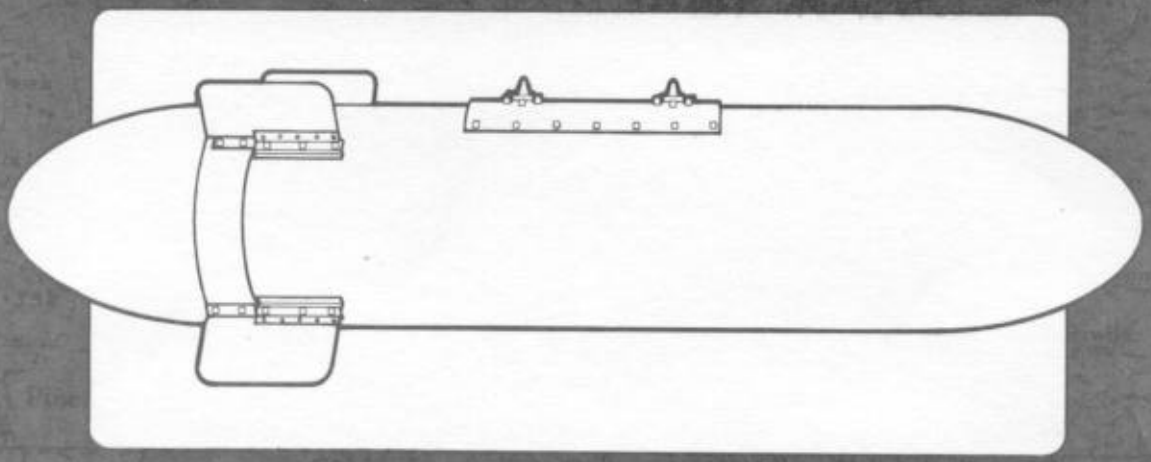
Army FM 10-547
Air Force TO 13C7-37-31
Navair 13-5-14

AIRDROP OF SUPPLIES AND EQUIPMENT:

RIGGING THE HIGH SPEED AERIAL DELIVERY CONTAINER CTU-2/A



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Departments of the Army, the Air Force, and the Navy

CHANGE

NO 1

DEPARTMENTS OF THE ARMY
THE AIR FORCE, AND THE NAVY
Washington, DC, 6 January 1984

AIRDROP OF SUPPLIES AND EQUIPMENT: RIGGING THE HIGH SPEED AERIAL DELIVERY CONTAINER CTU-2/A

This change adds data to the equipment required table and the repair parts listing. FM 10-547/TO 13C7-37-31/NAVAIR 13-5-14, 29 December 1980, is changed as follows:

1. Remove old pages and insert new pages as indicated below:

Remove pages	Insert pages
2-15	2-15
E-1 and E-2	E-1 and E-2

2. New or changed material is identified by a vertical bar in the margin opposite the changed material.

3. File this transmittal sheet in front of the publication for reference purposes.

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FIELD MANUAL NO. 10-547
TECHNICAL ORDER NO. 13C7-37-31
NAVAIR 13-5-14

DEPARTMENTS OF THE ARMY,
THE AIR FORCE, AND THE NAVY
Washington DC, 29 December 1980

AIRDROP OF SUPPLIES AND EQUIPMENT: RIGGING THE HIGH SPEED AERIAL DELIVERY CONTAINER CTU-2/A

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CHAPTER 1
INTRODUCTION

1-1. Scope

This manual shows how to rig and maintain the High Speed Aerial Delivery Container CTU-2/A (CTU-2/A container). It also includes procedures for packing and maintaining the PCU-8/A parachute. The CTU-2/A container is rigged for high-velocity airdrop from either the A-4, A-6 or F-4 aircraft with a 14-inch suspension bomb rack of the ejection type.

1-2. Description of Operation

a. The CTU-2/A container is capable of delivering supplies from a high-performance aircraft flying at a minimum altitude of 300 feet and at a maximum velocity of 425 knots indicated air speed.

b. The CTU-2/A container is ejected from the bomb rack, causing the connector cable assembly to initiate the cartridge-actuated thruster TCU-1/B (TCU-1/B Thruster). Four-tenths of a second after initiation and at a safe distance from the aircraft, the TCU-1/B thruster ejects the tail cone, causing deployment of the pilot parachute. The pilot parachute strips the deployment bag away from the main parachute. At this time, the main parachute is opened to a reefed diameter of about 36 inches. Two seconds after parachute deploys to its reefed diameter, explosive cutters cut the reefing line and allow the main parachute to open to its full diameter. The CTU-2/A container descends at a controlled vertical impact velocity of 30 feet per second and lands on its nose at an angle within a few degrees of a vertical position (fig 1-1).

1-3. Special Considerations

CAUTION: Only ammunition listed in FM 10-553/TO 13C7-18-41 may be airdropped.

a. Airdrop loads may include hazardous materials. When included, they must be packaged, marked, and labeled in compliance with AFR 71-4/TM 38-250.

b. A copy of this manual must be available to the joint airdrop inspectors during the before- and after-loading inspections.

1-4. Recommended Changes

You are encouraged to report any errors or omissions and suggest ways for making this a

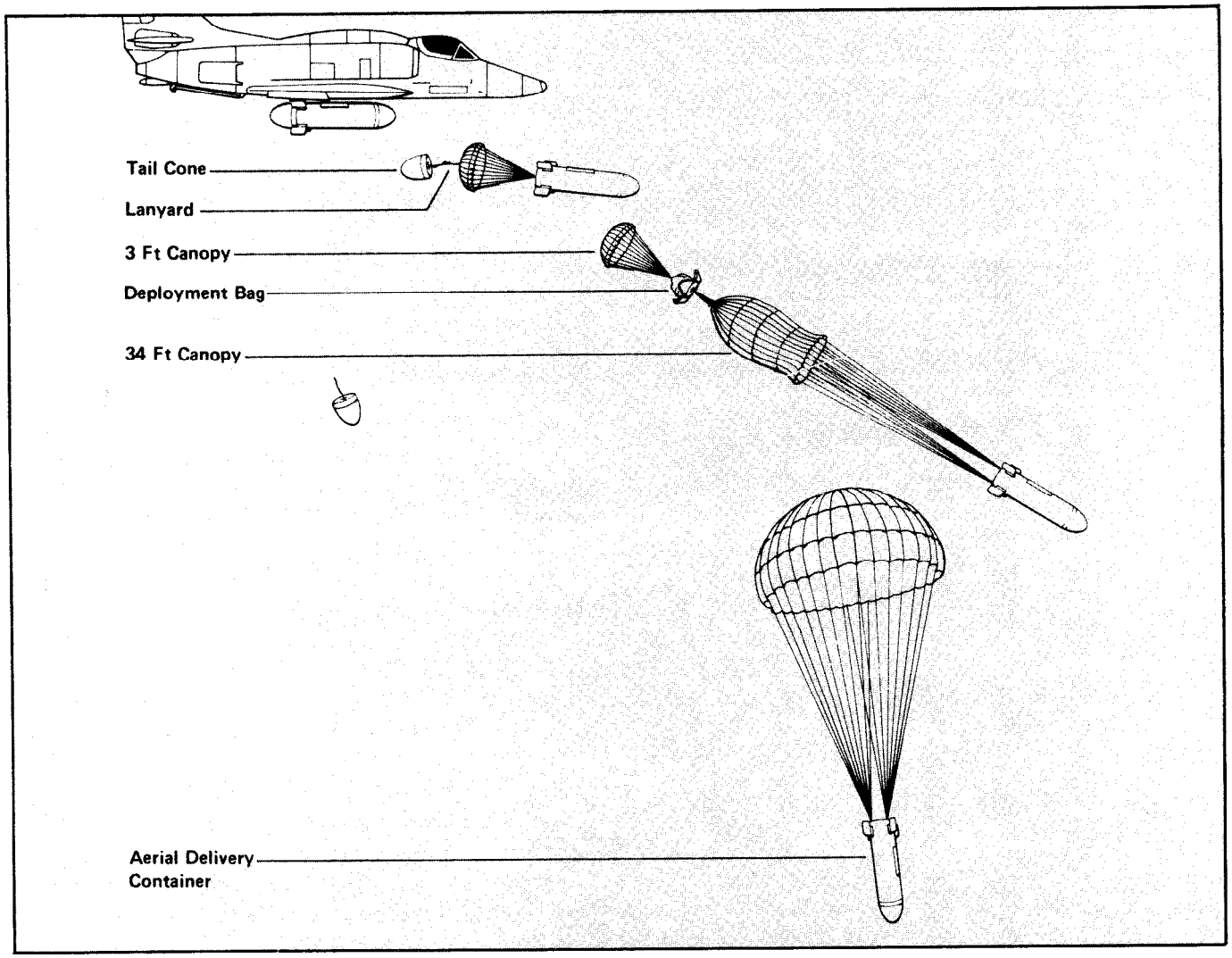

Figure 1-1. CTU-2/A container in operation.

better manual. Army personnel, send your comments on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to:

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1-5. Appendixes

a. Appendix A lists the publications to be used with this manual.

b. Appendix B provides the procedures for packing the PCU-8/A parachute.

c. Appendix C provides instructions for the maintenance of the PCU-8/A parachute.

d. Appendix D provides instructions for the maintenance of the CTU-2/A container.

e. Appendix E lists the repair parts for the CTU-2/A container.

f. Appendix F is a maintenance allocation chart.

CHAPTER 2

RIGGING CTU-2/A CONTAINER

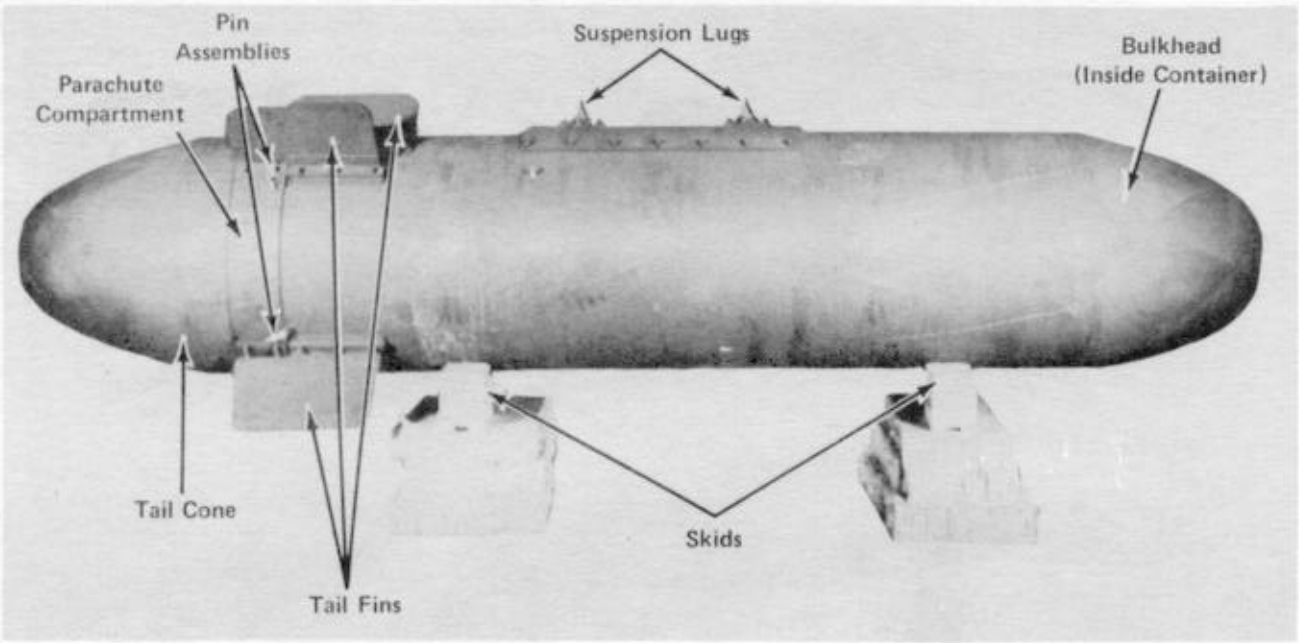
2-1. Description of Container

The High Speed Aerial Delivery Container CTU-2/A can deliver up to 500 pounds of supplies such as weapons, water, food, and survival kits from high-speed aircraft. The container may be destroyed by burning. The empty container with parachute weighs 213 pounds. It is 106 inches long and 21 inches in diameter. The cargo compartment is 61 inches long.

2-2. Preparing Container

Prepare the container as shown in figure 2-1.

Caution: The TCU-1/B thruster must be stored in an ammunition control area. Separate the brackets from the thruster. The brackets will be used in preparing the container.



Warning: The TCU-1/B thruster is not to be installed until immediately prior to mating the container with the aircraft.

1. Lay the CTU-2/A container on its side with suspension lugs on top. Use a cradle, skids, or chocks at least 1 foot high to lay container in.
2. Cut a piece of honeycomb 21 inches in diameter and place it against the forward bulkhead inside of container.
3. Slide the four tail fins into the slots at rear of container.
4. Bolt the rear bracket of TCU-1/B thruster to holes in the tail cone (fig 2-11).

   Note: For access to cargo compartment, remove the four pin assemblies and pull off parachute compartment.

Figure 2-1. CTU-2/A container prepared.

2-3. Preparing Cargo

a. Package the cargo so it can withstand a ground impact of 30 feet per second.

b. Weigh the cargo, dunnage and ballast (payload). Bags of lead pellets or sand may be used for the ballast. The total payload weight cannot be less than 100 pounds or more than 500 pounds.

Note: ***It is estimated that ballast weighing 100 pounds is needed for loads having items of different weights. It is estimated that ballast weighing 200 pounds is needed for loads having items of the same weight.***

2-4. Using Allowable Center of Balance Charts

a. The allowable center of balance range for a CTU-2/A container depends on the following:

(1) Type of aircraft being used.

(2) Type of bomb rack being used.

(3) Aircraft speed at drop time (Knots Indicated Airspeed or KIAS).

(4) Payload weight of container.

Note: ***Refer to the technical manual of the delivery aircraft for the correct station loading and delivery speeds.***

b. Figures 2-3 and 2-4 give the allowable center of balance ranges for the CTU-2/A container. Read the charts as follows:

(1) Select the chart showing the type of aircraft and bomb rack to be used.

(2) Select the line showing the aircraft drop speed.

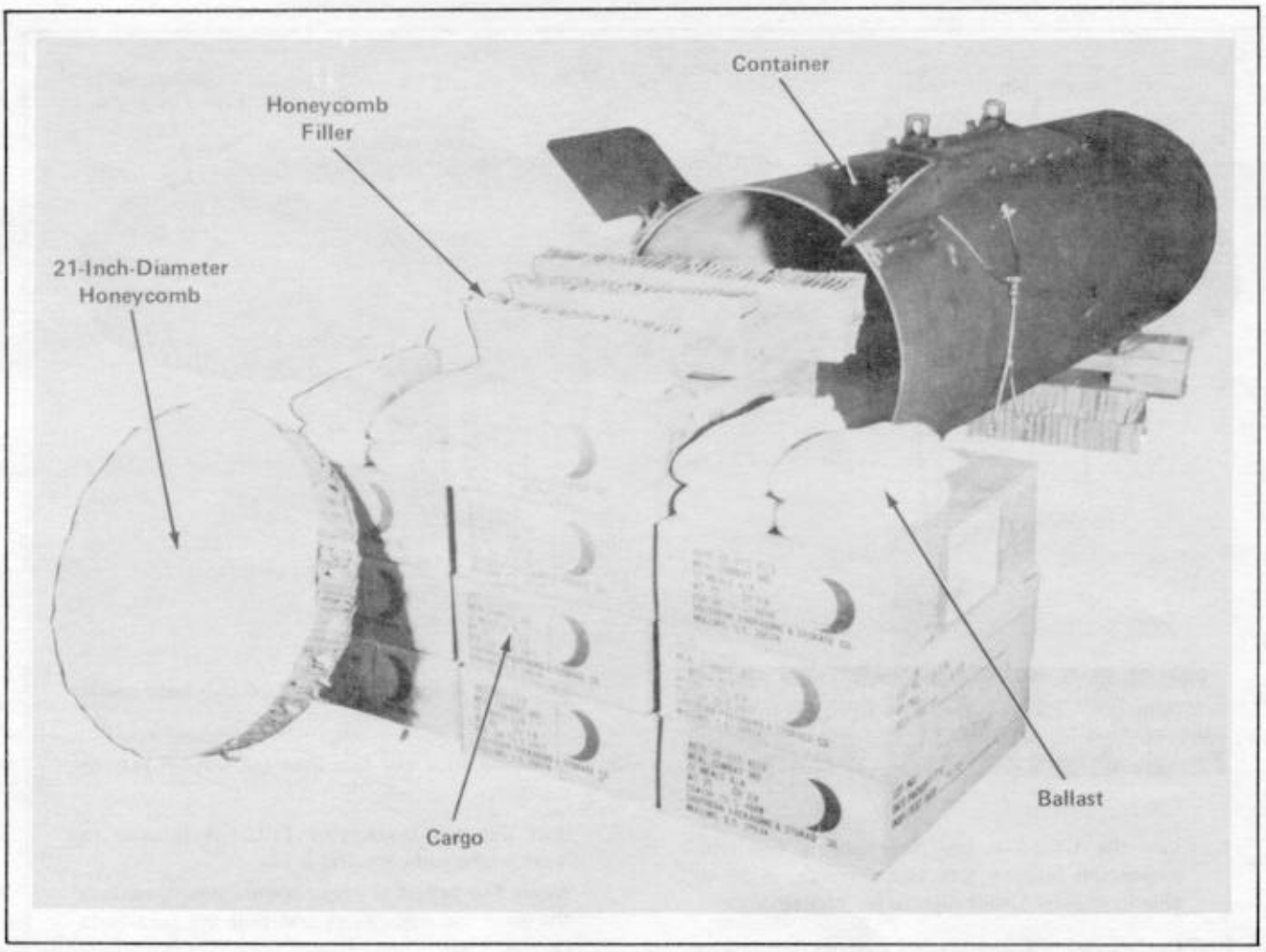
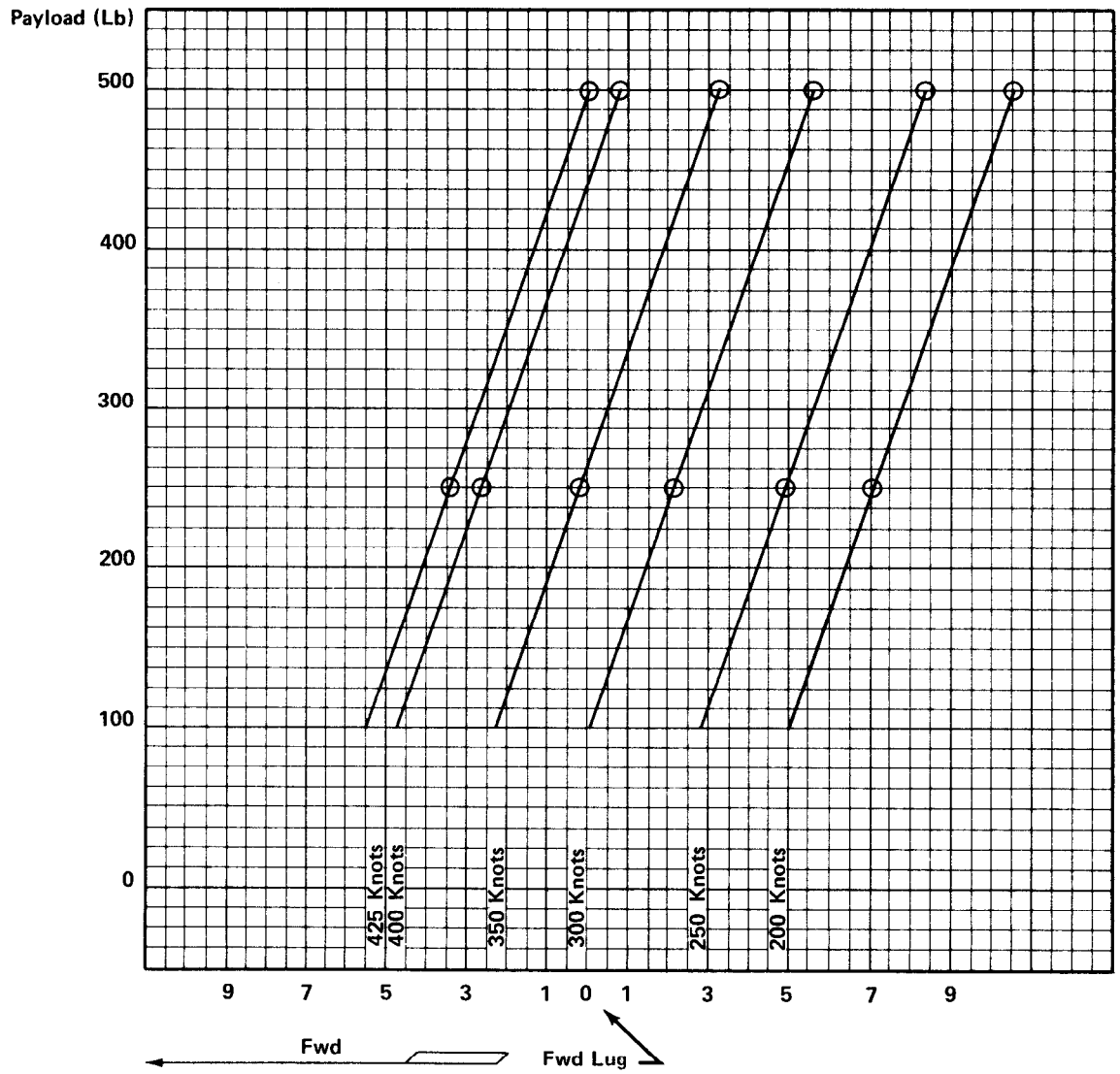


Figure 2-2. Typical load.

(3) Follow the aircraft speed line until it crosses with a horizontal line showing the cargo weight. From the point found, extend a vertical line down to the bottom line of the chart. The number here gives the distance in inches from the forward suspension lug that the center of balance will be. *The allowable center of balance range includes all positions forward of this center of balance point.*

Note: ***See paragraph 2-5 for an example on using the allowable center of balance charts.***



1. The numbers at the bottom of the chart show the distance in inches from the center of balance to the forward lug.
2. The allowable center of balance range includes all positions forward of the center of balance point.
3. The left-hand column is in terms of payload weight only, while the center of balance position is based on the total weight of the payload plus CTU-2/A container main body with parachute compartment (without parachute).

Figure 2-3. Allowable center of balance range using F-4 aircraft with Multiple Ejector Rack (MER) or Triple Ejector Rack (TER) bomb racks.

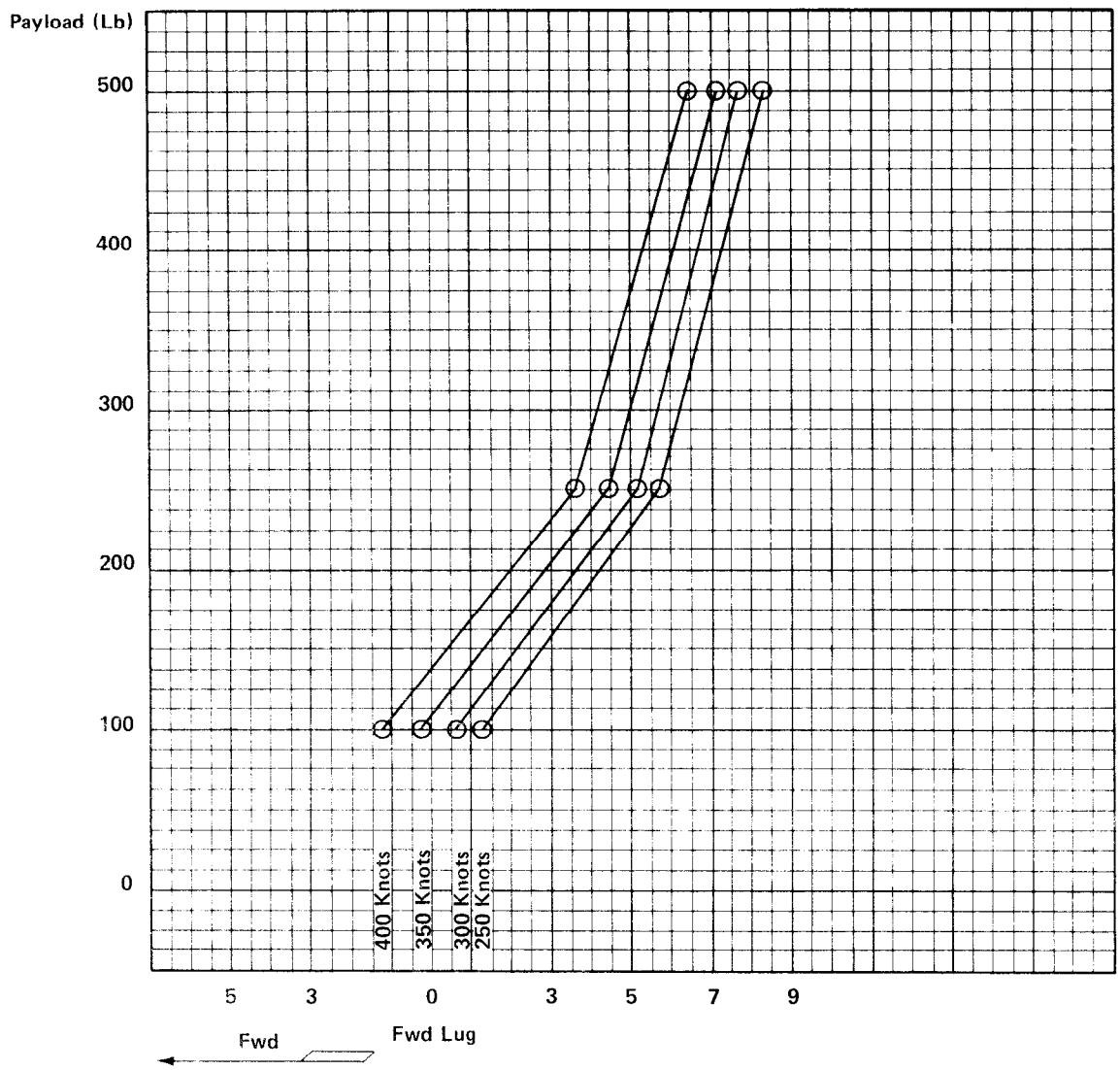
2-5. Example of Using Allowable Center of Balance Charts

The following is an example of how to use the allowable center of balance range charts.

a. Find the center of balance for the CTU-2/A container using the following data:

(1) Type of aircraft being used--F-4.
(2) Type of bomb rack being used--MER.
(3) Aircraft speed at drop--400 KIAS.
(4) Payload weight--500 pounds.

b. The following steps and figure 2-5 illustrate how to find the center of balance range.



1. The numbers at the bottom of the chart show the distance in inches from the center of balance to the forward lug.
2. The allowable center of balance range includes all positions forward of the center of balance point.
3. The left-hand column is in terms of payload weight only, while the center of balance position is based on the total weight of the payload plus CTU-2/A container main body with parachute compartment (without parachute).

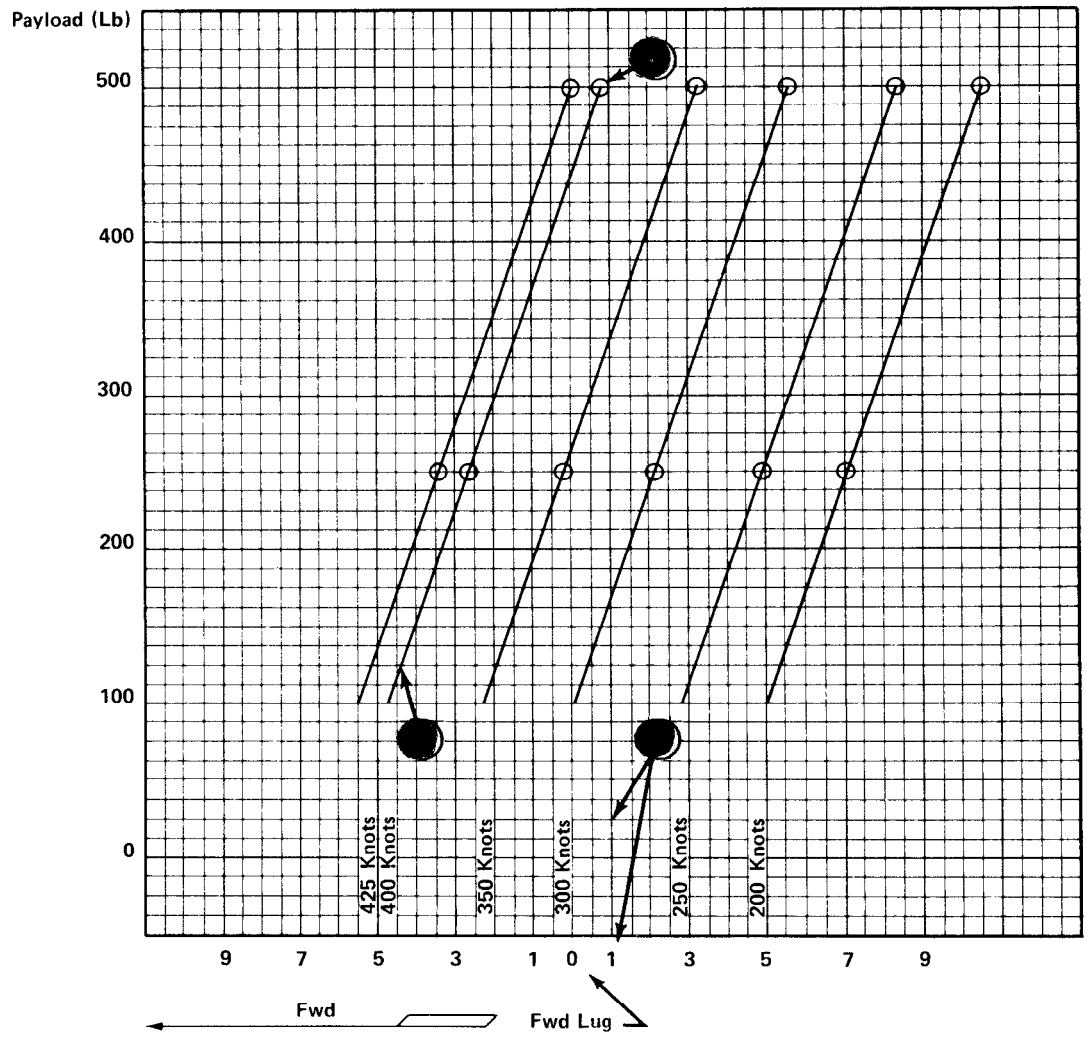
Figure 2-4. Allowable center of balance range using A-4 and A-6 aircraft with Aero 7A and 20A bomb racks.

● Select chart for F-4 aircraft with MER bomb rack.

● Locate the aircraft speed line of 400 knots.

● Follow the aircraft speed line until it crosses the 500 pound payload line.

● From the point found in step 3, go down the vertical line to the numbers at the bottom of the chart. This line shows that the center of balance is 1-inch aft of the forward lug. The allowable center of balance is all positions forward of the center of balance point (1-inch aft of forward lug).



1. The numbers at the bottom of the chart show the distance in inches from the center of balance to the forward lug.

2. The allowable center of balance range includes all positions forward of the center of balance point.

3. The left-hand column is in terms of payload weight only, while the center of balance position is based on the total weight of the payload plus CTU-2/A container main body with parachute compartment (without parachute).

● Allowable center of balance range using F-4 aircraft with Multiple Ejector Rack (MER) or Triple Ejector Rack (TER) bomb racks.

Figure 2-5. Example chart.

2-6. Loading Container

Load the container (fig 2-6) as follows:

a. Begin by placing the ballast against the bulkhead (honeycomb) in cargo compartment. Place the cargo against the ballast. In most cases, the heaviest cargo should go in first.

b. If needed, use honeycomb or fiberboard to fill all voids in the cargo compartment so the cargo fits snugly between the forward bulkhead and the parachute compartment.

c. Place the parachute compartment without the parachute on the rear of the cargo compartment. This keeps cargo from falling out while you find the center of balance.

2-7. Finding Center of Balance

a. Find the center of balance (C/B) of the loaded container as shown in figure 2-7.

Note: ***The C/B may be changed by placing ballast next to the bulkhead. Small changes can be made by placing lead pellets in the ballast cavity.***

b. Equipment needed to find the center of balance is as follows:

(1) Hoist (1 ea).

(2) Steel cable sling, 1/4-inch diameter (1 ea).

(3) Steel rod, 11/16-inch diameter and 30-inches long (1 ea).

(4) Spirit level (1 ea).

(5) Weighing scales, 1,000-lb capacity (1 ea).

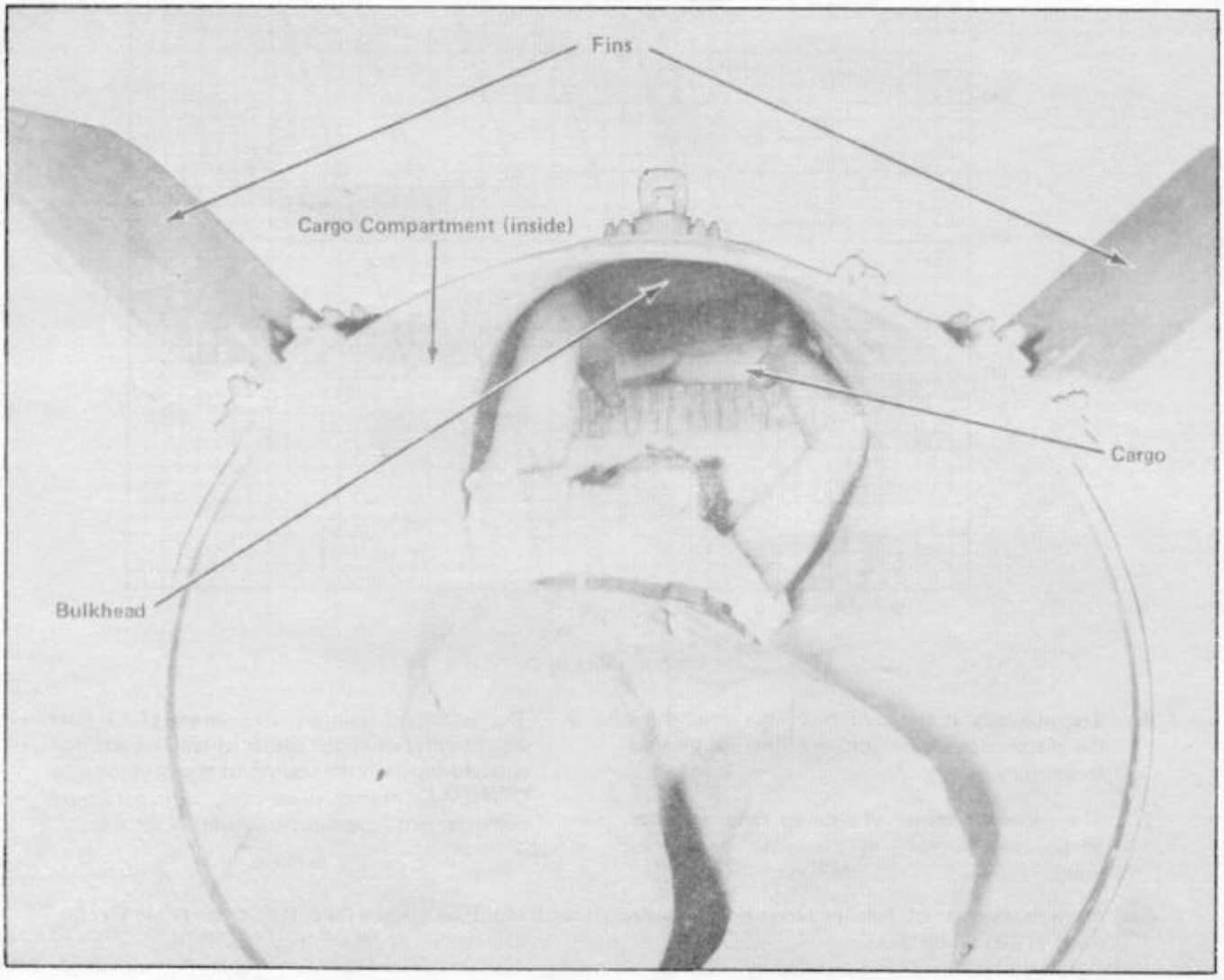
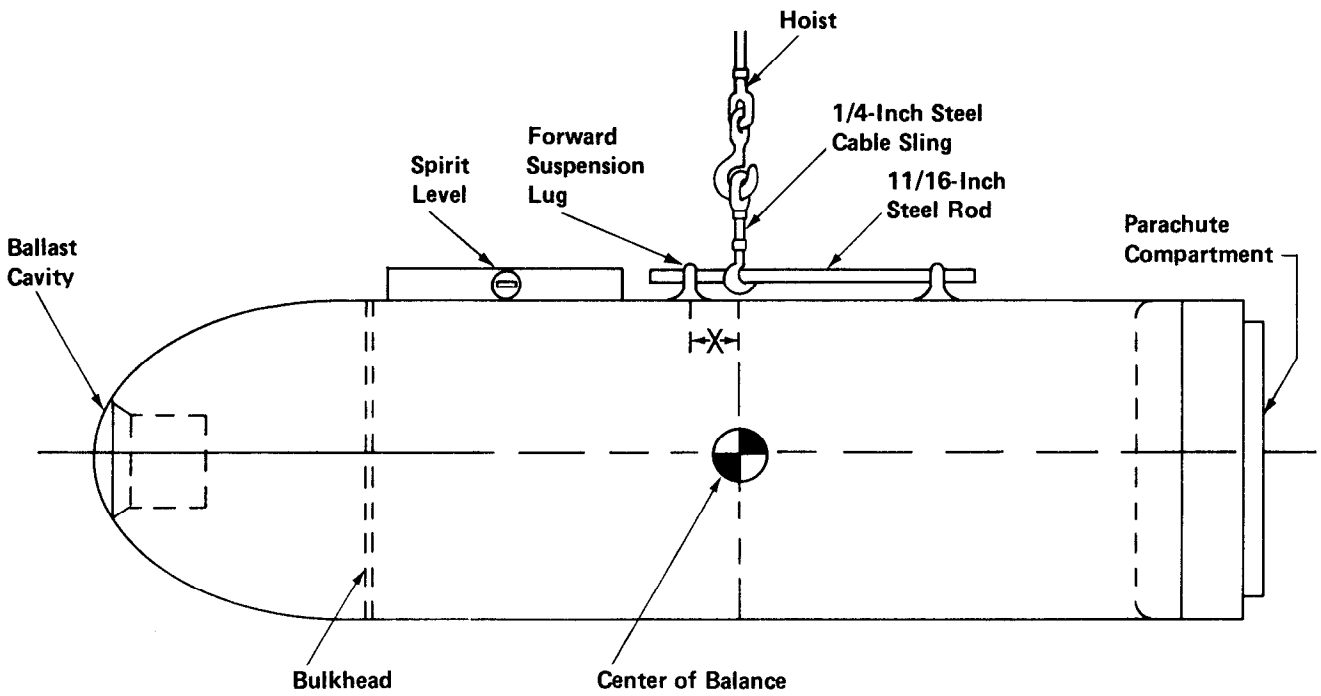


Figure 2-6. Loading container.

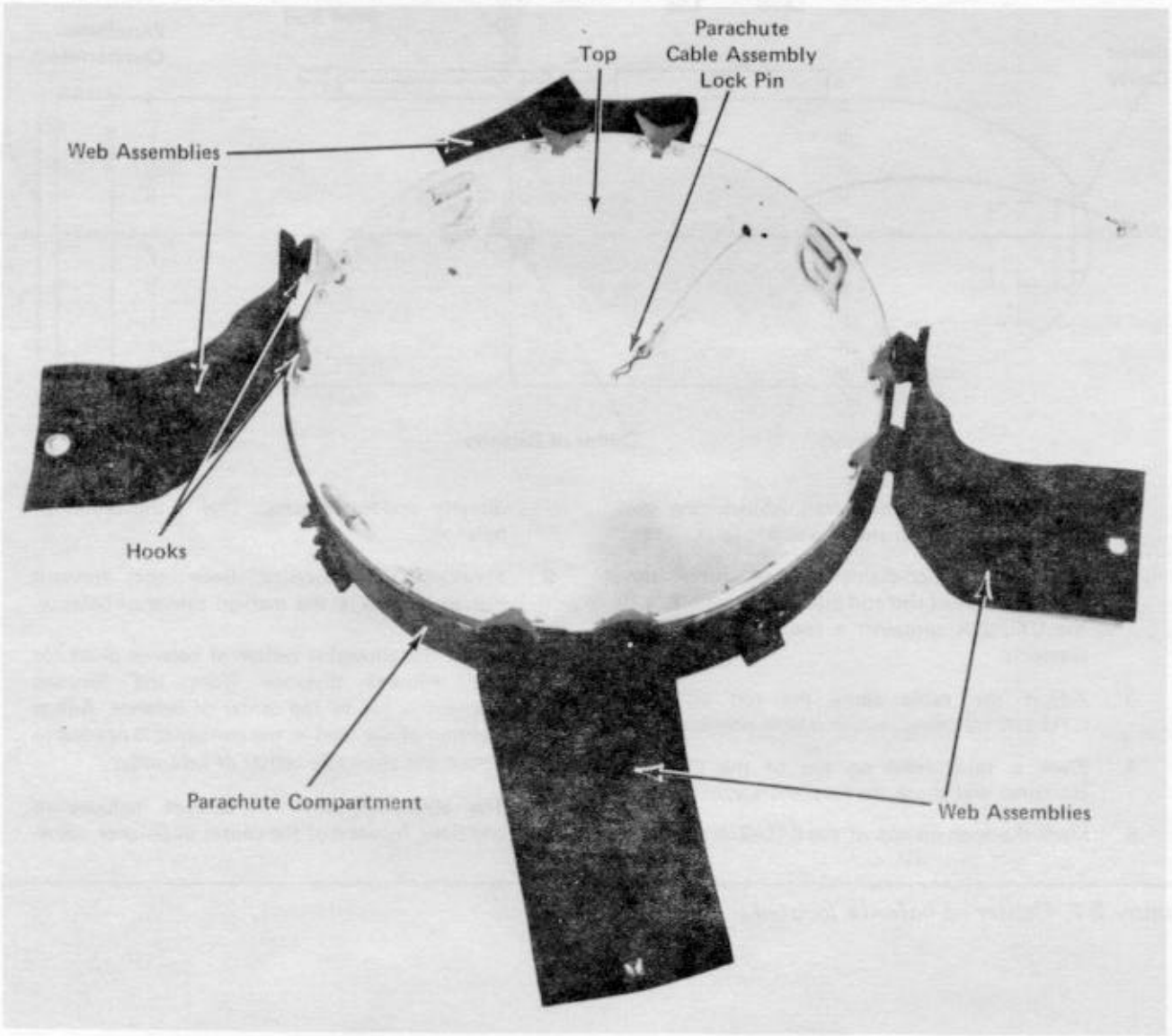


1. Pass an 11/16-inch-diameter, 30-inch-long steel rod through both suspension lugs.
2. Place a 1/4-inch-diameter steel cable sling around the steel rod and attach it to a hoist. Lift the CTU-2/A container a few inches off of its supports.
3. Adjust the cable along the rod until the CTU-2/A container rests in a level position.
4. Place a spirit level on top of the CTU-2/A container and check the level more exactly.
5. Mark the spot on top of the CTU-2/A container directly under the sling. This is the center of balance.
6. Measure the distance from the forward suspension lug to the marked center of balance.
7. Check the allowable center of balance chart for the allowed distance from the forward suspension lug to the center of balance. Adjust position of the load in the container if needed to obtain the allowable center of balance.
8. The allowable center of balance includes all positions forward of the center of balance point.

Figure 2-7. Center of balance located.

2-8. Installing Web Assembly

Install the web assembly as shown in figure 2-8.

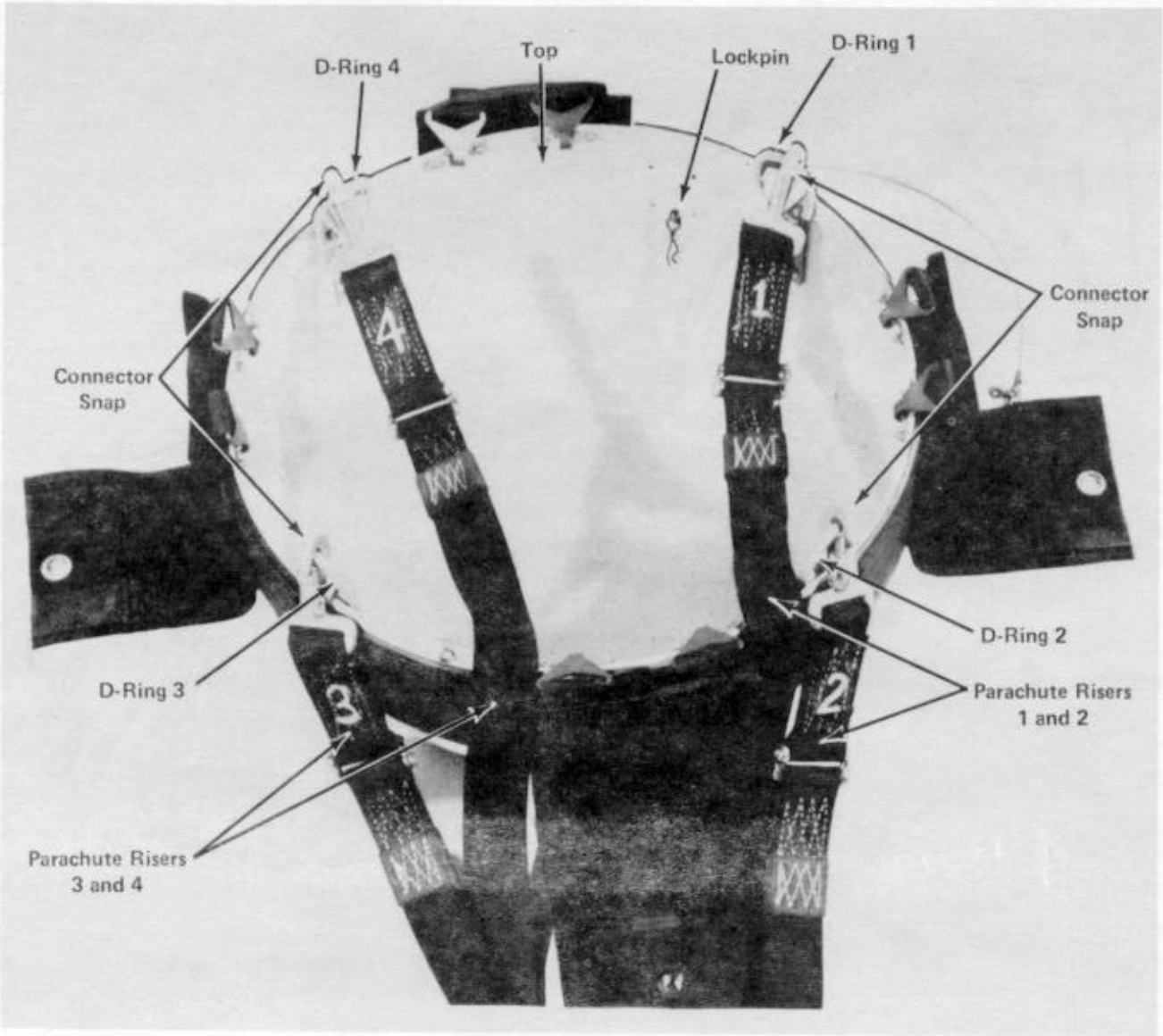


1. Place parachute compartment on floor.
2. Slide the parachute cable assembly, lockpin first, through the hole in the parachute compartment.
3. Bolt front bracket of TCU-1/B thruster to holes in parachute compartment (fig 2-11).
4. Put hooks of web assemblies into brackets around the inside of the parachute compartment. The open part of the hooks should point outwards. Each web assembly is marked either top, bottom, or side. Hook the top web assembly to the top brackets in the compartment, the bottom assembly to the bottom of the compartment, and the side ones to the side brackets. Crimp the hooks closed.

Figure 2-8. Web assembly installed.

2-9. Installing PCU-8/A Parachute Assembly

Install the PCU-8/A parachute assembly as shown in figure 2-9.



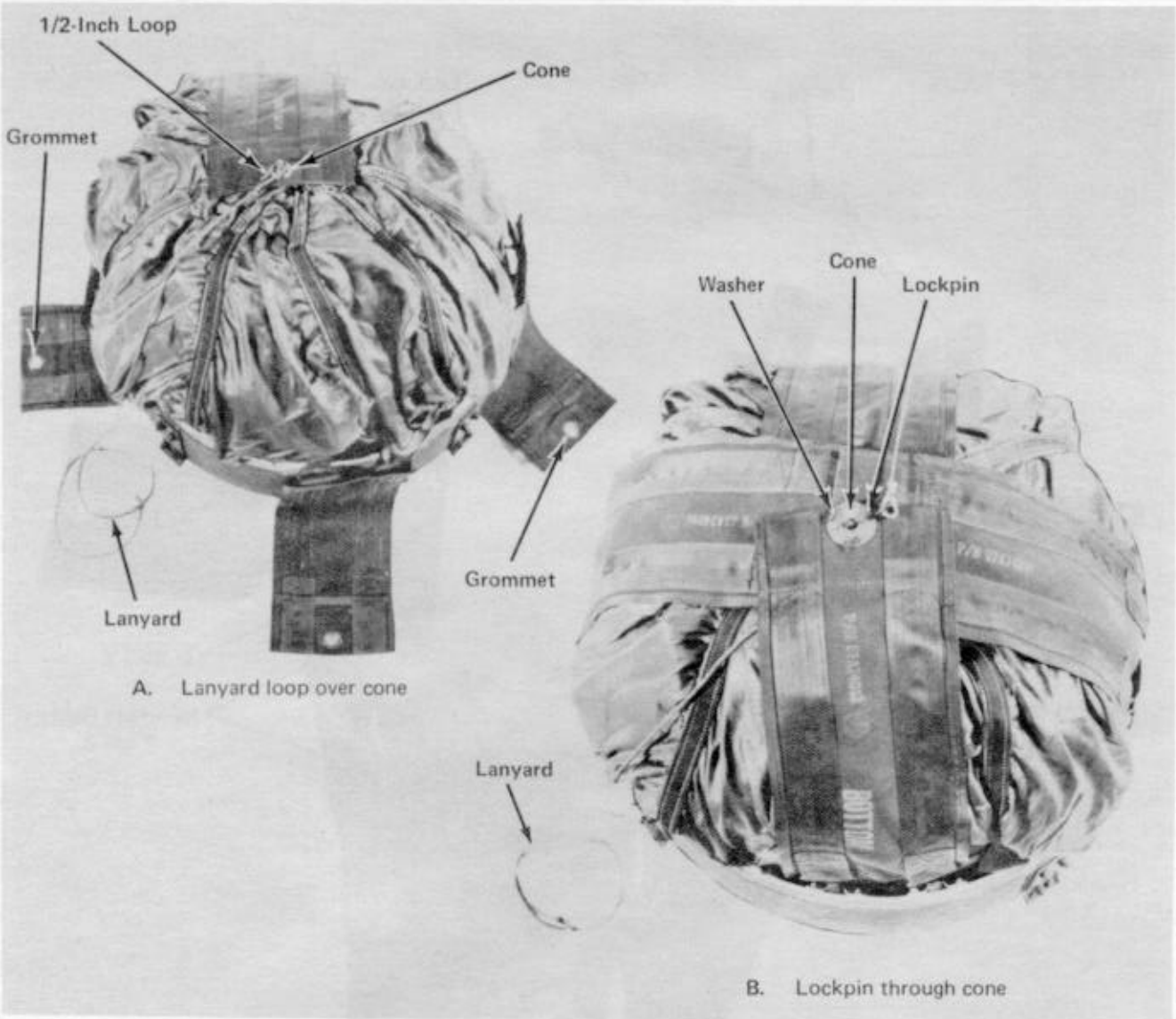
Note: Normally, do not install parachute assembly until just before the container is loaded on the aircraft. However, containers can be stored completely assembled for quick response. Store in the same type of area as that used for storing parachutes and pyrotechnic devices.

1. Rotate the four D-rings on the parachute compartment outwards.
2. Cut the cord binding parachute riser connector snaps together; this was a temporary tie.
3. Attach the connector snaps with the throat outwards to the D-rings. Match the riser numbers to the D-ring numbers. Close connector snap guards and put in cotter pins.
4. Rotate D-rings to inward position and set parachute into parachute compartment.

Figure 2-9. PCU-8/A parachute assembly installed.

2-10. Closing Web Assembly

Close the web assembly as shown in figure 2-10.



A. Lanyard loop over cone

B. Lockpin through cone

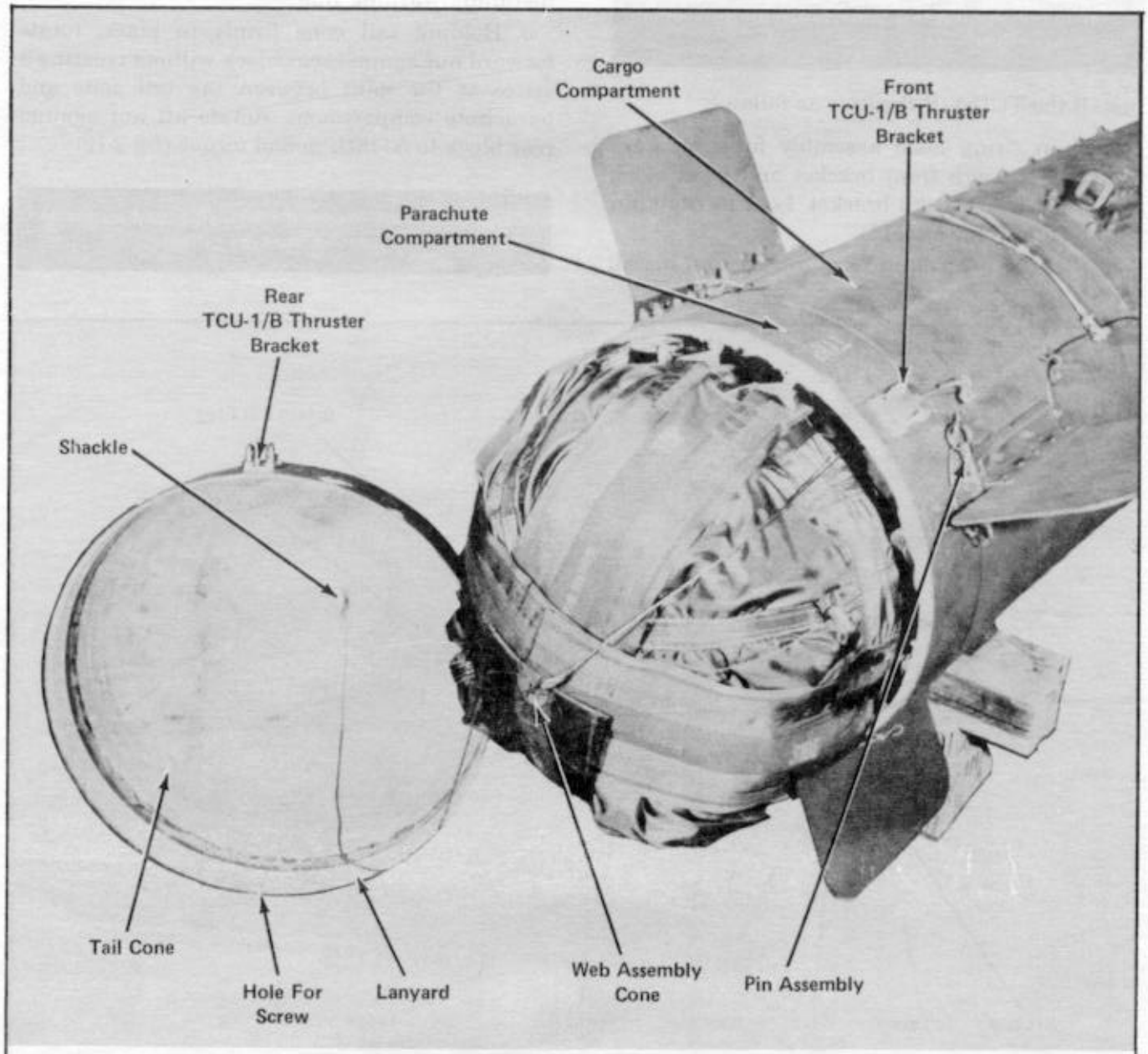
Note: Install lockpin carefully so it will exit the cone easily.

1. Lay the web assembly with the cone on top of parachute.
2. Form a 1/2-inch-diameter loop using a bowline knot in the pilot parachute/tail cone lanyard at a point 6 inches from the pilot parachute apex. Slip this loop over the cone.
3. Lay the grommets on both side web assemblies over the cone.
4. Lay the web assembly with the washer over the cone.
5. Put the lockpin of the parachute cable assembly through the hole in the cone.
6. Place the pilot parachute/tail cone lanyard through the joint of the web assembly.

Figure 2-10. Web assembly closed.

2-11. Installing Parachute Compartment and Tail Cone

Install the parachute compartment and tail cone as shown in figure 2-11.



1. Fit parachute compartment on to cargo compartment. (TCU-1/B thruster bracket will be on top right side). Lock parachute compartment in place with four pin assemblies. Safety each pin with a cotter pin.
2. Tie the parachute lanyard to shackle at apex of tail cone with a bowline knot and an overhand locking knot. Have approximately 48 inches of lanyard between tail cone apex and loop around cone of web assembly.
3. Fit the tail cone on to parachute compartment. Make sure the screw is fully seated in the bottom part of tail cone.

Figure 2-11. Parachute compartment and tail cone installed.

2-12. Installing TCU-1/B Thruster

Warning: The TCU-1/B thruster must be stored in an ammunition control area until ready for installation on the container.

Install the TCU-1/B thruster as follows:

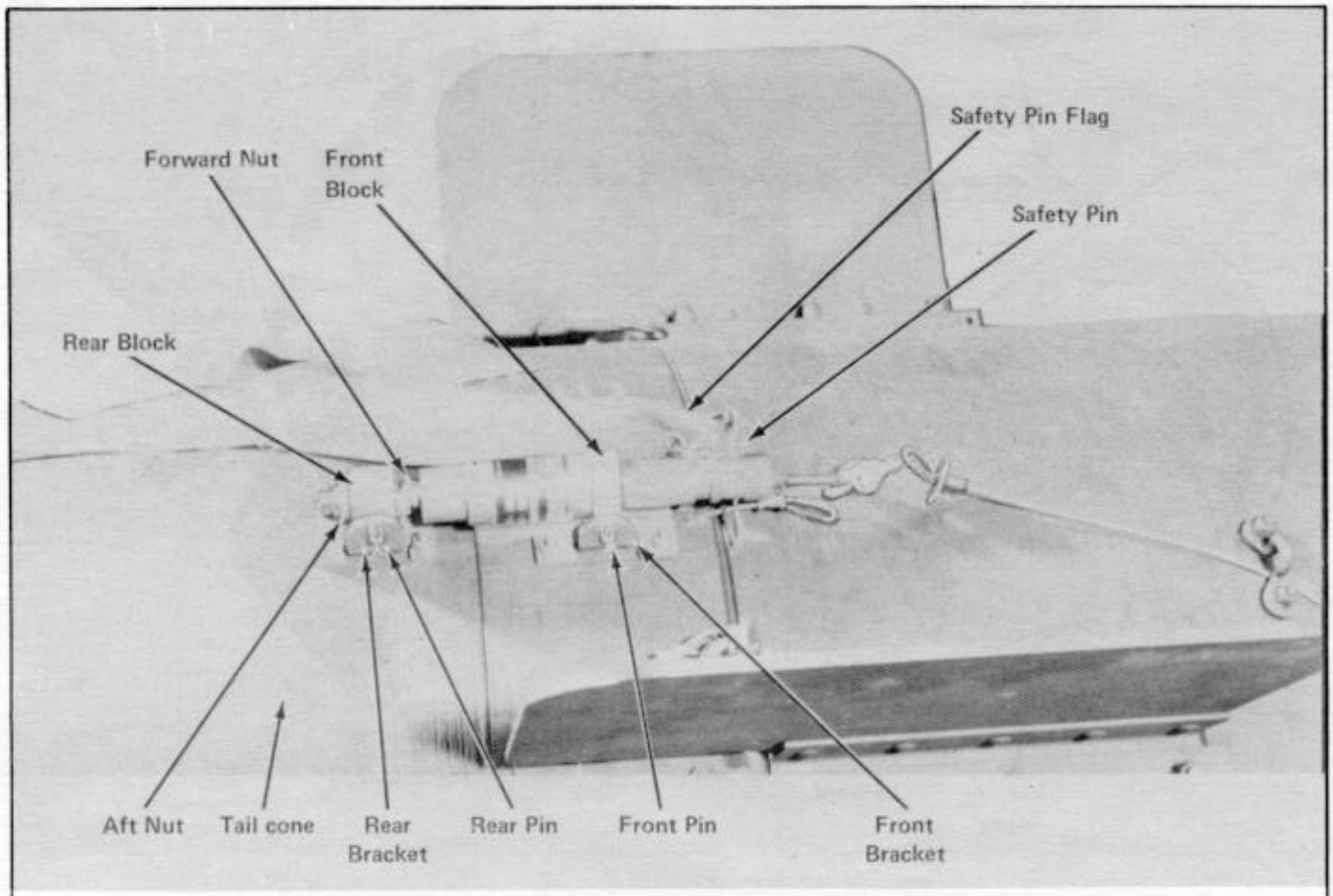
a. Point firing head assembly forward. Pass front pin through front bracket and front block into other side of front bracket. Lock in front pin with a cotter pin (fig 2-12).

b. Place rear block in rear bracket and install same as front block (fig 2-12).

c. Place the red warning flag on safety pin (fig 2-12). Do not remove safety pin from thruster when installing warning flag.

d. Holding tail cone firmly in place, rotate forward nut against rear block without creating a space at the joint between the tail cone and parachute compartment. Rotate aft nut against rear block to 50-inch pound torque (fig 2-12).

Caution: Do not exceed the 50-inch pound torque or the piston may separate from the cylinder.



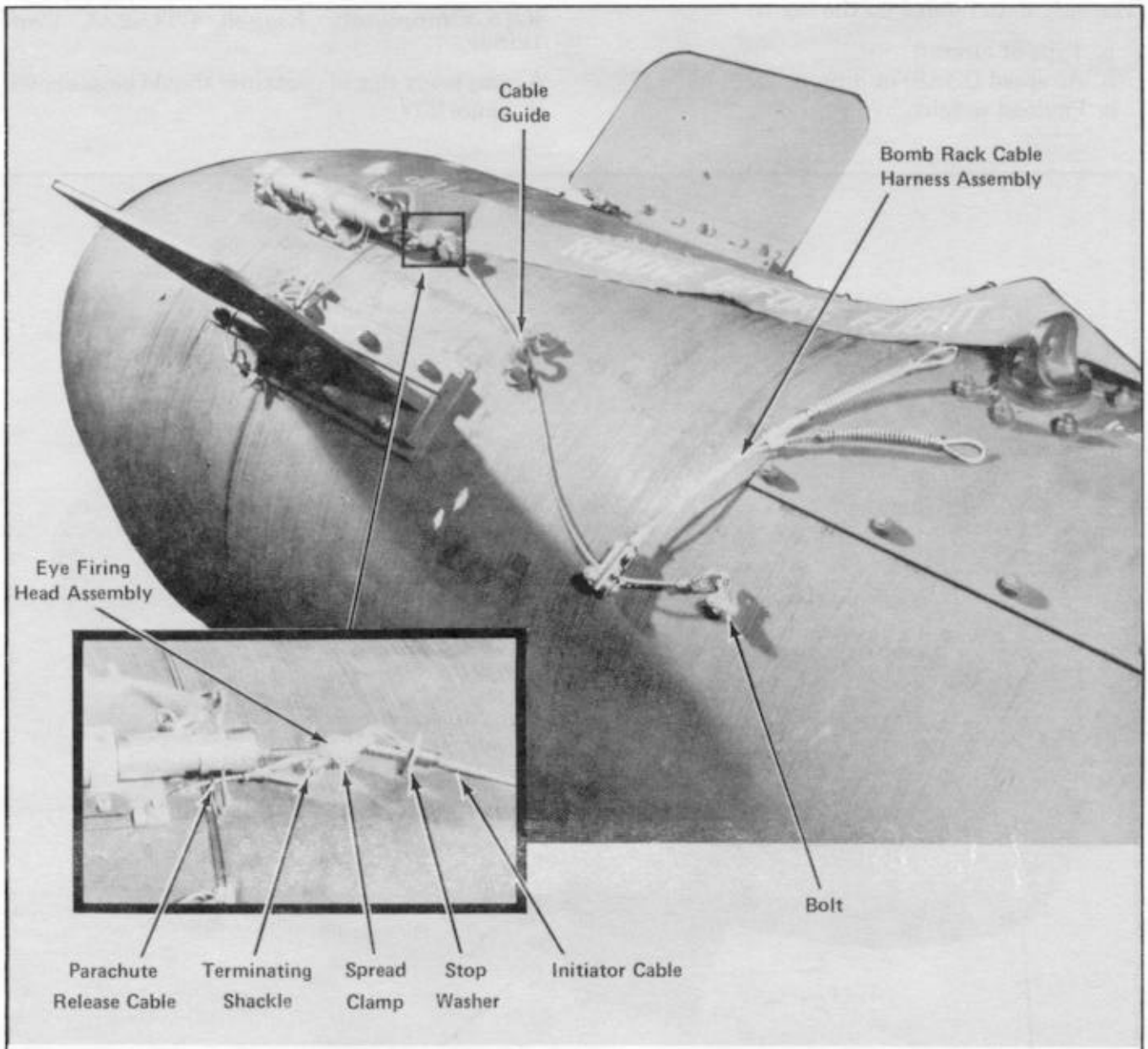
Warning:

1. Do not disassemble the TCU-1/B thruster which has been sealed at manufacturing source.
2. Do not install the TCU-1/B thruster until just before CTU-2/A container is hooked up to the delivery aircraft.
3. Do not remove safety pin until preflight check.

Figure 2-12. TCU-1/B thruster installed.

2-13. Installing Cable Release System

Install the cable release system as shown in figure 2-13.



1. Connect the terminating shackles of the parachute release cable and spread clamp of initiator cable with eye of firing head assembly. Join the three parts with the nuts and bolts.
2. Pass free end of initiator cable assembly through cable guide and secure the cable eye to the bolt with the nut and shackle.
3. Make sure initiator cable stop washer is located next to firing head and both the parachute and initiator cable assemblies have at least one-fourth-inch of slack.
4. Make sure bomb rack cable harness is between cable guide and bolt.

Figure 2-13. Cable release system installed.

2-14. Marking Rigged Load

Mark the rigged container according to FM 10-500/TO 13C7-1-5 with the following exceptions. The only data needed on the tag is:

a. Type of aircraft.
b. Airspeed (KIAS) at drop.
c. Payload weight.

Note: ***The above data will be based on data used to find the center of balance.***

2-15. Completely Rigged CTU-2/A Container

A completely rigged container should be as shown in figure 2-14.

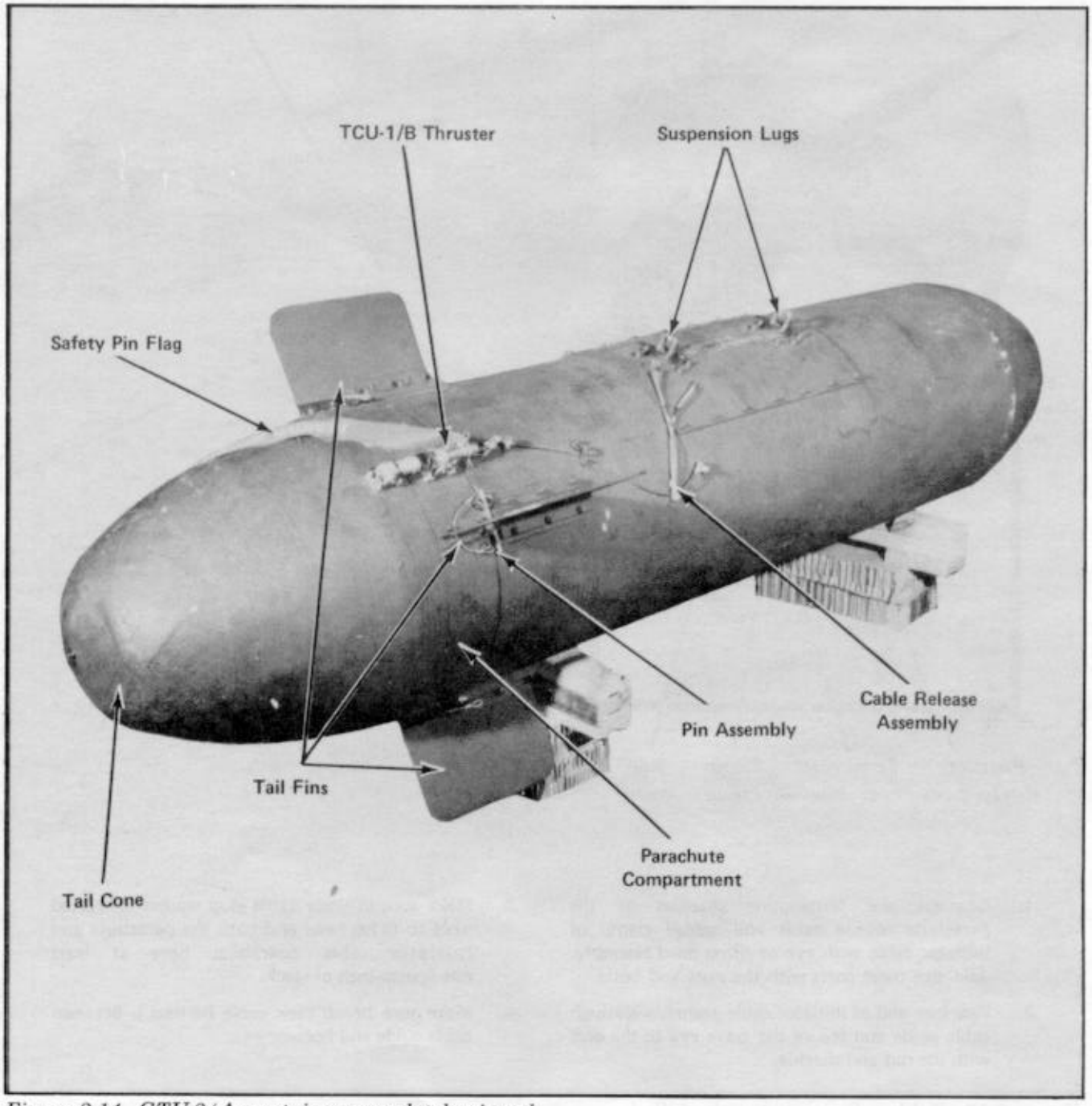


Figure 2-14. CTU-2/A container completely rigged.

2-16. Equipment Required

The equipment required to rig this container is listed in table 2-1.

TABLE 2-1. EQUIPMENT REQUIRED

National Stock No.	Item	Quantity
3940-00-926-3717	Block and tackle	1 each
4010-00-956-2871	Cable, 1/4-in diameter, 2-ft long	1 each
1377-00-060-0885	Cutter, M-21 reefing line	2 each
1670-01-059-5788	High speed aerial delivery container, CTU-2/A w/parachute	1 each
5210-00-277-2430	Level	1 each
1670-00-753-3928	Pad, energy-dissipating, honeycomb	As required
6670-00-164-0556	Scale, beam-indicating, 1,000-lb cap	1 each
	*Shot, lead, pellets, 0.1- to 0.65-in diameter	As required
9510-00-961-8153	Steel rod, 11/16-in diameter, 30-in long	1 each
1377-01-075-6433	Thruster, cartridge actuated, TCU-1/B	1 each

*Must be procured locally.

APPENDIX A
REFERENCES

AFR 71-4/TM 38-250

Packaging and Materials Handling; Preparation of Hazardous Materials for Military Air Shipment

FM 10-500/TO 13C7-1-5

Airdrop of Supplies and Equipment: General Information for Rigging Airdrop Platforms

FM 10-553/TO 13C7-18-41

Airdrop of Supplies and Equipment: Rigging Ammunition

TM 10-1670-201-23/TO 13C-1-41/ NAVAIR 13-1-17

Organizational and DS Maintenance Manual for General Maintenance of Parachutes and Other Airdrop Equipment

TM 10-1670-240-20/TO 13C7-49-11

Organizational Maintenance Manual Including Repair Parts and Special Tools List; Miscellaneous Airdrop Canvas, Webbing, Metal, and Wood Items

NAVAIR 11-100-1

Cartridge and CAD's for Aircraft and Associated Equipment

NAVAIR 13-5-7

Technical Manual Maintenance and Packing Instructions with Illustrated Parts Breakdown Parachute Assembly PCU-8/A (NADC)

NAVAIR 13-5-13

Technical Manual Operation, Service, and Overhaul Instructions with Illustrated Parts Breakdown Disposal Aerial Delivery Container CTU-2/A (NADC)

APPENDIX B
PACKING PCU-8/A PARACHUTE

B-1. Lay Out Parachute

a. Place the ringslot parachute on the packing table. Place the packing tools, materials, line separators, and shot bags at convenient locations.

b. Locate lines 1 and 32 and position the canopy on the table with these lines up. The right-hand side of the parachute is the side located to the right when you look from the suspension lines to the apex (fig B-1).

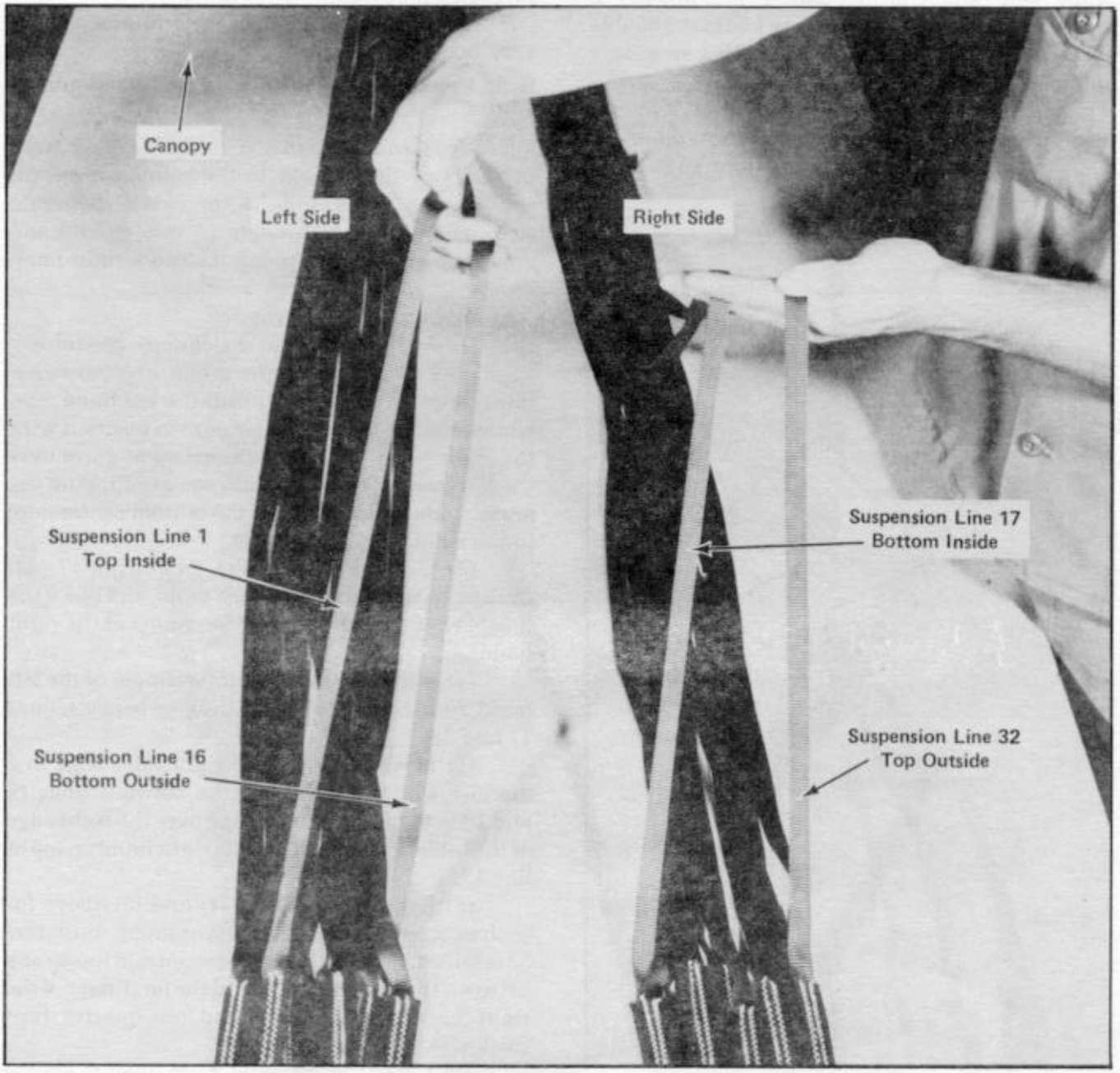


Figure B-1. Checking for proper layout.

B-2. Preparing the Vent Lines

a. Check the vent lines, making sure that the vent lines are straight and evenly distributed about the center. Straighten the vent reinforcement.

b. Wrap a 10-inch square of cotton muslin (type II) around the vent bridle loop to provide a protective chafing pad between the vent bridle loop and the vent lines. Center the vent bridle loop in the vent lines and hand-tie around the vent bridle loop and chafing pad, approximately 2 inches above the vent lines, using two turns double of 80-pound cotton webbing tied with a surgeon's and locking knot.

c. Tie the vent lines approximately 2 inches below the vent bridle loop with two turns double of 80-pound cotton webbing tied with a surgeon's and locking knot.

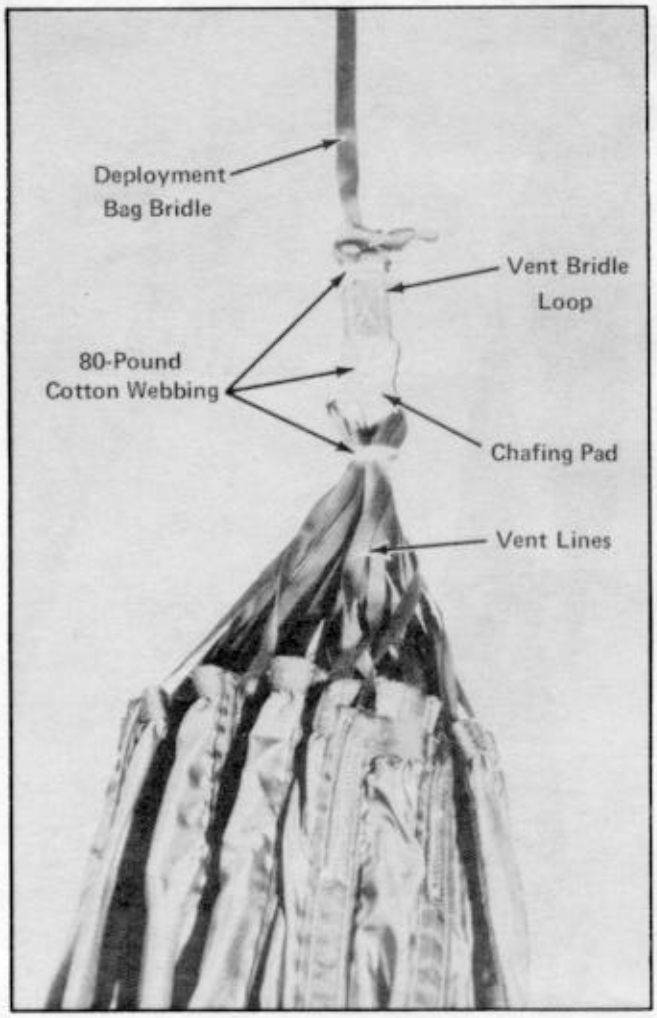


Figure B-2. Vent lines prepared.

d. Thread 4 feet (between knots) of deployment bag bridle, 4,000-pound, tubular nylon webbing, 1 inch wide, through the upper portion of the vent bridle loop and tie with a bowline knot finished with an overhand knot in the end. Tack through the bowline knot with two turns single No. 3 cotton thread and tie with a surgeon's and locking knot.

e. Tie the vent bridle loop at the deployment bag bridle as tightly as possible with two turns double of 80-pound cotton webbing secured with a surgeon's and locking knot (fig B-2).

f. Attach the top portion of the bridle loop to the apex hook.

B-3. Preparing Canopy and Suspension Lines

a. Separating suspension lines. Working from the skirt of the canopy to the connector snaps, remove any turns, tangles, or twists. Separate suspension lines 1 through 16 into a left-hand group, and lines 17 through 32 into a right-hand group.

b. Folding the canopy gores.

(1) Apply tension to the canopy assembly.

(2) Pick up the right group of suspension lines (lines 17 through 32) with the left hand, and while holding the top center gore in position with the right hand, flip the right group of gores over the left group of gores. While you are flipping the gores, simultaneously pull the bottom center gore to the right side of the table.

(3) Using the right hand, pick up line 17, pull the line to the right side of the table, and place the line between the thumb and forefinger of the right hand.

(4) With the thumb and forefinger of the left hand, raise line 18 to expose the gore between lines 17 and 18.

(5) Move line 18 to the right table edge in a manner which allows the gore between lines 17 and 18 to fold neatly and drape over the right edge of the table. Place line 18 in the right hand on top of line 17.

(6) Repeat procedures (4) and (5) above for each succeeding line in the right group until gore 32 is folded. Scissor the right suspension line group between the middle finger and the forefinger of the right hand. Rotate the hand one-quarter turn clockwise.

(7) Using the left hand, raise line 1 to expose the top center gore.

(8) Bring the left hand down to the right, allowing the top center gore to fold over the right gore group. Place line 1 between the right hand thumb and forefinger.

(9) Repeat the procedures in (7) and (8) above for lines 2 through 15.

(10) Using the left hand, grasp the canopy skirt reinforcement (lower lateral band) at a point 6 inches to the right of line 16. Insert the left elbow under line 16 and gore 16. Lower the left arm and allow gore 15 to fold to the right and gore 16 to fold to the left of the folded gores.

(11) Insert the two suspension line groups into a line separator.

(12) Holding the line separator and the two suspension line groups with the left hand, grasp the canopy with the right hand and pull the canopy off the right side of the table, allowing all folded gores to drape to the side of the table.

(13) Slide the canopy back onto the table and rotate the suspension lines and line separator one-half turn counterclockwise to permit the separator base to rest on the table.

(14) Flip the left gore group to the left side of the table, apply a packing weight to the suspension lines, and add extra tension to the canopy.

(15) To complete the canopy flatfold, dress the gores and the skirt reinforcement (lower lateral band). Insure that 16 gores are in each gore group (fig B-3).

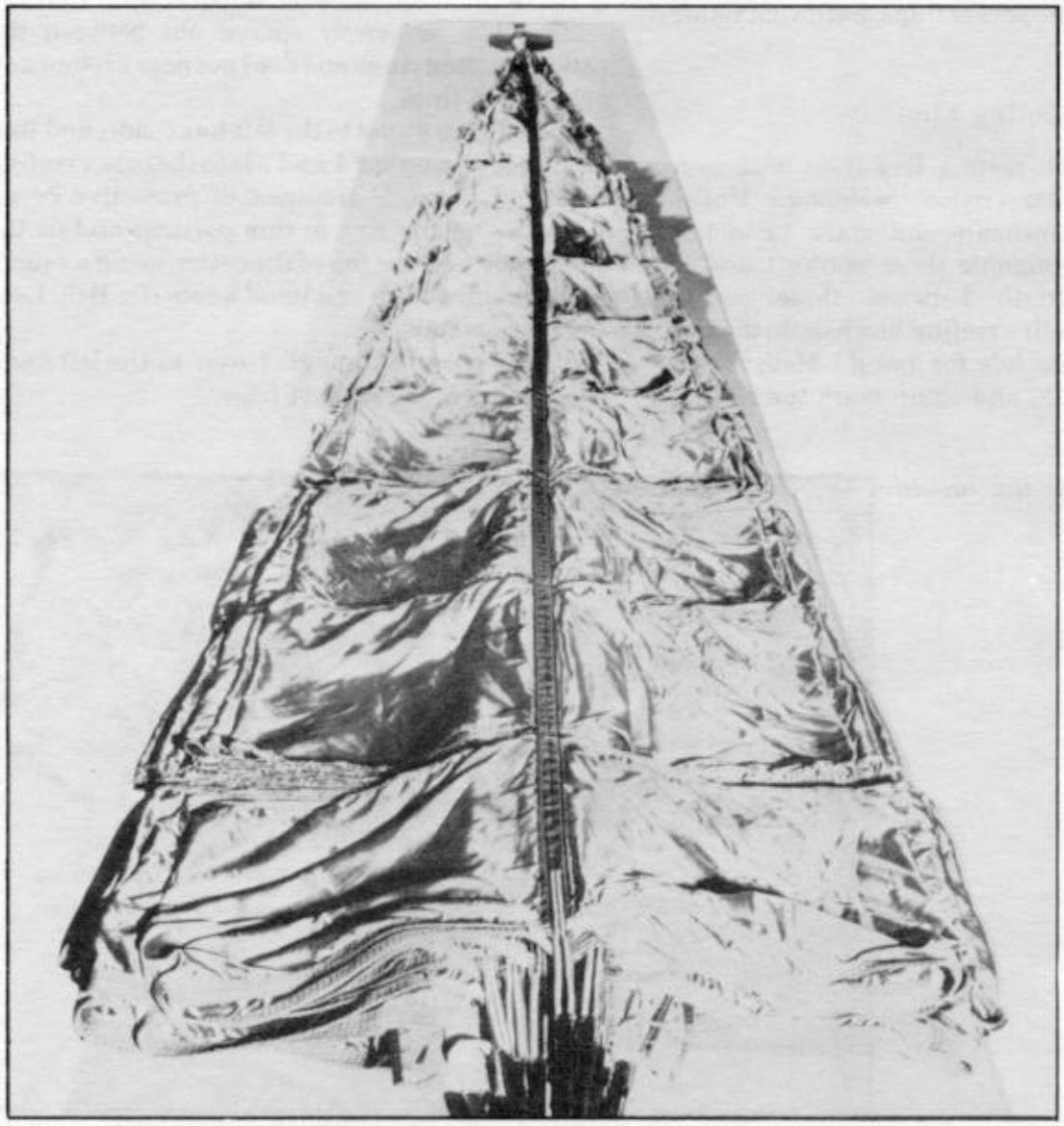


Figure B-3. Canopy flatfolded.

c. Mark the risers at the connector snaps with the numbers assigned below. This precaution is intended to prevent the risers from crossing when the parachute is attached to the container.

Lines 1 through 8, riser 1 (snaps up)

Lines 9 through 16, riser 2 (snaps up)

Lines 17 through 24, riser 3 (snaps down)

Lines 25 through 32, riser 4 (snaps down)

B-4. Installing Reefing Line Cutters

a. An M-21 reefing line cutter must be installed at the pockets provided at lines 8 and 24.

b. Secure the cutter to the bracket with the bolt provided.

c. Loosely lace the pocket flaps, but do not tie off at this point.

B-5. Installing Reefing Line

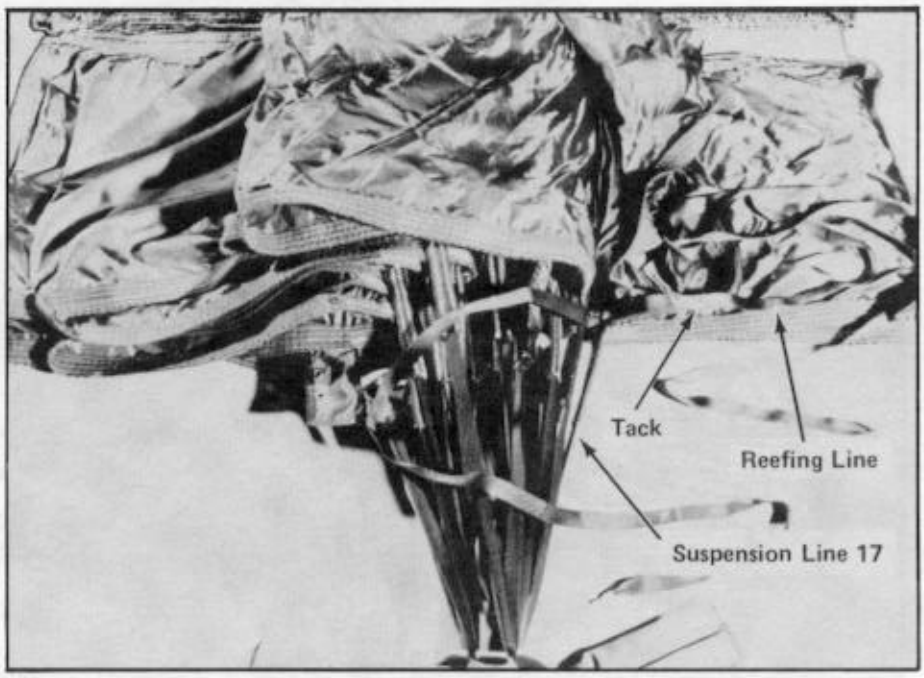
a. Cut a 130-inch reefing line from 9/16-inch 1,500-pound tubular nylon webbing. Under nominal tension, measure and mark 12 inches from each end. Designate these marks 1 and 2. (The 106-inch length between these marks represents the effective reefing line length; the two 12-inch lengths are left for tying.) Measure 27 inches from mark 2, and again mark the reefing line. Designate this as mark 3.

b. Pass the mark 1 end of the reefing line through the canopy reefing ring on suspension line 17 until mark 3 is directly under the ring. Hand-tack the reefing line to the canopy skirt at this point, using one turn of No. 3 cotton thread (also known as 8/4 cotton thread) (fig B-4). Install the mark 1 end of the reefing line (long length) through rings 18 through 32 and including the cutter on line 24 (fig B-5), and place shot bag on gore 32. Continue this process, keeping the same order through rings 1 through 7. Flip these gores to the right side, and place a shot bag on gore 7. Next, rotate the remaining gores over to the right-hand side, and pass the mark 2 end of the line (short length) through rings 16 and 9 as you return these gores to the left-hand side. Make certain that the reefing line is evenly spaced out between the canopy reefing rings and does not pass around any suspension lines.

c. Flip gore 8 over to the left-hand side, and feed reefing lines marked 1 and 2 into the cutter reefing hole and through grommet of protective cover. Keep the reefing line in this position and tie the loose ends over the top of the cutter, using a square knot finished with overhand knots (fig B-6). Lace the pockets loosely.

d. Flip gores 7 through 1 over to the left-hand side, and remove all shot bags.

Figure B-4. Reefing line tacked.



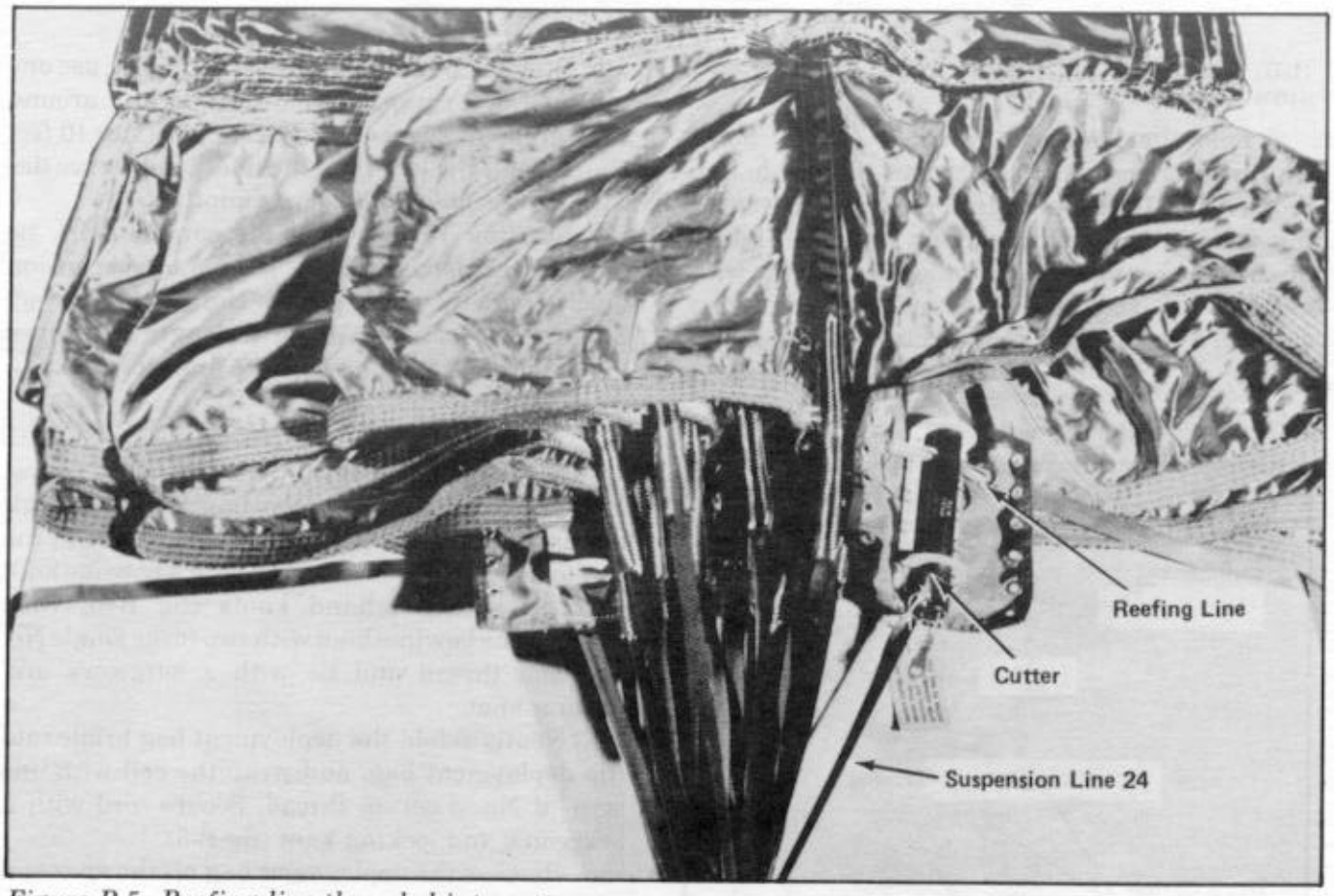


Figure B-5. Reefing line threaded into cutter.

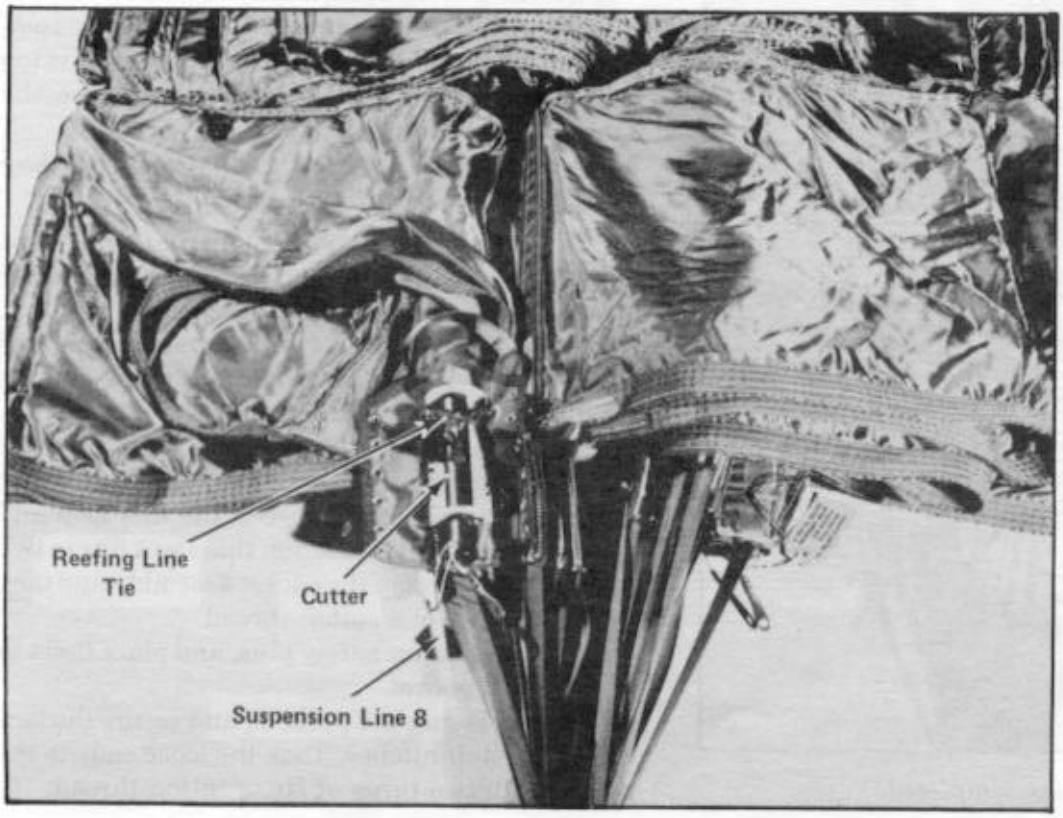


Figure B-6. Reefing line cutter tie.

B-6. Making Longfold, Canopy, and Suspension Line Ties

a. Fold the left-hand group of canopy gores lengthwise over the right-hand group to approximately 16 inches wide at the skirt and extend the folds to the eighth canopy ring. Tie tightly around the center of the first seven sections with one turn No. 3 cotton thread, and secure tie with a surgeon's and locking knot. Remove shot bags (fig B-7).

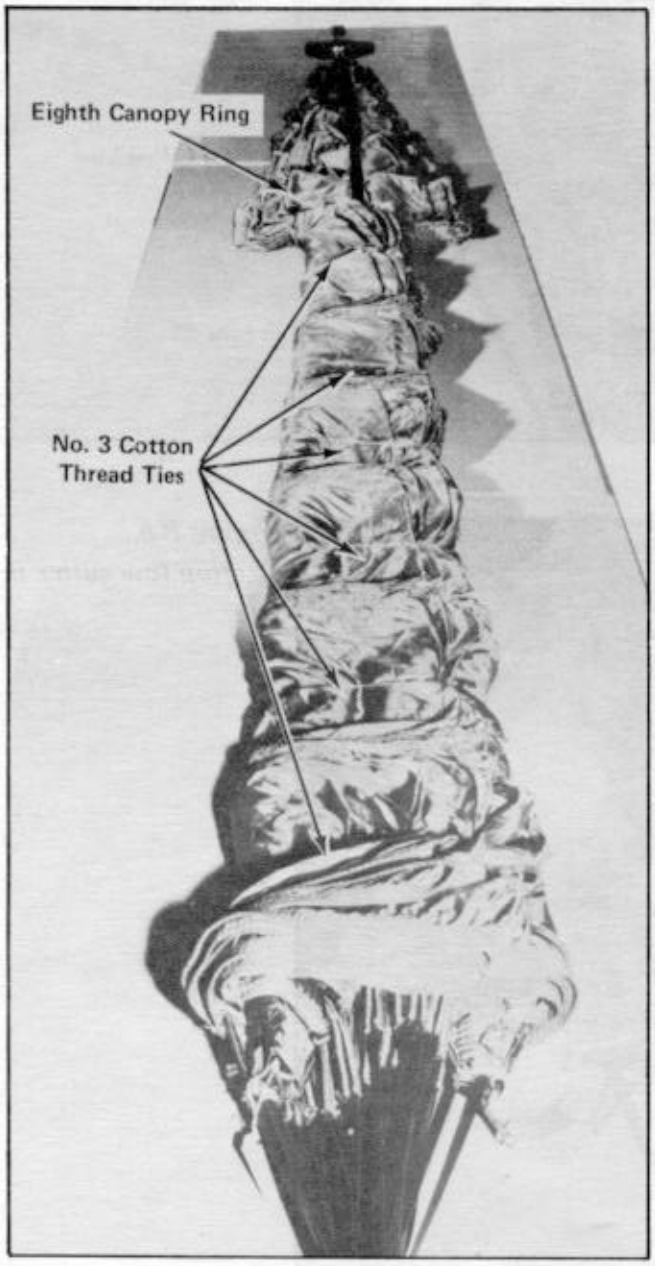


Figure B-7. Canopy ties completed.

b. Starting 5 feet from the canopy skirt, use one turn of No. 3 cotton thread to tie tightly around each group of suspension lines. Space ties 10 feet apart along the length of the lines, and secure ties with a surgeon's and locking knot.

c. Starting 10 feet from the canopy skirt, tie tightly both left and right groups of suspension lines together with one turn of No. 3 cotton thread. Space ties 10 feet apart along the length of the lines and secure ties with a surgeon's and locking knot.

B-7. Stowing Canopy in Deployment Bag

a. Release tension at the apex and guard snaps.

b. Thread the deployment bag bridle through the bridle line loop provided on the inside of the deployment bag, and tie bridle with a bowline knot finished with overhand knots (fig B-8). Tack through the bowline knot with two turns single No. 3 cotton thread and tie with a surgeon's and locking knot.

c. Neatly S-fold the deployment bag bridle into the deployment bag, and wrap the coil with one turn of No. 3 cotton thread. Secure cord with a surgeon's and locking knot (fig B-8).

d. Remove the deployment bag off the apex end of the table.

e. Starting at the apex, neatly accordion-fold the canopy into the deployment bag by firmly compressing each successive stow. If the canopy is too loosely packed, it will be difficult to close the canopy closure flaps (fig B-9).

Note: ***Maintain original position of bag while canopy is being stored.***

f. When the canopy skirt enters the deployment bag, arm the reefing line cutters by tying the cutter arming cable directly to the loops provided on suspension lines 8 and 24 with two turns single of type III nylon cord. Use a square knot and an overhand knot to make the tie.

g. Apply tension to the cutter arming wire by pulling lightly on the slack suspension line (approximately 2 feet) between the line loop and cutter pocket. Neatly position this slack line in two folds over the back of the pocket assembly and tack in place with No. 3 cotton thread.

h. Remove cutter safety pins, and place them in a log record pocket.

i. Finish lacing the pockets, and secure the lace using two half-hitches. Tack the loose ends to the pocket with two turns of No. 3 cotton thread.

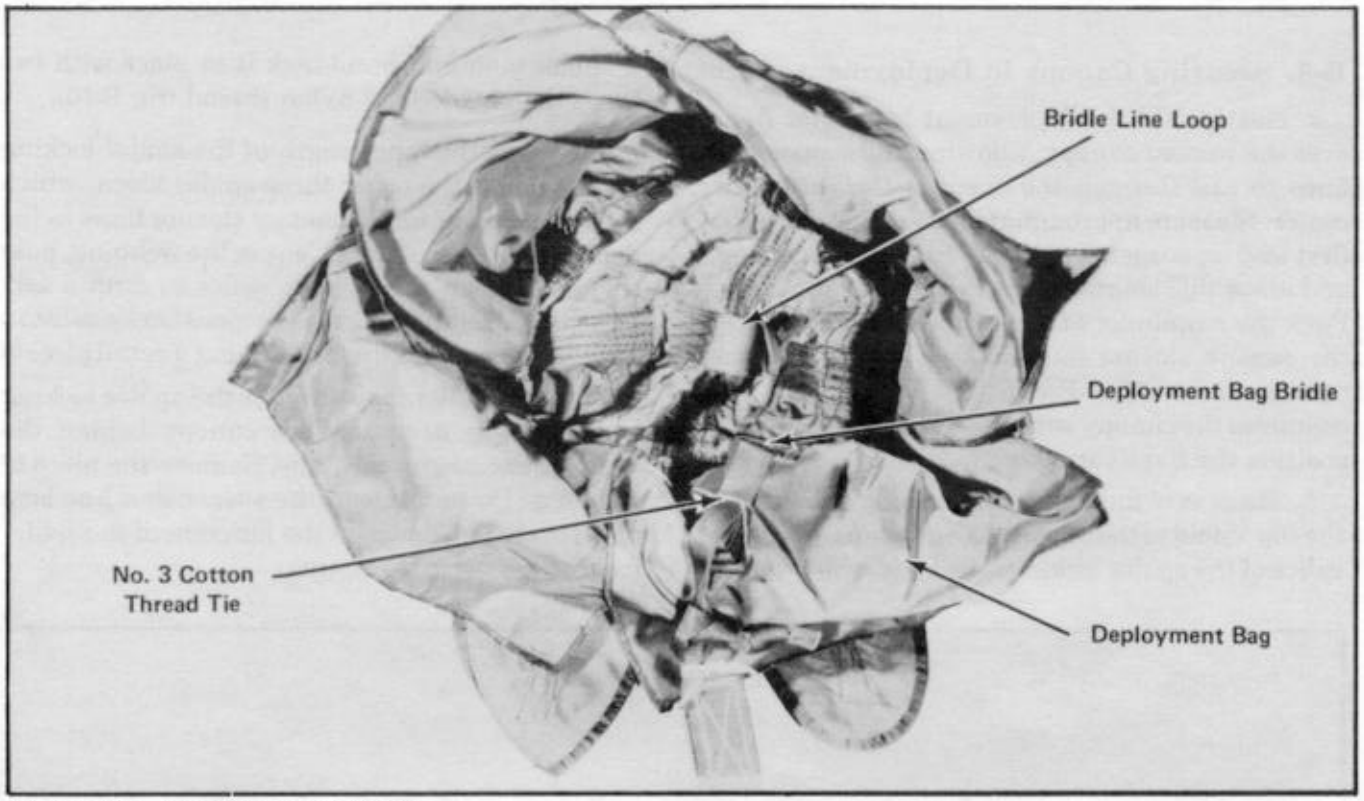


Figure B-8. Bridle line installed.

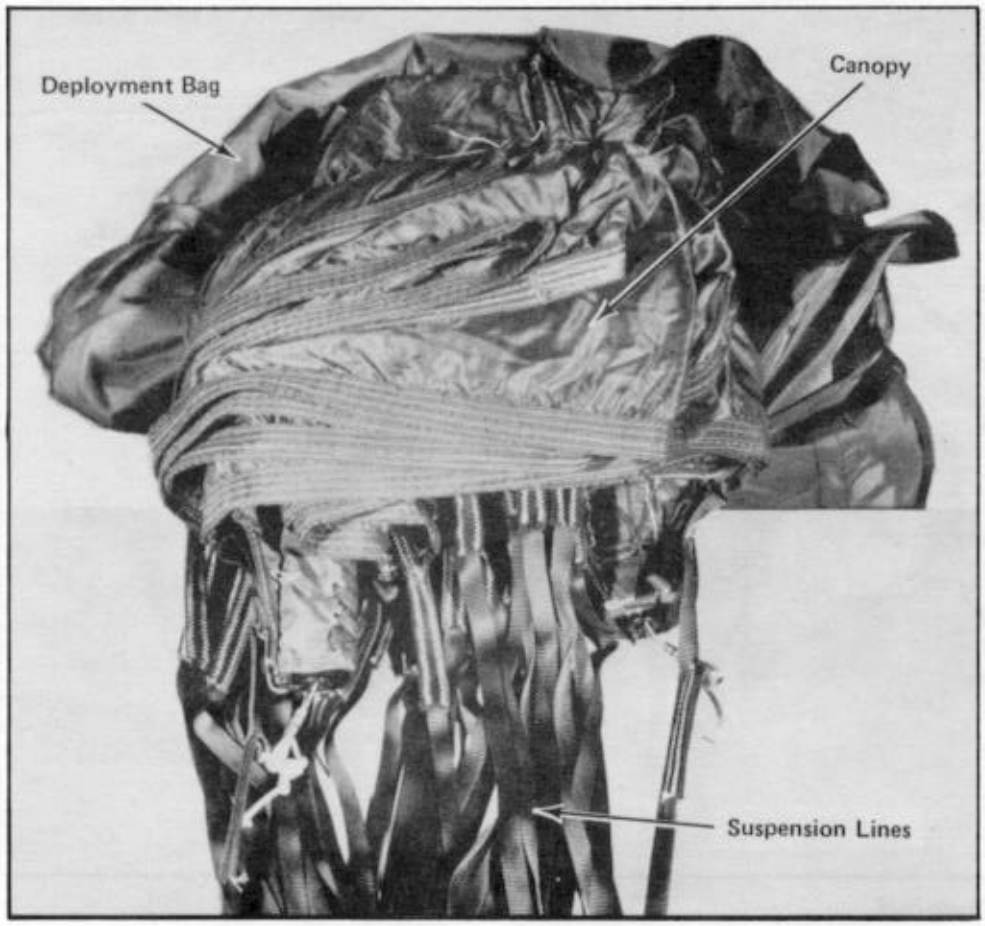


Figure B-9. Stowing canopy.

B-8. Securing Canopy in Deployment Bag

a. Neatly fold the deployment bag inner flaps over the packed canopy, allowing the suspension lines to exit through the opening formed in the center. Measure approximately 24 inches from the first loop on suspension line 27 toward the canopy, and allow this length to exit from the flap opening. Pack the remainder of the suspension lines under the canopy closure flaps to keep from firing the cutters accidently. Press the bag firmly and compress the canopy with the flat of your hands to position the flaps correctly.

b. Make sure the spider locking loop is located at the top V-fold of the canopy closure flaps. Place the splice of the spider locking loop inside the V-fold of a spider loop and hand-tack it in place with two turns double of No. 6 nylon thread (fig B-10).

c. Thread the long length of the spider locking loop through the other three spider loops, which are located next to the canopy closure flaps in the deployment bag. After it leaves the webbing, pass the spider loop through its splice to form a self-adjusting opening. Fold the suspension lines into a loop as shown in figure B-11. Using a small piece of webbing, pull the fold through the spider locking loop opening to secure the canopy behind the deployment bag inner flaps. Remove the piece of webbing. Do not extend the suspension line loop more than 3 inches past the junction of the spider locking loop (fig B-11).

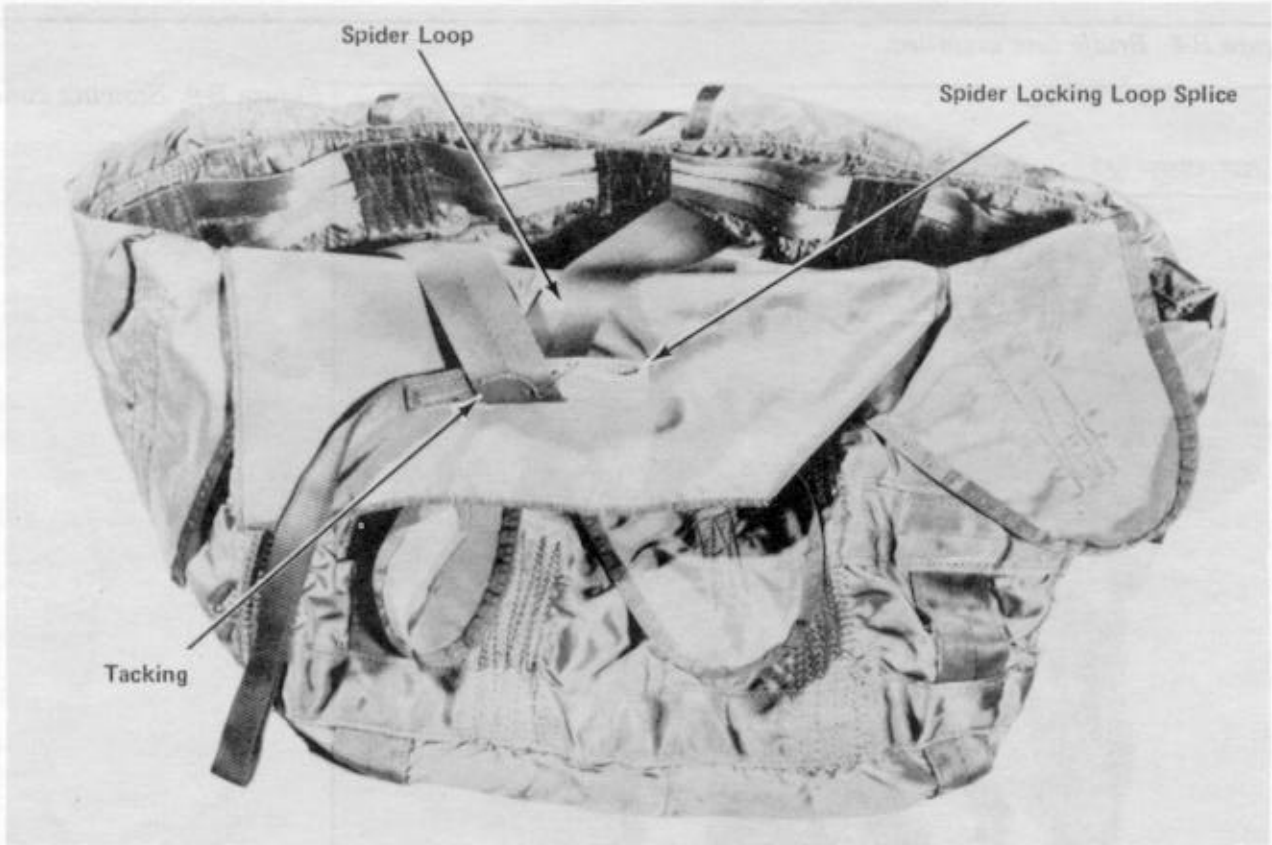


Figure B-10. Locking loop installed.

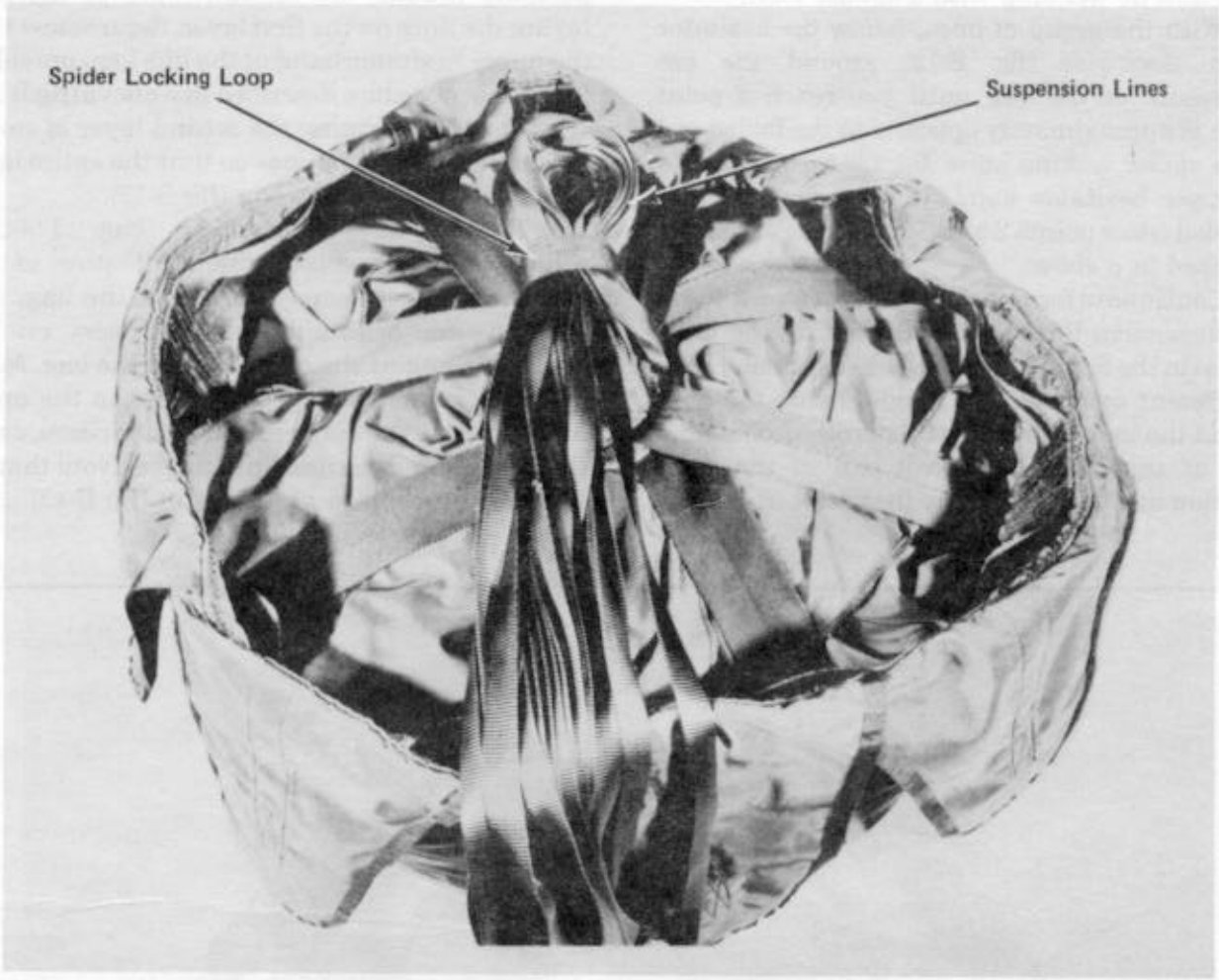


Figure B-11. Locking stow completed.

B-9. Stowing Suspension Lines in Deployment Bag

a. Securing the suspension lines to the hesitator bands, which are provided around the inside diameter of the deployment bag, is the most critical portion of the packing procedure. Extreme care must be taken in the process to insure lines are positioned with no twists or tangles. Loops have been provided on line 27 for the purpose of locating and tying each stow. Find the first stow of suspension lines so that the remaining stows can be packed correctly. A mistake has been made in the packing procedure if any stow does not end in a line loop contacting a hesitator band.

b. Extend the loose end of the suspension lines diametrically across the deployment bag until you make a line loop contact with the lower hesitator band. The distance from this contact to the folded end of the locking stow should measure approximately 15 inches. If the first line loop does not contact the hesitator band at this point, a compensating adjustment must be made on the amount of stack suspension line packed under the canopy closure flaps. To do this, open the spider locking loop and establish the proper relationship by trial and error. Except for the first stow, which is secured between the spider locking loop and a hesitator band tie, a stow is defined as the group of lines between any two hesitator band ties.

c. Use one turn single, 80-pound cotton webbing

at each tie point. Pass this webbing through the line loop, encircle the line group and a hesitator band, and tie webbing with a square knot.

d. With the group of lines, follow the hesitator bands clockwise (fig B-12) around the circumference of the bag until you reach a point which is approximately opposite to the folded end of the spider locking stow. Secure these stows to the lower hesitator band at the two line loops provided (stow points 2 and 3), using the procedure described in c above.

e. Continue to form the first layer of stows. Form the suspension lines so that the entire first layer lies flat in the bag. Make sure that suspension lines of different stows do not tangle. Route the lines around the locking stow in this process. The final stow of this first layer will end in the same direction and parallel to the first stow (fig B-13).

f. Begin the second layer of suspension line stows by following the hesitator bands clockwise partially around the circumference of the bag, laying the lines on the first layer. Secure stow 11 to the upper hesitator band at the line loop provided, using the procedure described in c above (fig B-13).

g. Continue forming the second layer of stows. Form the suspension lines so that the entire layer of stows lies flat in the bag (fig B-13).

h. Rotate the deployment bag 1/4-turn counterclockwise. Place the final stow of the suspension lines across the top of the bag, and position the beginning of the risers on the centerline and at the outer edge of the bag. Make the last tie of the suspension lines to the upper hesitator band at the beginning of the risers, using the procedure described in c above. Note that no line loop is provided at this point (fig B-13).

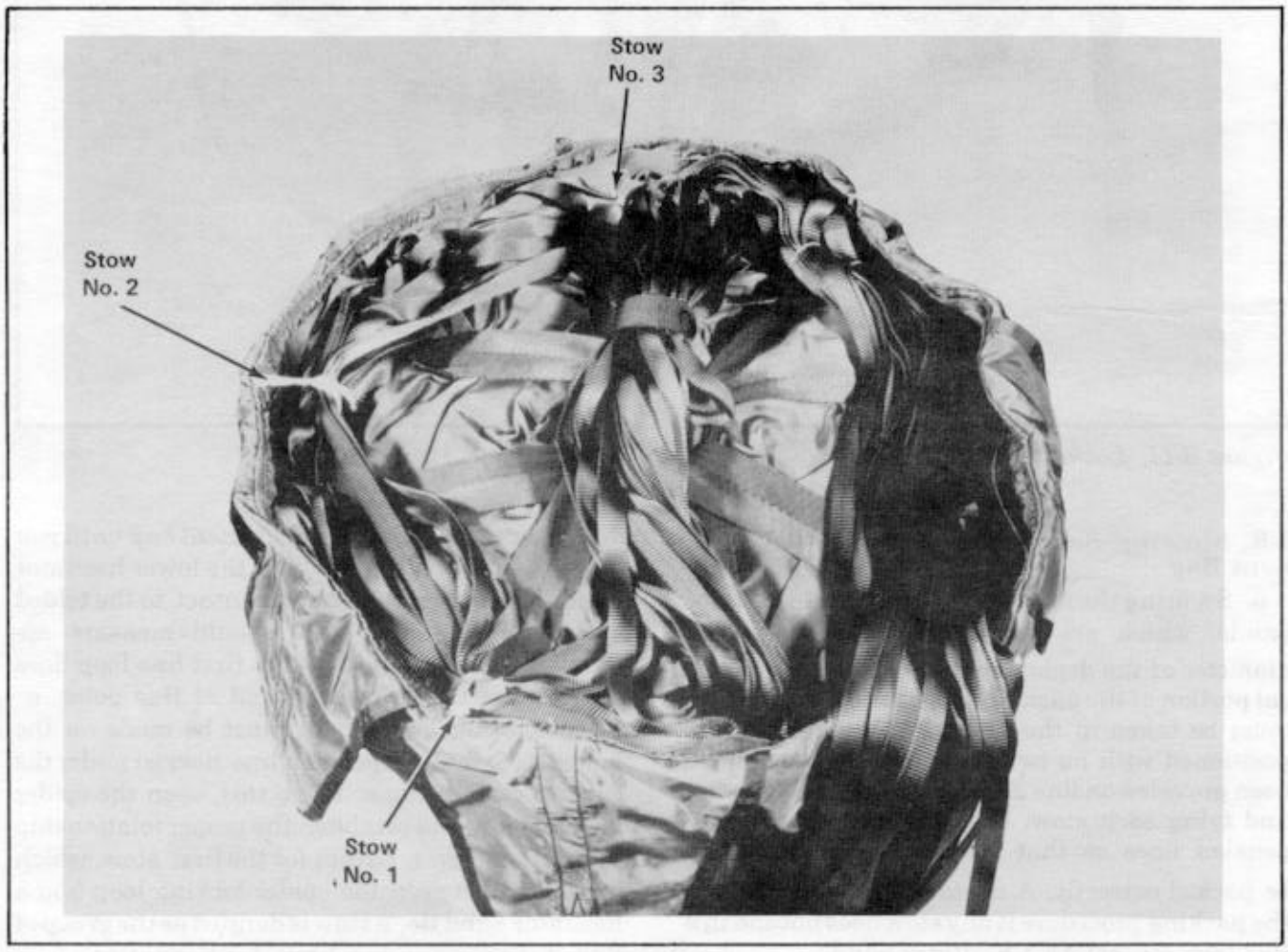


Figure B-12. Suspension line stows No. 1, 2, and 3.

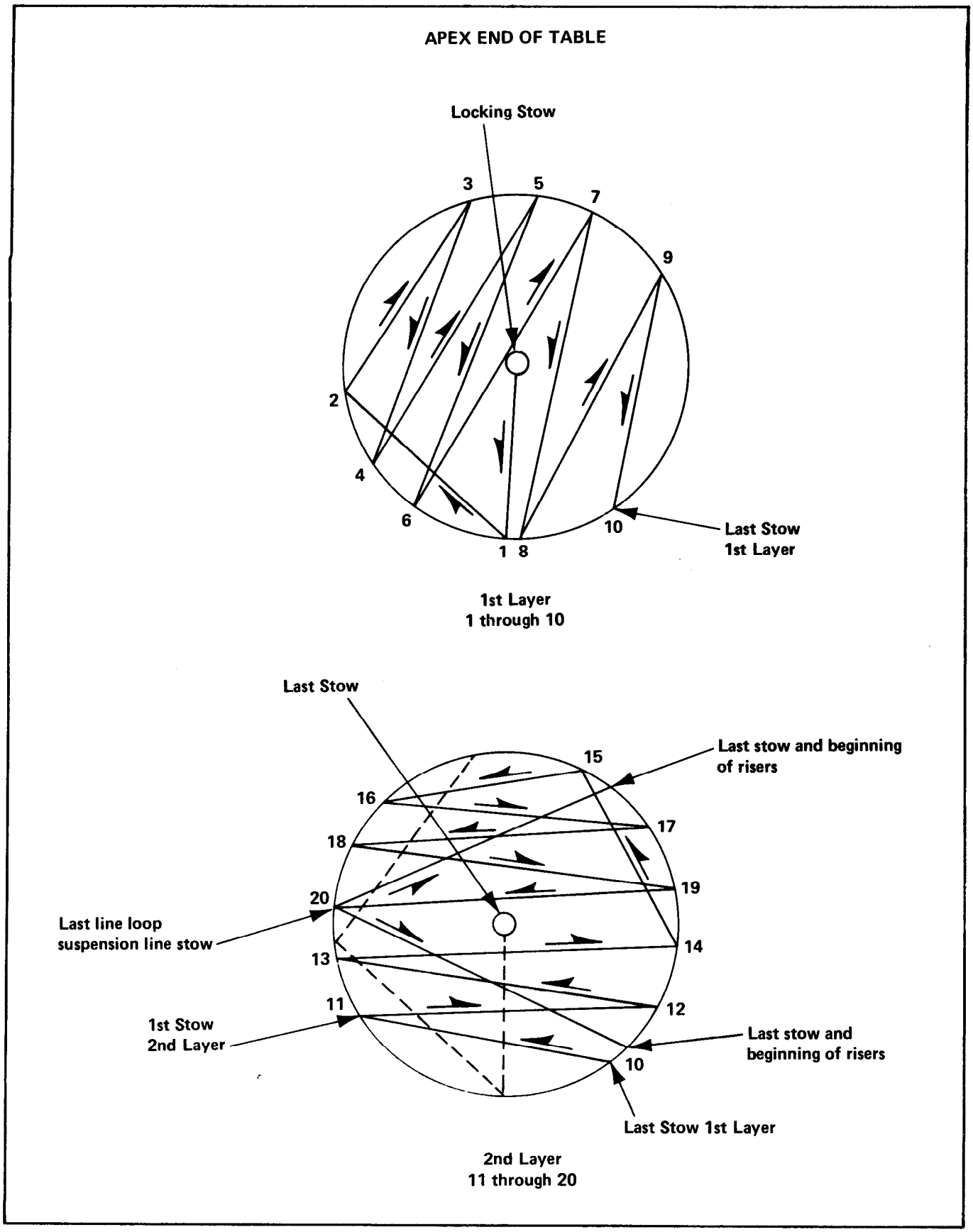


Figure B-13. Suspension line stows.

B-10. Stowing Risers in Deployment Bag

a. Starting approximately 3 feet from the connector snaps, combine risers 1 on top of 2 and 4 on top of 3 into two sets by tying with two turns of No. 3 cotton thread. Space ties 2 feet apart along the length of the risers.

b. Approximately 3 feet from the connector snaps, combine both sets of risers 1 and 2 on top of 4 and 3 into a single group by tying with two turns of No. 3 cotton thread.

c. Neatly distribute the remaining length of risers on opposite sides of the bag centerline, and secure them to the upper hesitator band in the same manner as the suspension lines. Each set of risers is to be folded twice and secured in three places (fig B-14).

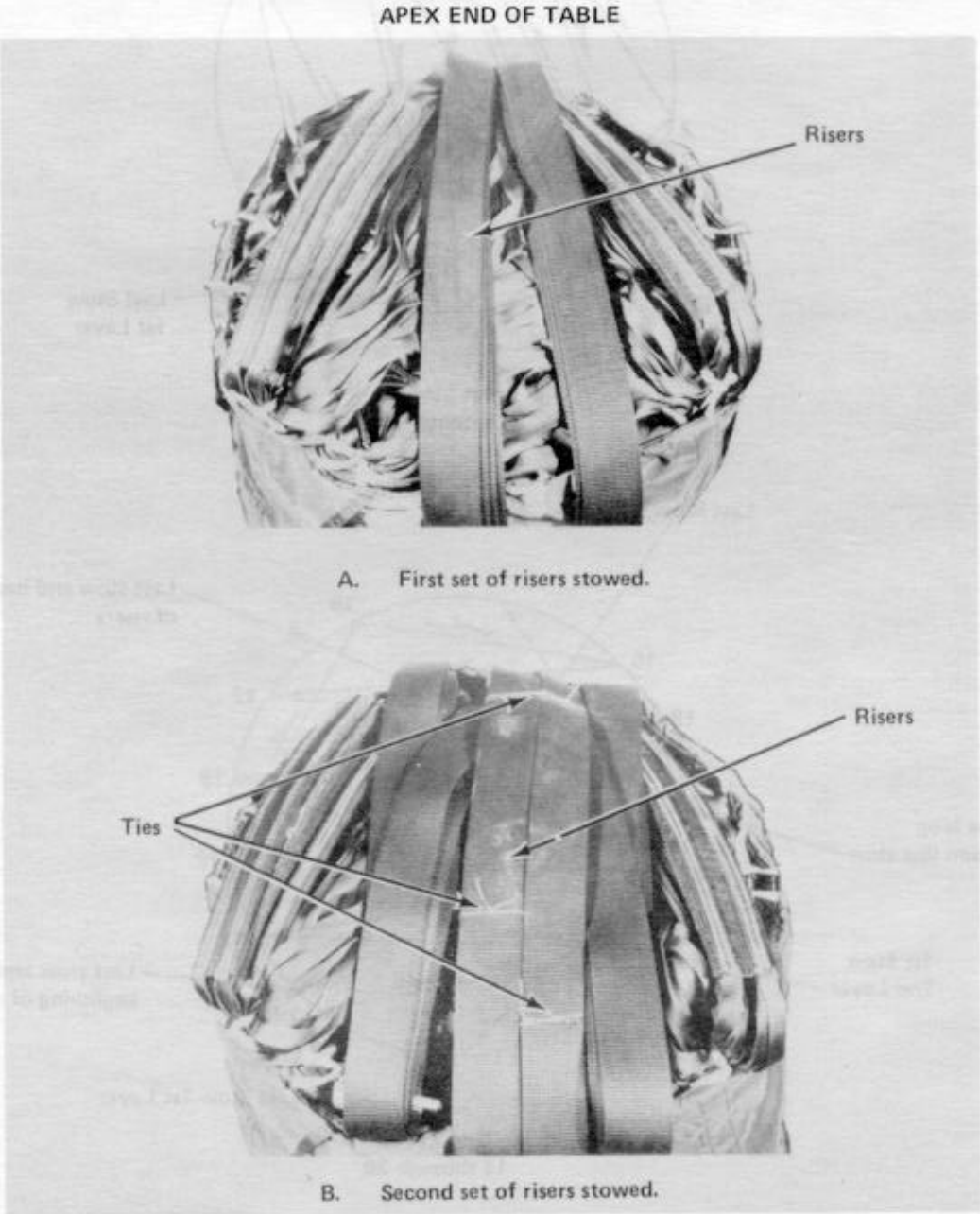


Figure B-14. Riser stowing completed.

B-11. Closing Deployment Bag

a. Again fold the risers to the center of the bag, allowing approximately 2 feet to extend out the opening at the center of the outer flaps.

b. Thread a length of 80-pound cotton webbing through the loops on the outer flaps, and close the bag by drawing the flaps up as tightly as possible around the exiting risers. Secure with a surgeon's and locking knot (fig B-15).

c. Position the four connector snaps at the center of the bag, and tie them together with 80-pound cotton webbing (fig B-16).

d. Tie each folded riser to the reinforcing webbing on the side of the bag, by tacking through the reinforcing webbing with single No. 3 cotton thread and passing the free running ends around the risers and tying with a surgeon's and locking knot (fig B-16).

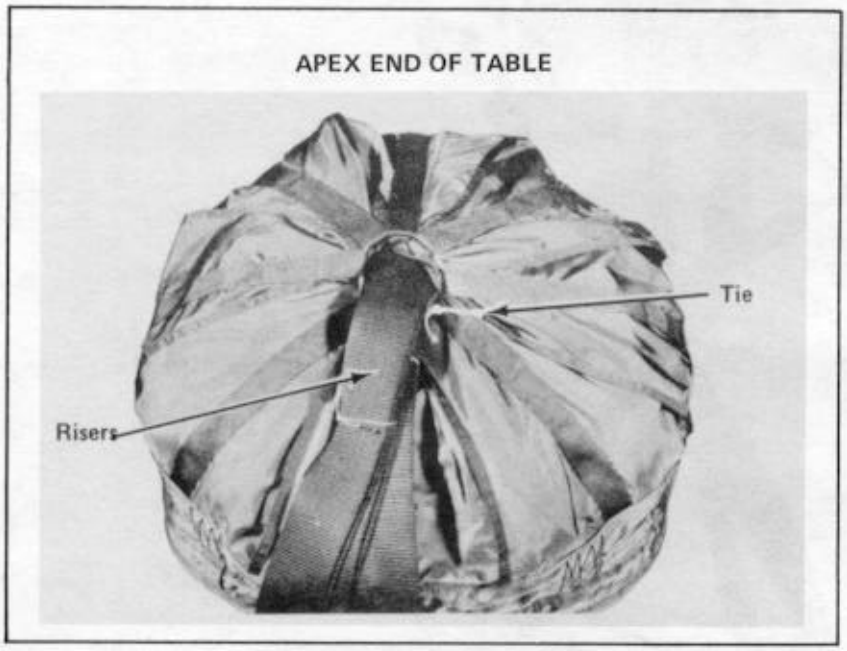


Figure B-15. Deployment bag closure.

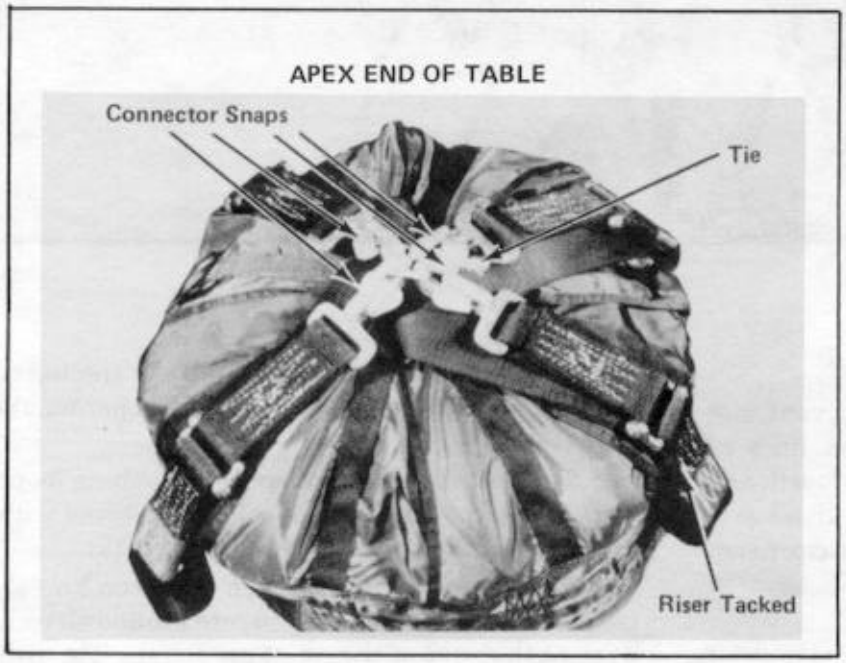


Figure B-16. Connector snaps tied and risers tacked.

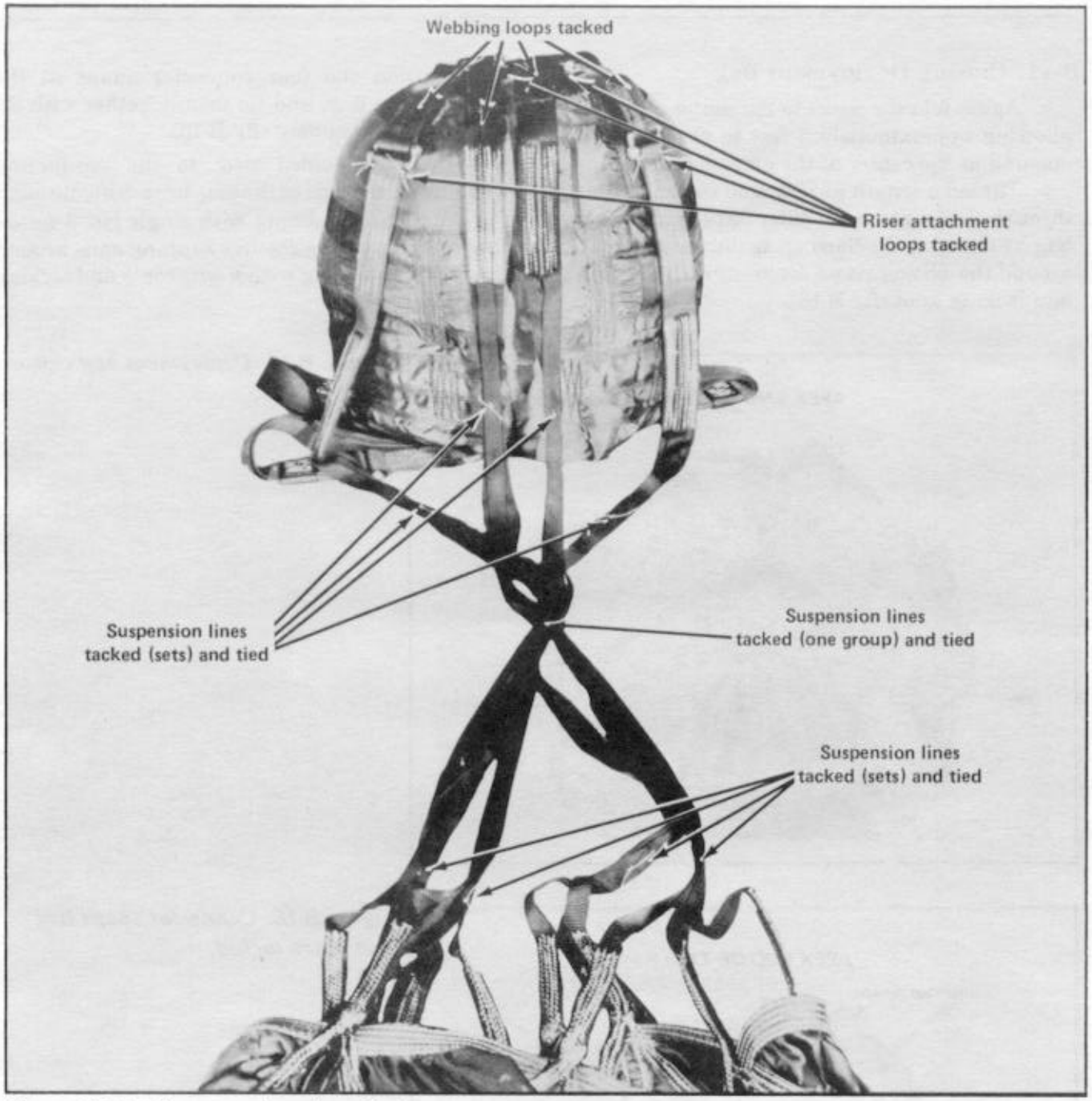


Figure B-17. Pilot parachute installed.

B-12. Installing Pilot Parachute

a. Lay out the pilot parachute canopy, vent, and suspension lines. Combine suspension lines of each riser by tacking in two places (one-fourth and three-fourths of the length). Combine these sets into one group by tacking through all suspension lines at midlength. Use single ply of No. 3 cotton thread for all tacks (fig B-17).

b. Attach the pilot parachute riser connector links to the webbing loops provided on the top of the deployment bag (opposite to main parachute exit) (fig B-17).

c. Tack all riser attachment and webbing loops tightly against the connector links by tying with two turns of No. 3 cotton thread (fig B-17).

d. Pass one end of a 48-inch (between knots) lanyard of type II,400-lb nylon cord around all vent lines at the vent of the pilot parachute. Tie with

a bowline knot finished with an overhand knot.

e. While lowering the canopy over the deployment bag, spread the risers over the top of the bag and tack each riser in place with one turn of No. 3 cotton thread (fig B-18).

Note: ***Make sure that no canopy material is tacked.***

f. While tucking the skirt up under the canopy, shape it to fit the contour of the bag. Pass a length of No. 3 cotton thread diametrically over the top of the canopy and tack to both sides of the bag (fig B-19). Repeat in four places 90 degrees apart.

g. Coil the lanyard and tuck under the vent lines (fig B-19).

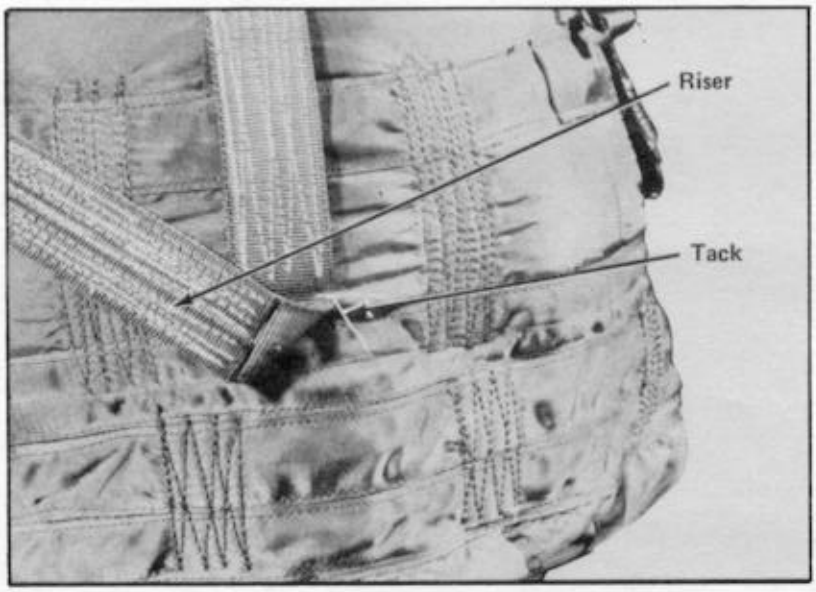
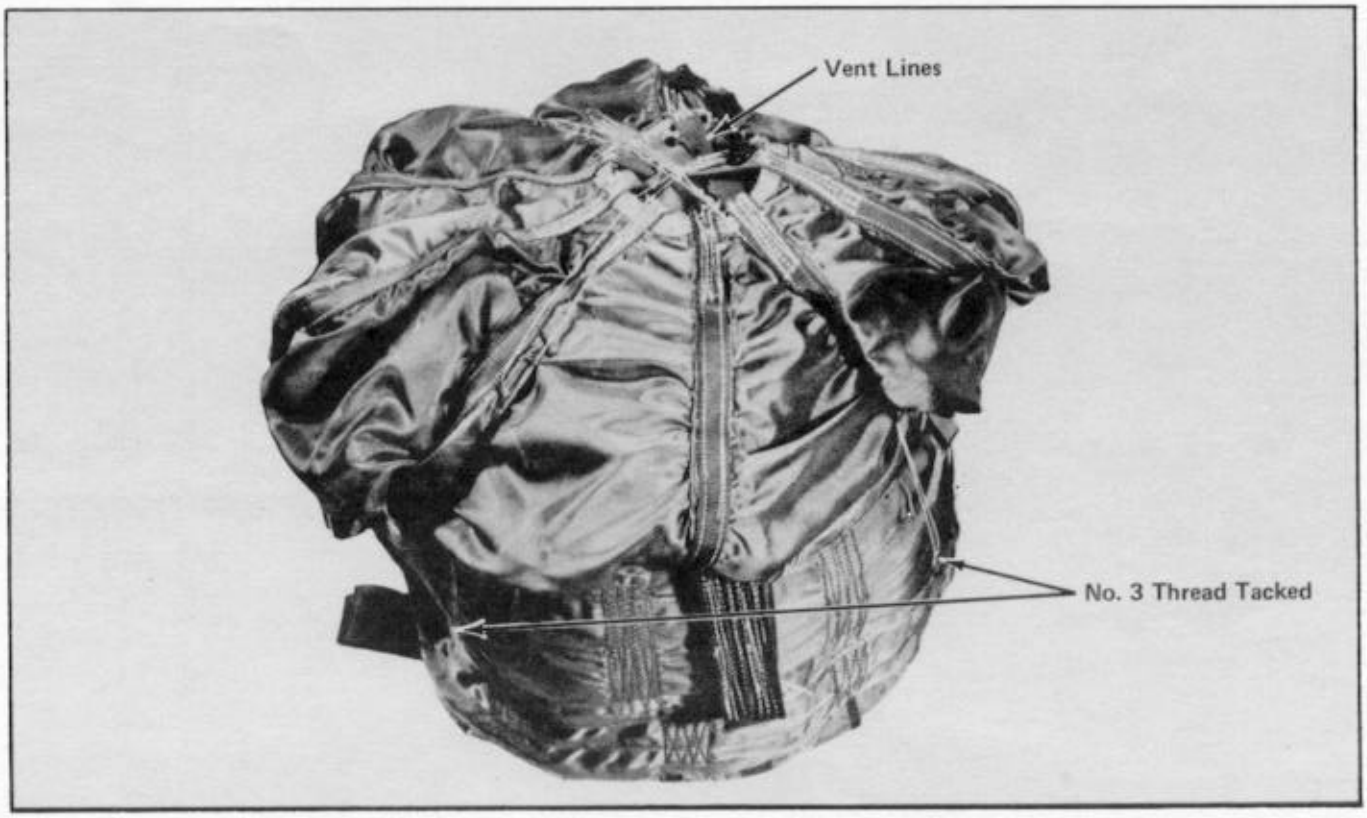


Figure B-18 (left). Pilot parachute risers tacked. Figure B-19 (below). Pilot parachute stowed and tacked.



APPENDIX C

MAINTENANCE OF PCU-8/A PARACHUTE

C-1. Basic Components

The PCU-8/A parachute system consists of the following basic components:

a. Canopy assembly (conical ringslot, 34-foot diameter).

b. Deployment bag bridle.

c. Deployment bag assembly.

d. Pilot parachute assembly.

e. Tail cone lanyard.

f. Web assembly.

C-2. Repairing Canopy

a. Inspection. Inspect the canopy in accordance with procedures in TM 10-1670-201-23.

b. Service. Service the canopy by cleaning the all-fabric components of the canopy as prescribed in TM 10-1670-201-23. In addition, remove burns, rough spots, or corrosion from metal items using a crocus cloth or metal file.

c. Repair. Make repairs as follows:

CAUTION. When repairing any part of the canopy which entails cutting of stitching or removal of an original part by cutting, insure adjacent canopy materials are not damaged during the cutting process.

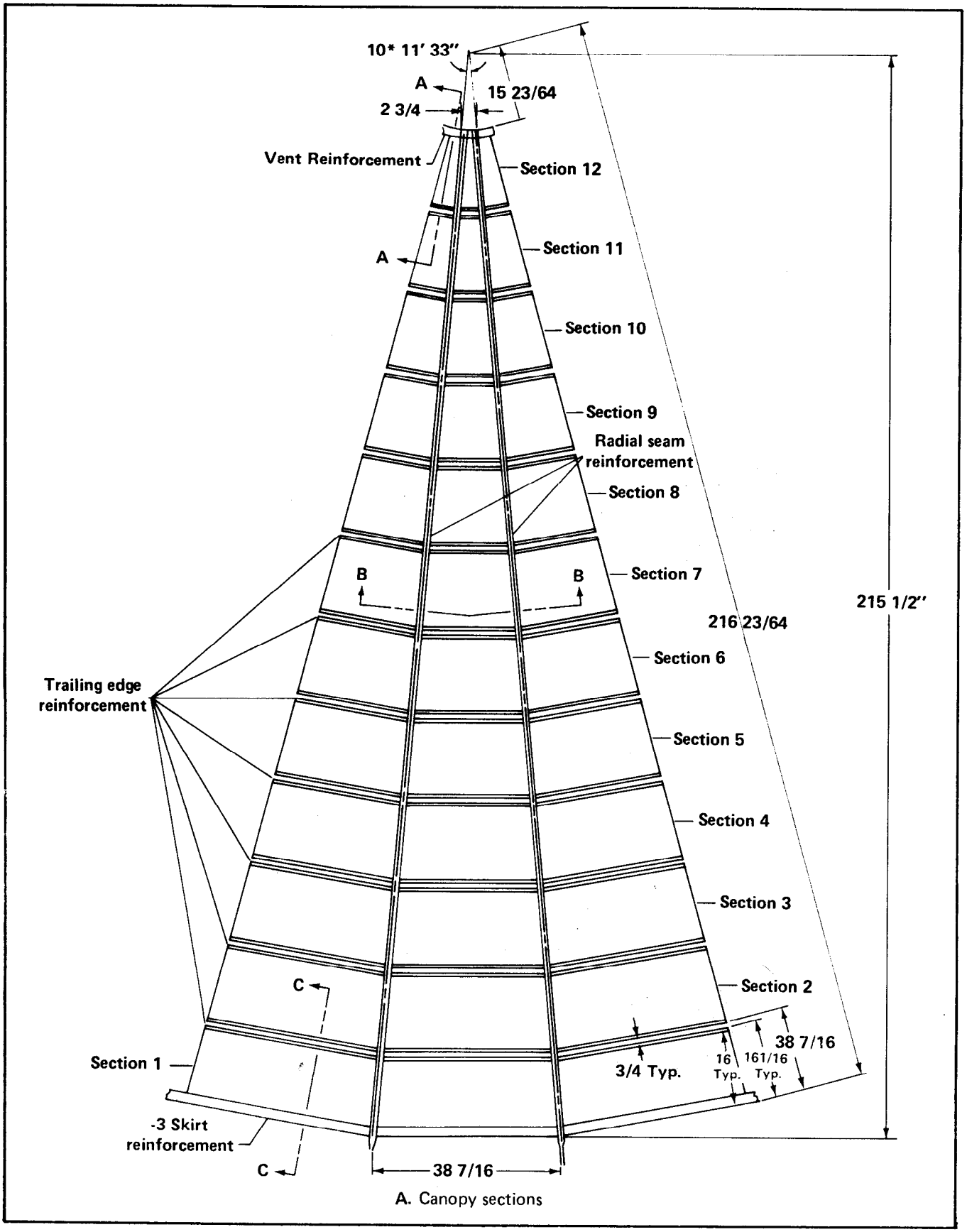
(1) Restitching. Restitch broken or loose stitching according to original construction details and TM 10-1670-201-23. Use size E nylon thread and make 7 to 11 stitches per inch (fig C-1).

(2) Restenciling. As required, restencil identification markings on the information data block using procedures outlined in TM 10-1670-201-23.

(3) Darning. Darn a hole or tear which does not exceed 1 inch in length or diameter using the procedures in TM 10-1670-201-23 and size E nylon thread. Each canopy section may be darned according to TM 10-1670-201-23.

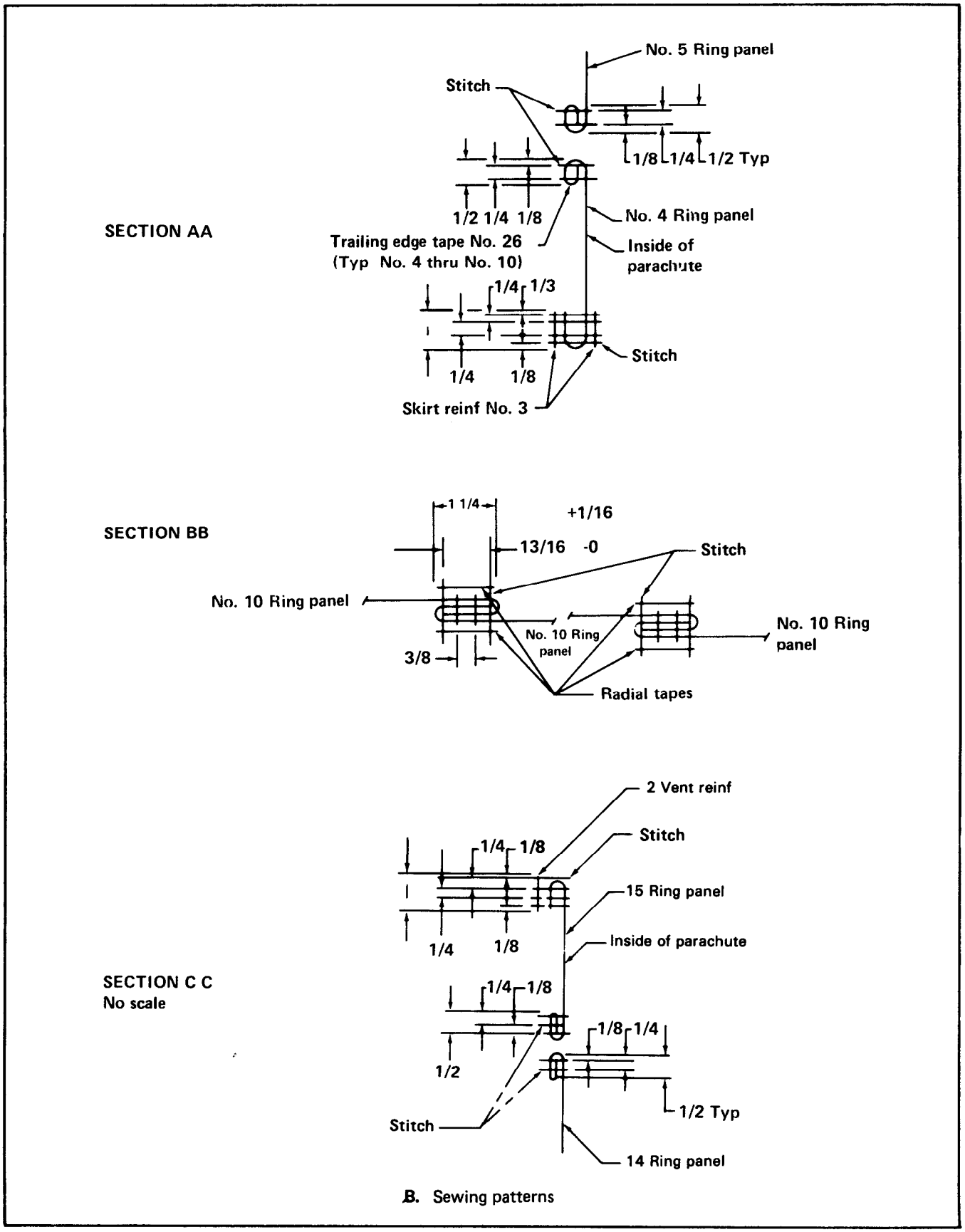
(4) Patching. Patch a hole or tear that exceeds 1 inch but does not exceed 6 inches in length or diameter according to procedures in TM 10-1670-201-23. Use 3.5-oz nylon cloth for sections 1 through 7 and 4.75-oz. nylon cloth for sections 8 through 12. Use size E nylon thread and a light-duty sewing machine and make 7 to 11 stitches per inch.

(5) Replacement. Replace gore section as outlined in TM 10-1670-201-23 using material as in (4) above. Use size E nylon thread and a light-duty sewing machine and make 7 to 11 stitches per inch (fig C-2).



A. Canopy sections

Figure C-1 (A). Typical canopy sewing patterns.



B. Sewing patterns

Figure C-1 (B). Typical canopy sewing patterns.

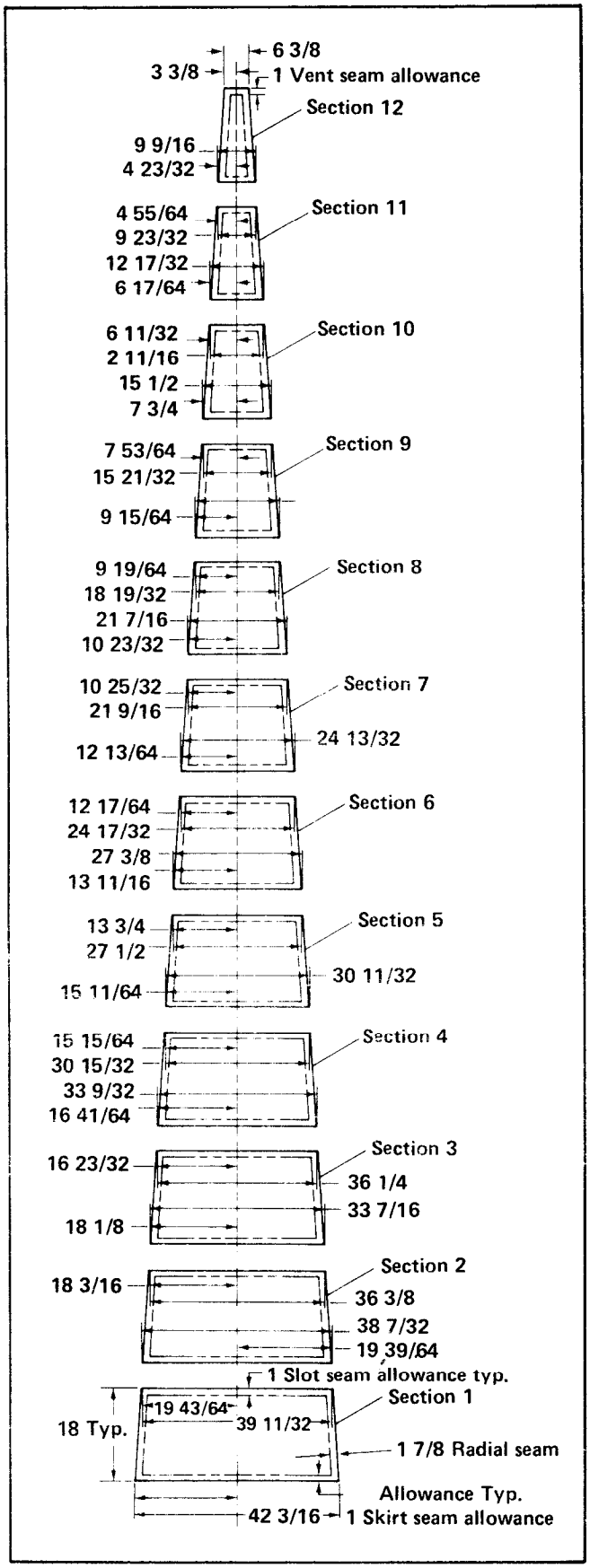


Figure C-2. Canopy flat patterns.

C-3. Repairing the Suspension Lines

a. Splicing. Cut a length of 9/16-inch tubular nylon webbing long enough to extend 6 inches on each side of the damaged area. (Insure that the repaired line will be the same length as original line.)

b. Searing. Sear the ends of the webbing. Position the webbing length over the damaged area and stitch in place. Use size FF nylon thread and a medium duty sewing machine and make 5 to 8 stitches per inch (fig C-3).

c. Replacing. Replace suspension lines as follows:

(1) Remove the stitching securing the suspension line to the riser at the lower end and stitching on the skirt reinforcements at the upper end.

CAUTION. Do not damage adjacent fabrics when cutting and removing stitching.

(2) Cut a length of new suspension line from 9/16-inch tubular nylon webbing to the dimension shown in figure C-4. Sear the end of the webbing.

(3) Attach new line to the riser and canopy as illustrated in figure C-4. Use FF nylon thread and a medium-duty sewing machine, and make 5 to 8 stitches per inch.

C-4. Repairing the Vent Lines

a. Splicing. Splice the vent lines in the same manner as prescribed for the suspension lines.

b. Replacing. Replace vent lines as follows:

(1) Remove the stitching securing the vent line to the radial seam and vent reinforcement. Note positioning of the vent line across the vent as it is removed.

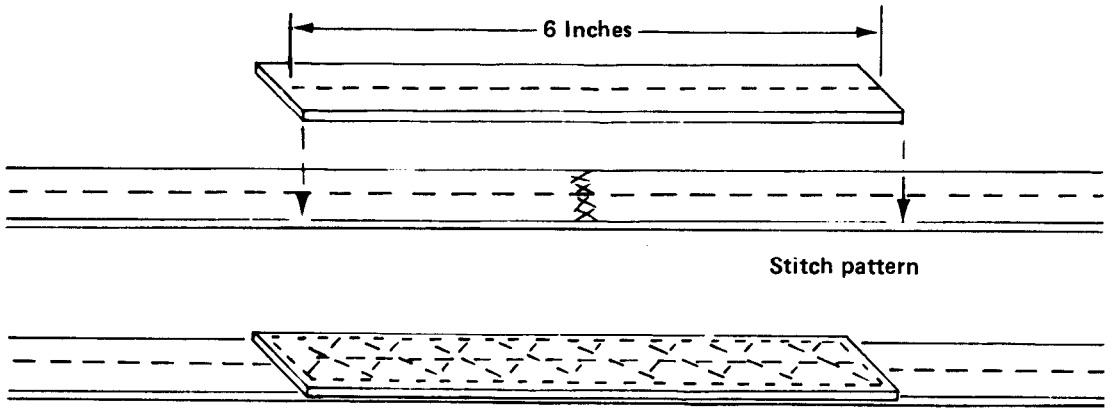
(2) Cut a new 38-inch long vent line from 9/16-inch tubular nylon webbing. Sear the ends of the webbing.

(3) Position new vent line across the vent identically to the one removed, and aline the ends as in figure C-5.

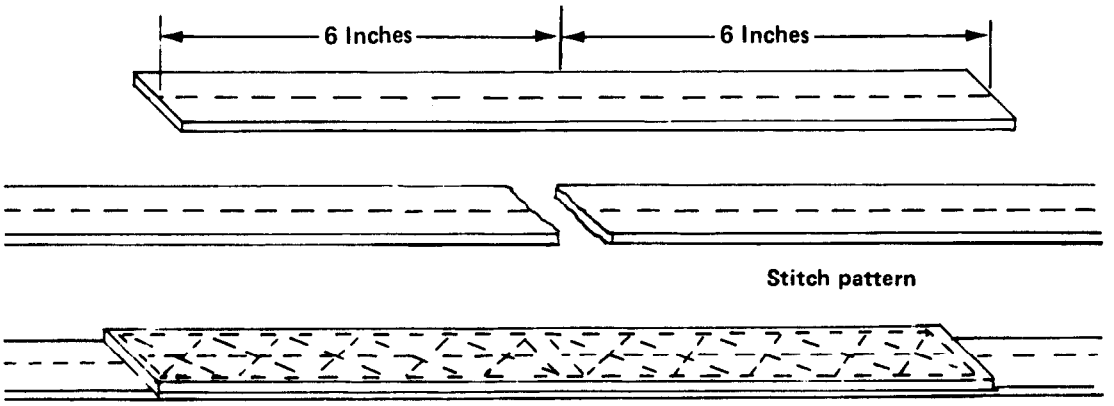
(4) Sew the vent line to the radial seam reinforcement with ticket No. 3 nylon thread. Use 5 to 8 stitches per inch applied in a two-point W-W stitch formation with a heavy-duty sewing machine.

C-5. Repairing the Radial Seam Reinforcement

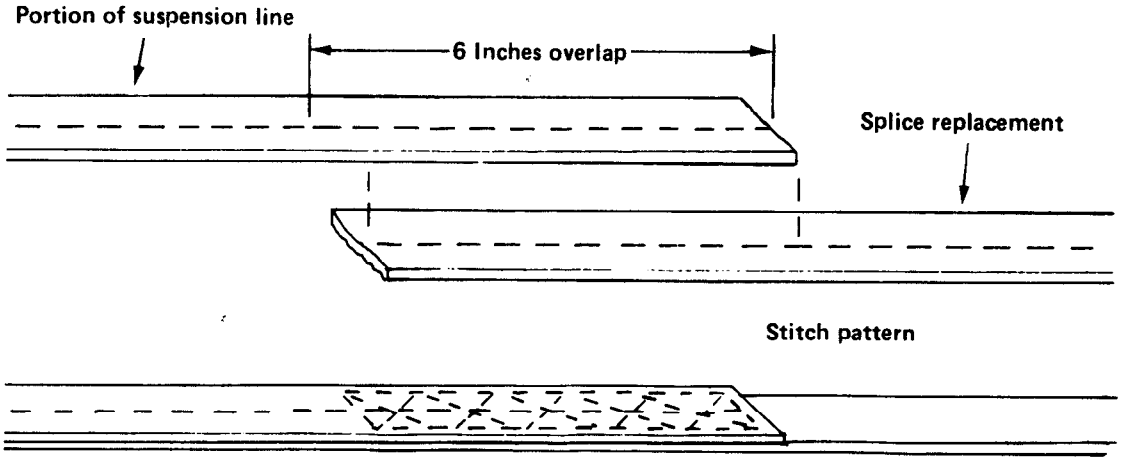
a. Cut a length of 1 1/4-inch nylon tape long



A. Reinforcing damaged suspension line.



B. Repairing broken suspension line.



C. Splicing missing section of suspension line.

Figure C-3. Repairing suspension line.

enough to extend 6 inches on each side of the damaged area. Sear the ends of the webbing.

b. Turn webbing under 1/2 inch on each end and place it over the damaged area. Sew in place as shown in figure C-6. Use size E nylon thread and a light-duty sewing machine, and make 7 to 11 stitches per inch.

C-6. Repairing the Skirt and Vent Reinforcements

Repair the vent and skirt reinforcements in the same manner as given in paragraph C-5. Use 1-inch tubular webbing for the vent reinforcement and 1-inch nylon tape for the skirt reinforcement.

C-7. Repairing the Risers

The risers may be repaired in the same manner as that prescribed for suspension lines. Splice risers with type XIII nylon webbing. Use ticket No. 6 nylon thread and a heavy-duty sewing machine, and make 5 to 8 stitches per inch.

C-8. Replacing the Reefing Ring and Reefing Ring Attaching Band

a. Cut and remove the stitching securing the reefing ring attaching band to the skirt reinforcement, suspension line, and radial seam reinforcement.

CAUTION. Do not damage adjacent fabrics when cutting and removing stitching.

b. Cut a 6 1/4-inch length of 9/16-inch wide

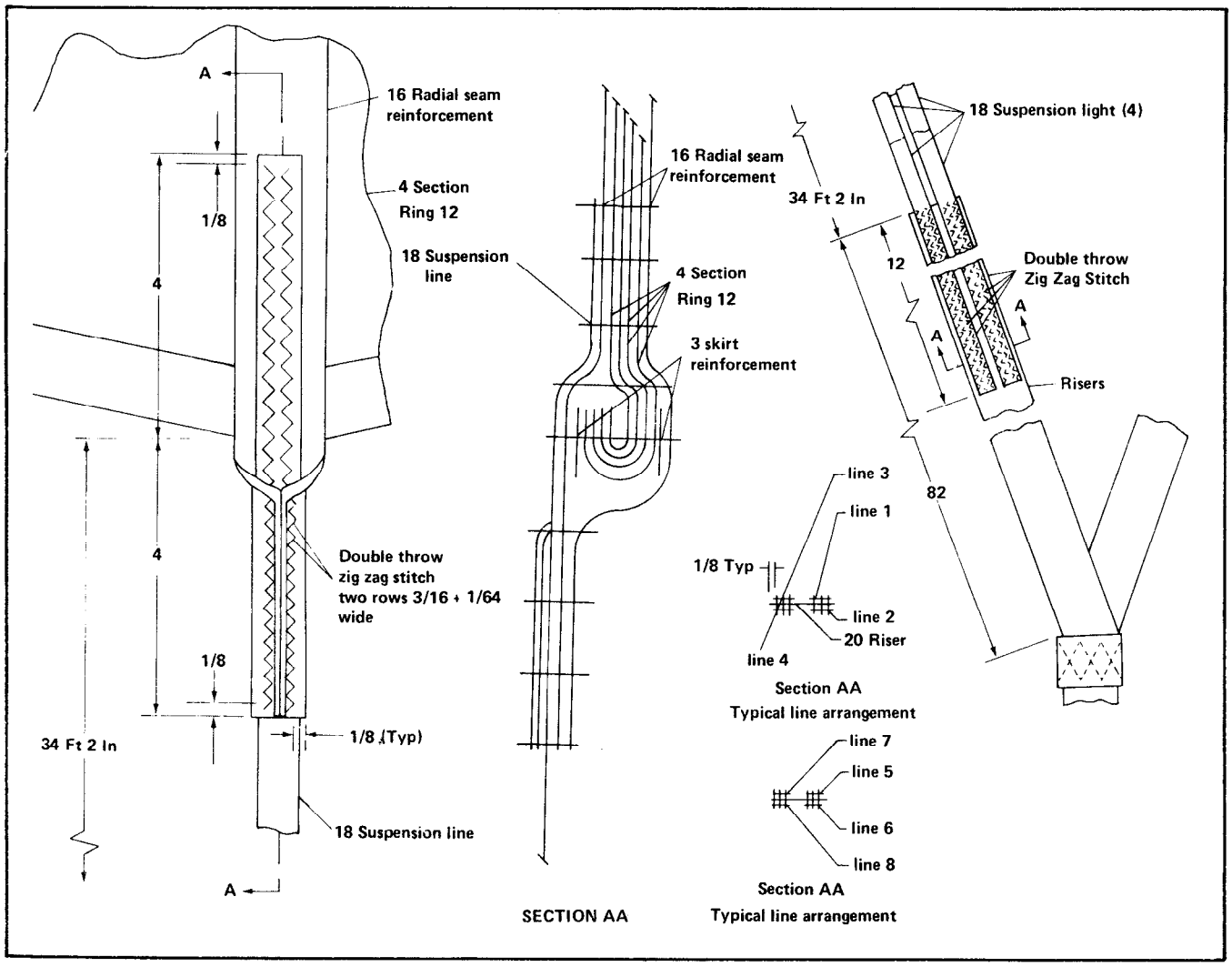


Figure C-4. Replacing suspension line.

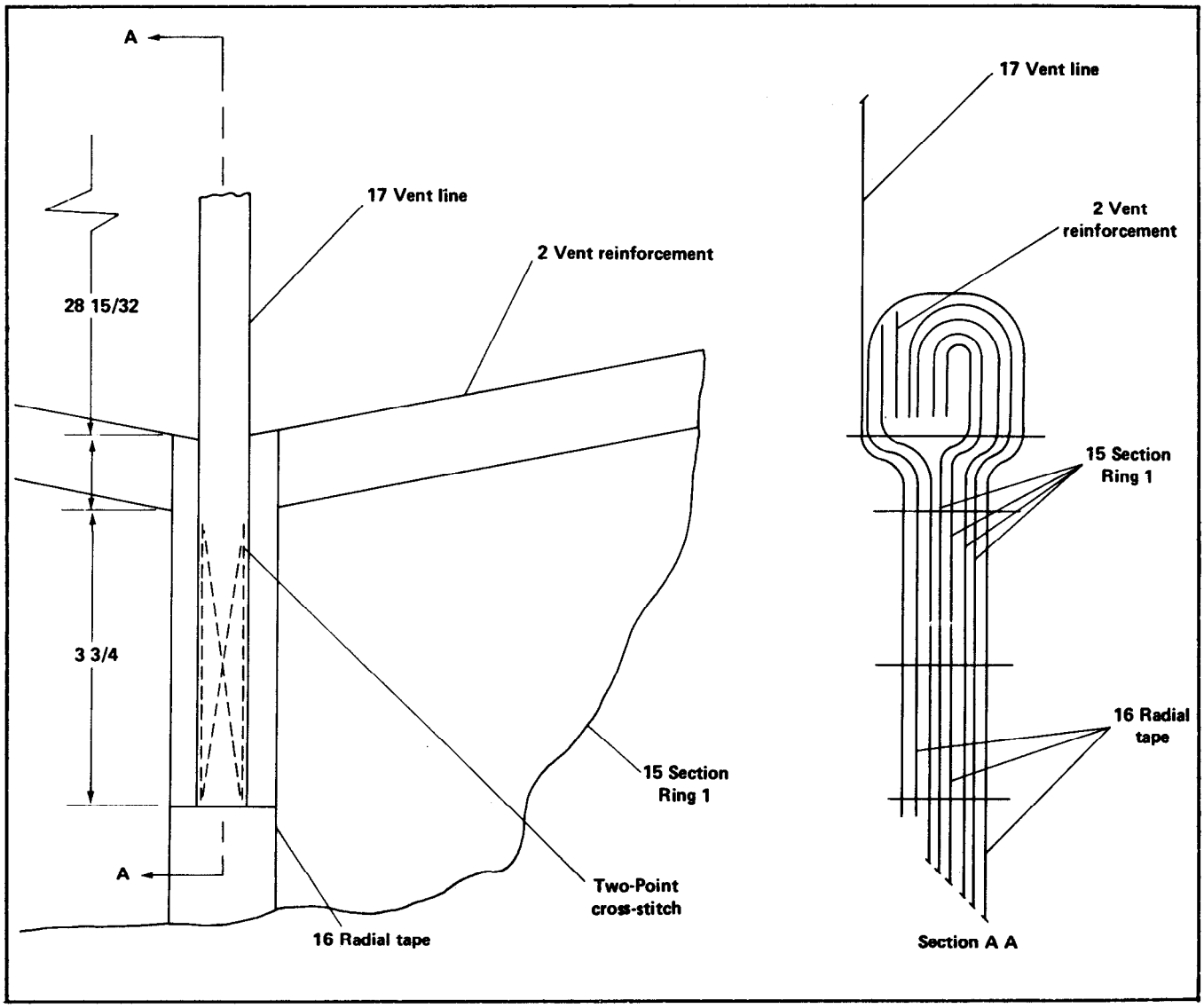


Figure C-5. Replacing vent line.

nylon webbing. Sear ends of webbing.

c. Install new ring and attach ring band outlined in figure C-7. Use size No. 3 nylon thread and a medium-duty sewing machine and make 5 to 8 stitches per inch.

C-9. Replacing Suspension Line Tie Loops

Replace damaged tie loop with a 9 1/2-inch length of 9/16-inch wide nylon webbing using the method of attachment as outlined in figure C-8.

C-10. Replacing the Bridle Loop

Replace a damaged bridle loop with a 24-inch length of type XIII nylon webbing. Overlap the webbing 4 inches and stitch with size No. 6 nylon thread using 4 to 6 stitches per inch. Use a box X pattern through two thicknesses only. Use a heavy-duty sewing machine.

C-11. Repairing or Replacing the Pocket Assembly

Darn small holes or tears in the pocket assembly (fig C-9). If the assembly is damaged beyond repair, replace it with a serviceable item from stock.

C-12. Repairing the Deployment Bag

The same general techniques used in repairing the canopy may be adapted for use in repairing the deployment bag. Make all deployment bag stitching with nylon thread.

(C-12. continued on page C-11).

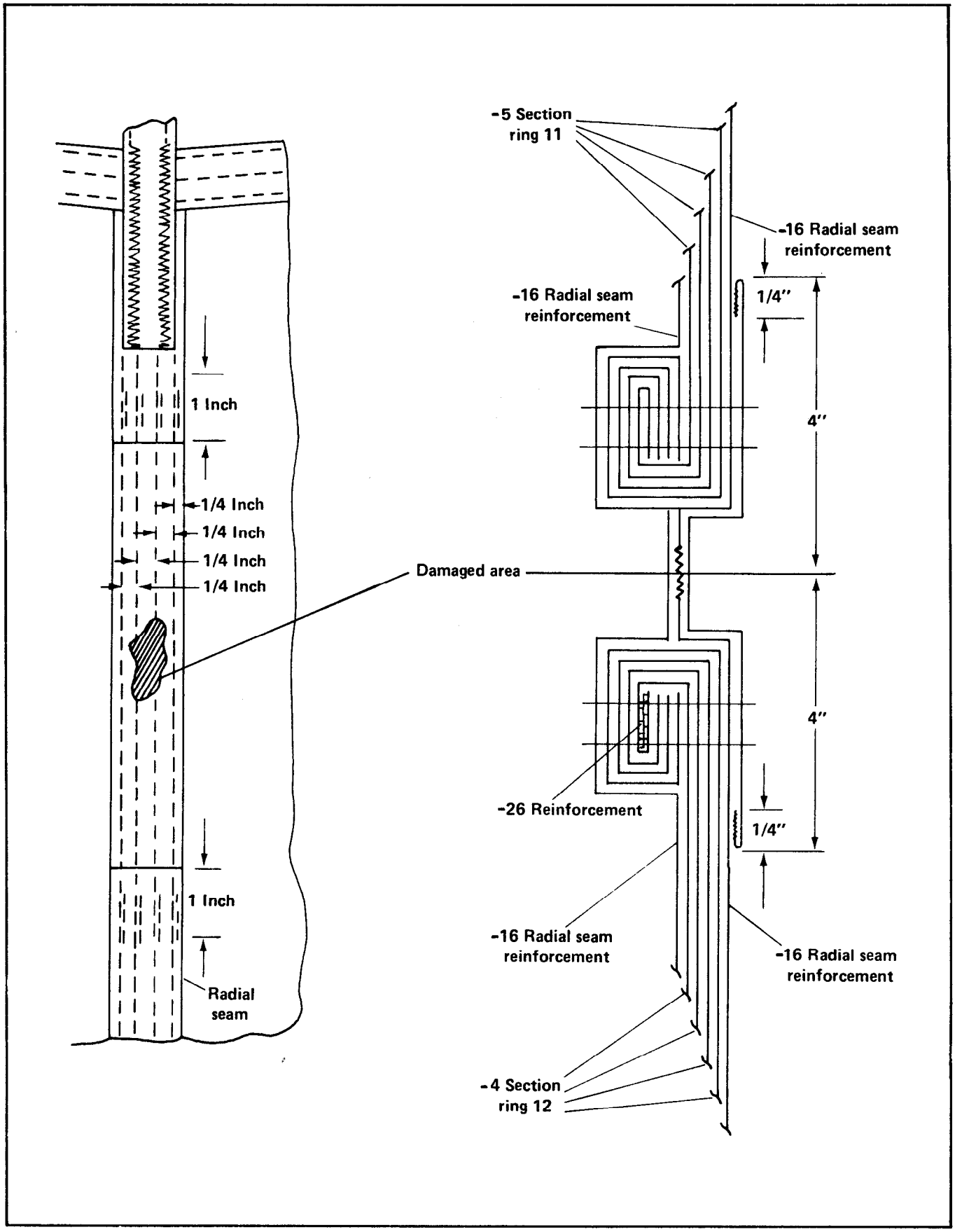


Figure C-6. Repairing radial tape.

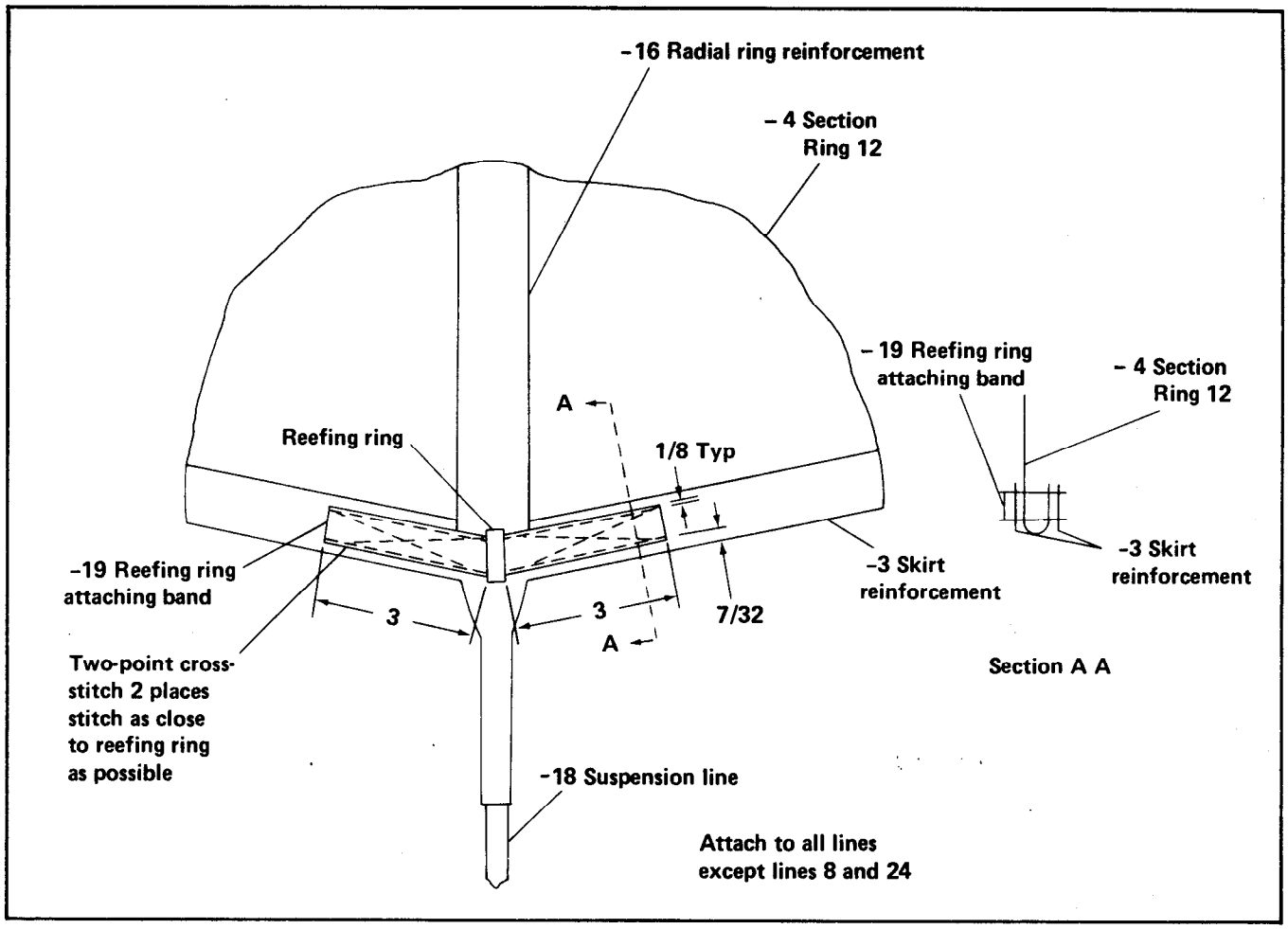


Figure C-7. Replacing reefing band.

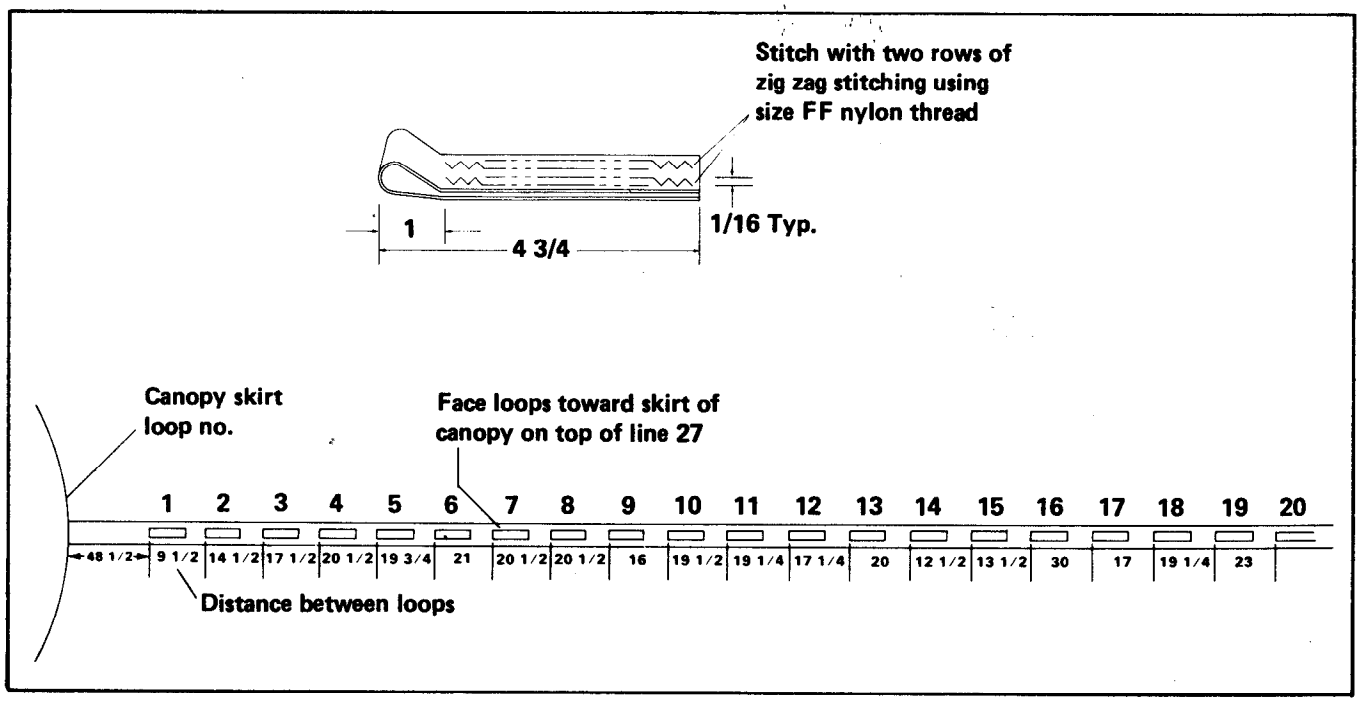


Figure C-8. Location of suspension line 27 stow loops.

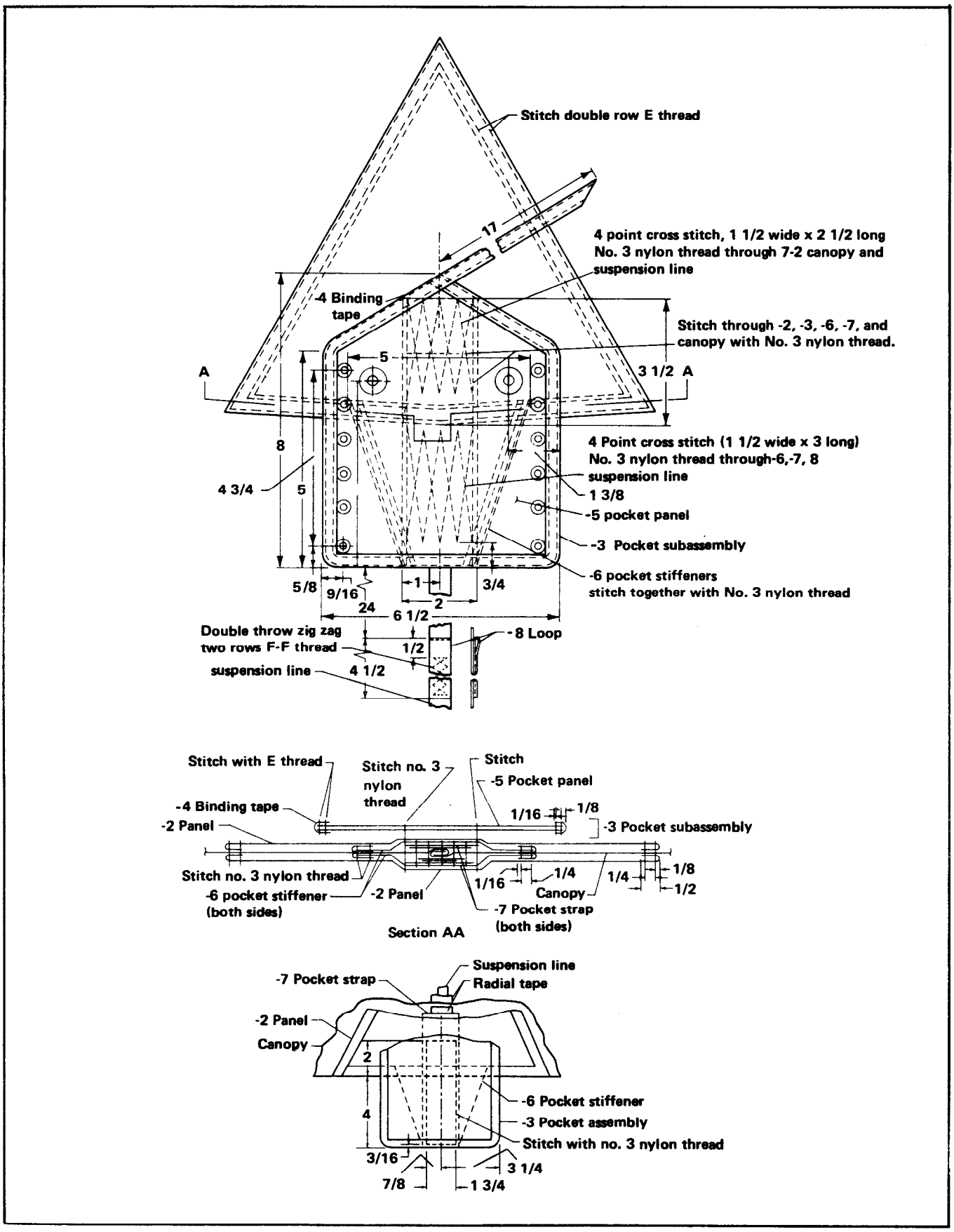


Figure C-9. Repairing or replacing pocket assembly.

(Continued from page C-7).

a. Use size 6 nylon thread and make 5 to 8 stitches per inch to attach the pilot parachute attaching strap, bridle line loop, and spider loop.

b. Use size 3 nylon thread and make 5 to 8 stitches per inch for general bag repair.

c. Use size E nylon thread and make 7 to 11 stitches per inch for tapes and bindings.

C-13. Repairing the Pilot Parachute

Repair the pilot parachute by adapting the same techniques used in repairing the ringslot canopy assembly. Make all pilot parachute stitching with nylon thread.

a. Use size 5 nylon thread, and make 5 to 8 stitches per inch when sewing the risers.

b. Use size 3 nylon thread and make 5 to 8 stitches per inch for general repair.

C-14. Components Requiring Replacement

Figure C-10 shows the details of constructing the spider locking loop assembly. Replace all of the following after each drop, or before the drop if they are damaged:

a. M-21 reefing line cutter.
b. Chafing pad.
c. Reefing line.
d. Tail cone lanyard.
e. Deployment bag bridle.
f. Spider locking loop assembly.

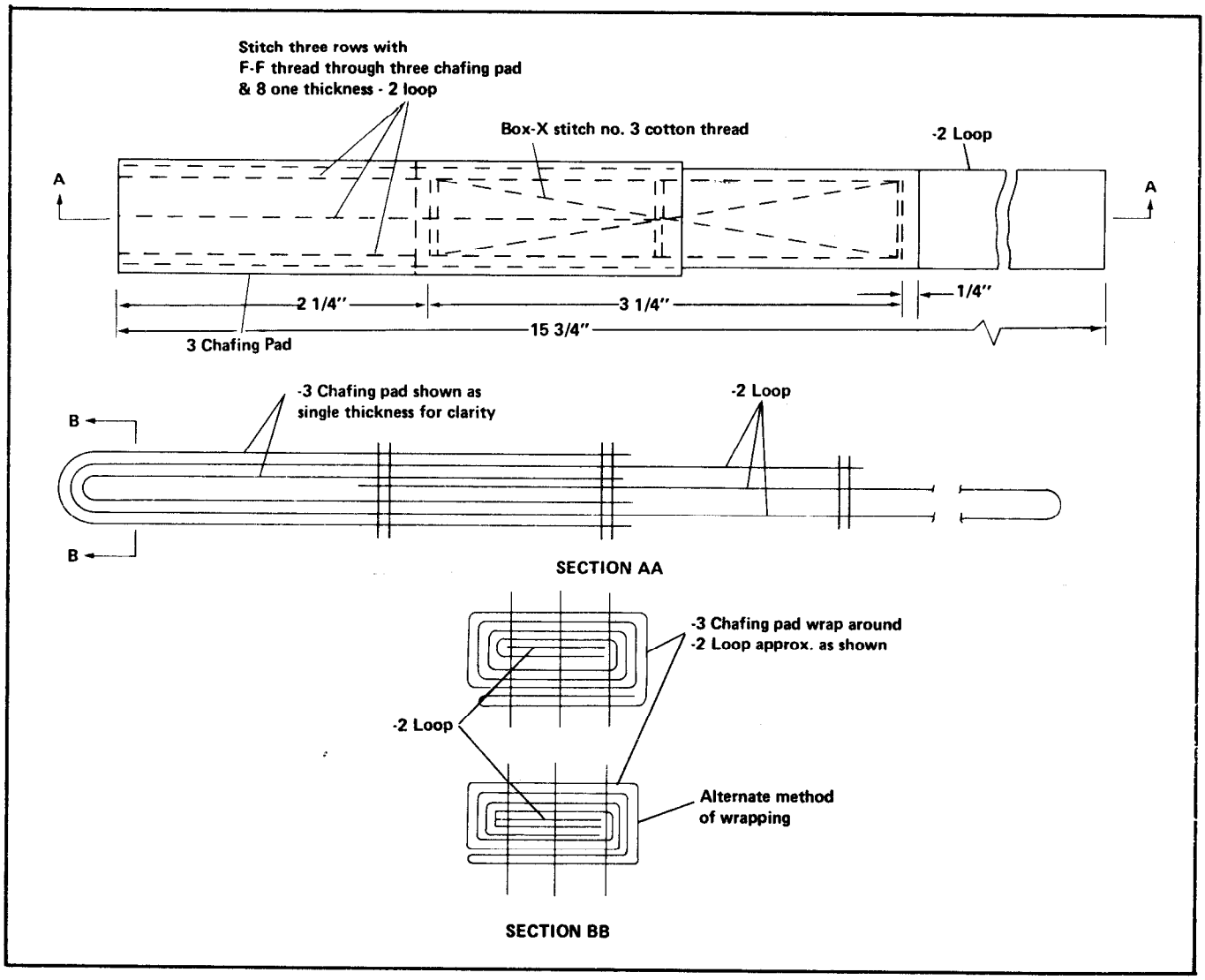


Figure C-10. Construction of spider locking loop assembly.

APPENDIX D

MAINTENANCE OF CTU-2/A CONTAINER

D-1. Basic Components

The CTU-2/A container consists of the following basic components:

- Cable harness assembly.
- Fin assembly.
- Initiator cable assembly.
- Parachute cable assembly.
- Parachute compartment assembly.
- Pin assemblies.
- Plywood bulkhead.
- Main body assembly.
- Tail cone assembly.

D-2. Cleaning

To protect the parachute or cargo from dirt or oil, clean the container by brushing or washing with water or solvent.

D-3. Inspection

Inspect container after each drop as follows:

a. Hardware. Inspect for damaged or loose nuts, bolts, or washers and tighten as required. When a container is damaged beyond repair, all hardware must be removed for future use on other containers.

b. Brackets. Inspect--those that are slightly bent may be straightened and reused.

c. Main and Parachute Compartment Body Assemblies. Inspect for cracks in the supporting retainers, lugs, and shells. Check for dents or distortion in the skin sufficiently large enough to alter aerodynamic effects, lessen structural integrity, or interfere with components or cargo stowed inside.

d. Cables and Fittings. Inspect all cables for excessive fraying, kinks, or partial failures. Inspect cable fittings for cracks, distortions, or looseness. Replace lightly damaged cable assemblies.

e. Tail Cone. Inspect for dents, cracks, and distortion. Diametrical clearance between the inside surface of the cone and the parachute compartment is not to exceed one-eighth of an inch.

f. Cartridge Actuated TCU-1/B Thruster.

WARNING. Do not attempt to disassemble the TCU-1/B Thruster, which has been sealed at the manufacturing source.

Insure TCU-1/B Thruster has no obvious defects. Replace the entire assembly, except the mounting brackets, after thruster is fired.

g. Fins. Inspect for damaged rivets and cracks or distortion of plates and angles. Replace fins if badly warped.

APPENDIX E

REPAIR PARTS LISTING FOR CTU-2/A HIGH SPEED AERIAL DELIVERY CONTAINER

(1) Illustration (A) Fig No.	(B) Item No.	(2) SMR Code	(3) Federal Stock Number	(4) Part Number	(5) FSCM	(6) Description	(7) Unit or Meas	(8) Qty Inc In Unit
		A000Z	1670-01-059-5788	11-1-2821	81337	High Speed Aerial Delivery Container CTU-2/A Assembly (w/Parachute)	Ea	1
		PA00Z	1670-01-059-5700	11-1-2805	81337	.Parachute Assembly PCU-8/A	Ea	1
					81337	.Canopy Assembly 34 ft Ringslot Conical PCU-8/A Parachute	Ea	1
					81337	.Line Vent	Ea	16
					81337	.Line Suspension	Ea	32
					81337	.Loop Suspension Line Tying	Ea	20
					81337	.Loop Vent-bridle	Ea	1
					81337	.Riser	Ea	4
					81337	.Guard Snap	Ea	4
					81337	.Band Reefing Ring Attachment	Ea	30
		PA00Z	1670-00-360-0469	MS27762-1	96906	.Ring Reefing	Ea	30
		PA00Z	1670-00-217-2421	MS22002-1	96906	.Link Assembly	Ea	4
		PA00Z	1670-01-076-7475	11-1-2812	81337	.Pocket Assembly Reefing Line Cutter	Ea	2
		PA00Z	1670-01-066-9313	11-1-2819	81337	High Speed Aerial Delivery Container, CTU-2/A, w/o Parachute Assembly	Ea	1
					81337	..Main Body Assembly	Ea	1
					81337	..Access Plug (Nose)	Ea	1
					81337	..Access Plug (Tail Cone)	Ea	1
					81337	..Tail Cone Assembly	Ea	1
					81337	..Parachute Compartment Assembly	Ea	1
					81337	..Seal	Ea	1
		PA00Z	1670-01-067-6213	11-1-2828	81337	..Fin Assemblies	Ea	4
		PA00Z	4010-01-067-7116	11-1-2822	81337	..Cable Assembly Initiator	Ea	1
		PA00Z			81337	..Plywood Bulkhead	Ea	1
		PA00Z	1670-01-069-1481	11-1-2823	81337	..Cable Harness Assembly	Ea	1
		PA00Z	4010-01-067-7117	11-1-2824	81337	..Cable Assembly (Parachute Release)	Ea	1
		PA00Z	1670-00-086-7781	11-1-184	81337	Bracket Assembly M-21 Reefing Line Cutter	Ea	2
		PA00Z	1377-00-060-0885	400715	07278	Cutter M-21 Reefing Line	Ea	2
		PA00Z	1670-01-076-7543	11-1-2807	81337	.Pilot Parachute 3 Ft. Dia PCU-8/A	Ea	1
		PA00Z	1670-01-082-0675	11-1-2808	81337	.Bag Assy Deployment PCU-8/A	Ea	1
		PA00Z	1730-01-059-5815	11-1-2845	81337	.Attaching Ring and Warning Streamer	Ea	1
		PA00Z	1670-01-059-5701	11-1-2843	81337	.Web Assy Grommet Type	Ea	2
		PA00Z	1670-01-127-0064	11-1-2841	81337	.Web Assy Cone Type	Ea	1
		PA00Z	1670-01-127-0063	11-1-2842	81337	.Web Assy Washer Type	Ea	1
		PA00Z	1670-01-080-5585	11-1-2809	81337	.Loop Assy Spider Locking	Ea	1
		PA00Z	1377-01-075-6433		55711	Thruster Cartridge Actuated TCU-1/B	Ea	1

APPENDIX E

REPAIR PARTS LISTING FOR CTU-2/A HIGH SPEED AERIAL DELIVERY CONTAINER

(1) Illustration (A) Fig. No.	(B) Item No.	(2) SMR Code	(3) Federal Stock Number	(4) Part Number	(5) FSCM	(6) Description BULK ITEMS	(7) Unit or Meas	(8) Qty Inc In Unit
		PAOOZ	8315-00-255-7673	To be furnished later	81349	Tape, Textile-Nylon, Type III, 1/2 In. W.O.D. 250 lb B.S. MIL-T-5038	Ft	V
		PAOOZ	8305-00-082-2142		81349	Webbing Textile-Nylon, Type XV2 In. W.O.D. Color, 1500 B.S. MIL-W-4088	Ft	V
		PAOOZ	8310-00-194-4156		81349	Thread Cotton-Ticket No. 3, Natural White 1775 Yd Per Tube, MIL-T-5660, Style A, Type II	Yd	V
		PAOOZ	8310-00-194-4055		81349	Thread Cotton-Ticket No. 5, Natural White 860Yd Per Tube, MIL-T-5660, StyleA, TypeII	Yd	V
		PAOOZ	8310-00-262-2770		81349	Thread Nylon-Size E, Natural White 2800 Yd Per Tube Fed V-T-295, Type I, Class 1.	Yd	V
		PAOOZ	8310-00-262-2772		81349	Thread Nylon-Size E, Olive Drab, 2800 Yd Per Tube Fed V-T-295, Type I, Class 1.	Yd	V
		PAOOZ	8310-00-267-3024		81349	Thread Nylon-Size FF, Natural White 2725 Yd Per Tube, Fed V-T-295, Type I, Class 1.	Yd	V
		PAOOZ	8310-00-227-1244		81349	Thread Nylon-Size FF, Olive Drab 1362 Yd Per Tube, FED V-T-295, Type I, Class 1.	Yd	V
		PAOOZ	8310-00-248-9714		81349	Thread Nylon-size No.3, Natural White, 900 Yd PerTube, FED V-T-295, Type I, Class 1.	Yd	V
		PAOOZ	8310-00-267-3027		81349	Thread Nylon-Size No. 3 Olive Drab, 900 Yd Per Tube FED V-T-295, Type I, Class 1.	Yd	V
		PAOOZ	8310-00-248-9715		81349	Thread Nylon-Size No.5, Natural White 500 Yd Per Tube FED V-T-295, Type I, Class 1.	Yd	V
		PAOOZ	8310-00-262-2777		81349	Thread Nylon-Size No.5, Olive Drab, 500Yd Per Tube, FED V-T-295, Type I, Class 1.	Yd	V
		PAOOZ	8310-00-248-9716		81349	Thread Nylon-Size No.6, Natural White, 425 Yd Per Tube, FED V-T-295, Type I, Class 1.	Yd	V
		PAOOZ	8310-00-262-2780		81349	Thread Nylon-Size No. 6, Olive Drab, 425 Yd Per Tube, FED V-T-295, Type I, Class 1.	Yd	V
		PAOOZ	8305-00-268-2411		81349	Webbing Textile-Cotton, Type I, 1/4-Inch W. Natural Color, 80 Lb B.S. MIL-T-5661	Ft	V
		PAOOZ	4020-00-262-2019		81349	Cord Fibrous-Nylon Type II, 400 Lb B.S. Olive Green 400 Yd Per Spool MIL-C-5040	Yd	V
		PAOOZ	8305-00-205-1478		81349	Cloth, Parachute-Nylon, Type II, 3.5 Oz, Natural Color, 36 1/2 Inch W, MIL-C-7350	Ft	V
		PAOOZ	8305-00-261-9517		81349	Cloth, Parachute-Nylon, Type I, 4.75 Oz, 36 Inch W, Natural Color MIL-C-8021	FT	V
		PAOOZ	8305-00-082-5753		81349	Webbing Textile-Nylon, Tubular, 1 In. W, Natural Color, w/Yellow I.D. Yarns 2,300 Lb B.S. MIL-W-5625	FT	V
		PAOOZ	8305-00-244-0214		81349	Cloth, Muslin-Cotton, Type II, 3.7 Oz Natural Color, MIL-C-4279	FT	V
		PAOOZ	8305-00-261-8582		81349	Webbing Textile-Nylon Tubular, 9/16 In. W. O.D. Color W/Black I.D. Yarns 1500 Lb B.S. MIL-W-5625	FT	V

APPENDIX E

REPAIR PARTS LISTING FOR CTU-2/A HIGH SPEED AERIAL DELIVERY CONTAINER

(1) Illustration (A) Fig No.	(B) Item No.	(2) SMR Code	(3) Federal Stock Number	(4) Part Number	(5) FSCM	(6) Description BULK ITEMS	(7) Unit or Meas	(8) Qty Inc In Unit
		PAOOZ	8305-00-082-5751	**To be furnished later**	81349	Webbing Textile-Nylon Tubular, 3/4 In. W. Natural Color, W/Yellow I.D. Yarns 2	FT	V
		PAOOZ	8305-00-765-2863		81349	Cloth Duck-Nylon, Type III, 7.25 Oz, Sage Green 42 In. W. MIL-C-7219	FT	V
		PAOOZ	8315-00-176-8083		81349	Tape Textile Nylon, Type III, 3/4 In W. O.D. Color, 400 Lb B.S. MIL-T-5038	FT	V
		PAOOZ	8305-00-261-8585		81349	Webbing Textile-Nylon, Type VIII, 1 23/32 In. W. O.D. 3600 Lb. B.S. MIL-W-4088	FT	V
		PAOOZ	8305-00-281-3012		81349	Webbing Textile-Nylon, Type XII, 1 23/32 In. W. O.D., 1200 Lb B.S. MIL-W-4088	FT	V
		PAOOZ	8305-00-260-4585		81349	Webbing Textile-Nylon, Type XIII, 1 23/32 In. W. O.D. 6500 Lb B.S. MIL-T-4088	FT	V
		PAOOZ	8305-00-267-3009		81349	Webbing Textile-Nylon, Type XVII, 1 In. W. O.D. 2500 Lb B.S. MIL-W-4088	FT	V
		PAOOZ	8315-00-255-7683		81349	Tape Textile-Nylon, Type III, O.D. Color, 800 Lb B.S. MIL-W-4088, 1 1/4 Inch W.	FT	V
		PAOOZ	8305-00-261-8584		81349	Webbing Textile-Nylon, Type X O.D. Color, 8700 Lb B.S. MIL-W-4088	FT	V
		PAOOZ	8305-00-281-3013		81349	Webbing Textile-Nylon, Type VI O.D. Color, 2500 Lb. B.S. MIL-W-4088	FT	V
		PAOOZ	8305-00-082-5752		81349	Webbing Nylon-Tubular, 1/2 In. W. Natural Color W/Yellow I.D. Yarns, 1000 Lb B.S. MIL-W-5625	FT	V
		PAOOZ	7510-286-5362		81349	Ink, Marking, Parachute-Strata-Blue, 1 Pt Can	PT	V
		PAOOZ	5350-221-0872			Cloth, Abrasive-Ferric Oxide & Quartz, Jean Cloth Backing, 9 In. W. 11 In Lg, 24 Sheets Per Carton	CT	V
		PAOOZ	9310-160-7858			Stencilboard-Oiled, 1/64 In. Thk, 24 In. W. 36 In. Lg, 100 Sheets Per Wrapper, Type II, Grade 1	SH	V
		PAOOZ	8315-176-8085			Tape, Textile: Nylon Warp; Spun Nylon Filling 1 In. W. Single Herringbone Twill Weave, 0.145 Oz Wt Per Linear Yd. 300 Lb Breaking Strength; Type II, Color Natural	FT	V

APPENDIX F

MAINTENANCE ALLOCATION CHART

F-1. General

This appendix contains explanations of all maintenance and repair functions authorized to be performed by organizational and direct support maintenance activities on cargo parachutes. The maintenance allocation chart (MAC) depicts the maintenance functions to be performed based on the skills available, the time required, and the tools authorized.

F-2. Maintenance Functions

Maintenance functions will be limited to and defined as follows:

a. Adjust. To maintain, within prescribed limits, by bringing into correct or exact position or by setting the operating characteristics to specified parameters.

b. Aline. To adjust specified variable elements of an item to bring it to about optimum or desired performance.

c. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

d. Inspect. To determine serviceability of an item by comparing the physical, mechanical, and electrical characteristics with established standards through examination.

e. Install. To emplace, seat, or fix into position of an item, part, or module (component or assembly) in a manner to allow the correct functioning of equipment or system.

f. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.

g. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance

applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

h. Repair. The application of maintenance services or other maintenance actions to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

i. Replace. The act of substituting a serviceable like-type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

j. Service. Operations required periodically to keep an item in proper operating condition, for example, to clean, preserve, paint, drain, or to replenish fuel, lubricants, hydraulic fluid, or compressed air supplies.

k. Test. To verify serviceability and to detect incipient failure by measuring the electrical or mechanical characteristics of an item and comparing these characteristics with prescribed standards.

l. Symbols. Indicates the lowest level at which that particular maintenance function is to be performed.

F-3. Explanation of Format

Purpose and use of the format are as follows:

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Functional Group. Column 2 lists the next higher assembly group and the noun names of components, assemblies, subassemblies, and modules within the group on which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 is divided into subcolumns to indicate the maintenance functions authorized for the components, assemblies, and subassemblies. Each maintenance function which is indicated for the entire assembly is applicable to all major components, and each function indicated for the major component is applicable to all items of the component except where the term "replace" is used. The term "replace" applies only to the assembly, component, or item beside which it appears.

(1) Use of Symbols. The symbols used to indicate the five categories of maintenance authorized for Army material are as follows:

C--Operator/crew.
O--Organization.
F--Direct support.
H--General support.
D--Depot.

(2) Work Measurement Time. The active repair time required to perform the maintenance function will be included directly below the symbol identifying the category of maintenance. The manpower figures have been developed under conditions (real and simulated) corresponding to those that would be considered normal for TOE units operating in the field. The skill levels used to obtain measurement times approximate those found in typical TOE units. The active repair time specified is the average aggregate time to restore an item (subassembly, assembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, fault isolation/diagnostic time, and quality assurance/quality control time in addition to the time required to perform specified maintenance functions identified for the tasks authorized in the maintenance allocation chart. This time may be the established time standard developed through maintenance engineering analysis or it may have been derived from the calculation of a statistically weighted time estimate, incorporating the optimistic, most likely, and pessimistic estimates for the work to be accomplished, using formula criteria prescribed in AR 310-3. This time is expressed in man-hours and carried to one decimal place (tenths of hours).

d. Column 4, Tools and Equipment. This column will be used to specify, by code, those tools and test, measuring, diagnostic, and support equipment required to perform the designated function. Tools and test equipment codes are specified in table B-1, as applicable.

e. Column 5, Remarks. The remarks column will list specific maintenance functions, cross-references, and instructions pertinent to the operation being performed.

MAINTENANCE ALLOCATION CHART

(1) Group Number	(2) Functional Group	(3) Maintenance Function											(4) Tools and Equip-Ment	(5) Remarks
		Inspect	Test	Service	Adjust	Aline	Calibrate	Install	Replace	Repair	Overhaul	Rebuild		
01	Container CTU-2/A	0 0.3		0 1.0					0 0.1					
	Main Body	0 0.2		0 0.1										
	Tail Cone	0 0.1		0 0.1										
	Parachute Compartment	0 0.1		0 0.1										
	Thruster Cartridge Actuated TCU-1/B	0 0.1							0 0.1					
	Fin Assemblies	0 0.1							0 0.1	0 0.1				
	Cable Assembly Initiator	0 0.1							0 0.1					
	Web Assembly	0 0.1							0 0.1					
	Cable Harness	0 0.1							0 0.1					
	Cable Assembly Parachute	0 0.1							0 0.1					
	Safety Pin and Warning Streamer	0 0.1							0 0.1					
	Spider Locking Loop	0.1							0.1					

MAINTENANCE ALLOCATION CHART

(1) Group Number	(2) Functional Group	(3) Maintenance Function											(4) Tools and Equipment	(5) Remarks
		Inspect	Test	Service	Adjust	Aline	Calibrate	Install	Replace	Repair	Overhaul	Rebuild		
02	Parachute Assembly PCU-8/A	0 0.3		0 1.0					0 0.1	0 0.5				
	Line Vent								0 0.2	0 0.3				
	Line Suspension								0 0.4	0 0.4				
	Tie Loop Suspension Line								0 0.4					
	Bridle Loop								0 0.3					
	Riser									0 0.4				
	Reefing Ring Attachment Band								0 0.4					
	Ring Reefing								0 0.4					
	Link Assembly								0 0.4					
	Pocket Assembly Reefing Line Cutter								0 0.1					
	Bracket Assembly M-21								0 0.4					
	Cutter M-21								0 0.1					
	Pilot Parachute								0 0.1	0 0.4				
	Bag Deloyment								0 0.1	0 0.4				