



*PARAGLIDERS*

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***HYBRID***

***SPORT***

Manual (EN)



**WARNING**

**Please read this Manual before using your Hybrid Sport!**

**NOTICE**

Swing Flugsportgeräte GmbH reserves the right to alter or add to the contents of this Manual at any time. You should therefore regularly visit our website :

**[www.swing.de](http://www.swing.de)**

where you will find additional information relating to your product and any changes to the Manual. There is further information about the Swing website in the section "Swing on the World Wide Web".

The date and version number of the Manual are given on the first page.

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# 01 Introduction

## 10 Safety Rules

### 1. The greatest risk with “Hybrids” is their simplicity

This can cause users to be tempted into forgetting or ignoring risks.

Exercise particular care if it starts to feel too “normal”.

### 2. Assess objective risks

**WEATHER:** Never fly if there is a *föhn* wind, storm or cold front. Your Hybrid Sport offers maximum safety, but the risks caused by extreme turbulence are unpredictable.

**AVALANCHE:** Only go into unstable areas if you have the appropriate skills/training and equipment (avalanche transceiver, snow shovel etc).

### 3. Inspect your equipment

Inspect your equipment thoroughly prior to each launch, and do not launch if you discover any damage. Adjust your equipment according to the conditions. We recommend that you always have a reserve chute.

### 4. Assess your own well-being

Never fly if you are unwell, whether you are physically unwell or have other concerns. Take a rest day - the mountains will always be there.

### 5. WHAT IF? - Plan B

Do not make any impulsive decisions. Take time to analyse the situation. Always make a plan B (e.g. choice of route, emergency landing areas etc).

### 6. ALWAYS CARRY OUT A SAFETY-RUN

Reconnoitre a new route by making a flight with sufficient height. Be on the look-out for potential obstacles. Ensure when flying near ground level that no third parties will be injured.

### 7. Twice the speed = four times the energy

Remember that small mistakes can quickly have fatal consequences.

### 8. Do not be afraid to speak out

if you feel that others are overestimating their abilities. Likewise, accept comments from others, even if it is unpleasant to acknowledge mistakes.

### 9. ANALYSE YOUR MISTAKES

Analyse any close-calls as if they had been actual accidents and learn the necessary lessons. Avoid a repetition, because next time it could be too late.

### 10. NO RISK – NO FUN, NO LIMIT – NO LIFE

Respect your limits and do not go beyond them just because you are with experienced pilots. Have the courage to say “enough”!

## What is the Hybrid Sport?

The Hybrid Sport is neither a speedglider nor a paraglider. It is both of these in one – it is a mini wing!

If you fly with trimmers closed, it has very good glide and it is similar to a paraglider in many respects.

If you open the trimmers or accelerate the Hybrid Sport, then there is a noticeable decrease in glide, its speed increases considerably and it sinks more when turning. It now has features which are similar to a speedglider, although more understated!

You, the pilot, decide how you would like to fly.

This Manual explains how to make the best use of its various features in a safe way.

## Manual

We recommend that you familiarise yourself with your new mini wing by reading this Manual carefully before your first flight. This will allow you to acquaint yourself with its new features, learn the best way to fly the mini wing in various situations, and explain how to get the best out of your mini wing.

Information in this Manual on design of the mini wing, technical data and illustrations are subject to change. We reserve the right to make changes without prior notification.

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### Special Text



#### DANGER

Sections of text headed “Danger” indicate a situation where there is imminent danger, which **will** in all probability lead to **death or serious injury**, if the instructions are not followed.



#### WARNING

Sections of text headed “Warning” indicate a potentially dangerous situation, which **may** lead to **death or serious injury**, if the instructions are not followed.



#### CAUTION

Sections of text headed “Caution” indicate a potentially dangerous situation, which may lead to **minor or slight injury**, if the instructions are not followed.



#### NOTICE

Sections of text headed “Notice” indicate possible **damage to property**, which may occur if the instructions are not followed.



#### TIP

Sections of text headed “Tip” give advice or tips which will make it easier to use your mini wing.

## Series of instructions

In this Manual, instructions which must be followed in a certain order are numbered consecutively.

- < Where there is a series of pictures with step-by-step instructions, each step has the same number as the corresponding picture.
- d Letters are used where there is a series of pictures in which a particular order need not be followed.

## Lists of parts

- Numbers circled in red refer to various parts of the item pictured. A list of the numbers and the part they are used to label follows the picture.

## Bullet points

This Manual uses bullet points for lists.

Example:

- risers
- lines

## Instruction Manual on the Internet

Additional information about your mini wing and any updates to the Manual can be found on our website at [www.swing.de](http://www.swing.de).

This Manual was current at the time of going to print. Prior to print, the Manual can be downloaded from Swing's website.

## Swing Flugsportgeräte and the environment

Protection of the environment, safety and quality are the three basic values of Swing Flugsportgeräte GmbH and have implications for everything we do. We also believe that our customers share our concern for the environment.

### Respect for nature and the environment

You can easily play a part in protecting the environment by practising our sport in such a way that there is no damage to nature and the areas in which we fly. Keep to marked trails, take your rubbish away with you, refrain from making unnecessary noise and respect the sensitive biological equilibrium of nature. Consideration for nature is required even at the launch site!

Paragliding is, of course, an outdoor sport – protect and preserve our planet's resources.

### Environmentally-friendly recycling

Swing gives consideration to the entire life cycle of its paragliders, the last stage of which is recycling in an environmentally-friendly manner. The synthetic materials used in a paraglider must be disposed of properly. If you are not able to arrange appropriate disposal, Swing will be happy to recycle your glider for you. Send the glider with a short note to this effect to the address given in the Appendix.

## 02 Safety



### WARNING

The safety advice given below must be followed in all circumstances. Failure to do so shall render invalid the certification and/or result in loss of insurance cover, and could lead to serious injuries or even death.

### Safety advice

All forms of aerial sport involve certain risks. When compared with other types of aerial sport, paragliding has the lowest number of fatal accidents measured according to the number of licensed pilots.

By contrast, speedriding and speedflying come very close to base jumping in terms of accident statistics. Speedriding and speedflying are associated with much greater risks than paragliding and must therefore be practised with even greater care.

However, few other sports demand such a high level of individual responsibility as paragliding. Prudence and risk-awareness are basic requirements for the safe practice of the sport, for the very reason that it is so easy to learn and practically anyone can do so. Carelessness and overestimating one's own abilities can quickly lead to critical situations. A reliable assessment of flying conditions is particularly important.

Paragliders are not designed to be flown in turbulent weather. Most serious accidents with paragliders are caused by pilots misjudging the weather for flying.

The equipment itself is extremely safe. In the type certification tests, all component parts of a glider must withstand eight times the load of normal flight. There is a three-

fold safety margin compared to the maximum extreme load occurring in flight. This is higher than the two-fold margin usual in aviation. Accidents caused by material failure are therefore practically unheard of in paragliding.

In Germany, paragliders are subject to the guidelines for air sports equipment and must not under any circumstances be flown without a valid certification. Independent experimentation is strictly prohibited. This Manual does not replace the need to attend training at a paragliding school.

A specialist must test-fly and inspect the mini wing before your first flight. The test-flight must be recorded on the mini wing information label.

Carry out your first flight with the mini wing on a training slope. For this flight and for all other flights, you must wear an approved helmet, gloves, firm shoes with ankle-support and suitable clothing. Only fly if the wind direction, wind speed and current and forecasted weather conditions guarantee a safe flight.

The Manual must be passed on to any new owner if the mini wing is sold. It is part of the certification and belongs with the mini wing.

The Hybrid Sport was developed and tested solely for use as a mini wing for foot-launch. Any use other than as intended is not permitted. Do not under any circumstances use the mini wing as a parachute.

Acrobatics are not permitted.

Observe the other specific safety advice in the various sections of this Manual.

## Safety notices

Safety notices are issued when defects arise during use of a glider which could possibly also affect other gliders of the same model.

The notices contain instructions on how the affected gliders can be inspected for possible faults and the steps required to rectify them.

Swing publishes on its website any technical safety notices and airworthiness instructions which are issued in respect of Swing products. We will also send you safety notices directly by email if you have registered your product (refer to "Product Registration" in the section "Swing on the World Wide Web").



### WARNING

The owner of a glider is responsible for carrying out the action required by the safety notice.

Safety notices are issued by the certification agencies and also published on their own websites.



Services such as RSS are also available which allow internet users to follow various websites and changes to them without having to access them

individually. This allows much more information to be followed than was previously the case. You should therefore regularly visit the safety pages of the certification agencies and keep up-to-date with new safety notices which cover any products relating to paragliding (refer to Appendix for addresses).

## Disclaimer and exclusion of liability

Use of the mini wing is at the pilot's own risk!

The manufacturer cannot be held liable for any personal injury or material damage which arises in connection with Swing mini wings. The certification and warranty shall be rendered invalid if there are changes of any kind (incl. mini wing design or changes to the brake lines beyond the permissible tolerance levels) or incorrect repairs to the mini wing, or if any inspections are missed (annual and 2-yearly check).

Pilots are responsible for their own safety and must ensure that the airworthiness of the glider is checked prior to every flight. The pilot should launch only if the mini wing is airworthy. In addition, pilots must observe the relevant regulations in each country.

The mini wing may only be used if the pilot has a licence which is valid for the area or is flying under the supervision of an approved flying instructor. There shall be no liability on the part of third parties, in particular the manufacturer and the dealer.

In terms of the warranty and guarantee conditions, the mini wing must not be used if any of the following situations exists:

- the inspection period has expired, or the inspection has been carried out by the pilot him/herself or by an unauthorised inspector
- the take-off weight is not within the permissible weight range
- there is rain or drizzle, cloud, fog and / or snow
- there are turbulent weather conditions or wind speeds on launch higher than 2/3 of the maximum flyable airspeed of the glider (varies according to the total take-off weight)

- the glider is used for aerobatics/extreme flying or flight manoeuvres at an angle greater than 90°
- the pilot has insufficient experience or training
- the pilot has incorrect or inadequate equipment (reserve, protection, helmet etc)
- the glider is used for winch-launching with a winch which has not been inspected or by non-licensed pilots and/or winch operators
- there have been modifications to the canopy, lines or risers which have not been approved

## Glider categories and guidelines

The certification agencies in Germany have developed guidelines which are based on many years of analysing paragliding accidents and on the experience of test pilots, flying schools, flying instructors and safety officers. These guidelines should help pilots to select the appropriate glider classification for their particular level of flying ability. The information below relates to the classification in EN/LTF-certification. There is also further information on the website of the relevant licensing body.

### EN/LTF certification

The Hybrid Sport does not have EN/LTF certification.

The Hybrid Sport has only a structural strength test certificate in terms of EN 926-1 (8g, incl. shock test).

## Description of flight characteristics

The Hybrid Sport is neither a speedglider nor a paraglider. It is both of these in one! If you fly with trimmers closed, it has very good glide and it is similar to a paraglider in many respects.

If you open the trimmers or accelerate the Hybrid Sport, then there is a noticeable decrease in glide, its speed increases considerably and it sinks more when turning. It now has features which are similar to a speedglider, although more understated!

You, the pilot, decide how you would like to fly.

## Target group

The Hybrid Sport is suitable for all pilots who like to fly dynamically. It is for pilots who enjoy playing with speed, centrifugal force and precision in flying.

The many different uses mean that the Hybrid Sport appeals to a very large and diverse target group. The Hybrid Sport can be used for:

- Thermalling
- Dynamic soaring
- Speedriding with skis
- Speedflying on foot
- Hike & Fly
- Easy ground-handling
- Easy freestyle

## Recommended flying experience

The Hybrid Sport is suitable only for good paraglider pilots who fly regularly. It is not for beginners or social pilots! Pilots should have flown at least 200 flights on their paraglider.

## Description of pilot skills required

You should have mastered the following skills on your paraglider, in order to be ready to be able to fly a Hybrid Sport:

- very good launch technique in various conditions and at different types of launch area
- very good landing technique and ability to flare the paraglider
- active flying style
- spiral dives
- medium wing overs or asymmetric spirals

You do not necessarily need to have knowledge and experience in speedriding in order to **fly the Hybrid Sport safely**. However, it will help you to **master the Hybrid Sport in all situations**.

## Suitability for training

The Hybrid Sport is not suitable for paragliding training. However, it can be used as a good introduction to Speedriding. Especially size 17 for heavier pilots.

## 03 Technical Description

### General layout illustration



Fig. 1: CAD drawing of Hybrid Sport

#### Hybrid Sport – Pure freedom

The Hybrid Sport is a revolution in the sports of paragliding and speedflying. It blends the two sports and allows pilots to switch from paraglider to speedglider at any stage during flight.

The latest expertise from the areas of paragliding and speedflying have been incorporated in the development of the Hybrid Sport. This allows a high dynamic level when flying with a very high level of passive safety.

The Hybrid Sport has a pure speedflying profile, which is extremely stable. However, the higher aspect ratio compared to a speedglider and the new 3-line concept allow much better performance, which in turn considerably reduces sink when turning. This makes thermalling possible and, for dynamic soaring, not much more wind is needed than with a paraglider.

The high performance also noticeably reduces the launch distance which is

otherwise usual for this wing-loading with a speedglider. The Hybrid Sport has very simple rising and inflation behaviour because of the nylon sticks in the leading edge. They also reduce the pack weight.

#### Line system

The Hybrid Sport has a revolutionary line concept. The Hybrid Sport was designed as a 3-liner, which in itself noticeably reduces line drag. The well thought-out suspension means that the Hybrid Sport has only two main lines per level. This means: 2 A-lines, 2 B-lines + stabilo lines and 2 C- lines. This gives the pilot a clear view when sorting lines which has not been possible before. Fewer lines also means there is less risk of the lines becoming knotted.



#### WARNING

The mini wing is delivered ex factory with the Maillon quick links secured using a strong thread-locking compound Loctite® to prevent unintentional opening. After service work, quick links which have been opened must be secured again against unintentional opening.



#### WARNING

The service intervals for the lines given in the Maintenance and Service book must be observed under all circumstances.



## WARNING

The revolutionary Hybrid Sport line concept with only two main lines per level means that an accident could result if one main line is broken. Using the Swing Spitfire as an example, even if one main line is broken, it is still possible to land safely.

## Risers

The risers specially developed for the Hybrid Sport make it possible to continue flying at speed by opening the trimmers. They also allow conventional acceleration using the speed bar. There is more information on which acceleration method is recommended for various circumstances in the section on “Speed system”.

## Technical information and materials

The Maintenance and Service book has detailed technical information, including take-off weight and design information. It also includes extensive information about the materials used.

## 04 Setting up the Hybrid Sport and test-flying

### Before the first flight



#### WARNING

A specialist must test-fly and inspect the mini wing before your first flight. The test-flight must be recorded on the mini wing information label.

During production, the Hybrid Sport goes through several quality control checks before finally undergoing an exact type certification test. Conformity with the reference specimen is checked and certified before it is delivered to the customer. Extreme care is taken in the manufacture of all patterns, lines and riser lengths. They show a high level of precision and should not be altered under any circumstances.



#### WARNING

Any changes or improper repairs to this mini wing shall render invalid the certification and warranty.

### Adjusting the main brake lines

The Hybrid Sport is delivered ex factory with a brake adjustment marked which complies with the test sample and which should not be altered. This adjustment is ideal. The brake lines are as short as possible so that the Hybrid Sport is able to react as quickly as possible. There could be dangerous implications if they are made shorter. There is no reason for you to alter the brake line length.

The main brake lines must be checked by an expert before the test flight, and must be fastened so that the mark is visible approx. 5mm above the knot.

### Factory setting

Correctly installed brake lines have about 10cm of feed. This is how far you must pull down the brakes before the trailing edge of the mini wing starts to move downwards and begins to brake. Note that the brake cascades already cause drag by their aerodynamic resistance.

Modern gliders such as the Hybrid Sport have less tolerance with regard to adjustment of the brake lines. It is therefore normally not necessary to alter the length.

If you do nevertheless adjust the brakes, under no circumstances should you go above or below the tolerance levels given in the Maintenance and Service book for the Hybrid Sport.

### Incorrect adjustment

If the brake lines are too long, the mini wing reacts slowly and is difficult to land. The brake lines can be adjusted during flight by wrapping them around your hands which will improve the flight characteristics. Adjust the brake lines to the correct length after you have landed. Changes to the braking distance should always be made in small increments of no more than 2 to 3cm and must be tested on a training slope. The left and right brakes must be adjusted symmetrically.

If the brakes are shortened, care must be taken that the mini wing is not slowed down in trim and accelerated flight (trimmers opened and speed bar in use) because of the brake lines being too short. Safety issues may arise and performance and

launch behaviour may deteriorate if the brake lines are shortened too much.



**WARNING**

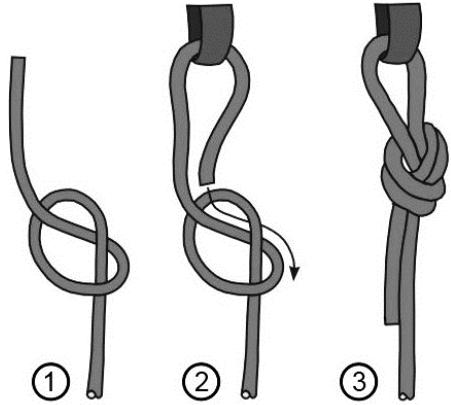
If the brake lines are too short, the following risks could arise:

- there could be an early stall
- the mini wing does not launch well and there is a risk of deep stall
- the mini wing exhibits dangerous behaviour in extreme flying

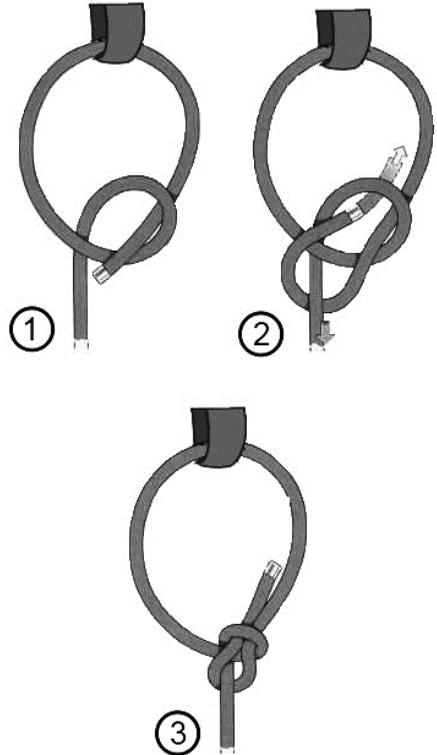
the trailing edge of the mini wing is braked in accelerated flight which, in an extreme case, could cause a frontal collapse

**Brake knots**

The overhead knot and bowline knot shown below are the most suitable for connecting the brake line to the brake handle.



**Fig. 2: Overhand knot**



**Fig. 3: Bowline knot**



**WARNING**

Ensure that only overhand or bowline knots are used and that they are tied correctly.

Take note that if a brake line knot comes undone on a dive turn before landing, the dive cannot be stopped. In most cases, this would lead to a hard landing with very serious injuries or death.

**Adjusting the brake handle**

The Hybrid Sport is fitted with Swing's Multigrip brake handles, which allows the stiffness of the grip area to be adjusted. The various options for stiffening the brake handles allow them to be adjusted to suit the pilot's particular preferences. There are 4 levels of stiffness possible using various combinations of the stiffening options. The pilot is able to choose the appropriate degree of stiffness by simply removing or inserting the various parts.

**Fig. 4:** How to insert and remove the stiffeners into Swing's Multigrip brake handle



Multigrip brake handle on delivery with both stiffeners



To remove the stiffeners, turn the Multigrip brake handle inside out and push the two small rods out through the opening



Multigrip brake handles after removing both stiffening rods. These are the various parts:

- 1 Firm stiffening (bar)
- 2 Soft stiffening (tube)
- 3 Multigrip brake handle without stiffening
- 4 Brake swivel
- 5 Main brake line

The procedure is the same to insert the stiffeners: turn the Multigrip brake handle inside out and push the two small rods into the handle again through the opening.

## Speed system



**Fig. 5:** Riser with open trimmers

The Hybrid Sport already has a high basic trim speed, but this can be increased considerably by using the additional speed system. It is particularly useful if there is a strong headwind, for valley crossings or to leave a dangerous area quickly.

The A-, B- and C-risers can be shortened/lengthened using the speed bar and/or the trimmers. This decreases the canopy's original angle of attack and the speed of the glider increases.

The Hybrid Sport's risers are designed in such a way that there is no risk caused if the speed bar system is used while the trimmers are open. It is therefore possible to use both at the same time. Nevertheless, there is no reason for doing this; forwards speed increases only slightly if the speed

bar is used as well when the trimmers are open.

The speed system must be correctly fitted and adjusted to ensure it operates smoothly during flight. Before first launch, the length should be adjusted to suit the pilot and the speed system should be checked.

The speed bar and the riser are connected by special Brummel hooks. Adjust the length to the speed system so that your legs are fully stretched when at maximum accelerated flight (the two riser pulleys next to each other), otherwise you may experience symptoms of fatigue in long flights. You should still be in a comfortable flight position even when the speed system is used to its full extent.

You will not be able to use the mini wing's full acceleration potential if the speed system is too long.



## WARNING

Do not make the speed system too short. The glider must under no circumstances be pre-accelerated as a result of the adjustment being too short.

Problems such as collapses or tucks have a more drastic effect with increased speed than in unaccelerated flight. It is generally strongly recommended that you do not use the speed system in turbulent areas and when flying close to the ground, because of the increased risk of collapse.

Fasten the speed bar to the harness before launch to avoid tripping over it when preparing to launch or taking off.

## Using the trimmers



### WARNING

There is a widely held opinion that a speedglider is at less risk of collapse if the trimmers are half or fully open – this is not correct! Trimmers should therefore always be kept closed in turbulent conditions. This applies equally to the Hybrid Sport.

The trimmers can be adjusted both during flight and also on the ground. The important point is that the trimmers are always symmetrical. If not, the Hybrid Sport will turn during flight towards the trimmer which is more closed.

If you are adjusting the trimmers on the ground, make sure to check they are firm by a strong pull on the D-risers. If not, one or both trimmers could unintentionally open during launch or flight! The straps from the trimmers begin to wear slightly with use, which could lead to them opening unintentionally.

If you are opening the trimmers during flight, pay attention to the following: the trimmers immediately open completely by pressing on the trimmer buckle. If this is not what you want, the trimmers must then be closed manually to the desired position.



### TIP

If you are adjusting the trimmers during flight, we recommend that you hold the brake handles and do not let them go. If you do, the brake handles could rise up and get caught in other lines.

## Recommended harnesses

The Brave II from Swing is recommended for use with the Hybrid Sport. Harnesses with a seat which is adjusted when paragliding are not recommended, because the Hybrid Sport reacts more sensitively to weight-shifting than a normal paraglider. If, e.g., a pilot using a harness with a seat-board leans towards the inside during a spiral dive, the Hybrid Sport could go into a stable spiral dive, which would not happen with a Brave II.

The speed bar on the harness is not absolutely essential, because the Hybrid Sport also has trimmers for acceleration. Bear in mind however that, the more the trimmers are open, the more acutely an accelerated glider reacts in the event of a collapse. A speed bar is therefore sensible, because a pilot can immediately ease off the speed in the event of a collapse.

Be aware too that the relative braking distance can also alter with the height of the attachment point. Please contact Swing or your Swing dealer if you have any questions about using your harness with the Hybrid Sport.

## Reserve

It is a mandatory requirement to carry an approved reserve for use in emergency situations where the mini wing fails and recovery is not possible, for example after colliding with another aerial sports craft.

In choosing a reserve, you should be careful that you remain within the specified take-off weight. The reserve is fitted according to the manufacturer's instructions.

## First flight

Carry out your first flights only during stable weather, and in a familiar area or on a training slope. Ensure that the launch place allows you to launch safely with a glide ratio of 5. You should steer gently and carefully to begin with so that you can become accustomed to the Hybrid Sport's reactions without stress. If you begin to roll unintentionally, brake on both sides 50% and remain in that position until the wing stabilises again. Only fly in a place with a large landing area which is free of obstacles. A weak to moderate headwind will make your first landings considerably easier.



### WARNING

Do not overestimate your own abilities. Do not allow the simplicity of the Hybrid Sport or the behaviour of other pilots to make you careless. Exercise particular care if it starts to feel too "normal".

## Recommended weight range

The Hybrid Sport must be flown within the permitted weight range, which is given in the Maintenance and Service book. The weight refers to total take-off weight: pilot, incl. clothing, glider, harness, helmet etc. Determine your take-off weight by weighing yourself with all of your equipment and your backpack.

You must choose the correct size of Hybrid Sport so that it covers your needs. The range of use for the Hybrid Sport depends greatly on its wing-loading. The correct size depends solely on your weight, unlike with a paraglider. Smaller does not mean better. Consider, therefore, exactly what you wish to do with the Hybrid Sport, and be certain what you are able and not able to do. Do not overestimate your abilities. The wing-loading table below should help you to choose the correct Hybrid Sport for you.

The general principle is that the higher the wing-loading, the more demanding and dynamic to fly the Hybrid Sport becomes.

### Wing-loading x suitability x pilot ability

Pilot level + suitability	paraglider pilots (soaring / thermal flying / Hike&Fly)				Experienced pilots (Hike&Fly / speed flying)			Speedrider Pilots (speed flying / speed riding)			Speedrider advanced level (speed flying / speed riding)			pros only	
	I		II		III			IV			V				VI
	60	65	70	75	80	85	90	95	100	105	110	115	120		
Take-off weight [kg]															
Hybrid Sport 15	4,0	4,3	4,7	5,0	5,3	5,7	6,0	6,3	6,7	7,0	7,3	7,7	8,0		
Hybrid Sport 17	3,5	3,8	4,1	4,4	4,7	5,0	5,3	5,6	5,9	6,2	6,5	6,8	7,1	7,4	
Hybrid / Hike 19	3,2	3,4	3,7	3,9	4,2	4,5	4,7	5,0	5,3	5,5	5,8	6,1	6,3	6,6	
Hybrid 22															
Hybrid 24															
Hybrid 26															

level	brief description of pilot skill level required
<b>I</b>	<p><b>Up to 4kg/m2: Suitable for all paraglider pilots, including beginners</b></p> <p>Flight behaviour is similar to a paraglider but it is easier to launch and land. Direct control travel. Normal flight speed. Very stable flight characteristics. Thermal flying and soaring quite possible with a little more wind.</p>
<b>II</b>	<p><b>Up to 5kg/m2: For very good and talented EN 1-2 or freestyle pilots</b></p> <p>Flight behaviour is more dynamic than with a paraglider. Glider dips considerably more in steep turns. Take-off distance is somewhat longer and landing is somewhat more difficult than with a paraglider, as there is less time for the landing sequence. Trim speed &gt;40km/h, &gt;50km/h with trimmers open. Landing speed slightly higher. Flight characteristics direct and dynamic. Still very good level of suitability for soaring and good for thermal flying. Also good for hike &amp; fly.</p>
<b>III</b>	<p><b>Up to 6kg/m2: For very good and talented 1-2 or freestyle pilots</b></p> <p>Flight behaviour is very dynamic. Glider dips considerably in tight turns. Extended take-off distance compared to the paraglider. Landing requires technique and ability. Trim speed &gt;45km/h, &gt;55km/h with trimmers open. Suitable to only a limited extent for thermals and demands active flying style. Ideal for strong winds and coastal soaring, speed flying and speed riding or hike &amp; fly in high alpine mountains with strong winds.</p>
<b>IV</b>	<p><b>Up to 7kg/m2: Only for advanced pilots with experience in speed flying, speed riding or with small acro gliders</b></p> <p>Very dynamic flight behaviour. Considerable loss of height in steep turns. Very demanding to launch and land. Recommended only for specific terrain. High trim speed &gt;50km/h, &gt;60km/h with trimmers open. Not suitable for thermal flying, hike &amp; fly: soaring in strong winds only with considerable experience. Considerable speed riding experience is required. Ski-launch highly recommended!</p>
<b>V</b>	<p><b>Up to 8kg/m2: Only for very experienced mini-wing pilots or advanced speed flyer or speed rider pilots</b></p> <p>For experts only! Flight behaviour is demanding and agile and requires a high level of pilot experience. Extreme loss of height in steep turns. Very high trim speed. Very demanding to launch and land. Considerable speed riding experience is absolutely essential. Ski-launch highly recommended!</p>
<b>VI</b>	<p><b>Above 8kg/m2: only for absolute professionals and generally not recommended</b></p> <p>This wing loading is no longer suitable for foot launch! Use the Spitfire speed rider for speed riding!</p>

## 05 Flying the Hybrid Sport

The Hybrid Sport was developed for advanced paraglider pilots who have regular flying experience. The Hybrid Sport is not suitable for social pilots. The basic types of flying described below should be second nature for such pilots, but have been included in this Manual for the sake of completeness.

### Laying out the mini wing and pre-flight check

Before launching, always check the following:

- Are there any tears in the wing or other damage?
- Are there any knots or tangles in the lines?
- Are the brake lines clear and attached firmly to the handle?
- Are the brake lines adjusted to the correct length?
- Are the quick links to the lines and risers closed and secured?
- Is the canopy dry?
- Are the risers and seams in good condition?
- Is the harness in good condition?
- Is the handle for the reserve chute secure?
- Trimmers adjusted to desired position and symmetrical?



#### WARNING

A careful pre-flight check is required for any type of aircraft. Make sure that you exercise the same level of care each time carry out the check.

Place the mini wing with its upper surface against the ground and spread it out so that the leading edge is slightly curved.

Carefully sort out all the rigging lines and make sure that there are no lines underneath the canopy, tangled or caught up in any way.



#### WARNING

If there are obvious folds in the glider because it has been tightly packed or stored away for a long time, then the pilot should carry out some practice inflations before first launch and smooth out the trailing edge a little. This ensures that the flow profile is correct during launch. It is particularly important in low temperatures that the trailing edge is smoothed out.

### 6-point check

The 6-point check is carried out immediately before launch to check once again the most important safety points. It should always be carried out in the same sequence so that nothing is overlooked. The 6 points are:

1. Is personal equipment correct (harness, carabiners, reserve, helmet) and are all straps done up?
2. Is the canopy arranged in a **half-moon** shape and are all the air-entrances open?
3. Are all the lines untangled and are any lines under the canopy?
4. Does the weather, in particular wind direction and strength, allow a safe flight?
5. Are the airspace and launch area clear?
6. Are the trimmers in the desired position?

## Launch

We recommend forward launching the Hybrid Sport if there is little wind. Pull up the wing with the lines stretched.

While the glider is rising, guide the A-risers evenly upwards in an arc, without shortening them. Avoid pulling hard on the risers. The Hybrid Sport launches very easily and is easy to control. It is important that the canopy is arranged in a half-moon shape, otherwise the wing will go into a “horseshoe” (rosette).

For a forwards launch without using the A-risers, we recommend using momentum to launch the Hybrid Sport and/or to start running with slack lines, in particular if the trimmers are closed. It is important that your hands follow the risers when launching, so that the Hybrid Sport is not braked during the ascent phase.

The Hybrid Sport is suitable for reverse-launching from wind speeds of 4m/s. The pilot turns around to face the mini wing with the updraft coming from behind. Pulling on the front lines makes the mini wing canopy start to rise above the pilot, as in a forwards launch. The pilot should turn around into the direction of flight when the canopy reaches its highest point, and can then begin to run and take off.

This method of launch makes it easier for the pilot to control the rising of the canopy and to carry out fine-tuning, so is therefore recommended in strong winds.



### WARNING

The pilot must work actively to keep the Hybrid Sport on the ground in higher wind speeds (from approx. 4 m/s), otherwise the glider may rise above the pilot unintentionally.

## Trimmer position on launch

In general, the Hybrid Sport should be launched with trimmers closed.

The only situation in which it would be sensible to open the trimmers by 3cm is if the launch site is very flat and then abruptly falls away (an extreme example would be a cliff launch) so as to guard against the canopy possibly “hanging” behind the pilot. This can be particularly dangerous if the launch site suddenly drops down. We definitively advise against launching from this type of area.

Launching with open trimmers also has the following disadvantages:

- More space needed for launch or run-up
- Increased risk of collapse
- Worse glide ratio
- More sink after become airborne or dive

Launching with open trimmers is also sensible with completely laminar strong wind, as is found, e.g., on sand dunes in coastal regions.

## Launching on skis?

Launching on skis is possible and reasonable primarily with high wing-loading (from Level V) but it is associated with a higher level of risk with the Hybrid Sport because it has only 2 A-lines. The sharp edges of the skis quickly damage the lines and, if one were to be cut through, a large part of the surface area would fall away. You must therefore pay particular attention on ski launches. Swing recommends using the Spitfire speedrider for frequent speedflying.

**WARNING**

Ski launches with the Hybrid Sport are associated with a higher level of risk because it has only 2 A-lines. The sharp edges of the skis quickly damage the lines and, if one were to be cut through, a large part of the surface area would fall away. You must therefore pay particular attention on ski launches.

**Level flight**

When the brakes are open, the Hybrid Sport's flight is stable and level. The brake lines can be used to adjust the speed according to the flight situation, to ensure the optimum level of performance and safety.

The best glide speed in calm air on the Hybrid Sport is achieved with the brakes pulled about 5-10%. Minimum sink with the Hybrid Sport is reached by pulling approx. 10 cm more of brake. If the brakes are pulled more, the sink does not reduce any further, the control pressures increase noticeably and the pilot reaches minimum speed.

**WARNING**

Flying too slowly close to stall speed increases the risk of an unintentional asymmetric or full stall. This speed range should therefore be avoided and used only on landing.

**Turns**

With the Hybrid Sport, Swing has developed a mini wing which reacts immediately to steering input and is extremely responsive. The Hybrid Sport performs best in turns when it is flown with sufficient speed and

weight-shifting. Too much braking increases the sink rate.

The Hybrid Sport has extremely low negative tendency, so it can be turned by carefully pulling the inside brake line even in a tight area.

If the brakes are applied more, the bank attitude increases and the glider will fly a fast turn increasing in steepness, which will eventually become a spiral dive (further information on this is in the section "Spiral Dive").

**Thermalling**

Thermalling with the Hybrid Sport is somewhat more demanding than with a traditional paraglider because of the reduced surface area. To reduce the sink rate in turns, Swing recommends flying turns without support from the brakes through weight-shifting.

Exercise care when flying near hillsides! If you turn towards the hillside and fall out of the thermal, the Hybrid Sport will dive considerably more than a paraglider!

**Rapid descent methods**

In many flying situations a very rapid descent is necessary to avoid a dangerous situation, e.g. the upcurrent from a cumulus cloud, an approaching cold front or a storm front.

The small surface area means that rapid descent is much easier compared to a traditional paraglider.



## WARNING

B-Stall and “big ears” on the Hybrid Sport are **prohibited!**

There is a high risk of twist with these manoeuvres because the surface area is very small!

A careful spiral dive is safer and more effective as a rapid descent method. (Refer to “Spiral dives”)

If there is a strong headwind, we recommend flying in a slight pendulum flight path against the wind to increase sink. However, it is always better to fly rapid circles or even a spiral dive if there is no problem with drift.

## Spiral dives

The spiral dive is the most effective method for making a rapid descent, and can allow sink rates of up to 30 m/s to be reached. It is suitable where there is a high ascent rate and little wind.

The Hybrid Sport moves fluidly from rapid turns into a spiral dive. The Hybrid Sport does not “bite into” it. Tight turns are usually sufficient to reduce height effectively. The Hybrid Sport can remain stable in a spiral dive when weight-shifting to the inside and this can be much easier using harnesses with seat-boards than harnesses without seat-boards. If this happens, it may be necessary to brake the outer side of the wing and/or weight-shifting to the outside to recover from the spiral.

### Starting the manoeuvre

Begin the spiral dive whilst flying at full speed by flying a turn which becomes tighter and tighter and by using weight-shift to the inside (refer here to “Turns” also).

The bank angle and sink rate are controlled by carefully applying or releasing the inside brake.

Look down before and during the spiral dive to maintain a constant check on your distance from the ground.

### Recovery

Recover from the spiral dive slowly and steadily over several turns. The inside brakes are gradually released. If the brakes are released too quickly, the increased speed can cause the wing to climb, and then to dive, become unsettled or partly collapse. Recovery can be assisted by braking lightly on the outside.



## WARNING

In the spiral dive, very high turn speeds can be reached with an increase in acceleration due to gravity (up to over 6g), so exercise care when attempting this manoeuvre. Take note of the following:

- Do not continue the spiral dive for too long: it could cause a loss of consciousness.
- Always maintain ground clearance of 150 – 200m.

Pay attention to the considerable loss of altitude.

## Landing

When landing the Hybrid Sport, you must whenever possible land from full trim speed. Avoid using the brakes during the final approach. Gentle braking improves the glide performance, if you are still too high, you are better to fly flat S-turns. Prepare for landing by making a straight approach flight

into the wind and allow the mini wing to decelerate at trim speed. At 1m above the ground, pull down the brake lines as far as possible, so that the wing has been fully braked just before reaching the ground. To avoid rising up again just before touch-down, pull the brake lines carefully.

Bear in mind that all aspects of the landing circuit must be flown higher than with a traditional paraglider because the Hybrid Sport is not a high performance glider.

## Landing with open trimmers

Land with open trimmers only if it is completely calm and if you are certain that you cannot expect to encounter any turbulence. As with all paragliders, the risk of collapse with the Hybrid Sport is greater in accelerated flight. A collapse on final approach can be fatal. The trimmer adjustment has little influence on landing speed provided that the wing is flared correctly.

Avoid landing from a sharp turn or making rapid turns before landing because of the associated pendulum motion and the high sink.



### WARNING

Always fly with sufficient speed when you are near the ground (well above stall speed) to avoid an unintentional stall.

## 06 Types of use

The Hybrid Sport was developed to be a versatile paraglider or mini wing. It is suitable for thermal flying, soaring, speedflying, speedriding, Hike & Fly and ground-handling.

The Hybrid Sport is not suitable for acrobatics.

Similarly, Swing recommends against using the Hybrid Sport for winch launch or motorised flight! Nor is the Hybrid Sport a parachute!



### WARNING

Any type of acrobatic manoeuvre at all on the Hybrid Sport is contrary to law and illegal. The pilot would be risking his/her life. Acrobatics involves a risk of unpredictable flight attitudes, which could lead to damage to material and structural failure.



### DANGER

The Hybrid Sport is not a parachute! It should never be opened in free fall.



### DANGER

Any manoeuvres associated with stall must not be flown with the Hybrid Sport. These manoeuvres are associated with unpredictable flight attitudes and risks because of the small surface area.

## Tandem paragliding

The Hybrid Sport must not be used in tandem paragliding.

## Aerobatics

In Germany, it is prohibited to perform aerobatics using a mini wing, which under German law is included under the term "aerial sports equipment" - *Luftsportgerät*. Aerobatics is defined under current regulations as flight manoeuvres at an angle greater than 135° along the longitudinal (roll) axis or lateral (pitch) axis.

The Hybrid Sport was not developed or tested for aerobatic use.

## 07 Dangerous situations and extreme flying

### Dangerous situations

Pilot error, extreme wind conditions or turbulence which goes unnoticed by the pilot for too long may leave the mini wing in an unusual flying position, requiring special reaction and skills on the part of the pilot. The best way to learn how to react calmly and correctly in a serious situation is to attend safety training, where you will learn how to manage extreme situations under the guidance of a professional.

Ground-training is another safe and effective method of familiarising yourself with your mini wing's reactions. Launch can be practised, as can smaller flying manoeuvres.

Any pilot who flies in turbulent conditions or who makes an error in handling the mini wing is at risk of getting into an extreme situation. All of the extreme flight figures and flight attitudes described here are dangerous if they are carried out with inadequate knowledge, without the right safety altitude or without training.



#### WARNING

Swing recommends against using the Hybrid Sport to practise extreme flight attitudes, because the smaller surface area can quickly become too demanding for the pilot and there is a high risk of twist.



#### DANGER

The Hybrid Sport is not a parachute!  
Never use the Hybrid Sport for free fall openings.



#### WARNING

Always keep within the recommended operating limits. Avoid aerobatics and extreme loading such as spirals with "big ears". This will prevent accidents and avoid over-loading the structure of the mini wing.

NEVER fly with open trimmers in turbulent conditions, always keep enough distance from rock faces and other obstacles. Time and sufficient altitude are needed to recover from extreme situations.

Deploy your reserve if the corrective manoeuvres described in the following sections do not return the glider to a controllable flying position or if there is not enough altitude for correction.

### Glider collapse

#### Asymmetric collapse

Asymmetric collapses are caused by the stagnation point moving to the trailing edge of the glider. A negative angle of attack makes part of the canopy collapse and tuck under, and the glider may plunge down, turn away or spin. Because of the small surface area and the speed with which it turns, there is a chance of becoming twisted.

A pilot flying the Hybrid Sport must be in a position to counter-steer actively on a side collapse in order to maintain direction. Any pilot who does not feel able to do this should not fly the Hybrid Sport.

## Recovery

Should an asymmetric collapse occur, counter-brake slightly on the side of the glider that is still inflated to stop it turning away and to stabilise it, until the mini wing flies straight ahead again. With large asymmetric collapses, it is important to counter-steer carefully so that the glider does not stall completely and go into a full stall.

The part of the glider which has collapsed generally re-inflates automatically but this can be assisted by applying light brake pressure on the collapsed side (but not frantic “pumping”) while counter-steering on the opposite side. Make use of the full braking distance.

Following a very large collapse of more than 70%, the wing-tip of the collapsed side may become trapped in the glider lines. Here too counter-braking and weight-shifting must be used to stop the mini wing from turning away. The trapped end can generally be opened by a short, fast pull on the brake lines or by pulling on the separate stabilo lines. The very low aspect ratio of the Hybrid Sport means that there is minimal risk of its wing-tip becoming trapped.



### WARNING

Counter-steering too strongly on the inflated side of the glider can result in a stall and to further uncontrolled flight manoeuvres (cascade of events).

## Front stall

A negative angle of attack can also cause part or all of the leading edge of the glider to collapse.

## Recovery

The Hybrid Sport will normally recover quickly and automatically from a front stall, but re-inflation can be assisted by light symmetrical brake input. In the case of extreme front stalls across the entire wing depth, the Hybrid Sport may fly skewed. This creates a risk of twist

## Types of stall

When a mini wing flies through the air, a laminar and turbulent boundary layer is created. Extremely dangerous flight configurations can result if the laminar boundary layer is interrupted, with practically the entire airflow along the top surface braking away. This happens in particular when the angle of attack is too great.

There are three different types of stall with mini wings, which are described below.



### WARNING

Full stall and spins are manoeuvres which can be fatal if recovery is not correct. These manoeuvres should therefore be avoided. However, it is important to learn how to recognise the indications that a glider is about to stall so that you can take immediate action to prevent it.



### DANGER

Even pilots who have mastered full stall and spin on a normal paraglider should not carry out these manoeuvres on the Hybrid Sport. These manoeuvres are extremely demanding because of the small wing area.

## Deep stall

Mini gliders can go into a deep stall for a variety of reasons: brake lines too short (no slack), old or damaged glider material which therefore has increased level of permeability, altered trim/line length and changes to profile characteristics caused by moisture (e.g. flying in rain). There is a particular tendency to stall if the wing-loading is too low.

In a deep stall, the airflow from the front reduces and the glider goes into a stable flight attitude without forward momentum. The mini wing sinks almost vertically at 4-5m/s and there is noticeably less flight noise.

### Recovery

Immediately open the trimmers fully to end the full stall.

With trimmers open, remain in an upright position and push the A- and B-risers in the direction you are flying, so as to shorten them by 5-10cm, or use the speed bar.

vertical descent with a sink rate of approx. 8m/s.

### Recovery

Fully release the brakes within 3 seconds (count 21, 22, 23). If the brakes are released too slowly, the mini wing may spin. The spin stops automatically when the brakes are released completely.



## DANGER

If the canopy has gone back during the full stall, the brakes must be held down, otherwise the canopy may surge forward and, in an extreme case, end up underneath the pilot. Hold the brakes down until the canopy is above you again.



## WARNING

After you have landed, the glider and the length of the lines must be checked before the wing is next flown.

## Full stall

The full stall happens when the mini wing partially deflates and loses its arched shape. It is triggered when the maximum possible angle of attack is exceeded. The most common cause is going below the minimum speed or flying near the minimum speed combined with the effects of turbulence.

In full stall, the mini wing loses its forwards travel, surges backwards and deflates. If the brakes are held down, the canopy comes up over the pilot again. The result is an almost

## Spin

The spin is a stable flight attitude, in which one side of the mini wing stalls, while the other side continues to fly forward. The mini wing rotates around its stalled side.

### Recovery

To recover from the spin, the pilot must quickly release the brakes. The stalled side of the wing will then pick up speed. Depending on recovery and the dynamic of the circular motion, one side of the canopy may shoot forwards and suffer an asymmetric collapse. If the pilot suspects that the glider has unintentionally been put into a spin, the brake which has been pulled down too far must be released immediately.



## WARNING

If the spin does not stop, check whether you have released the brakes fully!

## Emergency steering

If for some reason the brake lines are not working, e.g. if the knot on the brake handle has come undone or a brake line is defective, the rear risers can be used to steer and land the Hybrid Sport.

In this case, stall happens more quickly and the pilot must compensate for the changed flight behaviour by pulling carefully on the risers. Swing recommends using only weight-shifting to steer in this situation. Carefully and evenly pull the back risers only on landing.

## Other tips for dangerous situations

### Stalling in rain

In general, there are two reasons why a mini wing may go into deep stall in rain:

1. The first risk lies in the fact that the canopy weight increases if a glider is flown in rain for any length of time. The centre of gravity and angle of attack then shift, which can result in airflow separation/stall. It is relevant here that if a glider absorbs more water (as older gliders do because they lose their water-repellent coating over time) and is closer to the deep stall limit because of its design and age, less water absorption and thus weight increase will put the glider into deep stall.

2. When there is rain, or when flying in fog/cloud, there can be so many water droplets on the top surface of a glider that almost the entire upper surface is affected but, even so, the drops “bead” so the surface is not wet through. This makes the top surface so “rough” in texture from the

drop formation that the airflow over the top of the wing separates from the surface. This phenomenon has been known for some time from hang-gliding and gliding. With new gliders, the droplets are absorbed less quickly by the fabric. Thus, the newer a glider is, the greater the number of droplets caught on the top surface and the bigger those droplets are, the greater the risk that there could be airflow separation. These conditions could be recreated by practical tests and in computer simulations, but they occur very rarely.

In both of the above situations, the control travel and braking distance first reduce and then the deep stall is caused, mostly by alteration of the brake travel or angle of attack, e.g. by a gust or thermal.



### WARNING

Flying in extremely humid weather or in rain is outside of the operating limits of the glider. If you are not able to avoid flying in rain, please observe the following:

- it is advisable to open the trimmers fully during and after the rain
- use no brake input or as little as possible
- the control travel reduces
- avoid tight turns (or using the brakes), especially in the final approach. If conditions allow, you should also fly slightly accelerated in this phase and, if possible, open the trimmers half-way or use the speed bar until just above the ground (then release the speed bar only slowly)
- avoid large angles of attack and the possible early stall near the ground

## Advertising and adhesives

Always make sure before attaching advertising to the glider that the adhesive planned will not alter the glider's flight behaviour. If you are in doubt, we recommend that you do not attach the adhesive.



### WARNING

Attaching adhesives to the glider which are large, heavy, or made of unsuitable material may result in revocation of the certification.

## Overloading

The glider structure is put under high levels of strain in particular on extreme flight manoeuvres, rapid descent methods (spiral dives) or prohibited aerobatic manoeuvres. They considerably accelerate the aging process of the structure and should therefore be avoided.

The glider must be inspected earlier than is usually the case if it has been put under more than the usual degree of strain.

## Sand and salt air

In many cases, sand and salt air cause the lines and fabric to age much more rapidly. If you often fly near the sea, the glider should be inspected more frequently than normally required.

## Temperature range

Temperatures under  $-10\text{ }^{\circ}\text{C}$  and over  $+50\text{ }^{\circ}\text{C}$  can make the mini wing unfit to fly. The manufacturer's warranty will lapse if the glider is used outside of this temperature range.

## 08 Storing and looking after the mini wing

### Storing the mini wing

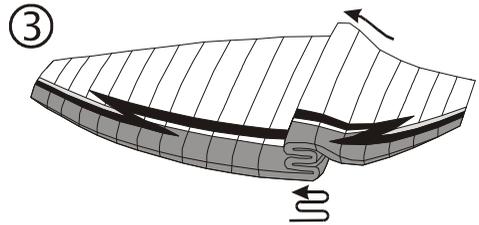
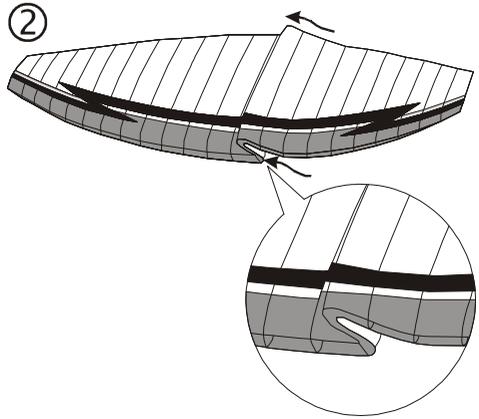
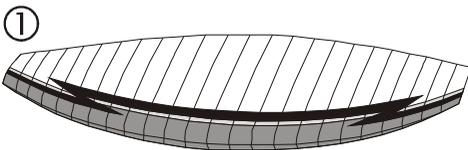
#### Packing the mini wing

Fold up the Hybrid Sport as shown in steps 1- 4. The leading edge reinforcements (rigid systems) on the front edge are placed on top of each other to avoid bending or misshaping them. This method of packing ensures that the leading edge is treated carefully, which will increase the wing's life, performance and launch behaviour.

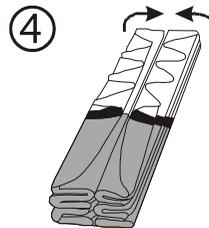
If the reinforcements have been bent or misshapen, they distort more easily during flight, creating an altered air inflow which can lead to a loss in performance and changes in flight behaviour.

The leading edge reinforcements also perform an important function on launch. Therefore, the less they have been bent, the more easily the glider will inflate and launch.

**Fig 6:** Steps 1 - 4 show the correct and careful way in which to fold up the Hybrid Sport



Vary slightly the final step of packing up ④, so that it is not always the middle cell which is bent. Use the neighbouring cells as well from time to time to increase the life of the fabric, particularly in the middle part.



When you are completing the final part of packing, we recommend that you put the internal protection bag under the glider to minimise abrasion on the ground.

## Storage and transport

Even if your mini wing was completely dry when it was packed up after the final flight of the season, for long-term storage you should if possible take it out of the backpack and spread out the canopy a little in a clean, dry place away from direct light. If you do not have the space to do this, then open the backpack, internal bag and belt as much as possible and avoid compressing the wing during storage. It must be stored at a temperature between 10° and 25° C and in relative humidity between 50 and 75%.

Make sure too that the mini wing is not stored in a place where animals such as mice or cats could use it as a place to sleep.

Do not store the mini wing near any chemicals. Petrol, for example, causes the material to disintegrate and can cause considerable damage to your mini wing. When your equipment is in the car boot, keep it as far away as possible from any spare petrol cans or oil containers.

The Hybrid Sport should not be exposed to extreme heat (e.g. in the boot of the car during summer). The heat may cause any moisture present to be pressed through the fabric, thereby damaging the coating. High temperatures accelerate the process of hydrolysis, particularly when combined with moisture, which damages fibres and coating.

Furthermore, the Dyneema lines used can be damaged in temperatures above 70° C.

Do not store your mini wing near radiators or other heat sources.

Always transport your mini wing in the special inner bag and use the backpack provided for the rest of your equipment.

## Looking after the mini wing

### Fabric

Swing uses a specially developed polyamide fabric for the Hybrid Sport which has a high-quality coating for improved UV resistance, colour fastness and air permeability. This fabric undergoes rigorous laboratory tests and was tested for several months under extreme conditions and heavy use in flight.

Care is essential to ensure that the fabric and wing remain durable and retain their qualities. The wing should therefore be protected from unnecessary UV light. Do not unpack your Hybrid Sport until immediately before flight and pack it up straight after landing. Modern paraglider fabrics have better protection against the sun, but UV rays in particular are still one of the decisive factors in how the fabric ages. The colours will fade first and then the coating and fibres will begin to age.

When the Hybrid Sport is manufactured, the side of the fabric with the coating is kept to the inside. This provides relatively good protection from damage for the coating which is of key importance to the fabric's features. When choosing a place to launch, try to find somewhere which is smooth and free of stones and sharp objects.

Do not stand on the glider. This weakens the fabric, especially if it is on a hard or stony surface. Pay attention to the behaviour of spectators at the launch site, especially children: do not hesitate to draw their attention to the sensitive nature of the fabric.

When you are packing up your mini wing, make sure that there are no insects trapped inside. Many insects produce acids when they decompose, which can cause holes in the fabric. Grasshoppers make holes by biting through the fabric and also excrete a dark liquid which stains. Keep animals away

when you are packing up. Insects are not attracted by any particular colours, contrary to what is commonly believed.

If the glider gets wet or damp, it should be dried as soon as possible in a well-ventilated room (but out of the sun). It may take several days before the canopy has dried completely because the fibres absorb water. Mould may form if the mini wing is stored wet and the fibres may rot, particularly when it is warm. This can make the mini wing unsuitable for flying within a short time.

A brand-new glider will often be compressed when delivered. This is solely for the initial delivery and the glider should not be compressed in such a way again. Do not pack your glider too tightly after use and, even though it is very comfortable, never sit on the backpack with the glider inside.

If salt water gets on the glider, it should be rinsed immediately in fresh water (refer to the section “Cleaning”).

## Lines

The Hybrid Sport has various different high-quality and accurately manufactured lines which have been selected according to the load and area of use. You should also protect the lines from unnecessary UV light because, as with the fabric, UV light in particular will weaken the lines.

Dyneema lines, which are used for the Hybrid Sport, are very temperature-sensitive and can be permanently damaged at temperatures above 75°C. Therefore your glider should never be stored in a hot car especially during summer.

Be careful that there is no abrasion caused to the coating on the lines by rubbing, particularly when ground-training with crossed risers.

Do not walk on the lines after the glider has been spread out and watch out for spectators or skiers who may inadvertently go over the lines.

When you are packing up the glider, be careful to avoid putting any unnecessary kinks in the lines and use only the overhand knot or bowline knots described for the brake lines.

## Cleaning

If you do have to clean the glider, use only lukewarm fresh water and a soft sponge. Use a weak soap solution for stubborn stains, and then rinse it out carefully and thoroughly. Leave the glider to dry in a place which is well-ventilated and in the shade.



### NOTICE

Do not under any circumstances use chemicals, brushes, rough cloths, high-pressure cleaners or steamers to clean the glider, as these can damage the fabric coating and weaken it. The glider becomes porous and loses braking strength.

Do not under any circumstances put the glider in the washing machine. Even if washing powder is not used, the glider would be badly damaged by the mechanical action of the machine. Do not put the canopy into a swimming pool - chlorine will damage the fabric. If you have no choice but to rinse the glider, e.g. following a landing in the sea, gently wash it down inside and out with fresh water. Frequent rinsing accelerates the aging process.

## 09 Repairs, Inspections and Warranty

### Type designation

Swing mini wings have an exact identification on the underside of the stabilo lines or on the centre rib, which is obligatory for all paragliders. The information required is set out in the airworthiness requirements.

It is helpful to provide the type designation and serial number of the mini wing if you are contacting your Swing dealer with any queries or ordering replacement parts or accessories, to ensure accurate identification.

### Repairs

#### Swing workshops

All repairs and servicing should be carried out by a Swing-authorised workshop or directly by Swing. Swing workshops have trained staff, original Swing parts and the necessary know-how, all of which will ensure top quality.

#### Small repairs to the glider

You can repair small tears in the wing yourself using self-adhesive sail material, provided that the tears are in places which do not bear heavy loads, are not at the seams and are no bigger than 3cm.

Replacement lines for the Hybrid Sport can be ordered direct from us online at:

[www.swing.de](http://www.swing.de) → Service → Line service

### Regular inspections

The following parts and materials must be inspected regularly for damage, abrasion and correct operation, e.g. after landing:

- Risers, quick-links, trimmers
- Lines
- Fabric

#### Lines

Measuring the length of the lines is part of the regular mini wing inspection. The lines must be measured with a load of 5kg, in order to ensure reproducible results for a comparison with the lengths in the check sheets. The line lengths for the Hybrid Sport are listed in the Maintenance and Service book.

The lines have a considerable influence on flight behaviour. Correct line length and symmetry are also important for performance and handling. Swing therefore recommends an inspection every 50 to 100 hours or once a year.

Lines age and lose strength even if the mini wing is used infrequently or not at all. This can affect the safety and function of your mini wing. Signs of wear are slight bumps or changes in flying characteristics. The lines must then be replaced immediately. Use only inspected and approved lines, which can be obtained through Swing.



## WARNING

A damaged line can result in loss of control of the glider. Always replace lines which are damaged.

If you need to replace damaged or worn-out parts, use only original parts or approved parts from the manufacturer.



## DANGER

Do not under any circumstances use knots to shorten the lines. Any knot will weaken the line considerably and may cause the line to break in case of high load.

The overhand knot and bowline knots described are permitted only for connecting the main brake lines/brake handle.

## Inspection

### General

Swing's service programme as set out in the Maintenance and Service book should be followed so that the same high level of flight safety, operational safety and reliability is ensured for your mini wing in the future as well.



## NOTICE

Read the Maintenance and Service book and follow the terms therein to ensure the validity of Swing's warranty, the glider's certification and insurance cover.

Failure to observe the inspection periods shall render invalid the certification and warranty. A properly completed logbook with details of all flying and training will help you to comply with these periods.

There is additional information on inspections in two separate booklets, both of which form part of this Manual:

1. Inspection information (required only in Germany and Austria), and
2. Maintenance and Service book (one booklet for each size and model).

These can be downloaded from our website at:

[www.swing.de](http://www.swing.de) → Products → Hybrid Sport

### Inspection periods

In Germany, the Hybrid Sport must be inspected as follows (check the situation in your country):

Annually or after 100 hours of use (whichever occurs first). Ground handling time must be at least doubled when calculating the total hours of use.

A regular visual inspection of the lines must be carried out in the case of a high number of ski launches.

### Validity of inspection

It is very important that your mini wing is serviced at the required intervals throughout its entire life. In order to benefit from Swing's warranty:

- you must have your mini wing inspected by Swing or an inspection agent authorised by Swing
- the documentation and the result of the inspection must be clearly identifiable (date and place / name of the inspector) and be entered near the glider information/certification sticker.

## Inspection by the pilot

Under § 14 para. 5 of the German Aeronautical Products Investigation Order (LuftGerPV), pilots in Germany are able to carry out the inspections themselves or appoint a third party to do so (e.g. manufacturer/importer), provided that the requirements are all fulfilled. However, if this is done, the liability and warranty of Swing Flugsportgeräte GmbH will lapse.

The DHV recommends that inspection is carried out by the manufacturer/importer or by an inspection agent authorised by it and approved by the DHV.

The manufacturer must be notified immediately of any defects in the product, variations or changes in flight behaviour and any warranty claims. If necessary, the glider or other Swing product must be sent to Swing Flugsportgeräte GmbH for inspection.

Swing generally includes all email addresses provided in warranty cards in its distribution list. If you only wish to register for the warranty and do not wish to receive any further safety and information email messages, please do not give your email address on the warranty card.

## Warranty

Swing offers a warranty for the Hybrid Sport of either 3 years or 300 hours of use, whichever comes first.

Swing's warranty is a comprehensive service package, which fulfils high standards for customer service and customer care. The terms of the warranty are in the enclosed warranty card. You must register your mini wing or other Swing product in order to be able to rely on the warranty. You are able to complete the warranty card and post it to Swing or register quickly and easily online. Go to the Swing website:

[www.swing.de](http://www.swing.de) → Service → Online warranty

Complete the registration within 14 days after purchasing the mini wing. If this is done online, you will receive a confirmation email. If you do not have an email address, enter 'info@swing.de' in the mandatory field. Registrations by post or without a personal email address will be recorded by Swing but will not receive confirmation. We therefore recommend that you register online with an email address.

## 10 Swing on the World Wide Web

### Swing website

Swing has a comprehensive website, which provides additional information about the Hybrid Sport and many other issues related to paragliding. Swing's website is the first port of call for Swing's worldwide following:

[www.swing.de](http://www.swing.de)

On Swing's website, you will find an extensive range of accessories for your Hybrid Sport, useful products for pilots, as well as additional information and accessories for your mini wing.

You will also find links there to other services and websites:

- Product registration
- Swing's Online Shop
- Facebook, Twitter & youtube

These websites and their content are provided for your use. The content of Swing's websites has been made available for your use on an "as is" and "as available" basis. Swing reserves the right to alter the websites at any time or to block access to them.

### Product registration

Registration of Swing mini wings is easy and gives you many advantages. In addition to important safety notices, you will receive advance information about, e.g. new products, upgrades, events and special offers.

Registration is a prerequisite for a valid warranty (refer here also to the section "Warranty"). In addition, Swing sends any safety notices and information for the

registered product immediately to the email address submitted. Your email address will not be provided to any third parties.

### Swing-Online Shop



At Swing's Online Shop you are able to obtain directly from Swing the full range of mini wing accessories, clothing and accessories and reserves. It is easy to place an online order and payment is made by credit card or Paypal.

### Facebook, Twitter & youtube



Swing is very active with the new media of Facebook, Twitter and youtube and has various websites which are updated daily on various topics related to aviation and Swing products.

### Paragliding

[www.facebook.com/pages/Swing.Paragliders](http://www.facebook.com/pages/Swing.Paragliders)  
<http://twitter.com/swingminiwing>

### Speedgliding

[www.facebook.com/SwingSpeedflyingTeam](http://www.facebook.com/SwingSpeedflyingTeam)  
<http://twitter.com/SSTSpitfire>

### Swing TV



On Swing TV, Swing puts official video footage and footage by pilots, under these categories:

- Paragliding
- Speedflying
- Accessories
- Video footage by pilots

[www.youtube.com/user/SwingParagliders#/a/u/0/1\\_T7QrzaEtU](http://www.youtube.com/user/SwingParagliders#/a/u/0/1_T7QrzaEtU)

# 11 Appendix

## Addresses

### Swing Flugsportgeräte GmbH

An der Leiten 4  
82290 Landsberied  
Germany  
Tel.: +49 (0) 8141 3277 - 888  
Fax: +49 (0) 8141 3277 - 870  
Email: info@swing.de  
www.swing.de

### Paraglider recycling

Swing Flugsportgeräte GmbH  
- Recycling Service -  
An der Leiten 4  
82290 Landsberied  
Germany

### DHV

Miesbacher Str. 2  
Postfach 88  
83701 Gmund am Tegernsee  
Germany  
Tel.: +49 (0) 8022 9675 - 0  
Fax: +49 (0) 8022 9675 - 99  
Email: dhv@dhv.de  
www.dhv.de

### EAPR

European Academy of Parachute Rigging  
Marktstr. 11  
87730 Bad Grönenbach  
Germany  
Tel: +49 (0) 8334 - 534470  
Fax: +49 (0) 8334 - 534469  
Email: info@para-academy.eu  
www.para-academy.eu

### DULV

Mühlweg 9  
71577 Großerlach-Morbach  
Germany  
Tel.: +49 (0) 7192 93014 - 0  
Email: info@dulv.de  
www.dulv.de

## Versions

**Version: 1.0**

**Date: 06.09.2011**

First version of the Instruction Manual

## Owners

<b>My glider:</b>	
<b>Model:</b>	
<b>color:</b>	
<b>Serial number:</b>	Hy ___ - ___/___/___ - ___/___/___/___

<b>1. Owner</b>	
<b>Name:</b>	
<b>Street:</b>	
<b>City:</b>	
<b>Telephone:</b>	
<b>Email:</b>	

<b>2. Owner</b>	
<b>Name:</b>	
<b>Street:</b>	
<b>City:</b>	
<b>Telephone:</b>	
<b>Email:</b>	

<b>3. Owner</b>	
<b>Name:</b>	
<b>Street:</b>	
<b>City:</b>	
<b>Telephone:</b>	
<b>Email:</b>	





**Swing Flugsportgeräte GmbH**

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