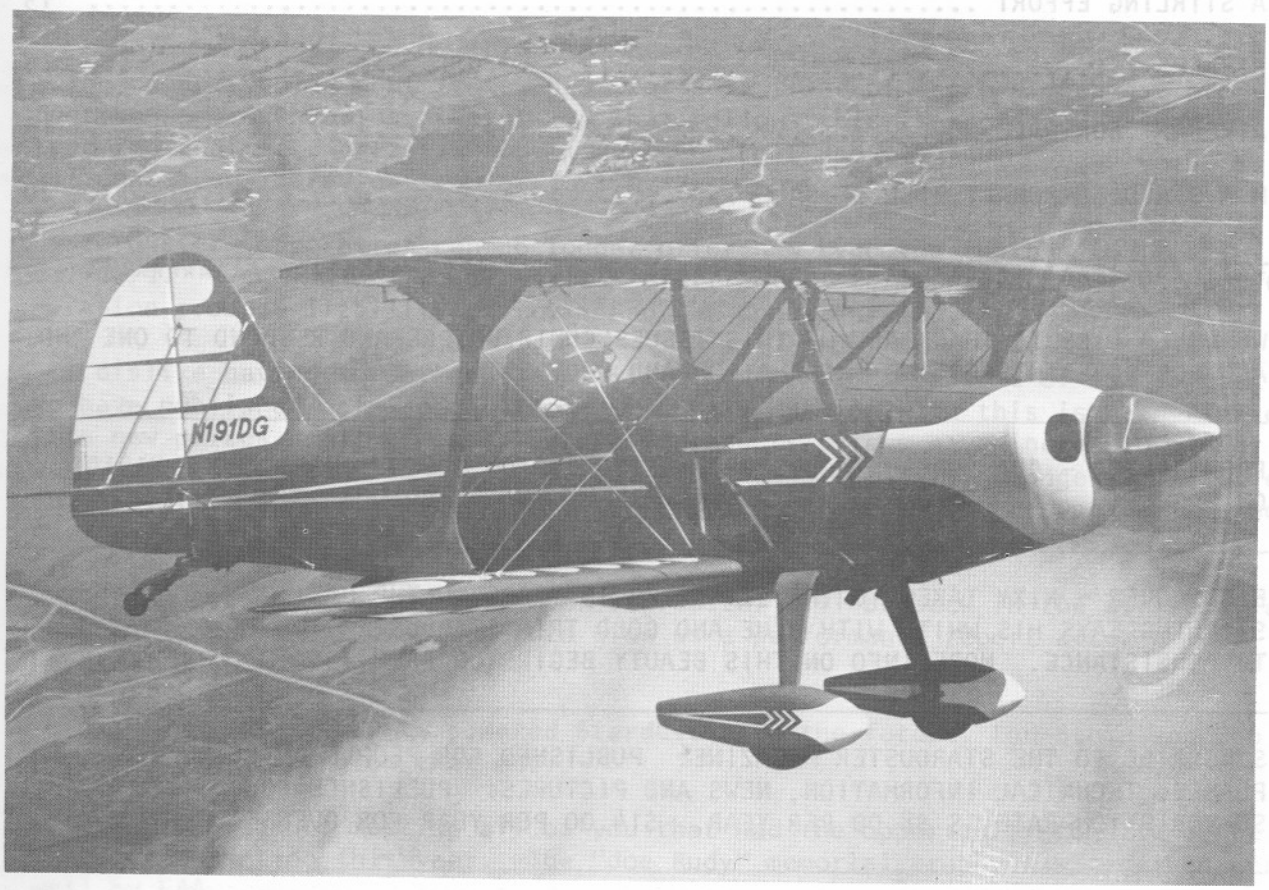
Starduster



Dedicated to the ACTIVE Homebuilders

OCTOBER 1983

OCTOBER 1983

THIS MAGAZINE USES MATERIAL SUBMITTED BY IT'S READERS.
SOME ARTICLES OR STATEMENTS MAY NOT BE IN AGREEMENT
WITH STARDUSTER CORPORATION OR IT'S EDITOR.

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WE WOULD LIKE TO THANK ALL OF THIS ISSUES CONTRIBUTORS AND RESPOND TO ONE AND ALL FOR SOME INTERESTING INFORMATION AND PHOTOS.

FRONT COVER - OUR SUPER STARDUSTER PILOTED BY TOM GREEN. MORE ABOUT N191DG ON PAGE 11.

BACK COVER - N1XY TAKES TO THE SKY AFTER 15 YEARS IN THE MAKING. OWNER JOHN STIRLING SAYS HIS WHITE WITH BLUE AND GOLD TRIM STARDUSTER TOO IS A MONUMENT TO PERSISTANCE. MORE INFO ON THIS BEAUTY BEGINS ON PAGE 13.

SUBSCRIBE TO THE STARDUSTER MAGAZINE. PUBLISHED FOR PEOPLE BUILDING OUR AIR-PLANES. TECHNICAL INFORMATION, NEWS AND PICTURES. PUBLISHED FOUR TIMES A YEAR. SUBSCRIPTION RATE IS $8.00 PER YEAR. $14.00 PER YEAR FOR OVERSEAS MAILING.

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

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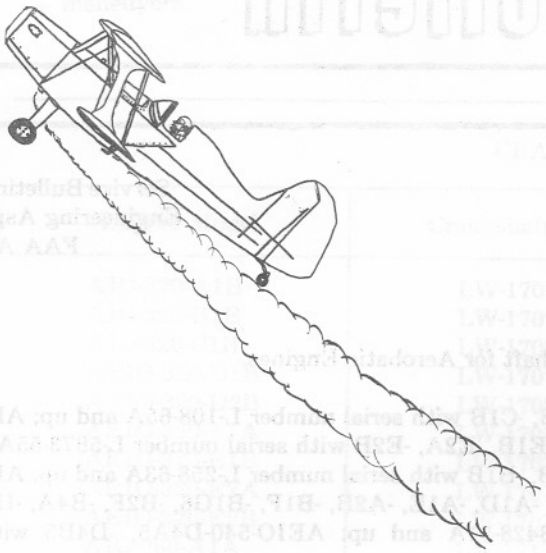
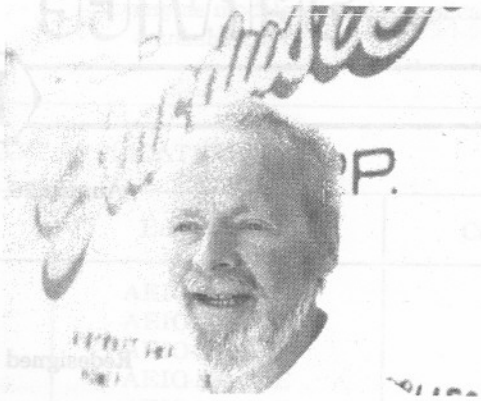




The economy being what it is, has started a trend of increased sales, production and inventories. Naturally what follows this is increased prices. Lycoming Engines, Hartzell Propellers, the steel and aluminum companies have all announced increases from 5% to 17%.

Starduster Corporation can no longer offer new Lycoming engines to it's builders. Lycoming now requires it's distributors to maintain a $3,000,000.00 aviation product liability policy. And the annual premium is prohibitive

I dislike having to say that you will find increases in some of our prices. We have published a few pages from our supply catalog with this issue. Please note new prices. All of our fiberglass products prices have increased along with most of our fuel tanks. Steel and aluminum prices will change very little. There will be a fairly large increase in spruce products. Our supplier has not, not, as of yet, informed us as to how much.

Now for the good news. The Super Starduster will be back in the air soon, and hopefully we can get Dick Green to give us a performance report after a few hours.

There may be another VW powered Starduster in the future. Lou Stolp and Bob Loveless are working on that one.

It was a pleasure meeting all of you that had the opportunity to attend the OSHKOSH convention this year. The "Joe Rudy" memorial trophy was received very well by EAA.

Maynard Ingalls of San Jose, Ca. was the winner of the designer award for 1983 and his name is also on the trophy. He also won reserve grand champion. His Starduster Too is absolutely beautiful.

AVCO LYCOMING DIVISION
WILLIAMSPORT, PENNSYLVANIA 17701

Service Bulletin

L

DATE: August 26, 1983

Service Bulletin No. 465
Engineering Aspects are
FAA Approved

SUBJECT: Redesigned Crankshaft for Aerobatic Engines.

MODELS AFFECTED: AIO-320-A1B, -B1B, -C1B with serial number L-108-65A and up; AEIO-320-D1B, -D2B, -E1A, -E1B, -E2A, -E2B with serial number L-5873-55A and up; AIO-360-A1A, -A1B, -B1B with serial number L-258-63A and up; AEIO-360-A1A, -A1B, -A1B6, -A1D, -A1E, -A2B, -B1F, -B1G6, -B2F, -B4A, -H1A with serial number L-23428-51A and up; AEIO-540-D4A5, -D4B5 with serial number L-22157-48A and up.

Remanufactured engines shipped after January 26, 1983.

NOTE

Engine models listed above will be equipped with the new heavy flange crankshaft commencing with the listed serial number. Engines with serial numbers below the listed serial number are equipped with the lighter flange crankshaft and are subject to the inspection requirements listed below.

TIME OF COMPLIANCE: Inspect crankshaft flange every 25 hours of operating time: Replace crankshaft at overhaul or earlier at owner's discretion.

It has been determined that excessive stress from aerobatic maneuvers can cause cracking and the eventual failure of the crankshaft propeller mounting flange. To reduce the risk of propeller flange failure, Avco Lycoming has re-designed the propeller mounting flange on crankshafts assembled in engines built for installation in aerobatic aircraft. These new crankshafts incorporate a thicker flange. In addition, the lightening holes are omitted, where applicable. Operators of Lycoming powered aircraft involved in aerobatic maneuvers are urged to install this new crankshaft at the earliest convenience.

To avoid propeller flange failure on aerobatic engines utilizing a crankshaft with lightening holes and thinner propeller flange, the following inspections must be accomplished:

1. After every 25 hours of operation, the propeller and starter ring gear support must be removed and the propeller mounting flange must be visually inspected. Use a 10X power magnifying lens with adequate light. Inspect the entire flange area from the crankcase oil seal forward. Pay particular attention to the rear face and fillet radius of the propeller flange. See Figure 1. Figure 2 shows an area of the propeller flange with cracks developing.

2. After 200 hours of operation and at 100 hour intervals thereafter, the propeller mounting flange must also be examined with portable magnetic particle inspection equipment. A record of each visual and magnetic particle inspection should be entered in the engine logbook.

NOTE

Lycoming does not recommend using the dye penetrant method for this inspection.

Crankshafts with light weight flanges that are removed from Aerobatic engines at overhaul, or for the purpose of installing a new heavy flange crankshaft must be scrapped. It is not permissible under any circumstances to reuse any light weight flange

crankshaft that has been subjected to aerobatic maneuvers.

The following table matches Lycoming Aerobatic engine models with the applicable new heavy flange crankshaft P/N.

CRANKSHAFT APPLICATION

Engine Model	Crankshaft P/N	Engine Model	Crankshaft P/N
AIO-320-A1B	LW-17073	AEIO-360-A1B	LW-17176
AIO-320-B1B	LW-17073	AEIO-360-A1B6	LW-17258
AIO-320-C1B	LW-17073	AEIO-360-A1D	LW-17176
AEIO-320-D1B	LW-17073	AEIO-360-A1E	LW-17176
AEIO-320-D2B	LW-17072	AEIO-360-A2B	LW-17180
AEIO-320-E1A	LW-17073	AEIO-360-B1F	LW-17177
AEIO-320-E1B	LW-17073	AEIO-360-B1G6	LW-17259
AEIO-320-E2A	LW-17074	AEIO-360-B2F	LW-17178
AEIO-320-E2B	LW-17075	AEIO-360-B4A	LW-17144
AIO-360-A1A	LW-17179	AEIO-360-H1A	LW-17177
AIO-360-A1B	LW-17179	AEIO-540-D4A5	LW-17653
AIO-360-B1B	LW-17179	AEIO-540-D4B5	LW-17653
AEIO-360-A1A	LW-17176		

NOTE

New heavy flange crankshafts are subject to a portable magnetic particle inspection every 600 hours. Record compliance with this inspection requirement in the engine logbook.

NOTE

This bulletin is being issued in some instances, prior to the availability of parts. Before steps are taken to replace the crankshaft, contact your nearest Lycoming distributor to check for availability of specific crankshaft.

NOTE

Affect of this re-designed crankshaft on weight and balance is negligible.

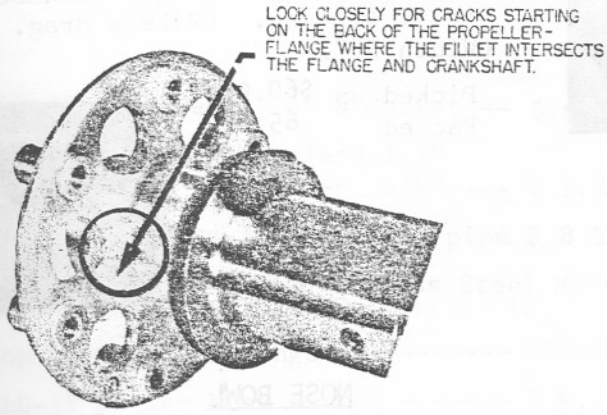


Figure 1. Rear View of Propeller Mounting Flange Showing Area of Lightening Holes

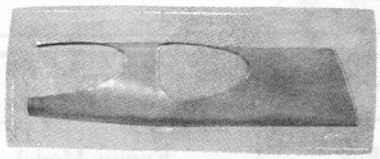
Figure 2. 10X magnified view showing appearance of area cracked due to abnormal loading imposed on the propeller flange during periods of unauthorized maneuvers.

ECO 21818 - 21818A - 21818B. These numbers for Avco Lycoming reference only.

FIBERGLASS

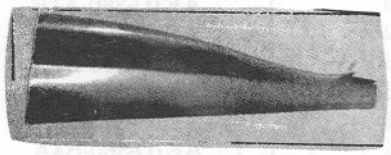
COCKPIT COWLING

Starduster Too
Picked up $80.00
Packed 90.00



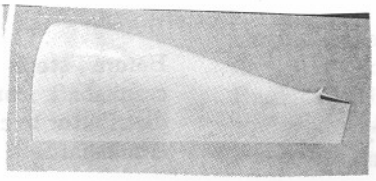
TURTLEBACK

V-Star
Starduster
Starduster Too
Starlet
Picked up $85.00
Packed 95.00



TURTLEBACK

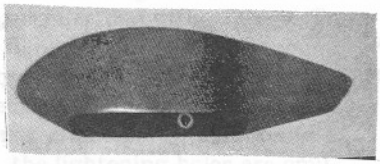
Acroduster Too
Picked up $85.00
Packed 90.00



WHEEL PANTS

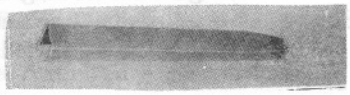
5.00 x 5
6.00 x 6
7.00 x 6

Please specify size.
Picked up $95.00
Packed 100.00



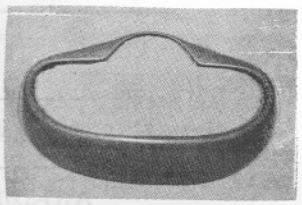
AILERON SLOTS (Set of 4)

Starduster Too
Picked up $45.00
Packed 48.00



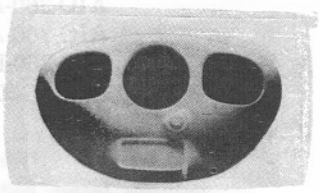
NOSE COWLING

Starduster
Starduster Too
Acroduster Too
Picked up $60.00
Packed 65.00



NOSE BOWL

Like the original Starduster One. Cut out below spinner may be used for either intake air or oil cooler. Has starter bump. For Lycoming engine.
Picked up $60.00
Packed 65.00

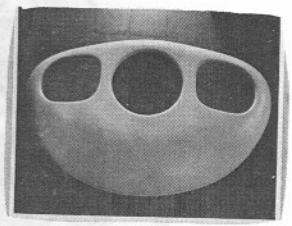


NOSE BOWL

New smooth three hole Nose Bowl. It has been used on our Acrodusters for several years, and we prefer it to the more traditional open bowl, sported by most Stardusters.

Reasons are (1)Stronger because of center bracing. (2)Less drag. (Width 35")

Picked up $60.00
Packed 65.00

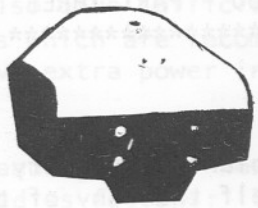


NOSE BOWL

New wider smooth three hole Nose Bowl. Same as above, except 2" wider. (Width 37")

Picked up $65.00
Packed 70.00

FUEL TANKS GAGES DRAIN VALVES



AIRCRAFT TYPE	MAIN STANDARD	MAIN INVERTED	CENTER SECTION
STARDUSTER TOO (SA300)		$305.00	$215.00
STARLET (SA500)	$155.00		$185.00
ACRODUSTER TOO (SA750)		$305.00	$215.00
V-Star (SA900)	$155.00		$185.00
PITTS		$150.00	
STEEN SKYBOLT		$165.00	
VP-2	$185.00		

(All Fuel Tamks are HELI-ARC welded and pressure tested.)

FOR AEROBATIC SHIPS-Direct reading, mechanical Barrel Gage, installed in Fuselage Tanks only --------add------ $30.00

Rochester Barrel Gage
Fits SA300 & SA750 Fus. Tanks· $30.00

Clear Plastic Tubing for sight gage.
1/4" ID x 7/16" OD ---------- .40/ft.

FOR FUEL TANKS WITH SENDING UNIT INSTALLED
---add---- $30.00

WELD-IN Type Neck, Cap & Gasket -- $19.75

WELD-IN Type Tank Outlets 1/4"
or 3/8" --- $ 1.90

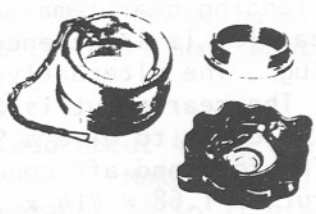
Finger Strainers-1/4' to 3/8" pipe $ 8 95
Silver soldered Stainless Steel Mesh.

Flop Tube and Fittings ---------- $20.00

WELD-IN Filler Neck Flange ------- $ 5.95

WELD-IN Flange for Flop Tube ----- $ 2.50

BARREL Gage Flange ---------- $ 3.95



Filler Neck-to-Cowl GAsket
Fits all Starduster Aircraft---- $ 1.50

CURTIS DRAIN VALVES

Quick opening brass drain valves for aircraft oil or fuel systems. A slight twist opens valve. No safety wire needed in closed position. FAA approved for use without safety wire. Stainless steel spring holds valve in closed position. Valve has synthetic rubber seal suitable for temperatures up to 225 degrees F.

PART NO.	THREAD	MATERIAL	SLOT
CCA-1550	1/8" NPT	Brass	Straight
CCA-1600	1/4" NPT	Brass	Straight
CCA-1650	3/8" NPT	Brass	Straight
CCA-1700	1/2" NPT	Brass	Straight

SAF-AIR QUICK DRAIN VALVES

PART NUMBER	THREAD SIZE	HOSE END
CAV-110	1/8 NPT	(NONE)
CAV-160	1/4 NPT	(NONE)
CAV-170	7/16-20 NF-3	(NONE)
CAV-180	3/8-24 NF-3	(NONE)
CAV-110 H-4	1/8 NPT	1/4"
CAV-160 H-4	1/4 NPT	1/4"

Curtiss Part No.	Price	Saf-Air Part No.	Price
CCA-1550	$ 5.75	CAV-110	$ 4.32
CCA-1600	$10.15	CAV-160	4.77
CCA-1650	$12.53	CAV-170	5.46
CCA-1700	$13.98	CAV-180	5.46
		CAV-110H4	5.63
		CAV-160H4	5.69

PRICES IN THIS CATALOG, SUBJECT TO CHANGE WITHOUT NOTICE

RADIAL ENGINE STARDUSTER TOO - PART THREE

****

Dear Bill and fellow Stardusters,

I assume that now you've read Crash's Bi-plane Dictionary and decided you can come up with a better flying airplane yourself than any of the 40 odd biplanes described, you are already looking for a radial engine, prop and mount - that's good! I'm real proud of you all!

Our last issue delt on types of engines, basic fuselage structure, with drawing showing dimensional changes. The drawing was purposely made confusing to discourage those of you who would improvise when they came to a section of the plans which was (1) unbelievable (2) fantastic (3) vaque, or (4) just plain stupid!

Do not improvise! This plan was patterned after the latest I.R.S. Income tax form which is just different enough from the previous year to foil any who might copy off the prior year's form to keep from thinking!

In other words, when in doubt, don't. If you have a question just drop me a line in care of the Starduster and your question will be answered in the next issue where all can see. If it's a matter of like yesterday, Bill will give you the address where Crash is chained to the drawing table and we'll get your answer right out. And I thank you for the self addressed stamped envelope. And that's the truth!

You should have enough information from the radial fuselage drawing so that Bill and Hank can cut and quote tubing prices in a kit.

In the meantime, please notice some obvious changes to the basic structure. Refer to the top truss view stations 51 and 65, and side truss station 76 to 65. This is a beef-up to handle high "G" landing loads, and to strengthen the rear cockpit against inward crumple in case of crash. This is for your protection, use it. Remember your glide is steeper with a radial engine so you don't have as many choices to set-her-down in that ideal spot in an engine-out situation, station 51 to 83 is the weakest point of the top longeron structure as it's halfway from the tailwheel to the main gear and also the longest didtance between stations, plus it's where you sit and that's enough said! Besides, the diagonals behind the instrument panel make a good hand hold for a Freddy Lund Roll. (Rolling 360 turn). The ship will take this manuever as it is not a violent load on the airframe. The tailwheel load on my empty airframe is 130 pounds in 3 point position and I have added one extra leaf to handle the load without permanent de-formation in the tail spring.

The main landing gear remains the same as the standard "Too" except as follows: The main gear leg is lengthened to 38½" -2" od .065 stuffed with a full length ash-wood plug. The alternative to this would be to go to the next larger wall thickness. The rear strut is 2.360" x .065 (streamlined) and this is also perportionately longer to give a 9" forward sweep from front strut fuselage station to axle. The fore and aft connecting tube is 3/4" x .049. The landing load tension strut is 1.68 x 714 x .065 or nearest equivalent. Don't go smaller as a crosswind landing could fold it under you. The transvers tube upon which the shock cord is attached is 11/8" x .072. *Go one size heavier on attach fittings than shown on standard "Too" plans. Heavier is you wish, these are heavily loaded.

Go to series III Cleveland wheels, (1800 pounds each) static load or the 2500 pound size if possible. An extra thick brake drum will give extra anti-fade brake power and also give sufficient tire clearance to the brake on large size tire installations which are recommended. Also make your brake pedal 3" longer than normal to give extra power in a hurry! Heavier rudder cables are also needed.

So much for the landing gear. Now for the center section cabane struts! These struts are modified as follows: The fire wall station being 5" aft of normal will necessitate a more vertical angle on the front strut. Make this strut so that the finished product gives 1 positive incidence, not 0 as shown on the plans! The radial biplane requires this change so it won't fly in a "mush" attitude! You should also pick 4 or 5 mph by doing so as it eliminates the decalage incorporated in the original design. This is good and bad. The bad is that the stall is more abrupt when it does occur. The good is the top and crusing speed is increased, the airplane holds speed longer in up and around manuevers, and the stalling speed is actually lowered. When you drag two wings thru the air at different angles of attack, the mean airfoil changes and the chord gets thicker! Thus you defeat the purpose of the designed airfoil which in this case is a (near) M-6 which is the most beautiful ever used, and time proven to have a very wide speed range with very low drag. Look at the Rearwin Sportsters, T-Crafts, Lairds, etc. all of which used it. (Porterfields too!)

We are assuming that all you radial Stardusters have enough moxie to not get the airplane in a low-slow condition where you would need decalage to get you out of trouble. After all, we are not building a J-3 Cub! In other words you either have a high performance biplane or you have a primary trainer. Take your choice!

Also, and this is a touchy point, visibility is not good (forward visibility that is) in a mush condition in this airplane cause you got a lota engine up front. Nuff said!

Also (again) go to the next larger size on the wall thickness of the forward cabane strut and the rear cabane strut! The O.D. can remain the same, but the intermediate strut must go to the next size wall and O.D., this is very important and do not omit!

Next the transverse or the "V" strut or what is called the "roll" strut must also go to the next heavier O.D. and wall thickness. If this strut ever goes you write of the airplane now!

One more wing strut is affected, that being the "I" struts or "interplane" struts. Remember to ad 1 incidence here too. We here agin go to the next heavier wall and O.D.,existing strut is a 2 3/8"x1"x.049 with 5/8"x.058 diagonals, and or stuff the strut with an ash or oak dowl or plug (the whole strut assembly gets beefed). The wings should handle the increased power with a minimum of changes shich we will discuss next issue. Plan on using .125 wall butt plates on all front spars. We will also beef up the tail some what, which is no big deal work-wise, but remains a must.

Before we leave the fuselage discussion, lets add about 4" to the control sticks, leave a 1" clearance to the instrument panel. Make a simple over lap bolt on extension. You will need this extra leverage! Also it gives it "a big ship feel".

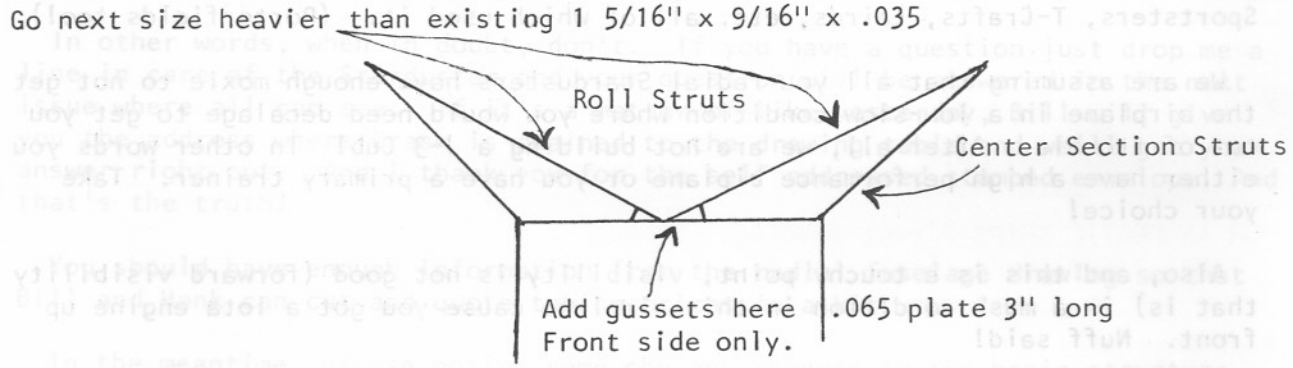
All right, mess! Engage brain and lets stop fooling around! I want to see those phone lines burning up between you all and home perch at Fla-Bob! You may as well start riding behind a radial engine while they are still available! It is only then that you can learn what biplanes are all about. Ah! I can

hear that Kinner now! Brakita -- brakita - brakita - brakita - brakita!

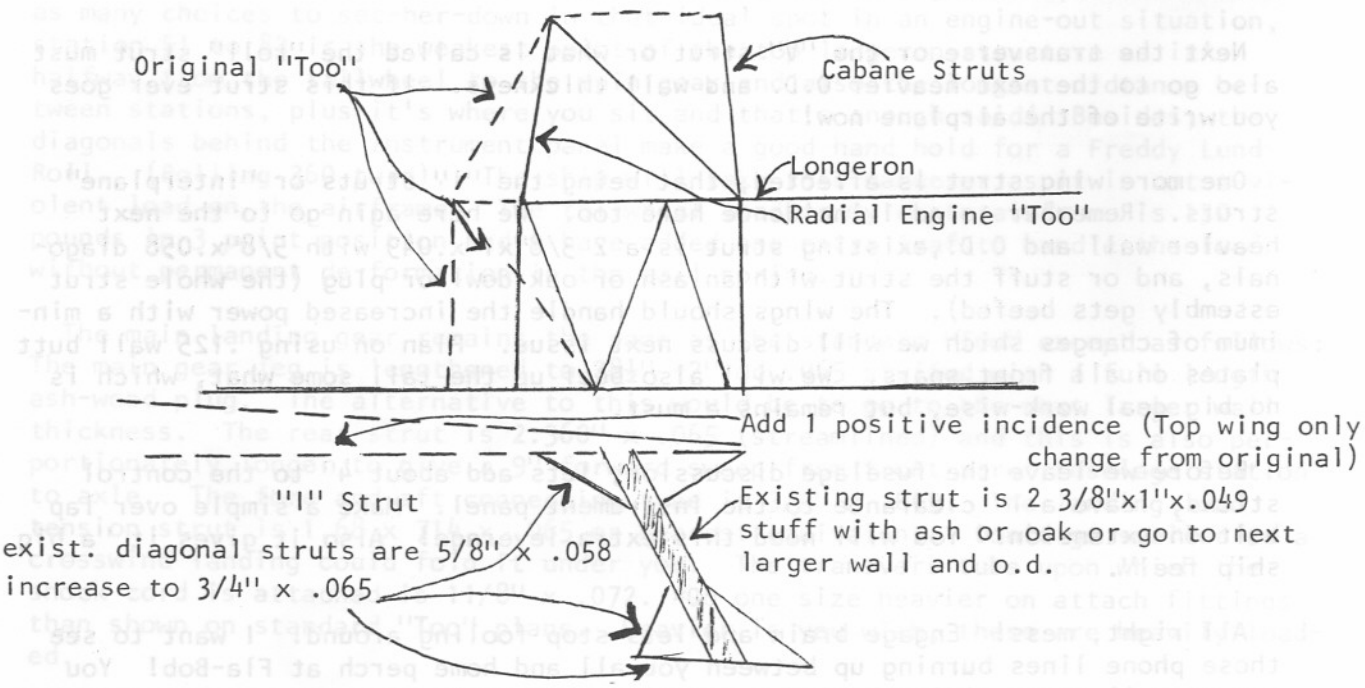
Till next time ..... Don't take any wooden propellers!

Sincerely, "Crash"
Oldest Flying Chicken

* 1 Correction to fuselage plan bottom truss top view. Change 1" .072 to read 1 1/8" .072 landing gear truss station 13. The landing gear attachment fittings look real good on the standard "Too", but for those of you who occasionally make a belly whopper, I would go to the next size end plate (s) on the front and rear longeron attachment fittings. The side wall is mostly a spreader piece and should be ok.



Add 10 positive incidence at front strut. (Top wing only. Only change from original)



ATTENTION STARDUSTER TOO OWNERS

Our freinds across the pond need help. Frank Holmes in London, England is trying to get approval to build an 10540 powered Starduster. Well it seems they (the English Feds) feel that a Starduster Too can only be powered by no more than 150 hp. This of course is obsurd.

I have flown 260 hp Stardusters myself so I know differently. Anyway, what Mr. Holmes needs from us is all the information and photos he can get.

We at Starduster are providing the original engineering data which clearly states the airframe can handle from 150 to 260 hp. engines.

If you would please send copies of your FAA certification for your aircraft, especially those powered by 10540 Lycomings and copies of your log book entry and FAA sign off to Mr. Holmes, your assistance will be greatly appreciated.

Frank Holmes
Huntara House
41 Latimer Road
London E7 OLQ

TELEX 8953244

LONDON 534-6456

ATTENTION ACRODUSTER TOO OWNERS

Dear Bill,

In your April '82 edition of the Starduster magazine, you published a letter on my behalf explaning what is required for the certification of a homebuilt aircraft in Australia. To date I have had no feed-back from your side and so once again I ask any Acroduster Too owners who have aircraft which have flown one hundred hours or more, if they would please forward to me a photo copy of the page in their log book showing that their aircraft has completed the required time. If I am able to produce six of these copies it will make the job of getting the aproval much easier.

I have enclosed fourteen dollars to renew my subscription to your magazine.

Please note new address:

Yours Faithfully,
Jim Gumley
10 Gillam Place
Karratha W.A. 6714
Australia

SUPER STARDUSTER

By Don Dwiggins

Fond du Lac. Wis. is the IN place for aerobatics, as illustrated by the EAA/IAC International Aerobatic Championships to be held there Aug.8-12. There you can see the newest wonder planes in action, driven by the worlds hottest pilots, who spend half there lives flying upside down, sideways, or any which way they can. All are trained to do things the hard way and make staying inside "The Box" look easy.

Pilots accustomed to roaming the beautiful skies of America would feel claustrophobic while flying the Box, a hunk of sky 1000 meters (about 3300 sq. ft.); the topside altitude limit is 1000 meters and the lower altitude limit is 100 meters. All competition aerobatics must be flown within the Box's parameters. To stick a wing or nose outside the Box costs you penalty points. A little J-3 doing wingovers and loop-de-loops can pretty easily fly within the Box, but for a 200 mph bomb, it's a real challenge!

One man who is quite familiar with the Box is Continental Airlines pilot Dick Green. He has flown competition aerobatics for the past two years in a sleek little Acroduster Too, powered by a 260 hp IO-540 Lycoming, and while his maneuvers were perfect, the Box just wasn't the right size. His speed while doing fancy whifferdills caused him to need more room, or a more agile ship that could handle the velocities he wanted without any excursions beyond the prescribed limits.

That's when he and his dad, Tom Green, a retired Continental captain, decided to work with Bill Clouse, new president of Stolp Starduster Corp. in Riverside, Calif. in order to see if they could come up with something new. They did. The result of their cooperative effort is the Super Starduster, a variant of the earlier Stolp Starduster SA-100 single plane aerobatic bomb.

Although officialy registered with the FAA as a "Starduster SA-100 Modified" it was so superior to the old SA-100 that they settled for the new name, Super Starduster.

The fine line of sport planes that was originated by Lou Stolp at Riverside's Flabob Airport has an interesting history. These aircraft include the SA-100 Starduster, SA-300 Starduster Too, the single seat SA-500 Starlet, the aerobatic SA-900 V-Star, the SA-700 Acroduster, the SA-750 Acroduster Too and now the Super Starduster.

Stolp Starduster Corp. was founded to market amateur plans, components and materials for the light single-seater SA-100. (The "SA" stands for Lou Stolp and George M. Adams, its designers.) SA-100 first flew back in 1957; plans for this model were discontinued in 1972. Recently Clouse also discontinued selling plans for the Acroduster 1, in anticipation of turning loose the Super Starduster.

The Stolp Starduster Corp. also markets plans for a replica of the Fokker D V111, the G/B Special designed by Glenn Beets and the Knight Twister, designed by Vernon Payne.

For power, a 200-hp Lycoming IO-360 A1A was installed, swinging a constant speed Hartzell aerobatic propeller. This provided a top speed of 200 mph IAS, the magic number for 1 mph, and a 24-square cruise speed of 180 mph indicated. The Super Starduster stalls at 55 mph when you first feel the nibble, and can

climb like a homesick angel at an easy 3000 fpm.

Tom Green likes to get off the deck in 200 feet, and land in 700. He says the max range is better than 500 miles; with 30 gallons of avgas in a fuselage tank, he allows 27 to burn, plus 3 gallons for reserve.

It was a few years ago that the Greens and Clouse began the Super Acroduster project. Clouse was responsible for building the fuselage, while Tom Green built the four wing panels. In all they spent some $45,000 on the project, and I have never seen a more lovely aircraft, painted red and white.

The Super Starduster airfoil is a modified Osborne A-1 symmetrical with a 38-inch chord and a 4-inch thickness, for a thickness/chord ratio of 9:5. Theres no dihedral or incidence to the wings, which sweep back 6 degrees for a more rearward Cp. The wing spars are of solid spruce, the ribs are birch and the covering is Dacron. The symmetrical ailerons, as stated before, are servo-boosted. Fuselage construction is of steel tubing and fabric, aluminum and fiberglass, stressed to 16 G's.

The tail unit is also built of steel tubing, fabric covered, and uses fitted elevators instead of all moving ones. It uses ground adjustable trim, servo-boosted on both rudder and elevator.

Landing gear is fixed, using spring steel for shock absorbtion. Wheels are Cleveland 500/5, the tires Lamb 11.4/5s. Cleveland brakes are installed, and the wheels are covered with specially designed fairings.

On the left side of the fuselage behind the cockpit area is a door for access to the 12-volt, 30-amp Globe gel-cell battery, (it won't leak inverted) and an APU attachment.

Behind the pilot's head position is a baggage compartment that holds a load of 2 cu. ft. Inside the cockpit you won't find any fancy IFR gauges or electronic equipment, just a simple little Terra 720 comm radio to get in and out of controlled airports. Any extra goodies would add extra weight that you don't need when flying compitition aerobatics!

The Super Acroduster's dimensions make it seem about half the size of a Piper Cub, with a wingspan of only 19 feet 6 inches and a width of 16 inches. The elliptical wings, which have an average chord of about 38 inches, have an aspect ratio of roughly 9:1. The fuselage is oval-shaped, 30 inches wide and 36 inches high at the firewall. The plane stands 7 inches tall, it's elevator span is 8 feet, wheel track width is 54 inches, and wheelbase is 108 inches. The 76-inch propeller blades clear the ground by a spare 6 inches.

At press time Dick Green had flown the first 25 hours on the Super Starduster along with his dad, and was set to compete in a regional IAC meet at Thermal, Ca., prior to heading east for the big show at Oshkosh and Fond du Lac.

Dick has already tried his new wings in the Super, and says it can do five successive snaprolls in one maneuver. Another achievement he may or may not try in the unlimited competition at Fond du Lac is what he calls a Torque Roll - you pick up speed and pull the nose straight up, rolling through aileron rolls until gravity takes over, then go into a vertical tailslide, unwinding on the way down!

FOOTNOTE: The next world Aerobatic Championships will be held at Bekescaba, Hungary, July 25 through August 15, 1984.

To our Starduster readers. This article was reprinted from the September 1983 issue of Homebuilt Aircraft magazine.

A STIRLING EFFORT

Remember the one about the fellow who builds a boat in his basement and then can't get it out? Well, his name is John Bull Stirling. He lives in McLean. And it isn't a boat, it's an airplane.

"I'll have to open those double doors," John muses with a glance at the basement's ground-level entry, "and take the center section of the top wing off. But I'll have problems getting the landing gear out. It's just a shade too wide. Maybe I'll angle it out, sort of slide it sideways. Maybe I'll get some husky guys over here, and a couple cases of beer - which I'll hold until it's out.

You need that kind of Wright Brothers ingenuity when you build an aerobatic biplane from nothing but a set of plans the size of a wallpaper swatchbook. "I remember when I first got the drawings," says this barrel-chested veteran pilot with hair like cirrus clouds and eyes the color of sky. "I was completely over whelmed They give you the drawings and a list of materials, but there are no step-by-step instructions. How do you start? So I jsut picked up something and started."

The "something" was a piece of steel tubing. Today the piece is somewhere in the center section of the upper wing of a sleek white biplane trimmed in blue and gold and standing in a cluttered basement like a tern in a nest box. It has never spread its wings; they hang from a joist in the next room. Yet it is already 14 years old.

"I came back from Southeast Asia in June of '67," says the 30-year Air Force veteran. "I'd been flying, and suddenly here I was sitting in a think tank in Washington. It was like running like hell and slamming into a brick wall. I was going nuts.

"So I started working on this darn thing. I'd work on it at night, sometimes till two or three in the morning, just unwinding. It was sort of a therapy, really. I never thought I'd finish it." For seven years he worked, on and off in the basement of the Stirling home in Washington, D.C. But that basement was tiny, and the plane was getting bigger. And so were teenagers John Carl and Cornelia. So Stirling and Margaret, his wife of 37 years, went house hunting. They had done that often during his peripatetic military career -- but never for a house with a plane-sized basement.

They finally found one off Kirby Road in McLean, and there the kids and the plane matured. And the little plane that was never expected to be finished is one exhaust stack away from slipping the surly bonds of earth. Provided, of course, it slips out of that surly basement first.

When it does, Stirling will hitch its tailwheel to his pickup and tow it to Warrenton- Fauquier Airport. Will he taxi it gingerly about, gradually speeding up to a momentary lift-off or two? "No, I'll just get it out on the runway, open the throttle, and take off," he said.

If that sounds cavalier, consider that John Stirling has spent more than 14,000 hours of his life piloting airplanes of every description. As a test pilot, he was first to refuel a B-47 jet bomber in flight over the North Pole. As a ferry pilot, he crisscrossed Africa until he knew the continent like the rug in his den. He has taught many a pilot to fly - including one who built a Starduster and didn't know how to fly it.

John took his first flying lesson when he was 16, back in 1936, at a grass patch called Beacon Field on a hill off Route 1 south of Alexandria. "In those days there were little airports all around Washington," he remembers.

There were airports all around the French countryside in World War II, and it was Army Air Corps pilot John Stirling's duty to bomb the Germans out of them with a plane called the Marauder. Naturally the Germans objected - explosively. "Sure, we got hit," he recalls. "But that airplane could sustain a lot of hits. Not like the jets; jet airplanes are pretty soft. In the Vietnam War we had hydraulic control systems that were very vulnerable, and once you lost the hydraulic system you lost control. The airplane would be in great shape, the pilot unhurt, but he just couldn't fly the thing. That's one reason we had so damm many POW's." The eyes harden into ice, perhaps remembering.

The bird about to hatch from his basement was dubbed by it's designer the "Starduster Too." Pilots love their jargon, and in the argot of the air this is called a two-holer, because that's what it's two cockpits are - two holes in the top of the fuselage. On the instrument panel in the forward cockpit the passenger will notice a bright red sticker that may preoccupy his attention for the rest of the flight: "Passenger Warning - This aircraft is amateur-built and does not comply with federal safety regulations for standard aircraft."

Unsafe, Far from it. Scores of Stardusters have been built, and thousands of other homebuilts as well. Still, the sticker means what it says. "You can build anything you've got enough guts to fly," John explains with a grin that crinkles the corners of his eyes. "All the authorities want is to protect the public from falling parts."

The public has little to fear beneath John Stirling's superbly crafted artifact. He taught himself to weld, to cut his materials with precision and to shape odd parts on a grinder until they were just what the plans said they should be.

But the plans don't specify everything. John had to design his own electrical system, fuel system and instrument panel. Leaning into the aft cockpit, he flicks a switch - a small green light winks on like a sound sleeper suddenly opening one eye. She is wingless, propellerless, sagging slightly toward a flat right tire amid a clutter of her own cowls and fairings. But already she is alive.

It's common for a homebuilder to wax rhapsodic about his creation, the special final bond, the dreams aborning, et cetera. But Stirling has flown Stardusters many times and his plane will be just another Starduster. "Oh, I'll fly it a little while, satisfy my ego, and then probably sell it," he chuckled.

We'll see. He hasn't gotten it out of his basement yet.

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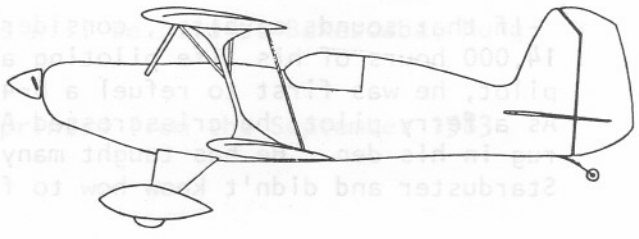
Article reprinted from the October 7, 1982 issue of The Gazette, Va.



Bill,

N1XY flew 15 years after I bought the first steel tubing. The drawings are serial number 446. This project is a monument to persistance.

A Lycoming O-360 A4A with fixed Sensenich prop is used and a top mounted NASA carb. inlet installed. The airplane is provided with a trim/servo tab giving light elevator forces but very sensitive trim tab response. Very little if any trim action is needed. The airplane is virtually self trimming.

I believe that the airplane with the engine/prop combination needs a longer engine mount. I calculate that with two 230 pound occupants, the center of gravity would be at 29% with the fuel low. For the time being I will explore adding lead ballast in the nose. About 40-50 pounds.

The other problem is that the tail wheel has a very large load due to the originally designed landing gear being raked so far forward and the spring appeared to be straightening out placing the tail wheel very near the bottom of the rudder. I need perhaps a stronger spring and a pneumatic tail wheel (or rebuild the landing gear).

All in all the airplane flys as a Starduster, which is to say --- well! I would like to see more differential on the ailerons and less adverse yaw. But no one is perfect.

The only change that I made to the drawings was to straighten the center section leading edge. I wonder what could be done with the construction drawings to remove basic weight.

Wires could be substituted for the internal wing structure eliminating the steel tube. Rib weight reduced by building up ribs instead of using relatively heavy plywood.

A careful redesign of the fuselage progressively reducing wall thickness of tubing going aft towards the tail and a considerable lightening of the entire emppennage. The interplane struts could be lightened combining struts and tie rods as with some of the classic bi-planes. (Waco-Bucker)

If I were not "burn't out" I would take the drawings and do it myself.

Anyway, it is a very nice airplane to fly and I suspect more than adequate in the strength department.

This is the third Starduster that I have flown with 180-200-265 HP engines. They are all winners.

Regards,

John Bull Stirling
McLean, Virginia

Note: John Stirling's Starduster Too is featured on the back cover of this issue.

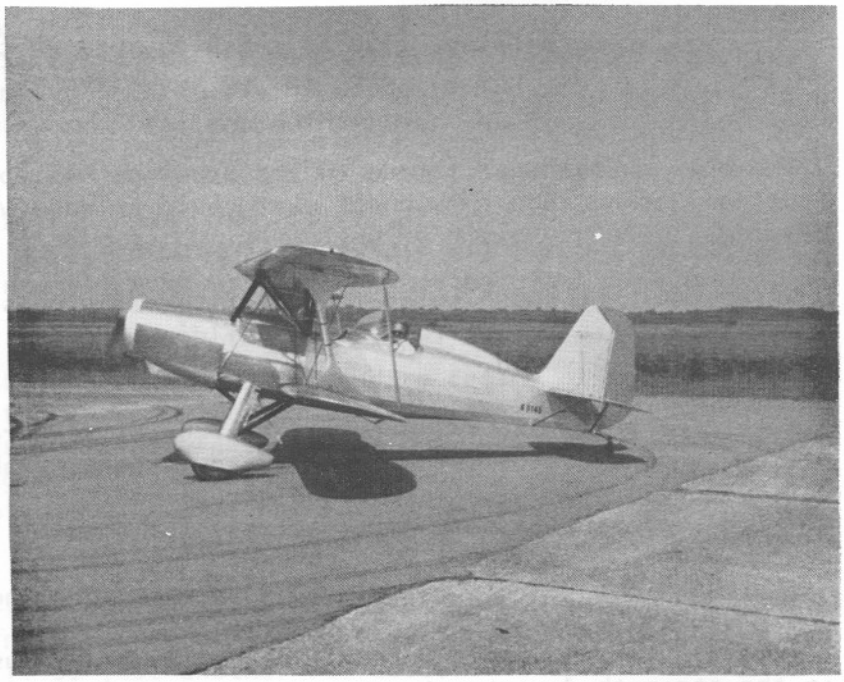
Dear Bill,

I am pleased to enclose two photos of my most recent project, a Starduster Too.

Charles McMahon, a long time associate of mine and a member of the Nashville Chapter of the EAA, started this project initially some 13 years ago. Due to health reasons, he decided to sell me the airplane this past March approximately 80% complete.

I flew the airplane on August 13th. It flew beautifully ..... it just didn't want to land. I asked three other pilots with varied backgrounds and experience in flying to fly the Starduster and they too had difficulty in landing. After talking to many of my freinds in the EAA, I learned from an old "Flying Ace" the key to landing a biplane was to have almost flat tires. We had 30+ pounds of air in the tires and when we dropped the air down to 16 pounds, she lands as beautifully as she flys.

I wanted to pass this information along as this airplane was difficult to land to say the least, prior to adjusting the air pressure in the tires. The three pilots I asked to fky the Starduster had been flying jets, War Birds, biplanes either professionally or all their lives and I was concerned that an inexperienced pilot could get hurt as all three men stated it was quite squirrelly and not for inexperienced pilots.



I think you should pass this information on to other plane builders because now it's a "pussy cat" instead of a tiger.

Thank you for all your help. On the Acroduster Toos, I will be in touch.

Sincerely,

W.R. "Bill" Sattler
Nashville, Tenn.

Bill,

Of course it wants to land and with full tire pressure, 28 lbs. Most pilots I have checked out in their newly acquired Starduster or Acroduster have what I call "pedalitis perplexitoedoes". Now I agree that leaving air out of your tires will soften the landing and keep you straight but it doesn't solve the basic problem, practice. On take off, left foot on the floor, right foot on right pedal. As you apply power just add a touch of right rudder, if you drift right remove some pressure. On landing, 100 mph over the fence, with power off (there are a lot of pilots chopping power after the wheels are on the ground. This of course sends the plane to the right, left pedal, right pedal, ground loop .... oops!) now flare, let her settle, hold stick back and freeze the pedals. I don't let the student move the rudder pedals except for very small corrections. That is a big rudder and very effective. Now remember...One lesson (like a picture) is worth a thousand words. Thanks for your info Bill.

Sincerely,
Hank Schmel
Starduster "Know it all"

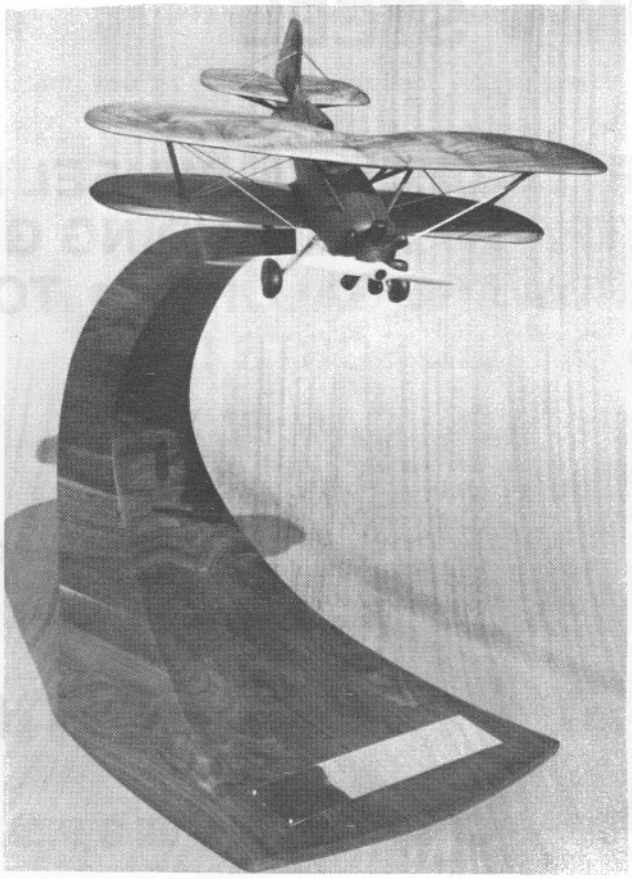
Dear Bill,

My summer has been filled with travel and "just going". We have stopped only long enough to get some clean clothes and a fresh supply of green stamps. It has been a joyful time indeed and something that I had never beleived could happen at this stage in my life.

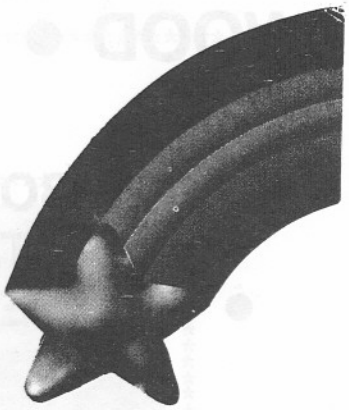
The Too has been neglected but not forgotten. I have been putting in about thirty hours a week for the last four or five. The entire time has been spent "reworking" a lower wing panel which was with the Starduster materials kit which I bought in K.C. years ago. A sane person would have junked the thing and built a new one. I have never been accused of that however. After spending enough time to build four panels and a center section I am finally ready to complete that pesky panel - walk, trailing edge and tip. How in the hell can a piece of 1/4" x 12" fir plywood be bent to conform to the airfoil for a step? Don't answer that! I laminated the thing with thinner stuff and left room for a layer of fiberglass on top. For the surface I'll cement a strip of coarse emery cloth for the surface and surround it with a sexy piece of trim. I'm old fashioned so the tip bows will be wood. That is a great advantage. Not only are they much harder to build but putting a tip in the ground on a chinese landing almost assures broken spars.

I regret very much that I cannot be at the Virginia Flyin. I have a prior commitment to attend a reunion of old, broken down, retired FAA engineers and inspectors at Bozeman, Montana and won't get home until the 10th.

All is not dark, however. Dorotha and I will go to Sun City, AZ. around Nov. 1st. We will live in her pad through April. We plan a visiting trip to Cal. during the winter. Flabob and Starduster are on the agenda and itenerary. I will see you then. I will try to build the Starfire canopy and center section this winter a S.C. When you see Lou Stolp tell him that I'm coming to stay at his house free until he makes me some "I" strut fairings.



Kindest Regards,
Roger Boggs
Fairfax, VA.



TO ALL THE WONDERFUL STARDUSTER PEOPLE AT "HOME BASE" **** MANY, MANY THANKS FOR HONORING MAYNARD AND I WITH THE JOE RUDDY MEMORIAL AWARD FOR THE BEST STARDUSTER AT OSHKOSH '83

MAYNARD AND PATTY INGALLS SA300 N38PM

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Dear Bill,

I appreciate the advise you gave me on the phone regarding alignment of the slave struts. It was getting very discourageing not knowing why the plane would periodically fly with a right wing down attitude. I would like to order one set of wheel pants and T-Bars for a Starduster Too. Also I would like you to place the following ad in the next issue of the Starduster :

****

SATRDUSTER TOO 180 hp., 475 TTA, 425 SMOH, Inverted Fuel & Oil NAV-COM, Intercom, ELT, DC Headsets, Strobe, GEL-CEL, Para-Inovator Seat Packs. Ceconite Cover needs redoping. $17,300.00 Contact Dr. David Crane, Chippewa Falls, WI (715)723-7175 week.

****

Enclosed is a check to cover the cost of plans, T-Bars, shipping, and the ad.

Sincerely,
David D. Crane

Dear Bill,

Here is a quick note to let you know I received the windshield in good shape. Also find a shot of my SA300 N1011Z.

****

This aircraft weighs 1024 empty, has 160 hp. with Fixed Pitch and cruises at 125 on a standard day. Other features are Stits Poly finish, Instruments in both holes and a GEL-CEL. Hope to sell this one so I can start another soon. $17,000.00. Contact Jon Nace 14314 Ireland Road, Mishawaka, Ind. 46544

****

See you at the convention. Sincerely, Jon Nace

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