



# **independence**

# **gliders for real pilots**

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## **Owner´s manual**

## **Cruiser paraglider**

Version 1.0 from 01.02.2008

**Fly market GmbH & Co. KG**

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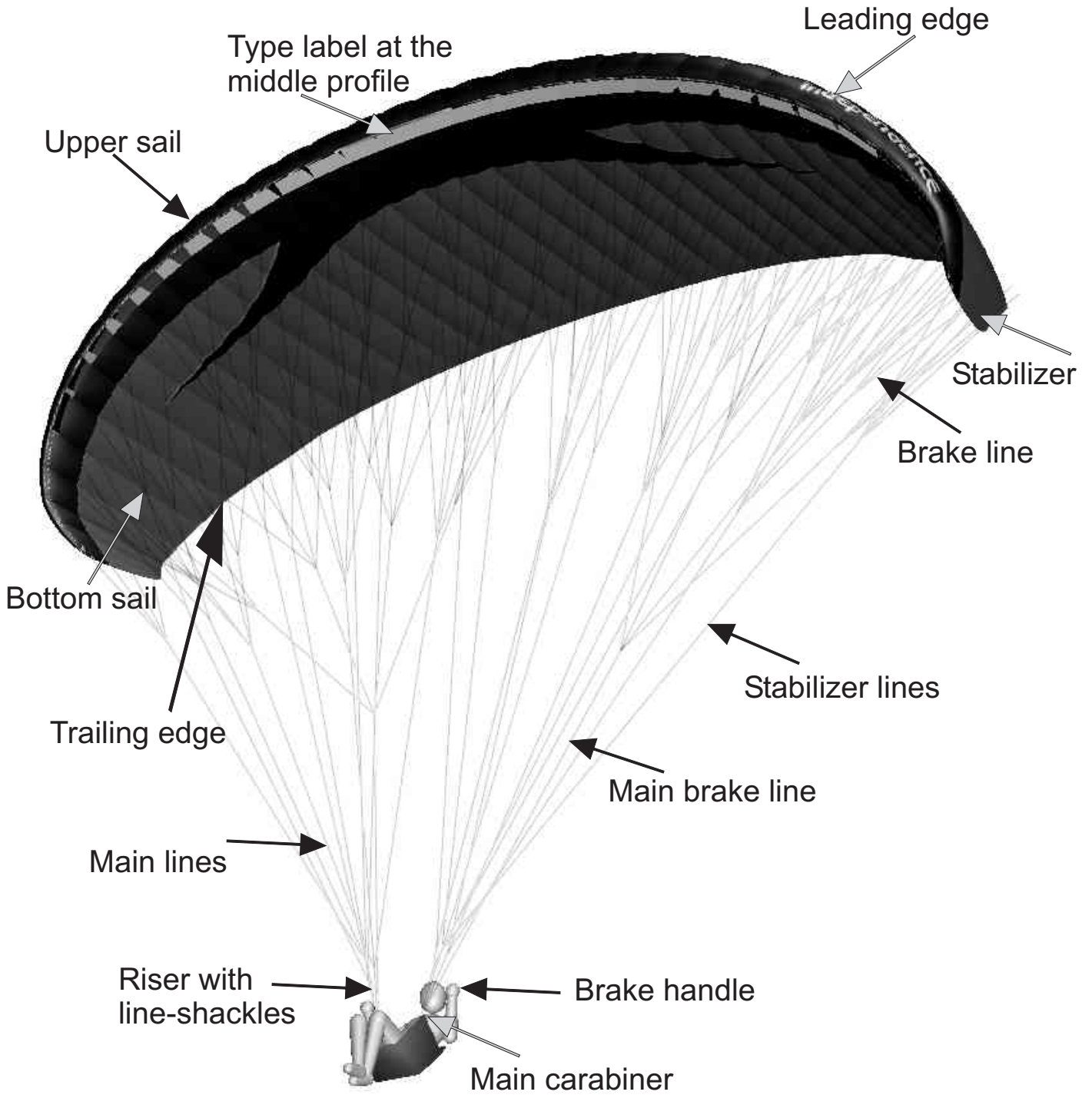
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**Overview:**



## **I. Dear Independence Pilot**

It is our pleasure to welcome you to the world of Independence pilots. The new Cruiser paraglider was developed to suit pilots that enjoy superior performance, high speed and agility, but still want a high level of security. The Cruiser distinguishes itself through its unique handling and performance. Like every paraglider the Cruiser has it´s own characteristics. To ensure your best possible flying experience we provide this manual.

## **2. Important Notice:**

### **It is your duty to read this manual!**

It is not allowed to fly the paraglider without reading this manual first, to avoid operating errors. We point out explicitly, that for any results caused by an improper usage no liability will be assumed.

At the time of it´s delivery this paraglider is corresponding to the definitions of the German type approval (LTF) category "I GH", as well as the European Norm EN 926-2 category "A".

New gliders have to be flown-in by the seller. This first flight has to be confirmed by date and signature on the enclosed measurement-protocol and on the type label of the glider.

Every arbitrary change at the paraglider will implicate the end of the operating licence of the glider!

The pilot alone has the full responsibility that the glider is airworthy! Furthermore the pilot has the full responsibility that all provisions of the law are observed (e.g. pilot´s licence, insurance, etc.).

It is assumed that the pilot´s skills are matching to the requirements of the glider.

To use this paraglider is complete on your own risk. The manufacturer or the distributor are not liable for any compensation resulting from using this glider.

The following owner´s manual has been written in all conscience. But it´s possible that some things will change in the course of time because of (flight)-technical innovations or modified type-approval tests and/or modified teaching methods. Out of this reason it´s advisable to get "updates" about maybe modified teaching methods or tests directly by us or the according points from time to time.

### **WARNING:**

Paragliding is an extremely dangerous activity that can and often does result in serious injury or death. The designer, manufacturer, distributor, wholesaler and retailer cannot and will not guarantee your safety when using this paraglider. You alone must judge the flying conditions, including weather, wind, congestion, launching areas, and landing area before you fly. Paragliders require careful and consistent care. Overtime, solar radiation, dirt, dust, grease, water, wind, stress, and other variables will degrade the performance and safety of the glider, thereby increasing the risk of injury or death. Read the owner's manual of the paraglider before you fly. Always wear a helmet and protective clothing when flying a paraglider.

## **3. Target Group:**

The Cruiser is certified with LTF (German type-approval) in the category I GH, and in category EN A concerning to the European type approval EN 926-2. At both approvals the Cruiser is only certified as single-seated paraglider. It is suitable for beginners and leisure time pilots. If the Cruiser is finally suitable for your own paragliding skills, should be checked with your flying-school/dealer in any way.

We recommend that every pilot should play with the paraglider on the ground (ground handling) as much as possible. Attending an over water safety course (SIV) is also advisable. Perfect control of the paraglider on the ground and in the air is the key to flying fun and the best way to ensure accident free flying.

## 4. Technical Description:

### Construction of the canopy:

The canopy of the Cruiser is made of Porcher Marine Skytex Ripstop Nylon-fabric Art. 9017 E77a and Skysport D70. In this synthetic fabric a reinforced thread-net is woven in, which stops the fabric from further tearing and is increasing the firmness at the seams. The coating makes the fabric water-repellent, UV-stabile and air-impermeable.

The Cruiser consists of 35 cells. The wingtip (stabilisator) is pulled downwards and is intergrated in the canopy.

The aeration of the canopy is done through the openings on the bottom side of the profile-nose. The lateral aeration is done through exactly dimensioned openings (cross ports) in the profile-gill.

Every carrying profile-gill is suspended from 4 Line-attachement-points, which are reinforced in the profile itself.

Between the single groups of main lines are taut ribbons sewn in, which are regulating the tension of the sail.

At the profile´s nose reinforcements are sewn in, which gives the canopy more stability.

On the entry- and trailing-edge of the canopy a special ribbon with low elongation is sewn in, which offers a cunning, by our design-software calculated, tension-distribution along the canopy.

On the upper-sail near the D-lines are special valve flaps, which opens by an according brake-line impulse to improve the extreme-flight-characteristics.

### Suspension-system/Line-system:

The lines of the Cruiser consist of polyester-covered HMA Aramid und polyester-covered PES / Dyneema, depending on where the line is placed. The strengths of each line depend also on the place where the line is built-in, and are varying between 70 bis 240 daN.

The lines are differing depending where they are built-in like follows: Top-lines (up at the canopy), middle-section-lines (between main- and top-lines), main-lines (down at the riser), stabilisator-lines (at the wingtip) and brake-lines (up at the trailing-edge) and main-brake-lines (at the brake-handle).

The lines are differentiated in A/B/C/D level and the brake.

Within the levels always 2-3 top-lines are combined to one middle-section-line. On the A and B level always 2 middle-section-lines are combined to overall 6 main-lines per level, which are mounted to the maillon rapides shackles at the corresponding riser.

On the C/D level always 2C and 2D middle-section-lines are combined into one main line.

The stabilaotor-lines are mounted to the B-riser together with the B-level.

The brake- or steering-lines are combined to the main-brake-line in the same way.

The lines of each level are coloured differently to make it easier to differentiate and check it.

The complete riser of the Cruiser consists of 4 risers.

The A-riser is splitted in a main(A)-riser and a sub(A´)-riser (also called outer- or baby A´ riser). On the A-riser 2 main-lines are attached, on the A´ one main-line is attached.

On the B-riser per side 3 B-main-lines plus one stabilisator-line are attached.

The C-riser takes in always 3 C-main-lines (grouped of C/D level).

The main-brake-line is running through a pulley at the C-riser to the brake-handle.

The maillon rapide shackles at the risers are made of stainless steel and are secured with an plastic-inlay against unintentional opening and against a slipping of the lines.

The complete geometry of the lines is shown on the single line plan, which you find a few pages behind.

### Speed-system:

The Cruiser has got a speed-system at the riser which is activated with the legs of the pilot. If the speed-system is released it goes back to the original position automatically. The riser has no trimmer which can be fixed.

The speed-system shortens the A and B risers and reduces the angel of attack of the canopy.

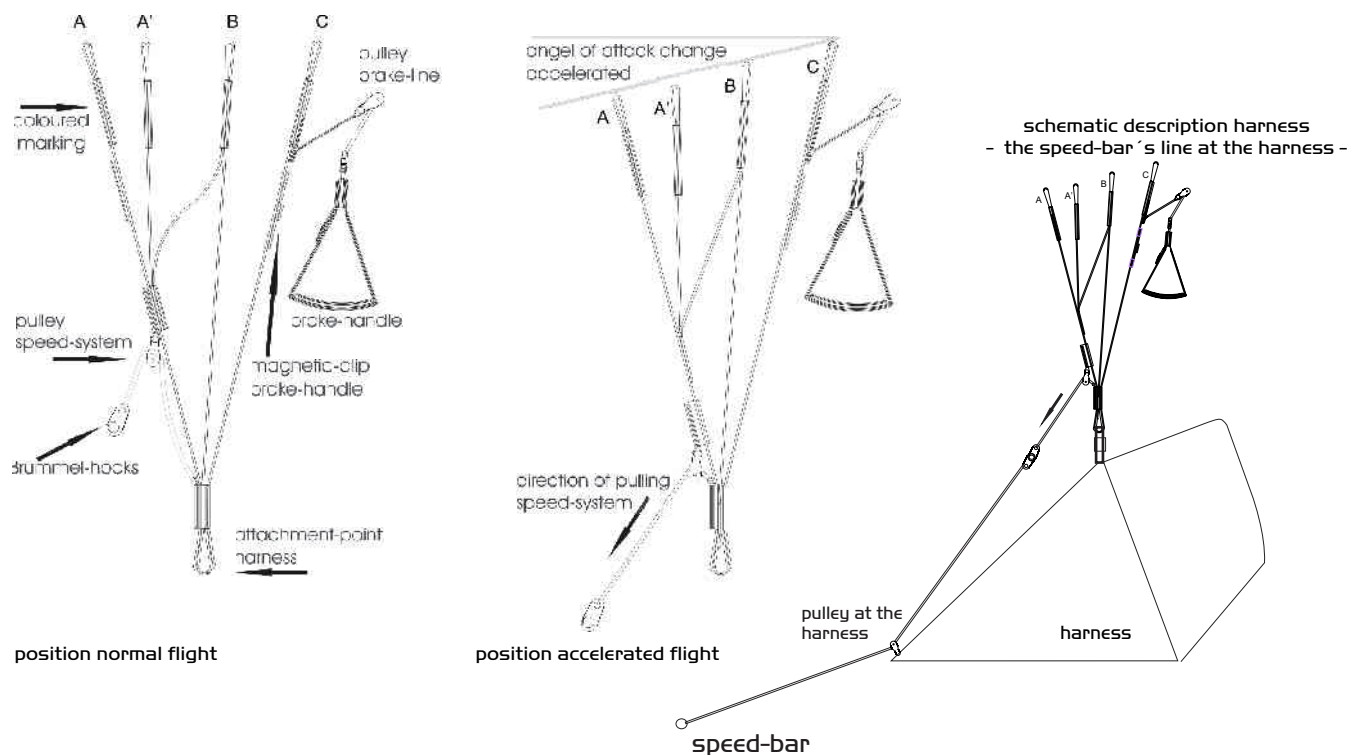
In normal flight all risers have the same length (50cm without the shackles). If the speed-system is activated the A-risers gets up to 12cm, the B-risers up to 10,5cm shorter. The length of the C-riser does not change.

Functionality and handling:

Before take-off the Brummel-hooks of the harness' speed-bar are connected to the Brummel-hooks of the speed-system at the risers. You have to take care that the line of the speed-bar is running free. Before the first use of the speed-system you have to adjust the length of the speed-bar's lines correctly. The best way to do this is in a simulator. The length is set correctly if the lines still have some free space and are not yet under traction if the speed-bar is not pushed.

By pushing the speed-bar with his legs the pilot shortens the A and B risers with the pulleys at the riser. This pulleys are reducing the necessary forces.

**Overview risers:**



**5. Technical Data:**

Size		L	M	S
Scale factor	%	104	100	96
Surface area flat	m <sup>2</sup>	29,61	27,38	25,23
Wingspan flat	m	11,33	10,89	10,45
Aspect ratio	A/R	4,33	4,33	4,33
Surface area projected	m <sup>2</sup>	25,55	23,62	21,77
Wingspan projected	m	8,91	8,57	8,23
Aspect ratio projected	A/R	3,11	3,11	3,11
Number of cells	Nr	35	35	35
Take-off weight min.	Kg	100	80	60
Take-off weight max.	Kg	125	105	85
V-Trim	Km/h	36	36	36
V-Max.	Km/h	>48	>48	>48
LTF / EN certification			IGH/A	

Changes of these data are possible!

## **6. Harness**

The Cruiser has been developed and authorised with harnesses according to the LTF type "GH". Nearly all harnesses recently produced are type GH harnesses and suitable for the Cruiser. They differ from the GX harness due to their low suspension and not very effective (if at all included) cross straps. Cross straps have not proven themselves in combination with modern paragliders.

## **7. How to check your paraglider:**

Every paraglider delivered is tested and measured by us. Nevertheless we advise you to check your paraglider for the following criteria. You should also follow these instruction after a long intensive flight, hard manoeuvres or an accident on landing, eg: tree landing.

Check:

the seams where the lines attach, at the the risers and at the canopy for any damage.  
that all the lines have been sewn correctly and are free of damage  
that all the line locks have been screwed up properly and the plastic inlets are tight  
that all width of cloth, the ribs and V-attachments are free of rips

**Every fault no matter how small must be checked and repaired by a professional. A damaged paraglider is not air-worthy.**

## **8. Adjusting the brake-/steering-lines:**

The two main steering/brake lines lead up to a line cascade which is fixed to the trailing edge. On the risers the steering lines run through a pulley and are connected to a handle. These handles are fixed to the risers with a magnetic clip when not in use. The length of the steering lines is set correctly at the factory. They have to have at least 5cm of free play and must only be adjusted by a qualified flying instructor or the dealer. The improper adjustment of the steering lines can cause severe changes to inflight behaviour.

## **9. In-flight:**

The following pages are not intended to describe how to fly a paraglider. Rather we want to show you the Cruiser's specialities and give you important information regarding in-flight behaviour.

### **9.1. Take off preparation:**

Before every take-off you have to do an accurate pre-flight check. You have to check the risers, lines and the canopy is not damaged in any way. Also you have to make sure that the line locks (maillon rapide shackles) are closed firmly and are fixed against turning by it's plastic inlays.

The harness has to be put on with a maximum of attention. After you have put your harness on you have to check again if all buckles are closed correctly. Also you have to make sure that the rescue-container is closed correctly and the release-handle of the rescue-system is placed correctly. (see in the manual of the harness!!)

**If there is any defect, you are definitely not allowed to take-off!**

The easiest way to take off with the Cruiser is to lay it out in an arc. You have to lay it out against the wind.

The line-levels as well as the brake-lines have to be sorted accurately, also the risers have to be sorted. All lines have to run free without any twistings or knots. No lines are allowed to lay under the canopy.

When all preparations are done the main carabiners of the harness are connected to the risers. You have to take care that the carabiners are closed correctly. If you are using a speed-bar, also the brummel-hooks of the speed-bar's line are connected to the brummel-hooks of the speed-system on the risers. You have to take care that the speed-system is free running.

### **Checklist:**

Paraglider:

- Canopy free of damages?
- Risers free of damages?
- line locks closed tightly and fixed against twisting by it's plastic inlays?
- Lines free of damages?
- All lines including brake-lines free running and without any twists?

Harness:

- Rescue-container closed?
- Release-handle of the rescue-system attached correctly?
- All buckles closed correctly
- Main carabiners closed correctly?

Take-off:

- Risers mounted correctly? Without twists!
- Speed-system mounted correctly? Without twists!
- Brake-handle and the correct level of riser taken in hand?
- Pilot in the middle of the canopy, that all lines are stretched symmetrically?
- Winddirection o.k.?
- Obstacles on the ground?
- Airspace free?

## **9.2. Take-off:**

The take-off with the Cruiser is quite easy. Generally we recommend to take both A-risers ( A and A´ ) for starting the Cruiser. Depending on the starting-technique, the wind-situation and the terrain you can alternatively use only the inner A-risers (A) for lifting up the glider.

For a better orientation the different risers are marked with different colours.

The pilot, who is ready for take-off, holds the A-risers and the brake-handles of each side in his hands. The A-lines are already stretched a little bit. On flat take-off areas or at low-wind conditions you can also go one step backwards to the canopy, to lift up the glider with more impulse. During the take-off run the arms of the pilot are first stretched sideways backwards in elongation of the A-risers. When the glider then lifts up, the arms are moving upwards. The most important thing during the take-off is, like at all other gliders too, not the force but the constancy of the pull. Because the Cruiser is very easy to lift up, you have to brake it a little bit on steep take-off areas or in strong wind conditions, to avoid that the glider is overtaking you.

If you are starting the glider backwards (face the glider while lifting it up) in strong wind conditions, you can avoid a too early take-off if you simply go along with the glider. The best way to train for taking off in strong wind conditions is by regular ground handling practice.

## **9.3. Level flight**

With loose steering lines, depending on the wing loading, the Cruiser reaches a flying speed of 35 to 38 km/h. In calm conditions the Cruiser flies at minimum speed if the pull on the brake-lines is approx. 60 - 65 cm. In turbulent air we advise flying with the brakes pulled down 5 - 15 cm. The angle of attack is higher and this makes the wing more stable. All mentioned cm-values are referring to the point at which the trailing edge is pulled down, that means without the free run of the brake-line.

## **9.4. Accelerated flight:**

When using the speed system with your feet, the angle of attack is reduced and the Cruiser flies up to 12 km/h faster. Due to the increased speed the reaction of the canopy is more dynamic in collapses. For your own safety you should only accelerate in calm wind conditions with ample ground clearance. Never let loose the brake-handles while flying accelerated. If you are flying in turbulent air, immediately release the speed-system! Sharp reactions during accelerated flight must be avoided, as the low angle of attack increases the chance of a collapse.

If the glider collapses you have to release the speed-system immediately, then you use the brake-lines to stabilise the glider first and reopen it.

## **9.5. Turning:**

The Cruiser has because of it's steering-characteristics a very high agility: It reacts very directly and without delays on brake-line inputs.

By weight-shift (pilot leaning on the curve's inner side) it's possible to fly very flat turns with a very little loss of height.

Weight-shift and pulling the brake on the curve's innerside enables the pilot to fly sharp turns. For flying in thermals we recommend a combination of weight-shift, braking the curve's inner side and stabilisation of the curve's outer side by braking the outer side a little bit as well.

By varying the brake line pulls and the weight-shift (active flying), the pilot can change the radius and the bank, what is optimizing the centering in the thermals.

Attention: If the brakelines are pulled too fast or too far the glider will be stalled!

A one-sided stall is signaled clearly by: The curves's inner side of the wing is getting soft, and nearly stops. In this case you have to release the brake-line!

## **9.6. Active Flying:**

By flying actively you can avoid most collapses before they occur!

Active flying means to fly the paraglider as stable and as effective as possible by correct weight-shift and brake-line inputs.

In turbulent air and rough thermals the canopy should be kept vertically above the pilot as good as possible. Therefore the pilot is using well dosed brake-line inputs.

If you fly into strong thermals (upwind) the glider's angle of attack increases. If you release the brake-line while flying into the thermals the canopy can accelerate and the glider stays more or less vertically above the pilot.

The opposite if you fly in downwashes (down winds): Here you pull the brake-lines dosed.

## **9.7. Landing:**

The Cruiser is easy to land. During the final approach against the wind you let glide the Cruiser with slightly pulled brake-lines (just a little bit, to give the glider more stability!). When you are approx. 1 meter above the ground you increase the angle of attack by steadily pulling both brake-lines and braking the gliders flight thereby. When touching the ground the brake-lines should be fully pulled through.

If you have strong head wind (contrary wind) you have to be very careful with braking of the glider. Do not brake it too much, to avoid a stall of the glider in this very low altitude!!

We also like to advise you not to reduce height by "pumping" with the brakes. Also you should avoid to fly sharp turns or changing the direction while landing.

After you touched down on the ground you should avoid that the canopy is dropping on it's nose. That could damage the profiles of the glider and affects the material in the frontal part of the glider if it happens more often.



## **10. Winch launching (Towing):**

The Cruiser is certified for tow launches. You should however discuss the requirements of towing with a flying instructor or the person in charge of the winch. Towing is only permitted when the person in charge of the winch has a valid winch license. The equipment needed for the tow must also be certified.

For best performance and easiest take off we recommend a pre-acceleration system!

## **11. Using a motor:**

At the moment the Cruiser is not yet certified for flying with a paramotor. But several manufacturers of paramotors are planning to do this certification. The current status of the certification can be inquired from the paramotor manufacturer or directly from us.

## **12. Extreme flight manoeuvres:**

### **12.1. Asymmetric (lateral) collapse:**

A asymmetric or lateral collapse is most probably the most common accident which can occur while flying a paraglider. If the Cruiser collapses laterally in turbulent air, this usually happens only on the wing's outer side. To keep the flying direction during this incident, you have to brake the opposing open part of the wing.

If the collapsed part of the canopy is very big, you have to break the open side very dosed (not too much!) to avoid a stall. After you have stopped the turning of the collapsed glider by braking the open side, you can open the collapsed side by pumping with the brake-line on the collapsed side.

If you do not react actively on the asymmetric collapse by braking the open side, the Cruiser mostly opens automatically within a half turn or less. If the glider does not open again, because of strong turbulences or other influences (e.g. cravats), the glider will get into a steep-spiral.

### **12.2. Cravats:**

Very big collapses or other extreme flight situations can cause on every paraglider so called cravats. The collapsed cells getting caught up in the lines. Without a reaction of the pilot the glider is getting in a steep-spiral.

If this happens you have to stop the rotation by dosed opposite breaking.

If the rotation is increasing despite breaking you have to release the rescue-parachute immediately, especially if you are already flying in low altitude.

If you have enough altitude you can try to correct the cravat by the following possibilities:

Well dosed opposite breaking (to slow down the rotation) and very fast, deep and resolute pumping of the steering-line on the collapsed side to try to get the cravat loose.

Pulling down the stabilo-line.

If these both tips do not work, you can try to release the cravat by doing a fullstall, if you have enough height!!

#### **Attention:**

The flying manoeuvres mentioned above are very difficult and could waste a lot of height! If the pilot is overchallenged or have not enough height the rescue-parachute have to be thrown immediately!!!

### **12.3. Symmetric or Front tuck (Frontals):**

A collapse of the complete frontal edge (leading edge) mostly happens by too deep pulling of the A-risers or during accelerated flying or by suddenly appearing strong downwashes (down winds). A fold of the complete

leading edge might look spectacular however it is not really dangerous, as far as the collapsed part is not too big. Normally no rotations occur during a frontal collapse and the paraglider quickly reopens unassisted, to return to normal flight again. Braking evenly on both sides will speed up the opening of the leading edge.

Early recognizing of the situation and a fast reaction by evenly dosed breaking of both sides helps you to keep the loss of height very small and avoids an escalation of this flying incident.

## **12.4. Parachutal stalls:**

During a parachutal stall a paraglider has no forward movement anymore but very big sinkrates. Letting go of the B-risers too slowly exiting a B-stall with old porous material, damaged lines or ribs, pulling the C or D-riser or incorrect take off weight can result in the glider going parachutal falling vertically but still holding its shape. The tendency for a parachutal stall is also increasing if the canopy is wet or the air-temperature is very low.

You can tell whether or not your paraglider is parachutal, as the flying noise can hardly be heard even though the brakes are free and you are sitting in your unusual position under the canopy. Normally, letting up on the steering lines will allow the glider to resume normal flight.

If the canopy and the lines are in good working condition, the Cruiser will speed up again automatically after 2-3 seconds. Should this fail to happen you must push the A-risers forward or use the speed-system of the glider. Does the glider stay in a repetitively parachutal stall without any noticeable reason (e.g. wet canopy, wrong take-off weight), the glider have to be checked before the next flight by your dealer or by the manufacturer.

Attention: Never pull the brake-lines during a parachutal stall, because the glider would go into a full stall immediately. Near the ground a parachutal stall should not be released because of possible pendulum movements. Instead the pilot prepares for a hard touch down.

## **12.5. Fullstall:**

You can only induce a full stall if the both brake lines are completely pulled through and remaining in this position for more than one second. When stall speed is reached the canopy will empty itself at once, the pilot is hurled forward and the impression is given that the canopy falls backwards.

It is vital to keep the brakes pulled down until the empty canopy is above the pilot again (this will take 3-6 seconds). If you let go of the steering lines with the paraglider still behind you, the glider will shoot forward and dive in front. Not until the glider is above the pilot again the steering lines can be released moderately quick and symmetrically. The perfect ending to a full stall should take place in two steps:

1) slow refilling of canopy (slow loosening of brakes, approx. up to the shoulder) until the canopy is reopened completely, then

2) releasing the brakes altogether

If this manoeuvre is released too fast or asymmetrically the glider can collapse frontal or asymmetrically.

Attention: A wrong, too early, asymmetrically or too fast released fullstall can cause an extreme forward movement of the canopy. In an extreme case the canopy will shoot and dive under the pilot.

## **12.6. Negative Spins:**

Pulling down hard on one brake can cause the air stream to break away on that half of the wing. A reversion of the air-stream direction can occur. The slowed half flies in the opposite direction. The paraglider then turns around its vertical axis. For negative spins there can be two reasons:

- one brake-line is pulled too fast and too far. (e.g. while entering a deep spiral)
- during slow flying one side is braked too much (e.g. while flying circles in thermals)

If an unintentional negative spin is released immediately during its beginning, the glider normally goes back into normal flight without losing lots of height. But if the negative spin is kept for a longer time and the glider can accelerate in this negative spin the release of the spin can cause the canopy to move extremely asymmetrically in

front of the pilot. Big collapses and cravats can be the result!!

## **12.7. Wingover:**

Narrow turns to the left and to the right are flown alternately. During that moves the bank is increasing more and more. If there is too much dynamic and bank the wing's outer side can loose pressure. If the bank is increased further and the pilot reacts wrong (timing!) a big part of the glider can collapse impulsively!

**Fullstall, Negative Spins and Wingover (over 90 degrees) are prohibited aerobatic (acro-) moves!!! Doing these manoeuvres wrong or a wrong reaction of the pilot can generally be very dangerous and life-endangering with all paragliders!!!**

## **12.8. Emergency steering:**

In the event of loosing control of the steering lines, the Cruiser can be flown easily with the rear risers (D lines). A stall happens quicker when steering with the rear risers, as if steered with the brake lines. The way of steering with the rear risers is at approx. 20cm with the Cruiser. Light turns can be flown using the stabilo lines or by shifting your weight.

## **13. Descending manoeuvres:**

### **13.1. Spiralling:**

Spiralling is the most efficient way to descend quickly. However, this causes a lot of strain for the paraglider as well as the pilot. Please be aware that, according to your fitness, outside temperature (cold) and descent rate, you could loose consciousness. Many pilots lower their breathing rate or start hyper ventilating, both of which heighten the risk of loosing control.

With the first signs of sickness, weariness or blurred eye sight you must stop spiralling immediately.

To enter a spiral you carefully but constantly pull at the brake-line on one side and move your weight-shift to the curve's inner side. By it's direct handling the Cruiser fast increases bank and flies a steep curve. As soon as the glider gets in front of the pilot ( glider is "getting on it's nose" ) there is an impuls which the pilot should follow and move his weight to the curve's outer side.

Sink-speed and bank during the spiral can be varied by dosed pull on the curve inner-side's brake-line.

A light braking of the curve's outer side gives the wing more stability and avoids a folding of the outer wing-tip.

To exit a spiral the brake-line on the curve's inner side is released slowly.

A too fast release will have the consequence that the high flying-speed (up to more than 100km/h) will be transformed into height by a massive pendular movement. An extreme deceleration at the end of this pendular move will occur, which causes the canopy too move far backwards. Also you have to be prepared that you fly in your own wake turbulence.

Because such spirals are wasting lots of height you always have to take care that you have still enough safety-height!

Attention: Nearly every paraglider at some point reaches a sink-speed at which the canopy moves with it's frontal edge downwards (glider is "getting on it's nose") and stays in this position and keep spiralling (stable steep-spiral), even if the brake-line is released.

This can happen, caused by disadvantageous influences, even earlier than at the sinkrate of 14m/sec which is tested during the certification flights. The reasons therefore can be complex, some examples: Geometry of the harness, cross-belts at the harness, moving of the pilot's weight to the inner side of the curve, and some more.

Should against all expectations a stable steep-spiral occur, you can stop it by moving the pilot's weight to the curve's outer side and dosed braking of the outer side.

**Attention: during a stable steep-spiral very high G-forces will occur, which require a high strain of a physical fit pilot!**

## **B.2. Big Ears:**

The so called big ears is an easy, but not too efficient way to descend quickly, at which the forward-speed is higher than the sink-speed. It is more suitable to reduce the gliding-performance and to fly away from a source of danger horizontally.

To do "big-ears" you simply pull down the outer part of the wing by pulling down the outer A-Risers (A´) symmetrically.

Too severe pull down of both sides (by pulling down the next A-lines) reduces the speed but increases the risk of a stall. Out of this reason always use only the outer A-rider (A´) to do big ears. By doing big ears you can increase the descent to approx. 5m/sec and halve the gliding performance.

By using the speed-bar you can again increase the descent and forward-speed clearly.

To end big-ears you simply release the outer A-lines. The canopy of the Cruiser normally re-opens by itself. To make the reopen faster you can pull both brake-lines a little bit after releasing the A-lines.

Attention: Never attempt tight turns or spirals with Big Ears, as the A-lines will be over stressed.

## **B.3. B-line Stall:**

The B-Stall with the Cruiser is easy to enter. Both B-risers are pulled down slowly and symmetrically up to 20cm. The glider stalls and gets into a vertical descent flight.

To end the B-stall you simply release the risers within one second.

If the glider starts to turn during the B-stall or the wing-tips are moving forward you have to release the B-stall immediately.

Possible reasons for turning or moving of the wing-tips could be:

turning: asymmetrical pulling of the B-riser, or one B- and one C-riser are pulled down.

frontal moving of the wing-tips (horseshoe): the B-risere are pulled down too far.

All descending manoeuvres should be practised in calm air with enough safety height, that you are able to control it perfectly then in cases of emergency!

## **Summary:**

For all extrem flight and fast descening manoeuvres it´s important that you:

- train it first under instruction of a flying instructor or during a safety course.
- are sure that the air space under you is free before and while you are doing the flying manoeuvre.
- have a look on the canopy during the manoeuvre and also look on the distance to the ground.

## **14. Care, Storage, Repairs and Disposal of waste:**

Your safety in the air depends on the condition of your paraglider. A maintained and properly used paraglider will last a long time. In order to maintain your Cruiser's condition for a long time we would like to give you the following advice:

### **Care:**

- In time the UV rays will damage the material of the paraglider. Therefore don´t leave the Cruiser out in the sun unnecessarily.
- Take care that the paraglider will not get dirty while laying it out. The dirt particles can damage the material.
- The line length should be checked after landing in a tree or in water.
- Don´t pull around your glider while it is lying on the ground. This could damage the coating of the fabric.
- Wetness damages the coating of the fabric and can reduce it´s lifespan.
- If the lines get hung on the ground while storing the glider, they can be stretched or can tear off.
- Don´t step on the lines!
- Put the cloth bag that comes with the glider underneath it when folding it up to ensure that the material of the glider is not damaged.

- Curl up the lines as little as possible with no sharp wrinkles.
- If the glider gets contact with salt water clean it immediately with fresh water!
- Insects in the cells should be removed alive, not just only for animal care reasons, but the insect secretion is acid and can damage the fabric.
- Clean your paraglider only with clean water and do not use brushes or hard rubbing. Chemical detergents will damage the fabric and the lines.

#### Storage:

- The glider must always be stored in dry condition. If the glider should have got wet, you have to spread it out to dry it as soon as possible. (but do not lay it in the direct sunlight).
- Do not store your paraglide near chemical fumes of gases.
- Avoid unnecessary high temperatures during storage or during transport (especially in cars).

#### Repairs:

- Small cuts in the material, if they are not along the seams, can be mended provisionally with special self-sticky repair-tape which you get at paragliding specialized stores.
- All other kinds of damages, like large cuts, cuts along the seam, ripped line loops, torn or damaged lines must only be repaired by an authorized dealer or the manufacturer.
- Use only original spare-parts!
- Every alteration of the glider, unless authorised by the manufacturer, results in the glider´s certification expiring.
- The Cruiser have to be checked by an authorized specialised company or the manufacturer at least after 300 operating hours or after 2 years.

#### Waste disposal:

- The materials of which a paraglider is made require a special waste disposal. So please send disused gliders back to us. We will care about an professional waste disposal.

## **15. Nature- and environment-friendly behaviour:**

Actually it´s self-evident, but nevertheless mentioned particularly: Please do our nature-near sport in a way which do not stress nature and environment!

Please do not walk beside the marked ways, don´t leave your litter, don´t make unnecessary loud noises and respect the sensitive balance in the mountains.

Especially at the take-off we have to take care for the nature!

## 16. Single line length

### Description of the lines

The lines of all independence gliders are named according to the same pattern. So if you order spare lines please find out the name of the line according to the following instructions and order it together with the glider's name and size!

The first digit always describes the line-level (riser), (A,B,C,D, K=brake). The numeration start at the middle of the glider with 1 and is running continuously to the stabilisator (wingtip).

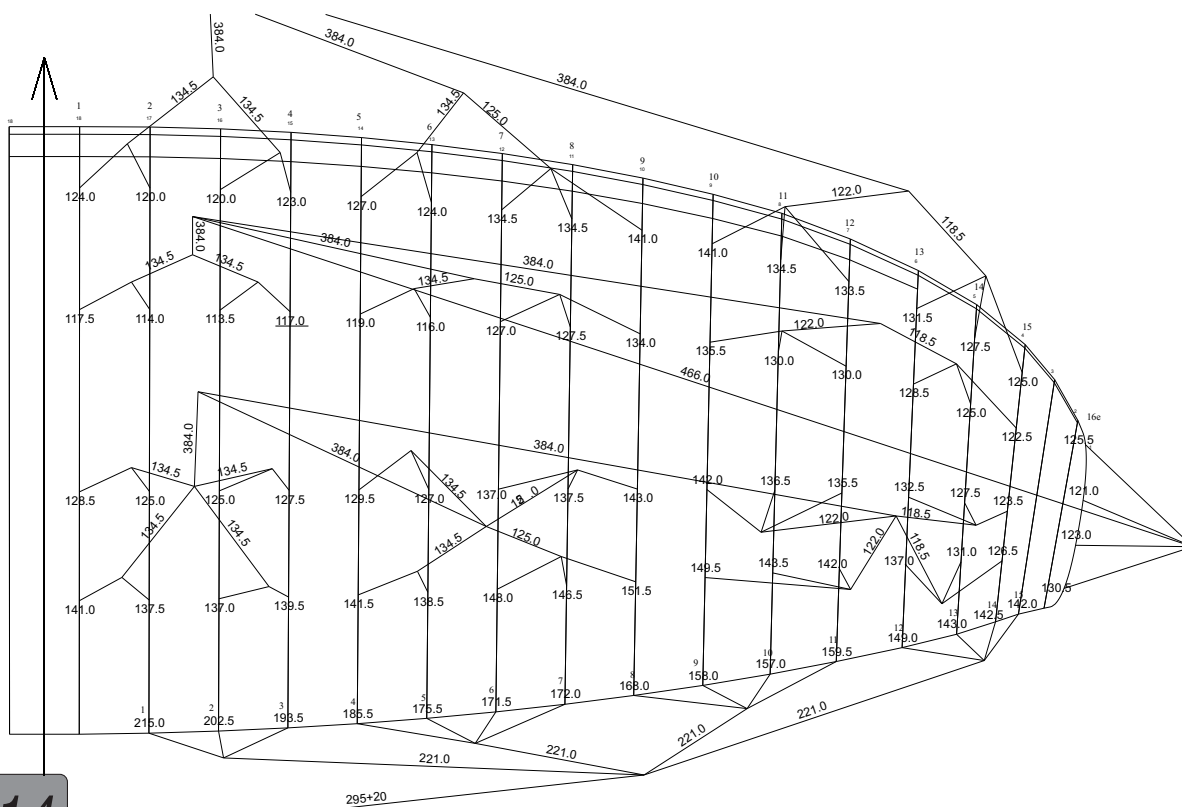
Top-lines (up at the canopy) are described with level and number, starting from the middle of the glider. For example: A5 = the 5th A-line from the middle (at the Cruiser M: 134,5cm)

The stabilisator-top-line has the additional description "e". For example: B16E = B-Stabilo-line, up at the canopy (at the Cruiser M: 128cm).

middle-section-lines (between main- and top-lines) gets the description "M". For example: CM4 = 4th middle-section-line from the middle of the glider on the C-level (at the Cruiser M: 130 cm)

The main-lines (down at the risers) gets the additional description "R". For example: AR3 = 3rd A-main-line from the middle of the canopy (at the Cruiser M: 400 cm)

### 16.1. Single line length Cruiser Small





## 17.1. Total line length Cruiser Small

in mm	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Stabi
A	6960	6920	6920	6950	6990	6960	6970	6970	7035	7005	6940	6930	6875	6835	6810	6455
B	6895	6860	6855	6890	6910	6880	6895	6900	6965	6950	6895	6895	6845	6810	6785	6410
C	7005	6970	6970	6995	7015	6990	6995	7000	7055	7015	6960	6950	6885	6835	6795	6430
D	7130	7095	7090	7115	7135	7105	7105	7090	7140	7090	7030	7015	6930	6870	6825	6505
Brake	7310	7185	7095	7015	6915	6875	6880	6840	6740	6730	6755	6650	6590	6585	6580	

All lines measured from attachment-point at the riser to attachment-point at the bottom sail, Brake-lines until end of main-brake-line.

## 17.2. Total line length Cruiser Medium

in mm	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Stabi
A	7235	7200	7195	7230	7280	7250	7260	7260	7325	7295	7230	7220	7160	7115	7090	6750
B	7150	7125	7115	7155	7195	7170	7180	7175	7250	7230	7165	7165	7105	7070	7045	6700
C	7280	7240	7240	7265	7305	7280	7295	7290	7335	7310	7250	7225	7155	7100	7055	6715
D	7400	7355	7355	7385	7415	7385	7385	7370	7420	7375	7320	7285	7205	7140	7080	6790
Brake	7650	7505	7415	7370	7270	7195	7195	7160	7115	7145	7200	7130	7105	7095	7070	

All lines measured from attachment-point at the riser to attachment-point at the bottom sail, Brake-lines until end of main-brake-line.

## 17.3. Total line length Cruiser Large

in mm	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Stabi
A	7485	7445	7440	7480	7525	7495	7505	7505	7575	7555	7475	7475	7415	7370	7345	6955
B	7405	7380	7370	7410	7445	7420	7435	7430	7505	7485	7420	7420	7360	7320	7295	6905
C	7550	7505	7505	7535	7555	7530	7550	7545	7590	7565	7505	7475	7405	7350	7300	6920
D	7685	7635	7635	7670	7700	7670	7660	7645	7700	7635	7575	7540	7455	7390	7325	7000
Brake	7930	7780	7685	7640	7535	7455	7455	7420	7375	7405	7460	7390	7360	7350	7325	

All lines measured from attachment-point at the riser to attachment-point at the bottom sail, Brake-lines until end of main-brake-line.



# 18.1. LTF / EN certification Cruiser Small



Erklärung über Bauausführung und Leistung (EBL)  
Declaration of Design and Performance (DDP)

## Gleitschirm - Paraglider

- Musterprüfung / Type testing: **EAPR-GS-7029/08**
- Gerätemuster / Test sample: **Cruiser small**
- Hersteller / Manufacturer: **Fly market GmbH & Co. KG  
Am Schönebach 3  
87637 Eisenberg  
Germany**
- Datum der Musterprüfbescheinigung / Date of type testing certification: **07.08.2008**  
Datum Flugerprobung / Date of flight testing: **July 2008**  
Datum Belastungs- und Schocktest / Date of load and shock testing: **Nov. 2007**
- Nachgewiesene Normen und Verfahren: **LTF 35/03**  
Certified standards and procedures: **EN 926/1 & 926/2**

6. Merkmale und Betriebsgrenzen / Characteristics and limitation				
6.1. <b>Gerätgewicht (ohne Packzack)</b> System weight (without carrier bag):	<b>6,5 kg</b>			
6.2. <b>Zulässiges Startgewicht min and max</b> Min. and max. Takeoff weight	min:	<b>80 kg</b>	max:	<b>80 kg</b>
6.3. <b>Anzahl der Sitze</b> Number of seats	<b>1</b>			
6.4. <b>Klassifizierung</b> Classification	LTF:	<b>1</b>	EN:	<b>A</b>
6.5. <b>Gurtzeugbeschränkung</b> Harness limitations	<b>GH</b>			
6.6. <b>Fußbeschleuniger</b> Foot accelerator	<b>Ja / Yes</b>			
6.7. <b>Trimmer (von Hand zu bedienen)</b> Trim device (hand operated)	<b>Nein / No</b>			
6.8. <b>Projizierte Fläche</b> Projected area	<b>21,77 m²</b>			
6.9. <b>Windenschlepp geeignet</b> Suitable for towing	<b>Ja / Yes</b>			

7. Tragegurtlängen / Riser length mm					
	A	A2	B	C	D
normal	500	500	500	500	500
Beschleunigt / Accelerated	380	380	395	500	



8. Leinenlängen / line length: mm

	A	B	C	D	E	BR
1	6435	6370	6480	6605		7310
2	6395	6335	6445	6570		7185
3	6395	6330	6445	6565		7095
4	6425	6365	6470	6590		7015
5	6465	6385	6490	6610		6915
6	6435	6355	6465	6580		6875
7	6445	6370	6470	6590		6890
8	6445	6375	6475	6565		6840
9	6510	6440	6530	6615		6740
10	6480	6425	6490	6565		6730
11	6415	6370	6435	6505		6755
12	6405	6370	6425	6490		6650
13	6390	6320	6360	6405		6590
14	6310	6285	6310	6345		6585
15	6285	6260	6270	6300		6580
ST	5930	5885	5905	5980		

- Art der Messung / Kind of measuring: **vom Leinenloop zum Untersegel**  
from line loop to lower surface
- Besonderheiten / particularities: **keine**  
none
- Betriebsanweisung in der Fassung vom: **Rev. 1.0 – 01.02.2008**  
Manual version dated
- Nachprüfanweisung in der Fassung vom: **Rev. 1.0 – 01.02.2008**  
Periodical check instruction version
- Nachprüffristen / Periodical checks: **24 Monate oder 300 Flugstunden**  
24 month or 300 hours of flight

Ort, Datum, Stempel und Unterschrift des Herstellers:  
Place, Date, Stamp and Signature of the manufacturer:



Sichtvermerk der Prüfstelle:  
Test center endorsement:



# 18.2. LTF / EN certification Cruiser Medium



European Academy of Parachute Rigging e.V. - EAPR  
LBA-amerikanische Prüfstelle für Sprungfallschirme und Gleitschirm  
Member of EPTA - European Paraglider Test Laboratory Alliance

## Herstellerangaben zum Luftsportgeräte-Kennblatt

### Gleitsegel

- Musterprüfung
- Gerätemuster: **Cruiser Medium**
- Hersteller: **Fly market GmbH & Co. KG  
Am Schönebach 3  
87637 Eisenberg**
- Datum der Musterprüfbescheinigung: **21.02.2008**  
Flugtests vom: **22.12.2007**  
Belastungstests vom: **23.01.2008**
- Nachgewiesene Normen und Verfahren: **LTF 35/03**  
**EN 926-1:2006 / EN 926-2:2005**

### III. Merkmale und Betriebsgrenzen

- Gerätgewicht (ohne Außencontainer, kg): **6,0**
- Zulässiges Startgewicht: min: **80 kg** max: **105 kg**
- Anzahl der Sitze: **1**
- Klassifizierung: LTF: **1** EN: **A**
- Gurtzeugbeschränkung: **GH**
- Fußbeschleuniger: **Ja**
- Trimmer (von Hand zu bedienen): **Nein**
- Projizierte Fläche: **23,62 m²**
- Windenschlepp: **Ja**
- Tragegurtlängen:

mm	Tragegurt A	Tragegurt A2	Tragegurt B	Tragegurt C	Tragegurt D
normal	500	500	500	500	-
Beschleunigt	380	380	395	500	-

### 11. Leinenlängen

in mm	A	B	C	D	Bremse
1	6710	6625	6795	6875	7650
2	6675	6600	6715	6830	7505
3	6670	6590	6715	6830	7415
4	6705	6630	6740	6860	7370
5	6755	6670	6780	6900	7270
6	6725	6645	6755	6900	7195
7	6735	6655	6770	6900	7195
8	6735	6655	6765	6845	7160
9	6800	6725	6810	6895	7115
10	6770	6705	6785	6850	7145
11	6795	6640	6725	6795	7200
12	6695	6640	6700	6760	7130
13	6635	6580	6630	6680	7105
14	6590	6545	6575	6615	7095
15	6565	6520	6530	6555	7070
Stufe	6225	6175	6190	6265	

Art der Messung: Fangleinen ohne Tragegurt und Schakel bis Untersegel

12. Besonderheiten:

IV. Betriebsanweisung in der Fassung vom: **Version 1.0 Stand 01.02.2008**

V. Nachprüfanweisung in der Fassung vom: **Version 1.0 Stand 01.02.2008**

1. Nachprüffristen: **24 Monate oder 300 Flugstunden**

Ort, Datum, Stempel und Unterschrift des Herstellers:



Sichtvermerk der Prüfstelle:



## 18.3. LTF / EN certification Cruiser Large

European Academy of Parachute Rigging e.V. - EAPR  
LBA-amerikanische Prüfstelle für Sprungfallschirme und Gleitsegel  
Member of EPTA - European Paraglider Testlaboratory Alliance



### Herstellerangaben zum Luftsportgeräte-Kennblatt

#### Gleitsegel

#### I. Musterprüfung

1. Gerätemuster: Cruiser Large  
2. Hersteller: Fly market GmbH & Co. KG  
Am Schönobach 3  
87637 Eisenberg  
3. Datum der Musterprüfbescheinigung:

- II. Nachgewiesene Normen und Verfahren: LTF 35/03  
EN 926-1:2006 / EN 926-2:2005

#### III. Merkmale und Betriebsgrenzen

1. Gerätegewicht (ohne Rucksack, kg): 6,5  
2. Zulässiges Startgewicht: min: 95 kg max: 125 kg  
3. Anzahl der Sitze: 1  
4. Klassifizierung: LTF: 1 EN: A  
5. Gurtzeugbeschränkung: GH  
6. Fußbeschleuniger: Ja  
7. Trimmer (von Hand zu bedienen): Nein  
8. Projizierte Fläche: 25,55 m<sup>2</sup>  
9. Windschlepp: Ja  
10. Tragegurtlängen:

mm	Tragegurt A	Tragegurt A2	Tragegurt B	Tragegurt C	Tragegurt D
normal	900	500	500	500	-
beschleunigt	380	380	385	500	-

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#### 11. Leinenlängen

in mm	A	B	C	D	Bremse
Stabi	6430	6380	6395	6475	
15	6820	6770	6775	6800	7325
14	6845	6795	6825	6865	7350
13	6890	6835	6880	6930	7360
12	6950	6895	6950	7015	7390
11	6950	6895	6980	7050	7460
10	7030	6960	7040	7110	7405
9	7050	6980	7065	7175	7375
8	6980	6905	7020	7120	7420
7	6980	6910	7025	7135	7455
6	6970	6895	7005	7145	7455
5	7000	6920	7030	7175	7535
4	6955	6885	7010	7145	7640
3	6915	6845	6980	7110	7685
2	6920	6855	6980	7110	7780
1	6960	6880	7025	7160	7930

Art der Messung: Laservermessung Bosch DLE 150

#### 12. Besonderheiten:

IV. Betriebsanweisung in der Fassung vom: Version 1.0 Stand 1.2.2008

V. Nachprüfanweisung in der Fassung vom: Version 1.0 Stand 1.2.2008

1. Nachprüffristen: 24 Monate oder 300 Flugstunden

Ort, Datum, Stempel und Unterschrift des Herstellers:

Eisenberg, 28.5.08  
Fly market GmbH & Co. KG  
Am Schönobach 3 | D-87637 Eisenberg  
Tel: +49(0)9341 9133-0 | Fax: +49(0)9341 9133-33

Sichtvermerk der Prüfstelle:

Gleitsegelkennblatt

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