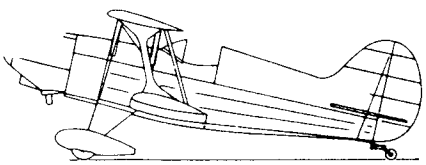
P.O. Box 462 Hales Corners, Wisconsin 53130

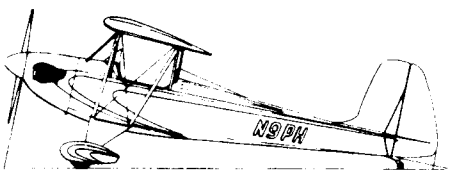
ACRO SPORT NEWSLETTER

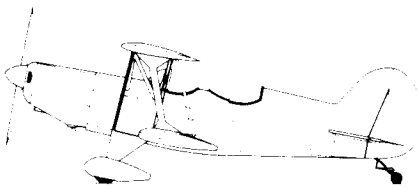
AND PROJECT SCHOOLFLIGHT

Issue No. 5 November 1983

Dorothy "Carrot Top" Vallee of Belleville, Michigan built her Acro Sport N6AS in about 2,000 hours starting July, 1973 and test-flying it in July of 1975. The aircraft has an 0-200 Continental of 100 h.p. and a Sensenich 54/69 metal prop. The cruise speed is 103 mph at 2450 rpm at 3,500 feet msl. The rate of climb is approximately 1,000 feet per minute, beginning altitude of 700 msl. The aircraft empty weight is 719 pounds and normal flying weight about 940 pounds. It has no electrical and no battery although it does have an inverted fuel system. It has no inverted oil system. The approach speed is about 80 mph and the landing speed approximately 68. The paint finish is Stits Aerothane. The aircraft stalls power off at 55 mph indicated airspeed. Maximum speed in the dive has been 182 indicated with no unusual flight characteristics or control pressures. The best glide is at 90 indicated and best climb the same. The aircraft has done all positive aerobatics including snaps, rolls, Cuban 8's, hammerheads and loops. Dorothy worked for a time as a mechanic for the EAA Aviation Foundation and later on became a Flight Instructor and Airline Pilot. She has been a frequent volunteer, assisting in welding instructing at the welding shop at the Oshkosh Convention and is an active EAAer.





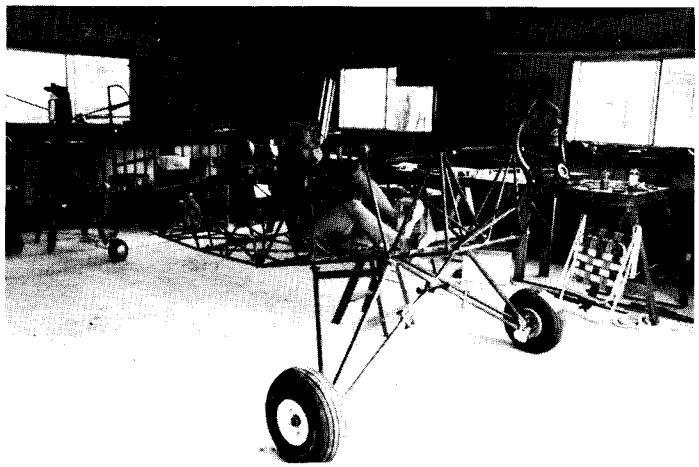


Editor's Note

You will notice that there has been a change in format of the newsletter. We had to do this to reduce printing costs which were somewhat high for slightly under 200 subscribe The newsletter will also be used as a vehicle to promote aviation education through bu ing of aircraft in the schools, EAA Aviation Foundation's "Project Schoolflight". If y were among the first 60 subscribers, you will recognize that it is time to renew your subscription. There will also be an issue immediately following this so that we can catch up on the newsletter. We regret that other projects have caused a delay in getting several of the back issues to you. The next issue will resume with Paul Poberezny's editorial on the front page.

ACRO SPORT BUILDERS GALLERY

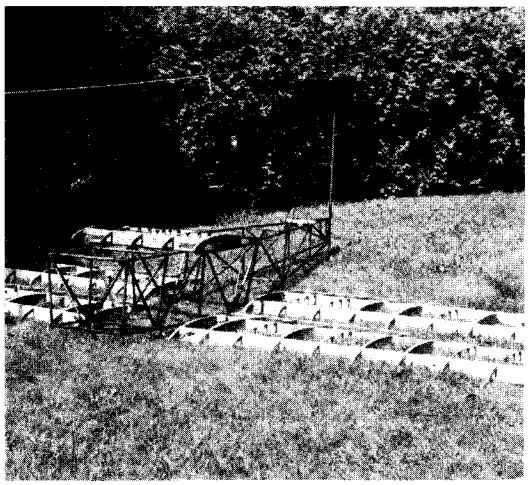
Mrs. Thompson getting some time in Henry's Acro Sport down in Canyon Lake, Texas. Henry comments as follows:



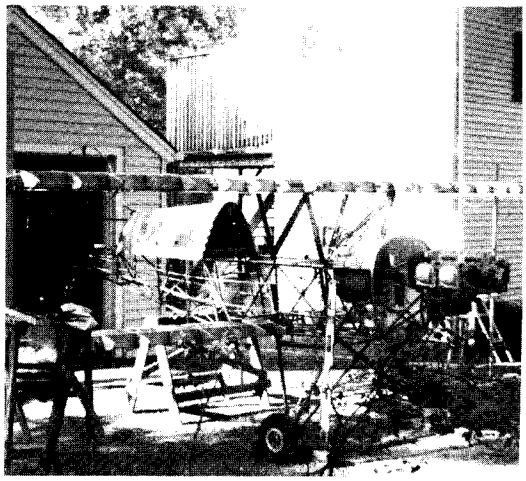
I started the Acro II Project around February, 1982. The frame was finished around April, 1983. At this time the ribs will be completed within the next 2 weeks. The Acro II set of plans are so complete and easy to read that it makes building the plane a real pleasure. I have also found out that any questions that I have can be answered very quickly be calling Ben Owen at the EAA office in Hales Corners.

ACRO SPORT BUILDER REPORTS

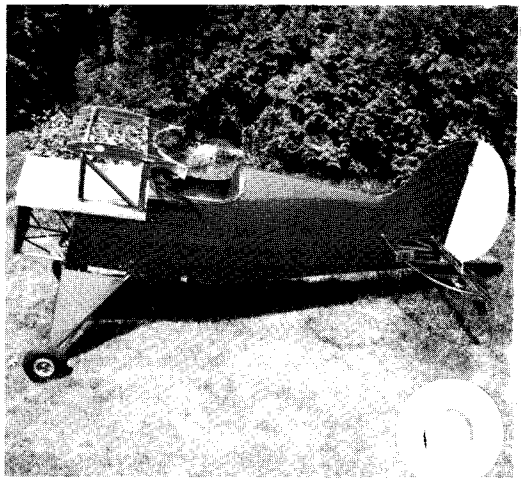
Builder, Dave Marsino of Closter, New Jersey sends a tip on the stabilizer front brace He has modified it. Instead of the clevis fork AN486, he has fabricated another fittin at the fuselage end. This method has not been tested on an aircraft by Acro Sport Inc. nor has Dave's aircraft flown as of this date.



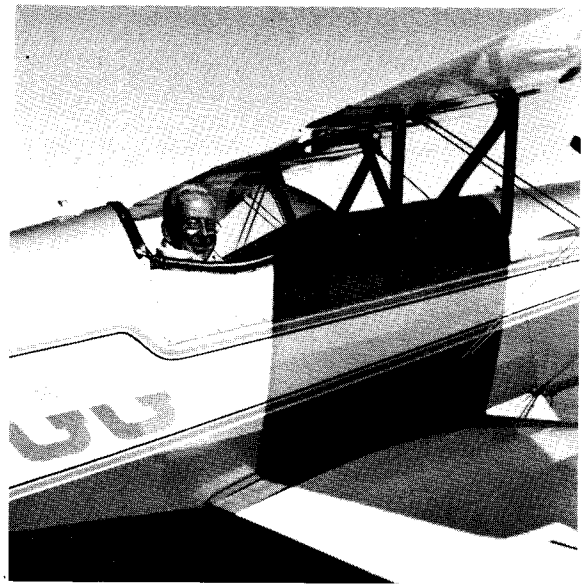
Acro after 1 year of work



Fall - 1982



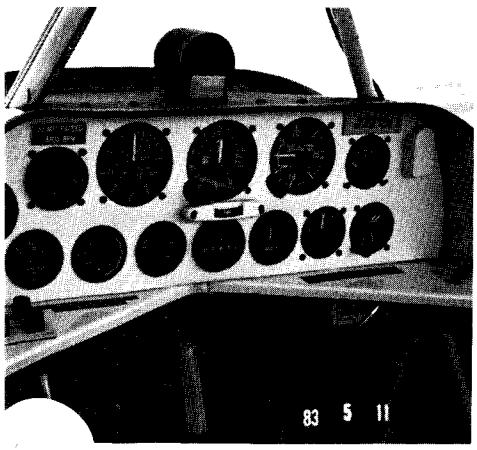
August - 1983



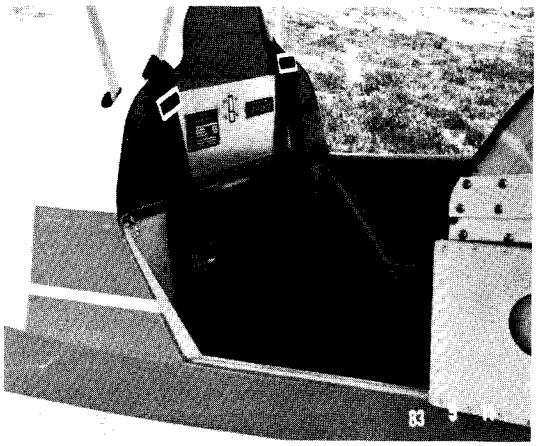
From Gary Grover of Dorris, California. These pictures show his Acro Sport which was completed some while back. Gary comments as follows:

I did build an Acro Sport I some years ago, but I sold it about 4 years ago. Construction was started about five years prior to that time. I found the plans good and really had few problems, but too much time has gone by to recall anything specific. One problem that I had was with the nose bowl which was not a problem with the design. With an -235 Engine I used Wag-Aero's bowl and there was conflict with the spinner. I then bought a Pitts bowl and had the same problem. The buyer advised me that he had the same problem with the spinner.

Dr. Jewell's Pixie



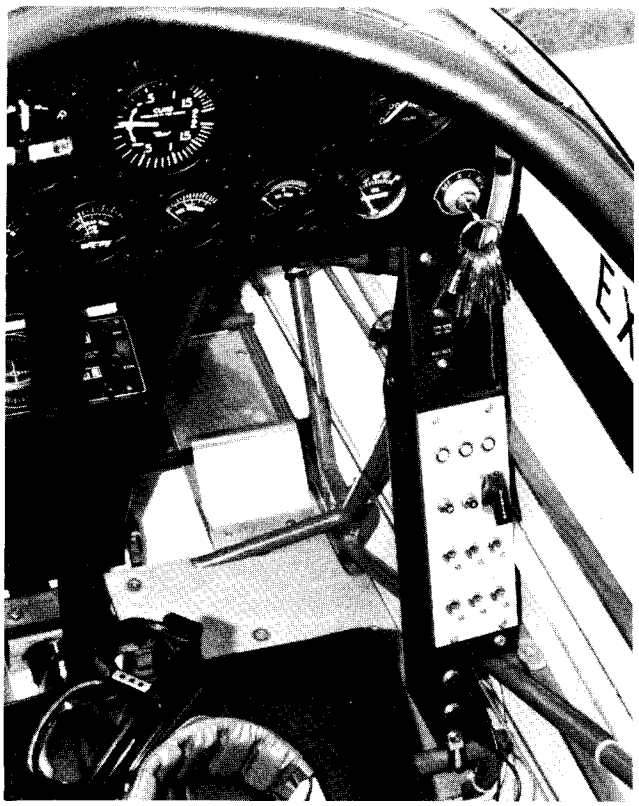
Builder, Dr. A. Hartwell Jewell's Instrument Panel - Note location of electrical switches



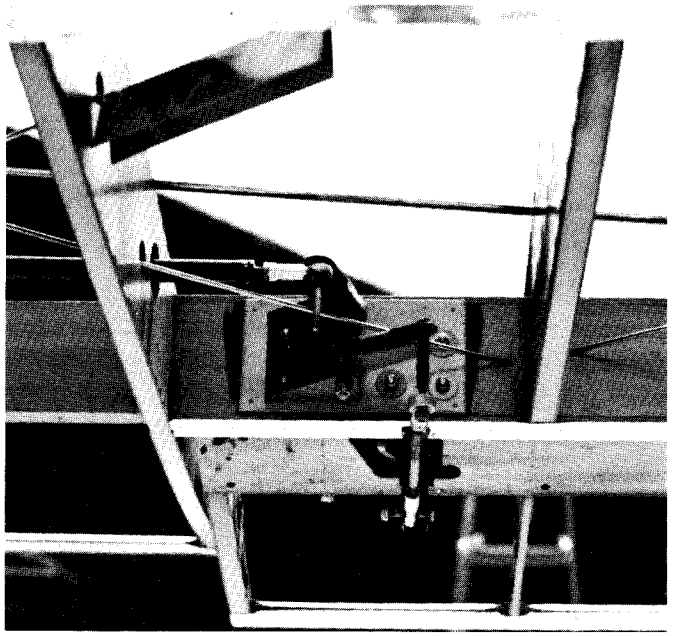
Shoulder Harness Location

Pixie with pressure cowling and wheel pants

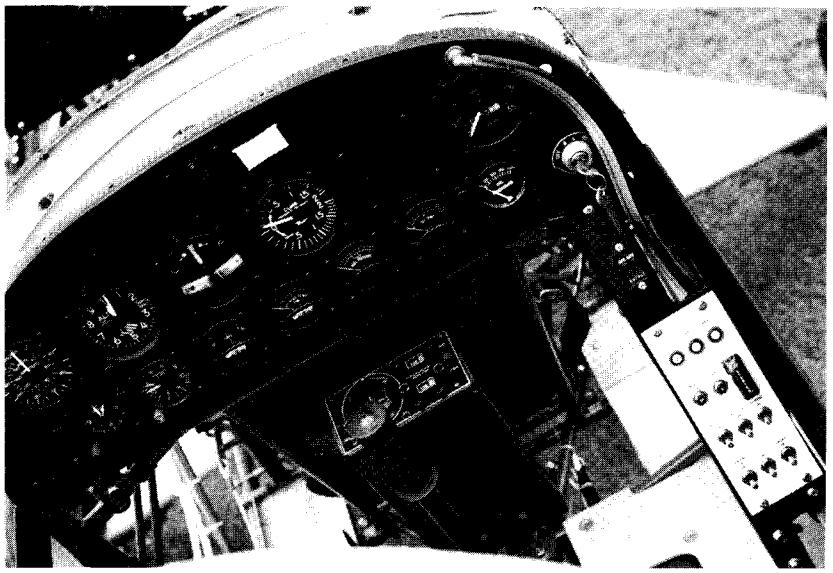
Al Smith's Acro II



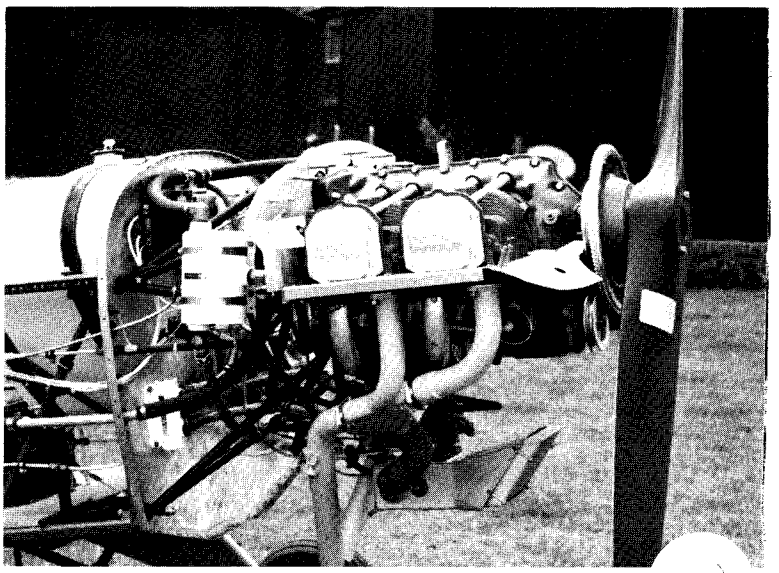
Cockpit View - Al Smith's electrical console. To the right, note the position of the magneto switch and keys. It is best to keep any protuberances away from the center section of the instrument panel in event of sudden stop.



Acro II Aileron push-pull bell crank



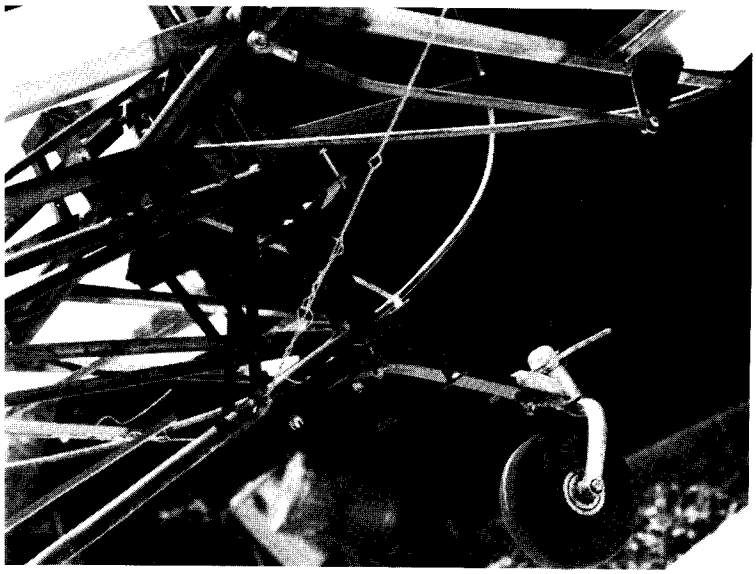
More instrument, electrical and radio detail



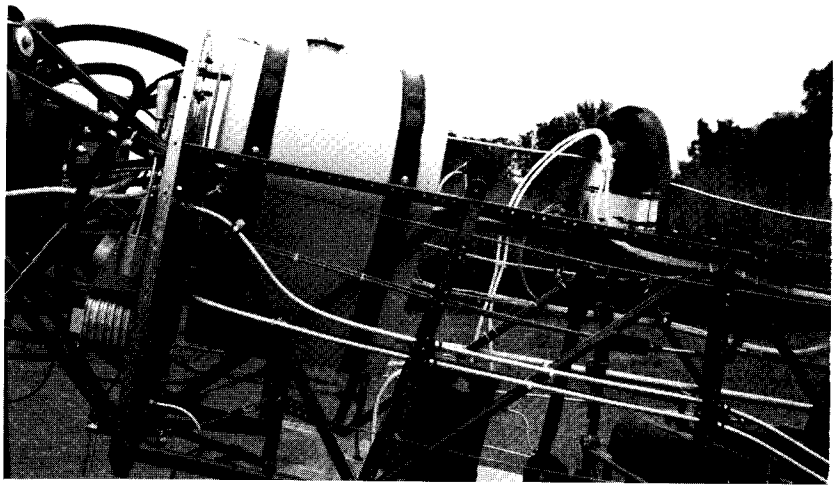
Engine shown from the side. Note location of the air oil separator (slobber pot) related to the thrust line.

ACRO SPORT BUILDER REPORTS

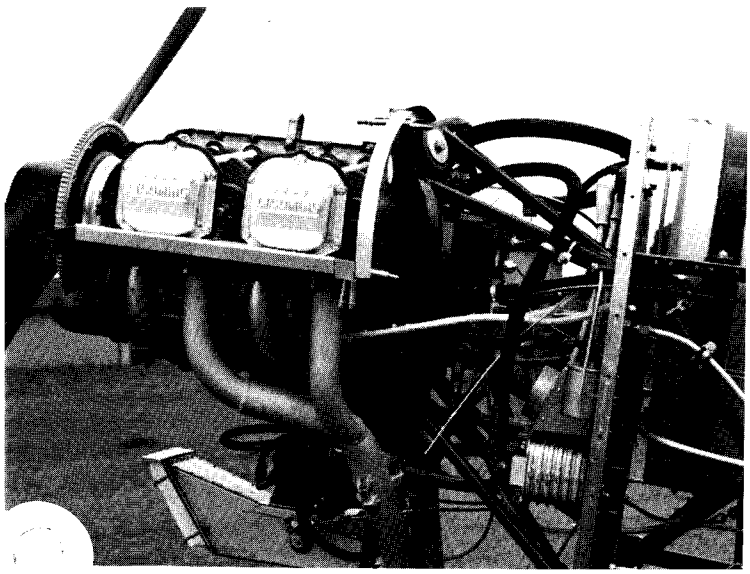
Al Smith's Acro II



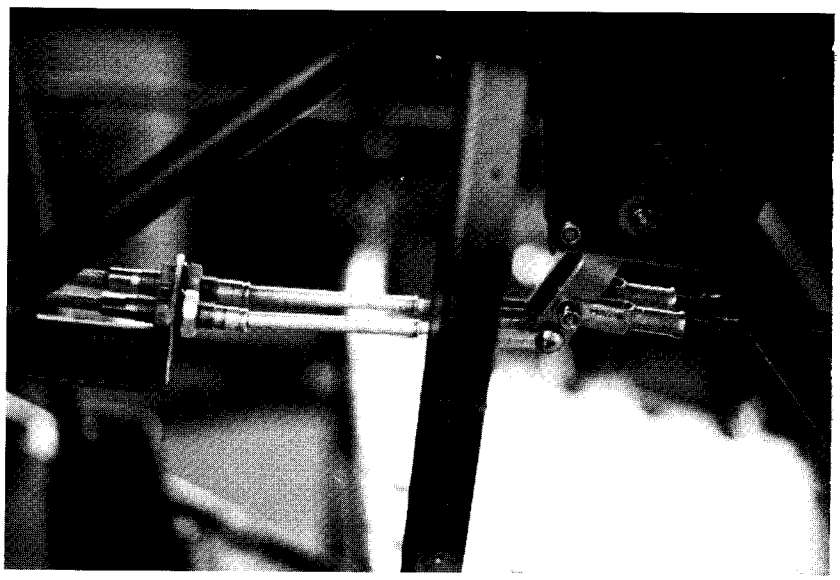
Tail Detail - Note slight bend in push rod to tab.



Cockpit area - Note, Battery location to Al's design



Engine Area - Location of oil cooler



Detail in way of front throttle plate
Aircraft was best Acro Sport II at Oshkosh, 1983

ACRO SPORT BUILDER REPORTS

John Leitis' Pixie

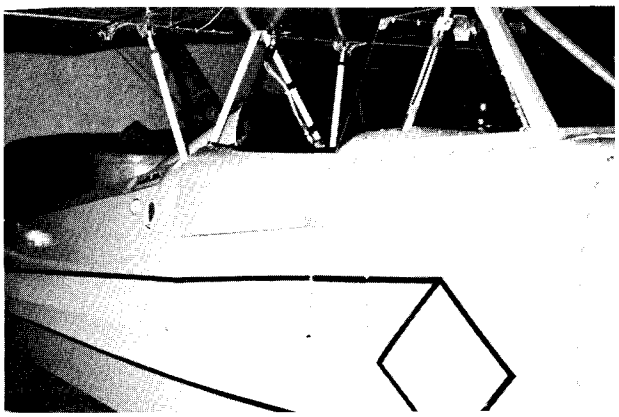
Builder, John Leitis of Roaring Spring, PA. comments as follows:

Also in response to your letter dated 4/28 in connection of Pixie construction, changes etc., I am enclosing several pictures showing side panels for the cockpit enclosure. This was done mainly for the purpose to reduce draft and cold air hitting my arms during the cold winter flying weather. However I gained a side benefit in airspeed increase of approx. 7 MPH as well as regaining the ability to raise the low wing, when displaced, just by rudder pressure. As you recall from my earlier experience report, I was not able to do so before. Also I would like to mention that the wing dihedral is only 1". Aircraft is very stable.

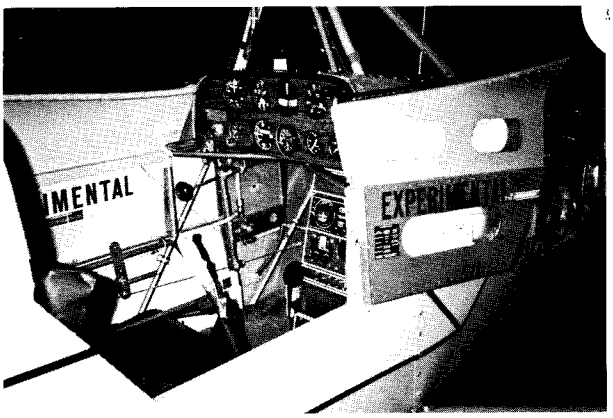
POBER PIXIE IS ONE GREAT AIRPLANE

In the Acro Sport Newsletter we reported a wrong size for the propeller, it is 72"D x 44"P producing 2350 RPM at 6000' alt. Best rate of climb is 65 MPH at 2050 RPM. Best angle of climb is 55 MPH at 2050 RPM. (That is all the engine will turn over). I normally cruise at 2250 - 2300 RPM producing 97 MPH. In the pictures you will notice a small wind generator. It is a DC motor (12 Volt). I bought it in surplus market. I was told that it was an electric wheelchair motor. The prop I use on it is an 8"D x 8½P model airplane racing propeller, mounted on backwards with flat side forward. (Otherwise it doesn't work at all). It produces 5 Amp at 15 Volts using 2 diodes 6 Amp each in series as a current block and Voltage drop. Could use one more diode to lower the voltage or construct a voltage regulator.

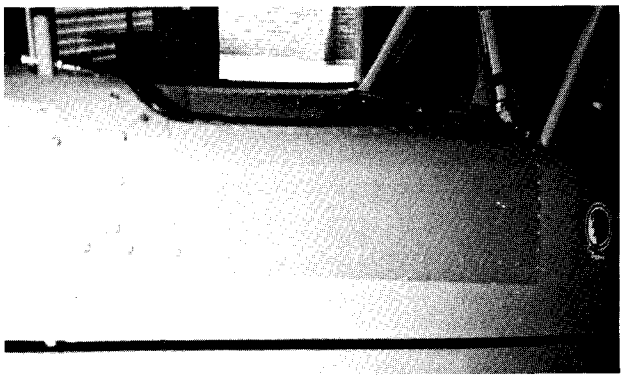
Last year I used a different generator. It was a model airplane electric motor equiv. of .25 cu. inch alcohol engine. It produced 3 Amps at 14 Volts using 10" D x 6"P model airplane propeller, the motor brushes in it only lasted 50 hours. The battery which is located in the baggage compartment is 12 V 9 Amp/Hour motorcycle type encased in plastic with vent hose leading to the outside of the fuselage.



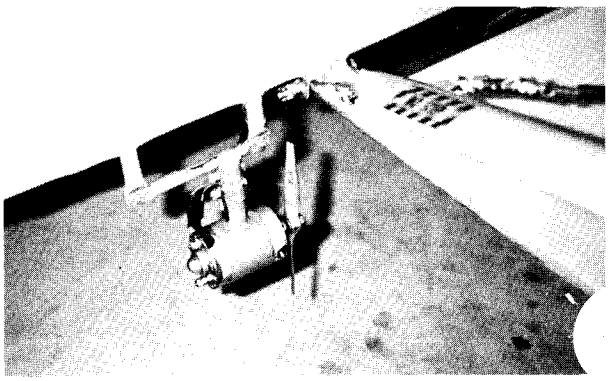
Side covers in place



Open door of the pixie showing detail interior of the side doors.



Upper door detail showing rivet spacing etc.



Detail of the current wind generator on the Pixie (forward is to the right)

R. E. Maulsby's Acro Sport I

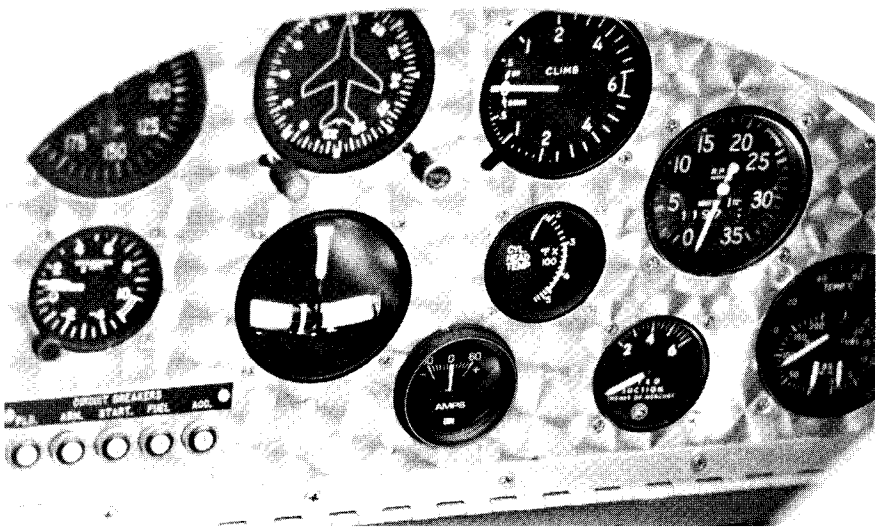
In thinking back on the Acro Sport I, I was reminded of Al Smith's new Acro Sport II in the last SPORT AVIATION because I too felt a real sense of responsibility in the development of the plans. When I saw the original partially completed Acro Sport at Oshkosh in 1971, I knew that was the plane I wanted to build. Took a bunch of detail shots, some of which show in the attached photo copy. There were no plans but Paul gave me a sketch of the fuselage (also a photocopy attached) from which I started. I spent a fortune on the phone with both Bill Blake and Chomo as Blake had started drawings. I have always felt that the fact that I was building really did help to correct errors as we went along. It took me five years and a lot of Chomo's patience, but of course the project was well worth it. The original was Serial No. 1 and mine was No. 3. I never did know what happened to No. 2.

My registration number N611DM bears the number of the Marine Bombing Squadron I flew in the Philippines during WW II. We flew PBJ's (B-25's in the Air Force).

I think that one time-saving suggestion for new builders involved a relatively easy way to lay out blocks on the fuselage jig. After laying out the center-lines in full size on my plywood jig base, instead of measuring each side of the center half the diameter of the respective tubing, making a mark, then nailing a block down at the marks, I devised an error reducing scheme. I took 3/4" thick plexiglass, and cut a strip 8" wide, then cut widths just barely under the widths or diameters of the tubing to be used, i.e. 1/2", 5/8", 3/4" etc. Therefore the plexiglass strip for the 1/2" tubing was 1/2" wide, 3/4" original thickness and 8" long. On one side I scribed a center line (in this case on the 1/2" wide side). By laying plexiglass down on the drawn center line of the jig, looking thru the plexiglass and lining its own center line up with the jig, at the same time holding my two blocks on either side of the plastic "window". It was simple to nail the blocks in the proper place. I had drilled holes in the wood blocks with tight-fitting nails already in place to simply drive home. If anyone is interested, I'd be glad to make a clarifying sketch for you.

N611DM is powered by an 10-320 fuel injected Lycoming at 160 HP. I didn't skimp on the weight as it has a starter, generator and battery, weighs in at about 900 pounds. It is hangared at Waterbury-Oxford Airport at Oxford, Connecticut where we have manged to squeeze it, a two-place Pitts, and single seat Pitts (that used to belong to Mary Gaffney) into one T-hangar. It is pretty faithful to the plans that subsequently were issued with the exception of a substitution of plywood for aluminum on the wing leading edges, and a hinged, fold-down instrument panel that didn't work out too well. I sure wish I had the foresight to make the skin ahead of the cockpit in two pieces instead of one so that area could be opened up for inspection and maintenance without having to unrig the whole airplane.

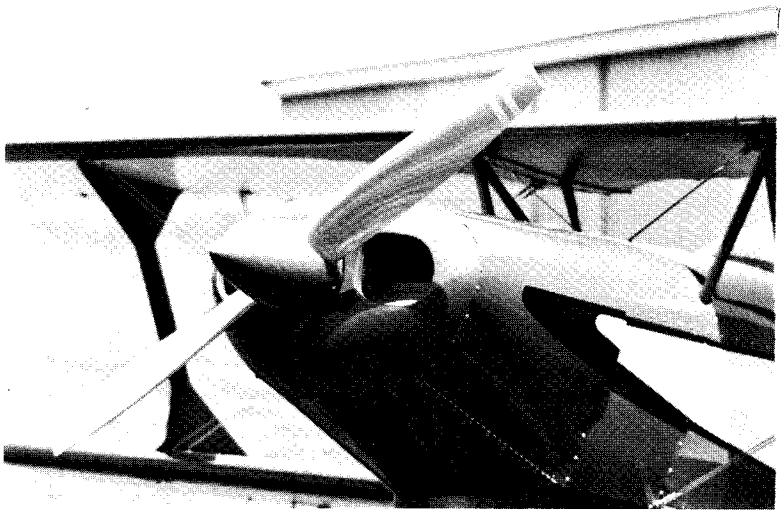
Dick's instrument panel which is burnished aluminum. We burnished the aluminum at the Museum Foundation for "The Spirit of St. Louis" using Scotch Brite pads cut in circles about 3" wide and glued to a plywood circle, the same size that was then chucked in a portable drill. Use Alclad sheet and be careful not to cut through the pure aluminum on the skin. When pads wear out, they can be glued over the top of the older pad.



ACRO SPORT BUILDER REPORTS

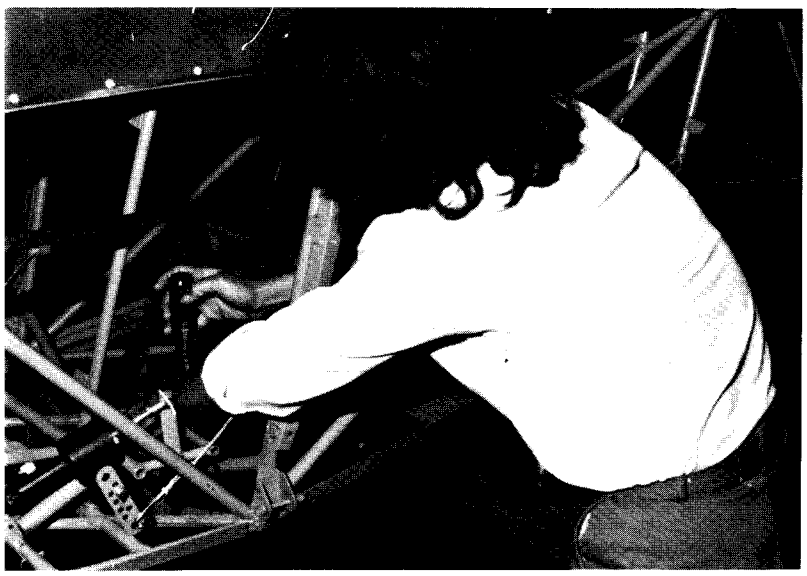
R. E. Maulsby's Acro Sport (cont.)

Dick Maulsby's Acro Sport, N611DM

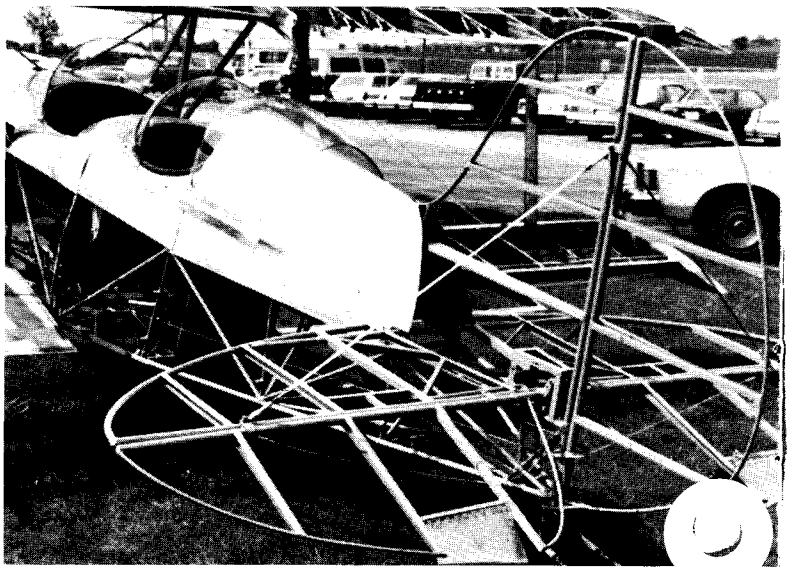


Detail of Dick's cowling area

Mundelein High School's Project Schoolflight Project Acro II
James Jackson, Instructor

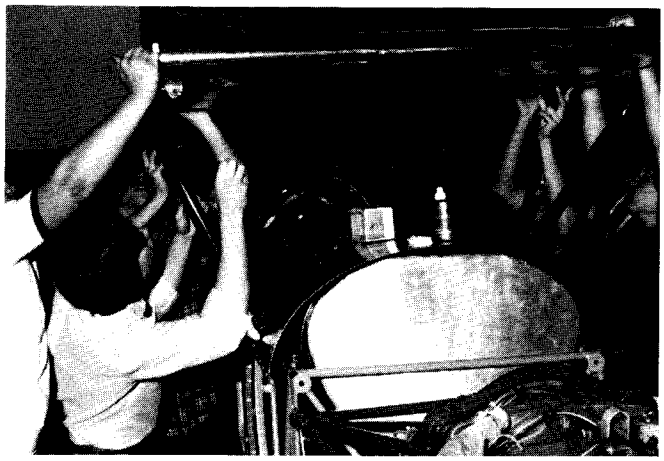


Jim does have some female students as the above verifies.

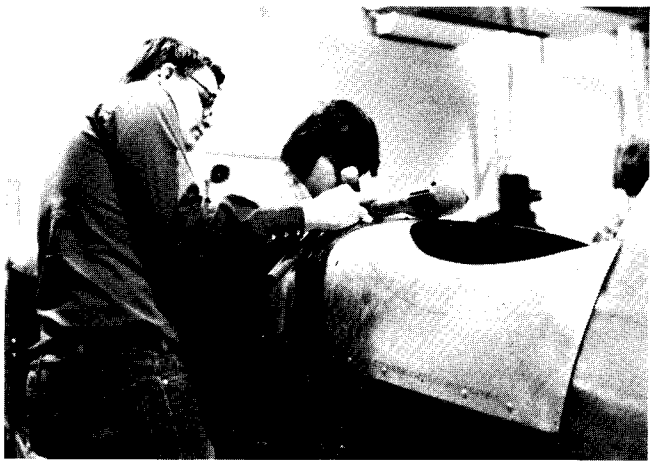


Detail of the tail area of Mundelein High's Acro II

Mundelein High School's Acro Sport (cont.)



Fitting the cabane struts

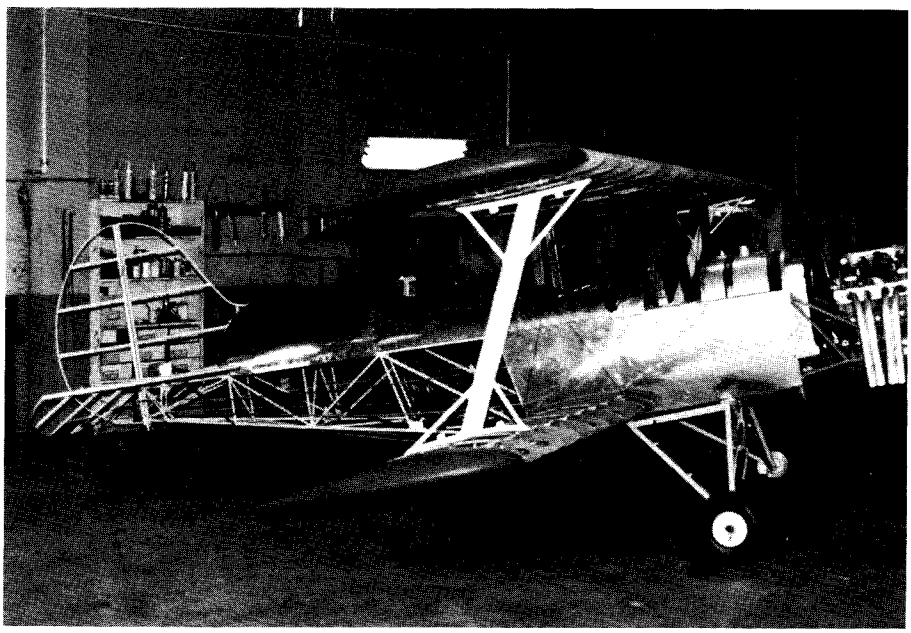


Fastening the cowling sheet metal in place

The rigging is done!

Dave Blanton
Wichita, KS

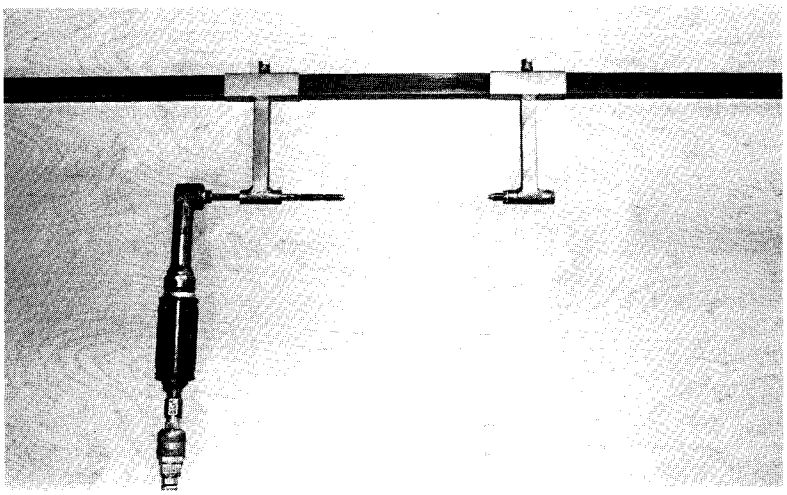
Dave is building an Acro Sport II with a Ford Escort engine. Otherwise the aircraft is standard



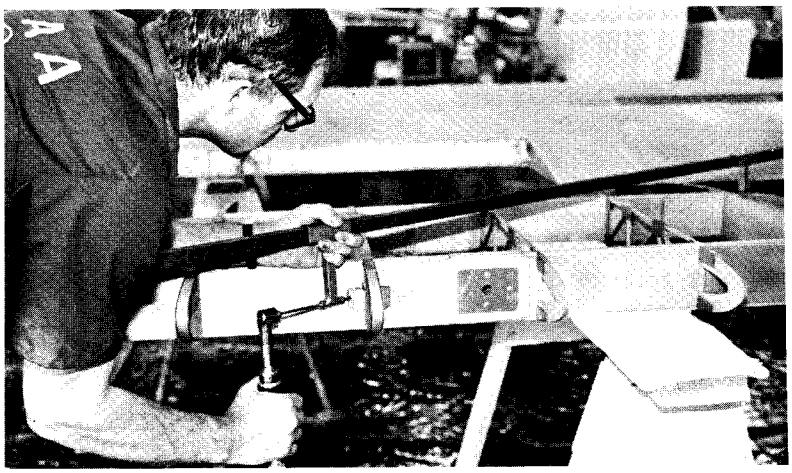
Bauken Noack of the Foundation Staff built this guide. One caution is that the guide itself must be in line in order for it to function properly. A good way to do this is to build all 3 guides together and then saw them apart when the work is complete. You should first weld the connecting stocks to the square tubing that slides over the 7/8 inch O.D. square tubing. Of course the I.D. of the square tubing that slides over is also 7/8 inc When the stocks are welded in place, the square tubing can be slid over the 6 foot length of 7/8 O.D. and the bushing welded in place on the stocks. Later the tool can be cut apart and will be found to be true if the bushing was lined up with the 6 foot length of square tubing initially.

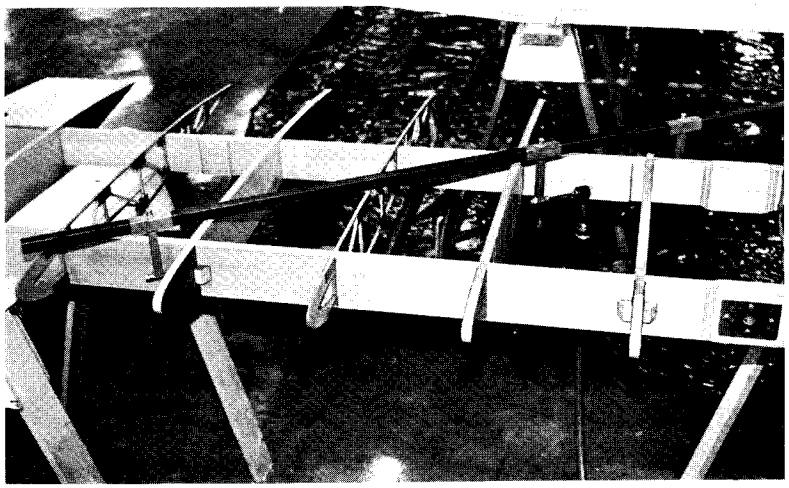
Note the "points" that are made from bolts ground down to a point slid into the bushing stock for alignment of the tool while it is being used.

The complete alignment and drilling tool using a compressed air right angle drill.



Drilling mounting holes in a wing for an Acro II





Procedure used to drill holes through a compression rib.

1. The leading edge brace on the horizontal stabilizer for Acro Sports I and II is a mandatory change. There have been no failures or problems. However, the Pitts S1 with a horizontal tail about half the size of our Acro Sport's, has had 6 failures of the horizontal brace into which the leading edge of the horizontal stabilizer slide. This was modified by them, but 5 of these failures did occur in flight. The S2 Pitts had one failure in flight and subsequently has braced the leading edge. It is imperative that the horizontal stabilizer leading edge be braced. If you do not have drawings for this, I will be happy to supply them.

2. A Pober Pixie plans builder questioned the fact that the aileron ribs butt glue to the aileron spar. He would have preferred the cap strips to extend through the spar or he would like to notch the spar to accept the cap strips. This is an unacceptable practice as the aileron ribs are held quite satisfactorily to the spars by glue alone. Nails are usually used (1 or 2) to position the vertical members of the ribs in place and nail them to the spar. Nails perform no other function other than as a clamp for the glue.

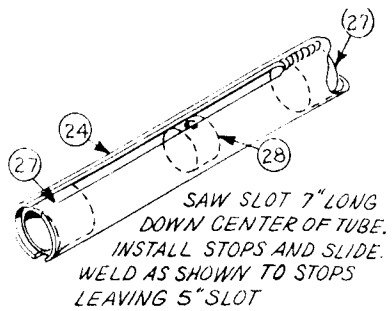
   The type glue that we usually use at the EAA Aviation Foundation is Sig Epoxy. This is due to the fact that it is a 2 to 1 mix and it is very convenient to use. Other glues may be somewhat stronger such as the Hughes FPL-16A or the Chem Tech T88. However, the prototype of all 3 aircraft was built using Sig Epoxy. In some areas, it may be necessary to use a glue such as Chem Tech T88 due to a cooler shop. Most Epoxies require that the glue, the shop and the materials worked on be at 70° Fahrenheit.

3. In the EAA Aviation Foundation Paint Shop, we have found that polyester work clothing can exude very fine and curly fibers that seem to be able to pass through the filters we are using. Our shop has elimated use of polyester work clothes in the paint room and is now using throw-away paper overalls. The money invested is well spent since we end up with a perfect finish.

   From Builder, Al Smith in Valdosta, Georgia
   We find that he has replaced his bungee cords using a 1380 HD which will take 1,120 pounds vs. the standard 1280 HD's of 950 pounds. Al has also found that his aircraft will snap roll quite satisfactorily without stall strips. It also spins quite satisfactorily without stall strips. Al weighs about 230 pounds and has spun up to 6 turn spins with a recovery in 1 1/2 turns upright. He has also found that it is better to keep the tire pressure to 23 pounds rather than 26. With 26 pounds the aircraft hops and bounces and lands much better with the lower pressure at 23 pounds. (This finding is also confirmed by previous information on the prototype with Sam Burgess and his trip around the U.S. in Acro Sport I, N1AC.)

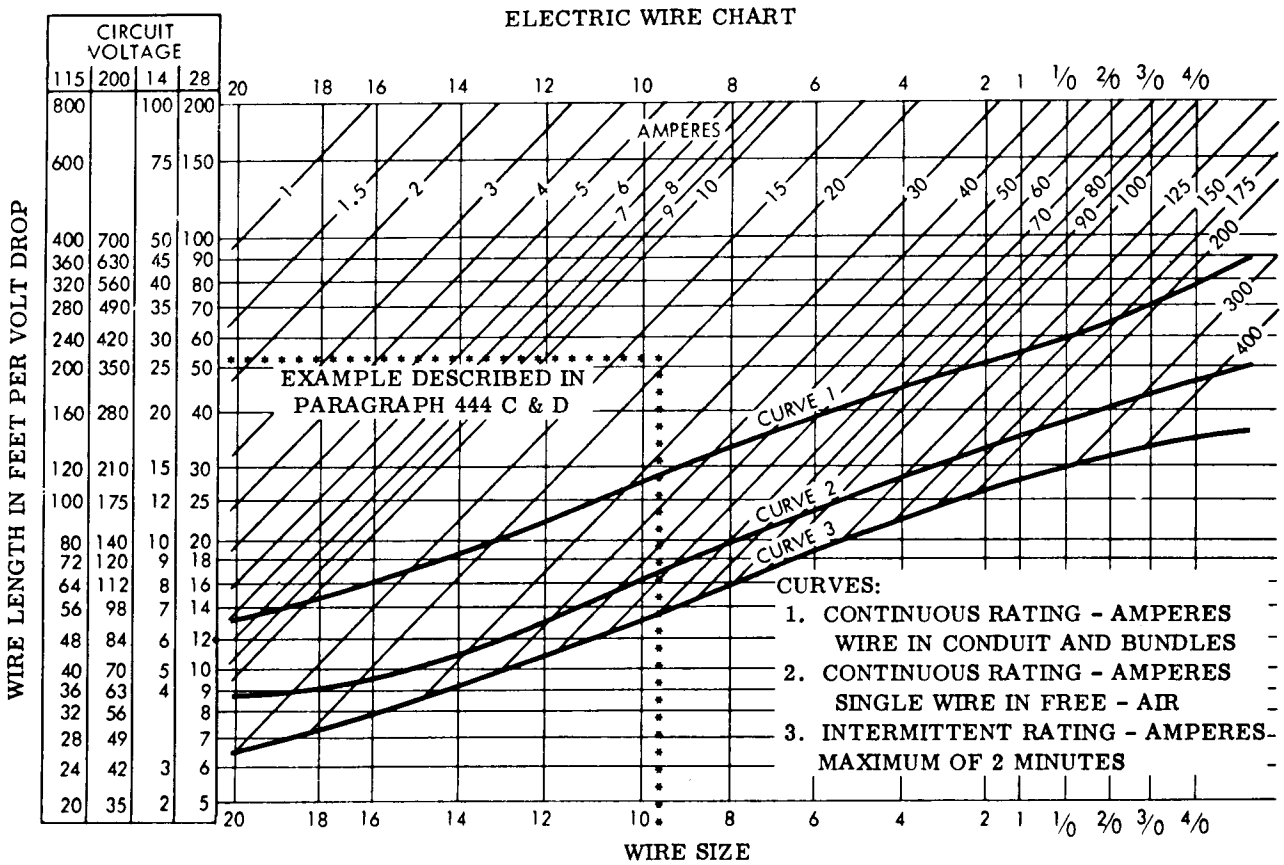
5. From Builder, Tony Hohenwald in Denver, Colorado
   He asked the method that is normally used when wing drag anti drag wires cut through a wing rib upright. If these are standard ribs, the usual way is to cut the diagonal or vertical member and to glue a 1/4 inch square aircraft spruce strip to the side opposite from the wire. This is a method that we have used satisfactorily on the prototype aircraft here at the foundation.

6. Landing Gear Slide
   An isometric drawing that appeared on the Acro Sport I drawing but not on the Pixie or Acro II is enclosed to show the method of fabrication to make this difficult task easier.



7. One of our builders has a starter in his aircraft but no battery. He has an auxillary power unit plug built in to the cowling and uses the small battery cart to start the airplane. This has been an effective method of starting the aircraft while still saving weight.

8. If you are going to design your electrical system, a good reference is the Advisory Circular 43.13-1A which gives electrical wire sizes. Another good reference is Advisory Circular 43.13-2 which has information on such things as battery box installations, landing skis, etc. The copy of the electrical wire chart is reproduced below. One of our builders reports that his starter draws 150 amperes on a continuous rating, 200 amperes on original start-up and draws about 400 amperes when it's starting to go bad. He uses double 0 cable (B and S gauge) and a K.D. Current indicator and always runs the starter wire by itself and does not bundle it up with others due to the heat generated. He found similar information on wire sizes in Delco Remy Bulletin 1M-150. KD current indicator is not one that is plugged into the system but is one you hold close to the wire near the start section of the gauge.



NEWSLETTER NOTES:

1. There is an Aircraft Registration Card attached to this Newsletter. We would appreciate if you would complete and mail this form to Ben Owen's attention at EAA Headquarters.

2. Harry Raday, EAA No. 38404, 4318 W. 148th Street, Midlothian, Illinois 60445, telephone 312-385-6529 is interested in purchasing an Acro Sport II of 180 or 200 h.p., preferably a 200 h.p. type.

3. Builder, Frank Johnson, 8910 Greenleaf Drive, Ft. Wayne, Indiana 46819, is interested in talking with other Acro Sport II builders in the immediate area. Anyone building an Acro Sport I or II in that area is urged to contact Frank