

# Owner's Manual for Packing, Donning, and Maintenance of the *Wings Harness / Container System*



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U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

Aircraft Certification Service  
Compliance & Airworthiness Division

Atlanta ACO Branch  
1701 Columbia Ave.  
College Park, Georgia 30337

October 15, 2018

**In Reply, Reference FAA Correspondence #: 7A0-18-11248**

Henri Pohjolainen  
President & Accountable Manager  
Sunrise Manufacturing International, Inc.  
4035 Correia Drive  
Zephyrhills, FL 33542

Subject: TSOA Application for “Parachute Wings Harness/Container System” Model SRI-100()

Dear Mr. Pohjolainen,

This is in reply to your letter dated February 19, 2018, notifying the FAA of your intent to relocate your design and manufacturing facilities. The Atlanta ACO Branch is reissuing the letter originally dated July 29, 1998, which was in reply to your letter dated May 15, 1998 requesting Technical Standard Order (TSO) Authorization for your “Parachute Wings Harness/Container System” Model SRI-100(). We accept your statement certifying that your articles meet the requirements of the TSO-C23d and that you meet the requirements of Title 14 of the Code of Federal Regulations (14 CFR) Part 21, Subpart O.

Effective this date, we authorize you to identify the following Personnel Parachute Assemblies and Components with the marking requirements defined in 14 CFR §21.616(d) and in TSO-C23d.

<u>Part Number</u>	<u>Description</u>
Model SRI-100()	Parachute Wings Harness/Container System

We consider your quality system, as defined in your Quality Control Manual revision 3 dated June 1, 2018, FAA-approved August 9, 2018, satisfactory for production of this/these article(s) at your 4035 Correia Drive Zephyrhills, FL 33542 facility. Sunrise Manufacturing International, Inc. must furnish the following statement to the original owner or installer of each article (or multiple articles if furnished to one source):

This article meets the minimum performance and quality system standards required by a technical standard order (TSO). Installation of this article requires separate approval.

This TSO authorization, issued pursuant to 14 CFR §21.611, is effective until surrendered, withdrawn or otherwise terminated under the provisions of 14 CFR §21.613. With notice, we may withdraw this TSO authorization if articles are not in compliance with the applicable TSO performance standard pursuant to 14 CFR §21.2.

You must provide one copy or online access to data listed as a furnished data requirement in the TSO to the original owner/installer of each article or multiple articles if furnished to one source (e.g., an operator, type certificate holder, or repair station).

You must obtain FAA approval before making any changes to the location of your manufacturing facilities pursuant to 14 CFR 21.609(b).

Without further FAA approval, we do not allow a manufacturer to mark articles after it changes its company name, address, or ownership. You must notify the ACO and MIDO of name, address, or proposed ownership changes.

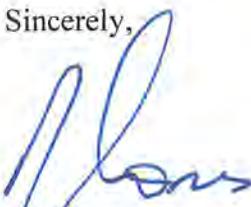
Pursuant to 14 CFR 21.614, a holder of a TSOA may not transfer it. If you wish to transfer it, you must request a transfer from the FAA.

Send to the office below any design change(s) for this TSO article as outlined in 14 CFR §21.619(a). You must notify us of minor design changes every six (6) months. Also, as recipient of this authorization, we require you to report any failure, malfunction, or defect relating to articles produced under this authorization pursuant to 14 CFR §21.3.

Please note that technical data the FAA retains may be subject to Freedom of Information Act (FOIA) requests. This office will notify you of any requests(s) pertaining to your data and give you the opportunity to protect the data from public disclosure.

Should you have any questions or concerns, please feel free to contact Samuel Kovitch at 404-474-5570 or via email at [samuel.kovitch@FAA.gov](mailto:samuel.kovitch@FAA.gov).

Sincerely,



(for) Christina M. Underwood  
Manager, Atlanta ACO Branch



## **WARNING!**

**SKYDIVING / PARACHUTING IS A HIGH RISK ACTIVITY WHICH CAN CAUSE OR RESULT IN SERIOUS INJURY OR DEATH.**

The following information must be read and understood before any use of this equipment:

### **USER KNOWS THE RISKS OF SKYDIVING AND ACCEPTS THAT:**

Skydiving can cause **death** and/or **serious injuries**. Many of these deaths and injuries can be attributed to equipment problems or malfunctions.

Skydiving equipment can fail, even if all possible precautions are taken by the user, the equipment manufacturers and everyone else involved with the jump.

Failure to activate the main or reserve parachute (or follow emergency procedures) at a safe altitude, and/or equipment failure can result in **severe injury or death**.

### **IT IS THE USER'S RESPONSIBILITY TO:**

Receive proper training before any use of all skydiving equipment.  
Be extremely careful and cautious.

Read and Understand all owner's and operating manuals for all skydiving equipment.

Thoroughly check all skydiving equipment and replace any defective or worn component prior to use.

Review emergency procedures before each use of this and all skydiving equipment.

Check equipment warnings –

**DO NOT EXCEED EQUIPMENT LIMITATIONS!**

## **WARNING!**

Never violate the training and experience requirements for the specific equipment use.

### **DISCLAIMER – STATEMENT OF WARRANTY**

Because of the unavoidable dangers involved in the use of this and all parachute equipment – **Sunrise Manufacturing International, Inc.**, (including but not limited to all owners, officers, staff, and employees), hereafter referred to as **(SMI)** makes no warranties of any kind, expressed or implied. The liability of the seller is limited to replacing defective parts found upon examination by the manufacturer to be defective in material or workmanship within 7 days after purchase and found not to have been caused by an accident, improper use, alteration, tampering, abuse or lack of care on the part of the purchaser.

By using this equipment or allowing it to be used by others, owner/buyer waives any liability of **SMI** for personal injuries or any other damages arising from such use. Any promise or representations inconsistent with or in addition to the **Statement of Warranty** are not authorized by **SMI** and shall not be binding.

## **!WARNING!**

Parachuting is a hazardous activity that can result in serious injury or death.

Failure to follow all warnings, instructions, and required procedures may result in serious injury or **DEATH!** Parachutes sometimes malfunction even when they are properly designed, built, assembled, packed, maintained and used.

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## Chapter 1

# Product Information

## 1.1 Sunrise Manufacturing International, Inc. Information

During the early 1990's, with increasing freefall speeds, smaller parachute options and a changing skydiving market, there was an obvious need for a fresh approach to skydiving container systems. The **Wings** harness/container system was designed with those needs in mind.

After many design and engineering trials, testing began for the **FAA TSO C23d** approval designation.

The **Wings** Single Harness Reserve Parachute is approved for use by a person up to 254 lbs /115 kg fully equipped up to 150 knots.

Located in Zephyrhills, Florida USA, **Sunrise Manufacturing International, Inc.** has since gone on to produce more than **10000** of these containers for sport, student and military applications.

**SMI, Inc.** is dedicated to address your needs with several harness/ container options.

## 1.2 WINGS Harness / Container Information

While each system is available in a combination of sizes and options, several Standard Features are included on the **WINGS** Harness/Container system:

- Main Pin Cover – Having an upward facing pin cover creates the ultimate in pin protection from unintended knocks or bumps causing premature pin extraction.
- Bridle and Riser Cover Protection – Zero exposed riser or main bridle ensures proper function in any manner of orientation or use.
- Main Risers with Front Dive Loops and Velcro-less Toggles.
- Foam Padded Yoke, Back Pad, and Leg Straps for added comfort.
- Automatic Activation Device () Set-up - ready for installation of many of the AAD's in use today.
- Reserve Static Line (**RSL**) Set-up - ready for installation.
- Single Pin Reserve Closing.
- Type VII Mil-SPEC Harness and Reserve Risers.
- 1000 Denier Cordura for durable long lasting use.

**OPTIONS** for the *Wings* Harness/ Container include:

- Reserve Static Line (**RSL**) Lanyard connecting the **Left Main Riser** and the Reserve Ripcord Cable which allows minimum altitude loss during the reserve opening in the event of a cutaway.
- “**Reserve Boost**” - Main Assisted Reserve Deployment (**MARD**) System.
- Reserve Pin Inspection Window.
- Articulated Harness.
- Spacer Foam Back Pad and Leg Pads.
- Quilted Back Pad.
- Cut-in Laterals.
- Stainless Steel Hardware.
- Personalized Monograms.
- Mid-flap Stripes
- Pinstripes.
- Custom Colored Hacky.
- Custom Colored Free-fly Handle.
- BOC, Ripcord or Static-line Main Deployment.
- Custom Colored Pillow Reserve Handle.
- Custom Colored Cut-away Handle.
- Hard Inserts in Pillow Handles.
- Collapsible Main Pilot-chute - Zero-P or F-111.
- Throw-out or Pull-out Main Pilot-chute.
- Type 17 or Type VIII Main Risers.

- Swoop Risers.
- CReW Risers and Toggles.
- Semi-Stowless D-Bag.
- Tie Dye Fabric.
- Magnetic Riser Covers.
- Hook-knife on Mud-flap.

**STUDENT OPTIONS** for the *Wings* Harness/ Container include:

- Spring-loaded Pilot Chute with Chest or Hip Mounted Ripcord.
- AFF Left Side Jumpmaster Handle for Throw-out Pilot Chute.
- AFF Left Side Jumpmaster Handle for Spring-loaded Pilot Chute.
- Static-line for Direct Bag, T/O Pilot-Chute Assist or Spring-loaded Pilot-Chute Assist.
- AAD Inspection Window on Reserve Cover Flap.
- B-12 or Quick Ejector Hardware.

## Chapter 2

# Technical Information

## 2.1 Container Harness Specs:

- Harness is Tested and Approved under **FAA TSO C23d**.
- Main Lift Webbing, Type 7 Mil-W-4088 Tensile Strength, 6000 lbs.
- Leg Straps and Laterals, Type 7 Mil-W-4088 Tensile Strength, 6000 lbs.
- Chest Strap, Doubled Type 8 Mil-W-4088 Tensile Strength, 4000 lbs.  
or
- Chest Strap, Doubled Type 17 Mil-W-4088 Tensile Strength, 2500 lbs.
- Reserve Risers, Type 7 Mil-W-4088 Tensile Strength, 6000 lbs.
- Main Harness Riser Ring, No.1 or No.8 Proof Load, 2500 lbs.
- Optional Adjustable Hip Ring, 555-2 Ring.
- Leg Strap Hardware, PS 22040-1 or Flip-Flop Stainless Steel Adjuster Tensile Strength, 2500 lbs.
- Chest Strap Hardware, PS 70101-1 or 1" Quick Fit Adapter
- Type 17 Mini Risers, Mil-W-4088, Tensile Strength, 2500 lbs.
- Large Ring Main Risers, Type 8 Mil-W-4088, Tensile Strength, 4000 lbs.

## 2.2 Container Assembly Specs:

- Reserve Container and all pertaining parts are Tested and Approved under **FAA TSO C23d**.
- Automatic Activation Device (AAD) set-up with the Control Unit in the Reserve Top Cover Flap or Back Pad.
- 1000 Denier Cordura lined w/ 1/4" Para-pack nylon backed black foam.
- Inboard Reserve and Cutaway Handles.
- 0# Stainless Steel Grommets.
- All Stainless Steel Housings
- .040 Nylon Stiffeners
- .062 Aluminum Reserve Floor Plate
- 500 Denier Cordura Main Deployment Bag.
- Velcro-less Main Toggles.
- Stainless Steel Reserve Ripcord Handle.
- Left Riser Reserve Static Line (RSL).



## Chapter 3

# Tools

Use this page to record which tools are used during the packing of your **SMI, Inc. WINGS Harness/Container System**. Mark which tools, and how many were used for packing and document all tools after work is complete.

## 3.1 Packing Tool Check-List

**Tool used:**

Packing paddle

**Pre-packing** used**Post-packing** used

Shot bag

 used used

.22 Gun cleaning rod

 used used

Pull up cord

 used used

Leverage device

 used used

Temporary pin

 used used

Mechanical Tension Device

 used used

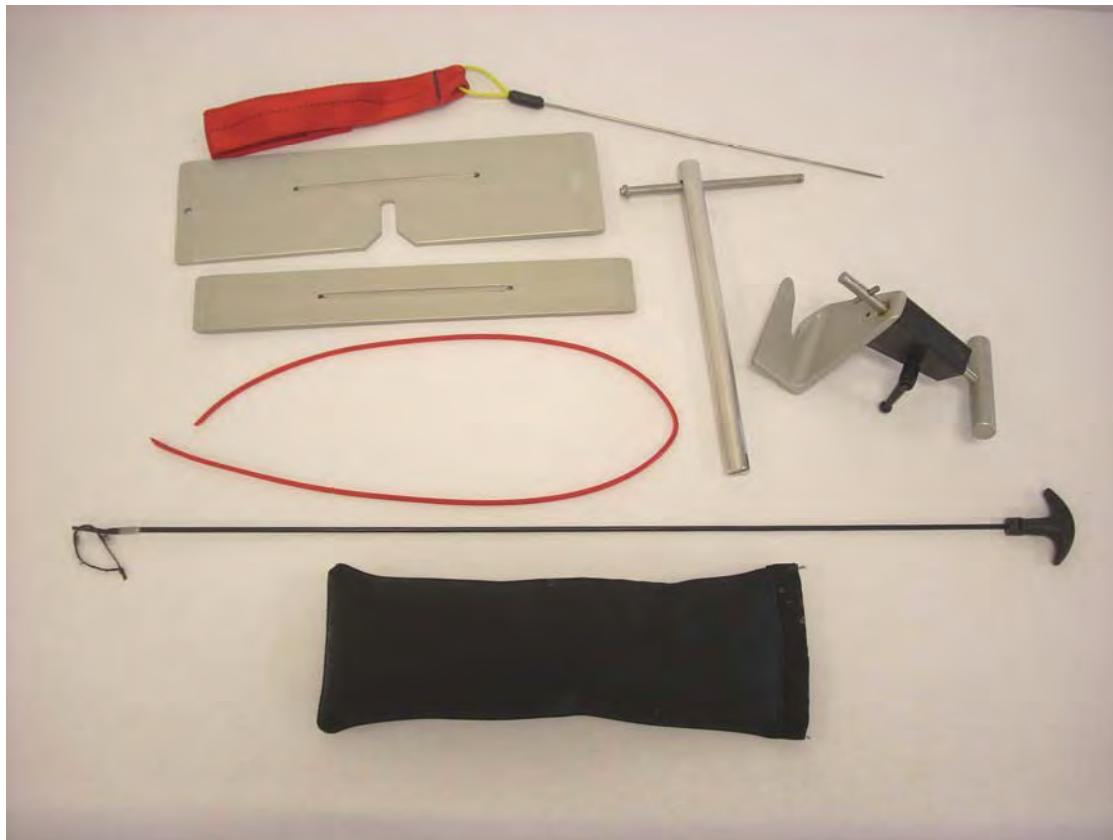
Closing plate

 used used**Additional tools:**

---

 used used

### 3.2 Recommended Packing Tools



SHOT BAG

MECHANICAL TENSION DEVICE

PACKING PADDLE

TENSION PLATE

TEMPORARY PIN

.22 GUN CLEANING ROD

SCREW DRIVER

SCISSORS

PULL-UP CORD

## Chapter 4

# Reserve Parachute

## 4.1 Inspections

### 4.1.1 Harness / Container

- Main Lift Web
  - Optional Adjustable Main Lift Webbing -  
Sizing identification symmetrical (same color).
  - Fold-over is present and sewn.
  - Harness stitching 3 and 4 point stitching is intact, no broken stitches.
  - Selvage edge is intact.
  - Webbing is free of wear and abrasions.
  - Velcro for Main Release Handle and Reserve Ripcord is correct and in place.
  - Main Release and Ripcord Housings are in place and secured.
  - Chest Strap fold-over is present and sewn.
- Laterals
  - Symmetrical (if adjustable)
  - Harness stitching present and correct.
- Leg Straps/ Leg Pads
  - Fold-over is present and sewn.
  - Leg pads have reinforcing bar tacks.
  - Harness stitching is present and correct.
- Reserve Container
  - Grommets secure without burrs or sharp edges.
  - Binding tape is secure and sewn correctly.
  - AAD pocket and window sewn in place for AAD set-up.
  - Floor Plate sewn in place.
  - RSL Ring in place.
- Reserve Risers
  - Symmetrical
  - Harness stitching present and correct.
  - Toggles and Velcro in place.
  - Guide rings present, free of wear, no abrasions

- Reserve Free-Bag and Pilot-Chute
  - Grommets secure without burrs or sharp edges.
  - Bridle bar-tacked.
  - Spring crimped, TSO Label present.
  - Cap and snaps present and secure.
  - Free bag size matches container.
  - Velcro and pocket secure, TSO Label present.
- Reserve Ripcord
  - Handle is correct shape and smooth.
  - No broken strands of cable.
  - Straight pin.
  - Ball & Shank in place.
- Reserve Static-Line (RSL)
  - Bartacks are present.
  - No Corrosion or wear.
  - Velcro secure and in good shape.
  - Release clasp is in working order.
  - Mini Ring present and round in shape.
- Main Container
  - Binding Tape, present and no stitches missing.
  - Closing Loop Retainer present.
  - Grommets, free of burrs, sharp edges.
  - Housings are secure and no sharp edges.
  - Main Parachute Release Handle is clean, free-moving in housings.

## 4.1.2 Reserve Parachute

- Links should be:
  - Clean of corrosion, debris and without cracks or visible damage.
  - No sharp or raw edges.
  - Free moving barrel, which should be able to tighten  $2 \frac{3}{4}$  turns from first engagement of the barrel without resistance.
- Rapide Link Covers
  - Covers should be firmly seated on top of links.
  - Covers tacked in place to prevent slippage.
- Lines
  - No excessive fraying or damage to lines.
  - Continuity is correct.
  - Bartacks sewn correctly on each line.
  - Each line is without twists and correctly installed from link to parachute, passing through the correct slider grommet.
- Slider
  - Slider is without holes, burns, or other damage.
  - Reinforcement tape in place and secure.
  - Grommets seated correctly without burrs or damage.
- Bottom Skin
  - Inspect each cell for any tears, fraying or other damage.
  - Seams and attachment points stitched correctly and evenly.
- Ribs
  - Cross ports without damage.
  - Stitching correct on seams.
  - Reinforcing tape present on loaded ribs.
  - No other damage on entire rib section.
- Top Skin
  - Seams are sewn correctly.
  - Leading edge bar tacks are in place.
  - Control line attachment points are reinforced.
- Stabilizers
  - Slider stops are present and secured.
  - Lines bar tacked to lower edge of stabilizer.
  - Slack is present in stabilizer when line is taut.

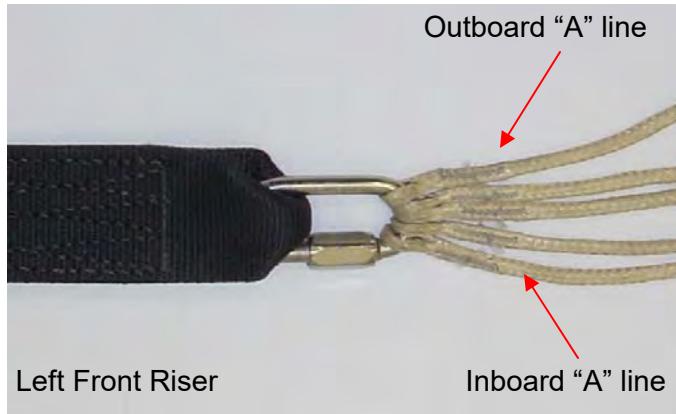
## 4.2 Assembly Instructions

### 4.2.1 Assembly of Reserve Canopy.

#### Assembly of Reserve Canopy using Rapide Links.

After inspecting the Parachute and the **Wings** Harness/Container System, hang or lay the parachute out on the ground with the nose section on the ground and the **Wings** Harness/Container System oriented face down.

When using **Rapide Links**, check to see that bumpers have been installed. See pg.5 for instructions on bumper installation.



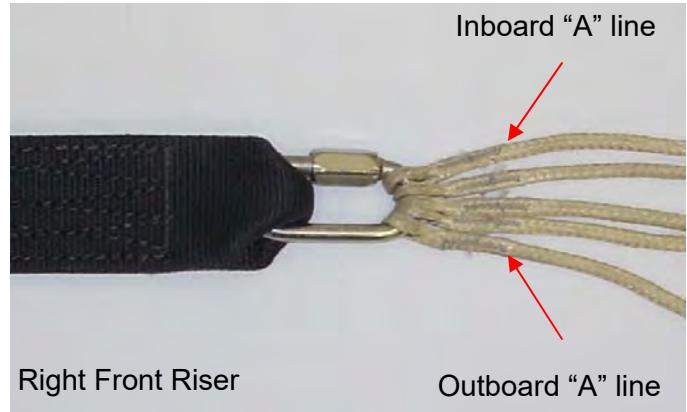
Begin the assembly process by ensuring that all lines are connected to the links correctly with the Outboard "A"-lines on the outside of the link and the Center "A"-line towards the inside of the link, the longer side of the link towards the riser.

Once the continuity of the lines is set, ensure the slider is correctly oriented; the slider should be longer span-wise than chord-wise, with the reinforcing tape of the slider on the side facing the reserve parachute.

Fold the ends of the risers to narrow the top section. Place the link of the Right Front line-set onto the end of the Right Front Riser. **Be careful not to twist the line sets.**

Tighten the barrel finger tight and then an additional  $\frac{1}{4}$  turn with a small wrench until the link is tight. Pull the Bumper down and secure as per the instructions on page 5 of this chapter.

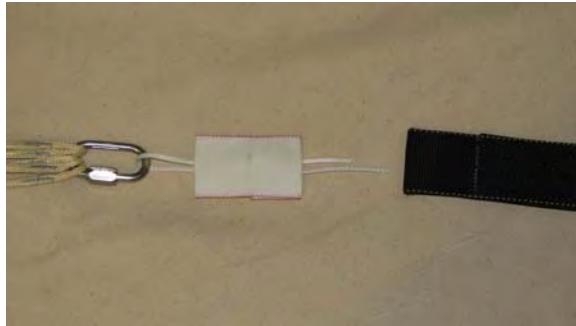
Repeat this step for the Left Front Riser.



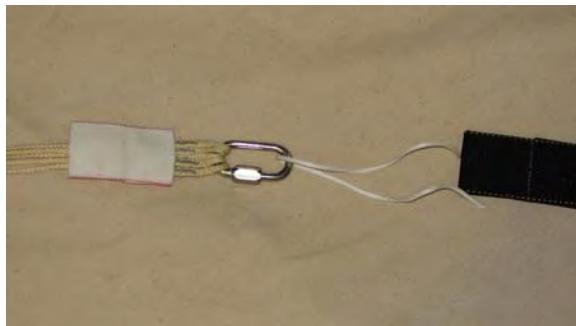
Repeat these steps for the two Rear Risers, ensuring that the Outboard "C" line is on the link first.

## Installing the Slider Bumpers.

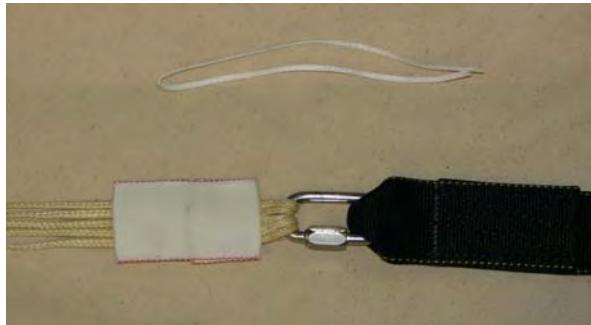
**Follow these Instructions when using Rapide links for the Reserve Parachute.**



With the line group correctly assembled onto the link, run a short piece of line through the closed link and the center of the bumper.



Pull the link through the bumper without twisting or turning the link.



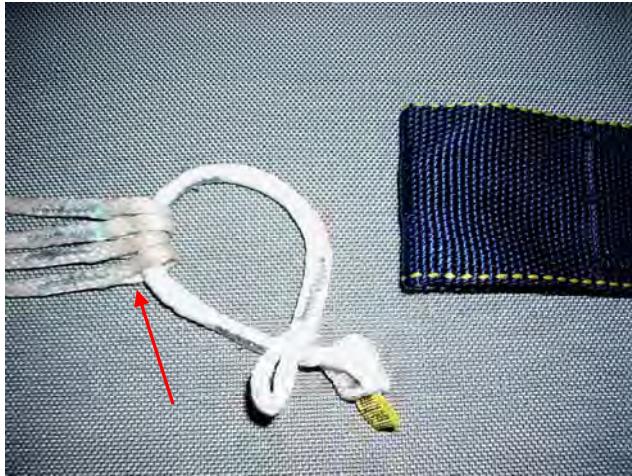
Fold the top of the riser and install the link. Tighten the barrel of the link. Ensure continuity of the line group.



Cinch the bumper over the link and tack into place. The tacking should go through both sides of the bumper and include a surgeon's knot and locking knot. Once tight, cut the loose ends of the tacking thread.

## Assembly of Reserve Canopy using Soft Links.

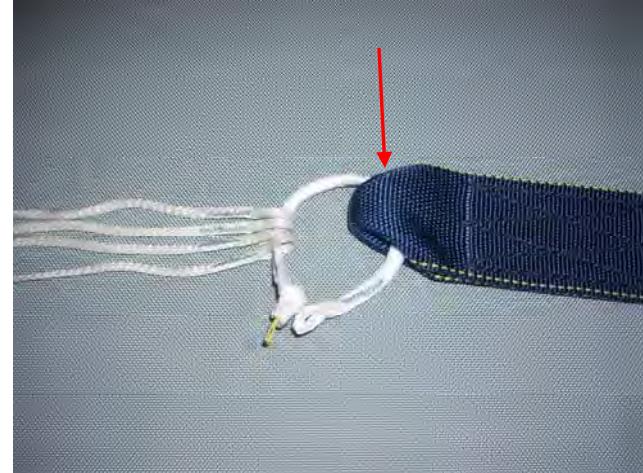
**Always Read and Follow the Instructions provided by the Soft Link manufacturer.**



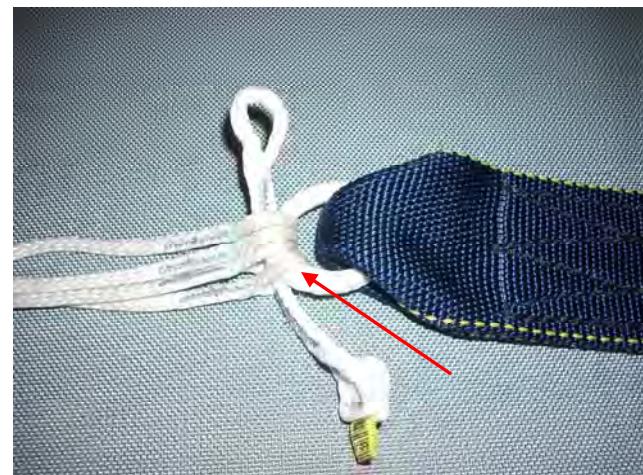
While keeping the continuity of the lines in order pass the Soft Link through each line.



Fold the end of the Reserve Riser as shown.



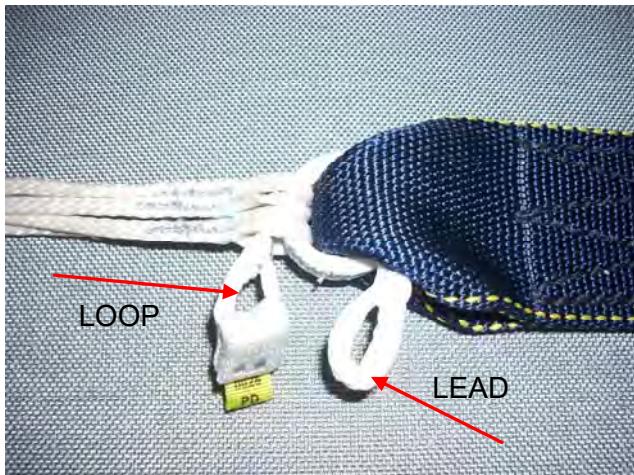
Pass the Soft Link through the Reserve Riser.



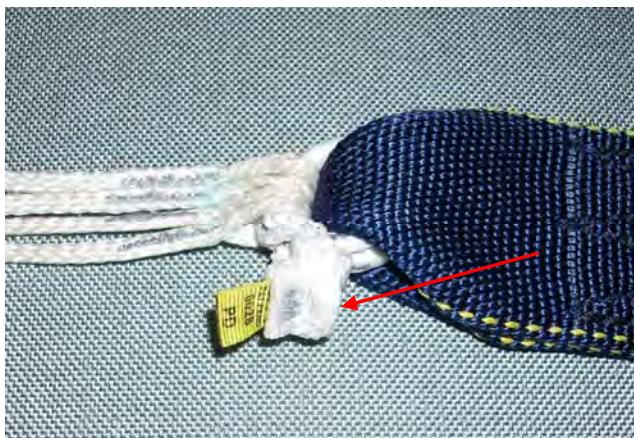
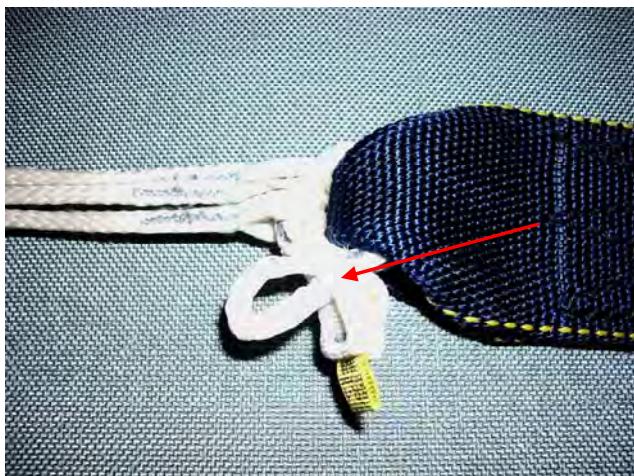
Pass the lead of the Soft Link through the lines again.

Depending on the Soft Link manufacturer you may have to pass it through the Reserve Riser and the lines once or twice again.

Follow the manufacturer's instructions.



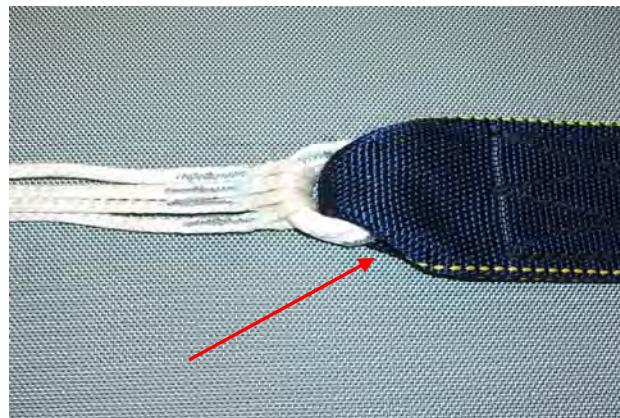
After passing the Soft Link through the lines and the Reserve Riser the proper number of times pass the Soft Link lead through the loop of the other end of the Soft Link.



Pass the Loop end back through the Lead then tighten the knot formed



Should look like this.

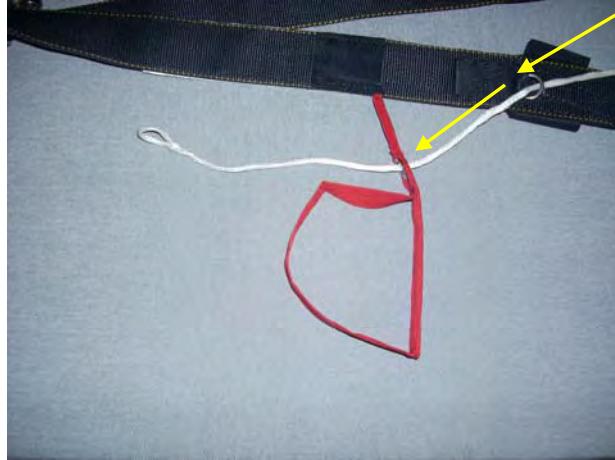


Tuck the Loop and Lead ends under the Reserve Riser.

Hand-tacking may be used to secure it between the Reserve Riser webbing.

#### 4.2.2 Installing the Reserve Steering Toggles onto the Control Lines.

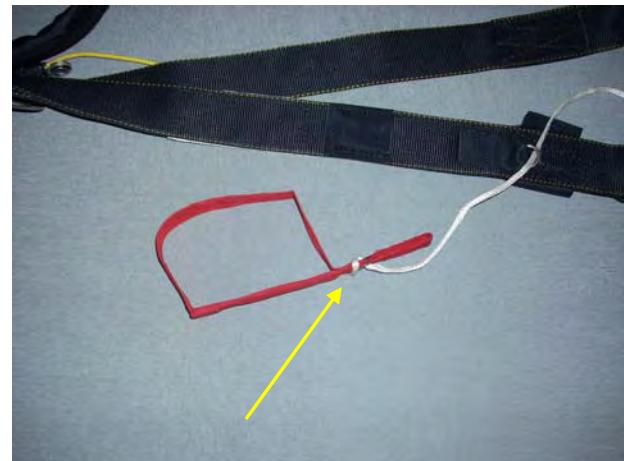
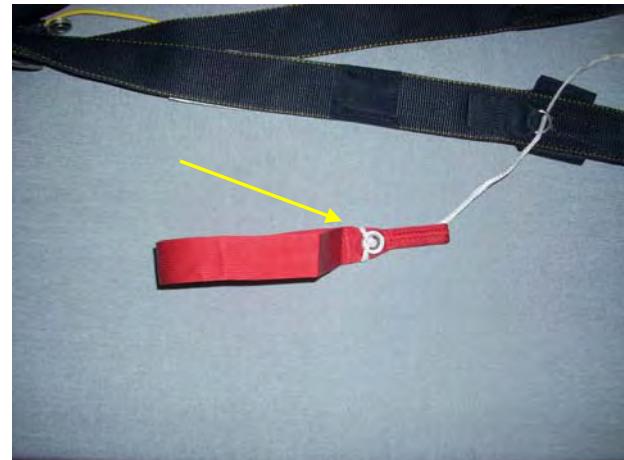
Once the Reserve Parachute is assembled onto the Reserve Risers, pass the Control Line through the appropriate slider grommet and guide ring on the reserve riser.



Pass the Control Line through the grommet from the back side of the toggle.



Pass the loop of the Control Line over the bottom of the toggle.



Tighten the loop up to the grommet.

Repeat for the other toggle.

The parachute brakes are now ready to be stowed.

#### 4.2.3 Assemble the Reserve Static Line. (RSL) Optional

RSL is **RED** for clarity only.



Mate the Pile Velcro of the RSL with the Hook Velcro under the RSL channel on the Left Side of the Yoke. Start at the lower end of the channel and proceed to the top.

Close cover when Velcro has been mated and RSL has been installed.

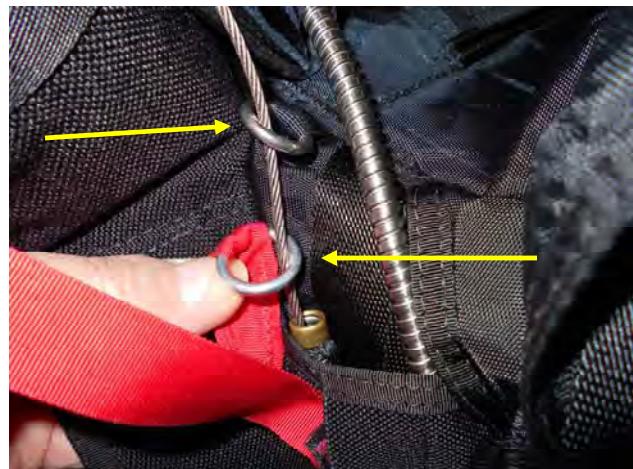


Install the cable of the Reserve Ripcord Handle into the Reserve Ripcord Housing on the left side Main Lift Webbing.

Install the Reserve Ripcord Handle into the Reserve Ripcord Pocket.



Pass the Ripcord Cable through the guide ring of the RSL.



If using the “**Reserve Boost**” pass the Ripcord Cable through the guide ring in the middle of the RSL then through the guide ring on the Container.

Installation is complete.

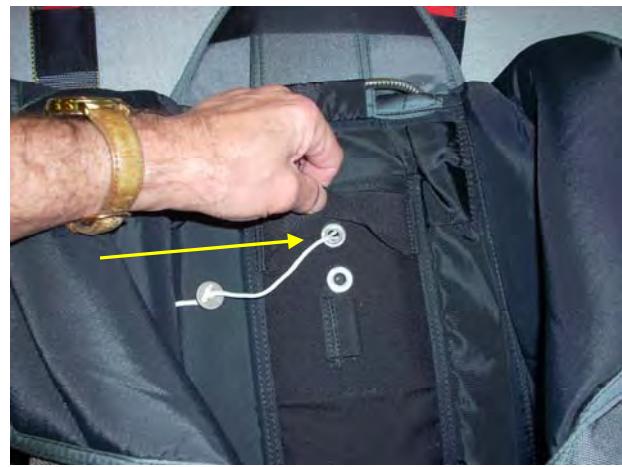
#### 4.2.4 Installing the Reserve Closing Loop.



Pictured above is the Reserve Container with the new dual grommet bottom plate.

This configuration allows the closing loop to be inserted from the top of the first grommet then up from the bottom through the second grommet.

Adjust the length of the closing loop to the proper length if known and tie several overhand knots to the tail to prevent slipping through the washer.



Begin by lifting the elastic covering of the top grommet.

Pass the closing loop down through the top grommet.



Then up through the bottom grommet as shown.



Tuck the excess closing loop under the elastic cover.

Installation of the Reserve Container Closing Loop is complete.

## 4.2.5 Installing the Automatic Activation Device (AAD) Back Pad.

Read the **AAD Owner's Manual** and become familiar with the different components of the unit and details of its use.

Insert the **Processing Unit** into the spandex pocket located on the bottom wall of the reserve container. (fig. 1)

Route the **Release Unit** under the reserve floor plate and through the slot and elastic housing. Stow the excess cable in the spandex pouch. (fig.2)

Route the **Control Unit** through the channel next to the floor plate. Once threaded through this channel, insert the Control Unit into the Back Pad pocket or the Reserve Cover Flap. (fig. 3)

Once secured in the spandex pocket, the display should be clearly visible through the clear plastic window of the back pad.

Stow the excess cable in the channel or spandex pocket.

Close the Velcro pocket on the spandex pouch.

Installation is complete.



**Processing Unit**

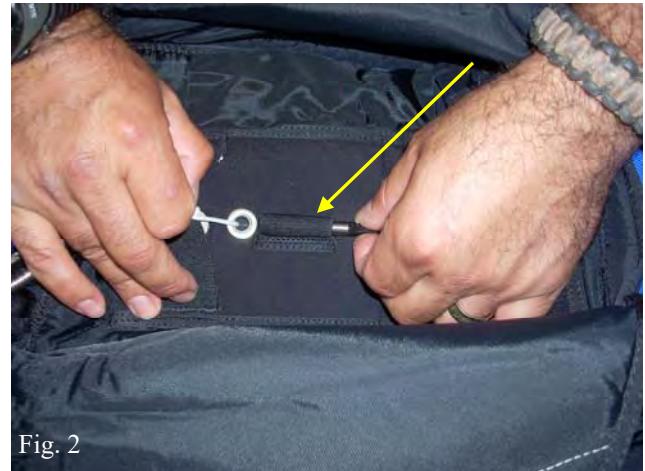


Fig. 2

**Release Unit**



Fig. 3

**Control Unit**



Installation complete.

## 4.2.6 Installing the Automatic Activation Device (AAD) Reserve Top Closing Flap.

Read the **AAD Owner's Manual** and become familiar with the different components of the unit and details of its use.

Insert the **Processing Unit** into the spandex pocket located on the bottom wall of the reserve container. (fig. 1)

Route the **Release Unit** under the reserve floor plate and through the slot and elastic housing. Stow the excess cable in the spandex pouch. (fig.2)

Route the **Control Unit** through the channel next to the floor plate. Insert the Control Unit into the Reserve Top Closing Flap. (fig. 3)

Once secured in the spandex pocket, the display should be clearly visible through the clear plastic window of the Reserve Top Closing Flap.

Stow the excess cable in the channel or spandex pocket.

Close the Velcro pocket on the spandex pouch.

Installation is complete.



**Processing Unit**

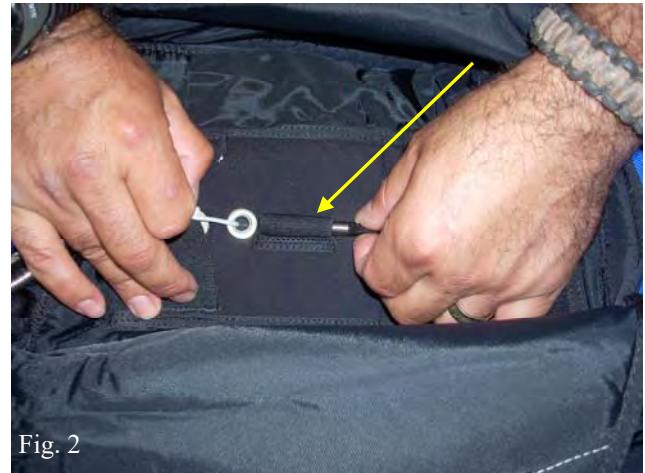


Fig. 2

**Release Unit**



Fig. 3

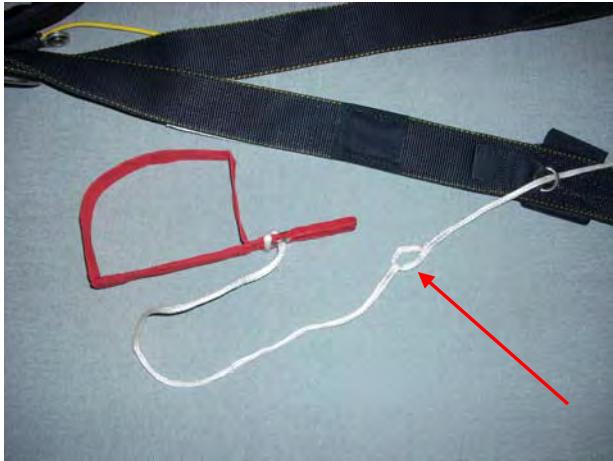
**Control Unit**



Installation complete.

## 4.3 Reserve Packing Instructions

### 4.3.1 Setting the Reserve Canopy Brakes.



After assembling the toggles correctly, pull the control line so that the "cat's eye" of the control line is just below the guide ring located on the riser.



Insert the toggle into the "cat's eye".



Tuck the bottom of the toggle into the keeper.

"S"-fold the excess control line next to the toggle tip.



Wrap and secure the Velcro around the toggle tip.

Repeat steps for the other brake.

### 4.3.2 PRO-Pack Method of the Reserve Parachute.

**BEFORE PROCEEDING: NOTE THE MAXIMUM OPERATING WEIGHT OF THE RESERVE CANOPY AND MARK ON THE DATA CARD!**

Follow the Instructions for stowing the Reserve Brake Toggles on page 12.



With no twists in the risers, place the left front riser line group between the middle and ring finger of the **LEFT** hand.

Place the left rear riser group between the middle and fore finger of the same hand.

Place the control line between the fore finger and the thumb.

Repeat for the opposite hand and line groups.

The slider should be between your body and the parachute.

Walk towards the parachute between the line groups, moving the slider up the lines with you and separate the line groups in your hands.

Upon reaching the parachute, **check that the control lines are not twisted around any other line groups.**

If so, restart this step or perform another continuity check.

Step outside of the lines, group the lines together in one hand and place this group over your shoulder.

For these instructions, the parachute is over the left shoulder. Switch orientation if using the right shoulder.

With the parachute in the correct orientation (nose towards the container, tail away from the container) start counting the leading edge cells out.

Start by slightly turning the parachute over your shoulder, resting the right outside cell against your body.



Count each cell and grasp this group.

Push the nose through the center of the parachute and pull it briskly back out.

Place the tip of the leading edge between your knees and hold the material in place.



Starting with the A-line group, count the 3 right cells between the A- and B- line attachment points and flake the material away from the center of the parachute.



Count the 3 right cells between the B- and C- line attachment points and flake the material away from the center of the parachute.



Count and flake the 3 right cells between the C- and D- lines.

Count and flake the 3 right cells between the D- lines and the Control Lines / tail.

Repeat this process on the other side of the canopy.

Separate the nose, one half on the side, center cell in the middle and second half on the other side.



Raise the canopy so that it is parallel to the floor and gently lay it on the floor.



Pull tail down carefully to just above slider and cocoon the parachute by wrapping the tail around the flaked cells.

**DO NOT** include the nose in this cocoon. The cocoon should roughly be the same width as the free bag.



Carefully squeeze out any trapped air.



“S”-fold the three (3) nose cells under the corresponding side of the parachute.



“S”-fold lower portion of canopy up to the trailing edge of the parachute and place under the trailing edge.



Place the Free-bag under the canopy.



“S” -fold the canopy on top of itself.



Fold the canopy back over itself.



Tuck the canopy into the corners of the Free-bag.



"S"-fold the canopy over onto itself once again.



Use the Free-bag bridle to hold the safety stow in place.



Smooth out and make sure that the canopy is no wider than the Free-bag.



Follow the center seam to the end.



Grasp "ear" and "S"-fold it on top of itself.



Roll the center material to the depth of the Free-bag. Place your knee on to hold in place.

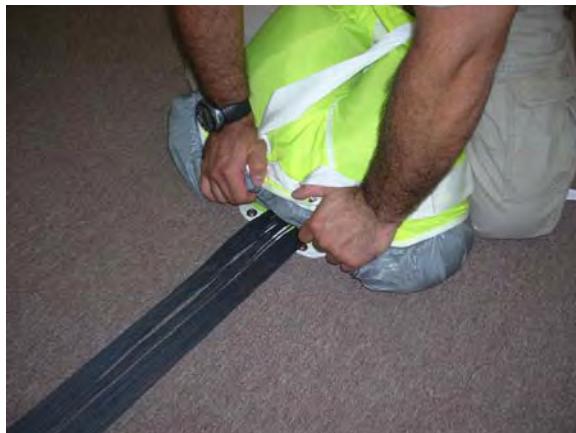


Straighten and smooth out the "ear" formed after following the center seam.



Place into the Free-bag.

Repeat the other side "ear".



Fold the Free-bag over the canopy in order to close with the safety stow.



Use two (2) line bights @ 1 1/2" -2" to secure the Free-bag closed.



Begin to stow the rest of the reserve parachute lines into the pocket on the Free-bag.



Alternate back and forth until lines are into the pocket and Reserve Risers are to the Free-bag.



The Reserve Free-bag ready to be placed into the Reserve Container.

#### 4.4 Closing the Reserve Container.



Check to be sure that the AAD cutter is installed correctly and that the closing loop goes through the cutter.

Carefully lift the Free-bag.

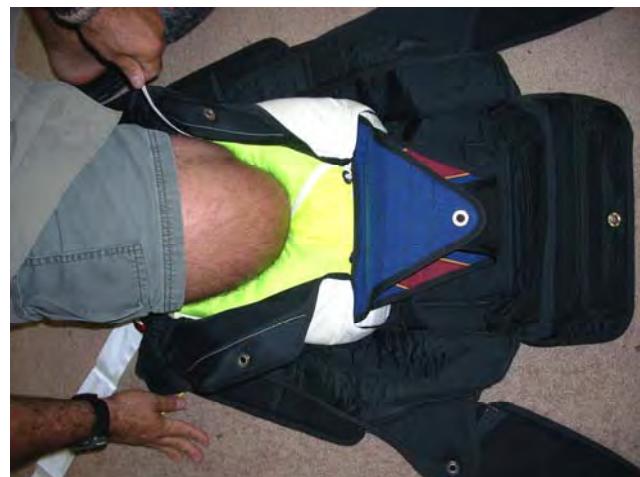


Flip the Free-bag over to the bottom of the Reserve Container.

Do **NOT** twist the lines.



Thread a pull-up cord through the closing loop and the center grommet of the Free-bag.



Use a knee to form a "nest" for the Reserve Pilot chute Spring.



Bring the Bridle towards the bottom of the Reserve Container.

"S"-fold the Bridle into 6"-8" folds (depends on the width of the Free-bag) leaving about 3' of Bridle remaining.



Tuck the folded Bridle under the Side Flaps.

Do **NOT** tuck more than 1" on each side.



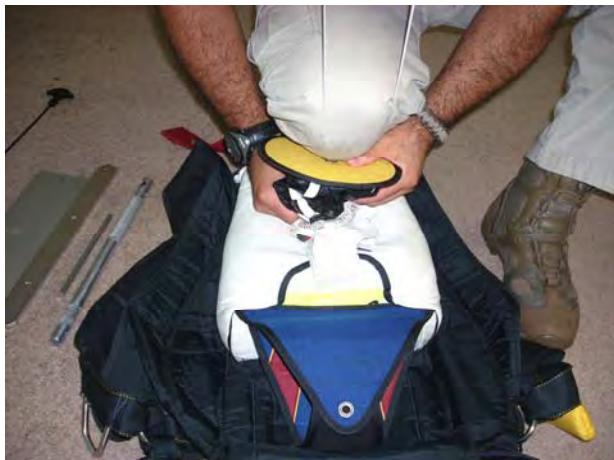
Close the Left Side Flap then the Right Side Flap.  
Secure with a temporary pin.



"S"-fold the remaining Bridle as shown.



Use a rifle cleaning rod to pull the pull-up cord through the pilot chute.

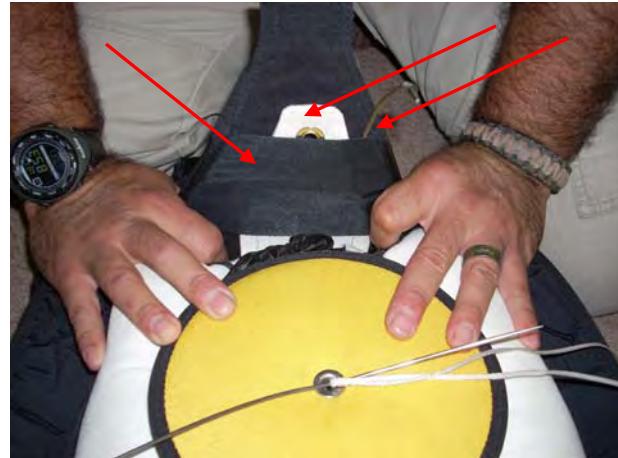


While compressing the Pilot chute be sure to keep all of the pilot-chute material folded into the spring and secure with a temporary pin.



Check that the RSL is properly installed.

**The Ripcord cable must be through the ring of the RSL and the guide ring of the Wings and be above the cutaway housing.**



Be sure that the **Top Closing Flap** and the **Ripcord Pin** are under the tape of the **Top Cover Flap** as shown.



Close the Top Flap and secure with a temporary pin.



Close the Bottom Flap and secure with the Ripcord Pin.



Follow all applicable Rules for Documenting and Sealing the **Reserve Container**.

**COUNT THE TOOLS USED DURING THE PACKING.**



Tuck the Top Reserve Cover Flap into the Bottom Reserve Flap pocket.

The **Wings** Harness/ Container ready for the Main Parachute to be packed.

## 4.5 Closing with the M.A.R.D. *“Reserve Boost” RSL.*

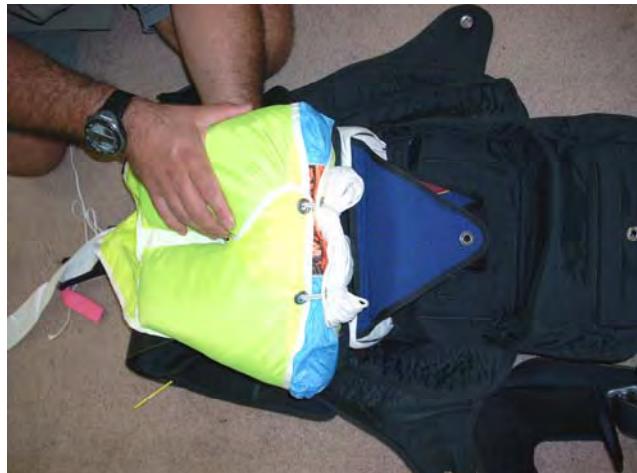


Check to be sure that the AAD cutter is installed correctly and that the closing loop goes through the cutter.

Carefully lift the Free-bag.



Thread a pull-up cord through the closing loop and the center grommet of the Free-bag.



Flip the Free-bag over to the bottom of the Reserve Container.

Do **NOT** twist the lines.



Use a knee to form a “nest” for the Reserve Pilot chute Spring.



Bring the Anti-twist flap over towards the bottom of the Container.



"S"-fold the Bridle into 6"-8" folds (depends on the width of the Free-bag) to the **"Reserve Boost"** modification.

Fold the Bridle back towards the top of the container.



Check to be sure that the RSL for the **Reserve Boost** is clear of the Reserve Riser and the Cutaway Housing.

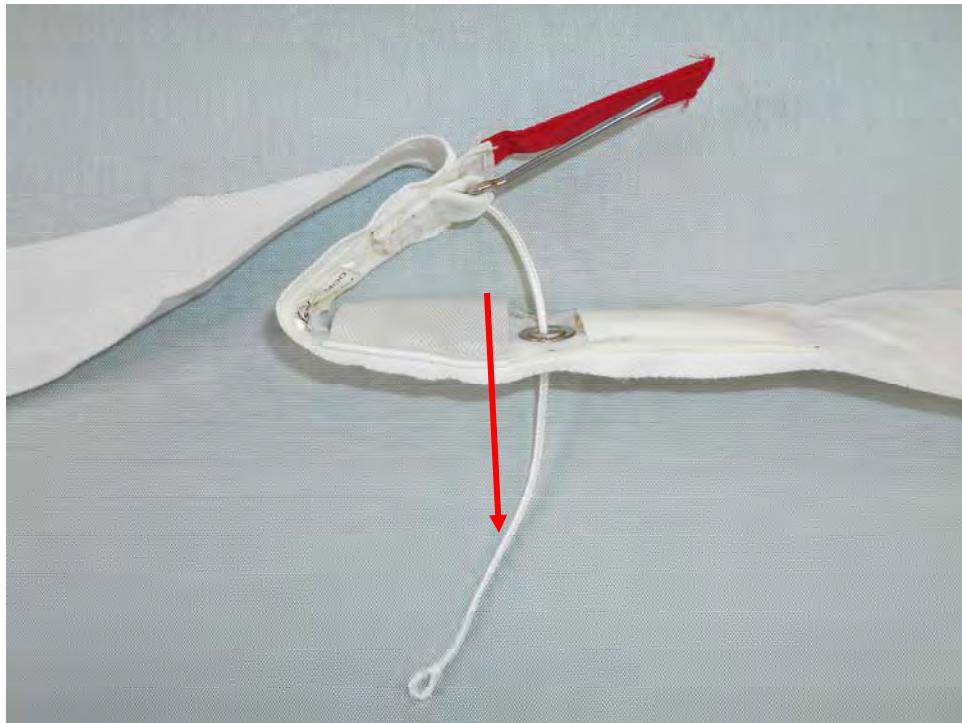


Tuck the folded Bridle under the Side Flaps.

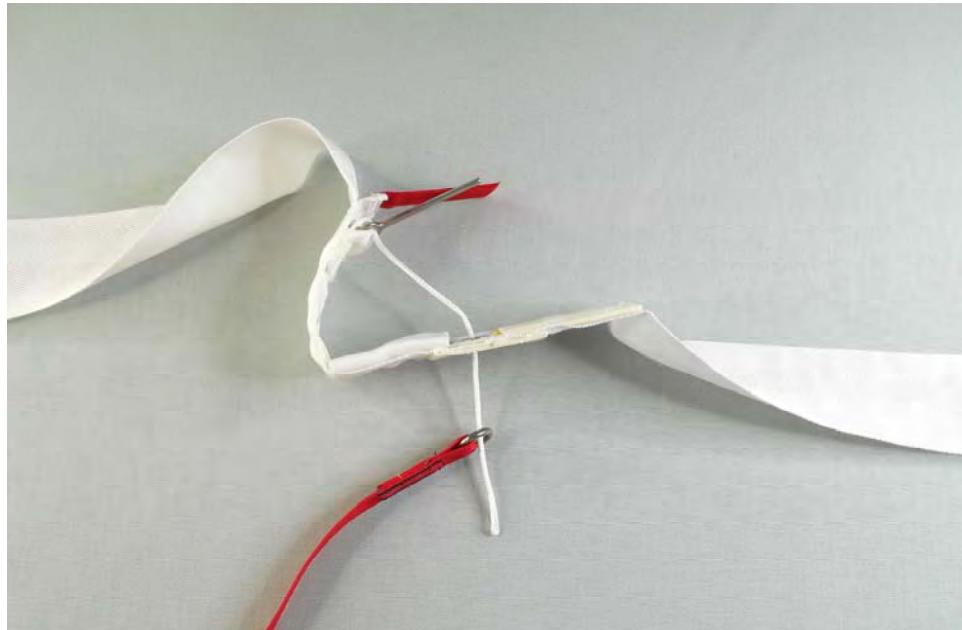
Do **NOT** tuck more than 1" on each side.

Keep the Bridle to the left side of the center of the Free-bag.

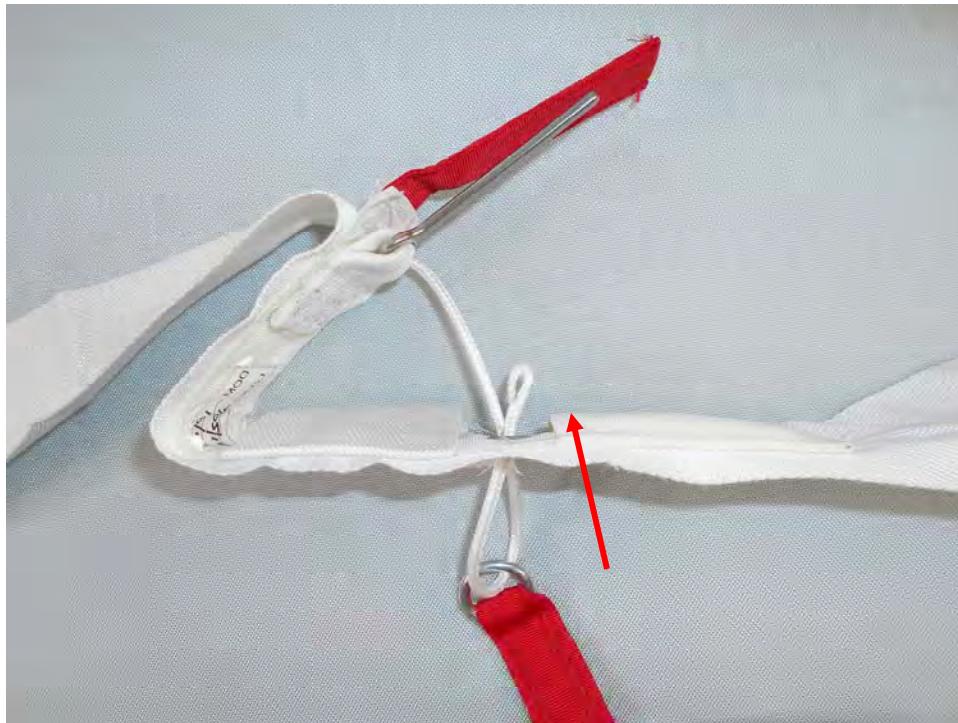
"Arm" the M.A.R.D. **"Reserve Boost"** at this time.



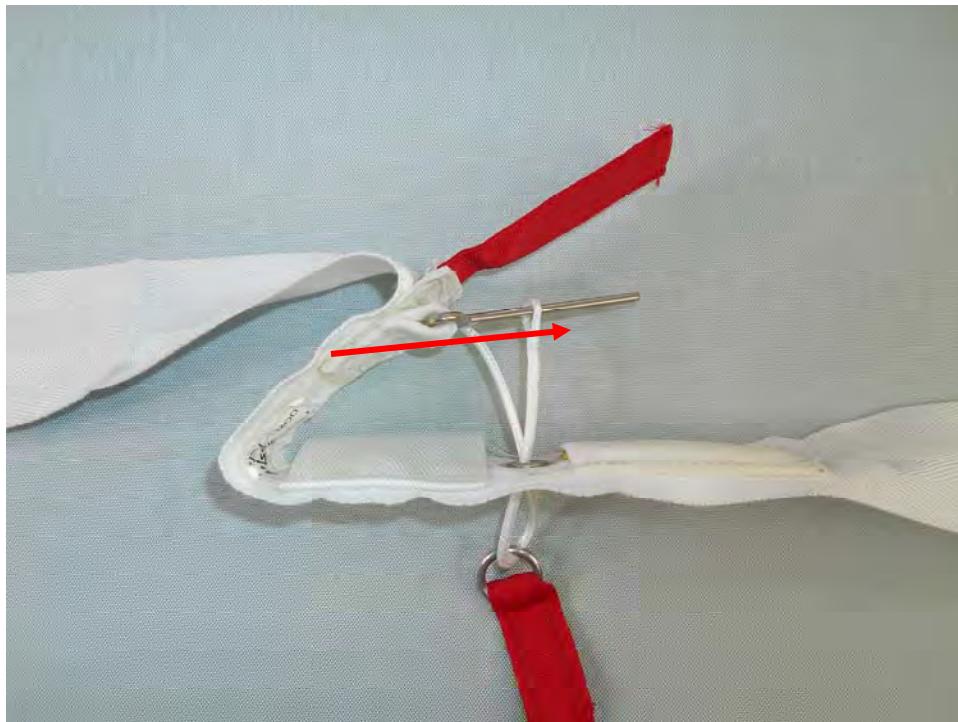
"Arm" the M.A.R.D. "**Reserve Boost**" at this time by passing the Spectra Line Loop down through the #0 grommet.



Pass the Spectra Line through the mini ring of the M.A.R.D. "**Reserve Boost**" RSL.



Loop the Spectra Line back up through the #0 grommet of the Reserve Freebag Bridle.



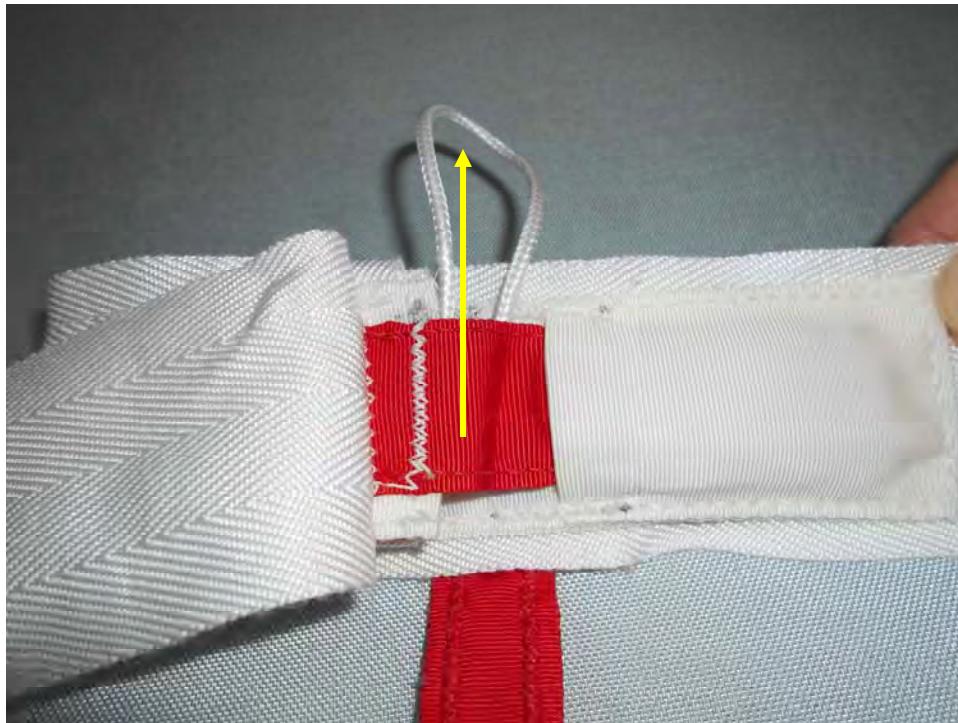
Slide the Long Pin through the loop on the end of the Spectra line.



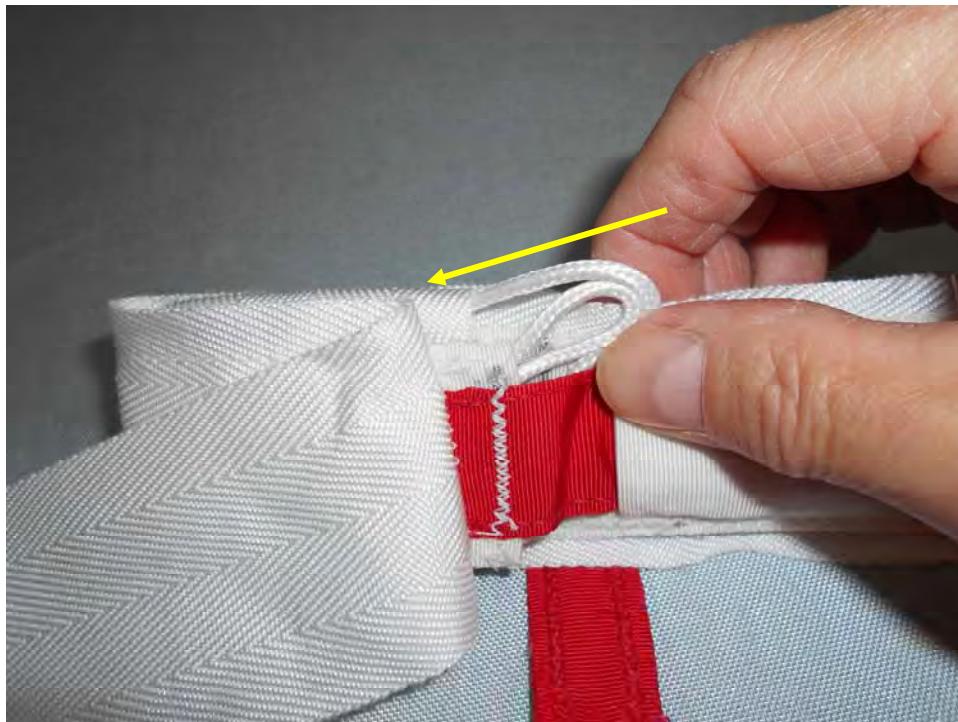
Stow the long pin into the channel under the tuck tab flap. Be certain that it is in its own channel of T-III tape (yellow).



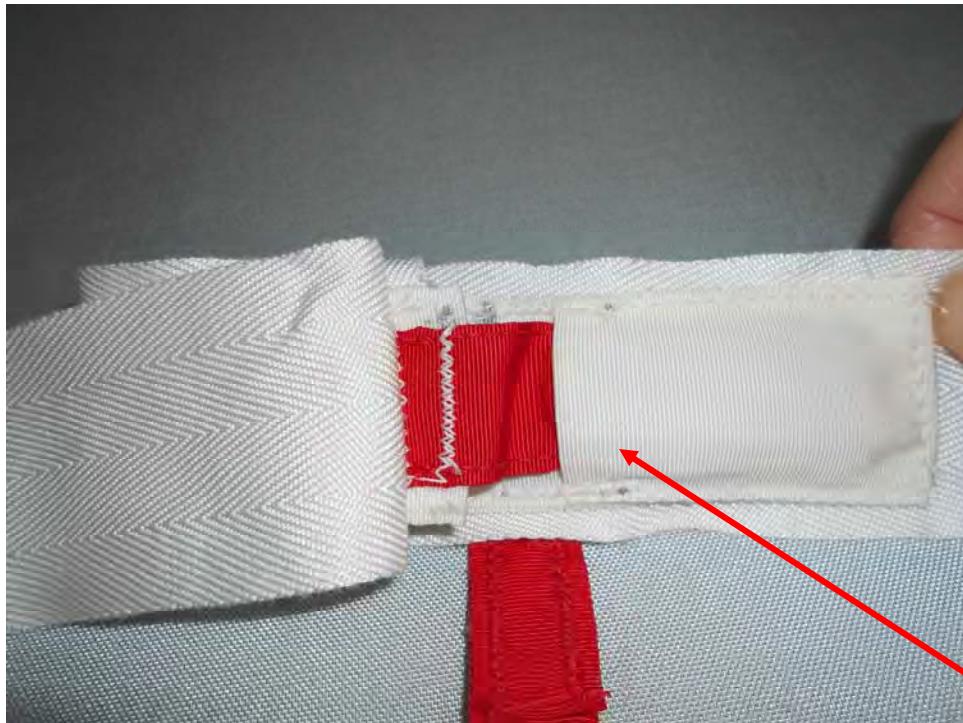
Tuck the stiffened T-III Tab (red) into the tuck flap on top of the Long Pin Channel.



Pull any excess Spectra line up through the grommet.



Stow any excess Spectra line into the pocket shown.



Should look like this.





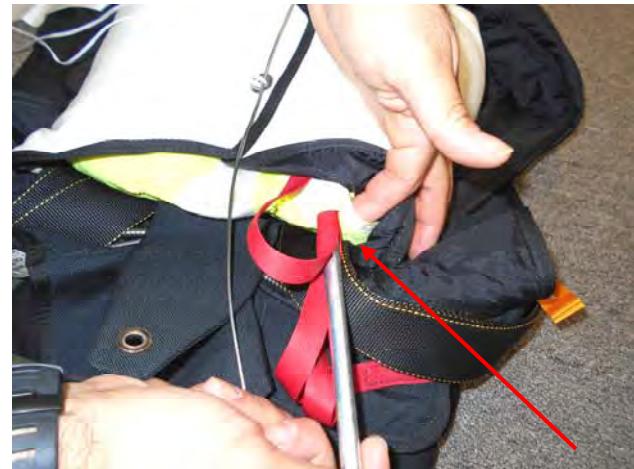
**Reserve Boost** armed and ready to close.



Close the side flaps. Secure with a temporary pin.



"S"-fold the remaining Bridle as shown.



Tuck any excess RSL into the channel pocket on the top left side of the free-bag.

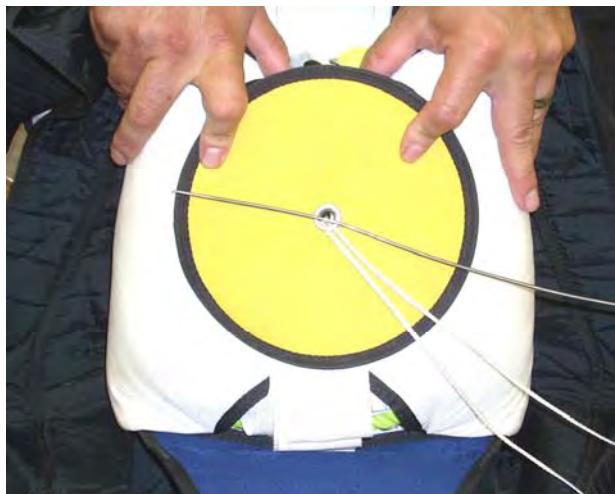
The M.A.R.D. "**Reserve Boost**" is armed. Continue to close the Reserve Container.



Pull the pull-up cord through the Pilot chute.



Center the Pilot-chute over the Side Flap grommets.



While compressing the Pilot-chute be sure to keep all of the pilot-chute material folded into the spring and secure with a temporary pin.



Make sure the Top Closing Flap is under the retaining tape of the Top Pin Cover Flap. Close and secure with a temporary pin.



Close and secure the Bottom Closing Flap with the Reserve Ripcord Pin.



Tuck the Top Reserve Cover Flap into the Bottom Reserve Flap pocket.

Follow all applicable rules for Documenting and Sealing the Reserve Container.

**COUNT THE TOOLS USED DURING PACKING.**

## Chapter 5

# Main Parachute

## 5.1 Main Parachute Inspection

- Links should be:
  - Clean of corrosion, debris and without cracks or visible damage.
  - No sharp or raw edges.
  - Free moving barrel, which should be able to tighten 2  $\frac{3}{4}$  turns from first engagement of the barrel without resistance.
- Rapide Link Covers
  - Covers should be firmly seated on top of links.
  - Covers tacked in place to prevent slippage.
- Lines
  - No excessive fraying or damage to lines.
  - Continuity is correct.
  - Bar tacks sewn correctly on each line.
  - Each line is without twists and correctly installed from link to parachute, passing through correct slider grommet.
- Slider
  - Slider is without holes, burns or other damage.
  - Reinforcement tape in place and secure.
  - Grommets seated correctly without burrs or damage.
- Bottom Skin
  - Inspect each cell for any tears, fraying or other damage.
  - Seams and attachment points stitched correctly and evenly.
- Ribs
  - Cross ports without damage.
  - Stitching correct on seams.
  - Reinforcing tape present on loaded ribs.
  - No other damage on entire rib section.
- Top Skin
  - Seams are sewn correctly.
  - Leading edge bar tacks are in place.
  - Control line attachment points are reinforced.
- Stabilizers
  - Slider stops are present and secured.
  - Lines bar tacked to lower edge of stabilizer.
  - Slack is present in stabilizer when line is taut.

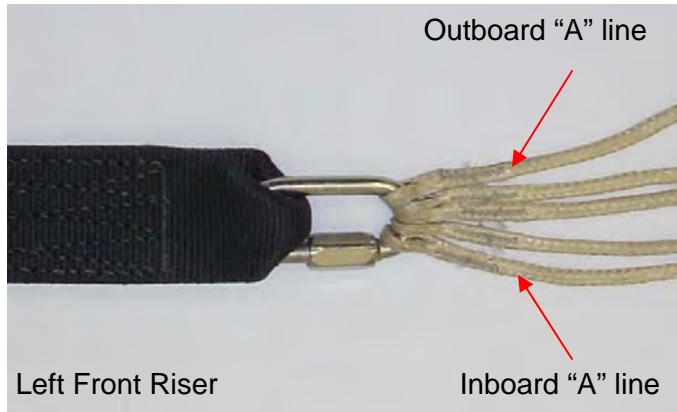
## 5.2 Assembly Instructions

### 5.2.1 Assembly of Main Canopy.

#### Assembly of Main Canopy using Rapide Links.

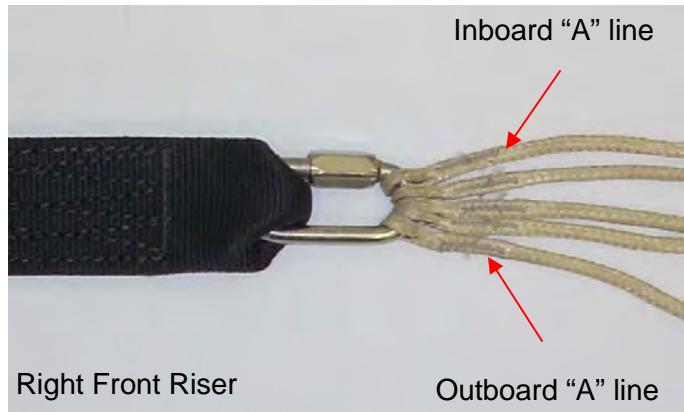
After inspecting the Parachute and the **Wings** Harness/Container System, hang or lay the parachute out on the ground with the nose section on the ground and the **Wings** Harness/Container System oriented face down.

When using Rapide links, check to see that bumpers have been installed. See pg.3 for instructions on bumper installation.



Fold the ends of the risers to narrow the top section. Maintain line continuity and place the link of the Right Front line-set onto the end of the Right Front Riser.

Tighten the barrel finger tight and then an additional  $\frac{1}{4}$  turn with a small wrench until the link is tight. Pull the Bumper down and secure as per the instructions on pg. 3 of this chapter.



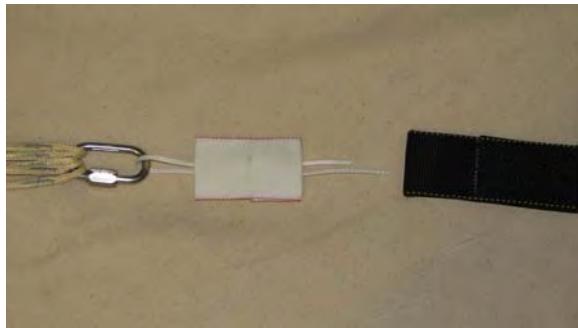
Begin the assembly process by ensuring that all lines are connected to the links correctly with the Outboard "A"-lines on the outside of the link and the Center "A"-line towards the inside of the link, the longer side of the link towards the riser.

Once the continuity of the lines is set, ensure the slider is correctly oriented; the slider should be longer span-wise than chord-wise, with the reinforcing tape of the slider on the side facing the main parachute.

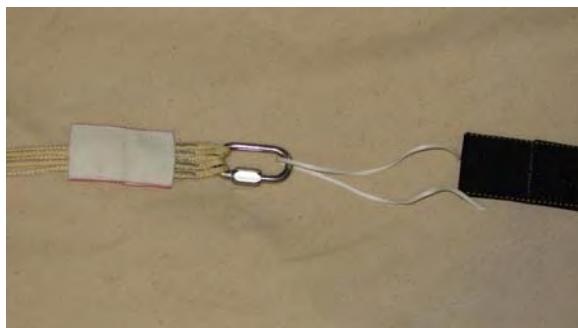
Repeat these steps for the two Rear Risers, ensuring that the Outboard "C" line is on the link first.

## Installing the Slider Bumpers.

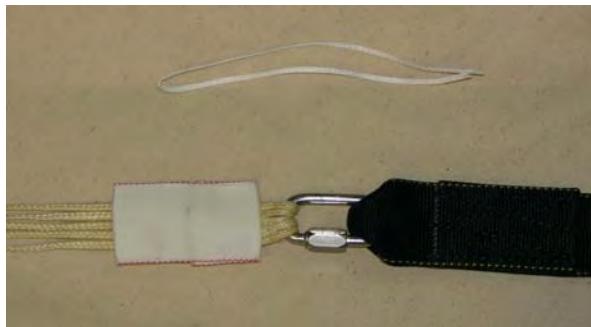
**Follow these instructions when using Rapide links for the Reserve Parachute.**



With the line group correctly assembled onto the link, run a short piece of line through the closed link and the center of the bumper.



Pull the link through the bumper without twisting or turning the link.



Fold the top of the riser and install the link. Tighten the barrel of the link. Ensure continuity of the line group.



Cinch the bumper over the link and tack into place. The tacking should go through both sides of the bumper and include a surgeon's knot and locking knot. Once tight, cut the loose ends of the tacking thread.

## Assembly of Main Parachute using Soft Links.

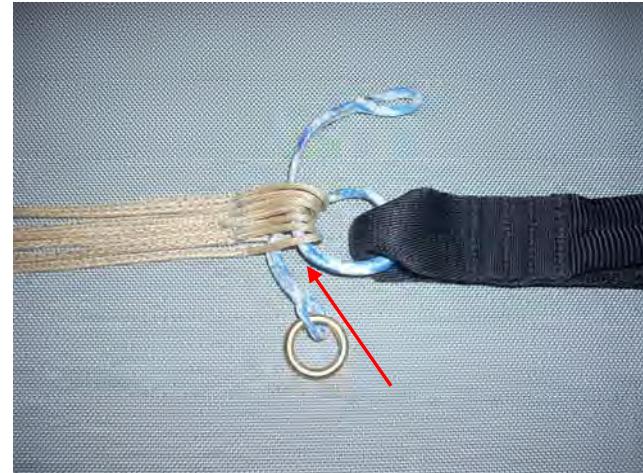
**Always Read and Follow the Instructions provided by the Soft Link manufacturer.**



While keeping the continuity of the lines in order pass the Soft Link through each line.



Fold the end of the Main Riser as shown.  
Pass the Lead of the Soft Link through the Riser.



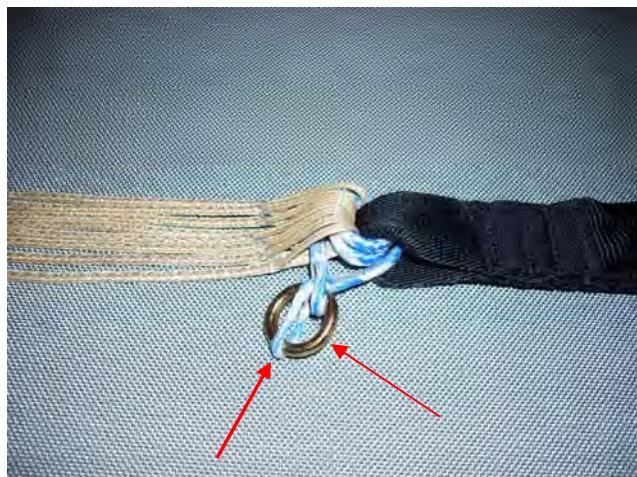
Pass the lead of the Soft Link through the lines again.

Depending on the Soft Link Manufacturer you may have to pass it through the Main Riser and the lines once or twice again.

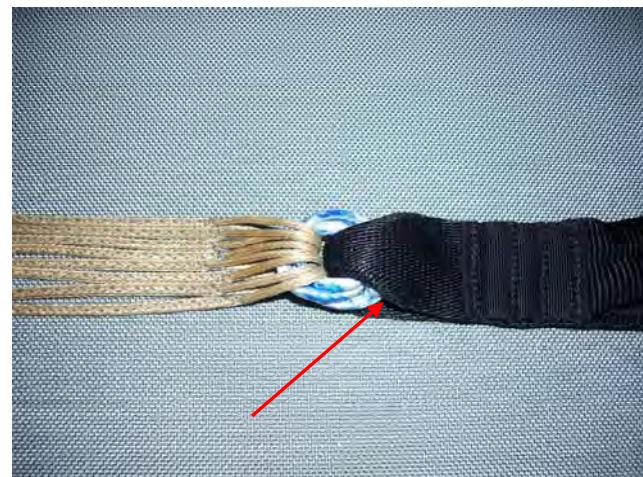
Follow the manufacturer's instructions.



After passing the Soft Link through the lines and the Main Riser the proper number of times, pass the Soft Link lead through the loop of the other end of the Soft Link.



Pass the Ring through the Lead then tighten the knot formed



Tuck the Loop and Lead ends under the Main Riser.

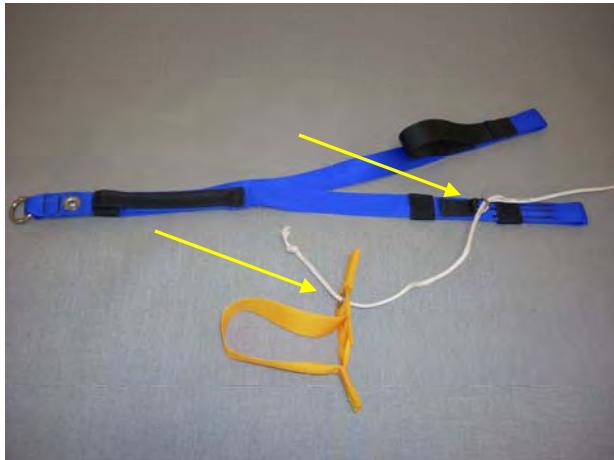
A hand-tack may be used to secure it under the Main Riser.



Should look like this.

### 5.3 Installing the Main Steering Toggles onto the Control Lines.

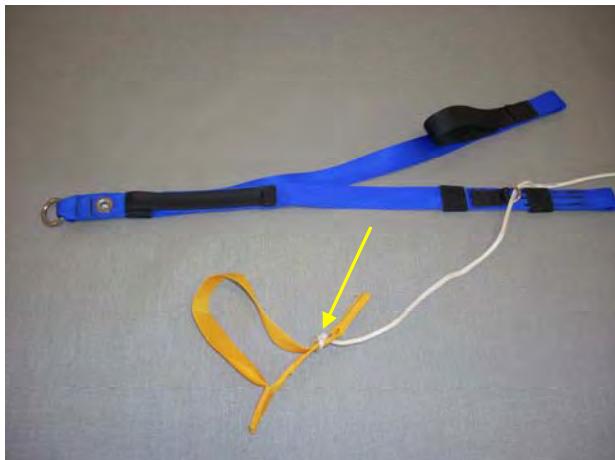
Once the Main Parachute is assembled onto the Main Risers, feed the Control Line through the appropriate slider grommet and guide ring on the Main Riser.



Feed the Control Line through the rear of the toggle.



Pass the loop of the Control Line over the bottom of the toggle.



Tighten the loop up to the grommet.

Repeat for the other toggle.

The parachute brakes are now ready to be stowed.

## 5.4 Attaching the Deployment Bag to the Canopy.



Open the Rapide Link of the Deployment Bag and place over the ring of the Main Canopy.

Make sure that the security line and kill-line are straight and not tangled.



Tighten the Rapide Link finger tight then use a small wrench to turn the barrel 1/4 turn. Do **NOT** over-tighten the link.



The Deployment Bag is now attached and ready to have the rubber bands or tube stows attached.

Use the correct size rubber band or tube stow as per the canopy manufacturer's instructions.

## 5.5 Installation of the Main Canopy Release Handle.

Inspect the ends of the yellow cables of the Release Handle for sharp edges.

Ends should be smooth so as to not snag the Type IIA line loop of the risers.



Begin by feeding the shortest yellow cable into the short cutaway housing.



Feed the other yellow cable into the other cutaway housing.



Mate the Hook Velcro of the Main Canopy Release Handle to the Pile Velcro in the pocket on the Right Main Lift Webbing.

## 5.6 Attaching the 3-Ring Risers.



Pass the large ring of the Riser through the large ring of the Harness.



Pass the small ring of the Riser through the large ring of the Riser.



Pass the Type IIA loop through the small Riser ring and into the grommet.

**CAUTION:** Be sure that the loop goes through only the small ring.



From the back side of the Riser, feed the loop through the housing grommet.

Feed the yellow cable through the loop.

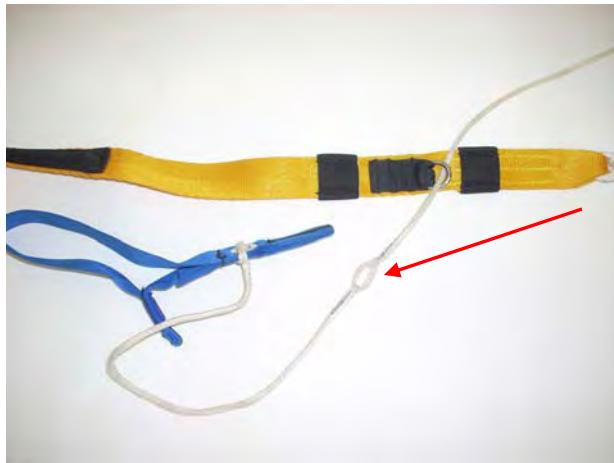


Stow the yellow cable into the channel on the backside of the Riser.

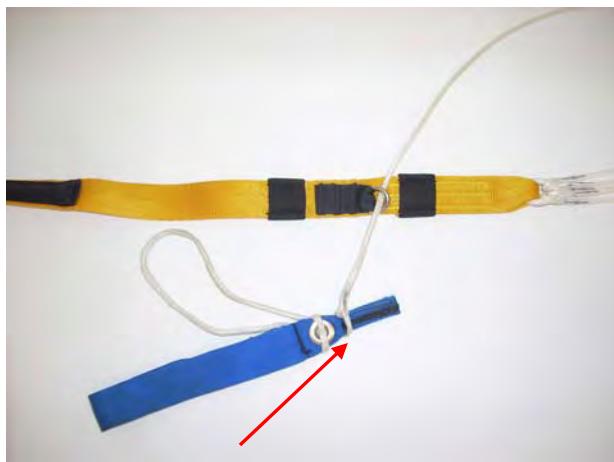


Attach the Shackle to the Reserve Static Line (RSL) ring.

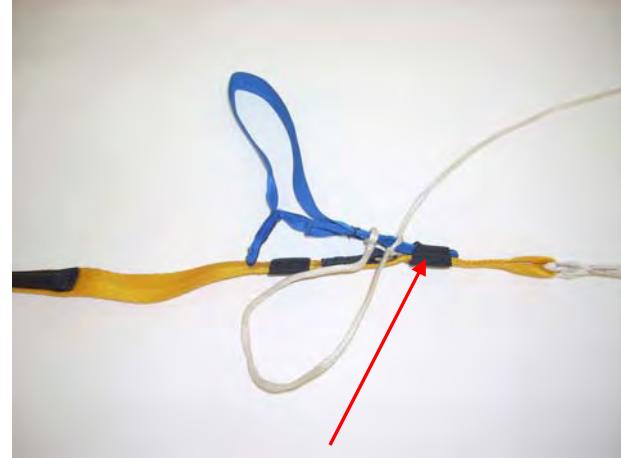
## 5.7 Stowing the Main Steering Toggles.



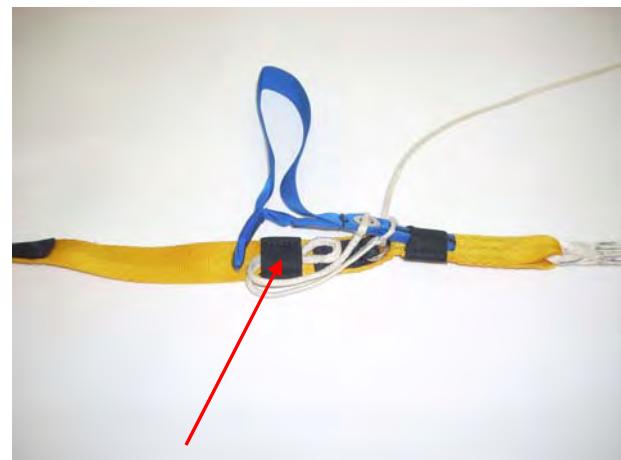
Begin by pulling the steering line until the "cat's eye" is just through the guide ring.



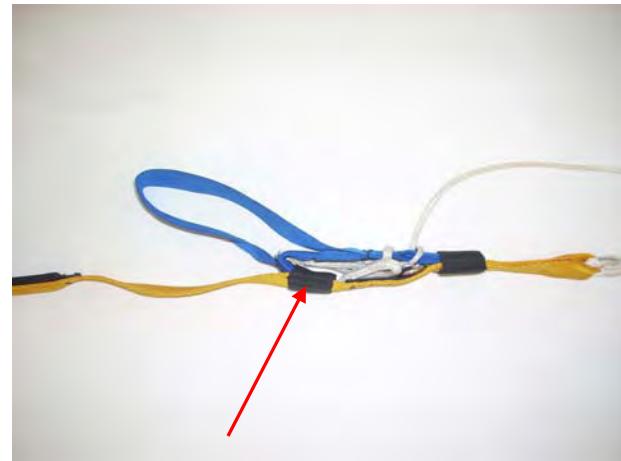
Pass the toggle through the "cat's eye" of the steering line.



Tuck the toggle into the elastic keeper.



Stow the excess brake line under the elastic keeper.



Tuck the toggle tail into the elastic keeper.

## 5.8 Flat Pack Method of the Main Parachute.

Read and follow the instructions for stowing the Main Steering Toggles on pg 10.



Grasp the rear line and control line groups in the **LEFT** hand and the front line groups in the **RIGHT** hand.

Walk towards the parachute, leaving the slider at the top of the risers, separating the line groups as you go.

Once at the stabilizer edge, shake the parachute from side to side.

While maintaining control of the line groups, lay out the parachute in front of you and away from the harness/container assembly.

Maintaining line tension will help in later steps.



Walk to the top of the canopy and:  
Count and flake out the cells leading edges.  
Count and flake out the B-line seams.  
Count and flake out the C-line seams.  
Count and flake out the D-line seams.  
Count and flake out the control lines and the remainder of the trailing edge of the canopy.



With tension on the A-line groups, fold the leading edge under the A-line group.



With tension on the A- and B-line groups, fold the B- line section on top of the A-lines.



With tension on the B- and C-line groups, fold the C- line section on top of the B-lines.



With tension on the C- and D-line groups, fold the D- line section on top of the C-lines.



Place the control line group on top of the line groups.

**Follow the instructions on page 10 for stowing the Main Steering Toggles.**



Separate the tail section, place the right control lines and material on the right side of the pack job, and the left control lines and material on the left side of the pack job.

Bring the slider up to the slider stops and quarter the slider.

Fold the material between the control lines out and away from the center of the pack job.



While keeping the control lines in the center of the pack job, begin wrapping the tail around the canopy. Make sure to include the slider.



Compress the air out of the parachute and continue cocooning the canopy until it is slightly wider than the deployment bag.



Start "S"-folding the parachute. The first "S"-fold should be approximately 1/3 of the canopy material.



Fold the remaining material on top of the first "S"-fold.

**If using a Collapsible Pilot Chute "cock" the system now.**



Cock the pilot-chute before placing into the Deployment Bag.

While placing a foot on the bridle near the top of the canopy, hold the pilot chute handle or hacky firmly and pull until the slack has been removed from the bridle and the pilot chute is extended to the length of the inside 3/8" tape.



Pull the pilot-chute handle until you see the mark in the window and the line is taut.

Place one corner of the canopy stack into the Deployment Bag.



Insert the other corner of the canopy into the other corner of the Deployment Bag.



With the lines from the center of the folded canopy, Stow the first line bight through either of the center grommet stow bands.

Stow another line bight through the other center grommet stow band.



Stow the 3rd and 4th line bights using the remaining two grommet stow bands.



Continue stowing the lines, alternating back and forth, until approximately 12" remain.



Open the Main Container and check for debris, twigs and pebbles.

Attach the Pull-up Cord to the Closing Loop from the #0 grommet at the top of the Main Container.



Lay the Main Risers into the trough beside the Reserve Container. Be sure to place the Main Risers on top of the Reserve Riser cover flap as shown.



Lift the Main Deployment Bag over the container without twisting the lines and place into the Main Container with the lines towards the Bottom Flap of the container and the Bridle towards the Reserve container.



Tuck the Riser Cover into the pocket as shown.



With the Bridle placed at the top right corner, close the **Bottom Main Flap** over the D-bag and feed the closing loop through the grommet of the Main Bottom Flap.



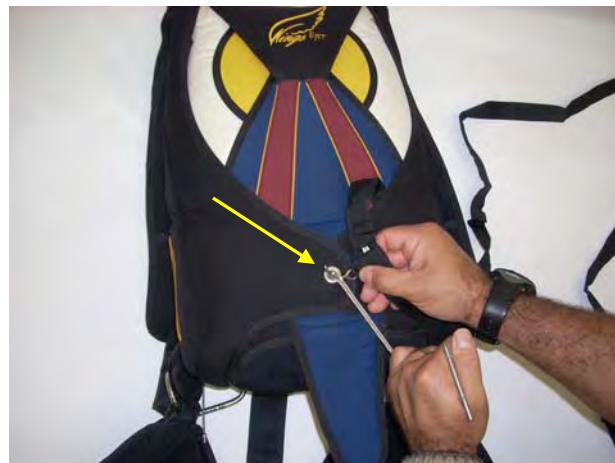
Pull the closing loop through the **Top Main Flap** grommet.



Close the **Right Side Flap**.



Close the **Left Side Flap**.



Secure with the Closing Pin.



Close the Pin Protector Flap and tuck the pilot chute bridle under the Right Side Flap as shown.



Fold the Pilot chute in 1/2 with the bridle coming out of the middle.



Fold the Pilot chute in 1/2 again with the bridle still coming out of the middle.



"S"-fold the bridle on top of the folded pilot chute.



Fold the Pilot chute into 1/3's towards the center.



Roll the Pilot chute into a tube shape small enough to fit into the Pilot chute Pocket on the bottom flap.



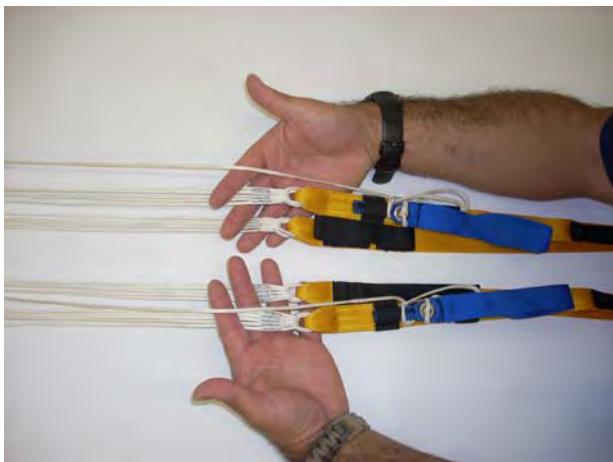
Insert the Pilot chute into the pocket.



***Wings*** packed and ready to Skydive!

## 5.9 PRO-Pack Method of the Main Parachute.

Read and follow the instructions for stowing the Main Steering Toggles **pg 10**.



With no twists in the risers, place the Right Front Riser line group between the little and ring finger of the Right hand.

Place the Right Rear Riser group between the middle and fore finger of the same hand.

Place the control line between the fore finger and the thumb.

Repeat for the opposite hand and line groups.

The slider should be between your body and the parachute.

Walk towards the parachute between the line groups, moving the slider up the lines with you and separate the line groups in your hands.

Upon reaching the parachute, check that the control lines are not twisted around any other line groups.

If so, restart this step or perform another continuity check.

Step outside of the lines, group the lines together in one hand and place this group over your shoulder.

For these instructions, the parachute is over the left shoulder. Switch orientation if using the right shoulder.

With the parachute in the correct orientation (nose towards the container, tail away from the container) start counting the 9 leading edge cells out.

Start by slightly turning the parachute over your shoulder, resting the right outside cell against your body.



Count each cell and grasp this group.

Push the nose through the center of the parachute and pull it briskly back out.

Place the tip of the leading edge between your knees and hold the material in place.



Starting with the A-line group, count the 5 right cells between the A- and B- line attachment points and flake the material away from the center of the parachute.



Count the 5 right cells between the B- and C- line attachment points and flake the material away from the center of the parachute.



Count and flake the 5 right cells between the C- and D- lines.



Count and flake the 5 right cells between the D- lines and the Control Lines / tail.

Repeat this process on the other side of the canopy.

Separate the nose, one half on the side, center cell in the middle and second half on the other side.

Quarter the slider by placing the section between the B-C attachment points away from the center of the parachute and separating the front and rear portions in a similar position.



Slowly wrap the tail around the line groups. Begin to roll the tail carefully be sure not to disturb the canopy. Keep the roll tight and make enough turns until the top skin appears tight and able to hold the cocoon shape.



Gently lay the canopy on the floor. Keep the lines tight and do not disturb the pack job.

Carefully lay on the canopy to remove as much excess air out of it as possible.

Do not allow the canopy to bellow out. After tightening the cocoon to the width of the Deployment Bag, start to "S"-fold the parachute.



The first "S"-fold should be approximately 1/3 of the canopy material.



Fold the remaining material on top of the first "S"-fold.

If using a Collapsible Pilot Chute “cock” the system now.



Cock the pilot-chute before placing into the Deployment Bag.

While placing a foot on the bridle near the top of the canopy, hold the pilot chute handle or hacky firmly and pull until the slack has been removed from the bridle and the pilot chute is extended to the length of the inside 3/8" tape.



Pull the pilot-chute handle until you see the mark in the window and the line is taut.

Place one corner of the canopy stack into the Deployment Bag.

Insert the other corner of the canopy into the other corner of the Deployment Bag.



Bring the lines up through the center of the canopy and out of the Deployment Bag.

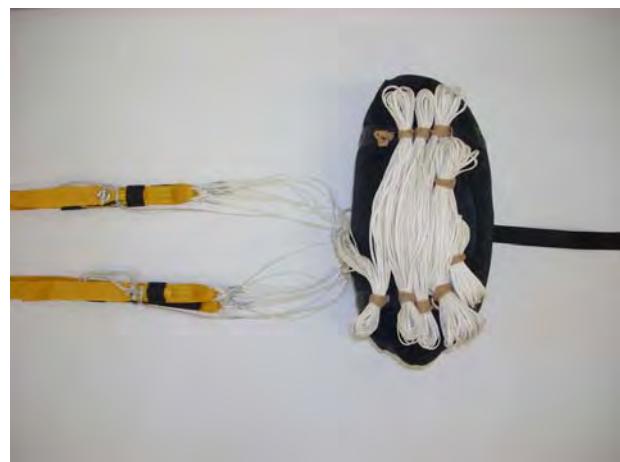


With the lines from the center of the folded canopy, Stow the first line bight through either of the center grommet stow bands.

Stow another line bight through the other center grommet stow band.



Stow the 3rd and 4th line bights using the remaining two grommet stow bands.



Continue stowing the lines, alternating back and forth, until approximately 12" remain.



Open the Main Container and check for debris, twigs and pebbles.

Attach the Pull-up Cord to the Closing Loop from the #0 grommet at the top of the Main Container.



Lift the Main Deployment Bag over the container without twisting the lines and place into the Main Container with the lines towards the Bottom Flap of the container and the Bridle towards the Reserve container.



Lay the Main Risers into the trough beside the Reserve Container. Be sure to place the Main Risers on top of the Reserve Riser cover flap as shown.



Tuck the Riser Cover into the pocket as shown.



With the Bridle placed at the top right corner, close the **Bottom Main Flap** over the D-bag and feed the closing loop through the grommet of the Main Bottom Flap.



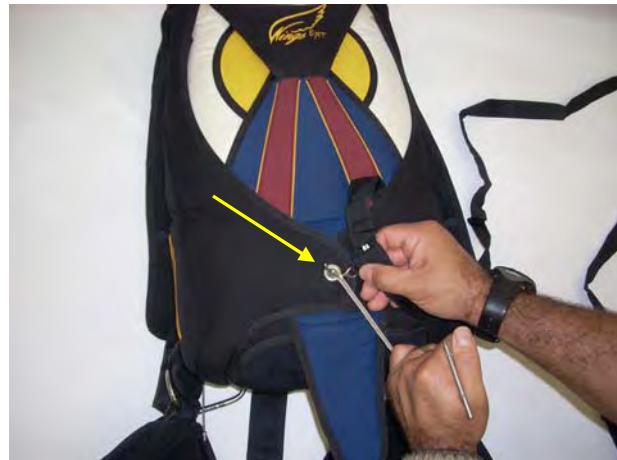
Pull the closing loop through the **Top Main Flap** grommet.



Close the **Right Side Flap**.



Close the **Left Side Flap**.



Secure with the Closing Pin.



Close the Pin Protector Flap and tuck the pilot chute bridle under the Right Side Flap as shown.



Fold the Pilot chute in 1/2 with the bridle coming out of the middle.



"S"-fold the bridle on top of the folded pilot chute.



Fold the Pilot chute in 1/2 again with the bridle still coming out of the middle.



Fold the Pilot chute into 1/3's towards the center.



Roll the Pilot chute into a tube shape small enough to fit into the Pilot chute Pocket on the bottom flap.



Insert the Pilot chute into the pocket.



***Wings*** packed and ready to Skydive!

## 5.10 Closing the Main Container for Pull-out Pilot chute.

**CAUTION:**  
BE SURE THAT THE PILOT CHUTE IS  
“ARMED” IF IT IS A COLLAPSIBLE PILOT  
CHUTE!

Follow the Instructions for placing the Deployment Bag into the Main Container and closing the Riser Covers.



Thread the pull-up cord through the closing loop from the #0 grommet at the top of the Main Container. Arrange the bridle into folds 6"-8" long and lay the folded bridle across the upper part of the bag.

Be sure **NOT** to tuck these folds down between the deployment bag and the bottom of the Reserve Container. To do so may retard the action of the pilot chute.

Using your pull-up cord, close the Bottom Flap.



Loosely fold the pilot chute and lay it across the D-bag.

**IMPORTANT!!! THE HANDLE AND THE PIN MUST EXIT THE CONTAINER AT THE LOWER RIGHT SIDE!**



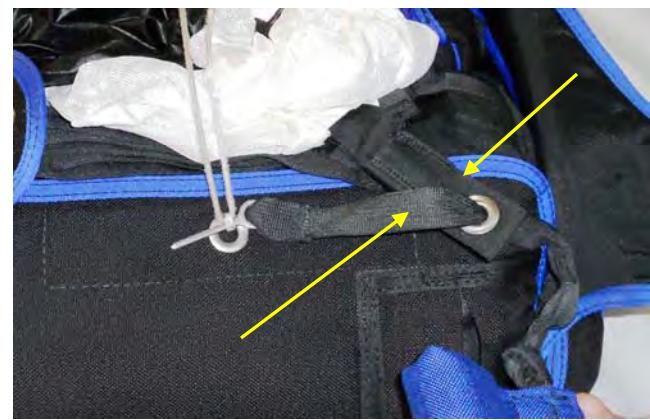
Close the Top Flap, keeping the Pin and the Handle outside of the container on the lower right.



Tuck the handle stiffeners into the pull-out pouch folds on the bottom of the Main Container. **See Fig. 1, 2, & 3.**



Fig. 1



**Always keep these parts on top of the Bottom Closing Flap.**



Fig. 2



Fig. 3



**For tight pack jobs, Tuck BOTH Stiffeners into the Right Side Pouch ONLY.**



Close the Right Side Flap.



Close the Left Side Flap and secure with the Straight Pin.



Tuck the extra Pull-out Bridle under the Right Side Flap.



Close the Main Pin Protector Flap.

**Wings** packed and ready to Skydive!

## Chapter 6

# Donning the *Wings* Harness/ Container System

**IMPORTANT:** Inspect the complete system before donning the **SMI, Inc.**  
**WINGS Harness/Container System.**

## 6.1 Proper Fit of the *Wings* Harness/ Container System.

The **WINGS** Harness / Container is custom built in a variety of container sizes, lengths, and widths. These configurations along with options make sizing of the harness and container to the individual jumper vital to the safe operation of the system. If the system does not fit properly, the handles may be either inaccessible or may shift in free-fall or under canopy, therefore causing problems that may result in injury or death.

The **WINGS** is designed to fit snugly, yet comfortably, when properly adjusted. A harness that is either too small or too large for the jumper's body size can affect safety and comfort during a skydive.

A **Wings** dealer is the best person to measure a skydiver for the proper size harness and container.

## 6.2 Equipment Check of the *Wings* Harness/Container System.

**Every jumper should do a thorough equipment check before every skydive, no matter how experienced the jumper is. Your pre-jump equipment check should follow a logical order.**

A thorough pre-jump equipment check includes the following checks:

1. Check the Reserve Pin and Cable. The reserve pin should be straight and seated deep into the locking loop with the end of the pin covered by the pin protection pocket. Slide the reserve ripcord cable back and forth in its housing to ensure that it moves freely. This is especially important in sub-freezing temperatures.
2. Open the Main Container Pin-protector Flap and check the closing pin. It must be at least halfway through the closing loop.
3. Ensure that the Bridle is routed correctly, from the closing pin into the pilot-chute pouch. A misrouted bridle may cause a pilot-chute-in-tow malfunction.
4. Make sure both the Reserve and Main Pin Protector Flaps are tucked into their proper places.
5. If your **Wings** includes an Automatic Activation Device, calibrate it according to the manufacturer's instructions.

6. If using the Reserve Static Line (RSL) be sure that it is properly hooked up.
7. Make sure that the 3-Ring Release System is assembled properly and is free of dirt or other foreign matter.
8. Check the position of the Reserve Ripcord Handle. Make sure that it is properly seated and that the Velcro secures it in its pocket to minimize the chance of it floating or dangling during free-fall.
9. Check the Main Parachute Release Handle (Cutaway Handle). It should be mated to the Velcro on the harness, and no more than 1/2" of yellow cable should be visible between the cutaway handle and the cable housing.
10. Ensure that the Chest Strap is threaded properly and that it is not threaded through the Reserve Ripcord Handle.
11. Ensure that the Leg Straps are threaded properly and not twisted. The free ends of the leg straps should be tucked into the leg pads.

### 6.3 Donning of the Wings Harness/Container System.

Put the rig on and loosely thread the leg straps. Check the leg straps for twists before threading them.

Tighten the leg straps so that they are snug, but not so tight that they will restrict mobility in a relaxed arch or turning motion.

Make sure that the left and right straps are evenly adjusted. Slide the excess leg strap through the elastic keepers and stow in the leg pads so that they won't flap around in free-fall.



Adjusting the Leg Straps.



Thread the Chest Strap through the friction adapter. Snug up the Chest Strap but do not over-tighten. The Main Lift Webbing should remain parallel when the chest strap is properly adjusted. Stow the excess in the elastic keeper.

Stow all excess straps in the elastic keepers.

Be certain that all Handles are properly seated and accessible.

## Chapter 7

# Operation of the WINGS Harness / Container System

## 7.1 Deploying the Main Pilot Chute.

Before using the **Wings** Harness/Container System for the first time, practice the procedures on the ground under the supervision of a knowledgeable Instructor.

To deploy the Main Parachute:

1. Find the Pilot chute Handle.
2. Firmly grasp the Handle with the right hand, while compensating for stability with the left hand.
3. Pull the handle from its pouch and:
  - a. If using a **Throw-out** Pilot chute, throw the Pilot chute away from the body immediately.

**or**

- b. If using a **Pull-out** Pilot chute, pull the Pilot chute out to arm's length and release into the relative wind.

**or**

- c. If using a **Ripcord**, firmly grip the handle and pull down and away from the body to arm's length.

## 7.2 Releasing the Main Parachute.

Certain circumstances may require the release of the Main Parachute from the **Wings** Harness/Container.

Practice these procedures on the ground before boarding the aircraft to skydive.

1. Locate the Main Parachute Release Handle (Cutaway Handle) on the **Right** Main Lift Webbing.
2. Grasp the handle and peel in an upward motion.
3. In a swift and smooth motion, pull the Handle down and away from the body to arm's length.

## 7.3 Pulling the Reserve Handle.

To deploy the Reserve Parachute:

1. Locate the Reserve Ripcord on the **Left** Main Lift Webbing.
2. Grasp the handle and peel in an upward motion.
3. In a swift and smooth motion, pull the Ripcord down and away from the body to arm's length.

## Chapter 8

# Care and Maintenance

## 8.1 General Storage Requirements

To ensure that serviceability standards of the **SMI, Inc. WINGS Harness / Container System** are maintained, every effort will be exerted to adhere to the following general storage requirements:

1. When available, a climate controlled building should be used to store the **WINGS Harness / Container System**.
2. The **WINGS Harness / Container System** shall be stored in a dry, well ventilated location and protected from pilferage, dampness, fire, dirt, insects, rodents and direct sunlight.
3. The **WINGS Harness / Container System** will **NOT** be stored in a manner which would prevent ventilation or interfere with light fixtures, heating vents, fire fighting devices, cooling units, exits or fire doors.
4. The **WINGS Harness / Container System** will **NOT** be stored in a damaged, dirty or damp condition.
5. The **WINGS Harness / Container System** will **NOT** be stored in direct contact with any building, floor or wall. Storage will be accomplished using bins, shelves, pallets, racks or Dunnage to provide airspace between the storage area floor and the equipment.
6. Proper housekeeping policies and strict adherence to all safety regulations will be practiced at all times.

## 8.2 Storage Specifics for Parachutes

In addition to the storage requirements stipulated in the **General Storage Requirements**, the following is a list of specifics that must be enforced when storing parachutes.

1. Except for those assemblies required for contingency operations, parachutes will **NOT** be stored in a packed configuration.
2. Stored parachute assemblies will be secured from access by unauthorized personnel.
3. A parachute that is in storage, and is administered a cyclic repack and inspection, will **NOT** be exposed to incandescent light or indirect sunlight for a period of more than 36 hours. In addition, exposure to direct sunlight will be avoided entirely.

## 8.3 In-Storage Inspection

### General Information:

1. An in-storage inspection is a physical check conducted on a random sample of parachutes that are located in storage.
2. Parachutes in storage should be inspected at least once every **180** calendar days and at more frequent intervals if conditions warrant.
3. Inspect the parachute to ensure that it is ready for use.
4. Check to be sure the parachute has the proper identification.
5. Check that no damage or deterioration has incurred.
6. Check the adequacy of the storage facilities, efforts have been taken to control pests and rodents, and protection against unfavorable climatic conditions.

## 8.4 Water Contamination Guide

If the **SMI WINGS Harness / Container** or any of its components have been **immersed in salt-water for more than 24 hours the equipment will be condemned**.

If the Harness / Container or any of its components have been immersed in water, be it fresh or salt-water, the Harness / Container and any of the components immersed shall be rinsed immediately or placed in a double plastic bag with the top securely closed to keep the contents in a wet state until they can be rinsed. **If they cannot be rinsed within 24 hours, they will be condemned.**

### **! CAUTION !**

**REMOVE ALL INSTRUMENTS BEFORE RINSING THE HARNESS / CONTAINER AND THE COMPONENTS.**

**FOLLOW THESE INSTRUCTIONS FOR RINSING AFTER WATER IMMERSION.**

1. Place the equipment in a large container filled with enough fresh water to completely cover it.
2. Agitate the contents of the container by hand for **5 minutes**.
3. Remove the equipment from the container and suspend or elevate it in a shaded area for a period of 5-10 minutes to allow it to drain. **Do NOT Wring** the fabric or suspension lines of a parachute canopy.
4. Repeat the procedures in steps 1, 2 & 3 above, twice, using fresh, clean water for each rinse.

5. After the 3rd rinse, allow the equipment to drain thoroughly. Upon completion of draining, dry the equipment by elevating or suspending the item in a well ventilated room or a heated drying room with the temperature not to exceed 130° Fahrenheit or 55° Celsius. When heat is used it shall not exceed 105° F. or 40° C. The preferred temperature is 90° F. / 32° C. The use of electric circulating fans will reduce the drying time.
6. When dried, perform a technical / rigger type inspection of the equipment. Corroded metal components or corrosion stained fabrics or suspension lines will be either repaired or replaced.
7. Record the immersion and rinsing and any repairs made to the equipment in the parachute log record.



## Chapter 9

# Special Instructions

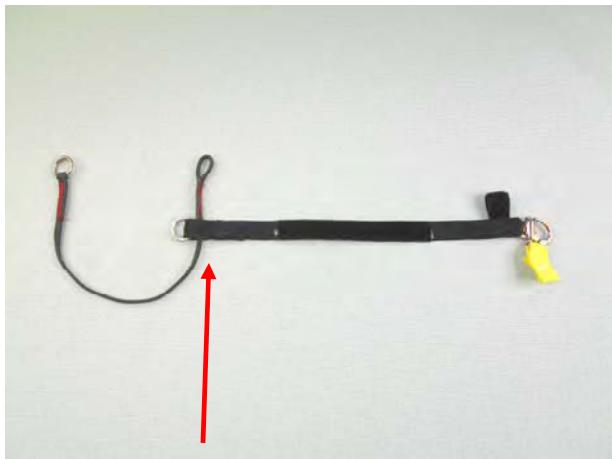
## 9.1 Installing the Optional “Reserve Boost” RSL Extension Lanyard.



Pictured above is the **“Reserve Boost” Extension Lanyard** and the Reserve Static Line.



Pass the ring of the **“Reserve Boost” Extension Lanyard** through the loop of the lanyard.



Pass the loop of the **“Reserve Boost” Extension Lanyard** through the opening under the ring of the Reserve Static Line.



Tighten the knot formed.

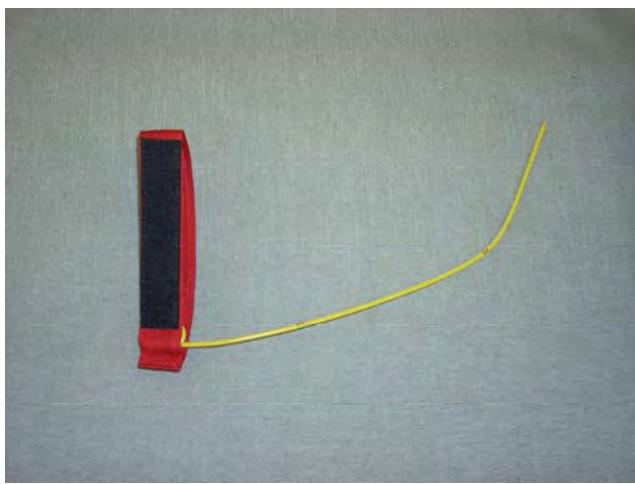
The **“Reserve Boost”** RSL Extension Lanyard is ready to install on the **Wings** Container.

## 9.2 Assemble the AFF Left Side Jumpmaster Handle for Throw-out Pilot-chute.

Follow these Instructions when using the AFF Left Side Main Deployment Handle for throw-out pilot-chute.



Pictured above is the Wings Reserve/Container Assembly with the optional AFF Left Side Main Deployment Handle.



Pictured above is the AFF Left Side Main Deployment Handle.



The AFF Left Side Main Deployment Pouch before assembly of the Handle.



Begin by mating the Hook Velcro of the AFF Left Side Main Deployment Handle with the Pile Velcro on the Main Container Bottom Flap.



Mate the Pile Velcro of the Pouch to the Hook Velcro of the AFF Left Side Handle.



After the Handle has been mated to the Velcro begin to feed the yellow cable of the Handle through the T-III loops on the Bottom Flap of the Main Container and the Spandex Pouch.



Be sure to include the small loop in the corner of the Bottom Flap.



Pass the yellow cable down into the T-III channel in front of the Spandex Pouch opening.



Alternate passing the cable through the loops of the Bottom Flap and the Pouch.



The AFF Left Side Main Deployment Handle assembled and ready for the Main Container to be closed.

### 9.3 Closing the Main Container for AFF Left Side Jumpmaster Handle.

Follow the Instructions on pg. 2 to Assemble the AFF Left Side Main Deployment Handle for T/O Pilot Chute.



Pictured above is the Wings Container with the optional AFF Left Side Main Deployment Handle for Throw-out Pilot Chute.

Follow the instructions for placing the deployment bag into the Main Container and closing the Main Container in Chp. 5.

Placing the Throw-out Pilot Chute into the AFF Left Side Jumpmaster Pouch is the same as a standard Bottom of Container Pouch. See Chp. 5.

Once assembled, the AFF Left Side Jumpmaster Handle and Pocket function as a regular BOC.

## 9.4 Assemble the AFF Left Side Jumpmaster Handle for Ripcord.

Follow these Instructions when using the AFF Left Side Main Deployment Handle for Spring-loaded Pilot Chute.



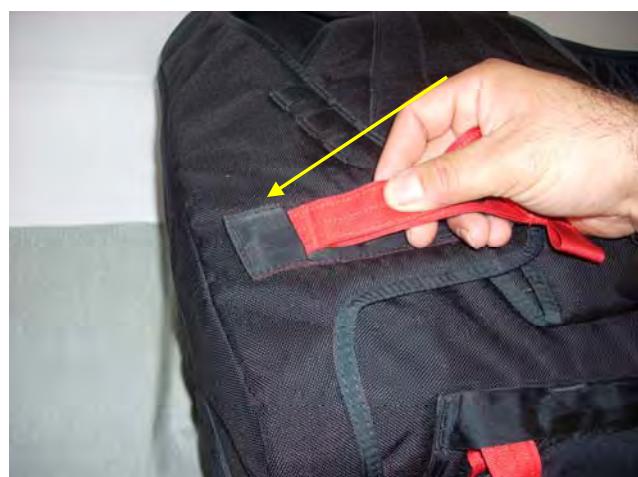
Pictured above is the Wings Container Assembly with the optional **AFF** Left Side Main Spring-loaded Pilot Chute Deployment Handle.



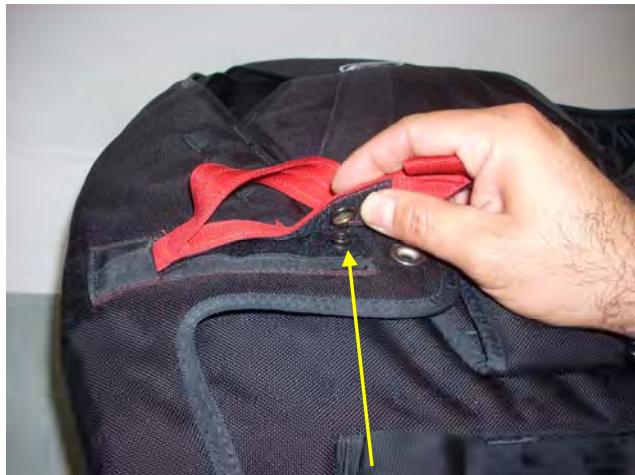
Pictured above is the AFF Left Side Main Deployment Handle.



Begin by feeding the Ripcord into the Ripcord Housing on the bottom of the Main Container **OR** on the Right Main Lift Webbing.



Slide the tab of the **AFF** Left Side Main Deployment Handle into the pocket as shown above.



Mate the Velcro of the Handle and the Container then fasten the snap of the Handle to the snap on the Container.



The AFF Left Side Main Deployment Handle ready for closing.

**Follow the Instructions for Closing the Main Container with a Ripcord Assembly pg. 7.**

## 9.5 Closing the Main Container with a Ripcord Assembly and the Optional AFF Jumpmaster's Handle.

**Before starting:**

**Assemble the AFF Jumpmaster's Handle according to the Instructions. Pg. 5.**

**Insert the Black Cable of the Main Ripcord into the Main Ripcord Housing located on the right side of the Bottom of the Main Container OR on the Right Main Lift Webbing.**



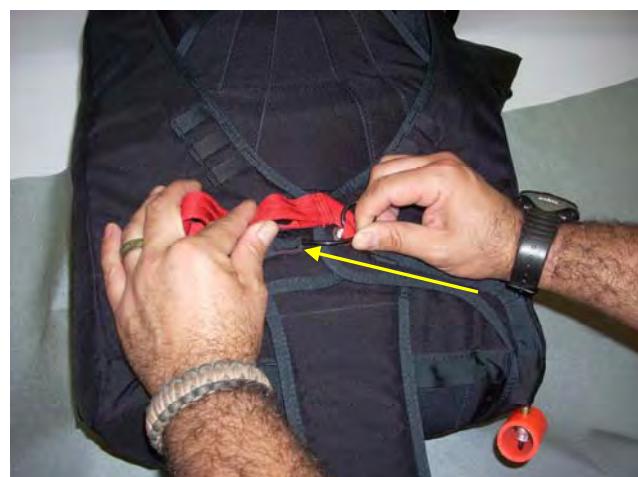
Close the Flaps per the Instructions on pg. 8.



Pass the Ripcord Cable through the Loop of the AFF Jumpmaster's Handle.



Pass the Ripcord Cable through the Closing Loop.



Continue to pass the Ripcord Cable into the channel on the Left Side Flap.

Close the Main Cover Flap.

## 9.6 Closing the Main Container with a Ripcord Assembly.

**Before starting:**

**Insert the Black Cable of the Main Ripcord into the Main Ripcord Housing located on the right side of the Bottom of the Main Container OR on the Right Main Lift Webbing.**



Place the Deployment Bag into the Main Container tray with the Pilot Chute launch pad facing up and the lines to the bottom of the tray.



Use the closing loop mounted to the bottom of the Main Container Flap.  
“S” fold the Bridle on top of the launch pad.



While compressing the Spring-loaded Pilot Chute be sure to keep the pilot-chute material folded into the spring.  
Close the Top Main Flap.



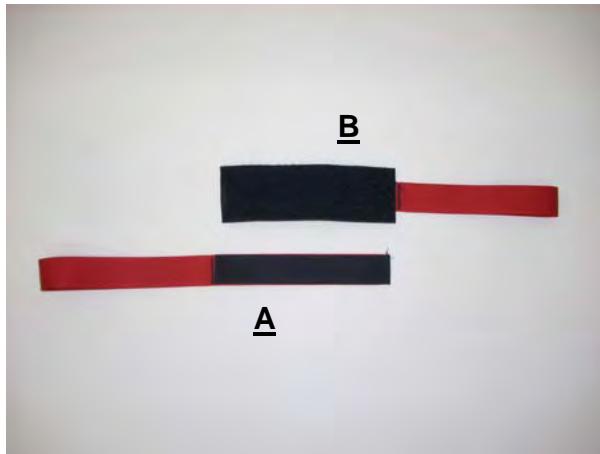
Close the Left Main Flap.



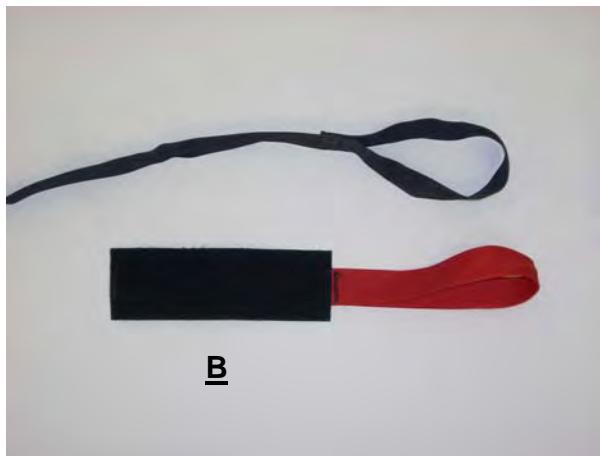
Close the Right Main Flap. Then insert the Black Cable through the closing loop.

Feed the excess black cable into the channel on the Left Side Flap.

## 9.7 Closing the Main Container for Spring-loaded Pilot chute Assist Static-Line.



Pictured above are the two (2) parts of the Spring-loaded Pilot-Chute Assist Static-Line Assembly.



Begin with the Pile Velcro piece (B) and the smaller loop end of the Pilot Chute Bridle.



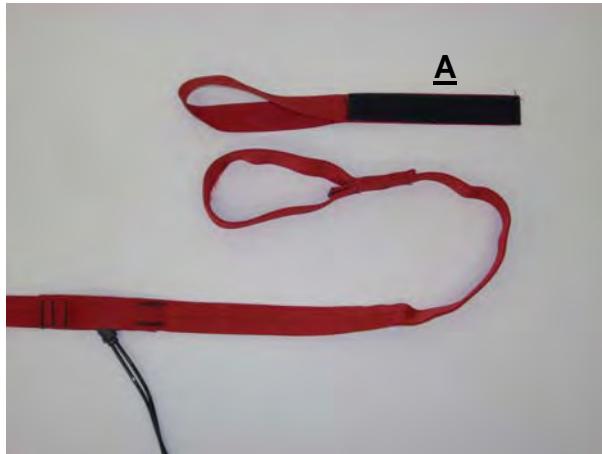
Feed both loops through both loops of the Spring-loaded Pilot Chute.



Feed the ends through both of the loops at the same time, forming a double loop. Tighten the formed knot.



Should look like this.



Next take the Hook Velcro part (A) and the loop of the Static Line.



Feed the Velcro end through the Static Line loop then through the loop of itself.



Tighten the formed Lark's Head knot.

The Spring-loaded Pilot-Chute Assist is ready to be assembled to the Deployment system for closing of the Main Container.

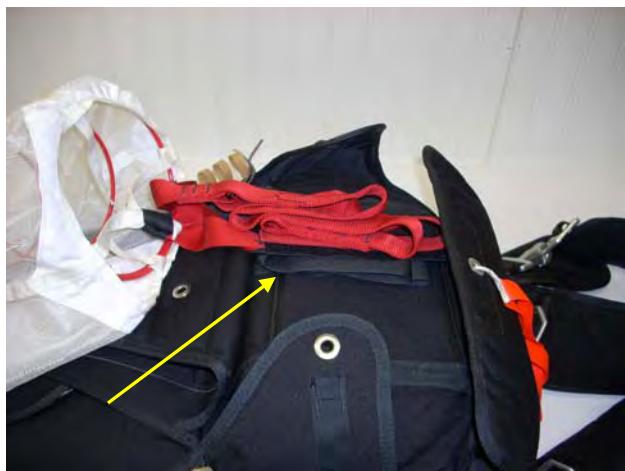
Mate the Hook and Pile Velcro of the and proceed to close the Main Container as follows on the next page.

Pack the Main Canopy using either the Flat Pack method or the PRO Pack method. Follow the instructions for placing the canopy into the Deployment Bag.  
**Chp. 5**



Set the Deployment Bag into the Main Container Tray, lines to the bottom.

Use the closing loop mounted to the bottom of the Main Container Flap.



"S" fold the Pilot Chute Bridle on top of the Deployment Bag. "S" fold the Static Line Bridle on top of the Pilot Chute Bridle. Lay the Static-line Assist on top of the "S" folds.



Compress the Main Pilot Chute.



Feed the Pull-up cord through the Top Flap.



Feed the Pull-up cord through the Left Side Flap.



Close the Right Side Flap and feed one of the black cables through the closing loop.

Feed both black cables into the channel shown.



Stow the first bight of the Static Line into the first rubber band.



Stow the second bight of the Static Line into the opposite side rubber band.



Continue stowing until last rubber band.



Stow the remainder of the Static Line into the pocket on the side of the Container.

## 9.8 Closing the Main Container for Throw-out Pilot chute Assist Static Line.



Pictured above is the Throw-out Pilot Chute Assist Static Line Pouch.



Pass the Loop of the Static Line through the Type 4 Loop on the end of the Pilot Chute Pouch.

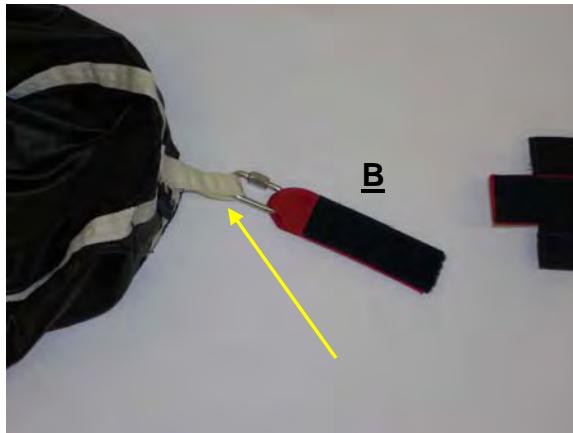


Pass the rest of the Static Line through the Static Line Loop, creating a Lark's Head Knot.

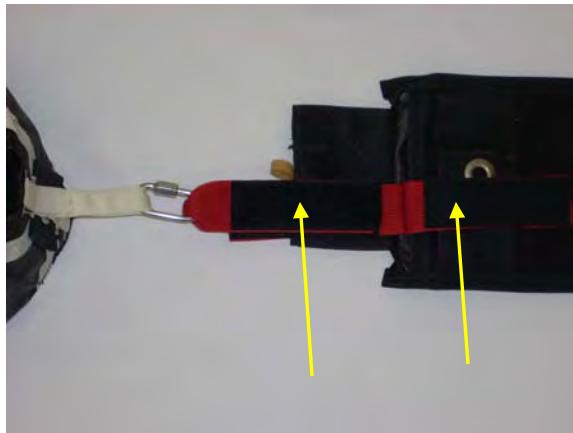


Tighten the knot formed.

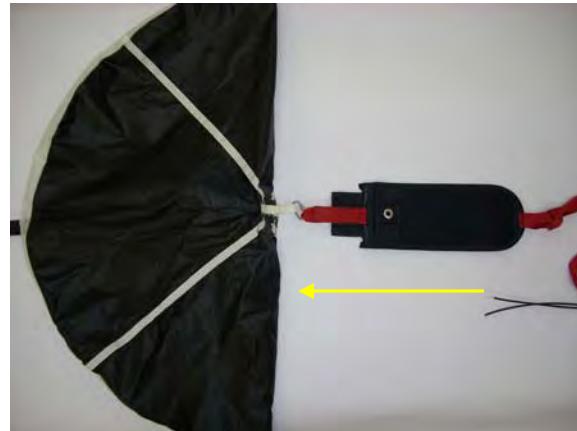
After attaching the Static Line to the Pouch attach the Pilot Chute to the Pouch.



Begin by attaching the tab with the Pile Velcro and the Rapide Link to the Type 3 Loop at the top of the Pilot Chute. Finger tighten plus 1/4 turn with a small wrench.



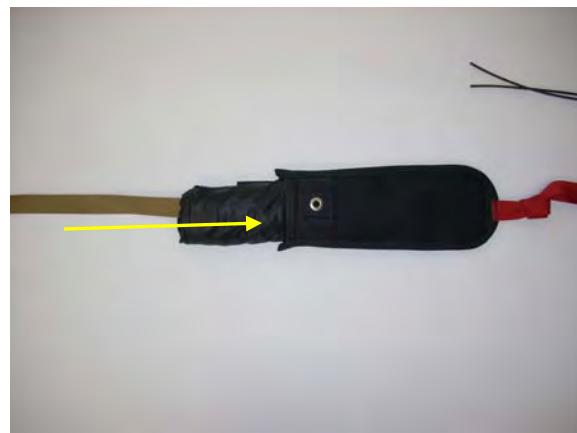
Mate the Pile Velcro of the tab with the Hook Velcro of the Pouch.



Fold the Pilot Chute in Half.



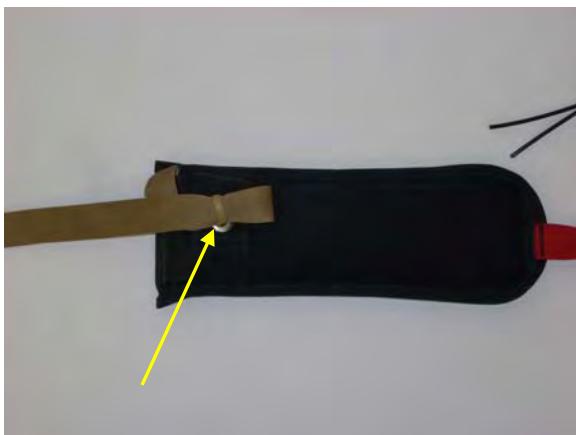
Fold the Pilot Chute in 1/3's towards the middle.



Finally roll the Pilot Chute into a narrow roll and place into the pouch, **Tab first**.



"S" fold the bridle into 2" folds and place on top of the Pilot Chute in the Pouch.



Close the Flap of the Pouch. Use the rubber band to secure the bridle and keep the Pouch closed.



Set the Deployment Bag into the Main Container Tray, lines to the bottom.

Lay the Pouch on top of the Deployment Bag. Use the closing loop mounted on the bottom of the Reserve Container.

Close the Bottom Main Flap first.



Close the Top Main Flap.



Close the Left Main Flap.



Close the Right Main Flap. Be sure Static Line comes from the top right side. Insert Black Cable.

Stow extra black cable into channel and close Flap.



Stow the first bight of the Static Line into the first rubber band.



Continue stowing until last rubber band.



Stow the second bight of the Static Line into the opposite side rubber band.



Stow the remainder of the Static Line into the pocket on the side of the Container.

## 9.9 Closing for Direct Bag Static-Line.

Begin by attaching the Main Bag to the Static Line.



Pull the red Type 4 Loop that is attached to the inside of the Main Bag through the grommet.



Pass the loop of the Static Line through the red loop of the Main Bag.



Pass the rest of the Static Line through the Static Line Loop, creating a Lark's Head Knot.



Tighten the knot formed.

Pack the Main Canopy using either the Flat Pack method or the PRO Pack method. Follow instructions for placing the canopy into the Deployment Bag. **Chp. 5**

Set the Deployment Bag into the Main Container Tray, lines to the bottom. Use the closing loop mounted on the bottom of the Reserve Container.



Feed the pull-up cord through the Bottom Flap and pull the closing loop through the grommet.

"S" fold the Static Line on top of the Deployment Bag about 12"-16" or to the black cables.



Feed the pull-up cord through the Top Flap and pull the closing loop through the grommet.



Feed the pull-up cord through the Left Side and pull the closing loop through the grommet.



Close the Right Side Flap and feed one of the black cables through the closing loop.

Feed both black cables into the channel shown.



Stow the first bight of the Static Line into the first rubber band.



Continue stowing until last rubber band.



Stow the second bight of the Static Line into the opposite side rubber band.



Stow the remainder of the Static Line into the pocket on the side of the Container.

## 9.10 Using the Optional Semi-Stowless Deployment Bag.

The **Wings Semi-Stowless Main Deployment Bag** uses either Elastic Stow Bands or regular Rubber Stow Bands to close the Deployment Bag.



When using Rubber Stow Bands pass the band under the T-4 tape and form a Lark's Head knot to secure it to the tape.



When using Elastic Stow Bands pull them through the #0 grommets using a piece of string or 5 cord thread.



Be sure to have a small washer before the knot to keep the band from passing through the grommet when using the Elastic Stow Bands .



Use a piece of string or 5 cord to pull the elastic band through the washer.

**Follow these Instructions when using the Semi-Stowless Main Deployment Bag.**



Pack the Parachute in the usual manner and close the Deployment Bag using the same method as a regular Deployment bag.



Open the Line Pouch and fold back the closing flap.



"S-fold" the lines back and forth placing onto the pouch. Leave about 18" unstowed.



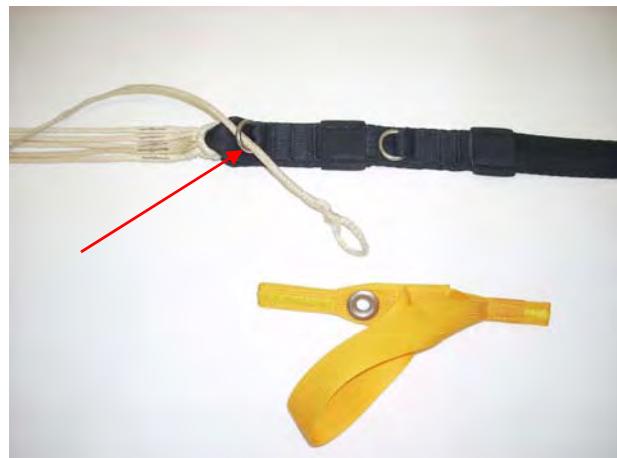
Close the Pouch and tuck the flaps under to secure the lines.



The Deployment Bag is ready to be placed into the Main Container.

## 9.11 Stowing the Optional Swoop Toggles & Risers.

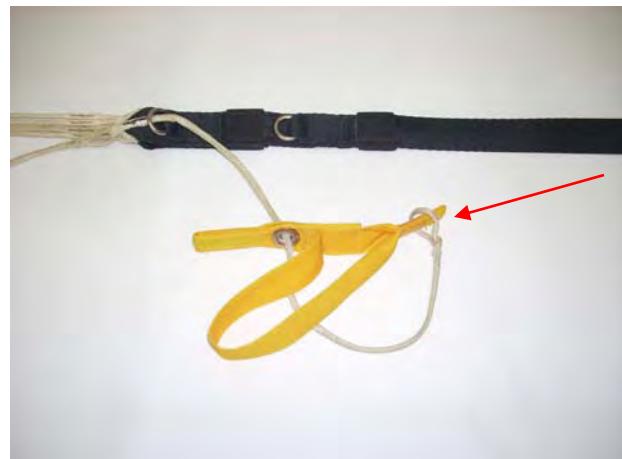
Assemble the Rear Line Sets to the corresponding Rear Riser, (Left side to the Left Riser and the Right side to the Right Riser).



Pass the Steering Line through the appropriate Slider Grommet then through the mini ring closest to the lines.



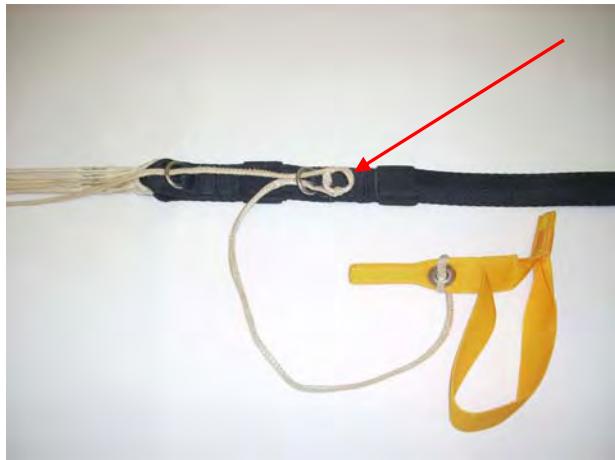
Pass the Steering Line through the rear of the Steering Toggle.



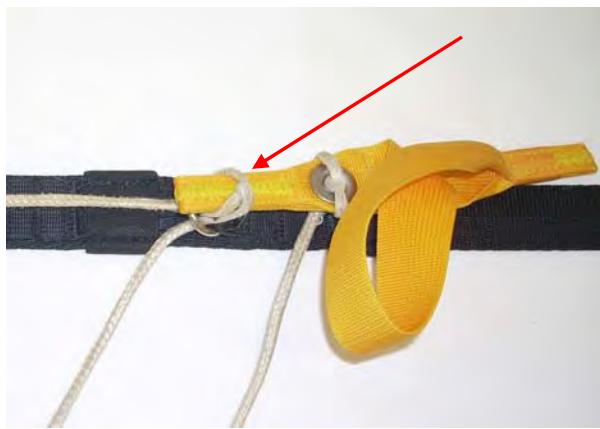
Slip the loop of the Steering Line over the lower tab of the Steering Toggle.



Tighten the knot formed.



Pull the steering line down and pass the "cat's eye" through the lower mini ring.



Pass the Steering Toggle through the "cat's eye" of the Steering Line to secure the line.



Slip the excess loop of the Steering Line under the elastic as shown.



Should look like this.

Repeat the other side.



Stow the Toggle Tabs under the Elastic Keepers on the Risers.

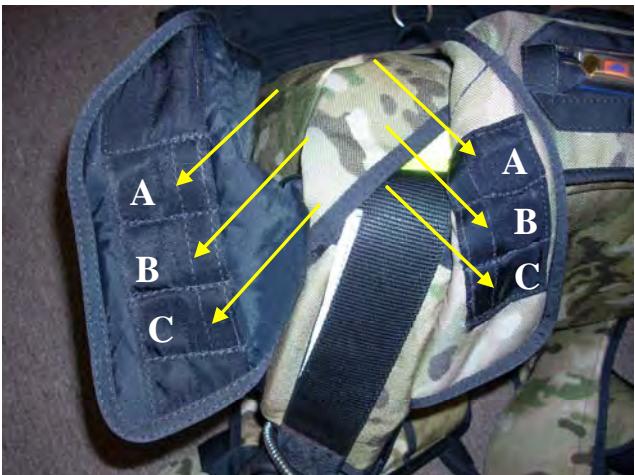
## 9.12 Replacing the Magnets in the Riser Covers.

**Note:** When replacing the magnets, be sure that the "A's" are "attracting" to each other, the "B's" are "attracting" to each other and the "C's" are "attracting" to each other and not "repelling" each other. Flip one over to correct the attraction to each other.



The **Wings** Harness / Container has the options of Magnetic Riser Covers.

The Magnets can easily be replaced when needed.



There are three (3) on each side of the Riser Cover.



Shown above are the three (3) magnet pockets.

The magnets are held in place with Velcro.

Slide them out to replace them.



Shown above is the other side of the Riser Cover.

There are three (3) magnets in this pocket also held in place with Velcro. Slide them out and replace.

## Chapter 10

# Parts List

**Part #****NAME / DESCRIPTION**

SRI -100	Standard <i>Wings</i>
SRI -101	Articulated <i>Wings</i>
SRI -103	Articulated Adjustable Student <i>Wings</i>
SRI -104	Standard <i>Wings</i> Vision
SRI -105	Articulated <i>Wings</i> Vision
SRI -106	Articulated FreeFly <i>Wings</i>
SRI -107	Articulated FreeFly <i>Wings</i> Vision
SRI -201	Reserve Pilot Chute
SRI -202	Reserve Pilot Chute Cap
SRI -203	Reserve Free-bag and Bridle
SRI -205	Square Reserve Toggles (Set of 2)
SRI -206	Reserve Ripcord Assembly
SRI- 207	Reserve Static Line (RSL)
SRI-208	Student/ FXC Ripcord Assembly
SRI-209 B	Pillow Reserve Handle
SRI-210 A	Reserve Boost (New Complete System)
SRI-210 B	Reserve Boost (Added to Existing Parts)

**Part #****NAME / DESCRIPTION**

SRI -300	Main Risers Type 8 Lg. Ring
SRI -301	Main Risers Type 8 Mini Ring
SRI -302	Main Risers Type 8 Lg. Ring w/Velcro
SRI -303	Main Risers Type 8 Mini Ring w/Velcro
SRI -304	Main Risers Type 17
SRI -305	Main Risers Type 17 w/Velcro
SRI -306	CRW Main Risers Type 8
SRI -310	Main Steering Toggles (Set of 2)
SRI -311	Main Steering Toggles w/Velcro (Set of 2)
SRI -313	Main CRW Steering Toggles (Set of 2)
SRI -314	Main Release Handle <b>Pillow</b> Style
SRI -315	Main Release Handle <b>Loop</b> Style
SRI -400	Main Spring Pilot Chute
SRI -401	Main Spring Pilot Chute Bridle
SRI -402	Main Spring P/C Bridle/Static-line Assist
SRI -403	Main Standard P/C w/Plastic Handle
SRI -404	Main Standard P/C w/Hacky Handle
SRI-405	Main Collapsible P/C/ Bridle w/Plastic Handle

**Part #****NAME / DESCRIPTION**

SRI -406	Main Collapsible P/C w/Bridle & Hacky
SRI -407	Main Collapsible Bridle
SRI -408	Main Standard Bridle
SRI -409	Hacky Handle with Center Line
SRI -410	Free-Fly Handle
SRI -411	Main Pull-out Handle
SRI -412	Main Static-line
SRI -413 A	Pouch for Main S/L Pilot Chute Assist
SRI -413 B	T/O PC for Static Line Assist
SRI -414 A	AFF Left Side Jumpmaster Handle- T/O
SRI -414 B	AFF Left Side Jumpmaster Handle- Spring
SRI -415	AFF BOC Pocket
SRI -500	Main Deployment Bag
SRI -500 A	Main Deployment Bag- Semi-Stowless
SRI -500 B	Main Deployment Bag Closing Bungee
SRI -600	Main Metal Ripcord Assembly
SRI -601	Main Plastic Ripcord Assembly

## Chapter 11

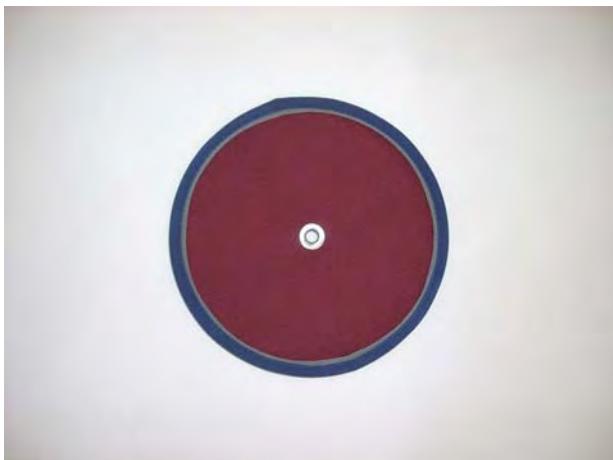
# Spare Parts



SRI- 201 Reserve Pilot Chute



SRI- 205 Reserve Toggles (Set of 2)



SRI- 202 Reserve Pilot Chute Cap



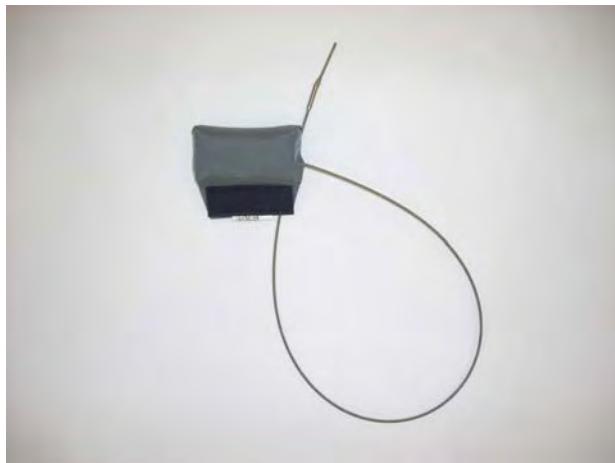
SRI- 206 Reserve Ripcord Handle



SRI- 203 Reserve Free-bag w/ Bridle



SRI- 207 Reserve Static Line (RSL)



SRI- 209 B Reserve Ripcord *Pillow Style*



SRI- 301 Main Risers T-8 Mini Ring



SRI- 210 Free-bag with "**Reserve Boost**"



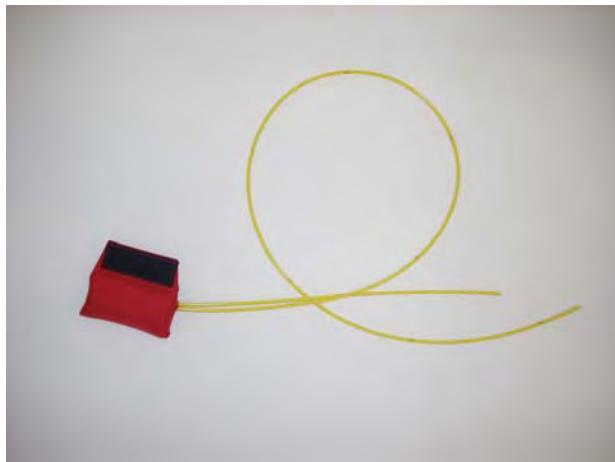
SRI- 304 Main Risers T-17



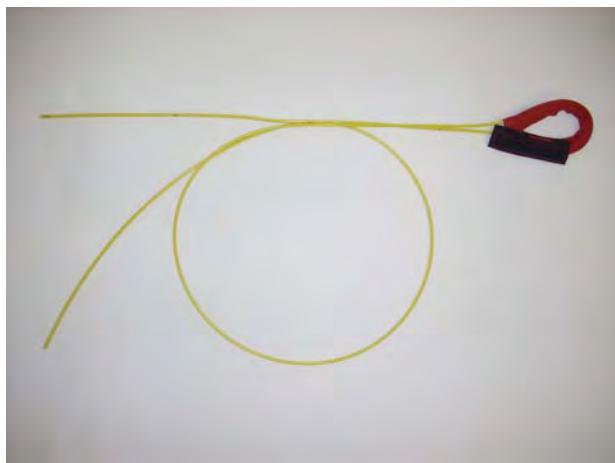
SRI- 211 "**RESERVE BOOST**" RSL  
EXTENSION LANYARD



SRI- 310 Main Steering Toggles (Set of 2)



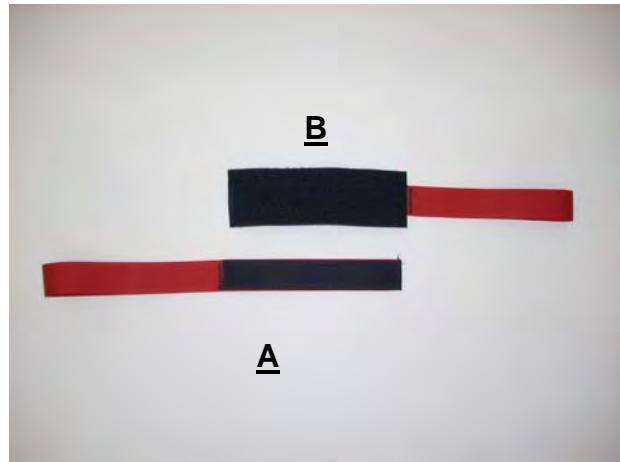
SRI- 314 Main Release Handle (Red)



SRI- 315 Main Release Loop Style



SRI- 400 Main Spring P/C w/Bridle



SRI- 402 Spring-loaded P/C Parts A & B  
**Static-Line Assist**



SRI- 404 Main Collapsible P/C w/Hacky



SRI- 412 Main Static-line



SRI-413 A Pouch / Connector - Main T/O  
Pilot Chute **Static Line Assist**



SRI- 414-B AFF Left Side Jumpmaster Handle  
Spring-loaded Pilot Chute



SRI- 413 B Main T/O Pilot Chute  
**Static Line Assist**



SRI- 500 Main Deployment Bag



SRI- 414-A AFF Left Side Jumpmaster Handle  
T/O Pilot Chute



SRI- 500-A Main Deployment Bag  
Semi-Stowless



SRI- 500-B Main Deployment Bag  
Closing Bungee



SRI- 600 Main Metal Ripcord Assembly



SRI- 601 Main Ripcord Plastic Handle

**NOTES:**