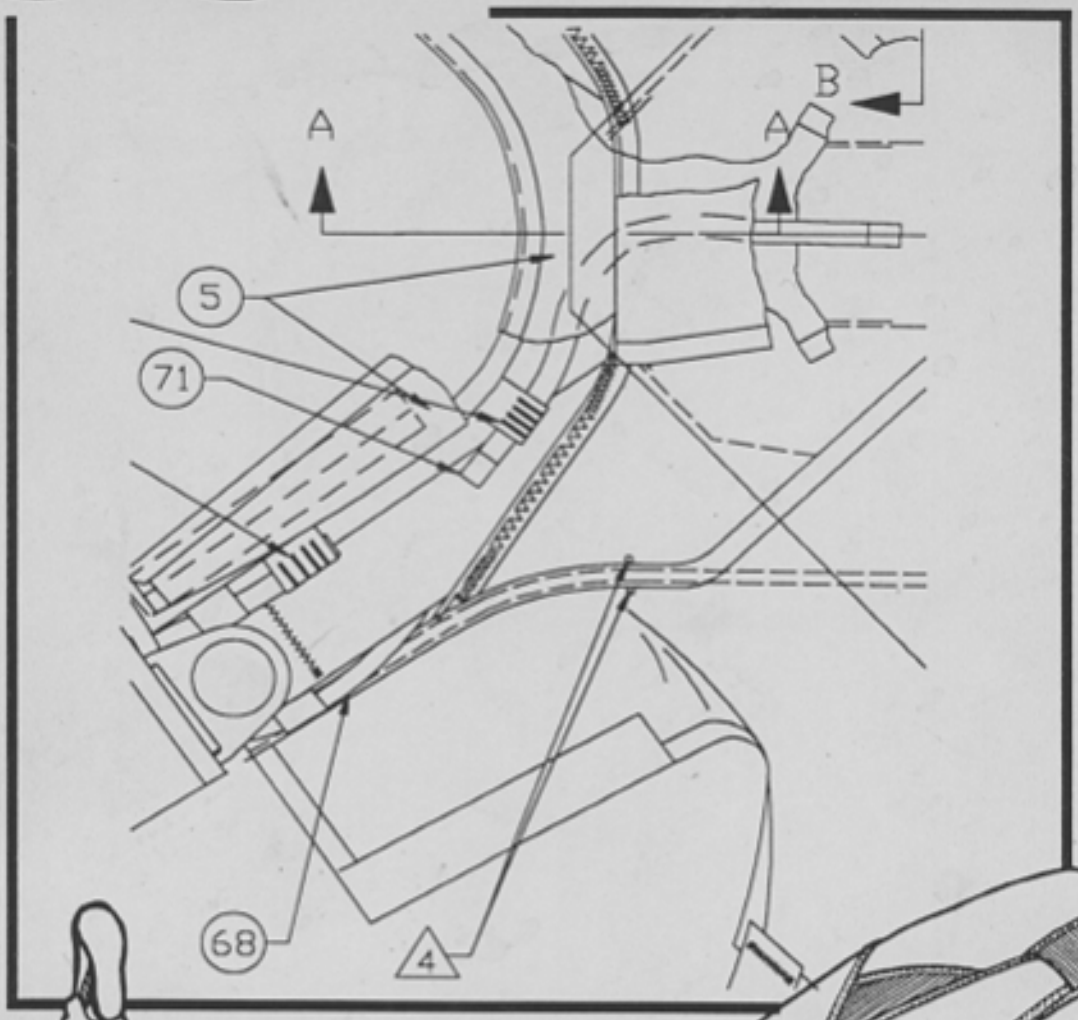
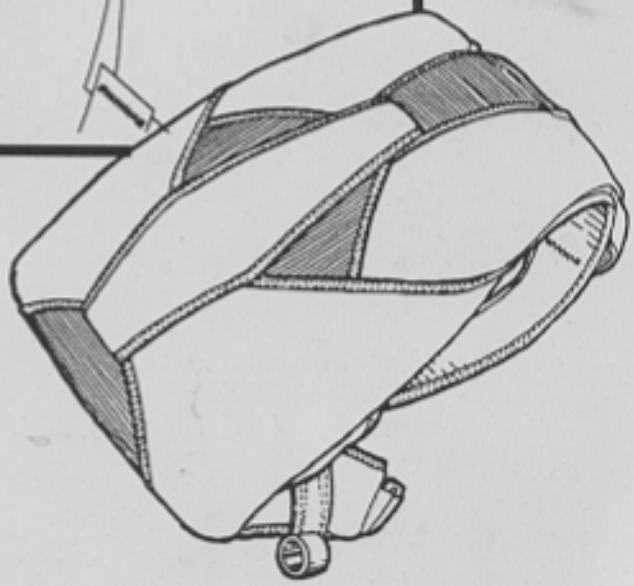
SN# 5125

EOS™

HIGH PERFORMANCE HARNESS/CONTAINER OWNER'S MANUAL





P/N: 816307

NOVEMBER 1991

⚠ WARNING

1. TRAINING AND/OR EXPERIENCE ARE REQUIRED TO LOWER THE RISK OF SERIOUS INJURY OR DEATH.

   NEVER USE THIS EQUIPMENT UNLESS YOU HAVE:

   A. READ THIS WARNING LABEL AND COMPLETED A "CONTROLLED PROGRAM OF INSTRUCTION" IN THE USE OF THIS PARACHUTE ASSEMBLY.

   - OR -

   B. READ THIS WARNING LABEL AND ALL APPROPRIATE OWNERS/FLIGHT MANUALS, PACKING INSTRUCTIONS AND COMPLETED AT LEAST 100 RAM AIR PARACHUTE JUMPS.

2. LOWER THE RISK OF DEATH, SERIOUS INJURY, CANOPY DAMAGE AND HARD OPENINGS BY NEVER EXCEEDING THE LIMITS SHOWN BELOW (THE LOWEST LIMIT OF ANY COMPONENT APPLIES TO THE ENTIRE ASSEMBLY):

	HARNESS/CONT.	MAIN	RESERVE
MAXIMUM DEPLOYMENT SPEED	150 KNOTS	KTS	KTS
MAXIMUM GROSS WEIGHT (JUMPER + CLOTHING + EQUIPMENT)	115KG (254 LBS.)	LBS.	LBS.
MANUFACTURER	PARA-FLITE, INC.		
MODEL			

ATTENTION RIGGER: FILL IN CANOPY DATA WITH WATERPROOF INK. CHANGE DATA ON LABEL IF A DIFFERENT CANOPY IS INSTALLED.

EOS™ HARNESS/CONTAINER ASSEMBLY

PART NO. _____ SERIAL NO. _____ DATE _____

APPROVED UNDER TSO-C23c, CATEGORY B, BASED ON TESTS CONDUCTED WITH SWIFT PLUS 145 AND 225 RESERVE CANOPIES. THIS SIZE HARNESS/CONTAINER ASSEMBLY WAS TESTED WITH AND IS COMPATIBLE WITH:

CANOPY _____ APPROX. VOL. _____ (cu. in.)

PARA-FLITE Incorporated
5800 Magnolia Avenue Pennsauken, New Jersey 08109-1399 U.S.A.

REMOVAL OF THIS LABEL VOIDS ALL WARRANTIES AND THE TSO

DISCLAIMER - NO WARRANTY

Because of the unavoidable dangers involved in the use of this system, Manufacturer makes no warranty of any kind, express or implied. The system is sold *With All Faults and Without Any Warranty of Merchantability or of Fitness for Any Purpose.* Manufacturer also disclaims any liability in tort for damages, direct or consequential, including personal injuries, resulting from a malfunction or from a defect in design, material, workmanship or manufacture whether caused by negligence on the part of Manufacturer or otherwise.

Any deviation from Manufacturer's specifications concerning maintenance, repair, and alterations or modifications constitutes willful negligence and will be done at the operator's own risk.

By using the system or allowing it to be used by others, Buyer waives any liability of the manufacturer for personal injuries or other damages arising from such use.

If Buyer declines to waiver liability on the part of Manufacturer, Buyer may obtain a full refund of the purchase price by returning the system, **before it is used,** to Manufacturer within 30 days from the date of original purchase. In order to obtain the refund, the following form must be filled out and returned with the ***unused*** system. Manufacturer will bear the cost of postage.

NAME: _____

ADDRESS: _____

_____

DEALER'S NAME: _____

DEALER'S ADDRESS: _____

_____

DATE OF PURCHASE: _____

EOS™ SERIAL #: _____

Mail to: Para-Flite, Incorporated
5800 Magnolia Avenue
Pennsauken, New Jersey 08109-1399
U.S.A.

PARA-FLITE INCORPORATED®

SAFETY WARNING

For continuing safe and rewarding use of the EOS harness/container, please follow these instructions.

The EOS contains high performance gliding parachutes with unique flight and handling characteristics.

A thorough understanding of these characteristics is imperative for safe and effective flight. Certain actions or maneuvers, improperly executed by the user, may result in serious bodily injury or death. Use of the EOS by an inexperienced or unprepared parachutist is extremely hazardous as it is intended for use solely by experienced parachutists.

The EOS is designed for intentional parachute jumping only. It is **not** intended as an aircraft emergency escape system.

The EOS is a sensitive device which may be easily damaged. A malfunction in flight may occur from improper use or maintenance, accident, striking, alteration, faulty repair, or abuse. Before each flight, the EOS should be carefully inspected for evidence of damage or wear in accordance with the instructions contained in the body of this manual. Any deviation from the Manufacturer's specifications concerning repair, maintenance, or alterations and modifications constitutes willful negligence.

As an EOS owner, you should not permit its use by an inexperienced parachutist. Neither you nor anyone else should attempt to use the EOS without having first carefully read and understood this entire manual, as well as **Para-Flite's *Emergency Parachute Owner's Manual*** and the **Para-Flite, Inc. *Ram-Air Flight Manual.***

PARA-FLITE, INC.
5800 Magnolia Avenue • Pennsauken, New Jersey 08109-1399 • (609) 663-1275
FAX: (609) 663-3028

EOS™ OWNER'S MANUAL

INTRODUCTION

The EOS is an innovative harness/container system, designed with the four primary objectives of all Para-Flite products:

- Reliability
- Durability
- Light weight and low volume
- Maximum comfort and performance

Among its special features are:

- Fully protected risers and bridle, hidden out of sight and out of trouble.
- Superbly comfortable harness, which snugs the containers into your back in freefall and cradles you under canopy.
- Low chest strap, for increased comfort and better breakaway and ripcord handle visibility.
- Functionally designed containers that are aesthetically appealing and aerodynamically clean.
- Minimal use of Velcro, for reduced maintenance.
- Easy conversion between pullout and throwout main pilotchutes.
- Automatically collapsing main pilotchute, for increased main canopy performance.
- Reserve static line (RSL) for split-second reserve activation.

The EOS was specifically designed to fit the Swift Plus™ line of reserve canopies, as well as compliment our line of main canopies including the Super Evolution™, the Robo™ and Robo Z™, the Cruislite® and the Pursuit® series'.

EOS PART NUMBERS

The EOS part number identifies the main and reserve canopy sizes which are compatible with the specific EOS harness/container system. The EOS part number is of the form

817ABC

where the letter "A" gives the reserve canopy size group, the letter "B" gives the main canopy size group, and the letter "C" specifies the particular hardware configuration of the system. Compatibility of main and reserve canopies with each size group is given below.

COMPONENTS

The EOS is designed to operate as a complete system, integrated with its components. The use of non-EOS components may result in lowered performance or in a malfunction.

RESERVE CANOPY COMPATIBILITY

Para-Flite, Inc. tested and TSO'd the EOS harness/container system with the Swift Plus 145 and Swift Plus 225 reserves. Size compatibility is as follows:

- EOS Group One reserve containers (with part numbers of the form 8171BC) are compatible with the Swift Plus 145 Reserve (PFI P/N 828100), which has a pack volume of approximately 330 cubic inches.
- EOS Group Four reserve containers (with part numbers of the form 8174BC) are compatible with the Swift Plus 225 Reserve (PFI P/N 828000), which has a pack volume of approximately 480 cubic inches.

Para-Flite, Inc. has also determined, through drop tests and other tests from AS8015A, that the Swift Plus 175 Reserve (PFI P/N 827400, formerly identified as the Swift Plus Reserve, with a pack volume of approximately 385 cubic inches) is compatible with the EOS Group Two reserve containers (with part numbers of the form 8172BC).

MAIN CANOPY COMPATIBILITY

The letter "B" in the EOS part number "817ABC" indicates the main canopy size group the container was built for. The chart below gives the approximate range of volumes for each size group.

Please note that it is difficult to measure the volume of a canopy accurately, since the measurement depends on technique, humidity, and other variables (not all of which are known or well understood). It is also difficult to translate the volume measurement into an equivalent container volume, since the packed volume of a canopy depends on packing method, technique (a "side pack" usually gives a smaller packed canopy than a "pro pack", for example), and container shape, as well as individual preference.

CAUTION: For the reasons listed above, **the volumes given in the chart below are provided for reference only,** and are not intended to be a definitive statement of volume compatibility.

MAIN VOLUME COMPATIBILITY

Main Size Group *(P/N letter "B")*	Volume Range *(cubic inches)*
1	Up to 350
2	350 - 400
3	405 - 450
4	455 - 500
5	505 - 550
6	555 - 610

EOS HARNESS/CONTAINER

DESCRIPTION

SPECIFICATION

The complete EOS harness/container assembly consists of:

- EOS Harness/Container
- Main Risers
- Main Toggles
- Breakaway Handle
- Main Pilotchute (with Bridle, except on main canopies with a retractable pilotchute system)
- Main Deployment Bag
- Reserve Toggles
- Reserve Deployment System (Free Bag with Bridle and Pilotchute)
- Reserve Ripcord

The weight of the complete system depends on its size and hardware configuration, and varies between approximately 7.3 and 9.0 pounds.

The design dimensions of the containers vary with the size of canopy intended for the system. Container width varies from 12 to 15 inches, overall length varies from 18 to 22 inches, and thickness varies from 3.50 to 5.25 inches.

PROCEDURES FOR USING THE EOS:

Before you jump your new EOS, please read this entire manual, as well as **Para-Flite's *Ram Air Flight Manual*** and **Para-Flite's *Emergency Parachute Owner's Manual***, both of which can be obtained from Para-Flite, Inc.

Before you jump the EOS, you should be totally familiar with the entire unit, especially the exact locations of the pilotchute handle, the reserve ripcord, and the breakaway handle. You should also be familiar with the main bridle routing.

The only way to become totally familiar with the EOS is to put it on and repeatedly practice the actions required to pull out the pilotchute, to accomplish a safe breakaway, and to deploy the reserve. Practicing these maneuvers in a suspended harness is strongly advised.

MAIN CANOPY ACTIVATION WITH THE THROWOUT PILOTCHUTE.

1. Get flat and stable, or in a slight track.
2. Clear the sky above, below and around. Wave off.
3. **Look** at the handle located on your right leg strap.
4. In a smooth and continuous motion, pull your pilotchute from the pocket and throw it to the side as far as you can. **Do not release the pilotchute by pulling it out of the pocket and just letting it go. It could fall into your burble and hesitate.**
5. Do not hold onto the pilotchute or wave off with it. The drag on the bridle may open your main container while the pilotchute is still in your hand.

MAIN CANOPY ACTIVATION WITH THE PULLOUT PILOTCHUTE.

1. Get flat and stable, or in a slight track.
2. Clear the sky above, below and around. Wave off.
3. ***Firmly*** grasp the pullout handle at the bottom right corner of the main container, and ***peel*** it from the Velcro.
4. In a smooth, continuous motion, extend your arm to full length and sweep it from your hip to above shoulder level, to pull the pin and extract your pilotchute from the container. Release it at the top end of the sweep. **Do not release the pilotchute by just pulling it out and letting it go. It could fall into your burble and hesitate.**
5. Do not hold onto the pilotchute or wave off with it. The main container is open, and your main bag may come out of the container while the pilotchute is still in your hand.

BREAKAWAY AND RESERVE ACTIVATION:

Familiarize yourself with the EOS, and practice breakaways from a suspended harness, **BEFORE** actually jumping it.

For maximum ease of operation, the soft breakaway handle (Velcroed on the right shoulder pad, behind the "mudflap") must be peeled away from the attaching Velcro, **THEN** pulled downward to effect the release. If the handle is not peeled away and just pulled straight down, considerably more force will be required to release the handle from the Velcro.

If you pull the breakaway cable completely out of its housing during a breakaway, ***THROW IT AWAY*** before pulling the reserve ripcord.

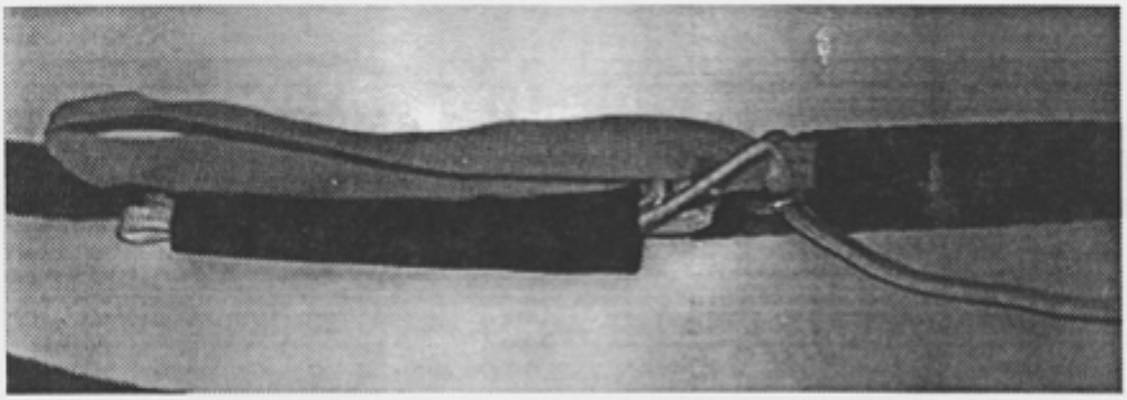
Make eye contact with or grab the breakaway handle **and** the reserve ripcord **before** breaking away.

Maintain eye contact with the reserve ripcord as you breakaway, and pull the reserve ripcord immediately following breakaway.

MANDATORY PRE-FLIGHT CHECK LIST:

1. Ensure that the connector link barrels are snug and tight, and that the slider bumpers (if used) are in place.
2. The reserve ripcord pin should be centered in the closing loop.
3. The reserve ripcord pin should be oriented vertically, with the reserve ripcord cable completely covered by the reserve top flap cover.
4. The reserve ripcord cable should be free in the housing.
5. The reserve ripcord handle should be properly installed in its pocket.
6. The 3-Ring Release should be properly assembled and flexible.
7. The pilotchute should be properly inserted in the pocket with no excess fabric or bridle hanging out (throwout pilotchute system only).
8. **The main container pin and bridle should be properly assembled and ROUTED.**
9. The breakaway handle should be properly sealed on the Velcro.
10. Check your harness to be absolutely certain it is not twisted, and that the adapters on the chest strap and legstraps are correctly threaded.
11. Stow all loose ends of the legstraps and chest strap.

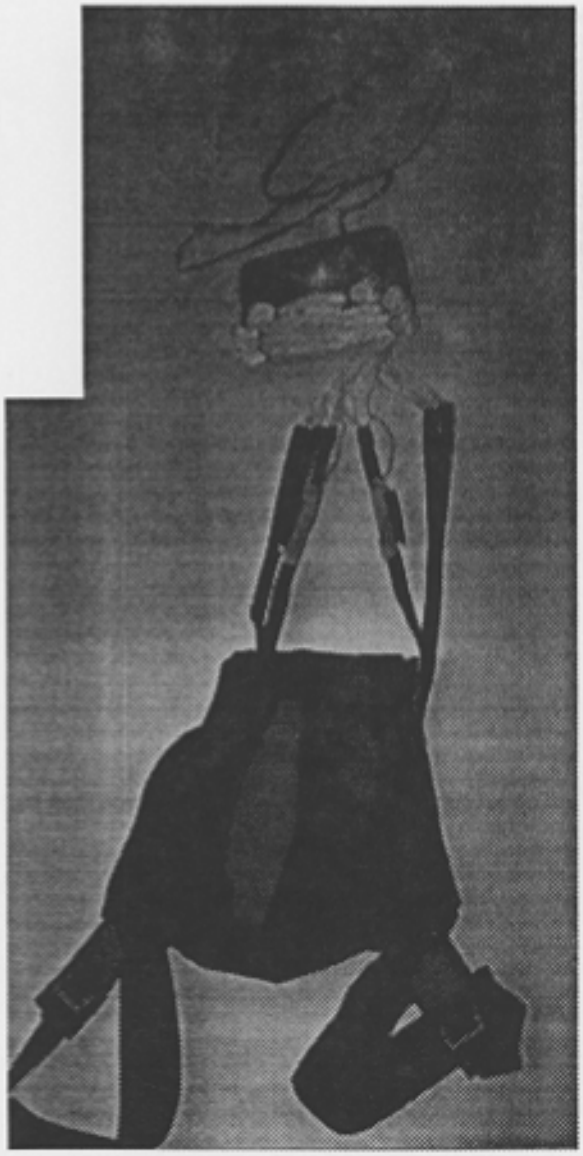
PACKING THE MAIN PARACHUTE IN ITS CONTAINER



SETTING THE BRAKES

Insert the tip of the toggle into the loop of tape above the keeper ring on the main riser, until the end is even with the top of the tape loop.

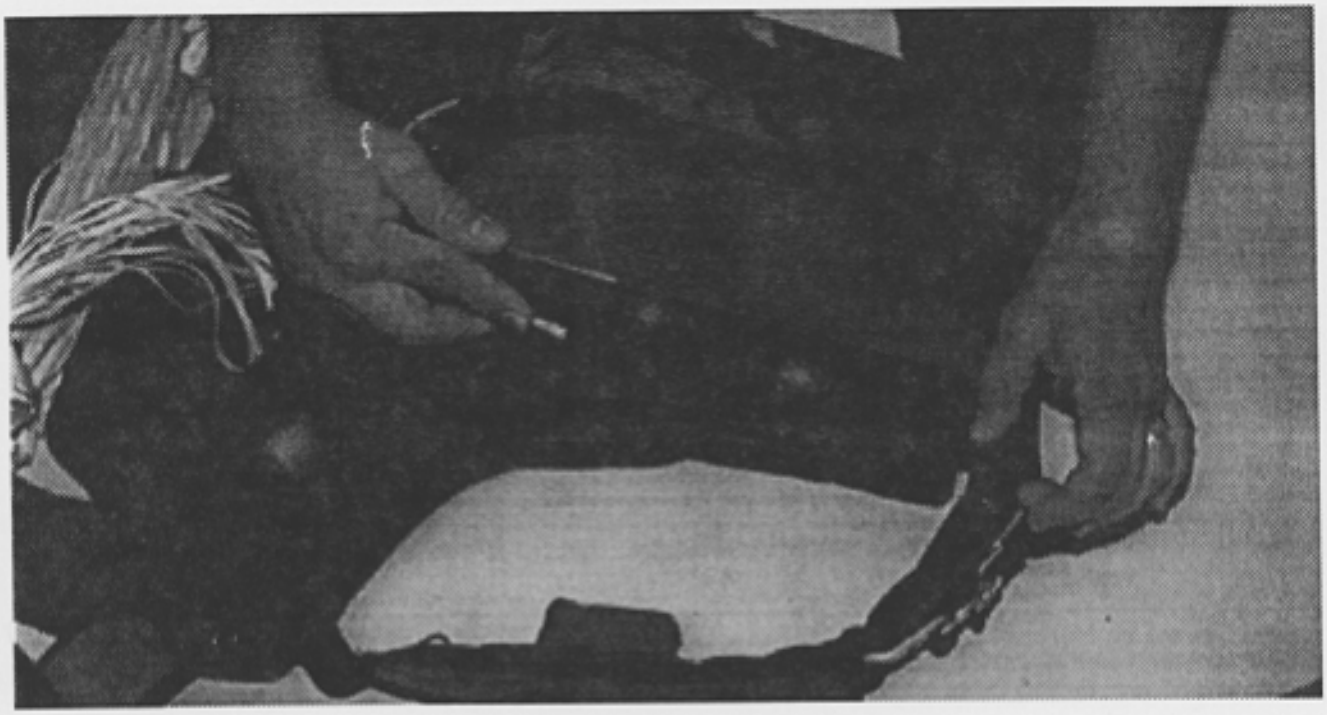
Stow the excess steering line next to the toggle, and cover it snugly with the Velcro® pile.



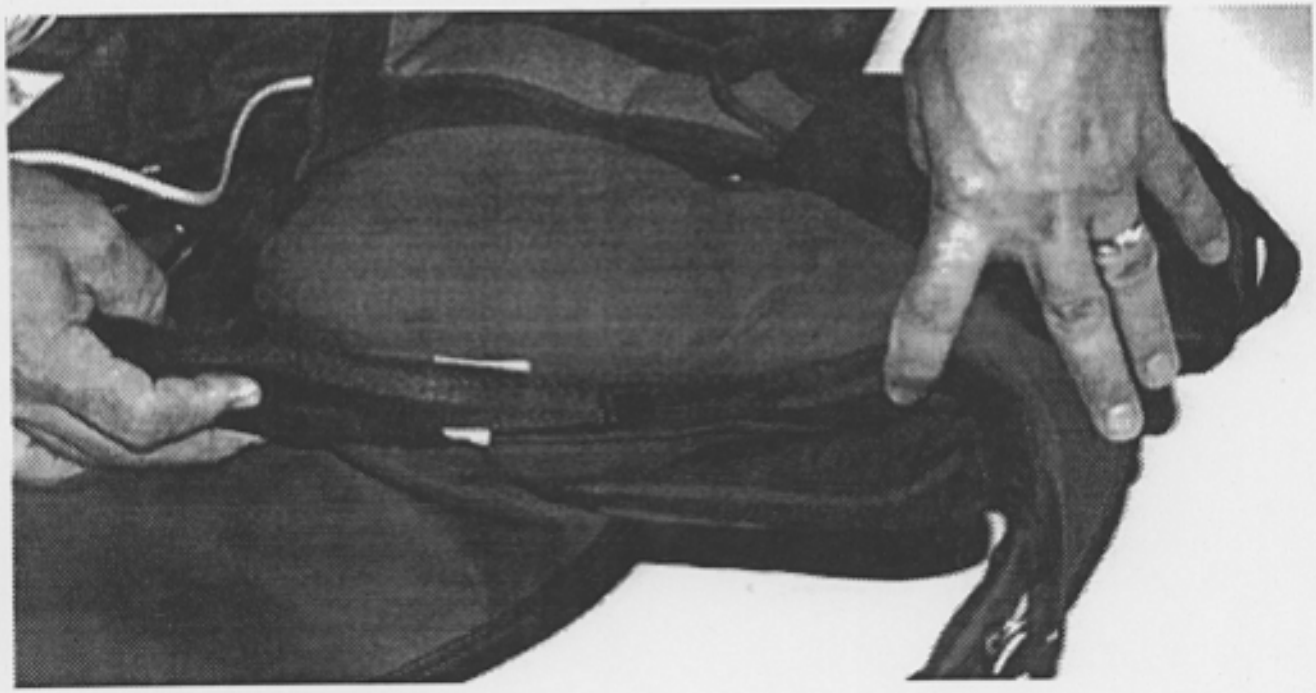
The main canopy should be packed according to the manufacturer's instructions, to the point where the canopy is in the deployment bag and ready to be placed in the pack tray. Stow all but about 12 to 18 inches of suspension line.

Spread the main container flaps and place the deployment bag close to the pack tray. Route the risers over the top of the rig and down the sides of the reserve container.

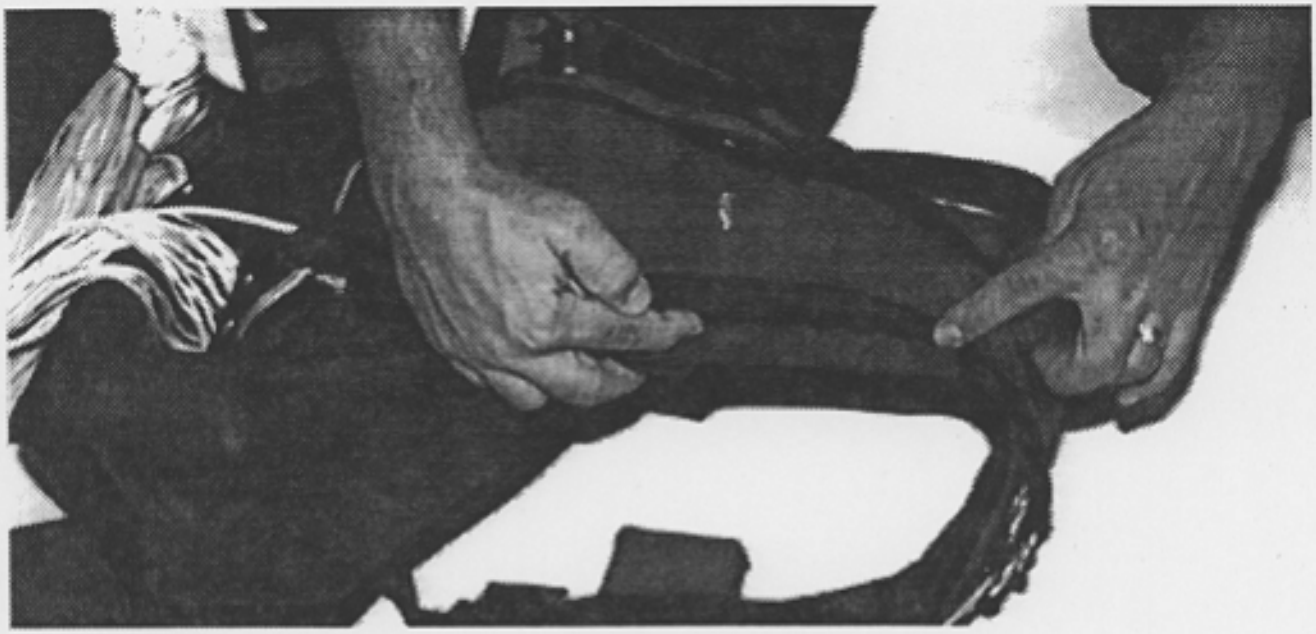
Stow the main risers as follows:



With the riser retainer tab laid out flat, stack the front and rear risers on one side and place them alongside the reserve container.



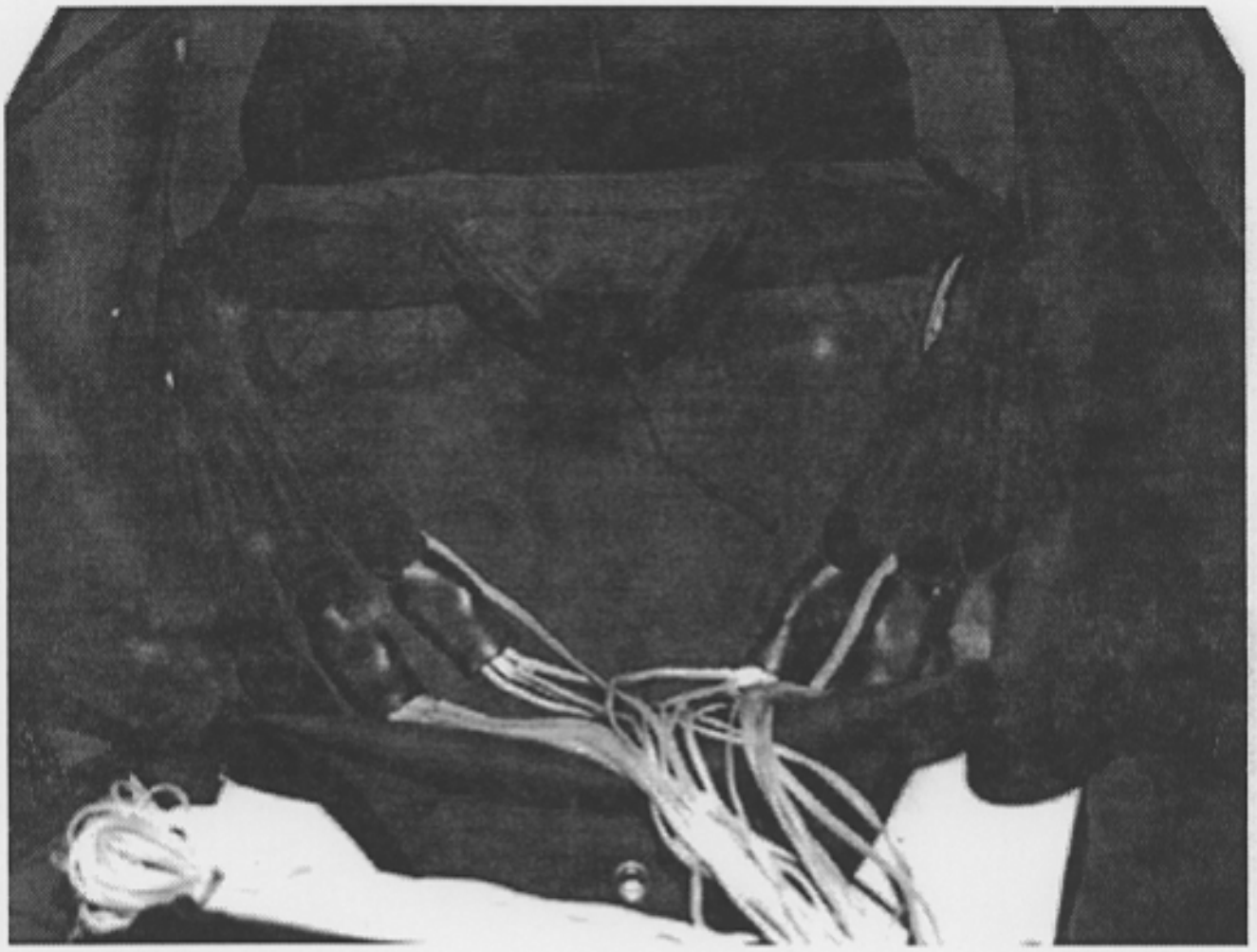
Slide the risers between the backpad and reserve container, keeping them against the reserve container. This will place a half-twist in the risers; push this half-twist toward the 3-Ring end, pressing the riser into the open gap above the retainer tab.



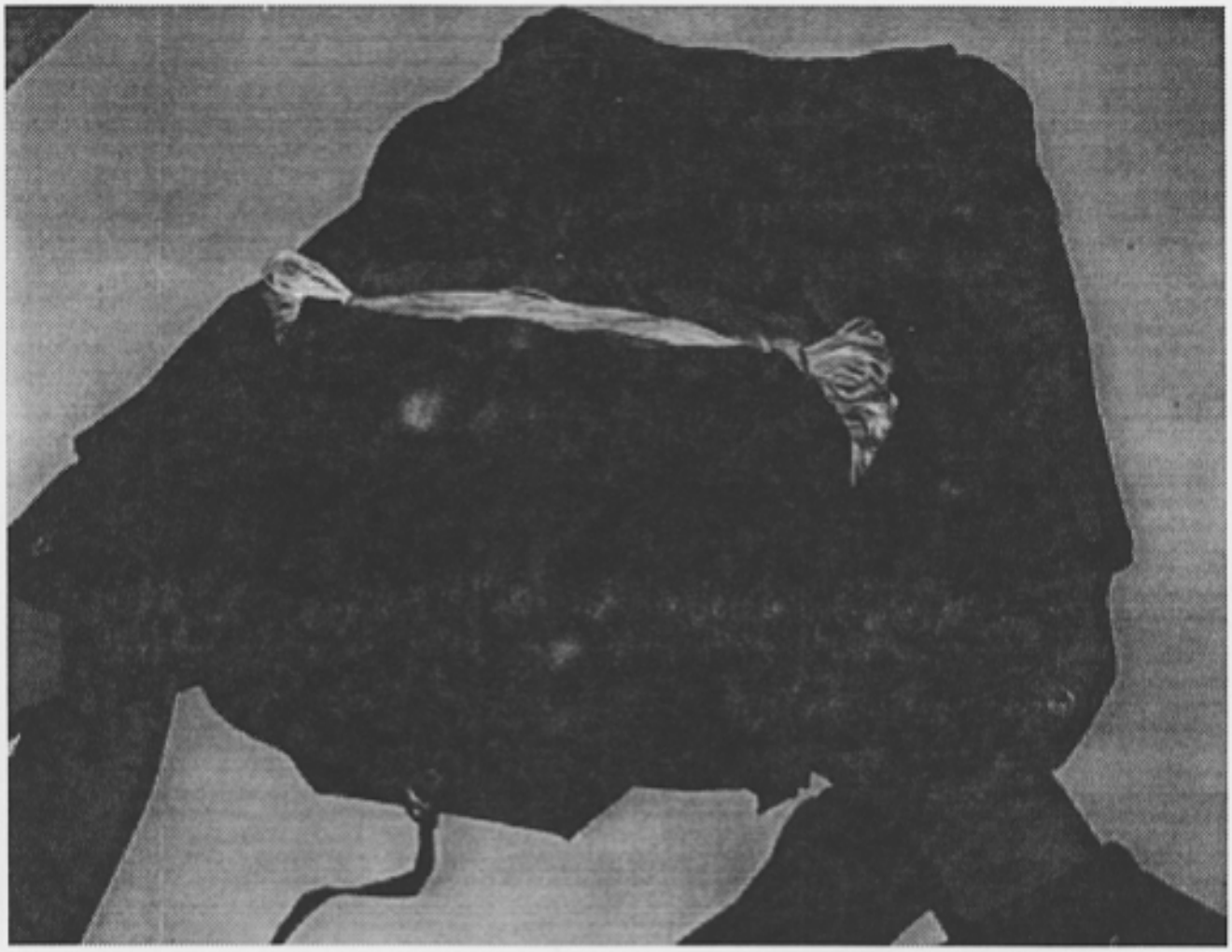
Slide the riser retainer tab between the riser and the reserve container.

Holding the backpad against the container with one hand, pull gently on the risers where they emerge at the main container, removing all the slack above the retainer tab.

Repeat these steps for the other side.

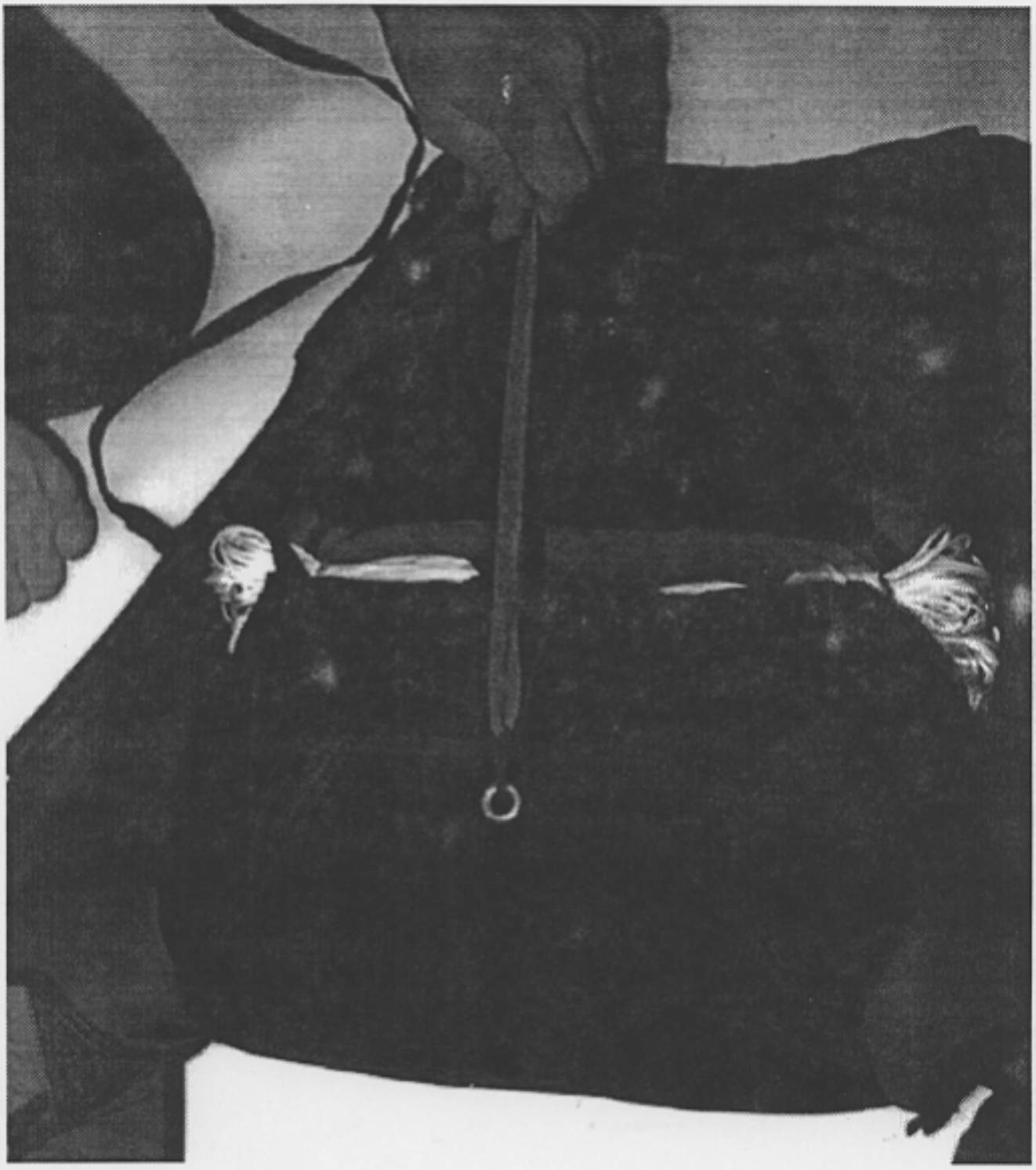


Lay the risers along the outside edges of the main container, spreading the connector links to minimize bulk. The toggles should be against the bottom of the container.

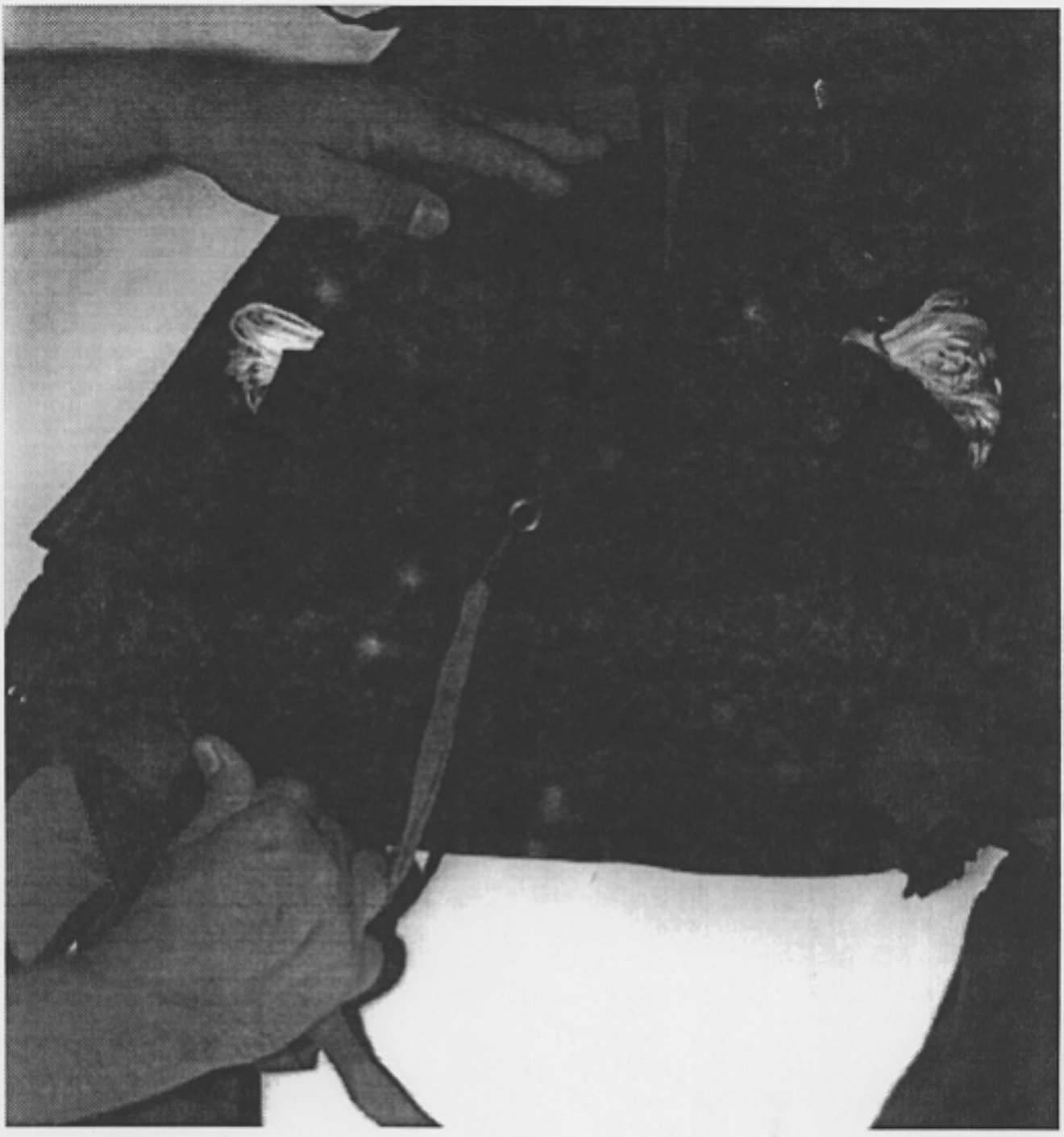


Arrange the unstowed line neatly, and place the deployment bag in the main container. Make sure the main locking loop isn't trapped by the bag. The lines may be placed either at the top or the bottom of the container, although placing them at the top fills the container better. Press the corners of the bag completely into the container.

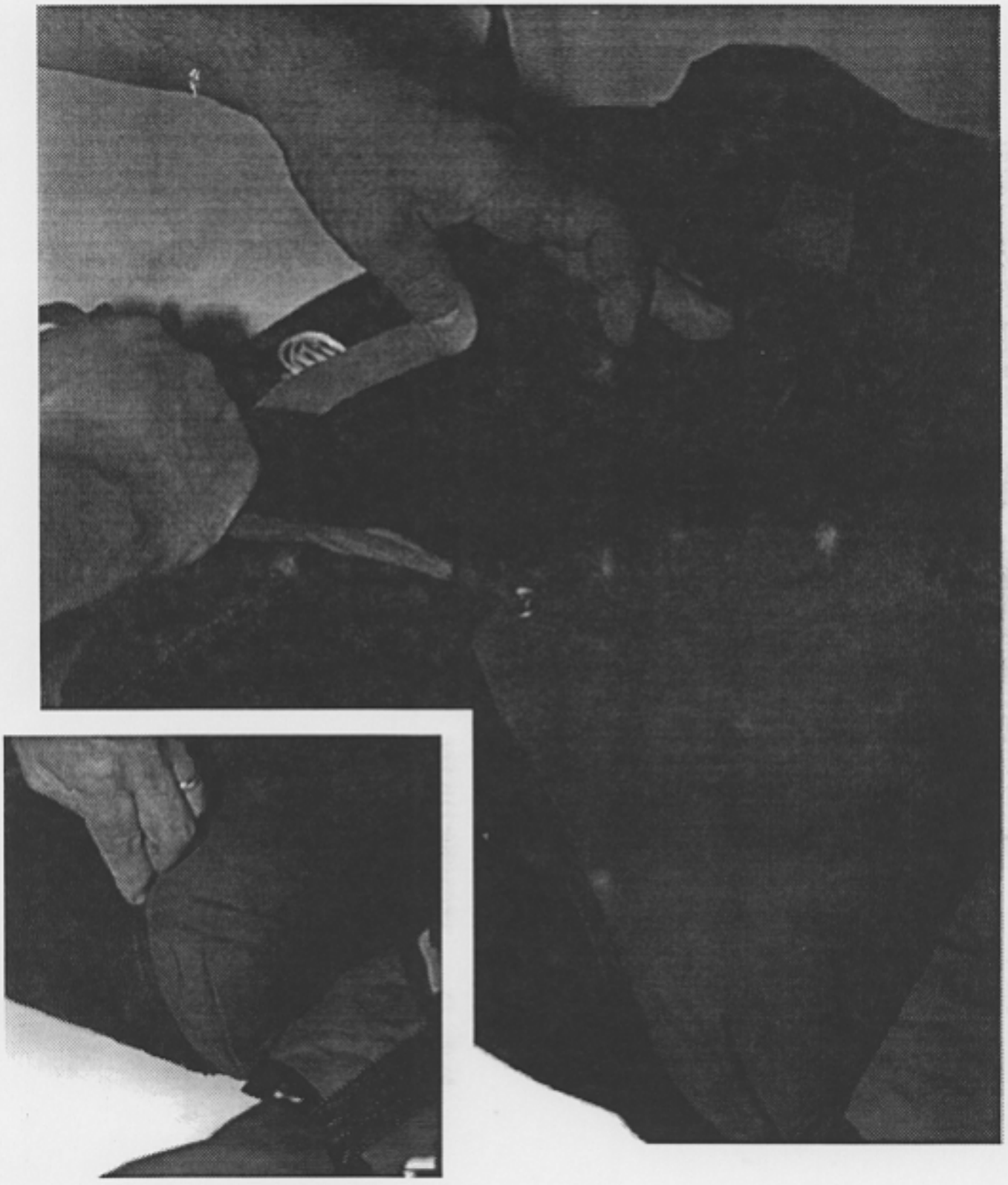
THROWOUT PILOTCHUTE CLOSING SEQUENCE



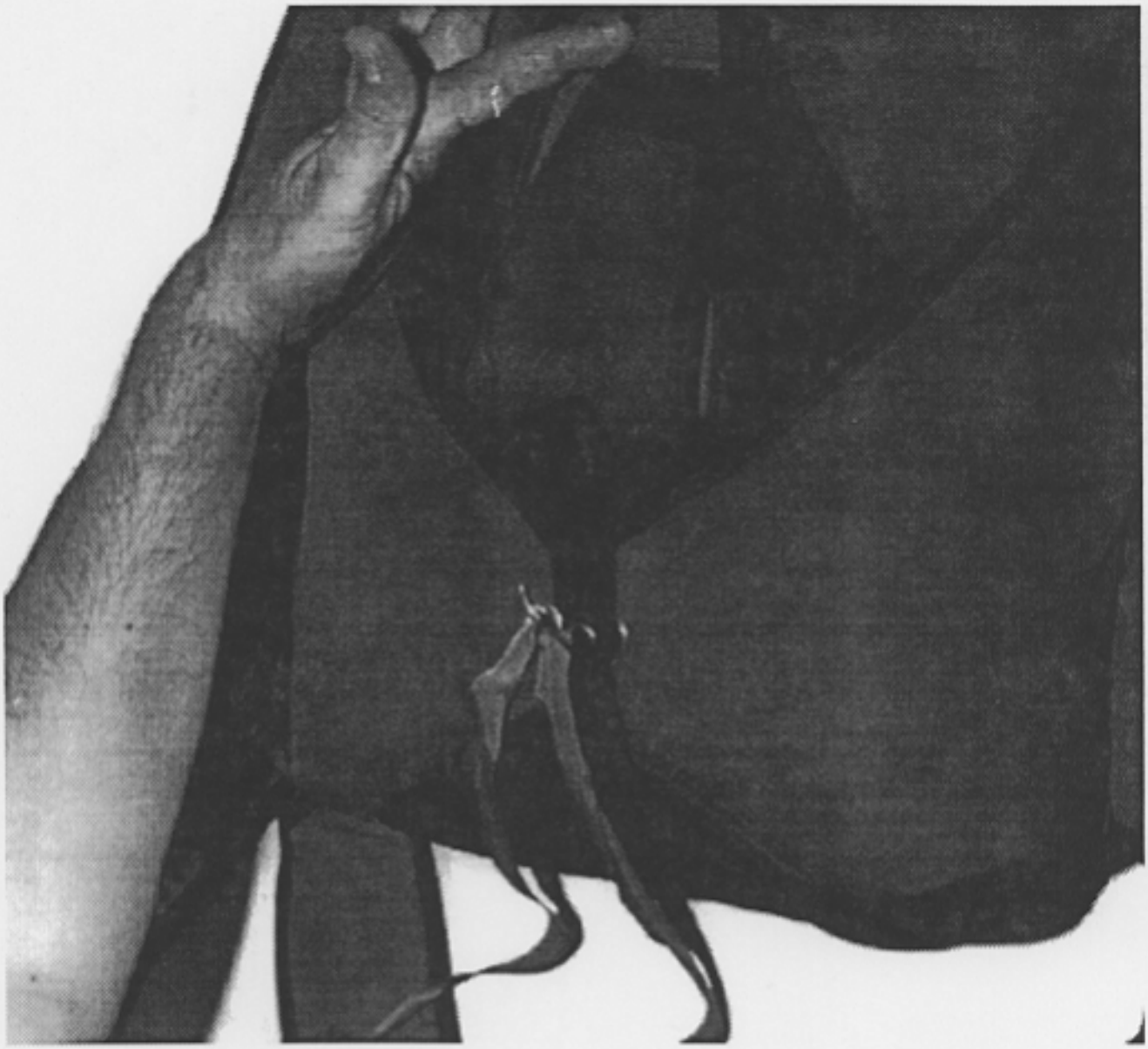
Pass a pullup cord through the closing loop (make sure the loop isn't frayed). Close the bottom flap. The bridle should be routed toward the reserve container, to the left of the closing loop.



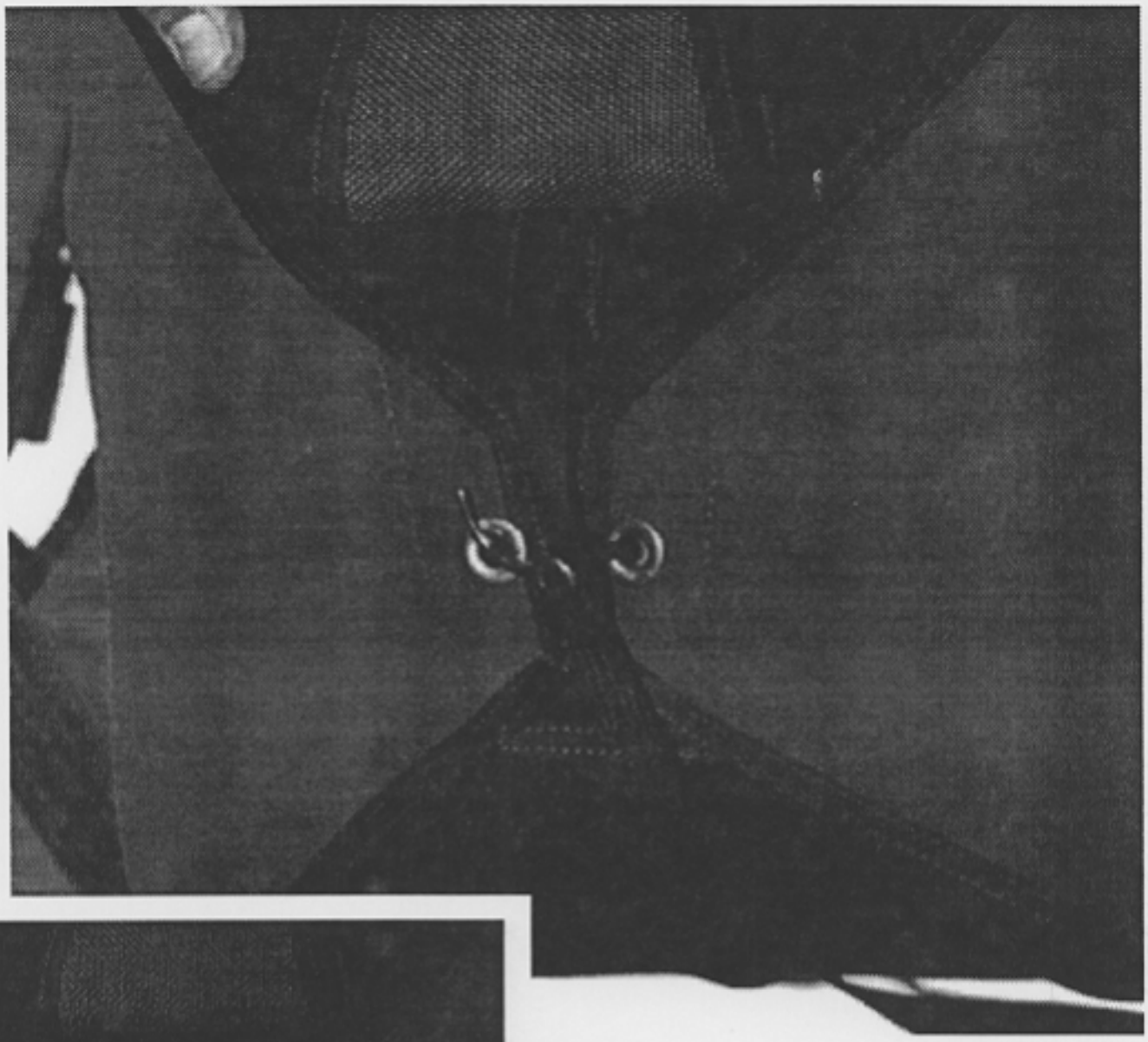
Next close the top flap, pulling until the grommets overlap. There should be an inch and a half of closing loop above the grommet; adjust the length of the loop if necessary. Lay the bridle across the top flap from left to right.

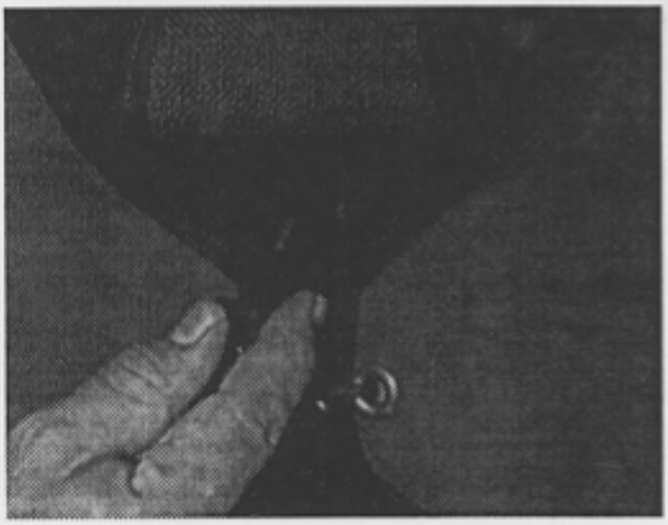


Now close the right side flap, pulling until the grommets nearly overlap. Dress the bottom corner of the side flap where it wraps around the bottom of the container.

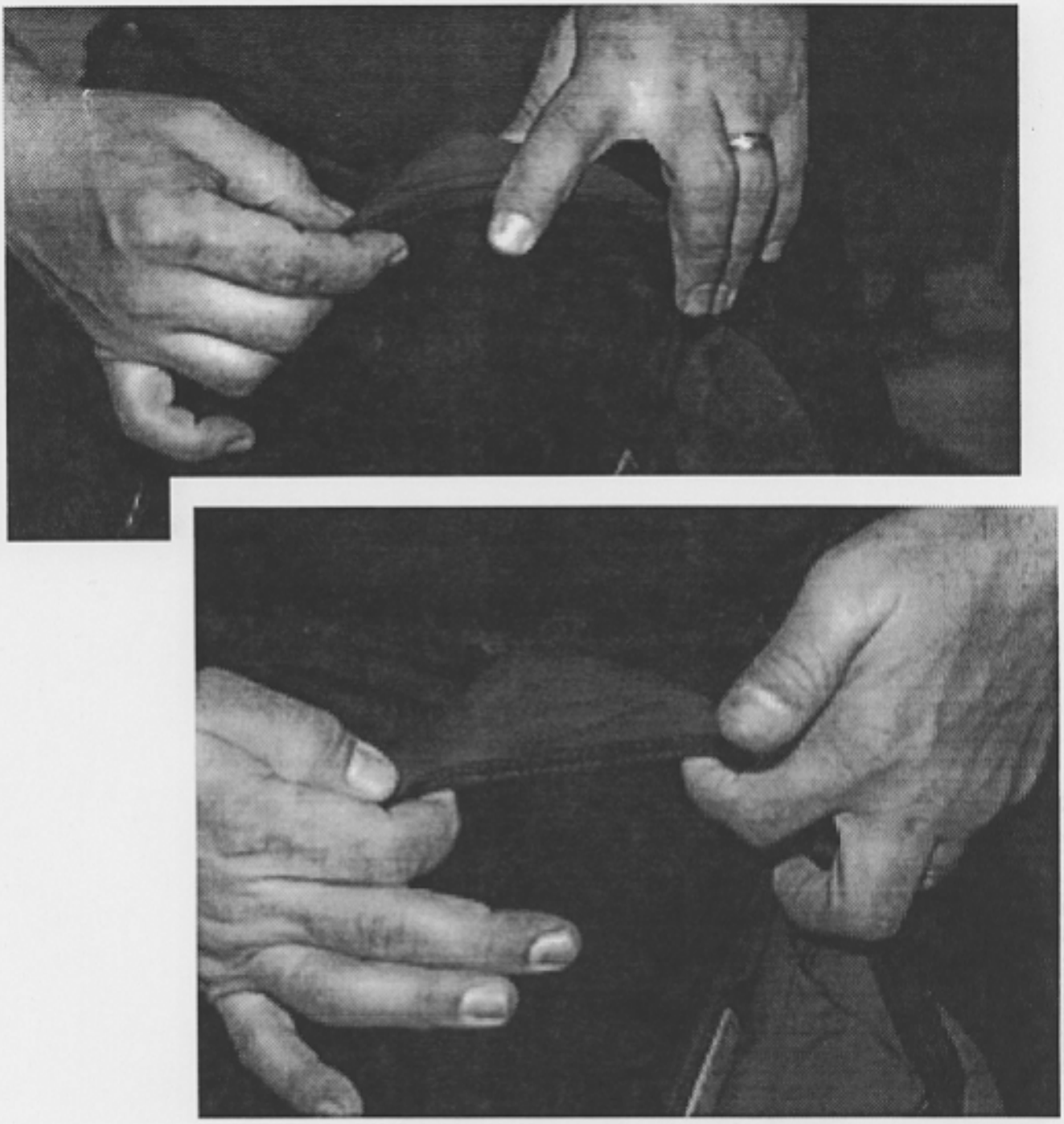


Finally, close the left side flap, pulling just enough loop through the grommet to pin it. Insert the pin through the loop from right to left. The side flaps should just meet, if the closing loop is the correct length. Dress the bottom corner of the side flap where it wraps around the bottom of the container.

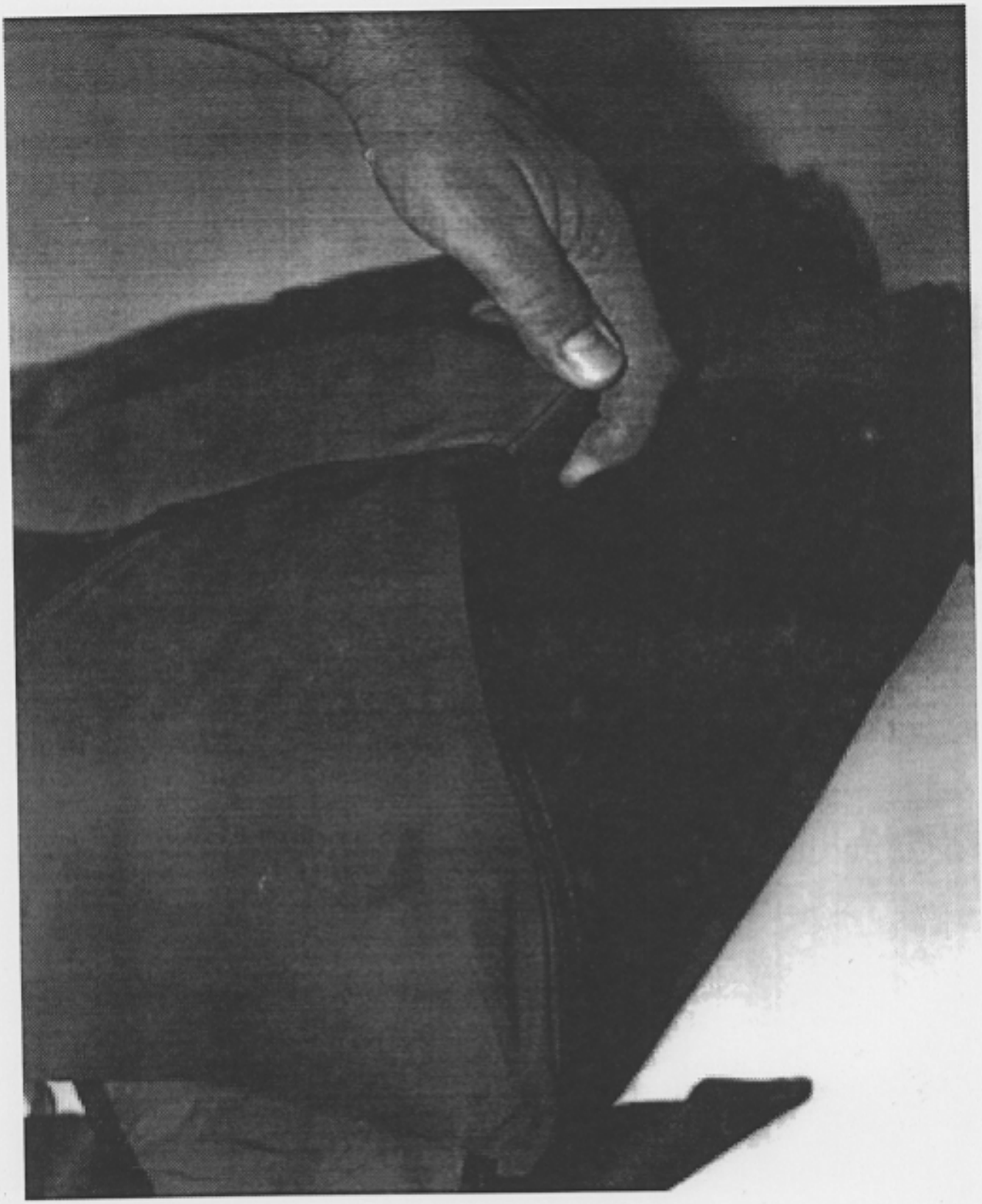




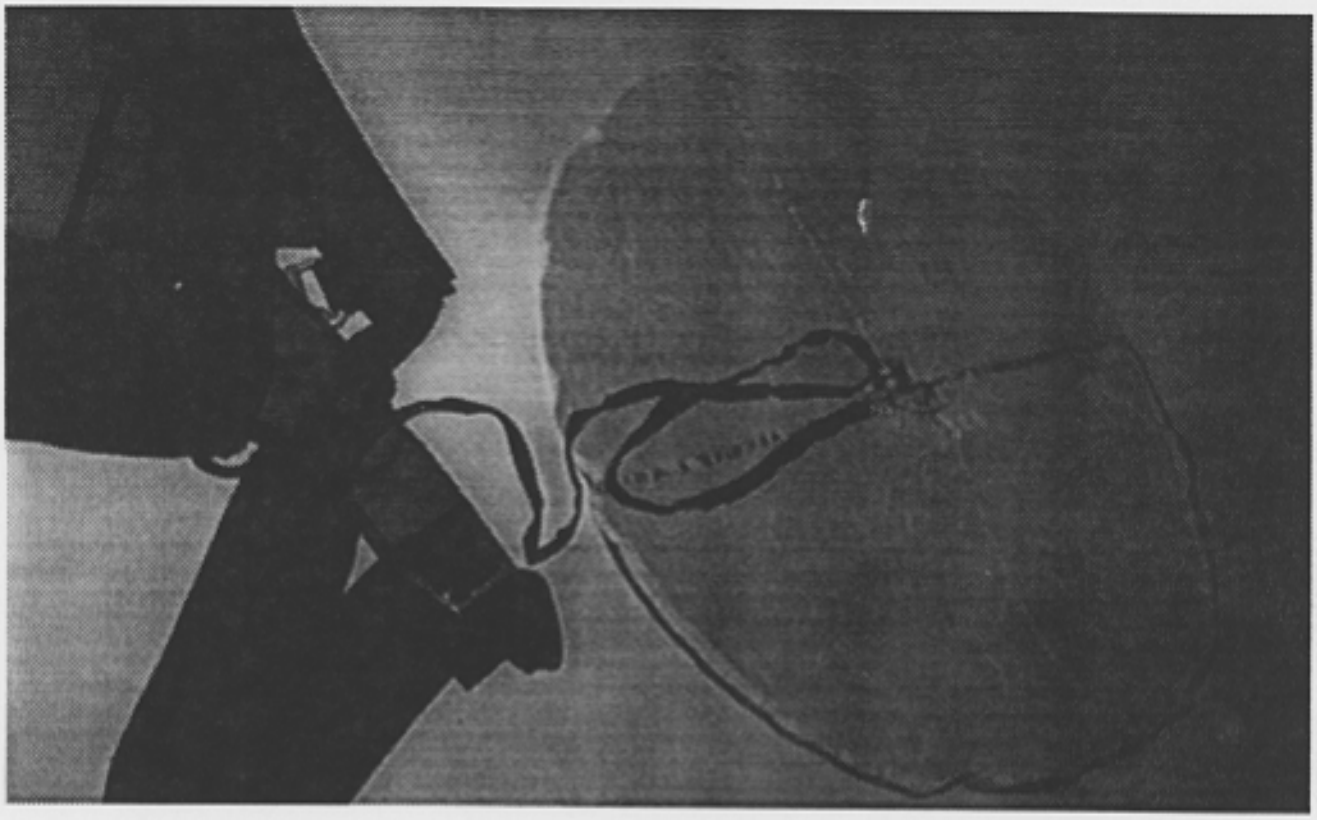
Fold the bridle back ***under*** itself at the top end of the red bartack (above the pin on the bridle), so the bartack is on top. Slide the folded end into the "snooze loop" keeper (located under the pin cover flap). Tuck any remaining slack under the left side flap.



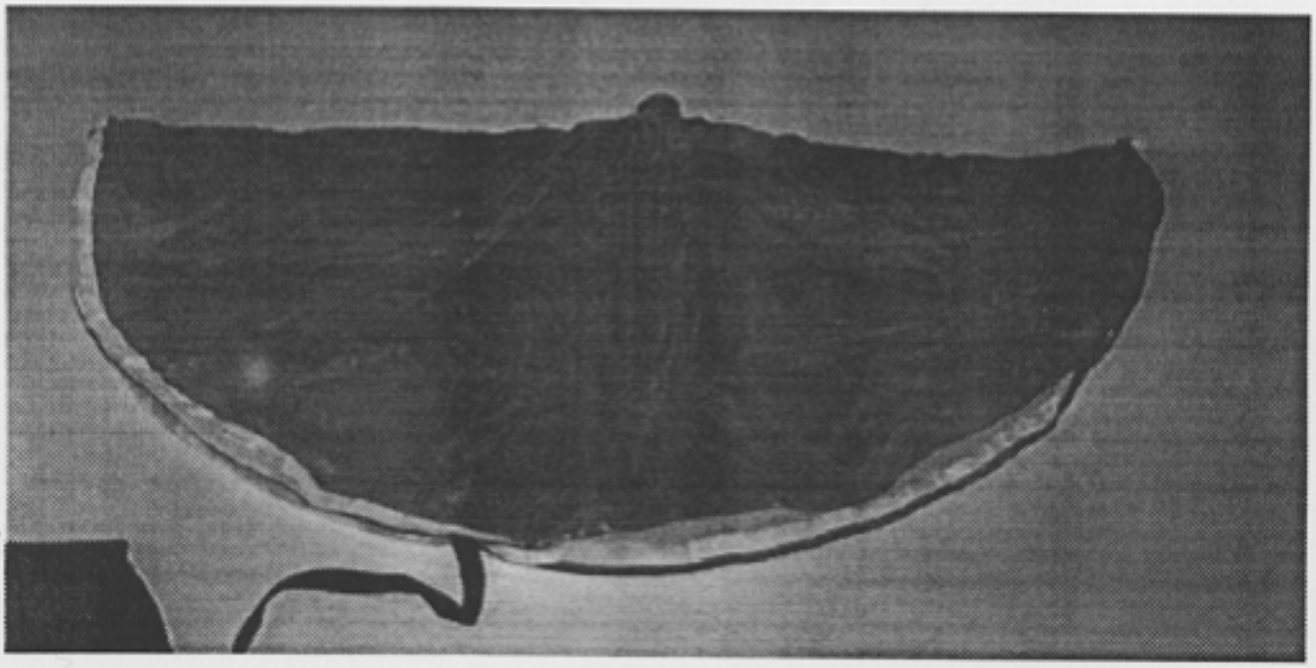
Pull the one-inch tape bridle keeper from under the right side flap. Lay the bridle under it, then fold the keeper and bridle together back under the side flap.



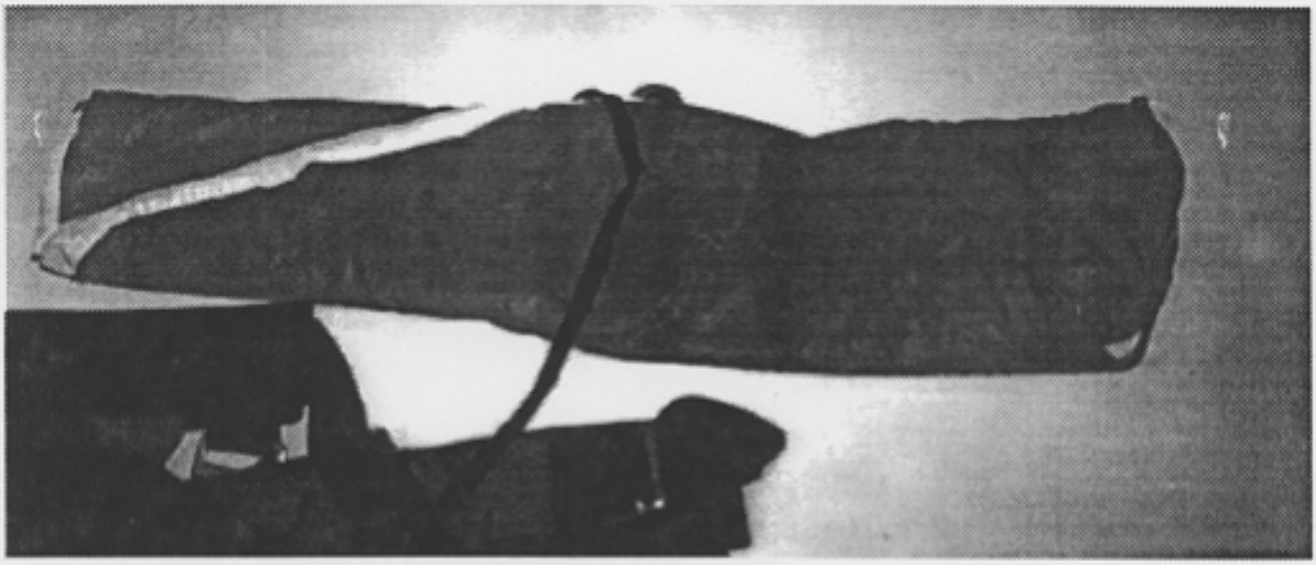
Close the pin cover flap by inserting the stiffened tab under the top flap's lower edge.



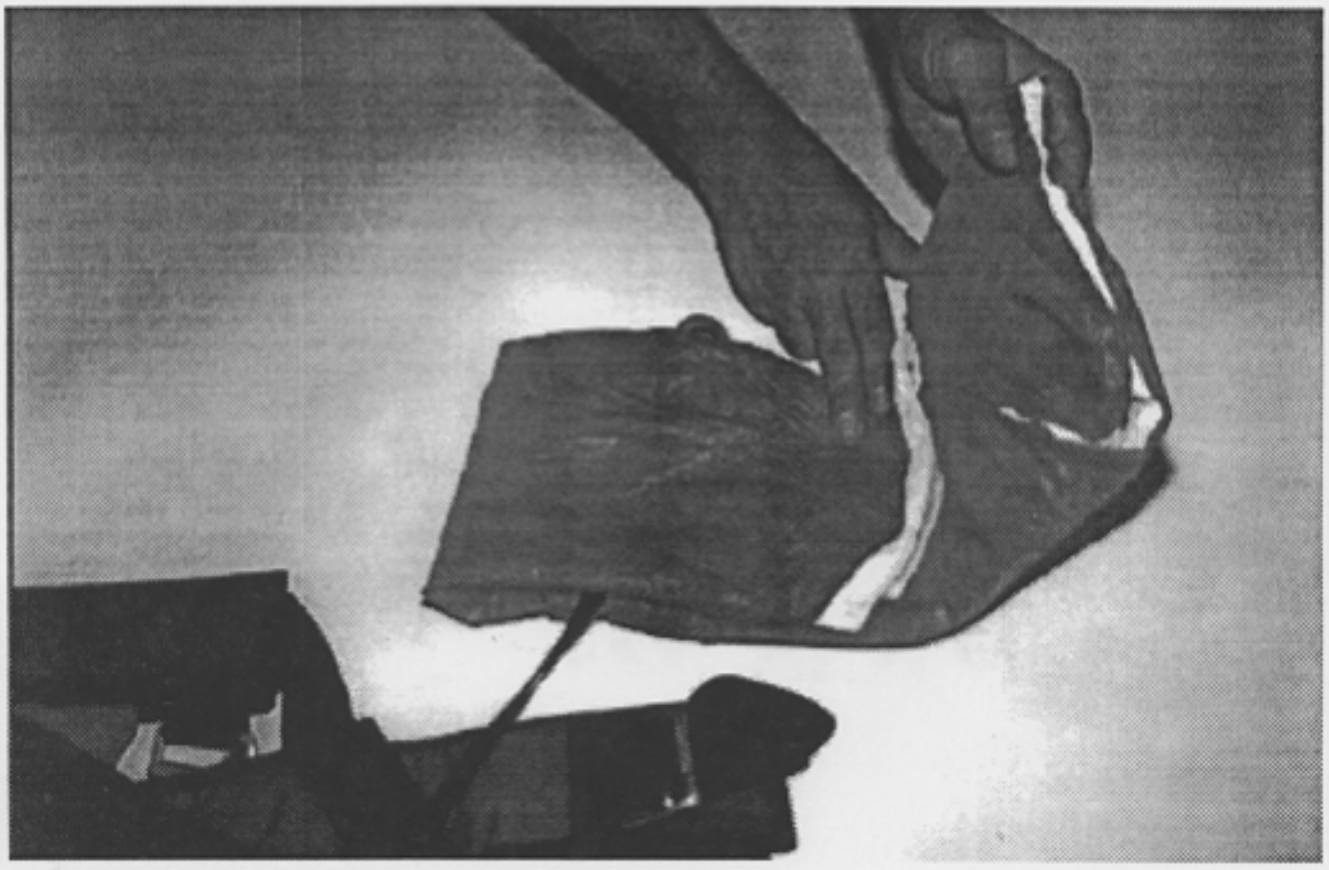
Lay the pilotchute next to the packed container, mesh side up. S-fold all but about a foot of the bridle on top of the mesh.



Fold the pilotchute in half, covering the bridle.

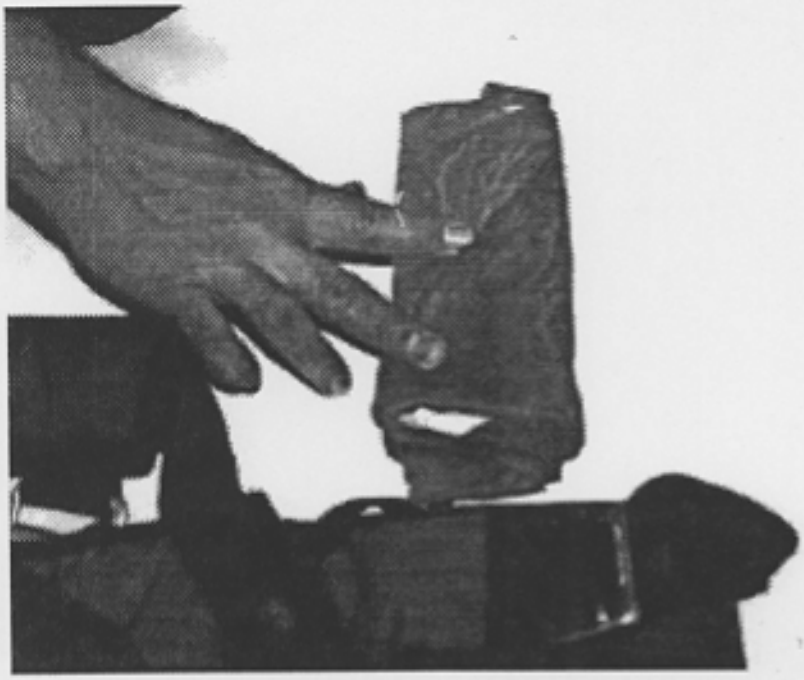


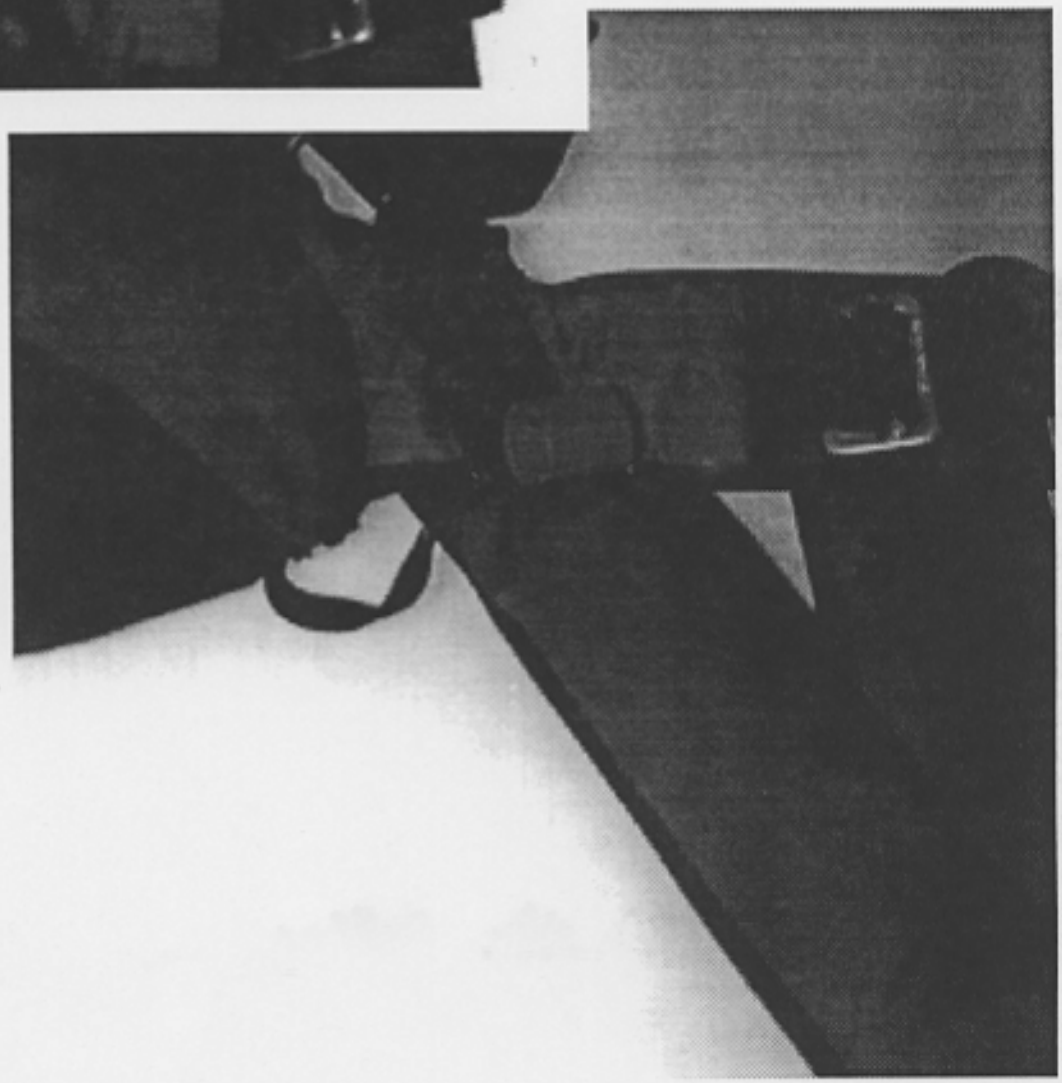
Fold the curved edge back to the handle.



Fold the sides in, overlapping them to form a square.

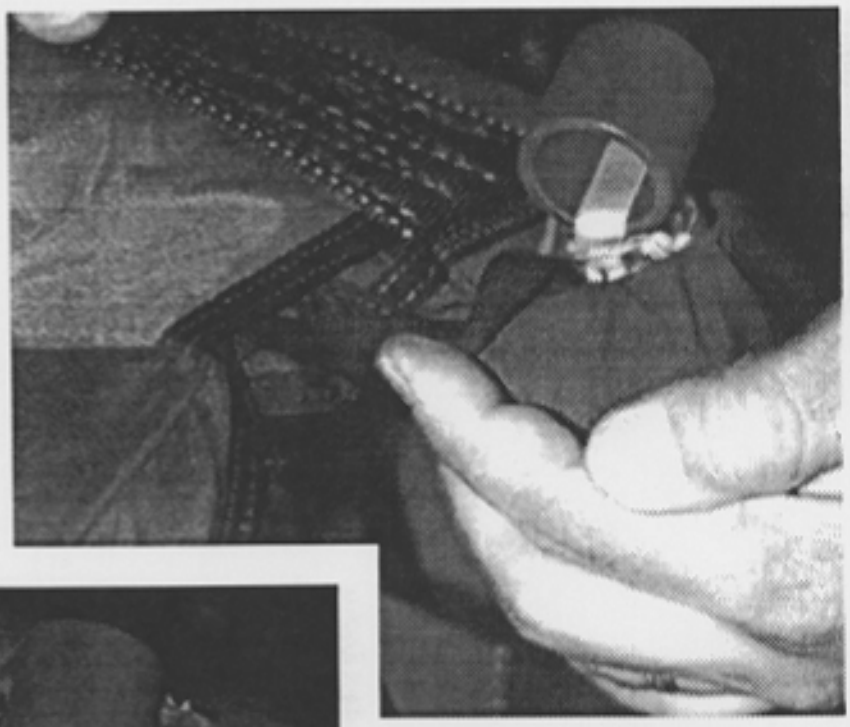
Fold the square to the approximate width of the pilotchute pouch.





Insert the pilotchute into the legstrap pouch.

Stow the bridle between the side flap and pilotchute pouch as follows:



Pull the bridge bridle cover tab from under the bridge (there is a small tape provided, to help you find it).

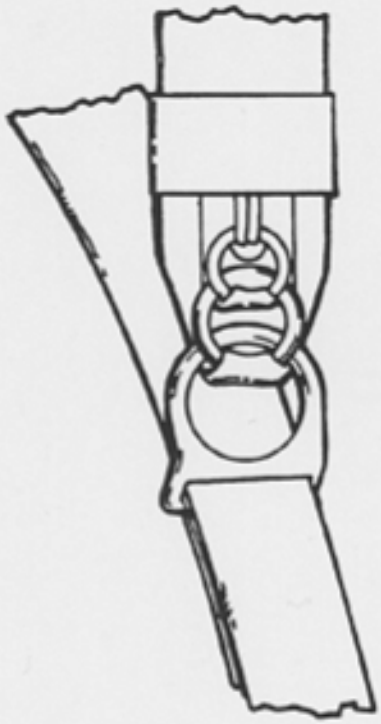
Lay the bridle on top of the tab, then fold the tab around it and tuck them both back under the bridge.

Make sure all the bridle is either stowed under the side flap, the bridge bridle cover, or in the pouch.

After a careful pin check, your EOS is ready to skydive.

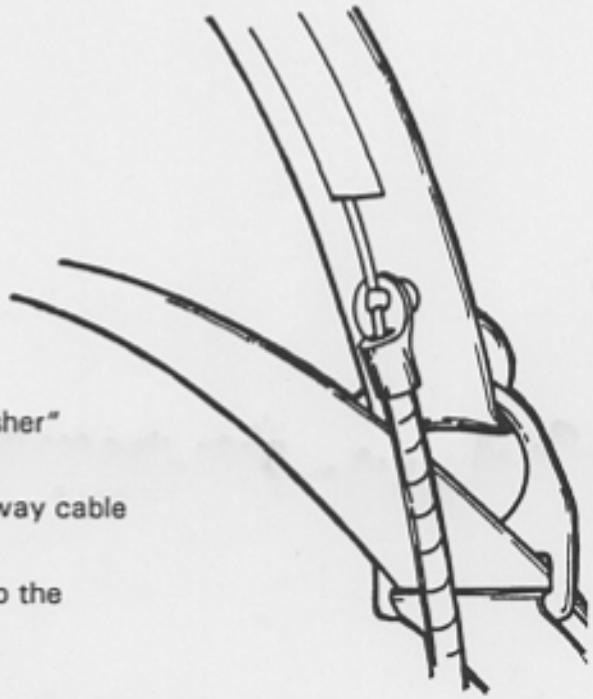
TECHNICAL MAINTENANCE AND USE OF THE 3-RING CANOPY RELEASE SYSTEM

1. Assemble as the diagrams show. Be sure that the nylon cord loop on the riser passes over only the small ring. **Do not** pass the loop over the middle ring also.
2. Do not construct any sort of cover for the rings. They will not operate if covered, and there is no reason for a cover anyway.
3. Do not allow the risers to become wet and frozen. If frozen, the rings will not release.
4. Periodically inspect the system for wear. Check:
   - Nylon Cord Loops
   - Cable Housing Ends
   - Breakaway Handle
   - Riser Grommets
   - Plastic Covered Cables
5. Avoid prolonged exposure to sunlight. Nylon will lose strength rapidly in sunlight, **without** apparent visual damage.



Front View

- Start with the largest ring.
- Pass the second ring through it.
- Then pass the smallest ring through the second ring.
- Then pass the loop through the smallest ring (**over** it).
- Then pass the loop down through the grommet.



Rear View

- First, pass the loop through the "washer" on the end of the cable housing.
- Then pass the plastic-coated breakaway cable through the loop.
- Then secure the breakaway handle to the attaching Velcro.

CONNECTING THE RISERS TO THE HARNESS

3-RING RELEASE SYSTEM
REQUIRED PERIODIC MAINTENANCE

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

Feedback from riggers and some of the thousands of users has made it possible to publish this set of maintenance and inspection instructions. They must be followed exactly. Generally it is NOT recommended that the risers be attached to the harness when new and "forgotten." Like all parachute gear, the 3-Ring Release should be carefully inspected and cycled (operated) on a regular basis.

Specifically, 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 is subject 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 release cable completely from the housing and disconnect the risers.**

2. **While the system is disassembled, closely inspect it for wear.**

   Check the white locking loops (the ones which pass over the smallest ring and through the grommet) to be sure they aren't frayed.

   Check the Velcro on the release handle and right shoulder pad (under the "mud flap") to insure that it adequately holds the handle.

   Check the stitching, including that which holds the largest ring to the main lift web and all stitching on the riser.

3. **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 in the webbing. Failure to do this might make a release hesitate when activated in response to a low-drag malfunction such as a streamer.

4. **Check the inside of the release housing** for gravel, dirt, or other obstructions. Use the cable to do this. Inspect the housing for dents or other damage.

5. **Clean and lubricate the release cable with a light oil** such as "3-in-1". 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. Failure to do this could require a higher-than-normal force to extract the cable during a breakaway.

6. **Inspect each release housing and assembly.** Tug and twist each housing where it emerges above the right "mud flap", to check the integrity of the tacking holding it in place.

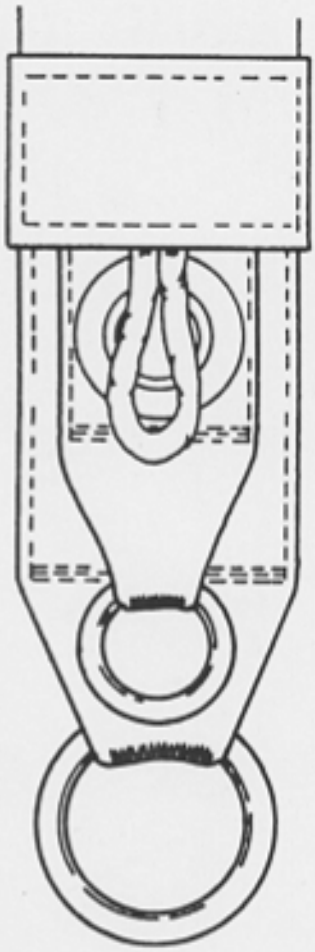
7. **Re-assemble the system properly, ensuring that it is done in accordance with the Manual. Double check it.** Make sure the risers aren't reversed. ***This is the point at which mistakes are most common.***

8. If any wear is found, consult the manufacturer or a rigger immediately.

HOW THE SYSTEM WORKS

The rings and loop act as a system of two levers and a pulley yielding a total mechanical advantage of approximately 80 to 1.

In other words, if the whole system were loaded to 2,000 pounds, the force each nylon loop/cable locking system would be exposed to would be only 25 pounds. Or, to release a 200 pounds jumper from his canopy, the cable activator need only move against a 2.5 pound load from each nylon loop.

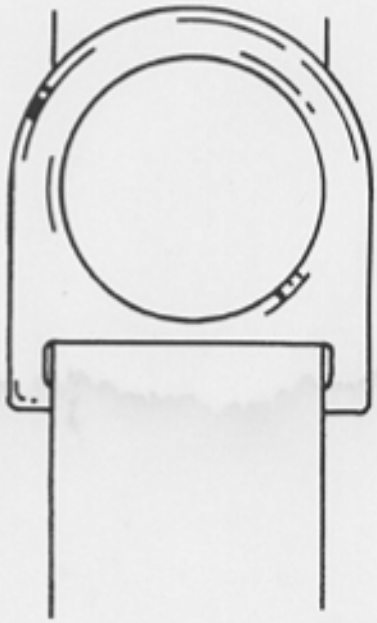


BREAKAWAY PROCEDURES

Familiarize yourself with the system by practicing breakaways from a suspended harness *before* actually jumping it.

For maximum ease of operation, the soft breakaway handle (which is Velcroed in place) should be peeled away from the main lift web, *then* pulled downward to effect release. If the handle is just pulled straight down, considerably more force will be required to release the handle from the main lift web Velcro.

If you pull the breakaway ripcord cable completely out of its housing during a breakaway, throw it



MAINTENANCE

The EOS is a high performance harness and container system. As such, it demands a high level of care, maintenance and performance from the jumper/owner.

As with any equipment which will be used in the air, you must "pre-flight" your rig each time it is jumped and you must periodically inspect it.

The EOS should be regularly examined for signs of wear. Any part of the system requiring maintenance should be marked for later repair/replacement.

Have a qualified rigger perform all repairs. Only a Master Rigger, a certificated loft, and the Manufacturer are allowed to perform repairs on the reserve system and structural portions of the harness/container.

For any major damage consult Para-Flite, Inc.

Special attention should be given to the deployment bag. Loose grommets should be replaced immediately. When replacing these parts, make sure that they are installed properly.

Replacement parts for the EOS may be obtained from Para-Flite, Inc. Because the EOS is designed to operate as a complete, integrated system, the use of other parts is not recommended. Substitution of non-EOS parts may result in lowered performance or in a malfunction.

Avoid leaving the harness/container uncovered in the sun. The sun's rays are very damaging to nylon. The amount of time that the rig is exposed to the sun is one of the deciding factors in how long the rig will last.

Use a packing mat under the EOS to avoid dragging it along the ground while packing.

FAA Part 91.15[a] and Part 105.43[a] state, in effect, that no person shall make a parachute jump without having had their reserve packed within the preceding 120 days. Only a rigger with ram-air reserve training is permitted to pack the EOS reserve container.