



MISTRAL Twin
Manual

Dear Swing customer,

You have just purchased a sophisticated product. We place great importance on our workmanship and the high quality of the materials used.

If you have any questions which are not answered in this manual, please do not hesitate to contact us directly (+49 8141 3 27 78 88), or your Swing dealer.

from

the Swing Team

Table of Contents

- 1. Disclaimer and exclusion of liability1**
- 2. For your safety.....2**
- 3. Features of the paraglider3**
 - 3.1 What does the Mistral Twin look like?3
 - 3.2 Who is the Mistral Twin suitable for?.....3
 - 3.3 Connecting a harness to the Mistral Twin3
 - 3.4 Winch-towing4
 - 3.5 Motorised flight4
 - 3.6 Mistral Twin risers.....4
 - 3.7 Tandem spreader bar4
 - 3.8 Appropriate rescue systems.....6
- 4. Setting up the Mistral Twin and test-flying6**
 - 4.1 Laying out the paraglider and pre-flight check6
 - 4.2 The 7-point check7
 - 4.3 The first flight7
 - 4.4 Adjusting the main brake lines7
 - 4.5 Adjusting the Mistral Twin's speed system (trimmers)8
- 5. Flying9**
 - 5.1 Normal flight9
 - 5.2 Instructions for extreme flying and dangerous situations9
 - 5.3 Rapid descents12
- 6. Looking after your paraglider14**
 - 6.1 Transporting and storing the paraglider14
 - 6.2 Checking the lines14
 - 6.3 Cleaning and repairing the paraglider14
- 7. Inspection.....16**
- 8. Warranty17**
- 9. Internet product information and safety notices17**

1. DISCLAIMER AND EXCLUSION OF LIABILITY

Use of this paraglider is solely at the USER'S OWN RISK. THE CERTIFICATION AND THE WARRANTY SHALL BE RENDERED INVALID if changes of any kind (including changes to the brake lines) or improper repairs are made to this paraglider or if any inspections are missed (annual and 2-yearly check).

Pilots are responsible for their own safety. Before every flight, the pilot must check the glider's airworthiness and must launch only if it is fit to fly. The pilot must check the weather forecast and only fly if both current and forecasted conditions guarantee a safe flight.

The glider may only be used with a pilot's licence which is valid for the area or under the supervision of an approved flying instructor. There shall be no liability on the part of third parties, in particular the manufacturer and distributor.

In terms of the warranty and guarantee conditions, the paraglider may not be flown if any of the following situations exists:

1. the inspection period has expired, you have carried out the inspection yourself, or the inspection has been carried out by an unauthorised inspector;
2. the take-off weight does not fall within the permissible overall take-off weight range;
3. the glider is flown in rain or cloud or when there is fog or snow;
4. there are turbulent weather conditions or wind speeds higher than 15 km/h;
5. the glider is used for aerobatics / extreme flying or flight manoeuvres at an angle greater than 90°;
6. the pilot has insufficient experience or training;
7. the wrong equipment or inadequate equipment (reserve, helmet, footwear etc) is used;
8. the glider is used for winch launching using a winch which has not been inspected or by non-licensed pilots and/or winch operators;
9. modifications have been made to the canopy, lines or risers which have not been approved;
10. the glider is opened in free fall - this is not a parachute.

2. FOR YOUR SAFETY

- The use of paragliders is subject to various regulations. They may not be flown without a valid certification. Any attempt to fly is highly dangerous.
- This manual does not replace the need to attend a paragliding school.
- The paraglider may only be used for the purpose for which it is designed. Please do not use it as a parachute.
- Use of the paraglider is at your own risk. The manufacturer is not legally responsible for any personal injury or material damage which occurs in connection with Swing paragliders.
- A specialist must test-fly the paraglider. The test-flight must be recorded on the paraglider information label.
- Do not under any circumstances tow your paraglider with a car, motorboat or any similar vehicle which is not fitted with a suitable towing system operated by an experienced winch operator.
- Before towing, ensure that the winch operator has the appropriate training and licences.
- Aerobatics are prohibited.
- Do not under any circumstances alter the construction of your paraglider. If you do, any claims under the warranty will not be accepted and the certification will lapse.
- When you fly for the first time, use training slopes only.
- When flying, always wear a helmet, gloves, suitable clothing and shoes which protect your ankles.
- Only fly if the wind speed, direction and weather conditions guarantee a safe flight.

This manual contains more information concerning your safety. This information is indicated by two symbols.



Caution! Accident risk!

This symbol indicates risks which may arise. We also explain how to avoid the risk or how you should react if the situation arises.

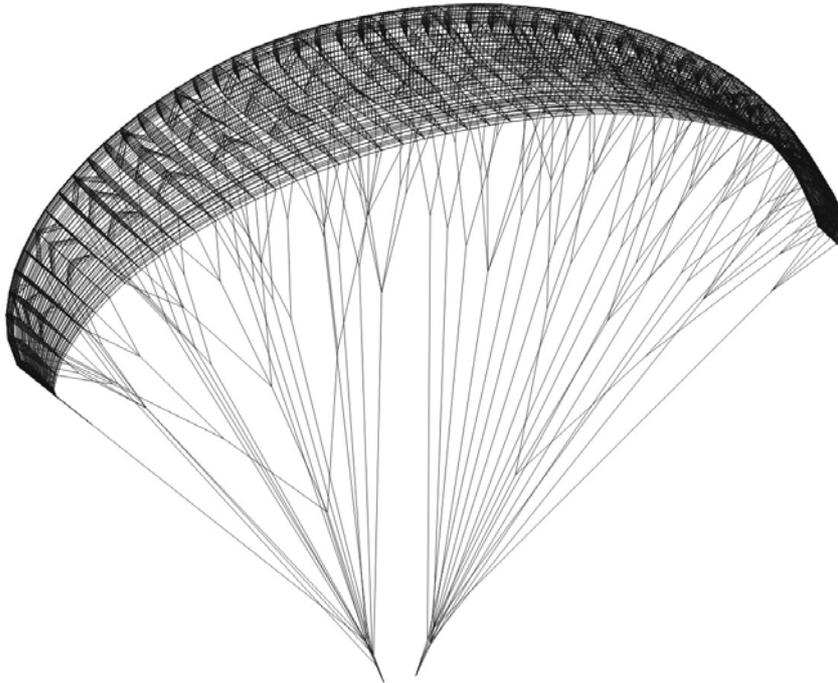


Tip

This symbol is used when we give advice on correct handling of the paraglider, how to protect it from damage and general information.

3. FEATURES OF THE PARAGLIDER

3.1 What does the Mistral Twin look like?



The A-rippers are split to allow better handling of "big ears".

3.2 Who is the Mistral Twin suitable for?

The Mistral Twin is suitable for both social pilots and for performance-oriented tandem pilots who want total flight enjoyment with a high performance and safety level for themselves and their passengers.

Classification

- Mistral Twin - DHV 1-2 GH with trimmers
- Take-off-weight (pilot + equipment + glider). The estimated weight of the equipment is about 25 kg. The Mistral Twin is designed for use by two people. Use by more than two people is prohibited.

3.3 Connecting a harness to the Mistral Twin

The Mistral Twin can be connected to any harness which has DHV "GH" harness classification. You can find out more about this on the DHV website at <www.dhv.de>. Be aware, however, that the relative braking distance alters according to the level at which the harness is attached.

3.4 Winch-towing

The Mistral Twin is suitable for winch-towing. Make sure that the brakes are unclipped when the paraglider takes off. Use weight-shifting while towing to assist steering. In general, Swing recommends launching with trimmers up to further enhance safety when winch-towing.



Tip

Winch-towing is only recommended and permitted if:

- the pilot has completed the appropriate training.
- the winch and release used have a certificate of compliance which covers the towing of paragliders.
- the winch operator has adequate training which includes the towing of paragliders.

3.5 Motorised flight

This is regulated by the DULV in Germany (the German Ultralight Association) and by other equivalent national organisations.

3.6 Mistral Twin risers

The Mistral Twin has split A-risers. This makes symmetrical “big ears” easier - the pilot pulls down both outer A-risers and does not have to spend time looking for the correct A-lines.

We have equipped the Mistral Twin with a B-stall device. This makes a smooth B-stall possible by using a pulley system on the lengthened B-riser. Be aware when doing this of the following:

1. Your hands travel twice the distance during the B-stall because of the pulley system. We therefore recommend that you recover from a B-stall twice as quickly as you would with a standard riser. If you do not do this, it is likely that it will take longer to recover forward speed.

Move your hands upwards quickly when recovering from a B-stall. The Mistral Twin will not shoot forwards.

2. Keep your hands away from the brakes, since you will have to pull down a fairly long way to execute the B-stall well, and the brakes will otherwise be pulled down too!

Keep your hands away from the brake handles before the B-stall or, if your passenger has paragliding experience, have the passenger execute the B-stall manoeuvre.

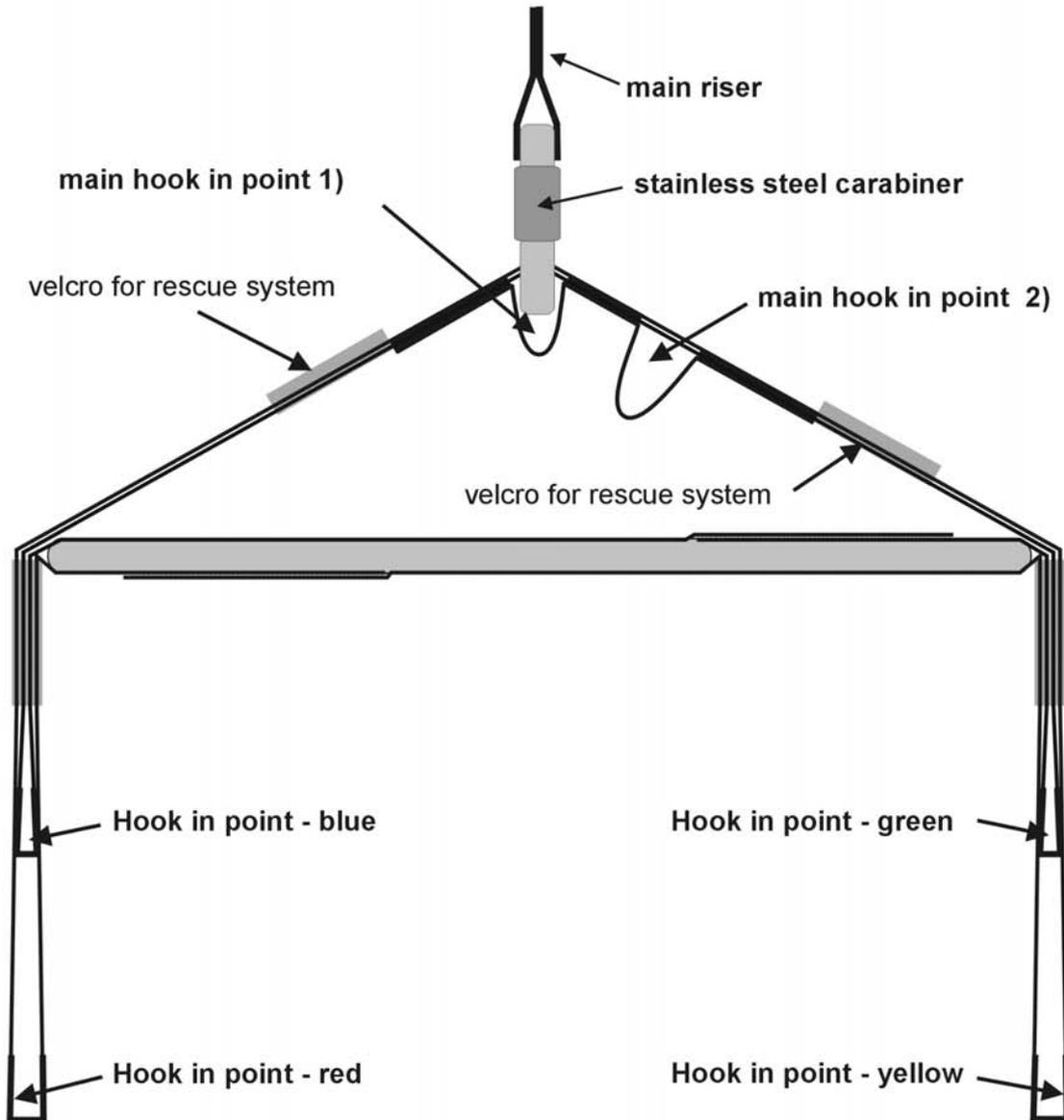
If the B-stall device is operated symmetrically, the B-stall will always be smooth and even.

3.7 Tandem spreader bar

The Mistral Twin's spreader bar offers various ways to attach the pilot and passenger so that any differences in weight and/or height are balanced out.

Differences in height are offset by attaching the passenger's carabiners in the upper or lower loops on the front of the spreader bar.

We recommend that you use short steel carabiners. More information on this can be found on <www.dhv.de>



Where to connect to the spreader bar

MAIN HANGPOINT - Steel carabiner	
The main steel carabiner should be hung on either main hangpoint 1) or 2):	
When the weight difference between pilot and passenger is less than 20kg	Main hangpoint 1) - central
When the weight difference between pilot and passenger is more than 20kg (with the heavier of the two closer to the main carabiner)	Main hangpoint 2) - assymetric

LEVEL TO ATTACH PILOT AND PASSENGER	
Attach the pilot and passenger at DIFFERENT levels if:	
the passenger is approx. 15cm taller than the pilot	attach the passenger above (blue or green)
the passenger is approx. 15cm shorter than the pilot	attach the passenger below (red or yellow)
Attach the pilot and passenger at the SAME level if:	
passenger and pilot are almost the same height, and fairly short	attach both above (blue or green)
passenger and pilot are almost the same height, and fairly tall	attach both below (red or yellow)

3.8 Appropriate rescue systems

An appropriate rescue system must be used. This can save lives in a dangerous situation.

The permissible weight for which the rescue system is certified must be at least the same as the take-off weight on the tandem glider.

The rescue system lines must be attached to the carabiners between the riser and the passenger hangpoint, so that if there is an emergency landing, the pilot and passenger land at approx. the same time.

4. SETTING UP THE MISTRAL TWIN AND TEST-FLYING

4.1 Laying out the paraglider and pre-flight check

Laying out the paraglider

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

Carefully separate all the rigging-lines and take care that no lines are underneath the canopy, tangled or caught up in any way.

The Mistral Twin can be reverse launched easily with a wind speed of just 3m/s.

Pre-flight check

Before launching, always check the following:

1. Are there any tears in the glider or other damage?
2. Have all the lines been untangled?
3. Are the brake lines clear and tightly connected to the handle?
4. Are the brake lines properly adjusted?
5. Are the quick links fastened securely to the lines and to the risers?
6. Is the canopy dry?
7. Are the risers and seams in good condition?
8. Is the harness in good condition?
9. Is the handle for the reserve chute secure?

4.2 The 7-point check

A thorough 7-point check must be carried out immediately prior to launch when flying a tandem glider:

1. Is the canopy arranged in a half moon shape and are all the air-entrances open?
2. Are all the lines untangled? Are there any lines under the canopy?
3. Check your equipment: harness, carabiners, reserve, helmet. Are the leg straps done up?
4. Do the wind-direction and strength ensure a safe flight?
5. Are the airspace and launch area clear?
6. Is the tandem glider in sound condition and are both passenger and pilot properly connected?
7. Is the rescue system properly installed?

4.3 The first flight



Tip

Carry out your first few flights only during stable weather conditions, and in a familiar area or on a training slope.

To start with, you should steer gently and carefully so that you can get used to the reactions of the paraglider while you are not under stress.



Caution! Accident risk!

Do not overestimate yourself! Don't let a paraglider that can easily be maneuvered or the behaviour of other pilots make you careless.

4.4 Adjusting the main brake lines

Securing the main brake lines

The main brake lines must be checked by an expert before the test-flight. The pilot must then fine-tune them. The correct length can only be determined once in flight and depends on the pilot's flying style, arm length and weight.

The main brake lines must be fastened so that the mark is visible slightly above the knot (approx. 5mm). Attach the main brake lines as shown on the diagram.

Correct adjustment

Correctly installed brake lines have about 10 cm of feed. This is how far you must pull the brakes down before the trailing edge of the canopy starts to move downwards and start braking. The manufacturer has pre-set this. It will allow you to steer and launch the paraglider without any delay.

The length of the brake line is indicated by a mark at its lower end. This mark must be next to the ring of the brake handle. If you have shorter arms, the length of the brake lines can be extended in relation to the mark.

Too long

If the brake lines are too long, the paraglider reacts slowly and is difficult to land. However during the flight you can twist the brake lines around your hands to minimise this problem. Adjust the brake lines to a suitable length after you have landed.



Caution! Accident risk!

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

- there could be an early stall.
- the paraglider does not launch well and there is a risk of deep-stall.
- the paraglider's behaviour in extreme flying is dangerous.
- the brake lines are in any event too short if, with trimmers fully on, the brake lines put pressure on the trailing edge.

4.5 Adjusting the Mistral Twin's speed system

Although the Mistral Twin is already trimmed to a sufficiently high basic speed, the speed envelope can be increased by using the trimmers, and the DHV 1-2 classification is still maintained.

Function

The A-, B- and C-risers can be shortened by using the speed bar. This decreases the canopy's original angle of attack.



Caution! Accident risk!

Disturbances (e.g. collapses) are more dramatic with increased speed than when the glider is unaccelerated. Because of the increased risk of collapse, we strongly recommend that you do not use the speed system in turbulent areas or near the ground.

5. FLYING

5.1 Normal flight

Launch Pull the Mistral Twin up using the weight of your body ensuring your arms and the lines are down and behind you (even in nil wind). Hold both the inner A-risers, without shortening them too much. The Mistral Twin launches very smoothly and is easy to control. Launching is even easier if the canopy is arranged in a half-moon shape.

Level flight The Mistral Twin's flight is stable and level when the brakes are up.

Turns You can help the glider to turn by weight-shifting. The Mistral Twin performs best in turns when it is flown with sufficient speed. Too much braking increases the sink rate unnecessarily.
The glider has no negative tendency.

Landing Start pulling down the brakes as far as they will go when you are approximately 1.5 to 2.5 meters above the ground, so that the paraglider has been fully braked just before the ground is reached. The Mistral Twin can be landed without any problem. If there is a strong head-wind, you should brake less and later; if there is a strong tail-wind, you should brake earlier and more strongly.



Caution! Accident risk!

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

5.2 Instructions for extreme flying and dangerous situations

Sources of danger There are no problems during a normal flight. However, pilot error during the flight or extreme wind conditions may leave the wing in an unusual flying position. This may require the pilot to make corrections during flight to which he is unaccustomed.

In this section we explain how to correct any extreme situations you may get into. We also describe how the Mistral Twin reacted in simulations during test-flights.



Tip

These instructions do not replace safety training or specialised literature. We recommend that you undertake special safety training which will prepare you for extreme situations.



Caution! Accident risk!

Always keep within the recommended limits. Do not perform aerobatics or extreme flying manoeuvres, such as spirals with "big ears". This will prevent accidents caused by over-loading the glider.

Deep stall

Various things can cause a paraglider to deep stall, e.g. shrinkage of the C and D lines as a result of dampness or flying in the rain. The airflow from the front of the glider gradually breaks away towards the back and the canopy sags, with the glider remaining upright. Paragliders are particularly susceptible to deep stalls if the wing loading is too low.

C and D lines which are too short, for example, can often be recognised because launch behaviour deteriorates.

You can recognise a deep stall because there is less flight noise than normal. In addition, your sink rate will increase (4-5 m/s).

During tests, the Mistral Twin did not stay in a stable deep stall.

Recovery

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 to 10 cm.

If you have a Mistral Twin with trimmers, simply use them to accelerate and, if necessary, follow the above instructions.



Caution! Accident risk!

Flying in the rain, or if the lines have shrunk, increases the minimum flight speed. You must use the brakes very carefully if this is the case.

Front Stall

Strong turbulence can cause part or all of the leading edge of the glider to fold or tuck under.

Normally the Mistral Twin will immediately recover its normal flight position.

Recovery

If the Mistral Twin does not immediately recover from a frontal tuck, brake quickly and strongly with both steering-lines (brake lines) to re-inflate the glider.

Asymmetric tucks

If there is turbulence, one side of the paraglider may collapse. Some of the cells deflate and the paraglider could collapse or spin.

During test flights the Mistral Twin self-recovered on release of the A-risers which were pulled down and caused the collapse.

Recovery

- Counter-brake slightly on the side of the paraglider that is still inflated to stop it turning away and to stabilise it.
- Counter-brake just enough that the paraglider continues to fly straight ahead.
- If the wing has not yet self-recovered, pump with the brake on the side that has collapsed in order to open it, making use of the full braking distance. "Shaking" is not enough.



Caution! Accident risk!

Counter-braking too strongly can result in a stall on the inflated side.

Full stall

A full stall occurs if full brake is applied during the flight. The paraglider slows down, surges backwards and deflates. If the brakes are held down, the canopy comes up over the pilot again. The result is an almost vertical descent with a sink rate of about 8m/s (or more).

Recovery

Fully release the brakes within 3 seconds. If you release the brakes too slowly, the paraglider may spin. The spin stops automatically when the brakes are released completely.



Caution! Accident risk!

If the canopy has gone backwards, you must hold the brakes down. Otherwise the canopy can surge forward and, in an extreme case, end up underneath the pilot. Hold the brakes down until the canopy is above you again. Watch your altitude and look above you during the full stall.

Spin

Spins occur when one side of the canopy stalls. The stalled part of the canopy continues to fly forward while the other side turns in the opposite direction.

Recovery

Quickly release the brakes.



Tip

If the spin does not stop:

1. Check whether you have released the brakes fully.
2. If this does not work, use your reserve.
3. If you have sufficient altitude and enough skill, you can recover from a stable spin using a full stall.



Caution! Accident risk!

In strong turbulence, always keep far enough away from rock faces and other obstacles. You need time and enough height to recover from extreme situations.

5.3 Rapid descents

In some situations you need to lose height quickly to avoid dangerous situations, e.g. the upcurrent from a cumulus cloud, an approaching cold front, a storm front etc. Below we explain three ways to make a rapid descent, so that you can avoid these situations and similar ones.

Spiral dives The spiral dive is the classic method for making a rapid descent with sink rates up to 14 m/s in normal conditions and up to 20 m/s in extreme conditions. It is suitable where there is a high ascent rate and little wind. The Mistral Twin does not stabilise in the spiral dive up to the 14 m/s rate. This can happen however above 14 m/s, and counter-breaking must be used to recover from the spiral.

Starting the manoeuvre Whilst flying at full speed, start to apply the brake on one side. This will steer the paraglider into a turn with a strong bank. You can tell that you are in a spiral dive if you are being pressed hard against your seat (high centrifugal force).

When you are in a spiral dive, you should steer very carefully because the paraglider will react immediately. Banking and rate of turn increase if braking efficiency increases. Look down before and during a spiral dive so that you can tell how far you are from the ground!



Tip

When you are in a spiral dive, the outer part of the wing can collapse, but this is no cause for concern. You can avoid this by braking slightly in the outside of the turn. Release the brakes carefully.

Recovery If you release the brakes too quickly, the increased speed can cause the wing to climb, become unsettled, or partly collapse.

If the glider does not stop turning, you can stop it by weight-shifting to the outside of the turn.



Caution! Accident risk!

- With spiral dives, very high turn speeds can be reached, with an increase in the acceleration due to gravity. So be careful when you try this!
- Do not continue the spiral dive too long; you could lose consciousness.
- Never attempt this with less than 150 to 200 meters ground-clearance.
- Spiral dives with "big ears" lead to extreme loading of the open section of the canopy. This move is prohibited in Germany.

B-line stall The B-line stall is another way to descend rapidly and has a sink rate of approximately 8 m/s. It is suitable where there is an average ascent rate and little wind.

Starting the manoeuvre Grasp both of the B-stall loops (attached to the B-risers) and pull the B-risers slowly and evenly towards your chest until the airflow is gone and the wing goes into a vertical descent flight mode. **It is important that both brake loops are released during the B-stall or else the glider may go into a full stall.** The pulley used reduces the force needed by 50%. The B-risers should then be held in the same position to ensure a gentle descent.

Check before and during the B-line stall that the airspace beneath you is free.

Recovery Return the B-risers to their normal position quickly and evenly. If you put the B-risers back too slowly, a deep stall or negative spin could occur.



Caution! Accident risk!

The canopy speeds up after the B-risers have been released. Under no circumstances should you apply the brakes at this time.

It is very important that you let go of the brake loops during the B stall to avoid a full stall.



Tip

If the paraglider does not speed up immediately because recovery is too slow or for some other reason, accelerate using the trimmers or pull the A-risers forwards. (see deep stall)

Big ears

"Big ears" is another way to descend quickly and has a sink rate of approximately 3 to 6 m/s. The forward speed stays the same. You can use the "big ears" method together with the speed system. It is suitable for avoiding a dangerous situation where there are high ascent rates and strong wind.

Starting the manoeuvre Pull both outer A-risers downwards. You can now descend safely on the stable middle part of the wing. Steer by weight-shifting. The brakes must not be applied during the manoeuvre, e.g. by wrapping the brakes.

Recovery Let go of both A-risers. If the ears do not open automatically, assist the opening process by pumping the brakes.



Caution! Accident risk!

When the technique of "big ears" is used, there is a higher load for the line groups which are still weight-bearing. Do not fly any extreme manoeuvres with "big ears".

6. LOOKING AFTER YOUR PARAGLIDER

6.1 Transporting and storing the paraglider

Transport Always transport your paragliding equipment in the special backpack and/or in the inner bag.

Storing Store all of your paragliding equipment away from UV light in a dry room which is well-aired and has a constant temperature. Open the backpack and/or inner bag and the belt a little so that air can get in.



Tip

- Sunlight, warmth and humidity can damage your equipment.
- Temperatures lower than -10°C and higher than 50°C can make the wing unfit to fly. The manufacturer's warranty will not apply if the paraglider is not stored at the correct temperature.
- Never store a paraglider which was packed up while still wet.

If the paraglider gets wet, spread it out immediately so that air reaches all parts of it. Since the fibres absorb water, it can take several days until it is completely dry. If a paraglider is stored wet, it can become unsuitable for flying after a short time.

6.2 Checking the lines

Measuring Measuring the length of the lines is part of the regular paraglider inspection.

The lines must be measured with a load of 5kg to get comparable results. You will find the original line measurements in the service and inspection manual.

Have your paraglider checked at least every two years by the manufacturer or an authorised inspector. In Germany, pilots have been able to carry out the inspection themselves since 01.07.2001 provided that they fulfil all requirements. This is provided as part of the DHV certification.

Tip



We recommend an inspection every 50 to 100 flight hours or once a year.

6.3 Cleaning and repairing the paraglider

Cleaning Only clean the paraglider with a soft sponge and clean water.

Tip



Harsh chemical substances, high-pressure cleaners or steamers will destroy the paraglider's surface layer. Clean the paraglider only if it is absolutely necessary.

Repairs

Repairs should only be carried out by the manufacturer or a specialist recommended by the manufacturer.

You can repair small tears in the wing yourself using self-adhesive sail material, as long as they are in places which do not bear heavy loads, are not at the seams and are not bigger than 3 cm.



Tip

Always replace lines that are damaged.

If you need to replace damaged or worn-out parts, use only original parts or parts that have been authorised by the manufacturer.

7. INSPECTIONS

- General** Failure to observe the inspection periods shall invalidate the warranty and certification. A properly completed logbook will help you to comply with these periods. There is more information on inspections and technical data in two separate booklets, both of which form part of this manual
1. Inspection instructions for Swing gliders (required only in Germany and Austria)
 2. Service papers (1 booklet for each size and model)
- Inspection periods** In Germany, Swing gliders must be inspected as follows (check the situation in your country):
- A) For tandem gliders (if used commercially) and gliders used by schools an inspection (the same as the 2-yearly check) must be carried out every 12 months from the purchase date.
- B) Gliders for personal use and tandem gliders (not used commercially) must be inspected every 2 years from the purchase date.
- C) The paraglider must be inspected after 150 hours of use (including ground handling) if this occurs prior to the periods in A) and B) above.
- Ground handling time must be at least doubled when working out the total hours of use because of the increased wear and tear on the glider.
- Validity of inspection** If Swing is to accept guaranty and warranty claims, all inspections must be carried out by SWING, or an inspection agent authorised by SWING. The documentation and the result of the inspection must be clearly identifiable by the inspector (date and place / name of inspector) and be entered near the glider information/certification sticker.
- Inspections by the pilot** Pilots in Germany have been able to carry out the inspection themselves since 01.07.2001 provided that they fulfil all requirements. However, in this event, SWING's liability and warranty lapse. There are more details on these inspections in a separate booklet (Swing paragliders inspection instructions)

8. WARRANTY

General The terms of the warranty are in the enclosed warranty card.
Please remember to return the warranty card to Swing within 14 days after you purchase the paraglider.

The manufacturer must be notified immediately of any defects in the product, variations or changes in flight behaviour and any warranty claims and, if necessary, the glider must be made available for inspection by the manufacturer.

9. INTERNET – PRODUCT INFORMATION AND SAFETY NOTICES

swing.de Swing now sends relevant product and safety information by email to all registered customers. If you would like to receive this, please register your name through our website.

Swing generally includes all email addresses provided in the warranty cards in the distribution list. If you do not wish to be included, please do not give your email address on the warranty card. We will not provide your e-mail address to any third parties.

Our website: www.swing.de

dhv.de There is also data and information about our products on the DHV website www.dhv.de.

We hope you have fun and many enjoyable flights

The Swing Team