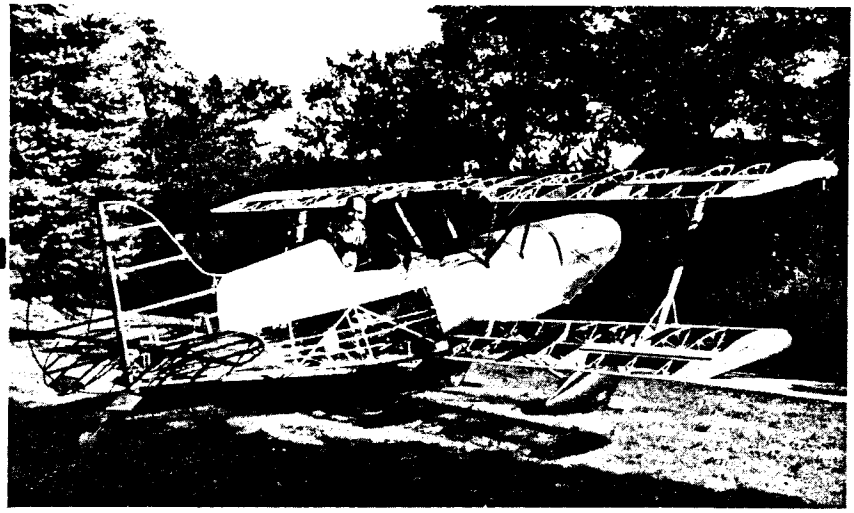
ACRO SPORT



Bud Gores and wife B.J. making progress on their Acro Sport II, 10-16-82.

January 1983 **ACRO SPORT NEWSLETTER** Editor: Ben Owen

ISSUE 2

Dear Fellow Aircraft Builders -

The response to the Newsletter has been satisfactory and it gives one an outlet for information, changes in drawings, corrections, etc., as well as bringing together other builders of either the Pixie, the single place Acro or the two-place Acro Sport for an exchange of information and the forming of personal relationships.

I am pleased to report that I am making good progress on my own Acro II, and though my time is limited, I have always believed in participating in every phase of aviation that I am privileged to work with. Besides, I like building airplanes and it keeps the hand and mind working. My Acro II is being constructed at Steamboat Springs, Colorado on the western slopes of the mountain, at a home that my wife Audrey and I have there. Though I'm not able to spend a great deal of time there, I do have an EAA office; a phone in my garage workshop and I'm pleased to report that I have my Acro II on the gear with the tailgroup completed, except for my elevator trim tabs; my centersection completed; all wing ribs glued on; my lower and upper wing spars. I don't have my drag wires installed; trailing edge or leading edges as yet.

During the Christmas Holidays, I completed most of the small fittings such as the floor board attach fittings, seatback, rudder pedals, rudder cable arrangement, firewall and turtle deck. I have a 180 Lycoming for use at the 7,000' field elevation of Steamboat Springs.

As you will note in our current newsletter, there are some changes needed in the rudder pedal arrangement; some re-dimensioning so that the master brake cylinders have proper clearances from the rudder cable. Since we ran tubing straight across the fuselage, which is a part of the front seat, we found that from the prototype (which did not have this additional tubing), that the rudder cables going to the front cockpit rudder pedals were interferred with by this cross over tube. We made some modification to the drawings; raising the rudder cable higher on the rudder pedals to give proper clearance.

We also have made some changes in dimension on mounting the rudder pedals to the floor of the cockpit, as indicated in the drawing accompanying this newsletter.

Our 108 horsepower 0-235 prototype Acro II is making progress. We are pleased to announce that Lycoming is donating a new engine to be used for our test work. We are certainly pleased with their cooperation and also that of Wag-Aero, who are building a centersection tank for a gravity feed fuel system.

We will be test flying the airplane with auto fuel. It is our hope that by eliminating some of the expensive items such as fuel pumps, wobble pump, starter, generator and battery, that this weight reduction will give us good performance, while at the same time (especially for schools which operate on a budget) permit them to use a lower horsepower and cheaper powerplant than the 180, thus increasing the chances of the costs involved in building the airplane meeting the budget of the school system.

The latest issue of *SPORT AVIATION* for January has an article on Bud Gores and his Acro II. Bud was Town Chairman of Burlington, Wisconsin. He is now in the covering process on his aircraft. I'm sure you will find his story of interest.

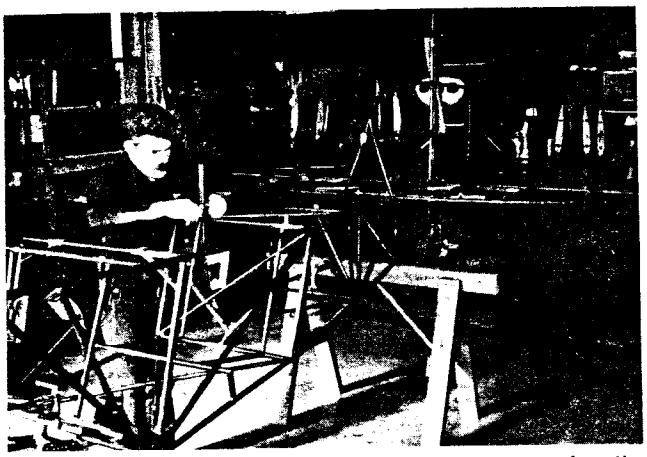
We hope that after reading the new FAA proposed amateur aircraft rules, appearing in the January issue of *SPORT AVIATION*, that you will support this effort which spells out in more detail FAA's policies regarding amateur built aircraft which, in particular, relates to eliminating precover inspection. The FAA would be making only one inspection at the time the aircraft is completed, while at the same time, giving it a permit to fly in an authorized test flight area. This certainly speaks well of our movement and our self-policing attitude as well as the quality of work done by the majority of the amateur aircraft builders. However, I would like to encourage you to keep a very good record of your construction and any changes that you might have made. Also, contact EAA for the Service Manual. It is a manual that you will complete; filling in the appropriate information which will make it a permanent record of your aircraft. This will be very helpful to the FAA and yourself, also, to anyone who purchases your aircraft in the future.

We hope to see a number of Acro Sport aircraft at Oshkosh this year. Again, there will be plaques and awards for the best machines in various categories. Bill Chomo will again hold a forum on building an aircraft.

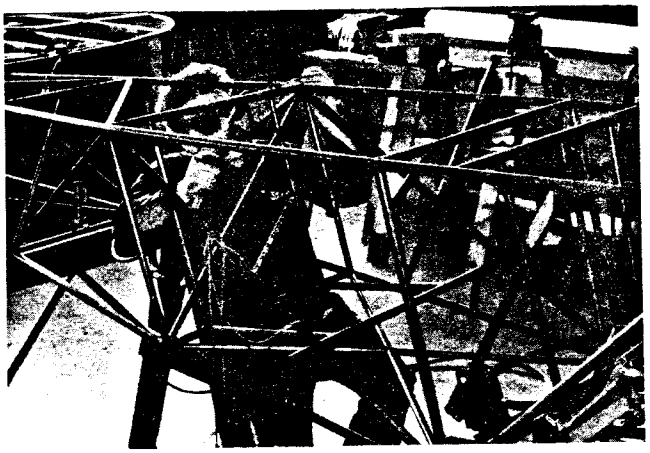
If you have any questions or any ideas as to how you would like to see the newsletter improved, please drop Ben Owen a note.

Regarding caps or a special Acro jacket, the response has been small and at the present time there is not enough interest shown to make it worthwhile to invest in such a project.

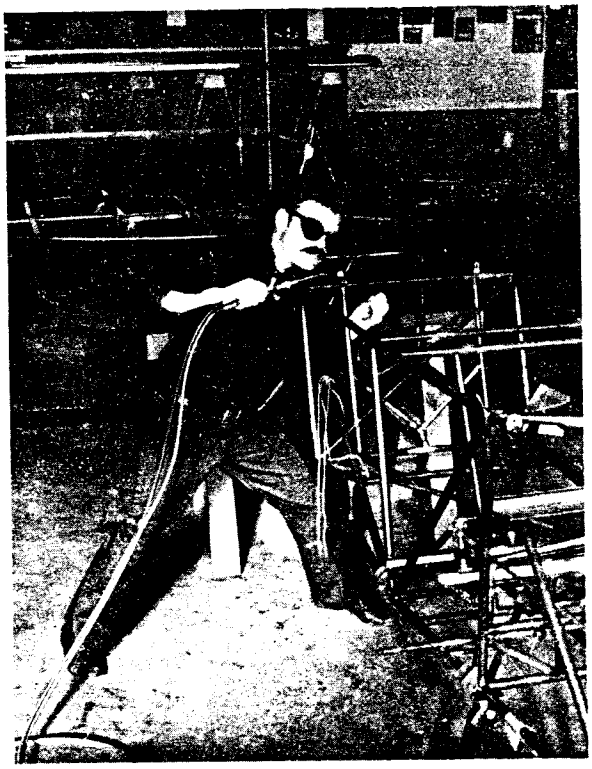
Paul H. Poberezny



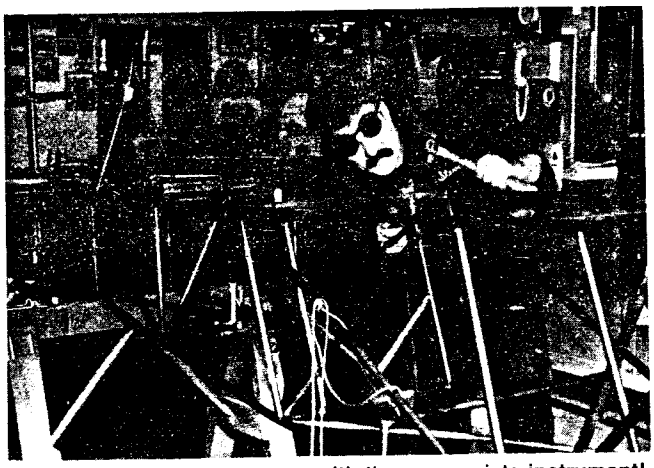
Steve Dawson measuring the bulkhead mounts for the turtledeck. It is fairly simple however, there is a definite process that is used. First you carefully position them by measuring.



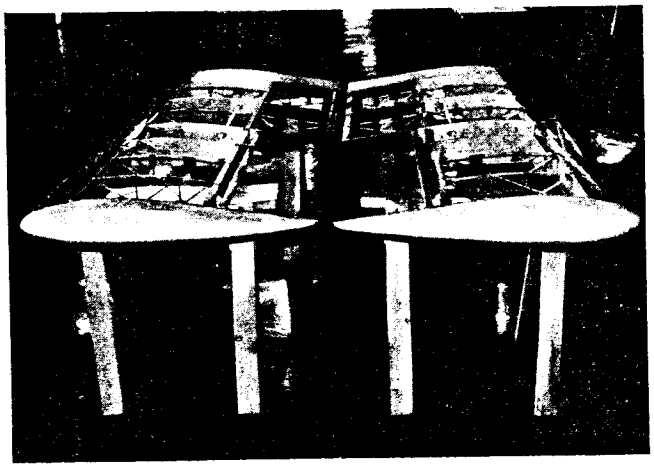
Then you weld on the left bulkhead mount very carefully.



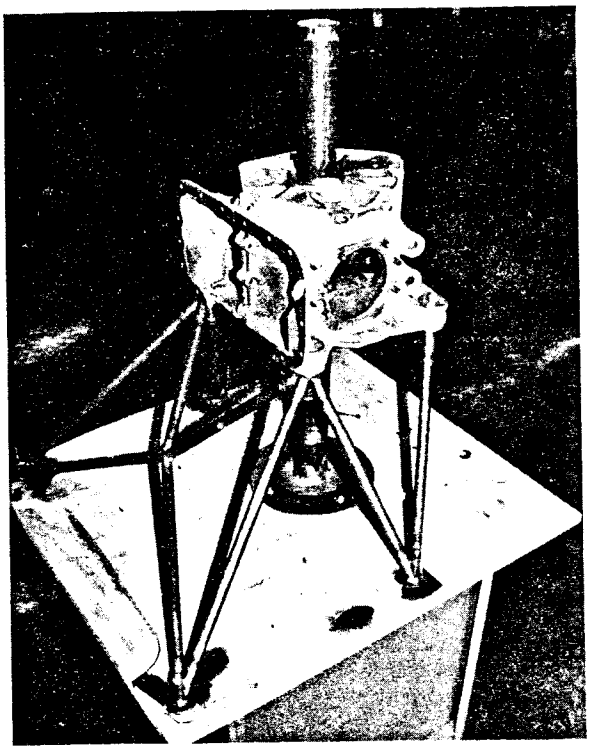
Then you carefully weld on the right bulkhead mount.



Then you carefully fine tune with the appropriate instrument!



Acro Sport II lower wings at EAA Aviation Foundation shop.

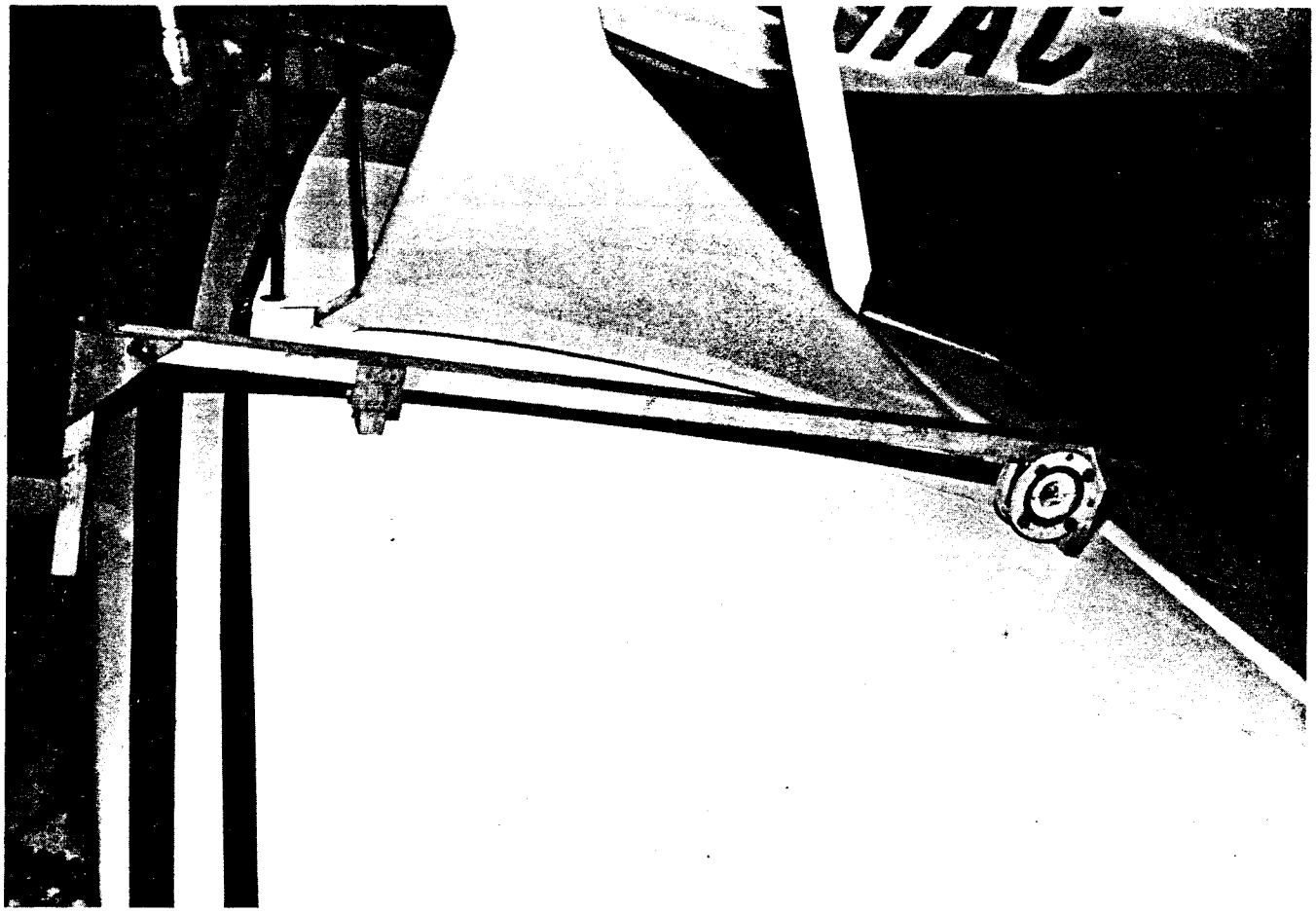


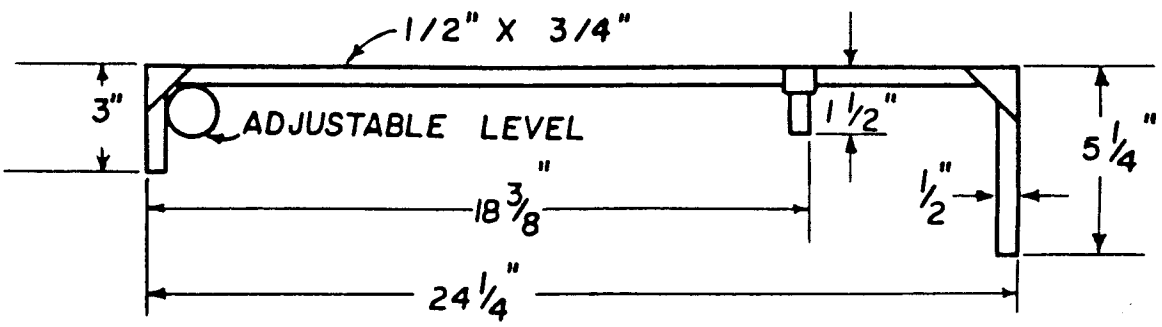
EAA Aviation Foundation's Acro Sport II will use a Lycoming 0-235 for power. This photo shows the jig built up to assemble the engine mount. Lower cross tubes should be moved as necessary to clear engine components on your particular engine.

WING INCIDENCE TOOL

It is highly important that the wing incidence be checked prior to the first flight. You want a wing that is twist free as possible and of course, you would like both wings on either side of the aircraft to have the same incidence. It is generally conceded that being accurate to a half of a degree is pretty close on incidence but the better you can make it the better the airplane can fly. Many aircraft have had substantial performance improvements after the wing incidence jig was used on the wing and the wing properly leveled.

The next thing you want to be sure of is that you have done your weight and balance before you fly. We don't know anyone that would fly an airplane without doing a weight and balance, do we? If you need assistance with weight and balance information, Ben Owen of EAA Headquarters would be happy to assist you.





With this tool, the incidence along the wing (or wash-in and wash-out along the wing) can be checked to eliminate any twist. The dimensions shown are for either Pitts or Acro Sport I. The tool is useful for any aircraft, but dimensions may need to be changed. The better the level used - the more accurate the tool. - ED -

——QUESTIONS AND ANSWERS - AIRCRAFT BUILDING TECHNIQUES——

Q - Can I use elastic stop nuts on landing and flying wire ends?

A - No! Elastic stop nuts are for shear loads only! Use AN315 nuts where called for.

Aircraft	Wire Dimensions	Wire Tensile Strength	Tensile Strength for AN315 Airframe Nuts
Acro Sport I	¼ x 28	4200 lbs.	4080 lbs.
Acro Sport II	5/16 x 24	6900 lbs.	6500 lbs.

USE OF NUTS AND BOLTS

The single most violated rule in the use of bolts and nuts is the continual re-use of nuts. This may come as a rude shock to some of you. Actual lab tests have shown that a 20 percent loss of assembly strength is encountered on the second use of a nut. This loss becomes progressively greater until, after 10 re-uses, only one third of the original nut strength remains. A good nut deforms slightly each time it is used. This corrects any thread mismatch, and distributes the loading over all the threads. It must redistribute its thread each time it is re-used. This results in loss of strength.

Now, for the third link in this chain . . . the washer. We use a carefully matched nut and bolt of the correct material and torque it to the proper pre-load. After a short time, we find that the assembly breaks or is loose. What happened? Take a look at the washer. If it isn't made of a material that is equally as strong as the bolt and nut, it will squash out.

Q - How do I attach the metal leading edge?

A - One half inch nails every 2" on spars and rib caps - use cement coated nails where possible. One source is Trimmcraft Aero, Francis Dahlman, 6254 Hwy. 36, Burlington, WI 53105. Telephone: (414) 763-3036.

Q - The regular engine mount cross tubes rub on my 0-235 case.

A - Move the cross tubes down before welding, the mount strength will not be affected.

Q - How do I attach the trailing edge riblets on the Acro Sport I and II to the spar.

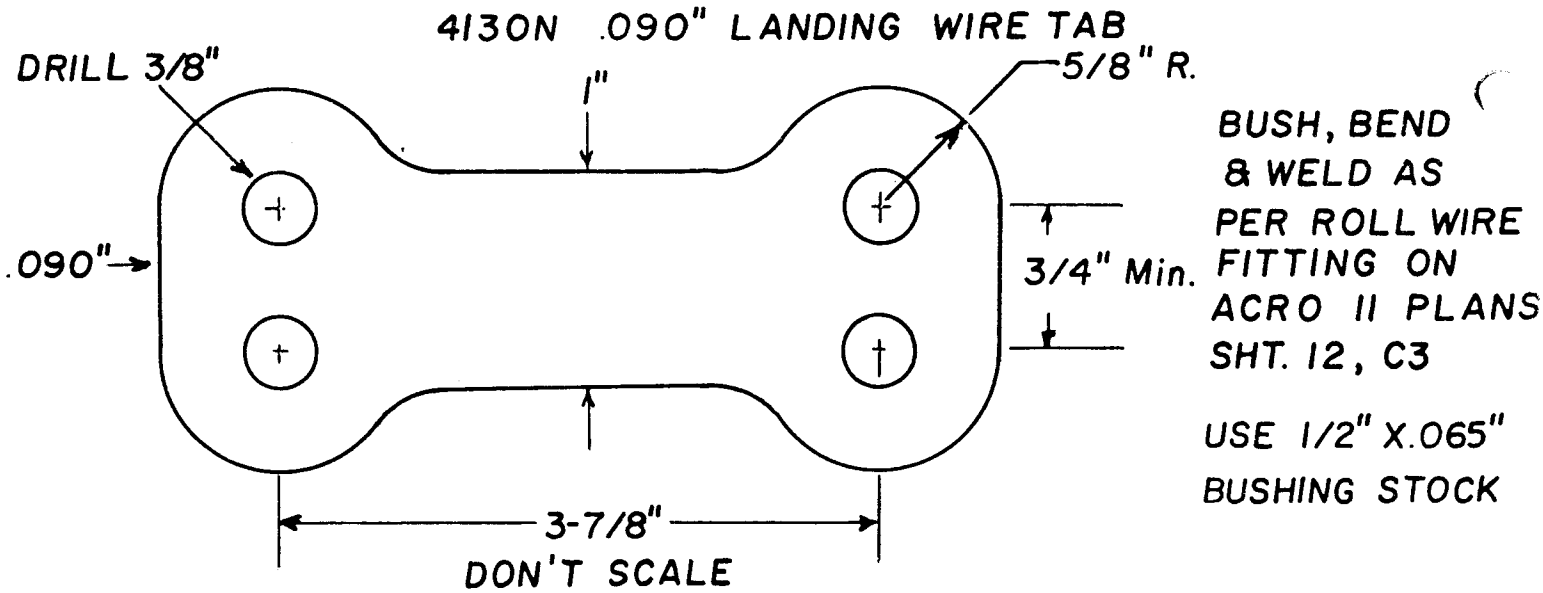
A - We use ¾" x ¾" triangular braces. You can also extend the cap strips over the riblets, top and bottom if you desire.

Q - My Acro Sport II center section drag antidrag wires don't fit unless I move the rear attachment point two bolts in on the fitting.

A - This is the correct way to assemble the aircraft with the rear spar fitting on the second bolts.

Q - My landing and flying wires are an interference fit.

A - A spreader should be constructed to hold the wires from rubbing. As long as there is no metal to metal contact, you have built it right. A broom stick of hardwood makes a good spreader. Another solution is to put a tab on the fitting end to spread the wires one way or the other as per this drawing.



Q - My shock cord covers are wearing out rapidly.

A - We buy ours from EAA'er Georgine Pritchard, 400 East Bolivard, Milwaukee, Wisconsin, telephone (414) 481-4368. Her's last over one year of hard use.

Q - Do the rear shoulder straps on the Acro Sport II go through the hole at the seat back or does the cable go through the hole?

A - The straps go through the hole.

Q - How do you reinforce the Acro Sport II's front head rest door?

A - The same as the rear with ½ x ½ x 1/16 angle of 60-61.

Q - How tight do I make the drag/antidrag wires in my aircraft?

A - A method used by the Pitts factory is to hand tighten them so you can't move the nut in holes sideways. Then you preload both drag/antidrag wires 1½ turns. You then tighten the wires a maximum of 3½ turns. Do not over tighten. Another method is to use a tensiometer and tighten them to a maximum of 20 percent of the ultimate load. This information comes from Mac-Whyte Wire Rope Company. Another way to do it is to tighten them to a "low musical note". We tried the Acro Sport II wing wires here, they sound like a low "plunk", no rattle even when tied together. Also, outer panel wires were lifted where they crossed and deflected about ¼". At this time, the wing just barely came up off the sawhorses. A similar method can be used for Pixie wires.

Q - How do I lay out the wing dimensions?

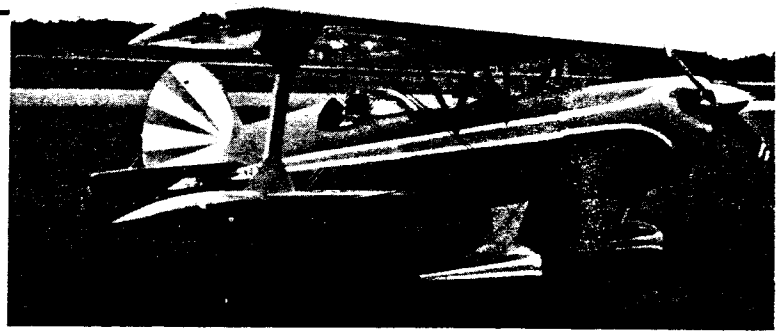
A - It is best to work from the spar root out, measuring every dimension from the spar root.

—AL SMITH'S ACRO SPORT II—

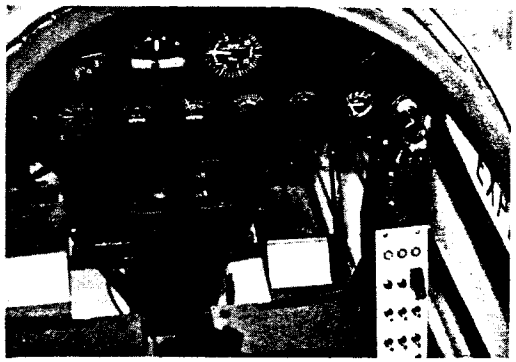
AL SMITH OF VALDOSTA, GEORGIA AND HIS ACRO SPORT II. Al has been flying his aircraft and is quite pleased with its performance. He has an 0-320 engine of 150 hp and it uses a 74/56 Sensenich propeller (DM 56). Its indicated airspeed at 2,500 rpm is 115 mph. This is equivalent to a true airspeed of about 130 to 131 mph. It's indicated airspeed at 2,350 rpm is 110 mph.

Al has been doing rolls with the rpm set at approximately 2,475-2,500. He does loops at an indicated airspeed of 130 mph from level flight. He flies from Valdosta, Georgia Municipal Airport, which is approximately 200 feet above sea level. At a ground level temperature of about 100° with a wind of 5-7 knots, he is climbing at about 1,000-1,200 feet a minute with himself and one other passenger aboard. He says it climbs better at 90 indicated airspeed than at 80 indicated airspeed, it feels like it gets "on step" in the climb at 90. He notices in the cruise that it also appears to have a "step" where if you just nudge the stick forward slightly the aircraft will come up in a slightly tail higher altitude and cruise faster.

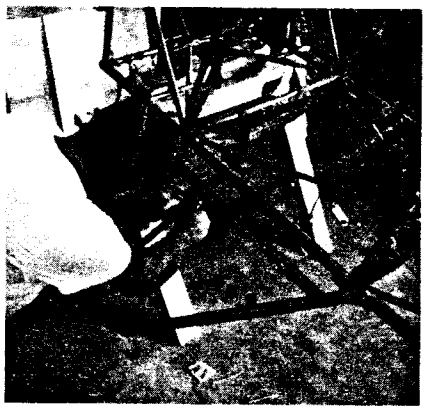
Al has been flying along side a 180 hp Marquart MA-5 "Charger". The Acro Sport II can out climb the Charger, has a faster cruise speed, and in general has a notch or two of better performance and roll rate. The aircraft has been flying since August of 1982.



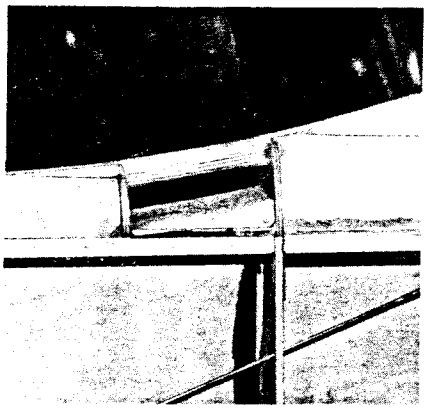
Acro Sport II, built by Al Smith, Valdosta, Georgia.



Cockpit of Al's Acro Sport II.

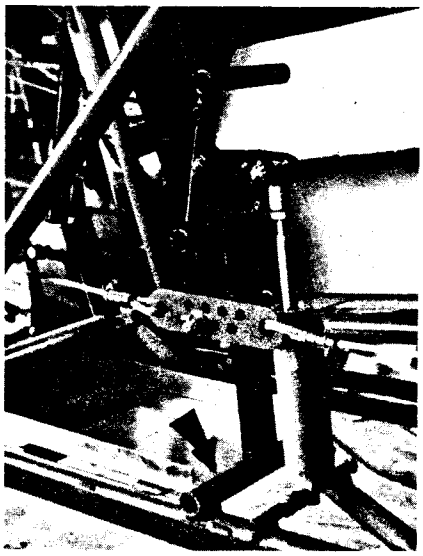


This shot shows Al working on his shock cord strut installation.

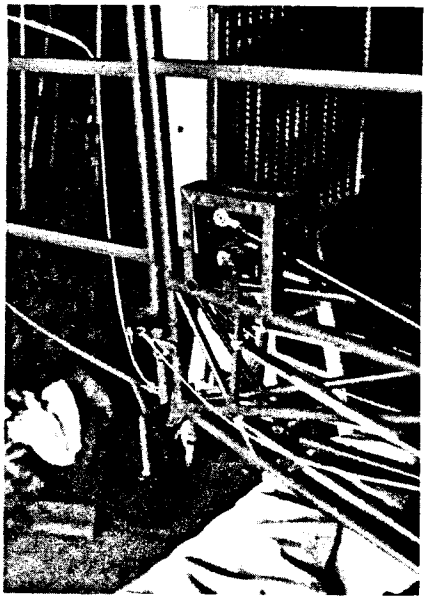


Detail photo of the hand hole in the center section.

This is one method of steaming cap strips.



Note arrow on front rudder pedal. See correction notice at Acro Sport Plan Changes Section.

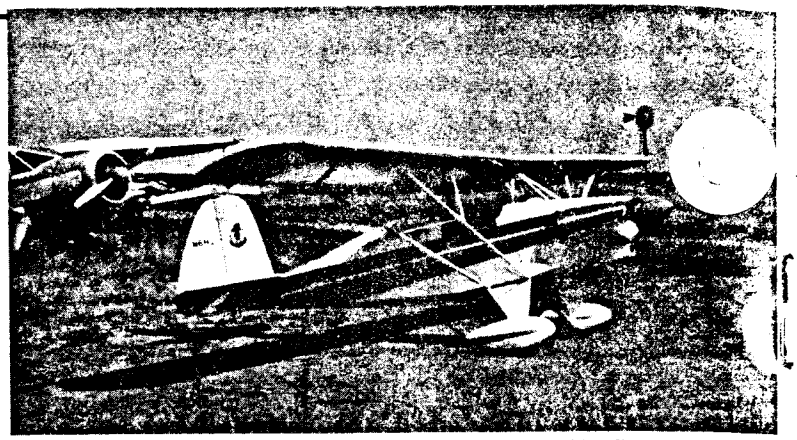


Tail post/tail skid area.

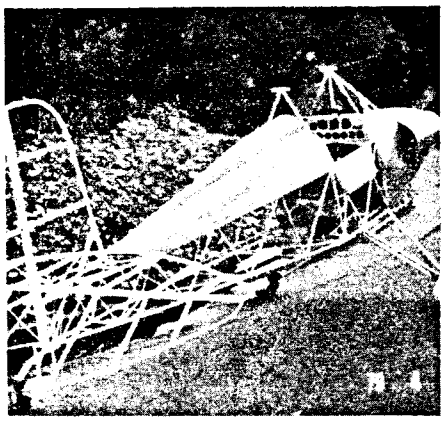
Either an Acro Sport II landing gear assembly or a good shot of a Sawhorse.

—DR. JEWELL'S PIXIE—

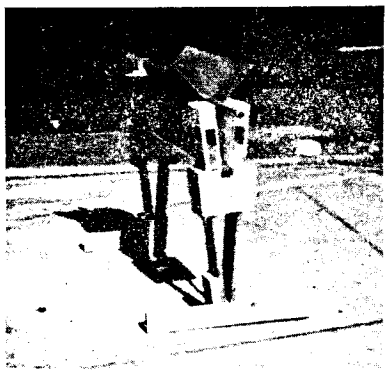
Dr. A. Hartwell Jewell, MD of Tiburon, California, has built a beautiful Pober Pixie, N6HJ. He started construction January 5, 1975, and the test flight was July 25, 1982. The engine is a Revmaster, 2100D of 64 hp and the propeller is a Hendrickson. It is 60" in diameter and has a 32" pitch wood prop. He cruises at an indicated 70 mph at 3,000 rpm at 1,000 feet of altitude. The climb is approximately 700 feet per minute from sea level, reducing to about 200 feet per minute at 10,000 feet. The aircraft empty weight is 645 pounds with radio and full electrical system. The normal flying rate is 885 pounds. CG datum is located 50.53 inches aft of the forward face of the engine flange. The empty weight on the tail is 27 pounds in flight level altitude, and he has a 20 amp alternator and geared starter. The approach speed is approximately 60 mph and his landing speed (stall) speed is 32 mph, indicated.



Here the airplane is shown as it appeared on the day of its first test flight.

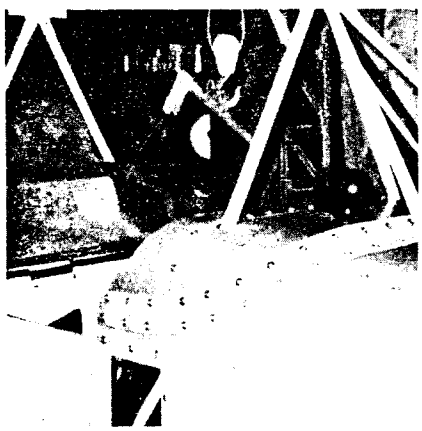


Fuselage details.

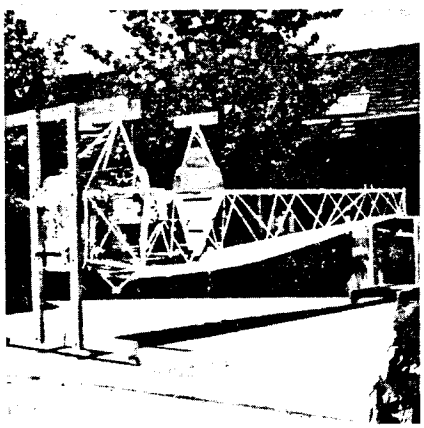


Bending the leading edge to the proper radius.

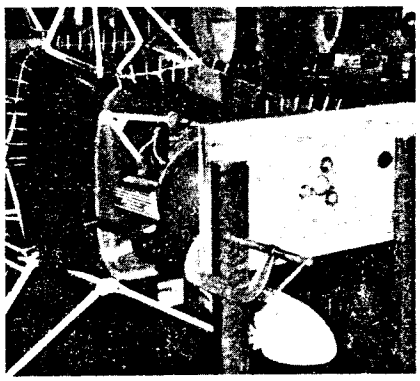
In this preassembly shot, one gets a good view of the center section fuel tank.



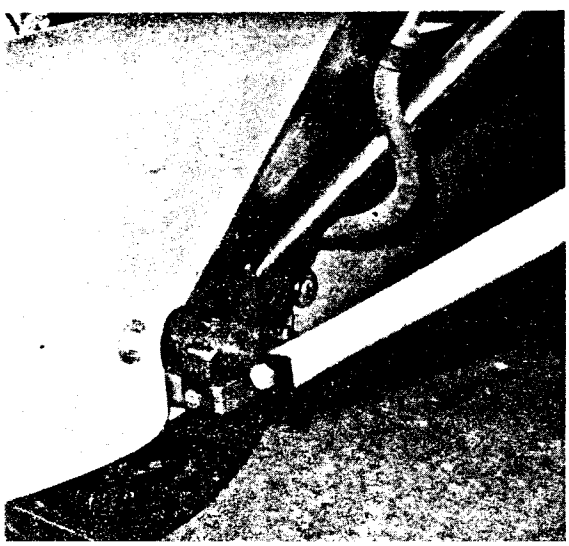
Cockpit windshield area.



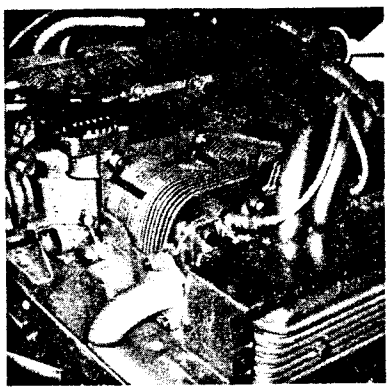
Fuselage detail including fuselage jig.



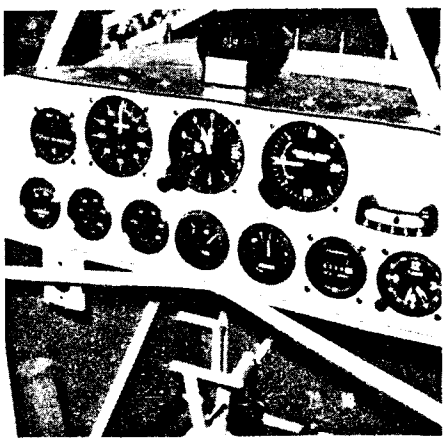
Engine area showing the approach used to get the flat cowl shape for which the Pixie is well known.



Detail on the landing gear.



Engine installation and baffling.



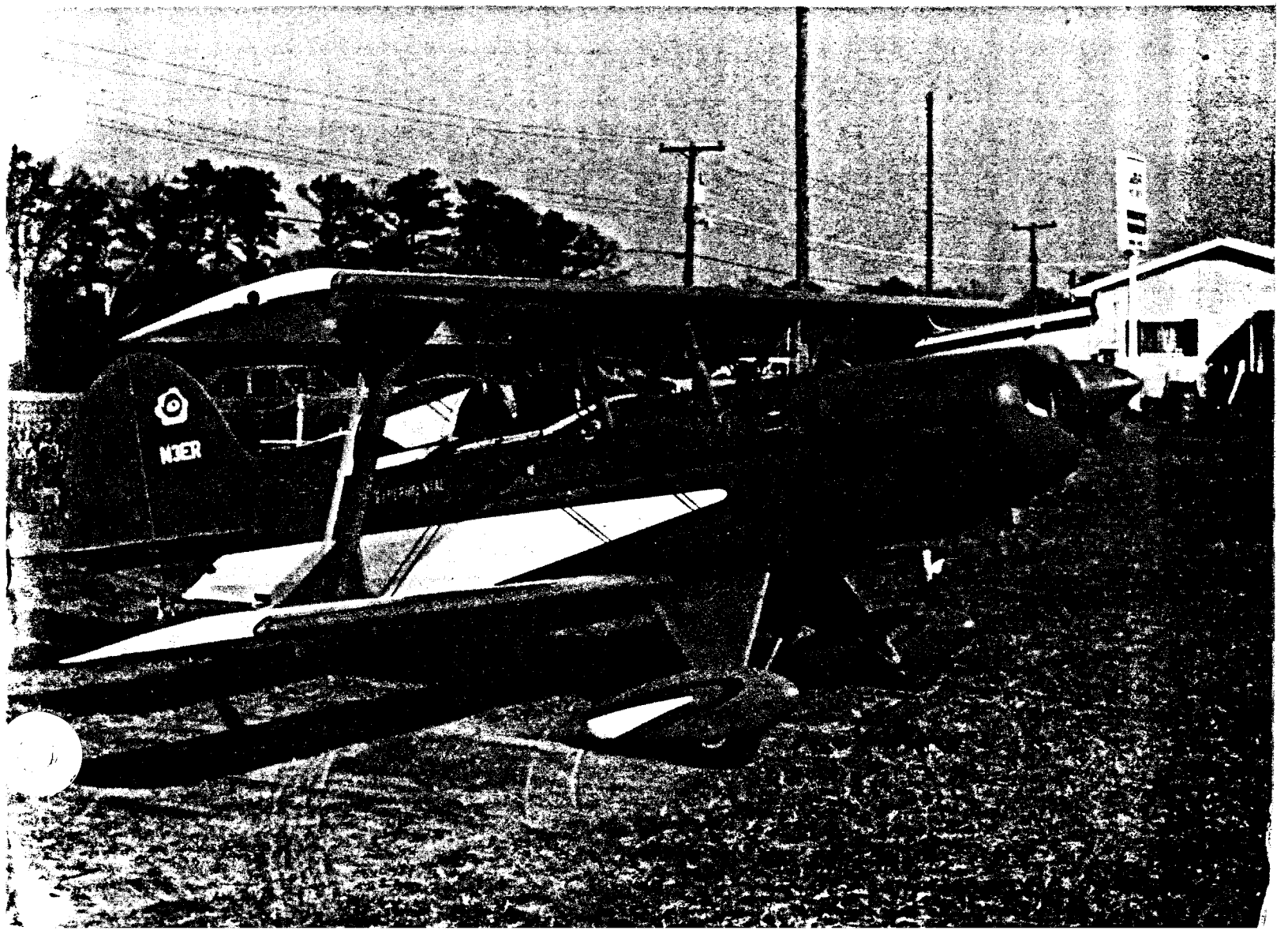
Instrument panel area of Dr. Jewell's Jewel.

THE RITTER SUPER ACRO SPORT

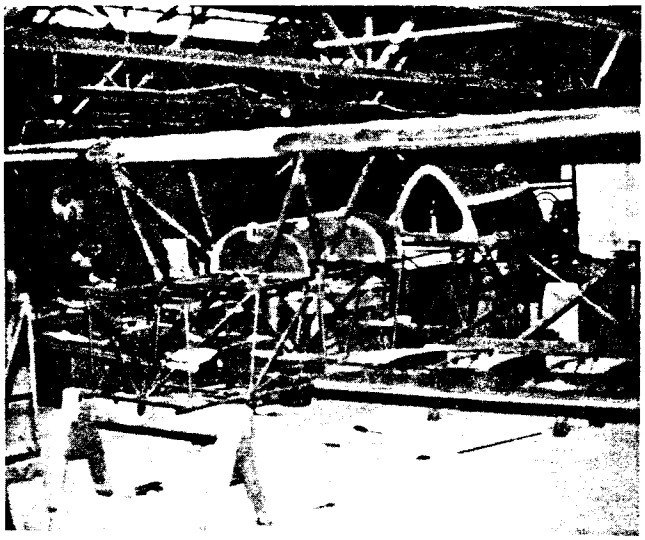
Earl F. Ritter of Milton, Delaware built this Super Acro Sport, N3ER, starting October 1974 and test flying it August 1979. He estimates that approximately 4,000 hours of construction time was spent on this aircraft. The engine type is a Lycoming 0-360A1A of 180 hp. The prop is a Sensenich, 76" diameter and 56" pitch metal prop. The cruise speed is 145 at 2,450 rpm at 2,000 feet of altitude. The rate of climb is 2,100 feet per minute at a beginning airport elevation of 28 feet above main sea level. The aircraft empty weight is 811 pounds and the normal flying weight is 1,150 pounds. He uses an 11" mount and the empty weight center of gravity is a 58.97". The empty weight on the tail in level flight attitude is 35 pounds. The aircraft has an electrical system installed and a battery behind the seat. It also uses a Christen fuel and inverted oil system. His approach speed is 80 mph and he lands at 55 mph. He uses a Pitts canopy bubble on a slide and it is painted in polytone and urethane. He says the aircraft flies very well and is a good aerobatic aircraft but isn't very super on snap rolls. He has added stall strips which has improved the roll rate considerably. He says, "but still no Pitts with a straight wing configuration. All in all I am satisfied with the results and the aircraft was completely built from scratch".

Editor's Note

Earl's hours to build were approximately 4,000. That is pretty high but he has a very super detailed airplane. The Acro Sport I and II were deliberately designed to be easy to control in the stall. For this reason, they need stall strips on both upper and lower wings to do snap rolls and also to spin properly.



—DAVE KRAGNES' ACRO II—



Dear Ben:

I am building an Acro II. I started last Christmas of 1981 and worked on it full time until March 15. I am a farmer and it hasn't been touched since April 1 through the 1982 growing season. The wings are finished except for the ailerons, the gear is done, the fuselage is done except for the standoff brackets, tailfeathers are ready for cover, motor mount is made, it has been rigged and the struts are finished. I have started working one night a week again. I feel real confident I can fly it to the Sun and Fun '83.

Do I have suggestions? Yes! When you lay out the fuselage size please note that the dimension given at station 4 is the length of that tube. It is not a dimension between the top and bottom longeron measured at 90° to the top longeron. That is the way I interpreted the plans and my side is 5/8" deeper. (Editor's Note - This has been a common error on the Acro fuselage and is easily correctable).

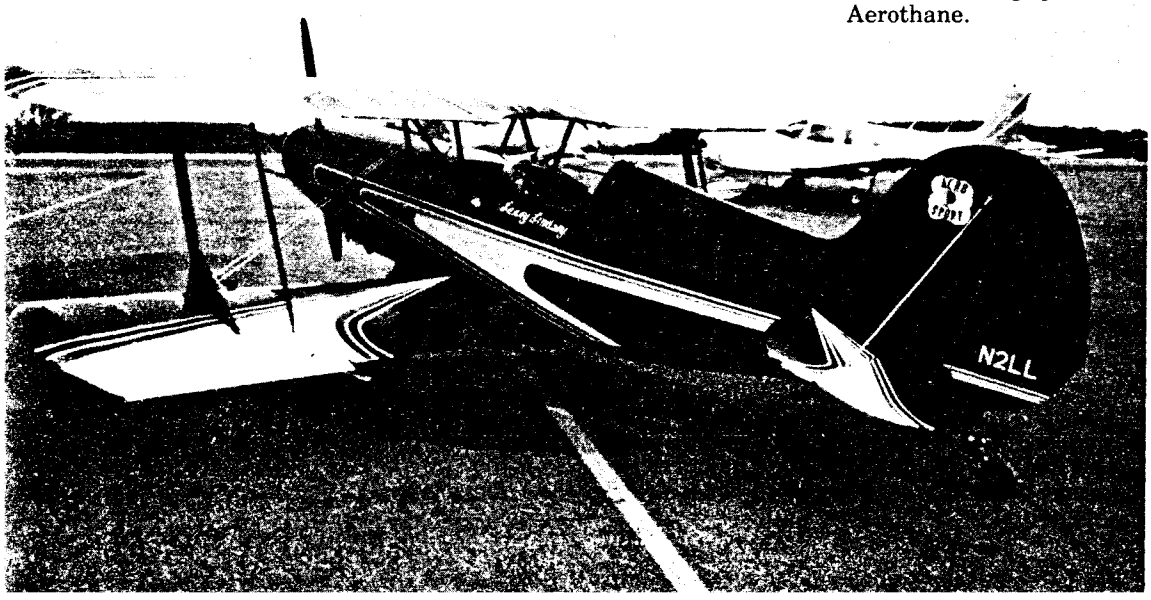
Bend in the stabilizer rear spar attach brackets so they don't stick outside the inspection cover frame. Use a straight edge to align the cover frame with the side of the tail before welding to the longeron.

I have an Aeronca Chief and to trim it with the slide is a pain. So for the Acro II, I got a vernier control from a heavy truck manual throttle and mounted it on the lower right side of the seat. It is light, very positive and very smooth operating. I hope it works out. I would be happy to write up some of my troubles. Thanks for starting this.

David Kragnes
President Chapter 317
Rt. 1
Glyndon, MN 56547

—LARRY LINDSEY'S ACRO SPORT—

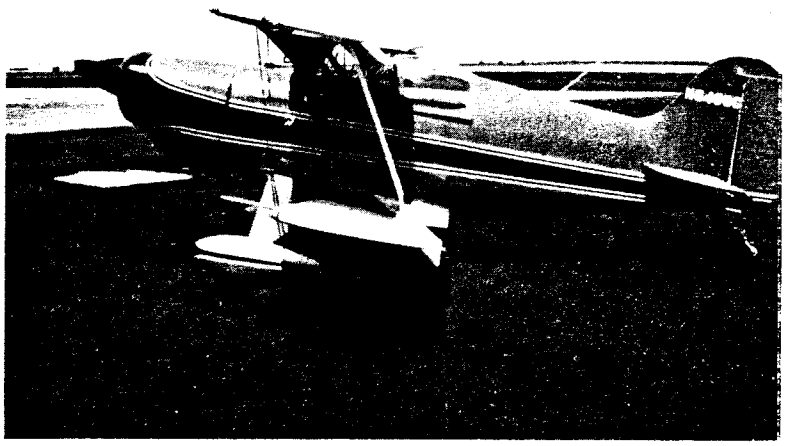
Larry is from Tupelo, Mississippi and his aircraft is N2LL. He estimates a cost of approximately $8,000. He started construction December 1974 and test flew it December 21, 1979. He estimates approximately 3,000 hours to build. The engine is a Lycoming 0235C of 100 hp. The prop is a Sensenich of 74" diameter and 48" pitch metal construction. The cruise speed is 110 mph at 2,300 rpm at 1,000 feet msl. The rate of climb is 900 feet per minute. The aircraft empty weight is 715 pounds and the normal flying weight is 1,015 pounds. The engine mount is 11" long and the empty weight center of gravity is 59.6 inches. The datum is the front face of the prop hub. The empty weight on the tail is 38 pounds. He has an electrical system installed and a battery behind the seat. There is no inverted fuel and oil system. The approach speed is 90 mph and the landing speed is 70 mph. The paint finish is Stits Aerothane.



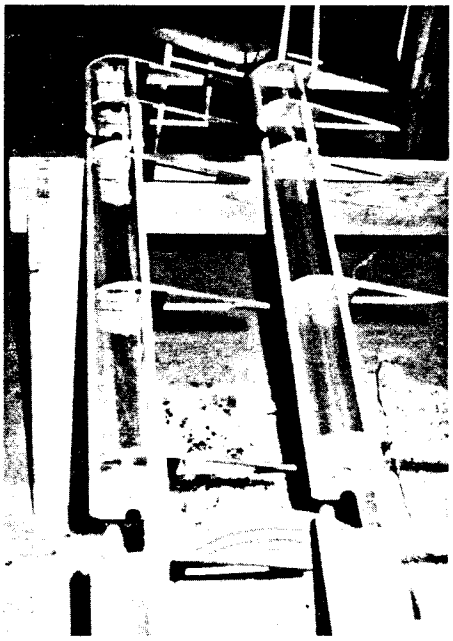
—SUPER ACRO SPORT PROJECT—

Willard Anderson
Great Falls, MT

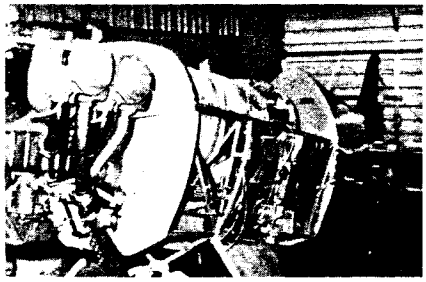
Willard Anderson started the Super Acro Sport N8488C in June of 1978, and finished it June 27, 1981 when it was test flown. The engine is a Lycoming 0360A-4A of 180 hp and the prop a Sensenich 76" diameter, 56" pitch metal prop. The cruise speed is 125 mph at 2,500 rpm at 6,000 feet altitude. The rate of climb is 2,000 feet per minute at a beginning airport elevation of 3,660 feet above msl. The aircraft empty weight is 914.6 pounds and the normal flying weight is 1,307 pounds with pilot, chute, full fuel and oil. The engine mount length is 11 inches, the datum is the fire wall and the empty weight center of gravity is 20.9" in back of that. The empty weight on the tail is 28 pounds (before balance installed) in aircraft level flight altitude. There is an electrical system installed and a battery between the rudder pedals. He has an inverted fuel and oil system. The approach speed is 85 mph and the landing speed is 70 mph. A canopy is used and the paint finish is Stits Poly Tone. The aircraft stalls at approximately 60 mph. Eleven pounds of balance is permanently installed.



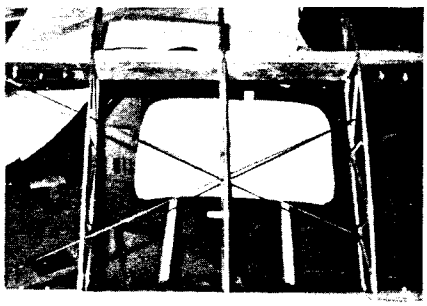
The Finished Product.



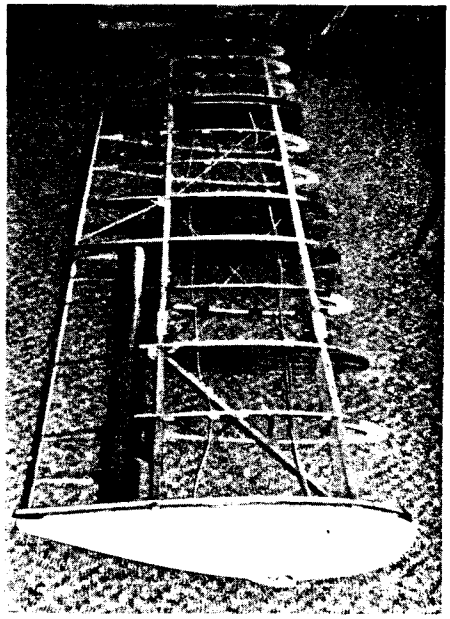
Anderson Acro Sport Aileron.



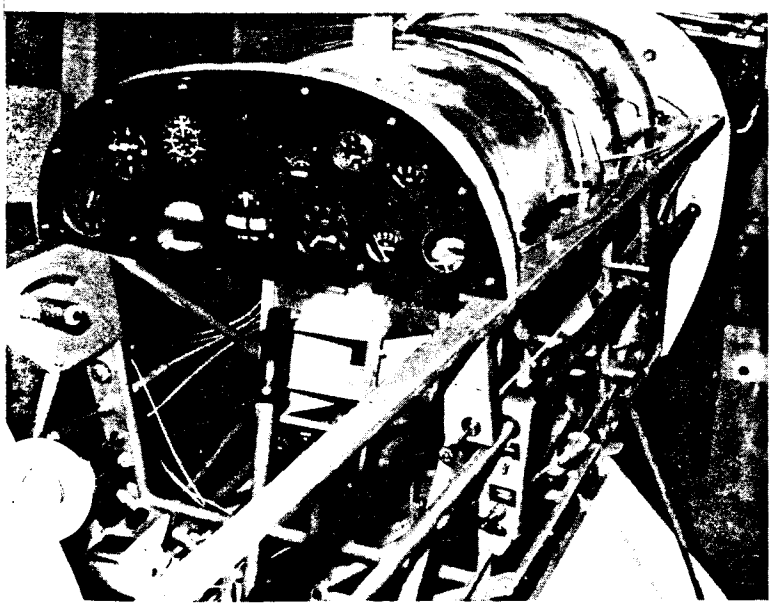
Anderson Acro Sport Engine and Cockpit Area.



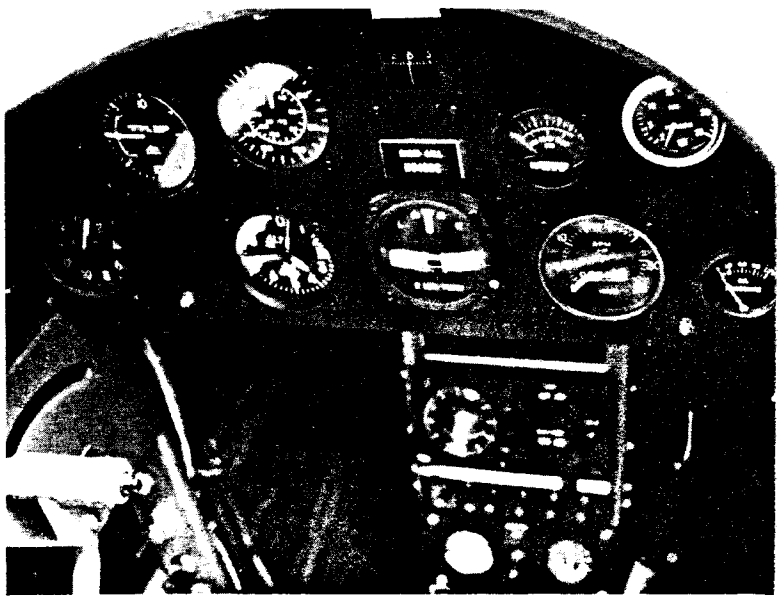
Anderson Acro Sport Wing Section.



Anderson Acro Sport Showing Lines for Lights and Upper Wing.



Anderson Acro Sport Cockpit, Throttle and Radio.



Anderson Acro Sport Finished Instrument Panel.

—PLANS CHANGES TO THE ACRO SPORT II 1-5-83

Sheet 3.0 Zone D4 **PEDAL ATTACH TUBE** Change 1¾" to 2¾". This moves the pedals inboard to avoid interference with the fuselage tubing (Do not change the brake attach dimension of 1¾"!)

Sheet 6.0 Zone D2 **PIN-REAR** Change the dimension from 5¼" to 6¼". The front pin stays the same. The above change is to accomodate the pedal attach change listed above on Sheet 3.0 Zone D4.

Sheet 6.0 Zone D5 **FRONT AND REAR PEDALS** Change the 2" vertical dimensions to 1¼". This moves the rudder cables up ¾" to cross the horizontal bar at the front seat.

Sheet 6.0 Zone D5 **REAR RUDDER PEDAL** Change the horizontal dimension of 2¼" to 2¾". This is to insure that the brake rod clears the rudder tab and cables.

Sheet 6.0 Zone D5 **FRONT RUDDER PEDAL** Change the horizontal dimension of 1¼" to 1¾" to give more foot room. (Align the cable with the front closed loop cable).

Sheet 6.0 Zone D4 **BRAKE PEDAL FRONT AND REAR** Change the vertical dimension of 2" to 3". This moves the break actuating rod up 1" and gives better leverage.

Acro Sport II Changes
By: Ben Owen
Bill Chomo
1-5-83
Approved by Paul Poberezny

—ACRO SPORT II COMPLETIONS

NOTE: Ten aircraft completed as of 12-16-82
BY: Ben Owen
Executive Director
Information Services

Builder
EAA Aviation Foundation
P. O. Box 469
Hales Corners, WI 53130
Registration No.
N9AS
Specifications
First Flight: 7-9-78
Engine: Lyc. 0-360 - 180 H.P.
Prop: Sensenich 76-56
Photos Available
yes

Builder
Paul Erickson
Route 3, Box 835
Salem, WI 53168
EAA #
414-658-3800
(8-10:00 a.m.)
Specifications
Engine: Lyc. 0-360 - 200 H.P. Special Hemi Heads
EW: 8160 lbs.
Prop: Sensen. 76 - 62 w/4" extension
Cruise: 120 mph
Full Electrical & Vacuum System
Battery is in back of rear seat
Engine has tuned exhaust

Builder
George C. Jones
Rt. 1, Box 430
Ruffin, NC 27326
EAA #88932
919-939-2666
Registration No.
~~N39GC~~ 360 G
Specifications
Engine: Lyc. 0-320, 150 H.P.
EW: 940 lbs., Full Electrical
Radio Escort 110 and Intercom
Take-off Distance: 500 ft.
Climb: 1200-1300 fpm
Prop: 74 - 54
Cruise: 105 TAS

Builder
Jim Schenfield
6677 Harshmanville Rd.
Dayton, Ohio 45424
EAA #115342
Specifications
Engine: Lyc. 0-320, 160 H.P.
Prop: Sensenich 73-56
EW: 955 lbs.
Rate of Climb: 1200 fpm @ 85 mph
Cruise @ 120 mph @ 2200 rpm
Basic Electrical System and
Gel Cell Battery forward of stick

Builder
Mike Brown
Route 7 114 Avenue
Allegan, MI 49010
EAA #149142
Specifications
EW: 1158 lbs.
Imron & Stits
Full Electrical
200 HP
Fixed Pitch
Upholstery
77 lbs. on tailwheel

Builder
Elmer Farris, Jr.
142 Preston Avenue
Lexington, KY 40502
EAA #74352
Registration No.
N80EF
Specifications
Test Flight: 5-2-82 360
Engine: Lyc. I0/360-C1C ~~-100~~ HP

Builder
Al Smith (Donald)
4015 Fritz Lane
Valdosta, GA 31601
912-244-8771
EAA #11020

Registration No.
N3342T

Builder
Jimmy Key
Rt. 1, Box 326A
Sandy Ridge, NC 27046
Specifications
HIO-360 standard mount (almost professionally built)

Builder
Elton James
2021 Wilshire Circle
Sacramento, CA 95822
Registration No.
N3145K
Specifications
O-320C2A
Flown: 7-82 at Oshkosh '82

Builder
William H. Merwin
Rt. 1, Box 422
Clarksburg, CA 95612
Specifications
Completed: 10-81 at Oshkosh '82
O-320 engine

ACRO SPORT II - (Nearly Completed)
Builder
Dan Massopust
213 Technical Wing
University of Wisconsin-Stout
Menomonie, WI 54751

Builder
D.E. Comrils
c/o Valley wood Turning
64 School Street
Dunedin, New Zealand
Registration No.
NZ-VWT

—POBER PIXIE COMPLETIONS

NOTE: Eight aircraft completed as of 4-27-82
BY: Ben Owen
Executive Director
Information Services

Builder
EAA Aviation Foundation
P. O. Box 469
Hales Corners, WI 53130
Registration No.
N9PH
Specifications
First Flight: 7-24-74
Engines: Limbach VW & a Monnett VW
Photos Available
yes

Builder
EAA Chapter 443
C/O John E. Berend
1943 Keswick Drive
Columbus, OH 43220

Registration No.
N443PX

Specifications
First Flight: 1977
Engine: Cont. 65 H.P.

Builder
EAA Chapter 85
Delta Air Park
Delta, B.C., Canada

Specifications
First Flight: 7-76
Engine: Lycoming, 65 H.P.

Builder
M. John Leitus
817 Roosevelt Avenue
Roaring Springs, PA 16673

Specifications
First Flight: 11-2-80
Engine: Cont. ~~A74~~ A75
Prop: 72--44

Builder
Howard P. Mayer
57 Main Street
Sturgeon Falls
Ontario, Canada OH 2GO
EAA #120149
Specifications
Engine: Cont. A-65

Builder
Martt Cooper
38 East Windsor Court
Aurora, IL 60504

Specifications
First Flight: 2-3-78

Builder
Bob Green
15947 Fortune Court
Brighton, CO 80601
EAA #14827
Specifications
Engine: Cont. A-65

Builder
A. Hartwell Jewell, M.D.
1300 South Eliseo Drive
Greensbrae, CA 94904
EAA #74853
Registration No.
N6HJ

—BOB HEUER FLIES THE ACRO SPORT I—

Paul thought that as the designer, he might be a little biased. Following is IAC's president Bob Heuer's views of the plane, in part - thanks to Dec. issue Sport Aviation - ed.

Not being familiar with the aircraft, I continue to climb to 7500 feet. The airplane has, at this time, just over 50 hours on it and has been flown by the top pilots in the country, but a little altitude won't hurt. As we enter the area and do a couple of clearing turns, we take a look around and make sure we don't have any traffic. Let's run through the stall characteristics first.

The power on stall is extremely steep at full throttle. It takes almost a 60 degree angle to get the airplane to stall. As we pull up and the airplane breaks into a stall configuration, we're in for a big surprise, it falls right straight ahead and the stall characteristics are ideal with the recovery right at the horizon. We fly away with no loss in altitude. That was fun! Now let's try a full oscillation stall. Power on, we use about 2300 rpm for this stall, set the angle at about 45 degrees and hold it, hold it and hold it on that line — it takes a long time to decelerate. As we decelerate and the airplane breaks in a stall, it is very smooth with lots of stall warning and the nose comes straight down into the horizon with just very little rudder application and with no tendency to pitch off to the left or right. I find that as I sit there with 2300 rpm, the nose will oscillate down a little, then up and finally stabilize in nose up position with 2300 rpm on it, and I can steer it with rudder all day and even make turns with the airplane in a fully stalled condition.

Now we're up to 9,000 feet — let's run through the power off stalls. Close the throttle and check the idling; idling fine as we slow down with the nose slightly above the horizon and the airplane stalls; we find it is as gentle as a lamb — no characteristics for sudden pitchovers; plenty of stall warning, plenty of rudder effectiveness, plenty of aileron effectiveness — the first one was gentle, just a nibble, and hardly any bite at all. We add the power and get the airplane flying again.

Now we'll try the turning stalls. Close the throttle, bring the nose up to the horizon, start around to a thirty degree bank to the left, and do the stall. It stalls gently again — add the power and fly away with no loss of altitude. Left and right stalls are equally normal. How about the climbing turn stalls? We find that in a thirty degree bank with the nose up about 45 degrees you can recover from the stall with the airplane flat on the horizon with no problems at all. I consider the characteristics of this airplane in the stall configuration very similar to the Cessna 150, if not better.

Now, we have lots of altitude — 9000 feet — let's try some spins. First spin is to the right, power off, normal inside spin. As the airplane stalls and breaks, we feed in the rudder, it comes around and enters the spin with the airplane well in the nose down position. After the first turn, the rotation seems to increase — there's one turn, two turns, and the recovery right on the point with a minimum application of controls. All you have to do is release the back pressure and center the rudder and the airplane flies immediately. Back up to the horizon, let's try the spin to the left — power off. The spin to the left is almost identical to the one to the right, easy entry with a normal recovery.

Let's see what it spins like inverted. We recover from the normal spins — pull back up and enter the inverted spin from the upright position and stall and push the airplane over with the stick all the way forward and full rudder application, we find that it breaks nice and easy into the inverted spin. One turn, two turns — no adverse characteristics — the airplane is spinning normally with the nose tucked under about 20 degrees. Now — we center the rudder and bring back the stick to neutral and it recovers right on the point. I did several more spins, both upright and inverted, with no adverse characteristics. You get a feeling of confidence in an airplane that will recover from spins very easily.

Let's try some other things. We haven't seen how the high speed stall characteristics are. We pull it around in a very tight turn and almost a 90 degree bank and tighten up the back pressure with full throttle on — there's the burble — you can control the roll with either top or bottom rudder — it will just hang in the turn with the airplane fully stalled. That one was to the left — let's try it to the right. The maneuver to the right — exactly the same — no tendencies to pitch over the top or through the bottom, completely controllable with the rudder.

Now that we have a pretty good idea of what the airplane is like, let's investigate some of its aerobatic capabilities. We accelerate to about 135 miles an hour, which is normal cruise speed, add the throttle, bring the nose up slightly above the horizon and we'll do a slow roll to the left — very fast roll rate — somewhere around, without timing, I would say 150 to 160 degrees per second. The slow roll requires very little rudder application. Let's do another one. Nose up slightly above the horizon, full throttle, roll to the right, roll rate being almost the same, perhaps just a little faster because the airplane is slightly out of rig, being a little bit right wing heavy — very nice. Plenty of rudder throughout the roll, very easy to hold on the point, and a good fast roll rate.

Now we progress to the snap rolls. Let's try the initial one at 120 miles an hour and see what happens. The initial snap, nose up slightly above the horizon, application of elevator, aileron and rudder together produces a nice clean snap roll with an easy recovery. With no previous experience in this airplane, I found that snap rolls both to the right and to the left from the upright and inverted position were very easy without requiring any practice to stop the rolls exactly where I wanted them. I also practiced several outside snap rolls with it, found that it broke very easily and recovered very easily.

Let's go on to the loops. Let's try normal cruise speed, 135 mph, full throttle, pull it up and over the top, starting at 8000 feet, and back around over the top, and recovering at 8000 feet. Very nice.

Let's take a look at some of its other characteristics — dive it down, see how it reacts at high air speeds — full throttle now, nose down to about 30 degrees, airplane accelerating nicely, no flutter anywhere, airspeed 160, 180, 190 and 200 mph. The airplane feels very good on the controls and nothing is moving on the airplane, everything is nice and stable. We'll pull up to the vertical line, apply left aileron in a full vertical roll and cap off and fly away. At this time, I became so enthralled with the airplane that I did several vertical rolls, half rolls, vertical snaps, etc. and everything that I could think of to investigate the characteristics of the airplane.

I then proceeded to do outside loops, inside loops, inside-outside cuban eights, vertical inside and outside snaps, etc. Quite frankly, I fell in love with the way the airplane flew. This was the first flight — I later had a second flight, and went back and repeated everything that I did in the first one, and a few more maneuvers. Before the third flight, I asked Paul if he had any restrictions on the maneuvers that I did with the airplane, and he said absolutely not. What I failed to mention to him was that I had been doing Lomcevaks and Torque Rolls with the airplane and, really, though I felt that he didn't have any restrictions, I wanted to clear it with him before I used the airplane in the air show at the Nationals at Sherman.

(Continued on Next Page)

BOB HEUER FLIES THE ACRO SPORT I . . .
(Continued from Preceding Page)

I found the landing and ground handling outstanding. The landing is slower than most midget biplanes, and as you come over the fence at 80 mph, the airplane actually wants to float a little bit, with the throttle closed. After touchdown, in a three point attitude, directional control, due to the wide gear, can be fully maintained with the rudder alone without any braking.

My over-all general impression of the EAA Acro Sport is that it is well designed, structurally sound, pleasing in appearance, gentle to fly, outstanding aerobatic aircraft. Certainly a lot of credit should go to Paul Poberezny and the EAA Air Museum Foundation and members of his maintenance staff for developing this beautiful aerobatic sport airplane for the amateur built movement. I think in the future we will see a lot of these airplanes built, and I am sure the builders will be very pleased with it.

DISCLAIMER

REQUEST FOR PICTURES AND ARTICLES

A request is submitted to all builders of the Acro Sport aircraft to send in pictures and information on the aircraft they are building. It is preferred to have black and white pictures as they reproduce better. We have no facilities for color reproduction. Builders for Pixie's, Acro Sport I, Super Acro Sports, and Acro Sport II aircraft are invited to submit articles and information on their aircraft and building practices. A sincere "Thank you" to all those who have previously submitted articles and photos.

This newsletter is published four times per year and is available to all. The subscription rate is $10.00 per year. Please send subscriptions to Ben Owen, P.O. Box 229, Hales Corners, WI 53130. Please make all checks payable to Acro Sport Incorporated.

ACRO SPORT DECALS!!

Decals are available which are suitable for display on the vertical fin.
Approximate size— 6½" x 8".

$2.50 each postpaid.

ACRO SPORT PATCHES!!

Due to many requests, we are presently offering a jacket patch for Acro Sport Builders.

$2.50 postpaid.

ACRO SPORT INC.
P.O. Box 462
Hales Corners, Wisconsin 53130