



user manual



DUPEK
paragliders

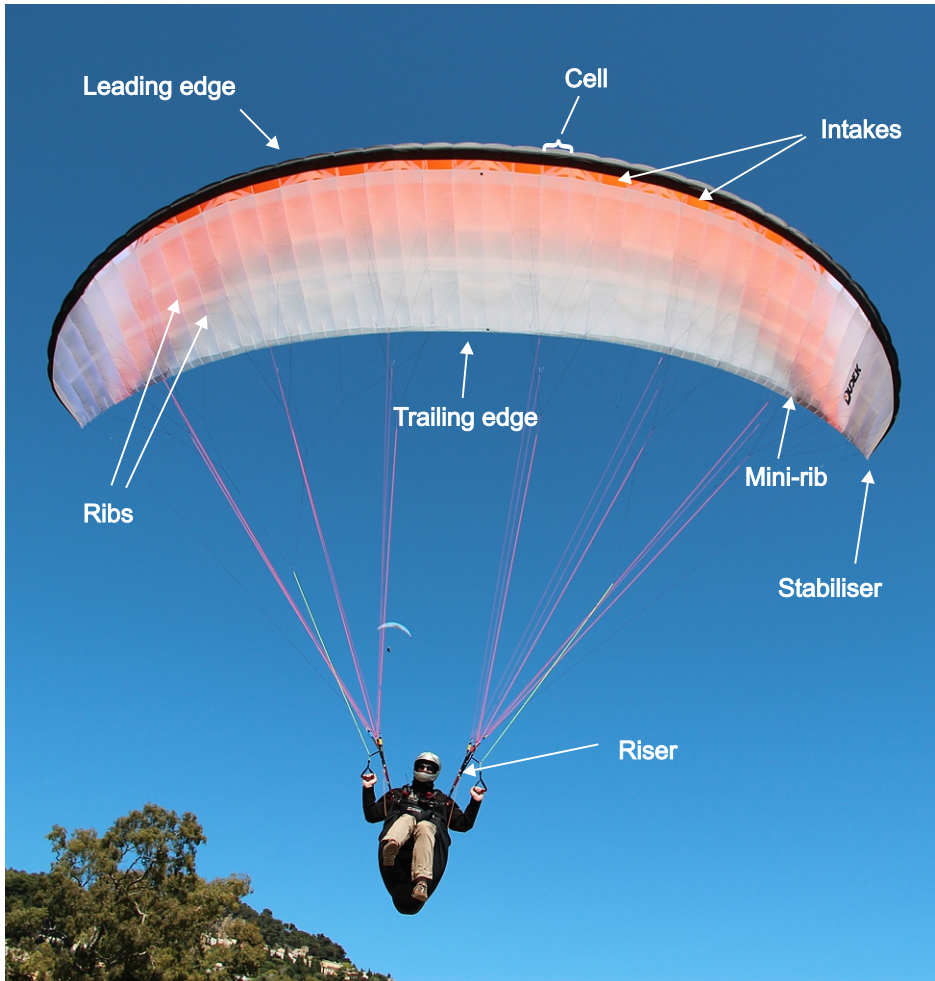
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NOTE!

Please read this manual carefully before your first flight



1. INTRODUCTION

CONGRATULATIONS!

We are pleased to welcome you among constantly growing number of Dudek Paragliders pilots. You've become yet another proud owner of a recreational state-of-the-art paraglider. Extensive development, use of most modern engineering methods and thorough testing resulted in a user friendly paraglider which provides good performance without neglecting the very fun of flying.

We wish you a lot of safe and enjoyable airtime with it.

DISCLAIMER

Please read this manual carefully and note following details:

- Purpose of this manual is to offer guidelines for pilots using Dudek wing. By no means it is intended to be used as a training handbook for this or any other paraglider in general.
- You may only fly a paraglider when qualified to do so or when undergoing training by an accredited School or Instructor.
- Pilots are responsible for their own safety and their paraglider's airworthiness.
- Use of this paraglider is solely at the user's own risk! Manufacturer and distributor do not accept any liability.
- This paraglider on delivery meets all requirements of the EN-926/1 and 926/2 norms or is certified as airworthy by the manufacturer. Any alterations to the paraglider will render its certification invalid.

Note

Due to constant perfecting of our designs it is possible that actual paraglider can slightly differ from the one described in manual. In case of any doubts please contact us.

2. ABOUT THE WING

For whom is the Nemo XX?

Nemo XX is a modern training/recreational paraglider with good performance and great safety. Originally intended for novice free-flying pilots, due to its stability it is well suited to training, towing and PPG flying as well.

THE PROJECT

Nemo XX is the successor of very popular Nemo2 in the training/recreational paragliders' class. Basically it is a free-flight wing, designed with most modern engineering software, the Glider Plan.

Three-row canopy with rigid cores (Dudek FlexiEdge technology) capitalizes on recent knowledge gained while testing three- and two-liner sport protos.

Inner reinforcements, structural cores and mini-ribs perfectly shape and stabilize the high-lift aerofoil. Well thought-out three-row rigging markedly decreases drag, thus enhancing overall performance. Mini-ribs on the trailing edge keep it slim and decrease ballooning, radically improving the airflow. All these combined solutions result in high glide ratio in this class, and outstanding safety confirmed by EN A certification.

During work on Nemo XX we put a lot of attention into flight safety, good steering, ease of operation, good performance and - last but not least - good look. In several prototypes leading to the final Nemo XX we tested different profiles, planforms and curvatures against turbulence and instability in various situations. Additionally, the selected airfoil was sampled and optimised with dedicated CFD (Computational fluid dynamics) software.

New engineering possibilities combined with Piotr Dudek's designer experience resulted in a perfectly stabilised canopy, ideally fulfilling every pilot's expectations.

Nemo XX is safe, good performing, easy launching canopy. Its versatility is confirmed with good towing (Computational fluid dynamics) and perfect PPG characteristics.

We are satisfied to see that Nemo XX is one of the best paragliders of its class currently available.

DESIGN

Canopy was designed in our CSG (Canopy Shape Guard) system, comprising a number of elements resulting in exceptional coherence and stability of the shape. Below you will find a short description of CSG subsystems.



Nemo XX has an elliptic shape with slightly back-swept wingtips. The canopy is made of doubled cells, with ribs supported by VSS (V-Shaped Supports) system. Such design guarantees that the canopy stays rigid, the upper surface is smooth with correctly reproduced aerofoil, and what is most important we have fewer suspension points (thus reducing overall lines' length and drag).

Inside the canopy there is RSS (Reinforcing Strap System) applied on the lower surface. RSS is a ballooning-independent reinforcement system made entirely of paragliding fabric, stiffening and stabilizing the canopy.

The aerofoil was perfected with DOA technology (Dudek Optimized Airfoil). It merges all our experiences stemming from previous designs and as a special feature is optimized with dedicated CFD engineering software.



The air intakes are placed on the lower surface close to the leading edge, placed so that max pressure point remains in the area at possibly many states of flight. They are designed and executed in Shark-nose technology, meaning specific, concave shape of the reinforced profile area at its leading edge (the name comes from the very shape, reminding shark's nose). Due to such shape the intakes can be smaller and moved a bit back, so that leading edge remains undisturbed and offers smooth airflow. The internal pressure of the canopy stays stable within wide speed range. In everyday flying this results in greater resistance to stalls (e.g. when thermalling) and front collapses at high speeds.



The suspension points areas are additionally reinforced with laminated fabric so that loads are equally distributed on three planes: vertically (with the ribs), diagonally (with VSS system) and level through RSS.

All crossports have been prepared with application of OCD (Optimised Crossports Design). Carefully designed shapes of the openings and their optimal placement between stress lines guarantee efficient pressure distribution in the canopy and its quick inflation. These openings are scaled together with the ribs, so that their replicability is flawless and they do not disturb the aerofoil in any way.

Another feature of the Nemo XX is the Flexi-Egde technology. The leading edge is closed to the airflow, and its precise shape is kept with laminated cloth



reinforcements, incorporating synthetic rods. The rods make the leading edge stiffer and smoother, bringing improvements in many areas - from easier inflation, through stiffening the canopy in flight to improved general airflow.

The wing tips additionally feature ACS (Auto Cleaning Slots) – as the name suggests, these are dedicated openings automatically removing dirt from inside the canopy.



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

Nemo XX is manufactured under new technology, utilizing precision of the laser cutter. All stages of production process take place in Poland under strict supervision of the designer himself, thus ensuring highest European quality.



CLOTH

Each kind of cloth has its own special qualities. We merged them so that they blend into a perfect composition.

The upper surface is made of 38-gram Porcher cloth. Basically it's a nylon material, covered with PU impregnate. Such covered fabric is not very stiff and - what's most important - has increased tear, stretch and UV resistance. It is not siliconised, so minor repairs can be easily made with self-adhesive strips.



Lower surface is made of 34-gram Dominico Tex cloth, contributing to low weight of the canopy.

The ribs must be as rigid and stretch-resistant as possible. We found these qualities in Porcher Hard Finish cloth (40 g/m²). All suspension points and leading edge reinforcements are made of SR-Scrim fabric.

RIGGING SYSTEM

All Nemo XX lines have coloured polyester sheath covering a core inside. Due to limited number of lines we made sure they are strong enough by employing brown TECHNORA cores. As a result is we have lines that are both strong and offer high stretch resistance.

Technora.

Rigging system consists of individual lines looped and stitched at each end.

The upper level (gallery) lines start at the suspension points of the canopy. These lines connect to middle level ones, and these in turn adjoin by twos to

single main suspension line. Main lines are attached to risers with quick links (maillons). To prevent their slipping off, the lines are kept together with a rubber 'O ring' twisted in eight.

All maillons are made of polished stainless steel, ensuring great strength, durability and resistance to corrosion. We use only the best quality, certified maillons by Peguet.



Wingtip lines connect outer suspension points with maillons in similar steps as above. The same story goes for steering lines. With consecutive cascades they lead from trailing edge down to main brake lines, which then go through pulleys connected to the C-riser and finish at the brake handles. Those lines do not carry any suspension loads.

RISERS

There are 3-way risers in Nemo XX, equipped with:

- ELR (Easy Launch Riser) - separate A riser with red ribbon
- speed system affecting A, A' and B risers



Risers are coloured for easy distinction:

- A - red (launch)
- A' - red (longer one for Big Ears)
- B - yellow (B-stall)
- C - blue (deflating the canopy in strong winds - aborting launch)

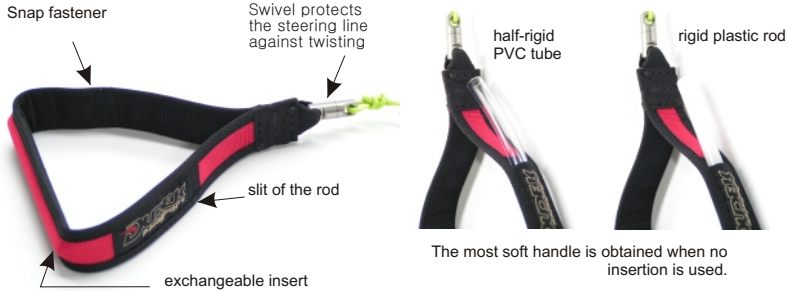
Main A row suspension lines connect to an A riser. The outer A suspension line connects to an elongated by 10 cm A' riser (both red). B row and stabiliser lines go to B riser (yellow) and C lines to C riser (blue) as well as steering lines (through their pulleys).

Brake handles are attached to the steering lines at optimal point, guaranteeing safe and effective operation. It is marked black on the main brake line and this setting should not be changed. Fixing brake handles above that point causes permanent braking of the paraglider which can easily lead to an accident. Overly long brake lines are not advised either, as total lack of strain can prove dangerous in some situations.

Nemo XX features our recent brake toggles, distinguished (beside its more robust yet lighter design) by applicaiton of TCT (Triple Comfort Toggle) with swivel.



Triple Comfort Toggle (TCT)



Addressing different needs of our clients we have created a TCT system - Triple Comfort Toggle, making it possible to have your brake handles in rigid, half-rigid or soft configuration without need to purchase additional handles.

Easy Catch



"Easy Catch" speedbar is a godsend for those who have problems catching the bar after taking off.

The speedbar is designed to stay always in front of the speedsystem lines. Its finish is very robust, so long-term service is guaranteed.

SPEED SYSTEM

The heart of speed system is a line sewn into A riser, running through two pulleys and finished with a loop with small hook. There you attach the speed bar line. In normal flight all risers (except A') have the same length.

Speed system affects risers A (with A'), and B. When the bar is being pushed, A and B riser gradually shorten. C-riser retains its original dimension.

NOTE: An improperly adjusted speed system leads to loss of certification!

SPEED SYSTEM ADJUSTMENT

Most of modern harnesses are equipped with special speed system pulleys and sometimes even its own integrated speedbar.

If it's not the case, first you need to have some pulleys attached (at best sewn into harness) in such a way that will allow the pilot maximize the output of his/her legs with correct power vector, without effect of pushing the harness back. The speed system cord must be firmly attached (with bowline or other non-slipping knot) to the speed bar. The other end of the cord must be ran upward through the harness pulleys, to be finished with hooks or small carabiners. Overall length of speed system cord should allow pilot to put his/her feet easily into the bar when in flight, and yet should be short enough to cover the full speed range.

Make sure that both cords on the speed bar are equal, as even slight difference can result in constant turning of the paraglider. Test your speed system thoroughly on the ground before flying with it!

The maximum action is reached when speed system pulleys touch.

SPEED SYSTEM USAGE

Before take-off attach paraglider risers to the harness with main carabiners. Then connect speed system cords with hooks or quick-links. Finally make sure that speed system is not tangled and runs freely.

To use the speed system simply place your feet on the speed bar and push forward in a horizontal plane. If you notice loss of pressure on the bar, it can be a sign of imminent frontal collapse. In this case release the bar immediately. Watch out for such things - quick wits can spare you most collapses and in general you will increase your awareness of the air around you. Slight speed-bar operation can also optimize your flight, i. e. when entering a thermal.

Speed system activation diminishes your paraglider's angle of attack, so that its airspeed is increased. Yet simultaneously canopy becomes less stable - that's why you should avoid using speedsystem in turbulent conditions, close to the ground or near other airspace users!

Do not use speed system in any extreme manoeuvres! If the canopy does collapse, release the speed bar immediately and correct the situation as usual.

WHAT HARNESS?

You can use any certified harness with hang point between 40 cm and 45 cm from the seat (it depends on take-off weight). Width between carabiners should remain between 40 cm and 48 cm. Configuration of tested harnesses is indicated in certification tables for each size

Please note that any modification of seat/hang point distance changes the position of the brakes in relation to the pilot's body. You must remember that in each configuration the effect of your hands' movement will be different.

Caution! Too tight cross straps can dramatically affect the handling, so tightening them actually may not contribute to higher safety. Have them tightened just the correct amount..

3. FLIGHT

PRE-FLIGHT CHECK

A thorough pre-flight check is essential for any aircraft; the Dudek Nemo XX is no exception.

Having unpacked and laid out the paraglider, following checks must be made:

- Canopy, lines and risers condition. Do not start if any damage is noticed.
- Paraglider should be arranged in such a way that the centre section A-lines (red risers) will strain earlier than the outer ones (A' - red risers). This ensures easy and symmetrical launch.
- Central cells have to be laid out carefully, with leading edge even and pre-tensioned.
- All lines and risers should be separated. Make sure they are not tangled and pay special attention to the A-lines, which should run free from the A and A' risers (both red) to the canopy.
- It is equally important to untangle the brake lines so that they will not catch anything on the ground during launch. They must be firmly attached to brake handles and run freely through pulleys to the trailing edge.

- See that the risers are not twisted. It is very important not to loop any lines around the canopy. The so-called "line-over" may have disastrous consequences during take off.

Always put on and fasten your helmet before clipping risers to the harness. Check quick links (maillons) between suspension lines and risers - sometimes they can unscrew.

Check main carabiners. They must be properly mounted, closed and locked.

LAUNCH

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 (marked with red ribbon), holding them at the stitching, just under the quick-links.

Spread out your slightly bent hands, keeping them down and back. All risers but the A 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 up and over your head until the wing will be directly above you. Check the wing and let the A risers loose. 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 (launch space permitting). 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.

Reverse launch

Should be used when wind speed rise over 3 m/s. After clipping risers into carabineers turn back to face the wing, moving one riser group over your head. As a consequence, you will have the risers crossed. Unlock brake handles and grip them outside of the risers without crossing neither arms, nor lines. In this way you have right brake in right hand. Keeping brake handles in hands take corresponding A risers on both sides. Make sure that the wing inflates symmetrical and the lines are not tangled. Building up tension with a

few steps back and simultaneously lifting the A risers (without pulling them towards you) will make the canopy rise. When it arrives over your head, stabilize it with brakes, check again if everything is OK and turn.

Remember to turn always in the same direction. The turn itself should be quick and smooth. While turning you have to release the brake handles and grip them again facing forward. Last check of the wing & free space to launch and off you go.

CAUTION

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

TURNS

The Nemo XX is a responsive wing; it has easy handling and reacts instantly to any steering input, with progressive forces on the brakes. Adding some weight shift will make the paraglider turn faster and tighter.

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

When it is necessary to turn the Dudek Nemo XX in a confined area at slow speed (e.g. slope soaring), we recommend 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 of the turn.

When entering a turbulent area you should brake a bit, just to put up the tension. It will give you better feel of the wing and allow you to react instantly in case of a problem.

CAUTION: Too hard or too quick pulling of one brake can cause the wing to enter a spin.

THERMALLING AND SOARING

When flying Nemo XX minimum sink is attained with slight brake pressure applied (10 cm to 15 cm depending on pilot's weight). In turbulent conditions the canopy should be flown with 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 remain above pilot's head. In order to achieve it, paraglider should be accelerated by letting off the brakes when entering a thermal (accordingly to its strength) and slowed down on exiting. This is basic active flying that can spare you many potential collapses.

When soaring the slope, a minimum height of 50 m above ground is recommended for safety reasons. It is important to comply with the rules of air traffic, especially when many pilots share airspace close to a hill. In such conditions rapid avoidance manoeuvres are often not possible.

FLYING WITH SPEED SYSTEM ENGAGED

When flying into head wind or through sink it is advisable (for the sake of best glide angle) to increase speed, as long as conditions are not too turbulent. Remember that on application of speed system overall angle of attack diminishes and the canopy may tuck easier than in normal flight. The faster is your flight, the more dynamic are tucks and stalls. See "Speed system" section.

LANDING

The Nemo XX is easy to land. Final leg of the landing approach must bring you into wind. At approximately 1 meter above ground pilot should flare the canopy, applying brakes accordingly to conditions. The glider may even climb again for a while gaining some height, if too much brake is used.

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

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.

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 contradictions were found for using Nemo XX in such flights.

CAUTION

During start, especially winched or with a motor, 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. As a result it can stay behind a pilot, if he neglects bringing it directly over head during launch.

RAPID DESCENTS

BIG EARS

You can deflate both wingtips simultaneously pulling down the A' risers (red ribbon) by approximately 50 cm.

It is important not to let off the brake toggles while entering the Big Ears manoeuvre. When folded, paraglider will maintain straight course with an increased sink rate (up to 5 m/sec). The canopy remains controllable with weight shifting. On releasing the A' risers canopy usually reinflates spontaneously, or can be aided by a long pump until the tips get clear.

Due to possibility of entering parachutal stall it is advisable to apply speedbar after folding the wingtips, in order to diminish AoA.

CAUTION: See Parachutal Stall section.

SPIRAL DIVE

You can reach highest sink rates by spiralling. Significant G-forces, however, make it difficult to sustain a spiral dive for long, as it places high loads on the pilot and glider which can lead even to a blackout. Never do this manoeuvre in turbulence or at too high bank angles, that is make sure that sink speed never exceeds 16 m/s. If the wing does not recover after releasing the brake, you must support it applying outer brake.

NEVER DO BIG EARS IN A SPIRAL!

Tests have proven that loads in a dive can be even higher than those used in certification tests (i.e. 8 G), which could result in structural failure of the glider, as smaller number of lines is taking these high loads.

B-STALL

To enter a B-stall simultaneously pull down both B-risers (yellow) by 10-15 cm. The wing will collapse on entire span along B-row, airflow over the top surface will break and canopy surface will be decreased. Forward movement will be almost completely gone. Avoid pulling of the B-risers deeper, as it increases the wing instability. If the canopy forms a horseshoe with wingtips in front of the pilot, gently apply brakes to recover.

To exit B-stall both risers should be released in a smooth and decisive manner. On quick and symmetrical releasing B-lines airflow reinstates and the wing surges forward, returning to normal flight.

CAUTION: see Parachutal Stall section.

All rapid descent techniques should be practised in smooth air and with sufficient height only! Full stalls and spins are to be avoided as recovery procedures, since irrespectively of paraglider type they may have dangerous consequences!

BY FAR THE BEST TECHNIQUE IS WISE, CORRECT AND SAFE FLYING, SO THAT YOU WILL NEVER HAVE TO DESCEND RAPIDLY!

AEROBATICS

Nemo XX was not designed to perform aerobatics.

WING OVER

You make a wingover by executing a series of consecutive, alternating turns with constantly growing bank angle. Too much banking with some flaws in coordination can evoke pretty dynamic collapse.

CAUTION: Steep turn with bank angle exceeding 60 degrees is a prohibited aerobatic manoeuvre!

EXTREME AND DANGEROUS SITUATIONS

CAUTION

PROVOKING EXTREME SITUATIONS SHOULD ONLY BE CARRIED OUT DURING SAFETY TRAINING COURSE (INSTABILITY TRAINING) UNDER PROPER GUIDANCE! WHILE PROVOKING OR EXITING REAL SITUATIONS THERE IS DANGER THAT YOUR ACTIONS WILL PROVE TOO QUICK OR TOO STRONG, SO YOU SHOULD EMPLOY GOOD JUDGMENT, STAY CALM AND TAKE MEASURED ACTIONS.

Since all actions required to exit or prevent dangerous situations on Nemo XX are typical and pilots flying this wing should already have some experience, we are going to describe only the characteristic features for this paraglider. Description of standard dealing with extreme situations can be found in textbooks.

SIDE COLLAPSE

May happen in strong turbulence. Usually Nemo XX does not turn at all.

With collapses of some 50% pilot has a couple of seconds to react before paraglider enters a turn. A little countermeasure will be enough to keep it on course. Under normal conditions Nemo XX will reinflate instantly and spontaneously.

FRONTAL COLLAPSE

Can happen in strong turbulence. Active piloting will usually prevent its occurrence. Under normal conditions Nemo XX reinflates instantly and spontaneously. Applying some brakes in the right moment will greatly speed up recovery.

FULL STALL AND SPIN

Practically do not occur spontaneously. It may happen only as a result of serious mistake or intentional action. Just be careful when flying with low speeds, until you feel familiar and comfortable with new wing.

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

PARACHUTAL STALL

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

- after B-stall, release the risers quick and evenly. Nemo XX does not jump forward excessively.
- after Big Ears execution engage speed system. It will increase the sink rate and safety margin, as big ears constitute an aerodynamic brake with significant loss of speed.

Nevertheless, if such a situation happens, apply some pressure to speed bar and/or push the A risers forward.

LINE OVER and CRAVATTE

Nemo XX is a modern wing, so in order to minimise drag it has less and wider spaced suspension lines. That's why it's possible that a wingtip gets tangled after some bad collapse. Usually a couple of stronger pulls with brake will clear things out. If it does not solve the problem, try big ears or pulling down corresponding riser. In case of any doubts pilot should seriously consider throwing the rescue chute.

EMERGENCY STEERING

In case of any malfunction rendering steering with brakes impossible, you can safely steer and land using the C-risers (blue ribbon) or stabilo lines.

4. PARAGLIDER CARE

Proper maintenance of the paraglider will greatly enhance its durability

FOLDING AND STORAGE

Nemo XX features a number of recent technologies, like tensioning the leading edge with a plastic string. That's why the paraglider should be folded with care in order to keep it healthy during transport and storage.

Basic rules to be observed when folding:

1. We fold the canopy together on rib-to-rib, cell-to-cell basis (like a harmonium). We don't break the wing in halves, taking the stabilizers towards centre.
2. After creating a package along the maximum chord, we don't roll it, but fold two to three times (depending on the chord length) from trailing to the leading edge.
3. Leading edge stays on top of the folded canopy.
4. Don't pack too tightly.

Please note that frequent playing with your paraglider on a field or a small hill will deteriorate it quickly due to its repeated rising, falling down and dragging around.

A good precaution to avoid catching wet and/or UV is to use quickpack after rigging up, when you have to wait in start line.

Never pack up or store the glider when wet. This shortens the life of the cloth. Remember that wing gets wet even when laying on a green grass in full sun, as the grass evaporate.

Leaving wet paraglider in a car heated by sun is absolutely unacceptable! Effect of an oven occurs and as house tests of the wet fabric have shown, colours can get unstable even at 50 grade Celsius. Guarantee claims concerning colour loss and stains will not be accepted!

While drying, never expose your paraglider to direct sunlight.

Store the paraglider in a dry space, away from chemicals and UV exposure.

CLEANING

Clean the paraglider with water and a soft sponge. Do not use any chemicals or spirits for cleaning, as these can permanently damage the cloth.

REPAIRS

Repairs should be carried out exclusively by the manufacturer, authorised distributor or authorised workshop. It is acceptable to fix minor cloth damages with self-adhesive patches included in the package.

INSPECTIONS

Full inspection is recommended every 24 months, or 150 flight hours (depending on what comes first) if not advised otherwise by the inspecting person due to current paraglider condition.

Paragliders in commercial use (training and tandem flights) should be undergoing Full Inspection every 12 months (excluding first 24-month period after purchase).

Technical inspection is carried out by the manufacturer or authorised person.

DETERIORATION: A FEW TIPS!

This paraglider is basically made of Nylon, a cloth which - like any synthetic material - deteriorates through excessive exposure to ultraviolet rays emitted by the sun.

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

Suspension lines consist of Technora inner core and polyester sheath. Putting them to excessive loads in flight and folding on the ground should be avoided, as it can cause irreversible damage.

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

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

Prevent lines from catching anything as they can get overstretched or torn. Do not step onto lines.

Uncontrolled strong wind takeoffs or landings can result in the leading edge of the canopy hitting ground at high speeds, which may heavily damage the ribs and surface cloth.

Knots can chafe the suspension and/or brake lines.

Check line lengths after tree or water landings, as they can stretch or shrink. A line plan may be obtained from the website or dealer when needed.

After landing in water you should check the wing cloth as well, since the wave forces can cause the fabric to distort in specific areas.

When taking the wing out of water, always do that by the trailing edge, so that water can flow out freely.

After 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 them with new ones immediately after contact with salty water.

5. TECHNICAL DATA

Nemo XX	23	25	28	31
Certification	EN A	EN A	EN A	EN A
	LTF A	LTF A	LTF A	LTF A
Number of cells	42	42	42	42
Surface area (flat) [m ²]	23,00	25,30	28,00	31,00
Surface area (projected) [m ²]	19,56	21,52	23,82	26,37
Span (flat) [m]	10,78	11,30	11,89	12,51
Span (projected) [m]	8,46	8,87	9,33	9,82
Aspect Ratio (flat)	5,05			
Aspect Ratio (projected)	3,65			
Sink rate [m/s]	min = 1,1 + - 0,1m/s			
Speed [km/h]	trim = 37; max = 47 + - 2km/h			
Max. cord [cm]	264,00	276,90	291,30	306,50
Min. cord [cm]	62,00	65,10	68,40	72,00
Distance pilot to wing [m]	6,52	6,84	7,19	7,57
Total line lenght [m]	233,43	245,06	258,66	272,48
Weight range EN [kg]	55-75	70-90	85-110	100-135
Weight range DGAC [kg]	55-95	70-110	85-130	100-155
Weight [kg]	4,8	5,2	5,6	6,0
Lines	Technora: 1,2 & 1,3 & 1,5 & 1,8 & 2,3			
Fabric	Porcher 38 g/m ² & Dominico tex 34 g/m ²			
	Dominico Tex Hard 40 g/m ²			
	SR Scrim, SR Lamine 180 g/m ²			
Risers	PASAMON - Bydgoszcz, Polska			

6. WARRANTY AND AEROCASCO

Purchase of a new paraglider is a serious expense for any pilot. That is why we cover our paragliders with extensive warranties and additionally offer an AeroCasco insurance against damage and repair costs.

WARRANTY

Dudek Paragliders guarantees free of charge repairs caused by the material or production faults along following scheme:



For the free-flying paragliders warranty covers **36 months** (3 years) or 300 flight hours (depending on what comes first). If the paraglider is used for powered flights, every hour spent in the air should be counted as two (does not apply to dedicated PPG canopies).



For the PPG paragliders warranty covers **24 months** (2 years)/200 flight hours (depending on what comes first).



For the mountaineering (MPG) and speedflying wings as well as school and profit users warranty covers **18 months** (1.5 year)/150 flight hours (depending on what comes first).

WARRANTY DOES NOT COVER:

- colour loss and staining of adjacent textiles caused by careless storage or transport
- damage caused by chemicals or salt water
- damage caused by incorrect use
- damage caused by emergency situations
- damage resulting from accidents (airborne or not)

WARRANTY IS ONLY VALID IF:

- flight hours are correctly registered in the logbook of the owner (and possible earlier owners), distinctly marking PPG flights,
- the paraglider is handled in accordance with the operating manual,
- the purchaser has not carried out any repair by him/herself (excl. minor repairs with self-adhesive patches),
- carried out any modifications,
- the paraglider can be unmistakably identified
- the paraglider was being inspected according to prescribed timetable.

If you have bought your paraglider second-hand, ask its previous owner of the paraglider for a logbooks copy (total of flying hours since the date of first purchase).

AEROCASCO



Normal warranty does not cover repairs of damages caused by the user or a third party. As costs of such repairs can be considerable, Dudek Paragliders offer an AeroCasco insurance. It covers a one-off repair of any mechanical damage, no matter how big and whoever inflicted them. The only expenses the purchaser has to pay are shipping costs and so-called share-of-cost amount.

AeroCasco can be purchased only for a brand new paraglider (at the paraglider purchase). Its cost is 50 euro.

NOTE: AeroCasco is not available for all paragliders (check this before purchase). It can be obtained for privately used wings only.

AeroCasco applies only to damages that took place during take-off, flight 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. There is a possibility to extend AeroCasco for one more year. To do this you have to send your paraglider for inspection not later than a year after the date of purchase. Extension fee is 75 euro (incl. inspection).

Remember to attach the AeroCasco confirmation on expedition.

AeroCasco does not apply to any of the following: theft, colour fading, damage caused by incorrect storage or transport, damage caused by chemicals, salt water and force majeure.

SEE YOU IN THE AIR!

If you respect rules of safe flying and proper glider care, you will enjoy many years of pleasant airtime on your paraglider. Still, you must be aware of present dangers and stand up to 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. This concerns both the weather choice and safety margin during all manoeuvres.

FLYING THE PARAGLIDER IS ALWAYS YOUR OWN RESPONSIBILITY.

7. WHAT DID YOU BUY

Paraglider set you bought shall include following items:

- Transport bag (with your wing inside it).
- The paraglider itself (canopy, lines, risers)
- Compression strap for tightening up a wing before putting it into a bag.
- Windsock.
- A pocket with paper work and repair wallet including:
 - A piece (10 cm x 37,5 cm) of self-adhesive fabric for small repairs (excluding rips placed in the vicinity of stitching, which should be repaired by an authorised service only).
 - A one-side looped 1.9 mm suspension line. It is equal to the longest line used in the paraglider and is to be used as temporary replacement only. Do not cut it if you have to replace a shorter one, just tie it at the length needed.
 - A paraglider passport with entered date of purchase and valid technical inspection (please check serial number with the sticker on a wing tip).
 - A pendrive with User Manual

You will receive some small gifts as well.

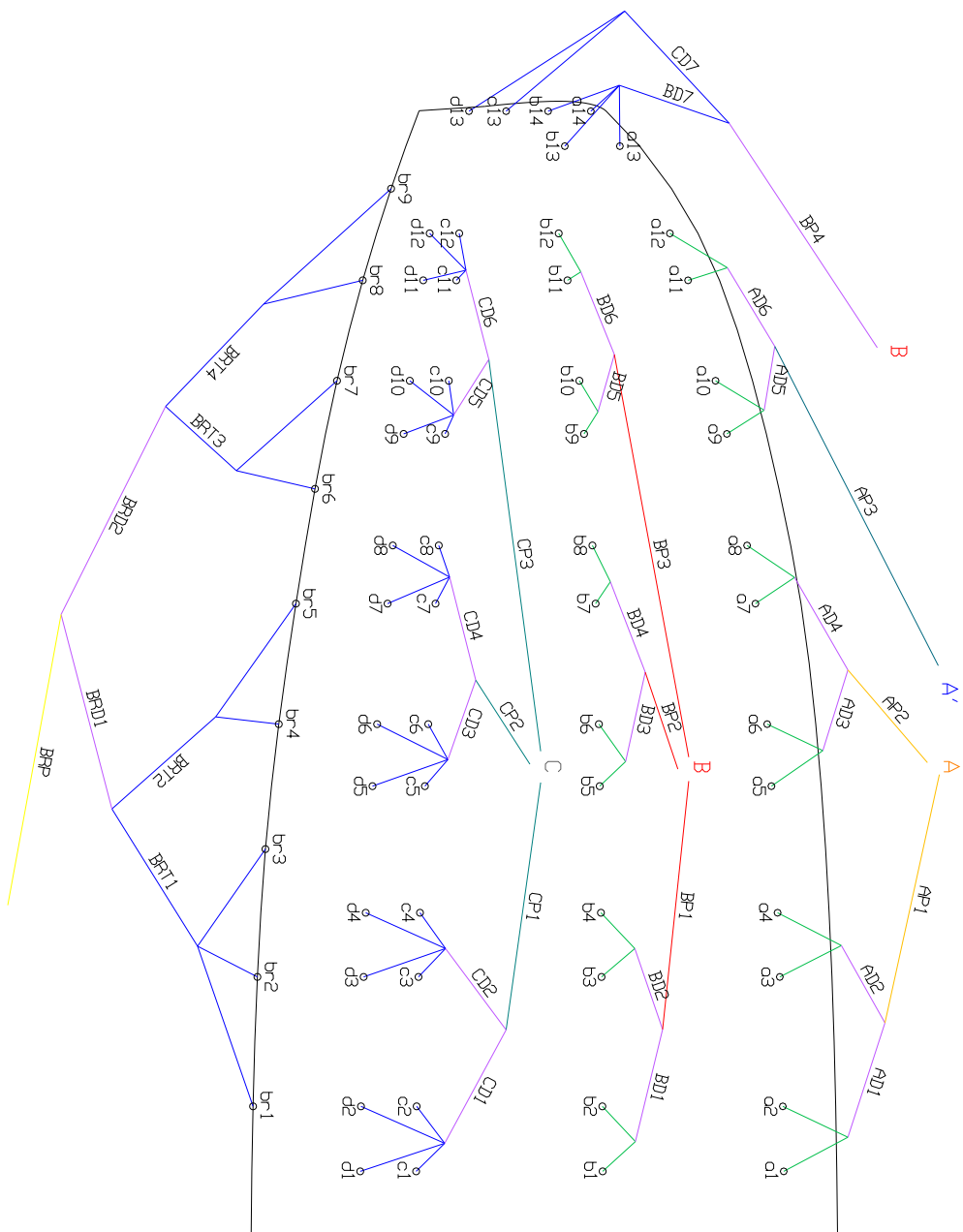
8. RIGGING SCHEME AND TABLES

The rigging scheme itself is published on the next page, while tables of line lengths you will find on our website **www.dudek.eu**

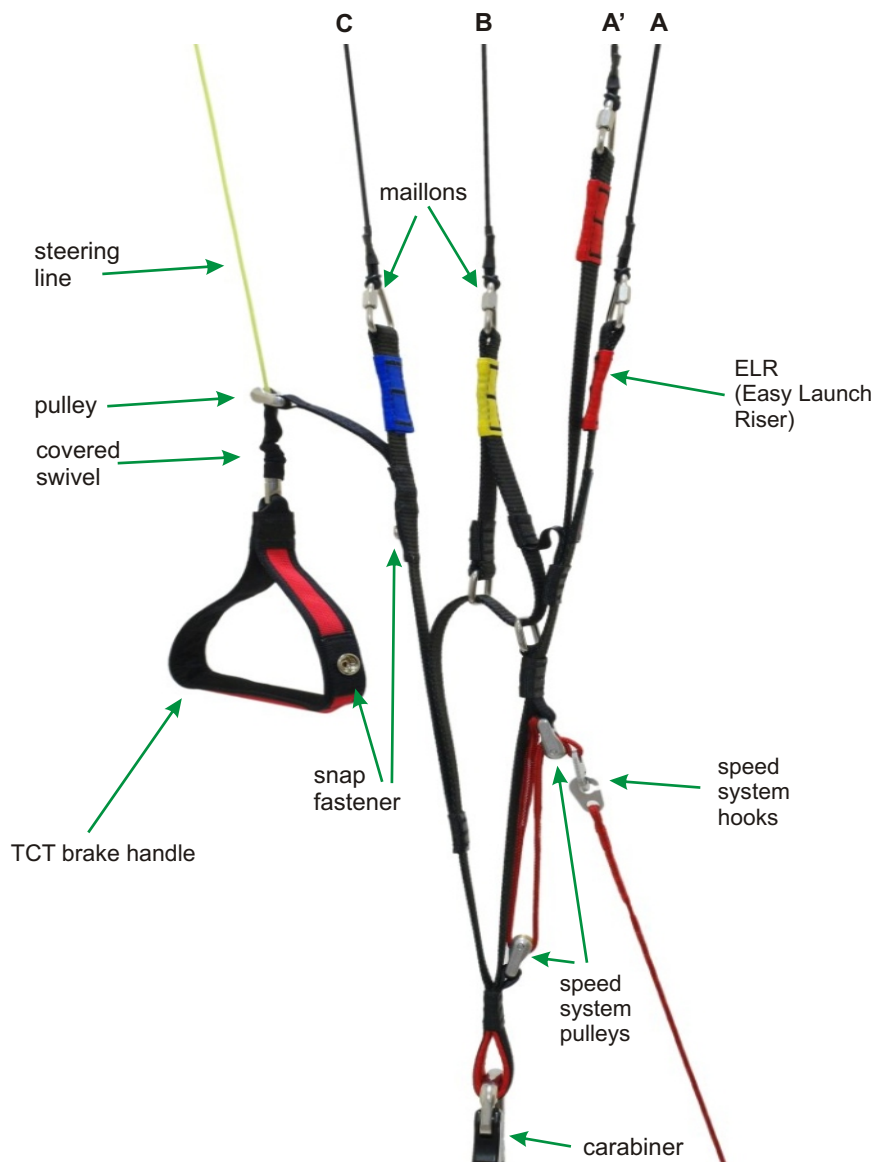
Line lengths are measured with specialized, computer-operated device. All lines before cut are stretched with a steady 5 kg load. Thanks to the abovementioned device and proper procedures final tolerance of line lengths does not exceed 0.15%.

CAUTION!!! Distances given below are to be understood as distances between connection points. When cutting a line for repairs, 200 mm more must be counted, as on each end a 100 mm stitch is required to fix the loop. The only exception is main steering line (BRP), which is looped at the upper end only, while down there is 200 mm margin left for fastening the brake handle (that means 300 mm more is needed to be cut).

Length of the steering line is given for the high hangpoint scenario (i.e. longer lines). For the lower hangpoints line is shorter by some 15 cm (you have to fix the handle higher).



9. RISERS



Speed system influence on the aerofoil

Risers neutral (without speed)

Slowest speed,
minimum sink,
Take off position

length of the risers (with maillons)

size:	23	25 i 28	31
row:			
A	515	535	555
A'	615	635	655
B	515	535	555
C	515	535	555



Full speed

Increased speed,
increased sink

length of the risers (with maillons)

size:	23	25 i 28	31
row:			
A	390	390	390
A'	490	490	490
B	430	430	430
C	515	535	555





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