

libero



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THANK YOU

We would like to thank you for choosing a Woody Valley product. We invite you to read this important document, the harness user manual and to pay special attention to the two most important paragraphs concerning:

Inserting the reserve parachute and adjusting the harness.

The harness is the connecting point between the pilot and the hang glider, and it is a necessary component for optimising flight performance and pleasure. Take the time to read this manual. Doing so will help you make the most of all LIBERO harness features.

Proper use of the harness greatly helps to reduce the risk of flight accidents. This manual contains all the information necessary to assemble, adjust, fly and store your harness. Thorough knowledge of your equipment will improve your personal safety and your level of flying.

1 - GENERAL INFORMATION

This equipment must contain:

- LIBERO harness
- Transportation backpack
- Coupling snap-hook
- Reserve parachute deployment handle
- 2 elastic loops for closing the reserve parachute
- Drogue parachute deployment handle

The available replaceable parts are:

- Foot rest protection
- 4 mm Kevlar support cords
- 20 mm aluminium support tubes
- Total outer cover: SKIN
- MAIN ZIP



1-1 FEATURES

LIBERO is a hang glider harness entirely developed by Woody Valley thanks to the collaboration and suggestions of our best customers and dealers. Its light weight, small size and ease of take-off and landing are the main features of this innovative product. There are no rigid parts on the back, instead there are 4 small aluminium tubes and Kevlar cords used to distribute the load over the entire body of the pilot. LIBERO is suitable for anyone from beginners on their very first flights, to occasional pilots, to top pilots for pure enjoyment outside of competitions.

LIBERO is built with the same system as our Tenax 4:

The outer cover (Skin) is assembled and attached by Velcro to the rest of the harness - the parachute pockets and the straps are separate from the skin. This allows easy cleaning, repair and/or replacement of all the external fabric.

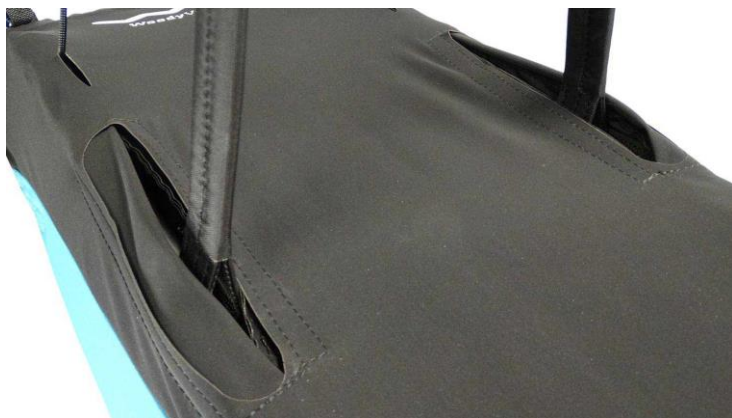
To reduce weight, we have abandoned heavy fabrics, such as Cordura, and instead utilised lighter ones used on paragliding harnesses. The rear part, made of reinforced Lycra, makes the harness aesthetically pleasing, improves fit and offers more elasticity in the back pocket, making it easier to store bags.

The main 3000 Kn snap-hook in Titanal helps reduce the weight of the harness to only 4.00 kg for the medium size, including the backpack.

The strap connecting the reserve parachute is sewn directly onto the base of the harness, in the shoulder area, as on our Tenax 4. This system has been tried and tested in real emergencies over the years: if the parachute is opened, the pilot is pulled upwards and impact with the ground is absorbed mainly by the hang glider.

The dual suspension strap is moved towards the pelvis with 2 straps when the harness is tensioned with the legs, and stays in that position throughout the flight. After closing the main zip, the horizontal position is maintained by means of the cord attached to the shoulders. "Angle of dangle" changes are obtained by applying slight upward pressure on the hang glider control bar, locking the front cord in the desired position with the corresponding jam cleat. Standard assembly provides for the incidence-lock knot in a horizontal position.

We recommend using variable incidence only after gaining good familiarity with the harness combined with your hang glider. To obtain a more head-down set up of your harness, and thus reduce aerodynamic drag at the top efficiency speed of your hang glider, simply move the limit knot by 5-10 cm.



2 - ANGLE CHANGING SET UP



3 - RESERVE PARACHUTE

LIBERO is provided by the manufacturer already completely assembled except for the reserve parachute, if not ordered with the harness. We recommend giving the utmost care and attention when positioning the rescue parachute in the harness, following the instructions. Supervision by your reseller or instructor is recommended. The reserve parachute housing is by default on the right side of the harness. The container is spacious enough for most reserve parachutes available on the market today. The reserve parachute must be attached to the harness before being inserted in the built-in container. The harness bridle has a large red central loop, reinforced with Cordura 500 covering.

3.1.1 - CONNECTING THE HANDLE TO THE DEPLOYMENT BAG

LIBERO is supplied with a special parachute deployment handle. Remember that only this handle must be used.

The black handle connection loop should be inserted in the deployment bag loop and then the entire handle should be passed through the same loop in order to obtain a tight connection. For easier deployment the connection loop on the deployment bag must be positioned far from the reserve chute centre. If your deployment bag does not have this loop please contact your reserve parachute reseller.



3.1.2 - CONNECTING THE RESERVE PARACHUTE TO THE HARNESS

The harness bridle should pass through the emergency parachute bridle loop. Next, the emergency parachute should be passed through the large loop of the harness bridle. The result is a connection that should be tightened as much as possible so as to prevent dangerous friction between the two cables during emergency opening shock. To prevent the union of the two cables from loosening over time, tighten the closure Velcro thoroughly.



3.1.3 - INSERTING THE PARACHUTE IN THE POCKET

The retaining rope must be suitably folded and secured to the deployment bag. Insert the entire pack in the corresponding pocket with the handle coupling loop to the deployment bag facing upward and the handle facing outward.



Introduce a thin rope (1 or 2 mm diameter) into each elastic loop which you will use to help close the container. Introduce the elastic loops into the two smaller eyelets. Follow the closing order of the various flaps visible in the photos.



Insert the metal handle pins into the elastic loops. The cord must be removed at the end of this stage and must be extracted slowly in order to avoid damaging the elastic loops due to excessive friction between the parts. At the end, the handle should be inserted into its housing. Ensure the handle cover lies flat and under the Lycra flap, hooking it to the Velcro.

CAUTION

We strongly recommend attempting parachute extraction on the ground in flight position at least once, to verify correct insertion and to become familiar with the manoeuvre. Ask your reseller/instructor for assistance.

3.2 - DROGUE PARACHUTE

The container built into the harness for the drogue parachute is on the opposite side from the one where the reserve parachute is positioned. If you ordered the drogue parachute together with the harness you will find it already inserted and secured. If you already have your own drogue parachute, secure it to the strap positioned near the container with a small snap-hook with a ring nut.



Drogue parachute assembly

Fasten the included handle to the apex of the cap using a cat's paw knot. Carefully bend the cables and the parachute cap back, observing the dimensions of the internal pocket. Put the pack in the pocket, allowing the handle to protrude which will lock everything into place with the Velcro.



3.2.1 USING THE DROGUE PARACHUTE

This system will allow you to deploy your drogue parachute by holding it firmly in your hand during the last stage while approaching landing and then releasing it at the end, at the most opportune moment.

CAUTION:

Do not release the drogue parachute in front of the hang glider control bar.

Before deploying the drogue parachute, we recommend opening the main zip and then only focus on the final stage of the landing.

Test parachute deployment at least once before doing so in-flight.

4 - BACK POCKET

Arrange all the hang glider protection padding pieces in the side pockets. Position the hang glider bag and the harness backpack inside the large rear pocket, located behind the pilot's back where a flexible drinking pouch and any personal effects can be stored in its special compartment. If the hang glider bag is very large, position it in the area between the pelvis and the feet. It is important that everything is folded up neatly in order to create as little thickness as possible. This will allow you to close the main zip of the harness more easily both on the ground and in flight. Use of a lightweight hang glider bag, for example the "CROSS COUNTRY" type, is recommended for this harness.

The radio must be secured to the red loop.

It is important to close all the zips of the various pockets before take-off.



LENGTH ADJUSTMENTS



5 – ADJUSTMENTS

5.1- OVERALL LENGTH ADJUSTMENT

Before carrying out any adjustment the reserve parachute must be inserted.

To find the optimum position we recommend hanging in the harness, simulating flight position and conditions. It is best to place all the material which you normally take in flight with you in the back pocket. The first adjustment that needs to be made is the length, which can be done by adjusting the shims of the foot rest board. Remove the 1 and 2 cm shims until achieving the desired measurement. Keep any unused shims, as you may need to use them if you change footwear according to the season.



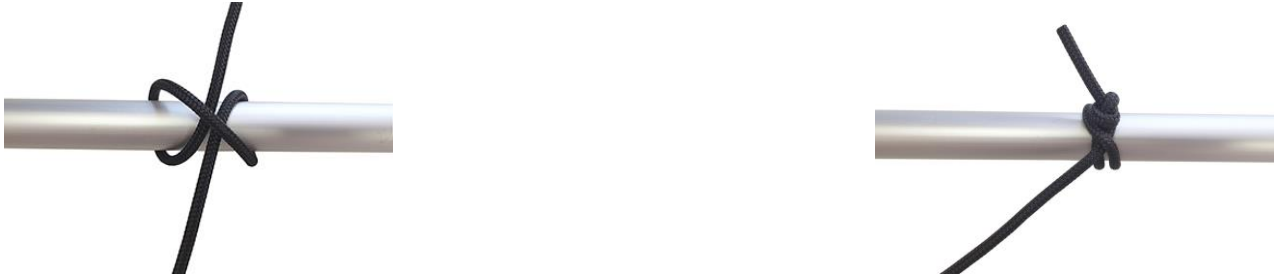
5.2 - LEG-STRAP ADJUSTMENT

The leg-straps should be shortened as much as possible symmetrically using the double window buckles in which they are inserted. This helps to achieve the correct position for landing during the final approach and landing flare. The leg-straps must be carefully adjusted because they should not be under tension when the pilot is in the harness in flight position.



5.3 - 4 mm KEVLAR CORD ADJUSTMENT

After having adjusted the harness, make sure you have proper leg support. Carefully observe the locking knots of the cords in order to easily re-do them. If changes need to be made, take care to make them symmetrical and a few centimetres at a time.



CAUTION: After each adjustment try the harness first on the ground and then in flight.

5.4 - HOOKING INTO THE HANG GLIDER

The strap is already set by the manufacturer with a standard length which is suited for most hang gliders, that provides a distance between the hang glider control bar and hang loop on the glider of about 120 cm. Any personal adaptation can be obtained by replacing the main hang loop on the hang glider or the strap on the harness.

6 - FLYING WITH LIBERO

6.1 - PRE-FLIGHT CHECKS

For maximum safety, use a valid and complete pre-flight inspection method.

Check that:

All the buckles are closed. Before closing them, clean them of mud, ice and snow.

The reserve parachute handle is fastened in its correct position and the pins are firmly inserted.

All pocket zips are closed.

The harness is correctly hooked into the hang glider and the snap-hook is perfectly tightened by means of the closing mechanism.

6.2 - HOW TO PUT LIBERO ON

Put the arms in the shoulder straps and then secure the two leg-strap buckles. Close the zip starting from the top downward and secure the Velcro strip limiting slider movement.

Close the chest buckle.



We recommend using adequate clothing, avoiding bulky footwear, jackets and trousers. The parts of the body subject to the cold are the ones that extend from the harness and, as such, should be adequately covered in order to prevent unwanted loss of body heat. The harness padding allows the rest of the body to withstand even the most extreme temperatures in flight. We also recommend wearing clothing without buckles, buttons or other fixtures which can create areas of pressure at the body's contact points and/or which inhibit closing the main zip in flight.

6.3 - TAKE-OFF

After take-off you will immediately be in the natural flight position. Insert your legs into the harness, keeping your attention on flight control. Then close the main zip, by tensioning your body (push with your toes), lifting your pelvis slightly and then close the zip with a single pull on the string on the right side. Complete closing the main zip about 15 cm, using the upper slide.

CAUTION

After take-off concentrate on maintaining control of the hang glider and only then close the zip. Close the lower zip with a single pull, extending the right arm all the way forward. Do not wind the zip-closing string around your hand.

6.4 - TOW LAUNCHING

There are two pairs of tow loops for tow launching. One pair is located at shoulder strap height and is suitable for aerotow launching. The second pair is located about 25 cm lower, at the centre of gravity position, and it is suitable for winch take-offs. For further details see your tow hook instructions or ask a qualified towing instructor at your air field.



6.5 - IN-FLIGHT

After you have adjusted the harness properly to your needs and build, LIBERO is able to offer excellent comfort even for long flights. Flying for a long time with your head lower than your feet can be very tiring. We recommend flying short sections with the head higher than the feet, thereby resting your arms and back muscles in order to conserve energy. **LIBERO HAS NOT BEEN DESIGNED FOR ACROBATIC FLIGHT.**

6.6 - LANDING

Open the main zip before approach and take your legs out of the harness in the final stage to allow the hook to slide to the landing position. Push upwards decisively on the speed-bar and move your hands to the uprights (downtubes) to prepare for the landing flare. Always maintain control of the hang glider's balance. In your first flights with LIBERO, we recommend trying the landing procedure while you are still flying at a height, to become familiar with the manoeuvre. **BE CAREFUL** not to lose control of the speed of your hang glider during landing.



6.7- THE BACKPACK

We recommend following these tips to pack the harness in the backpack: the backpack has been designed to be small and compact for transport. Position the right and left sides toward the centre, fold the harness over the space between the front and rear tubes. Put the harness in the backpack and close the zip halfway from both sides. Arrange the helmet, clothing and accessories in the top part, then completely close the zip. This stage must be performed with care.



7 - REPLACEABLE PARTS

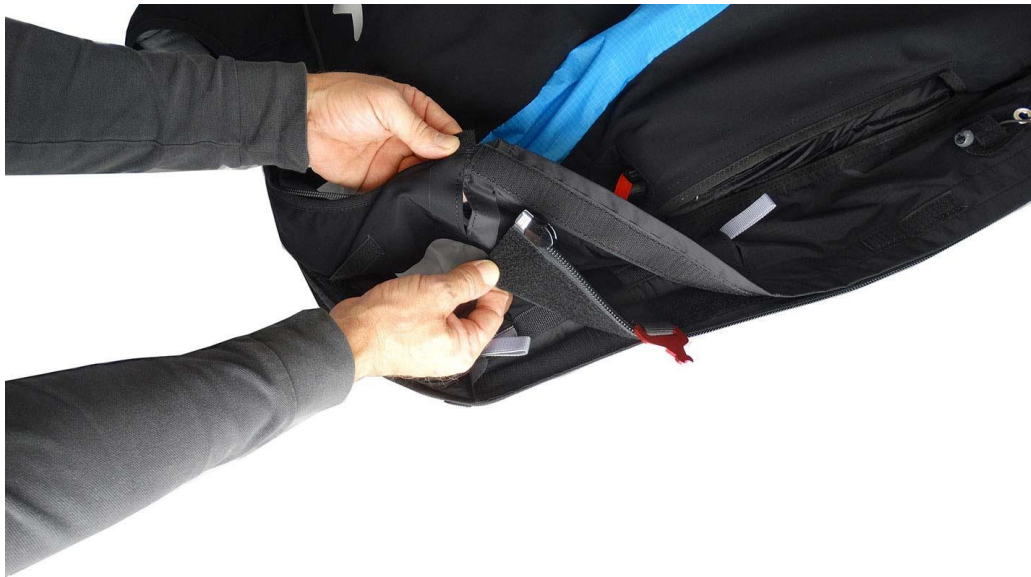
7.1.1 FOOT REST PROTECTION

This part is assembled with Velcro and prevents harness wear at this point, which occurs when walking while wearing the harness. Whenever possible, when wearing the harness on the ground, keep the part of the foot rest raised so as not to let it drag on the ground.



7.1.2 ZIP AND OUTER SKIN

The main zip and the total outer SKIN are replaceable.



7.2 - MAINTENANCE AND REPAIRS

Check the harness before each flight. In the event of a crash, check the straps and support cords more carefully. To prevent unnecessary wear and deterioration of the harness, it is important to avoid scraping it against the ground, rocks or abrasive surfaces. Do not expose the harness unnecessarily to UV radiation (sunlight) outside normal flying activities. Wherever possible, protect the harness from humidity and heat. Store all your paragliding equipment in a cool, dry place, and

never put it away damp or wet. Keep your harness as clean as possible, regularly cleaning off dirt with a vacuum cleaner and a damp cloth. If the harness gets exceptionally dirty, wash it with water and a mild soap. Allow the harness to dry naturally in a well-ventilated area away from direct sunlight. Repairs and replacement of harness components cannot be performed by the user, but exclusively by the manufacturer or staff authorised by the manufacturer. Only the manufacturer and authorized service staff can use materials and techniques ensuring correct product functionality and its complete conformity to product certification. The buckles and zips should be kept thoroughly clean and lubricated with silicone spray. Periodically check the 4 mm Kevlar cords along the entire length and near the support tube knots. Simply feel with one hand to make sure that the black outer sleeve is intact. The main hook, where the snap-hook is connected and where the aluminium tubes slide also needs to be checked. Before each flight, a visual check must be made of all the support straps and cords and the reserve parachute and drogue parachute handles. To replace the 4 mm Kevlar cord set, pay attention to how the knots are made and repeat them. Mark the length before removing the old ones. Follow the instructions which will be attached to the product to replace the outer cover (skin).

WE HOPE YOU ENJOY GREAT FLIGHTS WITH LIBERO!

This owner's manual is subject to change without prior notice. Please check www.woodyvalley.com for all the latest news on the LIBERO.

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