SERIAL

RAM AIR CANOPY

OWNERS MANUAL

Tandem Main & Reserve, Black Hawk Main & Reserve, NightHawk Main & Reserve

Angel Fire Reserve, Mentor, Basix, FireBolt

PARACHUTE LABORATORIES INC.

d.b.a. **JUMP SHACK**

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GENERAL

INTRODUCTION

Con gratu la tions on the pur chase of your new main or re serve can opy from Jump Shack. As you put jumps on your new can opy and get to know it, you will come to re al ize that you have pur chased the most re li able para chute that money can buy. We are sure that it is the most thor oughly en gi neered canopy avail able. All of our cano pies have been designed us ing 3- dimensional CAD tech nol ogy.

This manual introduces you to your new Racer Tandem Main or Reserve, AngelFire Reserve, BlackHawk Main or Reserve, Night Hawk Main or Re serve, Basix, Mentor or FireBolt - an introduction you must have before taking to the air with it. So leave yourself plenty of time between getting the canopy and making the first jump on it. Use this manual to help familiarize yourself with your complete system.

WARNING

IT IS AS SUMED THAT IN TEN TION ALLY JUMP ING FROM AN AIR PLANE IN FLIGHT OR FROM A FIXED OB JECT IS DAN GER OUS TO LIFE AND LIMB. PARA CHUTES DO NOT AL WAYS WORK AS DE SIRED. WHEN YOU TAKE IT UPON YOUR SELF TO PAR TICI PATE IN PARA CHUTE JUMP ING, YOU AC CEPT THE FACT THAT NO MAT TER HOW CARE FUL YOU ARE, OR HOW GOOD YOUR EQUIPMENT IS, YOU CAN BE SE RI OUSLY OR FATALLY IN JURED.

DISCLAIMER

It is expressly understood and agreed between the seller and the buyer and any subsequent user of this parachute, all or in part, the manufacturer and seller shall in no way be deemed or held liable or accountable for any failure or damages resulting from failure of the product. Use of this product for any purpose shall constitute waiver to the manufacturer and seller for any damages to person or property directly or indirectly caused by said use. This parachute is sold with all faults and without fitness for any particular purpose, and the manufacturer neither implies nor expresses any warranties or guarantees of the parachute. Use of this parachute for any purpose constitutes agreement between the buyer or user and the seller according to the terms herein. If the buyer refuses the terms of this agreement, he must return the unused parachute to the manufacturer with 10 days of receipt of the parachute with a letter stating why the parachute was returned along with the accompanying invoice showing purchase price.

ABOUT THE MANUAL

We have tried to write this manual, for all Jump Shack canopies. However, it is only current for the serial number shown on the first page. The data contained herein was current at the time of this writing, but the sport advances rapidly. Some of this information may not be true now or especially as time goes on. We reserve the right to change the canopy and its procedures without notice. Prudence requires that you contact us for information on updates if you are using this manual as a guide to service a later generation Jump Shack canopy. Additionally, you may view the most recent version of the Owners Manual at our Internet site *WWW.JUMPSHACK.COM*

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SERIAL NUMBER

The first two dig its of the se rial number de note the week of manu fac ture. The third digit de notes the year. The last two dig its de note the se quence.
Caution: This man ual is se rial num bered cor re-spond ing to the canopy with which it was shipped. Tech ni cal in for ma tion in this man ual re fers only to the can opy of that same se rial number.
Re cord the in for ma tion from the data plate now, along with the col ors of your canopy, in case your gear be comes lost or sto len. Keep the rec ord some place other than your equip ment bag.
If you have any ques tion re gard ing your canopy, this man ual, or the pro ce dures de scribed in the man-ual, con tact:

Jump Shack
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TECHNICAL DATA

These Reserve Para chutes are ap proved un der one of the fol low ing: Part number SST202 7-Cell Reserve has been cer tifi cated in the Low Speed Cate gory by the Fed eral Avia tion Ad min istra tion (FAA) un der Tech ni cal Stan dard Or der (TSO) C-23(b). It is lim ited to use in Air craft un der 150MPH. It is ad di tion ally lim ited to use with less than 225 pounds. This TSO re fers to Na tional Air-craft Stan dard (NAS) 804 pub lished in Sep tem ber, 1949. The 9- Cell and 11- Cell Tan dem Reserve are Cer ti fied un der TSO- C23(c) this TSO re fers to AS-8015a pub lished Sep tem ber 30, 1982. To meet these re quire ments, the manu fac turer must sub mit the de-sign in draw ings to the FAA En gi neer ing Dis trict Of fice. The FAA then in spects and cer ti fies the manu fac tur ing fa cil ity and ap proves the qual ity con-trol of the manu fac tur ing pro cess as de scribed in the manufacturer's manual.
The FAA fur ther as sures that the manu fac turer will trace and in spect each piece of fab ric and hard ware he uses dur ing the manu fac tur ing pro cess of the equipment.
Un der TSO C-23(b), equip ment can be tested to Stan dard Cate gory (some times called High Speed) or Low Speed Cate gory. A rig may be as sem bled with a Low Speed Cate gory re serve can opy, but then the en tire sys tem be comes cer tifi cated in the Low Speed Cate gory. (Later in stal la tion of a Stan-dard Cate gory can opy re stores the sys tem to the Stan dard Cate gory). Regu la tions re quire the rig ger to iden tify the sys tem as Low Speed Cate gory in the ap pro pri ate man ner when he in stalls a re serve from that cate gory. Stan dard Cate gory re quires no mark-ings. Per form ance limi ta tions of the in stalled can-opy should be plac arded, in the man ner re quired by the TSO docu ment, for the us er's in for ma tion.
The 9- Cell and 11- Cell reserves cer ti fied un der TSO C23(c) must con form to AS- 8015a . The test weight and speed speci fied in AS- 8015a Cata gory B is 300 Lbs. @ 175 KTS. The Tan dem Re serve cano-pies have been tested to 600 LBS. @ 175 KTS. Part num bers 12120 & 12121 9 cell re serves of 300 & 265 sq. Ft. Re spec tively, have been ap proved un der TSO C- 23d which re quires con for mance to AS-8015b. They are ap proved for use in dual (main & re serve) con tain ers and are lim ited to use at 254 lbs. At 150 kts.

OPERATIONAL LIMITATIONS

CYCLIC INSPECTIONS

The Fed eral Avia tion Ad min istra tion re quires that all para chute sys tems in use for emer gency cir cumstances be in spected every 120 days. You, as the user of this equip ment, should be fa mil iar with and check these items.

PERSONNEL QUALIFICATIONS

Only a cur rently FAA li censed rig ger may as semble, in spect, pack, and cer tify a re serve as air wor thy. Rig gers are re quired to have *this* man ual avail able to them while serv ic ing this canopy. Per the FAA regu la tions you must be fa mil iar with any type of re serve para chute you wish to cer tify.
The main can opy and its ac ces so ries may be as sembled and packed by you or a li censed rig ger.

The FAA states that mi nor re pairs may be done by a Sen ior Rig ger and ma jor re pairs must be done by a Mas ter Rig ger. They fur ther de fine mi nor re pairs as any thing that does not af fect the air wor thi ness of the equip ment, and ma jor re pairs as any thing that does af fect the air wor thi ness. This regu la tion/pol icy is sub jec tive and open to dis cus sion. You as the owner and your rig ger should dis cuss the re quired re pair and make the best de ci sion you can. If there is still some ques tion call us.

MAINTENANCE & REPAIR PROCEDURES

The best guide for the exe cu tion of gen eral re pairs to be per formed on para chutes is “The Para chute Man ual” by Poyn ter. When per form ing pe ri odic inspec tion to your can opy the rela tive line lengths should be noted. A dif fer en tial of more than one inch should be cause for re jec tion and sub se quent cor rec tion be fore re turn to serv ice. Any bro ken fibers or threads should be re paired or re placed. Stains must be iden ti fied and docu mented. They should be re moved if pos si ble with out dam ag ing the fab ric. Gen er ally only acidic en ti ties are harm ful to ny lon there fore a pH test is an ap pro pri ate method of de ter min ing if a stain is harm ful.

ASSEMBLY

PARTS LIST

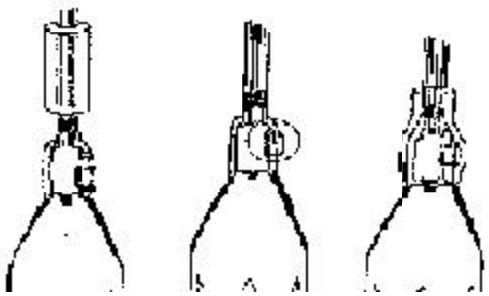
Can opy with Attached Lines
Con nec tor Links
Rub ber Stow Bands

Note: Only U.S. Mili tary Speci fi ca tion R- 1832 rub ber stow bands may be used on Para chute Labs. Prod ucts. They are avail able from Jump Shack.

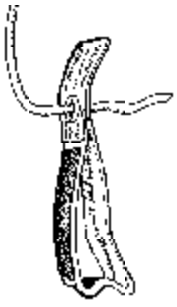
RESERVE ASSEMBLY

A. Con nect the can opy to the re serve ris ers us ing ap pro pri ately sized Rap ide links. For Rap ide links, turn un der the edge of the riser web bing to buffer it- self and in stall the links. Turn the bar rel nuts un til snug plus one- quarter turn.

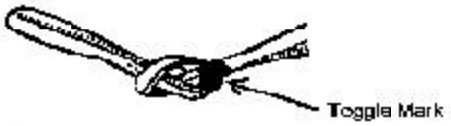
In struc tions For Spec tra Line

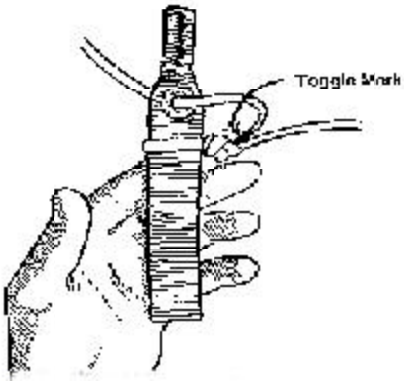


B. Route the steer ing line through the guide ring on



the riser. Then route it through the grom met on the tog gle, start ing from the side with Vel cro. Wrap the steer ing line around the out side of the tog gle, over

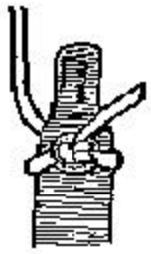




the grom met. The lo ca tor mark should be 1 ¼" (3cm) from the side as shown.

C. Slide the line off the tog gle and tie a loose over- hand knot in the folded line.

D. Next slide the line back over the tog gle and tighten the knot. The idea is to use the width of the tog gle as a meas ur ing guide for the size of the loop. The lo ca tor mark on the line should be just to the out side of the knot, away from the tog gle.

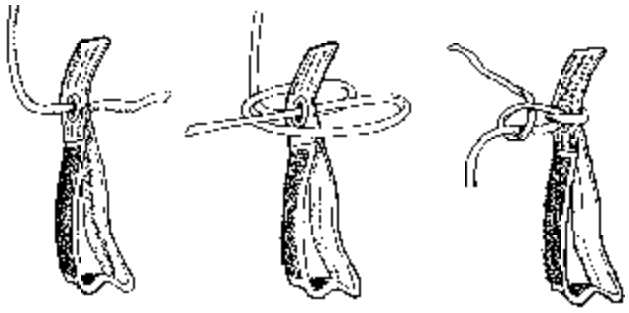


E. Pull the knot up to the grom met. Daisy chain the ex cess end of the steer ing line. Don't cut the ex cess

off, as you may wish to change the tog gle set ting slightly at some time.

In struc tions for Dac ron or Poly es ter line.

A. Route the steer ing line through the guide ring on t



he riser.
Then route it through the grom met in the tog gle, start ing from the Vel cro side.

B. Then route the steer ing line around the tog gle on the right side and then back through the grom met.

C. Now route the steer ing line around the tog gle on the left side and then back through the grom met.

D. Ad just the line so that the tog gle mark is on the line ex it ing the grom met go ing to the can opy, at the base of the grom met, on the Vel cro side of the tog-gle. Pull out all the slack while main tain ing the tog-gle mark po si tion.
E. Tie an over hand knot in the steer ing line and cinch it down against the tog gle.

TANDEM CANOPY ASSEMBLY
All cano pies should have a rub ber stow band at-tached to the line at tach ment point of one of the in-board “C” lines. The cen ter of the slider should be stowed in this re tainer dur ing pack ing. The pur pose of this re tainer is to pre vent the slider from com-ming down the lines pre ma turely. It is a good idea to do this to any can opy.

Other cano pies may re quire that the stow band be lo cated on the “B” line. This may be de ter mined by pull ing the cen ter of the slider up into the cen ter of the air chan nel with the slider grom mets firmly against the slider stops. Ob serve where the point 3 to 4 inches from the cen ter point of the slider falls, and lo cate the stow band on the near est line at tach-ment point.

SPECIFICATIONS

Canopy	Cells	Sq. Ft.	Chord	Span	Aspect	Pack Volume
AngelFire	7	177	9.25’	19.5’	2.11	416 Cu. In.
BlackHawk 265	9	265	10.1’	26.8'	2.65	580 Cu. In.
NightHawk 245	7	245				
NightHawk 280	7	280				
NightHawk 300	7	300				

Line Differential Specifications

	AngelFire	BlackHawk 265	BlackHawk 300
A to B	2.2”	2.75”	2.75”
A to C	8.2”	9.15”	9.3”
A to D	17.7”	18.9”	19.3”

INSPECTION INSTRUCTIONS

Your Para chute Labs re serve must be in spected thor oughly at the time of its ini tial as sem bly and at every In spect & Re pack Cy cle. The pre ferred method of in spect ing your ram air para chute is to hang the para chute up by the tail so that you can see the en tire top and bot tom skin. This will make the line con ti nu ity check eas ier too. Clamps at tached to a spreader bar that is at least the width of the canopy make this job a cinch.

An FAA cer tifi cated rig ger must in spect your new Para chute Labs re serve and de ter mine its com patibil ity with your rig. The in spec tion should be done in a clean, well lit area that will al low the can opy to be com pletely spread out.

VIS UAL IN SPEC TION

It's best to in spect your re serve in a care ful, system atic way. We rec om mend start ing at the top of the can opy and work ing down to the ris ers as described be low:

1) **TOP SUR FACE:** Hang the can opy or spread the can opy out on its bot tom sur face and in spect the top sur face start ing at the front of the left end cell. Check half of the cell from nose to tail. Then check the other half cell go ing tail to nose. Re peat this pattern un til all the cells top sur faces are in spected. Look for rips, stains, or failed seams.

2) BOT TOM SUR FACE: Again use the pro cedure of in spect ing half cells as on the top sur face. Check for rips, stains and failed seams. Look very closely at the line at tach ments. Even slight dam age is cause for re jec tion in these ar eas. Line at tachments must be com pletely free of any dam age or de fects.

3) IN SPECT EACH RIB: From lead ing edge to the trail ing edge by look ing in side each cell. Pay extra at ten tion to the line at tach ment points.

4) Check that all lines in each line group are the same length and that the trim dif fer en tial between each line group is cor rect for this re serve. This can be done while the can opy is in the hang ing po si tion or with the can opy neatly laid out on its side. Check the con di tion of the sta bi liz ers and slider stops on the sta bi lizer.

5) SUS PEN SION LINES: Check the full length of each line for dam age and wear. Look for fray ing at all cas cades and where each line at taches to the con nec tor link. Check that all lines are sewn and that the stitch ing is good. Check the con ti nu ity and rout ing of each line.

6) SLIDER: Be sure the fab ric isn't torn, that the grom mets are un dam aged and have no sharp edges, and that they are se curely at tached to the slider. Be sure every sus pen sion line and both steering lines pass through the proper grom met on the slider.

7) RIS ERS & LINKS: Be sure the bar rels of the con nec tor links have not moved by check ing the match marks. Visu ally check the match mark and link con di tion. If the match mark is still in tact and the link is not bent or dam aged, the link is OK for con tin ued serv ice.

If the up per and lower parts of the mark be come mis aligned, then the bar rel has shifted. Should this hap pen, the link must be im me di ately dis as sem bled, cleaned and in spected. If no dam age has oc curred, the riser/link/line/slider bumper as sem bly may be re at tached.

En sure that the slider bumpers lo cated on the con nec tor links are the cor rect ones, are po si tioned cor rectly, and are prop erly tacked to the links.

The tog gles must be in stalled cor rectly and must match the guide ring and Vel cro on the ris ers. Parachute Labs cano pies come with brake set tings and

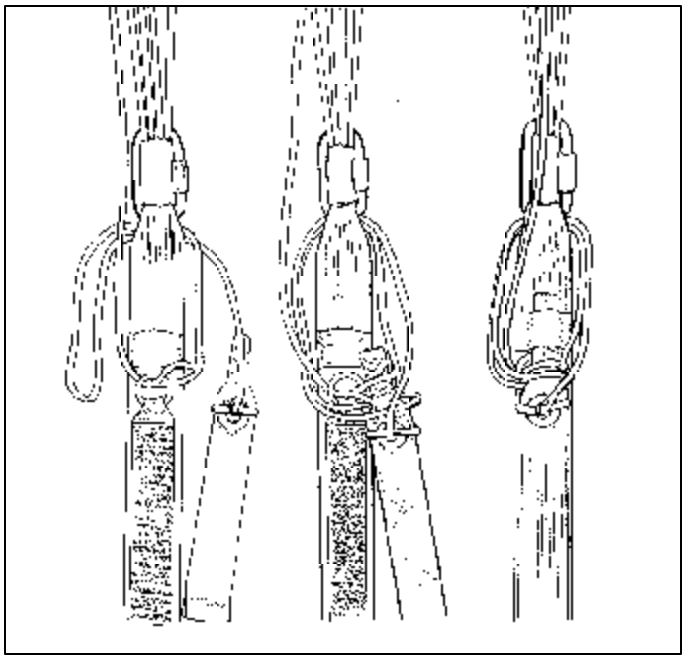
tog gle tie- on marks set for PIA stan dard riser/brake di men sions. This stan dard calls for 4 inches (10.2 cm) from the top of the riser to the top of the brake- setting ring. If there is a dif fer en tial of more than 1 inch (2.5 cm), from this stan dard the can opy must be modi fied. This modi fi ca tion may only be done by a mas ter rig ger and must be re ported to Para chute Labs, Inc. In ad di tion, any changes must be marked on the cano py's data panel.

8) THE REST OF THE AS SEM BLY: Fol low the in struc tions in the har ness/container manu fac- tur er's owners man ual to in spect the rest of your para chute sys tem.

RESERVE PACKING INSTRUCTIONS

CRITI CAL POINT

Compatibility—Make sure the can opy you're pack ing is the right size for the rig it's con nected to. Even if it was in there bef ore, some one el se's mistake will be come yours when you sign the pack ing data card.



SET TING BRAKES:

A. Pull the steer ing line through the guide ring mounted on the riser down to the eye let pro vided in the steer ing line.

B. Fold the ex cess in half and in sert through slot in top of riser.

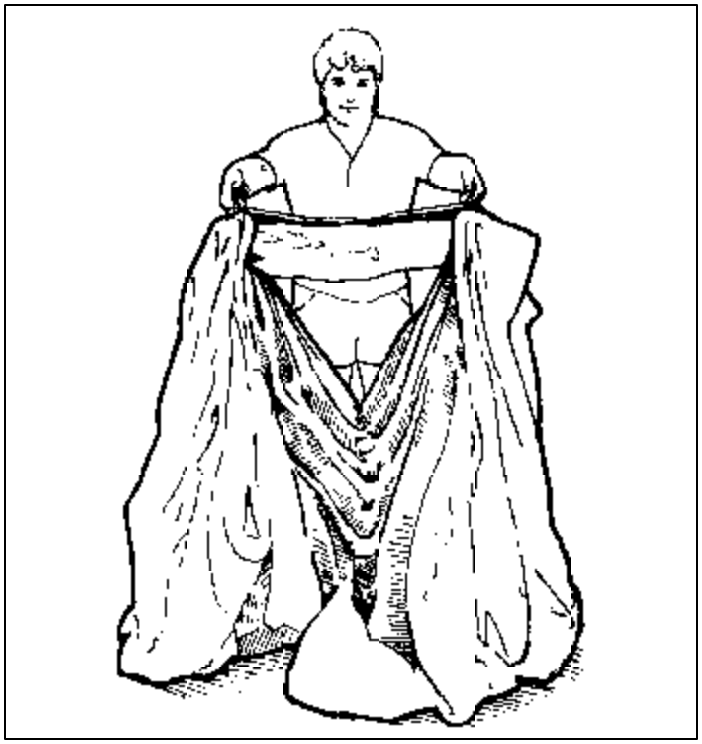
C. Place the loop made by the ex cess over and in line with the brake eye let.

D. In sert the tog gle through the loop in "C." and then through the brake eye let.

E. In sert the tog gle into it's elas tic keeper and seat it to the mat ing vel cro on the riser.

FOLD ING CAN OPY:

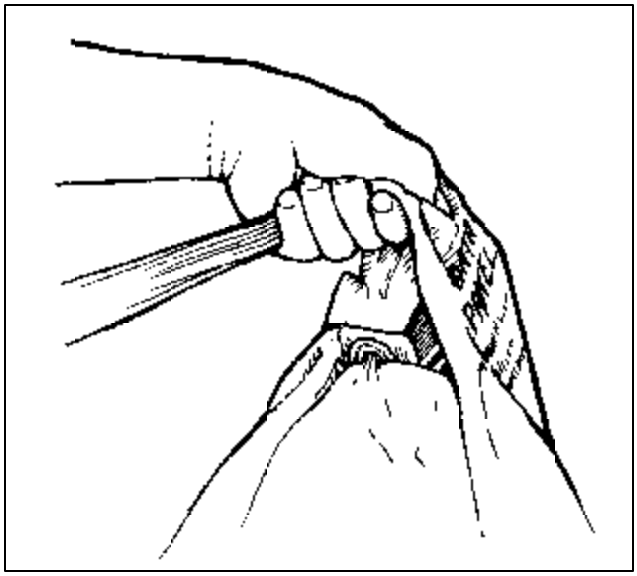
A. Sepa rate the four line groups be low the slider and walk the slider up to ward the can opy while lifting the can opy off the floor. Seat the slider grommets against the slider stops.



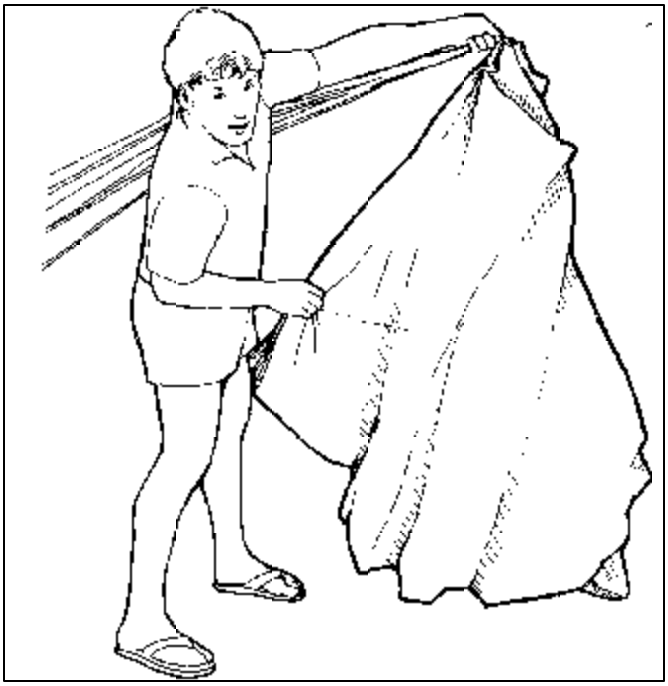
B. Hold all the lines in one hand while stand ing, and or gan ize the nose. It should now face the con tainer. With **"HANDS ON"** trace and clear the pe rime ter of the can opy pull ing all sta bi liz ers to ward the outside of the bun dle.

RESERVE PACKING INSTRUCTIONS

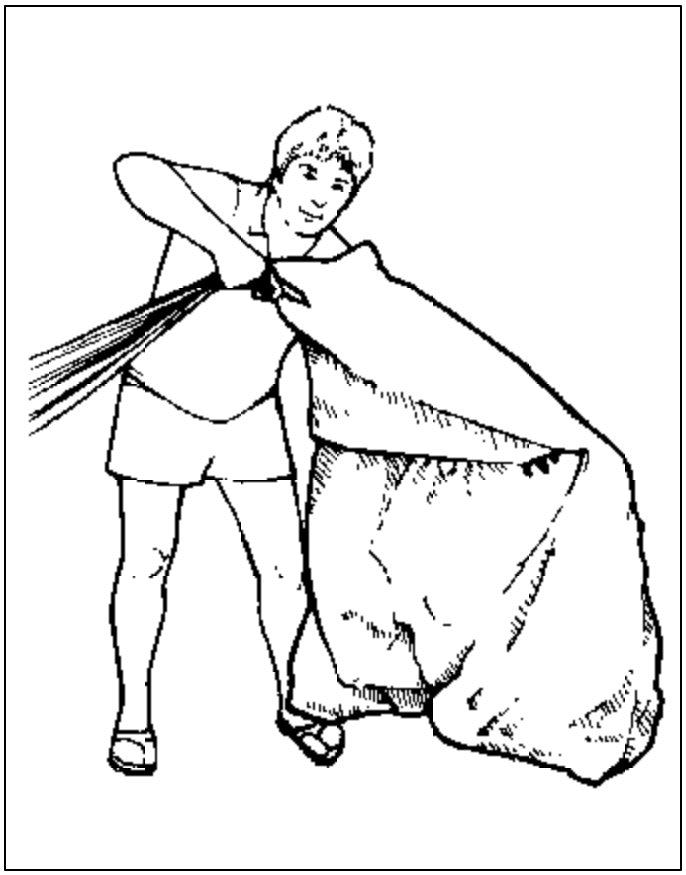
NOTE: **This pro cess is simi lar to the flak ing of a round can opy and must be done with care as pan els not cleared could cause a mal func tion.**
C. Place the cen ter tab of the tail un der your thumb as shown



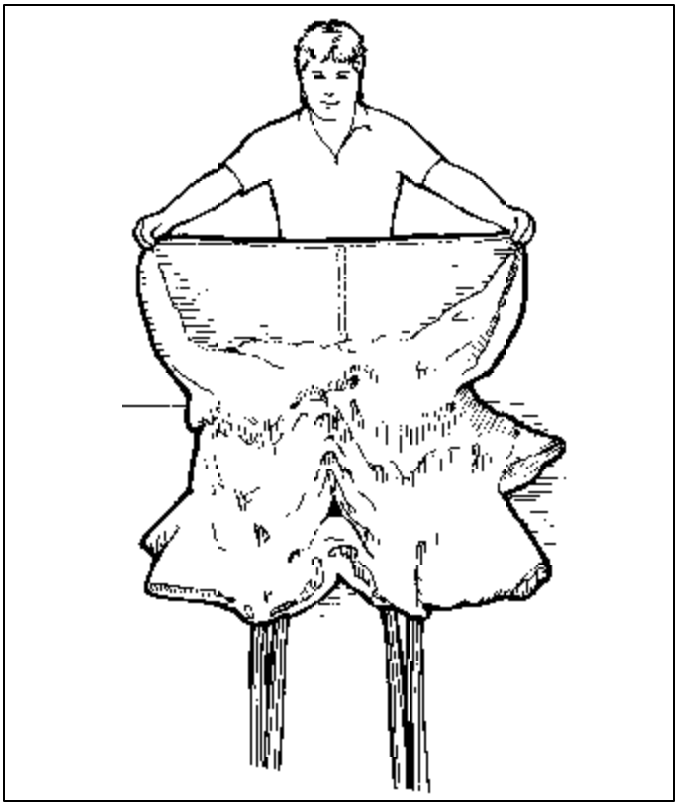
D. Sweep your fore arm un der the nose of the can-

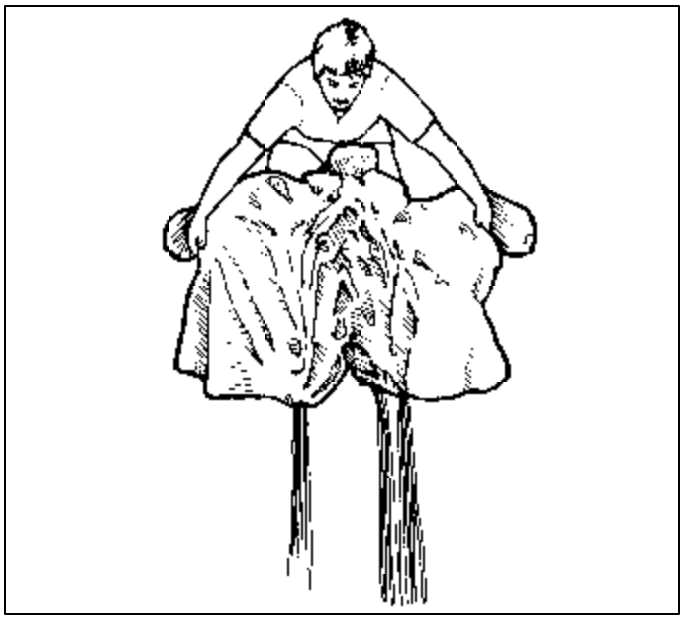


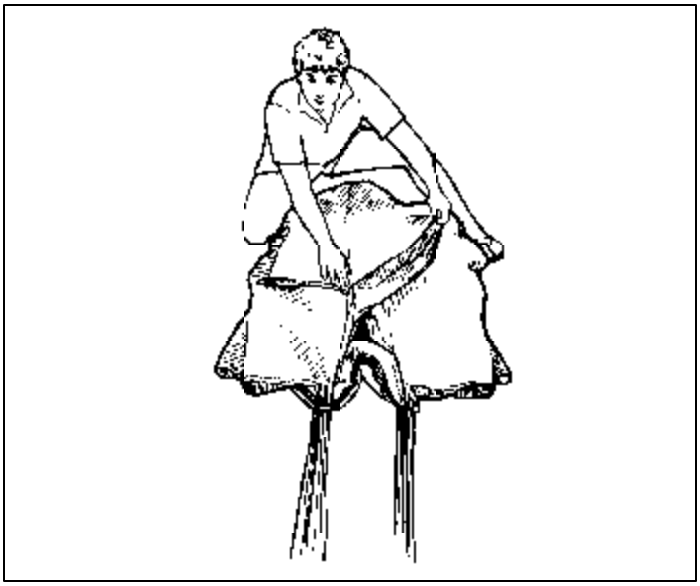
opy and lay it on the floor. The bun dle will spreadout widely, but neatly.



E. Kneel at the top of the can opy fac ing the container. Draw the can opy to ward you while at the same time nar row ing the bun dle to the width of the bag. Con stantly work the fab ric away from the links.



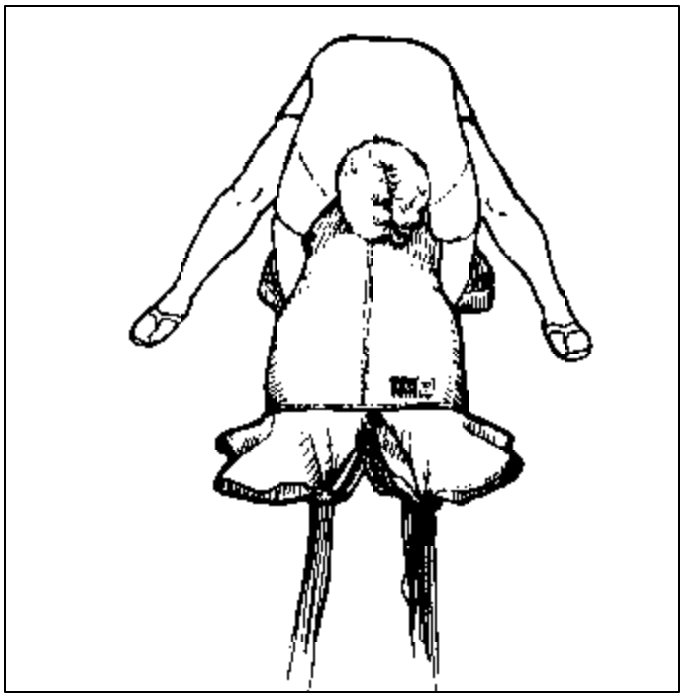


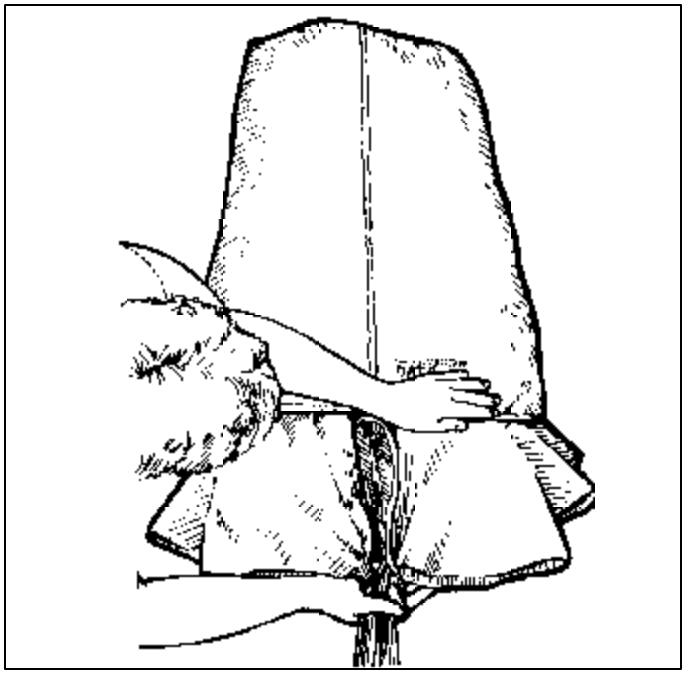


F. Pull the cen ter tab of the tail to the top ex pos ing the air chan nel.

G. Fold one- half of the tail over the bun dle to inspect the sta bi lizer folds. Dress the tail, stack ing all chord seams neatly over the cen ter line (air chan nel) and neatly lay all sta bi lizer and tail fab ric to the outside. Re peat with other half of tail back to the center. Stow the slider in its rub ber band.

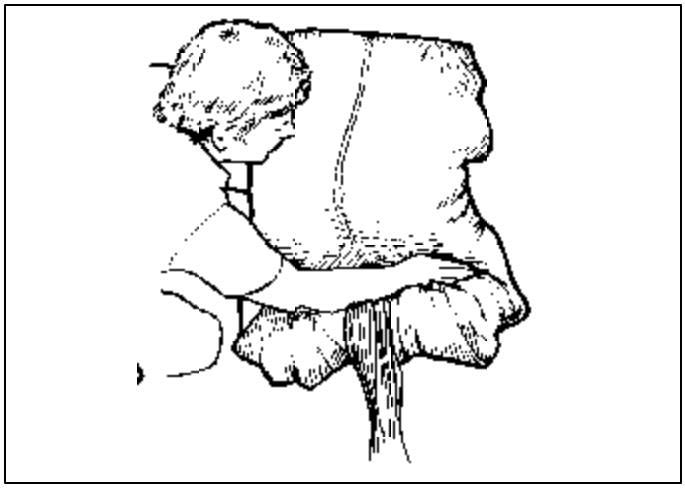
H. Re turn the cen ter tail tab to the bot tom cen ter of the bun dle. Where the sta bi liz ers at tach to the main body of the can opy. “Co coon” the can opy to the width of the bag.
NOTE: Care must be taken dur ing the co coon-ing pro cess so as not to dis turb the air chan nel and lines of the can opy.



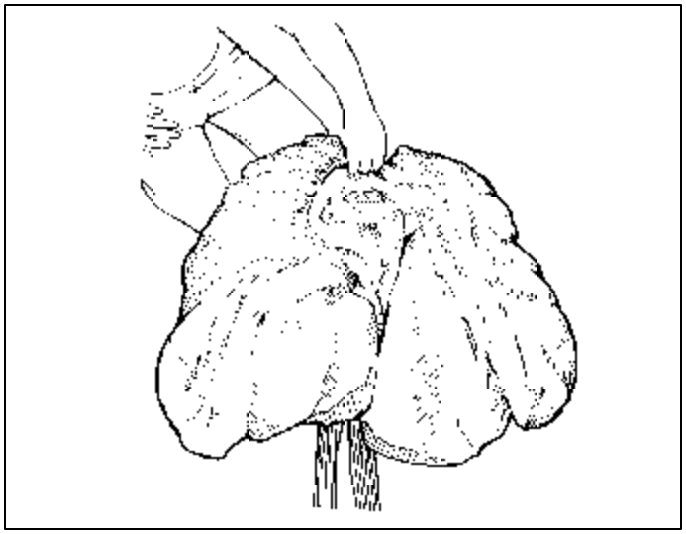


I. Fold the ex posed sta bi liz ers back un der the tail. Lay your hand 6"-8" from the bot tom of the bun dle and fold the can opy back over it self.

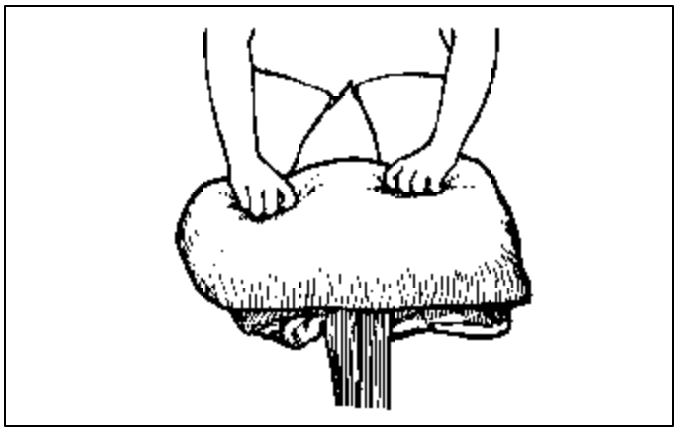
J. Fold each sec tion of the nose out ward from the cen ter so it takes air quickly dur ing de ploy ment.



K. Fold the can opy back over so you now have an 8" S- fold at the bot tom. The length and number of S- folds may vary ac cord ing to the dis tance be tween the ver ti cal par ti tion that sepa rates the main and re-serve con tain ers, and the grom met in the bot tom flap of the re serve con tainer.

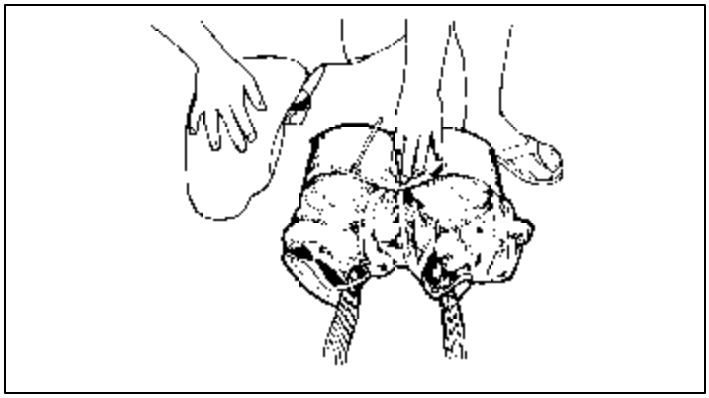


L. Tuck the re main der of the can opy un der the bundle un til it is the height of the bag.



PLAC ING CAN OPY INTO BAG:

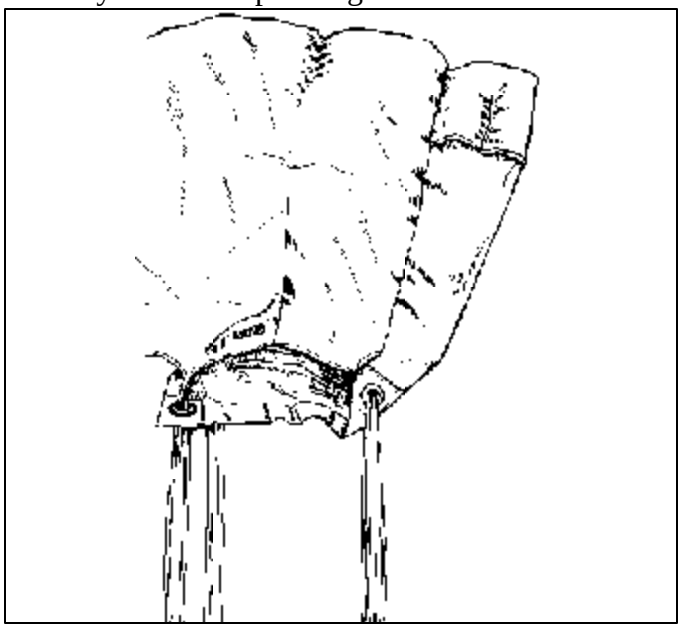
A. Face away from the con tainer and kneel on the packed can opy to keep it un der con trol. Shape the bun dle to re sem ble the bag, pre pare the bag and install the can opy into it. The can opy must be folded to mimic the length, width and thick ness of the container.



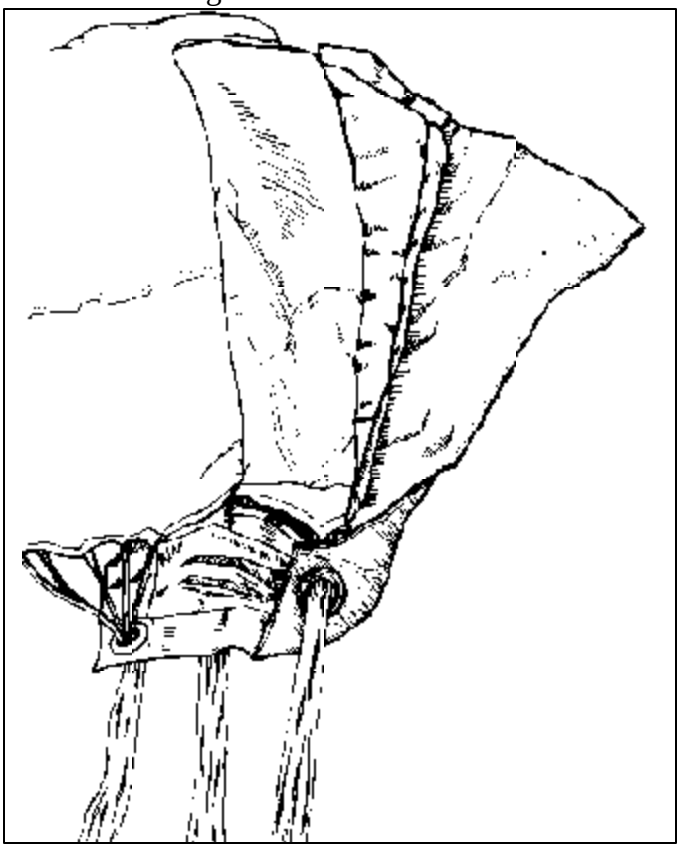
Tandem Specific Instructions

FLAG SLIDER INSTRUCTIONS

Pull the slider up to the stops in the same manor you would for a non- flagged slider. Con tinue to pull the flag por tion up to wards the top of the can opy un til the flag is straight and the grom mets are against their stops. The pock ets of the flag should be point-ing out or ex posed. Fold the can opy us ing the pro-ce dure you are most com fort able with, PRO or Side pack ing. Roll or fold the nose and make the A to B Fold if you are side pack ing.



NOTE: The pur pose of the flag is to cover the nose dur ing de ploy ment and for the pock ets on the flag to in flate and hold the flag in place cov er ing the nose and slow ing in fla tion.



PERMANENT HISTORY RECORD

Container Serial #	Date of Mfg.	Rsv. Canopy Serial #	Date of MFG.
Main Canopy Serial #	Date of Mfg.	Main Color	Rsv. Color

This page provides a place for you to keep a permanent history record of your canopies.

Repair Record and Misc. Data

You as the owner of this parachute system should provide this manual to your rigger at the inspection/repack interval and they should fill out this page in addition to the Packing Data Card in order to maintain a permanent history record of your system. If your Packing Data Card is ever lost this page will act as a backup document.

Inspection and Repack Record

Date	Location	Rigger	Certificate No	Remarks