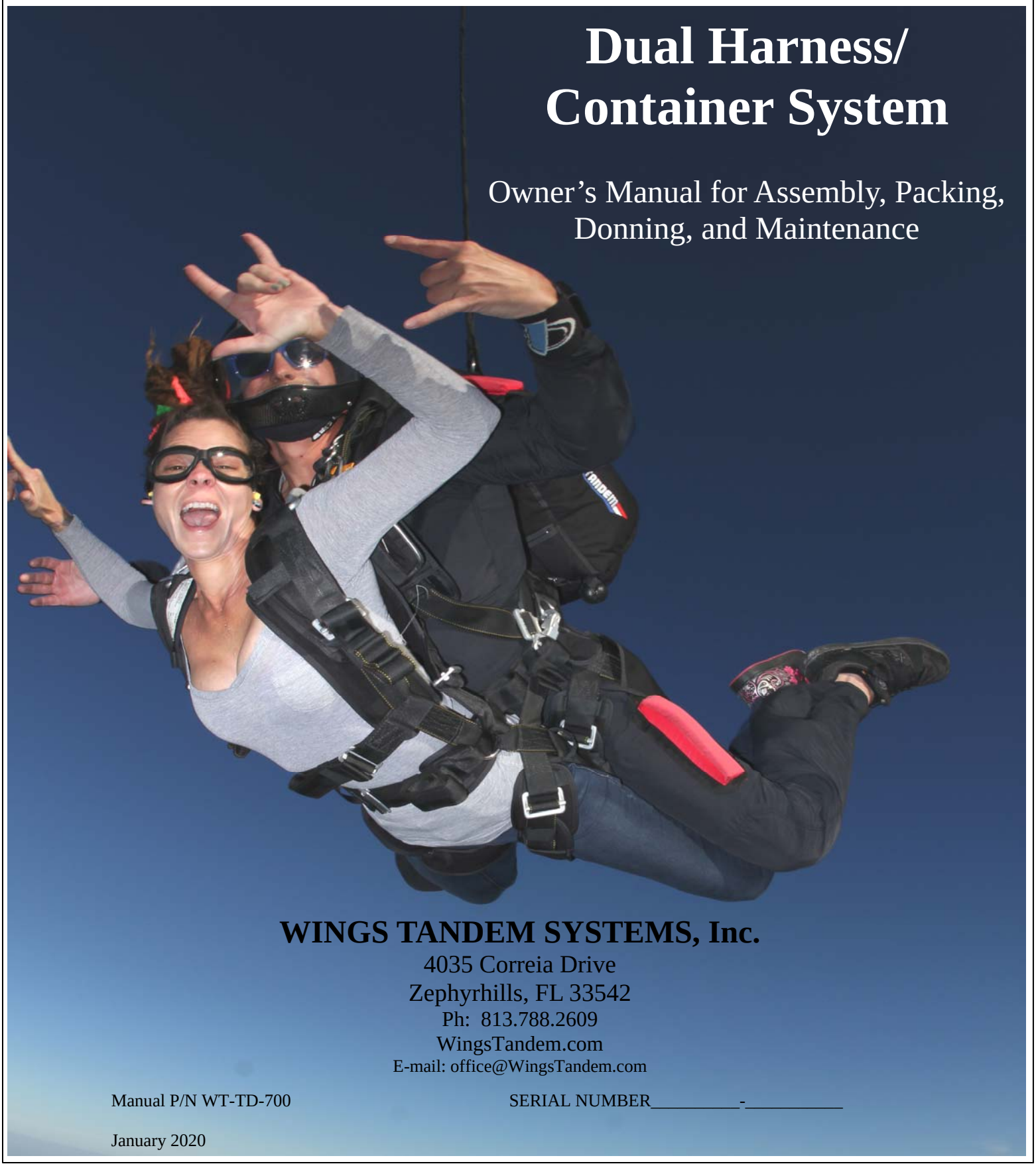
WINGS TANDEM



Dual Harness/ Container System

Owner's Manual for Assembly, Packing, Donning, and Maintenance

WINGS TANDEM SYSTEMS, Inc.

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Zephyrhills, FL 33542

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Manual P/N WT-TD-700

SERIAL NUMBER_____-_____

January 2020

U.S. Department
of Transportation
Federal Aviation Administration

Aircraft Certification Service
Compliance & Airworthiness Division

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

COPY

October 15, 2018

In Reply, Reference FAA Correspondence #: 7A0-18-11247

Henri Pohjolainen
President & Accountable Manager
Tandem Designs, Inc.
4035 Correia Drive
Zephyrhills, FL 33542

Subject: TSOA Application for "Wings Dual Harness/Container System"

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 February 13, 2013, which was in reply to your letter dated September 26, 2012 requesting Technical Standard Order (TSO) Authorization for your "Wings Dual Harness/Container System" as listed in the table below. 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.

Part Number	Description
TD-100	Dual Harness Reserve Parachute Assembly – Parachutist in Command Harness and Container
TD-100-16	Reserve Parachute Freebag
TD-100-18	Reserve Pilot Chute
TD-100-26	Reserve Static Line Lanyard
TD-200	Dual Harness Reserve Parachute Assembly – Passenger Harness

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. Tandem Designs, 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.

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.

Only persons who have successfully completed a **WINGS TANDEM** Certification Course may use this **WINGS Dual Harness/Container System**.

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.

WARNING!

Check equipment warnings –

DO NOT EXCEED EQUIPMENT LIMITATIONS!

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 – **WINGS TANDEM** (including but not limited to all owners, officers, staff, and employees), 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 **WINGS TANDEM** 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 **WINGS TANDEM** 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 12 Replacement Parts Instructions cond.

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Chapter 1

Product Information

1.1 *Wings Tandem*

Wings Tandem is committed to providing you with the latest, most versatile, dependable, and most cost-effective tandem skydiving system available on the market today.

This manual is designed provide you with the necessary information to assemble, pack and maintain your system.

Only operate your ***Wings Tandem*** with proper training and certification in this tandem system. For guidance on operating the ***Wings Tandem***, please refer to the Wings Tandem Operations Manual, available for order, or by free download at www.WingsTandem.com.

Wings Tandem, built under **TSO C23d,** is an expansion of a military heavy load freefall system. That military rig was designed for user simplicity, reliability and durability. These same aspects translate into improving the civilian operator's bottom line.
By extensive use of tough 1000 denier Cordura nylon and stainless steel hardware, the rig will last even under high-wear conditions. When parts need to be replaced, we have designed those parts to detach and reattach quickly and easily in the field by the user to get the rig back in the air as soon as possible.

Drop zone operators, tandem instructors, riggers and packers from around the country contributed valuable insights on how best to convert a military tandem into a system that meets the needs of a civilian tandem operation. Details highlight the research and thought that went into the design.

1.2 Features

- **Three Ring Drogue Attachment**

The 3-Ring Release is one of the most common pieces of skydiving hardware, and one of the most reliable. Every skydiver, rigger and packer is already familiar with it. By placing the 3-Ring Drogue Release in the center of the rig and close to the center of gravity of the Instructor and Student, the tandem pair stays in a comfortable and slightly head-high orientation for drogue-fall.

- **Drogue**

The Drogue must stay securely packed until the Instructor wants it out, and then it must deploy quickly and cleanly. The unique untapered, non-expandable design of the drogue pouch, along with the slick F-111 nylon pouch liner, prevents hard pulls. A magnet in the drogue handle locks the drogue into the pouch, positioning the packed drogue completely in the pouch while preventing it from deploying prematurely. Constructing the drogue pouch of durable 1000 denier Cordura ensures the pouch will last the life of the container, compared to Spandex pouches that lose their elasticity and must be replaced periodically.

Like a sport rig, the drogue does not fully collapse until after the main comes out of the deployment bag. This means the drogue has power to lift the bag out of the container while avoiding an unnerving "trap door" effect.

Wings Tandem also uses a unique 2-stage soft-open drogue. When the operator pulls the drogue release handle, the drogue apex pulls down about a foot, reducing the drogue's drag about 20%. This softens the opening force.

Reserve Boost uses the cutaway Main Canopy to lift the reserve bag out of the container. In the event of a total malfunction, the ***Reserve Boost*** does not interfere with the normal deployment of the reserve.

- **Floating RSL**

In the event of a broken Main Riser on the RSL side, the RSL could possibly pull the reserve pin and fire the reserve into a still-attached main. To prevent this, the risers of the ***Wings Tandem*** use stainless steel hardware that provides dramatically decreased wear on the riser fabric.

The weak point of any riser is the grommet. We place the RSL attachment point below the grommet, so that if the riser fails at the grommet, the RSL stays with the harness.

Finally, if the Riser does break below the grommet, the floating RSL attachment leaves the RSL with the harness.

- **Field Replaceable High-Wear Items**

The entire Tandem System focuses on simplifying the Tandem equipment. No special tools are needed to pack or close the rig. Many parts are easily replaceable in the field, and many do not need a rigger to do the work.

For example, leg pads on tandems are a major source of wear. ***Wings Tandem's*** leg pads can easily and quickly be replaced in the field.

- **Stainless Steel Construction**

Stainless steel hardware resists nicks and gouges that softer metal can get in normal tandem operations. Stainless steel is not only inherently smoother, it does not corrode. It will never develop rough spots that will cause premature wear when against fabric.

- **Flare Toggle Option**

For owners who want lower toggle pressure for most of the canopy flight, the ***Wings Tandem*** comes configured with separate steering and flare toggles. If simplicity is desired, the steering lines on each side can instead be attached to the gold toggles, eliminating the flare toggles.

The steering lines run through rings on the risers that prevent the lines from becoming twisted and entangled.

- **Instructor and Student Comfort**

Both harnesses use articulated designs, allowing greater flexibility. An Adjustable Main Lift web allows each Tandem Instructor to quickly custom fit the harness. *The Student Harness* is built for both comfort and security. Padded adjustable shoulder pads help make the student harness the most comfortable in the industry. The integrated "T" strap comfortably holds the student more securely.

Details:

- The D-bag for the Main Canopy is designed to lift straight off of the rig, greatly reducing the chance of line twists.
- With four standard rubber band locking stows closing the D-bag, the canopy stays in the bag until staged line release, virtually eliminating hard openings.
- The Hook Knife and Air Sickness Bag are easily accessible to the Instructor on the back of the Student Harness.
- Magnetic Riser Covers hold the risers securely while maintaining consistent force to open.
- The Positive Opening Drogue Riser automatically prevents the Drogue Release Handle from being pulled prior to drogue throw.


Main Container Harness 3-Ring System
Main Canopy Release Handle
Right Side (Primary) Drogue Release Hacky
Upper Student Attachment Ring
Reserve Ripcord Handle
Chest Strap
Lower Student Attachment Ring
Leg Strap


Main Pin Cover Flap
Left Side (Secondary) Drogue Release Hacky
Reserve Pin Cover Flap
Reserve Pilot Chute Cap
Drogue in Pouch

Upper Student Attachment Ring

Main Canopy Release Handle

Adjustable Main Lift Webbing Hardware

Drogue Handle

Right Hand (Primary) Drogue Release Hacky

Main Container Harness 3-Ring System

Reserve Ripcord Handle

Main Lift Webbing Adjustment Ring

Left Hand (Secondary) Drogue Release Hacky

Front View

Back View

Chapter 2

Dual Harness/Container Assembly Specifications

2.1 Main Container Harness Specs:

- Harness is tested under **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.
- Reserve Risers, Type 13 Mil-W-4088 Tensile Strength, 7000 lbs.
- Main Harness Riser Ring, No.10 Proof Load , 5000 lbs.
- Upper Student Harness Attachment Ring, Angled "D" Ring, Tensile Strength, 5000 lbs.
- Adjustable Hip Ring, 555-2 Ring.
- Leg Strap Hardware, PS 22040-1 Tensile Strength, 2500 lbs.
- Chest Strap Hardware, PS 70101-1
- Lower Student Attachment Ring, RW 8
- Large Ring Main Risers, Type 7 Mil-W-4088, Tensile Strength, 6000 lbs.

2.2 Main Container Assembly Specs:

- Reserve Container and all pertaining parts are tested under **TSO C23D**.
- Automatic Activation Device (AAD) with the Control Unit in the Reserve Top Cover Flap.
- 1000 Denier Cordura lined w/ 1/4" Para-pack nylon backed black foam.
- Outboard Reserve and Cutaway Handles.
- 0# Stainless Steel Grommets.
- All Stainless Steel Housings
- .040 Nylon Stiffeners
- .062 Aluminum Reserve Floor Plate
- 500 Denier Cordura Anti-Line Twist Main Deployment Bag.
- 600 lbs. Dacron Locking Loop for Main and Reserve Control Toggles.
- 1" Nylon Main Steering Toggles, Tensile Strength, 4000 lbs.
- 1" Type 17 Nylon Reserve Toggles, Mil-W-4088 Tensile Strength, 2500 lbs.
- Stainless Steel Reserve Ripcord Handle.
- Left Riser Reserve Static Line (RSL).

2.3 Student Harness Specs:

- Student Harness is tested under **TSO C23D**
- Main Lift Webbing, Type 7 Mil-W-4088 Tensile Strength, 6000 lbs.
- Leg Straps , Type 7 Mil-W-4088 Tensile Strength, 6000 lbs.
- Lower Attachment Straps, Type 8 Mil-W-4088 Tensile Strength, 4000 lbs.
- Diagonals, Chest Strap, Belly Band, Back Strap and Butt Strap, Doubled Type 8 Mil-W-4088, Tensile Strength, 4000 lbs.
- Upper Attachment Butterfly Snaps, PS 22042-1 Tensile Strength 5000 lbs
- MLW Adjustable Slider, PS 70114-1 Tensile Strength 2500 lbs.
- MLW Solid Adapter, No.44A9360, Tensile Strength 1000 lbs.
- Large Articulating Hip Junction Ring, C5010.
- Adjustable Leg Strap, Chest Strap and Belly Band Hardware, PS 22040 Tensile Strength 2500 lbs.
- Adjustable Diagonal, Back Strap, and Butt Strap Hardware, PS 70114-1 Tensile Strength 2500 lbs.
- Lower Attachment - Adjustable Quick Ejector Snaps, PS 22018 Tensile Strength 2500 lbs.
- Back Pad and Leg Pads 1000 Denier Cordura w/ 1/4" white foam.
- 3/4" Binding Tape, Mil-T-5038 Tensile Strength 400 lbs.
- 1" Type 4 Support Tape, Mil-T-5038 Tensile Strength 1000 lbs.
- 5 cord Nylon Harness Thread, Tensile Strength 40 lbs.
- "E" Nylon Thread, No.69 Tensile Strength 8.5 lbs.

2.4 Dual Harness / Container Assembly Specs:

The **Wings Dual Harness/ Container System** is tested and built under the **TSO C23d** and approved by the FAA.

The Maximum Combined Weight shall be **550 lbs. (249.5 kg.)** at 1**95 KEAS** (361.1 km/h).

Note: Actual Maximum Combined Weight with the complete system is the lowest rated weight for the components (main and reserve canopies) used.

The **Wings Dual Harness /Container System** weights 45-60 lbs. fully packed.

2.5 Drogue Pilot Chute Specs.

- Drogue Riser, Type 8 Mil-W-4088 Tensile Strength 4000 lbs. with standard 3-Ring Release System.
- Dual Release Handles; Right and Left Hacky Sacks. 2000 lb Spectra line.
- Drogue Kill Line, 2000 lbs. HMA line.
- Drogue Bridle, 13' 6" x 1 1/2" Type 4, Mil-T-5038 Tensile Strength 1500 lbs.
- F-111 Drogue Pilot Chute Fabric.
- Hacky Handle.

Chapter 3

Inspection Processes

3.1 Dual Harness / Container System

- Main Lift Web
  - 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 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.
  - TSO Label present and info correct.
  - Symmetrical (adjustable)

- Laterals
  - 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.
  - Cap and snaps present and secure, TSO label present.
  - 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.
  - Mini ring in shape and lanyard.

- 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.
  - Drogue pocket, no holes or rips.
  - Drogue release handles, clean and free moving.

- Main Risers
  - Ring shape
  - No corrosion or wear.
  - Harness stitching is present and correct.
  - Bartacks are present.
  - Velcro, hook is secured.
  - Grommets are secure w/o burrs or sharp edges.
  - T-IIA loops are present.
  - Steering line locking loops are present.
  - Snap shackle RSL present, in good working order, and correctly routed.

- Other Hardware
  - No corrosion or wear.
  - In correct shape.

- Main Deployment Bag and Deployment Option
  - Deployment bag is correct size. Grommets have no burrs or sharp edges.
  - Drogue bridle has secured release pin.
  - Main drogue releases are clean, free-moving in channel.
  - Main parachute release handle is clean, cables move free in housings.

3.2 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 ¾ 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
  - Grommets are seated correctly w/o burrs or damage.
  - Slider is without holes, burns, or other 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.

3.3 Main 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 ¾ 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.

3.4 Student Harness

- Main Lift Webbing
  - Harness stitching 3 and 4 point stitching is intact, no broken stitches.
  - Selvage edge is intact.
  - 2 fold-overs are present and sewn.
  - Webbing is free of wear and abrasions.
  - Solid adjusters are present, free of nicks, dents and burrs.
  - Solid adapters are present, free of nicks, dents and burrs.
  - Hip junction ring is sewn with 4 point, intact, no broken stitches.
  - Elastic keepers are present and in good shape.

- Upper Attachment Points
  - Two (2) 3 point stitching is intact, no broken stitches.
  - Two (2) butterfly snaps present, springs in good working order.

- Floating Chest Strap
  - Chest strap fold-over is present and sewn.
  - Chest strap floats freely for adjustments.
  - Hardware present, free of nicks and burrs.
  - Elastic present and in good shape.

- Belly-band
  - Hardware present and free of nicks and burrs.
  - Fold-over is present and sewn.
  - Elastic present and in good shape.

- Leg Straps
  - Leg strap fold-overs are present and sewn.
  - Hardware present and free of nicks and burrs.
  - Padding present and slides to adjust freely.
  - 3 point stitching present, no broken stitches.
  - Two (2) webbing retainer loops present on small pads.
  - Elastics present and in good shape.

- Rear Diagonals
  - Two (2) upper 3 point stitching present and intact, no broken stitches.
  - Two (2) solid adjusters present, free of nicks and burrs.
  - 2 diagonal adjuster fold-overs present and sewn.
  - Elastics present and in good shape.

- "T" Strap
  - Solid adapter present, free of nicks and burrs.
  - Strap fold-over is present and sewn.
  - 3 point stitching is present and intact, no broken stitches.
  - Elastic present and in good shape.

- Back Strap
  - Back strap fold-over is present and sewn.
  - Adjuster hardware is present, free of nicks and burrs.
  - Elastic present and in good shape.

- Student Lower Attachment Straps
  - Student lower attachment straps have fold-overs and are sewn.
  - 3 point stitching present and intact, no broken stitches.
  - Two (2) adjustable quick ejector snaps present, springs in good working order.
  - Heavy elastics present and in good shape.
  - NO "cheater strap" quick release tabs on quick ejector snaps.

- Back Pad and Yoke
  - Back pad stitching is present, no broken stitches.
  - Bar tacks present, no broken stitches.
  - Air sickness bag pocket present, air sickness bag in place.
  - Knife pocket present, knife in place.

- TSO Label
  - Present and information is correct.

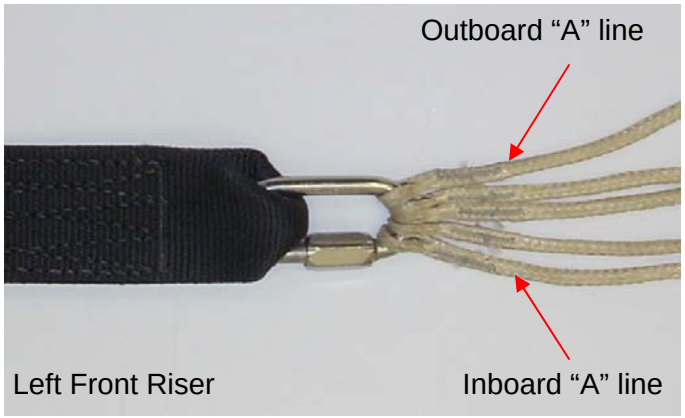
Chapter 4

Assembly Instructions

4.1 Assembly of Reserve Canopy.

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

Check to see that the Type-12 bumpers are above the links. See following instructions on pg. 2 to install them if needed.

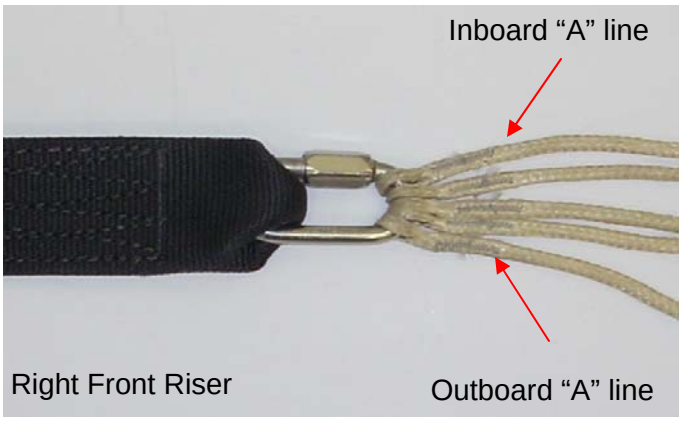


Begin the assembly process by ensuring that all lines are connected to the links correctly with the outboard A-lines on the outside of the link and the center A-line towards the inside of the link, the longer side of the link towards the riser.

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.

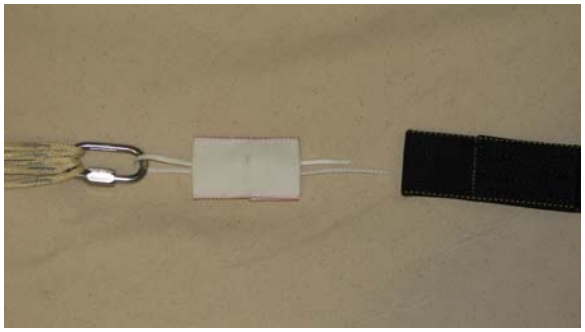
Fold the ends of the risers to narrow the top section. Maintain line continuity and place the link of the right front line-set onto the end of the right front riser. Tighten the barrel finger tight and then an additional ¼ turn with a small wrench until the link is tight. Pull the bumper down and secure as per the instructions on page 2 of this chapter.

Repeat this step for the left front riser.

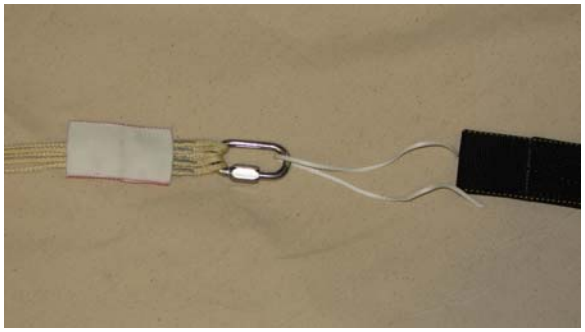


Repeat these steps for the two rear risers, ensuring that the outboard "C" line is on the link first.

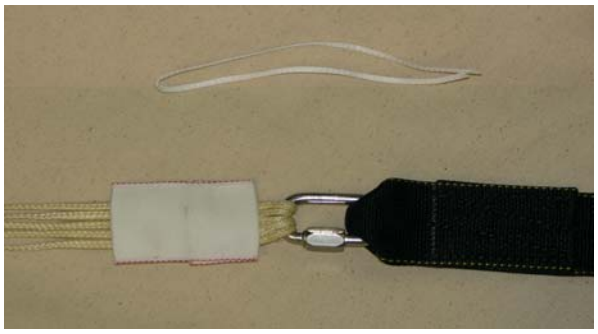
4.1.1 Installing the Bumpers.



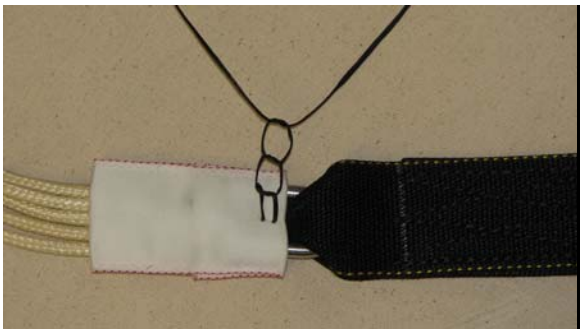
With the line group correctly assembled onto the link, run a short piece of line through the closed link and the center of the bumper.



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



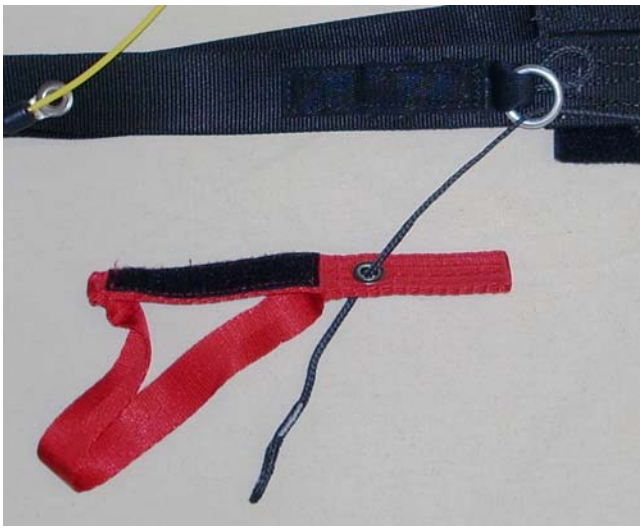
Fold the top of the riser and install the link. Tighten the barrel of the link. Ensure continuity of the line group.



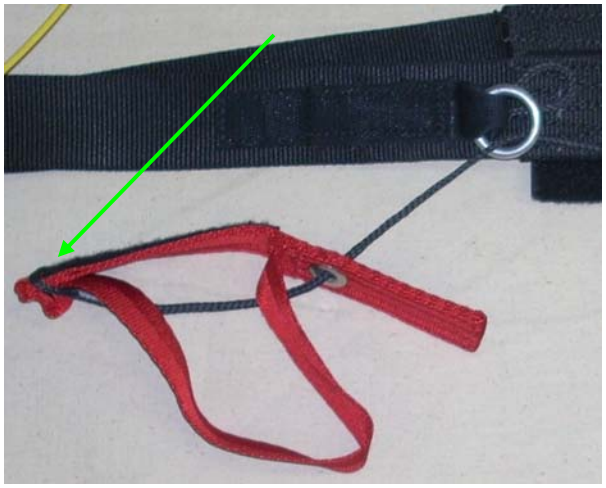
Cinch the bumper over the link and tack into place. The tacking should go through both sides of the bumper and include a surgeon's knot and locking knot. Once tight, cut the loose ends of the tacking thread.

4.1.2 Installing the Toggle onto the Control Lines.

Once the Reserve Parachute is assembled onto the Reserve Risers, pass the control line through **ONLY** the appropriate slider grommet and guide ring on the Reserve Riser and **NOT** through the Dacron locking loop.



Pass the control line through the rear of the toggle.



Pass the loop of the control line over the bottom of the toggle.

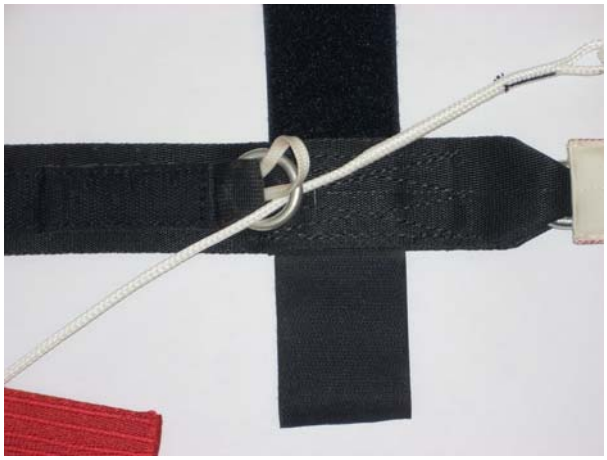
Tighten the loop up to the grommet.

Repeat for the other toggle.

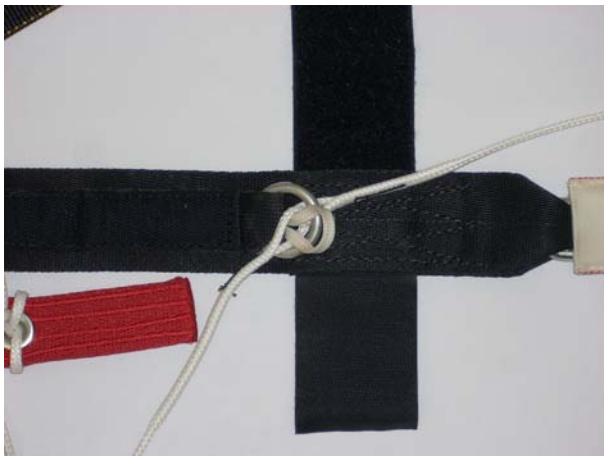
The parachute brakes are now ready to be set.

4.1.3 Setting the Reserve Canopy Brakes.

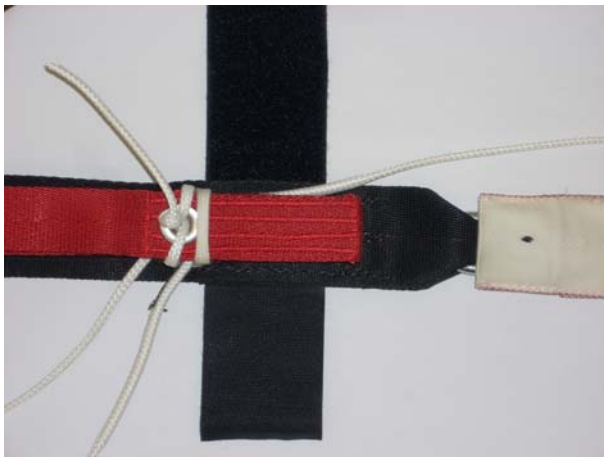
After assembling the toggles correctly, pull the control line so that the "cat's eye" of the control line is just below the guide ring located on the riser.



The control line should pass only through the guide ring and **NOT** the Dacron loop located on the riser.



Pull the Dacron locking loop through the guide ring and "cat's eye" of the control line.



Insert the toggle into the Dacron locking loop, ensuring the guide ring and "cat's eye" are underneath the toggle and the brake setting is below the guide ring.

Mate the Velcro of the riser and the toggle.

"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.

4.2 Installing the Closing Loop in the Reserve Container.

Follow these Instructions for Installing the Closing Loop in the Bottom Plate of the *Wings Tandem* Reserve Container.

Pictured above is the Reserve Container with the 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.

If the length of the closing loop is known it can be set at this time and a double knot can be tied to secure the closing loop. If not it can be determined when closing the reserve container and secured at that time.

Begin by lifting the elastic covering of the top grommet.
Pass the Closing Loop down through the top grommet.

Pass the Closing Loop 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.

4.3 Installing the Automatic Activation Device. (AAD)

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 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.


Fig. 1

Processing Unit


Fig. 2

Release Unit

Control Unit

Installation complete.

4.4 Installing the Reserve Static-Line. (RSL)

Mate the Pile Velcro of the RSL with the Hook Velcro under the RSL channel of the **Left Side** Reserve Riser. 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.

Insert 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 ring of the RSL then through the guide ring on the Container.

Installation is complete.

4.5 Installing 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 inserting the shortest yellow cable into the short cutaway housing.

Insert the other yellow cable into the other cutaway housing.

Insert the two (2) stiffeners on the Release Handle into the T-3 slots as shown.

Mate the Hook Velcro of the Cut-away Handle to the Pile Velcro of the MLW pocket.

4.6 Assembly of the Optional Examiner's Handles.

Pictured above are the Instructor/ Examiner Cutaway Handle and Reserve Handle **(WT-503)**, Handle Pockets **(WT-504)** and Handle Lanyards **(WT-505)**. These handles are interchangeable and may be used for either the Cutaway Handle or the Reserve Ripcord Handle.

Handle colors should match the colors of the corresponding handles on the Main Container, but may be chosen by the user.

The Handles are held in place with Velcro while the Pockets are secured to the Passenger Harness with snaps.

A lanyard of HMA 1750# line connects the Instructor/Examiner Handle to the Emergency Handle and has a Snap Shackle for easy "on" and easy release from the Emergency Handle.

Lay the Handle Pocket **(WT-504)** beside the Passenger Harness as shown above. The Velcro on the Pocket will be facing up.

Lift the webbing away from the Passenger Harness as shown above.

Do Not Place the Handle Pocket around the Main Lift Webbing.

Wrap the Handle Pocket around the webbing and snap the three snaps together.

Mate the Velcro of the Instructor/Examiner Handle to the Velcro of the Handle Pocket.

Close the Velcro covering of the Handle Pocket over the Instructor/Examiner Handle.

Repeat these procedures for the other Handle and Pocket.

Chapter 5

Tools

5.1 Packing Tools Checklist.

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

Tool used:	**Pre-packing**	**Post-packing**
Packing paddle	____ used	____ 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
_____	____ used	____ used
_____	____ used	____ used
_____	____ used	____ used
_____	____ used	____ used
_____	____ used	____ used
_____	____ used	____ used
_____	____ used	____ used
_____	____ used	____ used

5.2 Recommended Packing Tools

SHOT BAG

MECHANICAL TENSION DEVICE

PACKING PADDLE

TENSION PLATE

TEMPORARY PIN

.22 GUN CLEANING ROD

SCREW DRIVER

SCISSORS

PULL-UP CORD

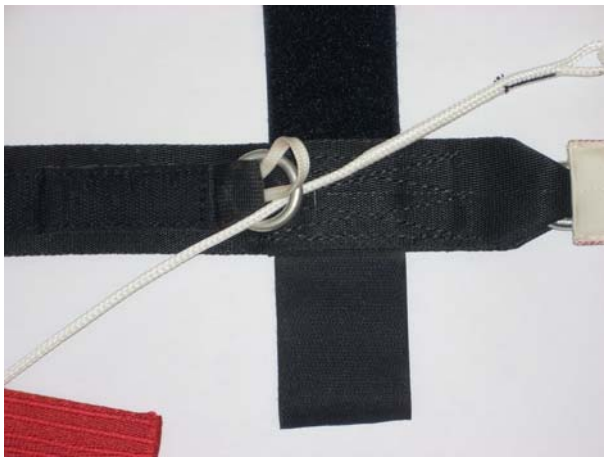
Chapter 6

Reserve Packing

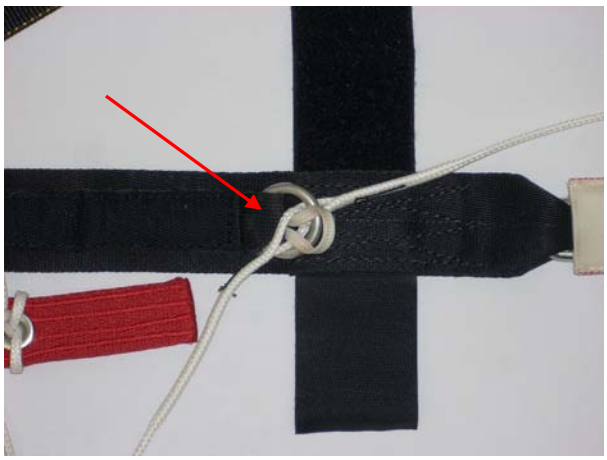
6.1 Setting the Reserve Brakes.

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.

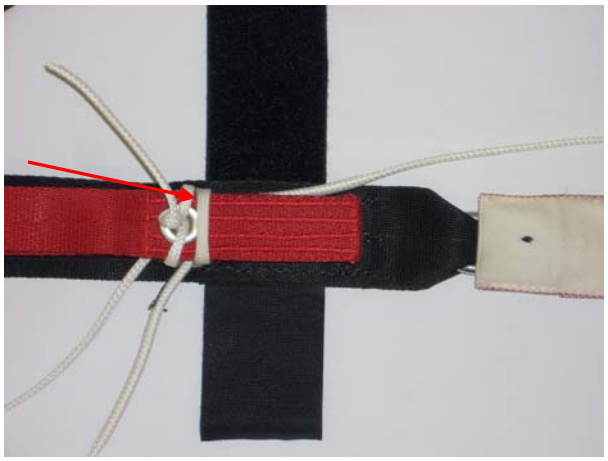
Check to be sure that any twists in the Control Lines have been removed before proceeding to setting the brakes.



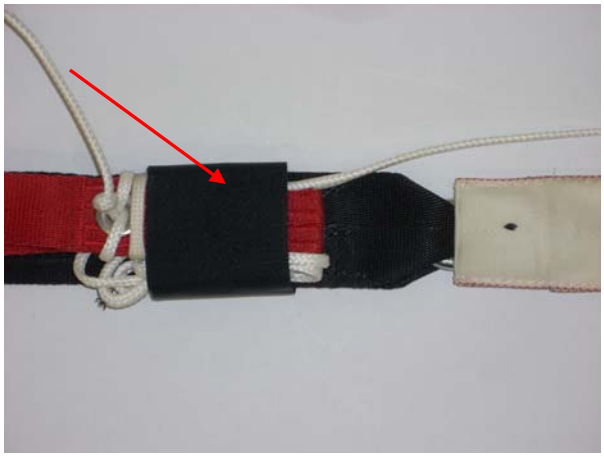
The Control Line should pass only through the guide ring and **NOT** the Dacron loop located on the riser.



Pull the Dacron locking loop through the guide ring and *"cat's eye"* of the control line.



Insert the toggle into the Dacron locking loop, ensuring the guide ring and *"cat's eye"* are underneath the toggle and the brake setting is below the guide ring.



Mate the Velcro of the Riser and the Toggle.

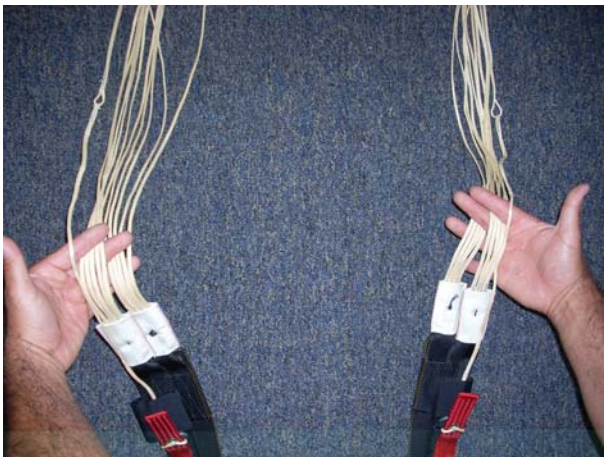
"S"-fold the excess Control Line next to the toggle tip.

Wrap and secure the Velcro around the toggle tip as shown.

Repeat steps for the other brake.

6.2 PRO Pack Method of the Reserve Canopy.

Follow the Instructions for stowing the Reserve Riser Brake Toggles in Chp. 6.1.



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 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.

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

Pull the slider down and away from the slider stops.

Dress the lines towards the center of the reserve.

On the outside folds, smooth out the material between the A-B, B-C, C-D and D-Control Lines.

Fold the A-B panels in half to narrow the pack job for the free-bag.

Do **Not** Include the **Nose** in these folds.

Repeat for B-C, C-D panels.

Flake the tail of the parachute on top of itself. This step will involve folding half cells between the control lines and whole cells on the remainder of the trailing edge.

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

Finish flaking the tail into half folds.

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.

"S"-fold the four (4) nose cells under the corresponding side of the parachute.

Carefully squeeze out any trapped air.

"S"-fold lower portion of canopy up to the trailing edge of the parachute and place under the trailing edge. If Needed.

Find center seam and follow up to the nose.

Separate into two (2) ears and gather center cell material.

Place free-bag under the reserve with the trailing edge of the Reserve Parachute in line with the mouth of the Free-bag.

"S"-fold each ear on top of the canopy.

Put all of the fabric from one ear into the Free-bag, filling out the ear of the Free-bag.
Repeat for the opposite ear; wrap Free-bag around the "S"-folded portion of the parachute.

Close the Free-bag by passing the safety stow through the grommets of the Free-bag and make the first line bight approximately 1 1/2" and place in the safety stow.

Secure the Free-bag closed by making a second line bight and placing it in the safety stow.

Make the first line bight and place into the corner of the line pouch.

Take the second line bight and place it into the opposite corner of the line pouch.

Alternate line stows into the pouch until a little less than 6" of line remains.

Close the line pouch with the Velcro tabs.

Kneel on the center of the Free-bag to form a "nest" for the reserve Free-bag Bridle and Pilot-chute.

Place Free-bag into Reserve Container.

Thread the Closing Loop through the AAD cutter.

Thread the pull-up cord through the Free-bag grommet.

Make sure that the Reserve Risers are tight and that the corners of the container are filled with the Free-bag.

6.3 Closing the Reserve Parachute using the "*Reserve Boost*" RSL.

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

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

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

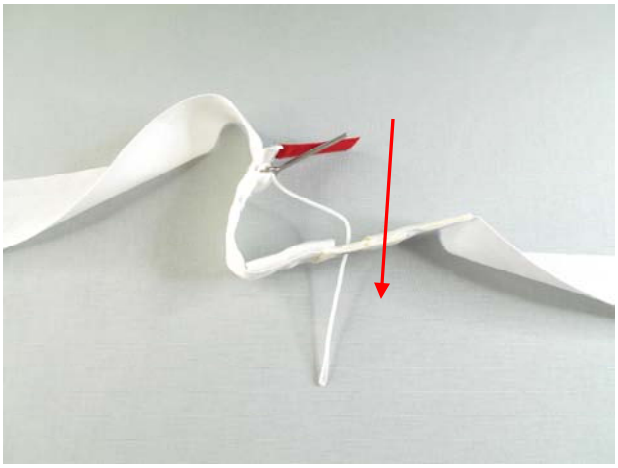
Fold the Bridle back towards the top of the Reserve Container.

Tuck the folded Bridle under the Side Flaps.

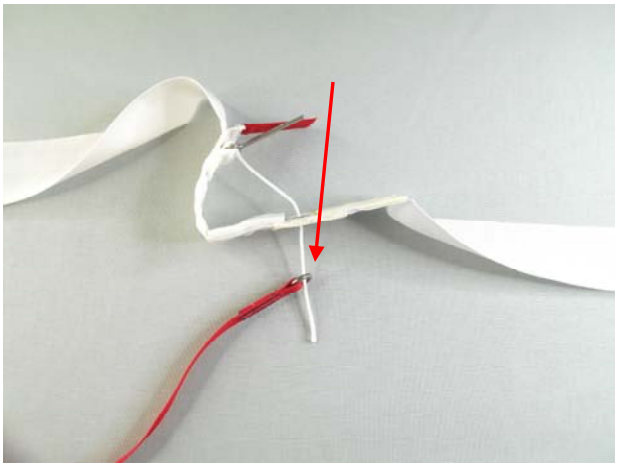
Do **NOT** tuck more than 1" on each side.

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

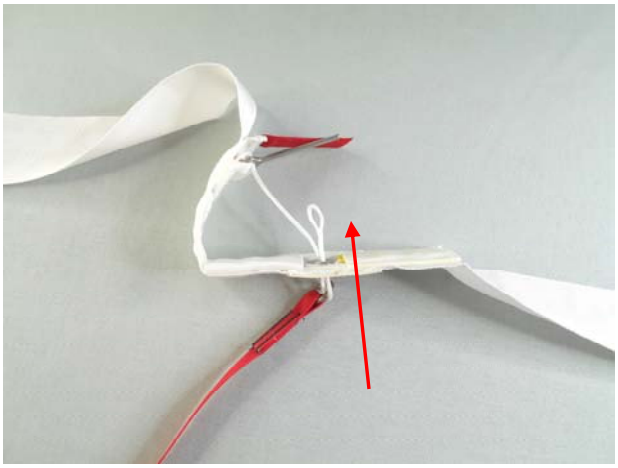
"Arm" the M.A.R.D. ***"Reserve Boost"*** at this time.



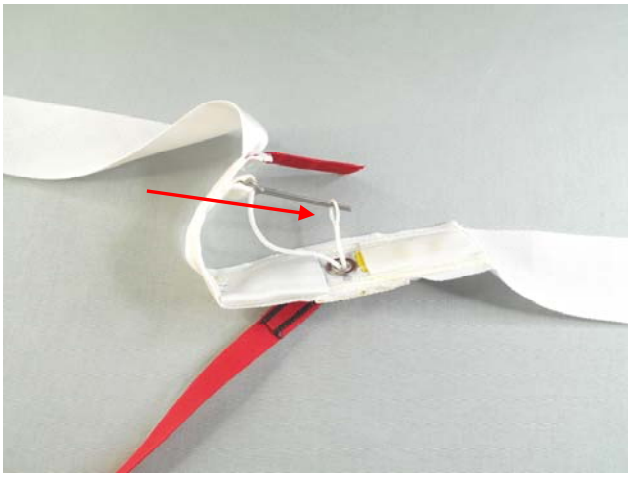
"Arm" the M.A.R.D. ***"Reserve Boost"*** at this time by passing the Spectra Line Loop down through the #0 grommet.



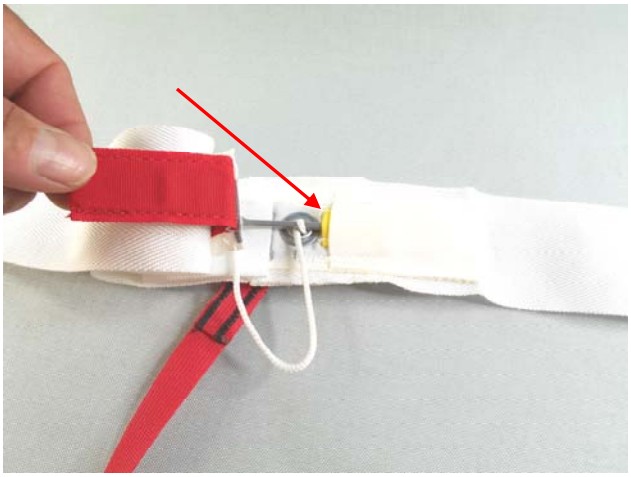
Pass the Spectra Line through the mini ring of the M.A.R.D. ***"Reserve Boost"*** RSL.

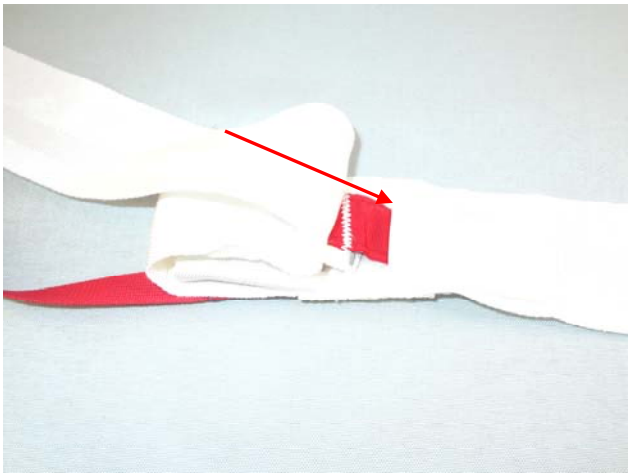


Loop the Spectra Line back up through the #0 grommet of the bridle.

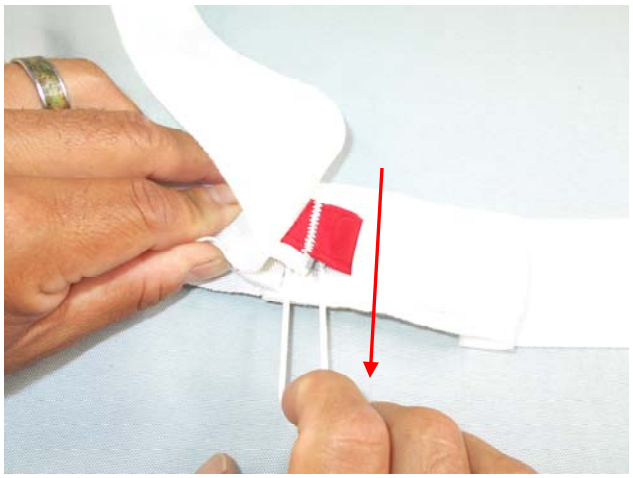


Slide the Long Pin through the loop then stow into the channel under the tuck tab flap. Be certain that it is in it's own channel of T-III tape (yellow).

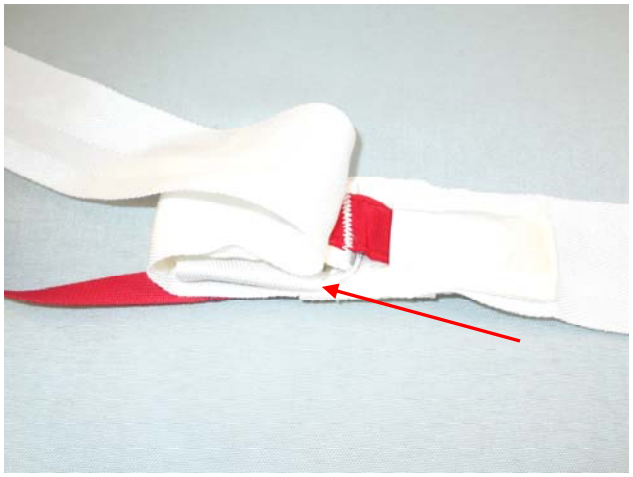




Tuck the stiffened T-III Tab (red) into the tuck flap on top of the Long Pin Channel.



Take up the slack of the Spectra Line Loop.



Stow the Spectra Line Loop into the looped polyester sleeve opposite the long pin channel.

Should look like this.

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.

Close the side flaps. Secure with a temporary pin.

"S"-fold the remaining bridle at a right angle to the tucked bridle.

Thread the pull-up cord through the Reserve Pilot-chute and center 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.

Close and secure the Top Closing Flap with a temporary pin.

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

Tuck the flaps of the Top Cover under the **Top Closing Flap** as shown.

Tuck the **Top Closing Flap** into the slot of the Bottom Reserve Flap.

Follow all applicable rules for documenting and sealing the Reserve Container.

COUNT THE TOOLS USED DURING PACKING!

Packed, sealed and ready for the Main Parachute.

Chapter 7

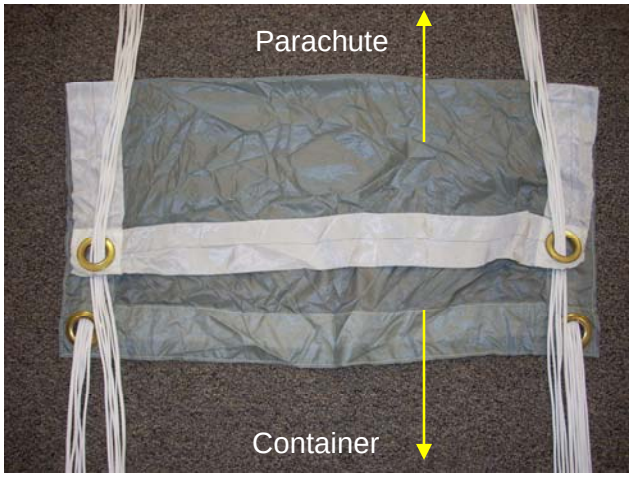
Main Parachute Packing

7.1 Assembly of Main Canopy.

7.1.1 Main Canopy Line Order.

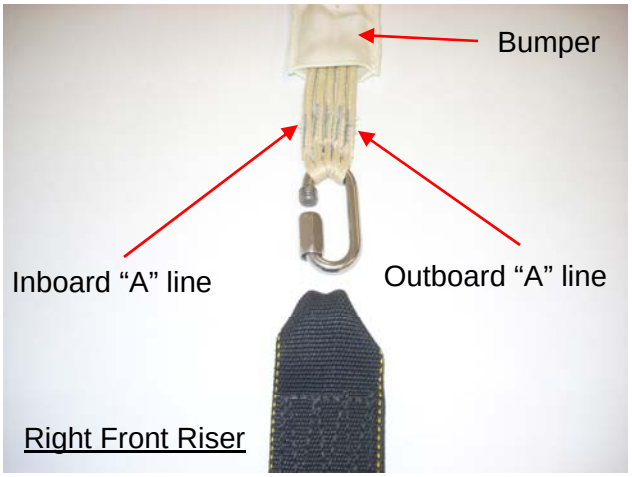
After inspecting the Parachute and the Harness/Container System, hang or lay the parachute out on the ground with the nose section on the ground and the Harness/ Container System oriented face down.

Check to see that the Bumpers are above the links. See the instructions on page 3 to install them if needed.

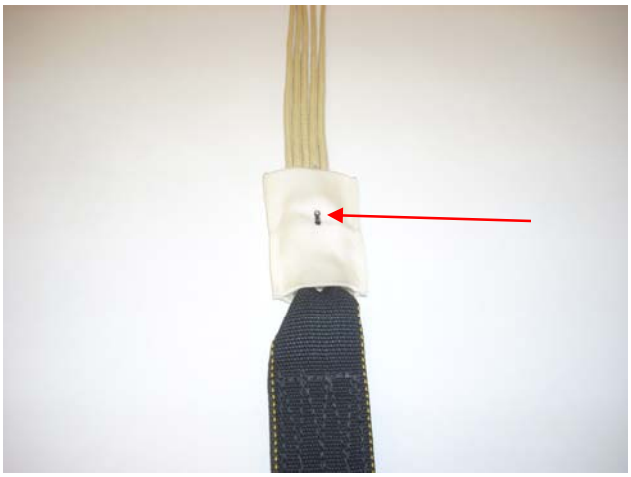


Ensure the slider is correctly oriented; the slider should be longer span-wise than chord-wise, with the reinforcing tape of the slider on the side facing the reserve parachute.

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.

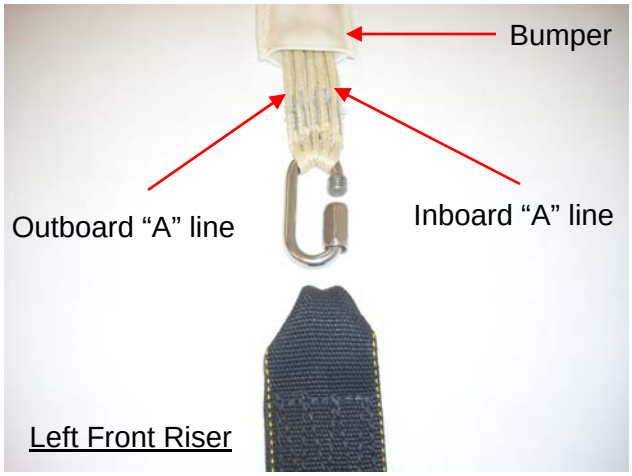


Fold the ends of the risers to narrow the top section. Maintain line continuity and place the link of the ***Right Front line-set*** onto the end of the ***Right Front Riser***. Tighten the barrel finger tight and then an additional ¼ turn with a small wrench until the link is tight.

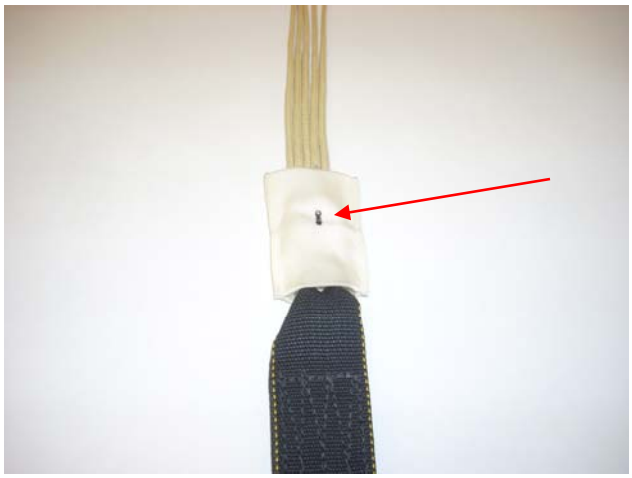


Pull the Bumper down and secure as per the instructions on page 3 of this Chapter.

Repeat these steps for the Left Front Riser.

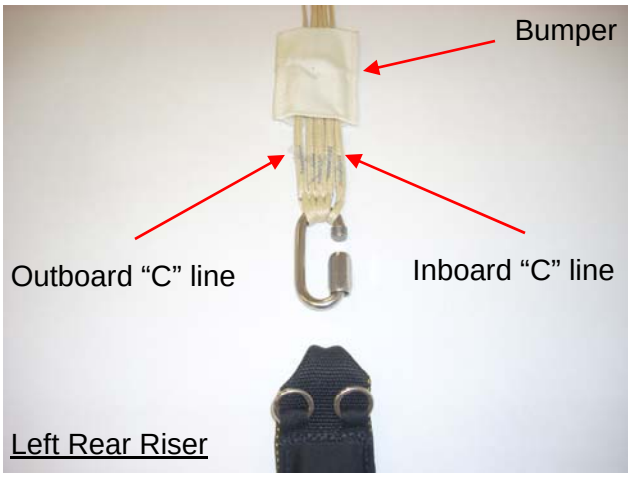


Fold the ends of the Risers to narrow the top section. Maintain line continuity and place the link of the ***Left Front line-set*** onto the end of the ***Left Front Riser***. Tighten the barrel finger tight and then an additional ¼ turn with a small wrench until the link is tight.

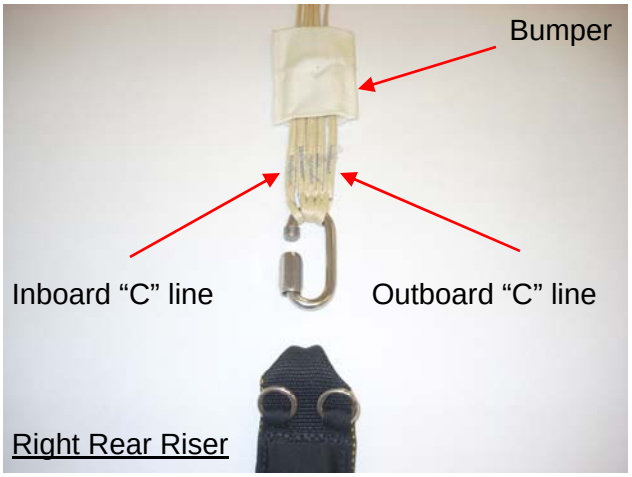


Pull the Bumper down and secure with a length of Super Tack cord.

See Instructions on page 3 of this Chapter.



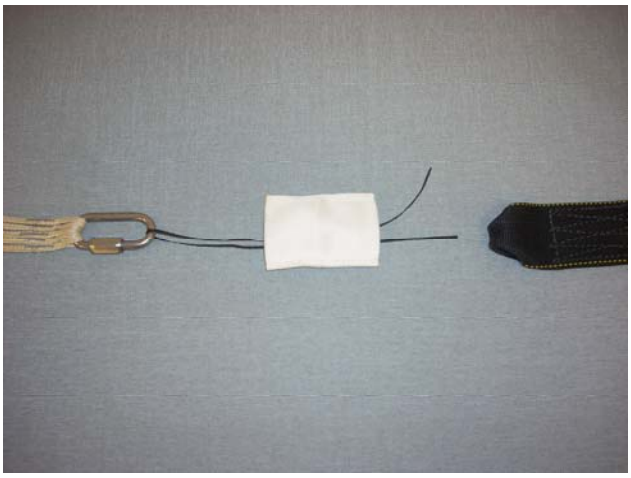
Repeat these steps for the two **Rear Risers**, ensuring that the Outboard "C" lines are on the link first.



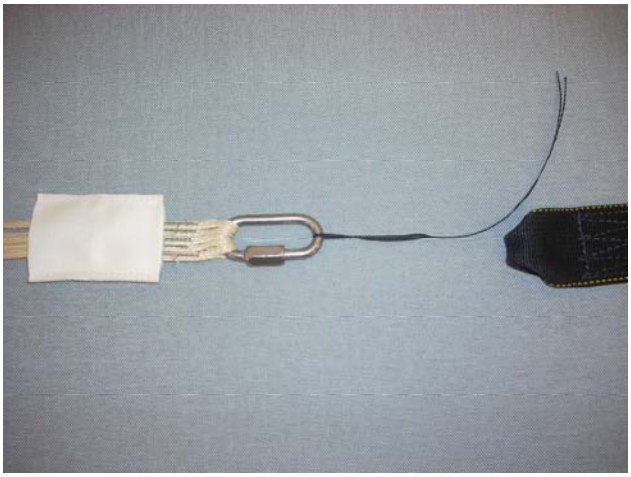
Pull the Bumpers down and secure.

Should look like this.

7.1.2 Installing the Bumpers.

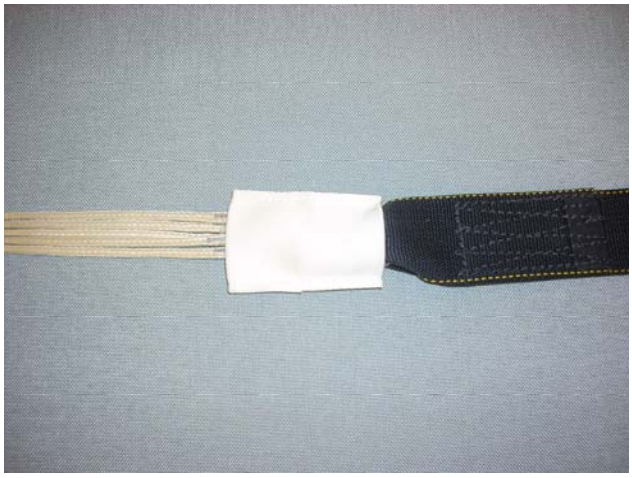


With the line group correctly assembled onto the link, run a short piece of line through the closed link and the center of the bumper.

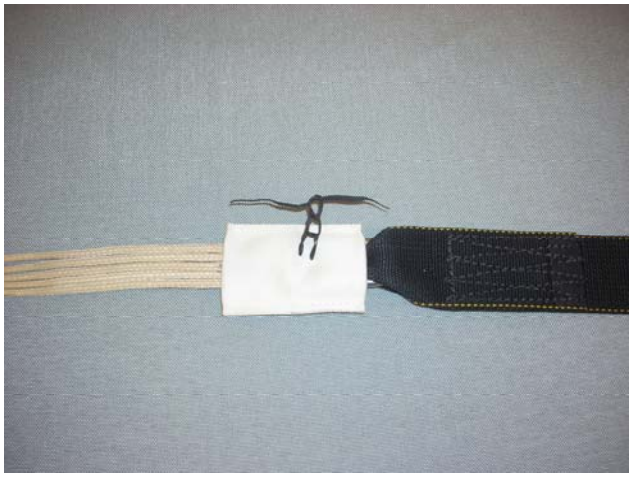


Pull the link through the bumper without twisting or turning the link.

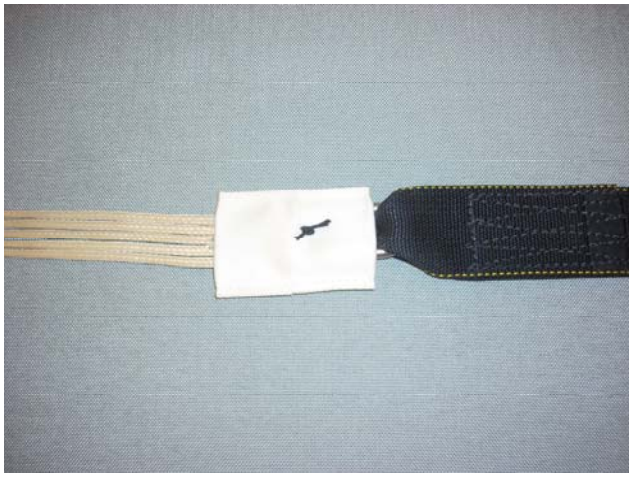
Fold the top of the riser and install the link. Tighten the barrel finger tight then a 1/4 turn with a small wrench.



Pull the bumper down and secure with Super Tack cord.



The tacking should go through both sides of the bumper and include a Surgeon's Knot and locking knot.



Trim the tails of the tacking cord.

7.2 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.

From the back side of the Riser pass the loop through the housing grommet.

Pass the yellow cable through the T-IIA loop.

Pass the yellow cable into the T-III channel.

An Awl may be needed to open the T-III.

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

7.3 Installing the Main Canopy Steering Toggles.

Before installing the Main Steering Toggles check the line continuity and be sure that it is correct.

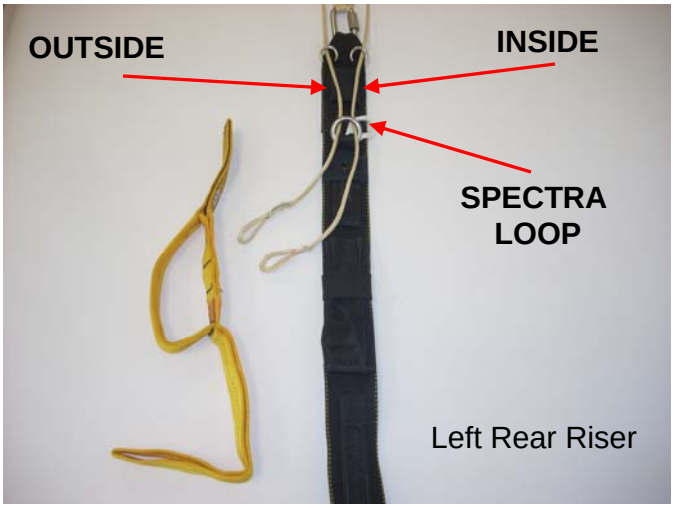
The Main Canopy has two (2) sets of steering lines.

The outside set controls the outside of the tail.

The inner set helps to steer the canopy and is used for "flaring" the parachute.

The ***Wings Tandem*** may be set up with either a Single Main Steering Toggle or the unique "Dual Toggle" Steering system.

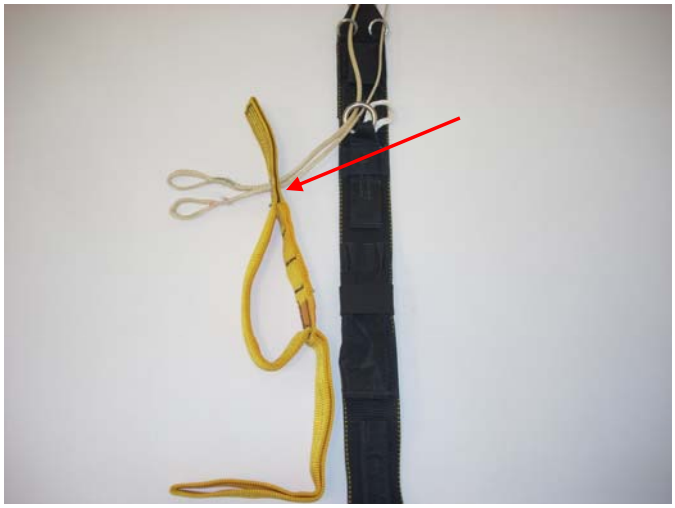
A. Follow these Instructions to set-up the *Wings Tandem* Main Parachute with a <u>Single</u> Main Steering Toggle.



Begin by pulling the steering lines through the two (2) mini rings at the end of the Rear Riser.

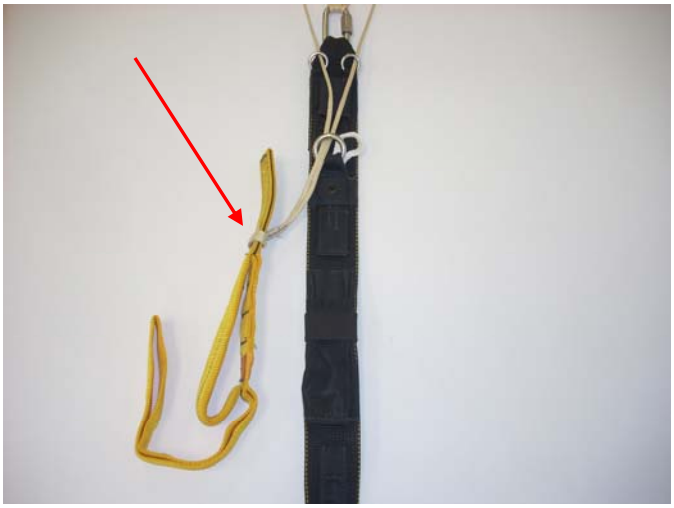
Be sure to keep the inner set to the inside ring and the outer set to the outside ring.

Pass both steering lines through the guide ring <u>only</u>, **DO NOT PASS THEM THROUGH THE SPECTRA LOOP!**



Pass both steering lines from the back side of the Main Steering Toggle through the 0# grommet.

Pass the tail end of the Steering Toggle through both loops of the steering lines.

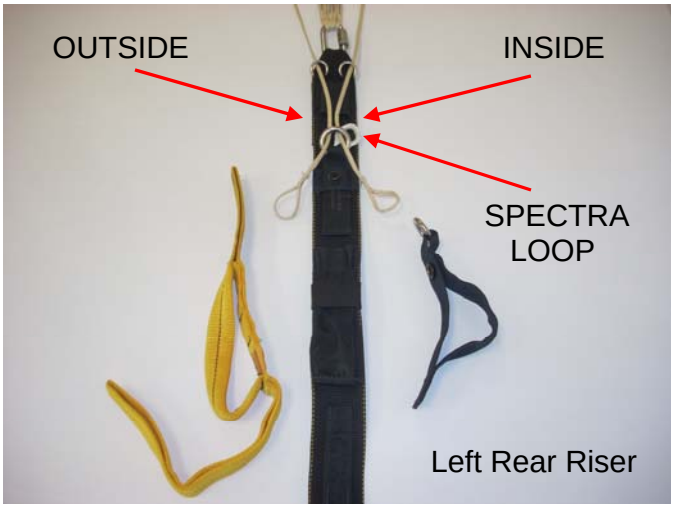


Tighten the knot formed.

Repeat the other riser.

Installation is complete for Single Steering Toggle.

B. Follow these Instructions to set-up the *Wings Tandem* with the "Dual Toggle" Main Steering Toggles.



Begin by pulling the steering lines through the two (2) mini rings at the end of the Rear Riser.

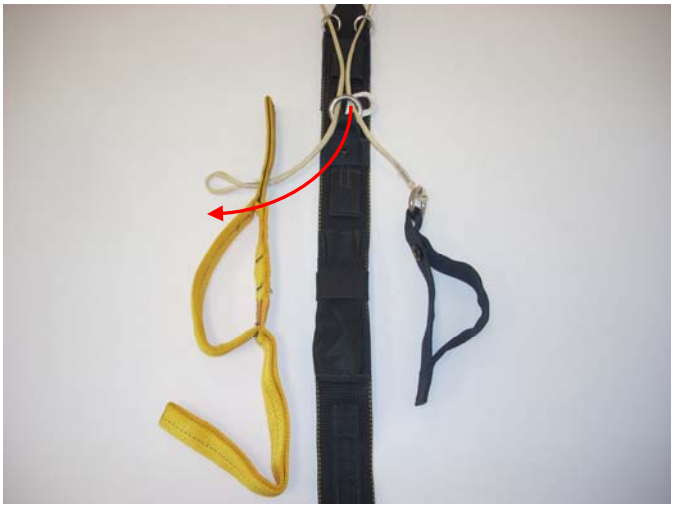
Be sure to keep the inner set to the inside ring and the outer set to the outside ring.

Pass both steering lines through the guide ring only, **DO NOT PASS THEM THROUGH THE SPECTRA LOOP!**

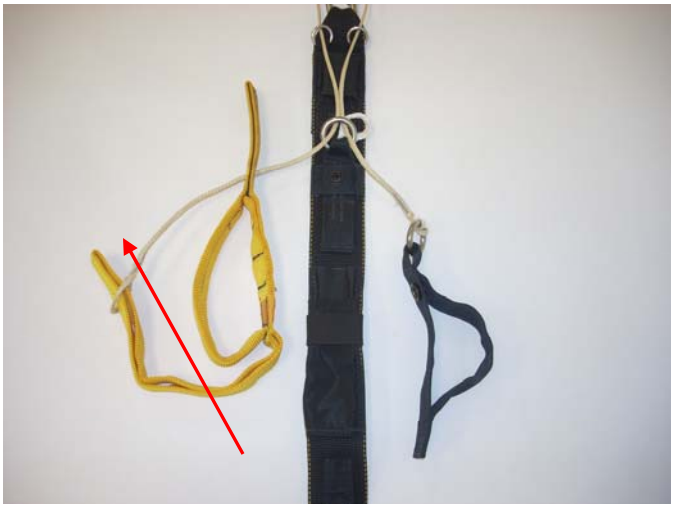
Pass the inner steering line through the ring from the back side of the "flaring toggle".

Pass the tail of the "flaring toggle" through the steering line loop as shown.

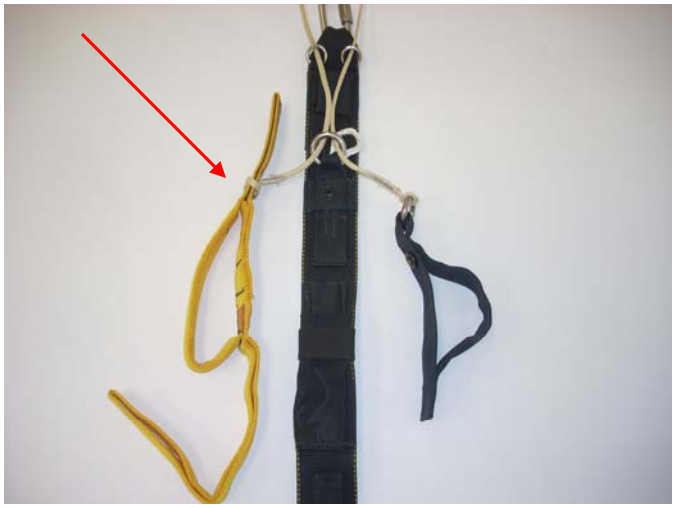
Continue to pass the toggle through the loop and tighten the knot formed.



Pass the outer steering line from the back side of the Main Steering Toggle through the #0 grommet.



Pass the tail end of the Main Steering Toggle through the loop of the steering line.



Tighten the knot formed.

Repeat on the other Riser and Toggles.

Installation of "Dual Toggle" Main Steering Toggles is complete.

7.4 Stowing the Main Steering Toggle, Single Steering/Flare Toggle.

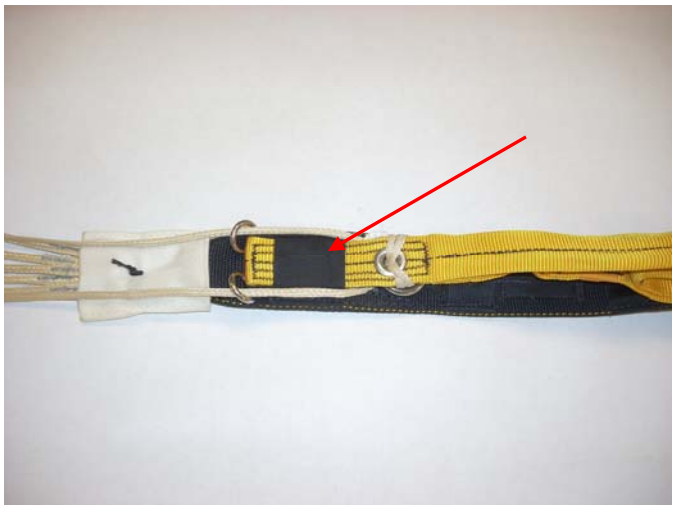
Follow these Instructions when using only a <u>Single</u> Main Steering Toggle.

The ***Wings Tandem*** does **<u>not</u>** use a "locking brake" configuration when stowing the Main Steering Toggles.

Pictured is the Main Steering Toggle of the ***Wings Tandem***. There is no "cat's eye" on the main parachute steering line to lock with the steering toggle.

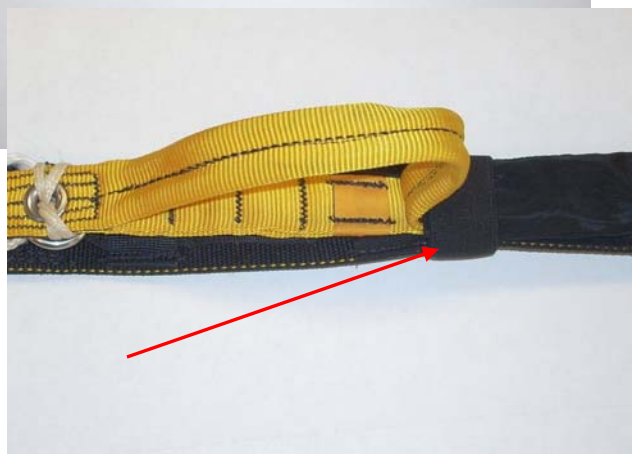
Begin by pulling the toggle down just below the Guide Ring of the Riser.

When using the Single Steering Line Toggle **<u>do not use</u>** the Spectra Loop.



Tuck the toggle end into the retainer.

Tuck the remainder of the Main Toggle into the keeper as shown.



Bring the Elastic Keeper up to the loop of the toggle.

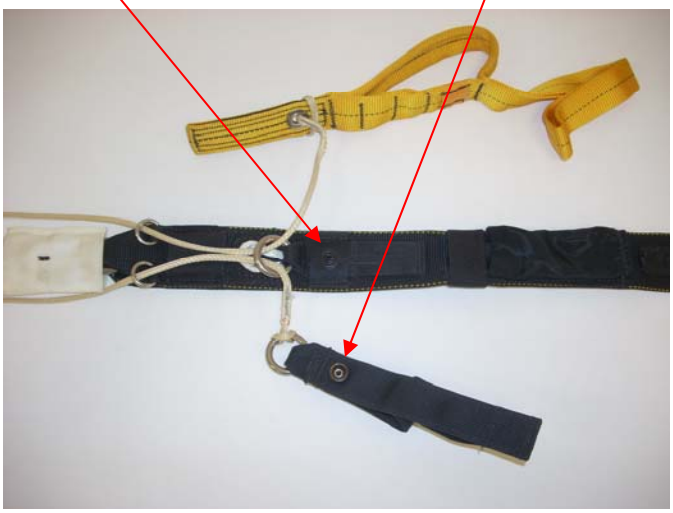
Should look like this.

7.5 Stowing the Main Steering Toggle, Dual Steering/Flare Toggle.

Follow these Instructions when using the Main Steering Toggle with the "Flaring Toggle".

The ***Wings Tandem*** does **not** use a "locking brake" configuration when stowing the Main Steering Toggles.

SNAP "A" SNAP "B"



Pictured is the unique "Dual Toggle" Main Steering Toggle of the ***Wings Tandem***. There is no "cat's eye" on the Main Parachute Steering Line to lock with the Steering Toggle.

Begin by pulling the two toggles down just to the snaps as shown above.

Pass the Spectra Loop up through the guide ring and the ring on the Flaring Toggle.

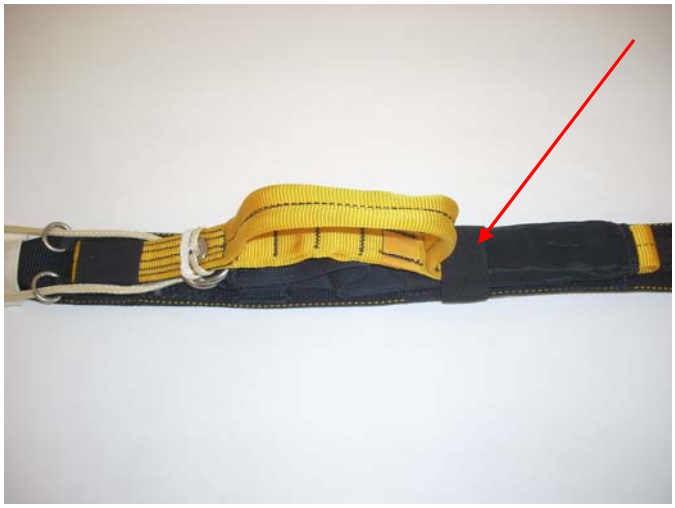
Snap the two snaps together.

Tuck the "Flaring Toggle" into the keeper.

Pass the Toggle through the Spectra Loop.

Tuck the Main Steering Toggle into the keeper as shown.

Tuck the Main Steering Toggle into the retainer as shown.

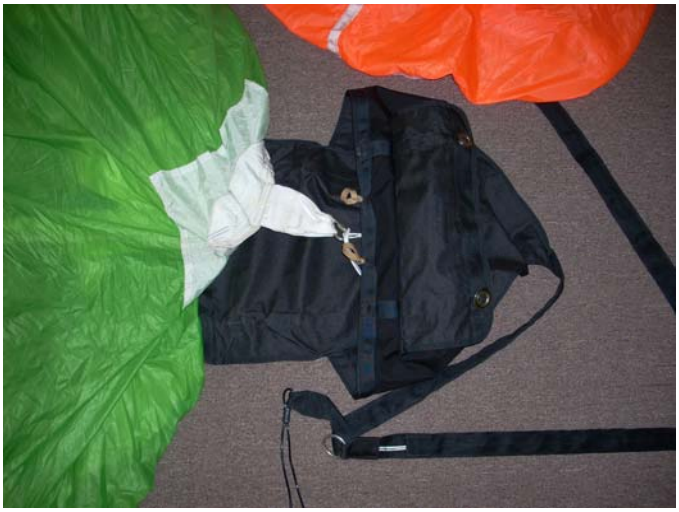


Slide the Elastic Keeper up to the Toggle Loop.

Should look like this.

Repeat other riser.

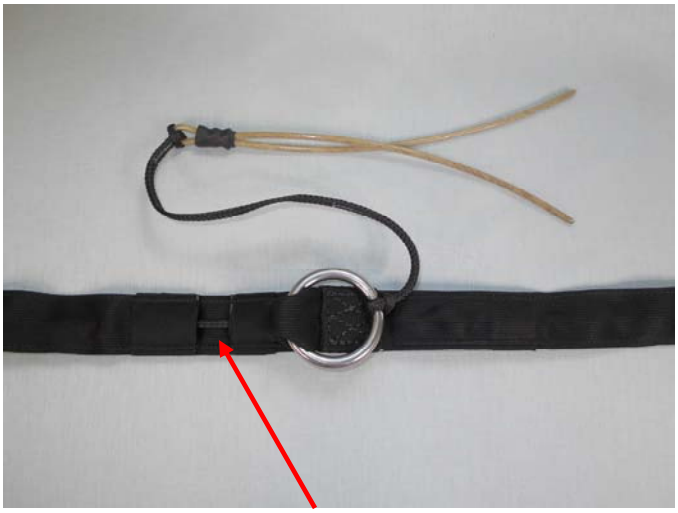
7.6 Arming the Drogue Pilot Chute.



Remove any twist in the Drogue Bridle or Center Lines and place Main Deployment Bag close to the Drogue Attachment Point of the Main Parachute on the top skin.

Extend the Drogue Bridle until it is at full extension, the center-line is tight, the bridle window shows a **Green line** and there is no excess center-line between the bag and the main parachute.

The Drogue is now armed.



CAUTION: NO GREEN LINE INDICATES THAT THE DROGUE PILOT CHUTE IS **NOT** ARMED!!

7.7 Flat Pack Method of the Main Parachute.

Before packing the Main Parachute be sure that the Deployment Bag is set-up for the specific Deployment Method.

Read and follow the Instructions for stowing the Main Steering Toggles in **Chp. 7.4 / 7.5.**

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.

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 to wrap 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. Place on top of the folded canopy.

While maintaining control of the canopy, narrow the material to fit into the Deployment Bag.

Continue to "S"-fold the parachute while maintaining control of the canopy material.

Bring the Deployment Bag up to the parachute.

Carefully place the parachute into the Deployment Bag.

Follow the instructions in **Chp. 7.9** for closing the Deployment Bag.

7.8 PRO-Pack Method of the Main Parachute.

Before packing the Main Parachute be sure that the Deployment Bag is set-up for the specific Deployment Method.

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

Repeat the other side of the parachute.

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 sections in a similar manner.

Lift the Tail up and slowly wrap the tail around the front of the parachute.

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.

Tighten the cocoon to the width of the Deployment Bag.

Check that the Drogue is still armed.

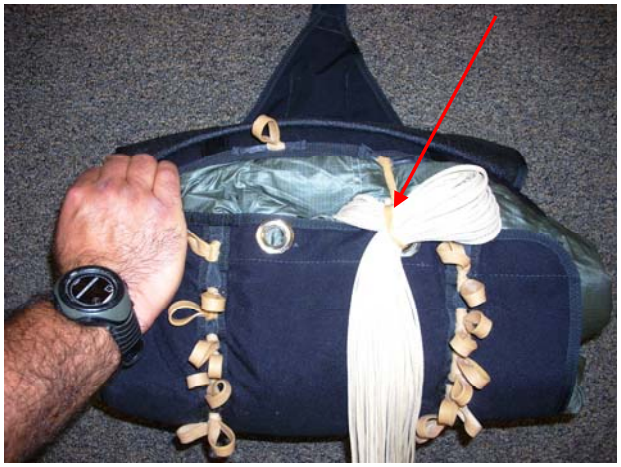
Start "S"-folding the parachute. The first "S"-fold should be approximately 1/3 of the canopy material. Place on top of the folded canopy.

While maintaining control of the canopy, narrow the material to fit into the Deployment Bag.

Continue to "S"-fold the parachute while maintaining control of the canopy material.

7.9 Closing the Deployment Bag.

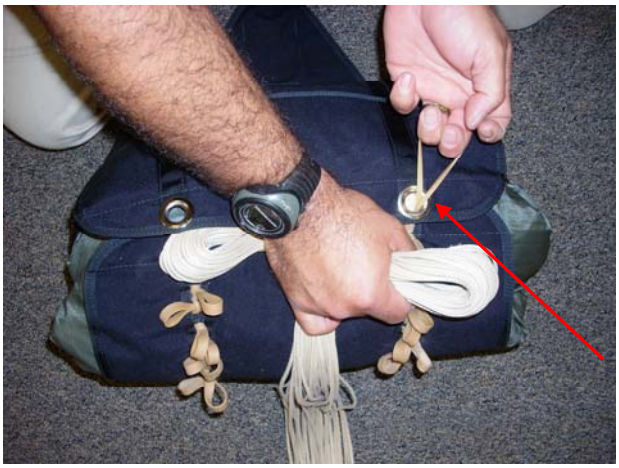
Carefully place the parachute into the Deployment Bag.



With the lines up through the center of the canopy and out of the Deployment Bag stow the lines in either of the inner stow bands of the inner closing flap.

The stow should not be more than 1 1/2"-2".

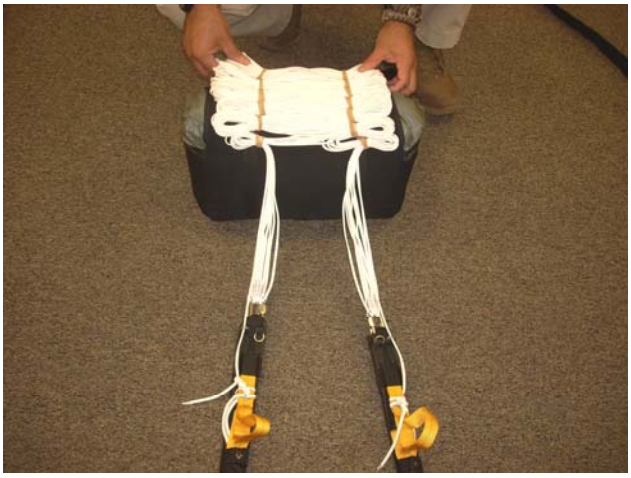
Stow another bight of the lines in the other inner stow band.



Stow the next line bight in the opposite outer stow band.

Finish closing the Deployment Bag with a bight in the last stow band.

Continue stowing the lines, alternating back and forth, until approximately 12"-15" remain.

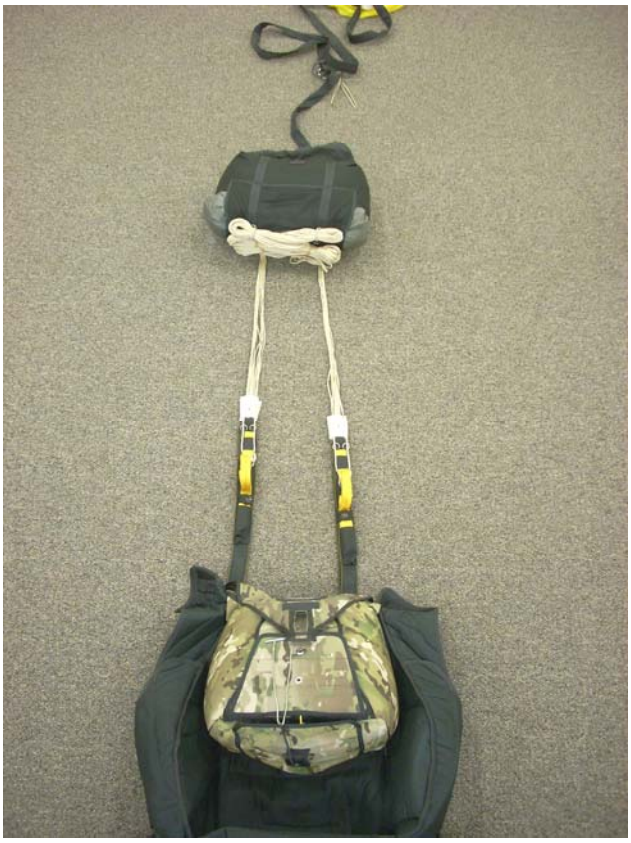


Split the lines into two (2) separate rubber bands for the last stow.

Should look like this.

Ready to put into the Main Container.

7.10 Placing the Deployment Bag into the Main Container.



With the Main Parachute secured in the Deployment Bag open the Main Container and remove any debris.

Carefully lift the Deployment Bag up and over the Container. Do **NOT** twist the lines.

Set the Deployment Bag into the Main Container with the lines towards the Bottom End of the Main Container.

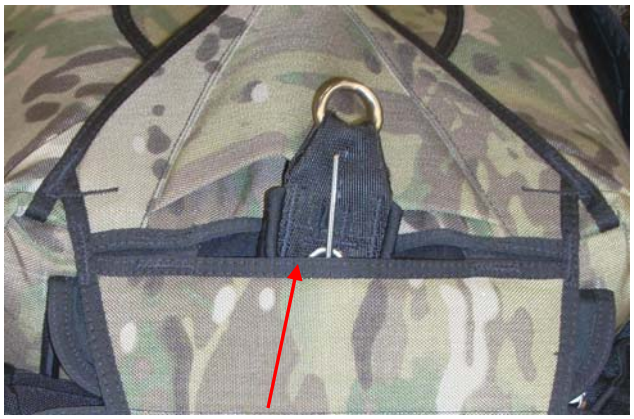
Lay the Main Risers on top of the Reserve Risers and cover them with the Magnetic Cover Flap.

Close the Tuck Flap over and into the Cover Flap as shown.

Chapter 8

Closing the Main Container

8.1 Closing the Main Container for Freefall Drogue Deployment.



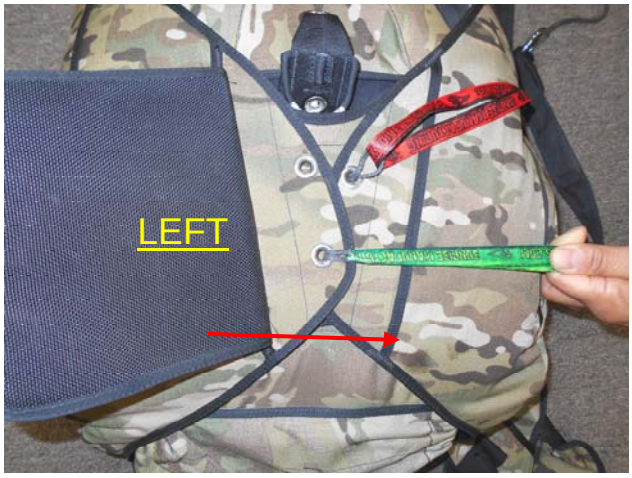
Before starting to close the Main Container pass the 3-Ring Drogue Riser through the slot between the Bottom Reserve Flap and the Top Main Flap.

With the Bridle placed at the top right corner, close the **Bottom Flap** over the Deployment Bag bringing both Closing Loops through the grommets. The Top Closing Loop goes through the top grommet and the Primary Closing Loop goes through the bottom grommet.

Notice the length of the Closing Loops at this point. This length will allow the ideal closing of the Main Container.

Close the **Top Main Flap**. Pass the Primary Closing Loop through the bottom grommet and the Safety Closing Loop through the top grommet.

Pass the Primary Closing Loop through the bottom grommet of the **Right Side Flap**.



Close the **Left Side Flap** using the lower grommet and the Primary Closing Loop.

Use either of the Main Closing Pins to secure the Primary Closing Loop.

Secure the Safety Closing Loop with the remaining Closing Pin.

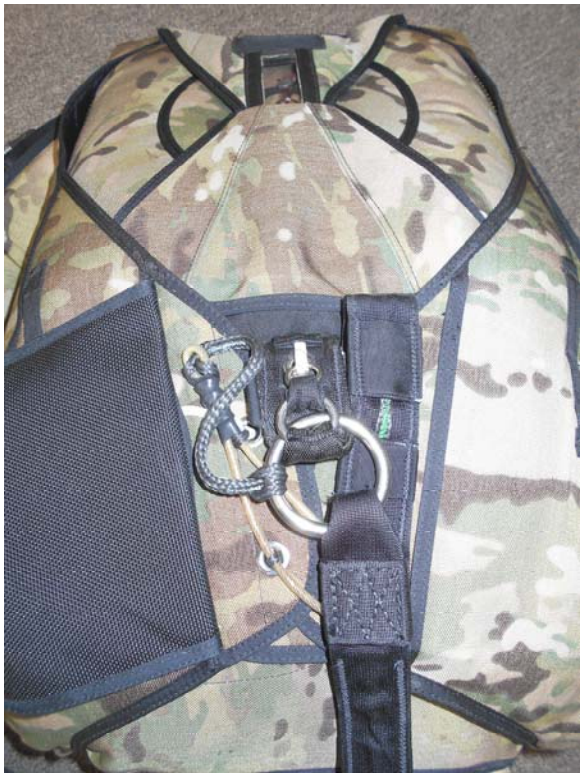
Tuck the ends of the Main Closing Pins into the **Right Side Flap.**

8.2 Assemble the 3-Ring Drogue Release System.

Assemble the 3-Rings.

Pass the T-IIA loop through **only** the smallest ring then through the grommet.

Secure the loop with the straight pin and tuck the pin end under the tape as shown.



Should look like this.

Tuck the Drogue Bridle under the Bottom of the Right Side Flap.

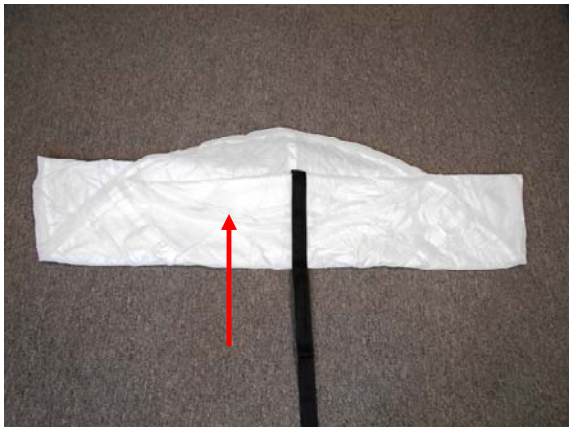
Tuck the Drogue Bridle under the Top Right Side Flap.

Close the Pin Cover Flap.

8.3 Stowing the Drogue Pilot-chute into the Pouch.

With no twist in the Drogue Bridle**,** lay the Drogue Pilot-chute out flat on its top. Mesh side up, handle down.

Fold Drogue Pilot-chute in half with the Drogue Bridle exiting the bottom of the curved side and the magnet facing up.



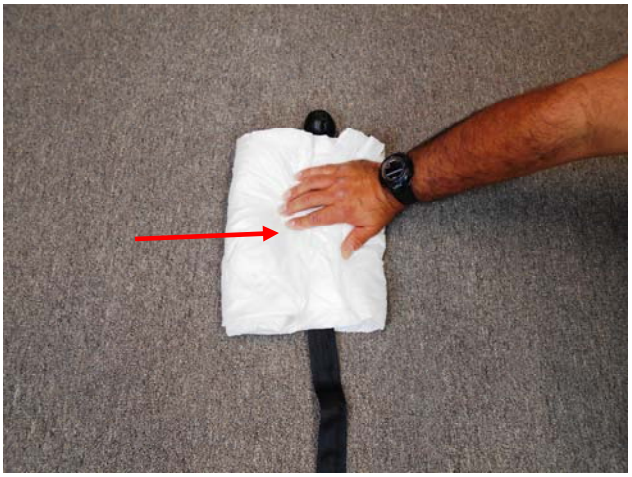
"S"-fold the Drogue Pilot-chute into thirds over the center.

"S"-fold the bridle on top of the folds.

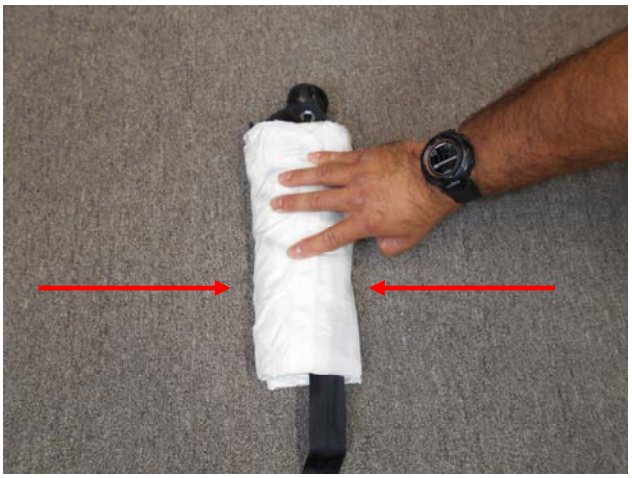
Fold the edge of the Drogue over the bridle.

Fold the Drogue Pilot-Chute into 1/3's over the "S"-folded Bridle.

Roll one side into the center.



Roll the other side to the center.



Roll both sides into the center the width of the Drogue Pouch.

Tuck the rolled Drogue P/C into the Pouch on the bottom of the Container.

Mate the Magnet under the Pouch.

Chapter 9

Donning the Student Harness

Begin by loosening all of the adjustable straps.

Help the student step into the leg straps and position the harness onto the student's shoulders.

Align the main lift webbing straight down from the shoulders to the hips. Fasten the chest strap and belly band.

Position the adjusted chest strap so that the attached shoulder pads fit comfortably.

Position the hip rings over the front of the hip bone, keeping the rings well forward.

Snug the leg straps, making sure that the excess strap is even.

Take the slack out of the back strap. Make sure that it sits above the buttocks.

The back strap and the belly band should work together to fit like a belt.

Place the top friction adapter forward over the student's clavicle.

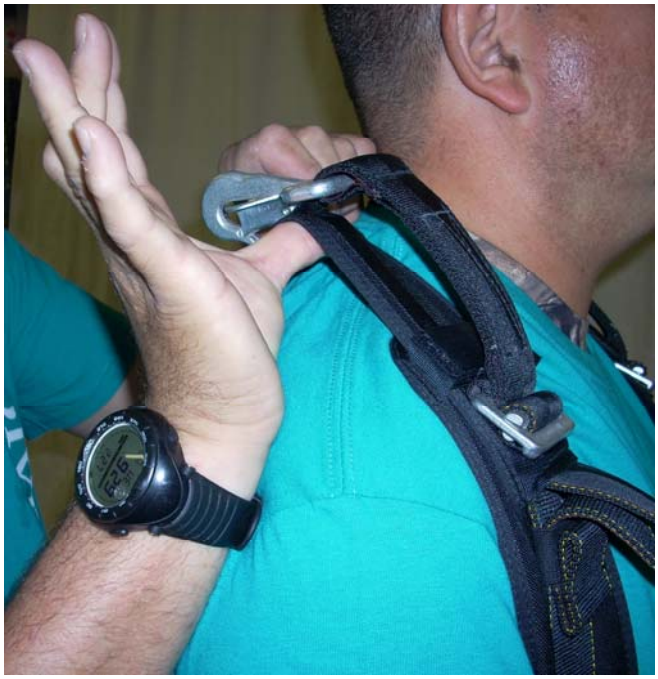
Take out the slack from the main lift webbing.

Confirm that the harness yoke sets just below the back of the neck.

Take out the slack from the back laterals.

Make sure the "T" strap is loose enough to allow the student to lift his/her legs for landing.

The properly fitted student harness. Note the hook knife in its pouch on the back of the student harness. A hook knife should always be carried on every tandem sky-dive.



Check the fit by lifting the harness at the shoulders. You should be able to lift it no more than one inch.

Stow all excess straps.

Chapter 10

Donning the Wings Tandem Main Container/Harness

IMPORTANT: Inspect the complete system before donning the ***Wings Tandem***.

10.1 Donning the *Wings Tandem* Main Container/Harness

Begin by loosening all of the Adjustable Straps.

Place the Harness/ Container onto the shoulders.

Step into the Leg Straps, or if applicable, snap the B-12 Quick Ejector Snaps.

Be sure that the Leg Straps have no twists in them.

Tighten the Leg Straps.

Adjust the Main Lift Webbing to fit snugly.

Thread the Chest Strap through the Friction Adapter. Pull the Chest Strap snug and stow the excess in the Elastic Keeper.

Stow all excess Straps in the Elastic Keepers.

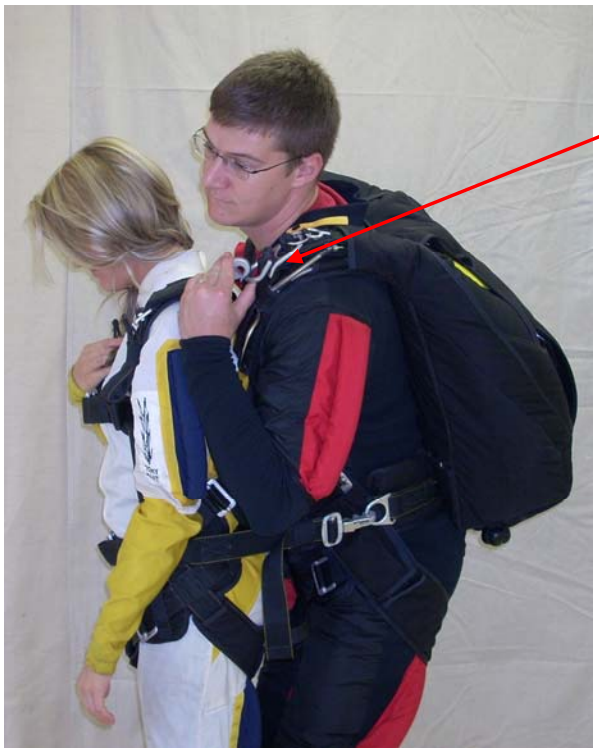
Be certain that all Handles are properly seated and accessible.

10.2 Connecting the Student to the Instructor.

Hook the Lower Attachment Snaps of the Student Harness to the Lower Attachment Rings of the ***Wings Tandem***.

Pull the Adjustable Straps of the Lower Connectors snug.

Stow the excess Straps.



Attach the Upper Attachment Butterfly Snaps of the Student Harness to the Upper Attachment Rings of the ***Wings Tandem***.

Pull out any slack on Student Main Lift Webbing.

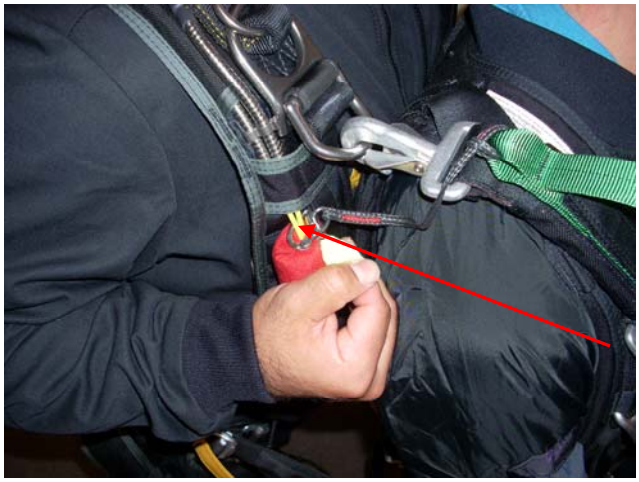
Stow the excess Straps with the Elastics.

Check Handles, Attachment Points and Student Harness before exit.

Ready to Skydive!

10.3 Optional Examiner Emergency Handles.

Follow these Instructions when using the Optional Examiner's Emergency Handles.



With the Instructor and the Passenger connected properly, attach the Snap Shackle of the Examiner's Emergency Cutaway Handle to the yellow cables of the Main Cutaway Handle.

Attach the Snap Shackle of the Examiner's Ripcord Handle to the Stainless Steel Cable of the Reserve Ripcord Handle.

Chapter 11

Operation of the WINGS Dual Harness / Container System

11.1 Deploying the Drogue Pilot Chute.

The **Drogue Pilot Chute** is easily deployed by reaching with the right hand back towards the bottom of the Main Container, grabbing the Soft Handle and pulling out with a swift and smooth motion. Release the Drogue Pilot Chute Handle as soon as you reach arm extension.

11.2 Drogue Release.

After the Drogue Pilot Chute has been deployed and **ONLY** after it has been deployed, the Main Parachute may be deployed.

This is accomplished by reaching to the Right Hip, grabbing the **Right** Hacky Handle and pulling it 6"-8". Since the Right Hacky Handle is Retractable it is not necessary to hold onto the handle after use.

The Main Parachute may also be deployed by pulling the **Left** Hacky Handle. The Left Hacky Handle is also retractable and may be pulled 6"-8" to release the Drogue Pilot-chute. Release the Hacky after pulling it.

11.3 Main Parachute Release.

In the event of the Main Parachute not deploying properly, it may be preferable to Release or "Cutaway" the Main Parachute.

This is accomplished by pulling the **Main Parachute Release Handle** which is located on the Right Main Lift Webbing below the 3-Ring Release Assembly.

The Main Parachute Release Handle comes in two (2) styles, a "pillow" and a loop style. Both use Velcro to secure it to the Main Lift Webbing Pocket.

The Handle should be grasped firmly in the right hand and "peeled" upward to separate the Velcro. In the same swift and smooth motion, the handle should be pulled down and away from the body to arm's length.

11.4 Reserve Parachute Deployment.

To deploy the Reserve Parachute, locate the **Reserve Parachute Ripcord Handle** on the **Left** Main Lift Webbing. There are four (4) styles of Reserve Ripcord Handles, two (2) metal "D" shaped, a "pillow" and a loop style. All are secured with the use of Velcro.

To pull the handle, the handle should be "peeled" from the Velcro in an upward motion then in a swift and smooth motion, pulled down and away from the body to arm's length.

11.5 Operating the Examiner Main Cutaway Handle.

The **Instructor/ Examiner Cutaway Handle** is easily used in the event that the Instructor/ Examiner needs to perform the cutaway procedure.

This is accomplished by pulling the I/E Cutaway Handle located on the Passenger's **RIGHT** Main Lift Webbing.

The Handle should be grasped firmly in the right hand and "peeled" upward to separate the Velcro. In the same swift and smooth motion, the handle should be pulled down and away from the body to arm's length.

11.6 Operating the Examiner Reserve Ripcord Handle.

The **Instructor/ Examiner Reserve Ripcord Handle** is easily used in the event that the Instructor/ Examiner needs to perform the Reserve Parachute Deployment Procedure.

This is accomplished by pulling the I/E Reserve Ripcord Handle located on the Passenger's **Left** Main Lift Webbing.

The Handle should be grasped firmly in the left hand and "peeled" upward to separate the Velcro. In the same swift and smooth motion, the handle should be pulled down and away from the body to arm's length.

Chapter 12

Replacement Parts

12.1 Replacing the Ballistic Reinforced Leg Pads.

The ***Wings Tandem*** has Replaceable Ballistic Reinforced Leg Pads. **(WT-304)**

Unfasten the snap button that secures the Primary Drogue Release Handle to the Leg Pad.

Shown above is the **Right Leg Pad** with Primary Drogue Release Handle.

Remove the Primary Drogue Release Handle.

Unfasten the snap button that secures the Leg Pad to the Leg Strap.

Back the Leg Pad out of the Adjustable Friction Ring. Remove Leg Strap from Friction Adapter.

Strip the Leg Pad from the Leg Strap.

Locate the inner webbing guide at the top of the Replacement Leg Pad, (the end with the button snap).

Pass the Leg Strap Webbing under the guide loop.

Continue to pass the leg strap through the padding and out the other side.

Snug-up the webbing, it should allow the pad to come together with the small leg pad.

Pass the buttoned end back through the Adjustable Friction Adapter Ring.

Slide the Snap Strap of the Leg Pad under the Leg Strap Webbing.

After mating the snaps tuck the Leg Pad into the Leg Pad Sleeve.

Reattach the Primary Drogue Release Handle and Sleeve to the Leg Pad.

Installation Complete.

Repeat the process for the **Left Leg Pad**.

12.2 Replacing the 3-Ring Drogue Riser. (WT-312)

The ***WINGS TANDEM*** has a Replaceable 3-Ring Drogue Riser. **(WT-312)**

It is attached to the Large Ring of the Internal Diagonal / Lateral Webbing with a Lark's Head Knot.

To replace the 3-Ring Drogue Riser, open the pocket that is on the bottom of the Reserve Container.

Reach into the pocket and pull the 3-Ring Drogue Riser out.

Pictured above is the back side of the 3-Ring Drogue Riser with Cover.

Slide the Riser Cover up to open the Velcro Tabs that release the Housings from the 3-Ring Riser.

Bring the Knots of the Elastic out from between the Riser Webbing.

Untie the Elastic Knots.

Completely remove the Elastic from the Channels on the sides of the Riser.

Shown above are the Right and Left Release Lanyards and Housings.

Remove the Elastic from the Straight Pin.

Remove the Straight Pin by loosing the knot and backing it out of the Loops of the Release Lanyards.

The Drogue Riser separated from the Release Lanyards.

The 3-Ring Drogue Riser removed.

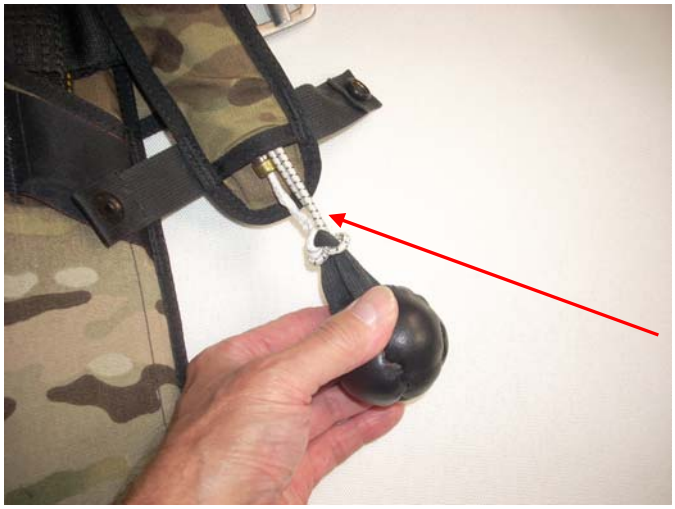
Pictured above is the **WT-312** Drogue Release Riser.

Inspect it carefully before installing it onto the ***Wings Tandem***.

Begin to install the Replaceable Drogue Release Riser by following the steps to remove the Drogue Riser in the reverse order as removing it.

12.3 Replacing the Retractable Hacky Handle Connector Loop. (WT-309)

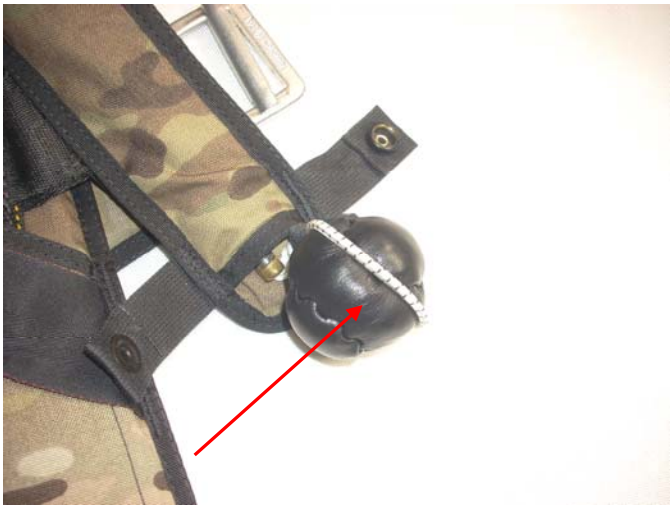
Begin to replace the Retractable Connector Loop **(WT-309)** by unsnapping the **Right-Side** Drogue Release Handle from the Right Leg Strap.



Pull the Right-Side Release Hacky to find the Retractable Connector Loop.

The Primary Release Handle separated from the Right Leg Pad.

Loosen the knot of the elastic loop.



Pass the Hacky through the elastic loop.

Pull the Left-Side Hacky Handle out to reveal the Connector Loop and knot.

Retractable Connector Loop freed from the Right Release Hacky.

Loosen the elastic knot.

Remove completely.

Pass the Hacky through the Connector Loop.

Retractable Connector Loop freed from the Left Release Hacky.

Remove completely from Hacky Handle.

Pull the Connector Loop from the Right Side.

Remove the Retractable Connector Loop completely from the right side.

Pictured above is the Replaceable Elastic Hacky Handle Connector Loop. **(WT-309)**

Inspect the Connector Loop carefully before installing it into the ***Wings Tandem***.

Insert a .22 rifle cleaning rod or similar tool into the opening on the right side of the Handle Sleeve.

From the left side attach the Retractable Connector Loop to the cleaning rod.

Pull the Connector Loop through the Back Pad from the Right Side leaving 3"-4" out.

Pass the Connector Loop through the Hacky Handle.

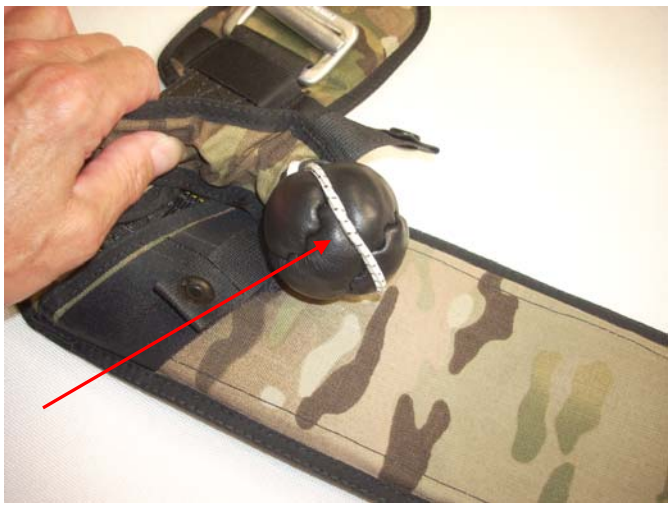
Pass the Connector Loop elastic over the Hacky Handle.

Tighten the Knot formed.

Left Hacky complete.

Pass the cleaning rod into the opening on the right side of the Handle Sleeve and attach the Connector Loop to it.

Pull the Connector Loop through the sleeve.



Tighten the knot formed.

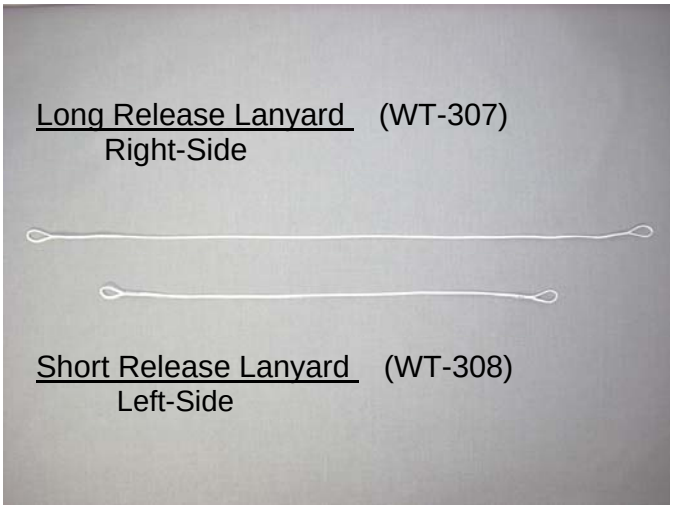
Replacement of the Connector Loop complete.

Pass the Snap Holder of the Right Drogue Release Handle under the retainer.

Fasten the snap.

Should look like this.

12.4 Replacing the Drogue Release Lanyards. (WT-307) & (WT-308)



Pictured above are the Right and Left Drogue Release Lanyards. **(WT-307 & 308)**

Pictured above is the 3-Ring Drogue Release Riser with the Left and Right Release Lanyards.

Spin the Elastic to expose the two knots.

Untie both knots.

With the knots untied remove the metal clasp.

Pass the elastic through the T-8 Riser.

Remove the elastic from the T-3 channel.

Pass the elastic through the eye of the Straight Pin. **(WT-310)**

The elastic loop removed from the Straight Pin.

Loosen the knot of the Release Lanyards.

Back the Straight Pin out of the loops of the Lanyards

The Straight Pin completely removed.

From the Right Release Handle pull the Lanyard out of the housing.

Loosen the knot on the Hacky Handle.

Back the Lanyard out of the knot.

Remove the tail of the Lanyard from the loop.

The Lanyard completely removed from the Hacky and the housing.

From the Left-Side Release Handle pull the Release Lanyard out of the housing.

Loosen the knot of the Lanyard.

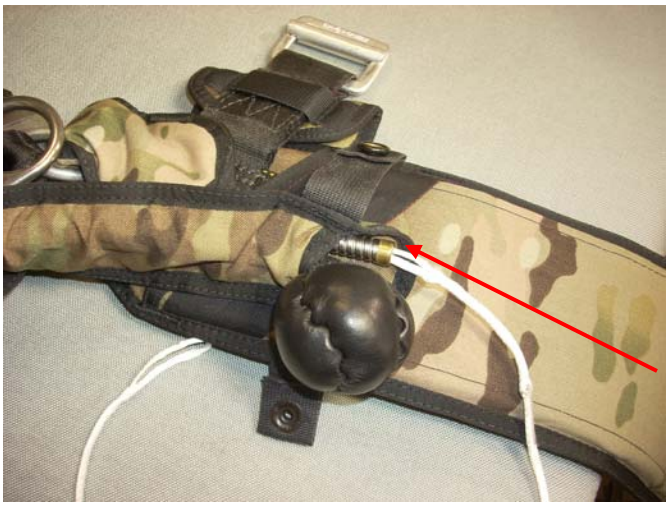
Remove the tail of the Lanyard from the loop.

The Lanyard completely removed from the Hacky and the housing.

Inspect the Drogue Release Lanyards carefully before installing them onto the *Wings Tandem*.

Begin to install the Left Replacement Lanyard **(WT-308)**, the shorter lanyard, by inserting the smaller looped end of the Lanyard into the housing.

Pass it up through the housing to the top.



On the Right side insert the small looped end of the Right Replacement Lanyard **(WT-307)**, the longer lanyard into the housing.

Pass it up through the housing to the top.

Continue to replace the Drogue Release Replacement Lanyards by following the Instructions in reverse from removing the lanyards from the Hacky Handles.

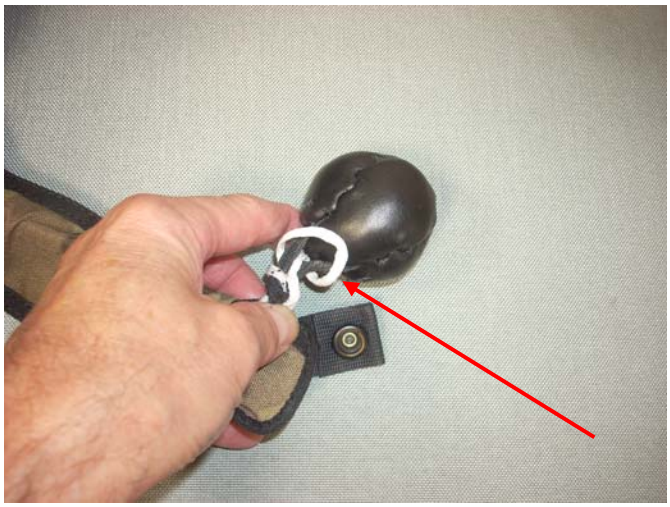
12.5 Replacing the Drogue Release Hacky Handles. (WT-306)

WT-306 Drogue Release Hacky
(Left and/or Right Side)

Pictured above is a Drogue Release Hacky Handle. It may be used as the Left or Right Release Handle.

To replace the Drogue Release Hacky Handles follow these Instructions.

Begin by releasing the Primary Drogue Release Handle from the Right Leg Pad. See pg. 1 Chp. 11.



Loosen the knot of the Release Lanyard.

Pass the Lanyard loop over the Hacky.

Place a Rapide Link on the Lanyard to prevent it from retracting into the housing.

Pull the Hacky out away from the Primary Drogue Release Sleeve and loosen the Elastic.

Pass the Elastic over the Hacky.

The Primary Drogue Release Hacky removed and the Elastic and Lanyard on the Rapide Link.

Inspect the Drogue Release Hacky Handle carefully before installing it onto the *Wings Tandem*.

Continue to replace the Right Side Drogue Release Hacky Handle by following the previous Instructions in reverse.

Pictured above is the Left-Side Drogue Release Hacky Handle.

Pull the Hacky out away from the Secondary Drogue Release Housing.

Loosen the knot of the Release Lanyard.

Pass the Release Lanyard loop over the Hacky.

Place the Release Lanyard on a Rapide Link.

Pass the Elastic over the Hacky.

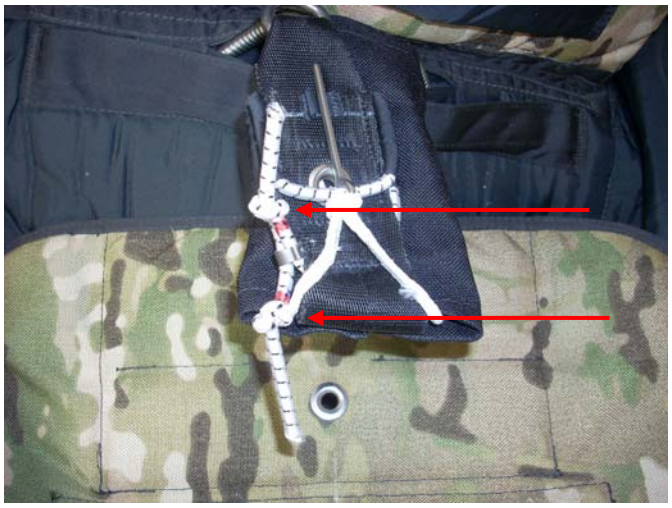
Place the Retracting Elastic onto the Rapide Link with the Release Lanyard.

Inspect the Drogue Release Hacky Handle carefully before installing it onto the *Wings Tandem*.

Continue to replace the Left Side Drogue Release Hacky Handle by following the previous Instructions in reverse.

12.6 Replacing the Drogue Release Pin Elastic. (WT-311)

Pictured above is the 15" long Replaceable Drogue Release Pin Elastic with Stainless Steel Clamp. **(WT-311)**



Begin to replace the elastic by spinning the knots out from between the T-8 Drogue Release Riser.

Pictured above is the Drogue Release Pin Elastic **(WT-311)** on the T-8 Drogue Release Riser.

Untie both knots.

With the knots untied remove the metal clasp.

Pass the elastic through the T-8 Riser.

Remove the elastic from the T-3 channel.

Pass the elastic through the eye of the Straight Pin. **(WT-310)**

Continue to remove the elastic from the T-3 channels.

The Drogue Release Pin Elastic completely removed.

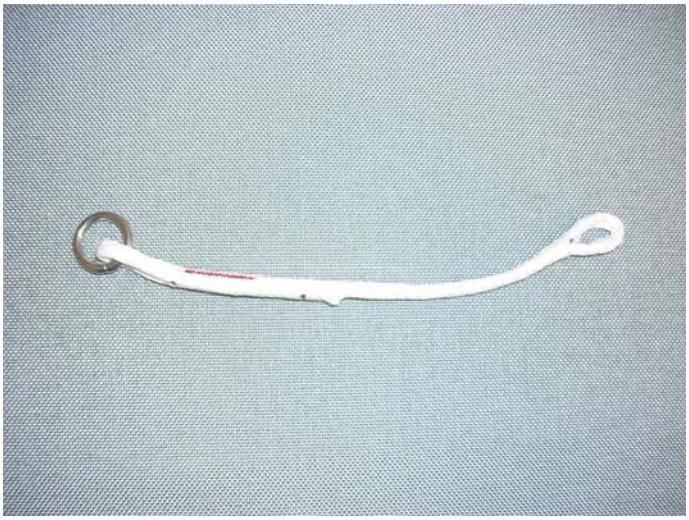
Inspect the Drogue Release Pin Elastic carefully before installing it onto the *Wings Tandem*.

Begin to install the Replacement Drogue Release Pin Elastic by inserting it into the T-3 channel on the side of the T-8 Drogue Release Riser.

Continue to replace the Drogue Release Pin Elastic by following the Instructions in reverse.

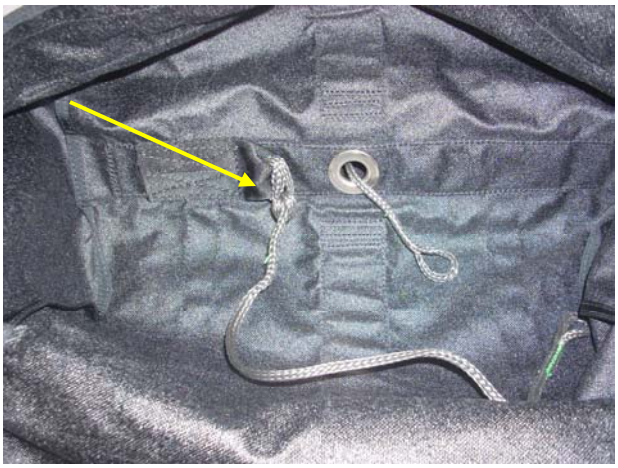
12.7 Replacing the Deployment Bag (WT-270) and Drogue Bridle. (WT-301)

The **Wings Tandem** comes with (2) 2000# Spectra Line Soft Links between the Drogue Bridle and the Deployment Bag to facilitate quick and easy replacement of either part. There is a third Soft Link to attach the Main Parachute.



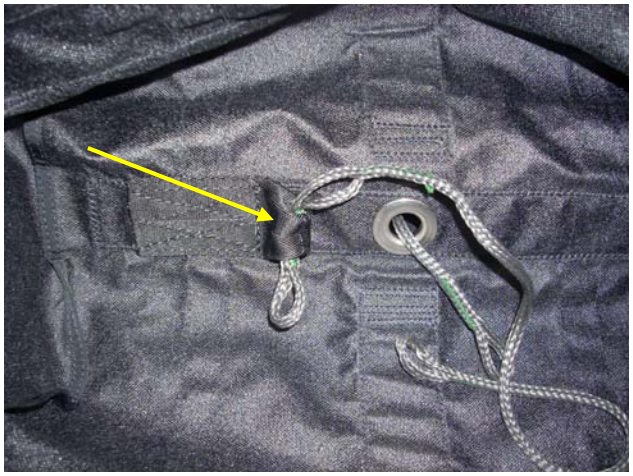
Part No. **WT-320**
Soft Link, 2000# Spectra Line

Pictured above is the 2000 lbs. Spectra Line Connector for the Drogue Bridle to Deployment Bag Assembly.

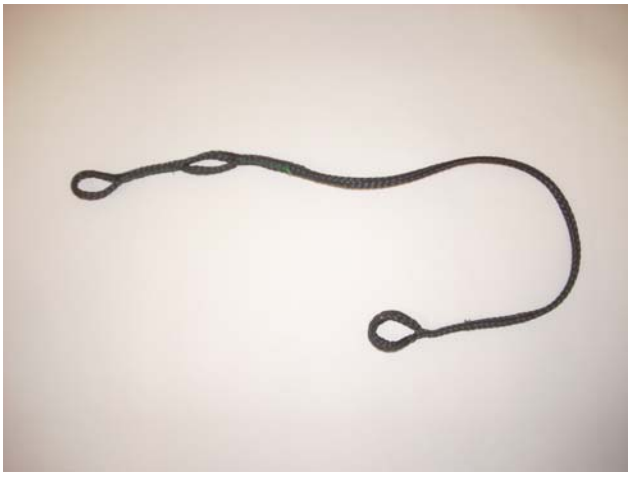


Begin to replace either the Drogue Bridle or the Deployment Bag by removing the Safety Line first. **(WT-303)**

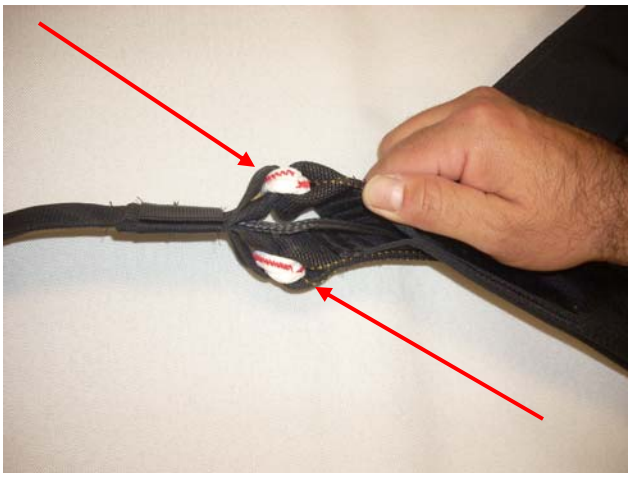
Loosen the knot and back the Safety Line out of the loop.



Remove the Safety Line completely.



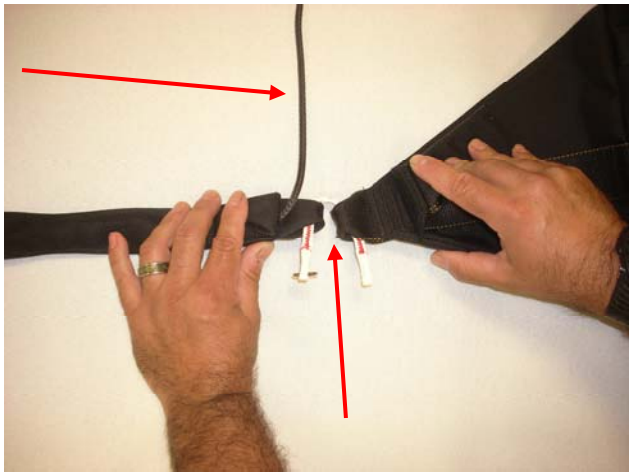
The Safety Line **(WT-303)**.



Shown above are the (2) two Soft Links that secure the Bridle to the Deployment Bag.

Twist the Soft Link out from the loops of the Bridle and Deployment Bag. Begin to open the Soft Link by passing the metal ring through the loop of the Soft Link.

Open the Soft Link completely.



Remove the Soft Link completely.

Remove the other Soft Link the same way.

Remove the Drogue Kill-Line (WT-302) from the Deployment Bag.

Follow these Instructions to Re-assemble the Wings Tandem Drogue Bridle and Deployment Bag.

Pictured below is the Replacement Drogue Bridle, Deployment Bag, Safety Line and Soft Links.

Before attaching the Bridle to the D-Bag be sure that the Ring of the Bridle is facing down and that the D-Bag is facing up.

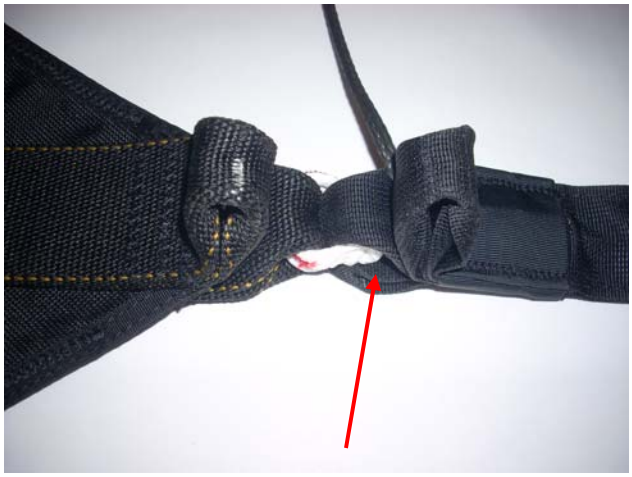
Pass a Soft Link through the loops of the Bridle and the Deployment Bag.

Pass the Soft Link through both loops twice.

Pass the end loop through the loop under the ring.

Pass the metal ring through the end loop.

Tighten the Soft Link.



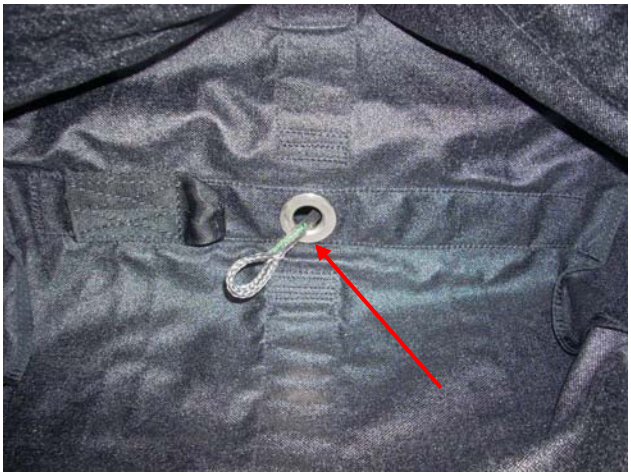
Tuck the metal ring of the Soft Link under the Bridle Loop.

Pictured above is the Kill-Line.

Insert the Kill-Line between the two loops of the Deployment Bag.

Attach the second Soft Link between the Bridle and the Deployment Bag.

Reach between the Anti-Twist Flaps to pass the Kill-Line through the Grommet of the Deployment Bag .



Assemble the Safety Line to the D-Bag.

Begin by passing the double looped end through the T-8 loop on the bottom of the D-Bag.

Pass the end of the loop through the double loop.

Pass the Tail Loop through the end Loop.

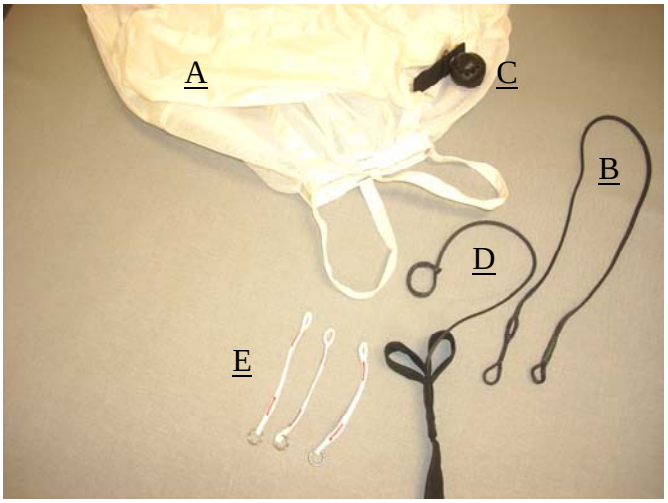
Tighten the knot formed.

Bridle and Deployment Bag are now re-assembled.

12.8 Replacing the Drogue Pilot-chute and Parts.

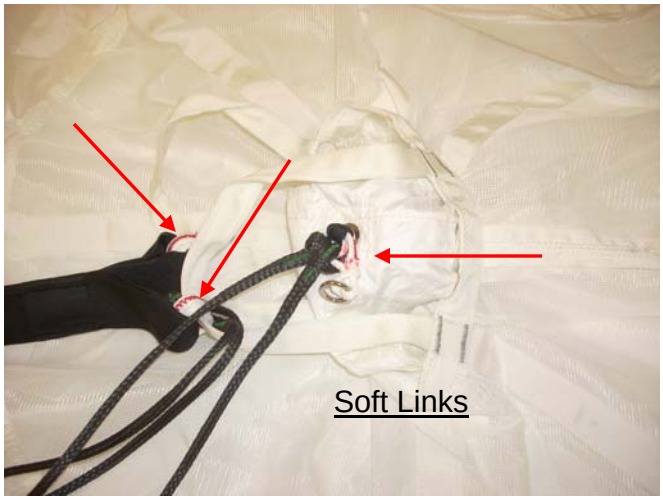
The **Wings Tandem** has a replaceable Drogue Pilot-chute **(A) (WT-305)**, replaceable Center Line **(B) (WT-304)**, replaceable Drogue Hacky Handle **(C) (WT-313)** and a replaceable Kill-Line **(D) (WT-302)**.

Both are made of #2000 HMA line.



Pictured above is the **(A)** Drogue Pilot-chute, **(B)** Center Line, **(C)** Drogue Hacky Handle, **(D)** Kill-Line and **(E)** Soft Links.

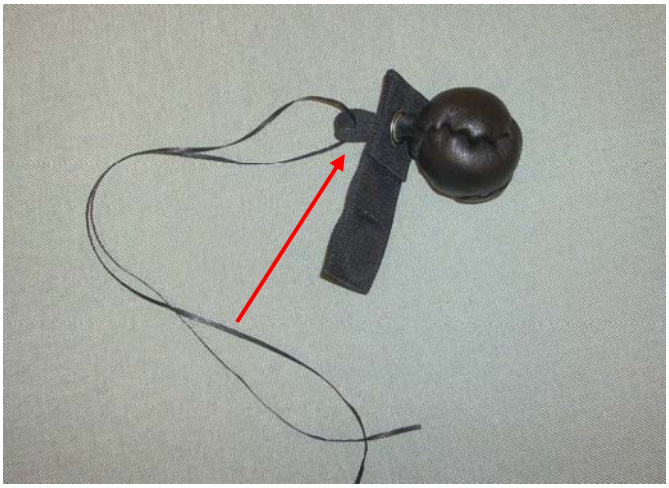
All are attached to the Drogue Pilot-chute with Soft Links **(WT-320)**. **Do Not** use any other type of link as it may cause premature wear on the system.



To replace the Drogue Hacky Handle, begin by opening the Soft Link **(WT-320)** on the under-side of the Pilot-Chute.

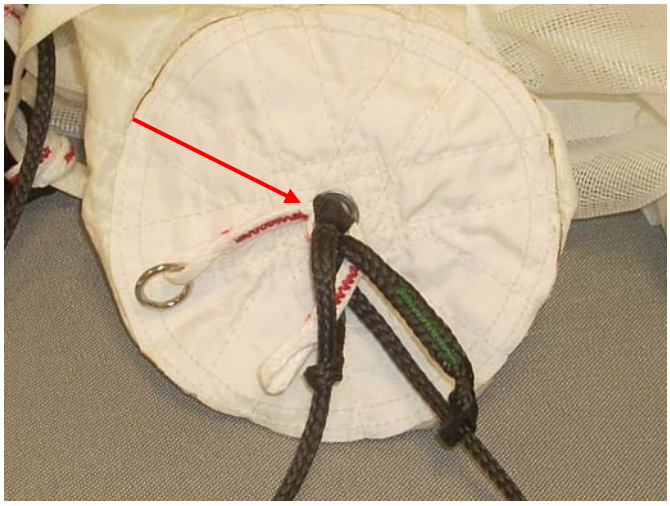
Notice the Lark's Head Knots.

The Hacky Handle **(WT-313)** and Magnetic Sleeve **(WT-314)**.

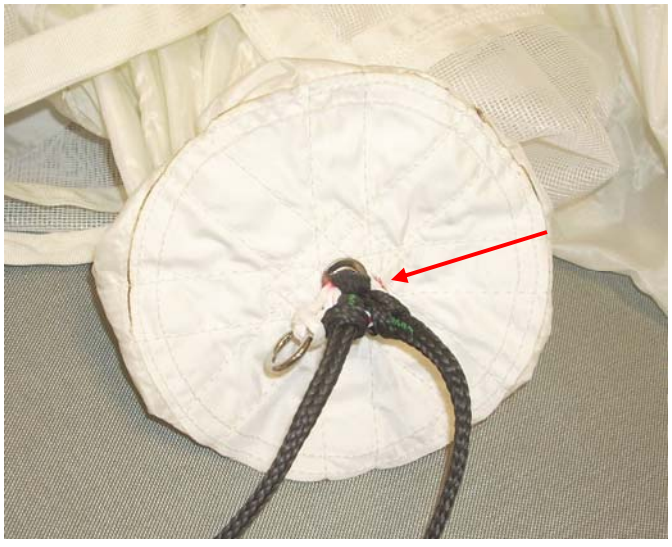


To replace it on the Pilot Chute pass a length of string through the loop.

Pass the string through the grommet on the top of the Pilot Chute and pull through from the other side.



Pass a Soft Link through the Hacky loop and the Lark's Heads of the Center Line and Kill-Line (2) twice.

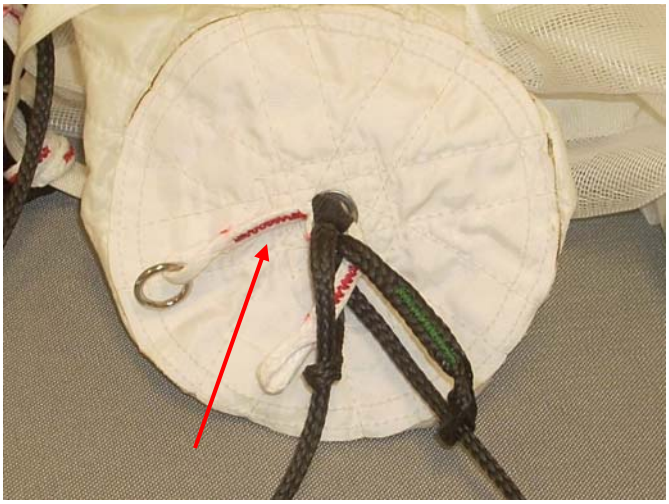


Close the Soft Link as usual.

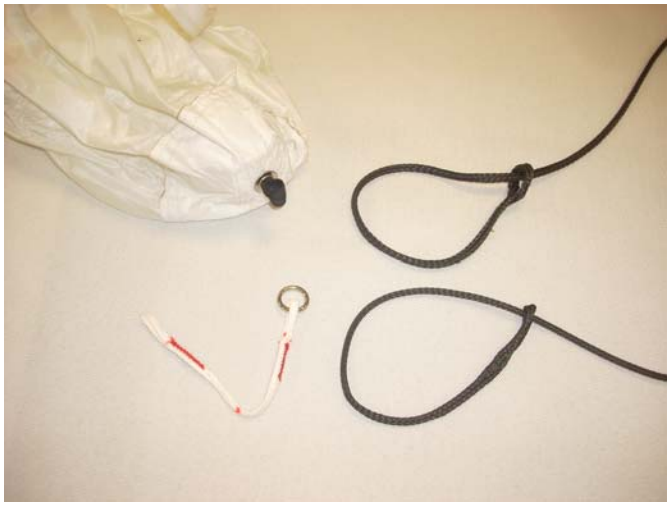
Tighten the Soft Link and the Lark's Heads.

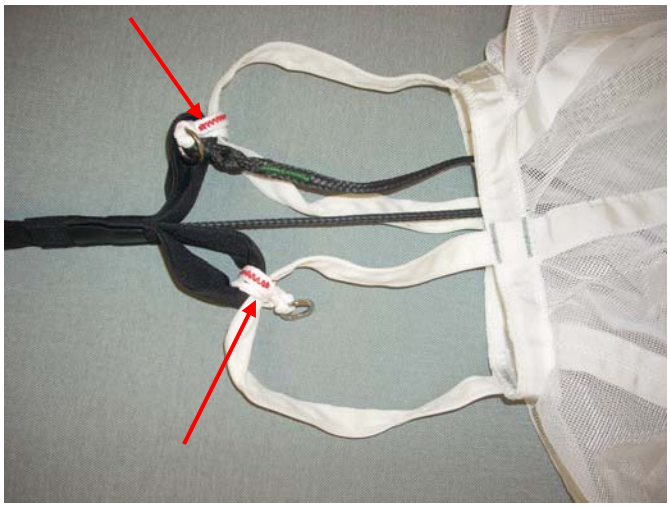
12.9 Follow these Instructions for Replacing the Kill-Line, Center Line and Drogue Pilot Chute.

Begin by removing the Center Line and Kill-Line from the underside of the top of the Pilot Chute.

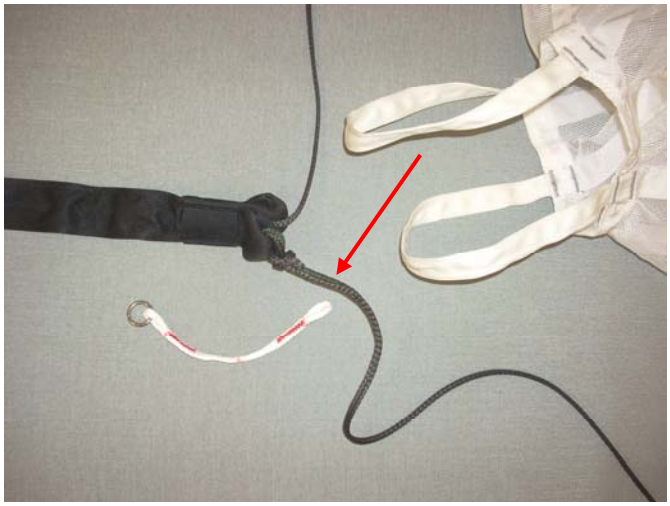


Remove the Soft Link.



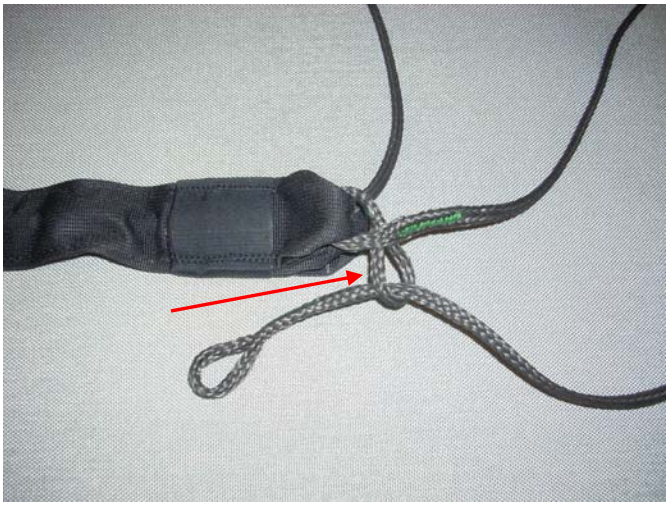


Remove the Soft Links from the Bridle loops.

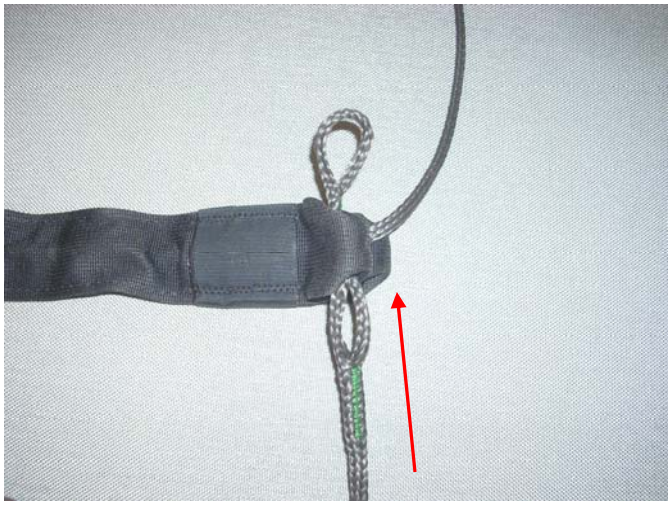


Remove the Center Line.

Loosen the knot.



Back the end out through the loop.



Back the end loop out of the center loop.

Remove the Center Line completely.

The Center Line completely removed.

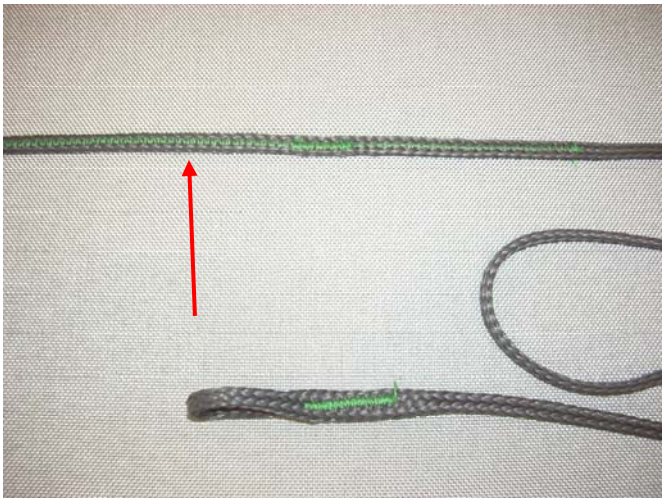
The Kill-Line may be replaced now.

If the Main Parachute is still connected to the Deployment Bag remove the Soft Link that secures it to the Kill-Line and the Safety Line.

To replace the **Drogue Pilot-chute Kill-line**, **(WT-302)**

There are several methods to replace the Kill-line.

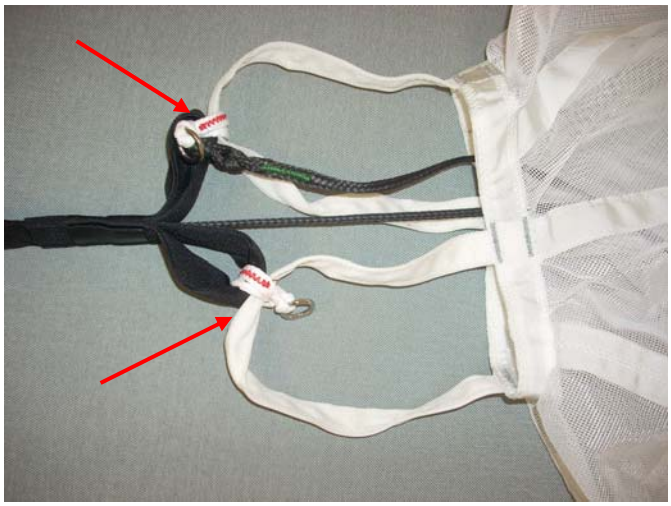
A long rod may be used to pull the new line through the Bridle, the new line may be tied to the old line and pulled through the Bridle or a stiff piece of wire or cable can be tied to the Kill-line and pulled through the Bridle.



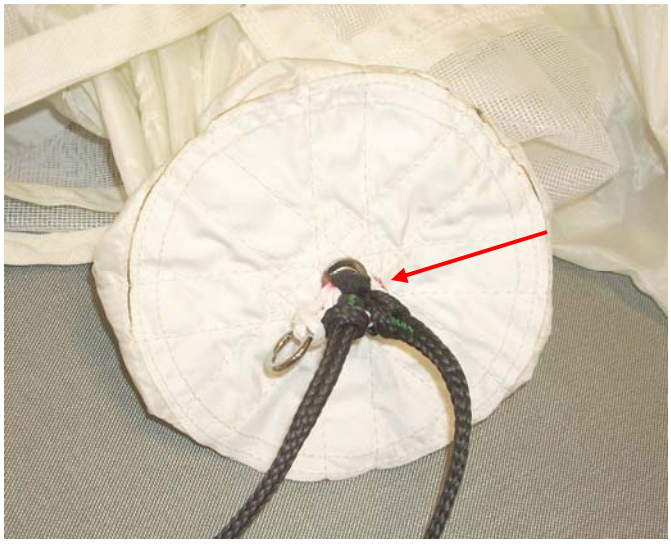
Be sure that the end of the Kill-Line with the center stitching is installed away from the Pilot-chute end.

With the Soft Links removed attach the Pilot Chute end of the Bridle to a stationary object and pull the Kill-Line out of the Bridle from the Deployment Bag.

With the Kill-Line replaced any or all the other parts may be replaced at this time.



To re-assemble begin by attaching the Center Line to either loop of the Bridle. Follow the directions for removing it in the reverse order.



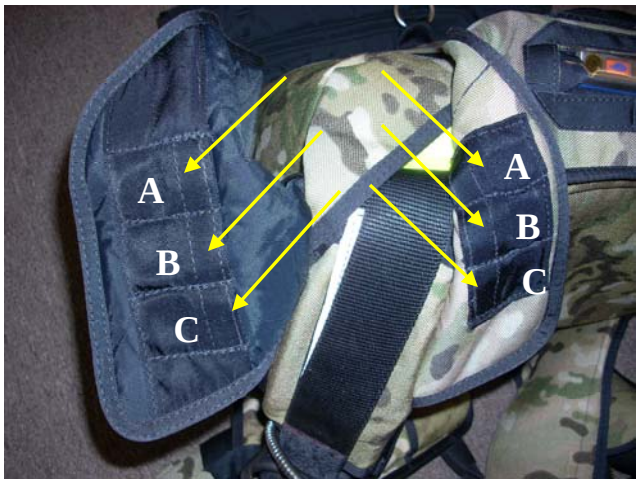
Attach the other end of the Center Line to the under side of the top of the Drogue Pilot Chute with the Kill-Line and the loop of the Hacky Handle with a Soft Link.

Assembly is now complete.

12.10 Replacing the Magnets in the Riser Covers.

The ***Wings Tandem*** comes with Magnetic Riser Covers.

The Magnets **(WT-290)** can easily be replaced when needed.



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

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.

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.

12.11 Replacing the Drogue Pilot-chute Pocket Magnets.

The ***Wings Tandem*** comes with Magnets **(WT-290)** to help keep the Drogue Pilot-chute in its pouch.

There is one (1) magnet in the Drogue Pouch pocket and one (1) magnet in the Drogue Pilot-chute pocket.

Pictured above is the Magnet Pocket in the Drogue Pilot-chute Pouch.

It is positioned beneath the inner spandex pouch.

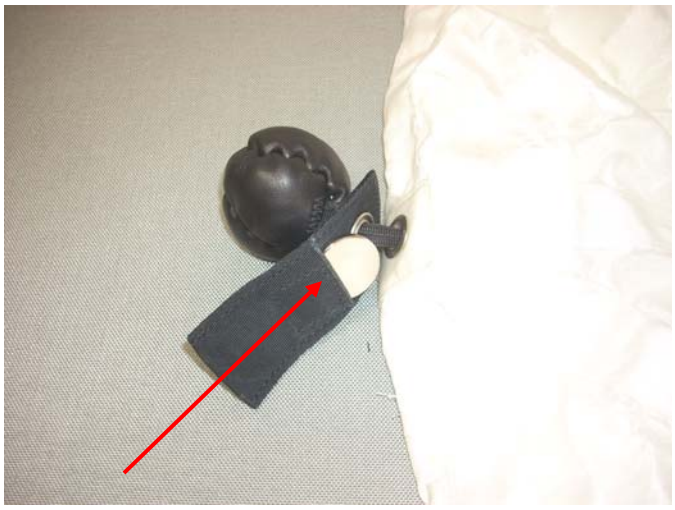
Pictured above is the Magnet Pocket on the Drogue Pilot-chute.

Both magnets are held in place with Velcro.

To replace these magnets separate the Velcro and slide the new magnet into the pocket.

Check to be sure that they are "attracting" to each other and not "repelling" each other.

Remove one or the other and flip it over to correct the attraction to each other.



Pictured above is the Magnet **(WT-290)** of the Drogue Pilot-chute sliding out of its pocket.

12.12 Replacing the Floating RSL with Mini Ring. (WT-222)

Pictured above is the Floating RSL Lanyard **(WT-222)** and the Left Side Riser.

From the inside of the Left Riser pass the end loop of the **WT-222** through the Riser between the two webbings.

From the underside of the Riser pass the end loop through the loop beneath the mini ring.

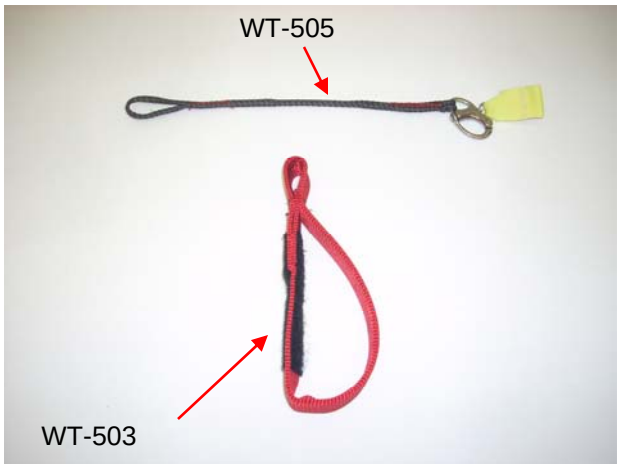
Pass the Mini Ring through the end loop.

Tighten the knot formed.

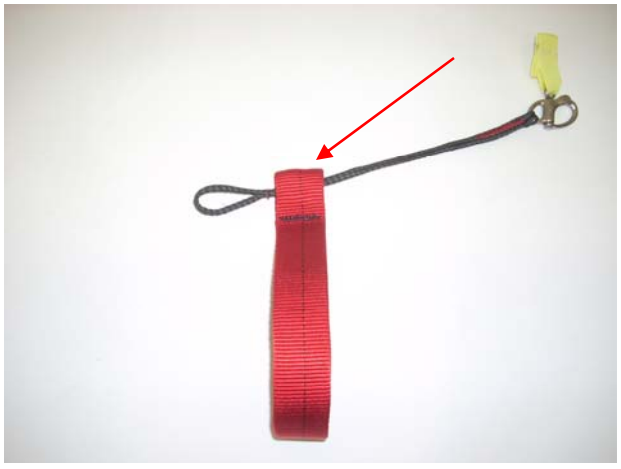
The Floating RSL **(WT-222**) installed.

12.13 Replacing the Lanyards of the Examiner's Handles.

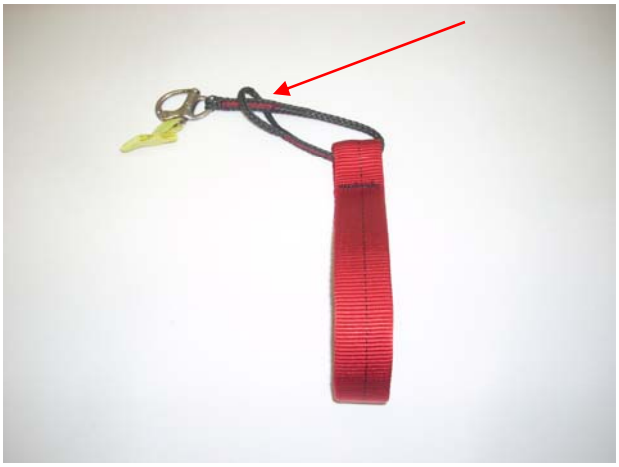
Follow these Instructions for Replacing the Lanyards of the Examiner's Handles. (WT-505)



Pictured above is the Instructor/Examiner Emergency Handle **(WT-503)** and Handle Lanyard **(WT-505).** These Handles are interchangeable and may be used for either the Cutaway Handle or the Reserve Ripcord Handle.



Pass the Lanyard through the Loop of the Emergency Handle.



Pass the Snap Shackle through the Loop of the Lanyard.

Tighten the Knot formed.

Repeat for the other Handle.

Chapter 13

Parts List

PART #	Manufactured Parts
WT-100	Reserve Pilot Chute
WT-102	Reserve Free Bag and Bridle w/ **"Reserve Boost"**
WT-103	Reserve Pilot Chute Cap
WT-106	Reserve Static Line for **"Reserve Boost"**
WT-109	Reserve Ripcord Assembly **(Metal)**
WT-111	Reserve Ripcord Assembly **(Pillow) (Specify Color)**
WT-113	Reserve Ripcord Assembly **(Loop) (Specify Color)**
WT-116	Reserve Closing Loop
WT-117	Reserve Toggles (Pair)
WT-119	Reserve Safety Stow
WT-201	Main Risers - Type 7, Lg. Rings (Pair) Tandem
WT-213	Main Toggles- Tandem (Pair)
WT-214	Main Flaring Toggles (Pair)
WT-222	Floating RSL with Mini Ring
WT-251	Main Release Handle – **Pillow (Specify Color)**

WT-253	Main Release Handle – **Loop (Specify Color)**
WT-276	Main Closing Loop –HMA
WT-277	Safety Main Closing Loop
WT-290	Magnet (Box)
WT-291	Rapide Links Stainless Steel #3 ½ (Box)
WT-292	Rapide Links Stainless Steel #4 (Box)
WT-293	Rapide Links Stainless Steel #5 (Box)
WT-294	Rubber Bands (Tandem) (Bag)
WT-295	Rubber Bands (Large) (Bag)
WT-297	Elastic Strap Keeper
WT-298	Elastic Keeper with Snap
WT-300	Complete Drogue Assembly (Drogue PC, Bridle and D-Bag)
WT-301	Drogue Bridle
WT-302	Drogue Kill-line
WT-303	Drogue Safety Line
WT-304	Drogue P/C Center Line
WT-305	Drogue Pilot Chute
WT-306	Drogue Release Hacky Handle (L or R)
WT-307	Right Drogue Release Lanyard (Long)

WT-308	Left Drogue Release Lanyard (Short)
WT-309	Elastic Hacky Connector Loop
WT-310	Drogue Release Pin
WT-311	Drogue Release Pin Elastic
WT-312	Drogue Riser, Type 8
WT-313	Drogue Handle (Specify Type & Color) Hacky or Pillow
WT-314	Drogue Handle Magnet Sleeve w/ Magnet
WT-320	2000 lbs. Soft Links
WT-330	Main Container Closing Pin only
WT-331	Main Container Closing Pin Lanyard
WT-332	Tandem D-Bag Grommet Insert
WT-340	Ballistic Reinforced Leg Pads (Pair)
WT-350	Reserve Pin Window
WT-500	Passenger Harness
WT-502	Passenger Harness Hook Knife
WT-503	Examiner's Emergency Handles (Sets of 2)
WT-504	Examiner's Handle Pockets (Sets of 2)
WT-505	Examiner's Handle Lanyards (Sets of 2)
WT-600	Gear Bag (Extra Large)

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Chapter 14

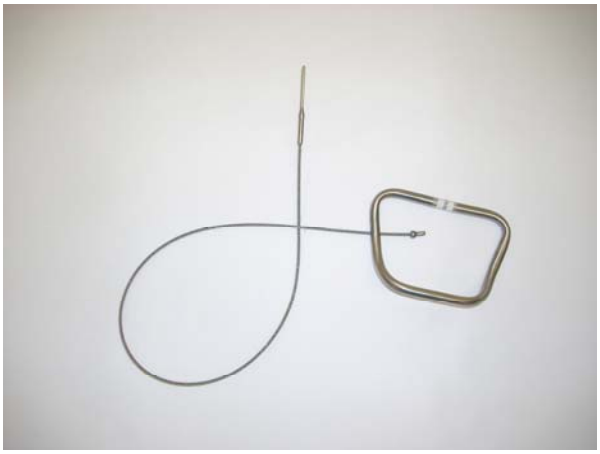
Spare Parts

WT-100 Reserve Pilot Chute

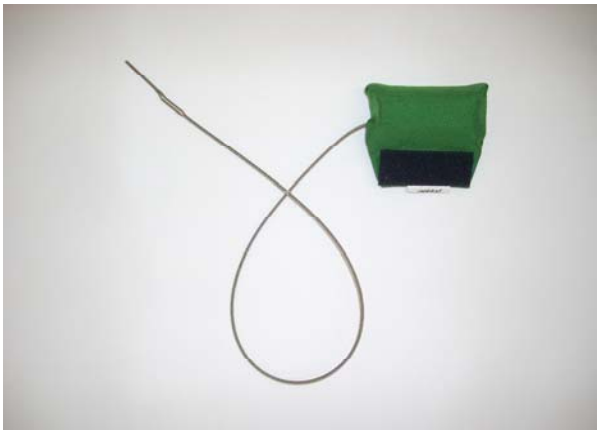
WT-102 Reserve Freebag w/ **M.A.R.D.** ***"Reserve Boost"*** Modification

WT-103 Reserve Pilot Chute Cap

WT-106 Reserve Static Line (RSL) for ***"Reserve Boost"***

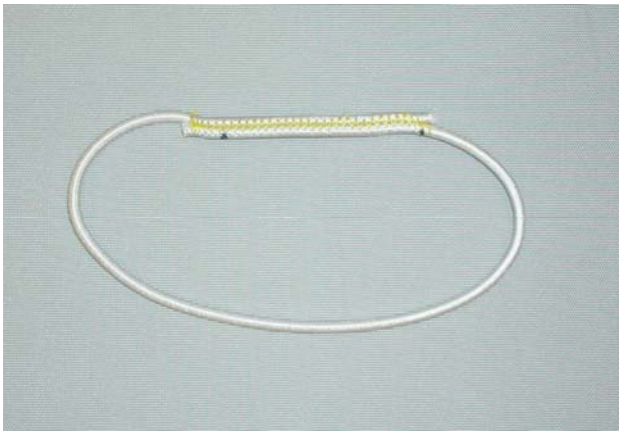


WT-109 Reserve Ripcord Assembly Bent Metal- Out-board



WT-111 Reserve Ripcord Assembly Pillow- Out-board

WT-113 Reserve Ripcord Assembly
Loop- Out-board



WT-119 Reserve Safety Stow Loop

WT-116 Reserve Closing Loop

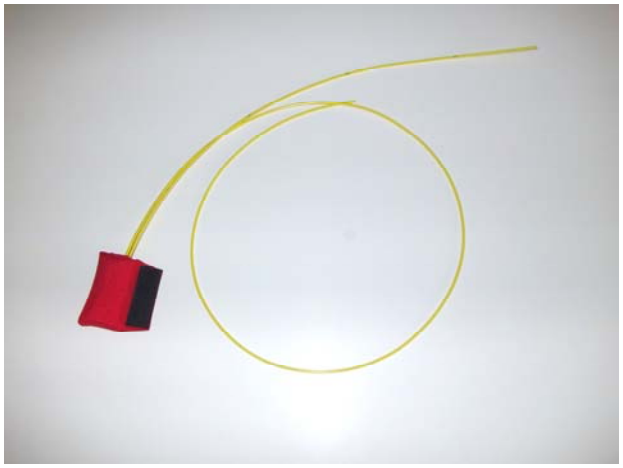
WT-201 Main Risers, Type VII

WT-117 Reserve Toggles (Pair)

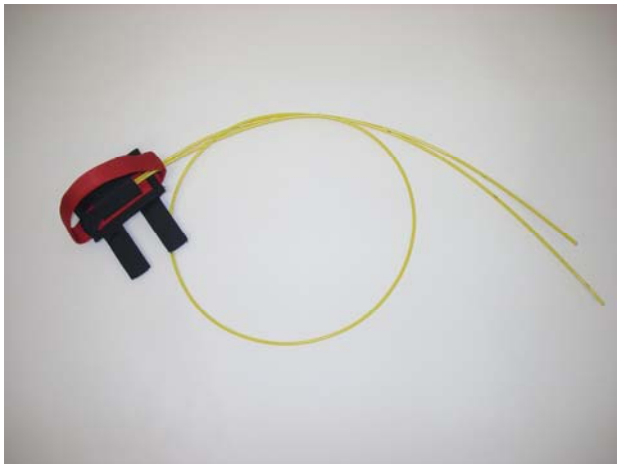
WT-213 Main Steering Toggles,

WT-214 Flaring Toggles (Sets of 2)

WT-222 Floating RSL w/ Mini Ring



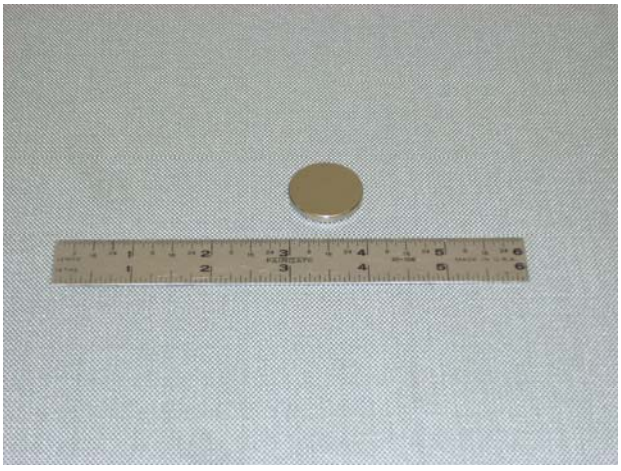
WT-251 Main Release Handle
Pillow / Out-board



WT-253 Main Release Handle
Loop / Out-board

WT--276 Main Closing Loop- HMA

WT-277
Safety Main Closing Loop



WT-290 Magnet

WT- 297 Elastic Strap Keeper

WT-298 Elastic Strap Keeper w/Snap

WT-301 Drogue Bridle

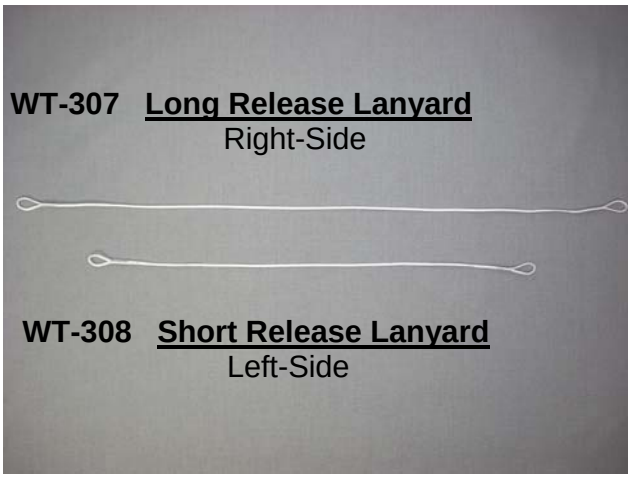
WT-302 Drogue Kill-line

WT-303 Drogue Safety Line

WT-304 Drogue P/C Center Line

WT-306 Drogue Release Hacky
(Left and/or Right Side)

WT-310 Drogue Release Pin



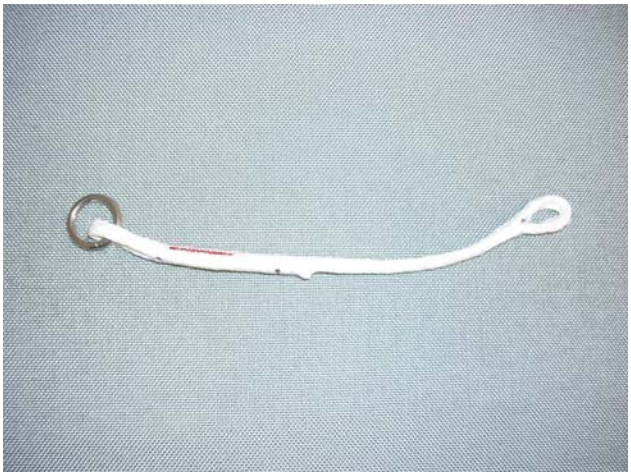
WT-307 & WT-308
Drogue Release Lanyards

WT-311 Drogue Release Pin Elastic

WT-309 Elastic Hacky
Connector Loop

WT-312 Drogue Riser, Type 8

WT-314 Magnetic Sleeve for Drogue Handle



WT-320 Soft Link

WT-330 Main Container Closing Pin

WT-331 Main Closing Pin Lanyard

WT-332 Tandem D-Bag Grommet Insert w/Velcro

WT-340 Replaceable Leg Pads

WT-500 Passenger Harness

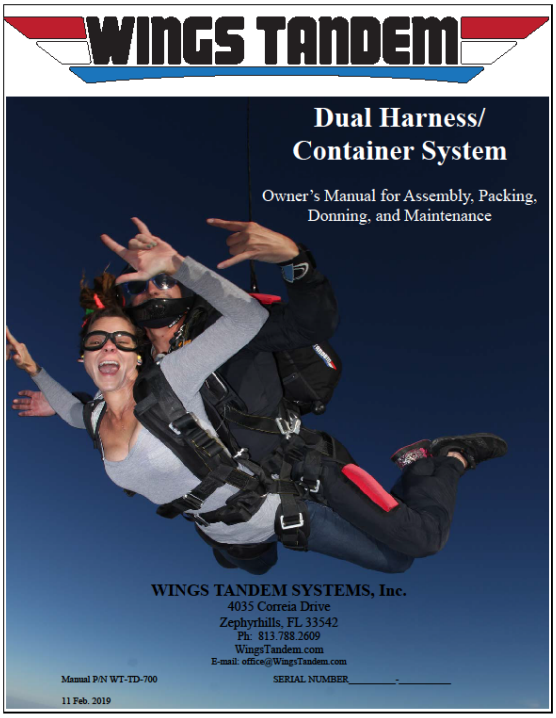
WT-502 Emergency Hook Knife

WT-503 Examiner's Handles (2 ea.)

WT- 504 Examiner's Handle Pockets (2 ea.)

WT-505 Examiner's Handle Lanyards (2 ea.)

WT-600 Tandem Gear Bag



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Chapter 15

Care and Maintenance

15.1 General Storage Requirements

To ensure that serviceability standards of the ***Wings Tandem*** are maintained, every effort shall be exerted to adhere to the following general storage requirements:

1. When available, a climate controlled building should be used to store the ***WINGS TANDEM*** Harness / Container System.

2. The ***WINGS TANDEM*** 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 TANDEM*** 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 TANDEM*** Harness / Container System will **NOT** be stored in a damaged, dirty or damp condition.

5. The ***WINGS TANDEM*** 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.

15.2 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.

15.3 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.

15.4 Water Contamination Guide

If the ***WINGS TANDEM*** **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 16

Repairs

16.1 Repair Guidelines

Stitching and restitching on parachute items constructed from cloth, canvas, and webbing should be accomplished with thread, which matches the color of the original stitching, when possible.

All straight stitching should be 7-11 stitches per inch, and locked by overstitching the existing stitching by at least 2-inches. Zigzag stitching should extend at least 1/2-inch into undamaged stitching at each end. Re-stitching should be made directly over the original stitching, following the original stitch pattern as closely as possible.

All thread on the canopy should be VT-295E, Type II, Class A, Size E, VY, and sewn with a light or medium duty machine.

Canopy

Type of Repair	Limitations
Re-stitching:	No limit as to length or number.
Patch, single side:	Size Limit: Maximum 50% of panel area. Limit of 3 per panel, 15 per canopy.
Panel replacement:	Limit 9 per canopy
Radial Seams:	Size Limit: 12", no more than 4 per canopy.
Lateral bands:	Size Limit: 2", no more than 10 per canopy
Upper	Size Limit: 4", Limit 1 per canopy
Lower	Size Limit: 36", Limit 4 per canopy

Static Line

A Damaged Static Line should be replaced.

Container

Standard military single side patches or replacement of the damaged area is authorized.

Ripcords

Damaged ripcords should be replaced.

16.2 Keeping Track of Repairs and Packing

Data Card

Data cards should not be discarded or replaced. When filled, they should be attached to the new card so that a complete log of packing, repairs, and alterations is recorded.

This is the history of the Harness/ Container.

Note!

Darning and Ripstop Tape are **NOT** authorized for Certified Canopies as they may weaken the fabric. Single side patches are recommended for even small damaged areas.

WINGS TANDEM

Office Use Only.
Serial # _____
Date rec'd _____
Date processed _____

Customer Name: _____
Address: _____
Phone #: _____ Email: _____

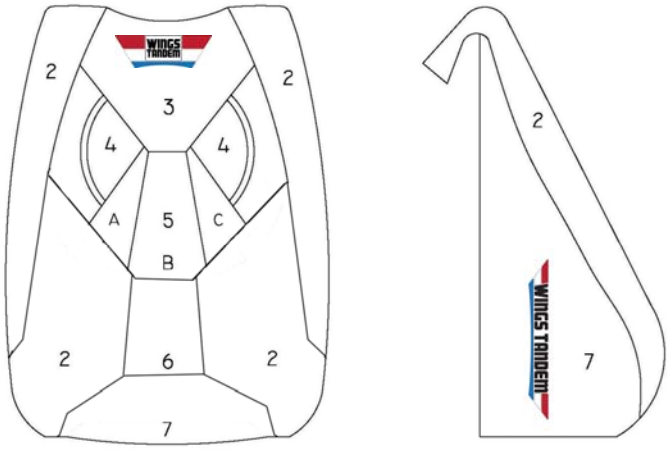
Harness/Container Information (for sizing): **T-** ☐

Main Canopy: _____
Reserve Canopy: _____

Container Colors:
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Harness Color: _____

Mid Flap Stripes
5A: _____
5B: _____
5C: _____



Leg Pad: _____ Back Pad: _____ Trim Tape: _____

Leg Strap Hardware: ☐ Thread Thru ☐ B-12 Snap
Reserve Handle: ☐ Metal ☐ Loop Style ☐ Red ☐ Green
Main Canopy Release Handle ☐ Pillow Style ☐ Loop Style ☐ Red ☐ Green
Monograms: (Type exactly as it is to appear) ☐ *Script* Style ☐ **Block** Style

(Note: *Wings Tandem* logos included at no charge on flap 3 and flaps 7 unless otherwise ordered.)
Reserve Flap (#3) _____ Color: _____
Side Wall (#7) Left Side _____ Color: _____
Side Wall (#7) Right Side _____ Color: _____

Student Harness: Harness Color: _____ Padding Color: _____ Trim Tape Color: _____

Main Canopy Ordered (make and size) _____
Reserve Canopy Ordered (make and size) _____
AAD Ordered _____

Special Instructions: (Please specify any options desired **not** listed)
_____
_____
_____

WINGS TANDEM 4035 Correia Dr., Zephyrhills, FL 33542
Tele: 813-788-2609 WingsTandem.com

Revised: 11 Feb 2019

NOTES: