

# ***BLADE***

# ***Manual***

 **APCO Aviation**  
*Setting Future Standards*

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# 1 Introduction



The BLADE is APCO's first competition harness. It is the top of our line, completing the already extensive harness range (containing 6 different harness models).

For many years competition harness was not part of our line. So when deciding to launch such a harness, we made sure it would be outstanding in its performance: safety, drag reduction, quality, and comfort

BLADE is a pod harness, designed and aimed at competition pilots, but equally well suited to cross country and experienced recreational pilots. It shares the same design philosophy as the rest of APCO's harness range.

The BLADE stands out for its comfort, finish and clean lines. The drag reduction of BLADE is among the best in its class. The weight of the BLADE harness is on a par or lighter than most popular competition harnesses available today, but without compromising on its durability or safety.

BLADE will appeal to pilots who prefer a classic pod harness, offering total comfort, maximum security, world class drag saving, blended with stylish design and loads of extras.

BLADE's geometry gives great comfort, with perfect adjustment possibilities.

Two PVC Battens aid in spreading the load evenly along the back, increasing comfort while reducing the amount of webbing supports required.

The BLADE has a back mounted reserve with the handle on the right side of the harness, which gives you both an easy accessible reserve and a well balanced harness in the air.

The clean aerodynamic form of the BLADE reduces drag created by the pilot and Harness, giving you higher performance all round.

## 2 Harness Sizing

The BLADE is currently available in three sizes for pilots from under 150cm up to 200cm.

Small/Medium	Up to 170cm	(43100)
Large/X-Large	165 to 185cm	(43200)
XX-Large	180cm and up	(43300)

## 3 Harness Colors

The BLADE is available in black with red design.



## 4 Disclaimer

In designing and manufacturing the BLADE and any of its subassemblies or accessories, our aim has been to create a harness system that will allow the user to engage in the sport of paragliding in a safe and comfortable way.

However, paragliding is a high-risk activity, which may cause or result in serious injury or death. When you take it upon yourself to participate in the sport of paragliding, you accept the risk inherent therein. You may reduce the risk by receiving proper instruction and by following the basic safety requirements. The BLADE is a sensitive device, which may easily be damaged. Before each flight, the harness should carefully be inspected for evidence of damage or wear. Any deviation from the manufacturer's specifications concerning maintenance, repair, alterations and modifications constitutes willful negligence.

It is expressly understood and agreed that by the use hereof by the buyer or any subsequent user that Apco Aviation Ltd. And/or the seller shall in no way be deemed or held liable or accountable and makes no warranty, either expressed or implied, statutory, by operation of law or otherwise, beyond that expressed herein.

Paragliding equipment is sold with all faults and without any warranty of merchantability or fitness for any purpose, expressed or implied. Apco Aviation Ltd. Disclaims any liability in tort for damages, direct or consequential, including personal injuries, resulting from a malfunction or from a defect in design, manufacturing, materials or workmanship, whether caused by negligence on the part of Apco Aviation Ltd. or otherwise.

By using any Paragliding equipment manufactured or sold by Apco Aviation Ltd., or allowing it to be used by others, the buyer and/or user waives any liability on the part of Apco Aviation Ltd., for personal injuries or any other damages arising from such use.

The liability of Apco Aviation Ltd. is limited to the replacement of defective parts found under examination by manufacturer to be defective in material or workmanship within 120 days after purchase, and which has not been caused by an accident, striking, improper use, alteration, tampering, excessive use, misuse or abuse.

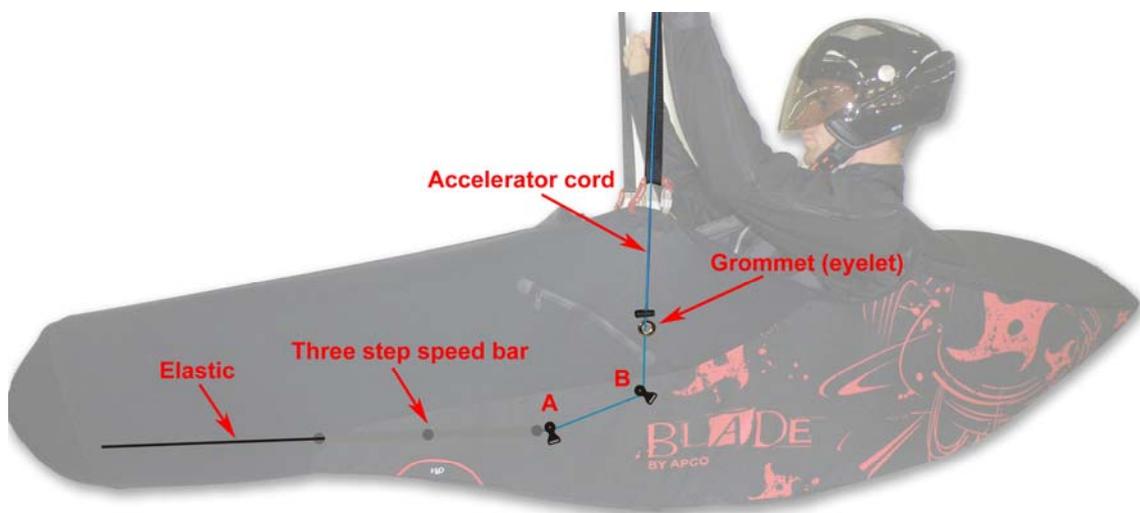
**BLADE**

The damages of the buyer and/or user shall be deemed liquidated in the costs of replacement as above.

## 5 Speed System Assembly

The Speed system rigging and geometry on The BLADE differs from previous Apco Harnesses. The BLADE's speed system is rigged in a way that assures the optimal aerodynamic position while in accelerated flight. Please observe the IMPORTANT [Warnings](#) on this page regarding the use of your speed system in flight.

Thread the accelerator cords through the pulleys attached to the front side of the seat (pulley A) and then through the pulleys attached to the back support (pulley B). Now pass the cords through the grommet (eyelet) above the pulley you have just threaded situated in the neoprene at the sides of the BLADE harness. Now you can attach the Chain Link/Clamp or maillon rapid to the cord and attach it to the riser. Check the IMPORTANT [Adjustment Instructions](#), which follow the alternative rigging instructions below.



## 6 Speed System Adjustment

It is very important to ensure that your speed system is adjusted correctly before making your first flight with your new harness, and/or after making any changes or modifications to the system.

The best way to correctly adjust your speed system is to hang your harness from a suitable structure, which can support your weight. Attach your risers to the harness and sit in the harness while a friend holds the risers up to simulate a flying position. If the speed system is correctly adjusted, the upper step of the speed bar will be situated approximately 2-3cm from the pulleys attached to the front side of the seat.

Under no circumstances should the bar be closer to the seat. This will cause the cords to be tightened and will permanently apply the speed system during flight. It is also very important to check that the speed system is not applied when you rotate into a standing (as for take-off and landing) position. The 2-3cm of space above the upper step is to avoid the problems mentioned above.

The adjustment for systems using the chain link/claps is done by shortening or lengthening the cord at the point where it meets the speed bar.

## 7 Speed System Warning

Once you have set up your speed system, make sure to test it in calm conditions, and never apply the speed system while close to the ground or in turbulent conditions.

## 8 Adjustments

The paragraph/section numbering below refers to the labels in the diagram above.



### The Shoulder Strap

These adjusters are similar to most Apco Harnesses. These straps are best adjusted when standing with the chest and leg straps closed. Tighten the shoulder straps so that they are tight while standing upright. While in flight it is normal for these straps to be a little slack.



### The Upper Back/side Strap

These Adjusters are similar to previous Apco Harnesses. They are best adjusted while the harness is suspended from a suitable structure, before the first flight is made.





## The Lower Back/Seat Strap

Adjusters set the angle of the seat and the lower back support. They are best adjusted while the harness is suspended from a suitable structure, before the first flight is made.



## The Chest Strap

Adjustment can be made at any time during flight or before. It can be used in any setting between its minimum and maximum, without changing the seating position. The primary function of adjusting this strap is the **ABS** semi cross-bracing. At a wide setting there is only a little cross bracing, giving maximum weight shift capabilities, while at the tightest setting it offers maximum cross-over stability, with reduced weight-shift steering capabilities. The chest strap adjustment has a 1:2 reduction, making it easy to adjust while under tension, i.e. while flying.



## The Leg Straps

Adjustment should be made in an upright position after having buckled and adjusted the chest strap. If you cannot stand upright comfortably while the leg straps are fully extended, the shoulder straps may be too tight. If the leg straps are too long, it may be difficult to transition to a seated position after take-off. Generally, we advise adjusting the leg straps short and the shoulder straps long. In addition to the leg straps, adjust to comfort straps to eliminate a squeeze of the groin area as necessary.



## The Seat Position

Adjuster is connected to the back of the seat. The adjuster sets the length of the bottom part of the leg skirt and should be adjusted while seated in the suspended harness before the first flight.

This adjustment sets the angle of the harness to the horizon (CG of the harness). Make sure that getting in and out of the harness is easy and comfortable once you have adjusted it.



## The Upper Skirt

Adjusters set the length of skirt (distance of the foot board). It should be adjusted while seated in the suspended harness before the first flight.

Make sure that getting in and out of the harness is easy and comfortable once you have adjusted it.



## Foot Board angle

Adjustment can be made at any time during flight or before. It is connected to the Upper skirt adjusters, tightened it will change the pitching of the foot board.



## The Skirt Closing Buckles

Close and tighten the top of the leg skirt and can be adjusted at any time during flight or before.

**Make sure that you have also closed all leg and chest buckles. Closing the skirt buckles can give the illusion of being secured in the harness but it isn't so.**

## 9 Reserve Parachute



The BLADE emergency parachute features a simple, easy to use back mounted system. This system has the advantage of being very easily accessible when you need it. In principle the assembly and fitting of the parachute into the harness is the same as most of the other Apco Harnesses. The installation must be done by a qualified person, and these instructions are only to serve as a guide to the proper fitting of your reserve. Remember that ultimately it is your responsibility to ensure that these instructions are followed correctly, and that your reserve will be working when you need it. After installation, it is recommended to do a test deployment while seated in the harness suspended from a suitably strong structure. The reserve should be easy to remove from the flaps by pulling it out by the deployment handle. The [Deployment Handle](#) (46100) is new. The [Deployment Bag](#) (44120T) is the same as used on our EDGE & SPARK Harness, and some of our other products. This makes it very easy to transfer a reserve from another Apco harness or external container to the BLADE Harness.

## 10 Reserve Assembly and Installation

Your harness is supplied with a deployment handle fitted in the correct way. Remove the handle by pulling it out of the retainers. Attach the handle to the deployment bag (44120T) supplied with your [Mayday](#) reserve parachute. If your Reserve is not already fitted inside the deployment bag, follow the instructions for doing this on the [Mayday](#) page.



1. The handle has a split ring fixed to one of its attachment loops. Thread the first (without the Split Ring) attachment loop through one of the attachment points on the deployment bag. Pass the handle through the protruding loop to form a lark Head knot as shown.



2. Thread the second attachment loop through the other attachment point on the deployment bag, making sure to center the split ring on the loop, passing it through first. Use the split ring to complete the second "larks head knot" by attaching it to both the strips of the attachment loop on the other side of the attachment point. The handle should now be attached at two points to the deployment bag as shown.

If your reserve parachute is fitted / supplied in a non-Apco deployment bag, it is possible to install it into the BLADE, provided that the deployment bag has at least one attachment point for the deployment handle. There should be no other handle fixed to the deployment bag, if there is one, it must be removed. The attachment point may be centrally located on the deployment bag. Attach the Deployment Handle to the Non-Apco Deployment Bag by simultaneously threading both the attachment loops of the handle through the attachment point on the deployment bag, and then pass the handle through both of the attachment loops to make a (double) Larks-head-knot, fixing the deployment handle to one point by both attachment loops. It is necessary to remove the split ring from the one attachment loop, since it will not be used in this case.



3. Attach the reserve parachute bridle to the center of the harness bridle using a larks head knot, sealed with a heat shrink tube to keep it in place as shown.

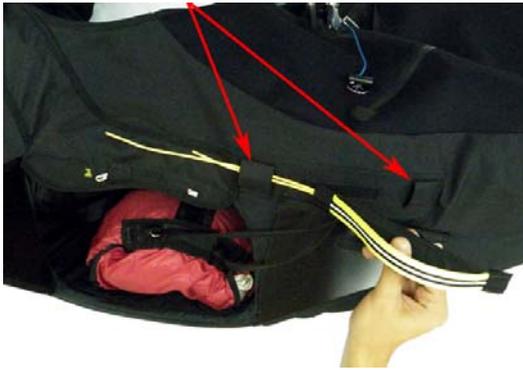


4. Place the deployment bag containing the reserve inside the reserve container of the harness, with the handle connection facing up as shown.



**WARNING!!!**

DO NOT place the deployment bag with handle connection facing down.



5. Fit the deployment handle to right side of the harness by pushing its ends ( **cable first**) into the sleeves with the cables protruding on the other side. The webbing part of the handle ends should be pushed all the way into the sleeves.



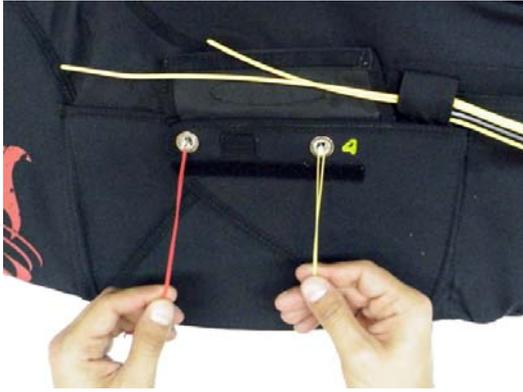
6. Take two short pieces of thin cord (i.e. glider line of approx. 40cm each, called "pull cords") and separately thread one through each of the white nylon closing loops attached to flap No.1 as shown.



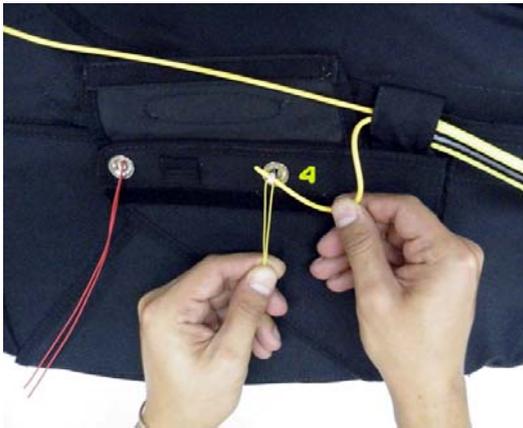
7. Now close flap No.1 over the reserve and thread the first pull cord through the grommet on flap No.2.



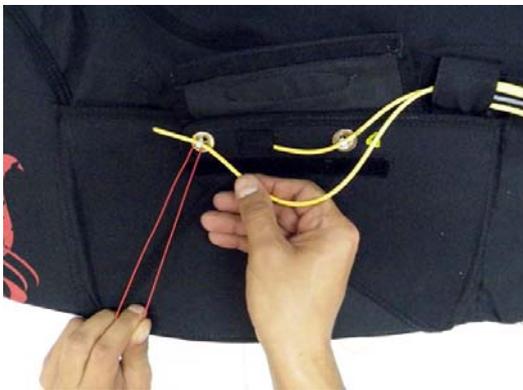
8. Next thread the second pull cord through the grommet on flap No.3.



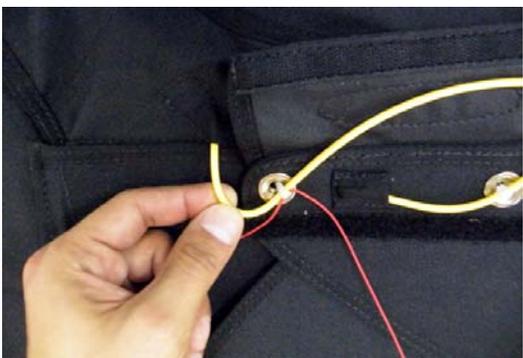
9. Next thread the both pull cord through the grommet on flap No.4.



10. Next push the short locking cable through the first closing loop as shown, carefully remove the pull cords by passing one of its ends under the locking cable and pulling it out slowly.



11. Next push the long locking cable through the second closing loop as shown, carefully remove the pull cords by passing one of its ends under the locking cable and pulling it out slowly.



12. Push the locking cables into the small pockets placed on the external flap of the reserve container and the right side of the harness as shown.



13. Close the locking cables cover using the Velcro as shown.  
**Finally, do a test deployment to check that the reserve can easily be extracted from the container by the pilot while sitting in the harness, suspended from a suitable point.**

## 11 The Reserve Deployment

Once you have decided to deploy your reserve parachute, place both brake handles in your left hand. Look for the reserve handle and firmly take it with your right hand. Pull upwards and sideways on the handle to release the two locking cables and subsequently release the reserve from the harness container. You will now be holding the reserve closed inside the deployment bag, hanging from the deployment handle. Look for a clear area and throw the reserve away from you and the glider.

It is preferable but not absolutely essential to throw the reserve away from the direction of rotation, and with the air stream passing you. This will speed up the deployment process.

Once the reserve has opened, immobilize your glider either by pulling it in completely, or by pulling the brakes, B or C lines to stall the glider. If you do not do this, the glider and the reserve will oppose each other and increase your sink-rate considerably, and there will be an increased chance of the two becoming entangled.

We recommend that if your glider is in a flat spin, if you have the necessary height that you try to stop the spin (i.e. Full stall, B-Stall etc.) before deploying your reserve, since there is a much greater danger of entanglement if you are in a flat spin. The fastest deployment will be if you are in a spiral.

## 12 Pilot Protection

The BLADE has a build in pilot airfoam type protector.

## 13 Storage Space

The BLADE has ample storage space in its rear compartment, has large side pockets and some additional front pocket.



### **The Main Back Compartment**

Is accessed through the top zip. This storage is most useful for articles that you will not need during your flight, i.e. your Glider Bag.

A small removable documents/change pocket is attached inside the main back compartment.



### **The Side Pockets**

Are useful for items that you will need to access during your flight, e.g. Camera, Radio, Map, etc.

### **The Front Pocket**

Is useful for items that you will need to access during your flight, e.g. Camera, Radio, Map, etc.

## 14 Packing your harness

In order to enjoy your harness for many years please pack it according the following instructions:

1. Open top container zip.



2. Push top cover inside the top container.



3. Put the harness inside the paragliding bag with the top of the harness facing downwards.



4. Put your glider on the seat area on top of the harness.





5. Close the paragliding bag.

## 15 Accessories

Several Harness accessories are available for the BLADE, if you have upgraded to the BLADE from another Apco Harness, you will be able to use your accessories from your old harness on your BLADE. Most of the BLADE accessories are compatible with Apco's previous and current harnesses.



### Inner Bag for Flight Panel (21000)

9L Inner bag / ballast for flight deck / under sit ballast including drinking hose



### Flight Panel / Deck (80050A)

Innovative cockpit from APCO



### 5cm leg spacer for BLADE harness (44020)

The leg spacer is placed in between the foot board and the outer leg skirt in order to keep the outer skirt tight when being used by a shorter pilot,  
The leg spacer is 5cm thick.

## 16 Inspections

These can generally be divided into two kinds, namely: - short preflight inspections, done before each flight and the more thorough inspections that are carried out periodically in order to ensure the airworthiness of the harness.

## 17 Preflight Inspections

- Paraglider is connected correctly and both carabiners secured by their locking mechanisms.
- There is no visible damage to the harness that could affect its airworthiness.
- The reserve parachute container is closed correctly with both locking cables in place.
- The deployment handle is inserted all the way into the elastic pockets.
- All pockets are closed properly and all loose items tied down safely.
- Both quick lock buckles should operate and should be closed securely.
- All adjustable straps are set as you desire and are symmetrical.

## 18 Periodic Inspections

The harness is inspected for airworthiness on every reserve repack, or if there are any signs of damage or wear to the harness structure. Inspect the harness after any crash or bad landing or takeoff where it could have been damaged. Also inspect the harness after long periods of storage, or if another pilot has used the harness not directly under your supervision (you never know what it has been through). Also inspect the harness if for any other reason there may be damage to it. In any case the harness must be thoroughly inspected every 12 months as a minimum. The points to check are as follows:

All webbing and straps are inspected for damage or wear and tear and repaired or replaced if necessary. Special attention should be paid to points where wear may not be easily seen such as the inside of the carabiner hook up points and the loops of webbing holding the quick lock buckles and also the various Kamet buckles and adjusters.

All sewing, sewing patterns and sewing lines are inspected and must be intact. Should any sewing show signs of unraveling, wear or excess stress, it must be attended to before your next flight. A qualified person using the correct thread must carry out repairs.

Elastic retainer cords are inspected and replaced if necessary. Pay attention to the elastic sheath holding the reserve deployment handle in place. It must retain its elasticity and hold the handle properly in place.

All buckles must be in a safe working condition, including the carabiners, quick lock buckles and kamets.

The seat plate must be in one piece and without cracks.

All sub assemblies must be in good condition. Take special care to inspect the parts that belong to the reserve container system.

Dirt can be cleaned off gently - you can use a damp rag or wash the harness with a mild soap. Make sure you remove all the sub assemblies, seat board, back plate, reserve parachute and foam padding etc. Drip-dry the harness in an open shady place.

Open the harness and inspect all interior parts, including the fabric, webbing straps, buckles, kamets, and all sewing.

If everything is found to be in an airworthy condition you can re-assemble the harness and pack the reserve, if not, the necessary repairs must first be carried out before the harness can be approved and used. Remember that a seam that has started unraveling may go a long way before the next inspection!

All materials needed for repairs are obtainable through your dealer.



## 19 Maintenance and Repairs

By keeping your harness clean and airworthy you will prolong its life and retain a higher resale value, if you ever decide to upgrade it.

We have carefully selected the materials we use to provide you with a durable harness that will be able to give you years of use. By following some of the advice given below you can further extend the life of your harness and its accessories.

Follow all recommendations regarding inspections and maintenance in this manual.

Always keep the harness in a protective bag (glider bag) when not in use, and do not expose it to UV rays unnecessarily. Sunlight will weaken the materials and cause fading of colors.

Never store the harness in a wet or damp location or if it or a part of it is wet or damp. First let it dry out completely. Store it away from direct sunlight, a dark place is best.

Avoid leaving your harness exposed to the elements while not flying, pack it away or at least cover it.

Wipe away any dirt and dust regularly. Do not allow dirt to settle permanently. Use a plastic bristle brush and a mild soap to clean it if necessary.

Do not drag or pull the harness on the ground, be especially careful on rocky areas.

Use a competent launch assistant when necessary. A failed takeoff is one of the most common reasons to damage a harness.

If you discover any damage on the harness you should make an effort to repair it as soon as possible. Even apparently minor damage can continue tearing or unraveling, complicating the repair or even becoming dangerous.

If any of the elastic retainers which keep the shoulder and leg straps in place wear out, they can easily be replaced. You can obtain these or any other spare parts from any Apco dealer.

Any repair that involves reinforcing or replacement of vital parts of the harness should be carried out by a facility recommended by Apco. Some materials on the harness will wear out sooner than others.

Thank you for your patience in reading this manual - we would like to hear your comments and criticisms as you get used to your harness. This will help us to continue developing better products for you in the future.



APCO wishes you many hours of enjoyable flying.

Take Air!

**BLADE**