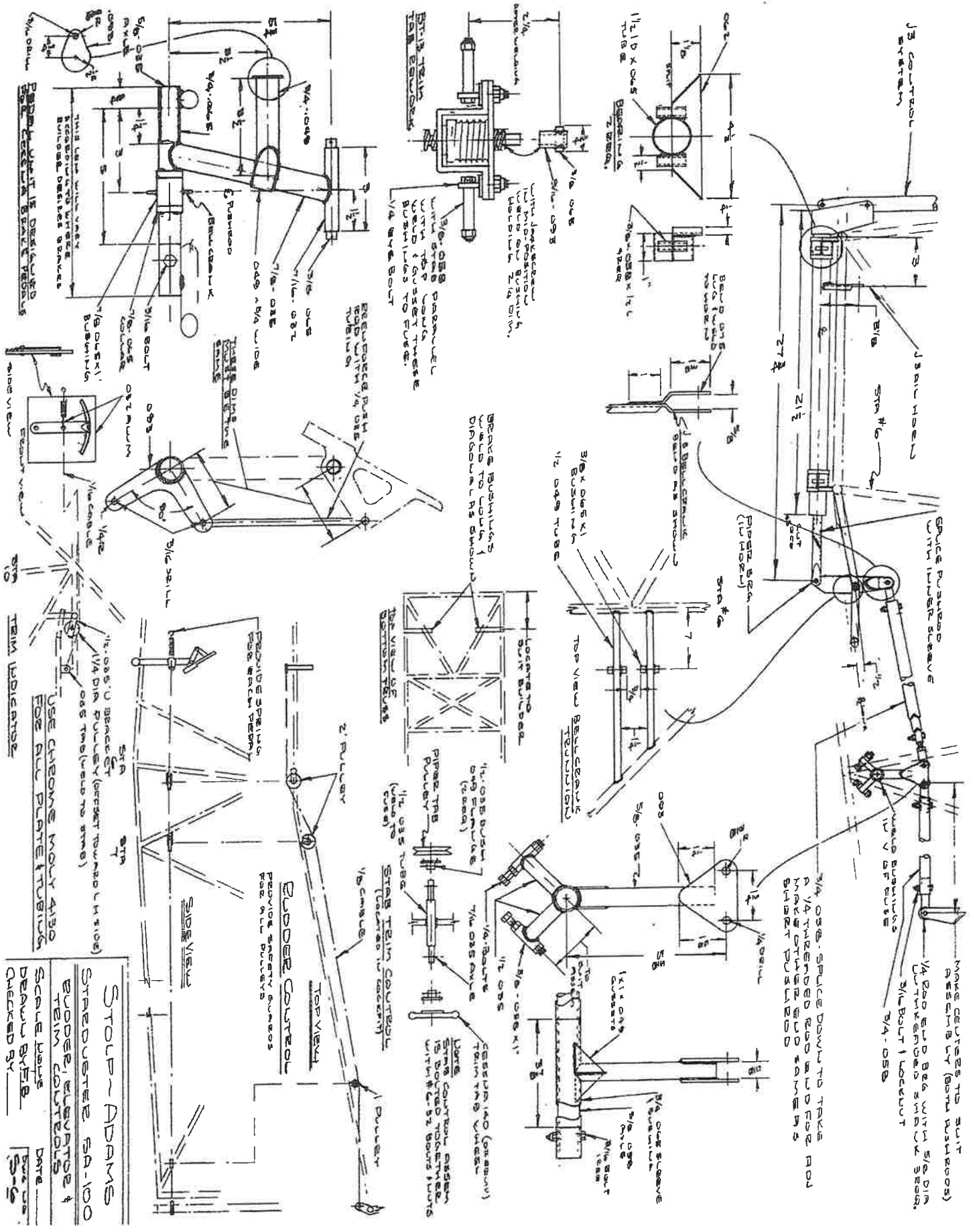


Starduster



STOLP-ADAMS
 STRUETTER SA-100
 BUOY, CURRENTS &
 TWIN CURRENTS

SCALE HALF
 DATE _____
 DRAWN BY SA
 CHECKED BY SA

USE CHROME NUTS ALSO
 FOR ALL PLATE TUBING

1/4" DIA. U. BRACKET
 1/4" DIA. PULLEY (OFFSET TOWARD L.H. SIDE)

PROVIDE SPRING
 FOR EACH VIEW

2" PULLEY

RUBBER CONTROL
 PROVIDE SEVERAL BUREOS
 FOR ALL PULLEYS

TOP VIEW

SIDE VIEW

REWORKED PULLEY
 RODS WITH 1/4" DIA.
 TUBING

3/16" DIA. BUSHING
 1/2" DIA. TUBE

3/16" DIA. BUSHING
 1/2" DIA. TUBE

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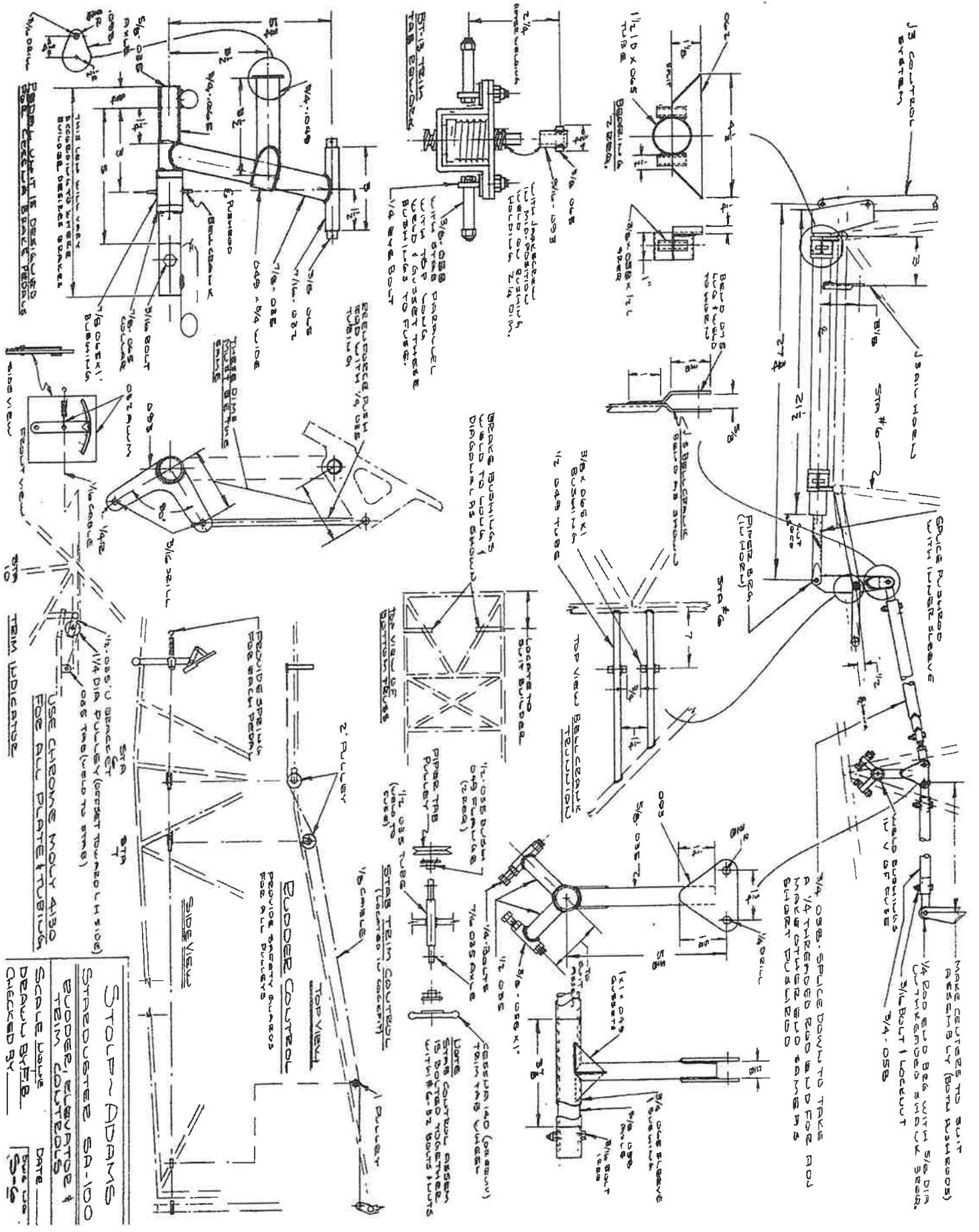
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STOLP-ADAMS
STRENGTHEN SA-100
BUOY CONTROLS &
TRIM CONTROLS
SCALE 1/8" = 1"
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DRAWN BY _____
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Starduster SA100



Information Packet

*Aircraft Spruce & Specialty Co. • 225 Airport Cir. Corona, Ca 92880
ph-909-372-9555 sales line 877-477-7823 fax-909-372-0555
www.aircraftspruce.com • email: info@aircraftspruce.com*

STARDUSTER ONE SA100



The STARDUSTER ONE SA100 was built to fill a need for a single-place, open sport biplane. It was built to fly just for fun and is not intended to be an aerobatic airplane. It is quite strong and many owners use the aircraft for aerobatic flight, but this is beyond the original concept of the machine. Stability is good and the light wing loading makes slow landing speed and short-field operation outstanding.

The main structure of the airplane is built of 4130 steel tubing and sheet stock and has no machined fittings or other complicated bends, which is an advantage for the average homebuilder with limited machine equipment to use. The wings have spruce spars and the ribs are made of 1/4" plywood using a modified M-6 airfoil. Construction of the plane has been kept as simple as possible and it goes pretty well. The prints are quite complete with ribs and most fittings full size, which saves considerable time on construction of these parts.

The Lycoming is the best power plant, and engines from 125 to 200 HP have been installed. The 125 to 160 HP range is optimal. All raw materials as well as certain prefabricated parts (such as fiberglass turtlebacks, nose cowls, wheel pants, cockpit cowlings, welded aluminum fuel tanks, plexiglass windshields, and so forth) are available at reasonable prices.

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THANK YOU JOSEPH M. PIRCH FOR THE FOLLOWING INFORMATION....



The airplane pictured is a Starduster SA100 powered by a Lycoming O-320-E2D, modified to 160h.p.. It was constructed by a real craftsman, John B. Snyder, from Richardson, TX., who along with three of his friends, built four nearly identical SA100's in assembly line fashion, with the one shown completed in 1994. While it does not have inverted systems, it does a credible job in entry-level positive "G" aerobatics and is a ball to fly. Not quite "Pitts-like", but neither are the landings!!

The builder of my aircraft, N247L, is John B. Snyder of Richardson, TX. He completed this and at least two other Stardusters over a number of years. I do have some specific numbers to share with you regarding weight and performance as follows:

Empty Weight: 900lbs.

Gross Weight: 1250lbs.

Engine: Lycoming O-320-E2D, with high compression pistons it is rated at 160h.p.+

Propeller: Sensenich Wood W74EM7-58

Rate of Climb: 2500FPM+

Cruise: 130kts at 2650 RPM and 7.5GPH Fuel Burn

Fuel Capacity

Stall: 50kts

The airplane's controls are light and responsive and it is capable of good aerobatic performance even without inverted systems.

Hope this is useful detail. It's a great little airplane.

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SCAPPOOSE CITY CLUB
P.O.BOX 933
SCAPPOOSE, OR. 97056

October 17, 1994

Starduster
David Baxter
5725 SW McEwan Rd.
Lake Oswego, Oregon 97035

Dear David,

On behalf of the Scappoose City Club, I would like to thank you for your participation in the Steinfeld's Scappoose Sauerkraut festival. It is only with the cooperation of people like you that this festival is the success that it has turned out to be.

The estimated attendance for this one day event was 18,000 to 20,000. It is easy to see that this project could not be completed without the support of the community and people like you. We will soon be starting preparations for the 1995 Sauerkraut festival.

As always, your airplane was a big addition to the festival. We thank you for your time and effort.

Thank you again.

Sincerely,

Scappoose Sauerkraut Festival



Evelyn Hudson
Sauerkraut Festival Coordinator

cc: Scappoose City Club

STARDUSTER HISTORY
N163G
GORDON RENFROE'S SA-100 FAMDANCY

Although I was able to meet Gordon on several occasions I never really knew much about him, because at the time I was just starting to get involved in flying and aviation and finding out that you could really build your own airplane.

The principles that made this airplane come about were of course Gordon Renfroe, Lou Stolp, Bill Michael, his wife June, Ken Kline and Joe Pribilo.

Gordon started in aviation during the late 30's working at a local airport in Sapula Oklahoma. He worked there after school and on the weekends. During WWII he was a pilot with the USAAF Flying B-25's, and C-47's with the Ferry command.

In the late 50's he started his own business, Citizens Communications with Bill Michael and had been away from flying for six years when he came across a 3 view drawing of the Starduster One at a local plumbing store while purchasing some parts. He was taken by the beautiful lines of the Starduster design and after doing some homework immediately purchased a set of plans from Lou Stolp.

He then rented a hangar at the Corona California Airport and with Lou's help ended up with a fully welded SA-100 fuselage complete with landing gear, tail and cabanes. The wings were completed in Long Beach and then brought to the Corona Airport for covering, painting and final assembly, so that Lou Stolp could oversee the progress. Much of the covering and rib stitching was done by June Michael. She still remembers how sore her fingers were from all the rib stitching.

The airplane was covered with Razorback, not the greatest covering process. Its a very rough and heavy fiberglass type of covering which required a lot of dope and sanding. However the airplane did come out a very beautiful cream with blue metallic and red trim.

The aircraft was powered by a 125 HP Lycoming ground power unit that was overhauled and converted to aircraft use. N163G was repowered several times over the years once with a certified O290-D2 and currently a 160 HP Lycoming.

The aircraft was flown on its first test flight by Ned Martin and subsequently by Gray Harmon, Bill Michael, Bob Schmidt and of course Gordon Renfroe, who eventually had more time in it than anyone.

Just about everyone I talked to about Gordon, told me he was a gold plated character. He was of course a salesman with a line a mile long. I'm sure this helped to add to his colorful stories. He also had a deformed hand, and delighted in telling everyone how it happened, although no two stories about it were exactly the same, as were many of the other stories he was capable of telling.

He was EAA Chapter #7 President in Fullerton, California during the early 1970's and was a real spark plug with numerous members and interesting meetings.

In late 1972 Gordon took N163G apart for recover and was well along in the process when on January 7, 1973 he was talked into flying another Starduster One, N661G, which was very much like his own N163G.

This airplane was almost two years old and was built by Bob Schmidt. It was a beautiful award winning airplane and was powered by a 150 HP Lycoming. At the time Bob was a Western Airlines captain.

The take off was smooth and straight, but the engine was running poorly at only about half throttle, and an accurate description of what really happened is questionable. The airplane was at very low altitude. He made a right turn crosswind, and whether it stalled, spun or merely bounced off some power lines, it ended up inverted. It doesn't really matter as Gordon was fatally injured, resulting in a sad day for all who knew him, he was sorely missed. But based on the information and conversations with his friends and acquaintances people who knew him and have owned and built single place Stardusters and were there, I venture to speculate as to the cause.

The PS5-C pressure carb used on this airplane required the mixture to be leaned prior to takeoff as an otherwise rich fuel mixture would result. Gordon's airplane required almost the same procedure. I cannot believe he missed this, but it is a plausible explanation. The PS5-C carbs have to be flow tested and adjusted to a given engine size. It was not uncommon in those days for carbs used on larger engines to be installed on smaller ones, which could result in overly rich mixtures. Thus requiring adjustment for smooth engine operation. People make mistakes, even our best friends. We do not want to believe it but they do.

There was also some speculation about some sort of physical problem that may have contributed, but no one will ever know for sure.

Also whether his military time or the time he had in the Starduster One was accurate is also pure speculation. Many people tend to stretch their experience.

In the late 60's N163G had over 150 hrs, so if you add up average flying time by 1973, 500 hrs would be a reasonably accurate estimation. Which would make him a very experienced Starduster One pilot. N661G's engine, airframe and its components were inspected very closely and no mechanical problem was found.

Gordon's airplane N163G was raced several times during the late 1960's, along with a number of other Starduster Ones, and although not winning or even being very competitive he and his crew were very colorful competitors.

After Gordon's death the airplane was sold to Irv Applebaum who finished the covering job and painted it in pre WWII military colors, much like (Wil Neuberts N7X F-4-B-Too). Not long after that it was purchased by John Castellucci who apparently owned it for many years.

In the late 1980's, I took pictures of this airplane at Fla-Bob during the 1988 Starduster Open House.



AT HEMET CALIFORNIA 1970



AT CORONA CALIFORNIA AIR COLLEGE 1966



AT FLABOB STARDUSTER OPEN HOUSE 1988

Starduster History

NINW Starduster One

Built by Norm Weis

His Second Sweetheart

Norm Wies; Adventures with building and flying NINW. An SA-100 Starduster one. Norm teaches Physics at a Junior College in Casper, Wyoming. Norms interest in aviation comes from a very early age. His interest in building model aircraft and then on to full-size airplanes with the exposure of homebuilt aircraft and the many airplanes that could be built. Followed by the Starduster design that he just could not keep from coming back to, as the airplane to build. It took him three years to build with all of the normal. Building problems. Trying to figure out the plans, learning how to weld. Almost burning down his garage. Buying a wrecked airplane for engine, instruments, wheels, brakes and other useful parts. Were some of the problems he faced and overcame.

The thrill of the first flight followed by flight testing, radio problems, fuel flow, weight and balance. Along with exploring the flight envelope. With a dive speed of over 178 MPH and 6 ½ "G" pull out certainly verified the structural integrity of the little Starduster. From dive testing Norm went on to spin testing. The airplane would enter a spin right or left very slow and lady like for the first turn, but as the spins progressed to more than one turn. The airplane would really wind up to about a turn per second. Norm had to force himself to proceed with the testing as it was quite unsettling, but as the testing continued he found the Starduster recovered quite well and was very predictable.

With the flight testing over it was on to other things. Norm had been eyeing a hayfield only about a mile from his home that was about 2100' long. The field was owned by Mel Loose a good friend of Norms who said OK, so Norm expanded his flight test program to include an off airport landing.

Norms next adventure was to learn aerobatics for several months he had been reading various books on aerobatics which made it clear that a good instructor was the first pre requisite, but since his airplane did not lend its self to dual instruction. He decided to teach him self aerobatics. However he does not recommend the method to anyone. By reading the book and trying a number of ways to do loops, rolls, knife edge, and vertical maneuvers. He was able to teach him self to do basic aerobatics consistently, but of course

the book claimed that it was simply a matter of doing this or that and a perfect maneuver could be achieved. But Norm found that it took much more trial and error. Followed by practice, practice and more practice.

In order for Norm to perform at an aerobatics contest or air show it required him to have a liability policy, membership in IAC, and a current low level waiver that demonstrates his ability with FAA. Norm was able to get all three.

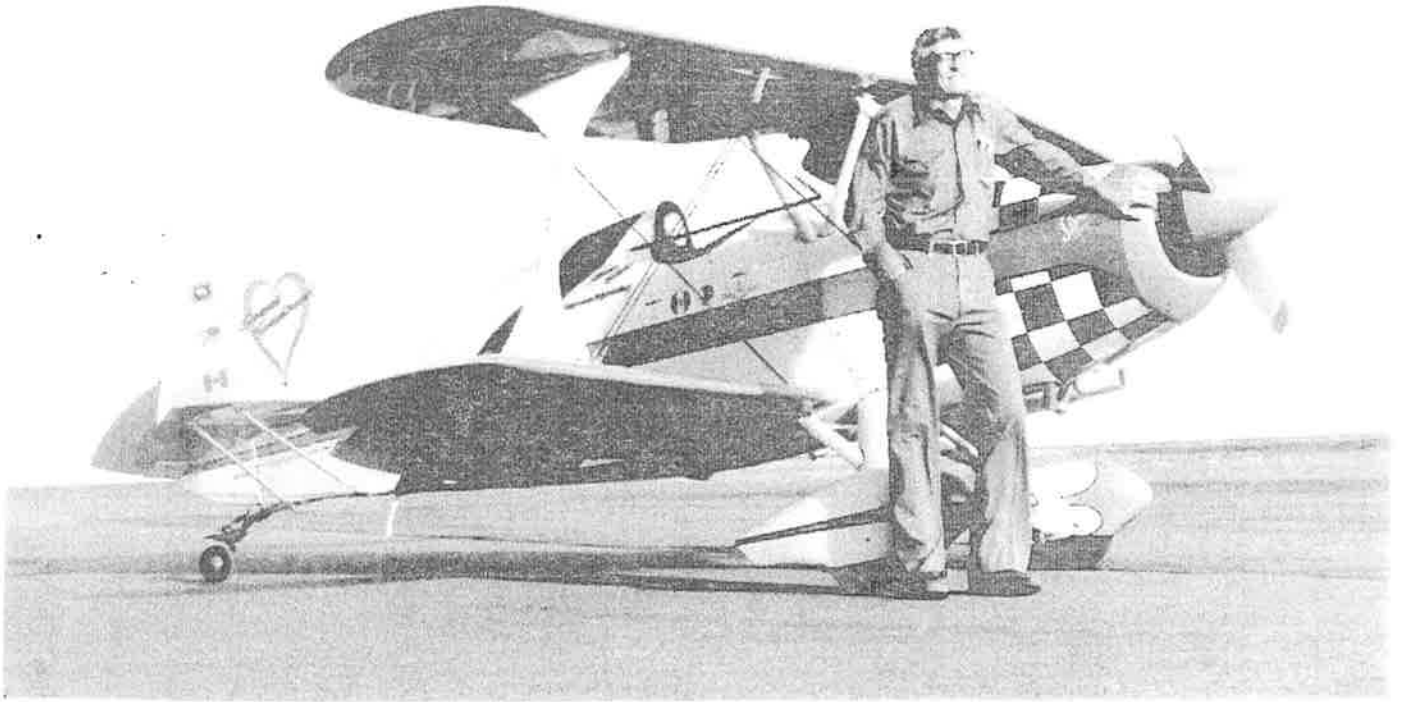
With the time flown off Norm wanted to stretch his wings and so started with Wyoming to Colorado and Utah and then to visit Lou Stolp. Who was then at Redlands, Calif. From Redlands it was on to the West Coast on his return he stopped in Colorado to compete in his first aerobatics contest and with some more practice and suggestions from his rivals. He competed again at Council Bluffs, Iowa. Norm said he was only able to muster 15th out of 30th entries in sportsman, but for a self taught non dedicated Acro pilot certainly is Quite an accomplishment.

Norm next goal was a trip to Canada for some fishing. However the rules for flying into Canada were interesting as well as the airports he stopped at that asked him to do some aerobatics. With some Great Fishing out of the way and a quick trip in a Cub Float plane. He returned home .

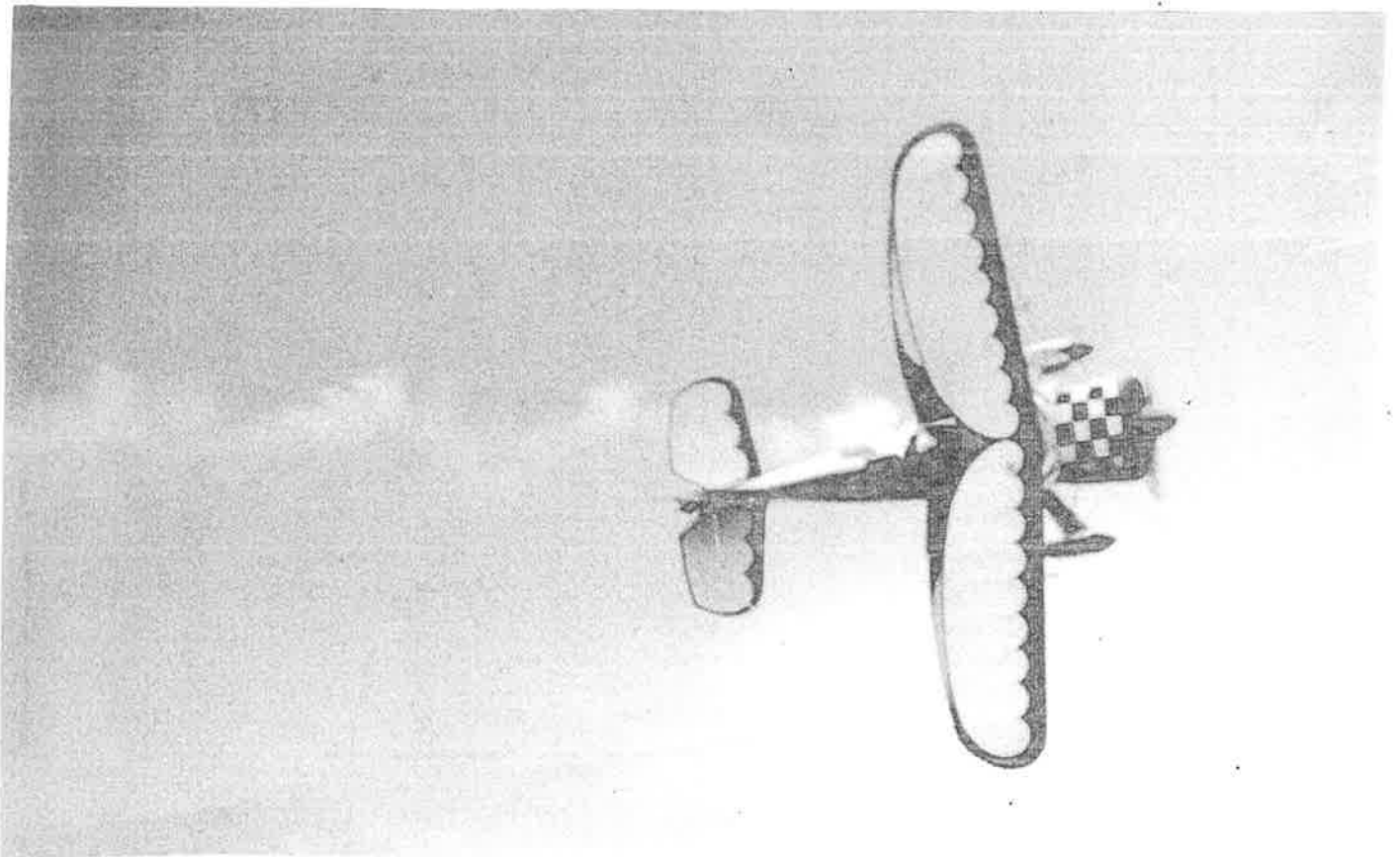
His next goal was a trip to The East Coast and Kitty Hawk with a stop at Oshkosh to visit the EAA convention. The normal dodging of thunder storms to get there, the millions of people who attend the other Starduster pilots he met and all the other interesting things connected with EAA.

With the convention over Norm was looking forward to more adventures with his trip to Kitty Hawk. So with a side trip up to Mackinaw Island and back down into Ohio with poor weather and visibility all the way into Virginia. He stayed with friends, as the next day he planed on flying to Kitty Hawk. Again with poor visibility and smog the likes of Southern California was able to pass by Elizabeth City and was rewarded with blue sky and good visibility over Kitty Hawk. Due to the off shore wind that was keeping the smog at bay. On his return home he was faced with more thunder Storm activity as well as wanting to visit his brother in Muscatine, Iowa and also visit Lake Mills where he had taught school 35 years earlier. He also wanted to visit the old Lake Mills Iowa Airport. Where he had first learned to fly, but it was gone eaten up by progress.

Norm best challenge was air racing . He can't remember just how he got involved, but was certainly curious about competing. His trip to the East Coast had cut down his time needed to prepare for Reno and as a new comer he had a lot to learn. He met many interesting people. Don Forbes, Clem



Norm Weis and N1NW - his Starduster One.



Learning: "We flew the canyons and waved at countless fishermen."

Reno: Rounding Pylon Six



Fischer, Don Fairbanks, Don Beck and Dan Mortensen. All were helpful and encouraging. One quipped you might get killed but never hurt. With testing, timing, lots of duct tape, different props. Speed went from 135 to 140. More practice a smooth oval seemed to work the best. Also a new nick name "Stormin Norman". Norm was able to qualify N1NW and place 6th in his first race and his share of the purse was \$500.00. Not bad for a first time out. Some of Norm's comment to me regarding Reno are as follows. Reno was confusing, is confused and getting more so! Being ahead after take off is nice, but if you have too little pitch be ready to be passed by the bunch. In spite of the rule, pass above and on the outside. Many old hands pass inside, below, and explain later "that's racing". It should cost them a lap each time. All race pilots are a bit odd with T-6 pilots being the worst of the bunch, for strange behavior.

Norm went on to fly an airshow in Mexicali, Mexico in conjunction with the First Mexicali International Air Race. Which turned out to be quite a fiasco. He did get paid for doing his routine in front of a big crowd. Much of the Reno crowd was there and the announcer kept calling them heroes.

After the show was over and on his way home in Southern Utah part of the prop separated from the airplane. A terrible vibration followed by a force landing. Lucky not to get hurt and to put the airplane down in one piece. However it was severely damaged from the fire wall forward. The airplane was rebuilt with a bigger engine and served Norm well until it was sold. The current owner of N1NW is Charles A. Spence of Midland, Texas. Norm also wrote the book "Starduster" it was published by Prentice-Hall. During the early 1980's. During my trips to and from Oshkosh I have been able to visit with Norm on several occasions. While over nighting in Casper, Wyoming. I have found him to be a really special person and engaging conversationalist with a sincere love for the Starduster. A feeling I to share.

Starduster History

Editor David C. Baxter

RECOMMENDATIONS ON HOW TO STAY ALIVE
IN V.F.R. FLYING
by

Chad Wille, CFI, A&P

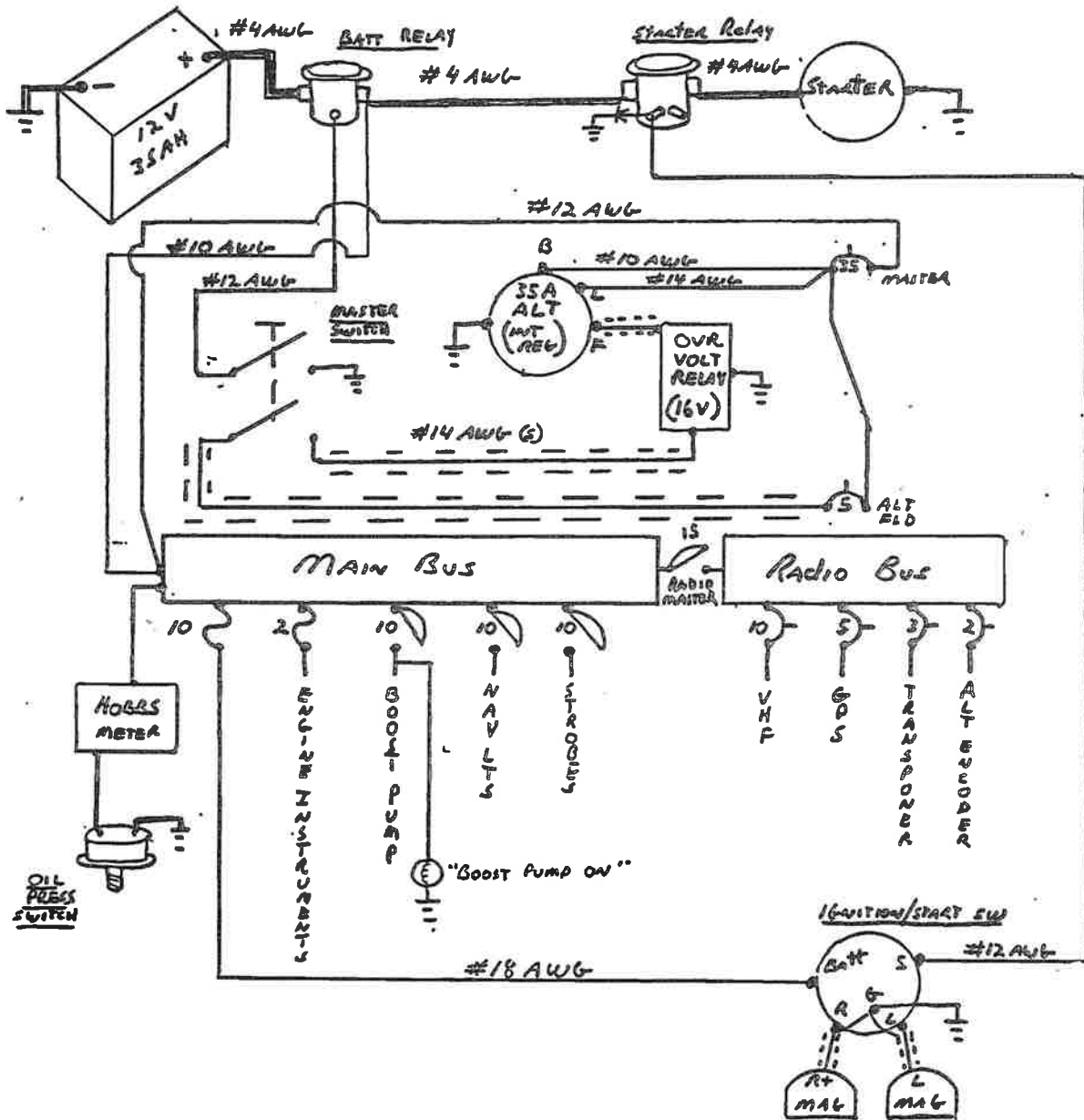
I would like to add a few comments concerning the several articles in the January issue of Starduster magazine concerning the near misses and accidents in the traffic pattern.

As a 5000 hr professional pilot and active Flight Instructor in several categories of aircraft I get to sit next to a pretty varied group of pilots, from students to experienced "Old Hands" and only very rarely do I find a pilot who looks around enough to suit me. Pilots have a lot to do, in fact FAR 91.103 says that we have to become familiar with all information concerning a flight, before we even get in the aircraft. I think you'll agree, ALL is a pretty big word. The FAA puts the burden of being a pilot squarely on the shoulders of the pilot in command in FAR 91.3 so we all know who is responsible when there is a problem. In spending our flying career trying to avoid problems there is absolutely no doubt that being able to see with our eyes is the biggest help. And yet pilots are persistantly lazy when it comes to looking through the plexiglas.

Lets look at typical takeoff. You taxi to the departure end of the runway, turn and face back into the wind and proceed with the runup checks, right? At this point, ask yourself why anybody with sense would TURN THEIR BACKS on the pattern and approach end of the runway?! Don't you want to see whats going on out there for the next few minutes? Don't you want to get a sense of the flow of traffic, which airplanes are staying the pattern, which ones are leaving, before you venture out into the busy highway called a runway? Don't turn your back on the potential danger! "What about engine cooling," you ask? Well, is there a cooling problem with a 15 second partial power runup or is it just something your instructor did, his instructor did it, and now you are doing it too? Of course there's no cooling problem! If you have a CHT and EGT you know that. And you won't find it as a recommended procedure in your engine manual either. "Well won't my propblast hurt the airplanes waiting behind me?" Somehow I think the FAA and NTSB post-crash investigation will fail to mention that you were a "nice guy" to the pilots behind you. But seriously, there are ways that you can handle the runup that will keep everybody happy and keep you informed about the airplanes on downwind, base and final. Spend a few moments figuring out how to do it at your airport. The expediant of doing your runup, then turning the airplane 360 degrees before taxiing to the runway is good, but does not allow more than a few seconds for viewing the pattern. But its a lot better than nothing.

Now that you've taken the active runway and you know the pattern is clear do you immediatly push full throttle? Why? Don't you "own" that runway for as long as you need it, or until someone wants to land? Take some time to LOOK! Is the Cessna 150 taxiing out of the midfield FBO going to turn onto the taxiway or continue right onto the runway? Do you know who is in that airplane? A student pilot confused by the last words his instructor said before stepping out of the plane, or maybe its a mechanic with taxi priveleges confused by the taxiway markings? Don't make the assumption that the runway is clear. And what about the far end of the runway, a mile away. Can you see it? If a plane shot out of the FBO at that end and took off toward you because the wind was "calm" what would you do? Look at the runway environment including the taxiways and parking areas, not just the runway. I think we have all seen some pretty strange things over the years, there's no guarantees at small uncontrolled airports.

N28LJ Electrical Schematic



A Marriage Made in Heaven—Tom Jense Acquires Bob Barney's Starduster SA100 By Paul Richards, Provo, Utah

Tom Jense has become an unwilling contortionist over the years, trying to fold his lanky 6'3", 230-pound frame into small cockpits. He usually ends up looking like an NBA player riding a kid's tricycle. So he was understandably conflicted last summer when he fell in love with a beauty of a Starduster built by Robert Barney of Bountiful, Utah. He wanted that little red biplane so badly his teeth ached, but then there was the problem of fit. "Not to worry," Bob said. The semi-retired craftsman, who began the plans-built project in 1983, had incorporated modifications to the experimental plane to accommodate his own 6'4", 230-pound bod.

"Bob has that artistic ability to look at something and say, 'This is what is needed, based on pilot size,'" Tom says. Bob widened the cockpit section and lengthened the fuselage 11 inches. To keep things in proportion, he extended the wings, adding eight square feet of surface area.

It was a marriage made in heaven, Tom thought, not realizing he was getting more than he bargained for. He has logged more than 55 hours in the craft since his initial self-checkout last August, coming to appreciate his little bird as one of the most "inherently stable, straight-and-level, smooth handling airplanes" he has ever flown. And he has been flying 43 years. "You just think turn, and away you go," he says.

"This airplane has absolutely no bad characteristics at all. It doesn't wander when you're looking at the scenery, it skates right down the runway where it is supposed to, and once trimmed, you can let go of the stick and it stays put." Tom, who owns and operates Central Utah Aircraft Maintenance in Provo, Utah, says the plane often gets accused of being a Pitts because Bob rounded off the empennage tips, deviating from the quasi-P-51 profile called for in the original Lou Stolp-USA 100 design. Another Pitts look-alike is the accent striping that Tom and friend Dennis Argyle, a professional painter, put on the shiny red Imron finish. They spent days mulling over various color combinations, knowing that once applied, the paint and tape could not be removed from the fabric

skin. Then one day Dennis spotted a Dr. Pepper can and realized its colors—black, white and maroon—were just the ticket. He called Tom and the deed was done. The plane sits lower to the ground than called for in the specs because Bob spread the landing gear 1 foot for a 6-foot wheel stance. This makes the plane more stable for take-offs and landings but also decreases prop clearance. Tom is planning to have the 74-inch Sense-nich prop shortened to provide more ground clearance.

"Workmanship on every aspect of the plane is outstanding," Tom says. "The fabric job is flawless. You can't buy a new, commercially-built airplane with better workmanship."

Bob installed a factory-new Textron Lycoming 0-320-D2A, 160-horsepower engine (up from the 125 horses called for in the plans) and brand new radios and instruments.

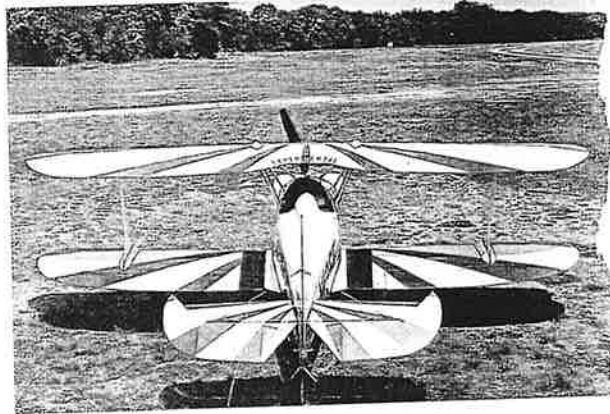
Standard empty weight for Tom's N97TJ (1997 Tom Jense) is 937 pounds; useful load is 363 for a total of 1,300 pounds. Tom carries 21 gallons of fuel in the fuselage and 5 in the top wing. "At a cruise burn rate of 7 gallons per hour, endurance is about three and a half hours," Tom says.

"The plane trues out at 155 miles per hour ground speed or about 140 indicated at 2550 rpm," Tom explains. "It takes off in 200 feet and can climb at 1,450 feet per minute at 95 indicated."

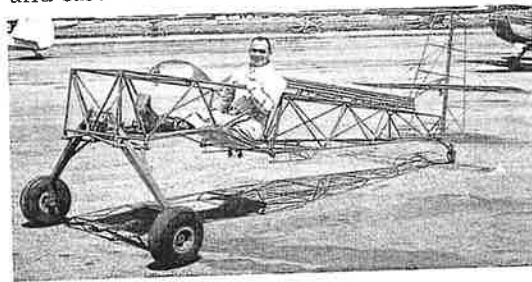
His Starduster is rated for certain aerobatics but is not equipped for inverted flight, he notes. When Tom first got the plane, indicated airspeed never exceeded 124 mph even though he knew it should be higher. He moved the static port from behind the pitot tube head to the fuselage, and that fixed the problem. In a plane like this, your first flight is a solo flight," Tom says with a grin. "In that first landing I pulled 1.5 G's, so I went around and came in faster and higher the second time for a no G, tail-wheel-first landing. I didn't go for a third because I wanted to think for a while about what I had done right." Ever since then when he flies his bird, he can't help but think good thoughts. "It's smooth and real soft but with a reactive feel," he explains. "I love it." (See photos, page 21)

Starduster One

Lou Stolp's little airplane was, and is, one of the prettiest biplanes ever designed. Its elliptical trailing edges are the result of changing the airfoil at the rear rather than having different ribs at each station, so it's not as complicated to build as it looks. Also, the wing uses a tubing truss for drag/anti-drag loads rather than wires, which keeps the cost down and eases construction.



The Starduster One shows its pretty lines. Left, Starduster designer Lou Stolp is all grins.



The airplane is just enough larger than a Pitts to make it more sedate, and possibly better suited to someone who isn't up to handling the frenetic personality of the Pitts. It might also be a better choice for those who are extremely long of leg.

Second-Generation Biplanes

By the late 1960s and early '70s it was obvious that even though we were seeing lots of new, seriously fast, cross-country monoplanes entering sport aviation, the biplane still held the hearts of many. New designs came on the scene, most of which are still with us in plans form, if not in pre-welded components.

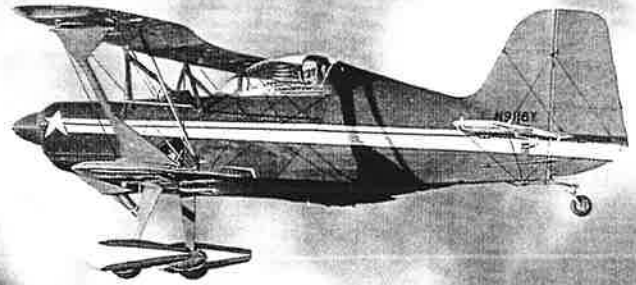
SA100 N97TJ
Tom Jense, Provo, UT



Cockpit View of
Tom Jense's SA100



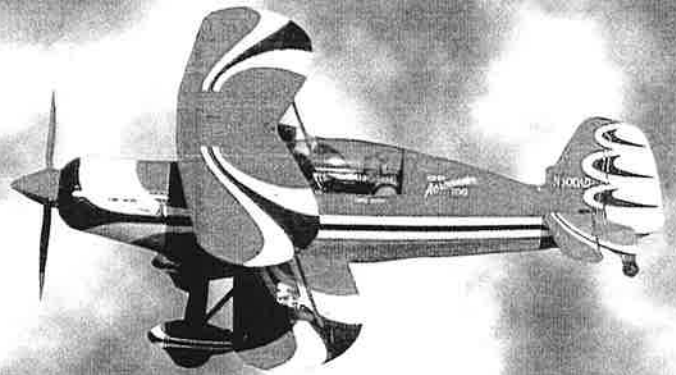
Starduster SA100
started it all, fun unlimited



Super Starduster SA101
unlimited aerobatic fun



Starduster Too SA300 two place, prettiest
biplane ever constructed, all around
best performer



Acroduster Too SA750
two place, high performance,
unlimited aerobatic



Starlet SA500
low horsepower, simple, fun



V-Star SA900
low horsepower, fun