazine. But what made it even better was the awards were presented by Anna Peebles and a kiss from her came with each award. So believe me being kissed by a pretty young lady along with receiving those awards shows that it just can't get any better. It also shows that airplanes can bring people together and that owning a Starduster can bring the best of people together. Anna's parents were wonderful in allowing me to take her flying, and Anna herself is a real sweetheart.

The other award given by Bill Clouse was the "True Grit" award given to Les Homan for attending every Starduster Open House at Flabob in the past ten years, for giving rides and his help in promoting the Starduster Corporation. Congratulations Les, a good friend and a great pilot to fly with.

The aircraft in attendance at Oshkosh were :

- N96576 Starduster Too, Dave & Donna Baxter, Portland, Oregon
- N4226Y Starduster Too, Les Homan, Livermore, California
- N530LR Starduster Too, Larry Rydberg, Albuq., New Mexico
- N8492P Starduster Too, Art Conner, Dallas, Texas
- N277DC Starduster Too, Richard Sherwood, Red Lodge Montana
- N9038Y Starduster Too, Bonnie Peterson, Apalachin New York
- N76GS Starduster Too, Max Bennett, Buffalo New York
- N77GG Acroduster Too, Daryl Glam, Madison, Wisconsin
- N15XX V-Star, Charles Bradford, Palos Height, Illinois.

After spending a wonderful time at Oshkosh, we left Wednesday morning for our return trip to Oregon. We now had four biplanes in our little group, as we convinced Larry Rydberg from Albuquerque New Mexico to fly West with us for little while. Our first stop was Portage WI, followed by Decora IA, Forest City IA, Lemars IA and an overnight with Bruce Fletcher in Orchard Nebraska. The following morning we were off to Valentine NE and we were also down to three biplanes as Larry headed south towards New Mexico. Les was also back up with me and Steve as during the previous days flight he and Larry had been chasing each others tails high and low all across Wisconsin, Iowa and Nebraska. After Valentine it was on to Chadron NE and from there up into the Black Hills of South Dakota and Mt. Rushmore, as Steve had never seen it from the air. Our next stop was New Castle Wyoming and for some of you who have pictures taken by me with my airplane on the ramp and lightning in the background, the hangar I was standing in to take those pictures is now gone! Apparently they had a big wind associated with some thunderstorm activity that just blew them away. Wow, am I glad we weren't there when that happened. After fueling we left Steve as he wanted to see more of the Black Hills. Our next stop was Thermoplis WY for the night.

The next morning we were off on one of our longest legs of the journey over the Tetons and Jackson Hole just southeast of Idaho Falls, over burely to a landing at Twin Falls Idaho, for just a short 3 hour and 40 minute flight. I had called Lowell Slatter before we left Thermoplis and he was there to meet us along with his wife and two daughters. We were treated to a tour of his house, airplane and shop where he and a friend are building two more Super Acroduster Too's.

Both will be powered by big engines and will have several modifications he feels will make it a more wild performer. For those who have never seen his original Acroduster Too N300AD, it is on the cover of this issue of Starduster Magazine. Wow, what an airplane!

From Twin Falls we were in for another long hop, this time to Pendleton Oregon. We ended up spending a great deal of time chatting with Lowell and having a good ole time, so at Pendleton we decided to call it a day. As there was no way we could reach Portland before dark and after logging well over 7 hours in the air, we were ready. The next day consisted of a relatively short hop to Hillsboro, our Home Base. After refueling and removing all the baggage, and letting my wife and son (who had been Les's companion on the return trip) drive home in his car, I joined up with Les as he departed south to the Bay Area and his home in Livermore California.

We departed as a flight of two, and I flew south with him for about 20 miles, I told him how wonderful it was to fly with him and hoped to do it again soon. As the trip neared its end, it became very apparent of how sad I felt as I pulled up into a big 180 degree turn, the blue and yellow airplanes that went so good together would not be flying formation again for some time. Upon my return to Hillsboro, the tower asked if I was a flight of two and I unfortunately had to reply no. But yet it was a wonderful end to a wonderful trip.

EDITOR - D.C.B.



The Peebles Family Oshkosh  
1991 Barb John Joe and Anna

Installation Of Cessna Pedals On Starduster Aircraft

As you can see by the drawings included with this article, installing Cessna pedals is not that difficult of a problem to overcome. By shortening the top  $3/4 \times 035$  tube from 4" to 3" and offsetting the master cylinder, it allows for clearance along the side of the fuselage as well as the rudder cable. The distance between the two pedals ends up being 18" and unless you have a person in the front cockpit with an unusually wide bottom, 18" is more than enough. The pin holes on the Cessna pedals must be moved  $1/2$  "inch down and  $1/2$  " inch towards the rear pedal. The Cessna  $1/4$ " pin with Cotter pin holes on both ends can be used on Starduster rudder posts, just as they were on the Cessna.

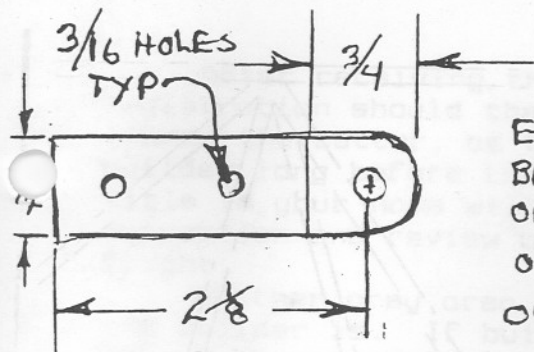
As far as the return spring go, I install them like they call for in the plans; except that I angle them down to a tab connected to the lower motor mount bolt. I also add a smaller spring inside the bigger one. The angle insures that their under tension no matter what angle the rudder pedals are at.

The actuating arm that connects to the clevis on the top of the master cylinder is made out of  $1/8 \times 3/4$  6061 aluminum strap and seems to work fine.

However if it was all made out of  $1/4$  inch aluminum it would probably be better. A  $3/4 \times 1$  "  $\times 1/4$  thick piece of 6061 aluminum is drilled  $3/16$  and welded to the horseshoe actuator piece. This unit is then clamped to the Cessna pedal arm and match drilled for  $3/16$  bolts. The bottom outside edge of the Cessna Pedals needs to be trimmed slightly for rudder cable and post clearance, during full forward rudder travel.

The brake pedal ears are made out of  $1/2 \times 2-3/8 \times 090$  4130. The end is bent to 90 degrees  $3/4$  of an inch away from the end. Three each  $3/16$  holes are drilled in each ear before bending. The ears are then mounted on the top outboard corner of each pedal. The ones on the rear pedals face forward and on the front they face aft. The back of each pedal must be filed flush so that the ears can be clamped and drilled, then the front face of each pedal is counter sunk for  $3/16$  flat machine screws. I am sure there is something I left out. But if you follow the plans, and use these drawings, I think most builders won't have any trouble.

EDITOR - D.C.B.



EAR BRAKE PEDAL  
BEND 90°, FORWARD  
ON REAR PEDALS AFT  
ON FRONT PEDALS.

090 4130

BRAKE PEDAL EAR

3/16

SIDE  
VIEW

3/16 HOLES

WELD

1/4  
HOLE

OLD

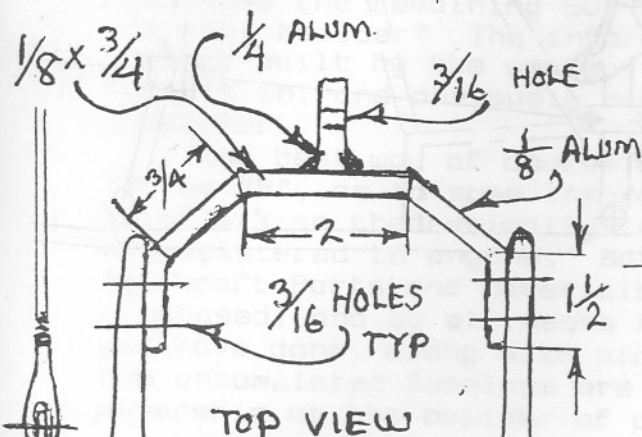
1/2

NEW

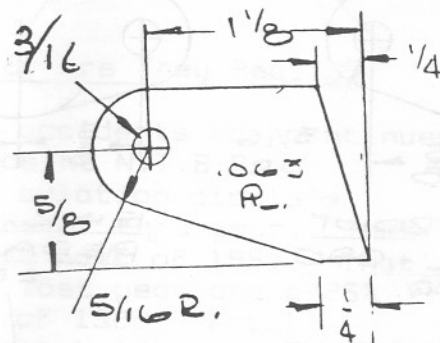
1/2

1"

ORIGINAL HOLE  
MUST BE MOVED  
DOWN AND AFT 1/2"



TRIM SLIGHTLY TO MISSE  
RUDDER CABLE ATTACH PT



DRILL 3/8 COUNTER  
SINK 3/16 FLAT  
HEAD SCREWS

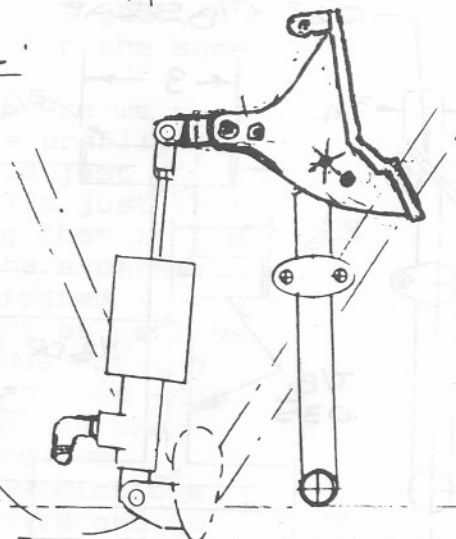
CLEVELAND, CESSNA  
OR GOODYEAR  
BRAKE CYL.

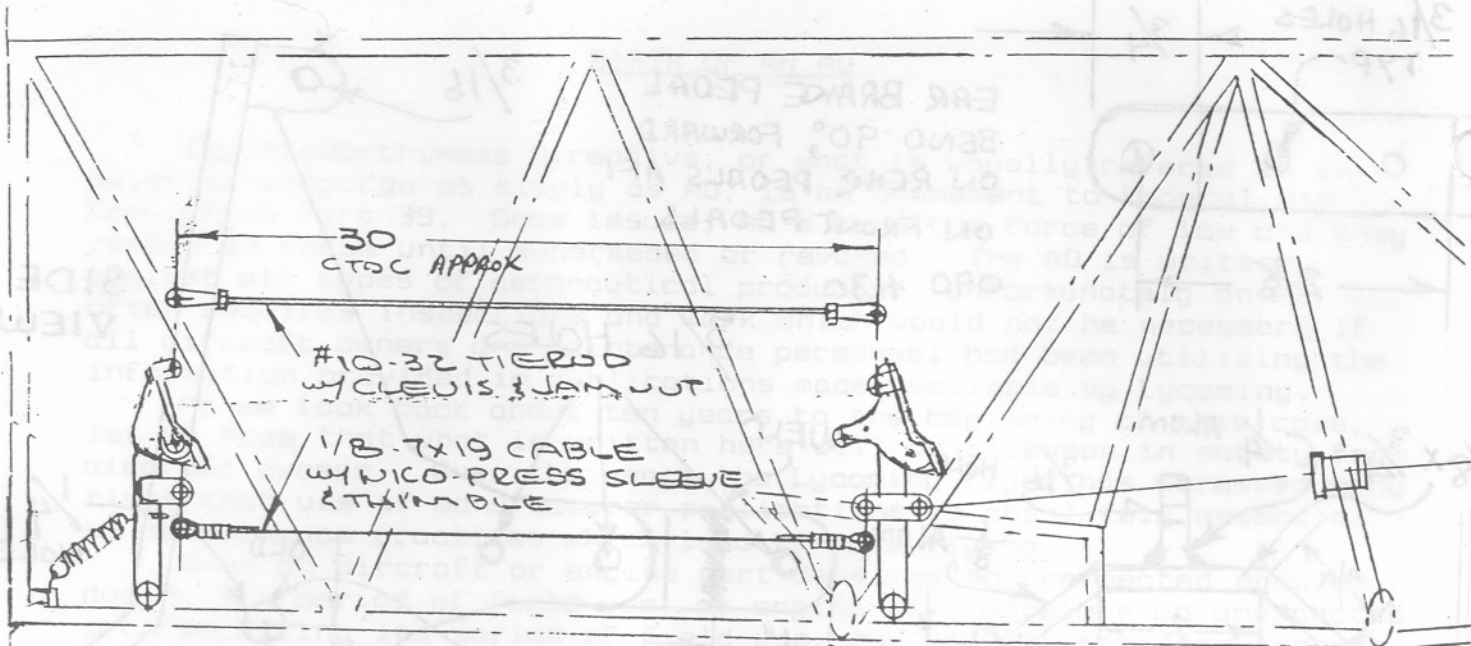
BRAKE CYL  
LUG  
AREA.

OFFSET BRAKE  
CYLINDER APPROX

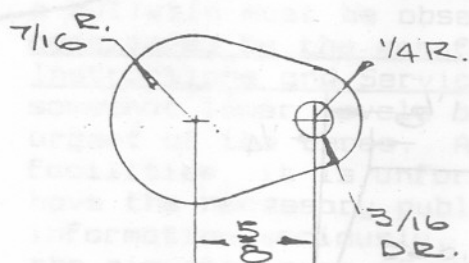
4 1/4  
(TYPICAL)

LONGERON LH

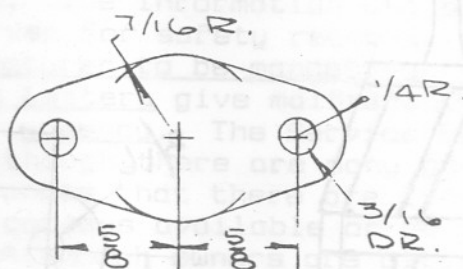




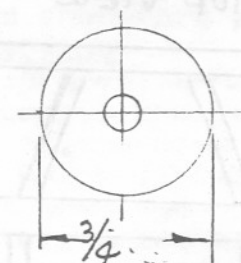
LOWER WING SPAR FRONT



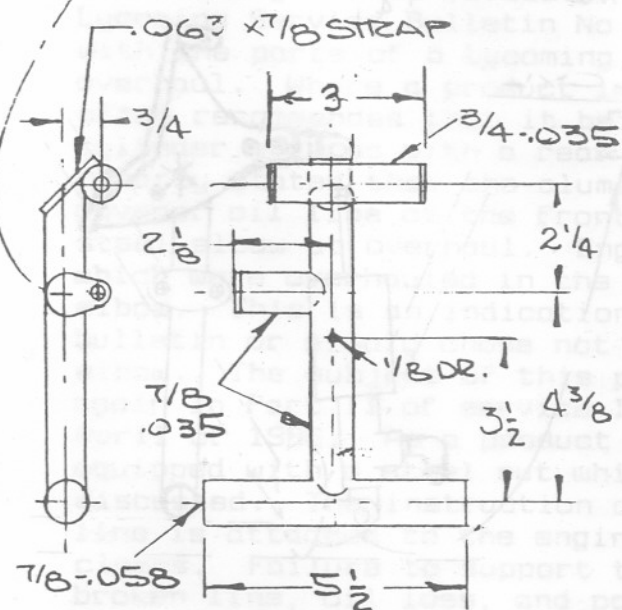
EAR - FRONT  
PEDAL - .090  
2 REQ.



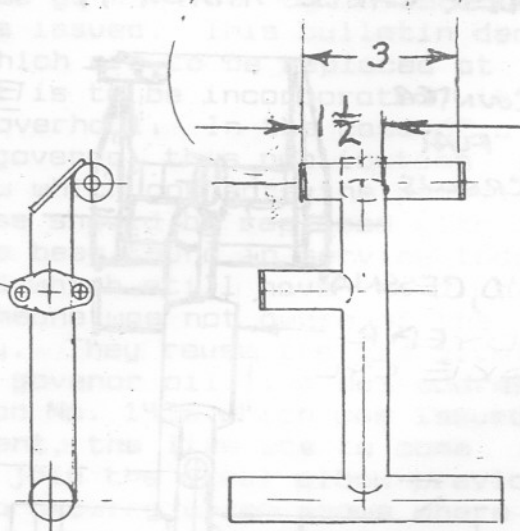
EAR - REAR  
PEDAL - .090  
2 REQ.



END PLATE  
.090. 8 REQ.



FRONT RUDDER  
PEDAL (L.H. SHOWN)



REVERSE FOR RH PEDALS

REAR RUDDER PEDAL  
(SAME AS FRONT EXCEPT EAR  
& OMIT DRILL)

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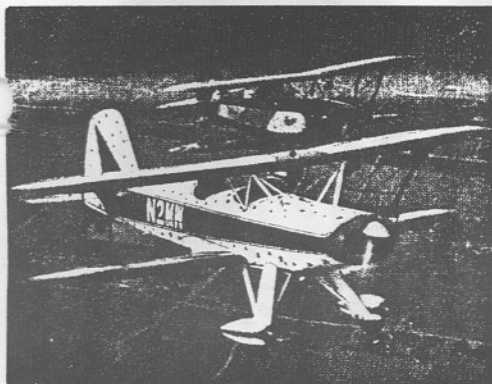
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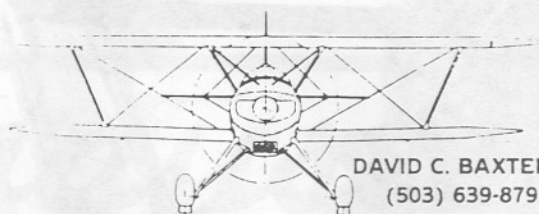
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