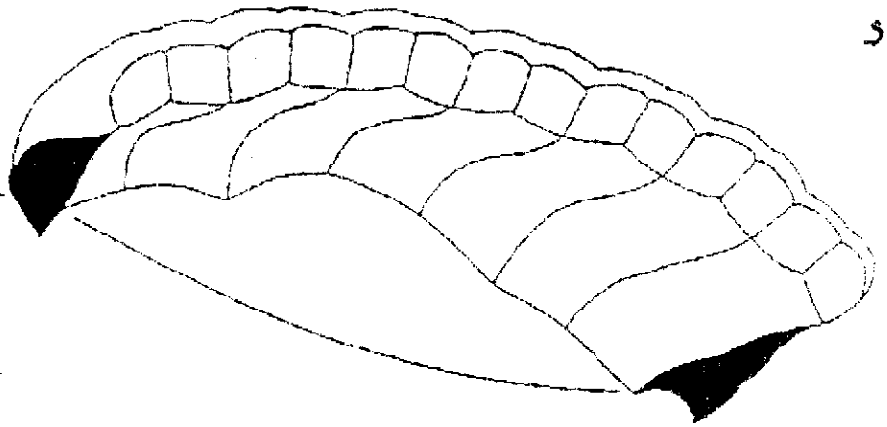
APS inc.

ADVANCED PARA-SYSTEMS

RESERVE MANUAL

FOR ALL MODELS MANUFACTURED BY A.P.S., INCORPORATED



ISSUED 01 JANUARY 1990

⚠WARNING

THIS PARACHUTE CANOPY IS SOLD WITH ABSOLUTELY NO WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED. ANY PROSPECTIVE RIGGER OR USER OF THIS CANOPY MUST BE AWARE THAT UNAVOIDABLE RISKS OF DEATH OR SERIOUS INJURY ARE INCURRED IN ANY AERONAUTICAL ACTIVITY, AND THAT USE OF THIS CANOPY DOES NOT ELIMINATE THESE RISKS. THE MANUFACTURER TOTALLY DISCLAIMS ANY LIABILITY IN TORT FOR DIRECT OR CONSEQUENTIAL DAMAGES, DEATH, OR INJURY RESULTING FROM ANY USE OF THIS PARACHUTE, AND FORBIDS ITS ASSEMBLY OR USE PRIOR TO THE BUYER'S EXECUTION OF THE PRODUCT LIABILITY AGREEMENT ENCLOSED. DO NOT ATTEMPT TO ASSEMBLE OR USE THIS PARACHUTE CANOPY WITHOUT FULLY UNDERSTANDING AND FULLY COMPLYING WITH THE REQUIREMENTS AND INSTRUCTIONS IN THIS MANUAL.

RESERVE MANUAL

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SPECIALISTS IN DESIGN, TESTING, DEVELOPMENT, AND MANUFACTURE OF ADVANCED AERODYNAMIC DECELERATORS AND GLIDING RECOVERY SYSTEMS

A.P.S., INCORPORATED

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113 HWY. 24
COMMERCE, TEXAS 75428
214 886-7662 FAX 214 886-8882

903 886 7663

INTRODUCTION

To the Owner:

Congratulations! The APS, Inc. ram-air reserve canopy you've just purchased represents the latest in advanced parachute engineering, and is just one of a new generation of high-technology parachutes designed, tested, and certificated under the FAA TSO C23(c) Category C requirements. We've engineered them with innovative, patented new design features to provide you with the strongest, most aerodynamically efficient gliding reserve parachute ever built.

On April 25, 1984, the FAA adopted TSO C23(c) reserve certification standards, superseding the older TSO C23(b) "low speed" and "standard" test categories. All reserve canopies or harness/container systems certificated after that date must be approved under TSO C23(c), in one of three categories. These are:

CATEGORY A TEST: 136 kg (300 lb) at 150 knots.
CATEGORY B TEST: 136 kg (300 lb) at 175 knots.
CATEGORY C TEST: 136 kg (300 lb) at 230 knots.

MAXIMUM OPERATING PLACARD LIMITS:

CATEGORY A: This parachute is limited to use by persons up to 90 kg (198 lb) fully equipped, and up to 130 knots.

CATEGORY B: This parachute is limited to use by persons up to 115 kg (254 lb) fully equipped, and up to 150 knots.

CATEGORY C: This parachute is limited to use by persons up to 115 kg (254 lb) fully equipped, and up to 175 knots.

Under TSO C23(c) requirements, the FAA allows each manufacturer to choose whether to meet the Category A, B, or C test standards in the design and certification of its equipment. We've chosen the toughest, because you want the best. During our reserve flight test program lasting over two years, we've performed hundreds of live and unmanned jumps, with consistent results: every deployment was quick, clean, with absolutely no hesitations, no damage, and no malfunctions. NONE.

All APS reserve canopies use our advanced, patented construction technology that eliminates obsolete "reinforcing tapes" and "flares" that add excess weight and bulk and have been proven to actually weaken canopy structures. This advanced technology not only gives you the strongest and most reliable parachute possible, but it also allows you to fit a larger, softer landing APS reserve into containers made for smaller, "minimum" canopies.

Each of the new generation of reserve parachutes from APS is manufactured under a meticulous, FAA approved quality control system, using only the finest quality materials available. Each is strictly intended for use as part of an FAA certificated reserve (auxiliary) or emergency parachute assembly, and must be assembled, packed, and maintained by a currently certificated FAA Senior or Master Parachute Rigger.

INTRODUCTION

Although each of the new APS ram-air reserves are identical in performance to their main canopy counterparts, the reserves are designed for free bag deployment and are not equipped with main pilot chute bridle attachment devices. We at APS are very concerned with your safety, and believe that your reserve should go into service inside your reserve container in the same high quality condition it was in when it was built for you. The continuous exposure to abrasion, dust, and ultraviolet radiation that main canopies unavoidably face can, in time, cause physical and/or chemical changes in canopy materials significant enough to affect opening reliability and flight performance. Since some of these changes are hard to detect, even a thorough visual inspection may not reveal serious weakening of materials in time to prevent a catastrophic failure. Because of this, APS, Inc., DOES NOT RECOMMEND THAT ITS TSO CERTIFICATED CANOPIES BE ASSEMBLED AND PACKED INTO ANY RESERVE(AUXILLARY) OR EMERGENCY PARACHUTE ASSEMBLY IF THE CANOPY HAS BEEN SUBJECTED TO USE AS A MAIN PARACHUTE.

Due to the long history of very successful service performance that the ram-air reserve packing method and free bag deployment system developed by Para-Flite, Inc., has earned, we have tested and adopted a method very similar to it for use with all APS reserves. We at APS respectfully acknowledge Para-Flite's pioneering work in developing this method, and require that all APS, Inc. TSO certificated reserve parachutes use the free bag with spring type pilot chute deployment system described in the rigging instructions in this manual. Specific reserve container compatability requirements vital to the safe operation of this canopy are included in these instructions. Both the user and parachute rigger must ensure that this canopy is installed and operated in accordance with the individual harness/container manufacturer's instructions, and that the operating placard limits for the complete parachute assembly are observed.

We at APS, Inc., are skydivers, like yourself, and we understand how important a decision the choice of your emergency equipment is. We've done everything possible to ensure that your reserve canopy is the most reliable, highest performance parachute available anywhere. The most important safety factor in your skydives, however, cannot be designed or built into your equipment by any manufacturer. No matter how well your equipment has been designed, how extensively it has been tested, or how well it performs, the critical factor in skydiving safety remains the same: how wisely do you operate it?

You are the most important safety device built into your equipment. Take the time to learn your emergency procedures and your gear thoroughly, as if your life depended on it. It does. Read this manual, read your harness/container system manual, and understand the capabilities and limitations of your equipment. We strongly urge you to be present during the assembly and packing of your reserve, and to discuss the design, function, and maintenance requirements of you gear with your rigger. Read and abide by FAA and USPA safety regulations.

Seek qualified instruction and guidance from experienced parachutists, and remain receptive to safety advise and correction. But most of all, remember and accept that the final reponsibility for your safety is yours, and yours alone. Know you gear, know your limitations, know your procedures, and manage your risks.

BLUE SKIES, AND GOOD DIVES!

The staff of A.P.S., Inc.

REGISTRATION AND PRODUCT LIABILITY AGREEMENT FORM

As fellow skydivers, we at APS, Incorporated, understand that each skydiver must make his or her own decisions and risk assessments. You must carefully consider the terms of the following agreement, and make your choice. If you decide that you cannot accept the risks and responsibilities as we've explained them, then please answer "NO" on the agreement form, fill in the requested information, and return it with your UNUSED canopy within 15 days of purchase for a full refund of your purchase price.

MANUFACTURER'S REPURCHASE AND PRODUCT LIABILITY AGREEMENT

THIS PARACHUTE CANOPY IS SOLD WITH ABSOLUTELY NO WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED. THE MANUFACTURER OFFERS THIS PARACHUTE FOR SALE ONLY UPON THE BUYER'S UNCONDITIONAL ACCEPTANCE OF ANY AND ALL RISKS ASSOCIATED WITH ANY USE OF THIS PARACHUTE. IT IS SOLD WITH ALL FAULTS AND WITHOUT ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR ANY PURPOSE. ANY PROSPECTIVE RIGGER OR USER OF THIS CANOPY MUST BE AWARE THAT UNAVOIDABLE RISKS OF DEATH OR SERIOUS INJURY ARE INCURRED BY ENGAGING IN ANY AERONAUTICAL ACTIVITY, INCLUDING SPORT PARACHUTING, AND THAT USE OF THIS PARACHUTE CANOPY DOES NOT ELIMINATE THESE RISKS. THE MANUFACTURER TOTALLY DISCLAIMS ANY LIABILITY IN TORT FOR DIRECT OR CONSEQUENTIAL DAMAGES, DEATH, OR INJURY RESULTING FROM ANY USE OF THIS PARACHUTE, AND FORBIDS ITS ASSEMBLY OR USE BY ANY PERSON PRIOR TO THE BUYER'S EXECUTION OF THIS AGREEMENT. BY USING OR ALLOWING THE USE OF THIS PARACHUTE, THE BUYER AGREES TO WAIVE ALL CLAIMS IN TORT, AND TO RELEASE THE MANUFACTURER FROM ANY AND ALL LIABILITIES, RESULTING FROM ANY USE OF THE PARACHUTE. THE BUYER FULLY ACCEPTS ALL RISKS.

BUYER'S NAME: _____ DATE OF BIRTH: _____

ADDRESS: _____ PHONE: _____

_____ DATE OF PURCHASE: _____

RESERVE MODEL: _____ S/N: _____ DEALER PHONE: _____

JUMPING OUT OF AIRPLANES CAN KILL YOU.
USING THIS PARACHUTE CAN'T CHANGE THAT.

YES, I UNDERSTAND AND ACCEPT ALL RESPONSIBILITIES AND RISKS.

PLEASE SIGN HERE: _____ DATE: _____

NO, I CAN'T ACCEPT THOSE RISKS. PLEASE EXCHANGE THIS UNUSED CANOPY FOR A FULL REFUND.

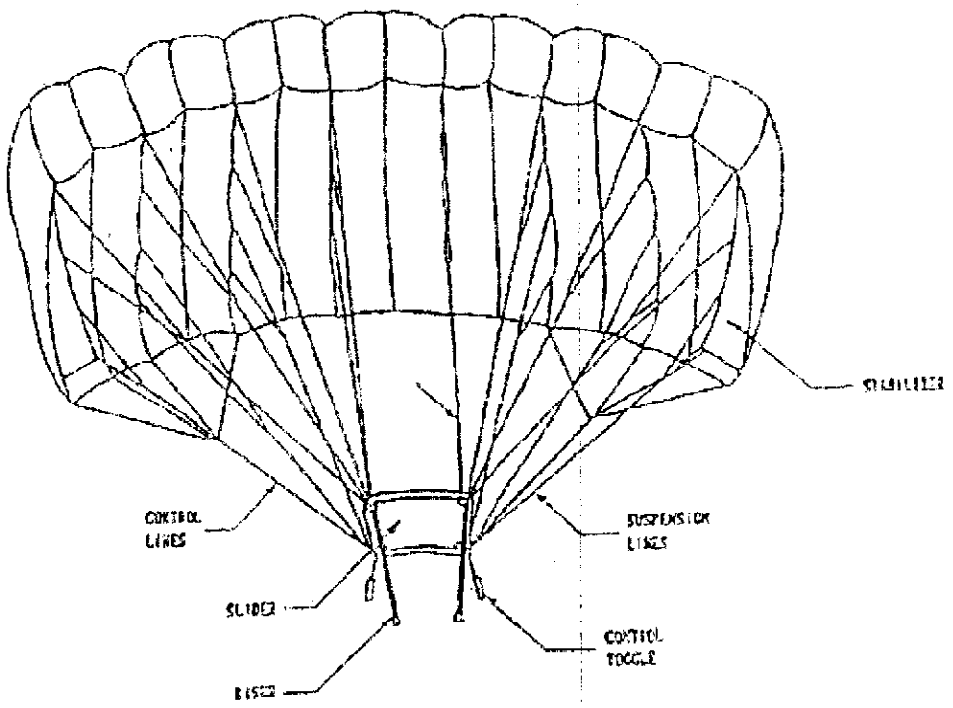
PLEASE SIGN HERE: _____ DATE: _____

FOR WARRANTY REGISTRATION PURPOSES, OR,
TO RETURN YOUR CANOPY FOR A REFUND,
PLEASE COMPLETE THE AGREEMENT FORM ON THE
REVERSE SIDE OF THIS PAGE AND RETURN TO:

ADVANCED PARA SYSTEMS, INCORPORATED
P.O. BOX 229
113 HWY. 24
COMMERCE, TEXAS 75428

214 886-7662 FAX 214 886-8882

SPECIFICATIONS



All APS, Inc. reserve parachute canopies meet or exceed FAA TSO C23(c) Category C test standards of SAE AS-8015A.

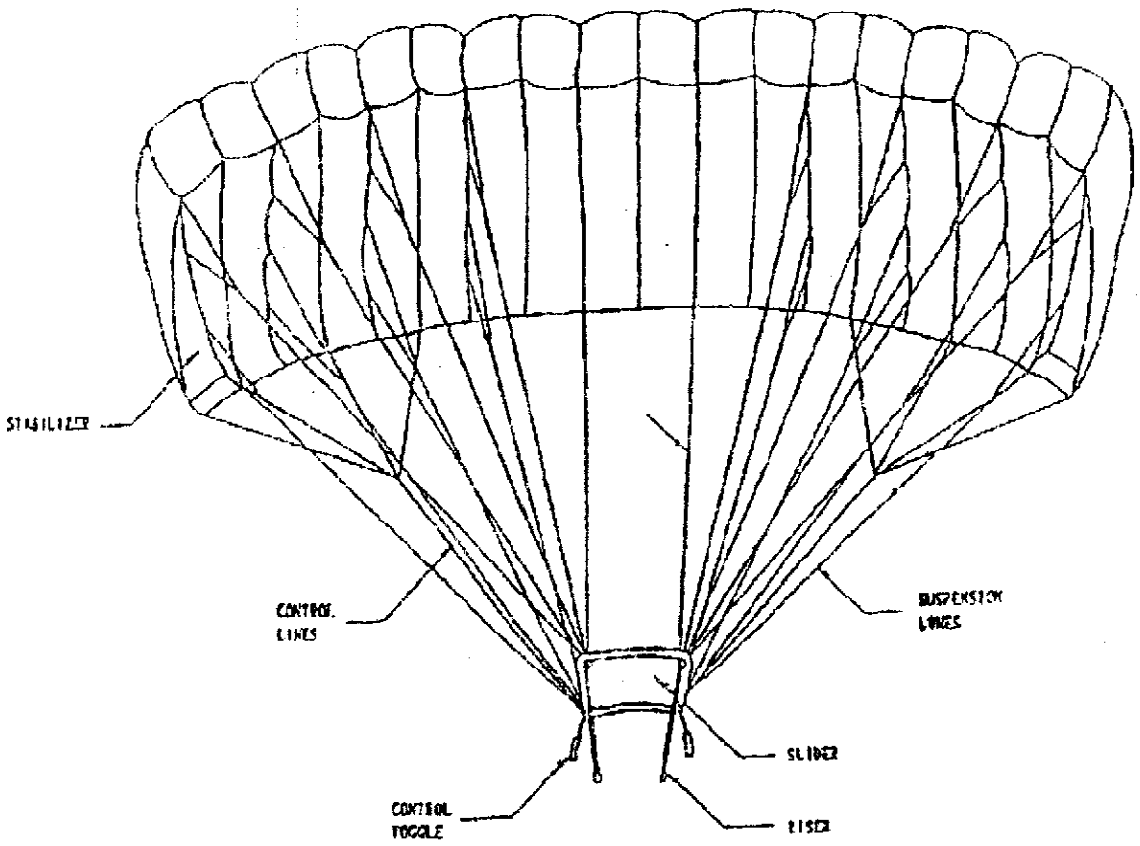
7-CELL CANOPIES:	*SURFACE AREA, (SQ FT)	SPAN (FT)	CHORD (FT)	**PLANFORM AREA (SQ FT)	ASPECT RATIO	***MAXIMUM RECOMMENDED WEIGHT LBS / KG	CANOPY WEIGHT (LB)	PIA PACK VOLUME
RASCAL 202 RESERVE	205	19.64	9.55	187	2.057	207 / 93.8	6.7	431 ci
LASER 7 RESERVE	227	19.64	10.55	207	1.860	229 /103.8	7.4	486 ci
LASER 250 RESERVE	250	21.61	10.55	228	2.048	253 /114.7	7.7	522 ci
BOGY 178 RESERVE	178	18.45	8.80	163	2.082	183 / 83.0	6.0	378 ci
BOGY 7 RESERVE	151	16.35	8.86	145	1.846	173 / 80.0	5.4	356 ci

* SURFACE AREA: the area of the canopy upper surface. A similar value, the "PIA area", is a recently developed standardized measurement of the relative sizes of ram-air canopies, and is explained in Parachute Industry Association Technical Standard 100.

** PLANFORM AREA: the inflated wing span multiplied by the inflated chord. Also known as the "projected area", this measures the actual area of the canopy in flight.

*** MAXIMUM RECOMMENDED WEIGHT: the maximum recommended suspended weight of the jumper, including all clothing and equipment. Weights in parentheses indicate the maximum allowable placard limit for TSO certificated canopies. Maximum recommended weights for main parachute versions of these reserves are higher than shown.

SPECIFICATIONS



All APS, Inc. reserve parachute canopies meet or exceed FAA TSO C23(c) Category C test standards of SAE AS-8015A.

9-CELL CANOPIES:	*SURFACE AREA (SQ FT)	SPAN (FT)	CHORD (FT)	**PLANFORM AREA (SQ FT)	ASPECT RATIO	***MAXIMUM RECOMMENDED WEIGHT LBS / KG	CANOPY WEIGHT (LB)	PIA PACK VOLUME
RASCAL 9 RESERVE	237	22.80	9.55	218	2.388	240 /108.8	8.1	549 ci
RASCAL 262 RESERVE	264	25.25	9.55	241	2.644	254 /115.0	8.5	594 ci
LASER 9 RESERVE	292	25.25	10.55	266	2.392	254 /115.0	9.1	625 ci
LASER 322 RESERVE	322	27.75	10.45	293	2.633	326 /150.8	9.6	674 ci

SURFACE AREA: the area of the canopy upper surface. A similar value, the "PIA area", is a recently developed standardized measurement of the relative sizes of ram-air canopies, and is explained in Parachute Industry Association Technical Standard 100.

PLANFORM AREA: the inflated wing span multiplied by the inflated chord. Also known as the "projected area", this measures the actual area of the canopy in flight.

MAXIMUM RECOMMENDED WEIGHT: the maximum recommended suspended weight of the jumper, including all clothing and equipment. Weights in parentheses indicate the maximum allowable placard limit for TSO certificated canopies. Maximum recommended weights for main parachute versions of these reserves are higher than shown.

PERFORMANCE

All APS ram-air reserve canopies are intended for use ONLY by properly trained persons, well experienced and fully competent in the use of high performance gliding parachutes. The performance specifications listed below are average values measured in stable air, at suspended weights ranging from 110 pounds (50 kg) through the maximum recommended suspended weight for each reserve canopy.

FLIGHT CONDITION	HORIZONTAL SPEED KNOTS	HORIZONTAL SPEED M/SEC	RATE OF DESCENT FT/SEC	RATE OF DESCENT M/SEC
WITH DEPLOYMENT BRAKES	7 - 12	3.6 - 6.0	7 - 11	2.1 - 3.4
FULL GLIDE	25 - 31	13 - 16	12.5 - 18.0	3.8 - 5.5
25% BRAKES	16 - 22	8 - 11	8.5 - 14.0	2.6 - 4.3
50% BRAKES	9.5 - 14.5	4.9 - 7.5	8 - 12	2.4 - 3.7
75% BRAKES	6 - 11	3.0 - 5.9	7.5 - 13.5	2.3 - 4.1
100% BRAKES	0 - 4	0 - 2	11 - 17	3.4 - 5.2
STEADY-STATE STALL	UNSTABLE FLIGHT		20 - 45	6.1 - 13.7
PROPERLY FLARED LANDING	0 - 3	0 - 1.5	0 - 6	0 - 1.9

The advanced, patented structural design of APS, Incorporated's ram-air parachutes provides an exceptionally smooth aerodynamically efficient airfoil surface. Your APS reserve canopy has very high lift and long range gliding capability, especially important after a low altitude reserve deployment far from the drop zone. But remember, only one thing is certain as you reach for your reserve ripcord: things are already not going very well, and these are not ideal conditions. Even with your APS reserve's excellent glide range, you may find yourself unable to return to the drop zone. You may be forced to maneuver into a tight, off-DZ emergency landing area surrounded by hazards. You may be forced to make a steep, precise approach during rapidly changing conditions, including thermal activity, vertical wind gusts, low level wind shears, and into wake turbulence from objects on the ground. Practice and remain proficient in spotting, low speed canopy maneuvering, both normal and low speed landing approaches, steady state and dynamic stall recovery, parachute landing falls, and hazardous landing procedures. Your APS reserve canopy is designed with its deployment brakes set to provide both its minimum steady-state "sink rate" and its optimum turbulent air penetration airspeed. If necessary, the canopy may be flown without unstowing the deployment brakes and may be maneuvered and landed with the rear risers, a procedure that should be considered if you are disoriented or injured after an emergency deployment or making an emergency landing at night.

RIGGING REQUIREMENTS

To the Rigger:

All APS, Inc. reserve canopies are strictly intended for use as part of an FAA certificated reserve(auxillary) or emergency parachute assembly. To assemble, pack, or maintain this parachute you must currently hold an FAA Senior or Master Parachute Rigger certificate. Both you and the owner must fully read and understand all of the information in this manual prior to the assembly or use of this canopy. These are high-performance parachutes, intended for use ONLY by experienced parachutists that understand and accept the risks inherent in their use. We strongly recommend that you decline to perform any work on this equipment if the owner has not completed and returned the liability agreement on page 4.

These parachutes are designed to use a free bag with spring type pilot chute deployment system, and are intentionally not equipped with main pilot chute attachment devices. DO NOT pack any APS TSO certificated canopy into any reserve (auxillary) or emergency parachute assembly if the canopy has been subjected to use as a main parachute.

In order to be compatable with APS reserve parachutes, an auxillary or emergency harness/container system must have the following features:

1) four risers, minimum 17" (43 cm) long.

2) control line guide rings installed on the rear faces of each rear riser so that the top of the ring is 3.5" to 5.5" (9 to 14 cm) below the bottom of the Maillon Rapide #5 connector link.

3) a free deployment bag assembly, with bridle, pilot chute, and external line stowage pocket, capable of fully enclosing the canopy and extracting itself from the container during a horseshoe type malfunction solely by the drag of the bridle.

4) a container flap configuration that does not restrict the extraction of the free deployment bag.

5) FAA certification under TSO C23(b) or C23(c).

Refer to the individual harness/container manufacturer's specifications and instructions to determine its compatibility with APS reserve parachutes. If you determine that a potentially hazardous compatibility exists, DO NOT attempt to modify the parachute. Please advise both the harness/container manufacturer and APS, Inc. of the situation as soon as possible, so that we may investigate it and publish any necessary safety advisories.

Thanks for your assistance,

The staff of APS, Inc.

CANOPY INTERNAL STRUCTURE:

1) Remove the canopy from the bag, unfold it, and lay it on its side. Extend the lines away from the canopy until straight, and move the slider down to the connector links. Place a chair sturdy and stable enough to stand on in front of the leading edge, facing the canopy.

2) Beginning with the top end cell, inspect the stitching along the top skin leading edge seam, stopping at each rib junction to ensure that the rib is properly secured into the seam. Continue this inspection to the bottom end cell.

3) Continuing from the bottom end cell, inspect the stitching along the bottom skin and rib leading edge seams, again checking each rib junction to ensure that each rib is properly secured. Continue the inspection back up to the top end cell.

4) Grasping the top end cell leading edge, stand on the chair and lift the end cell leading edge inlet to eye level, looking down into the cell. Inspect along the top and bottom inside seams to ensure that the rib is properly secured. Inspect the rib fabric for flaws, tears, or pulled threads. Continue this inspection from cell to cell along the leading edge to the opposite end cell. Except for the outermost end ribs, you should see that all other ribs are equally cross-ported and terminate forward of the trailing edge.

CANOPY UPPER SURFACE:

5) Lay the canopy down on its side and reflake it, extending the lines away from the canopy until straight.

6) Positioning yourself at the center of the top skin side, grasp the centers of the top skins at or near the packing tabs and flip the entire flaked canopy over, away from you and onto the suspension lines.

7) Beginning with the end cell that is now on top of the stack, inspect the stabilizer and end rib for flaws, tears, or pulled threads. Ensure that the stabilizer upper edge is continuously stitched into the lower surface seam and that the slider stops are properly secured to both the inboard side of the stabilizer and to the outboard suspension lines.

8) Grasp the seam at the top of the end rib and draw the top skin toward you until the entire top skin of the first cell is visible. Inspect the skin, the full length of each top skin seam, and the trailing edge seam for flaws, tears, pulled threads, or improperly captured fabric. Continue this inspection from cell to cell along the top skin to the opposite end cell.

9) Inspect the opposite stabilizer and end rib as in step 7).

CANOPY LOWER SURFACE AND LINE ATTACHMENTS:

10) Grasp the leading edges of both end cells and step backward, laying the canopy down on its top skin and exposing the bottom skin and suspension lines. Spread the canopy out flat, so that the entire lower surface is visible.

11) Beginning at one end cell, inspect the bottom skin and the full length of each lower surface seam for flaws, tears, pulled threads, or improperly captured fabric. Inspect the stitching of each of the suspension line and trailing edge control line attachment loops to ensure that they are properly secured by at least a 3/8" (10 mm) long stitch pattern.

12) Inspect each suspension or secondary control line attached to the cell to ensure that the finger-trapped loop at the attachment point is properly secured by at least a 3/8" (10 mm) long stitch pattern. This stitching is in a contrasting color for ease of identification.

13) Continue this inspection from cell to cell along the bottom skin to the opposite end cell.

CANOPY SUSPENSION AND CONTROL LINES:

14) Beginning just above the slider near the connector links, collect the front suspension line groups in one hand and the rear suspension and control lines in the other hand. Run both groups up to the base of the canopy, lift the canopy up, and flip it onto its side.

15) Trace the rear "C" and "D" line groups down from the canopy to the rear suspension line cascade points, checking for snags or broken fibers. Inspect each line cascade point to ensure that the finger-trapped insertion point is properly secured by at least a 3/8" (10 mm) long stitch pattern. This stitching is in a contrasting color for ease of identification. Continue this inspection along each line down to and including the finger-trapped end loop at the connector link.

16) Trace the front "A" and "B" line groups down from the canopy and inspect each of these lines as in step 15).

17) Trace the white trailing edge secondary control lines down to the thicker, red primary control lines, inspecting each of these lines as in step 15).

18) Trace these red primary control lines down to the white deployment brake loop near each lower end, checking for snags or broken fibers. Inspect each deployment brake loop to ensure that the finger-trapped insertion points are properly secured by at least a 3/4" (19 mm) long stitch pattern. This stitching is also in a contrasting color for ease of identification.

PARTS LIST

APS RESERVE COMPONENT PARTS:

(a) Ram-air parachute canopy, constructed from 1.10 oz./sq. yd, 0-3 CFM air permeability, high tenacity ripstop nylon fabric with ultraviloet inhibitor.

CANOPY NAME	PART NUMBER	CELLS	SURFACE AREA
RASCAL 202	R202R	7	205 sq. ft.
RASCAL 262	R262R	9	264 sq. ft.
RASCAL 9	R9R	9	237 sq. ft.
LASER 7	L7R	7	227 sq. ft.
LASER 9	L9R	9	292 sq. ft.
LASER 250	L250R	7	250 sq. ft.
LASER 322	L322R	9	322 sq. ft.
BOGY 178	B178R	7	178 sq. ft.
BOGY 7	B7R	7	151 sq. ft.

with:

b) ram-air parachute suspension line set, constructed from 400# rated tensile strength braided Dacron.

c) ram-air parachute control line set, constructed from braided Dacron of the following rated tensile strengths:

secondary control lines: 400# (color: white)
deployment brake loops: 675# (color: white)
primary control lines: 900# (color: red)

d) ram-air parachute deployment reefing slider, sail type, with 4 each, brass, #8 rolled rim spur grommets.

e) 4 each, Maillon Rapide #5 threaded barrel type connector links.

ADDITIONAL PARTS REQUIRED: supplied with harness/container assembly. (see RIGGING REQUIREMENTS, page 8.)

f) reserve (auxiliary) or emergency harness/container system.

g) free deployment bag, bridle, and pilot chute assembly, with O-rings or stowage bands as specified by container manufacturer.

h) 2 steering toggles, compatible with riser installation.

i) reserve or emergency ripcord.

j) parachute packing data card.

TOOLS REQUIRED: 3/8" (10mm) open end or small crescent wrench.

INSTALLING ON RISERS:

1) Lay the canopy down on its left side and reflake it, extending the lines away from the canopy until straight. Move the slider down to the connector links.

2) Lay the harness/container system face down just below the connector links, with the top facing the canopy.

3) Extend the reserve risers toward the canopy and place the riser ends next to the connector links.

4) Locate the right outside "A" line on the top of the flaked canopy near the leading edge. Clear this line from the canopy, through the slider, and to the right front connector link.

5) Attach this connector link to the right front riser, with the right outside "A" line to the outboard side of the riser. Do not tighten.

6) Locate the right outside "C" line on the top of the flaked canopy near the center. Note that this line is attached to the stabilizer. Clear this line from the canopy, through the slider, and to the right rear connector link.

7) Attach this connector link to the right rear riser, with the right outside "C" line to the outboard side of the riser. Do not tighten.

8) Locate the left outside "A" line on the bottom of the flaked canopy near the leading edge. Clear this line from the canopy, through the slider, and to the left front connector link.

9) Attach this connector link to the left front riser, with the left outside "A" line to the outboard side of the riser. Do not tighten.

10) Locate the left outside "C" line on the bottom of the flaked canopy near the center. Note that this line is attached to the stabilizer. Clear this line from the canopy, through the slider, and to the left rear connector link.

11) Attach this connector link to the left rear riser, with the left outside "C" line to the outboard side of the riser. Do not tighten.

12) Clear both of the trailing edge control line groups and locate the two red primary control lines. Ensure that the left control line follows the left rear riser group through the slider and that the right control line follows the right rear riser group through the slider. Pass the red left control line down through the control line guide ring on the back of the left rear riser and the red right control line down through the guide ring on the back of the right rear riser.

VERIFYING REAR LINE GROUP CONTINUITY:

13) Temporarily secure the red primary control lines by tying them to each of the respective control line guide rings with a half hitch knot at each control toggle mark. Move the slider down slightly below the connector links so that the links and attached suspension lines are clearly visible.

14) Grasp the red primary control lines and run them back up to the trailing edge of the canopy, collecting the entire tail of the stacked canopy in your right hand. Lift the tail high enough to clearly expose the "D" suspension lines. Note that each of the two outboard "D" lines are attached to the lower trailing edge of each stabilizer. Collect all the exposed "D" lines in your left hand. Separate the two control line groups with your right hand and drop one group to either side of the collected "D" lines. The tail should now be symmetrically split and laying on the floor between you and the raised groups of "D" lines collected in your left hand.

15) Using your right hand, locate the line attached to the lower trailing edge of the right stabilizer. Clear this right outboard "D" line all the way to the harness and verify that it is attached to the outboard side of the right rear connector link.

16) Continuing this inspection from cell to cell inward toward the center cell, transfer the "D" line from each adjacent cell into your right hand, verifying that each of the respective "D" lines is attached in the correct sequence to the right rear connector link.

17) Upon completing the inspection of the right rear "D" line group at the the center cell, drop the right rear line group and begin collecting the left rear "D" lines in your right hand, starting with the left inboard "D" line attached to the center cell. Clear this line all the way to the harness and verify that it is attached to the inboard side of the left rear connector link.

18) Continue this inspection from cell to cell outward to the left end cell, again transferring the "D" line from each adjacent cell into your right hand, verifying that each of the respective "D" lines is attached in the correct sequence to the left rear connector link. Note that the last line inspected should be attached to the lower trailing edge of the left stabilizer and run to the outboard side of the left rear connector link.

19) Lay the "D" suspension lines back down and smooth the canopy back into a roughly flaked position, pulling light tension on the attached lines to straighten them.

20) Turn the harness/container system over counterclockwise, so that it lays face up. Ensure that the slider remains slightly below the links.

VERIFYING FRONT LINE GROUP CONTINUITY:

21) Positioning yourself at the top of the canopy, grasp the center leading edge of the right end cell. Lift it off of the stacked canopy, pulling light tension on the attached lines to straighten them. Clear the right outboard "A" line all the way to the harness and verify that it is attached to the outboard side of the right front connector link. Verify that the adjacent "A" line you've also lifted up is clear and is the next line inboard on the connector link.

22) Continuing this inspection from cell to cell along the leading edge to the center cell, collect each leading edge center of the adjacent cells in your right hand, verifying that each of the respective "A" lines is attached in the correct sequence to the right front connector link.

23) Upon completing the inspection of the right front "A" line group at the the center cell, drop the right front line group and begin collecting the left front "A" lines in your right hand, starting with the left inboard "A" line attached to the center cell. Clear this line all the way to the harness and verify that it is attached to the inboard side of the left front connector link.

24) Continuing this inspection from cell to cell along the leading edge to the left end cell, collect each leading edge center of the adjacent cells in your right hand, verifying that each of the respective "A" lines is attached in the correct sequence to the left front connector link. Note that the last line inspected should be attached to the left end cell and run to the outboard side of the left front connector link.

25) Lay the "A" suspension lines back down and smooth the canopy back into a roughly flaked position, pulling light tension on the attached lines to straighten them.

26) Turn the harness/container system over clockwise, so that it again lays face down. Move the slider back up to its normal position above the connector links.

27) Inspect the four Maillon Rapide #5 connector links for corrosion or damage, then tighten hand tight. Using a 3/8" or 10mm open end or a small crescent wrench, tighten them no more than 1/4 turn further.

28) Untie the red primary control lines from the control line guide rings. Verify that the control lines are clear of all suspension lines and are not looped around the guide rings. Inspect the pair of control toggles to ensure that they can not accidentally pass through the control line guide rings. Securely tie a control toggle to each line below the guide rings, so that the control toggle mark of each line is located at the top of each guide ring when laid upward and flat against the riser.

PACKING INSTRUCTIONS

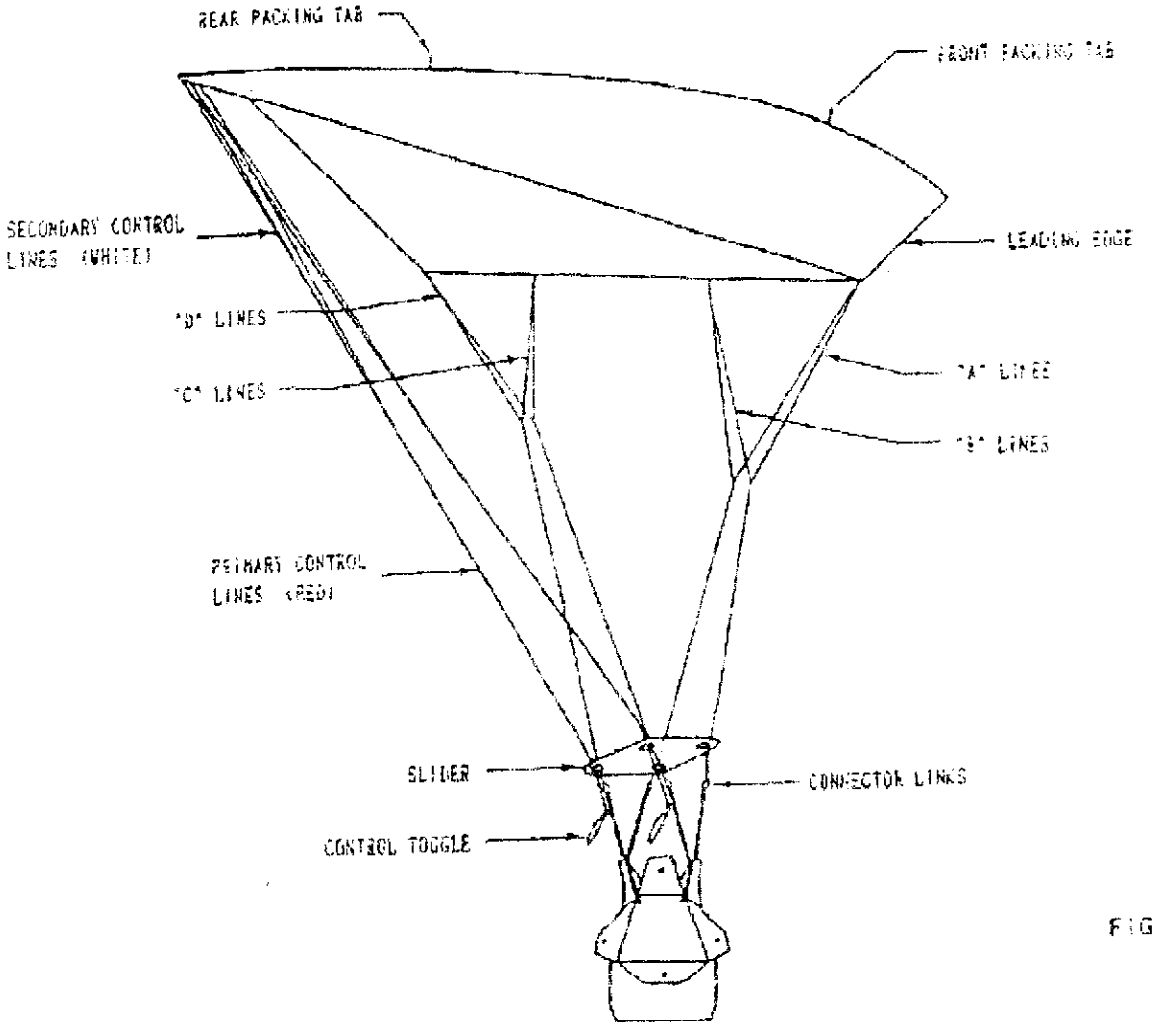


FIGURE 1

CANOPY LAYOUT:

1) Select a clean, dry working area of at least 13 feet by 16 feet (4 by 5 meters).

2) Place the harness/container system face down, with the open reserve container facing up.

3) Positioning yourself at the top of the canopy, lay the canopy out on its left side, pulling light tension on the four suspension line groups to separate and straighten them.

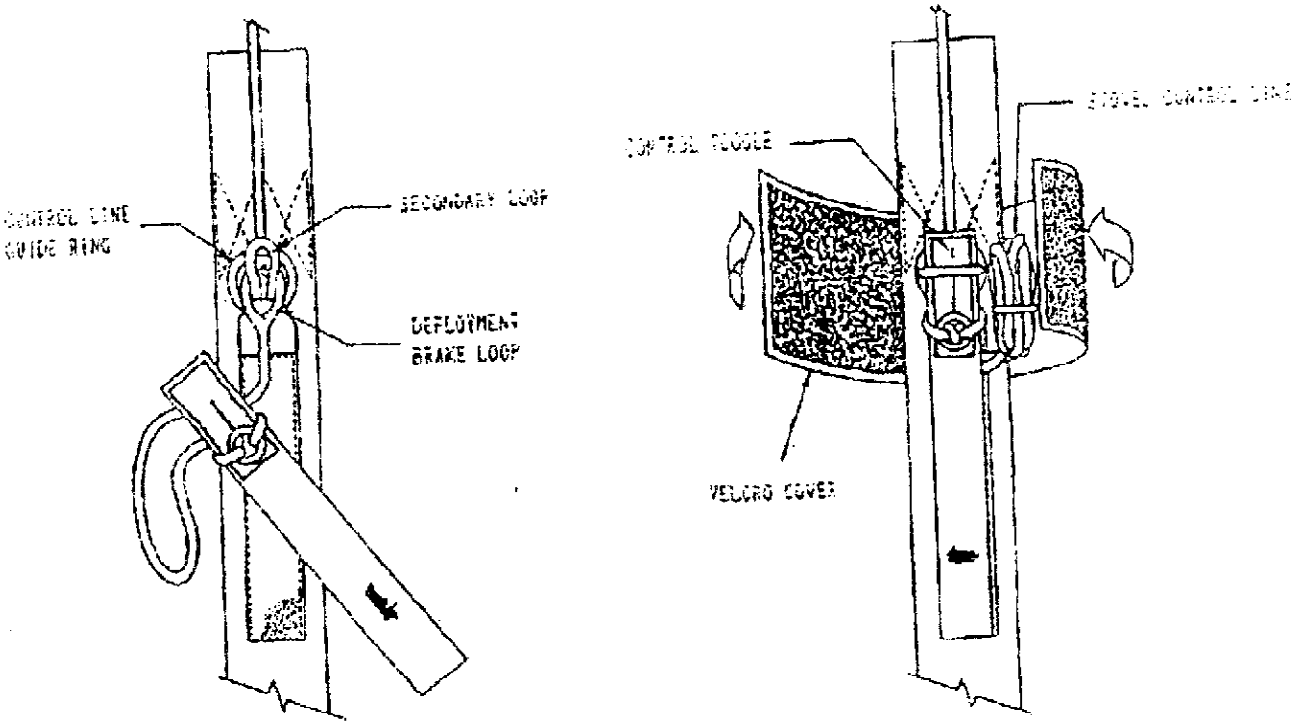


FIGURE 2

SETTING THE DEPLOYMENT BRAKES:

1) Pull one of the red primary control lines through its guide ring until the white deployment brake loop is positioned over the secondary loop sewn to the riser just below the guide ring. Pass the secondary loop up through the deployment brake loop and then through the guide ring as shown.

2) Some harness/container manufacturers do not specify the use of the secondary loop sewn to the riser, and instead specify that the upper end of the control toggle be inserted directly through the deployment brake loop on the primary control line. The illustrations above are only an example of a popular method in common use in the industry, and are not intended to replace the harness/container manufacturer's assembly instructions. Follow the specific reserve harness/container instructions to set the deployment brakes.

3) Insert the upper end of the control toggle through the secondary loop. Tack the upper end of the control toggle to the riser with one turn of doubled rigger's sewing thread.

4) Neatly stow the excess control line and close the velcro cover.

5) Repeat this procedure for the remaining side.

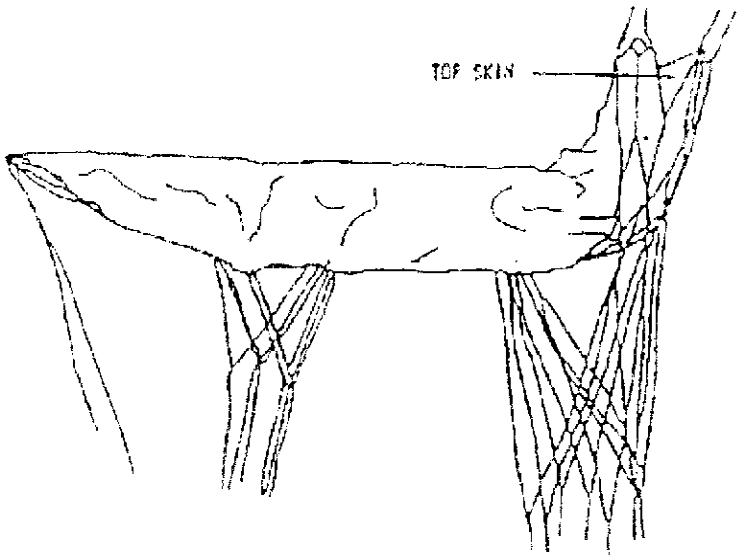


FIGURE 3

FLAKING THE CANOPY:

1) Starting with the right end cell that is on top of the stacked canopy, lift up the center seam of the top skin at the leading edge.

2) Collect each of these top center seams from cell to cell across the the leading edge.

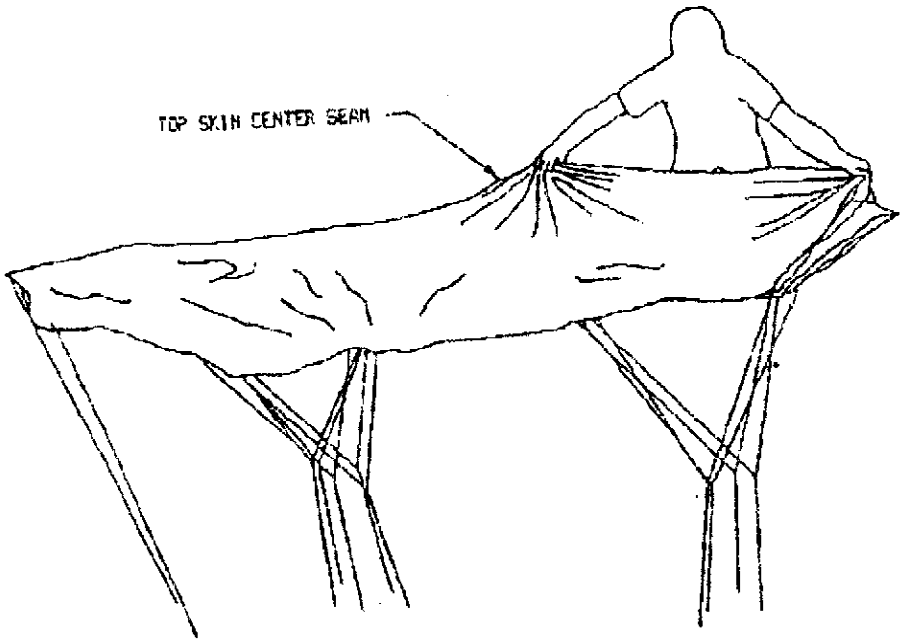


FIGURE 4

3) Positioning yourself at the top of the canopy, lay the canopy out on its left side, pulling light tension on the four suspension line groups to separate and straighten them.

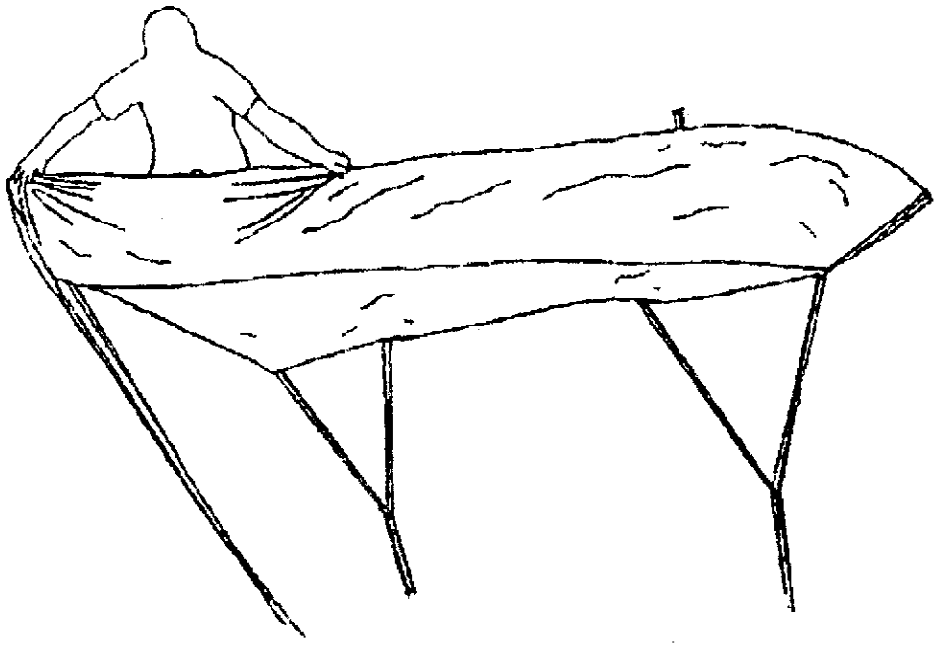


FIGURE 5

4) Move toward the tail of the canopy and continue this procedure until the entire canopy is neatly flaked, with each of the suspension line and control line groups clearly separated as shown.

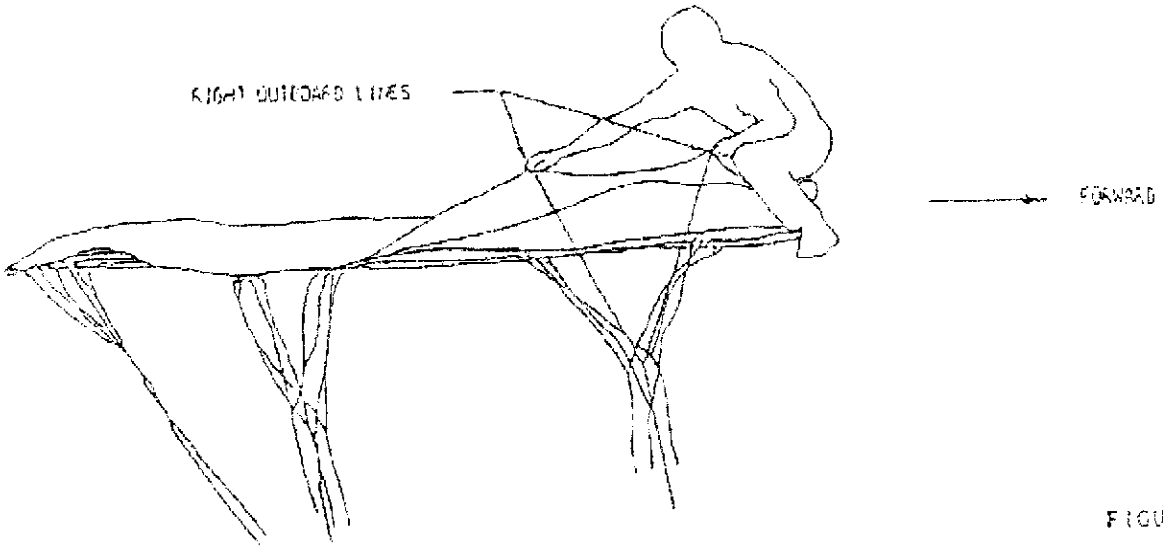


FIGURE 5

RECHECKING LINE CONTINUITY:

1) Raise the front two outboard lines at the top of the flaked canopy and trace them past the cascade point all the way down to the riser.

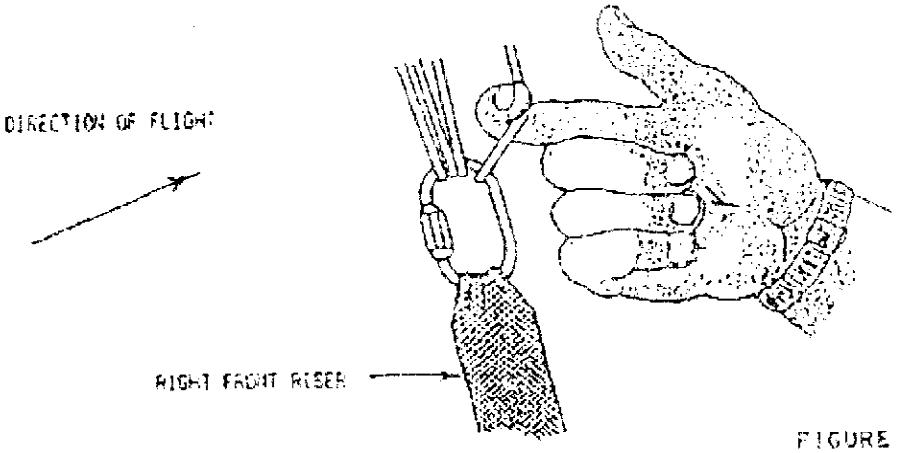


FIGURE 7

2) Verify that this line runs directly to the outside of the right front riser connector link.

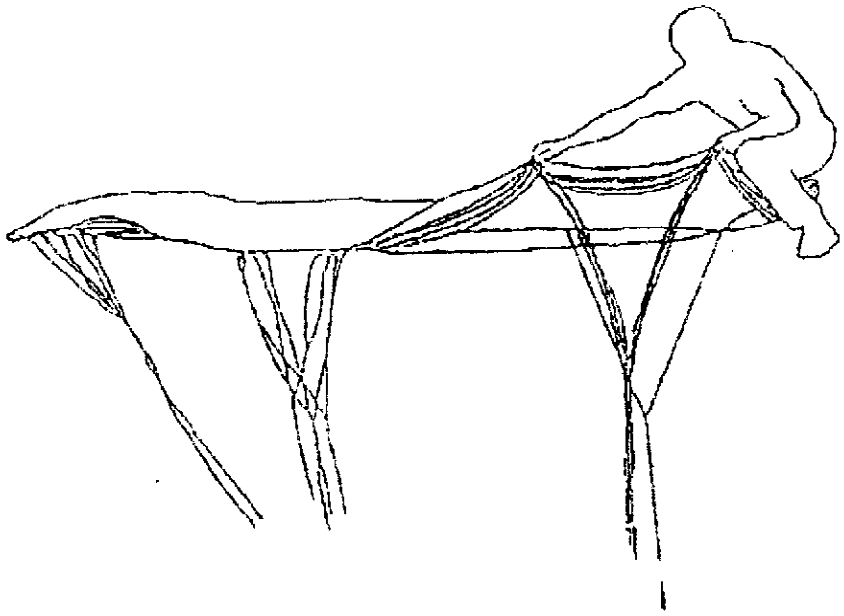


FIGURE 8

3) Raise all the front lines except for the two outboard lines at the bottom of the flaked canopy and trace them past the cascade point all the way down to the riser.

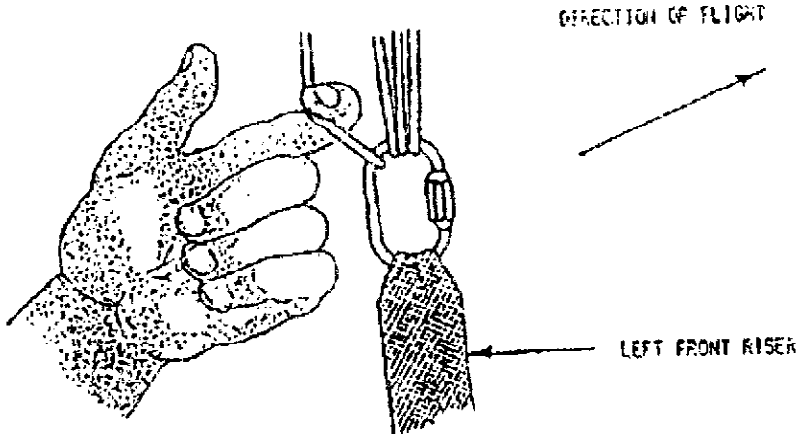


FIGURE 9

4) Verify that this line runs directly to the outside of the left front riser connector link.

5) Repeat steps 1) through 4) for the rear line groups, verifying that the right rear outboard lines on the top of the flaked canopy run directly to the outside of the right rear riser connector link and that the left rear outboard lines on the bottom of the flaked canopy run directly to the outside of the left rear riser connector link.

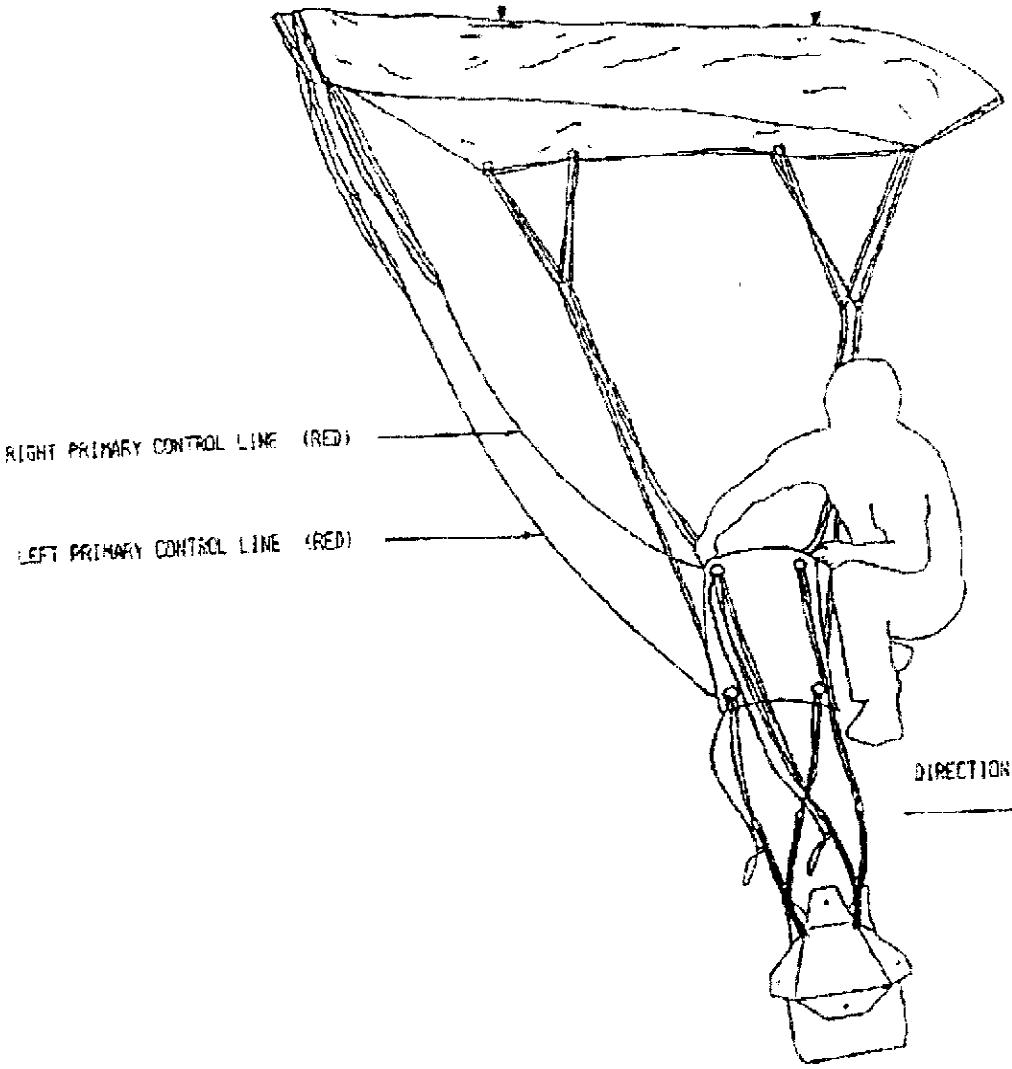


FIGURE 10

6) Separate the control lines into the left and right control groups and trace them through the rear slider grommets to each respective rear riser. Verify that each control line runs directly from the tail, through the proper side rear slider grommet, through the proper rear riser control line guide ring, and that the deployment brake is properly assembled. Verify that all four connector links are secure.

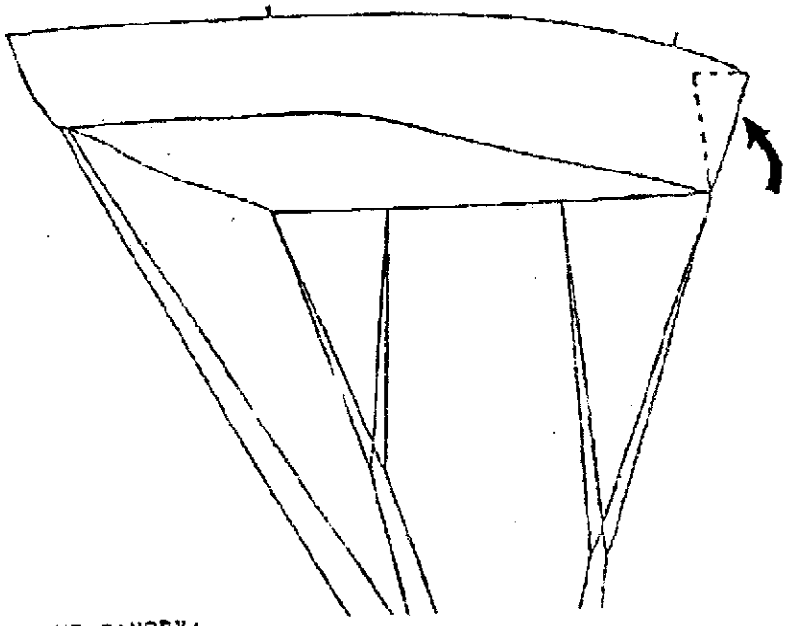


FIGURE 11

PACKING THE CANOPY:

1) Fold the nose under the flaked canopy in line with the "A" suspension line group.

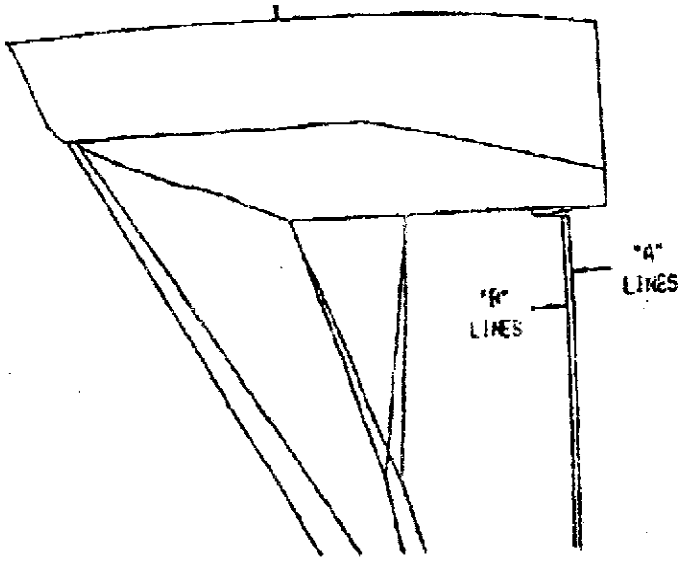


FIGURE 12

2) Grasping all the top skin center seams on the upper side of the flaked canopy in line with the "B" suspension line group, pull the lines taut and "S" fold the canopy, placing the "B" line group on top of and slightly to the left of the "A" line group. Staggering the stacked line groups slightly as illustrated will help reduce the pack volume.

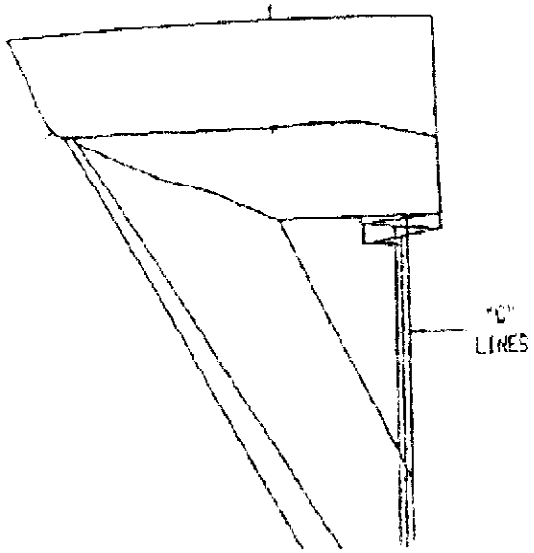


FIGURE 13

3) Grasp the top seams in line with the "C" suspension line group and "S" fold the canopy again, staggering the "C" line group slightly to the right of the other groups.

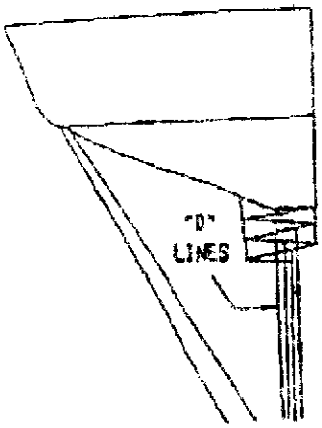


FIGURE 14

4) Complete the "S" folding of the canopy by grasping the top seams in line with the "D" suspension line group and staggering the "D" lines slightly to the left of the other line groups.

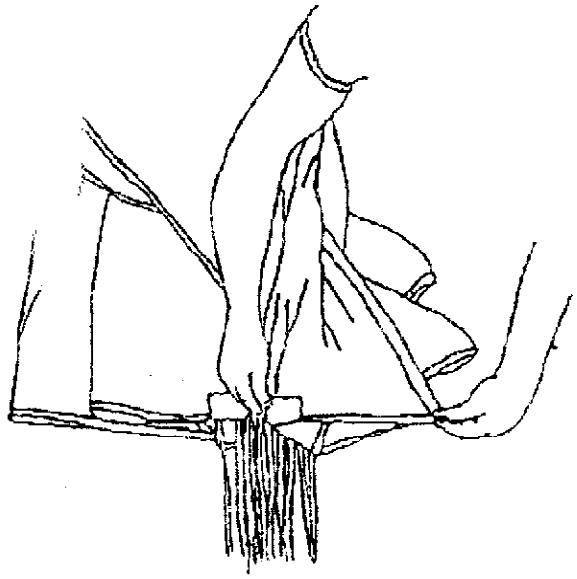


FIGURE 15

5) Center the trailing edges of the stabilizers on the stacked canopy, clearing them from the lines by gently pulling them to the outside. Clear all three stabilizer segments on each side.

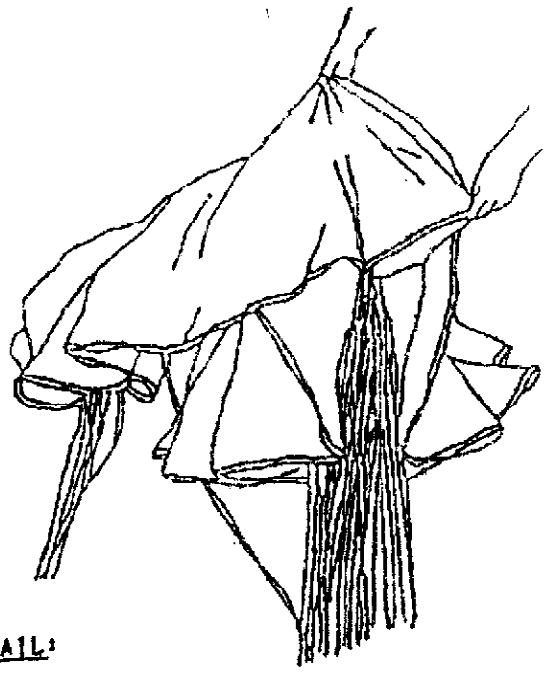


FIGURE 16

FOLDING THE TAIL:

6) Starting on the right side, grasp each segment of the tail between each secondary control line and pull the control lines taut, flaking each segment of tail to the right. After completing the right control line group, continue across the tail to the left control group and flake each segment of tail to the left.

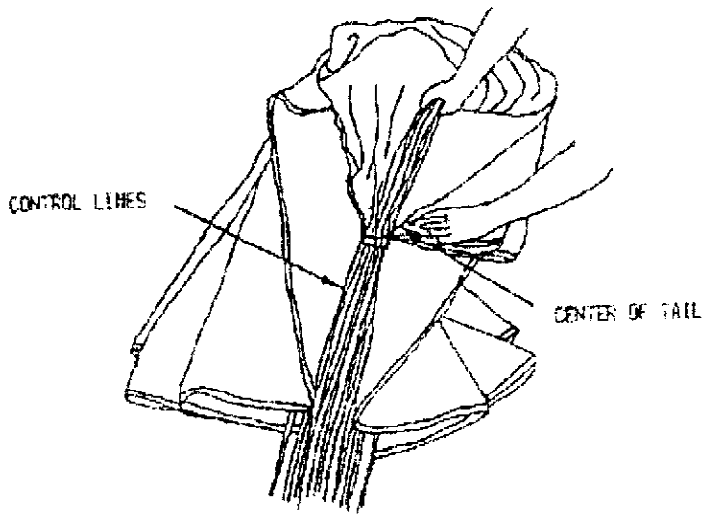


FIGURE 17

7) Split the folded tail at the center cell, ensuring that all the control lines are taut and centered on the stacked canopy.

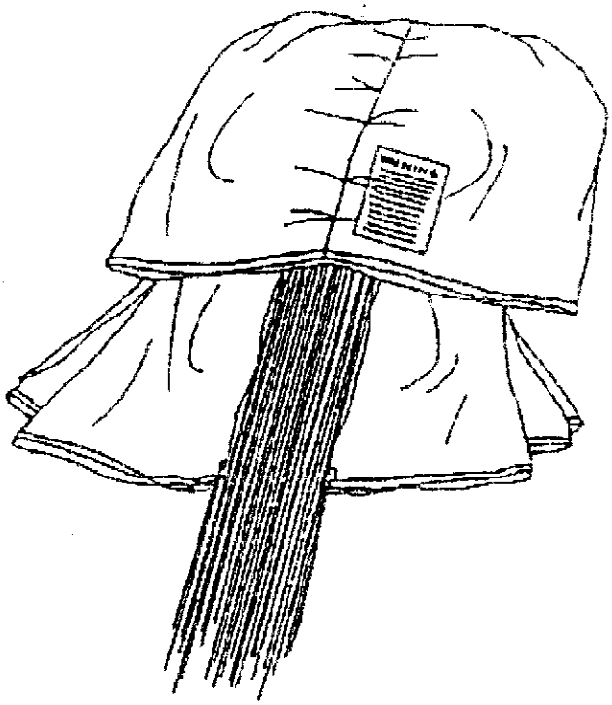


FIGURE 16

8) Spread the trailing edge outward on both sides of the folded canopy, keeping the lines centered. Smooth the tail evenly. Do not pull the center of the tail to the base of the canopy, but leave it at the level of the taut control lines.

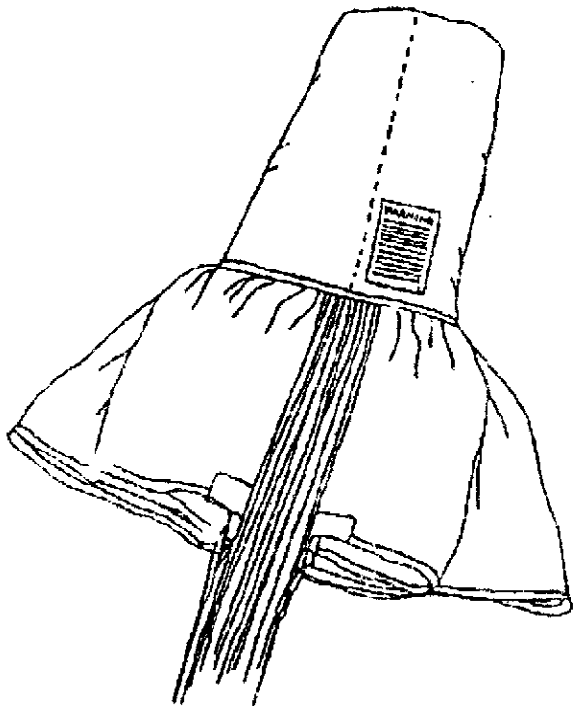


FIGURE 19

9) Refer to the harness/container manufacturer's specifications to determine the width of the free deployment bag. Wrap the center of the tail to form the stacked canopy into the width of the bag.

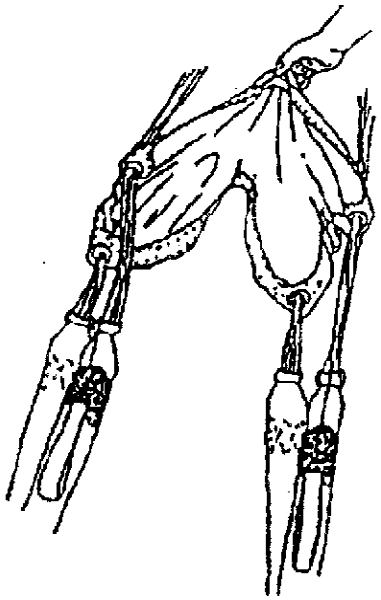


FIGURE 20

PREPARING TO BAG THE CANOPY:

10) Grasp the slider by the center and pull it up toward the canopy, ensuring that it moves freely and seats at the slider stops at the base of the stabilizers.

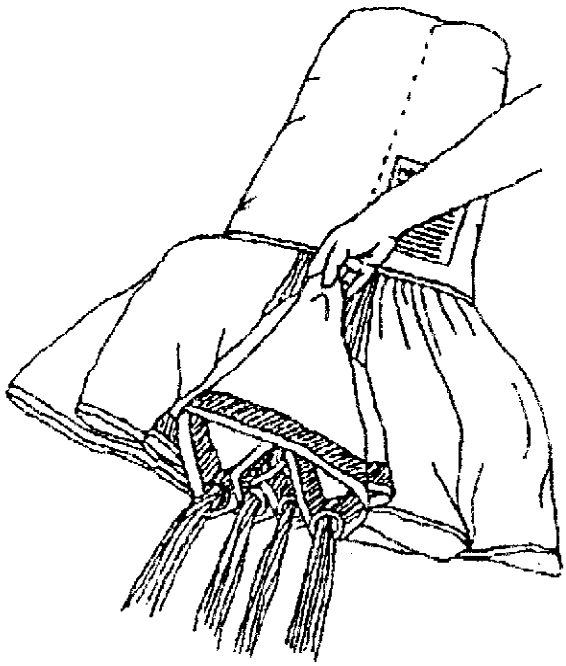


FIGURE 21

11) Place the slider on the stacked canopy, centered between the suspension line groups. Spread the four slider grommets evenly as shown.

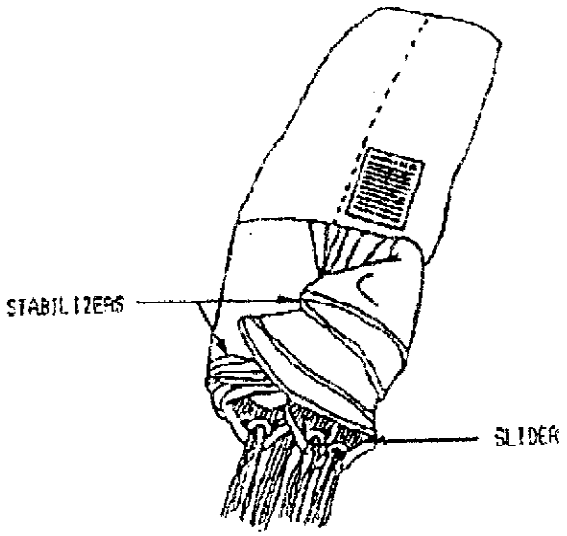


FIGURE 22

12) Fold the stabilizers over the slider at 45 degree angles as shown.

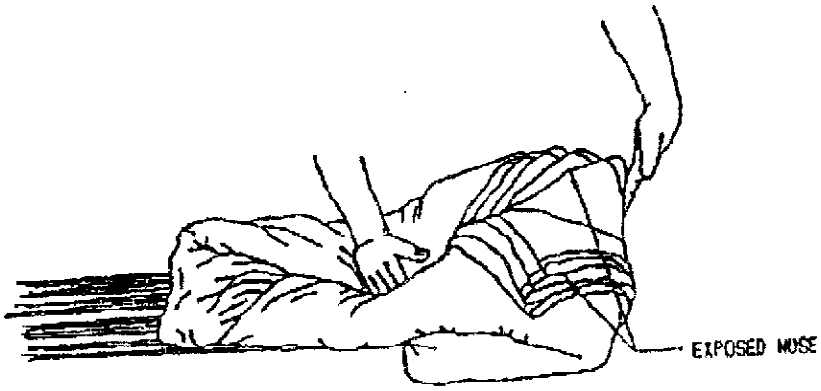


FIGURE 23

13) Grasp the top of the stacked canopy and pull it downward until the cell openings at the nose are visible. Ensure that the nose is split about the center cell and is completely exposed.

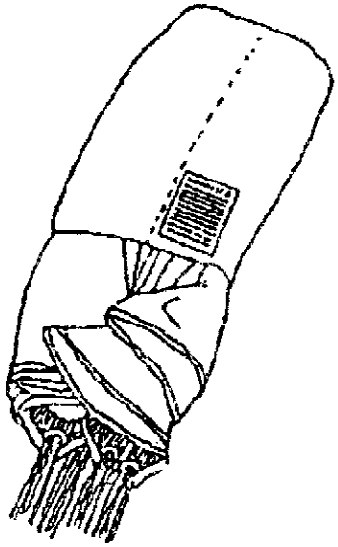


FIGURE 24

14) Return the stacked canopy to its original position and redress it. The canopy is now ready to place into the deployment bag.

IMPORTANT: Individual harness/container manufacturer's procedures for packing and installing the free deployment bag vary from type to type. Use the manufacturer's instructions for your specific type of harness/container system.