

# Auxiliary-powered Sailplane Association

## November-December 1998 Newsletter

Stan Nelson-President • Bruce Templeton, Vice President

Issue # 65 Vol. X

ASA, Inc. is a Division of the Soaring Society of America

BiMonthly

### President's Message....

*As the year comes to a close I would like to thank the membership for the help and support that made 1998 a success for the ASA. We had one of the best national contests ever at Hobbs, NM. The weather conditions and organization at Hobbs were outstanding. We've seen the self-launch/aux-powered movement take a giant step forward with launching of the 'Motorglider International' magazine which will be a key factor in spreading the word worldwide. Those in our membership, in the SSA and Sailplane and Gliding membership that supported and brought this endeavor to fruition are congratulated. Remember, this is the time of year when you should take an in depth look at your equipment and glider. With flashlight and mirror you can discover potential problems before they stand you down. Broken and loose wires, missing safety wires, loose nuts and bolts, parts needing lubrication, etc. are just waiting for you to find them. Send in your GPS, Recorders and Barographs for upgrade and calibration. Re-read your flight and maintenance manuals on a cold winter's night. You'll be surprised at what you have forgotten. Happy Holidays! Stan Nelson*

### INSIDE THIS ISSUE

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### Motorglider International Magazine

This new bi-monthly magazine is published jointly by the British Gliding Association and the Soaring Society of America. The first issue is November-December 1998 and will be published towards the end of October with an informative and varied mix of features reflecting the motorgliding scene. We have been fortunate to enlist the help of experts throughout the world.

Derek Piggott flies the Stemme S10 with its new Rotax engine.

Pete Williams, one of the leaders in the motorgliding world, helps with "Buying a Motor Glider" while Tom Knauff, a USA record holder, instructor and founder of the Keystone Gliderport in Pennsylvania, asks "Is a Motorglider For You?"

Weather is of vital importance to all pilots and Tom Bradbury goes back to basics with a series of articles aimed at giving a better understanding of the conditions.

Mike Woollard, BGA Technical Committee Chairman, tells how he restored an RF-4 to flying condition.

Jochen Ewald, that photo journalist who seems, to be the first pilot to get himself into the latest cockpits, will report on sailplane developments and tell us what is new from the factory floor.

Jack Alcock, BGA Senior Regional Motorglider Examiner, takes us on a learning curve, dissecting accidents and discovering what can be gained from the mishaps of others.

We have been traveling round some of the Germany manufacturers and will be reporting on our visits in forthcoming issues. We welcome your letters, news and articles. Ideally send them by e-mail or on a disc in ASCII format backed by hard copy. But a fax (again backed up with hard copy) or even in handwriting will be acceptable. The important thing is to have your contributions to help make this a lively magazine, which reflects the growing interest in this branch of the sport. We would also like photographs and colour prints, but please write the caption on a

label before sticking it on the back as writing sometimes shows through.

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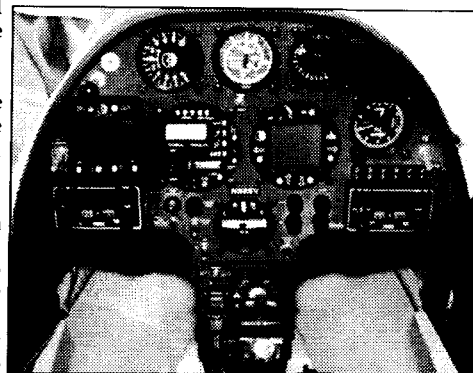
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Submitted by Gillian Bryce-Smith

### Soaring at Taos, New Mexico

It is September in Taos, New Mexico. For two weeks now the weather has been picture perfect with scattered cu's and bases above 15,000 feet and daytime temperatures in the 70's. The house thermal is still kicking up 800 feet per minute two miles from the airport. High on the 13,000ft. slopes the Aspen trees are changing color. During the first two weeks of October, the mountains are alive with color. We've already had a dusting of snow on the peaks and by Halloween they should be white. We've had several days of stacked "lennies" so far and more to follow. Once climbing above 12,000ft, Blanca Peak is clearly visible 80 miles to the north. It is an impressive, white block of a mountain reaching to over 14,000ft. From there north past the Sand Dunes National Monument is a continuous ridge that passes west of Silver Cliff/West Cliff and on to Salida. Salida now has a glider operation with access to the Collegiate range to the northwest and the Sangre de Christos to the south. Flights to these areas are a regular occurrence from Taos.

*Continued on Page 7*



NIMBUS 4DM front cockpit instrument panel.

## Pilot Reports

### ASH-26E COOLING FAN

Schleicher has issued a Technical Note concerning replacement of the cooling fan in the Mid-West AE50RA rotary engine. The white fan with the 32mm pulley will be replaced with a black (carbon fiber) fan with a larger pulley. The white fan can be used up to 16 hours longer if it is inspected every 4 hours and RPM are limited to 6,900 (normal climb rating). Replacement fans are available now and are installed on production ASH-26Es S/N 134 and over. Jerry Plaszowieki's ASH-26E fan failure was the only one in this model but several have failed in the ASH-25M which has a 7,500 rpm rating. Unofficially, it appears the 26E owners will get replacement fans free of charge. For more details contact John Murray at 513-897-5667.

*Submitted by Eric Greenwell*

### DG-800B

**Mid-West Engine:** 1. Cracks found at weld of exhaust manifold support bracket that bolts to the engine case. 2. Exhaust gasket failure on #1 manifold. Pilot discovered bolts were not tight after noting a certain amount of oil residue near the attachment bolts. Torque value is 16ft/lbs. Recommend check torque every 2-3 engine hrs and examine exhaust manifold connections closely for oil residue during pre and post-flight inspections.

**All DG-800Bs:** The coiled spring that lifts the muffler throat inlet during prop pylon extraction to mate with exhaust pipe can, with use, become weak. If this occurs there will be mis-mating of the muffler intake throat and the exhaust manifold pipe. This may result in exhaust gases being expelled into the engine bay. Inspect closely during extraction and if there is even a slight mis-mating, replace the coiled spring making sure the new spring has the same number of coils including coil and spring diameter. On each pre-flight inspection always test extract to ascertain the union of the 2 tubes is precise and repeatable.

## Pilot Profile



Karl Abhau has been an ASA member since 1988. The above photo shows him with his wife Inge and their Nimbus 4DM at Minden-Tahoe Airport, NV USA. Karl first soloed in a Zögling 33 glider in 1940. Since then, he has flown 41 different models. He has 4,000 hrs in gliders, 2,000 of which were logged in powered sailplanes. He established some of the first world motorglider records for speed and distance flying in a Nimbus 2M and has a total of six world records to his credit. Karl is one of Germany's leading advocates for motorized sailplanes. His most memorable flights are 1,016 km (8hrs) in a Nimbus 4 (South Africa) and a 30,000ft wave flight at Minden. Karl currently owns and flies a Taifun, Nimbus 4M and Nimbus 4DM. He has also owned and flown a Ventus cM and Grob 103SL. His reasons for flying a powered sailplane are more freedom and the fulfillment of a childhood dream beginning in 1936. The Abhaus live in Meerbusch Germany a suburb of Dusseldorf.



Coiled spring that assists in lifting muffler intake throat to join exhaust manifold pipe. If this spring is stretched even slightly, union with the exhaust manifold pipe will be affected. /Williams

### Use an Inspection Mirror



The retractable engine installation is difficult to pre and post flight. Use of an inspection mirror can make the job easier and will assist in discovering problems before they occur. Difficult areas to see without a mirror are the exhaust manifold system, ignition flywheel, starter ring gear, fuel lines, wiring, cooling hoses, lower engine case and engine bay insulation. These mirrors are available at any hardware or auto parts store.

## Powered Sailplanes in U.S. Registry

According to Bob Lacovara's publication listing gliders registered in the USA as of 3/96 the breakouts are as follows for powered sailplanes:

Motor Gliders	84	34%
Self-Launchers	144	59%
Sustainers	18	7%
Total	246	100%

Due to imports since March 1996, there are most likely another 15-20 self-launchers registered in the US.

Aerotechnik Vivat	6
Burkhart Grob 103 SL	8
Caproni A-21J	2
DG-400	40
DG-500M	4
DG-600M	2
DG-800A	4
Brasov IS-28M2	4
PIK-20E	52

### Scheibe:

SF-24	3
SF-25A	3
SF-25B	2
SF-35E	1
SF-28A	3
SF-27M	2

### Schempp-Hirth:

Janus CM	1
Nimbus3DM	4
Ventus CM	11
Janus CT	1
Nimbus3DT	1
Nimbus3T	2
VentusBT	11
VentusCT	1

### Schleicher:

ASK-14	6
ASH-26E6	
ASW-24E	3
ASW-22BE	2
ASH-25E2	

### Sportavia:

RF4D	15
RF4	2
RF5B	12
SFS-31	3

Stemme S10	3
Taifun 17E	25

For a copy of Lacovara's publication contact:

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Telford, PA 18969  
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## Rotax Engine 500 Series Dual Ignition Systems

Capacitor Discharge Dual Ignition (CDI) systems used in the Rotax 505A and 535 series engines are found in the DG 400/800A/500M, the Nimbus 3 and 4 DM, Nimbus 4M Janus CM, ASW-22BLE, ASH-25EB, PIK-20E/30 and Grob 103 SL. All of the applications above have dual spark plugs. The two Ignition Boxes can be the Bosch Polar Fire or the newer Ducati system. Newer aircraft such as the DG-800B also have a CDI system using IGN electronic ignition boxes.

The purpose of these systems is to provide a hot spark to the dual spark plugs controlled by sparking coils located behind the flywheel. About 300 engine rpm is required to operate the CDI system. When an ignition test is made, one of the spark plugs in each combustion chamber is rendered inoperable with a resulting drop in rpm of no more than 300 turns. The engine is effectively running on only one spark plug per cylinder. When the ignition test switch is moved to the other position, the other 2 plugs are rendered inoperable. This completes the ignition test.

### Ignition System Troubleshooting

1. If the engine is hard to start, it may be that the battery is not turning the engine to at least 500 rpm to generate a hot spark. Do not continue to crank over 10 blades. Stop and let the battery recover. Excessive cranking simply makes the matter worse. A battery voltage of at least 12.6V to 12.8V should be present prior to cranking.

2. If the engine quits when making the ignition test, several things are possible:

a. One ignition box has failed. To test this, switch the leads of the ignition boxes and try again. If the engine quits on the opposite box (the one switched to) then the box is defective and should be replaced.

b. If the failure remains on the same box, then the sparking coil for that circuit may be defective. To examine the coil requires the flywheel to be removed. Also resistance readings can be made of the sparking circuits as per engine manual.

c. If the coils are ok then it is possible there is a short in the circuits sometimes caused by a bare wire being grounded. Inspect and conduct a continuity test of each wire leading from ignition boxes to the flywheel.

Ignition boxes attached to the engine are subject to a lot of vibration. Check the mounting, plug-ins and the wiring system of these systems often. Newer systems such as those in the DG-800B and 505MB mount the IGN ignition boxes remote from the engine on the fuselage firewall to reduce vibration problems.

The IGN boxes have an integral fuse that can be checked if problems occur. In any case, always consult the Engine and Maintenance Manuals for troubleshooting procedures. Bosch Polar Fire ignition boxes are not made anymore and spares are difficult to find. Switching an to the Ducati system is the best way to go including a spare box. Contact the respective factory for new boxes and the hardware kit that mounts the Ducati system.

## Rotax Engine 500 Series Hard to Start Problems

If the ignition system is working ok but the engine is still hard to start or starts and will not accept throttle increase, one or more of the following reasons may be the cause.

1. Too rich Idle Mixture. This can be due to operating the aircraft at a higher field elevation, especially during the summer. Leaning the idle mixture slightly will usually solve this problem but great care should be taken to not lean too much. Err on the rich side always and observe engine temperature closely.

2. Another reason the engine hesitates to accelerate to full power can be the rubber diaphragms in the carburetors which become stiff with age and need to be changed from time to time. Another reason can be obstruction of the carburetor needle valves by foreign particles. This is especially true if the fuel hoses have been replaced without first flushing them with fuel to remove loose dust particles. A dirty fuel filter can also cause restricted fuel flow. Change all fuel filters once a year.

3. Air can enter the fuel lines if the hose clamps are not properly tightened. If this occurs the engine will run momentarily then quit without remedy. Avoid sharp bends in the fuel hoses, check all clamps and exchange for new hoses as directed in the Maintenance Manual.

4. Dirty, worn and oil fouled spark plugs create starting and running problems. Change each season and gap to recommended setting. Use anti seize grease on the plug threads to preclude galled threads in the engine head and facilitate plug removal. Torque to proper setting, being careful to not over-torque. The value of new, properly gapped and installed spark plugs cannot be over emphasized. Do not experiment with plugs. Stay with the factory specified plug.

5. Spark plug connectors are to be installed properly and inspected at least twice a season for integrity. Remember the spark plug high tension leads and phenolic connectors are subjected to heat and vibration. Inspect carefully and replace if cracked or worn.

Pete Williams

## Honing Your Landing Skills: Part II

*This is the continuation of landing techniques presented in the Sept/Oct 1998 Newsletter. The first article dealt with the landing pattern including crosswind procedures. In this article we will cover the Final Approach, Use of Flaps and Spoilers, Level Off, Touchdown, Crosswind Landings and Rollout and Stop. It also covers techniques that can be employed to "salvage" a less than optimum landing approach. This discussion is for the more experienced sailplane pilot and does not necessarily apply to the student pilot who are under instruction learning basic landing pattern techniques.*

**The Final Approach:** The Pilot's Manual will give the recommended speed for approach in the landing configuration with flaps extended (VFE). Maximum speeds for lowering landing gear and deploying flaps must be observed. The Yellow triangle on the Airspeed Indicator is the lowest recommended approach speed at maximum weight without water ballast. For most ships this will be 55-58Kts. In gusty wind conditions, more airspeed is required. In some cases an additional 10kts may be necessary. The key to making a successful landing is being at the proper altitude and airspeed after completing the final turn to the runway heading. Flying the sailplane to this optimum position is what landing patterns are all about. Some 'salvage' techniques:

- If arriving high on final, deploy spoilers to descend to the desired glide slope. To maintain the proper airspeed as the altitude bleeds off, adjust the nose attitude (pitch). Attempt to maintain the selected airspeed. If you get too slow, the sink rate will increase and you will be short of the selected level off position. If you get too fast your selected level off position on the runway will move upwind.
- Arriving low or too far out on the final approach leg is dangerous, especially on a windy day. If the spoilers are open, close them. Check your airspeed and nose position relative to the selected level off spot. If it is evident you are going to land short of this selected spot, maintain approach speed and select a new level off spot.
- Some words of caution: DO NOT reduce approach speed if low or establish a glide slope requiring a level off near the end of the runway. Its better to be a little high on final, especially on a gusty wind day. Select a level off spot that is a comfortable distance from the end of the runway.

**Use of Flaps and Spoilers:** Essentially, positive flaps increase lift and lower the stalling speed while spoilers increase drag and rate of descent. Select the landing flap position desired prior to beginning the turn toward the runway and leave them at this position until the landing is completed. Use the spoiler handle like a throttle. If low push the spoiler handle forward. If high pull the spoiler handle aft.

**Level Off and Touchdown:** Next to airspeed control, the level off is the most critical part of a landing. Level off too high and you risk dropping the aircraft onto the runway in a stalled or near stalled condition. This is because during level off the pitch or nose position of the aircraft is changing which is reducing the airspeed. Starting a level off too late or too low causes the main wheel to contact the runway first resulting in a bounce followed by a porpoise, another bounce, etc. So the question remains at what altitude above the runway should the level off be initiated

and at what rate should up elevator be applied. A successful level off (without excessive ballooning) depends on the airspeed at which level off is initiated. Also, depth perception plays a big part in judging height above the runway as does peripheral vision. Most pilots cease monitoring airspeed during level off and concentrate on the aircraft's attitude by slowly raising the nose to a position that hopefully results a 2-point or tail low touchdown. Some pilots have mastered a main wheel touchdown which requires relaxing back pressure on the stick as the main wheel touches down and applying just enough forward stick pressure to prevent a bounce. The ideal level off I try to attain is a smooth and steady application of up elevator that slowly raises the nose to the same pitch it is while the glider is at rest its parking space. If the main wheel touches first and a slight skip is made, relax stick back pressure just a bit and as the glider again descends toward the runway, raise the nose slightly to make a 2-point or tail low contact. If the stick is pushed to correct a bounce, more bounces will surely follow. It is a good practice to leave the spoilers alone during level off even if they are partially deployed as any increase in spoiler deployment increases drag and can result in a sudden hard touchdown. My idea of a good touchdown is a slight rolling of the tailwheel followed immediately by the main wheel chirping as it contacts the runway. Once solidly on the runway, I usually place the flaps in a negative setting. This causes the aircraft to stay the ground and provides excellent aileron control to keep the wings level. Be prepared for aileron and rudder corrections to keep the rollout straight. Some sailplanes have a nose wheel and can be landed on the main wheel (tail low) and then transitioned to the nose wheel during the roll out by applying the main wheel brake. These sailplanes (Nimbus 3 & 4DM, and Turbo versions, Grob 103SL and DG-500M/505M) are particularly susceptible to nose wheel damage after a bounce on the main wheel followed application of forward stick. Again, a proper level off will solve the problem.

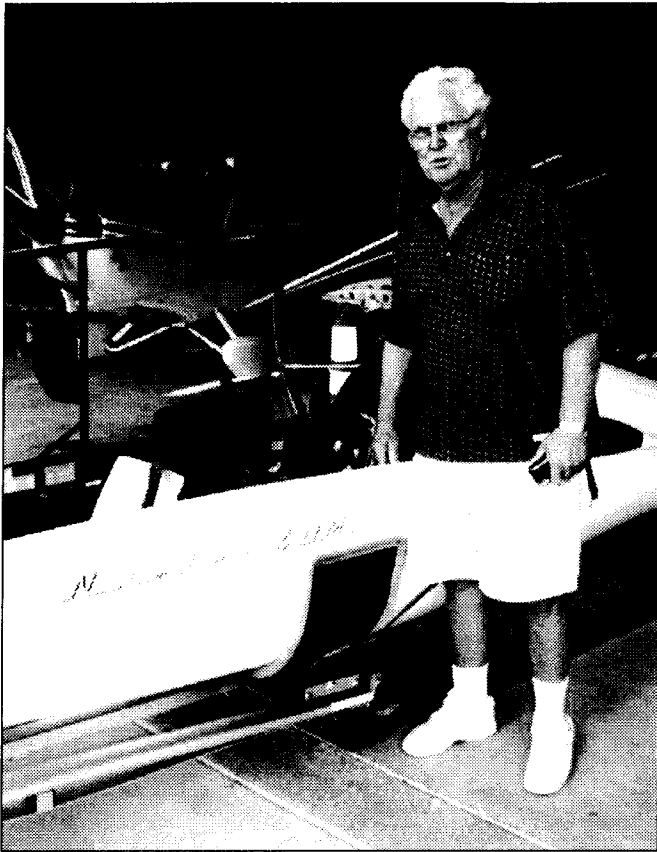
**Crosswind Landings:** Most pilots establish a crab into the wind to keep the sailplane aligned with the runway center. During the level off this crab angle can be reduced by lowering the upwind wing and applying just enough opposite rudder to maintain runway heading. In extreme crosswind conditions it may not be possible to eliminate all of the crab angle which can result in a touchdown that can swerve the aircraft toward the wind line. Be prepared to keep the upwind wing lowered and apply opposite rudder to keep the rollout track straight. On long winged ships there is a limit to how much the wing can be lowered without dragging a wing tip. The Stemme sailplane can be landed using the same level off techniques and for all practical purposes can be classified as a tail dragger.

**Rollout and Stop:** The landing is not complete until clear of the runway. If the aircraft has a steerable tailwheel, keep in mind it will respond to about one half rudder application normally required for a fixed tailwheel. Drum wheel braking systems are not as effective as disc systems so allow plenty of room to bring the aircraft to a full stop keeping in mind that the motorized ship is at least 100lbs heavier than its pure sailplane counterpart.

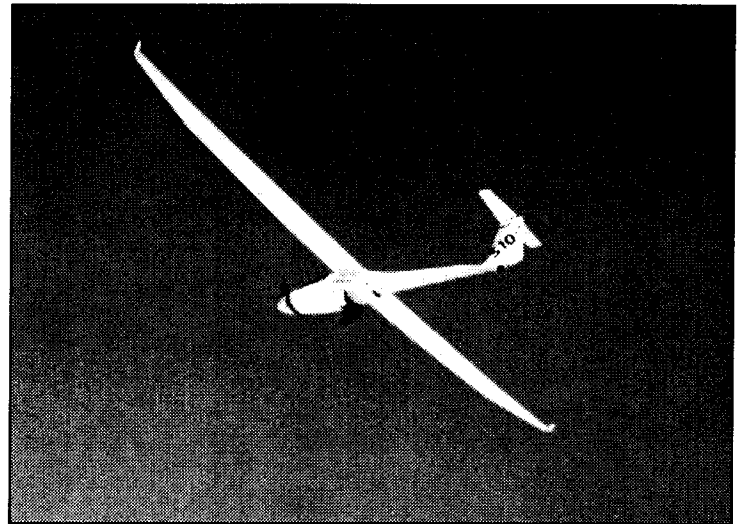
*Hopefully, some of this will be of value to you. If I have made a serious mistake, or if you have any comments, please let me know.*

Pete Williams

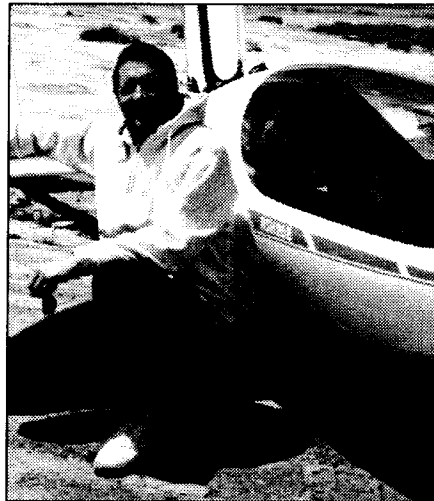
## Members in the News



Don Briggs recently took delivery of a Nimbus 4DM and will base it at Minden-Tahoe Airport. This ship is powered with the new 63hp Solo engine. /Williams



Martin Hellman climbs out in his Stemme S10VT. The landing gear is in the process of retracting. Hellman bases his S10VT at Hayward, CA and power commutes to Minden-Tahoe airport for soaring activities. A future newsletter will feature Martin's impressions of flying the Stemme. /Williams



Jerzy Plaszwiekie and his ASH-26E. Jerzy recently moved to the Minden area and bases his 26E at the Minden-Tahoe Airport. Currently there are 20 self-launchers now based at the M-T Airport. /Williams



Klaus Ansgor and his wife Joyce with their PIK-20E just purchased from Don Birmingham. The aircraft will be based at Minden-Tahoe airport. Klaus lives at Incline Village-Tahoe in the summer and Alicante Spain in the winter. /Williams



Jerry Wilger, his wife Glenna and Dotty Wayt stand by Jerry's DG-400 which he recently purchased from Skip Atwell. Jerry flies his 400 out of Durango, CO and Carefree, AZ. /Williams



Peter Kelly taxis his new DG-800B for the first time at Minden-Tahoe airport. This is the #2 Solo engine 800B in the US. First powered takeoff on right. The Jan-Feb 99 ASA Newsletter will contain an article on Peter Kelly's first impressions of flying the DG-800B.

### Going Places?

If a ferry flight is desired in a retractable engine sailplane, the designers recommend climbing under power to say 8-10,000ft above ground level then securing and retracting the engine and gliding to within 2,000ft agl prior to engine extraction for another climb. This "saw-tooth" type of flight profile can extend range to 300 miles or more depending on convective conditions, wind and fuel available. One word of caution. Always make it a habit to launch with a full fuel tank and carry a bottle of 2-stroke oil (usually 16oz per 5 gallons). Assuming you can land at an airfield that has fuel, if you are forced down due to weather or whatever, you can refuel with the proper fuel/oil ratio and go on your way.

## DG-USA SHOP TALK by OLIVER DYER-BENNET

### BATTERIES

*BATTERY: From Webster's College Dictionary, © 1998: "Battery - a cell or group of cells storing an electrical charge and able to furnish a current."*

Your battery is the heart of the electrical system for your self launching sailplane. In the DG-USA service shop during the annual inspection of the customer's motorglider, we give the battery system special attention. We have found that the battery is usually the reason the engine is either quick to start, or slow and hard to start.

The Rotax 505 and 535C engines have been installed in many self-launching sailplanes over the last fifteen years. The Rotax Repair Manual states: "The cut-in RPM, (ie. when the ignition unit gives the first sparks), is approximately 300 RPM, therefore the battery must be sufficiently charged to achieve at least the above minimal cranking RPM. (Normal cranking RPM with a fully loaded battery is approximately 500 RPM)."

The newer self launching sailplanes are using the German-made SOLO 2625 engine. The DG-800B maintenance

manual for the SOLO engine says: "If the engine turns at less than 500 RPM. there are no sparks at the spark plugs. Therefore the battery must be charged enough to reach this RPM, (normal starting RPM with well charged battery is approximately 600 RPM)."

Once the engine begins to turn over with the starter motor, the fuel/air mixture is drawn into the cylinders. If the starter motor cranking speed is below the spark triggering speed RPM, no electrical spark is generated at the spark plugs. The engine soon floods with fuel and becomes very hard to start. How long is your aircraft battery good for? Usually about 4-6 years, or about the same length of time as the best automobile batteries. If your self launching sailplane engine is slow or hard to start, check your battery/ies. They could be undercharged or unable to hold a charge and are ready for replacement.

**DG-USA is the factory-authorized Service & Repair Facility for DG Flugzeugbau GmbH of Germany**

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*Soaring in Taos continued...* In June 1998 I flew a 'just for fun' flight in my ASH-25E from Lobo Peak, to Ute Peak to a peak northeast of Ski Rio and back to Lobo Peak, a 100KM triangle at 97mph. It was not an exceptional day with bases to only 16,000ft. In another memorable flight, I took a German Air Force instructor pilot who was visiting Taos from Shepherd Air Force Base, Wichita Falls, Texas for a flight in the ASH-25. He instructs students in the T-38 and has over 1000 hours experience in the Tornado fighter plus over 500 hours glider time. When we got off tow, he asked me if the variometers in the rear seat were in meters per second and I replied yes. He then reported that they were malfunctioning, as they were both pegged at 5 m/s up. Timing the seconds it took to climb 1000 feet, we verified that we were in fact climbing faster than 1,000 fpm. For the next 3 1/2 hours we flew over snow capped mountains north into Colorado, west to the continental divide, south to Santa Fe and back to Taos. He said it was the most beautiful flight he ever had in a glider.

Since being in Taos a few months I have learned from locals that soaring has been a part of the scene since the 1960's. There have been soaring fiestas here organized by out of state clubs for years. My first visit to the airport in 1995 revealed two 2-33's and a 1-26 tied out. It was during May and they were getting ready for the first club visit. I did no flying that year but was told you had to sign up early because there was a limit on space. This is no longer the case as ramp space has doubled since then. Since flying my ASH-25 out of Taos, I have discovered that the Rotax 275 24hp engine will sustain my ASH-25, or nearly so, at

13,000 feet. If the glider is descending at all with the engine running it is doing so at such a small rate of descent that it is almost imperceptible after 10 minutes. This is much better than the manual predictions which show a maximum sustainable attitude of close to 7,500 feet. However, it is possible that on the days I tried this the air mass may have been rising to a small degree in the area where I made the test and thus not much of a conclusion can be drawn. However, there is no doubt the L/D improves greatly with the engine running.

Four different glider clubs came to Taos this year. Two from Colorado and two from Texas. Each spends a week of soaring. Several 200 and 500km flights were flown plus lots of for fun flying. The trusty Ag-Cat did the honors for those needing a tow. Eric Greenwell visited in his ASH-26E and Bud Schurmeier in his PIK-30E. A launch time of between 1200 to 1300 hours puts the gliders into good lift to 12,000ft where they make their way to the mountains to the east and lift to 15,000 feet. Later while soaring on the mountains, strong lift to 17,500ft is the order of the day. In addition to soaring, there are many fun things to do in the area. Accommodations are abundant with reasonable prices and great restaurants. Hiking, biking and sightseeing are great fun for family and crew. The ski valley is close by and on weekends the ski lift takes you to the top of the mountain. For more information, see Taos web site: [www.AirTaos.com](http://www.AirTaos.com).

Stan Nelson

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