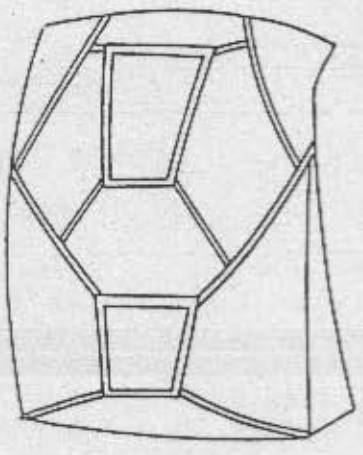
ZEROX

OWNERS MANUAL



Thomas Sports Equipment
Pinfold lane Industrial Estate
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North humberside
YO16 5XS
TEL: 0262 678299.
FAX: 0262 602063.

BSI REGISTERED FIRM

NATIONAL ACCREDITATION OF CERTIFICATION BODIES

First of all we would like to thank you for choosing a Thomas Sports Equipment Zerox, you have shown impeccable taste.

BEFORE You Jump Your Zerox Please read this manual thoroughly before assembling or using your Zerox, if after reading this manual you still have questions concerning the Zerox please contact us, we will be more than willing to help.
If you have any suggestions or see a need for some changes in the Zerox please let us kmown by calling or writing to:

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FAX: 0262 602063.

TRAINING Required
If you have never jumped a Zerox before, or if you are changing from other types of rig please be sure to get proper instructions from a suitable instructor.

FACTS about Thomas Sports Equipment
Thomas Sports has been manufacturing parachute equipment since 1968 and has provided services from students to British team members. Twenty years in our sport has provided TSE with a wealth of experience in developing and manufacturing parachute equipment with an enthusiasm and commitment in the complete sense. A service second to none. This in turn means you can be confident in the knowledge that with TSE you are using the best available, from the initial PLF through to SCR and beyond.
Staff qualifications are more than impressive: 4 FAA master riggers, 4 BPA ADV. rigger examiners, with a collective total of over 10,000 jumps, oversee all aspects of the production maintainance and repairs operations at the loft. Every care is taken to ensure that each rig from TSE meets the highest possible standards. Approved to British safty standards B.S.I. 5750 part 2, I.S.O. 9002. E.N. 299002. T.S.E. Standard 1 Issue 2, Approved by the Australian Civil Aviation Authority C.A.A. under C.A.O. 103.18-Equipment Standards-Emergency-Parachute.

THE Zerox container is a piggyback harness and container system designed for free fall sport parachuting. It is available in a wide range of container sizes to fit most main and reserve parachutes on the market today, including round or square reserves.

The main parachute can be deployed by either a throw away pilot chute or a pull out pilot chute.

THE Throw Away
An external pilot chute located in a spandex pocket on the rear of the right leg strap (sometimes on the bottom flap of the main container). The pilot chute is attahced to a pilot chute bridle cord. Sewn onto the bridle cord is a curved locking pin. This locking pin keeps the main container closed until the pilot chute is extracted from its spandex pocket and released into the airstream. The pilot chute inflates removing the locking pin, opening the main container and extracting the main parachute.

THE Pull Out
A soft handle located on the bottom right hand corner of the main container which connects to a straight pin at the base of a FIII pilot chute. As the handle is pushed down the straight pin releases the nylon closing loop allowing the container to open. Secondly the pull action extracts the pilot chute from inside the container. The wearer must manually throw the pilot chute into the clear airflow to their side and release it. The pilot chute then pulls out the main parachute.

RESERVE System
The Zerox reserve container is made to accept round or square reserve parachutes. The reserve parachute container is held closed by a 1 pin on the Top Flap making an easyer pull on the reserve. The reserve pilot chute is designed for the Zerox container and must be fitted before use.

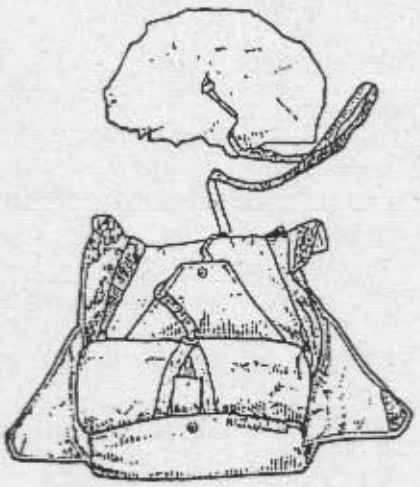
HARNESS
The harness is constructed of type 7 and type 8 mil spec webbing and incorporates the famous 3 ring circus. And the T.S.E designed shaped harness for extra comfort.

THE MAIN

PACKING The Main
First refer to the manufacturers instructions for laying out the canopy, setting the breakes and otherwise preparing it to put into the eployment bag. If you can not find suitable main instructions the conventional pack job is okay. If you require further instructions seek the advise of a suitable instructor.

1. Fold the canopy slightly wider than the bag.
2. Split the bag and put the canopy on top, then push the parachute out into the corners then close the bag making sure that you have filled out the corners of the bag.
3. Thread the locking bungies through the grommets and stow all the lines on the bag.
4. Pull the pilot chute bridle out of the top of the bag until the load bearing ring on top of the canopy seats against the grommet on top of the bag.
5. Set the bag in the tray on the container with the lines facing the reserve tray and the pilot chute bridle coming out of the bottom of the container. (Fig.1)

FIGURE #1

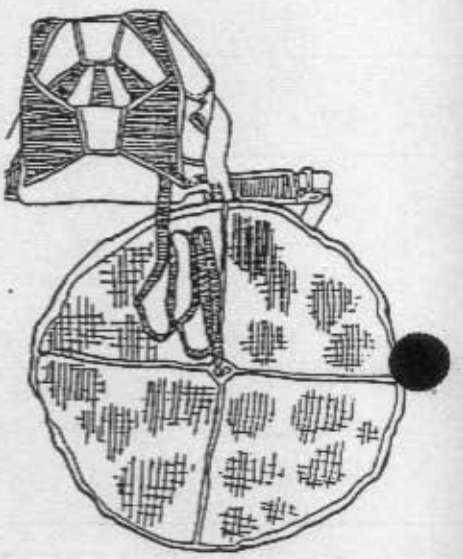


6. When using a throw away pilot chute bring the bridle line out of the Top right hand side.
a. Close the bottom flap #1, then the top flap #2, Right #3, then Left #4. Put in curved pin then dress the container making sure the risers are correctly positioned.
b. Insert the curved pin through the closing loop from right to left. Remove the pull up cord, note the container will not open if the pull up cord is left in.
c. Mate the velcro on the pilot chute bridle starting from the top of the pouch on the leg strap and following along the side of the container putting the extra broidle under the right hand side flap of the container.

Folding the Pilot Chute

A. Lay the pilot chute out over the leg strap, net side up so the edge of the circle is at the mouth of the spandex pocket S-fold the bridle on the half of the pilot chute over the pocket.

FIGURE #2



B. Fold the pilot chute in half over the bridle. The bring the corners up to form a wide triangle. (Fig.3)
C. Fold the triangle in half forming a smaller triangle. (Fig.4)
D. Fold the triangle into thirds forming a skinny triangle, then fold it once more. (Fig.5)
E. Fold the pilot chute in half so that the handle is even with the skirt. (Fig.6)
F. Then stow the pilot chute into the spandex pocket with the toggle at the top.

FIGURE #3

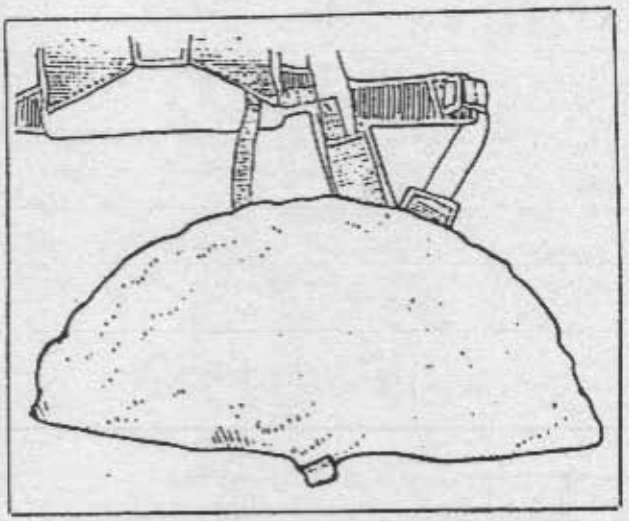


FIGURE #4

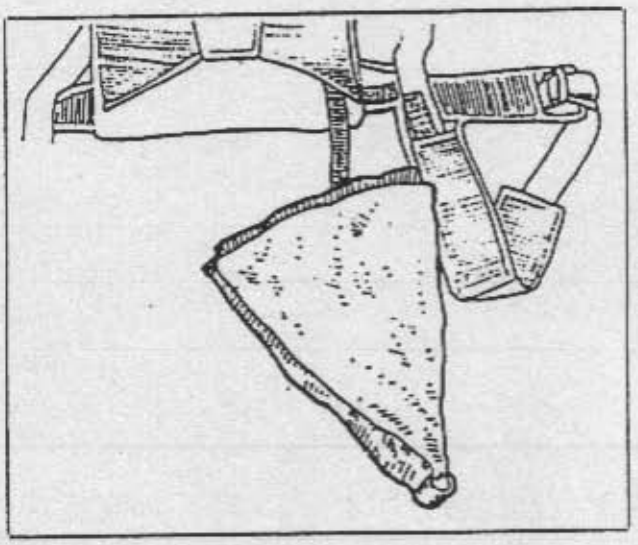


FIGURE #5

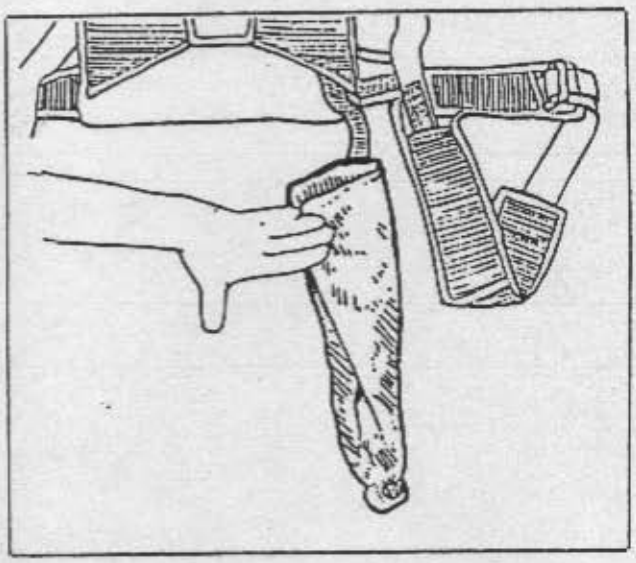


FIGURE # 6

INSTRUCTIONS for the Pull Out 

A. S-fold the pilot chute bridle across the bottom of the container and lay the folded pilot chute on the centre of the bag with the base coming out of the right hand bottom corner.
B. Place the pull out pad onto the velcro on the bottom of the container.
C. Close the container, following the #'s on the flaps 1,2,3 and 4.
D. Make sure that where the pad and pin is attached to the pilot chute, it is free from snagging on the right side.
E. Remove the pull up cord and tuck excess bridle and base of pilot chute up and under the bottom right flap.

THERE are many types of reserve on the market, and the Zerox will accept most of them. Thomas Sports Equipment has developed specific packing instructions for Square reserves in conjunction with the canopie manufacturers recomended packing instructions. It is the responsibility of the Qualified packer to use the appropriate method for any reserve he packs, and to pack according to the harness and container manufacturer's instructions. Deviating from these instructions results in a void pack job and no responsibility will be held by Thomas Sports Equipment.

COMPATIBILITY Make sure the canopy you are packing is the right size for the Zerox it is connected to.

CLOSING LOOP LENGTH a too short closing loop results in a dangerously hard pull. One that is too long looks messy and can snag on protrusions on aircraft or on lines whilst doing C.R.W.

PACKING A SQUARE RESERVE

Because of the size range of sqaure reserve canopies available today, this manual does not contain instructions on inspection assembling and flaking. For these steps the rigger must follow the instructions provided by the canopy manufacturer.

TOOLS REQUIRED:

1 x T Bars
1 x Pull up Cords
1 x Temporary Pins
1 x Packing Paddle

1. Throughly inspect the pilot chute bridle, deployment bag, canopy, lines, links, locking loop, risers, container and harness.
2. Follow canopy manufacturers instructions for:-
a. Attaching the canopy to risers.
b. Attaching toggles and/or steering lines.
c. Flaking canopy.
d. Folding the nose and canopy.
e. Setting deployment brakes.
f. Splitting the tail.
g. Stowing slider.
h. Dressing the canopy.
3. Prepare the free bag so that it is ready to be packed. To do this, insert one end of the pull up cord through the grommet in the top and bottom of the bag, and tie it to the other end so that it won't slip out during the packing procedure. **Note;** Some riggers prefer to use a T bar instead of pull up cords, inserting it through the bag from the bottom. The T bar or pull up cord will be used later to pull the locking loop through the bagged canopy.

TYPICAL PRO PACKING EXAMPLE

PACKING A SQAURE RESERVE

4. **Fig 1.**
Dress the canopy to 4" over the size of the free bag (2" each side)

5. **Fig 2,3,4.**
Stack the canopy on the top of itself, making each fold no longer than the distance from the mouth of the bag to the grommets in the open part of the bag.

FIGURE #1

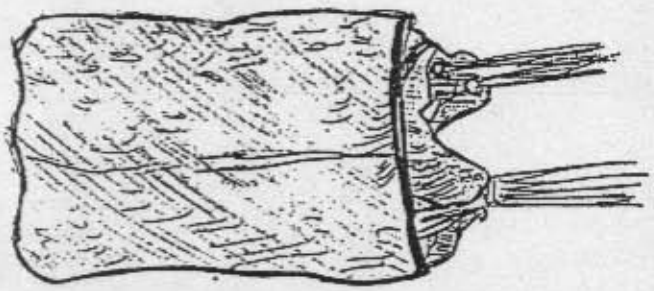


FIGURE #2

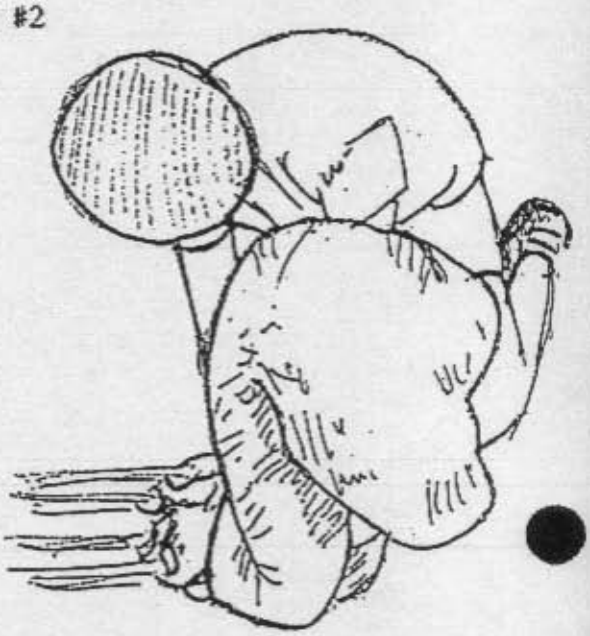


FIGURE #3

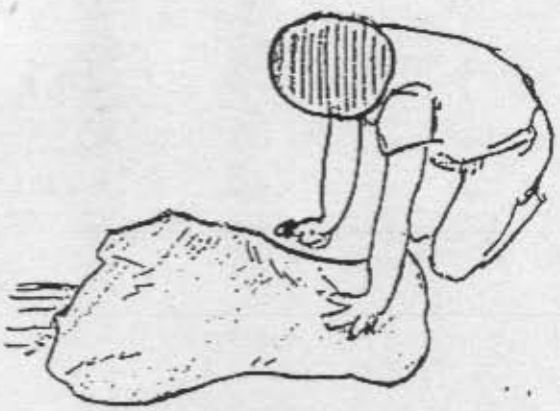
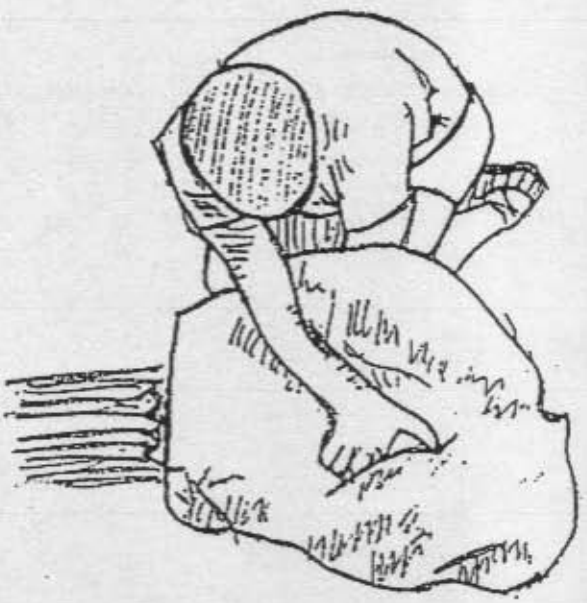


FIGURE #4



6. **Fig 5.**
After the canopy is stacked on itself, unfold the top portion into two sections or 'ears'.
7. **Fig 6.**
Dress each section neatly.
8. **Fig 7.**
Carefully slide the bag over the canopy pushing each 'ear' into the top corners of the bag, filling the corners evenly and leaving a tapered shape.
9. **Fig 8.**
Lock the bag closed with two bited of suspension line. A 'Safety Stow' is used not rubber bands.
10. **Fig 9.**
Stow the remainder of the suspension lines into the pouch on the underside of the bag. Use S-Folds that extend from one side of the pouch to the other. Be sure none of the lines are trapped between the velcro at the mouth of the pouch.
11. You are now ready to put the bag into the container.

FIGURE #5

FIGURE #6

FIGURE #7

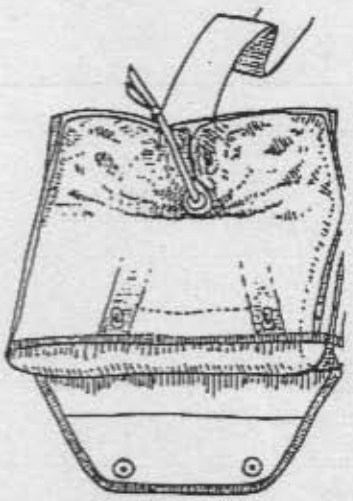


FIGURE #8

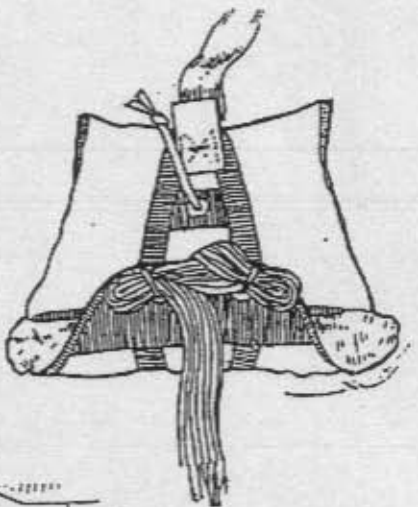
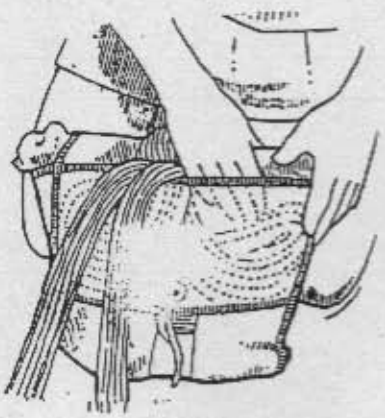


FIGURE #9

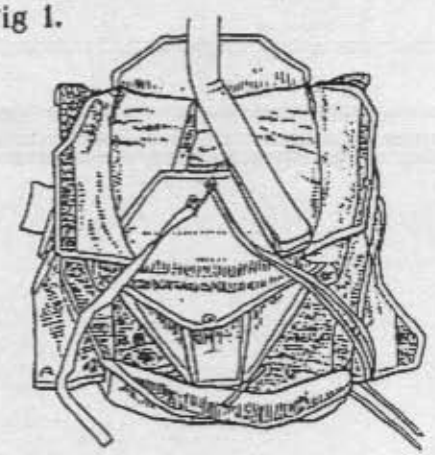


CLOSING THE RESERVE CONTAINER

Regardless of what procedure was used to place the canopy in the bag, the same procedure is used to close the container. AT ALL TIMES.

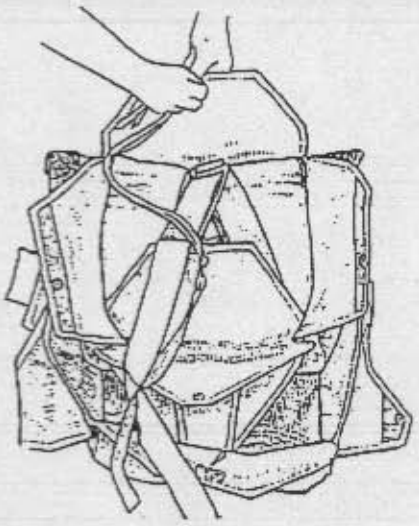
STEP 1.
Close the inside bottom flap (#1) and secure it with a teporary pin. Make long S-folds with the bridle from the top of the bag to the bottom right hand corner of the reserve container as shown. Carefully tuck the bottom of the S-folded section under the inside bottom flap (#1). As shown in fig 1.

FIGURE #1



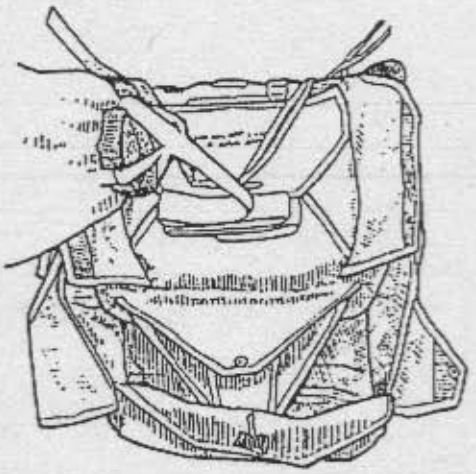
STEP 2.
Repeat this process on the left side make long S-folds in the bridle line from the top of the bag to the left hand corner of the container and tuck under the inside bottom flap as shown in fig 2

FIGURE #2



STEP 3.
Close the inside top flap (#2) and secure with temporary pin. The bridle should come out between these two flaps. Take a moment to check the amount of free bridle at this point. There must be at least five feet left from the junction of the closed flaps to the base of the pilot chute. If the excess bridle is too short, release the inside top flap and re do the S-folds.

FIGURE #3



STEP 4.
Fold the bridle to the left and make a series of short S-folds right up to the base of the pilot chute.

FIGURE #4

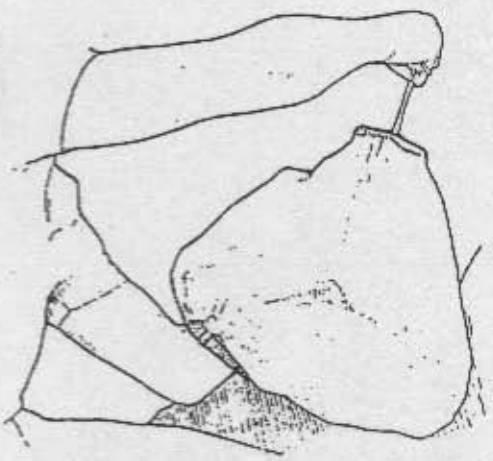
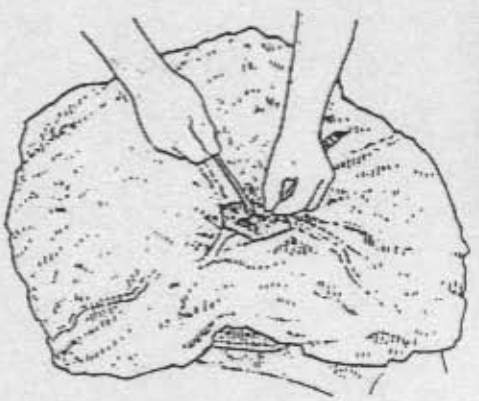


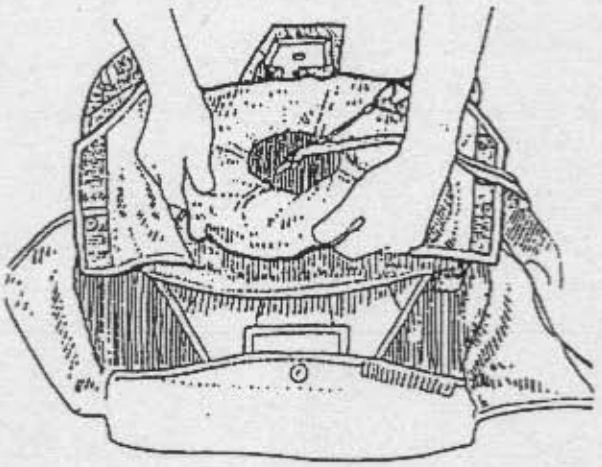
FIGURE #5



STEP 5.
Thread the pull up cord through the bottom of the pilot chute and out the top. Centre the base of the pilot chute over the two flaps.(Fig 4)
STEP 6.
Make sure the base of the pilot chute is centred over the loop, then collapse the pilot chute and lock it with a tempary pin (Fig 5)

STEP 7.
Pull all the canopy fabric out from between the spring. Folding the fabric - rather than stuffing it between the coils - reduces the bulk of the packed container. After pulling the fabric from between the spring, check to be sure the pilot chute base is centred under the crown. Now fully compress the spring to see how much loop can be pulled through the top of the pilot chute. If you can pull more than 1/2 to 3/4 of an inch through, the loop is too long. Now would be the best time to open the container and shorten the loop.

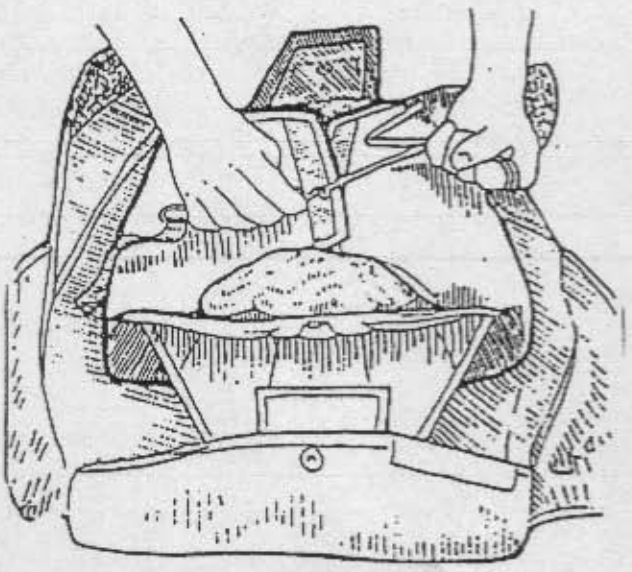
FIGURE #6



STEP 8.
Lay the fabric flat all around the pilot chute and fold it under in wide folds to the centre. Fold the top and bottom first, then the sides. Keep the fabric folds of the pilot chute out from under the open flaps. See fig #6.

STEP 9.
Thread the pull up cord through the side flaps (Flap #3 and #4) and close and secure with a temporary pin. Make sure that the folds in the pilot chute stay flat and neat. See fig #7.

FIGURE #7



CLOSING THE RESERVE CONTAINER

STEP 10.
Thread the pull up cord through the outside bottom flap (Flap #5) and insert the temporary pin.

STEP 11.
Thread the pull up cord through the outside top flap (Flap #6) and insert a temporary pin. If the force necessary to close the last two flaps seems excessive this will cause a hard pull. Lenghten the closer loop. A maximum pull force of 25lbs or less is required on the ripcord pin.

FIGURE #8

FIGURE #9

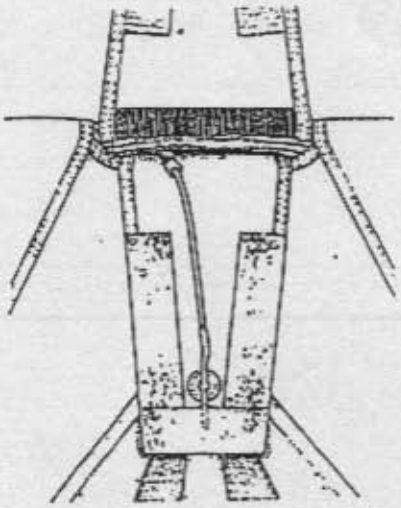
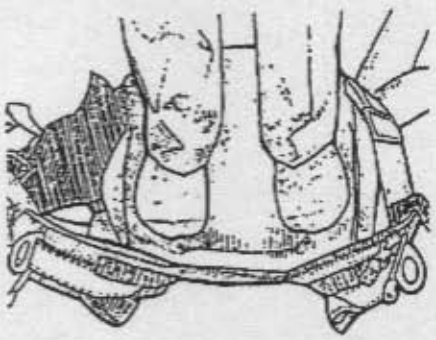
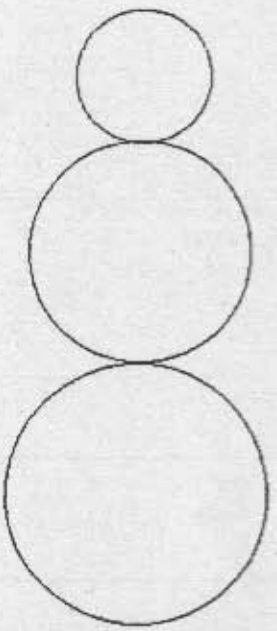


FIGURE #10



STEP 12.
Replace the temporary pin with the reserve pin. Insert the ripcord handle into its pouch on the main lift web.
STEP 13.
Roll back the velcro at the bottom of the #6 reserve flap and gently slide the reserve pin under it.
STEP 14.
Place the rig on a clean surface with the backpad facing up and walk on it with stocking feet or clean shoes to help expel the air from the container and make it flatter.
STEP 15.
Attach the main parachute risers.
STEP 16.
Dress the container, seal, sign and log the reserve.
STEP 17.
Count your tools.

THE 3-RING SYSTEM



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INTRODUCTION

The 3 Ring release system was invented by the Relative Workshop in 1976. It was the first practical release that allowed parachutists to jettison their main canopies in one motion by simply pulling a single handle. Not only is the 3 Ring easier to operate than previous canopy release systems, it is also more reliable. Failures of a properly built and assembled 3 Ring system are virtually unknown.

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

Modifying the 3 Ring Release

The great reliability of the 3 Ring system results from the proper functioning of every one of its individual components. Therefore, the owner should not modify the system in any way.

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

• Substituting risers that dont have type 2 sheathing for the locking loop. Dont use risers that have loops made of kevlar or solid cord.

• Not using a breakaway handle with cable with the special yellow coating. this Teflon impregnated coating is important, other plastic coatings may cause the cable to bind in the housings or loops, making it difficult or impossible to jettison the risers.• Using a breakaway handle with cables of the wrong length. the length of the cables is critical to ensure each riser releases in the proper sequence. Replacement handles are available from Thomas Sports Equipment.

GETTING TO KNOW THE 3 RING

Knowing how the 3 Ring release works will help you assemble and inspect it properly. Begin by peeling the release handle from the velcro on the harness. Peeling, rather than pulling, makes it easier to separate the handle from the webbing. Look behind the risers near the harness and observe the movement of the yellow cable as you pull the handle. When the cable clears the white loop, the release is disengaged. Now slowly pull one of the risers off the harness. As you pull, you'll notice that the white loop gets pulled through the grommet by the action of the smallest ring. Each ring forms a lever with a ten to one mechanical advantage as it passes through the other. A force of 1,000 lb on the large harness ring exerts a force of only ten pounds on the white loop (opening shock usually totals about 1,000lb. or 500 lb on each riser.)Because of the mechanical advantage provided by the 3 ring design, only a force of approximately a pound on the top ring keeps the release together. That's why its important to keep foreign matter like bits of grass and sticks out of the 3 ring assembly. When nylon stays in the same position for a long time, it begins to conform to that position or take a "set". If the 3 ring release system stays assembled for too long, the nylon can become so stiff that the low drag from a malfunction (such as a streamer) wont pull the riser off the ring. The 3 ring rele. system must be disassembled, flexed and inspected every month.

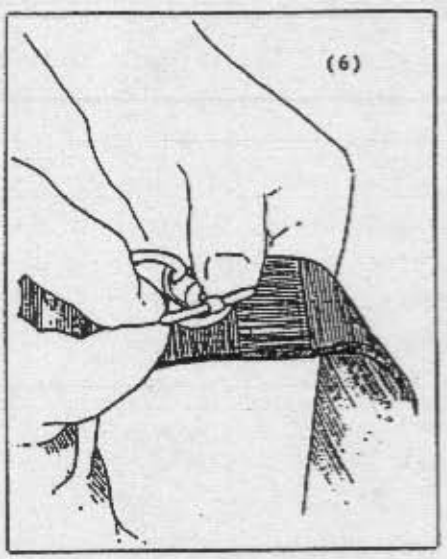
5 Continue threading the white loop through the grommet on the end of the ca housing. The flat side of the cable housing grommet should be against the riser.

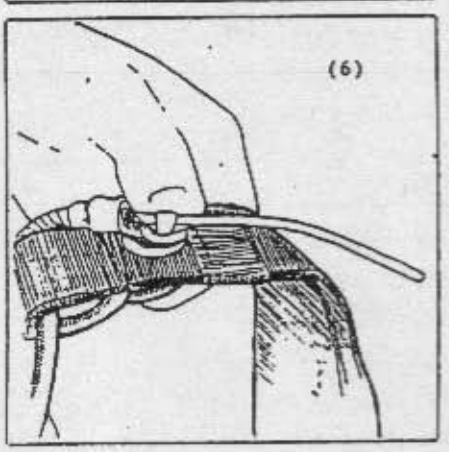
6 Thread the yellow cable through the white loop making sure the loop isn't twisted. Be careful with the cable so you don't bend it too sharply or kink it . Insert the free end in the channel on the back of the riser.

7 Repeat the above steps with the other riser.

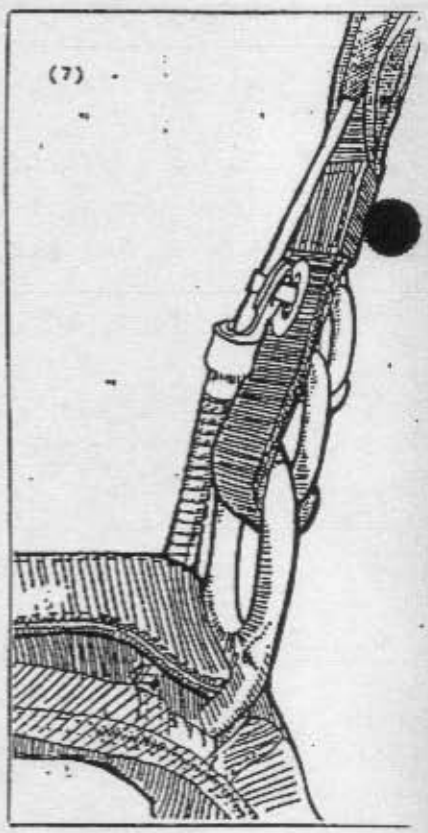
STEP #5

STEP #6





STEP #7



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

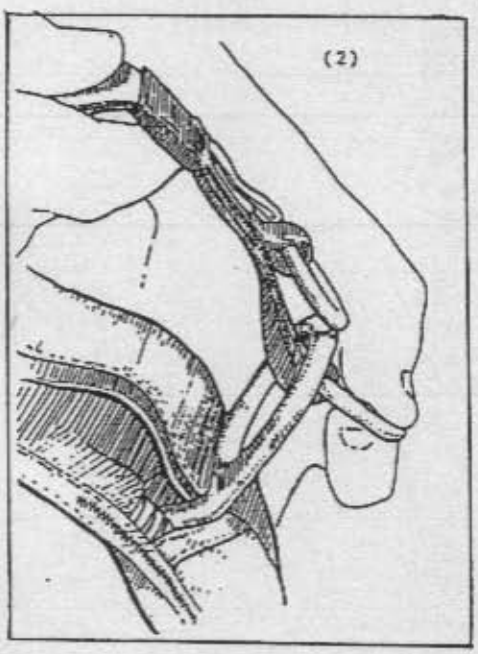
1 Thread each cable into its housing and stick the handle to the harness. The handle should be positioned as close to the ends of the housings as possible so that no cable is exposed.

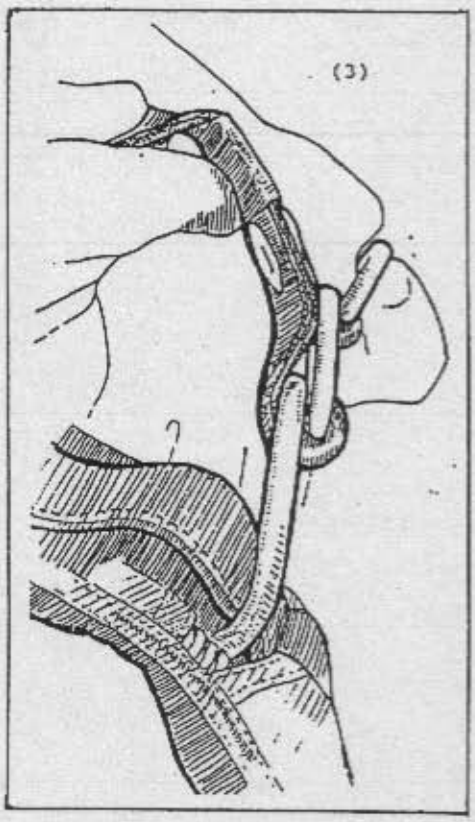
2 With the rings of the riser facing towards the floor, pass the ring on the end of the riser through the large harness ring from above. Fold it back toward the canopy and risers.

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

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

STEP #2 STEP #3 STEP #4





PRE-JUMP INSPECTION

Before jumping the Tear Drop check the 3 ring release system for the following:

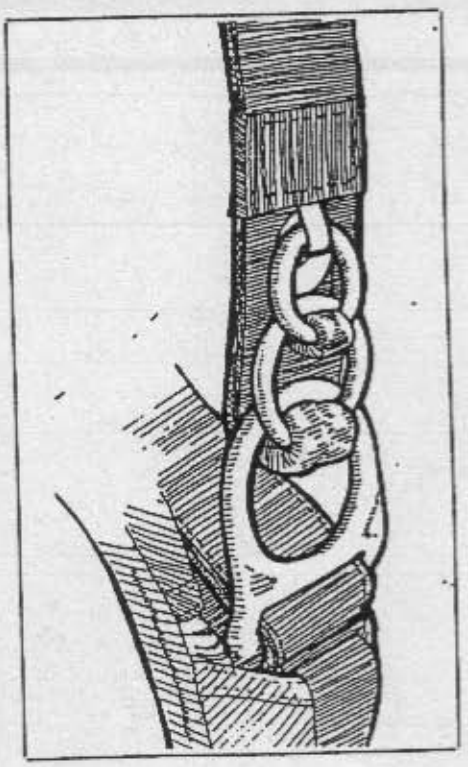
1 Each ring passes through only one other ring.

2 The white loop passes through only the small ring.

3 The white loop passes through the grommet on the end of the cable housing without twisting.

4 Nothing passes through the white loop except the yellow cable.

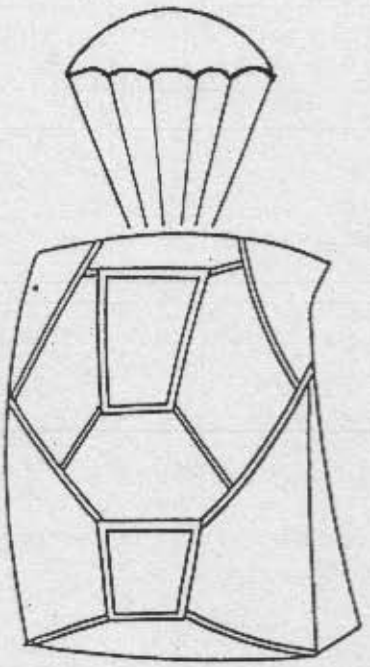
5 The 3 ring release handle is securely stuck to the harness, and no cable is visible between the handle and the cable housings.



ZEROX

ROUND RESERVE

SUPPLEMENT



Thomas Sports Equipment
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BSI REGISTERED FIRM

NATIONAL ACCREDITATION OF CERTIFICATION BODIES

This is a supplement for the Zerox owners manual. the information in this supplement is only for packing the round reserve, all other information concerning the zerox can be found in the owners manual.

because of the wide variety of round reserve canopies on the market this manual does not contain instructions on inspecting, assembling and folding the reserve parachute canopy. The rigger must refer to packing instructions provided by the canopy manufacturer for this information.

TOOLS REQUIRED

1 Temporary packing pin.
1 Pull up cord (48". of 550 cord sheathing).
1 Packing paddle.

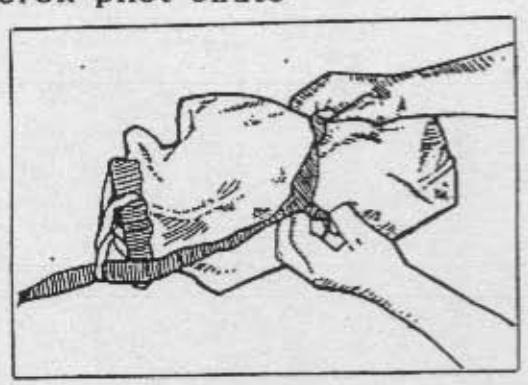
The reserve flaps are numbered 1 through 6 for reference. Close them in that sequence.

It's a goob idea to read all of these instructions before starting to pack the reserve.

STEP 1
Attach the canopy to the risers with the steering modifications and/or data panel facing to the wearers rear. If using L-bar links, make sure thier screws are throroughly tightened. If using rapid links, tighten them snug, plus a quarter turn.

STEP 2
Follow the canopy manufacturers instructions to set up the steering system.

STEP 3
attach the Zerox reserve pilot chute to the apex of the canopy using the bridle line provided. The smaller loop of the bridle line wraps around the apex lines and the larger attaches to the pilot chute see figure 1. Do not substitute other bridel lines 1 because the lenght of this bridle line is important for a fast deployment. Do not substitute another pilot chute for the Zerox pilot chute



STEP 4
Inspect the entire reserve system carefully, beginning with the pilot chute and ending with the harness.

STEP 5
Flake the reserve canopy according to the manufacturers instructions.

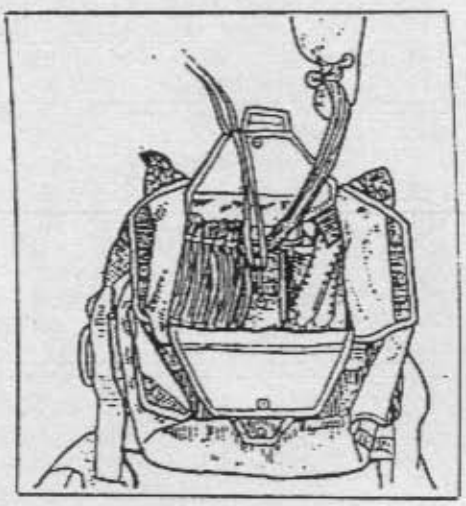
STEP 6
If your reserve canopy does not have a diaper or other deployment device, fold the skirt up parallel to the radial seams, then long fold the canopy into fifths.

STEP 7
If your canopy is equiped with a diaper or similar device, close it according to the manufacturers instructions

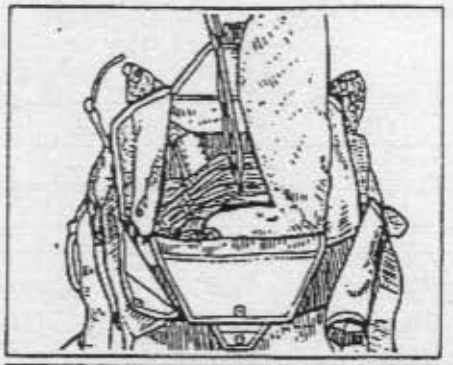
STEP 8
Placing the canopy in the pack tray follow the next set of instructions and look at the figures provided.

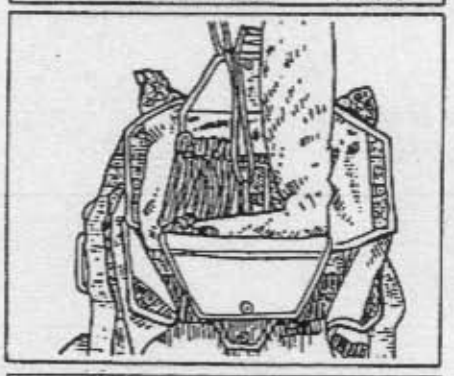
NOTE
A different packing procedure is used if the Zerox is equiped with an FXC 12000 AAD follow the instructions under B.

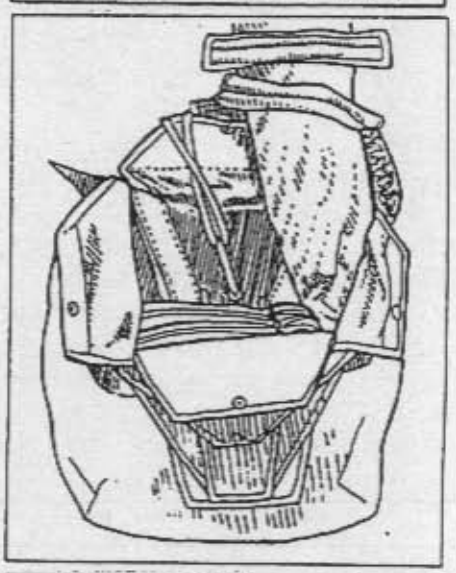
B. With FXC 12000 AAD
Place the reserve risers into the reserve container with the links lying between the line stow loops and grommet stiffener plate. Fan the riser ends out rather than stacking them on top of each other. Stow the lines vertically on the opposite side of the FXC power unit, starting from the outside working towards the middle of the container. NOTE: if the canopy has a diaper with the lines stowed on it (a full-stowage diaper) then stow the lines on the diaper instead of stowing them in the pack tray. Then lay the diaper and lines on the opposite side of the container from the power unit.

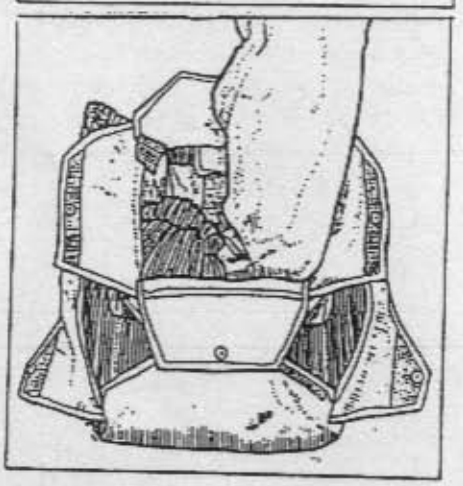


STEP 9
Check the length of the reserve closing loop the length from the stiffener plate to the end of loop should measure approximately 2 to 2 1/4 inches for small canopies like the pioneer K-XX and the National Phantom 22 canopies. For other canopies, the loop will have to be lenghtened accordingly
Two factors determine the correct loop length. First it should not take an excessive amount of effort to close the last flap #6. And when the container is closed, you should not be able to compress the pack more than 1/4" inch when you push down on the top of the pilot chute. If excessive play in the sping has developed after the reserve has been packed for a while open the container and shorten the loop.
STEP 10
Insert the pull up cord through the reserve locking loop.
STEP 11
Fold the canopy into the container
A. The first Fold. For a canopy without a diaper, place the canopy skirt into the bottom left hand corner of the container and lay the first fold of the canopy from left to right across the bottom of the container.
For a canopy with a two bight diaper (such as those buit by Strongs Ent and Pioneer) place the diaper enclosed skirt in the bottom left hand side of the container with the line stows facing towards the top (wearers head end) of the container. Lay the first fold of the canopy from left to right across the bottom of the container.
For a canopy with a full diaper on which the lines stow vertically (such as Strong Ent lopo lite), lay the diaper enclosed skirt in the bottom left hand corner of the contsainer against the dividing wall between the reserve and the main container. The stows should face up (towards the wearers head). Lay the first fold of the canopy from left to right across the bottom of the container. For a canopy with a piglet style (full diaper with the lines stowed horizontally) fold the diaper enclosed skirt lenghtwise for about 1/3 of the lenght, and place it in the bottom left hand corner of the container against the wall that divieds the reserve and main container. Lay the first fold of the canopy from left to right across the bottom of the container.









B. The remaining folds
For a canaopy with no diaper or a two boght diaper the canopy can now be S folded into the container. Make the folds slightly wider than the container. This will help fill out the sides better. For a canopy with a full diaper such as the Preserve 4 and the Phantom's, even out the bulk by making one or two short folds into the container corner opposite from the skirt. The subsequent fold can then be made across the entire width of the container, on top of the diaper to give the container its proper thickness. Then S fold the rest of the canopy toward the top of the container, making each fold slightly wider than the pack tray. With small canopies such as the Phantom 22 and the pioneer K-XX the best appearance results from having no more than two folds above the loop. With larger canopies it may be necessary to fold extra canopy abouve the loop, as well as to lengthen the loop. Make the folds above the closing loop slightly wider than the container to fill the space under the side flaps.

CLOSING THE RESERVE CONTAINER

See pages 9-12 in the Owners Manual.