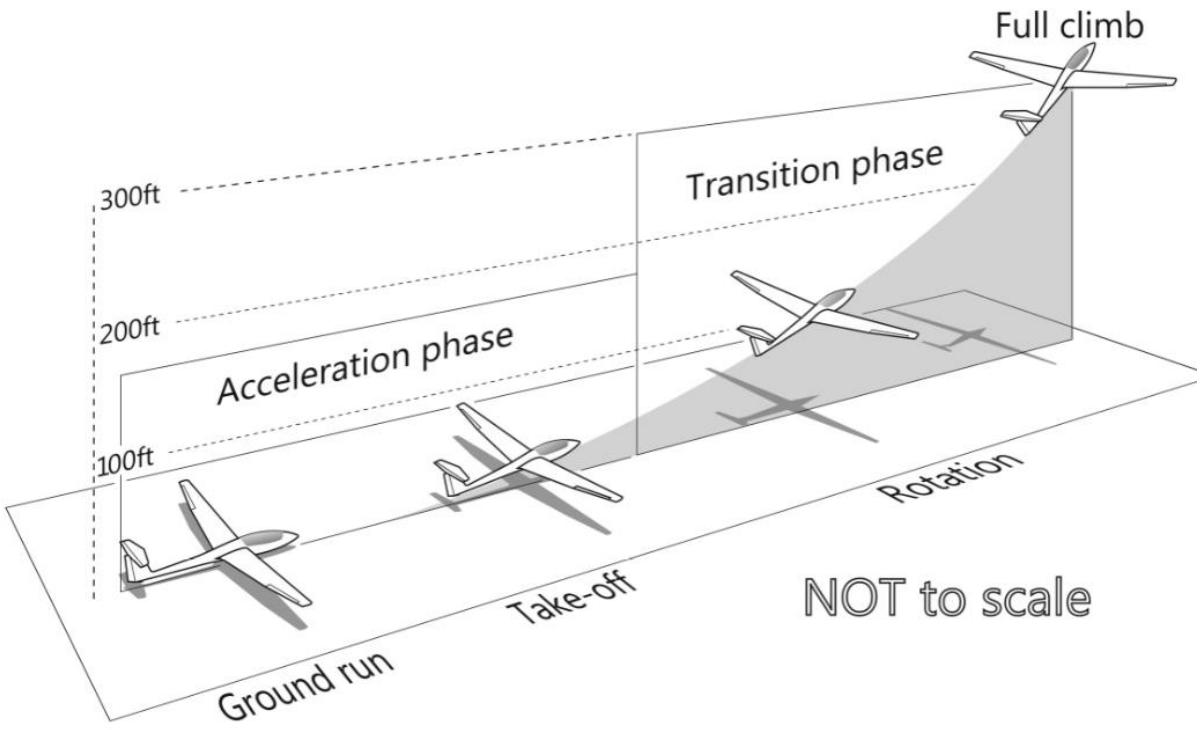
The Winch Launch

Winch launching is a cost effective and exhilarating way of getting airborne. A powerful winch at one end of the airfield winds-in a long cable at speed against which the pilot controls the gliders angle of climb and in doing so climbs rapidly to the top of the launch, ie between 1000 and 2000 feet depending on the length of cable being used.

The launch is normally made into wind. Why? It is important that the flying controls are effective as soon as possible, and that the glider accelerates to flying speed with the lowest possible ground speed and shortest take-off run. Let us consider the launch of a club glider which has a stalling speed of about 30 kts. At any speed greater than 30 kts this glider can develop an amount of lift equal to its weight and can therefore become airborne. If the surface wind speed is say 10 kts, the aircraft, if it is launched into wind, only has to reach a speed of 20 kts over the ground in order to take off. If the aircraft was launched downwind under these conditions, a ground speed of 40 kts would be required before flying speed was reached; this would involve a long run at high speed on the ground, it would take a while for the flying controls to become effective, and any unevenness in the surface would impose considerable stress on the aircraft.

The winch launch has a number of phases as illustrated below;



From your earliest flights, you will hear your instructor referring to keeping a hand on the cable release. This is a critically important safety point. If during the ground run a wing tip 'drops' to the ground, the glider, which is being pulled by the cable, is very likely to cartwheel resulting in a very serious accident. When a wingtip digs into the ground, there is not enough time to reach for and grab the cable release. **It is vital that the pilot carrying out the winch launch always has their left hand on the release knob during the ground run and is ready to pull the release in the event of a wing going down.** Your instructor will of course explain everything you need to know.

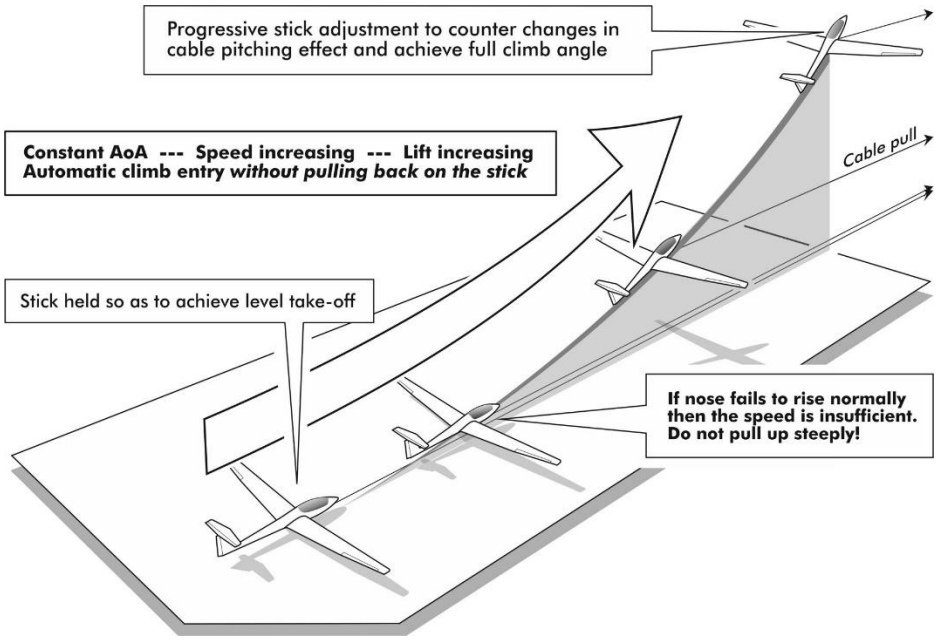
The early part of the climb in the take off and transition phase is quite shallow; if the launch fails, a shallow climb allows the pilot to recover safely.

Throughout the winch launch, it is very important to monitor the airspeed. Your instructor will ensure that you understand the acceptable range of airspeeds during the launch.

The climbing attitude during the launch may be checked by glancing to one side to compare the angle the wing makes with the horizon.

To gain the maximum height possible, the aircraft eventually needs to be climbed quite steeply. The transition from the initial climb to the full climb MUST be carried out gradually and smoothly. Your instructor will emphasise all the important points.

To help to develop your understanding of how to winch launch safely, **you should read the 'Safe Winch Launching' guidance on the BGA members website.** Your instructor can answer any questions.



Loads During the Winch Launch

The glider is subjected to additional loads during the launch primarily due to the wing generating a lot of lift against the pull of the cable through the launching hook. At steeper climb angles, the loads on the aircraft are greater. The glider cannot be over-loaded if the *maximum winch launch speed* (see the glider limitations placard) is observed and the *correct weak link* is fitted. The weak link, which is fitted between the glider and the cable parachute, is calibrated to break at a certain load.

Too Fast?

If the launch is too fast, before it reaches the maximum winch launch speed it is standard practice to yaw the glider from side to side to indicate to the winch driver that the speed is too high. Remember that yawing the glider also results in roll, so you need to be prepared to keep the wings level using

the ailerons. If the launch is too fast and the winch driver is not responding, it is important to release the cable and abandon the launch.

Too Slow?

If the launch is too slow, the glider cannot be climbed safely. It is very important to **promptly** lower the nose below the normal gliding attitude to accelerate the glider to safe flying speed, and then release the cable. Never hang onto a winch launch hoping that the speed will increase.

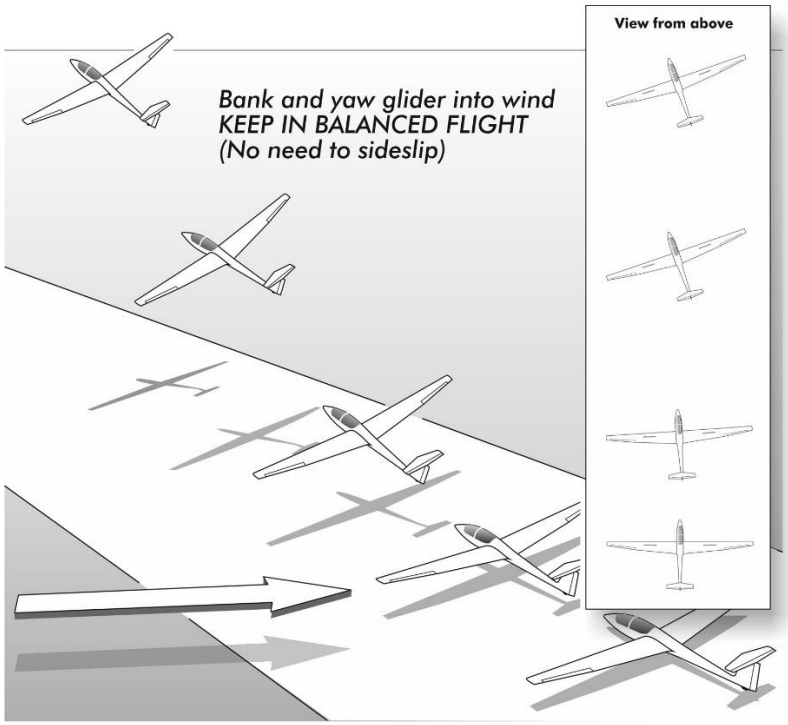
If an unacceptable fast or slow launch is experienced, the pilot should report this on landing to the duty instructor who should relay the information to the winch driver.

Release

Lowering the nose of the aircraft prior to release will reduce the load on the hook and reduce the chance of the cable springing towards the winch, which can cause problems for the winch driver. The cable is normally released when no more height is being gained. This will occur shortly before the glider arrives over the winch although the position depends on the strength of the wind. As the winch cannot easily be seen during the launch, the pilot must decide when to release from other indications such as the nose being pulled down and position relative to other features.

Launching in a Crosswind

Occasionally it is necessary to launch slightly across wind, ie with a crosswind. This means that if the wings are kept level during the full climb the glider will drift during the launch until it is downwind of the winch. This will give maximum possible height of launch under these conditions but may involve dropping the cable in an inconvenient place. When launching with a crosswind, it is usually necessary to sacrifice some height and maintain the original path by adopting a slightly banked attitude (balanced with rudder like any other turn) into the wind during the full climb.



Illustrations from the BGA Instructor Handbook