

Q-POWER LINE

Q-Power Line The Design Goal:

To produce the best line in the world specifically for traction flying.

Up to this point in time all line used for KiteSurfing has been a compromise, utilizing line developed for other industries or dual-line stunt flying. KiteSurfing has specific needs and *Q-POWER LINE* is the first line that has been designed specifically to meet the needs of demanding KiteSurfers.

Q-POWER LINE has been engineered specifically to address these needs.

KiteSurfing Line Requirements:

- 1) Provide low to no stretch.
 - Line stretch is normally uneven due to differing pressures on top and bottom lines, this causes the kite to go “out of tune” and requires frequent “re-equalization of lines”.
 - Line stretch tends to inhibit “feel” when flying the kite
 - With braided line, the fibers try to return to their stable state (that of a linear or straight line), when tension is applied, from their normal braid angle. The continual tendency for the braid to tighten with time and for the fibers to assume a more linear orientation results in continual “stretch” over and above the actual stretch of the fiber.

Q-POWER LINE utilizes an internal core consisting of a linear bundle of continuous Spectra fibers. All strength in the line is attributed to the core only, with the over-braid’s function limited to keeping the bundle together, keeping dirt out of the structure and stiffening the line. Since the internal fibers are linear from the start, there is no continuous ‘stretch’ as found in traditional braided line, where the braid tightens with use. Any stretch in the line is therefore limited to the elongation of the actual fibers, which is minimal when compared to braided line.

This minimized tendency to stretch and long term length stability.

- **dramatically increases the pilots ability to ‘feel’ what the kite is doing**
- **improves kite responsiveness**
- **minimizes the need to ‘retune’ the flying line lengths**
- **reduces kite instability caused by unequal ‘stretching’ of the leading and trailing edge flying lines**

- 2) Make the cross-section round to minimize ribboning effect.

- What is ribboning effect?
 - The tendency for normal hollow braided Spectra line to flatten and then act like a ribbon in the air, vibrating back and forth. Thereby having a much greater effective drag than the apparent static diameter would suggest.

Q-POWER LINE’s internal core bundle of fibers resists the tendency to flatten out and when compared to traditional braided line *Q-POWER LINE* has a very round cross-section. This round cross-section minimizes the effective diameter and drag. Traditional braided line can have an effective diameter of up to 5X the lines static diameter, substantially increasing parasitic drag.

***Q-POWER LINE*’s round cross-section minimizes any ribboning effect caused by flying lines flattening out and therefore effective line drag is minimized. Minimized drag equals maximized performance.**

- 3) Remove the need to sleeve lines when tying loops.
 - Most lines require sleeving at the attachment loops to increase knot strength and prevent the line from cutting into itself. Traditional braided lines benefit by at least a 15 to 20% increase in knot strength for sleeved line over un-sleeved line.
 - Traditional sleeving of lines is awkward to do, especially with the large-diameter, high-test lines used in KiteSurfing. The sleeves also add weight and drag to the line, must be moved if the lines needs to be shortened and need to be knotted on the ends to prevent the sleeving from slipping on the line.

Q-POWER LINE is over-braided at a very high braid angle (almost 90 degrees). This high angle allows the over-braid to cushion the internal bundle, in effect self-sleeving the line.

- **No Sleeving Required**
- **Re-tying and Adjusting Lines is Easy**
- **Line-Drag is Minimized**

- 4) Minimize the tendency for line to pick up dirt.
 - Dirt is the major cause of line wear and failure
 - KiteSurfing lines get wet and pick up sand in their braid when they lie on the beach.
 - When the pressure/tension is released on normal line the braid opens up, allowing the line to pick up dirt within the braid structure. When the foil is re-launched the braid is pulled tight, trapping the abrasive dirt particles in the internal braid structure. These particles then act like miniature knives, cutting individual fibers and destroying the line integrity from the inside out.

The *Q-POWER LINE* over-braid is made with the finest denier Spectra 2000 fiber available. This fiber allows us to make an unbelievably tight over-braid, over a rigid core. This tight braid does not relax like normal line when tension is removed and for this reason the line does not pick up dirt, and therefore does not have the wear problem that normal braided line has caused by dirt becoming trapped in the braid.

Very Tight Over-Braid Prevents Dirt from Becoming Trapped in the Line Thereby Substantially Increasing Line Life.

- 5) Optimize the strength to weight ratio
 - Line weight is not as significant a factor as effective drag, however with flying in light winds, with long lines, or flying high up-wind, the weight of the lines does have a tendency to pull the kite down. This requires the pilot to translate more of the kites power into lift (to keep the kite in the air) and less of the kites power into forward motion (reducing speed).

The use of 100% pure Spectra fibers both in the core and the over-braid gives *Q-POWER LINE* the highest strength to weight ratio possible. See chart on the back of the line package.

The Highest Tensile Strength to Modulus Ratio for the best Light-Wind and Up-Wind Performance.

- 6) Reduce the tendency to tangle
 - Braided Spectra and Dyneema Lines tend to be quite soft and pliable. This caused the lines to have a tendency for knots to form if and when a kite collapses and falls to the water. If the lines knot or tangle then re-launches are difficult if not impossible or dangerous.

The high-angle, tight over-braid incasing a linear core construction on *Q-POWER LINE* has the added benefit of stiffening the line, thereby minimizing the tendency for the line to ‘self-knot’ or tangle within itself when on the water.

Enhanced Stiffness Minimizes the Tendency Towards ‘Self-Knotting’.