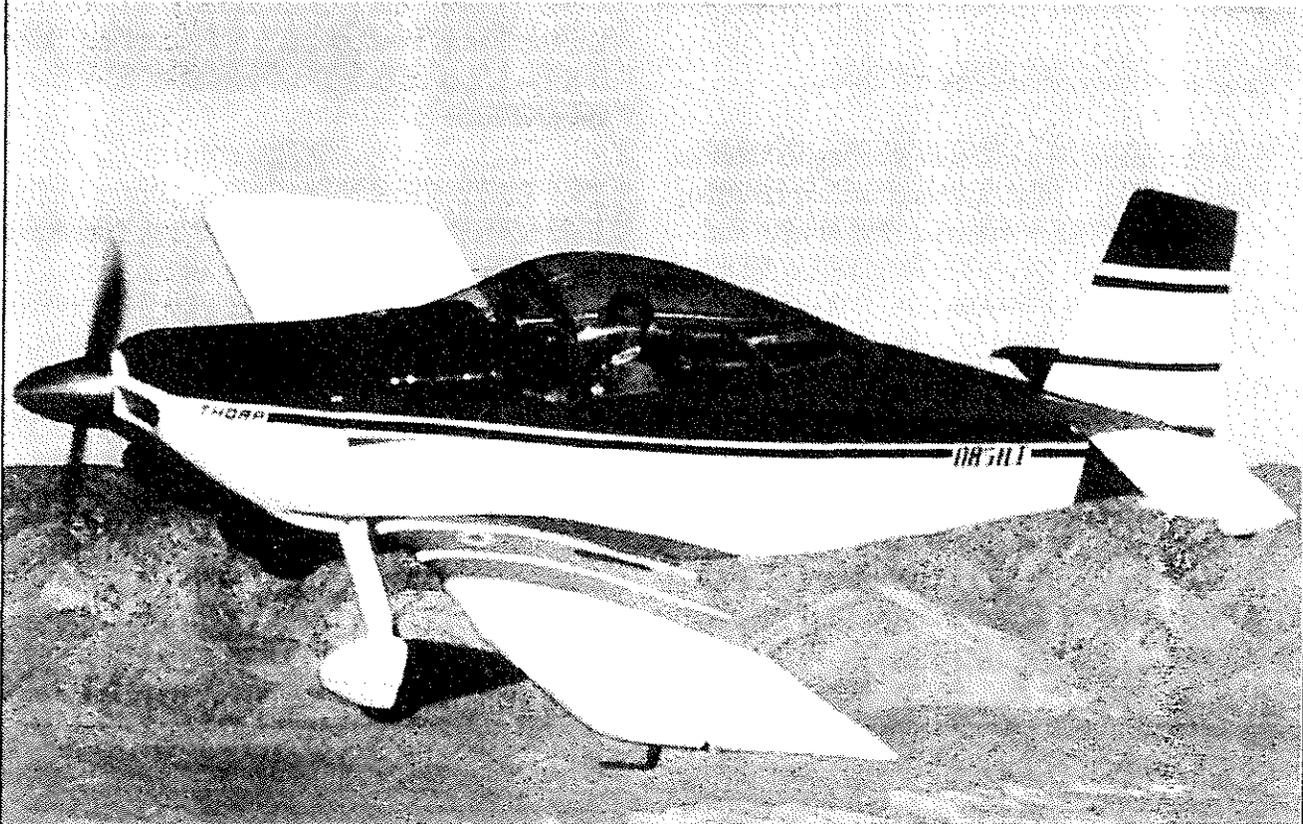


# T-18 NEWSLETTER



*Lyle Trusty's N851LT*

## **IN THIS ISSUE:**

**S-18 Aileron Binding Alert!** by Denell Zander

**Letter to the Editor...LOTS of them!**

**Electrical Tips** by Lyle Trusty

**Scott Master Cylinder Problem** by Walt Giffin

**For Sale Items: Some good buys here!**

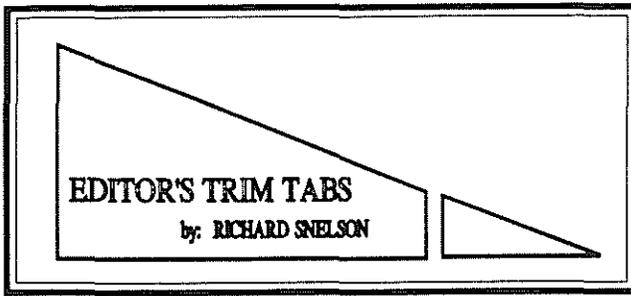
**Oshkosh 98** by Roy Farris

**Kentucky Dam Fly-In is Oct 9, 10 , 1998**

**Call for reservations 1-800-325-0146**

**See Page 19 for contacts and details**

*NOTICE: (STANDARD DISCLAIMER) As always , in the past, present, and future newsletters, we would like to make you aware that this newsletter is only presented as a clearing house for ideas and opinions, or personal experiences and that anyone using these ideas, opinions, or experiences, do so at their own discretion and risk. Therefore, no responsibility or liability is expressed or implied and is without recourse against anyone.*



Dear Members of our Thorp Family,

Fall temperatures are finally starting to bless us here in Illinois. With it comes the expectations for the great Thorp events at Placerville, and Kentucky Dam. Don't know how you folks are feeling, but it's my thinking that I'll take the Kentucky Dam Fly-In over Oshkosh anytime. These small get-togethers are twice as much fun and if you get on the ramp and discuss your project or airplane with the Thorp owners you can learn just as much as sitting in the crowded forums at Oshkosh. Unfortunately we still have hundreds of Thorp owners that don't come out for these events. Let's tell them what they are missing!

The second Thorp I had built now has a new home in Oregon. Sure, it was sad to see it go. But the new owner, Pat Rokus is a fine fellow and will give it tender loving care. Heard from him this week and he has more that 75 hours in the airplane now. He's put landing lights in the wings and the pictures show nice workmanship.

Some of you have asked what my plans are as far as another Thorp are concerned. There are a lot of good projects coming up for sale and I might go for one of those. I plan on keeping the newsletter going and making it to most of the Thorp events. I belong to the Decatur Aero club and have 5 airplanes available, so I have plenty of flying opportunities.

RoxAnne and I made it to the lunch/forum at Oshkosh this year, but left right after it was over. We had our horses and horsetrailer camper over in a wilderness area on the Wisconsin River.

More than 20,000 acres of woods and riding trails. Had a great time there.

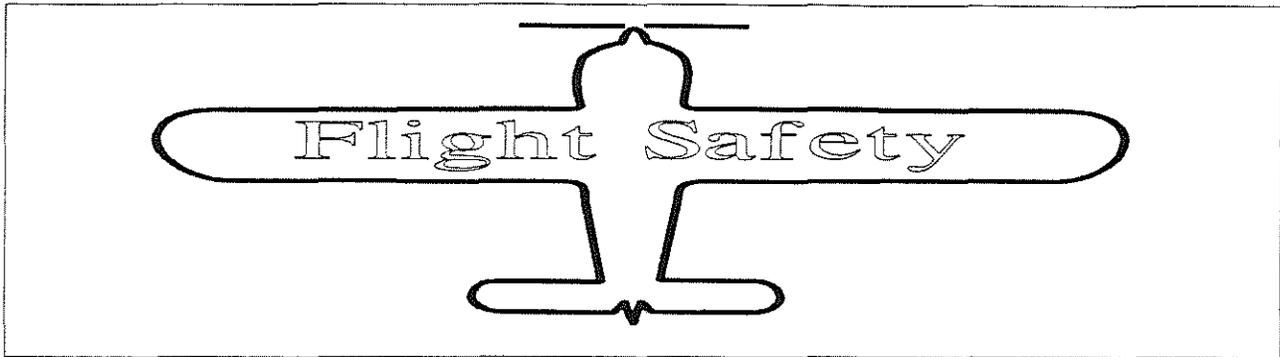
We had a good crowd at the lunch/forum and Bill Williams called afterward to say they had a surplus from the lunch collection. Bill thought it would be a good idea to send the funds to the folks at Placerville to help with some of their cost for the Thorp event there. So Placerville, hope it helped. Let us hear from you as to how the event went.

Dick Ecklund sent photos of the Thorps on the field at Oshkosh 98. He counted 22. I wish we had more space in this newsletter for more photos but it turned out I had a lot more material than I could get in. Thank you to Dick for the pictures and to the folks that continue to send letters and email articles for the newsletter. Roy Farris has promised an article on building the flaps for the next newsletter. We need other folks to jump in here and send me articles and information on their projects and trips. Please help! I would really like to hear from Classic Sport Aircraft with the details on their new S-18 Kit. The world wants to know Mike and Phil. Send us more info.

Visit my home page for event information.  
<http://homepage.dave-world.net/~rsnelson/thorp.html>

## Newsletter Dues

Please help me out fellows! There are still way too many of you that have not sent your 98 dues! This is really late in the year and makes it difficult for me to handle printing and postage cost. A couple of folks waited till December last year to tell me "Oh! by the way Rich, I didn't want the newsletter." That was after I had sent it to them all year! They didn't pay either. @#\*\*\*##...Thank goodness there were only a couple of people that pulled that stunt. So you late guys check the label for a red circle and then send your dues. Please do it today!



## S-18 Aileron Binding Alert

Subject: Aileron Alert!  
From: delzander@juno.com  
To: rsnelson@dave-world.net

While rigging my ailerons for first flight, I noticed binding at the aileron push-pull tube rod ends at the walking beam. I checked my plans and found everything built to specs. I checked another flying T-18 (Folding Wing) and found the situation even worse.

The problem is that the mast plates at the end of the stick socket and the AN960-10 washers at the control horn at the outer wing juncture do not provide enough clearance for freedom of the push-pull tube rod ends at both ends of the stick forward and aft excursion. On my airplane the twisting force had loosened the lock nut on the rod end and was working the threads about 1/16 turn at each full excursion of the stick. On the other airplane the lock nuts held and the last 6" +/- movement of the stick aft was torsionally loading the push-pull tubes. I suspect that every plans-built T-18 out there has a good chance of having binding in the aileron push-pull tube or working of the threads on the rod end. My solution was to shim out the mast plates at the end of the stick socket with a .032 aluminum shim on each side and then put a .032x1/4 dia. bushing on each side of the control tube rod end. I used standard AN960-10L (.032) washer and turned them down to 1/4" O.D.. That provided plenty of rod end freedom at both ends of the stick excursion. At the risk of being too paranoid I think this should be checked before the next flight on high time aircraft and on all T-18s at the first opportunity. Denell D. Zander 503-620-1335 DelZander@juno.com

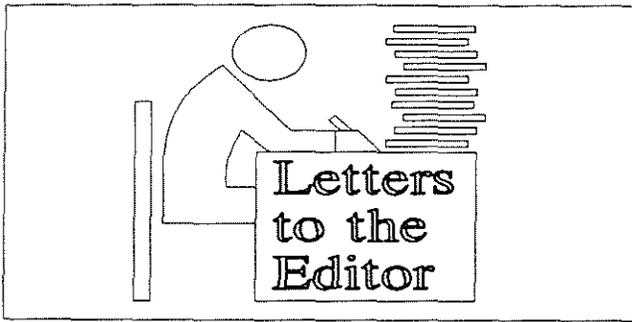
### Response from Classic Sport Aircraft

Subject: Binding Ailerons

I have an inner wing set up and tried to repeat your problem. Using the Hiem F34-14, I was able to get the rod end to move. You could see when the torsional load would start. I then tried to repeat using a Fafner REB3N and I could not see any movement. The Fafner is wider at the ball (approx. .500) and allows the full movement. The Hiem is narrower (approx. .460).

Adding spacers as you did fixed the interference with the Hiem. I will look into a possible change in the S-18 drawings. The movement does not appear to be anything critical, but should be looked at during annuals.

Sincerely, Mike Archer  
Classic Sport Aircraft



Editor's email: [rsnelson@dave-world.net](mailto:rsnelson@dave-world.net)

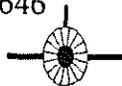
Hi Richard,

The home project should be completed by mid July. Building a T-18 is easy compared to building home. Thank goodness its almost over and I can get back to a normal life including airplanes.

Regards, Ken Morgan

New address:

9110 Bellechase Rd.  
Grandbury, TX 76049  
Phone: 817-578-3646



Rick:

Building your own windshield is essentially child's play, as outlined in a previous newsletter. It cost me \$40 for the acrylic - about 35 for the form, which cost could be reduced-so that \$75 is pocket change compared to the price asked by vendors. Sure, it takes time and one learns from doing - but is that what it is -all- about-?

Two attempts were made to form the canopy and both failed. The method attempted was to rough form the acrylic sheet over a rough male mold, then blow it to the desired shape. Unfortunately, the required compound curves could not be approximated; severe wrinkles developed during initial forming and could not be removed.

After checking all sources of which I knew, I bought one from Classic Sports, and I suggest that one in need of a canopy check with Mike Archer. Sincerely, Floyd Myers  
5170 Sunset Drive  
Ogden, UT 84403

Hello Rich & RoxAnne,

Hope all is well with you and your family as well as the T-18 family. Still enjoy very much receiving the newsletter and hope you continue to have the time and ENERGY required for such an undertaking.

A lot has changed in my life as well as Mike Hernden's. As for Mike, he has a C- 170 which he has been improving gradually over the last 4-5 years. About 4 years ago he bought a C-195 requiring a total restoration. He has had it disassembled about as far as you can go and still have anything that resembles an airplane. It is now going back together. Still a long way to go and a lot of work but at least all in a "positive" direction. Consequently, his T-18 project has been in storage for the last 4-5 years.

My life has changed as well. Sundstrand offered a "by-out" package to all over age 55 in 1996. I decided after 29 1/2 years to accept the offer and retired November 1, 1996. We all thought (HOPED) that that would mean the T-18 would finally get to the front burner and get finished. In January, I bought a hangar at Cottonwood Airport on the NW side of Rockford. In April, I bought a Fly Baby locally (really nice one) for a low cost tail dragger time builder. In May I was persuaded to come back to work via Kelly Services. Sales here were up 50% over 1996! \$635m to over \$1 billion for the aerospace division. So, I am now officially a Kelly Girl! Not sure how long I will be on the job here but the Director says he believes there will be work available for 4-5 years. Not sure I will stay that long but who knows. It is nice to be able to set your own hours and days however.

During the summer, I followed some "chatter" on the AOL bulletin board for the T- 18 and became concerned about something I have known for years but had forgotten when I bought my hangar. That is that the T-18 needs (for most/many pilots) 2000 ft minimum to land. Cottonwood is 2600 with a 400 ft displaced threshold on one

end. It seemed that I needed a new airport or a different project. After being emotionally involved as well as physically involved with the T-18 since the 60's, it became a rather depressing summer and OSHKOSH was somewhat of a "bummer" for me. Cottonwood is the home of EAA Chapter 22 and is nearly 100% owned by chapter members, consequently, I wasn't too eager to leave there.

Early September, I got a ride in an RV4 that belongs to a friend here in Rockford. After that, several things happened very quickly. I happened to see a RV4 project for sale on the internet with an 815 area code. Turns out it was only about 20 miles west of Rockford, was the second ship being built by an American Airlines Captain and was for sale due to lack of time since he bought a small farm for his family to live on. Just moved there. He has a lot of work to do to the house, like a complete rebuild! The following week end was the flyin at Whiteside airport so I went to the RV forum. To make a very long story short, I now have a RV4 airframe that is 90% complete. Have to install the canopy, instruments, engine and cowl. I had an inquiry about my T-18 project but it isn't for sale.

Current thought is that it will be my "retirement-retirement" project. I have a terrific shop, heated and well lighted in my hangar (hangar 42x42) so have a good place to build. Not as handy as the garage but nice to have both vehicles inside in the winter again. Also, with 4 or 5 projects being built or restored, there is a lot of activity there for encouragement. By the time it is completed I should have a lot more taildragger time and may feel competent to operate the T-18 from there also or will have to hangar it else where.

While I'm still at what was to be a short note transmitting a couple of checks, I would like to express my concern about the T-18 and OSHKOSH. I would like to see the T-18 continue to be popular with additional builders. With the forum "off-site" I wonder how many "wannabees" are getting the T-18 message.

Unless they come there and seek out the T-18, they would never learn anything about it. I know I haven't been to a forum since it left the field due to the time commitment to get there and back. I realize that it wasn't your wishes to move off the field either. Just wonder what others are thinking and whether or not it is hurting the future of the T-18.

Well, I've taken enough of your time with this. Would enjoy seeing you and RoxAnne again. Haven't been to KY LAKE for several years now. The last time I did, you folks didn't make it. By the way, we have a great fly-in breakfast the first Sunday in May, every year at Greater Rockford Airport. That would be a nice T-18 flight on a nice Sunday morning. HAPPY FLYING, SAFELY Wally Hunt 1658 Plaza Drive, Rockford, IL 61108 Phone: 815/332-4708

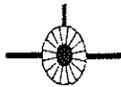
*Editors Note: It was great to hear from you, and what's happening in the Rockford area. We have missed seeing you at the T-18 events. I do agree with you that the "T-18/S-18" is not getting proper exposure at Oshkosh. With that said, I must tell you that you are missing the best bargain lunch at Oshkosh, plus a forum that can last most of the afternoon if one cares to sit in the big tent, drink free soda, and talk. Besides, Wally it ain't that far to the nature center. Looks like if the field keeps expanding west it will be at the doorstep to the nature center soon. As you know we had been pushed into late afternoon--evenings times for our forum, which most thought was really stupid. That's why we went to the Nature Center. Plus the fact that it's a better place! We missed the ball this year because I failed to get anything in the program about the forum. That's my fault and we can change that next year. What's really missing at Oshkosh is someone to bite the expensive bullet and have a T-18/S-18 display. Until that happens the T-18/S-18 will remain a well kept secret. (Best flying homebuilt in the world.) Just ask and we will tell you! Hope to see you at Kentucky Dam in October, Rich Snelson*

Dear Richard,  
 Sorry to read you sold your T-18. When I first heard this I was quite surprised and figured you would no longer edit the T-18 Newsletter. So I thought if you didn't do it I would no longer pay my dues. My biggest benefit is to read the letters sent in. However after reading the last issue and noting I'm behind I'm enclosing my check for at least another year.

I try to get my Cessna up at least once a week. Going to miss your flyovers. Ernest Thorp

*Editors note: Thanks for the comments Ernest. I plan to stick with the T-18 Mutual Aid Society. Lots of good T-18s and T-18 projects out there so you never know what might end up in my shop.*

*Ernest lives about 3 miles north east of Clinton Illinois and a great grass airport with east/west and north/south strips. Lots of flying history behind this gentleman going back to getting shot down in WWII. This year he was Illinois' flying farmer of the year. Great family, fine man! With a name like Thorp, how could he miss. Rich Snelson.*



Hi Rich,  
 Enclosed is some info on my T-18 and a picture. Heart problems is the only reason I'm selling. Mary and I had a lot more trips planned.

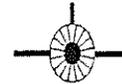
I just can not imagine going by car!! The Thorp sure went places in a hurry.

Thanks for carrying on with the newsletters, they are great! Truly yours, Dick Amsden  
*Editors Note: Sorry you are having to sell your beautiful Thorp. Details later in this newsletter. Rich Snelson*



Dear Richard,  
 Leave this AM for a month in the deep interior of Venezuela so won't make it to Coles Co. T-18 Thorp Fly-In.. Was planning to but this opportu-

nity came up. I might go to Oshkosh but over the years have determined that the small T-18 fly-ins are a lot more fun than Oshkosh. Will be sure to make Placerville, Ky Dam other local ones though. T-18, 9008Z is running fine-as usual! Thanks for the N.L. Steve Hawley.

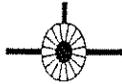


Dear Rich,  
 Enclosed is my check for this year's dues. I am embarrassed about my tardiness. The least that I could do is to get in on time or early as a way of thanking you for the excellent job that you are doing. Our business is coming along slowly but, it does cause me to work long hours and sucks up all of the money. We have recently signed an agreement with another company to market our products world wide. This is very exciting as we should see an increase in sales and I will have more time to design and develop new products. Fortunately, I love, what I am doing and it sure beats working for someone else in spite of the long hours. I am sure you heard about the misfortune that befell John Bridges and his buddy on the way to Sun n Fun. They were in the other guy's Glassair and they crashed in Louisiana shortly after takeoff from a refuel stop. The loss of both of them is enormous but I would like to tell you how John touched my life. I met John here in the Airpark at a hangar where he was building a Glassair for another buddy of his. John & I started talking back and forth and he was able to "drag" me to an EAA chapter meeting near the Deer Valley airport. After the meeting, we went to John's hangar to look over his Thorp, which was pictured in the newsletter last year. Then John started "pushing" me to have him come to my place and go over my project. We did get together and since John was a Tech Counselor for the chapter, he really went over my T-18. He had a lot of good tips for me and he wrote up the report and submitted it to Oshkosh. Then, he wanted me to visit his hangar so he could show me how to glass things in and to go fly with him. Unfortunately that did not happen

and I was shocked when I heard the bad news. We had a memorial service for the two of them at the hangar where he had been building the Glassair. We all will miss both of them and I will miss John and will remember his willingness to help anyone that he felt that he could help. You didn't need to ask as he readily volunteered his services. He was truly a typical EAA volunteer who was very skilled at building airplanes. Keep up the good work and I hope that next time we communicate that I will be able to report some progress on the Thorp.

Sincerely, Don Ruffner

*Editor's Note: I was very sorry and sad to learn about the loss of one of our T-18 friends and builders. Rich*



Subject: Flaps Fittings

Date: Tue, 15 Sep 1998 21:34:15 EDT

From: DDouble357@aol.com

To: rsnelson@dave-world.net

Hi Dick:

I get so frustrated with this darn machine(computer) some times I can't even find my self in it. Hope everything is well with you and your. Some how I stumbled over some T-18 stuff on AOL where there appeared to be a chat board with some of the builders asking some questions. I put in a question but haven't gotten an answer yet; so I thought I would direct it to you. I came across some Flap assembly parts from a friend who had decided not to build another Thorp. The parts all looked new: however, he had drilled some of the assemblies and one of them has a skin already clecoed on it but not riveted. The problem that I encountered was that he had reversed the locations of the -4 and -6 fittings on the ribs for the inner and outer flaps ribs.

Before I go on with the plugging and riveting doublers on the ribs and relocating the fitting IAW drawings, I thought I would shoot the question to you in the hope of saving me some extra work. What would happen if I decide to leave them as they are and going ahead with the assembly?.

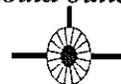
Would the flaps still operate as advertised?

Some time when I have a little more time I will send you a progress report on my project. I've been working 12 hours days and have had time to work on my project. And too the weather around here had been in the 100+ degree for the past two months which Zaps your want to do anything much less out in the garage.

Hello to all out there in the Thorp world.

P.S. Will be going to the Southwest regional in Abilene, Tx which is only 150 mi from here. Don Doubleday

*Editor's Note: It has always been my finding that when it comes to Thorp primary controls and assemblies we should build them to John Thorp's drawings.*



Rich,

I recently purchased a set of plans from Classic Sport Aircraft, SN 241. Is there any listing of names and addresses T-18 and S-18 builders. I live in the Dallas Fort (Texas) Worth Metroplex, and would like to visit as many projects as I could before actually beginning the construction myself. Surely there has to be some in the DFW metroplex.

Also, is there any kind of material takeoff that has been done for the T-18. I plan on scratch building everything. I don't want to order the whole plane at once, but I don't want to piece-meal the orders either. I asked this of Mike Archer of Classic Sport Aircraft, and he did not know of anything. For some other aircraft designs, I have seen tabulations of how much material you needed for a particular sub assembly, or a drawing showing full size sheets of material, and what was supposed to be cut from each.

Does something like this exist, possibly in the newsletter.

Thanks, Robert Mardis

<Robert.Mardis@halliburton.com>

*Editor's Note: See the details in this newsletter as to a Excel file that will be very helpful. Ron Chernich has it available. I also have it now and can email it to members.*

Hello,  
I thought you might be interested to know that my father, Bob Dial, passed away on August 14, 1998 at his home in Bloomfield Township, Michigan. My Dad had been suffering from heart disease for several years. He was 76 years of age. He built 2 T-18's.

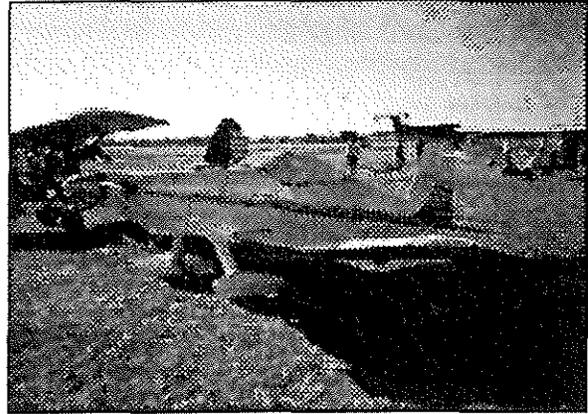
The first was built from scratch and flown by my Dad for many years. After he lost his medical, Dad sold his first T-18, and the new owner destroyed the plane and lost his life in an accident.

The second T-18 was bought by my Dad as a partially completed project, which my Dad finished. This plane was subsequently sold and I believe is currently owned by 2 gentlemen near Atlanta.

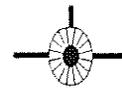
Dad served in the Air Force in North Africa and China during WWII and received an honorable discharge at the rank of Major. He retired from General Motors Corporation as a corporate pilot in 1978 flying G-2's.  
Please acknowledge your receipt of this email.

Thanks  
Kenneth M. Dial  
Geisinger & Dial, P.L.C.  
201 W. Big Beaver Road  
Suite 1120  
Troy, MI 48084  
Voice 248-524-0202  
Voice Mail 248-524-6164 X 3009  
FAX 248-524-0231  
kendial@dialcpa.com

*Editor's Note: Many of the T-18 folks are familiar with your dad's name. Bob Dial with his participation in the Thorp Mutual Aid Society added a lot to the great T-18's history. He was a fine builder and will be missed. I've included a photo of Bob's T-18 at Oshkosh 98. It's current owners are Barry Hall and Jud Carter*



*Bob Dial's Thorp N31BD*



Hi Everyone:

I just got out of the hospital today the 24th, feel weak as a kitten, but am doing fine. I'm home, under the able supervision of Anny the First. We have already done a bunch of things, prescriptions, groceries, etc. but I'm winding down, and about to call it "atsanuff" for today. I've got two extra belly buttons, a 10 inch scar on my chest, and an eighteen inch scar on the inside of my left leg. I also have numerous black and blue splotches where the nurses missed the vein with their darts. They did four by pass grafts without stopping my heart, a fairly new procedure pioneered by the Dr ( Dr A. Gheissari) that did the operation. I spent two days in the Intensive Care Unit (ICU) after the operation on the 20th, and then two more in the primary care unit (PCU) before getting discharged today the 24th, at noon. Thanks for your thoughts and prayers.  
Lyle and Anne Trusty

*Editor's Note: Glad things went well. You're back just in time to read the newsletters and the great article you sent on diodes. Not a bad picture on the cover either! Rich*

From: James "Jim" Borg <James.Borg@gte.net>  
 To: rsnelson <rsnelson@dave-world.net>

Hi Rich

I just got on the internet and having lots of fun just crashing around with this new computer. The T-18 is all in pieces right now. The wing is off for inspection and to correct some minor areas that I was never very happy with from the start. All is O.K. with the wing spar which is what I really wanted to inspect most of all.

The engine is disassembled and most of the parts are at the engine shop for inspection. I'm really happy with the results so far. The crankshaft, case, and cylinders were inspected and found to be within limits. All other parts are also checking out good. Not bad for a engine with 2800 hrs. (0320 E2A 150 h.p.)

As long as the airplane is down I plan on removing the tail group and inspecting that also. I'm also going to move the pitot from the vertical fin to under the wing. I also think a paint job is in the plans. I'm really getting tired of polishing aluminum. Jim Borg (N180RG)

*Editor's Note: I have always removed the rudder, and vertical fin each year. It's a good idea to check for cracks through out the area. Also check the steel landing gear attach points for rust and cracks.*



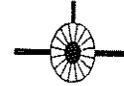
Rich,

I need to talk to someone who knows props. I have a 0-320 that has a c/s Hartzell designed for a 0-360 (F76 66 blades) . According to the factory there has never been any vibration testing done on the engine/blade combination that I have. Therefore they say there's no telling what kind of things are going on up there. To buy new blades is prohibitive and used ones are not to be found. I'm trying to find out what risks I may be running and also what kind of testing has been done on all the other non-certified props. Have they had this kind of testing, is it necessary, would I be in the same dark using one of them, etc.

Any help you can give I'd appreciate.

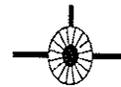
Thanks,  
 Damon Berry  
 FAMBER123@aol.com

*Editor's Note: I didn't have the answer for this on so passed it along to Bob Highley and Bill Williams. Anyone care to comment for the next newsletter?*



Hi Richard,  
 I'm home again after another wonderful time in your country, especially at Oshkosh. I really appreciated the get together on Friday when I was able to meet so many other T-18ers. As I arranged with you could you please send me the following 4 back numbers of the Newsletter: 82,84,85,88.

Regards, Brian Olney  
 <s.olney@student.murdoch.edu.au>



From: "WARWICK W. LLEWELLYN"  
 <wllewellyn@compuserve.com>

I am in the process of re-assembling a Thorp T-18 that was built in 1976 by a friend who passed away two years ago. When his health was declining he took the wings off to take the airplane home to do some fix-up work prior to putting the plane on the market. I have a question concerning the wing center section to fuselage attach. The Thorp drawings show an Avdel ball detent pin for the main spar attach. I find no such pin in the assortment of hardware with this plane. Would AN6 bolts with AN365 nuts be suitable ?

Do later T-18 plans call for the Avdel pins? Your help would be appreciated. Warwick Llewellyn, 2500 Perdido Drive, Midlothian, VA 23112  
 email: wllewellyn@compuseve.com  
 phone: (804) 744-1895

*Editor's Note: Most people use bolts instead of the pins. Rich*

G'day Rich

All the back newsletter issues arrived and it's been great to catch up on what's been happening in the T18 world during the last 20 years that I've been away. The current group are certainly a great group. Greg Halverson and Brad Chapman saw my name in the last newsletter, noticed I was "local" to them in the Portland area and took the trouble to contact me. Greg took me for a ride in his T18 (with folding wing) - which was my first ride in the type. Even though I'd had one a third complete way back, I'd never even sat in one before. Greg was brave (or foolish) enough to let me shoot some landings at Scapoose which I enjoyed immensely. Especially as my last taildrager experience was 30 years ago in a Tiger Moth. Brad had his T-18 down for maintenance when I visited, but we had a great time talking and with the cowl off, he was able to show me a lot about his 0-290 GPU installation. All this is helping to light the building fire under my tail again.

As an observation, the newsletters show the group has evolved from primarily builders to a more of a owners/social structure. Perhaps the efforts of Classic Av and Eckland Engineering to produce full kits will change that back a little - and perhaps I can do a little as well. I've started looking into material sources and costs and alas, the scene is not as good as it was years ago. When I started last time, I was able to order a materials pack containing all extrusions, tube, hardware, odd-size plate and other hard to source items. Not so today. Surprisingly, the newsletters were not able to give me a complete materials list - although there are at least three partial lists that I've found. So I set out to rediscover what other early builders must have found and would like to share it out through the newsletter and yourself to help others who would like to scratch-build. My first surprise was that a sheet 4x12 sheet of .025 Alclad that cost less than \$20 in the 1970's now costs more than \$120. That's a lot more than what could be accounted for by inflation.. Why is this?

I've gone through the current "Deluxe" plan set, making an Excel spreadsheet of every part and hardware item called out, with the exception of engine installation items like prop diving lugs, extensions and carby air box stuff. In the process, I found 3 more extremely minor drawing errors and two possible "missing" parts. These appear in the drawings, but are never actually dimensioned and given dash numbers - although I'll bet every builder has managed to notice and include them regardless. If anyone would like a copy of the spreadsheet, they can email me, or find someone that can email me and I'll send them an electronic copy. I don't want to get into the

"floppy by snail-mail" business, so emails only please.

However, since my email address will change in the near future, I thought it best to send you a copy so we have a central repository, as it were. Some of the stuff may also serve as newsletter filler material, from time to time.

Regarding the plan anomalies, I've emailed Richard Eckland who will validate my findings and update his plan correction sheet as appropriate.

Here is what I found:

A-650 "Assembly Canopy": two different parts both called out as -12, a Spacer and a Seal. No big deal.

A-740 "Flap Pulley Installation Inboard": drawing in the top left misidentifies -1 as -3. Again, this can't cause a problem.

550 "Control System" shows the 556-1 Walking Beam mounting brackets attached to the main spar with the wrong kind of Hi-shears, driven the wrong way around. This error could result in a mainspar that can't be mated with the fuselage - if the builder has not studied the plans carefully enough to know the spar web must be flat in this area. I'm sure this was a "known" plan error 20 years ago, but I can't find a newsletter reference to it.

The two part omissions are very obvious to a builder. Again, I stress that I may have missed where these are called out, but I don't think so:

1. The 3/4 x 3/4 x 1/16 angle extrusions that run either side of the 526 fitting down the middle of the 604 Firewall (back) are shown, but not actually identified. This could cause a builder to miscalculate the amount of angle stock required to build.

2. There is a Clip mounted to the 580-5 Long-erons just aft of the main spar (with Hi-shears) to carry bolts that bear against the rear of the top spar cap. These clips appear to be made of lower main spar cap material, but are not detailed anywhere, nor are the 4 Hi-shears that mount them. I don't think that a 133" length of lower spar cap material would supply enough excess to make these.

- 2a. The 599 Ref that shows the clips also suggests there are small plates riveted to the rear of the main spar upper cap against which the bolts through the "missing" clips bear. These would probably need to be something harder than 2024 - maybe stainless. I wonder what other builders have done here?

So, that's it. I've still not definitely decided to start the project - especially as I will soon return to Australia, where "rules Rule" and making a homebuilt requires as much bureaucratic compliance effort (read that how you will) as building effort. Anyone who completes an aircraft there, in my opinion, can justifiably feel a major sense of achievement.

If US readers want to see what I mean, review the requirements chizeled in stone on :

<http://www.saaa.com/building/guidance.htm> and prepare to be amazed (and thankful for living in a society that encourages individual achievement in general and aviation development in particular). That said, I must point out that an initiative exists down-under to implement an Experimental category. One can only hope.

A word or two on the spreadsheet. It's in Microsoft Excel, which is quite common. It's in a version compatible with MS Office 95 and uses "workbooks", but does not contain any macros. The sheets are:

\* Drawings - all sheets in the Deluxe set, as recently published in the newsletter. You can do your own sorts by, number, name etc.

\* All Parts - all components and hardware as called out in the drawings, along with the material type, stock, blank size and quantity. This sheet uses "groups", so it looks like the drawing list with little buttons in the left margin. Click on a button to explode out a drawing and see all its parts (due to a quirk, you actually click the button on the next line).

\* Materials - derived from "All Parts" this sheet is used to build a complete "materials required" list by sorting on Type and Stock, then adding up the blank sizes.

\* Hardware - again derived from "All Parts", this lets you total up all identical items from all the drawings.

Another sheet contains hardware prices from Aircraft Spruce. I have a macro that produces prices from this on the hardware list, but this requires more work.

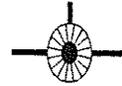
Here's some statistical data: There are 826 different bits of metal to be cut, trimmed and shaped in the airframe of a T-18. Putting these together will require 1557 different hardware items. This includes long rivets, the ones you will only need a few of, but not short ones which you would buy by the pound. Finally, the list does not contain anything forward of the firewall except the undercarriage - where you can

expect to add more parts and hardware.

Cheers for now,

"Ron Chernich" <Ron\_Chernich@clmt.com>

*Editor's Note: I have Ron's Excel and can email it to anyone wanting it. Contact me at: [rsnelson@dave-world.net](mailto:rsnelson@dave-world.net)*



Subject: first flight

From: Bob Pernic

<pernic@yerkes.uchicago.edu>

Richard,

N966RP flew for the first time on July 4th. It flies beyond my expectations which were based on two other T-18s I had flown. It stalls gently at 58 MPH clean. No sudden pitch down or wing drop off, only a gentle shutter at about 60. Ground handling is positive with no tendency to do anything unpredictable. I had an engine roughness that only I could detect while running the engine on the ground with the airplane as a test stand. In the air under power when I tried to lean it out it would back fire. I remembered reading someplace if this occurs that to look for loose or cracked fuel injection lines. When I inspected them I found all four only finger tight where they attach to the fuel distribution spider on top the engine. This also explains a slight gasoline smell and the roughness I mentioned. On the second flight on Sunday morning I made a nice three point landing with out using brakes until I went to turn onto the taxiway way. I did a left brake to make the left turn and then corrected with a right to straighten out. To my amazement both brakes were locked up solid! Mind you it was good upon landing and didn't lock up until applying brakes. First thing I thought of was the parking brake but that seemed to be fine. I examined the brake peddle and that seem peculiar because the master

cylinder piston rods were tight ( solid ) in the up position with out any play ( down travel ) in the rod. First thing I did was loosen the vent screw on the top of the cylinder. ( These are the Cleveland cylinders with the built in reservoir ) Loosening the vent didn't do anything. Next I loosened the hose connection at the bottom of the cylinder, with the release of a few drops of fluid the brakes released. This eliminated the parking brake as a possible cause and confined the problem to the master cylinders. I can not believe that it happened to both cylinders at the same time, but it did!

I've spent hours now trying to find the cause or to duplicate the problem and can not.

I remember in one of the past news letters you saying something like this happened to you, but as I recall it was a problem with the wheel cylinder, which I'm positive this was not. Any comments?

Now that I'm done with the project there is a lot that I can contribute to the newsletter and certainly will do so. Sincerely, Bob Pernic

*Editor's Note: We have had a lot of discussion of this in past newsletter, so look there. Also see Walt Giffon's article in this letter. Cleveland has said to always replace the rubber o'rings in any brake set that has been sitting around a few years.*

More from Bob.....

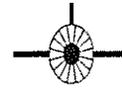
Subject: a winner!

Richard, it was good seeing and talking to you last Friday at the forum. I offer the following for the next newsletter: My T-18 won EAA award for outstanding workmanship in the Plans Built category. I guess this means it won best plans built airplane award. I was notified by receiving a rather heavy plaque last night when returned from a business trip. It is my understanding that these awards were presented on Monday evening in the theater in the woods, but I didn't know about any of this because I had to leave around noon on Sunday for the trip I just mentioned. At that time I did know that nine judges had judged

the plane so figured that something might be up. I will contribute a story to the next newsletter about the 20 year project, but could use a few words from you as to how long and what you think it should cover in order to make it interesting. Sincerely, Bob Pernic

Bob Pernic <pernic@yerkes.uchicago.edu>

*Editor's Note: Congratulations Bob. We are looking forward to an article on the project for the next newsletter. I thought I had a picture of your airplane from Oshkosh 98, but Dick Ecklund who took the pictures missed your plane. He did get the other Pernic Thorp, but must have thought he was seeing double. I think your plane was just behind his. Right? Rich*



From: Robert Mardis  
<Robert.Mardis@halliburton.com>  
Mr. Snelson

I am fixing to buy a set of Sunderland S-18 plans, and wonder if you could give me a little information. Let me explain my situation.

I was introduced to the Sunderland S-18 last year at Copperstate, and liked it. It was a tough choice, but I chose to build a new design called a Vision, a 2 place side by side compsite aircraft with similar dimensions to the S-18.

Having just barely gotten started on it, I have discovered that I am allergic to the epoxy that is used in the construction. I have sought the advice of many, including folks at Oshkosh this year, and after weighing all of the advice, have decided that the best thing for me to do is stop building this airplane.

Therefore, I am trying to divest myself of construcion manuals, building materials etc., which brings me to my question.

I would like to know what the dimensions (overall width and height) of the firewall is. I have aquired a piece of stainless steel for my Vision firewall, and am trying to determine if it is big enough to become a firewall for the S-18, or whether I should sell it along with the other stuff. I would appreciate any guidance you might be able to give me. Thanks, Robert Mardis

## Electrical Tips

By: Lyle Trusty, N851LT



The high tech electronic equipment in your airplane, in many cases, cost you as much as your engine. The last thing you want to do is inadvertently damage it by turning on the master switch or actuating the starter with your prized electronics, radios, and navigation equipment turned on. One of the first fixes implemented to avoid this problem was the practice of installing a radio master switch, however, with the introduction of all this new, miniature electronic equipment you need more than that. There's a way to overcome this problem. It's cheap and it's good insurance.

Here's what happens when the starter switch is released, or the master switch is turned off. The energizing coil of the solenoid creates a reverse current flow due to the collapsing field of magnetism. This current can have a very high negative voltage, as much as minus 400 volts, that will be opposite the normal polarity of

the system. If your electronic equipment is in the "on" position, this spike can burn out components of your system that are not protected. The diodes "short" this spike out, saving your valuable gear.

### CAUTION

If you don't have diodes in your system you should have all your electronic equipment turned off before you turn the master switch on or off, and while you start the engine. This also goes for electronic instruments and displays that have circuit boards and microprocessors in them.

**Ref. Fig. 1:** You can get 1N5408, or 1N4007 (or equivalent) diodes that are rated at 1,000 Volts and up to 3 Amps, at most any computer electronics store. They look like a resistor with a lead coming out each end. They have a colored band painted around one end. That is the **Cathode** end, which indicates the physical orientation of the diode required for it to perform its function

A diode is essentially an electrical check valve, passing current of a particular polarity

freely in one direction while acting as a high resistance in the other direction. Installing one of these diodes across each your master and starter solenoid will protect your electronics.

**Ref. Fig. 2:** The commonly used Cessna type master solenoid, rated for continuous duty, has three terminals on it, two large and one small. The large terminal marked "BAT" connects to the lead from the positive battery post. The other large terminal connects to the lead that goes to the terminal on the starter relay. The small terminal connects to the master switch. When the master switch is turned on it completes a ground circuit to the relay coil, **Connect the diode between the "BAT" terminal and the small terminal, with the cathode end of the diode connected to the "BAT" terminal.**

**Ref. Fig. 3:** The Starter Relay, rated for intermittent duty only, is wired in a similar fashion if it has three lugs. The large lead from the master relay connects to the "BAT" lead on the starter relay and the other large terminal connects to the starter. The small terminal is connected to the

start switch, which provides a ground to energize the relay. **The diode should be connected between the "BAT" terminal and the small terminal, with the cathode end connected to the "BAT" terminal.**

**Ref. Fig. 4** If you have relays, such as Cutler Hammer's, that have two large and two small terminals, an external lead from the battery terminal to the nearest small terminal will be required. Then, connecting another lead to the other small terminal, and through a switch to ground will enable you to energize the relay.

**In this case, connect the diode between the two small terminals with the cathode end on the "BAT" side.**

The reason you only have three posts on the newer solenoids is that one side of the energizing coil is connected internally to the battery post. When you hit the switch, all you are doing is grounding the other side of the solenoid, causing it to activate. Some builders, with master relays that have four posts, prefer to hook up their solenoids so they are supplying power to the solenoid when they throw the switch. However, this requires that the

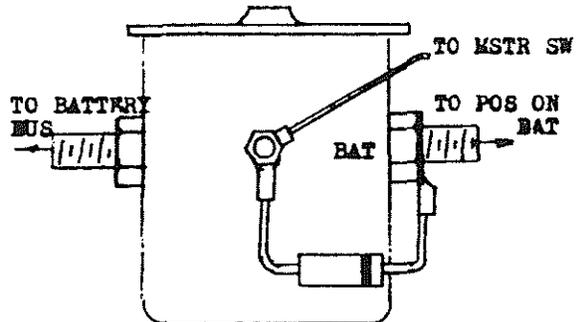
circuit be protected with a circuit breaker, and the circuit is not "fail-safe". A short to ground will pop the circuit breaker and open the relay. I prefer the other method, because if you get a short to ground in your switch wire, it doesn't short anything out and get hot. All it does is continue to activate the solenoid. You don't have a circuit breaker in the circuit that can fail, and you won't know the wire is grounding until you go to shut off the master switch. I'll take that any day, compared to sudden loss of all electrical power while airborne.

If you hook the diodes up backwards, all that happens is that they will get hot and burn out, almost instantly. Just go buy new ones, put them in the right way, and you won't have any more problems.

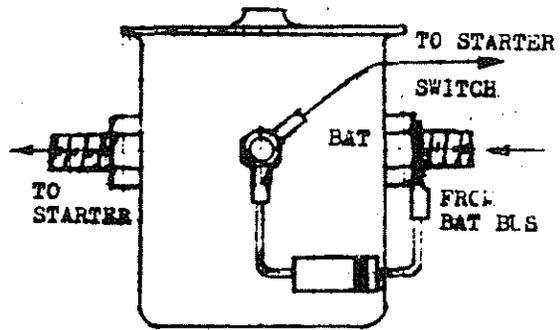


IN5408 or IN4007 DIODE  
1000 PRV. 1 to 3 Amps

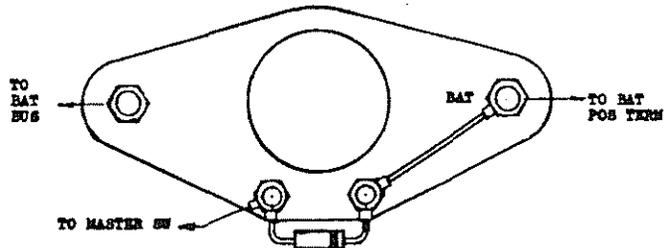
Fig. 1



MASTER RELAY  
FIG. 2



STARTER RELAY  
FIG. 3



4 TERMINAL TYPE RELAY  
FIG. 4

# SCOTT MASTER CYLINDER PROBLEM

## T-18 MUTUAL AID SOCIETY

I have some information which may be of interest to those of you who have experienced brake lock-up on your birds.

I have read several reports of brake lock-up usually attributed to the guide pins on Cleveland brakes. I believed that to be true until our recent (second) such incident on our T-18. After the first failure I installed long guide pins, swore to keep them clean, etc. all to no avail. The second failure (some 200 hour later) led to complete disassembly and testing of the Scott master cylinder for the offending wheel. What finally came to light was an intermittent movement of the small nylon (or teflon?) bushing located in the cup at the base of the actuating rod. Apparently that bushing is pressed into the cup but if it loosens enough to slip up on the shaft it blocks the pressure relief hole at the base of the cylinder and prevents return of fluid from the wheel cylinder to master cylinder. When that occurs the brakes remain in a locked configuration until pressure is released by opening the line or moving the pressure plate by disassembling the wheel hardware. The insidious part of this process is that the nylon bushing may return to its proper place in the cup and not cause problem for many more braking cycles. My cure was to put the bushing back in the cup and center punch the edges of the cup enough to (hopefully) retain the troublesome part.

I would be interested in feedback from others who have experience locked brakes, particularly to know if they have installed Scot master cylinders of the same design as mine.

Walt Giffin T-18 N78WG *Thanks for the tip, Walt. Rich Snelson*



*Here she is folks, the 1998 John Thorp Trophy winner at Sun-n-Fun.  
Built and flown by Bill Williams of Lakeland, Florida*

**FOR SALE:** 1984 T-18 650 Hrs on A/C & Engine, 0-320 A2B, Culver Prop. Nav, Strobes, Landing & Panel lights. Cleveland toe brakes & Johnson bar. Scott 2000 T/W. Easy Access APU. FGP, KX155, glide slope, 3 lite M/B, KX 78 Xpdr, \$29,500 Contact Bill Mitchell, 526 Leona Dr. Denver, GO 80221 (303) 427- 4025

Subject: G.P.U.parts and T-18 material  
Date: Sun, 30 Aug 1998 13:06:29 EDT  
From: JKerr56051@aol.com  
To: rsnelson@dave-world.net

Dear Richard:

I have almost three Lycoming G.P.U.'s that are for sale. There is no paperwork on them and no known history. I am putting one together for my third Thorp project. Two cranks are standard, one cam is an approved part number. I have no oil pans. I have plenty of con. rods and pistons. One engine is assembled. I have spar caps. I need a canopy.

Please run in newsletter; \$375.00 for the assembled engine. \$200 ea. for the cranks.\$100 ea. for cylinders. \$25.00ea for con.rods.\$20ea.for pistons. Buyer pay shipping.

Thanks; John Kerr 2441 Pence DR, El Cajon, CA 92019

Thanks,J.L.K.

**For Sale:** T-18 project -- fuselage on main gear and Scott tailwheel. Many subassemblies completed. Most parts and materials to finish, including preformed ribs, wing skins, bubble canopy, canopy frame, gas tank, Dynafocal mount, etc. Plans and all T-18 newsletters. Plus some metal-working tools. \$5,000, firm. Eugene, OR. (541) 687-8473.

From: Peter Wegerich  
<wegericp@cadvision.com>

For Sale S18 (kit?)

I have almost all the parts for an S-18. Firewall back. The only parts completed are some control surfaces and 1 wing spar. I am asking \$7,500 US. Complete with windshield and canopy, landing gear, wheels, tires, brakes, fuel tank, control stick assembly (inc. all push rods and offset sticks and rudder pedals and cables, Flap assembly and trim assembly), plans and all issues of the newsletters. I am located in Airdrie Alberta Canada (just outside of Calgary).

Peter Wegerich

403 948-5704 or 403 680-7300

wegericp@cadvision.com

For Sale: Thorp T-18 TTAF 980, TTE 1240  
LYC 0320 E2G 150 HP. 1983 S/N 1268  
IMRON Paint.

165 MPH (143k) @ 2400 rpm. Terra Radio w/  
GS & intercom.. Terra Transponder, Fly Buddy  
Loran Price is \$29K Dick Amsden 810-463-  
6273

*Editor's Note: Sorry about the medical problem  
Dick. We will miss seeing you at the Thorp  
events. (Nice Thorp Folks, jump on this one)  
Rich Snelson*



*Here's Richard Ecklund's N181RE. Note the metal cowling and the metal wheel pants "John Thorp Style" Nice work Dick.*

## OSHKOSH

by Roy Farris

Our forum/lunch get together was on Friday at the nature center as it has been for the last three years or so. Bill Williams had the chef honors and cooked Brats for around seventy-five people. I would like to thank the following persons, who had a hand in the forum/lunch preparation, Bill Williams, Bob and Susan Highley, Ben and Teresa Scola, Margie Conwell, Comelia Aldridge, Lee Skillman, Richard and Roxanne Snelson, and myself. The meal was great, the camaraderie was excellent, and the forum interesting.

Several individuals spoke on brake lock-ups and how they have addressed the problem. (*See Walt Giffin's article in this newsletter*). The Thorp "G" loading was discussed with reference to the over G event that occurred and was shared with us by the owner in the last newsletter

The upcoming fly-in at Placerville and Kentucky Dam were mentioned and plans for next year's Thorp events were discussed. It was voted to

have a **get-together in Colorado**. Walt Giffin will be helping to put this together. The airport would be Fremont County (1V6) which is near Canyon City, Colorado. This could be a Fall Fly-in if the folks don't hold the Placerville Fly-In again next September. We will continue to hold the Kentucky Dam event since we don't want to loose our Fall slot there.

We discussed the task of somehow trying to get a list of all the T-18's worldwide. This is made difficult because many of the T-18s/S-18s in the FAA's list are under different names instead of Thorp.

The topic of a Thorp Oshkosh dinner was raised and the difficulty of finding a suitable location. Rich Snelson and Bob Pernic have been working on this but came across contractual requirement with the restaurant that would require advance paid reservations. The dinner idea would be nice and is still in the back of our minds as something we would like to do. A vote at the forum

showed that the majority of those present liked the forum/lunch combination better than the dinner.

There were several T-18's at Oshkosh this year, but it was hard to tell by looking. The EAA is hampering any attempt to park aircraft by type. Thorps were strung out all over the place with only about fifteen or so in one centralized area. We were not the only group to suffer such parking problems. I think about everyone except the warbirds and the RV's suffered the same wrath. It was decided at the forum that if we wanted to park together as a group next year, someone would have to stake off a parking area and guard it, although no one volunteered to take the job. I think we should consider this plan and decide how to implement it. I know that there was at least one new T-18 there this year, maybe more, but I cannot say who the owners were. Next year we plan to have a sign-in sheet at the forum so we can get a list of those present.

Oshkosh for me is always an exciting time. I love everything there since it is about flying. I must admit though, that I heard a lot of grumbling among the pilots, from the warbirds through the experimental, the antique, classic and all the way to the contemporary. Pilots are not happy with the EAA's new policy of admitting the general public to the flightline. I must admit that I saw many incidents of people sitting and leaning on airplanes, smoking, and one incident of a gentleman moving the prop to make room for his beach umbrella. I saw many lawn chair and umbrella strikes on parked aircraft by people moving through. The EAA eliminated several rows of parking this year and in an attempt to park as many airplanes as before, they spaced them closer together. This made matters worse as far as the movement of people was concerned. I heard rumors of a letter writing campaign to Tom Poberezny to list the concerns of the pilots. I believe this is a sound idea, but I am not sure how far it will go. Let me know what you think.

Oshkosh is still the biggest aviation get-together

in the world despite some rising problems. I think most everyone believes that it has gotten too big and maybe a little too commercial, and some believe that EAA has lost sight of its roots. Maybe it has, but we could help EAA leadership remember their roots by setting a good example. Let's work together to promote the T-18 and try to get one hundred of them there for Oshkosh 1999. We can do it, there are plenty of us out there....

I think many of us would like to see someone else join the great long-time support of Ken & Marie Brock representing the Thorp at the largest aviation event in the country. Rich Snelson tells me he gets constants questions on who/where represents the Thorp. The lack of promotion by the suppliers keeps the Thorp a secret.

One of the topics that was discussed at our forum was how to unite this ragged group of T-18'ers together. We have the best airplane, and the best people, but we lack manufacture/kit supplier leadership and information for those who want it. I would like to see the T-18 movement gain speed, and I believe that with some effort, this could be a reality. If you have any input, I would love to hear from you.

Roy Farris

rfarris@wworld.com

(618)723-2594

**Please join us at the Fall Fly-In at Kentucky Dam. The event is Oct 9, 10, 1998 for reservations call 1-800-325-0146. This is the Kentucky Dam Village Lodge. For details call Roy Farris at the above number. Our thanks to Roy for helping to get this event together.**

T-18/S-18 Thorp Newsletter  
Richard Snelson  
Route 3, Box 295  
Clinton, IL 61727  
Phone: (217) 935-4215  
email: rsnelson@dave-world.net



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### THIS YEAR 1998 LATE DUES ONLY

Red Circle means I have not received your dues for this year.  
Please help out and get them to me now. Remit today.

#### **THORP T-18/S-18 MUTUAL AID SOCIETY 1998 DUES**

Please continue your support of this valuable exchange of ideas, building tips and safety information covering John Thorp's great design. Make checks payable to Richard Snelson, Route 3 Box 295, Clinton, IL 61727 \$25.00 US, \$30.00 other.

Name: \_\_\_\_\_  
 Address \_\_\_\_\_  
 City: \_\_\_\_\_ State \_\_\_\_\_ Zip Code: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Aircraft: \_\_\_\_\_ Hours on Aircraft: \_\_\_\_\_  
 Email address: \_\_\_\_\_  
 Notes: (Building?, Flying?, Thinking about it?etc.) \_\_\_\_\_