

T-18 Newsletter

March 2007

T-18 Website ~ <http://www.t18.net>

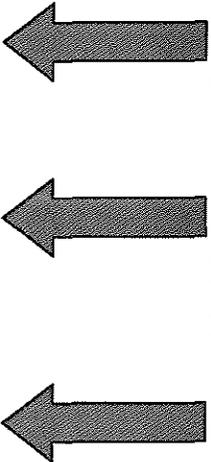


Pat and Dave Eby ~NX53PD

In This Issue:

- T-18 MAS Renewal Time !!
- Setting Maximum Gross Weight
- Loose Aileron Counterweight Aerobatics
- Cool Landing Light Flasher
- Tricky Tailwheels
- Heavy Wings
- For Sale Items

Is your MAS Membership Current?
Is this your Last T-18 Newsletter
Check the Exp date on your mailing label



Notice: (Standard Disclaimer) As always, in the past, present, and future newsletters, we wouldlike 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 responsibilty or liability is expressed or implied and is without recourse against anyone.

Frapper Website



I don't have much to say this time around. I appreciate every ones patience over the last few months. I know I have been a little slow in getting the newsletters out, but recovering from my computer crash took more time than I could have imagined.

I am more than a little worried about what seems to be happening to the "Manufactures" end of the T-18 movement. The Thorp has never been a highly promoted airplane, and it seems that it is becoming less promoted as time goes on. Never do I see any advertising in any of the major publications for plans or kits. Classic Sport pulled the S-18 plans off the market some time ago stating reasons of liability. It seems that people were straying from the plans a little .. wow imagine that. I sent an e-mail to both Eklund Engineering and Classic Sport to get an idea where they stood and what their future plans are. I didn't receive a reply from Classic, but Richard Eklund replied stating that they were going to sell all remaining inventory, and then only build on order. They did say that they will continue to support all plans holders, and that they will continue to work on their kit as time allows. I have reprinted his reply later in this issue.

I am also worried about the future of Sport Aviation. I feel that our government will eventually get user fees passed, and that is going to have a major impact on affordability. I am very interested on what you think on this issue, and would appreciate some feedback. Please e-mail or snailmail me your comments.

And Now On With The Newsletter

T-18 Newsletter On The Web

Did you know that the T-18 Newsletter can be downloaded in color from the T-18 Website? Go to: <http://www.t18.net/newsletterinfo.htm> and take a look at the sample. If you like it ... go ahead and sign up.

Have you computer savvy members seen this website yet? Go to <http://www.frappr.com/t18s> and check it out. I believe Bob Moehlenkamp (who is not a current MAS member ... come on Bob !!!) started this site for us T-18'ers. It is a neat map that allows you to mark your location and enter some particulars about yourself, including a photo is you wish. Its a neat way for everyone to see where all the T-18 are located. Go ahead ... try it.

Possible Get Together at Clarion County Airport

Some nice T-18 people would like to host a Thorp Gathering in Western Pennsylvania. It has been listed a couple of time on the ThorpList, but didn't get a terrific amount of response. I am going to re-print it here. If anyone is interested in doing something, even if it is in 2008, please let me know.

My name is Scott Sheffer, and I am the Secretary for EAA Chapter 994 at Clarion Airport. Our Chapter President, Harold Holben, asked me to contact you and answer some of your e-mail questions regarding a possible T-18 Fly In at Clarion. You can address responses to Harold at this address, and I will see he gets them, as he is here almost daily working on his T18 project.

1. Adequate airport facilities that will accommodate sport flying, including low passes and formation flying. Controlled and towered airports are not usual welcomed. No problem, Clarion is an uncontrolled low traffic airport.....we should be finishing up a runway extension project Spring of 2007, and will have a 5,000' x 75' asphalt runway. www.clarionairport.com The airport authority is airport promotion minded, and sees the EAA Chapter as an asset.
2. Good hotel accommodations that are close to the airport Holiday Inn, Quality Inn, Comfort Inn, Hampton Inn, Microtel and Super 8 within 5 miles of airport.
3. Shuttle service to/from hotel This can be personal cars of vans .. doesn't need to be provided by the hotel We can do this.

Possible Get Together at Clarion County Airport.cont.

4. Good place to meet and eat. Sometimes we do it at the airport as a cookout or something like that Chapter can provide this.
 5. Something to keep the women folks busy while we do airplane things.
- Should not be a problem either....several ideas come to mind, but I should let the chapter women validate them, lol

Please check with those you know in the Thorp Community, and see how a Fly In at Clarion would be received. Thanks...Scott

Robert 'Scott' Sheffer, Manager
Clarion County Airport
395 Airport Road
Shippenville, PA 16254
(814) 226-9993
manager@clarionairport.com



Aerobatics in a Thorp

More from: James Grahn

Recently, there was a small discussion about aerobatics in the Thorp. I thought I would write a newsletter article with some of my thoughts. For those who don't know me, I am a retired USAF fighter pilot. I flew F-4s and F-15Es for 21 years. During that time, I taught aerodynamics at the USAF Weapons School (Air Force version of TopGun). I spent the last 7 years of my commitment as an Operational Test pilot. I am writing this in the nose of a 737 at FL 340, which has been my job for a year. I did not build my T-18, but have owned the Patriotic Tigress for 6 years and 520 hours. I am not an aero engineer. My terms may not be technically correct, but they get the point across. First, I encourage anyone who wants to fly aerobatics to do so with a qualified pilot before trying it yourself. The Thorp picks up speed rapidly with the nose down and could put you in a square corner. I also recommend everyone take upset training (whether you fly aerobatics or not). Here's the academics....

Let's discuss CAS vs TAS. Your wing flies off of CAS for all intents and purposes. You can pull higher "G" before stall AOA at lower altitude due to higher CAS. When you fly aerobatics, you will get the "feel" for how much of a pull equals how many "G", and when to back off the AOA. Those "feel" criteria change with altitude. Your Thorp may pull a sweet-as-you-please loop starting at X airspeed and Y altitude, but if you try it 5 or 10K feet higher, it may fall off. Have no fear; unless you have a real whiz-bang panel, you are looking at CAS, not TAS.

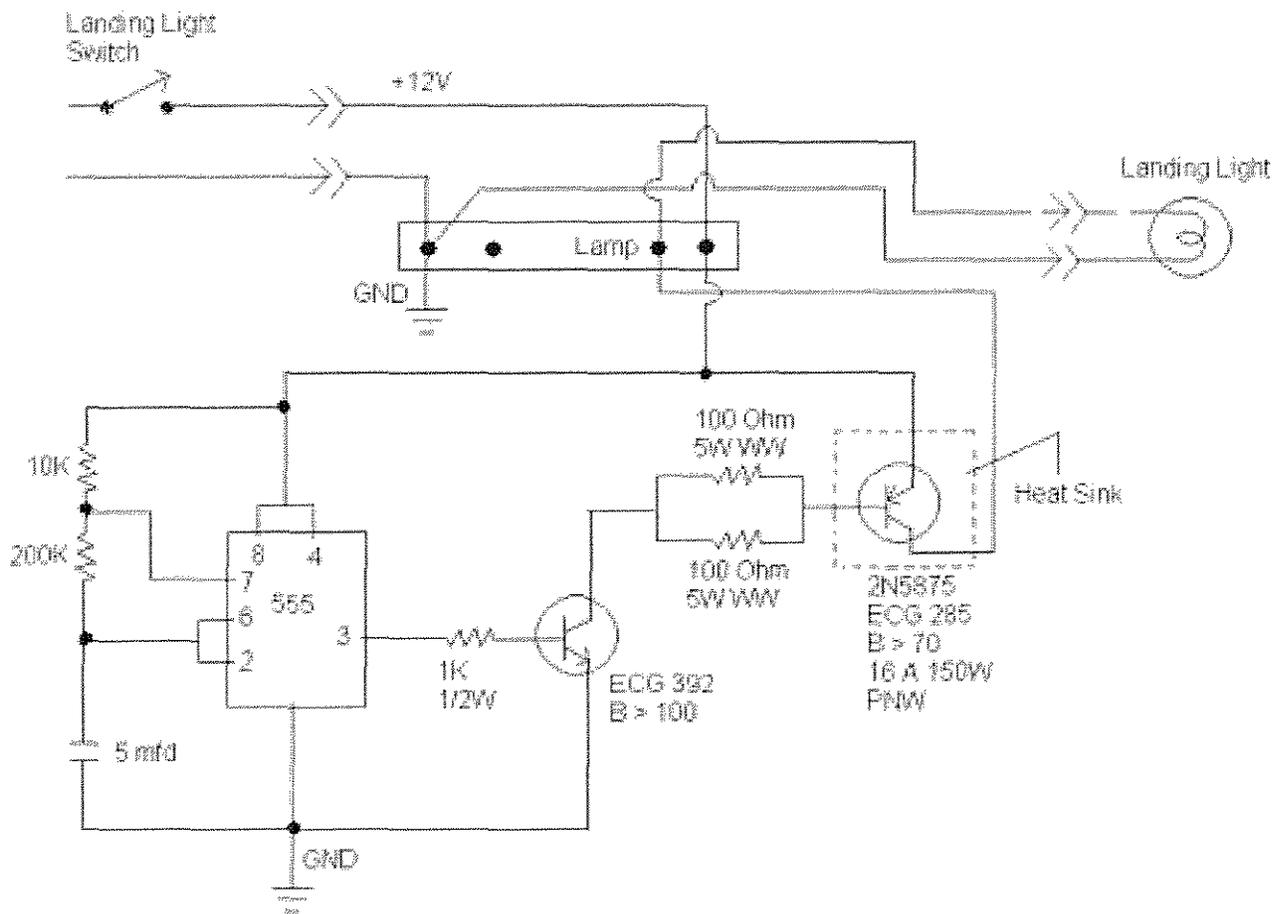
Every wing has an angle of attack that is its max. Beyond that angle, it will stall. What may not be obvious is that gross weight and "G" load do not change that critical angle of attack. Higher gross weight will lower the speed at which you reach that critical angle. Higher "G" load can damage a structural member before reaching that critical angle. Why is AOA important? If you stay below your particular critical AOA, you will not stall. If you do not stall, you cannot spin!! Keep in mind that your wing has no idea if it is upright, inverted, or performing a loop. You can stall the wing going straight up, straight down, or straight and level. I highly recommend you stall your Thorp in multiple configurations at least a couple of times a year. Listen and feel your way through a stall. My Thorp will get light in the stick, give me one bump, and then the left wing will fall off. These flight characteristics are very common to the Thorp. Get to feel your Thorps characteristics at altitude in a controlled environment. It will help you recognize the signs before a stall in the traffic pattern. In your stall training, your most important gauge is the turn and slip. Keep the ball centered and you cannot spin.

Let's talk spin recovery. The primary spin control is the rudder. Rudder against the spin (spin left = rudder right) is the desired input. Throttle above idle will flatten a spin and prolong recovery. Aileron, if used, should be into the spin (spin left = stick left). The idea here is to use the adverse yaw of the down aileron to aid in recovery. This control is less effective in aircraft with differential ailerons such as the Thorp. Elevator should be slightly forward of neutral. This aids in lowering the nose and breaking the stall AOA. Full forward stick comes with the following cautions. First, when the stall/AOA breaks, full forward stick can cause an overload in the negative

cont pg 12

Landing Light Flasher
 Submitted by: W. T. Worth

This schematic was designed by a friend of mine who is an electrical engineer. Others that are knowledgeable may wish to modify it some. There were 3 of 4 units built with an aluminum enclosure, with mine being mounted on the firewall. Most of the parts are available at your local Radio Shack, but an original landing light was installed on the front baffling. It burned out about a year ago and was replaced either one from Walmart. I bought 2 units for \$25.00, so now I have a spare.



A Message From Richard Eklund ~ Eklund Engineering

We intend to provide builder support for all current T-18 plans holders. We intend to continue developing kits as time allows. The pricing on the web site is current until I finish my stock inventory. We will then discount in-stock complete sub-assembly kits 25%. We are adopting a no inventory policy with 50% down to order parts or plans. Refund will be offered if delivery is not made in 60 days. Prices will be set at time of order. We order and fold plans and generally deliver in less than 30 days. www.thorpt18.com

Right Rolling Tendency

Recently there was some intense discussion on the ThorpList e-mail group about a wing heavy condition. Much advice was given by the membership, and many good items were brought up. As you might expect, all of the pertinent wing twist, and rigging problems were brought up. The owner followed the advice and checked everything he could think of. Following is his description of what he found:

The right wing tendency to drop has been corrected. **PROBLEM SOLVED!**

Dave Prince & I took her up for a spin and he saw/ felt the same heavy right wing tendency...it became more pronounced as we were in the yellow arc range of 170-200 mph. After landing...Dave & I re-measured every part of the Thorp (Flaps were in normal range, tail & elevator were straight) During our measurements we noticed "two drill holes" on the copilot wheel pants for the main outside screw was causing the Wheel Pants to be toed-out. We just changed the screw to the second hole and it lifted the wing significantly during our next test flight. It seems as if the wheel pants were causing a significant aerodynamic pull to the right causing the wing to go with it. The airplane was CO'd by a person I hired for a pre-buy inspection...as it turns out... he must have put the wheel pants screw in the wrong hole causing the wheel pants to be toed out. (The ferrying pilot I hired to fly it from California to Florida complained of the right wing tendencies too).

There are now virtually no heavy right wing or roll tendencies now. We are considering correcting the pilot's side wheel pants to just slightly as the "roll trim adjustment screw" is all the way at the maximum setting. **THANK YOU ALL...WHO CONTRIBUTED YOUR INPUT**

Scott Schlander

More on Heavy Wings

I have a heavy left wing, the flap trim does not help very much at full stop. When I am flying the right aileron looks to be 1 half inch above the wing tip. The left is even with wing tip. Also today on landing 10degrees ok then 20 degrees ok on 30 degrees the left wing dropped a great deal, when back to 20

degrees

ever thing ok? Any help would be nice

Frank Seats
N249R

Check the flap rigging. The right one is rigged lower than the left. Gary Green went thru this drill on his new a/c. Better than both wings heavy.

Dave Eby

You might also confirm that there is no twist in a wing panel. You can do this by using a long (4 foot) level and place it parallel to the wing spar at increments from the leading edge to the main spar...and from the main spar to the trailing edge. After you do this a bit and look at the bubble you will begin to see if there is any warp in the wings. It works better with a digital level. Using an incidence board once you confirm that you have no built in twist...you confirm that the wing panels are set at equal angles of attack. After you check that, you check and set the ailerons and the flaps. If after all the above, and correcting any apparent problems, if you still have a heavy wing, then you should think about adding an adjustable aileron trim tab that allows you from your seat in the plane, to adjust out the heavy wing. A tab built within the aileron itself will be much more effective than a tab mounted on the trailing edge.

Tom Hunter

I have had success correcting for minor wing heaviness, (after checking all the things like twist, flap settings etc) by simply bending the trailing edges of the ailerons. Use large C clamps to hold two light wood strips along the trailing edge of the aileron. Using the clamps as handles, bend the trailing edge of the aileron (where the two skins are riveted together), up to raise the wing and down on the other side to lower that wing. Try it in small increments and I'll be surprised if that doesn't do the trick. In my opinion, much better than riveting

cont pg 6

More on Heavy Wings, cont.How about that fuel tank vent?

a trim tab to the trailing edge of the ailerons. This is the same procedure called for in the Mooney manual for rigging adjustments.

Joe Gauthier

I fly my aircraft from the left seat and when I do so the left wing is heavy, if there is a person in the right-seat who is heavier by more than 10lbs than I am the aircraft is right wing heavy. What I am saying is that the aircraft seems to be very sensitive to lateral weight differences.

Wayne Matthews
ZK-WMT

I think that Wayne makes a very interesting point. Here is an experiment that I have tried. Trim out your plane to fly straight and level, hands off. Now, I do have a Trusty style electric roll trim that allows me to account for both different weights of passengers and amounts of fuel in my wing tanks. Anyway, trim out your plane to fly hands off...and then tilt your head back. The plane will climb. Tilt your head forward and the plane will descend. Tilt your head right and then left...and you will turn right and then left. I did that little experiment with a friend of mine and he was simply amazed at the perfect balance of the airplane.

The easy solution for wing heaviness is an adjustable roll trim tab. Moving the flap down is a poor man's way of doing that and results in significant drag and a slower plane. A fixed tab is only good for a selected loading condition. When my plane first flew, the left wing was "heavy". Tony Ginn was my test pilot on the first flight. After about a minute or so, Tony said if flew hands off. That was 400 hours ago.

Mike Archer sells the plans for the little aileron trim tab and drive that fits inside the wing tip.

Tom Hunter

Looking at the fuel vent on my airplane, I keep thinking that it would be an inviting place for mud dobbers to make a nest. It would be easy to miss on a preflight and it might not even be visible the way that they go deep into things. I was thinking about putting a screen cover over it something like a fuel tank finger screen. Has anyone done such a thing? Is there any chance that it would mess up the flow of air into the tank? Is there any good reason not to do it?

Jerry Miel

I have a finger screen over mine secured with epoxy which has given no problems. Have same apprehensions re: bugs.

Hal Underwood

I had a bug plug my pitot tube one time. The pitot tube plug was not in anyway visible from the outside of the tube. It's disconcerting to just get into the air and notice no indicated airspeed but certainly not a reason to panic. It could be a huge problem to just get in the air and have the engine quit from no fuel. This happened to me in my Sonerai one time when I filled the tank very full. Fuel started siphoning out the vent which was located in the top back of the tank going down the bottom of the fuselage. The engine started sputtering at about 50'. When I put the nose down the carb was lower and the fuel went more to the front of the tank. This stopped the siphoning and the engine picked up again within I'm sure 1 or 2 seconds and ran perfectly again. I was never filled the tank completely full after that and also how high I raised the nose when I did have a full tank. I never had that experience again with these 2 changes. I expect that the same thing could be made to happen in a T-18 if the tank were completely full and the airplane were flown with the right wing low. Now I use 2 tygon hoses each plugged on one end, one on the pitot tube and the second on the tank vent. My vent tube is at 90 degrees to the skin just behind the landing gear with a 45 degree scarf cut to the front. I intentionally made the fuel tank vent hose several

feet long where it is less likely to be forgotten before flight and I believe would fall off or be blown off if a t/o were attempted without removing it. I slip it on the vent tube just past the scarf cut (far enough to make an airtight seal). When removing the tank vent almost always there is some noticeable pressure or vacuum in the tank. If I'm not sure about the vent being open I unplug the end of the hose and blow into it just a little. You can then be sure that the vent is open by being able to blow into the tank and hearing the vapor coming back out of the tank. I also have installed an alternate tank vent hose hanging down just behind the right side of the panel. It is just a tee off the vent hose with a cap on it that could be removed while flying.

I think using a fine screen should be another good option to insure a good tank vent.

Last, per Tom Kerns experience years ago, the tank vent should face forward to slightly pressurize the fuel tank. As the fuel gets lower in the tank, the pressure from the fuel height above the carb continues to decrease. This slight additional pressure is needed to keep up the fuel flowing when the fuel height gets low. This probably was more of a problem on his airplane due to his very efficient carb air cleaner and air intake to the carb that he built. Done well, this can slightly pressurize the carb for more air flow and therefore needs a very slight increase in fuel pressure to offset this ram air pressure.

Eddie Eiland
N29EE



Setting Maximum Gross Weight

The original Weight and Balance document for my recently purchased 1978 T-18 stipulates a maximum gross of 1500 lbs. This is with a 320 engine that was souped up by John Thorp to 170 hp (JT's estimate). However, I notice the few POH's posted on web stipulate gross weights significantly higher than 1500 lbs. I'd like to know where these numbers are coming from? The 1500 lbs on my W&B may have been either stipulated or just suggested

cont

by JT--I don't know which. Also, I believe my airplane might perform quite well at a higher gross weight--say 1600 lbs, albeit within the acceptable CG range, of course. How does one legally change the stated maximum gross weight allowed, as reflected in the W & B document?????

Roger Sokoloff,
new owner of old airplane, N78DH

In a letter from John Thorp to Don Taylor (world-rounder), he stated that gross weight was a function of the intended use of the airplane. This is consistent with FAA standards that define the different categories (normal, aerobatic, etc.). In the case of the T-18, The aerobatic gross weight of the airplane is 1250#. This is defined as 6Gs positive (9Gs ultimate) and 3Gs negative. If you adhere to the utility category limits of 4.4Gs positive, simple math tells you that you can safely load the plane to approximately 1700#. See FAR Parts 23.3 and 23.337 for more detail. These spell out what loads and maneuvers are excluded or permitted for each category.

Remember that the Balance portion of the Weight and Balance is as important as the Weight portion. I would strongly suggest you get a new empty weight and balance for your plane and redo the load calculations. You may find that the Gross Weight was set 1500# because there is no way to add more weight without running out of aft CG.

Bob Highley
N711SH
SN 835

With regard to gross weight, maybe someone can explain this to me. My 180 HP T-18 has integral fuel tanks in the outer wing panels with 12 1/2 gallons in each side. It also has fiberglass wingtips which add about 3 foot of wing span. It has a gross weight limit of 1650# without wing fuel and 1800# with fuel in the wing tanks. In other words, weight above 1650# can only be used for fuel in the wing tanks. I'm an electronics engineer and an A&P, but I don't

cont pg 8

Setting Maximum Gross Weight, cont.

understand the aero engineering theory that allows the extra weight when it is carried in the outer wings. Can someone explain it to me?

Jerry Miel

Someone finally asked a question to which I know the answer! It is interesting that I just recently was asked essentially the same question in my job at Boeing, the question being "What is the meaning of Max Zero Fuel Weight?" On the big airplanes we specify the maximum weight of the airplane without fuel. All of the passengers, cargo and other payload items, plus furnishings, etc, go in the fuselage, which is in the middle of the wing where it produces the maximum amount of wing bending load. Fuel in the wing tanks will actually reduce the wing bending loads as it is distributed along the span. In the case of a Thorp with inboard wing tanks, this effect is very small. If you had the same amount of fuel in the outboard wings, that would distribute more of the weight along the wing, and have a greater effect in reducing wing bending loads. Assuming that your numbers are correct, that implies that the gross weight limit of the T-18 is primarily limited by wing bending. If that is true, and if you have increased the span by three feet from the original design, that moves the center of lift outboard. That would likely have more effect than the wing fuel, and would reduce the gross weight allowable, assuming the limit is based on wing bending. There are people on this forum who have studied the specifics on this - I have not. Where is Lyle when we need him? Probably fishing.

Ben Harrison

We all have glass wing tips: do yours actually increase the span several feet beyond that of a normal T-18 (20' - 10")? If they do, we should do some calculating, this will dramatically increase wing bending. If not, then the answers are pretty simple. As quoted in previous posts, John designed for 6 'g' at 1250 lbs, and used linear reductions in 'g' with increase in gross weight to keep wing bending loads in limits.

cont

Assuming you have a 20' 10" wing, your 1650# gross weight yields a 4.5 'g' airplane (Much less if it is a 24 foot wing). When you load fuel into the outer wing panels, the fuel weight actually reduces wing bending loads, and your builder calculated that it would carry 75 lbs on each side without overloading the wing (I will not attempt to validate the calculations in writing without a legion of lawyers at my side!).

Check the wing span: if it is longer, we need to talk.

Tom Kerns
N10TK

Gary Greens New T-18 Nears Completion

Photo's and Text by: Gary Green

Here are a bunch of photos I took today. I hope they don't bog down your computer. They show the airbox, airscoop, etc. that you were asking about. I think the modified Mooney airbox and Brackett filter set-up on my old Thorp is a good one, easy to remove/install cowl, aerodynamically efficient and attractive. But, I also think Van's air filter arrangement may be as good or possibly better. I like the large filter surface, I like the fact that the air comes in all around the filter and should be less turbulent as it enters the carb venturi. It is not as pleasing esthetically and may not be as aerodynamically clean. I am not sure about that though. Van's planes are surprisingly fast, even with their fat, ugly, hershey bar airfoils. I won't know if I made a mistake until I fly it. I had to cut a wedge out of the forward area of the airbox and tilt it upward a few degrees. That was the simple part. I also had to cut, past, section, extend, hack, and reshape Van's cowl intake a bunch. I might have been better off just making one from scratch. The mating flange fits the lower T-18 cowl quite well, but the intake is way too deep. I had to cut about a 2 inch section out and make the thing more shallow. Then, I had to cut wedges out of the sides so I could tilt the front of the intake up several degrees. The aft end had to be extended about 10 inches to smoothly fair into the bottom of the firewall. The black object laying in the

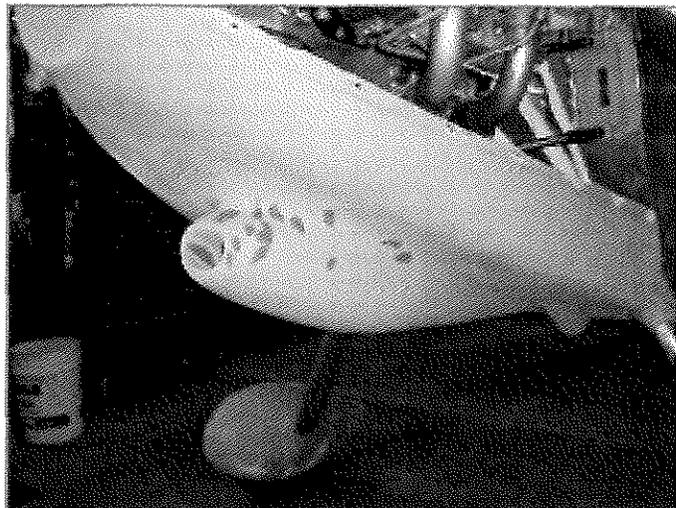
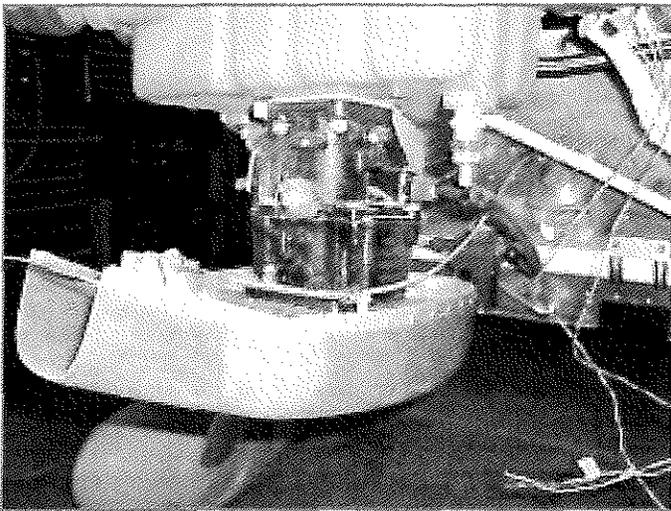
bottom of the air scoop is the rubber seal that attaches to the bottom and sides of the intake tube that mates up the intake of the airbox. The top seal of that tube is attached to the flat surface on the airbox just ahead of the carb heat flapper hinge. I also included shots of the baffling, firewall layout, servo locations, battery, ELT and antennae, backside of firewall, removable floor area, etc. Van's baffling kit is good. I used every part except the one that close out the front behind the prop. There is gobs of excess to be trimmed off. I used the same type butterfly valve to control air to the oil cooler that I use on my old Thorp. I sure like that oil cooler location, but ya gotta be able to choke off the air on cool days. I should be getting my new exhaust back from John Forsling in a week or two. I think you can see how I am going to suspend the tailpipe hangars



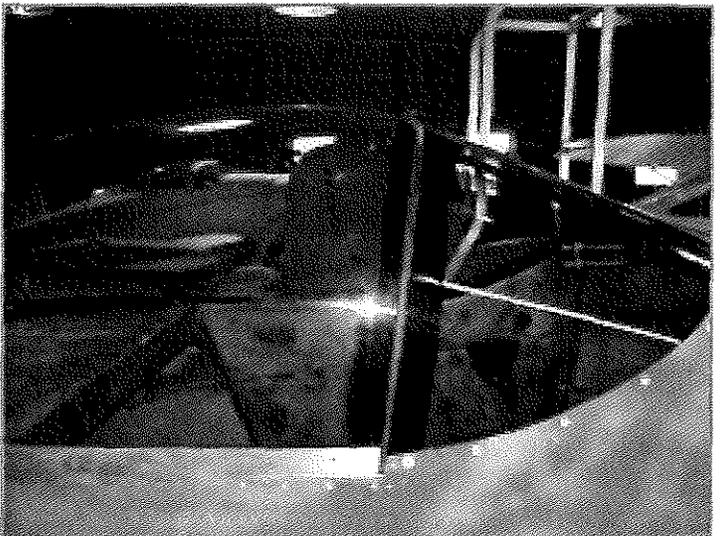
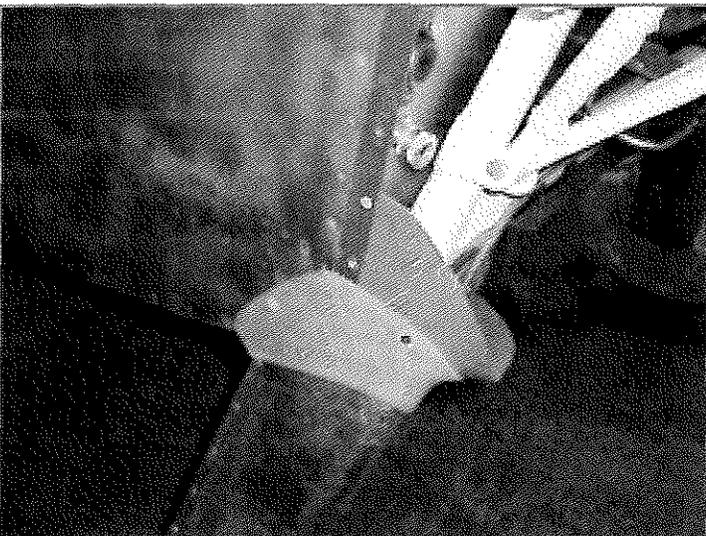
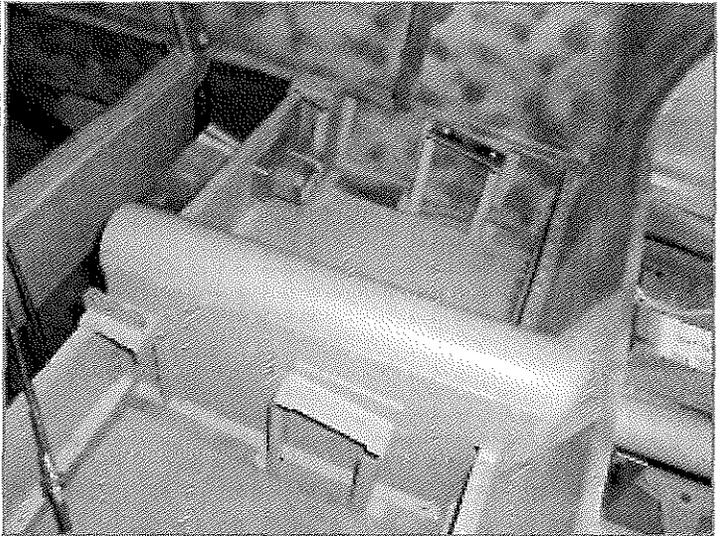
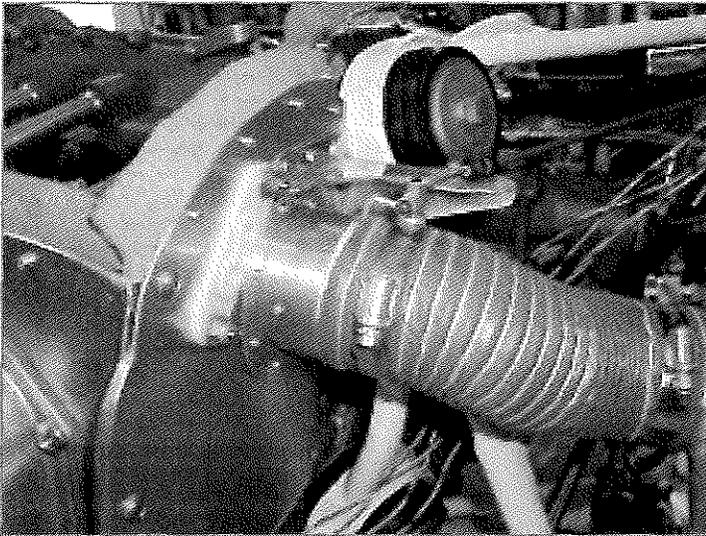
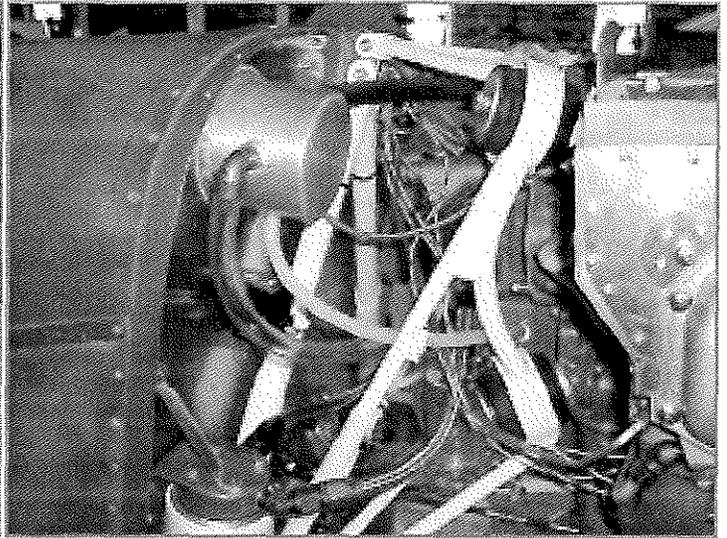
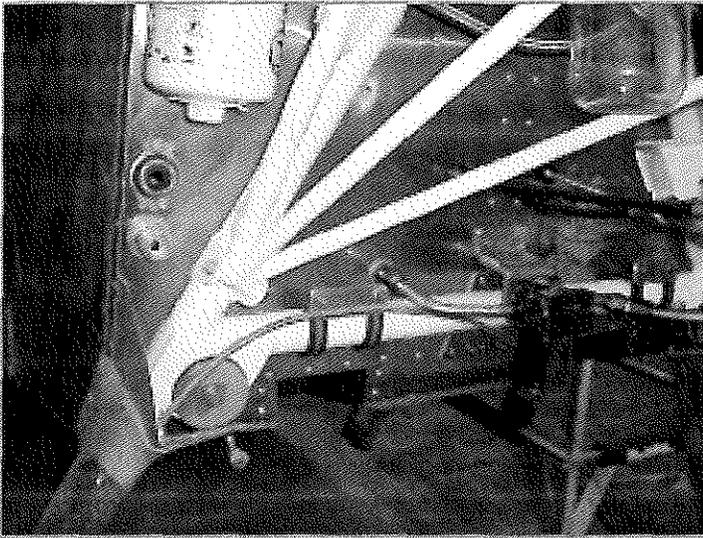
and see where I made the stainless tunnels to streamline the exhaust exits. I think you will be able to see how I made the gear leg-fuselage fairings so they do not have to be removed to remove the lower cowl. With this fairing and intake set-up, the cowl goes on and off very easily. It is an easy one man operation. I also made the Van's wheel pants as two piece. I put the ELT antennae under the canopy. I'd like to get the comm antennae out of the wind also, but can't figure out how to do so and still have the aux fuel tank under the top skin of the baggage compartment (John Kleber's design).

Gary Green

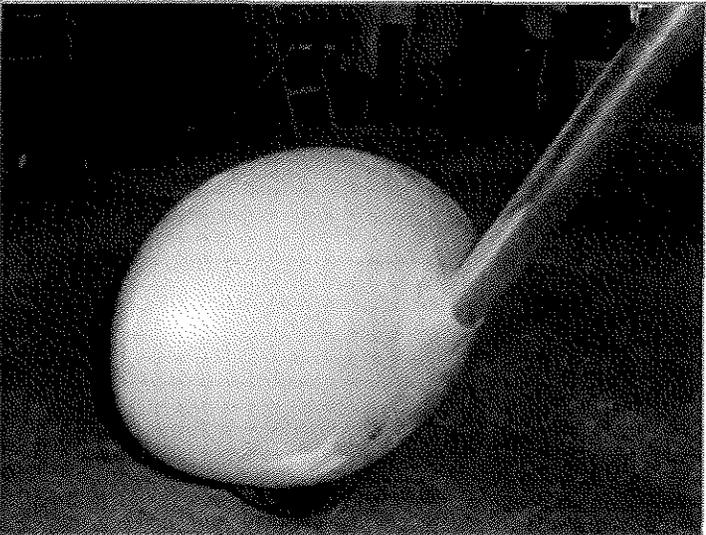
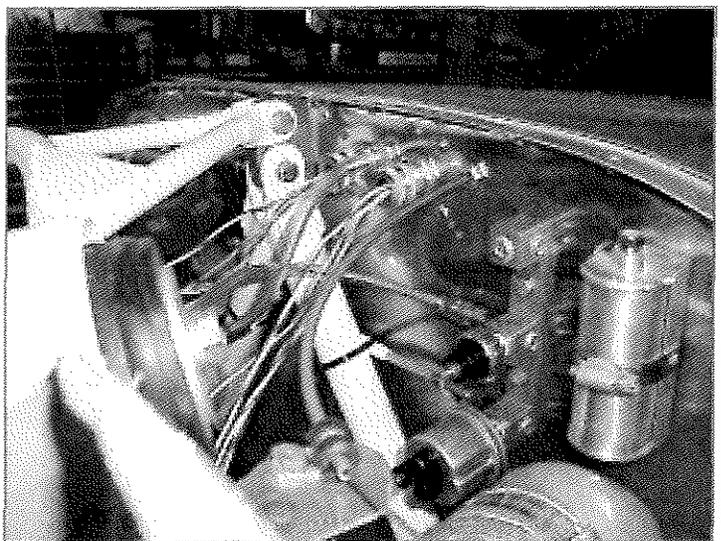
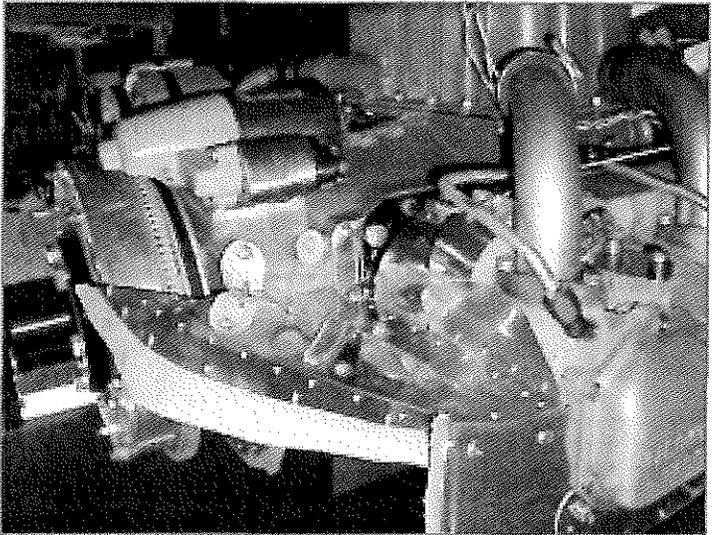
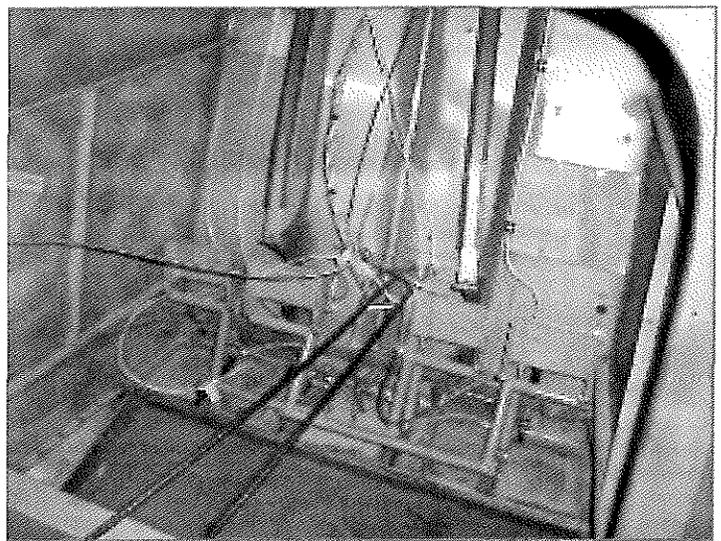
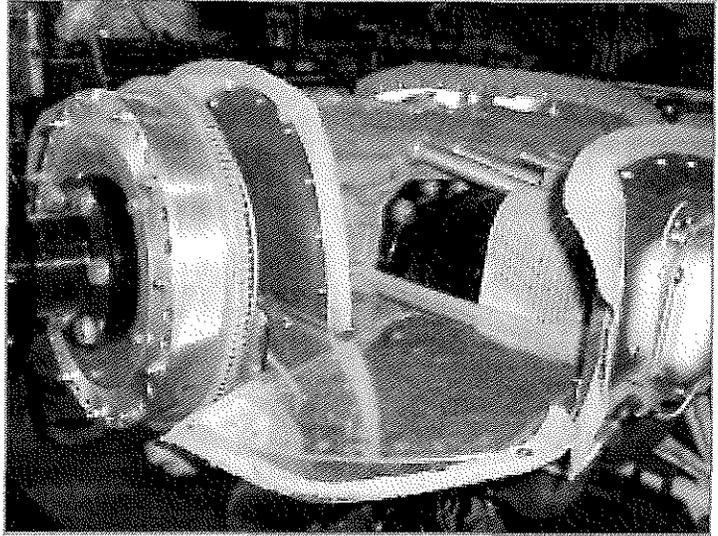
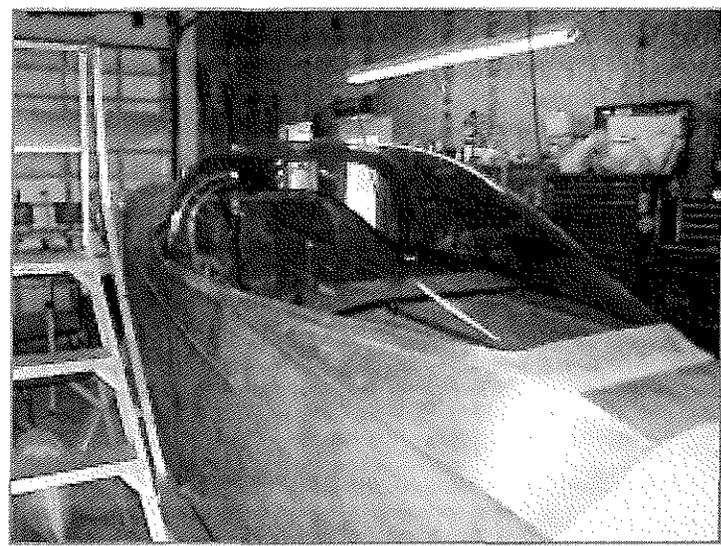
Editors Note ~ Gary's T-18 is now flying. We'll see those pictures in the next issue.



Gary Greens New T-18 Nears Completion, cont.



Gary Greens New T-18 Nears Completion, cont.



Aerobatics in a Thorp. cont.

direction if not corrected quickly. Second, while the Thorp has a powerful rudder, only a small portion is below the elevator, and therefore exposed the wind in a spin. It is this part of the rudder that is effective for spin recovery. Full forward stick provides even less rudder available to counter the spin's yaw. To sum up spin recovery, throttle idle, neutral to slightly forward stick, full rudder anti-spin, if altitude is critical, full opposite aileron.

The Thorp was designed as a +6/-3 "G" aircraft below 1250 lbs gross weight. When aircraft are designed, they are tested to failure. Certified aircraft are then authorized 66% of failure load. There are a lot of assumptions here. The point I want to make is that "G" loading design is predicated on a straight pull. If rudder or ailerons are deflected, or if the aircraft is asymmetrically loaded (i.e. single pilot Thorp), the allowable "G" limits go down. I'll give you an example. The F-15 has a constant HUD readout of max allowable "G". At FL200 and 420kts CAS under most gross weights, it reads 9 "G" allowable. If you deflect the ailerons more than 1/2 stick, the readout will drop to 6 allowable in about a tenth of a second. When flying aerobatics in your Thorp the rudder and ailerons need to be neutral if you are pulling more than about 3 "G". This is important enough to re-state. If you do not pull straight back (ZERO rudder or aileron), your allowable "G" limits are reduced!!! Rolling "G"s can hurt aircraft.

If you follow aviations news, you may have heard about the Airbus that lost its vertical tail and crashed on the East coast. The NTSB blamed the pilots of course. The reason the pilots were blamed is that they flew a doublet. In other words, they applied full rudder in one direction then full rudder in the opposite direction. The point is that a structure may be designed to withstand the loads of full control deflection below a certain speed. However, it may not be able to stand a doublet at that same speed. A doublet imposes greater stress on the structure than does a single deflection. Do not apply doublet controls.

My last point is about "G" load relative to airspeed. In the Air Force, fighter pilots study Energy-Maneuverability diagrams. These diagrams graph out the possible "G" loads and turn radii at certain airspeeds. By studying what I can do versus my opponent, I can

fly my fighter in a region my opponent cannot. How does this relate to us in the Thorp? From EM diagrams, we learn that below a certain speed, the pilot can snatch the stick straight back and not over "G" his aircraft. The airplane does not have enough energy to overload the structure. At higher speeds, the pilot must be more cautious with "G" load and rate of "G" onset. As you fly aerobatics in your Thorp, be careful with the nose pointed down. The Thorp picks up speed rapidly. If you find yourself there do not panic. Select idle power, roll to the nearest horizon, center the rudder and ailerons, and gently pull up. I do not use more than 3 "G" in the yellow arc. If you must have the nose down, realize that you can load up the AOA early (while the speed is still low) and use AOA to keep your airplane from accelerating.

Hopefully some knowledge will help fellow Thorp pilots enjoy these little wonders more safely.

Fly safe,
Jim 831 GR

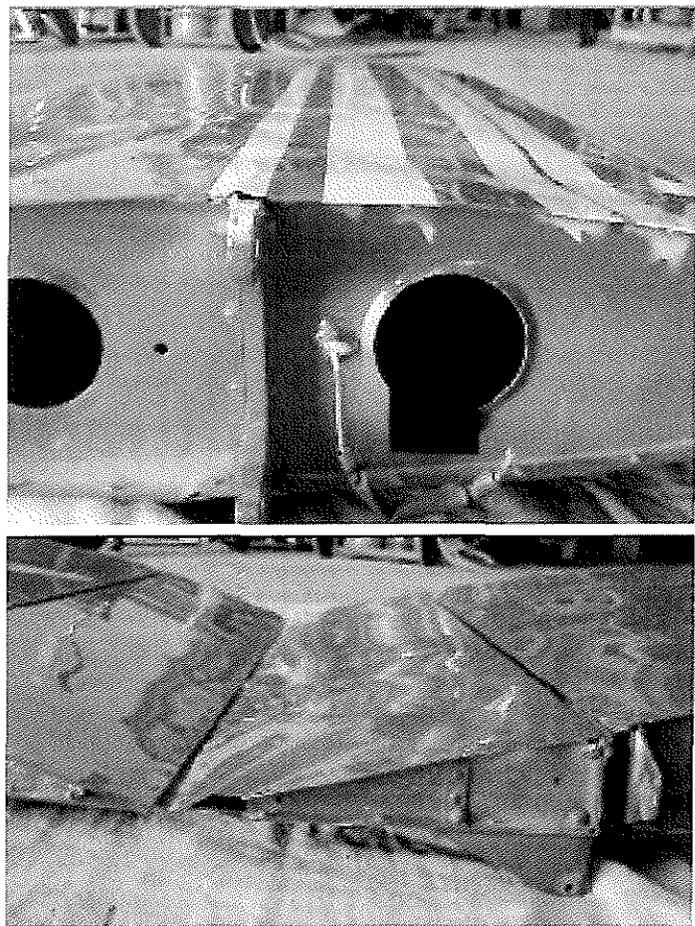
Aerobatics Gone Wrong

Submitted By: Jerry Hajek

I got myself in an overspeed condition with the airplane at gross weight and was too late to pull the power off. The day before I was playing in an L-39 and getting away with minor mistakes but the little jet has enough mass and builds up speed smoothly to get through a botched maneuver. Doing the same in the T18 I got stuck inverted on top at low speed and went negative below V_a so used power to pull through and the clover leaf now was a nasty high speed Split S. Can't tell you what the speed was but with power off when I attempted to pull out I got a high speed buffet and the nose tucked under another couple of degrees. I loaded it up just enough to stay on the edge of the buffet and 1500 feet later it recovered with a bent left aileron and both outer panels slightly wrinkled 6 inches out from the top spar connection. The time was about 5 seconds but felt like 5 minutes. Even with the lightweight glider style parachutes we could have never gotten out in time. The thought went through my head that I was going to bend the airplane but maybe it would hold together

I was more worried about the tail feathers staying on. After the recovery I noticed a 10 mph loss of air speed at 22"mp but the flight characteristics at slow speed and landing were normal. These are tough little planes and I plan on keeping this one.

An hour later we had the wings off and assessed the damage. An hour after that I had the tail feathers off and back on the same day all was good back there. The center section wing spar connections were good and passed the dye tests and by the end of the day had a recovery plan. Three months later back up again until yesterday found a crack in my oil cooler unrelated to the event.



So that's my story and I'm sticking with it. Another thing is that the T18 will not snap very well it sometimes gets stuck part way through the maneuver but with power off it will fall out and easily recover. My mistake was adding power at the wrong time to help a maneuver and only for a second or two was enough to get into trouble. Happy to be here to tell you about it.

I have an older O-320 that would prefer to run on 80, which is no longer readily available. About 6 months ago, a mechanic suggested that I start using TCP to clean my plugs, which had been fouling from the 100 LL. It worked great for the plugs. Recently, I've developed a small leak in my fuel tank (a drip every 2 seconds).

First, is there a way to seal the tank without removing it? Some of the sealant companies claim their product can be sprayed on. Has anyone ever done that successfully?

Second, could the TCP be eating the fuel tank sealant & be the cause of the leak?

Bob Shrank
N126TT

Its doubtful the tcp is hurting the sealant. Is the drip around a rivet? If so, you can try thinning proseal (toluene, I think), puddling it over the rivet & pulling a *slight* vacuum on the tank to get it into the gap around the rivet head. I did this on a tank using MEK as a thinner, but it's not the recommended thinner. There is a watery wicking sealant I read about on a Mooney list that's Certified to do the same thing. It costs about \$500. You can get an almost identical substance (basically super glue) at the hardware store branded Loctite Wicking Thread Sealer (green, I think) for about \$10. Same procedure as the proseal. Just be sure to not let the leak 'suck air' through the sealant. Pull the vacuum for a few minutes to an hour, relieve the vac & let the sealant cure.

Charlie England

I sealed a small leak in Bob Barney's RB-4 (that's not a typo!) by smearing a small amount of Proseal over the area and simply drafting on the vent with my lung power. Tasted crappy, but the seal held!

Danny Sorensen

The fuel tank per prints does NOT call out any sealant in the seams. It is a welded aluminum structure. If on the other hand, your tank has some sort of sealant in it already, then it was not made to the print. If you have a leak in it, then it should be removed and re-welded. After which it should be pressure tested.

The problem with trying to seal it with pro seal or any other material, is getting it clean where the pin hole is. Unfortunately, you can not easily work thru that little filler hole. I guess it would be like building a ship in a bottle trying to manipulate long sticks to first clean and then apply your sealant. I realize you do not want to remove the fuel tank from the plane, but I think that this is the best long term course for you. And bear in mind, if you do try to seal it and fail, then you have a real mess in trying to clean it prior to welding it and likely would have to junk it.

Tom Hunter



Tricky Tailwheel

Maybe you guys who have been flying the Aviation Products tail wheel for a while can help me. First the wheel breaks over very easily and earlier than the Scott did and is harder to re-lock. It taxi's and steers better than the Scott did. Here's the situation. Landing with a 5 to 7 kt crosswind component (wheel landing) the amount of rudder needed to stay straight is enough required for break over so as the tail settles down the wheel is castering. Lots of brake required to stay straight and neutralize the rudder to re-lock the wheel. This is not a desirable situation. The Scott never did this because it took full rudder and a tap on the brake to break over and that's what I got use to. Its been tricky getting use to it. Anyone else notice this or do I need to make some adjustments in the assembly. The spring tension is correct for the Scott and I assumed that's the same for the AP assembly. Anyone have some words of wisdom?

Jerry Hajek

It has been my experience that a little slack in the chain allows for more rudder movement without breaking loose. But in doing this it will take more rudder movement to taxi. I have spent a bit of time trying to perfect the rigging on my 140 which has a Scott 3200 on it. My t-18 with the "trusty tail spring and the Santa Paula wheel has functioned without any adjustment from day one. I have never yet had it break free when I didn't want it to.

Bruce
N98BJ

I have never had the tailwheel break out at speeds higher than slow taxi and, then, only when I stomp the brake. I suspect you have a malfunction of some sort. Most of us here in the east have had to disassemble and clean the tailwheel unit prior to service because metal junk from machining operations was left in by the manufacturer. Some folks have had a longer arm made for the tailwheel due to sensitivity. You can relieve the ramps inside the unit if you want, but it doesn't take much! For best results, the chains should be tight enough to have some tension on the springs at rest. Remember, they loosen when you get in the plane and put a load on it.

Bob Highley
Lakeland, FL
N711SH
SN 835

Jerry, take it apart and see how the "dogs" in the assembly unlock the tailwheel after the fork has traveled a fixed amount either way from center position. This amount is about half the distance it takes for the T18 rudder to reach it's limit. Extend the distance the fork travels before the "dogs" unlock the fork by removing metal from the "ramps" on each side of center so the fork will not unlock before the rudder has reached the off-center limits. It's easy - I did it with a Dremel tool rotary file and Jim did it with a milling machine. Be careful - the Dremel file can remove that soft aluminum very quickly! James Peran

I have about 5 hours and 10 landings on the new AP tailwheel from Tom Hunter after replacing a Maule - it was what came with the plane when I bought it last March - the chains were kinda loose and the Maule would make a pronounced "clunk" when it would break - did it from day one, so I thought little of it, greased it a couple of times during the summer and kept on going -got used to the exiting rollouts after letting the tailwheel down - when I conditioned in early November, I put the AP wheel on. At first I tightened the turnbuckles up to give me a little tension on the springs on both sides - after some slow speed taxiing, I loosened them up just a tad, as it was breaking early - I then did some high speed taxiing down the runway keeping the tail on the ground and all was great till I went to turn off at the taxiway, where I executed a perfect 450 deg left turn - I was so used to that "clunk" and wasn't quick enough - also, my chains/spring/turnbuckles were still too tight - after some more experimenting with tension, I think I have it down - the turnbuckles sure make it easy to fine tune tension - once I got used to it, I think it's the bomb compared to what I had - my hangar partner has an RV-4 with a Scott - he thinks the trusty AP design is the bomb as well - tension is the key I think, and the turnbuckles help - I might loosen my even more now

Fraser MacPhee
Draper, UT
886Y

Check the measurements on your tiller bar on the tailwheel and rudder. The Aviation Products tailwheel should not unlock until the rudder is fully deflected. If it is unlocking prior to that you may need to lengthen the tiller bar on the tailwheel or shorten the bar on the rudder.

I thought I had a problem with the tailwheel unlocking too easily on my new Thorp. It also has the Trusty spring but has one of Van's full swivel tailwheel, p/n U FSTW (\$120). It has a locking mechanism virtually identical to the Aviation Products tailwheel, which I have on the old Thorp.

While moving the plane around the hangar during construction, I noticed it took very light side pressure on the fuselage to break the tailwheel into swivel mode. I checked the geometry of the tiller bar and everything was correct so I test flew the plane. The tailwheel worked fine, but the rudder was very sensitive and I needed to shorten the right rudder cable to bias in some right rudder trim. While trying to accomplish that, I found that I had used lighter rudder return springs than specified in the plans. I had used springs with .80 music wire, the plans call for .100 music wire. I installed the heavier springs and it made a significant difference in the sensitivity of the rudder. It now flies just like the old T-18 and it takes much more side force to make the tailwheel break over.

I keep my chains to the tailwheel pretty tight. I don't think you'll like the slop in the steering if you have them loose like the RVs seem to prefer.

Gary Green

I have found my AV P tailwheel performs exactly as you describe. For the last several years, I have been flying it with rudder limited by set screws. The AV P tailwheel breaks at exactly 15 degrees. My T-18 was built with 28 degrees left and 32 degrees right rudder travel. I have not found any numbers for rudder travel in the news letters or plans. I asked Mike Archer and he said it all depends on how much you want. Sooooooo, last week I took the tailwheel off and had the block milled to let the pawl move 45 degrees before breaking. It is still on my kitchen table waiting for me to get back out to the hanger. I'll sing out when I test it hopefully tomorrow.

JimGrahm
831GR

Dear Group,
I want to make something very clear here. I do NOT endorse machining the Aviation Products tailwheel's that I have supplied. Second

Tricky Tailwheel, cont

I do NOT endorse drilling an extra hole in the spring and the tail wheel mount. You gain nothing by doing that as far as increasing the reliability of the assembly.

Third, I have over 200 hours on my Thorp and have never had the Aviation Products tail wheel break away on landing in a cross wind.

I am not disputing what I have read here on this forum, but as far as "INFORMING" you of a problem....I have no personal knowledge of any PROBLEM to inform you of. I disassembled the tail wheel locking mechanism and inspected it at the last annual. I would recommend that all of you do that if you are not already. A failure of the tail wheel is normally followed by a number of expensive events including possible physical damage to yourself including death. Due to the critical nature of the tailwheel, I can not endorse any changes you make outside the framework of guidance from Aviation Products. And I want to also point out that a landing without the use of brakes is the best landing you can make. If you get in the habit of dragging the brakes on taxi or roll out, that will come back and bite you big time. Again, please understand, I am not suggesting that this "issue" is brake related, but the incorrect use of brakes can in fact induce an unwanted tail wheel unlocking. Again, block up your plane and take the tail wheel off...and look at how it works internally. It does NOT have a definite locking mechanism....it is NOT A LOCKING tail-wheel. Now, again, before you start typing back, take the darn thing apart and figure out how it works.

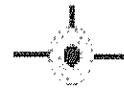
Now, just as a point of interest, I asked Aviation Products if they had made an absolutely locking tail-wheel that the pilot could lock and unlock, and they said they had a number of years ago, but they did not produce it.

UPDATE... As I said, I would talk to Aviation Products after Christmas. Today I talked with the designer of the tail wheel. He said that he has heard this complaint before from T-18 flyers and has talked to Mike Archer about this. He said he tried a test with his Champ and installed the tail wheel with very tight springs....and it broke away early from the center position. He said he replaced the springs with "softer springs" and the tail wheel acted much differently. So his conclusion is that some T-18's apparently have

springs that are of different tension than others.

He suggests before anyone go and machine the block they try different springs. In the course of wear on the tail wheel it is possible that the internal parts will get worn and cause the tail wheel to break out with a slight loading. That is why I suggest to everyone who flies this tail wheel, that as part of their preflight they verify that the side loading to "BREAK OUT" the tail wheel has not decreased since you last flew the plane.

Tom Hunter

Bent Rudder Pedals

In checking things over (which I do quite often) the other day I noticed that my rudder pedals no longer line up. The left pedal on the right side is bent back about an inch. Not the pedal but the vertical tube seems to be twisted. Before the bad weather set in, I have been getting some taxi experience with a friend in the right seat. He did some demonstrations on tight turns, breaking the AP wheel loose, etc, then I would practice (I am getting more comfortable with the ground handling). Anyway, is it possible to push hard enough to twist the vertical component. These pedals are from Ken Brock eons ago. Anyone else experience anything like this? I am uncomfortable with this situation even though it is on the right side.

Bob Clayton

Bent rudder pedals usually come from operations where there are two pilots in the airplane doing ground maneuvers. One pilot applies rudder pressure in one direction and the other pilot applies pressure in the other direction, correcting for an excursion. The pressure that an adult leg, powered by adrenalin, can impart on those components is often enough to bend or crack something.

Don't bother asking me how I know this.....use your imagination..... been there, done that.

Joe Gauthier
N22607

cont pg 17

Bent Rudder Pedals. cont

I had a crack in the rudder pedal at the intersection where the vertical meets the horizontal, welded gussets at the intersection.

Bill Williams



Loose Aileron Counter Weights

I noticed the other day that my right aileron counterweight moves slightly on the balance arm (I'd guess about 1/100'). Can't see how it's attached to the arm. i.e. there does not appear to be a way of tightening it up. Anyone know? Is the movement a problem?

Graham Kerr

You need to refer to the drawing for this part. If you do not have a set of drawings, you should obtain a set from Rickard Eckland. The lead weight is cast onto the respective counterbalance arms. There is a left side and a right side. You can not directly tighten up the lead weight on the arm since it is cast, but you can repair it by the following method. Note: you will be working with lead and melting it. There is a hazard involved in this process and you should take appropriate steps to insure that you do NOT inhale any lead fumes.

Step one to repairing the balance arm: Make a mold that fits around the outline of the lead weight. If you put the arm on a cement floor, you should see that one side is flat. That will be the down side. The mold can be open on that side and open on the top. The mold can be made out of wood since you will only use it once. When I made my molds...remember, you need one for the left and one for the right, I used balsa wood. I had a lot of big chunks of balsa on hand and figured it wouldn't work but it was easy enough to make. I was very surprised to find that it worked just fine. After you have completed making your mold, when you remove the lead from the arm. You want to capture the lead in a never to be used for cooking gain small pan. Use a propane torch. If you spill the

lead while you are doing this process and or loose the lead, you will need to refer to your drawing for the weight of the lead. However, if you made your mold so it can only contain the amount of lead that was initially on your arm, then you don't have to worry about the weight, just fill up to the point where the lead was initially. The weight of the lead on the arms is not a critical value and can vary a bit. But do try to be as close as possible to the called out value or the initial amount on the arm.

OK..let's say that you have removed the lead. Now what. You will want to inspect the two thru pins. Have they become loose? If so, repair them.

Now, put the arm into your mold. Using your pan with the lead in it, heat it on the stove. The lead will melt. Be sure and do this when your wife is away to her mothers, but be prepared to admit you were cooking up something when she returns home, because, she will find out as soon as she comes in the front door! After the lead is melted, pour it into your mold with the arm in the correct place. Remember, there is a right side up and a wrong side up!!!

It will cool very quickly and you will be able to inspect your work.

Tom Hunter
N18XT

One suggestion: rather than melt the lead on the stove and have lead fumes in the house, do it outside. I used my gas grill and it worked great. Also, I was wondering if, before doing a remelt job, you could put the counterweight in a vise and compress it around the balance arm to remove the play. Might be worth a shot before recasting the weight.

Andrew Robinson

Take the counter weight and put the lead weight in a large vise and squeeze down hard. The lead will flow and tighten on the tube and cross pin. If that doesn't work to your satisfaction, refer to previous suggestions. Worked for me!

Bob Pernic

Items For SaleT-18

I have N299V built by Earl Love in 1964 sold to my Brother in Law Dr. Richard Cottingham by Bill Warwick when it had 1100 hours on it. It has been reconditioned twice prior to his death. Last flight resulted in blowing a jug off in flight in early nineties, took cowl-ing on Right side with it but safe landing on highway in Nebraska. As best I can guesstimate airframe has 2500 hours since last refurbish....Probably 6000 hours total....Do not have log books for it. I have pulled engine and prop (0360A2A) and salvaged useable parts which include the Prop (Hartzell Constant Speed) -Excellent Condition but of course will require a re-cert & inspection. Prop spacer, starter gear/alternator pulley, Spinner and backing plate. Other parts such as Crankshaft, accessory case, oil sump, one magneto, carburetor and box, prop governor, fuel pump, and more. The case is scrap as well as the cam and lifters. The cylinders have lower skirt damage from rod flying around without a piston. Airframe appears in good condition for it's age, Has full panel less two radio's... the flaps have a few smoked rivets but otherwise everything appears OK. I can provide pictures once I find someone who can post them with a PC. I have webtv and do not think I could post more than one at a time. I also have a T-18 that Doc built but never finished. It includes a fuselage complete to stainless fire wall, including windshield frame, landing gear (New) Ken Brock built one piece. Center wing section complete (Ready to bolt on) Left outer wing panel and damaged Right outer panel, He used the new built one and the Horizontal on one of the rebuilds. also have a pair of flaps, ailerons, vertical stabilizer with pitot tubes all assembled and ready to install. Many other T-18 parts such as conical engine mount, rudder bars R&L and walking beam - All of which have been sand blasted and powder coated gloss black. many small parts and templates, 29 gallon alum fuel tank, welded and pressure tested. push pull tubes, medicine bottles of rivets, set of drawings for all (I Think -have not organized and inventoried. Also have the log book with the OK to close for all. done in 1967-69. All items were stored in hangar, never exposed to wet, had lot's of dust on exterior ...and by the way...all were zink chromated on interior surfaces 100%. , Center

wing section is chromated both exterior and interior same for control surfaces. I am asking 25K for 299V as is and 10K for NOS parts or 30K for all.

Right now I have a gear for sale. Solid one piece - Also a Ken Brock - NEW never installed. 1500\$ and one that has been pranged but straightened and welded on R/H side -Outer tube below gusset. \$800 as is... Up to buyer to have magnifluxed and heat treated if he or she feels necessary. You may call me or come see what I have. Serious inquires Only. I feel that this is a fair price for all considering the man hours and materials required for what is there.....anyone who has built a T-18 ground up knows what I am saying. Pictures to follow once the weather permits. Writ-ten 1-17-07

Thomas Ashton
aironut1@webtv.net

Would anyone be willing to adopt my now homeless Maule tailwheel? Most of you how know I feel about it - If I could get \$120 for it, I could then acquire a pair of Tom Hunter's pants, uhh... Brake Fairings - with "She, whom I worship" being none the wiser. Then I could fly really really fast.

Fraser
886Y
Draper, UT
p51par5@msn.com

LYCOMING O-290G PARTS . \$500 . FOR SALE .
lycoming o-290g case, crank,
accessory case, cylinders, rods and misc other parts.
crank is std. . Contact
Gunar Clem - located Sequim, WA USA . Telephone:
3606833257 . Posted January 13, 2007

I have a Lycoming 0-320 with o time and all the paperwork for \$10,000.

John Kerr
jkerr56051@yahoo.com

Items For Sale, cont

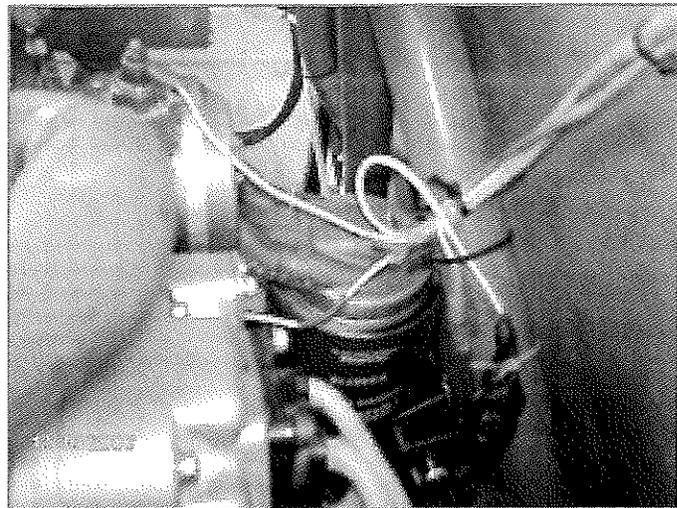
I have a IO/320 C1A ready to run 200hrs SMOH .
Asking price is \$10,500.00

Frank R. Seats 423-878-4522

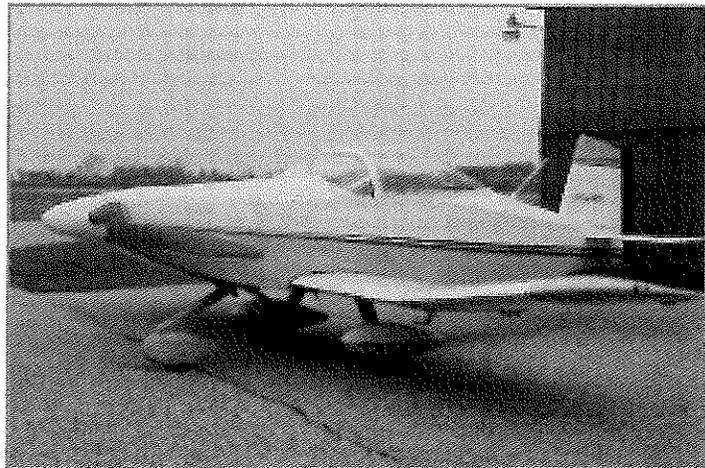
Gentleman I have a spare right angle adapter. If you
have a spin on filter set up. This will work well. I will
bring it to Oshkosh, you can talk me out of it for \$30
bucks Here is a pic , of the right angle oil filter ap-
plication.



Russ Verbael ~ N8428



James Peran
james.peran@bigpond.com



Bill Beswick ~ N54WB

**T-18 Mutual Aid Society
2007 Membership Dues**

This years membership numbers have declined
again, just as it seems to do every year. It seems that
the ThorpList e-mail group membership grows a little
every year, I guess maybe because its free. I don't
understand why we have T/S-18 owners and pilots out
there who do not wish to be part of the MAS Group.
Your continued support of the T-18 MAS will keep
this newsletter and the T-18 Website alive. Without
your paid membership they cannot survive.

**Please check the Expiration date on your mailing
label on the back cover. If it expired in 2006, please
send me your dues.**



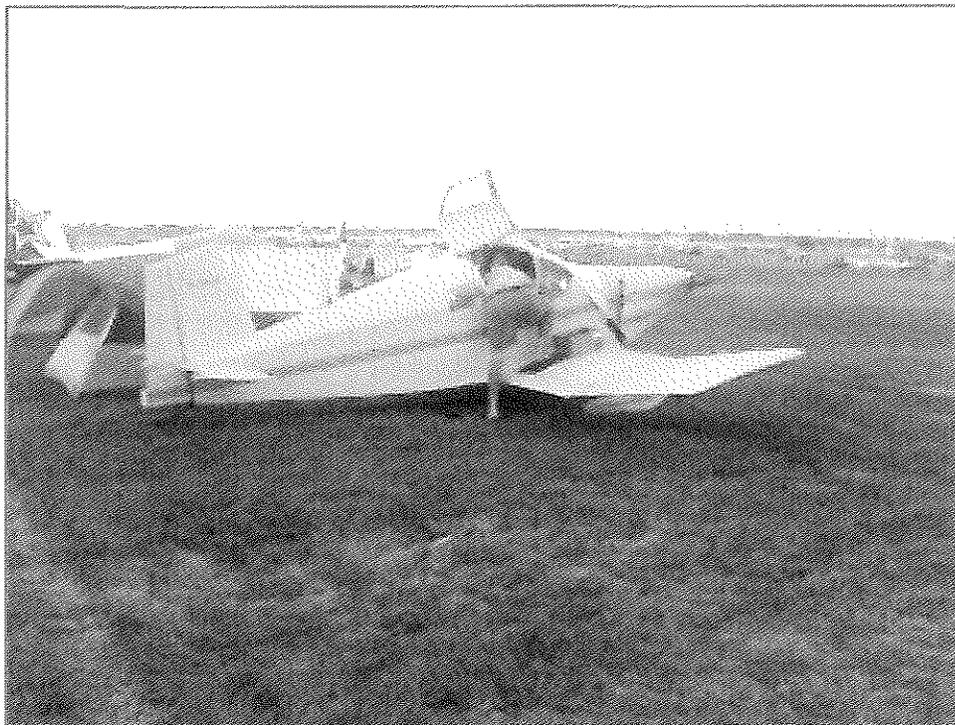
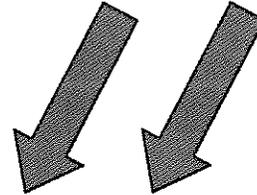
Barry Hall ~ N31BD

Check Your Label Now 

T-18/S-18 Thorp Newsletter
Roy Farris
1220 Stellar Drive
Franklin, IN. 46131
Phone: (317)736-8903
email: royfarris@earthlink.net

Newsletter No. 135
March 2007

Check You Label for the Expiration Date. If it says 2006, Please continue your support by sending your dues now.



Unknown Round Back Thorp at Oshkosh 2006 ~ N13688