

*OZONE*

**PHOTON**

Pilot Manual - EN



## CONTENTS

<b>Thank You</b>	<b>01</b>
<b>Warning</b>	<b>02</b>
<b>Your Photon</b>	<b>03</b>
<b>Limitations</b>	<b>05</b>
<b>Preparation</b>	<b>07</b>
<b>Basic Flight Techniques</b>	<b>09</b>
<b>Rapid descent Techniques</b>	<b>14</b>
<b>Incidents</b>	<b>16</b>
<b>Care and Maintenance</b>	<b>18</b>
<b>Ozone Quality</b>	<b>27</b>
<b>Technical Specifications</b>	<b>28</b>
<b>Drawings/Riser Lengths</b>	<b>29</b>
<b>Rigging Diagram</b>	<b>30</b>
<b>Materials</b>	<b>31</b>

# THANK YOU

Thank you for choosing Ozone.

As a team of free flying enthusiasts, competitors and adventurers, Ozone's mission is to build paragliding equipment of the highest quality. We are constantly working together to develop cutting edge designs with class leading performance and maximum security. Wings are rigorously tested and developed by our team of experienced, discerning, world-class pilots to ensure they meet your expectations and demands. The products we offer you are the ones we fly ourselves, every day.

To ensure the highest levels of quality, we manufacture all of our products in our own production facility, our unique made-to-order system means that every glider is effectively tailor-made for you. Panels are individually laser cut from a single layer to ensure the highest precision and production consistency from one wing to the next. Your wing undergoes numerous rigorous quality control checks at each and every stage of the manufacturing process to guarantee it meets the highest industry standards.

It is essential that you read this manual before flying your wing for the first time. It includes important information regarding the use and care of your paraglider. For the latest updates, including all technical datas, please refer to the latest online version.

If you need any further information about any of our products please check [flyozone.com](http://flyozone.com) or contact your local dealer, school or any of us here at Ozone.

Safe Flying!  
Team Ozone

## WARNING

- Paragliding is a potentially dangerous sport that can cause serious injury including bodily harm, paralysis and death. Flying an Ozone paraglider is undertaken with the full knowledge that paragliding involves such risks.
- As the owner of an Ozone paraglider you take exclusive responsibility for all risks associated with its use. Inappropriate use and or abuse of your equipment will increase these risks.
- Any liability claims resulting from use of this product towards the manufacturer, distributor or dealers are excluded.
- Be prepared to practice as much as you can - especially ground handling, as this is a critical aspect of paragliding. Poor control while on the ground is one of the most common causes of accidents.
- Be ready to continue your learning by attending advanced courses to follow the evolution of our sport, as techniques and materials keep improving.
- Use only certified paragliders, harnesses with protector and reserve parachutes that are free from modification, and use them only within their certified weight ranges. Please remember that flying a glider outside its certified configuration may jeopardise any insurance (e.g. liability, life etc) you have. It is your responsibility as the pilot to verify your insurance cover.
- Make sure you complete a thorough daily and preflight inspection of all of your equipment. Never attempt flying with unsuitable or damaged equipment.
- Always wear a helmet, gloves and suitable footwear.
- Pilots should have the appropriate level of license for their respective country and third party insurance.
- Make sure that you are physically and mentally healthy before flying.
- Choose the correct wing, harness and conditions for your level of experience.
- Pay special attention to the terrain you will be flying and the weather conditions before you launch. If you are unsure, do not fly and always add a large safety margin to all your decisions.
- NEVER fly your glider in rain, snow, strong wind, turbulent weather conditions or clouds.
- If you use good, safe judgment you will enjoy many years of paragliding.

# YOUR PHOTON

The Photon is a compact high performance 2 liner paraglider designed for experienced sport class pilots.

All of Ozone's 2 liner know how has gone into the design and development of the Photon. Based on the Zeno 2, but with a lower aspect ratio, moderated cell count, a more inherently stable profile and a higher arc, the Photon is the most accessible 2 liner we have ever developed. Extensive prototyping and experimentation along with hundreds of hours of flying and safety testing has been dedicated to the project to ensure it meets our exacting 'True Performance' standards.

The Photon is extremely compact and solid throughout the speed range thanks to the stable profile and solid span/chord wise cohesion. The wing is trimmed for safety, ease of use, fun handling and performance. The winglets have been implemented to improve high speed roll stability and to improve spiral stability, combined with the high arc the winglets reduce the necessary compromise between handling, side collapse behaviour and spiral stability.

The glide performance is comparable to the Zeno 2 but the improved sail cohesion and lower aspect ratio makes it less demanding and more comfortable to fly. In terms of speed, it is the fastest EN C wing we have ever built, faster than the D4, M7 and Zeolite and the top speed is only slightly less than the Zeno2. Importantly it is solid and comfortable at these speeds and the winglets improve the roll stability for higher levels of efficiency in accelerated flight.

Handling is refined and direct, similar to the M7 so it can turn on its wing tip and carve wide efficient circles making it easy to place in the middle of the core. The brake response is direct in the first part, whilst long and forgiving in the lower part. This characteristic makes the Photon not only exquisite in thermals but also very resistant to inadvertent stalls or spins. The long brake range and good slow speed flying characteristics makes top landing in tight spots easier than other wings with similar performance.

Certified EN C and available in six sizes it is suitable for experienced pilots who possess a high level of glider control skills and recent SIV experience. For the right pilot, the Photon is a fun, safe wing that is easy to fly, however despite its certification grade it is not suitable for less experienced or less competent pilots who are considering moving up from lower aspect ratio wings.

## ***Rucksack***

A choice of optional rucksacks are available for your wing. We have a large range suited for many applications - from large competition bags to accommodate modern competition harnesses to small lightweight compact designs suited for lightweight harnesses and hike & fly. You can choose from any of them at the time of order, or decide to not take one and re-use your old rucksack.

## ***Brake Lines***

The brake line lengths have been set carefully during testing. We feel it is better to fly with a wrap (one turn of the handle around the hand), for greater turn authority in the thermals and better overall control. Shortening the brakes from the factory setting will affect the trailing edge at full speed, so we strongly recommend to not do so. As the wing ages, the brakes will naturally reduce in length, so it is possible that they will require lengthening at some stage. When adjusting the brake lengths please keep in mind the following:

- Ensure both main brake lines are of equal length.
- If a brake handle has been removed, check the main brake line is routed through the pulley when replacing the handle. Use a bowline knot.
- When the brakes are fully released in flight, the brake lines should be slack. There must be a minimum of around 10cm of free play before the brakes begin to deform the trailing edge and a substantial bow to guarantee no deformation of the trailing edge when accelerated.

## ***Risers***

The Photon has been designed with 2 risers per side. The A risers have a smaller Dyneema riser holding the outermost AR3 line. As the wing ages, it is not unusual for the AR3 risers to reduce in length. Adjustment can be made by releasing the loop found on the small maillon attached to the B riser. Replacement AR3 risers can also be ordered separately from your Ozone dealer.

The risers feature a foot operated accelerator system, they do not feature trimmers.

**IMPORTANT**  
**In the unlikely event of a brake line snapping in flight, or a handle becoming detached, the glider can be flown by gently pulling the rear risers (B-risers) for directional control.**

# LIMITATIONS

## ***Pilot Ability***

The Photon has been designed as a solo high performance XC wing and is suitable for experienced sports class pilots only. It is NOT suitable for beginner or intermediate pilots, aerobic manoeuvres, training or tandem flights. To be flown safely, the Photon requires a good level of piloting skills - pilots are expected to have the necessary active flying skills and quick reaction times to keep a high aspect ratio wing open in turbulent air. We also expect recent and on-going SIV experience.

## ***Total Weight in flight***

Each Ozone glider has been designed and certified for a defined weight range. We strongly recommend that you respect these weight ranges. If you are between sizes the following information may help you make a decision as to which size to buy:

- For the most precise and dynamic handling or if you generally fly in mountains and/or in strong conditions, you should choose to fly near the top part of the weight range.
- If you want a better sink rate, or if you generally fly in flat lands and/or in weaker conditions, you may choose to fly nearer the middle part of the weight range. Remember, you can always add ballast when conditions are stronger.
- It is not recommended to fly at the very bottom of the weight range.

## ***SIV & Collapse lines***

As a thoroughbred high performance machine, we do not recommend to induce collapses with the Photon during SIV training. It was certified with the use of collapse lines, therefore induced collapses cannot be performed correctly, or safely without them. We strongly recommend to not perform collapses, it is better to work on your stall control. If you must, ensure the collapse lines are correctly mounted.

Collapse lines are available to order from your Ozone dealer. Ensure you fully understand the correct and safe use of this equipment before attempting SIV and only do so under expert tuition over water with all the necessary safety precautions in place.

## **IMPORTANT**

**The Photon was certified with the use of collapse lines, therefore induced collapses cannot be performed correctly, or safely without them.**



### ***Towing***

The Photon may be tow-launched. It is the pilot's responsibility to use suitable harness attachments and release mechanisms and to ensure that they are correctly trained on the equipment and system employed. All tow pilots should be qualified to tow, use a qualified tow operator with proper, certified equipment, and make sure all towing regulations are observed. When towing you must be certain that the paraglider is completely over your head before you start. In each case the maximum tow force needs to correspond to the body weight of the pilot.

### ***Flying in the Rain***

Modern wings are susceptible to rain and moisture, flying with a wet wing can result in the loss of normal flight.

Due to the efficient, wrinkle-free design of the sail, water tends to bead on the leading edge causing flow separation. Flow separation will make the wing more prone to entering inadvertent parachutal stalls, so flying in the rain, or with a wet wing (e.g early morning dew) should be avoided at all costs.

If you are accidentally caught-out in a rain shower, it is best to land immediately. If your wing becomes wet in the air it is advised to maintain accelerated flight using the speed bar, even during the final approach. DO NOT use big ears as a descent technique, big ears increases drag, and with a wet wing this will further increase the chances of a parachutal stall occurring. Instead, lose height with gentle 360's and maintain your air speed at all times. If your wing enters parachutal stall when wet, immediately accelerate the wing with the speed bar to regain airspeed.

**IMPORTANT**  
**Never fly in the rain or with a wet glider.**



# PREPARATION

## ***Accelerator System***

Attach the speed system lines to the accelerator system on the risers with the Brummel hooks. Alternatively they can be bypassed with the speed system attached directly to the riser accelerator lines using a larks foot.

There must be enough slack in the speed system to ensure the A risers are not inadvertently pulled during normal trim speed flight, but not so long that it is impossible to use the full speed range of the glider.

Maximum speed is achieved when the A/B limiter comes under tension. Pushing the speed system beyond this point will not increase the speed.

Once set up, test the full range of the accelerator in calm flying conditions and ensure that both risers are pulled evenly during operation. Fine-tuning can be completed when you are back on the ground.

## ***Harness***

It is important to set up your harness correctly before flying the wing. Make sure to spend time adjusting your harness's different settings until you are completely comfortable. Depending on the size of the wing, we recommend a chest strap setting between 42cm and 48cm (measured between the centre of the hang points). The XS & S sizes were certified with a chest strap set to around 40-42cm, the MS/ML between 44-46cm, and the L & XL between 46-48cm. Do not fly with a chest strap setting too tight (below 42cm) or too wide (above 48cm) as this will affect the behaviour and feedback of the wing.

The wing has been certified with a standard seated harness. Using a pod harness in a laid back supine position does not invalidate the certification but it may have an influence on the behaviour of the wing. Pod harnesses increase the risk of twists occurring during a large asymmetric collapse.

**IMPORTANT**  
**Using the accelerator decreases the angle of attack and makes the wing more prone to collapse, therefore using the accelerator near the ground or in turbulent conditions should be avoided.**

## ***Wing***

To prepare the wing, lay it out on the top surface and perform a thorough daily check. You should inspect the top and bottom surfaces for any rips and tears or any other obvious signs of damage. Lay out the lines one side at a time, hold up the risers and starting with the brake lines, pull all lines clear. Repeat with the B and A lines, including the upper C's laying the checked lines on top of the previous set. Make sure no lines are tangled, knotted or snagged. Mirror the process on the other side and then inspect the lines for any visual damage.

Inspect the risers for any signs of obvious damage or wear. Ensure they are not twisted, pay particular attention to the Dyneema AR3 risers as these are easily twisted.

### **Take-off checklist:**

1. Check reserve parachute - pin is in and handle secure
2. Helmet on and fastened
3. All harness buckles closed - check leg-loops again
4. Risers connected to the harness correctly with carabiners and maillons tight
5. Accelerator system connected
6. Holding the A risers and your brake handles correctly
7. Leading edge open
8. Aligned in the middle of the wing and directly into wind
9. Airspace and visibility clear

# BASIC FLIGHT TECHNIQUES

## **Launching**

Your Photon will launch with either the forward or reverse technique. The wing should be laid out in a pronounced arc, with the centre of the wing higher than the tips.

### **Forward Launch - Nil to Light winds**

When the wind is favourable, whilst gently holding the central A risers move forward positively, your lines should become tight within one or two steps and the Photon will immediately start to inflate. You should maintain a constant pressure on the risers until the wing is overhead. Do not pull down or push the risers forward excessively, or the leading edge will deform and possibly collapse.

Move smoothly throughout the entire launch, do not rush or snatch at it. Once above your head look up and check the canopy is fully inflated and there are no knots in the lines before committing yourself to the launch run.

### **Reverse Launch - Light to Strong Winds**

Lay out your wing as you would for the forward launch. Turn to face it by passing one entire set of risers over your head as you turn. Inflate the glider using your body weight and the A-risers. Once the wing is overhead, release the risers, brake gently if necessary, turn and launch. In stronger winds, be prepared to take a few steps towards the glider as it inflates. This will take some of the energy out of the wing and it will be less likely to overfly you or pick you off your feet.

## **Speed to Fly**

The Photon achieves its best glide in still air at trim speed. To maximise glide ratio when gliding downwind or when the air is not excessively sinking fly at trim speed or slightly slower by applying gentle pressure on the B risers. To penetrate better in headwinds and improve the glide ratio in sinking air, crosswinds or headwinds you should fly faster than trim speed using the accelerator. Using up to half bar does not degrade the glide angle or stability significantly and will improve your efficiency.

### **IMPORTANT**

**Never take off with a glider that is not fully inflated or if you are not in control of the pitch/roll of your wing.**

### **IMPORTANT**

**Never apply the brakes whilst using the speed system - it makes the wing more prone to collapse.**

At full speed the Photon is very fast, we recommend to only fly at full speed when absolutely necessary, such as when on final glide during a competition or when flying towards a strong thermal. 3/4 speed should suffice in most normal XC conditions.

Always pilot the wing with the B risers whilst accelerated and do not fly full speed close to the ground or in turbulent conditions.

By applying approximately 20cm of brakes the Photon will achieve its Minimum-Sink rate; this is the speed to use for thermalling and ridge soaring.

### ***Turning***

To familiarize yourself with the Photon your first turns should be gradual and progressive. To make efficient and coordinated turns, first check the airspace is clear and then lean in the direction you want to go. The first input for directional change should be weight-shift, followed by a smooth application of the brake until the desired bank angle is achieved. To regulate the speed and radius of the turn, coordinate your weight shift and use both the outer and inner brake.

### ***Active Flying***

To minimize the likelihood of suffering collapses in turbulent conditions, it is essential to fly the wing actively. The aim of active flying is to maintain a constant pressure and pitch control of the wing. If you feel a reduction or loss of pressure quickly apply the brakes until you feel normal pressure again. Once you have normal pressure, raise the hands back to the original position. Avoid flying with continuous amounts of deep brake in rough air as you could inadvertently stall the wing - always consider your airspeed. These subtle adjustments will help keep the glider flying smoothly directly above you and dramatically reduce the likelihood of a collapse. If the glider pitches in front of you, use the brakes to slow it down. Equally, if the glider drops behind you, release the brakes to allow it to speed up, but be ready to anticipate the following pitch forward. The goal is to maintain the wing directly overhead with a constant level of internal pressure.

### **IMPORTANT**

**Never initiate a turn at minimum speed (i.e. with full brakes on) as you could risk entering a spin.**

### **IMPORTANT**

**Always keep hold of your brakes. Do not fly in turbulent conditions**

When the conditions are turbulent, be more active and anticipate the movements of your wing, always be aware of your altitude and do not over-react.

We strongly advise you to keep hold of your brakes at all times and to not fly in turbulent conditions.

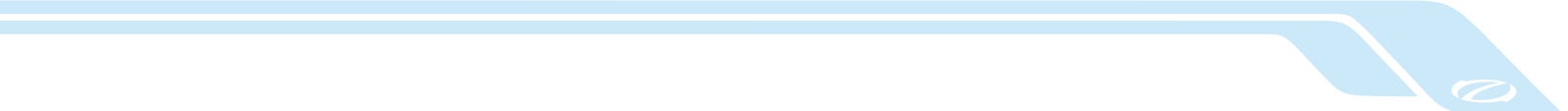
### ***Active B Riser control***

When gliding, whether at trim speed or in accelerated flight, we recommend to pilot the wing using the B risers. This gives an improved feel and control over the angle of attack enabling you to fly actively without using the brakes (which causes drag and pitch movements). The direct feel allows you to stop collapses before they happen and maintain higher speeds and higher levels of efficiency.

To fly with the B risers, keep hold of your brake handles (remove any wraps) and take hold of the wooden handles located on the B risers. Now you have direct control of the AofA; by pulling the B risers down you increase the AofA, releasing pressure reduces AofA and returns the wing to trim speed. With B riser control you can fly actively through turbulence, collapses can be stopped or at least reduced with correct inputs due to the sudden increase in AofA. If you feel the nose of the wing lose internal pressure, or you see a crease appear between the A and B line attachment points on the sail you can quickly input the B risers to stop the collapse occurring. The amount of pressure and size of the input is dependent on the amount of turbulence, or loss of pressure, but always avoid long deep inputs to avoid inducing large pitch movements or inadvertent stalls.

During accelerated flight, the added control of active B riser flying further increases the efficiency and stability of the wing. Whilst accelerated the act of pulling the B risers is exactly the same as releasing the speed bar. This translates to direct control of speed, AofA, and internal pressure in your hands. Coupled with active speed bar control, adjustments can be made with the B risers to optimise your speed and internal pressure through turbulence helping you to maintain a higher average speed whilst reducing the likelihood of unexpected

**IMPORTANT**  
**Always take hold of the B risers during accelerated flight.**



collapses. When pushing the bar, if the air becomes slightly turbulent apply some pressure to the B risers, when the air becomes less turbulent again you can reduce (or release) pressure on the B risers for extra speed. Flying fast and efficiently in normal air requires constant attention to the wing, it is necessary to combine B riser inputs and speed bar adjustments to keep the wing open and pressured.

This control method is suitable for gliding in good 'normal' air without huge levels of turbulence, it does not replace proper active flying with the brakes in strong turbulent conditions. If you are unsure about the air return the glider to trim speed, release the B risers and fly the glider actively with the brakes. If the air becomes very turbulent we recommend to use the brakes instead of the B risers.

### ***Landing***

The Photon shows no unusual landing characteristics but as a reminder, here are some tips:

- Always set up for your landing early, give yourself plenty of options and a safe margin for error.
- Once below 30 metres avoid turning tightly as the glider will have to dive to accelerate back to normal flight. If you are at low altitude, or if you hit sink, this could mean you hit the ground harder than necessary.
- Lean forward out of your harness before the actual landing (especially if it's turbulent), with your weight leaning forward against the chest strap, and make sure your legs are ready for the landing and a possible PLF (parachute landing fall).
- Allow the glider to fly at hands up (trim) speed for your final descent until you are around 1 metre above the ground (in windy or turbulent conditions you must fly the glider actively all the way). Apply the brakes slowly and progressively to slow the glider down until groundspeed has been reduced to a minimum and you are able to step onto the ground.
- In light winds/zero wind you need a strong, long and progressive flare to bleed off all your excess ground speed. In strong winds your forward speed is already low so you are flaring only to soften the landing. A strong flare may result in the glider climbing upwards and backwards quickly, leaving you in a vulnerable position.

- If the glider does begin to climb, ease off the brakes (10-20cm) - do not put your hands up all the way - then flare again, but more gently this time. Keep the brakes at mid speed, stand up, be ready to run and make sure you brake fully as you arrive on the ground.
- Choose the appropriate approach style in function of the landing area and the conditions.
- In strong winds you need to turn towards the glider the second your feet touch the ground. Once facing the wing pull smoothly and symmetrically down on the brakes to stall the wing. If the glider pulls you, run toward it.
- If the wind is very strong, and you feel you might be dragged, or lifted again, stall the glider with the B risers. This stalls the wing in a very quick and controllable way and will drag you less than if you use the brakes.
- Always land heading into wind!

# RAPID DESCENT TECHNIQUES

## ***Big Ears***

Folding in the wing tips increases the sink rate without radically changing the airspeed. Although mostly pointless with this type of wing, big ears can be useful for staying out of cloud or descending through the lift band of the hill, for example when top landing. As a means of descent though, it is better to find some sinking air and make steep turns.

To pull big ears, keep hold of your brakes and pull down on the AR3 line on each side until the wing tips fold under. The size of the big ears can be adjusted by pulling more line, or reaching higher up the line.

It is also possible to pull big ears with the 'B3' technique. To do so, keep hold of your brakes and pull BR3 lines on each side until the wing tips peel backwards.

Directional control while using the ears should be with weight shift.

Once the ears are engaged you can further increase the sink rate by pushing on the accelerator bar. Whilst it is possible to enter a spiral dive whilst holding in the ears, the high forces applied to the lower lines could exceed the breaking strain, leading to equipment failure!

**Ozone strongly recommend to NOT perform Spiral Dives with Big Ears engaged.**

To reopen the ears, release the lines at the same time. To help reinflation, if necessary brake gently one side at a time until tips open and regain pressure. Avoid deep symmetric applications of the brake as this could accidentally induce parachutal or full stalls.

## ***B-Line Stall***

Traditional B-line stalls are not possible with the Photon. Prolonged deep input on the B risers will result in a full stall. Do not do it.

**DO NOT perform spiral dives with the big ears engaged.**



## ***Spiral Dives***

The spiral dive is the most effective form of rapid descent. To initiate a spiral, look and lean in to the direction you want to turn, then smoothly and progressively pull down on the inside brake. The Photon will first turn almost 360 degrees before it drops into the spiral. Once in the spiral you should re-centre your weight shift and apply a little outside brake to keep the outer wing tip pressured and inflated.

Safe descent rates of more than 10m/s are possible, but at these rates the associated high speeds and g-forces can be disorientating. Always pay particular attention to your altitude.

To exit the spiral dive, smoothly weight shift in the opposite direction of the spiral and smoothly release the inside brake whilst applying the outside brake. It is possible for the Photon to remain neutral in a spiral dive, always be prepared to pilot the wing out of a spiral dive. To do so, use opposite weight shift and smoothly apply enough outside brake until the wing starts to decelerate, the glider will then start to resume normal flight. Recovering from a spiral with hard or quick opposite inputs will result in an aggressive climb and surge and is not recommended. Always be prepared to manage the energy, allow it to continue to turn until enough energy is lost for it to return to level flight without an excessive climb and surge.

Never perform spiral dives close to the ground.

Remember the spiral dive should be used in emergency situations only, excessive use of the spiral may result in an asymmetry in the lines and will put unnecessary strain on the canopy reducing the performance.

### **IMPORTANT**

**Always be prepared to pilot the wing out of a spiral dive. Use opposite weight shift and apply enough outside brake to stop the wing from spiralling.**

# INCIDENTS IN FLIGHT

## ***Deflations***

No pilot or wing is immune to deflations, however correct active flying will reduce the chances significantly.

Asymmetric collapses should be controlled by first weight shifting away from the collapse, fly away from the ground, obstacles and other pilots. Apply enough opposite brake to control your direction, this action alone will be enough to start the recovery process. In your efforts to stop the glider turning towards the collapse be very careful not to stall the flying side. If you are unable to stop the glider turning without exceeding the stall point, allow the glider to turn during the reinflation process.

If the deflation does not spontaneously reinflate make a deep, smooth, progressive input on the deflated side. Pumping too short and fast will not reinflate the wing and pumping too slow might take the glider close to, or beyond, the stall point.

Symmetric front collapses normally reinflate without pilot input, however 15 to 20cm of brake applied symmetrically, and immediately will speed the process. After a symmetric collapse always consider your airspeed. Make sure the glider is not in parachutal stall before making any further inputs.

If your Photon collapses in accelerated flight, immediately release the accelerator and manage the collapse using the methods described above.

## ***Cravats***

Cravats are when the wing tips become trapped within the lines and can result in the wing entering a spiral dive if not addressed correctly. The first action should be to stabilise the glider, i.e get control of your direction using opposite weight shift and brake input. Large cravats may require the wing to continue turning to avoid stalling the flying side. Once you have control of the spiral use strong deep pumps of the brake on the cravated side to try to free the tips. When doing so it is important to lean away from the cravat otherwise you risk spinning or deepening the spiral. The aim is to empty the air out of the wing tip, without

### **IMPORTANT**

**Never apply the brakes whilst using the speed system - it makes the wing more prone to collapse.**

spinning. Correctly done, this action will clear the cravat quickly, it is the most efficient and effective method. You can also try collapsing the wing tip by pulling on the AR3 line, this can help free small stubborn wing tip cravats. Whichever method you use, be careful with any brake inputs to not stall the opposite side.

If it is a very large cravat and the above options have not worked then a full stall is the next option. Only attempt this if you have enough altitude.

Remember if the rotation is accelerating and you are unable to control it, throw your reserve parachute immediately whilst you still have enough altitude.

### ***Deep Stall / Parachutal Stall***

It is possible for gliders to enter a parachutal stall, this normally occurs when flying with too much brake, after a front collapse or when flying with a wet wing. If the wing is out of trim this can also be a contributing factor.

If the wing enters a parachutal stall, your first reaction should be to fully raise both hands. This allows the glider to return to normal flight but if nothing happens after a few seconds, apply the speed bar to encourage the wing to regain normal flight. Ensure the glider has returned to normal flight (check your airspeed) before you use the brakes again.

Do not fly in rain, doing so significantly increases the likelihood of parachutal stalls occurring. To reduce the chance of stalling in rain avoid using deep brake movements or big ears. Find a safe area to land and using the speed bar, maintain a good airspeed at all times.

### **IMPORTANT**

**Never fly in the rain or with a wet glider.**

### **IMPORTANT**

**Only a few cms of input from your brakes can maintain your wing in the stall. Always release your wraps if you have taken them!**

# CARE AND MAINTENANCE

## **Packing**

To prolong the life of your wing and to keep the plastic reinforcements in the best possible condition it is very important to pack the wing carefully. We recommend to use the concertina packing method exactly as shown so that all of the cells rest alongside each other and the plastic reinforcements are not unnecessarily bent. It is also good practice to use the supplied inflatable folding pillow to reduce the angle of the leading edge fold, this will help to preserve the plastic reinforcements. The folding pillow can be deflated and carried in your harness. Using the Ozone Concerto pack will help preserve the life of the wing and aid with the speed and ease of packing.

**Step 1.** Lay the mushroomed wing on the ground or on the Concerto pack if you are using one. It is best to start from the mushroomed position as this reduces the dragging of the leading edge across the ground.



**Step 2.** Group leading edge (LE) plastic reinforcements with the A tabs roughly aligned. Make sure the plastic reinforcements lay side by side. Note the glider is NOT folded in half; it is folded as a complete concertina from wing tip to wing tip.

**Step 3.** Group together the middle and the trailing edge (TE) of the wing by sorting the concertina folds near the B and C tabs.



**Step 4.** Once the LE and TE of the wing have been sorted, turn the whole wing on its side.



**If using the Concerto pack go to Step 7.**

**Step 5.** Place the Folding Pillow below the LE - at the point of the first fold. The pillow reduces the angle of the fold and helps preserve the plastics. Next fold the TE over the LE being careful to not fold with tight angles.



**Step 6.** Now place the folded wing into the stuff bag.



**Step 7.** If using a Concerto pack, with the wing laid on its side carefully close the zip without trapping any material.



**Step 8.** Lay the Folding Pillow in place and make the fold of the LE around it. Use 2 folds.



**IMPORTANT:** Do NOT lay the wing flat on the ground before packing the glider, this will cause abrasion damage to the top surface as you pull the glider towards the middle. ALWAYS pack from a mushroom or lift the wing off the ground when gathering the wing and grouping the leading edge.



**IMPORTANT:** Do not fold the glider in the centre, you will bend the plastics, instead pack the wing with a full concertina method from tip to tip.







### ***Caring Tips***

Careless handling damages many paragliders. Here are some things to avoid in order to prolong the life of your aircraft:

- DO NOT drag your wing along the ground or any hard surface as this is guaranteed to damage to the sailcloth. Lift it up and carry it clear of the ground.
- DO NOT try to open your wing in strong winds without untangling the lines first - this puts unnecessary strain on the lines.
- DO NOT walk on the wing or lines.
- DO NOT repeatedly inflate the glider and then allow it to crash back down. Try to keep this movement as smooth as possible by moving towards the glider as it comes down.
- DO NOT slam your glider down on the ground leading edge first. The impact puts great strain on the wing and stitching and can even explode cells.
- FLYING in salty air, in areas with abrasive surfaces (sand, rocks etc.) and ground handling in strong winds will accelerate the aging process.
- DO NOT fly in the rain or expose the wing to moisture.
- DO NOT expose the wing to unnecessary UV or high levels of heat. Leaving the wing sitting in the sun or allowing it to get hot (e.g in the back of a car) will significantly increase the chances of premature ageing.
- Change your main brake lines if they are damaged.
- When ground handling be careful to not saw the brake lines against the risers or main lines. The abrasion caused by a sawing motion can damage the main lines and the risers. If you notice any signs of abrasion, especially to the lines, make sure to replace them. It is important to modify your ground handling technique to stop any future damage.
- Your wing has an opening on the wing tips called the 'Butt hole'. The Butt hole makes it easy to empty any sand, leaves, rocks, mobile phones etc that may have accumulated in the wing.

It is recommended that you regularly CHECK your wing, especially after a heavy period of use, after an incident or after a long period of storage.

### ***Storage and Transport***

Your wing should be dry before being packed away. Always store all your flying equipment in a cool, dry room, protected from direct heat and high levels of humidity. Moisture, heat and humidity are the worst elements for damaging your glider. Storing a damp glider in your car in the sun will lead to premature ageing of the cloth and should be avoided at all costs.

Take care that no insects get packed away with the wing. They may eat the cloth and make holes in a bid to escape. They can also leave acidic deposits if they die and decompose.

Transport the wing in the supplied bags and keep away from any oils, paints, chemicals and detergents

### ***Cleaning***

Any kind of wiping/scratching can damage the coating of the cloth. We recommend to not clean the wing, but if you do have to, use a soft cloth dampened with a small amount of water and use gentle movements across the surface. If you land in salt water, you must first rinse it thoroughly with clean fresh water. Dry the wing completely, preferably out of the sun, in the wind. Never use a hair dryer or other sources of direct heat.

### ***Wing Repairs***

Always let a registered dealer, professional repair centre or the manufacturer carry out any major or complex repairs, especially those near seam margins.

#### **If you damage the sail:**

If the rip is small and in the middle of a panel however you can fix it yourself. You'll find all the materials in the repair kit you need. The fabric can be simply mended with the sticky rip stop/spinnaker tape. When cutting out the patches allow ample overlap of the tear and make sure both sides are different sizes. Make sure to round off each corner of the patches.

#### **If you damage a line:**

Any line that is visually damaged **MUST** be replaced. Lines can be ordered from your local Ozone dealer, alternatively use a reputable paragliding service centre to make the replacement lines.

#### **IMPORTANT**

**Never pack away or store your glider wet.**

#### **IMPORTANT**

**Never use detergent or chemical cleaners.**

It is important that replacement lines are made from the correct materials and diameters. You should check lengths against their counterpart on the other side of the wing to make ensure symmetry. Once the line has been replaced, inflate and check the glider before flying.

### **Maintenance Checks**

Your wing should be checked regularly to ensure proper airworthiness. It should be serviced by a qualified professional for the first time after 24 months, or after 100 hours. If you are a frequent flyer, more than 100 hrs per year, then we recommend to have the wing serviced annually.

The dimensions of the lines tend to move during the first part of their life, it is therefore recommended to have a performance trim check within the first 50hrs of use. To ensure the correct trim, the lines should be measured and adjusted to the published values as necessary. Loops in the B lines and the AR3 risers are in place to make the trimming process easier.

It is important to perform regular inspections to know the exact condition of all of the components of your wing. We recommend that inspections are carried out by a qualified professional. The sail cloth and the lines do not age in the same way or at the same rate so you will have to change the line set during the normal use of the wing.

We recommend to change the entire line set after 150hrs of use.

You alone are responsible for your flying equipment and your safety depends on it. Take care of your equipment and have it regularly inspected. Changes in inflation/ground handling/ flying behaviour indicates the gliders aging, if you notice any changes you should have the wing checked before flying again. These are the basic elements of the check up:

**Porosity** is measured with a porosity meter, the time taken by a certain volume of air to go through a certain surface of cloth. Measurements are made in several places along the top surface of the leading edge.

**IMPORTANT**  
It is recommended to have the lines professionally measured after the initial 50hrs of flight

**IMPORTANT**  
We recommend that the entire line set is replaced after 150hrs of use.

**IMPORTANT**  
Take care of your glider and make sure you have it checked and serviced according to the schedule.

**The tearing resistance of the cloth** - A non-destructive test following the TS-108 standard which specifies minimum tear strength for sky diving canopies should be made using a Bettsometer. (B.M.A.A. Approved Patent No. GB 2270768 Clive Betts Sails)

**Strength of the lines** - An upper, middle and lower A line, along with a lower B line should be tested for strength.

**Lengths of the lines** - The overall length (riser lines + mid lines + upper lines) has to be checked under 5Kgs of tension. The difference between the measured length and the original length should not exceed +/- 10mm.

Compliance of the test sample's suspension lines, brake lines and risers were checked by the testing laboratory after the test flights were completed.

**Risers** - Visual inspection for signs of wear or abrasion. Differences to manual lengths should not exceed +/-5mm.

**Canopy check** - A full visual check should be carried out: All the components of the wing (stitching, ribs, diagonals, lines, tabs etc) should be checked for signs of deterioration.

Finally, a flight test to confirm that the wing behaves normally should be carried out by a professional.

### ***Modifications***

Your Ozone Photon was designed and trimmed to give the optimum balance of performance, handling and safety. Any modification means the glider loses its certification and will be more difficult to fly. For these reasons, we strongly recommend that you do not modify your glider in any way.

**IMPORTANT**  
**Do not modify your wing in any way.**

# OZONE QUALITY GUARANTEE

Ozone guarantees its products against manufacturing defects or faults, we will repair or replace any defective product free of charge. This does not include accidental damage or damage caused by normal wear and tear.

Ozone and its distributors provide the highest quality after sales service, do not hesitate to contact your local Ozone dealer for the latest most up to date information on our products. If you have an issue please contact the Ozone dealer where you purchased the product from, we will do our best to get you back in the air as fast as possible. Minor damage can normally be repaired locally, any serious damage can be rectified by the factory.

We always welcome customer feedback, it is how we improve our products - our contact details can be found on the website.

## **Summary**

Safety is paramount in our sport. To be safe, we must be trained, practised and alert to the dangers around us. To achieve this we must fly as regularly as we can, ground handle as much as possible and take a continuous interest in every aspect of paragliding. If you are lacking in any of these areas you will be exposing yourself to more danger than is necessary.

Respect the environment and look after your flying sites.

If you need to dispose the wing, do so in an environmentally responsible manner. Do not dispose of it with the normal household waste.

Finally, RESPECT the weather, it has more power than you can ever imagine. Understand what conditions are right for your level of flying and stay within that window.

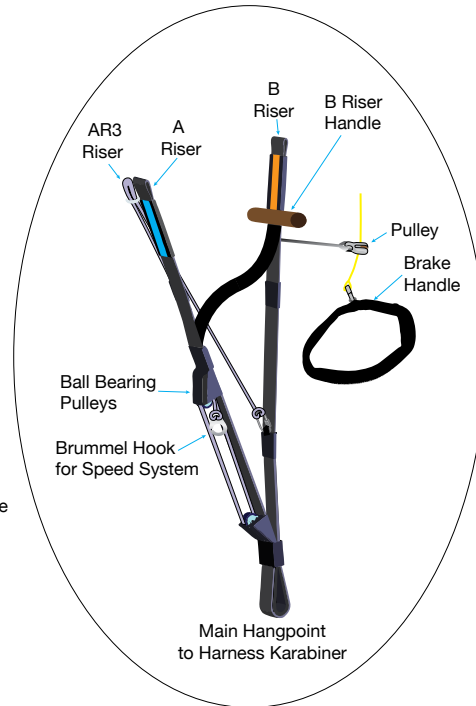
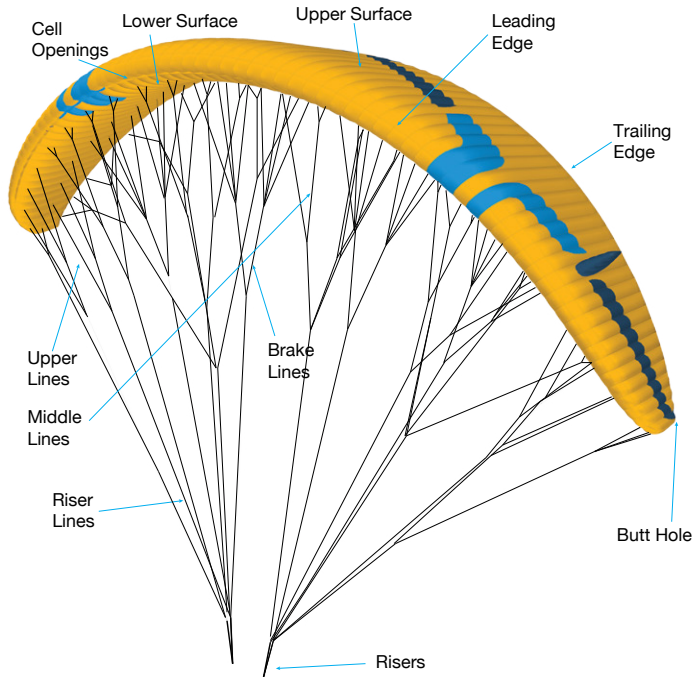
Happy flying & enjoy your Photon.

**Team Ozone**

# TECHNICAL SPECIFICATIONS

	<b>XS</b>	<b>S</b>	<b>MS</b>	<b>ML</b>	<b>L</b>	<b>XL</b>
No. of Cells	71	71	71	71	71	71
Projected Area (m <sup>2</sup> )	16.1	17.4	18.9	20.2	21.5	23.1
Flat Area (m <sup>2</sup> )	19.1	20.7	22.3	23.9	25.5	27.3
Projected Span (m)	8.7	9.0	9.4	9.7	10.1	10.4
Flat Span (m)	11.1	11.6	12.0	12.5	12.9	13.3
Projected Aspect Ratio	4.7	4.7	4.7	4.7	4.7	4.7
Flat Aspect Ratio	6.5	6.5	6.5	6.5	6.5	6.5
Root Chord (m)	2.17	2.25	2.34	2.43	2.5	2.59
Glider Weight (kg)	4.28	4.47	4.75	5	5.27	5.54
Approximate Control Travel (cm)	55	58	65	65	65	78
Certified Weight Range (kg)	60-75	70-85	80-95	90-105	100-115	110-130
Certification EN/LTF	C	C	C	C	C	C

# TECHNICAL DRAWINGS



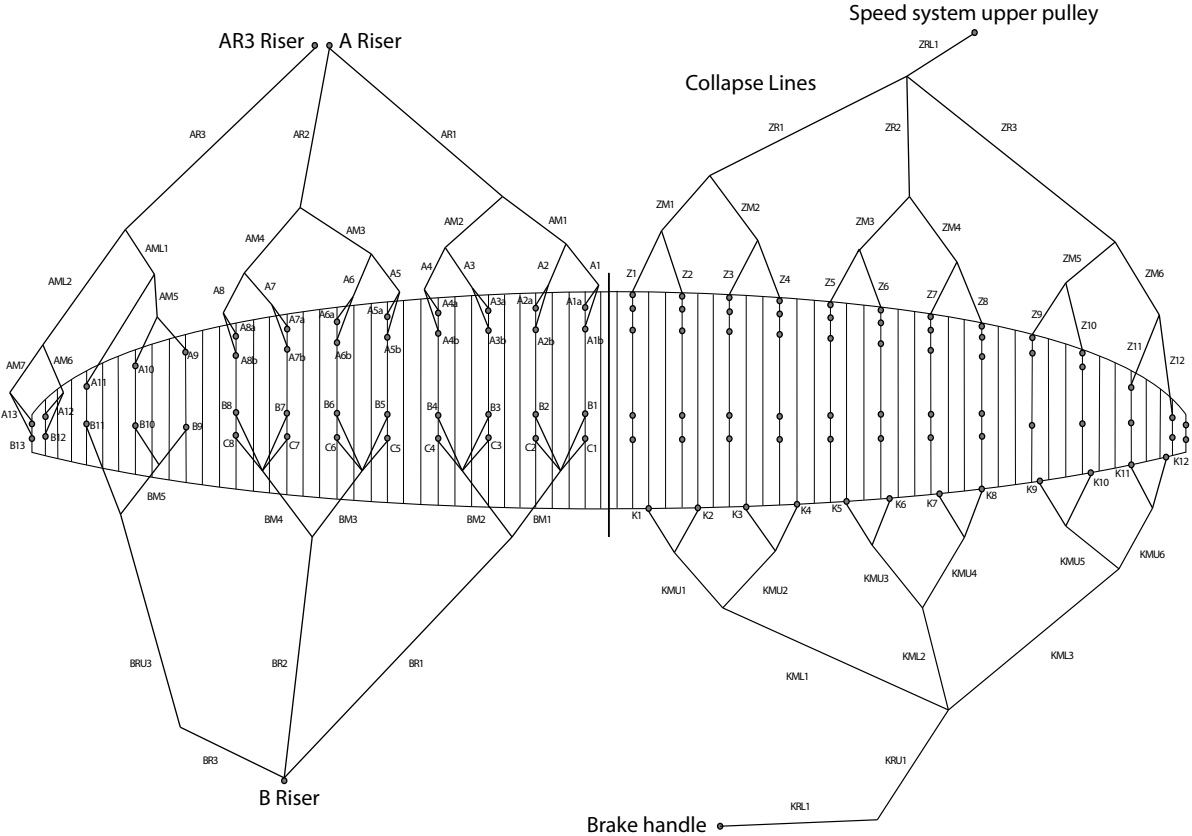
<b>Non Accelerated</b>	
A	530mm
A <sup>3</sup>	522mm
B	515mm

<b>Accelerated</b> <i>Pulleys axis - axis</i>	
A	380mm
A <sup>3</sup>	448mm
B	515mm

<b>Accelerator Range</b> <i>(fully overlapped)</i>	
MS, ML, L & XL	150mm
S	140mm
XS	130mm

# LINE DIAGRAM

Individual and linked line lengths can be found online.





# MATERIALS

All Ozone gliders are made from the highest quality materials available.

## ***Cloth***

### **Upper Surface**

Dominico DOKDO N20D MF

### **Lower Surface**

Porcher 7000 E71

### **Internal Ribs**

Porcher 9017 E29

### **Leading Edge Reinforcement**

Plastic

## ***Main Line Set***

### **Riser Lines**

Edelrid 8001U

### **Middle Lines**

Edelrid 8001U

### **Upper Lines**

Edelrid 8001U / 9200

## ***Risers and hardware***

### **Shackles**

Maillon Rapides

### **Riser webbing**

12mm zero stretch polyester webbing

### **Pulleys**

Ronstan ball bearing

## ***Brake Lines***

### **Main brake Lines**

Liros - 10-200-040

### **Middle brake lines**

Edelrid 8001U / 9200

### **Upper brake lines**

Edelrid 9200

*INSPIRED* BY NATURE, *DRIVEN* BY THE ELEMENTS

**FLYOZONE.COM**

***OZONE***

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