

HARNESS & CONTAINER SYSTEMS



CAN YA FEEL IT?

# ***THE TRITON HARNESS/ CONTAINER SYSTEM AC100-1***



# ***THE GLIDE HARNESS/ CONTAINER SYSTEM AC100-2***



# **AC100-XX OWNERS MANUAL**

**AP 102 REVISED JANUARY 2015**

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D/B/A**

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# ***AC100-XX***

## ***Harness/Container System***

### ***Owners/Packing Manual***

The purpose of this manual is to acquaint the rigger and prospective users with the functions, packing procedures and other features of harness/container systems manufactured by The Uninsured Altitude Connection, DBA Peregrine Manufacturing. It is NOT intended to be a course in parachute jumping nor packing. This manual should be read and understood by anyone who intends to use one of these systems for sport parachuting, however, it is the responsibility of the owner to be sure that the parachute system is correctly assembled, packed, maintained and used. It is also the jumpers own responsibility to assure that he/she is qualified for participation in sport parachuting activities.

(Any gender references automatically refers to the user)

For more information on the ***Glide and Triton*** harness/container systems and general information, about Peregrine Manufacturing Inc. please check out our website

<http://www.peregrinemfginc.com>

# **!!!! WARNING !!!!**

*Parachuting is a hazardous activity and there are dangers which can be unforeseen. No one should attempt to make a parachute jump unless they have been thoroughly trained by an experienced and qualified instructor. There are no guarantees that any equipment will function as intended, regardless of how it is assembled, packed maintained or used. Serious injury or death can result from the use, misuse, or attempted use of any parachute equipment.*

**!!! THE USER ASSUMES ALL RISK !!!**

# **INTRODUCTION**

It is the goal of Peregrine Manufacturing Inc. (The Uninsured Altitude Connection) is to produce and sell the best sport parachute equipment that can be manufactured with today's materials and engineering technology. In this effort, it is important that we obtain all the feedback from our customers that we can. We would like for you to share with us any observations, problems, suggestions, etc., that you may have.

Our primary concern is, of course the SAFETY and DEPENDABILITY of the AC100-XX harness/container systems. After that, **your satisfaction comes first.**

We thank you for your choice of the Triton or Glide harness/container and we hope for your continued confidence in Peregrine Manufacturing Inc.

The ***Glide (AC100-2) and the Triton (AC100-1)*** are sport parachute harness/container systems featuring back mounted main and reserve canopy containers. The reserve container is characterized by the partially exposed top cap of the reserve pilot chute, which is packed on the top of the side flaps.

The ***all AC100-XX systems*** are equipped with the 3-Ring main release system. Other standard features include throw-out hand deployed main pilot chute, single-pin reserve closure, step-thru leg straps, and “wrap around” harness construction. This type of harness construction produces one of the most freely articulating and comfortable harnesses on the market today.

The reserve container will accept most modern ram-air reserve canopies. The ***Glide*** is supplied with a unique “MOLAR BAG”, a free bag which features zero thickness where the closing loop passes through it, easing the reserve packing process and eliminating the need for extra packing tool such as soft bodkins or preliminary pull-up cords. This also prevents any of the canopy fabric from coming into contact with the closing loop.

The design and testing of the ***Glide*** was accomplished over a period of eighteen months and has resulted in one of the most “RIGGER and USER FRIENDLY” systems on the market. Any FAA certified senior or master parachute rigger or foreign equivalent with current skills should be able to assemble and pack this system by following the instructions in this manual.

The ***AC100-XX*** harness/container system was originally tested in accordance with AS-8015b and was originally approved by the FAA under TSO C23d in 1995.

In 2013, the system design was upgraded to modern standards and in early 2014 was retested using a higher test weight increasing the Max Operating Weight to 305lbs at 150kts. The ***Glide*** system retests validated all of the modernization minor changes as well as added 4 new main lift web configurations as options and continues to be approved under TSO C23d.



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# **OPERATING LIMITATIONS**

**Max Operating Exit Weight (MOW): 305 lbs**

**Max Pack Opening Speed (MPOS): 150 kts**

**Average Test Peak Forces Measured: 5101lbs**

**Test Weight: 366 lbs (166 kg)**

**Test Speed: 180 keas (207 mph)**

# GENERAL NOTES

## ***BEFORE USING YOUR NEW AC100-XX HARNESS CONTAINER SYSTEM***

- **1.** Read and understand this manual and be qualified by proper instruction for
  - sport parachuting activities.
- **2.** Check both 3-Ring releases to see that they are correctly assembled and check to see the release handle is securely attached (Velcro) to the main lift web.
- **3.** Check the main container closure for correct pin position and correct routing of the bridle.
- **4.** Check the reserve container for correct pin closure and routing of the ripcord. Be sure the reserve ripcord handle is well seated in its pocket.
- **5.** The main pilot chute must stowed and protected by its pouch, but the handle must be easily accessible and or visible.

# PUTTING THE RIG ON!

- When lifting the harness/container system, grasp the main lift web between the large harness ring and the chest strap. Put the rig on as you would a jacket, settling the yoke across the shoulders. Step through the leg straps, **being sure they aren't twisted**, then thread the chest strap through its friction adapter (adjustor) and tighten it to where it is comfortably snug. Be sure it has NOT been threaded through the reserve ripcord handle.
- Tighten the leg straps until they are comfortably snug and stick the free end of the strap down into the leg pad or in an elastic keeper. It is important to secure these free ends; a loose free end can easily be mistaken for a deployment handle.
  - **RING HARNESS ADJUSTMENT**
- If your AC100-XX is equipped with a ringed harness, to insure a proper and comfortable fit, it is very important that you tighten the chest strap first. By first tightening the chest strap very snugly, this will allow full arm and shoulder movement. Next tighten the leg straps until they are comfortably snug. (Helpful hint: Lift the rig up and over the shoulders from the rear while tightening the chest strap, this will aid in placing the rig properly over the shoulders)
- Be sure all the friction adapters are correctly threaded. The webbing must pass under the adapter (next to the jumper's body) and come up through the frame above the movable bar, then back around the moveable bar and under the end of the frame. If the webbing is routed in any way other than what is shown, **IT MAY NOT HOLD!**
- (1" chest strap) Fold the free end of the chest strap back onto the short side and stow the excess in the 1" elastic keeper.

This section is not a full course of instruction on how to deal with emergencies. It is meant only to explain the function of the AC100-XX harness/container system. Learning the proper procedures and deciding when, or if, to use them is the responsibility of the jumper, who must be thoroughly trained by an experienced and qualified instructor before attempting to make a parachute jump.

## **MAIN DEPLOYMENT**

### **BEFORE JUMPING**

The pouch for the main pilot chute is located on the bottom of the main container. When the pilot chute is packed correctly, the handle should be visible and easy to grasp at the top of the pouch. (It is very important that the jumper familiarize himself with all handles and activation devices on his/her rig before jumping). Practice locating the handle, grasping it and extracting the pilot chute. Then go through the same procedure without looking at it. This should be done under the supervision of an instructor. The pilot chute pouch location on some configurations will not allow the handle to be visible. i.e. those fitted with B.O.C. (Bottom of Container) or pull out.

### **IN THE AIR**

In a flat and stable position face-to-earth, grab the pilot chute handle and in one motion, extract the pilot chute from the pouch and vigorously throw it STRAIGHT OUT to the side, placing it in clean air. If you are in the air with other jumpers, the wave-off should be done before extracting the pilot chute. Waving off with the pilot chute in hand may cause a premature opening of the container.

# Reserve Deployment

## **PARTIAL MALFUNCTION**

A partial malfunction occurs when the main canopy has come out of the container, but has not opened properly. Most jumpers are trained to jettison (disconnect) the main canopy before activating the reserve if the partial malfunction is serious enough to warrant emergency procedures. Disconnecting from the main is called a "breakaway" or "cutaway" and it is done to prevent the entanglement of the reserve with the main.

## **PROCEDURE**

Look down and locate both the cutaway/release handle (on right main lift web) and the reserve ripcord handle (on left main lift web). Grab the cutaway/release handle and peel it away from its velcro mount. Pull it vigorously downward and outward as far as the arm will reach. Throw it away and then grasp the reserve ripcord handle. Peel the velcro loose and pull vigorously downward and outward as far as the arm will reach. It must be emphasized that it is the jumper's responsibility to decide whether any emergency procedure is appropriate and to decide whether he has enough time or altitude to perform it. Obviously if the jumper decides that he is too low to perform a breakaway, he should simply activate the reserve.

## **TOTAL MALFUNCTION**

A total malfunction occurs when the main canopy is still in the container after an attempt has been made to activate it. This may occur if the pilot chute cannot be extracted from its pouch, or if the pilot chute is inflated but cannot open the container. It is generally considered best when presented with a total malfunction to simply pull the reserve ripcord without breaking away from the main canopy. A total malfunction always leaves the jumper falling at high speed and breaking away from a canopy that is still in the container may waste precious time and altitude. However some jumpers may elect to release the main risers by activating the cutaway handle to avoid interference with the reserve as it deploys, all depending on altitude and jumpers ability to manage the malfunction scenario.

## **PROCEDURE**

Look at the reserve ripcord handle (the metal handle or soft handle just below the chest strap on the left main lift web), grasp it with both hands and peel the velcro and pull the reserve handle downward and outward with all your strength and as far as you can reach. It is usually considered best to be in a stable position somewhat head-high when deploying any canopy, but if time and altitude are running out, body position is not as important as getting the canopy out!

# PART LISTING

The *AC100-XX* is shipped to the customer with the

following components:

1. HARNESS/CONTAINER
2. MAIN RISERS WITH CONTROL TOGGLES
3. MAIN DEPLOYMENT BAG
4. MAIN RELEASE HANDLE (CUT AWAY HANDLE)
5. MAIN PILOT CHUTE AND BRIDLE
6. RESERVE PILOT CHUTE
7. RESERVE DEPLOYMENT BAG (FREEBAG) AND BRIDLE
8. RESERVE RIPCORD ASSEMBLY, HANDLE WITH PIN
9. RESERVE STATIC LINE (RSL) (OPTIONAL)
10. RESERVE CONTROL TOGGLES
11. MAIN CLOSING LOOP
12. RESERVE CLOSING LOOP
13. RUBBER BANDS
14. RESERVE PACKING DATA CARD
15. OWNERS MANUAL [WEB LINK](#)

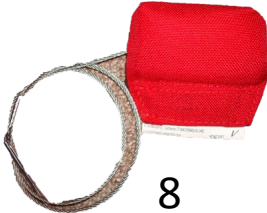
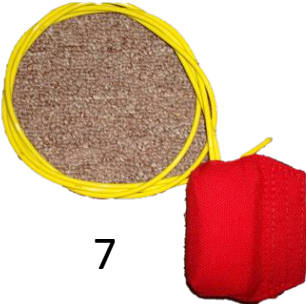
- [WWW.PEREGRINEMFGINC.COM](http://WWW.PEREGRINEMFGINC.COM)





# PART LISTING

CONTINUED:



## **IMPORTANT NOTES ON COMPONENT/ACCESSORY PARTS**

The following parts manufactured only by TUAC/Peregrine Manufacturing may be used with the AC100-XX system.

1. *RESERVE PILOT-CHUTE, Part number D-71.*

*\*\*Do NOT substitute any other reserve pilotchute\*\**

2. *RESERVE RIPCORD ASSEMBLY, Part number D-99, D-99A*

3. *RESERVE DEPLOYMENT BAG, FREEBAG, Part number D-72*

4. *SAFETY STOW, Part number D86*

5. *RESERVE STATIC LINE, Part number D-88 (if used)*

**All components listed above are available individually  
from:**

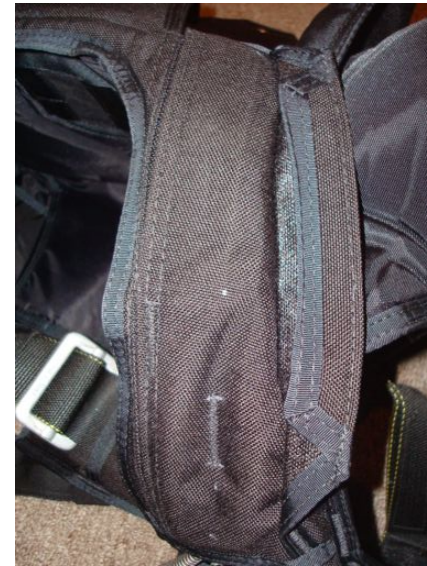
**The Uninsured Altitude Connection Inc (TUAC):  
DBA Peregrine Manufacturing, Inc.  
87 Brookstone Drive  
Colchester, CT 06415 USA  
(860)333-1461**

# ***Reserve Static Line (RSL)***

***(NO VELCRO STYLE)  
(optional device)***

## Installation instructions

First, locate and open the RSL channel so that the bound edge is exposed.  
(Channel is located on the wearers left side on the yoke, underneath the reserve riser.)

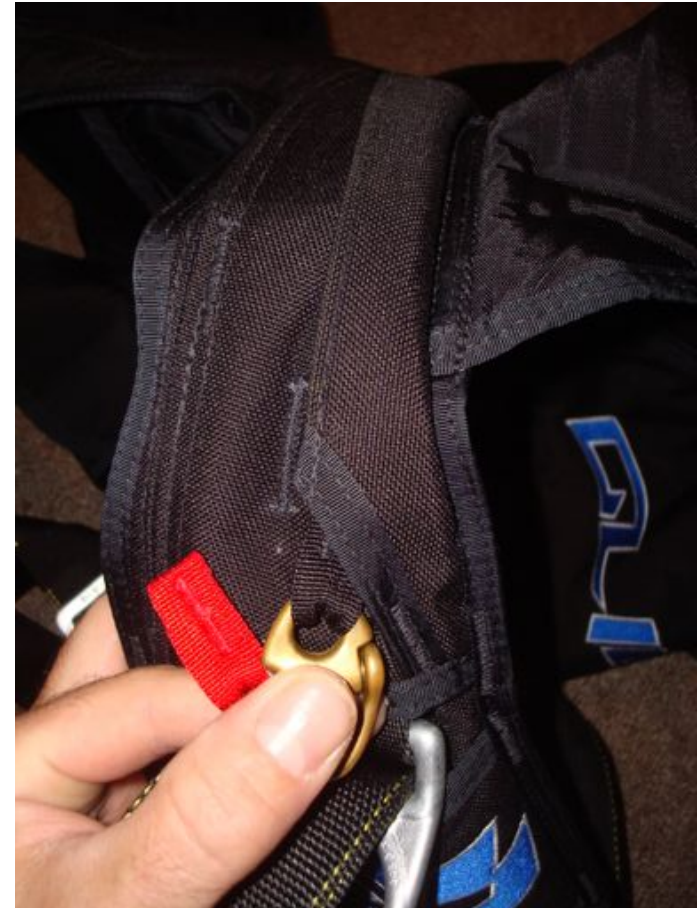


Open the channel up so that the under side is exposed.

Place the RSL Lanyard onto the yoke as if it were in its final position and orientation



Flip the RSL lanyard over 180deg and slide under the channel fold



Fold the first portion of the RSL channel back over with the RSL inside

Slowly pull enough of the lanyard downward and fold over the lower end (snap shackle end) so that the excess is kept in the folded channel and orientate so that the snap shackle is easily mated to the RSL ring on the left main riser

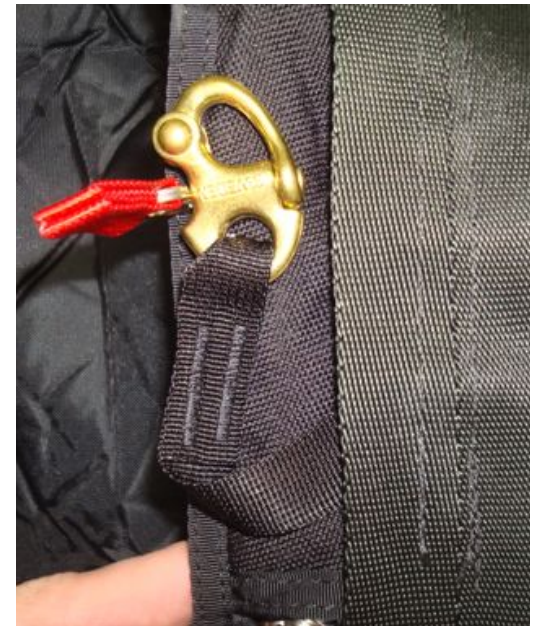


You should have approximately 80mm (3 3/8") of RSL from the exit point of the lower RSL channel to the snap shackle.

# ***Reserve Static Line (RSL)***

***(VELCRO STYLE)***  
***(optional device)***

AC100-1 and models made previous to 2013 have a velcro style RSL which attaches to the “REAR” of the Front Reserve Riser. To install, simply mate the Velcro on the RSL to the Velcro on the reserve riser. Ensure that all hook is covered or mated to its corresponding loop velcro side. This will help reduce wear and tear and extend the life of the webbing.



# ***RELEASE CABLE LENGTHS***

- **THE 3-RING RELEASE CABLE LENGTHS**

- After the cables have been installed in the housings of your **AC100-XX HARNESS CONTAINER SYSTEM**, there should be 178mm (7") on the wearer's left hand side (RSL side) and 153mm (6") on the wearer's right side. (NON RSL side) These measurements are based on extensive testing and should not be altered in any way to change the correct operation of the reserve static line.

- **THE 3-RING RELEASE SYSTEM**

- The 3-Ring Release system was invented by the Relative Workshop in 1976. It was the first practical release that allowed parachutists to jettison their main canopies in one motion by simply pulling a single handle. Not only is the 3-Ring easier to operate than previous canopy release systems, it is also more reliable. Failures of a properly built and assembled 3-Ring system are virtually unknown. Once the main is jettisoned, the only things left on the harness are the two smooth rings that cannot snag a deploying reserve. Some other popular release systems can and have interfered with the deploying reserve.

- **GETTING TO KNOW THE 3-RING**

- Knowing how the 3 ring release works will help you assemble and inspect it properly. Begin by peeling the release handle from the Velcro on the harness. Peeling, rather than pulling, makes it easier to separate the handle from the webbing. Look behind the risers near the harness and observe the movement of the yellow cable as you pull the handle. When the cable clears the white loop, the release is disengaged. Now 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. Each ring forms a lever with a ten-to-one mechanical advantage as it passes through the other. A force of 1,000 lbs on the large harness ring exerts a force of only ten pounds on the white loop. (Opening shock usually totals about 1,000 lbs or 500lbs on each riser).

# **RELEASE CABLES**

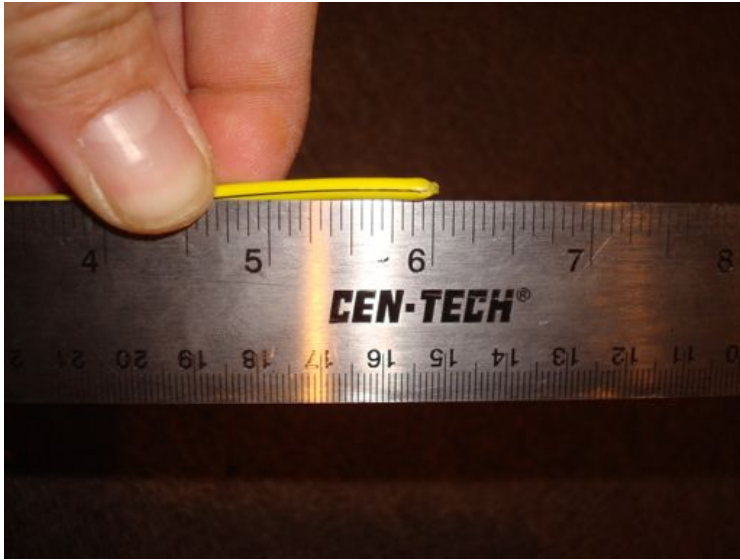
- Insert the Release cables into the release housings and seat the release handle into the pocket.
- Note: Insert and place the handle as far up into the pocket as possible, limiting the exposed release cables



The long side release cable will exit the release housing on wearers' left side.



## Measure and cut release cable excess



Non RSL Side, Wearers RIGHT should measure **153mm (+/-5mm) (6" +/- 1/4")**



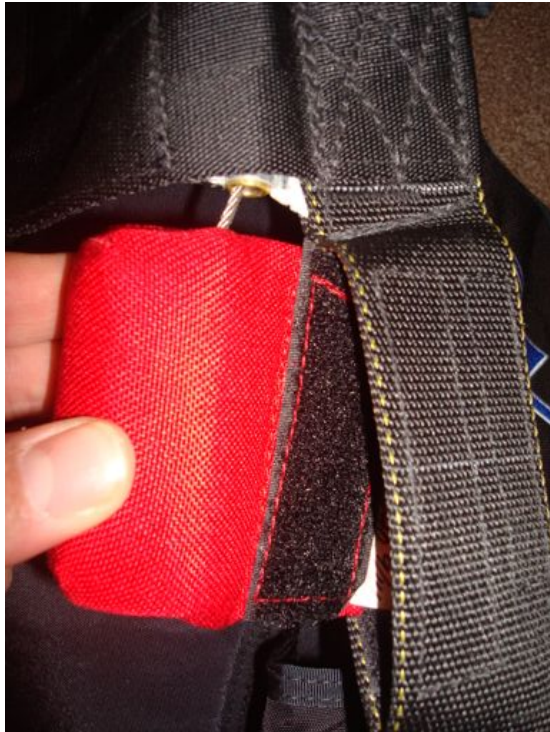
RSL Side, Wearers LEFT should measure **178mm (+/-5mm) (7" +/- 1/4")**

**NOTE: The NON RSL side (*wearers RIGHT*) should activate before the RSL side (*wearers LEFT*). This is done to ensure that the Non-RSL side main riser is released, free and clear BEFORE the RSL side is activated.**

**Continue attaching main risers as per instructions on page XXX**

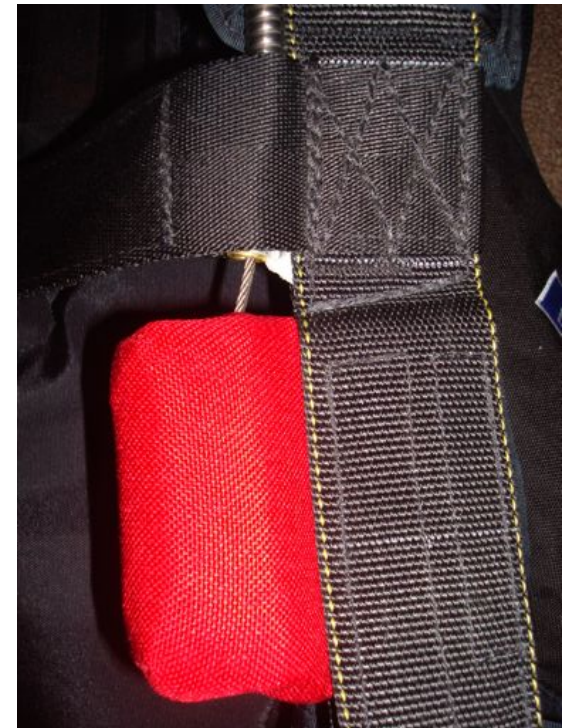
# **RESERVE RIPCORDER INSTALLATION** **"Fit Right" Reserve Ripcord Handle**

Insert the terminal pin end of the Reserve Ripcord into the Reserve ripcord housing on the wearers' left side harness.



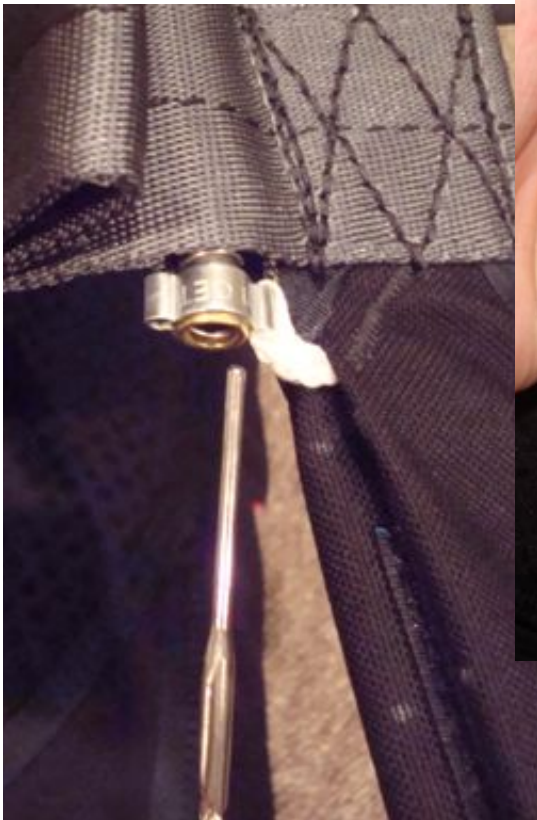
Seat the reserve ripcord handle into the reserve pocket and mate the Velcro closure inside the pocket.

**NOTE: For soft ripcord handles, pads or "Fit Right" handles, be sure to cover the unused hook Velcro on the inside of the pocket to avoid damage.**



# **RESERVE RIPCORD INSTALLATION** **D-Handle Reserve Ripcord**

Insert the terminal pin end of the Reserve Ripcord into the Reserve ripcord housing on the wearers' left side harness and secure the handle in pocket.



This will exit at the top of the reserve container on the pin flap.

Route the Reserve ripcord cable through the guide rings. (if applicable)



# ***AAD Statement***

AUTHORIZED FOR INSTALLATION IN AC100-XX HARNESS CONTAINER SYSTEMS AT THE TIME OF PUBLISH OF THIS REVISION OF THE MANUAL.

| AAD MAKE  | AAD MODEL |
|-----------|-----------|
| AIRTEC    | Cyres 1   |
| AIRTEC    | Cyres 2   |
| AAD SA/NV | VIGIL     |
| AAD SA/NV | VIGIL 2   |
| MARs      | M2        |

- A. APPROVAL FOR INSTALLATION IS BASED ON INSTALLATION VALIDATION OF THE UNIT INTO STANDARDIZED POCKETS AND CHANNELS WITHIN THE AC100-XX CONTAINER SYSTEM.
- B. INDICATION OF THE HARNESS- CONTAINER MANUFACTURERS AUTHORIZATION FOR AAD INSTALLATION IN NO WAY REPRESENTS APPROVAL OR VALIDATION OF THE AAD'S ABILITY TO FUNCTION . VARIOUS POSSIBLE MALFUCTION SCENARIOS ARE PRESENT WHEN INSTALLING A NON REGULATED PART INTO A TSO'D/REGULATED SYSTEM. USER ASSUMES ALL LIABLITY WITH INSTALLATION OF SUCH DEVICES AND DOES SO WITH FULL UNDERSTANDING OF THE RISKS INVOLVED.

Reference AC105-2d

d. AAD Installation. The FAA approves the installation (addition of pockets, channels, guides, etc., required for the AAD to be assembled in the parachute container) of each make/model AAD as part of the paperwork that is submitted by the parachute manufacturer during the TSO approval. Complete installation in consultation with, and with the approval of, the AAD manufacturer. The retrofit installation, or installation of a make or model AAD other than those specifically approved for a particular TSO or Military Specifications (MIL-SPEC)-approved parachute, constitutes an alteration to that parachute.

Reference AC105-2e

d. AAD Installation. The FAA accepts the installation (addition of pockets, channels, guides, etc., required for the AAD assemblage in the parachute container) of each make/model AAD as part of the paperwork that is submitted by the parachute manufacturer during the TSO approval for parachute harness/container systems. The TSO approval by the FAA and the AAD approval by the manufacturer (mentioned, for example, in § 105.43(b)) are for the installation only, and are based on AAD operation not interfering with normal function of the parachute.

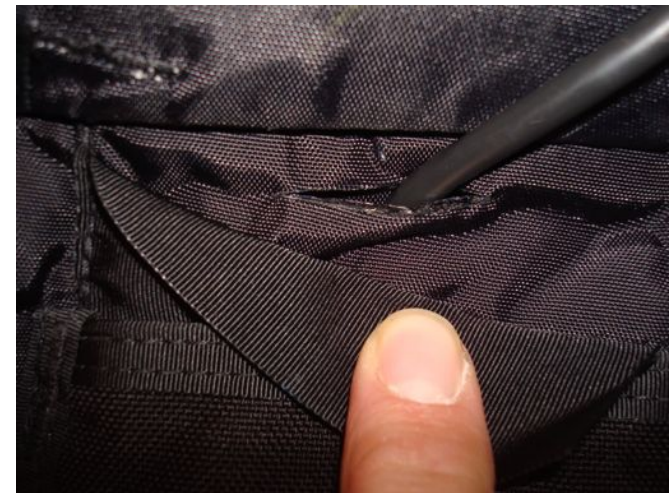
A retrofit installation, or installation of a make or model AAD other than those specifically authorized for use by the parachute manufacturer for a particular TSO or Military Specifications (MIL-SPEC)-approved parachute, constitutes an alteration to that parachute (refer to paragraph 16). Manufacturer and retrofit installation are done in consultation and agreement with the AAD manufacturer, and in accordance with established test procedures such as Parachute Industry Association (PIA) Technical Standard (TS)-112, Harness/Container - AAD Installation Test Protocol

# ***Automatic Activation Device Installation***

**This system has been equipped with a pocket and sleeve system to allow for an AAD to be installed. Compatibility with AC100-xx Series harness/Container systems does not certify the AAD unit in any way.**

Consult the AAD manufacturer's instructions for proper orientation of the unit within the pockets and H/C system.

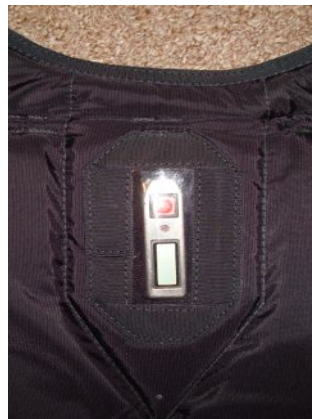
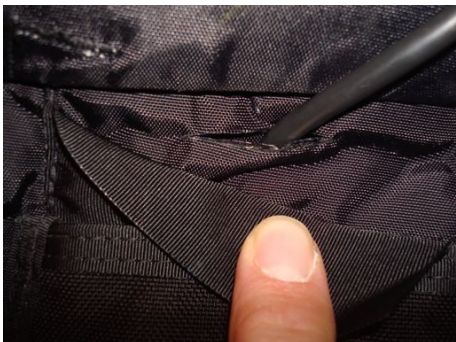
Place the main AAD unit into the pocket according to AAD manufacturer's instructions.



Route the control unit and cutter through the Type 3 sleeve inside bottom of the reserve container.



Pull the control unit complete through the first Type 3 sleeve and pull enough slack out of the cable to place the control unit into the window on the back pad. Place the control unit into the “slot” cut into the top center of the reserve container and back pad. (or other specific control unit location) Then, seat the control unit so that the LCD display and Red button are clearly visible through the clear window on the back pad.





Route the AAD cutter out the the slot mid way up the Type 3 channel and secure to floor plate with provided elastic keeper and route dyneema Closing loop through cutter.



**\*\* IMPORTANT NOTE\*\***  
The closing loop must be routed through the cutter for proper function

# **RESERVE ASSEMBLY** **AND** **PACKING PROCEDURES**

**Helpful Hint:** Before starting the pack job, copy the type of canopy, serial numbers and date of manufacture from AAD unit as well as both main and reserve canopies into an appropriate log book.

Make a thorough inspection of all components of the reserve parachute - Reserve Pilot Chute, Reserve Bridle, Free bag, Reserve Canopy, lines, slider, connector links, and harness/container system.

# ***REQUIRED TOOLS***

1. Adjustable Wrench
2. Temporary Pin with flag
3. Pull up cord spectra (recommended)
4. Wooden Packing paddle
5. .22 caliber rifle cleaning rod
6. Velcro protective strap
7. Finger trapping tool
8. Crochet hook (5mm)
9. Fine tip permanent marker
10. Scissors or snips
11. Steel Ruler with Metric and Imperial
12. Closing Device
13. Seal press
14. Seal Thread and lead seal



***Inspect and assemble  
the reserve canopy in  
accordance with the  
manufacturers  
instructions***

# ***Reserve Toggle installation and Setting the deployment brakes***

With the top of the toggle routed through the cat's eye of the steering line, below the guide ring, secure top and bottom portions of toggle in keepers, with excess brake line towards the outboard side.



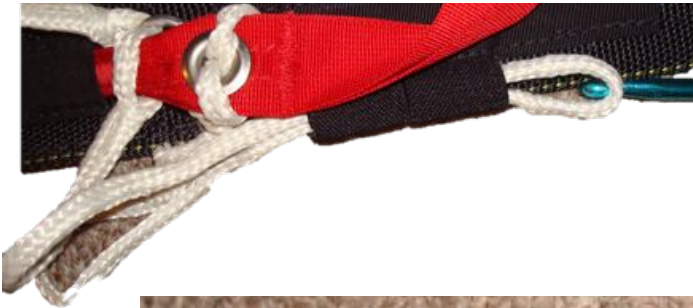
Stow excess steering line through both elastic keepers.

Bring half of the excess steering line back up through both keepers. Dress excess to be neat and clean as shown. Attempt to get as much brake to toggle excess inside the elastic loops.

# ***Reserve Toggle installation and Setting the deployment brakes***

Stow excess steering line through both elastic keepers.

Bring half of the excess steering line back up through both keepers. Dress excess to be neat and clean as shown. Attempt to get as much brake to toggle excess inside the elastic loops. Repeat on opposite side.



# **RESERVE TOGGLE** **SHORT NO VELCRO TOGGLE**





***Follow the parachute manufacturers reserve packing instructions for "Pro Pack" method***

- The canopy should look similar to Fig. x, after it has been flaked and folded.





Flake the center area of the tail out, and wrap around folded reserve canopy.

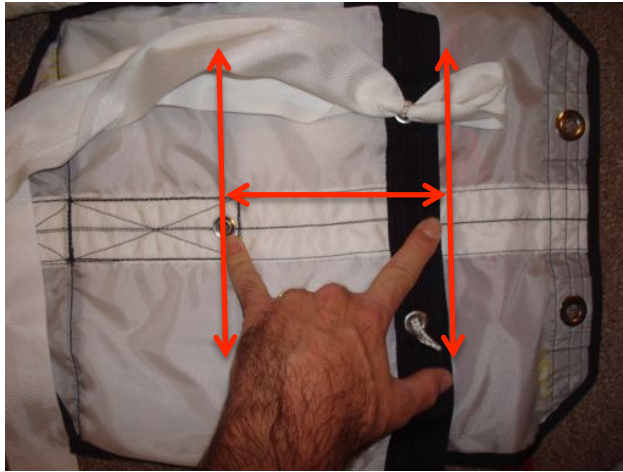


- Ensure to leave the nose sections exposed to the front



- S-Fold the Left and Right nose sections under and leave exposed to the front making the folded canopy one consistent width

Fold back the bottom portion of the tail, using the approximate distance between the grommet and the mouth of the freebag as a guide.



Make the first canopy "S" fold and Re dress the center of the tail to cover the first "S" fold. Attempt to make the canopy as wide, or just wider than the free bag.





**NOTE: Do not use any other deployment bag. Only the appropriate size “molar” bag may be used in the AC100-XX container systems.**

Place slider grommets so that they are to the outboard of center.

At this point it is necessary to spread the top of the canopy into halves by pushing down into the center from the top and spreading it outward into a “V” shape.



To keep the canopy symmetrically divided, use the seam on the top of the center cell as a reference. Split the canopy by accordion folding the center cell.

This will separate the canopy into 2 even halves, evenly split side to side.

Gather and dress each “ear” neatly. Ensure that the bulk of each side is distributed evenly and hold in place with your left knee.





Make the second (left side canopy “ear”) S-fold by grasping the left canopy ear, making the fold the same measurement as the first fold.

While holding the Left side secure, make the second (Right side canopy “ear”) S-fold by grasping the right canopy ear, making the fold the same measurement as the first fold.





- Once the 2nd “S” folds are made, carefully fold the extended portion of the ears UNDER so that the top of the ears are under the first 2 “S” folds. This will aid in filling the free bag and container properly. Repeat on opposite side.



While keeping control of the pack job, place the ears into the top of the free bag.

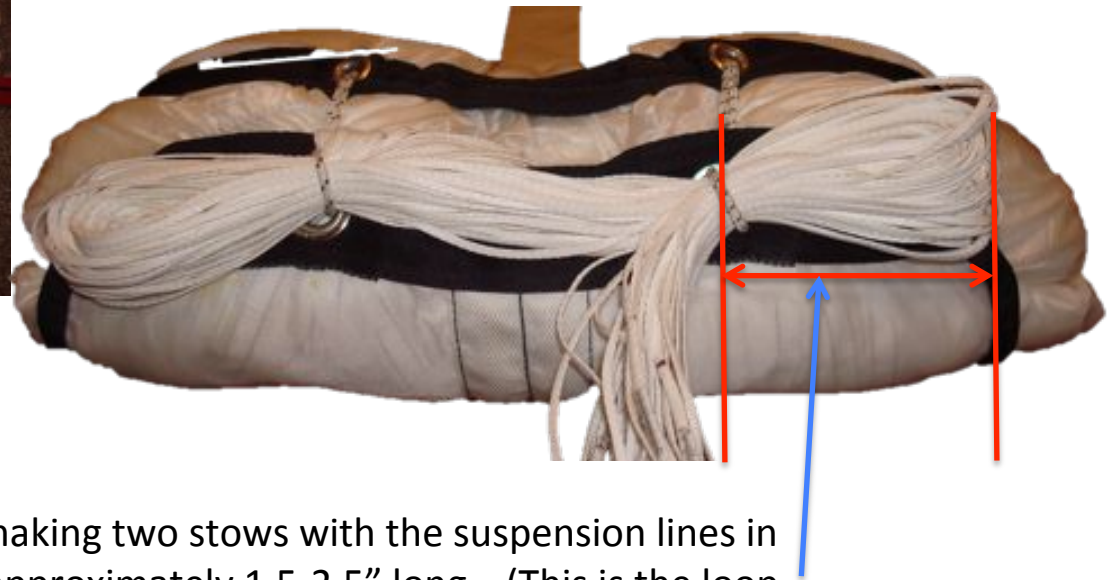


Push the slider grommets outboard of center to allow clear space for the AAD control unit.

Maintain control of the entire canopy as you place the remainder of canopy into the free bag, or place the freebag “over” the canopy, keeping the canopy in 2 distinct separate halves as much as possible.



Prior to closing the mouth lock on the free bag, carefully open the folds as to expose the slider grommets. Gently place the slider grommets to the outside of center. This will allow for a deep “valley” in the pack job allowing room for the AAD and reserve pilot chute fabric when closing the reserve container.



Lock the mouth of the free bag by making two stows with the suspension lines in the “Safety Stow”. Make the stow approximately 1.5-2.5” long (This is the loop made of 1/8” nylon based shock cord)

**NOTE: Only safety stows made by TUAC/PMI may be used.**

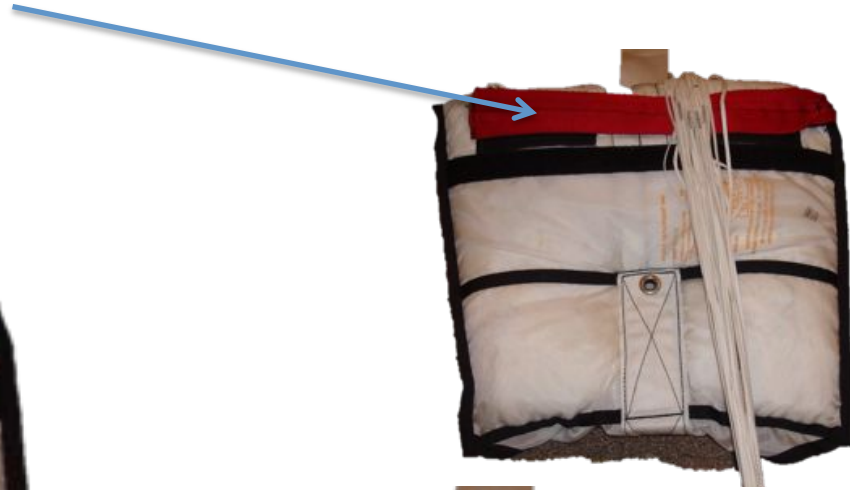
## HELPFUL PACKING TIP:

Use a wooden packing paddle to insert and dress any remaining canopy into the freebag. Place the paddle in between the first and second S- Fold and push the canopy towards the top of the freebag, gently. This will assist in filling the ears (top left and top right,) of the freebag.



Stow remaining lines in the line- stow pouch on the back of the free bag. Make Figure of 8 stows with the lines, the width of the pouch.

**Helpful Hint: Use loop Velcro strips with flags to cover any expose hook Velcro while stowing the suspension lines.**



To close the pouch, remove the Velcro strips and mate the Velcro at the mouth of the pouch, being sure that none of the suspension lines are captured by the closure.

**NOTE: Leave approx. 100mm-150mm (4- 6") of excess line out of the line stow pouch to the top of reserve risers.**

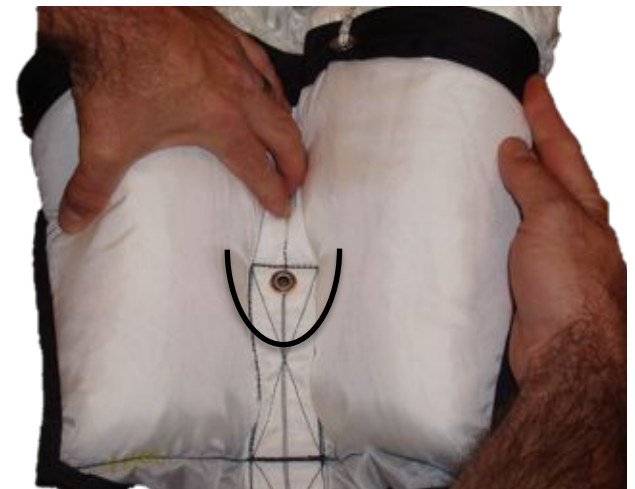


### **HELPFUL PACKING TIP:**

After all lines are stowed, take time to mold the pack job. Form the pack job into the basic wedge shape of the reserve container.

Kneel on the center of the free bag with knee. Gently work the pack job so that the bulk of material is worked to the outer sides of the free bag, creating a “valley” in the middle.

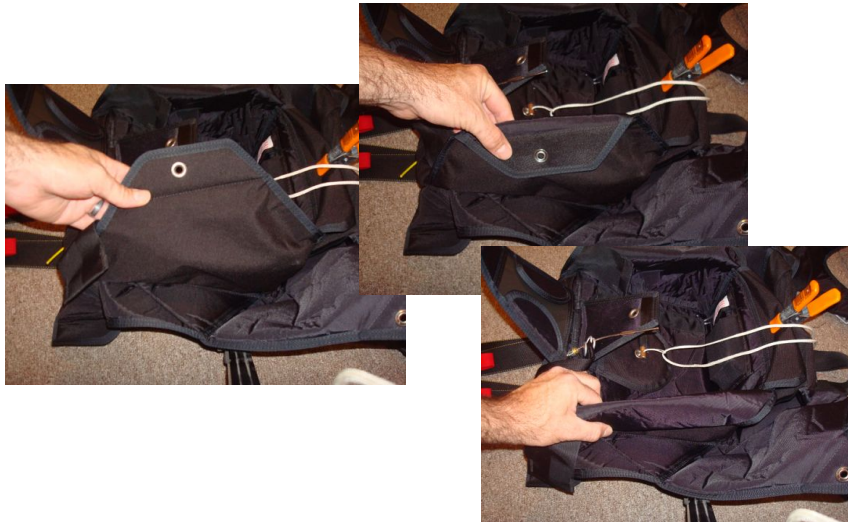
The bulk should be evenly distributed on either side of the pack job, leaving a “valley” in the middle.



**Reminder: Ensure that the AAD unit is properly installed and closing loop is proper length and routed properly through the cutter.**

**Reserve Closing Loop: Helpful Hint: Suggested reserve closing loop after setting (set the knot tight, do not pre stretch)**

**..... to be 54mm to 57mm. (2 1/8 +/- 1/4")**



**Helpful Packing Tip:**

Prepare the reserve container to accept the packed canopy and freebag by folding the side flap plastics 2-3 times outboard and fold back the lower corners of the container as shown.





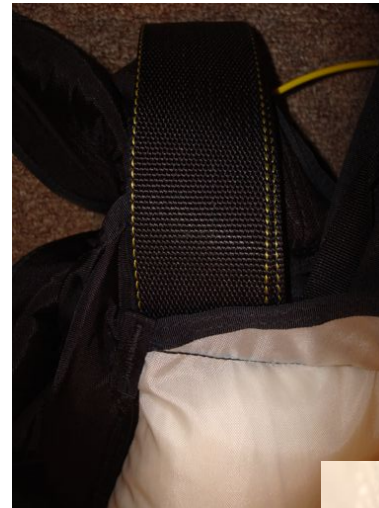
Rotate the free bag over so the line stow pocket is up and lay the reserve risers in the container so that the connector links (slinks) are laying flat inside the container or offset, riggers preference applies.

Be sure that the canopy main lines and control lines are clear and free of the closing loop and pull up cord and risers are stacked and stowed before rotating the freebag back towards the top.



Rotate the free bag over so that line stow pouch is facing down and thread the pull-up cord through the grommet in center of the free bag.

Ensure the reserve risers are tight and remained stowed in the container



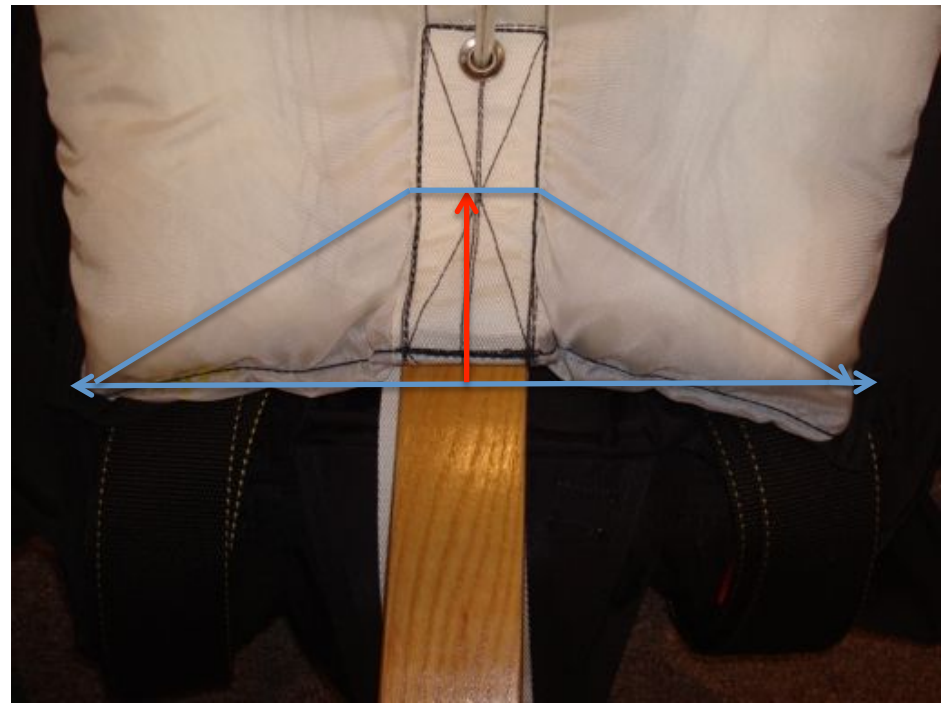
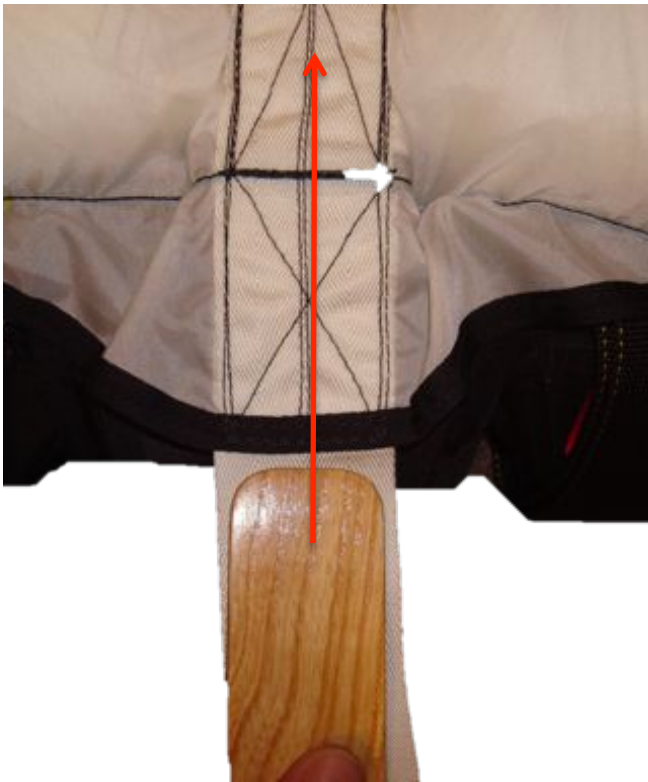
Center the free bag grommet with the AAD cutter and floor plate grommet.



Kneel on center grommet and work the bottom portion of the free bag into the bottom corners of the reserve container. Ensure that the suspension lines are clear and free and risers are placed neatly, either offset or stacked, riggers preference applies.



Set and stow the angled portion of the freebag/bridle under the freebag as shown below. Using a wooden packing paddle will assist in placement. Gently fold the angled fabric portion under the freebag with a short fold of the bridle, enough to square off the freebag and match the top line of the container.



Fold the bridle on top of the free bag  
Split the fold into a “V” with 2 folds on each side of the closing loop on top of the freebag, which will remain under the 2 side flaps once closed.



Then close the wearers left, side flap, use the packing paddle to keep the bridle folds clear and from folding under the left side flap.

First close the wearer's right, side flap. Use the packing paddle to keep the bridle folds clear and from folding under the right side flap.



**NOTE: Be sure to remove the packing paddle once each side flap is pinned in place.**

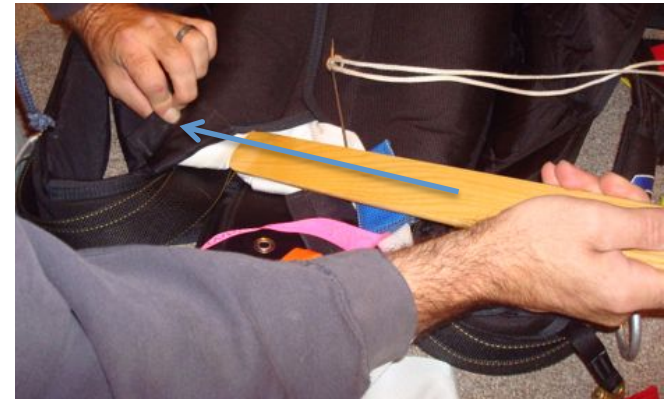
Smooth free bag and bridle as you close each side, filling the outside of the reserve tray.





Repeat the same process and close the wearer's left, side flap. Use the packing paddle to keep the bridle folds clear and from folding under the right side flap.

Work the bulk of material comprising the “ears” to the top outside of reserve container.



After the bulk is spread to the upper outside of the reserve container, push upper tuck flaps under the ears of the free bag with a wooden packing paddle.



**NOTE: Be sure that the tuck flaps are not interfering with any other component of the system.**

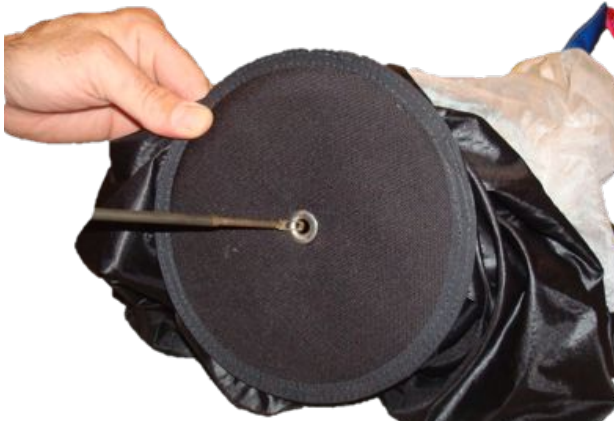


Once both side upper tuck flaps are stowed, “S” fold the remaining reserve bridle evenly up and down both sides of temporary pin and closing loop, on top of the two side flaps.



While controlling the folded bridle, pass the pull up cord up through the pilot chute spring and out through the grommet in the top plate.

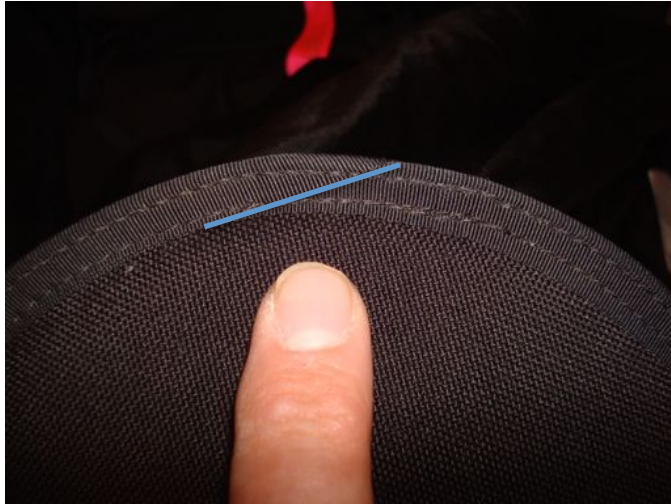
This is easily accomplished by passing a .22 caliber rifle cleaning rod down through the grommet/top plate and through the spring, exiting at the base of the pilotchute.



Thread the pull up cord through the eye of the cleaning rod and slowly pull back and remove the rod from the pilotchute.

Ensure that the pull up cord is properly routed and clear and free of any spring coils.

Pilotchute orientation: Locate the binding tape “roll off” on the top plate of the PC and orientate this towards the 6 o’clock position. (towards the base of the container, or towards the main container for reference) This will place the widest spring opening towards the top, allowing for the pc fabric to easily be stowed.



Seat the bottom end of the PC on top of the side flaps and bridle over the closing loop. Prior to compressing the spring, work as much of the F111 material up, between the top plate and first coil of the spring.



Rotate the F111 towards the main container and compress the spring.



Be sure to keep the point of the fan or twist, narrow and tight to the middle of the bottom of the p/c top plate and close the bottom flap, Keeping the pilot chute fabric evenly distributed to both sides of the bottom flap.

Once the spring is compressed and pinned in place, give the P/C material a 1/2 twist and fan out the p/c fabric, so that it extends wider than the bottom flap.



**NOTE: The valley created earlier in the pack job will now become beneficial. This valley will allow for proper seating of the reserve pc spring and fabric.**

Close the reserve container bottom flap, leaving the pilotchute fabric exposed.



Prepare the top flap for closure, by checking and ensuring the top portion of the reserve canopy and Freebag ears are firmly pressed outboard and tuck tab ears are still secure.

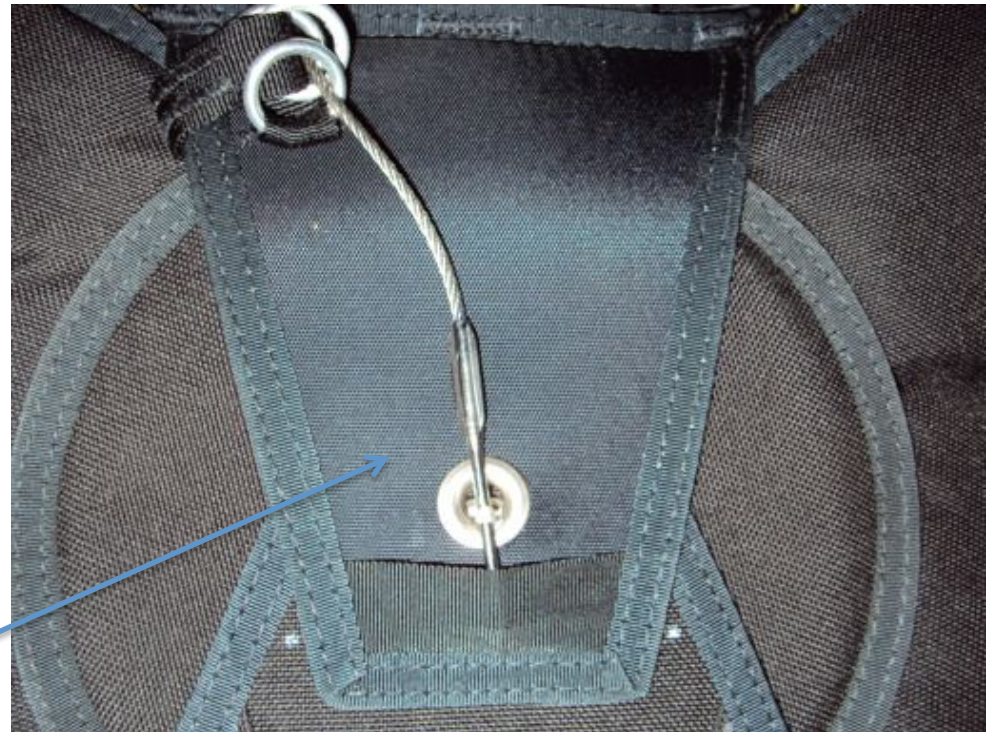
(if needed, use the wooden packing paddle to re secure any material which has come out or been dislodged during previous packing processes)

Press firmly downward on the PC top cap at the 12 o'clock position. This will aid in getting the top flap closed and as flat as possible.

(be sure to dress and flatten any bridle folds underneath the top flap before closing)



Close the top flap and secure with closing pin, stow end of pin in pocket and dress remaining RSL lanyard (if applicable), under pin flap.



Gently place each side of the exposed reserve pilotchute fabric under the bottom flap using your fingers or wooden packing paddle. (be sure not to snag or damage the fabric in any way)



Seal rig with one turn Seal thread and lead seal.



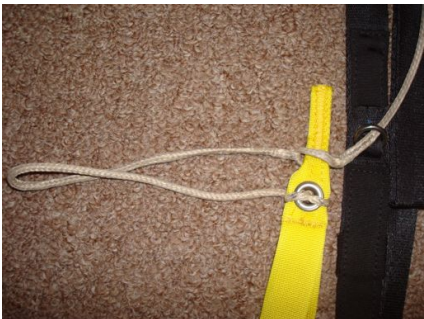


***MAIN PARACHUTE  
PACKING PROCEDURES***

- This chapter deals with the procedures for packing a ram-air main canopy into the **AC100-XX** harness/container system. Assembly and packing of the main must be done by an appropriately rated parachute rigger, under the direct supervision of a certificated parachute rigger or by the person making the next jump.
- Carefully inspect the main canopy, suspension lines, control lines, slider and grommets, connector links or soft links etc., before assembling it with the risers. Replace or repair any worn or damaged parts. Also inspect the deployment bag, bridle and pilot chute.
- Attach the main canopy to the main risers, being sure that the canopy is facing the same direction as the harness/container system and that each suspension line is clear from its attachment point all the way through the slider grommet to the connector link without passing around any other line. Be sure the control lines are clear from the trailing edge of the canopy to the control toggles. Each control toggle must be securely tied or larks headed to its control line at the location specified by the canopy manufacturer. Also be sure that the connector links are tight enough so that they cannot be loosened with the fingers alone. (finger tight + ¼ turn). Also refer to the canopy manufacturer's owners manual.

# *Setting the Brakes*

- A. Set the deployment brakes by pulling the cat's eye through the guide ring and securing with the stiffened portion of the top of the toggle.
- B. Set the top of the toggle into the Type 3 keeper, with the brake to toggle excess loop towards the outboard side, and brake line to the inboard as shown.
- C. Set the bottom portion of the toggle into the bottom keeper.



# ***Setting the Brakes (cont)***

- D. "S" fold the Brake to toggle excess and stow it in the elastic keeper on the back side of each main riser.
- E. Completed Brakes Stowed should look as shown.



# ***Bridle and Deployment Bag Attachment to Main Canopy***

- Attach main deployment bag to bridle attachment point on top center cell.
- Retro Style Bridles: Be sure that the rapide link at the base of the bridle is secure and the Hex Head portion is concealed inside the type 3/Cotton or Kevlar loops. Ensure that the center/kill line is routed through the center of the 2 cotton buffer loops.
- Fasten one or both Rapide links (if applicable) with an adjustable wrench.

(finger tight plus a 1/4 turn)



Attach Rapide link or Soft link, to bridle attachment point on top center of main canopy.

**Kill Line instructions:**

The pilot chute should be “cocked” before placing the deployment bag. To do this, simply anchor the bag (your foot works great) and pull out on the pilot chute handle until the centerline is tight.

To double check that you have fully cocked the pilot chute, check to see that the green portion of the kill-line is visible in the window on the bridle and sway the PC back and forth to check drag production or “inflation”.



# ***Always follow the main canopy manufactures instructions for packing of the main canopy***

Once the main canopy is in long fold. It is time to “S” fold the canopy and place the main deployment bag onto the canopy.

Begin with the first canopy “S” fold.



Make the first “S” fold approx. 15- 20cm wide, with slider grommets in the center.

Control the main canopy with knees and make second canopy "S" fold.







Control entire “S” folded main canopy with body weight and knees prior to inserting into the main deployment bag.

Place entire main canopy into main deployment bag with suspension lines centered. Try to fill the corners and sides of the bag to distribute the bulk evenly and avoid forming a lump in the middle.



Be sure to clear the bridle attachment point (top center of the canopy) and place the bag over the folded canopy.

Maintain control of the canopy and line groups during the entire process



**\*\*IMPORTANT NOTE\*\***

*During this part of the packing procedure always make sure that the rubber bands used for the locking stows are strong and in good condition. The weight of the canopy inside the bag comes to bear on these locking stows when the canopy is lifted off the jumper's back during deployment and broken locking stows at this point may result in an out-of-sequence deployment or line dump.*



Mate the locking stows with the suspension lines to close the mouth of the main deployment bag.

Continue stowing the remaining main suspension lines across the bottom of the bag in the rubber bands at each end.

Make the line stows guided by the canopy manufacturers recommended size and band stowage. Leave 300-400mm (12-16") of lines un-stowed between the bag and the top of the main risers.



Prepare the main container for closing by inserting the pull up cord through the main closing loop.

\*AC100, AC100-1 models have the closing loop located on the inside of the main container

\*\*AC100-2 models have the closing loop located on the main bottom flap



Pic ac100-1

Fold the side flaps and bottom flap outboard, rotating the lower corners over as to expose the entire inside of the container



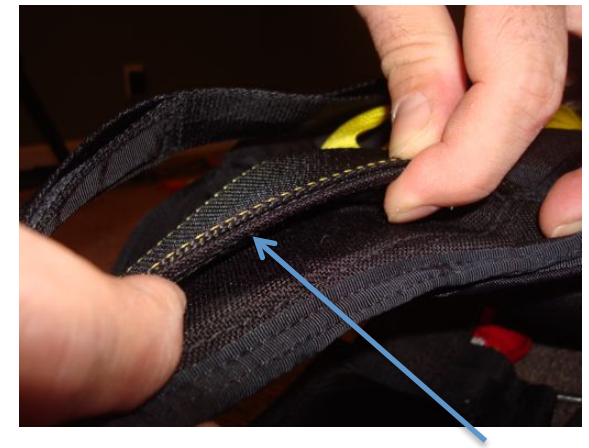
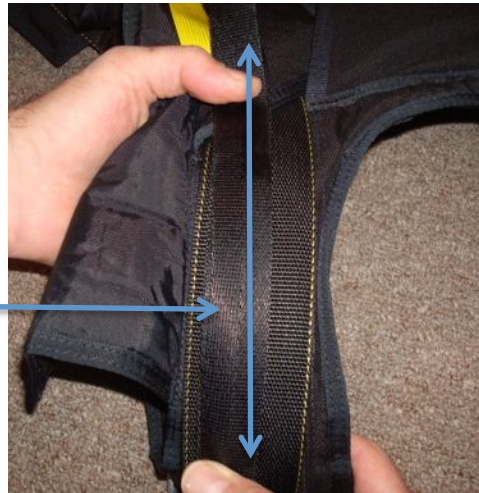
Place the bag (lines down) on the outside of the bottom of the container.

Place Main Risers on top of the yoke and route main risers in the “trough” between the reserve container and riser covers



Pull the "over the shoulder" section out flat. This will allow for easy and secure installation of the risers and tuck tab protection.

Lay the main risers in line and on top of the reserve risers and hold



Locate the riser cover tuck tab pocket "UNDER" the reserve risers

Fold the riser cover tuck tab flap all the way over as far as it will go and hold with your thumb.



Place the stiffened portion of the riser cover into the pocket.



Place the main deployment bag into the main container line stows facing DOWN. Be sure the un-stowed line portion and the top ends of the risers are neatly stowed in the bottom of the main container.



*When is bag rotation needed? The geometry to the main container dictates when the bag should or should not be rotated. So, the dimensions in the "height" (or thickness) of the main container in relationship to the length of the main container. (from bottom of the reserve container to the bottom of the backpad or main container) Generally speaking a model range thickness will normally be shorter than the length of the main container. So, Rotate the bag so that the grommet on the center of the bag is facing directly up towards the bottom of the reserve container. Seat the deployment bag as far into main container as possible. Ensure that bottom corners are filled.*



Neal on the top of the bag and fill out the main container with the pack parachute by gently pulling up on the 4 closing flaps.



Start with the top flap, this will allow the bag to “drop” into the container.

Then pull up on the side flaps and rotate the bottom corners over the top of the deployment bag.

**\*\*Helpful Hint\*\***

Before closing the container, attempt to get the bottom flap as far up towards the bottom of the reserve container as possible, while smoothing the fabric under each side flap.

Main Bridle Routing:

Routing A: Route the bridle so that the running end is towards the bottom and over top of the bottom flap as shown here.

(Note: TUAC/PMI bridles are constructed with pin and window locations with this with this intended routing)





Route the pull up cord and closing loop through the top flap and pull so that the grommets line up and the closing loop is all the out.

When closing the right side flap, be sure to maintain control of the bridle, keeping it on top of the bottom flap and under the side flap

Route the pull up cord and closing loop through the wearers right side flap and pull so that the 3 grommets align.



**\*\* HELPFUL HINT \*\***

*Use fingertips to grip the lower corners of the main container and roll the side flap over as you close the each side flap*

Route the pull up cord and closing loop through the wearers left side flap and pull so that the 4 grommets align.



Close the container and secure with main closing pin.

Carefully remove the pull cord



Route running end of main kill line bridle under the wearers right side flap and continue under the bridle cover. Stow the length of bridle in the bridle cover all the way to the BOC (bottom of container) pocket.



Lay the main pilot chute out flat with the mesh side up. The bridle should be running out at the 6 'o clock position.



Fold the pilotchute material in half, and then back in half again, bringing a portion of the bridle with the fold, as to start the bridle fold stack.





“S” fold the bridle and stack on top of pilot chute.

Fold the sides inward, just past half way, on top of the “S” folded bridle.



Fold the sides inward again towards the center and roll into a cylindrical shape, keeping the pilot chute and bridle as neat and clean as possible.  
(the tighter the better)





Fold remaining bridle outside of the folded pilot chute and carefully place the folded pilot chute and bridle into the BOC pocket.

**\*\*IMPORTANT NOTE\*\***

**Ensure that the P/C bulk is evenly distributed inside the full length of the BOC pocket. This will aid in ease of deployment and reduce hard pull scenarios.**



If using the “Nub” handle tab, simply insert into pocket with tab facing away from the BOC pocket

Close the main pin cover and smooth out any wrinkles.



Always check pin security before jumping

# ***MAIN RISER ASSEMBLY AND MAINTENANCE***

Because of the mechanical advantage provided by the 3-Ring design, only a force of approximately a pound on the top ring keeps the release together. That's why it's important to keep foreign matter like bits of grass and sticks out of the 3-Ring assembly. A small stick in the white loop could prevent a riser from releasing.

It is also important to understand one of the properties of the nylon components of the system. When nylon stays in the same position for a long time, it begins to conform to that position, or take 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) won't pull the riser off the ring. The 3-Ring release system must be disassembled, flexed and inspected every month. Procedures for this are listed in the maintenance chapter of the manual.

## **ASSEMBLY**

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

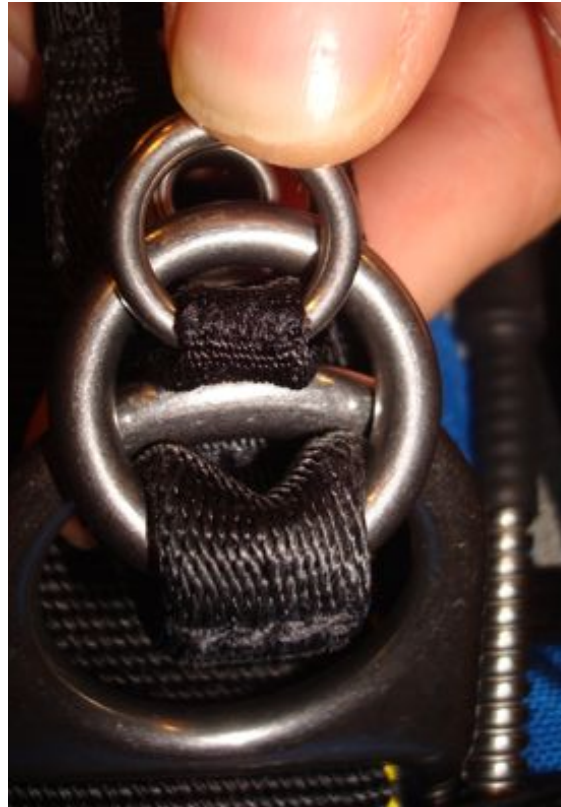
1. Thread the cable into its housing and secure the cut away/release handle into the harness and/or pocket. The handle should be positioned as close to the ends of the housings as possible so that minimal cable is exposed.



2. Pass the ring on the end of the riser through the large harness ring from above.



3. Fold it back toward the canopy and risers and thread the smallest ring in the same way, but make sure it does not pass through the large ring.



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



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

**6. Secure the release assembly by inserting the yellow cable end through the white loop. Ensure there are no twists in the white securing loop.**

**7. Stow the excess yellow cable inside the protective pocket/sleeve on the rear of both risers.**



## REQUIRED PERIODIC MAINTENANCE FOR THE 3-RING

The 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 harness/container assembly, it requires periodic maintenance and inspection to ensure proper operation. Generally it is NOT recommended that the risers be attached to the harness when new and "forgotten." Like all skydiving gear, the 3-Ring Release should be carefully inspected and operated on a regular basis. The procedures below should be done at least every month. This is especially important if the rig has not been used for a month or more, such as during the winter. Immediate inspection is required if it has been subjected to some abuse such as a drag across the runway, a water landing or exposure to a lot of dust or sand.

- 1.** Every month 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 Velcro on the breakaway 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.** Pull downward on the housings. They shouldn't move downwards more than 1/2 inch.

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 of the webbing. Do the same thing to the white loop. **(FIG. 1)**
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. Put a few drops or light spray onto a paper towel and firmly wipe the cable a few times. A thin, invisible film should remain--too much will attract grit and dirt, or could become tacky in cold weather. Too much may require more force to extract the cable during a breakaway.
10. Inspect the 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 a rigger or the manufacturer before using the system.
12. Reassemble the system. Double check it. Make sure the risers aren't reversed.

It's important to maintain the system even more frequently in humid, muddy or freezing conditions. If the harness/container system becomes immersed in mud or muddy water, clean the 3-Ring release system with a mild solution of soap and water. **Any rusted or corroded components must be replaced.**



# ***INSPECTION, MAINTENANCE AND REPAIR***

**Applicable to all AC100-XX harness/container systems, sport and student.  
Your harness container system is built with the latest technology and most up to date  
manufacturing methods.**

## **QUALIFIED PERSONNEL:**

It is strongly recommended that all major repairs to AC100-XX harnesses and container systems be made at the manufacturers' facility Brooklyn, CT.

## **AUTHORIZATION:**

AC100-XX (Dolphin, Triton and Glide harness/container systems are certified under TSO c23d. The TSO label is located under the reserve pin cover flap, in a pocket on the lower inside of the back pad. If this label is not present or has been removed **DO NOT PACK THE RIG. Removal of the TSO label voids the TSO and all certification approvals.**

**IF THERE ARE ANY VISIBLE SIGNS OF WEAR OR DAMAGE, HAVE YOUR RIG THOROUGHLY INSPECTED BY A CERTIFIED PARACHUTE RIGGER OR OUR MANUFACTURING FACILITY IN BROOKLYN, CT BEFORE NEXT USE.**

**LIMITS AND GUIDELINES FOR DAMAGE:**

Limits and guidelines for webbing are applicable to all sections of the harness. To include reserve risers, main lift web, lateral/diagonal and leg straps.

At every repack cycle, the entire harness/container system should be thoroughly inspected. Completion of this inspection and annotation of an A/I/P or A/I/R on the packing data card implies that the certifying party has inspected and deemed the harness, container and all applicable components to be airworthy and ready for use.

A visual inspection of the harness webbing and hardware should be conducted before each use to determine whether or not it is showing signs of abrasion, fraying, nicks, unusual wear and tear or any other visible damage to any part of the webbing and or hardware damage that will degrade its strength. Refer to the following grading list as a guideline for determining webbing wear.

Prevention of accidents is of prime importance in sport parachuting. One way to reduce these accidents is to inspect the equipment on a consistent schedule and to perform preventative maintenance whenever necessary.

The following checklist is provided for a framework in developing your own inspection and maintenance schedule. It is suggested that inspections be performed every 20 jumps or every month, whichever is more frequent.

1. Main Pilot Chute: Watch for fraying of the tapes which attach the handle to the top of the pilot chute. Also inspect the stitches on the tape. If the tape is frayed, have it replaced. If the stitches are coming apart, restitch it. If the handle comes off when you are trying to pull the pilot chute out of its pouch, it may be impossible to deploy the main parachute.

The length of the centerline on a “kill-line” type bridle is very important and critical. It must be at least as long as the suspension tapes on the mesh, preferably about one inch longer. If the centerline is shorter than the suspension tapes, the pilot chute is very close to a configuration in which a drastic loss of drag can occur. However, it is easy to inspect the centerline. Simply hang the pilot chute upside down by its bridle attachment point and compare the length of the centerline with the length of the suspension tapes.

2. Main Bridle: Check the entire length for abrasion and/or cuts. Pay close attention to the attachment of the curved pin. The tape must be replaced if it is frayed and any broken stitches must be re sewn or repaired. If the curved pin comes off the bridle during deployment, it may leave the jumper with a pilot chute in tow from a close container.
3. Main deployment bag: Inspect the attachment of the bridle to the main bag. Be sure that the locking stow rubber bands are in good condition. If a locking stow breaks during deployment, the canopy could be dumped out into deploying lines, inviting an entanglement.
4. Risers: The control line guide rings should be inspected to assure that their attachment to the riser is secure. Also check the risers securing/locking loop for fraying, and check the grommet for any sharp edges which damage the loop.
5. Control Toggles: The attachment of the control line to the control toggle is important. Check for fraying and be sure that the knot is secure. Check all finger trap sections and securing knots. If a control line breaks or a toggle comes off the line when a jumper is near the ground, the jumper may not have time to regain control before landing.
6. Closing flap grommets: Inspect for any sharp edges that may fray the closing loops. Replace if necessary.
7. Flap stiffeners: Inspect for damage or cracks. Broken or cracked stiffeners must be replaced.
8. Closing loops: At the first sign of fraying, replace the closing loop. If a closing loop breaks at an inappropriate time, it can cause major issues and should be avoided at all costs.

9. Harness: Look at all the exposed parts of the harness webbing and check for fraying, cuts, or abrasion wear and tear. If the edges of any harness webbing is worn or cut to depth more than 1/8", it must be repaired or replaced. Broken harness stitching must be repaired or replaced immediately to avoid further degradation.

10. Ripcord Assembly: During the required periodic repack and inspection of the reserve, inspect the entire length of cable for broken strands of wire, pin swedge, and ball/shank. If any strands of wire are broken, the ripcord must be replaced with OEM approved parts.

\*\* Any bent or damaged pins must be replaced\*\*

11. Housings: Be sure the ends of the release and ripcord housings are secured with tacking or clamps. Assure that they are tight and permanently attached to the harness and/or appropriate pocket area.

The list provide above includes several items which often are neglected even though they may pass through the hands of the jumper every time the parachute is packed. In a complete system there are other components not manufactured by TUAC/Peregrine Manufacturing, which should be inspected according to the instructions provided by their manufacturer. (This includes both main and reserve canopies, AAD's and any other item of which is combined with the use of the AC100-XX system)

# ***STORAGE***

- *Textiles and other materials used in the manufacture of parachute equipment to include harness/container systems are sensitive to the following environmental elements.*
- *Water/humidity  
Salt water  
Ultraviolet rays (Sunlight)  
All petroleum based products (oil, grease) Rodents, pests  
Smoke  
Excessive heat  
Chlorine (bleach)  
Acid*
- *While the parachute equipment is not in use it is recommended to store the gear in a proper gear bag and in a room where the temperature and humidity is maintained.*

# ***AC100-1 TRITON CONTAINER SIZING***

| <b>MODEL SIZE</b> | <b>RESERVE SIZE</b> | <b>MAIN SIZE</b> |
|-------------------|---------------------|------------------|
| MT                | 120                 | 120              |
| T-1               | 130                 | 150              |
| T-2               | 150                 | 170              |
| T-3               | 170                 | 190              |
| T-4               | 200                 | 220              |
| T-5               | 220                 | 250              |
| T-6               | 240                 | 250              |
| T-7               | 280                 | 320              |

# ***AC100-2 GLIDE CONTAINER SIZING***

| Container Model | F-111 Reserve Canopy | Low Bulk Reserve Canopy | Zero Porosity Main Canopy | Hybrid F-111/ ZP Main Canopy | Low Bulk Main Canopy | Crossbrace Main Canopy | Main Pilot Chute Diameter (F-111) |
|-----------------|----------------------|-------------------------|---------------------------|------------------------------|----------------------|------------------------|-----------------------------------|
| 36-42           | 105 - 120 (I)        | 113 (I)                 | 74-90                     |                              | 107                  | 74-84                  | 28                                |
| 36-44           | 106 - 120 (I)        | 113 (I)                 | 83 - 99                   |                              | 107                  | 68 - 75                | 28                                |
| 36-45           | 106 - 120 (I)        | 113 (I)                 | 100 - 107                 |                              | 120                  | 80 - 88                | 28                                |
| 36-52           | 106 - 120 (I)        | 113 (I)                 | 109 - 120                 |                              | 120                  | 88 - 96                | 28                                |
| 39-55           | 113 (I) - 120        | 113 (L) - 126           | 109 - 120                 | 135                          | 135                  | 96 - 103               | 28                                |
| 40-62           | 126 - 135(I)         | 143(I)                  | 135                       | 150                          | 150                  | 108 - 120              | 28                                |
| 40-67           | 126 - 135(I)         | 143(I)                  | 150                       | 170                          | 170                  | 120                    | 33                                |
| 48-64           | 143 - 150(I)         | 160(I)                  | 150                       | 170                          | 170                  | 135                    | 33                                |
| 48-73           | 143 - 150(I)         | 160                     | 170                       | 190                          | 190                  |                        | 33                                |
| 49-73           | 160 - 170(I)         | 176(I)                  | 170                       | 190                          | 190                  |                        | 33                                |
| 50-82           | 176 - 190(I)         | 193(I)                  | 190                       | 210                          | 210                  |                        | 33                                |
| 50-90           | 193 - 210            | 218                     | 210                       | 230                          | 230                  |                        | 33                                |
| 64-10.8         | 218 - 235            | 235                     | 240                       | 260                          | 260                  |                        | 33                                |
| 65-11.5         | 235 - 245            | 253                     | 260                       |                              |                      |                        | 35                                |
| 68-12.2         | 245 - 253            | 253                     | 280                       |                              |                      |                        | 35                                |
| LOOSE           | (L)                  | IDEAL                   | (I)                       | FULL                         | (F)                  |                        |                                   |