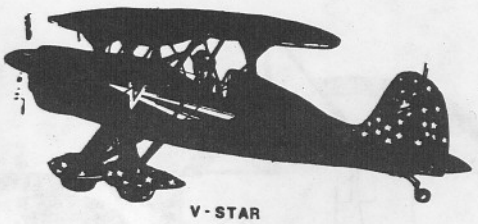
# Stardust

MAGAZINE


APRIL **1993**

Dedicated to the
ACTIVE Homebuilders




APRIL 93

STOLP STARDUSTER CORPORATION

HELLO FELLOW AIRMEN:

SPRING IS HERE - BLUE SKIES AND WARM WEATHER - FLYING WEATHER - TIME TO CHECK OUT OUR AIRPLANES - DAVE BAXTER HAS A FINE ARTICLE ON THAT SUBJEST IN A PREVIOUS EDITION { ?}

I MUST TARGET AGAIN ON LANDING GEAR. WE HAVE HAD THREE FAILURES RECENTLY, ALL INVOLVING OLDER STYLE GEAR. ALL WITH HIGH SIDE LOADS - NONE HAD THE REINFORCEMENT AT MAIN LEG AND LEG TO CENTER OF FUSE [BUNGEE AREA] ONE DID NOT HAVE THE TRAM TUBE - [AFT GEAR ATTACH AREA TO CENTER BUNGEE] ON FAILURE GEAR CAME UP THRU FLOOR AND HIT TANK. THE MESSAGE HERE IS CHECK YOURS AND MODIFY IT IF NOT UP TO LATEST DWG'S.

AM LOOKING FORWARD TO MAY 1. OUR OPEN HOUSE. FOR THOSE NEEDING A ROOM THE PATRIOT INN (909-788-9900). HOPE TO TALK OVER PLANS OF OSHKOSH TIME AND WATOMA. ROOMS THERE ARE TIGHT; GOOD CAMPING SITES AVAILABLE AT AIRPORT.
SUPER EIGHT MOTEL (414-787-4811), TALK TO BARB DIEKFUSS FOR ALTERNATE ROOMS. SHE GUARANTEES ASSISTANCE.
BIRDSONG BED & BREAKFAST (414-622-3770)
BERLIN (15 MILES) 361-4411 TRAVELERS
361-2383 RIVERSIDE
MT MORRIS 787-2919 _____

THATS ALL I HAVE FOR NOW, JULY ISSUES MAY BE TOO LATE FOR ADDITIONAL NUMBERS FOR ROOMS - TRY HARD

SEE SOME OF YOU MAY 1, LOOKING FORWARD TO THIS SUMMER.

"B.C."

YOU KNOW YOUR GETTING OLD WHEN:

WORK BECOMES MORE FUN AND FUN BECOMES WORK --

APRIL 1993

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 this issues contributers and respond to one and all for some interesting information and photos.

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FRONT COVER - N12P. Built by Parker Sherrer, now owned by Gary Due, 733 Grove St., Fond Du Lac, WI 54925. Flown from Florida to Wisconsin during Florida's coldest temperatures on record.

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BACK COVER - N248DW. Owned and built by Dick Waltermire, 420 Tideway Dr., Alameda, CA 94501. Picture taken at Nut Tree Airport, CA. in 1991 with your editor's Starduster Too N96576.

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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). 1993

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THE EDITOR IS ALWAYS LOOKNG 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 ARTICLE SUBMITTED.

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## Odds & Ends From Your Editor

It is my goal to write about activities as well as technical items I think would be of interest to all of you owners, builders, and pilots. It is very important that we communicate with each other regarding problems with maintenance and operation of our aircraft, and that these items be published so that all will be aware.

There are and have been, past and present.people who know little about the aircraft they have bought, and don't seem interested enough in finding out. From improper maintenance to fuel systems they are unfamiliar with, which often time results in fuel starvation.

Just in the last year, two more airplanes no longer exist because of this problem. And the really sad part is that both aircraft had been sold, and the new owners were being checked out by flight instructors, and both crashed only a few miles from the airport they had departed from, one airplane was in the pattern.

So if you know someone who is going to buy one of these airplanes, please make it your business to see to it that the new owner is briefed as to the operation and characteristics of the particular aircraft he has purchased.

One of the main things I would suggest, and I feel I can't stress it enough is to get an instructor who is knowledgeable and proficient with this type of airplane. No responsible instructor would agree to check you out or teach you how to fly your new airplane, without being familiar with this type of aircraft. And certainly he would not agree to teach you aerobatics unless he is more than intimate with the aircraft.

Your editor has just recently received copies of past and present accidents from the NTSB. Many of these accidents I have been aware of for years. However after reading the details, two things seemed to be noted over and over again, and I feel they bare repeating. They are engine failures and low altitude aerobatics.

As for engine failure they tended to break down into different areas. The different areas being fuel problems, either no fuel or contaminated fuel or it was due to accessory failure mags, fuel pump, lines, hoses, and venting, or mechanical failure of the power plant itself due to poor maintenance and inspection.

The other main problem is showing off, buzzing and all sorts of aerobatics at low altitude. About 20 years ago Art Scholl said that low altitude aerobatics require that 100 out of 100 slow rolls have to be done right. The same still hold$true today.

So lets make it a practice to become very familiar with our airplanes systems. To keep fuel in the aircraft, and not do anything stupid at low altitude, no matter what they temptation, and by example encourage our fellow pilots to do the same. Happy & Safe Flying!

D.C.B. Editor

## MORE ODDS & ENDS

The following news clips were taken from several different aviation news papers and are reprinted for your information.

It certainly does not take a rocket scientist to see, that if these trends continue, aviation as we know it will no longer exist. So everytime you hear and old timer talk about the "good old days". You, me, and the rest of us will certainly understand just what is meant by the "good old days". With less airplanes, fewer pilots and fewer airports, the battle to stay in the air becomes more difficult. Accidents and fatalities are down. I don't think people are flying any different than they did last year, there are just fewer airplanes in the air.

But the really big problem is this liability thing. How can an appeals court judge let this type of award stand. Is anyone responsible for their actions anymore. Is it just the money. Piper Aircraft has been bled dry already. In the old days judges wouldn't even hear these types of cases. What ever happened to what's right or wrong. I have never thought very much of attorneys who take these types of cases. But the pilot had to bring the suit against Piper, even though he was probably encouraged to do so. It gets down to one thing, money. There is a lot of money to be made in these types of law suits and the judges in most cases were attorneys before becoming judges and tend to take care of their own. Citing safety, the best interest of the public and the fact that 20 years ago Piper should have known that someday, somebody would do this, and they should have at that time, installed all sorts of safety devices to prevent it.

These types of judgements in my opinion are insanity. If suits continue with this type of mentality then, we should give the United States back to the indians and all of Europe to Neapolean's heirs. No one will argue the fact that if a company knowingly continues to sell a product, after it has been found to be life threatning and some unsuspecting purchaser is injured, he should be compensated. The problem is most injured parties do not receive even a fraction of the award, as it generally goes to attorney fees. So enough said, I think you get my fustration and feeling on this subject. Don't sue anyone, settle it out of court, act responsible, the world and the aviation community does not owe you and me a life long existance. Put something back into aviation.

D.C.B. Editor

(Clippings Cont.pg.34)

# Court upholds pilot's contention that Cub's taildragger design is flawed

DENVER, Colorado — Piper Aircraft recently lost a US Court of Appeals case that could have serious implications for the liability exposure of other aircraft manufacturers.

The 10th Circuit Court of Appeals denied Piper's argument that federal aviation standards should preempt aircraft standards established by the states.

The decision surrounds the case of Cleveland v. Piper involving a 1983 crash of a Piper Super Cub at Mid-Valley Airpark in Las Lunas, New Mexico.

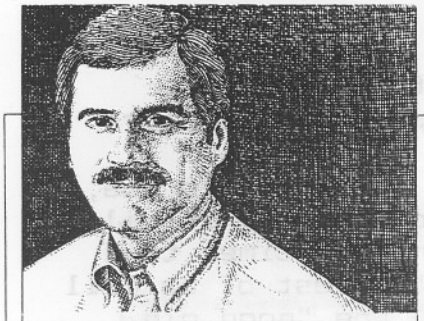
Pilot Edward Cleveland was injured when his head struck a rear-looking camera mount during a collision with a van deliberately placed on the runway to prevent Cleveland from taking off. The Super Cub also was towing a sailplane at the time.

Cleveland's attorneys argued that Piper was liable for the pilot's head injuries because the Super Cub's conventional-gear configuration limited the pilot's forward visibility and because the manufacturer failed to equip the 1970 model year aircraft with shoulder harnesses, even though they were not required in 1970. A jury in New Mexico awarded Cleveland and his wife $2.5 million in damages.

Both the FAA and the US Department of Justice filed amicus briefs supporting Piper's contention that the Super Cub was certified by the FAA and therefore safe. Piper also argued that federal safety standards override state safety standards.

The appeals court judge disagreed, saying that FAA certification is only a minimum requirement for safety.

The decision is likely to have major implications for the liability of manufacturers because it sets a precedent allowing juries in a state court to evaluate the safety validity of an aircraft's design.



LEFT SEAT

REPRINTED FROM AUGUST 1992
FLYING

# LYCOMING'S NEW CUSTOMERS

BY J. MAC MCCLELLAN

You've got a gray engine under your cowling. That makes you a Lycoming customer, right? Not necessarily. In reality, the relationship between pilots and engine makers has been indirect, sometimes even adversarial. It's a situation that Lycoming has spent the last seven years working to change.

Lycoming has been building aircraft engines for more than 60 years, and manufactured sewing machines and specialty piston engines before that. Every general aviation pilot knows the name. It's a good bet that you learned to fly in a Lycoming-powered airplane; most of the popular trainers have been powered by engines from Williamsport, Pennsylvania. Though Continental and Lycoming used to share the four-cylinder engine market, since the late 1970s Lycoming has dominated. Continental still powers the Beech Bonanzas and Barons, but there is a Lycoming under the hood of every other current-production airplane I can think of. And Lycoming powers the Robinson helicopters, the largest-volume general aviation aircraft now in production.

It was Lycoming's very success in convincing airframe manufacturers to use its engines that distanced the company from pilots. Lycoming didn't sell those hundreds of thousands of engines to pilots, it sold them to airframe manufacturers. In this focus on the GA manufacturers as customers, we as pilots were peripheral, considered only to the extent that our liking the engine made it easier to sell to the "real" customer. Building the best engine to meet an airframe manufacturer's requirements was Lycoming's objective; making Cessna, Piper, Mooney and the other manufacturers happy guaranteed a full engine production schedule.

But everything changed in the early 1980s. New aircraft production plunged, and so did Lycoming's market. From building more than 16,000 piston-powered airplanes a year in the late 1970s, U.S. general aviation manufacture declined, to less than 1,000 last year. Those numbers were not enough to sustain Lycoming's business.

Something at Lycoming had to change, and fortunately for pilots, it has been management attitudes. Led by President Phil Boob—a general aviation pilot and veteran of Piper during that company's glory years—Lycoming has focused its attention on the 175,000 owners of the company's engines. Pilots, not airframe manufacturers, are now the primary customer. Boob knows that it is actual flying, not just new airplane manufacturing, that will sustain general aviation and his company.

**SOMETHING HAD TO CHANGE; FORTUNATELY FOR PILOTS, IT WAS LYCOMINGS ATTITUDE.**

The new attitudes are reflected from the top down. Textron, Lycoming's parent, recently made the piston engine operation a full division. Turbine and piston engine manufacturing had until lately been lumped into one division, forcing the piston guys in Williamsport to go through division-level management at the turbine operation before reaching the top guys at Textron. Now Boob reports directly to Textron headquarters, where Terry Stinson, a general aviation pilot and airplane owner, supervises the division.

To successfully convert Lycoming engine owners to actual Lycoming customers, the company must be responsive to pilots' needs—and what pilots need most is to keep their engines running reliably at the most efficient cost. A survey of Lycoming engine owners, aircraft mechanics and FBOs found that the company enjoyed a generally good reputation for the quality and performance of its engines but didn't do as well in the areas of service and responsiveness. And, of course, everybody wants lower prices.

Because Lycoming had been focused on delivering new engines to airframe manufacturers for so long, the new-engine production schedule dominated the company; the pilot who needed a spare part was not at the top of the list. Boob has made some changes. For example, parts stockrooms are now combined so that workers building new engines and those shipping spare parts draw on the same stock. The company is filling over 90 percent of its spare-parts orders immediately.

Lycoming also cut prices on overhauled engines and on some replacement parts. A temporary reduction in the price of cylinders earlier this year was so successful that that program may be extended.

In addition to spare-parts support, pilots want a logical and cost-effective engine renewal program from Lycoming. The company offers three options—a new engine, a factory rebuilt or a factory overhaul. The new engine is just that—new, and expensive. The factory rebuilt is the official FAA word for what most pilots call a "factory remanufactured" engine; it contains mostly new parts, including cylinders, but critical and expensive components such as the crankshaft and connecting rods can be reused if they meet new tolerances. The factory-overhauled engine also contains many new parts, but items such as the crankshaft need only meet overhaul specs, instead of the factory-new tolerances that a rebuilt demands.

Only one of the three options—the new engine—requires no explanation. But a new engine doesn't make sense for most pilots because it costs two to three times as much as a factory-overhauled engine. Factory-rebuilt or factory-overhauled engines are logical alternatives, but in the past Lycoming has not done a good job of explaining why.

The single most important tangible difference between a rebuilt and an overhauled engine is that the rebuilt starts life with true zero time. It has a new serial number and a blank logbook. A rebuilt is as good as new, on paper, for half the price of a new engine, or less. The factory-overhauled engine costs considerably less than the rebuilt, but continues with its former serial number and logbook history.

The FAA says that only Lycoming can "rebuild" its own engines to true zero time, so there is no way to compare the cost of a factory rebuilt with any overhaul done in the field. We would expect to pay a premium to get an engine that is built to new standards by the people who built it the first time.

But the picture is less clear when comparing the value of a factory overhaul with one from an independent shop. I think Lycoming should be able to overhaul any of its engines for no more, and possibly less, than a quality independent shop so long as both replace the same number of parts in the engine with new components. Lycoming overhauls its engines using assembly-line procedures, so it's inconceivable to me that an independent shop working on a variety of engines could do the job in fewer man-hours. Lycoming can obviously obtain the replacement parts for less than an overhaul shop can, because Lycoming supplies the parts. And Lycoming can minimize downtime by shipping the overhauled engine to you before you remove the run-out engine. A factory overhaul or factory rebuilt also has a firm price with no surprises. As long as your engine was running and not damaged by a prop strike, for example, Lycoming gives you full "core credit" on your run-out engine so you know exactly how much the engine replacement will cost. If you have your engine overhauled in the field, your shop may find some surprises when it opens the case—and you pay the extra for unanticipated parts replacement.

**YOUR SHOP MAY FIND SOME SURPRISES WHEN IT OPENS THE CASE.**

Some pilots demand the personal attention of a customized overhaul, but most of us are happy with the way the engine was originally built at the factory and would like to have a worn engine returned as close to new as is cost-effective. That is Lycoming's challenge. If the company really wants to serve individual pilots as customers, it must be able to renew an engine to a level that both the maker and the pilot are comfortable with. And that's what Lycoming is promising to do.

If you fly a Lycoming-powered airplane and are coming due for engine overhaul, check out the new attitude in Williamsport. Lycoming can supply you with a comprehensive list of replacement parts and inspection procedures used in its factory overhauls and rebuilts. Compare what you get from Lycoming with what you can buy in the field. Make certain the overhaul shop you compare with Lycoming is replacing as many parts and maintaining the same tolerances as the factory, and get it in writing.

I think Lycoming management is serious about serving pilots, but there's only one way to find out. Put them to the test the next time your engine needs overhaul. □

**TEXTRON Lycoming**

**Williamsport Plant**
Textron Lycoming/Subsidiary of Textron Inc.
652 Oliver Street
Williamsport, PA 17701 U.S.A.

# SERVICE LETTER

Service Letter No. L163C
(Supersedes Service Letter No. L163B)
May 20, 1991

TO: All Owners and Operators of Textron Lycoming Opposed Series Aircraft Engines.

SUBJECT: Recommendations Regarding Accidental Engine Stoppage, Propeller Strike, Loss of Propeller Blade or Tip.

On numerous occasions we have been consulted about recommendations on whether to continue using the aircraft engine that has been involved in the separation of the propeller blade from the hub, the loss of a propeller blade tip or sudden stoppage following accidental propeller damage (such as propeller strike).

Conditions which surround accidents are many and varied; therefore the circumstances of the accident can not, in our opinion, be used to predict the extent of the damage to the engine or assure its future reliability.

Textron Lycoming must take the position that in the case of a sudden engine stoppage, propeller strike, loss of propeller blade or tip, the safest procedure is to remove and disassemble the engine and completely inspect the reciprocating and rotating parts including crankshaft gear and dowel parts. Any decision to operate an engine which was involved in a sudden stoppage, propeller strike, loss of propeller blade or tip without such an inspection must be the responsibility of the agency returning the aircraft to service.

NOTE: Revision "C" adds propeller strike as accidental propeller damage and changes Avco to Textron.

**TEXTRON Lycoming**

**Williamsport Plant**
Textron Lycoming/Subsidiary of Textron Inc.
652 Oliver Street
Williamsport, PA 17701 U.S.A.

# SERVICE BULLETIN

Date: July 16, 1990

Service Bulletin No. 475A
(Supersedes Service Bulletin No. 475 and Supplement No. 1)
Engineering Aspects are
FAA Approved



SUBJECT: Crankshaft Gear Modification and Assembly Procedures.

MODELS AFFECTED: All Textron Lycoming Direct Drive Piston Aircraft Engines (except: O-320-H, O-360-E, LO-360-E, TO-360-E, LTO-360-E, and TIO-541 series engines).

TIME OF COMPLIANCE: During overhaul, after a propeller strike, or whenever crankshaft gear removal is required.

Damage to the crankshaft gear and the counterbored recess in the rear of the crankshaft, as well as badly worn or broken gear alignment dowels are the result of improper assembly techniques or the reuse of worn or damaged parts during reassembly. Since a failure of the gear or the gear attaching parts would result in complete engine stoppage, the proper inspection and reassembly of these parts is very important. The procedures described in the following steps are mandatory.

CAUTION

PRIOR TO MAKING ANY REPAIRS TO THE CRANKSHAFT, INSURE THAT THE COUNTERBORED GEAR MOUNTING FACE OF THE CRANKSHAFT IS UNDAMAGED BY FRETTING OR GALLING. DAMAGE OF THIS NATURE IS UNREPAIRABLE.

1. Examine the threads in the gear retaining bolt hole of the crankshaft. Insure that the tapped hole is clean and the threads are undamaged. The threads can be cleaned by running a tap through them. Use a standard .3125-24NF3 (P.D. .2854/.2878) tap for 5/16 inch threads. Use a standard .500-20NF3 (P.D. .4675/.4701) tap for 1/2 inch threads. Check the depth of the thread by threading a gear retaining bolt to the bottom of the hole and comparing the exposed length of the bolt with the thickness of the gear and lockplate.

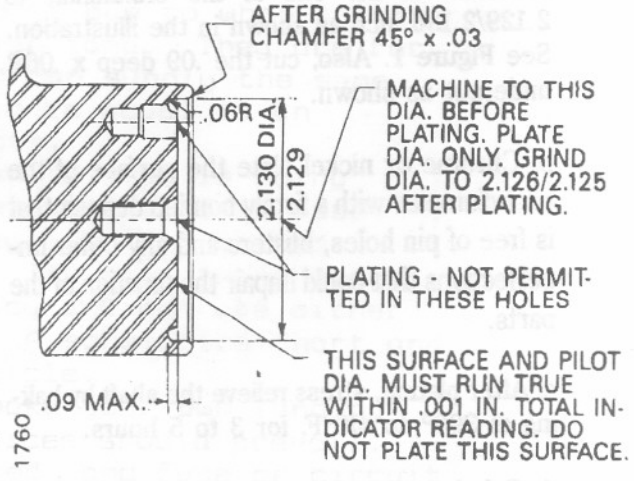



Figure 1. Details for Repairing Pilot Diameter of Crankshaft

2. Check the condition of the dowel in the end of the crankshaft. It should be perfectly smooth

with no indication of nicks or deformation. If it is out of round, it should be removed and replaced with a new one. Replacement instructions are in paragraph 4. If dowel condition is acceptable, insure that it is installed as shown in Figure 2 or 3.

NOTE

If the dowel must be removed, it is very important to do so without damaging the hole in the crankshaft. A satisfactory method consists of drilling a 1/8 in. dia. hole through the center of the dowel; then fill the hole with oil and insert a piece of 1/8 in. dia. drill rod in the hole. Strike the end of the drill rod a sharp blow with a hammer. Hydraulic pressure of the oil will force the dowel from the crankshaft.

3. Check the pilot diameter of the counterbore on the end of the crankshaft for size and evidence of damage. This diameter should not exceed 2.1262 inches when measured at any location. If found to be oversize, the crankshaft may be repaired as described in the following steps. Do not attempt to reuse a crankshaft with an oversize pilot diameter.

a. After removing the dowel, machine the pilot diameter in the end of the crankshaft to 2.129/2.130 inch as shown in the illustration. See Figure 1. Also, cut the .09 deep x .06R undercut as shown.

b. Chrome or nickel plate the surface of the pilot diameter with a firmly bonded deposit that is free of pin holes, blisters and any other imperfections that could impair the function of the parts.

c. After plating, stress relieve the shaft by baking at 390° to 410°F. for 3 to 5 hours.

d. Grind the plated pilot diameter surface to 2.125/2.126 inch. Note that the diameter must run true with rear main journal within .001 inch total indicator reading.

e. Chamfer edge of pilot diameter 45° x .03 as shown in Figure 1.

4. If the dowel has been removed, check the condition of the dowel hole in the crankshaft. If out-of-round or oversize, ream as required for installation of an oversize dowel. Available oversize dowels and the corresponding size for reamed holes are shown in Table I.

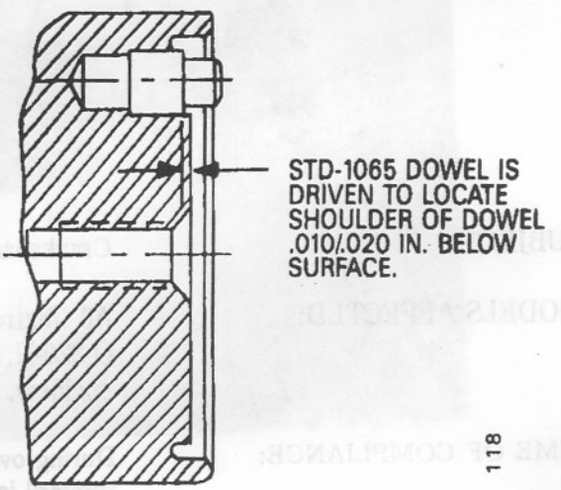



Figure 2. Section Thru End of Crankshaft Showing Driven Height of STD-1065 Dowel

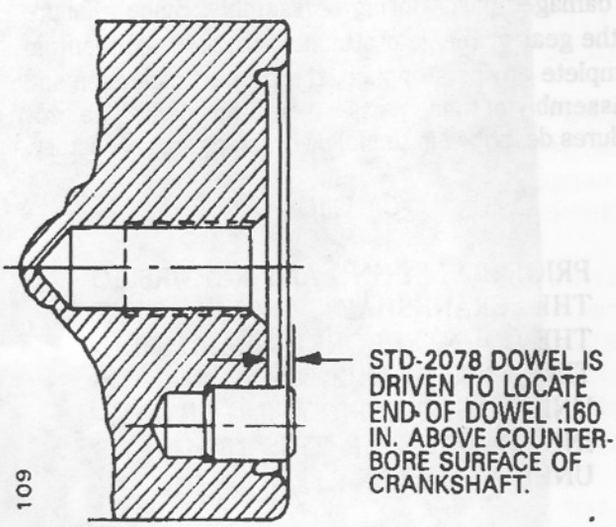



Figure 3. Section Thru End of Crankshaft Showing Driven Height of STD-2078 Dowel

5. Install a new dowel in the crankshaft as shown in Figures 2 and 3. Insure that the correct dowel is installed.

| TABLE I - DOWELS & DOWEL HOLES | | | |
|---|---|---|---|
| Dowel Part No. | Size Code on Dowel | Diameter of Dowel "A" (fig. 4) | Diameter of Dowel Hole in Crankshaft |
| STD-1065 | None | .3095/.3100 | .3085/.3095 |
| STD-1065-P02 | P02 | .3115/.3120 | .3105/.3115 |
| STD-1065-P05 | P05 | .3145/.3150 | .3135/.3145 |
| STD-1065-P10 | P10 | .3195/.3200 | .3185/.3195 |
| STD-1065-P15 | P15 | .3245/.3250 | .3235/.3245 |
| STD-2078 | None | .3760/.3765 | .3750/.3760 |
| STD-2078-P02 | P02 | .3780/.3785 | .3770/.3780 |
| STD-2078-P05 | P05 | .3810/.3815 | .3800/.3810 |
| STD-2078-P10 | P10 | .3860/.3865 | .3850/.3860 |
| STD-2078-P15 | P15 | .3910/.3915 | .3900/.3910 |

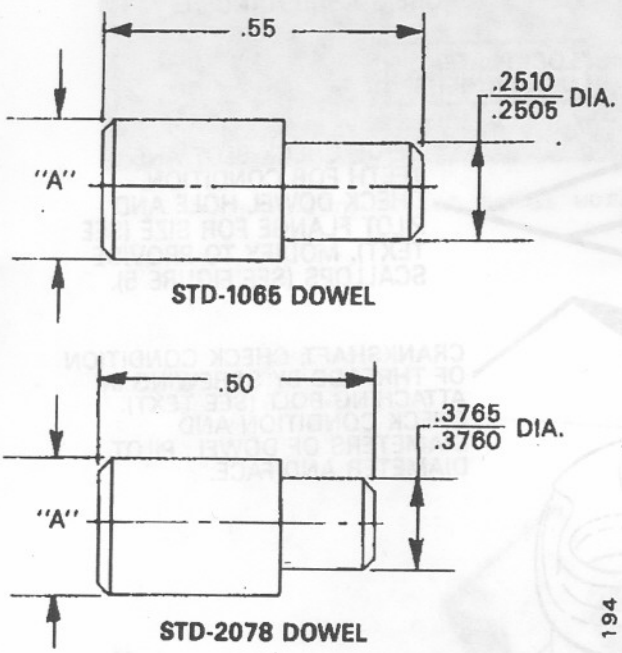



Figure 4. Details of Crankshaft Dowels

NOTE

Crankshaft gears for applicable engines are now manufactured with three 3/4 inch radius scallops cut into the O.D. of the pilot flange. These enlarged scallops have been added to allow inspection of the gear and crankshaft assembly. Serviceable gears must be modified as shown in Figure 5, prior to being reassembled on the crankshaft, or a new gear that has been manufactured to this configuration must be installed. Before modifying the gear, measure the diameter of the pilot flange. If it is less than 2.1245 inch, it should not be reused unless this dimension can be restored with a .0005 inch thick flash copper plate.

| TABLE II CRANKSHAFT GEAR & ATTACHING PARTS | | | | |
|---|---|---|---|---|
| New Crankshaft Gear Part No. | Superseded Crankshaft Gear Part No. | Lockplate Part No. | Bolt Part No. | Dowel Part No. |
| 13S19646 | 61155 | LW-18639 | STD-2213 | |
| 13S19647 | 67514 | LW-18638 | STD-2209 | (5/16 in. diam.) |
| 13S19648 | 76786 | LW-18638 | STD-2209 | |
| 13S19649 | LW-10284 | LW-10332 | AN8-14A | STD-2078 (3/8 in. diam.) |

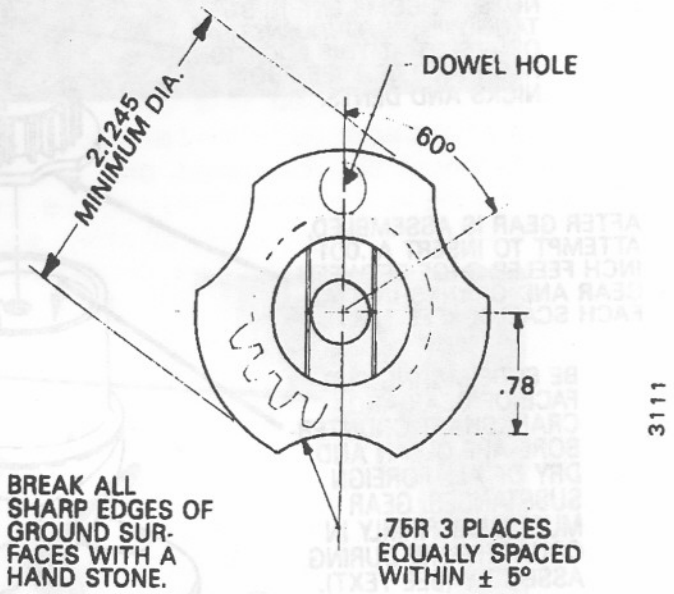



Figure 5. Details for Modification of Crankshaft Gear to Provide Means for Inspection

6. Assemble the gear to the crankshaft **using both a new lockplate and bolt**. Refer to Figure 6. The correct bolt, lockplate and dowel for each gear are shown in Table II. Tighten the bolt to 125 inch lbs. torque, then with a hammer and brass drift, tap lightly around the pilot flange of the gear and listen for sharp solid sounds from the hammer blows that would indicate that the gear is seated against the crankshaft. To insure that the gear flange is properly seated against the crankshaft, attempt to insert a pointed .001 inch

thick feeler gage or shim stock between the gear and crankshaft at each of the three scallops. The feeler gage must **NOT** fit between the two surfaces at any location. Retighten the gear attaching bolt to the proper torque. Tighten the 5/16 inch bolt to 204 inch-pound torque or the 1/2 inch bolt to 660 inch-pound torque. Measure the clearance between the O.D. of the gear flange and the pilot I.D. of the crankshaft. There should not be more than .001 inch clearance at any point.

7. Bend the lockplate against the bolt head.

8. A logbook entry, specifying the final bolt torque, verifying that the lockplate was properly bent in place against the bolt head and that the inspections and rework required by Textron Lycoming Service Bulletin No. 475A were accomplished, should be made and signed by an authorized inspection representative.

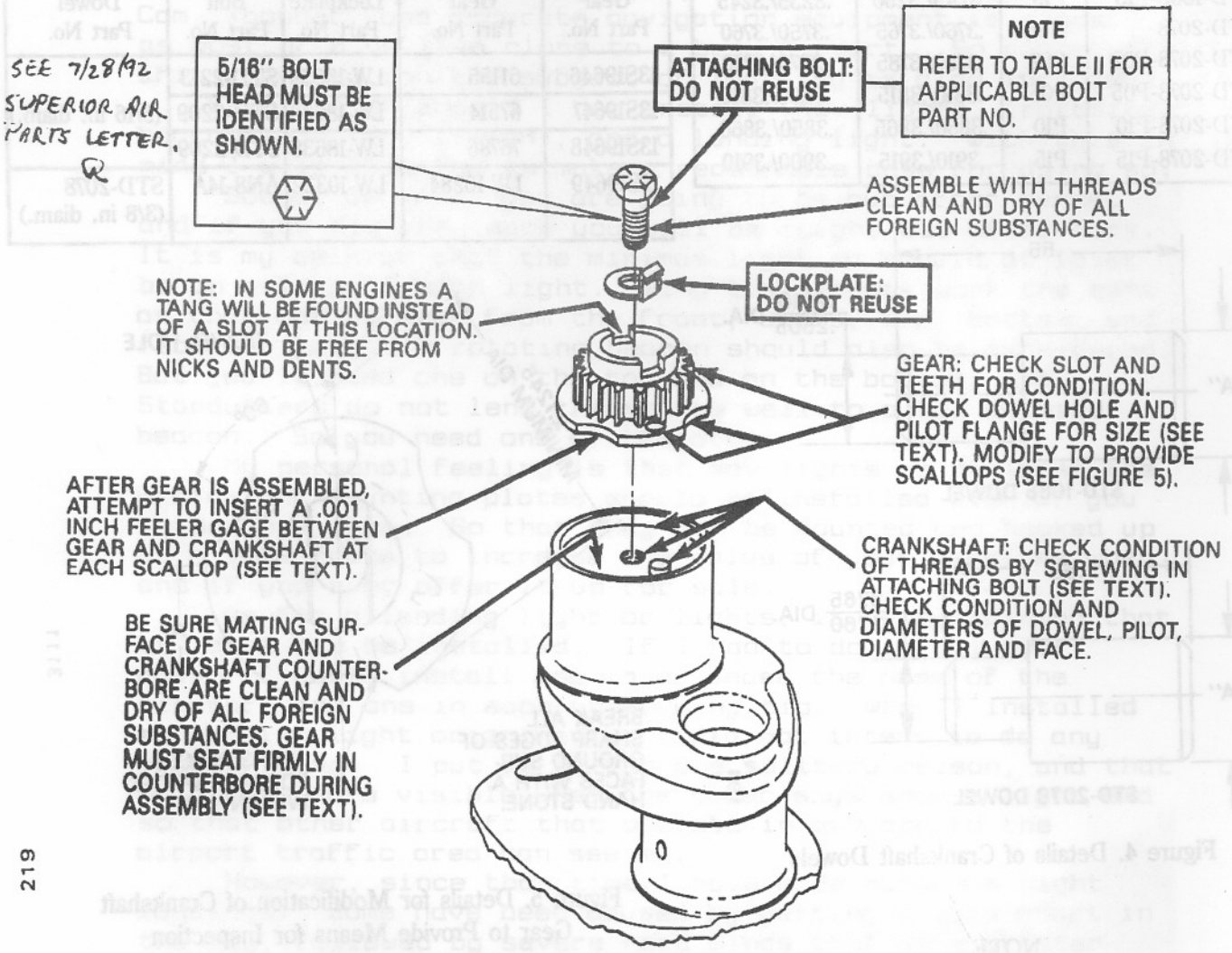



Figure 6. Rear End View of Crankshaft Showing Associated Parts

CAUTION

NO FIELD REPAIR OF CRANKSHAFT GEAR ATTACHING THREADS IS PERMITTED. CRANKSHAFTS REQUIRING THIS TYPE OF REPAIR **MUST BE** RETURNED TO THE FACTORY THROUGH AN AUTHORIZED TEXTRON LYCOMING DISTRIBUTOR.

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NOTE: Revision "A" adds caution note and includes all information in Service Bulletin No. 475 and Supplement No. 1 to Service Bulletin No. 475.

15563, 16674 22644, 22644A — These numbers for Textron Lycoming reference only.

BW 91-16

AVCO CORPORTATION, LYCOMING DIVISION
AIRWORTHINESS DIRECTIVE
ENGINE
SMALL AIRCRAFT

91-14-22 TEXTRON LYCOMING: Amendment 39-6916. Docket No. 89-ANE-10.

Applicability: Textron Lycoming (formerly Avco Lycoming) direct drive piston aircraft engines (except: O-320-H, O-360-E, LO-360-E, TO-360-E, LTO-360-E and TIO-541 series engines).

Compliance: Required at each engine overhaul, after a propeller strike, sudden stoppage, or whenever gear train repair is required. A propeller strike for the purpose of this AD, is defined as a sudden engine stoppage, or loss of a propeller blade or tip.

NOTE: Avco Lycoming Service Letter No. L163B dated December 23, 1977, "Recommendations Regarding Accidental Engine Stoppage, Loss of Propeller Blade or Tip," contains additional information on the subject.

To prevent loosening or failure of the crankshaft gear retaining bolt, which may cause sudden engine failure, accomplish the following:

(a) Inspect the crankshaft counterbored recess, the alignment dowel, the retaining bolt and lock plate, the bolt hole threads, and the crankshaft gear for wear, galling, corrosion, and fretting in accordance with Sections 1 through 7, including all tables and figures in Textron Lycoming Service Bulletin (SB) No. 475, Revision A, dated July 16, 1990.

(b) Prior to further flight, repair, rework, or replace damaged or worn parts as identified in paragraph (a) of this AD.

(1) Repair and rework crankshaft pilot diameter in accordance with Textron Lycoming SB 475, Revision A, dated July 16, 1990, and replace dowel pin with appropriate size dowel as shown in Table 1 of the service bulletin.

(2) Insure that the tapped threads in the gear retaining bolt hole of the crankshaft are clean and undamaged. If threads are damaged, replace crankshaft with a serviceable unit, or have threads repaired by an FAA approved facility specifically approved to do that repair.

(3) Inspect the counterbored gear mounting face of the crankshaft to ensure there is no damage due to fretting or galling, as damage of this nature is unrepairable.

(4) Repair crankshaft counterbore pilot diameter, if necessary, in accordance with Section 3 of Textron Lycoming SB No. 475, Revision A, dated July 16, 1990.

(5) Verify that the crankshaft gear incorporates three .75 inch radius scallops on the flange as shown in Figure 5 of Textron Lycoming SB No. 475, Revision A, dated July 16, 1990. Assemble gear onto crankshaft using a new retaining bolt and lockplate and insure fit of mating parts as described in Section 6 and Figure 6 of the Textron Lycoming Service Bulletin No. 475, Revision A, dated July 16, 1990.

(c) Aircraft maybe ferried in accordance with the provisions of FAR 21.197 and 21.199 to a base where the AD can be accomplished.

(d) Upon submission of substantiating data by an owner or operator through an FAA Inspector (maintenance, avionics, or operations, as appropriate), an alternate method of compliance with the requirements of this AD or adjustments to the compliance schedule specified in this AD may be approved by the Manager, New York Aircraft Certification Office, Engine and Propeller Directorate, Aircraft Certification Service, FAA, 181 South Franklin Avenue, Room 202, Valley Stream, New York 11581.

The inspection procedures shall be done in accordance with the following Textron Lycoming document:

| DOCUMENT NO. | PAGE NO. | ISSUE/REV. | DATE |
|---|---|---|---|
| SB 475 | 1-4 | A | 07/16/90 |

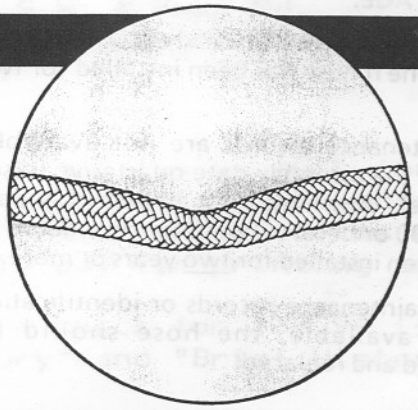
This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies may be obtained from Textron Lycoming, Oliver Street, Williamsport, Pennsylvania 17701. Copies may be inspected at the FAA, New England Region, Office of the Assistant Chief Counsel, 12 New England Executive Park, Burlington, Massachusetts 01803, or at the Office of the Federal Register, 1100 L Street, NW, Room 8401, Washington, DC.

This amendment (39-6916, AD 91-14-22) becomes effective on August 19, 1991.

FOR FURTHER INFORMATION CONTACT:

Mr. Pat Perrotta or Mr. N. Minnitti, Propulsion Branch, New York Aircraft Certification Office, ANE-174, FAA, Engine and Propeller Directorate, Aircraft Certification Service, 181 South Franklin Avenue, Room 202, Valley Stream, New York 11581; telephone number (516) 791-7421.

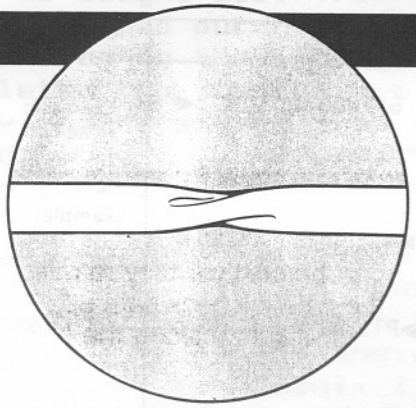
# 7 Quick Ways To Spot Hose Line Problems Before They Cause Big Trouble



## Kinked Hose

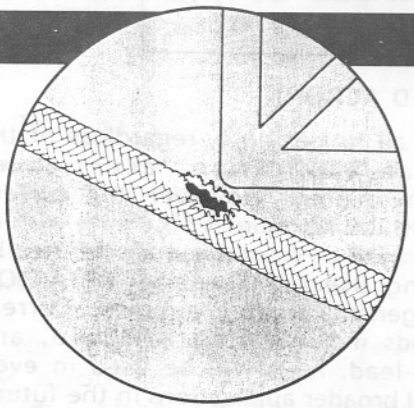
Usually is a result of Teflon* hose being improperly handled. Fluid flow is reduced. A break is in the making.

*Teflon is a DuPont trademark



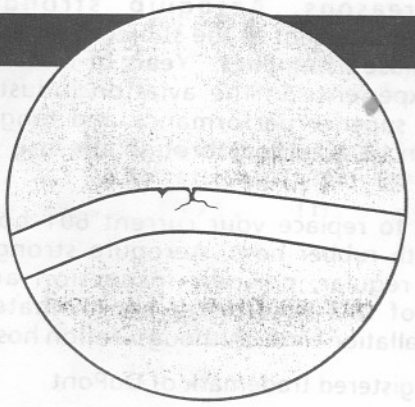
## Twisted Hose

Incorrectly installed, easy to spot. Flow is cut down. If the hose is permanently deformed, replace it at once.



## Scuffed Hose

Results from abrasion against a frame, an engine component, or another hose, or from incorrect clamping. Hard to detect on unsleeved wire-braided hose. Sleeved hoses usually exhibit evidence of wear if this problem is present.



## Brittle Hose

Rubber hose that's hardened, no longer flexible. Feel for stiffness. Wiggle and listen for crackling. Temperature and time produce this effect. Be sure you have the correct type of hose for the application.



Aeroquip

**Aeroquip Corporation**
Aerospace Group
300 South East Avenue
Jackson, Michigan 49203-1972
517/787-8121
Fax: 517/787-5758

Aeroquip
A TRINOVA Company

# AEROQUIP SERVICE BULLETIN

**TO OWNERS/OPERATORS OF ALL GENERAL AVIATION AIRCRAFT USING AVIATION GASOLINES (E.G., INCLUDING, BUT NOT LIMITED TO, 100 OCTANE LOW LEAD, HIGH OCTANE AUTOMOTIVE UNLEADED, ETC., HEREINAFTER REFERRED TO AS "AVIATION GASOLINE").**

Aeroquip Corporation's Aerospace Group has recorded several failures of its 601-type hose over the past 12-month period. **The subject hose meets all required specifications,** however, based upon data accumulated to date, it appears that the use of this hose in fuel systems which carry AVIATION GASOLINE is adversely affecting the life expectancy and performance which Aeroquip has historically experienced with this type of hose. Aeroquip has seen degradation of the elastomeric inner tube which has resulted in the tube cracking, which, in turn, has caused leaking of the 601 hose in these limited types of applications. Based on the data which Aeroquip has accumulated to date, it appears that this phenomenon is occurring after approximately two (2) years installation time (independent of actual service hours on the subject hose). **To the extent your aircraft may be affected by this phenomenon, Aeroquip recommends that you inspect your aircraft to determine:** (a) if your aircraft has 601-type hose fuel lines; and (b) the age and condition of said hoses. Aeroquip strongly recommends that any 601 hose, which is approaching, or has more than two (2) years in an AVIATION GASOLINE application, be replaced in accordance with the recommended action outlined in this Service Bulletin.

**Note: This Service Bulletin does not apply to applications using Jet A, JP4, JP5, or JP8 grades of fuel commonly used for turbine/jet engines. It also does not apply to other fluids such as lubricating oils, REF. MIL-L-7808 or MIL-L-23699.**

## HOW TO IDENTIFY 601 HOSE ASSEMBLIES AND AGE:

### IDENTIFICATION:

I. Aeroquip 601 hoses have a red socket

II. Locate metal identification tag (see example)

- 601 hoses typically begin with part number 601xxx
- Hoses that begin with AE701xxxx are not covered by this Service Bulletin. Most Cessna Twins use AE701 type hose.

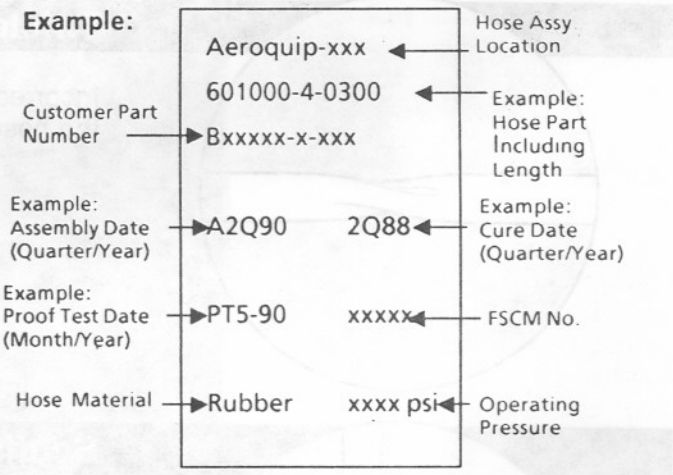
### DETERMINING AGE:

I. Review maintenance log books to determine if hose has been installed for two years.

II. If maintenance records are not available, refer to the assembly date quarter/year (see example). Any hose with an assembly date of A4Q90 or before should be considered to have been installed for two years or more.

III. If no maintenance records or identification tag is available, the hose should be removed and replaced.

**Example:**




### RECOMMENDED ACTION:

As you know, all rubber hose, regardless of the nature of the application, experiences degradation over time. However, the current phenomenon which Aeroquip is observing with its 601 hose appears to be caused and accelerated by the expanding use of low-lead AVIATION GASOLINE in general aviation aircraft. Current aviation trends indicate that low-lead, and eventually no-lead, fuels will be used in ever-expanding and broader applications in the future. **For those reasons, Aeroquip strongly recommends replacement of the subject 601 hose with Teflon* hose assemblies.** Years of research and service experience in the aviation industry indicates that superior performance and longer service life can be achieved through the use of Teflon hose.

If you choose to replace your current 601 hose assemblies with rubber hose, Aeroquip strongly recommends regular, periodic inspection and replacement of said hoses after approximately two years installation time. Although Teflon hose

*Teflon is a registered trademark of DuPont

assemblies should also be subjected to regular periodic inspection, **Teflon is normally unaffected by many of the operating variables which contribute to rubber hose degradation, and will give you superior performance and longer service life.** Teflon hose alternates are fully approved to FAA TSO C53 and TSO C75.

Aeroquip has established a comprehensive substitution program under which owners/ operators may obtain Teflon hoses at a price which is approximately 10 to 20 percent lower than its 601 equivalent. (Price difference will vary according to configuration.) For more detailed information regarding this program, please contact one of the distributors listed and provide the distributor with the following information:

Owner's Name:

Address:

Telephone Number:

Aircraft Registration Number:

Hose Assembly Part Number or Description:

Aircraft Type:

Number of Hours Service:

## PARTICIPATING DISTRIBUTORS

**UNITED STATES**

**Aero Hardware & Supply, Inc.**
4301 N.W. 36th Street
Miami Springs, FL 33166
Phone: 800-633-3997
Contact: Ms. Marty Pardo
Fax: 305-883-6179

**Airparts Company, Inc.**
5801 West Harry
Wichita, KS 67277
Phone: 316-943-2377
Contact: Pete Pankratz
Fax: 316-943-1023

**Avsco**
3820 N. Liberty Street
Winston-Salem, NC 27105
Phone: 919-767-5993
Contact: Steve Stayschich
Fax: 919-767-5277

**Cosgrove Aircraft Service, Inc.**
70 Oser Avenue
Hauppauge, NY 11788
Phone: 516-231-6111
Contact: Quentin Nieman
Fax: 516-231-6128

**Cooper Aviation Supply Co.**
2149 East Pratt Blvd.
Elk Grove Village, IL 60007
Phone: 800-654-4944
Contact: Brian Bradford
Fax: 708-364-0223

**Eastern Aero Supply, Inc.**
Municipal Airport
Millville, NJ 08332
Phone: 609-825-2500
Contact: Richard B Federici
Fax: 609-825-3073

**Falcon Crest Aviation Supply**
7798 Braniff
Houston, TX 77061
Phone: 713-644-2290
Contact: Steve Balko
Fax: 713-644-0356

**Herber Aircraft Service, Inc.**
1401 E. Franklin Avenue
El Segundo, CA 90245-4307
Phone: 310-322-9575
Contact: Dave Antonopoulos
Fax: 310-322-1875

**Hoses Unlimited, Inc**
618 Doolittle Drive
San Leandro, CA 94577
Phone: 510-632-4477
Contact: Sandra Hanson
Fax: 510-632-7763

**Nelson-Dunn, Inc.**
940 South Vail Avenue
Montebello, CA 90640
Phone: 310-724-3705
Contact: Dave Dodwell
Fax: 310-722-8136

**Ni-Cad Inc.**
55215 Mayflower Rd.
South Bend, IN 46628
Phone: 219-287-5905
Contact: Phil McClure
Fax: 219-287-1267

**Omaha Airplane Supply**
Eppley Airfield
Omaha, NE 68119
Phone: 402-422-6666
Contact: Dick George
Fax: 402-341-7895

**Superior Air Parts, Inc**
15800 Midway Rd.
Dallas, TX 75244
Phone: 800-487-4673
Contact: Kevin Housh
Fax: 214-991-4396

**Varga Enterprises, Inc.**
2350 South Airport Blvd.
Chandler, AZ 85249
Phone: 602-963-6936
Contact: Tammy Moncivaiz
Fax: 602-899-0324

**CANADA**

**Leavens Aviation**
2555 Derry Road, East
Mississauga, Ontario L4T 1A1
Phone: 416-678-1234
Contact: Russ Anderson
Fax: 416-678-7028

**Tuboquip, Inc.**
849 McCaffrey
Saint-Laurent, Quebec H4T 1N3
Phone: 514-341-3511
Contact: Dennis Jeanotte
Fax: 514-341-0681

**Wesco Aircraft Canada, Ltd.**
6175 Kestrel Road
Mississauga, Ontario L5T 1Z2
Phone: 416-670-2624
Contact: Wes Armstrong
Fax: 416-670-3637

# STARDUSTER HISTORY

## SA-900 "V" STAR
## N9LS

The first V Star came about due to many factors. Lou had always talked about building an inexpensive single place biplane. It would be of low horsepower, with easy construction techniques and have the same basic lines of previous Starduster aircraft.

The idea was to eventually convert the already successful Starlet into a biplane. However, during this time Starduster Corporation was aquired by Jim Osborne, with Lou staying on to help with the transition. At the time only a basic fuselage and landing gear was complete. This was May of 1972. Jim Osborne along with Bob Knight helped start the engineering drawing of the "V" Star. Along with all the other problems associated with ownership of a new business.

In June work really started to progress, as Lou along with his wife Joy, and their son-in-law Mike Ratz started construction of the "V" Star in earnest. They were working with incomplete drawings. But this sort of thing never seemed to slow Lou down. It also became evident that the "V"Star would not be a Starlet with two wings, as one change was made, it necessitated numerous others, and as it finally turned out, only the turtle back, fuel tanks and engine mounts were useable from the Starlet.

By the first of July it was obvious that without more help it would not be going to Oshkosh in 1972. So it was decided that other Starduster mechanics would help. So Bill Hill, Mike Snow, and George Evans jumped in full time.

On Monday, July 17, 1992 N9LS the first "V" Star was ready to fly. After some taxi tests and a short lift off, Lou took it around the patch. The first flight was successful and needed only minor trim adjustment. Then several other pilots including Jim Osborne flew it, and his comment was that it flew much like a J-2 Cub.

During the next week it was flown by a number of pilots 7 to 8 hours a day. By weeks end it had logged 50 hours and was ready for Oshkosh.

It was powered by 65 hp Continental. Its cruise speed was 75 to 85 mph, climb was 500 to 600 FPM and stall was around 35 mph and like most of Lou's airplanes had a plus or minus 6 G rating. The "V" Star terminology was originally ment to be powered by some of the bigger V/W engines. But most were powered by small Continentals. But the aircraft could except engines of 65 to 125 hp.

The very first "V" Star was sold shortly after Oshkosh to William E.Clark, P.O.Box 556, State College, PA 16801 and I believe was owned by him until it was donated to the EAA museum in Oshkosh, Wisconsin. I took pictures of it several years ago while it was in storage, and I think it is now on display in the FAA auditorium at Oshkosh.

There are approxiamtely 20 "V" Stars on FAA registration under make and model. However, I suspect there are at least that many more that are registered under the owners name and without the "N" number are hard to trace.

Some of the more notable "V" Stars are Larry Weisharrs N2LW featured in the December 1978 issue of Sport Flying, Donny Sanders N945GA, N15XX who has never registered it in his own name since purchasing it, but is at Oshkosh every year, and of course Art Morgans N18AM pictured on the back of the January 1993 issue of Starduster Magazine.

There were also about 12 "V" Star projects started in 1973, by EAA Chapter 15 in Lockport, Illinois. Many of them were well along. I often wonder what happened to them and the builders who started them. As it has been over 20 years and most of them were not youngsters. Does anyone know the whereabouts of Dick Fry, John Zimmerman, Lloyd Turner, Chuck Bradford, Dick Wunderlich, Jerry Hrdy, Ken Patrick, Ed O'Conner, Jerry McGinnis, Bill Lockman, Ed Rafacz, Dennis Costello and Bill Adams, or whether some of the "V" Stars on current register are some of the ones they started.

D.C.B. Editor


N9LS at Oshkosh 1972

N9LS at EAA Storage Facility
Oshkosh 1990.

Bob Kaveney and his two loves,
his bride and N192RK after its
first flight. 1/16/93.

ANNOUNCEMENT

Time and date: February 16, 1993 - 9:35 A.M. P.S.T.

Place: Sonoma Valley (Schellville) Airport, Ca.

Event: First flight of Stolp Starduster Too N192RK

Builder: Robert (Bob) Kaveney Novato, Ca.

Test pilot: Paul Reinders Santa Rosa, Ca.

Observer chase pilot: Henry Beadle Novato, Ca.

What a great sensation it finally see it go. Thanks for your help and encouragement over the many years — BK

Story

After two minor glitches a normal solid take-off was made from rnwy 34, a climbing right turn kept the craft within gliding distance of rnwy 25. A circling climb to 3500 A.G.L. with all systems normal preceded a series of test maneuvers, stalls, slow flight etc. First landing was made at Petaluma on rnwy 11. Four hrs, of test flight followed including rolls, loops, speed runs, rate of climb timing and many photo passes.

Phase II to follow as soon as inclimate weather(read lousy) clears and with one additional hour of test flight will satisfy 5 hr. F.A.A. requirement to declare airrraft, safe and sound; followed by check out by C.F.I. Reinders of the builder/pilot (that's me). To this point Reinders has declared N192RK to be a "great airplane". His actual words, I have it recorded on tape. My flying helmet is fitting very tight! Further developments including party time and place will be made available to all syndicated news agencies.

STATS reported:

Stall speed power off 49 mph. indicated

" " " on 52 " " (recheck, figures may be revesed)

Best rate of climb 80-85 " approx 1000/min.

Top speed sea level 2650 RPM " 132 MPH

Best glide 60MPH sink rate " 625/min. (power???)

Stall speeds are 8-10 MPH slower than Stolp pub. figs. - airspeed error??

Top end figures might improve some what. But with Lyc. O-320 & Sen. 74/58 prop. I am not disappointed. Empty weight 1166.5 lbs.

Party place and time to be cleared with Wash. D.C.as Bill indicated he wants to be there. No known tail-hook members will be invited!!!

NORTH COMMONSIDE FARM
INCHINNAN
PA4 9NA
UNITED KINGDOM.

10 November 1992

David Baxter
5725 SW McEwan Rd.
Lake Oswego
OR 97035

Dear David

I really enjoy your Stardurster Magazine, a great effort.

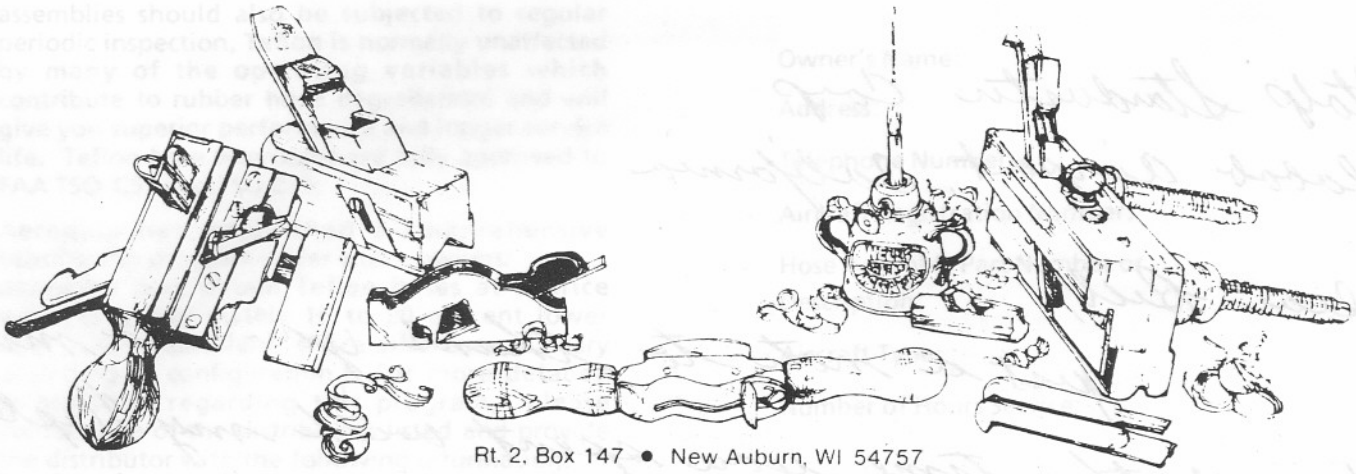
I previously bought your Stardurster book and wondered about book 2 or the updated version?

My aeroplane was built by Carl Johnstone of Kansas in 1975 and re-engined in 1982 with an IO360. I still have it on the US register (N90443) held in trust by some friends in Florida. The British authorities unfortunately are insisting that I now take out CAA certification - I am trying to avoid that as the bureaucracy is appalling and the costs high.

Please send me the Stardurster Cutaway I enclose £10-00 hoping that will cover postage

Best wishes

Jim McTaggart



Rt. 2, Box 147 • New Auburn, WI 54757

To; David C. Baxter
5725 S.W. McEwan Rd.
Lake Oswego, OR 97035

dave'

Lee Darrah sent me the 'long lost' list and I thought it was about time I responded.
To bring you up to date a bit , my Starduster Too has been in storage since I went to England in 1972 flying the F=111. After five years over there and a few other assignments, retirement from the Air Force, building a house and getting back on my feet. One through college, one a Air Traffic Controller at Kadena,Okinawa, another in college, and a young budding engineer in high school I am finally getting close to the finishing push.
I managed to get an 1800 foot runway graded in this fall and will get it seeded in the spring. It should be ready in the fall along with the airplane.
Send me a subs. to the newsletter along with any recommended changes that have occoured after the landing gear beefup mod. I shall try to encorporate them into the final plane.

Incidentally, we had planned to make a second plane as this one neared completion or possibly the Acroduster Too as I have many of the parts already made for the second plane(minus a few parts that have repaired other Stardusters over the years.

Also I helped Dave Crane with the dissasembly of his Starduster Too and crated it for shipment to England.

Sincerely,

Glenn Anderson
EAA14061/Tech C # 1748

11-5-92

Stolp Stardustr Corp
Flabob airport, Calyfornia

Klear Bill,

Just a note to thank you so muck for all the time you spent with my Nephew and myself during my visit to Calyfornia last week. The Computer in my Brain ran aut of "Information storage area" from all the info you gave me, especially on the canopy installation. I finished my new air Induction Box for the fuel injector last nite. Now if it fits! Like the builder of a Beautiful Stardustr Too at Oshkosh back in 1976 that I was admiring said to me, remember, "One piece at a time". I trynat to forgit that.

I like the idea of getting together at Watoma next year, but I don't believe my Stardustr Too will be complete at that time, so I will probably fly in with my T Craft.

Thanks again for making us feel so welcome during our visit.

Sincerely,
Buck Kado
Milford, Michigan

Mr. David C. Baxter
5725 S.W. McEwan Rd.
Lake Oswego, Or. 97035

February 10, 1993

Dear David;

Thank you so much for your rapid response to my inquery. I really appreciate the information and pictures. Any further information and pictures would be most appreciated, and I will gladly pay for printing and postage.

A check for $39.90 is enclosed. Please send "Starduster History" and "Brief History of the Starduster Too."

We bought 23JV from Jim Baird in Sturgis, Kentucky, in July, 1992. He had purchased the airplane from J. V. Withrow. The conversion to the IO540 was in process at the time and the Bairds completed the job in keeping with the rest of the airplane. It is my understanding that Withrow was very ill at the time. I would be very intrerested to know if he or his wife survive. I would like them to know that 23JV is well and in good hands.

The Bairds delivered Julie Victor to our son Kelly, who was a student at Purdue in West Lafayette, Indiana. Kelly checked out in her before I ever saw her complete and flying. He graduated (Aerospace Engineering) in December. He and I flew Julie Victor to Phoenix last week. Anybody who wants to know how big this country is ought to cross it in an open cockpit at 20 degrees with a 20 to 40 knot headwind. We're ready to do it again tomorrow.

The airplane is now with our son Casey at Falcon Field in Mesa, Arizona. He is a Junior at ASU (Aviation Science). He will get checked out there. Presumably I'll get my chance to play here in Reno after the semester ends in May. By then maybe Kelly will have a job somewhere and we'll have to draw straws or invoke the "Golden Rule."

We would like to join you at Flabob April 30th. I talked to Casey about it since its only a couple of hours from Mesa. However, that is the weekend before finals. We'll have to wait and see how timing and weather work out. Maybe I could hop down there direct in the Stearman, or meet the rest of you in Tracy. We will see.

I would like to go to Watsonville with the Stearman this year. I was there the year before last. It was Grand Champion there about 1971. This year I should have wheel pants over those

30 inch wheels, which should be spectacular. Last year I went to Watsonville (in a 172 - don't tell anybody) and talked with some Starduster people. I don't know who they were. I was interested in whether all 220 pounds would fit. I would like to go to Merced as well. I've not been to that one and several of my airport friends go every year. Evergreen is on my list as well, but is a long ways and is right after the Stearman gathering at Cottage Grove. I and another Speedmail owner plan on re-flying the Air Mail route from Oakland, Ca. East in September. We would end up at the Stearman fly in at Galesburg, Il. There would be three real Stearmans and 120 Boeings. I can't do it all, so we'll just have to wait and see how it sorts out.

Thanks so much for all your past and future help.

Very Truly Yours

Ben Scott
3810 La May Ln.
Reno, Nv. 89511

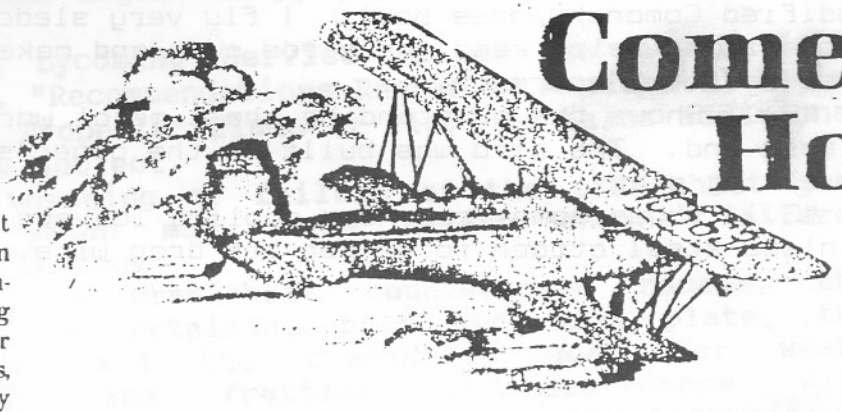
N23JV at Reno, NV.

Stearman 4E over Reno.

SCOTT MOTORS
TIMES
Cadillac
BUICK

Volume II Number 1 November 198

# Stearman 4E Comes Home



On November 12, 1929, Keith Scott placed his verbal order for a Stearman Model 4E biplane. With the options, including a reserve fuel tank, retracting landing lights, dual flare tubes for night landing flares, radio, wheel pants, and a "relief tube", the final delivery price was $18,107.50 - quite a hefty sum of money for 1929. But the investment was certainly worth it. Lloyd Stearman referred to her as the finest airplane he built. It was faster than the military pursuit planes, faster than the mail planes of the day. It was also larger than most biplanes, seating one pilot in the rear and two passengers in the big front cockpit.

Of the 40 model 4 Stearmans built, only 11 were 4Es. The 4E substituted a 450 horsepower engine for the normal 300 or less horsepower. This earned it the nickname of the "Bull Stearman." That gave it the range to fly nonstop from Reno to Los Angeles, the brute power to climb out of Reno straight west without circling. It was definitely the "Cadillac" of executive aircraft of the 1930s.

The "Bull" took its place in the Scott Motor Co. fleet, joining at various times an older Stearman, a Fokker F10 Tri Motor, and a Ford "Tin Goose" Tri Motor. Of the four airplanes two were eventually destroyed in accidents and one dismantled. Only the "Bull" remains.

In 1930 Keith was flying the "Bull" Stearman and driving a 1926 Pierce Arrow. He never sold the Pierce, but in 1942 sold the Stearman. In those years civilians could not fly in the Coastal Defense Zone, so Keith sold his airplane and joined Douglas Aircraft as a test pilot. He flew the famous C47 (DC-3), C54 (DC-4) and A20, a high performance twin engine attack bomber, and others.

The old "Bull" became a crop duster, then was left to dissipate in place. From 1968 to 1970 it was restored by well known antiquer Robert Penny, Jr., with the help of Ansel Smith, the mechanic who cared for it from 1930 to 1942. The restored airplane's first flight was witnessed by Lloyd Stearman. In the next two years the "Bull" won "Grand Champion" at the three major west coast antique shows.

In 1972 the "Bull" was purchased by Dan Wine, a United Air Lines Captain in Denver, Colorado. Dan continued to lavish loving care and further restoration on the old airplane. As the only 4E flying, the "Bull" attracted a lot of attention. Years later an old friend sent Keith Scott a newspaper article about the plane, and that led to contact with Dan Wine. Eventually Dan came to Reno and negotiations began in earnest. On October 17, 1985, Dan flew the Stearman to Reno. His last entry in the logbook was "Battle Mountain to Reno. Returned to original owner, Wm. Keith Scott. Welcome home!" The first passenger upon returning to Reno was of course Keith Scott. Perhaps, at 81, he was taking his first ride as a passenger.

It was obviously very hard for Dan to part with his pet, even to a good home. As part of the deal Dan obtained visitation rights, the status of "consultant pilot" and the promise that not a nut will be turned without his advice. He also drove home a new Cadillac Fleetwood with a check in his pocket.

If you would like to see this magnificent old airplane she is at the Yesterday's Flyers Museum at the Carson City Airport, open Saturdays and Sundays. It's a little hard to find, but worth it.

The old lady is back with her family to stay. You may see her in the Reno skies, distinctive by her black fuselage, yellow wings, the lower one much the shorter, and the sound of that big 1340 cubic inch engine. At 55 she is as beautiful as ever.

BUILDER IDEAS FROM:

Dick Lucas N56AM
101 Sedona Shadows
Sedona, AZ 86336
February 25, 1992

Dear David,

Many thanks for your response to my letter of renewal. Glad to hear that the "extra" went for such a good cause!

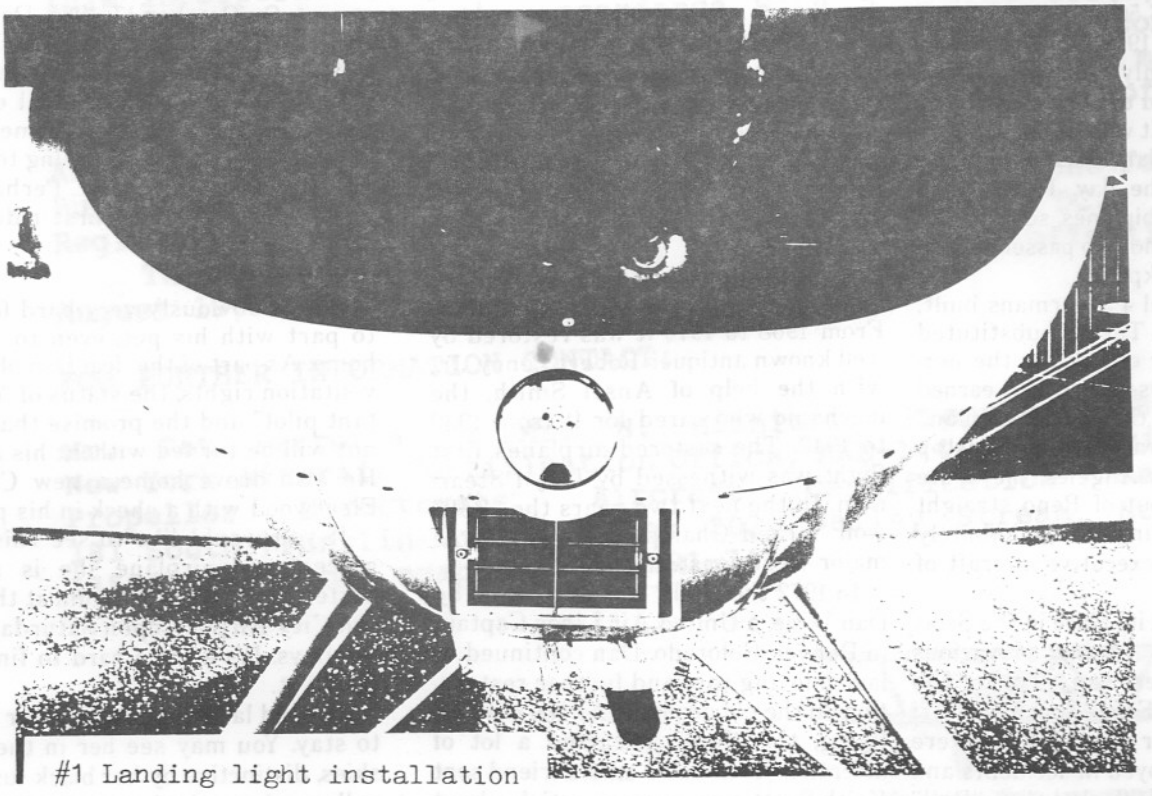
I unlimbered the old Figi camera and recently took some (I hope) pictures showing the amazing thought and detail that went into my Starduster during its construction from 1970-1975 by its builder Alvin McGihan. Some of your present day builders may wish to incorporate my bird's unique features. Starting with numbered pictures:

#1.) We have a very powerful landing light built into a modified Comanche nose bowl. I fly very sledom at night, but the light helps keep the birds away and makes me easier to see on final approach.

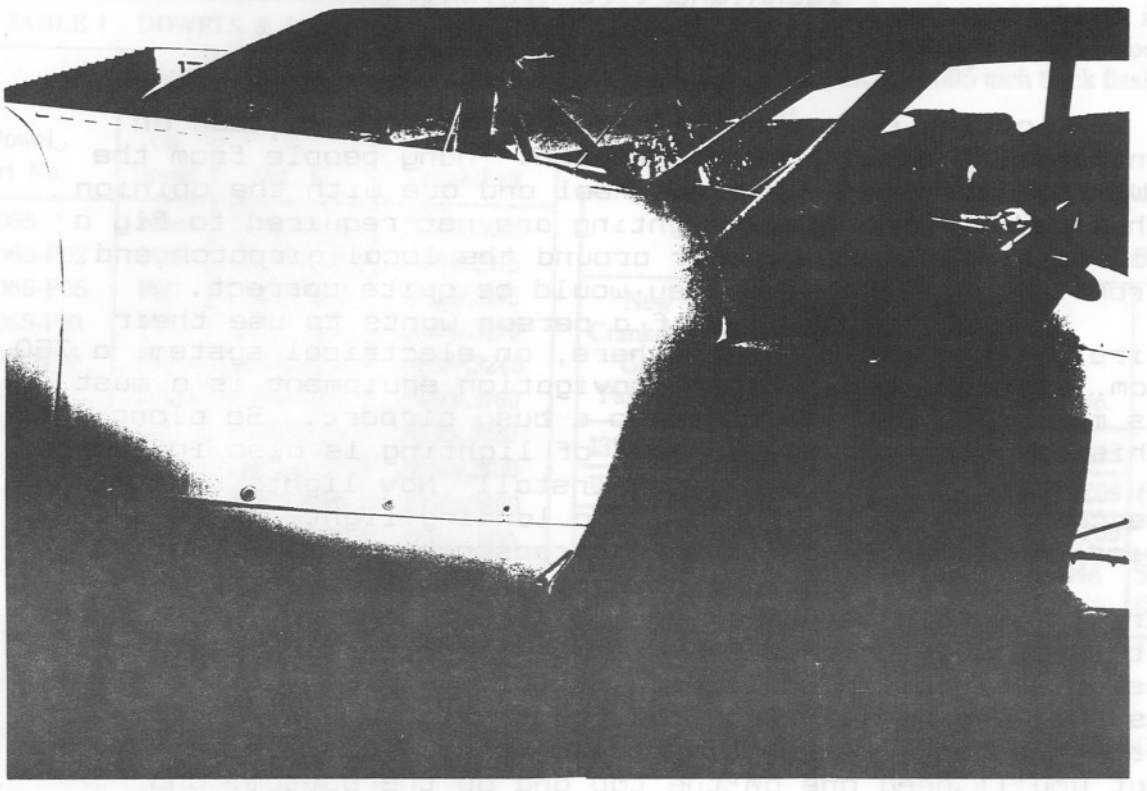
#2.) Shows the outstanding sheet metal work on the business end. The bird was built in the owner's sheet metal and welding plant!

#3.) Shows some very nice cooling louvers, also the stainless steel attach point for the drag wire.

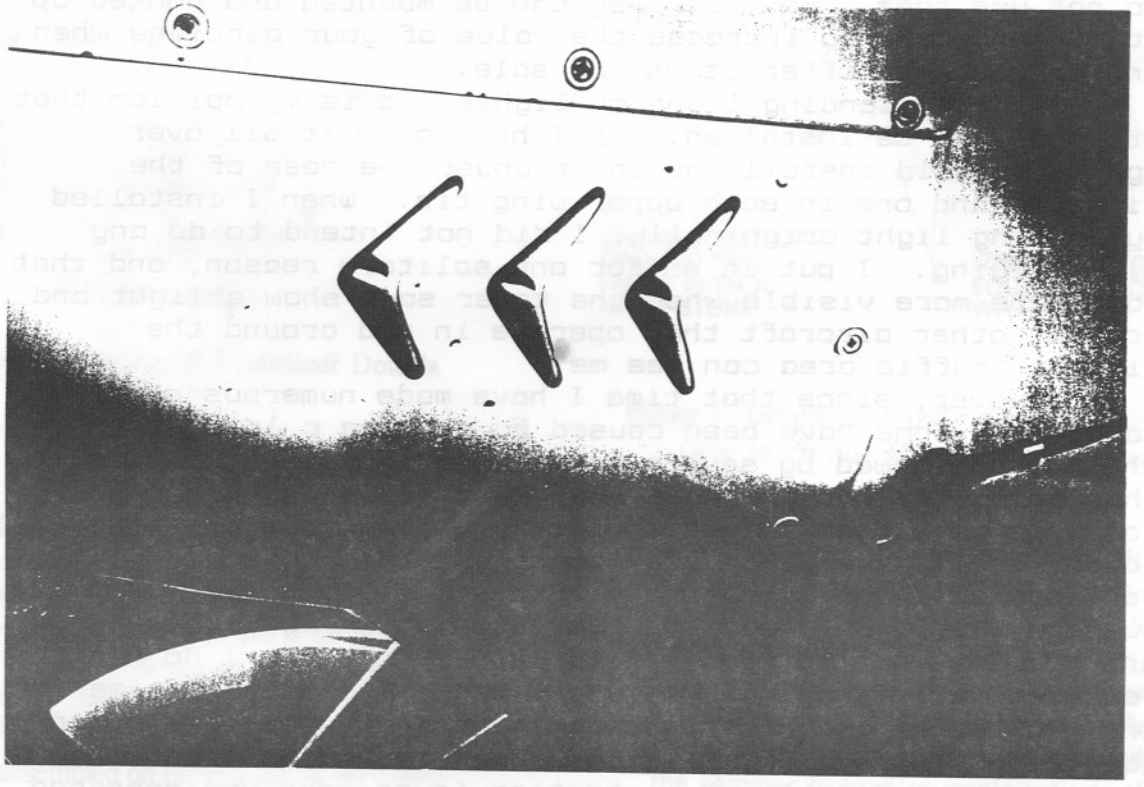
Richard Lucas



#1 Landing light installation
N56AM



#2 Outstanding sheet metal work.



#3 Cooling Louvers

## TECHNICAL TIPS - LIGHTING

### Nav Anti Collision & Landing

Lighting on homebuilt aircraft has always been an interesting topic of conversation. Many people from the WWII era are from the old school and are with the opinion that radios, much less lighting are not required to fly a non-electrical air-knocker around the local airpatch,and from their prospective they would be quite correct.

However, these days if a person wants to use their airplane and really go anywhere, an electrical system, a 760 Com, Xponder, and accurate navigation equipment is a must, as most of a us live close to a busy airport. So along with this conversation the subject of lighting is also included.

Should I or should I not install Nav lights, [rotating beacon / anti-collision], and a landing light. With this in mind I will endeaver to make a reasonable case for doing so.

Sooner or later you are going to be out after sunset and if you fly very much you will be caught out after dark. It is my opinion that the minimum lighting should at least be an anti-collision light. Wing tip strobes work the best as they can be seen from the front, sides, top, bottom, and from the back. A rotating beacon should also be considered. But you'll need one on the top and on the bottom, and Stardusters do not lend themselves well to a top mounted beacon. So you need one or the other.

My personal feeling is that Nav lights or at least the wiring and mounting plates should be installed even if you do not use them. So that they can be mounted and hooked up at a later date to increase the value of your airplane when and if you ever offer it up for sale.

As for a landing light or lights, it is my opinion that at least one be installed. If I had to do it all over again, I would install one in or under the nose of the aircraft and one in each upper wing tip. When I installed my landing light orignially, I did not intend to do any night flying. I put it on for one solitary reason, and that was to be more visible when the tower says show a light and so that other aircraft that operate in and around the airport traffic area can see me.

However, since that time I have made numerous night landings. Some have been caused by getting a late start in the day, followed by severe head winds that were greater than forcasted for the day. But most all of my night landings have been intentional other than those described above, and I have purposely made night take-offs and landings at three different airports in my homebase area. I suspect that I am one of the few Starduster Too owners that are current in this type of airplane at night. I do not recommend pilots doing this until they have lots of time in their airplane and are comfortable, and of course in an area you are famillure with. I also do not recommend night cross-country flight. My intention is to make you prepared in the event you are caught out or make you more visible to the tower and other aircraft.

I originally installed a 4" Spot light and had a section of spots from 35 to 100 watts to choose from. I also installed it on the baffeling in the nose. It was no value in landing as it pointed up during flair. But it did serve its purpose for being seen.

After attending several fly-ins and arriving at dusk or having to move the aircraft around after dark it helped expose the need for close up lighting, which could also be used during landings at night.

I then installed a 6" x 3" early halogen driving light of about 35 watts. in the cut out at the bottom of the firewall and cowling and angled it directly down the runway, when the aircraft is in a three point. This helped a lot, but was still not very efficient. People told me that my 4" light mounted on my baffel would not last. However, I have only used three lights over a 3 1/2 year period and 650 hrs of flying time. So I don't think I'm doing any worse than a Piper or Cessna.

The last 4" light I installed was a Wagner #7610 halogen 50 watt, it is for farm equipment and shows up better than the 100 watt spot it replaced. It also has a divided lens as opposed to a clear spot. Both of these lights have worked well and I think that if you are going to put landing lights on your airplane, two should be considered just like in certified aircraft - a taxi and landing light for far out and close up lighting.

Both lights currently draw around 8 amps. During the winter months, with these shorter days I have been flying more at dusk and after dark, which has once again exposed the need for better lighting.

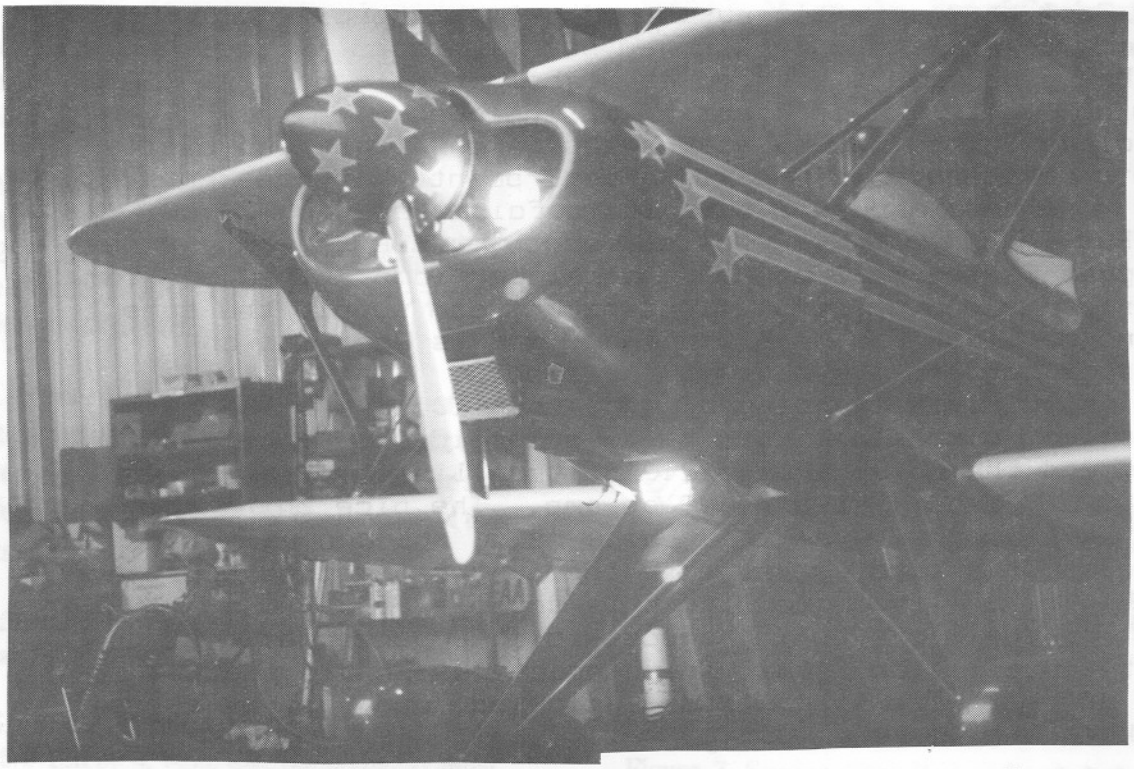
So I have recently purchased a light specifically for landing. It is a Hella Halogen work lamp and is designed for heavy equipment working at night, it is a model AS163FF with a C pattern. Information is included with this article. It has two 55 watt bulbs in one light and really lights up the area around its focal point. It does however draw more amps around 9, and it is fairly spendy $70.00.

But I think it will be well worth it due to what it was designed for as well as being a halogen lamp. They are far superior to conventional lighting and can supply the same amount of light for half the amps, and is equal to an aircraft landing light in many respects.

If multiple lighting of more than 10 amps is being installed, a constant duty relay/solenoid should be used. I recommend the Cole Hersey #24059, they list for around $12.00 and draw .8 tenths of an amp. The nice thing about them is that they are a four pole relay and can use either 12 volts or ground to initiate them. A schematics chart and parts list are included with this article.

For those of you who choose to make your own landing light installation, good wiring practices should prevail. I.E. correct wire size, loomed, clamped, and fuse or circuit breakers should be a must.

Landing lights on in the pattern, at Fond Du Lac, WI.
1992



Landing lights on in my hangar at Hillsboro, and at night.

** NOTE **: Your electrical system should also be up to task. I have a 55 amp Motorola alternator with a transistorized regulator, a 30 amp Gill Gell Cell and a total draw with the new light of around 25 amps and after talking with the Gill Battery representative. feel that my system along with their battery will work okay. A fully charged Gell Cell should read between 14.4 and 14.7 volts at 68 degrees F.

I also took some electrical readings of all the current consuming devices on my airplane and was somewhat surprised by what my digital shunted Amp meter produced. The following is a rough sequence of those readings taken at the battery.

Master switch solenoid. two clocks and Hobbs.....1.0 amps
add electrical turn and bank.....1.2 amps
add strobe light one each increases it to.....2.3 amps
add nav and map lights increases it to.....9.4 amps
add landing lights 2 each.....16.4 amps
add radio Loran Xponder.....19.0 amps
add boost pump increases it to.....21.0 amps
add radio transmitting increase it to.....27.0 amps

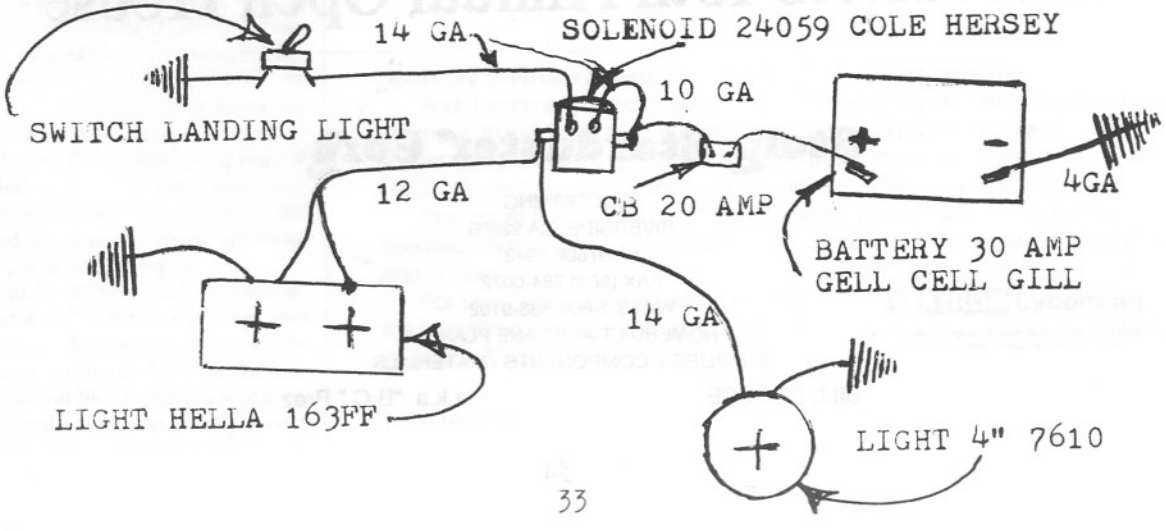
You of course would not be transmitting all the time or running your boost pump continuously. So the noraml continuous draw would be around 20 to 25 amps. Not noted was the starter, but would draw about 150 amps cranking.

## Parts List

Light Halogen 4" diameter Wagner 7610 50 watt or equivolent. Approximate price : $15.00

Light Halogen AS163FF with "C" pattern made by Hella has two 55 watt bulbs heavy equipment work light. Approximately : $70.00

Cole Hersey constant duty relay #24059 4 pole and can be made by grounding the unit or by 12 volts. This unit can also be used for a master switch or a starter solenoid. Approxiamtely : $12.00




# When : April 30th & May 1st & 2nd, 1993

# Where : Flabob Airport

# Why : Eat, Drink and Share Stories

**We would like to fill Flabob with biplanes, Starduster's, Acroduster's, V-Star's, Starlet's or any other homebuilt enthusiast. We would love to see you here with your airplane. Come help us celebrate our 13th anniversary. Please join us for a weekend of fun. Trophies will be awarded to aircraft in various categories.**

**4301 Twining Flabob Airport**
**Riverside, California 92509**

# Stardusters 13th Annual Open House

## FOR WHAT IT'S WORTH

Your editor will be returning to Flabob airport for the 13th Annual Starduster Open House. We, my wife and I, will be leaving Oregon on Saturday April 24, 1993. We will be staying with friends and, our eldest daughter in the Chico, Sacramento, and the Bay area during that week.

But on Friday, April 30th, 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 IPA 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 which 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 Spring, 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 ATA 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 ATA 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

FLY-INS

FLA-BOB - OSHKOSH/WATOMA

**********

April 30, May 1 & 2 1993. FLA-BOB Airport. Starduster Open House. Call Bill Clouse at 1-800-833-9102 or (909)686-7943. For motel reservations call the Patriot Inn, Riverside, CA (909) 788-9900.

**********

July 29th thru August 4th, 1993. Watoma/Oshkosh. Starduster "Get Together". Watoma is 40 miles west of Oshkosh. Call Bill Clouse at the above mentioned phone number or the Super 8 Motel. 1-800-800-8000 or Jeff Plitt at (414) 787-3030. Fly responsible, no high speed passes or Acro until air boss briefing. Please fly safely.

**********

June 26-27, 1993. 15th Annual Rocky Mountain Sport Aviation Fly-in. Greeley Weld County Airport, Colorado. Homebuilts, antiques, classics, warbirds and ultralights. Awards, camping, motels. Friday arrivals welcome! Call Bill Marcy at (303) 798-6086 or Bob Kelly (303) 353-5514.

**********

CONT-FROM MORE ODDS PG-5

## DID YOU KNOW?

### US General Aviation Trends

*From the General Aviation Manufacturers Association.*

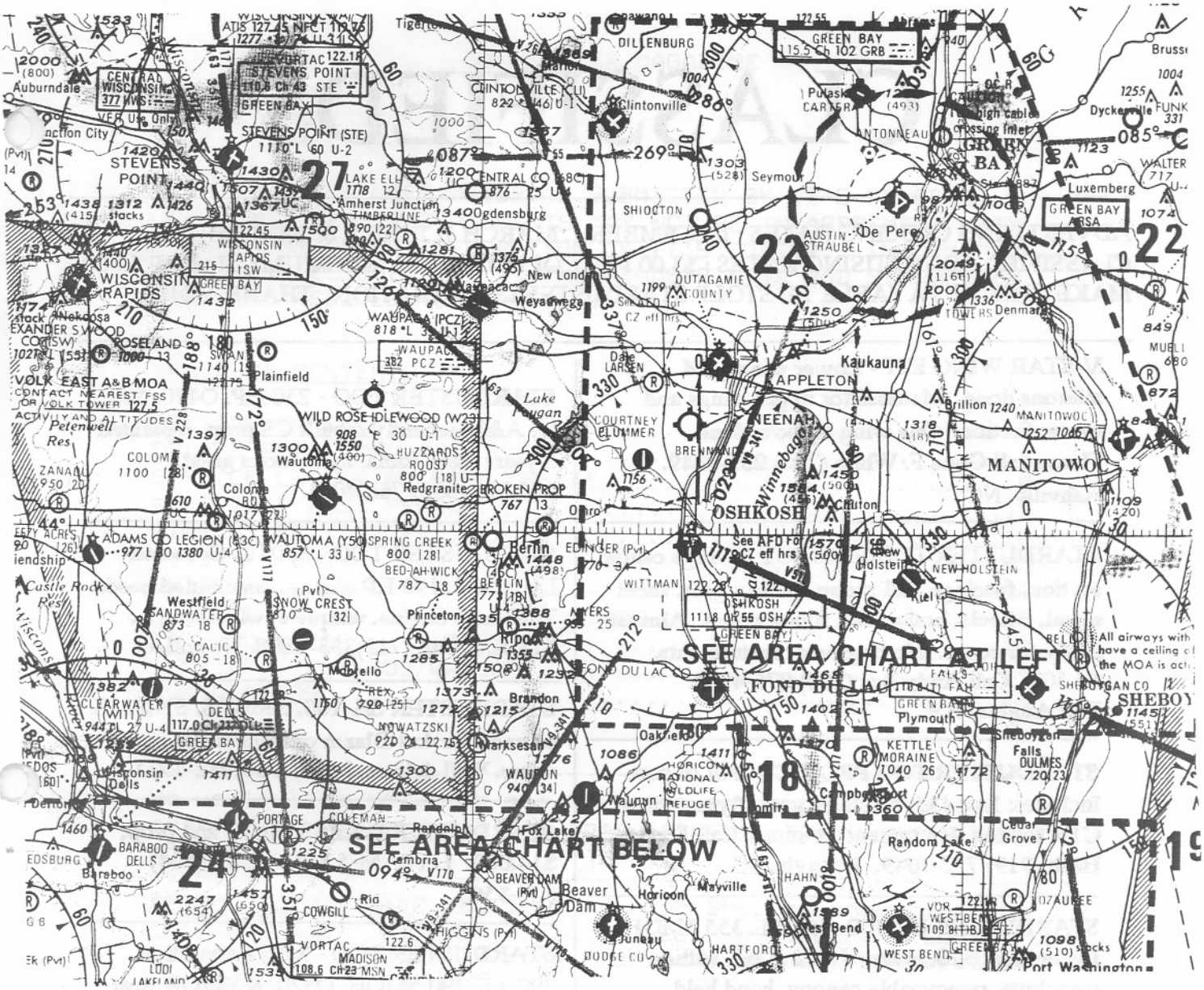
| | 1979 | Now |
|---|---|---|
| Active General Aviation Aircraft | 210,339 | 212,229 |
| Active Gen Av Piston Aircraft | 193,470 | 187,773 |
| Gen Av Piston Aircraft Shipments | 16,129 | 613 |
| Gen Aviation Hours Flown (million) | 43.3 | 34.8 |
| Public Use Airports | 6519 | 5207 |
| Active Certified Pilots | 814,667 | 702,659 |
| Student Certificates Issued | 135,956 | 88,586 |

## Accidents down, deaths up

General aviation had fewer total accidents last year, but the fatality rate increased, according to preliminary figures from the National Transportation Safety Board. Accidents dropped to a record low of fewer than 2,000 (1,956 actually), but more than 800 people died in the mishaps.

According to the NTSB, there were 408 accidents with 812 fatalities in 1992, compared with 414 fatal crashes and 746 deaths the previous year. Air taxi operators got through the year with only 74 accidents and 66 deaths, compared with 88 accidents and 73 fatalities in 1991. Commuter airlines had only seven accidents and 21 deaths, a decrease from the year earlier when they totaled eight fatal mishaps and 77 deaths.

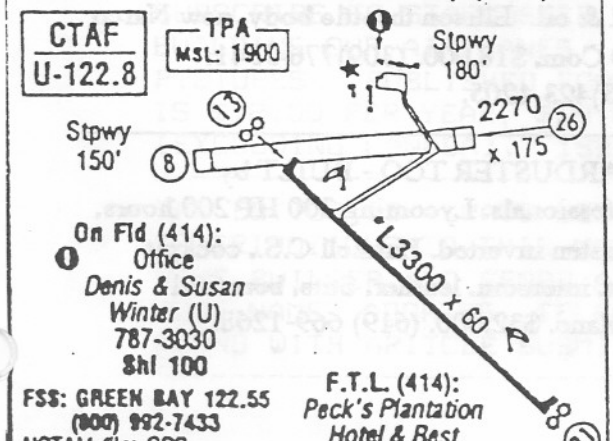
It is too early to make much of the raw data from the NTSB. While there were six fewer crashes involving fatalities, the number of victims jumped by 66. Apparently, larger general aviation planes carrying more passengers were involved in the flights. As additional information about the accidents is made available we can all learn and hopefully not repeat the same problems that resulted in these deaths.




WAUTOMA MUN. Y50. 858'. 2SW. 44° 02.7'N 89°18.4'W. (414) 787-3030. Att days; ngts on req. F-100 days; ngts 566-4144. Bcn. WDUX 800 D. Rwy 8/26—no snow rmvl. Ultralgts. P-lns N. *PCL: 122.8 - 13/31 intnsty (7x hi).

CTAF U-122.8

TPA MSL: 1900




On Fld (414):
Office
*Denis & Susan Winter (U)*
787-3030
Shl 100

FSS: GREEN BAY 122.55
(800) 992-7433
NOTAM file: GRB

| VOR | FREQ | RAD | NM |
|---|---|---|---|
| STE | 110.6D | 160° | 31 |
| OSH | 111.8D | 274° | 33 |

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ACRODUSTER II FACTORY - built. TTA&E 830. Lyc 200 HP, constant speed prop, full inverted, 2 place canopy, recovered July 1990, Ceconite, hand rubbed butyrate finish. Too much to list. excellent. Call Shane Fleming home (414)727-0993, or work (414)749-4244. $35,000 OBO.

ACRODUSTER TOO - TTAF&E 673SN; inverted fuel, oil and smoke, factory built, nav/com, intercom, leather interior, glass floor panels. Many extras. (904)695-9598, FAX(904)781-4232.

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STARDUSTER TOO - 350TT, Ceconite, Lyc O435, 190 HP engine, dismantled needs TOH/new engine, unique cowl, elec.sys., $13,500. Call (713)333-2808. No collect.

STARDUSTER SA-100, 220HRS. SN,$14K or trade for 4x4 Blazer or minivan of equal value. Will deliver. Mark (916)632-1931.

STARDUSTER II LESS engine and prop, $14,000. LA 8AM-5:30PM CST (504) 356-3565.

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STARDUSTER TOO - BUILT by professionals, Lycoming 200 HP 200 hours, Christen inverted. Hartzell C.S., cockpit heat, intercom, leather, Stits, beautiful airplane. $32,000. (619) 669-1268.

1992 STARDUSTER TOO - PRO-built. 30TT, Lyc. 250HP engine, Hartzell C.P. prop, Apollo 611, Narco Com, Intercom, Manle tailwheel, strobe/Nav light. $29,950. New England Aircraft. (203) 748-1449.

---

STARDUSTER II - 220 Franklin, TT 385 Nav/Com, headsets, Loran C, NAT intercom, 2-chutes, fresh annual. $25K (407)483-1607.

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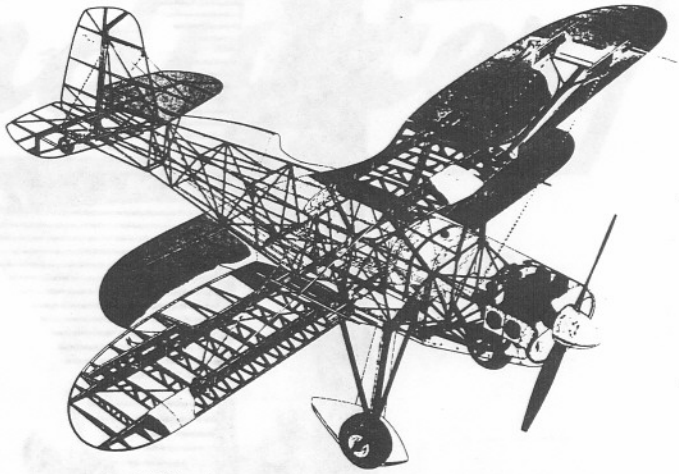
STARDUSTER TOO FOR SALE N24LP Low time, 180hp Canopy red, white and blue paint. Priced right. Contact Bill Payne. Anacortes, WA (206) 293-9394



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worth A Thousand Dreams

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Much Information regarding Starduster aircraft. For your needs please contact Editor or Starduster Magazine. Please include postage with requests. (503) 639-8792.

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SUPER STARDUSTER ONE SA-101, I0-360 200 plus hp, firewall forward mods, 200hr TT, A&E mixer controls. Can compete against SI-T Pitts. Picture in April '91 issue of S/D Magazine. Built by Tom and dick Green and S/D Corp. The only S/D ever built to compete in IAC. Priced for quick sale. Call Ormand Lavoie. $20,000 (406) 961-3327



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