

# **Kite**

**Operating instructions / April 2009**

**bautek Fluggeräte GmbH  
Gewerbegebiet, 54344 Kenn, Deutschland**

# Operating instructions Kite

(As of April 2009)

## General

With the Kite you have purchased a very powerful kingposted device of the newest generation with integrated swivel tips. The perfect sail position, the low weight and the balanced flight characteristics of the Kite will make you delight. The structural elasticity of the device was designed so that even with fully strained VG good controllability is maintained. That mediates in the fast gliding in the crowd, or close to the slope a secure feeling. At the start a spring system integrated in the cross tube clamps the lower sidewires and thus facilitates the alignment of the device before starting.

The classic structure of the Kite with aluminum tubes and steel cable suspensions has proven itself for decades in hanggliding. Everything opens up to check any damage well and easily, and the first official check is only due after 60 months.

Thanks to many clever construction details the set up and break down of this glider is exemplary simple, and without effort.

**Before the first time set-up, it is necessary to read this manual thoroughly.**

The enclosed "Air sport equipment certificate" is part of this manual.

**Assembly from the short pack of 3.8 m.** (Combi cover bag long / short required, Standard = Long cover bag)



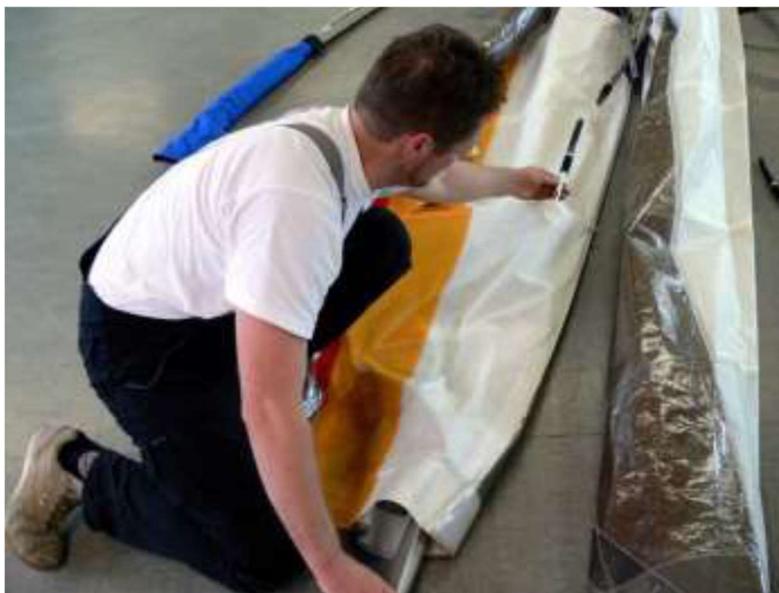
Lay down the short pack with the control bar area pointing up. Open the zipper and put the batten bundle [quiver] and both rear leading edge [wing tubes] to the side. If you are flying with non-split wheels, slide these on the speed bar now, before mounting it.

The bow of the speed bar is pointing up, when assembling. Alternatively the use of a profiled bautek- Alu-speedbar [with or without wheels] is an option. Attach the speed bar right and left with the push-pins at the control bar corners.



Now turn the wing over so it lies on the control bar and open the Velcro ties.

Unfold the rear sail-halves to the rear and the swivel-tip of the right and left outside [= rear] leading edge tube towards the front in the direction of the keel.



Push the rear sections of the leading edge tubes from the rear into the sail. Let the swivel tip exit the double sail at the zipper opening and push the tube into the front leading edge tube with the swivel tip cable pointing up. The swivel tip will swing to the rear. Press both snaps in and see that both snap out again through the holes in the front tube.



Then pull the wide, black, inside loop at the end of the sail leading edge over the end-cap of the rear leading-edge tube. There is an auxiliary loop, which helps to do this. Pay attention to the proper seating of the loop webbing in the groove of the plastic end-cap. Close the Velcro loop inside the sail to keep the black loop from moving out of its groove during transport.

### **Spreading the sail and inserting the upper battens**

Stand the glider on the control bar and raise the kingpost.



Spread the wings in steps, since the spreader bar has limited float.

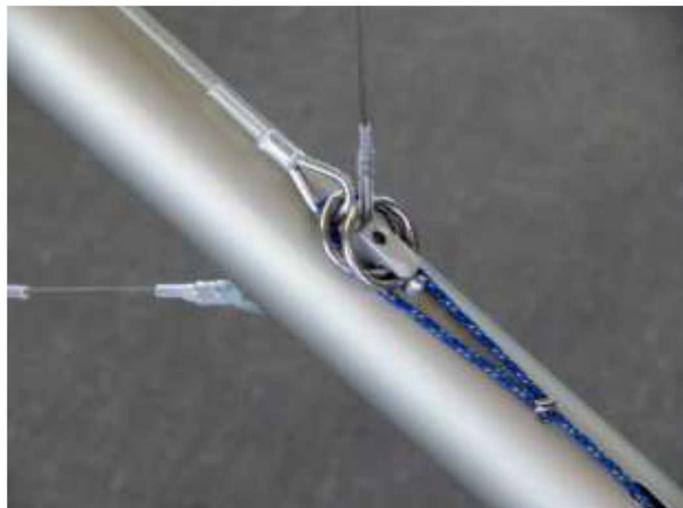
In strong winds keep the glider flat on the ground for the next steps.

Push the top battens 1-10, starting at the center with Batten 1, into their sail pockets and secure them with the spring-loaded end plug, by pushing the plug forward against the spring and releasing the flat tang into the open space in the trailing edge seam of the sail.



Red batten numbers = left side, green batten numbers = right side, looking in flight direction. [Portside and Starboard for the mariners] The batten quiver has separate pockets for the right and left wing. After the top battens are inserted, you can stand the glider up, if not done earlier, and tension it.

Before **tensioning** the glider, standing on the control bar, the wings should be spread as far as possible. Out of the keel-pocket leads a tensioning line to an elongated hole in the keel tube. Pull the spreader bar with this line to the rear and hang the steel ring in the notch of the tension line receptacle.



Then the steel ring of the rear upper rigging placed in the same notch. Check if the snap behind both rings is out and secures them.

In the front the two nose wires of the lower rigging are combined with a small screw closed triangle. Hang the triangle into the receptacle under the nose plate and again confirm that the snap secures it.



After this attach the snap hook of the spreader-bar safety cable from below = upwards into the tensioning line eye at the spreader bar; the zipper of the double sail is closed after this.



### **Folding tip battens tensioning**

The folding mechanism of the tip battens allows their tensioning with ease.

**Tension the tip batten always after the spreader bar is tensioned.** With detensioned mainframe [=spreader bar] the tip battens carry substantial higher loads! For tensioning unfold the short end of the batten tube in the direction of the end of the keel and insert its end plug into the web loop at the rear sail corner. Now with the **open** hand [Warning: danger of pinching] inside the double sail and the other hand at the sail corner, push the hinge of the batten past its balance point in the direction of the end of the keel.



The disassembly of the tip battens done in the reverse manner.

### **Inserting lower sail battens and folding out the Swivel-tips**

Push the straight battens into their pockets in the lower sail; they are not specifically marked, but clearly of different length; the elongated holes in the lower sail mark their pockets. Insert them fully and secure them against the rear seam.



The swivel tips are now folded out and automatically secured in their rear pocket by the closure of the zipper.



**Caution!**

**Before relaxing the device, the tip battens must be relaxed, the zips open and the swivel tips be folded!**

**Attaching nose plate cover**

The middle batten sits on the front nose plate screw and is secured by a rubber loop in its position. In the leading edge right and left at the nose plate area are two short zippers, which prevent folding of the leading edge in the cover / transport bag. Before you place the nose plate cover as the last step of the set-up, take a look through the opening of the upper sail at the nose plate area; make sure all parts are operational. Close the two zippers in the leading edge and press the Velcro strips of the cover in the proper position at the upper and lower sail on.



The glider is now flight-ready assembled.

## **Warning!**

**Open zips and / or unmounted nose plate cover results in a dangerous flight behavior with negative control bar pressure. In this case fly as slow as possible to the nearest landing site. Raindrops on the leading edge lead to a similar flight behavior. In this case fly a little faster (drops will be partially blown away), no tight turns and count on landing with an earlier and harder stall. Tip: rub the leading edge with a dishwashing detergent before the start. That prevents the drop formation and temporarily ensures almost normal flight characteristics even in the rain.**

### **Glider breakdown**

The breakdown of the glider is done in reverse order of the assembly, with attention to the following details:

Remove the nose cone and open both zippers at the leading edge, **before** you place the glider down on the nose. Open the zippers of the four swivel tips and swing the swivel tips outward. Pull the lower battens and detention the folding battens. Set the glider on the end of the keel and detach the spreader bar safety cable and the triangle of the nose wires. This triangle can be hooked into the snap hook of the spreader bar safety cable, so it is close at hand at the next assembly. Pull the upper battens 10 – 1 right and left out of the sail and fold the wing in increments together. Roll up each side of the sail and secure each side, separately at the middle swivel tip with a flour yellow Velcro tie. The red tie is longer and is placed in front of the control frame apex. Each rolled up sail end is put together with the folded swivel tip in the long cover bag.

Close the ties loosely to avoid permanent folds. Pull the cover bag over the standing glider and close it's zipper from the front up to the control frame apex. Now turn the glider over, lay it on it's back and remove the speed bar. Put the protective pouch, sown to the cover bag, over both down tube ends. Lay the batten bag in the rear of the cover bag. Close the zipper all the way.

## **Pre-flight check**

**Make it a habit, to do a careful pre-flight check before each start. Functioning equipment and proper judgment of conditions and the weather reduce the risk in hang gliding significantly.**

1. Check from the nose plate the even bend of both leading edge tubes, the symmetrical assembly of the glider and the “out” position of safety snap for the nose wires.
2. Check for easy operation of the VG pulley system and proper functioning of the VG jam cleat.
3. Base tube installed correctly and no cables kinked and tangs or eyes twisted?
4. Down tubes straight? Keel tube undamaged at control bar apex?
5. Check all lower rig cables, especially at eyes and press fittings.
6. Lift the glider at the rear end of the keel and check with tensioned VG for symmetry of the glider, the swivel tips right and left and installation of the straight battens and their secure seat in the double sail seam.
7. Tensioning line/cable ring seated correct in its seat?
8. Is the keel pocket screwed securely to the keel tube?
9. Are both pilot Hang strap and Safety strap correctly fastened and undamaged?

### **Periodically and after a crash inspect in addition:**

- All tubes for dents and bends as described in the maintenance and repair protocol.
- Upper and lower rigging right and left and the lines and cables inside the double sail as well as the swivel tip cables.
- Batten curves according to the batten chart.

## **Take-off**

Always make a hang check before the start or always get in your harness after it is hooked to the glider and the karabiner is locked. One standard routine needs to be adopted. A hook-in check is essential immediately before any start.

The “Kite” is neutral on the shoulders and easy to guide on launch. The integral spring system keeps the side wires tensioned, even when the VG is off; so there is no problem to set proper attitudes and balance for the start. Start with a slow jog and accelerate continuously till lift-off.

**Close your harness after you are a safe distance from the ground and the glider flies self-stabilizing.**

## Flight

The Kite has a variable geometry = nose angle [VG], with which the sail tension can be increased in flight. With loose VG the wing has more twist, is neutral in turns and easy to handle. For the first flight half tensioned VG is recommended to avoid over controlling. **Even with full tensioned VG the Kite can be controlled around the vertical axis;** in this configuration the wing has little twist and its best glide ratio. The Kite is consistent in all speed ranges. The airflow separates late and can be controlled well.

## Landing

Landing starts at higher altitude with repeated checks of the wind direction. Only after you are sure of the wind direction, should one decide on the approach and **then stick to it.**

The Kite is easy to land. Fly the final approach in a straight glide with some extra speed against the wind and let the glider lose its energy in ground effect. Change hand position when the glider flies level and **at trim speed. Keep your legs bent and behind you till flare time; arch your back.** Your upper body is thus closer to the down tubes and you have a longer way for the flare. The Kite glides long in ground effect and stalls soft and easy, with 1/3 VG harder but more definitive. If there is no wind, you should use the control bar more energetically, at stronger wind only slightly to flare for stand up landing.

## Towing

The Kite is licensed for winch- and UL- tow. Requirements for this per DHV are:

- A certified hand glider tow winch
- Tow training of the pilot
- Training of the winch operator and the UL-Pilot
- A certified tow hook up / latch system

For the UL-tow the VG should be ca. 70-100 % tensioned. Then the glider has less control bar pressure, but is still very controllable. **Give at disturbances only short, strong steering impulses with the hip [body center of gravity] and keep the tow latch in the middle of the base tube.** Do not support yourself on the base tube. Tip: Pull in on the base tube with open hands.

## **General information and limitations**

In Germany the Kite is type tested by the DHV and certified as a class 2 model.

The Kite is licensed to be flown only:

- by pilots with a correspondent license and training
- solo
- with an angle of +30deg to -30deg to the horizon
- with a roll angle up to 60deg, and
- with a top speed of max. 90 km/h

**The Kite is not to be used for aerobatics. It can be motorized with different motor systems [take notice of the license].**

**The Kite got the certification of DHV airworthiness standards tested for hang gliders valid in September 2006. This represents the current state of the art. This level of knowledge is growing, and it may well be that previously unknown physical relationships have been ignored. We therefore recommend that you always consider a margin of safety when choosing the weather conditions in which you want to start, as well as during your flight maneuvers.**

## **Maximum flight enjoyment through optimal trimming**

The sails of modern High Performance [HP] gliders are more tensioned and therefore more sensitive to their configuration = trim. Sail fabric and sailconstruction tolerances are with special measuring devices taken into account and individually corrected for. Despite these in depth measuring techniques it might be necessary after some time, to correct the basic trim.

Test the glider always in light thermal conditions, because changes in flight characteristics are easier detected in moving air. It is certainly not the case that more tension also brings about better performance. The sail tension in the direction of the wingspan can be changed with the position of the leading edge end pieces and the folding batten length. The end pieces are in standard production screwed through the middle hole to the tube end.

**In case you make any changes, we recommend, marking first the old position, so that in case the change is unsuccessful, the original position can be found again.**

## **Center of gravity**

The Kite should fly ca. 30-35km/h with hands off = at trim. By repositioning the kingpost in its base [2 allen key nuts] the center of gravity can be adjusted. Moving forward = nose heavy = faster, to the rear = tail heavy = slower!

**Device draws slightly to the right:** left tail higher, i. screw in the lower hole or / and reduce the length of the folding batten approximately 2 turns.

**Device draws gently to the left:** right tail higher, i. screw in the lower hole, or / and reduce the length of the folding batten approximately 2 turns.

If these changes are not sufficient, can on the better carrying side the bend of batten no. 10 at the high point be reduced by ca. 3/16 to 3/8 inch [5-10mm]; or on other side be increased.

If the leading edge end piece tension is increased on one side, then the folding batten of the same side has to be lengthened by ca. 5/32 inch [4mm]. The folding batten has a threaded adjustment at the front, turning the nut changes the length of the batten. Check the curve of the battens from time to time.

**Call us, if flight characteristics and performance of your glider do not meet your expectations and you are not totally enthusiastic about your wing. We are happy to help you to find the adjustment corrections that can bring about an improvement.**

### **Maintenance and Repair instructions**

For car transport a special support system or a ladder are advantageous. Do not roll the sail too tight at the Mylar insert. The Velcro ties should also not be too tight, to avoid folds in the leading edge. A wet glider needs to be **spread out for drying** after transport, to prevent mildew spots in the sail. Undo the Velcro ties for this! **Carefully inspect** the glider after a crash!

In the lower sail at the keel and the swivel tips are zippers, which facilitate a thorough inspection. After a hard crash the disassembly of the tubes is recommended. In an overload situation a tube is first permanently bent and then breaks subsequently. Therefore bent tubes were already overstressed and need to be promptly replaced, because the metal structure is damaged. Call us, if in doubt. Because of repeated set up and break down most cables are subject to added (ab-) use, especially in the area of the press fittings and eyes; **Check this area regularly!**

From time to time the sail battens need to be checked for correct form according to the batten plan. The length of the leading edge tube end piece is for each glider individually adjusted. **If such a part is replaced, the original length must be ordered or adjusted to.**

Damaged down tubes can be removed by pushing in the snap safety at the top and unscrewing the M5 Allen bolt at the bottom. All bolt connections without nylon locknuts are to be secured with Loctite 243. Instructions are on the Loctite container.

## Inspections

**The Kite must be completely dismantled and checked after 60 months at the factory. This inspection is to be repeated every 24 month thereafter.**

Spray all zips from time to time with cockpit spray (Silicone spray - car accessory trade). Soiling of the sail can be eliminated with conventional mild detergents. Rinse the cloth with clear water afterwards. Patches on the Mylar leading edge, or adhesive residues of license plates can be removed with acetone. **For maintenance of the Mylar upper sail and the leading edge a plastic deep care solution [automotive shop] can be used. This keeps the Mylar flexible and protects it better from sunlight [UV radiation]. Store the glider in a dry room on wall brackets.**

## Technical specifications:

Model:	Kite
HG class:	DHV 2
Sail area:	13,8 m <sup>2</sup>
Span:	10,15 m
Nose angle:	128°
Aspect ratio:	7,7
Double surface:	ca. 85%
Length packed:	long: 5,70 m; short: 3,80 m
Battens:	29 (8 in the double sail)
Stall speed:	ca. 25 km/h
V ne (never to exceed):	90 km/h
V min sink:	ca. 30 km/h
V best glide:	ca. 43 km/h
Take-off weight:	min. 90 kg / max. 150 kg
Glider weight without cover bag:	29,7 kg

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**Gewerbegebiet**

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Prüf- und Zulassungsstelle

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**Luftsportgeräte-Kennblatt**

(§ 4 LuftVZO)

**Hängegleiter**

Geräte-Kennblatt Nr.: *DHV 01-0421-06*

Ausgabe: *0*

Datum: *30.10.2006*

**I. Zulassung**

1. Gerätemuster: *Kite*
2. Hersteller: *Bautek Fluggeräte GmbH*
3. Datum der Musterzulassung: *30.10.2006*

**II. Merkmale und Betriebsgrenzen**

1. Gerätegewicht (ohne Packsack kg): *30,4 (mit Riemen)*
2. Zulässiges Startgewicht minimal (kg): *90* maximal (kg): *149*
3. Maximal zulässige Geschwindigkeit (km/h): *90*
4. Anzahl der Sitze: *1*
5. Klasse: *2*
6. Lage des Aufhängepunktes, gemessen vom vorderen Ende des Kielrohres,  
minimal (mm): *1315* maximal (mm): *1340*  
Lage des Aufhängepunktes über Kielrohr-Oberkante (mm): *110*
7. Speedbar: *Ja* Variable Geometrie: *Ja*  
Steuerhilfen: *keine*
8. Segellatten im Untersegel (Stück): *6* im Obersegel (Stück): *21*
9. Kieltaschenhöhe über Kielrohr-Oberkante,  
vorne (gestreckt, mm): *50* hinten (gedrückt, mm): *0*

10. Gestützte Segellatten über Kielrohr-Oberkante, von innen nach außen, (mm)

VG gespannt, 1. Latte: -85	2. Latte: -70	3. Latte: -63	4. Latte: -67
VG gespannt, 5. Latte: -95	6. Latte:	7. Latte:	8. Latte:
VG gespannt 9. Latte:	10. Latte:		

VG entspannt, 1. Latte: -65	2. Latte: -35	3. Latte: -23	4. Latte: -44
VG entspannt, 5. Latte: -97	6. Latte:	7. Latte:	8. Latte:
VG entspannt 9. Latte:	10. Latte:		

11. Swivelgestützte Segellatte über Kielrohr-Oberkante (mm)

VG gespannt:

VG entspannt:

12. Randbogen-Ende über Kielrohr-Oberkante (mm)

VG gespannt:

VG entspannt:

13. Seitenrohr-Ende über Kielrohr-Oberkante (mm)

Gerät auf Basis stehend, VG gespannt: -280

VG entspannt: -300

Gerät auf Turm stehend, VG gespannt:

VG entspannt:

14. Zugelassen für Windenschlepp: Ja

für UL-Schlepp: Ja

15. Nachprüffrist: 60 Mo

16. Sonstige Besonderheiten:

*Turmgerät ohne Lufflines. Winkel der Schränkungsanschlätze zum Kiel: VG gespannt, innerer Swivel 7,65° äusserer Swivel 12,65° VG entspannt, innerer Swivel 9,2° äusserer Swivel 14,0°m. Optionen: Alu Speedbar rund, Bautek Heckflosse.*

III. Betriebsanweisungen

*Betriebsanleitung in der genehmigten Fassung vom 30.10.2006.*





REPUBLIK ÖSTERREICH



ÖSTERREICHISCHER AERO-CLUB FAA

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Referat Technik Hänge- und Paragleiter:  
D-83703 Gmund, Mießbacherstr.2, Tel ++49-8022-9675-40, Fax: ++49-8022-9675-99

## MUSTERANERKENNUNGSSCHEIN

CERTIFICATE OF TYPE ACCEPTANCE

für Hängegleiter

Nr. MAK 01-0421-06

Das nachstehend bezeichnete Luftfahrzeug wird als Muster anerkannt auf Antrag von:  
The product described below has been accepted on application of:

*Bautek Fluggeräte GmbH, Gewerbegebiet, 54344 Kenn, Deutschland*

Dieser Musteranererkennungsschein ist auf Grund der die Anerkennung ausländischer Musterprüfungen betreffenden Bestimmungen der Zivilluftfahrzeug- und Luftfahrtgeräteverordnung in der am Tage der Ausstellung geltenden Fassung ausgestellt.

This certificate of Type Acceptance is issued in accordance with the appropriate Austrian regulation as in force today.

Luftfahrzeug: *Hängegleiter*  
Product:

Hersteller: *Bautek Fluggeräte GmbH, 54344 Kenn, Deutschland*  
Manufacturer:

Musterbezeichnung: *Kite*  
Type designation:

Musterzulassungsbehörde und Musterzulassungsschein: *DHV*  
Type Certification Authority and number of Type Certificate: *Nr. DHV 01-0421-06*

Anerkannte Bauvorschriften: *Deutsch-Österr. Lufttüchtigkeitsforderungen für HG und GS*  
Accepted Certification Standard:

Zusätzliche Auflagen:  
Additional requirements:

*Diese Musteranererkennung ist an die Einhaltung der Auflagen der o.g. Musterzulassungsstelle gebunden*

Diese Musteranererkennung kann durch den ÖAeC übertragen, ausgesetzt oder widerrufen werden.  
This certificate shall remain in effect until surrendered, suspended or revoked by ÖAeC.

Datum der Ausstellung: *30.10.2006*  
Date of issue:

Unterschrift:  
Signature: