

Auxiliary-powered Sailplane NEWS

The Official Publication of the Auxiliary-powered Sailplane Association, Inc.

Dean Carswell-President

ASA is a Division of the Soaring Society of America

Volume XIV Issue #88

ASA Web Site: www.motorglider.org

September-October 2002

President's Message...

When the motorized sailplane first appeared, it was regarded by many as 'not proper', or even 'illegitimate', among the ranks of pure sailplanes. It sometimes carried a whiff of cheating around its exhaust. Motorgliders did not, and indeed do not, fit neatly into the framework and rules for sailplane contests.

This inauspicious start notwithstanding, the popularity of self-launched and sustainer engined ships has increased by leaps and bounds as performance and reliability of engines and their accessories has improved. A quick look at the increasing proportion of sailplanes with motors compared to the total number of sailplanes produced each year gives a clear indication of the trend. Pure gliders and motorgliders happily co-exist at most gliding fields around the world. Not so with contests. The lack of acceptance of sailplanes with engines at traditional contests has been one of the strong influences behind the US Motorglider National Championships. This may be starting to change.

Have you read about the planned "Return to Kitty Hawk" transcontinental glider race from California to North Carolina in mid-2003? It is one of the more ambitious long-distance contests to be held for some time. You can find the details in the news section of the SSA webpage (www.ssa.org). It declares that entrants are limited to 50, but that it is hoped "to attract 20 self launch motorgliders which have a preferred entry status". Is this a pointer at a new trend? It certainly suggests that powered sailplanes are moving closer to center stage!

Dean Carswell



The **TW Taifun 17E** pictured above sits on the line at Minden-Tahoe airport after an unpowered wave flight (except for takeoff and landing) from Richland, Washington. The pilot/owner is Jim Leedy an MD who lives in Richland. It first flew in 1981 as the Valentin Taifun. It is classified as a powered sailplane (L/D 28.6:1) so only a glider Private Pilot's certificate is required and no annual medical is necessary.

Constructed of fiberglass sandwich composites, the empty weight is 1,372 lbs. With a payload of 502lb the max gross weight is 1,874 lbs. This aircraft is a good cross-country performer with a max. continuous cruise of 127mph and a range of 650sm. It is powered by a reliable Limbach L2400 developing 90hp. The prop can be fully feathered for soaring flight. The landing gear is raised mechanically with 21 turns on a crank. The nosewheel is steerable and the wings can be folded to provide an 11ft wide profile, 32ft long. The flaps are interconnected with the ailerons (-8, 0, +8, and +15 degrees). When the flaps are lowered to 30 degrees for landing, the ailerons return to zero to retain maximum roll control. Schempp-Hirth type spoilers provide excellent glide path control. For a two-place powered glider this aircraft has a lot going for it and Taifun owners are quick to agree.

There are approximately 25-30 Taifuns in the USA. ASA member Joe Volmar heads up the North America Taifun Owners Assn. Interested pilots can contact him at 734-529-5406 (MI), Email <joevol@dundee.net> Website: www.volmarjoe.com

Don't forget to renew your ASA Membership. Please complete Pink Slip enclosed and mail it TODAY. Otherwise this is your LAST ISSUE. Note NEW Payment Options (Membership page 8). Thanks!

Are Your Batteries Fully Charged??

“Glider November four zero zulu - Edmonton center. Squawk zero four four two, ident, and say intentions”.....or “Glider November four zero zulu – radar contact 8 miles south, say altitude and intentions”.

If you get either of those calls you'll want to be really confident of your batteries or be ready to abort the mission. Each of these occurred to me on record attempt flights. In the second case I turned on the transponder as I was sinking through 10,000 feet above the Reno Class C airspace only to watch my battery voltage sag below 12 volts. The exemption from transponder requirements for sailplanes does not apply between the Class C ceiling (in Reno 8400 feet) and 10,000 feet, only above 10,000 feet. If you've flown in an area as busy as Reno you know that there are good reasons for transponders even beyond the present requirements. I know that you know what I mean. In Canada the airways are positive control airspace. Yes, just like it sounds, two way communication and transponders mandatory above 12,500 feet. And there are plenty of east-west airways to get in the way if you're trying trans-border flights. And the terrain makes altitudes above 12.5 very attractive.

Interest in transponders for glider is increasing, and is accelerating with airspace concerns following Sept 11. ASA member Eric Greenwell has authored a summary of present options in the February and March issues of Soaring. He mentions that power consumption is an issue since sailplanes always seem on the ragged edge anyway when it comes to keeping all those electrons airborne with no visible means of support.

Solar cells? My research suggested that it's pretty hard to come up with one amp and since batteries are in the range of 20 ampere hours of capacity for self-launch sailplanes, getting the most out of the batteries is the place to start. The DG 400 manuals call for charging to 14.4 volts and make mention that most chargers quit at 13.8. I was able to get an automotive charger to go to 14.4 volts and that was an improvement over the 13.8 that I was seeing. I also bought a hefty solar panel from Jade Mountain and a Bobier controller from 'For the Birds' to pump the batteries up before flying. Then I contacted the manufacturer for my batteries, Eagle Picher, to see what they had in mind for charging. These batteries, HE 6V12.7, are retrofit for DG according to Technical Note 37. DG USA does a really nice job installing reinforced stud terminals on the standard tabs. The increase in capacity from the original batteries at 20 ampere hours to 25.4 for four in series-parallel can't hurt. But what about charging?

The Eagle Picher Application Manual for rechargeable valve regulated lead acid batteries offers lots of detail but one figure in particular caught my eye. This figure shows that even 14.4 volts is not adequate to fully charge these batteries. Our application is probably somewhere between “shallow cyclic” and “deep cyclic”. The temperature referred to is not the air temperature, but the temperature of the electrolyte inside the battery after cold soaking all night. In the high desert I doubt if it reaches more than 50 F by the time I wish I'd launched an hour ago. The Figure 1 below clearly shows that 6 cells in series should be charged to about 15 volts! A standard Bobier M-8 controller thinks it's got the job done at 14.2-14.4.

However, Bobier does offer a tunable controller with adjustable end point (M-8 12V T), so I made another contribution to the FTB charity and anxiously awaited the results. Voila! A ramp check at Minden this spring with the Chief Bird observing showed the adjustable controller cranked all the way up was putting about 15.2 volts to the batteries. My solar panel is big, about 2 feet by 3 feet. It's good for a couple of amps and voltages around 20 in good sunlight.

The engine driven charger shows about 13.8 volts in flight, but even my marathon climbs to 18K wouldn't make up for optimum charging before takeoff. The DEI voltage warning would come on at 14.7 volts if the regulator would go there, which it won't. So, we have an improved battery which wants a little more than the ship's charging system is designed to give it. Rather than complain about the voltage limits of the glider charging systems let's just appreciate the improvement of batteries and get our act together by accomplishing ground charging to fit the battery manufacturer's specifications. This means reading the battery manufacturer's charging specifications which can be found on the internet or requesting same via phone or mail. It's worth the time and can pay off big time when you really need all your battery system can deliver.

Submitted by Pat Martin

FIGURE 1



Pat Martin is a Commercial Fisherman who lives in Bozeman Montana and operates out of Alaska during the summer months. He first soloed a SGS 2-33 at Dillingham, Hawaii in April 1994. His first self-launch was in a Strojnik S2A at Winter Haven, FL in October 1994. He currently has over 2,300 hrs flight time with 240 hrs in pure gliders and 84 hrs in his DG-400. He has time in SGS 2-32, 2-33, IS263 Lark, Bergfalke, LAK-12, Grob 103 Acro, Blanik L-13, DG-500M, Grob 102 and Discus B. He has established 14 Montana State Records and cites his most memorable flight as just missing by 43 seconds breaking the 100K National Motorglider Speed Record while flying out of Minden.

Prandtl TE Probe Surprise

By Gary Evans (DG-808B)

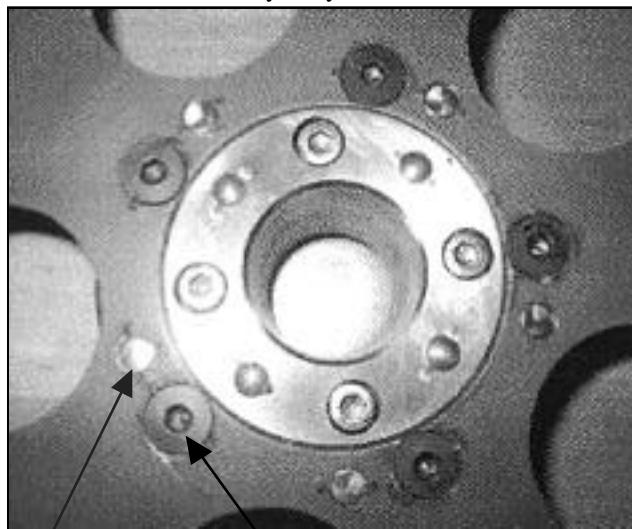
Imagine my surprise when I removed my carbon fiber TE probe and the metal tip stayed in the hole. The internal silicone tubing stretched enough to not break and I was able to reinsert the probe, twist and pull the tip back out. If the tubing had broken I'm not sure how it could be removed. In the process the silicone tubing received a nick just to make things even more difficult.

This was my fix in case you encounter the same problem I was able to stretch out the silicone tubing just enough to wrap it with a soft material clamp it with a clothes pin to prevent its retraction. If it snaps back inside the probe your in deep poo poo. I roughened the inside of the rod with a tiny round file and cleaned the inside and outside of the metal tip with sandpaper. Do not use solvents to clean the silicone tubing, as many will instantly attack silicone. The tubing was refastened using 24-hour cure 100% silicone adhesive (not ATV gasket making silicone). The metal tip was reattached using 24-hour cure JB Weld adhesive. The metal tip has flat sides to allow airflow and care must be taken to not block this passage with adhesive. I had been using silicone spray to lubricate the probe as it is a tight fix in the holder but obviously that didn't prevent my problem. Surely the manufacturer can either find a better adhesive or method of tip attachment.



DG-808B Starter Ring Gear Fix

By Gary Evans



Staked Steel Pin
Inserts (5)

Staked Allen Screws (5)

The image above is the bottom face of the starter ring gear showing the attachment of the gear to the pulley that connects to the engine's crank shaft. This assembly can rotate 6,000 rpm or better at full engine output. The fix was incorporated by Gary Evans after the head sheared off of one of the factory installed Allen screws. Gary added five steel pins in addition to metric Allen screws from a U.S. source. He used Loctite 638 on both the pins and the screws. Gary reports "I can see how a heat cured adhesive would be easier to work with as I had to chill (Arizona high summer temperatures) the parts to prevent bonding before the parts could be tightened together. The pins are staked on both sides. I found a U.S. source for high quality metric flat head Allen screws which are forged with rolled threads." <garyevans@cablaze.net> Pho: 480-380-2431

Ed. Note: Pete Williams made a similar fix on his DG-800B in Nov 1997. As of mid-June 2002 no problems after 119 engine starts and 30 engine hrs.

Parting Out PIK-20E

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NOTICE

Pete Williams , Editor of APS NEWS
has a new E-Mail Address
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**ASA Member Bill Newsom
Completes
His First Self-Launch**



Bill Newsom of Nevada City, CA purchased Malcom Pond's DG-400 in April 2002 and began his transition from a pure sailplane pilot to a motorglider pilot. Pond's 400 was in mint condition with only 240hrs airframe and 37 hrs engine. High Country Soaring went over the ship in detail and completed the Annual Inspection followed by Andrew McFall of Soar Minden checking Bill out in a DG-500. Bill owns a LS-6 and has 250 soaring hours. One of his reasons for buying the 400 was to be able to self-launch from the Grass Valley Airport, CA near Nevada City and not have to be concerned with getting a tow. He plans to continue flying out of Minden/Tahoe Airport this season to gain more experience in the 400 and will eventually base it at the Grass Valley Airport. Bill is married with three children and is a medical oncologist serving as the Medical Director of Sierra Nevada Cancer Center in Grass Valley, CA. He advises his LS-6 is for sale c/o Rex Williams at Williams Soaring Center 530-473-5600 (CA)

Frank App's AC-5M "Russia" sits on the flight line at the Minden-Tahoe Airport. The Nov-Dec 02 APS News has the story of his visit.



Medical Certification for Glider and Sport Pilots

In the FAA NPRM concerning "Certification of Aircraft and Airmen for the Operation of **Light Sport Aircraft**" there are several innovations pilots should be familiar with.

First is the FAA does not require **medical certification** for pilots flying as pilot in command of balloons and gliders (which includes auxiliary-powered sailplanes) who must state they do not know or have reason to know of any medical condition or are taking medication or receiving treatment for a medical condition that would prevent them from having a safe flight. This means if you do not feel well or if you are receiving treatment from a doctor who advises you not to fly or if you are taking any medication prescribed or over the counter that causes drowsiness. *Ed: Some call this self certification which is in reality is just plain common sense.* This is covered by FAA Regulation Part 61.53 "Prohibition on Operations During Medical Deficiency". This restriction applies regardless of what certificate the pilot holds.

For the new Sport Pilot classification as proposed by the NPRM, any pilot who flies a powered aircraft (fixed wing, powered parachute, trike or gyroplane) must hold either a current U.S. Driver's License or a current airman medical certificate. A make and model log book endorsement by a qualified instructor is necessary for the sport-pilot eligible aircraft the pilot intends to fly. Also if the pilot's medical disqualifying condition prohibits him or her from driving a car they cannot fly as a sport pilot. For an extended discussion of medical certification go <www.sportpilot.org>
Source: Sport Aviation April 2002

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ASA Membership

Membership in ASA is open to anyone interested in powered sailplanes. Write or call: Brian Utley, ASA Membership Chairman, 9541 Virginia Ave. South, Bloomington, MN 55438 Pho: 952-941-5683 Email: Utleyb@aol.com

USA Dues: \$20-1 yr, \$38-2 yrs, \$55-3 yrs.
Intl. Dues: \$25-1 yr, \$48-2 yrs, \$70-3 yrs.

ASA Officers

President: Dean Carswell972-775-1835
Secretary: Lloyd Atwell.....262-348-9488
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Publications: Pete Williams.....775-265-3877
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APS News is published Jan/Feb;
Mar/Apr;May/June;
July/Aug; Sept/Oct; Nov/Dec
©2002 Auxiliary-powered Sailplane
Assn.,Inc.
PRINTED IN THE U.S.A.

Newsletter Publication

Pete Williams.....Editor
Optimum Offset.....Printing and Fulfillment
Contributors please submit copy and materials to:

Pete Williams
1033 Dresslerville, Rd.
Gardnerville, NV 89460 USA
Pho: 775-265-3877
Fax: 775-265-6179
email: sls0526@pyramid.net

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Pete Williams, ASA Publications Manager, is the Editor, and Print Production Manager for APS News. As such, he supervises and coordinates with a printer located in Minden, Nevada. APS News is mailed from Minden.

Contributors are requested to submit hardcopy type-written or keyboarded text .12pt font size is best for accurate scanning. If submitting text on a floppy disk, please advise the word processing program used. Text may be edited as required to fit the newsletter. The newsletter is produced on a Macintosh G-3 using AppleWorks word processing software. Photos are always welcome and will be returned promptly.

APS News is delivered to the printer the last week in Jan; Mar; May; July; Sept & Nov. ASA desires input on what the members want in this newsletter and we are doing all we can to keep it informative and interesting. ***It's your newsletter, so please let us hear from you!***

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Above: Crushing damage to all six prop mounting holes.
Below: Aluminum plate installed under the carbon fiber shield.



PROP MOUNTING HOLES DAMAGED

My DG-800B Technoflug Prop had 106 hrs on it when it failed to pass Annual Inspection due to "dishing" of the mounting holes. I estimate it was removed and re-torqued at least ten times since it was installed new in 1994 on DG-800B s/n #1 which was a factory demo ship until I purchased it in 1997. Inspection of the carbon fiber shield also showed deformation at its four mounting holes. I sent the prop to Technoflug and they said it was not repairable and a new prop was needed. This was confirmed by a NASA-Approved composites shop in California. I had a 115mm dia. 1/8 inch thick aluminum plate fabricated to better distribute the load of 15 ft/lbs bolt torque as specified by DG. This prop has a wooden core at the hub reinforced with glass fiber. It is my contention that the factory specified torque values of 15-18 ft/lbs may be excessive and can lead to deformation of the hub mounting holes.

Submitted by Pete Williams

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