Butler Parachute Systems, Inc.

Chest Pack Emergency Parachute System

Assembly and Packing Instructions

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Title	Chest Pack Assembly and Packing Instructions

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List of Effective Changes

The portion of the text affected by the changes to the preceding released document are indicated by a black vertical bar in the left outer margins of the page.

Page Number Section Number

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Warranty for Emergency Parachute Systems

Butler Personnel Parachute Systems, Inc. (hereafter referred to as BPS) manufactures the finest emergency parachute systems in the world. Accordingly, subject to the Terms & Conditions set forth below, we warrant that our emergency parachute systems are free from defects in materials, workmanship and design for a period of five years from the date of manufacture.

Terms & Conditions of Warranty

This warranty excludes any condition that (in the sole opinion of BPS) has resulted from misuse, abuse, modification, improper maintenance, neglect, exposure to ultraviolet light, damage from aircraft parts and/or any other condition that is outside the realm of normal usage. Usage of this product in a manner that violates state or federal law is a misuse of the product and voids all warranties, express or implied. BPS shall not be liable in any manner whatsoever for damages related to the use of this product in an illegal manner.

This warranty excludes any condition related to color fastness, fading and/or the matching of any particular lot of materials with any color.

All BPS products have been thoroughly tested and found to be in conformance with all applicable FAA requirements for TSO C-23 certification in effect on the date of authorization. However, since we have no control over the actual conditions of usage, this warranty specifically excludes any guarantee, express or implied, that a parachute system will successfully save a particular individual in all conditions under which it might be used.

This warranty covers the product only when it is used in accordance with the manufacturer's instructions and within the stated and/or placarded operating limits regarding maximum pack opening airspeed and maximum gross weight for the lowest rated component of each assembly. Failure to follow these guidelines for the use of the product voids any and all warranties.

This warranty does include any changes that may be required under BPS Service Bulletins or FAA Airworthiness Directives, if issued. It does not include changes or updates that are recommended but not required.

The warranties and agreements herein set forth are exclusive and are expressly in lieu of all other warranties and agreements, express, implied, or statutory. there are no implied warranties of merchantability, workmanship or fitness for a particular purpose.

The customer's sole and exclusive remedy for any breach of this warranty is limited to repair or replacement of any BPS product deemed to be defective. BPS shall have no other liability for any incidental, consequential or punitive damages.

WARNING

Since we have no control over the actual conditions of usage we make no guarantee, expressed or implied, that a parachute system will successfully save a particular individual regardless of correct manufacture, assembly, packing and usage in any and all conditions under which it might be used.

WARNING

Butler Parachute Systems, Inc. reserves the right to revise this publication without obligation to provide notification of such changes. Butler Parachute Systems, Inc. does its best to provide current and accurate information in this manual. However, Butler Parachute Systems, Inc. reserves the right to change any specifications and product configurations at its discretion without prior notice and without obligation to include such changes in this manual.

WARNING

Improper use or negligent care of this equipment can cause serious injury or death.

1. Introduction

WARNING

WARNINGS indicate a procedure or situation that may result in serious injury or death if instructions are not followed correctly.

CAUTION

CAUTIONS indicate any situation or technique that will result in potential damage to the product, or render the product unsafe if instructions are not followed correctly.

NOTES are used to emphasize important points, tips, and reminders.

These instructions do not constitute complete instructions for assembling and packing a Butler Chest Emergency Parachute. This manual outlines only the procedures for packing the canopy into the Butler Chest Emergency Parachute system. The manuals titled, *Butler Personnel Canopies, Assembly and Packing Instructions, HX Series and Lopo Series Canopies* **and** *General Information for Parachute Riggers for Servicing BPS Personnel Parachute Systems* are also required to pack this parachute. You may need additional manuals to pack this parachute if it has options that require maintenance and service not covered in the manuals listed above. Contact Butler Parachute Systems if you are not sure you have the manuals you need.

The Butler Emergency Parachute is an important piece of survival equipment. Proper installation of the components and maintenance of the system are necessary for the parachute to deliver the safety performance it is designed to provide. It is important that you become familiar with these instructions to properly install the components. Improper installation of the components may result in failure of the parachute system during use.

2. Service Life and Repack Interval

All personnel parachutes manufactured by Butler Parachute Systems, Inc. are manufactured and certified under the Technical Standard Order (C23) process of the Department of Transportation, Federal Aviation Administration (FAA). Our products have been sold all over the world, and thus may fall under many other sets of operating regulations. The following guidance is provided to determine the allowable service life and repack interval under the specific circumstances listed:

The following information is provided as guidance only.

- When used in civil aircraft **in the United States of America**, our products have a recommended service life of 20 years from the date it is placed in service or 25 years from the date of manufacture. However, this parachute must be inspected and repacked in accordance with the applicable Federal Aviation Regulations, every 180 days. If more than 180 days has passed since the last inspection and repack, then the parachute is considered unairworthy until such inspection is completed.

- When used in civil aircraft **outside the United States of America**, our products have a recommended service life of 20 years from the date it is placed in service or 25 years from the date of manufacture. The local regulations pertaining to parachute inspection and repacking (if any) may be applied, but in no case longer than two years between inspection and repack.

If the parachute equipment is subjected to any unusual or severe conditions such as dust, moisture, impact damage, etc., it should be serviced on a more frequent basis. Please review all information in the service manuals before extending your repack cycle.

3. Rigger Responsibilities and Rating Limitations

We spare no effort in making our equipment the finest emergency parachutes available. However, parachute riggers in the field must also do their part to educate the user so he or she may fully benefit from the level of safety protection our systems offer. Parachute riggers should help the user understand his or her parachute and how to use it. We recommend that you become familiar with the User's Guide and answer any questions the user may have. We also recommend that you allow the user to don the parachute and pull the ripcord before each repack.

All routine maintenance and minor repairs that do not affect airworthiness may be performed by an FAA licensed Senior Parachute Rigger (or foreign equivalent) with the proper facilities and equipment.

4. Tools and Materials

We consider the following tools to be the minimum tools necessary to pack a complete emergency parachute system. While all the tools listed may not be necessary to perform the steps outlined in this manual, they are necessary to perform the packing service of a complete emergency parachute system from start to finish.

2	Temporary pins* with safety flag
2	Pull-up cords* – 50” minimum
4	Packing weights – 4 minimum
1	Line separator (Optional)
1	Packing paddle
1	9mm wrench or 3/8” wrench
1	Scissors & tacking needle
1	Lite Super Tack** cord (50 lb), A-A-52080, Type 1, Size 3, Finish B
1	80 pound break tape (Mil-T-5661, Type 1, 1/4”)
1	Stow Band (Rubber Band, 1 1/4” x 3/8”), PN: S7111
As Needed	Closing loop material*, 225 pound braided Dacron, PN: CSR3516-225

* If the system you are packing has a CYPRES AAD installed, you must use CYPRES closing pins, CYPRES pull-up cords, CYPRES approved silicone gel, and closing loops made with CYPRES approved material (408 pound, 1.7 mm Spectra cord).

** Super Tack size 2 (80 lb.) is approved for use as an alternative.

Required for assembly of an HX-series high speed canopy.

1	6’ bodkin or gun cleaning rod.
As Needed	Mil-T-5038, T3, 1/2” x 10”

Cable Bodkin, PN: 801157

6’ Gun Cleaning Rod

WARNING Major repairs or alterations that may affect airworthiness must be returned to Butler Parachutes or a designated representative.

WARNING Failure to carefully follow the instructions in this manual may result in serious injury or death.

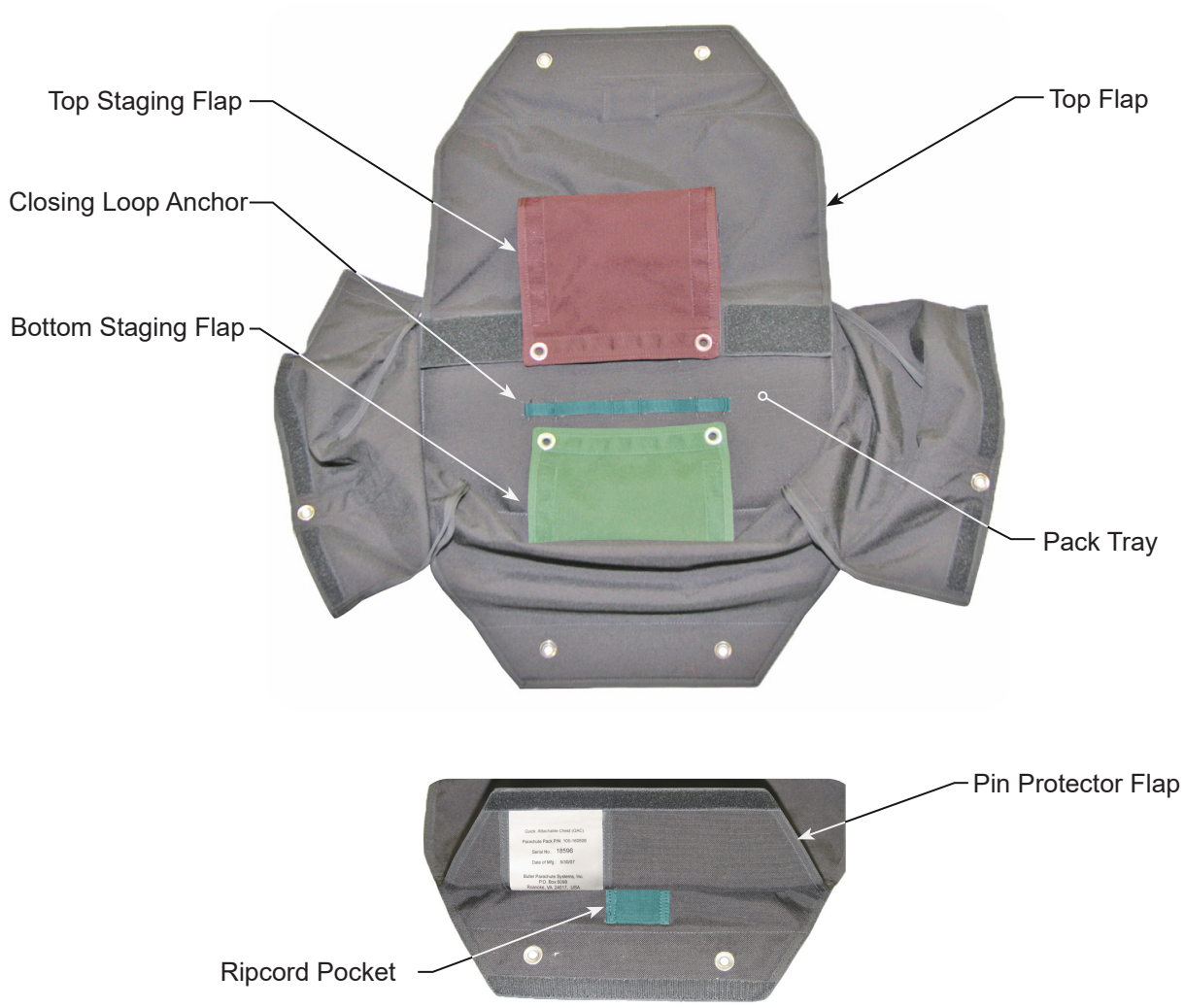
5. General Methods

Unless stated otherwise, secure all hand tacks and ties with a surgeons knot and locking knot.

All directional references are as the equipment is worn by the user.

Always count your tools before and after you work on a parachute to ensure nothing is missing or left inside the parachute.

6. Reference



7. CYPRES Installation

The CYPRES Military and Sport Expert AAD models are authorized to be used in the Butler Chest Pack parachute.

Airtec GmbH manufactures the CYPRES Automatic Activation Device (AAD). The CYPRES AAD is a backup device to the manual activation of the parachute in the event that the user is unable to pull the ripcord. The unit will activate the parachute deployment if the user is falling faster than 78 miles-per-hour and below a preset altitude.

Handle the CYPRES with care. Never pull, twist, or kink the cutter wires or the control unit cable. A bend in any of the cables cannot be less than 0.94" (24mm) (the diameter of a U.S. quarter).

Visually inspect the CYPRES for damage or wear.

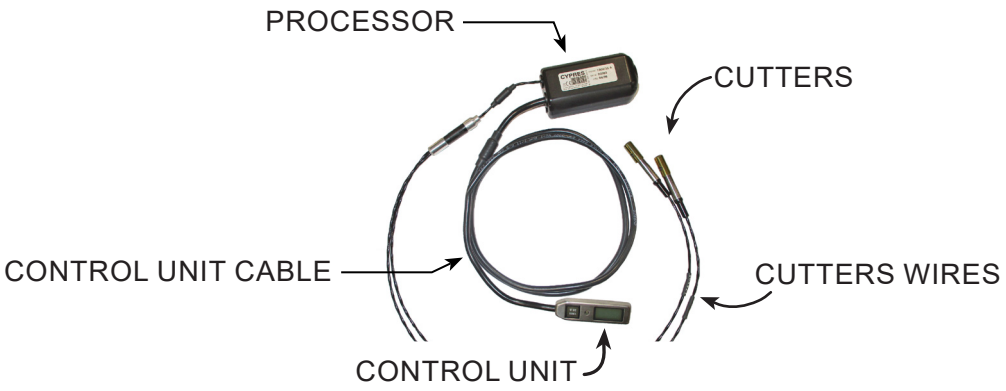
Verify that the maintenance cycle of the CYPRES will not expire before the next scheduled service of the parachute. Refer to the *Emergency Air Crew CYPRES 2 User's Guide* for CYPRES maintenance guidelines.

Write the CYPRES serial number and date-of-manufacture in the parachute packing data book.

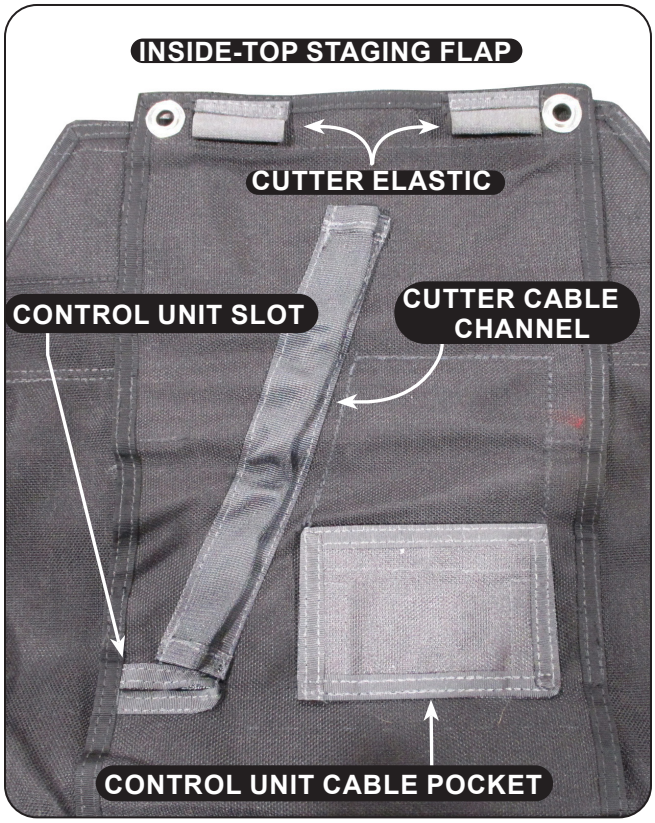
WARNING

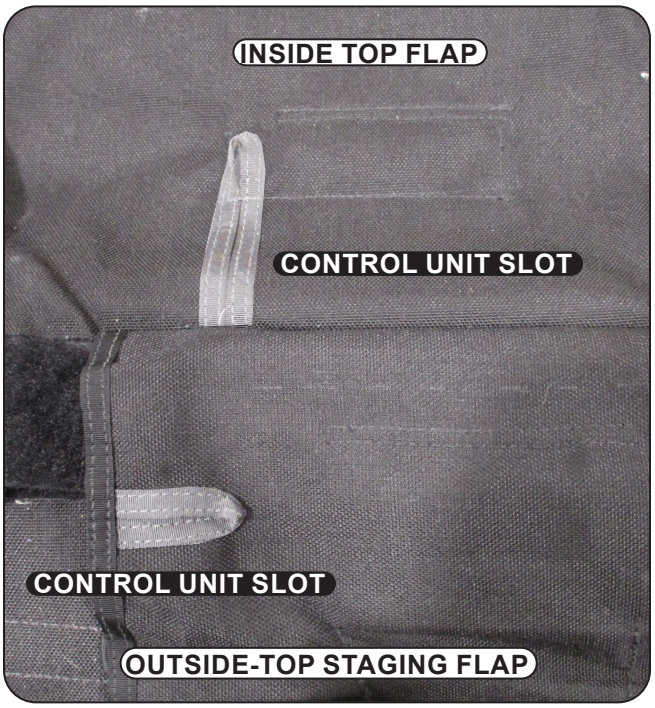
Please be aware that the altitude setting is the "**standard day MSL**." Pressure and temperature changes at your location can and will affect the actual altitude that the unit will fire. For this reason we caution you to never set the unit to activate below **2000 feet MSL above the highest point of the intended flight region.**

FOR EXAMPLE: If the highest point of the intended flight region is 1500 feet MSL, do not set the activation point lower than 3500 feet MSL.




PROCESSOR POCKET
PACK TRAY


INSIDE-TOP STAGING FLAP
CUTTER ELASTIC
CONTROL UNIT SLOT
CUTTER CABLE CHANNEL
CONTROL UNIT CABLE POCKET


INSIDE TOP FLAP
CONTROL UNIT SLOT
CONTROL UNIT SLOT
OUTSIDE-TOP STAGING FLAP


OUTSIDE TOP FLAP
CONTROL UNIT WINDOW

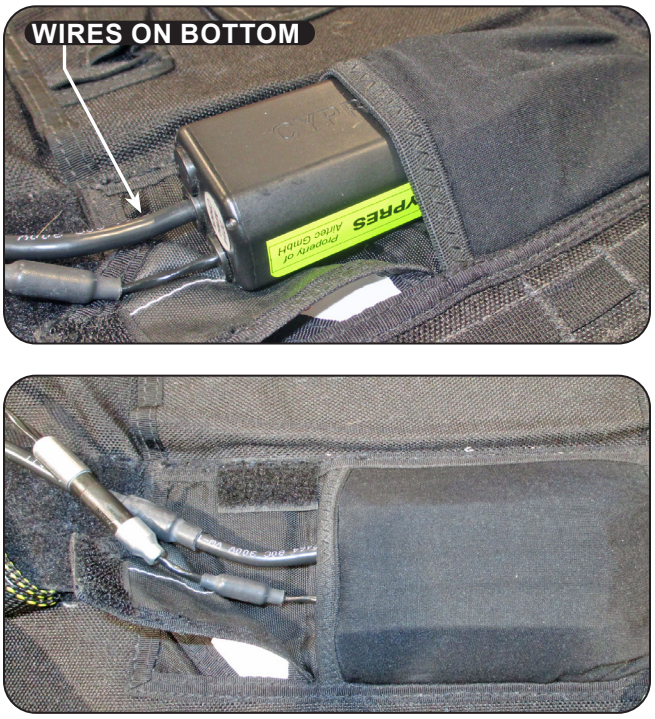
7.1

Insert the processor into the pouch located on the pack tray.

Place the processor in the pouch so the cutter wire and control unit cable are on the bottom, and flat against the pack tray.

CAUTION

The cutter wire and the control unit cable must be located on the bottom, and flat against the pack tray.



7.1 Stowing the processor.

7.2

Pass the cutter wires underneath the control cable and through the cutter cable channel.

Insert the cutters into the cutter elastics and align the holes in the cutters with the grommet hole in the top flap.

CAUTION

The cutter wires must be routed underneath the control unit cable.

7.2 Stowing the cutter wires.

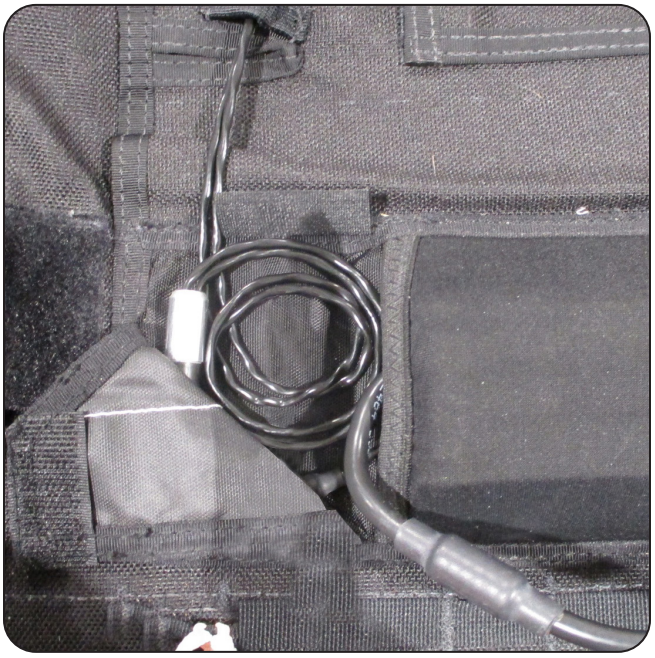
7.3

Coil the excess cutter wire and stow it in the CYPRES pocket underneath the control cable and the housing.

Do not bend any of the cables less than 0.94” (24mm) (the diameter of a U.S. quarter).

CAUTION

Do not pinch or bend the wires while you are stowing them.



7.3 Stowing the cutter wires.

7.4

Insert the control unit into the control unit slot located on the inside of the top staging flap and out the control unit slot located on the outside of the same staging flap.

7.4 Routing the control cable.

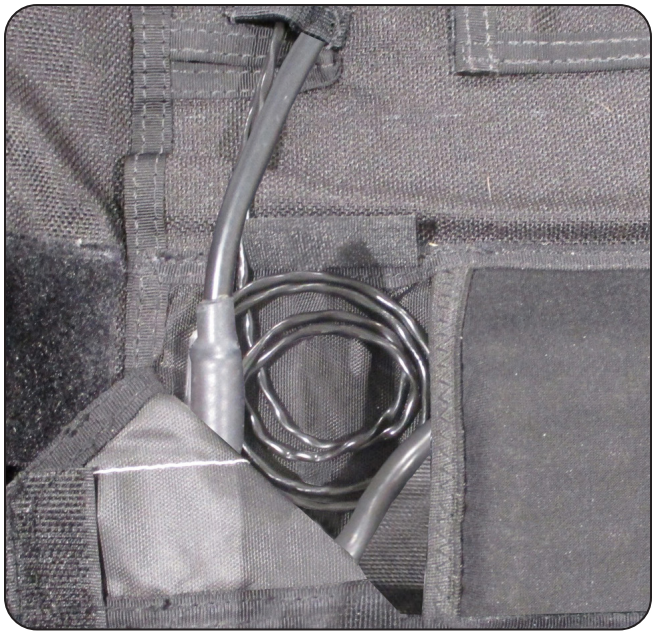
7.5

Insert the control unit into the control unit window and close the cover.

7.5 Stowing the control processor.

7.6

Stow the first 3 1/2” of the control cable on top of cutter cables in the pocket and close the cover.



7.6 Stowing the control processor cable.

7.7

Coil the remaining control cable and stow it in the control unit cable pocket and close the cover.

7.7 Stowing the control processor.

8. Installing the Risers

There are two ways to install the risers on the container. The standard profile extends straight from the chest pack. The reverse profile is folded over and tacked upside-down onto the chest pack.

Use the reverse profile method for users who prefer to wear their chest pack high on their torso.

8. Standard profile.

8. Reverse profile.

8.1 Standard Profile Installation

8.1.1

Place the riser on the pack tray with the snap facing down.

Mate the Velcro on the riser to the Velcro on the pack tray.

Tack* the riser to the pack tray below the Velcro.

*one-turn-single of Lite Super Tack (50 lb.) cord.

8.1.1 Tacking the riser to the pack tray.

8.2 Reverse Profile Installation

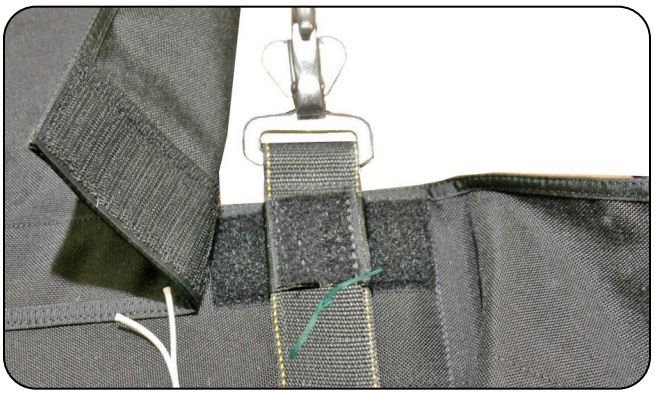
8.2.1

Place the riser on the pack tray with the snap facing up.

Mate the Velcro on the riser to the Velcro on the pack tray.

Tack* the riser to the pack tray below the Velcro.

*One single turn of Lite Super Tack (50 lb.) tack cord.



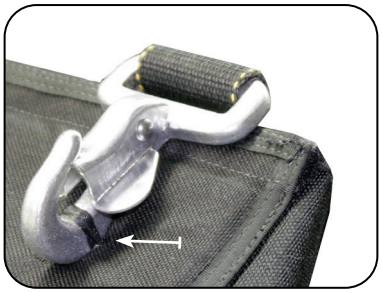
8.2.1 Tacking the riser to the pack tray.

8.2.2

Fold the snap over until it is against the pack tray.

Tack* the snap to the pack tray.

* one-turn-single of Lite Super Tack (50 lb.) cord.



8.2.2 Tacking the snap.

9. Installing the Canopy

Refer to the publication titled *Butler Personnel Canopies, Assembly and Packing Instructions, HX Series and Lopo Series Canopies* for instruction regarding assembly, flaking and stowing the lines of the canopy.

WARNING Perform a line continuity and four-line check before you install the cross connector straps.

9.1

Attach a cross connector strap to the front line groups.

The cross connector must be routed under the back line groups.

9.1 Installing the front cross connector.

9.2

Attach a cross connector strap to the rear line groups.

9.2 Installing the rear cross connector.

9.3

Thread a 14” piece of 80 lb. cotton tape through the center loop at the bottom of the pack tray.

Thread the closing loops* through the outside loops at the bottom of the pack tray and anchor the loops with a larks-head knot.

Place the pack tray behind the canopy links so the risers are on top of the container, and the top flap of the container is below the risers.

Install the links on the risers and tighten the links** . The top risers go to the back line groups and the bottom risers go to the front line groups.

9.3 Preparing the pack tray.

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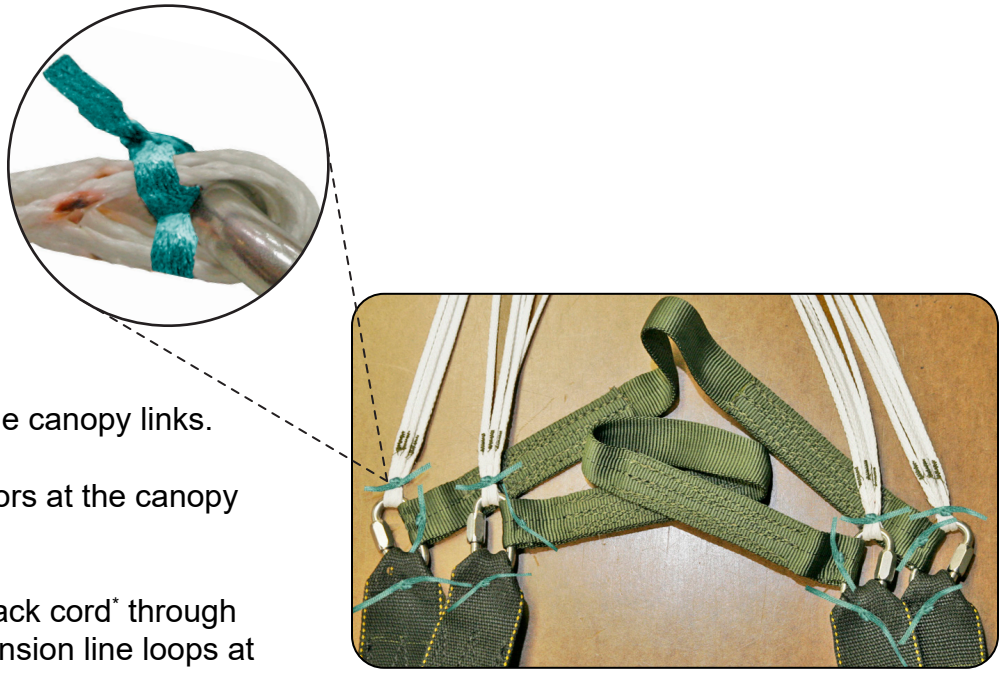
* Refer to the manual titled *General Information for Parachute Riggers for Servicing BPS Personnel Parachute Systems* for information regarding closing loop length.

** Hand tight plus one-quarter turn.



9.4 Tacking the assembly.

9.4

Tack* the risers below the canopy links.

Tack* the cross connectors at the canopy links.

Figure-eight a piece of tack cord* through each group of the suspension line loops at the link and tie the lines together.

*One single turn of Lite Super Tack (50 lb.) tack cord.

WARNING Do not tie any lines together from different riser groups.

10. Packing the Canopy into the Container

10.1

Flake the canopy and stow the lines.

Refer to the publication titled *Butler Personnel Canopies, Assembly and Packing Instructions, HX Series and Lopo Series Canopies* for instruction regarding assembly, flaking and stowing the lines of the canopy.

10.2 Stowing the risers.

10.2

Stow the risers and cross connectors in the bottom of the container as shown.

10.3

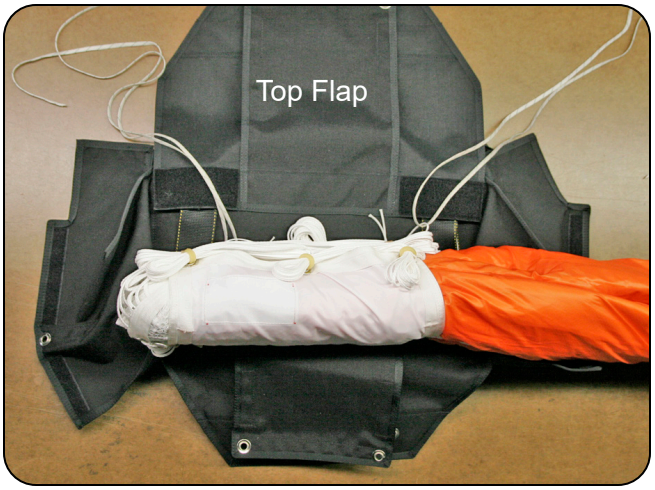
Form a stow-loop with the suspension lines and tie the stow with 80 lb. break tape on the bottom of the container.

10.3 Forming the break-tie stow.

10.4

Turn the container under the canopy diaper so the top flap is above the diaper.

Place the diaper at the bottom of the container below the closing loops.



10.4 Folding the canopy.

10.5

Make one S-fold in front of the diaper and behind the closing loops.

☞ Make the S-folds slightly longer than the pack tray to fill out the corners of the pack.

10.5 Folding the canopy.

10.6

Pull the closing loops through the bottom staging flap grommets and secure them with temporary pins.

10.6 Closing the bottom staging flap.

10.7

S-fold the remainder of the canopy in front of the closing loops.

☞ Make the S-folds slightly longer than the pack tray to fill out the corners of the pack.

10.7 Folding the canopy.

10.8

Pull the closing loops through the top staging flap grommets and secure them with temporary pins.

Route the pilot chute bridle to the outside between the grommets.

10.8 Closing the top staging flap.

10.9

Pull the closing loops through the side flap grommets and secure them with temporary pins.

10.9 Closing the side flaps.

10.10

Dress the top corners of the container.

10.10 Dressing the corners.

10.11

Fold the pilot chute bridle between the grommets in a circular pattern so it will fit under the pilot chute.

10.11 Folding the pilot chute bridle.

10.12

Place the pilot chute on top of the bridle.

Pull the closing loops through the bottom grommets and secure with temporary pins.

10.12 Stowing the pilot chute.

10.13

Pull the material away from the spring as you compress the pilot chute.

10.13 Compressing the pilot chute.

10.14
Place your knee on the cap and pull the center line out from the middle of the pilot chute.

9.14 Clearing the center line.

10.15

S-fold the center line and place it back inside the spring at the center of the pilot chute.

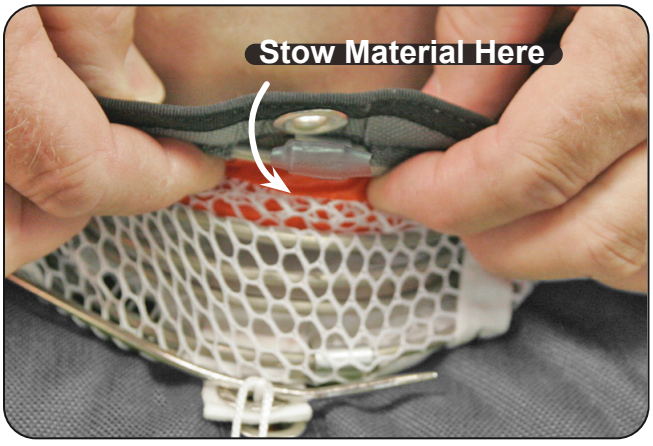
10.16

Fold the material under at the grommets and stow it between the top two coils of the spring.

Pull the closing loops through the top grommets on the pilot chute and insert temporary pins.

10.15 Folding and stowing the center line.

CAUTION All of the material must be stowed at the top of the spring where the grommets are located. Damage to the material may occur if it is not stowed properly.



10.16 Stowing the material.

10.17

Fold the material under the pilot chute cap at the grommets.

Pull the closing loops through the grommets on the top cap and secure them with temporary pins.

10.17 Folding the pilot chute material.

CAUTION Do not push any of the material inside the pilot chute spring.

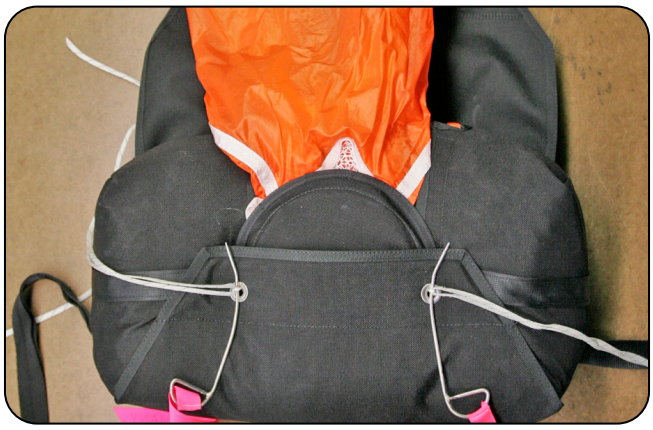
10.18

Fold the pilot chute material on the bottom-flap side so it is flat. It is not necessary to fold this section under the cap.

10.18 Folding the pilot chute material.

10.19

Pull the closing loops through the grommets on the bottom flap and secure them with temporary pins.



10.19 Closing the bottom flap.

10.20

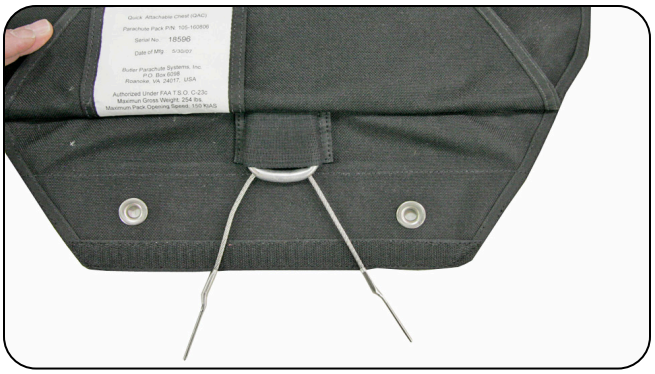
Fold the pilot chute material on the top-flap side so it is flat. It is not necessary to fold this section under the cap.

10.20 Folding the pilot chute material.

10.21

Insert the ripcord into the elastic pocket on the top flap.

The handle is bent at an angle. Insert the ripcord so the handle is angled into the container.



Correct ripcord placement.

Wrong ripcord placement.

10.21 Stowing the ripcord.

10.22

Pull the closing loops through the grommets on the top flap and insert the ripcord pins.

10.22 Closing the top flap.

10.23

Remove the pull-up cords and dress the container.

Seal the pins and record your work on the packing data card.

Count your tools.

10.23 Completed pack.


RIGGER

Butler Parachute Systems, Inc.
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