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# **Butler Personnel Parachute Systems, LLC**

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1820 Loudon Avenue NW • PO Box 6098 • Roanoke, VA 24017-0098 • (540) 342-2501 • (540) 342-4037 (FAX) • Info@butlerparachutes.com

## *Butler Personnel Parachute Systems*

### **Back Pack Emergency Parachute System**

### **Assembly and Packing Instructions**

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Revision A

October 5, 2017

## INTRODUCTION

This manual contains information required to pack the canopy into the BPS Back Style emergency parachute system and is intended to be used in conjunction with BPS manual titled *Butler Personnel Canopies. Assembly and Packing Instructions*. Once the canopy portion of the instructions have been complied with, then you must transition to this manual (or its equivalent for other products). If you do not have access to the appropriate manuals, **DO NOT ATTEMPT TO PACK THE PARACHUTE!** Contact the owner or BPS for a replacement copy.

**Note:** Placement of the diaper and distribution of the bulk when packing is dictated by the design dimensions of the particular container. For example, a container that is thicker at the top would have the diaper placed in the thicker portion at the top and the remainder of the bulk distributed to fill the container in proportion to the thickness at each point. Please keep this in mind if the particular parachute you are packing does not match the illustrations in this manual. Also remember that you as the rigger have broad discretion in how minute details of a particular pack job are accomplished.

**Note:** Some containers that are very narrow (relative to the diaper length) are not covered by these instructions since the diaper would need to be placed lengthwise down the side of the container. If you need the alternate instructions, please check our web site.

### **Harness & Container Operating Limitations**

Maximum Gross Weight: 350 pounds

Maximum Pack Opening Speed: 170 KEAS

Maximum Demonstrated Load: 6,500 Pounds

\* Refer to the manual titled *Butler Personnel Canopies Assembly and Packing Instructions* for instructions for additional limitations.

## CLOSING LOOP LENGTH

All BPS packs use adjustable soft closing loops. In general, the closing loops should be short enough to fully compress the pilot chute and keep it firmly in place. This not only ensures that the spring will get a good solid launch, but it will also keep the spring from shifting off center. For an initial assembly of a parachute, the force to pull the loops up and insert the pins can be quite high and still result in a pull force within limits (15 for chest packs and 22 lb. for all others) after several days. This is because the pack tray area where the loops are attached changes shape under the tension from the loops, allowing the loop tension (and thus the pull force) to drop off. This effect only occurs after the initial assembly and packing or an extreme increase in the loop tension.

The original (and strongly preferred) material for the closing loops is a 225 lb. braided polyester cord; however, you may also use the outer sheath or MIL-C-5040, T3 ("550 line") . No other types of closing loop material are authorized! Please contact Butler Parachute Systems for replacement cord.

**Note: It is the rigger's responsibility to ensure that ripcord pull force meets the requirements**

## TOOLS REQUIRED

Three pull-up cords  
Three temporary pins with safety flags  
Packing paddle  
Tacking needle with waxed 6-cord or equivalent  
Seal thread/lead seals

## GENERAL PACKING PROCEDURES

1. COUNT YOUR TOOLS!
2. Pull test – If possible, have the customer pull the ripcord themselves.
3. Airing and drying – as required.
4. Check layout and line rotation; straighten canopy from the top down.
5. INSPECTION – Record Serial number and other data from all components.
  - a. Pilot chute – snags, bent spring, solid ferrule, proper type.
  - b. Bridle – tackings and knots, proper routing of incremental bridle, T3 break tape.
  - c. Apex – vent and cap, lateral band, straighten vent hem.
  - d. Canopy – radial seams and gore seams, general condition, fabric pull test.
  - e. Lower lateral band – skirt hem, line attachments.
  - f. Suspension lines – snags, kinks, sheathing.
  - g. Connector links – plating, approved type (no speed links).
  - h. Risers – Stitching, condition of webbing.
  - l. Harness – canopy releases, webbing, hardware, ripcord and cables, housings, and pocket
6. Repair and re-inspect as necessary.
7. Pleat, fold, stow, stack, close, dress pack...Neatness Counts!
8. Seal, sign, record data.
9. Count your tools!

## BACK TYPE PACKING INSTRUCTIONS

1. Release all fasteners, snaps, Velcro, hardware, and tackings so the harness/container will lay flat on the packing table. Inspect the closing loops for wear and correct length. Replace if required.



2. Fold the risers back into the pack tray so that they will lay flat on the shoulder pad.

**NOTE:** If the rig you are packing has a floating chest strap the main lift web/risers are usually adjusted to the largest size (minimum riser inside the pack tray) by placing the bottom of the riser end stitch pattern 1/2" below the top edge of the pack tray. If the wearer requires that the harness be adjusted smaller, then the excess is pulled through the shoulder fitting and S-folded under the riser cover. If your customer has a particular adjustment set, you may tack the risers into the pack at that setting if they would like you to do so.



3. Tack the risers into position with one turn single Super Tack or equivalent; tie with a surgeon's and lock knot.



4. Spread the risers and connector links evenly across the pack tray. Position the diaper across the tray with the end slightly past the edge of the pack tray.

**Note:** The container pictured in this manual is three inches thick at the top and 1/2 inch thick at the bottom. Therefore, the diaper is placed across the top, in the thickest portion of the container. As previously stated, the diaper placement and the distribution of the bulk of the parachute you are packing will be dictated by the dimension of the container.



5. Pass one end of a 12 inch piece of 80 lb. cotton tape under the Type IV webbing adjacent to the center pack closing loop. Form a bight in the suspension lines and using the 80 lb. tape, secure it to the closing loop attachment tape with a surgeon's and locking knot. Take care to ensure that the location of this bight does not end up underneath the pilot chute spring. Trim the ends to 1 inch of the knot.



6. Insert pull-up cords into the closing loops. "S" fold the canopy back and forth across the packtray with the folds slightly past the edges. The number of folds between closing loops will vary depending on the design of the container you are packing and may be positioned at the riggers discretion. Pay particular attention to the area at the top center under the ripcord housing – this area must be sufficiently full to keep the ripcord housing aligned with the pack tray stiffener. Folding the apex back towards the center will place the pilot chute bridle in the correct position and leave a cleaner edge when closing the container.





7. Closing the container – the bottom flap closes first, followed by the top flap, left side flap, and finally the right side flap. Begin by threading the bottom pull-up cord through the grommet in the bottom flap. Fold the flap over the canopy and insert a temporary pin to hold it in place.



8. Pass the top and center pull-up cords through the grommets in the top flap, fold the flap over the canopy, and hold in place with temporary pins. The top flap will overlap the bottom flap approximately 1”.

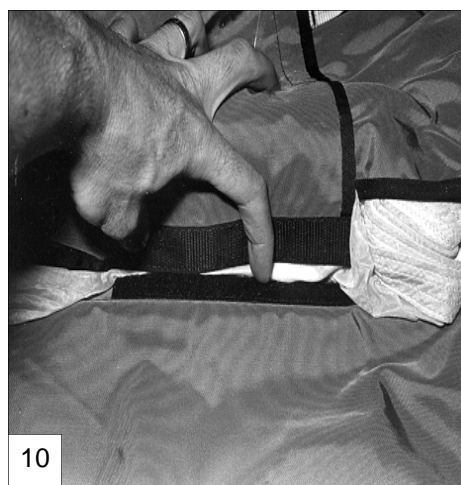


9. Mate the top and bottom flap Velcro, routing the pilot chute bridle through the gap between the Velcro segments on the flaps.



10. Mate the 6" sections of Velcro on the sides of the top flap by pulling the top flap over, down and around the canopy and fastening it to the corresponding Velcro on the pack tray. Leave some of the canopy material sticking out on all four corners – doing so will fill the corners of the container and result in a cleaner looking container when closed. Be sure to keep the bottom flap in position during this procedure.

**Note:** Fastening the top flap to the pack tray in this manner encloses the canopy, but not the pilot chute, and provides a staging effect which increases deployment reliability.



**DO NOT!!!!  
UNDER ANY CIRCUMSTANCES  
PLACE THE PILOT CHUTE  
UNDER THE TOP OR BOTTOM FLAPS**

11. When the previous step is completed, the top and bottom flap will act together to stage the deployment of the parachute so that the pilot chute will always be out and inflated before the canopy itself is exposed to the air.



12. "S" fold the pilot chute bridle between the top and center grommets on the top flap.

**Note:** If the container design is thicker at the bottom, you will generally want to place the pilot chute between the bottom and center grommets. In both cases, the general rule is the pilot bridle must be folded and placed underneath the pilot chute itself. The pilot chute may be placed in either location at the riggers discretion with the concurrence of the customer.



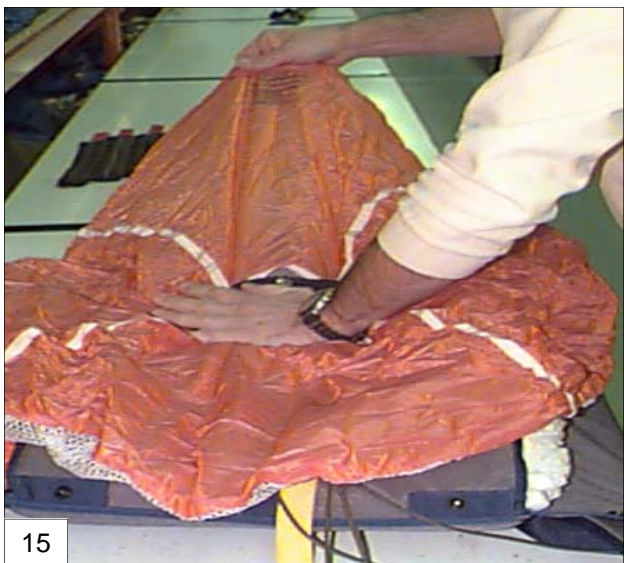
13. Position the pilot chute base on top of the folded, pilot chute bridle, aligning the grommets located on the base of the pilot chute with the top flap grommets. Pass your pull-up cord through the bottom pilot chute grommet and pin the pilot chute in place.



14. Pass the center pull-up cord through the bottom pilot chute grommet and pin in place.



15. Compress the pilot chute and pull all of the material clear of the spring.





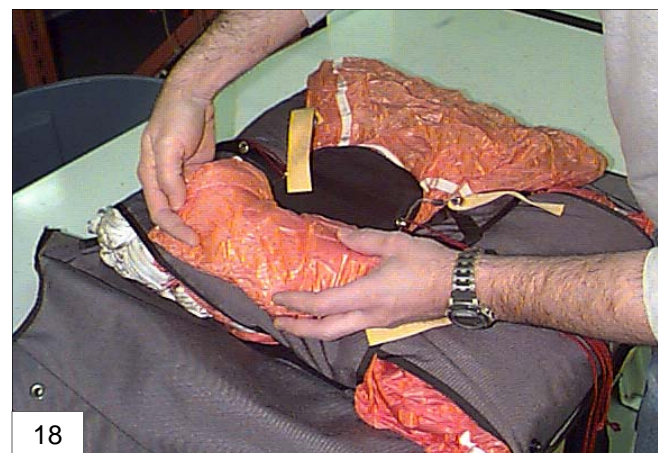
16. Hold the compressed pilot chute in place (your knee works well). Carefully fold the pilot chute material that is covering the bottom of the container and place it against the compressed pilot chute. **DO NOT TRAP ANY MATERIAL INSIDE THE PILOT CHUTE SPRING!** Pass your pull-up cord through the grommet on the pilot chute crown and pin.



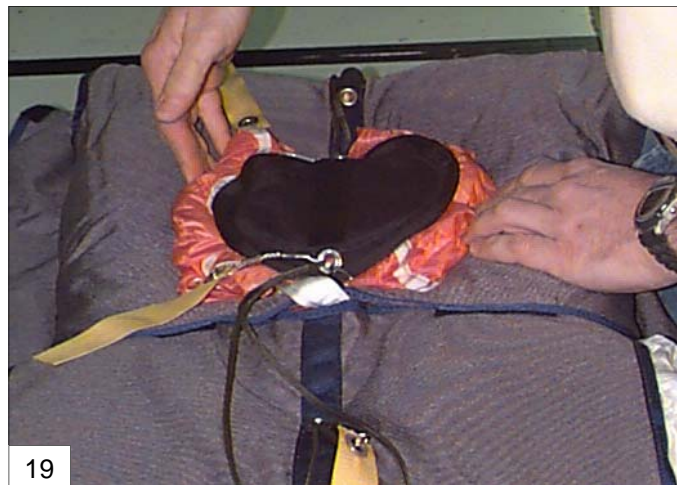
17. As in the previous step, fold the pilot chute material covering the top of the container, and pin the pilot chute crown in place.



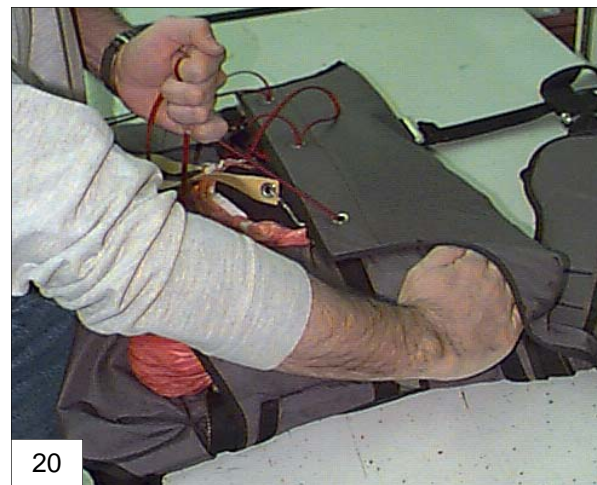
18. Carefully fold the left and right side of the pilot chute and place it up against and just barely under the edge of the pilot chute cap. Arrange the bulk of the pilot chute so that it will help stabilize the pilot chute spring and keep it from rocking. This technique will help ensure that the pilot chute stays where you put it.



19. Tuck the folded pilot chute material around the pilot chute crown taking care to support the spring as noted previously.



20. Pass all three pull-up cords through the grommets on the left side flap being careful to avoid trapping the temporary pins under the flap. Starting with either the top or bottom closing loop, use one hand to pull the loop through and the other hand to hold the inner flap in position and to keep the pack flat. Pull the side flap to the center taking great care to avoid rolling the edge of the pack tray. Pull the closing loop through the grommet and pin. Begin dressing the container by sliding a packing paddle between the side flap and inner flaps to smooth any wrinkles.



21. Repeat the closing procedure with the closing loop on the opposite end. Again, use a packing paddle to smooth any wrinkles.





22. After pinning the top closing loop, pull up on the center closing loop and pin; again taking care to keep the inner flaps in position and to keep the pack nice and flat.



23. Starting with either the top or bottom closing loop, close and dress the right side flap in the same manner.



24. Next, close and pin the closing loop on the opposite end.



25. Finally, close and pin the center closing loop.



26. Keeping the corners as neat and full as possible, carefully close the corners of the containers as shown. Use your finger to reach inside and poke the corner tuck out if needed.



27. After closing the top corners, align and mate the Velcro on the riser covers.





28. Route the ripcord through the housing and replace the temporary pins with the ripcord pins. Remove the pull-up cords being careful not to burn the closing loops. It is recommended that you place the pin between the loop and cord before removing the pull-up cord.



Dress the container, paying particular attention to the corners. Sign the Packing Data Card, seal the bottom pin, and log the pack job. COUNT YOUR TOOLS and make sure you have what you started with.

## **RIGGER'S NOTES**

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