STILETTO FLIGHT CHARACTERISTICS

The Stiletto will be described in comparison to the Sabre of similar size since it is a very popular high performance canopy that most experienced people have jumped. Both canopies are first class high performance canopies but with different handling characteristics. Some jumpers will prefer the handling of the PD-Stiletto, while other highly experienced jumpers will still prefer the more traditional high performance characteristics of the PD-Sabre. We suggest you make several jumps pulling above 10,000 feet to learn about the Stiletto. This is true even if you have thousands of jumps on high performance canopies. These notes certainly do not attempt to teach you how to fly this or any other parachute. They simply describe how we feel the canopy behaves.

Full Glide Speed: The Stiletto is slightly faster than a Sabre, but not enough to make speed alone the deciding factor between the two. Performance is much more than speed alone!

Glide Ratio at Full Glide: The Stiletto has a slightly flatter glide angle at full glide than the Sabre. This makes estimating the exact touchdown point a little more difficult than on a Sabre.

Straight Flight in Brakes: The Stiletto can achieve a lower minimum rate of descent than a Sabre; however, both canopies have a minimum descent that is much lower than the descent rate at full glide speed. This is very important on bad spots when running with the wind in brakes to get back to the DZ. The flight in brakes is a fairly slow, very floaty, flat glide, rather than a steep, sinking glide.

Straight Flight on Front Risers: The Stiletto tends to front riser to a higher airspeed, but not at quite as steep an angle as a Sabre (straight flight only). Riser pressure is similar to a Sabre at similar airspeeds. (Pressure builds up as airspeed increases.)

Control Range on Toggles: The Stiletto has a slightly shorter control range than a Sabre.

Stall Characteristics: The Stiletto has a slightly sharper stall than the Sabre. It has more tendency for one side to stall before the other when one toggle is even one inch past the other. When stalling and recovering using careful control inputs, the Stiletto recovers more quickly with less altitude loss, and heading is very controllable. However, when stalling and recovering radically, the Stiletto is more likely to recover with closed end cells, turns, slack lines, and rapid altitude loss. Radical stalling

maneuvers are more likely to result in an unrecoverable situation on a Stiletto, so such maneuvers are strongly discouraged, especially during turning flight.

Toggle Turning Characteristics: The Stiletto definitely rolls into a toggle turn much faster than a Sabre, and one needs much less control input to start a fast turn. The Sabre immediately rolls out of a fast turn quickly when the toggle is released; however, the Stiletto will continue to turn as it slowly rolls out of a fast turn. This causes the new Stiletto jumper to have difficulty in stopping turns on a desired heading. This can be corrected by using a little opposite toggle to roll out of a turn. (The amount required depends on the rate of turn and how you are sitting in the harness.) When using this technique, turns can be stopped quickly and precisely on heading with little or no loss in airspeed, after some practice! The opposite toggle technique isn=t required on the Sabre and if used results in a loss of speed and floaty glide afterwards.

Toggle Turns at Low Airspeeds: The turn rate at slow airspeeds is still quite fast on a Stiletto. There is much more control range available than is necessary to produce quick turns. Aggressive sashays can get out of control if extreme toggle movements are used. Line twists are possible at any airspeed if radical turns are pushed too far.

Front Riser Turns: In general, the Stiletto has a slightly slower turn rate on front risers than a Sabre, but the airspeed and rate of descent build up faster. On both canopies, the initial turn rate is faster if the front riser turn is initiated from a slow braked flight.

High Speed Maneuvering: From the above description, you can see that the Sabre is a little more Aground hungry≅ than a Stiletto when flown conservatively. However, the Stiletto tends to stay in a steep dive for a long time after several high speed turns. You can achieve a higher airspeed and rate of descent on the Stiletto than on a Sabre, so you may run out of altitude quicker than you expect. If you discover this, you may need to quickly use brakes, converting some airspeed back into lift, to gain back some lost altitude. This may open up more options for a safer approach and landing.

Flying in Turbulence: As with the Sabre, the Stiletto flies best in turbulence when it is flown using smooth control inputs at a speed close to full glide. It is quite stable even in conditions that you probably shouldn=t be jumping in. Allow the canopy to bounce around in turbulence WITHOUT trying to make constant jerky toggle movements to compensate. Many people worsen the situation in turbulence by making aggressive toggle movements or by flying too slow. Flying too close to stalling speed can result in a gust induced stall or collapse. Use good judgement.

Conservative Landing: An aggressive approach should not be required on either canopy, with proper technique. The Stiletto lands nicely when making a straight, full glide approach and carefully executing the flare. The result is similar to what can be achieved with a Sabre, but is a little less forgiving of poor technique than the Sabre, especially in the case of over controlling. It is particularly

less forgiving of errors in maintaining heading at the time of touchdown. It is also less forgiving of overflaring, since its stall is sharper. These errors commonly occur when toggles are unintentionally moved around when placing feet on the ground. The Aside gusts≅ that many people experience at touchdown are usually pilot induced, by unknowingly lifting the left toggle while placing the right foot on the ground. Sometimes the right toggle is pushed further as well. Even highly experienced jumpers occasionally have this bad habit! (Did you ever wonder why most Agusts≅ push the jumper to the right?) Obviously, this will get you into trouble more quickly on a Stiletto, because the turn rate is much higher. A few people pump toggles on landing. This has never improved any landing on any parachute. If you are a pumper, get rid of that habit before trying a Stiletto.

Swoop Landings: In general, the Stiletto will skim the ground farther than a Sabre on a similarly aggressive swoop. Since the Stiletto is less forgiving, it is not the canopy to use when learning the basics of swooping. We hope that Stiletto jumpers are rational enough to realize that swoops cannot be made safely in all conditions and on all jumps. Try to create safer situations for others when you reach the landing area. If you feel a swoop is required for a soft landing on a Sabre or a Stiletto, then perhaps you need some more practice...

Pilot Chute: The above characteristics assume that a collapsing pilot chute is used. An inflated pilot chute greatly hinders performance, stability and landings, especially in turbulence.

Packing: Keep it symmetrical! Roll packs will create some wild openings. Flat packing will be somewhat difficult due to varying chord length and the lack of packing tabs. When propacking, the nose is not rolled or stuffed in the center cell. To do either results in more off heading openings, long snivels and does not create a softer opening! Also, do not push the nose back inside the pack job, as this tends to create erratic openings.

Openings: When propacked, the canopy opens very soft, and somewhat snively. We have designed it this way since most very experienced jumpers prefer it this way. It is somewhat sensitive to body position during inflation, but opens generally on heading.

Body Position on Opening: Body position is important during the entire opening sequence. If you allow the inflating parachute to tilt your body in the harness, the canopy will respond by starting a turn while the slider comes down. If you want an on heading opening, do not allow this to happen! Some people learn to control this well enough to make the canopy open on any heading they choose. Others allow the inflating parachute to control their body position, making the heading a surprise. Pay attention to what the harness is telling you! Since the Stiletto is very responsive to harness movements during deployment, this canopy is not for everybody.

Riser Configuration: For better front riser performance, the risers should have the dive loops quite high up the riser. This allows holding toggles while pulling risers without deflecting the tail. Slight

buffeting will occur if the toggles are deflected too much while front risering. The higher dive loops and/or more slack in the steering lines should eliminate the buffeting. Shorter risers (20" to 22") may work better, because the create the effect of lengthening the control range. (Actually the control range is lowered.) Shorter risers also make the slider easier to reach.

Wing Loading: The Sabre is placarded at 1.1 lbs per square foot maximum weight. This means that 148 lbs is our maximum recommended weight for a Sabre 135, including gear weight. Obviously, the Sabre is capable of much higher wing loading in the right hands. The placard is intentionally quite conservative to help prevent problems with inexperienced jumpers getting in over their heads because their D-license says they are a Amaster parachutist≅. Because the Stiletto is built for extremely experienced skydivers, the maximum weight placarded is 1.3 lbs per square foot. We don=t feel the Stiletto is more capable of high wing loadings, but rather we feel that the extremely experienced jumpers are more capable of flying at higher wing loadings. Both canopies have been frequently flown at wing loadings over 2.0 lbs per square foot for thousands of jumps at sea level, including straight in landings in no wind. We do not recommend such extreme loading and actually feel such extremes may compromise both safety and performance.

Conclusions: As stated earlier, the Stiletto is not going to be everyone=s favorite canopy, as many highly experienced jumpers will still prefer the more traditional handling of the Sabre. Our impressions of the Stiletto are based on much testing and evaluation in house, along with feedback from others who have jumped pre-production canopies.The canopy has been very thoroughly and completely tested. We do not ask our customers to be unpaid test jumpers. We are very confident in the stability and performance of the canopy, and believe it is the highest performance elliptical canopy available today. Though the Stiletto is ready for the market, we feel the majority of the market is not ready for such a canopy. This is why we are restricting the release of the canopy in the skydiving community. We are interested in hearing your opinion about the canopy, and welcome any written feedback you are willing to send us.

Should you write to us, please tell us how many jumps you have made on the Stiletto, as well as the other types of canopies recently jumped.

Thank you for your interest; fly intelligently and safely.

Sincerely yours,

John LeBlanc
Vice President
Performance Designs, Inc.