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**W A R N I N G**

**WARNING**

Use of this equipment in the United States and its territories should be in accordance with all USPA Basic Safety Requirement's (BSR's) included within USPA [Skydivers Information manual \(SIM\)](#), Section 2: Basic Safety Requirements and Waivers.

Use of this equipment outside of the United States should be in accordance with the controlling body for parachuting and skydiving in the country in which the equipment will be used & operated.

If you use your Vector 3, or if you allow someone else to use it, you are acknowledging sport parachuting risk and accepting the fact that the Vector 3 and its components may malfunction. If you are not willing to accept the risks of sport parachuting, or if you are not willing to accept the possibility that your Vector 3 or its components may malfunction and perhaps cause you to be injured or killed, then you may return your Vector 3 for a full refund before it is used. Details on how to do this are printed below.

**DISCLAIMER – NO WARRANTY**

Because of the unavoidable danger associated with the use of this harness and container assembly, the manufacturer (Uninsured United Parachute Technologies, LLC) makes no warranty, either expressed or implied. This rig is sold with all faults and without any warranty of fitness for any purpose. The manufacturer also disclaims any liability in tort for damages, direct or consequential, including personal injuries, resulting from a malfunction or from a defect in design, material, workmanship or manufacturing whether caused by negligence on the part of the manufacturer or otherwise. By using this rig, or allowing it to be used by others, the buyer waives any liability for personal injuries or other damages arising from such use.

If the buyer declines to waive liability on the part of the manufacturer, buyer may obtain a full refund on the purchase price by returning the parachute harness and container, before it is used, to the manufacturer within 30 days from the date of original purchase with a letter stating why it was returned.

Take note that neon and fluorescent colored fabrics and tapes fade rapidly. Color brilliance may be lost within a year of manufacture. Uninsured United Parachute Technologies, LLC assumes no responsibility for this action.

Save this manual, your rigger may not have an applicable manual and will need it to service your Vector 3. This manual does not cover the correct assembly and packing procedures for the older Vector models.

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## A WORD FROM THE OWNER

Dear Skydiver,

Congratulations on your purchase of a Vector 3 harness and container system - without question one of the safest and most reliable container systems on the market today. I have spent my entire skydiving career personally striving to improve the safety in our sport through various innovations and design ideas which are now incorporated into United Parachute Technologies products. From the 3-Ring release system, the hand-deploy pilot chute, the Booth ball reserve pilot chute, the first ever riser covers. The list goes on, and will continue to go on, as we develop the next generation of Vectors. You will find that the majority of other container manufacturers have now incorporated these innovations into their own designs, following the lead of United Parachute Technologies.

Here at the United Parachute Technologies, LLC, we are totally committed to you, our customer, through the quality and performance in the harness and container systems we design, build and deliver. We have stood behind our products 100% from the day it leaves our factory and reaches your doorstep, and have done so for over 30 years. You will find our service after the sale to be as comprehensive as our customers have come to expect from United Parachute Technologies. When you buy a Vector, you're buying more than a container system; you're buying innovation, quality, reliability, and most of all a product that has survived the test of time. United Parachute Technologies has built more sport, student and tandem harness/container systems than anyone else in the world. We've been here for over 3 decades, designing the equipment that meets the imagination of today's skydiver.



Thank you again for your purchase of a Vector - with proper care and maintenance it should provide you with many years of safe and enjoyable skydiving. Should you have any questions or concerns about your equipment, please do not hesitate to contact us.

Blue skies!

Bill Booth  
President, United Parachute Technologies, LLC

## CONVENTIONS USED IN THIS MANUAL

### NOTE

*An example of a Note.*

This convention is used to highlight additional information in the form of a note.

### WARNING

*An example of a Warning.*

This convention is used to highlight areas of safety and to warn the user of dangers.

## CONTACT INFORMATION

If you have any questions, comments or suggestions after reading this manual, please feel free to contact us. United Parachute Technologies is open **Monday** through **Thursday**, from **8 am** to **5 pm** EST, Friday **8 am** to **12 pm** EST.



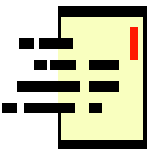
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**MANUAL REVISION HISTORY**

REVISION	DATE	AUTHOR	DESCRIPTION
3	12/01/14	BAS	General layout update, main bridle routing updated, main closing loop option added.
4	01/20/15	BAS	Updated with new Collapsible main pilot chute bridle and routing Page 58. Appendix F added for older main closing methods.
4.1	01/14/16	BAS	Updated Reserve component list Section 3, Page 16. Text in warning box fixed Section 7, Page 78; Warning page v updated; Reference for Staging loop corrected Page 30;
5	08/11/16	BAS	Updated cutaway cable trim lengths Page 72
6	2/22/2017	BAS	U Stow Main Deployment bag packing details added. Appendix G, Page 89





# SECTION 1

## INTRODUCTION

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# INTRODUCTION

By choosing the United Parachute Technologies Vector 3, you've shown that you'll settle for nothing less than the best.

## THE HISTORY BEHIND UNITED PARACHUTE TECHNOLOGIES (formerly Relative Workshop)

Over the past three decades, United Parachute Technologies has delivered more than 50,000 quality harness and container systems to skydivers all over the world!

In 1972, Bill Booth started Relative Workshop (now United Parachute Technologies) in a Miami garage. During the late 1970's Bill made two major contributions to the world of skydiving. First, Bill invented and patented the hand deploy pilot chute system. This contribution changed the sport forever. Bill Booth's second and maybe greatest contribution and recognition during this period came with the invention and patent of the Booth 3-Ring release system. In 1983, Bill received the prestigious Parachute Industry Association (PIA) Achievement Award. The Federation Aeronautic International (FAI) awarded Bill Booth the 1984 Gold Medal for outstanding achievement in parachute safety design, the highest award available in this field.

Relative Workshop's first harness and container system was called the Wonderhog. This rig incorporated all of the best safety improvements of its era. Not long thereafter, the Wonderhog Sprint was introduced. In 1981, the Vector was introduced and soon became the most popular rig in the world. The Vector II followed and soon enjoyed even more popularity. Since 1977, teams and individuals have been winning gold medals wearing Relative Workshop systems! The U.S. Skydiving Team at the 1981 World Meet wore the very first Vectors.

In the late 1980s and early 1990s, new freefall disciplines such as Sky surfing and Freestyle made their way into the skydiving mainstream. Free flying entered the mainstream shortly thereafter. These new disciplines brought with them new and increased demands on skydiving equipment. In these flight attitudes, the container is subjected to direct, high-speed airflow. The need for more security such as riser protection, pin protection and bridle protection became apparent. Hence, our engineers went to work.

### VECTOR 3

In 1994, Relative Workshop unveiled the Vector 3 harness and container system. This new design incorporated concepts that originated through years of research and development.

In 1999, using the latest technology and the knowledge Relative Workshop gained in building the Vector 3, the Micron was introduced to suit the growing trend of smaller canopy use. The Micron is the most technically advanced harness and container system in the world. Relative Workshop achieved this by hiring a team of engineers from the arena of sport skydiving. These engineers, who happen to be world-class competitive skydivers, reviewed current system designs and applied sound engineering practices to them. The result: improved overall function of the Vector 3 riser covers, greater pin protection, better overall comfort of the rig and the improvement to the operation of the Booth 3-ring release system. Consistent innovators and perfectionists, Relative Workshop's engineers continue to make improvements to the production and design of products. This determination to make the most comfortable and safest skydiving systems in the world has resulted in yet another update to the classic Vector 3. In February of 2002, the Vector 3 M-Series was successfully launched. The M-Series utilizes Micron technology to improve function, safety and comfort but is suited to larger canopies.

We continue to introduce innovative construction techniques that make rigs safer, lighter, and more comfortable. Many of these innovations have been adopted by the entire skydiving industry.

Presently at United Parachute Technologies, we have the facilities and expert staff to assemble, pack and maintain your entire Vector 3 harness and container system.

Please read this manual thoroughly before assembling or using your Vector 3, even if you have owned or jumped a Vector 3 before. We recently made several important changes to the rig, and you should know about them before using it in the air.

If you have any questions, comments or suggestions after reading this manual, please feel free to contact us.

## **FEATURES OF THE VECTOR 3**

The following is a list of features that set the Vector 3 apart from other harness and container systems. Please feel free to contact us if you have any questions or need further elaboration regarding these attributes.

### **Pro-Fit Harness**

This is a state-of-the-art harness system that contours the jumper's body for a glove-like fit, while allowing maximum comfort and freedom of movement. The harness is constructed of Type 7 and Type 8 Mil-Spec webbing.

### **Yoke**

The contoured yoke brings the harness over the shoulders and curves inward over the chest, which provides the most efficient placement of the emergency handles eliminating the need for chest rings and the inherent problems associated with them. This design also prevents the harness from slipping off the shoulders, should you have narrow shoulders.

### **Chest Strap**

Our double Type 8 chest strap is designed to provide the maximum in upper harness protection while complimenting the contoured yoke and protecting the cable housings.

### **Back Pad**

This is the foundation of the Pro-Fit Harness. It allows maximum upper body mobility without compromising total body fit.

### **Housing Guides**

Our guides provide a clean channel for the housings to float upward during high load situations. These guides also make it very difficult to misroute the cutaway cables.

### **Cutaway Cable Housings**

Our flexible housings are the first step in preventing hard pulls during cutaways. The upward float allowance provided by these housings significantly reduces the likelihood of near impossible cutaways. Without upward float, premature loading of the riser loop is almost a certainty. This would lead to the yellow cutaway cable being pulled up and through the housing end by the loop.

### **External Riser Covers**

These Magnetic riser covers utilize *the most successful* pocket design on the market. Years of extensive research and development (and *thousands* of jumps) with Babylon, Synopsis, Voltaire and our in-house test jumpers resulted in this superior design. It is the ultimate in riser protection.

### **Secondary Riser Cover**

Even in the highly unlikely event of an external cover opening during freefall, the secondary riser cover makes it virtually impossible for a riser or toggle to escape until the main pin is pulled. The Vector 3 is the only rig on the market to offer this level of riser/toggle security.

**Main Pin Protection**

The main pin cover flap is integrated into the #1 closing flap and tucks upwards into itself for maximum protection against external forces. Similar “tuck-up” systems are now being implemented in rigs around the world. Both the main and reserve pin covers are designed to conform better to the container. This ergonomic design helps eliminate protruding corners or edges that can catch on doorjambs, bulkheads or other such objects.

**Reserve Pin Protection**

The reserve cover flap utilizes three tuck tabs to remain virtually immovable, without interfering with the reserve activation process.

**Absolute Zero Bridle Exposure**

The Vector 3, configured for BOC or Pull-out deployment, virtually eliminates bridle exposure and the need for Velcro-type fasteners on the bridle cord.

**Pocketed Corners**

Both the main and reserve pack trays utilize pocketed corners at the bottom of the tray. This serves to ensure optimum bag positioning during deployment, helping to protect against bag tumble or spin as it leaves the container. The corner of the main tray also serves as a pocket for the main bridle, virtually eliminating bridle exposure during freefall.

**Tru-Lok Toggles**

Our new Tru-Lok toggle eliminates the need for Velcro fasteners. This design utilizes a stainless steel pin to secure each toggle in place on the main riser without inhibiting the jumper from releasing the toggles after deployment.



**Quality**

As is true of all of our containers, the Vector 3 is constructed to exacting standards, using only the finest materials available. Even with nominal care, your Vector 3 will perform faithfully for years. You don't have to look very hard to find Vectors out there with thousands of jumps on them, and lots of life left in them.

**Guarantee**

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## VECTOR 3 M A N U A L

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United Parachute Technologies is totally committed to you, our customer, through the quality and performance in the harness and container systems we design, build and deliver. We will back our products 100% from the day it leaves our factory. You will find our after sales service to be as comprehensive as our customers have come to expect from United Parachute Technologies. When you buy a Vector 3, you are buying with confidence in the company that has built more sport, student and tandem harness/container systems than any other harness/container manufacturer in the world. We've been here for 30 years and we will continue to be here when you need us.

### BEFORE JUMPING YOUR VECTOR 3

Please read this manual thoroughly before assembling or using your Vector 3, even if you've owned or jumped a United Parachute Technologies Vector before. We have recently made several important changes to the rig, and you should know about them before using your rig.

#### NOTE

*This manual is not a course of instruction on how to make a parachute jump, nor does it contain the various regulations that govern the sport.*

### TRAINING REQUIRED

If you have not jumped a United Parachute Technologies Vector 3 before, or if you're transitioning from other types of equipment to a United Parachute Technologies Vector 3, make sure you receive instruction on its use from a certified instructor. This instruction should consist of a practice session in a suspended harness or on the ground where you practice both routine and emergency procedures.

It is the responsibility of the owner to ensure that their Vector 3 is properly assembled, properly maintained, correctly packed and used. It is also the owner's responsibility to seek out and obtain proper training before using any skydiving equipment such as the United Parachute Technologies Vector 3.

Ensure that the person who inspects and packs both the main and reserve parachutes is qualified to do so.

The owner of a Vector 3 should not loan it to another person without first determining that the person is fully capable of using it properly and safely.

Finally, nothing in this manual is meant to discourage the reader from using the Vector 3 in a reasonable and prudent way.

The information and specifications in this manual were in effect at the time of printing. The United Parachute Technologies Inc., however, reserves the right to change the Vector 3 or its manual at any time without notice or warning and without incurring any obligation.

### ABOUT MODIFICATIONS

It is common for jumpers to "improve" their rigs by altering them. A high percentage of these alterations cause malfunctions or make the rig harder to use correctly.

Typical alterations include conversions to a pull-out pilot chute, changing the dimensions of the harness, changing the length of the bridle cord, installing approved automatic activation devices (AAD), and so forth.

We strongly urge you to check with the United Parachute Technologies before you make any changes to your Vector 3. The United Parachute Technologies has spent years of testing and development to achieve the current design and functionality. Check with us before you allow any changes to be made; even seemingly insignificant alterations to your Vector 3 may have dangerous and unforeseen consequences.

## SECOND-HAND VECTORS

If you obtained your second-hand Vector 3 privately, make sure it is airworthy before using it. We recommend that you have the rig thoroughly inspected by your local rigger before you purchase it or use it. However, if you prefer, the United Parachute Technologies will inspect your second-hand Vector for a nominal service fee.

United Parachute Technologies does not recommend purchasing replacement parts from a source other than a United Parachute Technologies dealer. If replacement parts are obtained from a source other than a United Parachute Technologies dealer, make sure that they match the parts they are replacing. For example: If you were to replace a reserve ripcord with an incorrectly sized reserve ripcord (i.e. non-matching), you could cause your rig to open prematurely. Consult a rigger whenever you replace any component of your Vector 3.

## COMPONENTS

### THE VECTOR 3 COMES COMPLETE WITH THESE COMPONENTS:

- Harness and Container
- Hand-deploy main pilot chute
- Main deployment bag
- Main closing loop
- Vector 3 balloon reserve pilot chute
- Reserve free bag and bridle
- Reserve ripcord
- Reserve closing loop
- Main risers and steering toggles
- 3-Ring release handle (cutaway handle)
- The Vector 3 Owner's Manual on CD



Once you are sure you have these components, check that the container is sized properly for your main and reserve canopies. Refer to the TSO label on the pocket of the reserve packing data card to determine the size of the containers. Refer to the Vector 3 compatibility chart to determine what canopies will fit in your Vector 3. This chart is located in the back of this manual.

### NOTE

*The TSO label is located either on the back side of the right shoulder pad or behind the spacer foam padding at the bottom of the back pad next to the BOC pouch.*

## REPLACEMENT PARTS FOR THE VECTOR 3

Only United Parachute Technologies (UPT) replacement parts should be used. Replacement components for the Vector 3 are readily available from this UPT. Refer to APPENDIX C for parts list.



# SECTION 2

## RESERVE ASSEMBLY PROCEDURES

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# RESERVE ASSEMBLY PROCEDURES

## INTRODUCTION

This section provides information needed to assemble the reserve canopy and attach it to the reserve risers. Take note that all Vector 3 rigs are AAD ready. Included are instructions on attaching an RSL. Remember though that a RSL is an optional component.

## ATTACHING THE RESERVE CANOPY TO THE RESERVE RISERS

Attach the canopy to the risers following the canopy manufacturer's instructions. Double-check the orientation of the canopy and the continuity of the lines. Check that the links are tightened securely and correctly. Follow the canopy manufacturer's instructions on installation of Slider Bumpers and Slinks (Soft Links).

## ATTACHING THE RESERVE STEERING TOGGLES

It is important to follow the *reserve canopy owner's manual* directions before attaching the toggles to the steering lines. The reserve owner's manual contains important information relevant to that particular make and model of reserve canopy. The reserve canopy steering toggles are supplied with the Vector 3. These steering toggles are compatible with the Vector 3 reserve risers. It is important to attach the steering toggles at the mark that is located along the steering line. The mark was measured and put there by the reserve manufacturer. Proper alignment of the mark and the steering toggle will ensure the canopy remains in a true no-brake mode while the toggles are resting against the guide ring. This will, in turn, ensure that the canopy maintains the correct glide during flight and landing

### NOTE

- *To minimize the chance of having a malfunction, ensure that the toggles and the risers are compatible.*
- *The standard distance from the end of the reserve riser to the top of the guide ring is 4 inches (102mm) and allowing  $\pm 1/4$  inch (7mm) tolerance.*

### WARNING

*If the toggles are mounted too far down the steering lines, the canopy may be less responsive and the jumper may not be able to apply full brakes.*

*If the toggles are mounted too high up the canopy, the glide and landing characteristics of the canopy may be affected or it may even result in a canopy stall (which could result in injury or death).*

*The situations mentioned above are more likely to occur when a canopy is hastily switched from one set of risers to another. If the guide rings on both sets of risers are not located the same distance from the connector links, the steering toggles must be moved to another location on the steering line.*



Hanging the canopy by the tail helps in both assembling and inspection.



**PROCEDURE**

There are 3 methods for attaching steering toggles to steering lines.

- Method A is for reserve canopies with Dacron (polyester) lines.
- Method B is for reserve canopies with small-diameter Spectra (Microline) that have a finger-trapped and sewn loop ends.
- Method C is for reserve canopies with small-diameter Spectra (Microline) that have only a mark for attaching the toggle.

**METHOD A—DACRON STEERING LINES**

Once the canopy has been correctly attached to the risers and while it is still laid on its side, begin to attach the reserve steering toggles using the following steps:

1. Ensure the steering lines are correctly routed (i.e. they should not wrap around any suspension lines). This is accomplished by starting at the tail of the canopy. Trace the upper steering lines down to the lower steering line. Check that the right hand steering line passes through the right hand rear slider grommet and the left hand steering line passes through the left hand rear slider grommet.
2. Locate the mark on the steering line that indicates the correct toggle location. Verify the correct location of this mark by referring to the reserve canopy owner’s manual.
3. Thread the steering line through the guide ring that is located on the riser.

4. Starting from the hook and loop fastener (loop side), thread the end of the steering line through the Vector 3 steering toggle grommet. Adjust the steering line so that the mark (on the steering line) is close to the grommet but has not passed through it.



**NOTE**  
*The hook and loop fastener side of the toggle faces the canopy.*



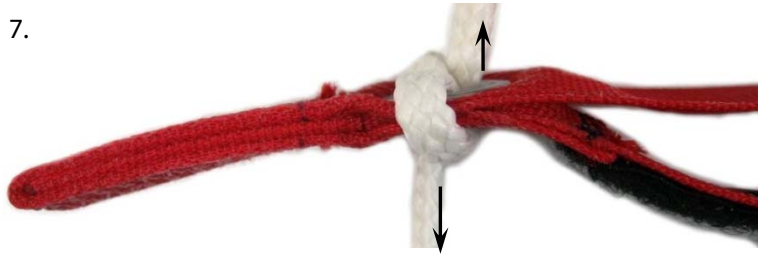
5. Loop the running end of the steering line around the toggle and thread it through the grommet again. Now pull it snug. Check that the mark remains in the correct place.



6. Continue by looping the running end of the steering line around the other side of the toggle and, once again, pass it through the grommet.

7. Now grasp the steering line on both sides of the toggle and pull it tight, ensuring the hook and loop fastener side of the toggle faces the canopy. The steering line does a figure 8 through the grommet and exits on the other side of the toggle. Once again, check the mark on the steering line, ensuring it is still in the correct place.

7.



8. Tie an overhand knot in the free end of the steering line and tighten it right down to the toggle. Ensure it is snug for now.

8.



9. Check the canopy with the deployment brakes set and with both not set to be sure that it is correctly configured. The reserve canopy owner's manual contains the correct brake settings and steering line lengths. Keep in mind that there are NO standardized dimensions. Therefore, unless the lines are the correct length, the canopy may not open or fly correctly



**This overhand knot must be tight.**

10. Verify that the brake setting measurements are correct. Tighten the overhand knot at the toggle once more. It is generally not a good idea to cut off the excess steering line, as you may want to adjust the steering toggles after the canopy has been jumped.

11. Repeat the procedure for the other toggle.

12. Inspect the installation. Ensure proper routing of the steering lines.

**METHOD B—SPECTRA LINES (MICROLINES) (WITH FINGER-TRAPPED AND SEWN ENDS)**

After the main canopy has been properly attached to the risers and while it is still lying on its side, attach the toggles to it by following these steps:

1. Starting at the tail of the canopy, trace the upper steering lines down to the lower steering line. The idea is to be sure the steering lines are routed correctly; they should not wrap around any suspension lines. The right-hand steering line must pass through the right-hand rear slider grommet, and the left-hand line must pass through the left-hand rear slider grommet.

2. Thread the end of the steering line through the guide ring located on the riser then through the grommet located on toggle.

3. Loop over the end of the toggle as shown.



**METHOD C—SPECTRA (MICROLINES) LINES (WITH UNFINGERTRAPPED ENDS)**

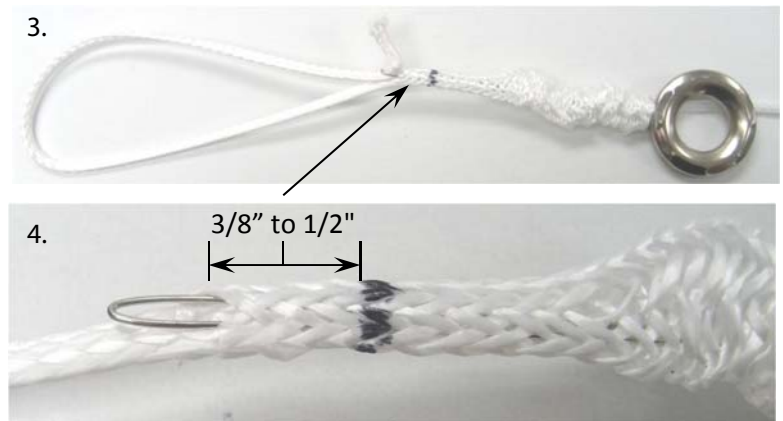
After the main canopy has been properly attached to the risers and while it is still lying on its side, attach the toggles to it by following these steps:

1. Starting at the tail of the canopy, trace the upper steering lines down to the lower steering line. The idea is to be sure the steering lines are routed correctly; they should not wrap around any suspension lines. The right-hand steering line must pass through the right-hand rear slider grommet, and the left-hand line must pass through the left-hand rear slider grommet.

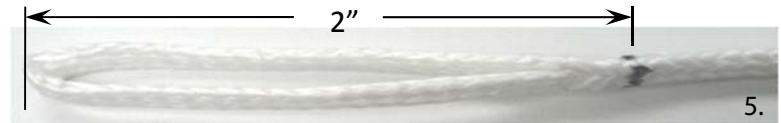
2. Locate the mark on the steering line that indicates the correct toggle location. Verify that this mark is in the correct location by referring to the main canopy owner’s manual.

3. Using an appropriate finger trapping tool, Begin the finger-trap as show to the right.

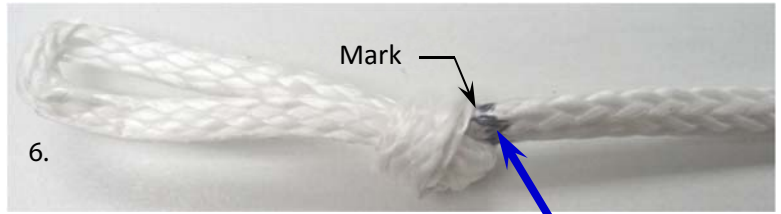
4. The finger-trap must begin from 3/8" to 1/2" from mark as shown. This will ensure that the finger-trap is locked in the knot.



5. Form a finger-trapped loop 2" from the manufacturers mark to the end as shown.



6. Tie and adjust an overhand knot until the mark is just to the outside. The loop should fit closely around the toggle. Tighten the knot.



**NOTE**  
*The finger-trap is locked in the knot..*

7. Thread the end of the steering line through the guide ring located on the riser then through the grommet located on toggle.



8. Loop over the end of the toggle as shown.



9. Draw tight and repeat the procedure for the other toggle.



10. Inspect the installation. Check to be sure the steering lines are routed correctly.

## INSTALLING AUTOMATIC ACTIVATION DEVICES (AAD)

All Vector 3 rigs are manufactured AAD ready. Consult the owner's manual supplied with the AAD for instructions on installing into your Vector 3 harness and container system.

### WARNING

*Because AAD's are reliable only if they are properly installed and maintained, anyone who purchases a Vector 3 with an AAD must have the unit tested by the manufacturer or an accredited testing facility at specified time intervals as outlined by the AAD manufacturer.*

*An AAD is a backup emergency device that, like many complex mechanical or electronic devices, is subject to failure or malfunction.*

1. Read the AAD's manufacturers installation Instructions.

2. Thread the cutter through the black rip-stop channel as shown.



3. Insert the AAD power unit into the spandex pocket as shown.



### NOTE

- Although AAD pouches may vary in design, they all utilize a Velcro cover for securing the excess cutter cable.
- The thicker cutter cable of the Vigil will need to be stored inside the spandex pouch.
- For Cypres II AAD's, the excess cutter cable is stowed separately under the Velcro cover.
- Nothing in this manual is meant to contradict any instructions or advice from the manufacturers of AADs.

4. Route the excess control unit cable under the white polyester tape and through the slit at the top of the reserve container.



5. Out from the back-pad side; insert the control unit into the clear vinyl window located at the top of the reserve container.





# SECTION 3

## RESERVE PACKING INSTRUCTIONS

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# RESERVE PACKING INSTRUCTIONS

## INTRODUCTION

After the reserve parachute has been assembled as described in Section 2 “Reserve Assembly Procedures”, you may proceed with packing the reserve. This section provides instruction for packing the reserve parachute into the Vector 3 harness and container. Make sure to read through this section entirely before you begin packing the reserve canopy. There are many different ram-air reserve canopies on the market today; this manual does not contain specific instructions on canopy inspection, or assembly. For these steps, the rigger must follow the instructions provided by the canopy manufacturer.

Regarding reserve canopy packing, follow the regulations and guidelines set forth by the sport parachuting governing body of the country in which you will be skydiving. For example, in the United States, a Federal Aviation Administration, or FAA Senior or Master rigger certificate is required to pack any reserve parachute that will be carried for use in the US.

## RESERVE COMPONENT LIST

- Ram-Air reserve canopy
- Vector 3 spring-loaded pilot chute:
- Vector 3 reserve free bag:
  - Bridle length for all Sport bags: 12 ft ± 2 in. (3.65m ± 50mm)
- Safety stow loop for reserve free bag:
  - 303-350- 6 inches ± 0.25 in. (152 mm ± 7 mm)
  - 351-392: 7.5 inches ± 0.25 in. (191mm ± 7mm)
- Closing loop for reserve container:
- Reserve ripcord:
  - \*Check with United Parachute Technologies LLC for the correct length*

## INSPECTION

Thoroughly inspect every part of the canopy and harness and container system including, but not limited to:

- The reserve ripcord
- Pilot chute and bridle
- Deployment bag
- Canopy
- Lines
- Links
- Risers
- Harness and container
- Closing loop



Hanging the canopy by the tail helps in both assembling and inspection.



## MINIMUM REQUIRED TOOLS USED

The following is a list of recommended tools you may need:

- Screw Driver appropriate for the L-Bar screws
- Rubber Mallet for setting L-Bars
- Scissors & snips
- Pull-up cords
- Velcro line protector strips for Reserve freebag
- Bodkin (Soft or metal)
- Temporary pin with flag.
- Seal, seal press & seal thread
- L-Bar separator
- Packing Paddles
- Weight bags
- Clamps
- Cranking/positive leverage devices.

## SKYHOOK RSL

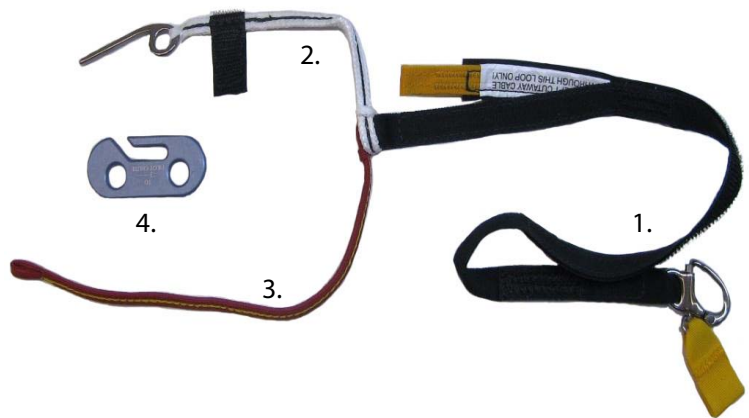
A traditional RSL does one thing. It pulls the reserve ripcord pin automatically after a breakaway. The Skyhook RSL does this, and then goes two steps further.

- A. It automatically releases the Left (non-RSL) riser, if the right (RSL) riser releases prematurely for any reason (Collins Lanyard). (You wouldn't want your reserve container opened with one riser still attached, would you?)
- B. It then uses your departing main canopy as a super pilot chute to get your reserve to line stretch faster than ever before. Breakaway, to canopy-out-of-bag and line stretch is  $\frac{1}{2}$  of a second, depending on the size of your reserve canopy. This is up to three times faster than a pilot chute can do it alone.

If you have a main total malfunction, or you're AAD fires, the Skyhook Lanyard automatically releases, and therefore does nothing to hinder normal reserve deployment.

The Skyhook RSL System has four parts:

1. The RSL Lanyard (5/8" black webbing) with a snap shackle that connects to your right main riser at one end, and the yellow Collins Lanyard loop at the other.
2. The White Universal Lanyard is attached to the RSL loop with the reserve ripcord pin at the other.
3. The Red Skyhook Lanyard is also attached to the RSL loop, with the Skyhook attachment loop at its free end.
4. The Skyhook itself, which is sewn to the reserve pilot chute bridle. (Because the RSL Lanyard, Collin's Lanyard, and Skyhook Lanyard are all part of one integrated system, pulling the yellow tab on the RSL snap shackle inactivates all three).



**SKYHOOK II**

Your rig is equipped with the new Skyhook II. It differs from the original Skyhook in the following ways:

1. It is anodized blue.
2. The "To Pilot Chute" instruction is laser etched on the top surface.
3. There is a holographic serial number label under the surface.
4. There are two Lexan cover pieces – one per side.
5. The Lexan pieces have small holes drilled in them for safety tie thread.
6. The upper attachment tape is red.
7. The label on the rig has been updated to reflect some of these changes.



The Skyhook II'S dimensions are exactly the same, and it functions in exactly the same way as the original Skyhook. Therefore, it is fully compatible with any United Parachute Technologies rig set up for the original Skyhook.

Reasons for the changes:

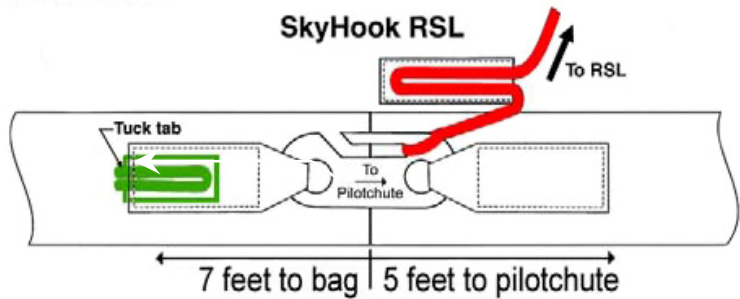
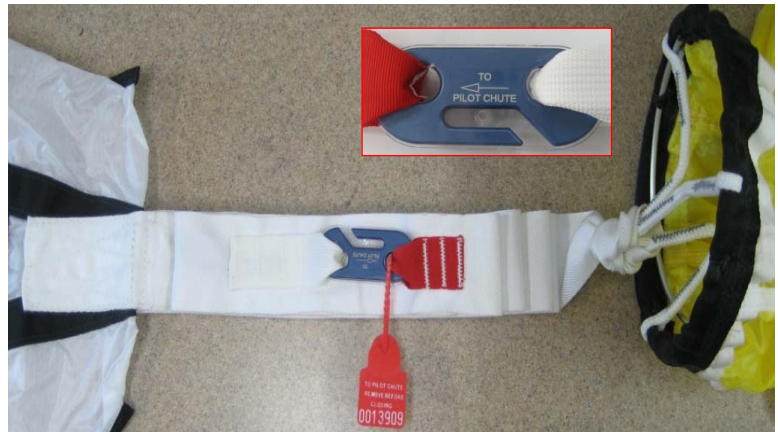
1. The blue anodizing makes it easier to see damage to the hook section, while the second Lexan cover piece better protects the hook from any damage.
2. The laser etching is much easier to read, and the holographic serial number seal makes it much easier for us to keep track of different Skyhook batches. Please notice that while the arrow on the Skyhook II points the same way as the original Skyhook, the "to pilot chute" text is flipped to make it "right side up" when viewed from the top of the rig.
3. Sealing the Skyhook lanyard with a **single piece** of red rigger seal thread passed through the holes in the two Lexan cover pieces (instead of tacking the red lanyard to the free-bag bridle, as was done in the original Skyhook) results in far greater percentage of free-bags still attached to the broken away main all the way to the ground. There is no chance of needle damage to the bridle from successive tacking with a dull needle.
4. Making the upper (toward the pilot chute) Skyhook attachment tape red makes it even less likely that someone will someday sew a Skyhook to the bridle backwards.

**WARNING - Before Packing:**

Make sure the left hand (exposed) yellow breakaway cable passes through the yellow Collins Lanyard loop at the end of the RSL. The Skyhook should not be used without a Collins' lanyard.



Make sure that the Skyhook is sewn to the reserve free-bag bridle correctly, with the pointed end of the hook facing toward the bag. If the Skyhook were sewn on the bridle facing the wrong way, a reserve pilot chute in tow would result if the reserve were pulled in response to a main total. (This pilot chute in tow could be cleared by pulling the yellow tab to release the RSL.) Remember, this malfunction can only occur if the Skyhook is SEWN to the bridle upside-down. It cannot be caused by a packing error.



## SETTING THE BRAKES

1. Open the hook and loop fastener cover on the riser. Use the toggle to pull the right hand steering line down until the brake loop just passes through the guide ring.



2. Insert the tapered end of the toggle all the way into the loop. Pull on the steering line above the guide ring to seat the toggle against the ring.



Mate the hook and loop fastener on the toggle with that on the riser. Check to be sure the tapered end of the toggle is completely seated in the loop (it shouldn't be inserted past the end of the taper, or it may be difficult to extract in the air).

3. Fold the excess line between the toggle and the loop into 3 inches (7.6 cm) folds and lay it neatly next to the toggle.



4. Carefully close the hook and loop fastener cover to encase the stowed toggle and folded line. Be sure none of the steering line is caught between the layers of hook and loop fastener.



5. Repeat the process for the other toggle.



## PACKING THE RESERVE CANOPY

### FLAKING, FOLDING AND STACKING

1. United Parachute Technologies recommends using the Pro Pack method as shown to the right. Also please refer to the canopy manufacturer's instructions for the following:

- A. Flaking the canopy.
- B. Folding the nose.
- C. Splitting the tail.
- D. Stowing the slider.
- E. Dressing the canopy.

WHETHER YOU PRO-PACK OVER THE SHOULDER OR ON THE FLOOR:

Lay the canopy out on its side and pull all of the cell's high points even before starting the pack job. This reduces the amount of work required to flake the canopy and produce a neat, orderly pack job with good bulk distribution.

MAKE ALL OF YOUR FOLDS AS NEAT AND WRINKLE FREE AS POSSIBLE.

Less wrinkles = less bulk = easier and neater pack job



### REDUCTION FOLDS

2. After flaking, begin reduction folds by laying the tail over to the other side exposing the flaked/folded material between the A, B, C, and D line groups.



3. Fold the A's to B's and B's to C's over together and then the C's to D's are folded under.



4. Pull out and use the width of the center cell to begin the cocoon.

Then fold it under the C's to D's to produce a nice sharp cocoon shape.

Left side



Right side



5. Fold the nose under as shown.



**NOTE**

*The use of the following clamps and packing paddles are optional and will help maintain control over the canopy and produce good sharp clean s-folds. Some riggers may prefer not to use them.*



**NOTE**

*The width of the Cocooned canopy should be only slightly wider than the free-bag, never narrower.*

**S-FOLDS**

Bag size should be considered when cocooning and S-folding the canopy.





6. Begin the S-folds by placing the packing paddles or your hands as shown.



7. Produce the first fold as shown with the paddles in place.



8. Produce the second fold by flipping the canopy as shown.



9. Reposition the top paddle for the third fold.



10. Make the third and final fold then remove the paddles if used.



### PLACING THE CANOPY IN THE BAG

11. Prepare the reserve bag by securing a locking pull-up cord with an overhand knot on the bottom side of the bag. Alternatively insert a metal bodkin for drawing the loops through.



12. Gather the short section of the center cell to form molar shape and carefully slide the bag under the canopy.

Then remove 2 of the clamps as illustrated right and reposition the other 2 clamps if used.

### WARNING

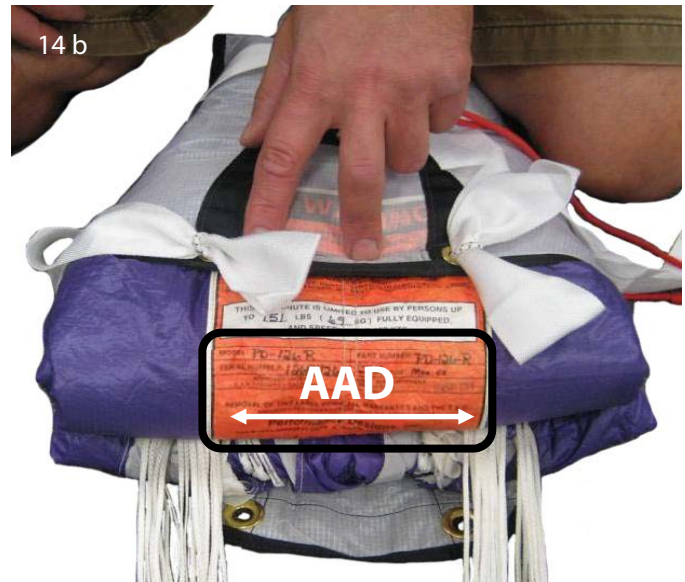
*If a Molar strap is used, make sure that it is removed before placing the canopy in the bag!*

13. Carefully slide the bag over the canopy, pushing each "ear" into the top corners of the bag, filling the corners evenly and leaving a tapered shape.

Note the use of bridle line to hold the safety stow in place.



14. Before making the first locking stow, separate the slider grommets to make room for the AAD.



15. Lock the bag closed with two bites of suspension line. A shock cord "safety stow" is used, not rubber bands.

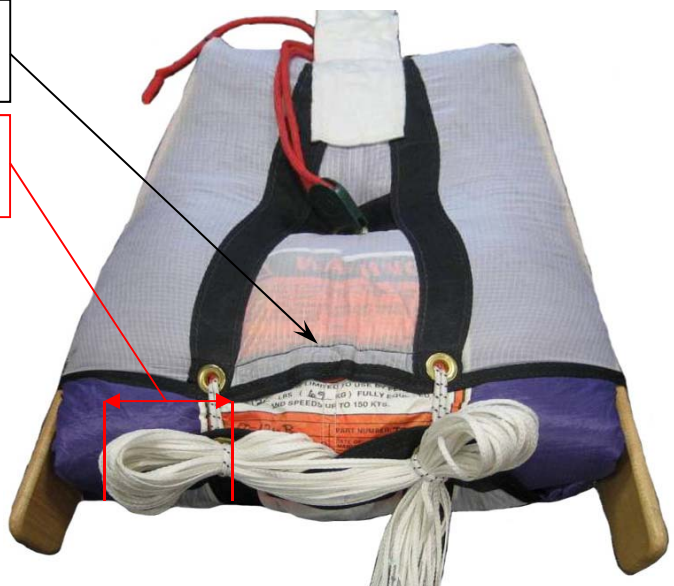
The locking stows should be no shorter than 2" and no longer than 3" long.

This section of the bag should be hard



This section of the bag should be soft.

NOTE: The bag should now resemble this V shape



Dress and shape the bag with packing paddles

**16.** Stand the bag up to expose the line stow pouch then cover the hook Velcro with a length of pile Velcro to protect the lines.

**17.** Stow the remainder of the suspension lines into the pouch on the underside of the bag using S-folds that extend from one side of the pouch to the other as shown in figures 17 a-17 b.

Be sure none of the lines are trapped between the hook and loop fastener at the mouth of the pouch.



17b.

17a.



**18.** Remove the two hook and loop fastener strips from the bag.



## PLACING THE BAG IN THE RESERVE CONTAINER (WITH OPTIONAL STAGING LOOP & SKYHOOK)

**\*FOR PROCEDURE WITHOUT STAGING LOOP AND SKYHOOK, SEE PAGE 38.**

1. Place the bagged canopy on the main container and position the reserve risers in the reserve pack tray. Fan the links rather than stacking them on each other, placing the rear links to the outside. Be sure to place the reserve risers far enough in the pack tray so they will lie flat over the shoulders.

2. Pass a pull-up cord through the reserve closing loop and a second pull-up cord through the shock cord staging loop as shown.

**NOTE:**

The pre-stretched reserve closing loop will measure 4 ½" +/- ½".

Color coded pull-up cords are helpful.

**NOTE:**

Regardless of the loop length, the staging loop will always be 1" shorter than the Cypres loop. This ensures proper tension on the reserve bridle for all V3 models.



3. Pass both pull-up cords through the bodkin and pull through to the top side.



**NOTE**

*If a T-bar was passed through the bag, thread the ends of the pull-up cord through the hole in the end of the T-bar.*

*Remove the T-bar from the bagged canopy, pulling the closing loop and pull-up cord through it.*

4. Place the bagged canopy in the pack tray, taking extra care to fill the lower corners.

Pull firmly on both pull-up cords to ensure good separation of the 2 loops.

**NOTE**

*When preparing the container for the bag, turn the upper reserve corners inside out.*

- *This allows the reserve bag and canopy to drop straight down into the container.*
- *It also makes it easier to fill the bottom corners of the container.*
- *Leave the upper corners turned inside out until it is time to close flaps #4 and #5.*



Using your knee, begin to produce room for the reserve pilot chute by pushing canopy fabric away from where it will seat.



The reserve flaps are numbered 1-6 for reference. Close them in proper sequence. Skyhook equipped rigs will have the additional 2A flap.



## CLOSING THE RESERVE CONTAINER (WITH STAGING LOOP & SKYHOOK)

5. Close the inside bottom kicker flap (Flap #1) and secure it with the temporary pin.

### NOTE

*Ensure closing loop passes through AAD cutter*



6. While keeping knee on center of the bag, carefully pop the corners of the bagged canopy into the corners of the container. Pushing too hard can result in moving bulk away from the corners.

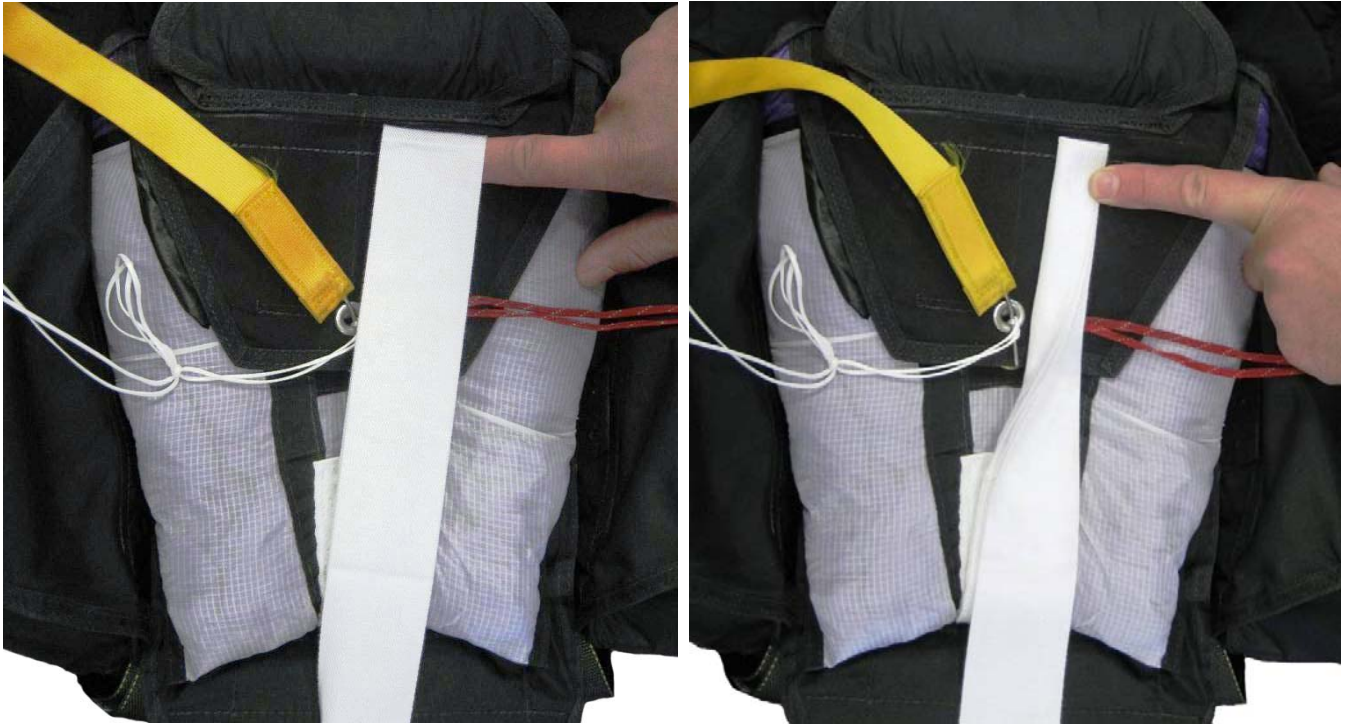
Firmly Push the AAD into the space made when closing the bag.





## SETTING THE STAGING LOOP

7. Begin by pulling the bridle line all the way to the top of the container as shown, and then fold it in half.

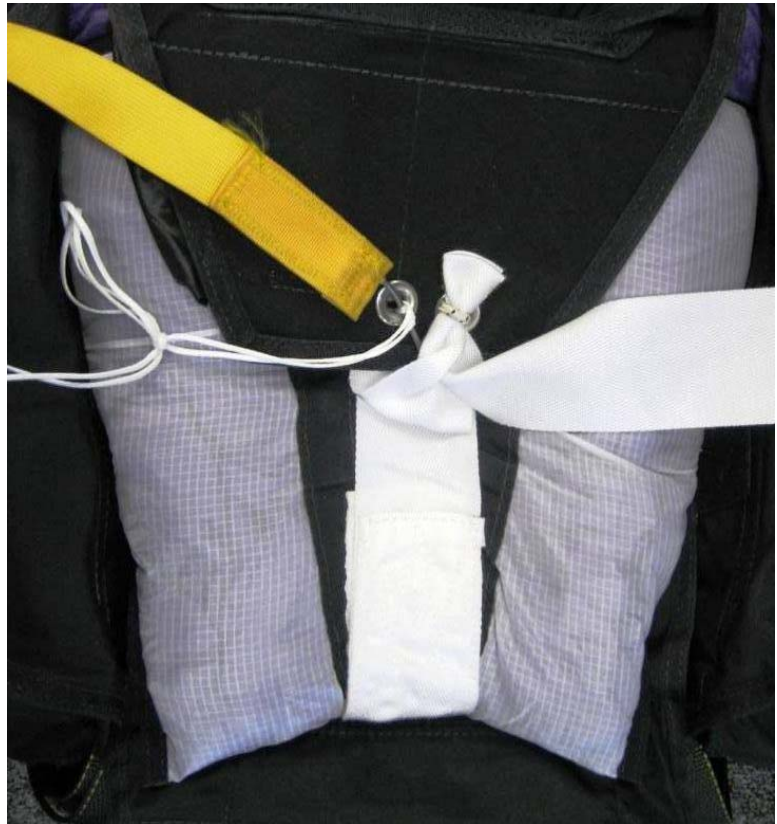


8. Stow 1" (25mm) of folded bridle as shown and tuck the excess slack under flap 1 as shown.

**NOTE**

**CHECK RESERVE RISER  
PLACEMENT BEFORE  
CLOSING FLAP #2**

- Ensure that the risers are at the edge of the pack tray with the rear riser fanned to the outside.
- Adjust the risers so that they lay flat against the yoke or shoulder padding.



9. Then fold remaining 6' (1.83m) of bridle in the V shape ending with the Skyhook as shown.

10. Close and pin flap #2.

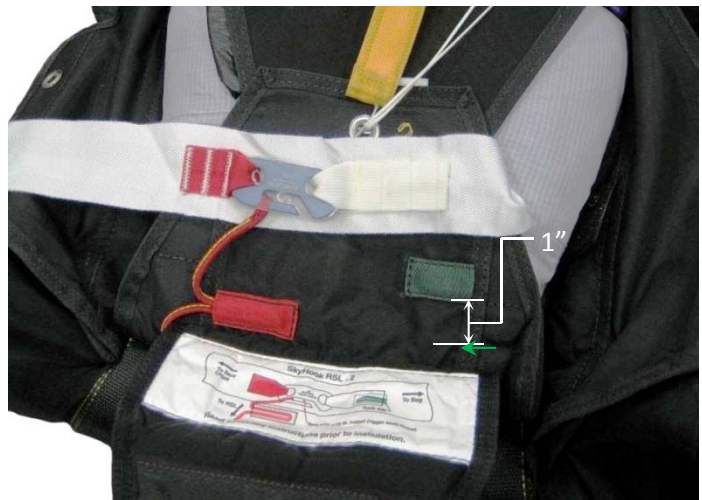
Attach the RED Skyhook lanyard to flap #2 by folding the stiffened section of the lanyard in half, and inserting it in the RED pocket on the flap. You may have to open the pocket a little with a pencil before inserting the flex-tab.

Lift the Lexan cover slightly, rotate the Skyhook enough to slip the loop on the end of the red Skyhook lanyard over the Skyhook, and rotate it back into position. The Skyhook should be held firmly in place between the two pockets with less than 1/4" (7mm) of play.

**NOTE:**

It should take a force of 5-7 lbs. to pull the red or Green flex-tab out of its pouch pulling at a 180° angle to the mouth of the pouch.

11. Pass a single length of riggers seal thread through the holes in the lexan covers and firmly tie off with a surgeons knot to hold the RED Skyhook lanyard in place

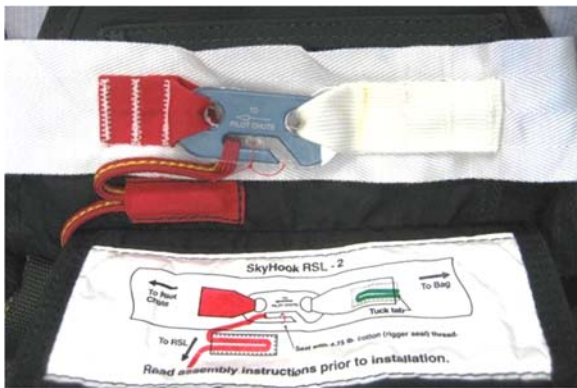


12. Insert the GREEN flex-tab on the free-bag bridle into the GREEN pocket on the #2 flap.



13. Complete the Skyhook assembly to the diagram on flap 2A.

Close and pin flap 2A then S-fold remaining 5' (1.52m) of bridle line as shown



14. Thread the pull-up cord up through the pilot chute from bottom to top.



**15.** Make sure the pilot chute is centered over the loop, then compress it straight down and lock it with the temporary pin.

**16.** Pull all the pilot chute fabric out, away from the spring. After pulling the fabric away from the spring, check to make sure the pilot chute base is centered under the crown then accordion fold the material across the top.

### NOTE

*Fully compress the spring to see how much loop can be pulled through the top of the pilot chute. If you can pull more than  $\frac{1}{2}$  to  $\frac{3}{4}$  inches (1.3 cm – 1.9 cm) through, then it is too long. This would be the best time to open the container and shorten the loop.*

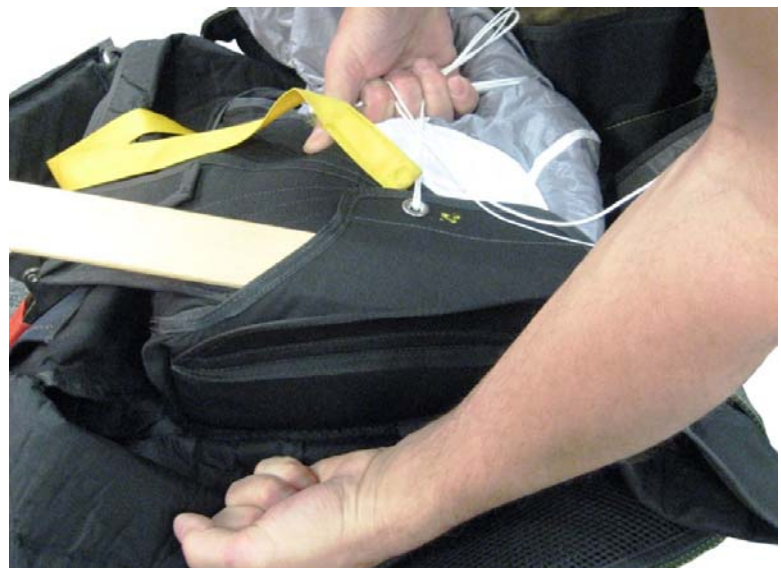
**17.** Thread the pull-up cord through the reserve bottom flap (Flap #3). Close and secure it with the temporary pin

### NOTE

***DRAW BOTH SIDE FLAPS, #4 AND #5, TOGETHER AT THE SAME TIME.***

- *This prevents the bulk of the pack job from pushing to the side that isn't closed, which then makes it more difficult to close that side.*
- *By closing both side flaps at the same time, the pack job is evenly compressed from both sides.*

**18.** Thread the pull-up cord through the right side flap (Flap #4), then the left side flap (Flap #5) in that order. Close and secure with the temporary pin each time. Ensure the pilot chute folds stay flat and neat.



**NOTE**

*If the force necessary to close flaps 4 and 5 seems excessive, the loop may be too short. Use a scale to determine how much force is needed to extract the pin; 8lb (3.6 kg) to 12lb (5.4kg) is correct. A short loop can also bend the reserve loop anchor.*

**WARNING**

*Make sure that the Skyhook lanyard goes directly from the RSL lanyard to the Skyhook hardware, without going under or through anything. (Except flap #2A)*



**19.** Thread the pull-up cord through the top center flap (Flap #6).



**20.** Replace the temporary pin with the reserve pin, seating it to the depth as shown the left.

**21.** Seal reserve in accordance with the regulations in your area and close the pin cover.



## PLACING THE BAG IN THE CONTAINER (WITH NO STAGING LOOP OR SKYHOOK)

1. Place the bagged canopy on the main container and position the reserve risers in the reserve pack tray. Fan the links rather than stacking them on each other, placing the rear links to the outside. Be sure to place the reserve risers far enough in the pack tray so they will lie flat over the shoulders.

**NOTE:** The pre stretched reserve closing loop will measure 4 ½" +/- ½".

2. Pass the pull-up cord through the reserve bag as usual.

### NOTE

*If a T-bar was passed through the bag, thread the ends of the pull-up cord through the hole in the end of the T-bar. Remove the T-bar from the bagged canopy, pulling the closing loop and pull-up cord through it.*

3. Place the bagged canopy in the pack tray, taking extra care to fill the lower corners. Then use the pull-up cord to pull the closing loop up through the bagged canopy. Secure it with a temporary locking pin

## CLOSING THE CONTAINER

The reserve flaps are numbered 1-6 for reference. Close them in proper sequence.



4. Close the inside bottom kicker flap (Flap #1) and secure it with the temporary pin.



**NOTE**

*If the staging loop is not going to be used, disregard the staging loop grommet in the following few steps.*

5. Fold first two thirds of the bridle by making long S-folds in the V shape as shown. Carefully tuck the bottom of the S-folded section under the inside bottom kicker flap (Flap #1).



6. Close the inside top kicker flap (Flap #2) and secure it with the temporary pin. The bridle should come out between Flap #1 and Flap #2. Check the amount of free bridle extending from the closed flaps to the base of the pilot chute; there must be at least 5 feet (1.5m). If there is less than 5 feet (1.5m), reopen the flaps and restow the S-folded bridle to make the length of free bridle at least 5 feet (1.5m), maximum 6 feet (1.8m) long.



**NOTE**

*If the reserve container has the 2a Skyhook flap installed, just close it simultaneously with flap 2.*

**7.** S-fold the length of bridle on top of #1 and #2 kicker flaps from right to left up to the base of the pilot chute.



**8.** Thread the pull-up cord up through the center of the pilot chute from bottom to top.



**9.** Make sure the pilot chute is centered over the loop, then compress it straight down and lock it with the temporary pin.

**10.** Pull all the pilot chute fabric out, away from the spring. After pulling the fabric away from the spring, feel around and check to make sure the pilot chute base is centered under the crown.





11. Lay the fabric flat all around the pilot chute and fold it under in wide folds to the center. Fold the top and bottom first, then the sides. Do not allow the folds of fabric from the pilot chute to get under the open flaps. Folding the fabric, rather than stuffing it between the coils, increases pilot chute launch performance and reduces the bulk of the packed container.



**NOTE**

*Fully compress the spring to see how much loop can be pulled through the top of the pilot chute. If you can pull more than ½ to ¾ inches (1.3 cm – 1.9 cm) through, the loop is too long. This would be the best time to open the container and shorten the loop.*

12. Thread the pull-up cord through the reserve bottom flap (Flap #3). Close and secure with the temporary pin.



**NOTE**

*If the force necessary to close flaps 4 and 5 seems excessive, the loop may be too short. Use a scale to determine how much force is needed to extract the pin; 8lb (3.6 kg) to 12lb (5.4kg) is correct. A short loop can also bend the reserve loop anchor.*

13. Thread the pull-up cord through the right side flap (Flap #4), then the left side flap (Flap #5) in that order. Close and secure with the temporary pin each time. Ensure the pilot chute folds stay flat and neat.



14. Thread the pull-up cord through the top center flap (Flap #6).

15. Replace the temporary pin with the reserve pin, seating it to the depth as shown the left

### WARNING

*If a cranking tool is used, care should be taken that the 22lb (9.9 kg) pull force is not exceeded. This is stipulated by the FAA FAR's.*

### NOTE

*Walking on the reserve with stocking feet or clean shoes to help expel air from the container will make the rig look flatter and more aesthetically pleasing.*

16. Remove the pull up cord.

17. Insert the ripcord handle into its pouch on the main lift web.

18. Dress the container, seal, sign, and log the reserve. Close the reserve pin protector flap.

19. Close the pin cover and count your tools.



## INSTALLING THE R.S.L. (RESERVE STATIC LINE)-NO SKYHOOK

### NOTE

*NOTE: For older style Vectors with the ring on flap 6, please refer to the appendix of this manual.*

1. Inspect the RSL: Check the stainless steel snap shackle is operating smoothly and that the spring will retain the locking pin. Check that the hook and loop fastener is clean and sufficiently tacky to hold the reserve lanyard in place. The pin should be curved from the eye to half way down its length. The rest of the pin should be straight.

2. Start by routing the RSL along its hook and loop fastener path alongside the right-hand riser.



3. Insert the RSL pin through the loop at the end of the reserve ripcord cable; ensure the pin runs the same direction as the cut in the marine eye. Replace the temporary pin with the reserve pin.

4. Remove the pull-up cord.



### NOTE

*RSLs should only be installed by a qualified rigger.*

5. Ensure the yellow release cable passes through the Collins lanyard.



**6.** Ensure the stiffened part of the RSL lanyard is completely inserted into the holding pocket located under the reserve risers.

**7.** Attach the main parachute risers to the harness.

**8.** Hook the reserve lanyard shackle to the ring on the right-hand riser.

**9.** Dress the container, seal, and sign and log the reserve. Close the pin cover.





# SECTION 4

## MAIN CANOPY ASSEMBLY AND PACKING PROCEDURES

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# MAIN CANOPY ASSEMBLY AND PACKING PROCEDURES

## INTRODUCTION

The Vector 3 is compatible with almost every ram-air canopy in use today. The Vector 3 is available with a variety of main container sizes. Consult with the United Parachute Technologies or your dealer to ensure compatibility between the pack volume of your main canopy and your Vector 3. Failure to follow manufacturer's recommendations regarding proper canopy sizing (i.e., using oversized or undersized canopy volumes) may create a situation such as a pilot-chute-in tow or a premature opening of the main container.

This manual does NOT provide specific packing instructions for the various main canopies on the market. It is the responsibility of the owner to obtain canopy packing information from the canopy owner's manual. This manual does include the steps necessary to pack your canopy from the point it is inside the main deployment bag until the container is closed and pilot chute is packed. There is also an included section on "Pro packing" the main canopy.

## ATTACHING THE MAIN CANOPY TO THE MAIN RISERS

Carefully inspect the main canopy for wear or manufacturing defects. Attach the main canopy to the main risers (included with the Vector 3) following the canopy manufacturer's instructions. Double-check the orientation of the canopy and the continuity of the lines. Check that the links are tightened securely and correctly. Leaving the risers attached to the harness while attaching the canopy will help minimize confusion.



## USING SOFT LINKS

Follow manufacturer's instructions on installation of the soft links.

## USING RAPIDE LINKS

If the canopy uses Rapide links, make sure the barrel nuts completely cover the threads. After hand tightening, turn the barrel  $\frac{1}{4}$  turn with the proper sized wrench.

## ATTACHING THE MAIN STEERING TOGGLES

It is important to note that Spectra lines (sometimes referred to as "Microline") and Vectran lines require a different method of toggle attachment than that of Dacron lines. Incorrect toggle attachment to a canopy that has Spectra lines may result in the lines slipping out of the knot and toggle detachment. This situation may require a cut-away and reserve deployment, or cause something more serious. If there is any question about the type of line the main canopy utilizes, refer to the canopy owner's manual, consult a rigger, or contact your canopy manufacturer directly.

The Vector 3 is supplied with steering toggles for the main canopy that are compatible with the Vector 3 risers. It is important that the toggles and risers be compatible to decrease the risk of associated malfunctions.

The toggle attachment point should be located along the steering lines so that at full flight, the toggles are resting against the guide ring. This is important to obtain proper canopy flight. If the toggles are mounted too high on the steering lines, the canopy will fly "in brakes" and will not glide or land correctly. Likewise, if the toggles are mounted too low on the steering lines, the canopy will become less responsive and the canopy pilot may not be able to apply full brakes or stall the canopy. This could result in flaring difficulty while landing.

These situations are likely to occur when a main canopy is hastily switched from one set of risers to another. If the guide rings on both sets of risers are not located the same distance from the connector links, the steering toggles must be moved to another location on the steering line.

It is also important to securely attach the toggles to the steering lines. Although using the rear risers may adequately control some canopies, a “lost” toggle can be hazardous in some circumstances, and may require a cut-away and reserve deployment.

**PROCEDURE**

There are 3 methods for attaching steering toggles to steering lines.

- Method A is for main canopies with Dacron (polyester) lines.
- Method B is for main canopies with small-diameter Spectra (Microline) that have a finger-trapped and sewn loop ends.
- Method C is for main canopies with small-diameter Spectra (Microline) that have only a mark for attaching the toggle.

**METHOD A—DACRON LINES**

After the main canopy has been properly attached to the risers and while it is still on its side, attach the toggles by performing the following steps:

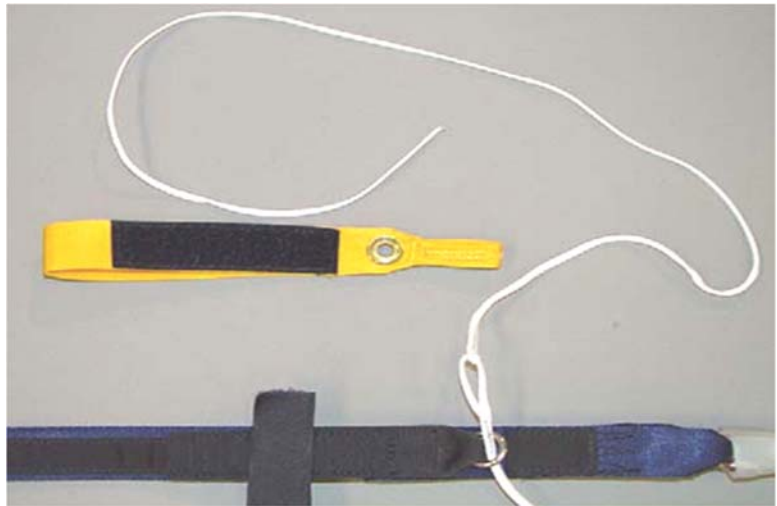
1. Ensure the steering lines are correctly routed (i.e. they should not wrap around any suspension lines). This is accomplished by starting at the tail of the canopy. Trace the upper steering lines down to the lower steering line. Check that the right hand steering line passes through the right hand rear slider grommet and the left hand steering line passes through the left hand rear slider grommet.

2. Locate the mark on the steering line that indicates the correct toggle location.

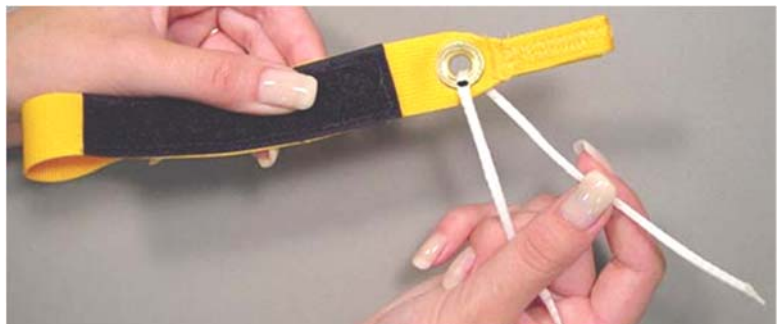
3. Thread the steering line through the guide ring located on the riser.

Verify that this mark is in the correct location by referring to the main canopy owner’s manual.

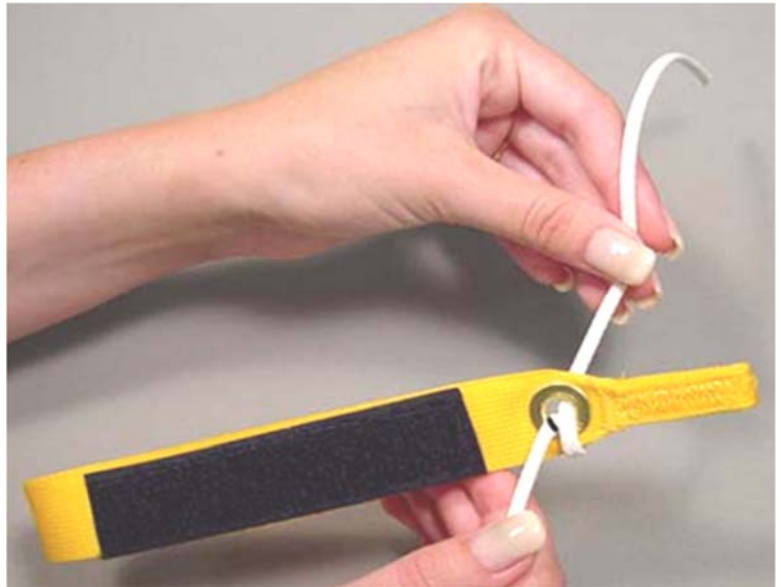
**NOTE**  
*Verify that this mark is in the correct location by referring to the main canopy owner’s manual.*



4. Thread the end of the steering line through the Vector 3 steering toggle grommet. Adjust it so the mark on the steering line is close to the grommet but has not passed through it.



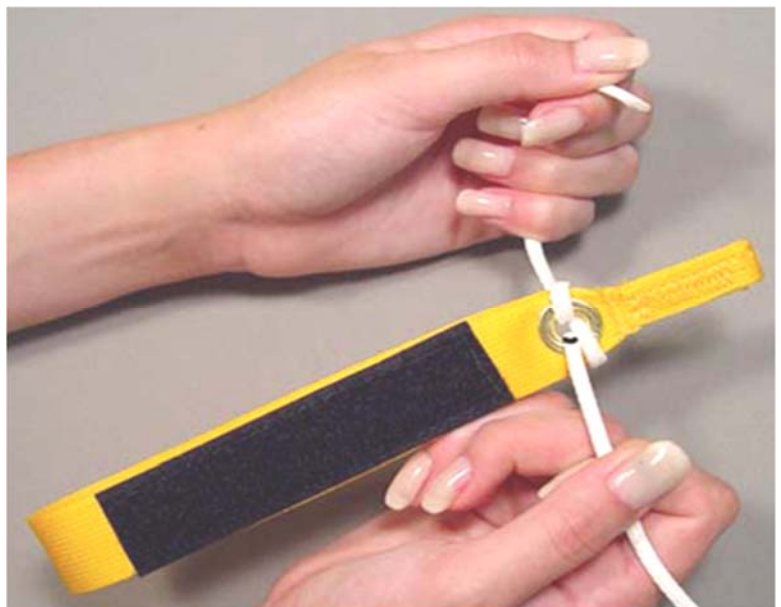
**5.** Loop the running end of the steering line around the toggle and thread it through the grommet again. Now pull it snug. Check that the mark remains in the correct place.



**6.** Loop the running end around the other side of the toggle and pass it through the grommet once again.

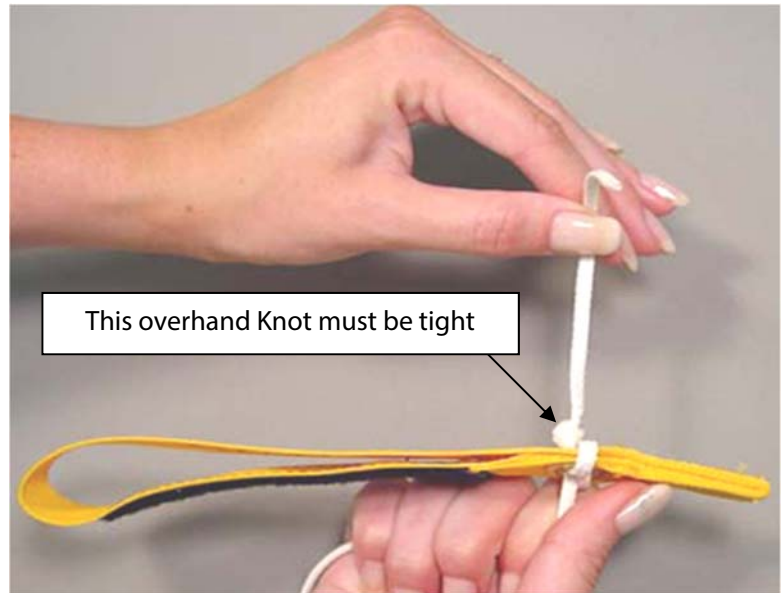


**7.** Grasp the line on both sides of the toggle and pull it tight. The steering line does a figure 8 through the grommet and exits on the other side of the toggle. Again, check the mark on the steering line, ensuring it is still in the correct place.





8. Tie an overhand knot in the free end of the steering line and tighten it right down to the toggle. Ensure it is snug for now. Beware: If the knot is not snug, the toggle may slip off the line!



9. Check the canopy with the deployment brakes set and with the brakes not set to be sure that it is correctly configured. The main canopy owner's manual contains the correct brake settings and steering line lengths. Keep in mind that there are NO standardized dimensions. Therefore, unless the lines are the correct length, the canopy may not open or fly correctly.

10. Once the measurements have been verified, tighten the overhand knot at the toggle. Daisy chain, finger trap or tack the excess end of the steering line to the toggle. Don't cut the extra line off; you may wish to adjust the toggle position later.

11. Repeat this procedure for the other toggle.

12. Inspect the installation. Ensure proper routing of the steering lines.

**METHOD B—SPECTRA LINES (MICROLINES) (WITH FINGER-TRAPPED AND SEWN ENDS)**

After the main canopy has been properly attached to the risers and while it is still lying on its side, attach the toggles to it by following these steps:

1. Starting at the tail of the canopy, trace the upper steering lines down to the lower steering line. This is to ensure the steering lines are routed correctly; they should not wrap around any suspension lines. The right-hand steering line must pass through the right-hand rear slider grommet, and the left-hand line must pass through the left-hand rear slider grommet.

2. Thread the end of the steering line through the guide ring located on the riser then through the grommet located on toggle.

3. Pull the loop over the end of the toggle as shown.



**METHOD C—SPECTRA LINES (MICROLINES) (UNFINGERTRAPED ENDS)**

After the main canopy has been properly attached to the risers and while it is still lying on its side, attach the toggles to it by following these steps:

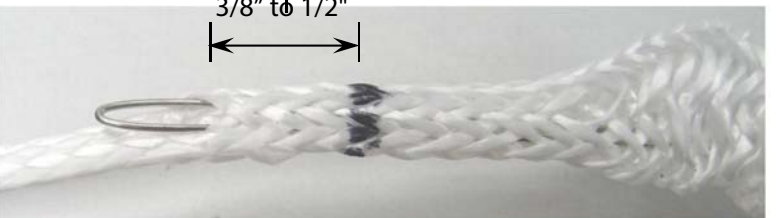
1. Starting at the tail of the canopy, trace the upper steering lines down to the lower steering line. This is to ensure the steering lines are routed correctly; they should not wrap around any suspension lines. The right-hand steering line must pass through the right-hand rear slider grommet, and the left-hand line must pass through the left-hand rear slider grommet.

2. Locate the mark on the steering line that indicates the correct toggle location. Verify that this mark is in the correct location by referring to the main canopy owner’s manual.

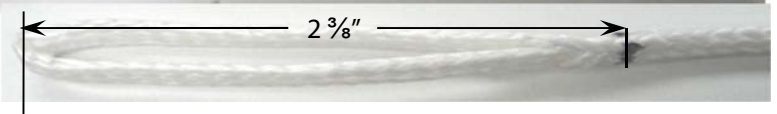
3. Using an appropriate finger trap tool, Start the finger-trap as show to the right.



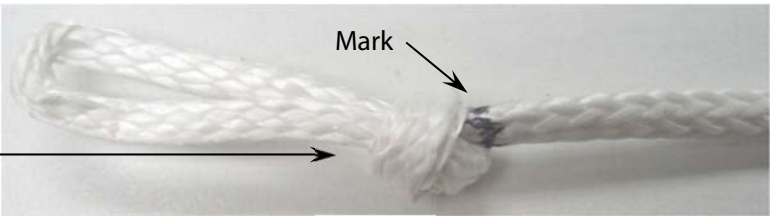
4. The finger-trap must begin from 3/8" (10mm) to 1/2" (13mm) from mark as shown. This will ensure that the finger-trap is locked in the knot.



5. Form a finger-trapped loop 2 3/8" (61mm) from the manufacturers mark to the end as show.



6. Tie and adjust an overhand knot until the mark is just to the outside of the mark. The loop should fit closely around the toggle. Tighten the knot.



**Note:**

The finger-trap is locked in the knot.

7. Thread the end of the steering line through the guide ring located on the riser then through the grommet located on toggle.



8. Pull the loop over the end of the toggle as shown.



9. Draw the steering line tight and repeat the procedure for the other toggle.



10. Inspect the installation. Check to be sure the steering lines are routed correctly.

## ATTACHING THE COLLAPSIBLE PILOT CHUTE

1. Locate the main canopy's pilot chute bridle attachment point.
2. Open the new collapsible pilot chute and bridle.
3. Run the end of the bridle opposite the pilot chute through the grommet in the top of the main deployment bag. The bridle should be inserted from the outside to the inside of the bag.



4. Pull the bridle through the main deployment bag grommet until the grommet is snug against the stop block (of the bridle) on the outside of the bag.



5. Pull the two fabric loops on the bridle back so they rest against the grommet on the inside of the bag.

6. Attach the pilot chute and bag to the pilot chute bridle attachment point on the main canopy. Pass the pilot chute and bag through the looped end of the bridle.



## PREPARING THE MAIN PILOT CHUTE

### WARNING

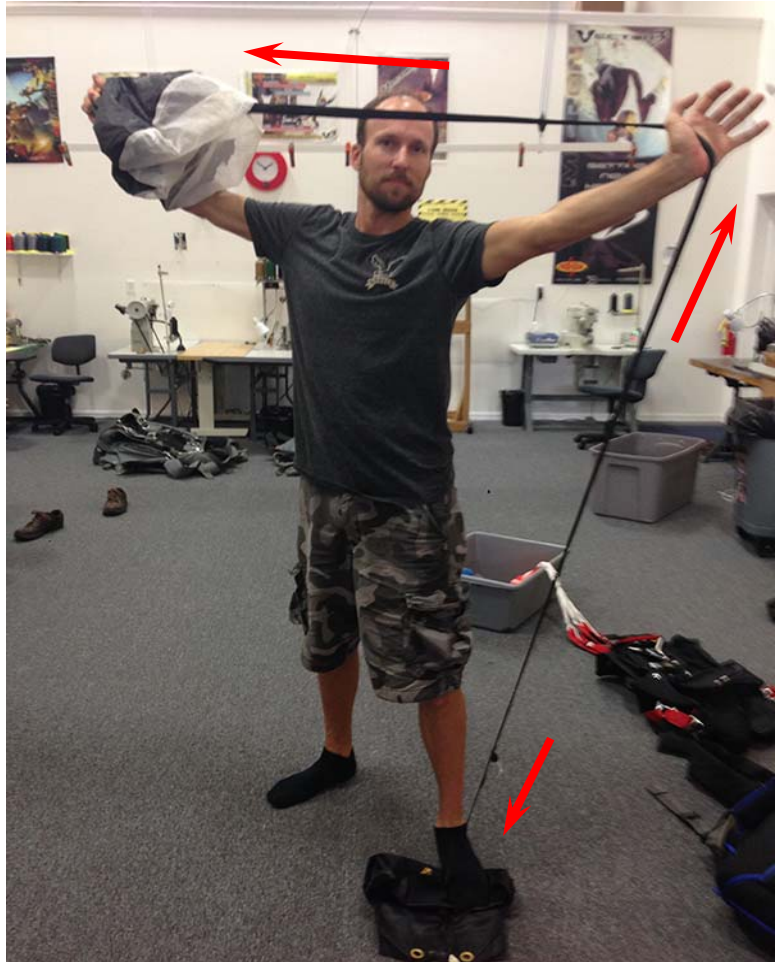
*Your pilot chute must be cocked to function correctly.*



1. Once installed / after each jump, notice the excess bridle between the bag and canopy.

2. To cock your pilot chute, step on your main bag and pull the handle on the top of the pilot chute with one hand. With the other hand, extend the bridle until it is tight.

3. You must see the green marking on the kill line to be sure it is cocked. Always recheck it after you place the bag into the container. This assures that the bridle has not become partially un-cocked while packing.



### NOTE

*Always recheck it after you place the bag into the container. This assures that the bridle has not become partially un-cocked while packing.*



### WARNING

*Cocking the pilot chute allows it to inflate when thrown into the airstream. An un-cocked pilot chute will remain collapsed and subsequently create a pilot chute in tow situation.*

## SETTING UP THE PULL-OUT DEPLOYMENT SYSTEM

When a Vector 3 is to be set up with the pull-out main deployment system, the bridle/pin and handle setup must first be attached to the pilot chute. To do this, perform the following:

- 1.** First, thread the end of the bridle with no hook and loop fastener on it through the loop located on the handle/pin setup.
- 2.** Next, thread the end of the bridle through the crossed tape and centerline at the base of the pilot chute.



- 3.** Finally, thread the end of the bridle back through the opposite end of the bridle.



## SETTING MAIN DEPLOYMENT BRAKES

Every ram-air canopy on the market today is equipped with “deployment brakes” to make it open more gently and reliably. The brakes work by keeping the tail of the canopy pulled down several inches during deployment. This prevents the canopy from surging forward as it inflates and begins flying.

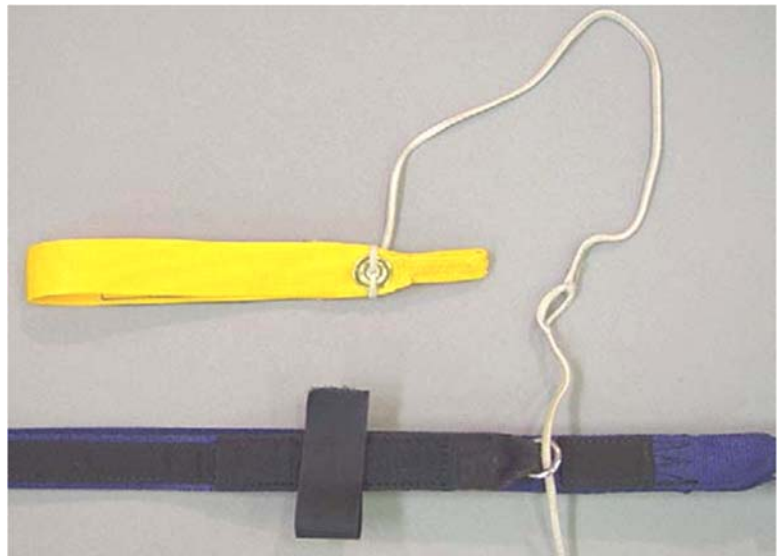
Malfunctions and poor deployments may result if the brakes are not set during packing, if the brakes are incorrectly set, or if one or both brakes release before complete canopy inflation and stabilization. Incompatible toggle and riser combinations may also create similar problems.

Not all harness and container systems have risers that are configured like those shipped with the Vector 3. Different riser designs require different procedures and a rigger should be consulted for the correct one.

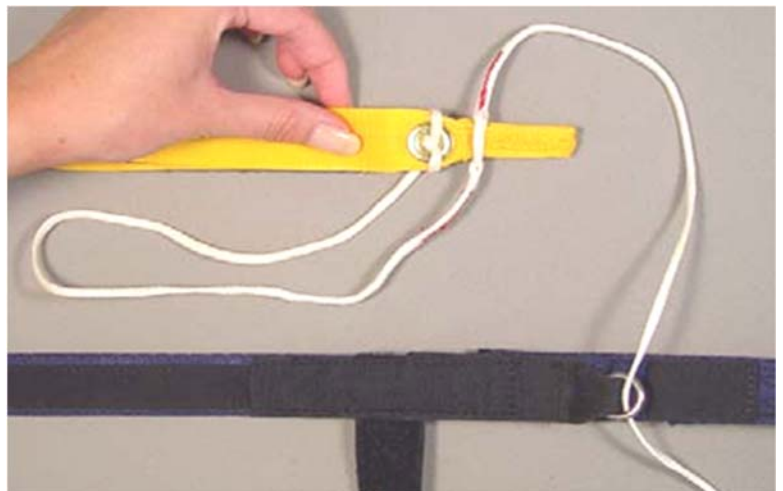
## PROCEDURES

### VELCRO TOGGLE SYSTEM

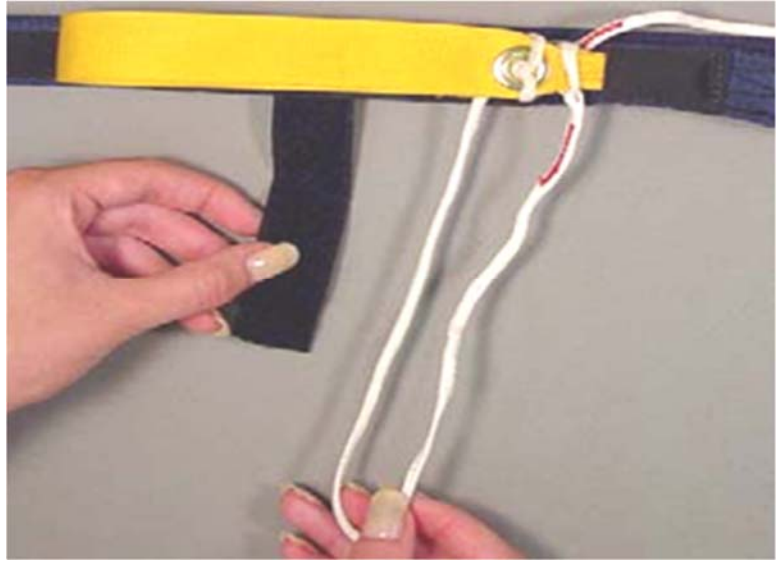
1. After the canopy is inspected, use the toggle to pull the right-hand steering line down until the brake loop just passes through the guide ring.



2. Insert the tapered end of the toggle completely into the cat eye of the lower steering line.



3. Pull on the steering line above the guide ring to seat the toggle against the ring. Insert the tapered end of the toggle into the toggle keeper above the guide ring. Mate the toggle hook and loop fastener with that on the riser. Check to be sure the tapered end of the toggle is completely seated in the keeper (It shouldn't be inserted past the end of the taper, or it may be difficult to extract in the air).



4. Fold the bight of line between the toggle and loop with 3 inches (7cm) folds and stow it in the hook and loop fastener tab next to the toggle. Be careful to avoid contact between the brake line and the hook Velcro as this will damage the line. Repeat the procedure for the left-hand toggle.



#### NOTE

*For those canopies with longer steering lines you can position the excess so that there is an even amount on both the top and bottom loops.*

## TRULOK TYPE TOGGLE SYSTEM

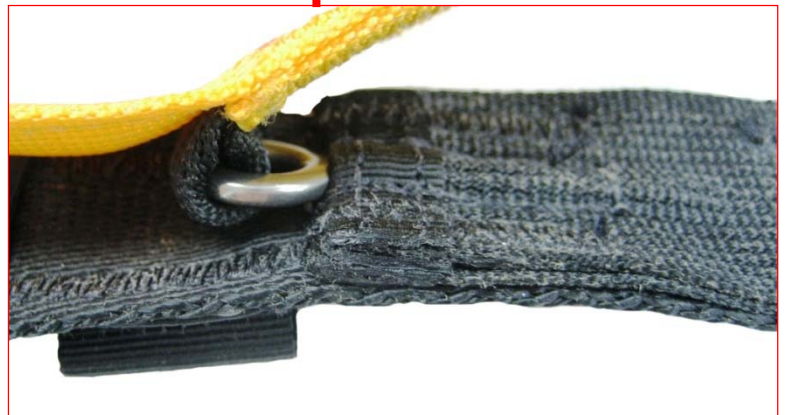
**WARNING**

*Always stow excess steering line. Failure to do so may result in a knotted steering system and uncontrollable canopy. The TruLok toggle system allows the most secure steering line stowage available. Nevertheless, always look at your toggles before releasing, to make sure a clean release is possible.*

**1.** Place the toggle tip through the cat eye on the steering line in the normal fashion.



**2.** Insert the straight pin into the channel that has been created in the material holding the ring to the riser.



**3.** Insert the tip of the toggle into the keeper located above the riser ring.





4. Pass the excess steering line through the two small loops of material located on the reverse side of the riser with the toggle assembly.



Inside View

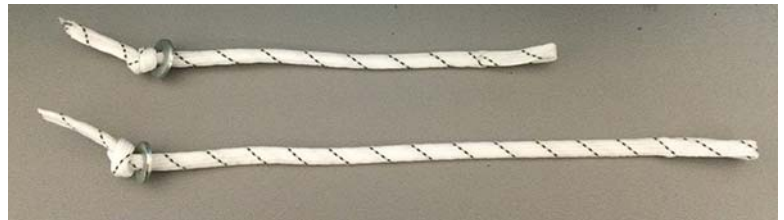


**NOTE**

*For those canopies with longer steering lines you can position the excess so that there is an even amount on both the top and bottom loops.*

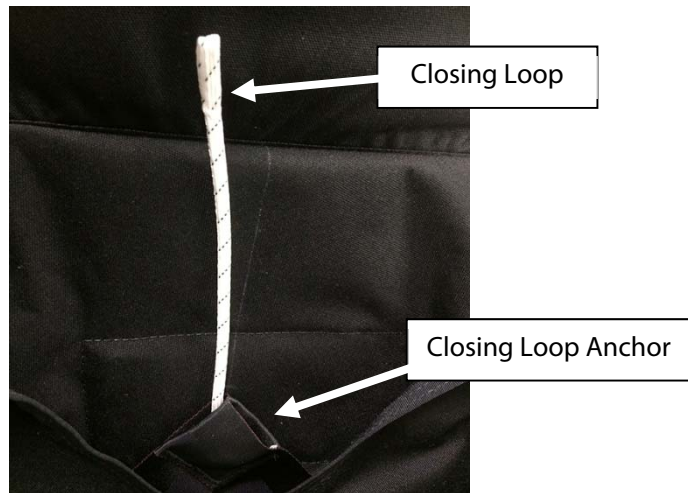
**SELECTING THE MAIN CLOSING LOOP**

In 2011, UPT updated the Vector 3 closing loop anchor location and closing method. The current production version now has the loop anchor located inside the main container, installed at the base of the reserve tray. It uses the longer closing loop shown here. All Vector 3 containers built before this update will use the shorter closing loop installed in the bottom main flap. See **APPENDIX F** for Closing the container with the previous design.



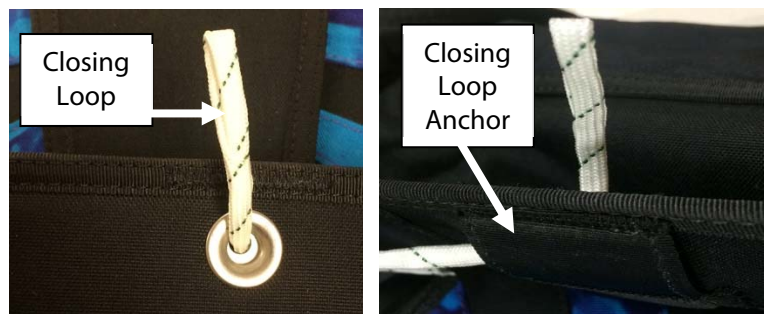
**CURRENT CLOSING LOOP**

The length of the closing loop is determined by canopy size and type of pack job performed. For assistance in setting the length, contact your rigger or the UPT rigging department.



**PREVIOUS CLOSING LOOP**

For closing loops that are anchored on the bottom main container flap, the length should be set to 1-5/8 inch, (4.1 cm) ± 1/8 inch (± 3 mm).



## CLOSING THE MAIN CONTAINER

1. The main canopy should be packed in the main deployment bag with lines stowed.

1



2. Stow the remainder of the lines in the rubber bands located on each side. Keep the 1-2 inch line bights leaving no more than 15 to 20 inches of lines un-stowed between the bag and the connector links.



3

3. Prep the main container for the deployment bag by opening up all flaps and covers then pick the bag up by its bridle.



4

4. Without rotating, transfer the bag over the reserve and past the main container.



5

5. Lay the risers over the shoulders of the harness and alongside the reserve container. Separate the risers and laying them side-by-side.

6. Close riser covers by performing the following:

- A. Cover main risers with the internal riser covers.
- B. Insert magnetic yoke flap into magnetic riser covers.



6

7. Neatly lay the remaining line in the bottom of the pack tray then lay the bag straight down in the container with the **line stows against the bottom flap**. Lift up on the top main flap as you push the top corners of the bag into the top of the main container so that the connector links are kept in place between the bag and the sides of the container. Make sure that none of the flaps are under the bag.



7

8. Kneel on the center of the bag and pull up the side flaps until the bag fills the container and is flush with the container. Pull the bridle to its entire length ensuring it is outside.



8

## CLOSING THE MAIN CONTAINER

**NOTE**

*The following steps show the updated method for closing the main container and routing the updated bridle design. For the alternative methods of container closing using the previous bridle design skip to **APPENDIX F***

**9.** Insert a pull-up cord through the closing loop. See page 57 for setting closing loop length.



**10.** Thread the pull-up cord through the grommet of the bottom main flap



**11.** Route the pull-up cord through the grommet of the top container flap (flap #2). Pull the pull-up cord towards the bottom of the container (avoid overstressing the grommet).



**12.** Route the pull-up cord through the #3 right side flap and draw it closed.



12

**13.** Route the pull-up cord through the #4 left side flap and draw it closed. Insert the closing pin (located on the bridle) through the closing loop from left to right. The green indicator on the bridle should face up.

Older center flaps will have a small piece of hook Velcro present used with older old bridles. This can either be removed or covered with a piece of pile.



13

**14.** Ensure the grommets are offset as shown. Stow the bridle under the right closing flap as indicated. Note that the grommets do not line up, the binding tapes should stack. It may be necessary to adjust the length of the closing loop to make the flaps align properly. The curved pin should be held firmly in place, but a force of no more than 12 pounds should extract it and open the container.

Close the main pin cover.



14

## FOLDING THE PILOT CHUTE FOR BOC POUCH (BOTTOM OF CONTAINER / BOC)

1. Lay the pilot chute out (mesh side up), so the edge of the circle is at the mouth of the Spandex pouch.



2. Fold the pilot chute in half over the bridle.



3. Fold pilot chute into thirds.



4. Fold opposite end of pilot chute to the center and S-fold the bridle.



5a

5b

5c

5. Fold in thirds again forming a long thin tube



6. Insert the pilot chute into the pouch until only the handle is exposed. If you have any excess bridle after inserting the pilot chute, tuck it away in the BOC pouch, between the pilot chute and the container.



**NOTE**

*If you have any excess bridle after inserting the pilot chute, tuck it away in the BOC pouch, between the pilot chute and the container.*

7. If a free-fly hand is used as shown to the right, tuck its locking tab under the right main side flap as shown

7.





## PACKING THE PULL OUT DEPLOYMENT SYSTEM

**1.** When closing the main, place the bag in the pack tray as usual, with the lines at the bottom of the container. S-fold the bridle over the bag as shown.



**2.** At the bottom right outside corner of the container is a flap. Secure the soft deployment handle to the hook and loop fastener under this flap, and the hook and loop fastener tab opposite the pin just above it.



**3.** S-fold the stretched-out pilot chute on top of the bag so that it fits over the main bag, and is centered as shown at right.



4. Close the top flap #2, keeping the pin to the bottom right and outside the flaps, as shown.



5. Close side flaps #3 and #4 and secure with the main closing pin.

#### NOTE

*Make sure there are no twists in the bridle and make sure the bridle is not looped around the tab that has the grommet set in it.*



6. Slowly remove the pull-up cord under the closing pin while extracting it. Doing so will reduce the wear on the loop. Close the main pin cover flap and make sure it completely covers the pin and bridle cord. Tuck any excess bridle under the right side flap.





# SECTION 5

## THE BOOTH 3-RING RELEASE SYSTEM

INTRODUCTION	71
GETTING TO KNOW THE BOOTH 3-RING	71
ASSEMBLY	72
PRE JUMP INSPECTION	74
TRIMMING CUTAWAY CABLES TO MATCH HOUSING LENGTH	75

# THE BOOTH 3-RING RELEASE SYSTEM

## INTRODUCTION

The 3-Ring release system was invented by United Parachute Technologies founder Bill Booth in 1976. It was the first practical release system that allowed skydivers to jettison their main canopies by pulling a single handle. The Booth 3-Ring was not only easier to operate than previous canopy release systems, but it was also more reliable and far less expensive. The Booth 3 Ring release system is now the industry standard.

## GETTING TO KNOW THE BOOTH 3-RING

Knowing how the Booth 3-Ring release works will help you to assemble and inspect it properly.

Begin by peeling the release handle (more commonly referred to as a cutaway or breakaway handle) from the hook and loop fastener on the harness. Peeling upward and then down, rather than pulling straight down, makes it easier to separate the handle from the webbing. Take a look behind the risers near the harness and observe the movement of the yellow cable as you pull the cutaway handle. When the cable clears the white loop, the release is disengaged.

Slowly pull one of the risers off the harness. As you pull, you'll notice that the white loop gets pulled through the grommet by the action of the smallest ring.

While opening shock may exceed 1,000 lbs the yellow cable never sees a force in excess of about 10lbs. This is due to the mechanics of the Booth 3-Ring release system.

It is important to understand the properties of the nylon components of the system, because of the tremendous mechanical advantage of the system.

When nylon stays in the same position for a long time, it begins to conform to that position. This is sometimes referred to as a "set". If the 3-Ring release system stays assembled for too long, the nylon can become so stiff that the low drag from a malfunction (such as a streamer) may not release the system.

The 3-Ring release system must be disassembled, flexed and inspected every 6 months. Procedures for this are listed in the care and maintenance chapter of the manual.

### WARNING

*A small stick or object in the white loop could prevent a riser from releasing. That is the reason why it's important to keep foreign matter, such as bits of grass and other debris out of the Booth 3- Ring assembly.*

## ASSEMBLY

Before assembling the Booth 3-Ring release system, make sure the risers aren't twisted or reversed. Lay the Vector 3 face down, as you would to pack it.

**1.** Thread each cutaway cable into its housing and fasten the handle to the harness. The handle should be positioned as close to the ends of the housings as possible so that little or no cable is exposed.

**2.** With the rings of the riser facing toward the floor, pass the ring on the end of the riser (middle ring) through the large harness ring from above. Fold it back toward the canopy and risers.



**3.** Thread the smallest ring through the middle ring in the same way, but make sure it doesn't pass through the large ring as well.

**A)** Rigs without an RSL: each yellow cable should extend about 6 inches (15.2 cm) past the housing ending.

**B)** Rigs with an RSL: the right (RSL) side yellow cable should extend 7½ inches (19.1 cm) past the housing ending. The left (non RSL) side should extend 5½ inches (14 cm) past the housing ending.



**4.** Bring the white loop over and through the small ring only, and then through the riser grommet so it protrudes out the back of the riser.



**5.** Continue threading the white loop through the cable housing grommet on the end of the cable housing. The flat side of the cable housing grommet should be against the riser.



**6.** Thread the yellow cable through the white loop, making sure the loop isn't twisted. Be careful not to bend or kink the cable as you insert it through the white loop. Insert the remaining free end of the cable into the channel which is on the back of the riser.



## PRE JUMP INSPECTION



### BEFORE JUMPING THE VECTOR 3, CHECK THE BOOTH 3-RING RELEASE SYSTEM FOR THE FOLLOWING:

- Each ring passes through only one other ring.
- The white loop passes through only the small ring.
- The white loop passes through the grommet on the end of the cable housing without twisting.
- Nothing passes through the white loop except the yellow cutaway cable.
- The Booth 3-Ring release handle is securely fastened to the harness, and no cable is visible between the handle and the cable housings. If your release handle has a tendency to hide itself, or flip under your main lift web, undo the Velcro and twist the handle in a clockwise rotation (when wearing rig) so the handle will stick out and slightly forward for a better grip.

We recommend that only United Parachute Technologies 3-Ring risers be used with the Vector 3 harness/container. If a Vector 3 is fitted with 3-Ring risers that were not built by United Parachute Technologies, it is important that they be checked for proper configuration. The side view above shows a correctly built Booth 3-Ring riser attached to the harness ring and put under moderate tension.

### NOTE THE FOLLOWING:

- The rings overlap each other and maintain metal-to-metal contact.
- The rings are aligned in parallel planes.
- The smallest ring is not pulled snug against the grommet; the white loop is long enough to give it some play.
- The white locking loop goes straight down through the center of the riser grommet on its way to the cable housing end fitting; it does not extend past the edge of the grommet hole and then turn back upwards towards the hole. If your riser configuration does not match this illustration, the 3-Ring release might not function correctly; contact a rigger or United Parachute Technologies if you are unsure of the 3-Ring riser configuration.

Periodic maintenance of your 3 ring release system is covered in section 6 of this manual.

### NOTE

Refer to the United Parachute Technologies web site for the correct configuration.  
<http://unitedparachutetechnologies.com/>

### TRIMMING CUTAWAY CABLES TO MATCH HOUSING LENGTH

There are many different length cutaway cable housings on many different rigs. To accommodate these differences, cutaway handles are manufactured with over length cables. So that both risers leave at the same time during a cutaway, these cables must be cut to match the housings of the particular rig on which the handle is to be installed.

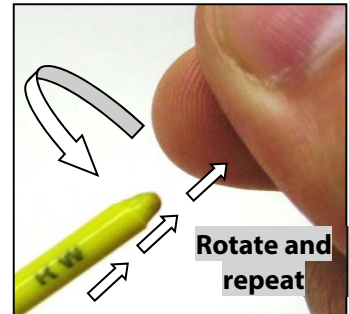
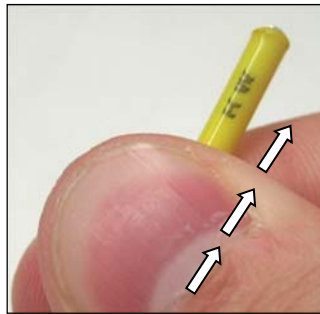
- Feed the cutaway cables all the way through both housings, and secure the handle in place. Do not hook up the risers, and make sure the long housing is not stretched out.
- Measure the cable sticking out of each housing from the end of the housing. Cut each cable as follows:

**NOTE**  
*Instructions only apply to cutaway cables that have been ordered as replacement parts. New rigs come with correctly trimmed cables.*



Type	Right (short side)	Left (long side)
RSL-Sport	7 ½"	5 ½"
Non-RSL- Sport		

Each cable end must be finished by exposing it to a (lighter) flame for a few seconds, and then forming the softened plastic coating to a blunt point using your fingers. The finished point should completely cover the inner steel cable so that no sharp edges are exposed. Be careful not to overheat the nylon as you could burn your fingers! It is always a good idea to consult a rigger if you have any doubt about how to safely accomplish this procedure.



Heat only the tip with a lighter until it just begins to mushroom.	Quickly and firmly grasp the cable just below the heated end.	In one smooth and fluent motion, quickly and repeatedly pull the firmly gripped cable completely out rotating it 90° each time. Reheating up to 3 times may be necessary.
--	---	---

### SAFETY TIP:

If you are jumping a high performance ram air canopy, you should consider installing UPT cutaway cable housings on your risers. Doing so will allow you to cutaway more easily if you experience line twists which are severe enough to twist down into your risers.

**WARNING**

*If an RSL is being used, trim the cable on the side which the RSL is attached at 7½ inches (± ½ inch) or 191 mm (± 12 mm) and cut the other cable at 5½ inches (± ½ inch) or 140 mm (± 12 mm). This is done to ensure that the riser to which the RSL is attached will always leave last. Make sure there is 2 inches (± ¼ inches) or 50 mm (± 6 mm) differential between the lengths of the cables.*





# SECTION 6

## MAINTENANCE & CARE

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# MAINTENANCE & CARE

## INTRODUCTION

The secret to extending the life of your new harness and container system is performing periodic inspections and maintenance. The inspections and maintenance that will be discussed go beyond a normal gear-check before boarding a plane. Under most circumstances, the Vector 3 requires very little maintenance unless it is subjected to abnormal or harsh conditions. Remember, you entrust your life to the skydiving equipment you have chosen. It is your responsibility to ensure that equipment remains in optimum working order.

## INSPECTING YOUR VECTOR 3

The best approach to rig maintenance is to spend a few minutes performing a periodic, detailed inspection of the rig. The inspection should be performed at least once per month. Obviously, the more you use your equipment, the more frequently you should inspect it. If any wear or damage is found, have it fixed immediately. In addition to inspecting the rig yourself, ask your rigger to inspect the entire assembly every time the reserve is repacked. If you have ANY questions regarding the condition of your harness and container system, do not hesitate to ask a rigger or the manufacturer to inspect it.

### **GEAR INSPECTIONS SHOULD COVER ALL PARTS OF YOUR HARNESS AND CONTAINER SYSTEM, WHILE PAYING PARTICULARLY CLOSE ATTENTION TO THESE AREAS**

**Cutaway System** - Refer to the 3-Ring section in this chapter for detailed information on inspecting the 3 ring releases.

**Reserve System** - This includes the reserve ripcord, closing loop, pins, handle, housing, container and associated sewing. You should NOT attempt any repairs or modifications to ANY of these items unless you are an appropriate certified rigger. You can, however, identify smaller problems before they become more severe. Some items to look for would include kinks in the reserve ripcord cable, frayed or worn closing loop, frayed stitching on the container, etc.

**Harness** - The harness should be inspected periodically for broken stitching or frayed webbing.

**Main Container** - Inspect the plastic stiffeners in the container flaps and have replaced any that are broken. Replace any grommets that are deformed, nicked, damaged, or that are pulling out of their setting.

**Main Pilot Chute** - Check the centerline (the length of nylon line inside the pilot chute that extends from the handle to the base) of the main pilot chute. It must be firmly sewn at each end; there must be no broken stitches or torn fabric. Inspect the seam that joins the pilot chute mesh to the pilot chute fabric. If the mesh is torn or badly frayed, replace the pilot chute.

**Closing Loop** - The main container is held closed with a closing loop made of nylon suspension line sheathing. This loop is subject to wear. If it wears out and breaks, the main canopy may release prematurely and a malfunction may result. Replace the closing loop upon the first sign of wear. A closing loop is a lot less expensive than some of the possible consequences of a premature opening.

**Hook and Loop Fastener** - Hook and loop fastener have many applications within skydiving. Even though it can eventually wear out, there exist few materials that can compete against it with regard to its flexibility, adaptability, and wide variety of applications. The "hook" portion of hook and loop fastener often attracts dirt, bits of grass, hair and other debris. You can clean the hook portion using a fine-toothed comb. The "loop" section generally remains clean but the nylon fibers sometimes tend to get pulled out of place. When you find that your hook and loop fastener is losing its adhesive qualities, replace it. Again, replacing a worn hook and loop fastener is a lot less expensive than a reserve repack or purchasing a main canopy due to a dislodged cutaway handle.

## CARING FOR YOUR VECTOR 3

Your Vector 3 is manufactured primarily from nylon. Nylon is very durable, but is still susceptible to damage from several sources:

**Sunlight**-The ultraviolet rays in sunlight quickly and permanently weaken nylon. Keep your Vector 3 out of direct sunlight as much as possible. Structural weakening of nylon may not be immediately noticeable. Prevention is the key.

**Acids**-Acids damage nylon. Keep your Vector 3 away from hangar floors, dirty car trunks and similar areas where acids may be present. If such contamination does occur, immediately and thoroughly wash the rig with plenty of warm soapy water. Until a rig can be washed, baking soda will quickly neutralize most acids. If acid damage occurs or is suspected, a rigger should thoroughly inspect your Vector 3. Pay attention to where you place or store your rig.

**Oils and Grease**-Most petroleum compounds do not weaken nylon; they simply stain it. A rigger using the proper petroleum solvent should promptly remove such stains.

**Water**-Water will not structurally damage your Vector 3, but prolonged agitation in fresh water weakens webbing or may cause some fabric and tape colors to bleed. Salt water may damage nylon and cause hardware to corrode if not promptly and thoroughly washed off with plenty of fresh water. Your rig will maintain its new appearance longer if it is kept dry.

**Soil**-Soil may damage your Vector 3. Brush off the soil after it has dried and gently wash with warm soapy water. Be sure that the soil is not in the cable housings, Booth 3-Ring release or reserve ripcord pins or loops. Consult a rigger if your rig is heavily soiled or extremely dirty.

**Sand**-Fine sand will weaken and cut webbing and fabrics of all types. Prolonged exposure to sand will shorten the life of the entire parachute assembly. One way to minimize the damage done by sand is to use a packing mat while packing.

**Abrasion**-Nylon quickly frays if dragged over concrete or other rough surfaces. Do not drag your rig on the concrete while packing.

## PERIODIC MAINTENANCE FOR THE BOOTH 3-RING RELEASE SYSTEM

The Booth 3-Ring release system has been in use for many years with excellent results. Although the system is as durable as the rest of the rig, it requires periodic maintenance and inspection to ensure proper operation.

The procedures below should be done at least every 6 months. This is especially important if the rig has not been used for an extended period, such as during the winter. Immediate inspection is required if it has been subjected to some abuse such as being dragged across a runway, a water landing or exposure to a lot of dust or sand. It's important to maintain the system even more frequently in humid, muddy or freezing conditions. If the Vector becomes immersed in mud or muddy water, clean the 3-Ring release system with a mild solution of soap and water. Any rusted components must be replaced.

## PROCEDURE FOR PERIODIC MAINTENANCE OF THE BOOTH 3-RING RELEASE SYSTEM

1. Yearly or as needed, operate the 3-Ring release system on the ground. Extract the cable completely from the housings and disconnect the risers.
2. While the system is disassembled, closely inspect it for wear. Check the white locking loops (the ones that pass over the smallest ring and through the grommet) to be sure they are not frayed.
3. Check the hook and loop fastener on the cutaway handle and main lift web to be sure it is clean and adequately holds the handle.
4. Check the cable ends for a smooth finish. The ends are finished at the factory to have a smooth, tapered surface. This prevents the cable from hanging up in the loop. Check the cable ends and consult a rigger or the manufacturer if a burr or "hook" is present.
5. Check the stitching, including that which holds the large rings to the harness.
6. Check that all 3-Ring release housings are firmly clamped (behind right ring cover and under yoke). The housing ends lie at the chest strap area, check for proper stretch by pulling downward on them to confirm that they don't move downwards more than ½ inch. The end of each housing (at the end fitting) must be even with or up to 1" (25mm) longer than the top of the large ring.
7. Take each riser and vigorously twist and flex the webbing near where it passes through each ring. The idea is to remove any set or deformation in the webbing. Do the same thing to the white loop.
8. Check the housings for dents or other obstructions. Use the cable to do this.
9. Clean and lubricate the release cable with a silicone spray. Spray on a paper towel and firmly wipe the cable a few times. A thin, invisible film should remain, too much will attract grit and dirt.
10. Inspect the end fittings at the end of each housing. If one of these fittings were to come off the housing, a riser might release prematurely.
11. If any wear is found, consult the United Parachute Technologies or a rigger before using the Vector 3.
12. Reassemble the system. Double check it with the instructions in section 5 of this manual. Make sure the risers aren't reversed. United Parachute Technologies appreciates and welcomes any comments from users that relate to the safety, operation or maintenance of the 3-Ring release.

## REPLACEMENT PARTS

United Parachute Technologies supplies replacement parts for its rig at a reasonable cost. When ordering parts for your rig please include the serial number and date of manufacture of your Vector so the proper items can be quickly supplied. This information is written on the label tucked under the left hand ring cover. See APPENDIX C for parts list.



# SECTION 7

## HOW TO USE THE VECTOR 3

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# HOW TO USE THE VECTOR 3

This chapter provides specific procedures for using the Vector 3. It is not a training syllabus. It is the responsibility of the owner to possess the specific knowledge required to make a safe skydive, including how to use their equipment properly. This kind of knowledge can only be gained by personal professional instruction.

## SUGGESTED TRAINING EQUIPMENT

It is essential that anyone jumping a Vector 3 for the first time practice normal and emergency procedures on the ground. Practicing normal and emergency procedures should be performed using training aids that simulate the equipment to be used in the air. If required, United Parachute Technologies can provide a Vector 3 training harness. It is equipped with simulated cutaway handles, reserve handles and main deployment handles that are located in the same positions as the Vector 3. If you decide to build your own practice harness make sure the main, reserve and cutaway handles are located in the same positions as the Vector 3 rig.

## PRE-JUMP EQUIPMENT CHECK

The equipment check should follow a logical order. For example: top to bottom, front to back.

### STARTING AT THE FRONT:

- Make sure the 3-Ring system is assembled correctly and free of any dirt or other foreign matter.
- Check the position of the cutaway handle and reserve ripcord handle. Do not remove them from their pockets unless you suspect a problem, as this puts unnecessary wear on the hook and loop fastener. Ensure that the chest strap is not threaded through the reserve ripcord handle.
- If you step into your harness, check the leg straps to make sure that they are threaded correctly. Should you prefer to leave them unthreaded prior to putting on your gear, make sure they are not wrapped around the main lift web but rather hang straight down.
- Open the reserve container pin protector flap by grasping the sides of the flap, and pulling straight up. Do not grasp the bottom edge of the flap. This will cause the end of the flap to curl up, becoming permanently deformed and more easily snagged. Check the pin; it should be straight and seated well into the closing loop.
- Slide the reserve ripcord cable back and forth in its housing to be sure it moves freely.
- Lift the main container pin-protector flap and check the curved closing pin. It must be at least halfway through the closing loop. Make sure that the yellow hook and loop fastener patches on the bridle cord and container flap are mated.
- Make sure the bridle is routed correctly from the closing pin, under the right-hand flap along the main lift web and into the pilot chute pouch. When asking another jumper for a pin check, make sure they also follow proper procedures.
- Check the 3-Ring release cutaway handle. The hook and loop should be mated correctly. No more than ½ inch (1.2cm) of yellow cable should be visible between the cutaway handle and the cable housings.
- If you have an AAD installed, make sure that you switch it on according to the instructions provided by the manufacturer.

### NOTE

*When asking another jumper for a pin check, make sure they also follow proper procedures.*

### WARNING

*Routing the bridle around the leg strap will cause a pilot chute-in-tow malfunction.*

## DONNING AND ADJUSTING THE VECTOR 3

The Vector 3 is designed so that it fits snugly, yet comfortably, when the harness is properly adjusted.

Pick up the Vector 3 using the main lift web close to where the 3-Rings are located. Put on your Vector 3 in the same way you would put on a coat.

**1. Threading the chest strap:** The chest strap enters the adjuster from behind (closest to the jumper's chest), around the sliding bar, and back through between the bar and the end of the adjuster. Adjust it so the main lift webs are parallel when the chest strap is tight. Stow the end through the black elastic keeper. An unstowed running end will cause major slippage.

### WARNING

*Improper threading of the chest strap may result in death. Death has occurred from a skydiver falling out of the harness due to an improperly fastened chest strap.*

**2. Check the leg straps for twists before threading them.** Make sure you route the webbing correctly before tightening them until they are snug. Slide the excess strap through the black elastic keepers provided and then stow the excess strap in the pockets on the leg pads. This will ensure that the leg straps don't flap around in the air while you are in freefall.



**SUMMARY**

To summarize the adjustment procedures:

- Always check your gear thoroughly before putting it on.
- Put the packed rig on over your jumpsuit.
- Thread the leg straps through the adapter or connect the straps, checking that they are not twisted, and position the comfort pads.
- Tighten the leg straps until snug.
- Stand up straight and secure the chest strap; it should not be cinched too tightly.

**JUMPING THE VECTOR 3****DEPLOYING THE MAIN PARACHUTE**

Before a jumper uses a hand deploy system, they should first practice the procedures on the ground under an appropriately rated instructor's supervision.

**DEPLOYING THE RESERVE PARACHUTE**

Before a jumper uses a Vector 3, they should first practice the reserve procedures on the ground under an appropriately rated instructor's supervision. A skydiver may be faced with a number of emergencies including those in the aircraft, during climb out or exit, in freefall, during deployment, under canopy and landing. A currently rated instructor or parachute center must provide training for any and all emergencies before jumping a Vector 3.





# APPENDIX

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## APPENDIX A: TIPS ON ORDERING YOUR NEW VECTOR 3

Provide as much information about your canopies as you know. For example, date of manufacture (or state that it is a new canopy), the type of suspension lines, etc. This will assist United Parachute Technologies in identifying the container size that is most ideal for you.

- Whenever possible, size the container to fit the standard fitting range of the stated pack volume.
- Consider that a canopy with a pack volume at the low-end of the scale will pack easier and will be more comfortable than a canopy that is at the high-end of the scale.
- If you jump in regions that have low humidity, such as Colorado or Arizona, you may need to go up one container size for the canopies to fit properly.
- If you are a dealer ordering a Vector 3, please let us know the state or country of origin of your customer. This will help us decide if the container fit is compatible.

We have found that the pack volumes given by the canopy manufacturers can range from 5-20% less or more than the actual pack volumes that have been determined by the Parachute Industry Association.

The United Parachute Technologies reserves the right to change the container size when we know your canopy choice will not fit. We will make every effort to inform you of the discrepancy.

### NOTE

*This information is subject to change at any time without incurring any obligation whatsoever.*

## APPENDIX B: SIZING YOUR VECTOR 3

Please use the following link to the Vector 3 Sizing Chart: <http://vos.uptvector.com/vos/v3sizing.html>

**MICRON**
**V3 M-SERIES**
**VECTOR SE**

**Vector 3 container size finder:**

Main Canopy:  Size:

Reserve Canopy:  Size:

**Find recommended container sizes**

container	main	reserve	specs

**NOTE:** We only recommend the standard fit. The tight fit can work but will affect comfort.

**Standard Fitting** pack volume represented by these sample groups should be considered optimum recommended pack volumes to ensure proper fit, function and ease of packing.

**Loose Fitting** pack volume represented by these sample groups should be considered the minimum recommended pack volumes to ensure proper fit, function.

**Full Fitting** Do to different canopies designs and materiel bulk some canopies have slightly larger pack volume. These canopies have the largest pack volume that can fit in this container and still maintain proper fit and function. Caution if you put a full fitting reserve and full fitting main in the same container (V303-310) this may be very hard to pack if bulk distribution is not correct.

Most canopy recommendations are determined by packing the canopy into the specified container by United Parachute Technologies. Canopy types included in this chart are intended to represent a group of common canopies suitable for each container size. Any canopy type with similar pack volume as the sample group will naturally be suitable for the same container. Brands appearing in this chart are in no particular way more suitable for our Vector containers over brands not listed. NOTE: logoed canopies pack one size larger.

Please contact United Parachute Technologies at [upt@uptvector.com](mailto:upt@uptvector.com) to inquire about a canopy not listed here or if you have any other questions about sizing your rig. If you feel that a canopy not listed below fits into a particular container, please let us know and we will be happy to add it to our list should we feel the fit is acceptable for all our customers.

**APPENDIX C: VECTOR PARTS LIST**

The following represents common replaceable components for the Vector 3 container. Items listed with an \* are size, color or model specific. Please call your dealer or our sales department for assistance.

<b>RESERVE DEPLOYMENT COMPONENTS</b>		
 <p>RESERVE PILOT CHUTE P/N: 022-001-000</p>	 <p>RESERVE STAGING LOOP P/N: 027-006-001</p> <p>RESERVE CLOSING LOOP P/N: 031-002-001</p>	 <p>SPECTRA RESERVE RIPCORD * Available as Pillow, Metal D, Mini D or Low profile D handles</p>
 <p>RESERVE DEPLOYMENT BAG*</p>	 <p>SAFETY STOW*</p>	 <p>METAL RESERVE RIPCORD* Available as Standard D, Mini D or Low profile D handles</p>
 <p>RESERVE STATIC LINE (R.S.L)*</p>	 <p>SKYHOOK LANYARD 025-009-002</p> <p>RSL UNIVERSAL LANYARD P/N: 025-009-001</p>	 <p>PILLOW RESERVE HANDLE*</p>
 <p>RESERVE TOGGLES P/N: 029-001-001</p>	 <p>CUTAWAY HANDLE*</p>	
<b>MAIN DEPLOYMENT COMPONENTS</b>		
 <p>MAIN DEPLOYMENT BAG*</p>	 <p>MAIN PILOT CHUTE* Various options available</p>	 <p>MAIN TOGGLE-TRULOK P/N: 030-001-002</p> <p>MAIN TOGGLE - P/N: 030-001-001</p>
 <p>MAIN RISERS*</p>	 <p>MAIN CLOSING LOOP*</p>	

## **APPENDIX D: WASHING YOUR VECTOR**

Over the years we've seen some extremely dirty Vectors! We've found that many people are unsure how to get their container clean. For that reason, we have put together the following instructions on how to make your Vector smell and look good again.

- The best way to wash a rig is the "good old fashion way" with slightly warm water and Woolite.
- First, remove the packing data card, reserve ripcord and cover all hook Velcro.
- Use a big tub; let the rig stay in the soapy water 4 hrs.
- Occasionally swish the rig around in the tub to loosen dirt.
- Drain soapy water, fill tub with clean water, and swish rig around until the clear water becomes soapy and cloudy.
- Drain tub and repeat until all soap and dirt residue are gone, usually in 3 rinses.
- Let the rig naturally dry, without direct sunlight. We usually allow a small fan to blow air past it to speed up the drying process.

We do not recommend using a washing machine. Extended agitation in a washing machine could have negative effects in the long run. This also requires you to wrap the heavy hardware to minimize damage to the machine.

## APPENDIX E: INSTALLING AN OLD STYLE RESERVE LANYARD (RESERVE STATIC LINE OR RSL) (NO SKYHOOK)

1. Inspect the RSL: Check that the stainless steel snap shackle is operating smoothly and that the spring will retain the locking pin. Check that the hook and loop fastener is clean and sufficiently tacky to hold the reserve lanyard in place. The pin should be curved from the eye to half way down its length. The rest of the pin should be straight.

2. Start by routing the RSL along its hook and loop fastener path alongside the right-hand riser. Insert the pin-end of the RSL through the guide ring on the #6 top reserve flap. Mate the patch of yellow pile hook and loop fastener on the top reserve flap.

### NOTE

*RSLs should only be installed by a qualified rigger.*

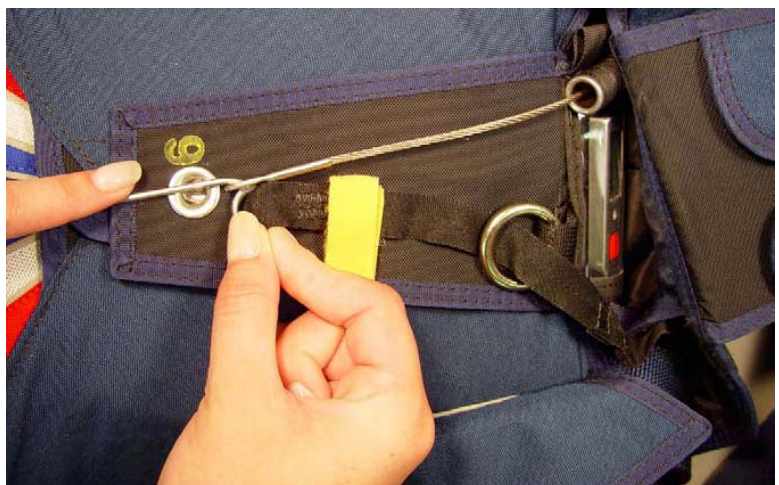


3. After threading the reserve ripcord through the housing and placing the ripcord handle into its pocket, insert the RSL pin through the loop at the end of the reserve ripcord cable.



4. Place the rig on a clean surface facing up and walk on it with stocking feet or clean shoes to help expel air from the container and to make it flatter.

5. Replace the temporary pin with the reserve pin.



**6.** Insert the stiffened part of the RSL (located close to the snap shackle) into the holding pocket located under the reserve risers.

**7.** Attach the main parachute risers to the harness.



**8.** Hook the reserve lanyard shackle to the ring on the right-hand riser.

**9.** Dress the container, seal, sign the data card and log the reserve.



**APPENDIX F: CLOSING THE MAIN CONTAINER – PREVIOUS METHODS**

**METHOD 1 – BRIDLE ROUTING FROM BOTTOM OF THE CONTAINER**

Instructions for using the previous bridle design routed from the bottom of the container.

Close the main container following normal methods making sure the bridle is exiting the bottom of the container at the right main flap.

Insert the closing pin (located on the bridle) through the closing loop from left to right. The green indicator on the bridle should facing down.

Cover the unused hook Velcro with pile Velcro. Slowly remove the pull-up cord to prevent excess friction from damaging the closing loop.

Ensure the grommets are offset as shown.

Ensure the grommets are offset as shown. Stow the bridle under the right closing flap as indicated. Note that the grommets do not line up, the binding tapes should stack. It may be necessary to adjust the length of the closing loop to make the flaps align properly.

Close the main pin cover.



**METHOD 2 -- BRIDLE ROUTING FROM TOP OF THE CONTAINER**

When using the previous bridle design routed from the top of the container follow the method shown.

Route the bridle from the right of the container and mate the Pile Velcro on the bridle line to the hook Velcro on the center flap.



Insert the closing pin (located on the bridle) through the closing loop from right to left. The green indicator on the bridle should facing up.

Slowly remove the pull-up cord to prevent excess friction from damaging the closing loop.



Ensure the grommets are offset as shown. Stow the bridle under the right closing flap as indicated. Note that the grommets do not line up, the binding tapes should stack. It may be necessary to adjust the length of the closing loop to make the flaps align properly.

Tuck the excess bridle under the bottom edge of the right side flap.

Close the main pin cover.





APPENDIX G: U-STOW MAIN DEPLOYMENT BAG PACKING METHOD

1.



Prepare the main bag by installing the main pilot chute bridle and opening the tuck flaps.

2.



Attach the bridle to the main canopy Pilot Chute Attachment (PCA).

3.



Insert the prepared canopy into the man deployment bag keeping the lines under tension.

4.



Rotate the deployment bag up upwards keeping the suspension lines in the center.

5.



Make your first locking stow.

6.



Make your second locking stow.

\*Depending on the bag size 2,3 or 4 stows are needed.

7.



Route lines from the locking stows over the top of the bag to the bottom of the line stow pouch.

8.



Use your thumb to form the first figure 8

9.



Continue figure 8 line placement into pouch stacking each placement upon the previous.

10.



Ensure the line stows are as wide as the pouch.

11.



Continue to stow remainder of lines.

12.



The last line stow should finish in the center between the two tuck tabs.

13.



With the deployment bag upright, close both tuck tabs making sure not to pinch the lines into tab pocket.

14.



Close the second tuck tab.

15.



The U stow main bag is now closed.