User Manual

for

PSYCHO²

VOODOO SPIRIT

FLYSURFER

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Contents

WARNING

Launching and flying a kite can be potentially dangerous, especially when ignoring basic safety guidelines.
Always be extremely careful when using a kite.
Incorrect handling or misuse of a kite may cause serious injuries and/or death.
When using a kite, you are responsible for your own safety and that of others around you.
A kite can be dangerous for as long as the Safety-System hasn't been deployed. Never hesitate to use the Safety-System (you can't ever use it too early or not enough, only too little or too late).
Never use a kite prior to professional instruction by a certified kite surfing school. For trained inflatable-kite users, a proper introduction into the FLYSURFER-System is essential (thoroughly read this manual).

You can find competent FLYSURFER-schools under www.flysurfer.de

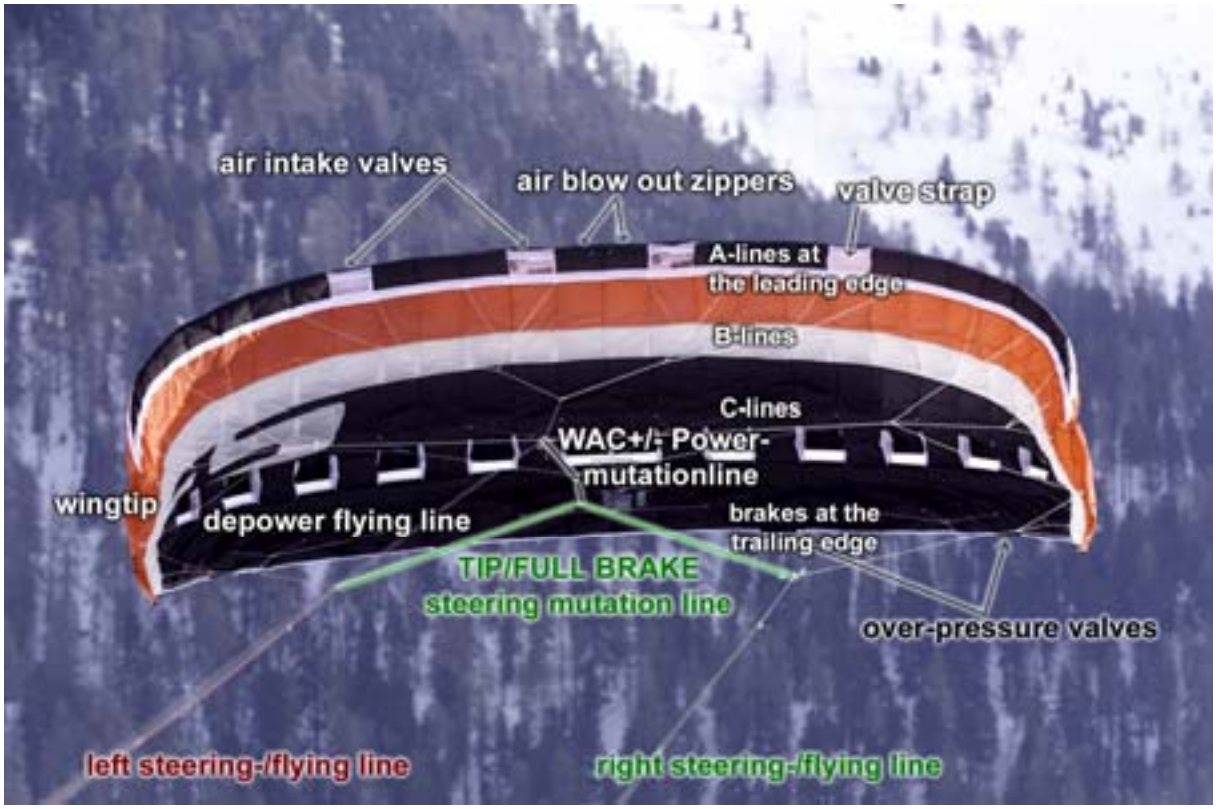
Safety Guidelines

- Never launch a kite during thunderstorms, in stormy conditions or before gust-fronts. The risk of injury increases over-proportionally with the wind strength, the gustiness, with suddenly increasing or completely onshore wind.
- Check the weather conditions and choose the right size of kite, a kite that's too big can be very dangerous.
- Lines under tension can cut like a knife. Never touch the lines unless the kite is properly secured on the ground.
- Only use a kite with a fully functioning Safety-System, wear a helmet and impact vest.
- Always check the current condition of your equipment, especially wear and tear parts (depowerloop, pulleys and V-lines) as they are very important for a safe and controlled flying. Never launch a kite that has any weakened or worn parts.
- Only sail out as far as you are able to swim back.
- Thoroughly check the kite-spot for shallows, obstacles, currents etc.
- Keep two line-length of distance between yourself and other beach users, obstacles, etc. Never fly the kite above other people downwind of you.
- Make sure that you are being watched while you are kite surfing and someone can call for help in an emergency.
- Only use the kite if you are in a good physical condition and never under the influence of drugs and/or alcohol.

1. Me and my FLYSURFER kite

To ensure save riding and maximum fun with your new FLYSURFER,
we recommend that you read these instructions thoroughly. In this manual we have tried to address all questions put to us in the past.
If there are still some unanswered questions then internet forums like www.oase.com, www.kiteforum.com or www.foils.nl will provide you with unbiased and helpful advice.
Alternatively pay a visit to our website www.flysurfer.de, through which you will also have the ability to contact our team directly. Also use the guarantee registration which can also be found there.

2. Descriptions



3. FLYSURFER (FS) specific functions

3.1. Safety-System

The FS Safety-System is activated when the rider unhooks from the depowerloop (or pulls the quick release on the depowerloop) and lets go of the bar. In this case the trailing edge folds forward and the wingtips of the kite fold up. The kite falls backwards with reduced pull until it lands on its trailing edge, ready for relaunch.
Important: If the kite doesn't immediately fall to the ground, but instead flaps in the air, then keep calm and wait a little. The kite will eventually land itself safely.

3.1.1. Depowerloop Quick Release

Activation

To activate the Safety-System in an emergency, pull the red ball on the depowerloop. Once free let go of the red ball immediately. The minute the depowerloop has released and you let go of the red ball, the kite will automatically divert into safety-mode.

Assembly

Guide the released blue end of the depowerloop through the blue loop on the cross-bar. Now push in the metal pin from the outside, first through the blue loop than into the guide pocket on the cross-bar.
Please check the reassembled depowerloop before you hook in and launch.
Try a test deployment just to be sure you put the loop back together properly.

Tips for assembly in the water

For this there is a so-called rescue loop directly above the cross-bar on the depowerloop, with which you can hook up if the safety line is pulled. But you can no longer release yourself in an emergency. That's why you should park the kite in the zenith as long as you're far enough away from other objects, so you can reassemble the depowerloop as shown above. Then you can rehook the depowerloop as you normally would.
Further alternatives can be found on www.flysurfer.de in our video gallery.

Compatibility
If you want to use your FS Quick Release in conjunction with other systems, e.g. Wichard shackle, you will have to get your new combined system tested for its functionality. On combined safety systems, both release options should remain functional.

3.1.2. Kite-leash Quick Release

The Quick Release on the kite-leash is activated in the same way as on the depowerloop, by pulling on the red ball. Through this you can completely detach yourself from the kite when only connected via the kite-leash.
This option is very important if you are still in acute danger after having deployed the standard safety-system (e.g. when kite kite/lines are caught up in a boats propeller), or if the safety-system doesn't work (e.g. wrong use, in extremely gusty winds etc.).
Please remember that, in this scenario it is possible for your kite to fly away and potentially harm other beach users downwind of you.

3.2. Pull-Stop-System

The Pull-Stop-System enables the kite to blow out completely and eliminate all rest-pull. Once the kite has landed in safety-mode, pull slowly on the red or green leader-line until the kite is lying flat and has lost the remaining pull.
When using a larger kite, the kite can blow out even better if you release the safety line from the harness. But the kite could fly away if you let go and potentially harm other people downwind of you.
To relaunch, slowly let go of the pulled leader-line whilst still in safety-mode.
In strong winds we recommend to swim towards the kite as much as pulling yourself along the rotor-leash, this counteracts the rest-pull in safety-mode.

3.3. Automatic Drainage System

FS kites have a built-in drainage system. It forces entered water through openings along the trailing edge towards the wingtips where it drains out. This enables the kite to remain relaunchable, even after it has taken on water (e.g. after crashes in big waves). The kite can drain out buckets of water in no time at all and the minute it has regained its flying weight it will relaunch and can be “flown dry”. Once the kite is totally dry, it will perform as usual (water inside the kite can affect its performance).

3.4. Rotor Kite Leash (RKL)

The RKL enables multiple rotations of the bar without getting the safety-system tangled around the depowerloop. After about 100 rotations in one direction, the thin depowerline should be untwisted.

4. Rigging of the kite

Attaching the flying lines, first use

The kites are delivered with a fully assembled bar. But in case you ever have to remove the bar, please observe the correct reassembly.
For this, the blue cross safety lines have to be threaded onto the thin steering-lines (before looping the flying-lines and leader-lines).

5. Launch preparations

5.1. Laying out the kite

Unfold and lay out the kite, trailing edge facing the wind for a launch from the power-zone, or with the wingtip facing upwind for a launch from the edge of the wind window. Weigh down the kite with sand (if available; if not, any none piercing or blunt objects).
Now unwind the flying-lines from the bar in a 90° angle to the kite. Finally check all of the kite's lines, pulleys and safety-systems for tangles, knots, sand blocking or previously sustained damage.

5.2. Pre-inflation

It is not essential to pre-inflate the kites. However a thorough pre-inflation gives you maximum control over the kite and helps in light wind starts.
There are many ways to pre-inflate a FS kite. The kites have new valve straps, which make it even easier to pre-inflate. The kite should remain calm, so that the pulleys don't tangle up with the bridle lines.

5.3. Connecting the safety

Attach the kite-leash onto the harness spreader-bar. Make sure that the plastic clip is free of sand and has engaged properly to avoid unwanted release. You should be able to hear the clip lock in, otherwise optimal safety can't be ensured.

Please check that the leash is never tangled up. This is especially important when using the Rotor Leash.
The leash mustn't be wound around the depowerloop as it can seriously affect the functionality of the safety-system. Please also check for tangles during riding and unwind them if necessary by hand.
In order to guarantee an optimal functioning of the RKL, a neoprene tube was attached just above the depower leader lines.

6. Launching the kite

FLYSURFER kites are very easy to launch, assisted and by yourself.
Here there are various options and tips to bear in mind, too.
It is very important, that during launches the kite is fully depowered.
Pull the trimmer all of the way down and stretch out your arms and only pull the bar on one side to steer.
It is also recommended to first practice the various launching methods in light winds.

6.1. In light winds

To launch the kite in very light winds inflate it more than usual and start it from the power-zone (6.2). Hook into the harness and grab the upper end of the trimmer with one hand.

Be careful not to accidentally pull on the safety-line at the same time. To launch the kite, pull the trimmer/depowerline with a prolonged tug towards you (you can also use a pumping action in light winds).
This launch technique also works very well in the water, if the wind hasn't got enough power to launch the kite on its own. In very shallow waters it is important not to walk back as not to sink the kite.

6.2. In the power-zone

If you have enough room and the wind isn't too strong, you can start the kite in the power-zone. This launching method bears a higher risk and should only be performed by experienced kiters. When the kite is ready for launch with its trailing edge facing the wind and you being directly upwind of the kite, fully depower to launch. Shake of any remaining sand or debris with small steering impulses, in case you weighed down the kite with sand.

6.3. From the edge of the wind window

The launch from the edge of the wind window should be the standard method for launching a FLYSURFER kite. The main advantage being that you won't get dragged downwind as you would when launching out of the power-zone. This can be quite dangerous in strong winds and with lack of space downwind.

From the edge of the wind window by weighing the kite down

Lay out the kite parallel to the wind and weigh down the upwind wingtip with sand (or other none piercing or blunt objects). Now position yourself about 30° upwind of the kite. Hook into the sand-free safety leash and the depowerloop and slowly tension the downwind flying-line by steering the bar. Slowly move downwind as the kite starts to inflate. At some point the kite will start to stand upright on its wingtip, now slowly steer it upwards along the edge of the window into the zenith. Now all you have to do is shake off any remaining sand, which you used to weight down the kite.

From the edge of the wind window with assistance
Position yourself so that you can launch the kite at the edge of the wind window. Get a trained assistant to slowly project the centre of the leading edge into the wind until the kite is standing upright and is fully inflated. On your signal the assistant can now let go of the kite and you can take control.

From the edge of the wind window without assistance or weighing it down
Position yourself directly upwind of the kite, as if you would launch from the power-zone. Hook yourself into the depowerloop and keep the safety-line pulled to stop the kite from launching prematurely. Once the kite is inflated enough move slowly downwind until the kite is almost at the edge of the wind window and one of the wingtips is starting to fold slightly. Now let go of the safety-line and immediately depower. As the kite launches steer it to the edge of the wind window just above the ground to reduce pull.

6.4. First launch in the water (Boat-launch)

To launch the kite in the water you should be an experienced FLYSURFER and the lines and kite should have been thoroughly wrapped up with pulled safety-line. You should first try these steps in shallow waters and in light winds.

Take the kite out of the bag and open it carefully. Whilst unwrapping face the leading edge towards the wind to help inflation. Keep the bar between your legs or hooked in the harness, so the bar can't fly into the lines.

When using the kite, 20% pre-inflation is already enough. Lay the kite on the water with the bridling and the trailing edge facing you. Carefully unwind the flying lines, as the kite drifts away from you. First attach, if possible, the safety-leash and then launch the kite as usual by depowering.

You can now body-drag back towards your board unless you have kept it stored on your back in the kite bag.

Attention: This is a very advanced launching method and extreme caution should be applied at all times. A not properly pulled safety or floating lines can cause serious accidents and should only be performed by experienced FLYSURFERs especially in stronger winds.

7. Flying of the kite

7.1. Steering

The steering of FLYSURFER kites works the same as on any other kite. For those who don't know how to steer and control a kite, it is strongly recommended to participate in a kite-course before attempting to use the kite. Kites can be extremely dangerous in untrained hands, not just for the user but also to innocent bystanders. Pull on the left side of the bar to initiate a left hand turn and vice versa.

7.2. Power/Depower

To depower a kite, push the bar away from your body; to power up, pull the bar towards you.
A depowered kite accelerates and moves further to the edge of the wind window. That's why it goes better upwind.

7.3. Trimmer

The Trimmer adjusts the basic setting and angle of attack on the kite similar to a 4-line inflatable kite. The Trimmer on FS kites should always be pulled in slightly in order to avoid possible back-stalling/oversheeting.
With a completely released Trimmer and the bar fully pulled in, the kite is overly powered up or over-sheeted. This causes the kite to fly backwards. We recommend that you only pull the bar in slightly when the trimmer is on the most open setting. The advantage of an open trimmer is that in light and constant winds experienced riders can ride with the bar resting against the gust-absorber, providing relaxed and effortless sailing.
If you power up too much, the kite is very wet and/or you fly it at the lower wind limit, it is possible for the kite to back-stall = fly backwards and loose its lift. In this scenario, **immediately depower** = arms out and if necessary pull in the trimmer.
To depower the kite more in strong winds (less angle of attack) pull on the larger, yellow handle. To power up the kite some more (more angle of attack) pull on the smaller blue handle. In light winds you will generally power up the kite some more with the trimmer further out (but not to such an extent that it won't fly forwards anymore, then depower again).
In case you have problems with back-stalls, just set the kite more to TIP-BRAKE and WAC – (see MULTI WAC-SYSTEM).
In addition, you can decrease the depower length.

8. Jumping with the VOODOO/SPIRIT/PSYCHO²

There are many different ways of jumping. The kites jump very direct and simple. They have particular stability, which lets the kites sail on for some time and that gives them the chance to catch themselves. Ride with medium speed at about 90° to the wind. Steer the kite fast and fully depowered into its zenith and then back hard (around 11:00 to 11:30). Wait until the kite has passed the zenith and then power up the kite to its maximum.
Before you lose the edge fully power up and jump up simultaneously and steer the kite into the zenith. Shortly before you land depower in the direction you are going, in order to land smoothly.
Especially when using the PSYCHO², it is important not to fly the kite too aggressively to the opposite wind window, because it will be very difficult to regain control and land smoothly.

9. Kite-control in extreme situations

Dangerous situations can often be avoided in advance. It is very important to stick to some basic safety guidelines and if in doubt, not to launch the kite.
If however you find yourself in an extreme situation, it is important **not to panic** and **react quick and decisively**. We strongly recommend that you practice the use of the Quick Release in order to automate the procedure. This way you will react faster and remain in control.

9.1. Flying the kite in the zenith

FLYSURFER kites are at their most stable in the zenith! However that's also where you are in the greatest danger of being lifted. The kites are also very stable at the edge of the wind window, when there is enough wind.

9.2. Being lifted on the beach

It is important to leave enough space downwind of you and to constantly keep an eye on the weather. If you "park" the kite at the edge of the wind window you can avoid being lifted. If a strong gust catches you unaware, directly use the safety system by pulling the quick release at the depowerloop before you are to high to use it.
If you are to height to use the QR, you can only depower the kite as much as possible to reduce its lift. If the Kite tries to luff, keep tension in the backlines. When the kite is in the zenith and you are about to touch down, gently power up to soften your landing.
If you got lifted up very high, keep the kite as still as possible and fully depowered (pull yellow strap if necessary) in its zenith (leading edge facing the wind). **Don't panic!**
You actually have a small paraglider over top of you and you will be able to control your flight with gentle steering impulses.
The Quick Release has to be pulled immediately after touching down.

9.3. Kite "over-flies"

If your kite over-flies (e.g. in gusty conditions), it is possible to get it back by either powering up or steering it to the side. It may be possible to power up more by pulling on one of the steering leader-lines, than when powering up with the bar. If you cannot prevent the kite from over-flying, the kite may collapse. The kites are very stable, so this will rarely happen.

9.4. Kite collapses

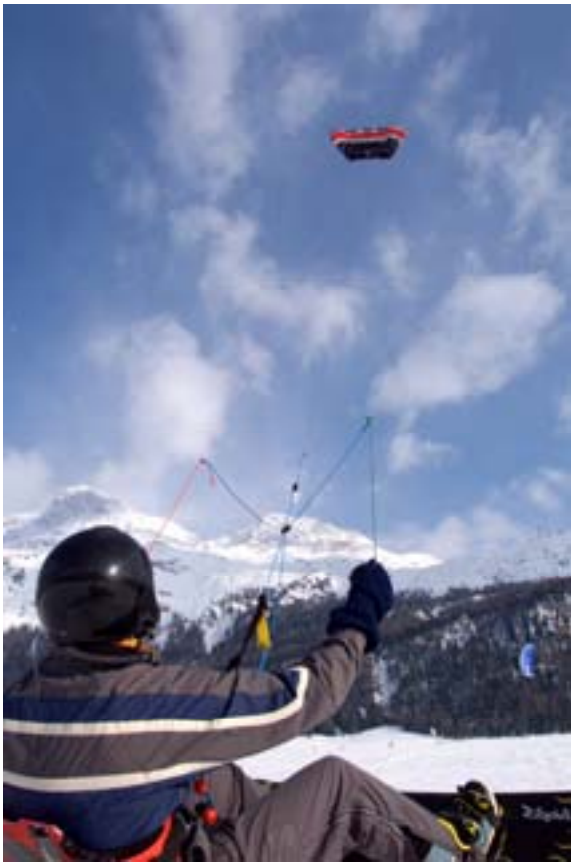
If the kite collapses, this is called front-stall or luff. Fortunately, you have a FS kite and you will notice this phenomenon more often when watching other kites. If a kite luffs it is best to unhook and to let go of the bar (if that's not possible pull the Quick Release) in order to land it in safety-mode.
A kite that re-opens in the middle of the power-zone can develop enormous forces, which can exceed the structural limits of harness, kite or rider. If the kite collapses whilst riding, it is most likely that the conditions are too gusty for your ability and you are better off waiting for the conditions to improve.

9.5. Kite is about to impact on land or water

If the kite hits the ground or water at speed in the middle of the power-zone, it is possible that it will explode, especially if you don't release the kite's pull. In these situations try to unhook in time and let go of the bar (pull Quick Release if necessary). If you haven't got enough time for this, actively reduce as much pull in the lines as possible before impact, so it isn't a frontal impact. Fortunately, the kites have 4 overpressure valves, so that the short discharge of overpressure makes them lighter and more robust than any other kite system on the market. However, the kites are still not indestructible, just like you.

9.6. Kite doesn't immediately land after safety deployment

The new safety was optimized for less rest pull, and the wingtips fold in when in safety-mode, in order to minimize the wind attack area. That's why the kite doesn't land backwards as quickly, which reduces the force on the kite.
The kite shouldn't be kept on the beach when in safety-mode, because it could launch if a gust of wind catches it. Whoever wants to land the kite precisely downwind in the lower wind range, can pull on the leader lines to force the kite to back-stall and land. It is important not to let go of the leader-lines in the power-zone, because this would result in a power-zone start.



10. Relaunching the kite from the water

There are different ways of relaunching a FLYSURFER kite from the water.
Here we describe a few. On our homepage www.flysurfer.de you will find some videos with further techniques for relaunching the kites.
For whom this is too complicated let him be told: The kites have three steering-lines and a pull on one of the three lines will launch it!

10.1. From the trailing edge

If the kite is on the water trailing edge down, simply fully depower (pull the trimmer if necessary) and it will launch by itself.
If the wind is too strong for a power-zone start, only depower on one side and fully pull on the other side. That way, the kite turns and you can restart it at the edge of the wind window (item 10.4).

10.2. From the leading edge
If the kite is in the water, leading edge down, you have various options to relaunch it.
Important: Don't get tempted to turn the bar because of the crossed over flying lines.
The green side is still on your right!

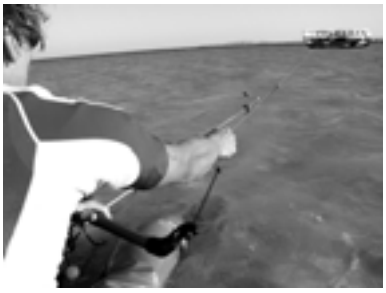
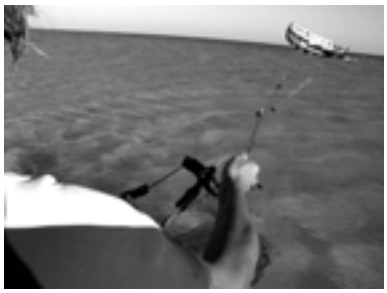
10.3. Backward start (in light winds)
By pulling both of the thick steering leader-lines, the kites can be launched backwards. As soon as the kite has landed on its leading edge, it can be launched as usual (10.1).

Tip: If the board is already strapped to your feet and you are holding it in front of you, you can avoid the body drag and keep going when you launch the kite. In addition, you can also build up the necessary counter-pressure for launching in weak winds, if you have the board in front of you. In very weak winds, you can pull on the steering leader-lines, to give the kite a launching impulse.

Caution: *Can be very damaging to the material in strong winds, because high pressure can develop on the lines and the kite.*

Prevention of body drag in strong winds and power-zone start (PSYCHO²):
By extremely powering up / over-sheeting (fully open trimmer and strong pulling of the bar toward the body), the kite can be flown out of the power-zone gently up to 60° when it stalls. As of 60° the kite can be flown into the zenith as usual by fully depowering.
This method requires flair from the kiter, but prevents the high strain on kite and kiter.

10.4. Relaunch from the edge of the wind window in strong winds
Grab one of the two steering leader-lines and pull gently so that the kite starts to move to one side. Just before the kite reaches the edge of the window pull the line all the way. The kite will stand up and launch with little pressure. If it doesn't stand up despite there being enough wind and you having pulled in the line correctly, it is probable that the kite is already too far at the edge of the wind window. You will then have to pull the opposite leader-line and steer the kite back into the power-zone. Now, try again and pull a little sharper, earlier on.
When the kite gets to the edge of the wind window, you can simply pull on the steering leader-lines, until the kite collapses. The wind will re-open it and you can easily launch it depowered.

Attention: Never wrap the lines around parts of your body. This is especially dangerous with the very thin flying and bridle-lines. Extreme danger of injury!

10.5. Quick launch
If you pull sharply on the leader-line it is possible to turn the kite on its spot so that it will launch in the power-zone (light and medium wind).
Experienced kiters can even launch the kite before having stopped "planing".
CAUTION: In strong winds and when there are obstacles downwind of you, you should avoid using this launch method.

10.6. Kite doesn’t launch anymore, you start drifting away

If you are unable to re-launch the kite and you start drifting away, it might be necessary to disconnect yourself from the kite before you drift too far and are unable to swim back to the shore. Once back you can always get a boat and salvage the kite. Main thing is that you are safe.

If you judge the situation correctly and early enough, whilst still close to the shore you might be able to rescue yourself and the kite. In this case you wrap up the kite as you would on land, but you must be careful not to get caught in the lines. First, activate the Pull-Stop-System (if available, in any case pull the safety-leash all the way through) and keep the lines under tension, then start to wind them onto the bar. Once at the kite, open the air outlet zipper and wind the kite around the bar. Don’t try to throw the bar into the lines.

If the wind is blowing only slightly off-shore, direct the kite to the edge of the wind window by pulling on the shore-side leader-line and see whether it has enough pull to get you back. If you only have to swim a short distance to the shore against the wind, it is enough to pull the kite with the activated Pull-Stop-System against the wind.

10.7. Being rescued with FLYSURFER kites

Experienced FLYSURFER riders can try to rescue others, who have got themselves into trouble, can’t re-launch their kite (e.g. snapped line, …) and drift out to sea. This is always a little tricky and should only be attempted in safe conditions and from very good riders. The rescuer should also have a line-cutter to free himself from tangled lines.

It is important, that the to be rescued rider’s kite hasn’t taken on too much water, as this makes a rescue almost impossible (anchor). The rider about to be rescued should detach him/herself from the kite. The rescuing rider cautiously approaches from upwind of the none re-launching kite. Whilst sailing past, the rescuing rider will attempt to grab the wingtip nearer the shore and drag it behind him. If successful he/she can sail back to the shore, dragging the kite behind him/her. Here it is very important that the rescuing rider is extremely cautious not to get tangled in any lines.

Important: Look after yourself first. If you put yourself into danger when attempting to rescue someone else, try and seek help from others.

11. Landing

11.1. At the edge of the wind window

Basically every kite is caught by a helper at the edge of the wind window. Especially, if there are strong winds and very little room downwind.
Fly the kite at the edge of the wind window slightly above the ground and let a competent helper catch it. The helper will approach the kite from upwind, grab the lower wingtip and pull it towards him/her. You should now walk toward him to relieve the tension in the lines and still leave some tension in the upper line to assist the helper in letting the wingtip blow out downwind. The helper lays the kite on its upper sail and weighs down the wingtip (e.g. with sand). That way, the kite is in an optimal position to be relaunched without a helper.
The secured kite should not be twirled around by gusty winds, because the lines could get tangled up.

11.2. In the power-zone

A FS kite can be landed single handed and safely. Check that the landing spot is free of people and obstacles. Then unhook and let go of the bar (in an emergency pull the Quick Release on the depowerloop). Once the kite has landed, it can be secured by a helper or you can let it blow against a suitable object where the wind should pin it down. Otherwise secure the safety leash onto a solid pole, rock etc. The kite should then be secured immediately, to make sure it doesn't restart. If there are no suitable objects near you it is possible to tie the safety to a board buried in the sand (only suitable for light winds). Then quickly run up to the kite outside of the lines and secure it additionally.

12. Packing and storing your kite

1. Weigh down the upwind wingtip with something heavy (e.g. sand) and open the zippers in the middle between the valves.

2. Now, pull the safety-line all the way (**Picture 1**) and start winding the lines in the following way. Always wind up the flying lines in a figure of eight around the winders on the bar until you get to pulleys of the bridle-lines. Now secure the lines with a half hitch and wrap (if you haven't done so already) the safety around the bar.

3. Take the downwind wingtip and place it on top of the weighed down wingtip. Throw the lines inside the kite, so that you can place the bar on top of the two wingtips and start rolling the kite all the way around the bar.

4. Important: Never place the bar on top of the kite's underside, (where all the bridle-lines are attached) as this can quite easily result in knotted and tangled bridle-lines.

5. Now simply fold over the flexible ends of the kite which overhang the bar and put it in its bag.

13. Frequent problems and their solutions

13.1. Many kite surfers are inhibited from using their safety system

Problem: Fear of the kite not being able to restart or malfunctioning.

Solution: FLYSURFER kites have a super safe safety-system, which enables the kite to restart in any situation right away without any problems. Because of this, FLYSURFER riders constantly use their safety-system, so they can (e.g. to take a break on the beach, by simply unhooking). This increases the trust in this system and also increases the probability of use in dangerous situations.
It is better to use the safety-system very often, rather than get into difficulties!

13.2. Kite flies backwards

Problem: The kite may fly backwards during low winds, too powerful steering impulses, stiff posture and fully powered bar, or when the kite is wet.

Solution: Push the bar away from your body (depower). If that is not enough, also pull the trimmer. The so-called depower range (from the depowerloop to the gust absorber/trimmer) can be shortened by simply moving the knot at the trimmer.
This is very effective against back-stalls.
Generally, the kite shouldn't be slowed down, which means it shouldn't be powered up too much, because this will slow down the flight too much and result in a decrease of pressure. A fast flying kite builds up pressure more dynamically and has better lift.

13.3. Kite fills up with water

Problem: Kite is pulled under water, because the kiter fights against the pull of the kite and/or against the wind.

Solution: Never pull on the bar if the kite is lying on the water, because this will pump water into the kite. Never try to move the kite against the wind when it's lying on the water, instead let it pull you. Don't try to pull the kite toward you using the safety before attempting to relaunch, instead work your way toward the kite. Decide which launching method to use (see manual) and observe the mentioned tricks. That way, you will be able to start the kite quickly and safely in all conditions, even if water has entered the kite.

14. Tuning Tips

Multi WAC-System

Thanks to the new Multi-WAC system, the flight characteristics of the kites can be adapted to your own personal preferences in a matter of seconds.
At the standard, the kite is trimmed at the best compromise of the two trimmings. For each trim option, either WAC or STEERING mutation, you have 5 possible positions.

WAC Mutation:

Optimal for: Wakeboarding, Freestyle and light wind.

By increasing the black WAC trim line, the **kite profile will have a deeper camber**. The lift of the profile will increase, the kite pulls harder, but also has more downwind pull. The JetFlaps are used for lift and Steering. The kite is more direct and harder in pressure build-up, therefore not as stable in the sky with the possibility of luffing with collapsing of the tips and the complete kite.

Advantage:	**less back-stall.** **more lift.** **more direct bar forces.**
Disadvantage:	**more downwind pull.** **more vulnerable to luffing/collapsing.** **slower flying speed.**

Optimal for: Races.

By decreasing the black WAC trim line, the **kite profile will have a flat camber**. The resistance of the profile is reduced. Therefore the kite has less downwind pull and you can go upwind more easily. The lift of the low camber is also less aggressive. The Kite will steer more slowly at complete WAC+ setting.
More feeling for the kite is demanded so you don't provoke the kite to back-stall (backwards flight of the kite) by over-sheeting (powering up too much). Therefore the kite is less vulnerable to luffing with collapsing of the tips or the complete kite.

Advantage:	**more upwindperformance.** **less luffing / collapsing.** **less bar forces.**
Disadvantage:	**more back-stall** **less lift.** **slower steering.**

Steering Mutation:

Optimal for: freestylers and beginners.

By increasing the green brake trim line, the kite is depowered more in the center and is therefore steered more over the wingtips, like a inflatable kite.
The kite can't be powered up as much, has less back-stall and is therefore easier to fly. The steering forces are harder and more defined.

Advantage:	**less back-stall.** **harder and more defined steering forces.**
Disadvantage:	**less lift.**

Optimal for: Races.

By decreasing the green brake trim line, the kite is powered up with the entire surface like a classical soft kite. The kite can be powered up more, but is therefore easier to back-stall by over-sheeting. The steering forces are very soft.

Advantage:	**more lift.** **less bar steering forces.**
Disadvantage:	**more back-stall.**

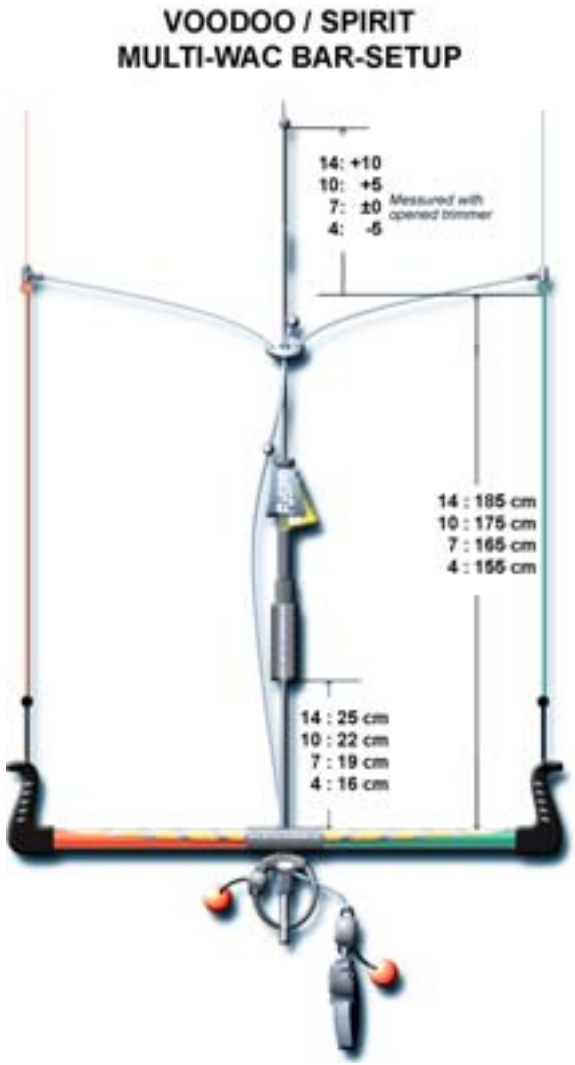
14.1. Extension lines

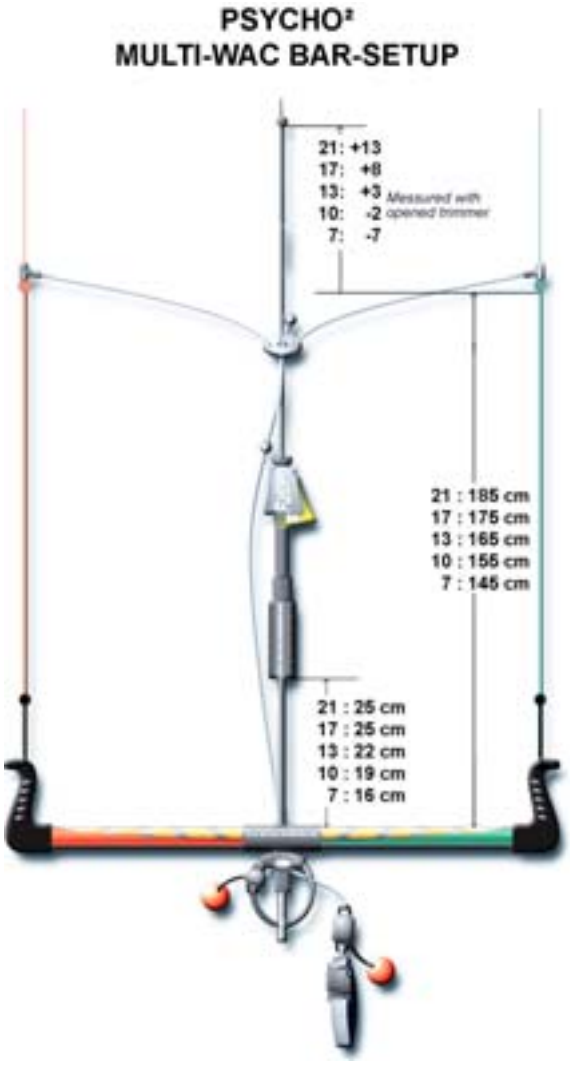
The kites have 3 m, 6 m and 12 m flying-lines, which add up to 21 m in length. That way, you can adjust the line lengths to your own personal preferences, the spot or the conditions in 3 m intervals. The advantage to RAM-Air kites is that they don't lose their projected surface when the lines are shortened, due to their bridle-lines.
In order to increase or decrease the line lengths, you have to unloop them. Make sure that the loops and knots are very tight when you put them back together. The standard lengths are the best compromise for the current riding style. If you want to lengthen your flying-lines, you just have to buy 3 extension-lines of the same length.

Length	Effects	Optimal for
Shortened	Due to decrease in wind window size faster change of kite position is possible. The kite gets a more direct feel. Less room to move the kite and closer proximity to water surface. Especially when close to the water surface, underpowered riding is more difficult	• more control when overpowered, especially in gusts • tight locations • wave kiting • more safety through more direct kite control • reduced risk for lofting.
Standardlength 21 m	Most optimal compromise	• all-round performance
Extended	Due to increase in wind window size change of kite position in the window is prolonged. Therefore it is easier to keep the kite in motion in the window when underpowered. If wind strength stronger at higher kite elevations, light wind performance is additionally enhanced. Responsiveness is markedly reduced e.g. in gusts	• underpowered cruising in certain conditions. • more hang time

14.2. Depower-line adjustment

Adjustments to the depower-line can be made to suit your preferred arm length position on the bar. Simply adjust the rope at the bottom of the trim strap to the desired length. It is important that you adjust the knot at the end of the depower-line to compensate for the shorter or longer length of the line between the trim strap and the bar. If you shorten the rope you must move the knot at the end of the depower-line up, and down if you lengthen it.





15. Wind ranges (for 75 kg rider using a 150 cm board)

Wind range: **VOODOO**

7.0	**10.0**	**14.0**	
4	4	4	min. Wind
4-14	4-12	4-10	under powered
14-30	12-25	10-21	normal powered
30-40	25-33	21-28	over powered
2.5-3.3:1	2.5-3.3:1	2.5-3.3:1	Depower-effect

Windrange [knt] for a very good 75 kg Rider

Wind range: **SPIRIT**

4.0	**7.0**	**10.0**	**14.0**	
6	6	6	6	min. Wind
6-19	6-14	6-12	6-10	under powered
19-40	14-30	12-25	10-21	normal powered
40-53	30-40	25-33	21-28	over powered
2.5-3.3:1	2.5-3.3:1	2.5-3.3:1	2.5-3.3:1	Depower-effect

Windrange [knt] for a very good 75 kg Rider

Wind range: **PSYCHO²**

7.0	**10.0**	**13.0**	**17.0**	**21.0**	**26.0**	
5	5	5	5	5	5	min. Wind
5-12	5-10	5-9	5-8	5-6	5-5	under powered
12-26	10-22	9-19	8-17	6-15	5-13	normal powered
26-38	22-32	19-27	17-24	15-22	13-19	over powered
1:3.8	1:3.8	1:3.8	1:3.8	1:4.2	1:4.2	Depower-effect

Windrange [knt] for a very good 75 kg Rider

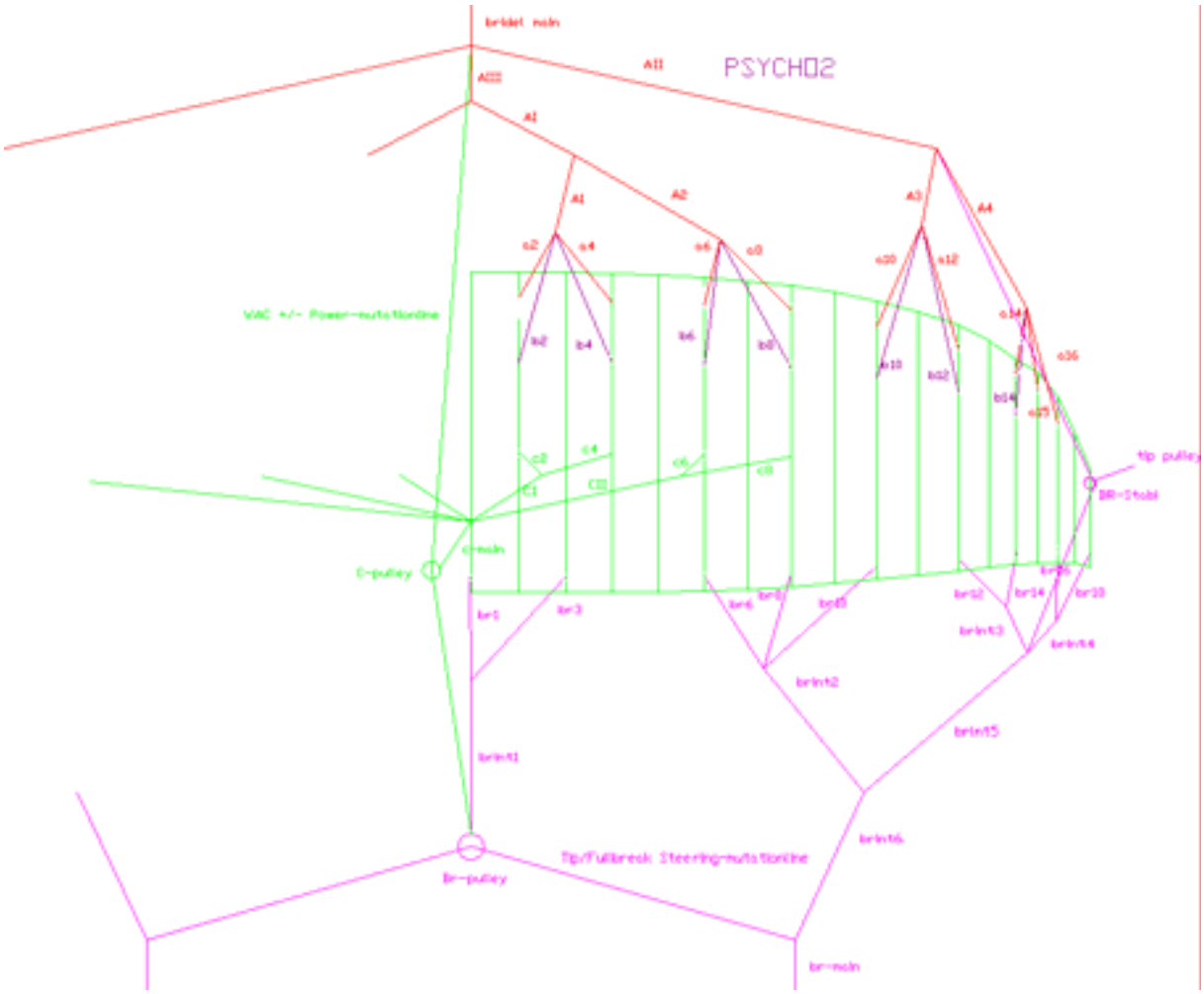
More information about the wind ranges of your kite can be found on our homepage www.flysurfer.de - kites/product/technical data.

Wind conversion table

Beaufort	Knoten	km/h	m/s	mph
1	1-3	1,1-5,4	0,3-1,5	0,7-3,5
2	4-6	5,5-11,9	1,6-3,3	3,6-7,5
3	7-10	12,0-19,4	3,4-5,4	7,6-12,2
4	11-15	19,5-28,4	5,5-7,9	12,3-17,8
5	16-21	28,5-38,5	8,0-10,7	17,9-24,0
6	22-27	38,6-49,7	10,8-13,8	24,1-31,0
7	28-33	49,8-61,5	13,9-17,1	31,1-38,3
8	34-40	61,6-74,5	17,2-20,7	38,4-46,4
9	41-47	74,6-87,8	20,8-24,4	46,5-54,7
10	48-55	87,9-102,2	24,5-28,4	54,8-63,6
11	56-63	102,3-117,3	28,5-32,6	63,7-73,0
12	>64	>117,4	>32,6	>73

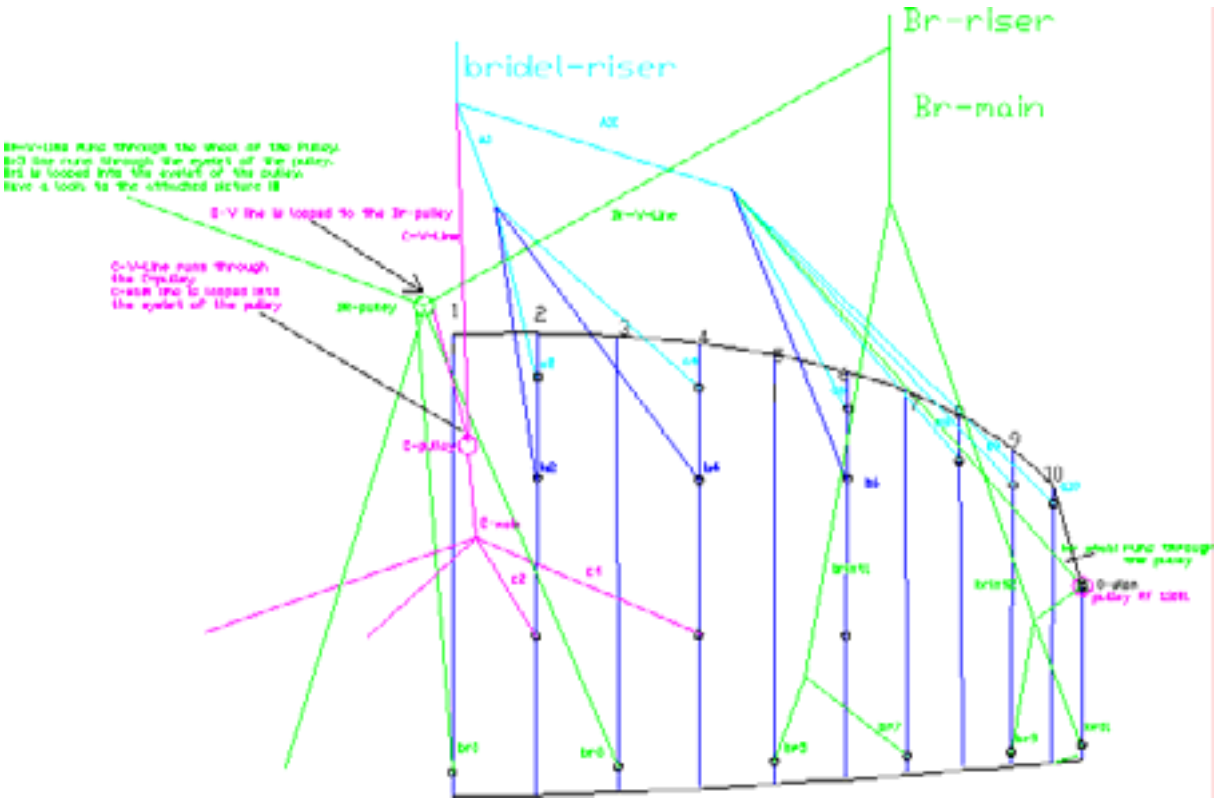
16. Line setup and lengths

Line setup PSYCHO² (13 m²)



The current line setup for your kite can be found on our homepage
www.flysurfer.de - kites/product/line setup.

Line setup VOODOO (10 m²)



The current line setup for your kite can be found on our homepage
www.flysurfer.de - kites/product/line setup.

The flying-lines
The flying-lines consist of one black depower flying line (500 kg breaking strength), as well as one green and one red steering line (200 kg breaking strength). They all consist of single pieces of 12, 6 and 3 meters. That way, you can reduce the line lengths in 3-meter-intervals from 21 m to 0 m. All lines have been pre-stretched. Nevertheless, the depower flying line will become about 8 cm longer than the steering lines, due to the higher load when in flight. The trimming of the kite has been adjusted to this stretching of the depower flying line.

17. Maintenance and Repair

17.1. General care
FLYSURFER kites are extremely UV- and saltwater resistant, as well as very tear resistant.
However for maximum durability a few things should be pointed out:

17.2. UV-light
Even though the fabric has been tested for UV-resistance, we advise not expose the kite to unnecessary UV-light (e.g. leave it in bright sunlight).

17.3. Saltwater
The material has also been tested against saltwater. However, the kite should still be rinsed out with fresh water on the inside and outside from time to time (e.g. after a vacation) and then let it dry in the shade.

17.4. Sand
Sand is relatively rounded, so it is not particularly harmful to the kite. Glass or other sharp or abrasive objects found on the beach can cause severe damage. Sand which enters the kite will work its way to the wingtips, and will be removed automatically from the kites.

17.5. Moisture
If a kite is stored wet and in a warm environment, it is possible for mildew to develop. This won't damage the kite but leaves ugly, dark stains. In extreme circumstances it is possible for the kite to rot. Moisture can cause discolorations of the fabric.

17.6. Cleaning
Only clean the kite with clear freshwater. All uses of chemical products can weaken the material and invalidate the warranty.

17.7. Wear and tear parts
Generally speaking, all moving parts are wear and tear parts. FLYSURFER only chooses material with the highest quality standards. We are constantly developing our materials further to provide our customers with maximum safety and product quality. This aside, all kites should be regularly checked for signs of wear and tear. After the kite has been exposed to heavy loads, you should thoroughly check all effected parts to make sure that none of them have been weakened and/or show excessive signs of wear and tear. When jumping, weakened parts can be dangerous especially on land or in shallow waters.

Important: A kite should be viewed as a flying machine and like all flying machines needs a regular, thorough check-up to ensure its safe usage. We recommend that a specialist also performs a thorough safety check on your kite at least once a year.

Important wear and tear parts are:
All knots on the line-system should be checked before your first flight and after a few hours of use, if they are secure.

Also check the V-lines, which travel over the pulleys for signs of wear. Replace immediately with Dyneema lines > 300kg if they are worn.

Check that the pulleys are running freely and whether they show signs of wear. Replace if necessary with originals or pulleys of >500kg braking strength. We strongly recommend only using original pulleys, which can withstand the loads developed by the kite.

Also check all connections of the kite's line-system for weaknesses and replace if necessary with original parts.

The depowerloop-line and the Rotor Leash, which travel through the hole in the bar, should constantly be checked for wear. Replace, if necessary with original lines or a wear-resistant > 1000 kg line. The depowerloop-line can be detached from the trimmer and the depowerloop itself.

17.8. Repair (with the included repair-kit)

Make sure that the damaged area is clean, dry and free of grease.
Cut a piece of repair-cloth in the correct size, thinly but evenly spread the glue (glue is quite runny) across one side and stick over the damaged area. Leave it to dry and you are ready to go.

TIP: When using glue during a repair, make sure not to accidentally stick the inside cross ribs or the upper and lower sails together.
Quick repairs are possible by using self-adhesive spinnaker repair tape, available from most good shops. Stick the correct size piece of self-adhesive tape to the inside of the kite. This type of quick fix won't last indefinitely and should in time be replaced with a proper repair. At least your day out on the water is saved.

17.9 Little connection lines

Each connecting point on the kite is joined by the 1 cm long so-called little connection lines with a knot at the end. These are helpful during repairs, so you can simply open the lines on the kite. They are very tear proof, white (ca. 45 kg) / black (ca. 30 kg), so they mostly prevent a destruction of the canopy.
Replacements for the little connection lines are enclosed with every kite.

18. Guarantee

With this guarantee the company skywalk GmbH & Co KG guarantees surf-kites of the brand FLYSURFER to the owner identified on the warranty card, 200hours of kiting, up to a maximum of 24 months starting from the date of initial purchase, that the craft with the applicable serial number has no material or fabrication defects. If during the guarantee time, material or fabrication defects occur, FLYSURFER will repair or replace defective parts in accordance with the following conditions.
If the repair of the defect is not possible or not economic, the proper owner will receive a qualitatively and same kind equivalent new product as desired, for payment after deduction of the market value of the damaged product. Damage due to improper use or normal wear (e.g. center line) as well as deficiencies that will not or insignificantly influence the function of the craft are excluded from the guarantee. The decision, whether the defect is due to improper use or not, will be up to FLYSURFER in accordance with best knowledge and conscience under consideration of the owner’s information.
Only the owner may claim guarantee services from FLYSURFER.

Conditions for guarantee services:

a) The guarantee card, which should be filled out at www.flysurfer.de, has to be sent in immediately to FLYSURFER after the purchase of the kite. Guarantee services will only be accepted starting from the date of arrival at FLYSURFER of the completely filled out guarantee card. Replacements for damages that have occurred before this date will not be warranted.

b) Guarantee services and replacements only apply for private and recreational activities, i.e. not for commercial use.

c) In case of damage, the craft and the contract of purchase are to be sent out to FLYSURFER or to an authorized general agent. Repairs or replacements of damaged parts can only be carried out by FLYSURFER. If a third party does any of these services, no claim for replacement will be possible.

d) The market value of the craft is exclusively determined by the following method: The depreciation accounts for 4% per month from the day of purchase (date of invoice). During the first year the purchase price (as indicated on the invoice) will serve as reference price. In the two following years, according with these criteria applying to value as of Dec. 31st of the previous year.

e) All necessary costs and risks for completion of guarantee services or replacements such as transportation of crafts and spare parts are the responsibility of the owner. Expired parts (in case of total destruction the entire craft) will become property of FLYSURFER.

f) Guarantee services and replacement services valued by FLYSURFER are limited to services indicated on the guarantee card. The service of other deficiencies or damages, especially subsequent damages and fulfillment interests (literal) etc., are excluded. Owner's rights for claims by law remain untouched. The owner has to submit guarantee claims to the seller (=direct contract partner). If a guarantee service has been completed all further guarantee claims have expired. Guarantee periods by law are active in addition to this guarantee and will not be extended.

g) Guarantee services will only be warranted if the deficiency before expiration of the 24 months guarantee period will be claimed within 14 days from notice (of deficiency) in writing or e-mail to FLYSURFER. Deficiencies claimed after expiration of the guarantee period are not covered by guarantee services, even if they have occurred within the guarantee period.

As long as above conditions are not entirely met, FLYSURFER has the right to deny guarantee and replacement services.

The guarantee by law is not limited in any way through the guarantee by FLYSURFER.

10 Advantages of FLYSURFER Kites

1. Unequalled light wind performance
Due to a profile similar to a paraglider and weight optimized inner construction on Flysurfer kites, no other kite system can compete with FS in light wind conditions. Or in power, wind range, control, stability, or in water start capabilities.

2. Easiest Handling & Setup
FS riders don't need helpers for launching and landing. Lines and bar stay attached to the kite for fast setup and you don't have to worry about any annoying inflation. Lines don't tangle when you release the safety, so you can restart right away.

3. Most Reliable Safety
Flysurfer kites are designed with safety first. Kiting with FS is easier and safer than with other kite systems.

4. WAC Depower
Our depower system is twice as effective, because it combines the tube kite system with the common Ram Air kite systems.

5. WAC Bar
Patented Auto-Rotor-Leash
Prevents twisting of the safety leash around the depower loop during rotating jumps - The safety untwists on it's own.
Safety Options
Multiple quick releases allow fast deployment in dangerous situations. The FS rescue loop allows for an easy and immediate restart.
Pull Stop System (PSS)
Allows the kite to lay down and reduce any pull immediately after landing.
Auto Restart System
Automatically sets the kite in the relaunch position when the safety is pulled.
Gust Absorber
This cushion on the depower line absorbs gusts automatically.
Carbon Bar
Stiff, light and super strong.

6. Patented Jet Flap Technology
Prevents the kite from stalling and increases stability, especially during gusty wind conditions and extreme manoeuvres. Have more fun with control and safety.

7. Patented Air Inlet Valves
Provides for easy setup and fast inflation of the kite prior to launching and prevents air from escaping when sitting on the water.

8. Water Drainage System
The kite automatically drains any water accumulated while sitting on the water for extended periods.

9. High Durability
Because FS kites do not need leak prone air filled sections, to keep the kite's shape to fly.

10. Material - Dependent Durability
FS uses the best quality material, starting with the cloth and the lines, up to the small parts.

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