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Warning / Disclaimer

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1. Introduction

1.1 Scope

This owner's manual constitutes the manufacturer's instructions for the operation, packing, and maintenance of the L-39 Emergency Parachute System.

1.2 FAA Approval

Originally certified in 1973 under TSO C-23b, standard category, the Para-Cushion parachute assemblies were upgraded in 1992 and are now FAA approved under TSO C-23c, category B (in accordance with AS 8015A and FAR 21, Subpart O).

1.3 Operational Limitations

Limited to use by persons up to 115 kg (254 lbs) fully equipped (person, clothes, and equipment except parachute), and up to 150 knots IAS when equipped with the C-9 Parachute Assembly.

1.4 Repack Cycle

The L-39 Emergency Parachute System is subject to a 120-day repack cycle. FAR 91.15 requires that "no pilot of a civil aircraft may allow a parachute that is available for emergency use to be carried in that aircraft unless it is an approved type and it has been packed by a certificated and appropriately rated parachute rigger within the preceding 120 days."

An FAA Senior or Master parachute rigger with a back type rating must pack your L-39 Emergency Parachute System. If your L-39 Emergency Parachute System is subjected to moisture excessive dirt or damage it should be inspected sooner than the 120 day maximum.

1.5 General Description of Models

The Para-Cushion series of Emergency Parachutes, including the L-39 Emergency Parachute System, is an FAA approved emergency parachute system fitted with a round, steerable canopy.

The Para-Cushion series includes back, seat, and chair types and several variations of each. The newer version of the back type (the 303, introduced in 1987) has fabric riser covers and is slightly shorter than the original Para-Cushion Back.

The newer version of the seat type (the 304, introduced in 1988) has fabric riser covers and is slightly taller than the original Para-Cushion Seat. The Para-Cushion Chair (305) combines the best features of both the back and seat types and extends all the way from shoulders to thighs on the wearer.

The unique arrangement of each system with its externally mounted pilot chute (U.S. Patent #3,908,937) allows for a soft flexible container with protected ripcord pins.

1.6 Model Description

The L-39 Emergency Parachute System was designed exclusively for use in the L-39 Jet Trainer. The system replaces the original Czech Parachute Seat Harness.

! WARNING !
**This Parachute System must be installed
by a trained and appropriately rated Aircraft Mechanic.**

1.7 System Function

The L-39 Emergency Parachute System is released from the seat by pulling the handle located at the bottom right hand side of the seat. This releases the locking mechanisms keeping the parachute securely in place allowing you to exit the aircraft.

! WARNING !
**A complete and proper course of training
on L-39 emergency procedures from a trained, properly rated
professional is required before using this system.**

Once clear of the aircraft, activate the Parachute System by pulling the ripcord handle. This should be done whether the included static line is installed or not.

Pulling the ripcord handle withdraws the ripcord pins and releases the locking loops allowing the pilot chute to eject, catch air and extract the parachute from the container. The total time for deployment and how far you travel from pulling the ripcord to a fully open canopy depends very much on your airspeed.

Generally, opening times are from 2 to 3 seconds and the distance fallen would be from 250 feet to 400 feet. This does not mean that you should plan on jumping or pulling at 300 feet. Practicing emergency procedures, and having a plan of action before an emergency is crucial in the event of an emergency.

1.8 Care of your L-39 Emergency Parachute System

Parachutes are simultaneously very rugged and quite delicate. This is a piece of life saving equipment and should be treated with care. Parachutes are made of nylon, a very strong and durable material, but even nylon has enemies. Small amounts of acid will eat it and ultraviolet sunlight weakens nylon rapidly.

Canopy cloth is vulnerable to sun damage, but also the container where your parachute is packed is susceptible to damaging UV light. If your Para-Cushion is opened or used, it should be taken to a certified parachute rigger, or returned to the manufacturer for airing, drying, inspection and repack. FAR 65.129 requires that no parachute be packed, maintained, or altered in any manner that deviates from procedures approved by the manufacturer. The parachute should be left unopened inside its protective container ready for use.

When you take your Para-Cushion to your rigger for servicing, bring these instructions with you,

ask them to allow you to pull the ripcord yourself, give you a functional demonstration, and answer all your questions. We urge you not to open your parachute in the field for demonstration purposes. Foreign objects can damage the canopy, which will require repairs at your expense. When your Para-Cushion is in the aircraft care must be exercised to insure that it is not damaged. Be sure that it does not come in contact with any sharp or loose metal surfaces, or any objects within the plane, which might cut or snag it. All metal edges and exposed nuts and bolts, etc. should be taped or covered to prevent wear on the parachute container. Be sure that your parachute does not come in contact with water, oils, acids, grease, and dirt, agricultural or fire retardant chemicals.

When not in use, store your Para-Cushion in its carrying bag in a clean, dry, protected area. If in doubt as to its condition, consult your nearest parachute rigger, or Strong Enterprises.

CAUTION
LEAVING YOUR PACKED PARACHUTE SYSTEM EXPOSED
TO THE SUN WILL GREATLY DECREASE ITS SERVICE LIFE.

1.9 Service Life

Debate regarding the service life of parachutes has been an ongoing for years. Strong Enterprises and other members of the Parachute Industry Association (PIA) have discussed guidelines for a recommended service life. FAR 65.129 requires that "No certificated parachute rigger may pack a parachute that is not safe for emergency use, so until guidelines are established, the continued airworthiness of an assembly is established by the licensed parachute rigger who inspects it as part of his repacking procedure. While proper care can no doubt extend its usefulness, an older parachute should be examined more closely for signs of deterioration.

1.10 Preflight Inspection

Prior to each flight the parachute should be inspected before it is used. Check it visually for any unsafe condition. Be sure the harness is not twisted or misrouted. Check the overall condition of the system. It should be clean and dry, with no deterioration of the metal hardware the Cordura container, or the webbing straps visible. Check that the ripcord handle is secure in its pocket.

Lift the Velcro[®] on the back pad and check the ripcord pins to be sure they are properly seated in their loops. All pins should extend at least 1/2 inch beyond the fabric-locking loop. Be sure the rigger's seal thread is still intact around the last pin. Check the packing data card in the nearby pocket to be sure that the parachute has been repacked within the previous 120 days.

1.11 Fitting the Parachute

The parachute system designed for the L-39 is unique in that once it is installed into the aircraft, it is locked in position. Therefore to don the parachute, you must climb into it while it is installed on the seat. If you're putting the parachute on for the first time, unsnap the straps, and loosen all adjustment points, sit down and slip your arms through the main lift web (the vertical straps in front), much like putting on a jacket.

Next, reach between your legs, pick up each leg strap, untwist them if necessary, and snap them in place on each side of the lower portion of the main lift webs (Right strap snaps into the right side hardware). Now pull the leg strap webbing below your hips, and tighten them snugly, yet comfortably, around your thighs.

Now adjust the vertical straps, 1 on each side located below the ripcord handle, and pull upward until the straps are snug. Next adjust the horizontal straps, the ones behind your lower back, and finally snap the belly-band, and the chest strap hardware, and adjust. Fold and stow all loose webbing ends in the elastic keepers. Be sure the ripcord handle is accessible. Resist the urge to excessively tighten the harness; this could restrict your escape from the cockpit.

1.12 How to Open Your Parachute

The ripcord handle is located near the chest strap on the wearer's left front of the harness. The key is to find the ripcord handle with your eyes first, then grab it with your hand. You do not want to waste valuable time pulling on a piece of your harness instead of the ripcord handle. In order, **LOOK** for it first. **REACH** over and grab it with both hands, and **PULL**. Remember to **LOOK-REACH-PULL**.

1.13 How to Steer

The C-9 Military Parachute in your L-39 Parachute System uses a method called a four line release to give your parachute forward speed making it steerable. Once under canopy you will notice just over your head on each side there is a red loop attached to a series of knots. Securely grasp the loops, one in each hand, and pull hard until all the knots have been released and the rear four lines of your canopy are free. Doing this will give you the ability to steer your parachute. Pull down right to turn right, pull down left to turn left. During a repack operation, ask your rigger to show you this steering assembly, and explain it further.

1.14 How to Land

Like pilots and smart birds, you want to reduce your landing speed by facing into the wind. Avoid all but very slight turns below 200 feet. Put your feet and knees tightly together, with your toes slightly pointed so you don't land on your heels.

The tension caused by keeping your ankles and knees pressed tightly together increases their individual support, reducing your chance of injury. Keep your elbows in and try to look at the horizon, not down at the ground. This will give you a better idea of your altitude (much like looking out the side, rather than over the nose during a landing flare). Maneuver the canopy as necessary to avoid all obstacles. In event of a tree or power line landing, keep your feet together so you don't straddle a limb or wire, and be prepared to slide through and hit the ground afterwards.

You should be able to avoid power lines, but if not, throw away the ripcord - it is three feet of dangling electrical conductor.

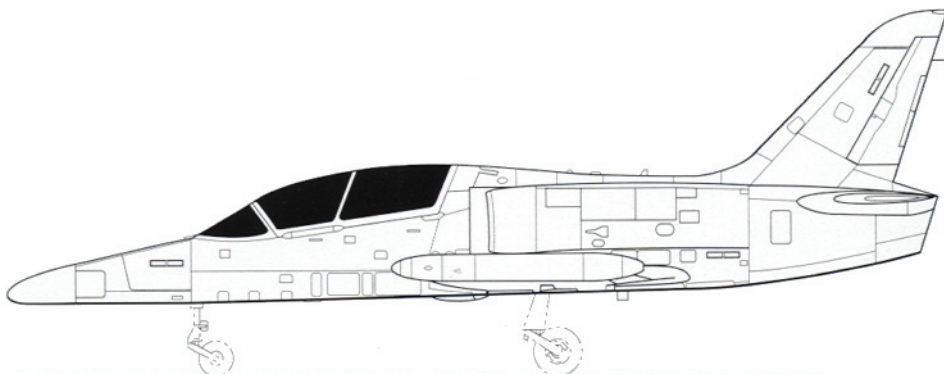
1.15 Recovery

If the wind keeps your canopy inflated after touchdown, you may be dragged, so pull the lines closest to the ground toward you to spill some air, and then run around the canopy to collapse it. In event of a water landing, take a deep breath just before you splash down.

Once under water, unfasten your harness straps and swim as far as possible straight ahead which should be upwind, allowing the canopy to blow away from you. Entanglements with soggy nylon cloth and lines can weigh you down. If suspended from a power line, do not attempt to climb down, and do not accept assistance from anyone until the power has been shut off.

2. L-39 Product Description

This system is designed specifically for use in the L-39 and L-29 Trainer Jet. This design incorporates the Russian designed Parachute Harness / Pilot Restraint system found on the original parachute assembly. As designed, this System perfectly replaces the original equipment, while providing the pilot with absolute comfort found on the Strong Enterprises entire line of Parachutes for Pilots.



2.1 Parts list



» 124114 Harness and Container Assembly

» 401010 28 ft C-9 Canopy



» 611406 Ripcord Assembly



» 812203 Seat Cushion

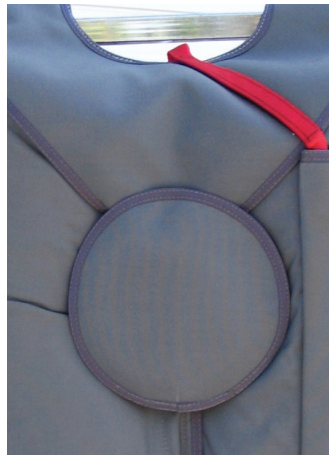


» 780530 Static Line, 16ft length, 5/8" tubular

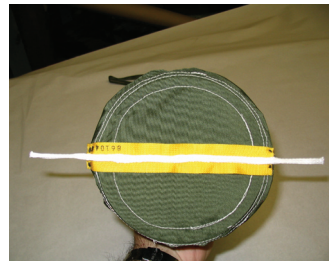
» 812114 G-pad, Back Cushion
with Sheepskin padding



» 790121 Pilot Chute, Lil Grabber



» 861041 Locking Loop



» 799031 Cap for Pilot Chute



» 816006 Carrying Bag

» 510085 Packing and Maintenance Manual

3. Required Packing Tools

A - Shot Bags, at least 4

B - Line Separator 1 ea

C - Pilot Chute Locking Rod 1

D - Pilot Chute Locking Strap

E - T-handles 3 ea

F - Pull-Up Cords 3 ea

G - Flat Head Screwdriver 1 ea

H - Tension Plate 1 ea

I - Tension Hook 1 ea



4 Prepare Parachute Assembly for Packing

Lay the harness and container and canopy down on the table with the wearer facing down. Apply tension using tensioning devices.

5 Inspection

- » Inspect the entire assembly for completeness and any damage.
- » Inspect Pilot Chute and bridle.
- » Check that the Larks-head knot on the pilot chute is secure.
- » Inspect Apex area.
- » Check over entire canopy for damage.
- » Inspect Lines for damage.
- » Check line sequence and 4 line release system.
- » Check that the screws are tight in the L-Bars.
- » Inspect Harness and Container Assembly.
- » Check that the elastic stow bands are elastic and in good condition.
- » Check tackings for tightness and condition.
- » Inspect Hardware for functionality and condition.
- » Inspect Harness for nicks, abrasions and sun damage.

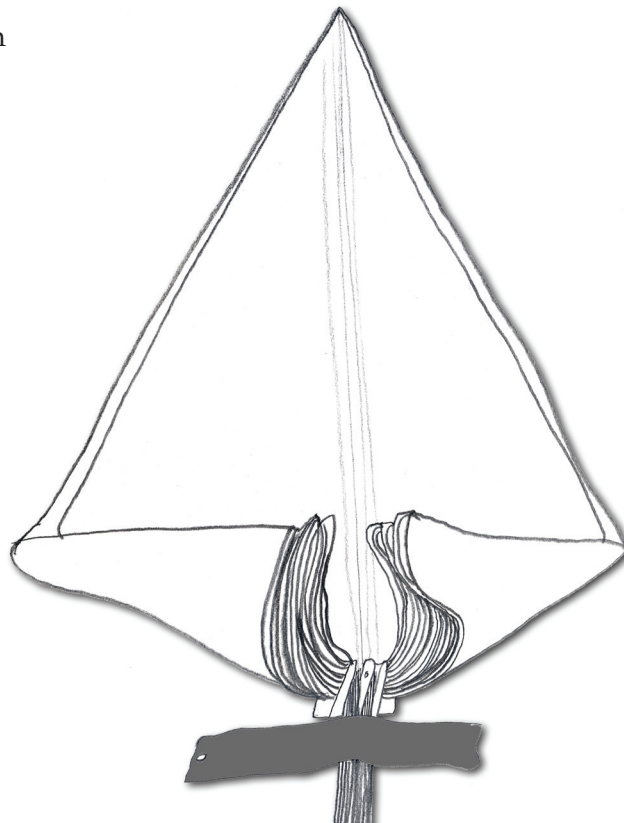
6 Packing the L-39 Emergency Parachute System

6.1 Folding the Parachute

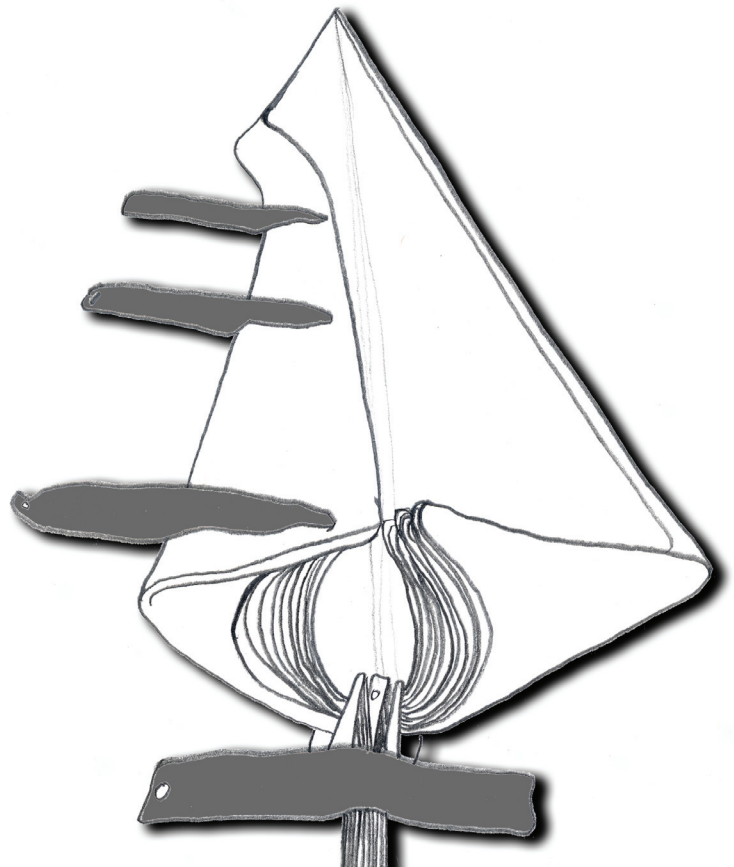
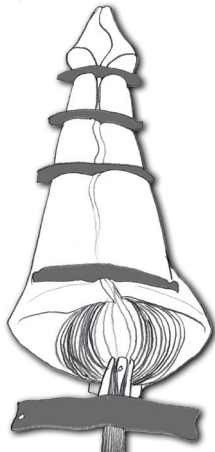
6.1.1 Lay the harness and container and canopy down on the table with the wearer facing down. Inspect entire assembly for completeness and any damage. Check line sequence and 4 line release system. Flake canopy and pleat in the normal manner with an equal number of gores to each side.



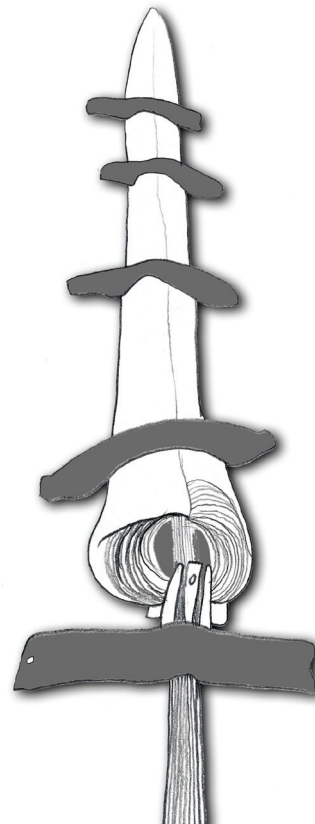
6.1.2 Fold the skirt up 90° on each side parallel to the radial seams.



6.1.3 Fold the canopy into thirds by bringing the sides up to the middle. First one side, and then the other.

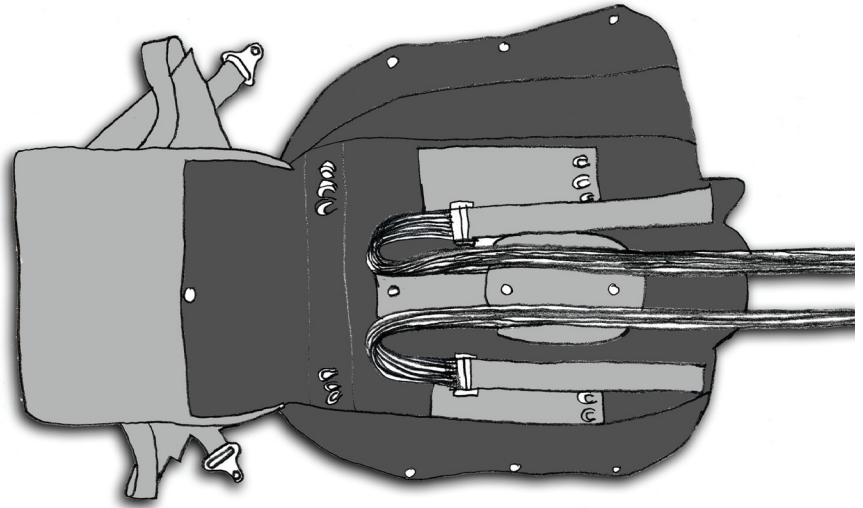


6.1.4 Long fold the canopy into 5ths, long and tight by laying the sides over each other.

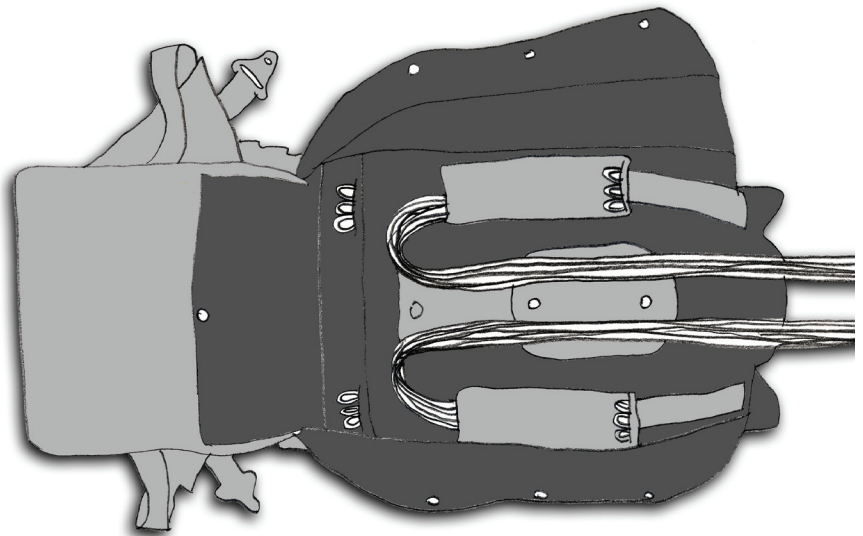


6.2 Stowing the Lines

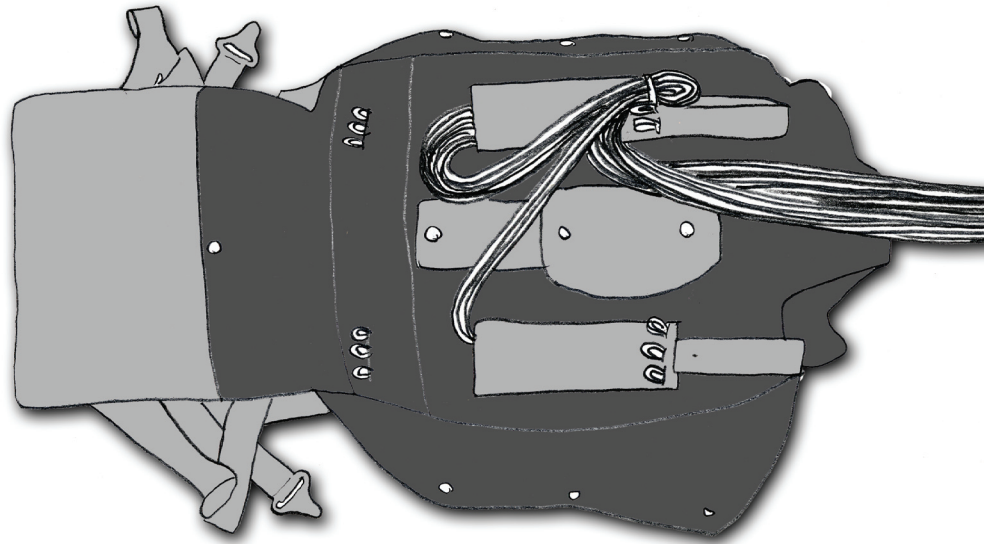
6.2.1 Release tension from the assembly and prepare container to begin stowing lines by laying the risers in the pack tray



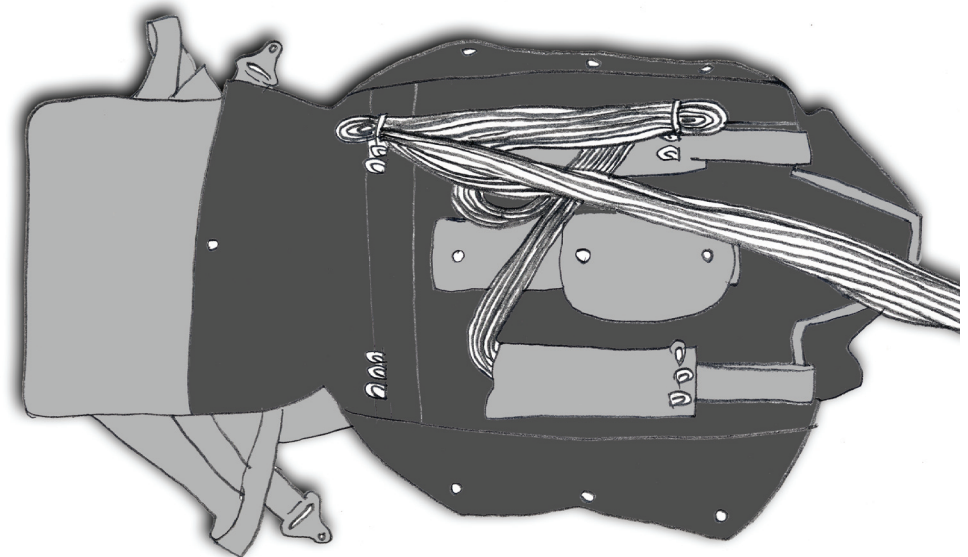
6.2.2 Lay risers under riser covers and close with Velcro® provided.



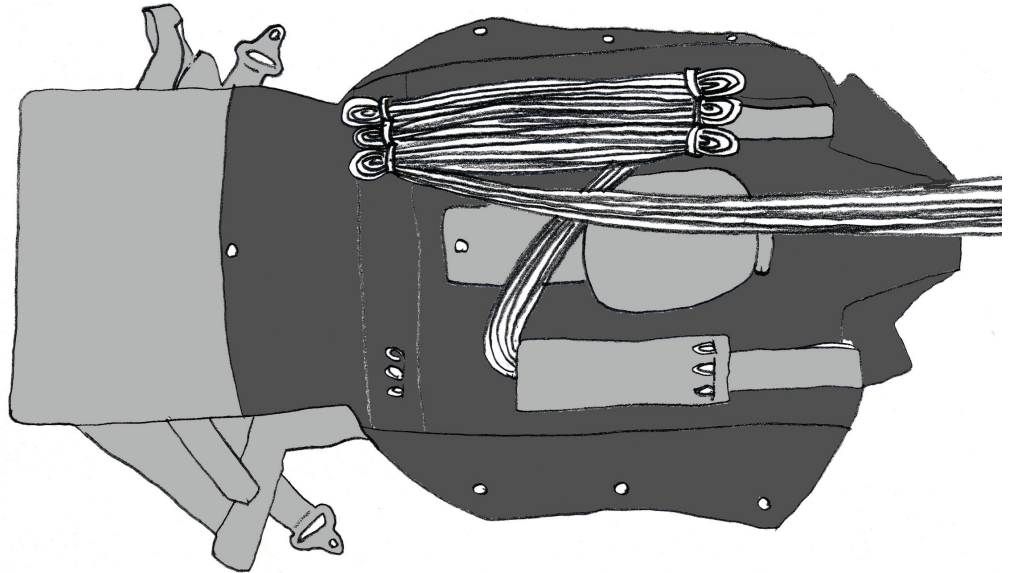
6.2.3 Keeping lines straight and untwisted make your first stow in the top left of the container extending about 1 1/2 in past the stow band.



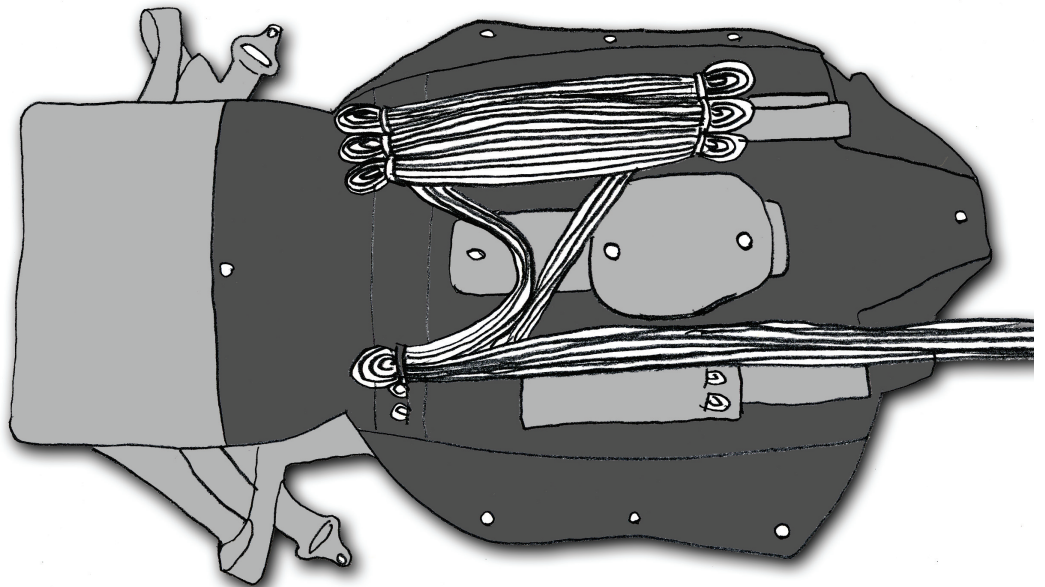
6.2.4 Extend the lines down the pack tray making your second stow in the wearers bottom left stow band.



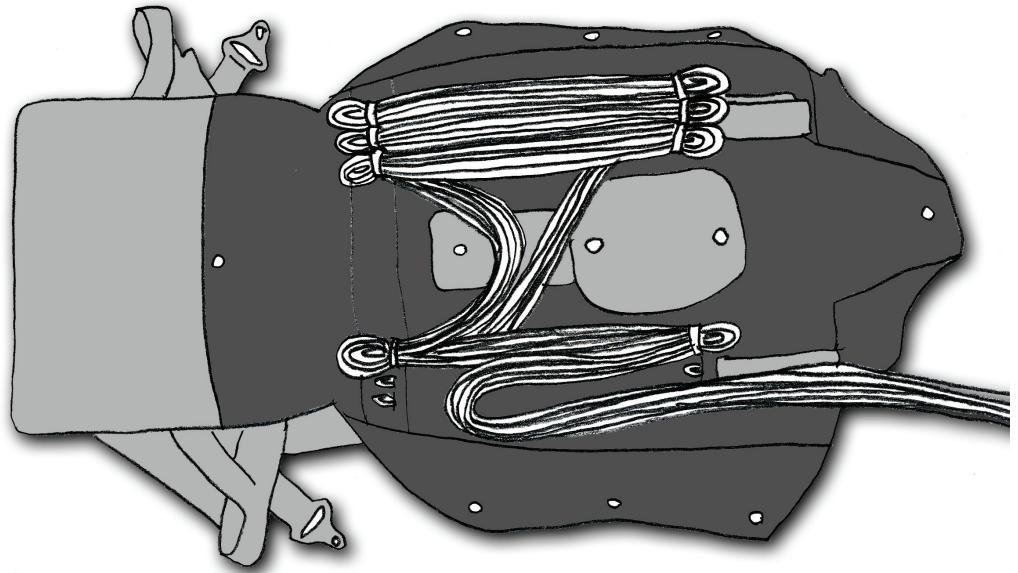
6.2.5 Continue stowing the lines in the same manner, up then down, until all the lines are stowed in the left side.



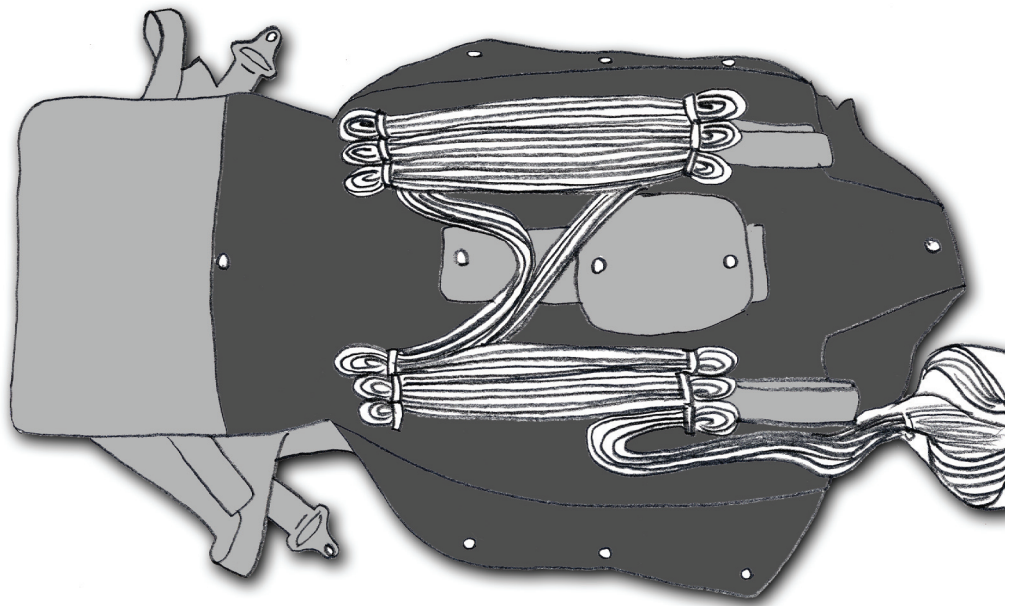
6.2.6 Cross over with the lines to the other side going in between the 2nd and 3rd grommets in the container and make the first stow on the right side bottom in board stow band as shown in the picture.



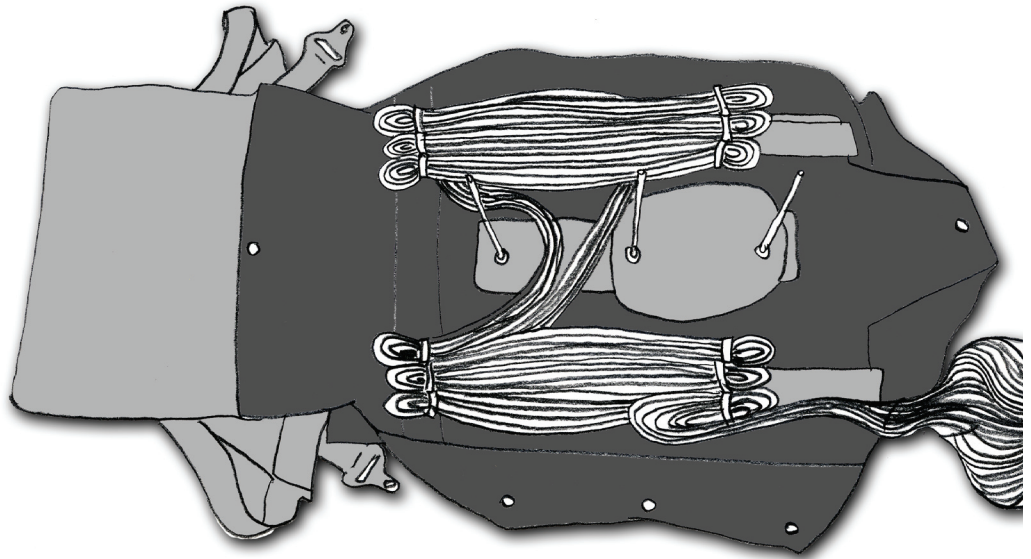
6.2.7 Make your second stow in the in-board top right side as shown in the picture.



6.2.8 Continue stowing the lines in the right side of the container up then down, until all lines are stowed and you have about 12 to 18" of unstowed line remaining.

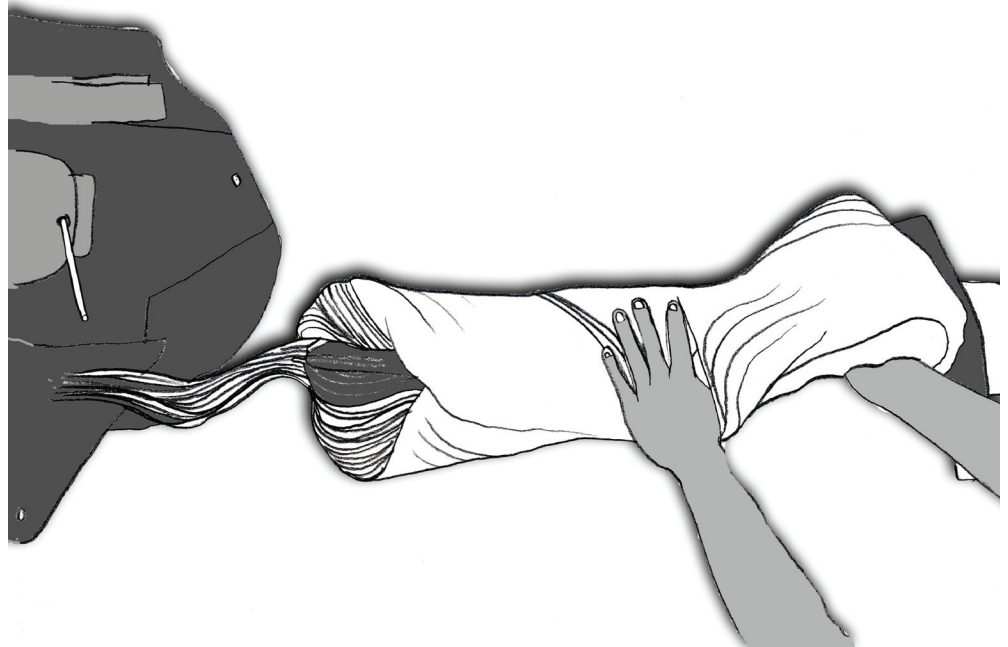


6.2.9 Now insert your 3 T-handles through the 3 grommets in the container.

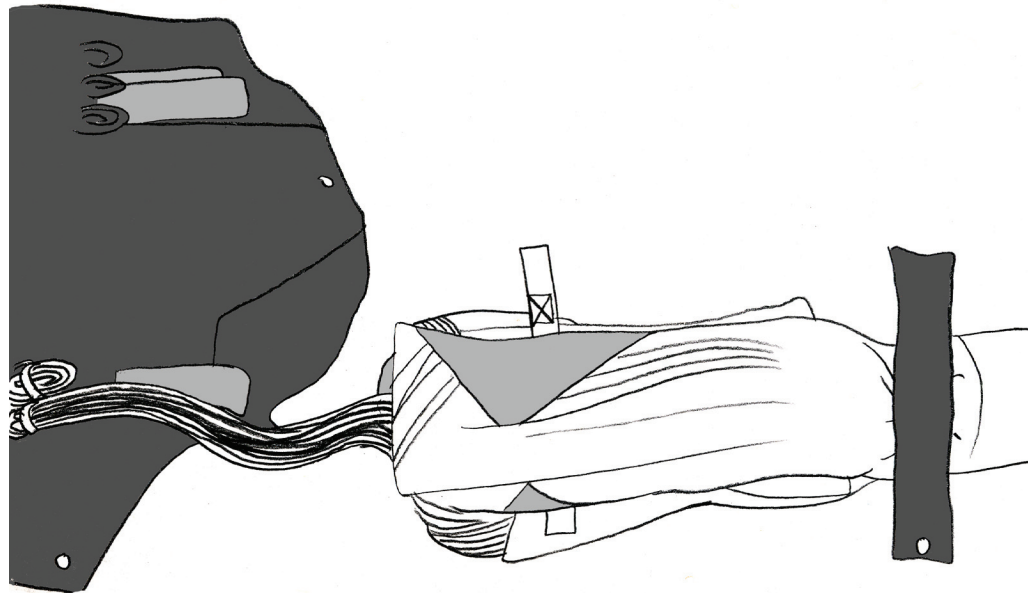


6.3 Placing the Parachute into the Container

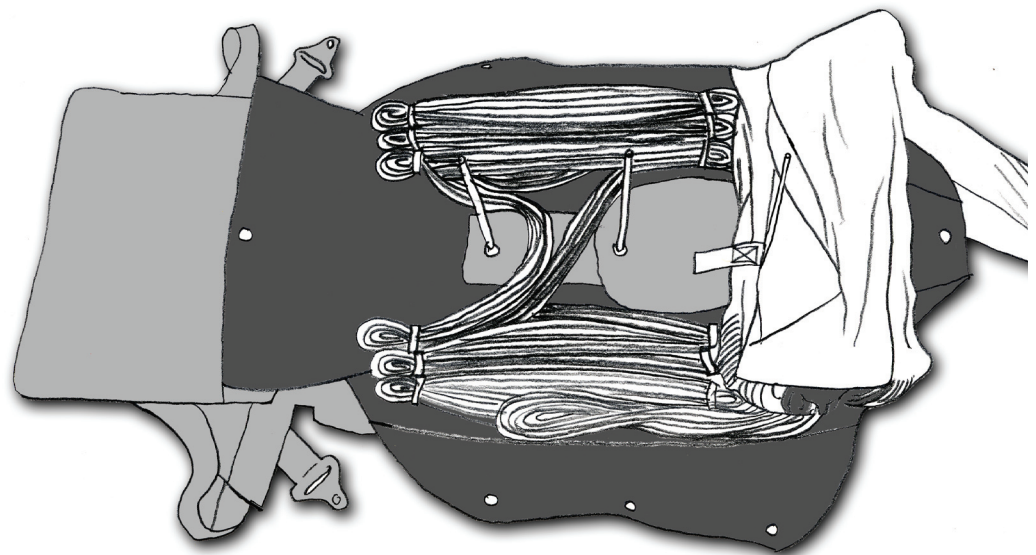
6.3.1 The skirt of the parachute goes into the top right of the container. Each rigger has a technique he or she is comfortable with when making this first stow of the canopy.



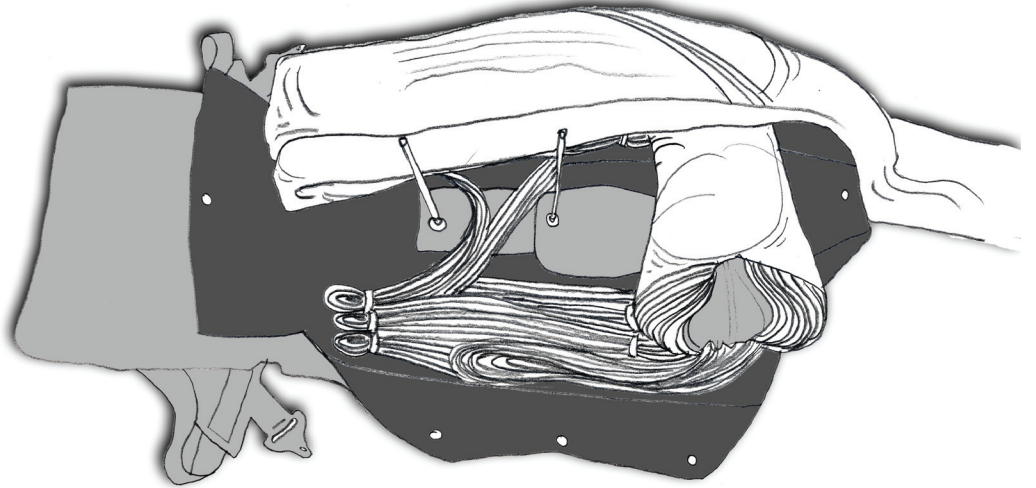
6.3.2 The pictures shows the technique of making an S fold outside the container on the table.



6.3.3 Laying the pre-folded parachute into the pack tray, again with the skirt on the top right side.



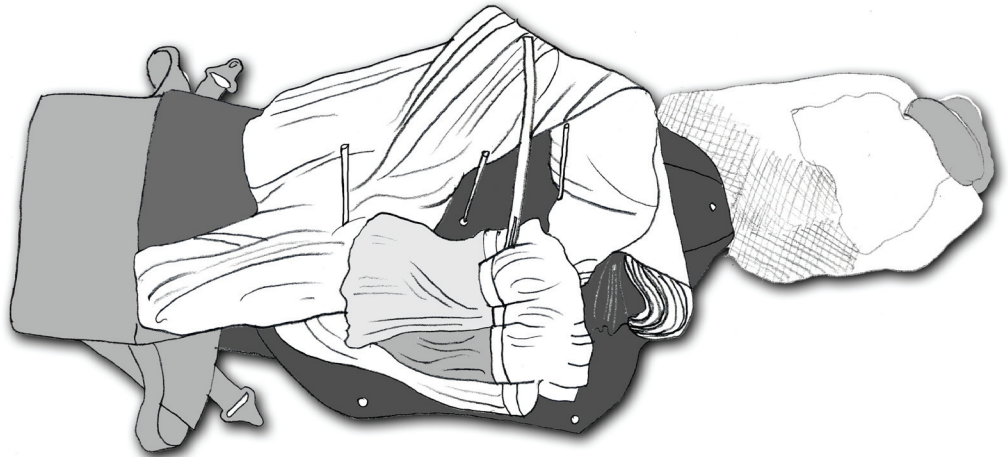
6.3.4 The next stow of the parachute is down the right side. Simply unfold the canopy into position and extend down to the right side bottom of the container.



6.3.5 Going back up the towards the top, lay the canopy on top of the previous fold going 3/4 of the way up the container. Make a 45° fold and cross-over to the left side in between the 2nd and 3rd grommets to the bottom of the container on the right side. Allow the canopy to extend about 5" past the bottom of the container.



6.3.6 Finish laying the remainder of the parachute into the container by going up the right side to the skirt. S fold any remaining canopy up close but not on top of the skirt.

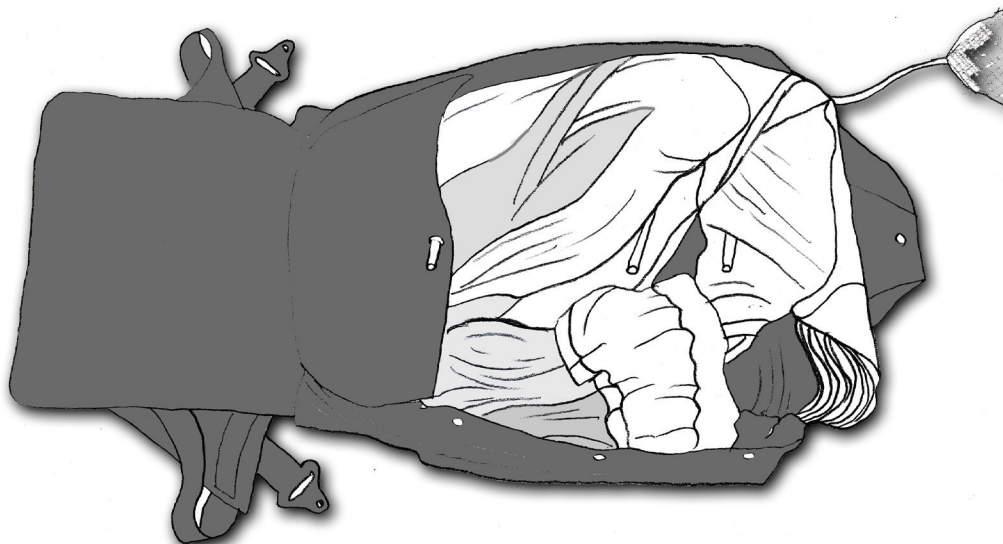


6.3.7 Fold the parachute at the bottom of the container where you extended 5 in past, at a 90° angle towards the center.

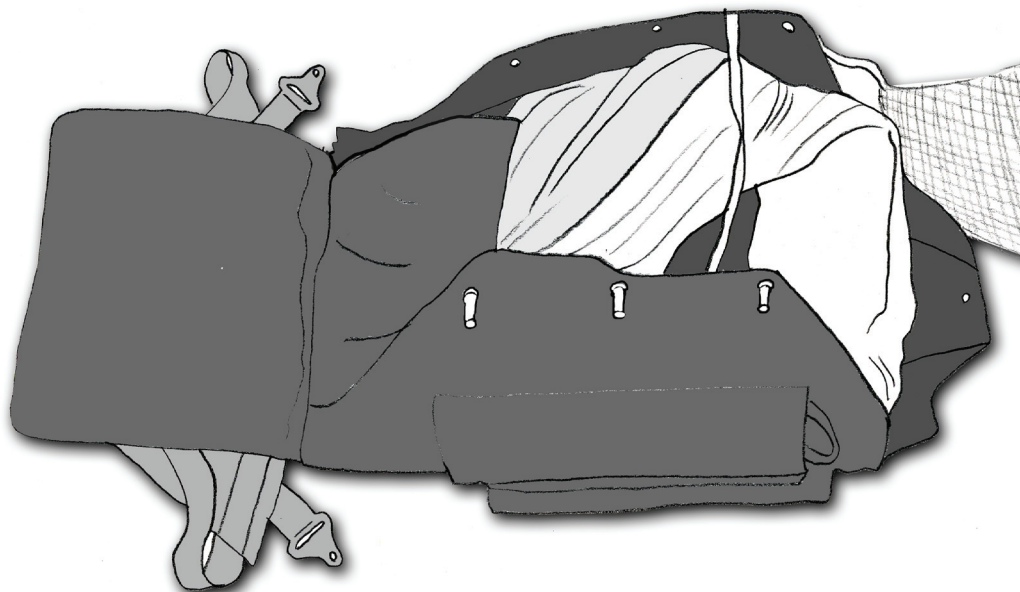


6.4. Closing the Flaps of the Container

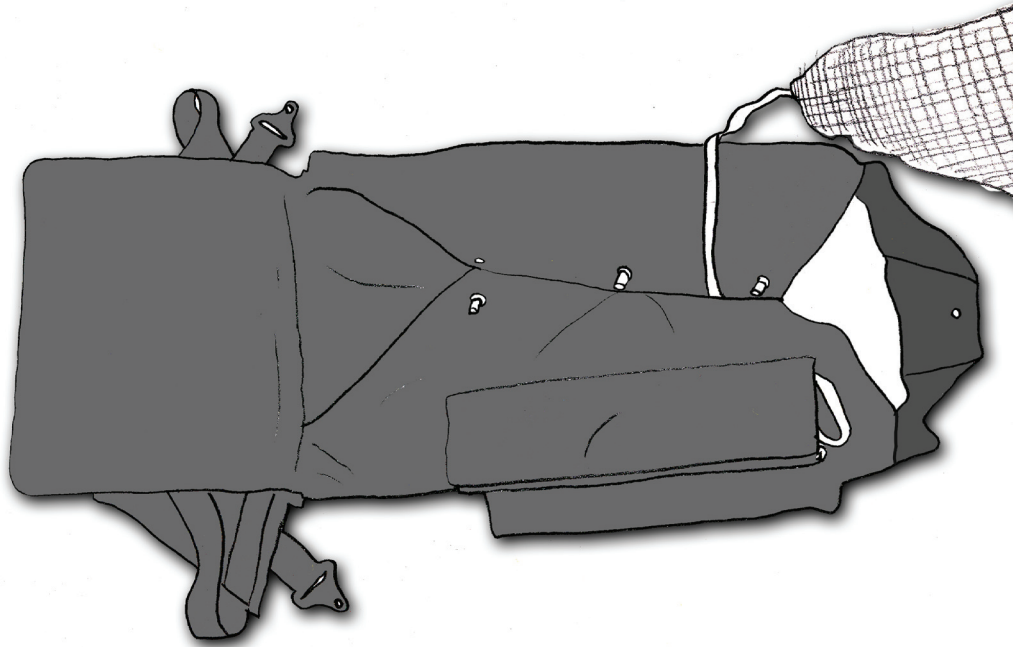
6.4.1 Begin closing the container by bringing the bottom flap grommet up and inserting bottom T-handle through grommet.



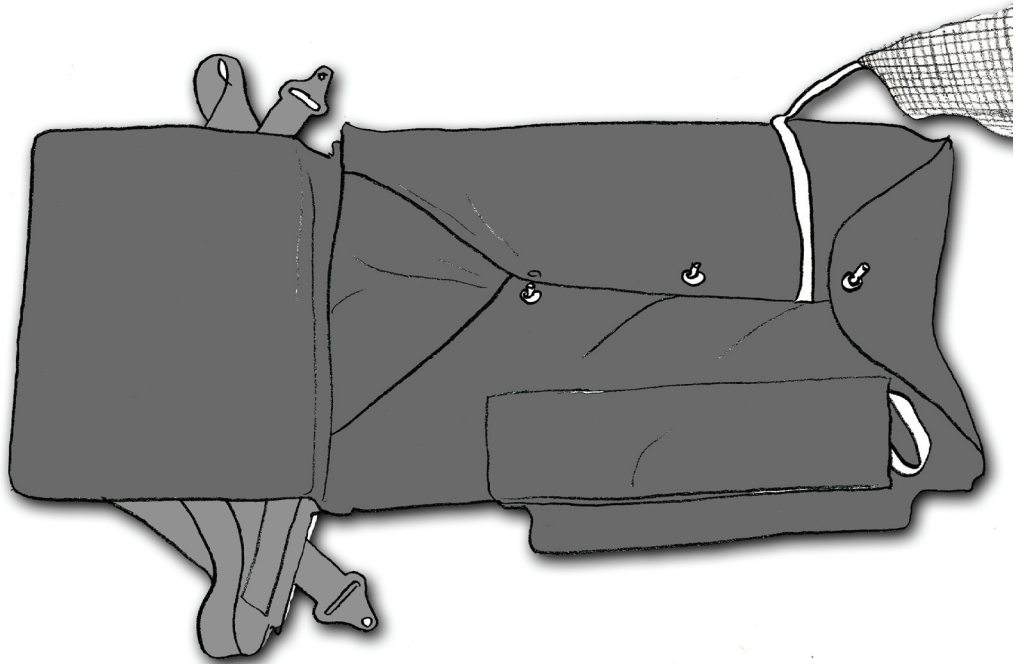
6.4.2 Dressing as you go and keeping the canopy as far outboard and neat as possible, close the right side flap by sliding grommets over T-handles. By keeping the canopy tucked far outboard, you are creating a nest that the pilot chute will eventually snuggle into. Route the bridle out in between the 1st and 2nd grommets of the container.



6.4.3 Now close the left side flap, again keeping in mind that the canopy should be tight against the out-board side. Slide the grommets of the flap over the T-handles. Reach inside the container and lift the inside divider flap located between the first and second grommets of the container. No part of the canopy should be in-between these grommets.

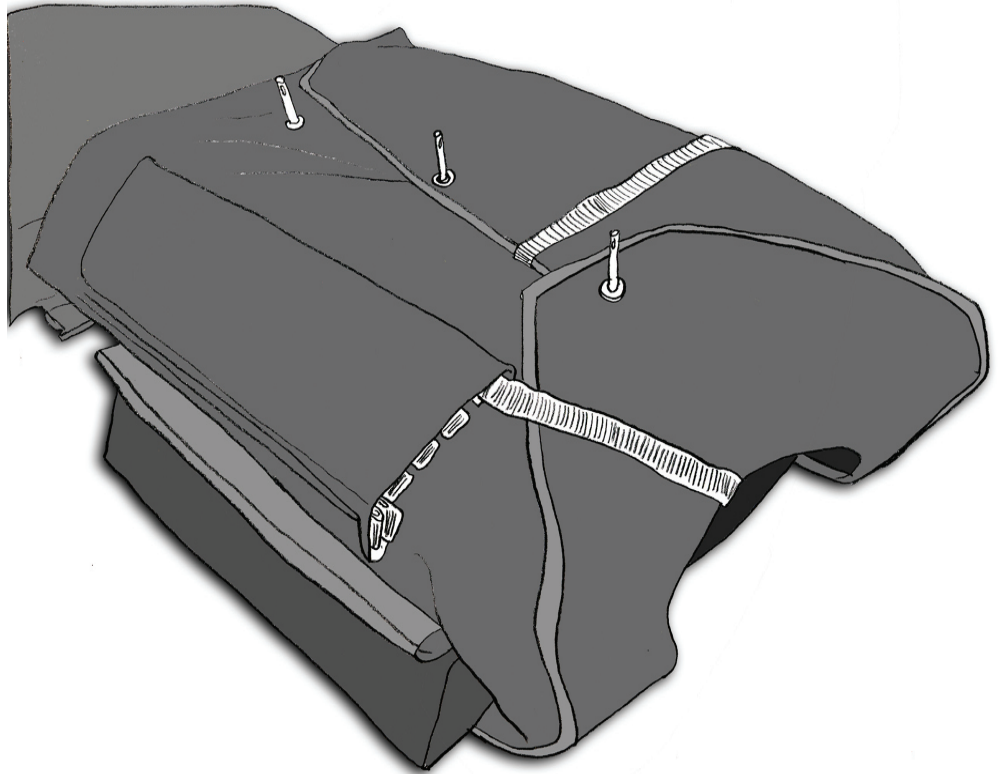


6.4.4 Close the top flap last sliding the grommet over the T-handle.

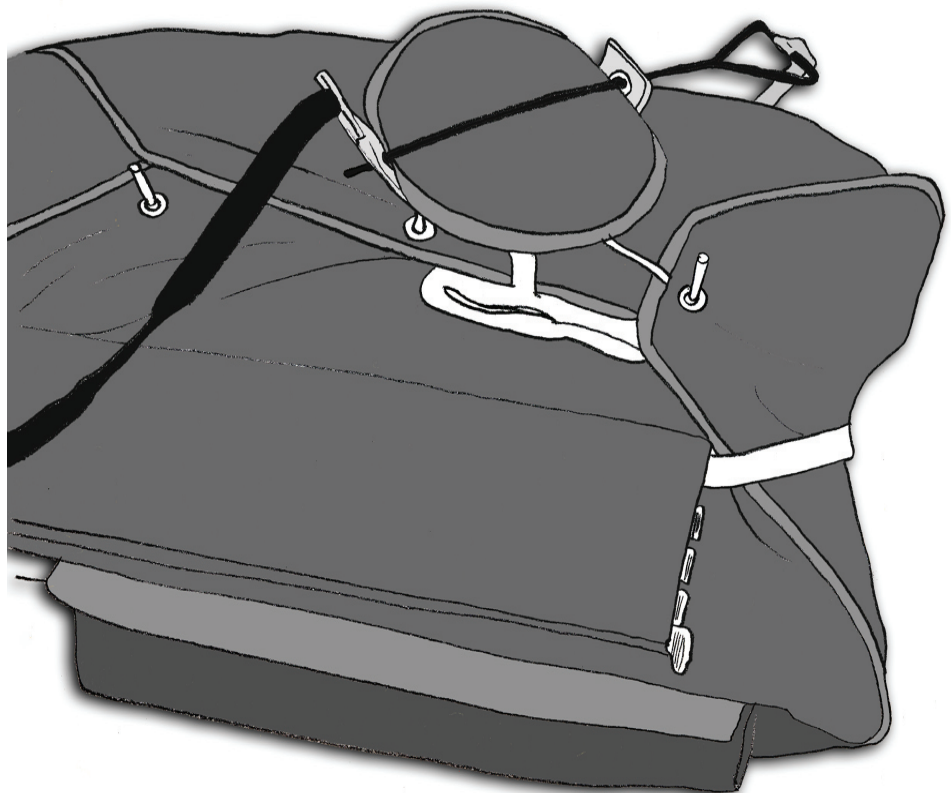


6.5 Closing the Container

6.5.1 There is a small opening on the top of the parachute system. This is for the static line. Locate the opening, and insert the end of the static line with the round ring 6" into this slot. Now locate the hook Velcro® on the static line and mate with the pile Velcro® on the top flap. Stow the remaining static line temporarily in a rubber band.



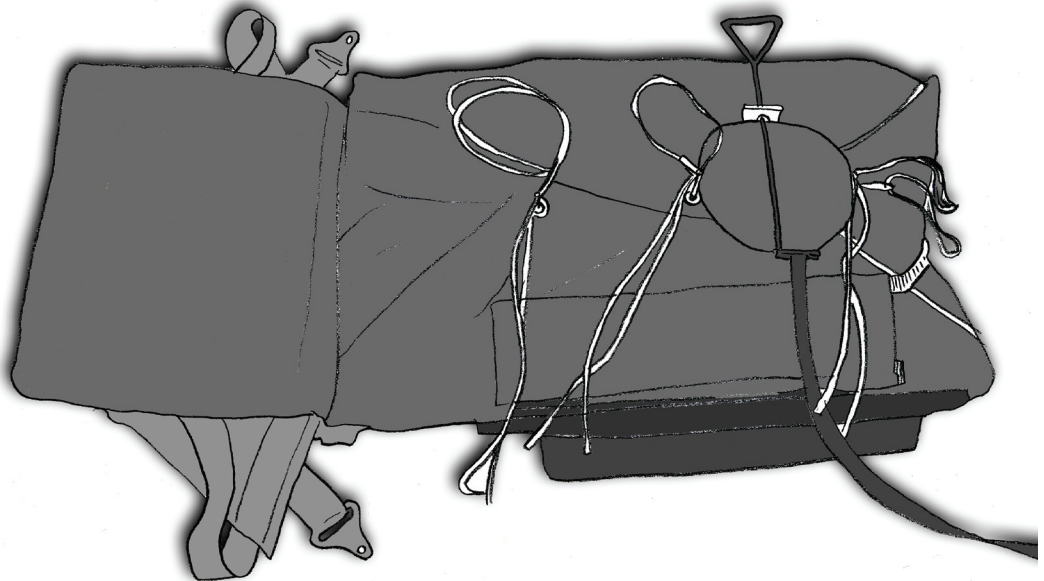
6.5.2 S-fold the bridle of the pilot chute in between the 1st and 2nd grommets of the flaps, and tuck in slightly.



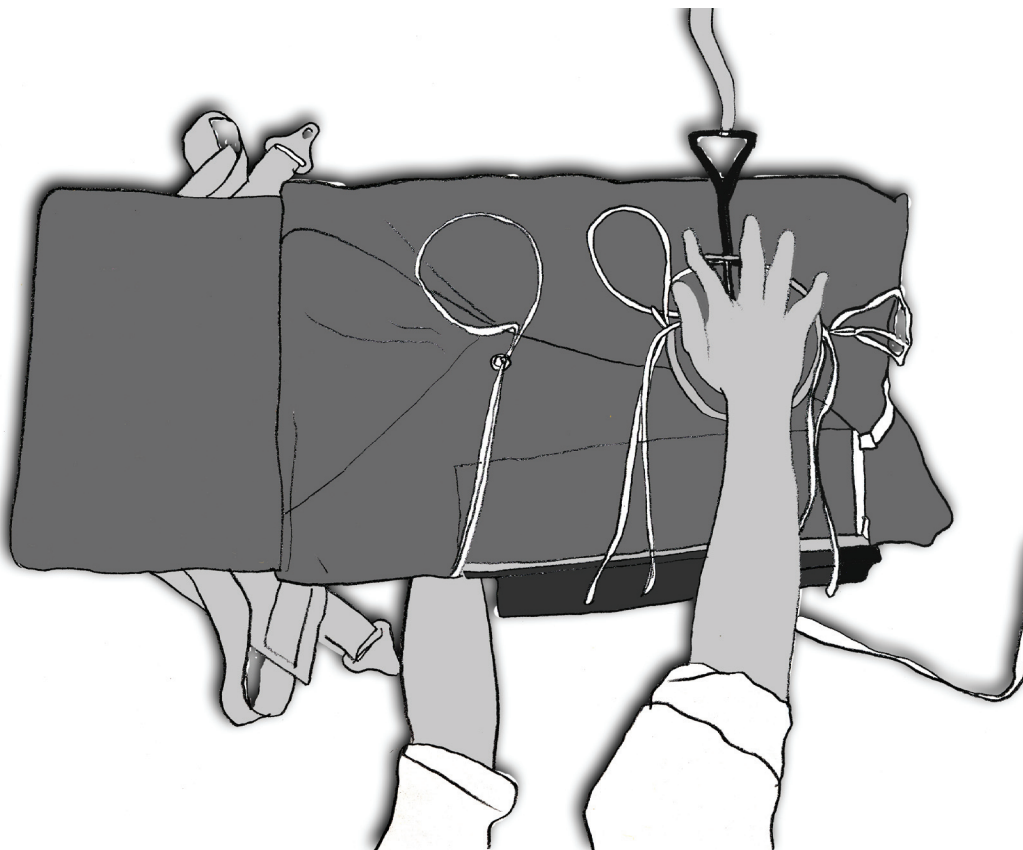
6.5.3 Collapse Pilot Chute onto the Locking rod, and secure with pilot chute locking strap.



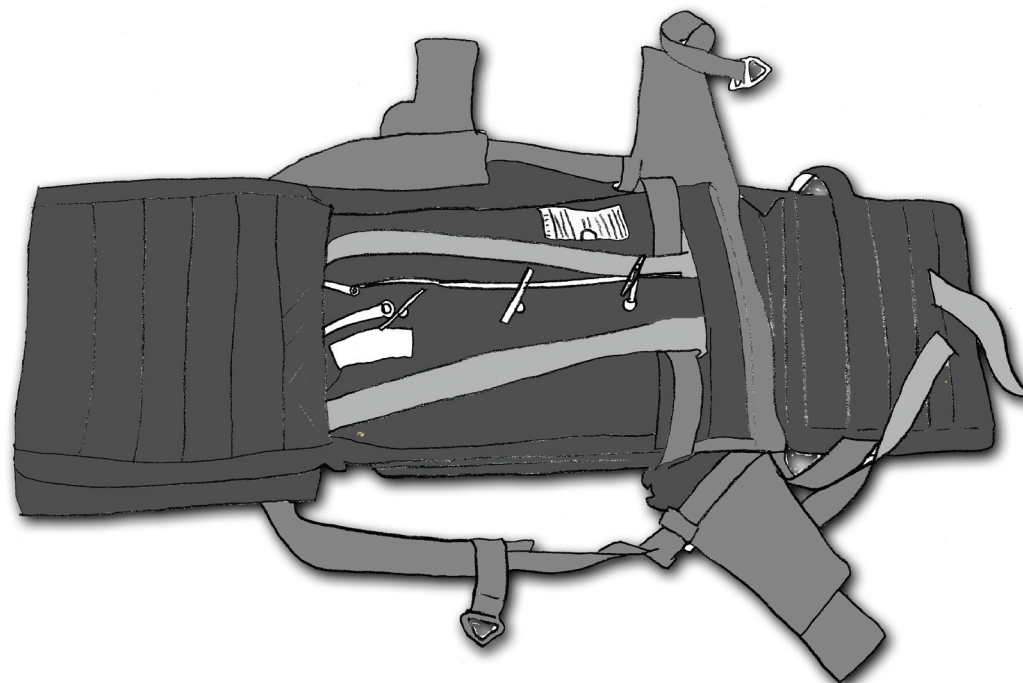
6.5.4 Place the Pilot Chute on top of the bridle in between the 1st and 2nd grommets of the container and run your pull-up cords through the 2 loops of the pilot chute and the loop located inside the bottom left flap. Now insert your pull-up cords through the T-handles.



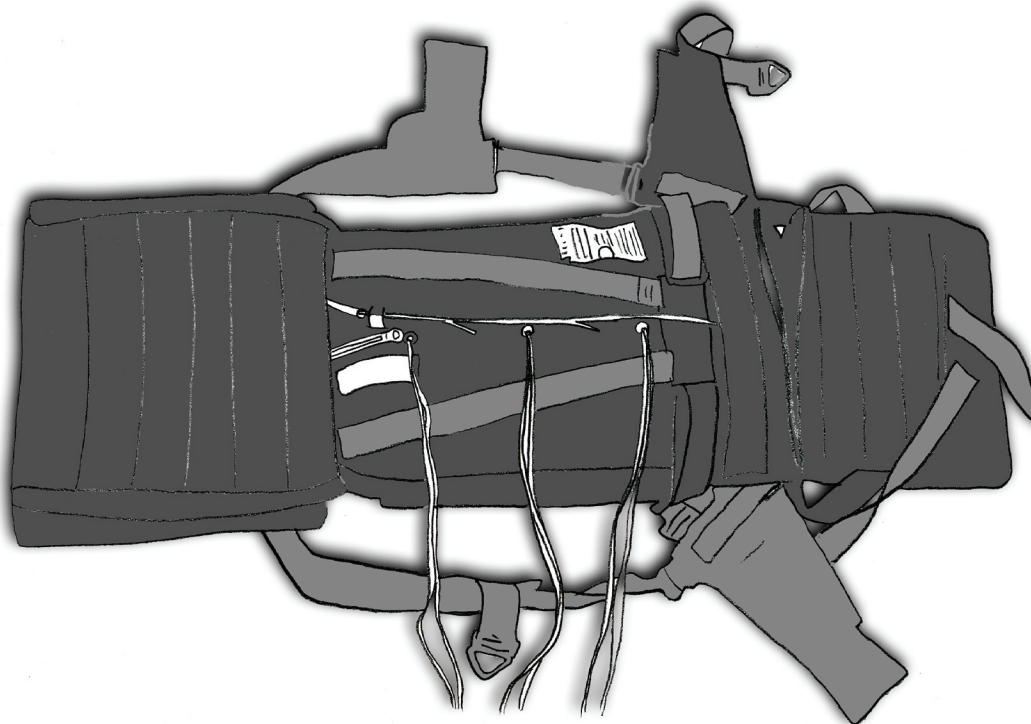
6.5.5 Prepare to flip the container over onto its back by placing your right hand on top of the compressed pilot chute, and your left hand under the container.



6.5.6 In one continuous fluid motion flip the container over onto its back. Now peel back the Velcro® of the back pad and lift exposing the grommets and T handles.



6.5.7 Pull the T-handles out of the container bringing the pull-up cords up with them.



6.5.8 Insert the 1st pin of the ripcord (the one closest to the handle) through the static line ring.

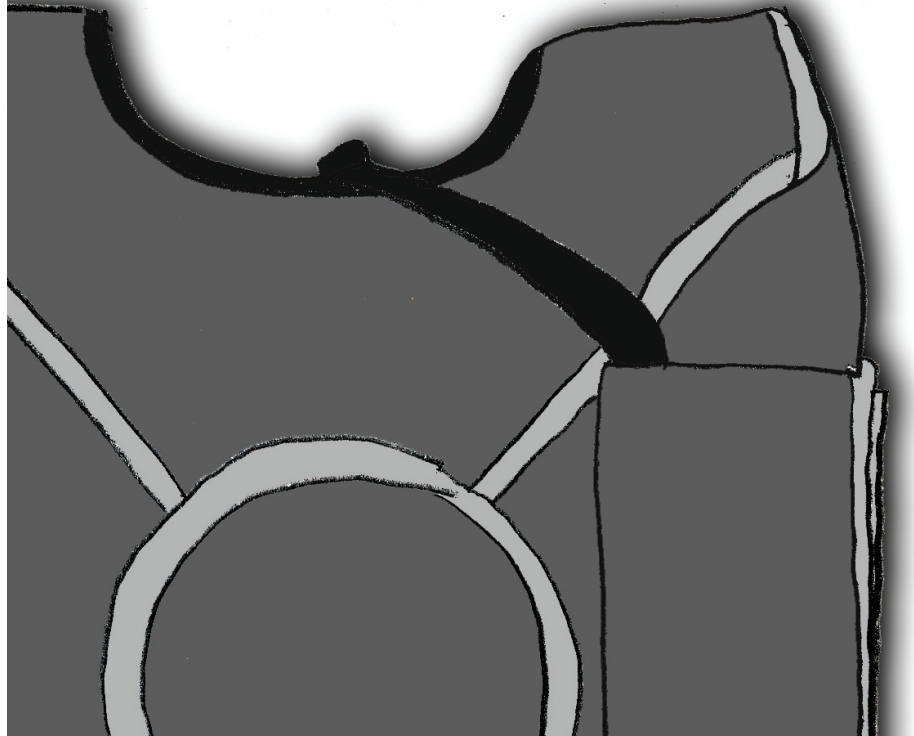
Then using the pull-up cords, leverage, and muscle, pull the top loop of the pilot chute up thru the pack and insert the ripcord pin starting with the one closest to the ripcord handle. Continue with the middle pin. Now pull the bottom pull-up cord up and expose the loop attached to the bottom left flap of the container and lock in place with the last pin of the ripcord assembly and remove the pull up cords.



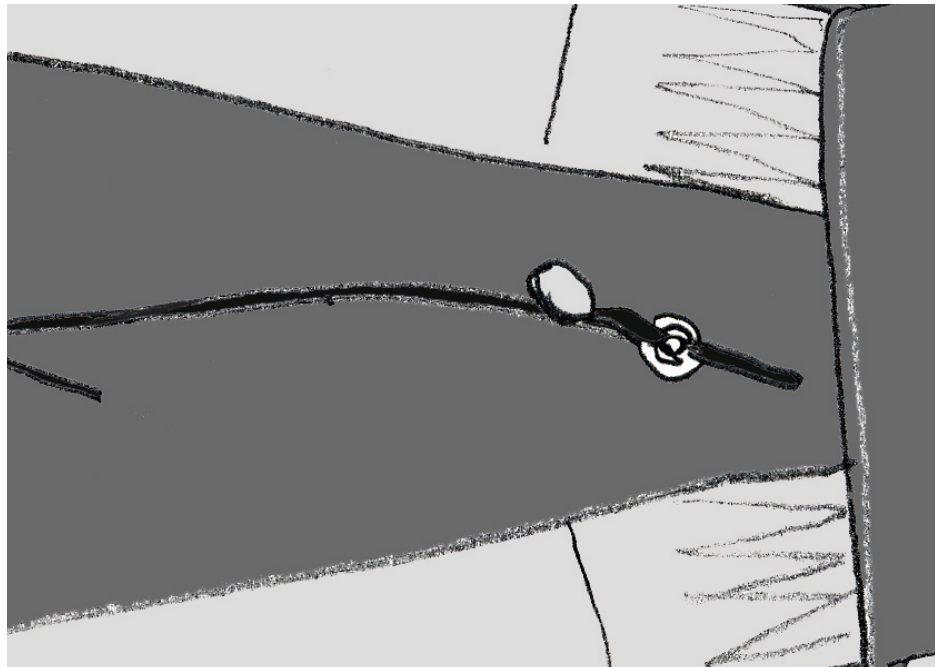
!WARNING!

Do not insert ripcord cable through static line ring.

6.5.9 Stow the static line in the pocket provided on the outside of the container.



6.5.10 Seal the last pin, fill out data on packing data card, count your tools and dress the assembly.



! WARNING !

Count your tools being certain you have the same as when you started.

7. Repair Guidelines

The following repair specification is set forth to aid riggers in the maintenance of Strong Parachutes. Repairs must be made only by appropriately rated FAA certified parachute riggers.

CANOPY

TYPE OF REPAIR

LIMITATIONS

Re-stitching:

No limit as to length or number.

Patch, single side:

**Size limit: 50% of panel area.
Limit of 3 per panel, 15 per canopy.**

Panel replacement:

Limit 9 per canopy

Radial Seams

Size limit: 12", no more than 4 per canopy.

Lateral bands

Damage: size limit 2"

Upper

Limit: 1 per canopy

Lower

Limit: 4 per canopy

"V" tabs:

No limit

Suspension Lines:

No Limit

PILOT CHUTE

Use restitching or single side patch. Anything more, replace.

PILOT CHUTE CAP

Replace when spandura fabric becomes worn.

CLOSING LOOP

Replace one time per year. See Chapter 7

BRIDLES

Damaged bridles should be replaced

CONTAINER

Standard military single side patches or replacement of the damaged area is authorized.

HARNESS

Any portion of the harness which is structurally damaged should be replaced in a manner to duplicate the original equipment.

RIPCORDS

Damaged ripcords should be replaced.

DATA CARD

Data cards should not be discarded or replaced. When filled, they should be attached to the new card so that a complete log of packing, repairs, and alterations is recorded. This is the history of the parachute.

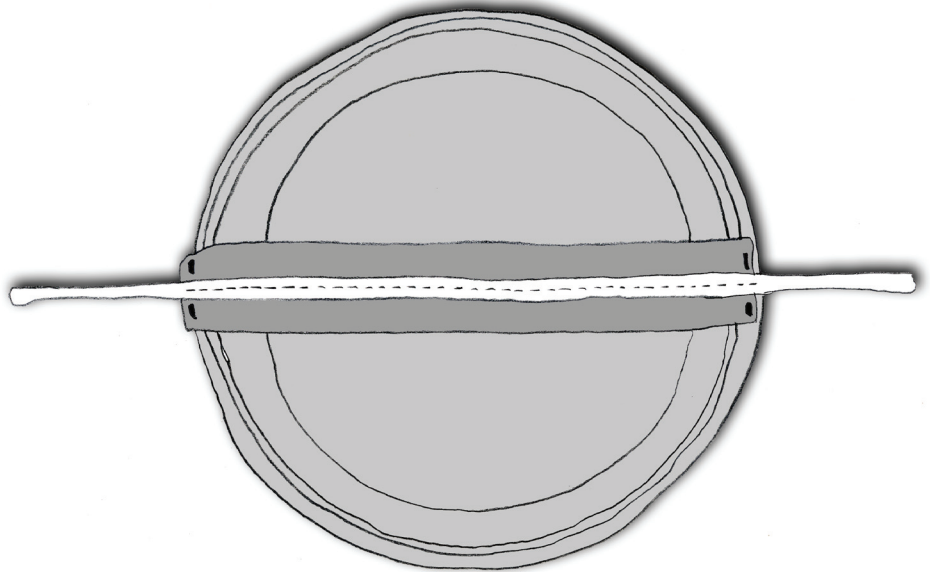
Note!

Darning and ripstop tape are not authorized for certified Canopy's as they may weaken the fabric. Single side patches are recommended for even small damaged areas.

8. Changing the Pilot Chute Loop and Cap

8.1 The L-39 Parachute Assembly has a Pilot Chute Cap with a Spandura Rim. This Spandura Rim is hand-tacked to the top of the pilot Chute at 90° angles to the loop openings. By snipping this hand tacking, you can easily remove the cap and lift it off.

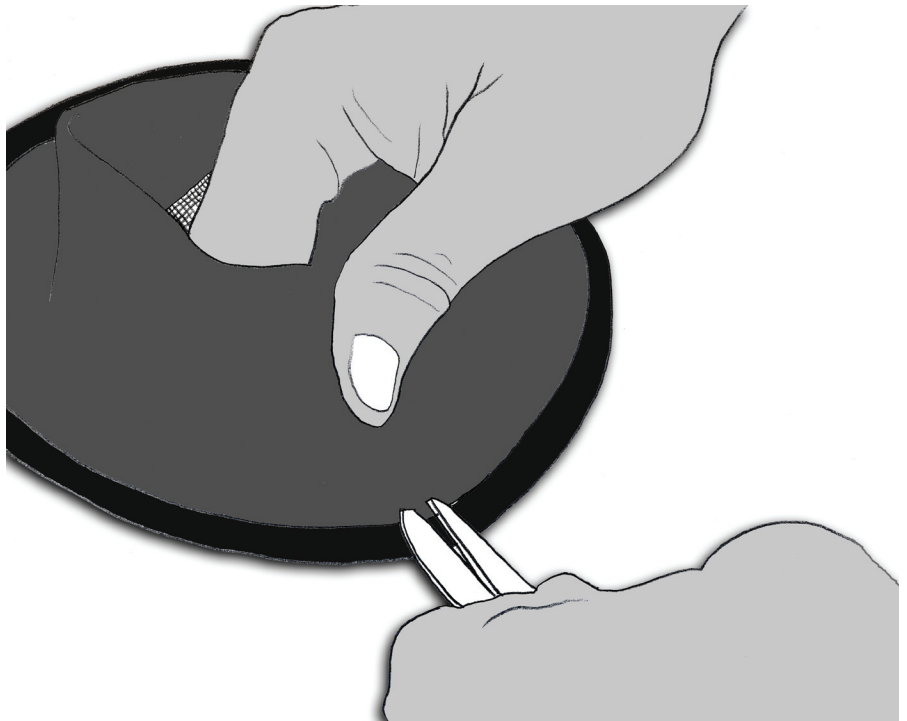
7.1.2 Once the cap is removed, remove the loop by snipping the hand tacking. Install a new loop by hand tacking from the bottom side up, then back through down, up on the other side, then down again on the opposite edge, followed by a good surgeons knot.



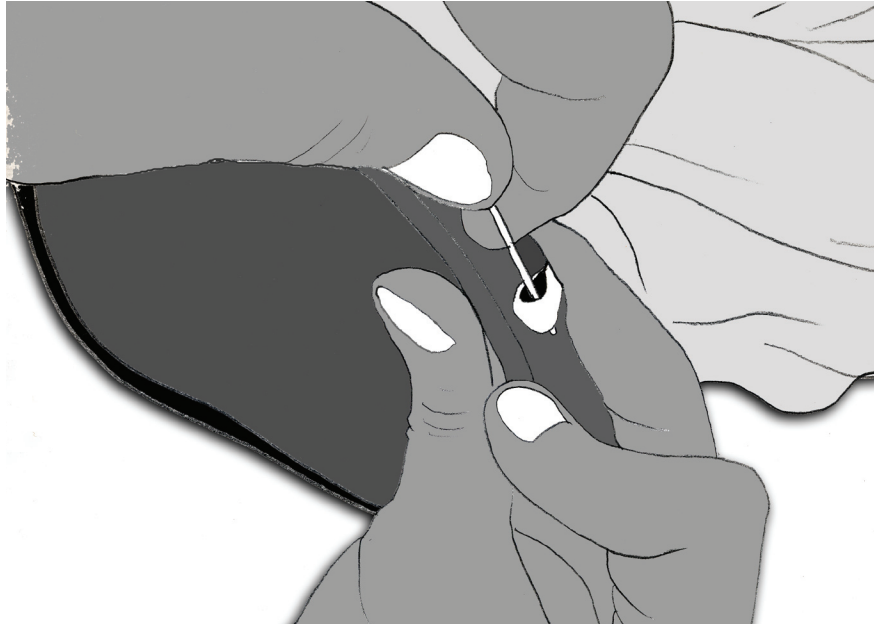
Note!

The Pilot Chute Loop must be placed as close to dead center as possible. Being off even a couple of degrees may cause The Pilot Chute to not sit properly on the packed container.

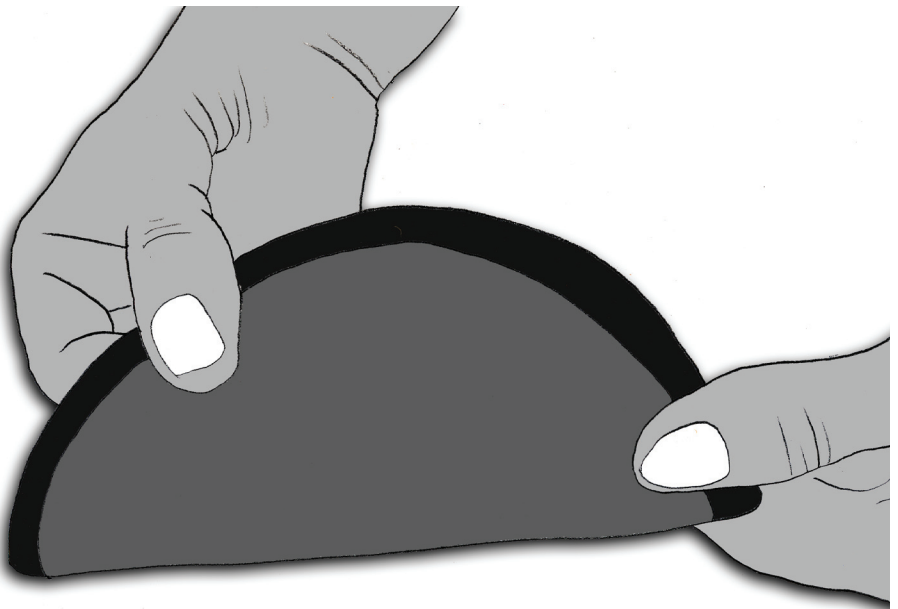
8.2 If you are replacing the cap, you must make two small holes where the loops will come through the Spandura. Do this near the seam in the Binding tape.



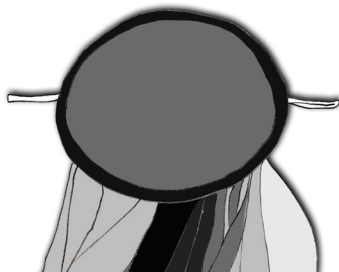
8.3 Once the holes are cut, Install the new cap over the loop by aligning the loop ends with the holes in the Spandura cap and pulling the loop through the holes with your hand tack needle.



8.4 Rigger tip: Once you have cut the first hole in the Spandura for your loop to come through, fold the cap perfectly in half at that hole, making a crease. Unfold the cap, and you can see just where 180° is and where your other hole should go.



8.5 Hand tack the new cap in place at 90° angles to the loops.



Note!

Be careful not to catch the pilot chute canopy cloth below the stitch line at the top of the pilot chute. Doing so may result in stress being put on the cloth resulting in a hole in the canopy.

Notes



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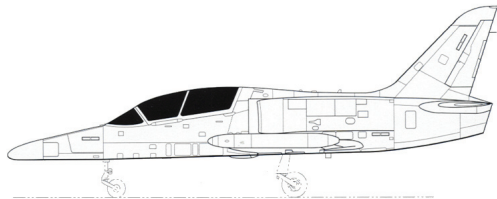
PARA- **CUSHION** EMERGENCY PARACHUTES

Owner's Manual
For packing and maintenance of

Para-Cushion model L-39

With Strong C-9 Parachute

Part number: 1045-4



L-39 Jet Trainer



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! WARNING !

Parachuting is a hazardous activity that can result in serious injury or death. Failure to follow all warnings, instructions and required procedures may result in serious injury or death. Parachutes sometimes malfunction, even when they are properly designed, built, assembled, packed, maintained and used. The results of such malfunctions are sometimes serious injury or death. There are so many factors, both human and natural, beyond our control that we want you to clearly understand that by using or intending to use our parachutes, you are assuming a considerable risk of personal injury or death. If you are not willing to assume that risk, please return the parachute to the dealer where it was purchased for a full refund.

DISCLAIMER

There are NO WARRANTIES which extend beyond the description of the parachutes in this manual and neither the seller nor any agent of the seller has made any affirmation of fact or promise with respect to the parachutes except those that appear therein.

The liability of the seller is limited to the duty to replace defective parts found upon examination by the manufacturer to be defective in material or workmanship within 7 days after purchase and found not to have been caused by any accident, improper use, alteration, tampering, abuse or lack of care on the part of the purchaser.

Mr. Edward Strong
President, Strong Enterprises
A Division of S.E. Inc.
11236 Satellite Boulevard
Orlando, FL 32837



U.S. Department
of Transportation
**Federal Aviation
Administration**

Dear Mr. Strong:

This is in response to your March 9, 1992, and subsequent submittals requesting Federal Aviation Administration authorization to identify Para-Cushion Series, Part No. 1045-() emergency parachutes assemblies, in accordance with the requirements of Federal Aviation Regulation (FAR) Part 21, Subpart O, Technical Standard Order (TSO) C23c, and SAE Aeronautical Standard AS-8015A, Category B.

We find your March 9, 1992, Statement of Conformance submitted with your request and your Quality Control Manual dated December 6, 1988, acceptable.

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

- a. Strong Enterprises Test Summary dated March 9, 1992.
- b. Strong Enterprises Drawings for the Para-Cushion Series P/N 1045-() submitted with your March 9, 1992, request.
- c. Strong Enterprises Owner's Manual which includes limitations and instructions and was submitted on May 7, 1992.

Effective this date, you are authorized to identify the Para-Cushion Series, Part No. 1045-() parachute assemblies 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 Airframe Engineer for this authorization is Cindy Lorenzen, telephone number (404) 991-2910. The Technical Support Specialist is Lorraine Bush, telephone (404) 991-6137.

Sincerely,


John Tigue
Manager, Atlanta Aircraft
Certification Office