L.D. Sunderland, 5 Griffin Drive, Apalachin, N.Y. 13732

Here it is New Year's Day and time for all of us to resolve to get the ole gal flying this year. I've spent the holidays riveting the flange on the nose piece, and doing all the other time-consuming cut-and-try jobs necessary to get the cowling made. I'm also in the process of installing insulation, making seats and forming the canopy.

Seats - While sitting on an aluminum lawn chair which I had bought to take to the Fly-In, I got a good idea for seat frames. A trip to th local discount store turned up a broken aluminum chair made of 1" tubing which I bought for $1. This provided exactly enough tubing for both T-18 seats. The chair seat bottom and back were both the same size and each made a bottom seat frame. The legs made the two seat back frames. Since the original chair frame was too wide, each piece was cut down to make a 16" wide frame. The splice was made with a 4" long piece of 1" tubing which was slit to allow it to be fitted inside the two pieces being joined. A few pop rivets secured this splice and the two corner splices.

This is a very easy-to-make ultra-light seat frame and I think it sure beats anything else like welding either aluminum or steel. Plywood should not be used if you want a comfortable, light-weight seat.

The bottom seat frames should have springs added. You can obtain zig-zag spring material from any upholstery shop or tear up an old chair. Use four springs running front to back. The springs can be secured with wrap around clips made of 0.015 stainless. These clips are secured to the top of the tubing in the frame with pop rivets. The springs should bulge up about an inch above the frame. If they bulge up too much, you can crimp them to draw them down.

The springs don't need to be tied together with wire like in chairs. Just cover the springs with a very heavy grade of canvas and attach the springs to the canvas with hog rings. This is the way Cessna does it. The canvas is secured to the frames by folding it over 1/2" wide aluminum strips, wrapping around and pop riveting to the frames. Now you are ready for the padding. I used a 1-1/2" layer of rubberized hair plus a 4" layer of polyurethane foam. Pincore foam rubber can be used but it weighs much more and costs many times more and deteriorates quicker. With this amount of cushion, I just clear the canopy with my 6'2" height. My rounded and lowered tunnel doesn't bother me either.

I recommend that you make a bucket type seat for maximum comfort. Cement , with foam cement, a 4" wide x 1" thick strip of polyfoam on each side of the cushion. The inner corners can be trimmed off to help shape it. The center portion of the cover is held down by small steel rods inserted through two loops sewed to the cover. In seats with thin padding, the foam is just slit part way through to make space for these rods. Then the rods are squeezed down and attached to the zig-zag springs with hog rings. (Corvair seats are made this way.) But with thick cushions the rods can be attached to the springs with strong cords. The center portion of the cover can be given a nice ribbed effect by sewing a piece of about 3/8" thick polyfoam between a thin backing cloth and the top cover. The cover can be stitched every two inches with the biggest size stiches possible to minimize weakening of the material.

Plastic upholstery material can be obtained at a fabric shop or auto seat cover shop. The best is Naugahide but it is also very expensive. The type with cloth backing should be used. The best grades use a foamlike plastic which is very pliable.

Ordinary sewing machines have a tough time with heavy plastic so you should use a heavy duty machine. In our area, it is possible to lease a heavy duty machine.

Backs of seats need not be padded so well. I am using canvas stretched over the frames with no springs. Over this I am using 1" polyfoam with the sides built up similar to the bottom cushions. Even with this thin back cushion and my rudder pedals located as per the plans, my knees just barely clear the instrument panel. If you are over 6' you don't have any extra leg room. John doesn't recommend a back-pack parachute for this reason, so make the bottom seat cushion removable so you can use a seat type chute.

For the most comfort, make the seat bottom angle the same as the 3/4" angle shown on the side of the tunnel in the plans. This distributes the support more evenly along your legs. If you cut a hole in the top deck aft of the seat, there is no need to have fold down seat backs. This is by far the simplest arrangement.

Cowling - Supports for the cowling outlets (or gills) have usually been fabricated from 1/4" steel tubing with a 1" strip of 4130 welded to it to form a flange. The support is riveted at the top and bottom of the gil to the 0.040 flange on the edge of the firewall. If you have some extra 3/4 x 3/4 aluminum angle, this will serve the purpose. Just trim off one leg of the angle, making it 3/4 x 3/8. Bend this to form the shape of the gil. Remember, the area of each outlet should be no bigger than the inlet, or about 27 sq. in. on each side, for minimum drag.

If you use Lee Hamlyn's fiberglas nose and bottom cowling you won't have any clearance problems for there is plenty of room for an alternator and a cross-over exhaust system. There isn't much extra clearance over the top plugs but it appears to be adequate. Lee does real nice fiberglas work.

One feature of this cowling is that it has nice big access doors which makes nearly everything on the engine accessible, without removing the cowling. The cut-outs are so large that the doors form a part of the load bearing structure. Remember this when allocating fasteners. I have added a diagonal brace across each opening for extra support.

Chromate Applicator - If you don't want to have to clean a brush or spray gun every time you need to chromate a small part or faying surface, just keep a piece of polyfoam handy, tear off a small piece of it and dip it in the chromate with a pair of pliars. It works better than a brush and doesn't need to be cleaned since it can be thrown away after use.

Flex Shaft - Since the trim system flex shaft seems to be hard to find, I'll continue to handle it for $3.00 a set until further notice.

Marking Dye - Lucius (Lu) Bigelow, 17 Crescent Ave., Sumter, S.C., 25190 the new owner of Sport Aero sends this tip. Just paint your aluminum parts with ordinary shellac before scribing. After cutting, the shellac washes off with alcohol and the metal is not scratched. If you haven't heard, Sport Aero has just about everything you need to build the T-18.

Wheel Retainer Bolts - I still have a few 7-1/4" long wheel retainer bolts for 75¢ per set so get them while they last. If you haven't learned yet, you had better note that the various good deals we have come up within the past have a way of evaporating so don't procrastinate.

Kits - Very few people are able to buy sheet and aluminum tubing kits anywhere in the country for the prices we can obtain through our distributor. You can probably save enough on the cost of one sheet to pay shipping on the entire kit halfway across the country. Someone in Detroit was paying over $30. per sheet and we get it for half that. Some people hesitate to buy the kit because it doesn't contain 15 foot sheets for the side skins.

Believe me, the little flush splices in the side skins will be the least of your worries and by the time you get the T-18 completed you will wonder why you even gave them a second thought.

Your sheet material will be shipped immediately, tubing will be shipped when we receive 5 orders. Complete kit is $335. and a partial kit is $260.

Canopies - Bob Gaede was unable to produce canopies because of a lack of facilities so I bought his plaster mold. I have spent nearly a month putting two layers of fiberglas over it so now I am ready to make a canopy. But I'm not making any for sale. Hopefully canopies will be available very soon, however, for someone with vacuum forming equipment is tooling up to produce them. As soon as they are available, it will be announced in the Newsletter.

Fuselage Templates - I have just bought back the fuselage skin templates which I had used and will make them available to anyone desiring to pay the shipping from whoever used them last plus $3. to me for the cost of replacement. The rules are: 1. They may be kept a maximum of one week per person. 2. No drilling or Whitney punching will be done through template holes. A transfer punch must be used. It will be supplied. Dick Cavin also has two sets of templates.

Another First Flight - Herman Rassler, T-18 #24 of 98 Constitution Ave., Henderson, Nevada, made his first flight in October, 1966 and already has 50 hours completed. With 125 hp Lyc turning a 65 x 68 Flotrop prop at 4000 feet, max. rpm is 2950 and at 2800 he gets 172 mph average ground speed! At 10,000 feet it still climbs at 850 ft/min. Stall is straight ahead, not tricky. He is very very happy. Watch for more details in next Newsletter.

601 Assembly - There isn't sufficient clearance between the fittings and the flange on 601 bulkhead to permit riveting. Therefore, I recommend that the fittings be riveted after 601 has been riveted in place. This might make the Hi-Shears impossible to instal so just use bolts instead. Some people have had so much trouble riveting 601 that it was buldged back slightly and made the wing difficult to install.

Riveting - by B.C. Roemer, Manitowick Waters, Wisc.

Past newsletters have gleamed with good tips and one of my favorites was the annealing of AN rivets. To me this is a must.

I ran into a problem in some "tight to buck places". If the ship head deformed and rivet had to be replaced, I drill it out using a 1/16" pilot drill and then (for flush heads) a #25 drill, carefully. The head will spin off and you can punch the bucktail out. (Or work it out with pliers.) Do not drill on through with the #25.

Now comes the problem: Dimpled holes are always larger than the rivet body to start with, so rivet is loose in a normal hole. While seating, before the shop head forms, the body of rivet swells until it is stopped by the sheet holes. Most any rivit (especially hard ones) in dimpled holes, will enlarge the hole as it takes some force to stop the expansion of the body of rivet.

If a 4-4 was the original rivit and you use another 4-4 so much of the length will be used up swelling to the enlarged sheet hole, that you won't have enough left to form a proper thickness shop head. So you could use a 4-5.

Now the problem of bucking a longer rivet in a loose "hard to get at" hole and not bending the stem, is a dandy. It's almost impossible with hard rivets.

I set up the Whitney punch into a squeeze riveter. Take a 4-5 annealed) drop the head in the base and center the stem on the plunger.

Squeeze slowly (you will expand the body) until you're about a -4 in length. If stem bends -- discard, of course. Now you have a fat bodied -4 that will fit nicely in the expanded holes. It will be long enough for a good head and it will drive straight as it fills the hole. (Need some nice tight dowles for dimpled holes? Squeeze yourself some the same way. Make them as tight as you need them).

Hinge Stock - John Foy says it's all gone. You can still get it from the factory as mentioned previously.

Prop Extensions - Merle Soule, Box 20123 Dallas, Texas has extensions made on a tape controlled machine which he says are really beautiful for $55. 50% with order and balance COD plus shipping.

Forming Parts - Stu McGeary, 8139 Broadwell Rd., Cincinnati, Ohio, 45244 has sent a sketch of a home made press made for forming wing ribs and other parts. He uses a 5 to 10 ton jack pushing against an I beam in his basement. The form block is made of masonite. The metal is forced down around the form with a slab of rubber 1" thick and 40 durometer hardness. Steel plates are placed between the jack and the rubber. It requires about two tons force to form 0.030 aluminum. This should work ok if you have a heavy house.

Instrument Panel - Many questions are asked about the panel. I moved mine aft about 3" by making an additional frame from 0.025-2024-T3 (scrimp the outer flange) which extends down to WL41. Attach to the 3/4 angle with a bracket made of 0.063 bent to 90 degrees. I put the panel on the aft side of the frame. Gap around panel can be covered with an overlay or panel can be made slightly larger. Make panel perpendicular to 3/4 angle.

Hardware - All-Aircraft Parts, 16673 Roscoe Blvd., Van Nuys, Calif., 91406 now has all T-18 hardware. Send for price list.

Pop Rivets - Many builders are having trouble finding the MK-440BS rivets at their local dealers. For some reason they have stopped stocking them. United Shoe wrote me a letter saying that anyone can order Pop rivets directly from the factory, Fastner Division, United Shoe Machinery Corp., Shelton, Conn., 06485 in minimum orders of 500 of each type. The MK440's are $23.74 per thousand and all others are less.

Dick Cavin - Just had a nice visit with Dick and saw his new round-back fuselage now being riveted. The aft fuselage will look something like a Sky Skooter with doors hinged up at top along fuselage center line and with aft windows. He's not selling plans. He tells me the boys around Atlanta are really going great, they have rented a building and have a regular assembly line going with 30 ships underway. Gotta watch that Southern Air Force!! Sounds like they're mobilizing.

Future T-18 Newsletters - Until now, we have asked only for a $2. donation to cover Newsletter printing and mailing costs for 20 issues. If you wish to receive future issues starting with number 21, please send me an additional $2. If you have already sent me this much, just indicate it on the attached questionnaire. No one having a serial number under 475 will receive future Newsletters if they have not returned this questionnaire. I have a limited number of the first 20 illues excepting 1 and 5. You may obtain a set for $2. I also have copies of the T-18 Building instructions reprinted from back issues of Sport Aviation for $2.