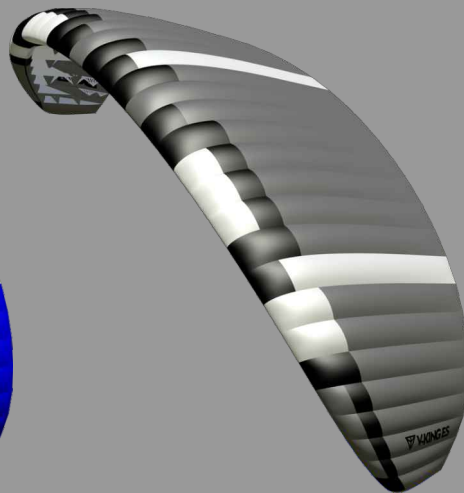
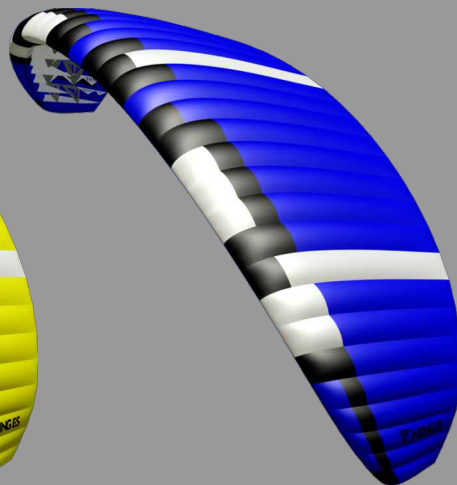
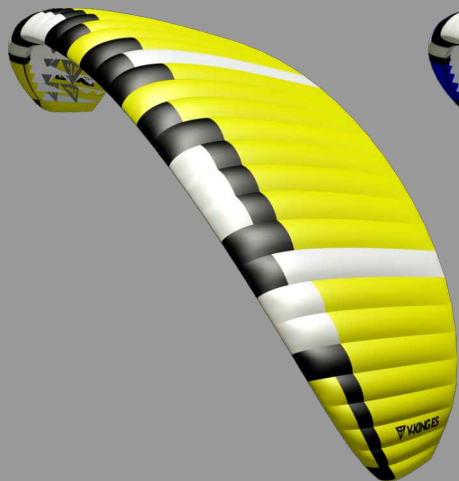




V. 20.03.2024



user manual

INDEX	page:		
introduction	3	technical data	31
the wing	4	rigging scheme	32
design	5	summary	34
before first use	8		
pre-flight check	10		
free flights - launch	11		
free flights - flight	12		
free flights - landing	13		
D-break system	14		
winching and tandem flying	15		
powered flights - launch	16		
powered flights - flight and climbing	18		
powered flights - landing	20		
speed modes	21		
quick descent methods	22		
extreme manoeuvres	24		
paraglider care	26		
warranty	28		
environmental care	29		
what have you bought	30		

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 is the V-King ES intended?

During testing of subsequent prototypes, V-King aroused interest of instructors and school owners. The ease of launching results in quick and efficient mastering proper skills by the trainees. At a specific request of flying schools, we are currently preparing a dedicated ES version made of more durable, sheathed lines, thicker fabric and standard quick-links in risers.

Simple preparation for launch, easy, pleasant take-off and flight at a relatively low trim speed mean that flying becomes accessible to everyone, and learning it is pure pleasure.

The main advantage of the V-King ES is its compactness, still allowing for decent performance and pleasant handling. It is perfect to take it on a long journey, because it does not take up much space in your luggage (precious thing in air travels).

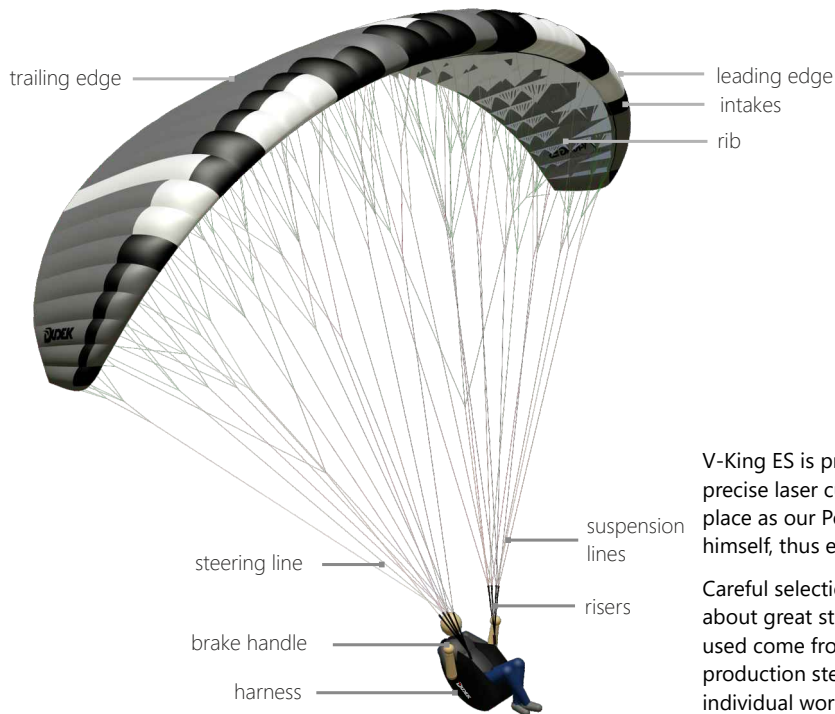
V-King ES is the perfect complement to the suitcase paramotors, recently appearing on the market.

 **IMPORTANT:** V-King ES belongs to the single-surface canopy class. There is fundamental difference between classic double skin and modern single skin canopies. All the launch, landing and

steering techniques look a bit different. If you are an established paraglider pilot, you shouldn't have any problems with adapting to the wealth of new possibilities brought to you by the V-King ES. However, this doesn't work both ways: if you started your paragliding experience with the single-skin gliders, be aware that you are not qualified to safely fly standard double-surface canopies.



IMPORTANT: V-King ES is classified by the manufacturer as suitable for paraglider training (PG/PPG) and released for it.



DOA
Dudek Optimized Airfoil

B3D
Ballooning 3D

SL
Smart Lock

LR
Laser Technology

SS
Speed System

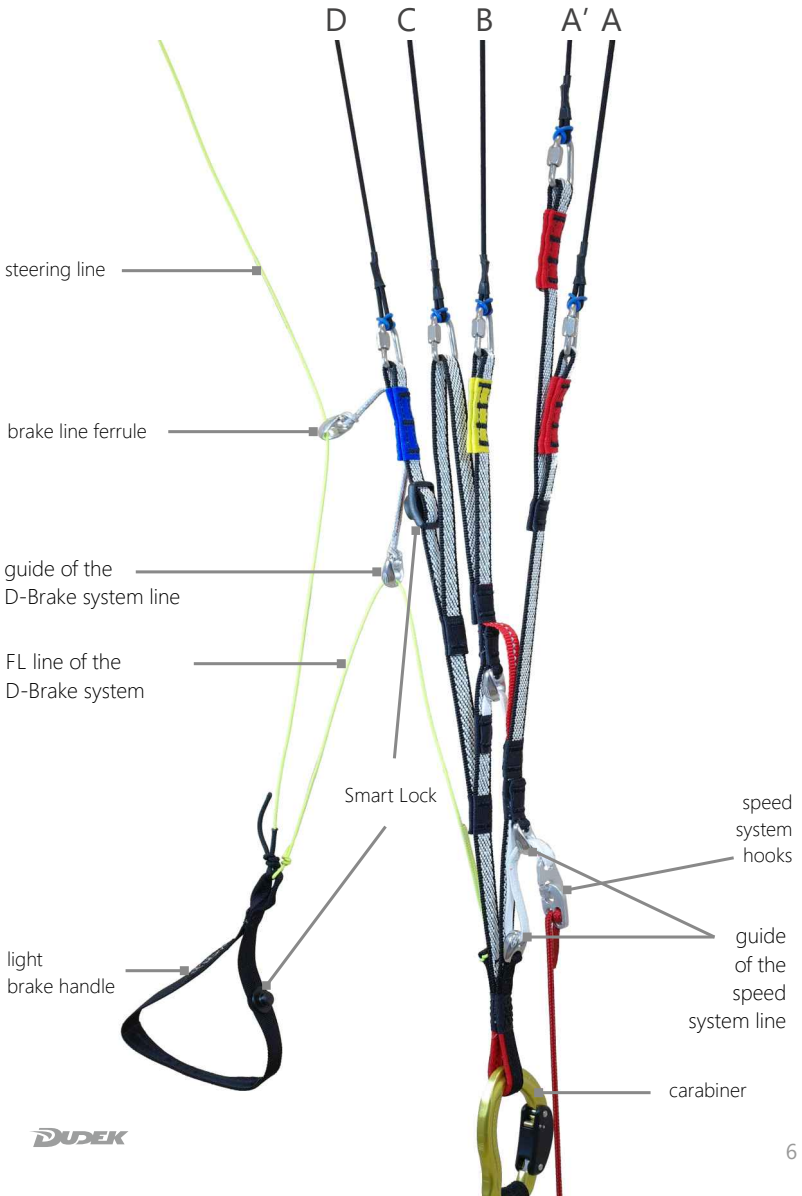
FET
FlexiEdge Technology

ELR
Easy Launch Riser

DBS
D Brake System

V-King ES 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.



The V-King ES features four-way, extremely light risers, equipped with:

- DBS (D Brake System) – additional steering lines, led through guides attached to D risers. The system is there to help obtain better flare and soft landing.
- ELR (Easy Launch Riser) - system. It is a specially marked A riser (with red cover)
- speed-system affecting A, B and C risers



Light brake handles are attached to the steering lines at an optimal point, guaranteeing safe and effective action in connection with FL line. 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.

For quick and easy recognition in emergency, some of the risers are

distinguished with coloured covers as follows:

A - red (used for launching if necessary)

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).

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?

You can use any certified harness which has its hangpoints at 40-45 centimeters from the seatplate. The width between carabiners should be somewhere between 40 cm and 45 cm. For the V-King ES we suggest using a light harness with separate leg placing, as this increases stability and somewhat limits the amount of kinesthetic sensations affecting pilot's body.

! **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.

Speed System

V-King ES is as standard equipped with a speed system. It consists of a cord sewn into the A riser, leading through two guides and finished with a loop and a hook. This is where you attach the speedbar cord.

The speed system affects A (including A'), B and C risers. Pressing the speedbar shortens first the A/A' risers, then gradually the B and C risers. D riser retains its original length.

! **CAUTION:** Ill-adjusted speed system renders the certification invalid!

How to adjust it?

Most of modern harnesses are equipped with speed system pulleys and sometimes even its own integrated speedbar. The speed bar cord must be firmly attached to it.

The other end of the cord must be ran upward through the harness pulleys or guides and attached to the hooks. With well adjusted speed system you should see the pulleys on the risers touch each other at max speedbar, meaning you are using the full range of speed system.

! **Caution:** Make sure that both cords on the speed bar are equal, as even slight difference can result in constant, inadvertent turning of the paraglider.

Before take-off attach paraglider risers to the harness with the main carabiners. Then connect the hooks of the speed system cords with hooks at the A-risers.

! **Caution:** Before launching make sure that the speed system is not tangled and runs freely.

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

When launching with a paramotor, additionally check if:

- nothing will collide with the propeller?
- full engine power is available?

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. Due to its outstanding design, the V-King ES rises so fast and easy that pulling the A risers is not suggested. It can easily lead to a frontal collapse! The best way is to spread your hands a bit down and back, with slightly bent elbows. All risers are to be placed near the elbows.

With a soft pull check whether the A risers are the topmost and all the lines are cleared. For easier orientation the A risers have a red cover.

Then in fluid movement lean forward and run, until the canopy rises. Look up and try to keep it directly over your head. 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

May be used once the pilot feels confident enough, after groundhandling the canopy for a couple of hours.

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. Make sure that the wing inflates symmetrically and the lines are not tangled.

By taking a few steps back you will strain the risers and consequently get the canopy up. Dedicated pulling the A risers is not necessary. When rising, the canopy should stop over your head on itself without your intervention. To make sure you have full control, you can keep the brakes slightly strained.

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.

! **Caution:** To get the canopy down in strong wind, pull the brakes down abruptly & forcefully to disrupt creating lift. You may also use the D risers by pulling them at least 25 cm down.

Turns

Turns on the V-King ES are dynamic, but exceptionally stable. The wing eagerly reacts to even smallest steering inputs. Handling is pleasant, and the steering forces grow linear with the pull. 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

Although the V-King ES was not designed with this in mind, thermal flying is well possible. During thermalling the wing will be intensively communicating to the pilot everything what's going on around. Still, perfect autostabilization will instantly bring the canopy back to its place over your head when necessary.

When flying minimum sink is reached with brake pressure applied (about 10 cm).

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 stay above the pilot. In order to achieve it, the pilot should accelerate the canopy by letting off the brakes when entering a thermal (according 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.

Flying with speed-system engaged

In order to accelerate your flight (as long as conditions are not too turbulent) you have to put your feet on the speedbar and push it forward. If you happen to feel tension drop when pushing the speedbar, it can be a sign of imminent frontal collapse. In this case release the bar immediately.

! **Caution:** Watch out for such things - fast reaction can spare you most of the frontstalls, always possible when using the speedsystem.

Remember:

- Speed system operation diminishes your paraglider's angle of attack, so that its airspeed is increased, but simultaneously the canopy becomes less stable. The airflow becomes more dynamic, too. Therefore you should avoid using speedsystem in turbulent conditions, close to the ground or near other airspace users!
- Do not use speed system during extreme manoeuvres! If the canopy does collapse when accelerated, release the speed bar immediately and correct the situation as usual.

! **Caution:** Accordingly to increase in speed the angle of attack diminishes, so the canopy is more susceptible to front collapses than in normal flight.

The faster is your flight, the more dynamic are possible collapses and stalls.

Landing

Just make sure that last turn into the wind is done with sufficient altitude. It is of highest importance to gain as much speed as possible on approach (by releasing the brakes to the max), so that you will have proper energy to flare and land softly.

At about 1 meter over ground flare out by gently braking both sides. The glider may climb again for a while gaining some height, if too much brake is used.

! **Caution:** Too early braking will impair or completely negate potential for correct flaring and adversely affect its dynamic.

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.

DBS D Brake System

In order to optimise parameters of the V-King ES canopy on landing approach we've created a dedicated D-Brake system. It is activated somewhere in half of the braking range, gradually pulling down the D-risers. Because of this, the wing airfoil is flattened in the rear area, generating additional lift needed for good flare and soft landing.



WINCHING

V-King ES has been successfully tested for foot launching by winch.

First phase of the winch take-off is analogous to classic launch. After rising the canopy you will be taken off the ground, as the winch line gets loaded. Avoid large heading corrections in first stage of flight up to altitude of 50 meters.

During this stage do not sit deep in the harness in order to be ready for emergency landing in case of e.g. winch line break. Make sure that your brakes are fully released, so that angle of attack does not increase above safe level.

During all winch it is recommended to control the direction by weightshifting only. Steering lines should be used only for considerable heading corrections, but even then do not pull them too much in order to avoid danger of stalling your wing.

Adjust your heading regularly when winched, so no large corrections are necessary. Remember there are several conditions to be met when winching:

- pilot should be properly trained for winching,
- the winch with all gear should be in good condition and specialized for paraglider winching,

- the winch operator must be properly trained in winching and servicing the gear,
- The wing must not be winched with forces exceeding 90 daN, and under any circumstances must not be towed by any vehicle not equipped properly or controlled by unskilled operator.



Important: While winching, the wing load is even greater than usual and the airspeed is increased relatively to standard flight. Be aware that in this circumstances the wing is much more agile and sensitive, so be cautious on the brakes!

TANDEM FLYING

V-King ES is not certified for tandem flying.

POWERED FLIGHTS

! **Caution:** Before each launch it is necessary to have a thorough check of the paraglider, harness and power unit.

Classic launch with no wind

Even when it seems that there is no wind at all, it is rarely so.

Therefore always be careful in determining the conditions, since in PPG flying it is most important that the launch and initial climb are performed with a head wind (the danger of losing your airspeed while steep crossing of the wind gradient is greatly reduced then). Special attention must be paid to trees, power lines and other obstacles, including the possibility of emerging rotors.

Preparing the canopy

Lay out the paraglider downwind of the power unit, with all suspension lines taut and pointing toward center of the power unit.

The risers are to be laid on the ground. Make sure that you warm up the engine while standing windward of the wing. Stop the engine before clipping in the risers. Now run the pre-launch checklist.

Place the flatly arranged risers on your shoulders (the A risers stay on top) and clip to the main carabiners of the harness. Lock the carabiners. Take the steering handles in your hands and move forward.

The wing practically does not overshoot, so the front collapses that otherwise happen quite often during launches are rarely seen with V-King ES. Instead it kind of waits for you to catch up.

From now on you should steer the paraglider facing forward, without looking back over your shoulders. When the canopy lies low behind you and you will try to turn, some lines can get in the propeller. On the other hand, possible fall on your back and damaging the propeller is dangerous (and costly!) so it should be avoided at any price, even that of some damaged lines!

During take-off, when you feel that the strain on both risers to be equal, open up full power and lean back to counter the engine thrust, so that it can push you forward rather than towards the ground. The best option is not to use the brakes, allowing the paraglider to rise as it was laid out. If it starts to swerve from its course, just run under the centre of the wing while observing starting direction.

If the paraglider drops to one side or back too far to rise again, kill the engine, interrupt launch and assess the conditions once again.

As the wing rises, the forces grow lighter and it should stabilise above your head without overshooting. This is the best moment to check if it is inflated in full and the lines are not tangled, but do so neither stopping nor looking back over your shoulder. Once you feel the forces on the risers decrease, run faster. See if there is already any opposition on the brakes and, if necessary, use them to correct direction or to increase lift at take-off.

Remember:

- If the cage of your power unit is not stiff enough, the risers strained during launch can deform it to the extent of colliding with the propeller. Before giving it full power, see that the cage did not catch any lines.
- Any brake operation (or steering inputs in general) should be smooth and gentle.
- Do not try to take off until you have your wing overhead. Hitting the gas pedal before that can cause dangerous oscillations.
- Do not sit in the harness until you are sure you are flying!
- The lower the hangpoints of your power unit are, the easier is the

launch.

Reverse launch in strong wind

Reverse launch can be executed while holding in one hand one brake, with throttle and the second brake in the other hand. With a stronger wind it is by far the best way to launch.

In weaker wind it is better to prepare a classic launch, as running backwards with a paramotor on your back is not the easiest thing to do. It is reasonable not to pull the wing up until you are really determined to launch, especially when it's already clipped in.

Lay down the rolled paraglider with its trailing edge against the wind. Unfold the wing enough to find the risers and check that no lines are looped over the leading edge. Stretch the risers against the wind, separating right and left one.

We suggest that you lay the risers in the same way as you will be turning during reverse launch, and place one riser over the other, with rear risers upmost. It should be done this way because once you clip in, the cage of your power unit will make turning on your own practically impossible (with the canopy lying still).

Now run the pre-launch checklist.

After warming up the engine put the power unit on, turn to face the wing, go to the risers and clip them in the appropriate carabiners.

Open the cell intakes using both the front and rear risers. It is advised to shortly get the wing up to check whether the lines are clear. With steering handles in your hands back up a few steps, thus pulling the canopy up. The V-king ES rises easily, sometimes even a short dab on the brakes is required to stop it.

Once you have it overhead, turn around, open the throttle and take off.

Remember:

- You are launching with your hands crossed. You have to really master this technique before trying it with a running engine on your back.
- Any brake operation (or steering inputs in general) should be smooth and gentle.
- Do not try to take off until you have your wing overhead. Hitting the gas pedal before that can cause dangerous oscillations.
- Do not sit in the harness until you are sure you are flying!

Important: When clipping in the crossed risers, you can

find proper connection of the speed system particularly hard. Be careful not to confuse the risers!

Climbing

Once you took off safely, continue heading against the wind, using brakes to correct rate of climb. Do not try to climb too steeply - attempts to increase climb rate by pulling the brakes will have an adverse effect - due to the additional drag actual rate of climb will worsen, and with the throttle fully opened even a stall can happen.

In powered flight, it is by far safer (and more impressive for the spectators) to fly level for a while after take-off and gain some speed before converting it to height with a brief pull on the brakes.

Another reason not to try climbing too steeply is the risk connected with engine failure at low altitude. Besides, you should always be able to land safely in case of engine malfunction, so it's better always fly with a safe margin of speed. Depending on the power unit geometry, it is possible that after take-off you will notice a propeller torque (turning moment). It will try to turn you around, so be counter-steer it with a brake.

Power-unit induced oscillations

Certain configurations of engine weight, output and propeller diameter can cause serious oscillations, during which the pilot is being lifted to one side by the torque effect, swings down due to his weight, then is lifted again and so on.

To avoid this you can:

- change the throttle setting and/or
- shift yourself to the other side of the harness and/or

Such oscillations usually occur at full power - the greater the engine output and propeller diameter, the bigger the swings. In addition there are often too late or wrong pilot reactions, increasing the problem instead of solving it. In this case the safest way to deal with this question is to close the throttle and release the brakes.

Especially less-experienced pilots tend to overreact. This is called a pilot-induced oscillation, and proven solution is to leave the brakes alone.

Level flight

If you have a variometer or altimeter aboard – watch it. In level flight it is very easy to start climbing unintentionally. The

instruments will help you optimise speed and fuel economy.

Of course each flight will depend on current configuration of your gear, but due to its ability to fly safe the V-King ES will let you adjust everything to the best effect. Good knowledge of weather conditions (e.g. wind at different altitudes and smart use of thermals or dynamic lift will help you greatly reduce fuel consumption and increase flight range. Of course the engine is always there to bring you in the right place.

Do not hesitate to lead the wing into tight thermalling in order to win some altitude and spare fuel.

Landing

In PPG flying there are two kinds of landing: with and without power.

Power off landing

At an altitude of 50 metres switch the engine off and glide as you would on a conventional paraglider. It reduces the chances of damaging the propeller on landing, but on the other hand there is only one attempt possible - so it has to be done right!

Powered landing

Make a flat approach with the engine idling, then level out and lose the speed before final flare. Immediately after touchdown switch off the engine. The main advantage of this procedure is of course the possibility of a repeated approach if anything goes wrong. Still, if you forget to switch off the ignition before the wing falls down, there is a considerable risk of damaging propeller, catching lines in it or even suffering injuries connected with falling on your running engine.

Remember:

- Whenever possible, get to know the landing field before taking off.
- Check the wind direction before planning the approach.

- Landing with power off requires much less space.
- In case of any doubt, practice the landing until you feel totally safe.

Neutral position

Minimal speed and minimal sink
Take-off position



neutral risers length:

- A - 510
- A' - 610
- B - 510
- C - 510
- D - 510

Full speed

Increased speed and sink



with speed system:

- A - 440
- A' - 540
- B - 455
- C - 485
- D - 510

* Lengths of the lines are given including the soft-links, length tolerance +/- 5mm



Quick descent methods

Big Ears

The big ears can be induced by simultaneous pulling the outer A' lines (red cover on the risers) by ca. 20-50 cm. While inducing big ears you should never let the brakes out of your hands. After tucking the tips in, the wing will continue to fly straight with increased sink rate (up to 5 m/s). You can steer the wing pretty efficiently by weight-shifting.

After releasing lines, the paraglider will usually open up on its own or you can assist it with a long stroke of the brakes, until the tips unfold.

B-stall

To enter a B-stall, simultaneously pull down both B-risers (yellow cover) by ca. 10-15 cm. The canopy will collapse across the entire span along its B-row, the airflow over top surface will break and projected canopy surface will be decreased. Forward movement will be almost completely stopped.

Further pulling B-risers is not advised, as testes have shown it to

increase wing instability. If the canopy forms a horseshoe, gently pull both brakes to recover.

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. The initial surge forward can be dynamic, but due to its inherent auto-stabilizing ability the wing does not require braking. The canopy will stop over your head.

Spiral dive

V-King ES is an agile paraglider, so entering spiral dive happens very quickly. Because of its stability the paraglider returns to normal flight as soon as the inner brake is released.

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. In case of the classic double-skin surface paragliders releasing the inner brake is sometimes not enough to exit the spiral; is recommended then to aid this process by pulling the outer brake. On the contrary, strong auto-stabilizing tendency of the single-skin means that it is highly improbable to encounter such situation.

! **Caution:** Never do spirals 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 standard wingover by performing a series of consecutive, alternating turns with increasing bank angle. Due to aforementioned autostabilizing of the V-King ES, executing classic wingovers is practically impossible.

! **Important:** Forcing the wingovers by too strong, alternating brake inputs may end with an asymmetric stall!

Aerobatics

V-King ES 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!

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

Extreme manoeuvres

! EXTREME FLYING MANOEUVRES SHOULD ONLY BE CARRIED OUT DURING SAFETY TRAINING COURSES (INSTABILITY TRAINING) UNDER PROPER GUIDANCE!

! Behaviour of the V-King ES is more dynamic than that of the classic double-skin paragliders. Still, exceptional traits of its design result in good auto-stabilization. Therefore the best way to fly it is to allow the wing find its own path, with minimal pilot inputs.

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.

V-King ES is a modern paraglider with significantly stiffened leading edge. Performed tests demonstrated an automatic refilling of the air tank on the leading edge as well as full reopening of the canopy; nevertheless, in some specific turbulence it can happen that the air stream will keep the collapsed part in. 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. Due to its unique design traits, the V-King ES tends to instant restabilizing of the flight parameters in case of any disturbance. To get out of deep stall you have to fully release the brakes. The wing can dynamically return over head of the pilot, yet without diving in front of him - so do not try to brake it in this phase.

Line over and cravatte

It is a modern wing which, in order to decrease drag has 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 strong pulls on the brake is enough to solve the problem. If it doesn't work, try to clear the canopy by pulling the big ears or the stabilo line.

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 or stabilo lines.

Cleaning and storage

Specific design of the V-King ES may require a bit different packing than the classic double-skin canopies. It should be packed like that and properly stored specifically to retain its special traits.

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 transport bag.

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. 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 12 months or every 100 hours** whatever comes first, if not advised otherwise by the inspecting person due to paraglider's condition.

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.

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 **mountain wings (MPG), hike&fly, 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)

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 the paraglider from the day of original purchase).

Environmental care

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:

- Transport bag (with your canopy inside)
- The paraglider itself (canopy, lines and risers)
- Compression strap to keep the canopy together
- 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

V-King ES	16	18	20	23
Certification	EN B	EN B	EN B	EN B
	LTF B	LTF B	LTF B	LTF B
Approval - ULM identification	-	-	-	-
Number of cells	37	37	37	37
Surface area (flat) [m ²]	16,00	18,00	20,50	23,50
Surface area (projected) [m ²]	13,75	15,46	17,61	20,19
Span (flat) [m]	8,76	9,29	9,92	10,62
Span (projected) [m]	7,02	7,44	7,94	8,51
Aspect Ratio (flat)	4,80			
Aspect Ratio (projected)	3,58			
Sink rate [m/s]	min = 1,2 + - 0,1m/s			
Speed [km/h]	trim = 35; max = 42 + - 2km/h			
Max. chord [mm]	2248,00	2385,00	2545,00	2725,00
Min. chord [mm]	624,00	662,00	706,00	756,00
Distance pilot to wing [m]	5,35	5,67	6,05	6,48
Total line length [m]	285,64	303,63	324,76	348,48
Total take-off weight - PG [kg]	50-74	60-85	80-100	100-130
Total take-off weight - PPG [kg]	50-105	60-120	80-135	100-155
Maximum symmetric control travel at maximum weight in flight [cm]	55,00	60,00	65,00	65,00
Distance between risers [cm]	40,00	44,00	46,00	48,00
Weight [kg]	3,00	3,24	3,55	3,89

V-King ES

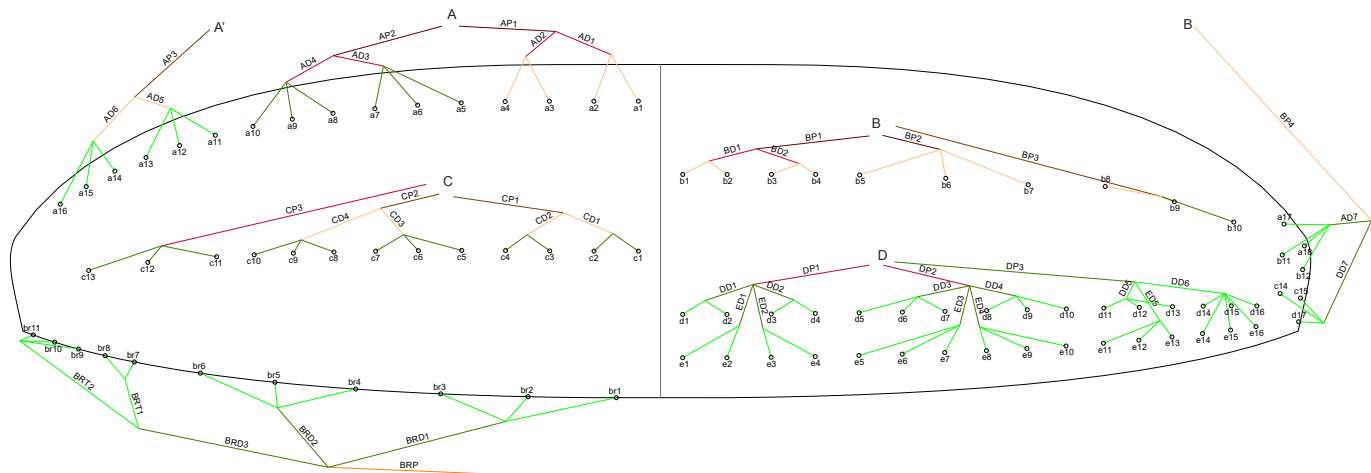
Lines	A-8000U-070 / Technora: 090; 140; 190; 280
Fabric	Dominico 30DMF
	Dominico 30DFM
Risers	Dyneema

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).



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!



Dudek Paragliders
ul. Centralna 2U
86-031 Osielsko, Poland
tel. (+48) 52 324 17 40

www.dudek.eu
info@dudek.eu