

# **PARA- CUSHION**

EMERGENCY PARACHUTES

**Owner's Manual**  
**For packing and maintenance of**

## **Para-Cushion model 303 Back**

**Part number: 124105**

with

Diaper equipped

**26ft. Mid-Lite Canopy**

Part number: 420550



**Strong Enterprises**

*"The parachute company with imagination"*

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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.**

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## **1.0 Introduction**

Thank you for purchasing a new Para-Cushion Emergency Parachute System from Strong Enterprises. It is the finest available anywhere and with a little care, should last you a very long time. Rest assured that your new Para-Cushion has been constructed to retain the durability, reliability, and comfort that Strong Enterprises has been building into its products for over 45 years. We welcome your comments so that we may continue to improve our products and help make flying safer and more comfortable.

### **1.1 Scope**

This owner's manual constitutes the manufacturer's instructions for the operation, packing, and maintenance of the Para-Cushion Back Model 303 (PCB 303) 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). A copy of this approval is on the inside of the back cover.

### **1.3 Operational Limitations**

When using 26 ft. Mid-Lite Canopy (Strong Enterprises Part Number 420550), this Para-Cushion is limited to use by persons up to 254 lbs (115kg) fully equipped (person, clothes, and equipment including parachute) at up to 150 knots IAS.

### **1.4 Parachute Repack Interval**

Your PCB 303 is subject to a 180-day inspection and 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 180 days." An FAA Senior or Master parachute rigger with a back type rating must pack the PCB 303. If your Para-Cushion is exposed to moisture or damage, it should be inspected and repacked sooner than the 180-day maximum.

### **Note!**

*The 180-day repack cycle required by regulation is a maximum. If for any reason your parachute is not in the condition it was when packed, it should be inspected and repacked, regardless of the time since previous packing.*

### **1.5 General Description of Models**

The Para-Cushion series of Emergency Parachutes, including the model PCB 303, are FAA approved, manually operated emergency parachute systems 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, it combines the best features of both the back and seat types and extends from the shoulders to the thighs..

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

Depending on canopy type, the complete system weighs between 14-1/2 and 15-3/4 pounds. This manual covers Para-Cushion Back 303 packed with the following Strong Enterprises emergency canopies:

- 26-foot Standard Lo-Po PN.420510
- 26-foot Military Lo-Po PN.420520
- 26-foot Mid-Lite PN. 420550
- 26-foot Lite PN. 420601

All four canopies are manufactured with low porosity (Lo-Po) cloth that restricts airflow, allowing a slower, more stable rate of descent than conventional parachute cloth.

## 1.6 Model Description

The PCB 303 measures 24" (60 cm) tall by 16" (40 cm) wide by 3" (7 cm) thick and weighs approximately 15 lbs. (6.5 kg).

The PCB 303 is recommended for use in airplanes where head room is at a minimum such as an ASW-27, a PW-5, a Cap-10, a Zlin 50, a Christen Eagle, the front seat of an RV-4 and many others. In many cases it is possible to replace the airplane back cushion with the Strong Para-Cushion Back Parachute System.

## 1.7 Available Options

- Fully Adjustable Harness - Allows wearer to adjust the harness using seven adjustment points for a perfect fit. Works very well for clubs where different people will be using the system, also works well for the non-pilot seat in two seat airplanes where different passengers will be carried.
- Aerobatic Harness - This harness option moves the snaps that normally sit on top of the pilot's legs, to your chest, where there is no pressure from a seat belt. This works best where a Hooker Harness Ratchet type seat belt is used.
- Quick Ejector Snaps - This is the Military type hardware that can be used in place of the standard B-12 snaps. Works best for former military pilots who have become accustomed to this type of hardware.
- Capewell Riser Releases - For landing in high wind conditions allows the pilot to release the parachute, to prevent dragging. Disadvantages - Heavy and expensive hardware.
- Oxygen Pocket - Pocket built in to the system for a bail out bottle. (Pocket only)
- ELT Pocket - Pocket built in to the system for the pilots ELT. (Pocket only)
- Sheepskin Pad - Sheepskin pads keep you cool in the summer and warm in the winter. Installed using the Velcro channels already in place on your system.
- Aero Pad - A zip-on seat pad held in place by the pilots weight to restrain the Para-Cushion and prevent shifting during high G maneuvers.
- G-Pad - An auxiliary pad that attaches to the back pad of any Para-Cushion. The G-pad is formed to snugly fit around the pilot's sides providing extra support during high G maneuvers.
- Lumbar Pad- Attaches to any Para-Cushion and provides support on the lower back area
- Custom Monogram - We can monogram your name, N number, or anything that space will allow on the front of your container.
- Survival Equipment Pocket - Storage space built in to the container, to hold personal items such as a cell phone, signal mirror, energy bar and a small first aid kit.

## 1.8 System Function

The Para-Cushion is activated by pulling the ripcord handle. This withdraws the ripcord pins and releases the locking loops allowing the pilot chute to eject, catch air and extract the parachute canopy from the container. A "diaper" is sewn to the skirt at the bottom of the canopy and is where some of the suspension lines are stowed. The balance of the lines are stowed inside the container. On deployment, the canopy and suspension lines are extracted from the container. The diaper is released as the last stows deploy, allowing the canopy to inflate.

Typically, it takes about 2 to 3 seconds from ripcord pull to fully inflated canopy, traveling a vertical distance of 150 to 300 feet. This does NOT mean that you should plan on jumping or pulling at 300 feet. Deployment time and distance depend on, among other factors, your airspeed.

## 1.9 Care of your PCB 303 Emergency Parachute System

Observe these precautions to maximize the service life of your Para-Cushion Emergency Parachute System. Parachutes are simultaneously very rugged and quite delicate. They are life saving devices and should be treated with great care. Parachutes are made of nylon, a very strong and durable, but not invincible, material. Nylon is deteriorated by small amounts of acid and weakened by ultraviolet sunlight. These surface effects do not seriously influence thicker materials, such as webbing or pack material, but canopy cloth is very vulnerable. 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, they will be glad 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 cause costly damage the canopy.

When your Para-Cushion is in the aircraft, care must be exercised to ensure 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, 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 THE PACKED PARACHUTE SYSTEM EXPOSED TO THE**  
**SUN WILL GREATLY DECREASE ITS SERVICE LIFE.**

## 1.10 Service Life

FAR 65.129 requires that “No certificated parachute rigger may pack a parachute that is not safe for emergency use”. The continued airworthiness of an assembly is at the discretion of the FAA licensed parachute rigger’s inspection during re-pack. While proper care can no doubt extend its usefulness, an older parachute should be examined more closely for signs of deterioration. Your parachute is a sensitive piece of life saving equipment and should be treated as such. However, it should not be expected to last forever, even with proper care.

## 1.11 Preflight Inspection

The parachute must be inspected by the wearer prior to each use. Check it visually for any unsafe condition. Be sure the harness is not twisted or misrouted. Be sure, the fittings are not rusted. Be sure the ripcord handle, is securely in it’s pocket (under the fabric pocket covering). Lift the Velcro on the back pad and check the ripcord pins. 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. That’s your assurance it has not been opened since it left the rigger’s packing table. Check the packing data card in the nearby pocket to be sure that the parachute has been inspected and repacked within the previous 180 days.

## 1.12 Fitting the Parachute Harness

Strong Enterprises produces 3 basic harness designs: the standard fixed harness, the fully adjustable harness, and the aerobatic harness. Below, please find proper fitting for each of these models.

**Standard Fixed Harness** - This harness has 3 adjustment points, one on the chest, and one on each leg. If you are putting the parachute on for the first time, unsnap the hardware on the straps, loosen the three adjustment points, 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. Lean forward, pull the leg straps below your hips, and tighten them snugly, yet comfortably around your thighs. Finally, snap and adjust the chest strap. Fold and stow the webbing ends in the elastic keepers. Be sure the ripcord handle is securely stowed, yet accessible.

**Fully Adjustable Harness** - The fully adjustable harness allows you to custom fit your harness. To properly adjust this harness, first loosen all adjustment points all the way out. Then put on the parachute as explained above being sure to fit the leg straps snugly. Then stand at attention and take up the slack in the main lift web (vertical straps) by pulling on the harness ends located just above the leg pads. This should pull the straps down snug over your shoulders. Next adjust the horizontal back strap (located behind you at the leg junction) to come in contact with your back. This strap need not be tight for a comfortable fit. Finally, snap and adjust the chest strap, fold and stow the webbing ends in the elastic keepers. Be sure the ripcord handle is securely stowed, yet accessible.



Aerobatic Harness - The Aerobatic, or two-point harness moves the snaps normally located on the leg, to the middle of the chest, thereby preventing interference with your seatbelt. To properly don this harness, loosen the two adjusters all the way out. Slip your arms through the main lift webs (the vertical straps in front), much like putting on a jacket. Then reach between your legs, pick up the right leg strap, untwist if necessary and thread the right strap through the loop located on the right main lift web at the leg junction. Take care not to twist the strap. Next, snap it in place at the chest on the opposite (Left) main lift web. Repeat the process for the left strap. The straps should be adjusted tight, but not so tight that it restricts your ability to stand upright. Resist the urge to over tighten the straps once you are seated. Fold and stow the webbing ends in the elastic keepers. Be sure the ripcord handle is securely stowed, yet accessible.

## **1.13 Plan Ahead**

Be prepared in the event of an emergency situation. Know and rehearse your emergency procedures before they are needed. With the parachute on, sit in your cockpit and fasten your lap and shoulder belts. Be certain these are over your parachute harness. Wear gloves, helmet and goggles, even headphones if you normally use them. Mentally organize your bailout procedure. Inspect your cockpit for projections or sharp edges that may damage the parachute, or injure you. Consider canopy ejection, oxygen disconnect, or other requirements that you may be faced with. All these things take time, and an emergency leaves you little time for errors. Generally, you are better off staying with the aircraft if it's controllable. However, your margin of safety is reduced as time passes evaluating your situation. With time, many predicaments can get worse. Make your decision quickly because all these actions consume altitude.

## **1.14 How to get out of the aircraft**

It boils down to two steps: Get clear of the aircraft, then pull your ripcord. In that order. If the parachute begins to open while you're still aboard, the wind may inflate it, dragging you out or into the tail. Also, it may entangle with the aircraft. There are no other hard and fast rules - the craft may be tumbling, spinning, or inverted. Get yourself out any way you can. Unless you're above 15,000 feet, clear the aircraft and pull your ripcord immediately. There is enough oxygen to breath and you'll be descending into denser air. It also gives observers an opportunity to get a fix on your position.

## **1.15 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 LOOK at the ripcord handle, rather than fumble or tug on a harness fitting. Beneath the fabric cover, the ripcord handle is held in place by a pocket. Look at it first because it may have been dislodged by your exit. REACH over and grab it with both hands (or typically with your right hand and left thumb), and PULL. YANK IT HARD.

This is no time to be gentle! Actually pulling, which uses the muscles of your forearms, is not as effective as pushing, which takes advantage of your upper arm strength. If it doesn't come free on the first pull, check to make sure it is the handle in your hand, not some other piece of hardware. Back the handle up to the housing to create slack in the cable, then punch it out again. The entire cable assembly should come completely out of the housing. To reduce the pull force, push the handle in the direction that the protective ripcord housing points - rather than straight out from your chest.

The ripcord housing on the Para-Cushion 303 Back comes over your shoulder, so push the handle down toward your feet. By having both hands together on the handle, you also reduce



the chance of the canopy or lines entangling with an extended limb. Keep your feet together for the same reason. Body position is secondary to pulling.

**Remember - LOOK-REACH-PULL.**

## **1.16 How to Steer**

Having a steerable parachute reduces your rate of descent, increases your stability, and allows you to avoid obstacles (buildings, trees, water, power lines, etc.). The parachute drifts with the wind and has a forward speed of about 6 MPH, which can be directed with or against the wind using the built-in steering vents in the rear.

The canopy may be turned by pulling down on the steering line rings or webbing toggles, located on the rear of the risers, just above your head. An 8-12 inch pull will produce the best rate of turn. Excessive pulling will not improve the performance.

## **1.17 How to Land**

Ideally, you want to reduce your landing speed by facing into the wind (or quartering slightly). Avoid all but very slight turns below 200 feet.

Put your feet and knees tightly together and point your toes slightly 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 landing).

Maneuver the canopy as necessary to avoid all obstacles. In the event of a tree or power line landing, keep your feet together so you don't straddle a limb or wire. 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. To prepare for a water landing, the chest strap may be unfastened (except with the Aerobatic harness) as long as you cross your arms in front of the harness to prevent falling out. Depth perception over water is difficult at best, so do not attempt to leave your harness "just above" the water.

## **1.18 Recovery**

If the wind keeps your canopy inflated after touchdown, you may be dragged. Pull in on the lines closest to the ground to spill some air, and then run around the canopy to collapse it.

In the 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 upstream, 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.

## **1.19 Customer Feedback**

In our effort to continuously improve our products, processes, and services, we invite you to send us your comments. As a user of this equipment, you are uniquely suited to provide us with valuable feedback regarding design and/or performance. Tell us what you like. Tell us what you don't like. Send us an email or mail us a letter to:

Strong Enterprises  
11236 Satellite Blvd.  
Orlando, Florida 32837  
sales@strongparachutes.com  
www.strongparachutes.com

## 2.0 Parts list



**124100**  
*Harness and Container Assembly*



*26-foot Standard Lo-Po PN.420510*  
*26-foot Military Lo-Po PN.420520 Mil*  
*26-foot Mid-Lite PN. 420550*  
*26-foot Lite PN. 420601*



**611366**  
*Ripcord Assembly*



**790121**  
*Pilot Chute, Lil Grabber*



**861043**  
*Locking Loop (White)*



**799030**  
*Cap for Pilot Chute*



**816005**  
*Carrying Bag*



**510086**  
*Owner's Manual*

**CAUTION**  
**THE MIDLITE CANOPY HAS A MAXIMUM RECOMMENDED  
WEIGHT LIMIT (WEARER, CLOTHES, AND EQUIPMENT) OF 254  
LBS. (115 KG).**

**Note!**

*Ripcord cable length is measured from the tip of the endpin to the ball swage. Pin space is measured from tip to tip.*

**Note!**

*On new closing loops, a tolerance of minus 0 or plus 1/8-inch is allowed from the referenced flat dimensions when measured under moderate (finger) tension. Some stretching is to be expected with previously packed loops.*

**Note!**

*Standard 2" x 3/8" parachute rubber bands were used on early production units. Later, a heavier version of the same was cut in half, rendering a 2" x 3/16" band. Current production utilizes a shorter 1-1/4" x 3/8" stow band which does not require doubling. Some units have a combination, using the smaller stow bands on the diaper and "half" line stows. All Rubber Band Stows may be doubled.*

**Note!**

*Do not remove heat shrink tubing to check tightened links. (Visual of where nut is on threads will give needed reference to verify link is tight.)*

## 3.0 Required Packing Tools

**A - Shot Bags at least 4**

**B - Line Separator 1 ea**

**C - Pilot Chute Locking Rod 1 ea**

**D - Pilot Chute Locking Strap 1ea**

**E - T-handles 3 ea**

**F - Pull-Up Cords 3 ea**

**G - Tension Plate 1 ea**

**H - Tension Hook 1 ea**



## 4.0 Prepare Parachute for Packing

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

Gather the appropriate tools as listed in Section 3.0. Always count your tools to ensure you don't leave any in the packed parachute.

## 5.0 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 control lines.
- Perform a complete suspension line continuity check.
- Check that the screws are tight in the L-Bars.
- Check that links are tight in the L-Bars.
- Inspect Harness and Container assembly.
- Check that the elastic stow bands stretch and are in good condition.
- Check tackings for tightness and condition.
- Inspect Hardware for functionality and condition.
- Inspect Harness for nicks, abrasions and sun damage.

## 6.0 Canopy Spec Chart

CANOPY:	MIL. LOPO	REG. LOPO	MID-LITE	LITE
Diameter	26 ft	26 ft	26 ft	26 ft
Canopy weight (lbs/kg)	7.75 /3.50	7.5/3.40	7.4/3.35	7.3/3.30
Max. total suspended weight (lbs/kg)	254/115	254/115	254/115	175/80
Max. deployment speed (kts)	150	150	150	130
No. of gores	24	24	24	22
No. of panels per gores	4	4	4	3
Suspension line strength lbs/kN	650/2.9	650/2.9	400/1.78	400/1.78
Radial tape strength lbs/kN	250/1.11	250/1.11	200/0.89	200/0.89
Canopy Cloth	Ripstop Nylon	Ripstop Nylon	Ripstop Nylon	Ripstop Nylon
Canopy Cloth porosity (CFM)	30-50	30-50	30-50	30-50
Suspension line material	Braided Nylon	Braided Nylon	Braided Nylon	Braided Nylon
No. Circular reinforcing tapes	3	1	1	1
Turn speed (360 degrees)	6-8 sec	6-8 sec	6-8 sec	5-7 sec
Forward Speed (MPH/km/h)	6-8/10-12	6-8/10-12	6-8/10-12	8-10/12-16
Opening time (varies w/ speed)	1.1-2.5 sec	1.1-2.5 sec	1.1-2.5 sec	1.1-2.5 sec
TSO Category	C-23c Cat.B	C-23c Cat.B	C-23c Cat.B	C-23b
Rate of Descent fps/mps w/225 lbs/100 kg (Lite w/175 lbs/80 kg)	18.6/5.7	18.6/5.7	18.6/5.7	19.6/6.0



## 7.0 Packing the PCB 303 Emergency Parachute System

Always perform inspection described in Chapter 5.0 before beginning packing procedures.

All directional references (left, right, etc.) are from the wearer's perspective.

### 7.1 Pleat and Long Fold

#### 7.1.1

Lay the harness, container and canopy down on the table as if the wearer were facing down. Apply tension using tensioning devices. Inspect the entire assembly for completeness and any damage. Flake canopy and pleat in the normal manner with an equal number of gores to each side.



#### 7.1.2

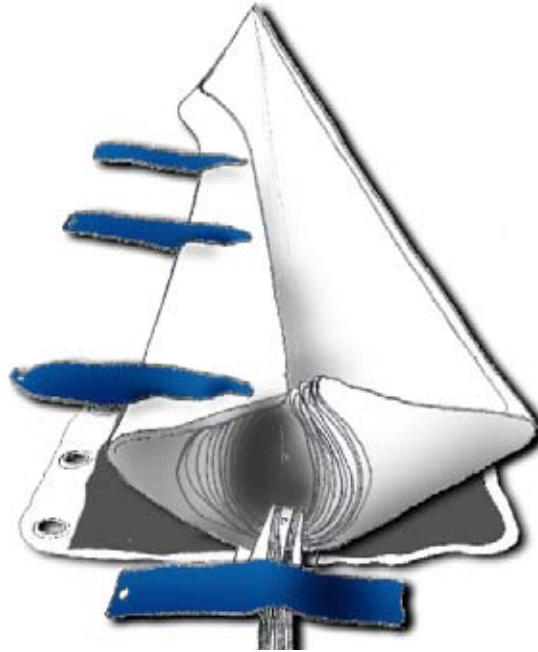
Fold the skirt up 90° on each side parallel to the radial seams.





### 7.1.3

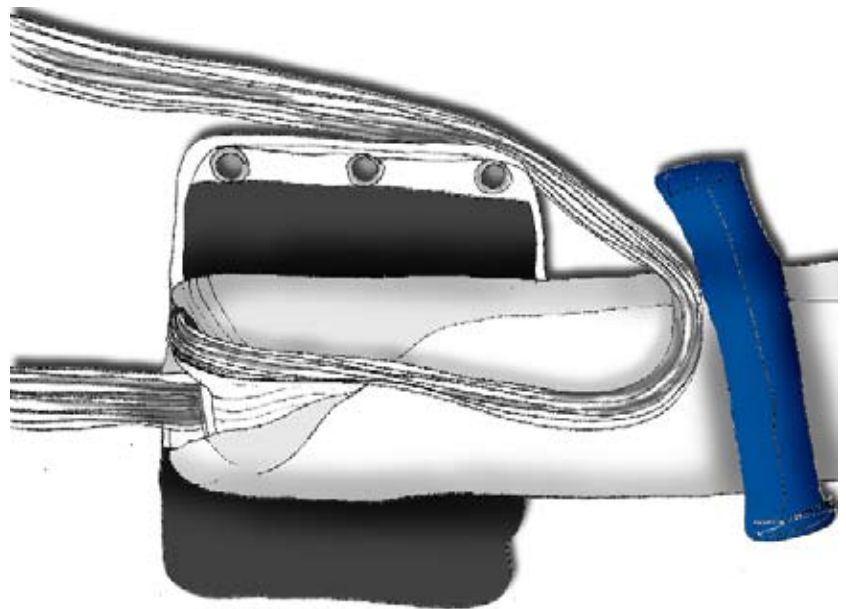
Long fold in fifths (fold both sides to meet at the center, then fold in thirds, overlapping) tight and narrow.



## 7.2 Securing the Diaper

### 7.2.1

Spread the diaper out flat. Bring the lines in the LEFT-HAND GROUP ONLY loosely up over the skirt.

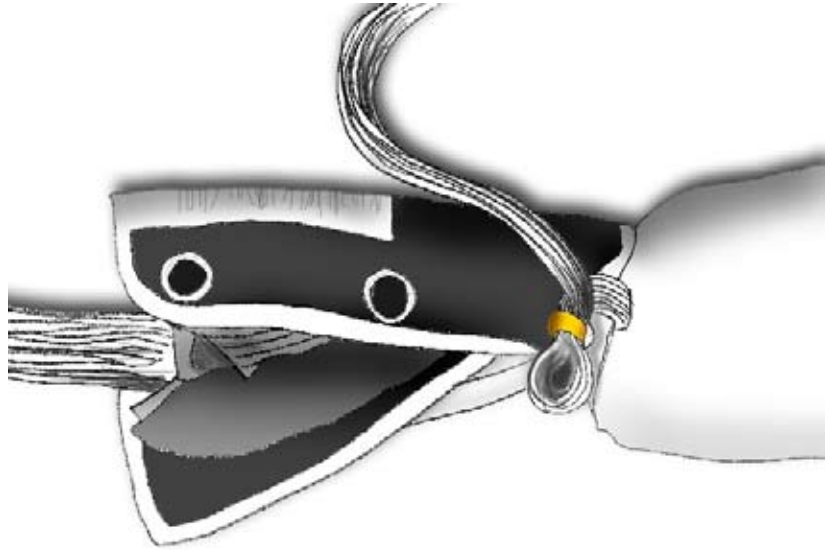


### **!WARNING!**

**DO NOT tuck the lines inside the folded canopy. Tucking the lines in the canopy can cause serious burns to the canopy and lines.**

## 7.2.2

Wrap the diaper around the skirt and left line group.



### **!WARNING!**

**Put only the left half of the lines inside the diaper. Otherwise, the purpose of the diaper will be defeated, allowing it to release before all the lines are unstowed.**

## 7.2.3

Pass the three (two on older models) locking rubber bands through their respective grommets in the diaper. Secure the diaper by stowing the left line group through each of the three (or two) rubber bands, stowing from top to bottom making 1-1/2 inch bights. Unless the shorter (1-1/4") rubber bands are used, these rubber bands should be doubled to hold the line stows securely.



## 7.3 Riser Placement

Lay risers in the container and spread the links so they are not on top of one another. Take a bight of line immediately above the links and stow in rubber bands.



## 7.4 First Line Stow

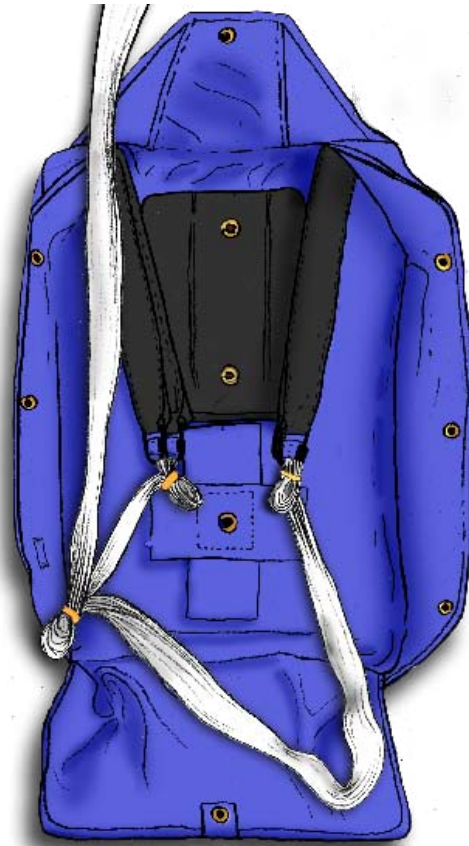
### 7.4.1

Grasp both line groups together about 9" from the left link. (The slack in the right line group will be toward the link; the lines toward the canopy should be even.) As you make your first line stow in the pack tray, separate the right and left line groups, and pull slightly more tension on the right side line group (the one attached to the skirt), so there is about an extra 1/2" of slack in the left side lines. This will insure that during deployment, the lines on the left side line group are not pulled so tight that they will unstow prematurely from the diaper. Continue stowing the rest of the lines in the pack tray with a single wrap of the stow band.



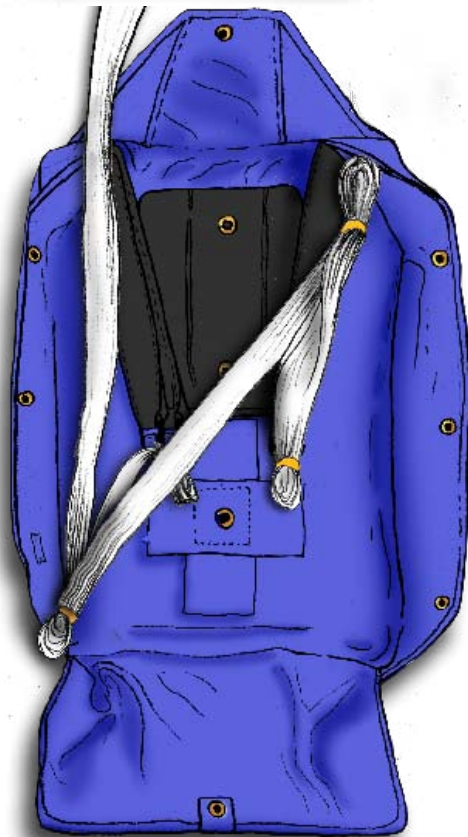
## 7.4.2

Stow the first bight of lines in the third rubber band on the wearer's lower left corner of the container.



## 7.5 Excess Line Stows (Right Line Group)

The resulting "excess" length of line (about 20 inches) from the right riser will have only one-half the total number of suspension lines. Stow this excess from the right line group on the right side of the container, in the upper right inboard rubber band. To do this, route the lines diagonally from the first stow to the top of the container, and stow using the rubber band closest to the center of the pack tray. At this point, all lines between the canopy and the container should be even.



### **Note!**

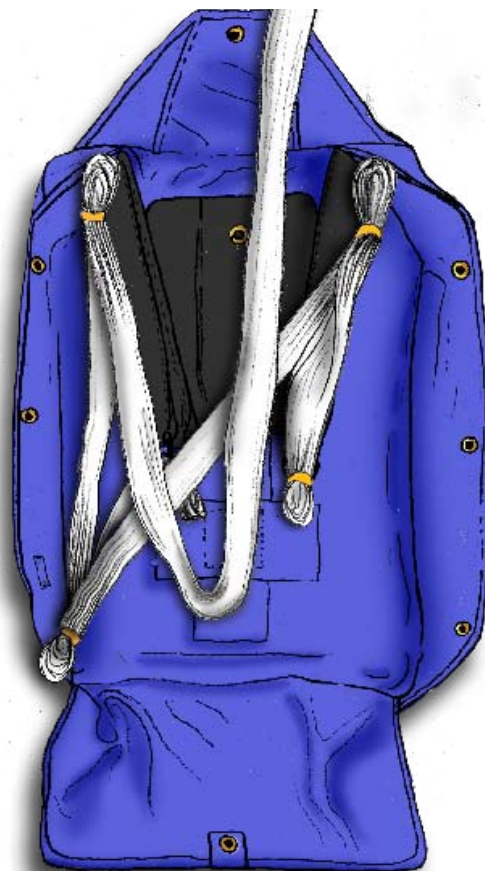
*When the 3-stow diaper is used, this bight may be doubled back on itself before being placed in the rubber band. With the 2-stow diaper, this will not be necessary. Unless the shorter (1-1/4 inch) rubber bands are used (See note in the parts list, Section 2.0), this rubber band should be doubled.*



## 7.6 Remaining Line Stows

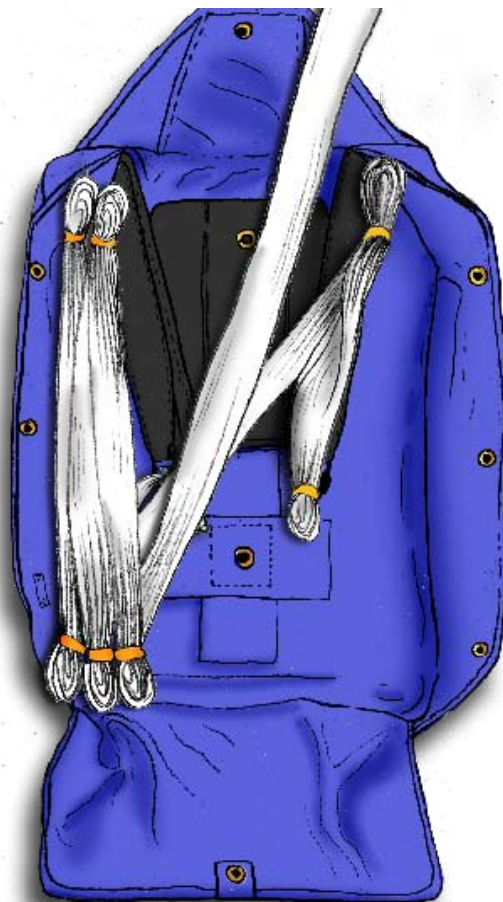
### 7.6.1

Proceed with stowing the remainder of the lines. The next stow is in the upper left corner of the container.



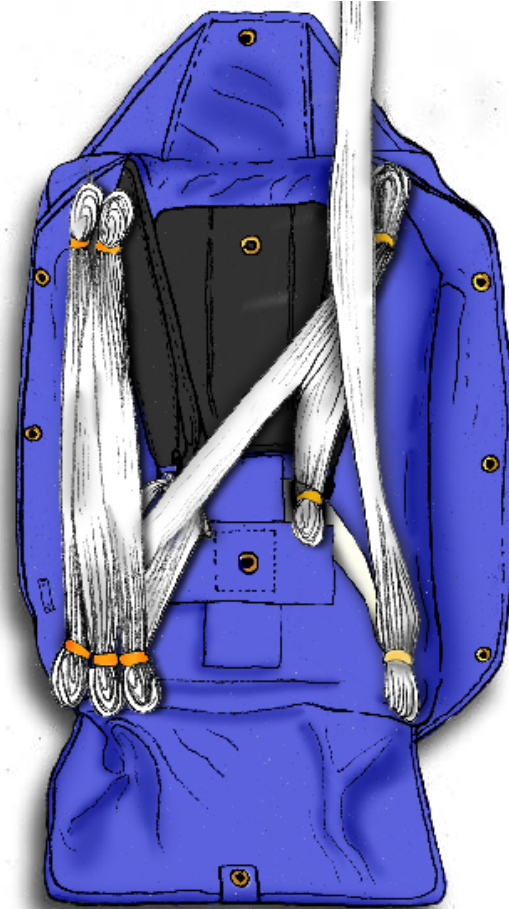
### 7.6.2

Continue stowing down, up, down until a total of five rubber band stows are on the left side of the container. There should be two stows in the top left corner, and three stows in the bottom left corner.



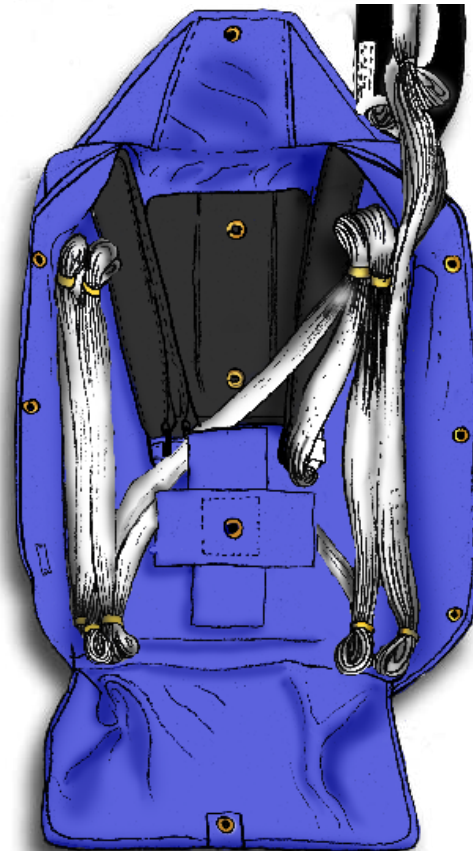
### 7.6.3

Route the lines between the lower two grommets and make the next stow in the bottom right inboard rubber band in the lower right part of the container.



### 7.6.4

Continue stowing on the right side of the pack, from inboard (left) to outboard (right), until all but enough line to allow for skirt placement is stowed. If, after the last stow at the top, more than 16" of line remain, a short stow may be made at the top of the container. This will be adjacent to the previous line stow, without the corresponding stow in the bottom of the container. We recommend the use of the 1-1/4" rubber bands, but alternatively, any or all stow bands may be doubled if necessary to retain line stows securely.



## 7.7 Skirt Placement

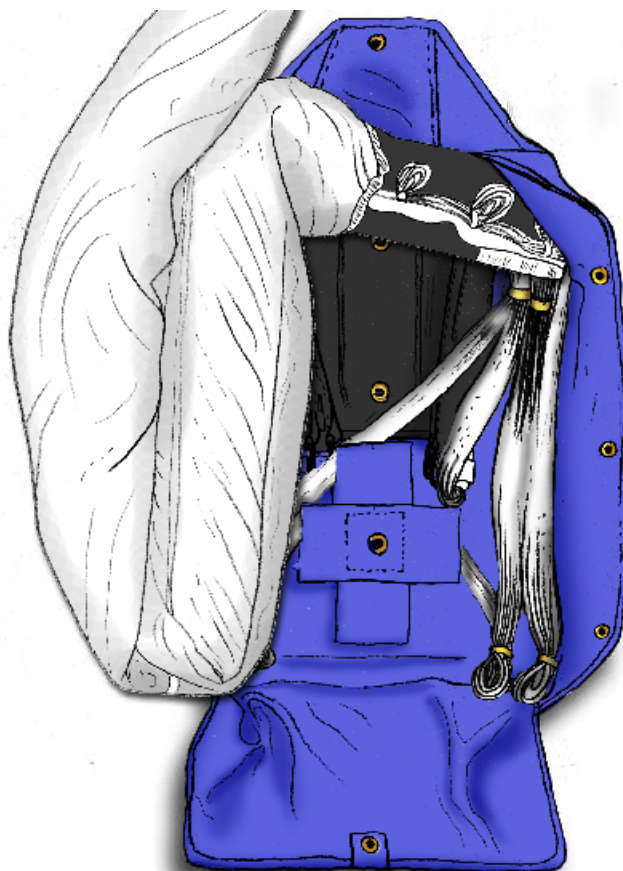
Insert a T-handle through each of the three grommets from the outside of the container.

Place the diapered skirt in the wearer's upper right hand corner of the pack, with the canopy extending across the top of the container.

Although the diaper may be twisted slightly to reduce lumps, stow the canopy "flat," not turned on edge.

From the skirt, it is routed across the top of the container, then folded 90 degrees "down" the left side of the container. This fold is positioned between the side flap of the container and the central divider flap that protects the three grommets in the base of the container.

Make the second fold "up" on the left side all the way to the diaper.



## 7.8 Placing Canopy Into Container

### 7.8.1

Next, the third fold is folded diagonally across to the right side, between the second and third grommet, and then down to the lower right corner extending 10" past the bottom of the container.

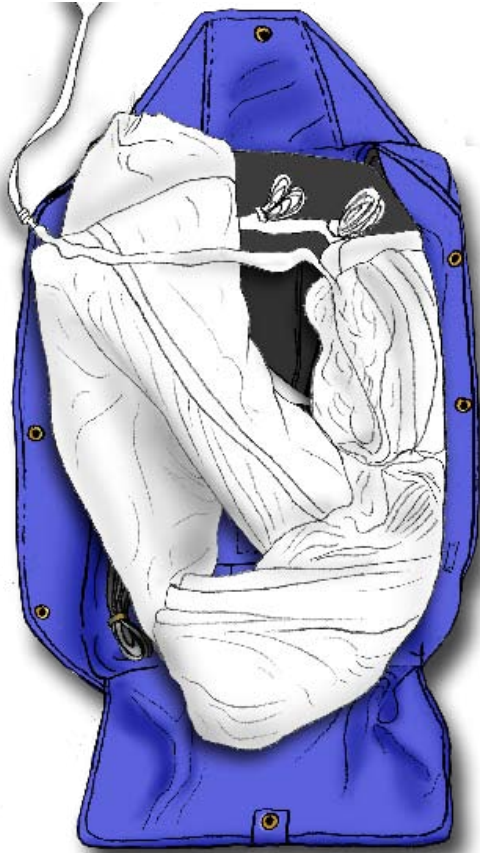
Fold the extra 10" of canopy across the bottom of the container as shown. Lay the remainder of the canopy on the right side of the container.





## 7.8.2

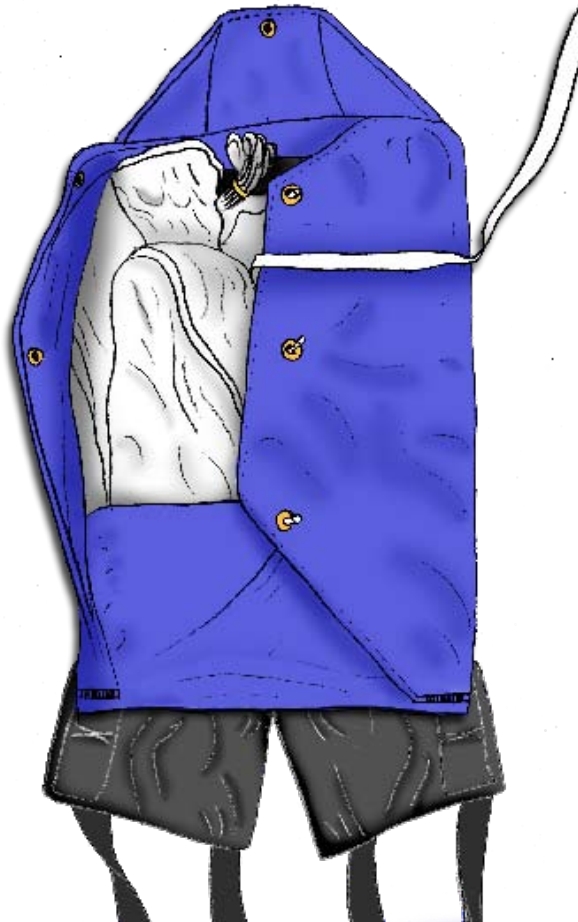
The balance of the canopy is stacked on the right side of the container (again, between the divider flaps and the side flap) using one long stow from the bottom of the container to the diapered skirt, followed by a shorter fold approximately 14 inches long (to approximate the bulk on the left side of the container). Spread the apex out flat, and route the bridle to the center of the pack (over the divider flap between the top two grommets). All folds should be fairly loose to evenly distribute the bulk of the canopy throughout the pack. There is no need to over-fill the corners. Route the pilot chute bridle outside the pack between the top and middle grommets.



## 7.9 Closing the Container

### 7.9.1

The Para-Cushion Back 303 is packed without a launching disc. For ease of packing, we recommend compressing the pilot chute on a closing strap and locking with a locking rod. Pre-close the pack in the following manner by inserting the T-handles up through the grommets in the bottom of the pack tray, passing them through the grommets in the container flaps so the flaps are closed in the following closing sequence: bottom, right side, left side, top flap, spreading the inside divider flap as you go to protect the canopy from the locking loops.



### 7.9.2

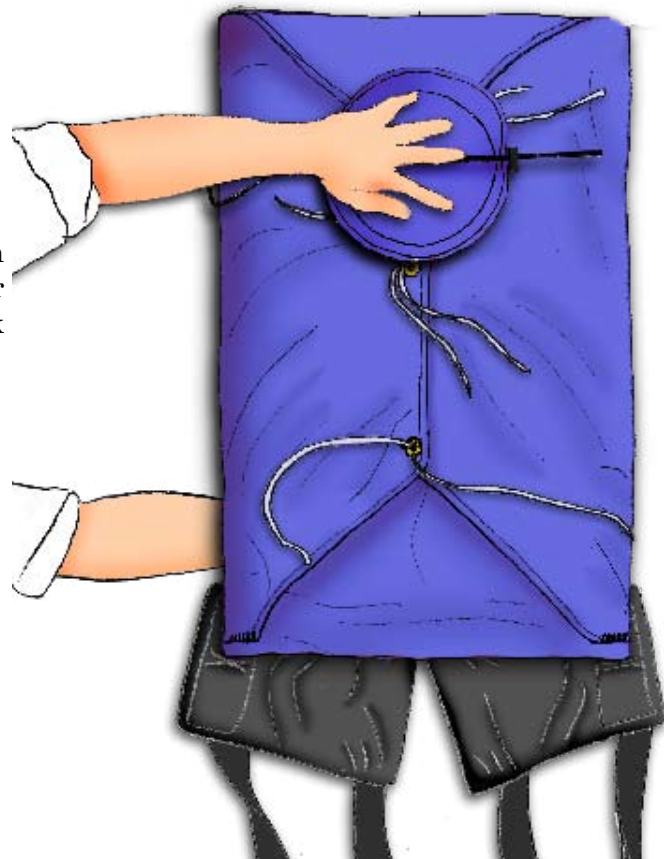
After the T-handles are inserted, pass the pull-up cords (3) through the closing loops in the pilot chute cap and the closing loop that is attached to the left side flap. Next center the pilot chute between the upper two grommets, and pass the ends of the pull-up cords through the slots in the T-handles.

***Note!***  
*Bridle is S-folded  
under Side Flap*



### 7.9.3

Holding the pilot chute in position with one hand, and with the other hand under the pack, holding it closed, turn the pack over.



### 7.9.4

Draw the pull-up cords through the grommets by removing the T-handles from the pack. Draw the pull-up cords up tight until the closing loops are through the pack.



### 7.9.5

Work from the top of the pack down inserting each ripcord pin in its loop. Slowly and carefully remove the pull-up cords to avoid friction burns on the packing loops. Remove the pilot chute locking rod and strap.



### **7.9.6**

Use a fid to tuck the excess pilot chute fabric under the rim of the cap. Dress the pack neatly and seal the bottom pin. Complete the data card and your rigger's logbook. Be sure the ripcord handle is secure in its pocket.

When the pack job is finished, the pilot chute should be centered on the back, and sunk down below the sides of the pack.



### **!WARNING!**

**Count your tools to assure you have not left any in the packed parachute.**



## 8.0 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 8.

### 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 a complete log of packing, repairs, and alterations is recorded. This is the history of the parachute.

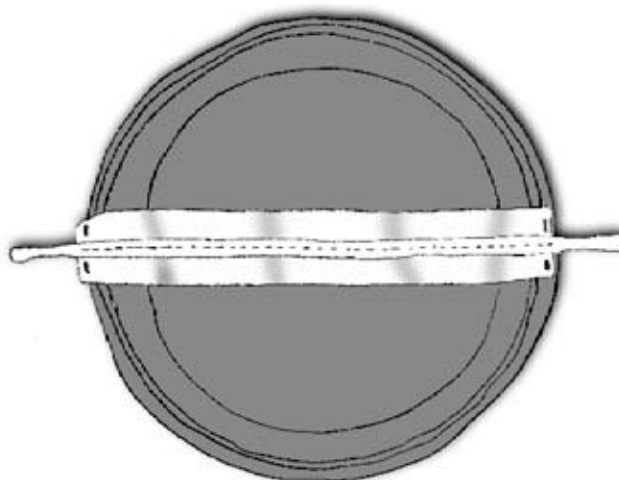
### Note!

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

## 9.0 Changing the Pilot Chute Locking Loop and Cap

### 9.1

The PCB 303 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.



### 9.2

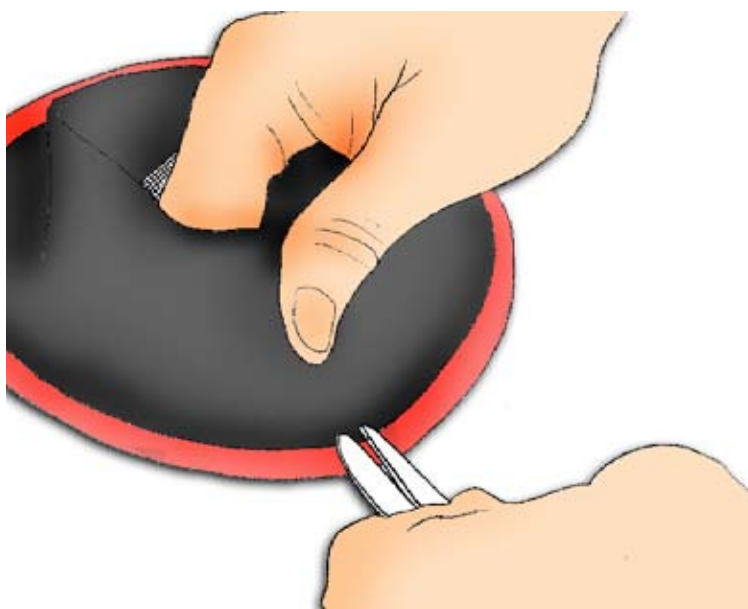
Once the cap is removed, remove the loop by snipping the hand tacking. Install a new locking loop by hand tacking from the bottom side up, then back through down, up on the other side, then down again on the opposite edge, followed by a good surgeons knot.

### **Note!**

*Pilot chute locking 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.*

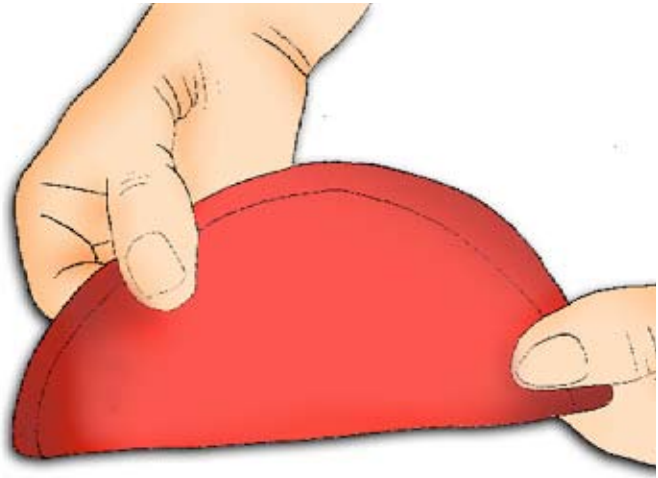
### 9.3

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.

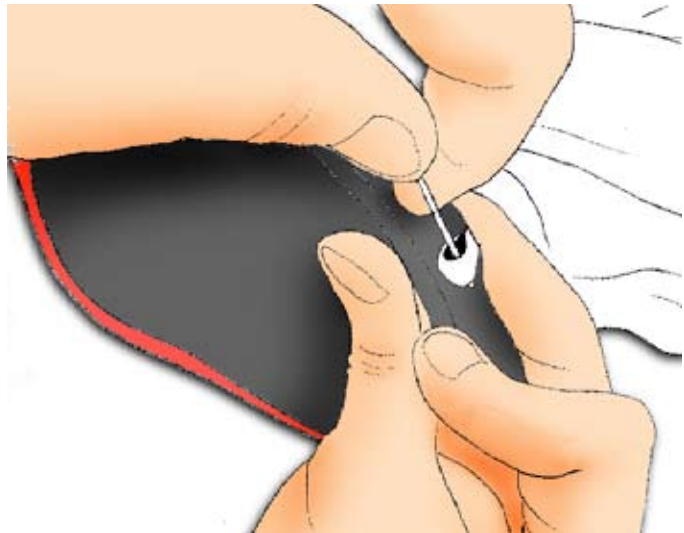


**9.4**

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.

**9.5**

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.

**9.6**

Hand tack 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.*



## 10.0 Installing the Toggles

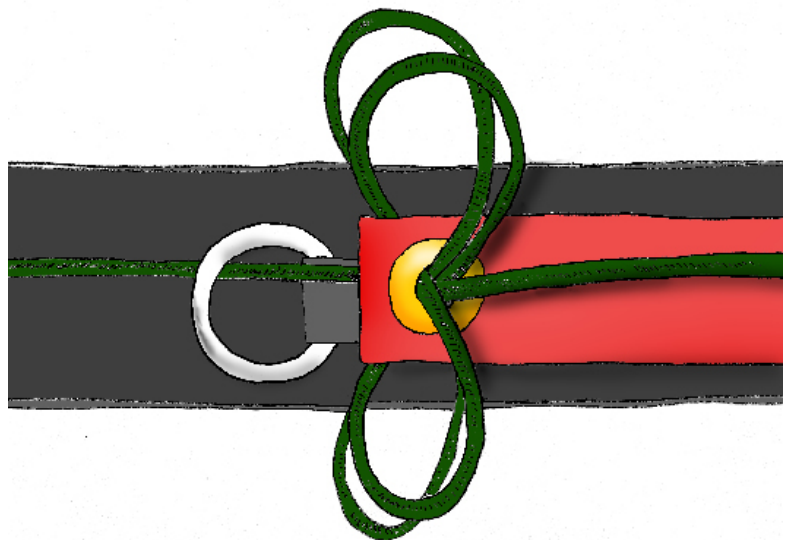
Thread the steering line through the grommet in the toggle, starting from the underside of the toggle (the side with Velcro®).

Lay the toggle on the riser where it will be when set, and measure where the steering line should be tied. There should be one or two inches of slack in the steering line after the rest of the lines are pulled tight. Figure-8 the line through the grommet and secure with an overhand knot.

If the steering line is thin, as in the Mid-Lite, or Lite, a second figure-8 may be necessary to fill up the grommet hole. Mate the Velcro® to secure the toggle to the riser.

For original Para-Cushions (old style) that utilize a metal ring, route the steering lines through the guide ring on each riser, zig-zag stitch a 1 1/2 inch loop (trim the excess line), then slip loop through and over a 1 inch ring or through the steering loop.

Safety tie each steering ring to the riser immediately below the guide ring using seal thread (cotton 24/4), one turn, single ply.



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.

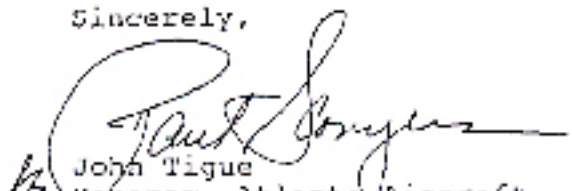
Effective this date, you are authorized to identify the Para-Cushion Series, Part No. 1045-( ) parachute assemblies with the appropriate TSO markings required by the applicable TSO and FAR 21.607(d).

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 Dash, telephone, (404) 991-6137.

Sincerely,

  
John Tigue  
Manager, Atlanta Aircraft  
Certification Office



# Strong Enterprises

*"The parachute company with imagination"*

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