

PARA-FLITE, INCORPORATED

**SWIFT PLUS™ RESERVE,
SWIFT® RESERVE,
CIRRUS® RESERVE,
ORION™ RESERVE
PACKING INSTRUCTIONS**

WARNING:

Because square reserves are radically different from conventional (round) reserves, it is absolutely essential that riggers be specifically trained before packing, assembling, repairing and/or inspecting them.

FAR Part 65.129 "Performance Standards" states that:

"No certificated parachute rigger may:

- (e) Pack, maintain, or alter a parachute in any manner that deviates from procedures approved by the Administrator or the manufacturer of the parachute; or
- (f) Exercise the privileges of his certificates and type rating unless he understands the current manufacturer's instructions for the operation involved."

Further, PARA-FLITE, INC. states that:

Prior to packing a

**SWIFT PLUS RESERVE, SWIFT RESERVE,
CIRRUS RESERVE OR ORION RESERVE**

emergency parachute, an FAA Senior or Master Rigger attend a course conducted by a qualified Square Rigger/Examiner.

Anyone who circumvents PARA-FLITE, INC. instructions regarding attendance of a Square Rigger Course is in violation of Part 65.129 and is therefore performing an illegal procedure.

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CONTAINER DESIGN

To ensure safe operation of Para-Flite, Inc. reserve parachutes, it is mandatory that they be installed in harness/container systems which meet the following requirements:

- (1) Both the left and right reserve risers **must** have a front and rear attachment point and be at least 15" long.
- (2) The containers **must** have a means of holding the bag in place until the pilot chute has reached the end of the bridle line, or if in a horseshoe situation, until the bridle line extracts the bag. If a locking loop arrangement is used, the needlefold **must** release with a maximum of 6-8 lbs. of pull. At 20 mph, the bridle line alone **must** create enough drag to release the needlefold and extract the bag. We are recommending a nylon covered bungee be used as the locking loop for these flaps as this will facilitate the release.
- (3) Because the canopy should be able to deploy despite a hung pilot chute, the bag **must** not be trapped in the container after the locking loop has been released. This means the container must NOT have restrictive corners which hold the bag into place. The drag created by the 2" wide bridle ALONE **must** be able to extract the bag.
- (4) The harness/container **must** be of the tandem type. Square reserves cannot be considered for use in front mount reserve containers unless a positive locking device is used to attach the risers to the harness. Even with the use of a cross-connector strap, should the jumper experience a riser release, the results could be catastrophic.

ALL THE REQUIREMENTS OF FAA TSO-C23 MUST BE MET AND THE ABOVE CONSIDERATIONS MUST BE INCORPORATED INTO AN ASSEMBLY FOR USE WITH PARAF-LITE EMERGENCY PARACHUTES.

PARA-FLITE, INC. HAS TESTED AND TSO'D THE SWIFT PLUS RESERVE IN THE SWIFT HARNESS/CONTAINER WITH THE SWIFT RESERVE DEPLOYMENT BAG AND PILOT CHUTE ASSEMBLY (PFI P/N 827212) AND IN THE TELESIS HARNESS/CONTAINER WITH THE TALON DEPLOYMENT BAG AND PILOT CHUTE ASSEMBLY (P/N 2111) ONLY.

PARA-FLITE, INC. HAS TESTED AND TSO'D THE SWIFT RESERVE **ONLY** WITH THE SWIFT HARNESS/CONTAINER SYSTEM **AND** THE SWIFT RESERVE DEPLOYMENT BAG AND PILOT CHUTE ASSEMBLY (PFI P/N 827212).

PARA-FLITE, INC. HAS TESTED AND TSO'D THE CIRRUS RESERVE **ONLY** WITH THE SWIFT HARNESS/CONTAINER SYSTEM **AND** THE CIRRUS RESERVE DEPLOYMENT BAG AND PILOT CHUTE ASSEMBLY (PFI P/N 835012). THE CIRRUS RESERVE IS ALSO COMPATIBLE WITH THE CIRRUS/ORION RESERVE DEPLOYMENT BAG AND PILOT CHUTE ASSEMBLY (PFI P/N 807019).

PARA-FLITE, INC. HAS TESTED AND TSO'D THE ORION RESERVE **ONLY** WITH THE SWIFT HARNESS/CONTAINER SYSTEM **AND** THE CIRRUS/ORION RESERVE DEPLOYMENT BAG AND PILOT CHUTE ASSEMBLY (PFI P/N 807019).

IF YOU ARE ASSEMBLING THE SWIFT PLUS RESERVE, SWIFT RESERVE, THE CIRRUS RESERVE, OR THE ORION RESERVE WITH EITHER DEPLOYMENT SYSTEM COMPONENTS OR HARNESS/CONTAINERS NOT MANUFACTURED BY PARA-FLITE, YOU MUST FIRST ASCERTAIN THAT THE ITEMS YOU ARE SUBSTITUTING ARE COMPATIBLE WITH THE SWIFT PLUS RESERVE, SWIFT RESERVE, CIRRUS RESERVE, OR ORION RESERVE. IF YOU ARE NOT SURE ABOUT THE COMPATIBILITY OF ANY COMPONENT WITH THE SWIFT PLUS RESERVE, SWIFT RESERVE, CIRRUS RESERVE, OR ORION RESERVE YOU ARE PACKING OR INSTALLING, CONTACT THE MANUFACTURER OF THAT COMPONENT.

ASSEMBLY PROCEDURES

As a rigger, you must be able to determine whether or not a container system is compatible with the Swift Plus Reserve, Swift Reserve, Cirrus Reserve, or the Orion Reserve. You must also be familiar with the **Assembly and Rigger's Packing Checklist** (available from PARA-FLITE, INC.) in order to assure maximum performance of the system.

MAINTENANCE AND REPAIRS

As a Senior or Master Rigger, you will find that some maintenance procedures for these square reserves are similar (**but not identical**) to those of round reserves. A Senior Rigger is allowed to repair only minor damage. Minor damage is considered to be a hole or tear not involving a seam or tape. **NO RIPSTOP TAPE PATCHES ARE ALLOWED.** A Senior Rigger may also repair and maintain, but not modify, the bag, bridle and pilot chute assembly. A Senior Rigger may, however, install a Safety Stow Kit (available from PARA-FLITE, INC.) in accordance with manufacturer's instructions.

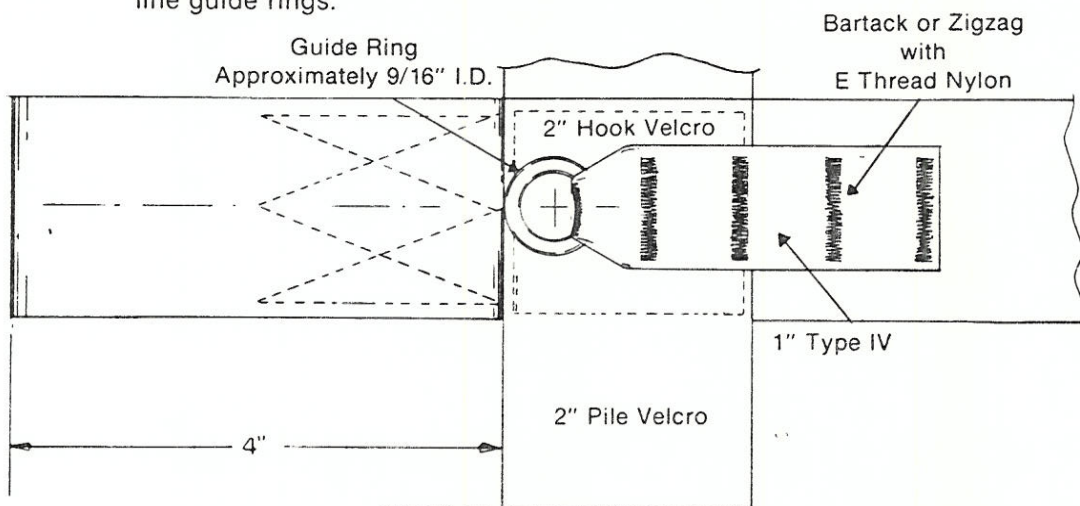
A Master Rigger's license is required to correct major damage. This is damage which does involve seams or tapes, or the repair or removal of any seams or tapes. Also, a canopy is considered to have major damage if one or more strands are broken in any suspension line. If a suspension line which runs through a deployment brake loop requires replacement, the entire group must be replaced with a factory replacement set of lines. This will ensure that the brake loop and lines are not weakened by being removed and reewn.

Any damage which requires the replacement of an entire panel or cell must be repaired by the manufacturer.

NOTE: You may repair this parachute **BUT YOU MAY NOT ALTER IT IN ANY FASHION.** All repairs must be done with PARA-FLITE, INC. specified materials.

RIGGER PACKING CHECKLIST

1. Check the connector links for proper tightness.
 - a. With a $\frac{3}{8}$ " open wrench, loosen the locking barrel.
 - b. Tighten the locking barrel to finger tightness.
 - c. With a $\frac{3}{8}$ " open wrench, tighten the locking barrel $\frac{1}{4}$ turn.
 - d. Place the link bumper over the link and secure.
2. Check the condition of the finger trapped loops, and locking loops for imperfections and wear.
3. While checking for proper line continuity, also check the lines for broken strands or damage of any kind.
4. Check all bartacks and suspension line attachment points.
5. Inspect the canopy for damage and wear. (*See the maintenance and repair section for repair guidelines.*)
6. Inspect the slider.
 - a. Check the slider grommets for damage.
 - b. Check the fabric and tapes.
7. Inspect the deployment system.
 - a. Check the bag for wear and/or damage.
 - b. Check the bridle for wear and/or damage.
 - c. Check the pilot chute for wear and/or damage.
8. Should repairs to the canopy be required, use a straight stitch INSTEAD of zigzag.
9. The illustration below shows the proper location for the small steering line guide ring for installation in systems which do not provide steering line guide rings.



NOTE: Due to the variety of steering line guide ring/toggle combinations now supplied on reserve risers, and the subsequent differences in deployment brake setting method, Para-Flite, Inc. will no longer supply guide rings with each Ram-Air reserve. These rings, however, will be available on request at no charge.

PACKING CHECKLIST (continued)

NOTE: While there are marks on the steering line for the proper position to tie the steering toggle, these marks should be double checked in the following way:

On the SWIFT RESERVE, the center steering line should be even with the D-line (± 1 ").

On the CIRRUS RESERVE, the short steering line should be 10" above D-line (± 1 ").

On the ORION RESERVE, the inboard steering line should be 10" above D-line (± 1 ").

On the SWIFT PLUS RESERVE, the steering line should be 12" above the D-line (± 1 ").

With every PARA-FLITE, INC. reserve parachute, you will receive the following:

- 1) Para-Flite, Inc. Reserve Packing Instructions.
- 2) Para-Flite, Inc. Ram-Air Flight Manual.
- 3) Para-Flite, Inc. Ram-Air High Performance Emergency Parachute Owner's Manual.

RISER ASSEMBLY INSTRUCTIONS

1. Lay the canopy out with its left side on the ground. Use illustration #1 as a guide to transfer the links **directly** to the risers in the following order; Left Rear, Left Front, Right Rear, Right Front. See page 10 of the Packing Instructions for the correct procedure to tighten the locking barrels on the Rapide Links.

NOTE: After approximately 10 - 20 jumps, retighten the links using the proper procedure as it is possible for the barrels to loosen.

2. TIE OFF the steering lines to the toggles as shown in illustration #2. Be certain you have threaded the steering lines through the guide rings on the risers.

CAUTION: Welded guide rings are not strong enough to withstand the opening shock load, only machined steel or forged steel rings can be used. Be certain that the guide rings are the proper size for the toggles you intend to use. If the rings are too large and/or the toggles are too small, the toggles could slip through the rings. We have supplied a set of toggles which should fit all but the largest rings.

NOTE: Align the mark on the steering line with the loop of the toggle grommet or ring for proper toggle location. DO NOT CUT OFF excess steering line until you have jumped the canopy and determined the stall point; the canopy should stall at full arm extension. See Flight Manual for toggle adjustment.

3. After the links and toggles are assembled, make a full line continuity check to be certain the canopy is assembled correctly **BEFORE JUMPING IT!**
4. Illustration #3 shows the finished end of the riser with the correct distance between the end of the riser and the guide ring (deployment brake ring). This dimension should be 4" \pm ½ inch. If this dimension is greater or lesser than 4", the deployment brake setting and full flight setting will be off by the same amount. However, this difference can be as much as \pm 1 inch without affecting proper opening or full flight.

ILLUSTRATION No. 2

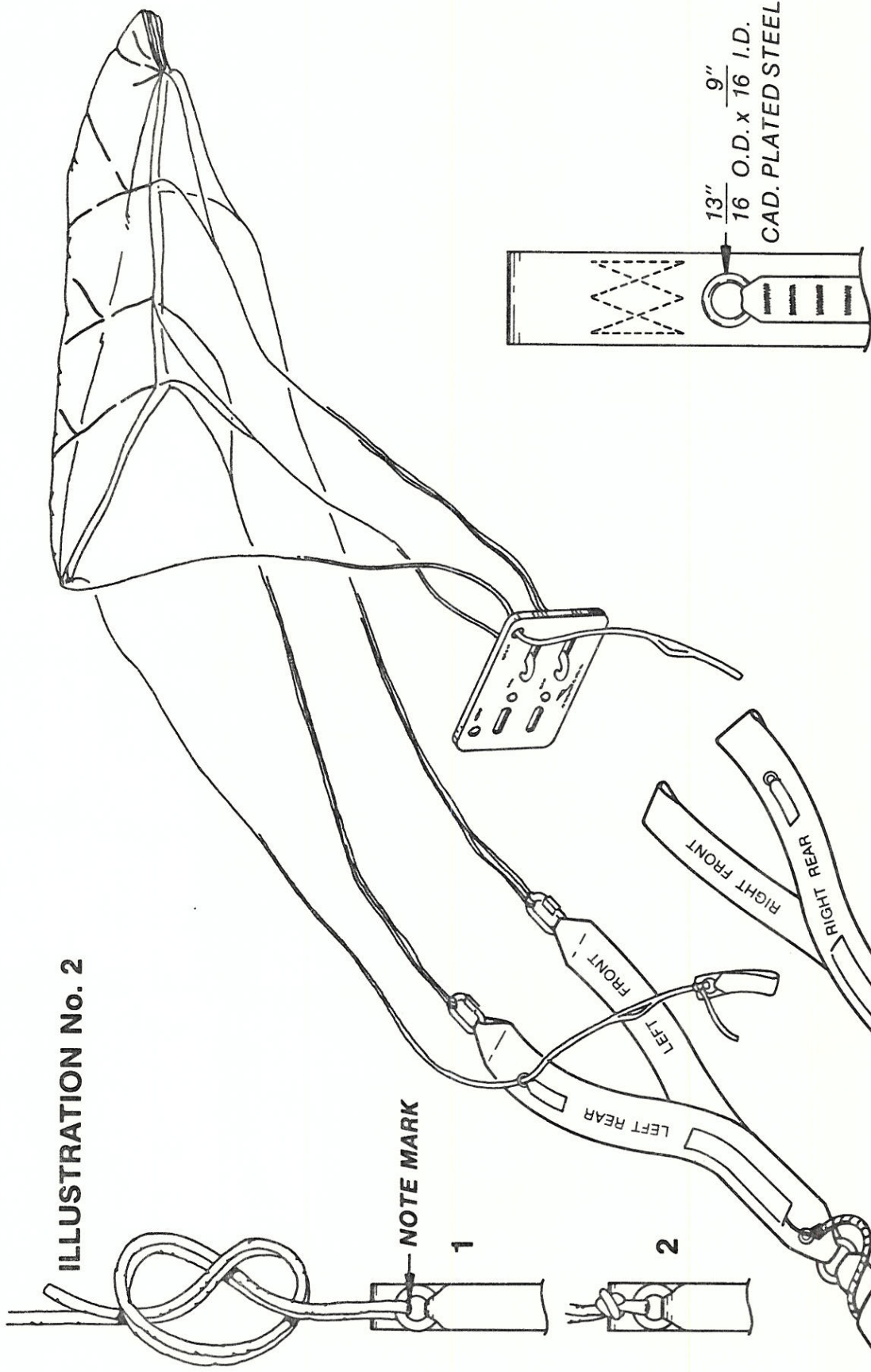


ILLUSTRATION No. 3

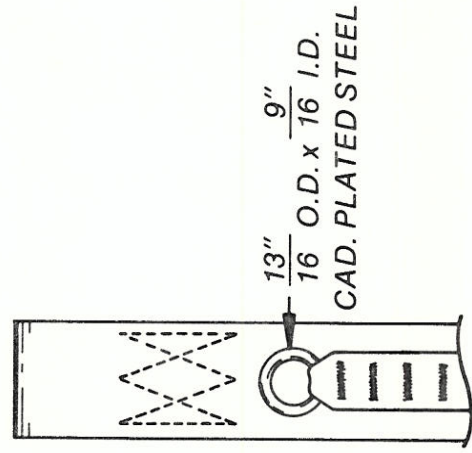
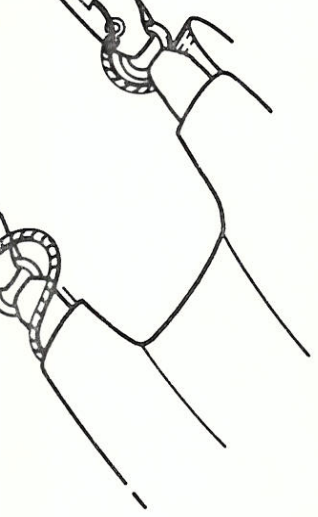


ILLUSTRATION No. 1

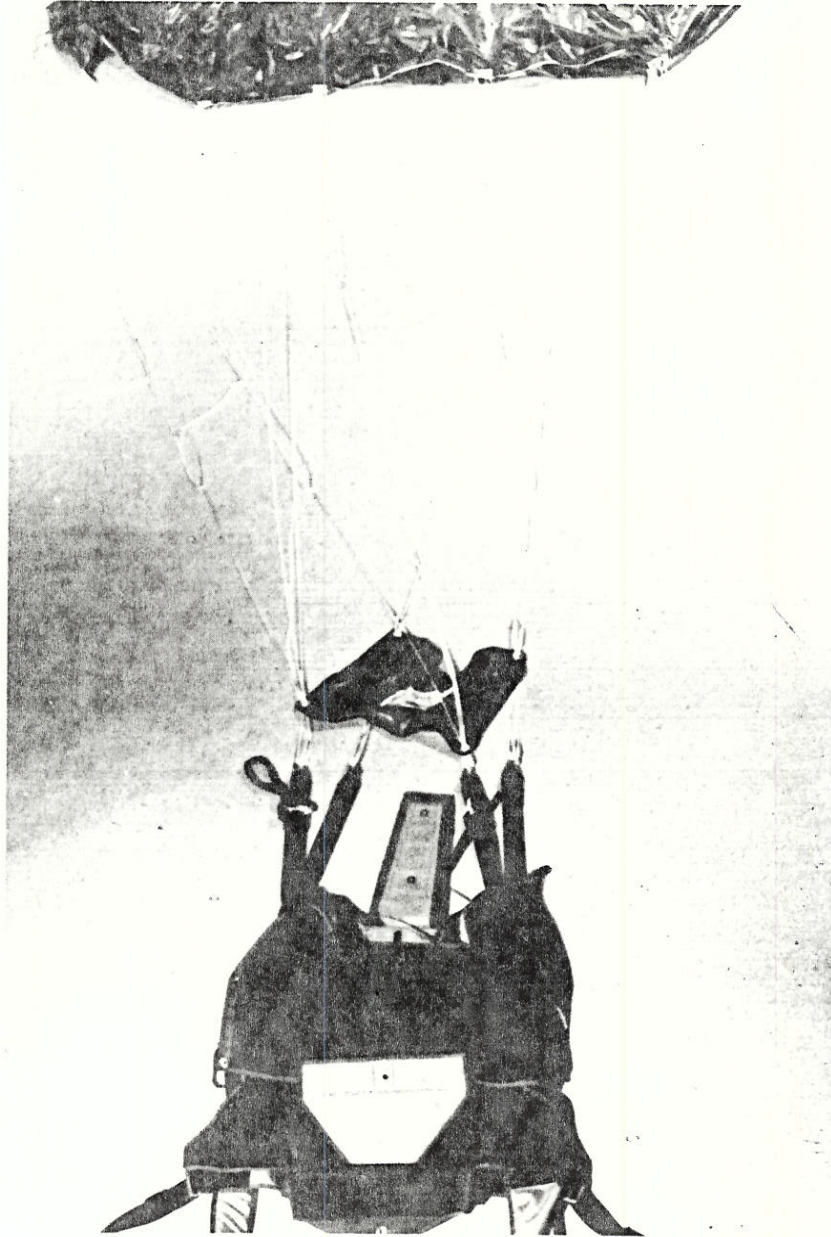


**PACKING INSTRUCTIONS
SWIFT PLUS RESERVE, SWIFT RESERVE,
CIRRUS RESERVE, ORION RESERVE**

STEP 1

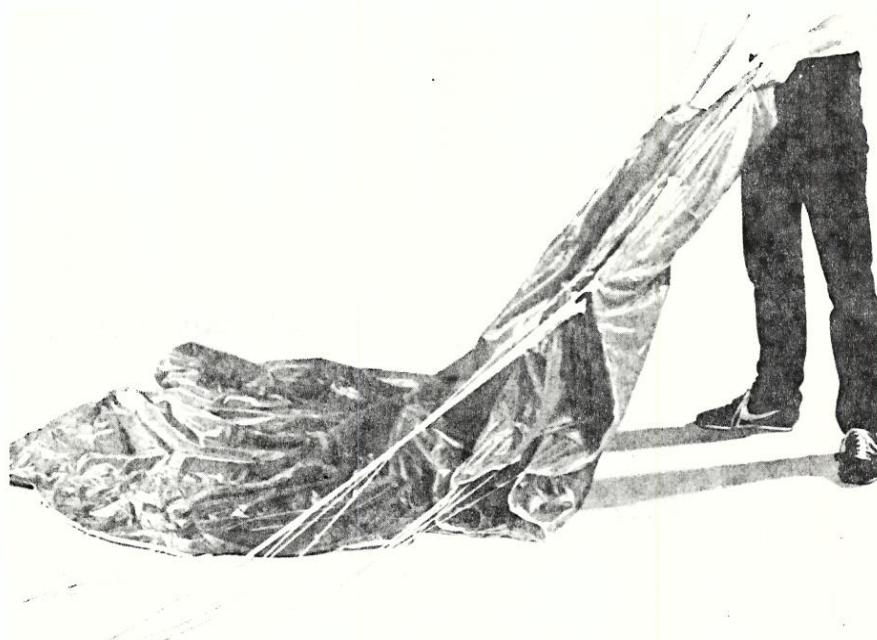
OVERALL LAYOUT

Figure A



STEP 2 LAYOUT

Figure A



Start by grasping the canopy by the top surface high points at the leading edge. With the high points in your hand, flip the canopy and lay it down with either the left or right side on the packing surface. (*The photos were taken with the left side down.*)

STEP 2

Figure B

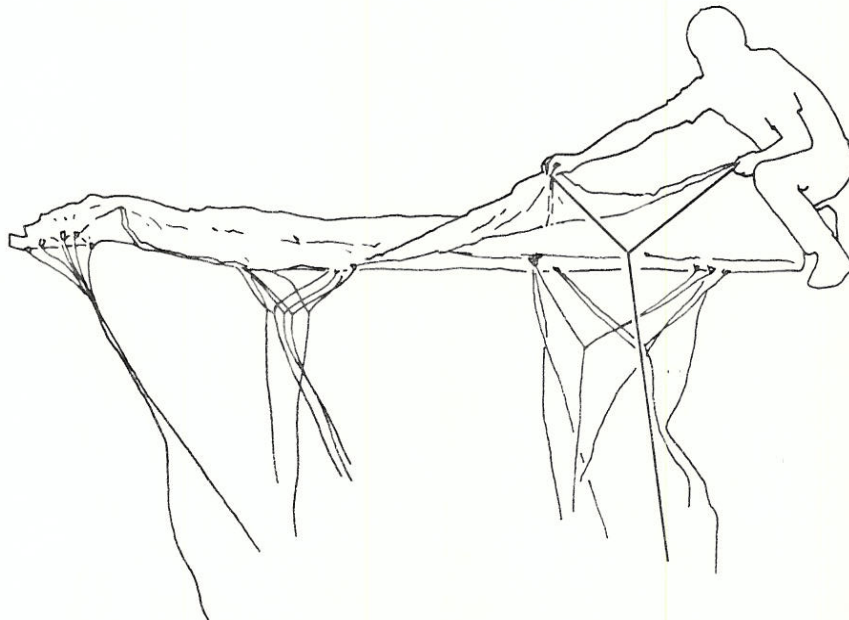


Lift the slider and ensure that all four line groups run freely from canopy to risers.

STEP 3

LINE CHECK

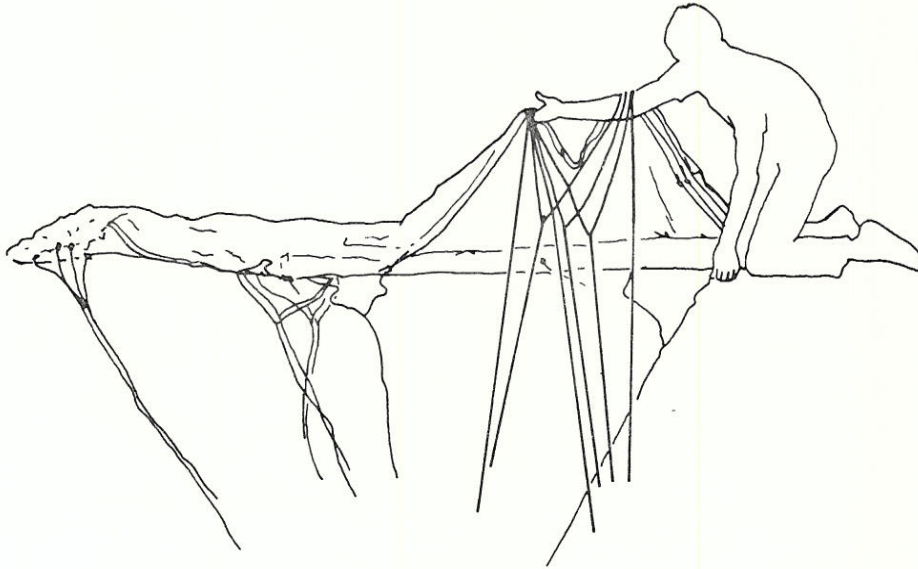
Figure A



With the slider at the connector links raise the first two and second two outboard lines at the canopy. They should run to the outside of the right front and rear risers respectively.

STEP 3

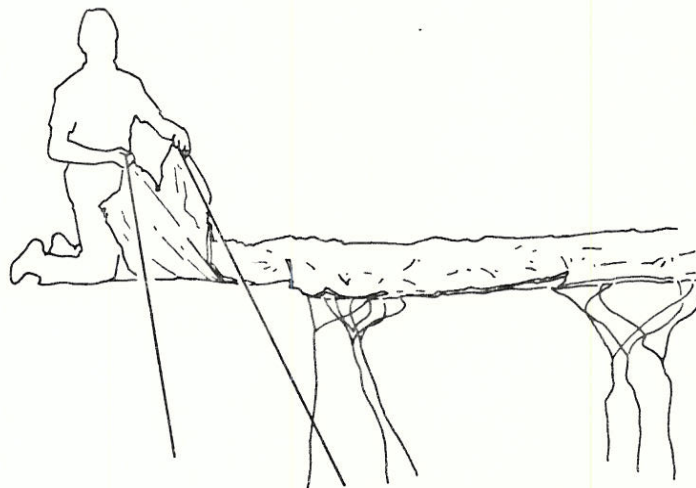
Figure B



Raise all the lines except the left outboard lines which are on the ground. The first two lines should run to the outside of the left front riser and the second two to the outside of the left rear riser.

STEP 3

Figure C



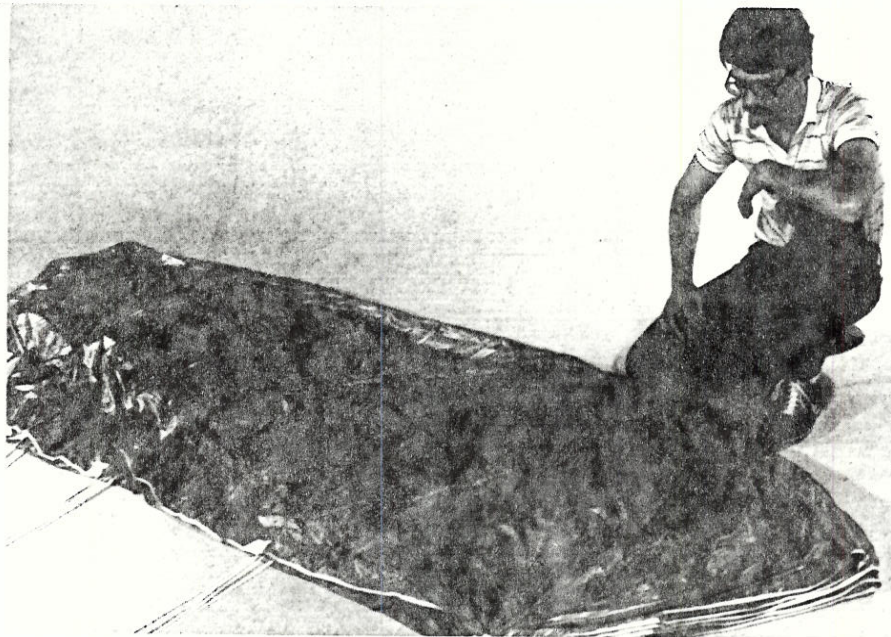
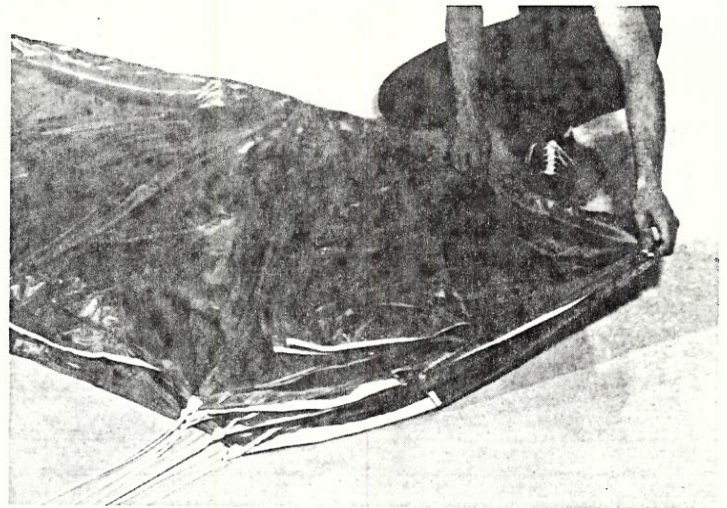
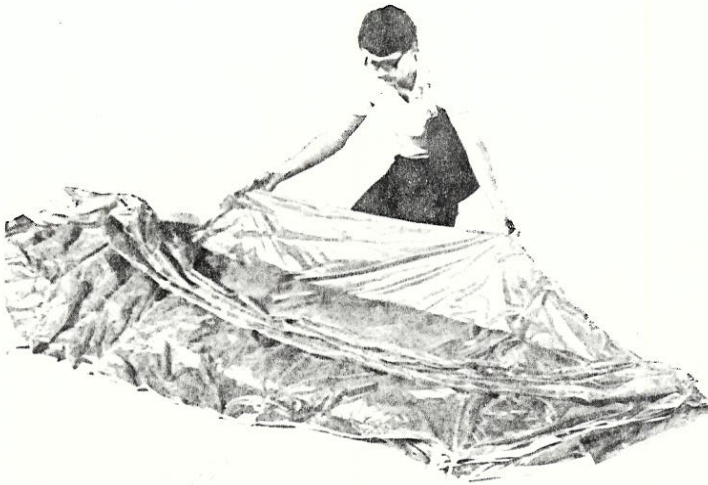
Grasp and raise the trailing edge lines. The steering line on the top should run to the right rear riser; the steering line on the bottom should run to the left rear riser.

CAUTION: ENSURE THAT THE STEERING LINES RUN THROUGH THEIR RESPECTIVE SLIDER GROMMETS.

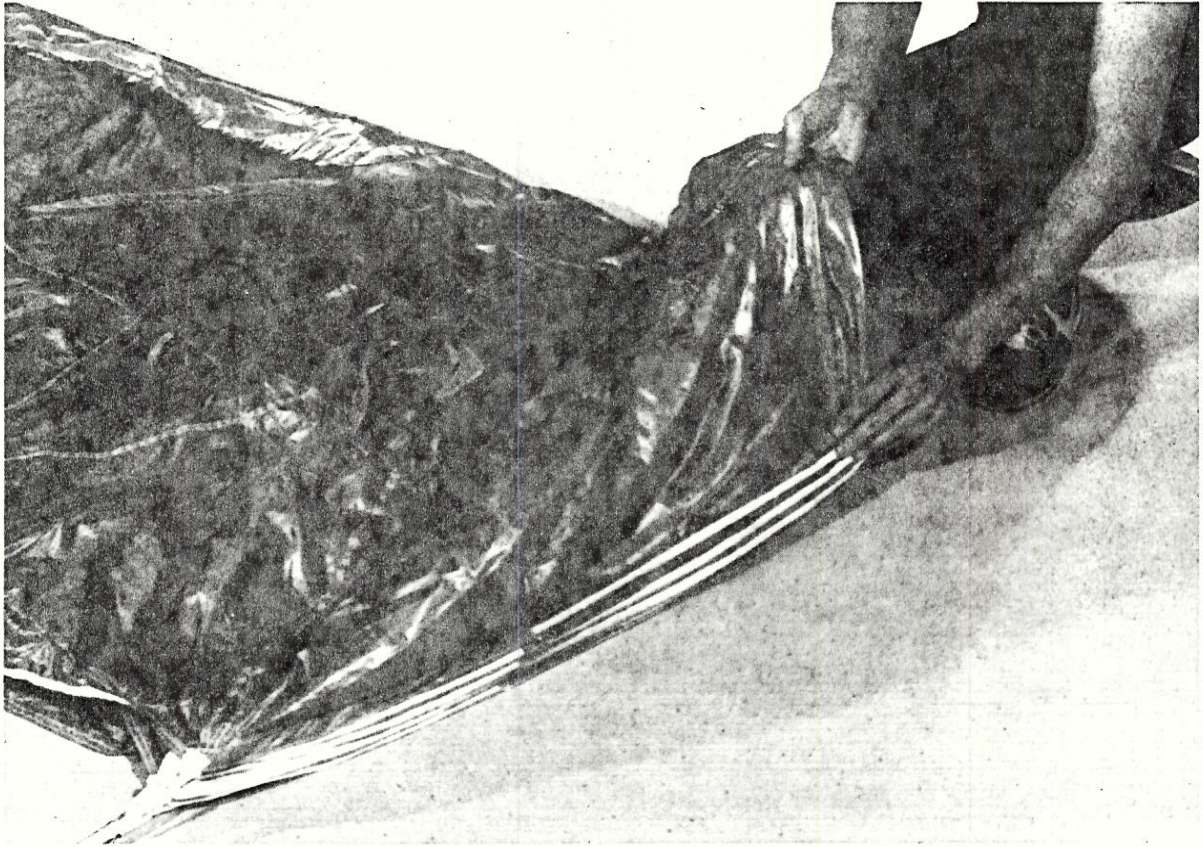
STEP 4

FLAKING THE CANOPY

Figure A

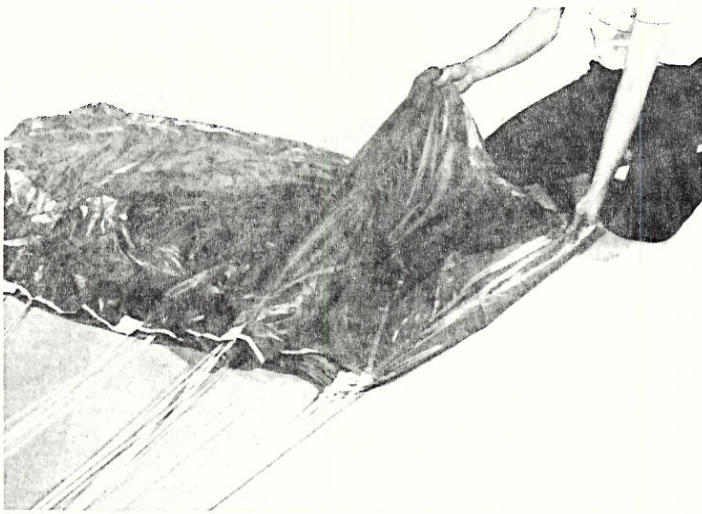


With the canopy on its side, throw all the tops, or high points, forward. Pull the top seams individually toward you until the lines are taut, smoothing the canopy from front to back. Continue this process from one cell to another until the entire canopy is neatly flaked with all the line groups, including the trailing edge lines, clearly separated.



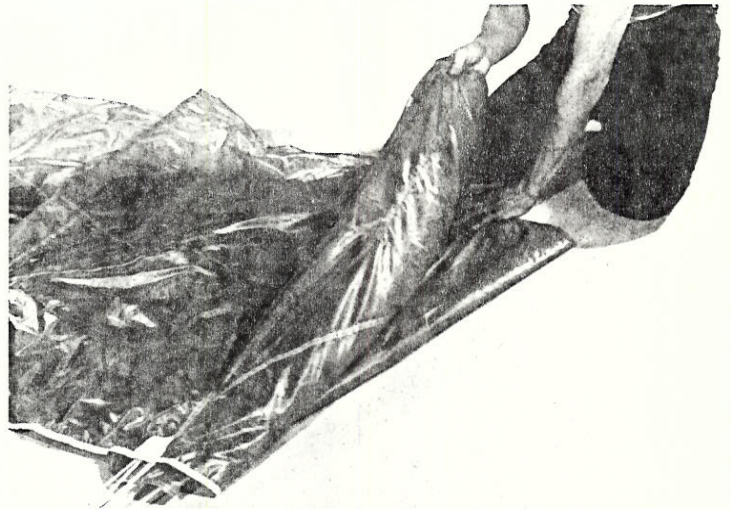
Fold the nose under, making the fold directly in line with the A line group.

STEP 5



1

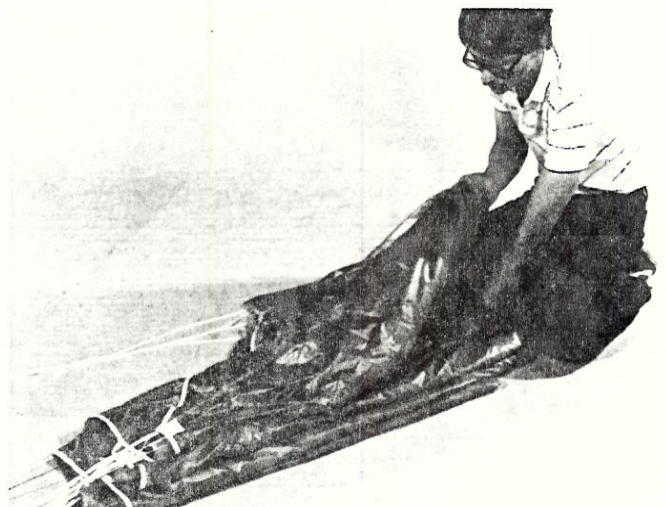
Figure B



2



3



4

Make an S fold so that the B line group is on top of the A line group. Continue this process with the C and D line groups until you have stacked all four line groups. Ensure that all suspension lines are taut.

CLEARING THE TRAILING EDGE LINES

STEP 6

Figure A

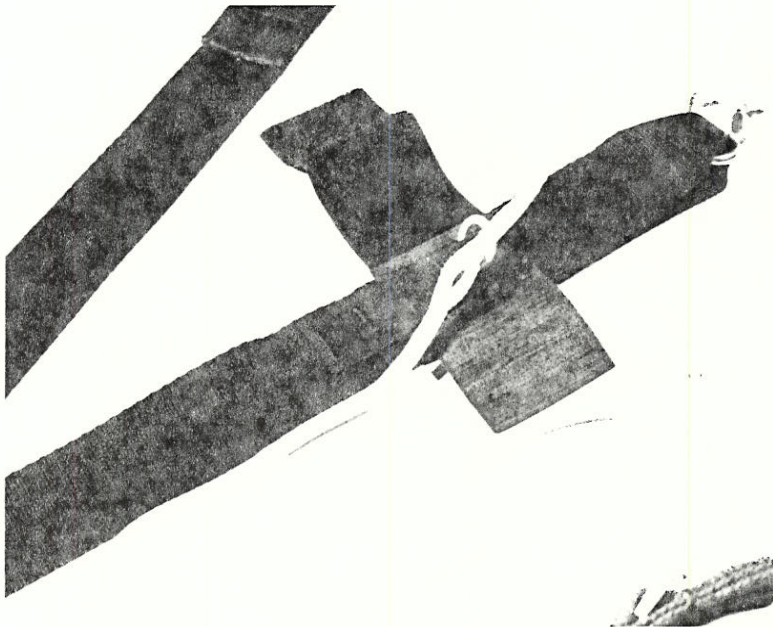


While grasping the D line group, pull the trailing edge down approximately 15". Separate the left and right trailing edge lines and check for proper routing.

SETTING THE DEPOLYMENT BRAKES (SWIFT PLUS RESERVE, CIRRUS RESERVE AND ORION RESERVE)

STEP 7

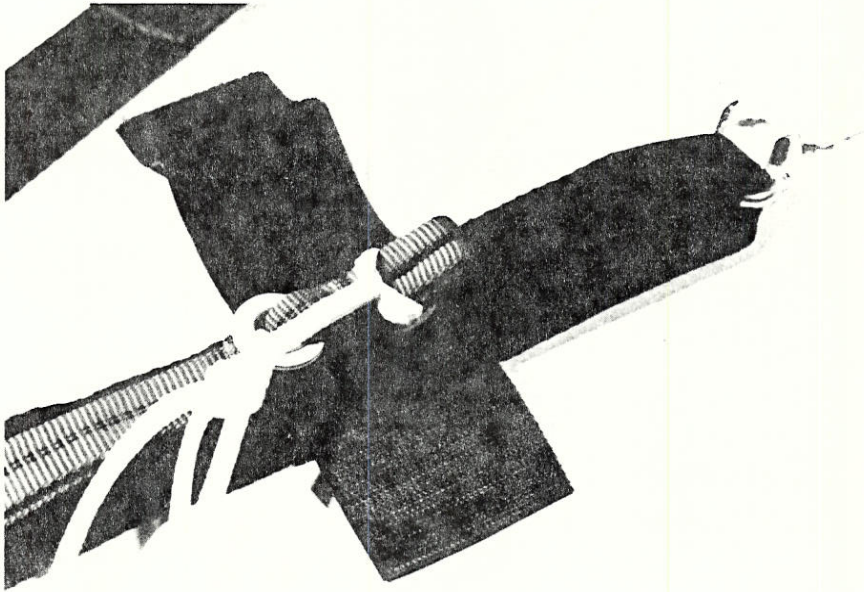
Figure A



Pull the deployment brake loop through the steering line guide ring.

STEP 7

Figure B



After bringing the deployment brake loop through the steering line guide ring, lock the loop with the top bartacked end of the toggle.

CAUTION: Insert approximately 1" of the toggle into the deployment brake loop. Do not insert the toggle past the horizontal bartack. If the toggle is inserted too far, it will be difficult to release after deployment.

STEP 7

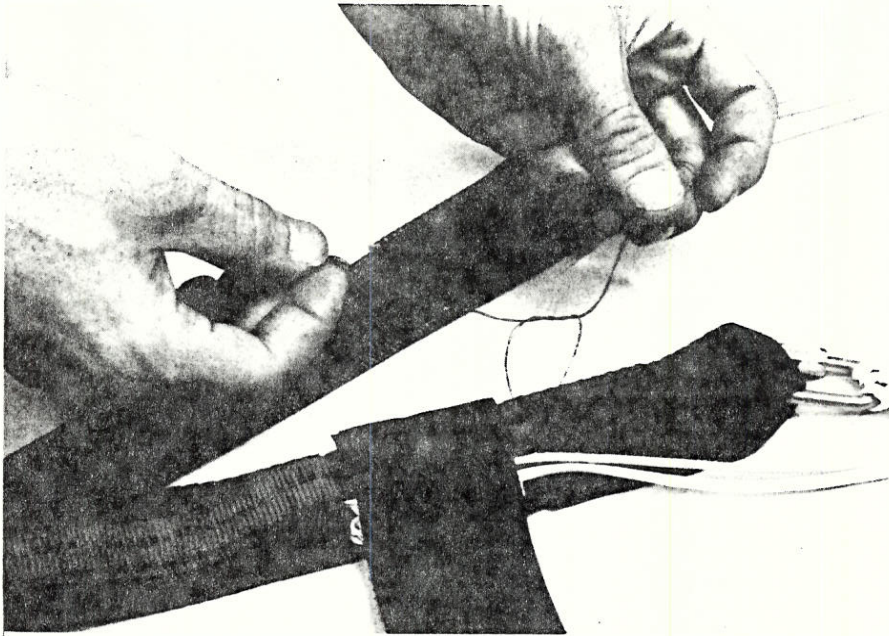
Figure C



Pull out the excess steering line, fold it and place it beside the toggle. Close the Velcro[®] cover securely.

STEP 7

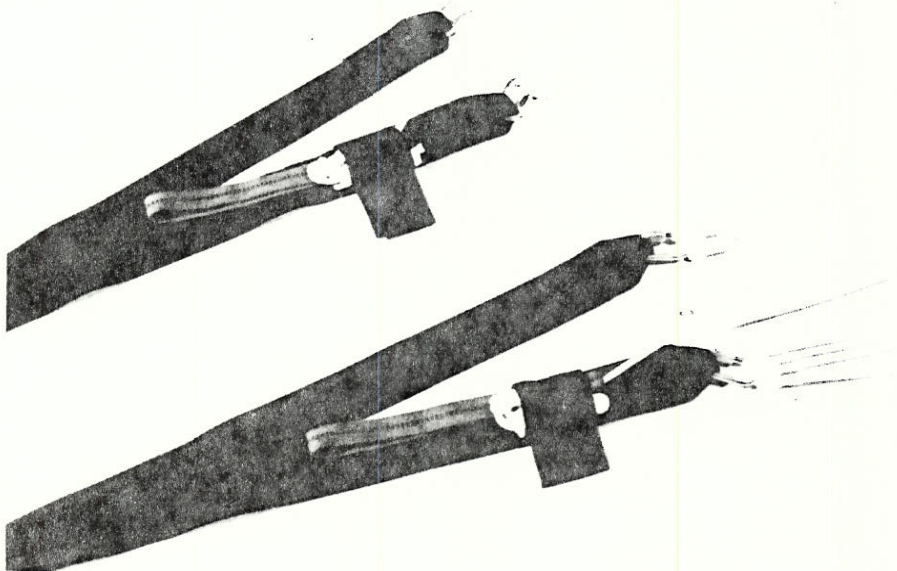
Figure D



Tack the top of the toggle to the rear riser with ONE turn of doubled red rigger sealing thread. Secure with a surgeons knot and locking knot. Do not use nylon thread or cord for this tacking.

STEP 7

Figure E

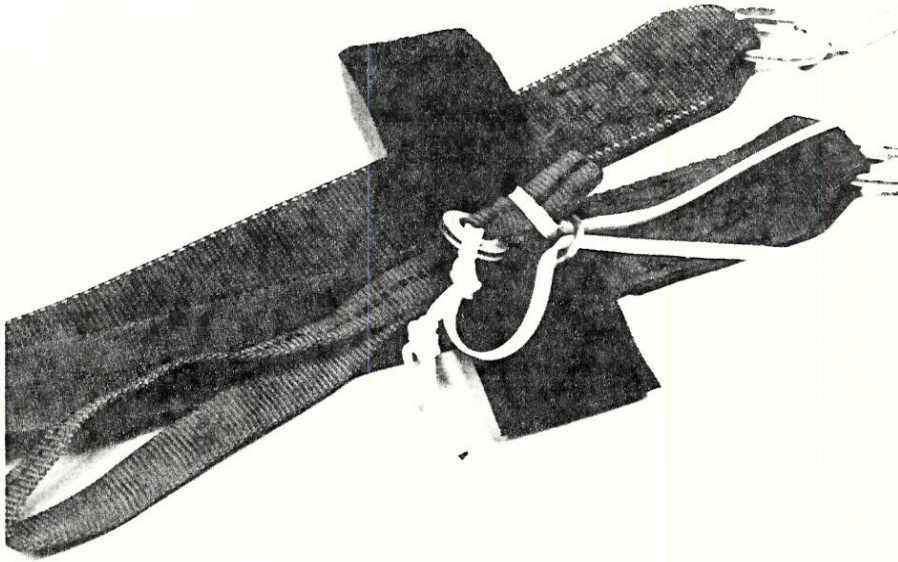


Repeat steps 7-A through 7-D on the other side.

SETTING THE DEPLOYMENT BRAKES (SWIFT RESERVE)

STEP 8

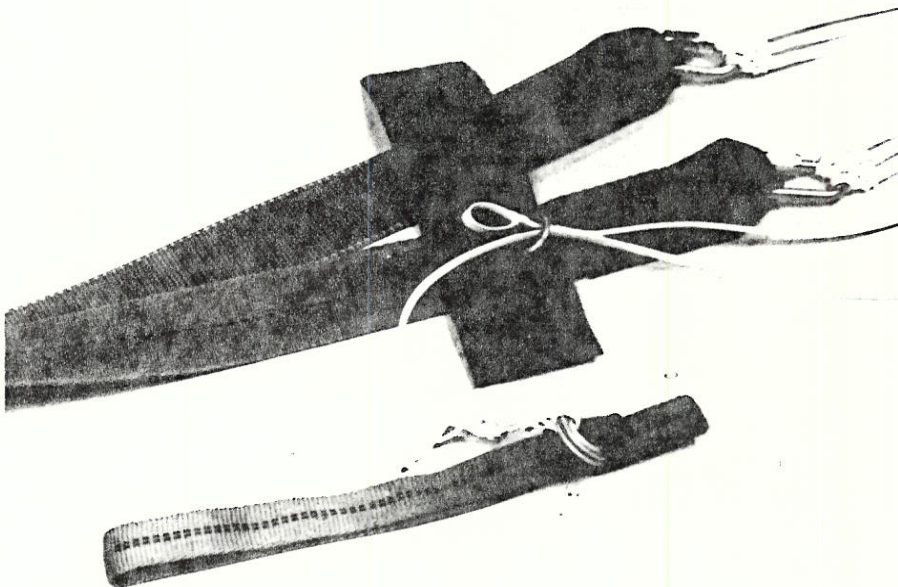
Figure A



Locate and pass the deployment brake loop through the appropriate grommet on the rear of the slider. Next, pass the deployment brake loop through the steering line guide ring.

STEP 8

Figure B

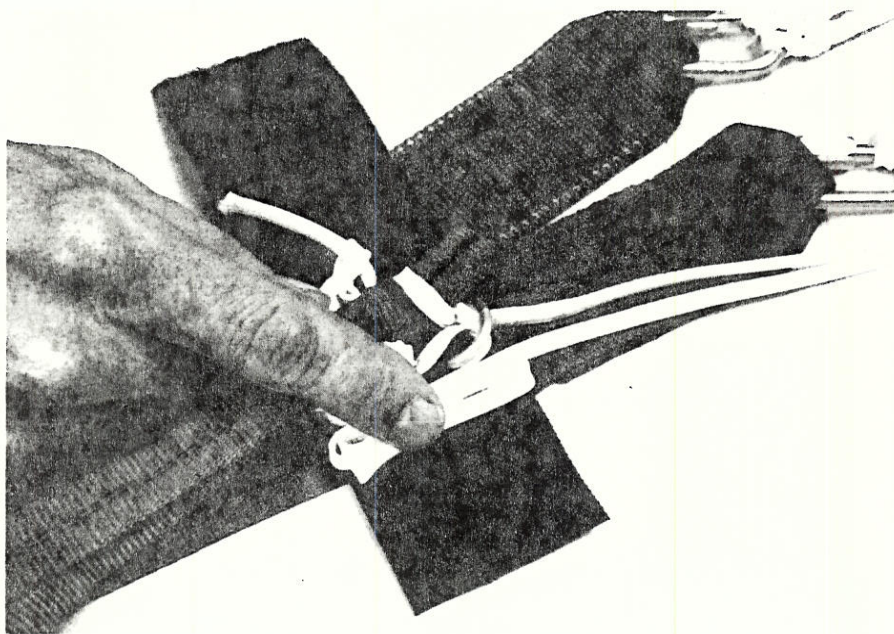
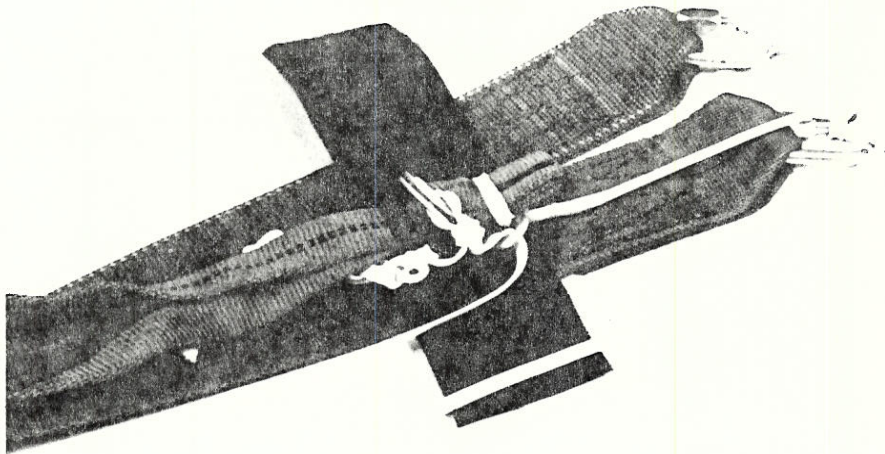


Lock the loop with the top bartacked end of the toggle.

CAUTION: Insert the toggle approximately 1" into the deployment brake loop. Do not insert the toggle past the horizontal bartack. If the toggle is inserted too far, it will be difficult to release after deployment.

STEP 8

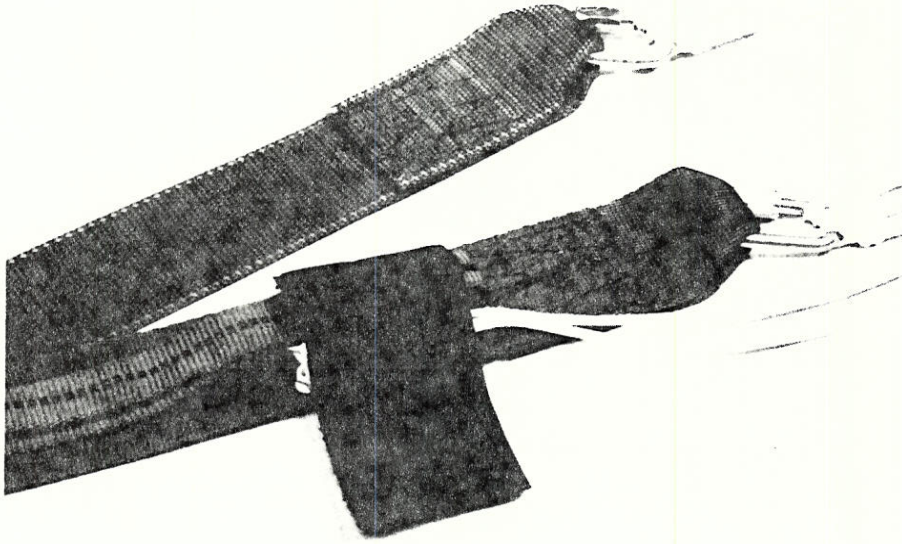
Figure C



Pull out the excess steering line ABOVE the steering line guide ring; fold it, and place it beside the toggle.

STEP 8

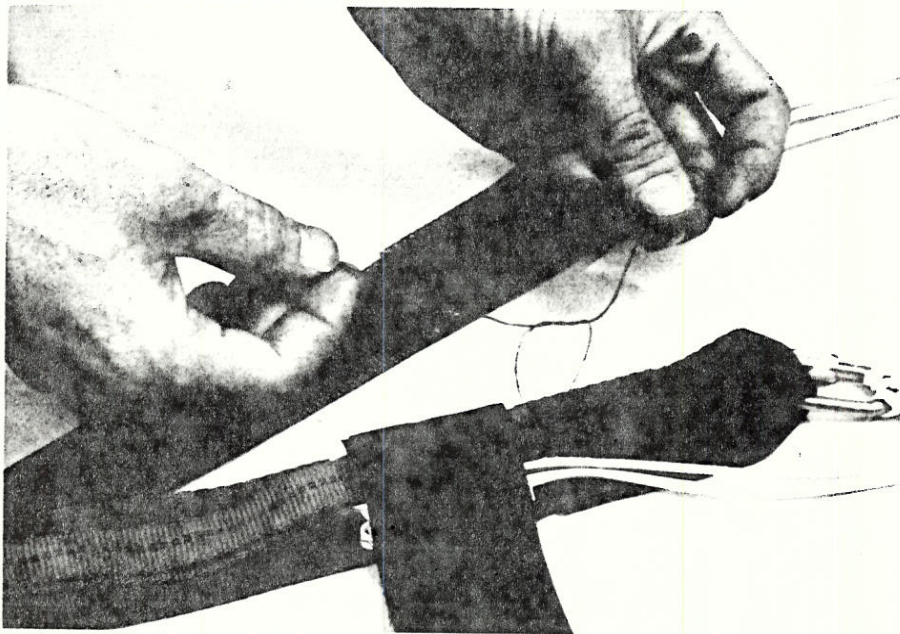
Figure D



Close the Velcro® cover securely.

STEP 8

Figure E

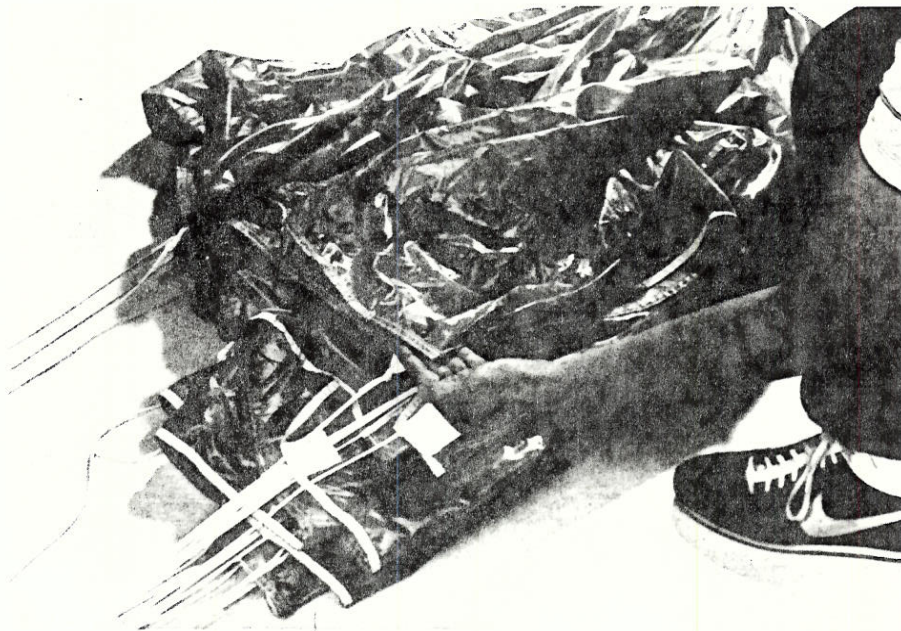


Next tack the top of the toggle to the rear riser with only ONE turn of doubled red riggers sealing thread. Secure with a surgeons knot and locking knot. Repeat the procedure for the other side (*Steps 8-A through 8-E*). Do not use nylon thread or cord to tack the toggle.

TRAILING EDGE FOLDING

STEP 9

Figure A

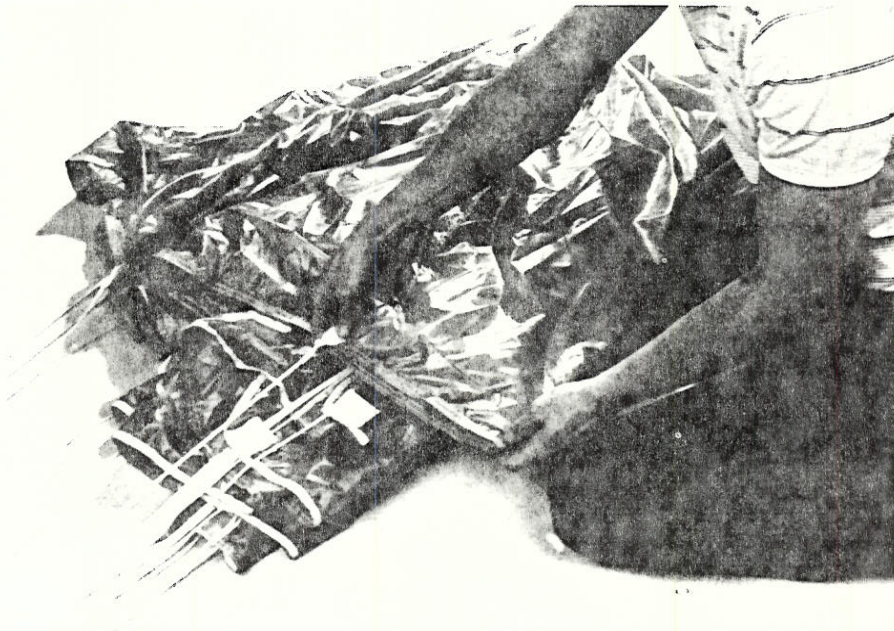
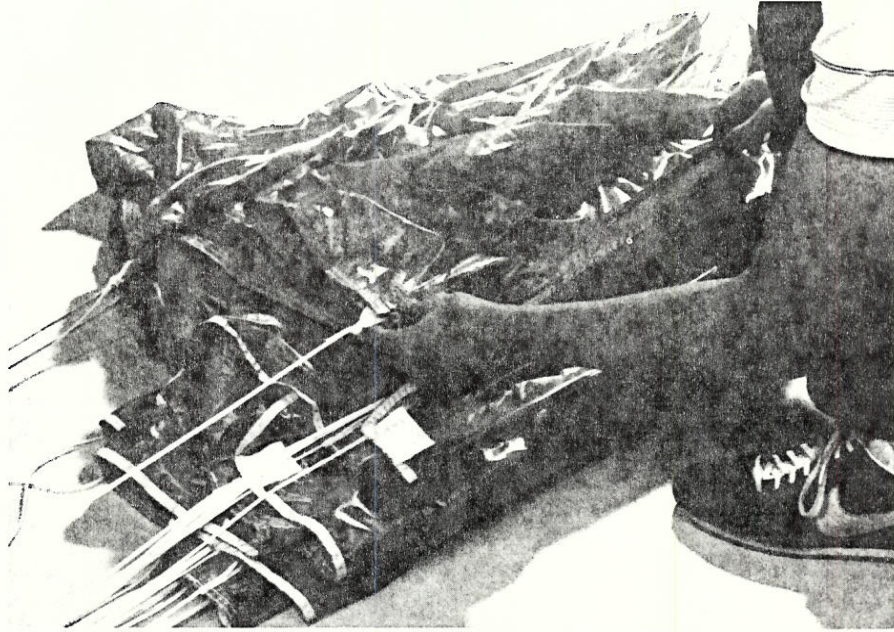


Locate the tops of the 'S' folds (*top photo*) and pull gently on each one to remove any slack from the suspension lines. Place the steering lines and rib seams in the center on top of the suspension lines. Flake the tail panels.

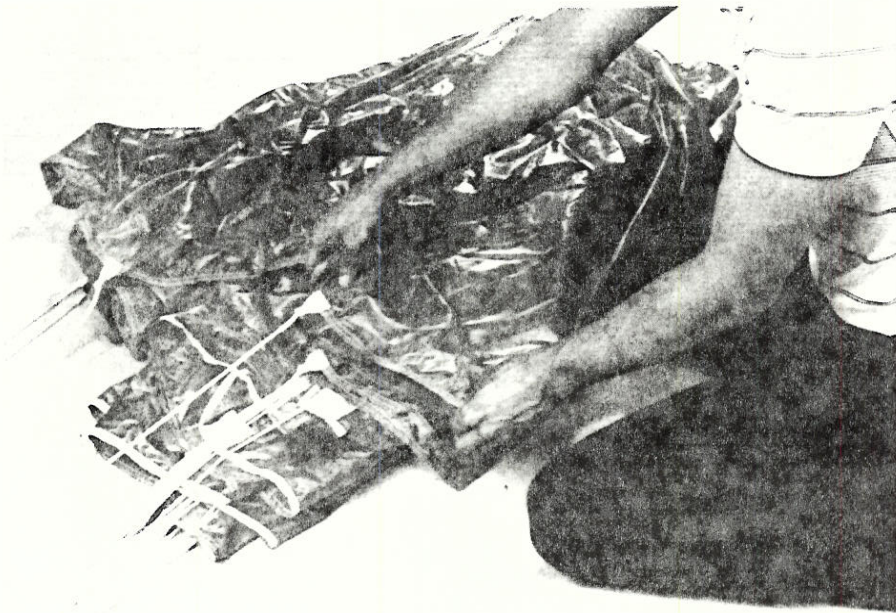
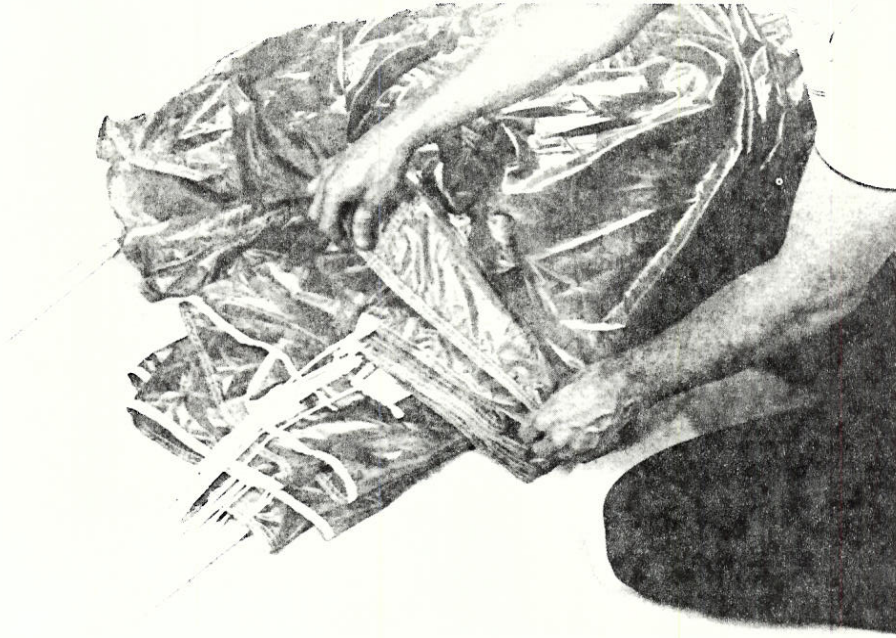
NOTE: Swift Reserves do not have a tip steering line (*bottom photo*).

TRAILING EDGE FOLDING (continued)
STEP 9

Figure B

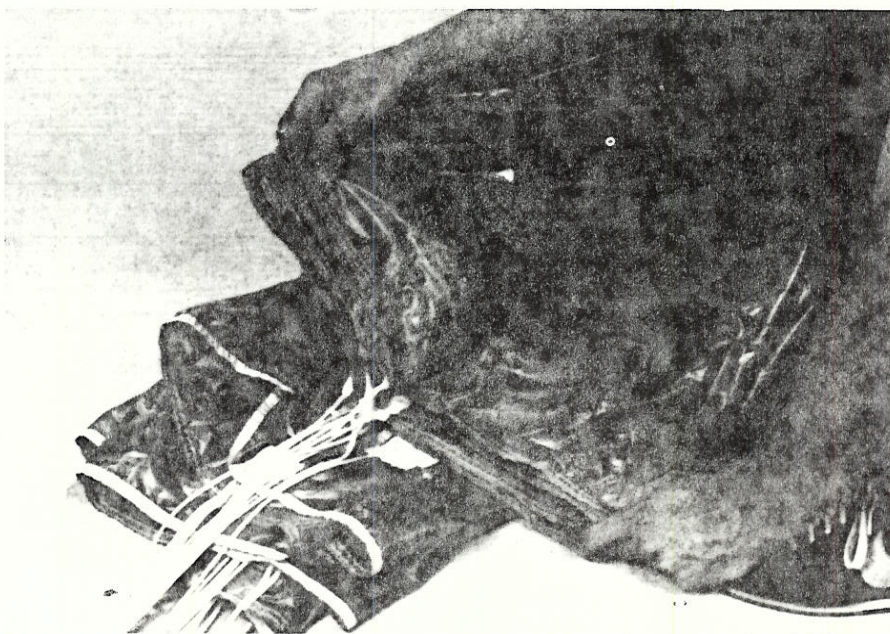
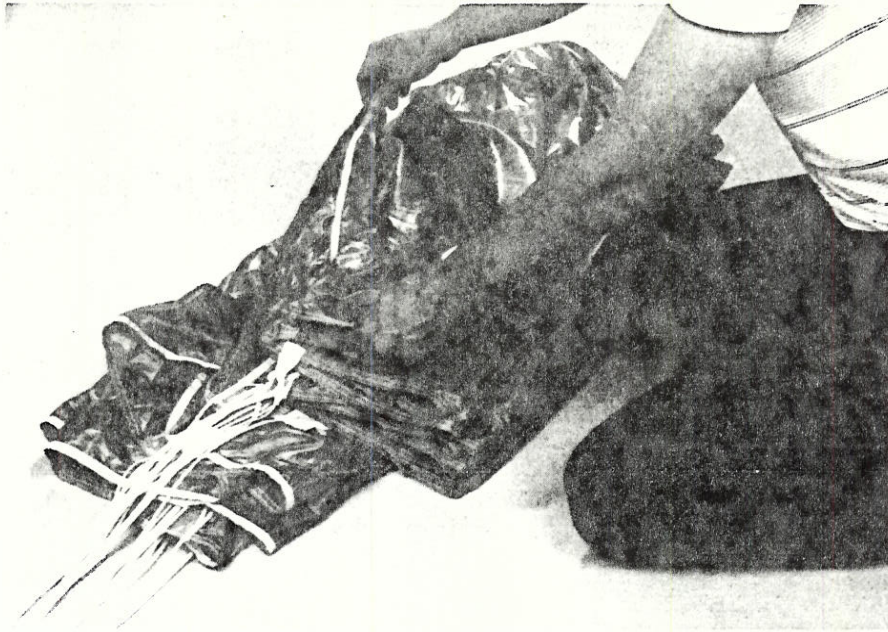


TRAILING EDGE FOLDING (continued)
STEP 9 **Figure C**



TRAILING EDGE FOLDING (continued)
STEP 9

Figure D

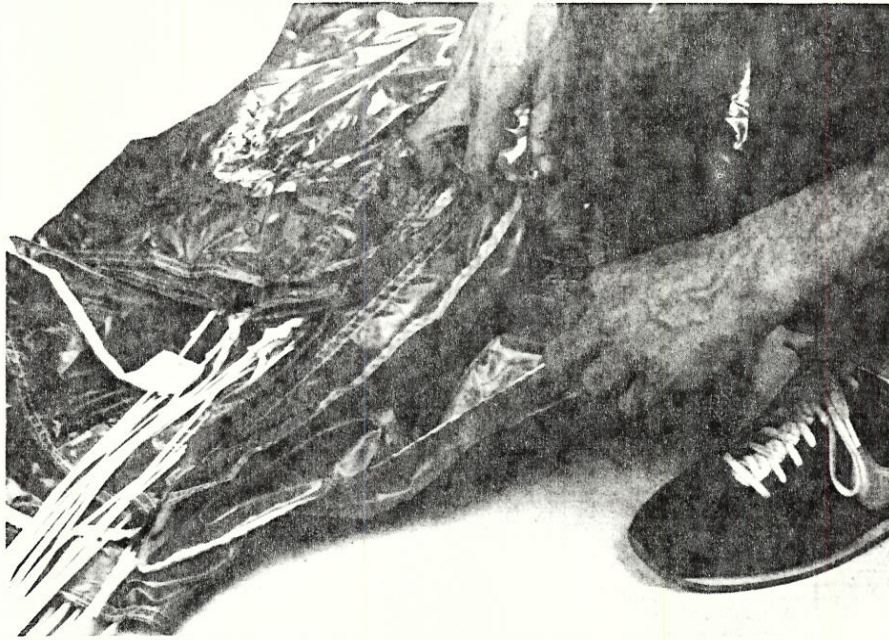


After flaking the tail, split at the center, and place an equal number of folds to each side. The center of the tail is identified with a stamped data block, or an orange sewn on warning label. Be careful not to disrupt the folded canopy when splitting the tail. The entire tail seam should be even with the steering line attach points.

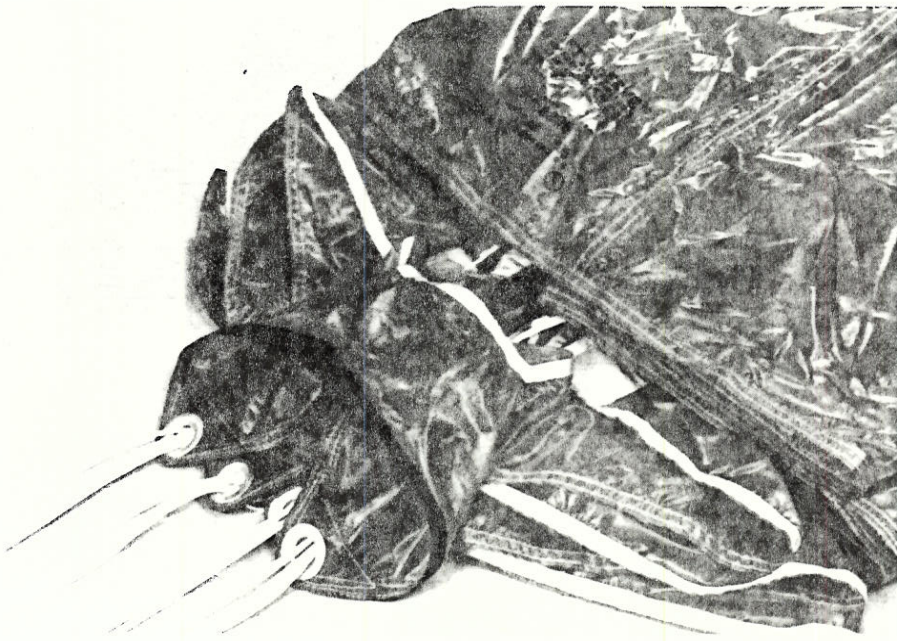
CLEARING THE STABILIZERS

STEP 10

Figure A



Clear the stabilizers (*three sections on each side*) by pulling out the slack and making sure that there are no lines wrapped around them. Stabilizer **edge** tapes should be visible. If they are not visible, the stabilizers may be inside out.



Pull the slider up to the slider stops by its center. Be sure that the slider is not inverted, and that it runs freely up the suspension lines.

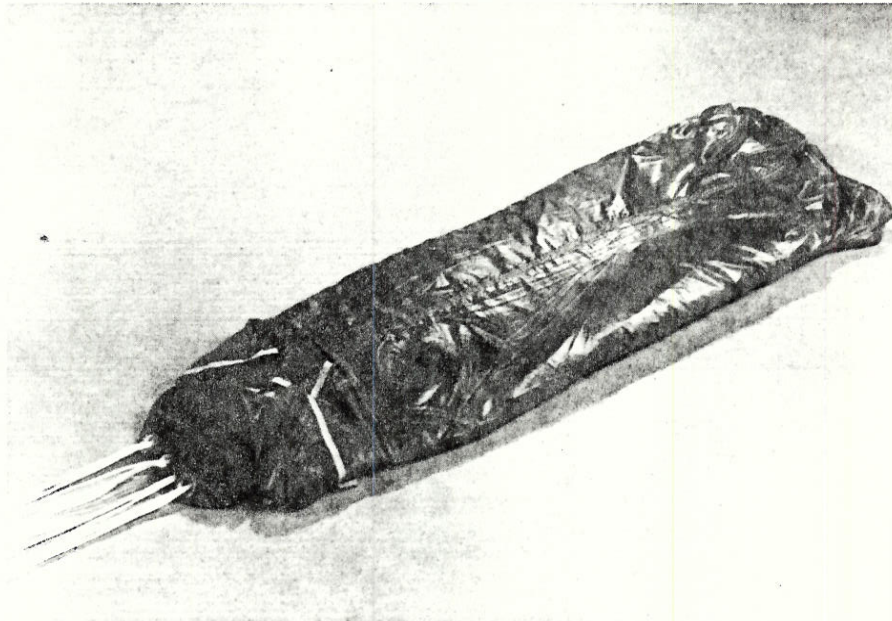


Fold the stabilizers over the slider.

STEP 12

WRAPPING THE TAIL

Figure B



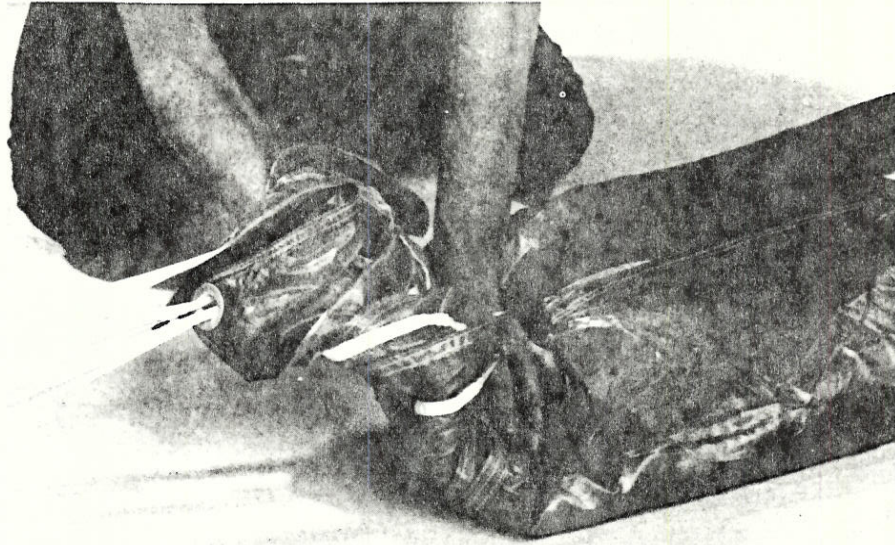
While kneeling on the tail, squeeze the air out of the canopy. Fold the sides under the canopy and dress it to the approximate width of the deployment bag.

NOTE: DO NOT wrap the center panel around the nose of the canopy.

FOLDING THE CANOPY INTO THE DEPLOYMENT BAG

STEP 13

Figure A

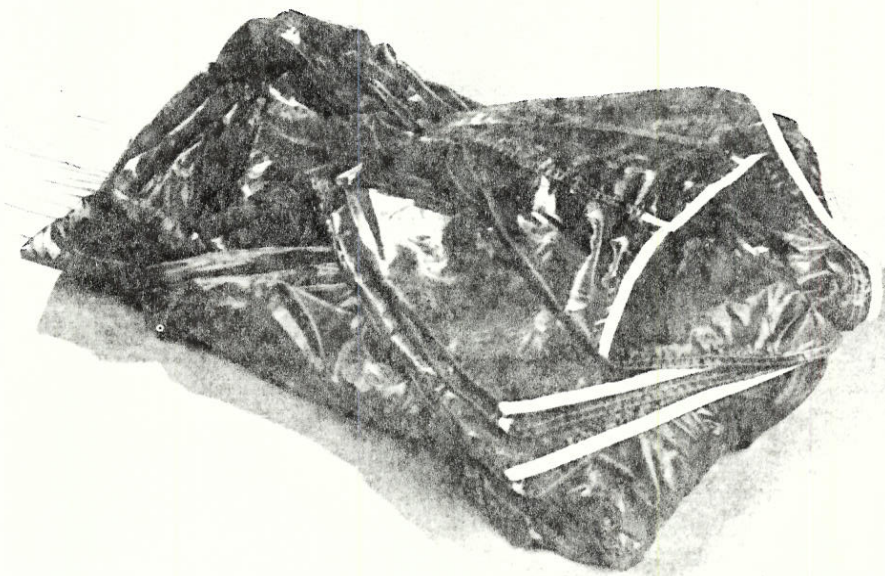
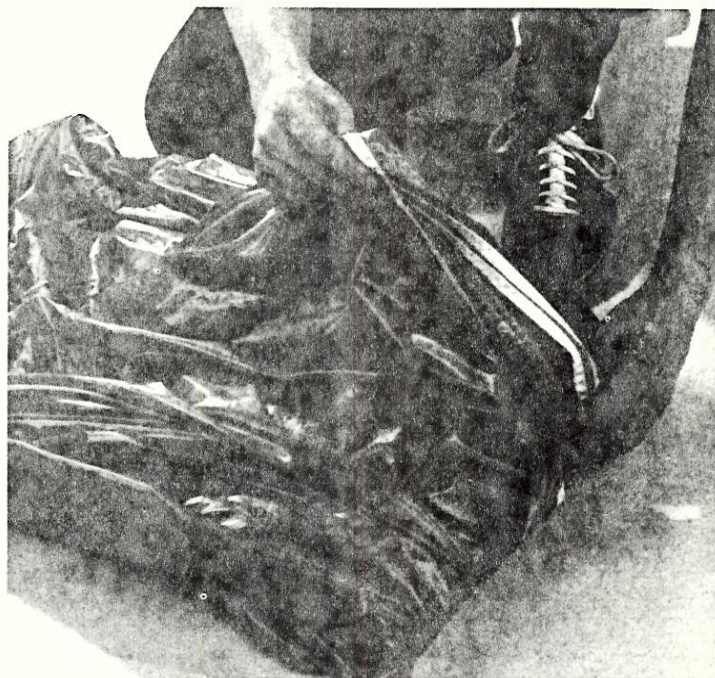


Fold the bottom eight inches of the canopy towards the top.
NOTE: The grommets are separated slightly to spread the bulk.

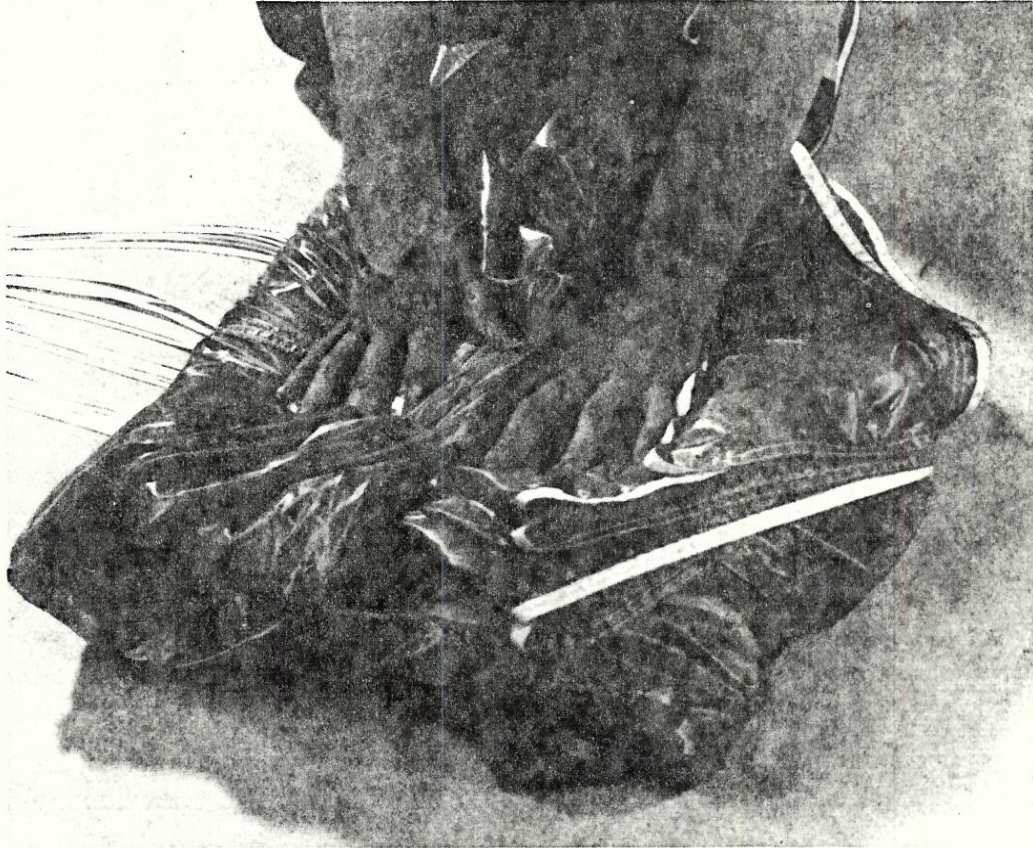
STEP 13



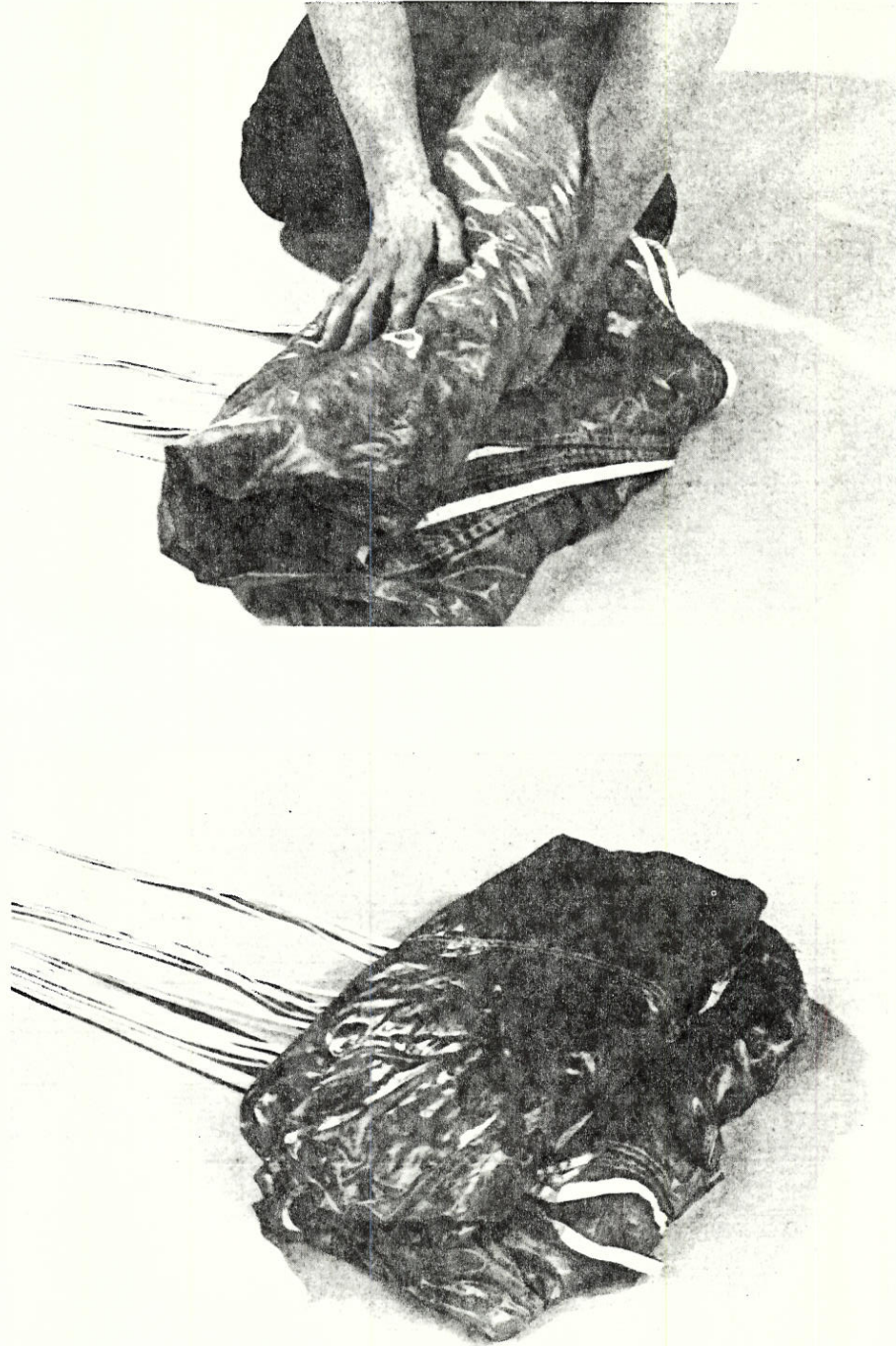
Figure B



Now fold the top of the canopy towards the container. Locate the high points of the leading edge, and ensure that they are **COMPLETELY** exposed. Redress the sides of the canopy to the approximate bag width.
NOTE: There are five high points on the Swift and Cirrus, and seven high points on the Swift Plus and Orion.



Fold the top of the canopy back as shown.

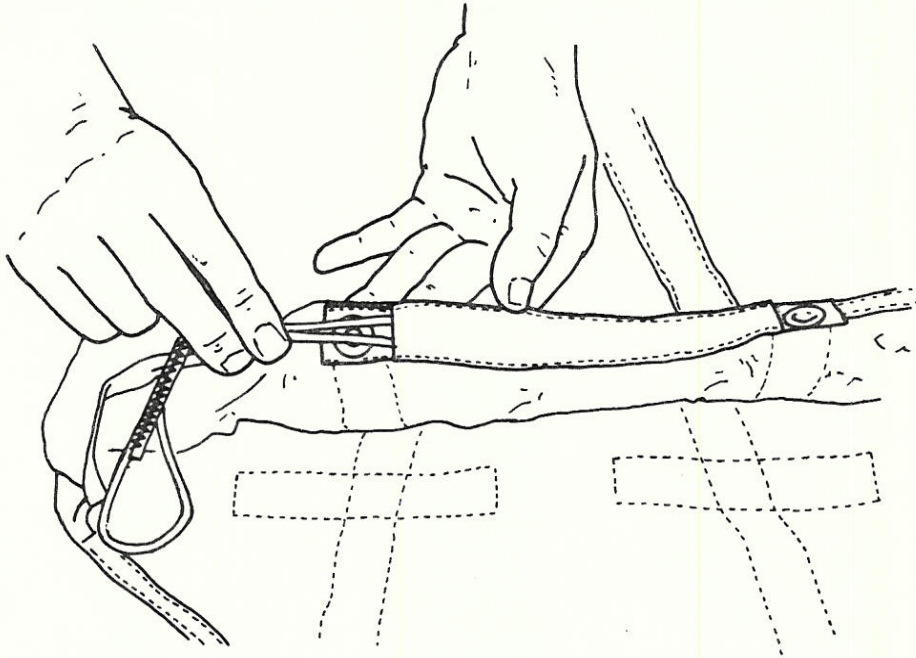


Fold the previous fold in half; this places the greater bulk of the canopy near the mouth of the bag after it is inserted. The top of the bag will have only one fold in it. This is important as it allows the bag to be wedge shaped. The folded canopy should be approximately as wide as the bag.

SAFETY STOW ASSEMBLY

STEP 14

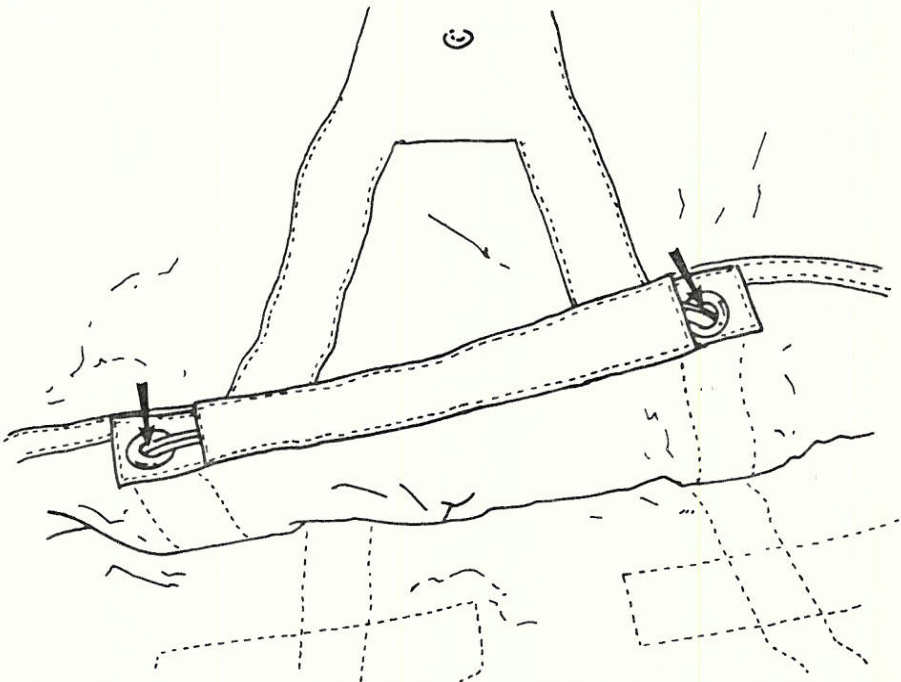
Figure A



Insert "Safety Stow" elastic loop in the channel. Center the loop splice between the grommets.

STEP 14

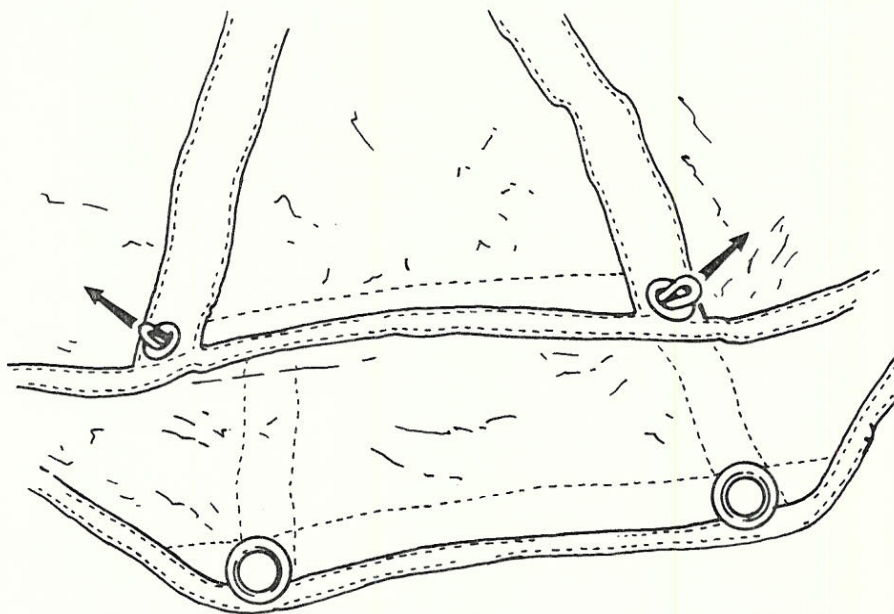
Figure B



After the loop is inserted, pass each end of the loop through the appropriate grommet. (*Inside View*)

STEP 14

Figure C

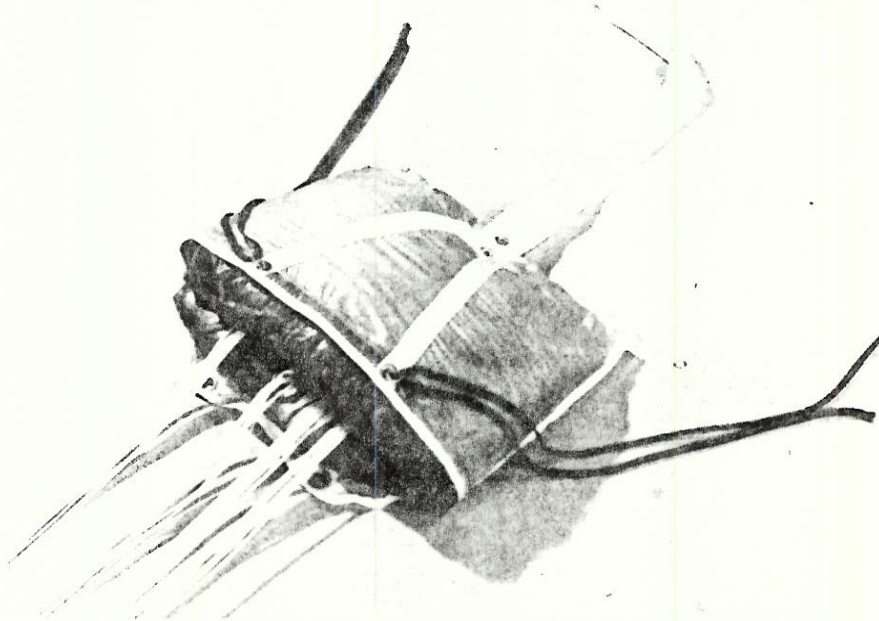


Outside view:

CAUTION: NEVER TACK THE ELASTIC LOOP TO THE DEPLOYMENT BAG OR CHANNEL. NEVER MODIFY THE LENGTH OF THE ELASTIC LOOP. USE LOOPS SUPPLIED BY PARAFILITE ONLY.

STEP 14

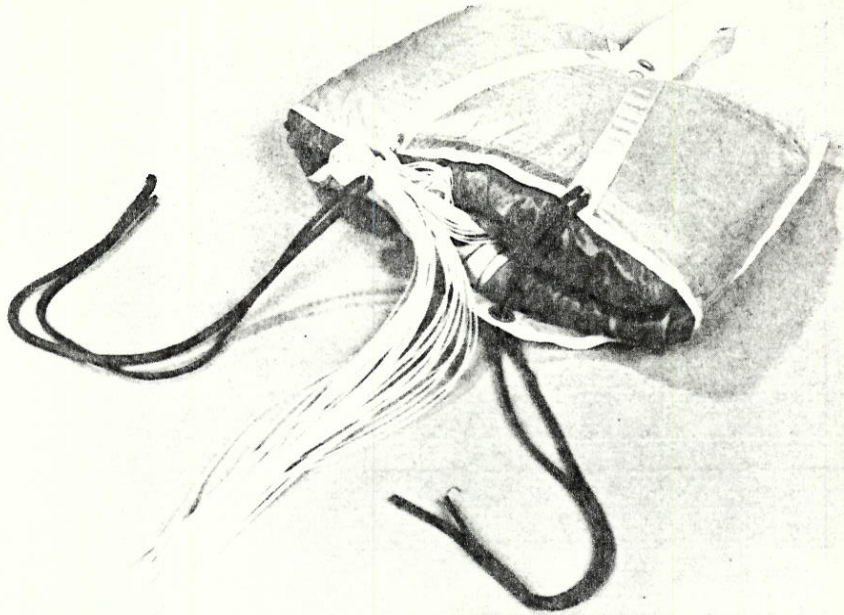
Figure D



Insert the pull-up cords through each loop.

STEP 14

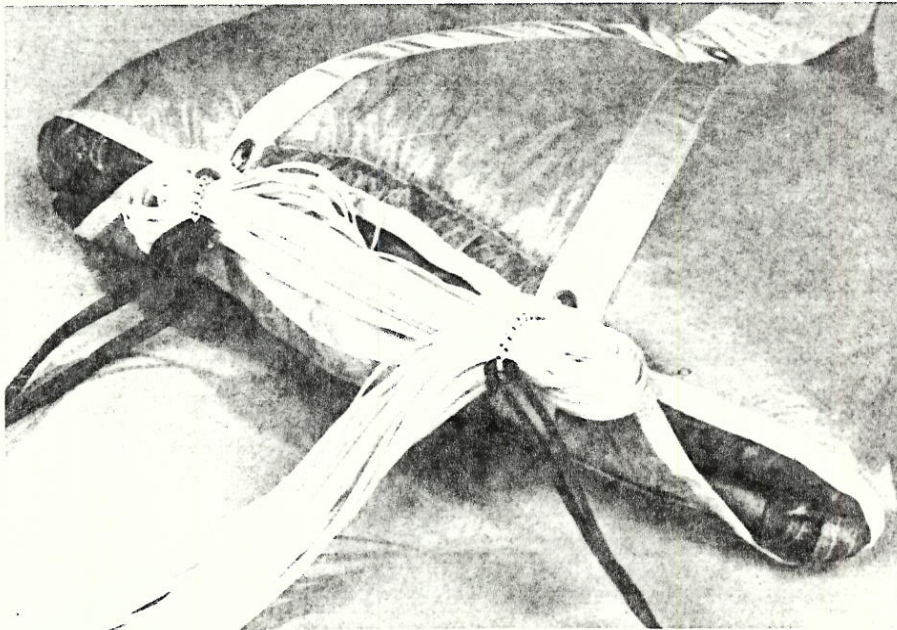
Figure E



Make the first locking stow using the elastic loop. AS ALWAYS, THE LOCKING STOWS SHOULD **NOT** BE MORE THAN ONE INCH IN LENGTH.

STEP 14

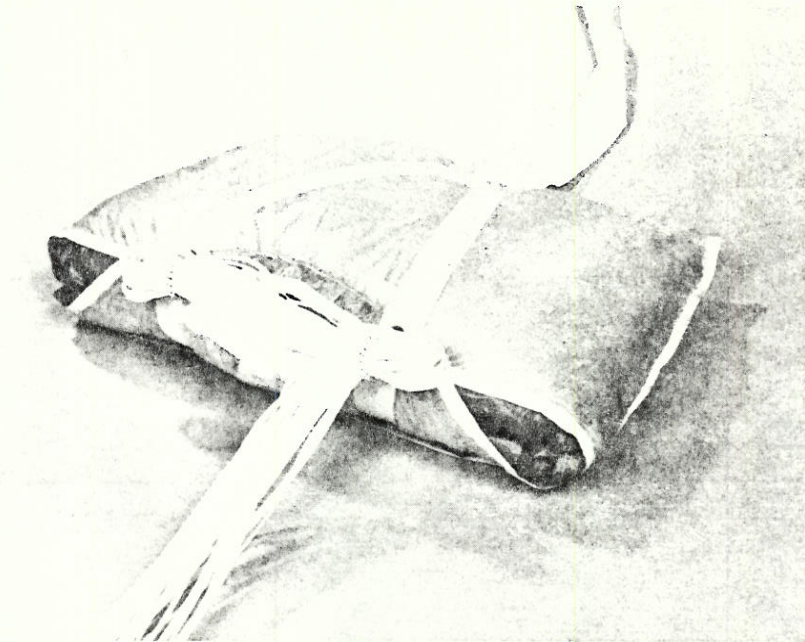
Figure F



Using the remaining pull-up cord to pull the elastic loop through the grommet, make the second locking stow.

STEP 14

Figure G



Remove the pull-up cords. DOUBLE CHECK TO SEE THAT BOTH PULL-UP CORDS HAVE BEEN REMOVED. COUNT THEM!!

SUSPENSION LINE STOWING

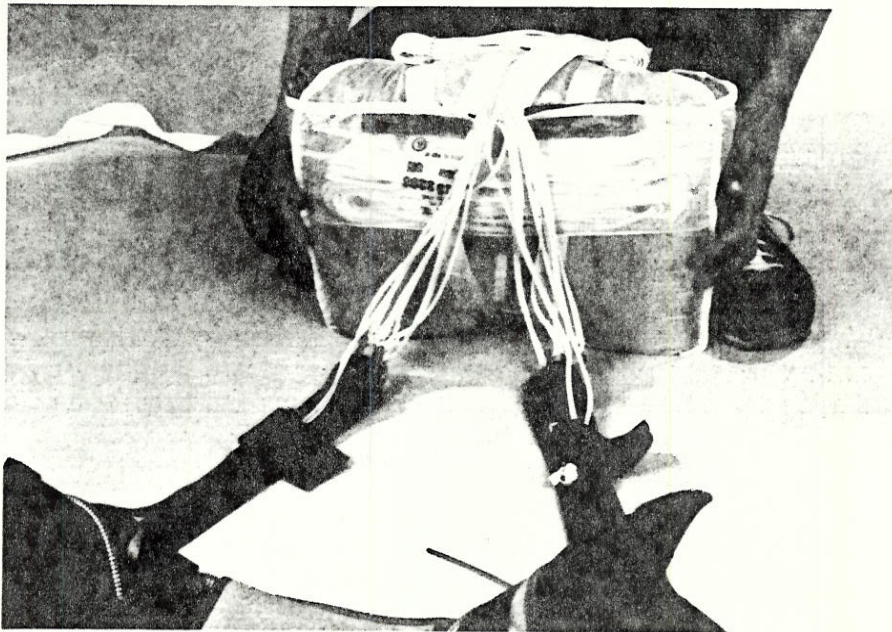
STEP 15

Figure A



Position yourself at the top of the bag facing the container. Rotate the bag up on its pointed end exposing the suspension line retaining pocket.

NOTE: Be very careful when stowing the Spectra® 1000 lines in the suspension line retaining pocket. Assure that the hook part of the velcro tape does not pull any fibers from the Spectra lines. Suggestion: Cover the hook velcro with a "Velcro Tab" temporarily.



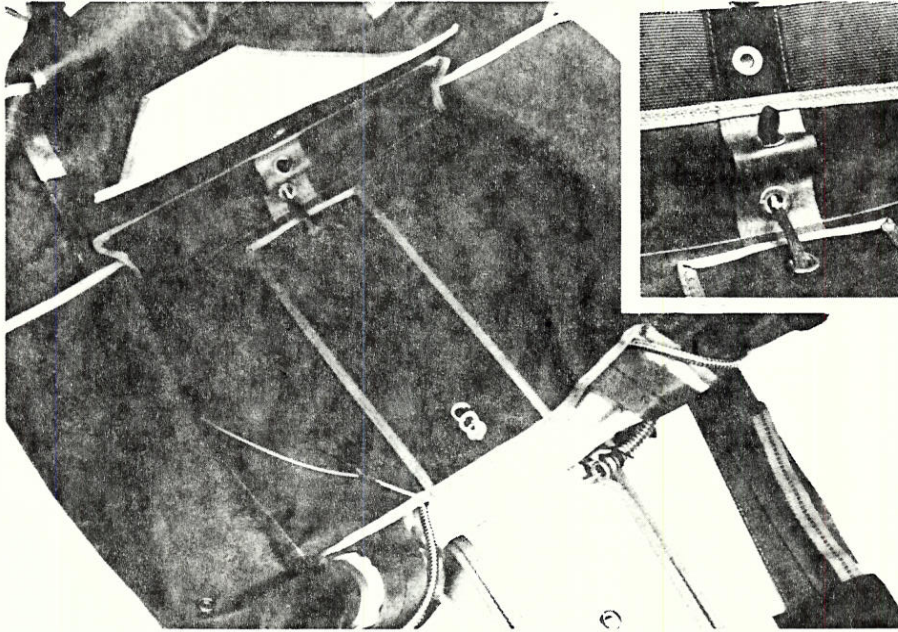
Neatly S-fold the lines into the pocket leaving approximately 8 to 10 inches of suspension line exposed as shown.

NOTE: If you used a "Velcro Tab" to cover the hook velcro remove them, close the suspension line retaining pocket and count your "Velcro Tab."

THE FOLLOWING INSTRUCTIONS COVER THE CIRRUS RESERVE, ORION RESERVE, SWIFT PLUS RESERVE AND SWIFT RESERVE CLOSING SEQUENCE IN A SWIFT CONTAINER SYSTEM ONLY. FOR THE CLOSING SEQUENCE IN CONTAINERS OTHER THAN THE SWIFT, FOLLOW THE APPROPRIATE MANUFACTURER'S INSTRUCTIONS.

STEP 16

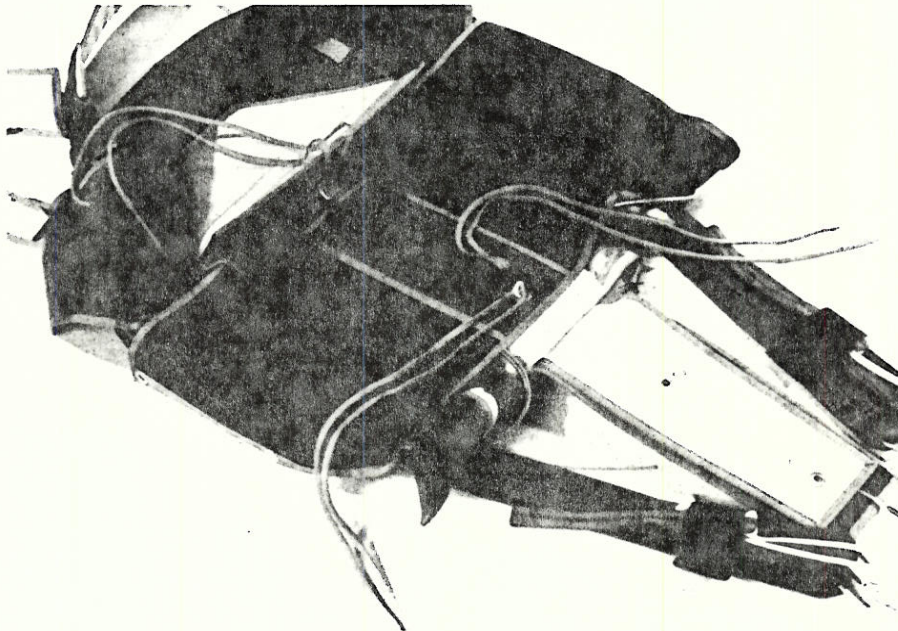
Figure A



Pass the closing loop through grommets in the bottom of the reserve container and through grommets in Main/Reserve divider flap as shown.

STEP 16

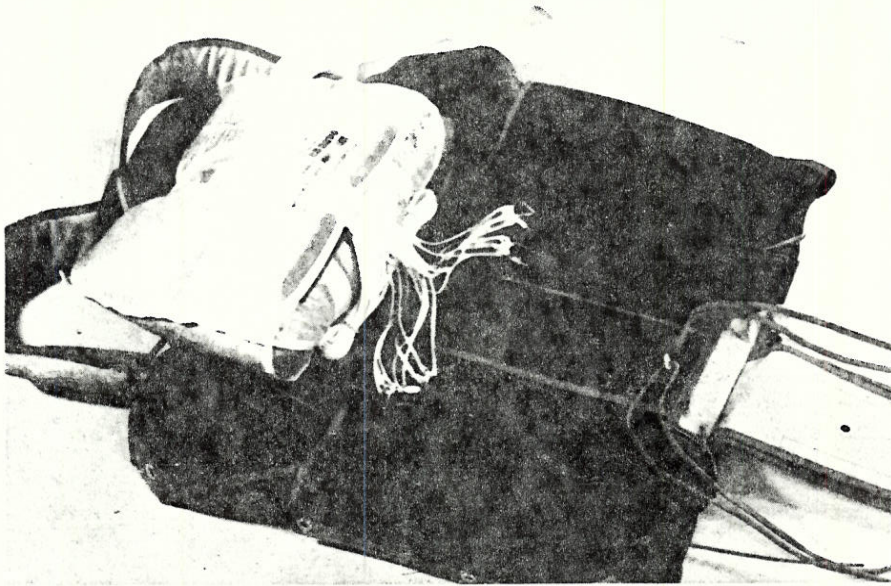
Figure B



Pass pull-up cords through closing loops and elastic locking loop.

STEP 16

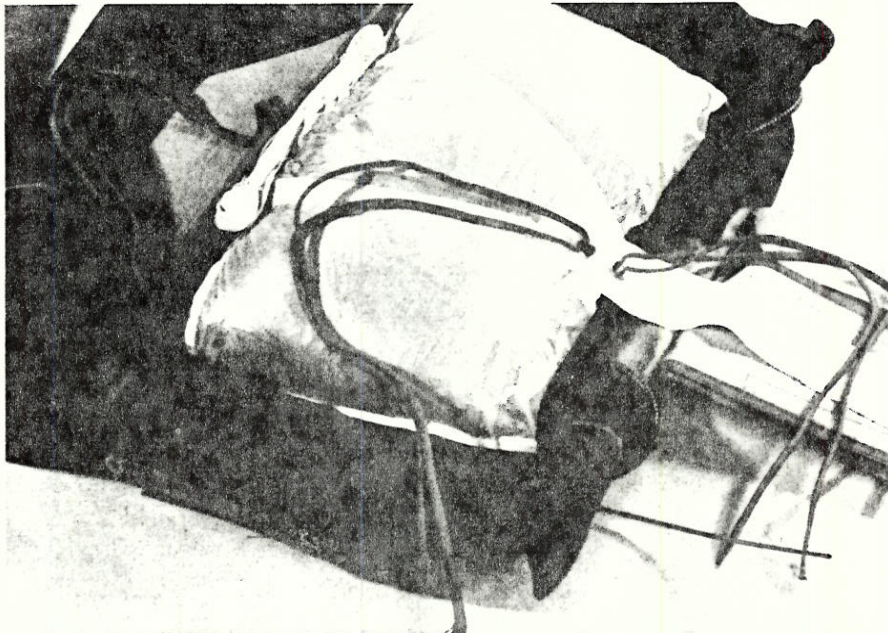
Figure C



Place the risers to the sides in the bottom of the reserve container. Spread the risers and connector links slightly to reduce bulk.

STEP 16

Figure D



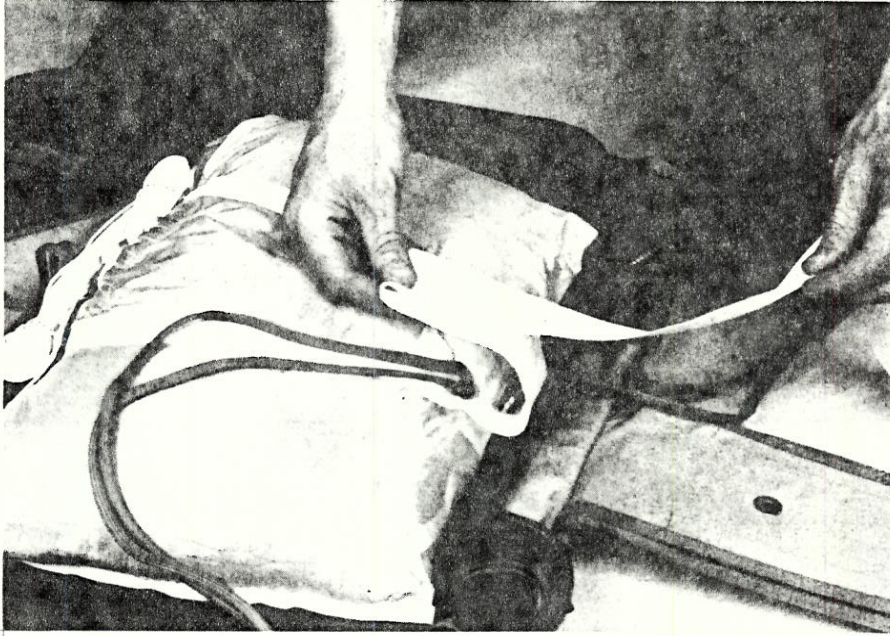
Place the deployment bag into the Swift container with the locking stows UP and the suspension line pocket DOWN. The bridle will point towards the top of the container.

Pass the pull-up cord holding the elastic locking loop through the top bridle grommet. Pass the pull-up cord holding the top closing loop through the 2nd grommet at the top of the bag.

SWIFT CONTAINER CLOSING

STEP 17

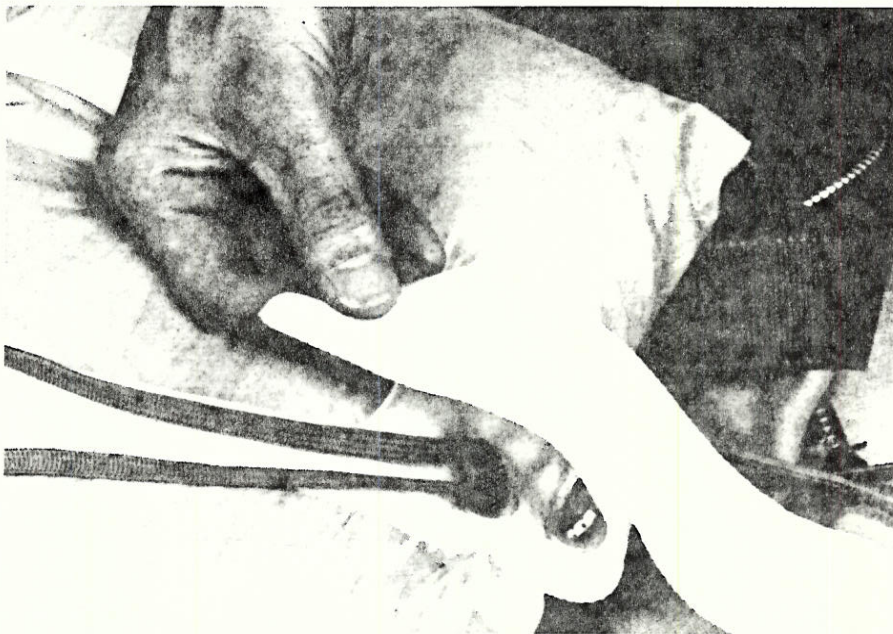
Figure A



The bag must be secured with a needle fold in the bridle line. To form the needle fold, first fold the bridle back over itself (*approximately 4" above the bag*).

STEP 17

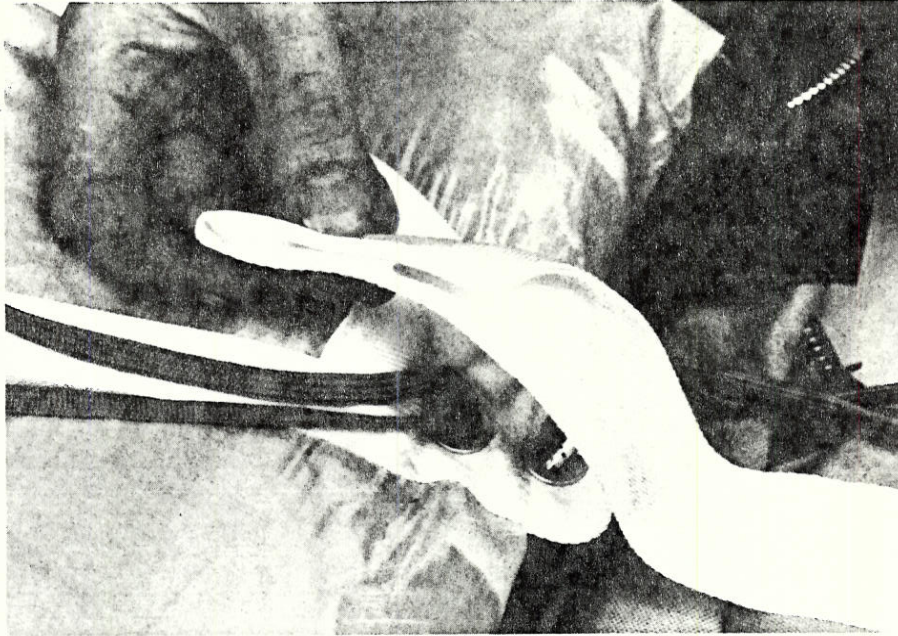
Figure B



Fold the left side up and across to the right side. This will form a triangle.

STEP 17

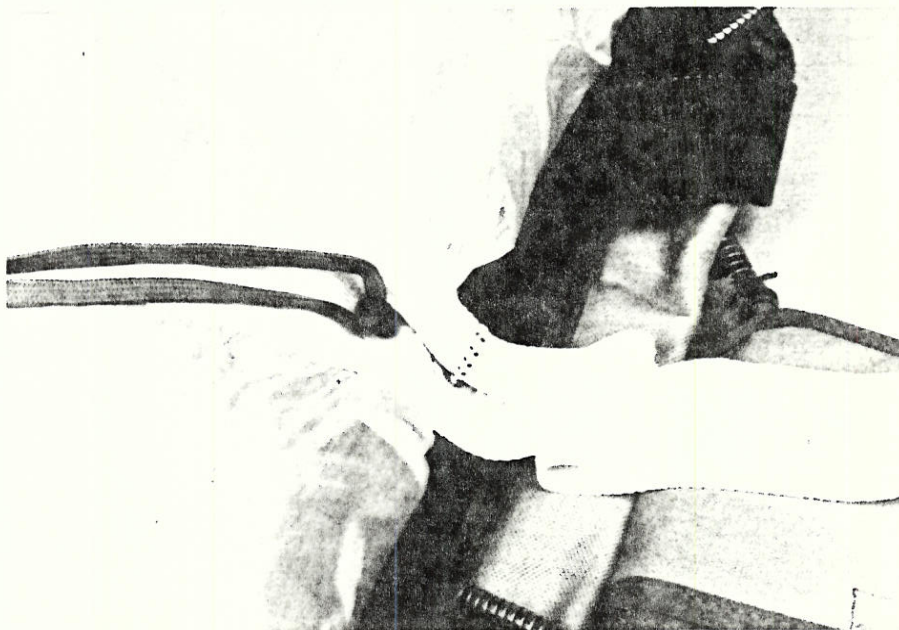
Figure C



Fold the triangle in half to form the needle fold.

STEP 17

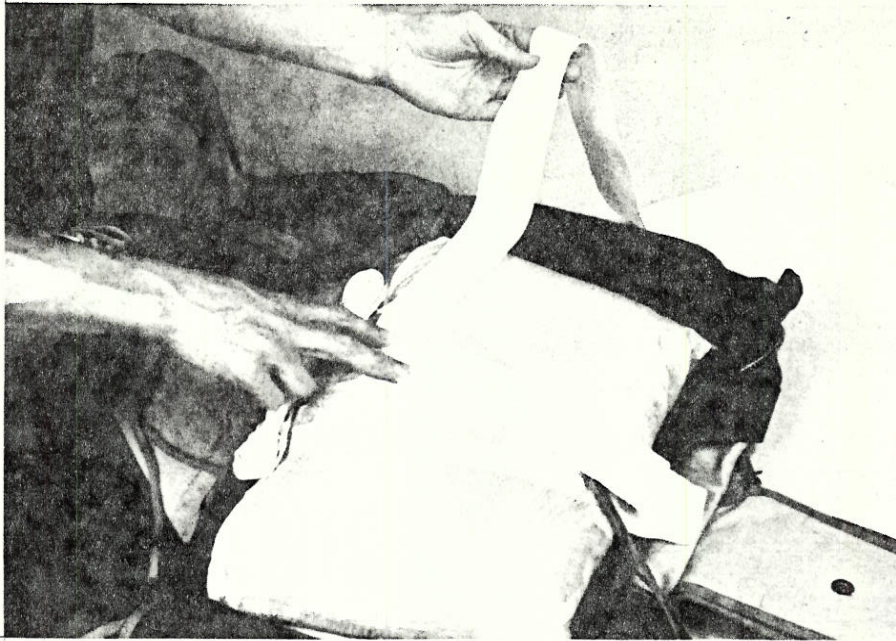
Figure D



Insert no more than 1" of the needle fold under the elastic locking loop. Be sure that the force required to extract the needle fold from the elastic locking loop is between 5 and 8 pounds.

STEP 18

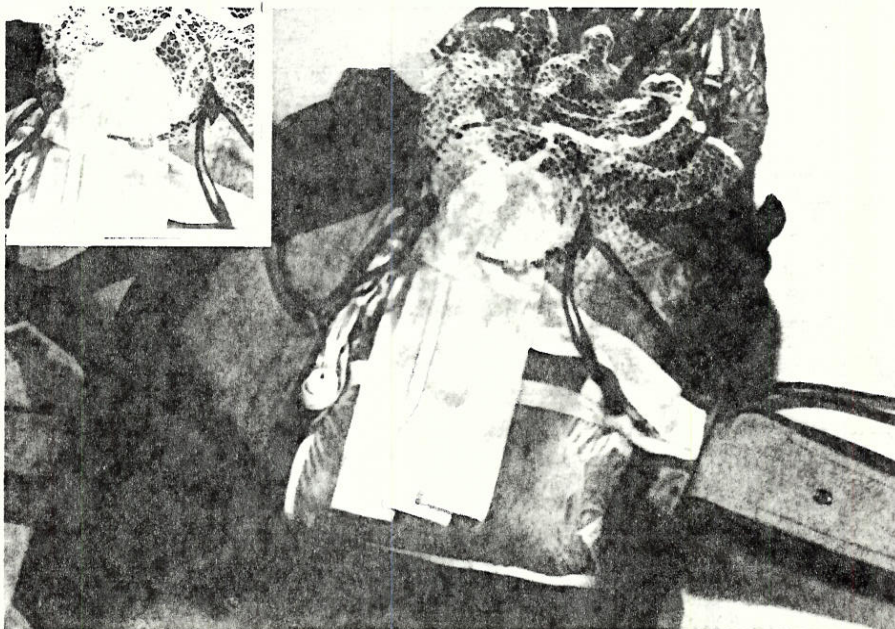
Figure A



The remainder of the bridle should be S-folded neatly under the pilot chute.

STEP 19

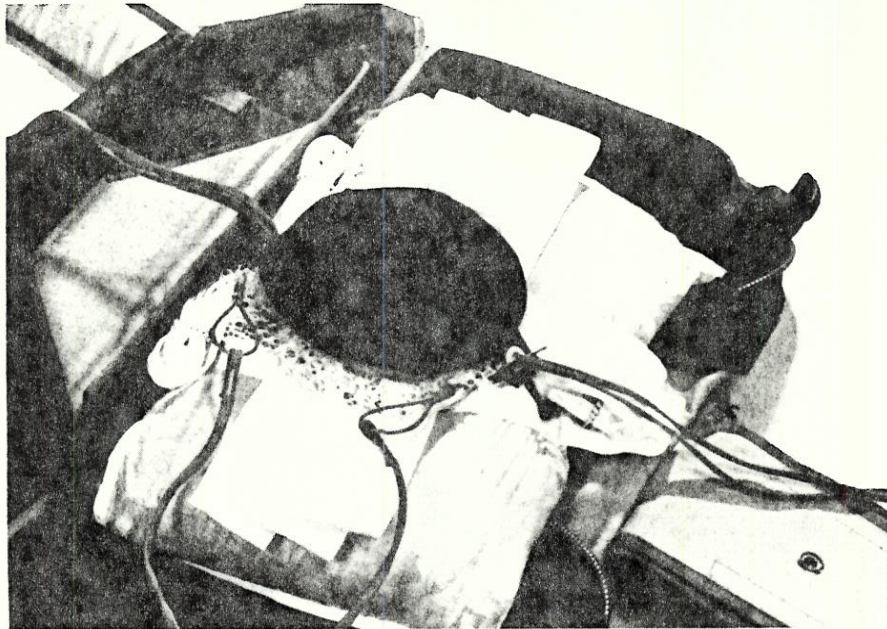
Figure A



Locate both lower pilot chute centering tabs, and pass the pull-up cords through the grommets.

STEP 20

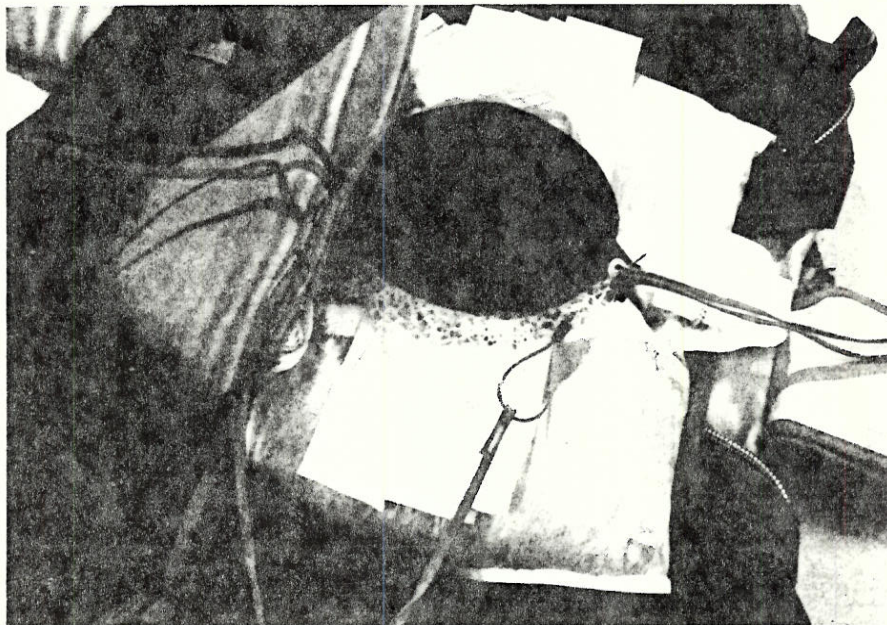
Figure A



Compress the pilot chute and pass the pull-up cords through the top pilot chute centering grommets; secure with temporary locking pins.
NOTE: The closing loop goes around the suspension lines.

STEP 21

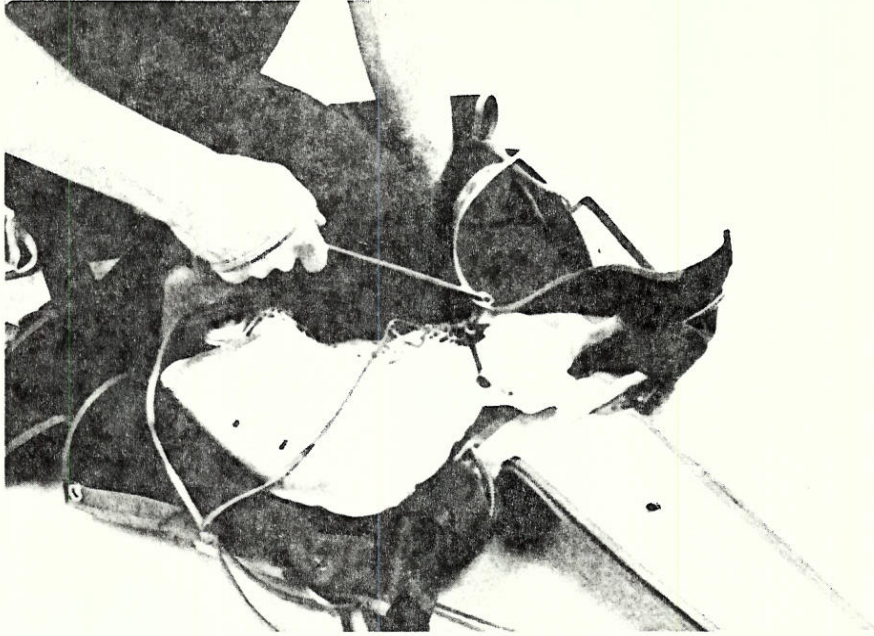
Figure A



Pass the bottom pull-up cord through the grommet on the reserve container bottom flap and secure with the temporary locking pin used on the bottom of the pilot chute.

STEP 22

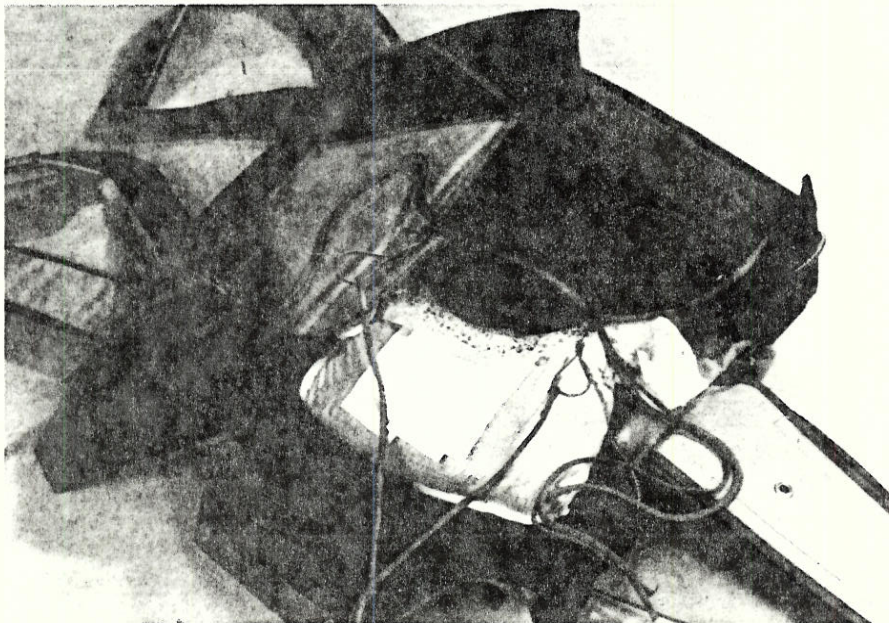
Figure A



Close the top of the left side flap and secure it with a temporary locking pin.

STEP 22

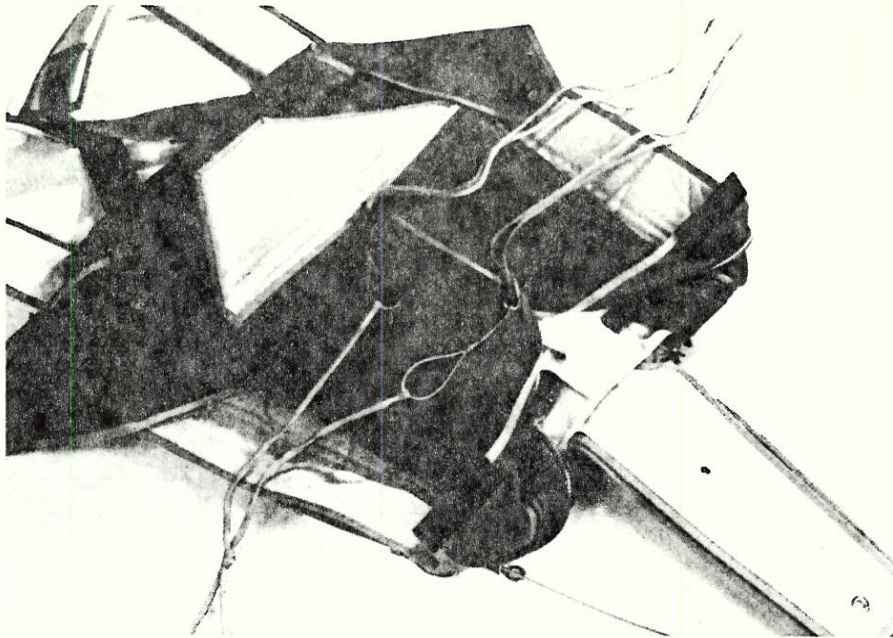
Figure B



Close the bottom of the left side flap and secure it with a temporary locking pin.

STEP 22

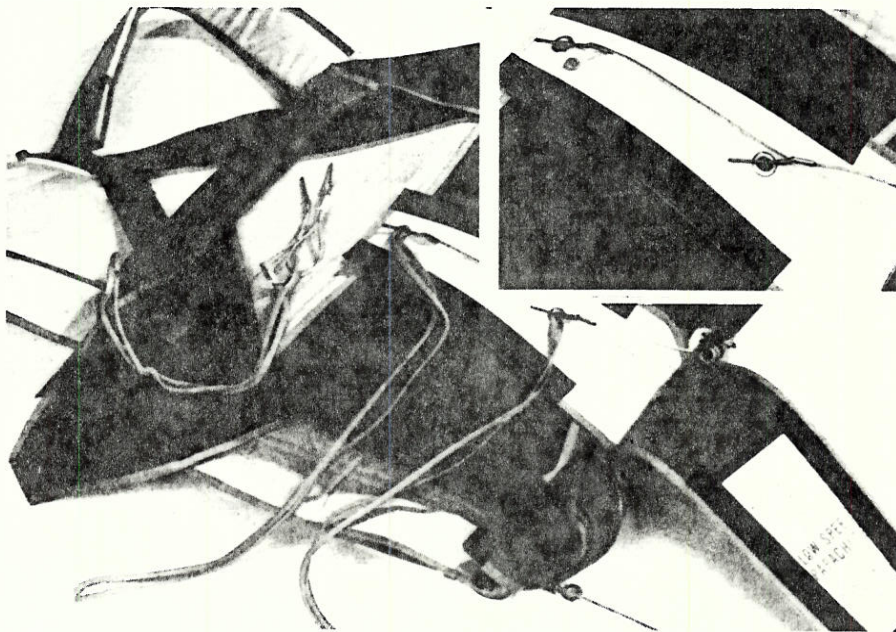
Figure C



Repeat this procedure on the other side.

STEP 23

Figure A



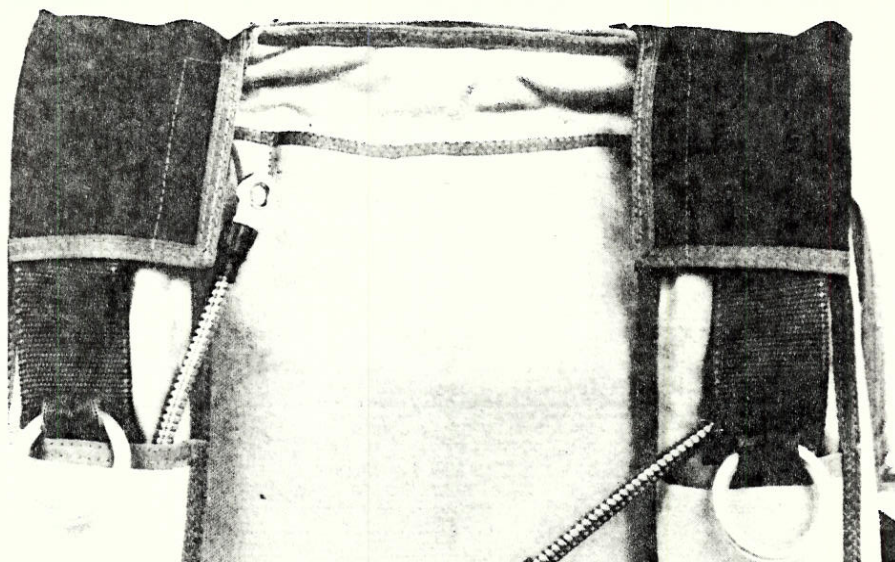
Pass the top pull-up cord through the top grommet on the reserve flap.
REMOVE THE TEMPORARY LOCKING PIN AND SECURE WITH THE RESERVE RIPCORD TOP PIN.

Repeat the procedure on the bottom loop.
Dress container and seal lower pin as usual.

NOTE: ENSURE THAT BOTH TEMPORARY LOCKING PINS AND PULL-UP CORDS HAVE BEEN REMOVED. COUNT THEM!

STEP 24

Figure A



NOTE: Secure the reserve riser covers.