

December 9, 1965

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Otto Zauner's T-18 -- Ray Remy just made a trip to Vineland, N.J. to see Otto Zauner's 150 hp T-18. He gives us this report.

The thing everyone has been wondering about is the aerobatic performance of the T-18. Otto appears the first person to wring one out. He has done loops, slow rolls, snap rolls and Immelmans and thinks it is a real fine aerobatic ship. After 21 hours flying time from a sod strip he feels the T-18 is not the ship for a novice to fly. He has 600x6 tires but says it is tough to wheel land on a rough field. He has a hinged back type canopy, flaps, wheel pants and several of his own modifications. Cruise speed is only 140 true at 2350 rpm. John Thorp has recommended a prop change which should help. The flaps reduce the stall speed some, but I don't know how much. If all goes well, I hope to visit Otto soon and get a first hand account.

HINGE STOCK -- Harry Hansen from Maple, Ontario says he can get 30-inch sections of complete hinge stock for \$1.00. This is a real bargain but he wants someone to handle a mass purchase. If someone will volunteer to handle the customs forms and re-mailing, we can make a purchase. If you don't see more about this, you can assume no one volunteered.

SPINNERS -- We now have orders for 12 spinners. John Tonzer just notified me the price will increase from \$31.50 to \$45, after January 1, so if you didn't get that Christmas gift you still have time. To save time, send a check for \$31.50 to John Tonzer, 6658 Jurnilla Ave., Canoga Park, Calif. 91306, and a duplicate copy of your order to me. The spinners will be shipped to me and I'll re-mail them to you.

FLIGHT REPORTS -- Dick Cavin writes about some interesting flying in a T-18 at a recent southwestern fly-in:

"Yes, I really had a ball flying Ralph Tenhaus' ship at our Georgetown Fly-In. I hauled about 75-80 passengers, T-18 builders, etc. Even gave some dual. I think it flies great. His tail wheel set-up makes it a little touchy on rudders on roll-out, but it has 10 times more rudder and brake than ever would be needed. Stalls nicely, too. Very hard to keep from putting tail wheel on first due to short main gear. Shot 3 wheel landings with bone-jarring results. Gear is no good for wheel landings, I believe, but I am satisfied with it as a landing gear on hard surface."

Jack Park, who helped fly Ralph Thenhaus' ship to Rockford is nearing completion on his own ship. He writes:

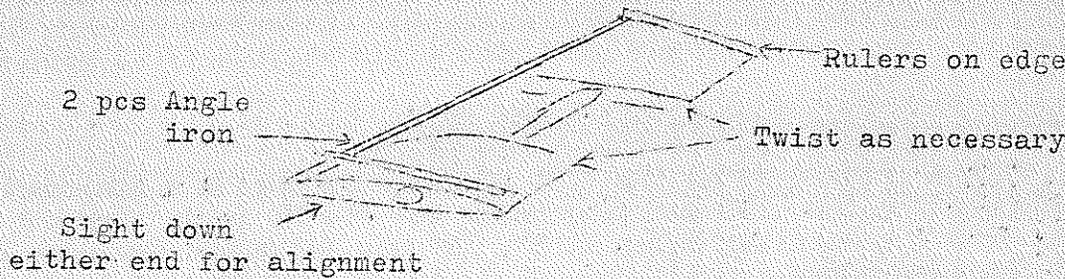
"The whole air frame is FAA checked and closed. The engine is on and cowled but lacks its mags, carb air box, exhaust stacks, and wiring. I have to do the "A-D" note modification to the fuel tank support structure. It is needed. I could watch the rivets and skin flex on Ralph's Bird 137RT during the trip to Rockford. I'm using Hamlyn tips and a modified Hamlyn cowl on mine for the first flight. It looks like I might switch to the new Hamlyn cowl which looks like my model, later. This new cowl was laid-up by Merle Soule and looks great. You can tell all T-18ers that they're in for some of the greatest cross-country flying they've ever had. That's my opinion, but I'm sure Lee Hamlyn will go along with me. This little T-18 really moves along, it's stable, relatively quiet, and can be as comfortable as the builder makes it."

SOME TIPS FROM MERLE SOULE, 3236 Camelot, Dallas, Texas, 75229.

"I received the latest T-18 Newsletter in the mail yesterday and I want to express my thanks and also compliment you on a very well written article on fibreglassing and mold making. I have just completed the chore of making

the HT as necessary for alignment.

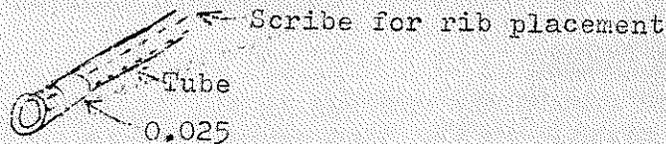
f. Sight down the leading edge and if ok, a few wisely spaced rivets will lock the skin in place.



g. A simple template can be made for accurately scribing the 4 lines on the HT tube. To make, scribe a vertical and horizontal line on a 4" sq. piece of 0.025" aluminum and cut a 2" hole out of the center.

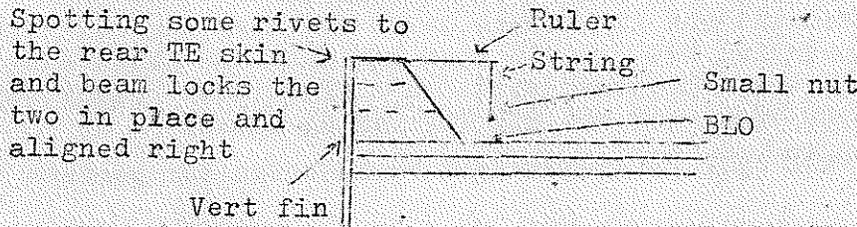
h. To make sure the first scribe line on the HT tube is square, lay the tube and a piece of angle on a flat surface and scribe while clamped together.

1. To make certain HT ribs are attached accurately (nose and main alignment), make a wrap around of 025 for the beam and scribe a circle.



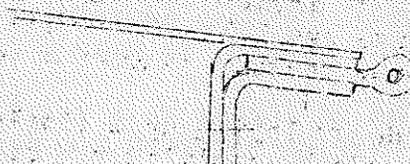
Vert. Fin Assy. --

- a. Level the plane at WL42 (cockpit area).
- b. Attach vert. fin beam with cap screws making sure alignment is correct using a plumb bob.
- c. Attach lower fin rib to vert beam and fwd mount bracked.
- d. Attach other ribs to rear beam - make sure all have scribe lines for rivet holes.
- e. bend skin and cleco to bottom fin rib.
- f. Attach a ruler to the top rib with the ruler sticking fwd about 30" attach a plum bob to intersect at bld.
- g. Twist fin accordingly and spot some rivets in rear beam to lock in place.
- h. Blind drill rest of holes, trim and rivet in place.



Assembly of main wing (outbd and inbd) will be accomplished in the same manner as the HT. This will eliminate all of the twist that has occurred on the 3 planes now flying.

doubler make it like this.



7. What is the latest on props for the T-18?

Jack Parks prop now installed on Ralph Thenhaus' T-18 is 6567. It was 6565 and should be 6569. Ralph's prop is 6565 and should be 6567. It is a guessing game because the blanks from which they are made vary considerably. Diameter and pitch are most important but blade width (activity factor) and thickness have considerable influence.

8. Rivets along the inner wing leading edge of both Hanson's and Warwick's ships loosened. (AN's were used). What should be one about this?

The leading edge rivets on the center wing are too few. I am adding 6 rivets to each leading edge rib both top and bottom on the center wing. "I cut the rib sticking too close". Although Thenhaus' wing hasn't loosened (pop rivets), Dick Hanson's T-18 is 250% (20%) over design weight and the cockpit vent system adds full dynamic pressure on the inside of the skin to the low pressure on the outside and Dick's wings have the added rivets now.

9. It is possible to get a small amount of twist in a wing panel using matched-hole tooling with dimpled holes. Wouldn't it be wise to use a simple fixture for holding the panels during riveting?

It would be well to check frequently for alignment of all structures while riveting. Neither clecos nor rivets really fill the holes and twist can develop during riveting.

MAKING A FIBERGLAS GAS TANK - By Don Carter, 2316 Donna Dr., Vestal, N.Y.

The following reasons led to my choice of fiberglass rather than aluminum;

1. Lack of aluminum welding capability.
2. Elimination of the fuel gage (markings on the tank seen through a mirror on the forward tunnel could provide a highly reliable fuel gage.
3. Recess in tank for radio and addition of sump would have been difficult modifications if aluminum were used.

The sketch shows the sump and the recess for the radio which is located in the lower center of the instrument panel. The instrument panel has been moved aft about 3 inches at WL42 and is perpendicular to the fuselage referen line. The recess is deep enough to accommodate the long radio 1-1/2 systems such as the Mark 12 and the KX 150.

Dreading the thought of building a form of wood and cardboard, which seems to be the more conventional home-builder's method, and also desiring the forms to be reusable by other T-18 builders, were the factors responsible for the technique which I developed for the fabrication of my tank.

Basically, the tank is made of the three parts as called out for the aluminum assembly on the drawings (the two ends, and a wrap around skin). However, instead of joining the parts by butting I left an additional 3/4 inch flange on the end pieces so that the skin could overlap. For a perfect fit the flange angles with respect to the ends should be something other than 90° but with a little trimming a good fit was obtained. The end form blocks were made of 2 inch thick pine and had the 1 inch radius as called out on the drawing.

Before going any further I would like to discuss a little of the philosophy of the fabrication method. To avoid the probability of loose fibers on the inside of the tank, only cloth was used for the first two layers and all inside surfaces were laid against the forming surface.

FRANK

layers. The third layer was mat except where my fuel quantity markings will be located. In this area I kept all cloth for better light transmission.

One could write a book on how to make a fiberglass gas tank but that was not the purpose of this article. Those techniques discussed by Lu Sunderland in earlier newsletters, such as the use of PVA for a mold release also apply here. I did learn a couple of things that I did not know previously. One was that there is a lot of difference in resins. The resin which I used had a high viscosity so that there was no tendency to run when the proper amount of resin was used. This was true when working vertically on both cloth and mat. Another trick I learned was used in removing a difficult part from a mold. A hole was drilled in the center and air pressure applied using a rubber stopper with a hole as a seal. The part may come off with quite a bang, so don't get shook.

Tools: Ray Remy, 104 Green Acres Rd., So Valley Stream, L.I., N. Y. says he can get commercial quality sabre saws and hand drills for \$15.00. Write to him for information.

Deburring: Norm Spillman sent me a handy deburring tool. It is made from a one inch long piece of 1/4 inch tube and about a three inch long piece of steel aircraft cable. Bend a loop in the cable and insert the two ends in the same end of the tube. Crimp the tube to retain the cable. Insert in a hand drill and use the spinning loop of cable for deburring. Use 3/32 cable. When making this tool the only thing to watch is the size of the loop in the cable. Too long a loop makes it flimsy and it won't stay in the hole. If the loop is too short, the cable will kink and unbalance it and make it wobble. Try it.

OOPS: Just ran off the first few pages and noticed that I didn't do a very good job of checking the artwork. Hope you can make it out. Our secretary made the sketches. As you can see by the mistakes, she isn't typing this part. By the way, all newsletters to date but one have been typed by a family friend, Miss Jo-Ann Crawford who is a secretary at IBM. Her only pay is some free flying time in my SkyCoupe, J-3 or glider.

Newsletter: We have lots of back issues now so send in your order if you need any. Many of you have written requesting information on material sources etc. If the information is in back issues, I haven't been answering those questions and hope you will find the answers when you receive yours. I really get stacked up on paperwork sometimes, so if I have failed to answer your request, just write again.

Maybe you would like to know something about your Editors. I (Lu Sunderland) am an engineer with GE where I design automatic flight control systems for military aircraft such as the F-111. Because I work with various airframe companies, I get around the country a bit and visit other T-18'ers such as Dick Cavin and John Thorp. I have built a SkyCoupe, a gyroglider, and rebuilt a J-3. Dr John Shinn, who usually helps edit the newsletter, is an electrical engineer at GE and owns a Luscombe Sedan. His father built the Shinn wheels on many light aircraft and we have talked him into producing a 500 x 5 wheel for homebuilts which will be available soon at a reasonable price. Don Carter is an aero engineer and is manager of a design group at IBM. Don is an old military pilot, holding an instructor's rating. Of course you know Dick Cavin is a pilot with Braniff Airways and during this year has just got checked out in 707's.

MERRY CHRISTMAS EVERYONE!