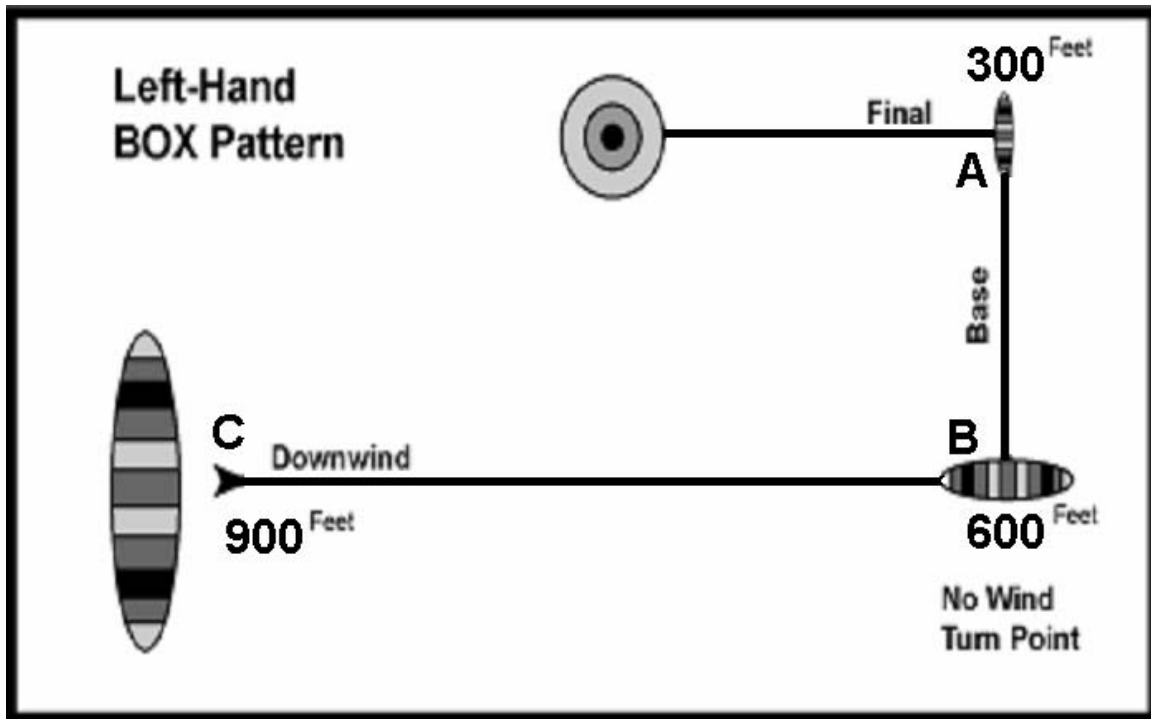


The “D” Point

By Brian Germain

Although there are many ways to improve one’s accuracy in parachuting, I have found no better way than flying a consistent pattern. By connecting a series of invisible points in the sky, “Altitude-Location-Checkpoints” as I call them, we can create a consistent flight path that makes us more predictable in the air, as well as significantly increasing our chances of landing on target. The typical pattern, made up of three distinct turn points, I will now argue is not quite enough to get to the target with the consistency we are looking for.



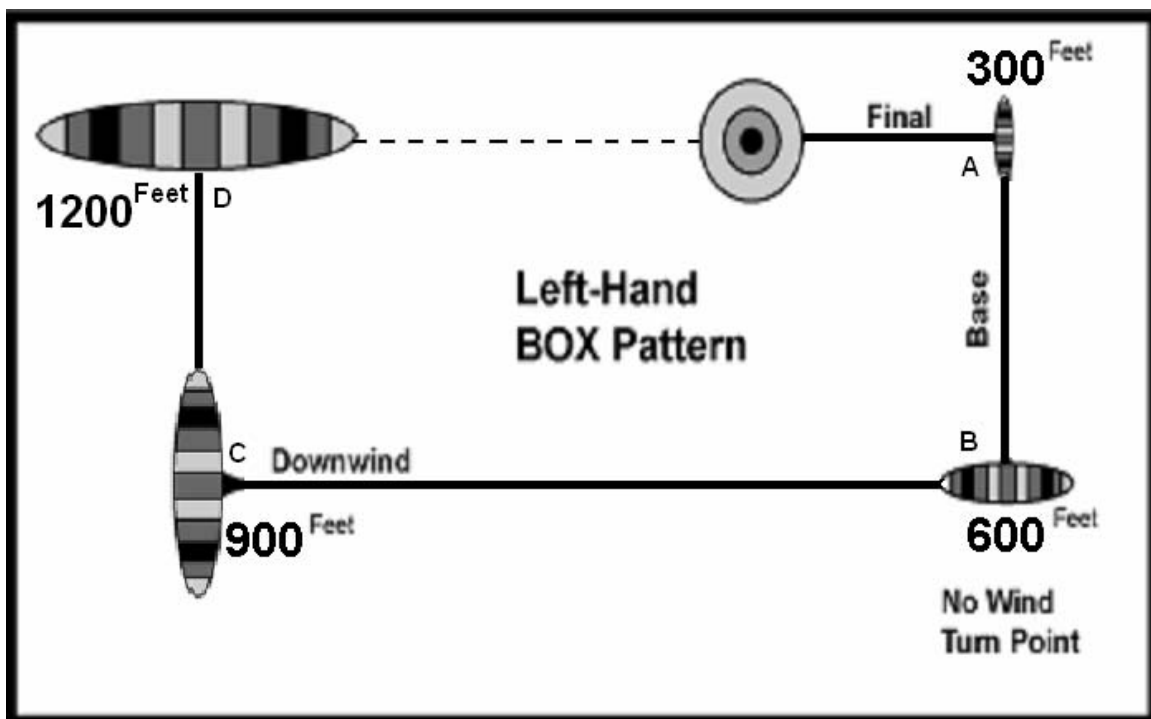
The standard flight pattern for a ram air parachute involves a downwind leg, a cross wind leg, and an into-the wind leg, also known as the final approach. This pattern is defined by three distinct turn points, “A” (Base to Final), “B” (Downwind to Base), and “C” (pattern entry point). It is true that if we are prepared to modify our approach in light of new information along the way, we can hit the target. But wouldn’t it be nice to get there without needing to modify our flight path, to just sail along and turn when the altitude is right? That is exactly what the inclusion of a fourth turn point does.

The trouble with the standard pattern is that there is a good deal of guesswork when it comes to the length of the Base leg. Depending on the glide ratio of the parachute, the location of the turn to Base leg will vary widely. The better the relative glide ratio, the farther the turn to Base needs to be from the

target. Our ability to adapt to this changing environment is spotty at best, and often requires substantial correction along the way. This creates traffic conflicts, as well as varying airspeed and decent rate, making life far more difficult for us, and for the canopies behind us. In most cases, the length of the Base Leg needs to be longer than we think.

This becomes an even more important issue for swoopers setting themselves up for a high speed approach. If the length of the Base Leg is incorrect, the pilot is forced to either float in the brakes or "S-Turn" prior to the initiation of the dive. This has consequences to the approach, even if they manage to reach the Initiation Point at the correct altitude. If they are flying significantly faster than usual when they arrive at the initiation point, they may lose much less altitude in the turn due to the increased front riser pressure upon initiation. If they are flying significantly slower than usual, they may lose a much greater amount of altitude in the turn, and find themselves hooking into the ground. It is my experience that, aside from the altitude of the Initiation, the selection of the "B" point is the most important aspect of a high speed approach.

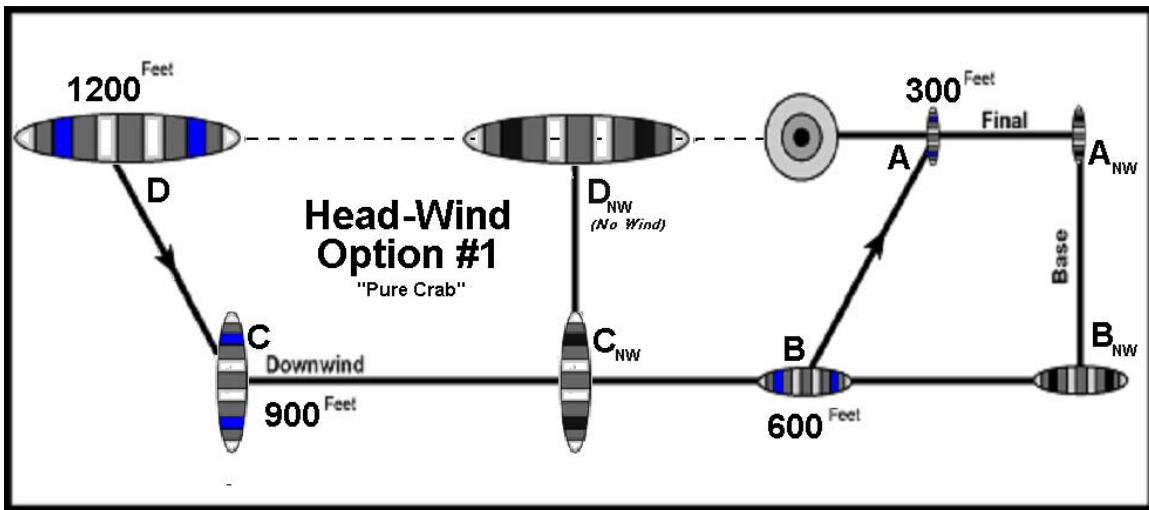
If we simply add another checkpoint prior to the entry into the Downwind Leg, we can take the guessing out of the process. Assuming that the turn points are equidistant in altitude (300, 600 and 900 feet), we can simply add another unit above the original pattern entry to create a fourth, or "D" point, precisely on the wind-line, upwind of the target. What this does is, it creates a Pre-Base Leg, which shows us exactly how long the Base Leg needs to be. In other words, if the altitude between the points is 300 feet, the "D" point is at 1200 feet.



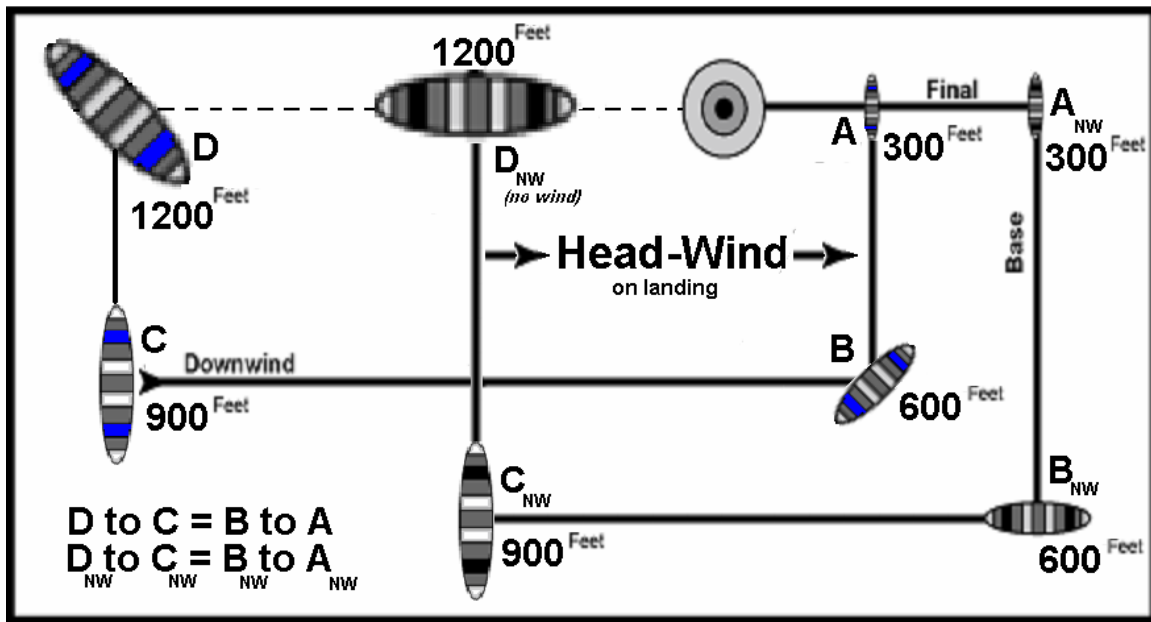
The beauty of the data that this "D" point brings us is, we discover the exact length of the base leg without choosing the precise location of the "B" point prior

to exit. This means that we can fly this pattern at a new drop zone, or when we are landing off, and learn where the altitude-location-checkpoints are for that specific landing area. It doesn't help us with the "depth" of the pattern points, but it puts us in the ballpark, assuming that we have a rough idea of our canopy's glide ratio.

When the winds pick up, this method still works perfectly well. The crab angle on the Pre-Base Leg is equivalent to the angle of crab on the Base Leg. Note that the horizontal distance of the offset from the target on the downwind leg on a windy day is exactly the same as it would be on a no wind day (A to $B = A_{NW}$ to B_{NW}). This is only true if we do not compensate for the side-slip of our ground track due to the crosswind legs.



However, even when we do choose to compensate for diagonal crabbing on the base leg and create a "Holding Crab", if we create the same crab angle on the Pre-Base Leg, we end up on the perfect final approach despite the complex situation. This is easily accomplished by simply making our goal to fly a box pattern on the ground, flying our Pre-Base and Base Legs perpendicular to the wind-line.



Also note that the length of the base leg is longer on the No Wind condition than it is on a windy day on which we perform a Holding Crab on the crosswind legs. This is due to the reduced groundspeed when in a Holding Crab, and the diminished glide ratio that comes as a result of it. If you aren't pointed where you are going, you will not move there quite as quickly.

This method assumes something that many canopy pilots do not have: a trustworthy altimeter. A standard dial-type, analog altimeter is not sufficient to give us the kind of accuracy we are looking for. Even the digital dial-type is not usually graded in such a way that we can distinguish units of one hundred feet or less. These are freefall altimeters. For the precise data required by today's canopy pilots, we need digital altimeters with digital read-outs. Even better, many of us have found, is the heads-up advantage of an audible altimeter designed for canopy flight such as the Optima and Neptune. If you have an audible alert telling you where you are, it is far easier to keep your eyes looking outside the cockpit and on the action that may require your instantaneous reactions. All that being said, your eyes have ultimate veto power. If things do not look right, your instruments must be ignored. Too many skydivers have hit the ground due to complete faith in their instruments that let them down due to mechanical problems, battery issues or some unconsidered technical malfunction.

Assuming that you use this accuracy technique the way it was intended, and you notice what is happening as it is happening, you can take a huge step forward in consistently hitting your target runway. It will take a while to dial-in your approach so that you actually hit the target, but the target is always a secondary goal to hitting the centerline of the runway and turning to final at a reasonable altitude. If you plan your pattern well, using four distinct points along the way, you can change what you are capable of handling as a canopy pilot.

Not only will you feel better about yourself, you will increase the likelihood that you will live a long, healthy life. That, of course, is the mark of a great skydiver.

In addition to being a highly experienced skydiver with over 14,000 jumps, Brian Germain is the author of several books including [The Parachute and Its Pilot](#), [Transcending Fear](#), [Vertical Journey](#), and [Green Light](#). He is currently designing canopies for Aerodyne Research, and offers canopy flight courses worldwide. For more about Brian's Books, Seminars and Parachutes, visit his websites: www.BigAirSportz.com and www.TranscendingFear.com