

MARCH 1982

THE

Starduster

JANUARY 1982

MAGAZINE

DEDICATED TO THE ACTIVE HOMEBUILDER



PAGE 1



"In October 1981 issue of Starduster I published a statement by David D. Blanton, Vice President NASAD pertaining to Pitts aircraft. I have subsequently learned that Mr. Blanton's allegations are without any basis in fact. Pitts aircraft have proven themselves over the years as outstanding aerobatic aircraft. For many years the Pitts has been used extensively in national and world unlimited competition. It has been subjected to load factors of 8 positive and 6 negative routinely during these years of unlimited competition. There has never been a structural failure in a Pitts during any of these unlimited contests over the span of many years. Rear flying wires are not required by Canada as stated by Mr. Blanton. I sincerely apologize to Pitts Aerobatics and Pitts owners for any problems or concerns that may have been raised by my publication of Mr. Blanton's erroneous statement."

Stolp Starduster Corp.

Bill Clouse
Bill Clouse
President

NOTE :

Pages 3, 4, 5 & 6 should be of intrest to all my readers.

ed.

MARCH 1982

David D. Blanton

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COVER PICTURE--A STARDUSTER TOO BUILT BY CLARK AND JERRY WILCOX OF FREDRICTON N.B. , CANADA. HOTEL WISKEY IS RED ORANGE AND WHITE.

REAR COVER--ANOTHER STARDUSTER TOO. SIGNED OFF FOR FLIGHT IN NOV. 1981. OWNED BY E.V. RAYMOND OF FRANKLIN MASS. BUILDING TIME- 11 YEARS OF BLOOD SWEAT AND TEARS.

THE EDITOR IS STILL LOOKING FOR TECHNICAL AND EDITORIAL CONTRIBUTIONS TO THIS MAGAZINE, WHICH IS DEDICATED TO THE HOME-BUILDER AND SPORT AIRCRAFT ENTUSIASTS.

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MARCH 1982

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David D. Blanton
Box 18486
Wichita, Kansas 67218

Dear Mr. Blanton:

I recently received a copy of Starduster magazine for October 1981, containing your statement regarding Pitts aircraft.

I wish to inform you that the article is replete with untruths and falsehoods. The article shows a basic lack of understanding on the part of the author of the structural load paths of the Pitts wing structure. It also appears that the author is confusing the Pitts wing with other outlaw brand wing designs that, although not approved by Pitts, are available from other suppliers in the marketplace.

I wish to address and clarify the following incorrect statements in the article:

(1) The article states that a check of FAA records in 1972 showed 57 cases of Pitts "going in" for unknown reasons, and that in most cases the airplane "goes in" rolling.
REBUTTAL: In fact, there is absolutely nothing in the FAA records indicating a single accident of the type you claim.

(2) The article states that all these alleged accidents were caused by a lack of rear flying wires and that the loads are so high on the bottom wing that the drag wires will pull through the spar. REBUTTAL: There has never been a single case of drag wires pulling through the spars on Pitts aircraft. There have never been drawings for the Pitts calling for AN 960-3 washers to be used on the drag wires as claimed in the article. The washer actually called for and used on the Pitts drag wires is an AN 970-3. The smallest washer for the AN 960 series would be a -2 for a #2 machine screw. The sizes for AN 960 washers would be as follows:

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		Inside Diameter
AN 960-2	#2 Machine Screw	.099
AN 960-3	#3 Machine Screw	.109
AN 960-4	#4 Machine Screw	.125
AN 960-6	#6 Machine Screw	.149
AN 960-8	#8 Machine Screw	.174
AN 960-10	3/16 I.D.	
-416	1/4 I.D.	
-516	5/16 I.D.	
-616	3/8 I.D.	
-717	7/16 I.D.	

It would not be possible to use an AN 960-3 washer on the wires since the wires are 3/16-inch diameter and the AN 960-3 washer is only .109 or 7/64-inch inside diameter.

(3) The article refers to an accident in Dodge City without cited any names, dates, or other pertinent details, and makes the statement that the plane crashed because of structural yielding. REBUTTAL: The accident referred to at Dodge City is apparently Earl Sanford's accident at Dodge City, Iowa. If so, the article is completely wrong in its conclusions concerning the accident. This pilot was flying at an air show and did a split S from too low an altitude to recover without hitting the ground. Contrary to the statements in the article, there was no structural failure involved.

(4) The article refers to an alleged Pitts' statement that "these failures are caused by the failure of the homebuilder to use a hard wood block on the back side of the spar versus a soft wood block." REBUTTAL: Pitts has never discussed these alleged failures since they never occurred. Further, Pitts has never suggested the use of a "hard wood" block on the back side of the spar.

(5) The article states that aileron flutter is a problem with the Pitts. REBUTTAL: This is completely incorrect since there has never been a reported instance of aileron flutter on a Pitts.

(6) The article states that the Canadian DOT has required that a rear flying wire be added to Pitts aircraft in Canada. REBUTTAL: This is another falsehood. The Canadian DOT has never required a rear flying wire on the Pitts in Canada. The rib breakage referred to in the article was found on Sparcraft wings, not Pitts wings, which have a different type of rib construction. The author of the article is either unaware of the significant differences between the Pitts wing and the other outlaw wings on the market (such as the Sparcraft)

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which some homebuilders have used on Pitts kits, or the author has chosen to ignore the different type of rib construction.

(7) The article states that "there have been many cases of the wings breaking off of a Pitts" at the I strut bolt hole. REBUTTAL: In 11 years of association with the Pitts project I've never seen or heard of one single failure of this type.

(8) The article states that Sherman Cooper's accident was caused by wing failure at the I strut attach points. REBUTTAL: Sherman Cooper's accident was in fact caused by failure of the upper wing caused by multiple snap rolls at speeds of 220 mph or more, a condition far beyond design limits of the aircraft.

(9) The article makes misleading statements about the manufacture and installation of the flying wire fittings on a Pitts and suggests that a fatigue crack spreads in the fitting everytime the plane lands. REBUTTAL: There has never been a flying wire fitting failure on a Pitts. There has never been a crack in a flying wire fitting on a Pitts.

(10) The article states that the Southern Region of the FAA has certified the plane with unacceptable concepts. REBUTTAL: There is nothing on the Pitts that needs fixing. The current FAA Regional Office having responsibility for the Pitts is located in Denver. Pitts wing structure has been static tested to 9 G's without failure. The engineering substantiation of the Pitts is open to audit by the FAA any time they choose to do so. It has always been so. Any indication of structural inadequacy would by law require immediate investigation of Pitts engineering data. The article's insinuation that the FAA would allow engineering deficiencies to exist in the Pitts shows an appalling lack of understanding of FAA policy and procedures with regard to type certificated aircraft.

If the statements in the article are the result of a lack of understanding or simply incorrect information on the part of the author, we would welcome the opportunity to sit down with him and provide him with correct information.

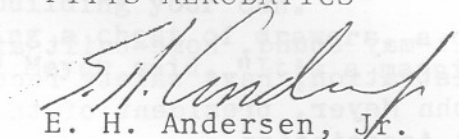
However, we do not intend to stand idly by and allow the continued publication of slanderous statements regarding Pitts aircraft, especially when the statements are made maliciously with a knowledge of their incorrectness. Any further dissemination of such information such as the above

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referenced article will result in legal action by Pitts
Aerobatics seeking injunctive action and substantial civil
damages.

Very truly yours,

PITTS AEROBATICS


E. H. Andersen, Jr.
General Manager

EHA/np

cc: Harvey Swack
P. O. Box 5974
Cleveland, Ohio 44101

Paul Poberezny, President
Experimental Aircraft Association
P. O. Box 229
Hales Corners, Wisconsin 53130

Bill Clouse
Stolp Starduster Corporation
4301 Twining
Riverside, California 92509

Duane Thomas, Attorney At Law
P. O. Box 1045
Evanston, Wyoming 82930

This letter is published with the permission of it's
Author Mr. Andersen Jr.

A boyhood ambition realized with flight of
Starduster 11

Ever since Les Homan saw a Piper Cub on his father's farm in Kansas, he has wanted a plane. The Livermore engineer stopped buying aircraft magazines, chewing gum and other extras so he could take flying lessons.

He began skipping meals every other day to support his habit.

Last July, his dream came true. After investing every spare minute for 3½ years into building his Starduster 11 biplane, he was ready for the final test.

"The big day came," he said. "I leaped in and threw the throttle on. It wasn't until I was 200 feet over the golf course that I knew I was in the air. I suddenly realized this thing is really flying and it hasn't fallen apart yet."

Risky as it may sound, home-built aircraft, regulated by the Federal Aviation Administration, have safety records similar to standard aircraft, according to John Meyer, president of the Livermore chapter of the Experimental Aircraft Association.

And, like standard aircraft, the main cause of accidents is pilot error.

Dave Hennington, one of the founders of the Livermore chapter, recalls a time he was forced to land when an engine blew a piston in a standard aircraft he was flying. He put the plane down in an open field.

An experienced pilot is always noticing spots that would work as a landing site in an emergency, Hennington said.

"You fly this way just kind of unconsciously," he said. Although he's flown 1,400 hours in his home-built plane, he has never had any engine trouble and has not been forced to land, he said.

Besides exchanging new design ideas and experiences, the association members help build and oversee each other's projects to ensure that the planes are safely built. More than 40 men and one woman belong to the Livermore chapter.

Before Homan put the fabric over his plane, he had 25 fellow aircraft association members inspect his work. Experimental aircraft, as home-builts are called, must be signed off by the FAA before they can fly.

But home-built aircraft go back before there was an FAA.

Heath airplane kits were sold in 1912, only nine years after Kitty Hawk. Some of the planes, powered by Model A engines, are still flying, Hennington said.

"Every once in a while, a guy finds a Heath airplane kit someone has in a barn and puts it together," he said.

The Experimental Aircraft Association, which has a current membership of more than 130,000, was formed after World War II, when much of the civil aircraft had been turned over to the military.

"People were tired of having to pay the price of conventional aircraft and there wasn't much available," Hennington said.

Saving money still is a primary reason for building aircraft. Hennington bought the pieces for his Luscombe for \$1,500 and it cost another \$1,500 for him to get it flying. If he bought a ready-made model today, it would cost \$35,000.

Home builders also are allowed to maintain their planes. But, if someone buys a ready-made plane, it must be maintained by an FAA-approved mechanic.

And a home-built plane can be finished at the builders own pace.

"If you buy a plane you have to make those monthly payments," Homan said. "If something happens, you could lose the plane. With a home-built, if you don't have the money that week, you just wait."

However there's more to it than money.

Some airplane kits, like the Christian Eagle, cost \$41,000. "That's not a cheap little homemade aircraft," Meyer said.

Most home-builders like the looks and versatility of their craft.

"There are no sources of airplanes that fit your particular needs," Meyer said. "The Cessna and Beechcraft are like station wagons - they are all things to all people."

And then there's the love of building your own.

"It's so much more than building a chest of drawers, a cabinet for the house or a new roof for the patio," Meyer said. "It's a magnitude beyond that."



Idea spurs man to build own plane

If you think you might build an airplane, Bob Barney of Woods Cross could show you how. He learned the hard way - by trial and error, thousands of hours and a pile of money.

Barney calls his yellow bird "Star Duster." The biplane consists of two sets of wings and was designed for aerobatic flying, but Barney hopes to use it for travel as well.

Barney began his project nearly 13 years ago. Now, 5,000 hours and \$13,000 later, he has discovered a feeling of pride.

According to Barney, the plane was simply a hobby, something to occupy his spare time.

"Maybe that's the reason I had so much fun, I didn't have to push to get it done," he said.

Barney's interest in aircraft started many years ago.

"I had always wanted to be an airplane mechanic, but the war and marriage changed things," he said.

In 1948, though, he received his pilot's license through the GI Bill to fly as a private pilot. But flying became too expensive to pursue, Barney said, so he began building fiberglass boats, canoes, furniture and model planes instead.

Finally, in 1969, he began his dream project - the biplane.

"After buying a set of plans, I put it together in my basement piece by piece until its size required transportation," he recalled. Last summer, Barney built his own airplane hanger at Sky Park Airport to continue work on his Star Duster.

The project required a great deal of study, but the real difficulty came in ordering the parts, he said. "It was important to buy quality aircraft materials. I didn't want to cannibalize old aircraft, and compromise the quality of my plane. Now builders construct from a kit making it a whole lot easier," he said.

Star Duster has a range of 500 miles per tank of gas and a 27 gallon fuel capacity. The 150 horsepower engine can cruise at 140 mph. It weighs 900 pounds when empty, has a 19 foot wing span and 110 square feet of wing area. The wings were constructed from wood and dacron fiber.

All this may sound complicated, but Barney said if you have the mechanical aptitude, the rest can be learned.

Barney said he looks forward to finishing Star Duster and launching it for its first voyage this spring.

Depending on the success of this plane, Barney said he may consider building one more.

This News article was sent to me from IDAHO, I think. That is a demonstration of love, 12 years in building.

ed: Bill

Jim,

Sorry I've been so long in writing but you know how things keep piling up. But now I've finished my V-Star and have flown it approximately 30 hours and everything works just fine except that it only climbs 1000 FPM on a hot day. I'll give you some specs. and see if you can answer some questions for me.

I'm using a O-235-C lycoming with a 74" x 48" prop. It grosses out at 1240# the cruise is about 105mph and climbs about 1000 FPM.

What is the biggest engine that can be used on this plane? Also, what is the new load factor and what is the never exceed speed? Remember I used the 2,3012 airfoil with 4 ailerons and constructed the wings from Stardusted Too prints completely. The rib stitching is for 230mph. All of the fittings are .125 chromoly plate. The empty weight is 889# with battery, starter, generator, strobe and position lights and radio. All control responses are great but I'd like to climb a little better. Hope you can answer some of my questions. I've only had it to two meets and have won best in its class at both.

Hoping to hear from you soon,

Pat Logsdon
Box 622 Calla Hill
Mt. Savage, MD 21545

Pat,

I am sure you can stuff a 10320 lyc. in your "V-STAR" . I would check the C.G. envelope carefully first, you still should be with in #9 - 9 G load range, especially with the .125 root fittings. You may investigate Prop pitch for better climb? Congrats on your very nice "V-Star".

Bill



HARD FACTS ABOUT ENGINE BREAK-IN

Most people seem to operate on the philosophy that they can best get their money's worth from any mechanical device by treating it with great care. This is probably true, but in many cases it is necessary to interpret what great care really means. This is particularly applicable when considering the break-in of a modern, reciprocating aircraft engine. Aircraft owners frequently ask about the proper procedures for run-in or a new or remanufactured engine so they can carefully complete the required steps. Many of these recommended break-in procedures also apply to engines which have been overhauled or had a cylinder replaced.

The first careful consideration for engine run-in is the oil to be used. The latest revision of Avco Lycoming Service Instruction Number 1014 should be consulted for this information. The basic rule which applies to most Avco Lycoming engines is simple: use straight mineral oil of the proper viscosity for the first fifty hours or until oil consumption stabilizes. But don't stop reading now because there are some exceptions and notes of caution which may apply to your particular situation.

The first exception to the basic rule on break-in oil applies to these engine models: TO-360-C, T00360-F, TIO-541- and TIGO-541-. These engine models are to be serviced with ashless dispersant oil for the entire life of the engine, including the break-in period.

Another exception to the basic rule for break-in oil involves the Avco Lycoming "76" Series engines. These include the O-320-H, the O/LO-360-E and the TO/LTO-360-E models. These engines may be run in with either straight mineral oil or ashless dispersant oil. A new aircraft may be delivered from the factory with either type oil in the engine. Once the engine has been serviced with ashless dispersant oil, it must remain on ashless dispersant oil. The addition of Avco Lycoming oil additive LW-16702 at initial fill and at each oil change or at maximum intervals of fifty hours also applies to the break-in period of all of the "76" Series engines listed earlier.

When taking delivery of a new aircraft, there is another point which must be emphasized. Some aircraft manufacturers add approved preservative lubricating oil to protect new engines from rust and corrosion at the time the aircraft leaves the factory. The preservative oil must be removed at the end of the first 25 hours of operation.

Each new or remanufactured engine is given a production test run at the factory before the engine is delivered to an aircraft manufacturer or other customer. After installation in the aircraft, the engine is run again during the test flights. These test runs will insure that the engine is operating normally and will provide an opportunity to locate small oil leaks or other minor discrepancies. In addition, these test runs do the initial seating of the piston rings. The rest of the break-in is the responsibility of the pilot who flies the aircraft during the next 50 hours.

A new or remanufactured engine should receive the same start, warm-up, and preflight checks as any other engine. There are some aircraft owners and pilots who would prefer to use low power settings for cruise during the break-in period. This is not recommended. A good break-in requires that the oil film which lubricates the piston rings and cylinder walls break down slightly and allow some wear to occur. This wear, or seating of the ring with the cylinder wall will only occur when pressures inside the cylinder are great enough to cause expansion of the piston rings. Pressures in the cylinder only become great enough for a good break-in when power settings above 65% are used.

Full power for take-off and climb during the break-in period is not harmful; it is beneficial, although engine temperatures should be monitored closely to insure that overheating does not occur. Cruise power settings of 70% to 75% of rated power should be used for a good engine break-in.

It should be remembered that if the new or remanufactured engine is normally aspirated (non-turbocharged), it will be necessary to cruise at the lower altitudes to obtain the required cruise power levels. Density altitudes in excess of 8000 feet will not allow the engine to develop sufficient cruise power for a good break-in.

For those who still think that running the engine hard during break-in falls into the category of cruel and unusual punishment, there is one more argument for high power settings during engine break-in. As stated earlier, the use of low power settings does not expand the piston rings enough to break down the film of oil on the cylinder walls. The high temperatures in the combustion chamber will oxidize small amounts of the oil film which often creates a condition commonly known as glazing of the cylinder walls. When this happens, the ring break-in process stops, and excessive oil consumption frequently occurs. The bad news is that extensive glazing can only be corrected by removing the cylinders and re honing the walls. This is expensive and it is an expense that can be avoided by proper break-in procedures.

To summarize, there are just a few items to remember about engine break-in. (1) If a preservative oil has been added by the aircraft manufacturer, drain it after the first 25 hours of operation. (2) Follow the engine manufacturers recommendation regarding the oil to be used for break-in and the period between changes. (3) Run the engine at high cruise power levels for best piston ring/cylinder wall mating. (4) Continue break-in operation for 50 hours or until oil consumption stabilizes. These simple procedures should eliminate the possibility of cylinder wall glazing and should prepare the engine for a long and satisfactory service life.

C.F. "Hank" Henderson
 Palomar Air Port
 Carlsbad, Calif.
 Hanger # 9

Dec. 2, 1981

Dear Bill;

Here is a summary of the procedures done on my Starduster Too to solve the problem of fuel pressure loss during steep climbs, knife-edge flight, steep side slips and even "go's" from touch and go's. As you know, my engine is a LYCOMING IO-540. (260 H.P.) During steep climbs, mild aerobatics, etc. the fuel pressure was prone to drop to "ZERO" and the engine had a slight tendency to go "AAAAHHHPPLOOHH" !! (Pronounced-ZERO HORSEPOWER !!) I originally changed and eliminated each item individually so that I would know exactly what the solution was.

However-- while waiting for some components to be returned, I continued with other modifications, so I am unable to tell you exactly which one corrected the problem. The bottom line, however, is that the problem has been corrected, the fuel pressure does remain constant and the engine has a tendency to continue running !! I feel that the principal problem was a "boiling" of the fuel at 90° turns in the fuel system within the engine cowling. It is a proven fact that any sharp turns of a fluid under pressure (particularly when subjected to heat) will lower the pressure due to "eddy effect". With this in mind - here are the procedures I followed to solve my problem of fuel pressure loss.

1. Inverted tank vent turned down 45° from straight ahead.
2. Upright tank vent aimed straight into slipstream.
3. Side gills installed in each side cowl just behind oil coolers to draw heat off directly from coolers.
4. New engine-driven fuel pump installed.
5. All fuel lines in engine compartment wrapped in "heat-shield."
6. Injector servo screen cleaned.
7. Christen fuel selector/wobble pump sent to factory for internal standpipe check. (Service bulletin-old models.)
8. Floorboard bulkhead fitting from fuselage tank line back to fuel selector valve changed from 90° to 45°.
9. Firewall bulkhead fitting serving line from selector valve to engine-driven fuel pump changed from 90° to 45°.
10. Line from above fitting lengthened to accommodate a gradual 180° turn and enter straight fitting at pump. (Was 90°)

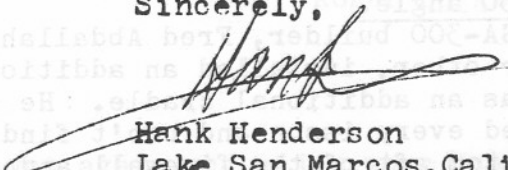
- 11. Pump outlet fitting changed to 45° from 90° and attached line to injector servo lengthened to accomodate gradual turn into straight fitting at servo. (Was 90°)
- 12. Piper type engine-driven fuel pump cover/blast tube cooling kit installed around fuel pump.

I have put over five hours on since completing the above and so far the fuel pressure holds steady as a rock in all attitudes. Undoubtedly, all of these changes were not absolutely necessary but I would recommend them to all future builders during construction since they are a real bear to do afterwards.

As I mentioned, I feel that the pump cooling kit and the elimination of sharp turns in fuel lines plus the heat wrapping are the principal cures.

Hope this will help future builders and any presently flying who may have this same fuel pressure problem.

Sincerely,



Hank Henderson
Lake San Marcos, Calif.

Thanks Hank, for all the info.: Your past shows with the thoroughness and professionalism that you applied in solving your problem.

Bill

2/3/82

Dear Bill,

The last order arrived in fine shape. I am fussing around with another. Now of all the delightful frustrations (honest) associated with building, parts/ materials orders are among the most delightfull. Naturally two factors are dominant in these frustrations - stupidity and ignorance. Of course neither you nor I can do anything about the former but perhaps, with a lot of help from you I can overcome some of the latter.

At the moment I am trying to finish all welding on the steel stuff (except for interplane struts) so that I can sand blast and prime before the whole mess rusts down and I have to start over. All of this brings up problems in other areas.

I'll get right into my dilemmi. That's lots of dilemma's. I wish I knew as much airplane as I do Latin.

Reference: Sheet 16 Seats Brakes & Tank Instal. Dated 9/1/76 J. Osbourne.

1. Detail of tank retaining straps (center of page above tank instal. diagram.) Why the splice? Is it desireable or necessary? I am aware that the tank top is not parallel to the retainer rail but splicing won't help that. In addition, I plan two retaining straps. Humor the old man a little at this point. Although I plan no outside maneuvers as a general practice, I do intend to examine fully the inverted spin characteristics with dive recovery in inverted flight. I have a little problem visualizing the security of the tank in it's nice little bed being dependent on the shear strength of two $\frac{1}{4}$ " bolts. I am aware that the c.c. tank is held in place by two #10 T bolts. That tank would be empty in any intentional inverted flight, however. I have on hand 2 pieces of item 26 strap material 36" long and 1 piece 72" long. Some of this will be needed for the c.c. straps. Is this enough for the c.c. and two main tank straps? If not send me what I need.

2. Items 25 & 27 -.040 4130 angle.

I was advised by a fellow SA-300 builder, Fred Abdallah, that he on the advice of some publication or other, installed an additional piece of angle at the bottom of the tank as an additional cradle. He said it was in Starduster Mag. I have reviewed every issue and can't find it. Seems practical to do this. One at the bottom aft of the firewall and one where the plane of the bottom intersects the interval diagonals at the aft side. At any rate send me enough of the angle to do the job as per the drawing (including the item (27) angles for four strap ends) plus 3 feet. I would hope that this would be an extrusion. If not, send what you recommend and ready for use. The drawing has a notation for the rails "weld 3 places." Where are the 3 places? J.O. knows what he meant but I don't. there are a number of possibilities.

3. Seat, shoulder harness, crotch strap attach hardware. Belts are Starduster, complete, all with pretty, plated hardware purchased 2/27/81. Attach gussets are all welded into the fuselage. Each has a $\frac{1}{4}$ " dia. hole as specified in the drawings. As you know, attach holes in the belt hardware are $\frac{5}{16}$ ". Here is what I need : All of the gizeks including bolts and nuts to attach the harness to the fuselage. This includes that nifty little cable assy. shown in sheet 16 dated 9/3/66.

4. Brakes - these are used units which I got from Mr. Edwards with the other Starduster stuff. Master cyls. are Gerdes, new - wheel cyls. and hardware . Used, unknown Mfg., carries plate Mfg. under FAA TSOC26a and Model 30 - 36. I'll overhaul of course before installing.

RED LETTER DAY

Here is what I need - Ref. diag. sheet #16 dated 9/3/66 : Items -
 4, elbow (2) ; 5, hose assy. (2); 6, unicon (2); 7, nut (4); 9, clamps (4)
 plus tubing for brake line (I'll bend and flare)
 5. Main fuel tank. Starduster Magazine. Date of drawing 4/20/75 by Jim
 Osbourne. Problem - The tanks were among the stuff from Edwards. They are
 Starduster built and beautiful - the main normal and inverted vents and in-
 jector (carb) return ftgs. , as well as the flop tube. The flop tube is at
 the rear. There is no fuel outlet at the front of the tank as shown in the
 drawing. What do I do now coach ? I suppose that you will tell me to put
 one in. If so, send me a threaded bushing so I can. Surprise, I have access
 to a nice Tig welding outfit. A neighbor (UAL pilot) is building a Skybolt.
 All Skybolt builders are rich. I'm pretty good with the damned thing, I
 taught him how. Please solve this the best way you can.

If you think that Mr. Dellicker will not be able to deliver the I strut
 fairings, just cancel with him and ship me a set of fiber glass ones when
 you get some made. Please let me know. The strut fairings are listed on In-
 voice #29181 dated 1/19/81.

If any of the items are not in stock and back ordered, please ship what
 you have. I'm beginning to hurt. The throttle assys. are especially impor-
 tant. I need to weld in the attach brackets and get the dad burned fuselage
 ready to prime.

I can't help my stupidity but I apologize for my ignorance. Your help-
 fullness is, as always, appreciated.

Keep one date open; The Q.B. Cornroast at Oshkosh. It's an event you'
 ll never forget. Eventhough your beard has become proprietor length, it is
 long enough for me to drag you there.

Kindest regards,
 Roger Boggs

Dear Roger,

Good to hear from you again and enjoy your Humor. Now to your queries.

- #1. You don't have to splice the tank strap. Maybe it was thought that
 tank strap material came in 36" length. Feel secure your tank is secure.
 30 GAL @ 6 # = 180 # times - 6G = 1080 #. You T Bolt is in tension. 2
 bolts =
- #2. We are using T bolts at strap ends now. Welding is done at firewall
 and both diagonals. The rails intersect.
- #3. We use 1/4" bolts with a 5/16 times O28 spacer to attach seat belts.
- #4. Wheels and Brakes-by # 30-36 identifies them as CLEVELAND
- #5. The flop Tube was moved to the front because engine stoppage could
 occur while going straight up and at minimum fuel.
- #6. As I mentioned over the phone, we should have some new strut fairings
 soon designed and built by L. Stolp.

Bill

2/3/82

Dear Jim,

Just a note with a couple of pictures to let you know another Star-duster Too is flying. The aircraft is C-GMHW and was built by myself and my brother Clark. We started construction in January 1978 and first flight was on October 17, 1981, with the only snag being a bit of flying wire vibration which was quickly remedied. Our test pilot liked the Too from the very start and had practically no complaints. We followed your plans very closely and built every part we could possibly build ourselves.

A few of the aircraft statistics are;

Engine -	Lycoming -	O 320 E2A
Prop. -	Sensenich-	74 DM 61
Empty wt. -		1,150 lbd.
Cruise -		about 110 mph.
Stall -		50 mph.
Covering -		Stits.
		Full electrical system.

The nose bowl, in case you didn't recognize it, is off an early model Cessna Cardinal and seems to fit very well.

We only have 10 hours time on Hotel Wiskey to date and have hangered her for the cold winter months ahead.

Thanks for the fine aircraft design that we hope to have a lot of happy flying hours in during the next summer.

Sincerely,
Jerry Wilcox



Bill

RED LETTER DAY

Dear Bill, Jim, Lou, etal.,

Sunday, Dec. 13 was the red letter day for Acroduster 1 N74M, and as Osborne said when I called him Sunday night, "It's about time!". I think we started 5½ years ago. I had laid off construction for a period but finally got it about done last winter.

We shipped it off to Thedford, Nebraska (Sand Hill country) where Todd Peterson of Peterson Aircraft was to paint it and do some final plumbing and etcetera's. We planned to assemble it out there, get it signed off, fly off the hours and bring it back. It finally got signed off this September with a few details still to be completed. With winter coming on, Todd planning a move, and commuting problems between Des Moines and Thedford, it was decided to take it apart and trailer it back to Des Moines. We brought it back Nov. 1 and spent the next few weekends putting it back together and taking care of the last few details. On December 8 I told our local GADO we were ready for sign off and on Dec. 10, a cold blustering day they inspected it (out on the gravel, in front of our tiny hanger) and pronounced it airworthy. Saturday morning I headed out, but snow and low ceilings kept me on the ground. I did taxi some, getting our preflight taxi time up to about 1.3 hours total. (The taxi testing, with me and partners Don Green and Al Greffenius all partaking, was a real ball. Dean Campbell, the airport operator was sure we were going to wear out either the plane or the runway. Directional control during all phases of taxi testing was superb, even had it running well over stall speed, with tail up.)

Anyway, went back home Saturday and hoped for better weather Sunday. Sure enough, Sunday had temperatures in the mid 30's and overcast just about 3000', with just a gental breeze from the southeast, fine for our N-S 2650' grass, gravel and mud strip. I suited up, climbed in, and told wife Pat that I'd probably make a taxi run or two. She got airport brabitude Terry Tingle out of his hanger to stand by with car, crowbar, and fire extinguisher and I head out. Run up was fine I lined up, and decided that there had already been enough taxi, so eased in full throttle and off we went. As I had found out during taxi testing, you can shove in power and bring the tail up with no directional control problems. As the A.S.I. went through 70 I eased back and in a wink we were climbing out indicating 120 and the climb was not shallow.

"My Goodness", I thought, "That elevator is certainly sensitive", or words to that effect. As Tingle said later, I learned an awful lot in a couple of seconds. My surprise was the relative stability in roll. The engine sounded fine, all the gages looked good and the plane responded perfectly. I did some slow flight and tried stalls. I got a slight buffet at or just under 70, and a straight drop through on the nose with instant recovery with the release back stick pressures. I set up an approach configuration, 90-95 indicated and a little power to see if rate of descent seemed o.k. It looked and sounded o.k and attitude seemed good so I did some coordination exercises, shallow dives, and a wee bit of hands off to see if there was any ten-

gency to drop a wing right away (no-there wasn't). Oil Temp maxed at 140'. I made a circle approach, 90-95 and a bit of power to the fence, flared, and set down three point. As near as I could tell, it played out some- below 70 indicated. Our empty weight is 732 lbs. and with me, chute and fuel and oil the weight should have been around 1102 lbs. less whatever the wheel pants weighed, (removed because they had collected 32 tons of mud - each.) My run out was quite short, straight with no problems, and you could have heard me holler over the idling 180. I taxied back and climbed out, floated gently down and walked away, about 6" off the ground. I call-partner Greffenius and found out both he and Don Green were on their way out. Arriving shortly, they flipped for next flight, and Green won, flip-Greffenius 22 ft., Green made a couple of taxi runs to accustom himself to the added bulk of the chute, and off he went. He darn near got out of sight, didn't think he was coming back. He played around a while, shot a landing, and then his navy background came through as he rolled the tail wheel an with the mains about a foot or so up for a real grease job. Greffenius then got his turn, and we were sure he wasn't coming back, then he started shooting landings, and went back up to play some more. He finally came back in and then Green went back up followed by Greffenius again. This is only the second time I've made a first flight (flew my Stdstr. Too the first time in Nov. 74) and even though I knew everything was going to be o.k, I was mentally prepared for that 1 flight that day. Besides, Tingle had had a delicious cold beer ready for me when I finished that first flight.

Both Green and Greffenius were delighted with the plane, both in the air and on the ground. The trim seems excellent, no tabs needed. We all think the elevator, while very sensitive, is managable, although Greff ran into some minor turbulence and found himself chasing the elevator. We did not balance the elevators, but have some lead slugs and will add weight to the horiz.to static balance the elevators. Greff sucked the stick back in a full stall, and then did falling leaf with the rudder. Both were doing steep turns, I had rolled from side to side but didn't go inverted. We all enjoy it's landing characteristics.

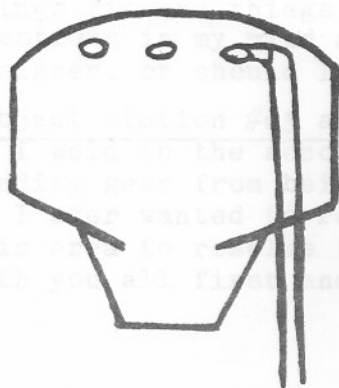
I've had a lot of Starduster time, and have had Maule and T. Craft time in the past, but my 'Too has been down with a broken bungee truss and about all I've been flying the last two years is the companys Comanche 400. Geff has been flying Decathalon and Citabrias in IAC competition, Bonanza, Super Cub, (Tow Plane) and Sailplanes, but no Bipes. Green has had a Swift, Dart is flying a Cessna Skywagon, Super Cub, Navaho (Doctor you know), and a ballon. He's A.T.P. - Goes back to Navy in W.W.II for Bipes. We all find the Acroduster I a real joy to fly. I've read and heard all the good news about the Acroduster I on the ground, but please realize, I've never actually seen one fly! I've seen these Pitts pilots and Smith mini plane pilots dance on the rudder coming in and I confess I had some fears that the Acro I would be at least somewhat squirrely. I'm comfortable as can be with it now, but I'll try not to get complacent.

The plane sticks right to the plans. We installed a Lyc. O-360-A1A, PS5C Pressure carb, military surplus wobble pump, and A.C. engine driven fuel pump (high pressure). The wobble pump is on the firewall. We have a starter, and starter solenoid, with A.P.U. plug in the cockpit and button starter switch on the panel. That way we can be lazy and not prop. Our cables are 15' long and it's easy to bring a car a long side. We have one oil

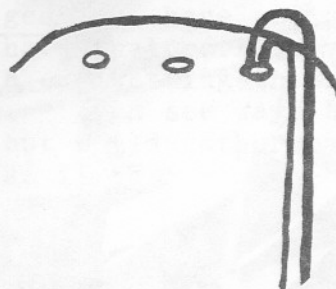
cooler, mounted on back baffle above left rear jug. As you will note in pictures we have plenty of outlet area on the cowl cheeks and plenty underneath. Cooling seems plenty adequate. Our oil system is Acro line. We have a plastic tube site guage on tank. Instruments are G meter, ASI, ALT, Ball Bank, Compass, Oiltemp, Oil Pressure, Fuel Pressure, and Tach. The throttle is a Gerdes Quadrant. Mixture and Carb Heat (Alt. Air) are push pull on the left former under the panel. We have a push pull rod to the wobble pump. The fabric seat back started to tear out and a $\frac{1}{4}$ " ply. back was put in, with a piano hinge on the seat bottom about where the retainer strip for fabric backed was placed. This makes a nice back, but lacks the sag of fabric to make more room for our Security 250 Back Pack Chute. - Think I'll go back to fabric (heavier this time). Our paint job has a nice gloss, but it is not a heavy build up. Our cockpit finish consists of one light coat of chromate, a small vinyl envelope for papers taped to the right side, and markings cut from a vinyl self adhesive set. Light is beautiful. We are pleased with 732 lbs. empty weight. Max rear C.G. with Min. Oil, 250 lb. pilot full everything else and 20 lb. baggage is 16.97" with no gas, no luggage, full oil, and a 120 lb. pilot, forward C.G. is 13.25". This of course is before static balance on the elevators but we'll still be ok, because max rear C.G. was figuring 250 lb. pilot, and I'm not that fat yet.

Although this is my second project, it's my first metal project. nonetheless, I found construction and building techniques to be simple and straight forward. Do remind everyone to get the interior work all done before finally riveting the last front side panel on. And whatever you bolt on the firewall, do it with shoulder nuts. (The slolnoid I installed was bad, didn't want to pull cowl and tank cover, so now have two on firewall. The second one was put on with rivited bracket with shoulder nuts. And, because I'm wider than 3.4", I have an inspection plate covering the access hole I made in the rear side under the horiz. stab. (I can reach all sorts of things from there, like attack points for front roof, stab. and firewall.

Remind builders to watch how they install their fittings into the tank vent holes. Guess what happens when you go



instead of ...



Someone needs to advise me as to a good rubber or neoprene to metal adhesive so I can fasten my split tubing on the baggage hatch. Everything we've tried soon lets go. Guess I'll wire it on, or use real rubber.

I went through 1 Lang and two Maule tail wheels on the Too before I finally got a big Scott, but the issue Maule for the Acroduster 1 worles fine. We have never noticed it shimmy during the extensive taxi testing.

I found rigging and setup on the too a real snap. May I suggest that Acroduster 1 builders, when both upper wings are built, join them together, lay them top side down, and make a solid jig that matches the fittings for the cabanes. This can be marked duplicate wing centerline locations and used to set up the cabanes to ease final assembly problems. And tell them to make sure that they get wings trial rigged perfect, before cover, so they can set up and tack weld I-struts, then recheck when I-struts are finished, and make sure all is right before covering wings. Saves a lot of sweat, wet towels, and asbestos.

The hour is getting late, my writing is getting sloppier, and I better get these pictures identified. Sorry Greff and Green that Pat ran out of film before you all flew, but after all, she's my wife.

My camera is a Minox, with wide angle lens, so the flying shots are near specks. Naturally, I suggest if you can use a picture, it be the modest one with arms upraised in triumphant accomplishment. Oh - it's hard to be humble when you've got an Acroduster 1.

Acroduster 1 built by Jim Hayes, Al Greffenius and Don Green
N 7ZM

Jim Hayes ,

Now do I get my patch?



Dear Starduster/ Acroduster Owner;

A LETTER FROM WALTER R. DeGROOT

This summer after the flying at OSHKOSH I followed up on a "Starduster Too" that was advertized in June 81 Sport Avation magazine. A friend of mine and I drove up to Goodrich, Michigan to visit Ed Brant of 5318 Hegel Road. I spent most of the day looking over the project which was spread from his fathers barn to his basement. I excepted the price and Ed, his wife, my friend John and I began to load the project on top of my 1979 AMC Pacer, assisted with special brackets that I had fabri-cated in anticipation of making the deal. With the fuselage, wing spans, extra tubing, rudder, horizontal stabalizer, and elevator lashed to the top of the car and the landing gear and wing ribs securly tucked in the back of the car, John and I said our good-byes to Ed and his wife, and hit the road for our long road treck back to Virginia. Mone-tering channel 19 we heard many weird comments from our trucker friend and gave us plenty of conversation on the CB as to what that is. One and a half days later John and I arrived at my house in North Arlington, Virginia. The project faired the trip as though it hadn't even been made.

I spent the next 2 months fixing up my large two car garage with insula-tion, and panneling to make it more comfortable with a wood stove to carry my project through the cold, and damp winter months here in Virginia.

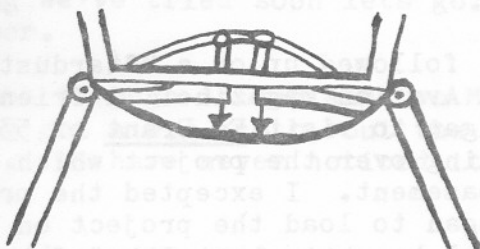
The moans and groans plus other strange sounds emanating from my workshop frequently brings neighbors and friends to watch me bend and weld parts that have begun to give shape and form to the basic skeleton that first arrived in the drive way this summer. It now seems that each piece brings this sculptured metal closer and closer to its intended purpose. The project I had intended to start back in the early 70's. I hope that by mid to late spring 82 I can say that the majority of the fuselage will be completed giving room and encouragement to start on the gluing of the wing's many parts.

At the present time I have run across several problems for which I thought you might give me some advise on.

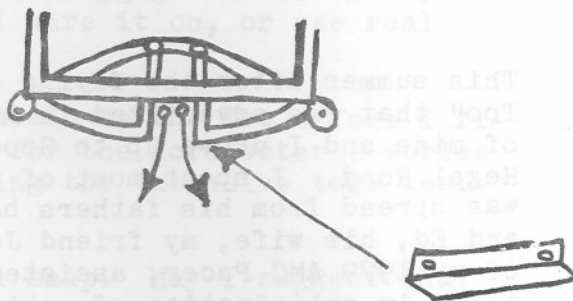
1. subject is the torque tube assembly: the torque tube assembly was constructed of the proper wall thickness but was 1 1/2" dia. tubing instead of the 1-5/8" as called for on the drawings. Things fit and things seem to move O.K. but I still have those questions in my mind as to whether that is O.K. with the designer, or should I just start over?
2. subject station #15 at the landing gear: I have noticed that if I weld in the second belly boe that, that part prevents the landing gear from being removed with out cutting the boe out if I ever wanted to remove the gear. I can see ways to redesign this area to resolve this problem, but would rather talk it over with you all first and get your ideas first.

This is just a preliminary plan. None of us are real pilots. We welcome any and all suggestions for the fabrication by, etc., whether you are joining our fly-by at OSHKOSH or not.

Present design :



Idea :



If at this station we cut into the belly boe making an opening large enough to allow the gear to drop down through I could insert two support tubes and weld them into place as seen in this view marked "Idea". Add a small piece of bent up sheet metal bolted to this frame to support the sheet metal under belly. What do you think?

Your response to these and others to come no doubt will be greatly appreciated.

For your records if you keep such. This project to the best information I have is as follows:

Started by: Joseph L. Brokaw
7124 N. Jennings Road
Mt. Morris, MI 48458 (now deceased)

Project purchased from widow by: Ed Brandt
5318 Hegel Road
Goodrich, MI 48438

Project now owned by: Walter R. DeGroot
3606 N. Dickerson St.
Arlington, VA 22207
Telephone: 703-534-5672

Yours truly,

Walt DeGroot

Hello Walt,

Regards Question #1 , 1½" is ok. Original drawing was much smaller. Larger diameter is now being used to reduce vibration. Not for strength. #2 your idea is great.

Bill

Dear Starduster/ Acroduster Owner;

While at Oshkosh this past August, Joe Hamilton, Bill Clouse and myself were very impressed with the daily fly-by's of B-17's; AT-6's; T-28's; Vari-Eze's, etc. During dinner one evening Joe asked why it wouldn't be possible to have a "STARDUSTER FLY-BY" in 1982. All agreed that it was an idea whose time had come and was definitely possible if we could contact enough Starduster/Acroduster owners and convince a number of them to bring their ships to OSH in 1982.

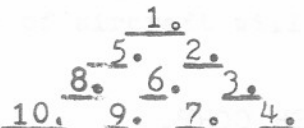
Joe Hamilton offered the copying and mailing facilities of his business operation if Bill and I would get together a letter to all Starduster/Acroduster owners. This is that letter !!

It has been determined that a fly-by can be made a part of the daily show or an every other day show or a one-time display. The plan would be to have each owner practice locally, a 3 ship V formation with the point of the V forward. This would be done at 110-120 mph with medium rate turns either way, at each of the trailing positions (left and Right) and each trail position should be about 10 to 20 feet above the lead position.

The other ships would not have to be Starduster/Acrodusters, or even biplanes, for this practice.

The final plan at OSH would be to have "X" numbers of 3-ship V's combined into one large V. Assuming operation to the South, all ships would form up well north of the field and would fly south in formation directly over the N-S runway. At the south end of the runway a 90° left turn would be made followed immediately by a right 270° turn to re-align with the runway and fly north. At least two of these passes would be made. Again assuming a landing to the South, - the landing break from formation would consist of: -

ASSUMING A 10 SHIP V - LANDING SOUTH.



Just after overheading the north end of the runway, #10 ship would call on the radio- " 1, 2, 3, 4, 5, 6, 7, 8, 9, 10". This would have the affect of breaking #1 right from the formation to make a 270° turn to the right onto base leg for a left turn in for landing long to the south, followed immediately by #2, 3, 4, etc. The reason for having # 10 as the annunciator is obvious- he has total sight of all ships while sighting his own formation position.

All of this should give adequate landing space with not too much slack if speeds are kept to 110-120 mph until on final approach. Each "break" from formation would be clean (no pull-ups or push-downs) until well clear of the formation.

After landing, it would be spectacular if all ships could taxi-by in 3-ship formations along the parallel taxi-way!!

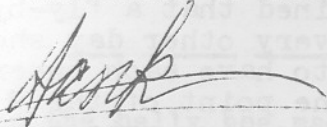
This is just a preliminary plan. None of us are formation trained pilots. We welcome any and all suggestions for the formation fly-by, etc., whether you are joining our fly-by at OSH '82 or not.

(2.)

I am certain you will all agree that this is an exciting prospect and a great chance to display our "prides and joys" in a very spectacular, professional and "clannish" manner. (Vari-ezes, eat your canards out-- we are real airplanes and we were here first!)

Enclosed is a form to return to Bill Clouse - Starduster Corp. Please fill it in and return as soon as possible so that we may place you in a position in the formation of Starduster/Acroduster fly-by's for OSH '82.

Thanks for your attention;


Hank Henderson
S/N 1961
N32CH

HEY BILL - I PLAN ON BEING AT OSH '82 AND WOULD LIKE TO FLY MY SHIP IN THE FLY-BY FORMATION. PLEASE REGISTER ME AND FORWARD ADDITIONAL INFORMATION REGARDING ACCOMODATIONS, SOCIALIZATION (STARDUSTER STYLE) AND DETAILS OF OUR "OSHKOSH STARDUSTER SPECTACULAR".

S/N -
N
OWNER/BUILDER/PILOT

BILL CLOUSE - STARDUSTER CORP.
FLABOB AIRPORT
RIVERSIDE, CALIF. 92509

Please use format from page 26.

Daedalus

WE'LL SEE YOU AT OSHKOSH '82

Please fill out questionnaire and return.

1. How many may we expect in your party, including yourself?
2. What will your length of stay be?

3. Have you made arrangements for accommodations?
4. Do you have formation flying experience?
5. Would you like to participate in the proposed "Starduster Fly-By" for Oshkosh '82?
6. What type of aircraft will you be flying to the event?
7. Would you like to volunteer your services in helping with this event. (Greetings, Hospitality, Entertainment Judging, and Awards) Circle one.

Hope to hear from you soon.
Sincerely,

Bill Clouse
Bill Clouse
President

See you there
Jim McKeehan
THE GOLDENSTATE

TAPE OR STAPLE

TAPE OR STAPLE

1. FOLD ON THE TWO DOTTED LINES SO ADDRESS PANEL FACES OUT.
2. STAPLE OR TAPE IN THE THREE PLACES INDICATED.
3. DROP IN MAIL.

I am certain you will all agree that this is an exciting prospect and a very special one. We are pleased to have you as a member of our organization. We are sure you will find this a most interesting and profitable experience. We are sure you will find this a most interesting and profitable experience. We are sure you will find this a most interesting and profitable experience.

Thanks for your attention.

[Signature]
What will you learn from this?

RETURN ADDRESS HERE

Place
Stamp
Here

STOLP STARDUSTER CORP.
4301 Twining
RIVERSIDE, CALIFORNIA 92509

OWNER/BUILDER/PILOT

What type of aircraft will you be flying to the event?

Would you like to have your services in connection with this event? (Indicate by checkmark in the appropriate box.)

Please
hope to hear from you soon.
Sincerely,

[Signature]
Bill Clouse
President

Daedalus

AIRCRAFT CO.

P. O. Box 901
Santa Paula, CA 93060
(805) 525-0393

OSHKOSH !

Are you ready for this? 1982!!

With all of you out there building and flying Starduster aircraft, and with the thought of OSHKOSH 82 lurking in the back of our minds, it may be time for us to consider the "Coming of Age" of the mighty Starduster.

Statistics quoted last year by Tony Bingelis in "Sport Aviation" magazine indicated that more Starduster aircraft had been built and registered than any other homebuilt.

But where are they? All of those masculine biplanes that cause a quickening of the pulse and a feeling of admiration in the hearts of fellow pilots and neophytes alike.

Oshkosh 81 was the biggest and mostest ever. Some say over 10000 airplanes and three quarters of a million souls, all pumped up with adrenalin and drewling pure 100-130. And yet, only 16 Starduster airplanes were on the line. Twelve Stardusters, three acrodusters and one V star..... out of 600 plus registered aircraft.


While Maynard the duck had over 100 of the flock to represent his product.

Lets play what if! What if 25% of all registered Stardusters appeared for the 1982 convention? Wouldn't that be a coop!

Look, we are all busy. Since many of you have been flying your Starduster for many years, and have been to Oshkosh in the past, you have been sitting back and saying "why don't more of these newcomers to EAA build a real airplane like us old folks used to do?

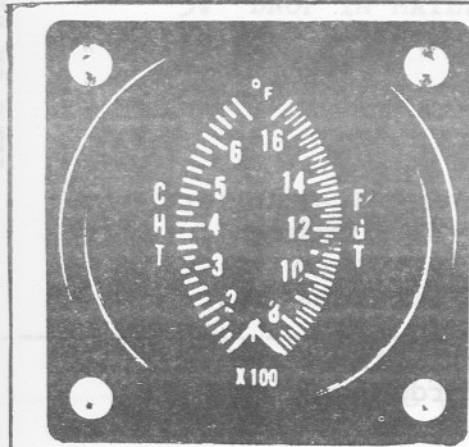
The answer? Motivation! Stur 'em up! Lets have a big Starduster WHO-HA: at Oshkosh 82 and show them how it's done. With 3 or 4 lines of aircraft, a Starduster tent and special activities. If you are really excited about this idea, or if you are mildly transfused, drop me a line, or let our prez know that you are thinking about going this year.

See you there!


Jim McKeehan
THE GOLDDUSTER

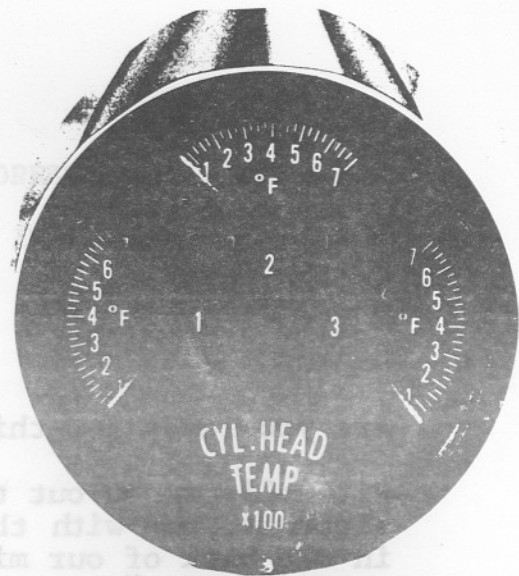
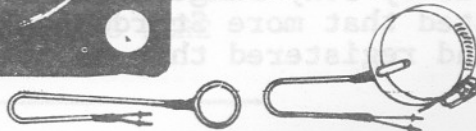
Deadlines

1. FOLD ON THE TWO DOTTED LINES SO ADDRESS WILL BE CORRECT
 2. STAPLE OR TAPE IN THE THREE PLACES

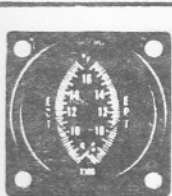


DUAL EGT-CHT
 Cat. No.: 2DA1
 Range: 700-1700°F
 EGT
 100-700°F CHT
 Weight: 3 oz.
 2 1/4" case. Light-weight and a space saver.
 Senders
 712-5W 712-2DW

Actual Size

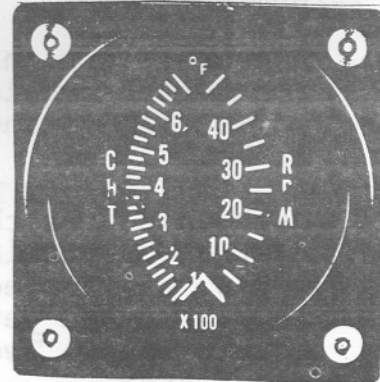
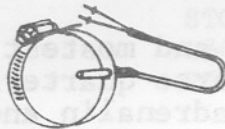


3" ROUND 'TRIPLE'

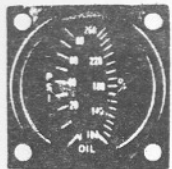


DUAL EGT (Exhaust Gas Temperature)
 Cat. No.: 2DA2
 Weight: 3 oz.
 Range: 700-1700°F
 Senders
 712-2DW

Read exhaust gas temperature on two different cylinders at same time.

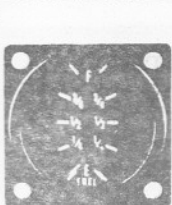
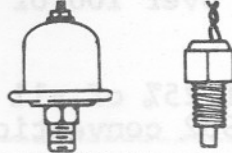


2 1/4" AIRCRAFT 'DUAL'



DUAL Oil Pressure/Oil Temperature
 Cat. No.: 2DA3
 Weight: 3 oz.
 Range: Pres 0-80 PSI
 Temp. 100-260° F
 Sender Oil Pres. No. 387-12S
 Sender Oil Temp. No. 399S

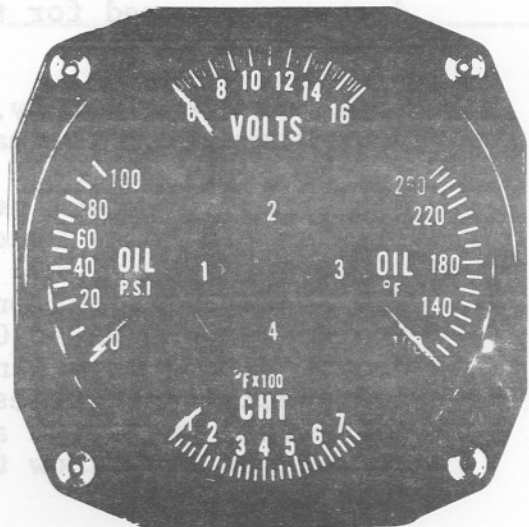
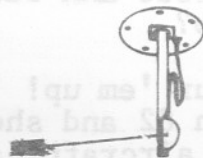
Read oil temp. and pres. with one instrument. For magneto operation order No. 103-18 mag adaptor.



DUAL FUEL LEVEL
 Cat. No.: 2DA4
 Weight: 3 oz.
 Eliminates switching.
 Read both tanks at same time.
 Senders
 Cat. No. 395-5 5-12"
 395-15 10-15"
 395-25 15-25"

Standard 5-hole flange. Top tank mounting only.

For magneto operation order Cat. No. 103-18 mag adaptor.



3 1/8" AIRCRAFT 'QUAD'

Classified Ads

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

STAR DUSTER TOO--
WINGS AND CENTER SECTION READY FOR COVER.
ALL STEEL IN SHIPPING TUBES. TURTLE BACK.
QUALITY WORKMANSHIP.
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EXCELLENT STARDUSTER TOO PROJECT FOR SALE.
80% COMPLETE. FULL CANOPY. 0-435 ENGINE
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PHONE
(503) 653-0943 or
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