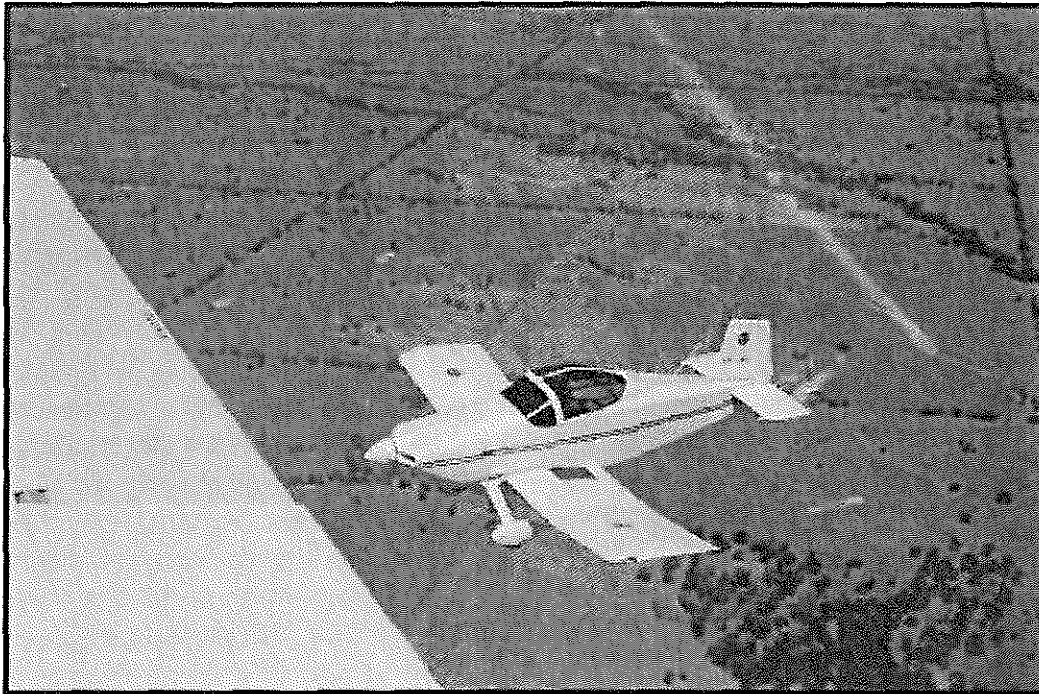


# T-18 Newsletter

August 2004



*James Peran ~ VH-JPS ~ Victoria, Australia*

## IN THIS ISSUE:

**Builders/Pilots Questions**  
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*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.*



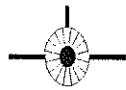
## Editors Notes

By: Roy Farris

As you read this issue of the T-18 Newsletter, you are probably just getting back from Oshkosh. I sure hated to miss it this year, but family commitments just got in the way. It happens to all of us ... Darn it !!

I don't have a lot to say this time around. Oh I still have the same old gripes, but it seems that no matter what or how much I gripe, nothing really changes. I guess the one thing I would like to say is "Thank You" to all those Thorp people out there that continue to help and advise me when I encounter problems on my project. I have been working on and off for about fourteen years on mine ... and believe it or not you guys, I am going to finish it.

Enough of that ... I hope everyone who attended this years Oshkosh had a wonderful time ..... and on with the newsletter.



## T-18 Website

I am still in need of T-18 Ambassadors for the Website. There are several states that still do not have an Ambassador. If you are interested in helping the Thorp Movement ... please contact me.

If you haven't checked out the "Ambassador" section on the website yet you should take a look at it. I believe this can be a great value in directing possible Thorp owners and builders to the correct source of information. Several contacts have been made through the Ambassador page and I think it would be a greater value if there were Ambassadors in more states ..... Please Help.

## Builders Question

I'm about ready to have my plane inspected by the FAA shortly and there after start the test phase. at the moment however I have some drag in the fore and aft movement of the stick which is in the elevator bushings. There isn't any binding but its not so loose as to just flop up and down. I don't have to exert any great force to move the stick back and forth but I have been in other T-18s that are easier to move. Will this cause any problems in flight? How does this effect the C/G?

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The c.g. is the center of gravity and it is affected by weight distribution within the airplane. So the answer is that binding in the elevator linkage won't affect c.g. However, as the c.g. moves further forward, the airplane tends to be more stable, so more force is needed on the tail feathers for elevator inputs. So if you already have some binding, the amount of "breakout force" required to start moving the elevator will go up when you are at (or near) the forward c.g. limit. It is hard to evaluate and comment on your problem without seeing and feeling it, but I do have to wonder about just why you have drag in your system. I'd want to get it right before first flight, so maybe you need to reexamine the pivot bushings or how tight some of your bolts are.

Andrew Robinson

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If it is moderately stiff, the airplane will have lousy speed stability. The tail has to float for inherent speed stability and if it sticks you will have to work harder to fly it. I test flew a T-18 with stiff elevator and it increased the workload noticeably. Hire a kid to pump the stick for an hour!

Tom Kerns  
N10TK

cont pg. 8

**Dual Brake's, Another Way**

By: David Read

At many points in airplane construction we face the dilemma of whether to purchase a piece or assembly or try to modify the design or make our own, trading time for money. My brake system installation was essentially that except no one makes what I wanted. Last year at OSH I saw a dual brake system with only 1 set of master cylinders. Wanting to save as much money as I could during construction this sounded like a good idea. I decided I would see if I could make a set for myself.

On each pedal with a master cylinder I needed an extra mast to keep the linkage away from the master. I made these from the same material as the originals. The linkage crossover tubes are 3/4 X .049 4130 - the same as the rudder pedals. The down tubes are 1/2 X .035 4130 with the tabs from .090 4130. I used 7/16 X .120 tubing on the bottom of the down tubes, reamed to accept AN-3 bolts. I placed aluminum angle on the firewall using existing rivet holes through the 527-2 angle. Shims were placed under the angle to avoid the need for joggles. I made bushings for the firewall pivots like the rudder pedals have.

The length of the horizontal arms are set so the vertical arms run in line with the master cylinders. That way the position of the pilot & copilot pedals should always be equal. I thought about using a clevis at the mast for adjustment but went with welded tabs for simplicity and less expense. After assembly I checked and I cannot tell any difference in pressure necessary to operate the brakes from the right or left side, although I am only dealing with spring pressure at this time. It does appear that there is some flex in the floor mount angles but I hope this will go away when they are riveted to the floor. I think this happens because the prints have the rudder and master cylinder mounted an inch apart on the angle while my setup pulls on the pedal from the firewall.

There is just enough room beneath the 527 beam for the two 3/4 tubes. I had to angle the tops of the rudder support angles a little but this keeps them up tight against the firewall and out of the way. These tubes pivot on bolts and bushings in the firewall angles. To make the threads in the ends of the tubes I cut a coupling nut in half (about 1/2" long), welded it to the back side of a washer and then welded the washer into the tubing. After the bolt is tightened, drill a hole through the tubing, nut, & bolt for safety wire. All of the other bolts in the assembly use fiberlock nuts.

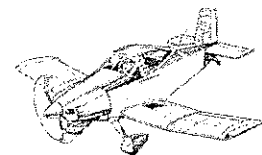
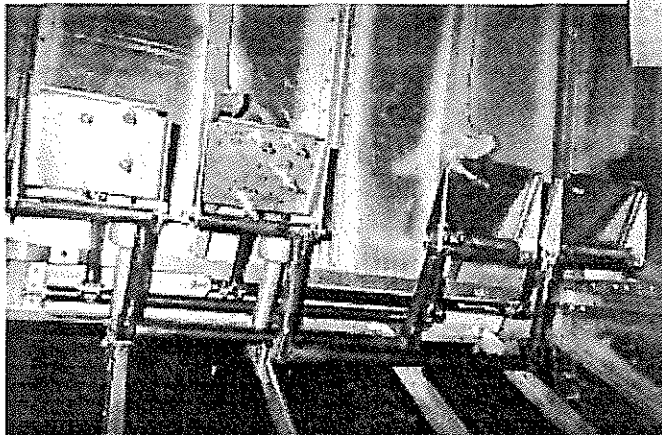
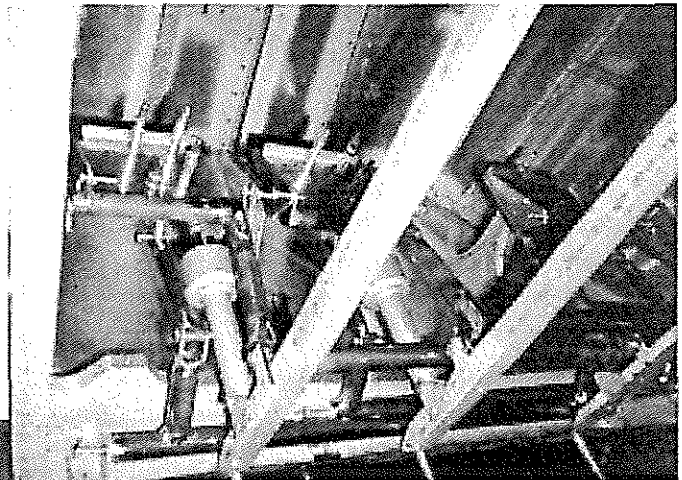
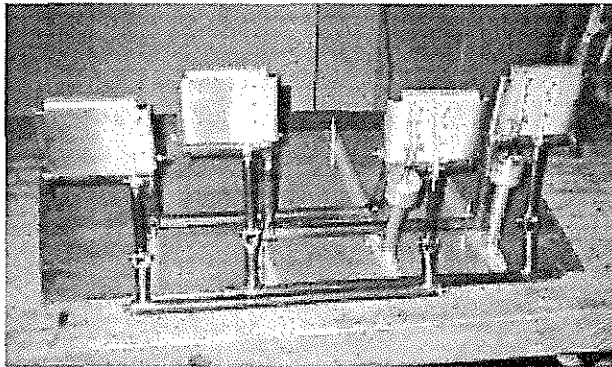
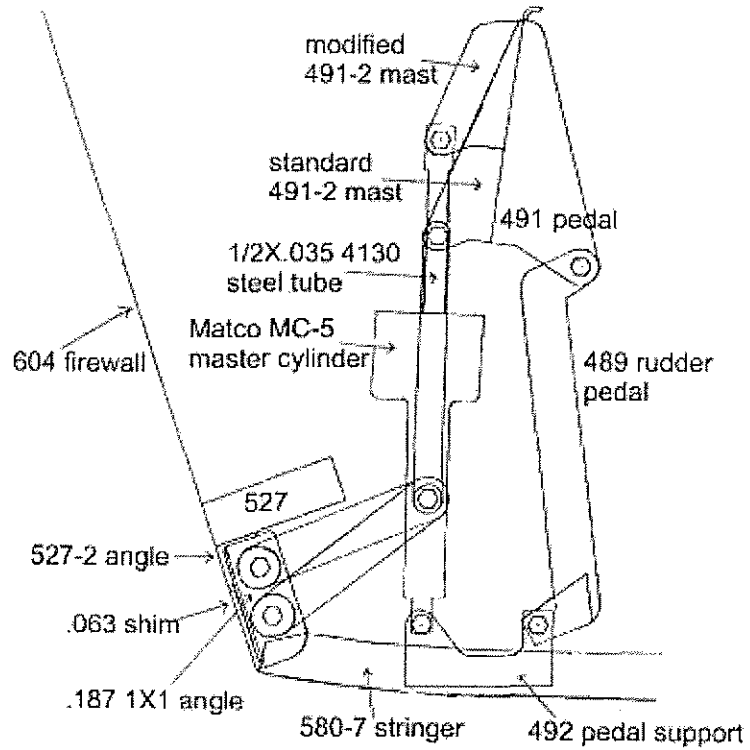
The bottom tube back to the down tube is longer because the extra length was necessary for the rudder pedal to have full travel. I may have overcompensated but I didn't want anything I did to limit pedal movement. Because my Matco cylinders are longer than those specified in the plans I moved the mast up on the pedal. The cylinder bottom is also larger so I added a shim to widen the bracket.

In the picture you can also see that I am moving my rudder cables outboard to eliminate the forward tunnel. I also welded reinforcement tabs at the rudder pedal corners.

I probably spent an extra 15 hours building and designing the linkage. I did it partly just to see if I could, partly to save the \$170 or so for the second master cylinders. In exchange I paid a weight penalty of 3-4 pounds, which may not have been worth it, but once I had started I really wanted to see how it would turn out.

Pictures and a drawing of Dave's installation are on Page 4

Dave Read's Dual Brake Installation



Engine Woe's

Help! Anyone with advice, please let me know what you think...

I have some roughness in my engine, at around 2400-2500RPM, at any altitude above 4500 ft. There is an RPM variation that seems to accompany it. The problem came up right after an annual, during which I had new mags installed, but according to my mechanic, mags can't cause this type of problem. The problem NEVER happens while the throttle is advanced to within 3/4" of full throttle. We've re-timed several times. Any clues?

Robert Shrank

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I had the exact same problem years ago and here is what I found. The carburetor needs a new main Jet ( pepper pod ) that seems to distribute fuel mixture better.

Dean Cochran

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I also had trouble with my carb at cruise range but it was fine above that. My main jet was too lean; I drilled out the ID a bit to fix it. Mixture goes very rich at wide open throttle, so a lean main jet will cause surging or roughness at part throttle, moderate power. If leaning mixture makes it immediately worse at 2,400 RPM (no rise in RPM, just more roughness), this may be a clue.

Tom Kerns

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Is it possible that the points gap , on either one or both mags is incorrect, maybe not giving the correct dwell angle affecting the coil saturation.

Mick Obrien

cont.

Engine Woe's, cont.

This is a rather common problem on the O-320. It seems that the engine does not like the single piece venturi as called out by the MS carb AD. If you can borrow a carb with the old two piece set up, try it. The fix is to put a micarta spacer between the carb and the sump. This changes the airflow a bit.

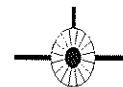
This problem has been addressed on the 150-160 HP Cherokees, but I don't know exactly what their recommendations are. Hope this gives you a place to start.

Bob Highley  
N711SH

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I had a little roughness during certain conditions also (usually in cruise, over rough terrain or water of course). It was actually more of a "miss" or "burp" that would occur. This was 8 or 9 years ago. Since it worked for my buddy Dean Cochran, I installed a "pepper-pod" nozzle also. It did the trick. I have an O-320-D2A, and the carburetor part # is 10-3678-32 (MA-4SPA). The nozzle part # was 47-828. It's important to note that I ended up reaming the new one, from the original I.D. of .093" to .104". This has worked very well. I do have a 2 piece venturi also.

John Evens N71JE

Aileron Deflection

I'm trying to set the limit stops for aileron position and having trouble finding the number for the max. angle. Anyone happen to have that. Thanks

Hal Underwood

cont. pg 6

Aileron Deflection, cont.

Look at drawing 520. It gives a lot of info. I have never been able to get the full 35 degrees up as shown however also have always had plenty of aileron and the adverse yaw is minimum. If you measure the angle of the stick throw, it comes out to about 15 degrees. I used a cheap angle finder for all my rigging.

Bob Highley  
N711SH

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I currently have my center wing sitting on the workbench waiting to get skinned. I attached the walking beam and connected the aileron push-pull rods to the bellcranks. I used a protractor to mark the bellcrank deflection angles per the dwg, and used those marks to set the deflection stops on the walking beam. Due to build tolerances and such, setting the stops on the walking beam might allow the bellcranks to hit. Turns out the tolerances are pretty close in that if you don't get the stops set on the walking beam, the bellcranks (or the protruding rod end) hit the wing rib. I'd rather have the bottom of the stick yokes hitting the stops instead of something hitting inside the wing where it might do who-knows-what kind of damage in the long run. I think from here I simply adjust the outermost aileron rod to a length that puts the aileron in a neutral position when the stick is centered. I'll let you know (one day) if this worked.

One comment about the max aileron deflection. I received a ride in the T-18 that Bob Dial built. While the owner was doing clearing turns, I closely watched the aileron deflections and it was difficult to see much deflection at all. So to second Bob's comment, you might not get all the deflection called for on the drawing, but I think what you get will be more than enough.

Andrew Robinson

Aileron Deflection, cont.

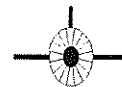
My ailerons came out 20 up and 10 down. That's the best I could do. Mike Archer said he have seen anywhere from 20 up to around 23 to 24 up. Down is always 10. This drove me crazy for a long time trying to figure how to get 35 up. Anyway, my ailerons came out equal on both sides.

Bob Clayton

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I have my aileron stops set so that my deflection is approx. 28 deg. up & 11 deg. down. My left leg prevents any more stick throw anyway. Ailerons have always been more than adequate with crisp roll rate. I used a cheap angle finder from Sears, also.

John Evens N71JE

Engine Hoses

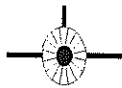
For what it's worth, I've been using the Teflon lines instead of aeroquip for some time now. They have no service life limits, they will stand higher temps, they look nice ( stainless braid wrap } , Perhaps the most important reason is that you don't have to worry about restricted flow. I have them custom made at a local hydraulic supply house. They use steel JIC 37degree ends. I get an average hose made up for about 20 bucks.

Ed Ludtke

Engine Hoses, cont.

I used teflon also, as have many Thorp builders. You can easily make your own, or have a local Aeroquip dealer or speed-shop make them for you if they offer that service (many do). Aeroquip sells their "TFE" hose in the common dash sizes. Also steel & stainless steel fittings are available (straight, 45 deg., 90 deg., etc.) for the teflon hose. I suggest you do a Google search for "Aeroquip teflon hose" and check it out!

John Evens N71JE

Sunderland Airfoil L.E. Bend

By: Andrew Robinson

Below is my method for bending the leading edge radius for the Sunderland S-18 airfoil. The original airfoil specified by John Thorp is nearly symmetrical in profile, which lent itself well to the original "poliwog" method of creating the leading edge radius. The Sunderland S-18 airfoil is not symmetrical and has the leading edge radius relocated such that you have the smaller i.e. radius and then the more gentle radius of the upper skin. Here is my method for achieving the new skin bend such that it will closely match the rib templates. Note that when bending my skins, I leave a few extra inches at each end and then later trim them to length, therefore the sets of holes mentioned below all get trimmed off. This isn't anything new, one of the original newsletters described a similar method, but I inserted some new numbers for the SU airfoil. New leading edge radius bend method for Sunderland airfoil

1. About 1/2" from each end of the skin, create matching top and bottom holes in what will be the trailing edge of the skin. Create at least 3, but preferably 4 or 5 sets of holes across the width of the skin.

cont.

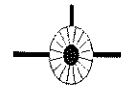
Sunderland Airfoil L.E. Bend, cont.

2. On the bottom skin, create holes that are 1/4", 1/2", and 1.1" forward of the matching holes from Step 1.

3.. Gently squish the skin down in the usual "poliwog" method. Lay back out (like an open book laid down on the pages) to reduce the radius on all radii except the sharpest part of the nose radius.

4. Cleco the top holes into the holes that are 1/4" forward and squish the leading edge down again. What this is doing is moving the sharp leading edge to more than just one place in the nose contour. I use a 2x6 board covered with newspaper and masking tape. Squish gently and gradually; it is a lot easier to create more bend than it is to undo bending.

5. Repeat with the other 2 sets of holes. Make sure to continuously check the leading edge radius against the template. Remember to check the template toward the center of the leading edge, not just at the edges.

Plumbing Those Wing Tanks

I am wondering how you Thorpers with aux wing tanks have plumbed the fuel lines. I ran alum tubing to a valve on the floor under the tunnel about hip position. I extended the valve stem up through the left side of the tunnel with a OFF, RT, LT handle on the top left edge of the tunnel. However, I have not found a way to get enough spacing from the rudder cable to prevent some touching or at least vibration against the cable. I am near inspection and have elected to remove the the stem and handle and use only the main tank until I have time regroup and figure out different plumbing.

I would appreciate knowing how others have plumbed from wing tanks.

Hal Underwood

cont pg. 8

Plumbing Those Wing Tanks, cont.

My wing tanks are pumped into the main. Each wing has a transfer pump in the wing root that independently pumps fuel up into the top of the main. I have a float switch in the top of the main that is in series with the pump switches so it shuts down the system when the main is full. In practice, I take off and climb out on the main, and then switch on the transfer pumps. As the fuel burns down, the pumps come on and fill the main. When it is full, the pumps shut off. This cycle repeats itself until the wing tanks are dry. There is a timed delay built into the shutoff that keeps the pumps from cycling too much in rough air. I will get with anyone interested in further details.

Bob Highley  
N711SH

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I have John Walton's wing tank drawings. I plan on coming to Oshkosh..I'll bring a set with me. I run a HA6 carb which is located level with the bottom of the fuel tank. So, I use both mechanical and electric pumps. I installed a 4-way fuel selector switch.. left,main,right, and off ( similiar to a cherokee) . I carry 62 gallons of fuel, burn 20 minutes left, 40 minutes right, back to left until empty, back to right until empty,the finish with the fuselage tank. (always land and take off with main tank)

Bill Williams  
N30WW

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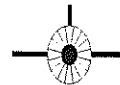
The arrangement I had in Fat Cat held 29 gal in the main, and 13 gal in each outboard wing leading edge. The engine always drew from the main tank which has a fairly accurate fuel gauge. I would run the main tank down to 1/2, then fill it back up, 6 from the left, and 6 from the right. Then I would repeat to empty the wings. That way if I had a transfer pump problem, I would

cont.

Plumbing Those Wing Tanks, cont.

always have 1/2 of the main tank to find a landing place. The engine was always drawing from the main tank, so it was idiot proof if you could read the main tank guage.

Harvey Mickelsen

Questions .. ContinuedOwner/Pilot Question on G.G.

Talking about CG now. How far aft do most people allow their % MAC to migrate? How far is too far? I'm not trying to kill myself here but I think the aft CG range is conservative. I'm wondering if anyone has done any experimentation.

Thanks,  
Eric

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Aft CG limit on my S18 with metal Sensenich prop and 150 HP Lyc, full panel is set near 29% MAC... I have flown it further aft and it becomes very pitch sensitive at low speed. This is most pronounced while landing.

Joe Gauthier  
N22607

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I was a bit careless with some baggage (a "heavy briefcase") that my nephew brought with him when we flew from LA to OSH several years back. I ran out of nose-down trim in cruise and thought that my trim was binding. Checking after our arrival at OSH, I found nothing. My next leg, I slipped his briefcase under his seat and I had no problems. I didn't compute ..

cont pg. 12



**Mountain Home, Arkansas ~ Get Together**

June 2004

Article by: Gary Green

Photo's by: John Evens

We had a pretty good turn out. Not as good as it could or should have been, but still pretty good. The weather was good nearly everywhere and should not have kept many from getting here. The weather was superb here Friday through Monday and no one had any difficulty getting home on Sunday. (Bill Cordoza is heading back to California today and it looks like he should have good weather all the way also.) The following Thorps attended:

Bill Cordoza—Woodland, Ca. (Longest distance)

Bill Williams, Bob Highley, Les Conwell—came from Florida

Jim Paine and Jerry Sheetz—Hendersonville, North Carolina

John Evens, Dean Cochran, Walt Giffin, Chuck Goldstein—came from Colorado

Gene Turner and Ken Morgan—came from Texas

That made 13 T-18's counting me.

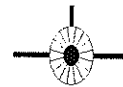
Then we had Charlie Calivas, Ed Ludtke, and Damon Berry in their RV-6's and Dick Keyt in his Polen Special Gary Cotner drove over from Tulsa Friday evening due to a thunderstorm in progress when he was ready to leave.

John Sanders drove up from San Antonio. Bob Bernic drove from N. Carolina.

I managed to fly Dean's T-18 with the new metal wingtips shaped like John Even's fiberglass ones. It seems to increase the dihedral effect and gentle the stall with full flaps. No flap stalls seem about the same as standard tips. I think the plane also stalls at a slightly slower speed than most with stock tips. We managed to get several small formations up and several buddy rides were given. We put together a 7 ship formation with Dick Keyt leading in the Polen Special, Les Conwell and I flew on his left wing, Bob Highley and Jim Paine on his right wing, and Damon Berry and Charlie Calivas flew as "stingers" in the slot position. I think it

looked pretty good. It could have been an 8 ship if Jerry Sheetz had not wandered off flying as we were trying to put it together. We flew over the town of Mountain Home, over Lake Norfolk and, of course, made a pass or two at "the Valley" to impress the neighbors. Everyone was thrilled to see the Polen Special. Damon (RV-6), Dick (Polen) and I beat up the pattern in a tight 3 ship quite a bit just before they departed Sunday. Most of the guys landed here at "the Valley" at one time or another during the weekend. No one had any problem with it. The cookout here Saturday nite went well I thought. Those interested got to visit neighbors hangars and see a beautiful Spartan Exec, Murphy Moose project, and see a couple of Beecher V-8 specials that are in a neighbor's hangar. Many of my neighbors joined us and we fed around 65 or 70 folks. We had lots of food left over, so no one went away hungry. The neighbors loaned us sufficient vehicles to handle transportation to the motel, etc.

cont pg. 11

**Sun'n Fun 2004**

By: Andrew Robinson

Sun 'n' Fun 2004 was lightly attended compared to the past few years. I was there only on Friday (the day of the Thorp dinner) and counted about 10 T-18 or S-18 aircraft on the flight-line. I'm guessing weather patterns kept a lot of people away.

The international Thorp community was represented by Canada, England, and Sweden. Sven-Erik Pira and Erland Magnusson were the two Swedish pilots; Erland's brother was also there, but I didn't catch his first name. Ditto for the English and Canadian gentlemen. Sorry about that guys. I didn't have my camera with me,

cont pg. 12

**Mountain Home, Arkansas ~ Get Together**

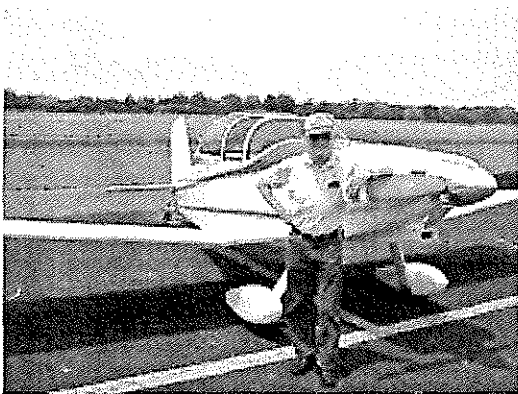
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Ken Morgan



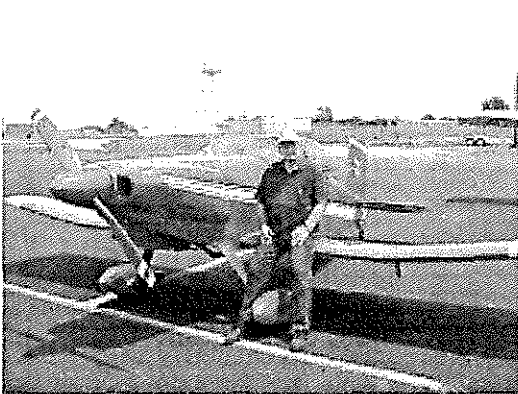
Jim Paine



Les Conwell



Chuck Goldstein



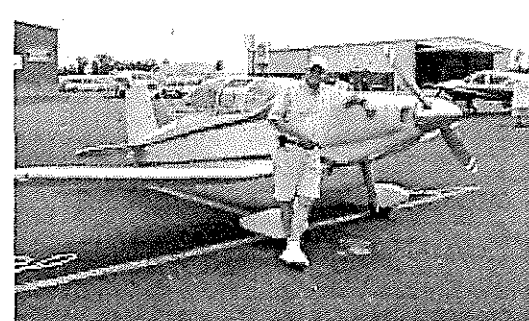
Gene Turner



Gary Green



Walt & Beverly Giffin



Bob Highley

Mountain Home, Arkansas ~ Get Together

June - 2004



Jerry Sheetz



Dean Cochran



Bill Williams



John & Vicki Evens



Generally hanging out in the hanger



Some of the Thorps in the nice hanger facility

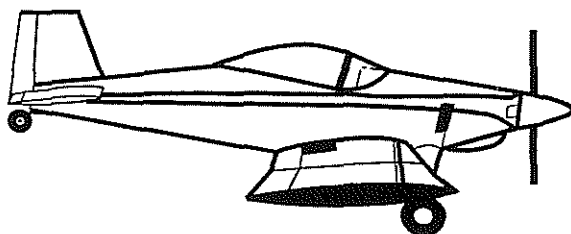
I think most folks were able to get to where they wanted in fairly timely fashion. But it is still tough to gather everyone up and get them headed in the same direction at any given time. Sort of like herding houseflies. There were things that could have been done better. I thought the restaurant on the field at Baxter Co. was going to be open on Saturday, but it was closed. We ate there on Friday and it has very good sandwiches and pizza. They could have done a lot of business Saturday if they had been open. Instead several had to make a run to McDonald's several miles away. The FBO guys were great. Gas was high (\$3.26), but they packed the hangar and got everyone inside both Friday and Saturday nite for \$15 per nite. As it turned out, hangaring was not necessary but it made most sleep better knowing their plane was not outside.

Sun'n Fun 2004, cont.

so no photos of the dinner; my flight-line photos were all close-ups of build details. George Green won the annual Spirit of Thorp award.

After going around the room with everyone identifying themselves, the floor was opened for discussion. The English gentleman regaled us with several episodes of forced landings due to a clogged fuel inlet and recommended the use of a finger strainer. Someone else noted that it should be more properly called a "multiple orifice inlet". I considered extending a finger to demonstrate the similarity between it and the strainer in my fuel tanks, but the issue quickly passed. Discussion then moved to the topic of cut down metal props. I don't know why this is even still considered by anyone in the Thorp community given the well-documented history of cutting down props. Considering that people like Sensenich are now offering metal props for Thorps, I personally wouldn't want to mess with trying to cut down or repitch a metal prop. Talk then moved to the issue of flying wood props in the rain. Several members told tales of wooden props severely eroded as a result of having been flown through rain, while another member reported good experience with simply throttling back to 2000 (or less) rpm while in rain. Then followed discussion of different leading edge tapes to prevent erosion. The most interesting suggestion was someone who reported good results with simply applying a strip of black electrical tape to the leading edge and removing it after each flight.

On a side note, Bill's On Dranefield Road is now the Dranefield Deli. Bill sold the business to someone else who agreed to host our group and fed us with some excellent bar-be-que ribs and fixin's. It was an evening of great food and good company; be there next year.



Owner/Pilot Question on G.G., cont.

the W&B with the briefcase (I was weighing the backpack/suitcase-like stuff) and never had an accurate W&B for that flight.

The airplane didn't handle badly, however.

Arrival at OSH was more a problem of guys flying 90 mph when the notam said 90 kts — and then not holding their altitude over the inbd track.

Tail heavy can be dangerous. I got away with it. I don't recommend it.

Jack Kenton

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The aft CG range is not conservative! I prove this every year as I land at OSH with low fuel and full baggage. Some of my most interesting landings were under those conditions. The airplane gets very pitch sensitive and you better be carrying some airspeed or it will drop out from under you. Not trying to scare you, just respect the aft limit as specified.

Bob Highley  
N711SH

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I have to agree with the others, i.e. find something other than aft c.g. to be experimental with. From the compiled "critical knowledge" on the website: Center-of-gravity: Forward limit is 15% chord, aft limit is 32%. These numbers translate to fuselage stations 62.5 to 71. For cg calculations see NL 18, 27, and 61.

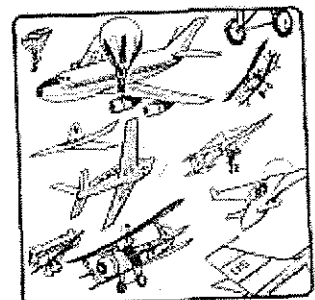
As Judge Reinhold said in Fast Times (if I can get the quote correct), "Read it, know it, live it"

Andrew Robinson

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Aircraft Terminology

Holding Pattern - The term applied to the dogfight in progress over any radio facility serving a terminal airport



**T-18 Directory Questionnaire**

Reprint from Newsletter 127

T-18 Mutual Aid Society member Rick Shoup emailed me a while back and ask if I thought compiling a written list of all the Thorps would be a worth while endeavor. I responded affirmatively, and stated that other members had expressed similar interests. Rick then replied that he was willing to undertake this monumental task. What he is now attempting to do is compile a list of every T/S-18 that has ever been built, or is in the process of being built. Now I think that we can all say with certainty that he has undertaken a HUGE project. There are many Thorps that have been built and not registered or licensed as T/S-18's, so these may pose a problem that is not easily rectifiable. But I believe with persistence he will be able to track down most of them. He will then compile the information into book form and make them available, at some nominal charge, for all of those of us who wish to own a piece of Thorp history.

Rick has ask that EVERYONE that is building, has built, is flying, restoring, or just has any knowledge of a T/S-18 to please fill out a questionnaire. I included one on page 16 of newsletter issue number 127. You may also find two different versions of the form on the T-18 website. One form is downloadable, and you may then print it out on your printer. The second version is fillable on the website .. when completed just click on "Submit" and it will be sent to Rick by email.

Rick also asks that everyone include some pictures of their airplane. It doesn't matter if its flying or still in the project stage ... just send some pictures. You can email them to him or send them by regular mail service.

Send your completed questionnaire to:

Rick Shoup  
HC-61 Box 82A  
Capon Bridge, WV. 26711

You can contact Rick at:  
Phone: (304)856-1023 Fax (540)722-2633  
Email: [volot18@citlink.net](mailto:volot18@citlink.net)

*Editors Note: Lets all help by filling out and submitting a questionair.*

**Prop Talk**

Gentleman: Looking for some advice. I recently purchased a fine little Thorpe N2KP that was built by an old friend of mine in the 70's and received her airworthness cert. in 1980. She has about 1000 hrs. on her and is powered by and O320 150 hp Lyc. In the begining she had a Sens. 66x76 wood prop. There have been three owners since she first flew, me being # 4. Currently she has a Aymar Demuth 3200 68x72. In a preflight yesterday I discovered a slight crack about half an inch from the trailing edge about one inch long. Therefore the aircraft is now grounded with the cowling off so as to remove the "AD" prop. I flew this aircraft 20 years ago and she seemed to come off the ground and had a faster cruise with the 66x76 Sens. The current propeller will not acheive red line in level flight and I feel that it seems to be a ground lover. I operate out of 1800 feet and with two people in N2KP you are more comfortable with one notch of flaps applied before take off roll or shortly after. I'm thinking in terms of going back to the Sens. or biteing the bullet and installing a constant speed. The engine was out of an Apache so I'm assumeing at this point she has a hollow crank and can use the constant speed. Thanks in advane for opinions and solid honest advice.

Ben Gleason

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I have the same prop that you have on your plane. I also have 0-320 150HP. Here are my numbers, The plane accelerates very good on the ground. I am airborne at about 600 to 800 feet fully loaded. Cruise is 180+ mph at altitude, I can turn the prop 2700 to 2800 rpm, depending on the conditions. You have a lot of hours on the engine, but that is not a bad thing. My engine and plane has almost 1400 hours in it. I suspect your engine is not developing full power. You might check that out. Just a suggestion.

Gary Cotner ~ N57GC

cont pg 14

Prop Talk, cont.

I have an O-320 (150 hp) in my T18C and a wood Henderson 68X72 prop. I find that I can redline the rpm easily at low altitudes and do most of my flying (So Calif) at 9 and 10K so that I am able to use full throttle and not have the prop redlined. I've occasionally thought of getting a prop with a bit more pitch — but I can't really complain about what I have. Of course I don't seem to have the high cruise speeds that I hear from others. I usually flight plan for 140 kts TAS up in the 9 and 10K altitudes.

Jack Kenton

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I run an Aymar Demuth 68x73 and have a spare PaceSetter 68x72. Depending on where the crack is, it's possible it can be repaired and resorcinol resin would be utilized. Do NOT repair if the grain has a slope of more than 1" to 25". A NL article refers to the failure of a wood prop (determined by the USDA Forest Products Laboratory in Madison, WI). It had laminate lumber pieces with slope of grain like 1" to 12-15" ...not good. Incidentally Richard Snelson equipped 295RS with the 66x76 sens. and replaced it with the 68x73 AD. For your field length I wouldn't recommend the same "cruise" prop.

Tom Worth - Tacoma, WA

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I, too, have an Aymar-Demuth prop, 68x75, with about 650 hrs. on it now. No problems. I have 160 hp. I agree with Gary Cotner... it sounds like you may not be developing full hp. I can turn a little over 2700 in cruise at 7500 msl. Rate of climb is more than adequate. My home field elevation is 5460' msl (Jeffco - Denver area). The AD props seem to be very consistent in performance from sample to sample, so I doubt that you have an incorrectly marked prop, or something crazy like that, but it is always possible.

John Evens N71JE

cont.

Prop Talk, cont.

I had an A/D prop split the same way you described, on the ply line about four inches from the tip on the trailing edge. A/D told me to epoxy glue it. Unfortunately I destroyed it a short time later. Incidentally, I initially ordered the A/D prop because of a better price, at the time, and they advertised a metal leading edge. When I complained about it arriving with a plastic leading edge they said they thought that was better for my installation. After flying in rain I doubt that.

Hurant Kariban

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I talked to Mike Demuth today by phone, naturally as a prop manufacturer his first responsibility was to make me think the prop hit something. I think that he and I have now come to the conclusion it may indeed be delamination. I'm boxing the prop and shipping back to A&D for their repair and review. Thanks for your input and "Happy Flying"

Ben Gleason  
Vermilion, Ohio

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Prop Refinishing ?

As props are in our conversation — I need to refinish my wood prop. It has several places where stones (or whatever) have scratched and pitted the varnish. I was wondering about the options of removing the old coating (it was polyurethane — next time it will be spar varnish). Sandpaper is what I did the last time. Someone has told me that he was aware of a recommendation to use a sharp knife — much like a box cutter type — and draw it along the surface to remove the varnish. Has anyone done this? I'd hate to put cuts into the wood because of the knife blade.

Jack Kenton

cont. pg 17



## More on Propellers

### Sensenich 72FM Metal Prop on N181RE

I have been doing some flight tests on the new Sensenich 72FM8S9-1-85 metal prop for the O-360 engine. This prop replaces my Sensenich W68LY80 wood prop that I operated for 242 hours. This new metal prop has generally increased my performance in takeoff, climb and cruise. The 85 inch pitch is a good match to my O-360 AIA engine using John Thorp's efficient recovery induction scoop. My full throttle rpm is limited to 2750 at 7 to 8 thousand feet leaned cruise conditions. This is the same as the W68LY80 provided. I see a 3 mph improvement in cruise speed under these conditions from 197 mph to 200 mph at 1300 lb gross weight. My takeoff performance at 1600 lb gross is improved (1 minute from brake release to 500 feet altitude). It is easy to maintain a cruise climb rate at 1600 lb gross in excess of 1000 fpm with indicated airspeed ranging from 140 mph to 120 mph to 9000 feet. The wood prop gave me similar data but at a solo gross weight of 1300 pounds. The additional 25 lbs for the aluminum prop with 4 inch extension moves my forward cg (full fuel, pilot only) forward .57 inch. My rear limit (30 lb fuel, 100 lb baggage and 2 crew) is now 70 inches. This has the disadvantage of some performance penalty due to higher balancing tail load, but would allow 125 lb baggage while staying within my 1600 lb GW and 71 inch rear cg limit.

Conclusions:

1. Performance is improved overall. The Rose designed Sensenich wood W68LY80 prop is only slightly inferior to this metal prop, however.
2. Rain erosion will not be a problem with this prop.
3. The 85 inch pitch provides a good match for full throttle altitude cruise while still improving climb performance.

Attached is a photo of the new prop installed with a Ken Brock fixed pitch spinner. Eklund Engineering is currently offering both the 70CM (O-320 Lycoming) and 72FM (O-360 Lycoming) series props. The 70CM series is \$1800 plus shipping. The 72FM series is \$1810 plus shipping. 7.75% sales tax would apply in California.

Richard Eklund  
Eklund Engineering, Inc.



### Eklund Engineering Website

Eklund Engineering has a new website available on the World Wide Web. Visit [www.thorpt18.com](http://www.thorpt18.com) to see the new website. It is dedicated to the T-18 and the wonderful kit that Richard and his group are putting together. Although it is still in process, the component quality is excellent.

**More on Propellers**

I thought I would chip in with my new prop details. I have a T18-C (see NL 26) fitted with an AEIO360 180HP. Last week I fitted a new Sensenich fixed pitch alum prop and pe formed alum spinner. It is a 72FM series with 88" pitch, that's right 88".

The hendrickson that it replaced is 68"Dia x 80"Pitch.

At 2500' feet the following comparison figures were recorded.

<b>HENDRICKSON</b>	<b>SENSENICH</b>	
<b>RPM 2450</b>	<b>RPM 2450</b>	<b>2500</b>
<b>TAS 157 Knots</b>	<b>TAS 166 Knots</b>	<b>174 Knots</b>
<b>MAP 22"Hg</b>	<b>MAP 24.0"Hg</b>	<b>24.50" Hg</b>

Around sea level RPM and Manifold pressure are square at all RPM. The prop was dynamically balanced after the first flight which really made a difference to vibration reduction. Climb performance is about 1500FPM once airspeed reaches around 115Knots. More testing will confirm these initial figures.

Malcolm Bennett  
VH-DTR

**Propellers from Classic Sport**

Classic Sport Aircraft has received confirmation of our OEM status from Hartzell Propellers. We are now able to purchase props directly from Hartzell Propellers.

The listing below is the recommended engine and prop combinations for the Thorp.

<u>Engine</u>	<u>Propeller Designation</u>	<u>Dia.</u>	<u>Price</u>
0290/0320 *	HC-F2YL-1F/F7663A-4	72"	5,966.00
0360 *	HC-F2YR-1F/F7666A-4	72"	5,966.00
0360	HC-F2YR-1F/F7068-2	68"	6,427.00

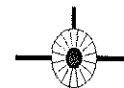
NOTE: \* Recommend the longer gear with this prop.

Terms: \$500 non-refundable deposit with order. Full payment prior to shipment. All orders will be shipped freight collect from Hartzell Propellers. Credit Card purchases - 3% extra.

California residents must add 7.25% sales tax.

I will advise you later on the fixed pitch propellers.

Thanks,  
Classic Sport Aircraft  
Mike Archer



Sport Aviation is on the decline, more pilots are choosing not to fly ...  
The government is watching us .... if we don't use it we may loose it ...  
Lets all attend those T-18 Get-Together's and events ~ There is strength in numbers !  
Its harder for our government to fight large organized groups than to fight us one at a time.  
Protect our freedom to fly .... Get out to those Aviation Events !!

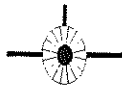


**Prop Refinishing ?**

Forgive me if I am asking a dumb question, but my personal experience with wood refinishing is with furniture and boats. Is ordinary aircraft paint stripper harmful to the laminating glue in these props? Is it satisfactory to spray on several coats of varnish? Do you typically sand between coats? Should the metal leading edge inserts also be varnished, or should these be masked?

Ben Harrison

*Editors Note: These are some good questions. How about some of you that refinish your own propellers sending me articles on the proper way to refinish them.*

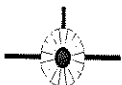


**Need An Engine Operators Manual**

For anyone looking for a good engine operating manual, I found the Lycoming Flyer Key Reprints: Operation (57 pages) to be very helpful. Found at:

<http://www.prime-mover.org/Engines/Lycoming/Flyer/Operation.html>

Hal Underwood



**Comments From A New Thorp Pilot**

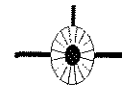
I was a little alarmed by the comments in Jerry's message also. I am new to the T-18 group, but I have flown several of the RV's. My T-18 is fairly light

cont.

**Comments From A New Thorp Pilot, cont.**

with the mouse motor. It will roll quicker than any RV-6 I have ever been in, and close to any RV-4. The published RV numbers show the RV-6 and RV-4 performance pretty close. What I have found is that there is a huge difference. The 4 being by far the better of the two. The RV controls are lighter to me, but I prefer the feedback I have in the Thorp. The only thing that I have seen a RV-6 do better in the air than my Thorp is get slow. I guess it is pretty easy to tell that I consider the RV-6, Especially the 6A, seriously over rated. However, I really do like the RV-4, and would probably like the RV-8 even better. I really would like to try a 180 HP T-18 to compare it with my snappy little mouse motored plane. I am curious as to how much if any the planes handling changes.

Keep-em Flyin.  
Mike



**Calculating Design Load**

Just received a development and spec sheet from Eklund Engineering, Inc.

1250 gross 6.0+ 3.0- Ult. 9.0+

1500 gross 5.0+ 2.5- Ult. 7.5+

You can easily calculate the design load for any given weight. The gross times the load will always equal a constant. For example the positive load constant is  $1250 \times 6 = 7500$  So 7500 divided by any given gross will yield the max design load.

To calculate the positive design load for 1700 gross wt. just divide 7500 by 1700. (it's about 4.4) The ultimate positive design load for 1700 lbs is 6.6 G's, so if you pull up out of a dive at 6.7 G's with a 1700 lb gross weight, expect the wings to come off! And that's assuming that you built everything perfectly and exactly according to the plans!

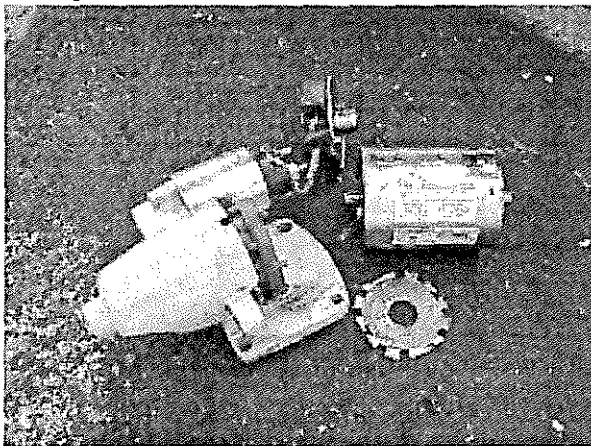
Carl ~ N647C

**Starter Explodes**

Yes, that was my starter. One of the long bolts backed out of it, as it turns out, a while ago. The remaining bolt finally cracked the starter nose case and the whole thing dumped into the engine compartment.

I had found a "spare" bolt a while ago, but thought it was from the vacuum air filter. Anyhow, a better job of chasing down the source of that bolt would have prevented the problem. This is not an uncommon issue with these starters. They work great, but I now have one more place to check when I'm under the hood. While I'm on this, these starters do not tolerate low batteries.

Bob Highley



Bob's SkyTech Starter

**Items For Sale**

Tools

Over the past few years I have aquired a few extra new or like new, very, very limited use. As such I have the below listed items for sale. If you want to see a picture of the tool(s) check the latest issue of the Aircraft Spruce & Specialty Co. cataloge, page 491.

One each:

**L-6000 RVNUT SPEED DRIVER**

This tool is designed for light production and features high speed push-pull, smooth,sprial action.

It is a #6 adequate for brass, aluminum or light steel. It provides easy on-and-off threading of rivet nuts with the push pull knob. The adjustable anvil is for different length rivet nuts. Made in the USA I have one 6-32 tools for sale. The sale price for this tool is \$65.00 plus \$5.00 S&H

Three each:

**L-6000 RVNUT SPEED DRIVER**

This tool is designed for light production and features high speed push-pull, smooth,sprial action. It is a #8 adequate for brass, aluminum, light steel or light stainless steel. It provides easy on-and-off threading of rivet nuts with the push pull knob. The adjustable anvil is for different length rivet nuts. Made in the USA

I have three of the 8-32 tools for sale.

The sale price for each tool is \$75.00 plus \$5.00 S&H

Two each:

**AT501R RIVET CUTTER**

This heavy duty rivet cutter is designed to quickly and easily shear aluminum rivets. It is adjustable for 1/4" to 3/4" long in 1/16" increments. It will accommodate 3/32", 1/8", 5/32", 3/16", 7/32" and 1/4" diameter rivets. As noted I have two of the heavy duty rivets cutters.

The sale price for each tool is \$58.00 plus \$5.00 S&H

If interested call

Norman Pauk

253-630-6396 after 16:00 PDT

Parts

This last weekend, I aquired a T-18 under restoration N89RB so I am going from a T-18 builder to a T-18 restorer. I have a boat load of parts and material for the S-18,

Upcoming Thorp Events



**AUG. 28 - 29** ~ Thorp Gathering at Mifflin Country Airport - Reedsville, PA. For more information contact: Jim Hockenbrock by phone at (717) 667-2790 or by email at [hockey@acsworld.com](mailto:hockey@acsworld.com)

**October 8 -10** ~ Annual Kentucky Dam Get-Together - Gilbertsville, KY. For more information contact Teresa Scola at: [btscola@aol.com](mailto:btscola@aol.com) or 847-437-7153

For Sale, cont.

T-18

Jack Rodgers passed away last week when he never left the hospital following heart bypass surgery. His widow, Martha, is going to sell his very nice traditional T-18, based at Palm Springs, CA. The airplane looks great, is well equipped for night / VFR flight, and will be in annual till July. She is looking to get \$30,000, and whoever gets it will have a very good airplane. She is not a pilot, and whoever wants to see it will have to go to P.S. to do so. If a prospect is serious after seeing it, I will be happy to arrange a demo ride.

Prospects please contact me at  
George Avans  
[gr8dds@desertsurf.com](mailto:gr8dds@desertsurf.com)  
760-837-0222 Work  
760-202-0108 Evenings

months): Aymar-DeMuth Prop with 4 inch extension and spinner, Lange tailwheel, Interior, EBC-102A ELT, Airspeed, Bruce canopy and prop covers. Radios are a KX-125, KT-78A, Airmap 100 GPS. Price \$22,000 firm.

Stan Campbell  
Reno, NV  
775-424-2273

Parts, cont.

including but not limited to folding wing beams, longerons, vertical stab, rudder, ailerons, folding wing bellcranks, firewall and bulkheads, tailwheel ans spring, windshield frame (rollover bar). There is probably more I didn't list than I did. It will take me a while to go through all of this stuff, and see what I am going to use, I also have two pieces of .032 2024T3 4 ft x 14 1/2 ft long that I was planning on using for the fuselage sides and never even unwrapped. I also have an extra set of 500 x 5 wheels and brakes.If you have any S-18 needs, let me know.

Robert Madris  
[rmardis@lopezgarciaigroup.com](mailto:rmardis@lopezgarciaigroup.com)

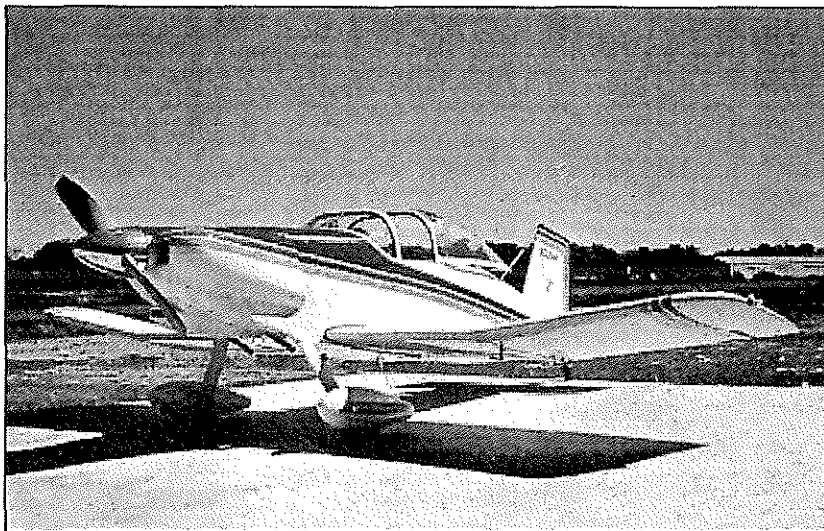
T-18

1974 Thorp T-18, N139G Ser. #375  
aproximately 650 hrs total time airframe and SMOH on LYC 0320. Annual Due April 2005. All new 130 hours ago (within 15

PRSR STD  
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**T-18/S-18 Thorp Newsletter**  
**Roy Farris**  
**P.O. Box 182**  
**Noble, IL. 62868**  
**Phone: (618)723-2594**  
**email: rfarris@shawneelink.com**

**August 2004**



Jerry Sheetz's T-18 ~ N32AH ~ Henderson, NC.