Safety Briefing

Accident Review 2017

Whilst gliding is an adventurous air sport, all glider pilots expect to be able to drive or walk home after flying. Unfortunately, the reality is that a number of glider pilots never made it home because of an avoidable accident. This booklet offers guidance on how everyone can help to avoid accidents. The detail is relevant to all glider pilots, regardless of experience. Please read it carefully.

BRITISH GLIDING ASSOCIATION

supported by

hill aviation insurance services

Allianz

Fatal Accidents

BGA aircraft were involved in 5 fatal accidents from 1 Oct 2016 to 30 Sept 2017:

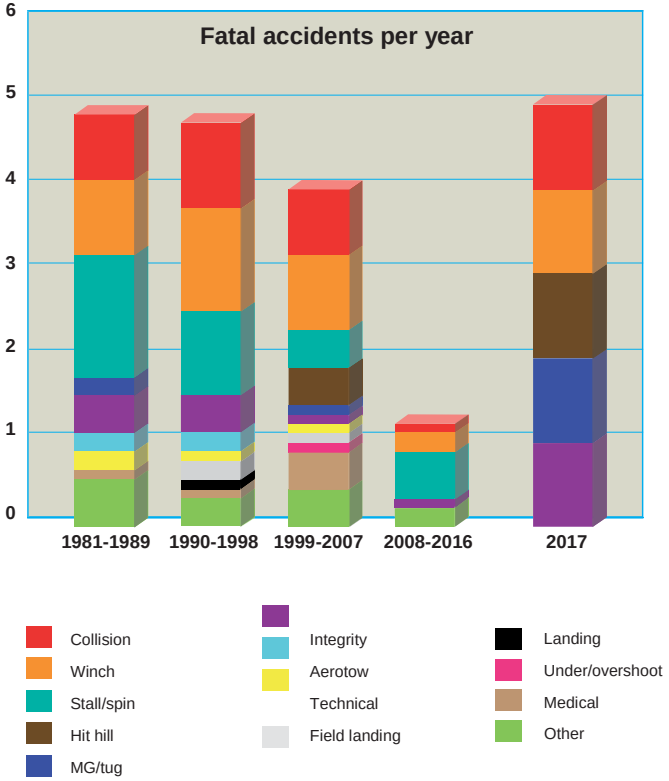
- Glider (fatality)/ C150 collision 5km from a gliding site.
- Winch launch failure under rotor, turn into intense sink, glider hit the ground in the turn.
- Aerotow, glider pitched up, back released, hit the ground vertically.
- TMG flight from non-gliding airfield with non-gliding instructor, unknown circumstances.
- Mountain flying accident in France.

The TMG accident is included because the aircraft was based at a gliding site

In the previous 9 years, from 2008-2016, there were 10 fatal accidents for an average of just over one per year. Before this, there were 4 or 5 fatal accidents per year.

Is the 5 fatal accidents in 2017 a reversion to the earlier high rate, or a freak statistical cluster? Time will tell.

Meanwhile, we can take the following measures which are outlined in the following pages, both individually and within clubs to minimise future fatalities.



Collision

Practice bailing out as recommended in the BGA leaflet, and required by participants in the European Gliding Championships held in the UK in 2017.

Fatalities from mid-air collisions have decreased in recent years, primarily because more pilots have parachuted successfully.

There are a number of points about parachuting that all glider pilots may want to consider.

1. Your decision to get out
If the glider is uncontrollable, it is likely the decision has been made for you.

If the glider has been hit in the tail, you may decide to get out even if the glider remains controllable in the immediate aftermath of the collision; the aerodynamic loads may cause a damaged tail to detach.

Wing main spars are very strong; if your wing is damaged and the glider remains controllable you may decide to stay with the glider and land.

2. Getting Out
Not easy from a stationary glider on the ground. It will be much more difficult if the glider is generating increased G.

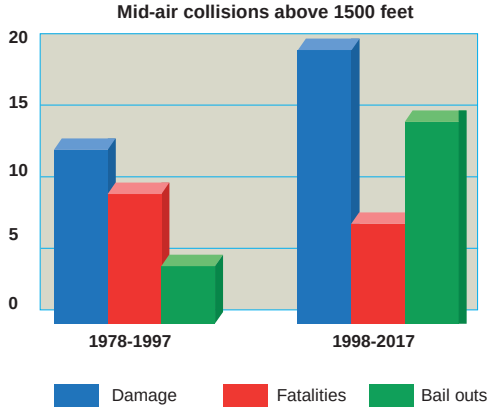
Do you know how to get out of this particular glider? Where is the canopy jettison control?

Which way does it move? Should you operate the normal canopy release at the same time as the emergency release or in any particular sequence?

Are you mentally prepared for taking the correct actions after a collision, on every flight?

Have you ever practiced getting out in an emergency, on the ground? If not, please practice. You need helpers to look after the canopy and a mattress alongside the cockpit.

How long did it take? Have one of your helpers time you. Practice and do it faster. In a real situation you may have to push the canopy clear.



Why might practice save your life? 19 collisions above 1500 feet since 1998 resulted in 7 fatalities and 14 successful parachute descents. Parachuting saves lives! Preparation is likely to increase your chances of parachuting successfully.

3. BGA Safety Leaflet
BGA guidance is available at
https://members.gliding.co.uk/library/safety-briefings/parachuting-after-a-mid-air-collision/

Winch launches

Follow the guidance in the new BGA booklet https://members.gliding.co.uk/library/safety-briefings/safe-winch-launching-booklet/ **and in the February 2017 poster which both add even stronger emphasis to the importance of landing ahead if it is safe to do so.**

Safe winch launching - land ahead if safe to do so

The instructors' manual and the safe winch launch leaflet/booklet teach:

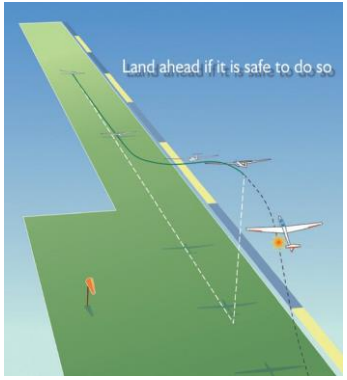
After power loss in mid-launch, adopt the recovery attitude, wait until the glider regains a safe approach speed and land ahead if it's safe to do so.

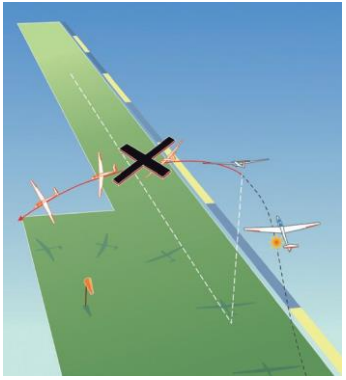
Why not turn? The BGA has been teaching 'do not turn' because:

• After a push-over the airspeed can be less than the attitude would suggest.

• Turning before the glider has accelerated to a safe speed after a launch failure can cause the glider to spin.

After commencing a turn, although the glider may have sufficient airspeed to avoid a stall and spin, no landing areas may be immediately available and this can expose the glider to *other* hazards which prevent a safe landing.





Sink is one such hazard, often associated with strong winds and wave. A glider making a 360° turn in still air at a bank angle of 35° and 50 knots typically descends by only 70 feet. But with 15ft/second sink the height loss in a 360° turn is over 400 feet. If the launch failure was at 300 feet the glider would crash before completing a 360° turn.

The existence of additional hazards from a turn adds force to the advice:

LAND AHEAD IF IT IS SAFE TO DO SO

If you are very experienced, you may sometimes be winch launching in challenging conditions. If you have a launch failure we would urge you to land ahead if it is safe to do so.

Inadvertent spin

These accidents occur predominantly to experienced pilots in circumstances of high workload and stress. The chance of an inadvertent spin can be reduced by anticipating high workload situations, knowing how you respond to stress, and taking mitigating action early

Avoiding an inadvertent spin

1 SPOT HIGH STRESS SITUATIONS BEFORE YOU'RE IN THEM

Difficult soaring

Marginal glide/low altitude

Fatigue

Poor visibility/turbulence/rotor

Airspace/ATC

Hunger/dehydration/full bladder

* Deteriorating conditions

* Pressing on

* Starting the engine

* Landing out

**Some may be foreseeable at the flight planning stage*

2 IDENTIFY HOW STRESS COULD EFFECT YOU

Speed control/handling

Reduced control sensitivity

Less ability to analyse

Glide computer more frustrating to programme

Decision making harder

Difficulty recognizing the inevitable

**Is your glider particularly sensitive to mishandling or misconfiguration?*

3 TAKE MITIGATING ACTION

Reduce distractions, set instruments

Stow articles. Eat/drink something

Fly faster? Manoeuvre more gently?

SPIN risk. Monitor speed, balance and attitude

Prepare mentally, expect hard decisions

Avoid a state of denial

Evaluate risks; beware field landings

AVIATE - NAVIGATE - COMMUNICATE

Preparation for flight

Follow the guidance in the BGA leaflet https://members.gliding.co.uk/library/safety-briefings/is-your-glider-fit-for-flight/ giving special attention to rigging in accordance with the flight manual and without interruption or distraction.

Rigging, D.I. and pre-flight checks

A recent BGA message advised:

• Pilot parachuted from the top of the winch launch.

• Glider on a trial lesson crashed in field shortly after aerotow take off.

• Wing flutter during test flight after major repair.

What did these accidents and incidents have in common? The glider was not properly prepared for flight. These events were a direct consequence of shortcomings in rigging, D.I., or pre-flight checks.

Accidents of this kind have continued with multiple instances of gliders being flown with an unconnected elevator, and one without the main pin when the wings stayed on during flight but fell off during landing.

Rigging and other errors and omissions in preparing a glider for flight are frequently caused by interruption, distraction, forgetfulness and making unwarranted assumptions. As a bystander, do not interrupt people who are rigging, carrying out a D.I., or conducting pre-flight checks. If you are engaged in these activities and someone speaks to you, send them away.

As an instructor or club official, try to develop a culture which makes everyone aware of the crucial importance of conscientious rigging, D.I.s and pre-flight checks.

Some glider types are particularly prone to control connection deficiencies. There are over 150 types on the BGA register but over half the unconnected elevators since 1974 have occurred to the ASW 19/20, Pegase, Pik 20B/D design configuration. 40% of the unconnected ailerons have occurred to the Kestrel and Libelle types. If you fly an ASW 19/20 or Pegase or Pik 20B/D give special attention to the elevator connection. If you fly a Kestrel or Libelle, beware unconnected ailerons.

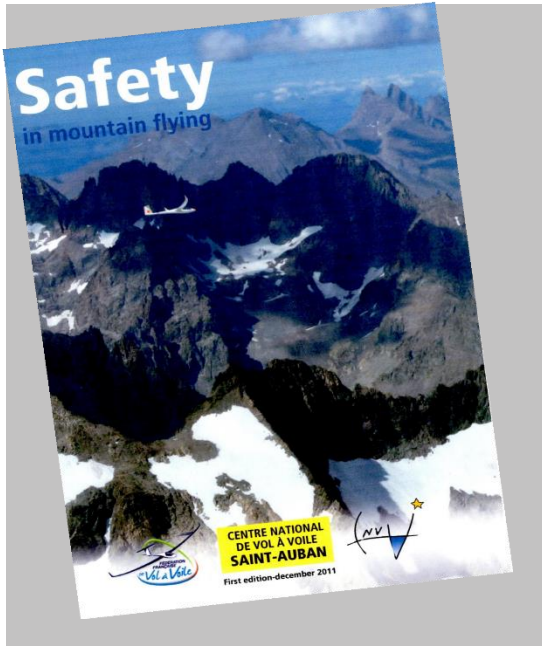
Whatever type you fly, please ensure your glider is correctly prepared for flight.

To avoid flying with an incompletely prepared glider:

- Rigging should be directed by a person experienced on the type, in accordance with the flight manual, without interruption or distraction.
- A newly rigged glider should always have a daily inspection (D.I.)
- The D.I. should be conducted by a person experienced on the type without interruption or distraction.
- The pilot should carry out proper pre-flight checks, again without interruption or distraction.

Accident Review 2017

Mountain flying

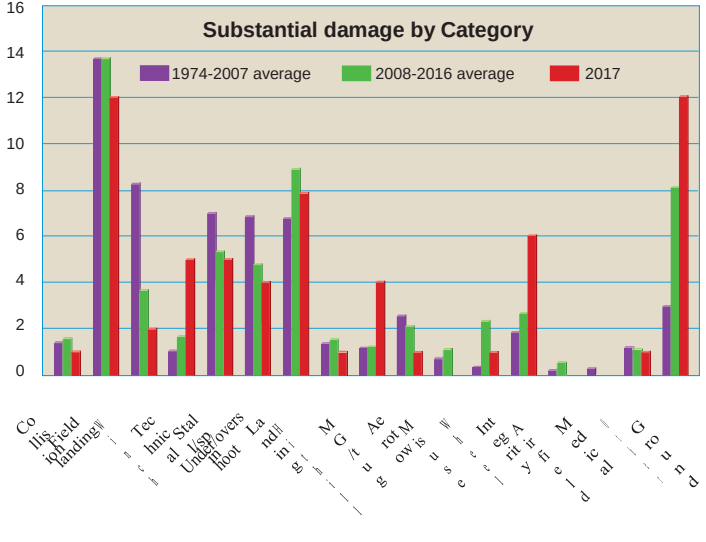


https://members.gliding.co.uk/library/safety-briefings/safety-in-mountain-flying/

Non-fatal accidents/incidents

There were 2 serious injury accidents in 2017, fewer than in recent years (5, 8, 4, 3, 5, from 2016 to 2012). One of the 2017 accidents resulted from a spin while ridge soaring. The other from the glider taking off with the airbrakes unlocked.

There were 63 substantial damage accidents in 2017, 54 minor damage, and 57 incidents. These substantial and minor damage totals are very similar to the corresponding totals in recent years. But incident reporting has shown a dramatic increase. 19 reports with no injury or damage were made in 2008, 23 in 2009, 37 in 2014. The total has been over 50 in the last 2 years. This is an encouraging trend.



Non-fatal accidents/incidents

Collision

None

Winch

There were fewer damage accidents in 2017 than the average for the previous 11 years of the safe winch launch initiative.

For the first time, there were no winch accidents involving a stall or spin. Well done everyone!

Four of the reports in 2017 involved a wing drop. No progress is being made towards eliminating wing drop accidents. Please ensure wing tip holders STOP THE LAUNCH if there is an up or down force at the tip.

A new edition of the safe winch booklet was published in October 2017 (https://members.gliding.co.uk/library/safety-briefings/safe-winch-launching-booklet/). Hard copies are available from the BGA office. The guidance is the same except for even more emphasis on landing ahead if it is safe to do so.

	S	SD	MD	All
2017		1	2	9

S = serious injury SD = substantial damage MD = minor damage

Stall/spin (not associated with winch launches)

The serious injury was from a spin while ridge soaring. The other four substantial damage accidents were pulling up over a wire while field landing, a wing drop in turbulence while field landing in the lee of a ridge, a stall on the approach to a field after a failed final glide, and a stall and undershoot on the approach to the home airfield.

	S	SD	MD	All
2017	1	5	0	6

Technical

An aircraft component broke or did not work as intended. There were 13 accidents and incidents of this kind in 2017. A fuselage boom broke in flight at the site of a previous repair. A fuselage was extensively damaged by a battery fire. The AAIB are investigating.

Two gliders were unable to release a winch cable, one due to wear, and the other from non-standard rings in the Tost hook. There were 7 failures of components for reasons that included metal fatigue and corrosion. A tug had a live magneto.

	S	SD	MD	All
2017		5	4	13

Non-fatal accidents/incidents

Field landing (excluding those involving stall/spin)

Field landing damage totals in 2017 were very similar to those in the previous 5 years.

The 12 substantial damage accidents were:

- Groundloop in heather after finding sink in a bowl
- Overshooting field, circled, wing clipped hedge
- Hit tree on approach to field in rain
- Landing downwind, overshoot, hit far fence trying to hop over, ducked under barbed wire
- Silver attempt, groundloop landing downwind
- Field selection constrained by crop and livestock, groundloop
- Bounce after encountering drainage ditch
- Lost on local flight, groundloop landing across slope
- European competition, tried to start engine at 300ft, hurried landing, cartwheel
- Overshot into far hedge
- Overshot, landed in crop in next field
- Rain, P2 warned P1 about cables which P1 could not see, P1 turned, heavy impact

	S	SD	MD	All
2017		12	8	20

Undershoot/Overshoot/Landing

In 2017 there were 8 substantial damage landing accidents and 4 substantial damage undershoot accidents on the home airfield. Accidents from the approach and landing have accounted for 600 of 2600 substantial damage since 1974.

	S	SD	MD	All
2017		12	12	26

Glider Integrity

In 2017 there were three instances of rigging errors, an insecure tailplane, an airbrake that opened at the top of the launch, and an aileron coupling that came undone during a winch launch. The airbrakes opened in flight with the pilot unaware on 5 occasions. One flight was on a trial lesson. A tug wagged its rudder whereupon the glider pilot released and landed in a field. In another instance with trees ahead the tug dumped the glider and the glider pilot was seriously injured.

4 canopies opened in flight. Two of these hit the tail. 3 flights were made with loose batteries or ballast weights, in one case substantially impeding the aileron. A glider was launched with a tail dolly attached.

SHORTCOMINGS IN PREPARING A GLIDER FOR FLIGHT CAN BE LETHAL AND ARE COMPLETELY AVOIDABLE.

	S	SD	MD	All
2017	1	5	2	19

Non-fatal accidents/incidents

Aerotow

There were 3 tug upsets. In one of them the glider airbrakes were open, both pilots released, and the tug just avoided trees during his pull out. In another the glider pilot had been looking at an instrument on the cockpit floor.

An out of position glider broke the weak link, the rope struck the canopy and then fell over the wing. In another instance of being out of position the rings hit the canopy and then the tail.

A glider pilot concerned about climb performance released and groundlooped. There was a wing drop on one flight and a PIO on another. On a frosty day the glider and tug canopies both misted shortly after take-off. A tug engine failure was followed by both aircraft safely landing.

	S	SD	MD	All
2017		1	2	12

TMG/tug

Two tug ropes hit parked gliders. A tug engine failure at 300ft was followed by a safe field landing. An engine cylinder cracked while towing. An aerotow was aborted, a tug brake was on. An aerotowing tug tipped on its nose during the initial acceleration. A TMG was safely landed in a field after engine failure. A TMG propeller hit a cable lying on the ground.

	S	SD	MD	All
2017		3	3	8

Accidents are only placed in this group if they do not fit into the other categories of stall/spin, landing, etc

Other flying

Two gliders hill soaring missed each other by 40m. A pilot in a 2-seater opened the canopy, intending to operate the vent. He held on to the canopy until the glider landed. A member crossing the landing area threw himself to the ground to avoid an approaching glider. A buggy being driven across the landing area caused an evading glider to make a stalled arrival.

	S	SD	MD	All
2017		1		8

Accident Review 2017

Non-fatal accidents/incidents

Ground

12 of the 28 incidents resulted in substantial damage. 10 gliders were damaged while being towed by a car. In one case the airbrakes had been opened and heat from the wheelbrake caused fire to engulf the glider. In another case a tail dolly with only one of the three clips remaining broke in use. A tug propeller hit the tow bar while taxiing. A winch cable was pulled into a glider. 5 gliders were damaged by wind, some during (de) rigging. A member was hit on the head walking under a wing. A glider fuselage came off the belly dolly during an engine run. Two cars ran over wingtips. Grass caught fire in the wheel spat of a taxiing tug. During his checks a pilot retracted the wheel intending to set the flaps. A tractor driver caught a tug rope causing damage to the tug.

	S	SD	MD	All
2017		12	11	28

Wheel up landing

Wheel up landings rarely cause injury but can be expensive.

	S	SD	MD	All
2017		1	10	19

Safe trial lesson/introductory flights

The 7 incidents in 2017 included a very low turn to land, an airbrake in a newly rigged glider opened at the top of the winch launch, and in two instances unlocked airbrakes opened in flight, one of which led to a field landing from 400ft.

We must make 2018 safer! Please ensure everyone in your club follows the guidelines in section 7 of Managing Flying Risk Available at https://members.gliding.co.uk/library/bga-requirements-guidance/managing-flying-risk-guidance/ **and in hard copy**

Towards fewer accidents

The main sources of serious accidents have not changed. Means of avoiding these accidents are summarised below:

Accident	Principal cause	Actions to avoid
Winch	Stall/spin, cartwheel	Follow guidance in Safe Winch Launching booklet
Stall/spin	Overload, distraction	Fly the glider!! Take action to mitigate potential overload
Collision	Poor lookout	Maintain good lookout, fit and use Flarm
Integrity	Rigging incomplete	If interruption/distraction, start again
Tug upset	Poor technique	Training
Landing	Poor technique	Training
Field	Field picked late	Pick a field early

BRITISH GLIDING ASSOCIATION

Allianz

Allianz Global Corporate & Specialty SE
www.agcs.allianz.com

hill aviation insurance services ltd

Phone: 01765 690777 Fax: 01765 690544
www.hillaviation.com

British Gliding Association, 8 Merus Court, Meridian Business Park, Leicester. LE19 1RJ
Telephone: 0116 289 2956
Email: safetyinitiative@gliding.co.uk
Web: www.glidng.co.uk
©British Gliding Association 2018