

Classic Slope Soaring - An introduction by Michael Kitchen

The title may present three words that each require a little more explanation -

Classic

As with other activities such as restoring cars, the term Classic represents a period witnessed a few decades ago. Prior to that, even older examples are normally classified as vintage.

Those aeromodellers of a certain age will actually have lived through what is now called Classic, but at the time it will have been quite normal. Before the age of 'ready to fly' where very little building skill is required before launching the model into the air, the art of aeromodelling required many abilities such as reading and building from a plan, the correct use of glues and covering techniques appropriate for a particular model.

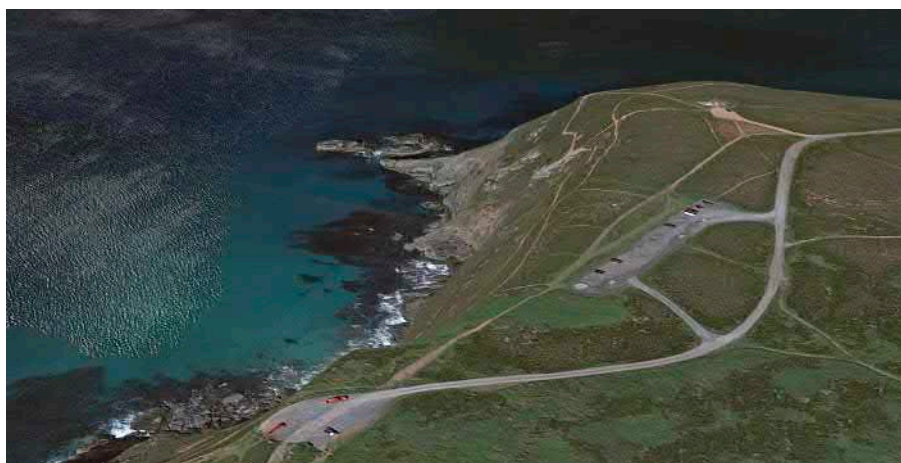
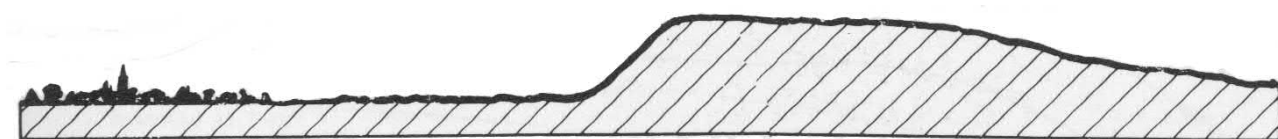
So what period should you be looking at? Taking the lead from the Society of Antique Modellers, SAM 35, Classic is defined as models that were designed, published or kitted after December 1950 and before January 1961. Vintage models are those available prior to January 1951. In general terms, a Classic model would have been available to build before the Beatles were famous. In reality, given the style of building described below, anything that appears in the Radio Control Slope Soaring bible compiled by Dave Hughes in 1983 helps to broaden the window a little.

Slope

The wonderful world of model gliding encompasses those flown from the flat field and those flown from the top of a hill. While flat field flying is the domain of thermal and aerotowing, a slope gives the opportunity to work with a breeze and choose the correct model for the conditions. From a gentle breath of wind that would suit a floater to a gale that benefits a highly loaded and strongly built example.

Thankfully, the UK is blessed with many areas covered in hills that are open to the general public and facing a variety of directions offering the right set of circumstances to fly throughout the year. An ideal slope would be several hundred feet high, with an angle of about 45 degrees, rising from an otherwise flat area of land with no other hills in front for several miles. The length of the face should be as great as possible - the longer the slope the more area in which to soar. The top should be in the form of a plateau that does not fall away too soon or suddenly on the down-wind side.

The ideal slope



The land in front can be substituted for open sea. The Gower Peninsula in Wales, along with Cornish and Yorkshire coasts are good examples.

The example shown here has flat open sea in front of a high and wide slope rolling on to a flat top. It even has a car park for ease of access!

Soaring

The definition of soaring is to fly or rise high in the air or maintain height without using engine power. An electric or I.C. motor can allow a model to take off from the ground or possibly get you out of trouble when things don't go quite to plan. However, there is something magical to work with and understand the air around you that enables full control of a model that you have just thrown off the slope in to the empty space beyond.

Soaring is a peaceful pastime with the just the sound of the breeze and possibly the whistle of a fast moving glider across the slope. It is a clean pursuit as no fuel is involved or propeller used that could so quickly end a day's flying if care is not taken.

Subject to weather conditions, the capacity of batteries fitted and the pilot's endurance, a glider can remain flying on the slope for a long time. This continuity can help towards honing your skills or staying in the air as conditions change.

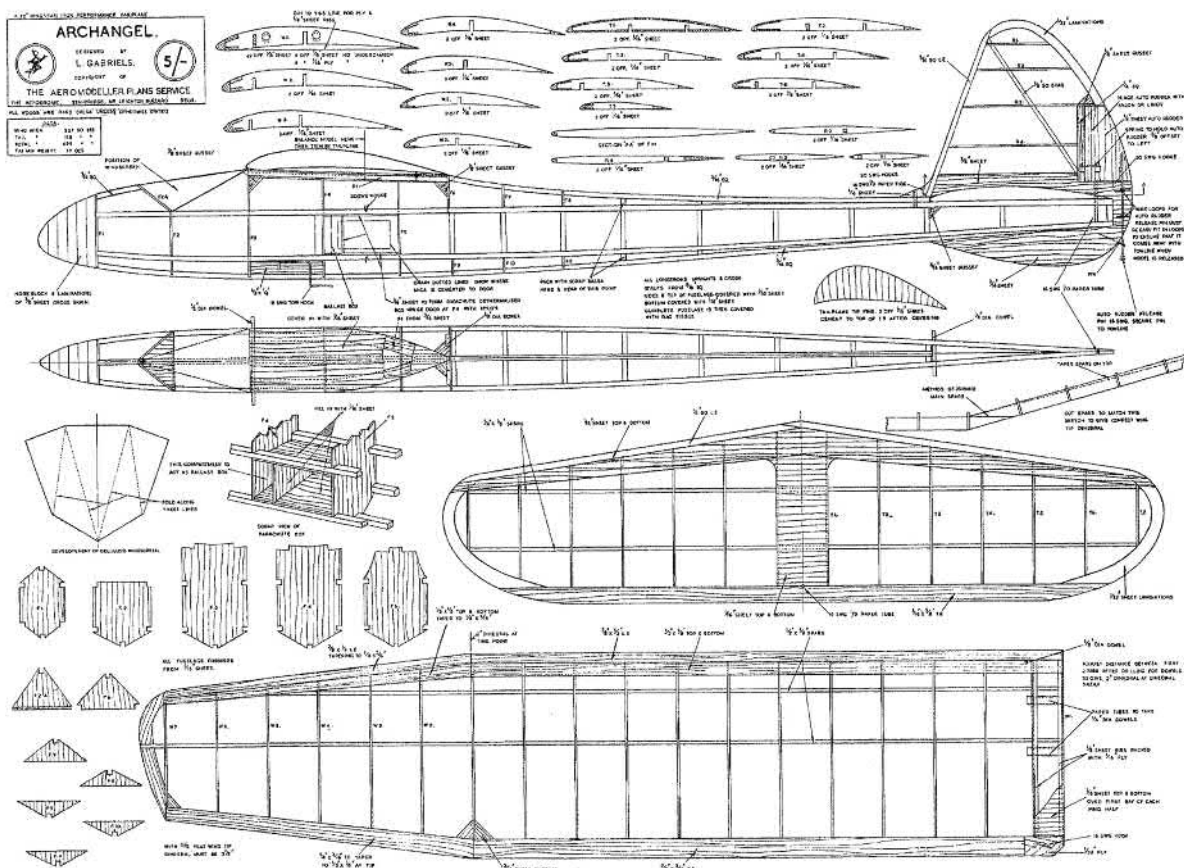
Classic and Modern

Having set the scene to illustrate the title of this article, just what are the differences between Classic and Modern slope soaring gliders?

A Classic build would use traditional materials. In the early days of aeromodelling, those natural materials available were balsa, ply, cane, tissue, balsa cement and tissue paste. Plans were often bought from a central source such as Aeromodeller Plans Service, but many are now available for free download from Outerzone - <https://outerzone.co.uk>



This example of Archangel is from the February 1950 edition of Aeromodeller. It shows a typical construction style - well balanced proportions, 72 inch span, under cambered wing for lift in light winds (although it can cope with windy weather), wing tips that are angled up to maintain stability and ability to be built on a 30 inch board. As no list of materials is given, a careful assessment of balsa and ply sheet or strip will be needed. A 'clean' version of the plan is also available that has been drawn using CAD software.



You may have gathered by now that the technique to complete the model involves creating all the ribs and formers from scratch and cutting strip to the correct lengths. While this was certainly the only method available at the time this plan was published, help is now at hand!

The advent of laser cutting and CAD drawings has generated a modern business for the 21st Century. Companies such as Belair, PhoenixMP, RC Europe, Sarik Hobbies and the Vintage Model Co. can all offer accurate model gliders using traditional materials. While many include all the balsa and ply required to complete, a few concentrate on the more difficult items such as ribs and formers with a suggested list of strip or sheet that can be purchased separately if not already in your stock. An ideal source for advice and large range of balsa is The Balsa Cabin - <https://www.balsacabin.co.uk>

Keeping it in the air

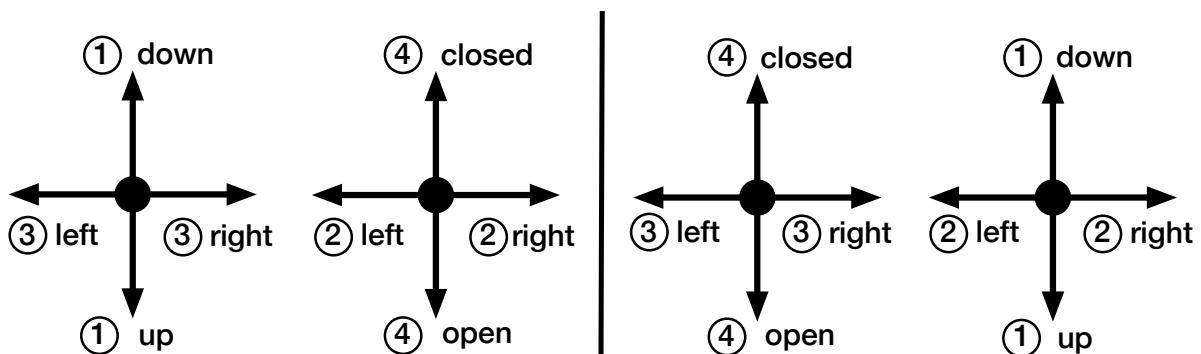
Although it is possible to use a free flight glider from the slope, getting it back to the top of the hill can require quite sophisticated guiding systems. The alternative is to retrieve from the bottom of the slope after each flight which is a bit tricky when flying along the coast. Thankfully, a great deal of fun can be had using inexpensive radio control and just two channels on rudder and elevator. The choice of radio equipment can be very subjective, but offerings from Spektrum, Futaba and JR would be a good place to start with perhaps Spektrum offering the widest selection for beginners. While choosing your outfit comprising transmitter, receiver and possibly servos, it is also necessary to give some thought on which of your two hands you would like to use for which controls. Many years ago, affordable two channel transmitters were commonplace and with sticks arranged for 'up and down' and 'side to side' these tended to dictate how a person learnt to fly.



The example shown here is classified as Mode 1 with elevator on the left and rudder on the right for a simple two channel layout. Many people fly quite successfully using just this with no aspirations to complicate matters. However, as experience, confidence and enthusiasm develops, transmitters with more channel options will be needed.

What is called a 'full house' transmitter would comprise two sticks that can each move up, down and side to side. This introduces the option of a set up that can be Mode 1 or Mode 2. The three primary controls for flight are rudder, elevator and aileron with the last two being used for changes in height or direction. The rudder tends to take a

secondary place for manoeuvres such as a stall turn or combined with ailerons with some large wingspan scale models for smooth turns. So which Mode would suit you? The diagram below illustrates the differences. On power models, the brakes/spoiler becomes the throttle and the stick is normally on a ratchet to maintain a 'hands off' setting. Please note that no throttle is at the bottom and the transmitter will give you a warning after switching on if incorrectly set.



Mode 1 - Elevator Left

Mode 2 - Elevator Right

Control Functions 1. Elevator, 2. Aileron (rudder if aileron not fitted)
3. Rudder (on aileron models), 4. Brakes/Spoiler

There is no right or wrong option. It is just what feels comfortable for you. However, when ordering a full house radio outfit in the UK, it is normal to choose Mode 1 or Mode 2. When it arrives, a conversion from one to the other is often possible, but does entail dismantling a new transmitter and switching around the ratchet throttle settings which can be fiddly and not to everybody's taste. It may also invalidate the manufacturers warranty. One example where this process is made very easy indeed is with the Spektrum 6e or 8e.



My Spektrum DX8e is currently set for Mode 2.

Mode 1 used to be 'the norm' here in the UK, whilst Mode 2 was commonly used in North America and other parts of the world. But recent R/C magazine polls have shown that Mode 2 is much more common now, here in the UK, and Mode 1 is becoming less common. Certainly Mode 2 is the worldwide preference at the current time.

In practice, Modes 3 and 4 are not often used when describing model aircraft use in the UK.

Which model to choose?

Unlike powered aircraft where the motor can overcome some of the shortcomings of a marginal design and build, the choice of a well regarded first model could make the difference between continued exhilaration ready for the next outing or lack of enthusiasm to continue. Although many will dream of making a spitfire as their first model, the reality is that early and persistent accidents should make you realise there is an easier route to success. An elementary understanding of the theory of flight using the four principles of lift, weight, thrust and drag are still relevant with the added fascination that your thrust can only be achieved by causing the air to move over the wings and tailplane. While a powered aircraft may excel in almost still air, a slope soarer needs a breeze moving up the slope to stop it falling out of the sky.

Recommended models would have the following criteria -

- 1 A large enough fuselage of simple shape to easily accommodate batteries, receive and servos. As there is no motor, vibration is not a consideration. Without any electric motor, power to the receiver could be NiMH battery packs which are still available from companies such as Overlander - <http://www.overlander.co.uk>
- 2 Simple shape wing that is either rectangular or slightly tapered. A wingspan of 4-6 feet will give sufficient lift capability for the required fuselage while making transportation straightforward.
- 3 Two channels on elevator and rudder would keep the mind focused sufficiently until experience is gained. That full house transmitter can still be used later on. It is also worth mentioning that some models are sold complete with their own radio gear. To avoid ending up with a shed full of transmitters, you may want to concentrate on your choice of outfit and really get use to it.
- 4 Any glider will benefit from building light. Weight can always be added to suit different wind conditions, but cannot easily be taken away. Size of battery pack and servos may save precious grammes. The whole flight pack may also be accommodated further forward requiring less or no lead to balance the aircraft. Radio outfits can either be bought as a transmitter,

transmitter and receiver combo, or complete with servos which will be a fixed size for the whole set. Some people prefer to have the choice of servos and often already have a selection to hand. Without delving in to the world of indoor models and micro examples now available, Hitec probably has the widest range of good quality servos available - <https://hitecrco.com/products/servos>

From the HS-40 economical analogue to the Ultra Premium Digital using exotic metals, there will be a servo of weight and size to suit your needs.

Examples of models that have stood the test of time and are now available as a kit would be -

- 1 Archangel, 72 inch from Belair
- 2 Sinbad, 62 inch, two channel from Belair
- 3 Snowy, 63 inch, two channel from PhoenixMP
- 4 Veron Impala, 52 inch, two channel from the Vintage model Co.
- 5 Soarcerer, 52 inch span, two channel (aileron option) from Sarik Hobbies
- 6 Keil Kraft Chief, 64 inch, two channel from the Vintage model Co. and Belair

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2



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Getting help

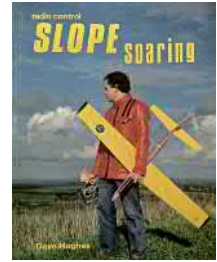
Learning how to get the best from your new found hobby of slope soaring can take a little time, but thankfully help is at hand with the following guidance.

Recognised as the bible for any slope soarer is the book Radio Control Slope Soaring by Dave Hughes. Although published in 1983, its contents are still relevant today and the photographs of models gives you a flavour of what people were building over three decades ago. Copies can still be found on -

eBay, <https://www.ebay.co.uk>

Abe books, <https://www.abebooks.co.uk>

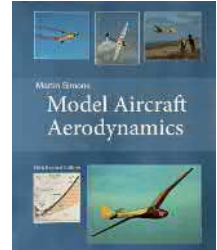
and can even be downloaded from RCLibrary, <https://rclibrary.co.uk>. Search for Radio Control Soaring.



A more focused book for beginners, although possibly becoming a little outdated since its publication in 1998 is Martin Simons Gliding with Radio Control. With no prior knowledge of flying, modelling or radio being required, it will help the complete beginner to avoid frustrating errors and possible subsequent disillusionment. Readily available from Amazon



For the enthusiast who really wants to understand why things happen, there is Martin Simons book on Model Aircraft Aerodynamics from 2015 that is readily available from Amazon. It is a standard work on aerodynamic theory, as applied to model flight. The revision for this edition reflects significant developments in model aircraft over the least few years, but does include considerations for powered aircraft. However, there is plenty for the glider enthusiast to absorb and perhaps provide answers to poor performance.



If reading does not appeal, then perhaps an experienced colleague with a compatible radio transmitter may help. Nowadays, it is standard practice to use a *buddy box* system during preliminary flight training, this being the equivalent of dual controls in a full size aircraft. Typically - two transmitters are connected by a cable, although this is now being replaced by wireless systems. The instructor has a switch which enables activation (or not!) of the control sticks on the student's transmitter.



Joining a Club is a friendly way to share your flying. Membership fees are usually not excessive and first hand help is readily available while on the slope.

A useful link to find a Club close to where you live can be found on the British Model Flying Association web site -

<https://bmfa.org/Clubs/Find-a-Club>

Please note that these are flying sites that are affiliated to the BMFA. The North York Moors Ridge Soaring Club does not appear as it is required to arrange for independent insurance as a condition of its license. Any responsible model flyer should ensure that sufficient insurance cover is available should it be required in the event of a claim following an accident or damage.

If you feel the need to progress to scale gliders, the Scale Soaring UK web site can help - <https://scalesoaring.co.uk/vintage/your-vintage-models/>

Although appearing to be flat field flying with tugs, a look at Chris Williams videos will soon show that slope soaring is also possible.

On perhaps a more competitive level with specialised gliders, the British Association of Radio Control Soarers has a comprehensive web site covering many classes of model gliders - <https://www.barcs.co.uk/>

I hope that this article has wetted your appetite sufficiently for you to start building a Classic Slope Soarer and flying it from your local site.