

# ***Aeros Harness***

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# ***Viper-2 / Viper-S***

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## ***Owner / Service Manual***



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# **C o n t e n t s**

<i>1. Introduction</i>	<hr/>	<i>2</i>
<i>2. Features</i>	<hr/>	<i>2</i>
<i>3. Adjustments</i>	<hr/>	<i>7</i>
<i>4. Maintenance</i>	<hr/>	<i>8</i>

# 1. Introduction

If you're looking for a world-class competition or cross-country harness, look no further. The Viper is without a doubt the lowest drag harness made by Aeros factory and is the next level in aerodynamic performance and comfort. This was not without much research and many trial versions. The Aeros design team was able to utilize the Antonov wind tunnel for in-depth study and application of various harness drag reduction ideas. The result is a complete makeover of the Aeros racing harness design.

The Aeros Viper will provide you with competitive performance and superior comfort, whatever the duration of your flight. The new generation of Viper series – the Viper S retains the best features of Aeros current Viper harnesses and combines them into a design that offers a super clean aerodynamic profile, reduced frontal area, and increased storage.

## 2. Features

All *Viper* harnesses utilize a carbon fiber backplate. This 330 mm (1.08 ft) wide, gently curving back support system allows the harness to fit as close as possible to the pilot while still allowing 'non-binding' support. Depending on the pilot's height, the backplate is between 800 mm (2.62ft) – 1050 mm (3.44ft) long. While having the same dimensions as a previous Viper harnesses the new backplate has different design, which makes it 550 – 650 grams (depending on the harness size) lighter retaining the same ultimate strength.

The *Viper* has an optional Matrix cloth outer skin for drag reduction. This cloth has been proved in the wind tunnel to be the most 'slippery' available at the moment. With the *Viper* series you are able to replace the entire outer matrix cloth covering at anytime with a new one.

Employing a lever system that is more reliable than those used in previous models, the Viper pilot is able to easily adjust the pitch (the angle of attack) of the harness in flight with his butt without taking hands off the basebar.

The pitch adjusting system is adjustable on the ground. Making the pitch adjusting rope shorter or longer it is possible to adjust the pilot's angle of attack. To do so you have to undo the knot on the rope, adjust it and tie it again (*Photo 1*):



*Photo 1*

We suggest that you would trim the rope to the position when the max. angle of attack would be comfortable for you when thermaling (0 -+3 deg). Moving the removable protective board along the backplate allows adjusting the pitch lever position in accordance with pilot's size.

The *Viper* comes in two options: with *dual parachute* containers (one on each side of the harness) and a *single parachute* container with a *4-pocket container* on the opposite side. In the 4-pocket container you can fit a radio, camera or back-up GPS.

There is a room for the drag chute in the pocket in aft part of this container.

**The drag chute pack up procedure is shown on the pictures below.**

1. Attach the drag chute bridle to the loop next to the main hang strap (Photo 2). Fold the canopy of the drag chute and put the drag chute bridle inside the flap for creating less drag (Photo 3):

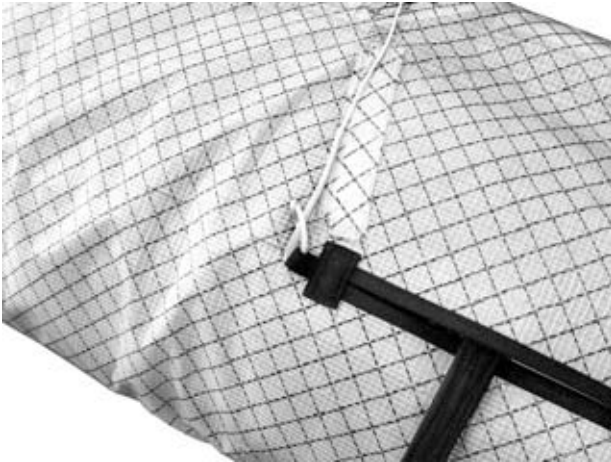


Photo 2

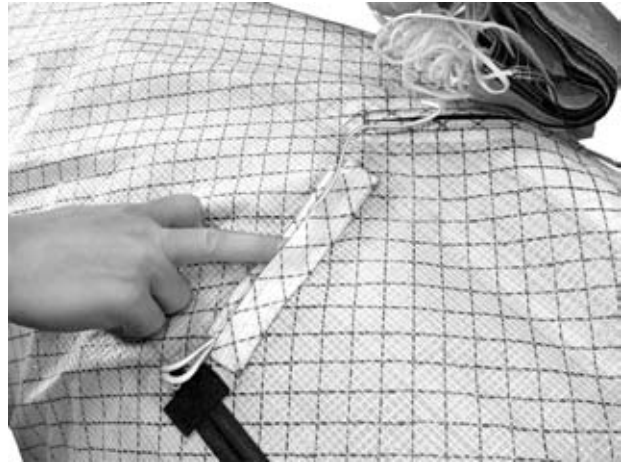


Photo3

2. Enclose the canopy of the drag chute inside the pocket (Photo 4, 5):



Photo 4



Photo 5

3. Making sure the pullout handle is outside, close the zipper (Photo 6):

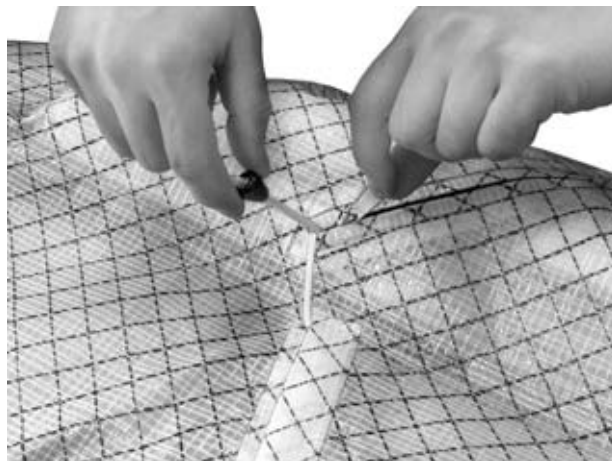


Photo 6

To extract the drag chute pull the handle out and forward. This will cause the zipper to open. When deploying the drag chute make sure it doesn't go above or around the base bar and doesn't interfere with the glider parts.

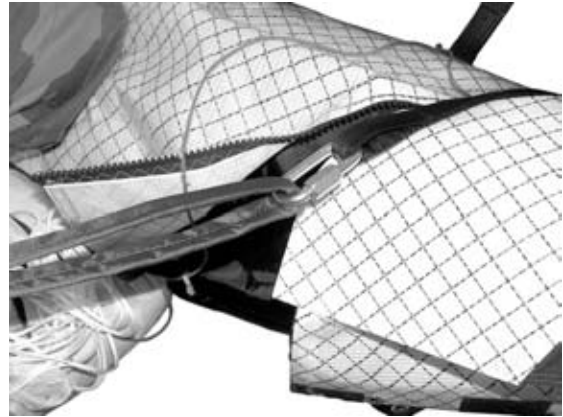
We do recommend that you use the drag chute on the final approach only, when the last obstacle which separate you from the landing field have been cleared.

Remember that the drag chute does not improve the landing characteristics of the glider and does not make the landing easier. It only makes the landing approach shorter allowing landing on the relatively small landing field.

Before using the drag chute for the first time we recommend that you practice to use it on the big open field in calm conditions.

Depending on the option you chose from the order form when ordering the harness there is a possibility to connect a reserve parachute bridle in two ways:

- Standard attachment to the carabiner;
- Attachment to the harness. In this case the steel carabiner with max load 5000 kg should be used (*Photo 7*):



*Photo 7*

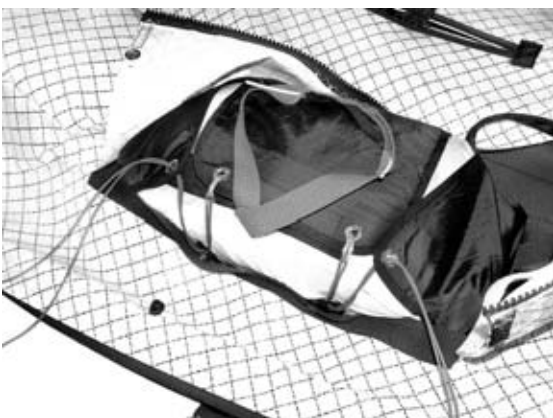
To **secure the parachute** container proceeds as shown on the pictures (*Photo 8 –a, b, c, d,*).



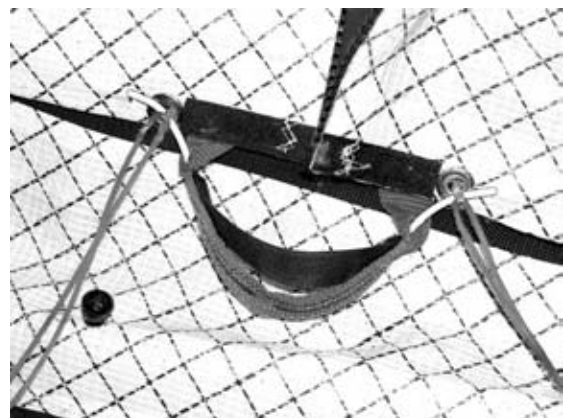
*Photo 8-a*



*Photo 8-c*



*Photo 8-b*



*Photo 8-d*

After the rescue parachute is secured in the container close the parachute zipper (Photo 9,10):



Photo 9

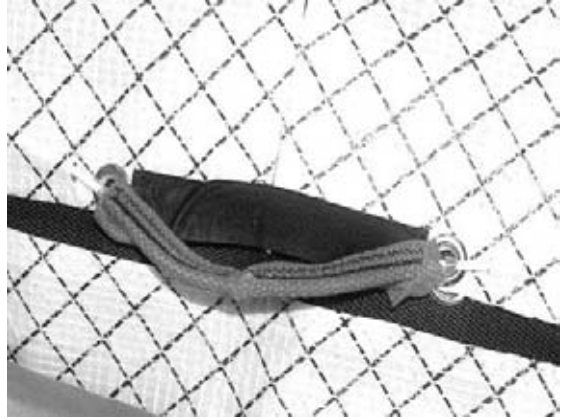


Photo10

To provide the zipper opening during the parachute deployment leave one or two zipper teeth next to the pull out handle open (Photo 10)

The Viper allows for a surprising amount of storage for such a sleek racing harness.

It has a wide storage section next to the back plate in the aft section (Photo 11):



Photo 12



Photo 11

There is additional storage in the tail section for the pack up gear. You can simply take the foam out and use this section for storage (Photo 12):

There is additional pocket for bags, papers, etc. (Photo 13):



Photo 13

All Viper harnesses features the drag reducing neoprene neck- seal.

The Viper has aerotowing loops. You can aerotow with the neoprene neck-seal half-zipped (*Photo 14*). After releasing the towline you can hide the tow release under the neoprene neck-seal and zip it up, so the tow release will not be visible at all.



*Photo 14*

There are car tow / winch tow loops on the harness (optional) (*Photo 15*):



*Photo 15*

The Viper features optional pocket for the hook-knife (*Photo 16*):



*Photo 16*

### 3. Adjustments

There are a wide range of Viper adjustments according to your preferences and flying equipment.

- The harness leg loops and shoulder straps are adjustable to suit the pilot's preference.
- Harness length adjustment by means of the shoulder straps (*Photo 17*):



*Photo 17*



*Photo 18*

- Harness length adjustment by means of moving the footplate, which is attached by Velcro (*Photo 18*):
- Foot angle change by means of changing the foot support plate position. The foot support plate is attached by Velcro (*Photo 19*):



*Photo 19*



*Photo 20*

After having adjusted the harness length by way of moving the foot support plate, it is necessary to respectively change the rope length, ensuring the extreme rear slider position in flight (*Photo 20*):

Make sure when you press on the foot plate and set it in the aft position (flying position) the slider moves all the way in the aft position.

The pitch attitude of the harness is easily and quickly adjustable by the pilot in flight without removing his hands off the control bar. Between adjustments, the pitch attitude becomes securely locked in position, providing an enhanced level of stability and safety that is lacking in many single suspension harness designs. To adjust the harness pitch angle, the pilot simply pushes up with his rear end against the lever on the harness back plate, releasing the pitch adjustment line, and rotates to the new desired pitch angle. When the pilot relaxes, the rope is locked into position again. When you press on the foot plate and set it in the aft position (flying position) the slider moves all the way in the aft position.

The pitch lever adjustment has been described earlier in section 2.

## 4. Maintenance

With the proper care your harness can be used for a long time.

However there are few points in a harness that need to be checked regularly. We recommend that prior to each flight you take your time and do a complete preflight of the harness. Make sure that:

- the main hang strap has no signs of wear.
- the axle of the slider is not bent and has no signs of wear or damage.
- the pitch adjusting webbing and rope have no signs of wear and the complete pitch adjusting system is operational.
- the harness zippers move freely, the ropes for opening and closing the harness are not tangled. We recommend that you spray with a silicone spray all harness zippers time after time, this will greatly increase zipper life.
- Take a close look at your harness to see if there is any sign of wear or damage of structural webbings.
- make sure that all the details are mounted securely to the back plate and the back plate has no cracks or damage.

Inspect the pitch adjusting webbing for signs of wear and replace it if necessary. Usually it requires replacing the pitch adjusting webbing after each 50 – 100 hours of airtime (depending on how frequently and correctly you adjust the pitch angle in flight).

**To increase the service life of the pitch adjusting webbing press on the pitch-adjusting lever completely (all the way down) each time when you adjust the pitch angle of the harness.**

The general advice is, do not leave your harness under the direct sunlight, keep it always in a bag or in a glider's shade or any other shade whenever it is possible. Store the harness in a harness bag in a dry place.

If the harness has been exposed to the direct sunlight for a long time, you should replace all the main webbing or even the entire harness, if you are in doubt that your harness is in the inside repair condition.

Once in a while check all hardware, all the ropes and webbing for possible worn-out or damaged parts.

If you have questions about the need to repair or replacement of some part of your harness, feel free to contact your dealer or Aeros directly.

Have fun. Fly safe.

Aeros Team