30

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

BULLETIN - John reminds all T-18 builders to complete the tail modification per the plans. When disassembling one tail to make the mod, they found loose rivets in the fittings. They were 1/8" pop rivets. Of course, some weren't long enough since it is not possible to get them long enough for this application. John says the following is mandatory: Use only the AN 5/32 rivets specified for attaching the 510 horizontal tail fitting. Use no pop rivets for this fitting. To buck them, use a seven foot long steel bar 1" or larger. It is also possible to use a shorter large diameter bar with a handle taped to it. Gravity does the job of holding it against the rivet. John is very concerned about the tail modifications and wants everybody to make them immediately.

HORIZONTAL TAIL TUBE MATERIAL - I was surprised to find how easy it was to get tail tube material. I just called my aluminum warehouse and they put me in contact with Mr. Leeson at Tube Sales, 456 Nordhoff, Inglewood, New Jersey, 07631 and he had a large supply. It comes only in 12 foot lengths. The .049 wall is $1.44/ft. and the .120 is $2.61/ft. If you go in with other guys so there is no waste, it is about $17. per tail.

LOCKHEED FIELD SERVICE DIGEST - Lockheed has run out of copies of the Field Service Digest #49 and requests that T-18ers not write for anymore.

CANOPY FOR SALE - Chris Fast, 507 Almar Ave., Pacific Palisades, California, 90272, has a one piece tinted canopy from M.R. Supply which he will sell for $60. Reason for sale is restricted head room on sides. Condition is just as received, untrimmed.

PROPELLERS - The 1A76 Cherokee propellers have a bulletin which requires that they be sent back to the factory after 500 hours, refinished and checked. Sensenich says the 74DM propellers used on the smaller engines are not affected. A T-18 accident in Maryland was caused by loss of 18" of a propeller blade. Be sure you inspect metal props for nicks every flight and never operate at rpm ranges where there is resonance or noticeable increase in vibration level.

DICK WALEN FLIES - (2719-1/2 Pownattan, Toledo, Ohio, 43606) - March 14, 9:30 a.m., ole 336 took to the air. Sure was beautiful. Had a qualified test pilot fly her. She indicates 130 at 2000 RPM and 155 at 2450. At present I have a roll problem. Right aileron pressure is needed to keep her from rolling to the left. I am trying to decide how much to lower the left wing trailing edge to correct this. Must be built in twist. Will send a detailed report when corrected. FAA said it was the nicest aircraft they had inspected in a long time. Sure makes me proud. Burst an oil line from firewall to pressure gauge on third flight. Had small orifice in firewall fitting so was able to get back before any damage was done. Advise builders to make sure of quality when installing hose and fittings. I took someones word and it could have been disasterous. More later as soon as I have the information. (Engine is 0290D2 135 HP with 68" x 70" pitch, 180 Cherokee prop adapted to prop ext. (3-31-70) - more news -- I have soloed my T-18 now and have six hours on it already. Lowered left trailing edge 1/4" and raised right

trailing edge 1/4" and almost all rolling tendencies gone. A tab will still have to be installed to eliminate everything. Airspeed was checked against a Pacer and Tri-Pacer -- Indicate 105 @1700 to the Tri-Pacer's 120 ind. and 100 @1600 to the Pacer's 112 indicated. At 4000 ft. it will indicate 160 at 2500 rpm. At 2000 rpm it will indicate 130! I plan to cruise at 2450 or 2500 indicating 155 to 160. My airspeed indicator is slow compared to the planes I've checked it against so I don't know yet what it will true out to be. Hopefully 165 to 170 cruise, on 135 hp. Stalls are right now. The bottom just drops out with no warning or buffeting. I have not installed spoilers yet. I can get secondary stall by holding the stick back after she stalls the first time. No major problems to report about. My engine breather outlet will have to be cocked more down into the slipstream as my belly is full of oil and it seems to be siphoning out. Same on oil separator for vacuum pump. It's really a good feeling to go around all of those Cherokees, Muskateers and the like in my T-18. I'm sure proud. I'm glad I let a qualified person test my airplane as I don't think now I could have done it alone. By the way, I wheel land my T-18 all the time. I tried a stall landing and the tail hits first. A gust caught the left wing and put the right one on the runway before I knew what happened. Just skinned a little paint off and no other damage. I feel more comfortable in the flying attitude when the wheels touch. FAA permitted me to have a test pilot and he can ride with me anytime during the first 50 hours. My flight test area for the first 50 hours is 25 miles wide by about 40 miles long.

SPINNERS - (B. Pershing Larsen, 7059 N. Noselle Ave., Chicago, Ill., 60646) - I have enclosed a copy of my spinner listings. I have not advertised at any time, only exhibiting at Rockford once each year during the fly-in. I have been more interested in enough volume to move about a hundred spinners a year to get the bugs out of the tooling and finance the extensive retooling during the winter of 1968-69. All this has really held back work on my T-18, but I do have pretty near a complete collection of parts hanging from the joists in my basement. As soon as I have a little time the fiberglass gas tank and wheel pants will be next completing the components. Next will be dismantling the engine for magnaflux and zyglo then balancing and reassembly. If all goes well I hope to start assembling the airplane after this year's Oshkosh fly-in.

EXPERIMENTAL AIRCRAFT SPINNERS

T-18 & PAZMANY PL-I--II--14 5/8" long x 12 1/2" diameter with a 2" nose radius
Unpolished ---------- $38.00
Polished ---------- $44.00
Standard propeller hub thicknesses are 2-3/4" and 3-1/2" ALL others are special with extra charges to be quoted.
CONSTANT SPEED is furnished with a single .125 thick rear bulkhead only. EXTRA ADDER TO ABOVE ------- $10.00
T-18 #502-2 spar end cups machine to size old or new tube/pr. $1.75

ALL SHIPPING CHARGES ARE F.O.B. CHICAGO, ILLINOIS

BULKHEADS ------6061-T4 bare (not alclad) aluminum sheet spun to shape.
SPINNER SHELL--6061-0 bare (not alclad) aluminum sheet spun to shape,

heat treated to age harden to the T4 condition, and respun before age hardening to remove the distortion.

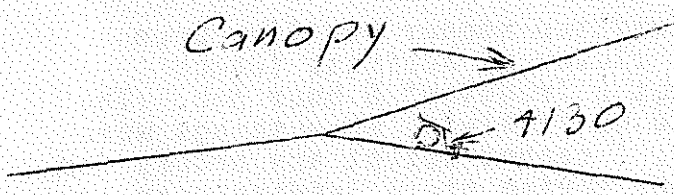
ELECTRICAL WIRING DIAGRAM - Someone gave me the Electrical Wiring Diagram shown in Figure 7 at Rockford last summer. It should be of help to anyone who has not designed the intercabling for his aircraft.

RIVETS - John Cragin, 34 Smith St., Needham, Mass., 02192 - Just a minor point, but an easy point of confusion and one that I recently investigated reference your aluminum alloy comments. The standard garden variety rivets with the dimpled head is the AD type A175 now called 2117, not 2017. Old 175 type D rivets with a raised dot are 2017. Enclosed is a copy of the pertinent page of my vintage ANC-5 Strength of Metal Aircraft Elements, now called MIL Handbook No. 5. This chart shows the designation equivalents. It's all academic though since the comments in this and earlier newsletters still apply. Most handbooks don't mention re-heattreat of 2117 so I called Alcoa here in Boston. The same rules apply for both 2017 and 2117, 940 ± 10°F for solution treatment. I guess we are all using AD rivets beyond the normal shelf life expectancy and hence the treatment is necessary. Chilling and cold storage should not be necessary with 2117 but quench is, just like 2017 and 2024. Check with your Alcoa office for their book "Riveting Alcoa Aluminum", look at the rivet identification page similar to that in the Mech. Pocket Manual.

RON ZIMMERMAN CLOSES - I should have written sooner but I've been kind of busy lately. Last November I closed my business (Zimco Plastics) and sold my machinery and got a "regular" 8 hour job. The prop extensions I was making were used as "fill-in" when things were slow. So -- under present conditions, I cannot accept any orders for propeller extensions. Drawings for the spring steel landing gear are still available from my home address. Did you know that Thorp designed a beefed-up extension (#1072) for the O-360 engines? He has some for sale @ $115. each.

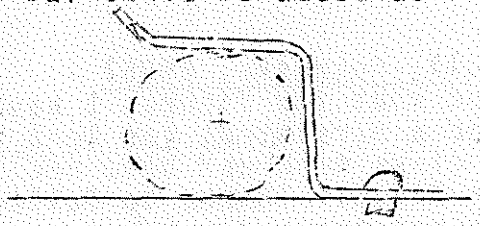
SPRINGER JONES FLIES - Route One, Mitchell, Nebraska, 69357 - (October 29, 1969) - Enclosed please find what few figures I have as yet. Combination of terrible weather and a persistent gas leak have kept time to 10 hours so far. I have a glass tank and have had it out 2 times trying to get that dang drip fixed. Thanks to following your good advice in the Newsletter, it's not too bad a job to remove, about 30-45 minutes. I am about to give up on the glass tank, and go to aluminum. With the tank cut out for radio I only have 25 gals. which is cutting the fuel a bit fine for 180 H.P. engine. The numbers on the sheet are very tentative as I haven't had the time to work out and calibrate the inst. The only positive thing to report is the complete delight this bird is to fly. Of course you are aware of this. And as you said in the Newsletter, there is no way of describing that flight for the first time. Although ranching for a living, I have done quite a bit of flying in the past 20 years. Learned to fly at 18 and flew F80's, T-33's, F-86's, T-29 Convairs and C-121 Constellations with the Airforce and Air National Guard along with enough soaring to collect a gold badge with two diamonds. Also flew the initial tests on a 180 Pitts last summer which for the first few hours was the nastiest little beast I have had the misfortune to tangle with. Finally got it tamed down though and it

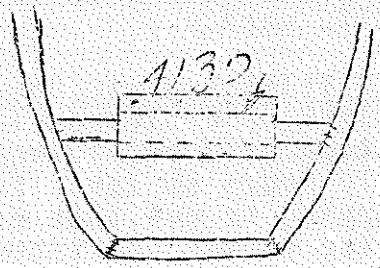
wasn't too bad. Lost the main oil line downwind at 400' and pumped it dry by the time I got it stopped. A 20 knot down wind landing in a Pitts with a canted tail wheel tends to keep one busy. Also cured the urge to build a bitty bi-plane after the T-18. The kick of that first flight was the fact that there you are and YOU BUILT THE THING AND IT FLYS!! Actually, the flights have been very straight forward and no problems at all after getting the wing heaviness cured. I had been fortunate to fly Lon Anderson's T-18 built by Ron Lee so I had something to compare. I used a steel spring (softer) on the tail wheel and the roll out is a piece of cake. Better than Lon's -- easier to control. You can land to complete stop with no brake in a 10-15 knot wind. Don't know if the tail spring has anything to do with it or if I got a better do on the wheel alignment. I personally feel the bird has a much more ferocious reputation than it deserves. John wants most T-18 drivers to be a little apprehensive and I understand why. The only comments I have presently are that I may have too much prop. 2650 max. in flight and 2200 max. climb. I can always cut some off. John is going to use 67"-65" so we will have something to compare. Ron Lee's was 68"-71". My bird is very conventional -- no big changes. Only limit I might give is about the canopy lifting in back in flight. Due to the way I attached the rails and canopy, I was able to make a 4130 fitting per the sketch.



The rear bar on the canopy frame slides under the steel fitting. (I have a one piece canopy with no center bar.) However, another cross bar could be added forward of the rear frame. The 4130 plate is 10" long and bent to fit over the bar in the closed portion.

This is simple and works real well. Sure quiets down the wind noise. Another bar could be added as:





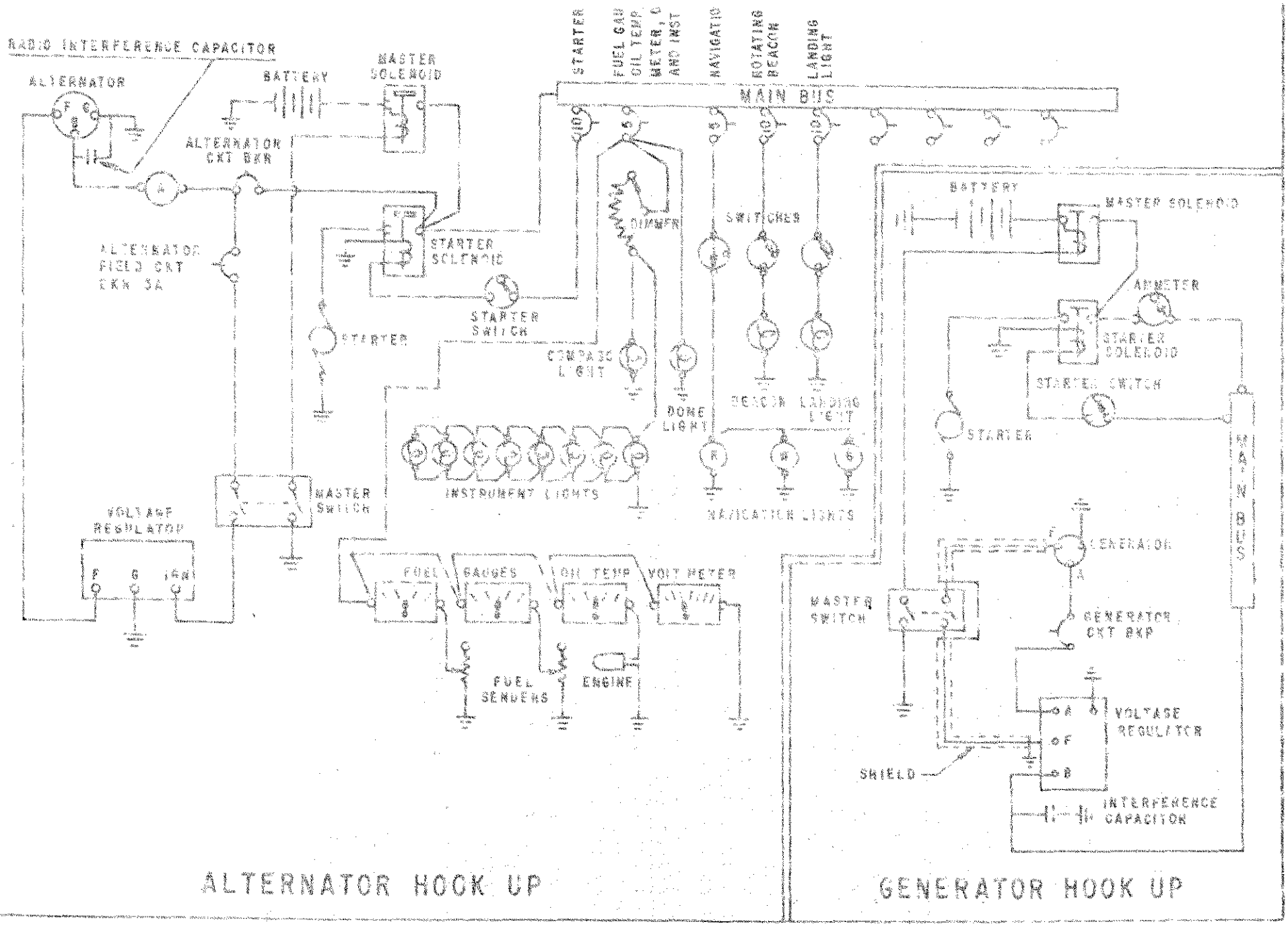
(Feb. 9, 1970) - After reading your #29 Newsletter, I felt real proud of myself for being one of the few that returned your questionnaire and lo and behold, tonight I found the thing plus a letter I had written on the 29th of October, so here it all is plus the update of all information. I have about 60 hours now and am cleared with F.A.A. I gave up on Naples fiberglass tank and got one from Merrill Jenkins in aluminum. Much happier now. Have gone through a clean-up phase. As field elev. is 4000' -- no low alt. info. the airspeed is pretty close -- checks out on a number of 10 mile runs at 175 true (150 ind 07000' - 0°C). At least at that one airspeed the indicator is as close as I can fly it over the two way course. The only other aircraft I have checked with was one "M" Bonanza. Airspeeds on the two were about 6 mph different, through the 150-175 range. After that I added power and left a couple of highly re-educated Bonanza pilots with the

rear view of a Thorp T-18. Climb isn't spectacular with the 81" pitch on the order of 1200-1500 fpm at near gross from 5,000 to 8,000; however, pull-up from full throttle cruise (2700 rpm 174 ind @ 5000' to 6000') down to 110 gave a time of 14 sec. for the 1000' climb or around 4250 fpm (the next 1000' took the balance of the minute to complete.) Got a good check yesterday after installing new plugs, picked up 75 rpm. and got 172 ind at 2750 rpm @ 6000' and 1000# for 192 true. However I am cruising 2450 for X-C work which works out 175-180 true and about 9 to 9.5 gph. Am getting ready to paint now as I only have primer on it. Then will take some pix.

FORMING RIBS - Ed Rogers, P.O. Box 1767, Sioux City, Iowa, 51102 - Am starting construction on T-18, Serial #674, and have found newsletters most helpful. Formed ribs with rubber hammer cut to chisel head. If wrinkles started to form - used birch block 2"x2"x4", with 60° angle face as shown in Newsletter #22 but hit with rubber hammer. After flange formed to full width of 3/4" birch form, used flat side of above birch block to smooth out flange by beating hard on it with hard rubber hammer. Worked better than solder bar. Rough cut ribs to full 1" rough flange - bent surplus flange material after forming to about 45° for ease of trimming -- all flanges came out nice and smooth. Used electric metal cutting shears (Aircraft Components - Benton Harbor, Mich. 49022) for trimming -- it will be one of the most worked tools I have. Cut, formed and trimmed all 16 nose ribs and 12 center wing ribs over Memorial Day weekend. (Approx. 12 hours work). - 1969.

O-290-G PERFORMANCE - L.D. Sunderland - N4782G - While sitting here reading the material for this Newsletter, I decided I'd better get busy and take some good data on my T-18. Since today the wind is very calm, I figured it would be a good time for some speed runs. So I rolled out my bird and buzzed off. First I had to shoot a landing to see if I was as good as Springer Jones, then headed for my measured course. (I never need brakes either unless I get to watching the scenery.) We aren't so fortunate in this part of the country and have nothing measured to use for speed checks. I've located a six mile course using topographical maps. I flew back and forth over this course four times and, using a stop watch marked in one second units, got the same readings every time, 150 mph at 2000 ft MSL, 56°F, 2450 rpm and 1343 pounds. The wind was about 6 mph directly across course. Then I opened it up and made one run at full throttle, 2900 rpm, 2000 ft MSL and made it in two minutes even averaging 180 mph. I even gained 200 feet to keep from exceeding red line. That's really moving!

Here's More Data on My Ship - N4782G - Lyc O-290-G, 125 hp, FP Prop 68 long x 56 pitch; max static 2300, OAT 15°C, 840' alt; max at 5000' 2950 rpm, IAS 178, OAT 5°C; max at 2000', 2900 rpm, IAS 180, OAT 11°C; Airspeed was calibrated in lab and over meas course. Max TAS 187 mph at 2950 rpm, 1350 lbs, 5000', OAT 0°C; Oil temp at 70°F is 190, at 90°F is 210°. Small Corvair cooler front of left front cyl. Max RC 1300; cruise 150 mph at 2500 rpm, 6.5 gpm; $2000, 3-1/2 years; Empty 881 lbs.


RADIO INTERFERENCE CAPACITOR
ALTERNATOR
BATTERY
MASTER SOLENOID
ALTERNATOR CKT BKR
ALTERNATOR FIELD CKT BKR 3A
STARTER SOLENOID
STARTER
STARTER SWITCH
STARTER
MASTER SWITCH
VOLTAGE REGULATOR
F
G
IGN
STARTER
FUEL GAGE OIL TEMP METER, & AMP INST
NAVIGATIO
ROTATING BEACON
LANDING LIGHT
MAIN BUS
DIMMER
SWITCHES
COMPASS LIGHT
DOME LIGHT
BEACON
LANDING LIGHT
INSTRUMENT LIGHTS
NAVIGATION LIGHTS
FUEL GAUGES
OIL TEMP
VOLT METER
FUEL SENDERS
ENGINE
ALTERNATOR HOOK UP
BATTERY
MASTER SOLENOID
AMMETER
STARTER SOLENOID
STARTER SWITCH
STARTER
MASTER SWITCH
GENERATOR
GENERATOR CKT BKR
SHIELD
VOLTAGE REGULATOR
GA
GF
GB
INTERFERENCE CAPACITOR
GENERATOR HOOK UP

N.A. #30

T-18 PERFORMANCE DATA

#587 N198SJ, Springer Jones, Rt. 1, Mitchell, Neb., 69357 - O-360-A2B 180 hp prop 70 x 81 fix pitch, static max 2200 at 42°F and 3985' elev; max level at 6000', 2750 rpm, 172 IAS, +5°C; at 10,000' 2500 rpm, 155 IAS, -10°C; Airspeed calibrated meas. course; max gnd spd 192, 2750 rpm, 1600 lbs, 6000', +5°C; Corvair cooler, max RC 1500 fpm; 9.5 gph at 180 cruise, 2450 rpm; Cost $3500+ in 20 mo., first flight October 8, 1969; Empty 898 lbs; Fwd cg 62.6 (15.2%), Gross 67.5 (25%), Empty 60.78 aft 69.8 (29.6%).

#329 N2721, Maj. Robert Pargin, 2720 Mossdale Dr., Nashville, Tenn. - 37217; - O-320 150 hp prop 68 x 72 F.P.; static 2500 rpm, 59°F, 540' elev, max level at 5000', 2750 rpm, 160 IAS, +5°C; at 2000', 2750 rpm 165 IAS +9°C, no calibration, max gnd spd 150 mph, 2500 rpm, 1350 lbs, 5000' +9C; oil at 70°OAT 195°F at 2500 rpm, 90°OAT 210°F 2500 rpm, Corvair cooler, RC 1300 fpm at 1350 lbs, cruise 150 mph at 8000', 8 gph, 2500 rpm; Cost $4000, 2000 man hours, first flight Sept. 25,'67, empty 860 lbs, CG measurements aft of leading edge - fwd 7", gross 10", empty 7", aft 10".

55418-

#117 N18117, Ron Zimmerman, 1915 McKinley St. NE, Minneapolis, Minn, O-290D-2, 135 hp; prop 69x67 FP, static 2250 rpm, 58°F, 908' elev; max level 4000', 2750 rpm, 170 mph IAS, -4°C, 24.8 mp; 6000', 2740 rpm, 164IAS, -6°C, 22.9 mp; 8000', 2700, 156, -10°C, 21"; 10,000, 2675, 148, -13°C, 19.2"; max gnd sp 180 mph, 2775 rpm, 1350 lbs, 2000', -5°C; largest Corvair cooler, fwd of left cyl; RC 1400 fpm; cruise 155 TAS, 7 gph, 2350 rpm, 21", $4000+, 3.5 years, first flight, July 10, 1967, empty 880 lbs, fwd cg 63.1 (16.2%), gross 68.2 (26.4%), empty 62.3 (14.6%), aft 70.5 (31% with 90 lb baggage and 8 gal in tank).

#301 N318W, Callbie Wood Jr.,1121 Forest Hills Rd., Wilson, N.C., 27893 O-320-A, 150 hp, prop 70 x 70 fp, static 2300, 70°F, 160' elev; max level, 5000', 2750 rpm, 175 IAS, 70°F, 24" mp; 2000', 2950 rpm, 185 IAS, 70°F, 27" mp, calibrated on meas. course; max gnd sp, 180 mph, 2800 rpm, 1450 lbs, 7500', 21"mp, 50°F; oil at 70°OAT 180°F; Cardinal cooler fwd of left cyl; RC 1200 fpm; cruise 150 TAS, 7 gpm, 2500 rpm, 17.5" mp at 7500'; $4000, 18 mo.; first flight May 6, 1967, Empty 830 lbs.

FUTURE NEWSLETTERS

At last, the thing my wife has been wishing for has happened. The Newsletter treasury has run dry. I've planned on just ceasing publication when the money ran out because it has gotten to be a bigger job than I originally envisioned; but after much deliberation and discussion with T-18 builders, I've decided to keep publishing it. So, if you will fill in the attached form and enclose a $2. donation, I'll keep you on the mailing list. Many other Newsletters operate on a $2. per year donation but since 1964, when we started publication, we have asked for only $4. total. Some have been very generous and contributed more, however. If you have already contributed your share, just return the form and I'll keep you on the list. If you want to receive future issues you MUST return the form. If you have sold your plans please notify me and John Thorp -- this is very important!

Nebraska Bush Pilot - Dr. Richard Cottingham, M.D., Rural Route 1, East Hiway 6 and 34, McCook, Nebraska, 69001 - Have all pieces done on my own T-18 save horizontal tail, for assembly. Wore out a Mooney Mite in about 350 hours last year and since purchasing Dick Hanson's T-18 299V last June, couldn't be more enthusiastic about an airplane. Put 339 hours on 299V in 10 months, rain or shine, hitting six sod fields per week, two of these atrocious. Had 1200 hours when I bought 299V, all tricycle time. Only tail wheel qualified instructor in this area was about 30 seconds behind everything in the cockpit from the right seat - typically calling out "right rudder" when we were veering about 30° right on the runway. I decided after two hours of this I'd have to go it alone. Spent eight hours on a 6000 foot asphalt strip making taxi runs, eventually minor lift offs and back on, etc. Learned it's better to do this not in Nebraska in July as I warped the right brake flange in the average 100°F heat during this time. Decided I was ready and flew it off and on a number of times after the eight hour "runway priming". Since, 299V has been subjected to daily punishment including the worst sod fields in the U.S., wild mid-summer cumulonimbi, 30-40 mph crosswind landings, oil burner route vortices from B-52's (unanticipated through ignorance) and has been stood at bay by a 1700 lb. Hereford Bull after a night landing (no landing lite then) who had taken over a Kansas strip last fall.

At 240 hours of this, I noticed the tail springs drooping one day and forward edge of tail spring was down 3/4" from the fuselage. Disassembled the tail and found the 591 fitting completely fractured aft of the flange. 5/16" bolt, nut plate, ok. Further found fractures (several) in the 583 fitting on the 576 bulkhead -- some were old and had been stop drilled. New fittings, doubler on the lower 1/2 of the 576 frame have held up well after another 100 hours of the same torture. I am hesitant to report this since I think it is directly due to the lousy fields (especially when frozen), poor landings, and probably fast taxiing over these.

If I have to drive to look after my practice in this area it amounts to 19 hours in the car a week. The T-18 has cut this to five hours. Routinely indicate 165-170 and G.S. averaging 190 mph at 11 GPH. (Need an EGT) 2400 RPM and 23" MP - usually about 5000 ft MSL. It's a great airplane!

Russ Basye - We regret to report that Russ Basye lost his life while on a search and rescue mission in the high Sierras. Severe turbulance or hypoxia is suspected for he had been above 10,000 feet for about two hours and was a heavy smoker. No mechanical malfunction is suspected. He had asked for the highest search grid.

From John Thorp -"Rudy Adler is claiming 180 mph V max for his T-18 with GPU. This gives an "f"= D/q = 2.5 ft^2 and a C_{Dp} of .029. The L/D at 1400# and 103 mph is 11.5. This is all better than it is supposed to be but I can't dispute it. Your 75% power cruise is about 2700 rpm at S. L. with an increase of about 25rpm per 1000 ft to full throttle at 2900 at 8000 ft (all density altitude)."

John says he will not be able to be at Oskosh this year. I probably won't be there either for I am taking the family on an auto trip to California about then.

After getting the above letter from John yesterday, today I thought I'd see what my T-18 would do at the 2700 rpm cruise. While at 2000' and 2700 rpm, I indicated about 167 mph. Oat was 55°F.

Maintenance Tip - For 180 hours I've been plagued by a problem which I've finally solved. When at full throttle, occasionally the engine would give a little jerk like it missed once. Thot it had to be carb but it was a bad mag. Hooray!