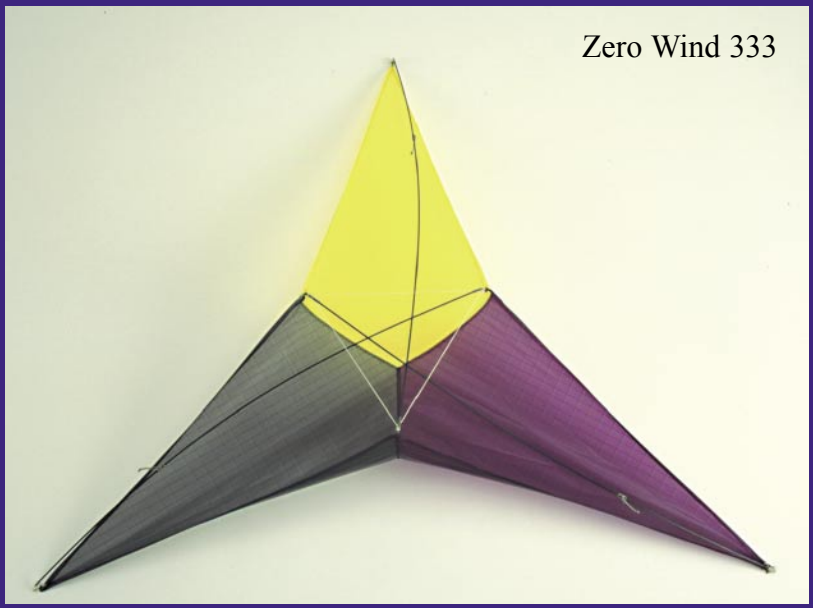


SYNERGETICS SERIES SYNERGY™

ZERO WIND

333

Designed by Marc Ricketts
Produced by InVento
patented

Synergetic Series Kites

Marc Ricketts introduces Zero Wind€ Kites.
What is indoor flying? It's flying a kite in an enclosed environment without the use of an available wind source. The kiteflier becomes the wind force in order to move the kite through the air by pumping the kite with smooth actions of the wrists and arms; by twisting body movements that lead the kite into flight; or by walking in a backwards direction to create a consistent lifting force for the kite. This opens the range of movement of the kites to a full 360Ў.

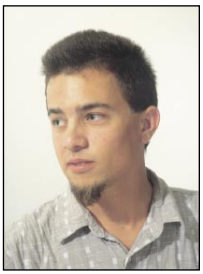
"Indoor flying" is not a contradiction in terms. It is becoming a legitimate sport that is gaining popularity in North America, Europe and Japan.

The Zero Wind 333€ is an ultralight version of the Synergy 333€, the first high performance tri-symmetrically designed 3 line kite on the market. When you fly these unique designs, you can lead with any point or edge; their unusual flying technique is quick to learn. The Zero Wind 333™ can be flown in one hand, indoors and out, in winds up to 12 mph (20 kph).

Why Synergetic Series Kites?
Dynamic and sculptural in design, Synergetic Series Kites feature a state-of-the-art Tensegrity framework combined with a tension-suspended, aerodynamically-shaped sail.

Tensegrity, short for tensional integrity, is a system where the spars do not touch each other, but are suspended in a continuous network of integrated tension lines. Tensegrity is one of the lightest yet strongest structural systems known (which is why it makes a great kite structure!) So, while your Synergetic Series Kites look elegant, even delicate, for their size and weight, they are by far the strongest kites on the market. If a Synergetic Series Kite crashes, the tension lines disperse the stress equally throughout the kite, while allowing freedom of motion between the spars in order to relieve the stress. Synergetic Series Kites give you the stability and flexibility you need for performance, plus the resiliency you want for durability.

The Synergetic Series of Kites are designed by Marc Ricketts.



produced by:

InVento Klein Feldhus 1 D-26180
Rastede-Neusudende Germany
Tel: 49 44 02 92 62 0

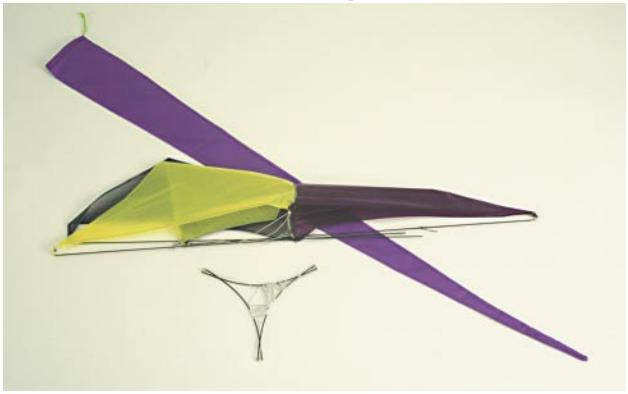
ZERO WIND 333™
Wind Range: 0-12 mph (0-20 kph)

Fly Line (included): 13 feet (4m) 50 lb (23kg) Spectra™ x 3

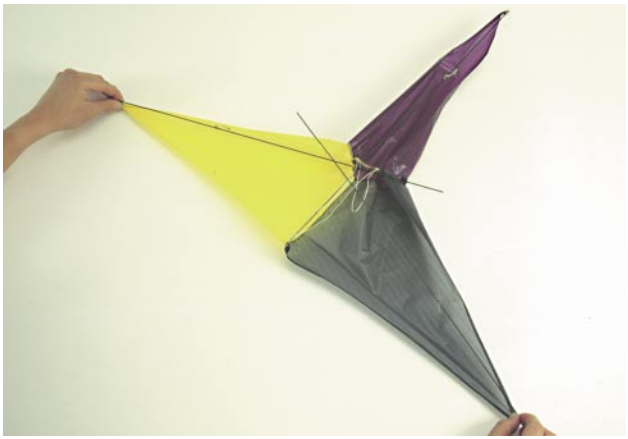
Zero Wind 333™ trademark owned by Marc Ricketts
Spectra™ is a registered trademark of Allied Signal
Ventex™ is a registered trademark of InVento

Your Synergy Zero Wind 333 is warrantied against defects in workmanship and materials.
When you fly this stunt kite you are taking responsibility for its control. The manufacturer, designer, and distributors cannot accept responsibility for damage due to improper or careless use of this product.

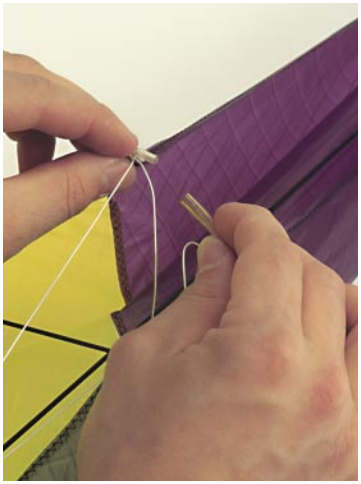
Zero Wind 333
Assembly:



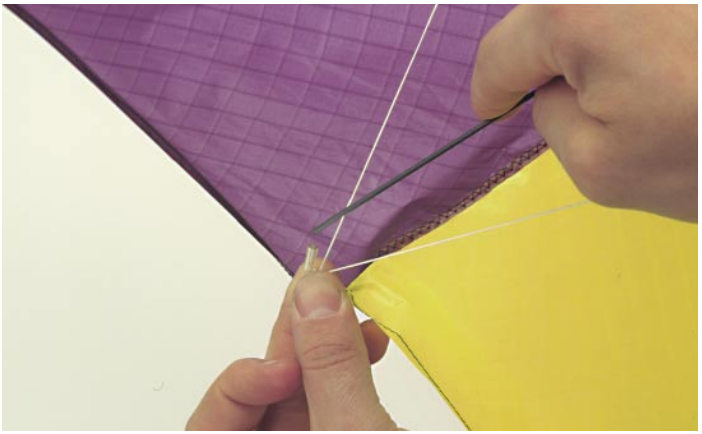
Your Zero Wind 333 comes complete with the kite with 3 attached spars, a tri-handle with line set, and a bag.



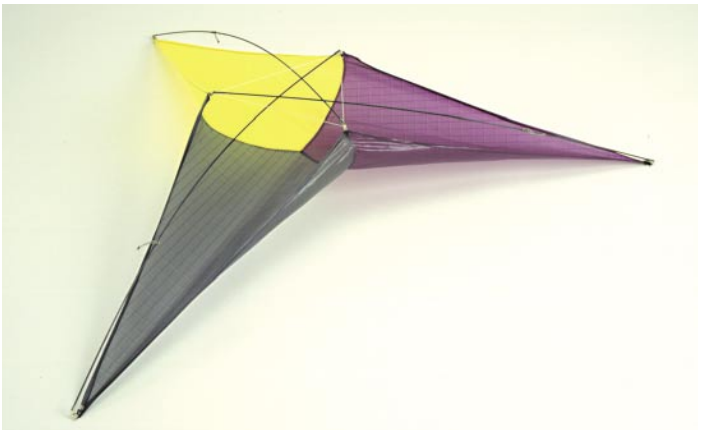
Unroll your Zero Wind 333 and spread apart the two tips that are folded together, so you have three distinct points and the spars and rigging are facing you.



Notice the side opposite the two tips you just spread is restricted from spreading by a connector at the center. Remove this connector from both sides and store it in a safe place for when you pack your kite away.

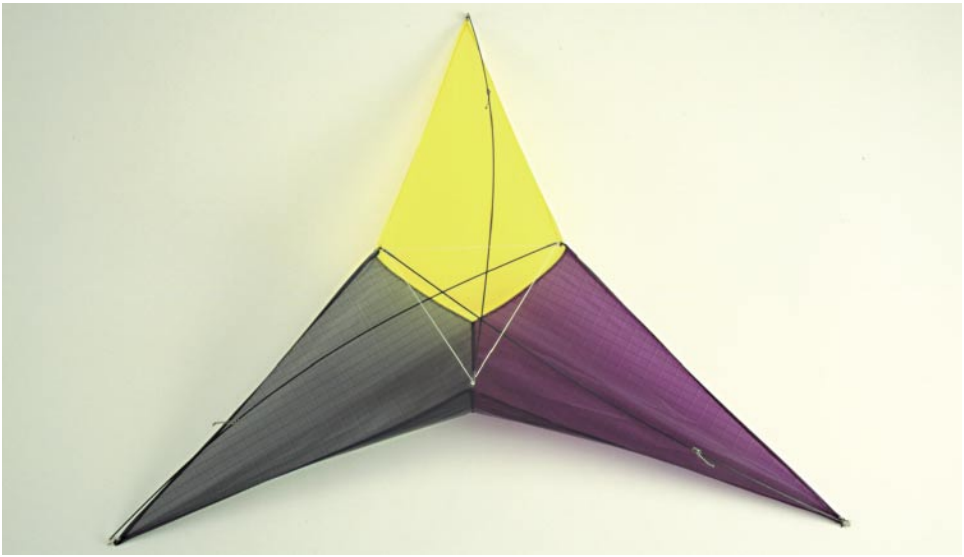


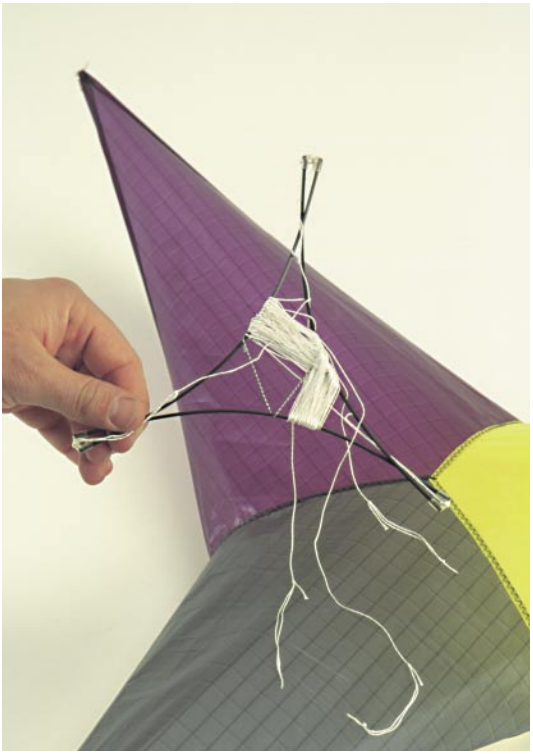
Take one of the spars with the loose ends, slide it back under the rigging line and insert it into the vinyl connector on the side opposite its attachment point. Do the same for the other loose spar.



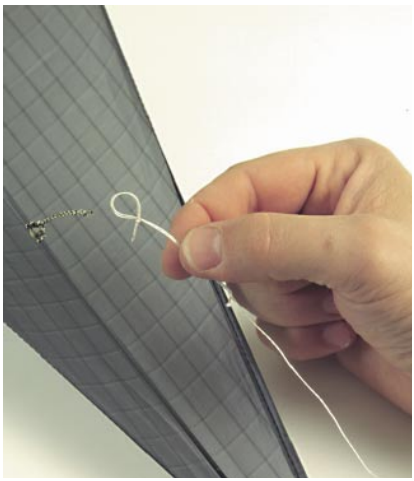
Note: The spars should weave with each other in the center - in other words each spar should go under then over the other two spars before going into the vinyl connector.

Your Zero Wind 333 is now completely assembled and should look like the photos above & below.





Unwind the lines from the Zero Wind 333 Handle, and you will have three lines corresponding to the three wings of the kite. On each of these lines you will find loops at one meter (3 feet) and two meters (6 feet) from the end.



The loops allow you to choose from 3 possible line lengths. Unwind the lines until you reach the set of loops at the length you want. Fasten them to the handle using a lark's head loop. Then attach the line ends to the small bridles on the spars.

How to tie a lark's head loop

When your are first learning to fly your kite in zero wind, fly on the first setting (the shortest length), since this is the easiest position for controlling the kite. For more advanced zero wind flying or for flying outside in wind, fly on either of the longer settings.

Flying the Zero Wind 333 in Zero Wind is based on the movement of your arm and the tilt of your wrist. Follow the drawing on the following page to get the basics in Zero Wind flying. Flying the Zero Wind 333 in wind is based on a direct control principle. This means that the kite will move in the direction you tilt the handle. Learn to control spins by rotating the handle in the direction of the spin.

Enjoy flying your Zero Wind 333!!

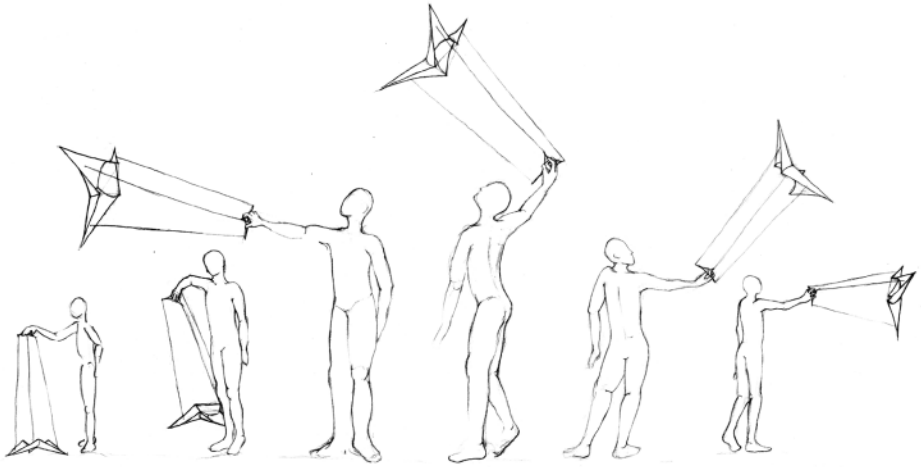
picking a flying space

True Zero Wind flying must be done in an indoor flying space, as there is always a little breeze outside which interferes with flying, especially when you are first learning to fly your 333 in Zero Wind. Places to try include community centers, schools, indoor activity centers, gyms, tennis & basketball courts, warehouses or loading docks (when not in use). The ceiling should be at least 15 feet high and have a clear, even area roughly 25 feet in length and width. This is important as you will be walking backwards with your eyes on the kite. Once you have learned to fly without wind you will find that you can fly almost anywhere: streets and alleys, rooftops, bridges, etc. Your can even try flying with a 333 in each hand! Also remember you can fly in clean low to medium wind on normal flying fields. In these situations you can fly on lines longer than those provided.

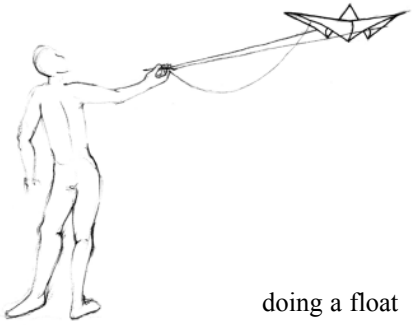
When flying outdoors, find an open field with no power lines, or roads crossing through it. Also make sure that there are no thunder storms in the area, as wet lines can conduct electricity. The more open and spacious the flying space the better the wind. A building, hill, or big bank of trees at either end of your field will cause turbulence which may interfere with learning to fly. The smoothest wind is that coming from a large lake or the ocean. Locate yourself as close to the center of the clearing as possible, as the smoothest winds will be there.

Fly safe!

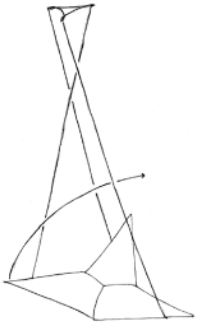
Avoid power lines, cars, roads and people. Don't fly near airports or in hazardous storm conditions.



flying in Zero Wind



doing a float



to fix a twist

Glossary

airfoil- a surface that gains lift when air is run past it due to its shape.

carbon- the most basic and abundant molecule in nature. Carbon is easy to produce, poses no environmental hazards, is a very strong molecule for its weight, and bonds very well with epoxy for the production of compression materials (spars, sheets)

clean and dirty wind- wind with no turbulence, caused by obstacles such as trees and buildings, is often called 'clean' by kiters. Dirty wind is turbulent, unpredictable.

compression- the force of pushing in from two ends on a material.

design science- the study and use of nature's principles of design and building. Knowing and understanding the possibilities of form, structure and movement, the design scientist analyzes the needs and goals of a particular project and searches for the most efficient and economic structure to satisfy those needs and goals.

downwind- the direction the wind travels in, ie. a dropped leaf blows downwind.

k upwind- the direction the wind is coming from. ie to walk into the wind is to walk upwind.

flying lines- the tension lines (strings) that run between the handles and your kite, set precisely to ensure the proper response of your kite to your control signals.

larks head- a loop system used to attach lines together which need to be removed and reattached, one end forming the loop or lark's head, the other tied in an overhand knot.

lift- the upward force created by the movement and angle of a kite.

line attachment- our term for the knotted loop attached to the kite and handles to which your flying lines are attached by a lark's head.

ripstop- a pattern woven into cloth that greatly strengthens the cloth without much additional weight, and which helps to keep puncture holes from ripping.

k Ripstop Nylon- traditional high-tech sailcloth using woven nylon fibers and a plastic or silicon coating.

k Ripstop Polyester- the latest, greatest sail cloth using woven Polyester fibers and a plastic or silicon coating. The advantages of Polyester are its low stretch and slow fade (polyester has 5 times greater resistance to damage from UV light).

spar- a compression member (stick or strut) traditionally of wood or bamboo, usually made of carbon or fiberglass with epoxy in modern kites.

k pultruded carbon spars- spars produced by running carbon fibers impregnated with epoxy through a die. The fibers in these spars run lengthwise; the spars can be made hollow, solid, round, rectangular, or practically any shape. Pultruded carbon spars are strong, light and economical - their only weakness is that the fibers may split down the length of the rod when over stressed.

k micro carbon- a pultruded carbon spar that is solid in the center and usually under .25 in / 5mm.

Spectra™- a smooth man-made high tech fiber with extremely low stretch, low weight, and high strength. This makes it a great fiber for fly lines. The Spectra™ fiber is developed and produced by Allied Signal corp.

synergy- in principle, the whole equals more than the sum of its parts, i.e. the action/interaction of two or more parts produces an effect of which each part is individually incapable. The sum of the parts of a synergetic kite produce a higher effect of stability, response, and performance than that of an ordinary kite design.

tension- the force pulling out on two ends of a material.

tensegrity- a system in which the spars are suspended in a continuous network of integrated tension lines. Tensegrity is short for tensional integrity; it is one of the lightest yet strongest structural systems known.

tension suspended airfoil- the unique patented feature of all Synergetic series kites in which the efficient shape of the airfoil is formed by the tension pulling on a sail which is suspended in a resilient shape.

tension system- the network of tension lines (strings) and caps connected to the sail of a Synergetic Series kite. This system controls the shape and flexibility of the kite.

wind window- the term used to describe the possible flying range of the kite in reference to the kite flyer. This is always part of a sphere which is centered at the kite flyer, with the flyable area located down wind (if there is wind). The size of the window depends on the wind and the efficiency and shape of the kite. When flying in Zero Wind your window is 360° around you, and on bridges your window can extend almost 360° vertically above and below you.

Zero Wind- no available wind source to propel the kite. In these conditions you must use your movement and the efficiency of the kite in order to fly.

Replacement parts:

Synergy Zero Wind 333
spars:

# per kite -	3
length -	21.875 /55 in / cm
type -	Avia Micro Carbon .070 /2mm

For parts, supplies and additional information contact your local kite retailer or Nova Design Group (see back cover for address).

If you wish to find other information about kite flying, try the following:
-Talk to the store you got your kite from or to a kite store in your area.
-Talk to the kite flyers you see in your area.
-Contact the American Kite Flyers Association: 1559 Rockville Pike, Rockville, MD 20852 800) AKA-2550, (408) 647 8483
- Attend kite festivals and competitions.
- Pick up one of the kite magazines.
-There are also many good books on kite flying (here are a few suggestions):

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Thompson, D.W. On Growth and Form, ed. J.T. Bonner, Cambridge Univ. Press, 1961.
Periodical publications:
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American Kite - America
Drachen magazine - Germany
Kite Passion - France (in english also)

designer profile

Marc Ricketts
A kite flyer from a very young age, Marc experienced the explosive development of high-tech, high performance sport kites and has been competing since the early 80's. Following his interest in design and structure he studied architecture at Pratt Institute in New York City. There the focus of his studies moved away from architecture to geometrical structure and stability - in particular tension structures. He applied this knowledge to aerodynamics, developing and patenting the "Tension Suspended Airfoil".

Marc released the Synergetic Series kites in the beginning of X94. Immediately recognized for their innovation, they were awarded "Best New Kite" from the Kite Trade Association, and "Best Multi Line Kite" from the Smithsonian Institute. With the recent introduction of his 3 line series, Marc continues to transform the kite world through innovative design.

Marc Ricketts' kites are being manufactured by Invento, so you can expect their high production quality. All the kites come with their own Ricketts-designed carbon-fibre handles and Spectra© lines.

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