tenax 3

Language

THANK YOU!

We would like to thank you for having chosen one of our products, and we invite you to read this important document, the User Manual for the harness. Please pay special attention to the two most important paragraphs, regarding:

Insertion of the reserve parachute.

The reserve parachute is a piece of equipment that may save your life. It must be treated so that it works correctly when it is required, whether this happens in two days' time, or two years from now.

Adjusting the harness.

The harness forms the connection between the pilot and the paraglider, and it is an essential component in optimizing performance and the pleasure of flying. A bad harness that is well adjusted may enable you to fly well, but a good harness that is badly adjusted may put you off flying altogether.

We are confident that this harness will give you greater comfort, control, performance and enjoyment in flight. We are conscious of the fact that reading an instruction manual is not an exciting experience. However, please remember that the respective product is not a citrus juicer or a mobile phone, and that correct use of the harness helps reduce the risk of flying 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.

The Woody Valley team

SAFETY NOTE

You have purchased a piece of equipment manufactured by us, and so you are aware of your identity as a hang-gliding pilot holding the respective pilot's licence, and you accept all the risks connected to hang-gliding including the possibility of injury and death. The incorrect or inappropriate use of Woody Valley equipment greatly increases this risk. In no case can Woody Valley and the Woody Valley retailer be held responsible for personal injury caused to yourself or to third parties, or for whatever type of damage. If you have any doubts on the use of our equipment, please contact your retailer or the importer for your country.

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1- GENERAL INFORMATION

The equipment should contain:

- ✓ *Harness*
- ✓ *Rucsac*
- ✓ *Hang strap karabiner*
- ✓ *Emergency parachute deployment handle*
- ✓ *2 spare elastic loops for fastening the emergency parachute*
- ✓ *Deployment handle for the drogue chute*

The spare parts available are:

- ✓ *Shoulder support in thermoformed plastic*
- ✓ *Lexan protective component*
- ✓ *Tail-cone reinforcing footrest*
- ✓ *Zippers for the main zip*

1.1- Concept

TENAX 3 is a product that was developed entirely by Woody Valley in order to meet the requirements of hang glider pilots worldwide. This hang glider harness was made in cooperation with the world's finest hang glider pilots. Its low drag and its characteristic geometry enhance flight performance. TENAX 3 was designed for maximum comfort and ease of use. Its attractive, aerodynamic design makes it smart and distinctive.

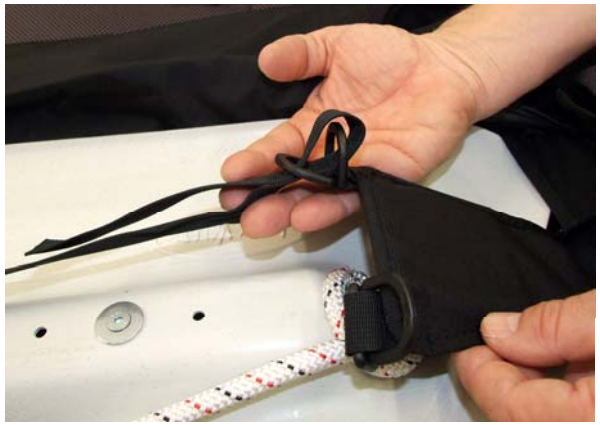
2- BEFORE USE

Woody Valley supplies TENAX 3 completely assembled, except for the emergency parachute. However, we shall explain how to assemble and disassemble some important parts of the harness that require regular inspection for wear. We strongly advise you to seek help from a qualified professional hang glider pilot, such as your instructor. Above all, great care and attention must be dedicated to inserting the emergency parachute correctly into the harness. Only after this has been done should the pilot adjust the harness for comfort.

2.1- Back plate

It is important to be able to remove and reassemble the harness' back plate, both to check wear, and for the various modes of adjustment that can be performed on the plate. It is important to remember that the back plate has already been installed by the manufacturer, and adjusted according to ergonomic standards that are suitable for the vast majority of pilots.

To remove the back plate, open the zip of the dorsal storage pocket, and then open the other zip inside. Pull out the two plate fixing straps from the plastic buckles, and then pull the plate upwards in order to remove it from the two Velcro strips that hold it to the harness. Unhook the safety strap from the karabiner and pull out the main hook-in strap from the slit.



To install the back plate again, just follow the instructions above in reverse order. If you have any doubts about the procedure, seek advice from a qualified professional hang glider pilot, such as your instructor.

IMPORTANT:

-Remember to hook the safety strap to the karabiner

2.2- Emergency parachute

The emergency parachute container is located on the right-hand side of the harness. The container is large enough for most emergency parachutes on the market. The emergency parachute must be fastened to the harness before it is inserted into the harness container. The parachute bridle has a large central red loop, reinforced with a covering in Cordura 500.

2.2.1- Connecting the emergency parachute deployment handle to the deployment bag

TENAX 3 is supplied complete with the emergency parachute deployment handle. It is important to remember that this handle must be used and no other.

The black loop attached to the handle itself should be passed into the loop on the deployment bag, and then the entire handle should be passed through its own loop and pulled tight. For easier extraction, the loop attached to the deployment bag should be positioned laterally

with respect to the centre of the reserve parachute. If your deployment bag does not have this loop, please contact the retailer from whom you purchased the reserve parachute.

2.2.2- Connessione del paracadute di emergenza all'imbragatura

There are two methods for connecting the emergency parachute bridle to the harness risers.

First system:

Use a karabiner with a screw collar and a breaking strength of at least 2000 kg. In this case, the emergency parachute risers should be held in position within the karabiner using elastic bands, to prevent the karabiner from rotating into a lateral position which could cause it to undergo a dangerous lateral stress in the case of deployment. The screw collar should be tightened very firmly to prevent accidental opening. This type of connection can withstand a higher shock on deployment than the second system, and it is without doubt the best system to use.

Second system:

The reserve parachute bridle is passed through the loop at the end of the harness reserve parachute bridle. The reserve parachute itself is then passed through the large loop in the reserve parachute bridle. This connects the two bridles. The loops should be pulled as tight as possible to avoid any chance of dangerous friction developing between the two bridles during the shock caused when the reserve parachute opens. To ensure that the link between the two bridles remains tight, remember to fasten the knot using the Velcro strip on the harness reserve parachute bridle.



2.2.3- Inserting the emergency parachute

First of all, arrange the parachute bridle into the pocket at the end of the emergency parachute container. Insert the parachute into the container so that the deployment handle is in view, facing outwards, and with the loop connecting the handle to the deployment bag facing upwards.

Insert a thin cord (1 or 2 mm diameter) into each elastic loop which will be used to close the housing. Using the cords, pull the elastic loops through the two smaller eyes, choosing those that best suit the size of your emergency parachute. Follow the order of closing the various flaps as shown in the drawings/photos below.

Push the metal pins on the deployment handle into the elastic loops. After this operation, the thin cord must be removed. This is very important. Remove the cord slowly and carefully in order not to damage the elastic loops by creating excessive friction. After completing this, the handle should be inserted below the elastic cover. Position the final cover flap so that it fits closely and covers the Velcro on the deployment handle.

WARNING:

- Each new combination of emergency parachute and harness or emergency parachute container to be assembled for the first time should be checked to ensure that the emergency parachute can be correctly deployed, by an official harness or emergency parachute dealer, or by a flight instructor. Emergency parachute deployment should be perfectly feasible from the normal flying position.

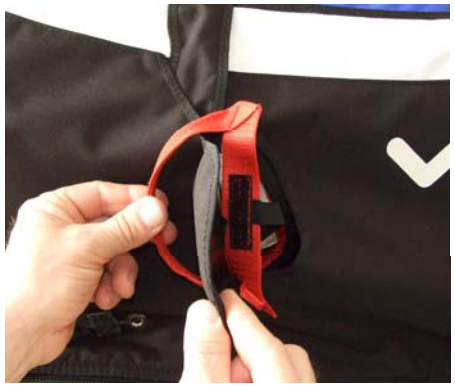
2.3- Drogue chute

The built-in housing for the drogue chute is on the opposite side with respect to the emergency parachute. If you ordered the drogue chute together with the harness, you will find it already assembled and fastened in accordance with the gravity deployment system (see explanation below). If you already own your drogue chute, fasten it to the strap provided, positioned near the chute holder, using a small karabiner.

Two types of drogue chute deployment system can be used with this harness. The difference between the two systems reflects the different methods of deployment.

Controlled deployment system:

Fasten the handle supplied to the top of the canopy using a larkshead knot. Fold the cords and canopy carefully, considering the size of the pocket. Use the semicircular flap as the deployment bag, arranging it so that the handle can be seen from outside, and using the Velcro on the handle to fasten the complete assembly. Slide the external flap into the handle and then into the pocket containing the drogue chute.

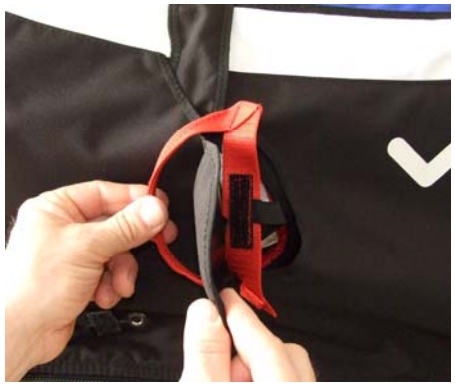


This system enables you to pull out your drogue chute and hold it in your hand during your approach to the landing field, launching it precisely at the desired moment. For immediate deployment, just release the handle immediately after extracting the drogue chute.

Gravity deployment system:

Fasten the handle to the semicircular flap inside the pocket, using a larkshead knot. Fold the cords and canopy of the drogue chute carefully, considering the size of the pocket. Use the semi-circular flat as a deployment .bag, arranging it so that the handle can be seen from outside, and using the Velcro on the handle to fasten the complete assembly. Slide the external flat into the handle and then into the pocket containing the drogue chute.




This system permits immediate extraction of the drogue chute, and its gravity deployment.

IMPORTANT:

-Ensure that you do not release the drogue chute in front of the hang glider's control bar

-Before deploying the drogue chute, slide your legs out of the harness so that you are ready for landing

-Every time the drogue chute is installed with a different deployment system, it should be tested before using it for the first time

2.4- Rear storage pocket and tail-cone footrest

Arrange all the hang glider's protective padding pieces into the removable plastic tail-cone footrest. Place the hang-glider cover and the harness rucsac into the large dorsal pocket behind the pilot's back. In this pocket there is also room for a water bladder and sundry personal items. If the hang glider cover is vary large, place it in the area between hips and feet. It is important to fold everything neatly in order to create the minimum possible volume. This makes it easier to close the harness' main zip, both on the ground and in the air. Use the two straps positioned outside the dorsal pocket to reduce its volume once packed. Another two large pockets are provided with zips inside the harness. When correctly filled, they help maintain the TENAX 3 harness' aerodynamic shape.

Remember to close all the pocket zips before launch.




3- ADJUSTMENTS

TENAX 3 provides many methods of adjusting the harness in order to enable the pilot to fly in the optimum position. A little time is necessary to locate this optimum position, but once it has been found, flying comfort is exceptionally good.

Before making any form of adjustment, the emergency parachute must be installed.

The best way to locate the optimum position is to simulate the flying position by hanging the harness from a suitable fixed point, after having inserted all the material that you normally have in the harness during flight into the back pocket.

IMPORTANT:

-After every adjustment, try out the harness on the ground first, and then in the air

-Every adjustment must be performed symmetrically on both sides.

-After having made all harness adjustments the first time, repeat all the adjustment operations and ensure that all the straps are tight.

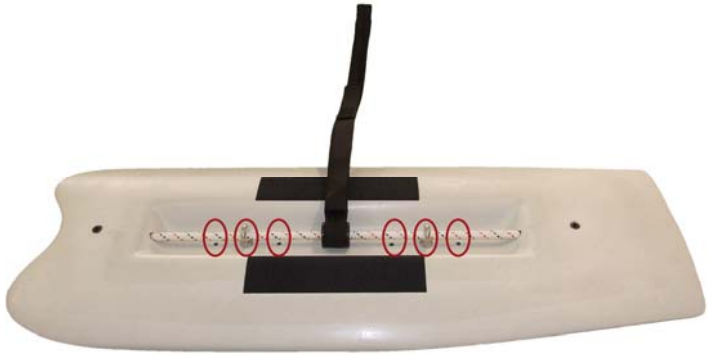
-On all versions of the harness, the main hang strap has a safety strap linked to the harness

3.1- Changing position during flight

In TENAX 3, Woody Valley provides three systems of changing position during flight.

3.1.1- Standard

The Standard system is implemented by means of the main hang strap, which slides on a pre-tensioned cord that is built into the back plate. Flight position can be changed by means of a light vertical push or pull on the hang-glider's control bar. The friction generated by the nylon grommet that slides on the 100 mm static cord ensures that the pilot remains in the position reached, without having to use any other fastening systems. If you wish to increase the angle of incidence and you are already close to the speedbar, as well as acting on the speedbar, it may be useful to fold your knees powerfully in order to move your centre of gravity as far forwards as possible. The harness is made to measure, and the centre of gravity is calculated according to pilot height. To take account of differences in centre of gravity caused by different body conformation, the centre of gravity can be adjusted by moving the two stop-clamps that limit the range over which the hang strap can slide on the cord. There are six adjustment holes, and your harness is adjusted to a central position. Remember that the setting installed by the manufacturer is suitable for the vast majority of pilots.



If the harness tends to be nose-high:

move the front stop-clamp back one hole. If this is not enough, move the second stop-clamp back one hole as well.

If the harnesss tends to be tilted nose-down:

move the front stop-clamp forward one hole. If this is not enough, move the second stop-clamp forwards

3.1.2- Friction MR

This system is very similar to the Standard system, with an additional static 4 mm cord which runs in the cleat sewn at the centre of the bridle, and which increases harness stability. It is adjusted in the same way as the Standard system; changing the length of the cord changes the friction resistance to changes in angle of attack. Don't adjust the 4 mm cord too short, because this can prevent harness movement.

3.1.3- Inside trim system

This method of changing the angle of attack is implemented by exerting pressure on the lever fixed to the back plate, inside the harness, using pressure from your buttocks. The hang strap runs on a steel bar and is held in a rear position by a cord fixed near the feet. The front cord that limits hang strap movement makes it possible to vary the angle of attack. The length of the travel-limiting cord can be adjusted, which changes the position of the knot near the trim system inside the harness. The cord must not be too short, in order to prevent the possibility of finding yourself in too vertical a position and too far from the control bar immediately after launch. By pressing the lever, the harness tilts downwards from the initial position, by about 25 cm. To return to the previous position, you have to push away from the speed-bar while exerting pressure on the lever in order to tighten the travel-limiting cord. Like the other systems, this also permits stable intermediate positions.



3.2- Harness adjustment systems

3.2.1- Shoulder-strap adjustment

Adjusting the shoulder-straps tailors the harness to your exact height. The adjustment buckle is at the top of the straps, under a neoprene cover. After adjustment, place the neoprene cover back into position using the Velcro fasteners, ensuring that is firmly in place but not

excessively taut. TENAX 3 has an additional component that provides extra shoulder support. This is a replaceable part, designed to break and absorb energy in the case of impact. To replace this support, follow the instructions in paragraph 6.1.

3.2.2- Leg strap adjustment

The leg straps should be shortened symmetrically as much as possible, using the double-aperture buckle. Ensuring that the leg-straps are tight helps maintain a vertical position when landing, during the final flare.

Leg straps have to be adjusted carefully, because they should not be taut when the pilot is in flying position in the harness.

3.2.3- Hang strap

The hang strap is provided by the manufacturer, with a standard length suitable for most hang gliders in which the distance between control bar and the hook-in point is about 120 cm.

4- FLYING WITH THE TENAX 3

4.1- Pre-flight checks

For optimum safety, use a complete and appropriate sequence of pre-flight checks, and use the same procedure of mental steps for every flight.

With regard to the harness, ensure that:

- *all buckles are fastened. Take great care in conditions of snow or ice. Always clean snow and ice from buckles before fastening them;*
- *the emergency parachute deployment handle is correctly fixed in position, with the pins correctly inserted;*
- *all pockets and zips are closed;*
- *the harness is properly hooked into the hang glider, and the karabiner is correctly locked by means of the locking collar.*

4.2- How to put on the TENAX 3 harness

Put the arms into the shoulder straps, fix the "T" buck to the internal ventral buckles ensuring that the leg straps are correctly positioned between the legs, and then close the main zip, starting from the top and zipping downwards to beyond the external safety buckle. Fasten the external safety buckle.

TENAX 3 is a harness that should feel tight, so that in flight, it becomes your “second skin.” We recommend using appropriate garments, avoiding excessively bulky boots, jackets or trousers. The parts of the body that are exposed to the cold are those parts that emerge from the harness, and it is for these parts that you should provide sufficient cover and protection to prevent the loss of body heat. The harness itself is sufficiently padded to ensure that the rest of the body will remain comfortable even when the air temperature is very low. We also recommend wearing garments without any buckles, buttons or other projecting components that could cause discomfort when they are subject to pressure due to contact with the body, and that could also impede closing the main zip after launch.

4.3- Launch

After launch, you will immediately find yourself in the normal flight position. Put your feet into the harness, taking care to keep the glider under control during the operation. Then close the main zip. This should be performed by tensing your body inside the harness, lifting your hips slightly, and closing the zip with one single pull on the cord on the right-hand side of the harness, as shown in the photo. This will completely close the lower part of the main zip. To finish closure of the main zip, use the top zipper.

IMPORTANT:

-After launch, think first about maintaining complete control of the hang glider, and only then begin the operation of closing the main zip

-Close the lower zip in a single movement, extending your arm completely

-Don’t wind the cord for closing the lower zip around your hand

4.3.1- Tow launching

There are two pairs of webbing loops for tow launches. There is a pair at shoulder-strap level, suitable for aero-towing. The second pair is about 25 cm lower, in a position corresponding to the centre of gravity, and these are suitable for winch launching. For further details, refer to the instructions supplied with your towing hook, or seek the assistance of a qualified tow launch instructor at your flying club.

4.4- During flight

The best aerodynamic performance is obtained by flying with the horizontal axis of the harness parallel as close as possible to glide angle. Therefore, in the case of high-speed glides, start by modifying the tilt angle of the harness in accordance with the speed that you wish to reach. Then change the angle of attack of the glider itself.

Flying at length with the head lower than the feet can become very tiring. We suggest flying for certain periods with the head higher than the feet. This will enable you to rest your arms and back muscles, and your reserves of strength and energy will last for longer.

4.5- Landing

Unzip the main zip before beginning the approach to the landing field. During the final approach, push yourself up on the speedbar in order to move into a vertical position, and move your hands up onto the downtubes, ensuring that you keep the hang glider under control at all times. During your first flights using the TENAX 3 harness, we recommend trying out the procedure of opening the main zip while still at a good height and well before landing.

4.6- Water bladder

TENAX 3 is specifically made for use with a water bladder. Slide the water bladder into the container as shown in the photo, located in the rear storage pocket.

5- PACKING THE HARNESS

To pack the harness correctly so that it takes up as little space as possible, we suggest that you follow the procedure shown in the photos below. Remove the tail-cone and use it to hold instruments or other items that are best placed inside a rigid container. Fold the harness in half, and place it into the rucsac along with everything else. If you have packed the harness correctly, there will be enough space for your helmet and spare clothing.

6- CHARACTERISTICS AND ASSEMBLY OF REPLACEABLE PARTS

6.1- Shoulder support

This piece of thermoformed plastic improves shoulder support, and it is designed to break if subjected to impact. To replace this part, remove the back plate from the harness, and slide the shoulder support into the respective pockets, as shown in the photos.

6.2- Lexan protection

This component in Lexan prevents wear when the harness is folded inside the rucsac. It also improves the harness' aerodynamic profile in flight. The Lexan protective piece is located towards the end of the back plate, and it is easy to replace. Slide the component into the pockets as shown in the photo.

6.3- Tail protection

The tail protective cover is made of Cordura 1500, and it is easy to remove and replace using the Velcro strips.

6.4- Main zip sliders

The zippers of the main zip are easy to replace without having to cut any seams, because the end of the zipper is held by strong Velcro strips.

7- MAINTENANCE AND REPAIR

Check the harness after every impact, bad landing or launch, or in the case that there are signs of damage or excessive wear.

We recommend having the harness checked by your retailer every two years, and likewise we recommend replacing the hook-in karabiner every two years. Every 30 hours' flight, check the cord on which the main bridle slides for wear, particularly where it enters the grommets in the back plate, and the parts in which it is in contact with the bridle slider.

To prevent unnecessary wear and deterioration of the harness, it is important to avoid its scraping 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 while damp or wet.

Keep your harness as clean as possible by regularly cleaning off dirt with a plastic bristle brush and/or 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.

If your reserve parachute ever gets wet (e.g. in a water landing) you must remove it from the harness, dry it and repack it before putting it back in the container.

Repairs and replacement of harness components cannot be performed by the user, but exclusively by the manufacturer or staff authorized by the manufacturer. The manufacturer and authorized service staff alone can use materials and techniques ensuring correct product functionality and its complete conformity to product certification.

The harness can be washed using a tepid solution of water and mild soap.

Zip fasteners should be kept clean and lubricated with silicone spray.

In the case of making any request to an official retailer or Woody Valley for maintenance operations, please quote the complete identification number shown on the silver label in the rear pocket.

We hope that you enjoy great flights and happy landings with **TENAX 3** !

Every effort has been made to ensure that the information contained in this manual is correct, but please remember that it has been produced for guidance only.

This owner's manual is subject to change without prior notice. Please check at www.woodyvalley.com for the latest information regarding the TENAX 3 harness.

Latest update: APRIL 2011