SKYWALK

SCOTCH

JET FLAP motor- & mountain-glider – DULV/DHV

Manual/Service **Serialno:**

CONTENT

1 CONGRATULATIONS

Congratulations for you choosing to buy the new SCOTCH.HY and placing your trust in skywalk. We are sure you will enjoy every minute of your flying time. In order to fully understand how to begin flying your new wing, and increase the enjoyment, we recommend that you read the instruction book in full.
This way you will be able to get a quick start in the use of your wing, and fully understand all ist flight characterics. The instruction book also offers you quick tips on safe flying so that your enjoyment will be over a long period of time.
Skywalk is open to any comment or suggestion you may have and you can certainly voice your opinion to us, using our internet email address, or Fax us.
The skywalk Team is always there for you if you need any further information.

Very Sincerely,
Your skywalk Team

2 DESCRIPTION

The SCOTCH.HY is a paragliding wing for both motorized flight and normal launches from mountains using the conventional start techniques without the motor.
HY stands for hybrid, since the SCOTCH.HY is both an excellent paramotor wing as well as a paraglider wing with very good performance characteristics. That way, and the big advantage to purchasing this wing, a pilot does not have to buy 2 separate wings.
The SCOTCH.HY is delivered with our special Motorizer (a Riser attachment system) serially manufacturered, which also includes a Trimmer system with a DHV 1-2 GH Certification in the weight classification of 90 – 110 kg.
When the Motorizer system is attached while using a motor, the Riser system and Trimmer can be used to counter balance or offset the torque of the motor and also increase the trim speed of the wing in flight. The SCOTCH.HY is also certified to 130 kg/150 kg dependent on the size of total weight under the DULV certification.
The Motorizer system is also equipped with 2 separate harness connection points, the lower connection for free flight when not using a motor, and a second connection point up the Riser when connecting the wing to a paramotor system and harness.
The high performance characteristics of the SCOTCH.HY allows the pilot to fly using less motor power and offers better gas mileage, to cruise nicely along the landscape.
The wing Cells are equipped and use Diagonal and Parallel reinforcement bands, which offers an optimal weight distribution across the wing. With our so called „Ballooning“ computer model and design system we compensate for the blow up effect thus creating a very homogeneous Wing.
The higher surface tension of the upper Wing is a direct correlation of this Ballooning effect compensation and thus generates among other things, a higher performance.
The optimally adjusted Riser system and connection point to harness uses proper line thickness and thus less air resistance with a very good wing to weight distribution reinforcement and support.
The SCOTCH.HY upper wing material at the forward leading edge, uses a special Porcher Marine material called 9092E85 with excellent longevity characteristics and combined with our excellent manufacturing technique, a garantee for long life and extended value.
Therefore, we would like to wish you many long and successful flights. Your equipment is now ready for use.

Your skywalk Team

3 LINE SYSTEM

To provide you with an optimal line system, we have worked hard to figure out what is best.
Skywalk works in cooperation with the line manufacterer LIROS, and have selected the best possible mix of lines.
Using a generous scale of dimensioning, the lines offer exceptionally high weight load reserves.
The sensible combination of both Technora and Dyneema lines are both robust and offer less air resistance.
Excellent rebounding effect even under extreme weights as well as a minimum of stretch, are also good characteristics of the line mix. The skywalk SCOTCH.HY is equipped with 3 A-, 3 B-, 3 C-, 2 D- main lines and 1 Stabilo line.
The total line systems is characterised by 2 line systems, the Top line attached to the wing and the lower main line units attached to the Risers. Each main line system has 3 Top line attachments and is connected to the locking hubs of the risers.
The Stabilator main line with its upper gabeled top line , is attached to the locking hub on the riser.
The brake lines, which are not a part of the carrier weight, lead to the wings back edge, and are divided into the main brake line system which is threaded through the brake roll eyelet attached to the D level riser and brake grip.
In order to better distinguish the Stabilisor line of the A line system, the Stabilisor line is colored pink to the A main line which is colored Red. The B Line system, , and the main brake lines are colored Yellow, and all other lines are colored blue.
The main locking hubs of the Riser is triangular and the lines are closed with a rubber band to reduce line movement.
The SCOTCH.HY uses a 5 riser system. Both of the inner A-Main lines risers lead to the forward A Gurt, the outer A Lines lead to the back A Gurt, the B Lines to the B Gurt, the C lines and Stabilator line lead to the C Gurt and the D lines to the D Gurt. Additionally there is the Trimmer which can be set before flight.

CAUTION

GENERALLY SPEAKING IT IS UNDERSTOOD BY EVERY PILOT THAT FLYING WITH A PARAGLIDING WING A MAXIMUM OF CAUTION SHOULD ALWAYS BE USED. WE WANT TO EMPHASIS THAT YOU THE PILOT WILL BE FLYING YOUR PARAGLIDING WING AT YOUR OWN RISK, AND IT IS THE PILOTS OWN RESPONSIBILITY TO ASSURE THAT THEIR WING AND EQUIPMENT ARE IN PROPER MAINTENANCE AND ORDER BEFORE EACH AND EVERY FLIGHT.

The skywalk SCOTCH.HY is not permitted to be flown:

- >outside of the permissable minimum and maximum certified Start Weight range.
- >By Rain, Snowfall, extreme turbulent weather conditions or strong winds.
- >Direct into clouds or fog situations where visual flight regulations are hampered
- >By Pilots lacking proper paragliding education or experience.

Every Pilot carries the responsibility for their own safety and must therefore be certain that their flying equipment (Paragliding Wing and Motorsystem) is in proper flight maintenance and condition and is serviced maintained.
The skywalk SCOTCH.HY is only permitted to be flown where permission is granted from the legal authorities governing each country.
Your skywalk SCOTCH.HY has already under gone many careful Quality Control checks. Before leaving the factory for delivery to you, each wing is checked to insure certified manufacturering tolerances are met.

4 TECHNICAL INFORMATION

Typ	M	L
Number of cells	51	51
Area [qm]	27,5	30,4
Wingspan [m]	12,01	12,57
Aspect ratio	5,2	5,2
Area projected [qm]	23,8	26,4
Wingspan projected [m]	9,63	10,13
Aspect ratio projected	3,89	3,89
Speed Min	23	23
Speed Trimmer closed	42	42
Speed Trimmer open	47	47
Speed Max	53	53
Trimmer closed	90-110kg DHV 1-2 GH	105-130kg DHV 1-2 GH
jet flap Technology	ja	ja
DULV homologation	DULV	DULV
Weight range DULV [kg]	90-130	105-150

CAUTION

THE WING TYPE LABEL IS LOCATED ON THE INSIDE OF THE STABILOS. THE DHV CERTIFICATION LABEL IS LOCATED IN THE WING POCKET OF THE MIDDLE PROFILE RIB. THE DULV CERTIFICATION LABEL IS LOCATED DIRECTLY OVER THE DHV LABEL. DATE OF USERS 1ST FLIGHT SHOULD BE PRINTED IN THE LABEL. THE DHV CERITIFICATION LABEL MUST BE VISABLE AND LOCATED ON THE WING FOR USE IN GERMANY AND AUSTRIA. IN COUNTRIES WHERE NO CERTIFICATION LABEL IS REQUIRED, THE SKYWALK CERTIFICATE AND LABEL MUST BE VISABLE, TO CONFIRM THAT THE WING CONFORMS TO THE DHV CERTIFICATION STANDARDS.

5 ACCELERATION SYSTEM

The Speed system has influence over the A-,B-C-, and D- risers. In the end positions all of the riser extentions are of equal length: In total 50,5 cm without the screw lock connection piece.
With full opening of the Trimmer the Gurt lengths extend in the following manner, B-level riser 1,5 cm, the C Gurt by 3,7 cm, the D Gurt by 5,5 cm.

If the Speed System is activated then the A,B, and C-riser systems are shortened:
In that way, we allow for flight in the most accelerated speed range.
The SCOTCH.HY has a Trimmer and Speed System.

Using the SCOTCH.HY in non motorized flight. Free Flight mode.
From starts from a mountain, the trimmer can be connected into the main carabine lock. If that ist he case, then the certified ranges change depending on the amount of trimmer used and weight range.
Please refer to the details in the Trimmer Weight Table.

SCOTCH.HY M			
Weight range	Trimmer closed and fixed with speedbar	Trimmer open with speedbar	Trimmer open without speedbar
Mountain flight 90-110kg	DHV 1-2 GH	DHV 2-3 GH	DHV 2-3 GH
Motorized flight 90-130kg	DHV 2-3 GH	DHV 2-3 GH	DHV 2-3 GH and DULV
SCOTCH.HY L			
Weight range	Trimmer closed and fixed with speedbar	Trimmer open with speedbar	Trimmer open without speedbar
Mountain flight 105-130kg	DHV 1-2 GH	DHV 2 GH	DHV 2 GH
Motorized flight 105-150kg	DHV 2 GH	DHV 2 GH	DHV 2 GH and DULV

ATTENTION:

IF THE TRIMMER LOOP IS HOOKED INTOTHE MAIN CARABINE LOCK WHEN STARTING FROM A MOUNTAIN, IT IS RECOMMENDED THAT THE TRIMMER BE FULLY CLOSED. IF THAT IS NOT DONE, THEN THE RISER EXTENTIONS MAY NOT BE OF EQUAL LENGTH, THAT COULD EVEN HAVE THE EFFECT OF SHORTENING THE EXTENTIONS TO A POINT THAT THE WING COULD BE IN A DANGEROUS FLIGHT CONDITION.

Assembly
Most of the modern harnesses in use have Rollers for the Speed Bar System. The speed bar lines are threaded throught the rollers on the harness and lead through to the Brummel hook connection piece and tied at that point. By correct placement or positioning of the speed system lines, the speed bar should be easily reached when stepping into the system, and fully accelerated at the point of full extention of the leg and foot. Before starting your wing from mountain starts be sure to hook up the speed bar line connection pieces to the Brummel hooks located on the riser speed line and wing. Please ensure that the speed lines are running free, and properly connected.

Functionality of the Speed System
The Pilot activates the speed system using his foot and extending it, thus the A-B-C Riser is shortened lowering the angle of attack.

Motorised Flight
The SCOTCH.HY is certified for Motorised flight to the upper speed range of the Trimmer as registered under DULV. Speedbar is not allowed to use for Motorised flight.

Assembly
The Motor Riser which is attached to the Motor system, has roller attachments for the speed system. The assembly ist he same as when using the system in
Free Flight mode.
It is recommended that the Speed Bar System be properly attached and secured during take off and landings, so that the system does not have a chance to get caught up in the Propeller.

ATTENTION

BY EXCESSIVE FLIGHT SPEEDS THE WING REACTION TO PROBLEMS OF TURBULENCE (EXAMPLE BEING LOSS OF WING INFLATION ON ONE SIDE) CAN BE DRASTICALLY INCREASED, AS COMPARED TO NORMAL TRIM FLIGHT SPEEDS.

6 HARNESS

The SCOTCH.HY is certified for all modern manufacturered Harnesses meeting the DHV-Classification GH. More information is found under: www.dhv.de
Flying with a motor, be advised that a harness with a large type of back protection system is not suitable. Harnesses and Paragliding wings must be certified by DHV standards, and Motorsystem certified and registered by DULV.
(The German Ultra Light Flight Authority).

7 WINCH TOW

> The skywalk SCOTCH.HY is especially constructed and suitable for winch towing. Pay attention to climb out of any flat lower surface on the ground.
> The Pilot must have a proper winch tow certification and education in use.
> The Winch Tow System must be properly certified.
> The Winch Tow Operator must have a proper winch tow certification to include towing paragliding pilots.

The Winch Tow System must be sensibly operated and not overly braked. The Wing flies under tow at a higher level of attack.

8 RISER MAIN SYSTEM

The SCOTCH.HY is comprised of 5 main Riser Extentions. Both the A Main Line Extensions lead to the front A-riser, the outer A Lines lead to the back A-riser, the B Lines to the B-riser, C Lines and Stabi Lines lead to the C-riser and the D Lines to the D riser.

Additionally the serial manufacturered Motorizer riser of the SCOTCH.HY has 2 separate points of connection. The correct point of connection depends upon the height of your Motor Hangpoints. That way the optimal point of reaching the steering and brake system and lines is maintained.

Also the SCOTCH.HY has an additional Trimmer System which increases the overal speed of the wing plus corrects for the torque motion in flight.

When using SCOTCH.HYin Free Flight mode with starting from mountains, the Trimmer can be fixed onto the main Carabine Lock, that way the pilot will find themselves inside the DHV recommended Start Weight Range of the DHV 1-2 certification area.
See page 61.

9 PRE FLIGHT CHECK AND SERVICE

Your complete line of flying equipment, wing, motor, harness, etc. must be carefully maintained and inspected for any potential shortcoming or deficiency. This should especially be the case after long pauses between flights or longer storage of your wing and equipment.

Carefully Inspect and Check:

> All stitching on your harness, the stitching on the reserve chute and attachment, and your Riser riser System.
> All Connection points, line locks, and carabiners and close down lock system.
> The Brake and steering grip to line connection knot, and inspect the brake line through to the cap.
> Symmetry of the brake lines.
> All other lines leading from the Riser riser to the Cap.
> All line connection point and stitching, knots up to the cap.
> The Upper and Lower wing segments for damage or wear.
> The Leading Edge profile and Crossports from the inner portion of the wing.

Even so called small defects or deficiencies are Cases where we do not Start!

In the event that you have identified damages or wear to your equipment, please contact your local Flight school or Dealer.

Laying Out your Wing to Start

We recommend that you first try out your new wing, by first performing some ground handling excercises or even fly your wing first from a small hill at lower elevations before attempting a major flight.
Start your SCOTCH.HY wing with your Motor first on your local flight park and in low wind or optimal weather conditions.
You should lay out your new Wing in that the Leading Edge is lightly arched or rounded out, and that the wings center be at the highest arch. Then, when starting, pull first using a light surge, the A Lines in the middle, the wing should then fill itself equally from the middle to the ends and allow an easy and safe start.
The A, B, C, D level lines should be separated from each other. If the riser is not crossed over, then the brake lines should be free up through the roller at the riser to the back of the wing.
All lines must be totally free from each other, and not have any knots or twists or snaking, of the total line length.
Lines which are knotted, and brought into flight, are very difficult or impossible to free.
The brake lines are the lines always laying on the ground, therefore please be careful to make sure that the brake lines are free of any entanglements on the ground before trying to start.
There should never be any lines laying underneath the wing itself. If a line is ever crossed over the wing, that can have a catastrophic effect on flight.

The Start (Motor and Moutain slope)

The skywalk SCOTCH.HY is very easy to start.
You hold both the A riser Lines and the Brake grips in each of your hands.
For better orientation and control over starts, we have colored the A lines, as well as the Manschetten Red. The Brake lines are yellow and the brake grip is black.
The Arms are extended outward and back holding the A lines in your hands.
Before starting you must check to make sure your wing is properly layed out, the wind direction is good, and the airspace you will fly into at start is free.
Holding the Riser riser in your hands, it is best to start by starting your surge forward by pulling the A Lines equally, and to make sure you are in the middle of your wing.

Using a nice homogeneous surge to start the skywalk SCOTCH.HY, the wings leading edge should fill itself quickly and reliably.
By normal wind conditions, making sure the wind is coming optimally from the front, your SCOTCH.HY should climb upward and over you in a continual patch.
The Wing should not in anyway hang back at the start, instead will climb immediately over your head, even with little or no forward wind.
At the same time the Pilot should be glancing an eye at the wing as it stabilizes over your head to make sure the wing totally open.
The final decision to start is only done after you are sure that all eventual disturbances or disorders are taken care of.
Any necessary directional changes may now be performed.
Only when everything is clear to start, do you accelerate, if any disorder happens, then stop your start for safety reasons.
To start your wing on steep slopes, it may be necessary to lightly brake your wing at the apogee to stop any eventual over shooting of your wing.
When Starting your wing backwards, or so called strong wind starts, it may bet hat your wing will overshoot more than usual, or that you would take off immediately. In order to avoid this, it is best to simply take the energy out of the wing by walking slowly in a controlled fashion up the slope and into the wing.
We recommend that you practice these backward start techniques on a flat ground surface at first.
When starting backwards in strong winds we recommend that you only take the front A riser in your hand, then the wing should open somewhat slower and the pressure in the wing is somewhat diminished. Thus making your start easier to control.

Cross Country Flying (Motor)

The best flying characteristics of your SCOTCH.HY is when using an opened Trimmer.
You may still want to close down a Trimmer somewhat to compensate for the torque in the motor. However when there is excessive turbulence in the air, you should not use the Trimmer, as the wing stability through the steeper angle of attack of the forward leading edge may be compromised.

Flying in Curves (Motor and near mountains)
The SCOTCH.HY has a direct handling response when flying in curves. The wing has a high level of safety reserves, however this wing should not be flown by complete beginners. The SCOTCH.HY has a high level of precision handling, and it great fun when using a motor. Through the high level of direct curve control, the wing is very easy to steer even against the torque, and allows for excellent dynamic.

CAUTION

WHEN ACTIVATING THE BRAKE LINES TO AGGRESSIVELY OR STRONGLY, YOU HAVE A POTENTIAL DANGER OF BREAKING OFF THE AIR FLOW TO THE WING.

When lift is lost from one side of the wing by to aggressive braking, you will notice right before this happens that the brake pressure increases and the tip of the leading edge of your wing will bend downwards. If this happens you release immediately the brake pressure on the inside curve wing side.

Emergency Brake Control
In the Event that a brake line breaks, or your knot on your brake grip loosens or releases from the line, you can still control your wing using the D riser line levels. That will help restore some directional control and land immediately.

Turbulent Air Conditions (Motor)
Even though the danger of a wing collapse is relatively low when flying your wing with a running motor, with its high level of surface tension on the wing, and the higher level of leading edge attack, in comparison to free flight without motor, it is recommended that the Trimmer always be closed and the speed bar not activated, in heavy or strong turbulence.
Fly in turbulence using a minimum of brake and try to control the wing over your head by flying actively. In that way you can avoid a single sided loss of your wing. However in the event that you do lose a side of a wing, fold down, you should still maintain the direction of your curve. Only after you have stabilized your wing in the curve, may you also attempt to open the folded down wing, by lightly pumping the loose side.

When flying into hard or strong thermals do not brake, instead open up the wing, and reduce your motor speed, so that you don't get involved in a dynamic loss of lift, stall to the wing. When exiting a strong thermal be sure to brake more to keep the wing from overshooting, and increase your motor speed. This will avoid getting a front stall of the wings leading edge.

Landing (with Propeller or Motor Off)
The skywalk SCOTCH.HY is simple to land. When making your final approach against the wind, let the wing glide out in combination with light braking. When the wing has reached a level of 1 meter over ground, increase your braking as this will decrease the angle of attack of the wing and will slow the wing. After you have reached the minimum sinking speed, brake strongly in the end.
If you experience a strong approach wind, apply your brakes only lightly. Only when you have touched down and successfully landed should you allow the wing to stall out careflully.
Landing flying steep curves in the final approach should absolutely be avoided. (Danger of Occilation)

Landing (with Motor running)
You may also want to land using the support of motor power.
The flight level height and speed can then be controlled with the help of your brakes and motor torque to control the landing approach and touch down.

CAUTION

IF THE ROTORING PROPELLER MAKES CONTACT WITH THE GROUND, BECAUSE THE PILOT SACKED A LITTLE IN THE KNEES, IS A CRASH PREPROGRAMMED.

10 FLIGHT DECENT ASSISTANCE

The Operation manual is not meant to be an instruction manual for flying.
The education and flight course study must be completed from a recognised flight school as required from each of the individual countries according to their local laws governing sport flying. The following tips will allow you to get the best out of your sky-walk SCOTCH.HY.

Steep Spiraling (Motor and Free Flight)
Using a steep spiral flying manuever you have the best opportunity to increase your flight decent.
The steep spiral is performed by cautiously increasing the brake pressure on one side and leaning your body weight into the curve.
In the event that your curve does not sufficiently enter into a steep enough curve, break off the manuever and try again, don't continue to slowly increase the brake pressure.
The steep spiral manuever is best performed when the SCOTCH.HY enters a sharp axilar curve and starts to fly in a quicker steeper curve. This sharp axilar curve and sinking speed is controlled using a measured dose of increased or decrease of the brakes on the curve inner side.
A light amount of pressure on the outside curve brake line may be applied to control the lose of wing tip folding.

CAUTION

HIGH SINK RATES CAUSED BY THE STEEP SPIRAL MANUEVER CAUSE A CENTRIFUGAL FORCE WHICH LEADS TO A STRONG G FORCE LOAD AND SHOULD NOT BE PERFORMED BY INEXPERIENCED PILOTS!

Through the contraction of a pilots stomach muscles, the steep spirals negative body load may be helpful.
As soon as you notice a light headedness or tunnel vision or approach of unconsciousness, you must immediately stop the steep spiral manuever.
Because of the often large loss of altitude during the steep spiral manuever, it is necessary to always allow for sufficient safe altitude.
In order to avoid a strong pendulum movement during the ending phase of the steep spiral, you should slowly release the curve inside brake, while holding tension on the outer brake.
If the wing starts to react and dive into a stronger asymettrisch spiral caused by some bad factors, (for instance by having the harness cross straps pulled to tight), you must actively stop the spiral by placing your body weight on the curve outside side, and substancially increase the brake pressure on the outside wing side.
Also a braking effect of braking both sides equally, can bring the wing out of the spiral, but an overshooting of the wing on one side may be a side effect to be compensated by brake control.

CAUTION

THE STEERING AND BRAKE PRESSURES MAY BE QUITE A BIT HIGHER THAN DURING NORMLA FLIGHT!

B-Line Stall (Motor and Free Flight)
To perform this manuever, the B-risers are pulled down symettrically by approx. 20 cm. At the same time you should still hold the brake grips in your hands.
The airflow over the upper wing profile is then broken off and the wing starts to enter what appears to be a Sack stall type of flight condition without any forward flight.
Through a strong pulling down of the B-riser, you can reduce even more the wing surface and thus raise your sinking rate.
Though a quick release of both of the B-riser, simultaneous, you can bring your wing back into normal flight.
The wing cap surges forward and the wing begins to fly normally again.
In the event that the wing forms into a Rosette or backwards U form, you must release the B-riser lines immediately and allow the wing to fly normally. If the wings leading edge does not fully inflate then you can add some brake pressure equally to both sides to help inflation.

Big Ears (Motor and Free Flight)
Another Sink Rate Manuever option, other than B-Stall and Steep Spirale, is the „Big Ears" concept using a combination of forward ground speed and sink. This form of Sink

Manuever is used when an area of danger exists and you want to change your direction horizontally and fly out of the danger area quickly.
To perform this „Big Ear“ manuever pull down both outside A-risers. Now you can easily lose altitude without any danger, by decreasing the wing surface and causing the wing to fly only from the mid section of the wing. To steer the wing, simply rotate or change your weight from side to side. By performing this manuever you should not be shortening the brake line by wrapping the lines around your hand.
The opening of the wing tips to full form is performed by simply releasing the A-risers on both sides and through dosed pumping of the brakes to support the opening, when necessary.

ATTENTION

WHEN USING THE FLIGHT DECENT METHOD „BIG EARS“ BE ADVISED THAT YOUR WING AND ESPECIALLY THE LINE GROUPS ARE UNDER A HIGHER LOAD OR STRESS, THEREFORE DO NOT FLY ANY EXTREME FLIGHT MANUEVERS WHILE PERFORMING „BIG EARS“.

Valid for all Types of Extreme flight manuevers and Flight Decent Hel pare:
First learn all types of new flying methods, like quick Sink methods under the observation of a qualified flight instructor in a teaching course covering Safety in flying.
When performing these manuevers be certain that your air space is free all around you, but especially under you.
When performing these methods it is advised that the pilot have constant eye contact with their wing.

SPECIAL NOTICE:

ALL EXTREME FLIGHT MANUEVERS HAVE A CONSEQUENCE OF PUTTING ADDITIONAL STRESS ON THE WING, LINES, AND CAP, AND THUS HAVE A NEGATIVE EFFECT ON THE MATERIAL LONGEVITY. THE RESULT IS THAT THE WING WILL THUS HAVE LESS OF A LIFESPAN.

One Sided Wing Loss
In the event of extreme weather conditions with increased levels of turbulence it is not unusual that your wing may collapse on one side. In the rule your skywalk SCOTCH.HY, even under large collapses, should open quicky and completely within a range of 90 – 180 degree turning radius. The collapse, with a subsequent turning away and reopenng of the wing, after a Klapper where the wing surface has collapsed on one side, can be minimalized or improved by providing additional brake pressure on the supporting wing surface on the open side.
By a strongly deformed wing on one sided collapse, you should only apply a dosed or cautious amount of brake pressure on the open side, to avoid a complete air flow stop, even on the good side.
If the wing does not open after the collapse, even after applying brake pressure on the good side, you can try to stabilize the wing on the collapsed side, by repeated pulling of the brake on the collpsed side, this may help some in the reopening phase.
When applying brake pressure on the good side, you may experience some roll down of the wing tip but that should not have any real relevance on safety. The SCOTCH.HY should perform extremely well when reopening and not have any negative tendency in direction control.

Front Stall
A paragliding wings leading edge will collapse into a front stall if you pull hard on the A riser or through sudden instances of strong down winds.
The Leading edge will impulsively collapse across the entire Front wing span.
Through careful dosing of your brakes, both sides equally, the occilation on the cross axis should be minimalized and at the same time the reopening time quickened.
The skywalk SCOTCH.HY should normally open after a front stall without any pilot reaction. In the event that the reopening phase takes longer, you can help acelerate the reopening by pulling both brake lines equally.

CAUTION

DO NOT OVER BRAKE YOUR WING?

Deep stall

In this condition your paragliding wing will not have any forward flight tendency, instead will flutter above you and have a higher rate of sink.
The cause of this deep stall flight condition is often through a poorly performed B Stall especially when the pilot is too slow in releasing the B Level Gurt, during the reopeing phase.
Wings which have a very porose surface, caused through age and heavy UV radiation overdose, or through use with winch tow systems, which cause a heavy strain on the wing materials and especially on the A lines, are especially subject to backstall.
The Pilot can try and correct this flying condition by lightly pulling forward on the A Gurt at the height of the line locks, or through apply pressure on his speed bar.
The skywalk SCOTCH.HY normally should correct itself automatically to get out of this backstall condition.

CAUTION

BE ADVISED THAT IN THE EVENT OF A BACKSTALL AND THE PILOT ACTUATES HIS BRAKES THE WING WILL IMMEDIATELY GO INTO A FULLSTALL CONDITION. IN THE EVENT THAT THE BACKSTALL HAPPENS NEAR GROUND LEVEL, DO NOT ATTEMPT A RECOVERY OF YOUR WING, AS THE DANGER OF OCCILATION IS TO GREAT. INSTEAD THE PILOT SHOULD MOVE FORWARD AND OUT OF HIS HARNESS, STRAIGHTEN HIS LEGS, AND PREPARE FOR LANDING CONTACT USING THE PARATROOPER ROLL.

Fullstall

In order to perform a Full Stall the pilot should wrap his brake lines once around the grips, symettrically on both sides, and pull the brake line down constantly and fully.

The wing will slowly start to lose speed until the wing completely collapses.
The wing will shoot back suddenly. In spite of this unpleasant sensation, both brake lines should be continued to be held down, until the wing has a chance to stabilize itself above you.
The skywalk SCOTCH.HY will fly backwards and most often form a Rosette (backwards U Form) bending towards the front.
In order to reopen your wing after the full stall, you should release the brake lines symettrically upwards, (time interval of more than or equal to 1 second). The wing will begin to open, occilating forwards some before it recovers into full flight.
Through a symettric holding of the brakes, you will hinder or minimalize the tendency of the wing to shoot forward.
In the event that the Pilot does not apply the brakes, the skywalk SCOTCH.HY will shoot forward marginally, where a possible front stall collapse of the wing could happen.

CAUTION

IF THE FULL STALL IS OPENED TO EARLY; TO QUICKLY OR IMPROPERLY; A FURTHER OVERSHOOT OF THE WING IS THE CONSEQUENCE.

Spin

A wing can turn negatively into a spin, when the airflow is lost over one side of the wing surface.
In this event the wing cap turns on the horizontal axis inside the wingspan. The inside wingspan then flies backwards.
There are 2 possible Causes for a Spin.
The brake lines are pulled down to quickly and to hard, (as in entering a steep spiral manuever).
In very slow flight when the brakes are applied to strongly on one side, for example when entering into a thermal or when a pilot applies the brakes to hard when flying with a motor or (while trying to compensate for torque).
In the event of an unwanted negative curve the pilot should release his brakes so that the skywalk SCOTCH.HY can recover into normal flight without much loss of altitude.
The brake lines are released to the point that the air flow starts to recover over the

inner wingspan. After a longer held negative curve, it may be that the wing will shoot forward considerably on one side, after release. This may lead to a one sided wing collapse. A cross over stabilizing harness strap will increase the tendency of spin in all wings.

Wingover
To perform this manuever the wing is flown in narrow held slanting curves, changing back and forth, increasing the angle of tilt after each curve.
When performing wing overs with a great amount of tilt, the outside wing tips may be deformed slightly.
Overly tilting your wing should be avoided, since the eventual collapse of one side of the wing may be quite impulsive.

ATTENTION

FULLSTALL, SPIN, AND WING OVER (OVER 90 DEGREES) ARE FORBIDDEN ACROBATIC MANUEVERS, AND SHOULD NOT BE PERFORMED UNDER NORMAL FLYING CONDITION. FALSE APPLICATION OF BRAKES OR OVERREACTION OF THE PILOT CAN CAUSE VERY DANGEROUS SITUATION REGARDLESS WHICH TYPE OF WING A PILOT FLIES.

11 MATERIALS

The skywalk SCOTCH.HY is made of the highest quality of materials. Skywalk has selected the best possible combinations of materials to use, in consideration of material longevity, load, stress, and performance. The highest life expectancy of your wing is a goal of skywalk as we only want satisfied customers.

Cloth Materials
After more than 1 year of development and countless testing, we have made a decision in the beginning of 2005 to use a very special robust Nylon material from Porcher Marine. This cloth material has somewhat more weight as others we have tested, but the advance of wing longevity outweights the negatives. Our philosophy is to use materials which meet our set goals, therefore our bottom and rear upper wing cloth still uses the trusted 9017 material type, also from Porcher. The reduced weight of the material and excellent tear quality makes that by far the best choice for these areas.

Lines
LIROS has proven itself to be one of the best manufacturers of paragliding wing lines. We have selected a well trusted Technora line for the main lines. The reason for this selection is an excellent stretching quality with a minimum diameter, good sharp bending resistenz, plus good recovery values.

Top and brake lines are	DLS 70/PPL 120
A,B, and C- Main lines	TSL 280
CIII, D and Stabilo Main Lines	NTSL 160
Main Brake Lines	DFL 200/32

Riser
The Riser is produced using a 25 mm Polyester from Güth and Wolf. Stretch rates, sturdiness and stabily of this materials are the trademark of this special Gurt material and belongs to the top materials in use.

12 SERVICE

When performing proper care and service, your skywalk SCOTCH.HY will remain in good flying condition over many years.
A well maintained paragliding wing will have double the flight time over wings which are just shoved into your Packsack.
Don't forget your life is hanging on this wing.

Storage
Store your skywalk wing in a dry, and light protected enviornment and not around chemicals. Moisture is your wings worse enemy, so before you repack your wing, make sure it is dry, for instance, by hanging it up in a heated room.

Cleaning
Every form of rubbing on the material or washing will quickly age your wing.
The PU imprägnated cloth material of your skywalk SCOTCH.HY is designed to resist getting dirty.
In the event that you have the feeling that your wing needs to be cleaned in some spots, then just use a soft, water moist cloth or sponge without soap or other wash powder or fluids. Don't use any hard cleaning solutions, as these may attack and damage the materials.

Repair
Repairs may only be performed by authorized skywalk service centers.

Material handling in normal retail use
The skywalk SCOTCH.HY is made mainly of Nylon materials, which are subject to negative influences of UV rays causing material break down and loss porosity.
Avoid strong light situations by only taking out your wing at the last minute to start, and upon landing, immediately repack your wing away from the strong rays of the sun.

Line Repair
The line system of the skywalk SCOTCH.HY is made of a Technora or Dyneema Core with a polyester outer covering .
Excessive stress, over weight, or strain on the materials is to be avoided, as this could lead to an irreversible stretching of the lines.

Avoid over bending of the lines at the same point, that may lead to damage.
Every form of visual damage to the lines, even when the damage is only to the outer sheaf, requires that you replace that line.
Replacing a line requires that you contact a skywalk authorized service center to make sure you the proper exchange.
Your school, or dealer can help you with this task. Before you change a line, be sure to check it to make sure that you have the correct length, by comparing it to the same line on the other wing half.
You should also test fly the wing on the ground first, after any exchange of line, to insure its proper function.

General Tips:

- When laying out your wing inspect your wing cloth material and lines to make sure they are not dirty. Dirt, sand, etc. can collect in the fibers of the material, damaging them and cause shortening.
  If your lines are entangled with debrise, rocks, roots, etc. and are not free, while starting, that can cause overstreching or ripping of the lines.
- Don't step on your lines.
- Pay attention when starting to make sure your wing cap does not have any snow, sand, pebbles or rocks in the chambers, as this material can all end up at the back edge of your wing and slow it to the point of stall.
- Sharp edges, stones etc. can injure your cap material.
- When starting your wing in strong winds, note that the inflated wing can crash back onto the ground and damage the sowing at the seams. This can lead to rippng of the wing nose profile, or generally damage the cloth and stitching.
- When landing don't allow your wing to crash forward onto the ground over you, as this can lead to damage of the material in the wing nose area.
- After every tree landing, or landing in water, check the lines and material for damage.
- After contact with any type of salt water, you must immediately rinse the complete wing and riser with normal fresh water.
- A complete current list or diagram of your lines should be included with the delivery of your wing and Handbook, or can be requested from your dealer, flight school, or skywalk directly.

13 2-YEAR CHECK

After 24 Months DHV requires a service check of your wing.
The 2 Year Check Test as described in the DHV requirements, can be accomplished by the manufacturer, or service centers contracted by the manufacturer, or by the owner himself.
The service check is to be confirmed with a DHV stamp or brand.
If the Service check is not performed in the authorized time frame, or is done by an unauthorized center, your skywalk SCOTCH.HY wing will lose its manufacturing validation. We recommend that you do not perform the check yourself, as you may not have the authorized or correct instruments or devices to properly test your wing, or are not fully competent to perform this check. Therefore an air certification is not garanteed.

Changes or Alterations to your Paragliding wing
The skywalk SCOTCH.HY is garanteed to be in the required manufacturing tolerances when leaving the factory.
This tolerance range is very exact and should never be changed. The correct balance of performance, handling, and safety is garanteed.
Any change to the wing done by yourself or others will effectively cancel the commercial garantee of the manufacturer.

CAUTION

THEREFORE ANY LIABILITY OF THE MANUFACTURER OR SALES CENTER IS AUTOMATICALLY CANCELLED.

The diverse Certification tests as well as the DULV certification is the final phase in the development process of the wing manufacturer. The certifications and Test flight is thus accomplished only when the Testing Team is totally satisfied with the results of the wing performance. We want to make you aware that the certification test results have no real effect to the flying characteristics or performance of the wing in thermally active or turbulent air. Certifications only provide you with performance characteristics of the wing when performing extreme flight manuevers in normal or calm air. The provocated extreme flight manuevers as described in the certification and validation testing procedures should be handled only as one benchmark in a complex row of correlating relationships to your wings performance characteristics, and should not be over rated.

14 A FEW CLOSING WORDS

The skywalk SCOTCH.HY is at the pinnacle of the development standards in Hybrid Wing technology.
This Wing will offer you years of satisfaction and joy, if you handle your wing properly. Take into account the demands of flying and respect the dangers involved, that is the basic requirement for successful and problem free flying. Even the safest wing can not save you from disaster if your pilot calculation is wrong or you falsely interprete the weather conditions. Remember that every form of sport flying has a potential for danger and your inevitable safety is in your hands alone. In the interest and respect to our sport, remember to always fly within your own safe bounds and always under the local laws governing flight in your country.

Remember Every Pilot Always Flies At Their Own Risk!

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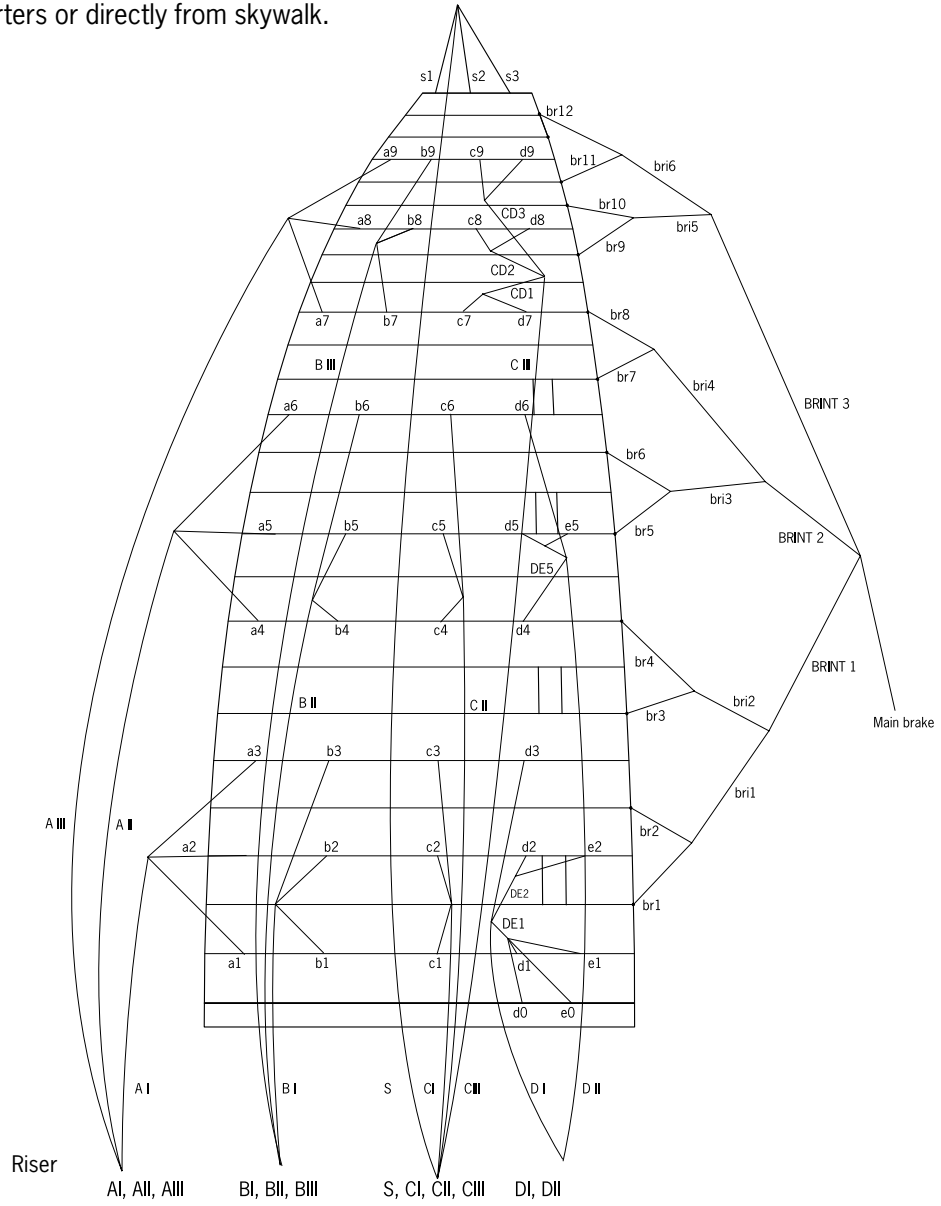
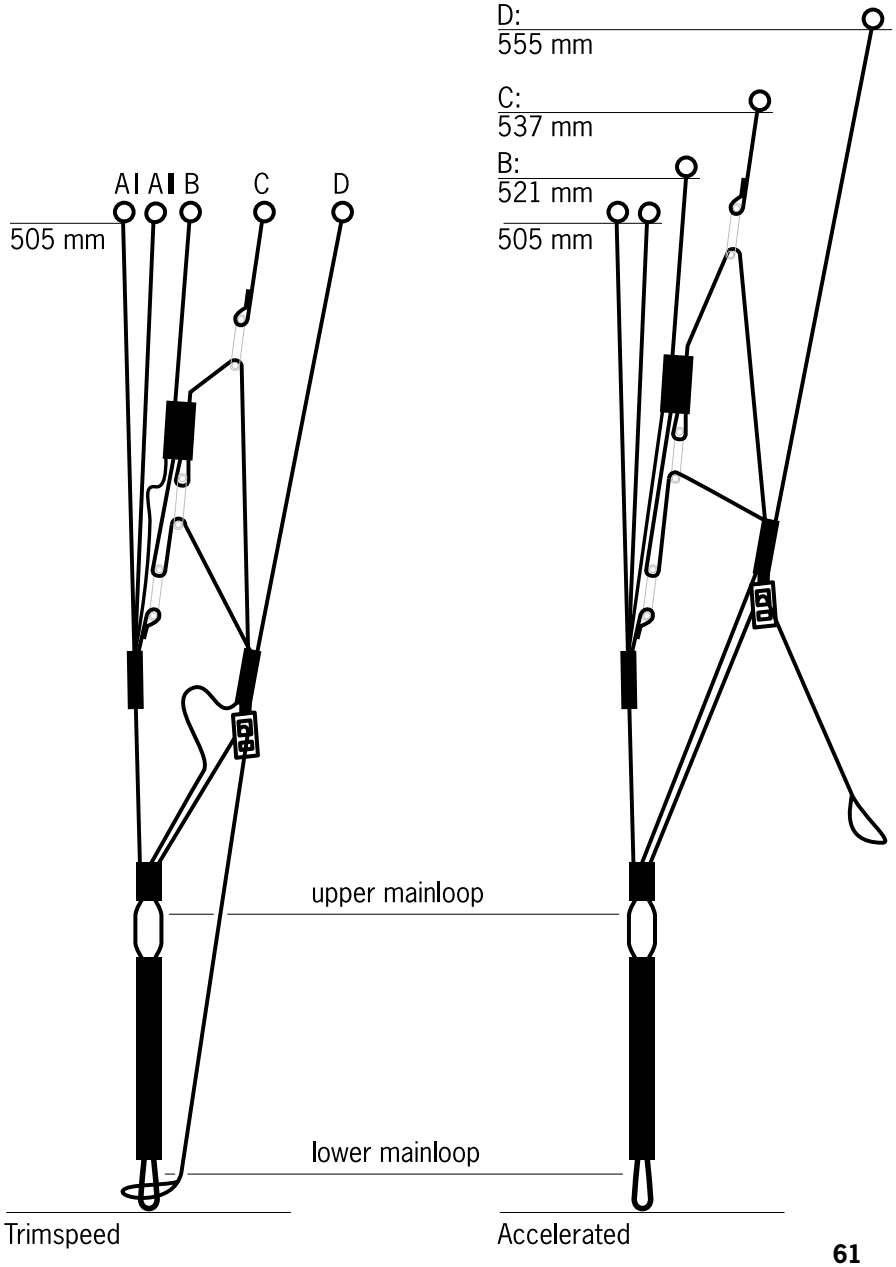
15 LINE PLAN

The displayed line plan of the skywalk SCOTCH.HY is only for demonstration purposes of the line configuration. Plans for other sizes can be aquired via flight schools, importers or directly from skywalk.



16 RISER

SCOTCH.HY, Size M, L



17 TEST PROTOCOL

Test Protocol		Date:
Customer, Name:		
Adress:		Phone:
Glider:	Size:	Serial number:
Gütesiegelnr.		Date of last check:
Date of first flight:	Year of construction:	

Accomplished checking:	Results: [+/–]	Description of failure	Suggested repairs
Identification:	+ –		
Visual check of canopy:			
Upper surface:	+ –		
Lower surface:	+ –		
Profiles:	+ –		
Line flares:	+ –		
Leading edge:	+ –		
Trailing edge:	+ –		
Crossports:	+ –		
Visual check of lines:			
Seams:	+ –		
Abrasion spots:	+ –		
Core withdrawals:	+ –		
Vis. check of connectionparts			
Suspension line screw locks:	+ –		
Risers:	+ –		
Lenght measurement:			
Risers:	+ –		
Lines:	+ –		
Examinations of the canopy:			
Firmness of canopy:	+ –		
Porosity:	+ –		

Examinations of the lines:			
Firmness of main lines:	☐ ☐ ☐ ☐ ☐ daN		
Visual check of trimming:	+ –		
Checkflight necessary?	+ –		
Gütesiegel plaque?	+ –		
Identification plate?	+ –		

Condition:

- ☐ New
- ☐ Very good condition
- ☐ Good condition
- ☐ Well used
- ☐ Heavily used, but within gütesiegel standards, frequent checks required
- ☐ No longer airworthy, outside of the limit values.

Repairs made?

Signature of tester:	Date:

17 TEST PROTOCOL

Test Protocol		Date:
Customer, Name:		
Adress:		Phone:
Glider:	Size:	Serial number:
Gütesiegelnr.		Date of last check:
Date of first flight:	Year of construction:	

Accomplished checking:	Results: [+/–]	Description of failure	Suggested repairs
Identification:	+ –		
Visual check of canopy:			
Upper surface:	+ –		
Lower surface:	+ –		
Profiles:	+ –		
Line flares:	+ –		
Leading edge:	+ –		
Trailing edge:	+ –		
Crossports:	+ –		
Visual check of lines:			
Seams:	+ –		
Abrasion spots:	+ –		
Core withdrawals:	+ –		
Vis. check of connectionparts			
Suspension line screw locks:	+ –		
Risers:	+ –		
Lenght measurement:			
Risers:	+ –		
Lines:	+ –		
Examinations of the canopy:			
Firmness of canopy:	+ –		
Porosity:	+ –		

Examinations of the lines:			
Firmness of main lines:	☐ ☐ ☐ ☐ ☐ daN		
Visual check of trimming:	+ –		
Checkflight necessary?	+ –		
Gütesiegel plaque?	+ –		
Identification plate?	+ –		

Condition:

- ☐ New
- ☐ Very good condition
- ☐ Good condition
- ☐ Well used
- ☐ Heavily used, but within gütesiegel standards, frequent checks required
- ☐ No longer airworthy, outside of the limit values.

Repairs made?

Signature of tester:	Date:

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