

# Pilot's Manual



**Harnesses**

**Spring**

**Spring**

**Airbag**



07/2009

**PLEASE READ THIS MANUAL CAREFULLY  
AND NOTE THE FOLLOWING DETAILS**

**HIS HARNESS MEETS AT THE TIME OF DELIVERY THE  
REQUIREMENTS OF THE LTF (LUFTTÜCHTIGKEITSFORDERUNGEN)  
CERTIFICATION OR THE EN 926 (EURO NORM) OR THE AFNOR  
SHV AND AEROTESTS).**

**ANY ALTERATIONS TO THE HARNESS WILL RENDER ITS  
CERTIFICATION NULL AND VOID!**

**THE USE OF THIS HARNESS IS SOLELY AT THE USER'S OWN RISK!**

**MANUFACTURER AND DISTRIBUTOR DO NOT ACCEPT ANY LIABILITY.**

**PILOTS ARE RESPONSIBLE FOR THEIR OWN SAFETY AND THEIR  
HARNESS'S AIRWORTHINESS.**

**THE AUTHOR ASSUMES, THAT THE PILOT IS IN POSSESSION OF  
A VALID PARAGLIDING LICENCE !**

**INDEX**

Welcome to the SOL Team .....	35
About SOL .....	36
Philosophy .....	37
Introduction .....	38
The SPRING and SPRING AIRBAG CYGNUS.....	39
Technical innovations .....	38
Pre-Flight adjustments and installations.....	39
Installing the protectors.....	40
Side protectors .....	39
Back protector.....	40
Installing the airbag (Spring Airbag Cygnus).....	41
Installing the carabiners.....	41
Position adjustments .....	41
Flight position.....	43
Distance measure between carabiners .....	43
Rescue parachute compartment .....	44
Installing the rescue parachute .....	44
Water Ballast Compartment.....	48
Storage in the airbag compartment.....	48
Installing the speed system .....	48
Tension Spring Retrieve System.....	49
Installing the foot stirrup.....	49
Installing the tow release system.....	50
Installing a cockpit.....	51
Final adjustments.....	51
Tandem flight .....	52
SOL Harness with third party gliders.....	52
Maintenance, Repair and Cleaning .....	52
Maintenance .....	52
Repairs .....	53
Zipper .....	53
Pulleys, Carabiners and click lock buckles.....	54
Cleaning .....	54
Water Landing.....	54
Technical Data .....	55
Size table .....	55
Features.....	56
Legend .....	56
Final Words .....	57



## **WELCOME TO THE SOL TEAM!**

Thank you for selecting a **SOL** Paragliders harness. You have acquired a high quality product, manufactured under one of the most demanding industry standards worldwide.

We trust your harness will bring you many great life memories you will cherish forever.

We would like you to read this manual carefully and thoroughly. In it, you will find important information about using your new equipment.

In the event you should have any questions about its usage or you should wish to be updated on the latest news at **SOL**. We remain at your disposal at our Sales and Service Departments at the phone +55(47)3275-7753 and through e-mail at [export@solsports.com.br](mailto:export@solsports.com.br) or [info@solsports.com.br](mailto:info@solsports.com.br)

Don't forget to access our website frequently at [www.solsports.com.br](http://www.solsports.com.br) to be updated on the latest models' launchings, results and news from the world of paragliding.

**Be welcome to the SOL Team of pilots.**



## ABOUT SOL

Founded in 1991, after six months of research and many visits to several manufacturing facilities and suppliers, **SOL** began its production in partnership with the European brands Condor, Comet and Nova, and became autonomous in 1999 with its own testing and development centers.

From the beginning **SOL** Paragliders has adopted the philosophy of utilizing certified designs, manufactured with imported materials of the highest quality by specialized and skilled-trained staff.

In 1995, the company moved to its current facility, occupying an area of 3.400 m<sup>2</sup> and has at its disposal a team of 110 employees, 22 of which are pilots. **SOL** provides a comprehensive benefits package such as Health Plan, Life Insurance, partnerships with pharmacies, transportation vouchers, education grants and incentive getaways to employees who outperform each month.

At **SOL**, we take extreme measures to maintain our machinery and manufacturing equipment current with the world market. This way, we safeguard our accuracy everyday in the production process, control and assuring the high quality of **SOL** brand and products throughout 65 countries around the world.

**SOL** is one of the few paragliding enterprises worldwide to have its own manufacturing facilities able to test every new model before making it available to the market, which fosters the reliability necessary for excellent performance when flying.

In early 2004 **SOL** Paragliders became certified by DHV, which is the most respected regulating body of free-flying worldwide. Its mandate is to make sure its members have the capacity to reproduce faithfully the certified equipment on an industrial scale. Few facilities in the world possess this certification in their manufacturing process. **SOL** was one of the firsts to obtain it.

It is part of our history to break various of the most important world records in free flight and pilots winning national and international championships all over the world, flying equipments designed and produced through **SOL** Paragliders.



## PHILOSOPHY

**SOL's** philosophy is to introduce products that are considerably better than current ones, in order to guarantee significant advancements in four aspects: **Safety, Performance, Ease of Operation and Innovation.**

**Safety:** The new product has to offer a level of safety that is at par or better than the one it is replacing;

**Performance:** The new product must perform better than the one it is replacing;

**Ease of Operation:** The new product must display higher levels and better operational ease than the one it is replacing;

**Innovation:** New products must display real benefits to the user, facilitating free-flying, increased safety, or both.



## INTRODUCTION



**SOL** offers a complete and the latest line of Harnesses available for all levels, ranging from early flying stages to aerobatics.

Since we spend a lot of time in the air - whether testing our products, flying for leisure or breaking local and world records - nothing else makes more sense than taking advantage of these opportunities to develop and test our harnesses, always in search of safety innovations, handling and comfort.

Like any other **SOL** product, the materials used are carefully selected, assuring greater durability and high safety ratings. All **SOL** harnesses are manufactured at our own plant facility.

The development process and design of every new product begins at the computer. Drawing Software, 2D, 3D modeling and simulation are utilized before the actual manufacturing of prototypes, in order to ensure greater accuracy in each new design.



## The **SPRING** and **SPRING AIRBAG CYGNUS**

### Technical Innovations:

- Independent bridles system according to LTF/ EN norm;
- Adjustment straps manufactured according to LTF / EN norm;
- Adjustable Quick Lock T-Cobra for 38-55 cm;
- Extended speed pulley;
- Waist adjustment;
- Side adjustment with trimmer and safety strap;
- ABS System;
- Quick Lock leg buckles;
- Passage for ballast hose exit;
- Self release system of foot stirrup on rescue deployment;
- Anatomic shoulder cuts;
- Back composed by ergonomic foam and PP plate;
- Side foam protection;
- Spacious side pocket;
- Sliding shoulder straps;
- Shoulder strap attached to seat;
- Lateral reinforcement for better load distribution;
- Elastic rig for speed system and foot stirrup;
- Impact and perforation protection plate;
- Rescue compartment 5 blades;.
- Foot stirrup;
- Spacious back pockets;
- Water compartment;
- 18 cm foam back protector;
- ension spring retrieve speed system when not in use;

## **PRE-FLIGHT ADJUSTMENTS and INSTALLATIONS**

The **SOL** Harnesses provide a variety of adjustment possibilities, for the pilot to find his/her ideal flying position.

The first adjustment must be done in a simulator where you can fit the harness to the best flying position.

It may be necessary to do a few test flights until the ideal setting is achieved, but the pilot will be rewarded with amazing comfortable flights.



For your first flight, choose calm weather conditions. Should you need to make further adjustments, it will be easier to find the ideal position after this first flight.

**Attention:**

-Install the back protection and the reserve parachute before adjusting your **SOL** Harness.

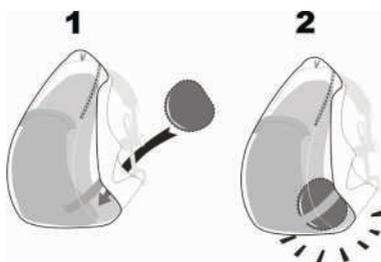
The entire harness body is equipped with an anti-perforating plate under the back and the seat, side protections, back foam and adjustment straps for the pilot's safety.

**Attention:**

-Do not carry instruments that may perforate the harness in case of impact!

### INSTALLING THE PROTECTORS

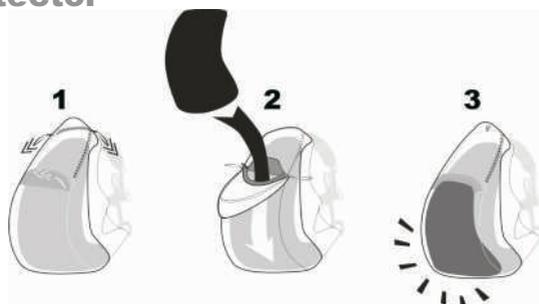
#### Side protectors



**Attention:**

- The side protectors must be fed through the side pockets.

#### Back Protector

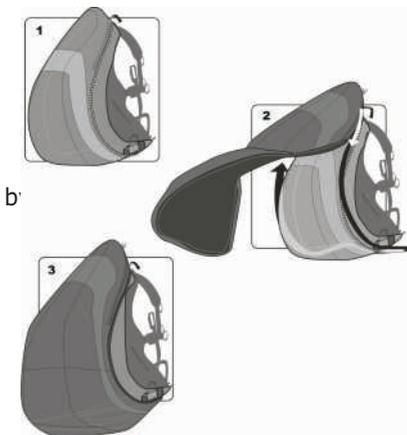


**Attention:**

The back protector must be fed through the rear pocket!

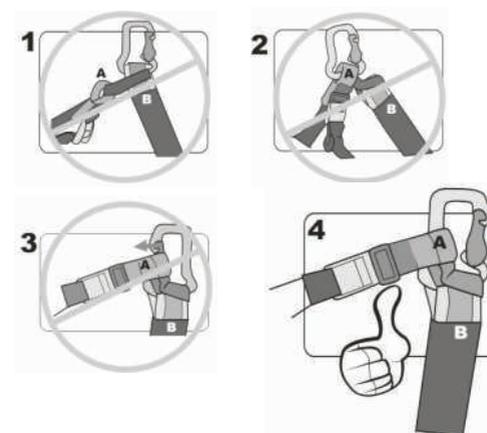


### INSTALLING THE AIRBAG (Spring Airbag Cygnus)



The **Spring Airbag** harness is composed by a detachable zip-airbag easy to handle.

### INSTALLING THE CARABINERS



### POSITION ADJUSTMENTS

Before the first flight, we suggest the pilot to simulate the flying position hanging the harness on a harness tester, sitting on **SOL** Harness and trying to find the best position adjustment. This simulation becomes more realistic if the back pocket is filled with objects the pilot would normally carry during flight.



After adjusting the back, the pilot must choose the best body inclination, respecting a central vertical line. We don't recommend a steep inclination, so that vision and access to commands are not jeopardized.

The shoulder strap is adjustable, varying according to the pilots' height. For better comfort, the shoulder straps support part of the dorsal weight.

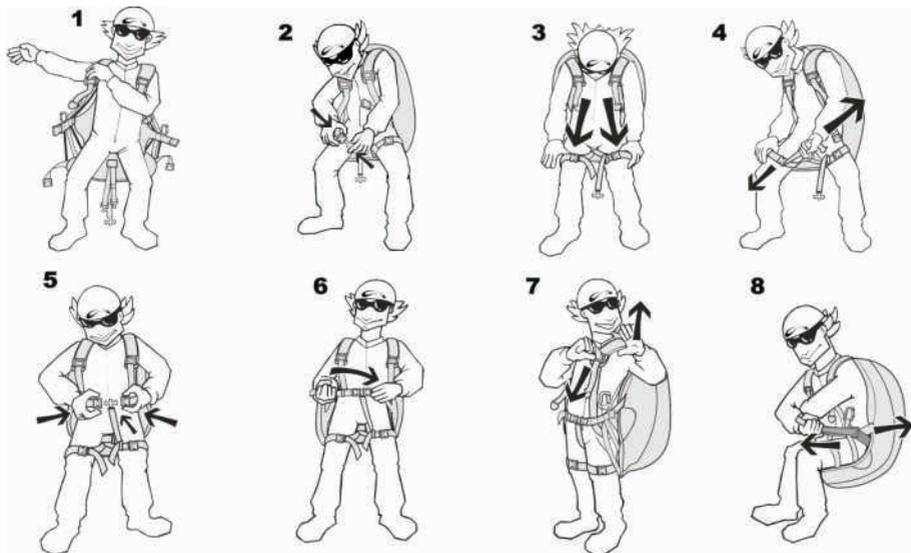
The chest strap regulates the distance between the two carabiners, which varies depending on the paraglider's size (verify through easy check measure tape).

**Attention:**

-The pilot must maintain the chest strap distance at the specified measurement as shown in the manual, therefore the certification characteristics are not altered.

The legs' straps adjustment is very accommodating and allows for a wide range of heights. All **SOL** harnesses are equipped with leg locks, which works together with the chest strap, making the connection of pilot and harness.

Observe the details how to adjust the **Spring** and **Spring Airbag** harness for flight :



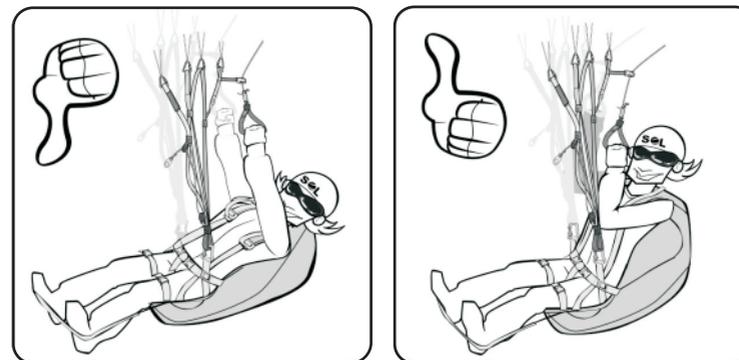
**Attention:**

-The leg setting should not be too tight, to avoid jeopardizing good movement.  
-Make sure the setting is symmetric.



**Flight Position**

Avoid a reclined flight position, as this alters the handling of the paraglider: your command is shortened and you are more vulnerable to a twist.

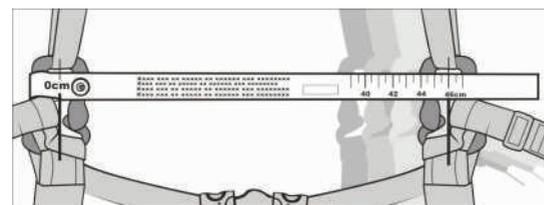


**DISTANCE MEASURE BETWEEN CARABINERS**

Depending on the paraglider size, there is a recommended carabiner distance to which the paraglider was designed and tested. With **SOL** paragliders you must fly within these measures. In case you are outside of them, the behavior of the paraglider may not correspond to the certification.

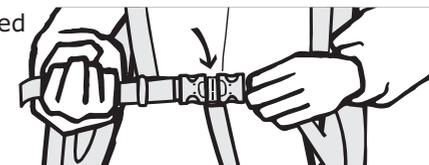
Distance between carabiners according to **SOL** paragliders sizes:

S - 40 cm    M - 42cm    L - 44 cm    XL - 46cm    Tandem - 44 cm



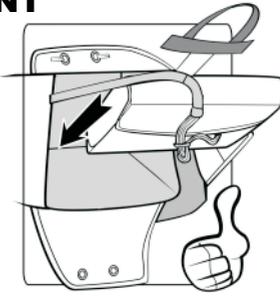
The easy check measure tape is included in your harness for you to set the exact distance measure between the carabiners.

The measure of 42cm (M) is premarked on the chest webbing as a reference.



## RESCUE PARACHUTE COMPARTMENT

The reserve parachute compartment of your harness was designed for most of the parachute models in the market. Any new combination of rescue and harness need to be checked by a qualified person or the respective manufacturer. Any questions concerning its operation must be dealt with during the installation and setting of the harness before the first flight.



### Attention:

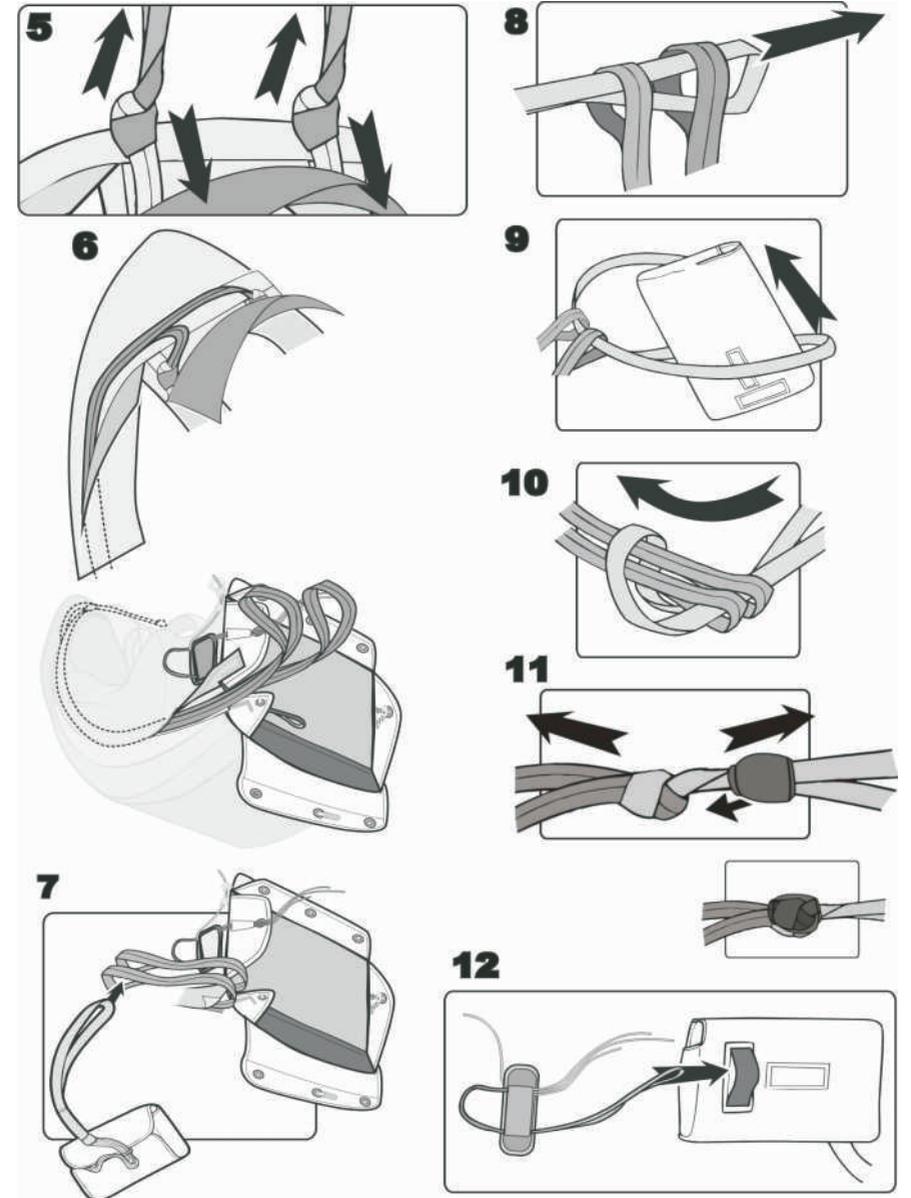
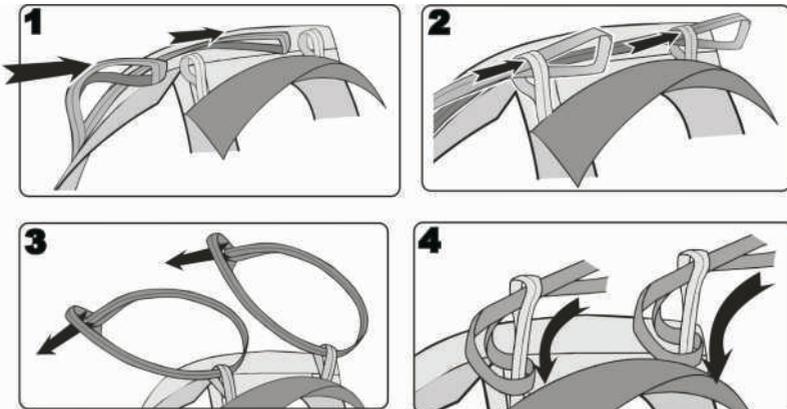
Never sit down in your harness for tests or other activities when it is layed on the ground, this can damage the harness, the rescue parachute compartment and its operation.



Pay special attention to the fact that a deployment of your installed rescue system should be simulated for your training.

## INSTALLING THE RESCUE PARACHUTE

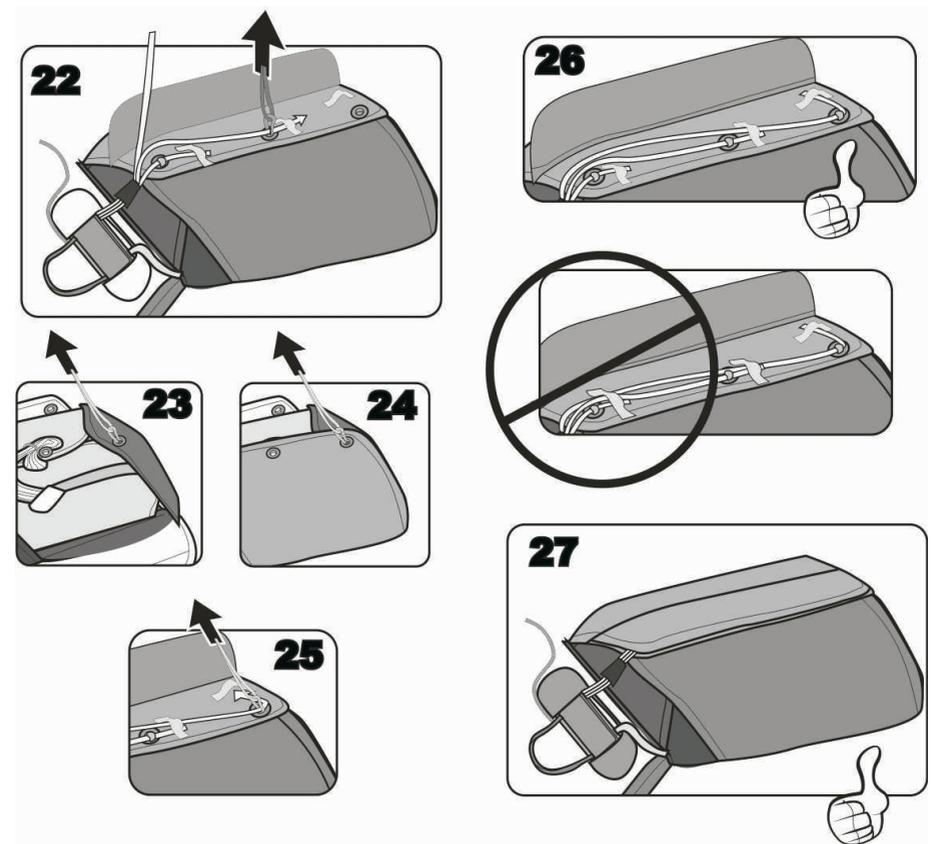
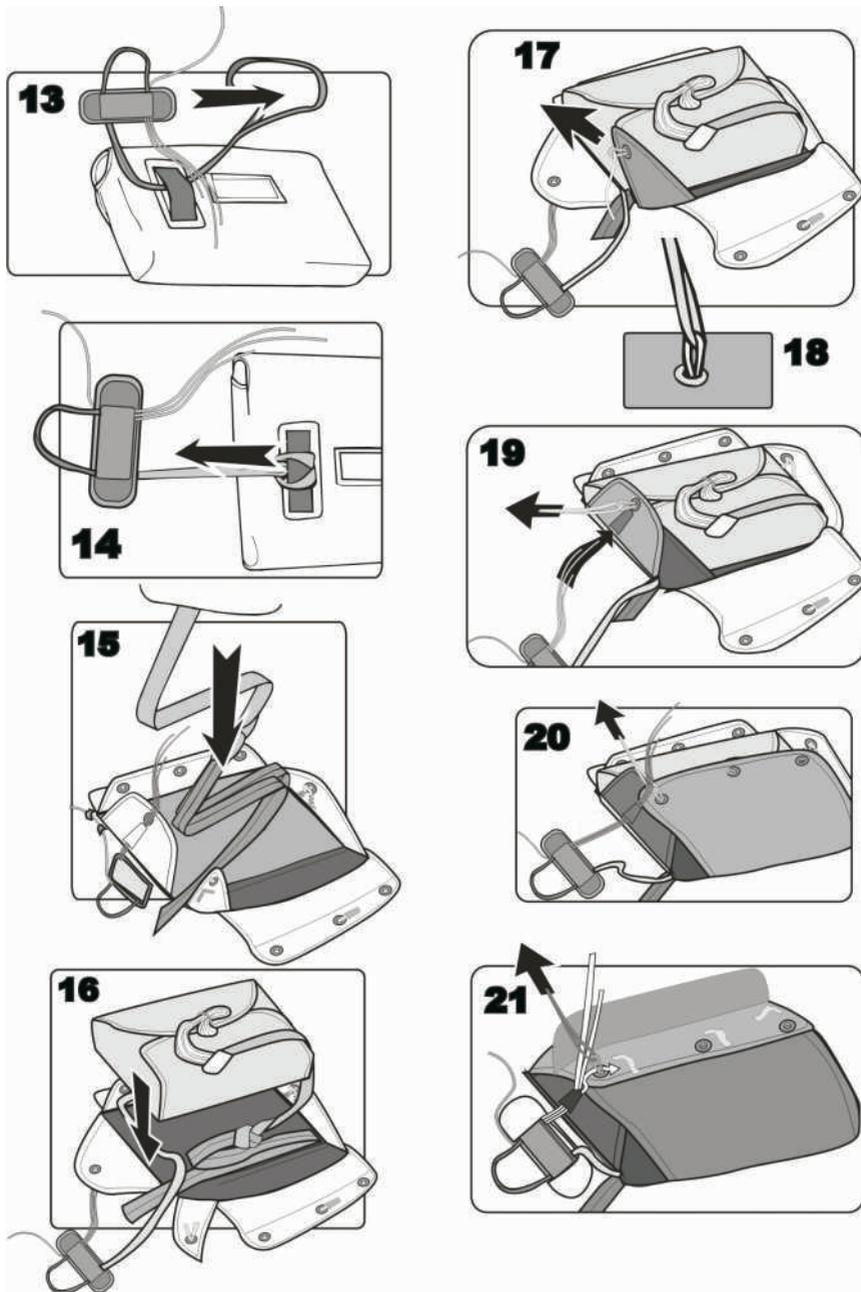
Observe the details how to execute the rescue parachute installation. If necessary, you should ask for professional help to be sure of the properly installation of the rescue system.



### Attention on illustration 5 and 11:

Pull the bridles firmly to stop an involuntary opening, avoiding a dangerous friction of the looped bridles in case of a reserve deployment.





The **Spring** and **Spring Airbag** features a rescue parachute installation system with easy access and visible rescue handle.

The closure flaps maintain the rescue parachute in the right position and protect it from dust and humidity (Figure 19).

In case of a water landing, the rescue parachute need to be removed from the harness, be dried and re-packed before it is installed back into the compartment.

- Before every flight, make sure that the rescue handle and its retention cables are in the correct setting position.
- The rescue compartment size is adjustable to the rescue size to be installed that corresponds to the harness size x pilot.
- Any new rescue installation must be checked through a qualified person.



## WATER BALLAST COMPARTMENT

Your harness **Spring** or **Spring Airbag** has at its disposal a water compartment located in an aerodynamically efficient place in the rear pocket with easy access.

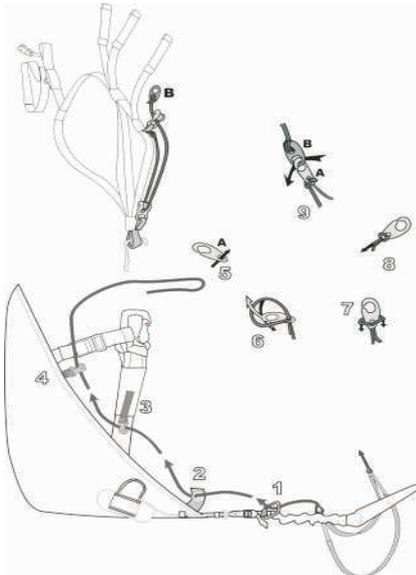


## STORAGE IN THE AIRBAG COMPARTMENT

The paraglider back pack can be easily stored in the pocket of the Airbag compartment.



## INSTALLING THE SPEED SYSTEM



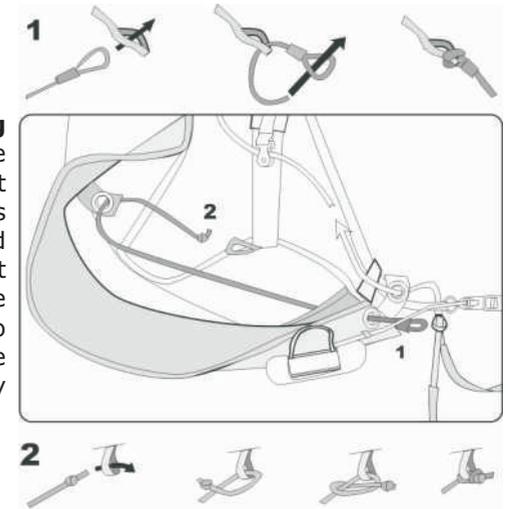
A system of pulleys is in task for the load and travel of the speed bar. The lines run on each side from the D-ring (1), to the eyelet (2), passing through the 2 pulleys (3+4). The end of the cord is being knotted (5-9) with the sister clip (A) to be connected to the sister clip (B) of the riser on each side

After the installation, the speed system need to be sharp tuned to optimize its travel and function.



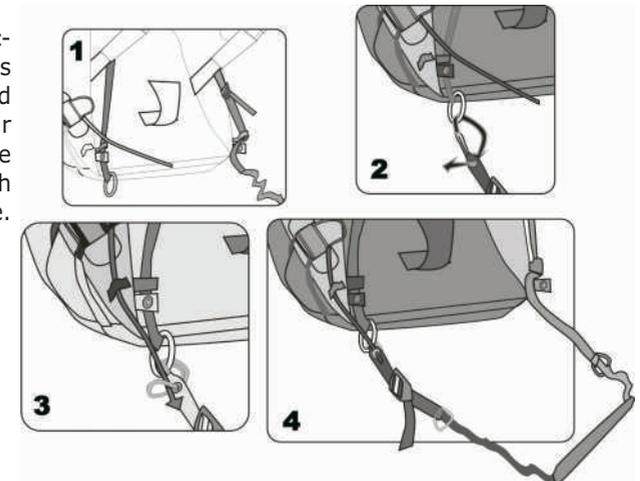
## TENSION SPRING RETRIEVE SYSTEM

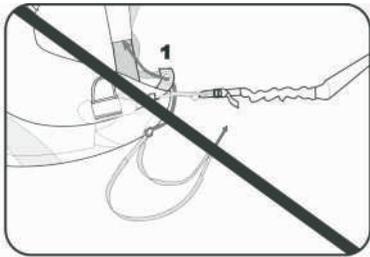
The **Spring** and **Spring Airbag** has a tension **spring** retrieve system for the speed bar. It makes sure that it maintains close beneath the seatboard when not in use. Primarily for not to interfere in an eventual rescue deployment. The elastic need to be installed as close as possible to the speed bar but without any tension applied.



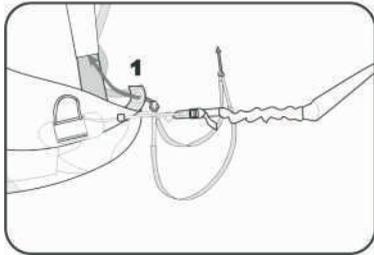
## INSTALLING THE FOOT STIRRUP

The foot stirrup that accompanies the harness will be disconnected automatically for your safety in case of a rescue deployment together with the deployment handle.





Pay attention to the correct installation of the speed system and the foot stirrup to avoid any interference in case of a rescue deployment.

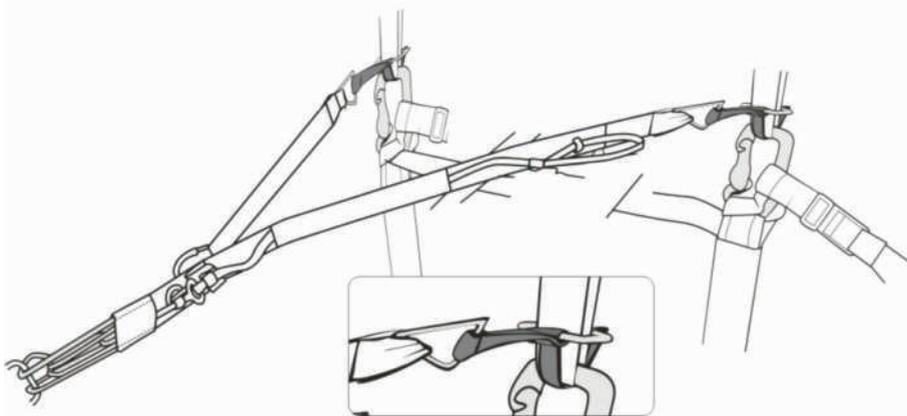


## INSTALLING THE TOW RELEASE SYSTEM

Your **SOL** harness is suitable for towing, provided that it is attached to the tow release system.

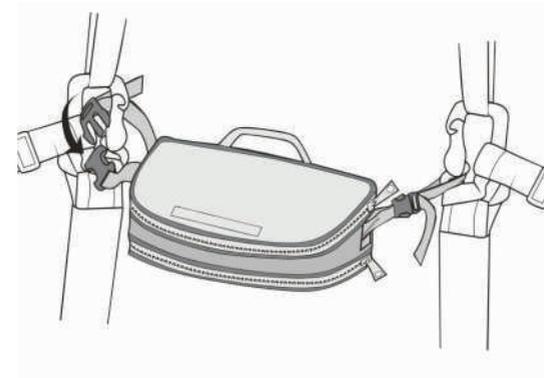
This must be fitted on the same carabiners that link the harness to the paraglider, being activated by an elastic rope conveniently located which releases the equipment for flight when pulled.

In any doubt, please consult the tow driver and the handbook of your paraglider in the section 'towing'.



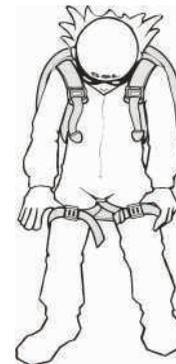
## INSTALLING A COCKPIT

A cockpit for your instruments can be connected to the main carabiners. You should choose the right model according to the functions it should perform (cockpit for instruments only, as in the picture; cockpit for instruments with water ballast container or cockpit for instruments with rescue container).



## FINAL ADJUSTMENTS

Before any take-off with your new **SOL** Harness, make sure to perform the following inspection in detail:



- 1) check, if all pockets are closed correctly;
- 2) check, if reserve parachute handle is in the correct position;
- 3) check, if all click log buckles are connected;
- 4) check, if the recommended carabiner distance is set according to the paraglider's certification.



## Tandem Flight

The **Spring** and **Spring Airbag** Harnesses were not designed for Tandem flights, neither for pilots nor for passengers.

## SOL Harness with third party paragliders:

**SOL** Harnesses don't have any usage restriction in combination with any other brand of paragliders. Please refer to your paraglider's manual.

## MAINTENANCE, REPAIR AND CLEANING

### Maintenance:

We recommend to check your **SOL** Harness completely at least once a year, verifying the condition of the sewing and webbing parts and the operation of the buckles. A regular ventilation and repacking of your rescue parachute is essential.

In case of a rescue deployment of the parachute or any heavy loading exposure, your harness should be checked by an authorised service center or the manufacturer.

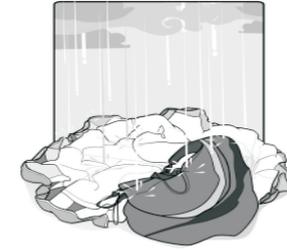
The harness fabric is made mainly out of Nylon, which like any other synthetic material is sensitive to UV light radiation, causing it to wearout, losing its mechanical resistance, and thus increasing its deterioration. For this reason, the unnecessary exposure to sun light, which carries out a high UV radiation level should be avoided.



When not in use, leave the harness stored away at adequate ventilation and well protected.

Avoid dragging your harness on the ground, on rocks or on wet surfaces as this speeds up the aging process, furthermore, sharp corners may cut the fabric.

Prolonged exposure to humidity and heat must also be avoided to prevent early and unnecessary material deterioration.



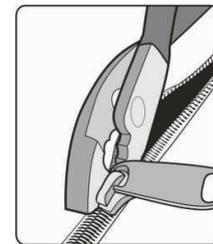
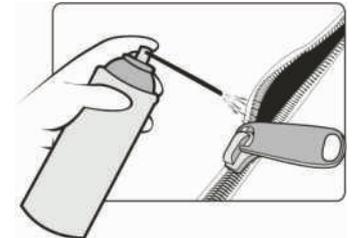
In case of contact with sea water, rinse the harness carefully with fresh water only. Sea water can diminish its resistance even so.

### Repairs:

We advise you, to get done any repair by the manufacturer or authorized repair shop, where original materials are utilized and technical expertise are second to none.

### Zipper

The zipper should open and close softly and the slider should travel through its path easily. If you experience any trouble with the slider, you should apply wax or lubricant spray to minimize the friction between the parts.

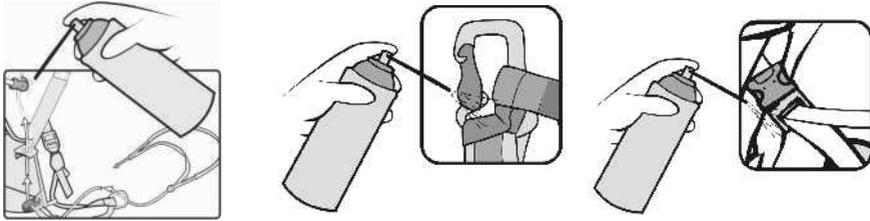


In most cases, you will be able to repair the zipper yourself. In case the slider is not able to close the zipper, bring it to the starting point and with some pliers lighten the slider on both sides.



## Pulleys, Carabiners and Click lock buckles

It is very important to maintain all pulleys, carabiners, click-lock buckles well lubricated, as this will keep from stressing the speed system lines and guides. Apply wax or lubricant spray. Read carefully about the lubricant to avoid spots and fabric deterioration. Do not apply on the stitchings.



## Cleaning:

Use water and neutral soap to clean your **SOL** Harness, avoiding scrubbing over the sewn areas.

## WATER LANDING

Usually safety courses are taught over water, or a poorly calculated landing may force you to land in the water. In this event, you must be careful since the back protector at the first moment will act as a floating device, therefore forcing your head into the water and you could be in danger of drowning. The foam, already saturated with water will get heavy and may naturally sink.

After a water landing you need to tear off the back protector, seat board, reserve parachute, all lateral protectors and let them all dry under shade in a breezy area.

## TECHNICAL DATA

Maximum pilot weight allowed: 100 kg DHV

(Prüf-Nr. 11071400-11071421 **SOL** FLEX AB (ABS) )

Harness measures	M	L	XL
Seat width (cm)	35	37	39
Seat length (cm)	36	38	40
Height of connection point (cm)	39	41	43
Spring (Kg)	<small>(Without Back Protector, Seat, Reserve Parachute, Carabiners and Lateral Protectors)</small>		
	4,6	4,7	4,8
Spring Airbag (Kg)	<small>(Without Back Protector, Seat, Reserve Parachute, Carabiners and Lateral Protectors)</small>		
	5,3	5,4	5,5

Back Protector 18 cm: 0.95Kg  
 Seat Board: 0.80Kg  
 Side Protectors: 0.26Kg

## Size Table :

		Kg													
		45	50	55	60	65	70	75	80	85	90	95	100		
E	1,55													5'1"	
	1,60			<b>M</b>										5'2"	
	1,65													5'4"	
	1,70				<b>M or L</b>									5'6"	
	1,75						<b>L</b>							5'7"	
	1,80													5'9"	
	1,85								<b>L or XL</b>					6'1"	
	1,90											<b>XL</b>		6'2"	
1,95													6'4"		
		Lbs													
		99	110	121	132	143	154	165	176	187	198	209	220		



## Features :

Spring																				
Spring																				
Airbag																				

## Legend:

	English	Français	Português	Deutsch
	Back protector 14cm	Potection dorsale 14cm	Protetor Dorsal 14cm	Rücken Protektor 14cm
	Back protector 18cm	Potection dorsale 18cm	Protetor Dorsal 18cm	Rücken Protektor 18cm
	Airbag Cygnus	Airbag Cygnus	Airbag Cygnus	Airbag Cygnus
	Side protector	Protection latérale	Protetor lateral	Seiten Protektoren
	Side pocket	Poche latérale	Bolso lateral	Seiten Taschen
	Back pocket	Poche dorsale	Bolsa dorsal	Rücken Stautaschen
	Foot stirrup	Cale-pieds	Apoio de pé	Beinstrecker
	Reserve bridles	Sangle de reserve	Fita para o reserva	Verbindungsleine für Rettungsschirm
	Speed pulley	Poulie d'accélérateur	Roldana para acelerador	Beschleuniger Lenkrolle
	Double speed pulley	Double poulie d'accélérateur	Roldana dupla para acelerador	Beschleuniger Doppel Lenkrolle
	Lightweight buckles	Bouclerie légère	Fechos leves	Leichtschellen
	Auto buckles	Bouclerie automatique	Fechos automático	Schnellverschlüsse
	Auto buckles and safe T-bar	Bouclerie T-anti oubli	Fechos automático-T	Schnellverschlüsse-T safe
	Auto buckles and safe V-bar	Bouclerie V-anti oubli	Fechos automático-V	Schnellverschlüsse-V safe
	Bottom reserve container	Poche de parachute inférieure	Container de reserva inferior	Rettungsschirmcontainer unter Sitz
	Back reserve container	Poche de parachute dorsale	Container de reserva dorsal	Rettungsschirmcontainer am Rücken
	Trimmer	Compensateur	Trimmer	Trimmer

## FINAL WORDS

Safety is the major theme of our sport. In order to fly safely, pilots must train, study, practice and be alert to the dangers around us.

In order to achieve excellent safety levels, we must fly regularly as much as possible, don't go beyond our limitations and avoid exposing ourselves to unnecessary dangers. Learning to fly is a slow process and takes years, so don't pressure yourself. If conditions are not favorable, keep your equipment stored away.

Don't overestimate your skills and be honest with yourself. Every year we see many accidents which in most cases could be prevented with a minor adjustment.

We are a part of the community in which we live: friends, family and even people we don't necessarily know worry about us. Our obligation towards this community is to keep ourselves healthy and that at each landing we will be one landing happier than before. We fly so that we can feel more alive.

We wish you good and safe flights with your **SOL HARNESS**.

*SOL Paragliding Team*

