A Parachute Quiz

by Betty Pfeiffer

Hang gliding parachutes have proven to be very successful in preventing injuries and deaths thus making the sport much safer. Even though the safety record of parachutes is very good a pilot should not rely on one to save his/her life. This means that you should not take unnecessary risks while flying just because you are "armed" with a parachute.

Aerobatics, the number one cause for parachute deployments; flying too close to other pilots (the more turbulent the air the greater the separation needs to be); flying in extreme turbulence; flying when you are exhausted and your decision making processes are impaired; flying in clouds and flying too high without supplementary oxygen are just some of the circumstances that can and should be avoided.

The following questions are designed to test your basic knowledge about hang gliding parachutes. In the interest of your safety take time to carefully consider each judgment call. Discuss the options with other pilots. It is far better to be prepared in your mind to cope with any emergency situation than to just *deal with it if it happens*. You need to know your options before your feet ever leave the ground.

1. When should you carry a parachute?

2. How do you "pre-flight" a hang gliding parachute?

3. Where would you normally expect the first signs of wear on your bridle?

4. Many pilots fly with a steel shackle attaching the parachute bridle to the mains on their harness. Why?

5. What are the correct steps to deploy your hand thrown hang gliding parachute?

6. Is there any time you should not pull your hang gliding parachute back into you if it has not opened?

7. What do you do if you have deployed your parachute but it is not opening?

8. How do you "practice deploying" your parachute every flight?

9. What should you do once your canopy is open?

10. Under what circumstances would you consider deploying your parachute?

11. Should you throw your parachute if you tumble your hang glider?

12. What emergency equipment can pilots carry besides their parachutes?

13. What are some additional uses for your hang gliding parachute?

14. How often should you have your hang gliding parachute inspected or repacked?

15. What is the best way to practice deploying your hand thrown hang gliding parachute?

16. When would you use a hook knife?

17. If the glider is spinning and you can throw your chute any direction, which way do you throw?

18. If you have your parachute repacked by a FAA certified rigger why do you need the packing instructions? They should know how to pack.

19. Parachutes are built primarily out of nylon. What is the biggest enemy of nylon?

20. What should you do if your parachute gets wet with salt water?

21. After a repack your parachute may seem bigger. What can you do to get it back down to normal size?

22. What is the "knee test"... when should it be performed?

23. Is it safe to replace your nylon lines with smaller spectra or kevlar lines?

24. Can hang gliding parachutes withstand terminal velocity deployments?

25. How does a conventional hand-deployed chute open?

26. How does a ballistic or air deployed parachute open?

27. What are the most common malfunctions?

28. What are the pro's and con's of using a larger parachute?

29. What are the pro's and cons of using a smaller chute?

30. If you count the number of lines on your parachute what does that tell you?

31. What does a swivel do?

32. How can you be absolutely sure that your parachute will work?

33. What do you do if your canopy lands with you hanging from high power lines?

34. What should you do with an old parachute?

35. What should your bridle minimum length be?

36. What is "mental imaging" and why is it important in hang gliding parachute safety?

Answers

1. When should you carry a parachute?
Every time you fly. How far do you want to fall?

2. ... "pre-flight" a HG chute:
Make sure:
* Safety locks are properly positioned through the bungee or rubber loop
* Velcro is securely fastened
* Your deployment handle is readily accessible.
* The bridle routing along your harness has no twists or excessive length.
* The bridle is on the back of the 'biner opposite the gate.
* There are no signs of wear on the outside parachute container or bridle.

3. ... first signs of wear on your bridle:
* At the loop by the carabiner.
* Any place the bridle comes in contact with Velcro hook.
* Any place rubbing occurs

4. Why a steel shackle?
To remained attached to the parachute in the event of a carabiner failure.

5. ... deployment steps:
1. Look for the handle.
2. Grab the handle
3. Pull the parachute out of the container on your harness
4. Throw the parachute into a clear area if possible. Do not "wind-up" before you throw or you may end up having thrown your parachute in the wrong direction. Do not waste too much time trying to find a clear area, there may not be one. Throw it hard as if your life depends on it, because it very well may.
5. Pull in on the bridle vigorously. If it has not inflated try to yank the 'chute back in and repeat steps 4&5. You may be able to re-deploy an unsuccessful attempt in this way.

6. When should you not pull back in?
One such situation might be if your parachute is below you and you are falling into the canopy. In this case the best you can do is to continue yanking on the bridle in an effort to dislodge it into clear air.

7. Deployed chute is not opening?
* Yank vigorously on the bridle to help facilitate opening the parachute.
* Pull the canopy back in and throw it again.
* If you are close to impact, position your body with your feet down in a manner that would allow the glider to absorb as much of the impact as possible. Bend your knees slightly and tense your leg muscles.

8. Practice deploying:
* Look for your parachute handle and grab it.
* Practice using each hand to grab the handle.
* DO NOT DEPLOY IN FLIGHT JUST FOR FUN OR PRACTICE.

9. Once canopy is open:
* Climb into the control bar (if there is one left) with your feet on the base tube.
* Try to steer the glider into the wind and flare for a softer landing.
* Position your body to let the hang glider take as much of the impact as possible.
* No matter what position the glider is in, try to land with your legs downward.
* Before landing, bend your knees slightly and stiffen the muscles in your legs to help absorb the shock.
* If it is windy be prepared to be dragged.
* Have your hook knife readily accessible to cut away from the parachute and glider as quickly as possible.

10. When should you consider deploying?
* Structural failure
* Mid-air collisions
* Loss of control due to turbulence close to the ground
* Inverted flight conditions
* Any time you cannot regain control of your glider.
* Anytime you become physically impaired during flight.

11. If you tumble your hang glider?
This is a real judgment call. Your first consideration should be your altitude. Often as a hang glider tumbles, the tumbles become more severe. The glider may start to break by the force of your body being thrown against it. You may become injured. All these factors could reduce your chances to achieve a successful deployment. On the other hand, there have been many cases in which the hang glider rights itself after a tumble and the pilot flies it safely down.

12. Other emergency equipment:
* Radio * Flares * Whistle * Signal mirror
* Water * Compass * First Aid Kit
* Smoke or streamers for wind direction indicators
* Dental floss (hoist a rope up if you land in a high place)

13. Additional uses for your hang gliding parachute:
* Climbing out of a tree using the chute as an escape rope.
* Wrapping up in your parachute in extreme cold.
* Spreading it out to help drivers or pilot spot you in remote outlanding areas.

14. How often inspect or repack?
* At least every 6 months.
* Every time it gets wet or is exposed to extreme heat or humidity.
* Any time you expect damage from belly landings, acids or dirt.
* Rubber bands should be inspected every time you have left your harness in a hot place: i.e. the trunk of your car on a hot day or once a month, whichever comes first.

15. Practice deploying your chute!
Hang a control bar from that is suspended from the ceiling and have your friends twirl you violently as you practice throwing your parachute. Be sure to wear a helmet. This should be done prior to every repack.

16. Hook knife:
* If you land under parachute in windy conditions.
* If you are going to land in water.
* Any time you need to free yourself or someone else from the hang glider or harness.

17. Which way to throw?
Always try to throw <u>into</u> the spin in order to avoid wrapping up the bridle in the wreckage.

18. Why do you need the packing instructions?.
Many certified parachute riggers are not familiar with hang gliding reserves. Although they do quite well in inspecting the construction and material, each deployment bag has its own recommended manner of packing. Any deviation from that method may interfere with a successful deployment. Any work on your parachute should be done to FAA parachute standards. *The Parachute Manual* by Daniel Poynter provides a valuable reference for repairs.

19. Biggest enemy of nylon:
Ultra violet rays

20. If chute gets wet with salt water:
Rinse it thoroughly in clean water, dry it out of the sun.

21. Get it back down to normal size:
Sit on it and rock from side to side in order to push out the trapped air.

22. What is the knee test?
Each time you put your parachute into your harness you should do a knee test to assure that your parachute is not going to pop out of the harness in flight.
To do it:
1. Place your knees on the back of the chute container (inside the harness where your body would normally lie).
2. Hold the harness where the sides of your body would normally fit.
3. Pull the sides of the harness towards you while you push against the parachute with your knees in a manner that simulates your body weight.

23. Spectra or kevlar lines?
Maybe. You should consult the original manufacturer before modifying your parachute in any way.

24. Terminal velocity deployments?
Consider a pilot weighting 170 pounds deploying without a hang glider at 170 to 180 feet per second, and the parachute is constructed using current manufacturing techniques with nylon lines and bridle, it will *probably* work. Spectra or Kevlar lines and a low-stretch bridle theoretically can double the load on the chute and increase the risk of failure.

25. Opening sequence, hand deployed:
Full bridle extension is followed by full line extension and finally full canopy extension. As air fills the canopy the parachute will expand from the apex down.

26. Opening sequence, ballistically deployed:
Full canopy extension is followed by full line extension and then full bridle extension.

27. Most common malfunctions:
* Parachute streamer due to lack of speed needed to inflate the canopy.
* Entanglement in glider wreckage.

28. Pro's and con's of using a larger parachute:
Pros: Softer landing, softer opening.
Cons: More weight and bulk, slower opening.

29. Pro's and cons of using a smaller chute:
Pros: Less weight and bulk, quicker opening
Cons: Harder openings and faster landings

30. What does the number of lines tell you?
It will tell you the number of gores in your canopy. It does not tell you about the performance of your canopy.

31. Swivel:
It can keep the lines and bridle from twisting and thus causing the parachute to close. It should be attached close to the bridle/line junction.

32. Are you absolutely sure it'll work?
You can't be. Reduce the risk of malfunction by properly maintaining your chute, flying safely within the glider manufacturer's recommended limitations, and being mentally prepared to deal with any situation you can imagine.

33. Hanging from high power lines?
Do not touch anything! Wait for help to arrive. Instruct help to have the power company turn off voltage immediately. Do not let anyone on the ground touch you or your glider.

34. Got an old chute?
If it has been thoroughly inspected and approved by qualified personnel you can consider selling it, otherwise it is best used as a car cover.

35. Bridle minimum length:
As long to go from the carabiner down the control bar uprights and clear the wing of your particular glider.

36. Mental imaging:
Mental imaging is visualizing yourself in situations. Rehearsing emergency procedures in your mind is important in allowing you a time advantage when having to make quick decisions. You should think out every possible emergency situation you may encounter while flying your hang glider or deploying your parachute, and have a plan of attack ready. In addition you should think out your alternate plan if the first one does not work.

The following brief examples are just a few situations you should have thought out. They are actual true life situations Add as many other possibilities you can think of.

• It is smooth ridge lift when you are involved in a mid-air collision 150 feet over the ridge. Your hang glider is tangled with the other hang glider.

• You are 500′ AGL when your hang glider hits severe turbulence and tumbles. The control bar is ripped out of your hands.

• You have deployed your parachute and are drifting straight towards high tension power lines.

• You have been sucked up into a cloud. Conditions are very turbulent. You are not sure if cloudbase is below the mountains.

• Your glider is in a severe spin. You seem to be descending pretty slowly according to your instruments.

• You have just completed your first loop and the momentum has carried you into a second loop. You were not prepared for the second loop, stall the hang glider and begin to tumble. After the first tumble you are at 2500 feet.

The answers provided here are not absolute. Each situation requires a judgment call by the pilot. It is my hope that this article will stimulate discussion of a topic many hang glider pilots would rather ignore. Hang gliding is a tremendously rewarding sport but it also has risks. You can minimize those risks by flying safely, attending parachute seminars, practice deploying your parachute while hanging from a control bar suspended from a tree or the ceiling and being mentally prepared to handle emergency situations.

Betty Pfeiffer
High Energy Sports