29

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

Using Wing Skin Templates - As you know, I have two sets of T-18 skin templates circulating around the country. One set is for fuselage only and the other set also includes inner and outer wing skins, horizontal tail and rudder. The donation for use of these is $3 for the fuselage only and $6 for the more complete set in case you've used them and forgot to pay. Each user pays shipping to him These templates were copied directly from John Thorp's original templates.

Many T-18's have been built from the fuselage templates with no problems to my knowledge however I have not heard any reports from anyone who has used the wing skin templates so don't know how they are working out. I'm concerned that there may be a tolerance build-up problem if they aren't used properly.

Here is a way to use the wing skin templates which will insure that all holes will line up

1. Transfer all spar rivet holes in both outer and inner skins. Transfer wing walk rivet holes in inner skins.
2. Scribe around all outer edges of the templates.
3. Transfer and then punch only one complete row of rivet holes for one rib in the outer wing skin.
4. From this row of holes, a transfer strip can be punched directly from your wing skin.
5. Then use your new transfer strip to transfer all other rib rivet holes. The original templates could be used to mark, not drill, several rivet locations for the top and bottom of each rib just to help locate the transfer strip.
6. Make your rib tooling and transfer from the transfer strip to the master rib.

This procedure will work just as well as the one described in the Building Instruction. Using the skin templates will guarantee a good straight wing if you also take the few steps described in earlier newsletters on using a carpenters level during final assembly of the panels.

Here are some very important tips on using the templates.

1. You must have a smooth, flat work surface. This means something like a new, unwarped piece of plywood, or better yet, chipboard or particle board. You can get by with a 4 x 8 sheet, but 4 x 12 is much better.
2. The templates are made of .025 sheet so must be handled with respect.
3. Never drill or punch through my templates. Use only a duplicator punch to mark through them by tapping with a mallet. This can be a punch out of the Whitney punch set or one you made on a lathe. Why not drill through the templates? If you don't know this much, you definitely shouldn't be building an airplane. Yet John Thorp tells me he often catches people drilling through his templates. But why not punch where possible since this can be done without enlarging the holes? Yes, it can be done if the nib is ground off a Whitney punch, but you can also slip up now and then and catch the template. You are certain to do this sometime. If each user does it just once, it wouldn't take long to ruin the templates. Please cooperate.

Matched Hole Tooling - M.R. Yoder, 1047 Dolorita Ave., Glendale, Calif., 91208 - I just received Newsletter No. 28 and found it most interesting reading as were all the others.

I would like to add a comment to yours about matched hole tooling. Ed Henderson and I also had doubts about this type of construction, because all our past experience had been on massive

jigs. After building the ailerons and flaps to test John's templates and our own rusty but not forgotton sheet metal skill, we started the wings, starting with the spars. Again we used John's templates and fabricated all parts for the center section and outer panels, and after completing these parts with tongue in cheek we assembled the outer wing spars to the center section spar and were able to finger press 1/8" rivits into and through the #30 alignment holes for the spar attach bolts. As you can see we are convinced matched hole tooling works.

As for a progress report we have completed to date both ailerons, both flaps, rudder, fin, landing gear (arc welded) all wing spars, all ribs, wing skins layed out, cockpit flight control and many miscellaneous goodies in the making.

Engines - By M.R. Yoder - We purchased a 320 cu.in. Lyc. complete from firewall forward including all accessories plus constant speed prop and spinner, for $1000. This engine has 700 hours since factory remanufacture. These engines are being removed from piper Apachies for a larger Franklin. If anyone is interested in an engine, contact: J.W. Miller Aviation, Box 16203 International Airport, San Antonio, Texas, 78216. These people welcome inspection and will crate and ship an engine for a fee.

How Not to Photograph Airplanes - Did you ever notice how some photos of airplanes look like an amateur snapshot while others made with a comparable camera will look professional? One of the most important factors in photography is the viewing angle. A favorite view of amatuers is from about 45 degrees off the nose and 6 feet off the ground. For small homebuilts, and especially tail draggers, this makes a rather unbecoming picture. A good rule is to get down on the samelevel with the subject. Haven't you noticed that when a TV camera takes a picture of a girl walking, they never view from a point level with the top of her head? They always get right down where the action and interest is. Still photos are the same. Just leaf through some back issues of Sport Aviation and see the difference viewing angle can make. Sure, all pictures should not be taken from directly off the wing tip at mid-height level, but the further you get from this position, the more distortion-unless you are trying to emphasize some particular feature.

If you include people in a photo which is primarily meant to be a picture of the airplane, get them out of the way - either inside, below, beside or behind it. If the airplane is only background, that's different, treat it as such and concentrate on the subject.

Cracked Exhaust Stack - After re-welding broken off or cracked exhaust stacks about a half dozen times, I called John to find out what to do. I had a cross-over system with no slip joints. If you don't know what a cross-over system is, it is one which has two exhaust stacks and exhaust from the right front cylinder is brought across in front of the oil pan, joined with that from the left front and exited through the left stack. Exhaust from the left rear is also taken around in front of the pan, joined with the right rear and exited in the right stack.

The problem is that when the engine is running, there is relative motion between cylinders. We've all learned that you can't tie two cylinders on one side together with a solid cooling baffle or it will crack. The same thing applies for the exhaust system. The solution is to put a slip joint between each pair of cylinders just like on the Cherokee.

But how do you make a slip joint? John has a set of dies to make one on a press, but that doesn't help us. So I decided to weld up one. For material, I used one of the stainless shrouds that were around the short stacks on my GPU. By slitting one with the chrome blade on my table saw, I could form it neatly to fit tightly over the exhaust tube making a sleeve. The sleeve was made 3-1/2 inches long and the slit was welded up. To keep from having any weld material run through the crack, I slipped the sleeve over a 1 inch steel bar that was clamped horizontally in a vise. It was welded with the slit facing upward so that the tube contacted the bar just under the weld seam. Surprisingly enough, it didn't make too much of a heat sink but did make a perfectly smooth inside seam. Now, cut the exhaust tube at the desired location and slip the sleeve on the downstream side of the cut. Overlap about 1/2 inch and weld. The gas should have to reverse direction in order to escape. Trim off about 3/8 inch off the end of the tube which slips inside the sleeve for clearance. Presto, a slip joint which John says will end cracked exhaust problems. I've got my fingers crossed.

Welding Stainless - Until now I have been getting all my welding of stainless done by heli-arc because I couldn't seem to make anything but a mess with gas. But after seeing a demonstration with gas - on top of not being able to get my heli-arc man when I needed him - I decided to learn or bust trying. Much to my surprise, it really isn't quite impossible. Here's how I finally succeeded.

First you need some flux and some 1/16 inch stainless welding rod both available at your welder's supply house. Clean the joint well with a steel brush and make sure the parts fit well with no big cracks. Coat the joint and the rod with flux. Now, light up, say a little prayer and begin. You will notice that at about the time a nice puddle wouldbe starting to form in ordinary steel, the area under the flame suddenly caves in and you have a nice hole. Lesson one: there is no visual indication of temperature like 4130. Then you melt some rod over the hole which for some reason wants to either cave in after the first, or make a rather obscene looking pile. The pile is stubborn and only gets bigger as you dab on more rod. Lesson two: you can't shape the puddle with the flame in the normal way, in fact, it should not be puddled. So, how do you weld stainless? Let's try it again. Heat the weld area and apply a little rod before it caves in. About the time you think you have some rod flowing on, sparks fly and a bubble erupts from within, making a pop! and a real mess! Lesson number four: use a very carbonizing or reducing flame. Now, I thought this meant just a little bit more than the normal feather of excess acetylene normally used for welding 4130, but I discovered that my trouble was that I needed more excess acetylene. Then things started working better. Two other pointers should help. Normally, you weld 4130 easier if you progress up hill, but stainless welds easiest if you progress downhill. Also, I found it works best if you weld backwards with the rod held behind rather than ahead of the torch as it progresses. Point the torch toward the already formed bead. Apply rod sparingly. Keep the rod bathed with the reducing flame. Don't be surprised if it won't win a beauty contest!

Clecos - A very popular question among T-18ers is "Where do I buy clecos?" To my knowledge, the surplus 9¢ clecos are about all gone. So you will have to pay the new price. One place you can obtain them is: Spencer Aircraft, 8410 Dallas Ave., Seattle, Wash. 98108. The price is $.39 each. For 100 or more, the price is $.30.

You will need at least 100. You might get by with 50, but the price difference is so little that you should get 100. It will be easy to sell them and recover most of this cost.

Just heard that Spencer has recently got a shipment of 6000 clecos, 1/8" size, and is selling them for 11¢ each while they last. This time, don't pass it up!

Tailwheel Steering Springs - During the first 150 hours on my T-18 the springs on the tailgear became uncoupled at least a half dozen times. I tried several different weight springs and bent the ends in more, but still they became unhooked. I finally found a fix that really works, and makes ground handling much easier. I simply restricted the amount of stretch of each spring with an extension of the connecting chain. New chains were made about 6" longer than normal. The first link of a chain was hooked to one end of a spring and the same end of the spring was then hooked to the horn on the tailwheel. Then the chain was hooked to the other end of the spring in a link which permits the spring to stretch about an inch before taking up the slack in the chain. The chain then continues on to be hooked to rudder horn.. Since making this change, I have never had an unhooked spring and directional control is much improved. This along with the longer, softer main gear legs, has really made a world of difference in my T-18. I strongly recommend both.

Taxi Tests on 336 by Dick Walen - I have started taxi tests on No. 336 and have found that it's a bit more than I can handle right now. I'm not familiar with the tail wheel so I'm checking out on a 125 hp Pacer. When I get her up to about 40 to 50 MPH and reduce power I have fishtail problems. I'm just not proficient enough to handle it yet.

The noise level is surprisingly low. The cockpit is fitted with styrofoam 1" all around with rolled and pleated upholstering. With the styrofoam filling the cavity between the angles, the upholstry is flush from the seats to the firewall. Here is some data on construction and equipment: 3 years, 2 months to build; $5000 total investment; 0290 D?, zero time certified engine; full IFR instruments; Alfa 200 Genave Radio; Prop from a 180 Cherokee adapated to fit extension, 66" dia. 70" pitch. Weight - 950 lbs. Engine will turn 2200 static, 29" MP with the tail tied down.

Editor's Note: The foregoing comments about Dick's taxi tests are not surprising for two reasons. First, the difficulty in maintaining directional control when the throttle is cut under 40 mph is typical. It is the only time a T-18 could be said to be even slightly hard to handle. Second, all his experience has been in nosegear airplanes. For this reason I recommended that he find an experienced tail gear pilot to make the test flight. For making a first test flight in a new airplane, it isn't good enough to just be able to handle an airplane. The pilot should be able to handle all the unexpected things which can occur without worrying about normal control of the aircraft.

Fuel Systems - B.D. Ham, Rt. 3 Box 703, Orlando, Fla., 32811 sent a sketch of a fuel strainer made from a brass elbow into which a finger of copper screen was inserted and soldered. He said a friend had a forced landing in his all-metal cougar when a moth got into the fuel tank and clogged the outlet because there was no outlet filter. This is a very common kind of problem. A strainer at this point is a must.

If you make your own, don't restrict the hole in the fitting any. Drill out the hole in the end of the fitting that screws into

the tank so when the screen is inserted and soldered, the ID will be as large as original. Caution: Since items such as this cannot be easily visually inspected, make a sketch of your fuel system and show it to the FAA inspector before the final inspection.

Here are a few tips:

1. Use no smaller than 3/8" fuel lines.
2. A flexible coupling must be used between fuselage and carburetor. This must be a high pressure type hose.
3. Make sure there are no low spots between tank and sediment bowl where water could lay and freeze.
4. Make provision for easy access to a quick drain on the bowl.
5. Different carburetor kits are used when a fuel pump is used. This is not easy to get the straight scoop on. Don't fly until you've checked with someone who really knows.
6. The fuel tank vent should have a screen to keep insects from building nests in it.

If you have been reading the aviation literature you will recognize that all of the above items have been involved in accidents or at least engine problems.

Making Fuselage Frames - People continue to have trouble bending up the fuselage frames. Common troubles are cracks at lower corners of the outer flanges and cracks in the inner flanges. Here are my recommendations.

1. Don't use a brake to bend up the outer flanges unless you are so good you don't need any advice.
2. Get a 4 x 8 sheet of chipboard (particle board) and saw out some forms. Be sure to make adequate bend radii. Also, areas to be joggled can be a little on the "deep" side due to springback. Make up a little sample and experiment to get the proper size joggle.
3. The inside flanges of all frames are shown on the plans to be bent down 45 degrees. Do not, however, make a 45 degree bevel on the forms. Cut the form at 90 degrees.
4. Using a rubber mallet - the type where the mallet is one big piece of rather soft rubber stuck on a handle - bend the inside flange down. All straight sections should be bent down 90 degrees but the radiused corners should be bent down only 45 degrees.
5. Make absolutely sure that you first removed all scratches from the edges of the sheet material. The best way is to first draw file the edge after cutting and then with sandpaper wrapped around a stick, rub parallel to the sheet edge until nicks and scratches not parallel with the edge are removed. Slopiness with cleaning up sheet edges seems to be one of the most prevalent problems with novice tin benders, yet it is so very easy to do. Don't forget the Stanley Sureform rasplane for all straight edges.
6. When forming the inner flange at the rounded corners, you can get a very smooth job if you strike the metal with the mallet using a wiping stroke parallel with the sheet edge. Don't forget this!
7. Now for the $64,000 question. What do you do if you crack a frame? If you have spare material, you naturally can make a new part. However, it is perfectly acceptable to stop-drill or cut out the cracked material and put a splice over it using the same stock.

For Sale - If it hasn't already been sold, Jerry Finney's 95% completed T-18 is for sale. It is a real jewel with factory new 150 hp Lycoming and the works. Total parts and material cost $7000, but it is for sale for $ 500. As was reported in the November Sport Aviation, Jerry was killed in an accident with Bill Hutcheson. This is the accident mentioned in Newsletter No. 28. The cause was apparently a spin or spiral following a stall. He may have been

trying to stretch a glide with a dead engine because the propeller indicated it was not developing power. There were no structural problems. If you know of anyone interested in buying Jerry's nearly completed T-18 which reportedly ranks second only to Basye's, contact Don Pridham, 3730 Larkstone Dr., Orange, Calif., 92667.

Letter From Russ Basye: (T-18 #72, N372RB) - Sure sorry I missed you at Rockford but I fully understand about weather. We ran into weather just west of Omaha and went back to Grand Island, Neb. on the way to Rockford. I found where the T-18 leaks! At the rear of the canopy where the hip skins start. We averaged 184 mph (not counting return to Grand Isle) takeoff to touchdown going to Rockford, and 155 mph coming home.

In my opinion the T-18 is the nicest flying airplane I've ever been in. After about 20 hours I finally got the canopy sealed and with the sound deadening material that was put in (aluminum foil tape and polyurethane foam) it's noise level is about halfway between a 172 and a Bonanza, so it's real comfortable for crosscountry flying. With 39 gallons of fuel it will go safely about 500 miles.

I have my pitot and static tubes halfway out the wing outer panel underneath. It stalls when the indicator reads "0" mph and after fiddling with it for a couple of months, I am now in the process of installing it on the fin as per plans. Otherwise I have had no problems -- the retracting gear works fine although I have to retract it under 85 mph or I can't get it up. A wind tunnel would probably show me where the air loads are that keep it from going up. It's just the last few inches where it gets hard to pull up.

Performance Data Questionnaires - For some reason, I have received only six completed questionnaires which were mailed out with Newsletter 28. Out of the thirty-some already flown, this is a pretty poor score. I know that some of them are laid up for maintenance or modifications, but you other guys can obtain the necessary data. It will be of immense value to everyone, so please try to get the data and return the form as soon as possible. The weight and balance data has already been put to good use by many who are about to fly.

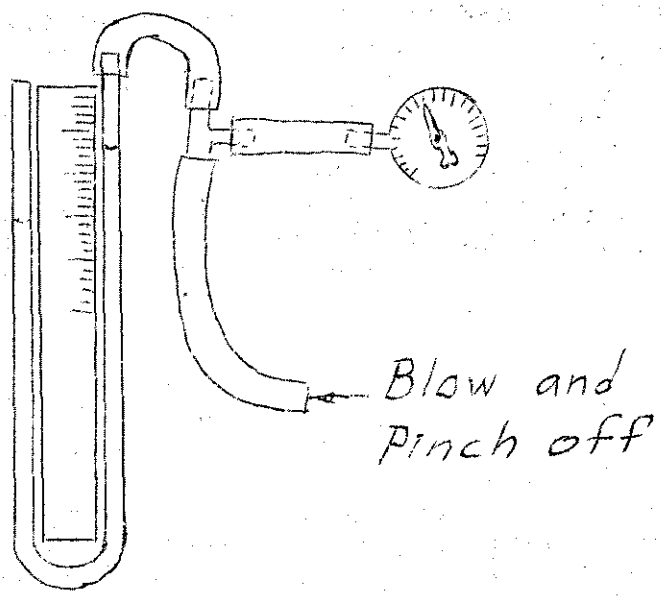
Letter From Herm Rassler: (He's rebuilding after a forced landing when a dip stick came loose.) - Think it's about time for a status report on the rebirth of No. 24. Have the wings, fin, ailerons, rudder done through prime, fuselage up to firewall except for wiring, instruments panel, and a few tunnel parts. Have most all the parts rounded up to complete late summer or early fall. Need cool weather for testing. Should be abut 50# lighter, 25 more horses, smoother and faster! I built twist into the wing roots. If anyone is interested, 1/16" off square (diagonally measured) will give approximately 1/4 degree twist.

Bought a Rattray T-18 nose cowl. The one in the winter SA ads and at the Fly-In last summer. The work is beautiful but it won't fit over a Lyc ring gear. Sent it back for refond and he sent one he has designed for a 180. Great big ugly thing (my opinion). Sent it back about two months ago. Now have nose and belly panel from Hamlin. Will have a 290 sump, vacuum pump and regulators, and electric flap actuator for sale.

Am enclosing a tester for checking airspeeds. You can make a manometer with clear tubing and a yardstick. I think this is more accurate than flying alongside one of those factory spam cans.

According to the article I got it from, all airspeeds are off somewhere along the scale. Only some are worse than others. One could make up a correction card just like for the compass. This won't test the static system but I think teeing a manometer into it would also check for good static.

Sure wish someone would come by and give me another ride in a T-18.



mph	differential height of water in inches
60	1.77
80	3.16
100	4.95
120	7.14
140	9.73
160	12.7
180	16.16
200	20.0
250	31.6

$$hw = \frac{pair\ V^2}{Pw \quad 2g}$$

hw = height of water inches
Pair = Density air
Pw = Density water
V = Velocity air MPH
g = Gravity

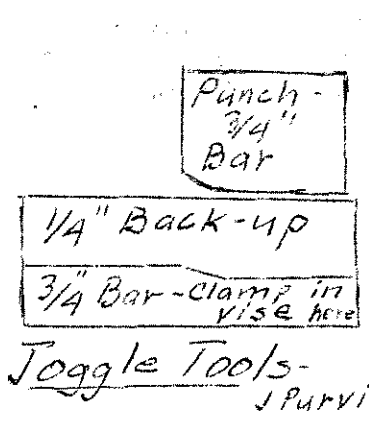
Use food coloring to make water more visible. Blow up pressure and hold to check for leaks in the system.

Editor's Note: Bench checking of an airspeed system does not guarantee accuracy in flight. Getting a good static pressure source is a big problem. Note Russ Basye's comments. The only way to be sure of accuracy is a good calibration test over a measured course. The bench test should be run before first flight. Go back and read Herm's test flight report to see why. This is not an isolated case.

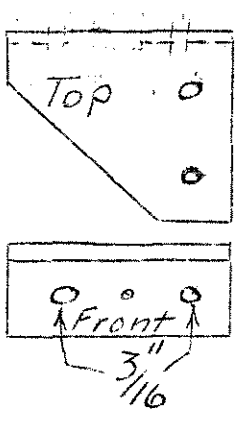
Joggles - John Purvis, 2925 Marco Way, Marco Way, Carmichael, Cal. 95608
Perhaps others are dissatisfied with their efforts to achieve good .093 joggles in the 3/4" x 3/4" #580-14 stiffness. My solution is too simple to be new but just in case - here goes. As indicated by the drawing, a 3/4" aluminum bar is shaped as shown and with a backing plate of handy aluminum - say 1/4" thick, is, with the extrusion between, clamped in a vise. The punch shown is used to direct the energy of a hammer directly onto the standing leg of the extrusion. As indicated, the left end of the bar is clamped in the vise, and the right end where the joggling takes place is relieved sufficiently to permit the standing leg to move downward. The relieving can be very slight. If relief is too extreme the standing leg will wander and produce a wavy result. The 3/4" bar is clamped and relieved on both sides so right and left parts can be joggled. The dem#nisions do not appear to be critical and one bar will also set the .062 joggle just by using a lesser hammer blow. The punch should be used, because direct application of the hammer to the part will "ding" the part. My results have come out real "pro".

Fuel Tank Straps - John Purvis - Perhaps another idea that's obvious--good results in bending the fuel tank straps to receive the bolts on each end have been achieved by placing two rods of 7/32" diameter vertically in a vise - with about 1/4" between them. The strap is then bent by inserting the strap between the rods about 2", and smoothly pulling the long end around until sufficient bend is obtained. The strap is allowed to "unwind", and is continued back in that direction until the short end of the strap can be used to press against the long end of the strap and cause a bend, identical to that first placed in the short end, to be placed in the long end. It works real fast and results are excellent. If any imbalance exists between the two sides of the bend, one of the rods can be placed in the loop and the strap clamped in the vise, and the loop tapped lightly to the appropriate side to create symmetry -- holes are then drilled and waste trimmed off.

BILL JOHNSON'S PROGRESS - (Con't from page 10. Sorry about that!)
Just got another letter from Bill which you should hear so I'll stick it here where I was planning to put a figure. "While installing the new vertical stiffener at station 70, I noticed another possible mechanism which could have some bearing on the 601 loose-rivet problem. Under g loads, the 601-2 clip transmits loads to the lower longerrn which will tend to rotate about a longitudinal axis and tend to move the center of the clip thru a lateral distance. Note that during positive g this is inboard and during negative g, outboard of the static position. I am modifying the clip as shown to resist rotation.



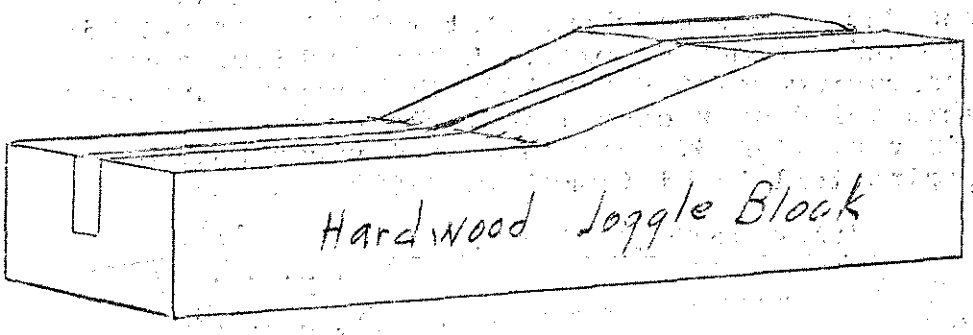
Toggle Tools - J Purvis



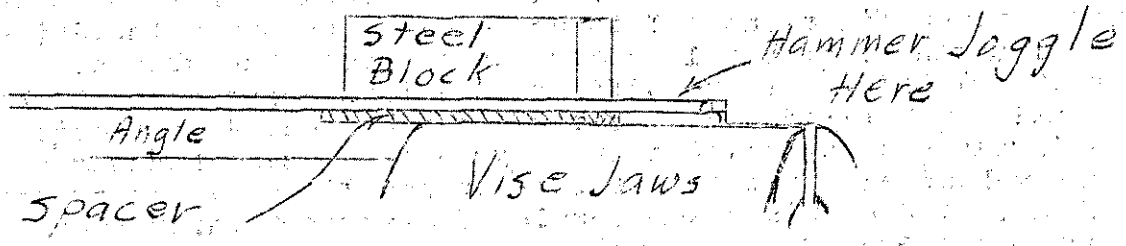
Clip is 1/8" thick anchored with 2 3/16" fastners to the -602 fitting.

602-2 Clip

Joggling Angles - Malcolm Fowler - (1.) This was how I solved the problem of those -10 brackets in the center section of the wing. Worked very well with no rejects. Make a hardwood block (maple or birch) 2" longer than bracket, bandsaw to profile making the angle sharper than called for to allow for spring back. Kerf through the center on bench saw. Insert flange in kerf and clamp tightly at high end, hold block as low as possible in vise to prevent block splitting then beat the 3/4" x 3/4" angle down.



(2.) Another quickey to joggle 3/4" x 3/4" angle as in forward fuselage modification. Place angle, not too tightly in soft jawed vise, support horizontal flange with spacer slightly thicker than depth of joggle. Hold heavy block of steel on top of angle and hammer the unsupported end down.

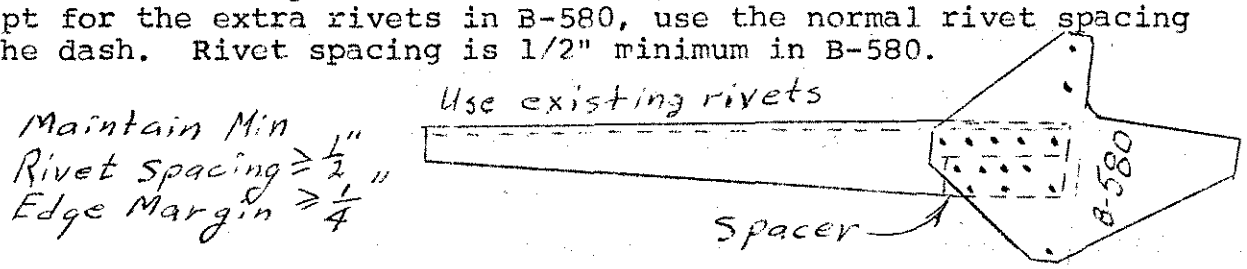


FOR SALE - 683 Tip Weights, $10.00 per pair plus shipping. Includes plated steel tubes. Norm Dibble, RD#3, Windsor, N.Y.

Dimpling and Riveting - D. Hendrick, Anchorage, Alaska - For dimpling, chuck up your male die in a drill press and the female die in drill vise. Thus you don't spend time hunting the hole in the back up. Works well but is limited by depth of drill press throat. Another idea is the use of masking tape on face of rivet sets. Helps keep us amatures from murdering rivet heads. Also, use tape to hold a line of rivets in place rather than install one at a time. Also use tape to keep components in position.

Rivet Guns - Bert Nicholson, 3712 Riviere Place, North Vancouver, B.C. I see that rivet guns at $39.75 is considered a good price. I purchased a Florida Air Hammer from US Industrial Tool and Supply, 13541 Aubury, Detroit, Michigan, 48223 for $18.75 plus retainer spring and rivet sets at an additional $12.00. I bought the little regulator valve locally. This tool is listed in the US Industrial Tool and Supply Catalog #268,

Bill Johnson's Progress - As you know, Bill is modifying his T-18 to install a retractable conventional gear. He has made an entirely new wing using a different airfoil with no camber, which he says isn't needed with flaps. His gear is now mounted on the wing spar and the fuselage is about ready to button up. When he removed the wing and inspected the rivets around the ends of 601, he found the rivets loose. Although he had not made the wrap-around modification, he does not think it is adequate to distribute wing loads into the fuselage side skins. He has done a pretty thorough stress analysis of that area and says an additional doubler is needed to transmit loads from the B-580 doubler to the dash and side skin. A total of 12 rivets is needed between the B-580 and the new doubler. The doubler, shown below, is a 15.5 inch long piece of 0.63" 2024-T3 bent up as an angle 2" x 0.6". One is placed inside the dash at each lower corner. Except for the extra rivets in B-580, use the normal rivet spacing in the dash. Rivet spacing is 1/2" minimum in B-580.



I believe Bill has checked with John on this and he concurs.

Another Tri-Gear - R.L. Moore, 3327 Fenimon, Corina, Calif. 91722 sent this letter about progress on his tri-gear T-18. "I wish to thank you for publishing the T-18 Newsletter. It is informative as well as a source of inspirational fuel. When I start to lag on my project I reread some first flight reports. I have serial number 442 and like many have made modifications. I do not claim to be an authority on Acronautical Engineering but I do have an aircraft background. I'm a retired (Navy) Chief Warrant Officer, Aviation Maintenance Technician is my specialty. Retired 1960 after 21 years in Naval Aviation. I'm presently involved in aviation as an Aircraft Division Manager of a small plant making aircraft structural parts. I'm making a tri-gear (retractable). The drawings wee completed prior to starting my project October 1967. I have rudder, fin, ailerons, flaps completed. The trailing edges were spot welded instead of being brazier head riveted as per plans. It makes a nice smooth surface. I used the .040 reinforcing strip as per plans with 426AD3-5 rivets spaced approximately 12" for holding edges and strip until spotwelding. First the holes were drilled then the skin portions were dimpled (both sides) then the strip countersunk to receive the dimpled skin. A rivet then was bucked until material filled dimple. Excess rivet then was milled off leaving a flush head both sides. The edges to be spot welded were etched, thoroughly neutralized then spot welded and finished off by dipping edge in zinc chromate primer. Some test strips were made and pull tests made which were quite satisfactory. I'm presently skinning the outboard wing panels. Since I'm using the D section of the leading edge for extra fuel, I have increased the number of rivets in the spar and skin as well as using epoxy at the joints for sealing and strength of skin to spar and nose ribs, beam web to spar caps. Interconnect between outboard leading edge and center wing leading edge is accomplished by beaded tubing fittings, hose and clamps.

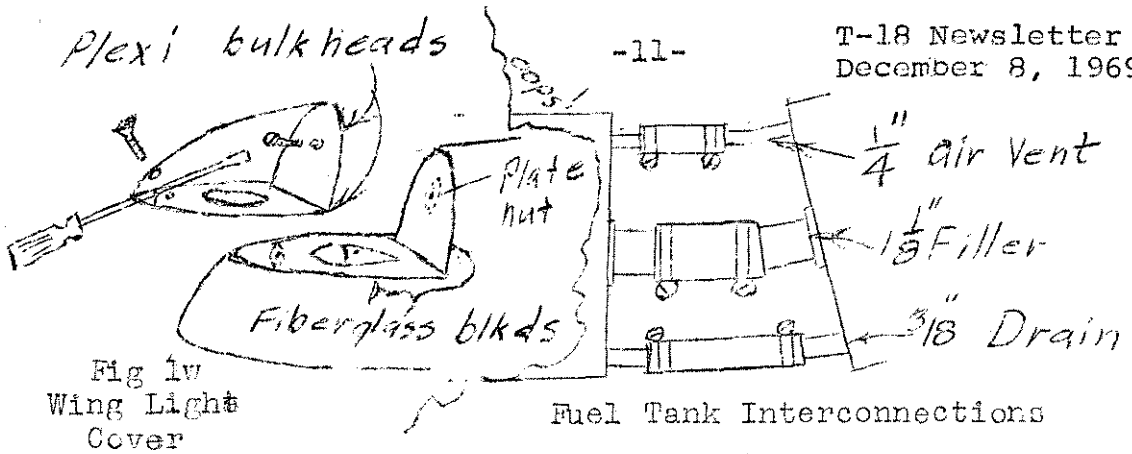


Fig lw
Wing Light
Cover

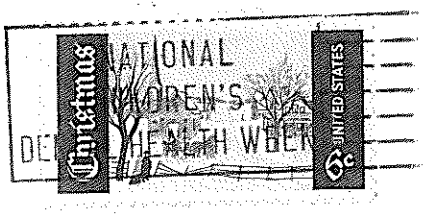
Fuel Tank Interconnections

The wing tanks will be filled at the wing tips. The nose ribs serving as slosh bulkheads. (3 ea) 1" lightening holes plus suitable 1/4" drain and air bleed holes in the nose ribs. I'm presently working on the center wing. The modified spar is completed and am presently cutting and welding up the main gear fittings. To take the heavy shock loads of hard landings, had to beef the spar using two upper spar caps with additional rear web making a box spar."

Forming Wing Light Covers - Here is the way I formed my plexiglass wing tip light covers. First, cover the fiberglass tip with outing flannel in the area where the lite will be. Heat a piece of plexiglass in the oven and stretch down over the fiberglass tip using broad jawed pliars or clamps. This takes two people. Cut out the fiberglass as desired. Make two fiberglass bulkheads and cement into the tip. See Figure lw above. Instal lite on bulkhead. Make two plixiglass bulkheads. Cement plexiglass cover and bulkheads together. Instal with two #8 screws into plate nuts located behind fiberglass bulk'ds. The screw on rear bulkhead can be installed with a long screwdriver through a hole in the tip of the one plexiglass bubkhead.

FOR SALE - Callibie Wood, 1121 Forest Hills, Wilson, N.C. 27893 says he is about ready to sell his T-18 because he has a 4-place homebuilt about completed. It has a 150 hp engine. For more details, contact him.

Propell ers - Here's an interesting letter from H.O Beckett which he sent me a long time ago before he flew his T-18. This might have been written before Sensenick decided they would no longer cut down props. The comments on harmonic modes should be of interest to everyone. "My engine is complged (0.320), and I bought a brand new Sensenick M74DM prop, cut down and repitched 67-68. To order my prop, my wife and I drove up to the Sensenick factory at Lancaster, Pa. We spent about two hours at the factory in discussion with Mr. Rose, who is in charge of Engineering. Mr. Rose also states that overspeeding the 0-320 beyond 2750 rpm red line should in no way be harmful. However, he does state that there are several vibration ranges which are to be avoided in order to minimize chances of harmonic modes of the prop and engine. He says that each inch cut from the basic 74" diameter prop will increase the 4th order (I believe) which occurs at approximately 2400-2500 rpm, by 100 rpm. He was not able to supply me engineering data on the 67"x68" or recommended cruising rpm. Mr. Rose says that operating on this harmonic could cause prop and/or shaft failure!" According to my figures if you cut off 6" you raise this frequency to over 3000 rpm - far beyond anyone's cruise speed.



407. J.R. Wood Jr.
705 N Cross
Robinson, Ill.
62454