



fot. Jean-Baptiste Chandelier

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Congratulations!

We are pleased to welcome you among the growing number of DUDEK PARAGLIDERS pilots. You've become a proud owner of a sport paraglider, designed according to recent trends.

Intensive development, application of the modern production methods and thorough testing resulted in a friendly behaving paraglider, offering the pilot a lot of fun combined with great performance.

We wish you many enjoyable and safe flying hours.

Please read this manual carefully and note following details:

- The purpose of this manual is to offer guidelines to the pilot using the paraglider. By no means it is intended to be used as a training manual for this or any other paraglider.
- You may only fly a paraglider when qualified to do so or when undergoing training at an accredited school.
- Pilots are personally responsible for their own safety and their paraglider's airworthiness.
- The use of this paraglider is solely at the user's own risk! Neither the manufacturer nor dealer do accept any liabilities involved.
- This paraglider on delivery meets all the requirements of the EN

926-1 and 926-2 regulations or has an airworthiness certificate issued by the manufacturer. Any alterations to the paraglider will render its certification invalid.

- Other documents concerning this paraglider can be found on attached pendrive or on our website: www.dudek.eu.

! **Note:** Dudek Paragliders warns that due to the constant process of development the actual paraglider may differ slightly from the one described in the manual. However, those differences must not affect the basic design parameters: technical data, flight characteristics or strength. In case of any doubts contact us please.

For whom the Orca 4?

The paraglider is dedicated both for free-flying with passenger and for light paramotor trikes.

Design

Four-row canopy with rigid cores (Dudek FlexiEdge technology) blends recent experiences of testing other prototypes featuring this technology with long-standing info received over years from happy users of the original Orca. The aspect ratio and other factors were carefully calculated in order to make full advantage of new technologies, while retaining optimal mix of passive safety, performance and steering for this class.

Orca 4 as compared to Orca XX:

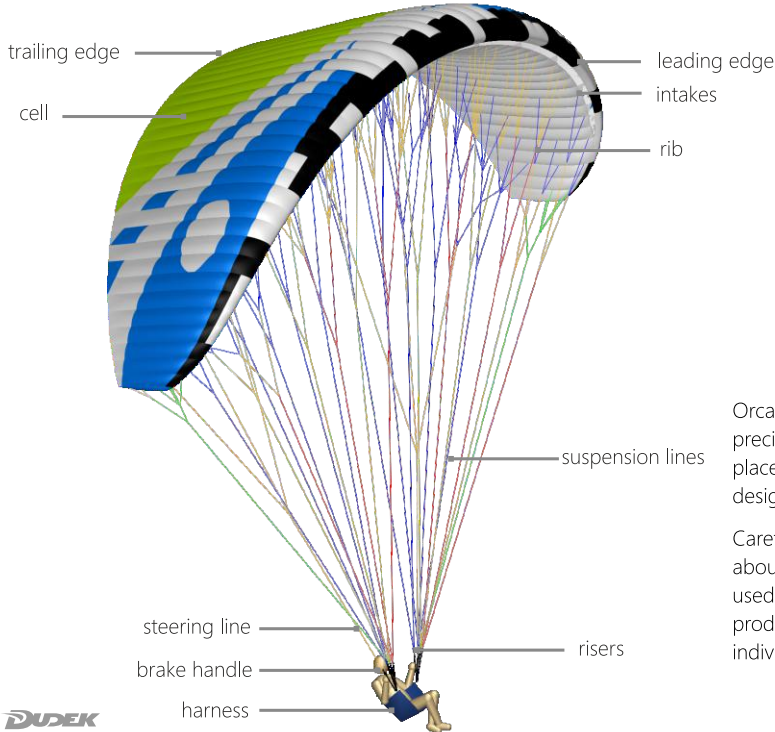
- further improved already great launch parameters, precision and ease of steering as well as flaring efficiency during landing,
- slightly increased aspect ratio,
- minor design changes within canopy,
- new, LTF-certified spreader bars.

The aerofoil used in Orca 4 has Shark-nose intakes - they help to internal pressure of the canopy stays stable within wide speed range.

Inner reinforcements, structural cores and mini-ribs perfectly shape and stabilize the aerofoil. Mini-ribs on the trailing edge keep it slim and decrease ballooning, radically improving the airflow. All in all, we succeeded in creating a perfectly balanced design, mixing great performance with safety and stability. In turbulence the paraglider behaves very reassuring and predictable, with efficient damping of both longitudinal and lateral oscillations.

Orca 4 easily inflates and rises, without lagging behind. Then it stabilizes and with slight brake action simply flies away. On the landing approach it is enough to brake down a little in order to markedly decrease speed with ensuing soft touchdown. All tandem pilots appreciate those features, so we've put quite an effort into polishing them to perfection.

Advanced engineering merged with Piotr Dudek years of designer experience resulted in a paraglider ideally suited to pilot's expectations of this class.



B3D
Ballooning 3D

MR
Mini-Ribs

ELR
Easy Launch Riser

SS
Speed System

ACS
Auto Cleaning Slots

DOA
Dudek Optimized Airfoil

CSG
Canopy Shape Guard

LR
Laser Technology

FET
FlexiEdge Technology

SN
Shark-nose

Orca 4 is produced in new technology, utilizing capabilities of precise laser cutter. All stages of the production process take place as our Polish plant under close supervision of the designer himself, thus ensuring highest European quality.

Careful selection of modern fabrics and design solutions brings about great strength and durability of the canopy. All materials used come from marked production batches, and each production step can be verified down to identification of individual worker and controller.



For the Orca 4 we have chosen four-way risers equipped with:



- ELR (Easy Launch Riser) - system. It is a specially marked A riser (with red cover)
- trimmer with replaceable (in case of deterioration) regulation strap, affecting the B, C and D risers.

Brake handles are attached to the steering lines at an optimal point, guaranteeing safe and effective action. This point is marked on the line with a black dot and this setting should not be altered. Attaching the handles above factory markings will cause constant braking of the paraglider, possibly cause of an accident. Overly loose setting of the brake lines is not advised too, since the much lower load on the trailing edge lines can sometimes be dangerous too.

Our newest brake handle used in Orca 4 besides its attractive, light design features:



- ACT (Adjustable Comfort Toggle) system, with adjustable loop,
- a swivel – preventing possible twisting of the steering line.

For quick and easy recognition in emergency, some of the risers are distinguished with coloured covers as follows:

- A - red (used for launching)
- A' – red (used for big ears),
- B - yellow (used for B-stall),
- D - blue (needed to keep the glider down in strong wind – aborted launch).

ACT

Adjustable Comfort Toggles

In order to accommodate diverse preferences of many pilots we've designed the Adjustable Comfort Toggle, allowing steepless adjustment of the toggle size.



ball for easier steering

velcro strip to adjust the toggle



swivel against twisting the steering line



Nap and Easy Keeper magnet - keeping the toggle at the riser

Operation

It's pilot responsibility to choose a canopy matching his skills.

Dudek Paragliders cannot take responsibility for a wrong choice, but we are always ready to advise you – just contact us.

Weight range

Each size of the canopy is certified for specific weight range, meaning total take-off weight including the pilot, harness, equipment and the canopy itself.

We advise flying the paraglider in the middle of weight range. However, if you most often fly in weak winds you can consider flying in lower part of the weight range, and in higher part when in strong winds.

- **Caution:** Check your real take-off weight! Some pilots calculate their take-off weight by just summing up catalogue numbers, e.g.: harness 5 kg + canopy 6 kg + pilot 89 kg = ca. 100 kg. In reality your actual take-off weight can be umpteen kilograms more. Most often we forget the clothing, electronics, backpacks, sometimes even such basic things like fuel or rescue chute weight are omitted!

What harness?

When flying an Orca 4 you can use any certified harnesses and spreader bars that will make both pilot and passenger feel safe and comfortable.

Typical passenger harnesses have simple design, so as not to hinder the pilots' movements. Harness for the pilot should be equipped with divided seating and proper tandem rescue system. The spreader bars must allow various hangpoint configurations, in order to compensate pilot and passenger weight differences.

- **Caution:** Please note that any modification of seat/hang point distance changes the position of the brakes as related to pilot's body. You must remember that in each harness your steering range will be different.

Trimmers

Trimmer system consists of a trim shackles sewn into C and D risers, and red regulation strap going through the shackles and fixed to risers with rectangular connector link.

We have 3 main positions of the trimmers:

- full closed (slowest speed, minimum sink)

- neutral „0" (best take-off position)
- fully released (increased speed and sink)

During normal flight at neutral position all risers have equal length of 400 mm. Trim operation affects the B, C and D risers.

When trimmers are fully opened, the D risers goes out to its max possible length of 510 mm, while B and C proportionally less.

Make sure that both trim buckles are locked in the same position, otherwise you will be constantly and unwillingly turning. It must be checked before every launch!

Maximum speed is obtained when the trimmer tape is fully stretched.

Trimmer operation

The main goal of the trim is to adjust the paraglider speed to various loads, depending on pilot and passenger weight (the weight range of a tandem wing is greater than single-seater).

To sum it up:

- greater take-off weight – trimmer more closed,
- lesser take-off weight – trimmer more opened.

The other goal of the trimmer is adjusting the speed during flight, accordingly to your needs and changing conditions.

Before the launch connect the risers to the tandem spreader bars with main carabiners. Then have a check that the trim operation is not limited.

It is advised to set the trimmers at neutral "0" position for the launch, thus improving canopy inflation. This position is also most universal to fly within standard load of the paraglider.

To close the trim (and slow down) just pull the trim tab down. The shackle will change its position and remain still in new place.

Completely closed trimmers can be used for thermalling, given that you do not fly near low load. In turbulent air this could lead to a deflation or a spin.

In order to open it (and fly faster) you should grab the shackle, push the knob with your thumb and thus allow the trim to move up.

By releasing the trimmers you increase the airspeed. Such configuration is especially needed when flying against strong headwind or seeking next thermal.

Orca 4 stays calm even at completely released trimmers and full

speed.

Whenever you do adjust trim settings, always remember to do it symmetrically.

Tandem spreaders

Orca 4 is sold with a pair of spreaders, equipped with a Big Ears lock.

- **Caution:** Make sure that each of the spreaders was installed on its dedicated side – the red ball locking the Big Ears should always be on the outer side.

Other systems

This paraglider has no other systems which can be adjusted, exchanged or removed.

Pre-flight check

Having chosen a place to launch accordingly to the terrain as well as wind speed and direction clear it of any obstacles that could damage your canopy or tangle in the lines.

After laying out your paraglider in a horseshoe directed against the

wind following checks must be made:

- canopy, lines and risers condition. Do not launch if the slightest damage is noticed,
- the paraglider should be arranged so that the centre section A-lines will strain earlier than the outer ones. This ensures easy and symmetrical launch,
- the leading edge should stay taut and even,
- all lines and risers should be separated. Make sure they are not tangled, and checked against catching anything. It is equally important to check the brake lines. They must be firmly attached to the brake handles and run freely through the pulleys to the trailing edge,
- make sure the risers are not twisted,
- it is very important to check that no lines are looped around the canopy. The so-called "line-over" may have disastrous consequences during take off.
- always put on and fasten your helmet before clipping in to the harness,
- make sure that all quick links (maillons) of the risers are tight,
- check main carabiners. They must be properly mounted, closed and locked.
- remember to set the trimmers symmetrically.

Due to considerable passenger/pilot inertia, most tandem flights usually start with a classic straightforward launch. The alpine (reverse) launch is executed only when the wind speed makes normal start impossible.

For the launch neutral trimmer position is recommended.

Classic (forward) launch

Should be used with little or no wind. Facing the wind place the risers over your shoulders (A riser must lay on top).

Clip it into carabiners and lock them. Grip the brake handles and A-risers, holding them at the stitching, just under the quick-links. To make things easier, A-risers have been marked with a red cover. Spread out your slightly bent hands, keeping them down and back.

All other risers should be placed near your elbow joints.

Apply some tension to check if the A risers stay on top and the lines are not tangled. Take a step back, bow down a little and run forward. After the initial inflation smoothly move the hands with the risers up and over your head until the wing will be directly above you. Let the A risers loose and check the wing.

Pump out possible faults and keep an eye on position of the

paraglider. Side drift is corrected best by moving yourself always under center of the canopy. In order to keep wing in the air the suspension lines must stay taut all the time, so in light winds you will have to run forward. With stronger winds you can control the wing while standing still.

When leaving the ground apply some brakes, then release it after gaining some distance from the ground. Keep your hands relaxed.

Reverse launch

To be used when wind speed exceeds 3 m/s.

After clipping the risers into carabiners as for the forward launch, turn back to face the wing, moving one riser group over your head. As a consequence, you will have the risers crossed.

Unclip the brake handles from rear risers and grip it outside of the risers without crossing neither arms nor lines. In this way you steer the left side with you left hand and vice versa. Now take corresponding A risers on both sides (still keeping brake handles in your hands).

Make sure that the wing inflates symmetrically and the lines are not tangled. Building up tension with a few steps back and

simultaneously lifting the A risers (do not pull them towards you) will make the paraglider rise.

When it arrives over your head, stabilize it with the brakes, check again if all lines are clear and the cells inflated.

When turning into wind, remember to turn the right way (hint: always do it the same direction) and to keep the lines strained at all times. The turn itself should be quick and smooth. While turning you have to release the brake handles and grip them again facing forward, so that again the left one is in the left hand etc. Last check of the wing & free space to launch and off you go, running into wind with eventual light braking when taking off.

Remember!

When deflating the canopy in strong winds (e. g. aborting a launch), use the C risers, not the brakes. Using the brakes in strong wind can lift the pilot up and drag him/her back.

- **Caution:** When clipping in the crossed risers, you can find proper connection of the speed system particularly hard.
Be careful not to confuse the risers!

Turns

Orca 4 is an agile wing, with smooth reactions to all pilot's actions. Handling is actually easy and forces grow proportionally to position of the brakes. Adding some weight shift will make the paraglider turn really quick and tight.

The combined technique (weight shifting and brake input) is by far the most efficient method of turning. Turn radius is then determined by the amount of inside brake used and weight shift. Additional application a little outside brake after initiating the turn with maximum weight shift increases turn efficiency and the outboard wing's resistance to collapse (in turbulence, the edge of a thermal etc).

In case of necessary turning in confined area at slow speed (e.g. slope soaring), it is recommended to steer the decelerated canopy by loosening the brake at the outside of the turn while applying just a little more brake on the inside.

- **Caution:** when entering a turbulent area you should brake a little to put up the tension. It will allow you to react instantly in case of a problem. Too hard or too quick pulling of one brake can cause the wing to enter a spin.

Thermalling and soaring

When flying Orca XX, minimum sink is achieved with light pull on the brakes (15 to 20 cm depending on total weight in flight) and closing the trimmers. Just be careful with closing the trims when flying at low weights - it is not advisable.

In turbulent conditions the canopy should be flown with a small amount of brake applied. This improves overall stability by increasing the angle of attack of the canopy. The canopy should neither rock back nor surge forwards, but always stay above the pilot. In order to achieve it, the pilot should accelerate the canopy by letting off the brakes when entering a thermal (accordingly to its strength) and brake it on exiting. This is part of basic active flying that can spare you many potential collapses.

When soaring the slope, minimum height of 50 m above the ground is recommended for safety reasons. It is important to comply with air traffic rules, especially when many pilots share airspace close to the hill. The avoidance manoeuvres often happen to be impossible in such conditions.

Winching and motoparagliding

During tests, numerous flights were made with winch start and backpack power units, as these are the only means to gain some height in flatlands. Absolutely no reasons were found for not using Orca 4 tandem in such flights.

- ! **Caution:** During launch, especially winched or with a paramotor, always remember to bring the wing directly over your head. The aerofoil and its angle of attack were arranged so as to give maximum lift coefficient with relatively high safety level. Therefore if the canopy is not pulled enough, it can stay behind the pilot, rendering launch difficult and/or dangerous.

Landing

Considering safety of the pilot and the passenger, landing should be always well planned. Last turn into the wind must be done with sufficient altitude. Prior to landing you should build up speed, fully releasing the brakes, and then flare out at 1 - 2 meters over ground. The glider may even climb again for a while gaining some height, if too much brake is used.

The best trimmers position for the landing is to reset them at neutral "0".

Strong wind landings hardly require braking, if any at all! Use D-risers (coloured blue) to deflate the canopy after landing. Using the brakes will probably result in pilot (and passenger) being lifted and dragged backwards.

The final glide of the landing approach should be straight and smooth. Steep or alternating turns can result in a dangerous pendulum effect near the ground.

Trimmers Closed

Slowest speed, minimum sink

- A - 425
- A' - 425
- B - 415
- C - 407
- D - 400

* lengths of the risers incl. maillons,
length tolerance +/- 5mm



Trimmers fully released

Maximum speed and increased sink

- A - 425
- A' - 425
- B - 460
- C - 497
- D - 535

* lengths of the risers incl. maillons,
length tolerance +/- 5mm



How to pull down and lock the Big Ears

You can pull down the big ears by pulling the A' riser (pict. on the right) or by using the ear lock (picture below).

Further pictures show consequential steps of pulling down and locking the line under the ball

3



4



1



2



5

locking ball



Big Ears

You can deflate the wing tips simultaneously pulling down the A' risers (red band) by approximately 50 cm.

With big ears pulled the paraglider will fly straight, albeit with increased sink (max 5 m/s). If you keep the risers in hands, the paraglider can be steered with weightshifting.

Our new spreader bars are equipped with a locking system (Big Ears Keeper), able to lock the pulled down line under the red ball placed on the spreader. This allows to keep the Big Ears down as long you wish, with full control of the paraglider via regular steering system. In order to use the Big Ears lock it is enough to place the A' riser line under the ball from the outside. Then check carefully if the line is properly placed and will not slide free by chance.

On releasing A' risers (or unlocking lines from red balls) in dynamic air the canopy usually reinflates on its own. In case of necessity it can be assisted by a long pump until the tips get clear.

- **Warning:** When flying with Big Ears pulled down avoid hard steering, since the canopy in such configuration has shorter steering paths and you can stall or spin it much easier than normally.

B-stall

To enter a B-stall you have to simultaneously pull both B-risers (yellow) down by 10 - 20 cm. The wing collapses on its entire span along B-row, the airflow over the top surface will break and the canopy projected surface will be significantly reduced. Forward speed will die and you will be descending almost vertically.

Further pulling of the B-risers is not advised, as the wing instability can grow.

This manoeuvre is rather hard to execute on the Orca 4 due to great forces required to pull in the B riser.

- **Warning:** To exit a B-stall, the risers should be released in a smooth and decisive manner.

On quick and symmetrical releasing B-lines the airflow will be reinstated and the wing will surge forward, returning to normal flight. If the canopy forms a horseshoe with the wingtips in front of you, gently apply both brakes to recover.

Spiral dive

A spiral is characterised by reaching the highest sink rates possible.

Significant G-forces, however, make it difficult to sustain a spiral dive for a long time, as it can place high loads on both pilot and glider, to degree of losing consciousness by the pilot. Never do this manoeuvre in turbulence or at too high bank angles.

Control the dive and do not exceed 16 m/s sink. If the dive is not stopping after releasing the brake, assist the glider with the outer one.

- ! **Caution:** Never do spirals or wingovers with big ears pulled.
- That's another example of concentrating whole load on reduced wing area, which - combined with high G manoeuvres - shifts the peak loads unnecessarily close to their maximum values.

Wing over

You make a wingover by performing a series of consecutive, alternating turns with increasing bank angle. Too aggressive banking with insufficient control can result with a massive collapse.

Aerobatics

Orca 4 was not designed to do any aerobatics.

- ! **Caution:** All rapid descent techniques should be practiced in smooth air and only with sufficient altitude margin! Full stalls and spins are to be avoided as they are not recommended techniques of clearing dangerous situations. Irrespective of paraglider type they may lead to dangerous consequences!
- ! **Caution:** By far the best technique is safe and correct flying, so that you will never need to descend rapidly!

! Caution: Extreme flying manoeuvres should only be carried out during safety training courses (instability training) under proper guidance!

One sided collapse

Can happen in strong turbulence.

With collapses up to 50% pilot has a couple of seconds to react before the wing will enter rotation. Standard counter-steering is enough to keep the paraglider on course.

Under normal conditions the canopy will reinflate instantly and spontaneously.

Frontal collapse

Can happen in strong turbulence. Active piloting will usually prevent its occurrence.

Orca 4 is a modern paraglider with significantly stiffened leading edge. Tests have shown that most often canopy reinflates spontaneously, however in specific turbulent conditions it is possible that airflow will keep the leading edge collapsed. That's why an instant pilot's reaction is advised – a measured braking at the right

moment will greatly speed up the recovery.

Full stall and negative spin

Practically do not occur, may happen only as a result of serious neglect or intentional action of the pilot. You have to be careful when flying at very low speeds until fully familiar with brake operation.

The canopy recovers spontaneously in initial phase of stall, otherwise use standard procedures.

Deep stall

Under normal conditions does not occur. If you want to prevent it at all, simply stick to a couple of rules:

- after B-stall, release the risers quickly and evenly. Don't be afraid – the canopy does not jump forward excessively.
- after big ears execution, engage the speed system. This will increase both the sink rate and safety margin, as big ears constitute an effective aerodynamic brake with significant loss of speed.

Nevertheless, if such a parachutal stall happens e.g due to strong

turbulence, simply apply some pressure on speed bar and/or push the A risers forward.

Flying on Orca 4 does not require knowledge of different procedures and configurations than those described in this manual.

Line over and cravatte

It is a modern wing which, in order to decrease drag has fewer suspension lines with greater distances between them, as well as stiff leading edge.

That's why it's always possible that after a tuck one of the stabilisers may tangle in the lines. Usually a couple of pulls with a brake settles the matter. If it's not enough, try to untangle it with big ears or a stronger pull on the risers.

- **Caution:** In case of any doubts you should seriously consider throwing the rescue chute.

Emergency steering

In case of any malfunction rendering normal steering impossible, you can safely steer and land the paraglider using the D-risers (blue marking) or stabilo lines.

Special procedures and other configurations

The Orca 4 design incorporates newest technologies, including stiffening rods in the leading edge. That's why the canopy should be folded carefully, accordingly to its design, so that good conditions for transport and storage are observed.

Basic rules to be followed when folding the canopy:

- Fold it accordion-wise rib to rib (cell by cell). Do not fold it by halves, placing the stabilizers at the centerline.
- When a compact package is created on the longest chord do not roll it, but fold three to four times (depending on the chord length) from trailing edge towards the leading one.
- The leading edge remains on top of folded canopy.
- Never pack you paraglider too tightly.
- Optionally pack the wing into a dedicated WingShell.

If you have completely prepared your gear but have to wait for launch, a good idea is to use a quickpack, to protect your wing against moisture and UV rays. Never pack or store the glider when wet, as it significantly shortens life of the fabric. Remember that wing gets wet even when laying on a green grass in full sun, as the grass transpires.

! **Caution:** Locking a wet paraglider in a car exposed to sun is absolutely unacceptable! Hot car interior acts like an oven and as tests have shown that color bleeding/transfer can happen even at 50 Celsius grade. The warranty does not cover such damages!

While drying, never expose your paraglider to direct sunlight operation. Store the paraglider in a dry place, away from chemicals and UV exposure. Ideal storage temperature for the paragliders is 5 to 25 Celsius.

Cleaning

Clean the paraglider with water and a soft sponge. Do not use any chemicals or alcohol, as these can permanently damage the fabric.

Deterioration - a few tips

The paraglider is made mainly of Nylon - a fabric which, like any other synthetic material, deteriorates through excessive exposure to UV rays that come with the sunlight.

Hence it is recommended to reduce UV exposure to a minimum by keeping the paraglider packed away when not in use. Even when packed in a bag, it should not remain in the sun for long.

Suspension lines in this paraglider consist of Technora inner core and polyester sheath. Submitting them to excessive bending and loading in flight should be avoided, as it can cause irreversible damage.

Please note that with frequent kiting on a field or a small hill your paraglider will deteriorate more quickly due to its repeated rising, falling and being dragged around.

Uncontrolled strong wind takeoffs or landings can result in the leading edge of the canopy hitting the ground hard, which may seriously damage the ribs, sewing and surface cloth (including coating damage).

Keep the paraglider clean, since getting dust in the lines and fabric will reduce their durability.

Be careful to keep snow, sand or stones from entering the cell openings: their weight can slow or even stall the glider, while sharp edges can damage the cloth.

Prevent lines from catching anything, as they can overstretch or tear. Never step on the lines.

Knots can chafe suspension and/or brake lines.

Check the length of your lines after tree or water landing, as they can stretch or shrink. The lines can be measured at the manufacturer or an authorised workshop.

After landing in water you should check the wing fabric as well, since waves can cause the fabric to distort in some areas.

When taking the wing out of the water, always do this by trailing edge. After a sea landing, rinse the paraglider with fresh water.

Since salt crystals can weaken the suspension lines even after rinsing in fresh water, you should replace the lines with new ones immediately after contact with salt water.

Frequent flying near oceans and seas accelerates deterioration of the paraglider, as salt present in the sea breeze can make the lines stiffen and even break.

Repairs

Repairs should only be carried out by the manufacturer, authorised distributor or an authorised workshop.

It is acceptable to fix minor cloth damage with self-adhesive patches included in the package.

Inspections

Full Inspection is recommended every 24 months or every 150 hours whatever comes first, if not advised otherwise by the inspecting person due to paraglider's condition.

In case of paragliders used commercially (e.g. in schools or tandem flying) a Full Inspection is recommended every 12 months after first 24 months from purchase date or every 100 hours airtime (whatever comes first).

A paraglider can be officially inspected only by the manufacturer or a dealer (authorised to do so).

We are aware that purchase of a new paraglider is a big expense for every pilot. That's why we guarantee quality of our products, as well as optionally we are offering a security system that will allow you to insure your paraglider against possible damage and repair costs with an AeroCasco insurance.

Warranty:

Dudek Paragliders guarantees free of charge repairs in case of damages caused by the material or production flaws:

36

36 Months Warranty

For the free-flying paragliders warranty covers 36 months (3 years) or 300 flight hours, whatever comes first. If the free-flying paraglider is used for

24

24 Months Warranty

powered flights, every hour flown is counted double (not concerning PPG paragliders).

18

18 Months Warranty

For the paramotor canopies (PPG) warranty covers 24 months (2 years) or 200 flight hours (whatever comes first).

For the light wings, for speedriding, speedflying, schools or professional users warranty covers 18 months (1,5 year) or 150 flight hours (whatever comes first).

Warranty does not cover any of the following:

- canopy colour fading as well as bleeding caused by improper storage/transport
- damage caused by chemicals or salt water
- damage caused by improper use
- damage caused in emergency situations
- damage resulting from accidents (airborne or otherwise)
- physical damages caused by natural wear of moving parts


Warranty is only valid if:

- flight hours can be identified basing on properly kept logbook of the owner (and his possible predecessors) with marked PPG hours.
- the paraglider is used in accordance with the operating manual
- the owner did not make any repairs by him/herself (excl. minor repairs with self-adhesive patches)
- the owner did not make any modifications
- the paraglider can be unmistakably identified by data sheet/sticker
- the paraglider has been properly inspected at all times.

- ! **Note:** In case of damages caused by the material or production flaws please contact the dealer that sold you the gear. The dealer will determine further actions.

If you have bought the paraglider second-hand, ask previous owner for a copy of his logbook (covering entire use of their paraglider from the day of original purchase).

AeroCasco

 Standard warranty does not cover repair costs of damages caused by the user or a third party. Since costs of such repairs can be considerable, Dudek Paragliding offers an AeroCasco insurance. It offers a one time repair of any mechanical damage, no matter how big and who caused them.

The only expenses you will be facing are shipping costs and the share-of-cost amount. AeroCasco can be purchased for a brand new paragliders only (at the purchase). The AeroCasco costs 50 €.

- ! **Note:** AeroCasco is not available for all paragliders (check before purchase). It can be purchased only for privately used paragliders.

AeroCasco covers only damages occurring while taking-off, flying or landing. Obviously, all faults in the material and manufacturing flaws are covered by normal warranty.

When handing the paraglider for the repair you have to present a card confirming its AeroCasco status. After the repair you will have to cover only the share-of-cost value of 50 euro. AeroCasco is valid for one repair only during covered time.

There is a possibility of extending AeroCasco for one further year.

To do this you have to send your paraglider for inspection to the manufacturer not later than a year after the date of purchase. The AeroCasco extension fee is 75 EUR (including inspection). Remember to include the AeroCasco confirmation when you send the paraglider for inspection.

AeroCasco does not cover any of the following: theft, canopy discoloration, damages caused by incorrect storage damage of transport, damages caused by chemicals, salt water or force majeure.

Paragliding is an outdoor sport. We believe that our clients share our environmental awareness. Exercising paragliding you can easily contribute to environment preservation by following some simple rules. Make sure you are not harming nature in places where we can fly. Keep to marked paths, do not make excessive noise, do not leave any garbage and respect fragile balance of the nature.

Recycling of used gear

A paraglider is made out of synthetic materials, which need to be properly disposed of when worn out.

If you are not able to dispose of the paraglider properly, DUDEK Paragliders will do that for you. Just send your paraglider to the address given at the end of the manual, accompanied by a short note.

The Dudek paraglider you bought should include following items:

- a backpack or MotoBag (optionally)
- transport bag (with your canopy inside)
- the paraglider itself (canopy, lines and risers)
- compression strap to keep the canopy together
- wingshell (optionally)
- tandem spreaders
- wind indicator (windsock or a strap)
- pocket with paper work and repair wallet including:
 - piece of self-adhesive fabric (10 cm x 37.5 cm) for small repairs. Note that even small tears located in the vicinity of stitches are to be repaired by an authorised service only.
 - looped and stitched suspension line (the longest of all lines in the paraglider) to be used as a temporary replacement. Do not cut it if you have to temporarily replace a shorter one, just tie it at the length needed.
 - paraglider passport with entered date of purchase and valid technical inspection (please check the serial number with the sticker on wing tip).
 - USB drive with this manual
- small gifts

Orca 4	41
Certification	EN B
	LTF B
Approval - ULM identification	yes
Number of cells	53
Surface area (flat) [m ²]	41,00
Surface area (projected) [m ²]	34,83
Span (flat) [m]	14,88
Span (projected) [m]	11,77
Aspect Ratio (flat)	5,40
Aspect Ratio (projected)	3,97
Sink rate [m/s]	min = 1,1 + - 0,1m/s
Speed [km/h]	trim = 38; max = 50 + - 2km/h
Max. cord [cm]	342,50
Min. cord [cm]	84,20
Distance pilot to wing [m]	8,93
Total line length [m]	429,17
Total take-off weight - PG [kg]	120-220
Total take-off weight - PPG/PPGG [kg]	120-250
Maximum symmetric control travel at maximum weight in flight [cm]	65,00
Distance between risers [cm]	55,00
Weight [kg]	7,27

Orca 4

Lines	Technora: 1,2 & 1,3 & 1,5 & 1,8 & 2,3; A-8000U-050
Fabric	Porcher 38 g/m ²
	Porcher 32 g/m ²
	Porcher Hard 38 g/m ²
	Porcher Hard 32 g/m ²
	SR Scrim, SR Laminate 180 g/m ²
Risers	PASAMON - Bydgoszcz, Polska

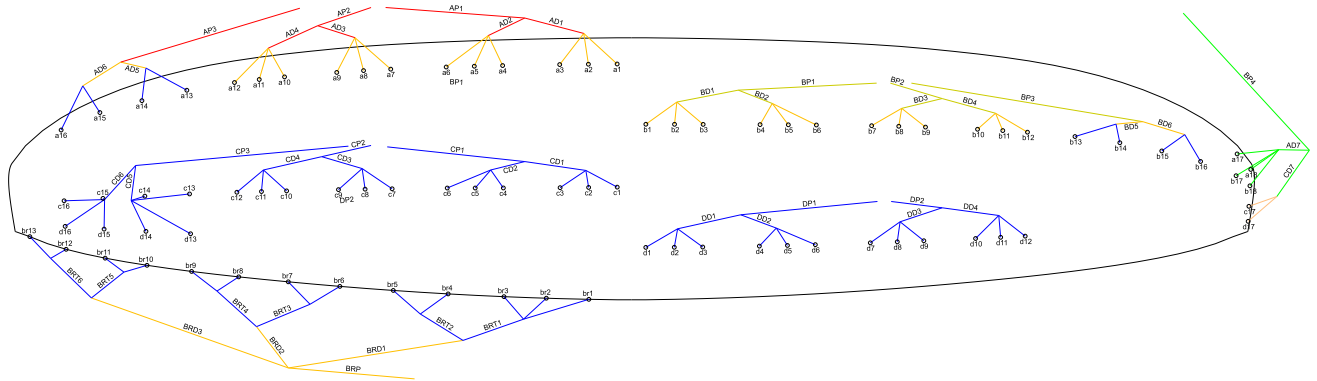
* Detailed list of materials used for the manufacture can be found in service documents file on the page of a wing, available on our website www.dudek.eu.

The rigging scheme itself is published on the next page, while tables of line lengths you will find in attachments to this manual.

Lengths are measured with a specialised, computer-operated device. All the lines before measurement are stretched with a steady 5 kg load. Thanks to abovementioned device and proper procedures, final tolerance of line lengths does not exceed +/- 10mm.

■ **Note:** Distances given below are to be understood as distances between connection points. When cutting a line for repair, 20 cm extra must be added, as at each end a 10 cm stitch is required to fix the loop. The only exception is the main steering line (BRP), which is looped only at the upper end, with at least 150 mm margin for fastening brake handle (this means for this line extra 25 cm than in the table is needed).

■ **Note:** accordance of all suspension and steering lines as well as risers with dimensions given in this manual has been confirmed by testing center after completing the test flights.



By purchasing our gear you've become an important part of Dudek Paragliders family!

Share your experiences with the entire community and stay current with new offers by joining our fanpages:



Movies and pictures

If you have interesting photos and films of your flying by all means send them to us, and we will share them with our entire community: media@dudek.eu

Do not forget to label everything you publish in social media with [#dudekparagliders!](#)

Need any help?

- Do you want to fly with us, but are not sure which paraglider should you choose?
- Are you already our pilot, but would like to know more details concerning your wing?
- Or maybe you seek advice in honing your skills?

Write us! Send an email to support@dudek.eu and our specialists will answer all your questions!

If you respect the rules of safe flying and proper glider care, you will enjoy many years of pleasant airtime on your wing. Still, you must be aware of possible dangers and face them wisely. You must accept the fact that all air sports are potentially dangerous and your actual safety depends solely on you. We insist that you fly safely, and this concerns both the weather choicesafety margin during all manoeuvres.

- **Caution:** Flying the paraglider is always your own responsibility!

See you in the air!



fot. Jean-Baptiste Chandelier

DUDEK

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