NIKLAS DANIEL

Fashion or Function?

REMOVABLE DEPLOYMENT SYSTEMS

by Niklas Daniel of AXIS Flight School

As canopy technology and the performance capabilities of new canopies on the market accelerate, the use of removable deployment systems is becoming more common. Although RDSs have been around for years, generally only highly experienced canopy pilots and competitors have used them. Now, more people with less experience are jumping them. Are some skydivers using this piece of gear as a fashion statement or status symbol, or are they using it for its function?

If you are considering an RDS, you need to determine whether the use of such a system is necessary and appropriate for the activities you plan to engage in. As with almost all aspects of skydiving, safety and performance are at odds with one another. Therefore, you must find a healthy balance and weigh your options by looking at the pros and cons of the choices available.

A parachute's deployment system (i.e., slider, bridle and pilot chute) produces significant drag, as its primary function is to extract the main parachute from the container in a controlled fashion. However, once the components perform this action, they actually hinder the canopy's flight performance (although they don't negatively affect safety in any way). Most parachute designs incorporate a collapsible slider and pilot-chute system, which mitigates some of these negative effects but does not get rid of them altogether. A collapsed pilot chute and slider greatly increase your flare power for landing and improve overall handling. An RDS takes this a step further by allowing you to get rid of these components altogether in midflight.

A removable deployment system.

The Deployment System

A typical deployment system attaches to the top skin of the canopy. As a skydiver throws out the pilot chute, it creates a lot of drag in order to open the container and extract the main parachute. The pilot chute attaches to a bridle that passes through the deployment bag, which houses the main parachute. These are the parts trailing behind skydivers like a tail when they are flying under canopy.

Another important component is the slider, which is inside a packed main parachute. Its purpose is to slow down the opening to make the deployment more pleasant. This rectangular piece of fabric rests above a jumper's head when the parachute is flying.

An RDS modifies this system in two ways. On an RDS, a thin lanyard connects the pilot-chute bridle to the slider, not the top skin of the canopy. This allows the parachute to open normally, with the only difference being that the deployment system is now attached to and trailing from the slider. The second modification is to the grommets of the slider, which allows the jumper to remove the slider fabric via a set of cutaway cables.

An RDS can be rigged in one of two ways:
1) Removable Slider Only—the pilot chute, bridle and bag remain attached to the top skin after deployment.
2) Full Setup—A lanyard attaches the entire deployment system together, connecting the slider with the rest of the deployment system for retrieval.

Should I Use a Removable Slider?

The drag produced by the slider has less effect on the aerodynamics of the canopy than the rest of the deployment system since it is close to the jumper, who can diminish its drag in several ways, the most common being collapsing it with kill lines (see "Foundations of Flight—Collapsing a Slider," March 2018 *Parachutist*). Consequently, a removable slider was not even a part of the original RDS design. According to Performance Designs Vice President John LeBlanc, his company originally intended to design an RDS in which the lanyard detached from the slider. However, this took too long to complete in the air, so the safer and faster solution was to make the slider removable.

Being able to remove the slider allows the risers and harness to spread slightly span-wise, flattening the canopy overhead. This in turn makes the canopy fly more efficiently. However, bringing the slider down past the toggles and securing it behind your head—either via a bungee or a magnetic stow mounted on or near the reserve flap—can accomplish the same thing. (Check with your container manufacturer to see which stowing method, if any, it recommends for use with its gear.) Removing the slider completely does not allow the canopy to spread out any farther than when you pull the slider down the risers and loosen the chest strap.

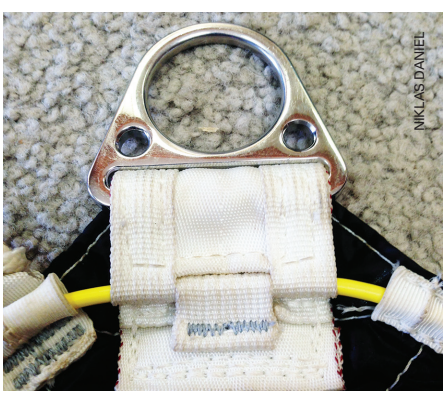
Though removing a slider will give you a marginally more complete field of view than collapsing and stowing it will, when deciding whether to use a removable slider, consider the drawbacks as well as any benefits. First, it's possible that you may lose your slider mid-flight, potentially ruining the rest of your jumping day. You also must reattach the slider after each jump, inspecting it carefully for wear, and pack with additional care.

Should I Use a Full RDS?

The aerodynamic penalty created by an attached pilot chute is greater than the effect of its drag alone. Because the pilot chute applies drag at the top of the system, it pulls the wing backward, producing a moment of strong nose-up pitch. This increases the angle of attack and slows the canopy by forcing it into a more sluggish flight mode. This is why high-performance canopy pilots often choose to use an RDS.

Those who wish to push their personal boundaries in canopy flight should spend a significant amount of time training under the supervision of an experienced coach before using an RDS. Invest in skills, not gimmicks. The advantage in performance that an RDS gives you comes at the price of having to handle

A removable slider.



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more moving parts and deal with greater complexity. A removable deployment system takes time and altitude to deal with. In addition, the pilot is at greater risk of experiencing hard openings or unusual malfunctions. This is why you should use an RDS only for sub-terminal deployments (i.e., hop-and-pop exits).

Unless you are planning on doing a performance turn of 270 degrees or greater (or perhaps doing an activity like XRW), you do not need the full RDS setup. An RDS is not for everyone. It is intended to give high-performance canopy pilots who already have great skill and technique an advantage in the competition environment. If you're not a highly accomplished canopy pilot who needs an edge in competition, use a conventional deployment system and slider while working on improving technique before investing in an RDS. There is always more to discover through the refinement of technique.

Learning to Use an RDS

Practice with just the removable slider a few times before using the entire setup at once. This familiarizes you with the process, so you can learn to do it quickly and efficiently without the possibility of tangling something up. In addition, you will have less material to stow away. When you are not practicing for jumping with a full RDS setup, just use your regular slider and stow it behind your head.

If you are new to using an RDS, make solo hop-and-pop jumps so you can focus on the task at hand. During the deployment, take command of your canopy's heading (see "Foundations of Flight—Heading Control Using Rear Risers During Deployment," February 2018 *Parachutist*). Once the canopy is fully inflated and flying in your desired direction, get comfortable in your harness.

Before you unstow your toggles, remove and consolidate the RDS in order to stow it away somewhere (such as a specially designed leg pocket, in your jumpsuit or between your back and rig). Move all four slider rings below the toggles before releasing them or the rings may interfere with your control inputs.

Next, locate the slider-release lines located in the middle of the leading and trailing edges of the slider. Grab both release lines with one hand from the rear as shown. Pull both lines simultaneously toward the back until all four corners of the slider have detached from the slider rings. Make sure not to let go of the RDS, as this will prove to be a costly mistake!

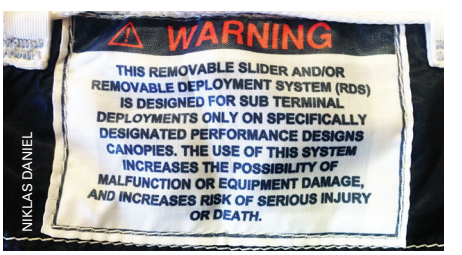
At this point, feel how much drag you are removing from the system when the wind tries to pull the RDS out of your hand. Hold the slider in one hand while reeling in and balling up the lanyard, bridle, deployment bag and pilot chute. Be careful not to get your hand or wrist stuck in the ball and secure it somewhere so you do not lose it during your flight.

Lastly, unstow your toggles and perform a canopy-control check. You must ensure that you have completed a full canopy-control check above your decision altitude. Once you've landed, take time and care when reassembling the system.

A detailed description of RDS parts, as well as instructions on how to assemble an RDS, are available on the Performance Designs website, performancedesigns.com, and as a video on the company's YouTube channel.

ABOUT THE AUTHOR

Niklas Daniel, D-28906, is co-founder of AXIS Flight School at Skydive Arizona in Eloy. AXIS offers professional coaching year-round in various disciplines, including canopy flight. More information is available at axisfightschool.com.



Removable deployment systems can add complication to a skydive and should be used only for sub-terminal deployments.