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manual

FENIX

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FENIX

22 - 24 - 27 - 29

flight manual

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> congratulations

Congratulation for buying the new **FENjX**

We strongly recommend that before you even unfold the **FENjX** you read this manual carefully in order to be aware of any general limitations, performance characteristics, take off and flight characteristics, landing procedures, dealing with emergency situations and general maintenance.

We appreciate your feedback, so please send us your comments, positive or negative, in regard to the **Windtech** range.

You are the best feedback and support for future products, and please remember that we are always happy to give you any help and advice. You can always find more information at **www.Windtech.es** or you can contact your local dealer.

Best winds

Windtech Team



> warning & liability

Flying paragliders is a risky activity this may come by an imprudence by the pilot or by unexpected bad weather conditions which may cause an accident and injuries to the pilot. Windtech assumes that the purchasing pilot has the appropriate pilot's license has taken a training course, and has the proper ability and enough experience to safely fly the **FENIX**. By being a **FENIX** owner you are taking responsibilities by all the inherent risks and you will make the risk higher but not taking the proper steps to fly safely. All liabilities actions against the manufacturer or dealer will be excluded by the misuse of this product.

Use only certified harnesses with back protection, emergency parachutes according to the weight range. Also do a daily inspection and pre-flight inspection of all your gear. Never try to fly with a damage or unadapted equipment. Use helmet, gloves and boots.

All pilots must have a license and permit in their own country and a CR insurance.

Do a cautious inspection of the flying area as well as the weather conditions before taking off. If you are not confident do not fly and always add an extra of security in the decisions taken. Do not fly under rain, snow, strong wind, turbulent air or overclouded skies

We must insist that reading this manual is not enough and you need a large experience in all kind of flying conditions.

It must be absolutely understood that Windtech & the dealer do not accept any responsibility for accidents, losses, injuries, direct or indirect damage following the use or misuse of this product

The **FENIX** is right for experienced pilot of the Sport Class or Cross Country Class looking for the best performance/safety ratio and are able to fly 100 hours per year. This wing is certified in the top range of the EN C class.

> desing materials

The **FENIX** structure is made with 67 cells with a different widths and has an inner structure made with V-ribs. This makes possible a large line reduction.

The new profile makes this wing very safe and gives it a plus in performance and is very efficient when turning.

-- fabric

Top and bottom sail are made of 38 g nylon of high tenacity. Profiles are made out of a stiffer nylon fabric to avoid deformation even after several years of intensive use. Profile reinforcements are made out of polyester of 180 g. and plastic rods of 2.4 mm to help the inflation of the wing.

-- lines

They come in different diameters of kevlar and dynema unsheathed: They have to be inspected every 100 hours maximum.

-- brakes

Brake lines come a little longer so every pilot can adjust it according to his personal taste. But you must always leave 10 cm before the brakes line starts acting in order to avoid trailing edge deformation when the wing is fully accelerated. In case the brake handle comes loose during flight or any brake lines is cut you can pilot the wing by pulling softly the C risers

-- risers

3 risers. A riser has a red cover to recognize it at first look. Attached to this riser there is another line with another maillon This is A' and is the big ears riser. B riser is blue and also has a rope with a maillon the B', so the wing tips remain at positive angles when accelerated. C riser comes in grey color.

-- speed system

The accelerator has being limited in travel up to a safety point, however you can gain 20 km of extra speed.

You have to adjust the harness to the speed system so you can use all the speed travel. To do so you have to be seated in the ground meanwhile you are in your harness and adjust the lines by pulling up the risers with tension. Another person help to do this is recommended. Make sure also that the pedal is not pulling down the risers when you are not using it.

Once all the gear is rigged you have to test the whole speed travel in calm air.

The use of the speed system reduces the angle of attack and the canopy may be more sensitive to collapses therefore do not use near the ground or in turbulent air and in case you are hit by turbulence remove your feet off the pedal bar as quickly as possible.

Distance between attachments points (harness carabiners) must be between 42 and 46 cm.

-- all up weight

Each model of paraglider has been certified for its own weight range. It is recommended to respect those weight ranges.

You have to take under consideration that if you want more speed, or more accurate handling or you like to fly in high mountains or strong conditions you have to choose to fly in the top part of the weight range. If you want a better sink rate or you fly in flatlands or weak conditions you can choose to fly in the bottom of the range weight (but you can always carry ballast for stronger conditions)

To get used to your new wing we recommend to do some ground handling exercises and short flights from a training hill. This will enable you to set up your gear properly.

-- pre-flight

Check cautiously the risers. Check the maillon are perfectly closed and verify there are no tangles in the lines.

Brakes lines must have 10 cm extra from the knot. Both lines must be equal in length and no obstacle around the pulleys.

Check the carabiners and harness locks are closed, the parachute container pins are in and the helmet is properly tight.

> inflation and launch

-- front launch

Choose an open space free of any obstacles, especially trees and power lines. Open your glider in a slight horseshoe arc (semi-circle) & thoroughly check that you have no knots or line twists. Connect the risers to your harness making certain that your karabiners are fully closed and you have no twists in the risers. Pilot must be placed in the center and two meters off the wing. By pulling the A risers walk forward till you feel pressure and the wing starts inflating. Keep a constant pull in the risers until the canopy is well above your head (do not pull down or forward since this will deform the leading edge and may potentially cause a collapse and making the take off dangerous) Once the wing is above your head release the risers and keep the brake handles in your hand applying a little pressure. This enables you to have some extra time for a final checking before taking off. If the wing goes toward one side you have to keep the symmetry by using the other brake. If one side collapses pump that side until it reopens. When the canopy is not fully inflated stop and start again. After checking the canopy is perfectly inflated run forward and launch.

IMPORTANT: Never take off when the glider is not fully inflated or falls toward one side.

-reverse launch (strong wind take off)

Reverse launch is the safest method when the wind is strong during take off.

There are several ways to achieve this take off but the best way is to practice in an open and flat space with a regular constant breeze.

We will proceed to describe one of these ways:

Set up the canopy as in the front launch. Turn 180 degrees to face the canopy by passing one of the risers and lines well above your head when you do the turn.

Inflate the canopy pulling lightly the A riser (if the wind is strong you may have to walk a couple steps toward the paragliders during the inflation process) Once the canopy is

above your head release the risers and keep the handles in your hands, then do 180° turn to face the slope, run and take off.

IMPORTANT: Never take off when the glider is not fully inflated or falls toward one side.

> fly with the C risers

In order to obtain a better flight control, anticipate collapses, keep a higher speed and better efficiency flight in turbulent air without using the brakes you can control the wing with the C risers. In order to pilot with the C risers keep the handles and pull the C risers.

With the C risers you can actively fly through turbulent air. When the leading edge openings transmit a lack of pressure apply some input with the C risers in order to keep the mouths open. The amount of the input to apply varies with the turbulence but it must be smooth to avoid any pitch or surge forward of the canopy.

This method is right for normal air, not strong turbulences. In the case of being hit by strong turbulence keep using actively the brakes to maintain the wing open.

IMPORTANT: Never take off when the glider is not fully inflated or falls toward one side.

> landing

Choose a large field clear of all obstructions & in a clean laminar airflow with an extra in security in case of making mistakes. Always face the wind when landing.

A different technique is needed for different wind strengths. Every landing should be judged differently even if it's your local site.

On final approach the pilot should have hands up (keeping a feel on the wing in case of unexpected turbulence) so the glider has energy for a flare. In light or nil winds the pilot will need a committed symmetric flare at around one meter above the ground. When the wind is strong avoid too much braking to avoid a dangerous situation. Once in the ground with strong winds run toward the canopy and pull the C risers to avoid being pulled by the wind.

You must avoid the canopy to fall on its leading edge since the pressure will not escape and you can brake cells and ribs.

> possible flight incidences in turbulent air

-- asymmetrical tuck/collapse

An asymmetric tuck / collapse is when part (one side) of the wing (say 20% or even anything up to 90% of the span) tucks or collapses, usually induced by turbulence but sometimes also through poor pilot control in turns and wing-overs.

The **FENIX** is tested and certified to automatically recover without correction by the pilot, but with the correct input the pilot can minimize any turning, and height lose, and help the glider recover more quickly.

There are 3 basic steps to follow immediately if you have a collapse:

1: Weight shift to the flying side of your glider (away from the collapsed side). This helps stop the rotation & increases pressure in the wing in the inflated side.

2: If needed apply the correct amount of brake to the open (flying) side to slow any rotation (spiral) induced by the collapse. Be very careful not to use too much brake as its possible to stall the flying side of the glider, and enter further unstable situations which may be harder to recover from than the collapse itself.

3: Once the glider has straightened out, or the spiral has slowed, smoothly pull down the brake on the collapsed side, with a long stroke/pump, & the deflated side of the glider should re-inflate. As the glider re-opens release the brake immediately but progressively.

With instruction & experience the above will become a reflex action, and the correct input to give will become second nature to the experienced pilot.

-- front/symmetrical tuck collapse

A front tuck /collapse is a symmetric tuck of the leading edge of the wing, starting from the centre of the canopy to the wing tip. This can be either a tucking of just the central part of the leading edge of the glider, which can sometimes cause a front 'horseshoe' or 'rosette-ing' of the glider, or even a complete 'blow-out' of the whole canopy in extreme situations.

When flying, a front tuck may occur while leaving a strong thermal, or more often while using the speed system in turbulent air, or sometimes whilst flying down-wind of another paraglider & being 'waked' by the wing tip vortices of the glider and turbulence wake turbulence of the pilot.

Remember, the pilot can learn to help stop collapses by flying 'actively', but if a front tuck does occur it will easily clear itself. Re-inflating the wing can be helped by correct pilot input and, once the glider is overhead, symmetrically applying 40 % of both brakes & then releasing immediately will get pressure back in to the glider and speed up the recovery. Do not brake when the glider is behind you, as this can stall the wing, but wait for the glider to shoot forward above your head, then brake.

-- cravats

If the wing tip gets stuck in a line this is a "cravat". This may cause a spiral very difficult to control. First thing you have to do is to regain stable flight and flight straight. Then by pulling down the stable line try to free the wingtip. You have to be careful with the amount of brake input since you may cause a stall by pulling to much the opposite brake. In the case this method does not work the only option is a full stall. Do this with plenty of height. If the wing spin accelerates and you can not control it any longer you have to use the emergency parachute when there is still a lot of height.

-- asymmetric stall

This can happen when turning in a thermal at low speed (near the stall point) when you want to close the turn and you don't rise the outer brake but you apply more input to the inner brake causing an asymmetrical stall (half wing will fly forward and the other backwards) When this happens to regain stable flight you have to rise the inner brake and the wing will surge forward. Depending on the flat spin the surge can be quite large. Use the brakes to stop the surge. Another option is to achieve a full stall and exit in a symmetrical way to avoid any twist. Do this with plenty of height above ground.

-- deep stall

It is possible that a glider goes into deep stall. This maybe caused in different situations: when flying the wing wet, and after a slow exit from a B stall or after a symmetrical or asymmetrical tuck. The result are that even when the canopy looks fully inflated is not flying forward. When this happens rise both hands. This action may cause to regain flight. If nothing happens after several seconds pull the A risers or use the speed system to regain normal flight.

Make sure that the wing is back to normal horizontal speed before using the brakes. Never fly under the rain or with a wet canopy since these may cause a deep stall situation. When flying under rain land immediately.

> bad weather flying

We advise not to fly in bad weather. Before going flying you should check the weather forecast & always ask more experienced pilots about the conditions expected for the day. Never fly if weather conditions are inappropriate. If you are already in the air then get down safely before it's too late! Always be aware of the weather changing & if in case of doubt land as quickly as is safely possible.

Even though the **FENIX** is EN C certified this is not a guarantee against flying in turbulent air.

> emergency procedures & quick descent techniques

It may happen that you will need to descend very quickly and all pilots should do a training course (SIV) in a certified official school. This training is done with plenty of height above water and a support boat. As a informative manner quick descent maneuvers are:

-- bigs ears

Big Ears is the simplest descent technique & can be very useful for top landing.

Sit upright in your harness & with the brakes in your hands reach up to the OUTSIDE 'A' riser. Make sure that you have the correct line, and be careful not to pull down the whole

'A' riser on one side which could induce a collapse.

Once you are sure that you have the correct riser pull out and down, and the tips of your glider should fold under symmetrically. You should be applying NO brake, as you could stall the wing in this way. Steering is done by weight-shift.

To recover, release the outer 'A' riser & the **FENIX** will return to normal flight. Pump with the brake in case needed.

-- spiral dive

The spiral dive is performed by starting a series of 360 degrees turns, gradually pulling one brake harder and harder and weight shifting into the turn. Pull more inside brake, and weight shift harder, for a faster spiral dive but be careful not to stall one side and enter a spin in this way. Ease off on the inside brake, and weight-shift less hard, to regain level flight. Like this, the pilot can control the bank angle and the sink rate of the glider in the spiral dive. Always remember that whilst in the Spiral dive you are drifting with the wind, and it is very easy to become disorientated.

This manoeuvre is not approved for bank angles higher than 60 °. At this upper limit the sink rate of the canopy is approximately 10 m/s and the overload is equal to 2G's.

For bank angles higher than 60 degrees the sink rate can achieve 20 m/s but the greater overload (High gravitational forces - G's) can cause eyesight and equilibrium problems, and cause some people to 'black out' (faint), which consequently can make the manoeuvre extremely dangerous.

To recover from a spiral dive, the inner brake must be progressively and slowly released, until the canopy assumes normal flight, and angle of bank, again. A good rule of thumb is to use the same number of 360-degree turns as you did on entry on exit to give a safe and progressive pullout. If you release hands up from a tight spiral dive you will experience a big surge followed by a dive. (In turbulent air this can result in a collapse.) The ZEPHYR 2 has been tested for this but it is advisable to learn the correct exit method, i.e. progressively release the inside brake.

-- b stall

The B-line stall is a real stall even though the wing appears to be flying above your head the laminar airflow over the wing is completely lost. During B-Stall, the canopy falls perpendicularly to the ground (straight down, but drifting with the wind) at a sink rate of 5 to 12 m/s, with an angle of attack of 90 degrees.

To enter a B-Stall, it is necessary to sit upright in your harness, reach up with the brakes still in your hands (preferably with the toggles around your wrists) & securely clutch each B risers in each hand at the top near the maillons rapides (quick links). To enter the B-line stall, pull down symmetrically on the B risers. (About 40 cm)

The force initially is quite hard (up to about 15cm) but for the last part the force required to pull down is less. Keep your weight centered in the harness, and keep the risers held

at a symmetric level to each other. The more B riser pulled the faster the decent rate, but the glider can become unstable with a very deep B-line.

To return the glider to normal flight conditions:

Ease up the B-risers SYMMETRICALLY for 50% (25-cm of B-line still held) holding some pressure, then symmetrically completely and rapidly release them. If necessary, control the surging forward of the canopy by gently braking when the glider is in front of you. What you are trying to achieve is to not shock-load the glider by an immediate release from a deep B-line, whilst at the time not easing off too slowly and risking a deep stall in turbulent conditions. Releasing the B-lines from a deep B-line position works fine (& if unsure whilst attempting the manoeuvre simply release the B-lines together from this position) but puts unnecessary load on the glider.

If necessary, control the surging forward of the canopy by gently braking when the glider is in front of you. Do not brake too hard as you may cause the wing to enter a full stall in this way, and let the brakes back up as soon as the surge has stopped.

> towing

The **FENIX** is valid for towing. It is under the pilot responsibility to use the proper harness, quick out system and accessories and they have to get used to the equipment and towing gear. All towing personal must have the proper qualification to do this activity and the towing device must be certified according to the norm in your country.

> acro flying

Even when the **FENIX** was tested by expert acro pilots in different situations it was not designed for this purpose and we don't recommend this type of flying.

> maintenance

When folding the glider, we recommend to put reinforcements one above each other in order to avoid that they might suffer any kind of deformation.

Store the paraglider in a dry space away from chemical agents, UV light and high temperature. If the canopy has been packed wet it is necessary to reopen it and let it dry before packing away for a sustained period. Keep the canopy and lines clean, as dirt may penetrate into the fibers and damage them.

Clean the paraglider only with fresh water and a soft sponge. If you are unfortunate to land in the sea & survive! Hose/soak the glider with fresh water & dry completely. Absolutely avoid contact with chemical agents like oil, petrol, solvent and similar, which can damage the fabric and its surface covering.

Store the paraglider in a dry space away from chemical agents, UV light and high temperature. If the canopy has been packed wet it is necessary to reopen it and let it dry before packing away for a sustained period. Keep the canopy and lines clean, as dirt may penetrate into the fibers and damage them.

We strongly recommend you to have a full inspection of the paraglider by **Windtech** or the distributor at least once a year. Besides this you should check periodically the lines, cloth and stitching.

Every 100hrs. or once a year, which ever comes first, change all bottom lines. This is very important to maintain the flying and safety characteristics of the wing. The rest of the lines must also be checked and if they have deteriorated then they need to be changed. Test some of the lines that are not changed for minimum 40% of the rated strength. If the line fails you should replace them all before using your glider.

Small tears in the sail can be repaired by using adhesive spinnaker cloth, which we supply with every new glider. If you need more of this material, you can buy it from some yacht chandlers, sail repair centers, and some other such places.

Large tears, any sewing or structural repairs, or tears along seam lines or line attachment points, of the paraglider must be carried out only by the manufacturer or authorized service centers.

> warranty

This glider carries a two-year guarantee from defects due to materials and manufacturing. If a product is deemed to be defective by **Windtech**, the warranty covers the repair or replacement of the defective product only. **Windtech** will not be responsible for any costs, losses or damages incurred as a result of loss of this product.

Windtech is not responsible for mailing costs or material costs used other than what is found to be defective.

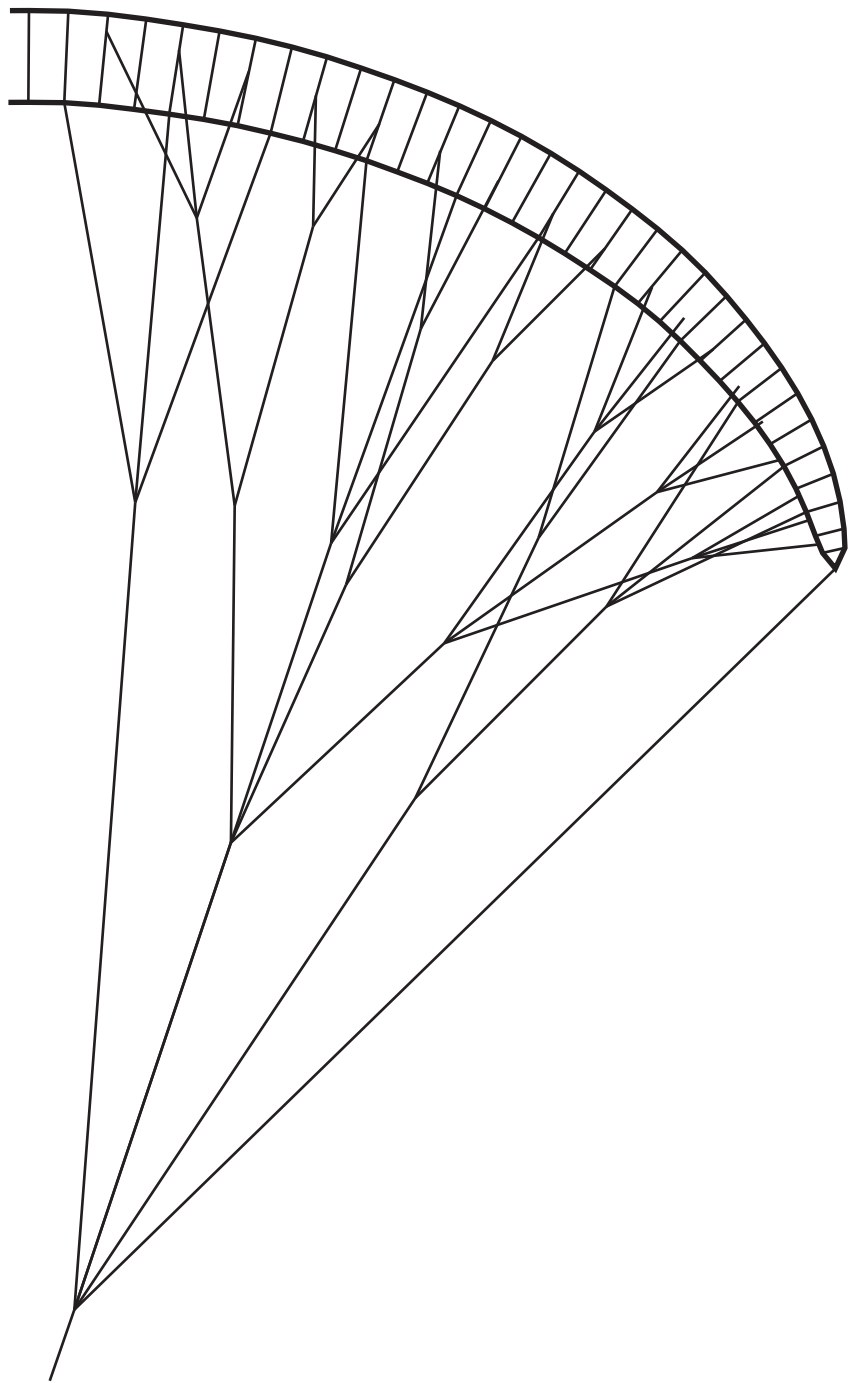
This warranty does not cover damage caused by misuse, abuse, neglect or normal wear & tear including damage due to excessive sun exposure, damage caused by improper handling & damage caused by anything other than defects in material & workmanship.



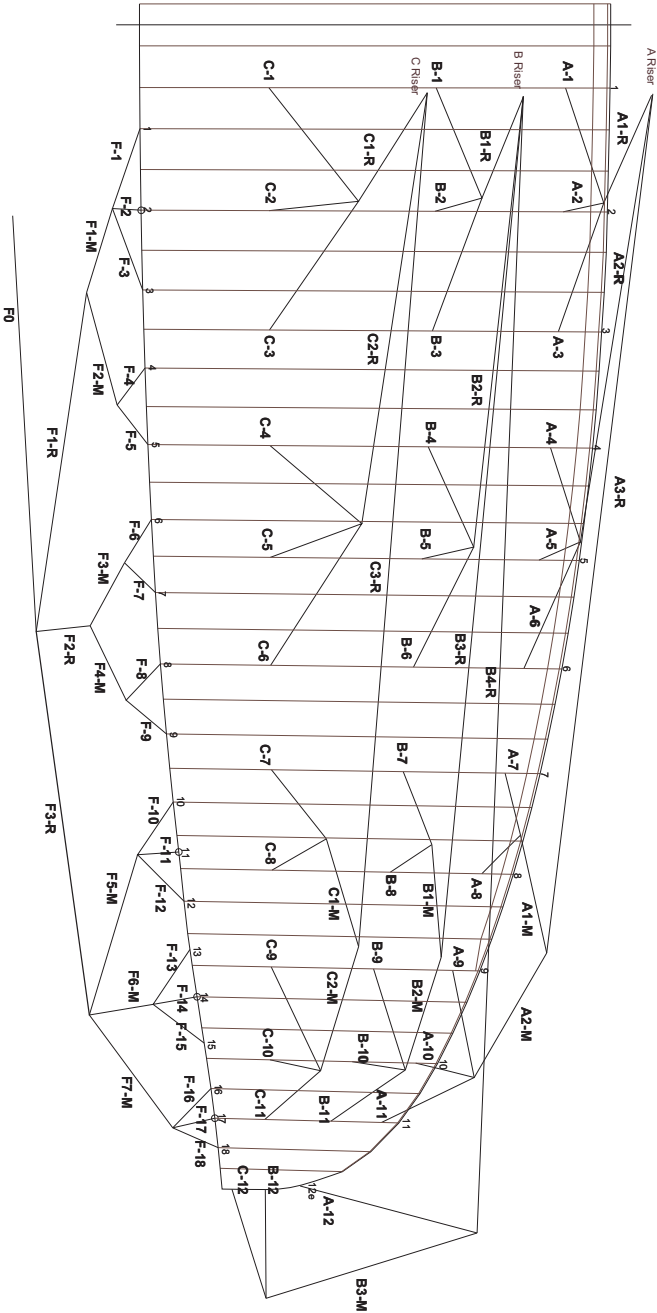
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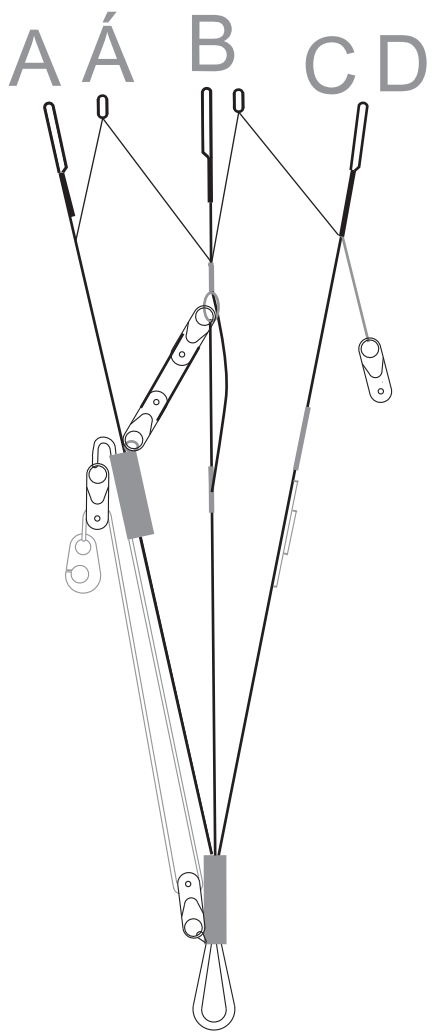
Size	22	24	27	29
Area (m ²)	21.76	24.87	26.8	28.84
Projected area (m ²)	18.67	21.32	23.05	24.76
Span/ (m)	12.03	12.83	13.34	13.83
Projected span (m)	9.53	10.18	10.59	10.97
Aspect ratio	6.65	6.65	6.65	6.65
Projected aspect ratio	4.86	4.86	4.86	4.86
Max. chord (m)	2.27	2.43	2.53	2.61
N° cells	67	67	67	67
Line lenght (m)	6.58	6.8	7.06	7.30
Canopy weight (kg)	5.9	6.2	6.5	6.8
Pilot weight (kg)	45-60	55-75	70-95	80-110
Weight in fly	65-75	70-95	85-110	100-130
Min-max speed (km/h)*	22-58	22-58	22-58	22-58
Max speed trim (km/h)*	39	39	39	39
Certification EN		C	C	C

* speeds with medium range weight pilot at sea level.



FENIX





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