

ALL PARACHUTES ARE NOT CREATED EQUAL

**As published In: Sport Aerobatics and Soaring Magazine
(December 1995 and April 1996)**

by: ALLEN SILVER

Updated: 1MAY 03

There are many things you have no control over if you have to make an emergency bailout . Questions arise such as, am I going to land in the rocks? Am I going to hit trees? Or am I going to get lucky and land in a soft field and have someone hand me a cold beer? Is the wind going to be 0 mph, or is it going to be howling at 20 mph? Although you have no control over these things, you do have control over the parachute that you are wearing. And that can be all the difference you need to land safely.

When you are preparing to purchase a parachute or if you need to re-evaluate your existing parachute, you must ask some very pertinent questions. The two most important questions you must ask are: What is the parachute rated at in knots or miles per hour? And, what is the rate of descent with my weight?

One very important fact that you need to know in order to make an informed choice and select the best parachute for yourself, is what speed the parachute is rated at.

Unless you are quite lightweight (under 140 lbs.), I strongly urge you to choose a parachute that is rated at 150 knots or higher. This means the canopy can withstand an opening shock while you are traveling at 150 knots without sustaining major damage, with the maximum recommended suspended weight on it. Even though a parachute with a lesser rating will probably save your life, it's nice to have a little extra in reserve; just as it is preferable to have premium tires on your car as opposed to retreads. Under normal conditions things may work fine, but an emergency bailout is far from normal.

You may argue, "But I fly a very slow glider or aerobatic aircraft, I don't need a high speed parachute." True, but let's assume your aircraft was just involved in a mid-air collision and has no wings left. It will come out of the sky like a lawn dart. Even the most docile aircraft can come down quite rapidly under adverse conditions. You need to know that the parachute you chose to save your life will be open above you when you look up. Most certainly this is not the time to wish you had purchased a stronger canopy.

There are also several factors which will affect the rate of descent of your parachute with your weight suspended under it. Ideally I would like to see you descend at a rate of 16 feet per

second or slower under an open canopy. Most manufacturers will say as an example, “This canopy has a rate of descent of 16.3 feet per second with a 205 pound person.” With these figures from the dealer or manufacturer you should be able to determine if you will come down faster or slower depending on your weight. Your size and weight may dictate what will fit into your aircraft, but you always want the strongest parachute with the slowest rate of descent possible.

Other factors that affect the rate of descent and speed rating of your parachute include such things as:

- * inflated dimension
- * length of suspension lines
- * tensile strength of suspension lines
- * materials used in manufacturing
- * type of reinforcements for strength
- * method used to construct the canopy

People are often under the assumption that a 24’ diameter parachute is the same size no matter which company manufactured it. Another misconception is that the bigger the canopy (26’ or 28’ in diameter), the slower it will come down. As you may have guessed, that is not always the case.

A simplified way that many people use to explain the size of your canopy is to say that if the distance from the skirt of your parachute to the apex is 12’ up and 12’ down, it is a 24’ diameter parachute.

Using the above canopy as an example, what could be different about it? If the inflated dimension (how wide it’s open across the bottom) is only 10’ across or 17’ across instead of about 21’ across, is this still a 24’ parachute? Yes, but probably one with a very fast rate of descent. The length of the suspension lines can and does vary greatly. Some canopies have lines 3’ - 5’ shorter than others. The longer lines are desirable because this increases the inflated dimension, thus lowering the rate of descent.

Another factor in increasing the speed rating of a parachute is the tensile strength of the suspension lines. If one canopy has lines rated at 400 lbs. and another at 600 lbs., choose the one with 600 lb. lines.

The nylon cloth used for canopy construction has varying degrees of porosity and permeability. Porosity is the ratio of open space to covered area of a drag surface, not to be confused with permeability, the measure of a volume of air that will pass through a given area

of cloth in one minute at a given pressure. This is usually measured in cubic feet per minute (cfm). What I'm trying to say is a smaller zero-porosity parachute constructed of material with a cfm. of 0-3 may come down slower than a larger, higher porosity parachute with a cfm. of 40-50.

Most manufacturers use concentric bands of tape or webbing (of various strengths) on the canopy for added reinforcement. Some may sew 4"- 6" of suspension line directly to the canopy while others may sew 10" or more. The stronger the reinforcements and the more line sewn directly to the canopy should yield a stronger parachute.

Finally, the construction of the canopy (how all the pieces are assembled) is vital to its size and strength. The size of each pie wedge gore of material that makes up your parachute and how many are used on the same size canopies often varies. If each wedge gore is a few inches narrower at the skirt (or bottom) the inflated dimension will be narrower.

Your parachute should be modified (mesh covered openings in the rear of your parachute to vent air and make it steerable). A modified parachute will greatly reduce the oscillations and allow you some maneuverability. There should be steering handles on the parachute to help you identify what and where to pull. They should be a contrasting color. This will allow you to quickly identify them and miss life threatening obstacles and face into the wind on landing.

When you are considering a particular brand of emergency parachute to purchase remember to ask the speed that the parachute is rated at, with 150 knots or higher being a good speed rating for the average weight person. And, also ask what the rate of descent is, with 16 feet per second or less being ideal. Don't forget to check the packed dimensions of the harness and container to be sure it will fit in your aircraft, with your height and weight.

This is why **all parachutes are not created equal**. And this is also why you need a trusted parachute rigger to help you make the best choice for your particular needs.