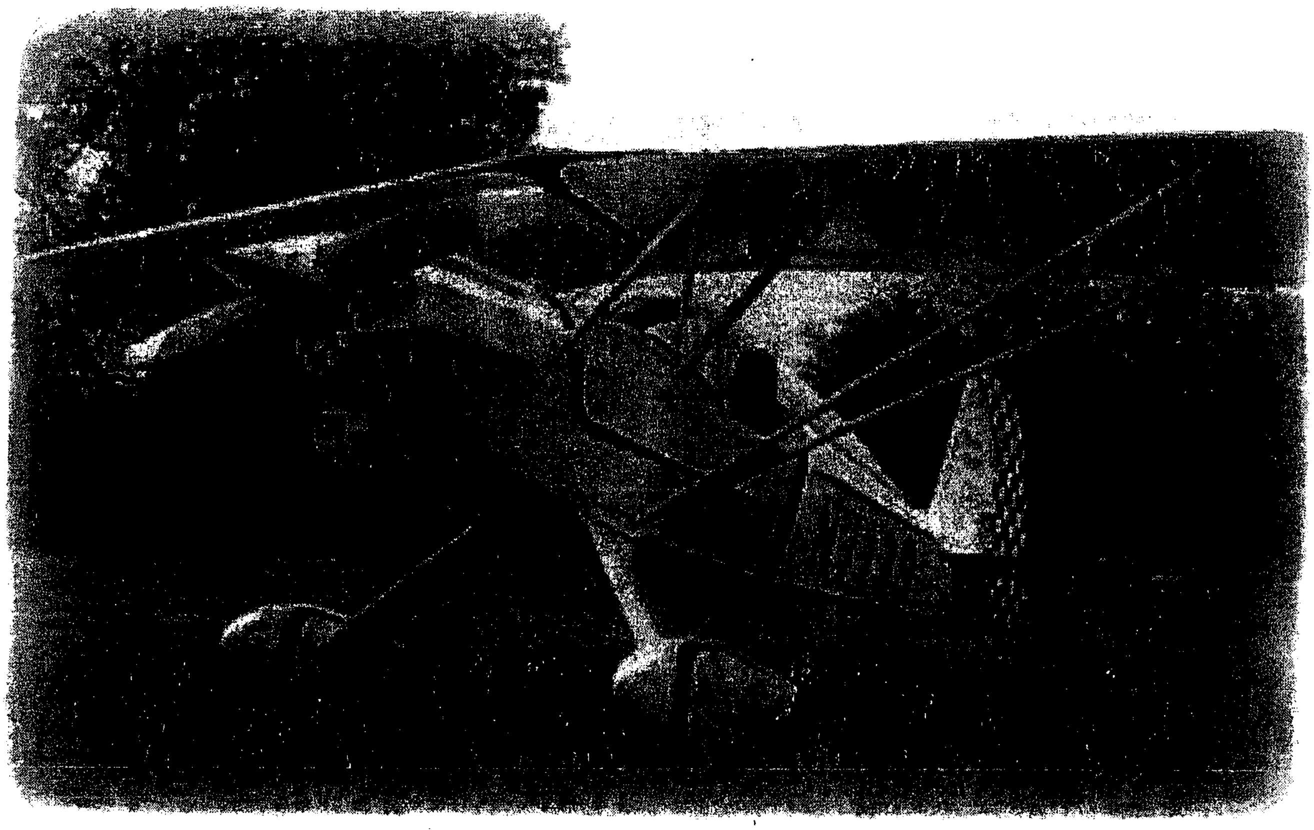
STARDUSTER STARLET



SA500
Information Pack

By: Aircraft Spruce & Specialty Co.
225 Airport Cir.
Corona,Ca 92880

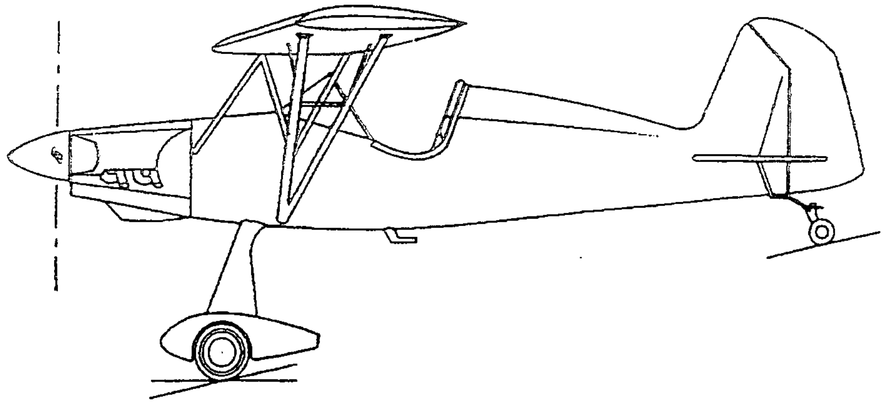
Ph-951-372-9555, Sales Line: 877-477-7823, Fax-951-372-05555
www.AircraftSpruce.com • Info@aircraftspruce.com

STARLET SA500

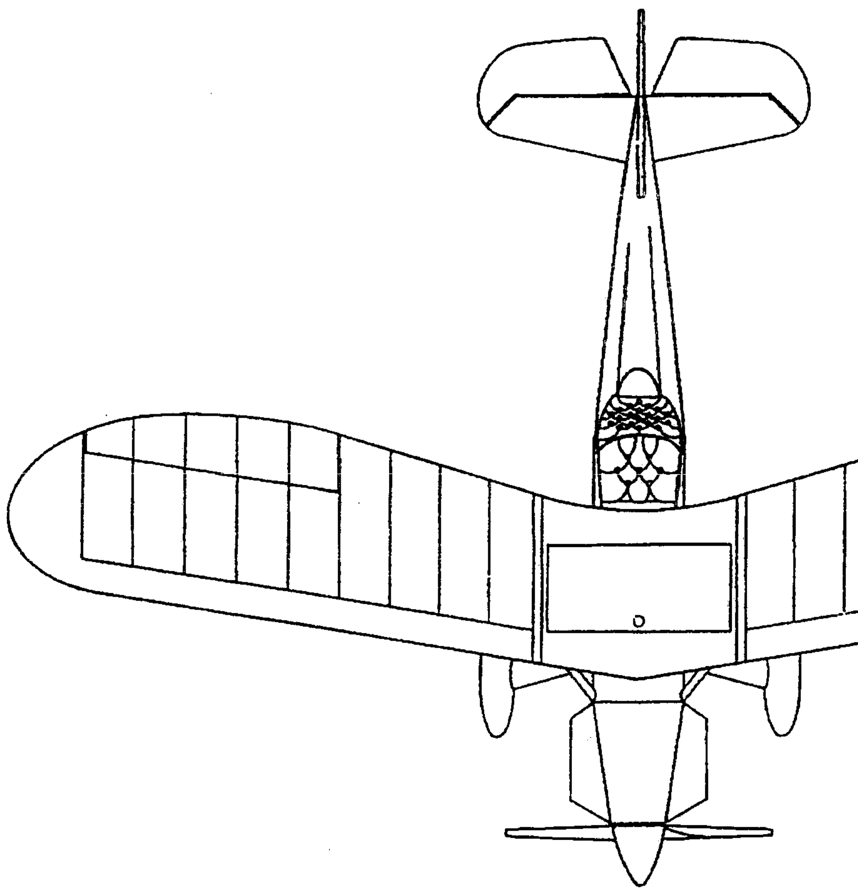
"She's a beauty!"
Top aerobatic expert Art Scholl

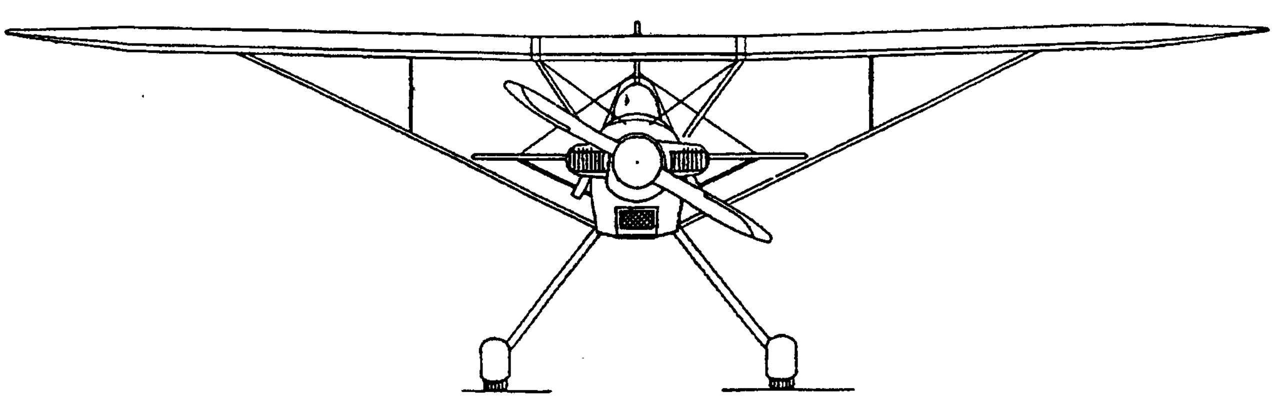
The STARLET SA500 is easy and economical to build and fun to fly. It is stable and relatively fast. The parasol wing makes it especially suitable for operating out of rough field. Although a small airplane, the Starlet has a roomy cockpit suitable for a large adult. Construction follows standard Stolp Starduster practice. All basic structure except the wing is made of 4130 steel tubing. The wing uses spruce spars and plywood ribs with cap strips. The airfoil is a Clark Y, High-Lift. Optimum engine is the 108 HP Lycoming; however, engines of 85 HP to 125 HP may be used. The Starlet will fly well with Rotax, Subaru, Suzuki, or Continental engines.The drawings are quite complete and easy to follow, with ribs printed to full size. The drawings are printed on an offset press so they will not fade and shrinking is held to a minimum.

"Some people come up with a really sexy airplane design once in a while.
Some other people do it habitually."
- Sports Planes magazine



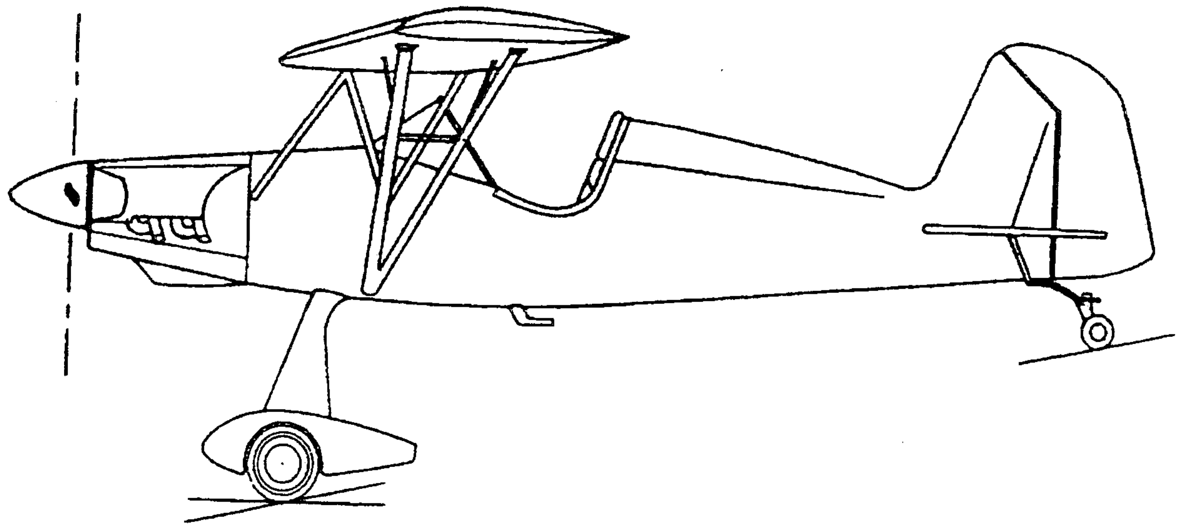
SPAN	25 FT.
LENGTH	17 FT.
HEIGHT	6 FT. 8 IN.
AREA	83 SQ. FT.
SWEEPBACK	9°
INCIDENCE	3 1/2°
AIRFOIL	CYH





STOLP STARLET SA500

STOLP STARLET SA500 WEIGHT & BALANCE



Stolp Starlet SA500 N2300
Note: Datum is Firewall
Fwd. C/G Limit is +21.6
Aft C/G Limit is +27.9

EMPTY WEIGHT C/G

Weighting point	Weight
Right	342
Left	346
Rear	38
Total	726

$$C.G. = D + \frac{R \times L}{W} = 8.5'' + \frac{38 \times 144''}{726} = 8.5 + 7.1 = 15.7$$

MAX. FWD. C/G

	Weight	Arm	Moment
Aircraft empty weight	726	+15.7	11398
Pilot	200	+48	9600
Fuel	45	+ 9	405
Fuel	87	+19	1653
Total	1058		23053

$$\frac{TM\ 23053}{TW\ \ 1058} = +21.7$$

MAX. AFT C/G

	Weight	Arm	Moment
Aircraft empty weight	726	+15.7	11398
Pilot	200	+48	9600
Baggage	10	+72	720
Total	936		21718

$$\frac{TM\ 23053}{TW\ \ 1058} = 23.3$$

SA500 Specifications

Span	25'
Overall Length	17'
Overall Height	6'8"
Wing Area	83 sq.ft.
Sweep Back	9 degrees
Incidence	3-1/2 degrees
Airfoil	Clark Y
Design Limit	+/- G's
Fuel Capacity-main	6.5 Gallons
Fuel Capacity-wing	14 Gallons
Empty Weight*	480 lbs
Stall Speed(power off)*	60 mph
Stall Speed(power on)*	74 mph
Cruise Speed*	120 mph
Rate of Climb*	950 fpm

*Approximate

Stolp Starlet SA500 Design and Construction

The Starlet SA500 incorporates the sleek elements of Lou Stolp's other designs in the Starduster series, i.e., a very clean, low drag aircraft that generates the appearance of speed and performance even when parked on the ramp. The f uselage consists of 4130 chrome moly tubing, while the parasol wing is made of spruce spars and plywood ribs with cap strips. The museum's Starlet, prototype N2300, was completely renovated in 1981 for the owner at that time in a rebuild by the late Dan McGrogan. His work included:

* Completely stripping the aircraft
* Cleaning, inspection, repair and repaint of all metal tubing
* Inspection of the electrical system and replacement of part of that system
* Propeller was overhauled and certified Airworthy
* Landing gear was inspected and main gear tires and tubes were replaced
* A differential compression check was completed on the engine
* Complete check of magnetos, exhaust system, carburetor and controls
* Recovering with Dacron fabric
* Repainting with eleven coats of butyrate dope, finished with four coats of enamel
* The aircraft was rigged, weighed, inspected and certified Airworthy by the FAA

Stolp Starlet SA500 N2300
Note: Datum is Firewall
Fwd: C.G. Limit is +21.6
Aft: C.G. Limit is +27.9

Empty Weight C.G.

Weighing Point	Weight
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Total:	726

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Max FWD. C.G.

	Weight	Arm	Moment
Aircraft empty weight:	726	+15.7	11398
Pilot	200	+48	9600
Fuel	45	+9	405
Fuel	87	+19	1653
Total	1508		23053

$$\frac{TM=23053}{tw=1058} = 21.7$$

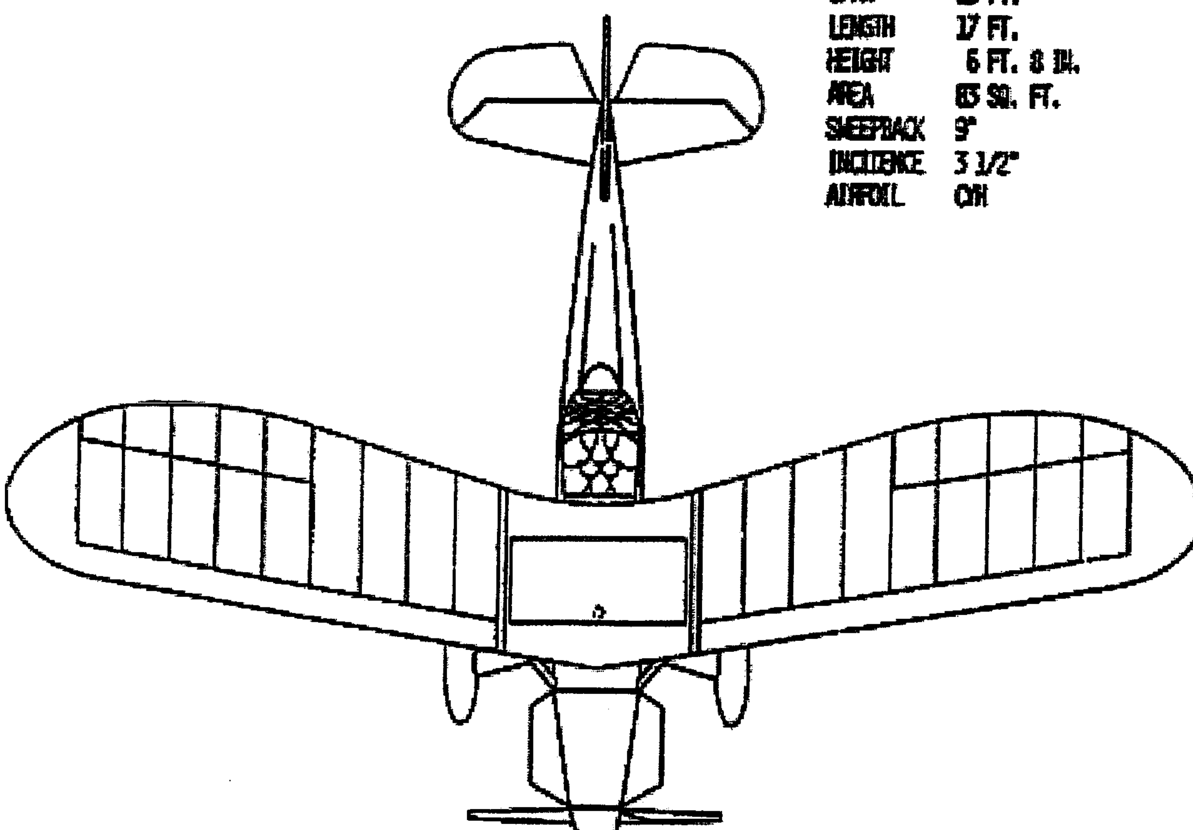
Max AFT C.G.

	Weight	Arm	Moment
Aircraft Empty Weight	726	+15.6	11398
Pilot	200	+48	9600
Baggage	10	+72	720

$$\frac{Tm=23053}{Tw=1058} = 23.3$$

Misc. Artical's on the Starlet SA500

SPAN	25 FT.
LENGTH	17 FT.
HEIGHT	6 FT. 8 IN.
AREA	85 SQ. FT.
SWEEPBACK	9°
INCIDENCE	3 1/2°
AIRFOIL	CYH



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Art Scholl Flies
The Stunning Starlet

Some people come up with a really sexy airplane design once in a while. Some other people do it habitually.

One of the ones who do it habitually is a friendly fellow named Lou Stolp, who had a hand a few years back in a design called the Stolp-Adams Starduster. It was quite a popular little single-seat biplane: so popular, in fact, that he sprinted to the drawing board, expanded it into a two-seater, and produced an airplane clearly destined to become a classic biplane, the Starduster Too.

After he caught up with the flood tide of demand for plans on that celebrated two-holder, Lou Stolp got to thinking that it would be quite a lot of fun to design a smaller sports airplane, maybe with only one wing. So he sashayed back to the self-same drawing board in an office at the Fla-Bob Airport near Riverside, California, and began to sketch.

What came out had only one wing, all right. It also had an unmistakable resemblance to the Stardusters. It was a diminutive parasol-wing open-cockpit monoplane with pizzaz and romance and hot damn! Written all over it. He gave it an M-6 airfoil, a Volkswagen engine, a blue paint job and a big sendoff, and it bombed out. It simply wasn't good enough. So he built another one, gave it a modified Clark Y Hi-lift airfoil, a Lycoming O-235 and a red paint job, and it presently has various mature and sensible pilots doing absolute nip-ups over it. It is the Stolp Starlet.

Magazine editors, composing articles at 10:55 p.m. after a hard day at the office, not to mention one or two restorative libations, frequently have quite a hard time capturing just the flavor of rhetoric (i.e. prose) to do justice to a particular subject. The Starlet presents that kind of problem. With other starlets, you get right down to brass tacks and mention motion picture credits, bust measurements and that sort of thing. With this Starlet, it seems pitifully inadequate to quote a wingspan of 25 feet, a McCauley fixed-pitch Prop on a 108-hp Lycoming and similar nonsense. Nobody, not even Tennessee Williams or Hemingway, has yet put sex appeal into mere verbiage. What I mean to say is, if you can walk around the Starlet on the ramp and eyeball her and not get the twitch, you had better run (not walk) to the nearest newsstand and buy a copy of the Stamp Collector's Journal or the Yale Literary Magazine or Cat Fancy, because you are clearly reading the wrong magazine. If the Starlet does not turn you on, go away.

The Starlet is a toy. There is nothing practical about it, at all. It is a plaything, but just between us, it is the only kind of plaything most pilots are ever likely to chose in preference to Raquel welch.

To be prosaic, the Starlet is a quite conventional airplane with a welded steel tube fuselage, a wooden wing mounted on steel tube cabane and lift struts, a Dacron fabric cover, a landing gear suggested Focke Wulf "Stosser" and a fuselage profile as distinctive as Lou Stolp's signature. The Lycoming-engined prototype weighs 723 pounds empty, chiefly because it has a full electric system, a radio and all the other goodies. It has flaps, but the drawings won't show them and they aren't recommended. With the 108-hp it gets off in a commendable but as yet unmeasured distance, climbs at an initial 1,000 to 1,200 fpm, cruises at 120 to 125 mph and will indicate 150 full bore. And it makes friends out of new pilots.

To prove it, SPORTS PLANES is about to present - pretty much unedited - the transcript of several tape recordings made by a pilot who did a number of test flights of the airplane.

His name is Art Scholl, and he is more or less generally acknowledged to be a tolerably proficient airplane driver. He has placed high in national aerobatic championships, and has twice represented nation as a member of the U.S. team in world aerobatic competition. Art made a series of evaluation flights in the Starlet immediately after it was test-flown by Stolp, and taped his knee-board notes at the conclusion of each flight. We could dress up the punctuation and the sentence structure a bit, but we think you'll get the message if we offer it pretty much as it came off the tape, because this is about as close to nitty-gritty test piloting as most of us will ever get. The next voice you hear, therefore, will be Art Scholl's:

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This is a pilot report on the Stolp Starlet, N 2300. I will try to express my own personal opinion on what I felt and what I feel as I walk up and look at this airplane and then fly it, and whoever writes this can use my thoughts any way they want, to describe my feelings.

As I watched the construction of this aircraft, I have been very interested in its flight characteristics. It is probably one of the prettiest of all the little homebuilt airplanes I have ever seen, and I think its name is very appropriate. Starlet, actually it depicts a very slim, good-looking girl. But these lines just strike me as being very exceptional. Then you wonder, will these line sacrifice some of its flying abilities, and this is what we have all been wondering for quite some time.

The first preliminary flights were done by Lou Stolp. He gave me a brief rundown of the aircraft, that they have had it up to as high as 120 mph, but no higher. The first thing in a test flight would be to find what its dive characteristics are. This is very important in flight testing any aircraft, because if you are trying some kind of aerobatic maneuvers, and you have no idea of what you could allow the aircraft to go to, you must know what your basic red line is on the aircraft. Then, in starting and executing maneuvers, if the maneuver does not turn out like you had planned, at least you know where your limits are, as far as the red line is concerned.

Getting in the airplane, you find that it is a very comfortable position to be seated in. In fact, after flying you feel like you don't want to get back out of it. Everything is strapped in with the shoulder harness and belt. Taxiing is fairly easy, with very good visibility. Being a high-wing parasol, you can see left and right and straight down very easily. Ground handling seemed fairly good after run up. On taxiing out on the runway, you find that it is a little sensitive. The stick movement is very little, and yet on the initial run for takeoff you find that the stick pressures are very light, and although the stick is very efficient, you don't have the feeling of over-controlling it, because the airplane is fairly stable. Directional control, though, is a little touchy on the initial roll.

Immediately around 80 mph, I pulled the aircraft off and climbed. Timing, at this point, appeared at 80 mph, 1,200 feet per minute, sustaining the 80 mph climb to about a 2,000 foot altitude. Climbing to 5,000 feet above the field, the dive tests were started. The aircraft was rolled over and dived to 130 mph, the stick accelerated, and then a pull out. The next one was 140; then 150. A surprising thing, as I reached speeds to 150 and 160 mph, I noticed in accelerating the stick that the aircraft tended to remain in any position it was placed. In other words, the center of pressure travel did not seem to be very excessive in either direction. Trim seemed just about right for me. The aircraft has a fixed stabilizer and I had no particular problems with the trim whatsoever.

(Ed. Note: "accelerating" the stick is merely pulsing it - giving it a shove to move it, then releasing it immediately, to see what effect momentary control surface displacement has on stability.)

The dive testing continued, and reaching 180 and 190 mph, again this sensation of putting the nose down and having the nose stay at the pitch angle that it was set at in accelerating the stick. I had no indication of any type of flutter whatsoever. And finally, the final dive speed was to be 220 mph. To achieve this, I rolled over in half of a wingover or split "S" and started on down with about half throttle, and immediately the airspeed did build up to about 220 mph, and again hands off, accelerating the stick, and no indication of any kind of flutter or bad characteristics. On pulling out this time, however, the air speed did go as high as 230 mph. At this speed, I felt that there would be no need for anyone to dive or fly the airplane past 230, so the dive tests were stopped at 230 mph.

Next came the spin tests and stall. I will check again on the next flight. I think the stall speeds appeared to be indicating around 60 mph. Let's correct that to about 55 to 60 mph without the use of flaps. On the first flight test, the spin was started. I started out with a half turn spin to the right and a half turn to the left. The spin to the left seemed about twice as fast as the one to the right. We finally ended up with today's testing of a full spin to the right and a half turn to the left, still being a little cautious about the spin.

At this point, I wanted to check the center of pressure and CG travel before any further spin tests were conducted. During the procedure of making the dive test, in pulling up for altitude again and starting back down, I was doing a semi-wing over, hammerhead type turn, but not a real competitive type hammerhead. The reason for this is, not knowing the spin characteristics, you would not want to have the airplane fall down on its tail into a tail slide and then flip into a spin if the airplane had any bad characteristics in the spin. So, no real hammerheads were done at this time.

After being very satisfied with the dive test, I headed back to the field and made a 160 mph fly-by, down to field and then pulled up and came around to land. The approach had to be done with a little power. I noticed that it did have a little faster sink rate on landing and the flare was done with a little power, and this felt very good, and it seemed to have real good characteristics on a 3-point landing attitude. I noticed in trying wheel landings one would have to get used to the airplane to make good wheel landings.

On the next test flight, a few days later, we were interested in seeing what the aircraft would do on the spins. Again, climbing to 5,000 feet, the spin was started to the right. We worked up to 3 turns in each direction. I noted that the spin to the left is very fast and quick, but it does stabilize without going flat and the spin recovery is remarkably fast. The spin to the right is somewhat slower. I allowed the airplane to go into a 5 turn spin to the right and found that after about two turns, it stabilizes at a constant rate, and the recovery, again, is very responsive.

At this time, knowing that the spin characteristics were excellent, I wondered how the aircraft would snap. Surprisingly, it reminded me of the Pitts in the snapping characteristics because it was very fast, much greater than the Super Chipmunk or the standard Chipmunk. The aircraft, again, would snap much faster to the left than to the right. After doing 1 and 1-1/2 and 2 turn snaps, I tried loops, a loop with a snap on top, Cuban 8's, maneuvers such as this. The aircraft is not fitted with an inverted fuel system, so it has a float carburetor. So, no inverted flight was tried except for the Cuban 8, just momentarily holding inverted, and, surprisingly, the engine never sputtered or gave any problem with the negative loadings that were imposed on it just momentarily. I noticed that on the loop with the snap on top, the aircraft does slow down enough that when you try a snap, you have to watch it because it does get quite mushy on top. It seems to want to snap very nicely at high speeds.

The next thing to find out is, what kind of an angle the aircraft will fly inverted even though the engine will quit. We are interested to see what kind of inverted flying characteristics it will have. Also, the hammerhead turns never were really tried. Going from a Pitts or a Chipmunk to a high-wing parasol is just a little different feeling because you have very good visibility ahead and down, and in the hammerhead you have to watch the wing in getting the airplane perfectly vertical. Now, we want to find out just how it pivots about its center line to start on downhill in the hammerhead.

This is what surprised me, because after this third flight here, that we've just done, I find that I re-inverted and there is no pressure feel. In fact, it is so light on pressure, you're going to have to do what Bob Herendeen did with his Pitts, and this is, put some springs on it so that you know where neutral is, because you can shove forward on the stick and, thereupon, just push right on over. You have very little stick pressure whatsoever in any direction, there's just no feeling of any stick pressure, it's like it has hydraulic boosts in the controls. So, you want to build in a little stick pressure. You'll probably want to put some bungee springs in there, so that when you push the stick, you'll feel a little pressure.

It is unusual to get an airplane design that flys like this, especially the airfoil here. I find that there is very little difference between the feel of upreight and inverted as far as the stick pressures are concerned. And the outside snapping, we only had one belt, so I didn't want to push too much outside, but I did dive at about a 30 degree angle, down at 180 and pushed forward on the stick, and very little stick pressure, but instantly to about 3 negative G's to push up. And I felt that without power I could have pushed it right over into an outside loop from the inverted position. But until we get a heavier belt on there, I don't dare do that.

Then I wanted to try the outside snap, so from the inverted position, just touched the stick and rudder and your outside snap back to upright, with immediate recovery. And then on one of the outside snaps, I flew inverted and did an outside snap back to inverted position again. Very nicely. It did it real good. I'm very surprised at the snapping ability of the airplane. The rudder is most effective. Now, for instance, in a hammerhead turn, if you're going to do s hammerhead and then a half roll straight down, the nose will pin right on a point, but if you push aileron in, the rate of roll is very slow. But pushing the nose on the point and hitting the rudder and aileron is a fantastic rate of roll, just right around and still staying on the point. So, the rudder is the most effective point of the airplane.

Now, when you are aerobatics, I have to relate back to my Chipmunk; the Super

Chipmunk was taken to Fort Worth, Texas, and I couldn't get it to snap. So Harold Krier flew it, and he tried and tried, and he could get it to mush around into a little better snap then I got out of it. And when he landed, he said, "Art, there's nothing wrong with the airplane; you're going to have to learn how to fly it." And yet we did modify certain things, but not significantly, and suddenly we got that airplane snapping very well, just like the Russian Yak and Zlin. It is just techniques and learning to fly, and learning to fly a particular airplane. So here now I have to say that, in all fairness, when I flew the Starlet, you have to learn to fly each individual airplane, it was a pleasure to do snaps to the left and the right, spins to the left and right, outside snaps, everything came easy, which normally doesn't come easy in a new airplane that you don't know. The only thing that was not a good competitive maneuver was the hammerhead turn.

The airplane goes to the vertical position very quickly and easily; it holds, it stalls, it pivots instantly right around its axis, but when it starts heading down, it tucks under. It tucks under about 30 degrees, and with full back pressure in the stick, I can't keep it from tucking under. And if this is the only complaint that I can find, this is pretty good because, with a little technique of flying, maybe we can solve this problem, and if we can't solve it by learning how to fly it, then there may be some aerodynamic things we can do to the airplane to try to get it not to tuck under, if you were looking for a competitive type airplane. But all the basic characteristics of the airplane, with the 108 hp Lycoming in it, it seems that even with that little power you do have a fairly good competitive airplane from the little things that I can see from flying it.

Now, the landing; let me explain this is only my third landing in it, today. I came in at 90 mph, throttled off, and a very slight flare at 90 and a real nice flare in floating and touch down at 60, 3 point, and it seemed very straight forward on the landing. There is something I can't quite pin down on the flaring of the airplane, the stick. I am probably getting to the point now that I am understanding why it felt funny on the first landing. I think it feels funny because everything is so well in balance that you don't have the feel you should have, and with the bungee cords on the stick, you might have the feel. And again, I have to go right back and say it flies very similar to the Pitts as far as a lot of the response that it has. And I know that Bob Herendeen had to put bungees on his Pitts because of the controls being so easy that he didn't have the feel. I think this is what bothered me on the first landing, - - - back pressure when you came back on the stick and you might begin to wonder if the controls are working. Now, if we can get that double belt in there, we can try some of these outside maneuvers.

Without an inverted system, you are limited to what you can check, but I was surprised at the way the airplane did respond. It seems it will fly very well inverted. The inverted characteristics felt the same as upright. I didn't seem to find any difference. I could point the nose up and take my hands off, it would stay there, or I could point it down; it would stay, and the same upright.

I noticed I came from a half of a loop to inverted flight and stopped it and then flew inverted. A couple of times I came up and purposely pushed it there and stalled it to see how it would feel in a stall, and, as soon as it stalls, it flips to the upright position. So, the airplane does have some real good characteristics as far as the amateur is concerned. You always look at what's the guy going to do in getting into trouble. Now, one way you could get into trouble is if you didn't have altitude and you were learning aerobatics without altitude, which you shouldn't be doing anyhow. But, if that did happen close to the ground, you could very easily snap the airplane, in the inverted position, and head on downhill very easily.

Definitely, the airplane could very easily, if you were slow in turning from base to final and kicked rudder, it could snap upside down instantly. This is characteristic of good aerobatic airplanes. You have to respect them and know that the airplane, if you kick rudder hard, it's going to snap on you. I mean, it's going to snap so fast. If you got back pressure, it could snap, and it wouldn't give much of an indication. The thing to do to correct that, if a person is going to fly it as a regular airplane, without doing aerobatics, the thing he would have to watch, you could put stops on the rudder so you won't have much rudder travel. That would stop it. You want elevator travel for flaring out for landing. It's the back pressure stall, it's very straight forward on stalling. You're not worried about back pressure, you can stall it by pulling the stick back. It's the rudder, a very efficient rudder on there, you just touch the rudder and it's going. And this is the only caution, the rudder control. The elevator will stall straight ahead, it won't fall left or right or roll on its back, but if you push the rudder in and stall it, then it will.

We flew today fully grossed. This airplane indicated 1,000 feet a minute climb, all the way on up, and we were fully grossed with a wing tank and fuselage tank full. So, all this aerobatic flying was done with full fuel on board. It has electrical, radio; it's probably loaded the most that you would get a Starlet loaded. Now, if you increased this horsepower and lightened up some of the weight on it, it would be a very, very good air show and competitive airplane. I guess you didn't mean it to be that way, though. It should real good with a 150, aerobatic-wise. The airplane feels very solid structurally, I don't seem to worry at all about the tail or the wings, everything seems to be very solid, and in doing the aerobatics, you don't have the feeling of anything flexing or giving, like you do in a lot of airplanes; a very solid feeling.

That is another thing, too, today's test flight had absolutely no horizon. It's one of the worst days of smog I have seen, it really is. It was really bad out there; no horizon whatsoever, and this made it very difficult, and yet the airplane responded pretty well.

Incidentally, one of the pleasures of flying this airplane is taxiing. It is a real thrill to taxi the airplane. It honestly is. You can see everywhere you are going because of the visibility. It has excellent visibility on the ground. You can taxi in between airplanes, turn around, and without taking any room up, head back the other way. It's fun just taxiing it.

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It's fun just reading about it, too, Art.

The airplane that does all this, and turns every head on the airport as you taxi past, cannot really be built on Saturday afternoons in the tea room by little old ladies from Pasadena. But if you can weld, glue and rib-stitch, and force yourself to do exactly what Stolp's excellent drawings tell you you to do, you can have your own Starlet and all your pals can eat their little hearts out. Lou Stolp will sell you an information packet for $3.00 which includes a picture of the bird. Plans are $65 from Stolp Starduster, P.O. 807, Mentone, Calif. 92359.

Stolp Starlet SA500 - N2300

EAA's Starlet prototype (N2300) comes from a distinguished line of outstanding airplanes designed by Lou Stolp, offering a family of kits for homebuilders with a common theme -- open cockpit, single and two-place, fully aerobatic machines that are powerful, stout, graceful, and perhaps most important, with lines conveying the basic message which draws most to aviation in the first place: "This airplane would be fun to fly!" In the words of the late Art Scholl, the legendary aerobatic and movie stunt pilot who conducted early some of the early test flights, (the Starlet) "is probably one of the prettiest of all the little homebuilt airplanes I have ever seen, and I think its name is very appropriate ... Starlet."

A 1970 follow-on to Stolp's highly successful Starduster biplane series, the Starlet was aimed at a specific market niche -- customers seeking the Stolp experience, but through a simpler design and construction process, i.e., eliminate the lower wing and step down in horsepower. The resulting single place, high wing parasol got the builder into the air faster, with more dough left in his pocket, and with a sturdy airplane that was just as comfortable operating on rough turf as it was on paved runways.

N2300 actually is the second Starlet prototype produced by the Starduster Corp. of River side, California. A 1500cc Volkswagen engine producing only 48bhp, which proved to be underpowered, propelled the first but sufficient, proof of the Stolp design concept. The second prototype, powered by the 108 hp Lycoming O-235C-1, dazzled everyone who flew it and led to kits with 85hp to 125hp engine options from Lycoming, Rotax, Subaru, Suzuki and Continental. Completed Starlets soon were showing up at fly-ins with the proud builders-owners attracting numerous admiring glances and questions about performance. N2300 also has a distinctive audible signature that adds to its appeal. The 108 hp Lycoming has short stacks, which produce a most pleasing, head-turning, rumbling/crackling growl in the pattern and on fly-bys.

The stylish Starlet is compact, with a length of just 17 feet and a wing span of 25 feet. Normal gross is 1,000 lbs, and the O-235C-1 with a metal McCauley prop produces an easy 1,200fpm climb and 100mph cruise at 6.8gph. Fuel capacity of 22 gals (13 in the wing center section and 9 in a f uselage tank forward of the cockpit) offers a 300-mile range with reserve.

Handling is responsive and stable, much like a Piper Super Cub, and the Starlet likes about 80mph on the approach to a normal flare and stall at about 60 mph. Once accustomed to the Starlet, the average pilot will find takeoffs averaging 300 feet and landing rolls of 400 feet. It's fun flying at its finest, as long as the pilot remembers the airplane is very much like its namesake ... she demands your undivided attention.

This aircraft was researched by EAA volunteer, Jerry Cosley, who donated N2300 to the museum in 1981.

Story taken from http://www.airventuremuseum.org/collection/aircraft/Stolp%20Starlet%20SA500.asp

FLIGHT TESTS, STOLP STARLET

February 14 & 21, 1970
(Post-flight comments by the late Art Scholl)

This is a pilot report on the Stolp Starlet, N2300. I will try to express my personal opinion of what I felt when I walked up and looked at this airplane and then flew it.

As I watched construction of this aircraft, I have been very interested in its flight characteristics. It is probably one of the prettiest of all the little home-built airplanes I have ever seen, and I think its name is very appropriate ... Starlet. Actually, it depicts a very slim, good-looking girl, but these lines just strike me as being very exceptional. Then you wonder, will these lines sacrifice some of its flying abilities.

Lou Stolp conducted the preliminary flights. He gave me a brief rundown on the aircraft, that they have had it up to 120mph, but no faster. The first thing in a test flight would be to find out what its dive characteristics are. This is very important in flight-testing any aircraft, because if you are trying some kind of acrobatic maneuver, and you have no idea what you could allow the aircraft to go to, you must know what your basic red line is on the aircraft. Then, in executing and starting maneuvers, if the maneuver does not turn out like you had planned, at least you know where your limits are as far as the red line is concerned.

Getting in the airplane, you find that it is a very comfortable position to be seated in. In fact, after flying you feel like you don't want to get back out of it. After getting strapped in with the shoulder harnesses and belt, I found I could not reach down to the left to reach the flap handle, so the flights were done without the use of flaps. (Flaps on prototype only - currently deactivated.)

Taxiing is fairly easy, with very good visibility. Being a high-wing parasol, you can see left and right and straight down fairly easily. Ground handling seems fairly good after run up. On taxiing out to the runway, you find that it is a little sensitive. The stick movement is very small and yet, on the initial run for takeoff, you find that the pressures are very light. Although the stick is very efficient, you don't have the feeling of over-controlling because the airplane is fairly stable. Directional control, though, is a little touchy on the initial roll.

Around 80mph, I pulled the aircraft off and climbed. Timing was, at this point 80mph, 1,200 feet per minute, sustaining the 80mph climb to about 2,000 feet. Climbing to 5,000 feet above the field, the dive tests were started. The aircraft was rolled over and dove to 130mph, the stick accelerated and then a pullout. The next one was 140; then 150. A surprising thing, as I reached speeds of 150 and 160mph, I noticed that in accelerating the stick, the aircraft tended to remain in any position that it was placed. In other words, the CP travel did not seem to be very excessive in either direction. Trim seemed just about right for me. This aircraft has a fixed stabilizer and I had no particular problems with the trim whatsoever.

Then, the dive testing continued, and reaching 180 and 190mph, again this sensation of putting the nose down and having the nose stay at the pitch angle that it was set at in accelerating the stick. I had no indication of any type of flutter whatsoever. And finally, the final dive speed was to be 220mph. To achieve this, I rolled over in a split "S" and started on down with about half throttle and immediately the air speed did build up to about 220mph, again hands off, accelerating the stick and no indication of any kind of flutter or bad characteristics. On pulling out this time, however, the air speed did go as high as 230mph. At this speed, I felt that there would be no need for anyone to dive or fly the airplane past 230, so the dive tests were stopped at 230mph.

Next came the spin and stall tests. I will check again on the flight today, but I think the stall speeds appeared to be indicating around 60mph. Let's correct that to about 55 to 60mph without the use of flaps. On the first flight test, the spin test was started. I started out with a half turn spin to the right and half turn to the left. The spin to the left seemed about twice as fast as the one to the right. We finally ended up today's testing with a full spin to the right, and a half turn to the left-still being a little cautious about the spin.

At this point, I wanted to check the center of pressure and CG travel before any further spin tests were conducted. Making the dive tests, I was doing a semi-wingover, hammerhead type turn, but not a real competitive hammerhead. The reason for this is, not knowing the spin characteristics, you would not like to have the airplane fall into a tail slide and then flip into a spin if the airplane had any bad characteristics in the spin. So, no real hammerheads were done at this time.

After being very satisfied with the dive tests, I headed back to the field and made a 160mph flyby, and then pulled up and came around to land. In landing, I was able to reach forward and put in one notch of flaps. The approach had to be done with a little power. I noticed that it did have a little faster sink rate than you would normally think of on landing. The flare was done with a little power and this felt very good, and it seemed to have real good characteristics for a 3-point landing. I noticed in trying wheel landings one would have to get used to the airplane to make good wheel landings.

On the next test flight a few days later, we were interested in seeing what the aircraft would do in spins ... this was our main concern at this time. Again, climbing to 5,000 feet, the spin was started to the right. We worked up to 3 turns in each direction. I noted that the spin to the left is very fast, but it does stabilize without going flat and the spin recovery is remarkably fast. The spin to the right is somewhat slower. I allowed the airplane to go into a 5-turn spin to the right and found that after two turns, it stabilizes at a constant rate and the recovery, again, is very responsive.

At this time, knowing that the spin characteristics were excellent, I wondered how the aircraft would snap. Surprisingly, it reminded me of the Pitts in snapping characteristics because it was very fast, much greater than the Super or standard Chipmunk. The aircraft, again, would snap much faster to the left than to the right. After doing 1 and 1-1/2 and 2 turn snaps, I then tried loops, a loop with a snap on top, Cuban 8s and maneuvers such as this. This aircraft is not fitted with an inverted fuel system. So, no inverted flight was tried except for the Cuban 8, just momentarily holding inverted, and surprisingly the engine never sputtered or gave any problem with the negative G loadings that were momentarily imposed on it. I noticed that in the loop with the snap on top, the aircraft does slow down enough so that when you try to snap, you have to watch it because it does get quite mushy on top. It seems to want to snap very nicely at high speeds, which is typical of the Pitts in its snapping characteristics.

The next thing to find out was what kind of an angle the airplane will maintain inverted, even though the engine will quit. We were interested to see what kind of inverted flying characteristics it will have. Also, the hammerhead turns never were really tried. Going from a Pitts or a Chipmunk to a high-wing parasol is just a little different feeling, because you have very good visibility ahead and down, and in the hammerheads you have to watch the wing in getting the airplane perfectly vertical. Now, we want to know just how it pivots about its centerline to start on downhill in the hammerhead.

This is what surprised me because after this third flight, I find that I roll inverted and there is no control pressure feel. In fact, it is so light on pressure, you're going to have to do what (Bob) Herendeen did with his Pitts. And that is, put some springs on it so that you know where neutral is, because you can shove forward on the stick and just push right on over. You have very little stick pressure whatsoever in any direction. There's just no feeling of any stick pressure; it's like it has hydraulic boosts in the controls. So, you want to build in a little stick pressure. So, you'll probably want to put some bungee springs in there so that when you push the stick, you'll feel a little pressure against the stick.

It is unusual to get an airplane design that flies like this, especially the airfoil. I find that there is very little difference between the feel of upright and inverted as far as stick pressures are concerned. And outside snapping ... we only had on one flimsy belt, so I didn't want to push too much outside. But I did dive at about a 30 degree angle down at 180 and pushed forward on the stick with very little stick pressure, but instantly to about 3 negative Gs to push up. And I felt that without power, I could have pushed it right over into an outside loop from the inverted position. But until we get a stronger belt in there, I don't dare do that.

Then I wanted to try the outside snap, so from the inverted position I just touched the stick and rudder and snapped back to upright, with immediate recovery. And then on one of the outside snaps, I flew inverted and did an outside snap back to the inverted position again, very nicely. It did it real good. I'm very surprised at the snapping ability of the airplane. The rudder is most effective. Now, for instance, in a hammering turn, if you're going to do a hammerhead and then a half roll straight down, the nose will pin right on a point. But if you push aileron in, the rate of roll is very slow. But pushing the nose on the point and hitting the rudder and aileron is a fantastic rate of roll, just right around and still staying on the point. So, the rudder is the most effective point of the airplane.

Now, when you are doing aerobatics, and I have to relate back to my Chipmunk, the Super Chipmunk was taken to Ft. Worth, Texas and I couldn't get it to snap. So, Harold Krier flew it and he tried and tried, and he could get it to mush around into a little better snap than I go out of it. And when he landed, he said, "Art, there's nothing wrong with the airplane; you're going to have to learn how to fly it." And yet we did modify certain things, but not significantly, and suddenly we got that airplane snapping very well, just like the Yak and Zlin. And yet, it is just techniques and learning to fly, and learning to fly a particular airplane. So here I have to say that, in all fairness, you have to learn to fly each individual airplane. Now, with this airplane, it was a pleasure to do snaps to the left and to the right, spins to the left and right, outside snap-everything came easy, which normally doesn't in a new airplane that you don't know. The only thing that was not a good competitive maneuver was the hammerhead turn.

The airplane goes to the vertical position very quickly and easily. It holds, it stalls, it pivots instantly right around its axis, but when it starts heading down it tucks under. It tucks under about 30 degrees, and with full backpressure on the stick, I can't keep it from tucking under. And if this is the only complaint that I can find, this is pretty good because with a little technique of flying, maybe we can solve this problem. And if we can't solve it by learning how to fly it, then there may be some aerodynamic things we can do to the airplane to try to get it not to tuck under ... if you were looking for a competitive-type airplane. But all of the basic characteristics of the airplane, with the 108hp Lycoming in it, it seems that with that little power we have in it, you do have a fairly competitive airplane from the things that I can see from flying it.

Now, the landing. Let me explain this is only my third landing in it today. I came in at 90mph, throttled off, and a very slight flare at 90 and a real nice flare in floating and touchdown at 60, 3-point, and it seemed very straightforward on the landing. There is something I can't quite pin down on the flaring of the airplane ... the stick. I am probably getting to the point now that I understand why it felt funny on the first landing. I think it feels funny because everything is so well in balance, you don't have the feel you should have, and with bungee cords on the stick, you might have the feel. And again, I have to go right back and say it flies very similar to the Pitts as far as the response that it has. And I know that Bob had to put bungees on his Pitts because of the controls being so easy that he didn't have the feel. I think this is what bothered me on the first landing, not feeling any backpressure when you came back on the stick, and you might begin to wonder if the controls are working. Now, if we can get that double belt in there, we can try some of those outside maneuvers.

Without an inverted system, you are limited as to what you can check, but I was surprised at the way the airplane did respond. It seems it will fly very well inverted. The inverted characteristics felt the same as upright ... I didn't seem to find any difference. I could point the nose up and take my hands off and it would stay there. Or I could point it down and it would stay, the same as upright. I noted that when I did the dive testing and I put the nose down, I could take my hands off the controls and it would tend to stay in the position you put it in. Very stable as to if an amateur pilot that would be flying would make any kind of mistake inverted, immediately, the airplane wants to roll upright. Say you get too slow and you stall inverted-the airplane just flips upright. I noticed this when I came from a half of a loop to inverted flight and stopped it and then flew inverted. A couple of times I came up and purposely pushed it there and stalled it to see how it would feel in a stall, and as soon as it stalls it flips to the upright position. So, the airplane does have some real good characteristics as far as the amateur is concerned. You always look at what the guy is going to do in getting into trouble. Now one thing is, you could get into trouble if you didn't have altitude and you were learning aerobatics without altitude, which you shouldn't be doing anyhow. But, if that did happen close to the ground, you could very easily snap the airplane and head on downhill very easily.

Definitely, the airplane could very easily-if you were slow in turning from base to final and kicked rudder-it could snap upside down instantly. This is a characteristic of good aerobatic airplanes. You have to respect them and know that the airplane, if you kick rudder hard, it's going to snap on you-I mean, it's going to snap so fast. If you've got backpressure, it could snap and it wouldn't give much of an indication. The thing to do to correct that-if a person is going to fly it as a regular airplane without doing aerobatics-the thing he would have to watch ... you could put stops on the rudder so you wouldn't have much rudder travel. That would stop it. You want elevator travel for flaring out for landing. It's the backpressure stall-it's very straightforward on stalling-you're not worried about backpressure, you can stall it by pulling the stick back. It's that rudder, a very efficient rudder on there, you just touch the rudder and it goes. And this is the only caution-the rudder control. The elevator will stall it straight ahead; it won't fall left or right or roll on its back, but if you push the rudder in and stall it ... then it will.

We flew today fully grossed. This airplane indicated 1,000 fpm climb all the way up and we were fully grossed with full wing tanks of fuel-a wing tank and fuselage tank were full. So, all of this aerobatic flying was done with full fuel on board. It has an electrical system and radio, and it's probably loaded the most that you would get a Starlet loaded. Now, if you increased this horsepower and lightened up some of the weight on it, it would be a very, very good air show and competitive airplane. I guess Lou didn't mean it to be that way, though. It should be real good with a 150, aerobatic-wise. The airplane feels very solid structurally. I don't seem to worry at all about the tail or wings, as everything seems to be very solid. And in doing the aerobatics, you don't have the feeling of anything flexing or giving, like you do in a lot of airplanes ... a very solid feeling. Incidentally, one of the pleasures of flying this airplane is taxiing. It is a real thrill to taxi the airplane ... it honestly is. You can see everywhere you are going because of the visibility. It has excellent visibility on the ground. You can taxi in between airplanes; turn around, and without taking up any room head back the other way. It's fun just taxiing it.

The above story is from http://www.airventuremuseum.org/collection/aircraft/Stolp%20Starlet%20Specific%20History.asp#TopOfPage

STOLP "STARLET"

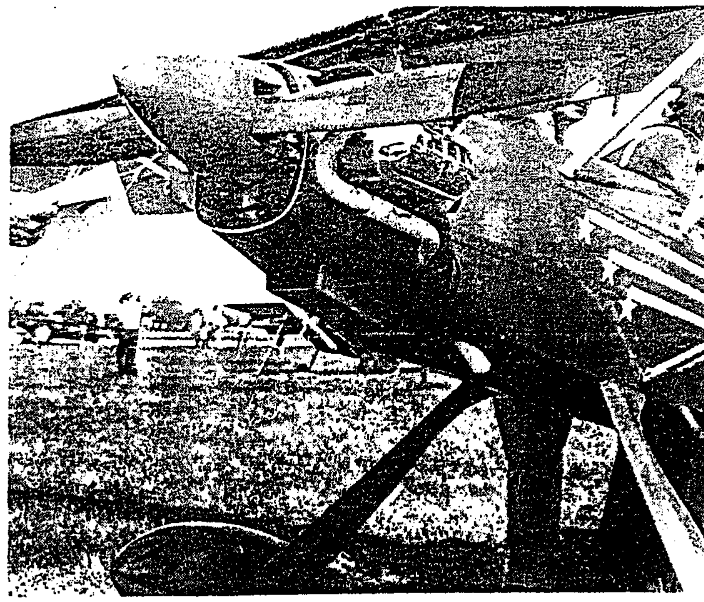
PICTURED ON this month's cover is the popular Stolp "Starlet" that has appeared at several events and was on display at the Rockford EAA Convention.

Judging from the crowds around this Volkswagen-powered jewel, a great deal of interest was shown.

Lou Stolp, the designer of the "Starduster" aircraft, says drawings are not yet available until such time as all flight testing and modifications from the original concept are thoroughly completed and tested, and the drawings will be accurate and complete so that the amateur builder will have no difficulty in building the airplane.

Stolp stated that, as he flew his "Starduster Too" back to Rockford this year . . . his first trip back . . . he looked down upon the many cities, towns and villages, and thought how difficult it must be for the many builders or potential builders to locate the many, many items needed in construction of an airplane, and that the time spent finding all these items must almost equal construction time. So he plans to make a complete kit of all materials needed to construct the "Starlet" available, much the same as Ed Heath did in the '20s and '30s.

The present "Starlet" sports an M-6 airfoil. However, a new set of larger wings is nearing completion and is utilizing a CYH airfoil, with a span of 25 ft. and 87 sq. ft. of wing area. The present aircraft has been flown five hours; however, an improved conversion of the 2,000 cc.



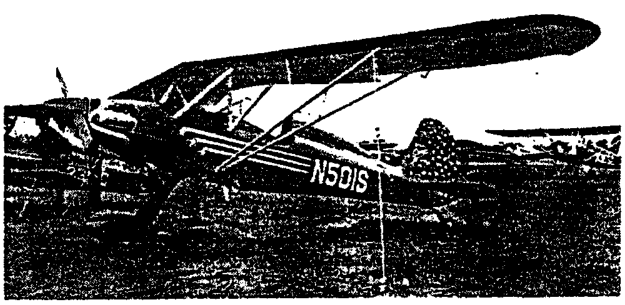
The Volkswagen conversion in the "Starlet" is efficiently cowled and offers a slim profile which is carried all the way along the fuselage.

VW engine is being prepared by Rev. Masters, having a special steel tapered crankshaft which will improve the mounting of a propeller over the standard modification to the VW automotive engine. The engine will be completely balanced and use a ground-adjustable steel propeller.

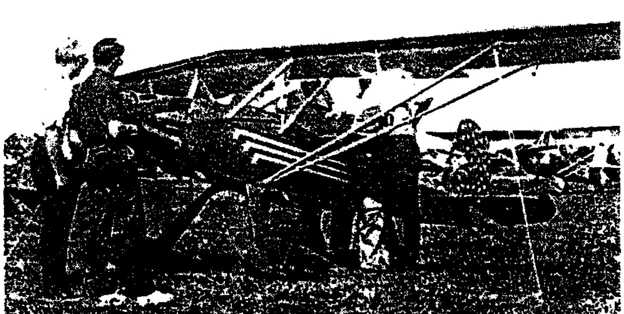
Empty weight will be 475-480 lbs., and it will cruise at 90 mph. The fuselage and tail group is of steel tube construction, wings have spruce spars with the ribs constructed of ¼ in. x ¼ in. grooved spruce cap strips using a 3/32 in. birch plywood web. The landing gear is of steel tubing with a coil spring compression spring. However, Stolp is looking into the possible use of Ford truck engine mount rubbers.

The cockpit is roomy . . . 20 in. wide . . . with plenty of leg room which should be of interest to some of us larger-size pilots. The tubing in the rear of the cockpit has been curved so as to fit a back cushion or permit the use of a back-pack parachute.

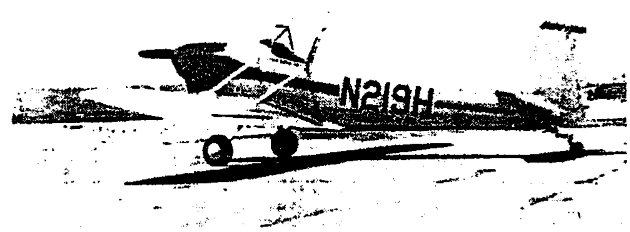
It is refreshing to see the appearance of new designs with originality as well as the development of newer or improved power plants.



Gangly as a newly foaled colt, the new Stolp SA-500 "Starlet", N-501S, brings a new look to the homebuilt aircraft field.



Easily the most popular attraction on the field at Rockford, the Stolp "Starlet" was always hidden from view by onlookers.



"Playboys" are among the oldest of the designs available to the aircraft builder, but they are still being completed regularly. This fine example of the Stits SA3A, N-219H, was completed by Gray A. Harmon, EAA 23305, of 14944 San Ardo Dr., La Mirada, Calif., and mounts a 75 hp Continental C-75. All in all, it's a creditable job.

BUILDING THE STARLET RIBS

READ COMPLETELY BEFORE STARTING CONSTRUCTION

The Starlet rib is assembled using 1/4" square spruce cap strips which have been grooved to accept a .100 or 2.5 MM or 3/32 birch plywood web. To easily assemble these ribs, it is necessary to construct a simple fixture. Cut a piece of 1/4" or heavier plywood to a size that will accommodate the rib with approximately 2 inches extra on all sides. Carefully draw the rib outline on this wood. Glue and nail a block at least 3/4" thick to act as spar openings. Width and fore and aft positions of these blocks are important. It is recommended that they do not extend full spar depth, however, because of gluing procedure. It is acceptable to use 1/4" thick blocks on the fixtures, however in this case it will be necessary to make right and left gluing fixtures to assemble the left and right Butt and inboard aileron ribs because of the 3/4" wide cap strip.

Glue and nail blocks approximately 3/4" X 1" X 1½" long, approximately 4" apart, exactly on the upper line of the rib. Glue and nail similar blocks to the bottom of the fixture approximately ¼" away from the rib outline.

Next, fit the trailing edge of the rib cap strips so that top and bottom caps form a good fit where they join. Cut the cap strips to slightly over full length at the leading edge. Soak the forward portion of the cap strip in hot water so they will conform to the rib outline more easily. Mix a reasonably small quantity of Weldwood Plastic Resin Glue or equivilant. This is easily applied with a squeeze bottle similar to the type women's hair coloring comes in. With this type of bottle it is easy to apply the glue to the groove in the cap strip. With glue apply the cap strip, assemble webs, and install in gluing fixture.

Glue pressure is applied between the rib cap strips and the upper blocks by using small hardwood wedges. These are most easily obtained by using a spring type clothes pin. Remove the spring and discard it, thereby obtaining 2 wedges from the wooden portion of the clothes pin. If block spacing is too wide, two wedges may be used. Of course, it is recommended that the fit of each rib be tested prior to final assembly. This test is accomplished with the cap strips wet as removed from the hot water. Let the rib set for at least 30 minutes to allow the cap strip to take a set.

It is recommended that the fixture be waxed and care should be taken not to use excessive glue because of the possibility of the rib gluing itself to the fixture. When the ribs are assembled, it is recommended that they not be inserted to the bottom of the fixture. If they are lined up with the top of the fixture blocks, thereby leaving a ½" gap to the bottom, the possibility of the rib gluing itself to the fixture is practically eliminated.

If the fixture blocks aft of the rear spar are nailed only, it is possible to make all of the ribs on one fixture by changing their position and starting with the largest rib first. Because of the number of ribs involved and because of gluing time required per rib, it is recommended that several fixtures be constructed.

Leading edge reinforcement and aileron slot reinforcement may be added after removal from jig. Trim forward end of cap strip after removal from jig. Note also that the butt rib uses 3/4" X 1/4" cap strip and the inboard aileron ribs use 3/4" X 1/4" aft of the rear spar, which steps up the cap strip in size. Also these are made in left and right parts.

Additional doublers such as nose reinforcements, trailing edge reinforcements, etc. are glued to appropriate place after the ribs are removed from the jig. These parts may be clamped only or ¼" 20 gauge nails may be used to produce gluing pressure.

Mark out the rib outline on the leading and trailing edges and using a disc sander or equivalent, grind the rib to proper contour.

FUSELAGE

The fuselage is constructed of welded 4130 chrome moly seamless steel tubing. It is necessary to construct a simple jig. There are many ways to do this. We will describe one. The basic fixture is made of 1/2" or 3/4" plywood. Using a 4' X 8' sheet, cut it into two 2' X 8' pieces. Using a splice plate on one side, about 12" X 24", (cut off the end of one of the 2' X 8' pieces) glue and nail the 2 long pieces together to form a piece 2 feet wide and 14 feet long. Now, lay out the fuselage sides from the measurements on your prints. The front (or firewall tube) indicated station 0, is the firewall and entire tube is behind it. The others are laid out on center line, so allow for it. Some time can be saved if the top longeron line is laid out one half of the longeron width from the edge. Carefully lay out all of the side tubing lines.

Add one half of the longeron size to the outside edge of the lower longeron and draw a line. Let the aft end extend an inch or so beyond the tail end. Carefully cut the plywood to the dimensions of the outside lines. Cut some 1½" wide strips of ¼" plywood and glue and nail them to the outside of the fixture with the bottom, or down side, even with the bottom of the jig. This will give you a short "fence" around except for the tail. Skip that fence. Remembering that you have a center line drawing, add the amount to each side of the line to the size of the tube at that location. Make some wood blocks approximately 1" X 2" of 3/4" plywood or similar and, using at least two blocks on each side of each tube, glue and nail them in place. Use two blocks in each longeron bay. Using the center point of the welded cluster locations, draw a circle of approximately 3" radius. With a saber saw or similar, cut out the circles. This will enable you to weld on the wood jig.

Now that the side fixture is completed, we can start building the fuselage. Make the longerons first. The forward sections are of 3/4" X .049, so cut a length at a 30° angle on the aft end and 45° on the front to a length required to the splice. Insert a required amount of 5/8" X .035 into the 30° end, approximately 3 inches. Being careful to hold it straight, completely weld the splice. The lower longeron is similar except it will be necessary to heat the longeron to a dull red

Weld each step securely as you progress. Install the two 7/8" X .049 members at station 12½ and 21 3/4, but do not complete the landing gear truss at this time. All of the jigs and holding devices may be removed at this time.

The next step is to bring the sides together from station aft of the cockpit to the tail post. Beings that the sides were cut to equal lengths, allignment should not be too difficult. Loosely wire the tail post ends together and then with a soft flame, evenly heat the longerons to a dull red and slowly and carefully bend the tubing so as to make a reasonably straight angle to the tail post. After preliminary bending has taken place, clamp a straight piece of angle iron, approximately 2" angle is heavy enough, to all four longerons, so they are good and straight. Lightly tack weld the longerons at the aft end. If the front section was accurately done, the tail should be in allignment, however, it is good practice to check this with a string, drawn through the fuselage from the center line of the front section. Some small adjustments may be needed to line up the tail post end. To check allignment use a level across the fuselage forward section and vertical on the tail post. These adjustments are made at this time. With the tail post end vertical and in allignment, weld in the cross member and diagonals, using the same technique as in the forward section. Note that the fuselage gets shorter, but this is taken into consideration and do not attempt to allow for it. With the basic fuselage frame welded completely, fabricate and weld in the tail spring attachment.

CONSTRUCTING THE VERTICAL FIN, RUDDER AND TAIL ATTACH FITTINGS FOR THE STARLET

The tail post, which was previously installed during the construction of the fuselage, should now be accurately cut to length. Notice the measurement of the length is taken from the center line of the lower longeron, to the top of the aft side of the tail post. After measuring this distance, carefully cut the tail post length to a 45° angle as noted.

Using a piece of ½ X .035 tubing, form the 7 inch radius portion on the top end. In order to more accurately form the outside formed or curved members of the fin and rudder, it may be helpful to lay these out full size on plywood, stiff paper, or some other material, as it will serve as a guide in bending and fitting the individual parts.

When the leading edge has been formed, construct the top rib, number 6, as indicated, and, with these two parts, cut to dimension, tack weld in position. You will note the vertical fin has no offset to allow for torque or propellor effect, as this is allowed for by offsetting the engine thrust line. With the top rib and leading edge tacked in position, fit and tack weld the vertical fin rib. As this rib is constructed of 5/8 material, it will be necessary to slightly form down or flatten the leading edge to line up with the ½" leading edge.

Next, install the lower braces, as in view AA. Then, install the 3/8 X .065 bushing at the junction of the tail post and rib. If the aircraft is to use horsepower over 65, it is recommended that a like bushing be installed at the forward end of the rib at the junction of the leading edge. This will enable the installation of the second brace wire. It may be recommended this bushing be installed for future use if more horsepower is anticipated in the future, or if the aircraft is to be used for aerobatic flight. With the vertical fin checked for allignment and accuracy of dimension, weld completely at this time. Do not install the rudder hinger at this time, however.

Next, fabricate the front and rear stabilizer mounts, as well as the wheel spring mount and weld into place as indicated. Also, at this time, construct the tail brace fitting on the fuselage at section CC. If the aircraft is to be powered with over 65 horsepower or used in aerobatic flight, it is recommended a tube of the same size as the fuselage diagonal members be installed vertically down from the center line of the forward stabilizer attach fitting to the lower longeron, and a tube from this junction with the lower longeron upward to intersect with station 118 as indicated on Sheet 6.

After the vertical members have been added to the fuselage side, it will be necessary to also add a transverse member between the lower longerons. After this has been accomplished, construct and install fittings on each side to accomodate installation of a forward strut. This fitting need not go completely across, as in section CC, as it can be made in two individual parts, each having a dimension outboard from the longeron, similar to the rear fitting, and extending inboard approximately 1 inch, and being fabricated with a slight taper so it will be welded to both the longeron and the fuselage cross member. This fitting is not to be welded fore and aft outside of the longeron. The fitting to secure the tail wheel spring will be fabricated at this time.

Constructing the rudder in considerably easier if a fixture similar to the fuselage is used to secure the parts. It will be necessary to install spacer blocks under the trailing edge of the rudder, so as to establish the same center line as the tail post. Bend the trailing edge to conform with the fixture. This material is reasonably light and can be satisfactorily bent by hand or with the use of a rubber mallet.

The lower trailing edge radius may be easily done by bending the tube over a piece of pipe or tubing. Because of its small diameter, it will not flatten an appreciable amount.

Cut the rudder spar to required dimension and angle and install in the jig. Fabricate the sheet metal ribs and install in their proper position. These ribs are easily constructed with the use of a sheet metal brake. However, the bending is quite difficult to be accurately done any other way. Unless the ribs are purchased ready-bent or proper facilities are available, it is recommended your local sheet metal shop fabricate these parts.

STOLP STARLET SA500

With the ribs all in position, install the trailing edge braces of ¼ X .035 tubing, as well as the brace vertically from the tail post of 5/16 X .035 tubing. When these parts have been fabricated and fit, it is recommended they be welded completely. If any doubt exists as to their proper fit in matching with the vertical fin, it is recommended the part be tack welded, removed from the fixture, and the hinges be installed at this time. The hinges are the same as those described on sheet 13, covering the fabrication of the horizontal stabilizer and elevators. Locate these hinges in position and weld securely. The welding is done only on the vertical dimension and slightly around the corner, so to speak, to the actual bushing itself. Do not weld across the bearing face of the bushing.

Remove the temporary hinge pins and reinstall the rudder in the fixture and complete welding. It will be noticed on installing the hinge pins, it will be necessary to drill a hole in the 45° rudder rib to allow for installation of this pin. After covering, it will be necessary to cut the fabric from this small hole in order to install the upper hinge clevis pin.

The rudder horn should next be fabricated from .063 4130 sheet steel. It will be noted there is a bend on the leading edge of the rudder horn. It will probably be necessary to install the rudder horn in a vice, or similar, and heat the leading edge portion so that it can be bent. The tail wheel steering arm is of simple tubing construction and will also be bent, fabricated and welded into position at this time. This completes the fin and rudder installation with the exception of the rudder stops, which are welded to the fuselage, as indicated. They are set for a 30° rudder travel. They are to be installed at this time. Also, if navigation lights are to be installed, proper modification to the trailing edge, below rib number 4, can be made at this time.

Starlet - SA500 Plans Ordering Information

Thank you for your interest in the Starlet SA500 from Aircraft Spruce. To order plans please send back the license agreement included in this info pack, including your method of payment and billing and shipping address to the attention of Renee Gelinas at our Corona, CA location. If you have any questions prior to ordering please feel free to contact us @ 909-372-9555 or toll free at 877-477-7823. Again, thank you for your interest and we look forward to serving you soon.

Regards,

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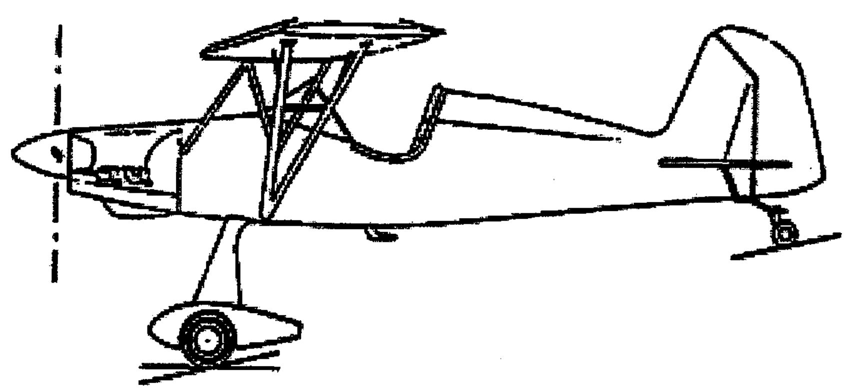

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B. I will not allow another party the use of these drawings and manuals to build a second airplane or part thereof.

C. I will not transfer these drawings to another party without prior approval of Aircraft Spruce & Specialty Co.

D. I will not allow these drawings, manuals or instructions to be duplicated.

E. I will not use or permit the use of these drawings in the design, construction or manufacture of another aircraft.

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