

How Do You Define Rig Performance? *by Sandy Reid*

PERFORMANCE

That elusive product that everyone claims to have, but is difficult to measure by any standard. For both you and me, defining canopy performance is relatively easy. The openings must be easy (a subjective term), consistent and clean. Flight performance must be to the level that the owner wants, depending on his or her needs. The landings must be smooth, controllable, consistent and tip-toe every time and finally, packing should be easy, consistent, and straight forward.

However, rig performance is considerably more subjective. There are certain functional criteria that are mandatory in a rig to receive certification. It must work every time. The operation of its components have been tested and shown to function as designed. The design must serve the purpose. Unless the end result is a rig that addresses the needs of a style or form of skydiving, even the best operating unit does not have usable rig performance. It should be durable. The owner should expect to get reasonable service from the assembly. It should fit the canopies or range of canopies for which it is designed.

Aside from the above mandatory requirements, how does the average jumper measure performance of their harness and container (i.e. rig) system? For the perfect rig, there are three other areas to take into consideration:

Fit
Feel
Flex

FIT

In addition to the fit of the canopies, the rig should fit the owner in two key areas: Container and Harness.

Container

The size of the container should match the size of the individual's body. The basic planform (length and width) should be within the planform of the person's back. It should not be taller than the top of the shoulders and the bottom should just rest lightly on the top of the buttocks. The width should not protrude beyond the waist more than an inch or so. At the top, the width should not extend beyond the shoulders. Exceeding the persons physical characteristics causes two problems. The rig is more susceptible to getting snagged during exit and excessive width causes parasitic "rig drag" in freefall. As jumpsuits become tighter and more streamlined, rig drag becomes more pronounced.

Problems arise if the manufacturer proceeds in the inverse design direction as well. Making the rig excessively narrower than the body planform can result in an overly thick pack. This idea has been chosen by some manufacturers which create inherent problems. The thicker the rig, the stiffer and less flexible it becomes. The end result is a very narrow brick strapped to your back. In addition, the thicker rig creates more distance between individuals during exit stringing the exit out. Ideally, the containers should match the body planform and be as thin as possible.

Harness

This has proven to be a really elusive subject both for the customer and the manufacturer. How the harness holds the containers to the body and supports the individual under canopy is determined by the manufacturer. How well the manufacturer succeeds is determined by the customer.

No matter how the container fits the canopies and the person's body, if the configuration of the harness does not support the containers correctly on the body, the result is a total failure of the whole design and an unhappy customer. The main area of harness design failure is the fit to the human body. The failure shows up in one of two ways:

Too Loose

This is the most common problem. There are several symptoms associated with the harness being too loose. The containers can sag on the back resulting in a container that moves around and floats off the back in freefall. The individual then loses control of the rig and the rig flies them instead of the reverse being true.

The main deployment system can be affected due to the containers changing position. Even though the individual may practice pulling the pull-out or throw-out while lying on a table, in the air the pull-out in particular may move out of reach or be impossible to pull.

The chest strap and 3-Ring locations move upward on deployment causing discomfort and a longer reach for the risers and toggles. The primary cause of the ladies complaining about chest strap placement is almost always a loose harness. On deployment, the cutaway handles and reserve ripcord move from their normally expected position. At the same time the pull forces can change due to loading created on the cables by the different angles of the harness.

Too Tight

A harness has to be really tight for most people to complain about it. The primary problems of a too tight harness have to do with comfort and not with safety or function. However, in certain cases, too tight a harness can restrict the individual's movements to the point where they cannot reach or operate the deployment handles properly.

FEEL

Once the canopies have both been packed into a rig, this is where the customer decides whether or not the manufacturer has done their job of building the rig to their personal requirements. The rig should fit the body snugly but not too tight. The

containers should not move around at all, no matter what position you get in. There should not be any lumps or bumps in the containers. It should feel symmetrical in pressure on the body. In short, it should feel RIGHT.

FLEX

Depending on your personal skydiving style, you should have a full range of flexibility and maneuverability. This includes the hardest arch possible with your arms raised above your head to a full pike with all positions in between. A correctly designed rig with high performance fit will reduce any restriction points to a minimum.

Other areas concerning performance and the success of the modern rig lies in the perfect balance of "form, function, durability and price. Probably the most subjective of all and the one that most people base their choice on, is the cosmetic factor. People have come to believe that rigs are like automobiles, just select the style and color you like. They all will drive down the road. But in rigs, you need to ask the questions, how clean and functional is the overall package? Has the designer succeeded in making the rig work but at the expense of looks? Does it look good but is a real pain to pack and difficult for your rigger to maintain? Remember, if your rigger doesn't like your choice, you may have to find another rigger or pay a premium for him/her to work on it.

Price is another area of subjective determination. The value of the product is determined by whether or not the individual feels that they are getting their moneys worth. Is the overall package worth what is asked for it? Like buying an automobile, if you want pay the lowest price for your car, then there are many econo-boxes around that give excellent value for money. However, performance is generally lacking. On the other hand, if you want the sleekest looks coupled with the best performance available as well as all the "bells and whistles", then you can expect to pay accordingly.

The final area of performance is whether or not the manufacturer delivered what they said they would. Did the rig fit the canopies ordered? Does the harness fit accordingly? Did you get what you expected? If there were problems, were they taken care of promptly and correctly? Remember, we're all human and can make mistakes. The real proof of manufacturer's performance is whether they correct their mistakes.

It is my hope that these guide lines of determining rig performance will help you, the customer determine whether or not you are getting the maximum performance out of your rig. Put your rig on and see if your current gear meets your own personal standards with the information given. When it comes to your next or first gear purchase, the final decision lies with you.