Auxiliary-powered Sailplane Association

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NEWSLETTER

A Message from the President

Since the last newsletter went to press the SSA Fall Board Meeting has taken place. Prior to that meeting I asked Frank Reid, SSA Board Member from Bermuda High Soaring in South Carolina, if he would suggest to the Board Members during the meeting that a committee be formed to address Aux-powered sailplane issues. Frank is the Chairman of Affiliates and Divisions. Since ASA is a Division of SSA, Frank could bring this issue to the floor.

Frank agreed to introduce the issue to the Board. David Volkmann, also an SSA Board member from California and an ASA Member and past National Champion of Aux-powered Nationals at Minden 95, also agreed to support this idea. Frank and Dave reported the SSA would look favorably on the creation of a committee to address Aux-powered issues. Our thanks go out to Frank and Dave for job well done.

Stan Nelson

Stan Nelson, President ASA, Inc.

Micro Bursts

We all are well aware of what has happened to airliners that have encountered micro bursts of rapidly descending air in the vicinity of a thunderstorm. They crash if close to the ground in spite of application of massive amounts of power. What happens to a sailplane? They also crash. I have been told several examples by sailplane pilots who have been fortunate enough to make a somewhat controlled crash landing during micro burst conditions. I have landed where I did not want to after encountering a micro burst after passing through a line of thunderstorms. It was solid sink all the way from 10,000' to a ball field parking lot emergency landing behind the Ramada Inn at Van Horn, Texas. A friend of mine flying a Libelle landed gear up & downwind on a rain soaked pasture that same day. He went through a barbed wire fence totaling his ship. His injuries from the barbed wire fence (which entered the cockpit after smashing the canopy) while not fatal, were significant.

In July a DG-400 crashed at Douglas County Airport / Minden after encountering a micro burst at 600' agl while turning final to land on runway 34. The pilot wisely leveled his wings before the aircraft struck the ground and slid across the runway into a deep ditch. The pilot emerged safe but the aircraft sustained significant, but repairable damage. In this case a thunderstorm was about 3-5 miles from the field and the wind was beginning to shift. Two aircraft just ahead of the 400 had landed safely and were rolling out. The pilot of the crashed 400 had over 1,700' agl when he arrived over the field and could have escaped to the north had he chose to do so. A few words to wise:

1. Do not takeoff or land if a thunderstorm is in the vicinity of the field especially if it is dead calm or the wind is starting to gust and begins shifting in direction.

2. If in flight, stay clear of clouds producing lightning and/or rain.

3. Do not penetrate a squall line.

4. Lift is replaced with sink as a cloud is transited from sunny side to shadow side.

5. The higher the cunimb cloud is vertically, the more of a chance of micro bursts, lightning, precip and hail.

6. All aircraft produce a negative charge while in flight.

7. Sailplanes do not have static wicks to deplete this minus charge.

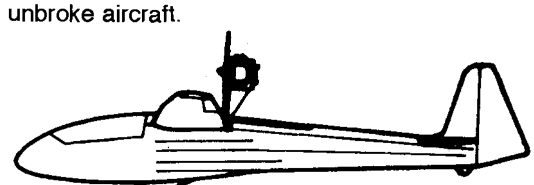
8. Increase airspeed as sink increases.

9. If in landing pattern and sink increases dramatically, close spoilers, shorten the pattern and increase airspeed.

10. If caught in a micro burst or extreme sink while at altitude, execute a 180 degree turn to calmer air.

11. If caught in a micro burst in landing pattern, close spoilers, increase airspeed, pick a landable spot, level the wings, tighten the straps and prepare to land. Do not attempt to lineup with runway as you may end up unable to level the wings and a cartwheel landing will most likely result in damage to both pilot and plane.

12. Stay in the box if the weather looks chancy and fly tomorrow in an unbroke aircraft.



Scheibe SF-27M with retractable 26HP Hirth Engine.
34/1 L/D. 727 lbs MGW .Circa 1967.

True Airspeed v.s. Indicated Airspeed

All pilots acknowledge the fact that at altitude the aircraft is moving through the air faster than shown by the airspeed indicator. The question is how much faster? This becomes a critical question when the day is hot and the altitude is high. Since the density of the air is less at altitude, the molecules are farther apart so for any indicated airspeed, the aircraft is moving faster than at sea level. Couple this with the fact that warm air temperature also results in widely spaced molecules and it becomes apparent that in a sailplane the TAS can exceed the IAS by as much and 30-40kts depending on atmospheric conditions and altitude. Let's take a look at two separate situations:

1. **Start Gate.** A sailplane making a start at 7,500msl (5,000' agl) at a Vne of 140 KIAS with the outside air temperature at 80F at 7,500' msl will have a TAS of 165kts (190mph) or 15kts over Vne! This exceeds the design limitation and invites control system flutter, especially if turbulence is present (it usually is). This same sailplane if flown at 118kts through the gate will have a TAS of 140kts. So it is still within the envelope. From the above it is most likely safe to conclude that most sailplanes flown in competition have been stressed beyond the manufacturer's operating limitations.

Can you fly this way and get away with it? Of course, for a period of time but eventually a failure will occur as the bird's structural design limits are being exceeded. All that it takes is a particularly turbulent day with sharp, vertical gust loads and "zip" a tail, wing, aileron, elevator is missing.

2. **High Altitude Flights**. This includes wave flights and any flight above 10,000'msl. The following IAS/TAS are possible at various altitudes and OATs (Outside Air Temperatures) using a 95 degree F ground temperature, a field elevation of 1,500'msl and a temperature reduction of 3 degrees per 1,000' altitude:

MSL	OAT F(C)	KIAS	KTAS
10,000	69 (21C)	100	122
		110	135
		120	146
15,000	54 (12C)	100	130
		110	145
		120	158

To compute these values enter a E6B circular calculator with altitude vs temperature and read out TAS against IAS on the outer dial. This can be easily done before each flight knowing ground temperature and figuring a 3 degree F drop for each 1,000' ascended. The aircraft Flight Manual will also have this data listed under Airspeed Limits and an instrument panel placard should be posted with the not to be exceeded IAS vs various altitudes.

There is a double edged sword hidden in these figures. On the good side is the fact that at altitude a lower indicated airspeed can keep you airborne longer as the TAS is high. Slowly increasing indicated airspeed as you descend to the corrected value of Vne at the finish of a task or record can be an efficient way to make a maximized final glide. Leave the testing to the test pilots and enjoy knowing you are staying within the sailplane's structural operating envelope.

Submitted by Pete Williams

PILOT REPORTS

DG-400 Steerable Tail wheel Rod Failure

A pilot reported he heard a distinct bang while in flight and felt a change in rudder pedal pressure on one side. After testing for adequate control responses, he continued the flight remembering advice from another DG-400 pilot that if one of the rods connected to the springs attached to the tail wheel steering fork broke there would a reduction in tail wheel steering effectiveness in one direction and the rudder would be displaced toward the still attached spring. This would make necessary a main wheel landing allowing the tail wheel to come down only when the speed was low. This he did and reported a definite swerve when the tail wheel finally contacted the runway. Investigation revealed one of the rods connected to the spring had broken at the rudder horn connection. These are stainless steel rods with a circle bent into each end for connection to the return spring and the rudder control horn.

Why the failure? Perhaps the nut that threads to the end of the connecting pin for the rudder cable and the steering rod was over torqued creating a chafing condition that would not permit the end of the rod to rotate slightly at the connection point. This area is also subject to grit accumulation and needs to be lubed regularly. Suggest a close inspection of this area.

Engine Failed to Retract

Rudy Allemann reports his engine would not retract after a routine launch in his DG-400. After landing with the engine extracted, he found the 7.5 amp circuit breaker for the engine retraction/extension motor had popped. Allemann believes he held the extraction switch on too long resulting in an open circuit. He suggests DG-400 pilots check this circuit breaker **IN** as part of the pre-takeoff check list.

Drag Rake Tests on ASH-26E

Eric Greenwell has constructed and tested a Drag Rake system to measure pressure changes while maintaining a selected airspeed for flap settings, turbulator type and position on his ASH-26E. Although he considers the results to be preliminary, he found his ship was very close to the handbook flap settings and that turbulators should be used. Pilots interested in the testing method, equipment and results, can contact Eric at 509-943-9065. PILOT REPORTS continues on Page 3

ASA Financial Statement
(Jan 1-Sep 30 1996)

Income:

Dues, Publication Sales & Donations $5,412.88

Expenses:

Postage	$908.97
Phone/Fax	102.53
Printing	811.38
Supplies	121.32
Legal Fees	340.00

Total Expenses: $2,284.20

Bank Balance 1-1-96	$3,893.93
Income (+)	5,412.88
Expenses (-)	2,284.20
Bank Balance 9-30-96 (Net Worth)	$7,022.61

PILOT REPORTS

(Continued from Page 2)

Aileron-Flap Control Stiffness

Pete Williams reported a certain amount of resistance in movement of the control stick to the stops from L to R and vice versa on his DG-400. This stiffness varied according to the amount of flap used both positive and negative with positive deflection creating more resistance. Investigation revealed there was dirt and grit in the hinged areas of the 17 meter tip extensions. He reports an improvement of about 10-15% after cleaning and lubing the tip extension hinges and the interconnects of the flap/aileron system located in the fuselage. He also reported that he was removing both flaps and ailerons this winter to closely inspect all hinge points including the "Hotellier" ball fitting at the juncture of the flap/aileron. This fitting should be inspected per Technical Data IM 10.01A issued 01-89 by Louis L'Hotellier. This data sheet is available from DG as Plate E08 (2 pages). Another area where stiffness can develop is at the Flap Control Handle Rod in the cockpit. Check for hardened grease and lube on the actuation rod/tube interface. Clean and re-lube with a light oil.

Engine Rpm Reduction During Takeoff Roll

One pilot reports that on application of power for takeoff the RPM dropped to 4,000 rpm from over 6000 rpm during takeoff roll in a DG-400. Takeoff was aborted. Inspection showed scoring of front face of flywheel by the starter gears which, in effect, reduced rpms due to drag on the flywheel face. The small coiled spring that returns the starter gears to the in position was suspected as being weak and engine vibration caused the starter gears to creep aft and strike the flywheel face. A new stronger coiled spring was fabricated and installed with no further problems encountered. Details of type and size of this fabricated spring are available from Billy Stowers, High Country Soaring, 702-782-4944 (NV). Application: All Rotax powered self-launchers. Action: Suggest inspect flywheel face and starter return spring prior to next flight.

Sealing DG-400 Propeller and Landing Gear Doors

Rudy Allemann reports he has installed curved mylar to overlap the junction of the prop door and the fuselage's right side. He says it seems to work well and has not heard the door rattle during turbulent conditions. He also installed curved mylar on the right landing gear door to seal that opening. More info: 509-375-0722.

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18 Meter Integrated Class Gains Momentum

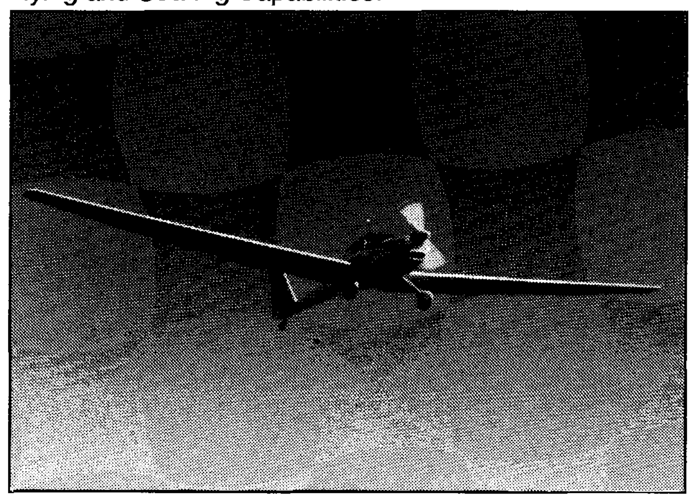
Germany is leading the way with continued development of 18 meter class contests that permit both powered and unpowered ships to compete under a common scoring system. Entries of powered ships have been as high as 70%. The 1998 contest is being planned as an international event if the IGC recognizes an integrated 18 meter class. Germany expects competition rules to continue to develop where there will be no special rules for powered ships. (SAILPLANE RACING NEWS)

Factory News

NEW SOLO ENGINE TYPE 2625

This new 2-stroke liquid cooled engine is now being used in the DG-800B, Ventus 2M and LS-9. It is a 625ccm power plant producing 54 hp. It has a compression ratio of 9.5/1 and a single Mikuni carburetor. Wolfgang Emmerich of Solo made the development of this engine possible. It weighs only 20 kg (41lbs) minus the muffler, propeller, spindle drive and mounting hardware. The installed weight of the system is 50 kg (110 lbs). The Solo Type 2625 promises to become the "staple" engine for the new generation of enclosed engine self-launching sailplanes with wing spans up to 18 meters. An electronic dual ignition system is used (Ducati or Iskra). ASA has no details as yet on maintenance accessibility of the 2625 but the factory OEMs are enthusiastic about the low vibration and performance.

COMING UP...Martin Hellman's Pilots Report on Flying the Super Dimona. Takeoff and Landing Techniques, Service and Maintenance, Cross Country Flying and Soaring Capabilities.



Marty Hellman on Approach in His Super Dimona

Pete Williams Taxis out in his DG-400 on a Spring day at Minden, NV.
Photo: Ruud Rozendaal