PRACTICE - PRACTICE - PRACTICE
(EMERGENCY BAILOUT PROCEDURES)

Part I

Would you like to reduce your egress time by 50% or more? All you have to do is practice your emergency egress procedures before and after each flight. It's a simple concept yet very few pilots do this. After all, accidents only happen to someone else, right? Over the past few years I've run clinics at conventions, flying group meetings and FBOs teaching pilots and instructors how to egress their aircraft in case of an emergency. It soon became apparent that by teaching pilots to practice these procedures *before* and *after* each flight, the time needed to egress an aircraft was drastically reduced.

WHY PRACTICING WORKS
If you have no game plan, the thought process during an emergency is a four-step, panic-filled process that goes something like this:

Step #1 *Recognize The Problem.*
Also known as the "Oh Sh**!" step. When a major problem occurs, your brain will take a second or two to realize that your left wing has left the airplane!

Step #2 *What Do I Do?*
I need to bail out. Should I jettison the canopy first, or am I supposed to unfasten my seatbelt?

Step #3 *How Do I Do It?*
Where is that canopy release lever? Do I push it or pull it?

Finally, you arrive at **Step #4** *Actually Doing Whatever You Figured Out In Steps #2 and #3* … and hope you have enough altitude left to do it!

Any hesitation in these steps starts to add up. By practicing before and after each flight, **Steps 1, 2, & 3** can be eliminated (well, I suppose you'll never really eliminate the "Oh Sh**!" step, but at least you can keep it to a minimum) and **Step 4** can be accomplished more quickly. You'll be reacting because you've developed a habit of practicing egress procedures over and over.

Practicing is a process, not a one-time event. When you first learned to fly, your instructor didn't show you how to make one landing and then said, "Great! That's over with!" You had to spend hours in the pattern to get good at it. Even now, you continue to practice maneuvers you've done over and over to make sure you don't lose your edge. Preparing for an emergency is no different. We are creatures of habit and repetition is the key to reacting quickly and decisively. Nothing but practice, practice and more practice will achieve this goal. The results will save you precious time and altitude which, in a real emergency, could mean the difference between making it home to view another sunset or not.

STRATEGIZE WHILE YOU'RE ON THE GROUND
Start by looking at the aircraft you are going to fly and establish a plan of egress. There are certain actions you must take in any aircraft and you must do them in the correct order. I have a catchy phrase to help you remember: "CANOPY – BELTS – BUTT." If you fly an open cockpit airplane, you

can skip the canopy part. But if you have a canopy (or door) it is extremely important that you jettison this **before** unfastening your seatbelts. We've seen placards on some popular aircraft that suggest loosening belts first. Don't do this! Your belts are the only thing holding you in the aircraft. If you're tumbling out of control and unfasten your belts before jettisoning the canopy, you may be ejected through it or pinned in a position where you can't reach the release mechanism. Neither situation is desirable. Unless you absolutely cannot reach the release handle with your belts on, always jettison the CANOPY first, then release your BELTS, then get your BUTT out of the airplane.

If you're flying someone else's aircraft, or a rental, become familiar with and discuss their emergency procedures before your flight. Some possible questions to ask are:

Does the canopy or door jettison?
If your door or canopy has a separate mechanism to jettison it during an emergency, learn how to operate it. Also, make sure this mechanism actually works!

If the canopy slides back, does it lock in place?
If not, it could slam forward on your hand and fingers. A possible solution would be placing an elbow on the track.

Does your canopy swing open to the side?
If it does, maybe a shoulder against it will help prevent it from slamming back shut on you during a bail out. Aerodynamics can play strange tricks when an aircraft is plummeting out of control. Don't assume the canopy will just rip off in the slipstream.

Also, think about how you would actually claw and crawl your way out of the airplane. In an emergency, you're not worried about where you step or what you might break on the way out. Bailing out is quite different from the way you normally get out of your airplane (unless you routinely dive out head first onto the ramp!) and will probably be difficult if the aircraft is tumbling out of control and pulling positive G's. In general, it's best to try and dive out over the side head first. This minimizes the chance of hitting your head on the tail. But the important thing is to get out any way you can and as quickly as possible.

There are many other things to consider, but I'm trying to get you thinking about the various scenarios that might occur. Work out a possible solution from the comfort of your hangar, while you're still on the ground. Remember Murphy's Law: whatever can go wrong, will…and at the most inopportune time!

What's the only thing worse than not being able to get out of a disabled aircraft? Find out in segment two of this three-part series. In the meantime: practice, practice, practice! If you have questions please feel free to call (510) 785-7070 Mon. – Thurs. or email me at Allen@SilverParachutes.com. Visit my website at www.SilverParachutes.com for additional information.

PRACTICE – PRACTICE – PRACTICE
(DEPLOYING & STEERING YOUR PARACHUTE)

Part II

When we left off, you managed to successfully escape your disabled aircraft. Unless you bail out on a regular basis, these next two segments in our three-part series will involve mostly mental practice and visualization. But it is valuable practice time that can save your life.

DON'T FALL OUT OF YOUR PARACHUTE

All the practice in the world won't help if your parachute doesn't fit properly. It's rather embarrassing to be tumbling in freefall after a successful egress and notice a parachute just like yours floating a few feet away! You can fall out of an improperly adjusted harness. This has happened in the past and it's so easy to remedy. Your parachute rigger will be able to help you. A properly adjusted harness will place the 3-bar adjuster slides (if your chute has them) just below your collar bone (see Figures 1 & 2).

Figure 1.

Figure 2.

GRAB THE RIGHT PARTS

Now that your parachute is adjusted properly, let's make sure you can easily identify the ripcord from all those other shiny pieces of metal. You or your parachute rigger should put a piece of brightly colored tape on your ripcord handle. This will help you to see and quickly identify the handle, saving precious time. You should always try to pull the ripcord with both hands (Fig. 3), but what if one is injured? Think about and practice how you would pull the ripcord if one arm is injured. I teach the methods shown in Figures 4 and 5 on the next page.

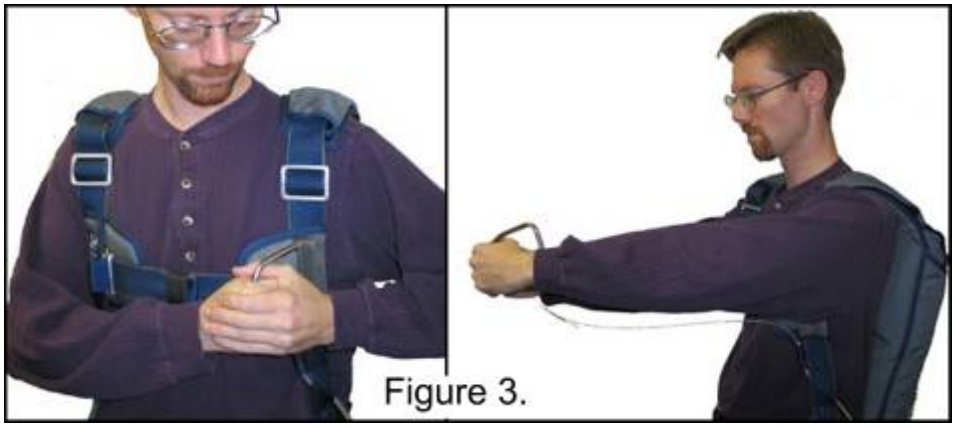


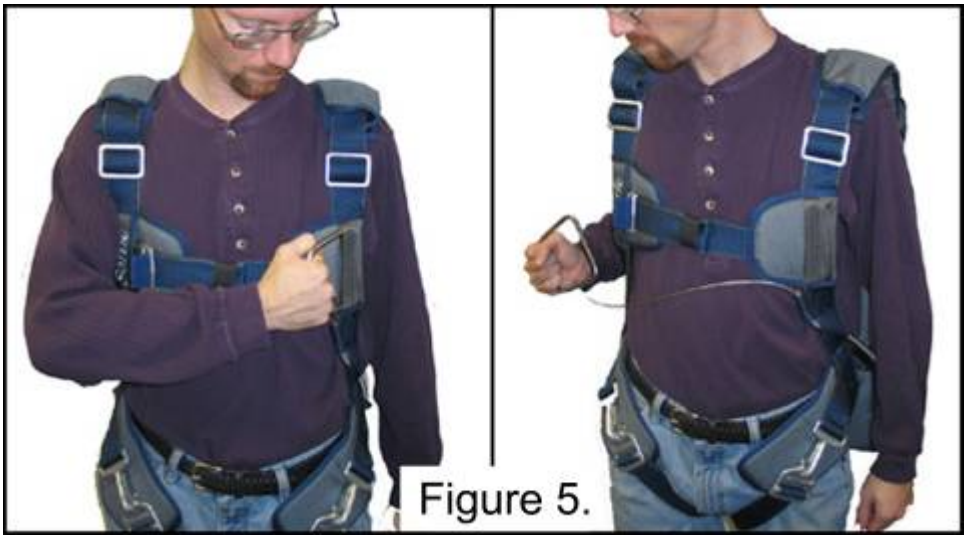
Figure 3.

Two-Handed Pull (the preferred method): grasp ripcord with right hand, place left hand on top and hook left thumb in ripcord. Pull straight out – hard!

Before every flight, take a moment and visualize jettisoning your CANOPY, unfastening your BELTS,and getting your BUTT out of the aircraft. Look at the ripcord, grab it with both hands and simulate pulling it. Grab it with only your left hand and simulate pulling it. Grab it with only your right hand and simulate pulling. Go through this process once again at the end of your flight after you shutdown. Practicing before and after each flight only takes a few seconds and you'll be conditioning yourself to react in a real emergency.

If right arm is injured, grasp ripcord with left hand and hook thumb inside ripcord (just like in the two-handed pull). Pull straight out from your body.

YOU'RE NOT ON THE GROUND YET



This is the hardest way to pull the ripcord. If left arm is injured, grasp ripcord with right hand and pull across your body like you're elbowing someone behind you.

Opening your parachute is, of course, the most important part of any successful bailout. But there are still many steps you can take to increase your chance of survival and minimize injuries. Don't go through all the effort of scrambling out of your doomed aircraft and successfully opening your parachute only to land downwind in 20 knot winds, or create a fireworks show in some power lines. Floating back to earth under an open parachute certainly beats trying to grow feathers on the way down, but if you just drift at the mercy of the wind, you can still be seriously injured on landing. Steering your parachute to avoid life-threatening obstacles and to face into the wind for landing gives you the best chance to avoid, or at least minimize, injuries on landing.

GET A GRIP

Steering your parachute is easy if you have steering handles. They are typically a loop of gold or red webbing attached to a steering line that goes up to one of the rear vents on the parachute canopy (See Figure 6 on the next page). By pulling one of these handles, the corresponding vent is partially closed and the parachute turns.

Not all parachutes have steering handles. The manufacturer may rely on you to remember which riser to pull down on. The risers are those pieces of 1 ¾" wide webbing that the connector links and

lines are attached to. Pulling down on one of the **rear** risers has the same effect of closing a rear vent, although it is slightly harder than pulling on just one steering line. There can be four risers above your head and pulling on the wrong one can make steering more difficult. It can also increase your rate of descent and, in extreme cases, collapse your parachute. At the very least, your parachute rigger can sew handles directly onto the rear risers to make them easier to identify and hang onto. Installing steering handles and making sure you know what they look like and where they are located will help lessen the stress during an actual emergency. Why not stack the deck in your favor ahead of time?


Figure 6.

PARACHUTE STEERING 101

After your parachute is open, take a hold of the steering handles or rear risers and do not turn them loose until you have landed. To keep the handles from blowing around in the wind, they are typically tacked in place with thread that is easily broken when you pull on them. If the steering system is properly rigged, you should only need about 10 pounds of force to pull the handles and steer.

Up high, you can pull one of the steering handles or risers down as far as you want. You won't collapse the chute; it just turns faster. Remember to pull down only one handle or rear riser at a time. Pull the right handle or riser to turn right and the left to turn left. When that turn is completed, all you have to do is ease the pressure off the steering handle or riser and allow it to return to its original or neutral position. When landing an aircraft, you make smaller corrections as you get closer to touchdown. The same applies to steering your parachute. Try to make only minor inputs when low to the ground as this will reduce the oscillations (swinging) and help you land softer. The only exception is if you recognize a life-threatening obstacle, like power lines, at the last moment. You **must** miss these even if it means making a low turn or landing downwind. It does you no good to face into the wind and land softly in the power lines.

Remember that arm that was injured during the bailout? It hasn't healed yet, so think about how you would steer with only one hand. Be creative. If you can't make a 90 degree right turn because your right arm is injured, try making a 270 degree left turn instead. Two wrongs don't make a right, but three lefts do!

There is still a critical, potentially life-threatening hurdle in the bailout process. Find out how to overcome it in the final segment of our three-part series. If you have questions please feel free to call (510) 785-7070 Mon. – Thurs. or email me at Allen@SilverParachutes.com. Visit my website at www.SilverParachutes.com for additional information.

PRACTICE – PRACTICE – PRACTICE
(LANDING YOUR PARACHUTE & GETTING BACK HOME!)

Part III

APPLES & ORANGES

The majority of pilots wear emergency parachutes with round canopies and you must not confuse these with the rectangular, ram-air canopies used by skydivers. They are apples and oranges. Everyone has seen skydivers in the movies, at a local drop zone, or at an airshow. Maybe you've even made a jump. You may have noticed or were taught that rectangular, ram-air parachutes are flared for landing by pulling both steering handles down at the same time a few feet before landing, much like flaring an airplane. These "apples" are actually non-rigid airfoils. Your round "orange" is an umbrella, not a wing. If you try to flare a round parachute, you will, at best, increase your decent rate, and at worst, partially collapse the canopy. A partially collapsed canopy will reinflate in about 20 feet. This is not good if you are 18 feet above the ground! More on landings later.

WHERE WILL YOU LAND?

Most steerable, round parachutes are designed to have about a 5 mph forward speed. Air flowing up into the canopy is forced out the vents in the rear. Kind of like a jet engine but without all the noise. This dampens oscillations and makes the parachute steerable. The 5mph forward speed created by the vents cannot be stopped. Pretend the gas peddle is stuck at 5mph. With this knowledge and the diagram in Figure 7 you can get a rough idea of where you're drifting. If there is no wind, then you'll be going 5mph in any direction you are facing. If you don't like what's in front of you, turn and head in a new direction at 5mph.

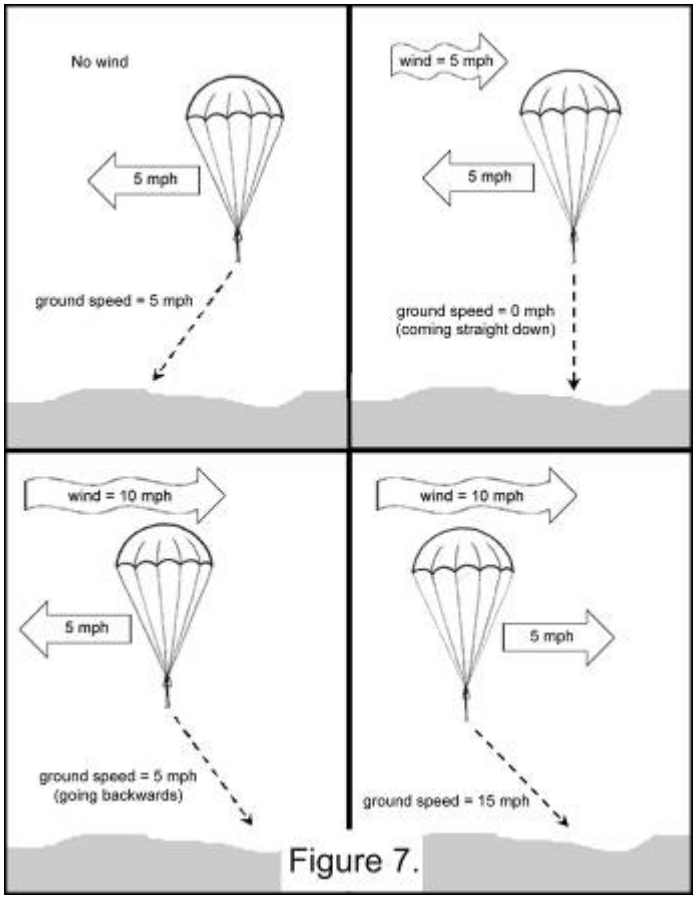


Figure 7.

In the unlikely event that the wind is blowing at exactly 5mph, you'll be coming straight down if you face into the wind. Look below you and decide if this is where you want to land. If you see something that you would not like to land on (like those ever-present power lines) and have plenty of altitude, just turn your parachute180 degrees and head downwind at 10mph. Once you are downwind of the obstacle, turn back into the wind. You won't make it back to that obstacle unless the wind dies down and you have enough altitude.

TIP: Steer away from roads. Besides the obvious danger of getting hit by a car (a real bummer after just surviving a heroic bailout!), power lines usually run alongside roads and can be hard to see until it's too late.

In our final scenario the wind is blowing at 10 mph (or any speed faster than the 5 mph forward speed of your parachute). Facing into the wind will have you drifting backwards, but it's better to land going backwards at 5 mph instead of facing forward going 15mph. Just remember to glance over your shoulder on the way down to see what obstacles you might be heading towards.

ON THE GLIDESLOPE
For a parachute to be certified, it must have a decent rate of no more than 24 feet per second. Decent rate is affected by your weight and also the model of parachute you choose, but for the average person, 16 feet per second is a good number to work with. Couple that with the 5 mph forward speed and you're looking at a glideslope of about 45 – 60 degrees. Of course, this will vary with the wind and other factors, but we're not concerned about doing trigonometry during a bailout. We're dealing with a rule of thumb that will help save your life. If you look down (or behind you, depending on which way you are drifting) about 45 – 60 degrees, that will give you a good approximation of where your touchdown area is going to be. If you don't like what's there, turn and go somewhere else (if altitude permits). Just remember, miss obstacles first, then face into the wind.

K.I.S.S. THE GROUND
Hopefully, you won't be bailing out on a regular basis, so I use the KISS method (**K**eep **I**t **S**imple **S**tupid) when teaching landings. If you've had any military training, you might be familiar with the "parachute landing fall" or PLF. During a bailout, you're not trying to be a paratrooper so don't worry about it. Landing under a modern emergency parachute is about the same as jumping off of something 3 – 5 feet high. You could do that without any special training, right? Landing your parachute is no different.

It is usually more comfortable to hang in a parachute harness with your legs slightly out in front of you. Just make sure to get them under you before you land so you don't hit your tailbone. Keep your feet together to help brace your ankles, and don't lock your knees. Land on the balls of your feet and try to take up most of the landing shock using your leg muscles like the springs of shock absorbers, bending them enough to cushion and slow your landing. You might get pulled over by the parachute or you might fall over if you're drifting across the ground, but if you absorb most of the landing with your feet and legs, you are less likely to receive severe upper body injuries, especially to your head. Practice jumping off something 3 – 5 feet high and you'll get the idea.

IT'S NOT OVER YET
Once on the ground, you must get out of the parachute harness as quickly as possible to avoid being dragged in strong winds. Get out of your parachute harness even if there is no wind just in case a gust suddenly comes up. It only takes about 5 – 6 mph to drag a light person. Being dragged over rough terrain in strong winds can be deadly in a short distance.

Practice getting out of your harness. If your harness has a chest strap, get in the habit of removing that first. If you're being dragged and you unfasten the leg straps first, the harness could strip off of you and the chest strap could choke you. Some harnesses are more difficult to get out of than others. If this is the case, you might need to collapse the parachute by reaching up and grabbing no more than two lines that are side-by-side and reel them in hand-over-hand until you get the parachute under control. If you are injured, this may not be an option either (remember the broken arm from earlier?). You might consider a hook knife. I make a "S.M.A.K. PAK" survival kit that attaches directly to your parachute harness. It has a hook knife on the outside of the kit within easy reach. With one hand, you can use a hook knife to quickly cut off a riser to collapse your parachute. Once out of your harness, spread out your parachute so someone can find you. Use your signal mirror, whistle or whatever survival equipment you have to summon help. If you have your cell phone with you, maybe it will work. If it does, call for help and maybe call your favorite pizza place that guarantees delivery in 30 minutes or less.

Take some time to think about possible emergency scenarios and practice your procedures. In an emergency, seconds can mean the difference between life and death. If the unthinkable happens,

you'll be able to take quick and correct action. You owe it to yourself and your loved ones to PRACTICE – PRACTICE – PRACTICE.

If you have questions please feel free to call (510) 785-7070 Mon. – Thurs. or email me at Allen@SilverParachutes.com. Visit my website www.SilverParachutes.com for additional information.

ABOUT THE AUTHOR

Allen Silver, owner of Silver Parachute Sales & Service, is one of the world's recognized experts in getting you out of your aircraft quickly and safely. He is an FAA Master Rigger, a Designated Parachute Rigger Examiner, and has served as chairman of the Parachute Industry Association's Rigging Committee. 17 of Allen's 25 years in the California Air National Guard were spent working with parachutes and survival equipment. He also has over 40 years of skydiving experience and has amassed more than 3,200 jumps as a sport and professional skydiver.