



SUN PATH PRODUCTS, INC.

5037 Gall Blvd.
Zephyrhills, Florida 33541

(813) 782-9242

JAVELIN_{T.M.} OWNER'S MANUAL

REVISED SEPTEMBER 1988

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SUN PATH PRODUCTS INC.
5037 GALL BLVD.
ZEPHYRHILLS, FL 34248 U.S.A.
(813) 782-9242



US Department
of Transportation
Federal Aviation
Administration

Central Region
Atlanta Aircraft Certification Office
1609 Phoenix Parkway Suite 210
Atlanta, GA 30349

NOV 23 1987

Mr. Michael W. Furry
President
Sun Path Products Inc.
819 - 5th Avenue
Zephyrhills, FL 34248

Dear Mr. Furry:

This is in response to your October 3, 1987, request for Federal Aviation Administration (FAA) authorization to identify the below listed JAVELIN harness/container parachute system in accordance with the requirements of Federal Aviation Regulation (FAR) Part 21, Subpart O, Technical Standard Order (TSO) C23c, Category B, and SAE Aeronautical Standard AS-8015A:

<u>Part</u>	<u>Part Number</u>
Harness	JH-101()
Container System	JC-101()

We find your Statement of Conformance dated October 3, 1987, and your Quality Control Manual, dated September 15, 1987, acceptable.

The following data as submitted by your October 3, 1987, letter will be retained on file for this authorization:

- a. Sun Path Products, Inc., Inc. Test Report, dated September 4, 1987
- b. JAVELIN Products, Inc. Engineering Drawings submitted October 3, 1987
- c. JAVELIN Owner's Manual submitted October 3, 1987

Effective this date, you are authorized to identify the JAVELIN harness, Part Number JH-101, and container system, Part Number JC-101, with the appropriate TSO markings required by the applicable TSO and FAR 21.607 (d).

This authorization is not transferable to another person or location and is effective until surrendered, withdrawn, or otherwise terminated by the Administrator.

Your responsibilities as a holder of a TSO authorization are outlined in FAR 21.3 and FAR 21, Subpart O.

The TSO specialist for your program is Charles Perry, telephone number (404) 991-2910.

Sincerely,



Jack C. Bentley
Acting Manager, Airframe Branch



US Department
of Transportation
**Federal Aviation
Administration**

Central Region
Atlanta Aircraft Certification Office
1669 Phoenix Parkway, Suite 210
Atlanta, GA 30349

JUN 8 1988

Mr. Michael W. Furry
President
Sun Path Products, Inc.
5037 Gall Boulevard
Zephyrhills, Florida 34248

Dear Mr. Furry:

This is in response to your May 4, 1988, letter in which you advised the Federal Aviation Administration of a change of address for Sun Path Products, Inc. to 5037 Gall Boulevard, Zephyrhills, Florida 34248. TSO approvals for the JAVELIN parachute harness, P/N JH-101 and container system, P/N JC-101 were issued to Sun Path Products, Inc. at the previous address on November 23, 1987.

We have been in contact with Mr. Oscar Tidwell of our Lakeland office. Mr. Tidwell conducted an inspection of your new facility on May 2, 1988, and found everything to be satisfactory. Your revised Quality Control Manual dated April 30, 1988, has also been reviewed and found acceptable by Mr. Tidwell. This document will be retained at the Lakeland office. The technical data submitted for the previous authorization will also be retained by the Atlanta Aircraft Certification Office for this authorization.

Effective this date you are authorized to manufacture the JAVELIN harness, P/N JH-101 and container system, P/N JC-101 at your new facility under TSO-C23c, Category B of SAE Aeronautical Standard AS-8015A. This authorization is not transferable to another person or location and is effective until surrendered, withdrawn or otherwise terminated by the Administrator. Your responsibilities as a holder of a TSO authorization are outlined in FAR 21, Subpart O and FAR 21.3.

Sincerely,

Donald T. Buckley
Manager, Airframe Branch

The purpose of this manual is to acquaint the prospective user with the functions, packing procedures and other features of the JAVELIN harness/container system. It is NOT intended to be a course in parachute jumping. This manual should be read and understood by anyone who intends to use a JAVELIN system for sport parachuting, however, it is the responsibility of the owner to be sure that the JAVELIN is correctly assembled, packed, maintained and used. It is also the jumper's own responsibility to assure that he is qualified for participation in sport parachuting activities.

!!! WARNING !!!

PARACHUTING IS A HAZARDOUS ACTIVITY, AND THERE ARE DANGERS WHICH SOMETIMES CANNOT BE FORSEEN. NO ONE SHOULD ATTEMPT TO MAKE A PARACHUTE JUMP UNLESS HE HAS BEEN THOROUGHLY TRAINED BY AN EXPERIENCED AND QUALIFIED INSTRUCTOR. THERE ARE NO GUARANTEES THAT ANY EQUIPMENT WILL FUNCTION AS INTENDED, REGARDLESS OF HOW IT IS ASSEMBLED, PACKED, MAINTAINED OR USED. SERIOUS INJURY OR DEATH CAN RESULT FROM THE USE, MISUSE, OR ATTEMPTED USE OF ANY PARACHUTE EQUIPMENT.

!!! THE USER ASSUMES ALL RISKS !!!

JAVELIN OWNER'S MANUAL

T.M.

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INTRODUCTION

The JAVELIN is a sport parachute harness/container system featuring back-mounted main and reserve canopy containers. The reserve container is characterized by the partially exposed top plate of the reserve pilot chute, which is packed on top of the side flaps.

The JAVELIN is equipped with the 3-Ring release system under a license agreement with The Relative Workshop Incorporated. Other standard features include throw-out hand deployed main pilot chute, single-pin reserve closure, step-in leg straps and "wrap around" harness construction. This type of harness construction produces junctions which are not limited to the strength of the stitches. In the JAVELIN, the harness junctions are stronger than the webbing itself.

The reserve container will accept either a round or ram-air reserve canopy. For ram-air reserves, the JAVELIN is supplied with the unique "MOLAR-BAG", a free-bag which features zero thickness where the closing loop passes through it, eliminating the need for any preliminary fid or preliminary pull-up cord when packing the canopy into it. This also prevents any of the canopy fabric from coming into contact with the closing loop.

Design and testing of the JAVELIN was accomplished over a period of eighteen months, and has resulted in one of the most "RIGGER-FRIENDLY" systems on the market. There is no additional sewing or tacking required to assemble the JAVELIN with canopies, and no "special techniques" are necessary to pack it. An FAA certified rigger with current skills should be able to assemble and pack the JAVELIN by following the instructions in this manual.

The JAVELIN harness/ container system has been tested in accordance with AS-8015A, and is approved by the FAA under TSO C-23c, Category B.

PARTS LIST

The JAVELIN is shipped to the customer with the following components:

HARNESS/CONTAINER
MAIN RISERS WITH CONTROL TOGGLES
MAIN DEPLOYMENT BAG
RELEASE HANDLE (CUTAWAY HANDLE)
MAIN (HAND-DEPLOY) PILOT CHUTE AND BRIDLE
* RESERVE PILOT CHUTE WITH:
 BRIDLE FOR ROUND RESERVE
 -or-
 BRIDLE AND "MOLAR" FREE-BAG FOR RAM-AIR RESERVE #
RESERVE RIPCORD
RESERVE CONTROL TOGGLES
MAIN LOCKING LOOP
RSERVE LOCKING LOOP
ONE EXTRA LOCKING LOOP
RUBBER BANDS
RESERVE PACKING DATA CARD
JAVELIN OWNER'S MANUAL

- * Only the JAVELIN reserve pilot chute may be used with the JAVELIN harness/container system. Do not substitute any other pilot chute.
- # Only the "molar" free-bag may be used when packing a ram-air reserve canopy into the JAVELIN harness/container system.

All components listed above are also available individually from:

SUN PATH PRODUCTS INC.
5037 GALL BLVD.
ZEPHYRHILLS, FL 34248 U.S.A.
(813) 782-9242

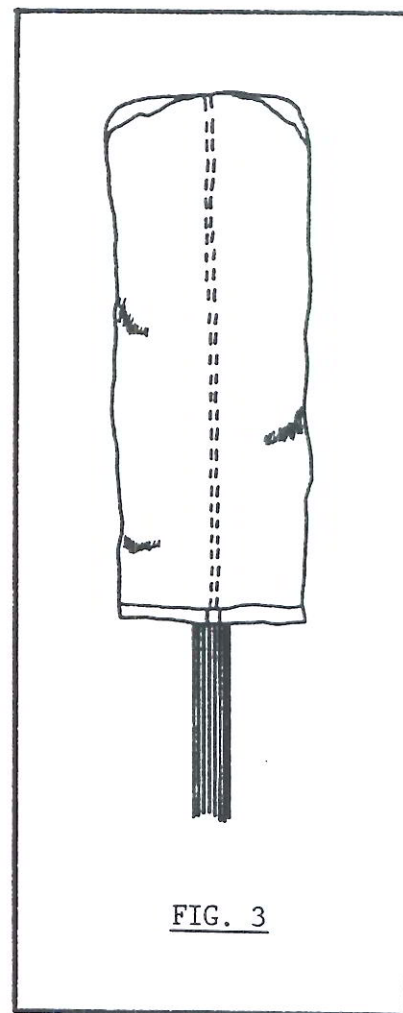
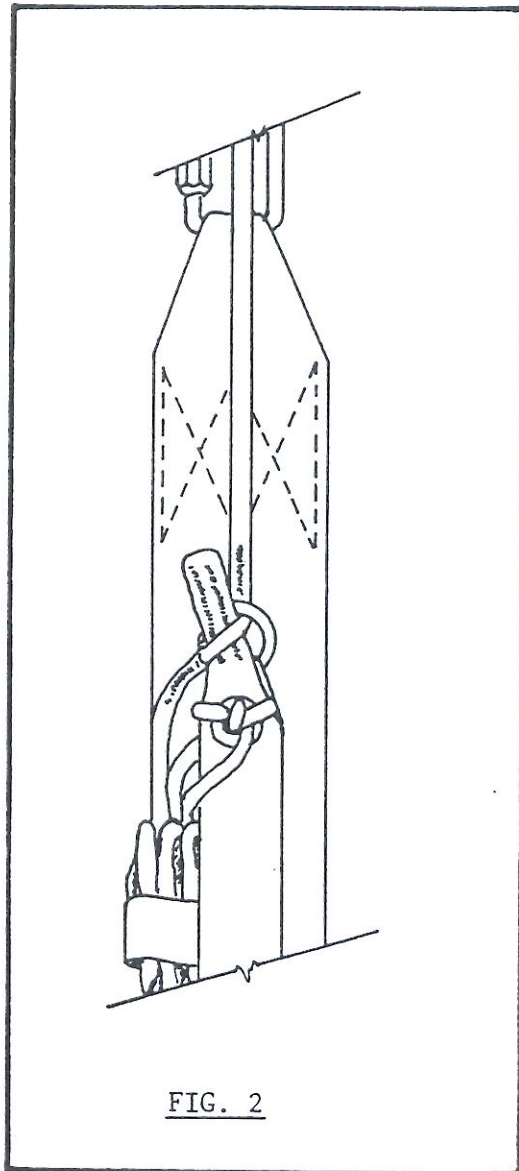
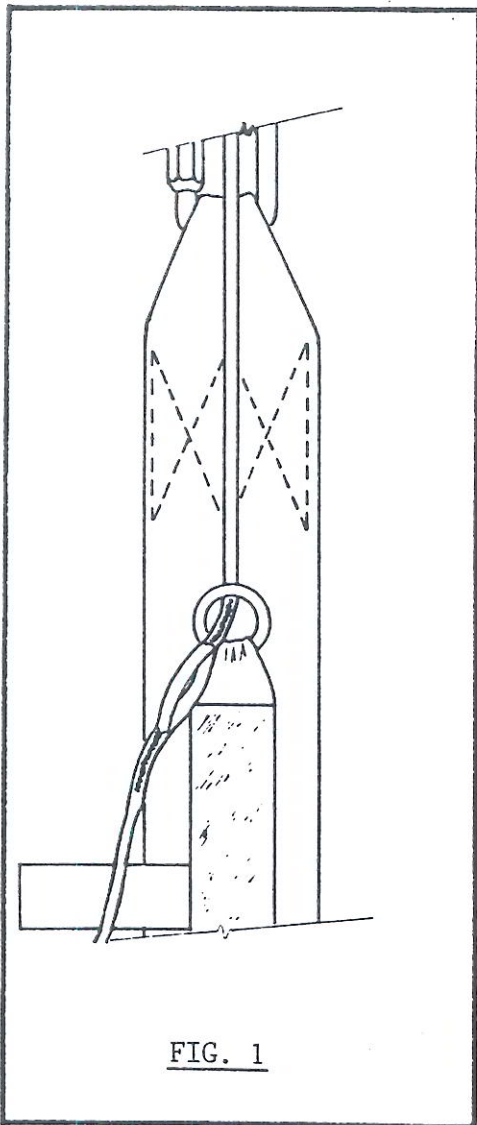
JAVELIN

MAIN PACKING INSTRUCTIONS

This chapter deals with the procedures for packing the main canopy into the JAVELIN harness/container system. Assembly and packing of the main must be done by an FAA certified rigger or by the person making the jump.

- 1) Carefully inspect the main canopy, suspension lines, control lines, slider and grommets, connector links, etc., before assembling it with the risers. Replace or repair any worn or damaged parts. Also inspect the deployment bag, bridle, and pilot chute.
- 2) Attach the main canopy to the main risers, being sure that the canopy is facing the same direction as the harness/container system, and that each suspension line is clear from its attachment point all the way through the slider grommet to the connector link without passing around any other line. Be sure the control lines are clear from the trailing edge of the canopy through the slider grommets and through the ring guides on the rear risers to the control toggles. Each control toggle must be SECURELY tied to its control line at the location specified by the canopy manufacturer. Also be sure that the connector links are tight enough so that they cannot be loosened with the fingers alone.
- 3) Pass the pilot chute bridle down through the grommet in the top of the deployment bag and attach it to the ring on the top of the main canopy. Be sure that the stop-ring on the bridle is between the bag and the pilot chute.

- 4) Set the deployment brakes on each side by pulling the control line down through the guide ring until the brake loop just passes through the guide ring (FIG. 1). Insert the stiffened upper portion of the toggle through the loop and pull it back up tightly against the ring guide. "S"-fold the slack between the toggle and the brake-set, and stow it in the velcro loop provided, then mate the velcro on the toggle with the velcro on the riser (FIG. 2).
- 5) At this point, refer to the directions by the canopy manufacturer for flaking and folding the canopy. After flaking and folding it should resemble FIG. 3. (Be sure the slider is up as far as it will go against the canopy.)



- 6) Stack the canopy in "S" folds as shown in FIG. 4, keeping the slider up against the canopy and keeping the slack out of the lines. The stacked canopy should be 3-4 inches wider than the bag.

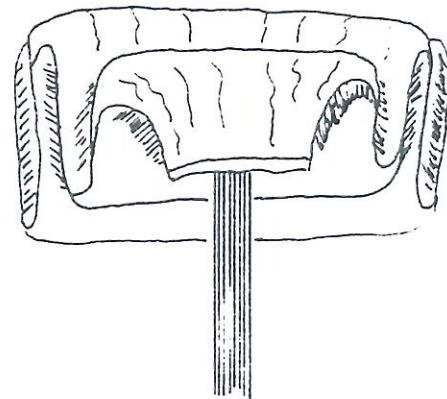


FIG. 4

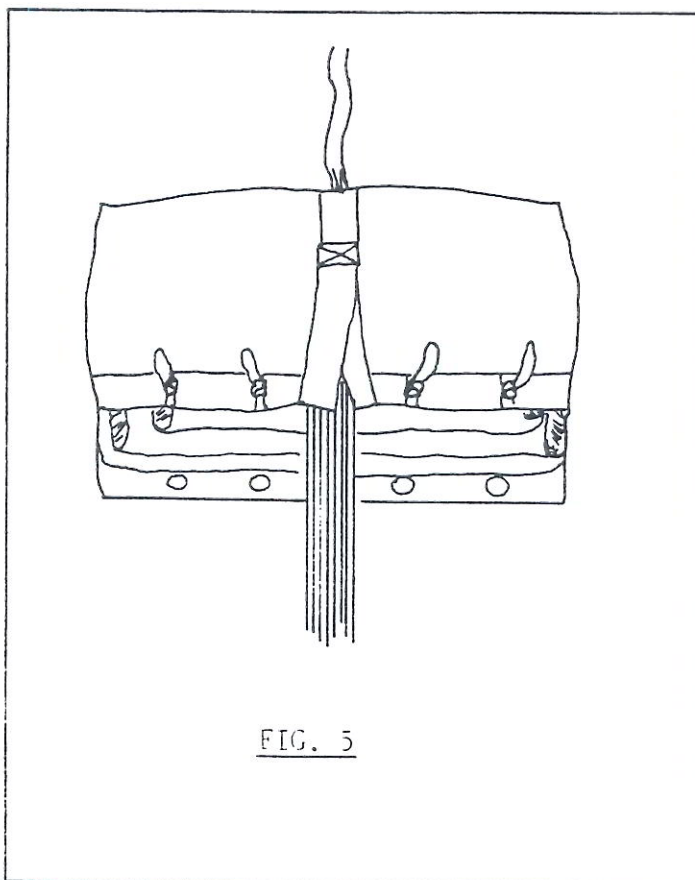


FIG. 5

- 7) Pull the bag down onto the canopy. Try to fill the corners and sides of the bag to distribute the bulk evenly and avoid forming a lump in the middle (FIG. 5). Mate the velcro to close the split in the center of the bag.

- 8) Make the locking stows with the suspension lines to close the mouth of the bag. On the smaller model bags, there are two locking stows; the larger model bags have four locking stows. (SEE FIG. 6)

During this part of the packing procedure always make sure that the rubber bands used for the locking stows are strong and in good condition. The weight of the canopy inside the bag comes to bear on these locking stows when the canopy is lifted off the jumper's back during deployment, and a broken locking stow at this point may result in an out-of-sequence deployment.

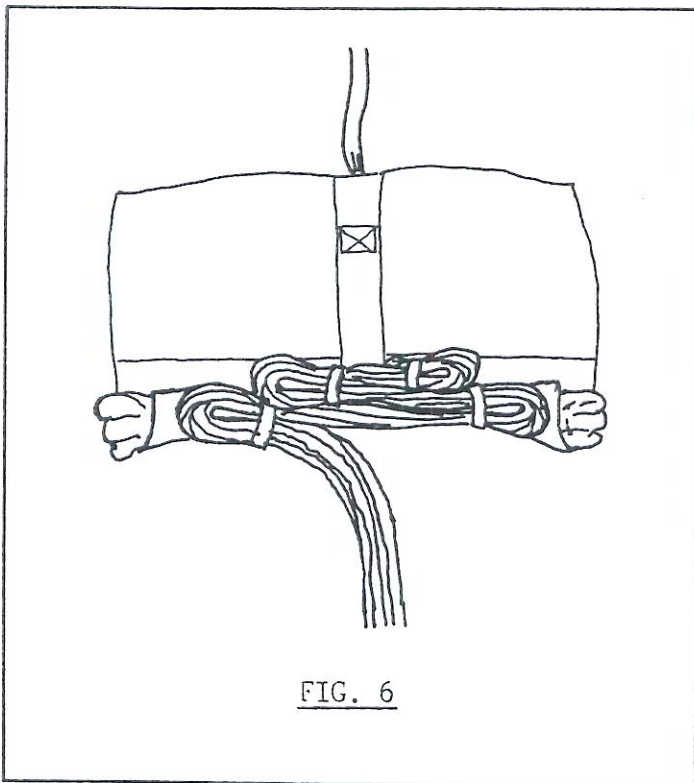
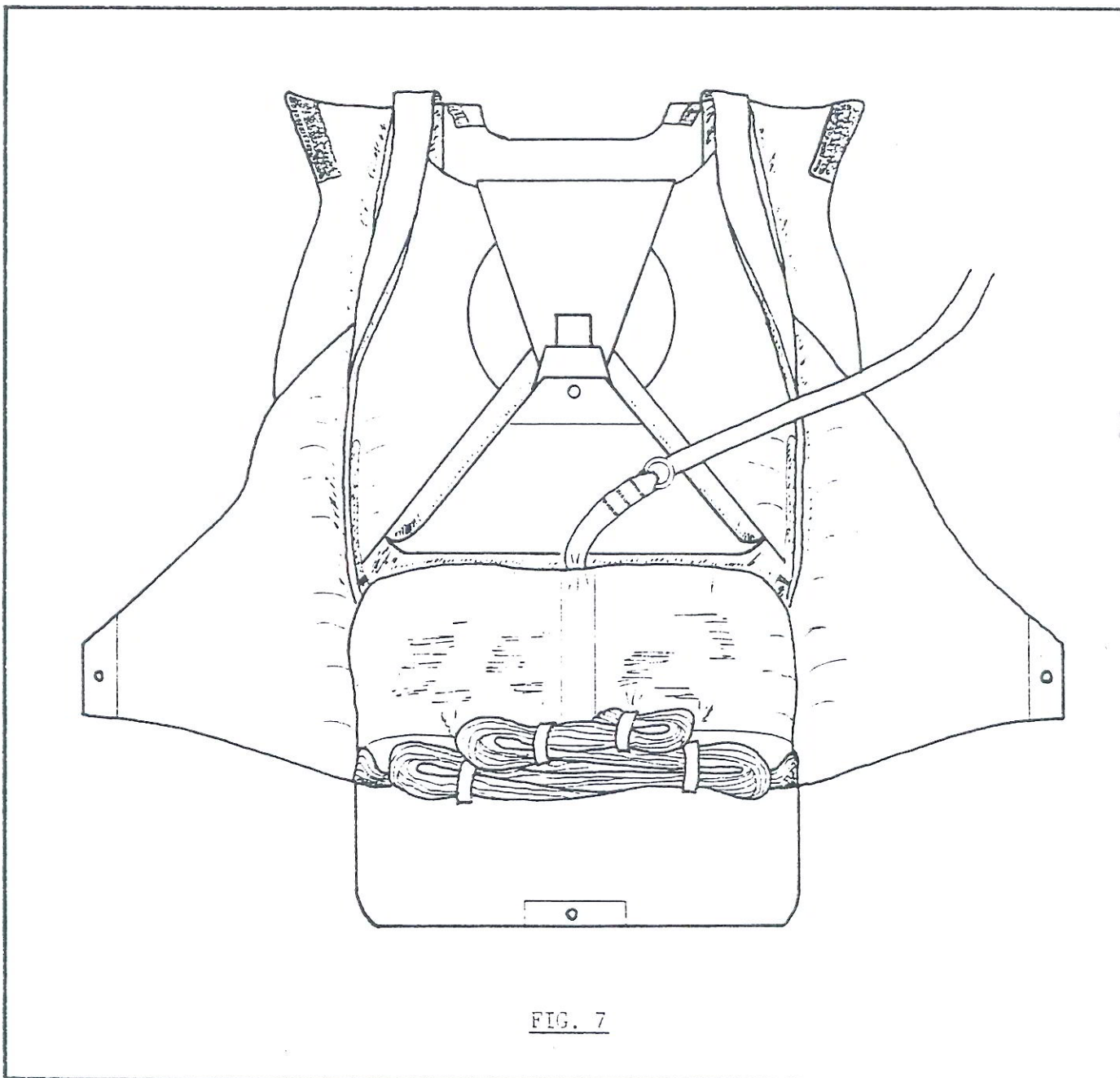


FIG. 6

- 9) Pull the bridle out the top of the bag until the metal ring of the canopy is seated against the grommet of the bag. Be sure there is no canopy fabric between the ring and the grommet. Now stow the remainder of the suspension lines across the bottom of the bag in the rubber bands at each end. Leave 12" to 15" of lines unstowed between the bag and the connector links.

- 19) Lay the risers in the "trough" between the sides of the reserve container and the riser covers, and place the connector links in the lower corners. Place the bag in the container with the line stows toward the bottom. This position is important; if the line stows are toward the top, it may be more difficult for the pilot chute to extract the bag. (FIG. 7)

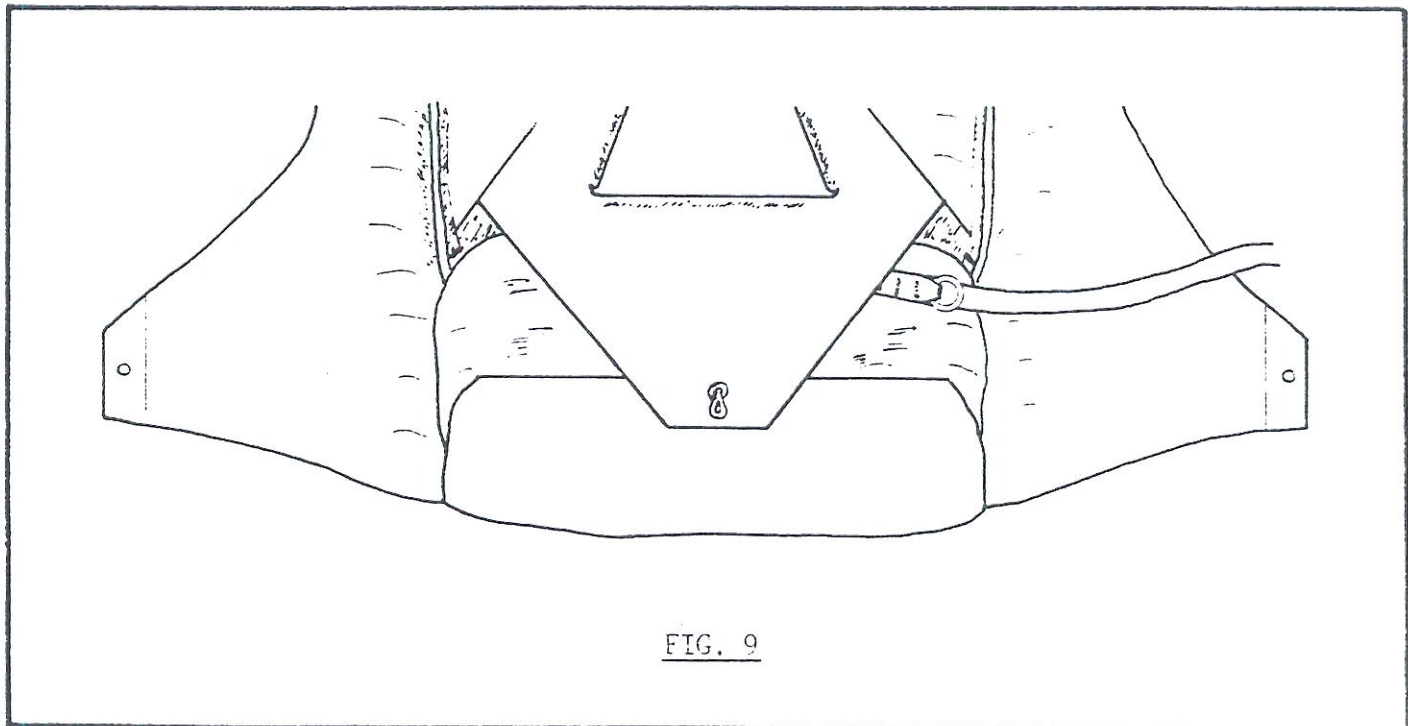
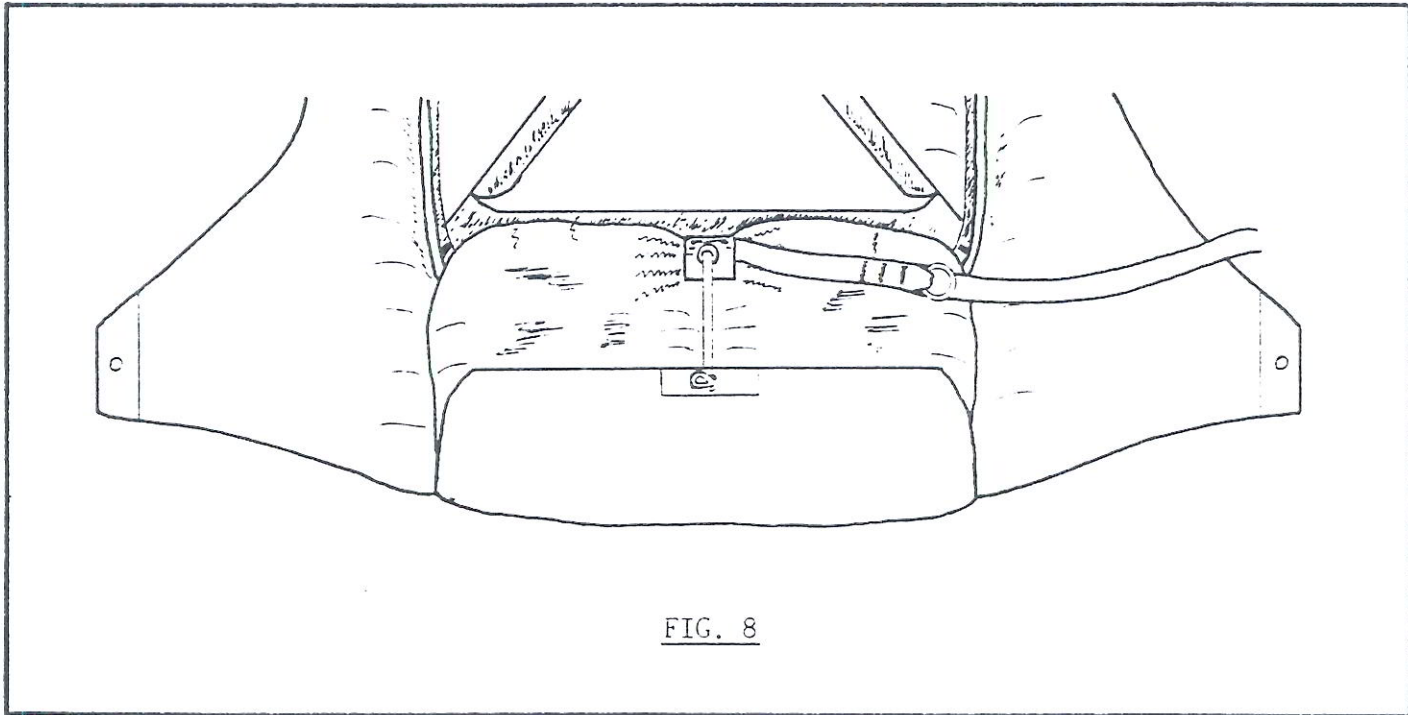


If your JAVELIN is equipped with the THROW-OUT pilot chute, continue with the next page of these instructions.

If your JAVELIN is equipped with the PULL-OUT pilot chute, skip to page 15 of these instructions.

- 11) Thread the pull-up cord through the closing loop and bring the closing loop over the top of the bag. The bridle should be routed to the right of the closing loop. Thread the pull-up cord through the bottom flap grommet and close the bottom flap (FIG. 8).

- 12) Close the top flap, keeping the bridle to the right (FIG. 9).



- 13) Close the right side flap, then the left side flap, routing the bridle out the upper right side of the container. To close the container, insert the curved pin attached to the bridle into the closing loop. Remove the pull-up cord SLOWLY to avoid wearing the loop. Mate the two small velcro pieces together on the bridle just above the curved pin. This is very important; it assures that the pilot chute will have sufficient slack to extract the curved pin (FIG. 10).

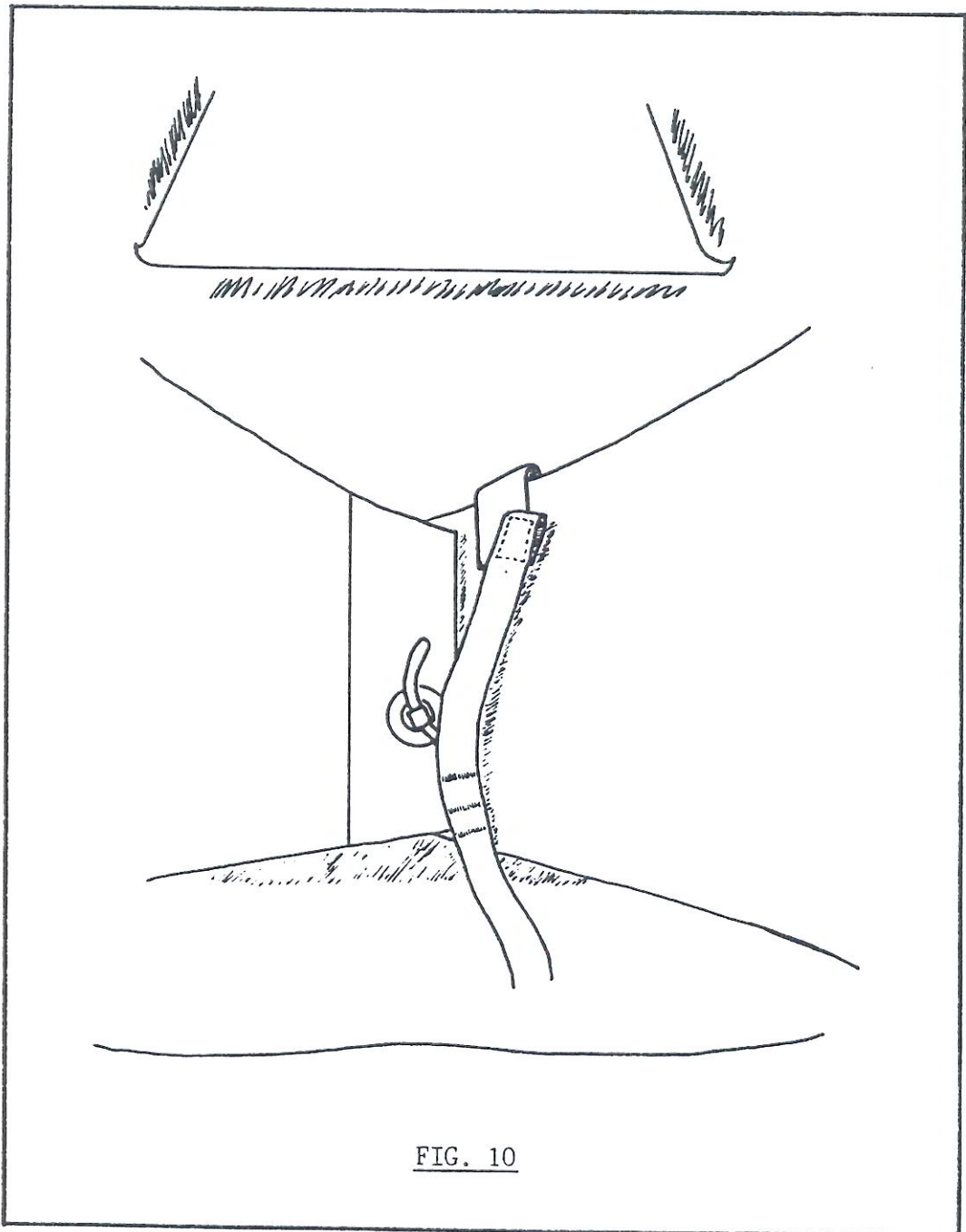
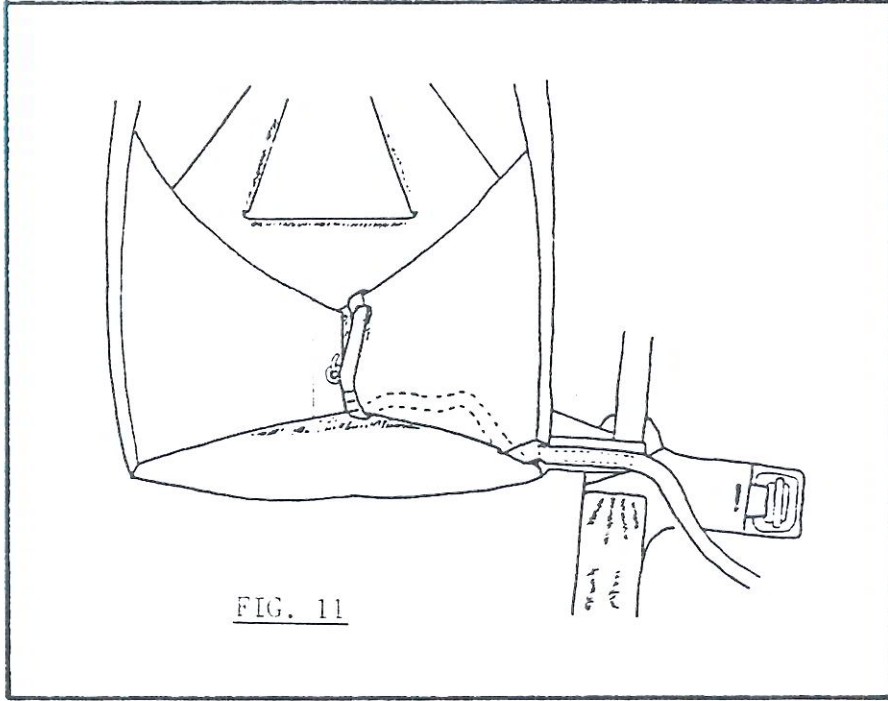
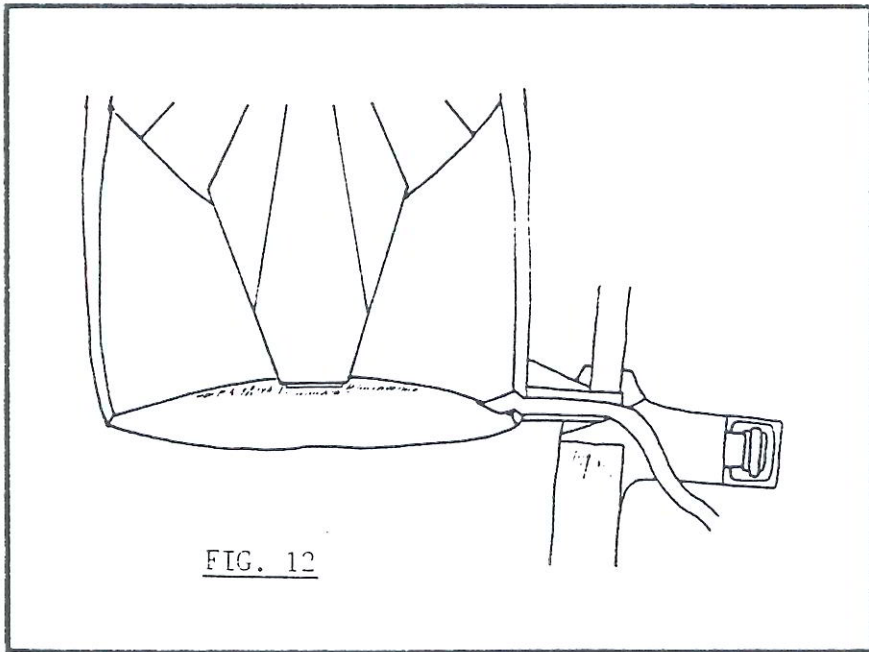


FIG. 10



- 14) Mate the velcro on the bridle to the velcro on the lower right side of the main container and harness-lateral. The excess bridle between the velcro and the curved pipe should now be tucked under the right side flap (FIG. 11).



- 15) Close the top flap protector by tucking the "tongue" underneath the flaps (FIG. 12). At this point be sure that the bridle goes from the container to the pilot chute without passing under or through any part of the harness.

- 16) Lay the pilot chute out flat with the mesh side up, and fold the pilot chute in half over the bridle (FIG. 13). Now fold the curved side up to a point just under the handle (FIG. 14).
- 17) Fold the pilot chute into thirds (FIG. 15), and then roll it tightly into a cylindrical shape (FIG. 16).

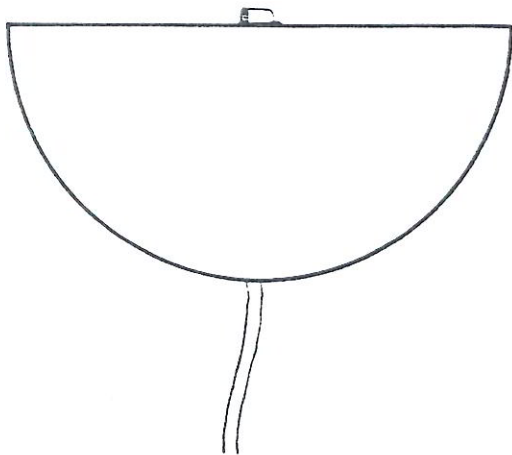


FIG. 13

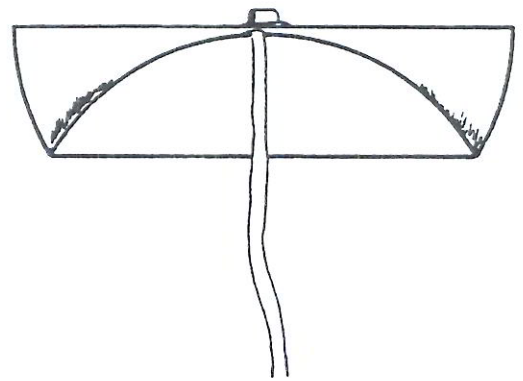


FIG. 14

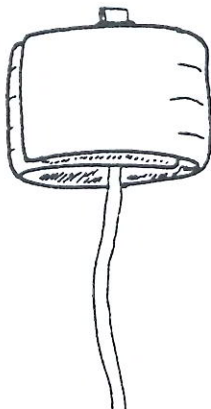


FIG. 15



FIG. 16

- 18) Using one or two fingers, push the bridle, one fold after another, into the pilot chute pouch. Start at the end nearest the harness, and continue until all the bridle is in the pouch. Then stuff the rolled pilot chute completely into the pouch, making sure that the handle sticks out the top for an easy grip (FIG. 17).

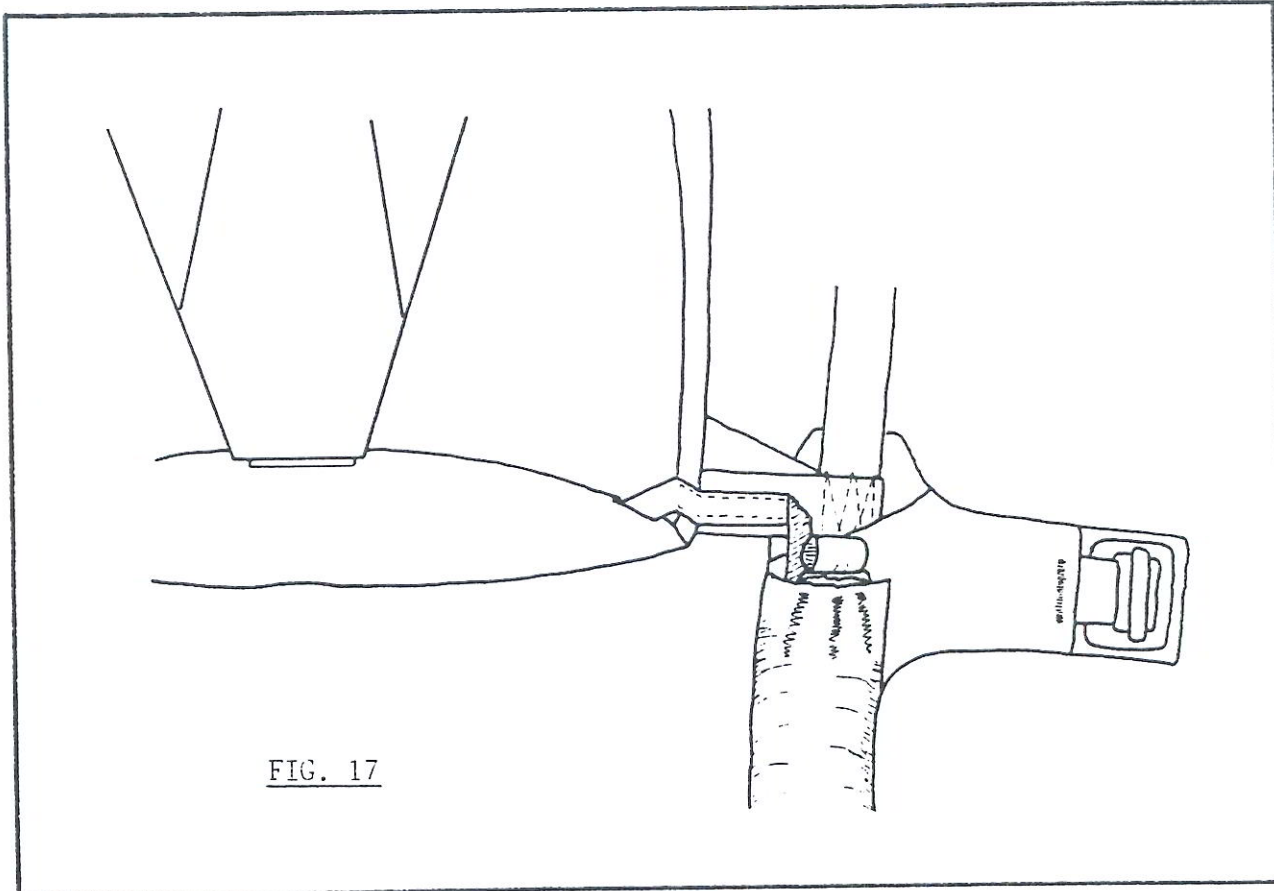
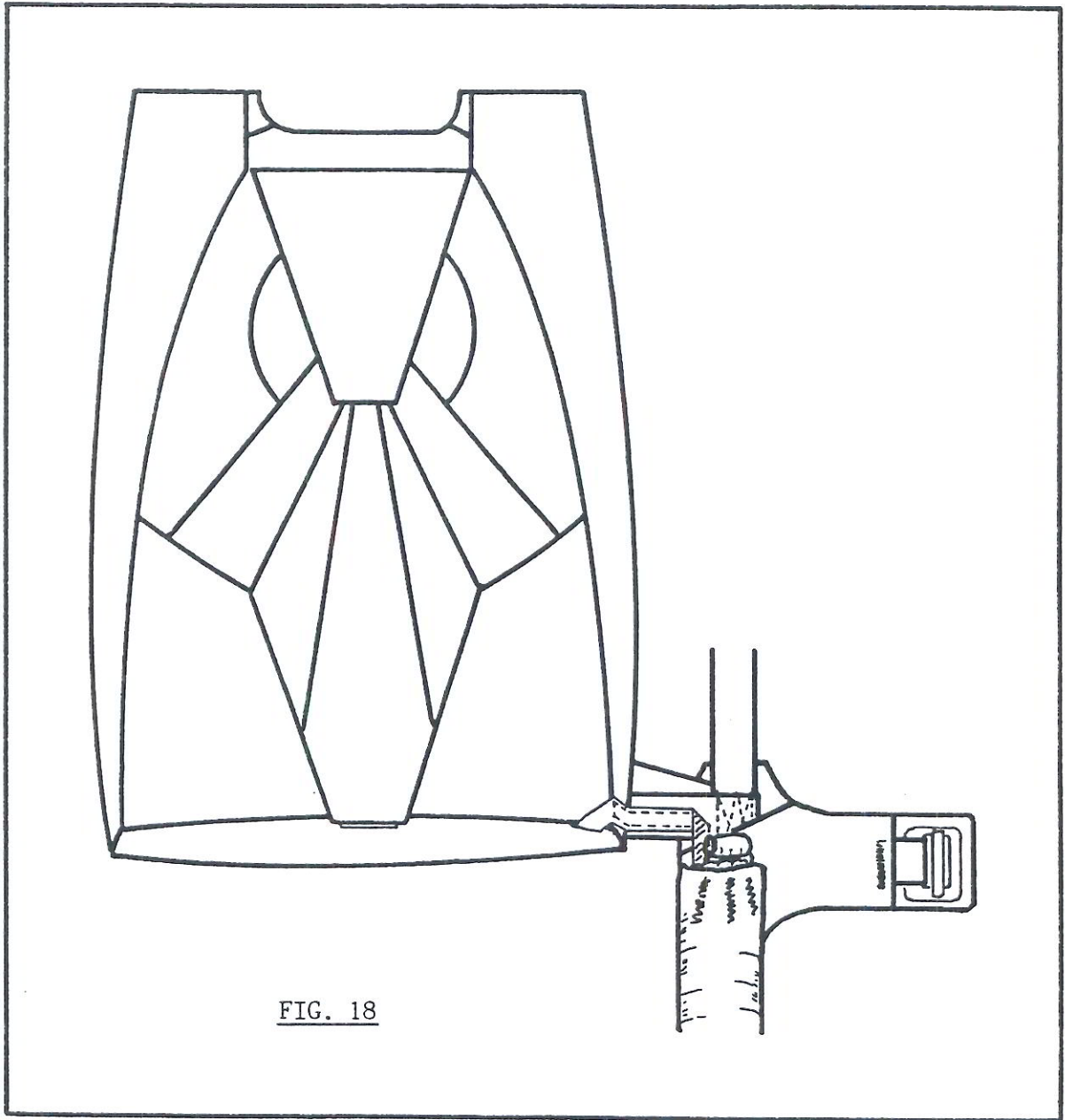


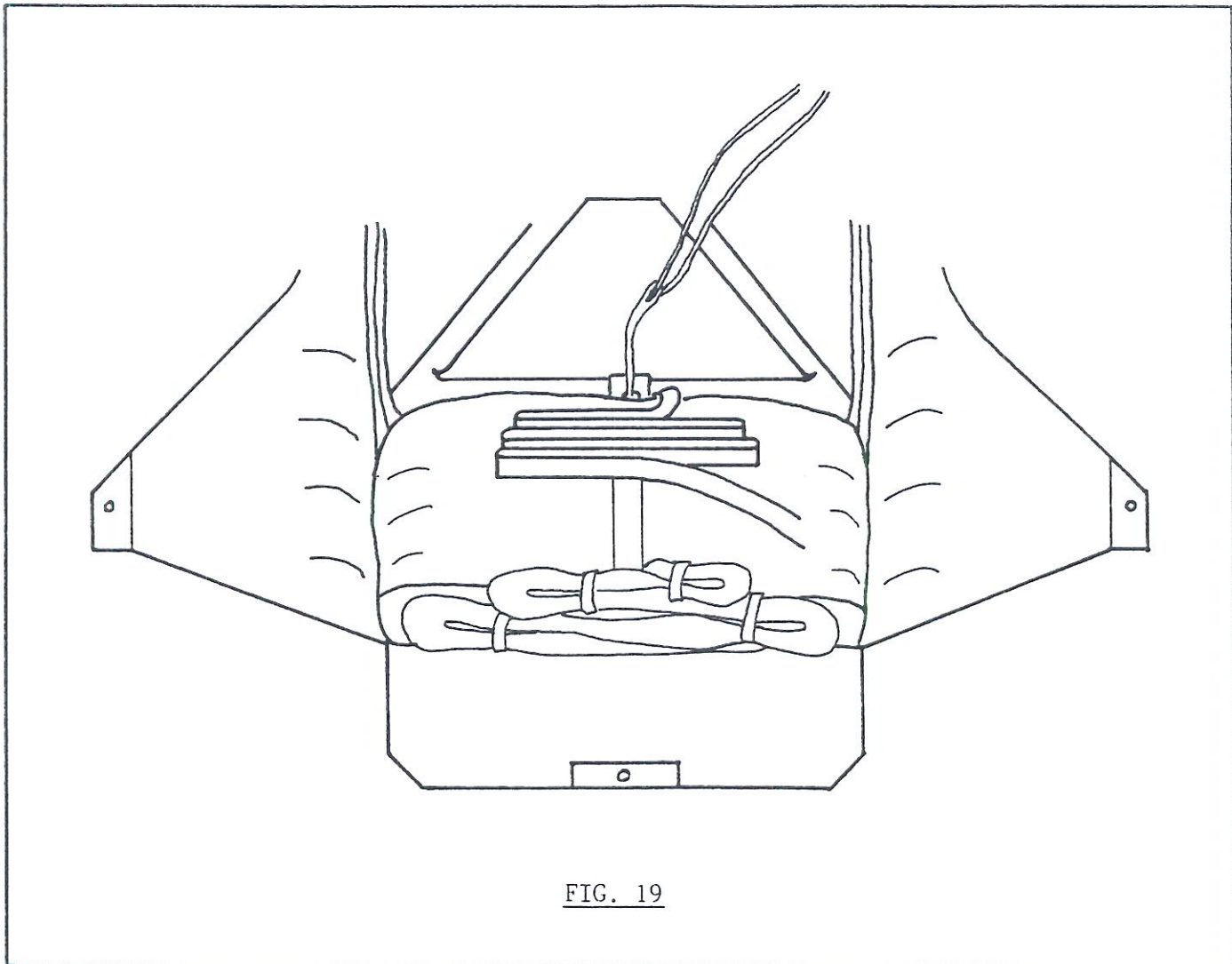
FIG. 17

19) Close the riser covers over the main risers (FIG. 18).



THIS PAGE FOR PULL-OUT PILOT CHUTE ONLY

- 11) Thread the pullup cord through the closing loop and lay it back across the reserve container temporarily to keep it out of the way. Arrange the bridle in folds six to eight inches long, and lay the folded bridle across the upper part of the bag as shown in FIG. 19. Be sure NOT to tuck these folds down between the bag and the bottom of the reserve container. To do so may retard the action of the pilot chute.



THIS PAGE FOR PULL-OUT PILOT CHUTE ONLY

- 12) Loosely fold the pilot chute and lay it across the bag as shown in FIG. 20. IMPORTANT!!! THE HANDLE AND PIN MUST EXIT THE CONTAINER AT THE LOWER RIGHT SIDE!

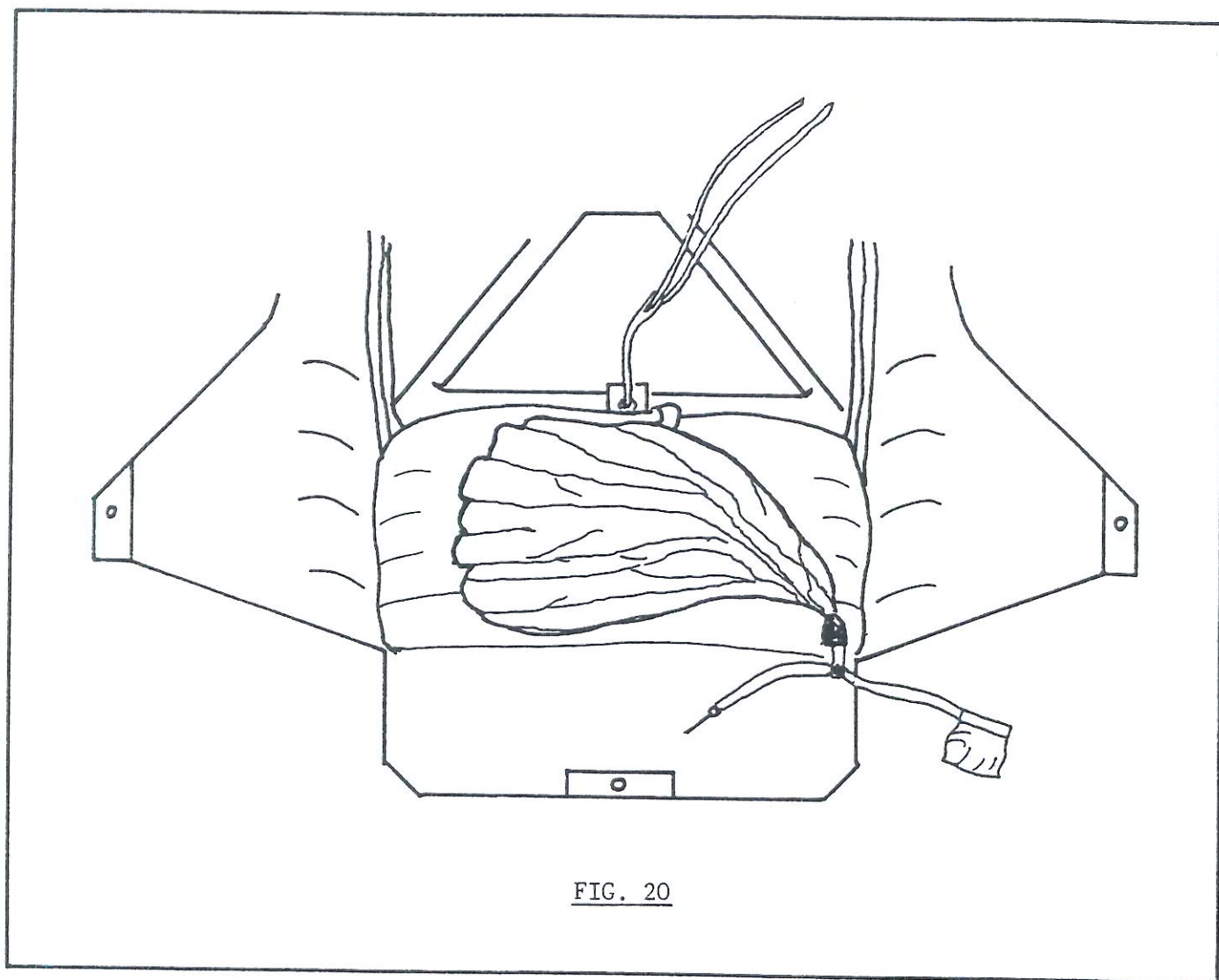


FIG. 20

THIS PAGE FOR PULL-OUT PILOT CHUTE ONLY

- 13) Close the bottom flap, then the top flap as shown in FIG. 21, keeping the handle and pin outside the container at the lower right.

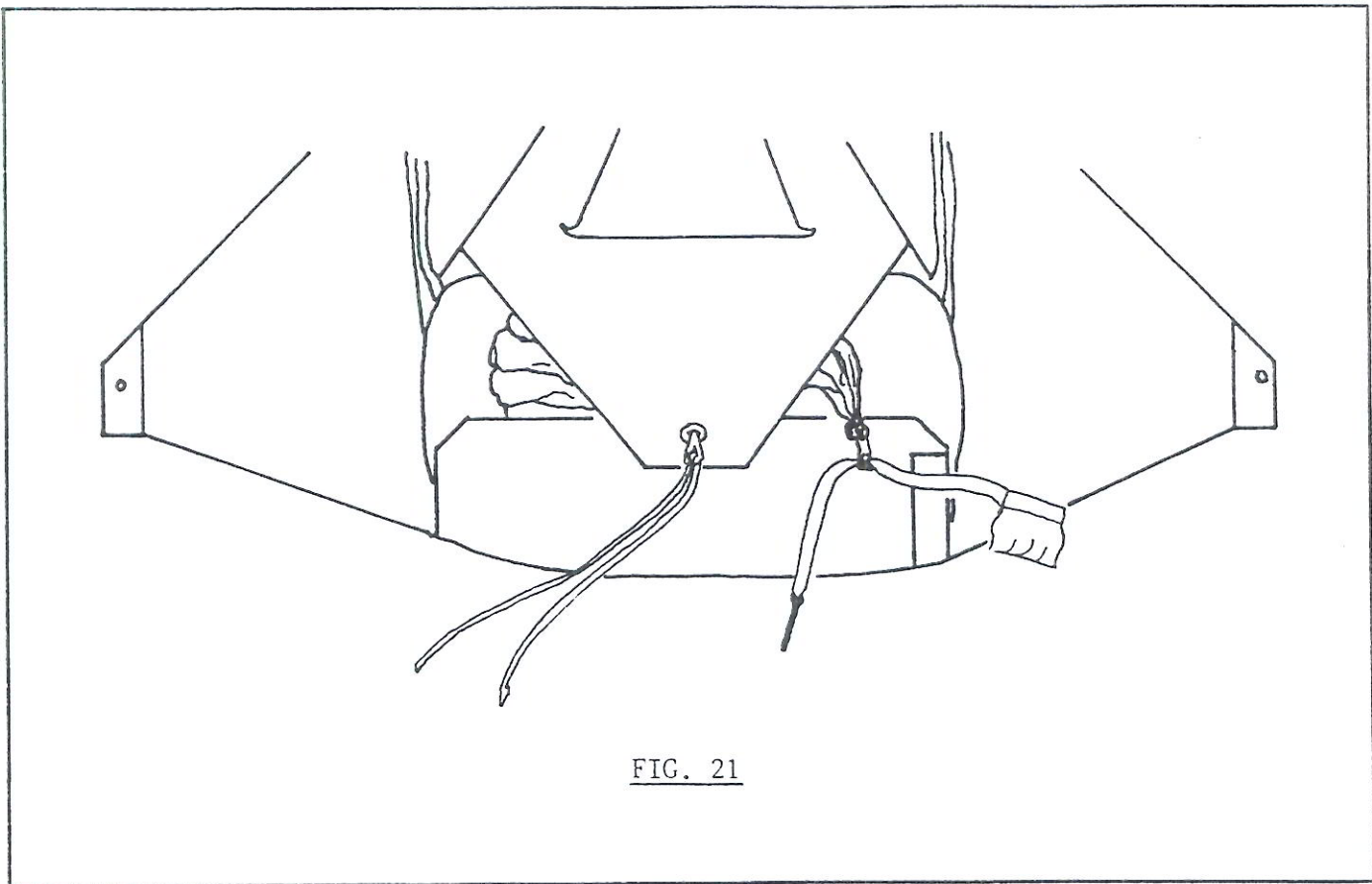
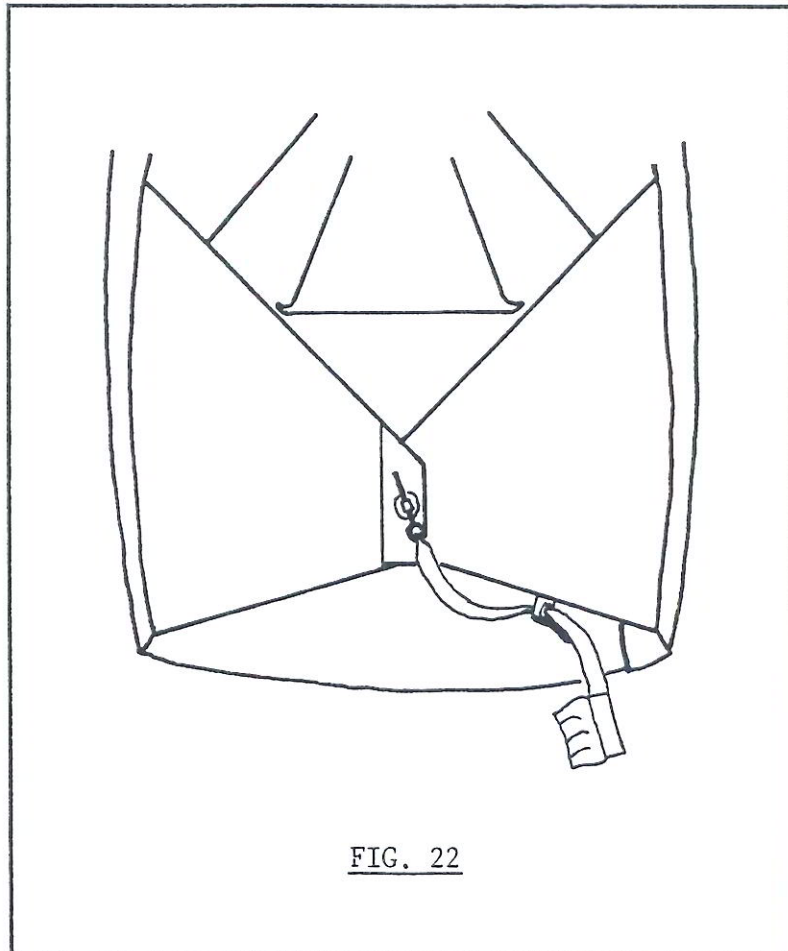


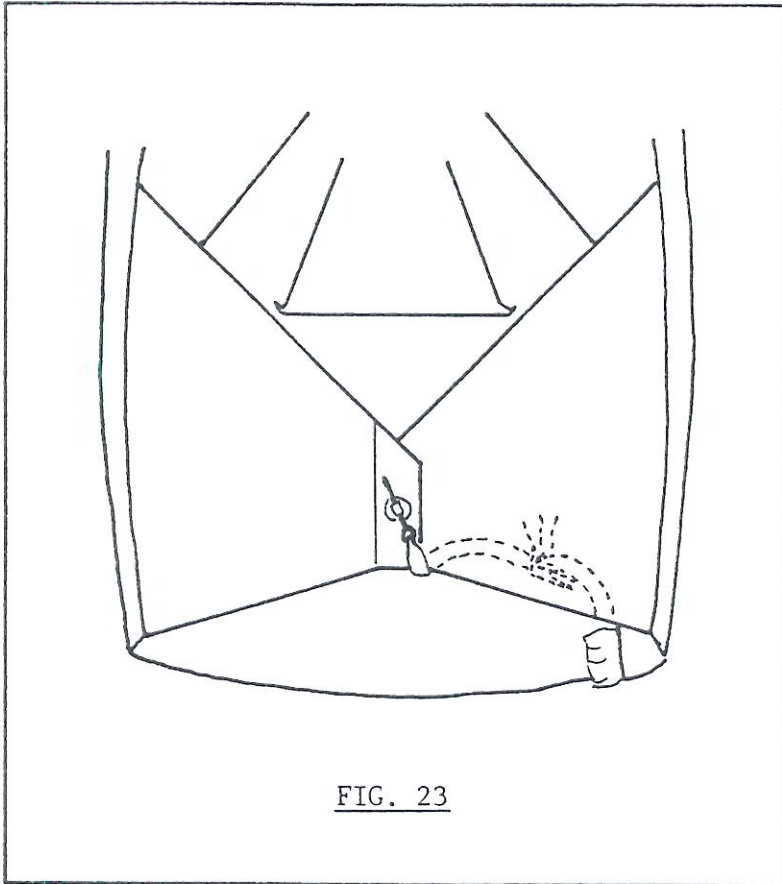
FIG. 21

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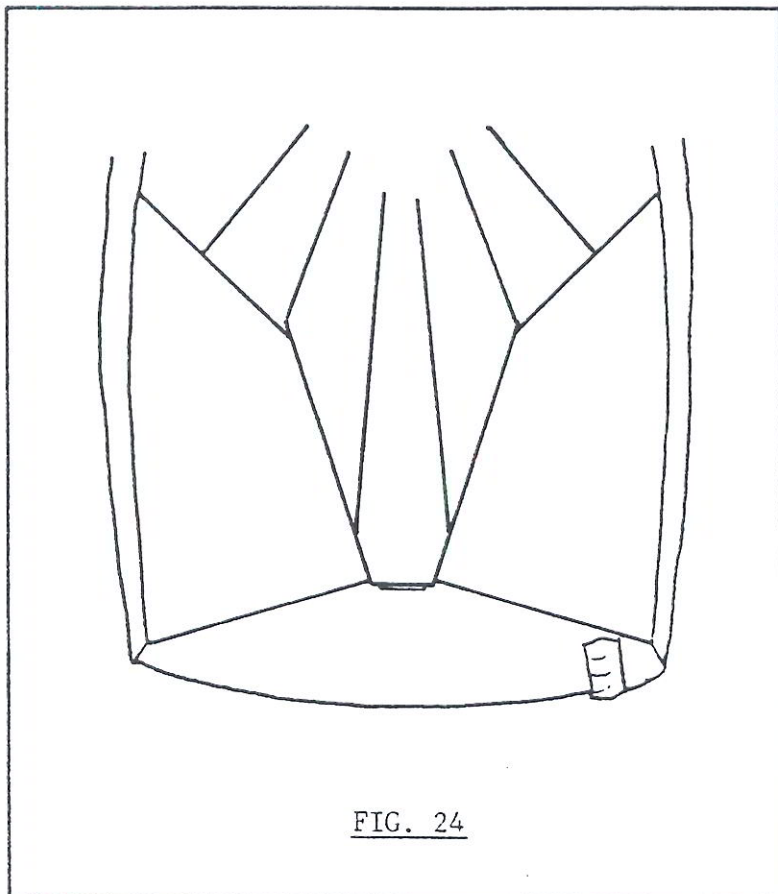
- 14) Close the right side flap, then the left side flap, securing the closure with the pin as shown in FIG. 22.

Mate the two small tabs of velcro where the handle-tape passes thru the grommet. This arrangement is important because it helps to prevent hard pulls by enabling the jumper to pull the pin before pulling on the pilot chute inside the container.



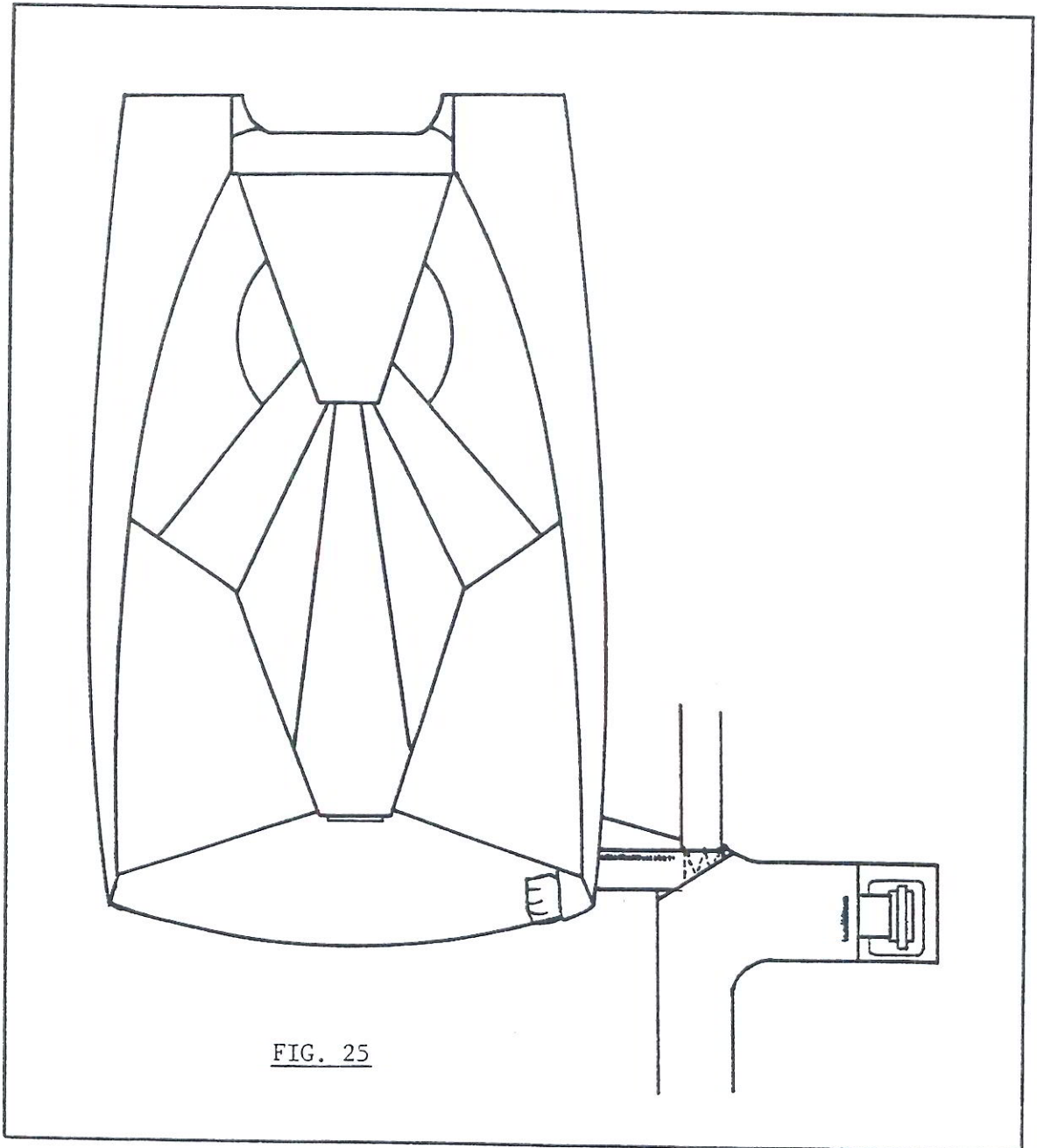


- 15) Tuck the slack in the tape under the right side flap and mate the velcro on the handle to the velcro under the protective cover on the right side of the bottom flap as shown in FIG. 23.



- 16) Close the top flap protector by tucking the "tongue" underneath the flaps (FIG. 24).

- 17) Close the riser covers over the main risers (FIG. 25).



JAVELIN
ROUND RESERVE PACKING INSTRUCTIONS

This chapter deals with the procedures for packing a round reserve canopy into the JAVELIN harness/container system. Assembly and packing of the reserve must be accomplished by an FAA certified Senior Rigger or Master Rigger, or by the manufacturer of the harness/container system.

REQUIRED TOOLS:

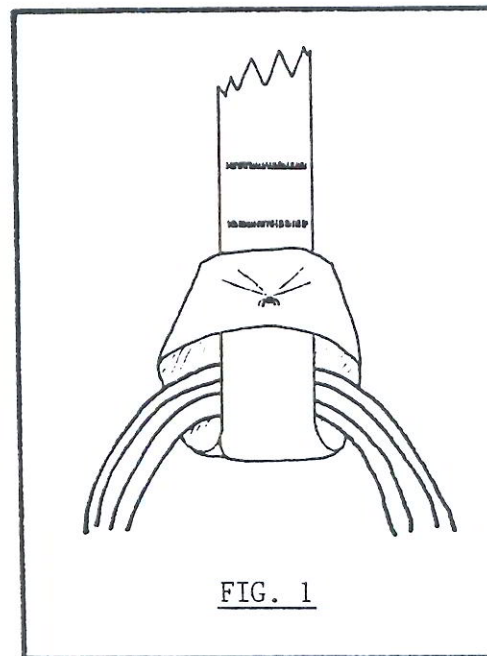
- One temporary pin (preferably with warning flag attached)
- One pull-up cord (48" minimum length)
- One packing paddle or "long bar"

OPTIONAL TOOL:

.22 calibre rifle cleaning rod

- i) Make a thorough inspection of all components of the reserve parachute:
 - a) Reserve pilot chute
 - b) Reserve bridle
 - c) Reserve canopy, lines, connector links
 - d) Harness/container system

- 2) Attach the bridle to the apex of the reserve canopy. The smaller loop of the bridle should be used at the apex, and the loop should be tacked securely with enough slack so that the loop will not bind the apex lines. The apex lines must be able to move freely thru the bridle attachment (FIG. 1). The large loop of the bridle must then be attached to the pilot chute. (Only the JAVELIN reserve pilot chute may be used with the JAVELIN harness/container system. Do not substitute any other pilot chute.)



- 3) Follow the canopy manufacturer's directions for the inspection, attachment to risers, routing of control lines (if present), and for flaking the reserve canopy.

- 4a) If the canopy is equipped with a full diaper, all stows of the suspension lines will be made on the diaper. Do this in accordance with the canopy manufacturer's directions. Then lay the risers in the reserve container so that the connector links are in the lower corners (FIG. 2), and go to STEP 5.

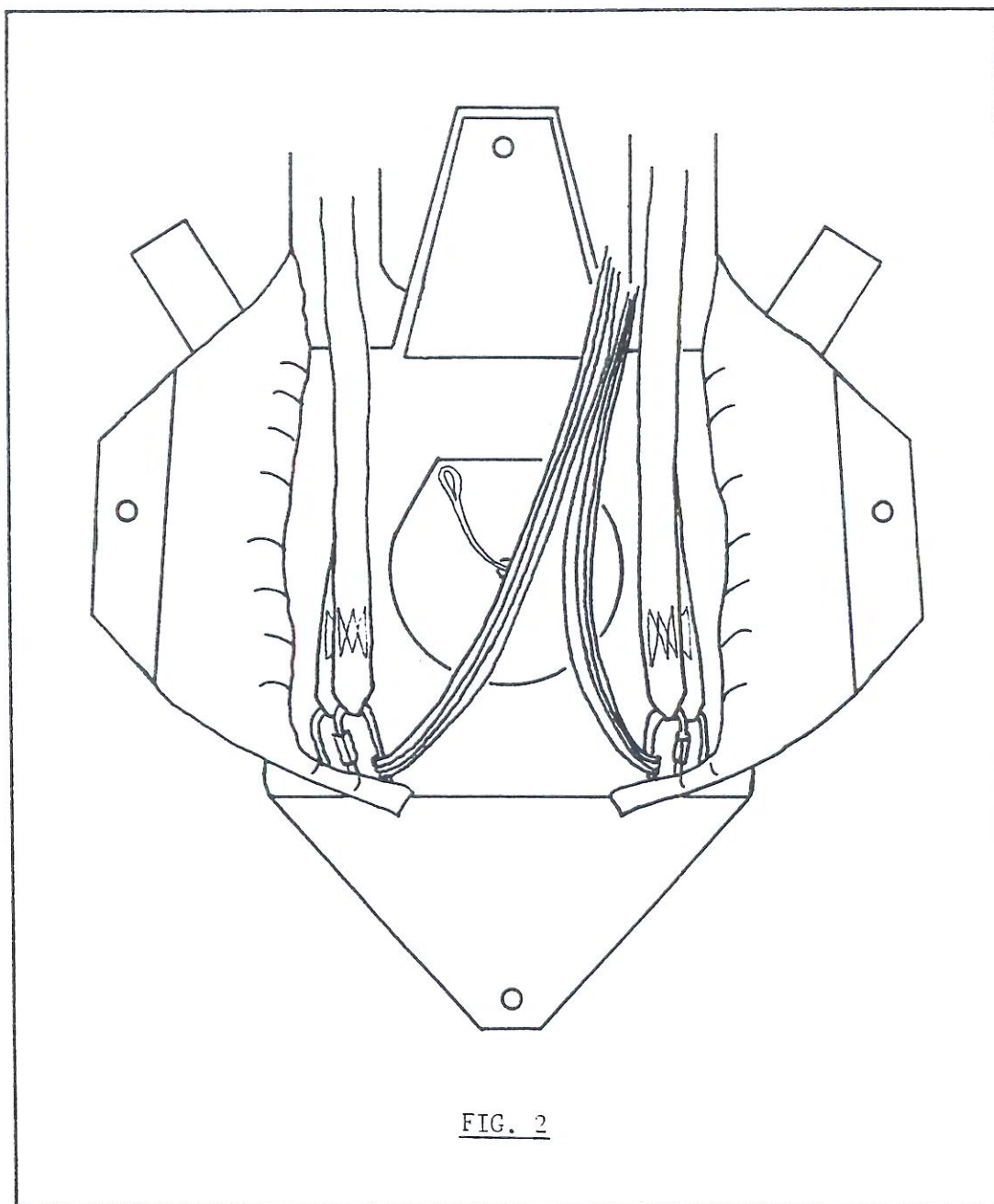


FIG. 2

- 4b) If the reserve canopy has no diaper, or is equipped with only a partial diaper, the suspension lines must be stowed in the container. Lay the risers in the container so that the connector links are in the lower corners (FIG. 2), and make the first stow of suspension lines in the lower left corner. Continue upward, making the stows the full width of the pack tray. (FIG. 3).

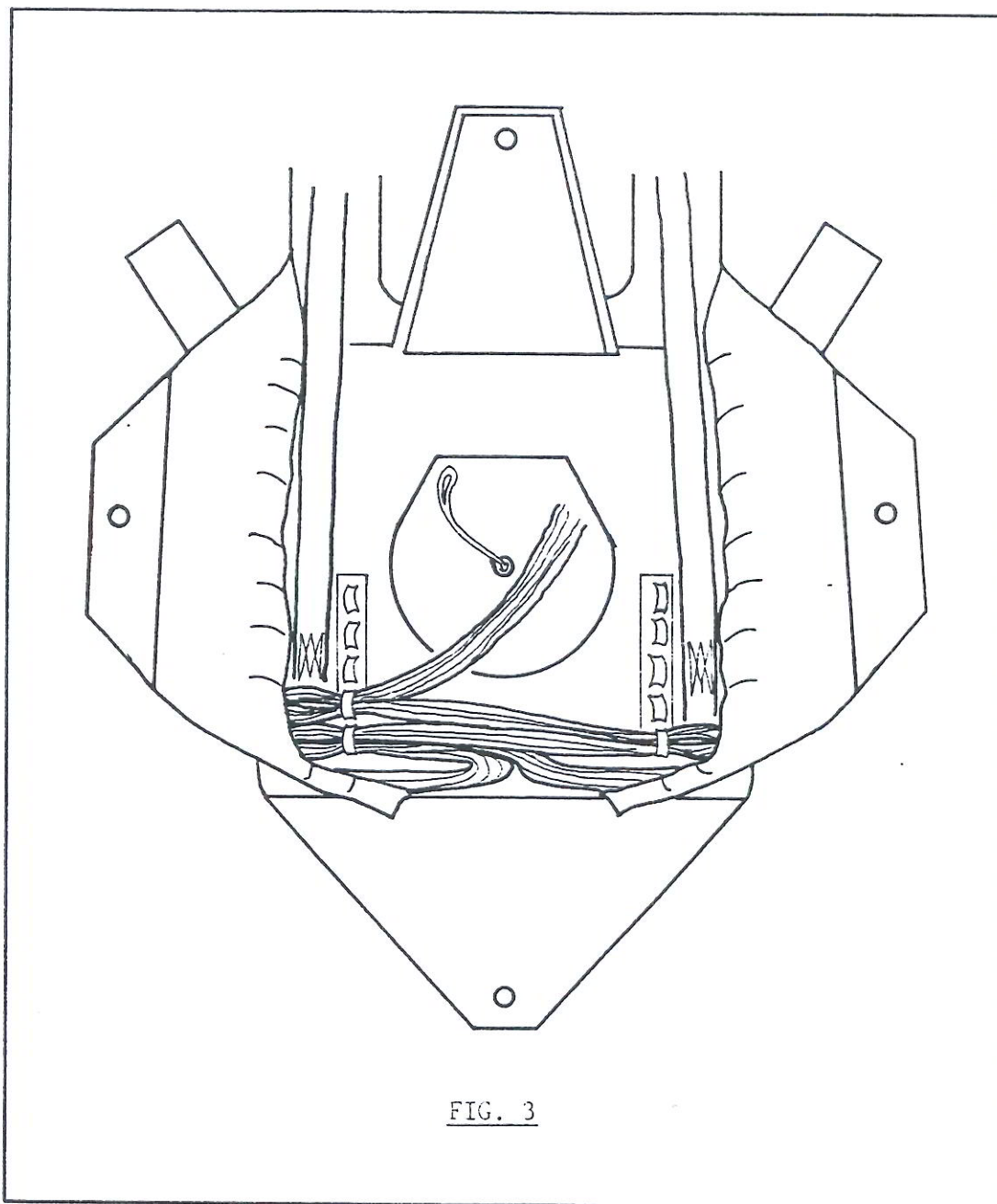


FIG. 3

- 5) Place the skirt (or diaper) of the canopy in the lower left corner of the reserve container. If the diaper is not as wide as the container, make a short fold in the right side to equalize the bulk (FIG. 4).

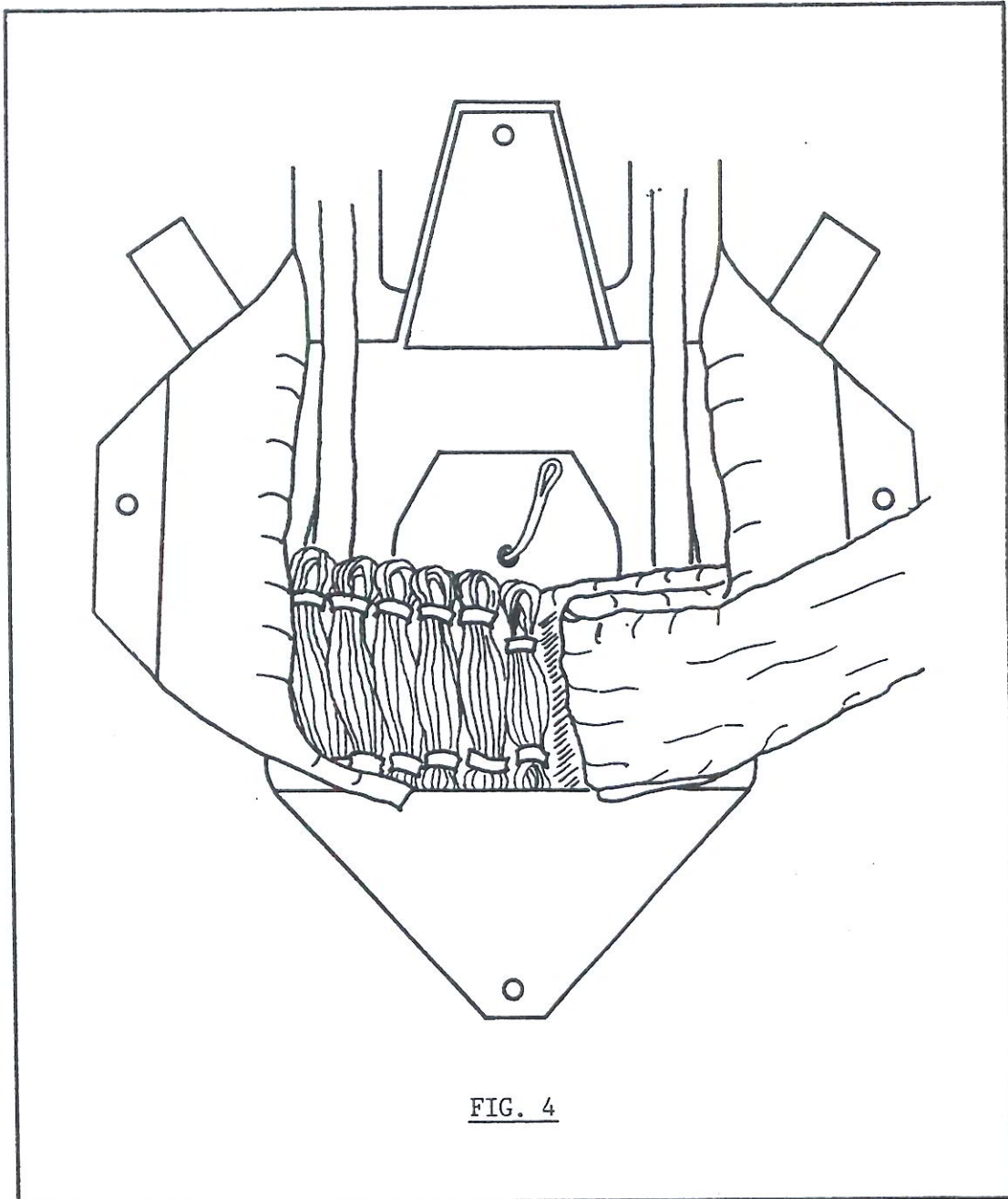
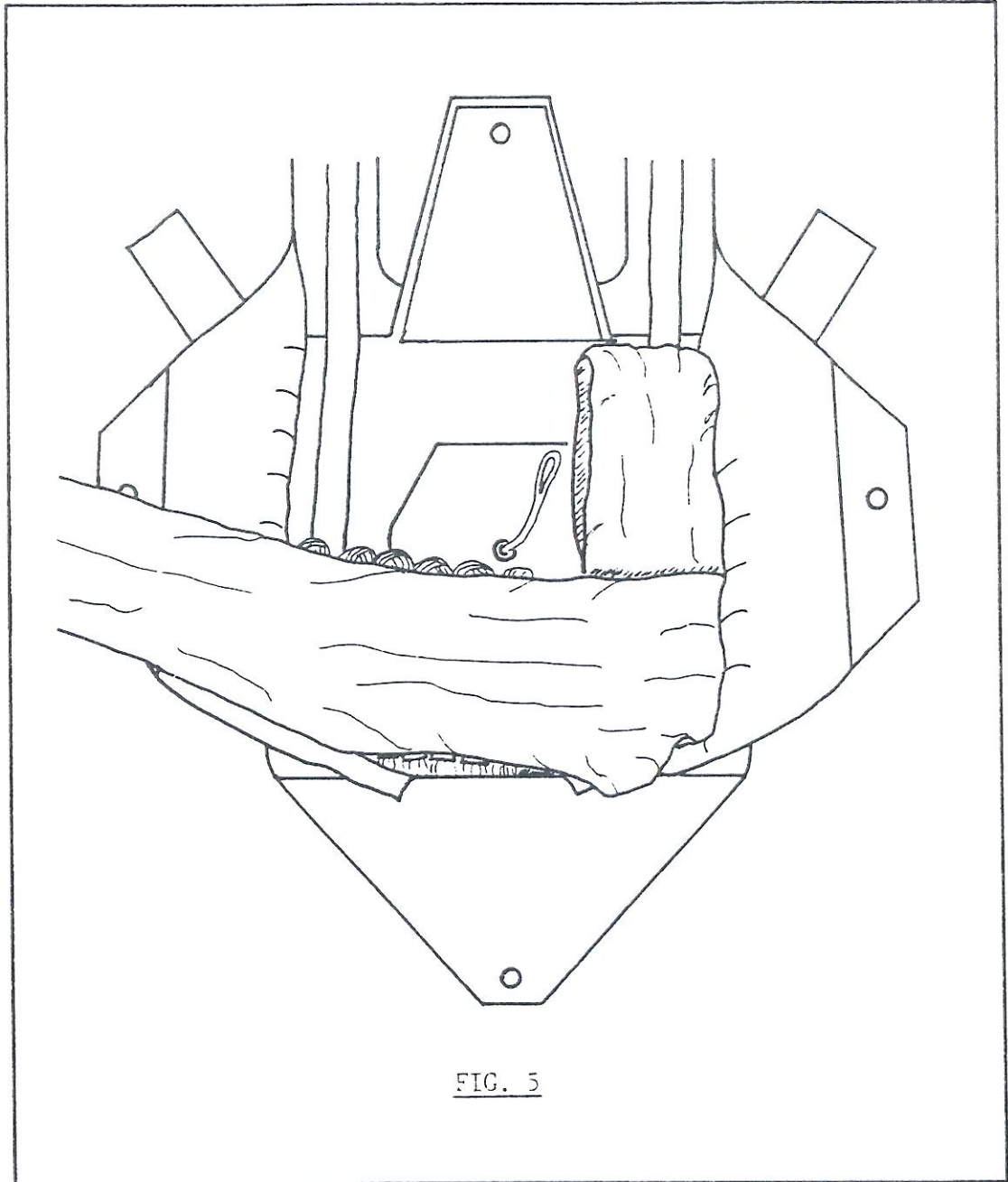
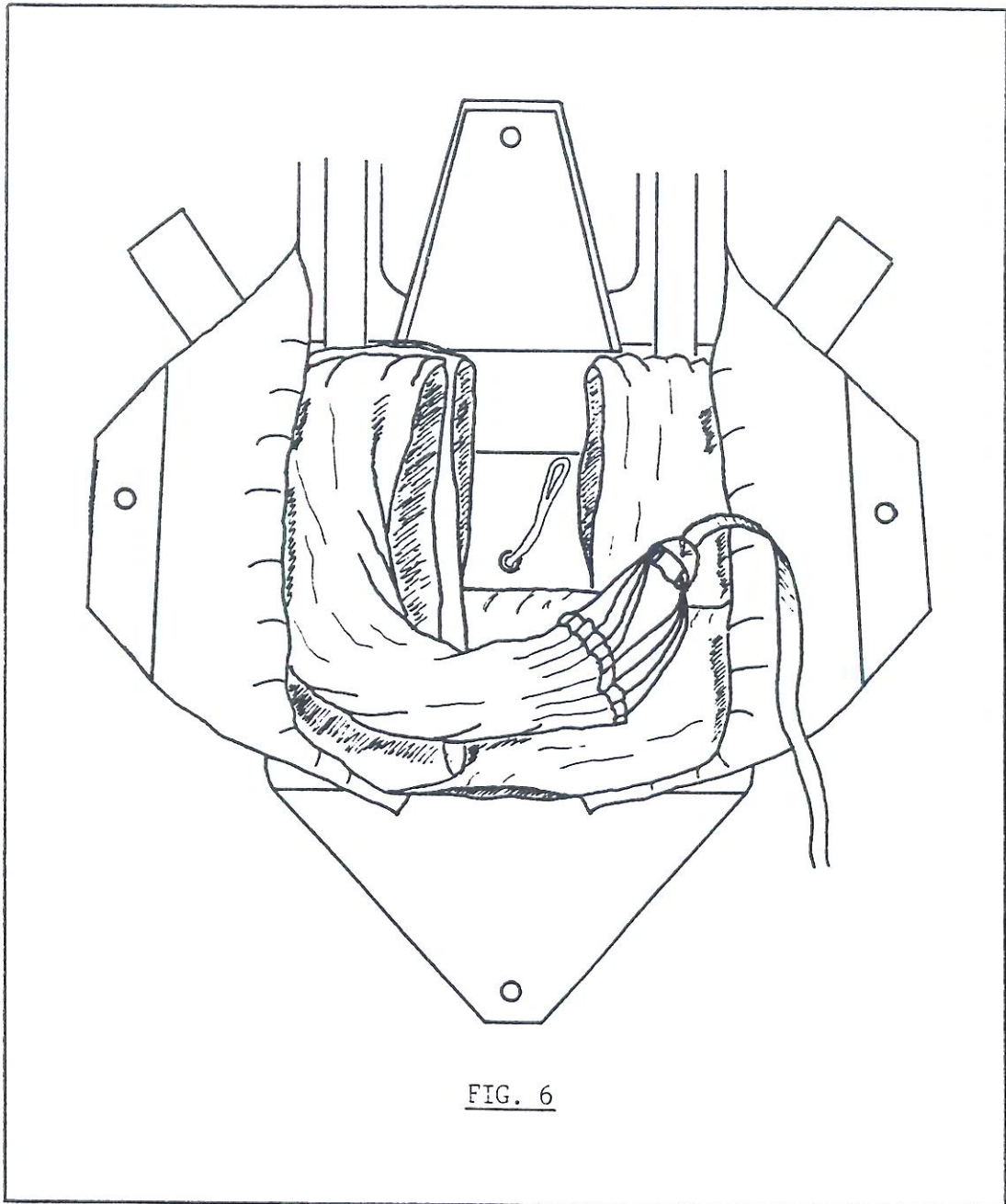


FIG. 4

- 6) Fold the canopy up and down the right side of the container, then make a fold across the bottom of the container, on top of the diaper or skirt (FIG. 5).



- 7) Make two folds up and down the left side of the container, keeping the bulk away from the center as much as possible. The rigger may at this point make another fold across the bottom in order to distribute the bulk evenly side to side (FIG 6). The object is to form a "U" shaped stack with the canopy so that the pilot chute will seat itself in the "nest" formed by the side flaps after they have been closed.



The distribution of bulk may vary with the size of the canopy or the shape of the container, and it is left to the rigger's discretion how many folds to make on each side and how many times the canopy may be folded across the bottom of the container. As long as the stack is basically "U" shaped and the bulk of the stack is kept away from the center of the container, the pack is more likely to be correctly shaped after the flaps have been closed.

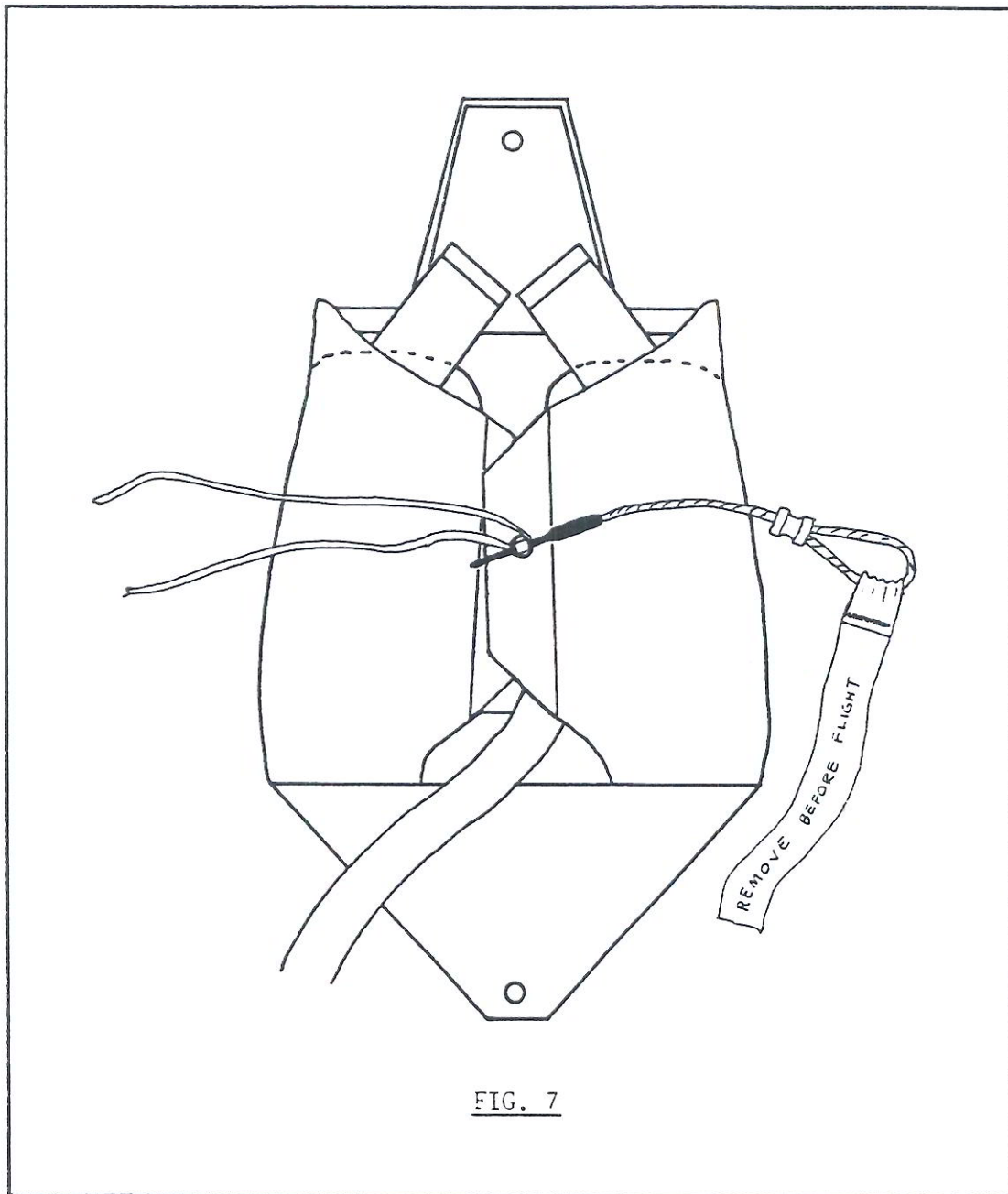
A HELPFUL HINT

Be sure that the lower corners of the reserve container are filled as you fold the canopy into the container. If there is slack in the lower corners, it may be difficult to close the container or to make the container look neat after it has been closed.

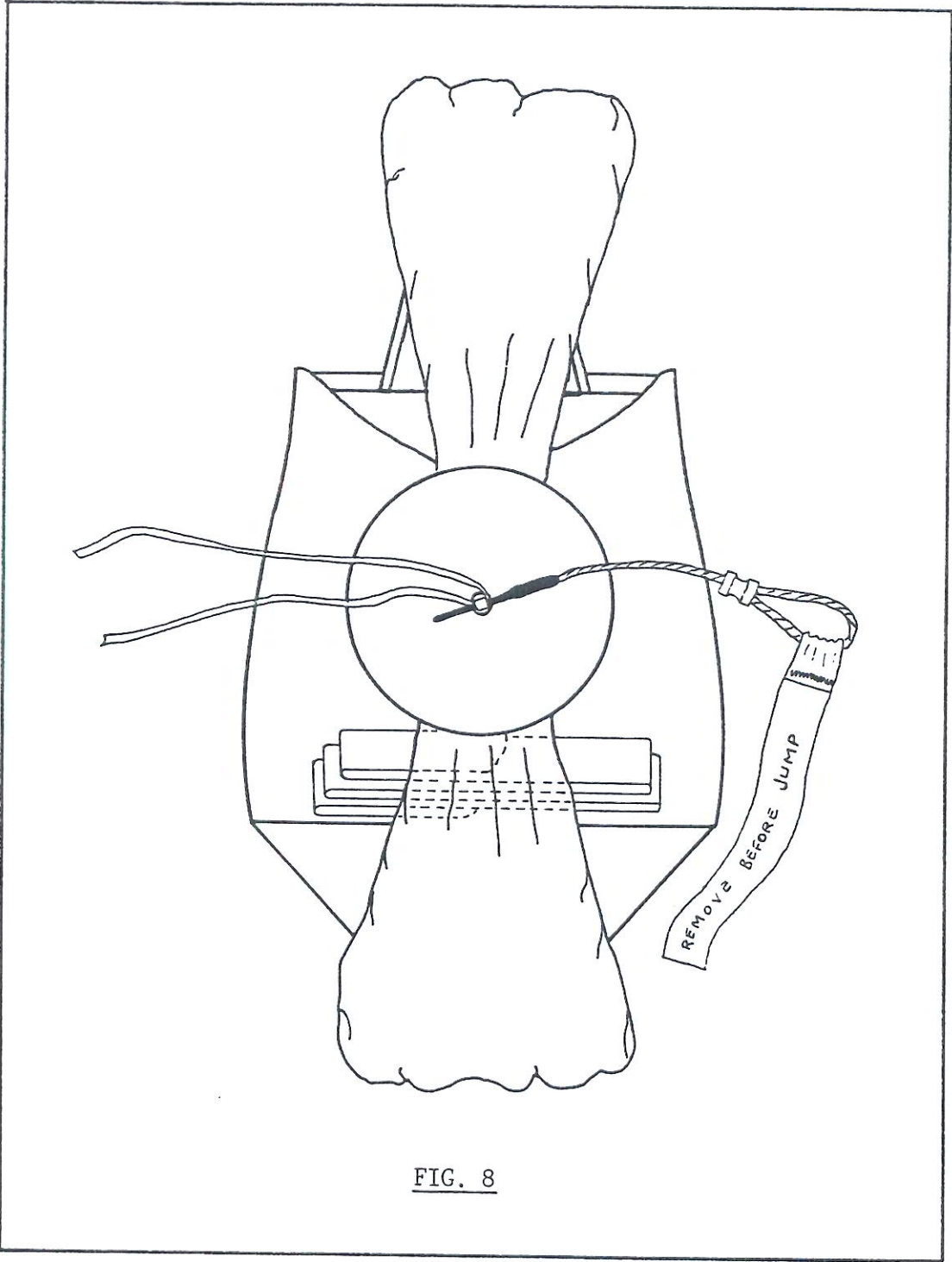
ONE NOTE OF CAUTION:

Do not stuff the apex of the canopy down into the lower corner of the reserve container. Doing so might delay (or even prevent) extraction of the apex by the pilot chute.

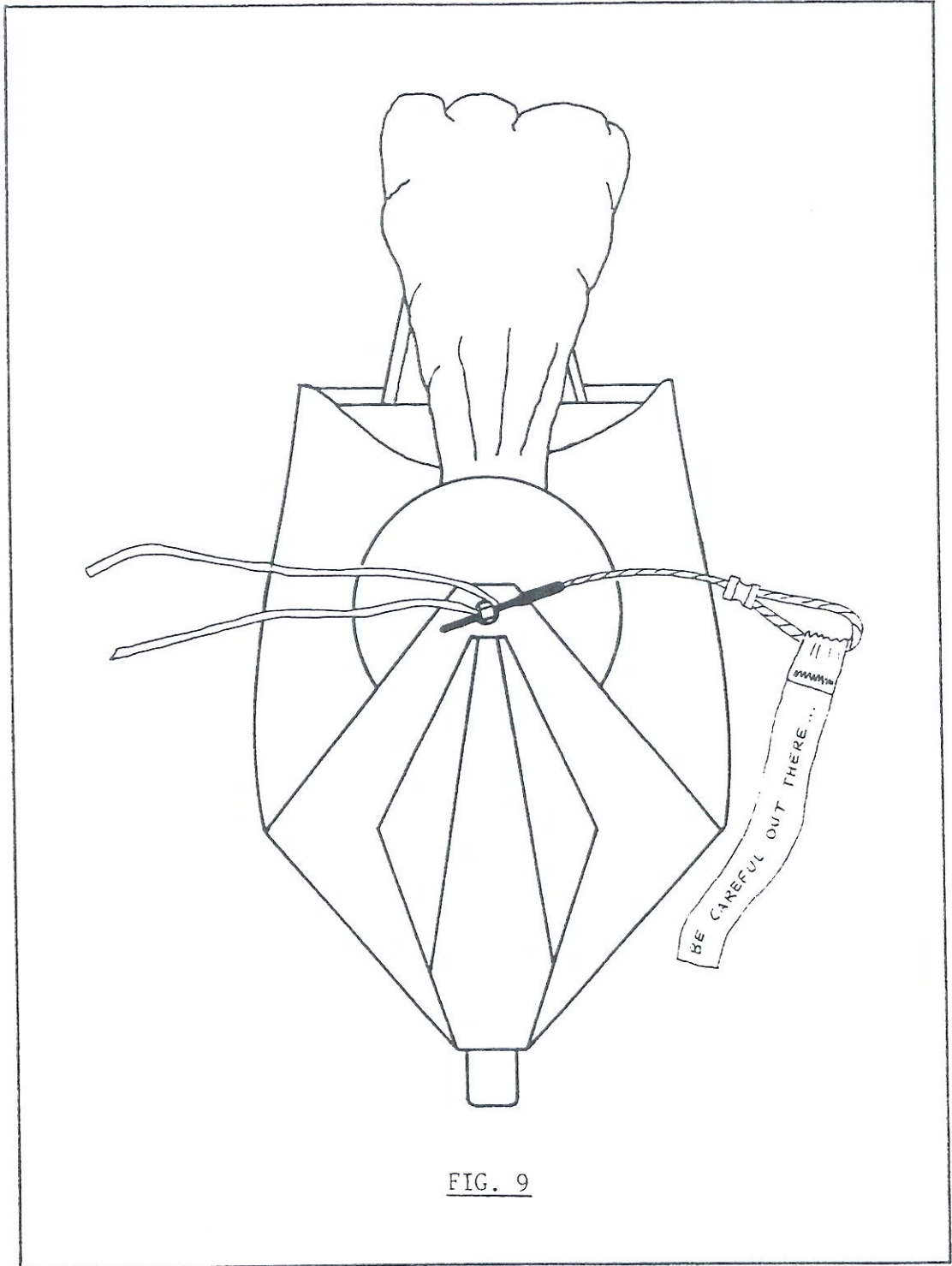
- 8) Thread the pull-up cord through the closing loop and close each side flap in turn, routing the bridle out the bottom of the container. Try to keep the bulk of the canopy away from the center of the container while closing the side flaps. Secure the side flaps with the temporary pin (FIG. 7), then push the tuck flaps in under the folded canopy at the upper edge of each side flap.



- 9) Pass the pull-up cord up through the pilot chute and out through the top plate. (This is easily accomplished with the .22 calibre rifle cleaning rod mentioned as an optional tool.) Seat the lower end of the pilot chute on top of the side flaps, and keeping the pull-up cord tight, compress the pilot chute and lock it with the temporary pin. Now pull all the fabric out from under the top plate so that the pilot chute canopy appears round. At this point check the length of the closing loop. If the pilot chute top plate can rock back and forth or from side to side, the loop is too long, Shorten the loop so that when the pilot chute is compressed and locked with the temporary pin, the top plate will be firmly seated in the "nest" formed by the "U" shape of the stacked canopy.
- 10) On each side of the top plate make a roll or fold in the pilot chute fabric parallel to the side of the reserve container, and push this roll under the top plate. Fold the bridle in accordian folds across the bottom of the container on top of the side flaps. The width of the folds will vary with the width of the container; a simple rule-of-thumb is: "make the folds as wide as possible, but not so wide as to be seen after the bottom flap has been closed". (FIG. 8)



- 11) Part of the lower half of the pilot chute which now extends downward can be tucked under the top plate (but not so much as to cause the top plate to tilt forward). The rest should be arranged in a loose fold or roll and laid on top of the folded bridle. Close the bottom flap and secure it with the temporary pin. (FIG. 9).



12) The pilot chute fabric extending upward from under the top plate can now be pushed into a narrow, loose roll and placed in the space just under the top closing flap between the folds of canopy. Be careful not to tuck any of this pilot chute fabric back under the side flaps; this would tend to retard the launch of the pilot chute. Close the top flap and secure it with the ripcord pin. (Be sure that your temporary pin is accounted for at this time!) Insert the ripcord handle into its velcro pocket just below the chest strap on the inboard edge of the left main lift web.

13) Seal the reserve container and log the work done on the packing data card and in your rigger's log-book. Place the completed data card in the pocket provided on the underside of the reserve top flap cover. Secure the top flap cover over the top flap by inserting the tongue on each side under the top flap (FIG. 10).

14) COUNT YOUR TOOLS.

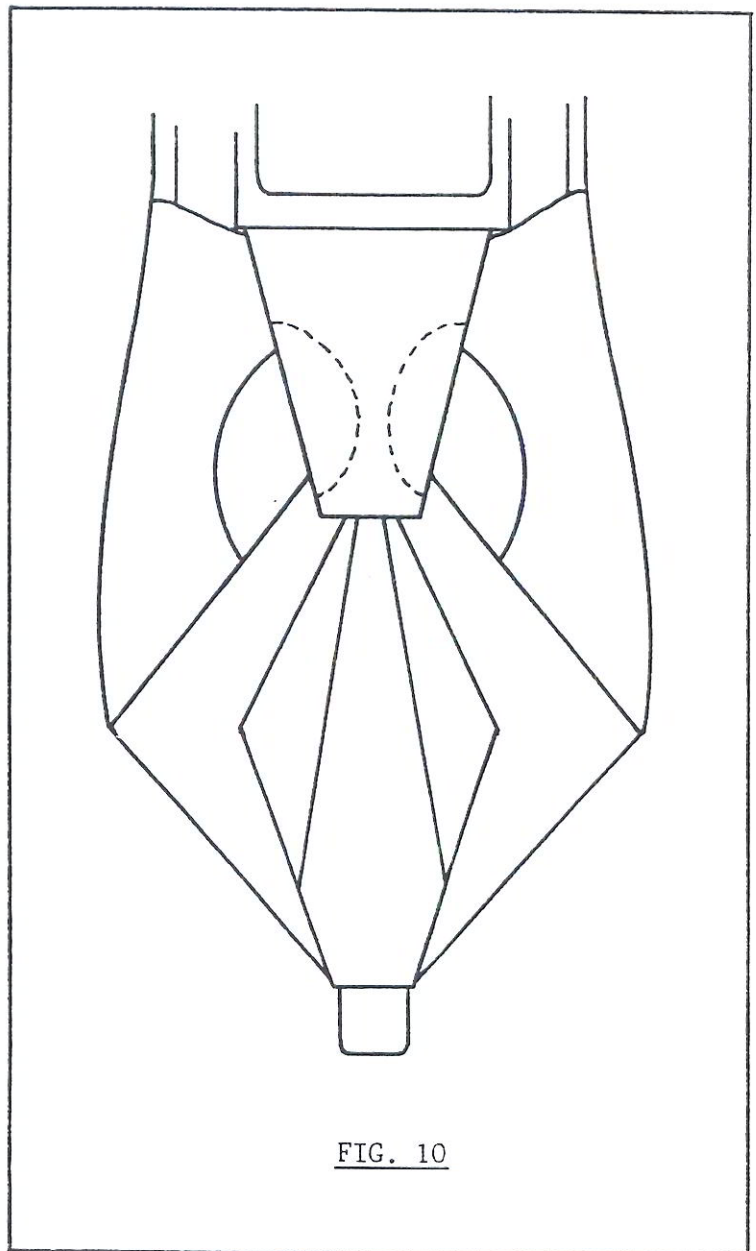


FIG. 10

JAVELIN HARNESS/CONTAINER SYSTEM

RAM-AIR RESERVE PACKING INSTRUCTIONS

This chapter deals with the procedures for packing a ram-air reserve canopy into the JAVELIN harness/container system. Assembly and packing of the reserve must be accomplished by an FAA certified Senior Rigger or Master Rigger, or by the manufacturer of the harness/container system.

REQUIRED TOOLS:

One temporary pin (preferably with warning flag attached)
One pull-up cord (48" minimum length)
One packing paddle or "long bar"

OPTIONAL TOOLS:

.22 calibre rifle cleaning rod
Two 6-inch strips of 1" velcro loop

- 1) Make a thorough inspection of all components of the reserve parachute
 - a) Reserve pilot chute
 - b) Reserve bridle
 - c) Free-bag
 - d) Reserve canopy, lines, slider, connector links
 - e) Harness/container system
- 2) Follow the canopy manufacturer's directions for the inspection, attachment to risers, routing of control lines, attachment of control toggles, setting deployment brakes, and for flaking and folding the reserve canopy.
- 3) If the manufacturer of the ram-air reserve canopy uses a "conventional" packing method, the canopy should look similar to FIG. 1 after it has been flaked and folded. If the manufacturer of the ram-air reserve canopy recommends the "PRO-PACK", the canopy will resemble FIG. 2. In either case, it will be necessary at this point to spread the top end of the canopy into halves by pushing down into the center from the top and spreading it outward into a "V" shape. (See FIG. 3.)

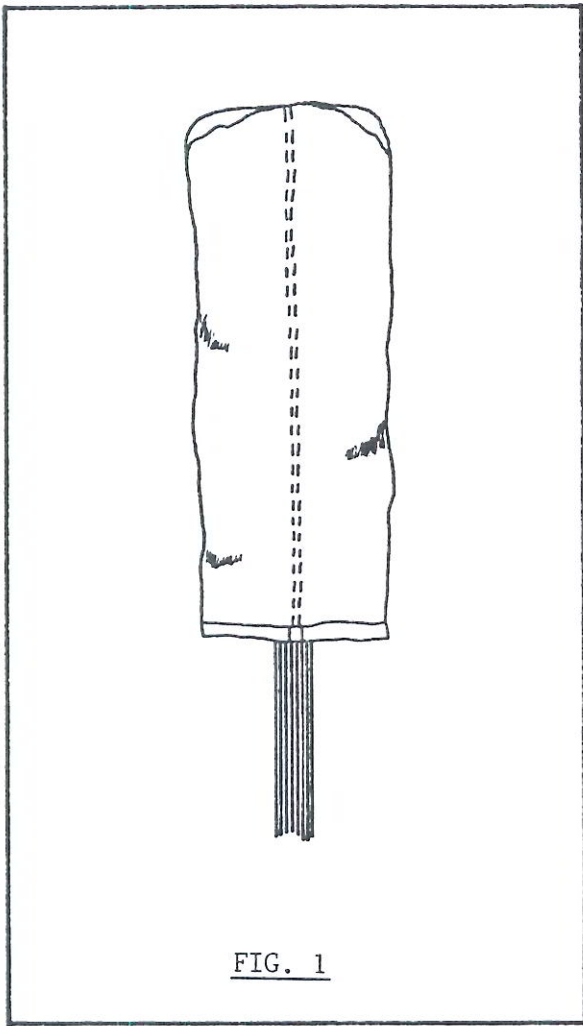


FIG. 1

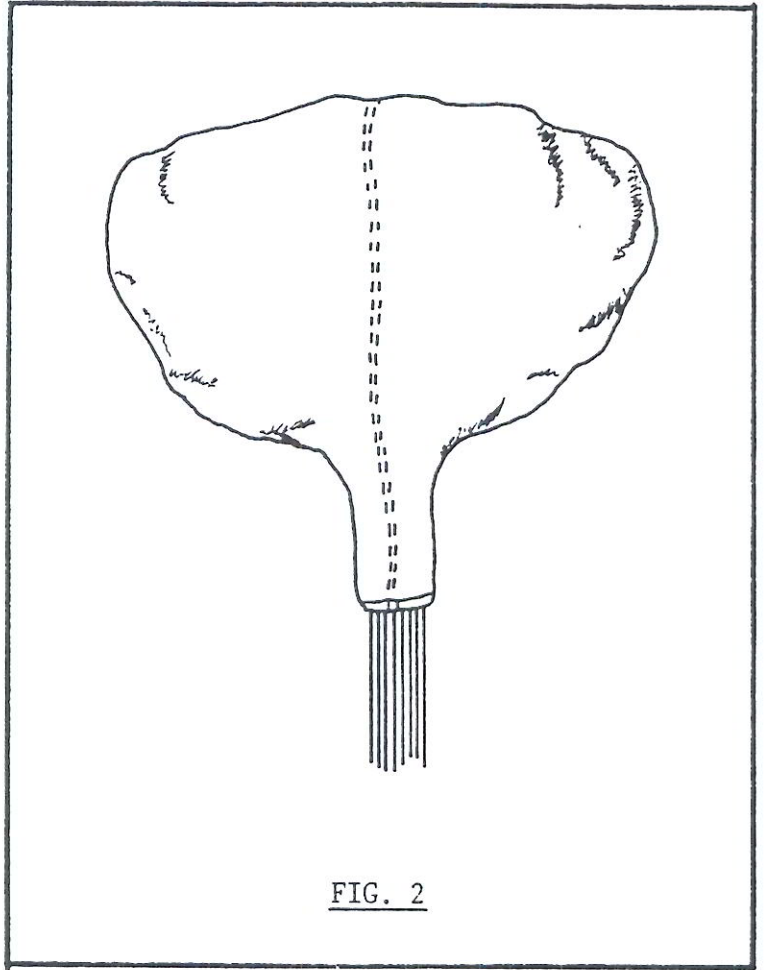


FIG. 2

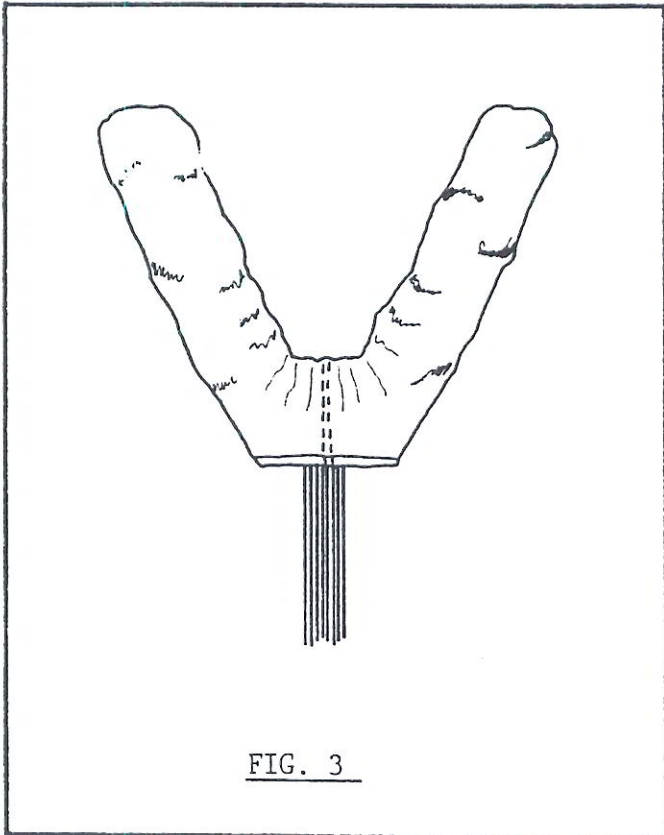


FIG. 3

To keep the canopy symmetrically divided, use the seam in the top of the center cell as a reference. At this point be sure that the slider is as far up as it will go against the slider steps.

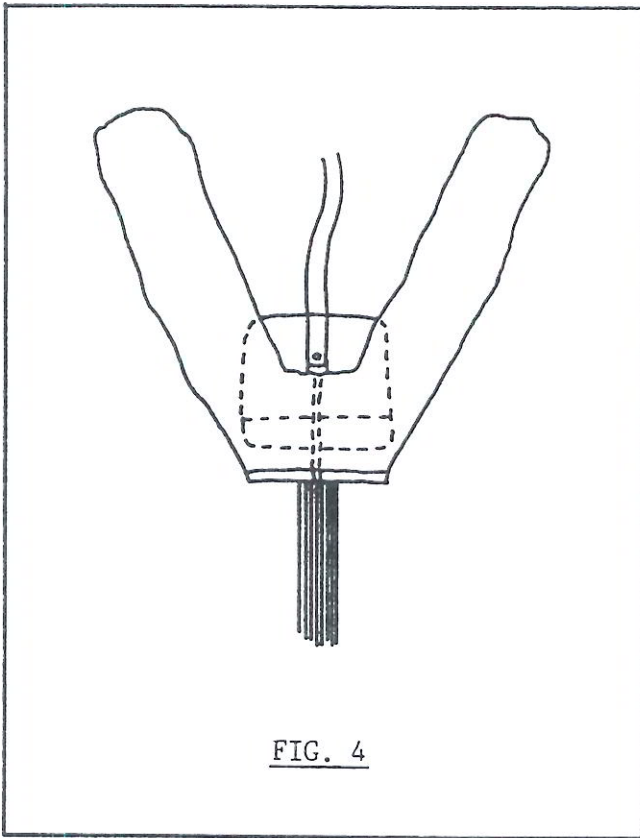


FIG. 4

Stuff each half of the canopy into its respective side of the upper part of the bag. (It may be helpful to kneel on the lower part of the canopy with the closing flap under it to keep the bag in position while stuffing its "ears".) (See FIG. 5.) After stuffing the ears of the bag as much as is practical, the remainder of the canopy (and the slider) can now be pushed or folded into the center-bottom of the bag.

4) Place the reserve deployment bag in the "V" formed by the canopy as shown in FIG. 4. Do not substitute any other deployment bag. Only the JAVELIN "molar" bag may be used in the JAVELIN harness/container system.

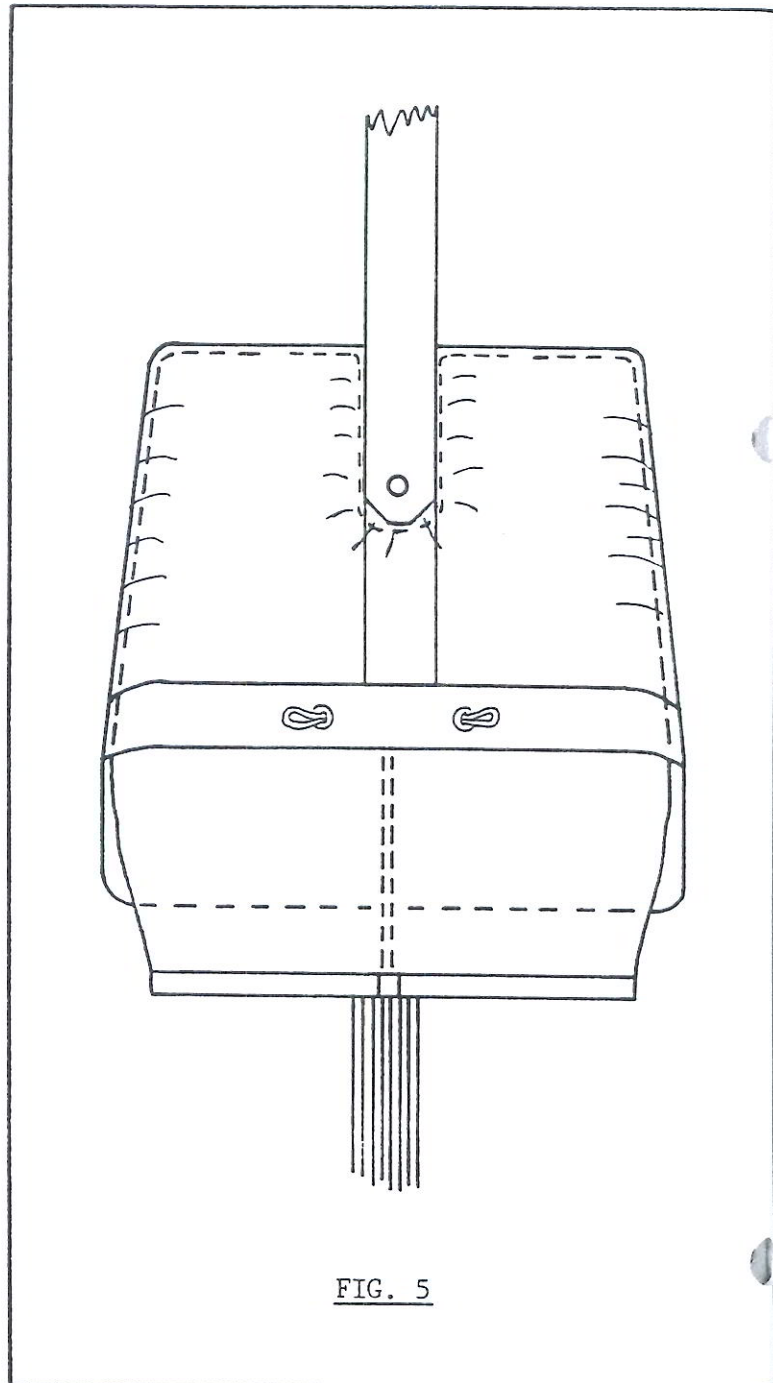


FIG. 5

- 5) Lock the mouth of the bag by making two stows with the suspension lines in the "safety-stow". (This is the loop made of 1/8" shock cord.) (FIG. 6)

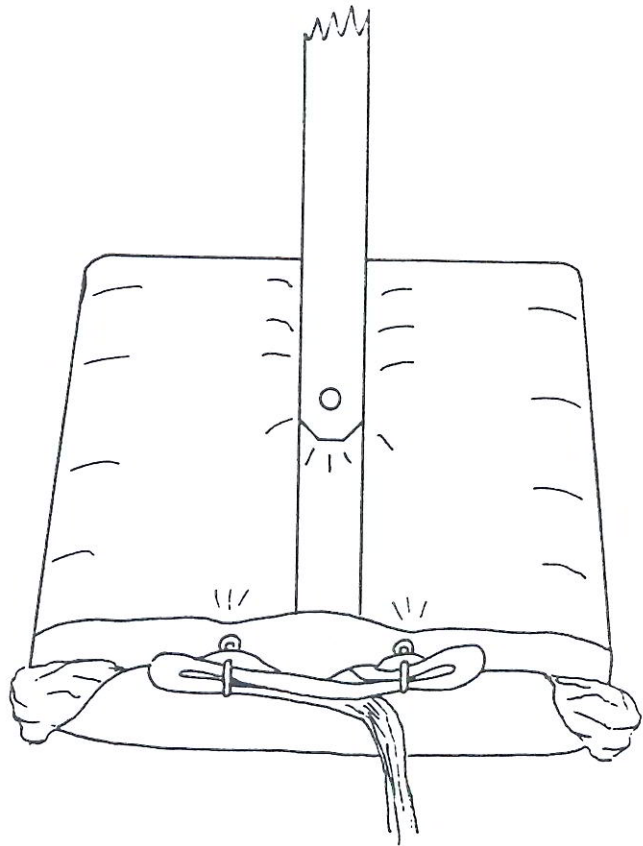


FIG. 6

- 6) After the two locking stows are made, stow the remainder of the suspension lines (to within 6" to 12" of the connector links) in the line-stow pouch on the back of the bag. This is where it is useful to use the velcro strips mentioned in the list of optional tools. Cover the hook velcro on the pouch with the strips of loop velcro while stowing the lines in the pouch. Make the "S" folds of the lines the full width of the pouch. To close the pouch, remove the strips of loop velcro and mate the velcro at the mouth of the pouch, being sure that none of the suspension lines are captured by the closure (FIG. 7).

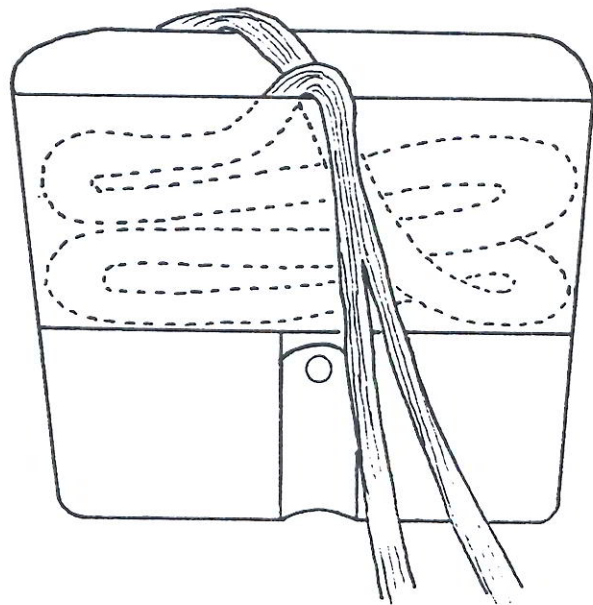


FIG. 7

- 7) Lay the reserve risers in the container so that the connector links are in the lowers corners of the container. Pass the pull-up cord thru the closing loop, then thread it thru the grommet in the bag. Lay the bag in the container with the line-stow pouch on the under side, and route the bridle back along either side of the closing loop. Close each side flap in turn, securing the flaps with the temporary pin. Push the tuck flaps under the ears of the bag. The bridle should now exit the container at the bottom (FIG. 8).

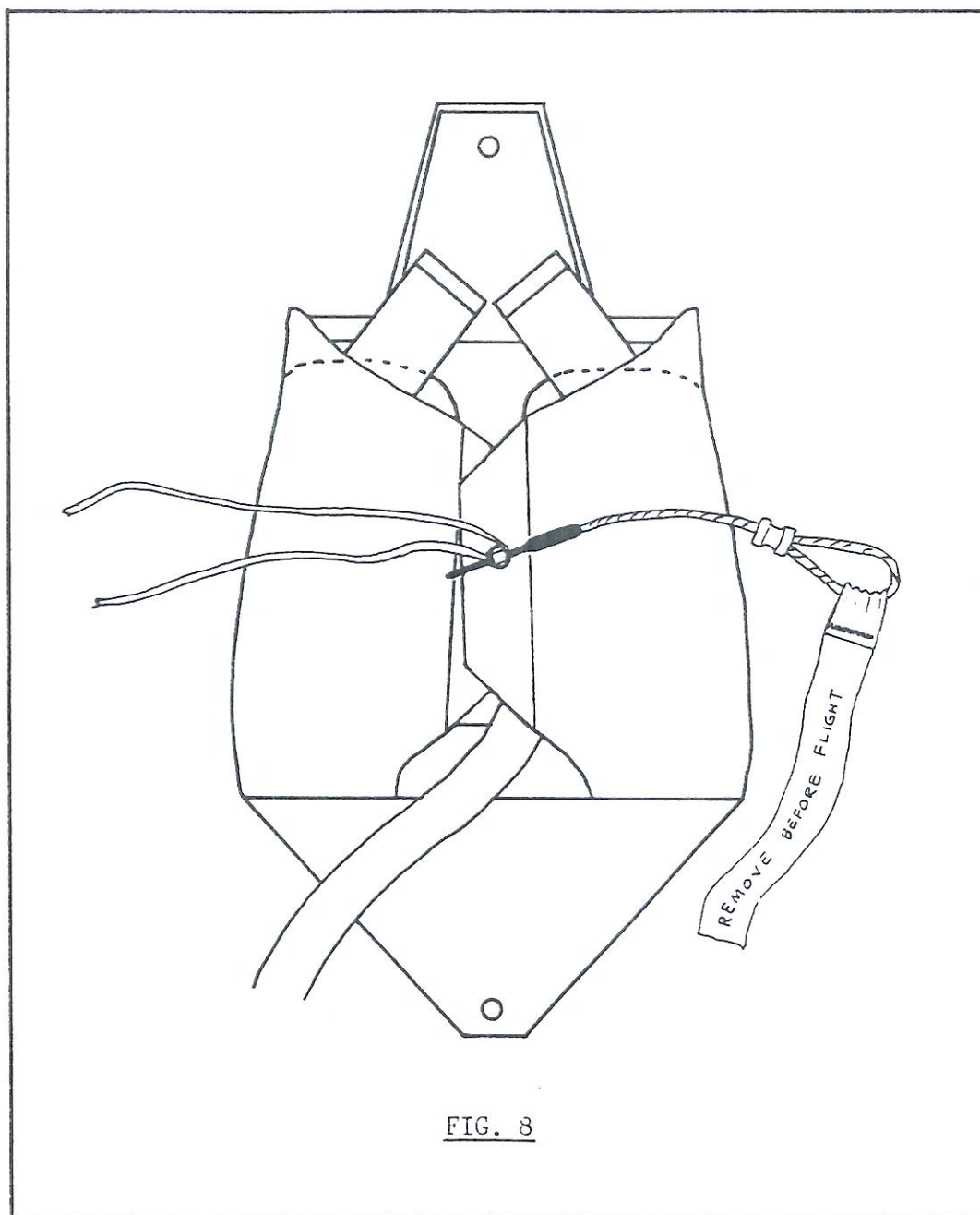


FIG. 8

- 8) Pass the pull-up cord up through the pilot chute and out through the top plate. (This is easily accomplished with .22 calibre rifle cleaning rod mentioned in the list of optional tools.) Seat the lower end of the pilot chute on top of the side flaps, and keeping the pull-up cord tight, compress the pilot chute and lock it with the temporary pin. Now pull all the fabric out from under the top plate so that the pilot chute canopy appears round. At this point check the length of the closing loop.. If the pilot chute top plate can rock back and forth or from side to side, the loop is too long. Shorten the loop so that when the pilot chute is compressed and locked with the temporary pin, the top plate will be firmly seated in the "nest" formed by the "molar" shape of the bag and the side flaps.
- 9) On each side of the top plate make a roll or fold in the pilot chute fabric parallel to the side of the reserve container, and push this roll under the top plate. Fold the bridle in accordian folds across the bottom of the container on top of the side flaps. The width of the folds will vary with the width of the container; a simple rule-of-thumb is, "Make the folds as wide as possible, but not so wide as to be seen when the bottom flap is closed". (See FIG. 9.)

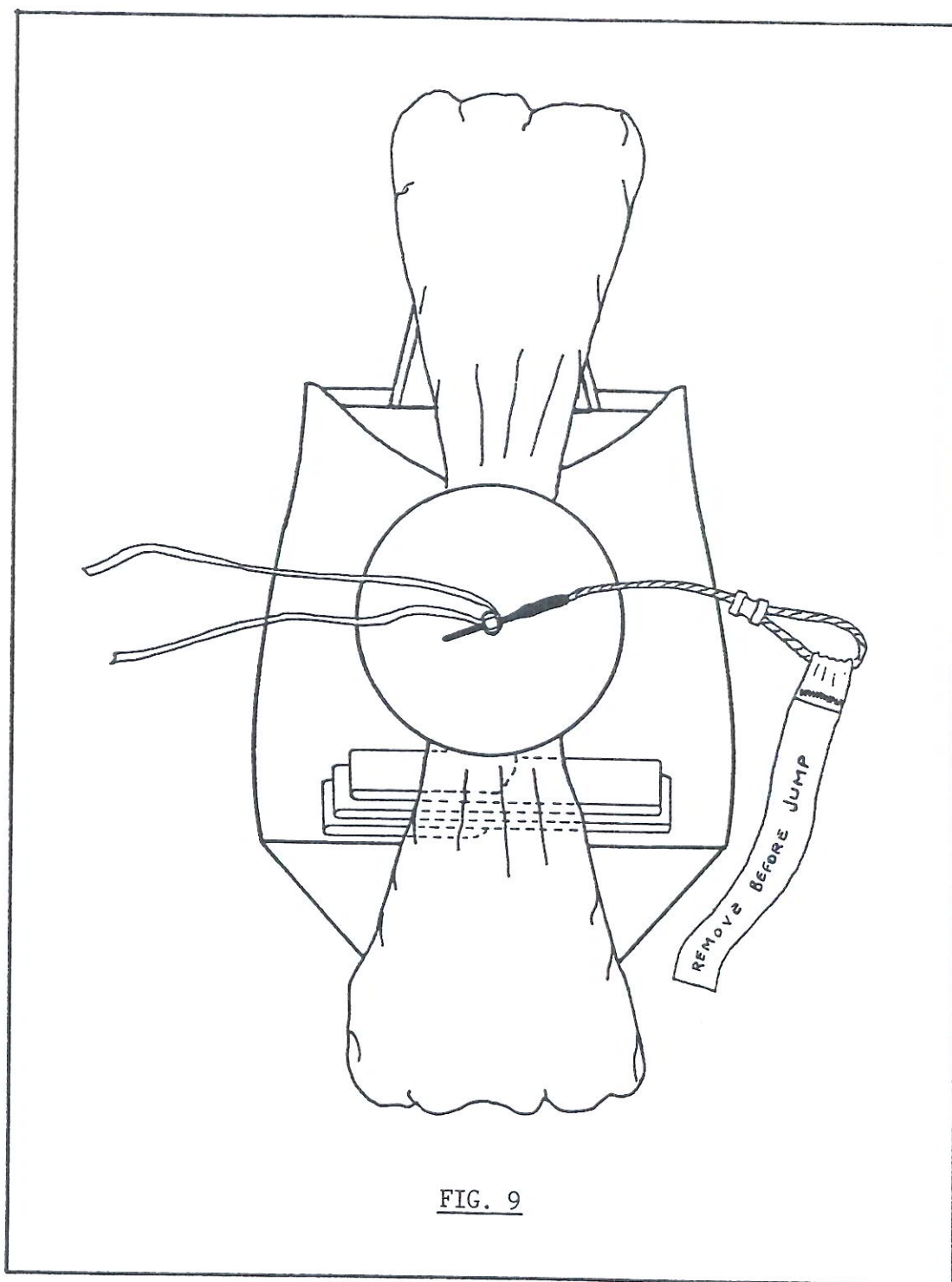
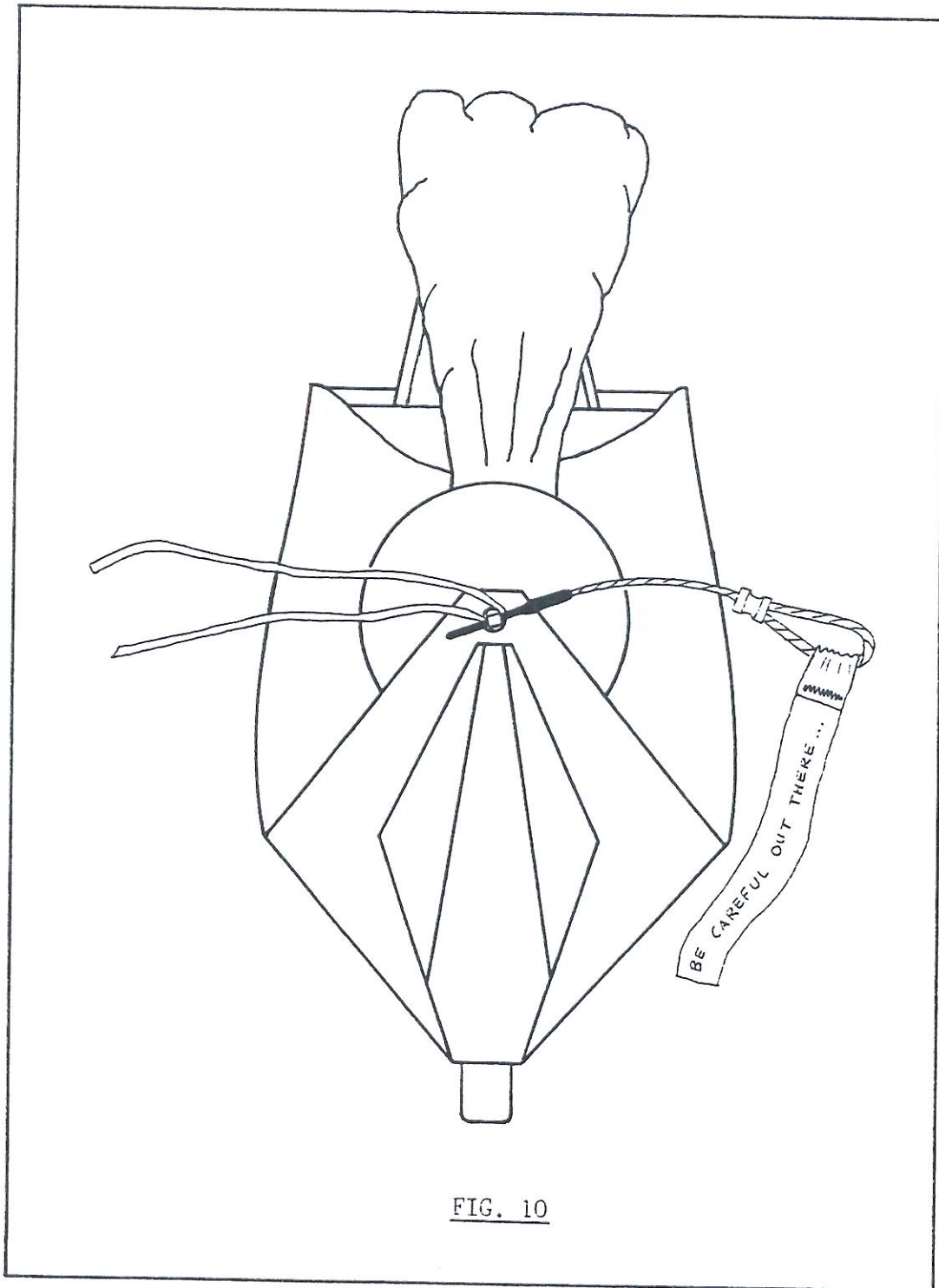


FIG. 9

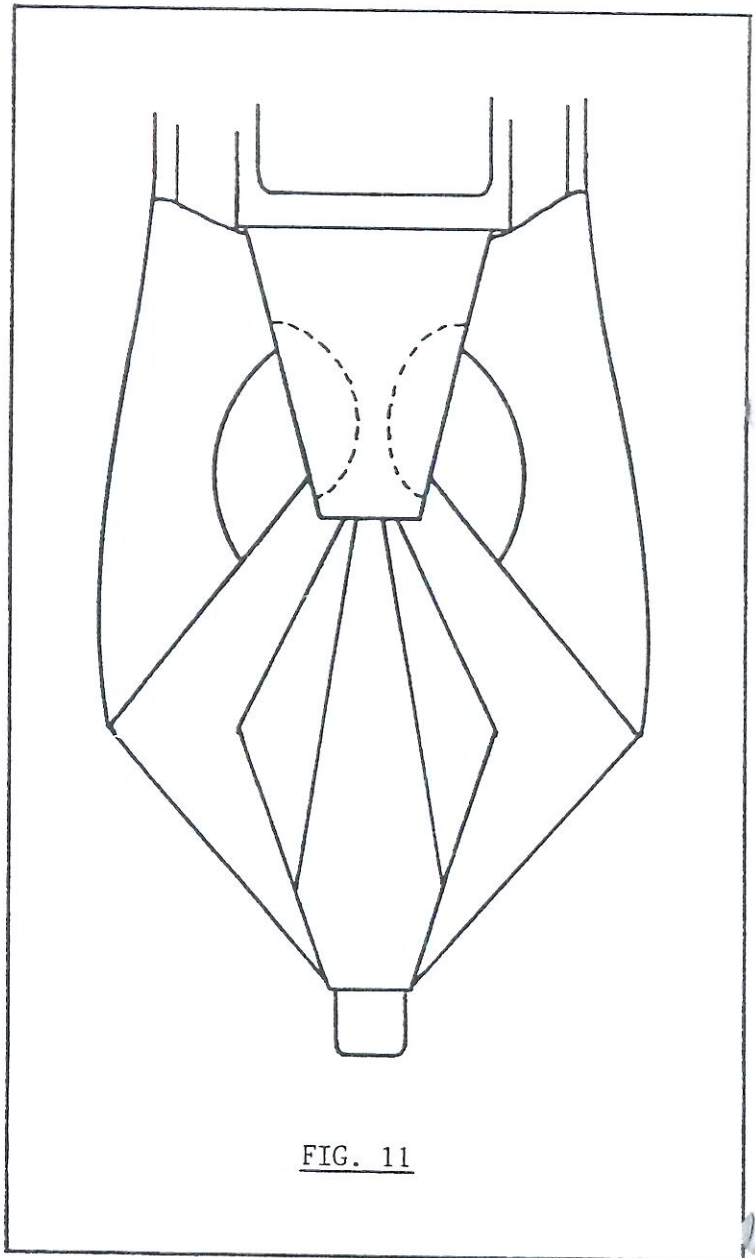
- 10) Part of the lower half of the pilot chute which now extends downward can be tucked under the top plate (but not so much as to cause the top plate to tilt forward). The rest should be arranged in a loose fold or roll and laid on top of the folded bridle. Close the bottom flap and secure it with the temporary pin (FIG. 10).



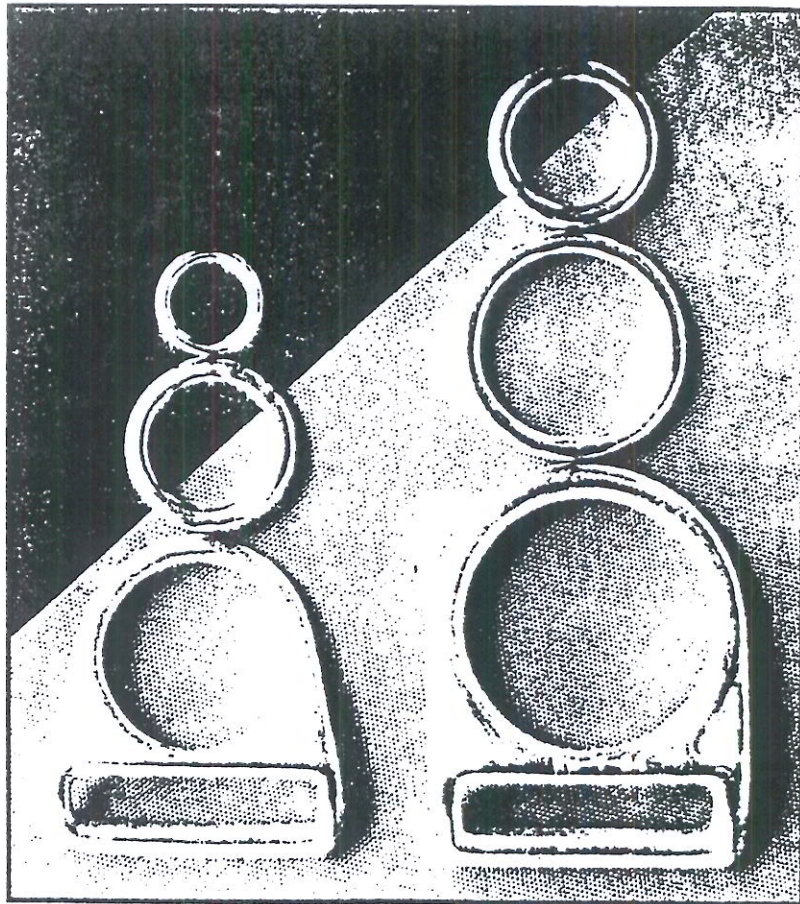
- 11) The pilot chute fabric extending upward from under the top plate can now be pushed into a narrow, loose roll and placed in the space just under the top closing flap between the folds of canopy. Be careful not to tuck any of this pilot chute fabric back under the side flaps; this would tend to retard the launch of the pilot chute. Close the top flap and secure it with the ripcord pin. (Be sure that your temporary pin is accounted for at this time!) Insert the ripcord handle into its velcro pocket just below the chest strap on the inboard edge of the left main lift web. the left main lift web.

- 12) Seal the reserve container and log the work done on the packing data card and in your rigger's log-book. Place the completed data card in the pocket provided on the underside of the reserve top flap cover. Secure the top flap cover over the top flap by inserting the tongue on each side under the top flap (FIG. 11).

- 14) COUNT YOUR TOOLS.



The 3-Ring Release



This section reprinted courtesy of THE RELATIVE WORKSHOP INC.

THE 3-RING RELEASE SYSTEM

Introduction

The 3-Ring Release System was invented by the Relative Workshop in 1976. It was the first practical release that allowed parachutists to jettison their main canopies in one motion by simply pulling a single handle.

Not only is the 3-Ring easier to operate than previous canopy release systems, it is also more reliable. Failures of a properly built and assembled 3-Ring system are virtually unknown.

Once the main is jettisoned, the only things left on the harness are two smooth rings that cannot snag a deploying reserve. Some other popular release systems can—and have—interfered with the deploying reserve.

MODIFYING THE 3-RING RELEASE

The great reliability of the 3-Ring system results from the proper functioning of every one of its individual components. Therefore, the owner should not modify the system in any way, nor should he replace genuine 3-Ring parts with others.

These modifications (among others) will cause the system to not work properly:

- Substituting risers that don't have Type 2 sheathing for the locking loop. Don't use risers that have loops made of Kevlar or solid cord.

- Not using a breakaway handle with cable with the special yellow coating. This Teflon-impregnated coating is important; other plastic coatings may cause the cables to bind in the housings or loops, making it difficult or impossible to jettison the risers.

- Using a breakaway handle with cables of the wrong length. The length of the cables is critical to insure each riser releases in the proper sequence. Replacement handles are available from the Relative Workshop.

The 3-Ring Release is now found on other rigs besides Vectors as the Relative Workshop has licensed its use to other manufacturers.

GETTING TO KNOW THE 3-RING

Knowing how the 3-Ring release works will help you assemble and inspect it properly.

Begin by peeling the release handle from the Velcro on the harness. Peeling, rather

than pulling, makes it easier to separate the handle from the webbing.

Look behind the risers near the harness and observe the movement of the yellow cable as you pull the handle. When the cable clears the white loop, the release is disengaged.

Now slowly pull one of the risers off the harness. As you pull, you'll notice that the white loop gets pulled through the grommet by the action of the smallest ring.

Each ring forms a lever with a ten-to-one mechanical advantage as it passes through the other. A force of 1,000 lb. on the large harness ring exerts a force of only ten pounds on the white loop. (Opening shock usually totals about 1,000 lb., or 500 lb. on each riser.)

Because of the mechanical advantage provided by the 3-Ring design, only a force of approximately a pound on the top ring keeps the release together.

That's why it's important to keep foreign matter like bits of grass and sticks out of the 3-Ring assembly. A small stick in the white loop could prevent a riser from releasing.

It is also important to understand one of the properties of the nylon components of the system.

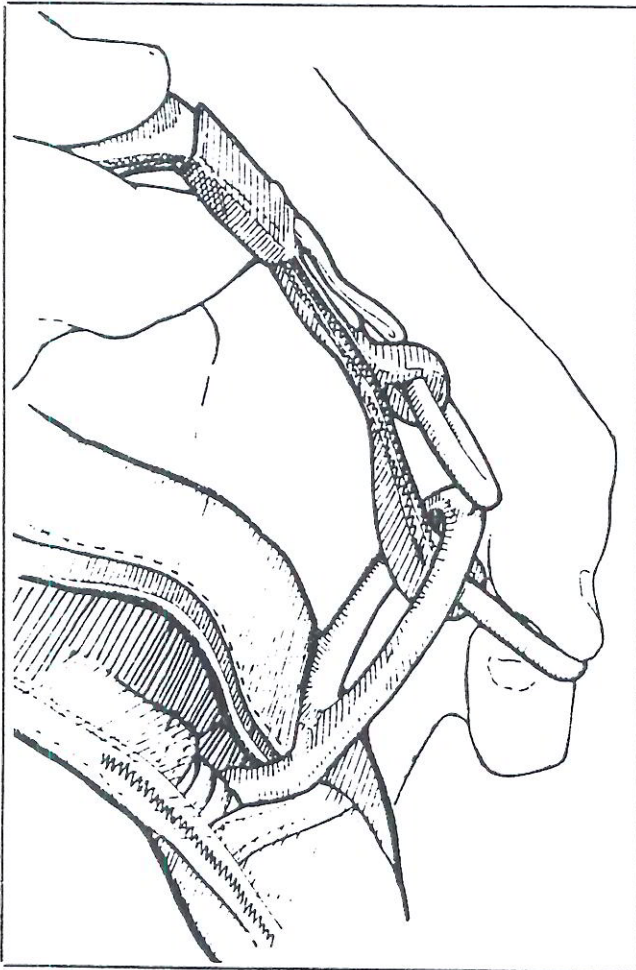
When nylon stays in the same position for a long time, it begins to conform to that position, or take a "set." If the 3-Ring release system stays assembled for too long, the nylon can become so stiff that the low drag from a malfunction (such as a streamer) won't pull the riser off the ring.

The 3-Ring release system must be disassembled, flexed and inspected every month. Procedures for this are listed in the care and maintenance chapter of the manual.

ASSEMBLY

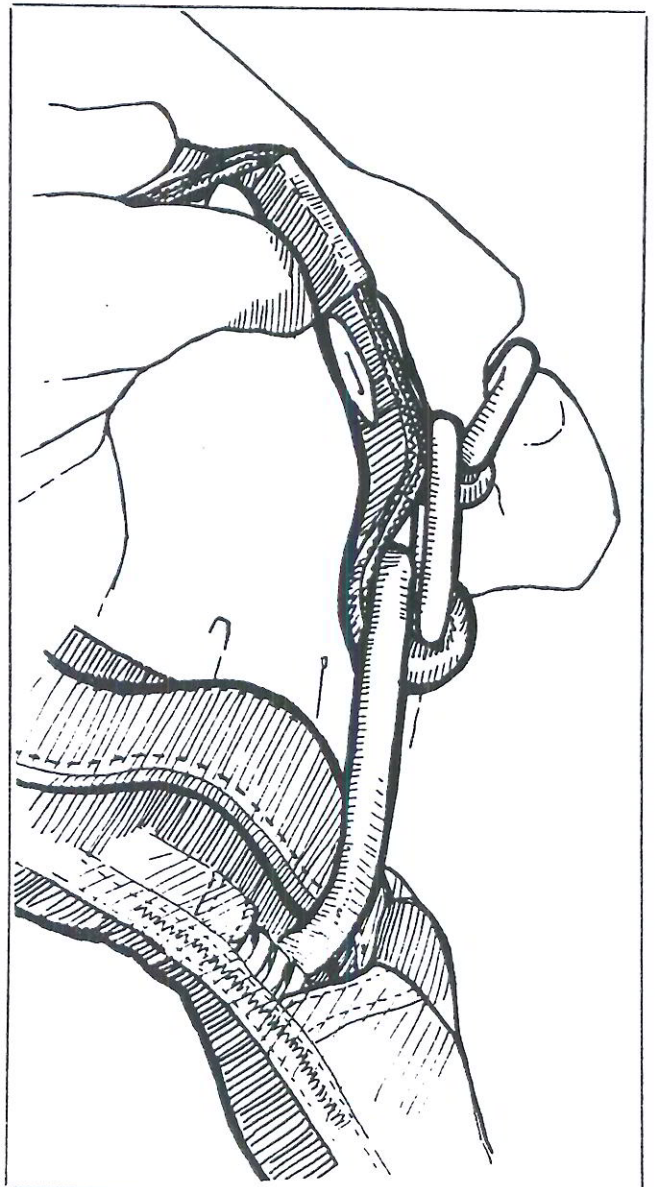
Before assembling the 3-Ring release, make sure the risers aren't twisted or reversed. Lay the JAVELIN face down, as you would to pack it.

1) Thread the cable into its housing and stick the handle to the harness. The handle should be positioned as close to the ends of the housings as possible so that no cable is exposed.

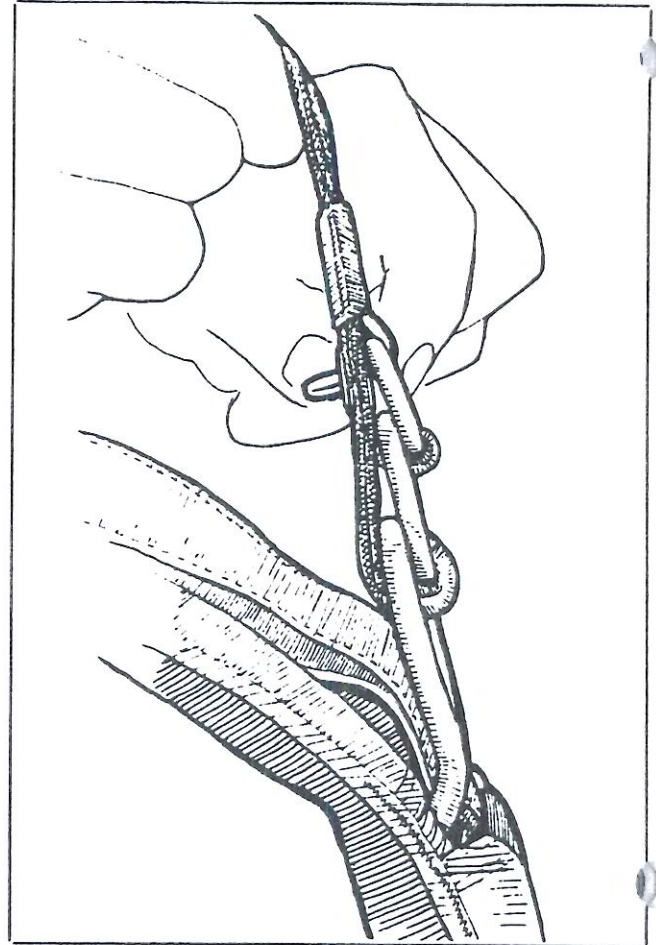
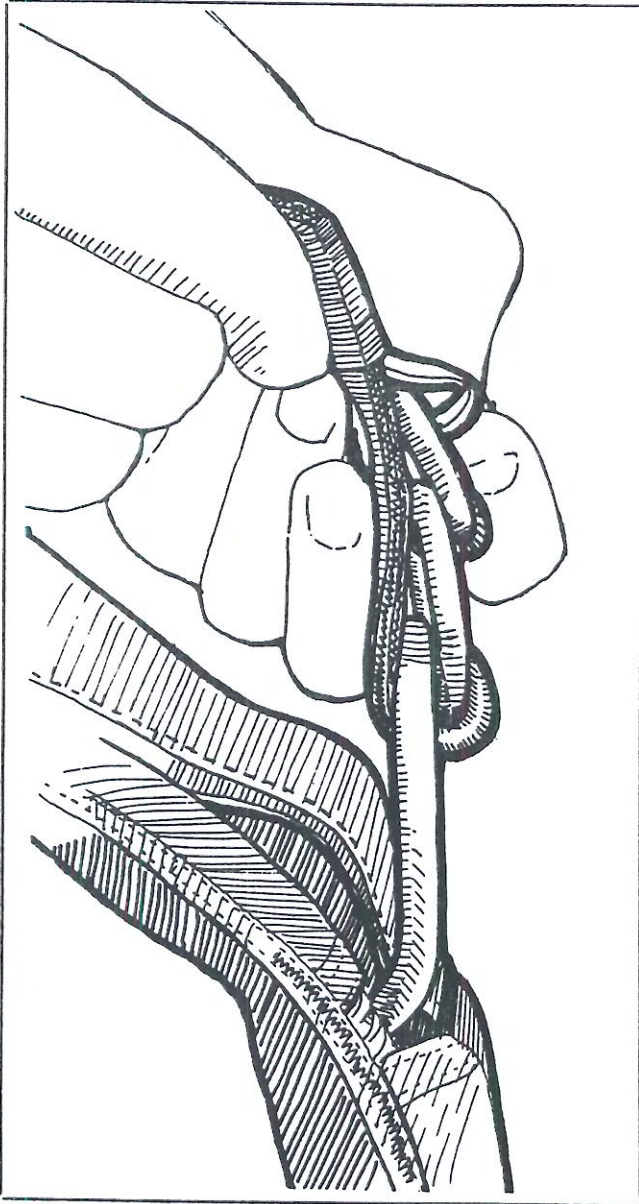


2) With the rings of the riser facing toward the floor, pass the ring on the end of the riser through the large harness ring from above. Fold it back toward the canopy and risers.

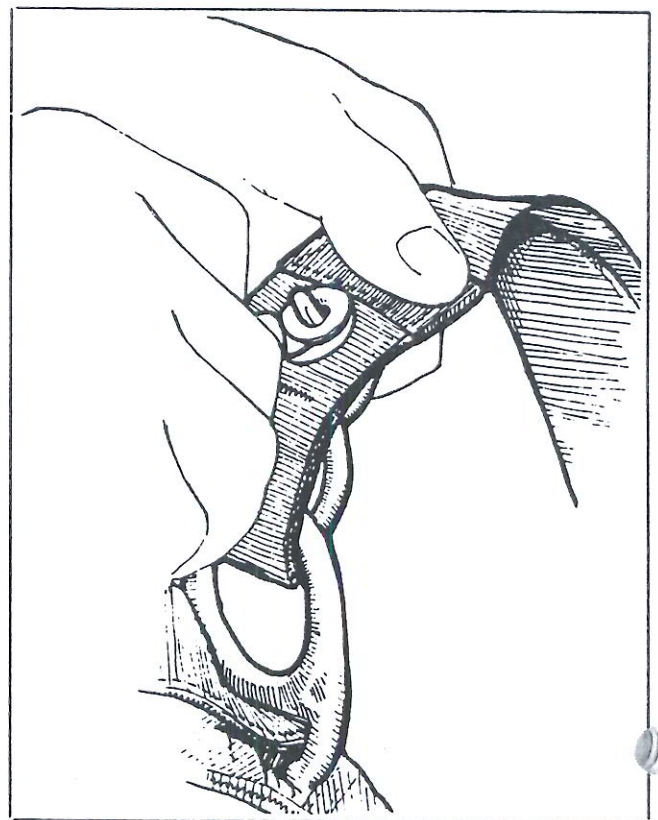
3) Thread the smallest ring through the middle ring in the same way, but make sure it doesn't pass through the large ring.

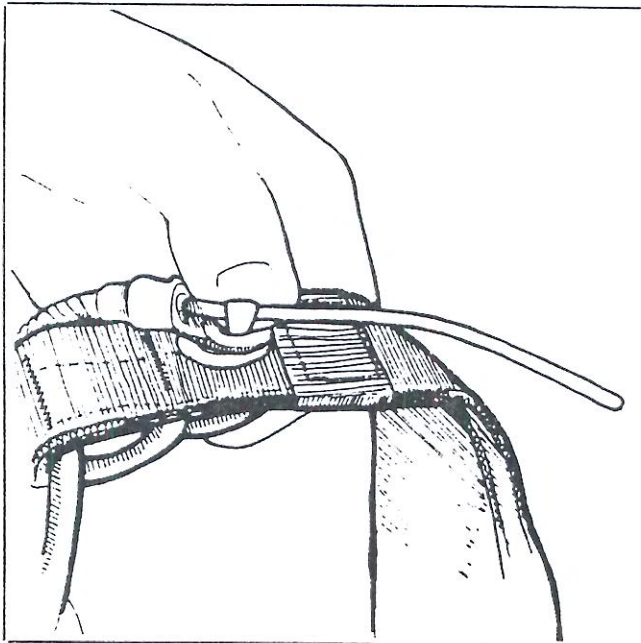
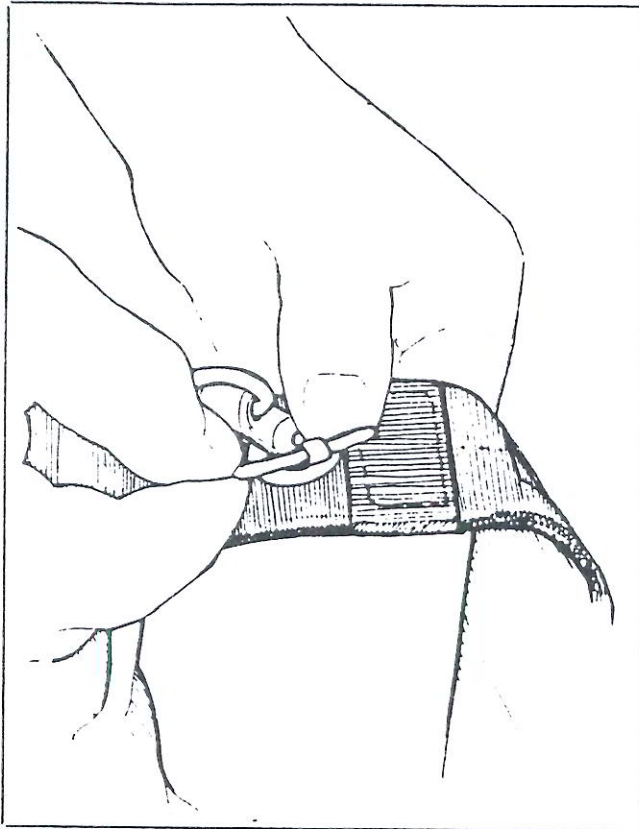


4) Bring the white loop over the small ring only and then through the riser grommet so it pokes out the back of the riser.



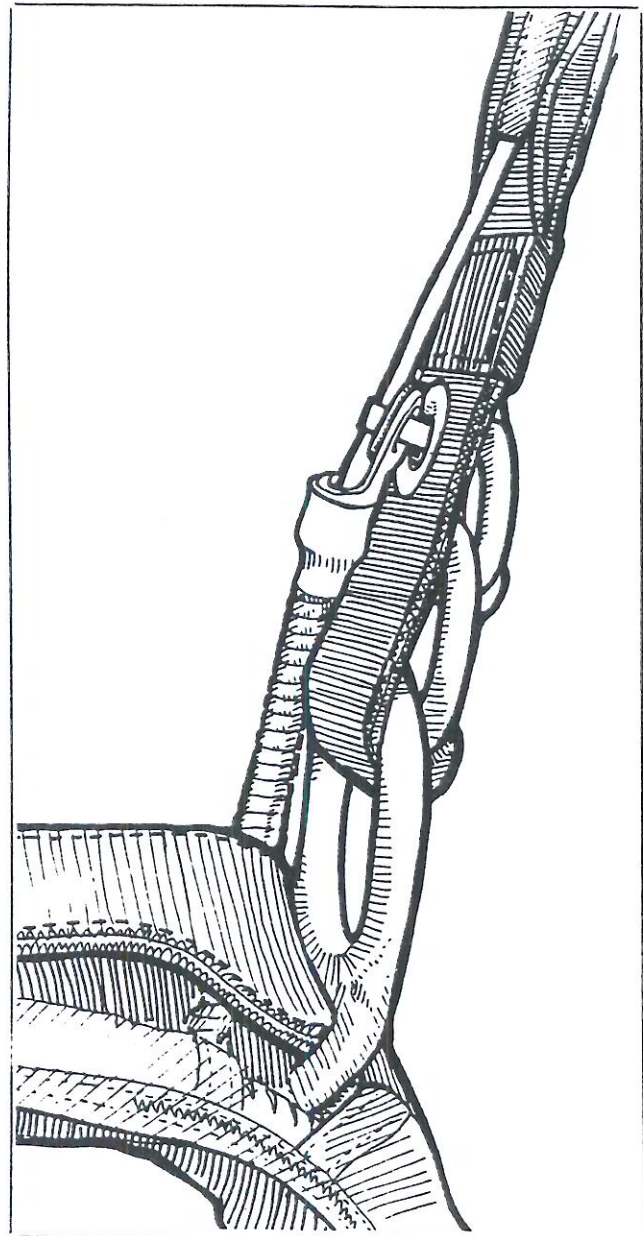
5) Continue threading the white loop through the grommet on the end of the cable housing. The flat side of the cable housing grommet should be against the riser.





6) Thread the yellow cable through the white loop, making sure the loop isn't twisted. Be careful with the cable so you don't bend it too sharply or kink it. Insert the free end in the channel on the back of the riser.

7) Repeat the above steps with the other riser.



REQUIRED PERIODIC MAINTENANCE FOR THE 3-RING

The Booth 3-Ring Release System has been in use for many years with excellent results. Although the system is as durable as the rest of the harness/container assembly, it requires periodic maintenance and inspection to ensure proper operation.

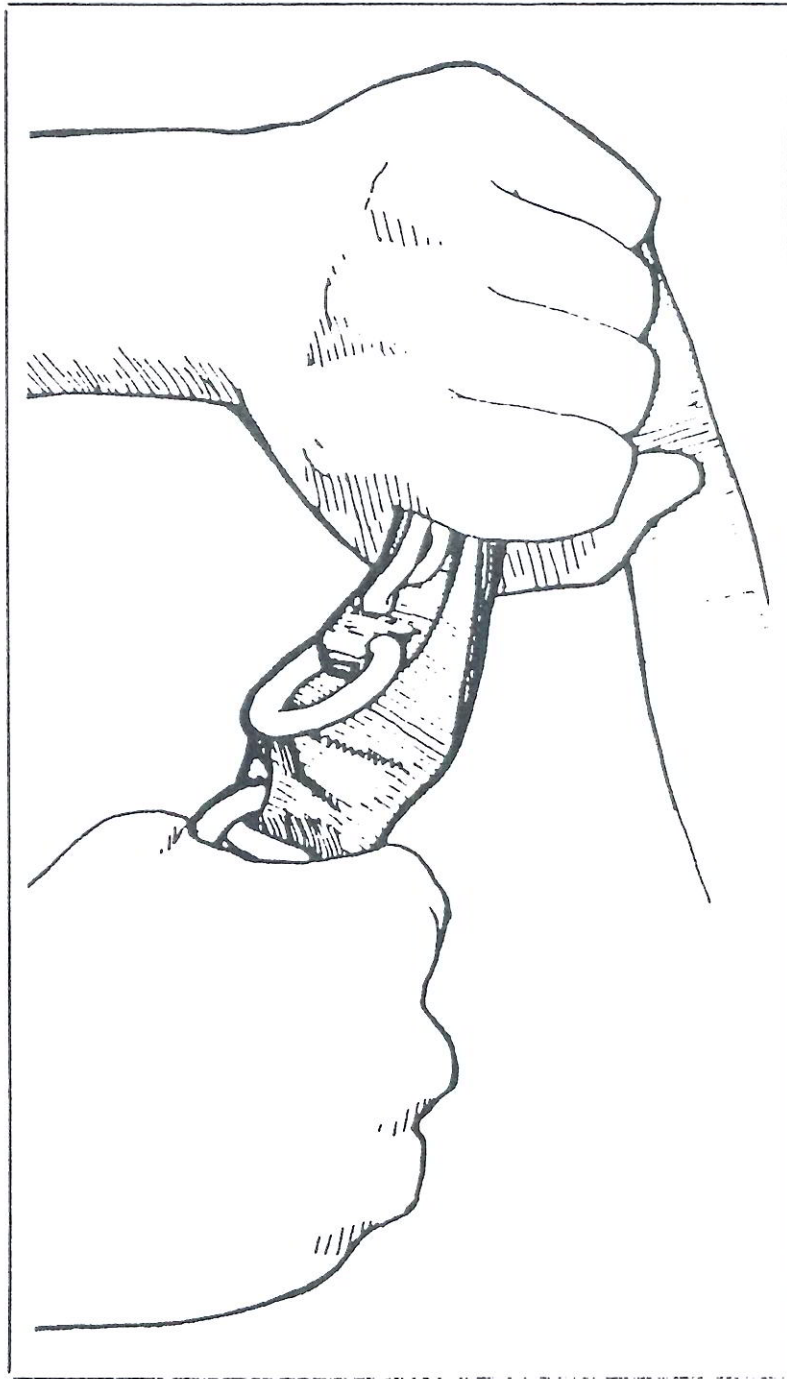
Generally it is NOT recommended that the risers be attached to the harness when new and "forgotten." Like all skydiving gear, the 3-Ring Release should be carefully inspected and operated on a regular basis.

The procedures below should be done at least every month. This is especially important if the rig has not been used for a month or more, such as during the winter. Immediate inspection is required if it has been subjected to some abuse such as a drag across the runway, a water landing or exposure to a lot of dust or sand.

- 1) Every month operate the 3-Ring release system on the ground. Extract the cable completely from the housings and disconnect the risers.
- 2) While the system is disassembled, closely inspect it for wear. Check the white locking loops (the ones that pass over the smallest ring and through the grommet) to be sure they are not frayed.
- 3) Check the Velcro on the breakaway handle and main lift web to be sure it is clean and adequately holds the handle.
- 4) Check the cable ends for a smooth finish. The ends are finished at the factory to have a smooth, tapered surface. This prevents the cable from hanging up in the loop. Check the cable ends and consult a rigger or the manufacturer if a burr or "hook" is present.
- 5) Check the stitching, including that which holds the large rings to the harness.
- 6) Pull downward on the housings. They shouldn't move downwards more than $\frac{1}{2}$ inch.

- 7) Take each riser and vigorously twist and flex the webbing near where it passes through each ring. The idea is to remove any set or deformation of the webbing. Do the same thing to the white loop. (See drawing, next page.)
- 8) Check the housings for dents or other obstructions. Use the cable to do this.
- 9) Clean and lubricate the release cable with a light oil such as a "3-in-1" brand. Put a few drops on a paper towel and firmly wipe the cable a few times. A thin, invisible film should remain--too much will attract grit and dirt, or the oil could become tacky in cold weather. Too much oil will require more force to extract the cable during a breakaway.
- 10) Inspect the fittings at the end of each housing. If one of these fittings were to come off the housing, a riser might release prematurely.
- 11) If any wear is found, consult a rigger or the manufacturer before using the JAVELIN.
- 12) Reassemble the system. Double check it. Make sure the risers aren't reversed.

It's important to maintain the system even more frequently in humid, muddy or freezing conditions. If the JAVELIN becomes immersed in mud or muddy water, clean the 3-Ring release system with a mild solution of soap and water. Any rusted components must be replaced.



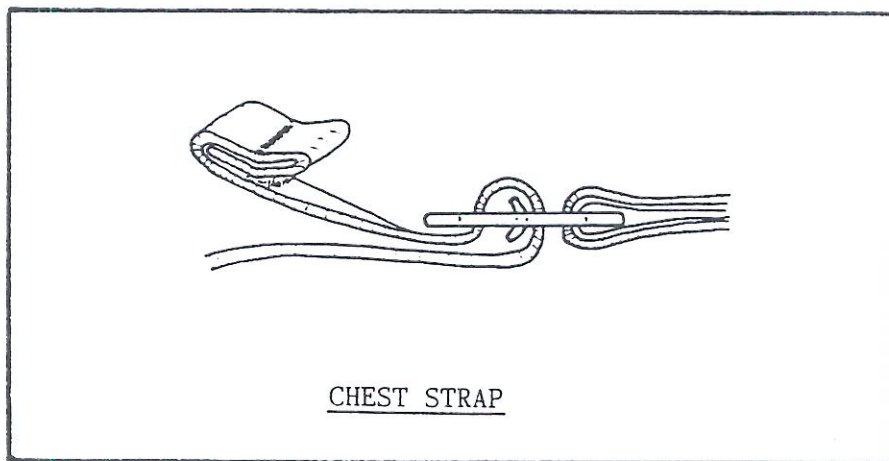
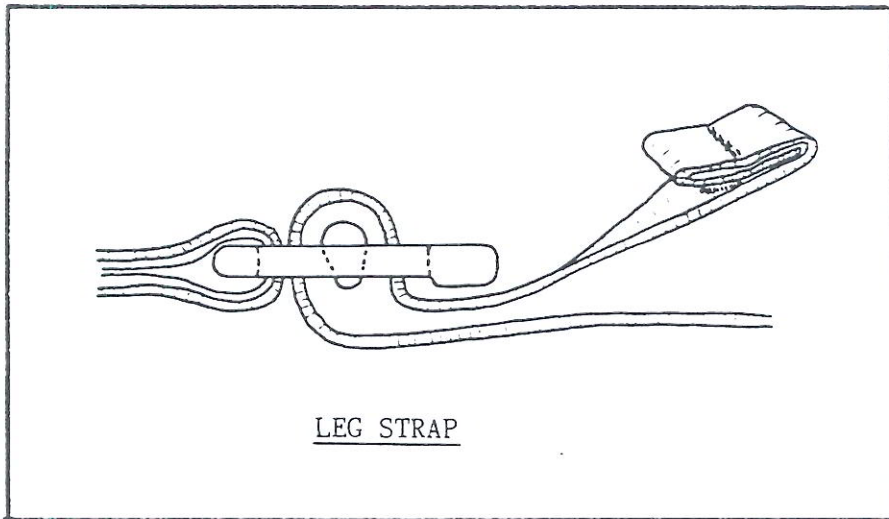
BEFORE USING THE JAVELIN

- 1) Read and understand this manual, and be qualified by proper instruction for sport parachuting activities.
- 2) Check both 3-Ring releases to see that they are correctly assembled, and the release handle is securely velcro'd to the main lift web.
- 3) Check the main container closure for correct pin position and correct routing of the bridle. The little velcro tabs on the bridle must be mated, and that fold must be on top of the side flap just above the curved pin.
- 4) Check the reserve container for correct pin closure and routing of the ripcord. Be sure the reserve ripcord handle is well seated in its velcro pocket.
- 5) The main pilot chute must be protected by its pouch, but the handle must be easily visible and accessible.

DONNING THE JAVELIN

When lifting the JAVELIN, grasp the main lift web between the large harness ring and the chest strap. Put the rig on as you would a jacket, settling the yoke across the shoulders. Step through the leg straps, being sure they aren't twisted, then thread the chest strap thru its friction adapter (adjustor) and tighten it to where it is comfortably snug. Be sure it has NOT been threaded through the reserve ripcord handle.

Tighten the leg straps until they are comfortably snug, and stick the free end of the strap down into the leg pad or in an elastic keeper. It is important to secure these free ends; a loose free end can easily be mistaken for a deployment handle.



Be sure all the friction adapters are correctly threaded. The webbing must pass under the adapter (next to the jumper's body) and come up through the frame above the movable bar, then back around the movable bar and under the end of the frame. If the webbing is routed in any way other than what is shown in these figures, it may not hold!

MAIN DEPLOYMENT

BEFORE JUMPING

The pouch for the main pilot chute is located at the right hip on the outside of the right leg pad. When the pilot chute is packed correctly, the handle should be visible and easy to grasp at the top of the pouch. (It is very important that the jumper familiarize himself with all handles and activation devices on his rig before jumping.) Practice looking at the handle, grasping it and extracting the pilot chute. Then go through the same procedure without looking at it. This should be done under the supervision of an instructor.

IN THE AIR

In a flat and stable position face-to-earth, grab the pilot chute handle and, in one motion, extract the pilot chute from the pouch and vigorously throw it STRAIGHT OUT to the side, placing it in clean air. If you are in the air with other jumpers, the wave-off should be done before extracting the pilot chute. Waving off with the pilot chute in hand may cause a premature opening of the container.

RESERVE DEPLOYMENT

This section is not a full course of instruction on how to deal with emergencies. It is meant only to explain the function of the JAVELIN harness/container system. Learning the proper procedures, and deciding when or if to use them is the responsibility of the jumper, who must be thoroughly trained by an experienced and qualified instructor before attempting to make a parachute jump.

PARTIAL MALFUNCTION

A partial malfunction occurs when the canopy has come out of the container, but has not opened properly. Most jumpers are now trained to jettison (disconnect) the main canopy before activating the reserve if the partial malfunction is serious enough to warrant emergency procedures. Disconnecting from the main is called a "breakaway" or "cutaway", and it is done to prevent the entanglement of the reserve with the main.

PROCEDURE:

Look down and locate both the metal reserve ripcord handle and the breakaway handle (the soft handle just below the chest strap on the right main lift web). Grab the breakaway handle and peel it away from its velcro mount. Then pull it vigorously downward and outward as far as the arm will reach. Throw it away and then grasp the metal reserve ripcord handle with both hands. Pull downward and outward with all your strength as far as the arms will reach.

Again it must be emphasized that it is the jumper's responsibility to decide whether any emergency procedure is appropriate, and to decide whether he has enough time or altitude to perform it. Obviously if the jumper decides that he is too low to perform a breakaway, he should simply activate the reserve.

TOTAL MALFUNCTION

A total malfunction occurs when the canopy is still in the container after an attempt has been made to activate. This may occur if the pilot chute cannot be extracted from its pouch, or if the pilot chute is inflated but cannot open the container. It is generally considered best when presented with a total malfunction to simply pull the reserve ripcord without breaking away from the main canopy. A total malfunction always leaves the jumper falling at high speed, and breaking away from a canopy that is still in the container may waste precious time and altitude.

PROCEDURE:

Look at the reserve ripcord handle (the metal handle just below the chest strap on the left main lift web), grasp it with both hands and pull it downward and outward with all your strength and as far as you can reach. It is usually considered best to be in a stable position somewhat head-high when deploying any canopy, but if time and altitude are running out, body position is not as important as getting the canopy out!

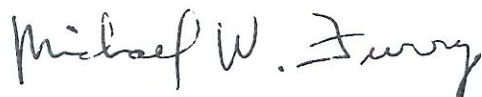
* * *

DEAR JAVELIN OWNER,

It is the goal of SUN PATH PRODUCTS INCORPORATED to produce and sell the best sport parachute equipment that can be manufactured with today's materials and technology. In this effort it is important that we obtain all the feedback from our customers that we can. We would like for you to share with us any observations, problems, suggestions, etc., that you may have. Our primary concern is of course the SAFETY and DEPENDABILITY of the JAVELIN harness/container system. After that, your satisfaction comes first.

We thank you for your choice of the JAVELIN, and we hope for your continued confidence in SUN PATH PRODUCTS INC.

BLUE SKIES and SAFE DIVES,

A handwritten signature in cursive script that reads "Michael W. Furry".

MICHAEL W. FURRY, PRESIDENT,
SUN PATH PRODUCTS INC.