

OUTLAW

USER MANUAL

YOU MUST READ THIS MANUAL BEFORE DOING ANYTHING WITH YOUR SQUIRREL EQUIPMENT

Contents

About this Manual.....	1
About The OUTLAW.....	2
Reminder	2
Skydive it FIRST!	2
Adjust Your Toggle Setting.....	3
Tune Your Deep Brake Setting (DBS).....	3
Flight Characteristics	3
Variable Slider Use.....	3
Slider-Gate	5
Canopy Design Features.....	5
Care and Maintenance	6
Technical Specifications	7
Contact Us.....	7



Watch this video to learn how to adjust your toggle setting for optimal flare and handling performance, and get to know your BASE canopy in the skydive environment.

vimeo.com/flysquirrel/basecanopy

About this Manual

This manual does not provide instructional information, and is not a substitute for professional training, instruction, or experience. Before using this parachute, it is critical that you receive training and instruction for its use by a certified / rated instructor who is familiar with the characteristics of a 7-cell low-porosity parachute system. It is mandatory that you receive professional training and instruction on the deployment, flight, landing, packing, assembly, and maintenance of this parachute. This manual is only a general guide and does not contain any instructional information.

This manual may be updated, revised, or changed by Squirrel LLC without notice, at any time. Contact Squirrel LLC to be sure that you have the most up to date version of this manual. It is imperative that you read this manual in its entirety, and understand it fully. If you do not understand any part of this manual, or feel that any part is unclear in any way, please notify Squirrel LLC in writing and do not use any equipment that this manual refers to until you are certain that you fully understand the most up-to-date information pertaining to your equipment.

Your Squirrel OUTLAW comes with NO WARRANTY.

Parachuting, BASE Jumping, and wingsuit flying are extremely dangerous activities. This parachute is sold with all faults, as is, and with no guarantee or warranty of fitness for any purpose. Squirrel LLC, its members, owners, associates, and dealers, disclaim any and all liability in tort for damages of any kind, caused by negligence on the part of Squirrel LLC or otherwise. By using this parachute system or allowing it to be used by others, the user waives any liability of the manufacturer for personal injuries or other damages resulting from its use.

! WARNING !

ALL FORMS OF SKYDIVING, PARACHUTING, BASE JUMPING AND WINGSUIT FLYING ARE INHERENTLY HAZARDOUS ACTIVITIES AND REQUIRE THE DELIBERATE AND CONSCIOUS CONTROL OF YOUR PHYSICAL BODY THROUGH THE PROPER USE OF THIS PRODUCT IN RELATION TO EVER-CHANGING VARIABLES AND DANGERS. TRAINING, PROFICIENCY, SKILL, GOOD JUDGMENT, AND BEING CONTINUALLY ALERT TO CHANGING CONDITIONS, INCLUDING WEATHER, VISIBILITY, SURFACE CONDITIONS, ATMOSPHERIC CONDITIONS INCLUDING DENSITY ALTITUDE, AND OBSTACLES, ARE REQUIRED TO LOWER THE RISK OF SERIOUS INJURY OR DEATH. DO NOT USE THIS PRODUCT WITHOUT INSPECTING IT AND ALL OF ITS COMPONENTS BEFORE EACH AND EVERY USE.



!!!Even when properly used, this product may malfunction or fail to operate as expected. You risk death or serious injury each time that you use this parachute system!!!

The OUTLAW is a 7-cell parachute system designed for experienced parachutists ONLY. You must have at least 200 skydives and a thorough understanding of the performance differences between this canopy and other more common parachute systems before using this parachute. Do not use this parachute unless you have received training and instruction on the proper use of a 7-cell canopy constructed from low-bulk and / or 0-3cfm materials. Packing, opening, flight, and landing characteristics may vary greatly from other parachutes you have previous experience with.

It is imperative that you take the time to familiarize yourself with all aspects of this parachute system in the skydive environment, and tune your DBS, before jumping it from solid objects. BASE jumping requires dedication and commitment – take it seriously, and learn to use your equipment properly before your next BASE trip.

About The OUTLAW

BASE Jumping equipment has evolved incrementally during the past decade. The central goal of the OUTLAW development project was to evaluate the best features from existing BASE canopies and combine them with key innovations to create the most versatile and modern design possible.

BASE techniques and equipment have evolved into specialized disciplines, with canopies designed specifically for low freefall, or wingsuit use. Jumpers have also become connoisseurs of these specific disciplines and this specialization has encouraged innovation in each aspect of our sport. The OUTLAW, however, is not designed especially for only one type of jumping. Instead of creating a new highly-specialized canopy, we decided to focus on versatility.

The OUTLAW project mission was to create a highly versatile, user-friendly canopy that performs well in a wide range of applications for a wide range of jumpers. Significant innovations in BASE canopy technology have been combined with the absolute highest quality materials available, to make what we think is the ultimate all-around tool for today's BASE jumpers. We hope that you enjoy your OUTLAW as much as we have enjoyed making it.

Reminder

This should be obvious, but... for the thick-headed: The OUTLAW is not a "magic" parachute that performs perfectly in every situation regardless of how you use it, configure it, or fly it. It is a parachute system that demands extensive training and good judgment to use safely and properly. It is critical that you fully understand each aspect of this parachute system, and that you configure the system correctly for each scenario that you use it for. The slider, slider brake, packing method, pilot chute selection, and jumper freefall technique **MUST** be adjusted for every scenario in every jump. Therefore, it is mandatory that you take the time to educate yourself on each specific aspect of this parachute system and its proper use. Misconfiguring or misusing this parachute system can easily lead to equipment failure, injury, or death.

It is YOUR responsibility to learn to use this equipment safely, properly, and responsibly!

And remember, even when properly used, this product may malfunction or fail to operate as expected. You risk death or serious injury each time that you use this parachute system. Being a BASE jumper means taking responsibility for your own life, death, and wellbeing. BASE is dangerous and unpredictable, and no equipment can mitigate all risk factors, nor can a manufacturer predict how all jumpers will use their equipment. Therefore: Consider yourself a test jumper!

Skydive it FIRST!

BEFORE BASE JUMPING YOUR OUTLAW, WE RECOMMEND SKYDIVING IT.

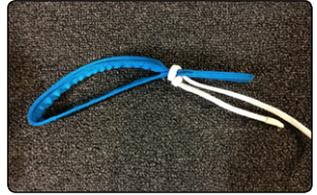
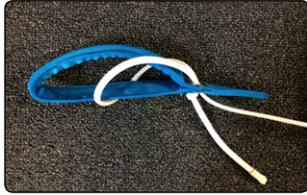
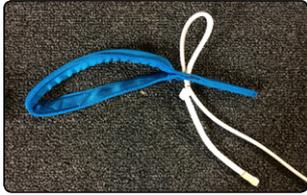
In the skydiving environment, you can test a variety of delays and slider configurations as well as learning the stall point, brake range, and handling characteristics. Get to know your canopy well before taking it into the BASE environment!

Deploy your OUTLAW after low airspeed hop-and-pop exits with short delays and longer delays. While maintaining an awareness of your airspeed at deployment and how that equates to a certain delay in the BASE environment, determine which slider-brake configuration works best for the type of jumping you plan to do. The OUTLAW can be used for a variety of applications from low freefall to terminal wingsuit use, but it is critical that you adjust each aspect of the system appropriately for each type of delay.

Renting or borrowing a skydiving container system that is compatible with your OUTLAW requires very little effort. Work with your local rigger to ensure the safe installation of your OUTLAW in a skydive container, and take the time to learn to use this canopy.

Adjust Your Toggle Setting

Your OUTLAW comes from the factory with a mark on the main control line. This mark is the default setting, and most jumpers will choose to shorten it according to their taste. The first thing you should do is adjust the toggle setting to a length that is comfortable for your control stroke preference, your personal arm length, and your riser length. You should be able to achieve stall without great effort or needing to extend your arms too much. Also, you should be able to use the full control range when flaring for landing. Adjusting the brake length is very easy and can be done in less than two minutes. Take the time to get this right – by setting your toggles to the proper length, you will have much better landings and control authority over your canopy. Testing, adjusting, and fine-tuning your toggle setting is best done in the skydiving environment, not in the BASE jumping environment.



Tune Your Deep Brake Setting (DBS)

In the skydive environment, or while jumping from a large and forgiving object, TUNE YOUR DEEP BRAKE SETTING! A tuned DBS is critical to your safety when opening near objects. Work with your mentor or BASE instructor to learn how to measure and mark the stall point of your canopy, and adjust the DBS accordingly.

Flight Characteristics

The Squirrel OUTLAW is suitable for qualified and responsible BASE jumpers of beginner to expert ability.

We used a high-lift profile combined with supplemental lifting devices (Slat and Float-Flaps) to increase stability and decrease sink rate at low speeds. The deep brake behaviour is predictable and smooth, with a progressive transition to stall and back-fly, without excessive pendulum or vertical acceleration.

The brake travel is progressive, and long. As with every new canopy, take time to learn how the canopy flares and **adjust the length of the main brake lines** as noted above, if necessary.

The rear-riser response with brakes stowed is very direct and efficient. Learn to use this technique for rapid heading changes. It is important to understand how the canopy responds to riser inputs with brakes stowed and un-stowed, in a safe environment. In many cases, it is safer and more efficient to correct an off-heading by using brakes only. Practice all object avoidance skills in a safe location, before you need them.

Variable Slider Use

The OUTLAW slider size and aspect ratio was chosen to ensure a quick descent for opening performance on short delay slider-up jumps.

Because a rapid slider descent is not always desirable, your OUTLAW is also delivered with “slider-brakes” which can be added or removed to adjust the aerodynamic drag of the slider. You can easily switch between configurations in the field without tools, to optimize slider descent speed.

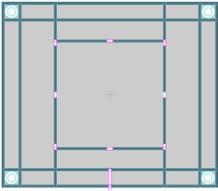
It is critical that you understand when and when not to use the slider and slider-brakes. There are many variables that control parachute opening speed. Jumper velocity and body position, pilot

chute type, wingsuit or tracking suit type, line material (Spectra or Dacron) and line condition (new or used), and atmospheric conditions will all affect the opening speed and the resulting force on you and your equipment. For instance, deploying your vented OUTLAW from a steep terminal track with a large PC and no slider-brake would be stupid, and the resulting hard opening could damage you or your equipment. Conversely, using a full slider-brake on a subterminal jump opening near terrain would be extra stupid and even suicidal.

NOTE: The Slider Brake must be positioned on the bottom side of the slider.

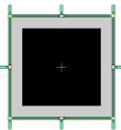
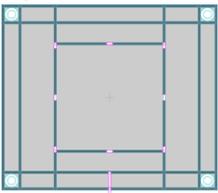
Due to the large amount of variables, particularly in jumper airtspeed and body position, it is impossible to create a set of fixed guidelines for the configuration of your equipment. You must choose the configuration based on progressive and conservative jumping with large safety margins. In general, the naked mesh slider provides the fastest openings. The hybrid slider brake will decrease opening speed slightly. The full slider brake will provide slower openings. The following table is only a rough guide:

No Slider Brake: Fast Openings

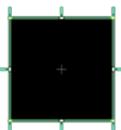
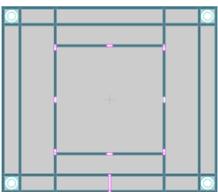


For sub-terminal delays and wingsuit use. Not for high-speed terminal deployments.

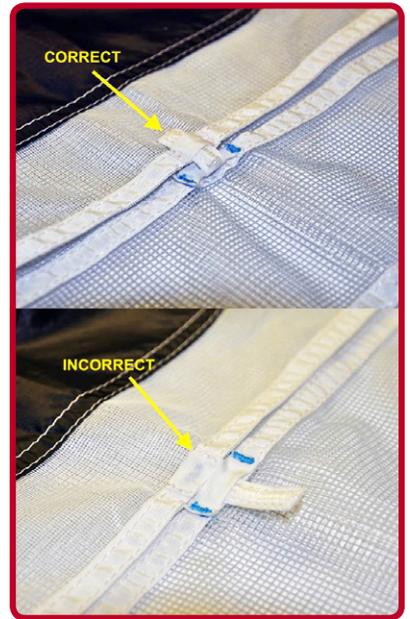
Hybrid Slider Brake



Full Slider Brake



NOTE! Be sure to fold the tab back and tuck it in to secure the slider brake.



REMEMBER! The Slider Brake must be positioned on the bottom side of the slider.

Freefall Type	→	Slider Setup
Less than 4 seconds		No Slider
Subterminal Slick, ~6 second range		Naked Mesh Slider
Subterminal Tracking		Naked Mesh Slider
Terminal Wingsuit		Naked Mesh, or Hybrid Slider Brake
Terminal Tracking		Hybrid or Full Slider Brake
Terminal Slick		Hybrid or Full Slider Brake

Slider-Gate

The slider-gate is a method of containing your control lines (brake lines) in the same manner as the standard tail-gate used for slider-off configurations. As shown in the photo, the slider-gate should contain your brake lines. It is also acceptable to contain your brake lines + inner C/D lines. We recommend two or three wraps of a small rubber band (such as is pre-installed on your Outlaw), in the same manner that you would secure the tail-gate.



Canopy Design Features

A-chord line Mini-Vents allow forward A-line attachment points

The OUTLAW's leading edge design was chosen for its balance of inflation speed and efficiency. By extending the top surface more into the leading edge, we increased the OUTLAW's efficiency and performance at trim speed and deep brakes. We also extended the bottom surface into the leading edge in order to place the A-line attachment points as far forward as possible, to increase pitch stability. This would otherwise reduce nose opening size, so in order to maintain excellent nose-inflation during the opening sequence, five mini-vents were added to the A-chord line. This gives us the best of both worlds: a performance nose design, with rapid inflation and high stability. It adds up to increased pitch stability during inflation, canopy flight, and landing.

Rear-Chord Float-Flaps increase laminar flow in deep brakes

Inspired by a paraglider design, this key innovation allows low stall speeds and forgiving slow-speed characteristics. The OUTLAW excels in steep approaches using deep brakes.

Spanwise tension in the canopy and a 3D-shaped differential cut between the top and bottom surfaces keep the Float-Flaps closed while the canopy is in trim flight, meaning that the OUTLAW's glide performance is not compromised. With brakes applied, profile camber increases progressively and opens the Float-Flaps, allowing some air to escape and add laminar airflow to the top surface of the canopy in the location that stall begins. This airflow stabilizes turbulence over the top surface and provides a smooth transition to deep-brakes for a steep approach with a low sink rate. The OUTLAW's forward speed can be greatly reduced to a stable deep-brakes configuration.

Center Cell Slat maintains center-span laminar flow

First introduced to BASE canopies on the Atair OSP, the slat system helps to increase airflow over the top surface of the canopy. While the Float-Flap system provides a more direct feed to the critical area of the top surface while in deep brakes, the Outlaw's single center cell slat encourages flow at the center span, while the Float-Flaps fill in the airflow at the most critical areas.

Varied Crossports enhance inflation characteristics

The OUTLAW features a varied crossport design to maximise spanwise airflow while retaining structural longevity. Unloaded and loaded rib crossports were designed using a load-calculation algorithm. Unloaded ribs feature larger crossport size overall, while loaded rib crossports are concentrated in the ideal locations for load and top-surface cleanliness. This optimization means that The OUTLAW benefits from unsurpassed air circulation inside the canopy, leading to progressive and homogenous openings with a compact and coordinated feel in flight and during flare.

ZP Ellipse at leading edge for heading and glide performance, and longevity

ZP leading edges increase glide performance, opening performance, and sail longevity. The OUTLAW is the only BASE canopy with an ellipsed ZP leading edge, which positions more ZP where it is needed most, at the center span, and just enough outboard ZP to ensure performance.

This design encourages priority center-span inflation for heading performance, and the cleanest most efficient airflow possible at center-span for glide and flare performance.

A ZP leading edge is especially important in canopies made from ultra-light / low-bulk material, which degrades faster than traditional 0-3cfm cloth. Porosity at the leading edge is a crucial factor for glide and flare performance. Ultra-light cloth is too porous for use at the leading edge of a BASE canopy (or any main parachute, in our opinion).

Staggered Upper Brake Cascade reduces tension knot probability

The OUTLAW's unique upper brake cascade is constructed without loop to loop junctions. Finger-trapped lines allow a more consistent flex and prevent the acute-angle "kinks" that can lead to tension knots in the brake cascade. The benefits of the OUTLAW's smooth brake fan are apparent when stowing the lines – the brake line junction curves more smoothly in concert with the rest of your lines, reducing the chances of tension knots.

A positive side effect of this design feature is a reduced spacing between upper brake lines, reducing the potential severity of line-over malfunctions.

Always use a tail-gate, slider-gate, or tail-restricting device in conjunction with packing methods that properly stage tail expansion. Redundancy is the key to reliability.

Line Maintenance/Replacement

Squirrel will provide complete and already assembled brake linesets that need only be fingertrapped and bartacked on the trailing edge attachment points of the canopy. Use a simple loop to attach each line to the tab at the trailing edge. No larks heading is needed.

Advanced Profile and Leading Edge

The OUTLAW's profile is based on more than a decade of paraglider research and development combined with the BASE experience of the Squirrel team. Our testing has shown that even in the thicker profiles that we use for low aspect ratio BASE canopies, small improvements lead to significant performance differences during all aspects of flight. The OUTLAW profile was chosen for its consistently pitch-stable behavior, dependable glide performance, and excellent slow-speed characteristics.

Care and Maintenance

When properly cared for, the OUTLAW will last for several years. The factors that will shorten the lifespan of your canopy are primarily Moisture, Heat, UV Exposure, Hard Openings, and Improper Storage:

- Keep your canopy dry at all times. All moisture exposure will degrade the coating which provides the correct level of porosity to the cloth. Avoid water landings, and try to keep your canopy away from moist or wet landing areas. Never pack or store your canopy when wet or damp. If your canopy becomes wet or damp, hang dry it in the shade, NOT in direct sunlight.
- Do not store your canopy in a hot location. Avoid leaving it in hot vehicles, for instance.
- Do not expose your canopy to unnecessary or excessive UV / sunlight – obviously your canopy is not allergic to the sun, but we don't recommend letting it sit out in direct sunlight unnecessarily.
- Avoid hard openings at all times. Pack appropriately, and moderate your airspeed at deployment. Excessively hard openings may damage your equipment, and may result in serious injury or death.
- For periods of extended non-use, store your canopy unpacked, in a cool, dry, dark location, away from solvents, batteries, or any chemical that will damage or degrade synthetic materials. Exposure to car battery acid or even the fumes emitted from car batteries will degrade or completely ruin your canopy and other nylon skydiving equipment. Always discard / destroy any equipment that has had significant exposure to battery acids or harmful solvents.

- Keep your canopy clean, and out of the dirt and dust as much as possible. Allowing any type of dirt, sediment, or debris to accumulate inside your canopy or on the exterior surfaces will degrade your canopy's lifespan. Packing a dirty canopy will cause sediment to abrade the surfaces of the materials.

A necessary part of maintaining your canopy is understanding and recording its usage. We recommend logging every jump that you make on your OUTLAW, and recording deployment parameters for each jump such as wingsuit, non-wingsuit, type of wingsuit, estimated airspeed, etc.

In addition to you inspecting the equipment before each jump, your OUTLAW should be thoroughly inspected by a certificated rigger every 200 jumps or annually (whichever comes first), or whenever it is potentially exposed to harmful conditions including but not limited those listed above.

Technical Specifications

SIZE [PIA] (ft ²)	Area Flat (m ²)	Exit Weight*		Recommended Wingloading	Wingloading Min	Wingloading Max	Aspect Ratio Flat	Span (m)	Chord (m)	Load Test (kg)
		Min (lbs/kg)	Max (lbs/kg)							
204	18.9	127/57	154/70	0.69 - 0.75	0.61	0.75	2.07	5.94	3.12	145
226	21.0	140/63	171/77	0.69 - 0.75	0.61	0.75	2.07	6.60	3.47	145
248	23.1	154/70	188/85	0.69 - 0.75	0.61	0.75	2.07	7.26	3.81	145
260	24.15	162/73	198/90	0.69 - 0.75	0.62	0.76	2.07	7.59	3.99	145
271	25.2	169/77	207/94	0.69 - 0.75	0.62	0.76	2.07	7.92	4.16	145
282	26.25	176/80	216/98	0.69 - 0.75	0.62	0.76	2.07	8.25	4.33	145
293	27.3	183/83	224/102	0.69 - 0.75	0.62	0.76	2.07	8.58	4.51	145

* Exit Weight = Jumper + All Equipment. If you are unsure of your Exit Weight, you can add 18lbs/8kg to your naked weight as an estimate.

Contact Us

If you have *any* questions about any product that we make, please do not hesitate to contact us.

www.squirrel.ws

fly@squirrel.ws

855-FLY-SQRL

THANK YOU FOR FLYING SQUIRREL!

