

TECHNICAL MANUAL

**UNIT AND INTERMEDIATE DIRECT SUPPORT (DS)
MAINTENANCE MANUAL (INCLUDING REPAIR PARTS
AND SPECIAL TOOLS LIST)**

FOR

**PARACHUTE, CARGO TYPE: 100-FOOT
DIAMETER, MODEL G-11A, MODEL G-11B
AND MODEL G-1 1C
NSN 1670-01-016-7841**

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5 AUGUST 1991

ARMY TM 10-1670-280-23&P
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WASHINGTON, D.C. 15 October 1993

NO. 3

Unit and Intermediate Direct Support (DS)
Maintenance Manual (Including Repair Parts
and Special Tools List)
for

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DIAMETER, MODEL G-11A, MODEL G-11B
AND MODEL G-11C
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(Including Repair Parts and Special Tools List)
for

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MODEL G-11A, MODEL G-11B AND MODEL G-11C
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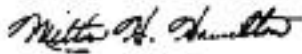
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NAVY NAVAIR 13-1-31
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NO. 1

HEADQUARTERS
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WASHINGTON, D.C., 25 NOVEMBER 1992

Unit and Intermediate Direct Support (DS)
Maintenance Manual (Including Repair Parts
and Special Tools List)
for

**PARACHUTE, CARGO TYPE: 100-FOOT
DIAMETER, MODEL G-11A, MODEL G-11 B
AND MODEL G-11C
NSN 1670-01-016-7841**

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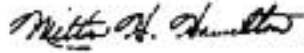
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WARNING

DEATH could result if inspections are not performed as specified in this manual. Perform all inspections as specified.

WARNING

DEATH from burns or parachute failure could result if cleaning solvents other than tetrachloroethylene are used in cleaning this equipment. Other solvents shall not be used because of their flammable properties and nylon-damaging substances.

WARNING

Prolonged inhalation of tetrachloroethylene vapors can cause respiratory injury. Provide adequate ventilation when using it. Also avoid skin contact. Repeated exposure can cause injury.

WARNING

Exercise extreme care when using petroleum products to destroy equipment by fire, as severe burns or DEATH could result.

WARNING

FIRST AID

For First Aid treatment, refer to FM 21-11

***ARMY TM 10-1670-280-23&P
AIR FORCE T.O. 13C5-31-2
NAVY NAVAIR 13-131**

TECHNICAL MANUAL
NO. 10-1670-280-23&P

HEADQUARTERS,
DEPARTMENTS OF THE ARMY, NAVY AND AIR FORCE
WASHINGTON, D.C., 5 August 1991

Unit and Intermediate Direct Support (DS) Maintenance Manual
(Including Repair Parts and Special Tools List)
for

**PARACHUTE, CARGO TYPE: 100-FOOT DIAMETER
MODEL G-11A, MODEL G-11B AND MODEL G-11C
NSN 167041-01 67841**

Current as of 14 September 1990

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: US Army Troop Support Command, ATTN: AMSTR-MMTS, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished to you.

AIR FORCE

Reports by U.S. Air Force units should be submitted on AFTO Form 22 (Technical Order Publication Improvement Report) and forwarded to the address prescribed above for the Army. An information copy of the prepared AFTO Form 22 shall be furnished to ALC/MMILRA, Kelly AFB, TX 78241-5000.

NAVY

For Navy, mail comments to Commander, Space and Naval Warfare Systems Command, ATTN: SPAWAR 8122, Washington, DC, 20363-5100.

In either case a reply will be furnished direct to you.

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ARMY TM 10-1670-280-23&P
AIR FORCE T.O. 13C5-31-2
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CHAPTER 1

INTRODUCTION

		Page
Section I.	General	1-1
Section II.	Equipment Description and Data.....	1-5

OVERVIEW

This chapter includes the general information common to all parachute manuals and specific information pertinent to the parachute described in this manual.

Section I. GENERAL

Paragraph		Page
1-1	Scope	1-1
1-2	Maintenance Forms and Records	1-4
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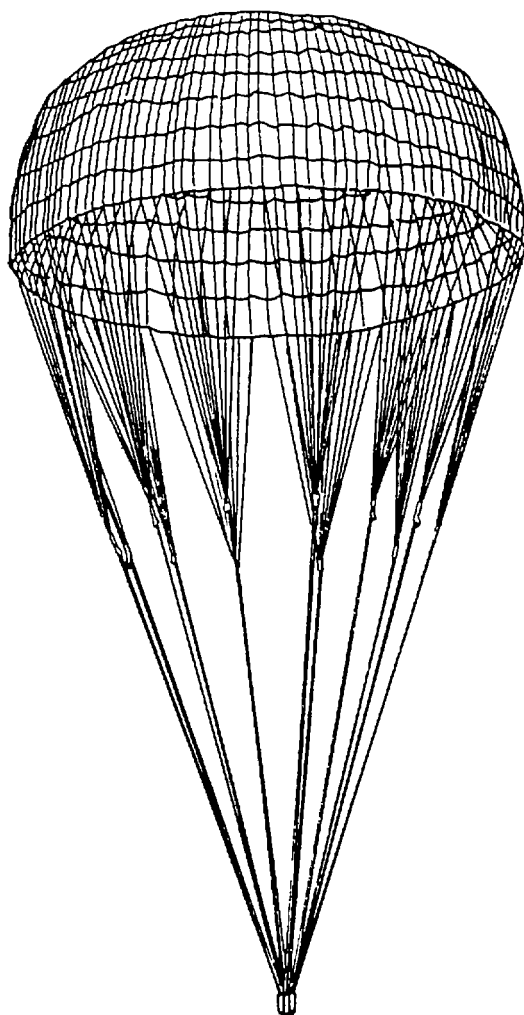
1-1. Scope. The scope of this manual is described in the following subparagraphs.

a. Type of Manual. This manual provides unit and intermediate direct support (DS) maintenance instructions for parachute NSN 1670-01-016-7841, shown in figures 1-1 and 1-2. This manual also provides a Repair Parts and Special Tools List located at Appendix C.

b. Equipment Name. 100-Foot Cargo Parachute, Model G-11A, Model G-1 1B and Model G-1 1C, hereinafter called 100-Foot Cargo Parachute.

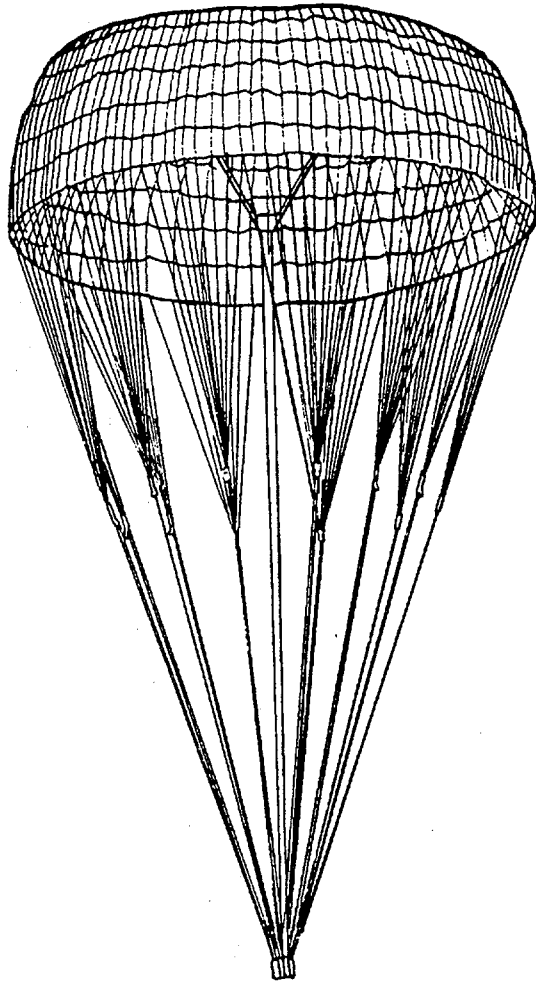
c. Purpose of Equipment. The parachute provides air delivery of vehicular and bulk-type platform loads. It may be used singly or in clusters of two or more.

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4838-001A

Figure 1-1. 100-Foot Diameter Cargo Parachute Assembly, Model G-11A, NSN 1670-01-016-7841.



4838-001B

*Figure 1-2. 100-Foot Diameter Cargo Parachute Assembly, Model G-11B and Model G-11C
NSN 1670-01-016-7841.*

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1-2. **Maintenance Forms and Records.** Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System, and DA PAM 738-751, The Army Maintenance Management System - Aviation.

1-3. **Destruction of Army Materiel to Prevent Enemy Use.** Destruction methods are described in the following subparagraphs.

a. General.

(1) *Objective.* Methods of destruction used to inflict damage on delivery platforms should make it impossible to restore equipment to a usable condition in a combat zone by either repair or cannibalization.

(2) *Authority.* Destruction of air delivery equipment that is in imminent danger of capture by an enemy is a command decision that must be made by a battalion or higher commander or the equivalent.

(3) *Implementation plan.* All units which possess air delivery equipment should have a plan for the implementation of destruction procedures.

(4) *Training.* All personnel who use or perform such functions as rigging, packing, maintenance, or storage of air delivery equipment should receive thorough training on air delivery equipment destruction procedures and methods. The destruction methods demonstrated during training should be simulated. Upon completion of training, all applicable personnel should be thoroughly familiar with air delivery equipment destruction methods and be capable of performing destruction without immediate reference to any publication.

(5) *Specific methods.* Specific methods of destroying Army materiel to prevent enemy use shall be by mechanical means, fire or by use of natural surroundings.

b. Destruction by Mechanical Means. Air delivery equipment metal assemblies, parts, and packing aids shall be destroyed using hammers, bolt cutters, files, hacksaws, drills, screwdrivers, crowbars, or other similar devices to smash, break, bend or cut.

WARNING

Exercise extreme care when using petroleum products to destroy equipment by fire, as severe burns or DEATH could result.

c. Destruction by Fire. Items that can be destroyed by fire shall be burned. The destruction of equipment by use of fire is an effective method of destroying low-melting-point metal items (e.g., side rails, threaded portions of nuts and bolts, and platform panels). However, mechanical destruction should be completed first, whenever possible, before initiating destruction by fire. When items to be destroyed are made of metal, textile materials (or some comparable low combustible material) should be packed under and around the items, then soaked with a flammable petroleum product and ignited. Proper concentration of equipment which is suitable for burning will provide a hotter and more destructive fire.

d. Destruction By Use of Natural Surroundings. Small vital parts of assemblies which are easily accessible may be disposed of as follows: Disposal or denial of equipment to an enemy may be accomplished through use of natural surroundings. Accessible vital parts of assemblies may be removed and scattered through dense foliage, buried in dirt or sand, or thrown into a lake, stream, or other body of water. Total submersion of equipment in a body of water will provide water damage as well as concealment. Salt water will inflict extensive damage to air delivery equipment.

1-4. Preparation for Storage or Shipment. For storage, refer to Chapter 2, Section VII of this manual.

1-5. Reporting of Equipment Improvement Recommendations (EIR). If your parachute system needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 Quality Deficiency Report (QDR). Mail it to us at: Commander, U.S. Army Troop Support Command, ATTN: AMSTR-QP, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. We will send you a reply.

Section II. EQUIPMENT DESCRIPTION AND DATA

Paragraph	Page
1-6 Equipment Characteristics, Capabilities and Features	1-5
1-7 Location and Description of Major Components.....	1-5
1-8 Differences Between Models	1-10
1-9 Equipment Data	1-11
1-10 Safety, Care and Handling	1-12

1-6. Equipment Characteristics, Capabilities and Features. A summary of the characteristics, capabilities and features of the equipment is contained in the following subparagraphs.

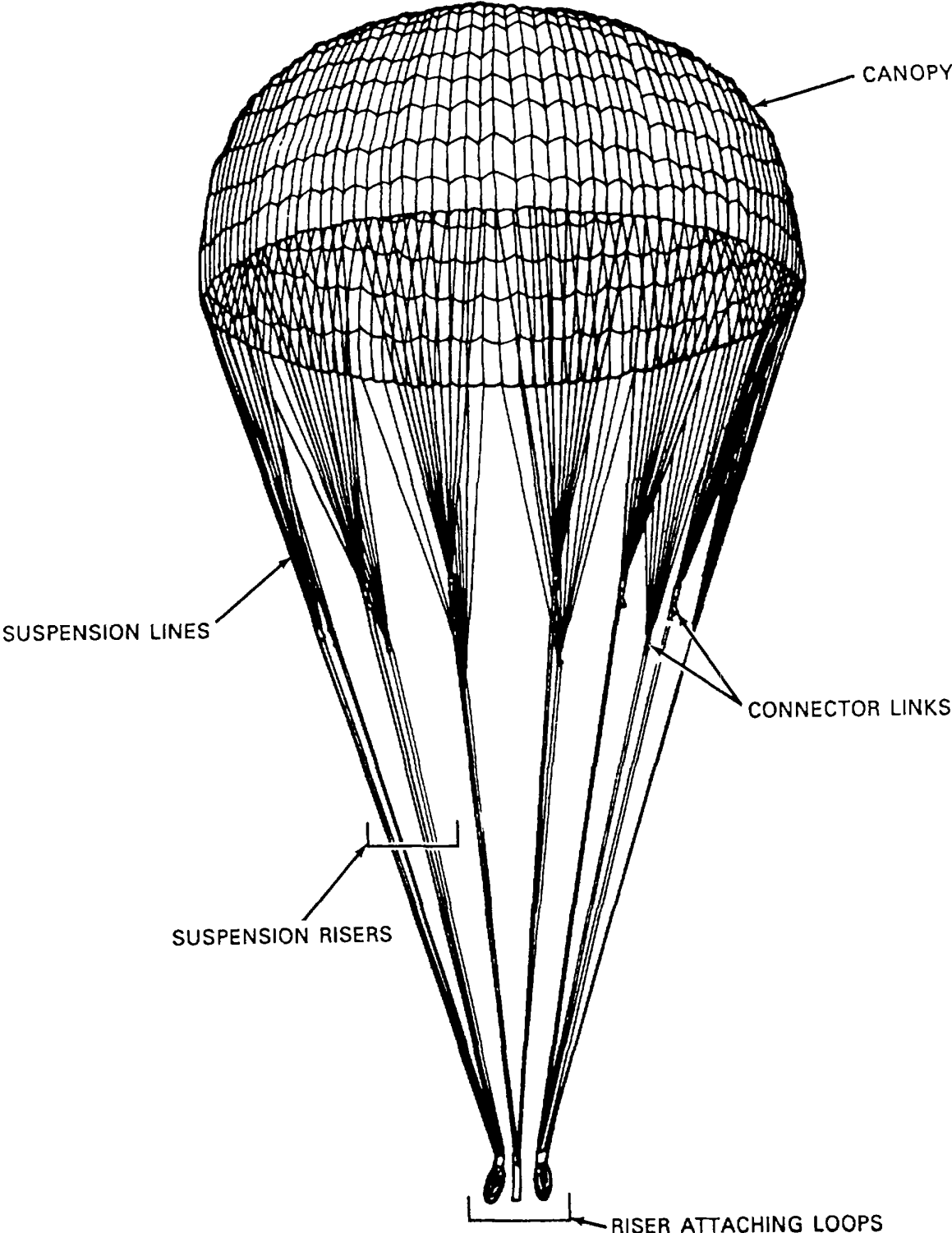
a. Characteristics. A heavy capacity parachute designed for the air delivery of vehicular and bulk-type platform loads.

b. Capabilities and Features.

- (1) Capable of supporting up to 42,000 pounds, when in a cluster of eight. (Refer to FM 10-500.)
- (2) Can be used singly or in clusters of two or more, depending upon air delivery load weight.
- (3) Designed for deceleration and stabilization of vehicular and bulk-type platform air delivery cargo loads.

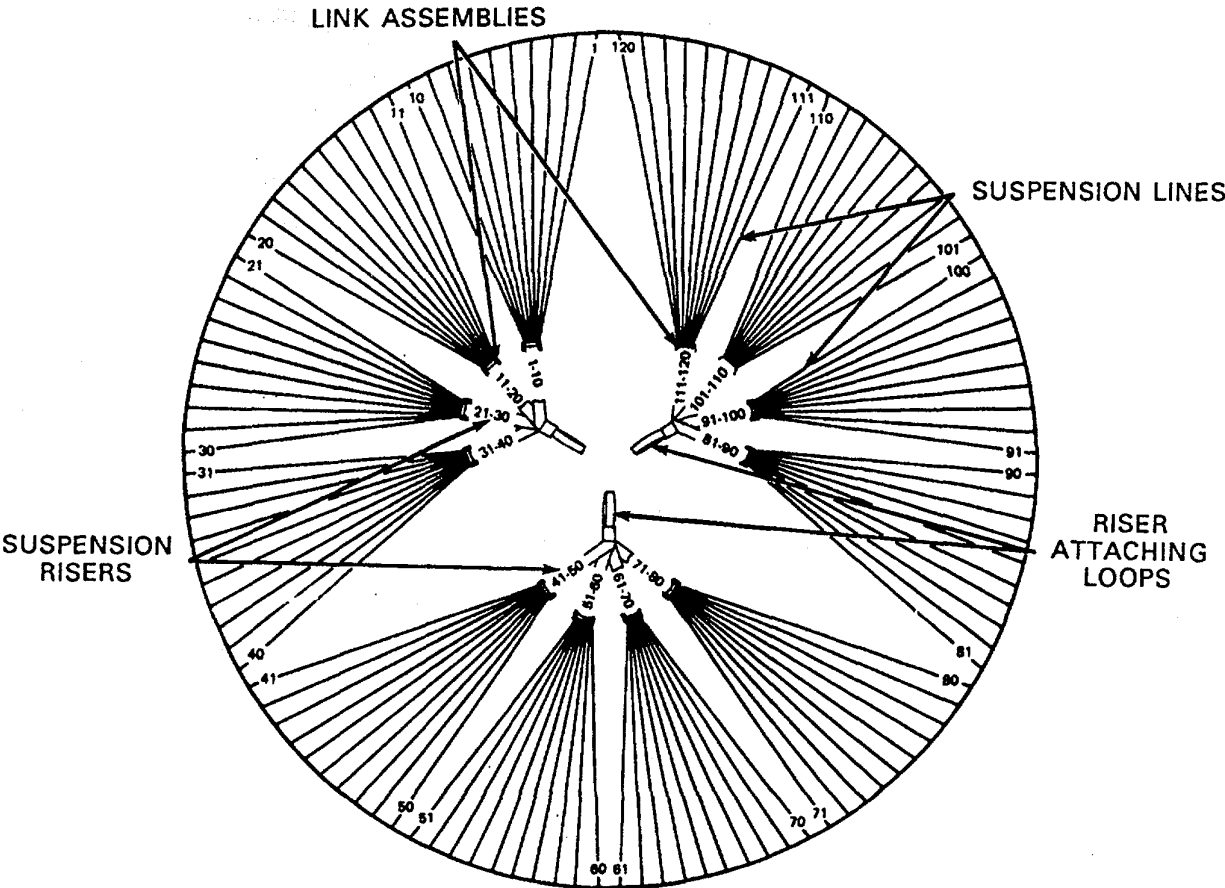
1-7. Location and Description of Major Components. The following subparagraphs contain locations and descriptions of major components.

a. Canopy. The canopy assembly (figure 1-3) consists of a 100-foot diameter nylon canopy, with suspension lines numbered counterclockwise, 1 through 120, as viewed from the connector links (figure 1-4), and three riser assemblies, each composed of four suspension risers, terminating in three riser attaching loops. Each of the 12 suspension risers is connected to 10 consecutively numbered suspension lines by a link assembly.



4838-004

Figure 1-3. Parachute Canopy Assembly.

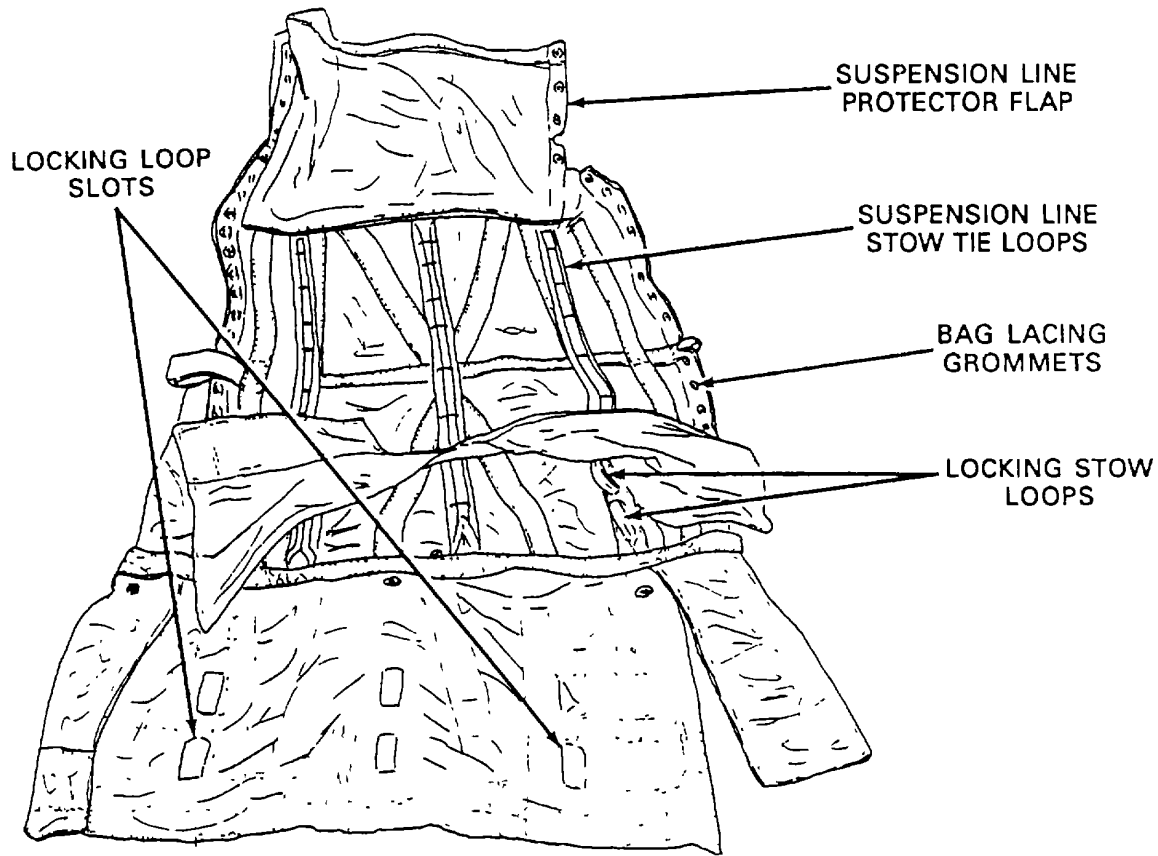


4838-005

Figure 1-4. Suspension Line Arrangement and Numbering.

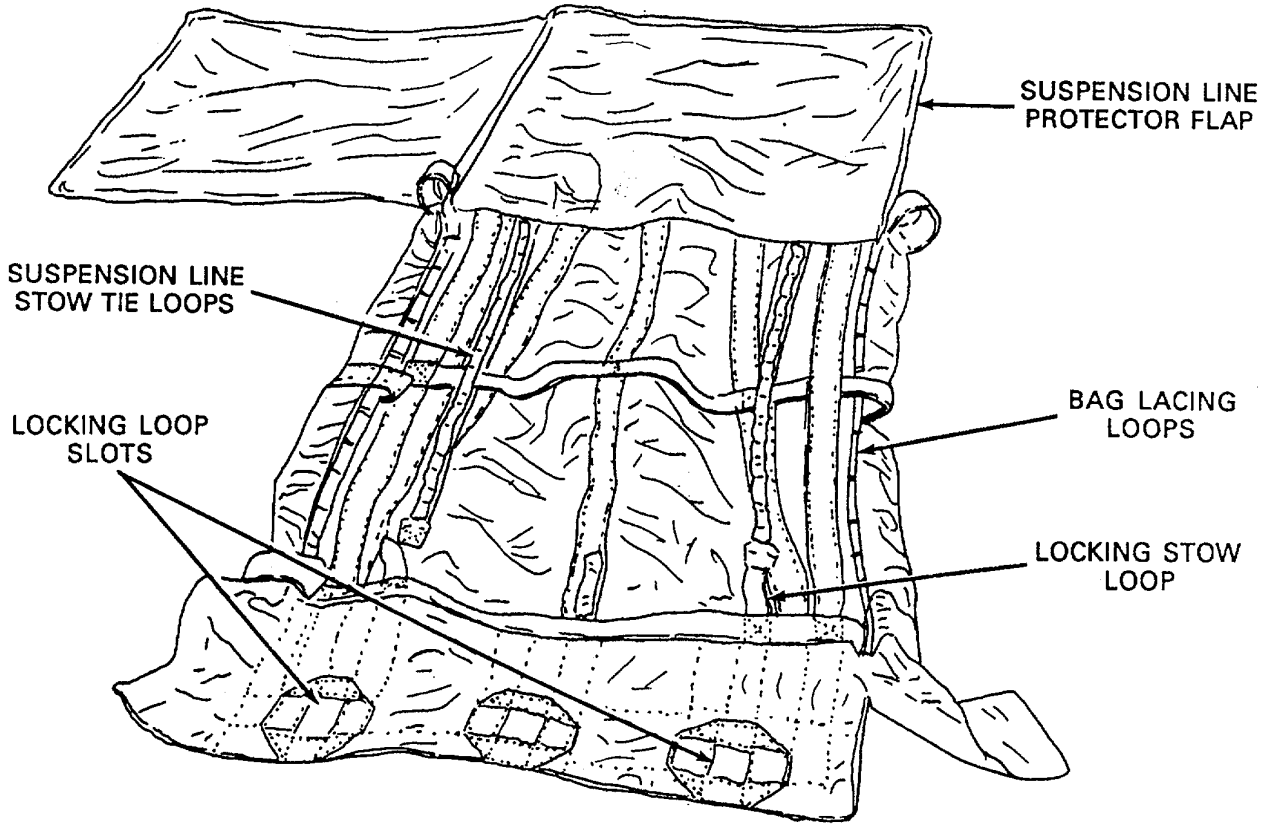
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b. *Deployment Bag.* There are three deployment bags used with the 100-foot parachute, the cotton G-11 A and G-11B bags (figure 1-5) and the nylon G-11 A/B/C bag (figure 1-6). The cotton bags and the nylon bag are of the locking-closure type. The cotton G-11 B bag has larger locking stow loops than the G-1 1A bag to accommodate the center line used in the model G-11 B and G-11 C parachutes. The cotton G-11 B bag also has additional grommets to secure two additional reefing line cutters on the model G-1 1B parachute. The nylon G-11 A/B/C bag also has larger locking stow loops than the cotton G-11 A bag to accommodate the center line.



4838-006

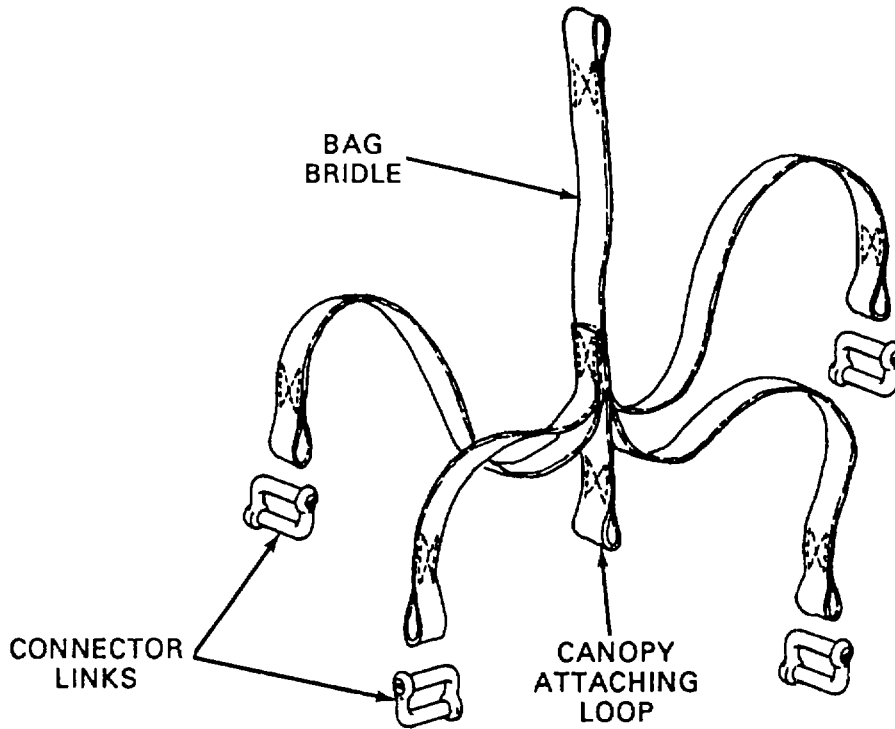
Figure 1-5. The G- 1A/G-1 B Cotton Parachute Deployment Bag.



4838-007

Figure 1-6. The G- 1 1AB/C Nylon Parachute Deployment Bag.

c. Deployment Bag Bridle. The deployment bag bridle (figure 1-7) consists of a main webbing strap with four webbing branch straps. The main strap contains the canopy attaching loop at the lower end. The branch straps are attached to the G-1 1A/G-11B cotton deployment bag by four connector links.



4838-008

Figure 1-7. Bridle for Cotton Deployment Bag.

1-8. Differences Between Models.

Model	Difference
G-11A	No centerline. Uses two M-21 reefing line cutters with 2-second delay.
G-11B	Uses 95-foot or 100-foot centerline to pull down canopy vent and four M-21 reefing line cutters with 2-second delay.
G-11C	Uses 1 00-foot centerline to pull down canopy vent and two MLU-58/B reefing line cutters with 4-second delay.

1-9. **Equipment Data.** The following listing summarizes the specific capabilities and limitations of the equipment and other critical data needed by the unit and intermediate direct support (DS) maintenance personnel for maintenance of the 100-foot cargo parachute.

a. General.

Total weight (packed for use).....	250 pounds
Dimensions (packed for use).....	35 1/2-inches-wide by 48 5/16-inches-long by 12-inches-high
Cube (packed for use).....	11.9 cubic feet

b. Canopy Assembly.

Shape.....	Flat-circular
Diameter.....	100 feet
Number of gores.....	120
Number of sections per gore.....	7 or 13
Gore material.....	Type II or Type III, 1.6-ounce nylon parachute cloth
Number of suspension lines.....	120
Length of suspension lines.....	35 feet
Number of suspension riser assemblies.....	3
Length of suspension riser.....	60 feet
Reefing line length:	
Model G-11A (1).....	22 feet
Model G-11 B (4).....	16 1/2 feet
Model G-11C (2).....	10 feet
Reefing line material:	
Models G-1 1 A and G-11 B.....	1/2-inch-wide tubular nylon webbing
Model G-11 C.....	Type IV coreless nylon cord

c. M-21 Reefing Line Cutter.

Method of activation	Arming cable
Method of actuation	Explosive powder
Firing time delay	2 seconds

d. MLU-58/B Reefing Line Cutter.

Method of activation	Arming cable
Method of actuation	Explosive powder
Firing time delay	4 seconds

e. Deployment Bag.

Type bag.....	Locking-closure
---------------	-----------------

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1-10. Safety, Care, and Handling.

a. Safety. It is imperative that you observe all safety precautions specified on the warning page in the front of this manual. You must also observe specific warnings and cautions specified throughout this manual. The warnings are provided to tell you how to protect yourself from death or serious injury.

b. Care and Handling.

- (1) Use care in handling packed parachutes as metal parts could cause personal injury.
- (2) Remove all jewelry when packing or performing maintenance on the parachute. Damage to the canopy materials could result from watches, rings, bracelets, etc.
- (3) Use every effort to protect the parachute from the weather elements, dust, dirt, oil, grease, acids, and direct sunlight.
- (4) Cover canopy during periods of inactivity. Avoid exposing canopy for prolonged periods to sunlight, inspection lights or fluorescent lights. Nylon material is subject to deterioration under ultraviolet light.
- (5) Use a heated building to store parachutes when available. Store parachute in a dry, well ventilated location, protected from pilferage, dampness, fire, dirt, insects, rodents, and direct sunlight.

CHAPTER 2

**UNIT AND INTERMEDIATE DIRECT SUPPORT (DS)
 MAINTENANCE INSTRUCTIONS**

	Page
Section I. Repair Parts, Special Tools, Test Measurement and Diagnostic Equipment (TMDE) and Support Equipment	2-1
Section II. Service Upon Receipt.....	2-2
Section III. Assembly.....	2-8
Section IV. Preventive Maintenance Checks and Services (PMCS)	2-8
Section V. Unit and Intermediate Direct Support (DS) Maintenance Procedures.....	2-11
Section VI. Repair.....	2-205
Section VII. Preparation for Storage or Shipment.....	2-283

OVERVIEW

This chapter contains information necessary to maintain the 100-Foot Diameter Cargo Parachute on the unit and intermediate direct support (DS) maintenance levels in accordance with the Maintenance Allocation Chart for the equipment. It includes the following:

- a. Procedures for processing a new or used parachute assembly upon receipt.
- b. Assembly of components prior to packing.
- c. Preventive maintenance procedures to ensure continued serviceability of all components.
- d. As-required inspections and maintenance procedures performed prior to packing such as shakeout and airing, cleaning and drying, and acidity and salt-water contamination tests.
- e. Detailed packing procedure.
- f. Repair methods and repair or replacement procedures for all components of the parachute assembly.

**Section I. REPAIR PARTS, SPECIAL TOOLS, TEST, MEASUREMENT AND DIAGNOSTIC
 EQUIPMENT (TMDE) AND SUPPORT EQUIPMENT**

Paragraph		Page
2-1	Common Tools and Equipment	2-1
2-2	Special Tools, TMDE and Support Equipment.....	2-2
2-3	Repair Parts	2-2

2-1. **Common Tools and Equipment.** For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit, and Appendix B, Section III of this manual.

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2-2. **Special Tools, TMDE and Support Equipment** . Special Tools, TMIDE and Support Equipment are not required.

2-3. **Repair Parts**. Repair parts are listed and illustrated in Appendix C of this manual.

Section II. SERVICE UPON RECEIPT

Paragraph		Page
2-4	Initial Receipt.....	2-2
2-5	Receipt of Used Parachute.....	2-8
2-6	After-Use Receipt.....	2-8
2-7	Checking Unpacked Equipment After Shipment.....	2-8

2-4. **Initial Receipt**. The following describes the procedures for processing parachutes upon initial receipt.

a. General Procedures for 100-Foot Diameter Cargo Parachute. When air delivery equipment is initially procured from a supply source and issued to a using unit, the item(s) will be unpacked from the shipping container(s) and inspected by a qualified parachute rigger (MOS 43E). The inspection performed will be a technical/rigger-type which will be conducted as outlined in paragraph 2-13. Upon completion of the inspection, the item(s) will be tagged as prescribed in DA PAM 738-751. Serviceable equipment may then be entered either into storage or into use in air delivery operations, as applicable. An unserviceable item will be held and reported in accordance with DA PAM 738-750. Marine Corps users refer to MCO 4855.10.

b. Inspection Personnel. Personnel other than parachute rigger personnel may assist in the unpacking process of initially received parachutes as directed by the local air delivery equipment maintenance officer. However, the maintenance officer will insure that the entire unpacking effort is conducted under the direct supervision of a qualified rigger (MOS 43E).

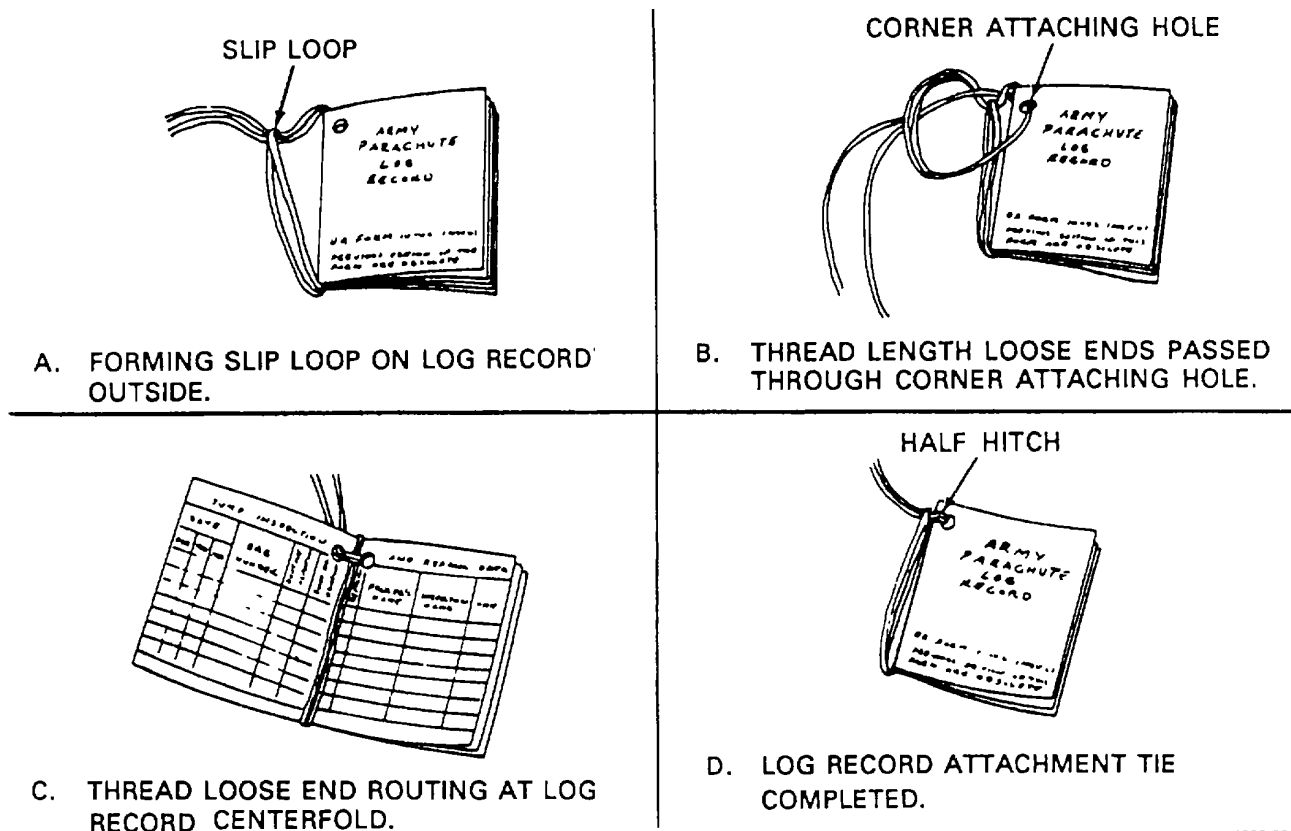
c. Configuration/Condition. Acceptance of new equipment from the manufacturer is based upon inspections made of sample lots which have been randomly selected in accordance with military standards. It is incumbent upon the using activity personnel to bear this in mind whenever equipment is first placed in service. Changes will sometimes evolve from the original equipment design and sometimes contracts are authorized to make deviations in material and construction techniques. Air delivery equipment that has been in the field cannot be expected to meet exacting manufacturing specifications; however, the equipment should closely reflect desired design characteristics. Since repairs, modifications, and/or changes can alter or detract from the configuration originally desired, such equipment shall be airworthy, safe, of the desired configuration, and adequate for intended use.

d. Parachute Log Record. The Army Parachute Log Record DA Form 10-42 or DA Form 3912 is a history-type maintenance document which accompanies the parachute canopy and deployment bag assemblies through the period of service of the individual assembly. The log record provides a means of recording maintenance actions performed on a parachute canopy assembly. Normally, a log record is initiated and attached to a deployment bag upon receipt by a using unit. However, if the item is subjected to alteration or modification by a maintenance activity during the interim period from date of manufacture to receipt by a using unit, the log record will be prepared by the activity performing the maintenance function. Once initiated, a log record will be attached to and contained in an affixed parachute log record/inspection data pocket until such time as the parachute canopy assembly is destroyed or rendered unfit for further use or repair. Additionally, should an item that requires a log record be transferred from one unit to another, the log record for the parachute assembly will accompany the item in the transfer action. A prepared log record will not be removed or separated from a parachute, and

especially a packed parachute, except as directed by the local air delivery equipment maintenance activity officer. A log record which is illegible, lost, damaged, soiled, or precludes further entries due to lack of space will be replaced upon the next repack or inspection, as applicable, with a serviceable item from stock.

e. Installing Attaching Tie. Install attaching tie as follows:

- (1) Cut a 30-inch length of ticket No. 5 waxed cotton thread and double the thread length.
- (2) Pass the looped end of the double thread length around the centerfold of the log record and form a slip loop on the outside at the log record top (A, figure 2-1).
- (3) Pass the thread length running ends through the corner attaching hole from the front cover of the log record (B, figure 2-1) and insure the running ends are routed over that part of the thread length located along the log record centerfold (C, figure 2-1).
- (4) Complete the attachment tie by making a half hitch on top of the slip loop made in (2), above.
- (5) Thread one running end of the log record attachment tie in a tacking needle and pass the tacking needle with attached thread end through the edge binding of the applicable parachute log record/inspection data pocket.
- (6) Remove the thread end from the tacking needle and make a finished 10-inch-long record attaching loop by securing the two thread together with an overhand knot.
- (7) Insert the log record into the pocket and secure the record within the pocket using the pocket flap and applicable type flap fastener.



4838-009

Figure 2-1. Installing Attachment Tie on Parachute Log Record.

f. Accomplishing a Log Record. Upon completion of the first technical/rigger-type inspection, the individual performing the inspection will initially prepare a log record for an individual parachute and accomplish subsequent record entries using the following procedures:

NOTE

Log record book entries will be made with a suitable type blue or black marking device that cannot be erased.

(1) Inside front cover. Using the information provided on the parachute canopy data block, make the following entries on the inside front cover of the log record (figure 2-2). Entries may be continued on the inside of the back cover, if necessary.

- (a) Serial number. Enter the parachute canopy assembly serial number.

NOTE

A parachute canopy serial number is recorded in a log record as a method of establishing control for maintenance, EIR documentation, and to insure the correct original record is reattached should the record become detached. A canopy serial number will not be used for property accountability, except in test projects or other special instances.

○ STATION & UNIT (Continued)

4838-011

Figure 2-2. Inside Front Cover of Parachute Log Record.

- (b) Type. Enter the parachute type.
 - (c) Part number. Enter the part number of the parachute canopy.
 - (d) Date of manufacture. Enter the month and year the parachute canopy was manufactured.
 - (e) Manufacturer. Enter the name of the parachute canopy manufacturer.
 - (f) Canopy contract number. Enter the entire contract number specified for the parachute canopy.
 - (g) Station and unit. Enter the name of the station and unit to which the parachute canopy is currently assigned. When a parachute is transferred permanently to another station and/or unit the original entry will be lined out and the name of the receiving station and/or unit will be entered.
- (2) *Inside back cover.* Entries may be continued on the inside back cover, if necessary (figure 2-3).

○ STATION & UNIT (Continued)

4838-011

Figure 2-3. Inside Back Cover of Parachute Log Record.

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(3) *Modification work order compliance record page.* When a modification is performed on a parachute canopy, the following entries will be made on the "Modification Work Order Compliance Record" pages of the Log Record (figure 2-4).

MODIFICATION WORK ORDER		COMPLIANCE RECORD			
MWO NUMBER	MWO TITLE	MODIFIED BY (Initials)	INSP BY	UNIT	DATE
					DAY MONTH YEAR
10-1670-280-23&P 1 JUN 72	ENLARGE ORIFICE	Evans	JAB	71	25 7 71
10-1670-280-23&P 1 JUN 72	ENLARGE ORIFICE	C/W			25 10 72

1. MODIFICATION WORK ORDER COMPLIANCE COMPLETED.
 2. MODIFICATION COMPLETED BY UNKNOWN DUE TO LOST ORIGINAL LOG RECORD.

4838-012

Figure 2-4. Log Record Entries for the Modification Work Order Compliance Record Page.

(a) *MWO number.* Enter the publication number and date of the Modification Work Order (MWO) which describes the MWO (1, figure 2-4).

(b) *MWO title.* Enter a short, abbreviated title extracted from the MWO prescribing the work.

(c) *Modified by.* Enter the last name of the individual who has performed the modification. If the original log record for the parachute has been lost, and it has been ascertained through inspection that a particular modification has been accomplished, the entry for this column will be C/W "Complied With" (2, figure 2-4), which signifies the applicable MWO has been complied with.

(d) *Inspected by.* The individual who accomplished the inspection required after modification will sign this entry with his last name only.

(e) *Unit.* Enter the unit designation responsible for performing the MWO or in the event of a lost Log Record, the unit to which the inspector is assigned.

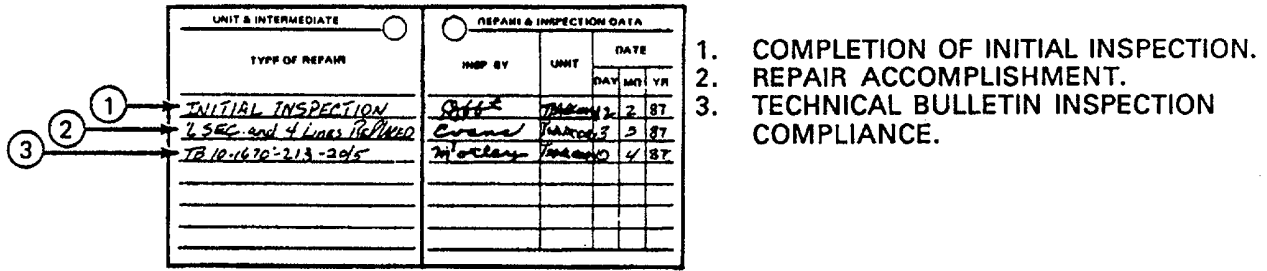
(f) *Date.* Enter the day, month, and year the modification work was completed.

(4) *Unit and intermediate repair and inspection data.* When a parachute canopy assembly is initially received from a supply source and a technical/rigger-type inspection is performed, the inspection accomplishment will be documented on the "Unit and Intermediate Repair and Inspection Data" page of the individual Parachute Log Record (figure 2-5). Additional entries will also be made on this page each time the canopy assembly is repaired or is administered an inspection in compliance with a one-time inspection Technical Bulletin (TB). The page completion criteria is as follows:

(a) *Type of repair.* Enter the type of repair, completion of initial inspection, repair accomplishment, Technical Bulletin Inspection compliance.

(b) *Inspection by.* The individual who accomplished the inspection required will sign this entry with last name.

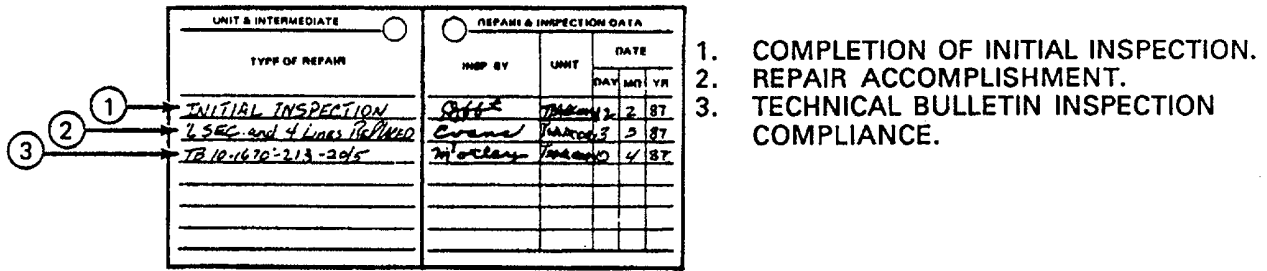
- (c) *Unit.* Enter the unit designation responsible for performing the type of repair.
- (d) *Date.* Enter the day, month and year the repair was performed.



4838-013

Figure 2-5. Log Record Entries for Unit and Intermediate Repair and Inspection Data Page.

(5) *Note page.* A page is provided at the back of a parachute log record to accommodate recording of additional data pertinent to the serviceability of a parachute canopy assembly (figure 2-6). This shall also include the month and year the item was placed in service.



4838-013

Figure 2-6. Data Entries for a Log Record Note Page.

2-5. Receipt of Used Parachute. Upon initial receipt of used parachute proceed as follows:

- a. Follow procedures given in paragraph 2-4a, and check each component for excessive wear and tear.
- b. If defects of damages are discovered, process the parachute for maintenance at the maintenance level assigned by the Maintenance Allocation Chart (Appendix B).

2-6. After-Use Receipt. When a parachute is received at the maintenance activity following its use during air delivery, it must be given a shakeout and aired (para 2-11), and, if necessary, cleaned (para 2-12) before it can be returned to service. If a parachute is issued but not used, it does not need to be given a shakeout, however, it must be aired if it has been subjected to conditions of dampness.

2-7. Checking Unpacked Equipment After Shipment.

- a. Inspect equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF Form 364, Packing Improvement Report.
- b. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions in DA PAM 738-750. Marine Corps personnel refer to MCO 4430.3.
- c. Check to see whether the equipment has been modified.

Section III. ASSEMBLY

Paragraph	Page
2-8 Assembly of the 100-Foot Cargo Parachute.....	2-8

2-8. Assembly of the 100-Foot Cargo Parachute.

NOTE

The procedure for assembling components of the parachute is incorporated in paragraphs 2-16, 2-17 and 2-18.

Section IV. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Paragraph	Page
2-9 PMCS Procedures.....	2-8

2-9. PMCS Procedures. The following describe PMCS procedures on the unit and intermediate direct support (DS) maintenance levels.

- a. General. Table 2-1 lists preventive maintenance checks and services. The purpose of PMCS is to assure that the 100-Foot Diameter Cargo parachute is operational.

b. Frequency of Performing PMCS. PMCS will be performed before equipment is packed for use, during modification and repair after use, or at any time deemed necessary by the air delivery equipment maintenance officer.

c. PMCS Columnar Entries Table 2-1. Enter data in columns as follows:

(1) Item number. The item number column shall be used as a source of the item number required for the "TM Number" column on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) when recording the results of PMCS.

(2) Interval. This column identifies the required PMCS level.

(3) Item to be inspected. Contains the common name of the item to be inspected.

(4) Procedures. Provides a brief description of the procedure by which the checks are to be performed.

d. Recording Defects. All defects discovered during the inspection will be recorded using the applicable specifics in DA Pamphlet 738-750, DA Pamphlet 738-751, and TB 43-0002-43 Maintenance Expenditure Limits for FSC Group 16 (FSC Class 1670).

e. Overage items. The 100-foot parachute has no age or service life.

f. Inspection Function Requirement. Normally, a technical/rigger-type inspection will be performed by air delivery equipment maintenance personnel at a packing, rigging, or repair activity. The inspection of initial receipt items will be performed as a separate function from packing or rigging activity; the item to be inspected will be placed in proper layout on packing surface or suitable sized floor area. Should defect or damage be discovered at any point during the inspection, the inspection will be terminated and the applicable item will be processed and forwarded to repair activity. The repair activity, in turn, will conduct a technical/rigger-type inspection that will be performed by only those parachute rigger personnel cited in AR 750-32, Airdrop, Parachute Recovery and Aircraft Personnel Escape Systems. Any defect discovered during a unit level repair activity inspection which exceeds the capability of that activity will require the affected item to be evacuated to an intermediate direct support (DS) maintenance function for further determination of economic repair and repair accomplishment, if applicable.

NOTE

A parachute which is deemed unserviceable by a packing or rigging activity will be S-folded in its deployment bag prior to being sent to a repair activity.

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NAVY NAVAIR 13-1-31

Table 2-1. Unit and Intermediate Direct Support (DS) Preventive Maintenance Checks and Services (PMCS).

B - Before

D - During

A - After

Item No.	Interval			Item to be inspected	Procedures
	B	D	A		
					NOTE
				The 100-Foot-Diameter Cargo Parachute	Any defective material noted must be repaired prior to use.
1	•			Parachute Packed for Use	Visually check visible parts for serviceability and completeness without opening deployment bag. Check parachute inspection data record for pack date and also check inspection data pocket for availability of reefing line cutter tags to insure the reefing line cutters are armed. Confirm model of parachute.
2	•		•	Canopy	As canopy is inflated for shakeout, remove all debris by hand using a suitable broom or brush. Also check for dampness, fungus, acid, grease, oil, dirt, foreign material, holes, cuts, tears; broken lines and webbing.
	•		•	Fabric Material	Legibility of marking data; completeness; dampness, fungus, dirt, acid, grease, oil, foreign material, rips, burns, cuts, breaks, frays, tears, holes, thin spots, loose weaving; loose or broken stitching, tacking and lines; freedom of lines in radial seams; raveled ends.
	•		•	Hardware Components	Corrosion, rough spots, burrs, breaks, cracks, bends; loose or missing screws and reefing line rings; stripped or damaged threads.
3	•		•	Deployment Bag	Completeness, dampness, fungus, acid, grease, oil, dirt, foreign material, holes, cuts and breaks.
	•		•	Fabric Materials	Completeness, dampness, fungus, dirt, acid, grease, oil, foreign material, rips, burns, cuts, breaks, frays, tears, holes; loose or broken stitching; loose or missing metal grommets.
4	•		•	Parachute Bridle	Completeness; dampness, fungus, acid, grease, oil, dirt, foreign material, holes, cuts and breaks.

Table 2-1. Unit and Intermediate Direct Support (DS) Preventive Maintenance Checks and Services (PMCS) (cont).

Item No.	Interval			Item to be inspected	Procedures
	B	D	A		
4	•		•	Fabric material	Completeness; dampness, fungus, dirt, acid, grease, oil, foreign material, rips, burns, cuts, breaks, frays, tears, holes; missing, loose or broken stitching.
	•		•	Hardware components	Corrosion, rough spots, burrs, breaks, cracks, bends; stripped or damaged threads; loose or missing screws.

**Section V. UNIT AND INTERMEDIATE DIRECT SUPPORT (DS)
 MAINTENANCE PROCEDURES**

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2-10. **General Information.** The following paragraphs contain general information pertinent to unit and intermediate direct support (DS) maintenance procedures:

a. **Scope.** This section contains maintenance procedures which are the responsibility of the specified technician as authorized by the maintenance allocation chart (MAC) and the Source, Maintenance and Recoverability (SMR) coded items that are identified in the repair parts and special tools list (RPSTL).

b. **Maintenance Functions/Procedures.** Each paragraph identifies a maintenance function specified in the MAC. All maintenance procedures required to complete a maintenance function are identified under "This task covers:", in the order in which the work is most logically accomplished.

2-11. Shakeout and Airing.

This task covers: a. Shakeout b. Airing

Tools:

Brush, Scrub, Household, Item 1, Appendix B
Broom, Item 24, Appendix B
Fan, Pedestal, Item 25, Appendix B

Equipment Condition:

Parachute suspended or inflated

Personnel Required: (2)

43E(10) Parachute Rigger

a. Shakeout. The shakeout will be accomplished by a two- or three-person team either indoors within a shakeout room or outdoors at a shakeout tower. If facilities permit, shakeout will be accomplished by suspending the canopy as described in (1), below. If facilities do not permit canopy suspension, the canopy will be inflated and shakeout will be accomplished as described in (2), below.

(1) *Canopy suspension method.* Each parachute will be suspended by the canopy vent and all debris removed by shaking the canopy thoroughly or by brushing with a dry, soft-bristled brush as detailed below:

- (a) With assistance from No. 2 person, No. 1 person will connect snap on a pulley rope to canopy bridle loop (A, figure 2-7).
- (b) Through use of pulley rope, No. 2 person will raise canopy to a suitable height which will enable No. 1 person to perform shakeout on each canopy gore. Until gore shaking process is completed, No. 2 person will maintain a steady pull on pulley rope to hold suspended canopy at working height needed by No. 1 person.
- (c) No. 1 person will grasp any two consecutive suspension lines, one in each hand (B, figure 2-7), and vigorously shake first gore. When gore is free of debris, No. 1 person passes line from right hand to left hand and grasps next consecutive suspension line in right hand. No. 1 person will shake out each consecutive gore until all suspension lines are held in left hand and all gores are free of debris.
- (d) Once gore shaking process is completed, No. 2 person will slowly raise suspended canopy higher as No. 1 person clears suspension lines and risers of debris and removes entanglements (C, figure 2-7) when possible.
- (e) After suspension lines have been cleared, No. 2 person may hold or temporarily secure pulley rope while No. 1 person proceeds to clear debris from other parachute components.
- (f) When all components are free of debris, No. 2 person will slowly lower canopy while No. 1 person S-folds suspension lines and risers into deployment bag (D, figure 2-7). After suspension lines and risers have been completely folded, No. 1 person will accordion-fold canopy length on top of folded lines.

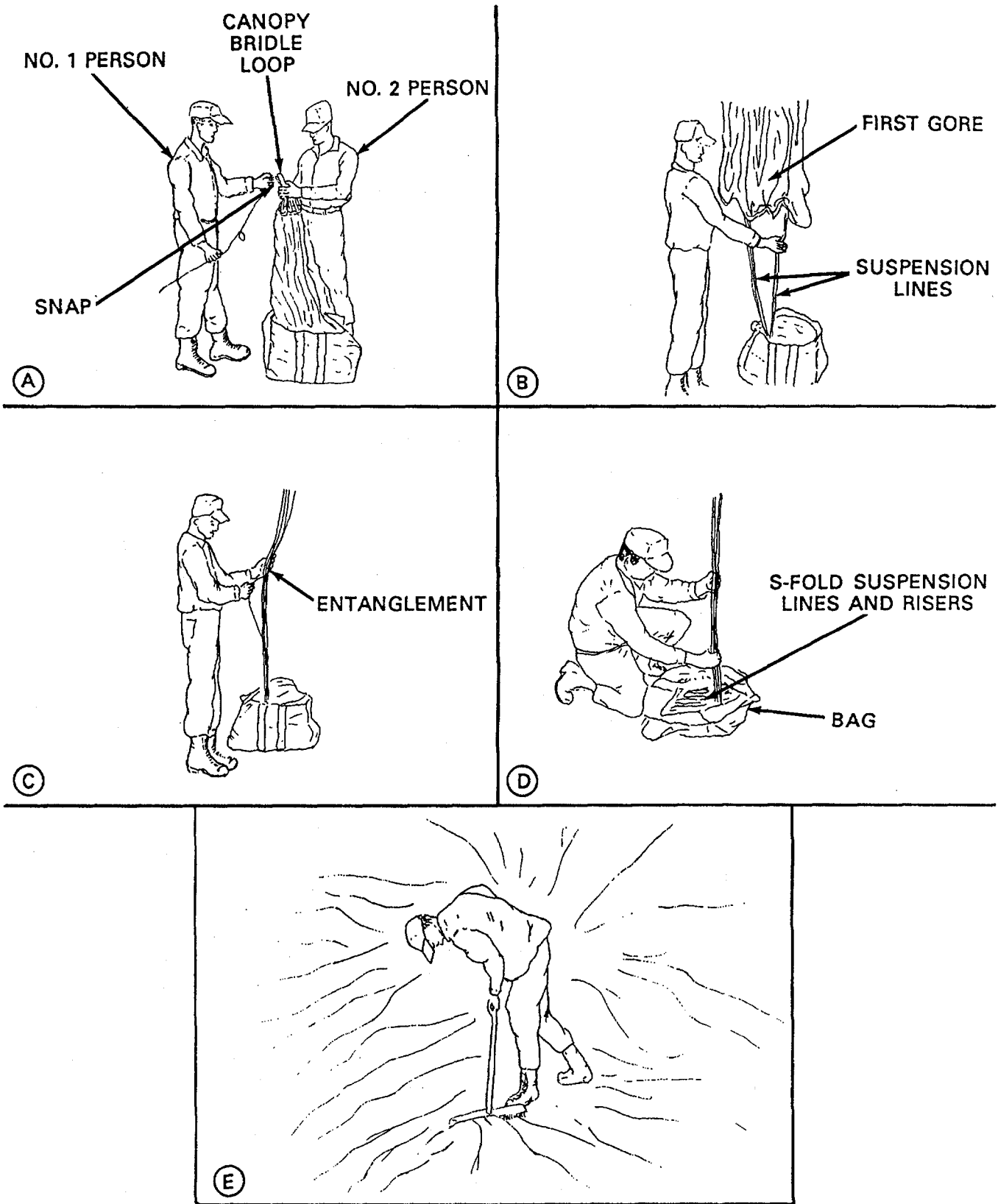


Figure 2-7. Shakeout.
2-13

2-11. Shakeout and Airing (cont).

- (g) As canopy folding is being completed, No. 1 person disconnects canopy vent from pulley rope snap. Secure folded canopy assembly for further handling.

(2) *Canopy inflation method.* The shakeout will be accomplished by a three-person team, either indoor within a shakeout room or outdoors at a suitably-sized shakeout area. Each parachute canopy will be inflated and all debris removed by shaking the canopy thoroughly or by brushing with a dry soft-bristled brush or broom, as detailed below:

- (a) The No. 1 person will position a large pedestal fan at a point 10 feet below the canopy skirt so the airstream will partially inflate the canopy.
- (b) The No. 2 person will enter the inflated canopy with a broom or fine-bristled brush and sweep the inside surfaces of accumulated debris (E, figure 2-7).
- (c) The No. 1 person will grasp the first available suspension line, holding it high above the head while holding the next consecutive suspension line with the foot. The No. 3 person on the outside of the canopy and the No. 2 person on the inside will sweep or brush accumulated debris from the exposed canopy gore.
- (d) As each gore is cleared of debris, the No. 1 person will continue to expose the next consecutive gore to the sweeping or brushing process until all gores are free of debris.
- (e) Once the gore sweeping or brushing process is complete, the No. 2 person will exit the canopy, shut down the pedestal fan and continue to clear accumulated debris from the suspension lines and risers.
- (f) When all components are free of debris, the No. 1 person will S-fold the canopy, suspension lines and risers into a deployment bag, while the No. 2 person holds the bag open.

CAUTION

Prolonged exposure to direct sunlight will cause extensive damage to fabric materials.

b. Airing. Where dampness and mildew are common, air delivery equipment will be aired more frequently. Parachutes that have been previously packed or are unpacked, which have been subjected to conditions of dampness or mildew, will be aired for a period of at least 6 hours prior to being repacked. Air delivery items may be aired either indoors or outdoors in dry weather. However, fabric items will not be aired in direct sunlight. Airing may be accomplished by suspending or elevating the applicable item(s) in a manner which would allow entire exposure to the circulation of air. Outside facilities used for the shakeout of parachutes may be used for the airing of air delivery equipment if weather conditions permit. If the shakeout facilities are inadequate for airing, the applicable item(s) may be suspended or elevated at several points or by draping over suitable type objects which would not cause damage.

2-12. Cleaning and Drying.

This task covers:

a. Cleaning fabric items with cleaning solvent	c. Equipment immersed in salt water
b. Cleaning fabric items with dishwashing compound	d. Equipment immersed in fresh water
	e. Drying fabric items
	f. Cleaning metal items

Tools:

Brush, Scrub, Household, Item 1, Appendix B

Materials/Parts:

Tetrachloroethylene, Item 26, Appendix D
Dishwashing Compound, Item 15, Appendix D
Rag, Wiping, Item 21, Appendix D
Lubricant, Solid Film, Item 17, Appendix D
Cloth, Abrasive, Item 2, Appendix D
inhalation of cleaning solvent vapors can be detrimental to human health.

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Layout on packing surface or other suitable area.

Special Environmental Condition:

Ventilation required as repeated or prolonged

WARNING

Due to flammable properties and nylon-damaging substances, cleaning solvents other than tetrachloroethylene will not be used in the spot-cleaning of air delivery equipment. Tetrachloroethylene will only be used in areas where substantial ventilation is available. Repeated or prolonged inhalation of the solvent vapors can be detrimental to human health. In addition, avoid prolonged or repeated contact of the solvent fluid with areas of the skin. Tetrachloroethylene must not be taken internally.

CAUTION

If during the cleaning there exists a possibility that the substance to be removed contains acid or some other equally destructive ingredient, the item will be evacuated to intermediate maintenance activity for determination as to the nature of the substance and item disposition. If the substance cannot be identified or if normal repair procedures will not eliminate all traces of chemical or acid damage, the applicable item will be condemned.

2-12. Cleaning and Drying (cont).

NOTE

Cleaning of parachutes should be held to a minimum and should be performed only when necessary to prevent malfunction or deterioration. When a parachute contains debris, or when it is soiled by dirt, oil, grease, rust, corrosion, or other foreign substances to such an extent that cleaning is necessary, the cleaning should be performed manually and should be limited to the soiled area only, unless the parachute has been contaminated by water. The methods of cleaning must be determined by the nature of the substance to be removed.

Do not use cleaning solvent to clean item soiling caused by air sickness. Use a solution of hand dishwashing compound to clean this type of soiling.

a. Cleaning Fabric Items with Cleaning Solvent. Use cleaning solvent to clean fabric items as follows:

- (1) Gently brush with a soft bristle brush.
- (2) Spot clean with cleaning solvent tetrachloroethylene.
 - (a) Rub soiled area with a clean cloth dampened with tetrachloroethylene.
 - (b) Rinse cleaned area by repeating the rubbing process with clean portion of cloth dampened with the cleaning solvent.

NOTE

Do not wring out the rinsed area if an excessive amount of cleaning solvent was applied.

b. Cleaning Fabric Items with a Solution of Hand Dishwashing Compound. Use dishwashing compound to clean fabric items as follows:

- (1) Gently brush with a soft bristle brush.
- (2) Spot clean with a solution of dishwashing compound.
 - (a) Dissolve 1/2 cup of dishwashing compound in one gallon of warm water.
 - (b) Rub soiled area with a clean cloth dampened with solution of dishwashing compound.
 - (c) Rinse cleaned area by repeating rubbing process with a clean portion of cloth dampened with the dishwashing compound.

NOTE

Fabric items will not be dried in direct sunlight or by laying an item on the ground.

NOTE

Equipment made of cotton fabric immersed in salt water is to be condemned. See paragraph 2-13e for equipment disposition.

c. Parachute Assemblies Immersed in Salt Water. If the parachute, or any of its components, has been immersed in salt water for a period in excess of 24 hours it will be condemned. Additionally, if the parachute, or any of its nylon components, has been immersed in salt water for a period of less than 24 hours, but cannot be rinsed within 48 hours after recovery, it will also be condemned. However, if the cited time limitations can be met, then immediately upon recovery, suspend or elevate the parachute assembly in a shaded area and allow it to drain for at least 5 minutes. Do not attempt to wring the fabric or the suspension lines. Within 48 hours after recovery, under the supervision of a qualified parachute rigger (43E), rinse the recovered parachute assembly as follows:

- (1) Place the parachute assembly into a large water-tight container filled with a suitable amount of fresh, clean water to cover the assembly.

NOTE

If the salt-water-soaked parachute assembly is too large to be placed into a rinsing container, then the rinsing process will be effected by applying fresh, clean water to the assembly using a hose.

- (2) Agitate the container contents by hand for 5 minutes.
- (3) Remove the parachute assembly from the container and suspend or elevate it in a shaded area, allowing a 5-minute drainage period. Do not attempt to wring the fabric or the suspension lines.
- (4) Repeat the procedures in steps (1) through (3), above, twice, using fresh, clean water for each rinse.
- (5) After the third rinse, allow the parachute assembly to drain thoroughly. Upon completion of draining, dry the assembly in accordance with procedures in e., below.
- (6) When dried, perform a technical/rigger-type inspection of the parachute assembly. Corroded metal components, or corrosion-stained fabrics or suspension lines will be either repaired or replaced as prescribed by the Maintenance Allocation Chart (MAC) in Appendix B.
- (7) Record any repairs, immersion and rinsing in the parachute log record as shown in figures 2-5 and 2-6.

d. Parachute Assembly Immersed in Fresh Water. Any parachute or its components that has been immersed in a fresh water lake, river or stream will not require rinsing unless it has been ascertained that the water is dirty, oily or otherwise contaminated. Procedures for handling a fresh water immersed parachute are as follows:

- (1) *Contaminated fresh water.* If the parachute, or its components, has been immersed in contaminated fresh water, rinse and dry (see c., above) and, if applicable, repair.

2-12. Cleaning and Drying (cont).

(2) *Uncontaminated fresh water.* If the parachute, or its components, has been immersed in uncontaminated fresh water, it will be cleaned and dried as outlined in a., b., e. and f., above and below. Minor discoloration of fabric items resulting from immersion in uncontaminated fresh water may occur. No attempt should be made to eliminate a minor discoloration as a slight discoloring is preferable to employing vigorous techniques that may damage fabric. Small stains caused by petroleum products or blood will be removed using spot-cleaning procedures in a., or b., above.

e. *Drying Fabric Items.* Dry fabric items as follows:

- (1) Suspend or elevate item in a well-ventilated room or in a heated drying room.
- (2) Drying time may be reduced by using electric circulating fans.
- (3) When heat is used, the heat temperature shall not exceed 160°F (710C). Preferred temperature is 140°F (600C).

f. *Cleaning Metal Items.* Clean metal items as follows:

CAUTION

Use care not to damage the adjacent fabric materials.

- (1) Remove burrs, rough spots, rust or corrosion from metal items by filing with a metal file or by buffing and polishing with abrasive cloth.

WARNING

Use tetrachloroethylene only in areas where substantial ventilation is provided. Repeated or prolonged inhalation can be detrimental to human health. Avoid prolonged or repeated contact with skin areas. Tetrachloroethylene must not be taken internally.

- (2) Remove all oils and filings by brushing and dipping in tetrachloroethylene. Allow to dry.

NOTE

Shield adjacent fabric material before spraying solid film lubricant.

- (3) Spray metal item with a solid film lubricant and allow to air dry for 24 hours.

NOTE

A small amount of lubricant will not damage fabric, but may cause discoloration and make fabric appear soiled.

2-13. Inspection.

This task covers:

a. Routine Inspection	d. In-Storage Inspection
b. Pack-In-Process Inspection	e. Equipment Disposition
c. Technical-Rigger Type Inspection	

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Packed

a. *Routine Inspection.* A routine inspection is a visual check performed to ascertain the serviceability of all visible components of a parachute that is packed or rigged for use. The inspection will be made on all components that can be inspected without opening the parachute pack. This inspection will be administered by a parachute rigger prior to use. Parachutes issued for an air delivery operation and not deployed will receive a routine inspection prior to being placed into ready-for-issue storage.

b. *Pack-in-Process Inspection.* A pack-in-process inspection is performed at specified intervals during the packing of a parachute to insure that only authorized procedures and methods are being used. The inspection will be accomplished by a parachute supervisor other than the packer or rigger preparing the applicable equipment for use. The intervals at which the inspection is performed is as follows:

- (1) After the canopy is placed in proper layout and the reefing line cutters are installed. (G-11 B and G-11 C center line and temporary tie installed.)
- (2) After gore folding is completed, reefing line is installed and center line is installed (G-11 B and G-1 1C).
- (3) After the canopy, suspension lines, connector links and riser ties are completed.
- (4) After the installation of breakcord tie (G-1 1A), stowing the canopy and arming the reefing line cutter.
- (5) After the first regular stow.
- (6) After the deployment bag is closed and suspension lines protector flap is laced.

c. *Technical/Rigger-Type Inspection Procedures.* Perform inspection as follows:

- (1) *Overall inspection.* An overall inspection will be made on the 100-Foot Cargo parachute to ascertain the following:

(a) *Log record/parachute inspection data pocket and form.* As applicable, inspect the assembly log record/parachute inspection data pocket to insure the Army Parachute Log Record (DA Form 10-42 or 3912) is enclosed and properly attached as prescribed in paragraph 2-4d. Further, remove the log record from the pocket and evaluate the recorded entries to insure compliance with paragraph 2-4e.

- (b) *Assembly completeness.* Insure that the applicable assembly is complete and no components or parts are missing.

2-13. Inspection (cont).

(c) *Operational adequacy.* Check item components and parts to ensure proper assembly, which includes attachment and alignment, and that assembled product functions in prescribed manner. Further ensure that no stitch formation or sewn seam has been omitted.

(d) *Markings and stenciling.* Inspect each assembly and components for faded, illegible, obliterated, or missing informational data, identification numbers.

(e) *Foreign material and stains.* Inspect each assembly and related components for presence of dirt or similar type foreign material. Also check for evidence of mildew, moisture, oil, grease, pitch, resin, or contamination by salt water.

(2) *Detailed inspection.* In addition to the overall inspection performed in (1) above, a detailed inspection will be performed on materials which constitute assembly or component construction using the following criteria, as applicable:

(a) *Metal.* Inspect for rust, corrosion, dents, bends, breaks, burrs, rough spots, sharp edges, wear, deterioration; damaged, loose, or missing screws.

(b) *Cloth.* Inspect for breaks, burns, cuts, frays, holes, rips, snags, tears; loose, missing or broken stitching or tacking; weak spots, wear, or deterioration.

(c) *Fabric tape, webbing, and cordage.* Inspect for breaks, burns, cuts, frays, holes, snags, tears, incorrect weaving, and sharp edges formed from searing; loose, missing, or broken stitching, tacking, whipping, , and weaving; weak spots, wear, and deterioration.

(d) *Pressure-sensitive (adhesive) tape.* Inspect for burns, holes, cuts, tears, weak spots; looseness and deterioration.

d. *In-Storage Inspection.* An in-storage inspection is a physical check conducted on a random sample of air delivery equipment which is located in storage. The purpose of the inspection is to ensure that the equipment is ready for issue, that the item is properly identified and segregated from other types of equipment, that no damage or deterioration of equipment has been incurred, and that all modifications or similar action requirements have been completed. The inspection shall also concern the methods and procedures applied to the storage of air delivery items, the adequacy of storage facilities, efforts of pest and rodent control, and protection against unfavorable climatic conditions. Air delivery equipment which is in storage will be inspected at least semiannually and at more frequent intervals if prescribed by the local parachute maintenance officer. The frequency of inspection may vary according to the type of storage facilities and local climatic conditions. In-storage inspection will be conducted only by parachute rigger personnel designated by local parachute maintenance officer.

e. *Equipment Disposition.* Air delivery equipment may be rendered unserviceable by either normal fair wear or by aging and will subsequently be repaired, modified, or condemned, as appropriate. Equipment that is uneconomically repairable (outdated) will be condemned. Disposition of air delivery equipment that is condemned, unserviceable, or for which the serviceability is questionable, will be accomplished using the following procedures, as applicable.

(1) *Item requiring repair or modification.* An air delivery item which requires repair or modification will be tagged in accordance with DA PAM 738-751. Subsequent work on the item will be performed at the maintenance level specified for the maintenance function in the applicable supporting technical publication.

(2) *Disposition of condemned air delivery equipment.* Condemned equipment, other than fatality parachutes, will be removed from service and disposed of in accordance with current directives listed in Appendix A of this manual.

(3) *Rejected equipment.* Equipment which, prior to use, is deemed unserviceable for use will be reported in an EIR in accordance with DA Pam 738-750, as authorized by AR 750-1. Each applicable item which is defective will be held and safeguarded pending receipt of disposition instructions from the National Maintenance Point (NMP). In all instances, EIR exhibit material will be handled as prescribed in DA Pam 738-750. If the quality or the serviceability of an item is questionable, clarification and assistance may be obtained by contacting Commander, U.S. Army Troop Support Command, ATTN: AMSTR-QP, 4300 Goodfellow Blvd., St. Louis, Missouri 63120.

(4) *Equipment of doubtful serviceability.* Equipment which has had previous use and has not exceeded normal fair wear or aging criteria, but of which further serviceability is doubtful, will be tagged as prescribed in DA PAM 738-751. In addition, the equipment will be reported in an EIR in accordance with DA Pam 738-750 and AR 750-1. The item(s) in question will be held as EIR exhibit material as outlined in DA Pam 738-750 pending receipt of disposition instructions from the NMP. A maintenance activity holding EIR exhibit material will not tamper with the applicable item(s) or make any attempt to ascertain cause factors. Unnecessary handling of EIR exhibit material may disturb or alter peculiar aspects of the affected item(s) which might affect the judgement of engineering personnel who have the responsibility for final evaluation of EIR actions.

2-14. Acidity Test.

This task covers: Acidity test

Tools:

Packing Paddle, Item 10, Appendix B

Materials/Parts:

Medicine Dropper, Item 51, Appendix D
Three-Color pH Paper, Item 52, Appendix D
Spool with Color Chart, Item 53, Appendix D

Equipment Condition:

Unpacked.
Layout on packing table or other suitable area.

a. Fabric and Webbing Acidity Test. Components and parts that are constructed from fabric or webbing will be administered an acidity test whenever the material is discolored, stained, or the presence of acid is suspected. The acidity test will be accomplished using approved colorimetric pH paper, strip type, with the color comparison chart on the side of each manufacturer's dispenser, to determine the acidity level in steps of 1 pH on fabric or webbing item.

b. Test Procedure. Perform test as follows:

- (1) Using a medicine dropper or equivalent type applicator, place one to two drops of water on the item in the intended test area. If water drops do not penetrate the material, gently rub the moistened area with a , flat side of a clean metal packing paddle.
- (2) Tear a suitable length of colorimetric pH paper from dispenser, place the piece of pH paper on the wetted area and press the full surface of the paper against the material with a flat side of the packing paddle used in step (1), above. Insure the pH paper becomes thoroughly wet.
- (3) Using the color comparison chart enclosed in the dispenser, compare the color of the moistened pH paper strip with the pH 1-3 color scale. If the color of the pH paper matches the numerical pH 1-3, the acidity present in the material exceeds the acceptable level and the item is to be condemned and processed for disposition in accordance with paragraph 2-13e.
- (4) After a packing paddle has been used as outlined in steps (1) and (2), above, thoroughly rinse and dry the paddle before using the paddle for any other functions.

2-15. Salt-Water Contamination Test.

This task covers: Inspection

Equipment Condition:

Layout on packing surface or other suitable area.

Inspection. Look for a white crystalline residue.

NOTE

Clean or condemn equipment known or suspected of salt contamination in accordance with paragraph 2-12(c) or 2-13(e).

2-16. Packing 100-Foot Cargo Parachute, Model G-11A.

This task covers:

a. Inspection	c. Preparing Parachute for Proper Layout
b. Orientation	d. Packing the G-11A Parachute Assembly

Tools:

Line Separator, Item 7, Appendix B
Knife, Item 4, Appendix B
Yardstick, Item 22, Appendix B

Materials/Parts:

Cloth, Cotton, Muslin, Item 5/6, Appendix D
Cord, Nylon, Type III, Item 11/12, Appendix D
Marking Aid, Item 46/47, Appendix D
Paper, Kraft, Item 19, Appendix D
Tape, Masking, Item 25, Appendix D
Thread, Cotton, Size 8/4, Item 27, Appendix D
Thread, Cotton, Size 8/7, Item 28, Appendix D
Webbing, Cotton, Type 1, 1/4-in., Item 36, Appendix D
Webbing, Nylon, Tubular, 1/2-in., Item 44, Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Parachute cleaned (reference paragraph 2-12) and given a shakeout (reference paragraph 2-11).

References:

DA PAM 738-750 and DA PAM 738-751
TB 43-0002-43

WARNING

Failure to detect areas of damage may result in malfunction of the parachute and injury or loss of life to personnel.

a. *Inspection.* If defects or damages are discovered during inspection of a parachute, the parachute must be processed for maintenance in accordance with TM 10-1670-201-23 and DA PAM 738-751. A rigger type inspection and a pack-in-process inspection must be performed in conjunction with each packing of a parachute (refer to paragraph 2-13).

(1) *Modified rigger-type inspection.* During the packing of each parachute, it must be given a visual rigger-type inspection by the packers in accordance with paragraph 2-13(2).

(2) *Pack-in-process inspection.* A pack-in-process inspection must be performed by a designated supervisory rigger, other than the packers, at six intervals during the packing procedure. The inspection is performed to ensure that the parachute is packed according to authorized packing procedures. (Refer to paragraph 2-13).

b. *Orientation.* Throughout this manual, all directions (right, left, upper, lower, top, bottom, clockwise, and counterclockwise) are given from the rigger's point of view, as the rigger stands looking from the parachute riser (tension device) toward the canopy vent (stationary post). See figure 2-8.

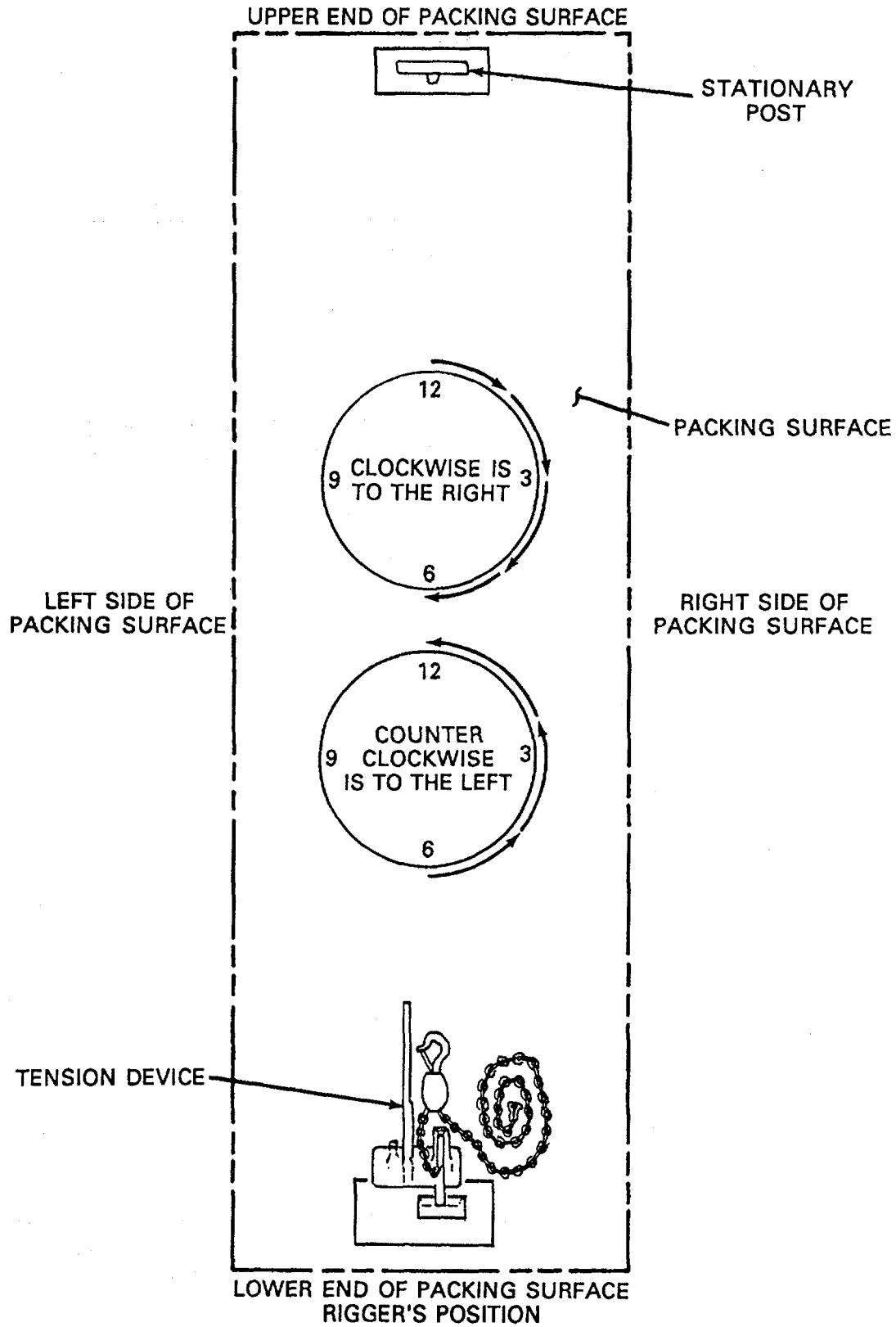


Figure 2-8. Rigger's Orientation.
2-25

2-16. Packing 100-Foot Cargo Parachute, Model G-11A (cont).

- (1) Top, that portion of the equipment that is farthest from the packing surface.
- (2) Bottom, that portion of the equipment that is nearest to the packing surface.

c. Preparing Parachute for Proper Layout. Prepare the parachute for proper layout by positioning the canopy in an elongated manner on a suitable packing surface, with the vent lines located next to a stationary post (figure 2-9) and the suspension risers near a tension device. Remove the reefing line cutter tags and cotter pins from the log record book pocket. To complete the proper layout, perform the following:

(1) *Removing canopy inversion.* Inspect the canopy vent lines to determine if the canopy is inverted. If the vent lines are located on the inside of the upper lateral band, the canopy is inverted. To remove the inversion, lift the canopy skirt and walk up through the canopy to the vent area. Grasp the bridle loop and pull the canopy vent down through the canopy skirt between two adjacent suspension lines (figure 2-10). On the outside of the canopy, pull the canopy vent back to the stationary post. Attach the bridle loop to the stationary post.

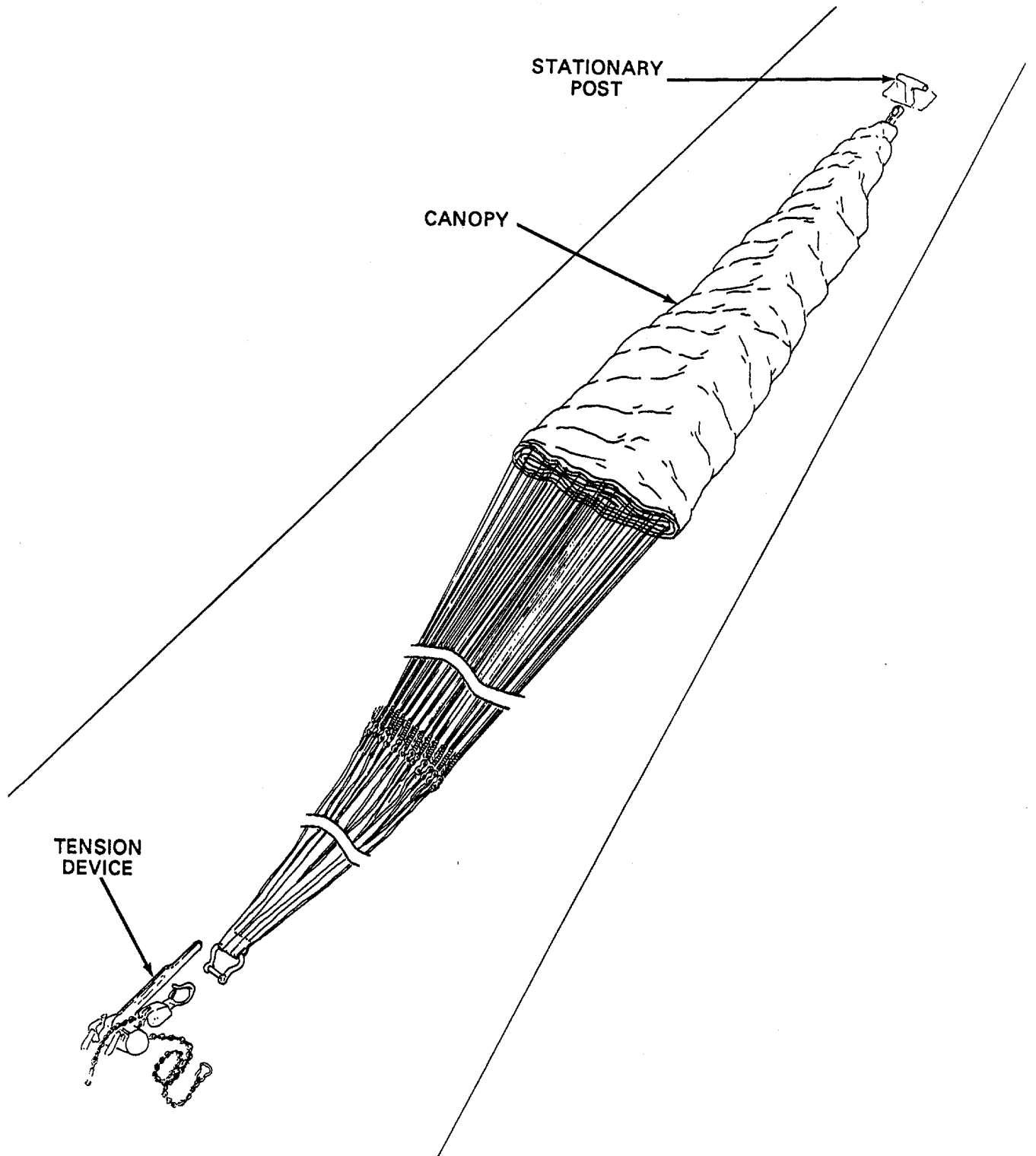
(2) *Locating suspension lines in proper layout.* Locate the top center gore of the canopy and divide the suspension lines into two groups, Lines 1 through 60 in the left group and lines 61 through 120 in the right group. Maintain group separation by moving from the skirt of the canopy towards the suspension risers, removing turns, tangles and twists from the two groups as follows:

(a) *Turns.* A turn occurs when one group of suspension lines rotates around the opposite group of suspension lines. Remove the turn by rotating the suspension lines (figure 2-11) in a direction opposite to that of the turn.

(b) *Tangles.* To remove a tangle or tangles in the suspension lines, begin by separating lines 1 through 40 from the canopy skirt to the connector link assemblies. While separating the lines, place all lines which pass over the top of the group over one forearm. Grasp the four connector link assemblies which have lines 1 through 40 attached and pull the connector link assemblies and the suspension risers through the remaining suspension lines (figure 2-12). At line 41, count 40 more lines, separate the lines from the canopy skirt to the connector link assemblies. While separating the lines, place all lines which pass over the top of the group over one forearm. Grasp the four connector link assemblies which have lines 41 through 80 attached and pull the connector link assemblies and the suspension risers through the remaining suspension lines. This will give you three groups of 40 lines each.

(c) *Twists.* A twist occurs when the suspension lines in one group become improperly crossed. To remove the twists in the suspension lines, each group of ten suspension lines must be traced from the skirt of the canopy to the connector links (figure 2-13). As the lines are being traced they must be threaded onto a nylon strap, such as an A-7A or 60-inch shear strap. To trace the suspension lines and thread the connector link assemblies, three men shall be required to perform the following:

- 1 One man grasps the suspension risers at a point just below the connector link assemblies and holds the suspension lines taut. A second man, positioned at the canopy skirt, begins with line 1 and pick, up the first line in each line group. As each line is picked up, it will be held in such a manner as to allow the line to be visually traced to the respective connector link assembly.



4838-017

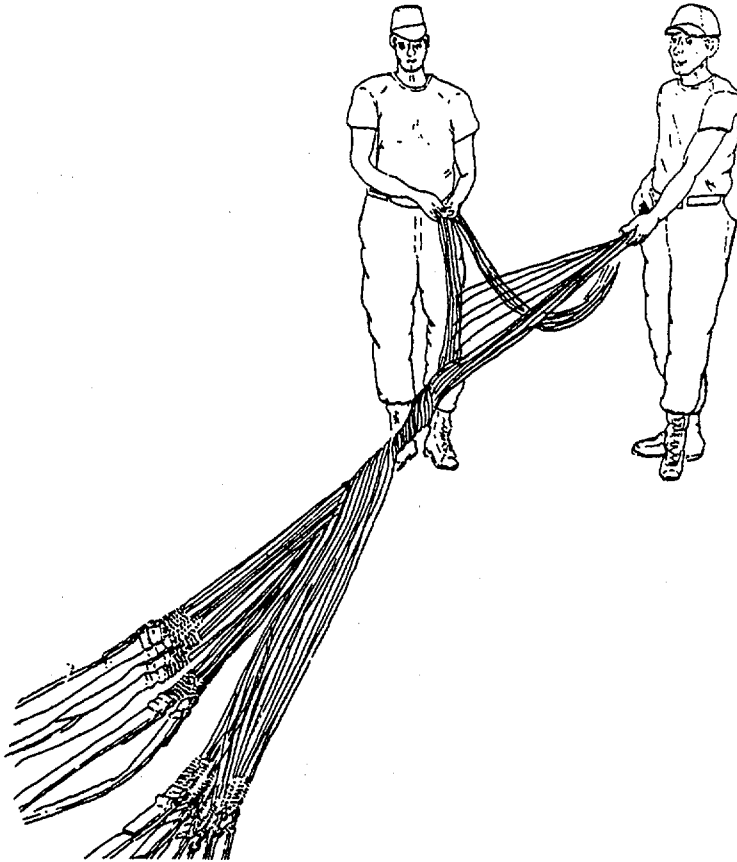
Figure 2-9. Canopy Positioned on Packing Surface.

2-16. Packing 100-Foot Cargo Parachute, Model G-11A (cont).



4838-018

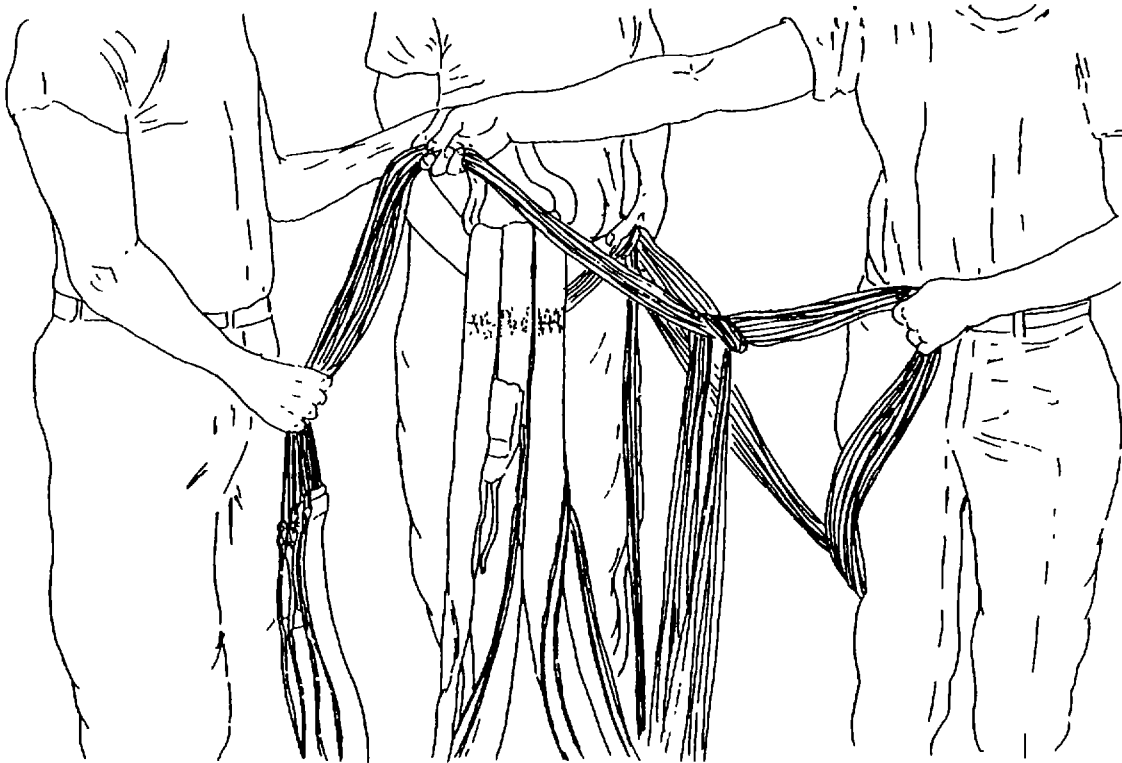
Figure 2-10. Removing Canopy Inversion.



4838-019

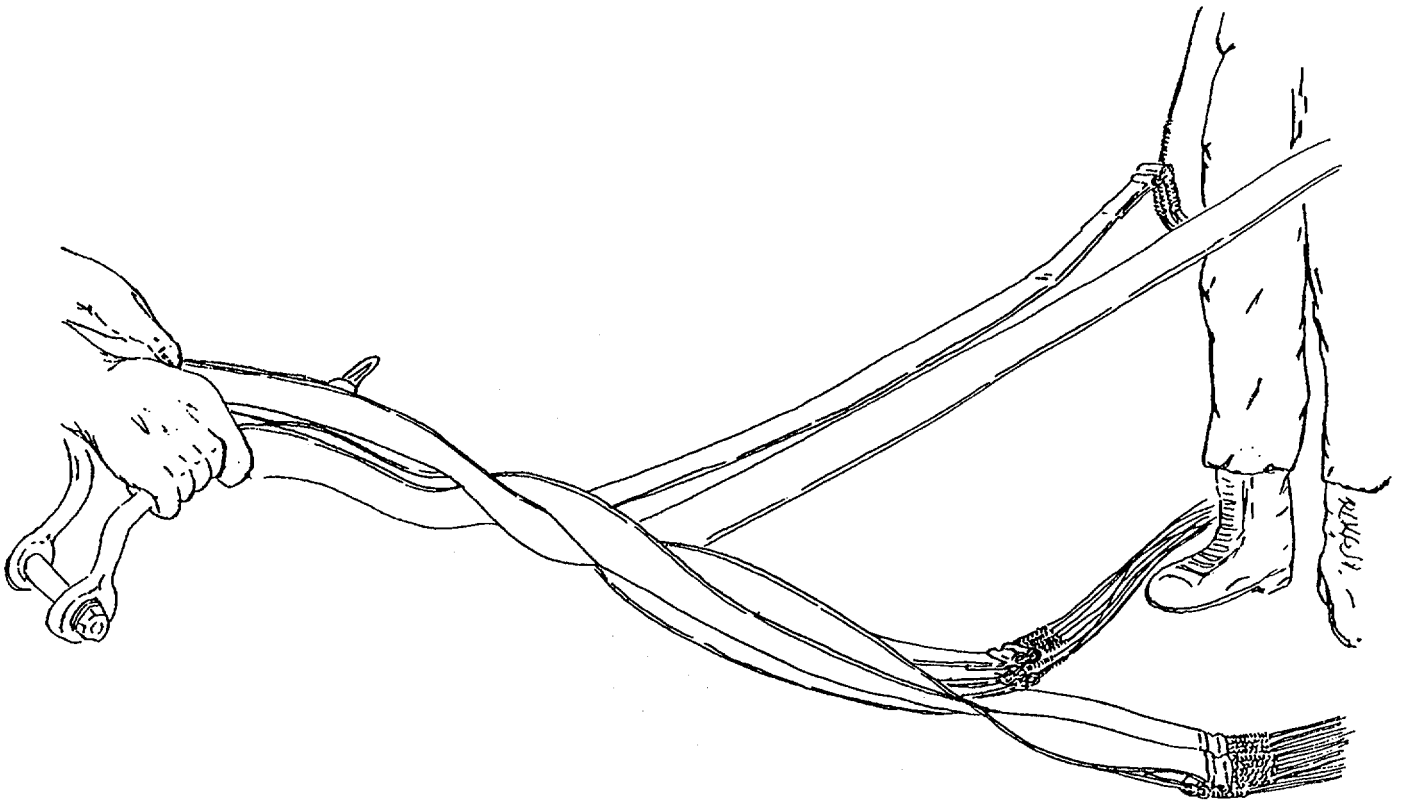
Figure 2-11. Removing Turns from Suspension Lines.

2-16. Packing 100-Foot Cargo Parachute, Model G-11A (cont).



4838 020

Figure 2-12. Removing Tangles from Suspension Lines.



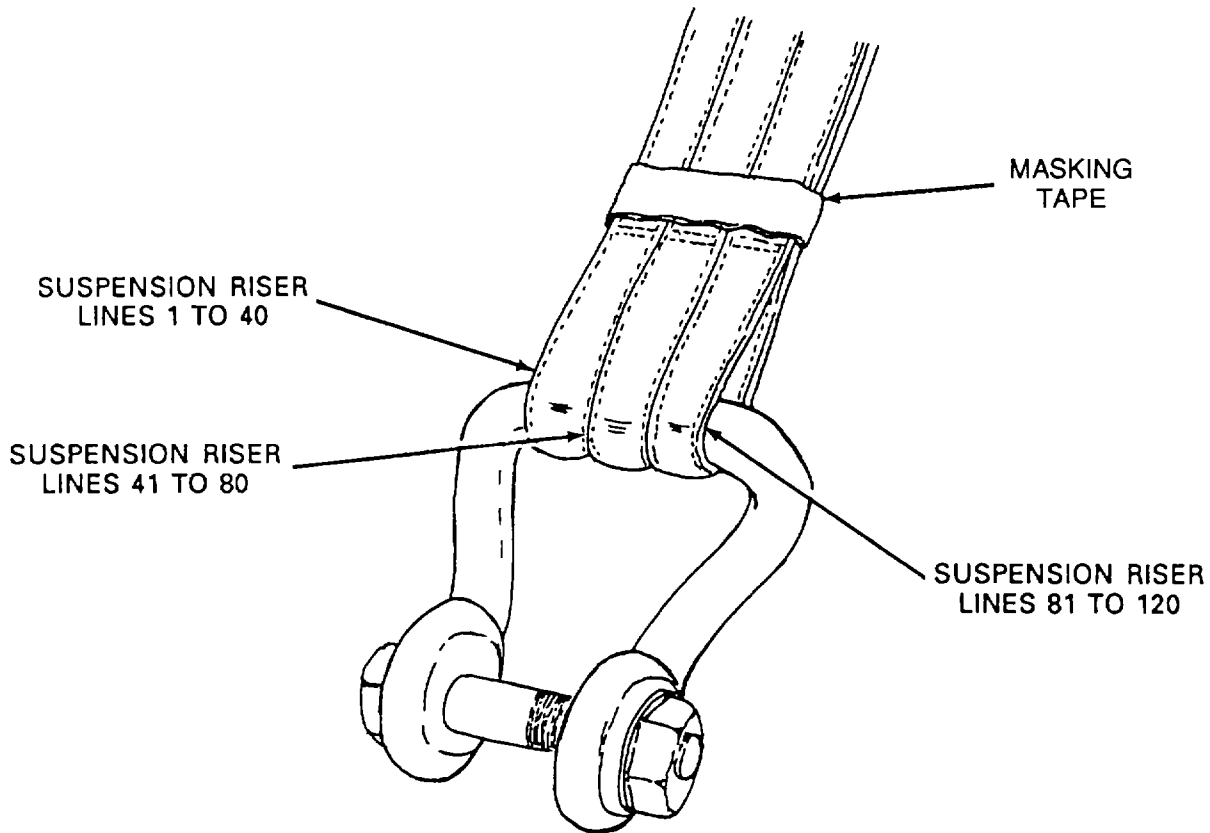
4838-021

Figure 2-13. Removing Twists from Suspension Lines.

a After tracing the first line of each line group, the first man passes the respective connector link assembly containing the line to another man who threads the nylon strap through the connector link assembly. As the strap is being threaded through the connector link assembly, the man positioned at the canopy skirt grasps all suspension lines which are attached to the connector link assembly and throws the line group over his shoulder. This procedure shall be repeated for each succeeding line group. Insure the connector link assemblies are threaded on the strap in a manner which positions the odd numbered suspension lines to the left side of the strap. Secure the ends of the strap.

(3) *Riser layout.* Adapting the procedures above for locating the suspension lines in the proper layout, remove all turns, tangles, and twists from the suspension risers. Arrange the three suspension clevis attaching loops at the ends of the suspension risers in order, with suspension riser of lines 1 through 40 to the left, suspension riser of lines 41 through 80 in the center and suspension riser of lines 81 through 120 to the right. Install a large suspension clevis through the riser attaching loops to maintain proper layout of the risers (figure 2-14).

2-16. Packing 100-Foot Cargo Parachute, Model G-11A (cont).



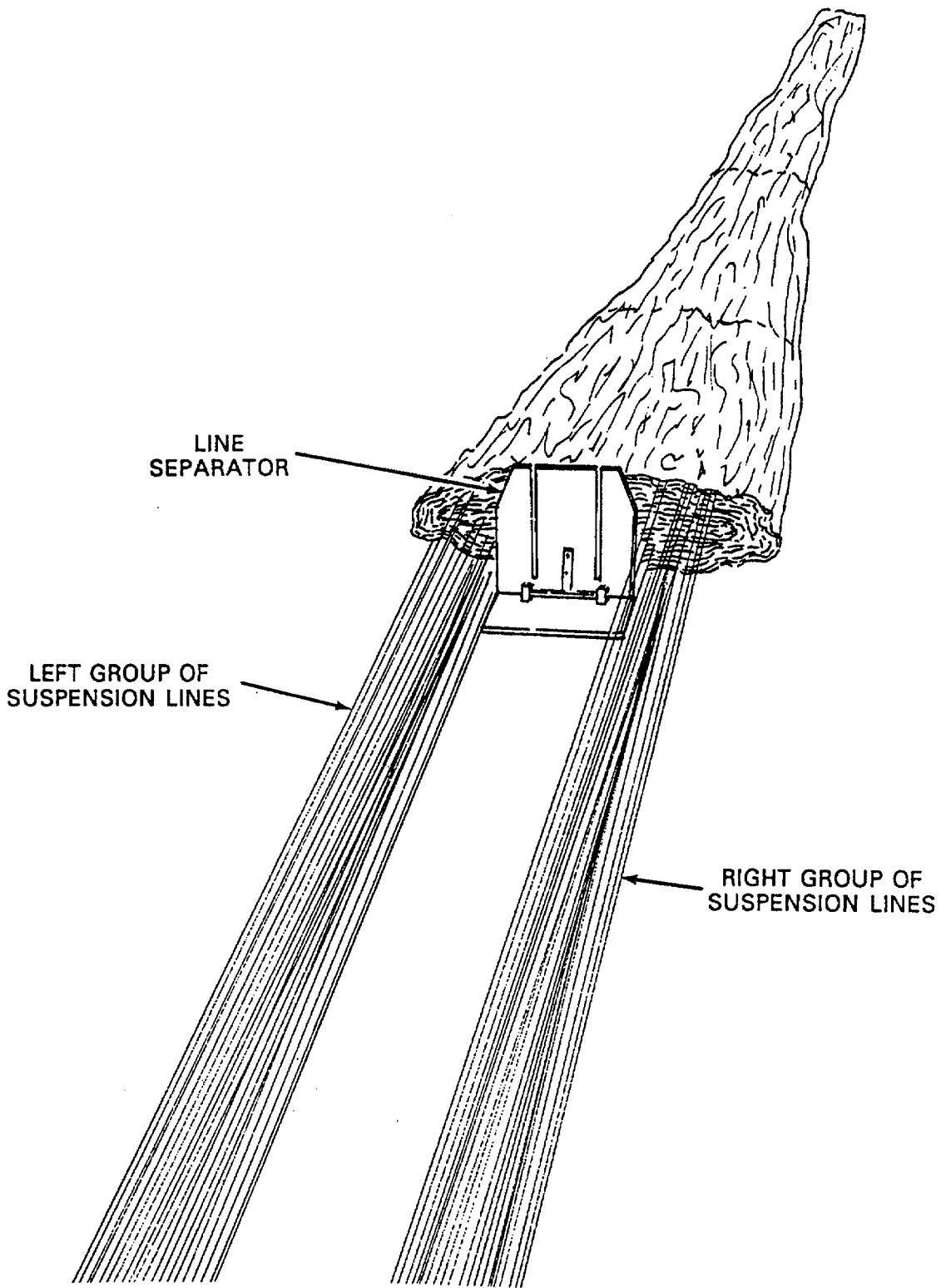
4838-022

Figure 2-14. Riser Layout.

d. Packing the G- 11A Parachute. After preparing the parachute for proper layout (c., above), continue packing the G-1 1A parachute as follows:

(1) *Group separation of suspension lines.*

- (a) Beginning with the connector link assembly to which suspension line number 1 is attached, count six connector link assemblies.
- (b) Grasp all suspension lines attached to the six connector link assemblies and working to the canopy skirt, separate these lines from the remaining suspension lines.
- (c) Position a large line separator between the two groups of lines at the canopy skirt to maintain group separation (figure 2-15).



4838-023

Figure 2-15. Separation of Suspension Lines Into Two Groups.

2-16. Packing 100-Foot Cargo Parachute, Model G-11A (cont).

- (2) *Confirming proper layout.* Perform a four-line check to confirm that the suspension lines are in proper layout and a three-line check to confirm that the suspension risers are in proper layout.
- (a) Position packer between the separated suspension lines near the skirt of the canopy, facing the suspension risers.
- (b) Place lines 1 and 60 in the right hand and lines 61 and 120 in the left hand. Hold these suspension lines in a manner that will keep the lines separated and identifiable in each hand.
- (c) Walking slowly, trace the four lines to the connector link assemblies. Line 1 should be at the top of the first connector link on the left (rigger view), line 60 should be at the bottom of the sixth connector link, line 61 should be at the top of the seventh connector link and line 120 should be at the bottom of the twelfth connector link (figure -2-16).

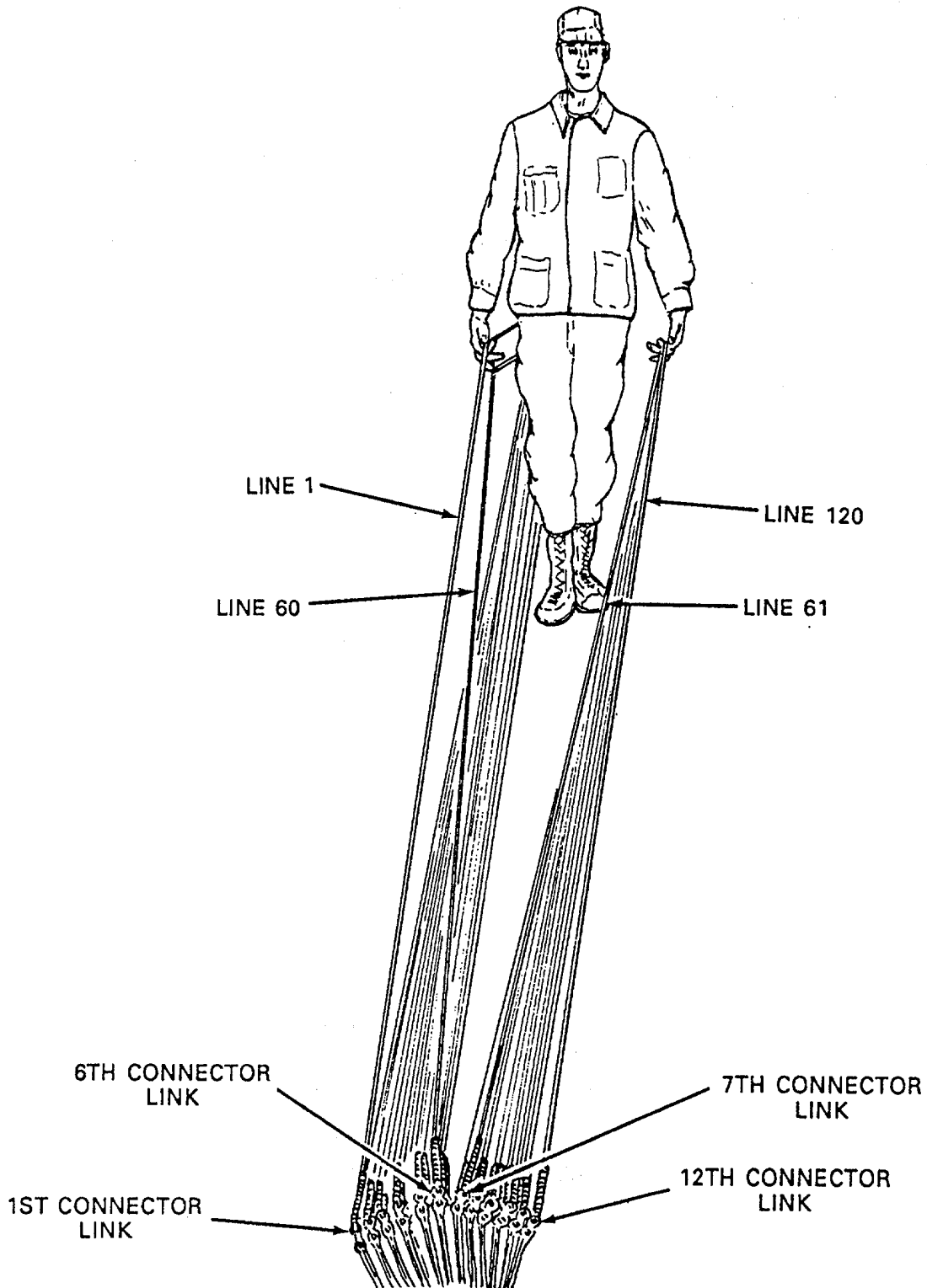


Figure 2-16. Canopy Assembly in Proper Layout.

4838-024

2-16. Packing 100-Foot Cargo Parachute, Model G-11A (cont).

- (d) Below the connector link assemblies, pick up the first suspension riser on the left (rigger view) attached to the first connector link, the fifth suspension riser and the ninth suspension riser (A, figure 2-17).
- (e) Slowly trace these suspension risers toward the attaching loop end of the suspension risers.
- (f) The three suspension risers should be on top of each riser group (B, figure 2-17).
- (g) Using masking tape, secure the risers together at a point immediately above the attaching loops.

NOTE

Dress the vent reinforcement (upper lateral band) to center the canopy vent lines.

(3) Servicing the canopy vent.

- (a) Remove the canopy attaching loop (bridle loop) from the stationary post and dress the upper lateral band to center the vent lines.
- (b) Ensuring that the dressed vent reinforcement is not disturbed unnecessarily, slide the attaching loop to one side of the canopy vent lines.
- (c) Cut a 10-inch square piece of cotton muslin cloth and wrap the cloth around the center of the vent lines.
- (d) Center the canopy attaching loop on the wrapped portion of the vent lines.

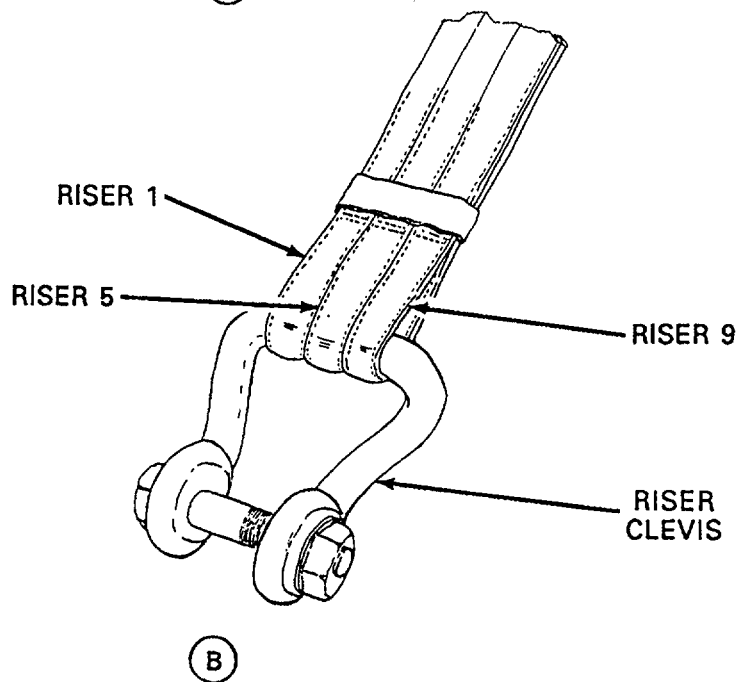
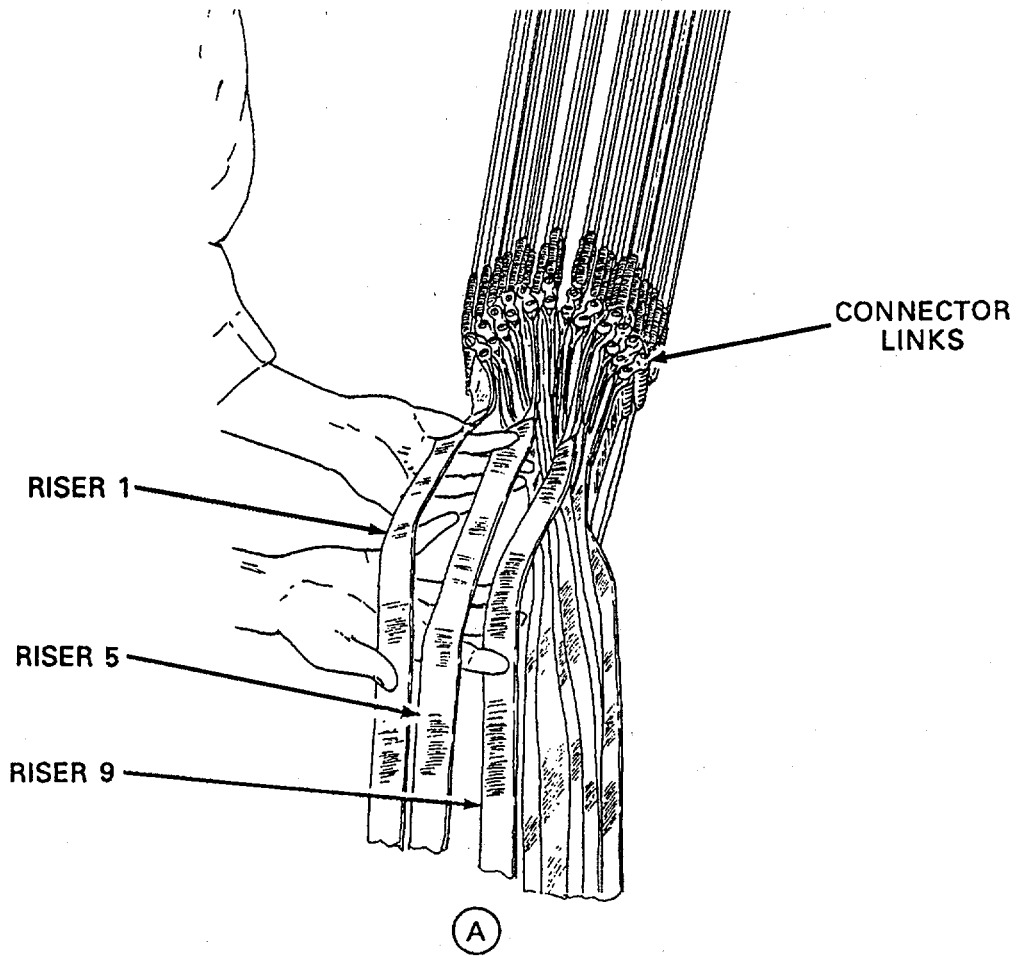
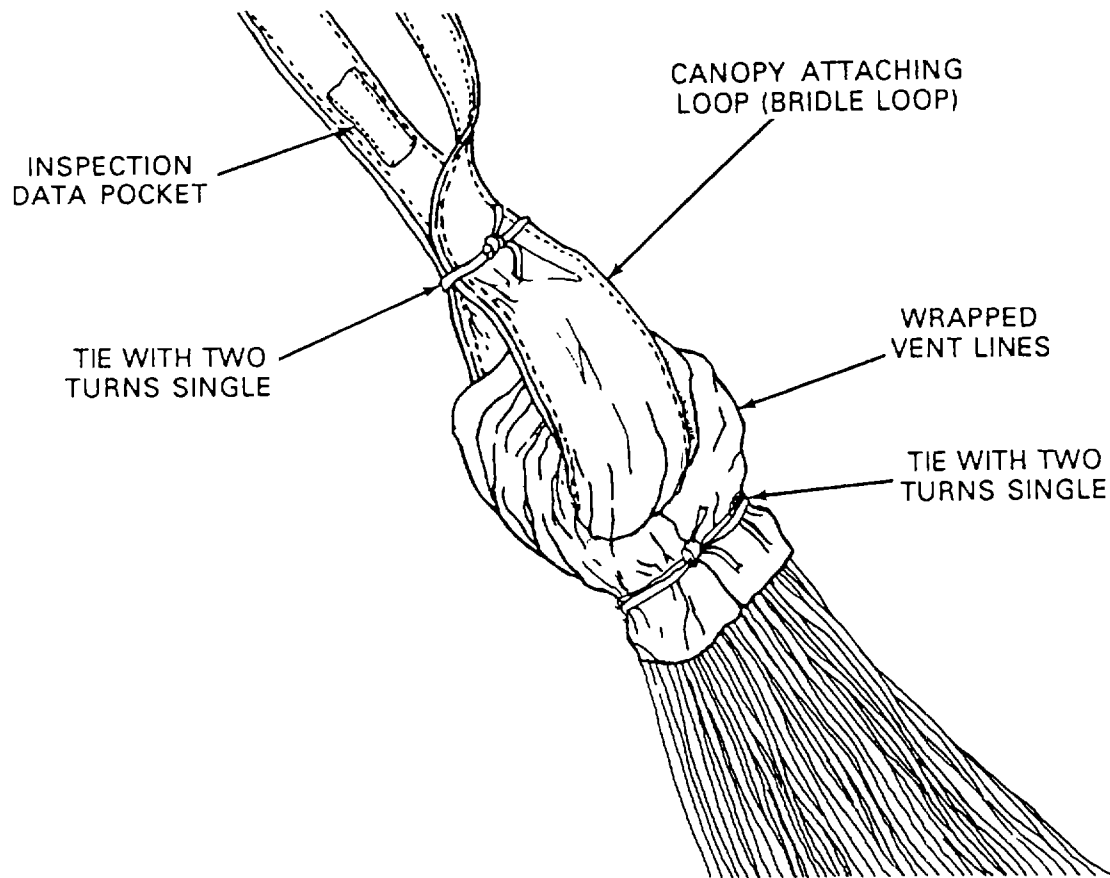


Figure 2-17. Suspension Risers in Proper Layout.

2-16. Packing 100-Foot Cargo Parachute, Model G-11A (cont).

- (e) Bring the cloth wrap ends together to form a loop around the attaching loop. Secure the cloth wrap ends together with a 24-inch length of 1/4-inch wide type I cotton webbing. Make the tie with two turns single and secure the tie with a surgeon's knot and a locking knot. Trim tie ends to 2 inches (figure 2-18).
- (f) At a point 2 inches above that part of the bridle loop through which the vent lines pass, make a tie around the bridle loop using a 24-inch length of 1/4-inch-wide, type I cotton webbing (figure 2-18). Make the tie with two turns single and secure the tie with a surgeon's knot and locking knot. Trim tie ends to 2 inches. Insure that the parachute inspection data pocket (log record pocket) on the inside of the bridle loop remains accessible.
- (g) Attach the bridle loop to the stationary post.

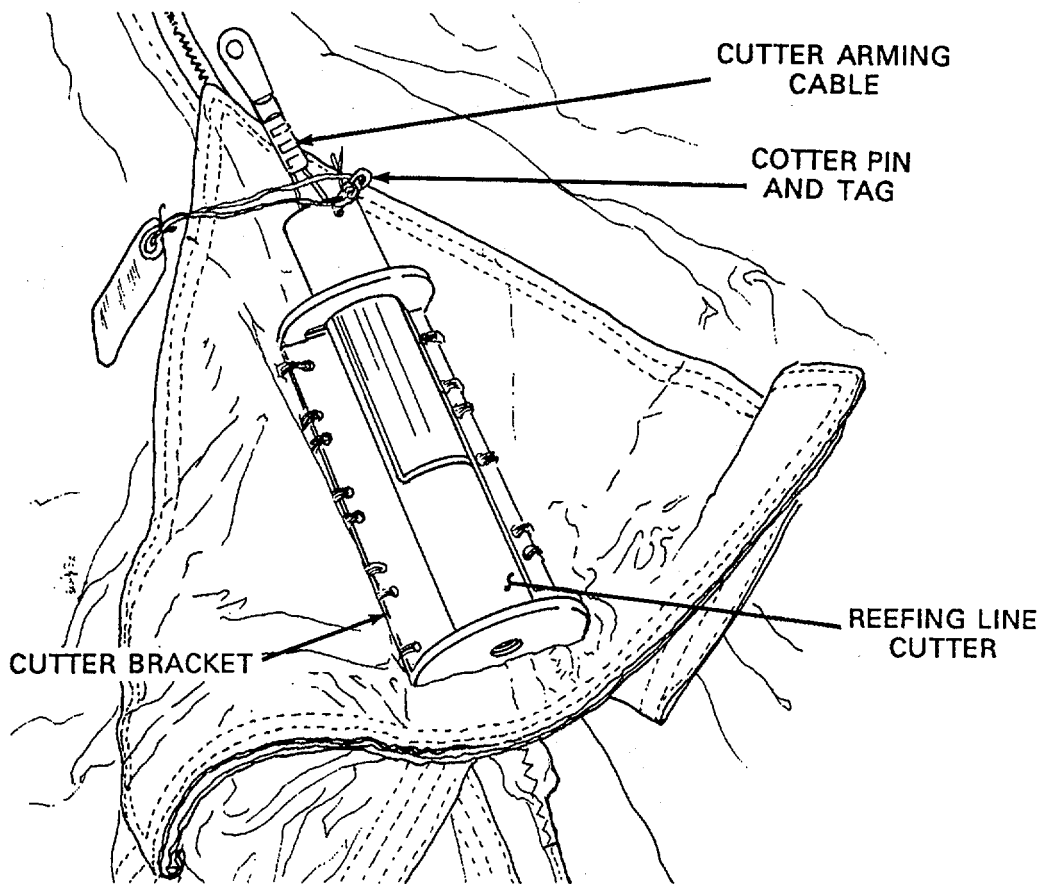


4838-026

Figure 2-18. Canopy Vent Lines Wrapped and Secured.

(4) Installing M-21 Reefing Line Cutter. Install an M-21 reefing line cutter at lines 1 and 61 as follows:

- (a) Remove 1/4-inch screw and insert the cutter into the upper end of the cutter bracket (figure 2-19). Ensure the cutter arming cable is pointed toward the canopy vent.



4838-027

Figure 2-19. Positioning the M-21 Reefing Line Cutter in Cutter Bracket.

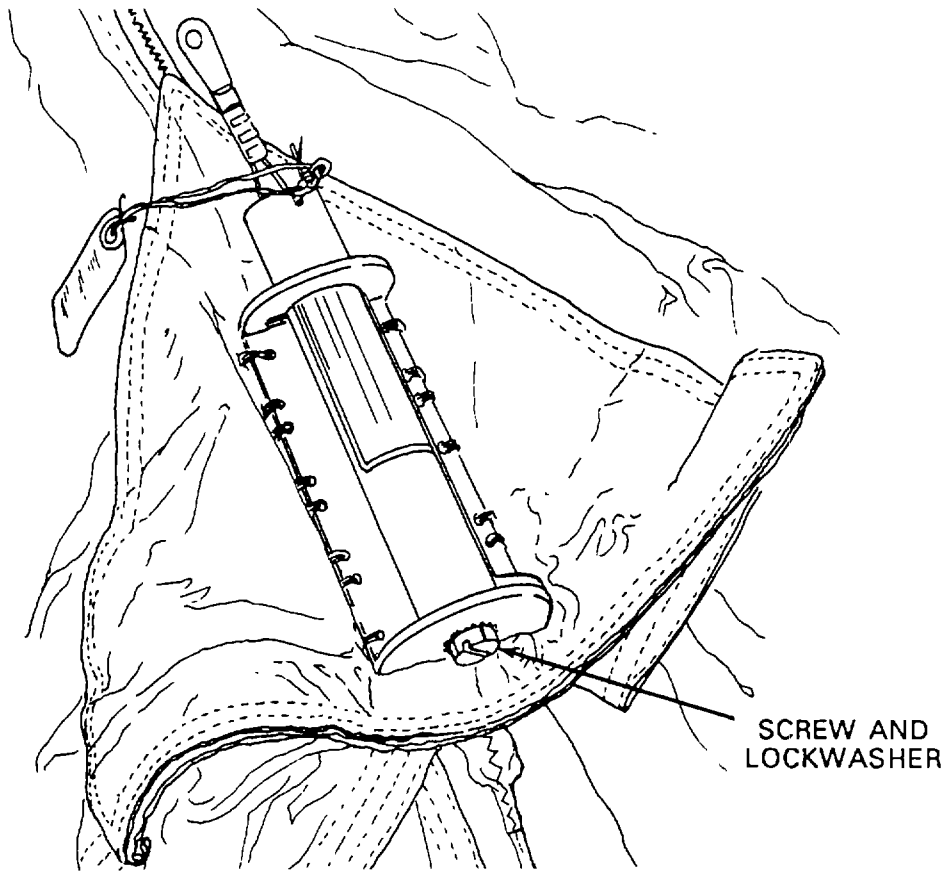
- (b) Align the screw that protrudes from the side of the cutter with the slot in the upper end of the cutter bracket.
- (c) Slide the cutter into the cutter bracket until the cutter lower end is flush against the inside bottom end of the bracket.
- (d) Turn the cutter one-quarter turn to allow the screw, which protrudes from the cutter side, to fit into the indentation located in the center of the bracket.

NOTE

Do not use any type of tool to tighten the reefing line cutter bottom screw.

- (e) Insert the 1/4-inch screw with serrated lock washer through the hole on the bottom of the bracket into the threaded hole in the bottom end of the cutter and tighten the screw finger tight (figure 2-20).

2-16. Packing 100-Foot Cargo Parachute, Model G-11A (cont).



4838-028

Figure 2-20. Reefing Line Cutter Installed and Secured.

NOTE

A four-line check for proper layout shall be performed before applying tension.

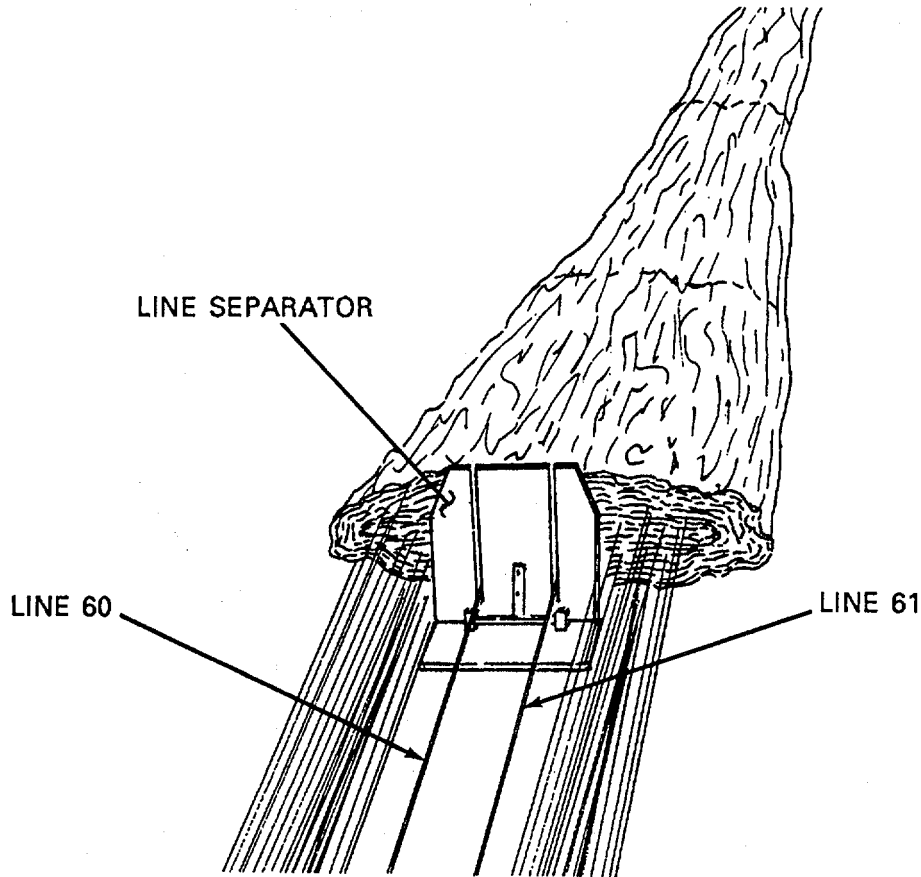
(5) *Applying tension.* Attach the nylon webbing strap routed through the connector links to a tension device and apply tension.

NOTE

A tension jack, chain hoist, power winch, or a vehicle may be used as a tension device.

(6) *Folding the gores and reefing the canopy.* Fold the canopy gores into two groups of 60 gores each and thread the reefing line through the canopy reefing rings as follows:

- (a) At a suitable point below the canopy skirt (lower lateral band), position a large line separator between the two groups of suspension lines and insert line 60 into the left slot of the line separator and line 61 into the right slot (figure 2-21).

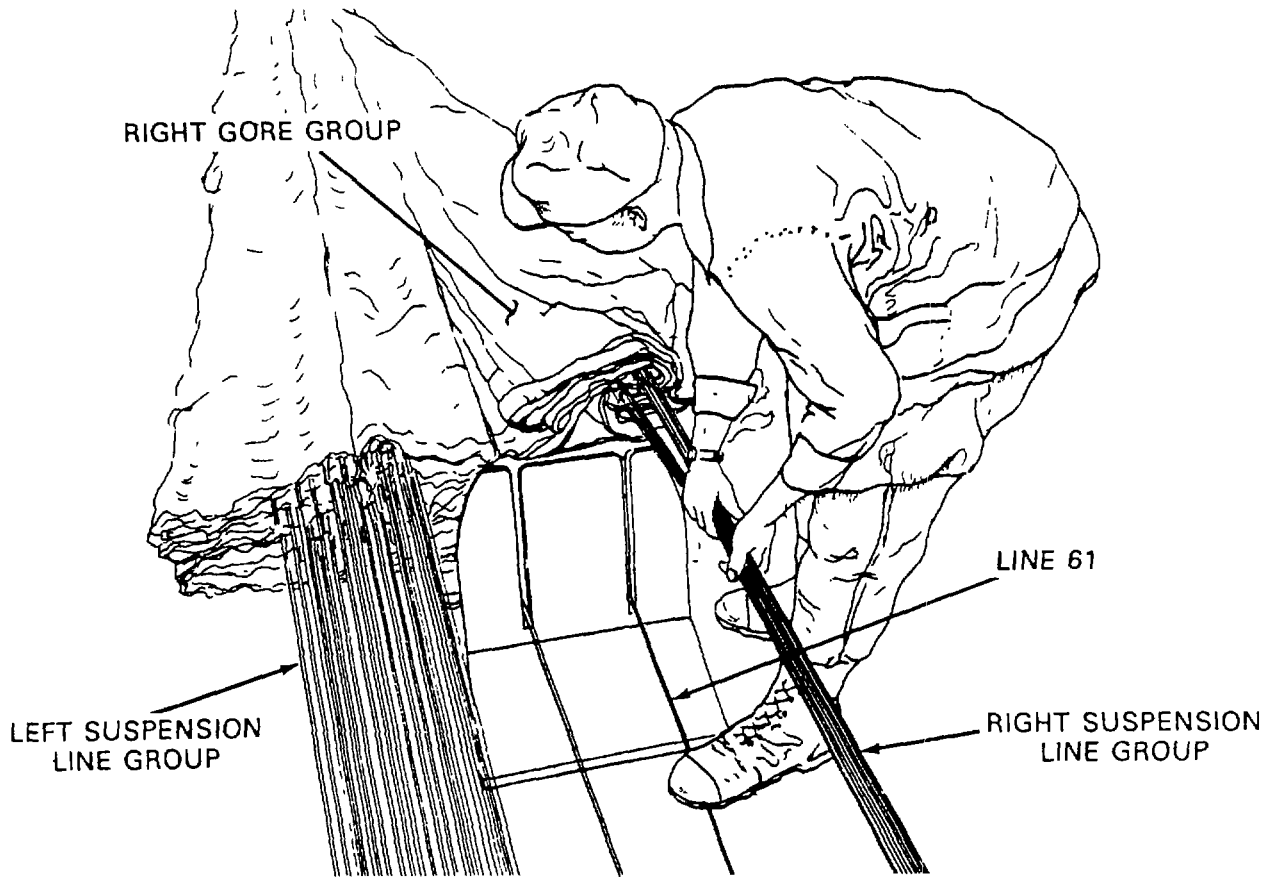


4838-031

Figure 2-21. Line Separator Positioned Between Suspension Line Groups.

- (b) While holding line 61 in position in the line separator, pick up the right suspension line group (figure 2-22) and throw the right group of gores and lines over the left group of gores and lines.
- (c) Cut a 22-foot length of 1/2-inch-wide tubular nylon webbing for use as a reefing line, taper cut the ends and tape 2 inches of each end.
- (d) Using an authorized marking aid of contrasting color, mark the reefing line at a point 11 feet from one end.

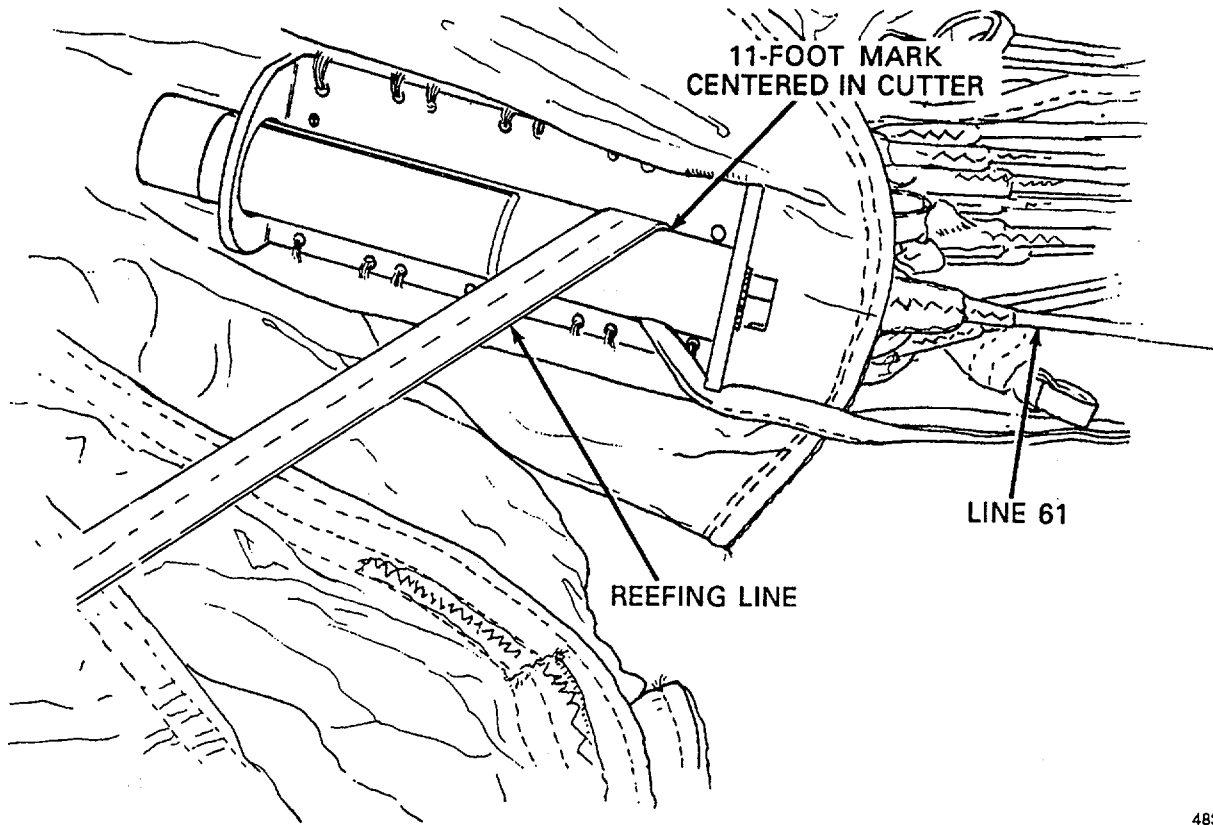
2-16. Packing 100-Foot Cargo Parachute, Model G-11A (cont).



4838-032

Figure 2-22. Preparing to Throw Right Group of Gores Over Left Group.

- (e) Thread one taped end of the reefing line through the hole in the reefing line cutter at line 61 and pull the reefing line through the cutter until the 11-foot mark is reached (figure 2-23). Center the mark at the cutter.
- (f) Make a slip knot in the reefing line length immediately to the right side of the reefing line cutter (figure 2-24) to prevent the line from becoming off-centered during the reefing process. Tuck the remaining length of the knotted reefing line under the skirt of the canopy.
- (g) Position a large pedestal fan at a point 10 feet below the canopy skirt; position the fan so the airstream will partially inflate the canopy.



4838-029

Figure 2-23. Reefing Line Threaded Through Reefing Line Cutter at Line 61.

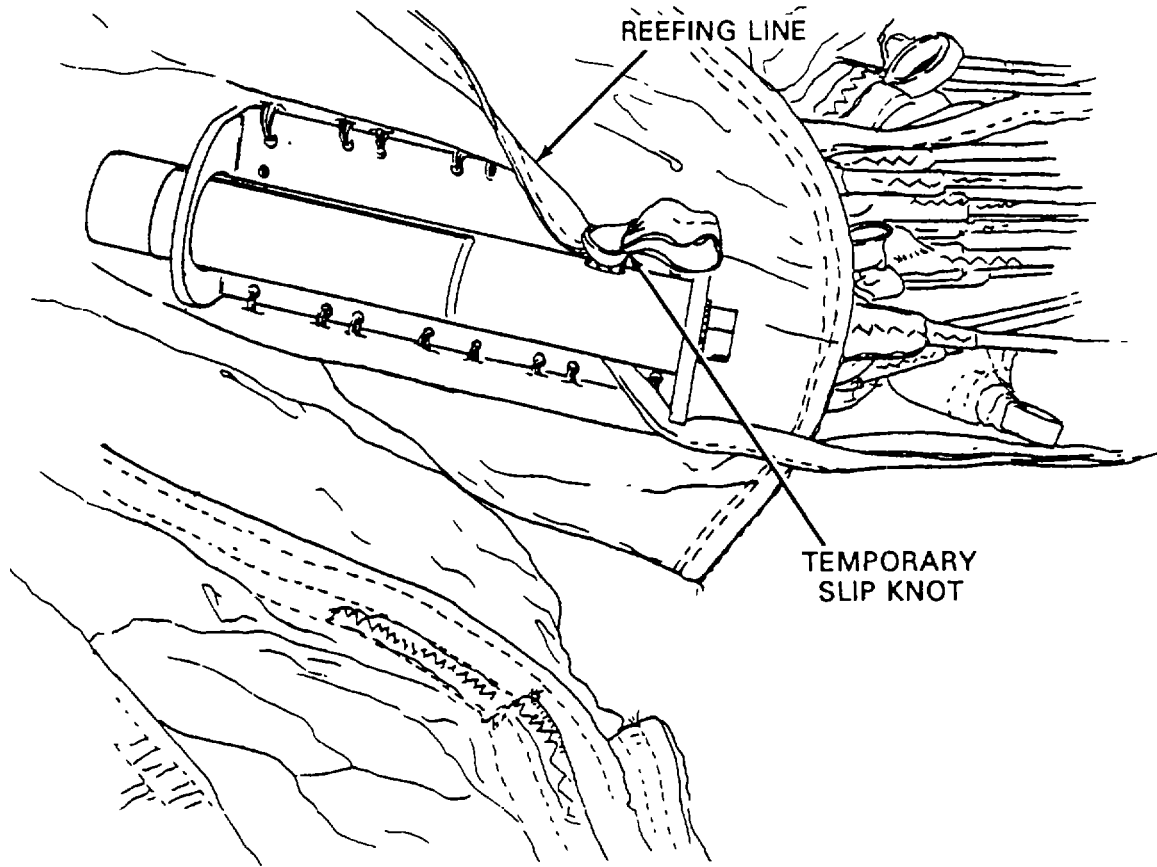
CAUTION

Failure to evenly distribute the reefing line between each reefing ring will cause a delay in the parachute deployment, an uneven inflation of the canopy or result in a malfunction.

NOTE

A packer will take a position near the apex of the canopy and observe the canopy during the reefing process. If canopy damage is observed, the packer will stop the reefing process.

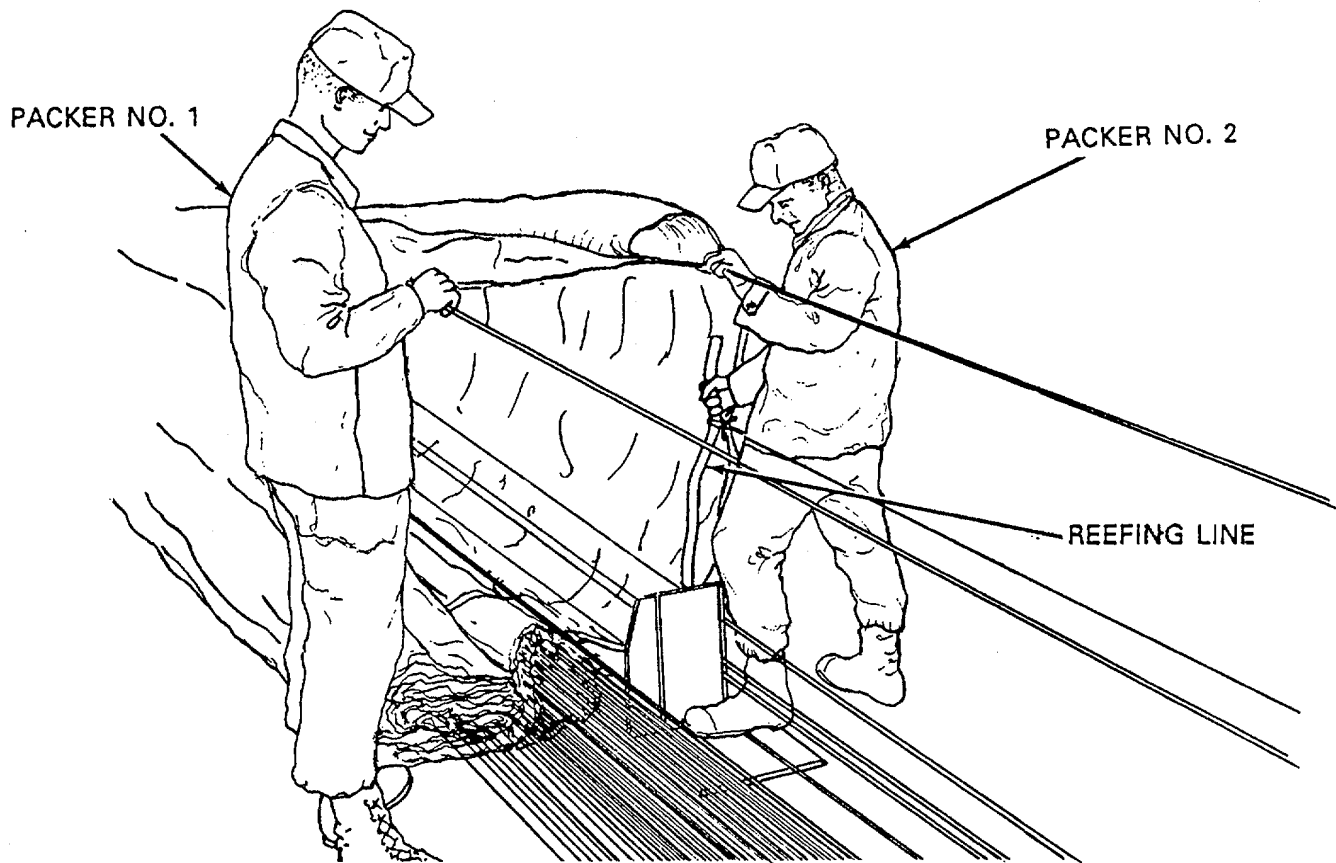
2-16. Packing 100-Foot Cargo Parachute, Model G-11A (cont).



4838-030

Figure 2-24. Position of Temporary Slip Knot on Reefing Line.

(h) Beginning with line 62, one packer passes each line in the right group to a second packer who threads the right running end of the reefing line through each reefing ring. After each reefing ring is reefed, the second packer will use a leg to guide the suspension line into the right slot of the line separator (figure 2-25). Continue the gore folding process until lines 61 through 120 are reefed and in the right slot of the line separator and the gores between each line are folded (figure 2-26). Place a slipknot in the reefing line next to reefing ring at line 120.

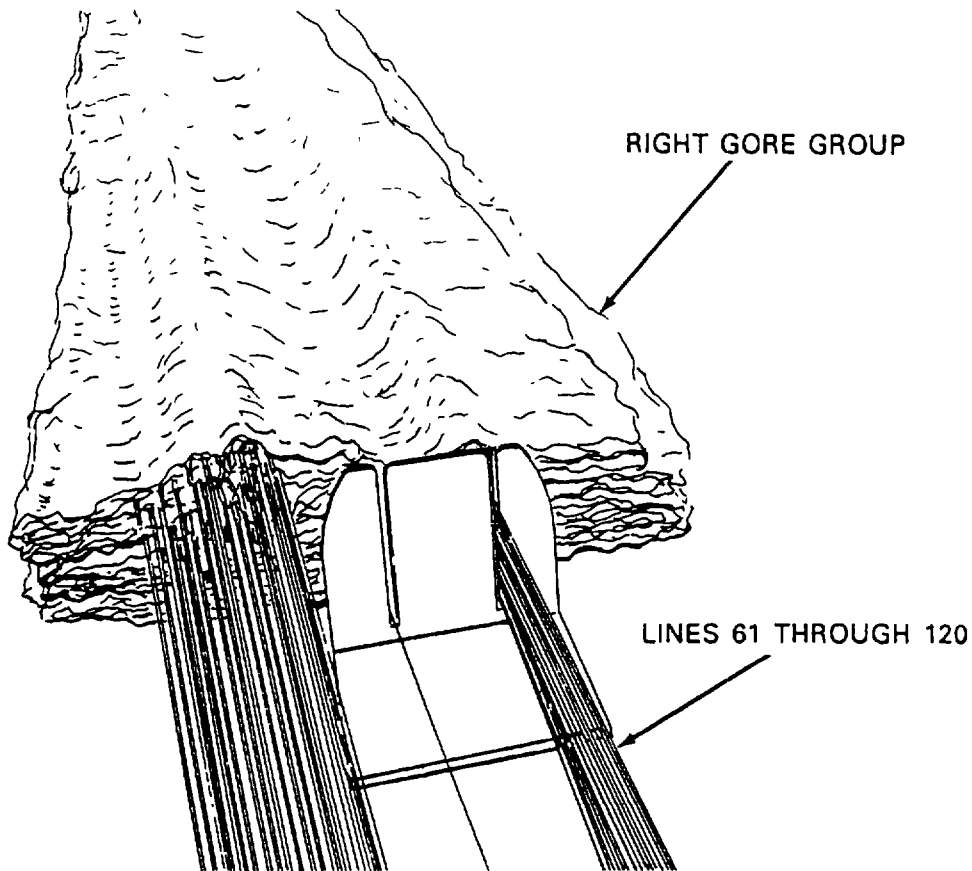


4838-033

Figure 2-25. Reefing and Folding the Canopy Right Gore Group.

- (i) While holding line 60 in position in the line separator, pick up the left suspension line group (figure 2-27) and throw the left group of gores and lines over the folded right group of gores and lines.
- (j) Remove the slip knot in the reefing line at the reefing line cutter on line 61.
- (k) Beginning with line 59, one packer passes each line in the left group to a second packer who threads the left running end of the reefing line through each reefing ring. After each reefing ring is reefed, the second packer will use a leg to guide the suspension line into the left slot of the line separator. Continue the gore folding process until lines 60 through 1 are reefed and in the left slot of the line separator and the gores between each line are folded.
- (l) Pass the running end of the reefing line from the left group of gores to the outside of the canopy and from left to right, thread it through the hole in the reefing line cutter at line 1. Pull 6 to 8 inches of reefing line through the reefing line cutter hole. This will be used to secure the ends of the reefing line.

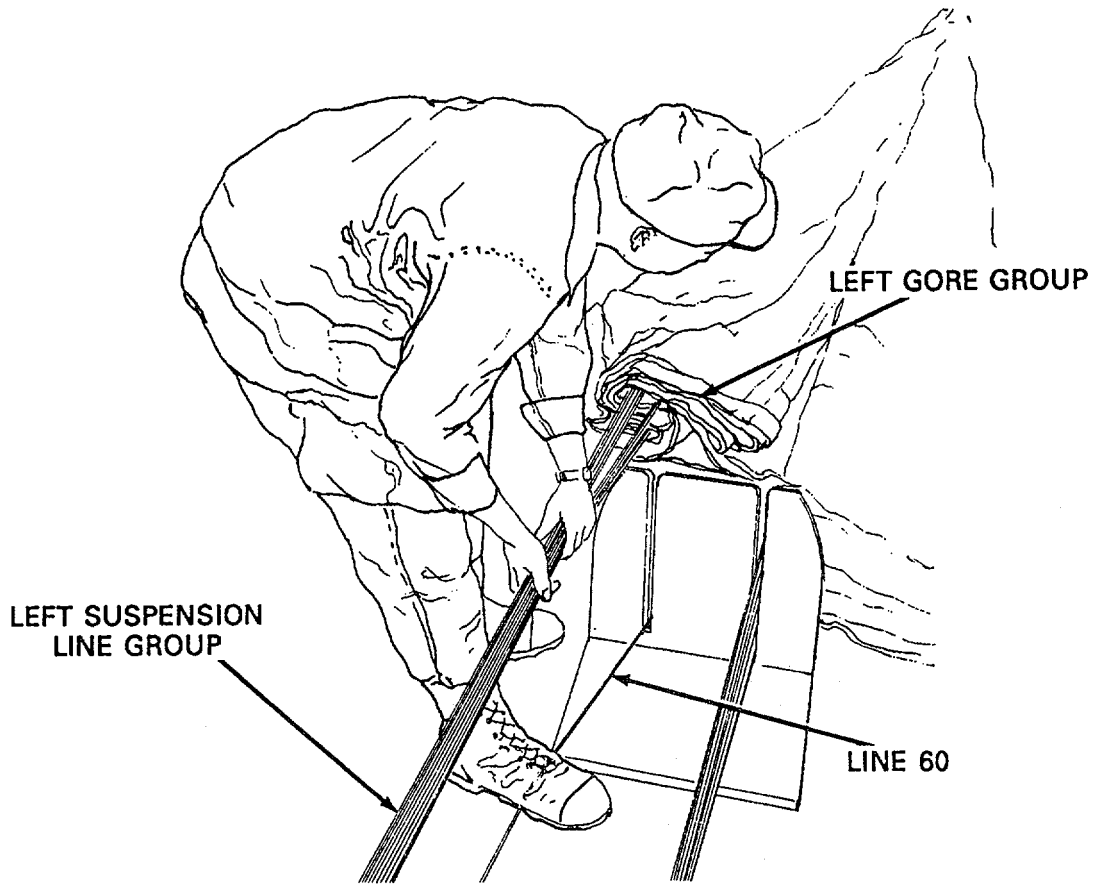
2-16. Packing 100-Foot Cargo Parachute, Model G-11A (cont).



4838-034

Figure 2-26. Right Group of Gores Folded.

- (m) Pass the running end of the reefing line from the right group of gores to the outside of the canopy and from right to left, thread it through the hole in the reefing line cutter at line 1. Pull 6 to 8 inches of reefing line through the reefing line cutter hole (A, figure 2-28).
- (n) Using the running ends of the reefing line, secure the ends together over the reefing line cutter at line 1 with a surgeon's knot and locking knot. Make an overhand knot in the running ends. Cut and remove the taped ends. Trim each tie end at a point 2 inches from the overhand knot (B, figure 2-28).



4838-035

Figure 2-27. Preparing to Throw the Left Group of Gores and Suspension Lines.

2-16. Packing 100-Foot Cargo Parachute, Model G-11A (cont).

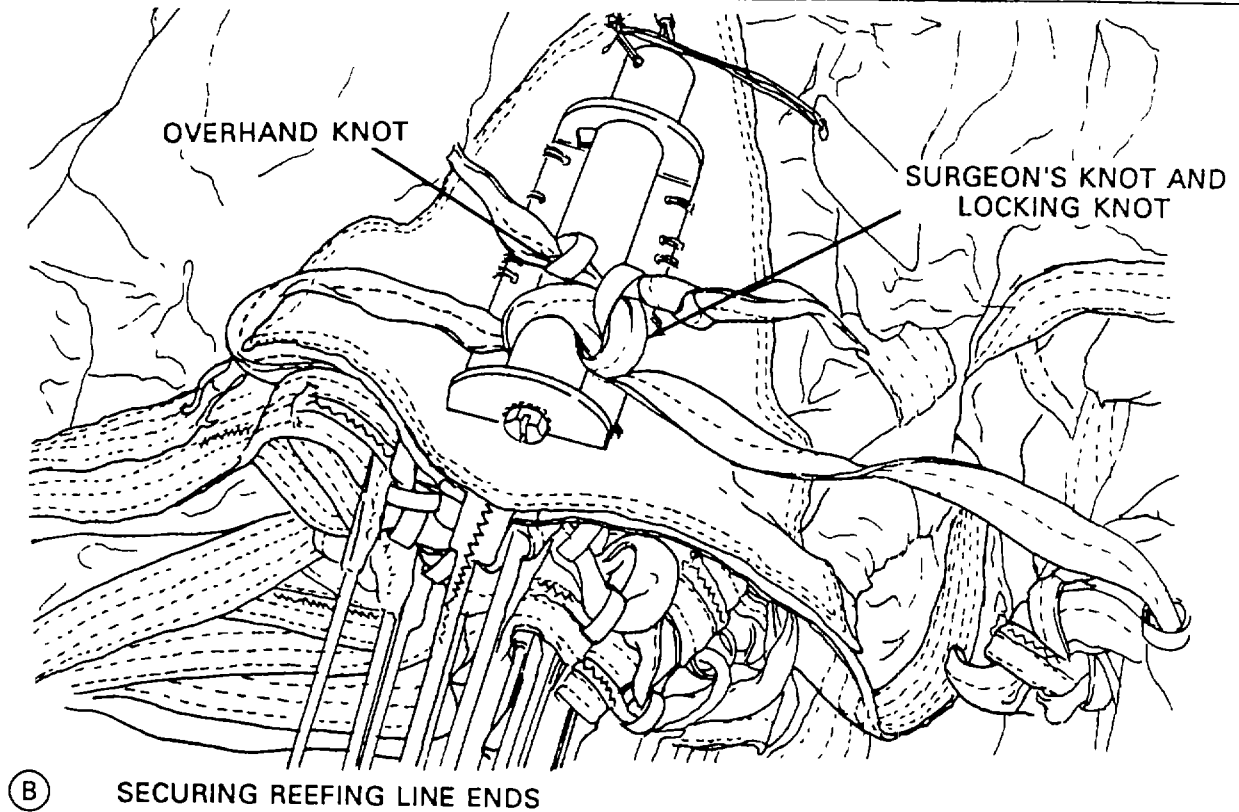
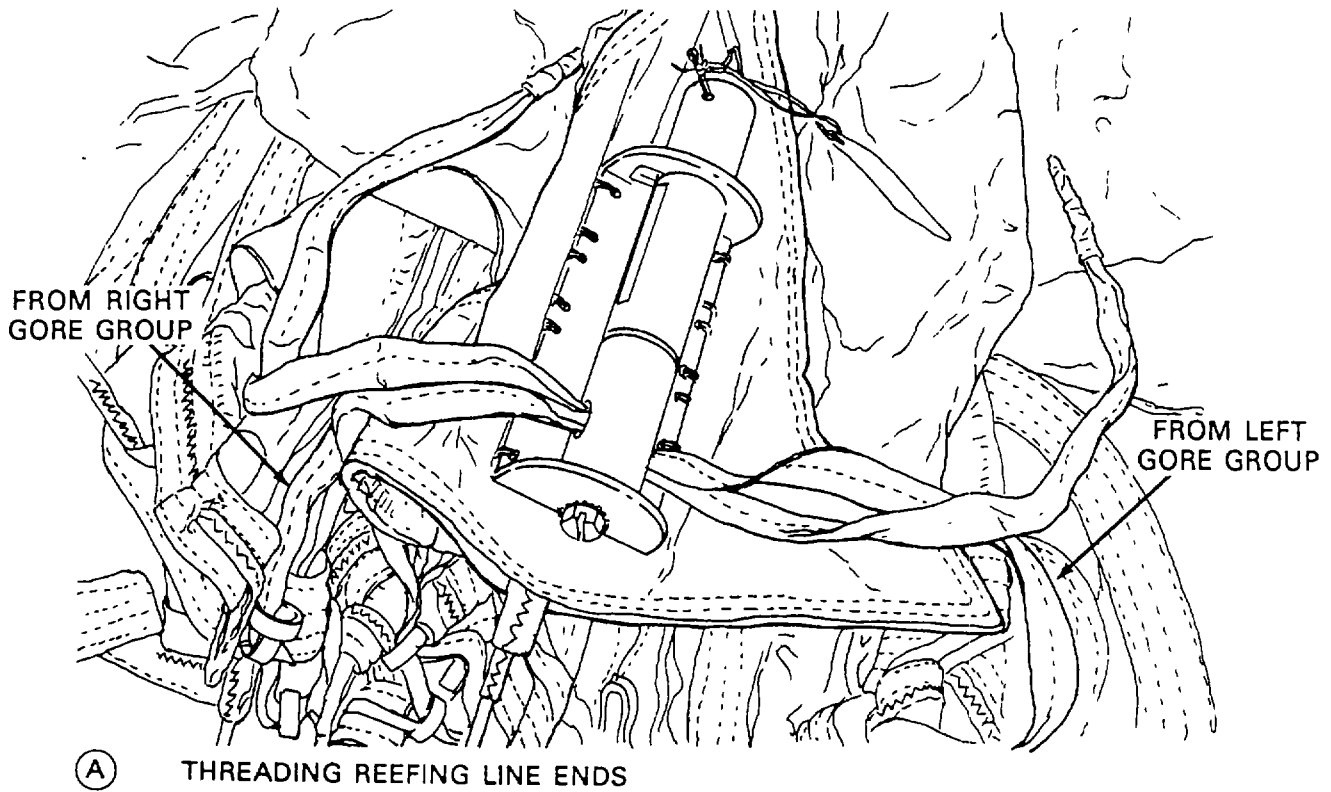


Figure 2-28. Securing the Reefing Lines at Suspension Line 1.
2-48'

NOTE

It is 48-feet from the lower lateral band to the upper lateral band. It is not necessary to install a 9th canopy tie.

- (7) *Tying the canopy assembly.* Release tension, remove the tension device and tie the canopy assembly as follows:
- (a) Beginning at a point 5 feet above the skirt band (lower lateral band) and at 5-foot intervals thereafter, install eight canopy ties. Tie the canopy folds using one turn single, ticket No. 8/4 cotton orange thread at each point. Secure each tie with a surgeon's knot and locking knot. Trim tie ends to 2 inches (figure 2-29).
 - (b) At a point 5 feet below the skirt band (lower lateral band), tie each group of suspension lines separately using one turn single, ticket No. 8/4 cotton orange thread. Secure each tie with a surgeon's knot and a locking knot. Trim tie ends to 2 inches. Remove the large line separator.
 - (c) Beginning at a point 10 feet below the skirt band (lower lateral band) and at 10 foot intervals thereafter, tie both suspension line groups together using one turn single, ticket No. 8/4 cotton orange thread at each point. Secure each tie with a surgeon's knot and locking knot. Make the last tie 5 feet above the connector link assemblies. Trim all tie ends to 2 inches (figure 2-30).
 - (d) Release the strap fastener on the webbing strap threaded through the connector link assemblies and tape a 14-inch length of type I cotton webbing to the running end of the strap.
 - (e) Remove the webbing strap from the connector link assemblies which, in turn, will pull the taped webbing through the connector link assemblies (figure 2-31).
 - (f) Remove the taped webbing length from the webbing strap, and tie the connector link assemblies together with the webbing length. Secure the tie with a surgeon's knot and a locking knot. Trim the ends to 2 inches (B, figure 2-31).

2-16. Packing 100-Foot Cargo Parachute, Model G-11A (cont).

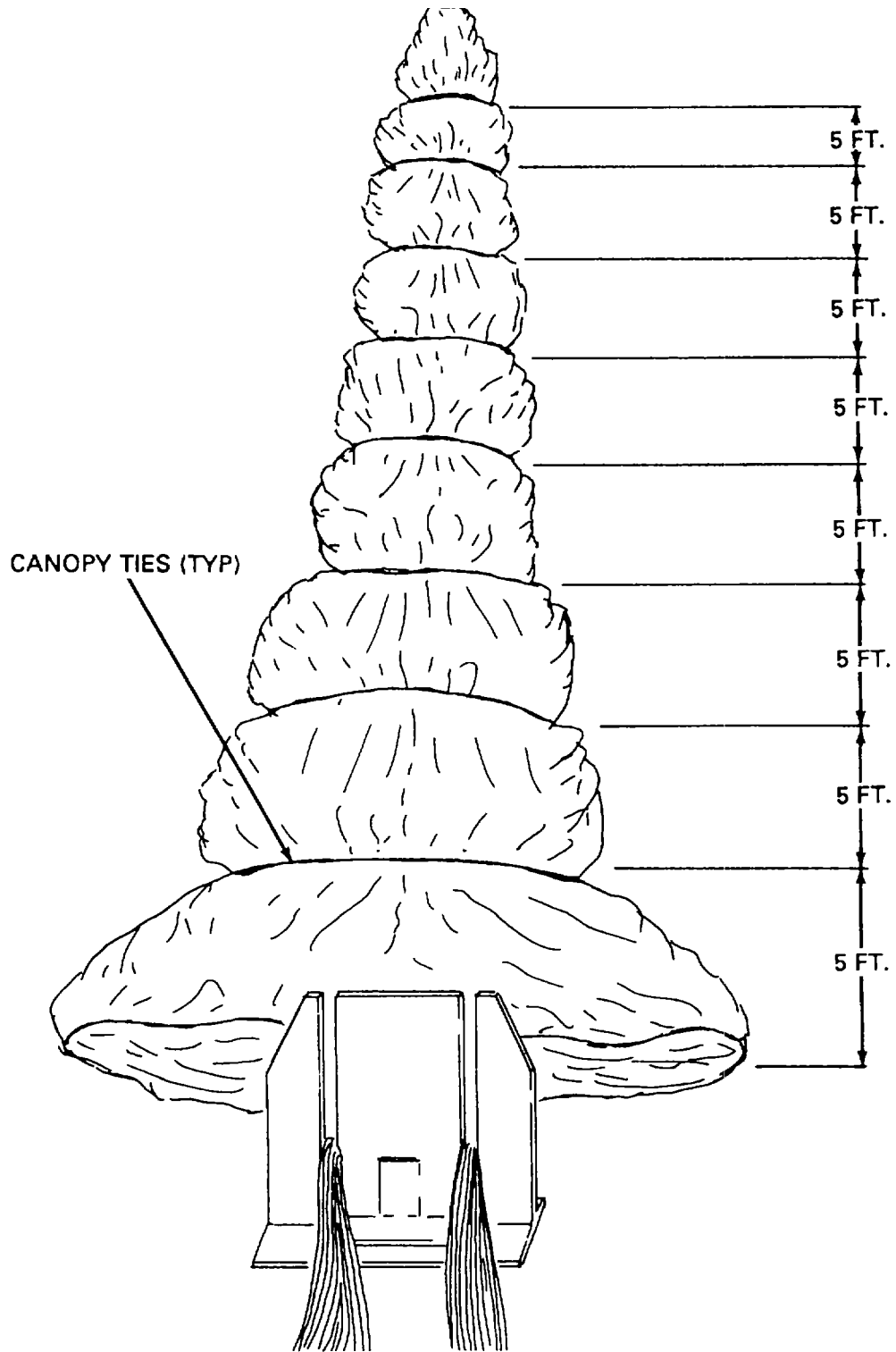
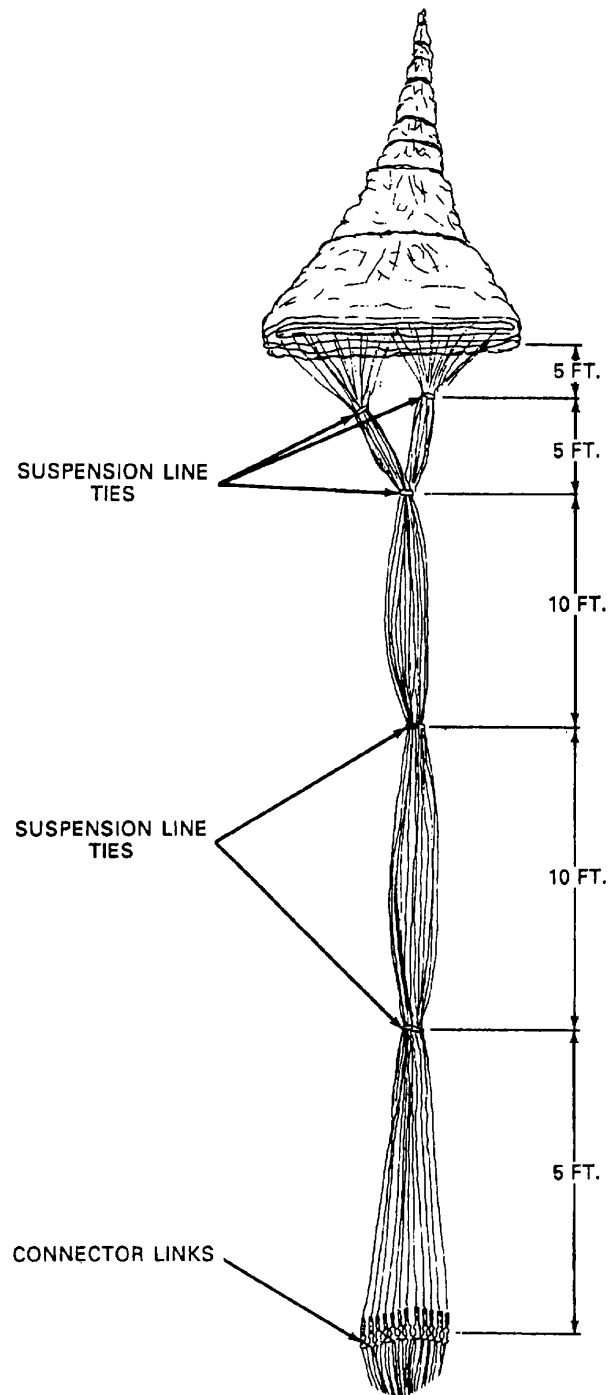


Figure 2-29. Canopy Ties Completed.

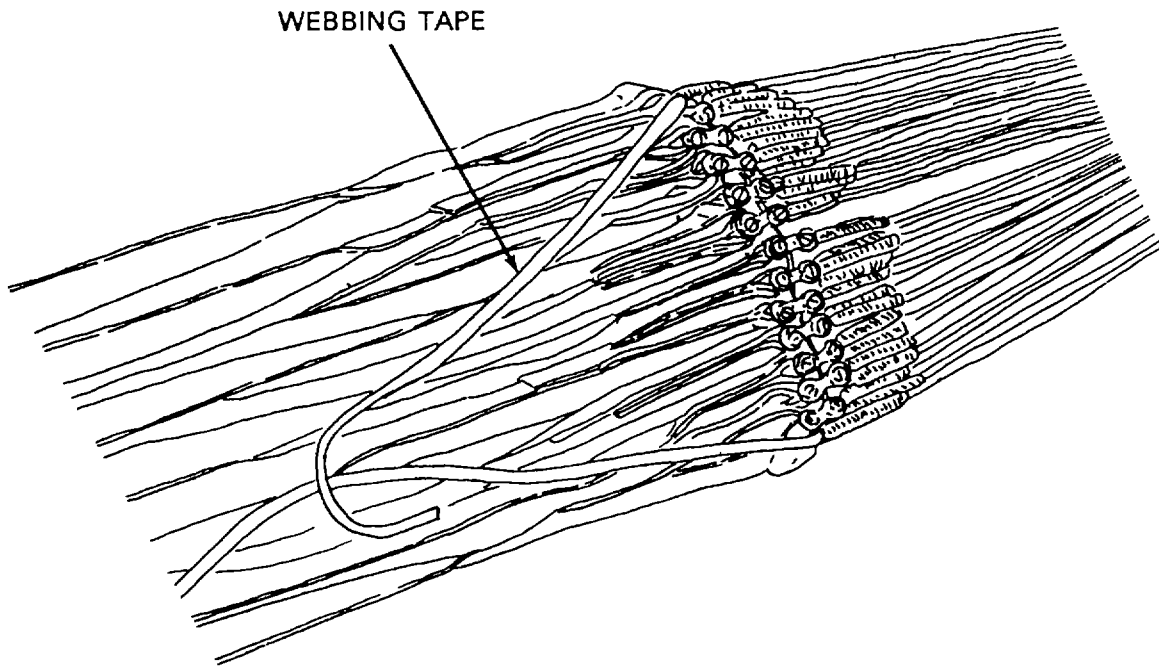


4838-038

Figure 2-30. Suspension Line Ties Completed.

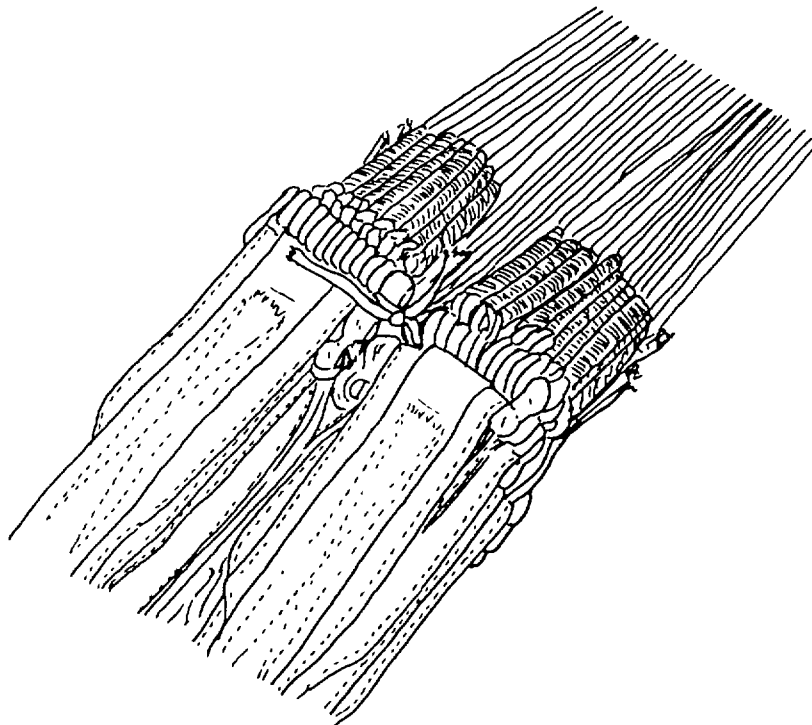
19 2-51

2-16 Packing 100-Foot Cargo Parachute, Model G-11A (cont).



(A)

CONNECTOR LINKS THREADED



(B)

CONNECTOR LINKS SECURED

4838-039

Figure 2-31. Securing the Suspension Line Connector Link Assemblies

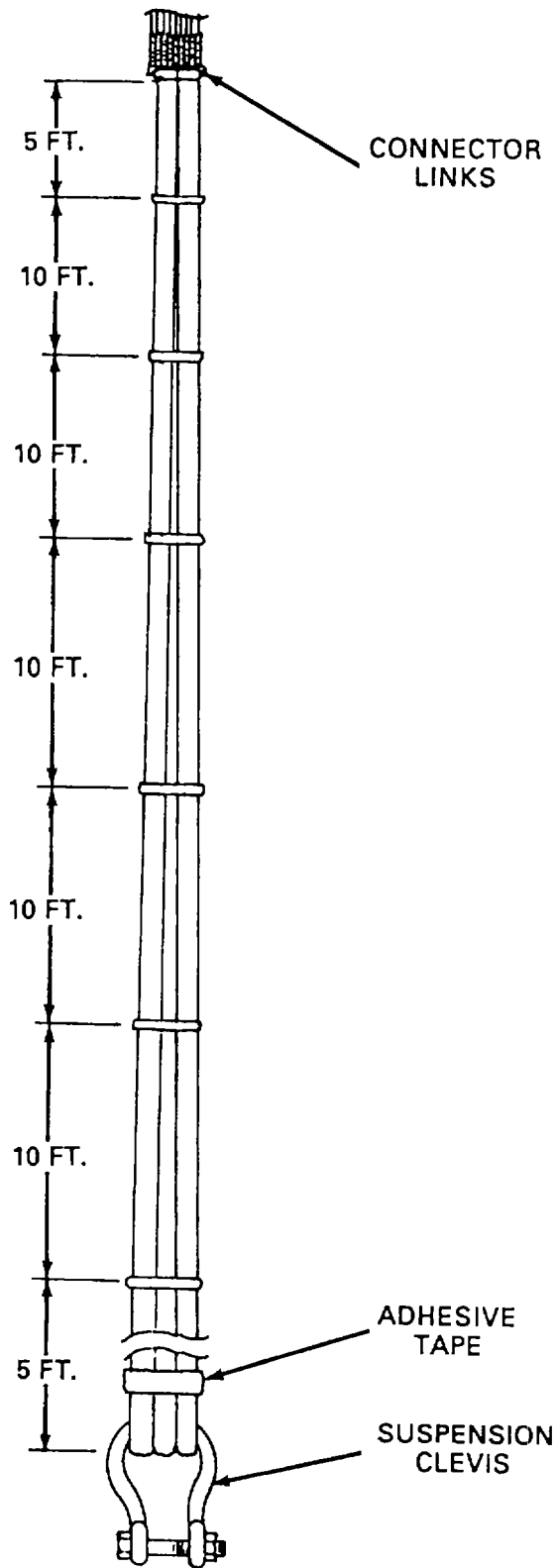
(g) Suspension riser. Beginning at a point 5 feet below the connector link assemblies and at 10-foot intervals thereafter, tie the suspension risers together using one turn single, ticket No. ~~87~~ cotton orange thread at each point. Secure each tie with a surgeon's knot and a locking knot. Trim tie ends to 2 inches. Make the last tie at a point 5 feet above the suspension clevis attaching loops (figure 2-32).

NOTE

The G-11 A may be packed in three different deployment bags. The G-11 A deployment bag, the G-11 B deployment bag and the G-1 1A/B/C nylon deployment bag. There is no difference in the pack procedures when using the G-11A and G-11B cotton deployment bags. If the G-11A/B/C nylon deployment bag is being used proceed to step (10), below.

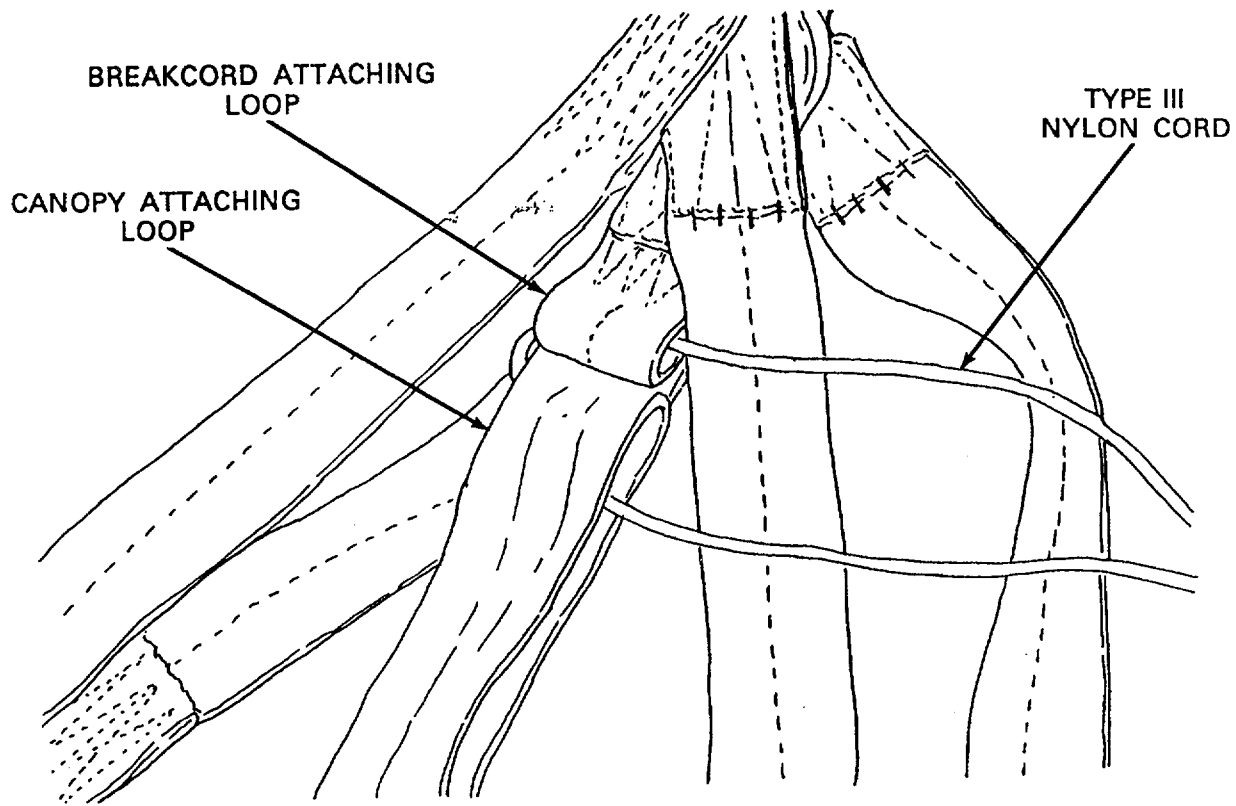
- (9) Installing canopy breakcord.
- (a) Remove the canopy attaching loop from the stationary post.
 - (b) Position the deployment bag at the canopy vent with protector flap up.
 - (c) Pass the canopy attaching loop through the deployment bag from the bag open end and through the vent line hole located in the bag closed end. Allow 12 inches of the attaching loop and serviced vent lines to extend from the vent line hole.
 - (d) Secure the canopy attaching loop to the breakcord attaching loop of the deployment bag bridle assembly with an 18-inch length of type III nylon cord. Pass one end of the cord length through the canopy attaching loop and through the breakcord attaching loop of the deployment bag bridle assembly (figure 2-33). Secure the cord ends with a surgeon's knot and a locking knot. Make an overhand knot in each running end. Trim each tie end at a point 2 inches from the surgeon's knot and locking knot (figure 2-34).

2-16. Packing 100-Foot Cargo Parachute, Model G-11A (cont).



4838-04C

Figure 2-32. Suspension Riser Ties Completed
2-54

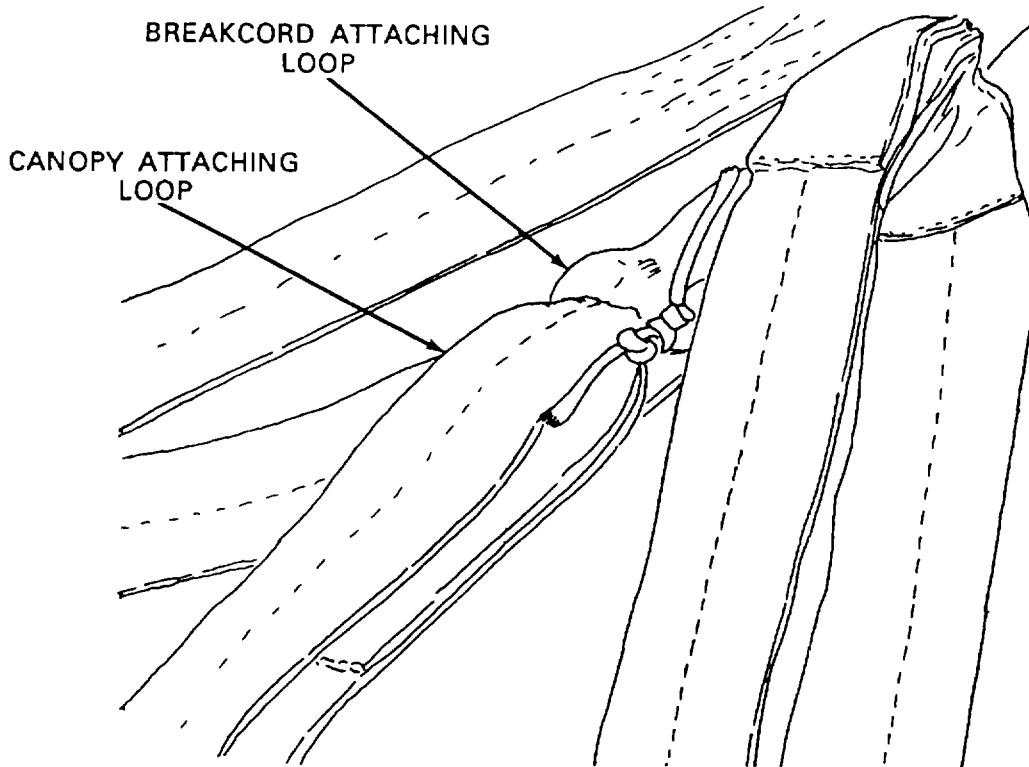


4838-041

Figure 2-33. Installing Canopy Breakcord Tie.

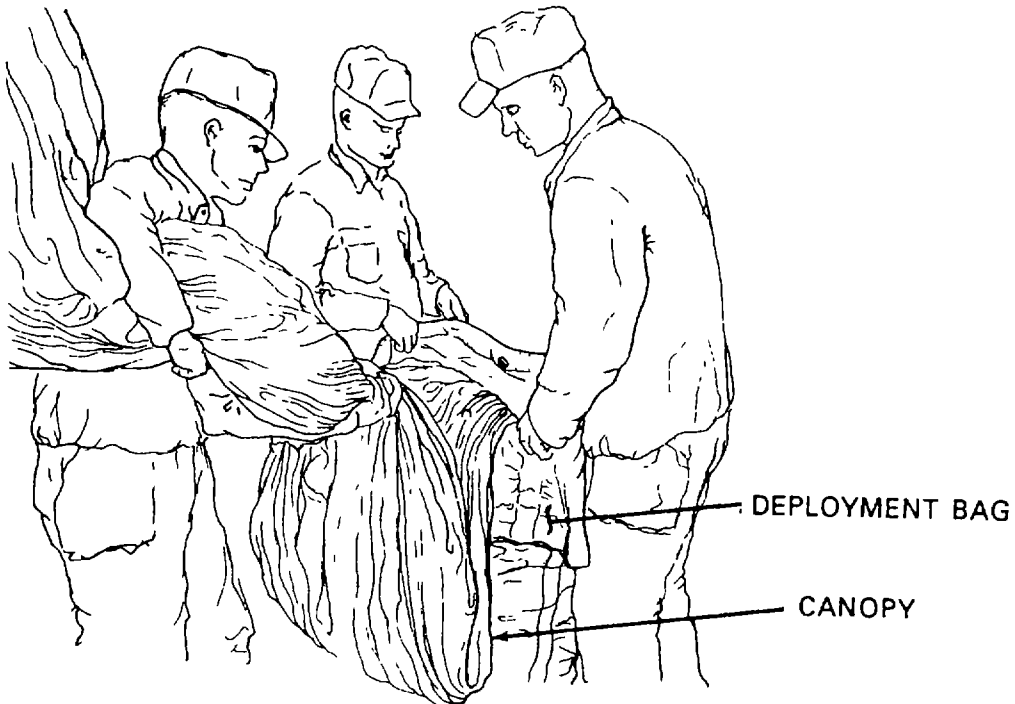
- (10) Stowing the canopy.
 - (a) Two packers, positioned at the top of the canopy, will raise the open end of the deployment bag and hold the bag erect. In addition, one or both persons should hold the canopy material to the bag to prevent the canopy vent from being withdrawn through the bag vent line hole while the canopy is being picked up from the packing surface.
 - (b) A third packer shall move to a point a reasonable distance below the canopy apex, pick up the canopy from the packing surface and S-fold the canopy material into the deployment bag (figure 2-35).

2-16 Packing 100-Foot Cargo Parachute, Model G-11A (cont).



4838-042

Figure 2-34. Canopy Breakcord Tie Completed.



4838-043

Figure 2-35. Stowing the Canopy In Deployment Bag.

- (c) While holding both groups of suspension lines, pick the canopy skirt up and push the canopy skirt into the deployment bag (figure 2-36).



4838-044

Figure 2-36. Canopy Stowing Completed.

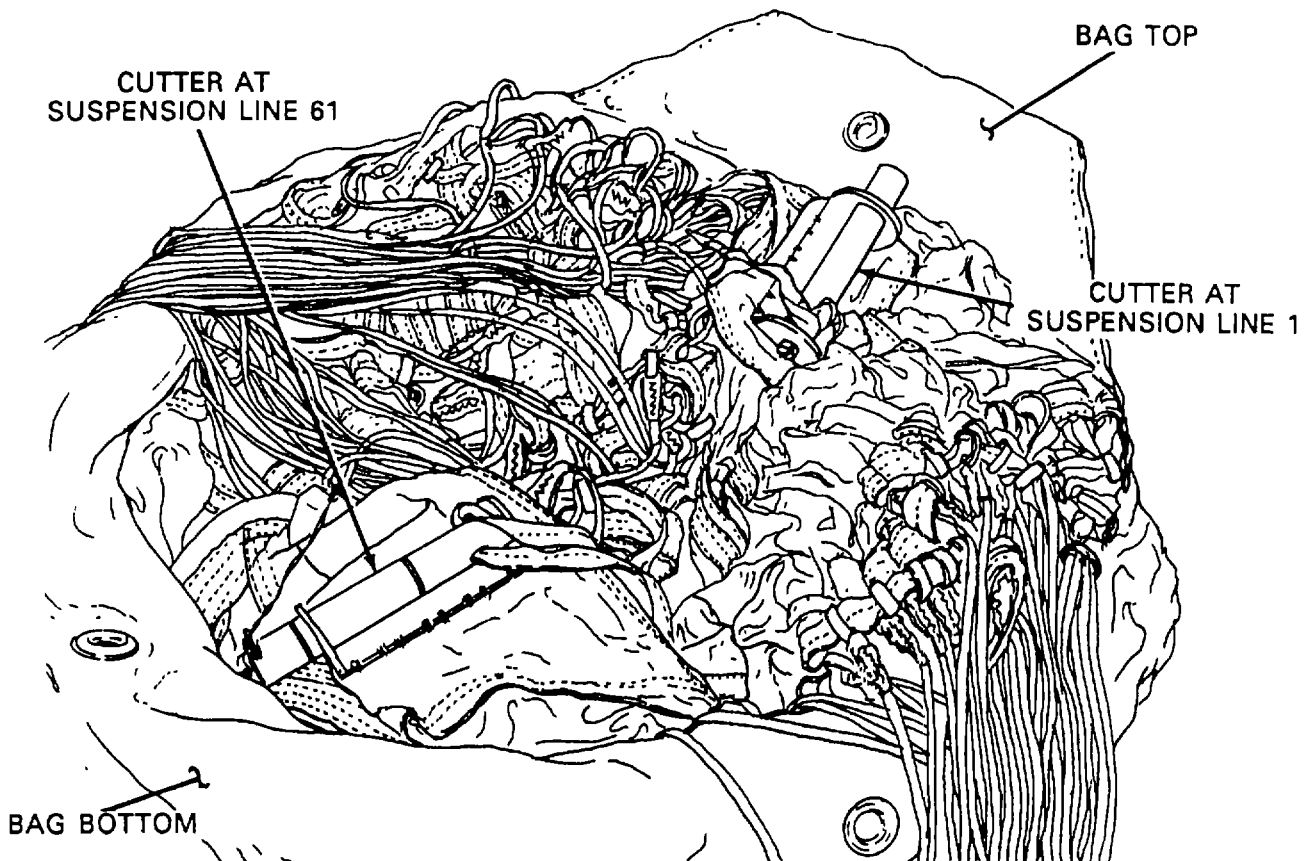
- (11) Arming the reefing line cutters.

NOTE

The following procedures are for using a G-1 1 A or G-11 B cotton deployment bag. If using a nylon deployment bag, proceed to paragraph (20), below.

- (a) Position the two reefing line cutters on top of the stowed canopy with the cutter at suspension line 61 placed adjacent to the bag double grommet on the bag bottom and the cutter at suspension line 1 placed adjacent to the bag single grommet on the bag top (figure 2-37).
- (b) Cut two 12-inch lengths of type III nylon cord for use as arming cable ties.
- (c) Beginning with the reefing line cutter at line 1 near the bag top, pass the end of one cord through the hole in the top of the reefing line cutter arming cable and through the bag single grommet to the outside.

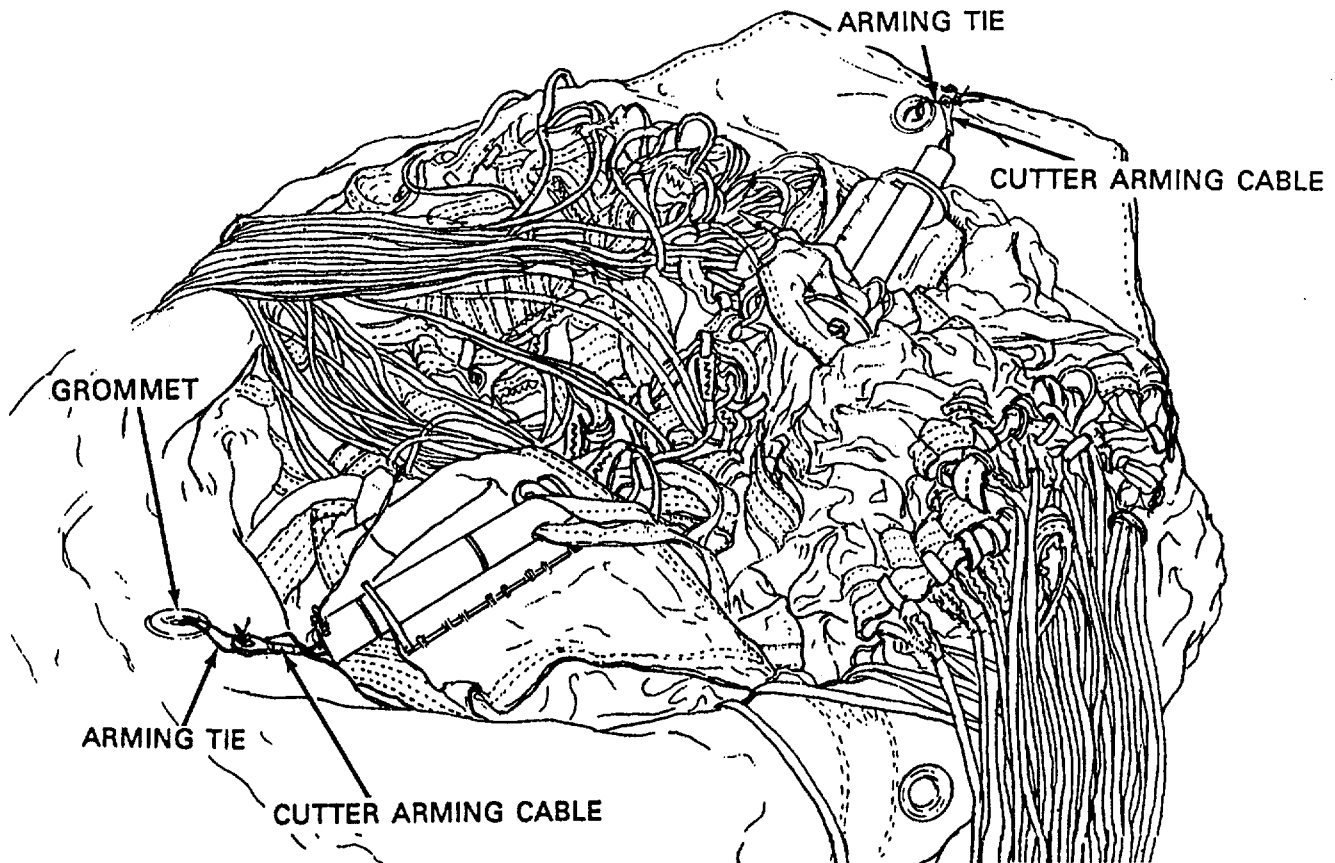
2-16 Packing 100-Foot Cargo Parachute, Model G-11A (cont).



4838-045

Figure 2-37. Positioning the Reefing Line Cutters in Deployment Bag.

- (d) Pass the other end of the cord over the top of the bag edge and draw the cord ends tight. Secure the cord ends on the bag outside with a surgeon's knot and locking knot. Make an overhand knot in each running end. Trim each tie end at a point 2 inches from the surgeon's knot and locking knot (figure 2-38).
- (e) Using the remaining cord length on the reefing line cutter at line 61 near the bag bottom, pass one end of the cord through the hole in the top of the reefing line cutter arming cable and through the lower bag grommet to the bag outside.
- (f) Pass the opposite cord end through the upper bag grommet to the bag outside and draw the cord ends tight. Secure the cord ends together on the outside of the bag with a surgeon's knot and locking knot. Make an overhand knot in each running end. Trim each tie end at a point 2 inches from the surgeon's knot and locking knot (figure 2-38).



4838-046

Figure 2-38. Reefing Line Cutter Arming Cable Ties Completed.

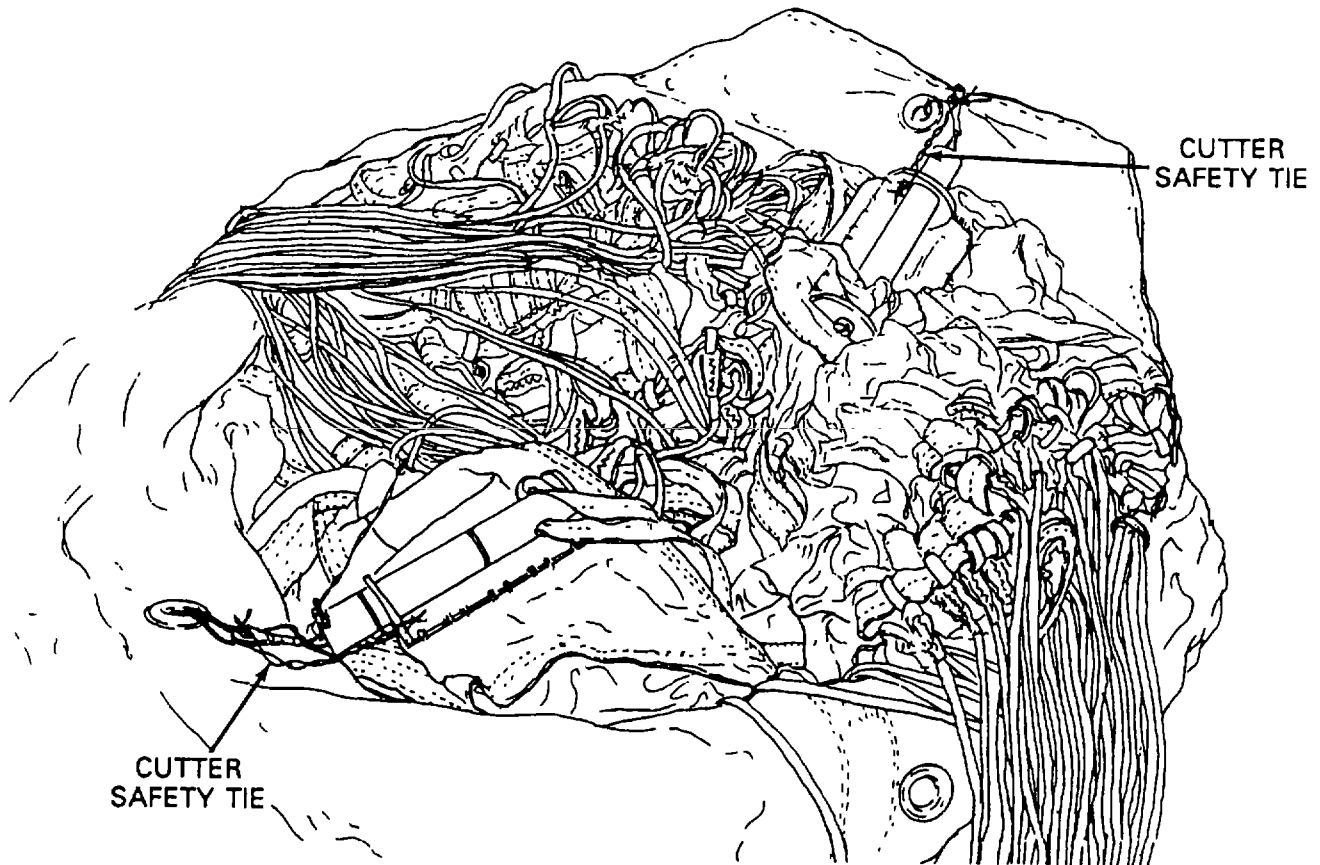
- (12) Installing reefing line cutter safety ties. To prevent premature firing of a reefing line cutter while stowing the suspension lines, install a safety tie on each of the reefing line cutters and remove the safety cotter pins as follows:
- (a) Using a length of one turn double, ticket No. 8/7 cotton thread, pass one end of the doubled thread through the slot in the reefing line cutter bracket, through the loop of the arming cable tie previously installed, and draw the tie ends tight. Secure the safety tie with a surgeon's knot and locking knot. Trim tie ends to two inches (figure 2-39).
 - (b) The senior packer will annotate each cutter tag with the reefing line cutter lot number/serial number and parachute pack date. After these entries have been made the senior packer will sign each tag.

CAUTION

Failure to remove the cutter cotter pins will cause a malfunction of the parachute.

- (c) Remove the safety cotter pin and tag from each reefing line cutter, fold the tags lengthwise and stow safety pins and tags in the parachute inspection data pocket.

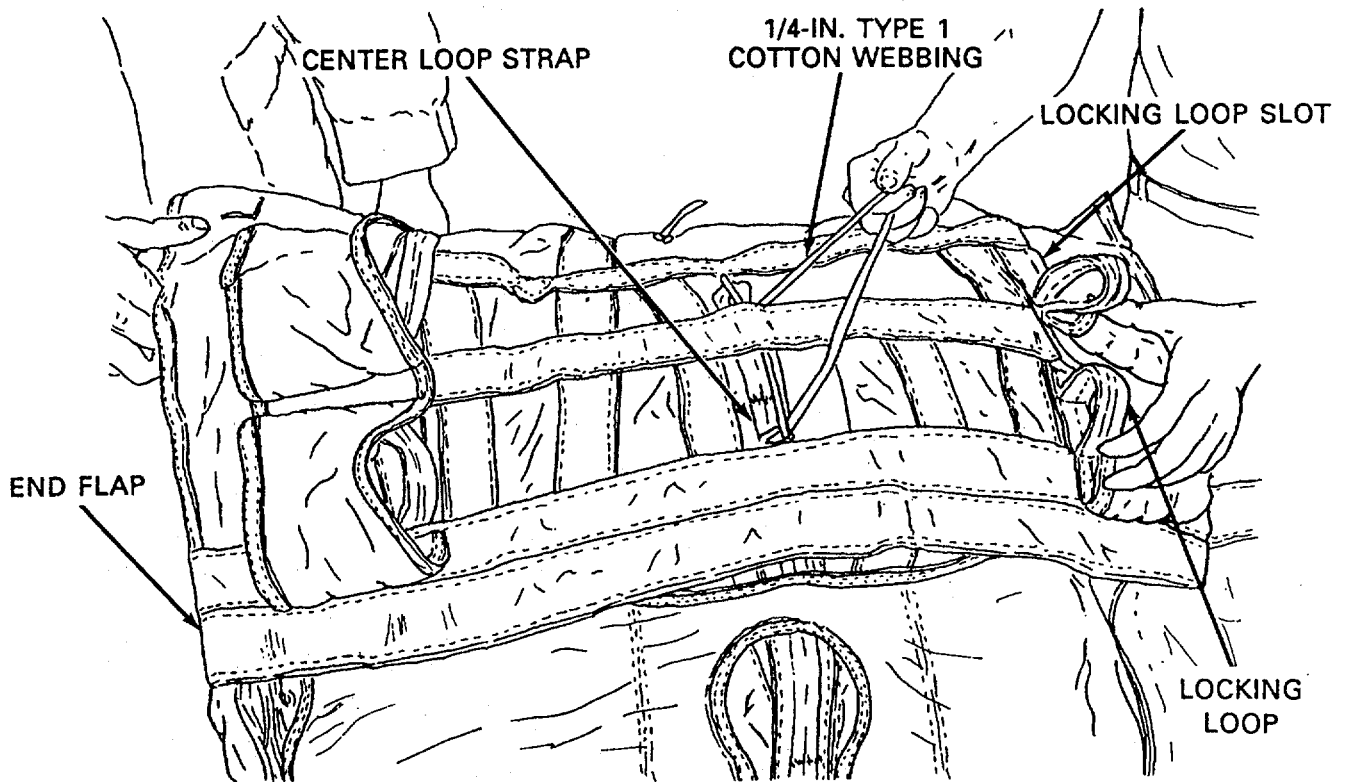
2-16 Packing 100-Foot Cargo Parachute, Model G-11A (cont).



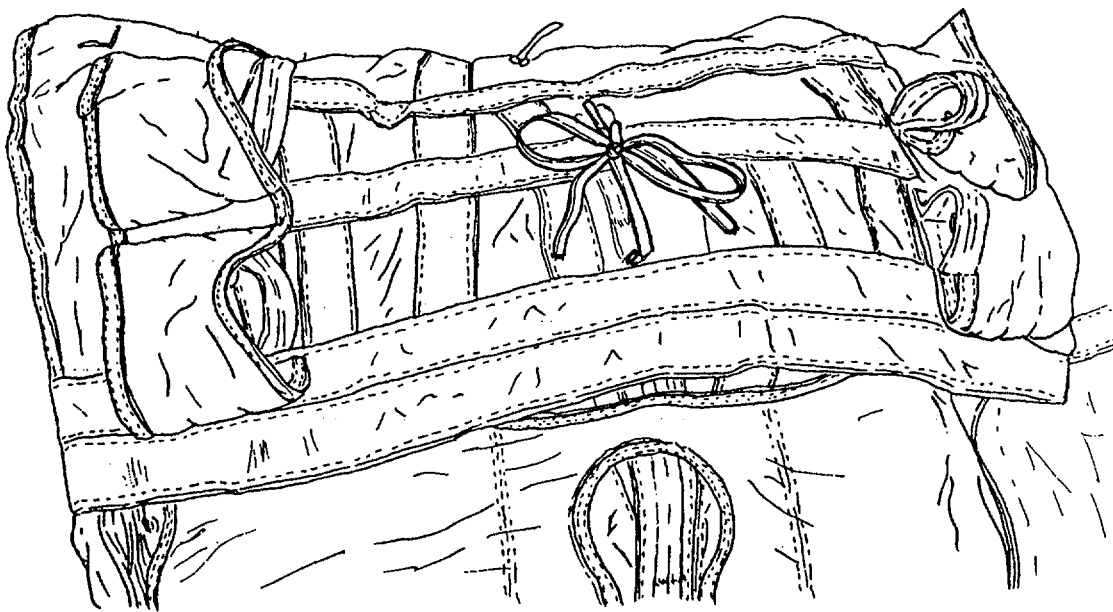
4838-047

Figure 2-39. Reefing Line Cutter Safety Ties Completed.

- (13) Closing the cotton deployment bag
- (a) Bring the suspension lines up over the top of the deployment bag and close the side flaps.
 - (b) Cut an 18-inch length of 1/4-inch type I cotton webbing and girth hitch the webbing length to the deployment bag top center loop strap
 - (c) Bring the large end flap of the bag over the bag end and pull the locking loops up through the locking loop slots. Pull the 1/4-inch wide cotton webbing ends on the center loop strap through the center opening on the end flap and tie with a temporary bow knot (B, figure 2-40).



(A) THREADING CENTER LOOP STRAP TIE



(B) CENTER LOOP STRAP TIE SECURED

4838-048

Figure 2-40. Inserting Locking Loops Through Locking Slots

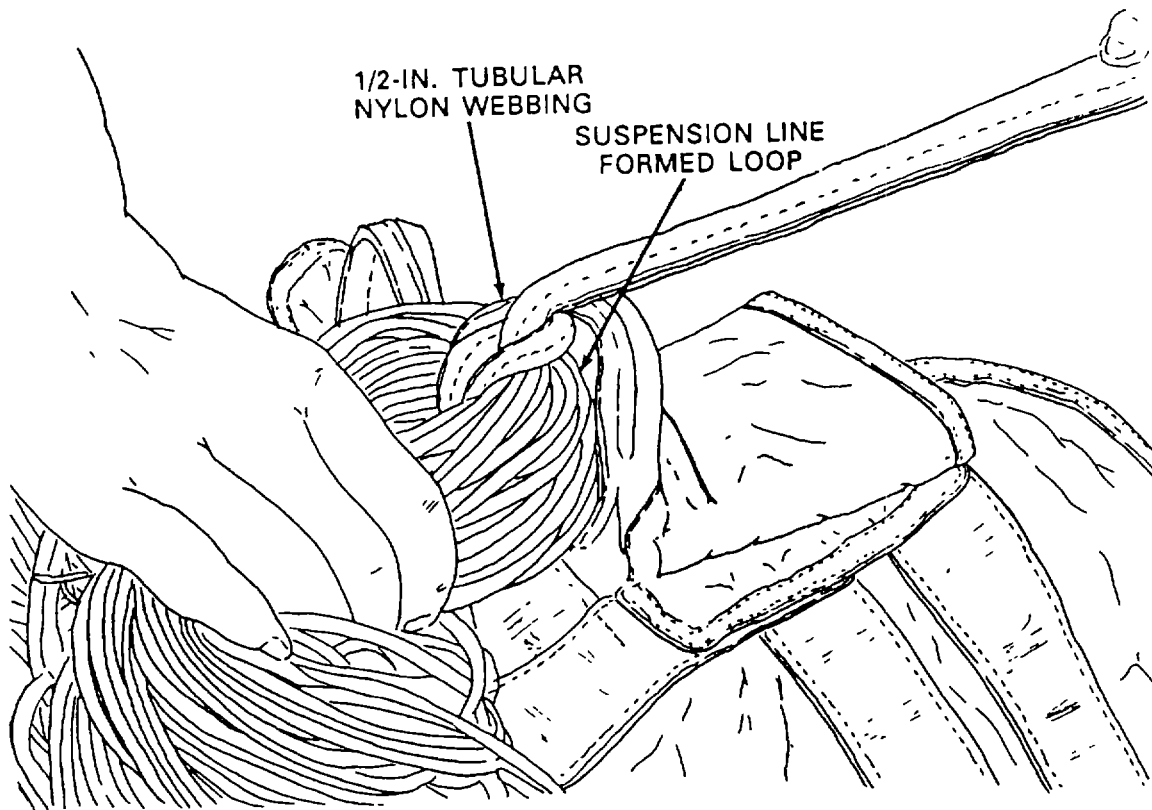
2-16 Packing 100-Foot Cargo Parachute, Model G-11A (cont).

(14) Making locking stows

CAUTION

Failure to remove the packing aid will cause total malfunction of the parachute

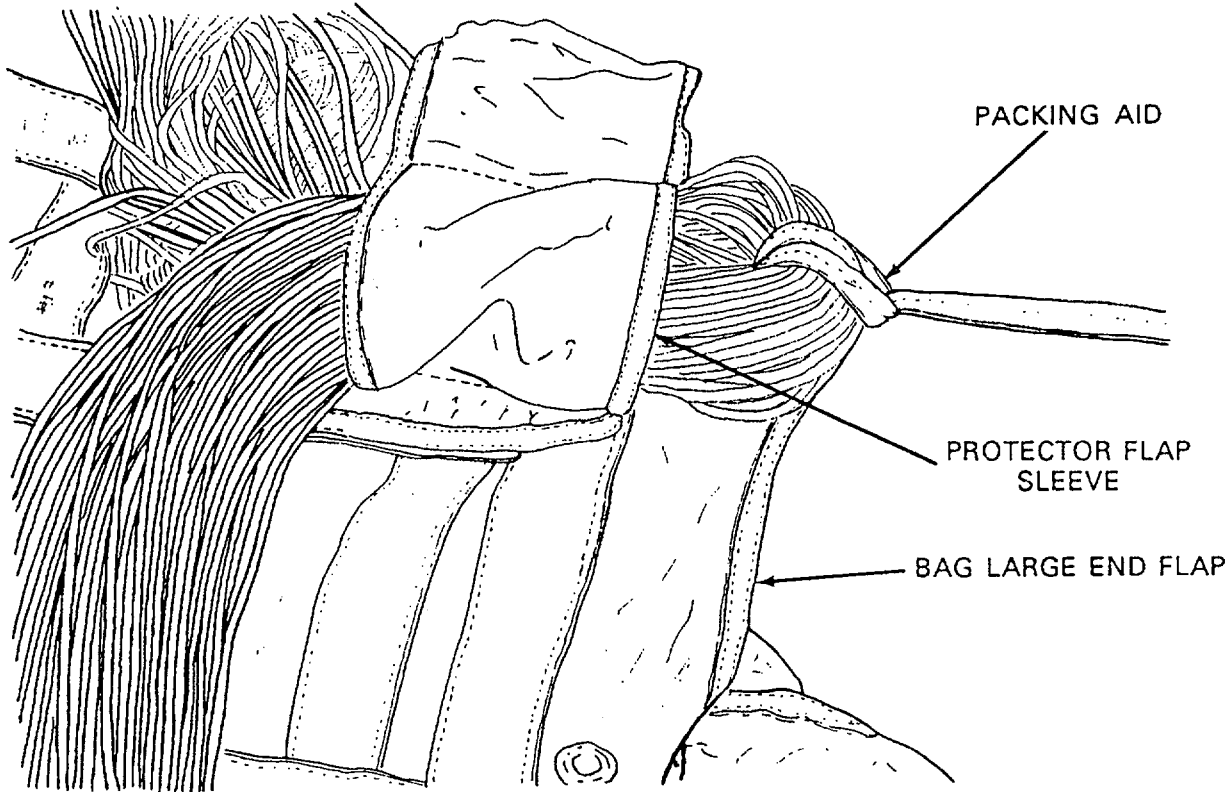
- (a) Cut a 36-inch length of 1/2-inch wide tubular nylon webbing, or equivalent, for use as a packing aid in making the locking stows. Double the webbing length and make an overhand knot in the aligned ends
- (b) Fold the suspension lines back over the large end flap and measure and form a loop in the lines that will extend to the right edge of the bag large flap
- (c) Using the packing aid, encircle the formed loop in the suspension lines and make a girth hitch in the packing aid (figure 2-41)



4838-049

Figure 2-41. Packing Aid Encircling Suspension Line Formed Loop.

- (d) Thread the knotted end of the packing aid through the locking stow loop located under the protector flap sleeve at the lower right corner of the deployment bag. Pull the suspension line formed loop until the loop is aligned with the right edge of the bag large end flap (figure 2-42). Remove the packing aid.

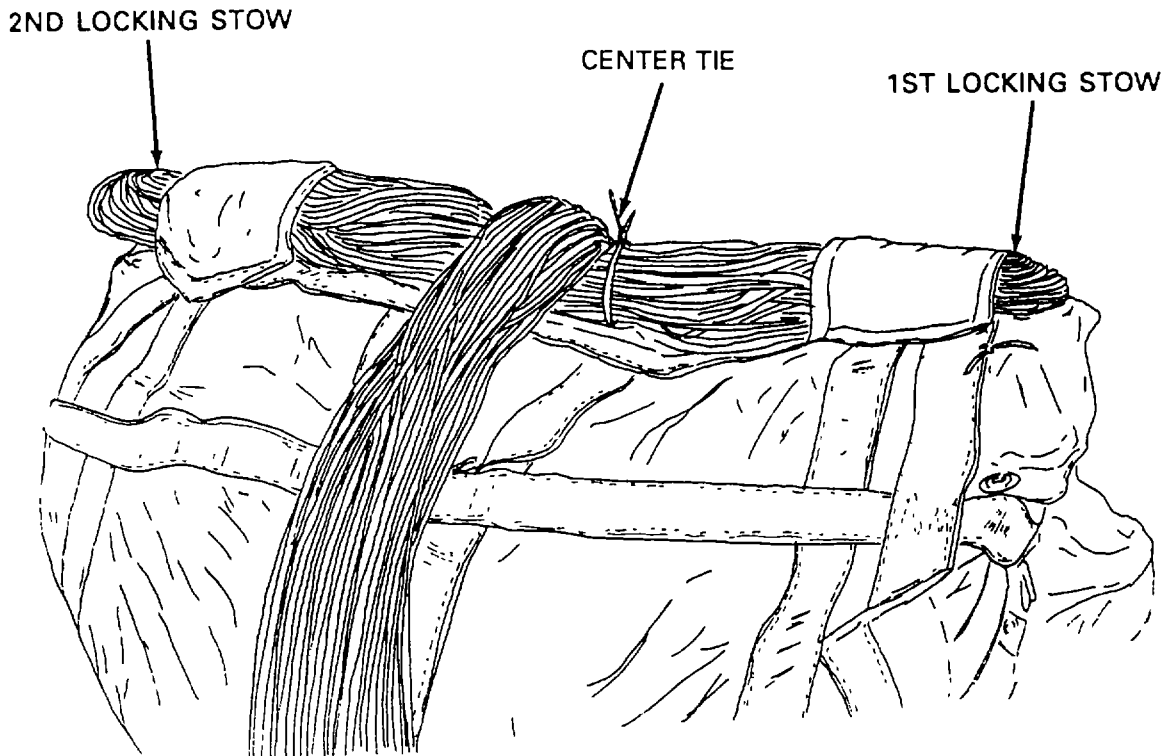


4838-050

Figure 2-42. Making the First Locking Stow.

- (e) Extend the running end of the suspension lines to the locking stow loop at the lower left corner of the deployment bag and measure and form a loop in the lines.
- (f) Using the packing aid, encircle the formed loop in the suspension lines and make a girth hitch in the packing aid.
- (g) Thread the knotted end of the packing aid through the locking stow loop located under the protector sleeve at the lower left corner of the deployment bag. Pull the suspension line formed loop until the loop is aligned with the left edge of the bag large end flap. Remove the packing aid.
- (h) Secure the first two locking stows by tying the suspension lines together at point between two stows. Use the 1/4 inch wide cotton webbing previously installed. Make the tie one turn single and secure with a surgeon's knot and locking knot. Trim tie ends to two inches (figure 2-43).

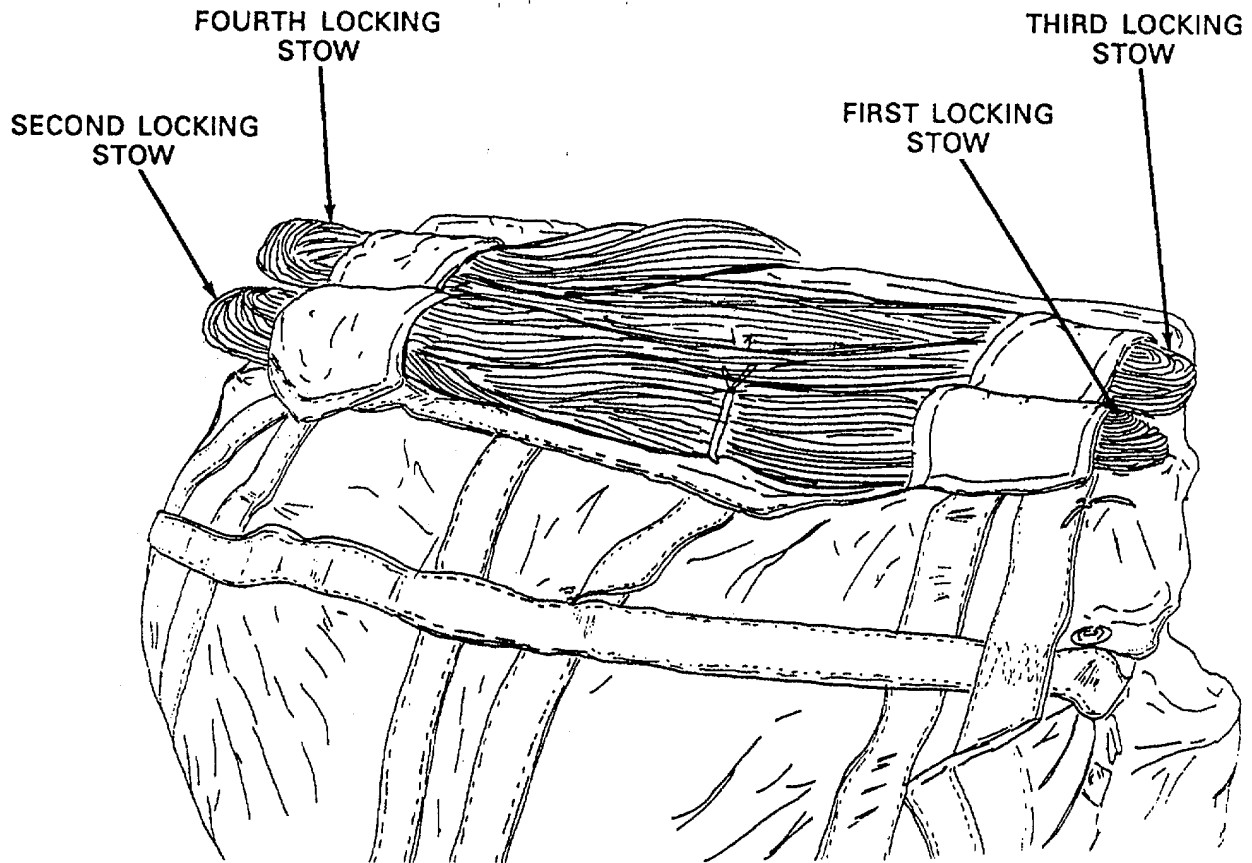
2-16 Packing 100-Foot Cargo Parachute, Model G-11A (cont).



4838-051

Figure 2-43. First Two Locking stows Completed and Tied.

- (i) Extend the suspension lines to the upper right corner of the large end flap and measure and form a loop in the lines
- (j) Using the packing aid, encircle the formed loop in the suspension lines and make a girth hitch in the packing aid
- (k) Thread the knotted end of the packing aid through the locking stow loop located under the protector sleeve at the upper right corner of the deployment bag. Pull the suspension line formed loop until the loop is aligned with the right edge of the bag large end flap. Remove the packing aid.
- (l) Extend the suspension lines to the upper left corner of the large end flap and measure and form a loop that aligns with the left edge of the large end flap.
- (m) Using the packing aid, encircle the formed loop in the suspension lines and make a girth hitch in the packing aid.
- (n) Thread the knotted end of the packing aid through the locking stow loop located under the protector sleeve at the upper left corner of the deployment bag. Pull the suspension line formed loop until the loop is aligned with the left edge of the bag large end flap (figure 2-44). Remove the packing aid.



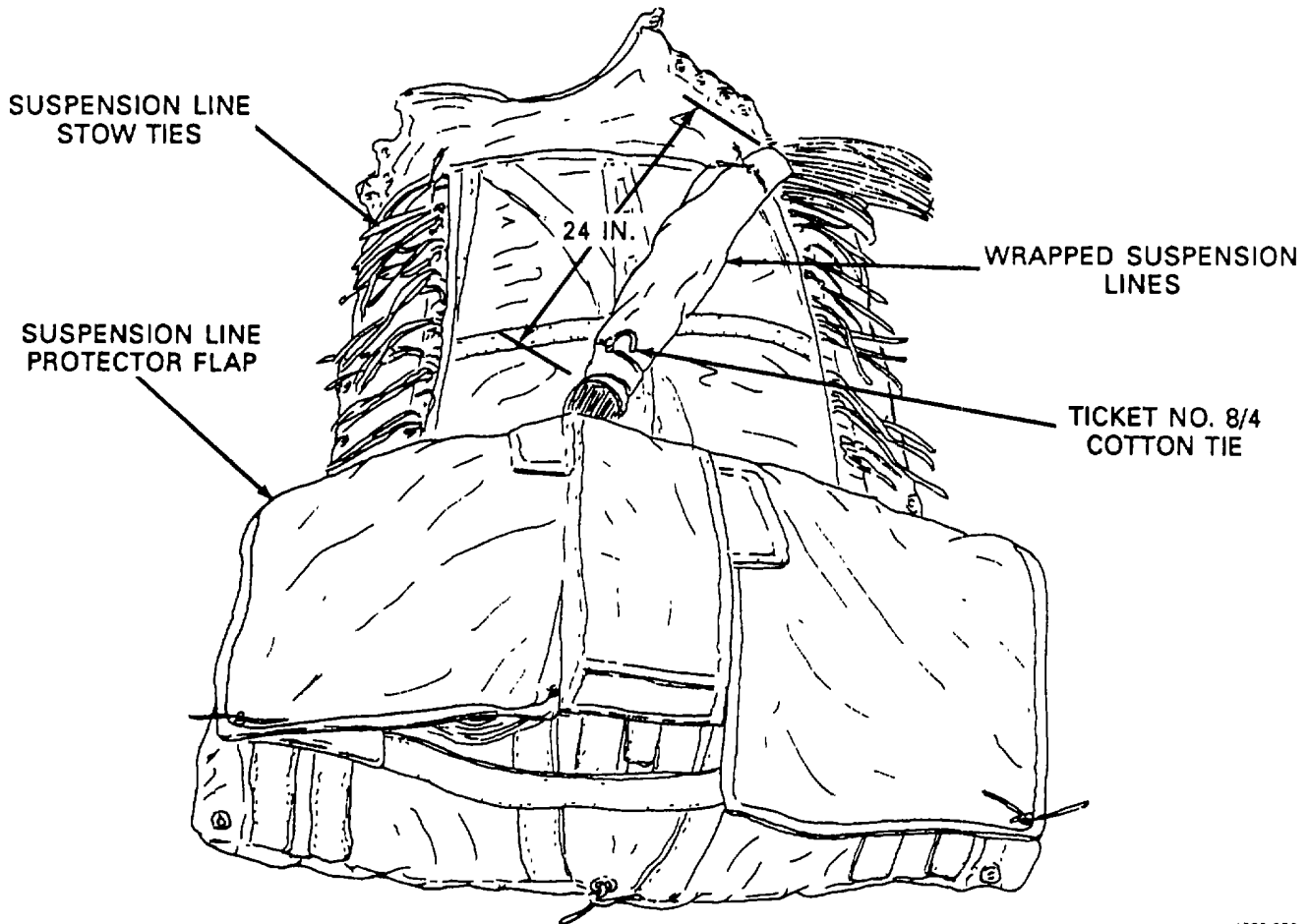
4838-052

Figure 2-44. Locking Stows Completed.

- (15) Installing suspension line stow ties.
- Cut a minimum of thirty six 18-inch lengths of 1/4 inch wide, type I cotton webbing for use as suspension line stow ties.
 - Secure the webbing lengths at equal intervals along each row of side strap loops by making a girth hitch in each webbing length. Insure the ends of each webbing length are alined and positioned toward the respective outer edge of the deployment bag.
- (16) Wrapping the suspension lines.
- Extend the suspension lines along the top center of the deployment bag toward the bridle end of the bag.
 - Using an 8 1/2 inch wide by 24-inch long piece of kraft paper, wrap the suspension lines extended along the top center of the deployment bag.

2-16 Packing 100-Foot Cargo Parachute, Model G-11A (cont).

- (c) Secure each end of the suspension line wrap with one turn single of ticket No 8/4 cotton orange thread. Secure each thread end with a surgeon's knot and locking knot. Insure the suspension lines are not inadvertently secured to the center loop strap on top of the deployment bag. Trim tie ends to two inches (figure 2-45)



4838-053

Figure 2-45. Suspension Line Wrapping Details.

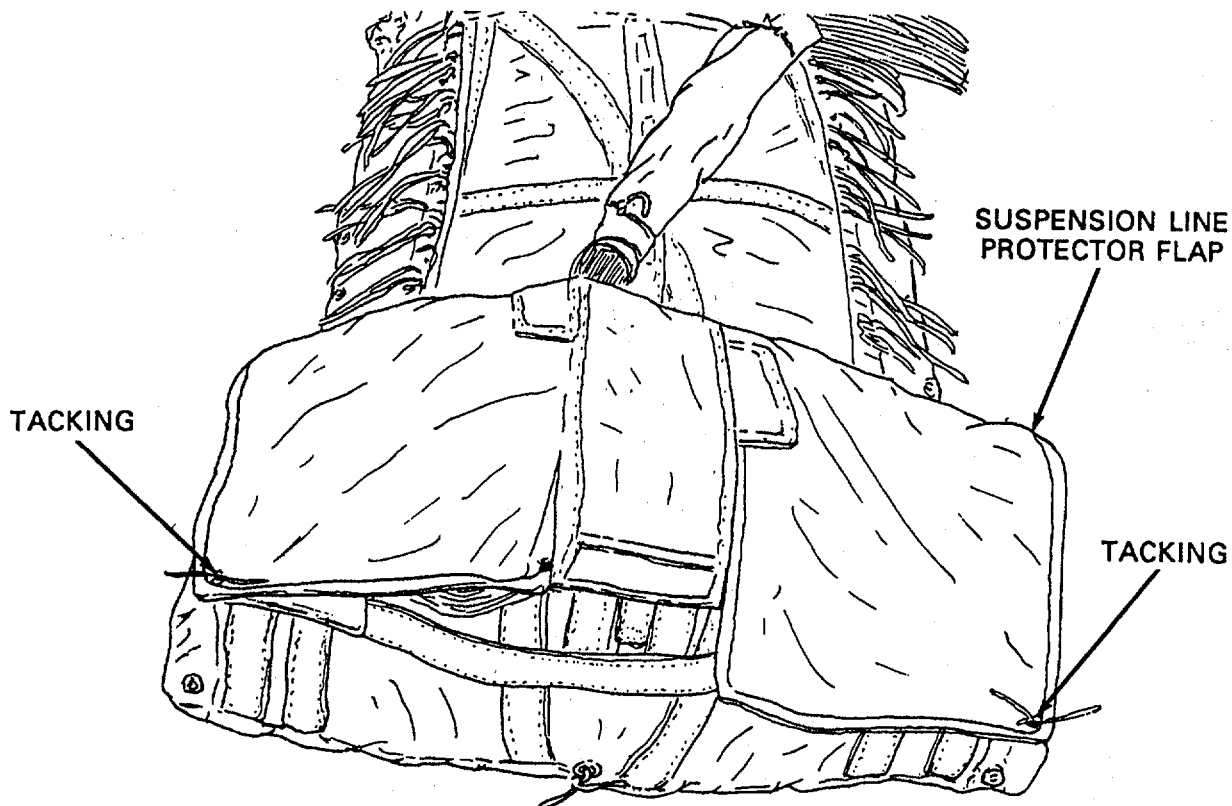
NOTE

If the suspension line protector flap is damaged, it may be removed from the deployment bag. Remove by cutting the flap material as close to the deployment bag body as possible.

- (17) Tacking the suspension line protector flap.

- (a) Extend the deployment bag suspension line protector flap over the locking stows.

- (b) Secure each lower outside corner of the suspension line protector flap to the deployment bag by hand tacking using one turn single, thread ticket No. 8/4 cotton at each tacking point (figure 2-46). Pass the tacking needle through the deployment bag outside edge of the reinforcement strap and the protective flap edge reinforcement. Secure the tacking ends at each tacking point with a surgeon's knot and locking knot. Trim tie ends to two inches.



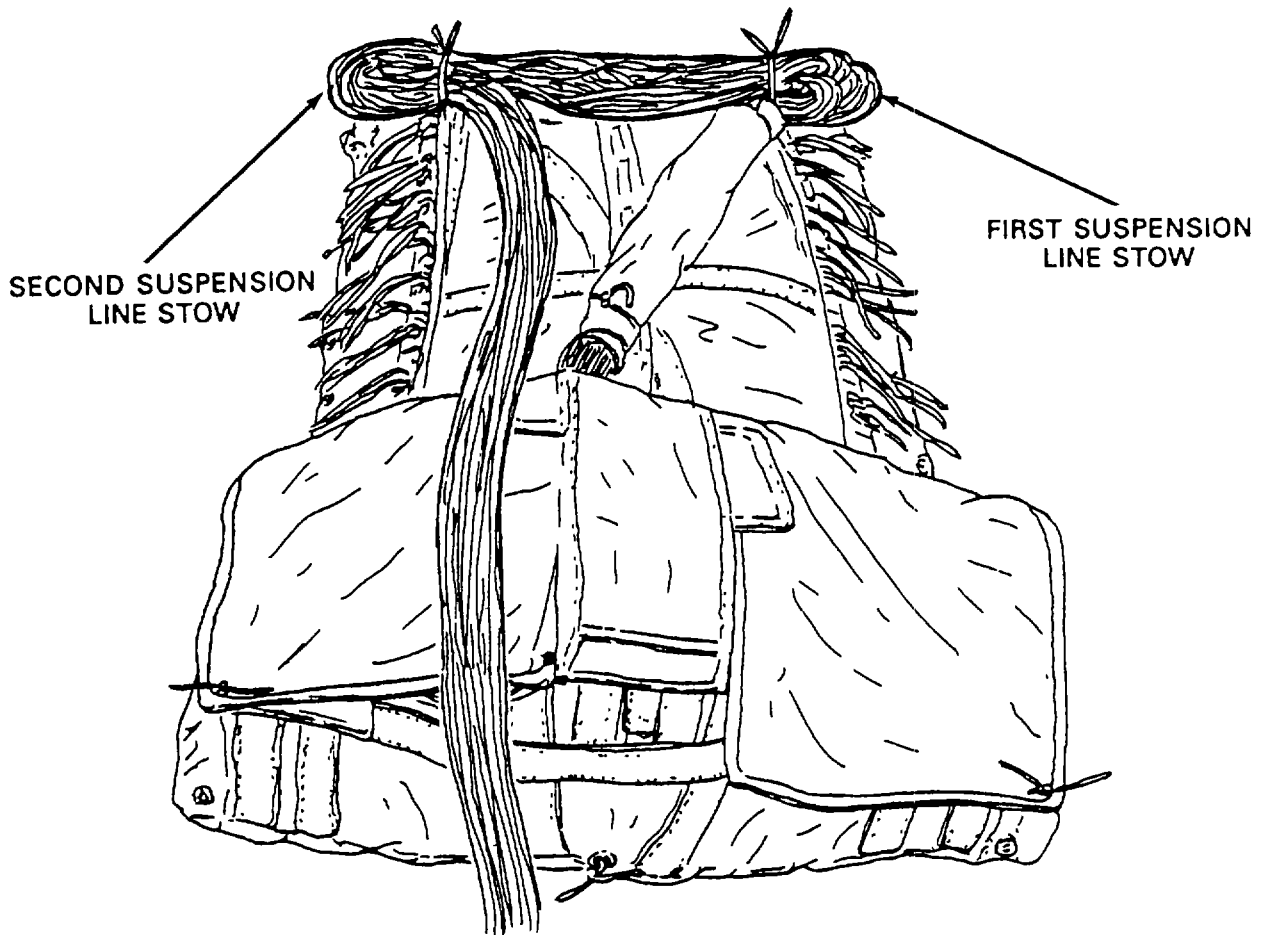
4838-054

Figure 2-46. Tacking the Suspension Line Protector Flap.

(18) Stowing the suspension lines and suspension risers.

- (a) Extend the running end of the suspension lines to the upper right corner of the deployment bag. Measure to the right edge of the stowage compartment and form the first suspension line stow by making a loop in the suspension lines.
- (b) Secure the first suspension line stow to the upper right outside strap loop using the first stow tie. Secure the stow tie with a surgeon's knot and locking knot.
- (c) Extend the running end of the suspension lines across the deployment bag to the upper left corner of the deployment bag. Measuring to the left edge of the stowage compartment, form the second suspension line stow by making a loop in the suspension lines.
- (d) Secure the second suspension line stow to the upper left outside strap loop using the second stow tie. Secure the stow tie with a surgeon's knot and locking knot (figure 2-47).

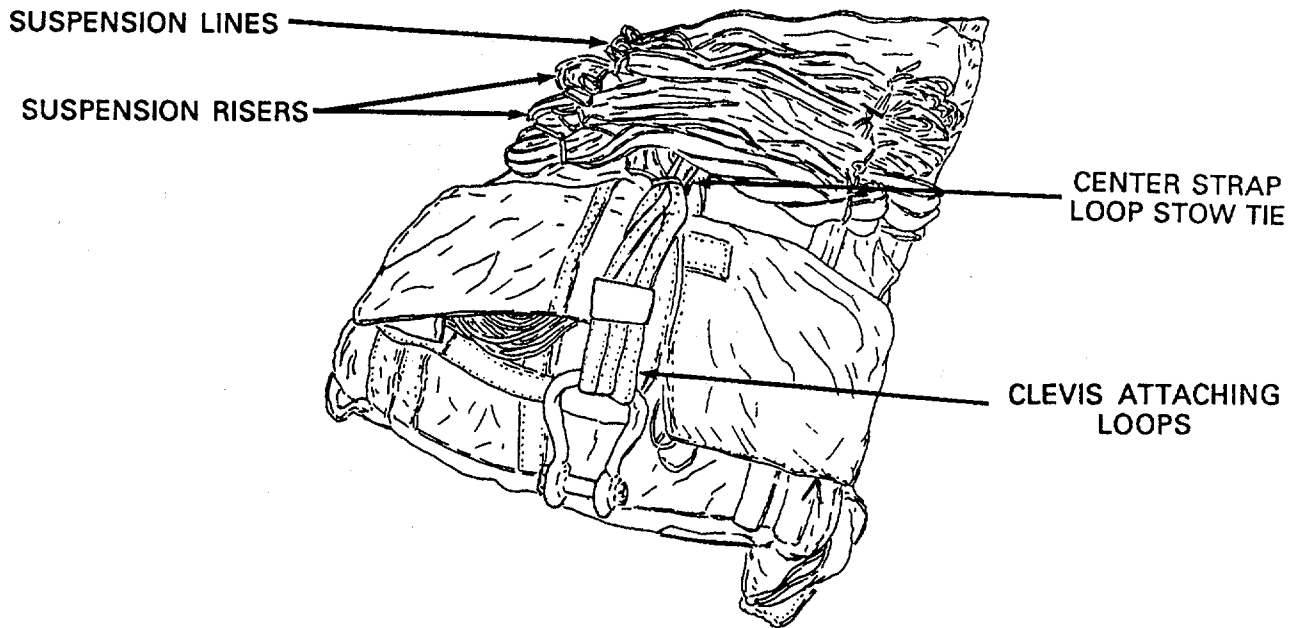
2-16 Packing 100-Foot Cargo Parachute, Model G-11A (cont).



4838-055

Figure 2-47. First and Second Suspension Line Stows Formed and Secured.

- (e) Using the procedures in (a) through (d), stow the remaining length of suspension lines and the suspension risers to a point 6 to 10 inches from the clevis attaching loops on the end of the suspension risers (figure 2-48) Install an additional stow tie on the center strap loop in order to route the suspension risers from the center of the bag Trim all ties to 2 Inches Remove excess ties



4838-056

Figure 2-48 suspension Line and Suspension Riser Stowage Completed.

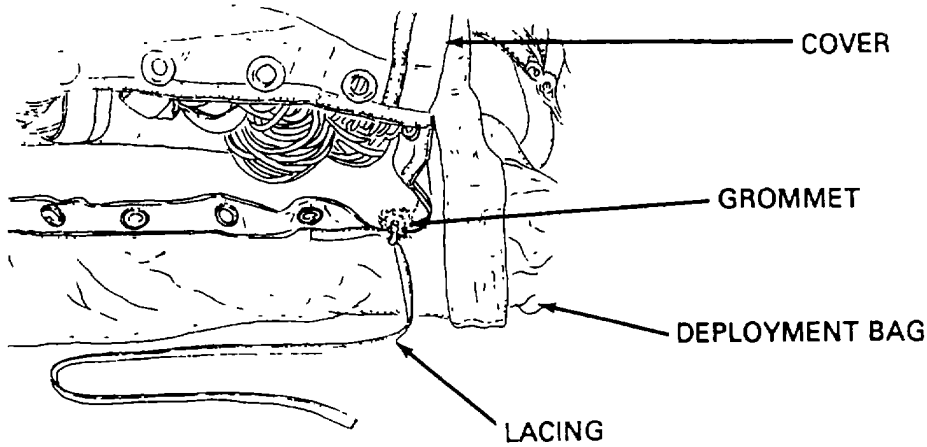
(19) Lacing the deployment bag.

- (a) Bring the suspension line protector flap down over the stowed suspension lines and suspension risers. The grommets on the flap sides should overlap the grommets on the side of the deployment bag.
- (b))Cut two 60-inch lengths of 1/4-inch cotton webbing for use as lacing ties.
- (c) Secure an end of each webbing length to the first grommet located on the bottom corner of the deployment bag upper corners with two half-hitches (A, figure 2-49).
- (d) With a packer positioned on each side of the deployment bag and using the lacing tie running end, lace the flap to the deployment bag main body, grommet over grommet (B, figure 2-49).
- (e) Secure the lacing tie free end to the last lace with three half hitches. Trim the tie ends to two inches (C, figure 2-49).

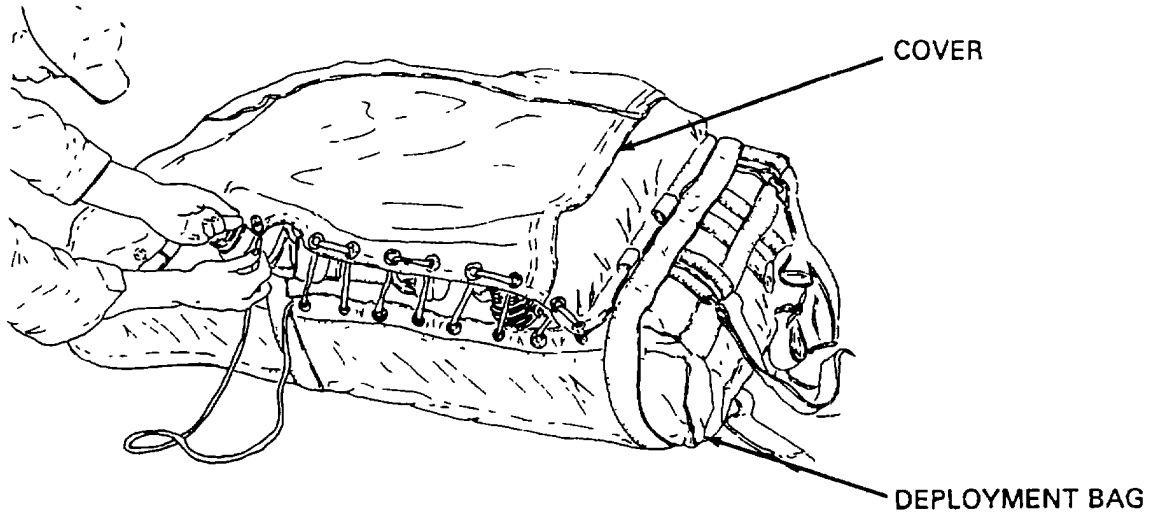
NOTE

Proceed to step (28) for log record book entries.

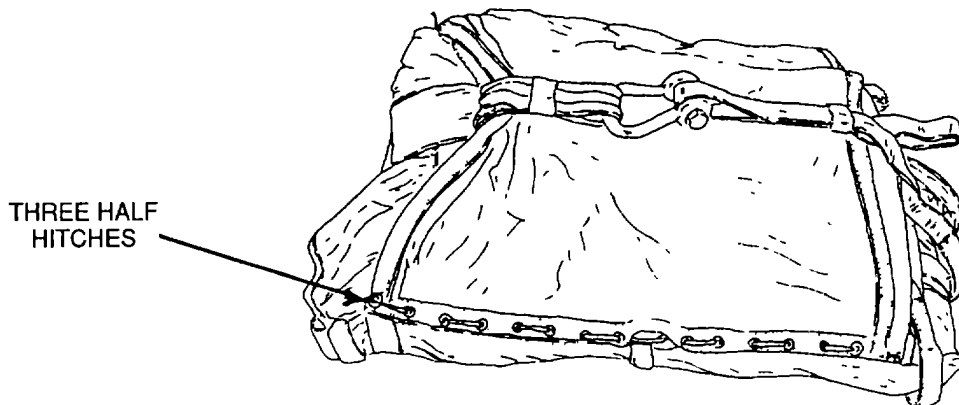
2-16 Packing 100-Foot Cargo Parachute, Model G-11A (cont).



(A) LACE WEBBING SECURED TO GROMMET ON DEPLOYMENT BAG



(B) LACING THE COVER TO THE DEPLOYMENT BAG



(C) DEPLOYMENT BAG LACING COMPLETE

4838-057

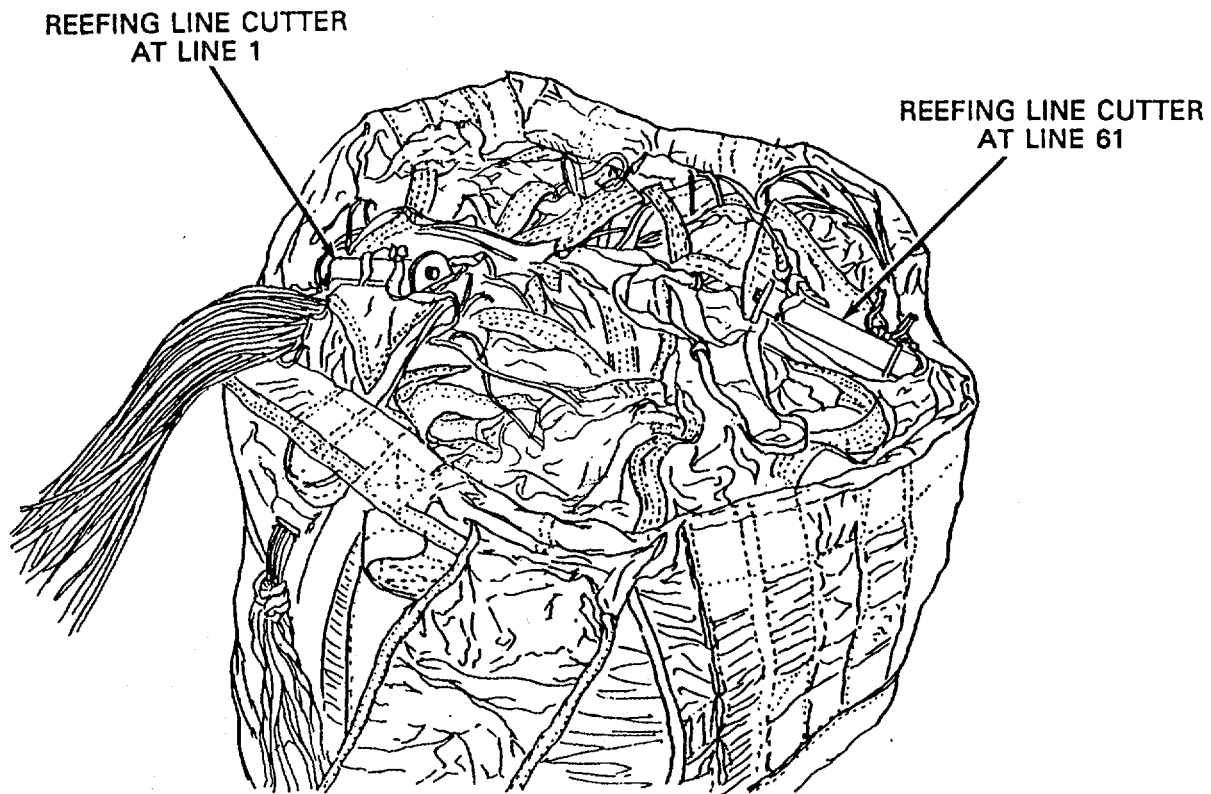
Figure 2-49. Lacing the Deployment Bag.

NOTE

Paragraphs (20) thru (28) will be used when packing the G-1 1A parachute in the nylon deployment bag.

(20) Arming the reefing line cutters.

- (a) Position the two reefing line cutters on top of the stowed canopy with the cutter at suspension line 61 placed adjacent to the arming loop on the bag bottom and the cutter at suspension line 1 placed adjacent to the arming loop on the bag top (figure 2-50).
- (b) Cut two 12-inch lengths of type III nylon cord for use as arming cable ties.
- (c) Beginning with the reefing line cutter at line 1 near the bag top, pass the end of one cord through the reefing line cutter arming cable and through the arming loop on the bag top. Draw the cord tight and secure the cord ends with a surgeon's knot and locking knot. Trim the tie ends at a point 2 inches from the surgeon's knot and locking knot.

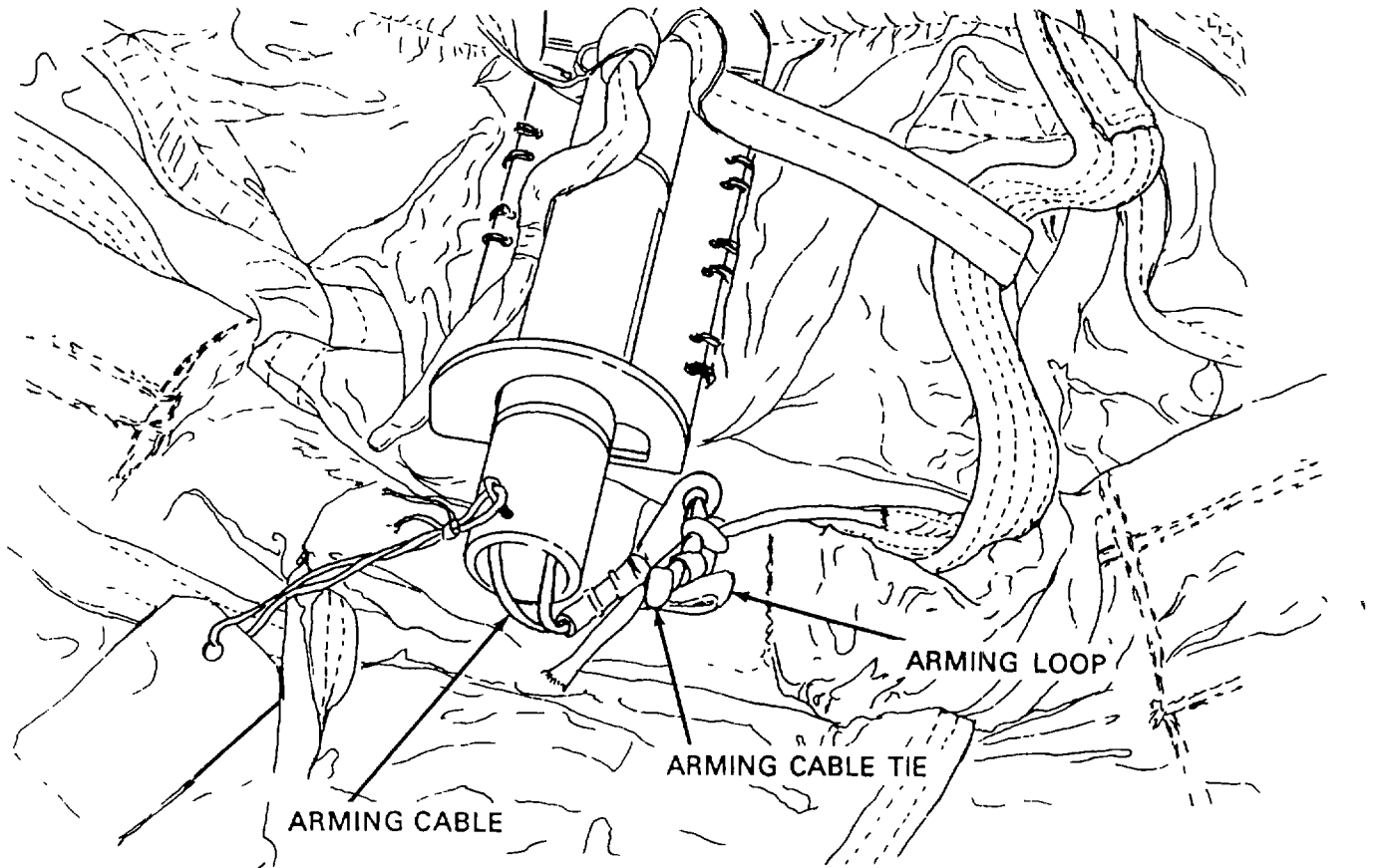


4838-058

Figure 2-50. Positioning the Reefing Line Cutters in Nylon Deployment Bag.

2-16 Packing 100-Foot Cargo Parachute, Model G-11A (cont.).

(d) Using the remaining cord length on the reefing line cutter at line 61 near the bag bottom, pass one end of the cord through the hole in top of the reefing line arming cable and through the arming loop. Draw the ends of the tie tight and secure the ends with a surgeon's knot and locking knot. Trim tie ends 2 inches from the surgeon's knot and locking knot (figure 2-51).



4838-059

Figure 2-51 . Reefing Line Cutter Arming Cable Ties Completed on Nylon Deployment Bag.

(21) Installing reefing line cutter safety ties To prevent premature firing of a reefing line cutter while stowing the suspension lines, install a safety tie on each of the reefing line cutters and remove the safety cotter pin as follows:

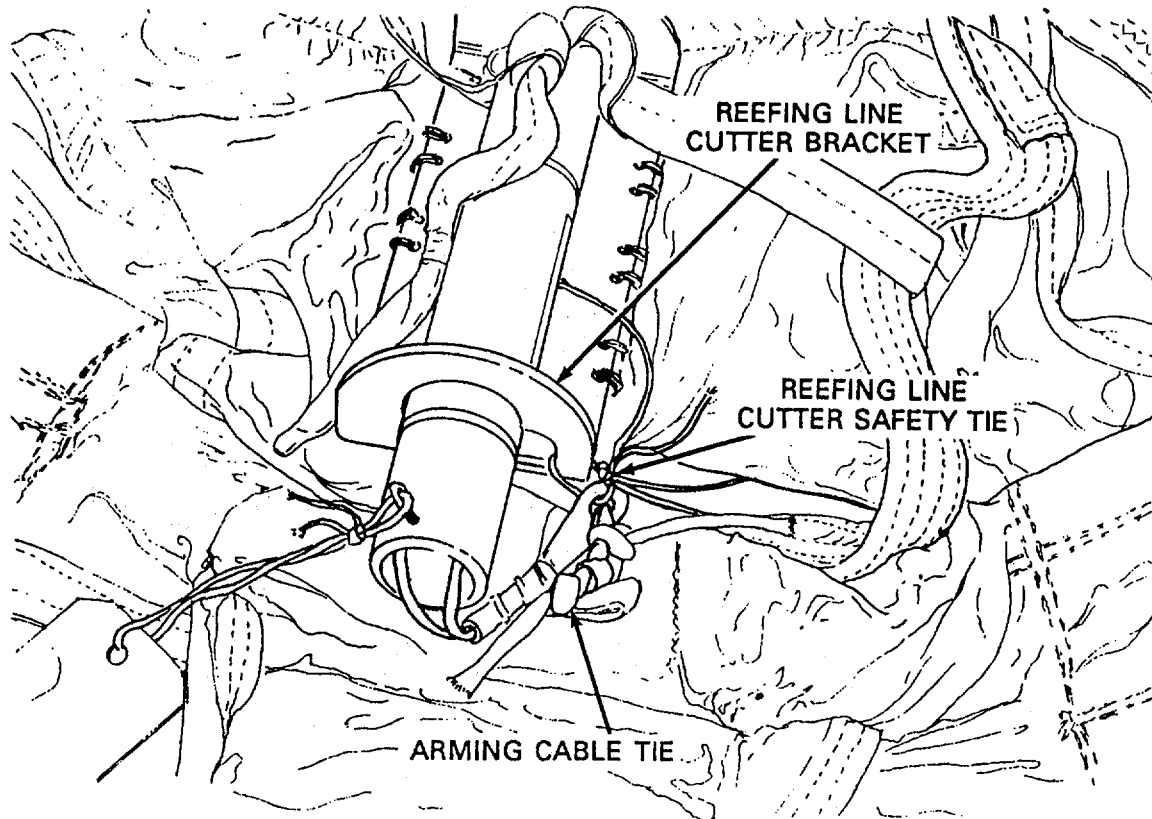
(a) Using a length of one turn double, ticket no 8/7 cotton thread, pass one end of the doubled thread through the slot in the reefing line cutter bracket, through the loop of the arming cable tie previously installed, and draw the tie ends tight (figure 2-52). Secure the safety tie with a surgeon's knot and locking knot. Trim tie ends to two inches.

(b) The senior packer will annotate each cutter tag with the reefing line cutter lot number/serial number and parachute pack date. After these entries have been made, the senior packer will sign each tag.

CAUTION

Failure to remove the cutter cotter pins will cause a malfunction of the parachute.

- (c) Remove the safety cotter pin and tag from each reefing line cutter, fold the tags lengthwise and stow safety pins and tags in the parachute inspection data pocket.



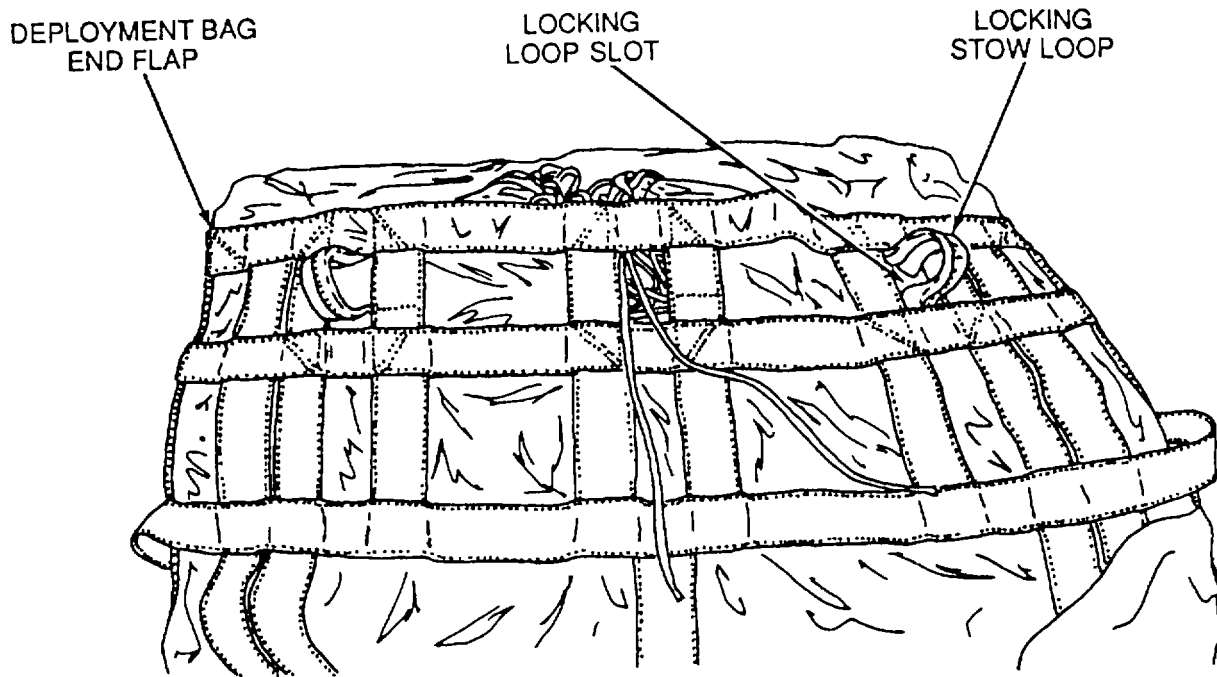
4838-060

Figure 2-52 . Reefing Line Cutter Safety Ties Completed.

2-16 Packing 100-Foot Cargo Parachute, Model G-11A (cont).

(22) Closing the nylon deployment bag

- (a) Bring the suspension lines up over the top of the deployment bag and close the side flaps
- (b) Bring the large end flap of the deployment bag over the bag end and pull the locking loops up through the locking loop slots (figure 2-53)

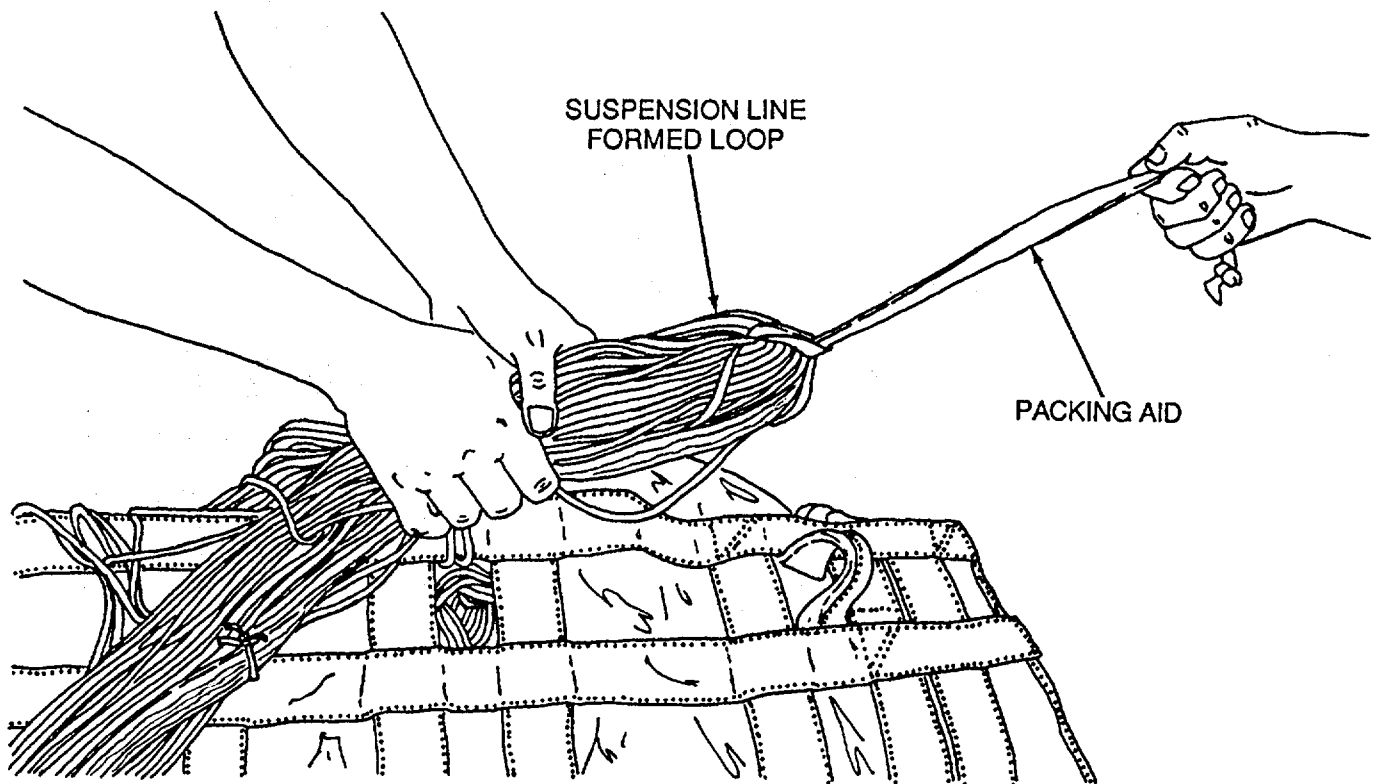


4838-061

Figure 2-53. Inserting Locking Loops Through Locking Loop Slots.

(23) *Making locking stows.*

- (a) Cut a 36-inch length of 1/2-inch wide tubular nylon webbing, or equivalent, for use as a packing aid in making the locking stows . Double the webbing length and make an overhand knot in the aligned ends.
- (b) Fold the suspension lines back over the large end flap and measure and form a loop in the lines that will extend to the right edge of the bag large flap.
- (c) Using the packing aid, encircle the formed loop in the suspension lines and make a girth hitch in the packing aid (figure 2-54).

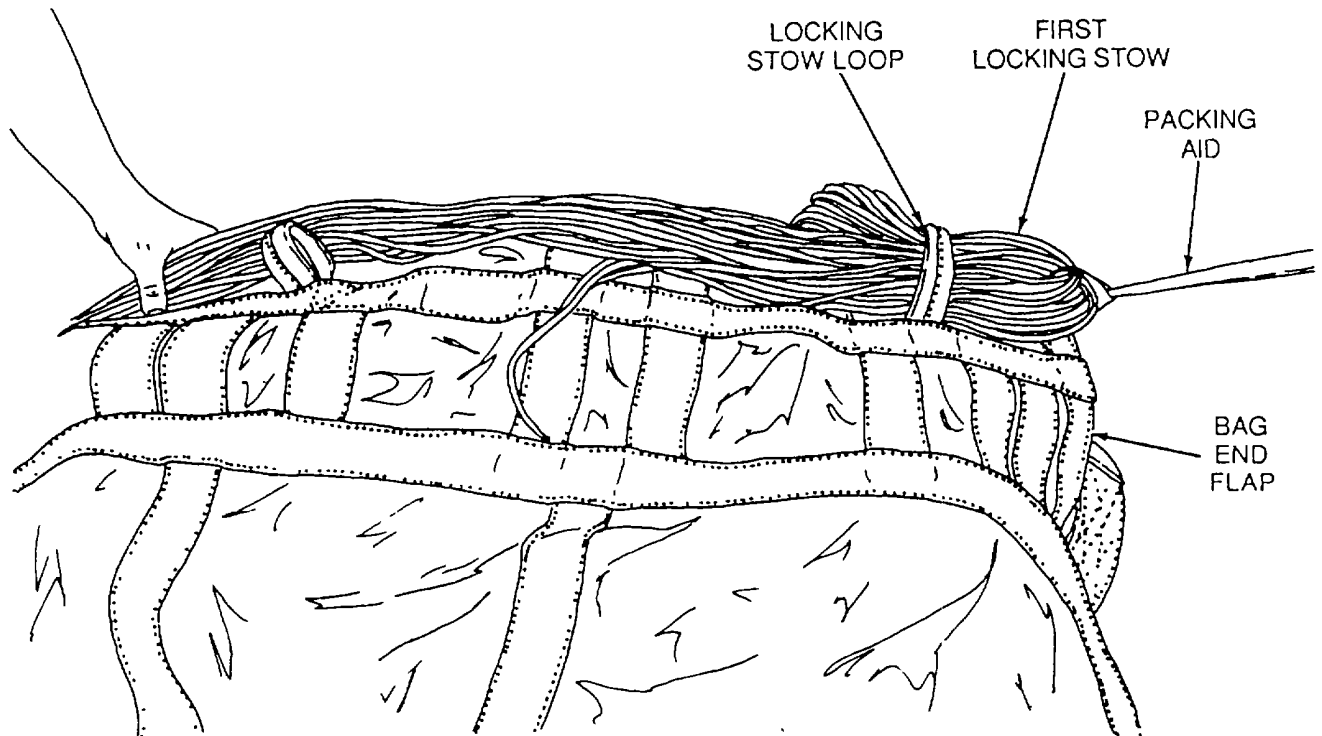


4838-062

Figure 2-54. Packing Aid Encircling Formed Suspension Line Loop.

2-16 Packing 100-Foot Cargo Parachute, Model G-11A (cont).

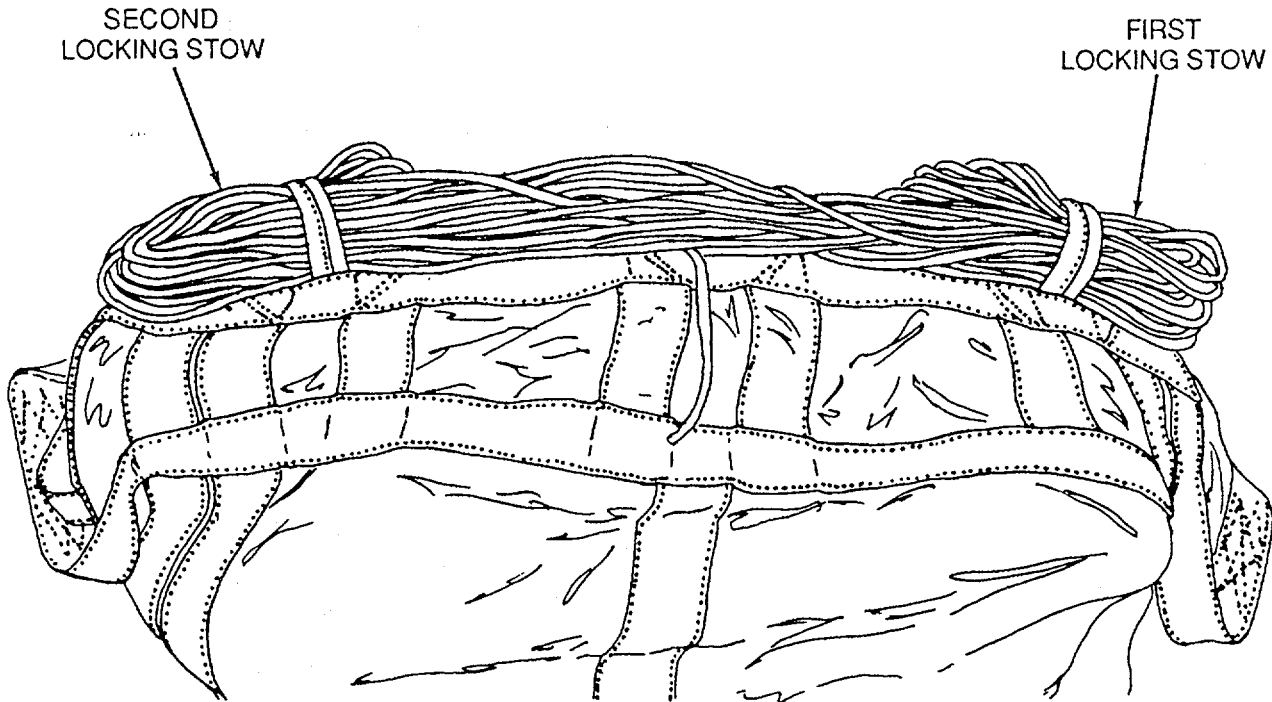
- (d) Thread the knotted end of the packing aid through the locking stow loop located at the upper right corner of the deployment bag and pull the suspension line formed loop until the loop is alined with the right edge of the bag large end flap (figure 2-55). Remove the packing aid
- (e) Extend the running end of the suspension lines to the locking stow loop at the lower left corner of the deployment bag and measure and form a loop in the lines
- (f) Using the packing aid, encircle the formed loop in the suspension lines and make a girth hitch in the packing aid



4838-063

Figure 2-55. Making the First Locking Stow.

- (g) Thread the knotted end of the packing aid through the locking stow loop located at the upper left corner of the deployment bag and pull the suspension line formed loop until the loop is aligned with the left edge of the bag large end flap (figure 2-56) . Remove the packing aid.



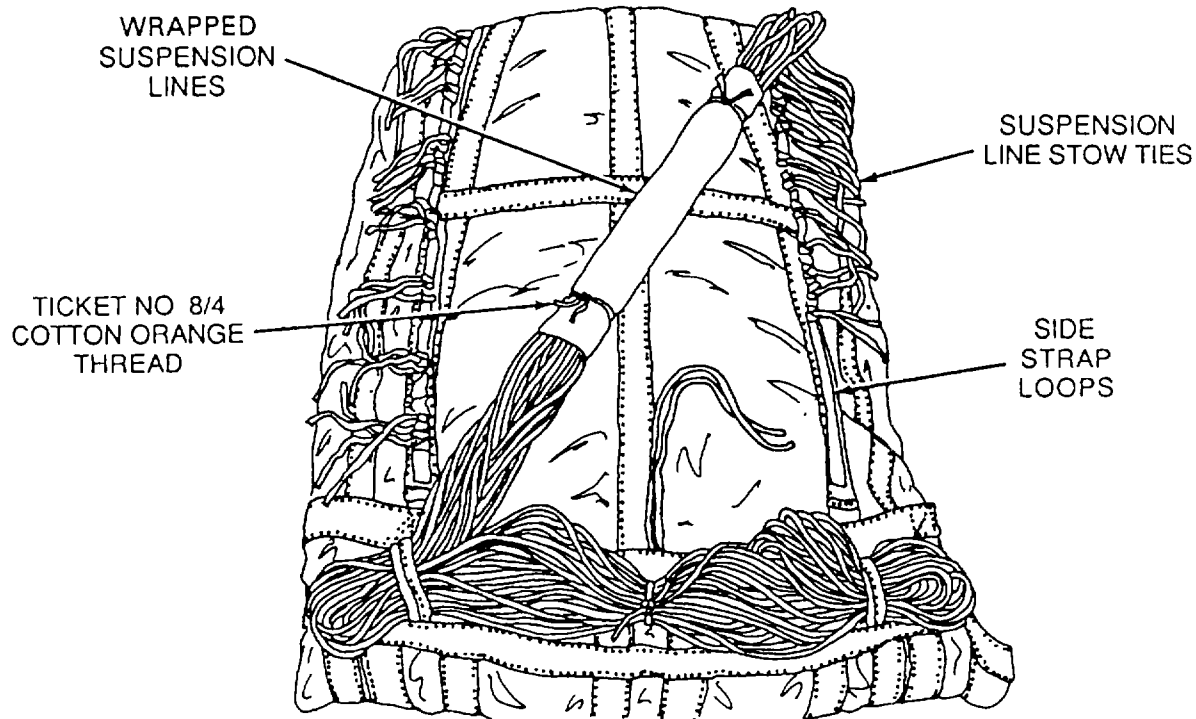
4838-064

Figure 2-56. Two Locking Stows Completed.

- (24) Installing suspension line stow ties.
- (a) Cut a minimum of thirty six 18-inch lengths of 1/4-inch wide, type I cotton webbing for use as suspension line stow ties.
 - (b) Secure the webbing lengths at equal intervals along each row of side strap loops by making a girth hitch in each webbing length . Insure the ends of each webbing length are aligned and positioned toward the respective outer edge of the deployment bag.
- (25) Wrapping the suspension lines.
- (a) Extend the suspension lines along the top center of the deployment bag toward the bridle end of the bag.
 - (b) Using an 8 1/2-inch wide by 24-inch long piece of kraft paper, wrap the suspension lines extended along the top center of the deployment bag.

2-16 Packing 100-Foot Cargo Parachute, Model G-11A (cont).

- (c) Secure each end of the suspension line wrap with one turn single of thread, ticket No 8/4 cotton. Secure each thread end with a surgeon's knot and locking knot (figure 2-57). Trim tie ends to two inches.



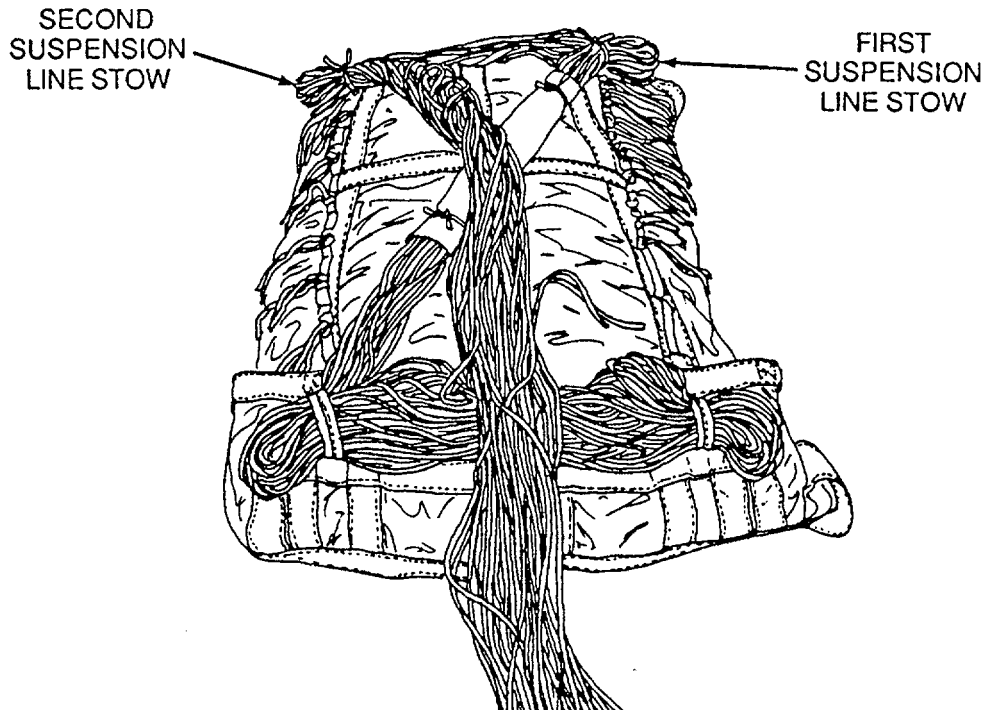
4838-065

Figure 2-57. Suspension Line Wrapping Details.

(26) Stowing suspension lines and suspension risers

- (a) Extend the running end of the suspension lines to the lower right corner of the deployment bag and measuring to the right edge of the stowage compartment form the first suspension line stow by making a loop in the suspension lines
- (b) Secure the first suspension line stow to the lower right outside strap loop using the first stow tie. Secure the stow tie with a surgeon's knot and locking knot
- (c) Extend the running end of the suspension lines across the deployment bag to the lower left corner of the deployment bag. Measuring to the left edge of the stowage compartment form the second suspension line stow by making a loop in the suspension lines

- (d) Secure the second suspension line stow to the lower left outside strap loop using the first stow tie. Secure the stow tie with a surgeon's knot and locking knot (figure 2-58).

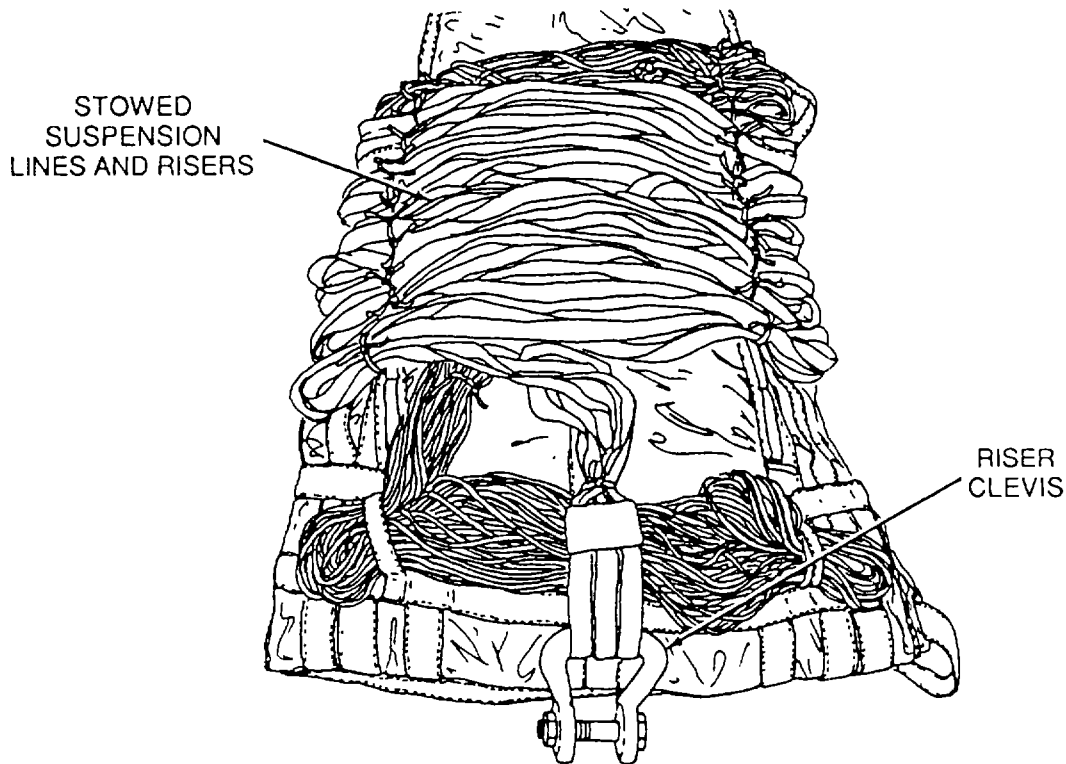


4838-066

Figure 2-58. First and Second Suspension Line Stows Formed and Secured.

- (e) Using the procedures in (a) through (d), above, stow the remaining length of suspension lines and the suspension risers to a point 6 to 10 inches from the clevis attaching loops on the end of the suspension risers . Install an additional stow tie on the center straploop in order to route the suspension risers from the center of the bag (figure 2-59) . Trim all ties to 2 inches.

2-16 Packing 100-Foot Cargo Parachute, Model G-11A (cont).

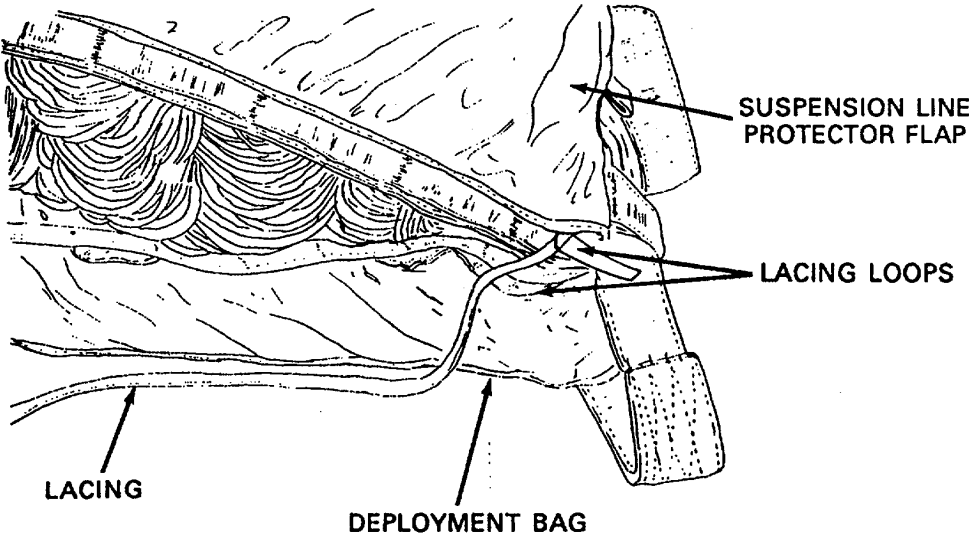


4838-067

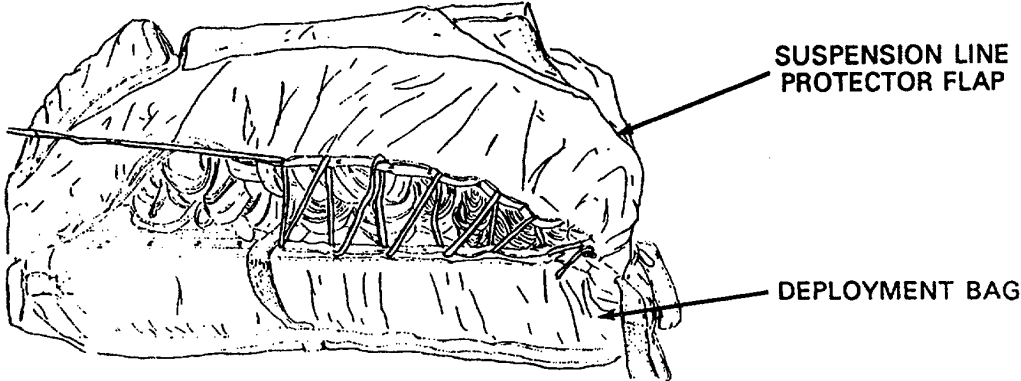
Figure 2-59. Suspension Line and Suspension Riser Stowage Completed.

(27) Lacing the nylon deployment bag

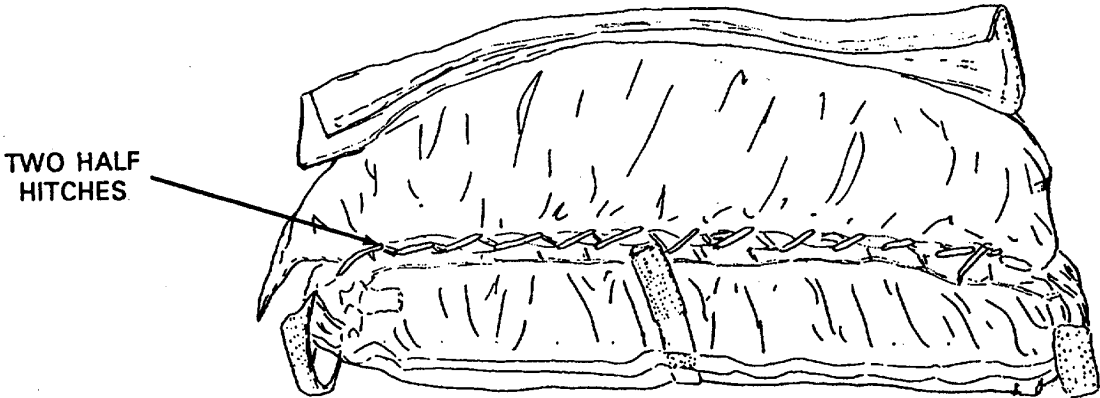
- (a) Bring the suspension line protector flap across the stowed suspension lines and suspension risers
- (b) Cut two 35-inch lengths of 1/4-inch cotton webbing for use as lacing ties
- (c) With two half hitches, secure an end of the webbing length to the first loop located on the bottom corner of the deployment bag right upper corner (A, figure 2-60)
- (d) Using the lacing tie running end lace the flap to the deployment bag main body (B, figure 2-60)
- (e) Secure the lacing tie free end to the last lace with two half hitches (C, figure 2-60)



(A) LACE WEBBING SECURED TO LOOP ON DEPLOYMENT BAG



(B) LACING THE PROTECTOR FLAP TO THE DEPLOYMENT BAG



(C) DEPLOYMENT BAG LACING COMPLETED

4838-068

Figure 2-60. Lacing the Nylon Deployment Bag.

2-16. Packing 100-Foot Cargo Parachute, Model 11A (cont).

(28) Log record book entries.

CAUTION

The inspector **MUST** ensure that the reefing line cutter tag entries match those made in the log record book. Inspect the cutter tags for the current date and verify that the signature on the tags is that of the senior packer of the parachute.

NOTE

The log record book must be modified for use on the G-11 A cargo parachute. On the "Jump, Inspection and Repack Data" page, change "BAG NUMBER" to "LOT/SER NUMBER".

Senior packer's signature **MUST** be legible.

- (a) Remove the log record (DA Form 10-42 or DA Form 3912) from the parachute inspection data pocket (log record book pocket) located on the canopy bridle loop.
- (b) Make entries on the "Jump, Inspection and Repack Data" page as follows:
 - 1 Date. Enter the pack day, month, and year.
 - 2 Lot/Ser Number. Enter the lot number or serial number of the reefing line cutters that are being used for this repack
 - 3 Routine Inspection. No entry required.
 - 4 Jumps or dropped. No entry required.
 - 5 Repack. For initial packing, enter "IN"; thereafter, enter a checkmark in the column each time the parachute is repacked.
 - 6 Packer's Name. The senior packer will place his or her signature in this column.
 - 7 Inspector's Name. The inspector who performed the pack in process inspection will sign this entry.
 - 8 Unit. Enter the unit designation to which the packer and/or inspector are assigned.
- (c) Return the log record book to the log record book pocket upon completion of all required entries.
- (d) Route the log record pocket tie cord through the dosing loops at the bottom of the pocket and secure the tie cord ends with a square knot.

NOTE

Stow riser extension in accordance with the FM 10-500 series manual.

(29) Closing the riser extension flap.

- (a) Temporarily secure the riser extension flap until riser extension has been stowed. Secure the flap at each corner and at the center with 1/4 inch cotton webbing.
- (b) Remove the temporary ties, open riser extension flap and stow riser extension.
- (c) Bring the riser extension flap across the stowed riser extension.
- (d) Cut a 36 inch length of 1/4 inch cotton webbing for use as a lacing tie.
- (e) With two half hitches, secure an end of the webbing length to the first loop on the deployment bag main body at the right upper corner.

- (f) Using the lacing tie running end, lace the riser extension cover flap to the deployment bag main body.
- (g) Secure the lacing tie free end to the lastlace with two half hitches.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B.

This task covers:

a. Inspection	c. Preparing Parachute for Proper Layout
b. Orientation	d. Packing the G-11B Parachute Assembly

Tools:

Line Separator, Item 7, Appendix B
Knife, Item 4, Appendix B
Yardstick, Item 22, Appendix B

Materials/Parts:

Cloth, Cotton, Muslin, Item 5/6, Appendix D
Cord, Nylon, Type III, Item 11/12, Appendix D
Marking Aid, Item 46/47, Appendix D
Paper, Kraft, Item 19, Appendix D
Tape, Masking, Item 25, Appendix D
Thread, Cotton, Size 8/4, Item 27, Appendix D
Thread, Cotton, Size 8/7, Item 28, Appendix D
Webbing, Cotton, Type I, 1/4-In., Item 36, Appendix D
Webbing, Nylon, Tubular, 1/2-In., Item 44, Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Parachute cleaned (reference paragraph 2-12) and given a shakeout (reference paragraph 2-11).

References:

DA PAM 738-750 and DA PAM 738-751
TB 43-0002-43

WARNING

Failure to detect areas of damage may result in malfunction of the parachute and injury or loss of life to personnel.

a. Inspection. If defects or damages are discovered during inspection of a parachute, the parachute must be processed for maintenance in accordance with TM 10-1670-201-23 and DA PAM 738-751. A rigger type inspection and a pack-in-process inspection must be performed in conjunction with each packing of a parachute (refer to paragraph 2-13).

(1) Modified rigger-type inspection. During the packing of each parachute, it must be given a visual rigger-type inspection by the packers in accordance with paragraph 2-13(2).

(2) Pack-in-process inspection. A pack-in-process inspection must be performed by a designated supervisory rigger, other than the packers, at six intervals during the packing procedure. The inspection is performed to ensure that the parachute is packed according to authorized packing procedures. (Refer to -.paragraph 2-13).

b. Orientation. Throughout this manual, all directions (right, left, upper, lower, top, bottom, clockwise, and counterclockwise) are given from the rigger's point of view, as the rigger stands looking from the parachute riser .(tension device) toward the canopy vent (stationary post). See figure 2-61.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

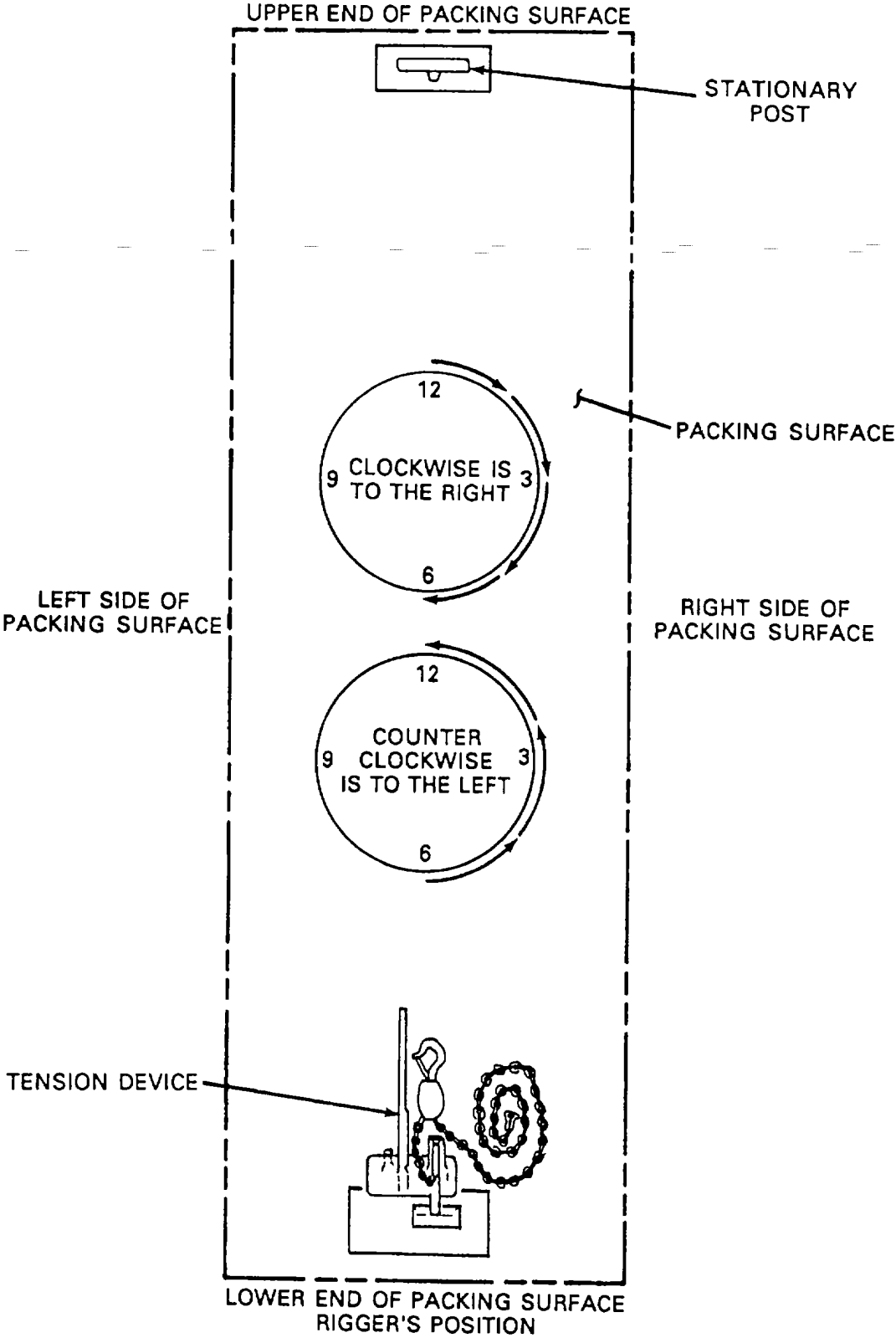


Figure 2-61. Rigger's Orientation.

4838-016

- (1) Top, that portion of the equipment that is farthest from the packing surface.
- (2) Bottom, that portion of the equipment that is nearest to the packing surface.

c. Preparing Parachute for Proper Layout. Prepare the parachute for proper layout by positioning the canopy in an elongated manner on a suitable packing surface, with the vent lines located next to a stationary post (figure 2-62) and the suspension risers near a tension device. Remove the reefing line cutter tags and cotter pins from the log record book pocket. Also remove the center line for Before Use inspection. -To complete proper layout, perform the following:

(1) Removing canopy inversion. Inspect the canopy vent lines to determine if the canopy is inverted. If the vent lines are located on the inside of the upper lateral band, the canopy is inverted. To remove the inversion, lift the canopy skirt and walk up through the canopy to the vent area. Grasp the bridle loop and pull the canopy vent down through the canopy skirt between two adjacent suspension lines (figure 2-63). On the outside of the canopy, pull the canopy vent back to the stationary post. Attach the bridle loop to the stationary post.

(2) Locating suspension lines in proper layout. Locate the top center gore of the canopy and divide the suspension lines into two groups, Lines 1 through 60 in the left group and lines 61 through 120 in the right group. Maintain group separation by moving from the skirt of the canopy towards the suspension risers, removing turns, tangles and twists from the two groups as follows:

(a) Turns. A turn occurs when one group of suspension lines rotates around the opposite group of suspension lines. Remove the turn by rotating the suspension lines (figure 2-64) in a direction opposite to that of the turn.

(b) Tangles. To remove a tangle or tangles in the suspension lines, begin by separating lines 1 through 40 from the canopy skirt to the connector link assemblies. While separating the lines, place all lines which pass over the top of the group over one forearm. Grasp the four connector link assemblies which have lines 1 through 40 attached and pull the connector link assemblies and the suspension risers through the remaining suspension lines (figure 2-65). At line 41, count 40 more lines, separate the lines from the canopy skirt to the connector link assemblies. While separating the lines, place all lines which pass over the top of the group over one forearm. Grasp the four connector link assemblies which have lines 41 through 80 attached and pull the connector link assemblies and the suspension risers through the remaining suspension lines. This will give you three groups of 40 lines each.

(c) Twists. A twist occurs when the suspension lines in one group become improperly crossed. To remove the twists in the suspension lines, each group of ten suspension lines must be traced from the skirt of the canopy to the connector links (figure 2-66). As the lines are being traced they must be threaded onto a nylon strap, such as an A-7A or 60-inch shear strap. To trace the suspension lines and thread the connector link assemblies, three men shall be required to perform the following:

- 1 One man grasps the suspension risers at a point just below the connector link assemblies and holds the suspension lines taut. A second man, positioned at the canopy skirt, begins with line 1 and picks up the first line in each line group. As each line is picked up, it will be held in such a manner as to allow the line to be visually traced to the respective connector link assembly.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

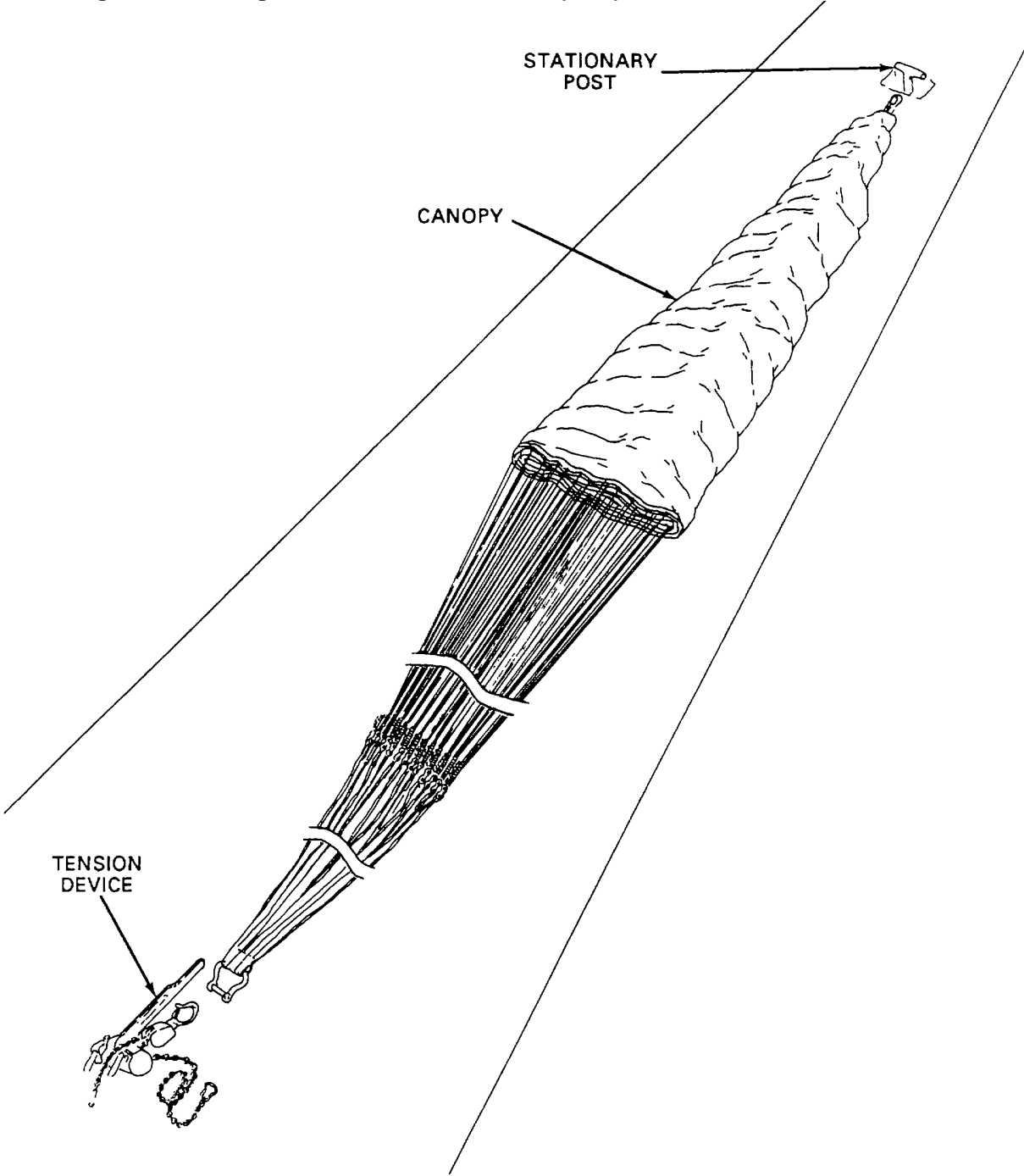


Figure 2-62. Canopy Positioned on Packing Surface.

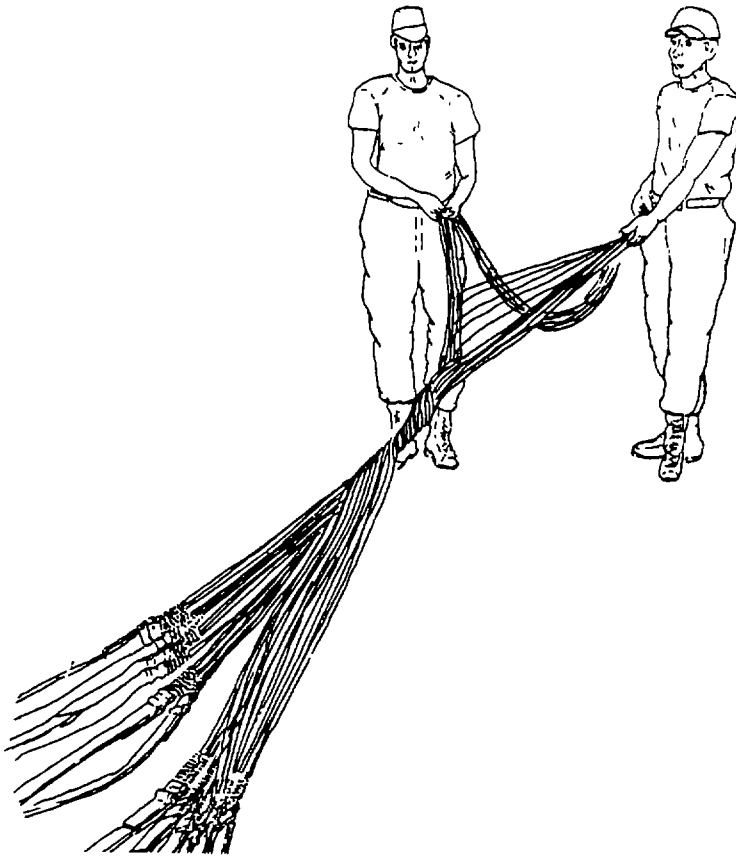
4838-017



4838-018

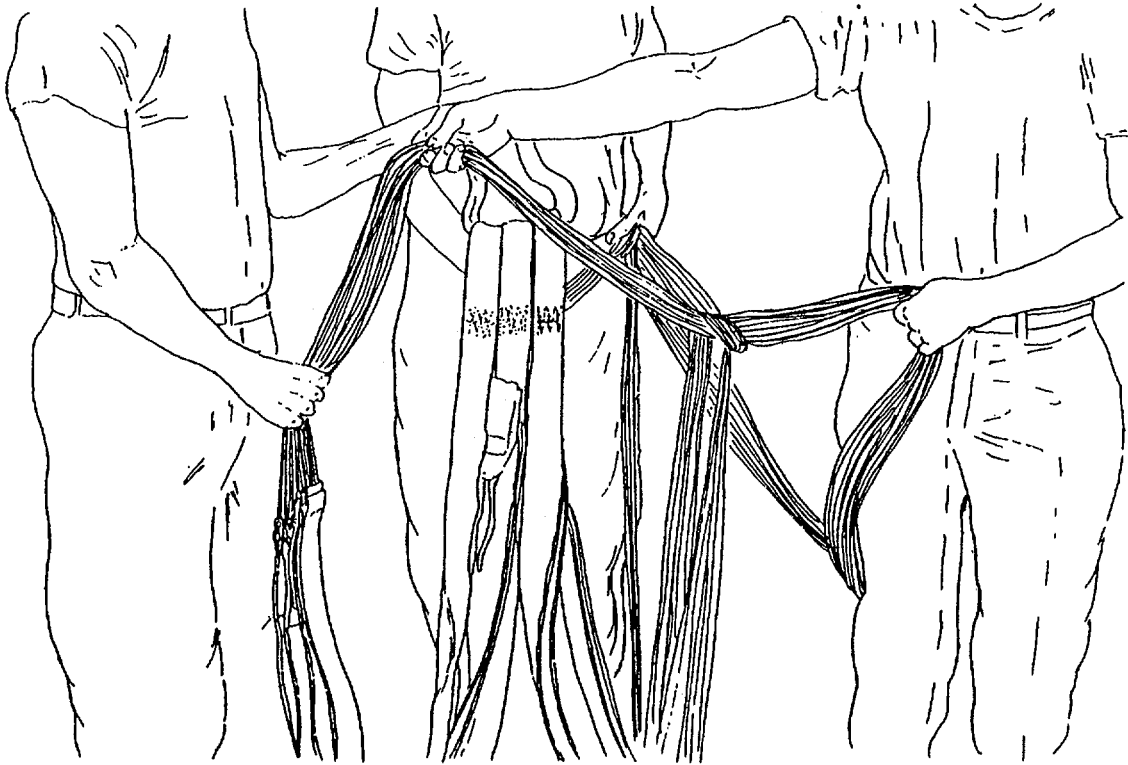
Figure 2-63. Removing Canopy Inversion.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).



4838-019

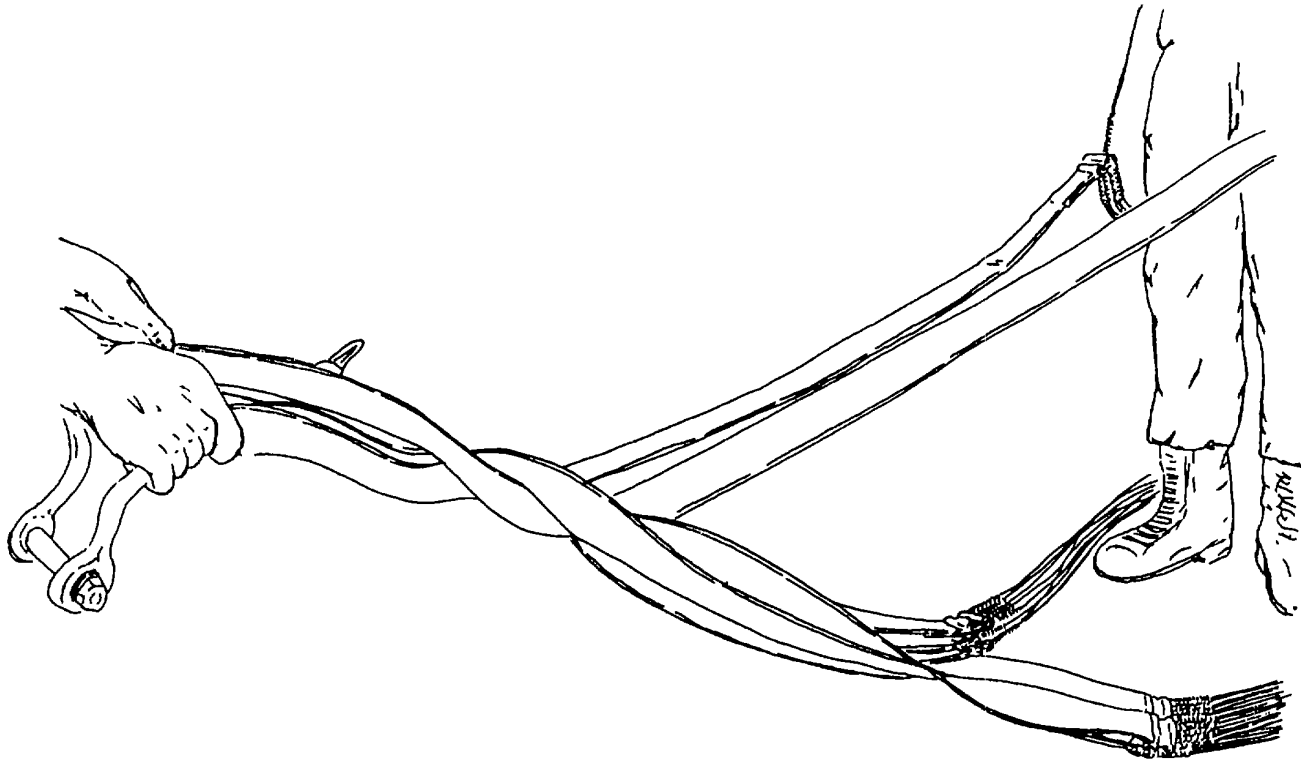
Figure 2-64. Removing Turns from Suspension Lines.



4838-020

Figure 2-65. Removing Tangles from Suspension Lines.

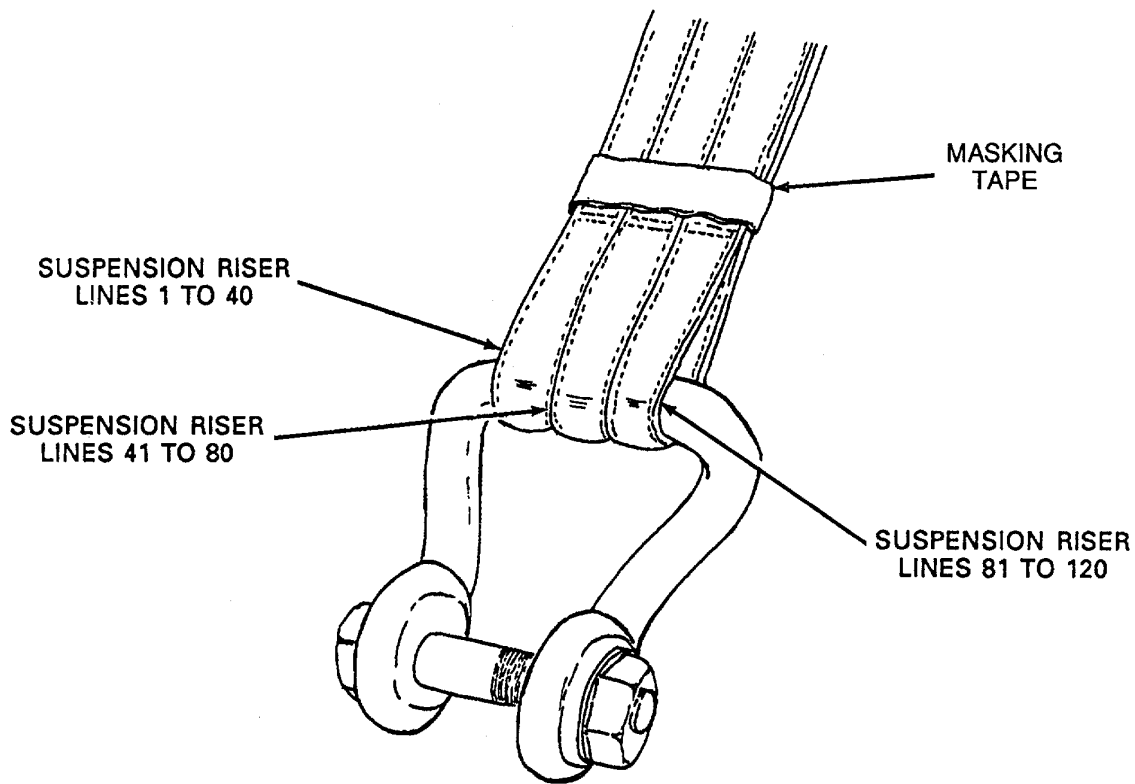
2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).



4838-021

Figure 2-66. Removing Twists from Suspension Lines.

- 2 After tracing the first line of each line group, the first man passes the respective connector link assembly containing the line to another man who threads the nylon strap through the connector link assembly. As the strap is being threaded through the connector link assembly, the man positioned at the canopy skirt grasps all suspension lines which are attached to the connector link assembly and throws the line group over his shoulder. This procedure shall be repeated for each succeeding line group. Insure the connector link assemblies are threaded on the strap in a manner which positions the odd numbered suspension lines to the left side of the strap. Secure the ends of the strap.
- (3) *Riser layout.* Adapting the procedures above for locating the suspension lines in the proper layout, remove all turns, tangles, and twists from the suspension risers. Arrange the three suspension clevis attaching loops at the ends of the suspension risers in order, with suspension riser of lines 1 through 40 to the left, suspension riser of lines 41 through 80 in the center and suspension riser of lines 81 through 120 to the right. Install a large suspension clevis through the riser attaching loops to maintain proper layout of the risers (figure 2-67).



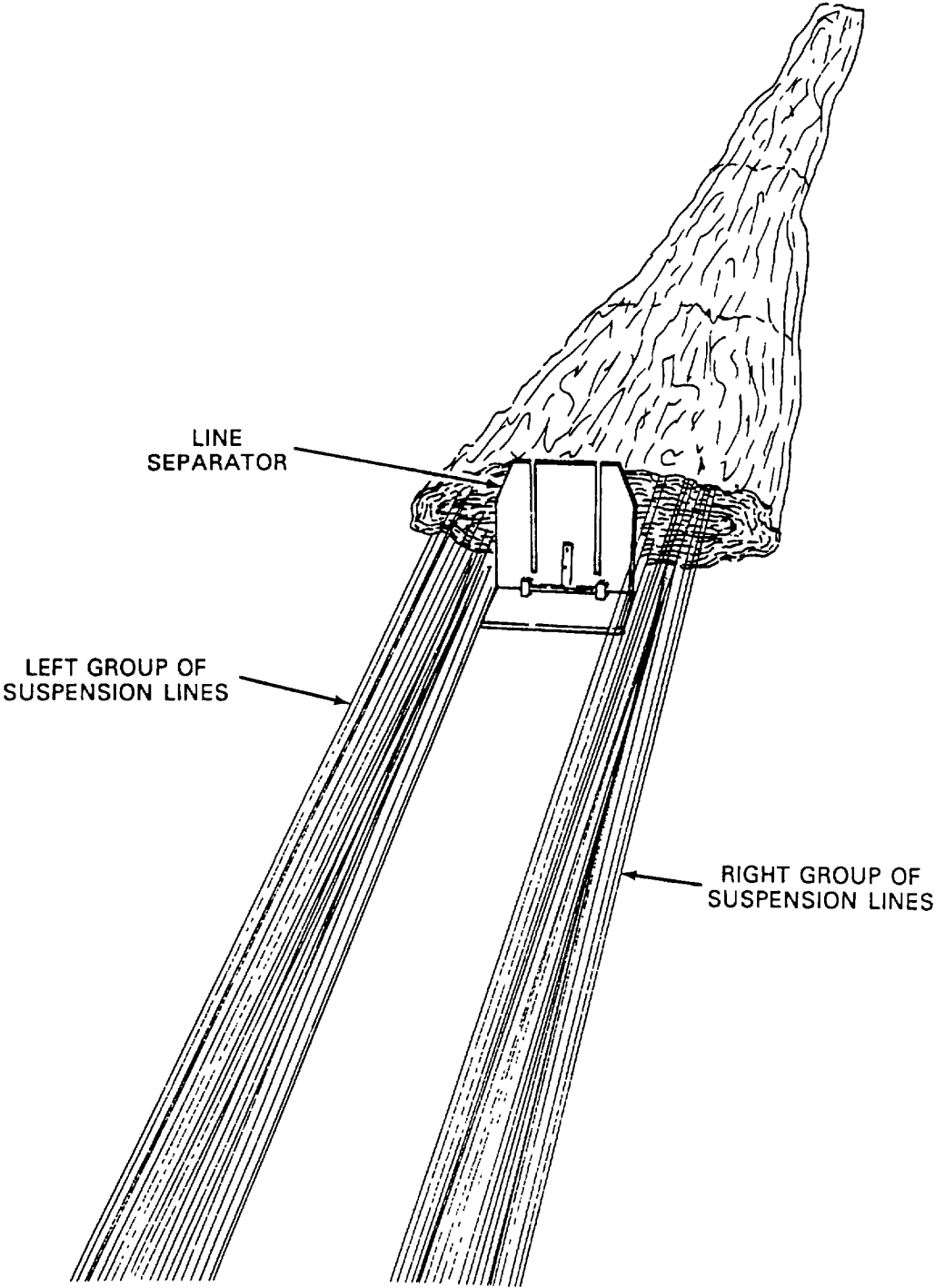
4838-022

Figure 2-67. Riser Layout.

d. Packing the G-11B Parachute After preparing the parachute for proper layout (c., above), continue packing the G-11 B parachute as follows:

- (1) Group separation of suspension lines.
 - (a) Beginning with the connector link assembly to which suspension line number 1 is attached, count six connector link assemblies.
 - (b) Grasp all suspension lines attached to the six connector link assemblies and working to the canopy skirt, separate these lines from the remaining suspension lines.
 - (c) Position a large line separator between the two groups of lines at the canopy skirt to maintain group separation (figure 2-68).

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).



4838-069

Figure 2-68. Separation of Suspension Lines into Two Groups.

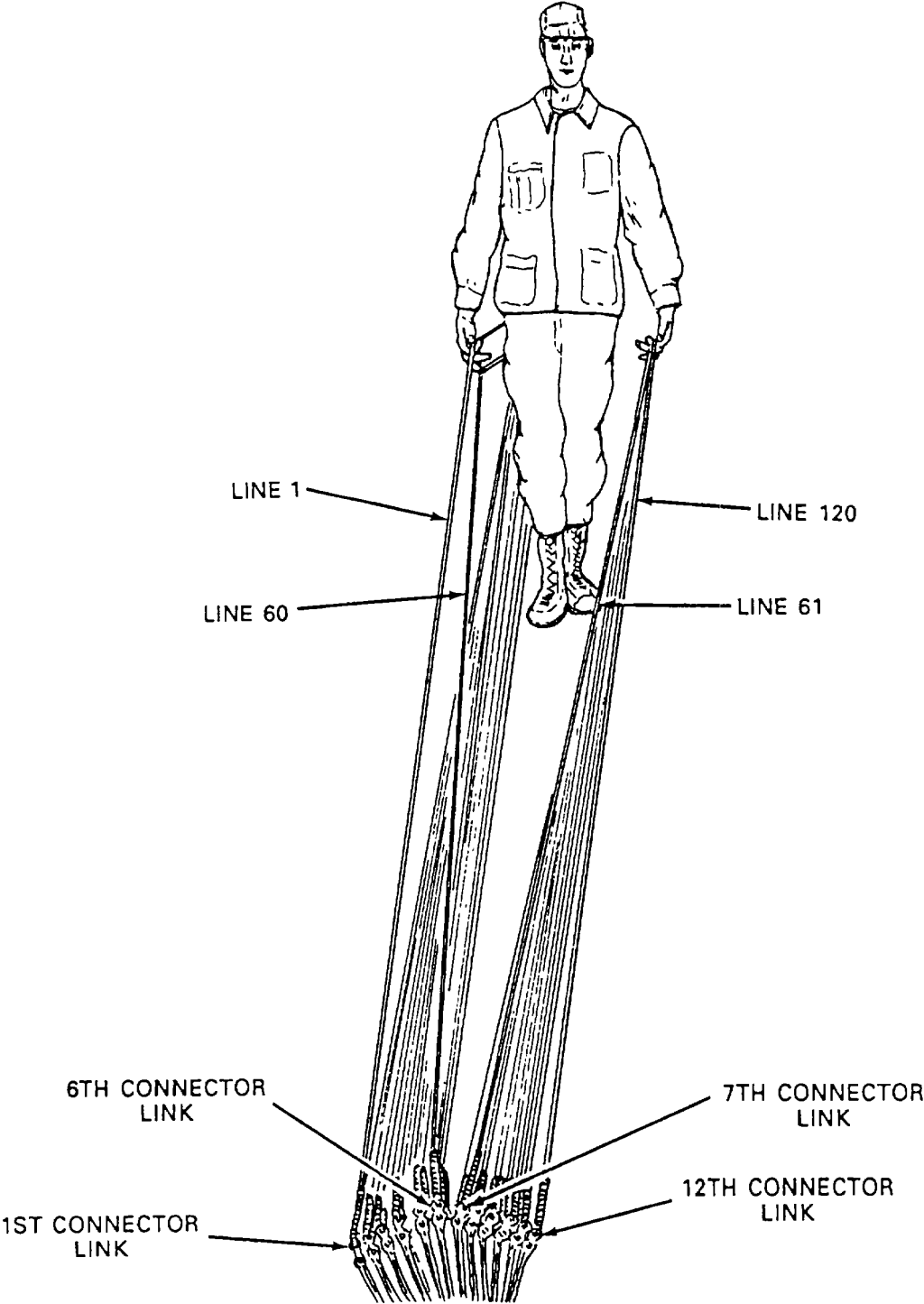
(2) Confirming proper layout. Perform a four-line check to confirm that the suspension lines are in proper layout and a three-line check to confirm that the suspension risers are in proper layout. Proceed as follows:

- (a) One packer will take a position between the separated suspension lines near the skirt of the canopy, facing the suspension risers.
- (b) Place lines 1 and 60 in the right hand and lines 61 and 120 in the left hand. Hold these suspension lines in a manner that will keep the lines separated and identifiable in each hand.
- (c) Walking slowly, trace the 4 lines to the connector link assemblies. Line 1 should be at the top of the first connector link on the left (rigger view), line 60 should be at the bottom of the sixth connector link, line 61 should be at the top of the seventh connector link and line 120 should be on the bottom of the twelfth connector link (figure 2-69).
- (d) Below the connector link assemblies, pick up the first suspension riser on the left (rigger view) attached to the first connector link, the fifth suspension riser and the ninth suspension riser.
- (e) Slowly trace these suspension risers toward the attaching loop end of the suspension risers (figure 2-70).
- (f) The three suspension risers should be on top of each riser group.
- (g) Using masking tape, secure the risers together at a point immediately above the attaching loop.

NOTE

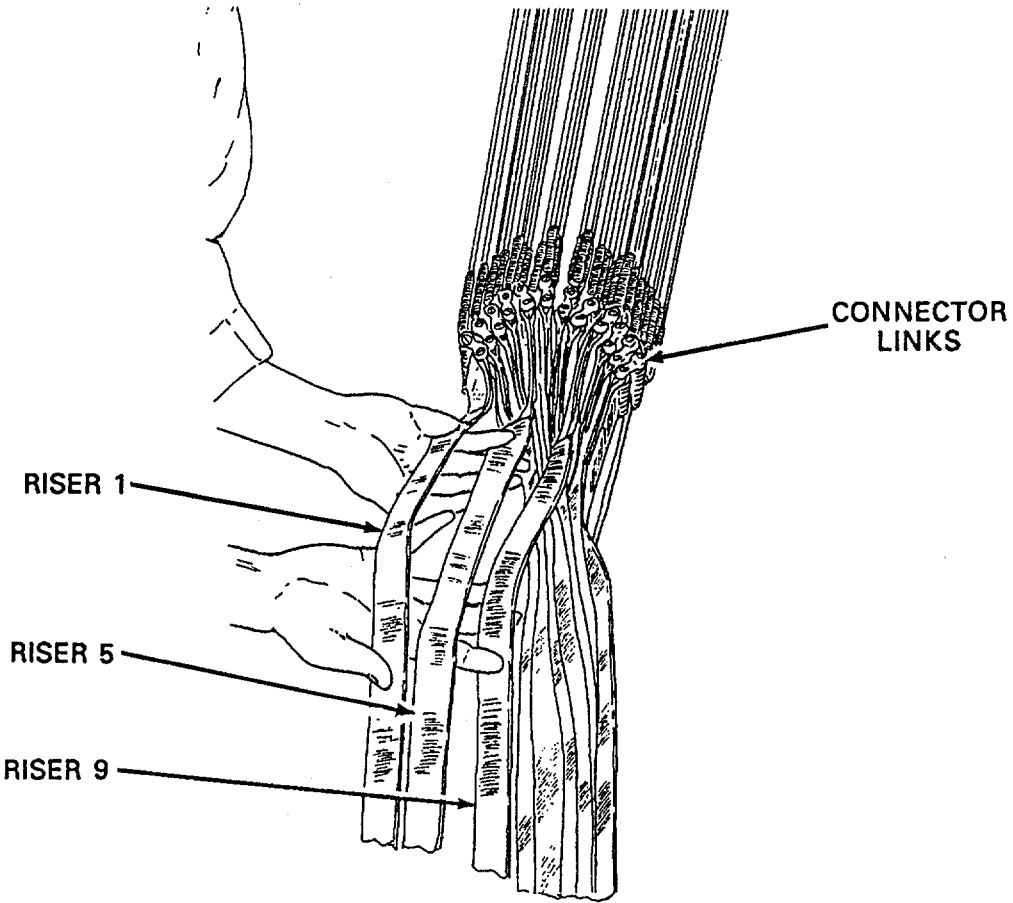
Dress the vent reinforcement (upper lateral band) to center the canopy vent lines.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

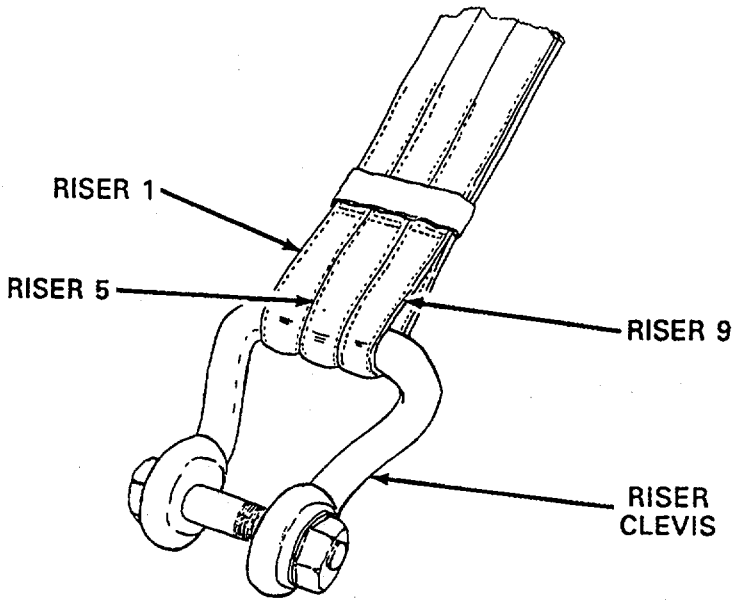


4838-070

Figure 2-69. Performing a Four-Line Check to Confirm Proper Layout.



(A)



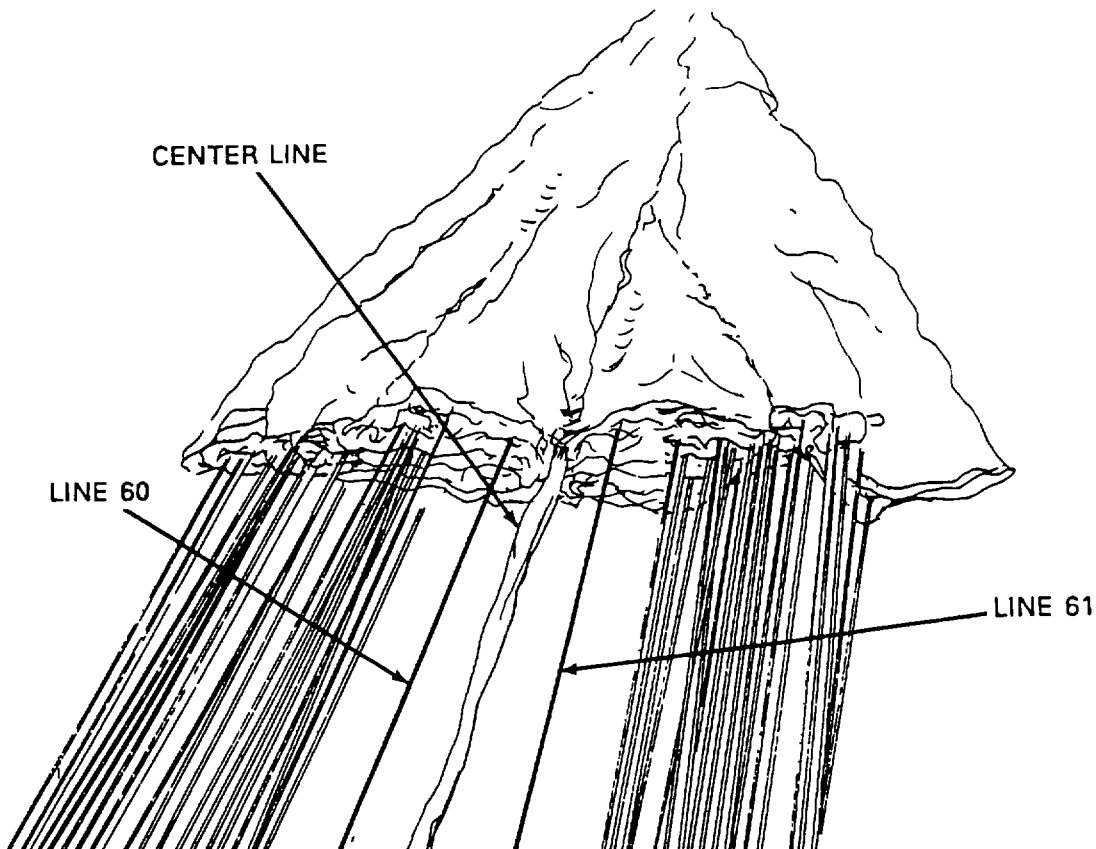
(B)

Figure 2-70. Tracing Suspension Risers.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

(3) Attaching the center line.

- (a) Position a large pedestal fan about 10 feet below and 6 feet to the left of the canopy skirt. Adjust the fan so the canopy will be partially inflated.
- (b) Walk up through the inside of the canopy and pull the center line to the canopy vent.
- (c) Pass the center line to another packer on the outside of the canopy.
- (d) Secure the center line temporarily to the bridle loop with a length of 1/4-inch wide cotton webbing.
- (e) Attach the bridle loop to the stationary post.
- (f) Place the free end of the center line between lines 60 and 61 at the canopy skirt (figure 2-71).



4838-072

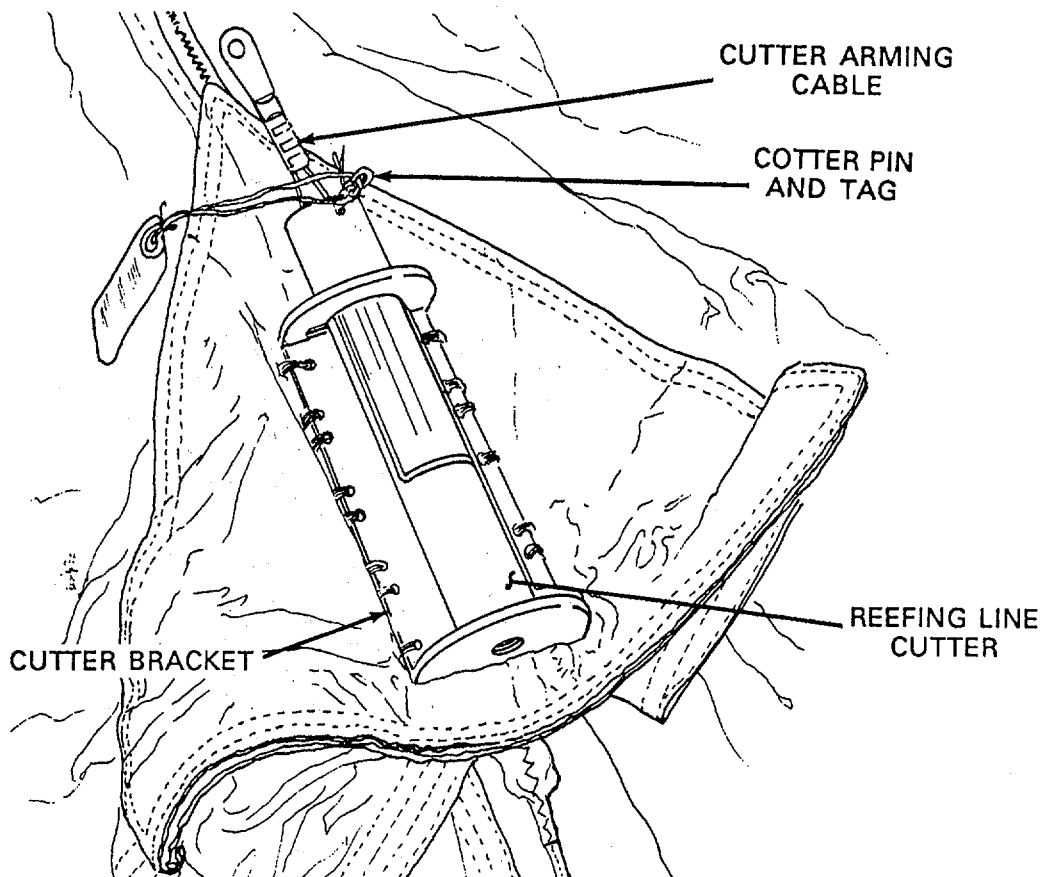
Figure 2-71. Placing the Center Line.

(4) Installing M-21 reefing line cutter. Install an M-21 reefing line cutter at lines 1, 31, 61 and 120 as follows:

- (a) Remove 1/4-inch screw and insert the cutter into the upper end of the cutter bracket (figure 2-72). Insure the cutter arming cable is pointed toward the canopy vent.
- (b) Aline the screw that protrudes from the side of the cutter with the slot in the upper end of the cutter bracket.
- (c) Slide the cutter into the cutter bracket until the cutter lower end is flush against the inside bottom end of the bracket.
- (d) Turn the cutter one-quarter turn to allow the screw, which protrudes from the cutter side, to fit into the indentation located in the center of the bracket.

NOTE

Do not use any type of tool to tighten the reefing line cutter bottom screw.

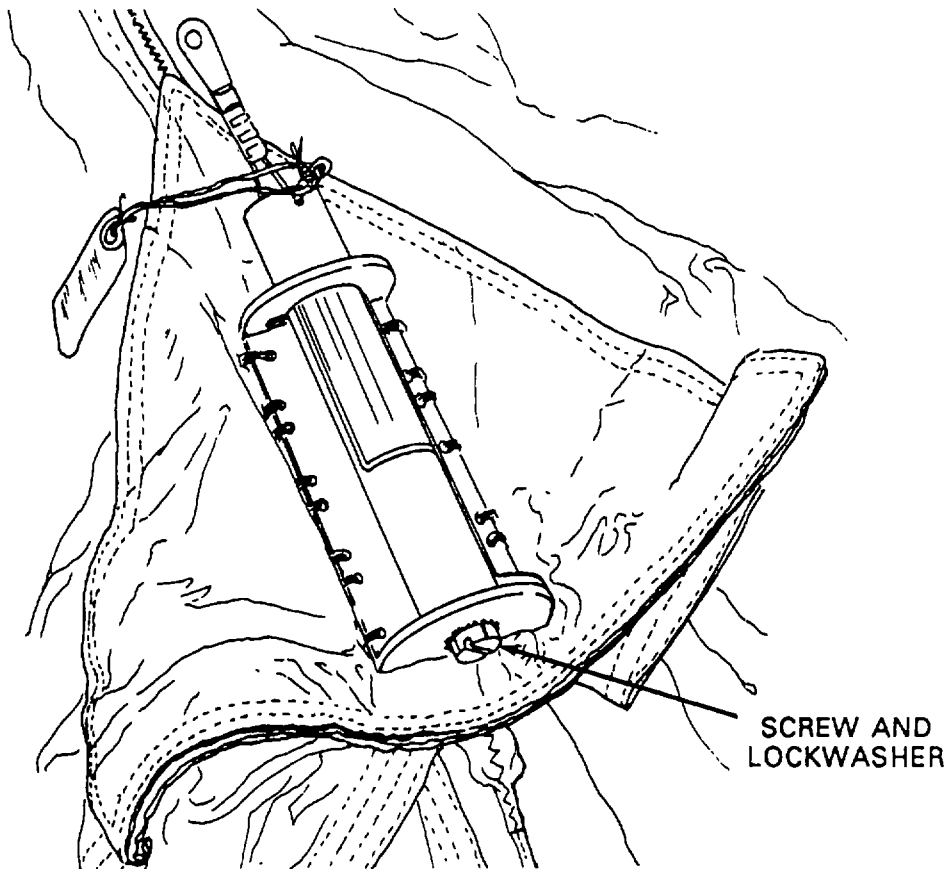


4838-073

Figure 2-72. M-21 Reefing Line Cutter Positioned in Cutter Bracket.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

- (e) Insert the 1/4-inch screw with serrated lockwasher through the hole on the bottom of the bracket, into the threaded hole in the bottom end of the cutter and tighten the screw finger tight (figure 2-73).



4838-074

Figure 2-73. Reefing Line Cutter Mounted in Cutter Bracket.

NOTE

A four-line check for proper layout shall be performed before applying tension.

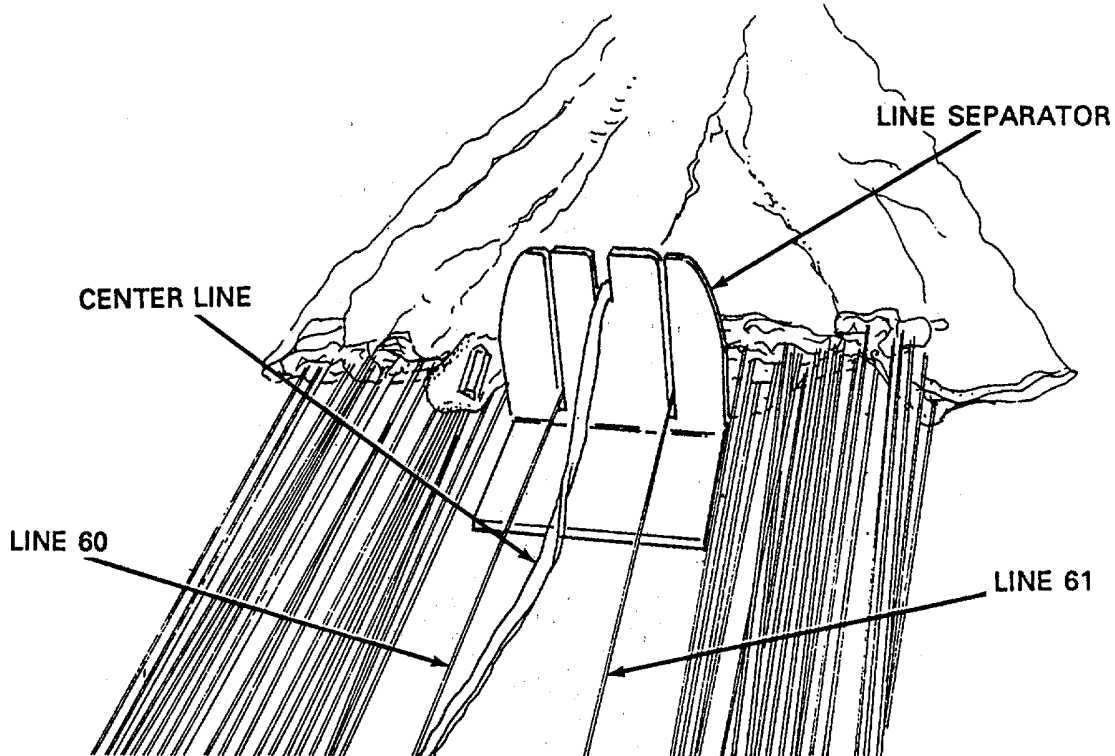
(5) Applying tension. Attach the nylon webbing strap routed through the connector links to a tension device and apply tension.

NOTE

A tension jack, chain hoist, power winch, or a vehicle may be used as a tension device when applying tension to the parachute.

(6) Folding the gores and reefing the canopy. Fold the canopy gores into two groups of 60 gores each and thread the reefing line through the canopy reefing rings as follows:

- (a) At a suitable point below the canopy skirt (lower lateral band), position a large line separator between the two groups of suspension lines. Insert line 61 into the right slot (figure 2-74).

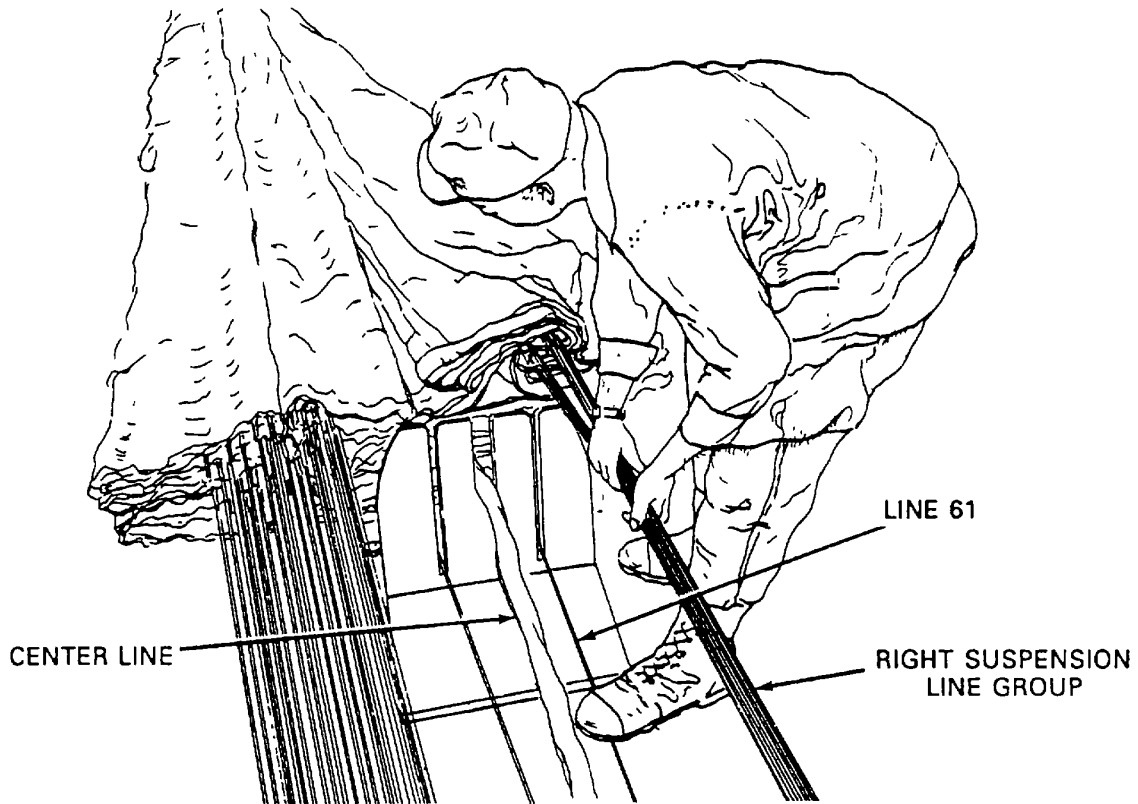


4838-076

Figure 2-74. Suspension Lines 60 and 61 in Place in Line Separator.

- (b) While holding line 61 in position in the line separator, pick up the right suspension line group (figure 2-75) and throw the right group of gores and lines over the left group of gores and lines.
- (c) Cut four 16-1/2 foot lengths of 1/2-inch wide tubular nylon webbing and tape 2 inches of the ends of each webbing length.
- (d) Rotate the reefing line cutter at line 61 upward and pass one end of a 16-1/2-foot reefing line from left to right through the hole in the reefing line cutter. Pull 9 inches of the reefing line through cutter.

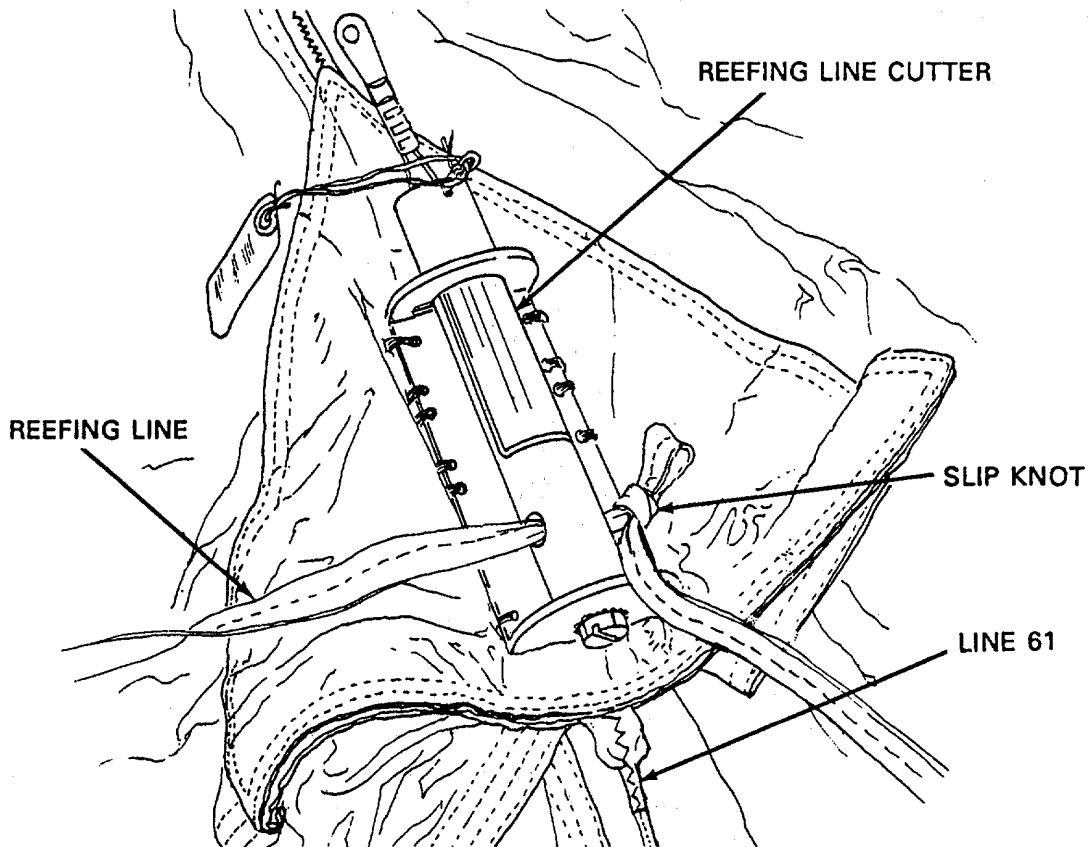
2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).



4838-077

Figure 2-75. Preparing to Throw Right Group of Gores and Suspension Lines.

- (e) Using the 9-inch length of the reefing line, make a slip knot immediately to the right of the reefing line cutter to secure the reefing line during the reefing process (figure 2-76).
- (f) Position a large pedestal fan at a point 10 feet below the canopy skirt. Position the fan so the airstream will partially inflate the canopy.



4838-075

Figure 2-76. Reefing Line Cutter Threaded at Line 61.

CAUTION

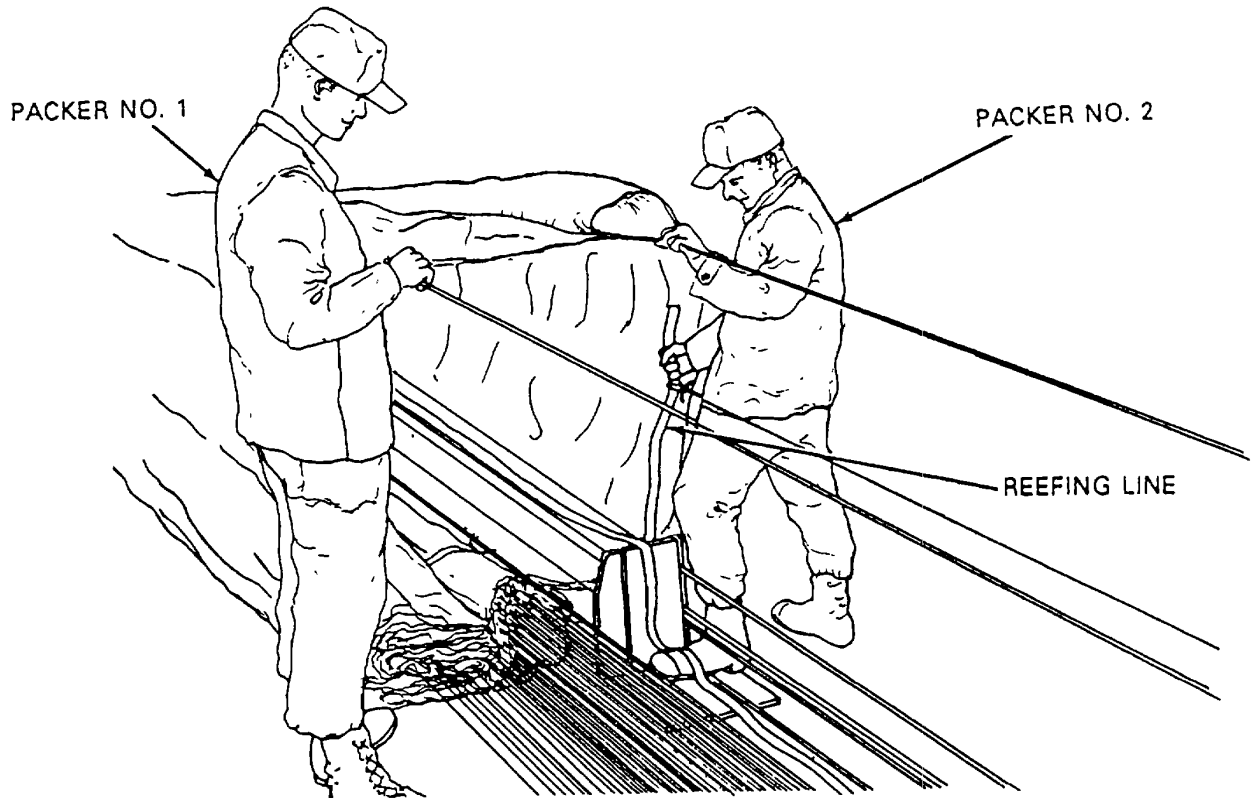
Failure to evenly distribute the reefing line between each reefing ring will cause a delay in the parachute deployment, an uneven inflation of the canopy or result in a malfunction.

NOTE

A packer will take a position near the apex of the canopy and observe the canopy during the reefing process. If canopy damage is observed the reefing process will be stopped.

- (g) Beginning with line 62, one packer passes each line in the right group to a second packer who threads the right running end of the reefing line through each reefing ring. After each reefing ring is threaded, the second packer will use a leg to guide the suspension line into the right slot of the line separator. Continue the gore folding process until lines 61 through 90 are reefed and in the right slot of the line separator and the gores between each line are folded (figure 2-77).

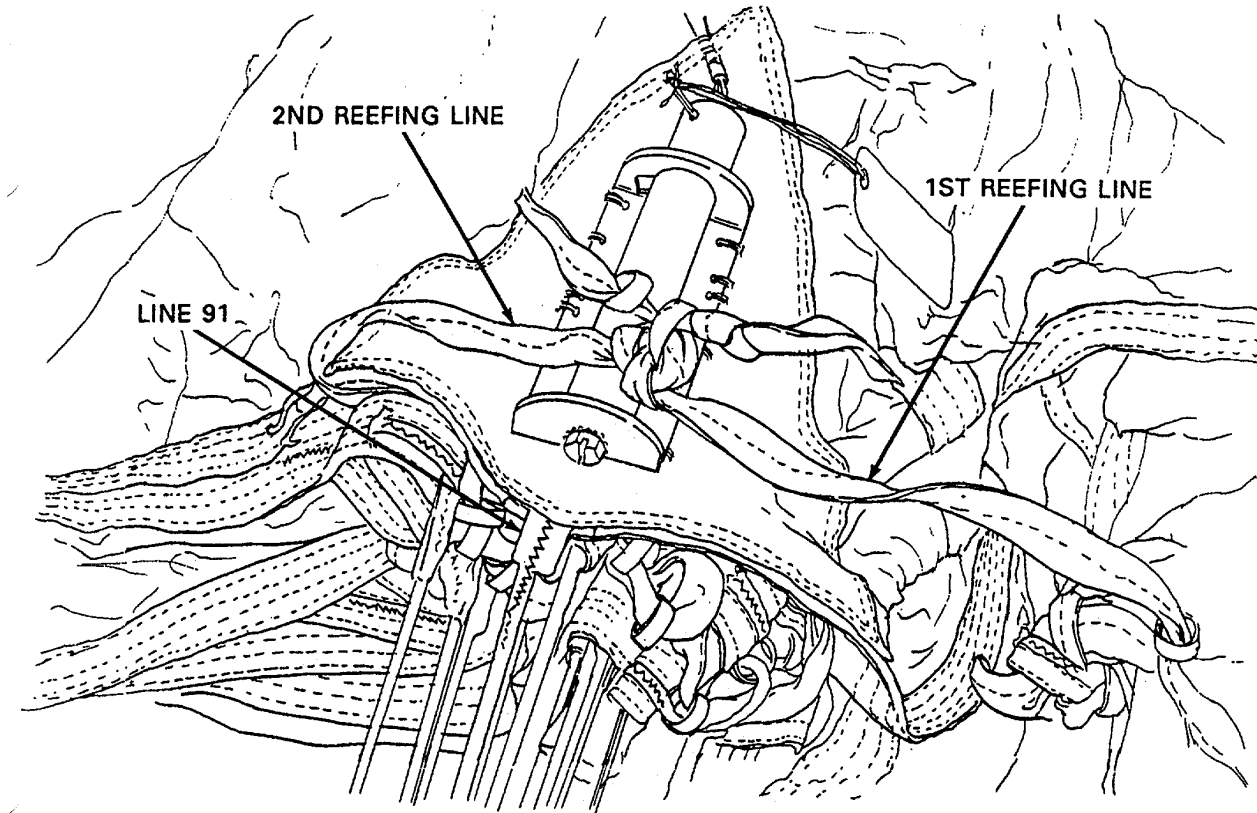
2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).



4838-078

Figure 2-77. Reefing and Folding the Canopy Right Gore Group.

- (h) Stop the gore folding and from right to left, pass the end of the reefing line through the reefing line cutter at line 91 and pull 9 inches through.
- (i) Pass one end of the second reefing line, from left to right, through the hole in the reefing line cutter at line 91 and pull 9 inches through.
- (j) Secure the two reefing line ends together over the reefing line cutter at line 91 with a surgeon's knot and locking knot (figure 2-78). Make an overhand knot in each running end. Trim each tie end at a point 2 inches from the surgeon's knot and locking knot.

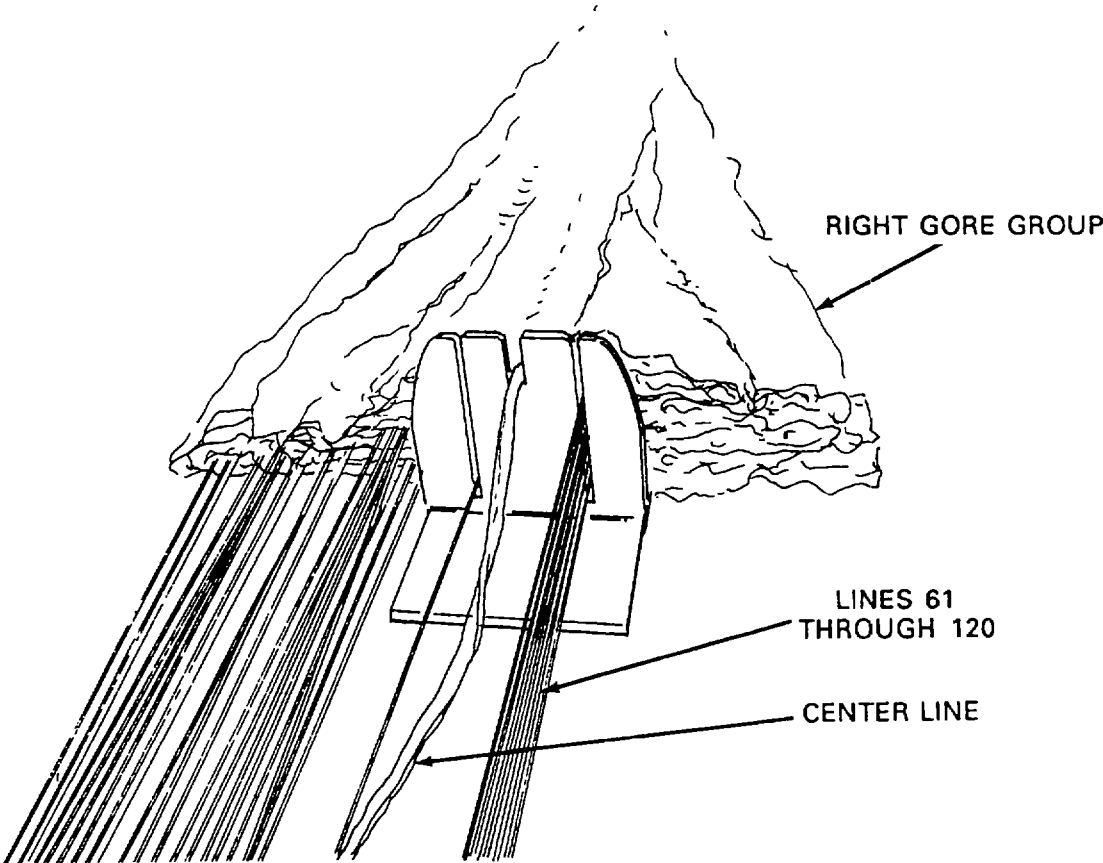


4838-079

Figure 2-78. First and Second Reefing Lines Secured at Suspension Line 91.

- (k) Using the gore folding procedures in (g), fold the gores and reef the canopy skirt between lines 91 and 120 until the right group of gores are folded and lines 61 through 120 are in the right slot of the line separator (figure 2-79).
- (l) Rotate the reefing line cutter at line 61 upward again and from right to left, pass one end of the third reefing line through the hole in the reefing line cutter.
- (m) Pull 9 inches of the third reefing line through the reefing line cutter. Release the slip knot on the first reefing line.

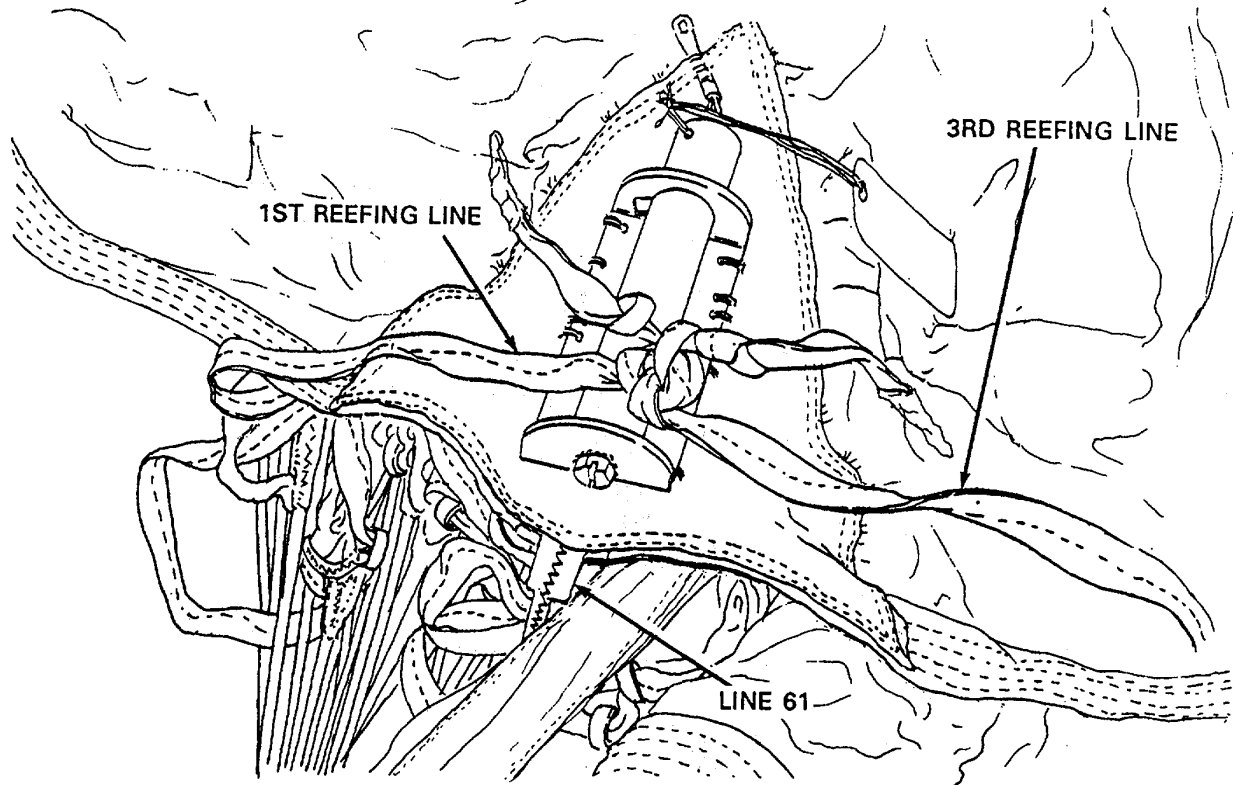
2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).



4838-080

Figure 2-79. Right Group of Gores Folded.

- (n) Secure the ends of the first and third reefing lines together over the reefing line cutter at line 61 with a surgeon's knot and a locking knot (figure 2-80). Make an over hand knot in each running end. Trim each tie end at a point 2 inches from the surgeon's knot and locking knot.

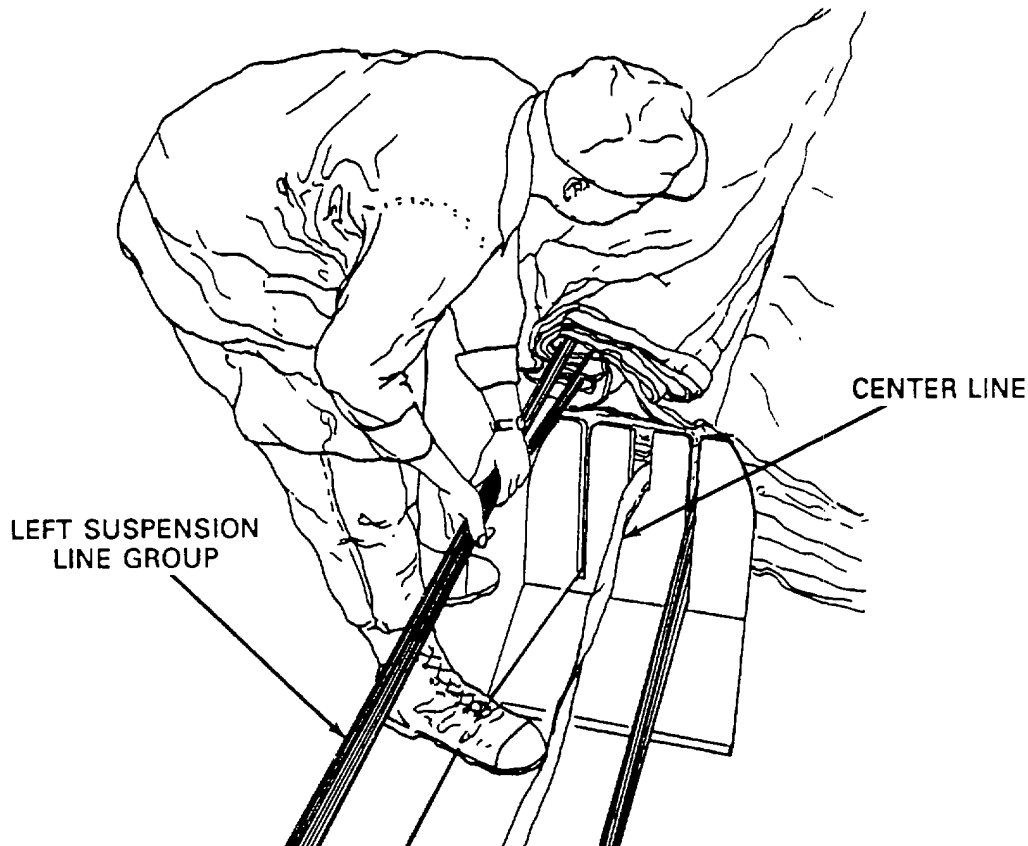


4838-081

Figure 2-80. First and Third Reefing Lines Secured at Suspension Line 61.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

- (l) While holding line 60 in position in the line separator, pick up the left suspension line group (figure 2-81) and throw the left group of gores and lines over the folded right group of gores and lines.

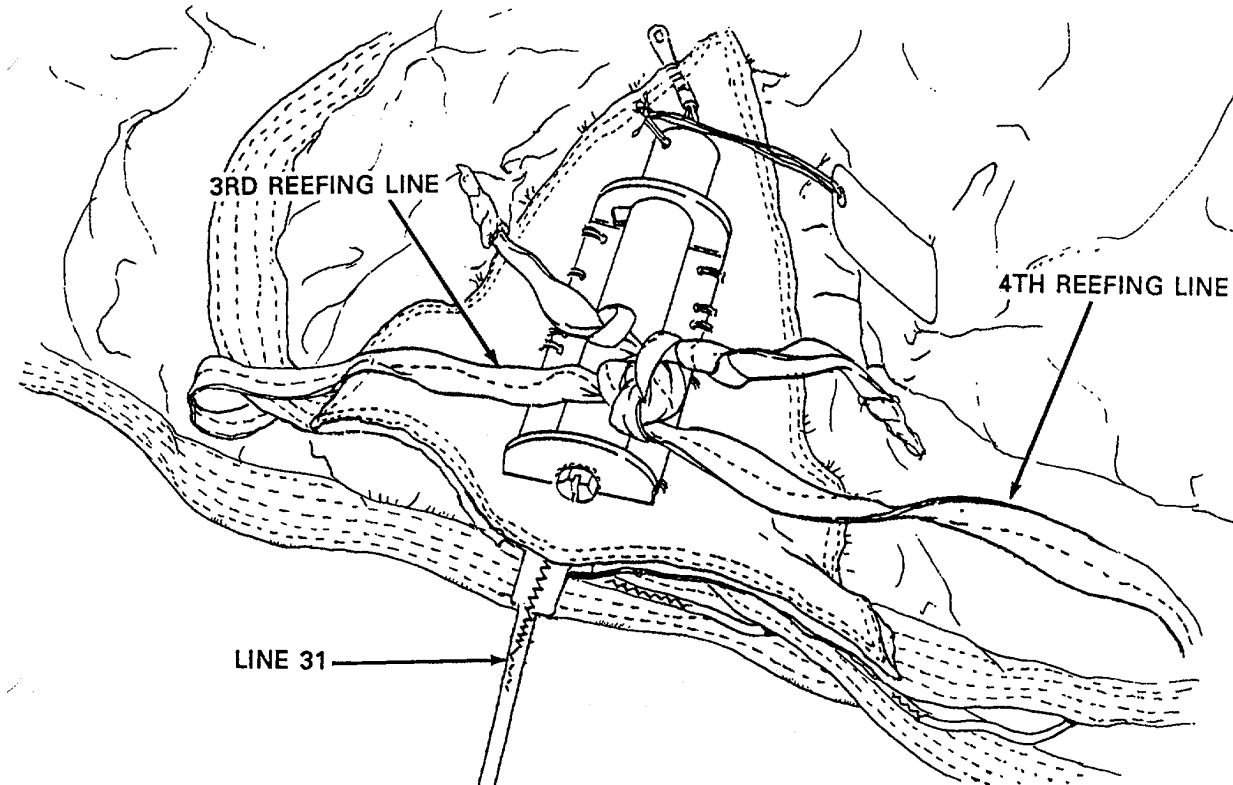


4838-082

Figure 2-81. Preparing to Throw the Left group of Gores and Suspension Lines.

- (o) Beginning with line 59, one packer passes each line in the left group to a second packer who threads the left running end of the reefing line through each reefing ring. After each reefing ring is threaded the second packer will use a leg to guide the suspension line into the left slot of the line separator. Continue the gore folding process until lines 60 through 31 are reefed and in the left slot of the line separator and the gores between each line are folded.
- (p) Stop the gore folding process and from left to right, pass the end of the third reefing line through the reefing line at line 31 and pull 9 inches through.
- (q) Pass one end of the fourth reefing line, from right to left, through the hole in the reefing line cutter at line 31 and pull 9 inches through.

- (r) Secure the two reefing line ends together over the reefing line cutter at line 31 with a surgeon's knot and locking knot (figure 2-82). Make an overhand knot in each running end. Trim each tie end at a point 2 inches from the surgeon's knot and locking knot.



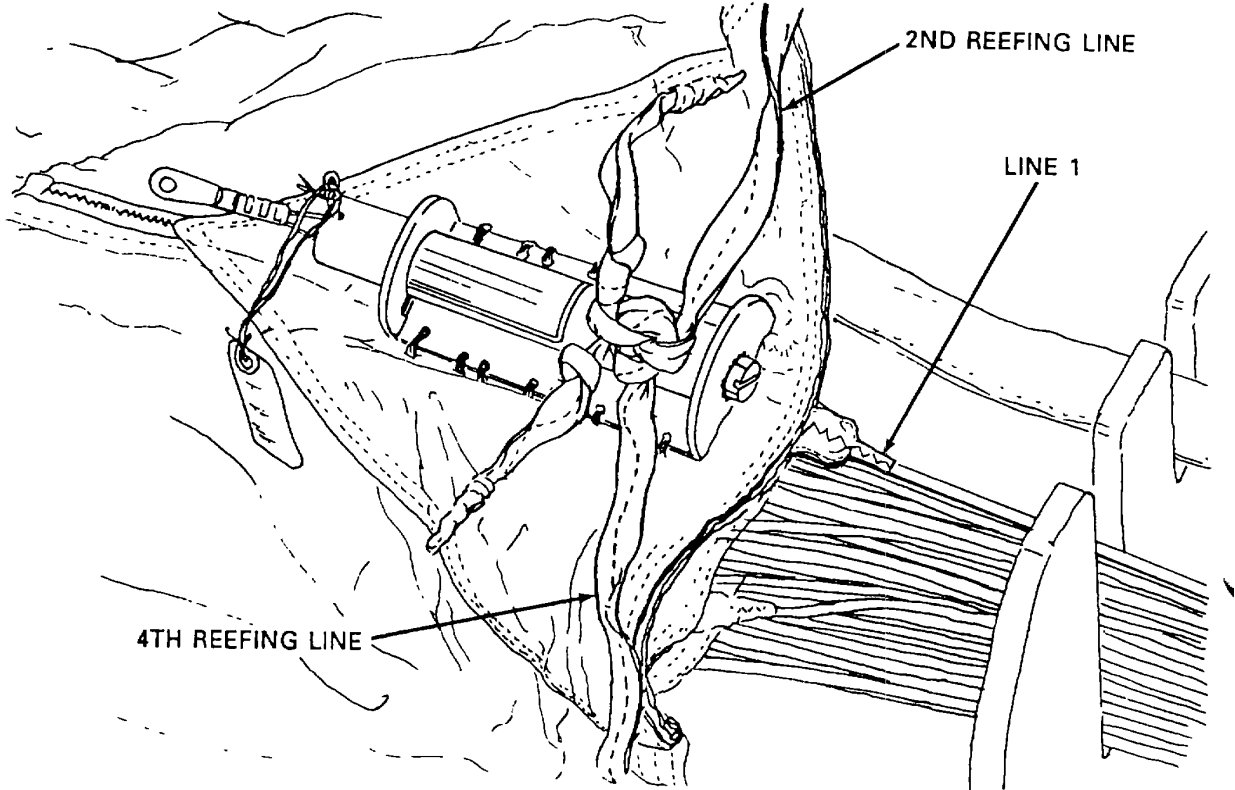
4838-083

Figure 2-82. Securing the Third and Fourth Reefing Lines at Suspension Line 31.

- (s) Using the gore folding procedures in (o), fold the gores and reef the canopy skirt between lines 31 and 1 until the left group of gores are folded and lines 60 through 1 are in the left slot of the suspension line separator.
- (t) From left to right, pass the end of the fourth reefing line through the hole in the reefing line cutter at line 1 and pull 9 inches through.
- (u) From right to left, pass the end of the second reefing line through the hole in the reefing line cutter at line 1 and pull 9 inches through.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

- (v) Secure the two reefing line ends together over the reefing line cutter at line 1 with a surgeon's knot and locking knot (figure 2-83). Make an overhand knot in each running end. Trim each tie end at a point 2 inches from the surgeon's knot and locking knot.



4838-084

Figure 2-83. Securing the Second and Fourth Reefing Lines at Suspension Line 1.

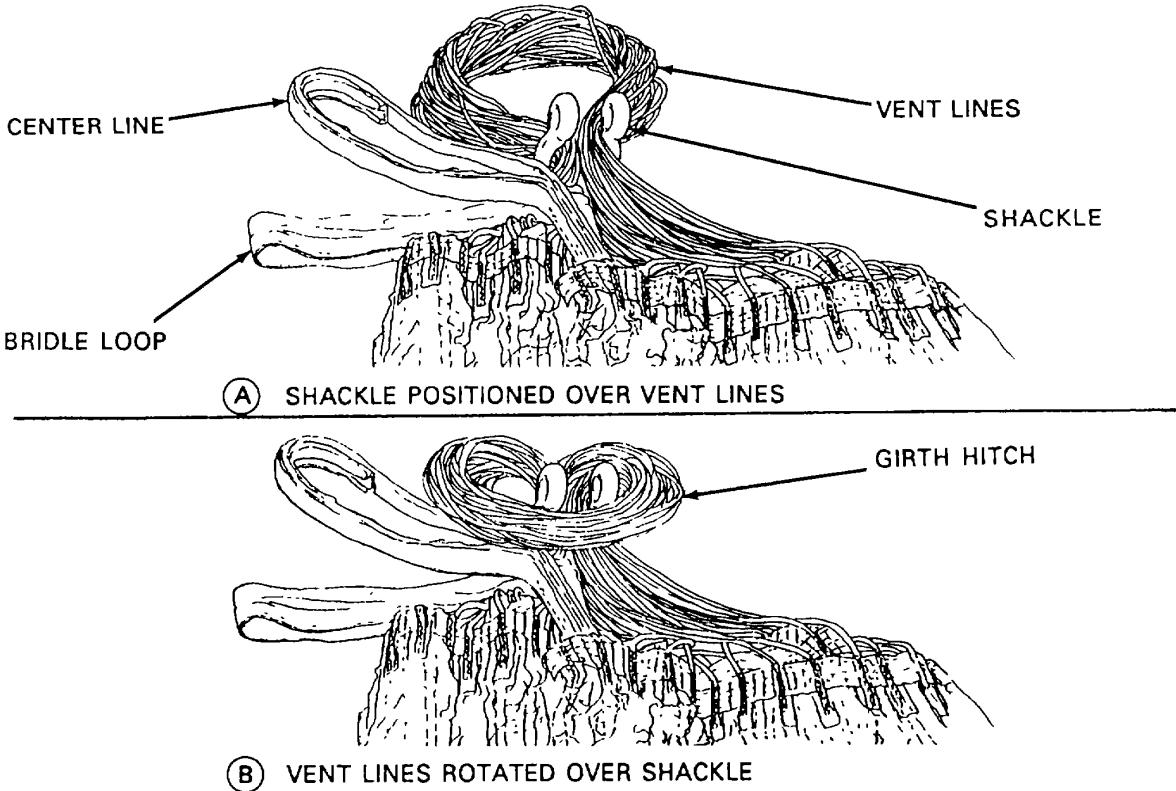
CAUTION

When installing the center line, ensure that it is not entangled or wrapped around the suspension lines or suspension risers.

(7) Completing center line installation.

- (a) Disconnect the bridle loop from the stationary post and dress the upper lateral band making sure the vent lines are centered and separated.
- (b) Grasp the vent lines, with the bridle loop positioned to one side, and place the screw pin shackle over the vent lines (A, figure 2-84).

(c) Rotate the vent lines down over the shackle legs to form a girth hitch (B, figure 2-84).



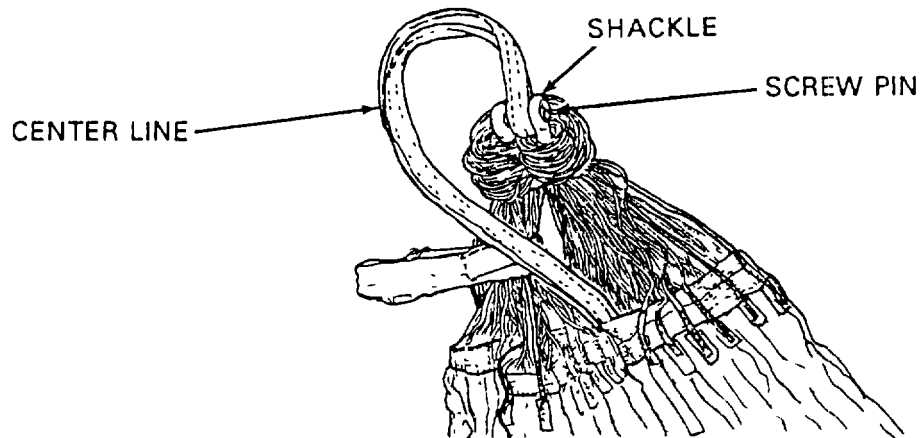
4838-085

Figure 2-84. Vent Lines Secured to Shackle.

(d) Disconnect the center line from the bridle loop. While installing the screw pin, place the end loop of the center line on the screw pin.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

(e) Tighten the screw pin and pull the vent line loop tight (figure 2-85).

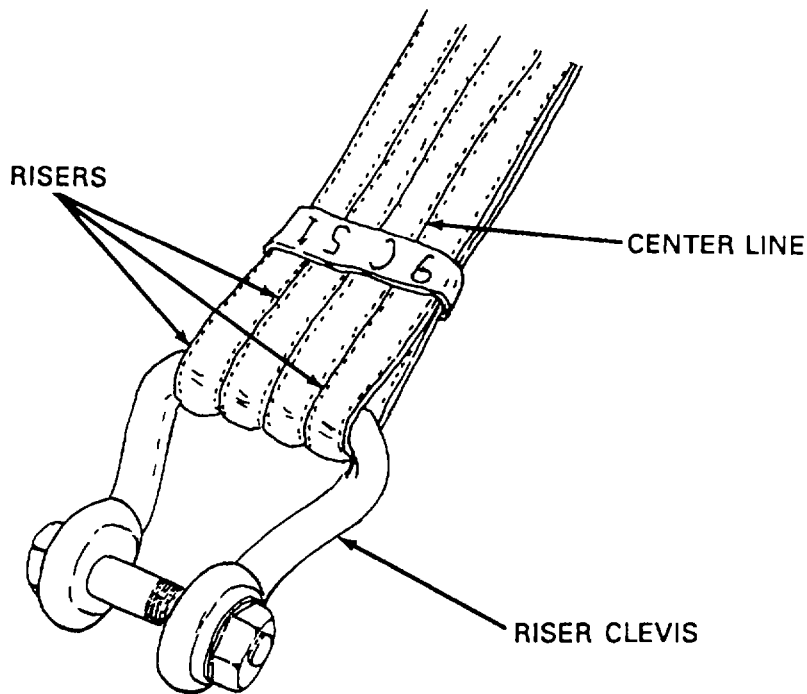


4838-086

Figure 2-85. Screw Pin with Center Line Installed in Shackle.

- (f) Tape the shackle, vent line loop and center line loop so that no metal parts, splice ends or rough webbing ends are exposed.
- (g) One packer will pull the center line free end toward the risers, one of the other packers will guide the canopy vent, keeping it in the air channel between lines 1 and 120, ensuring that the canopy material does not become disarranged while the canopy vent is being pulled toward the canopy skirt.

- (h) Remove one suspension riser from the large suspension clevis and place the center line free end on the clevis. Using masking tape, secure the risers and center line together at a point immediately above the attaching loops (figure 2-86).



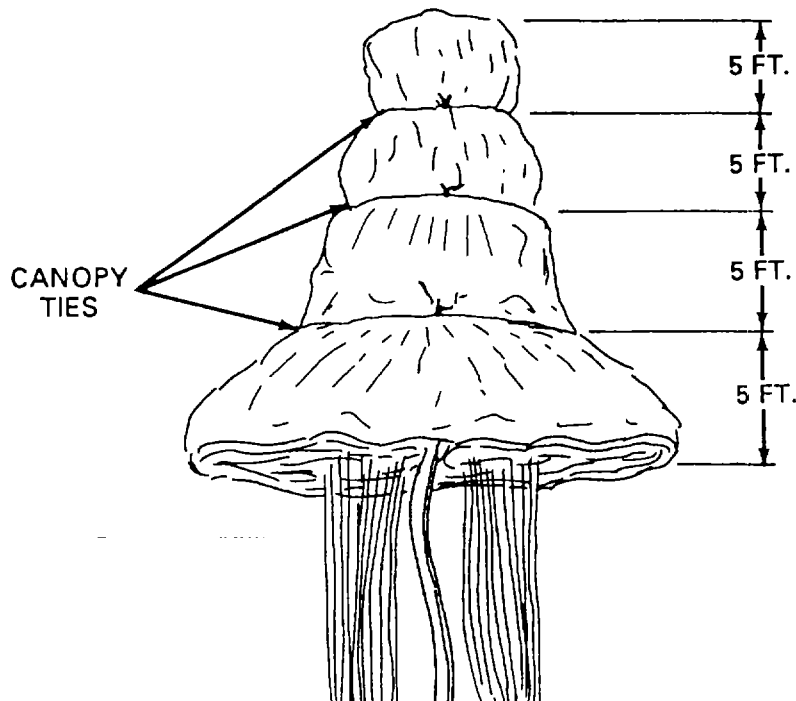
4838-087

Figure 2-86. Risers and Center Line Secured Above Riser Clevis.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

(9) *Tying the canopy assembly.* To tie the canopy assembly, release tension, remove the tension device and tie the canopy assembly as follows:

(a) *Folded canopy.* Beginning at a point 5-foot above the skirt band (lower lateral band) and at 5-foot intervals thereafter, install the canopy ties. Tie the canopy folds using one turn single, ticket No. 8/4 cotton orange thread at each point. Secure each tie with a surgeon's knot and locking knot (figure 2-87). Trim tie ends to 2 inches.

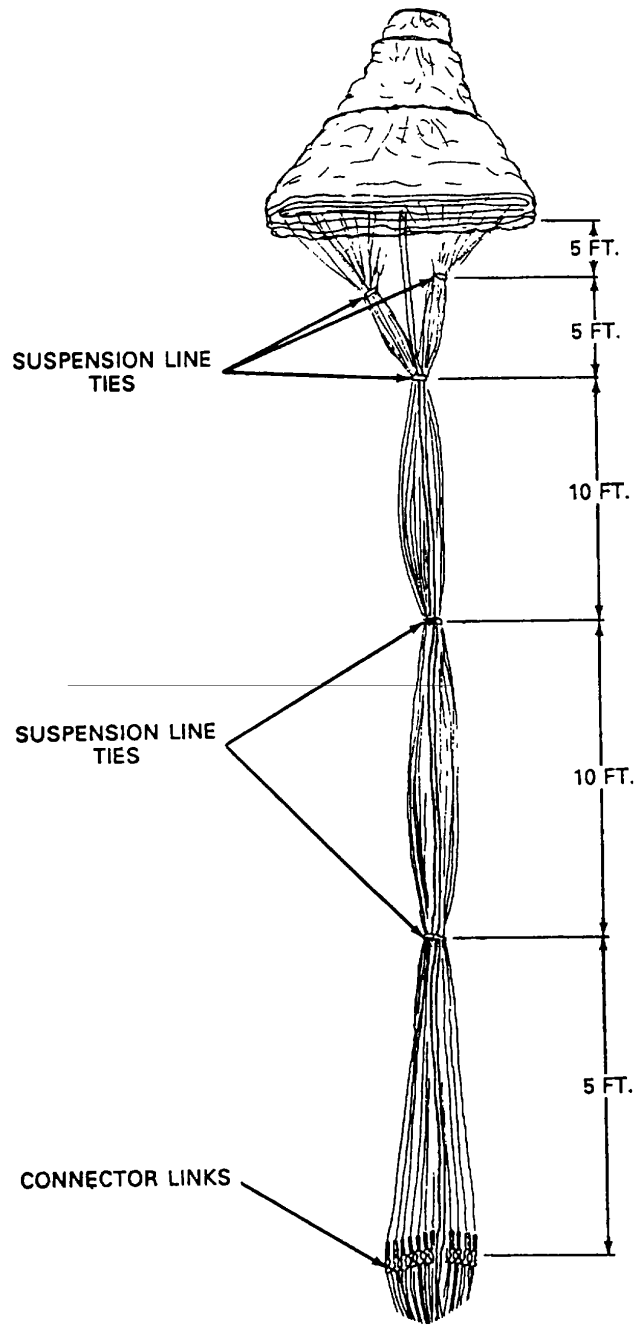


4838-088

Figure 2-87. Canopy Ties Completed.

(b) *Suspension lines.*

- 1 At a point 5 feet below the skirt band (lower lateral band), tie each group of suspension lines separately using one turn single, ticket No. 8/4 cotton orange thread. Secure each tie with a surgeon's knot and a locking knot (figure 2-88). Trim tie ends to 2 inches. Remove the large line separator.
- 2 Beginning at a point 10 feet below the skirt band (lower lateral band) and at 10 foot intervals thereafter, tie both suspension line groups and center line together using one turn single, ticket No. 8/4 cotton orange thread at each point. Secure each tie with a surgeon's knot and locking knot. Make the last tie 5 feet above the connector link assemblies (figure 2-88). Trim all tie ends to 2 inches.



4838-089

Figure 2-88. Suspension Line Ties Completed.

2-24. Attaching Loop (Bridle Loop).

This task covers: a. Repair b. Replacement

Tools:

Pot, Melting, Item 12, Appendix B
Sewing Machine, Heavy Duty,
Item 17, Appendix B

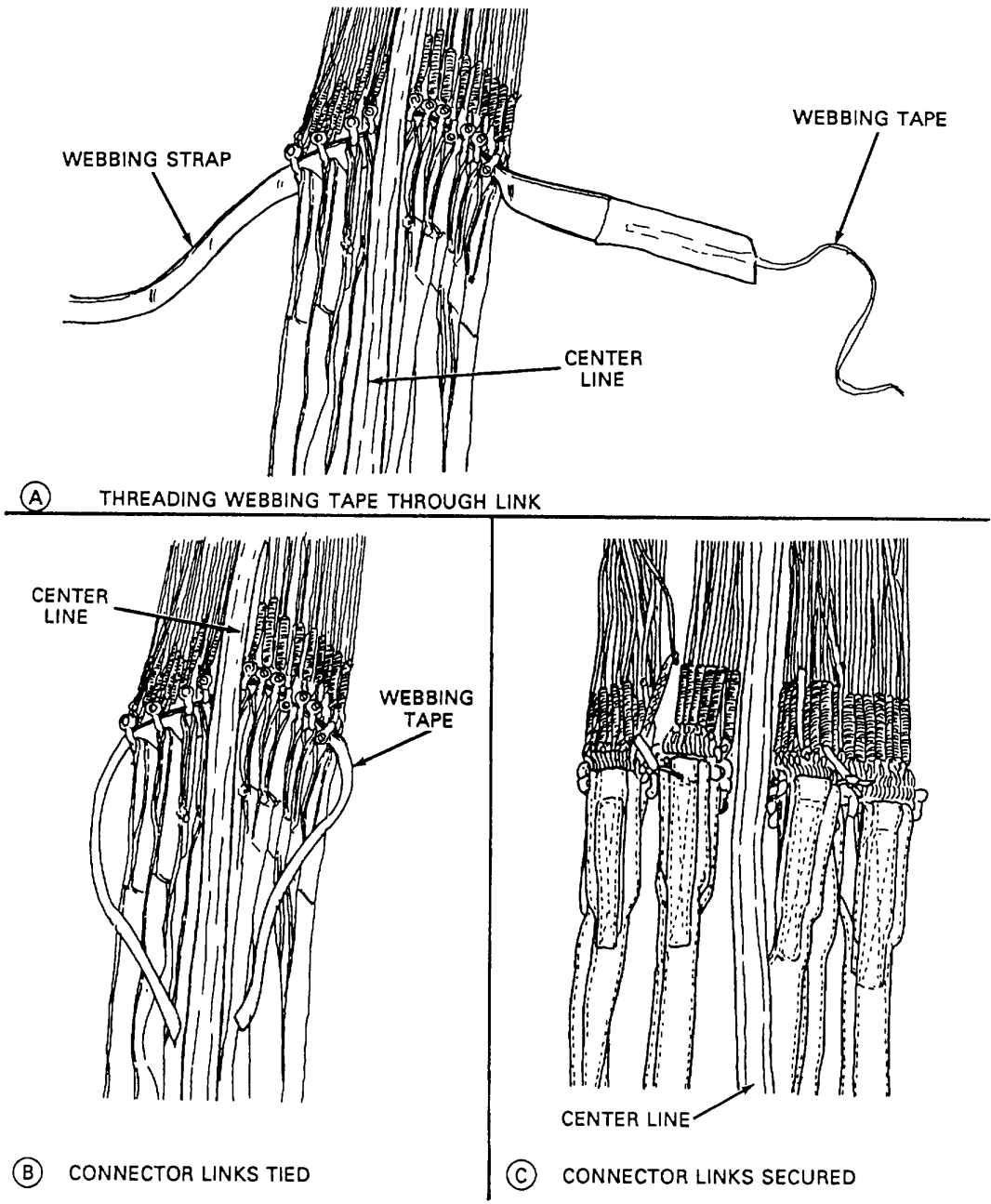
Equipment Condition:

Cleaned, paragraph 2-12.
Inspected, paragraph 2-9, 2-13.
Lay out on packing surface or other suitable area.

Materials/Parts:

Webbing, Cotton, Type X, Item 38, Appendix D
Thread, Nylon, Size 3, Item 31/32, Appendix D
■ Webbing, Nylon, Type VIII, Item 54, Appendix D

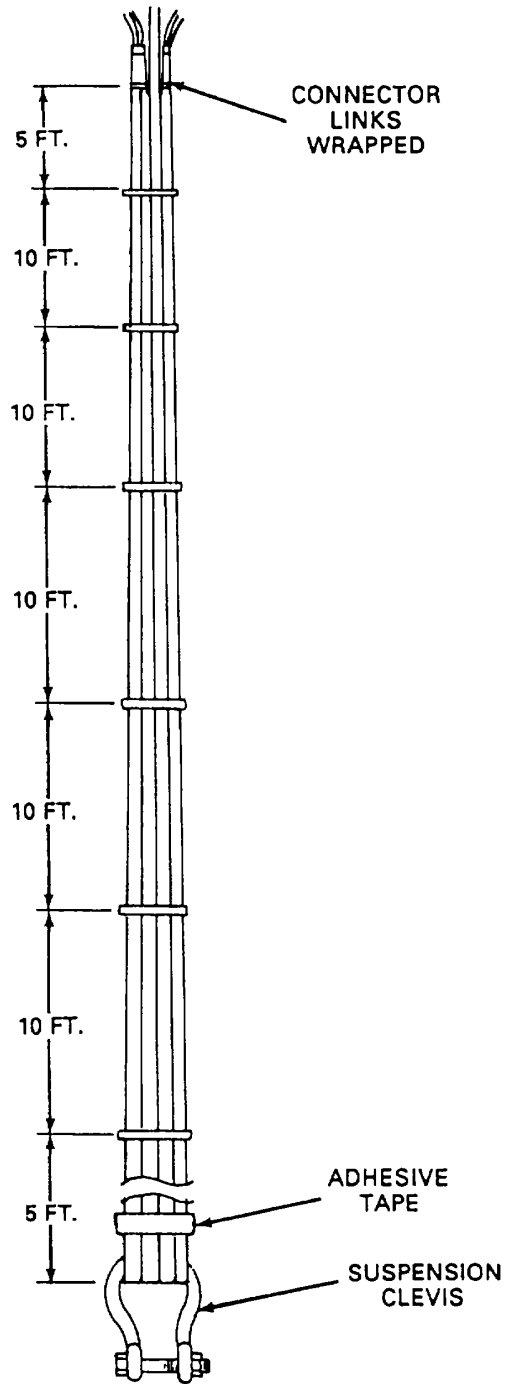
- a. Repair. Restitch broken or loose stitching according to original construction details, using the procedures in paragraph 2-20.
- b. Replacement. Replace a damaged attaching loop (bridle loop) by fabricating as follows:
- (1) Cut a 30-inch-length of 1 3/4-inch wide, type X cotton webbing and wax the ends or a 30-inch-length of 1 3/4-inch wide, type VIII nylon webbing and sear ends.
 - (2) Pass one end of the webbing length through the canopy vent lines and join the webbing ends together above the vent lines with a 5-inch-long overlap (figure 2-175). Insure the webbing encircles all the canopy vent lines.
 - (3) Secure the overlapped webbing ends together by stitching a 5-inch-long four-point WW-stitch formation, 1/8 inch in from each side edge. Overstitch each webbing end by 1/8 inch. Stitching will be made in accordance with paragraph 2-20 using a heavy-duty sewing machine and size 3 nylon thread. Stitching will be 5 to 8 stitches per inch, using the specifics in table 2-3.
 - (4) Remove the original canopy attaching loop (bridle loop) from around the canopy vent lines by cutting the loop webbing.
 - (5) If the original parachute inspection data pocket (log record pocket) is serviceable, remove the pocket from the damaged attaching loop (bridle loop) by cutting the tacking which secures the pocket to the loop webbing. Install the pocket on the replacement attaching loop (bridle loop) according to original installation details, and the applicable tacking specifics in paragraph 2-38, below.



4838-090

Figure 2-89. Securing the Suspension Line Connector Link Assemblies.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).



4838-091

Figure 2-90. Suspension Riser Ties Completed.

- (c) While holding both groups of suspension lines, pick up the canopy skirt and push the canopy skirt into the deployment bag (figure 2-91).



4838-092

Figure 2-91. Canopy Stowed in Deployment Bag.

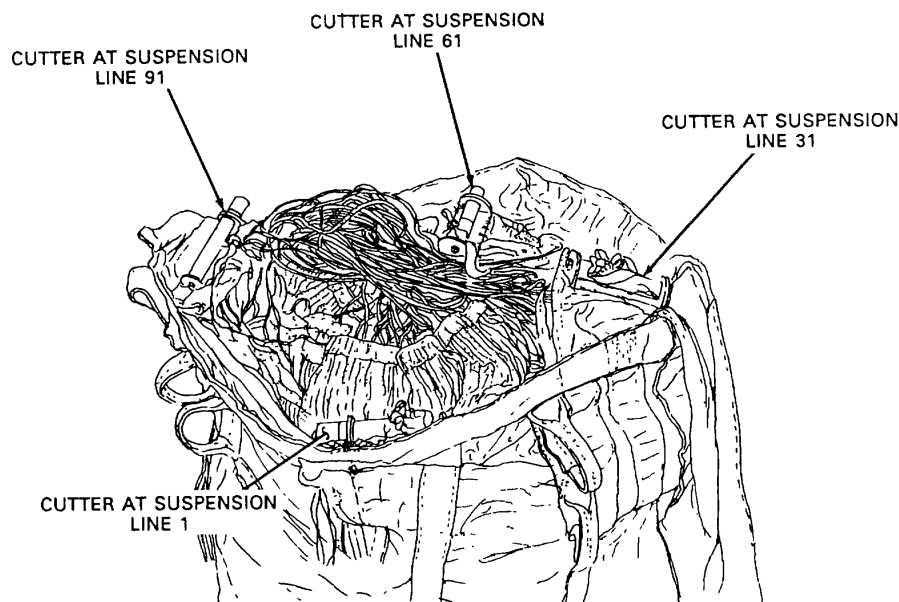
NOTE

The G-11 B may be packed in either the G-11 B cotton deployment bag or the G-11A/B/C nylon deployment bag. If the nylon deployment bag is used, proceed to paragraph (21).

2-17. Packing 100-Foot Cargo Parachute, Model G-11 B (cont).

(11) *Arming the reefing line cutters.*

- (a) Position the four reefing line cutters on top of the stowed canopy with the cutter at suspension line 6- placed adjacent to the bag double grommet on the bag bottom, the cutter at suspension line 31 placed adjacent to the grommet on the left side of the deployment bag, the cutter at suspension line 91 adjacent to the grommet on the right side of the deployment bag and the cutter at suspension line 1 placed adjacent to the bag single grommet on the bag top (figure 2-92).



4838-093

Figure 2-92. Positioning Reefing Line Cutters on Stowed Canopy.

- (b) Cut four 12-inch lengths of type III nylon cord for use as arming cable ties.
- (c) Beginning with the reefing line cutter at line 1 near the bag top, pass the end of one cord through the hole in the top of the reefing line cutter arming cable and through the bag single grommet to the outside.

- (d) Pass the other end of the cord over the top of the bag edge and draw the cord ends tight. Secure the cord ends on the bag outside with a surgeon's knot and locking knot. Make an overhand knot in each running end (figure 2-93). Trim each tie end at a point 2 inches from the surgeon's knot and locking knot.

SEE NEXT PAGE FOR FIGURE 2-93

Figure 2-93. Threading reefing Line Cutter Arming Cable Tie at Line 1.

- (e) On the left side of the deployment bag, arm the reefing line cutter at line 31, pass the end of one of the cords through the hole in the top of the reefing line arming cable and through the lower grommet located on the left side of the deployment bag.
- (f) Pass the other end of the cord through the top grommet and draw the cord ends tight. Secure the cord ends on the bag outside with a surgeon's knot and locking knot. Make an over, land knot in each running end. Trim each tie end at a point 2 inches from the surgeon's knot and locking knot.
- (g) On the right side of the deployment bag, arm the reefing line cutter at line 91, pass the end of one of the cords through the hole in top of the reefing line arming cable and through the lower grommet located on the left side of the deployment bag.
- (h) Pass the other end of the cord through the top grommet and draw the cord ends tight. Secure the cord ends on the bag outside with a surgeon's knot and locking knot. Make an overhaul knot in each running end. Trim each tie end at a point 2 inches from the surgeon's knot and locking knot.
- (i) Using the remaining cord length on the reefing line cutter at line 61 near the bag bottom, pass one end of the cord through the hole in the top of the reefing line cutter arming cable and through the lower bag grommet to the bag outside.

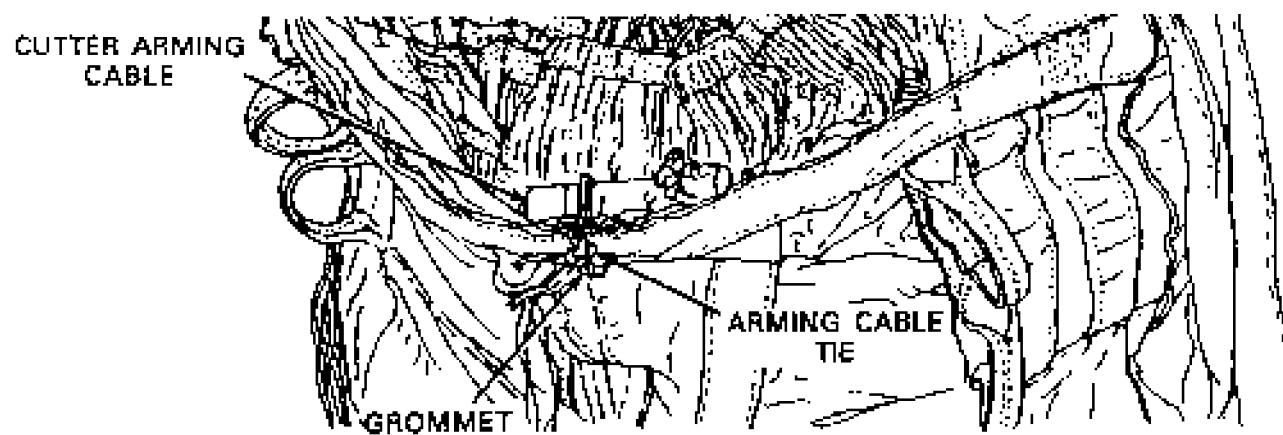
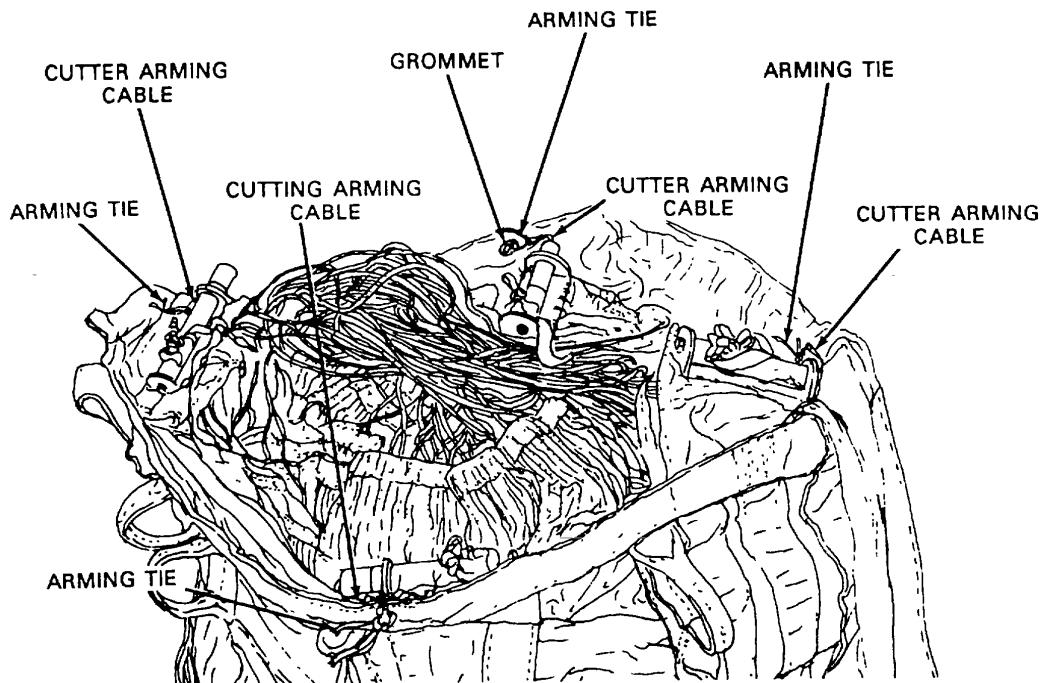


Figure 2-93. Threading Reefing Line Cutter Arming Cable Tie at Line 1.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

- (j) Pass the opposite cord end through the upper bag grommet to the bag outside and draw the cord ends tight. Secure the cord ends together on the outside of the bag with a surgeon's knot and locking knot. Make an overhand knot in each running end (figure 2-94). Trim each tie end at a point 2 inches from the surgeon's knot and locking knot.

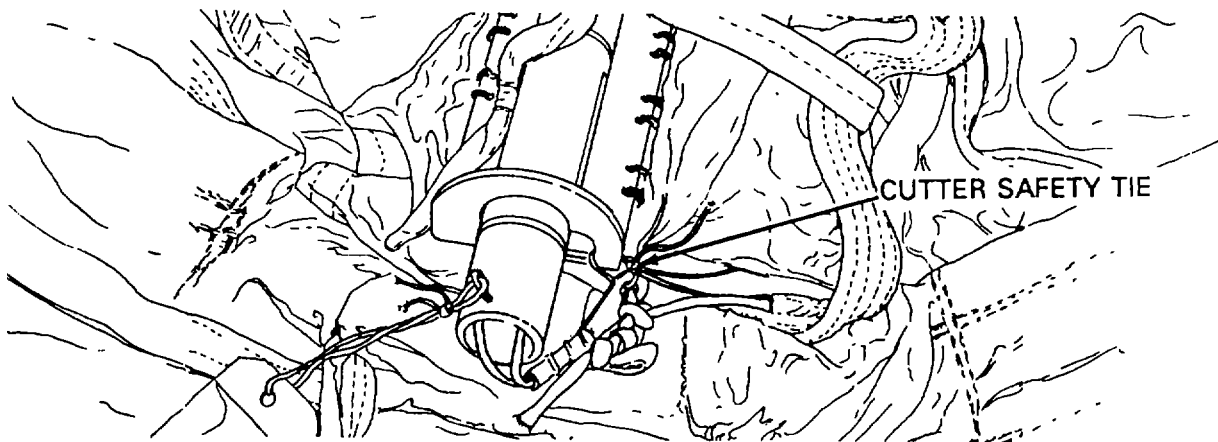


4838-095

Figure 2-94. Reefing Line Cutter Arming Cable Ties Completed.

(12) Installing reefing line cutter safety ties. To prevent premature firing of a reefing line cutter while stowing the suspension lines, install a safety tie on each of the reefing line cutters and remove the safety cotter pins as follows:

- (a) Using a length of one turn double, ticket no. 8/7 cotton thread, pass one end of the doubled thread lengths through the slot in a reefing line cutter bracket, through the loop of the arming cable tie previously installed, and draw the tie ends tight. Secure the safety ties with a surgeon's knot and locking knot (figure 2-95). Trim tie ends to two inches.



4838-096

Figure 2-95. Reefing Line Cutter Safety Ties Completed.

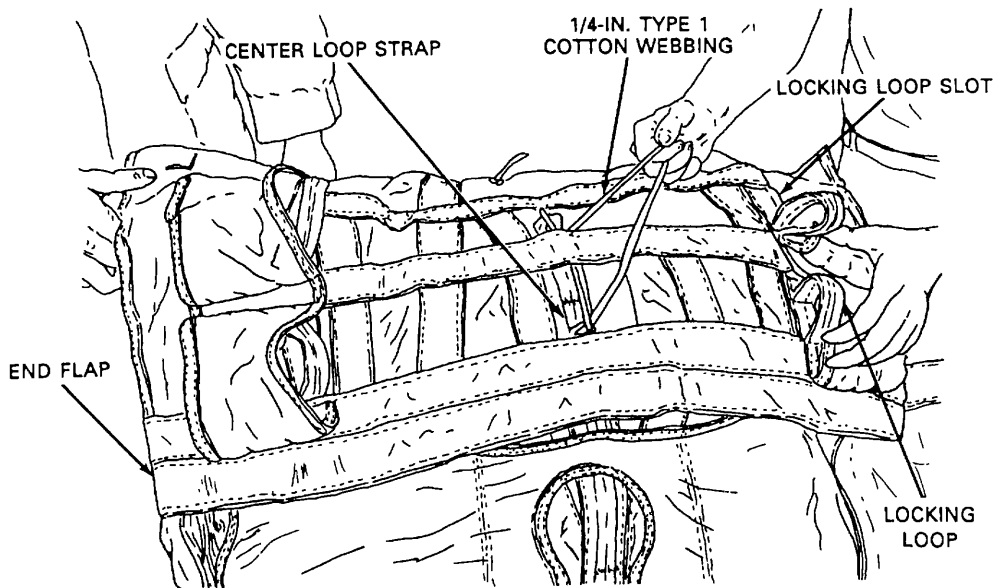
(b) The senior packer will annotate each cutter tag with the reefing line cutter lot number/serial number and parachute pack date. After these entries have been made, the senior packer will sign each tag.

CAUTION

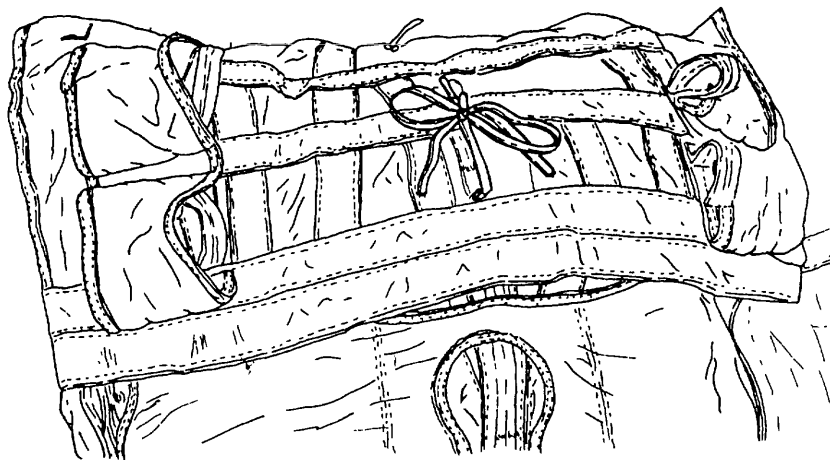
Failure to remove the cutter cotter pins will cause a malfunction of the parachute.

- (c) Remove the safety cotter pin and tag from each reefing line cutter, fold the tags lengthwise and stow safety pins and tags in the parachute inspection data pocket.
- (13) Closing the cotton deployment bag.
- (a) Bring the suspension lines and center line up over the top of the deployment bag and close the side flaps.
 - (b) Cut an 18-inch length of 1/4-inch type I cotton webbing and girth hitch the webbing length in the deployment bag top center loop strap.
 - (c) Bring the large end flap of the bag over the bag end and pull the locking loops up through the locking slots. Pull the 1/4-inch wide cotton webbing ends on the center loop strap through the top center opening on the end flap (figure 2-96).

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).



(A) THREADING CENTER LOOP STRAP TIE



(B) CENTER LOOP STRAP TIE SECURED

4838-097

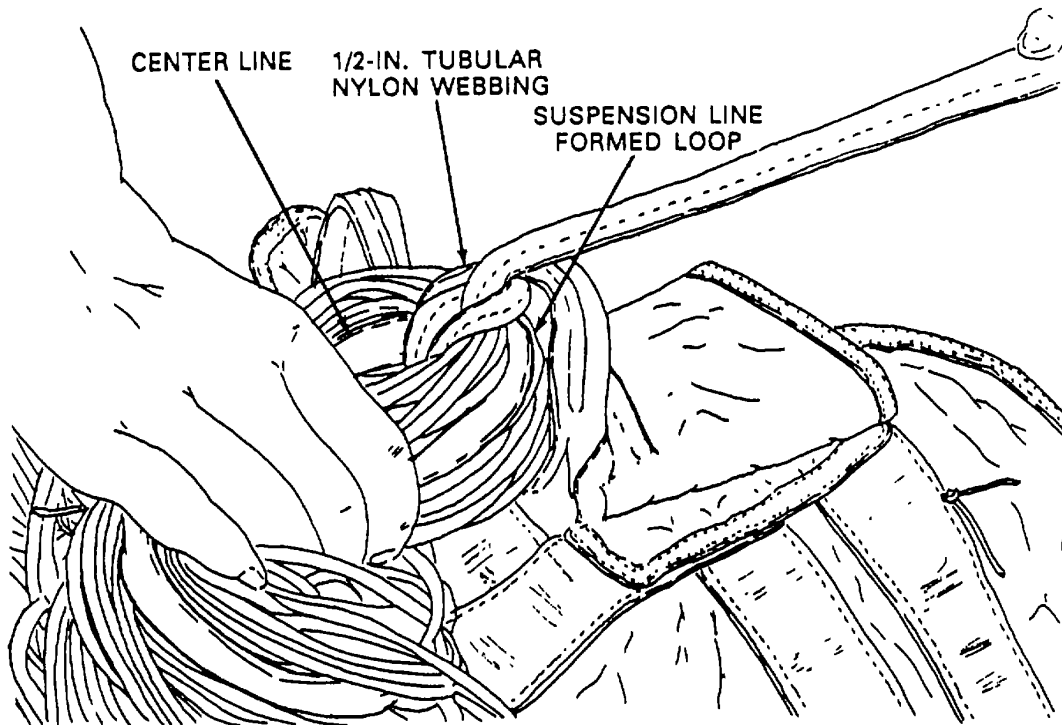
Figure 2-96. Inserting Locking Loops Through Locking Loop Slots.

(14) Making locking stows.

CAUTION

Failure to remove the packing aid will cause total malfunction of the parachute.

- (a) Cut a 36-inch length of 1/2-inch wide tubular nylon webbing, or equivalent, for use as a packing aid in making the locking stows. Double the webbing length and make an overhand knot in the aligned ends.
- (b) Fold the suspension lines and center line back over the large end flap. Measure and form a loop in the lines that will extend to the right edge of the bag large flap.
- (c) Using the packing aid, encircle the formed loop in the suspension lines and make girth hitch in the packing aid (figure 2-97).

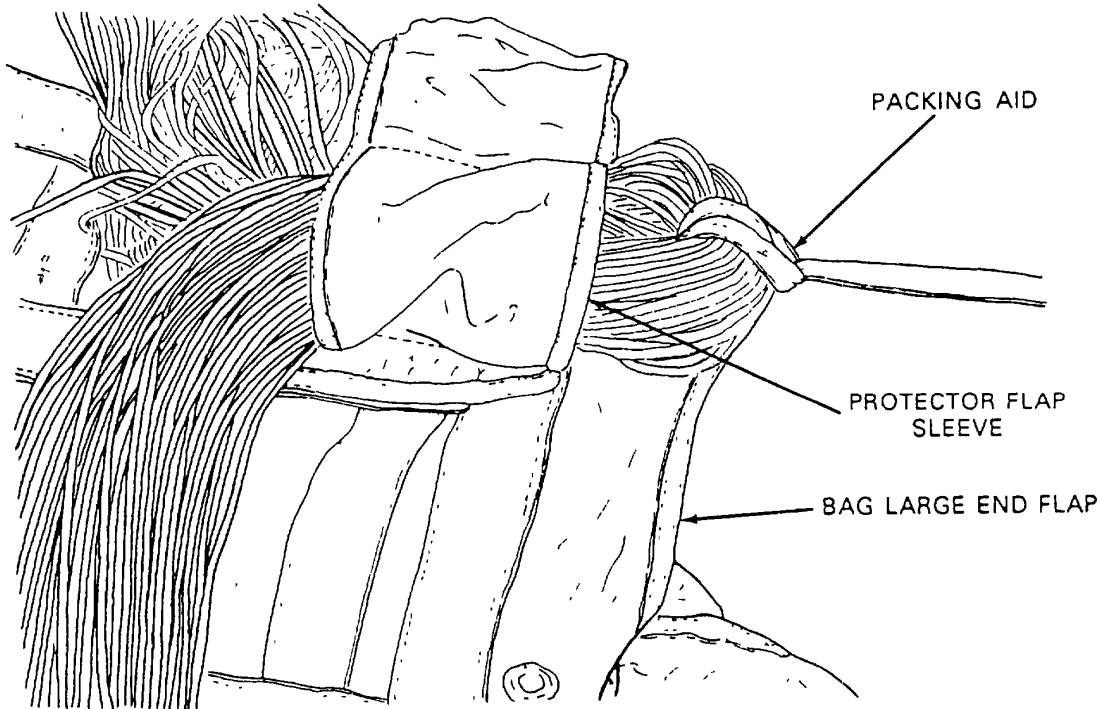


4836-098

Figure 2-97. Packing Aid Encircling Formed Suspension Line Loop.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

- (d) Thread the knotted end of the packing aid through the locking stow loop located under the protector flap sleeve at the lower right corner of the deployment bag. Pull the suspension line formed loop until the loop is aligned with the right edge of the bag large end flap (figure 2-98). Remove the packing aid.

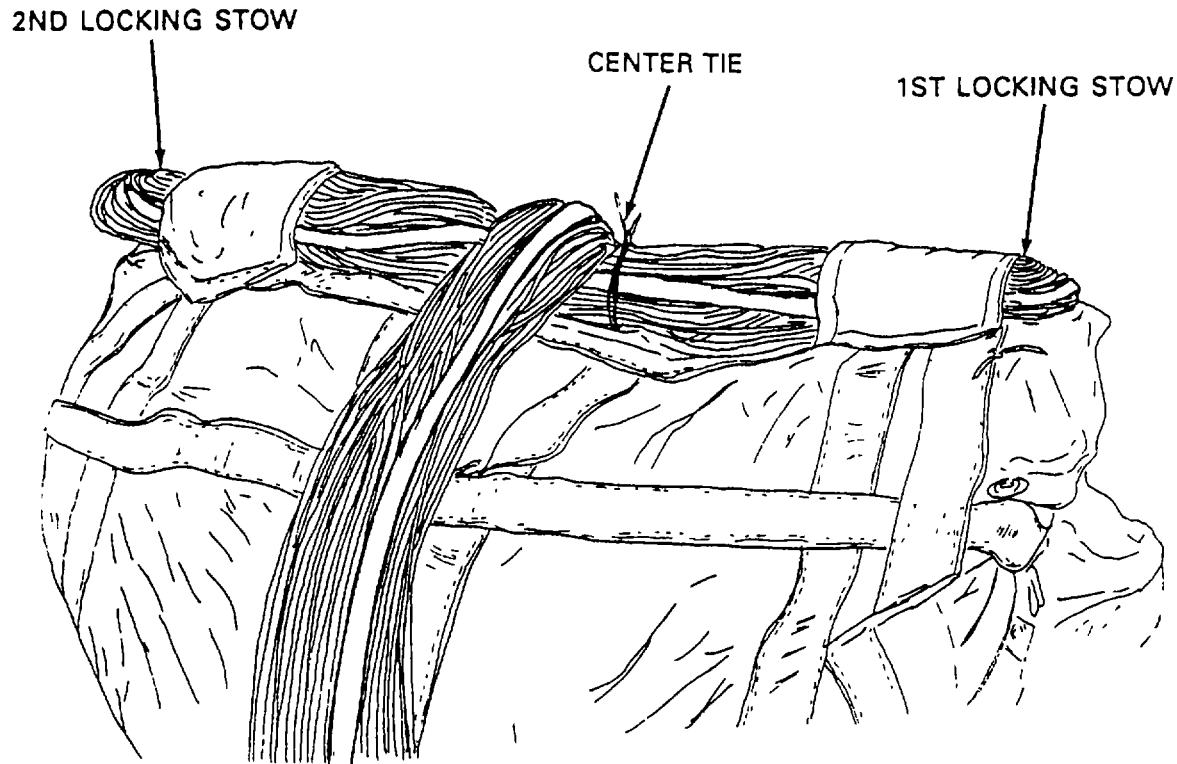


4838-099

Figure 2-98. Making the First Locking Stow.

- (e) Extend the running end of the suspension lines and center line to the locking stow loop at the lower left corner of the deployment bag and measure and form a loop in the lines.
- (f) Using the packing aid, encircle the formed loop in the suspension lines and make a girth hitch in the packing aid.
- (g) Thread the knotted end of the packing aid through the locking stow loop located under the protector sleeve at the lower left corner of the deployment bag. Pull the suspension line formed loop until the loop is aligned with the left edge of the bag large end flap. Remove the packing aid.

- (h) Secure the first two locking stows by tying the suspension lines together at a point between the two stows. Use the 1/4-inch wide cotton webbing previously installed. Make the tie one turn single and secure with a surgeon's knot and locking knot (figure 2-99). Trim tie ends to two inches.



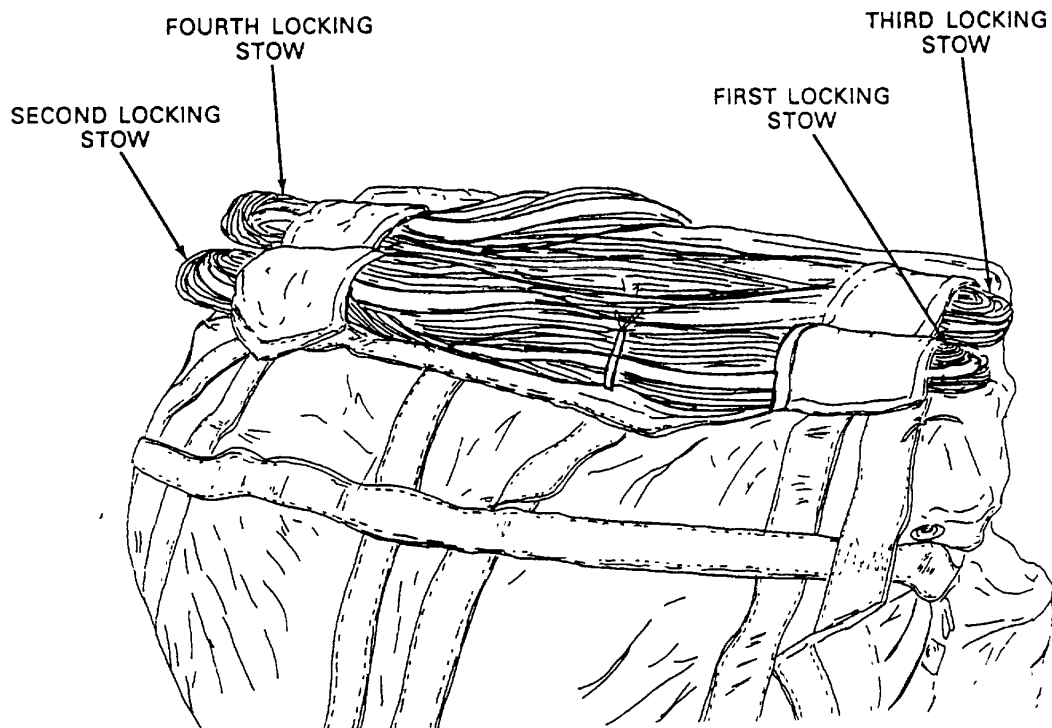
4838-100

Figure 2-99. First Two Locking Stows Completed and Tied.

- (i) Extend the suspension lines to the upper right corner of the large end flap and measure and form a loop in the lines.
- (j) Using the packing aid, encircle the formed loop in the suspension lines and make a girth hitch in the packing aid.
- (k) Thread the knotted end of the packing aid through the locking stow loop located under the protector sleeve at the upper right corner of the large end flap. Pull the suspension line formed loop until the loop is aligned with the right edge of the bag large end flap. Remove the packing aid.
- (l) Extend the suspension lines to the upper left corner of the large end flap and measure and form a loop that aligns with the left edge of the large end flap.
- (m) Using the packing aid, encircle the formed loop in the suspension lines and make a girth hitch in the packing aid.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

- (n) Thread the knotted end of the packing aid through the locking stow loop located under the protector sleeve at the upper left corner of the large end flap. Pull the suspension line formed loop until the loop is alined with the left edge of the bag large end flap (figure 2-100). Remove the packing aid.



4838-101

Figure 2-100. Locking Stows Completed.

(15) Installing suspension line stow ties.

- (a) Cut a minimum of thirty six 18-inch lengths of 1/4-inch wide, type I cotton webbing for use as suspension line stow ties.
- (b) Secure the webbing lengths at equal intervals along each row of side strap loops by making a girth hitch in each webbing length. Insure the ends of each webbing length are alined and positioned toward the respective outer edge of the deployment bag.

(16) *Wrapping the suspension lines.*

- (a) Extend the suspension lines and center line along the top center of the deployment bag toward the bridle end of the bag.
- (b) Using a 12-inch wide by 36-inch long piece of kraft paper, wrap the suspension lines extended along the top center of the deployment bag.
- (c) Secure each end and the middle of the suspension line wrap with one turn single of ticket No. 8/4 cotton thread. Secure each thread end with a surgeon's knot and locking knot (figure 2-101). Insure the suspension lines are not inadvertently secured to the center loop strap on top of the deployment bag. Trim tie ends to two inches.

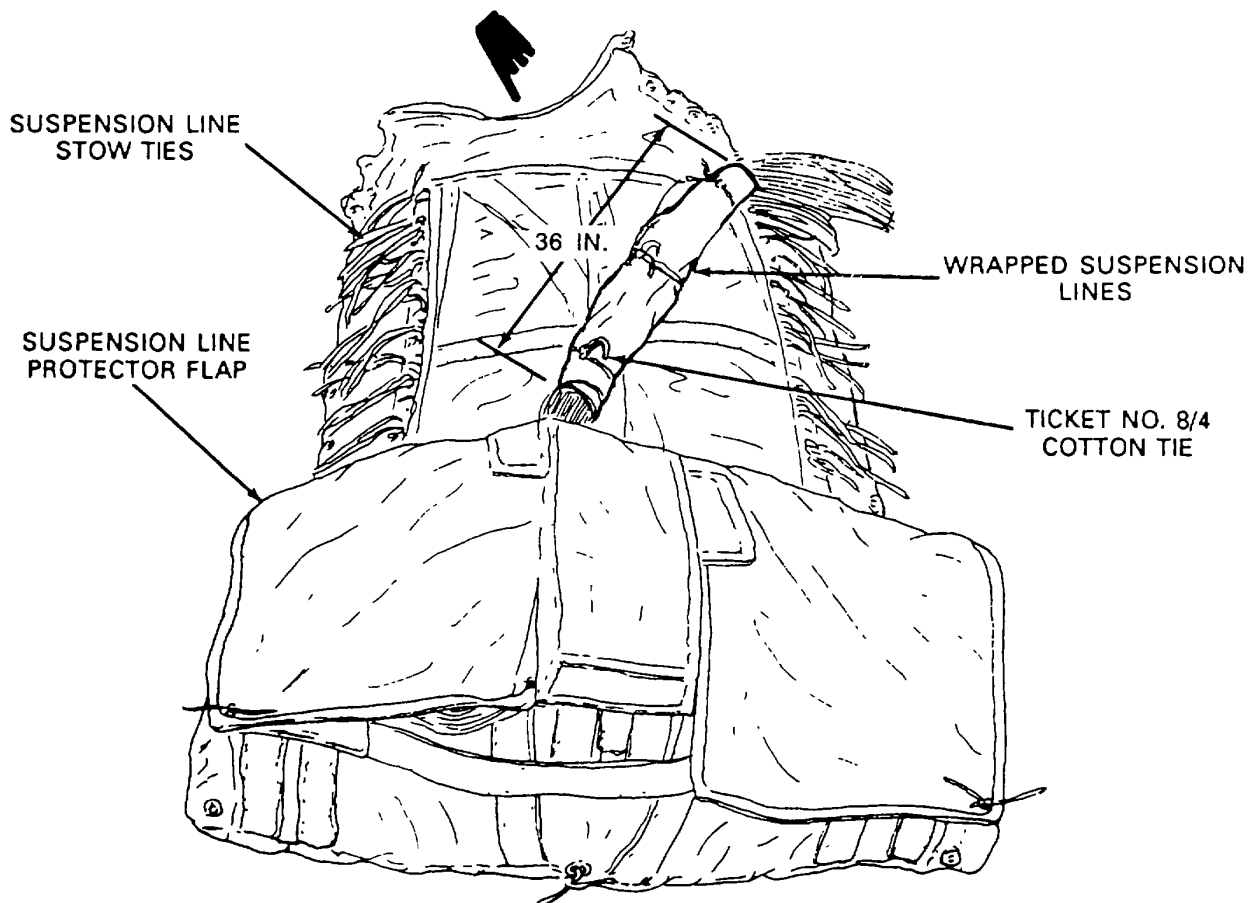


Figure 2-101. *Suspension Line Wrapping Details.*

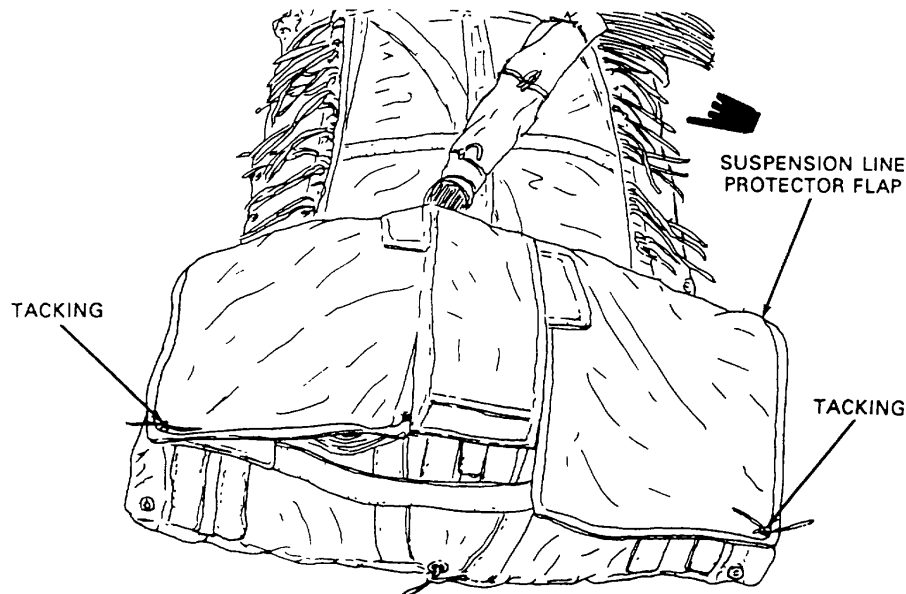
NOTE

If the suspension line protector flap is damaged, it may be removed from the deployment bag. Remove by cutting the flap material as close to the deployment bag body as possible.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

(17) *Tacking the suspension line protector flap.*

- (a) Extend the deployment bag suspension line protector flap over the locking stows.
- (b) Secure each lower outside corner of the suspension line protector flap to the deployment bag by hand tacking using one turn single, cotton thread ticket no. 8/4 at each tacking point. Pass the tacking needle through the deployment bag outside edge of the reinforcement strap and the protective flap edge reinforcement. Secure the tacking ends at each tacking point with a surgeon's knot and locking knot (figure 2-102). Trim tie ends to two inches.

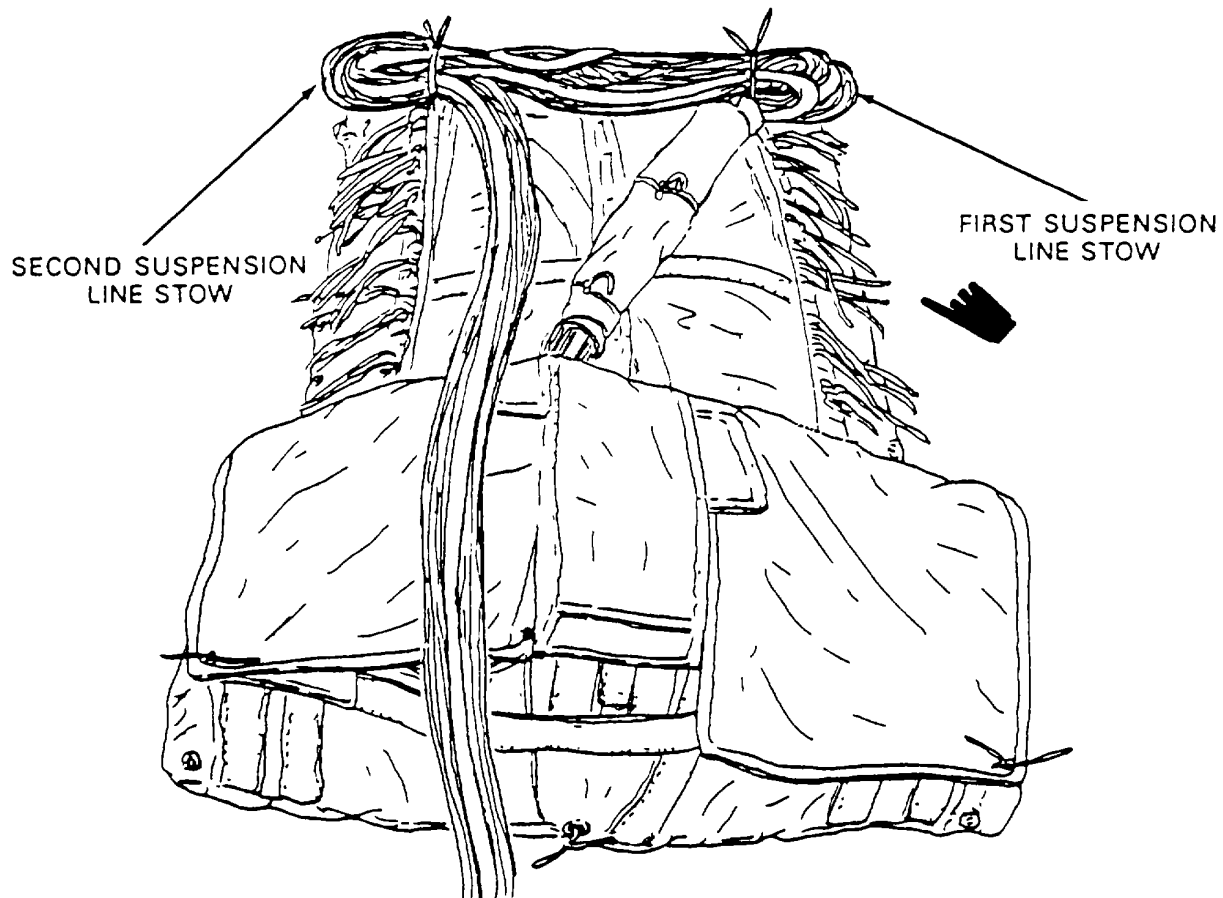


4838-103

Figure 2-102. Tacking the Suspension Line Protector Flap.

(18) *Stowing the suspension lines and suspension risers.*

- (a) Extend the running end of the suspension lines and center line to the upper right corner of the deployment bag. Measuring to the right edge of the stowage compartment, form the first suspension line stow by making a loop in the suspension lines.
- (b) Secure the first suspension line stow to the upper right outside strap loop using the first stow tie. Secure the stow tie with a surgeon's knot and locking knot (figure 2-103).
- (c) Extend the running end of the suspension lines across the deployment bag to the upper left corner of the bag. Measuring to the left edge of the stowage compartment, form the second suspension line stow by making a loop in the suspension lines.
- (d) Secure the second suspension line stow to the upper left outside strap loop using the first stow tie. Secure the stow tie with a surgeon's knot and locking knot (figure 2-103).

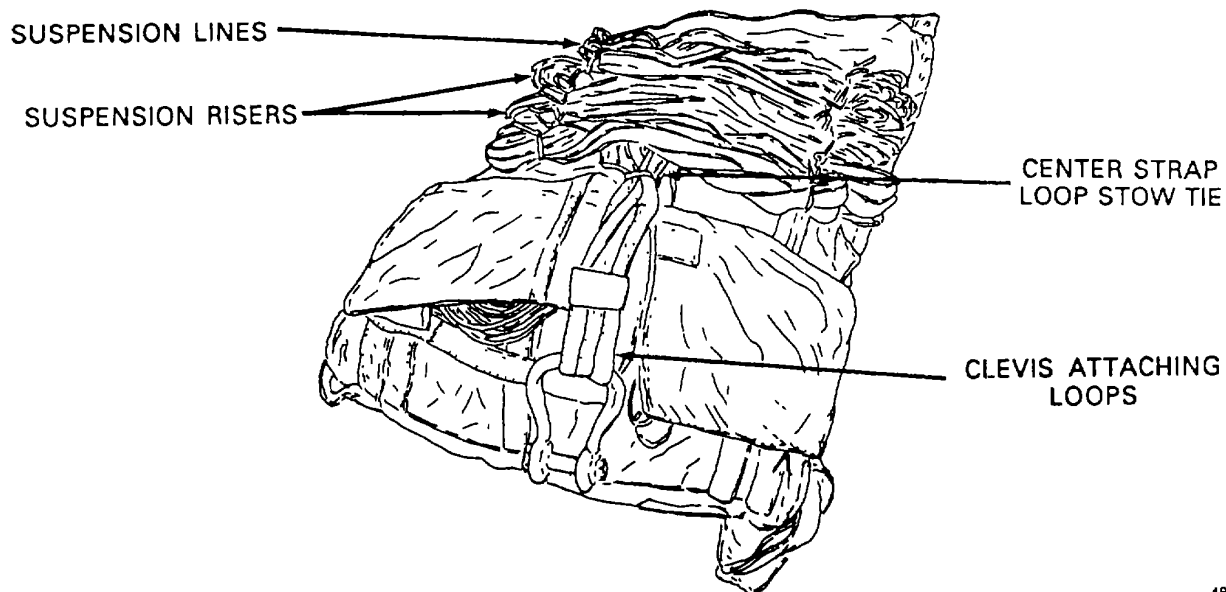


4838 104

Figure 2-103. *First and Second Suspension Line Stows Formed and Secured.*

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

- (e) Using the procedures in (a) through (d), stow the remaining length of suspension lines, center line and the suspension risers to a point 6 to 10 inches from the clevis attaching loops on the end of the suspension risers. Install an additional stow tie on the center strap loop in order to route the suspension risers from the center of the bag (figure 2-104). Trim all ties to 2 inches. Remove excess ties.



4838-105

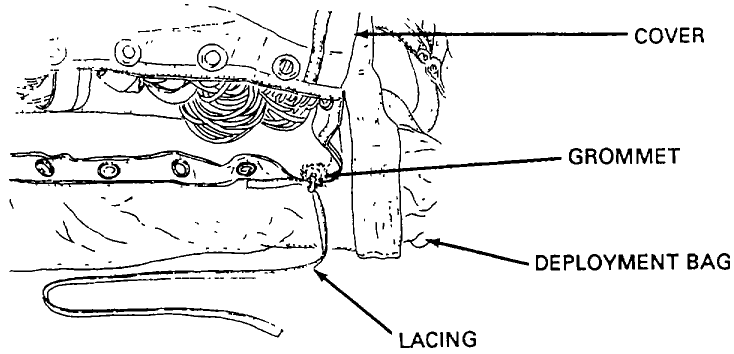
Figure 2-104. Suspension Line and Suspension Riser Stows Completed.

(19) Lacing the deployment bag.

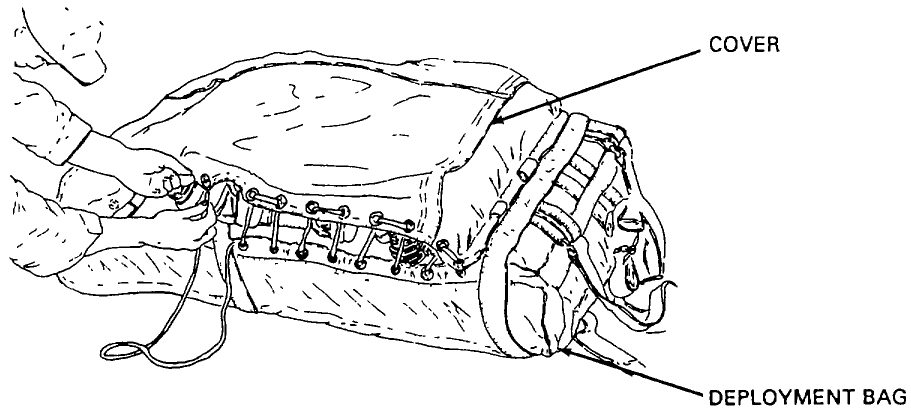
- (a) Bring the suspension line protector flap down over the stowed suspension lines and suspension risers. The grommets on the flap sides should overlap the grommets on the side of the deployment bag.
- (b) Cut two 60-inch lengths of 1/4-inch cottonwebbing for use as lacing ties.
- (c) Secure an end of each webbing length to the first grommet located on the bottom corner of the deployment bag upper corners with two half hitches (A, figure 2-105).
- (d) With a packer positioned on each side of the deployment bag and using the lacing tie running end, lace the flap to the deployment bag main body, grommet over grommet (B, figure 2-105).
- (e) Secure the lacing tie free end to the last lace with three half hitches. Trim the tie ends to two inches (C, figure 2-105).

NOTE

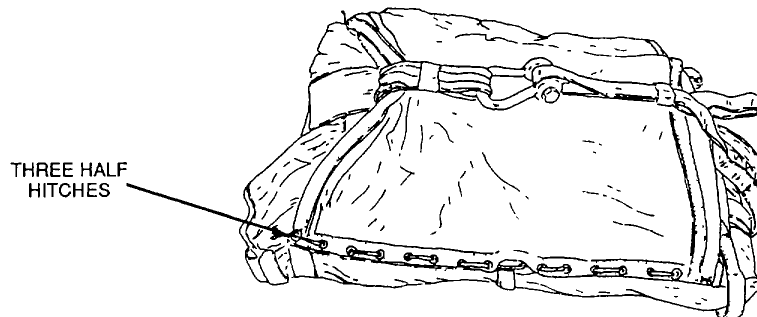
Proceed to step (28) for log book entries.



(A) LACE WEBBING SECURED TO GROMMET ON DEPLOYMENT BAG



(B) LACING THE COVER TO THE DEPLOYMENT BAG



(C) DEPLOYMENT BAG LACING COMPLETE

4838-106

Figure 2-105. Lacing the Deployment Bag.

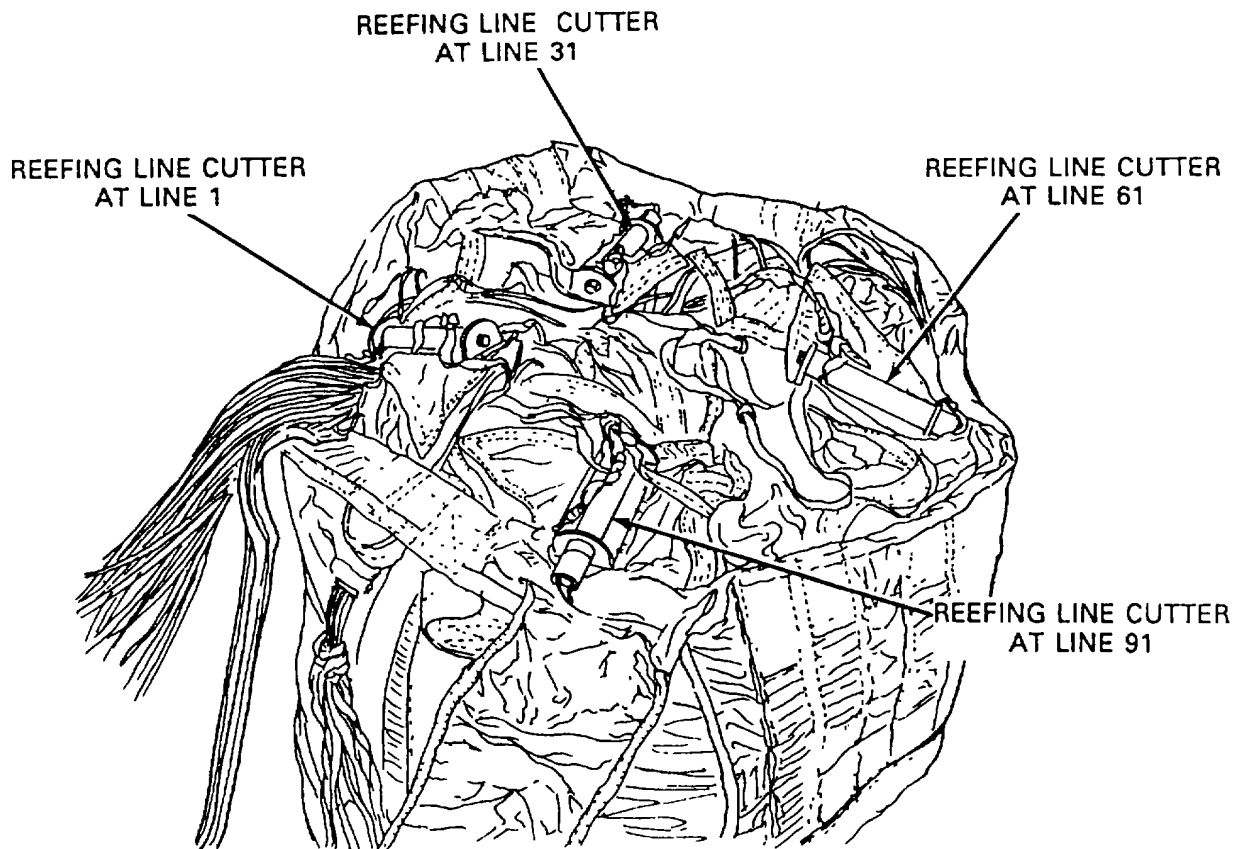
2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

NOTE

Paragraphs (20) thru (28) will be used when packing the G-1 11B in the nylon deployment bag.

(20) *Arming the reefing line cutters.*

- (a) Position the four reefing line cutters on top of the stowed canopy with the cutter at suspension line 61 placed adjacent to the arming loop on the bag bottom, the cutter at suspension line 31 placed adjacent to the arming loop on the left side of the deployment bag, the cutter at suspension line 91 placed adjacent to the arming loop on the right side of the deployment bag and the cutter at suspension line 1 placed adjacent to the arming loop on the bag top (figure 2-106).

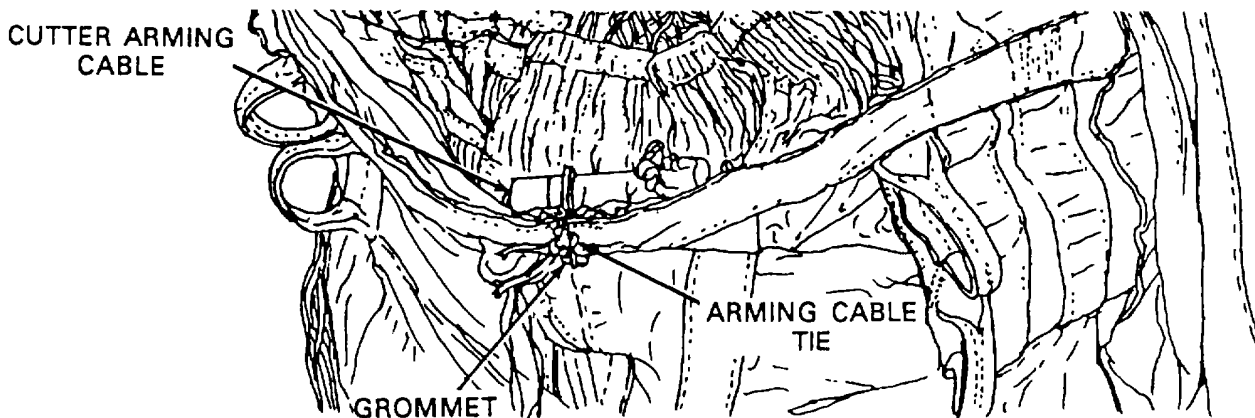


4838-107

Figure 2-106. M-21 Reefing Line Cutters Positioned on Nylon Deployment Bag.

- (b) Cut four 12-inch lengths of type III nylon cord for use as arming cable ties.

- (c) Beginning with the reefing line cutter at line 1 near the bag top, pass the end of one cord through the reefing line cutter arming cable and through the arming loop on the bag top. Draw the cord tight and secure the cord ends with a surgeon's knot and locking knot (figure 2-107). Trim the tie ends at a point 2 inches from the surgeon's knot and locking knot.

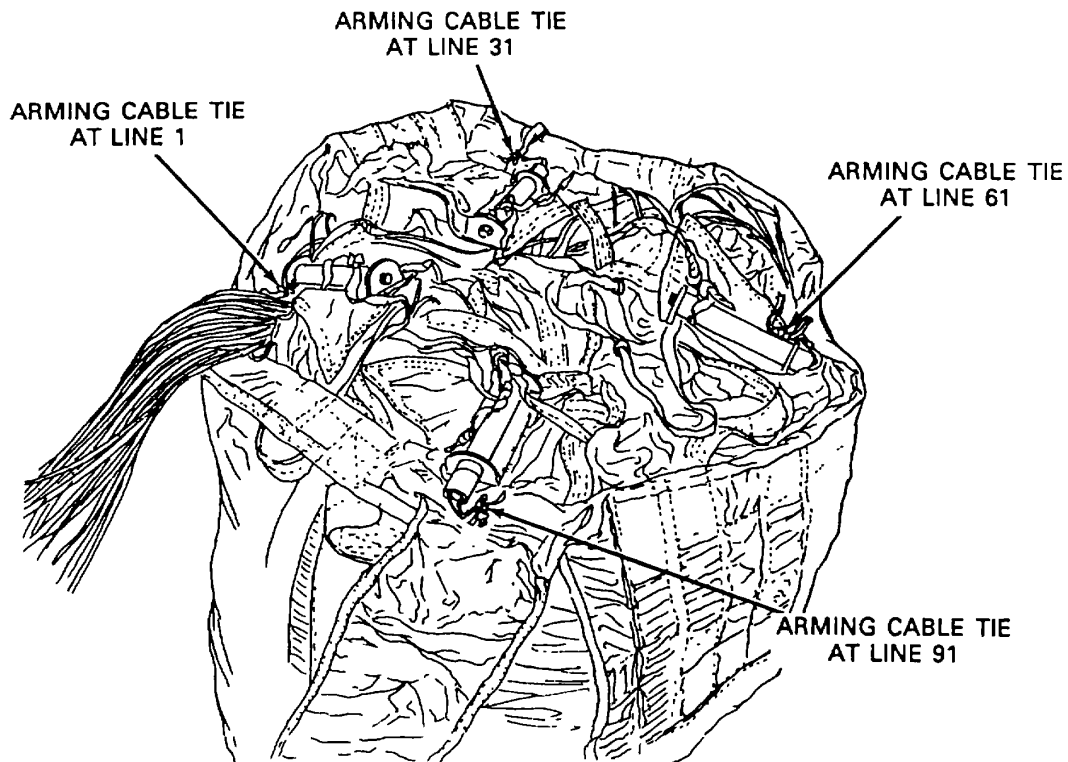


4838-108

Figure 2-107. Threading Reefing Line Cutter Arming Cable Tie at Line 1.

- (d) On the left side of the deployment bag, arm the reefing line cutter at line 31, pass the end of one of the cords through the hole in the top of the reefing line arming cable and through the arming loop located on the left side of the deployment bag. Draw the cord tight and secure the cord ends with a surgeon's knot and locking knot. Trim the tie ends at a point 2 inches from the surgeon's knot and locking knot.
- (e) On the right side of the deployment bag, arm the reefing line cutter at line 91, pass the end of one of the cords through the hole in the top of the reefing line arming cable and through the arming loop located on the left side of the deployment bag. Draw the cord tight and secure the cord ends with a surgeon's knot and locking knot. Trim the tie ends at a point 2 inches from the surgeon's knot and locking knot.
- (f) Using the remaining cord length on the reefing line cutter at line 61 near the bag bottom, pass one end of the cord through the hole in top of the reefing line arming cable and through the arming loop. Draw the ends of the tie tight and secure the ends with a surgeon's knot and locking knot (figure 2-108). Trim tie ends 2 inches from the surgeon's knot and locking knot.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

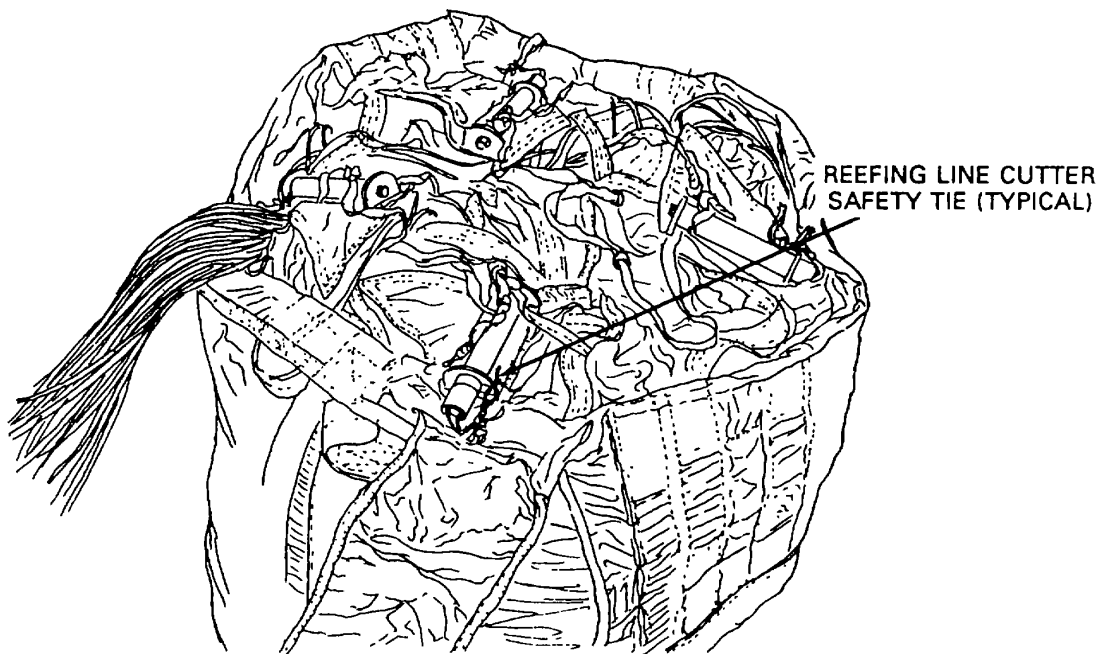


4838-109

Figure 2-108. Reefing Line Cutter Arming Cable Ties Completed.

(21) *Installing reefing line cutter safety ties.* To prevent premature firing of a reefing line cutter while stowing the suspension lines, install a safety tie on each of the reefing line cutters and remove the safety cotter pins as follows:

- (a) Using a length of one turn double, ticket no. 8/7 cotton thread, pass one end of the doubled thread through the slot in each reefing line cutter bracket, through the loop of the arming cable tie previously installed, and draw the tie ends tight. Secure the safety tie with a surgeon's knot and locking knot (figure 2-109). Trim tie ends to two inches.



4838-110

Figure 2-109. Reefing Line Cutter Safety Ties Completed.

- (b) The senior packer will annotate each cutter tag with the reefing line cutter lot number/serial number and parachute pack date. After these entries have been made the senior packer will sign each tag.

CAUTION

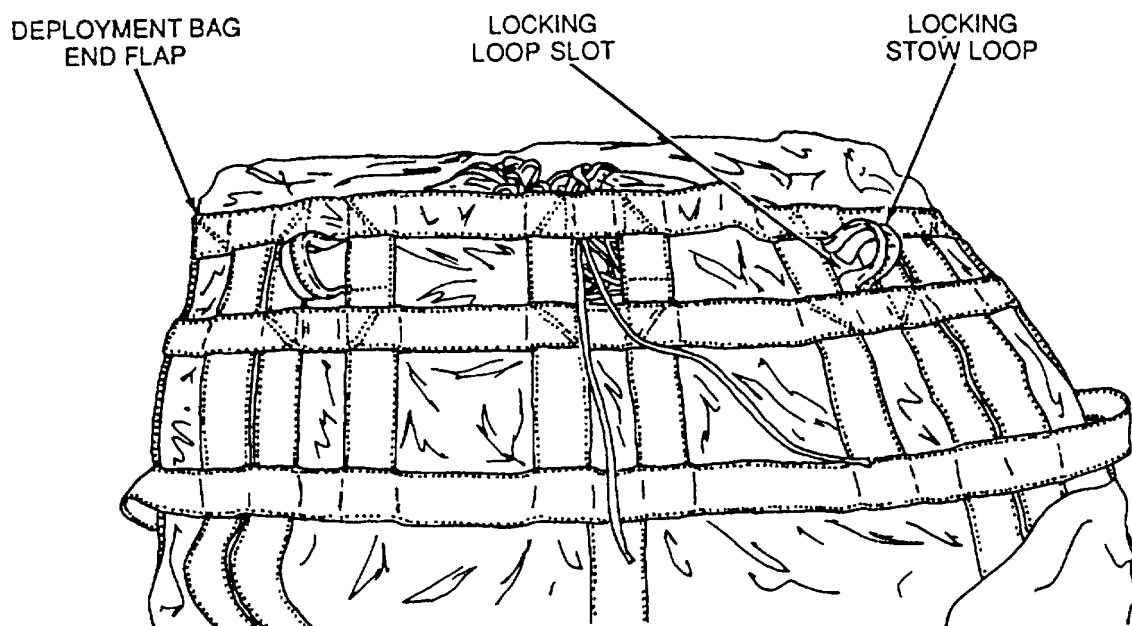
Failure to remove the cutter cotter pins will cause a malfunction of the parachute.

- (c) Remove the safety cotter pin and tag from each reefing line cutter, fold the tags lengthwise and stow safety pins and tags in the parachute inspection data pocket.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

(22) *Closing the nylon deployment bag.*

- (a) Bring the suspension lines up over the top of the deployment bag and close the side flaps.
- (b) Bring the large end flap of the deployment bag over the bag end and pull the locking loops up through the locking loop slots (figure 2-110).



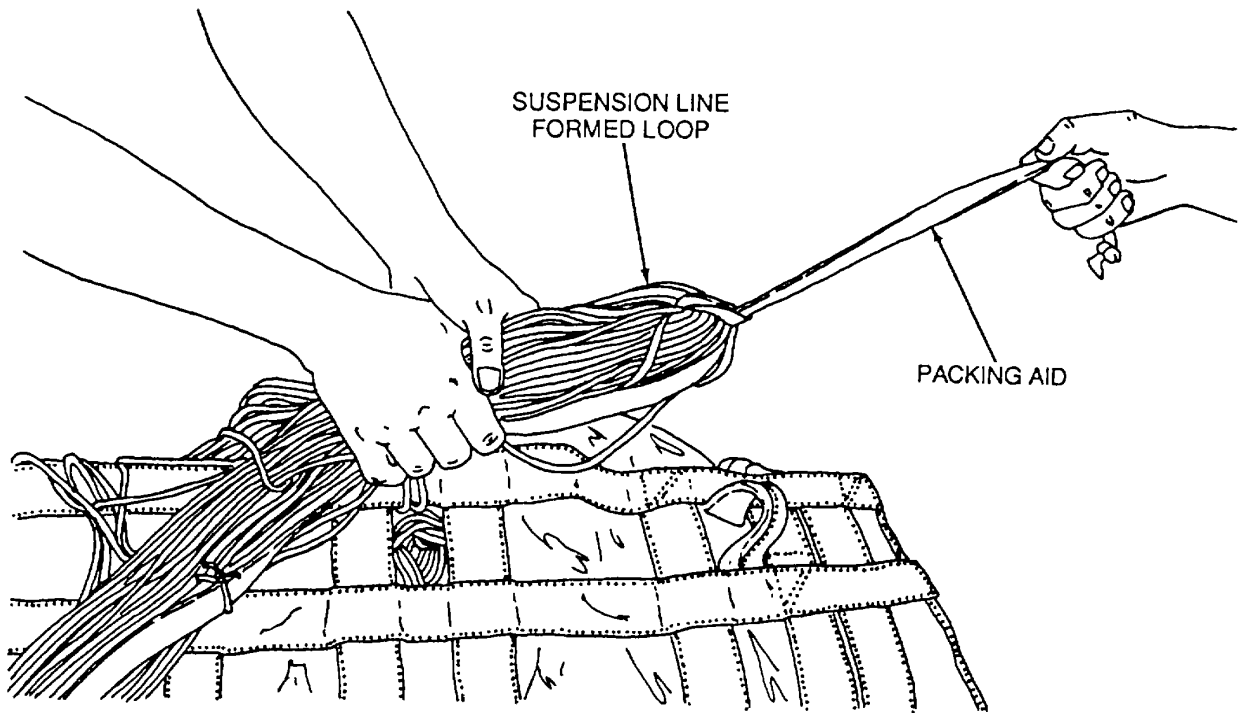
4838-111

Figure 2-110. Inserting Locking Loops Through Locking Loop Slots in Nylon Deployment Bag.

(23) *Making locking stows.*

- (a) Cut a 36-inch length of 1/2-inch wide tubular nylon webbing or equivalent for use as a packing aid in making the locking stows. Double the webbing length and make an overhand knot in the aligned ends.
- (b) Fold the suspension lines and center line back over the large end flap and measure and form a loop in the lines that will extend to the right edge of the bag large flap.

(c) Using the packing aid, encircle the formed loop in the suspension lines and make a girth hitch in the packing aid (figure 2-111).

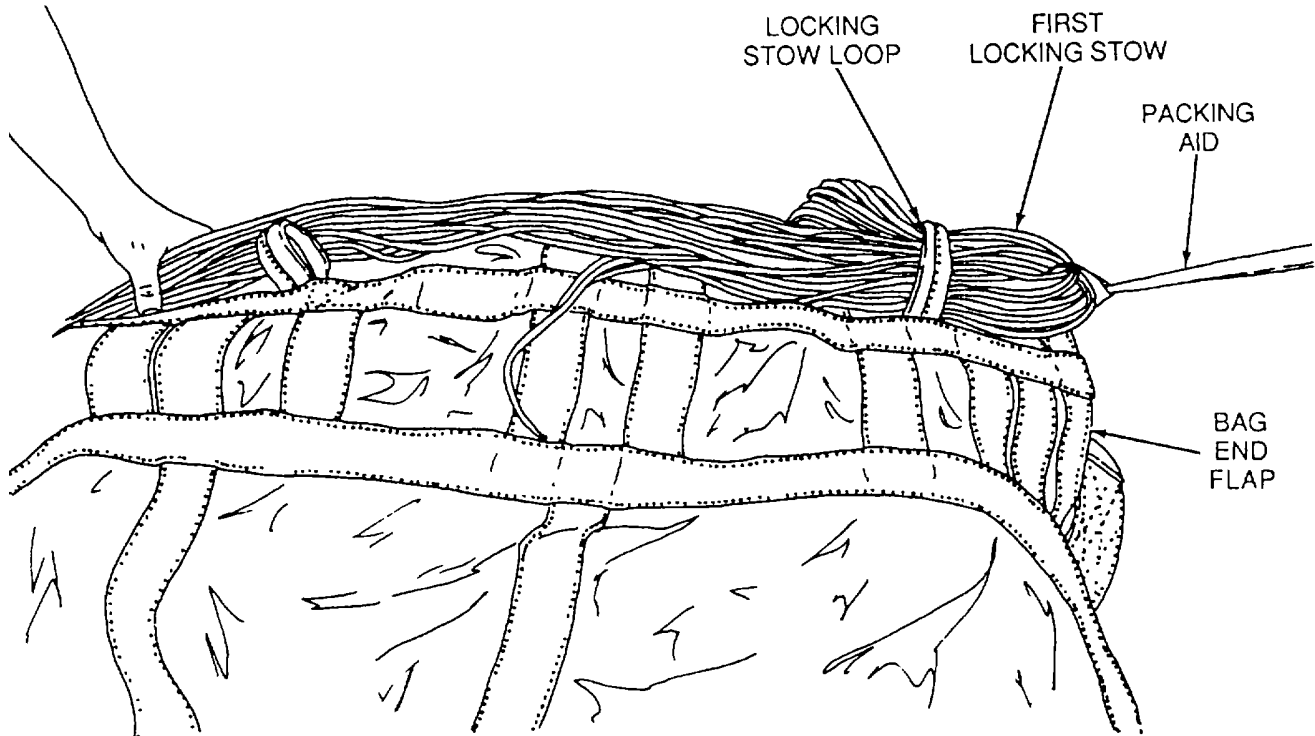


4898-112

Figure 2-111. Packing Aid Encircling Formed Suspension Line Loop.

- (d) Thread the knotted end of the packing aid through the locking stow loop located at the lower right corner of the deployment bag. Pull the suspension line formed loop until the loop is aligned with the right edge of the bag large end flap (figure 2-112). Remove the packing aid.
- (e) Extend the running end of the suspension lines and center line to the locking stow loop at the lower left corner of the deployment bag and measure and form a loop in the lines.
- (f) Using the packing aid, encircle the formed loop in the suspension lines and make a girth hitch in the packing aid.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).



4838-113

Figure 2-112. Making the First Locking Stow.

- (g) Thread the knotted end of the packing aid through the locking stow loop located at the lower left corner of the deployment bag. Pull the suspension line formed loop until the loop is aligned with the left edge of the bag large flap (figure 2-113). Remove the packing aid.

(24) *Installing suspension line stow ties.*

- (a) Cut a minimum of thirty two 18-inch lengths of 1/4-inch wide, type I cotton webbing for use as suspension line stow ties.
- (b) Secure the webbing lengths two per loop along each row of side strap loops by making a girth hitch in each webbing length. Ensure the ends of each webbing length are aligned and positioned toward the respective outer edge of the deployment bag.

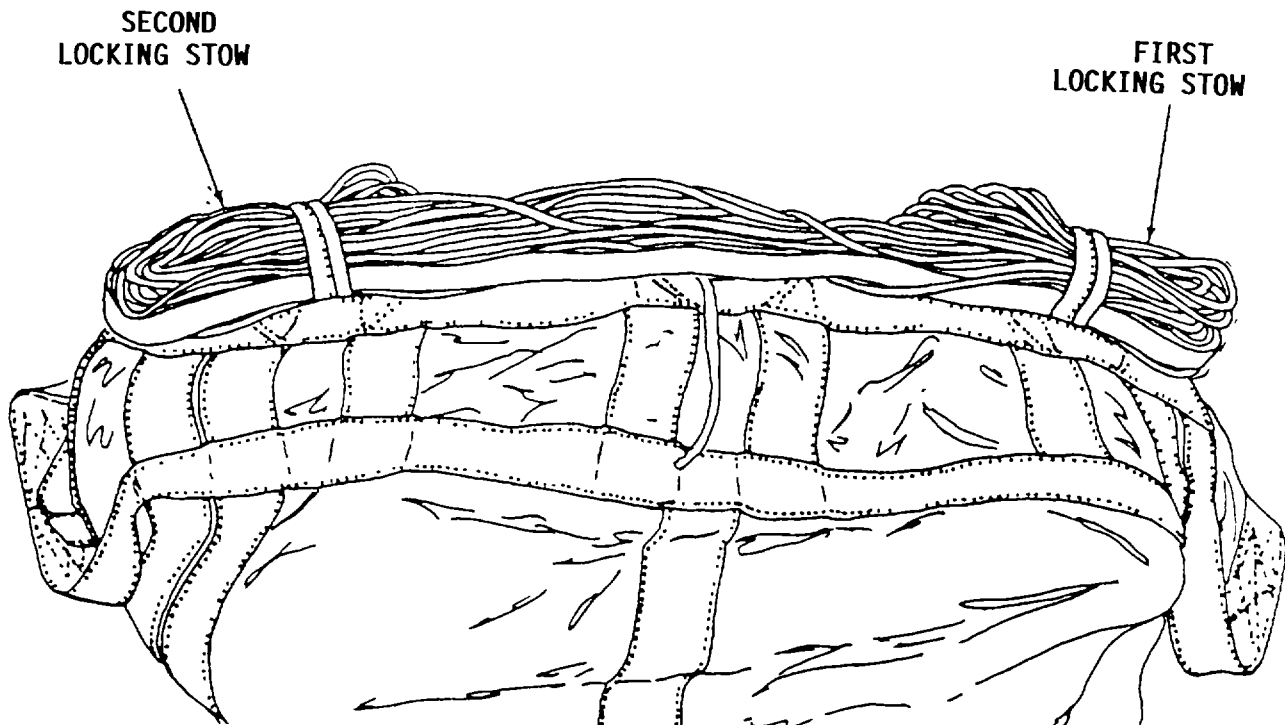
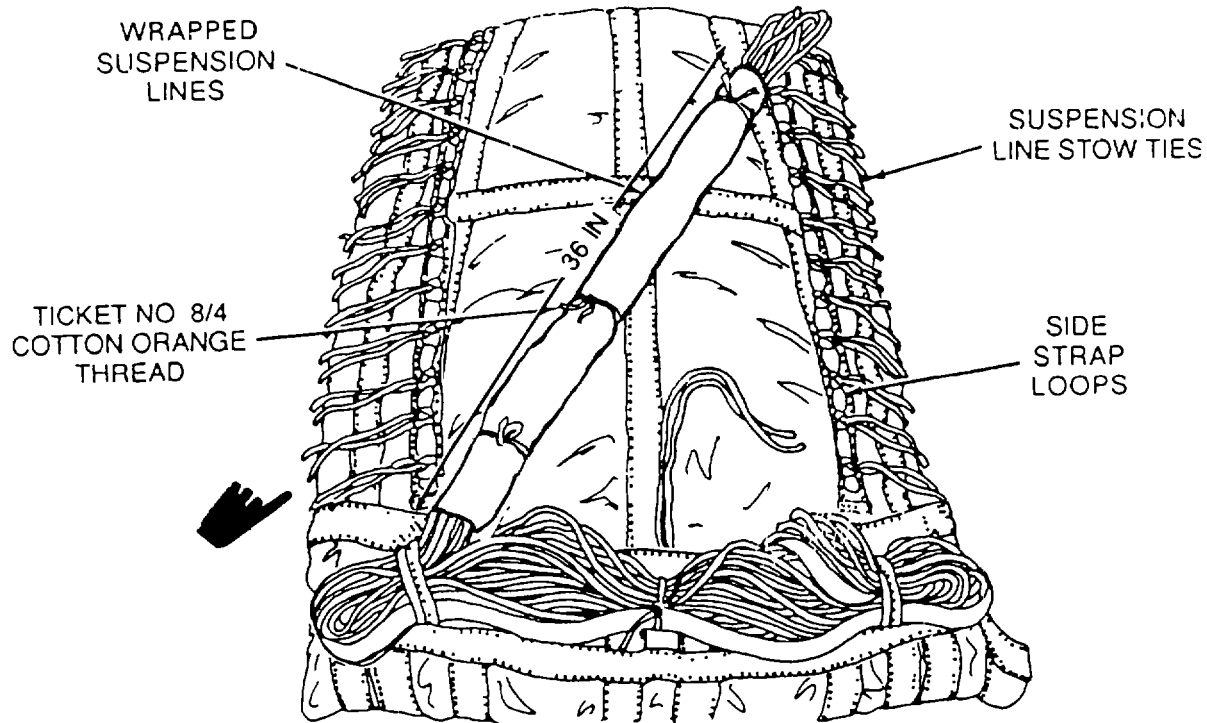


Figure 2-113. Locking Stows Completed.

(25) *Wrapping the suspension lines.*

- (a) Extend the suspension lines and center line along the top center of the deployment bag toward the bridle end of the bag.
- (b) Using a 12-inch wide by 36-inch long piece of kraft paper, wrap the suspension lines and center line extended along the top center of the deployment bag.
- (c) Secure each end and the middle of the suspension line wrap with one turn single of ticket no. 8/4 cotton orange thread. Secure each thread end with a surgeon's knot and locking knot (figure 2-114). Trim tie ends to two inches.

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

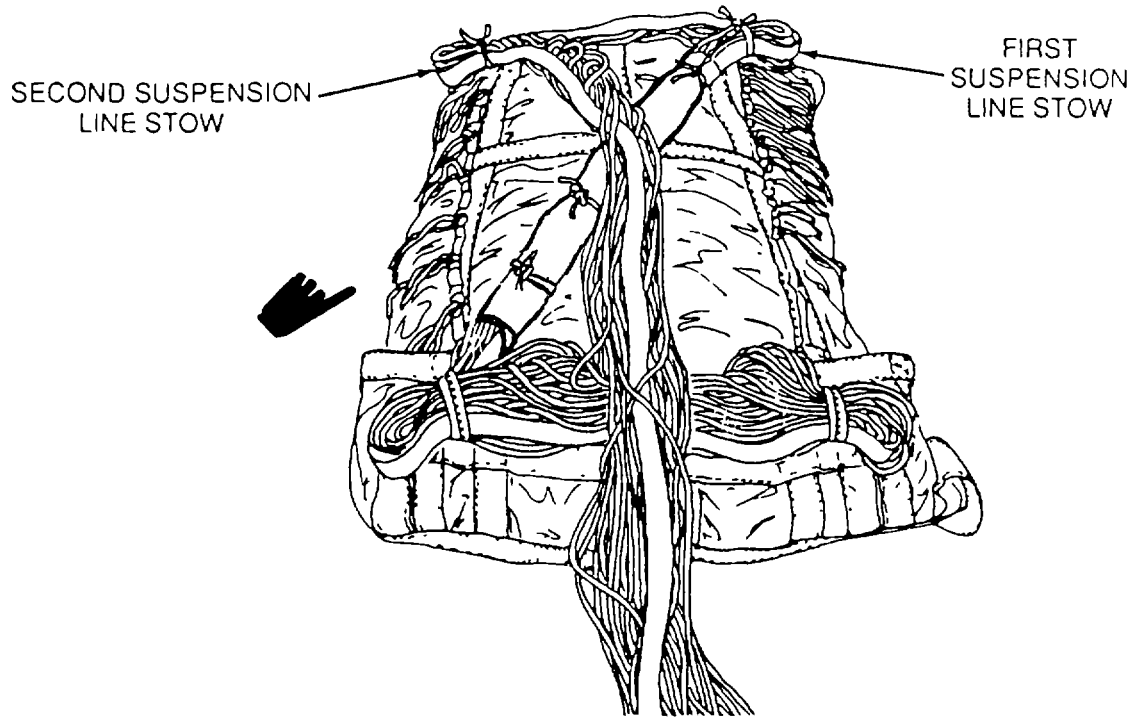


4838-115

Figure 2-114. Suspension Line Wrapping Details.

- (26) *Stowing the suspension lines and suspension risers.*
- Extend the running end of the suspension lines and center line to the upper right corner of the deployment bag. Measuring to the right edge of the stowage compartment, form the first suspension line stow by making a loop in the lines.
 - Secure the first suspension line stow to the upper right outside strap loop using the first stow tie. Secure the stow tie with a surgeon's knot and locking knot.
 - Extend the running end of the suspension lines across the deployment bag to the upper left corner of the deployment bag. Measuring to the left edge of the stowage compartment, form the second suspension line stow by making a loop in the lines.

- (d) Secure the second suspension line stow to the upper left outside strap loop using the first stow tie. Secure the stow tie with a surgeon's knot and locking knot (figure 2-115).

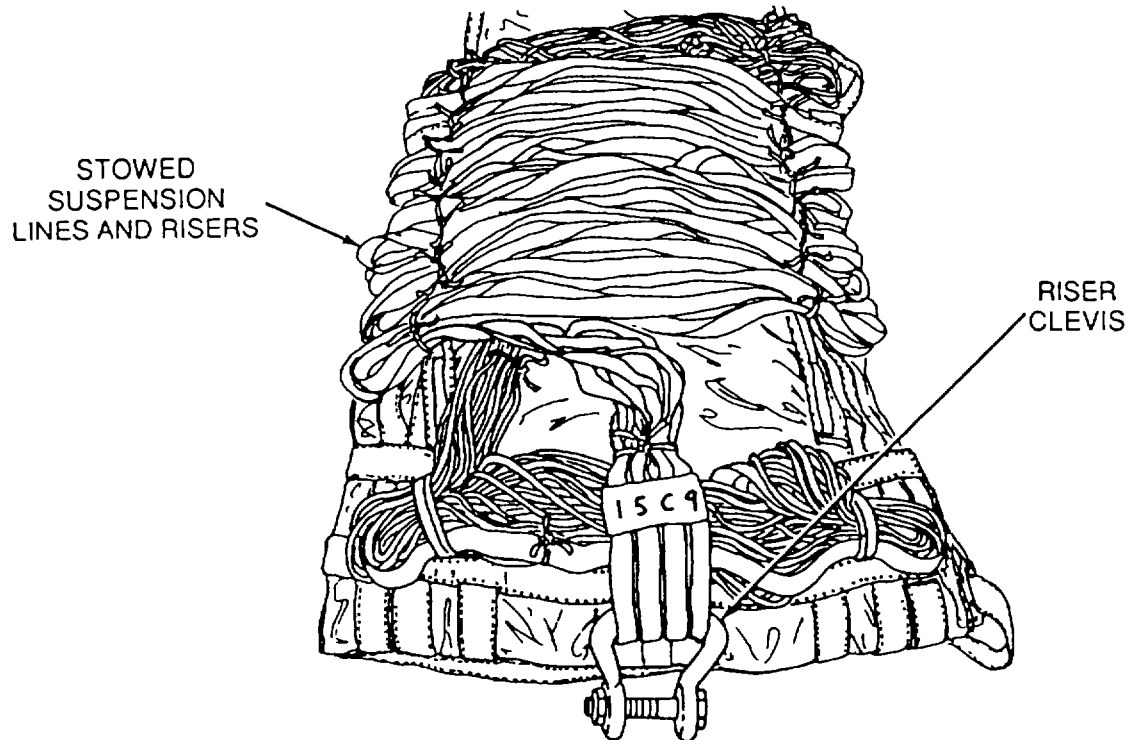


4838 116

Figure 2-115. First and Second Suspension Line Stows Formed and Secured.

- (e) Using the procedures in (a) through (d), stow the remaining lengths of suspension lines, center line and the suspension risers to a point 6 to 10 inches from the clevis attaching loops on the end of the suspension risers. Install an additional stow tie on the center strap loop in order to route the suspension risers and center line from the center of the bag (figure 2-116).

2-17. Packing 100-Foot Cargo Parachute, Model G-11B (cont).

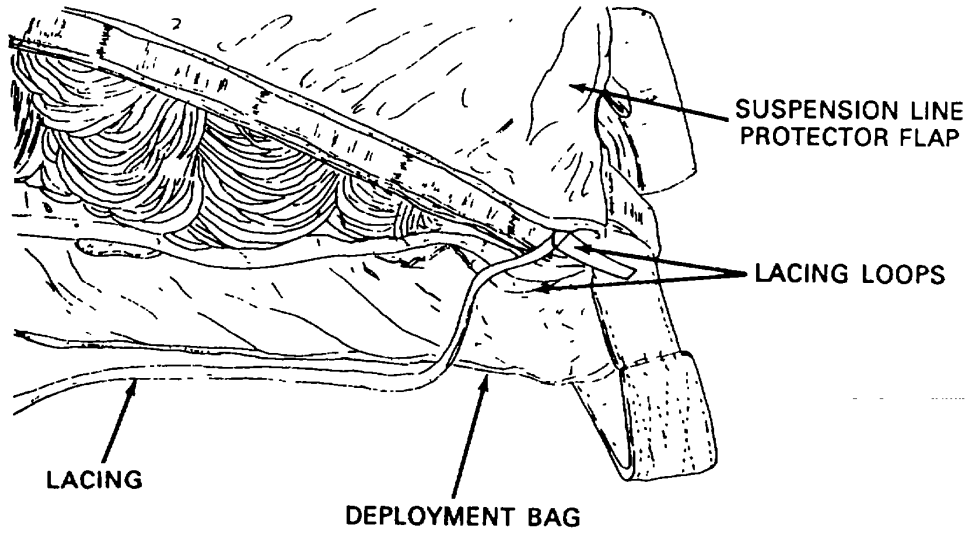


4838-117

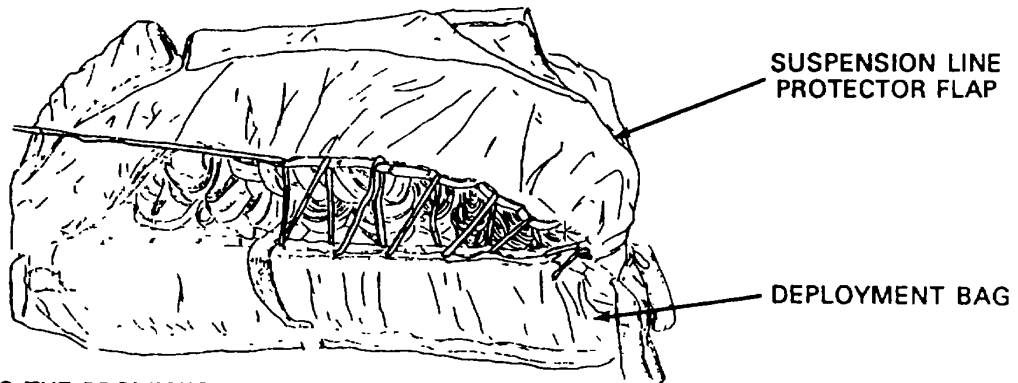
Figure 2-116. Suspension Line and Suspension Riser Stows Completed.

(27) Lacing the nylon deployment bag

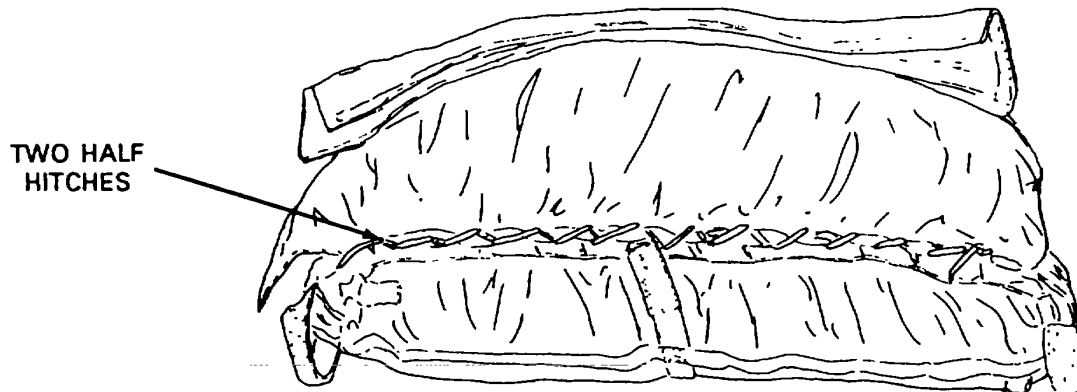
- (a) Bring the suspension line protector flap across the stowed suspension lines and suspension risers.
- (b) Cut a 70-inch length of 1/4-inch cotton webbing for use as lacing line.
- (c) Secure an end of the webbing length to the first loop located on the bottom corner of the deployment bag left upper corner with two half hitches. (A, figure 2-117).
- (d) Using the lacing tie running end, lace the flap to the deployment bag main body (B, figure 2-117).
- (e) Secure the lacing tie free end to the last lace with two half hitches (C, figure 2-117).



(A) LACE WEBBING SECURED TO LOOP ON DEPLOYMENT BAG



(B) LACING THE PROTECTOR FLAP TO THE DEPLOYMENT BAG



(C) DEPLOYMENT BAG LACING COMPLETED

4838-118

Figure 2-117. Lacing the Nylon Deployment.

2-17. **Packing 100-Foot Cargo Parachute, Model 11A (cont).**

(28) *Log record book entries.*

CAUTION

The inspector MUST ensure that the reefing line cutter tag entries match those made in the log record book. Inspect the cutter tags for the current date and verify that the signature on the tags is that of the senior packer of the parachute.

NOTE

The log record book must be modified for use on the G-11 A cargo parachute. On the "Jump, Inspection and Repack Data" page, change "BAG NUMBER" to "LOT/SER NUMBER".

Senior packer's signature MUST be legible.

- (a) Remove the log record (DA Form 10-42 or DA Form 3912) from the parachute inspection data pocket (log record book pocket) located on the canopy bridle loop.
- (b) Make entries on the "Jump, Inspection and Repack Data" page as follows:
 - 1 *Date.* Enter the pack day, month, and year.
 - 2 *Lot/Ser Number.* Enter the lot number or serial number of the reefing line cutters that are being used for this repack
 - 3 *Routine Inspection.* No entry required.
 - 4 *Jumps or dropped.* No entry required.
 - 5 *Repack.* For initial packing, enter "IN"; thereafter, enter a checkmark in the column each time the parachute is repacked.
 - 6 *Packer's Name.* The senior packer will place his or her signature in this column.
 - 7 *Inspector's Name.* The inspector who performed the pack in process inspection will sign this entry.
 - 8 *Unit.* Enter the unit designation to which the packer and/or inspector are assigned.
- (c) Return the log record book to the log record book pocket upon completion of all required entries.
- (d) Route the log record pocket tie cord through the closing loops at the bottom of the pocket and secure the tie cord ends with a square knot.

NOTE

■ Stow riser extension in accordance with the FM 10-500 series manual.

(29) Closing the riser extension flap.

- (a) Temporarily secure the riser extension flap until riser extension has been stowed. Secure the flap at each corner and at the center with 1/4 inch cotton webbing.
- (b) Remove the temporary ties, open riser extension flap and stow riser extension.
- (c) Bring the riser extension flap across the stowed riser extension.
- (d) Cut a 36 inch length of 1/4 inch cotton webbing for use as a lacing tie.
- (e) With two half hitches, secure an end of the webbing length to the first loop on the deployment bag main body at the right upper corner.

- (f) Using the lacing tie running end, lace the riser extension cover flap to the deployment bag main body.
- (g) Secure the lacing tie free end to the last lace with two half hitches.

Change 2 2-144.1/(2-144.2 blank)

2-18. **Packing 100-Foot Cargo Parachute, Model G-11C.**

This task covers:

- | | |
|--|--|
| <p>a. Inspection</p> <p>b. Orientation</p> | <p>c. Preparing Parachute for proper Layout</p> <p>d. Packing the G-11C Parachute Assembly</p> |
|--|--|
-

Tools:

Line Separator, Item 7, Appendix B
Knife, Item 4, Appendix B
Yardstick, Item 22, Appendix B

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Parachute cleaned (reference paragraph 2-12)
and given a shakeout (reference paragraph 2-11).

Materials/Parts:

Cloth, Cotton, Muslin, Item 5/6, Appendix D
Cord, Nylon, Type III, Item 11/12, Appendix D
Marking Aid, Item 46/47, Appendix D
Paper, Kraft, Item 19, Appendix D
Tape, Masking, Item 25, Appendix D
Thread, Cotton, Size 8/4, Item 27, Appendix D
Thread, Cotton, Size 8/7, Item 28, Appendix D
Webbing, Cotton, Type I, 1/4-In.,
Item 36, Appendix D
Webbing, Nylon, Tubular, 1/2-In., Item 44,
Appendix D

References:

DA PAM 738-750 and DA PAM 738-751
TB 43-0002-43

WARNING

Failure to detect areas of damage may result in malfunction of the parachute and injury or loss of life to personnel.

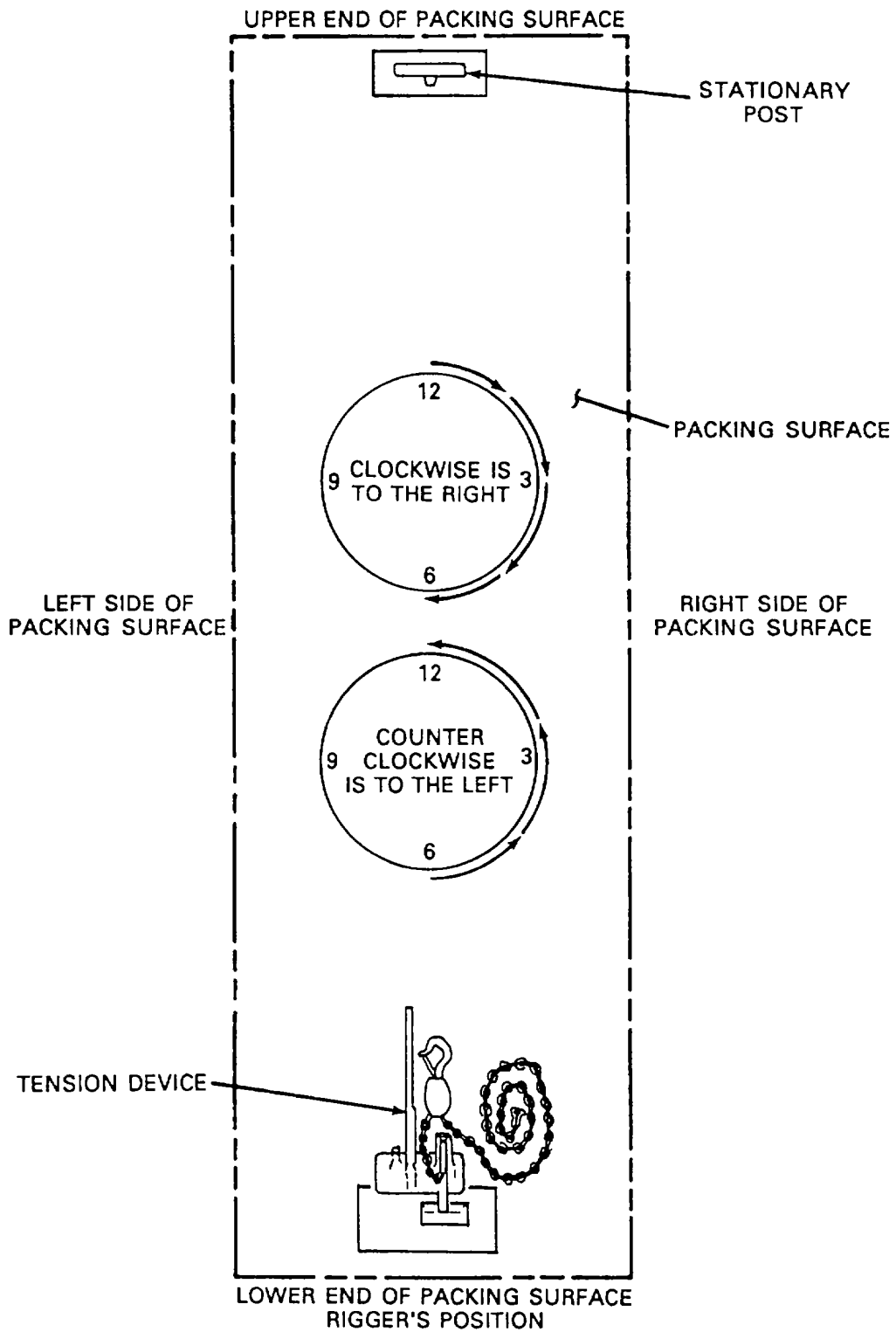
a. **Inspection.** If defects or damages are discovered during inspection of a parachute, the parachute must be processed for maintenance in accordance with TM 10-1670-201-23 and DA PAM 738-751. A rigger type inspection and a pack-in-process inspection must be performed in conjunction with each packing of a parachute (refer to paragraph 2-13).

(1) ***Modified rigger-type inspection.*** During the packing of each parachute, it must be given a visual rigger-type inspection by the packers in accordance with paragraph 2-13(2).

(2) ***Pack-in-process inspection.*** A pack-in-process inspection must be performed by a designated supervisory rigger, other than the packers, at six intervals during the packing procedure. The inspection is performed to ensure that the parachute is packed according to authorized packing procedures. (Refer to paragraph 2-13).

b. **Orientation.** Throughout this manual, all directions (right, left, upper, lower, top, bottom, clockwise, and counterclockwise) are given from the rigger's point of view, as the rigger stands looking from the parachute riser (tension device) toward the canopy vent (stationary post). See figure 2-118.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).



4838-016

Figure 2-118. Rigger's Orientation.

- (1) Top, that portion of the equipment that is farthest from the packing surface.
- (2) Bottom, that portion of the equipment that is nearest to the packing surface.

c. Preparing Parachute for Proper Layout. Prepare the parachute for proper layout by positioning the canopy in an elongated manner on a suitable packing surface, with the vent lines located next to a stationary post (figure 2-119) and the suspension risers near a tension device. Remove the reefing line cutter tags and cotter pins from the log record book pocket. Also remove the center line for Before Use inspection. To complete the proper layout, perform the following:

(1) *Removing canopy inversion.* Inspect the canopy vent lines to determine if the canopy is inverted. If the vent lines are located on the inside of the upper lateral band, the canopy is inverted. To remove the inversion, lift the canopy skirt and walk up through the canopy to the vent area. Grasp the bridle loop and pull the canopy vent down through the canopy skirt between two adjacent suspension lines (figure 2-120). On the outside of the canopy, pull the canopy vent back to the stationary post. Attach the bridle loop to the stationary post.

(2) *Locating suspension lines in proper layout.* Locate the top center gore of the canopy and divide the suspension lines into two groups, Lines 1 through 60 in the left group and lines 61 through 120 in the right group. Maintain group separation by moving from the skirt of the canopy towards the suspension risers, removing turns, tangles and twists from the two groups as follows:

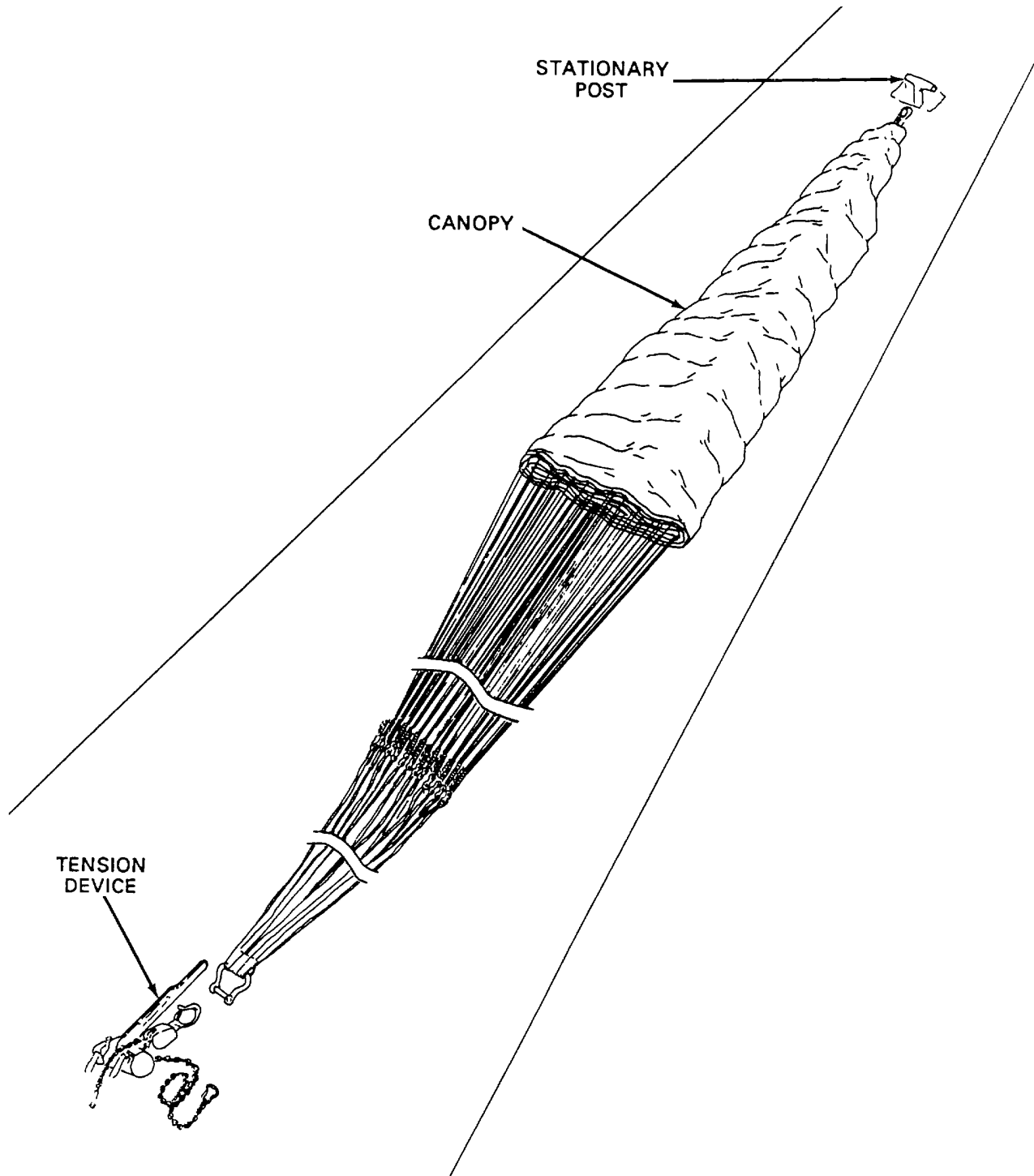
(a) *Turns.* A turn occurs when one group of suspension lines rotates around the opposite group of suspension lines. Remove the turn by rotating the suspension lines (figure 2-121) in a direction opposite to that of the turn.

(b) *Tangles.* To remove a tangle or tangles in the suspension lines, begin by separating lines 1 through 40 from the canopy skirt to the connector link assemblies. While separating the lines, place all lines which pass over the top of the group over one forearm. Grasp the four connector link assemblies which have lines 1 through 40 attached and pull the connector link assemblies and the suspension risers through the remaining suspension lines (figure 2-122). At line 41, count 40 more lines, separate the lines from the canopy skirt to the connector link assemblies. While separating the lines, place all lines which pass over the top of the group over one forearm. Grasp the four connector link assemblies which have lines 41 through 80 attached and pull the connector link assemblies and the suspension risers through the remaining suspension lines. This will give you three groups of 40 lines each.

(c) *Twists.* A twist occurs when the suspension lines in one group become improperly crossed. To remove the twists in the suspension lines, each group of ten suspension lines must be traced from the skirt of the canopy to the connector links (figure 2-123). As the lines are being traced they must be threaded onto a nylon strap, such as an A-7A or 60-inch shear strap. To trace the suspension lines and thread the connector link assemblies, three men shall be required to perform the following:

- 1 One man grasps the suspension risers at a point just below the connector link assemblies and holds the suspension lines taut. A second man, positioned at the canopy skirt, begins with line 1 and picks up the first line in each line group. As each line is picked up, it will be held in such a manner as to allow the line to be visually traced to the respective connector link assembly.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).



4838-017

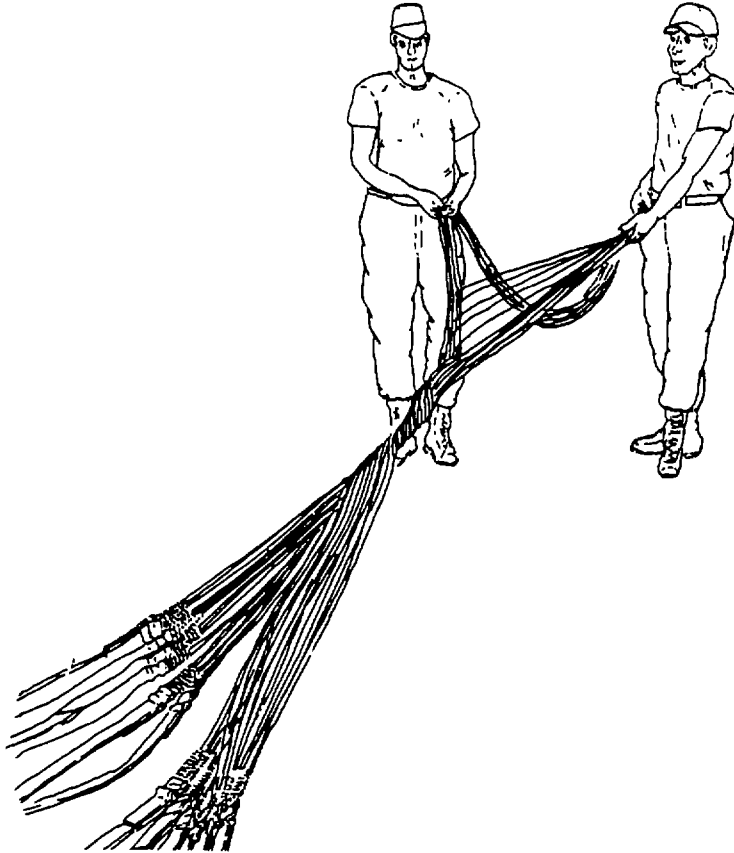
Figure 2-119. Canopy Positioned on Packing Surface.



4838-018

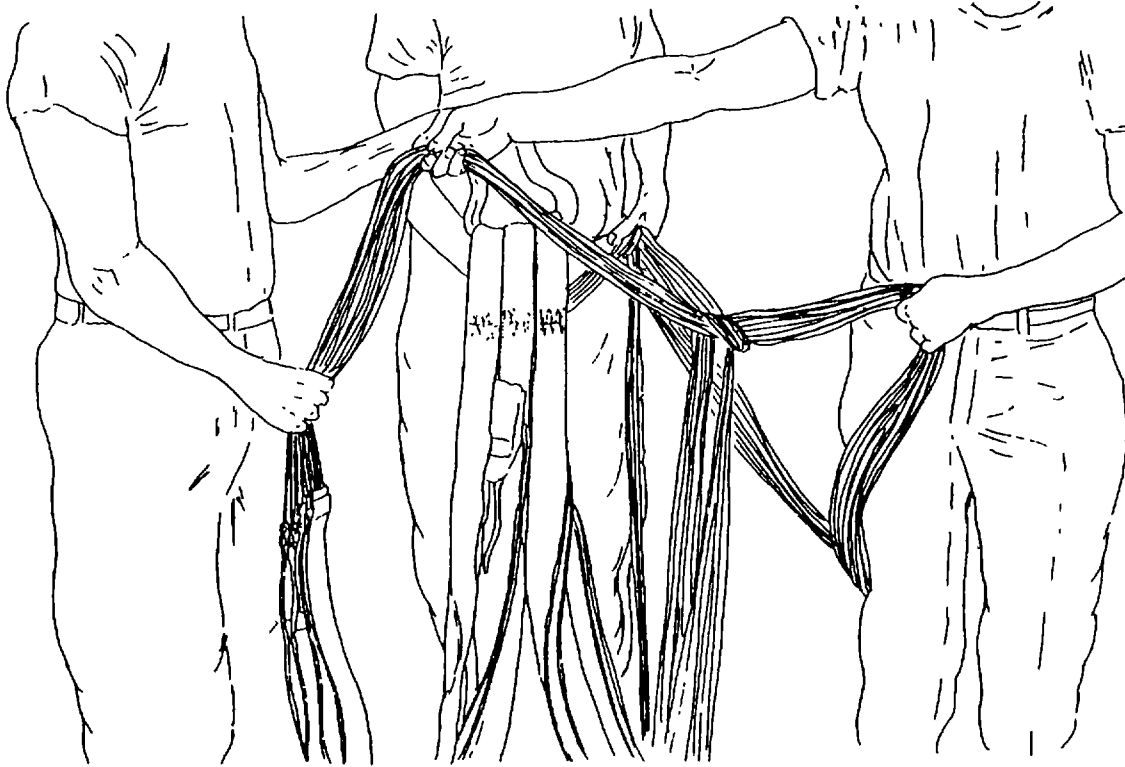
Figure 2-120. Removing Canopy Inversion.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont)



4838-019

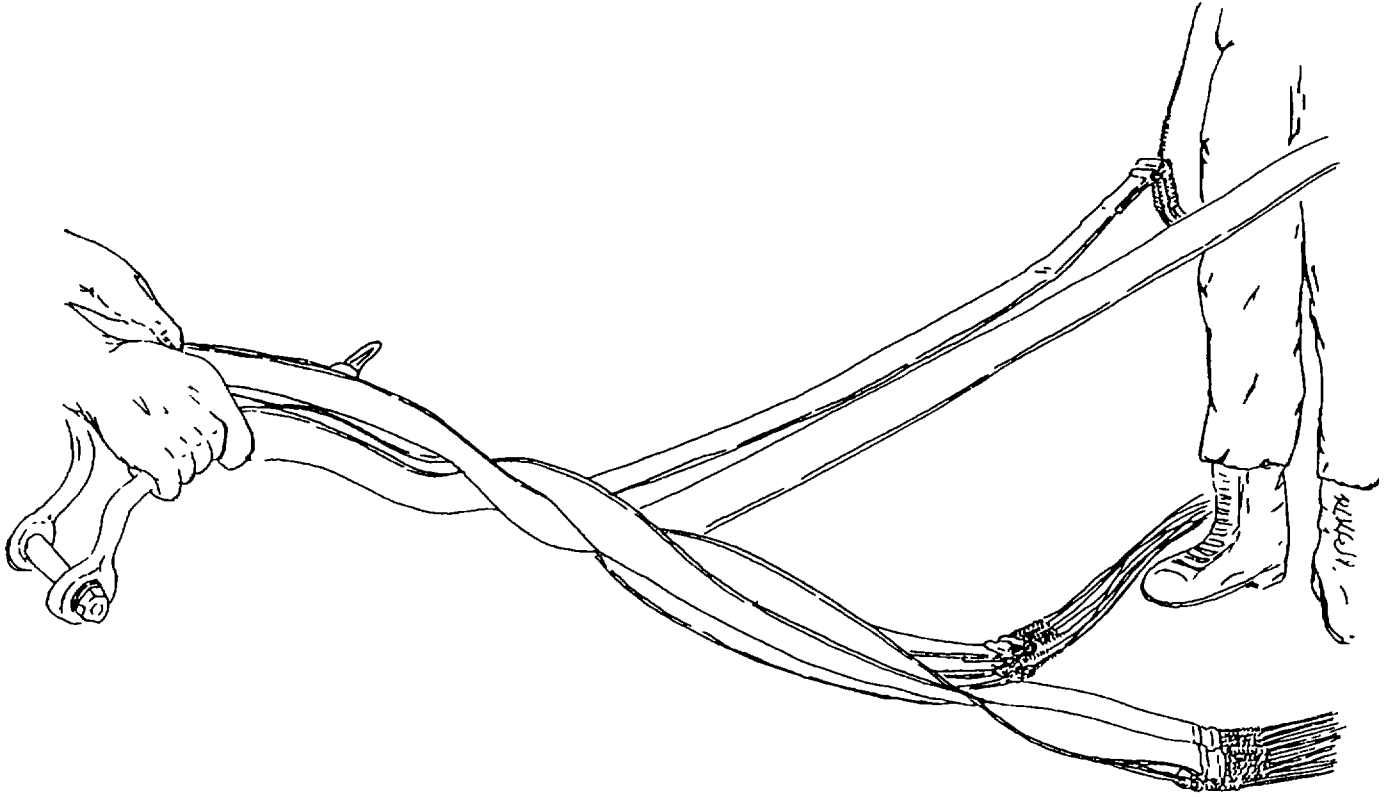
Figure 2-121. Removing Turns from Suspension Lines.



4838-020

Figure 2-122. Removing Tangles from Suspension Lines.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).

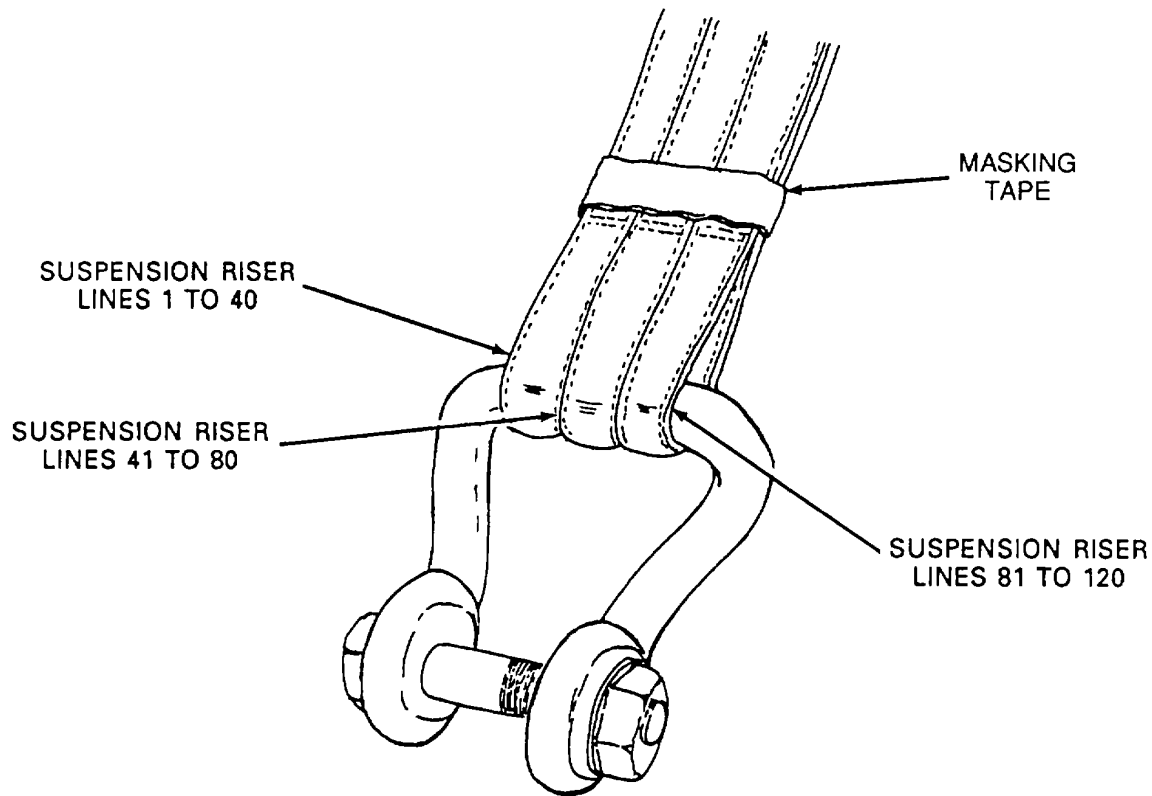


4838-021

Figure 2-123. Removing Twists from Suspension Lines.

- 2 After tracing the first line of each line group, the first man passes the respective connector link assembly containing the line to another man who threads the nylon strap through the connector link assembly. As the strap is being threaded through the connector link assembly, the man positioned at the canopy skirt grasps all suspension lines which are attached to the connector link assembly and throws the line group over his shoulder. This procedure shall be repeated for each succeeding line group. Insure the connector link assemblies are threaded on the strap in a manner which positions the odd numbered suspension lines to the left side of the strap. Secure the ends of the strap.

(3) *Riser layout.* Adapting the procedures above for locating the suspension lines in the proper layout, remove all turns, tangles, and twists from the suspension risers. Arrange the three suspension clevis attaching loops at the ends of the suspension risers in order, with suspension riser of lines 1 through 40 to the left, suspension riser of lines 41 through 80 in the center and suspension riser of lines 81 through 120 to the right. Install a large suspension clevis through the riser attaching loops to maintain proper layout of the risers (figure 2-124).



4838-022

Figure 2-124. Riser Layout.

d. Packing the rc-11C Parachute. After preparing the parachute for proper layout (see para. c.), continue packing the G-11C parachute as follows:

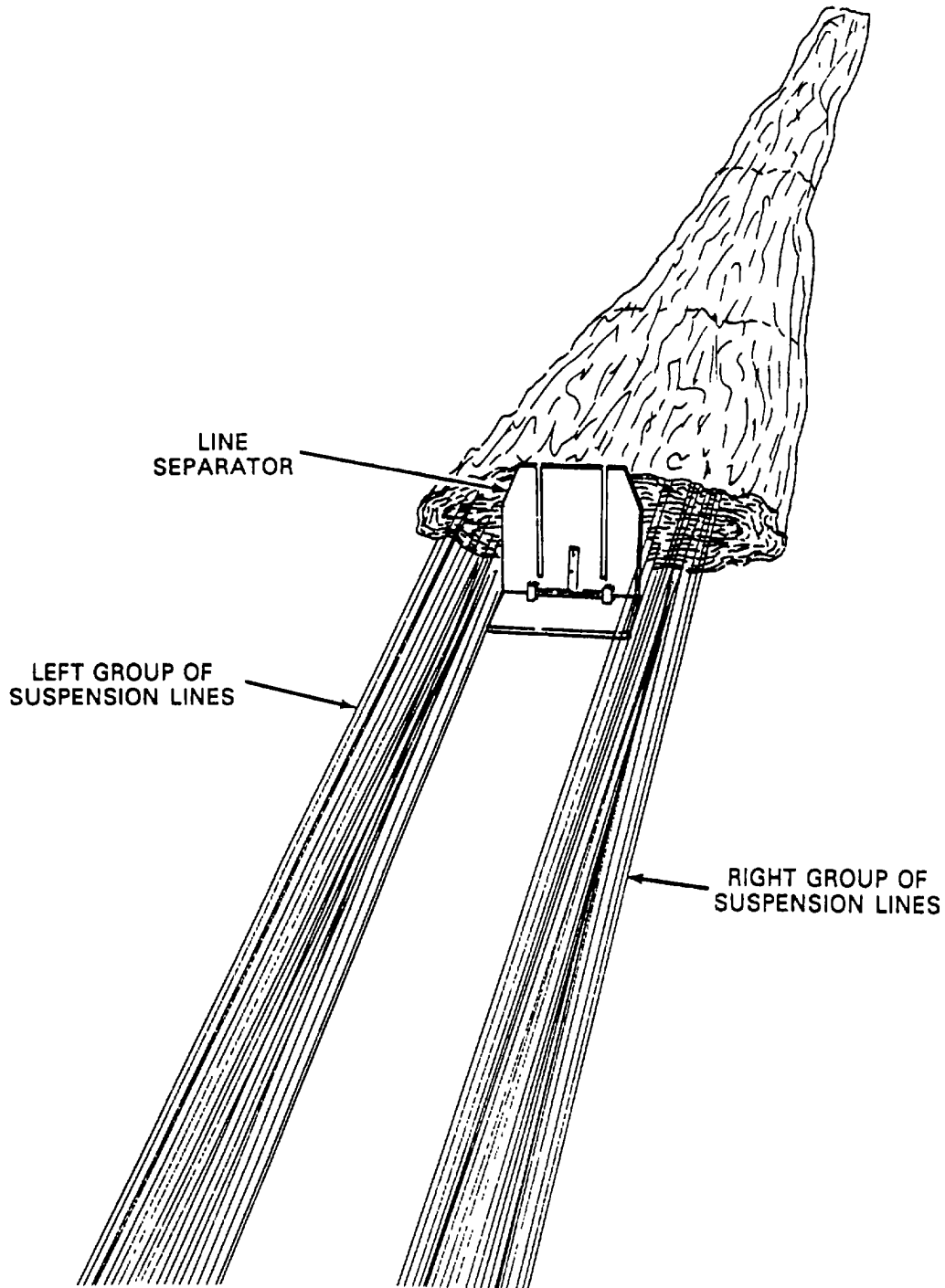
(1) *Group separation of suspension lines.*

- (a) Beginning with the connector link assembly to which suspension line number 1 is attached, count six connector link assemblies.
- (b) Grasp all suspension lines attached to the six connector link assemblies and working to the canopy skirt, separate these lines from the remaining suspension lines.
- (c) Position a large line separator between the two groups of lines at the canopy skirt to maintain group separation (figure 2-125).

(2) *Confirming proper layout.* Perform a four-line check to confirm that the suspension lines are in proper layout and a three-line check to confirm that the suspension risers are in proper layout. Proceed as follows:

- (a) One packer will take a position between the separated suspension lines near the skirt of the canopy, facing the suspension risers.
- (b) Place lines 1 and 60 in the right hand and lines 61 and 120 in the left hand. Hold these suspension lines in a manner that will keep the lines separated and identifiable in each hand.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).



4838-119

Figure 2-125. Separation of Suspension Lines into Two Groups.

- (c) Walking slowly, trace the 4 lines to the connector link assemblies. Line 1 should be at the top of the first connector link on the left (rigger view), line 60 should be at the bottom of the sixth connector link, line 61 should be at the top of the seventh connector link and line 120 should be on the bottom of the twelfth connector link (figure 2-126).
- (d) Below the connector link assemblies, pick up the first suspension riser on the left (rigger view) attached to the first connector link, the fifth suspension riser and the ninth suspension riser.
- (e) Slowly trace these suspension risers toward the attaching loop end of the suspension risers (figure 2-127).
- (f) The three suspension risers should be on top of each riser group.
- (g) Using masking tape, secure the risers together at a point immediately above the attaching loops.

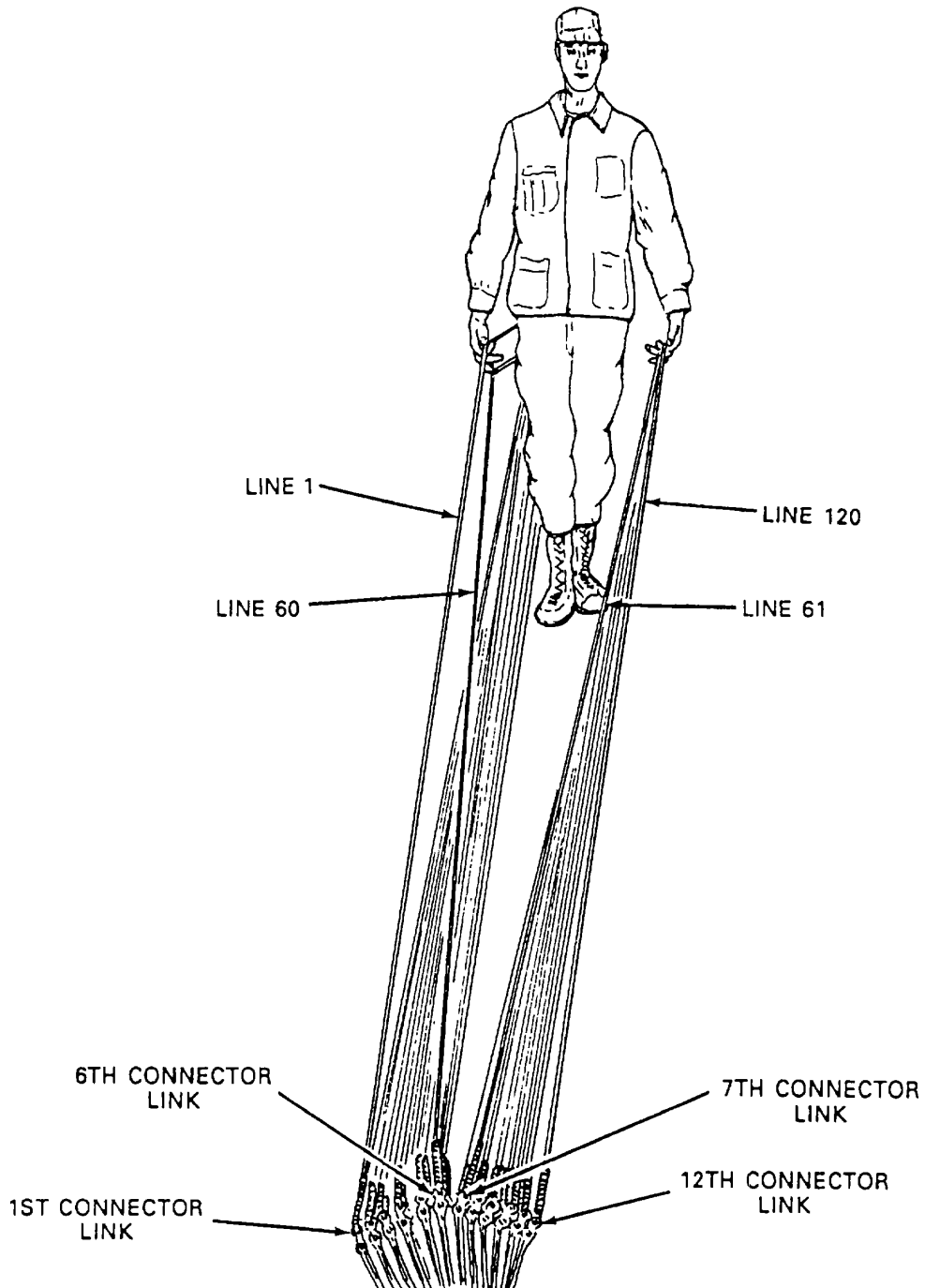
NOTE

Dress the vent reinforcement (upper lateral band) to center the canopy vent lines.

(3) Attaching the center line.

- (a) Position a large pedestal fan about 10 feet below and 6 feet to the right of the canopy skirt. Adjust the fan so the canopy will be partially inflated.
- (b) Walk up through the inside of the canopy and pull the center line to the canopy vent.
- (c) Pass the center line to another packer on the outside of the canopy.
- (d) Secure the center line temporarily to the bridle loop with a length of 1/4-inch wide cotton webbing.
- (e) Attach the bridle loop to the stationary post.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).



4838-120

Figure 2-126. Performing a Four-Line Check to Confirm Proper Layout.

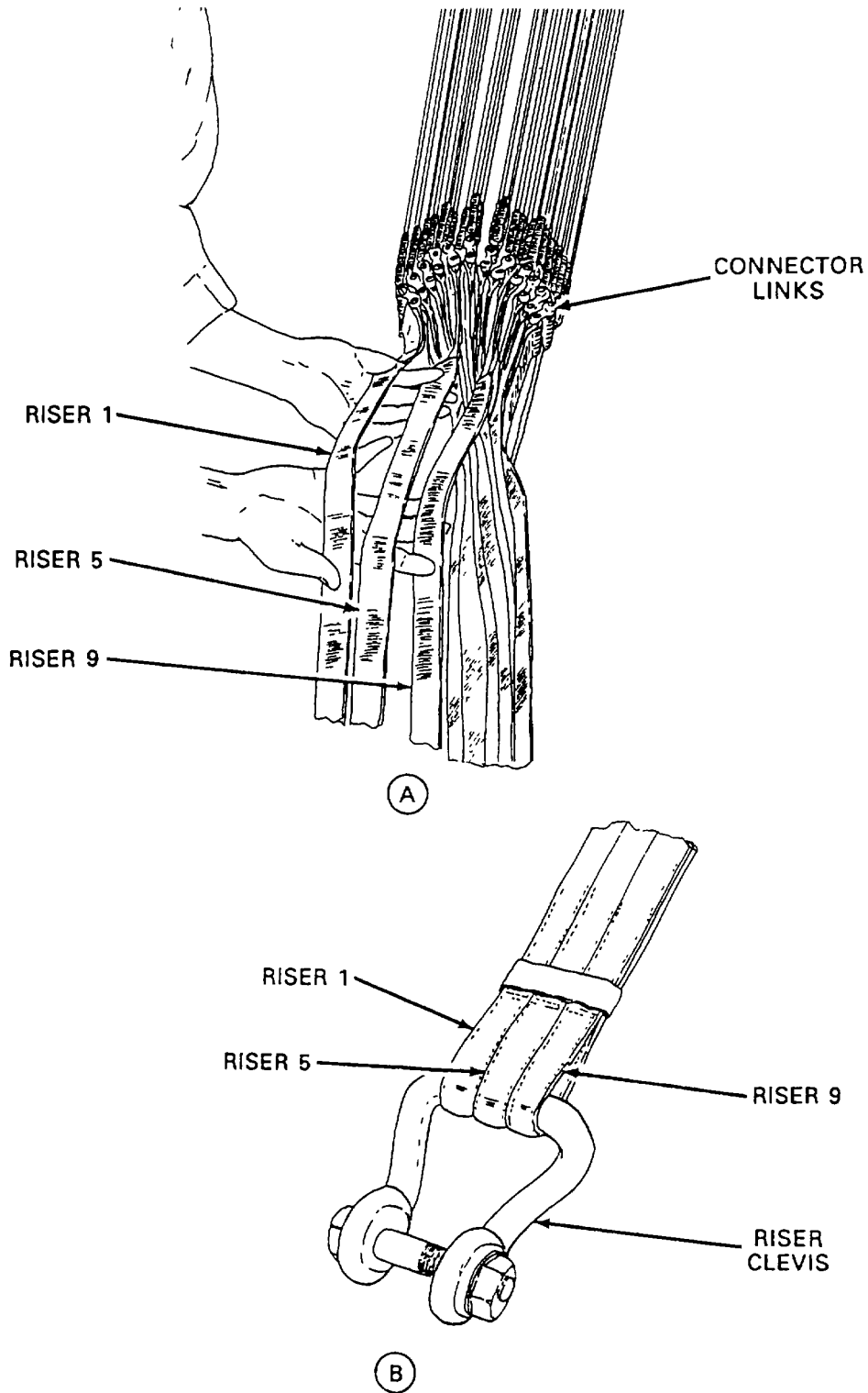
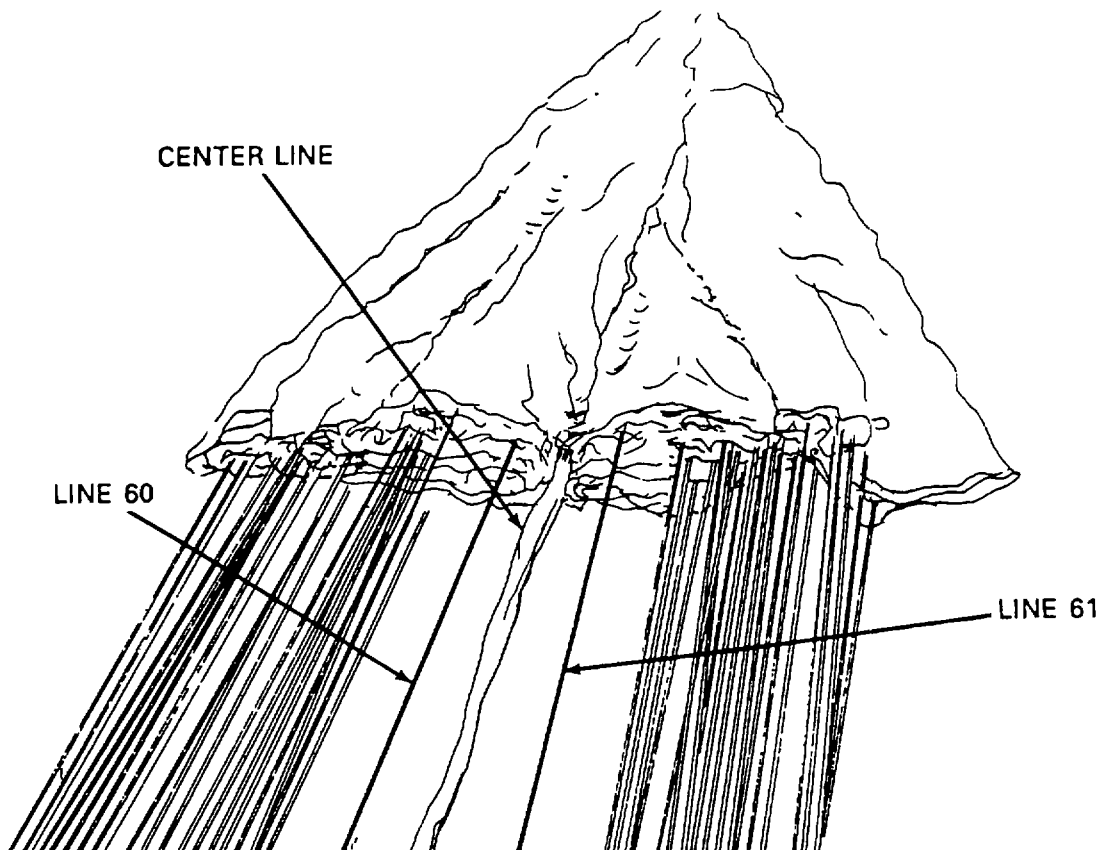


Figure 2-127. Tracing Suspension Risers.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).

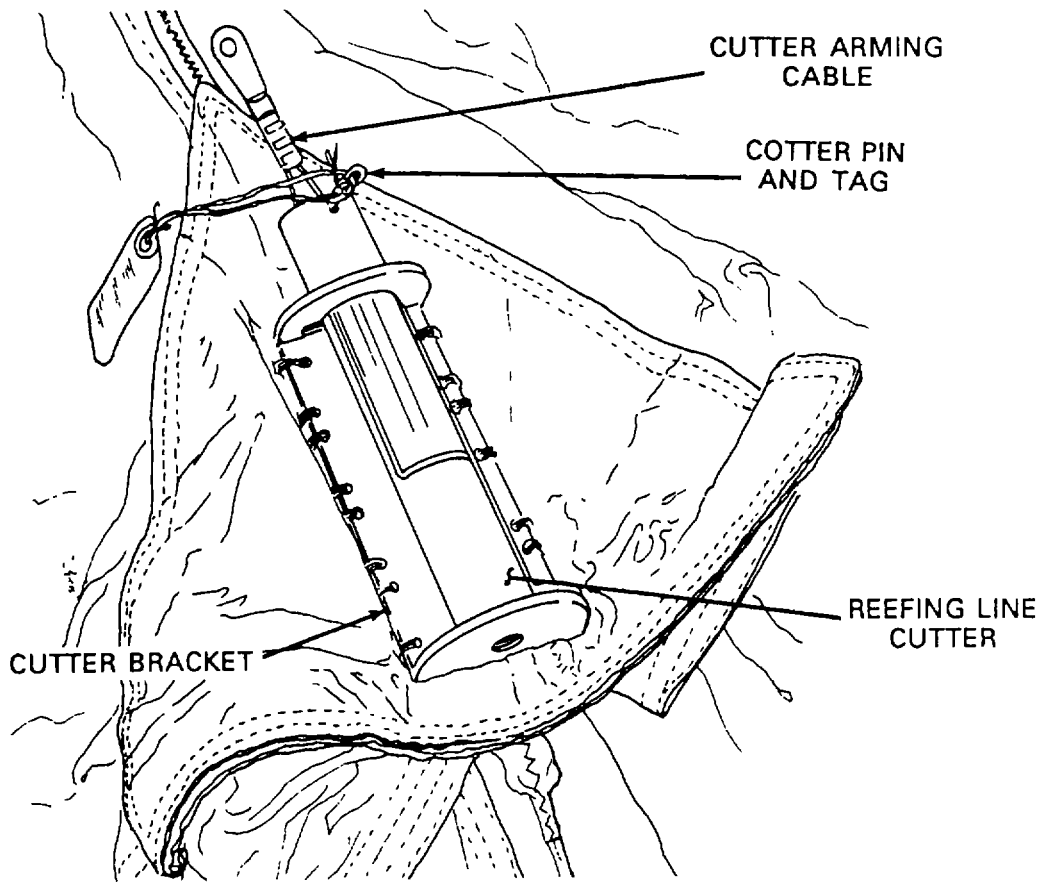
- (f) Place the free end of the center line between lines 60 and 61 at the canopy skirt (figure 2-128).



4838-122

Figure 2-128. Placing the Center Line.

- (4) *Installing MLU58/B reefing line cutter.* Install a MLU58/B reefing line cutter at lines 61 and 1 as follows:
- Remove 1/4-inch screw and insert the cutter into the upper end of the cutter bracket (figure 2-129). Insure the cutter arming cable is pointed toward the canopy vent.
 - Align the screw that protrudes from the side of the cutter with the slot in the upper end of the cutter bracket.
 - Slide the cutter into the cutter bracket until the cutter lower end is flush against the inside bottom end of the bracket.
 - Turn the cutter one-quarter turn to allow the screw, which protrudes from the cutter side, to fit into the indentation location in the center of the bracket.

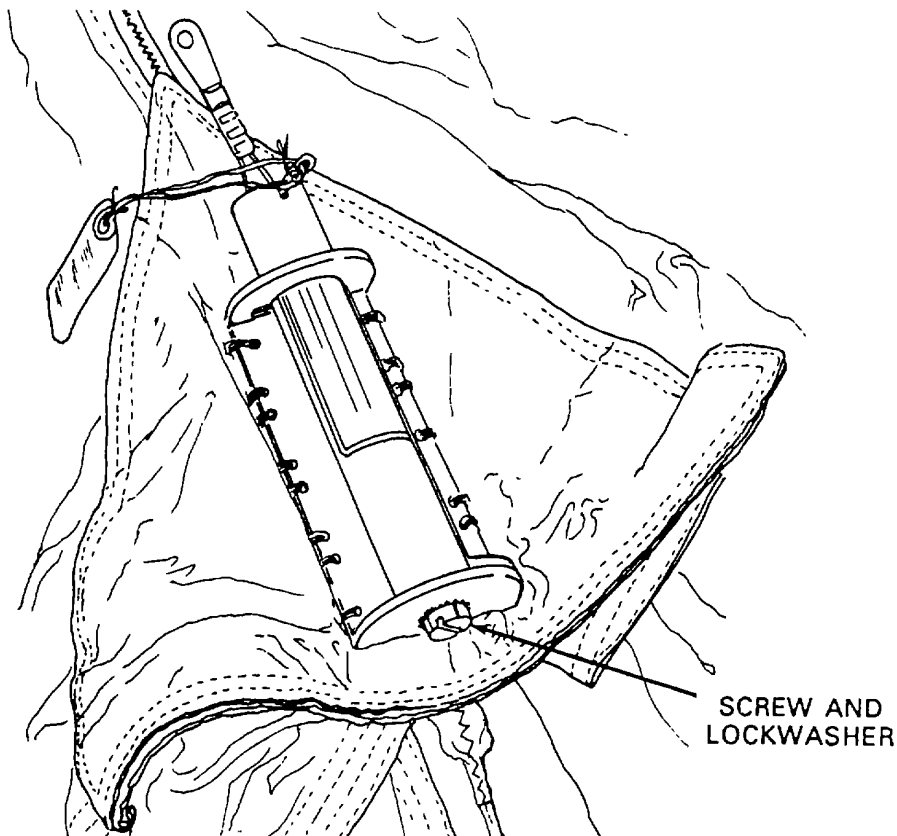


4838-123

Figure 2-129. MLU58/B Reefing Line Cutter Positioned in Cutter Bracket.

2-18. **Packing 100-Foot Cargo Parachute, Model G-11C (cont).**

- (e) Insert the 1/4-inch screw with serrated lock washer through the hole on the bottom of the bracket, into the threaded hole in the bottom end of the cutter and tighten the screw finger tight (figure 2-130).



4838-124

Figure 2-130. Reefing Line Cutter Mounted in Cutter Bracket.

NOTE

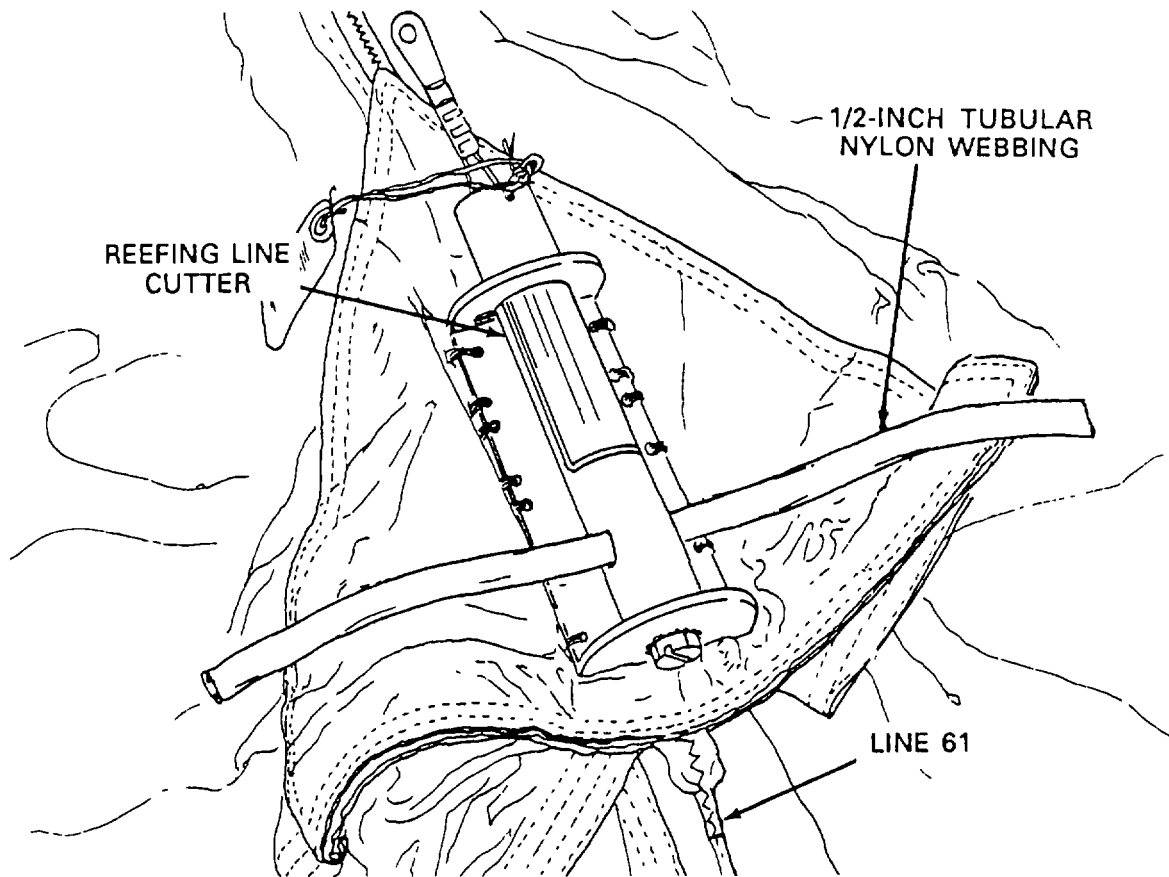
Do not use any type of tool to tighten the reefing line cutter bottom screw.

- (5) *Threading the reefing line cutter at line 61.*

NOTE

The G-1 1 C uses two 1 00-foot type IV reefing lines. The reefing lines will be fabricated in accordance with the instructions in Appendix E of this manual.

- (a) Cut two 18-inch lengths of 1/2-inch tubular nylon webbing to be used as reefing line securing ties.
- (b) Rotate the reefing line cutter at line 61 upward and pass one end of a securing tie from left to right through the reefing line cutter hole. Center the tie with an equal amount of webbing on each side of the reefing line cutter (figure 2-131).



4838-125

Figure 2-131. Reefing Line Securing Tie Threaded through Cutter at Line 61.

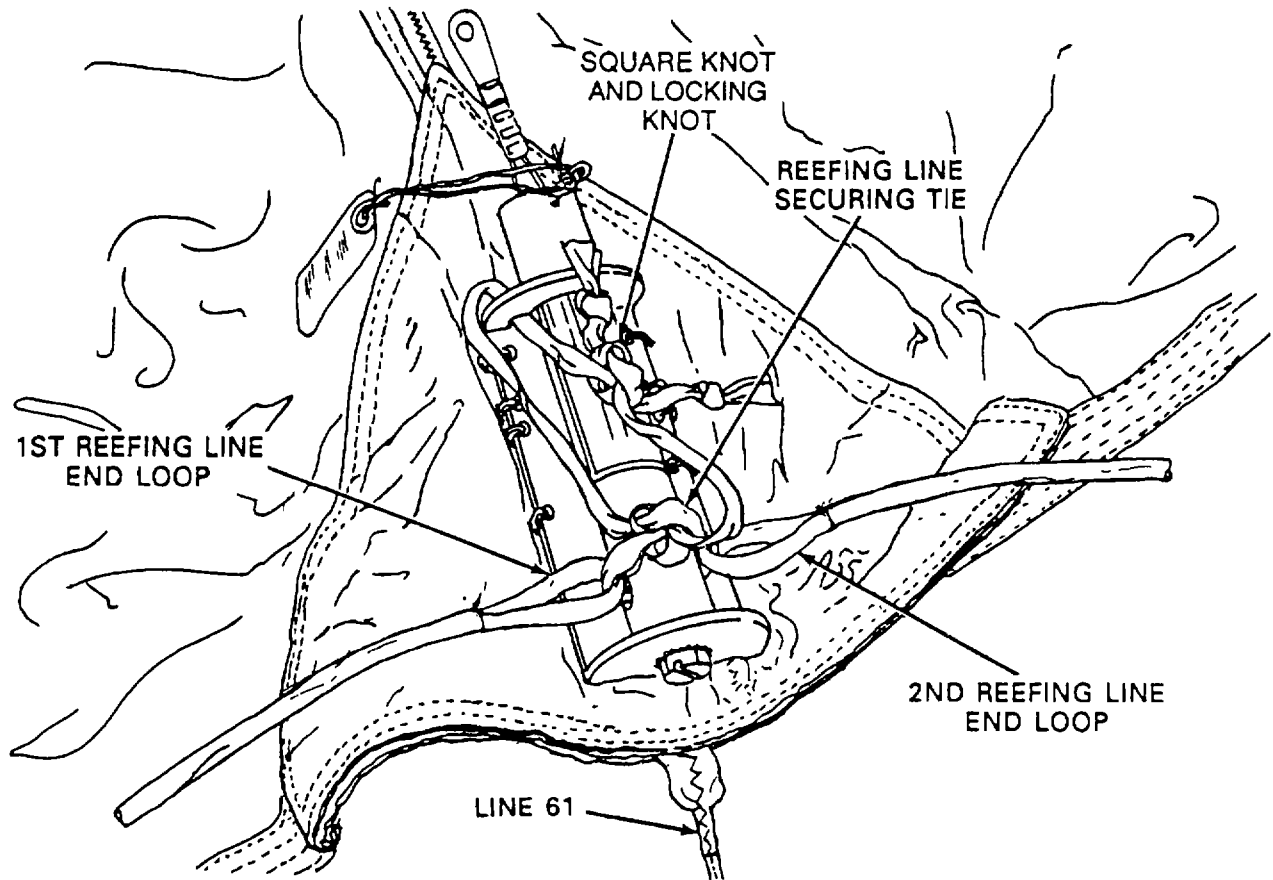
- (c) Pass the running end of the webbing on the left side of the cutter through the end loop of one of the 10-foot reefing lines. Pass the running end of the webbing on the right side of the cutter through the second reefing line end loop.
- (d) Secure the ends of the reefing line securing tie together over the reefing line cutter with a square knot. Route one running end of the tie up through the side screw slot of the reefing line cutter bracket. Secure the running ends together with a square knot and locking knot with an overhand knot in each running end (figure 2-132). Trim ends to two inches.

NOTE

A four-line check for proper layout shall be performed before applying tension.

(6) *Applying tension.* Attach the nylon webbing strap routed through the connector links to a tension device and apply tension.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).



4838-126

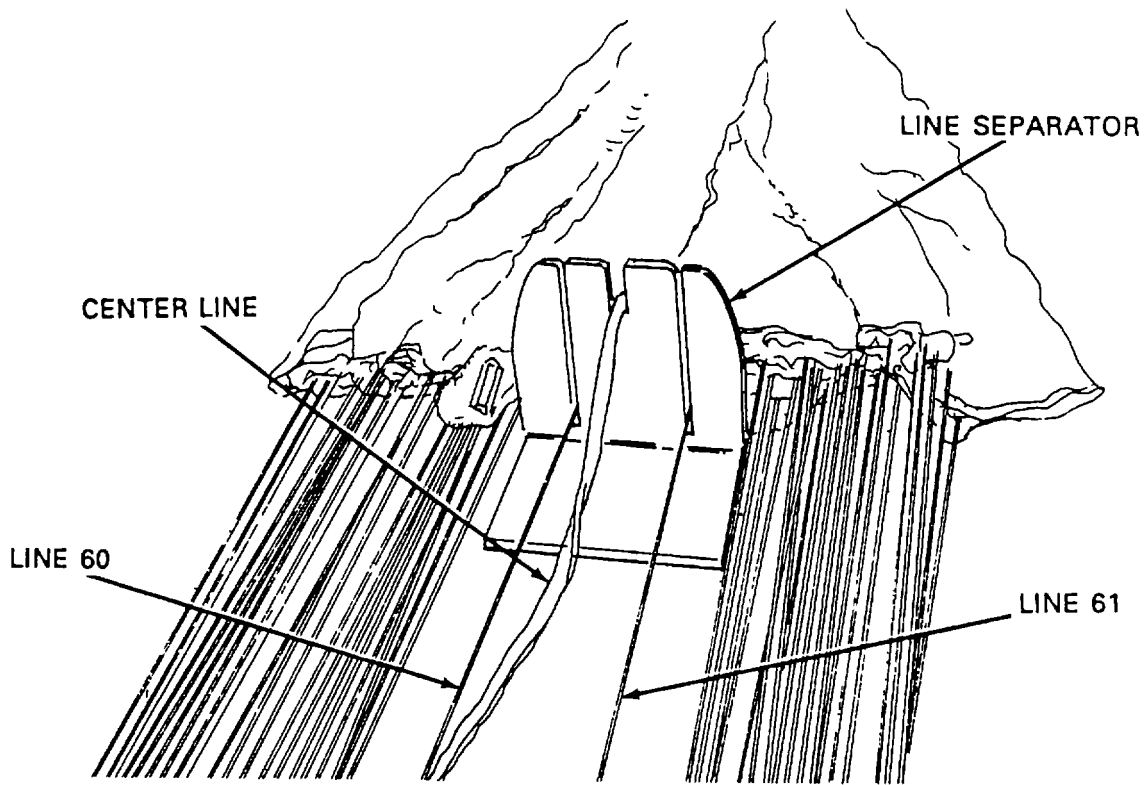
Figure 2-132. Reefing Line Secured to Cutter Over Line 61.

NOTE

A tension jack, chain hoist, power winch, or a vehicle may be used as a tension device when applying tension to the parachute.

(7) *Folding the gores and reefing the canopy.* Fold the canopy gores into groups of 60 gores each and thread the reefing line through the canopy reefing rings as follows:

- (a) At a suitable point below the canopy skirt (lower lateral band), position a large line separator between the two groups of suspension lines. Insert line 60 into the left slot of the line separator and line 61 into the right slot (figure 2-133).

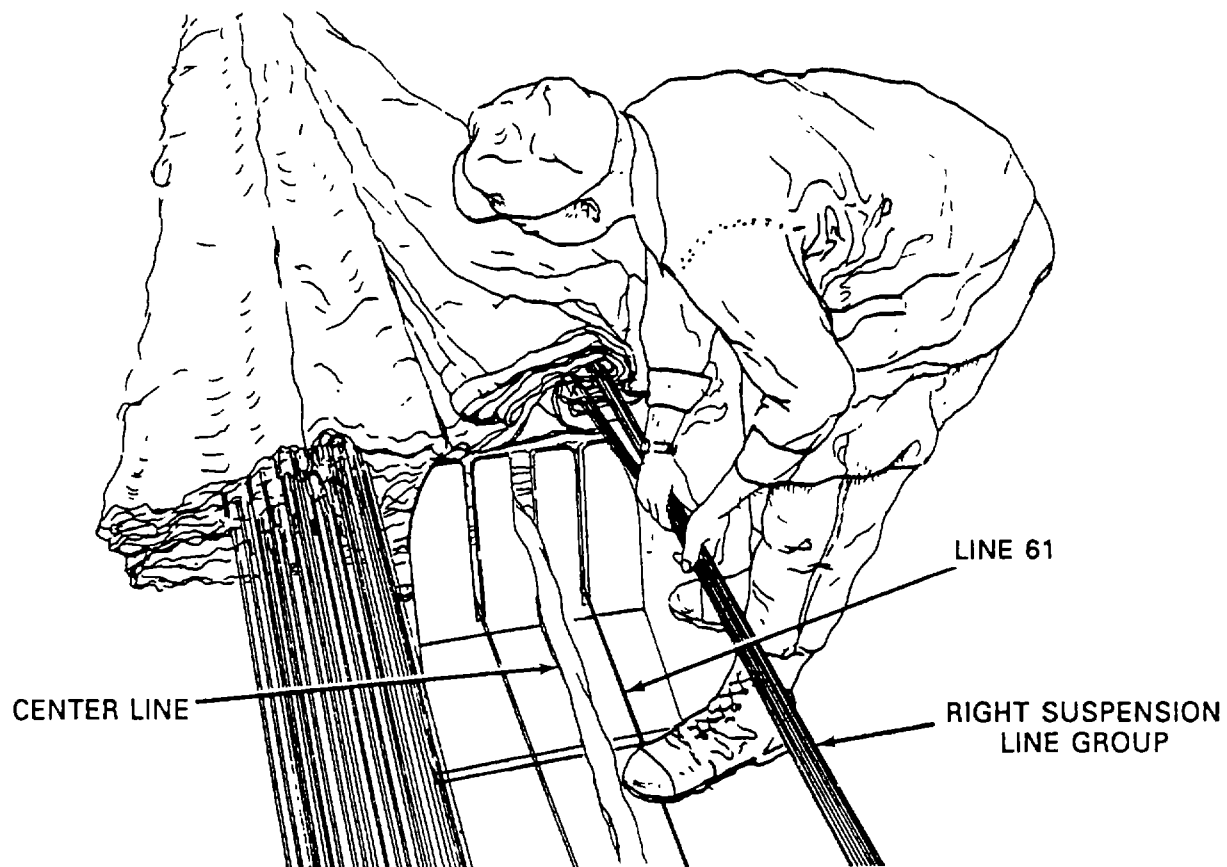


4838-127

Figure 2-133. Suspension Lines 60 and 61 in Place in Line Separator.

2-18. **Packing 100-Foot Cargo Parachute, Model G-11C (cont).**

- (b) While holding line 61 in position in the line separator, pick up the right suspension line group (figure 2-134) and throw the right group of gores and lines over the left group of gores and lines.



4838-128

Figure 2-134. Preparing to Throw Right Group of Gores and Lines.

- (c) Position a large pedestal fan at a point of 10 feet below the canopy skirt. Position the fan so the airstream will partially inflate the canopy.

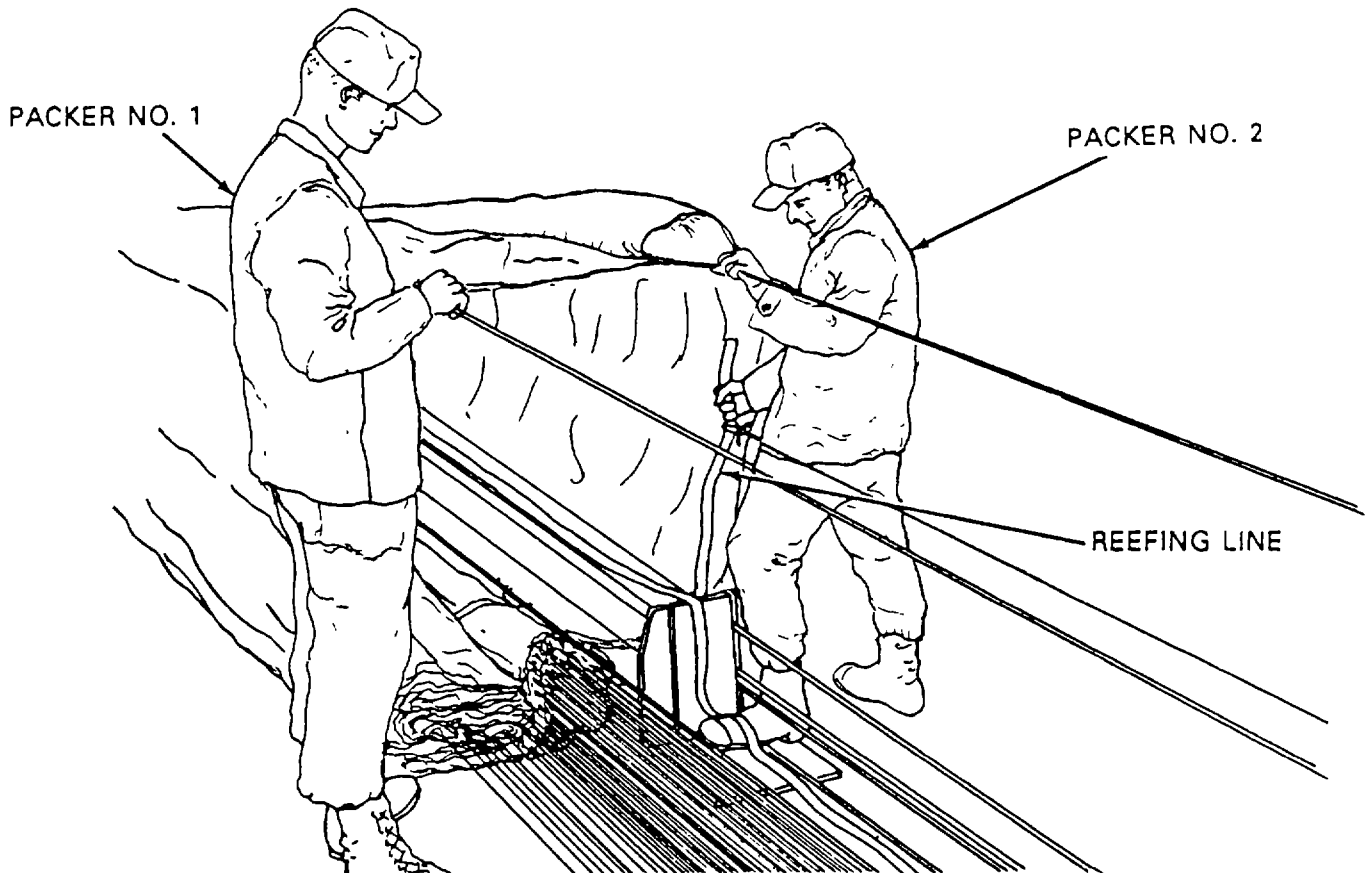
CAUTION

Failure to evenly distribute the reefing line between each reefing ring will cause a delay in the parachute deployment, an uneven inflation of the canopy or result in a malfunction.

NOTE

A packer will take a position near the apex of the canopy and observe the canopy during the reefing process. If canopy damage is observed the reefing process will be stopped.

- (d) Beginning with line 62, one packer passes each line in the right group to a second packer who threads the right running end of the reefing line through each reefing ring. After each reefing ring is threaded, the second packer will use a leg to guide the suspension line into the right slot of the line separator. Continue the gore folding process until lines 61 through 120 are reefed and in the right slot of the line separator and the gores between each line are folded (figure 2-135).

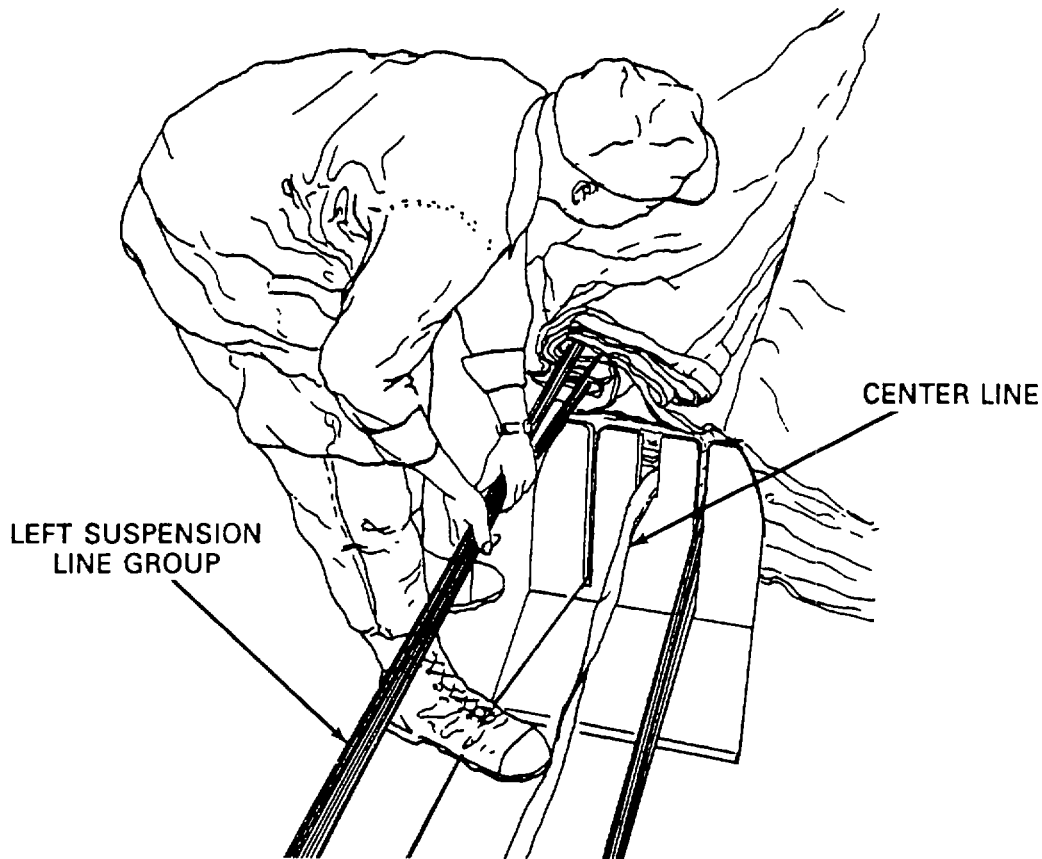


4838-129

Figure 2-135. Reefing and Folding the Canopy Right Gore Group.

2-18. **Packing 100-Foot Cargo Parachute, Model G-11C (cont).**

- (e) While holding line 60 in position in the line separator, pick up the left suspension line group (figure 2-136) and throw the left group of gores and lines over the folded right group of gores and lines.

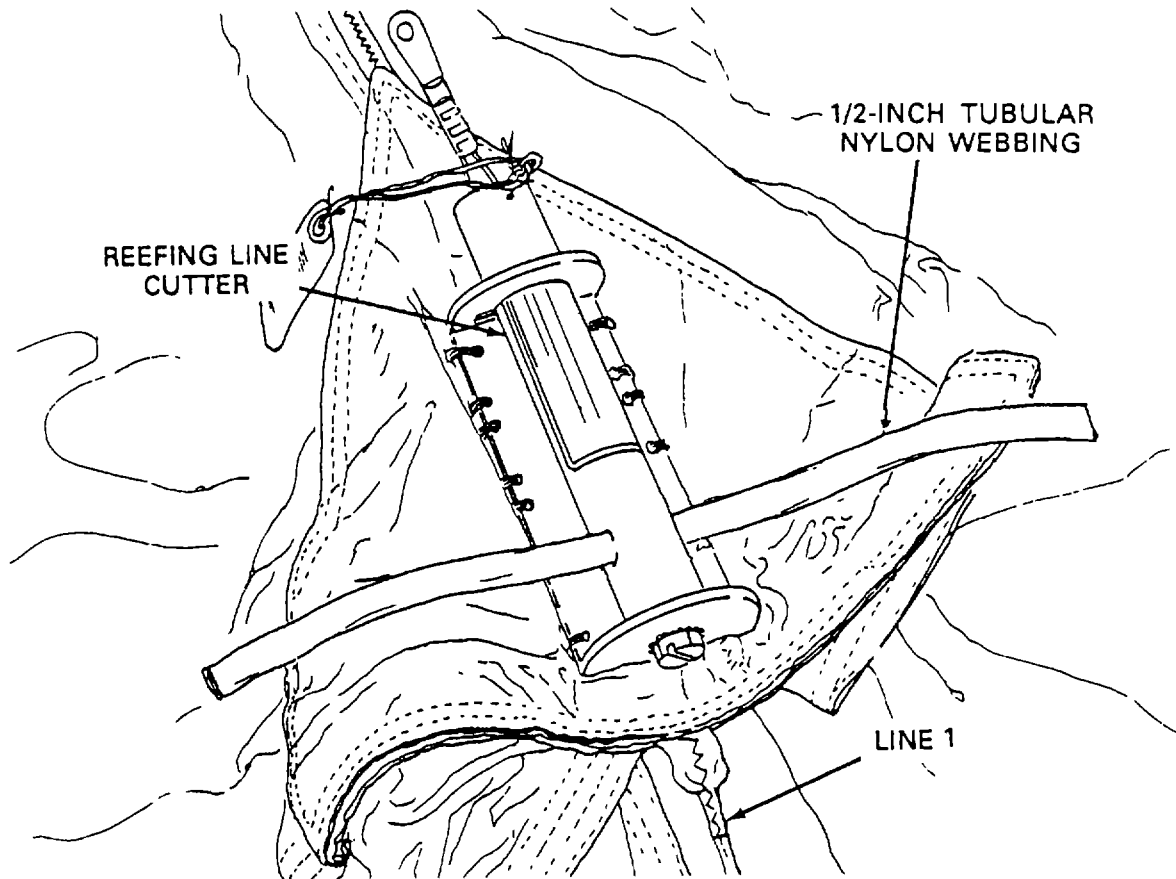


4838-130

Figure 2-136. Preparing to Throw the Left Group of Gores and Lines.

- (f) Beginning with line 59, one packer passes each line in the left group to a second packer who feeds the line and reefing ring to a third packer. The third packer threads the left running end of the reefing line through each reefing ring. After each reefing ring is threaded, the second packer will use a leg to guide the suspension line into the left slot of the line separator. Continue the gore folding process until lines 60 through 1 are reefed and in the left slot of the line separator and the gores between each line are folded.

- (g) From left to right, pass one end of the second reefing line securing tie through the hole in the reefing line cutter at line 1 and center the webbing length (figure 137). Figure 2-137.

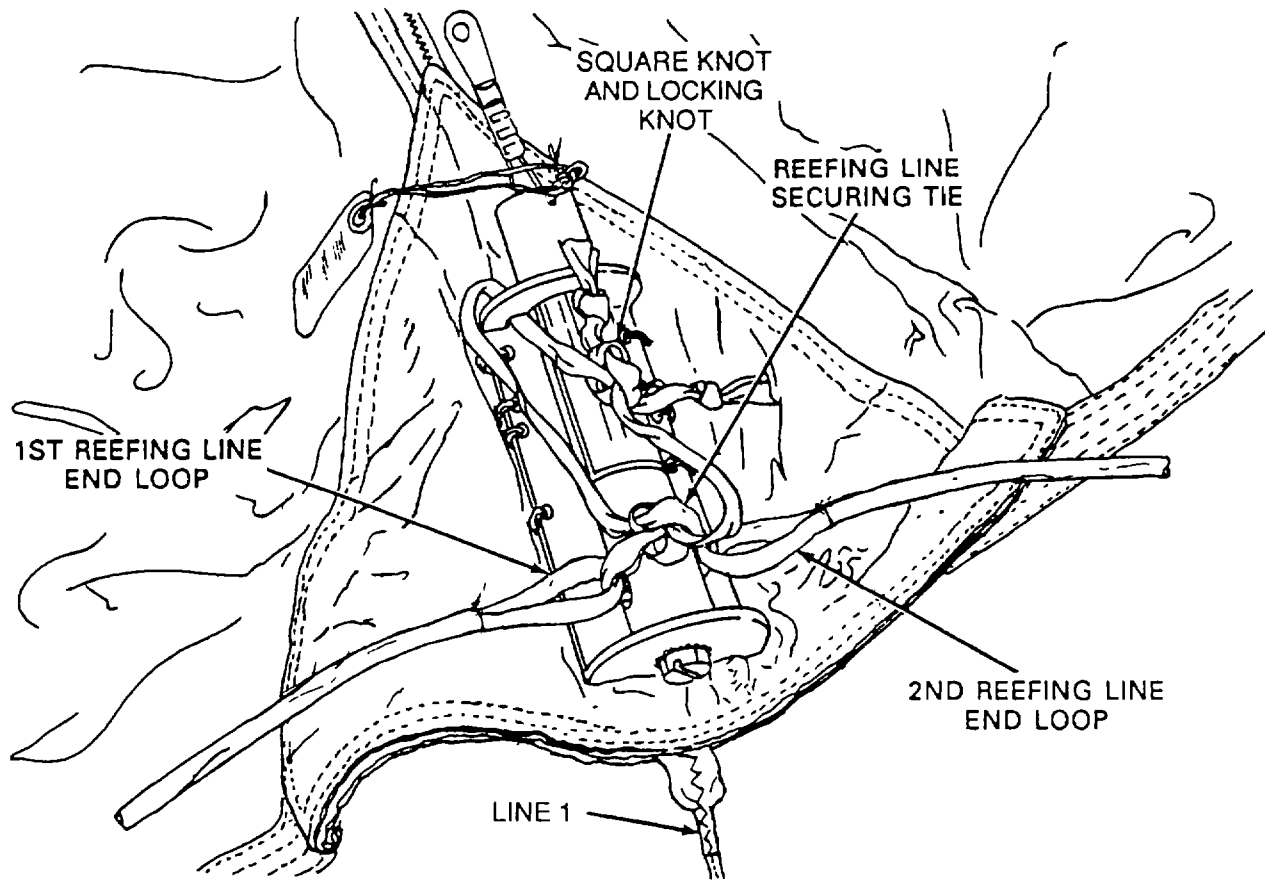


4838-131

Figure 2-137. Reefing Line Securing Tie Threaded Through Cutter at Line 1.

- (h) Route the running end of the webbing on the left side of the reefing line cutter through the end loop of the reefing line of the left gore group. Route the running end of the webbing on the right side of the reefing line cutter through the end loop of the reefing line of the right gore group.
- (i) Secure the ends of the securing tie together over the reefing line cutter with a square knot. Route one running end of the tie up through the side screw slot of the cutter bracket. Secure the running ends together with a square knot and a locking knot with an overhand knot in each running end (figure 2-138). Trim ends to two inches.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).



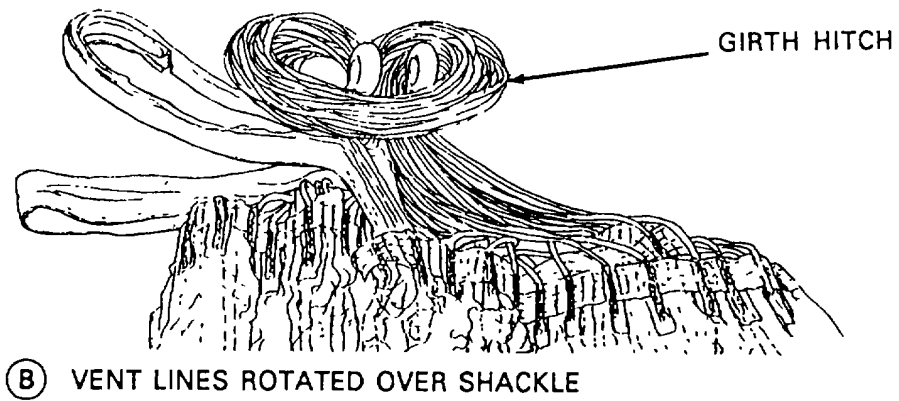
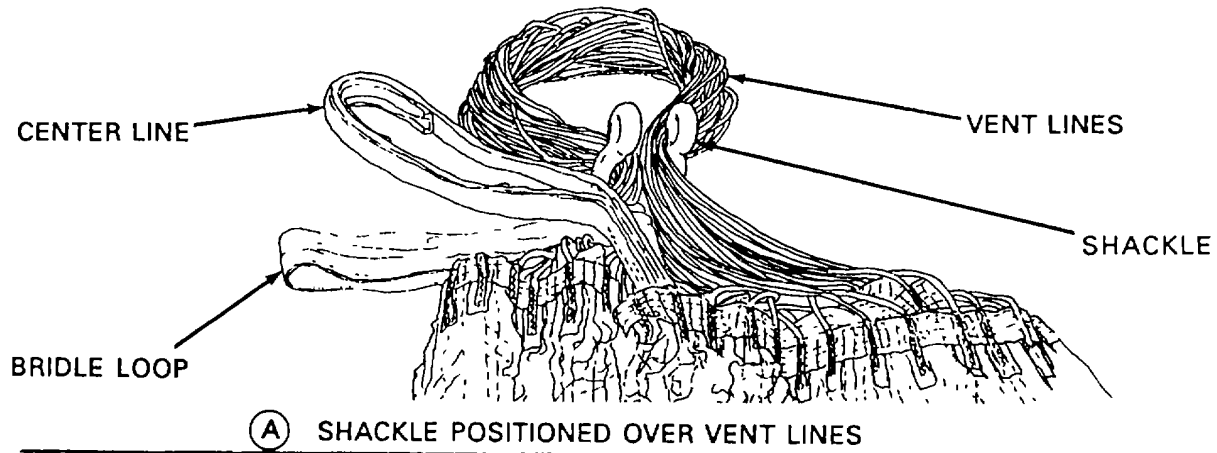
4838-132

Figure 2-138. Reefing Line Secured to Cutter Over Line 1.

CAUTION

When installing the center line, insure that it is not entangled or wrapped around the suspension lines or suspension risers.

- (8) Completing center line installation.
 - (a) Disconnect the bridle loop from the stationary post and dress the upper lateral band making sure the vent lines are centered and separated.
 - (b) Grasp the vent lines, with the bridle loop positioned to one side, and place the screw pin shackle over the vent lines (A, figure 2-139).
 - (c) Rotate the vent lines down over the shackle legs to form a girth hitch (B, figure 2-139).



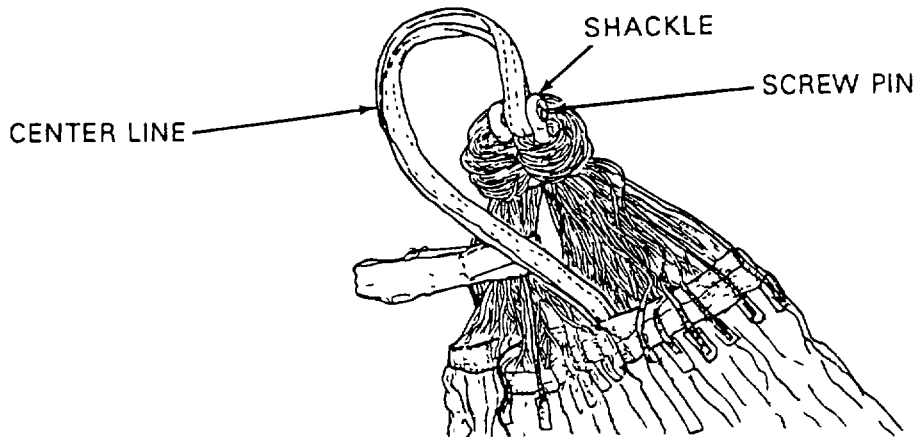
4838-134

Figure 2-139. Vent Lines Secured to Shackle.

- (d) Disconnect the center line from the bridle loop. While installing the screw pin, place the end loop of the center line on the screw pin.

2-18. **Packing 100-Foot Cargo Parachute, Model G-11C (cont).**

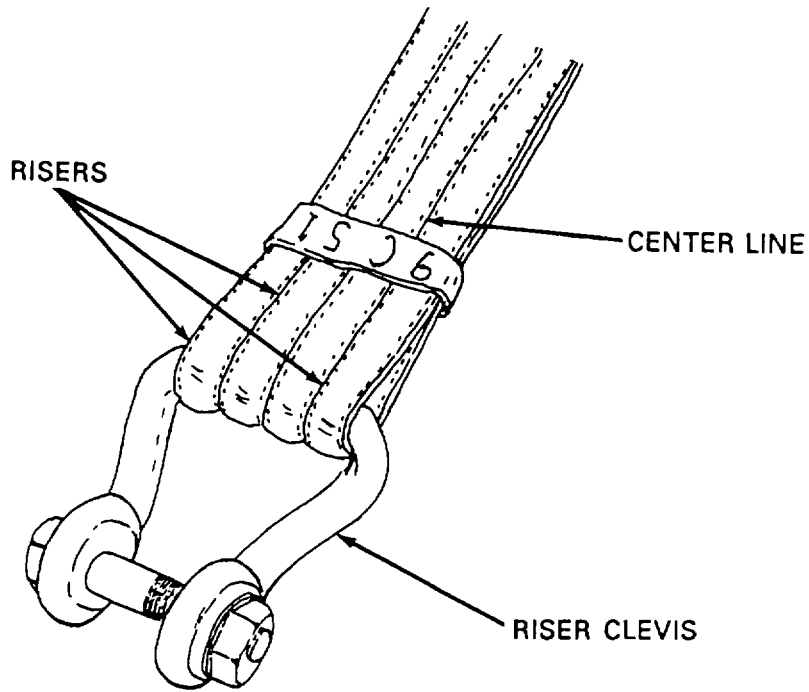
- (e) Tighten the screw pin and pull the vent line loop tight (figure 2-140).



4838-135

Figure 2-140. Screw Pin with Center Line Installed in Shackle.

- (f) Tape the shackle, vent line loop and center line loop so that no metal parts, splice ends or rough webbing ends are exposed.
- (g) One packer will pull the center line free end toward the risers, one of the other packers will guide the canopy vent, keeping it in the air channel between lines 1 and 120, insuring that the canopy material does not become disarranged while the canopy vent is being pulled toward the canopy skirt.
- (h) Remove one suspension riser from the large suspension clevis and place the center line free end loop on the clevis. Using masking tape, secure the risers and center line together at a point immediately above the attaching loops (figure 2-141).



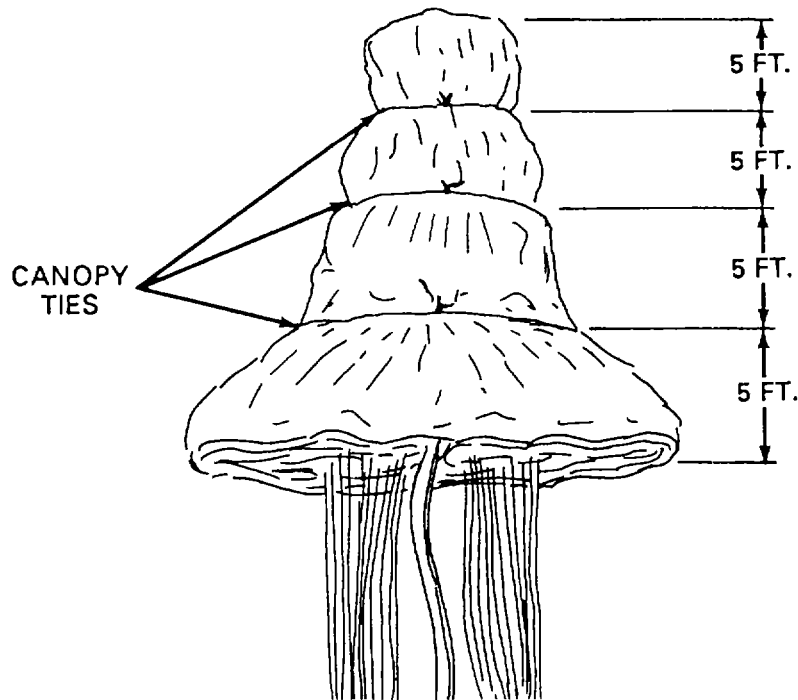
4838-136

Figure 2-141. Risers and Center Line Secured Above Riser Clevis.

2-18. **Packing 100-Foot Cargo Parachute, Model G-11C (cont).**

(9) *Tying the canopy assembly.* To tie the canopy assembly, release tension, remove the tension device and tie the canopy assembly as follows:

(a) *Folded canopy.* Beginning at a point 5-feet above the skirt band (lower lateral band) and at 5-foot intervals thereafter, install the canopy ties. Tie the canopy folds using one turn single, ticket No. 8/4 cotton orange thread at each point. Secure each tie with a surgeon's knot and locking knot (figure 2-142). Trim tie ends to 2 inches.

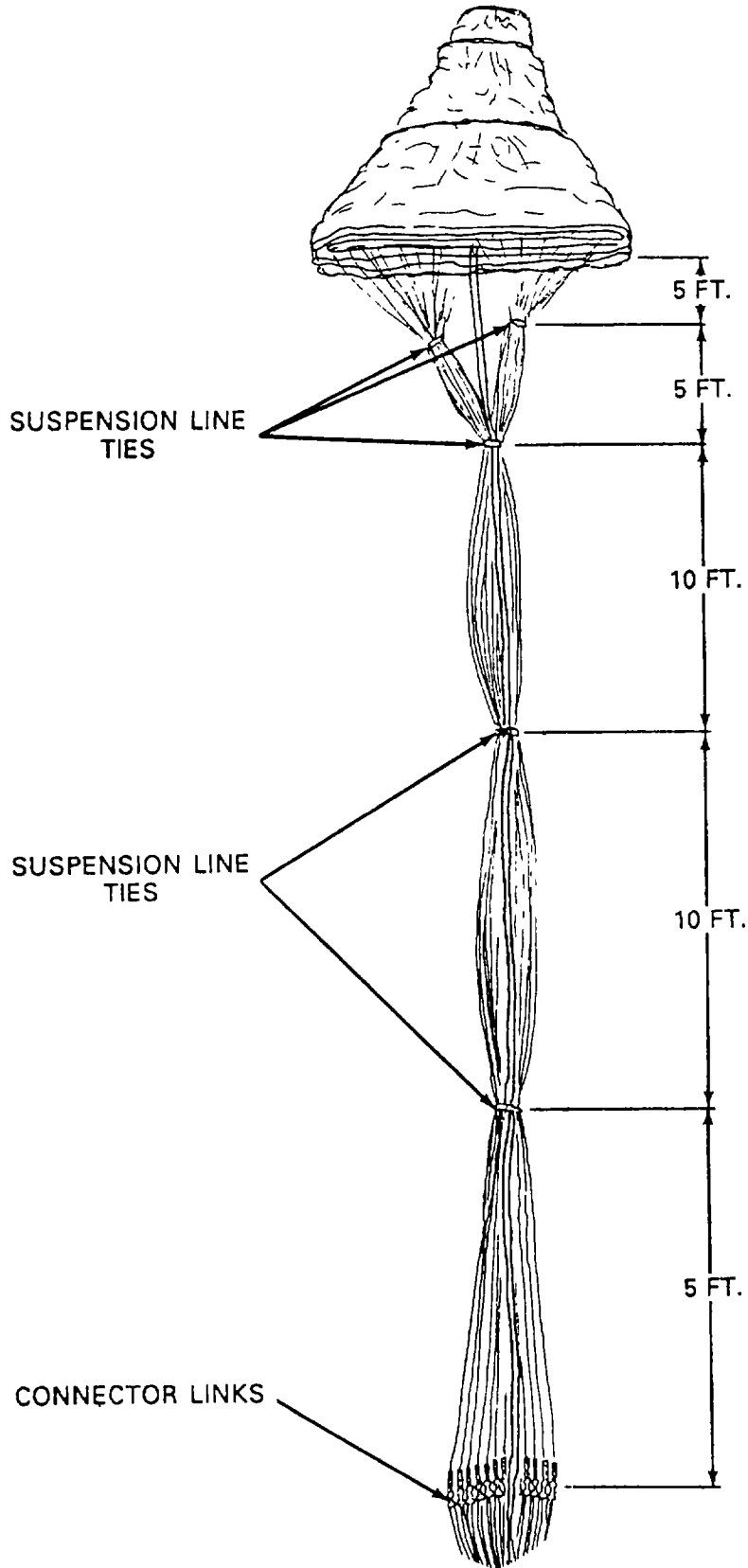


4838-137

Figure 2-142. *Canopy Ties Completed.*

(b) *Suspension lines.*

- 1 At a point 5 feet below the skirt band (lower lateral band), tie each group of suspension lines separately using one turn single, ticket No. 8/4 cotton orange thread. Secure each tie with a surgeon's knot and a locking knot (figure 2-143). Trim tie ends to 2 inches. Remove the large line separator.
- 2 Beginning at a point 10 feet below the skirt band (lower lateral band) and at 10-foot intervals thereafter, tie both suspension line groups and center line together using one turn single, ticket No. 8/4 cotton orange thread at each point. Secure each tie with a surgeon's knot and locking knot. Make the last tie 5 feet above the connector link assemblies (figure 2-143). Trim all tie ends to 2 inches.



4838-138

Figure 2-143. Suspension Line Ties Completed.

2-18. **Packing 100-Foot Cargo Parachute, Model G-11C (cont).**

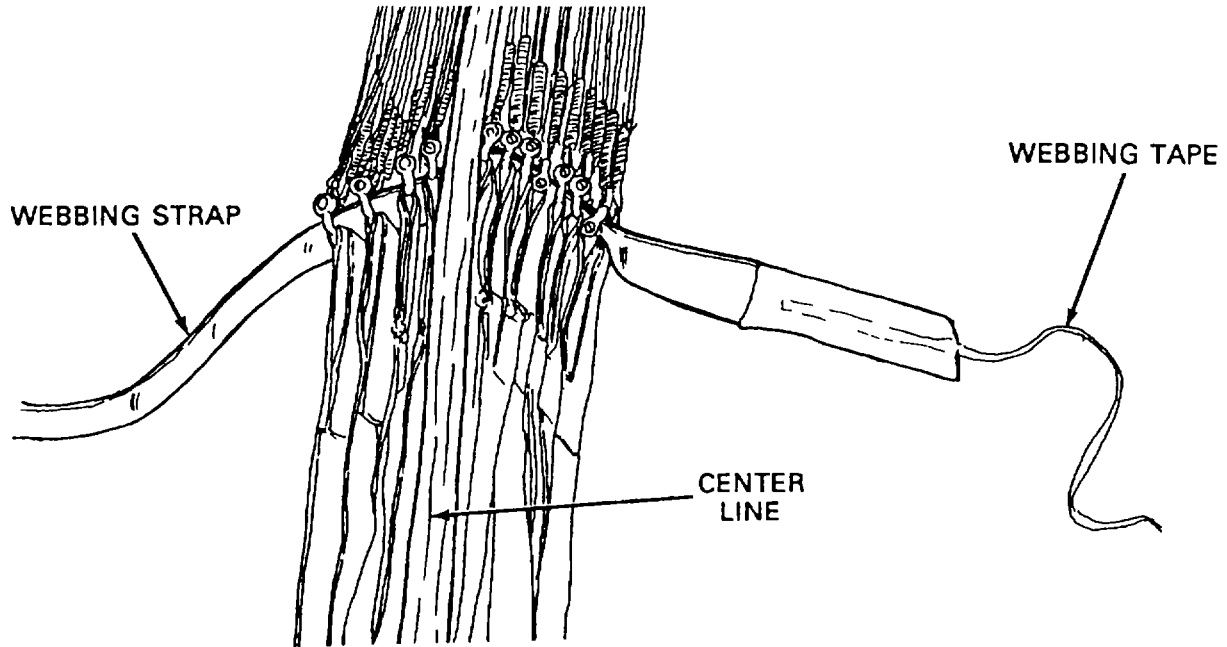
(c) *Connector link assemblies.*

- 1 Release the strap fastener on the webbing strap threaded through the connector link assemblies and tape a 24-inch length of 1/4-inch wide, type I cotton webbing to the running end of the strap (A, figure 2-144).
- 2 Remove the webbing strap from the connector link assemblies which, in turn, will pull the taped webbing through the link assemblies (B, figure 2-144).
- 3 Remove the taped webbing length from the webbing strap and cut the webbing into two equal lengths with 6 connector links on each length. Tie the connector link assemblies together with the webbing lengths. Secure the ties with a surgeon's knot and a locking knot (C, figure 2-144). Trim tie ends to 2 inches.
- 4 Cut two lengths of kraft paper, 14 by 28 inches. Wrap each group of connector links with two turns single of the kraft paper. Secure the kraft paper with one turn single of thread ticket No. 8/4, cotton on each side of the connector links. Secure ties with a surgeon's knot and locking knot. Trim tie ends to 2 inches.

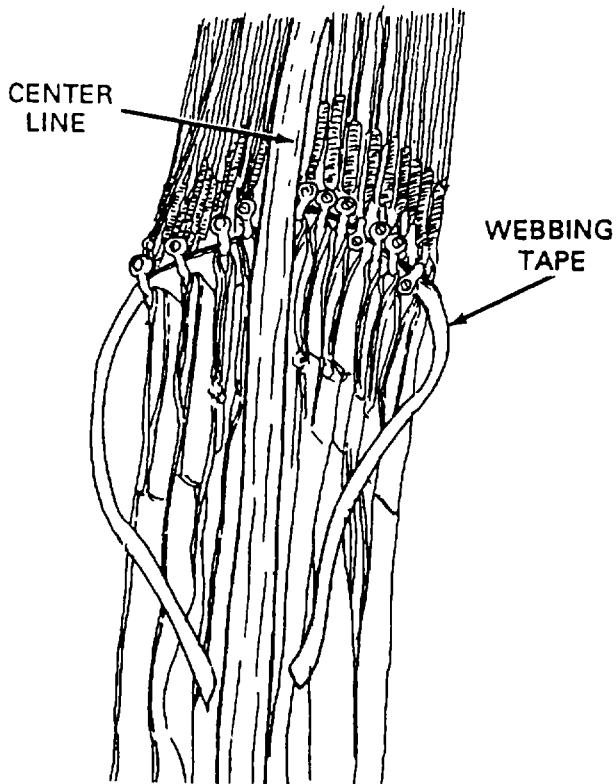
(d) *Suspension riser.* Beginning at a point 5 feet below the connector link assemblies, and at 10-foot intervals thereafter, tie the suspension risers and center line together using one turn single, ticket No. 8/4 cotton orange thread at each point. Make the last tie at a point 5 feet above the suspension clevis attaching loops. Secure each tie with a surgeon's knot and a locking knot (figure 2-145). Trim tie ends to 2 inches.

(10) *Stowing the canopy.*

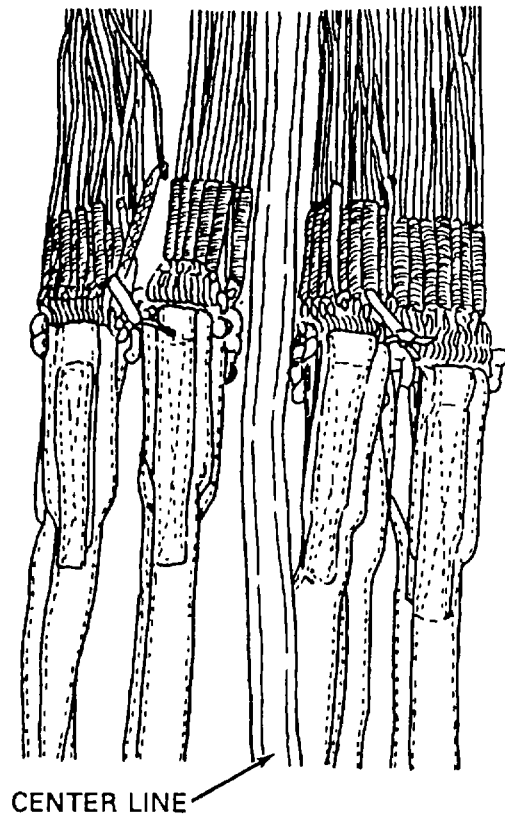
- (a) Two persons, positioned at the top of the canopy, will raise the open end of the deployment bag up and hold the bag erect. In addition, one or both persons should hold the canopy material to the bag while the canopy is being picked up from the packing surface.
- (b) A third person shall move to a point located a reasonable distance below the canopy top, pick up the canopy from the packing surface and S-fold the canopy material into the deployment bag.
- (c) Continue stowing the canopy until only 2 feet of the canopy remains out of the deployment bag.
- (d) At a point immediately below the skirt reinforcement, grasp both groups of suspension lines with the right hand and two feet below the right hand grasp both groups with the left hand.



(A) THREADING WEBBING TAPE THROUGH LINK



(B) CONNECTOR LINKS TIED



(C) CONNECTOR LINKS SECURED

4838-139

Figure 2-144. Securing the Suspension Line Connector Link Assemblies.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).

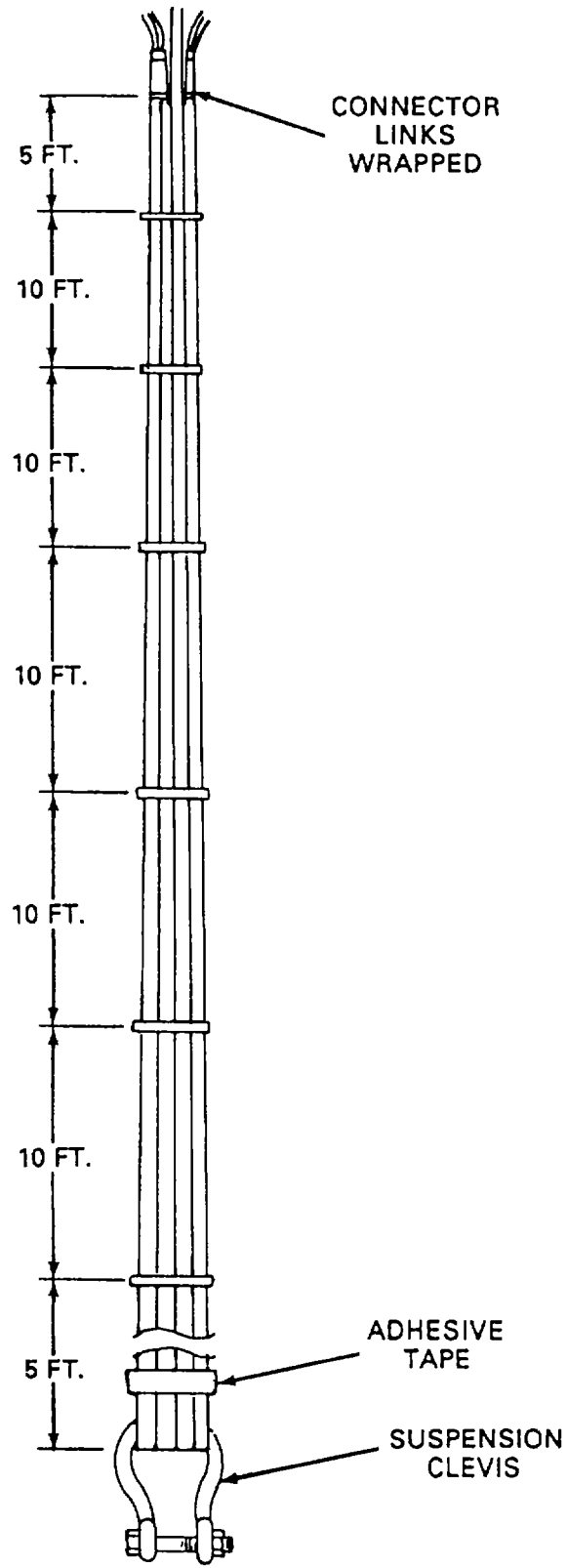


Figure 2-145. Suspension Riser Ties Completed.

4838-14

- (e) While holding both groups of suspension lines, pick up the canopy skirt and push the canopy skirt and 18 inches of suspension lines into the deployment bag (figure 2-146).



4838-141

Figure 2-146. Canopy Stowed in Deployment Bag.

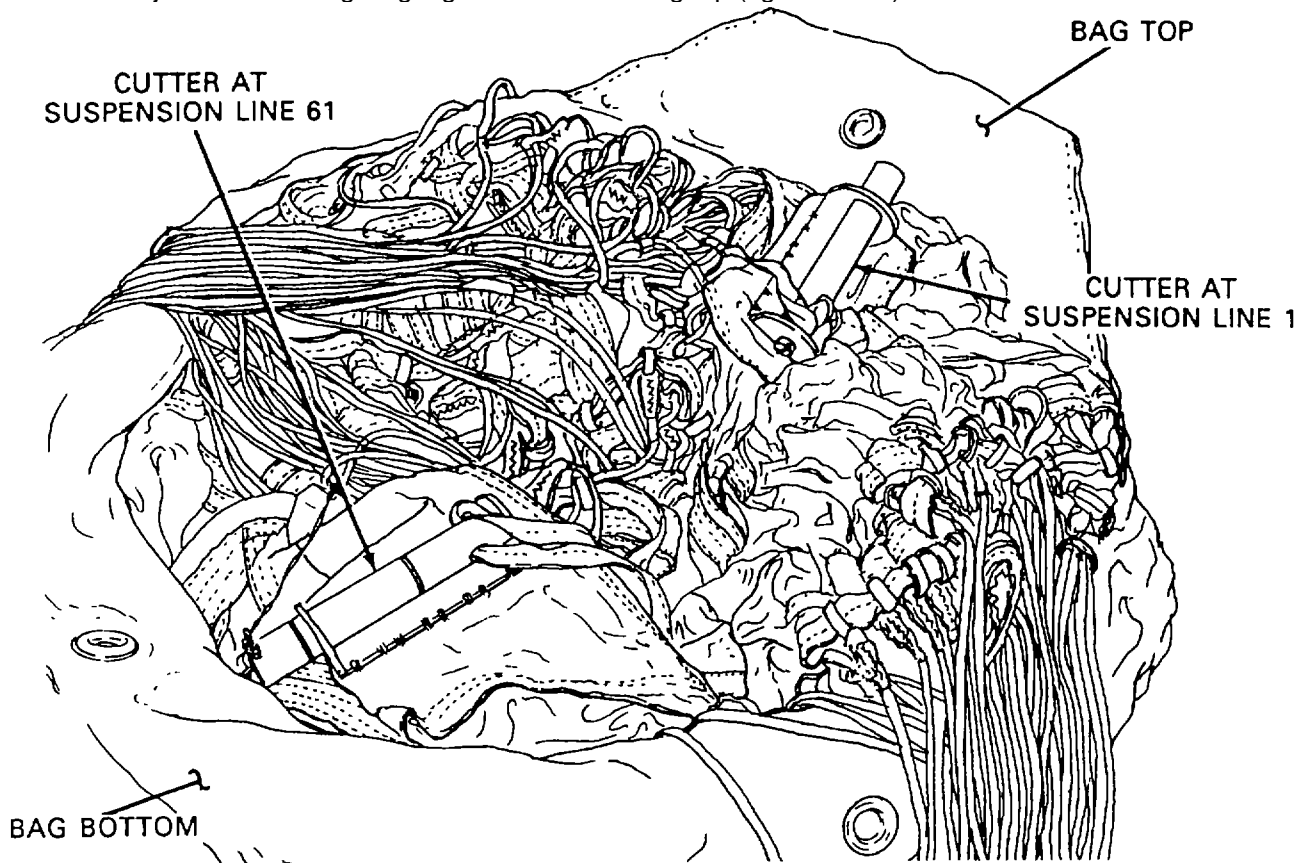
2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).

NOTE

The G-11C may be packed in either the G-11B cotton deployment bag or the G-11A/B/C nylon deployment bag. If the nylon deployment bag is being used, proceed to paragraph (21).

(11) Arming the reefing line cutters.

- (a) Position the two reefing line cutters on top of the stowed canopy with the cutter at suspension line 61 placed adjacent to the bag double grommet on the bag bottom and the cutter at suspension line 1 placed adjacent to the bag single grommet on the bag top (figure 2-147).

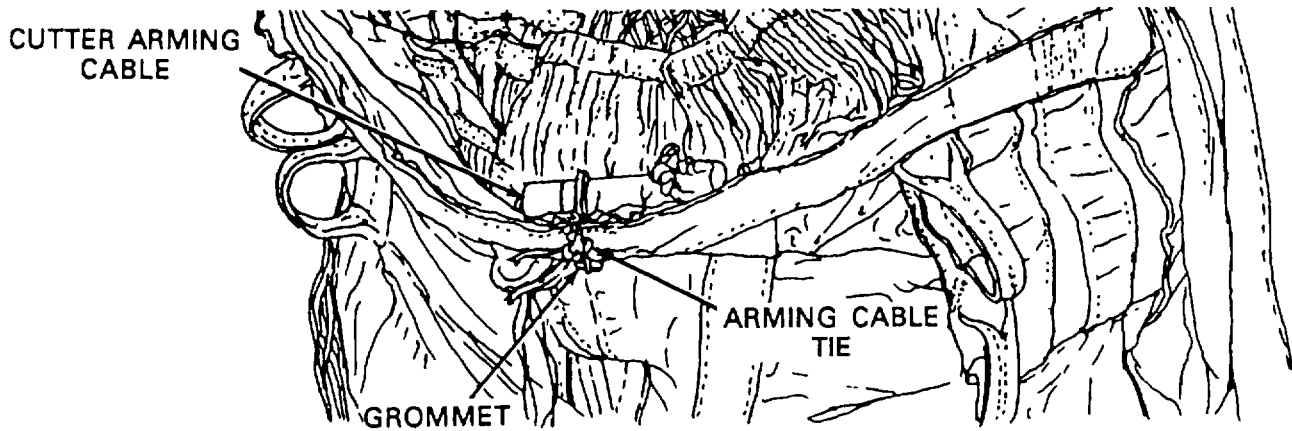


4838-142

Figure 2-147. Positioning Reefing Line Cutters on Stowed Canopy.

- (b) Cut two 12-inch lengths of type III nylon cord for use as arming cable ties.
- (c) Beginning with the reefing line cutter at line 1 near the bag top, pass the end of one cord through the hole in the top of the reefing line cutter arming cable and through the bag single grommet to the outside.

- (d) Pass the other end of the cord over the top of the bag edge and draw the cord ends tight. Secure the cord ends on the bag outside with a surgeon's knot and locking knot. Make an overhand knot in each running end (figure 2-148). Trim each tie end at a point 2 inches from the surgeon's knot and locking knot.



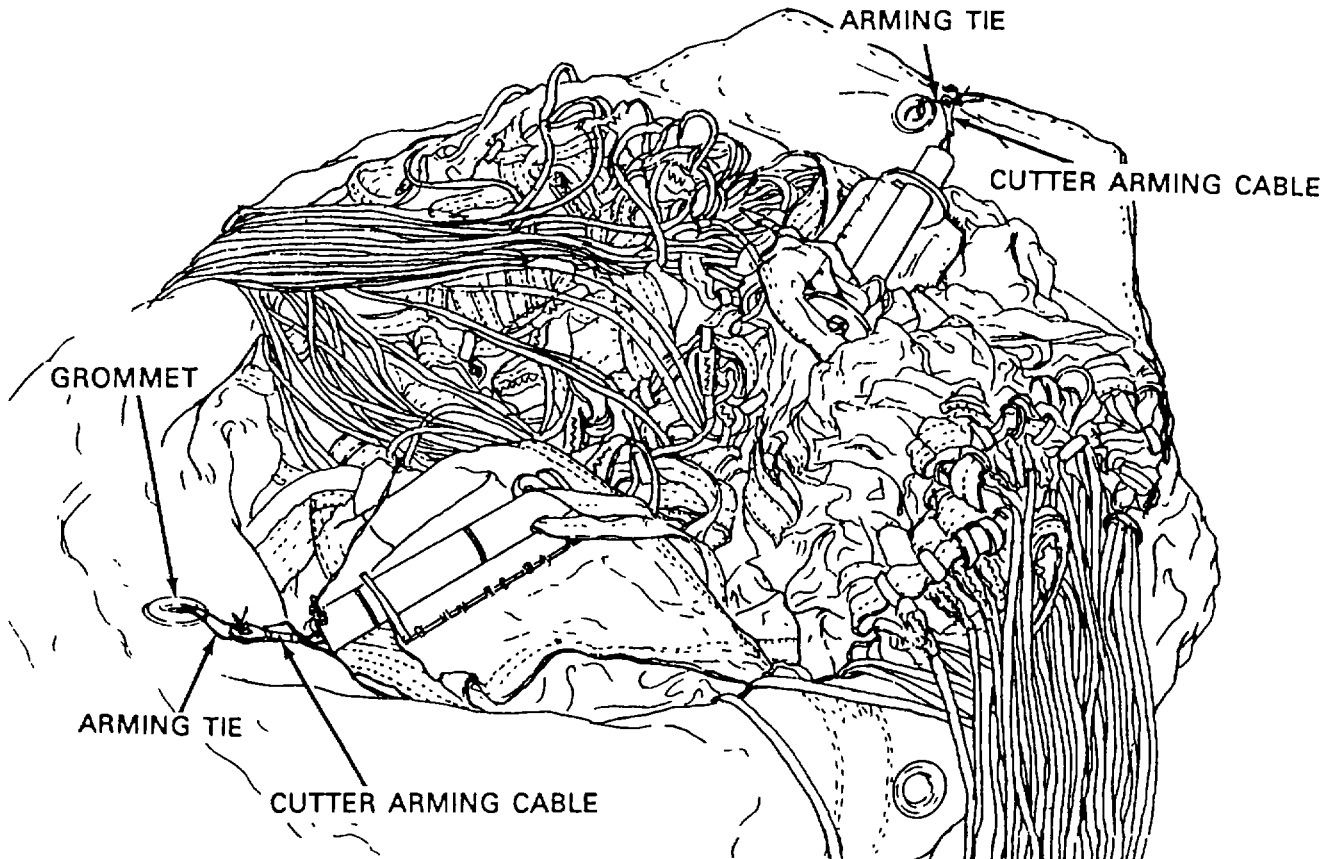
4838-143

Figure 2-148. Threading Reefing Line Cutter Arming Cable Tie at Line 1.

- (e) Using the remaining cord length on the reefing line cutter at line 61 near the bag bottom, pass one end of the cord through the hole in the top of the reefing line cutter arming cable and through the lower bag grommet to the bag outside.

2-18. **Packing 100-Foot Cargo Parachute, Model G-11C (cont).**

- (f) Pass the opposite cord end through the upper bag grommet to the bag outside and draw the cord ends tight. Secure the cord ends together on the outside of the bag with a surgeon's knot and locking knot. Make an overhand knot in each running end (figure 2-149). Trim each tie end at a point 2 inches from the surgeon's knot and locking knot.



4838-144

Figure 2-149. Reefing Line Cutter Arming Cable Ties Completed.

(12) *Installing reefing line cutter safety ties.* To prevent premature firing of a reefing line cutter while stowing the suspension lines, install a safety tie on each of the reefing line cutters and remove the safety cotter pins as follows:

- (a) Using a length of one turn double, ticket no. 8/7 cotton thread, pass one of the double thread lengths through the slot in the reefing line cutter bracket, through the loop of the arming cable tie previously installed, and draw the tie ends tight. Secure the safety tie with a surgeon's knot and locking knot (figure 2-150). Trim tie ends to 2 inches.

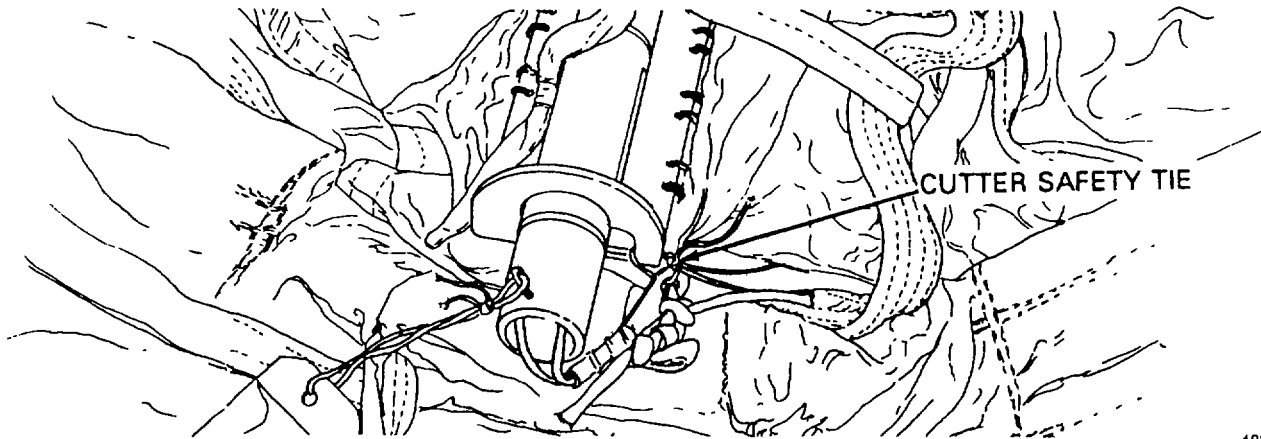


Figure 2-150. Reefing Line Cutter Safety Ties Completed.

- (b) The senior packer will annotate each cutter tag with the reefing line cutter lot number/serial number and parachute pack date. After these entries have been made the senior packer will sign each tag.

CAUTION

Failure to remove the cutter cotter pins will cause malfunction of the parachute.

- (c) Remove the safety cotter pin and tag from each reefing line cutter, fold the tags lengthwise and stow safety pins and tags in the parachute inspection data pocket.

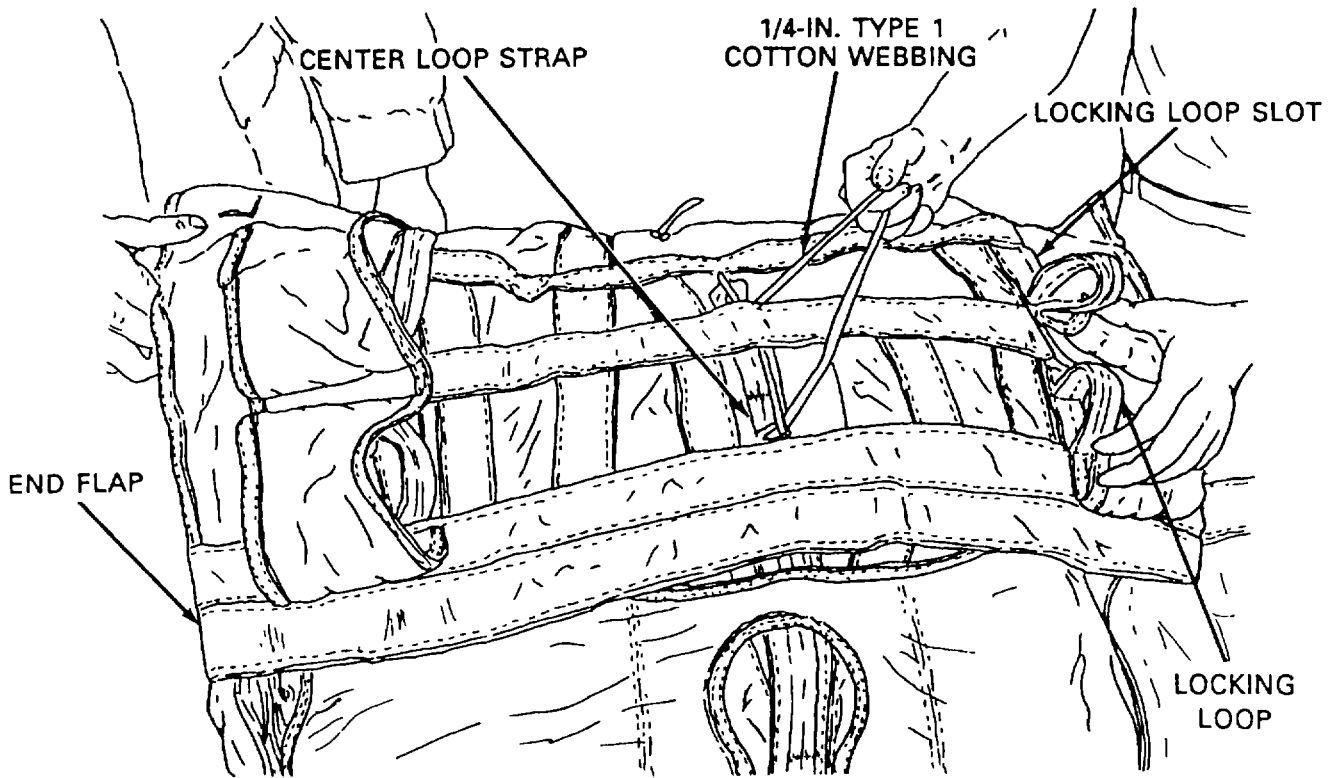
(13) *Closing the cotton deployment bag.*

- (a) Bring the suspension lines and center line up over the top of the deployment bag and close the side flaps.
- (b) Cut an 18-inch length of 1/4-inch type I cotton webbing and girth hitch the webbing length in the deployment bag top center loop strap.
- (c) Bring the large end flap of the bag over the bag end and pull the locking loops up through the locking loop slots. Pull the 1/4 inch wide cotton webbing ends on the center loop strap through the top center opening on the end flap (figure 2-151).

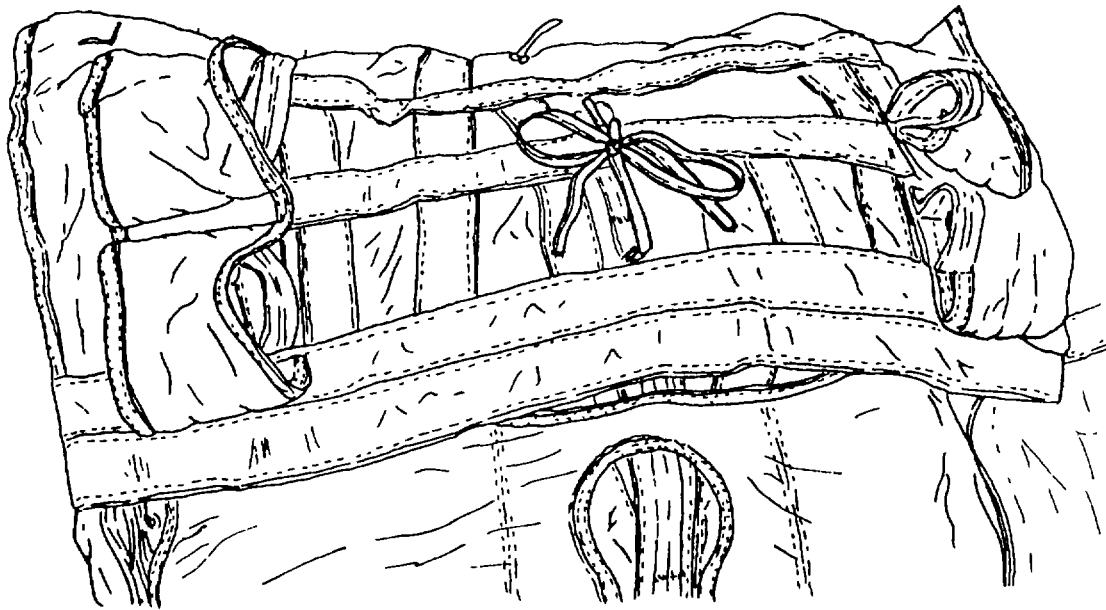
(14) *Making locking stows.*

- (a) Cut a 36-inch length of 1/2-inch wide tubular nylon webbing, or equivalent, for use as a packing aid in making the locking stows. Double the webbing length and make an overhand knot in the aligned ends.
- (b) Fold the suspension lines and center line back over the large end flap. Measure and form a loop in the lines that will extend to the right edge of the bag large flap.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).



(A) THREADING CENTER LOOP STRAP TIE

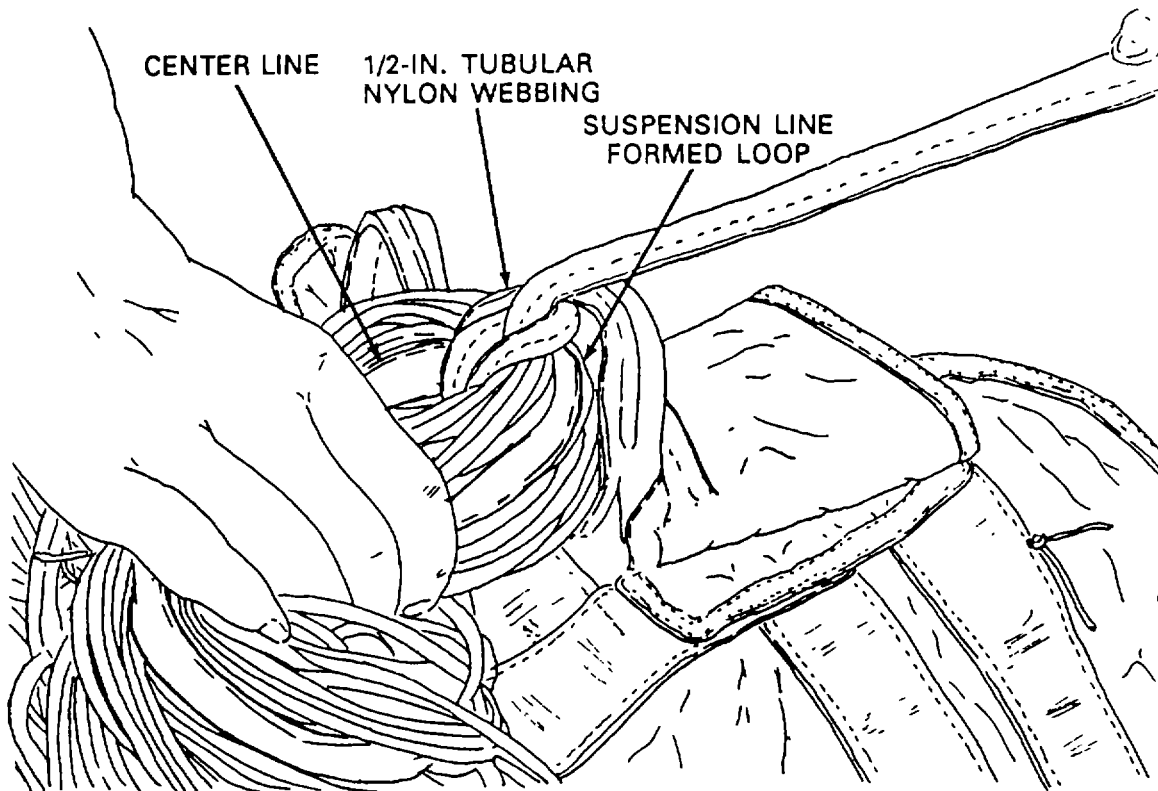


(B) CENTER LOOP STRAP TIE SECURED

4838-146

Figure 2-151. Inserting Locking Loops Through Locking Loop Slots.

- (c) Using the packing aid, encircle the formed loop in the suspension lines and make a girth-hitch in the packing aid (figure 2-152).

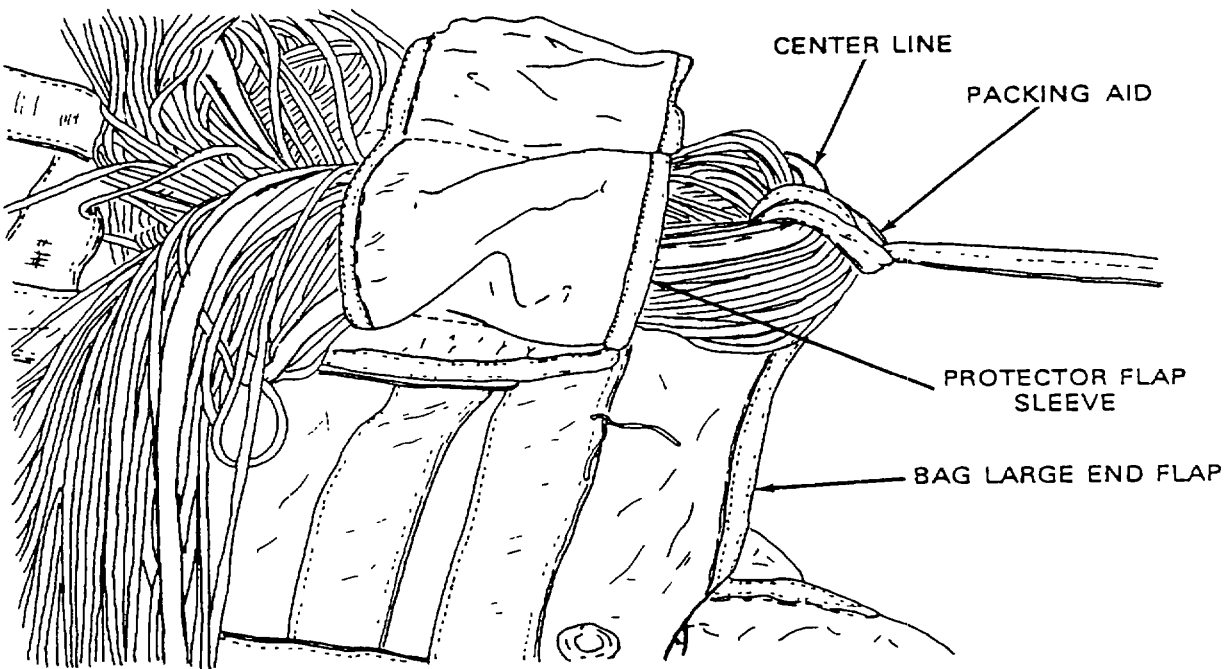


4838-147

Figure 2-152. Packing Aid Encircling Formed Suspension Line Loop.

- (d) Thread the knotted end of the packing aid through the locking stow loop, located under the protector flap sleeve at the lower right corner of the large end flap. Pull the suspension line formed loop until the loop is aligned with the right edge of the bag large end flap (figure 2-153). Remove the packing aid.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).



4838-148

Figure 2-153. Making the First Locking Stow.

- (e) Extend the running end of the suspension lines to the locking stow loop at the lower left corner of the bag large end flap and measure and form a loop in the lines.
- (f) Using the packing aid, encircle the formed loop in the suspension lines and make a girth hitch in the packing aid.
- (g) Thread the knotted end of the packing aid through the locking stow loop located under the protector sleeve at the deployment bag. Pull the suspension line formed loop until the loop is aligned with the left edge of the bag large end flap. Remove the packing aid.

- (h) Secure the first two locking stows by tying the suspension lines together at a point between the two stows. Use the 1/4-inch wide cotton webbing previously installed. Make the tie one turn single and secure with a surgeon's knot and locking knot (figure 2-154). Trim tie ends to two inches.

2ND LOCKING STOW

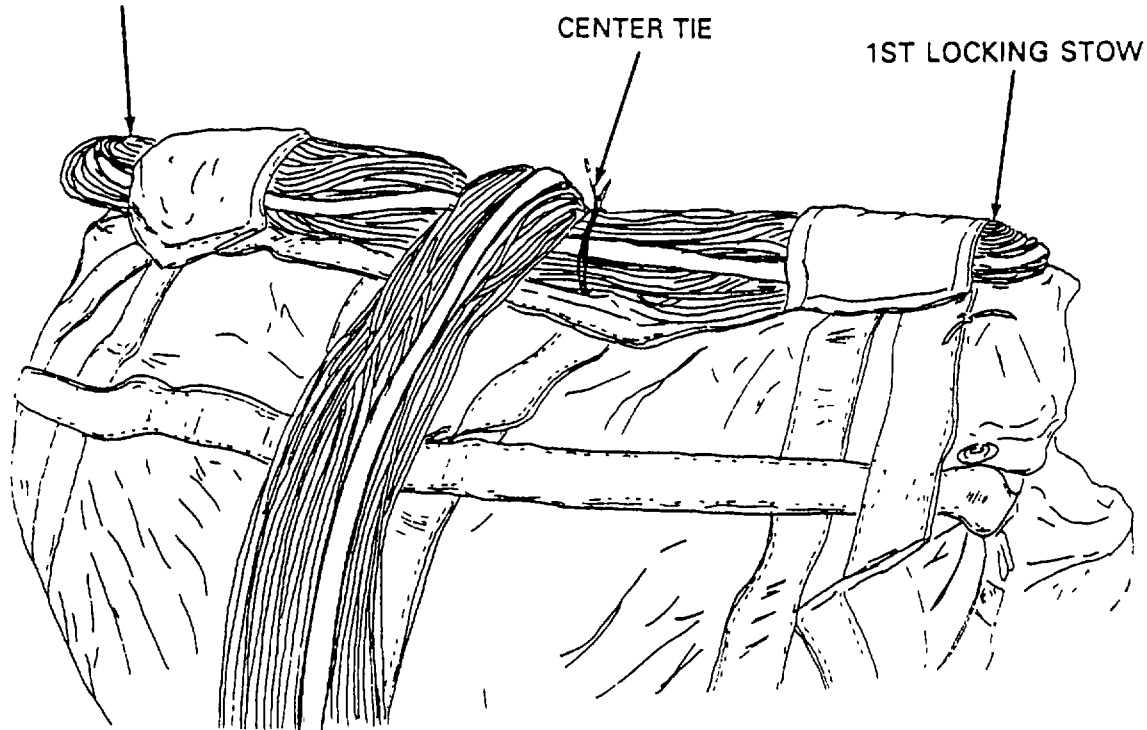


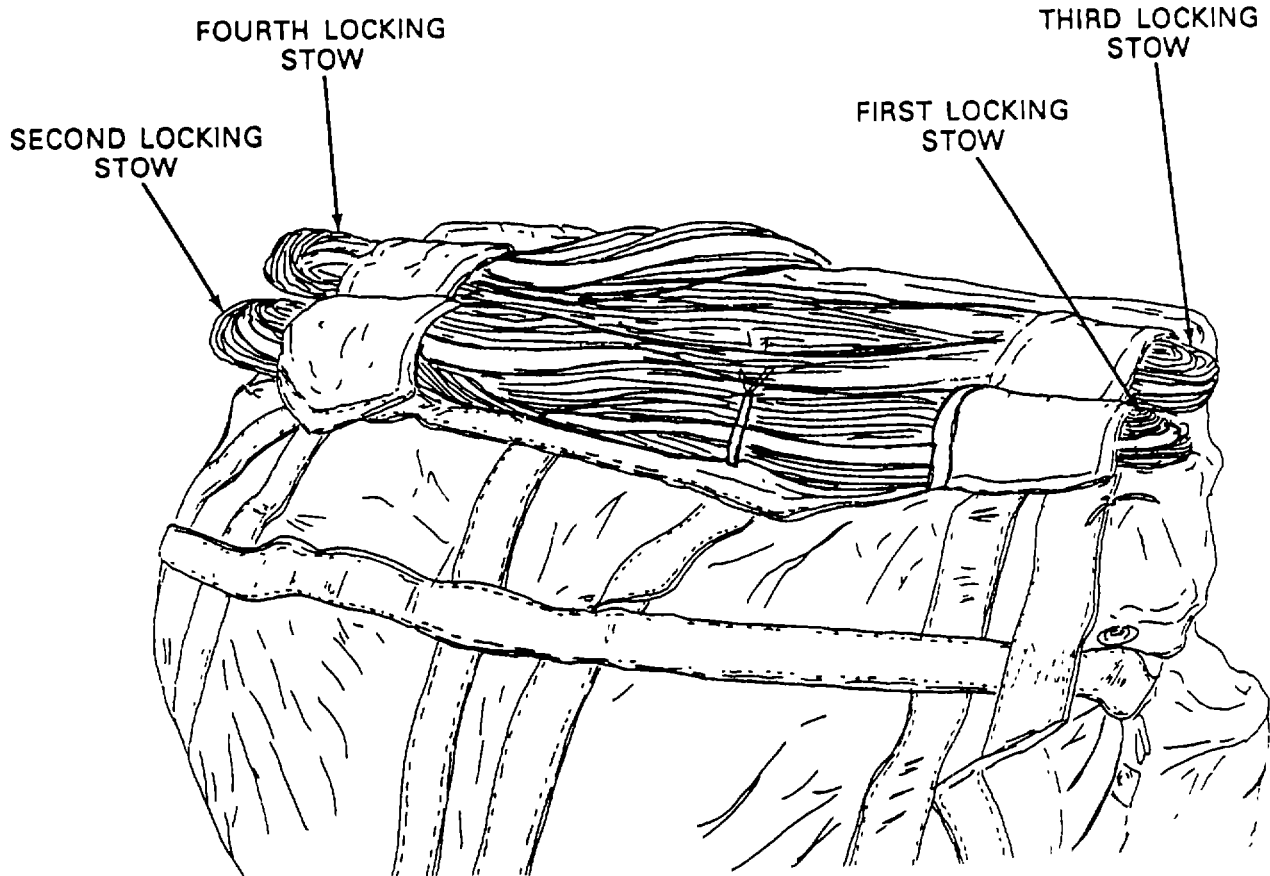
Figure 2-154. First Two Locking Stow Ties Completed.

4838-149

- (i) Extend the suspension lines to the upper right corner of the large end flap and measure and form a loop in the lines.
- (j) Using the packing aid, encircle the formed loop in the suspension lines and make a girth hitch in the packing aid.
- (k) Thread the knotted end of the packing aid through the locking stow loop located under the protector sleeve at the upper right corner of the deployment bag. Pull the suspension line formed loop until the loop is aligned with the right edge of the bag large end flap. Remove the packing aid.
- (l) Extend the suspension lines to the upper left corner of the large end flap and measure and form a loop that aligns with the left edge of the large end flap.
- (m) Using the packing aid, encircle the formed loop in the suspension lines and make a girth hitch in the packing aid.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).

- (n) Thread the knotted end of the packing aid through the locking stow loop located under the protector sleeve at the upper left corner of the deployment bag. Pull the suspension line formed loop until the loop is aligned with the left edge of the bag large end flap (figure 2-155). Remove the packing aid.



4838-150

Figure 2-155. Locking Stows Completed.

CAUTION

Failure to remove the packing aid will cause total malfunction of the parachute.

(15) Installing suspension line stow ties.

- (a) Cut a minimum of thirty-two 18-inch lengths of 1/4-inch wide, type I cotton webbing for use as suspension line stow ties.
- (b) Secure the webbing lengths at equal intervals along each row of side strap loops by making a girth hitch in each webbing length. Ensure the ends of each webbing length are aligned and positioned toward the respective outer edge of the deployment bag.

(16) Wrapping the suspension lines.

- (a) Extend the suspension lines and center line along the top center of the deployment bag toward the bridle end of the bag.
- (b) Using a 12-inch wide by 36-inch long piece of kraft paper, wrap the suspension lines and center line extended along the top center of the deployment bag.
- (c) Secure each end and the middle of the suspension line wrap with one turn single of ticket no. 8/4 cotton orange thread. Secure each thread end with a surgeon's knot and locking knot (figure 2-156). Insure the suspension lines are not inadvertently secured to the center loop strap on top of the deployment bag. Trim tie ends to two inches.

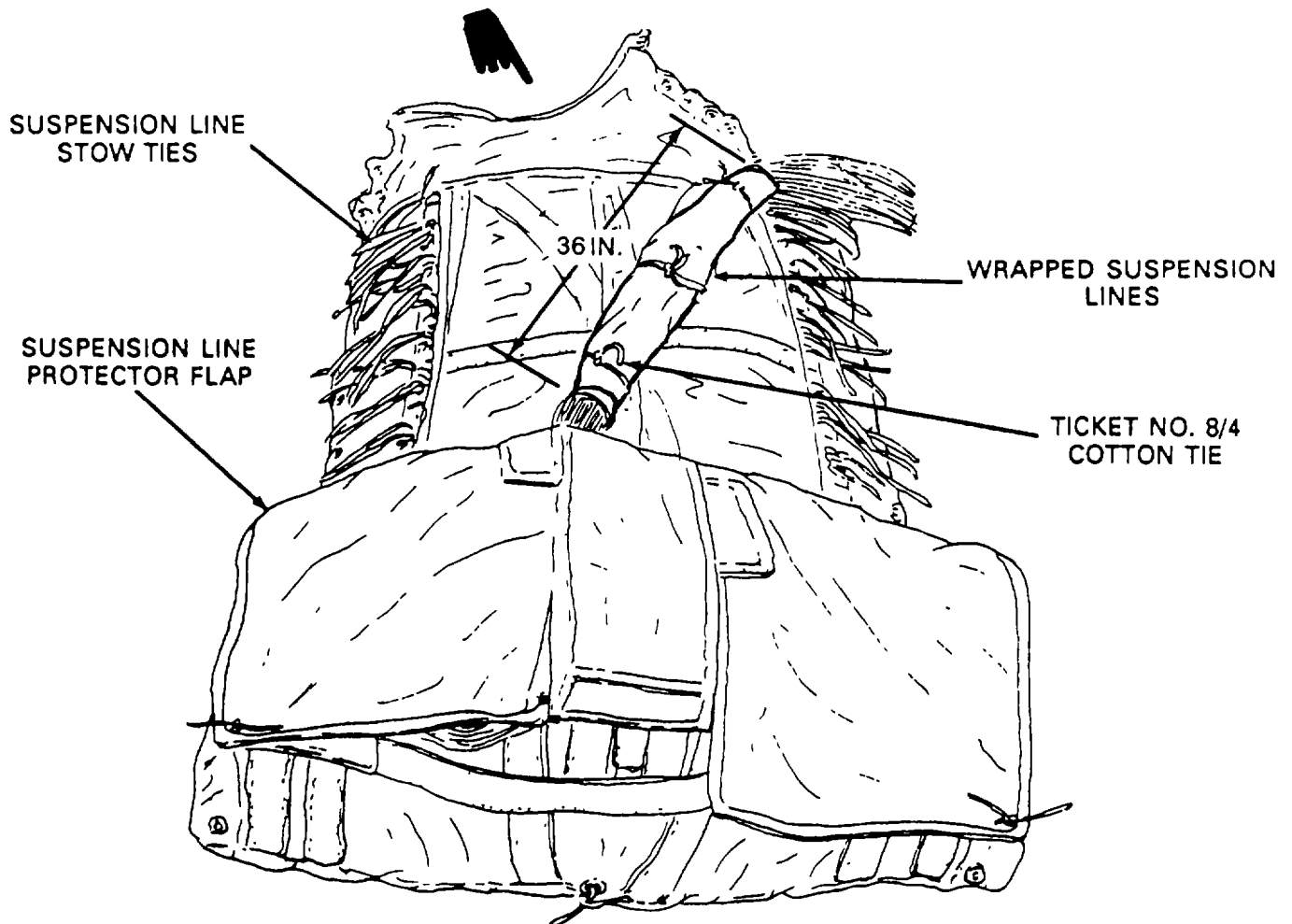


Figure 2-156. Suspension Line Wrapping Details.

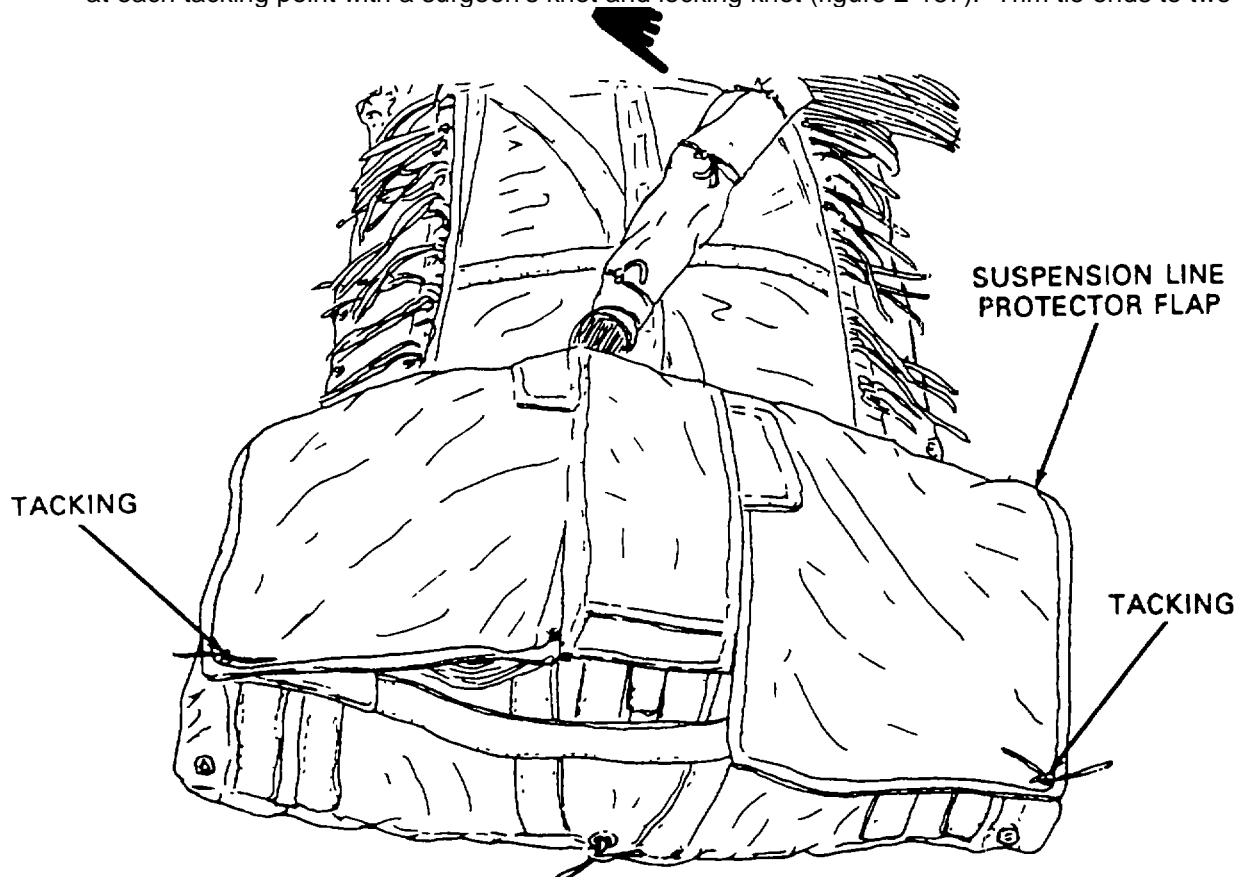
NOTE

If the suspension line protector flap is damaged, it may be removed from the deployment bag. Remove by cutting the flap material as close to the deployment bag body as possible.

2-18. **Packing 100-Foot Cargo Parachute, Model G-11C (cont).**

(17) Tacking the suspension line protector flap.

- (a) Extend the deployment bag suspension line protector flap over locking stows.
- (b) Secure each lower outside corner of the suspension line protector flap to the deployment bag by hand tacking using one turn single, cotton thread ticket no. 8/4 at each tacking point. Secure the tacking ends at each tacking point with a surgeon's knot and locking knot (figure 2-157). Trim tie ends to two inches.



4838-152

Figure 2-157. Tacking the Suspension Line Protector Flap.

(18) Stowing the suspension lines and suspension risers.

- (a) Extend the running end of the suspension lines and center line to the upper right corner of the deployment bag. Measuring to the right edge of the stowage compartment, form the first suspension line stow by making a loop in the lines.
- (b) Secure the first suspension line stow to the upper right outside strap loop using the first stow tie. Secure the stow tie with a surgeon's knot and locking knot (figure 2-158).

- (c) Extend the running end of the suspension lines across the deployment bag to the upper left corner of the bag. Measuring to the left edge of the stowage compartment, form the second suspension line stow by making a loop in the lines .
- (d) Secure the second suspension line stow to the upper left outside strap loop using the first stow tie. Secure the stow tie with a surgeon's knot and locking knot (figure 2-158).

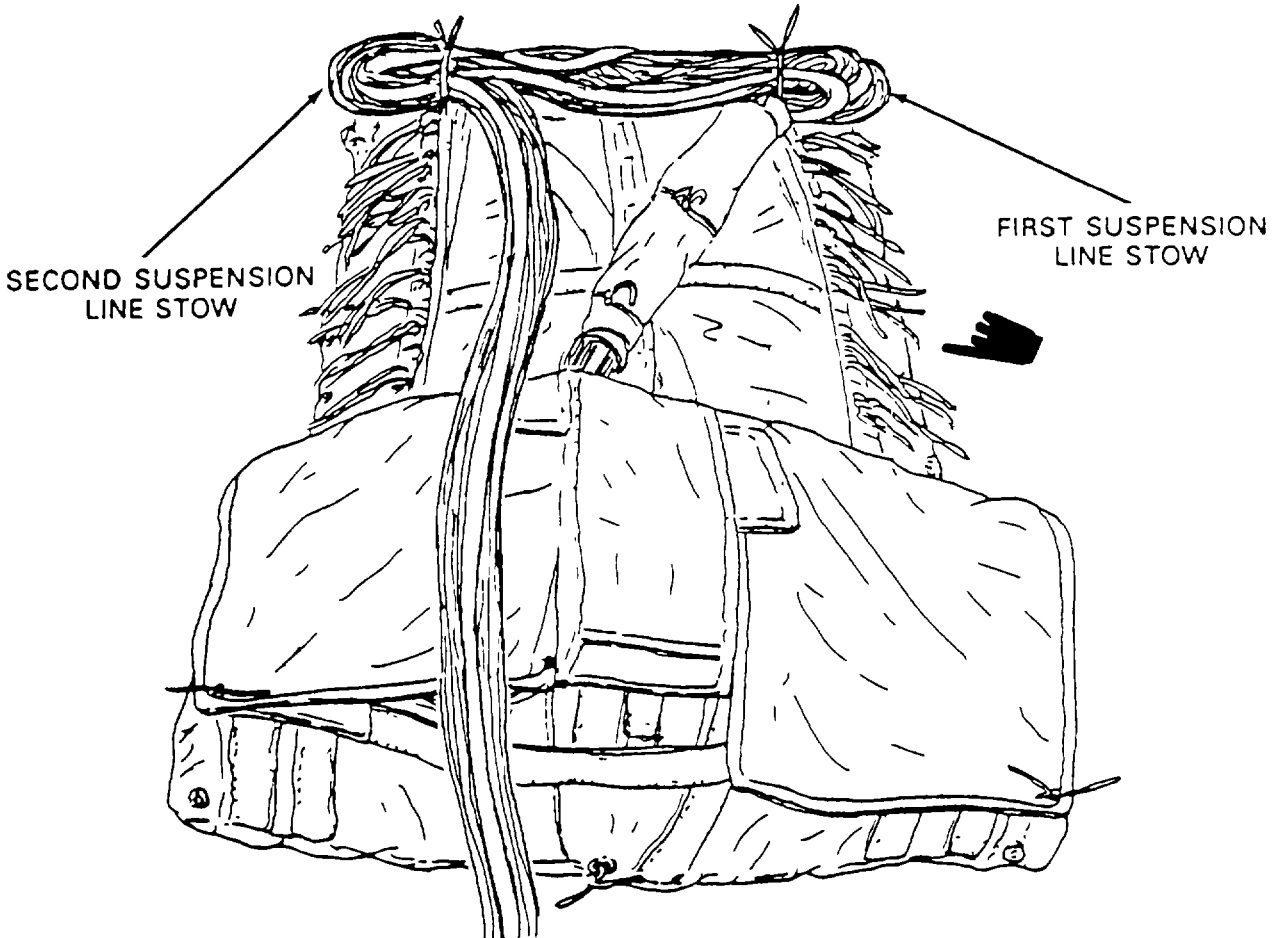


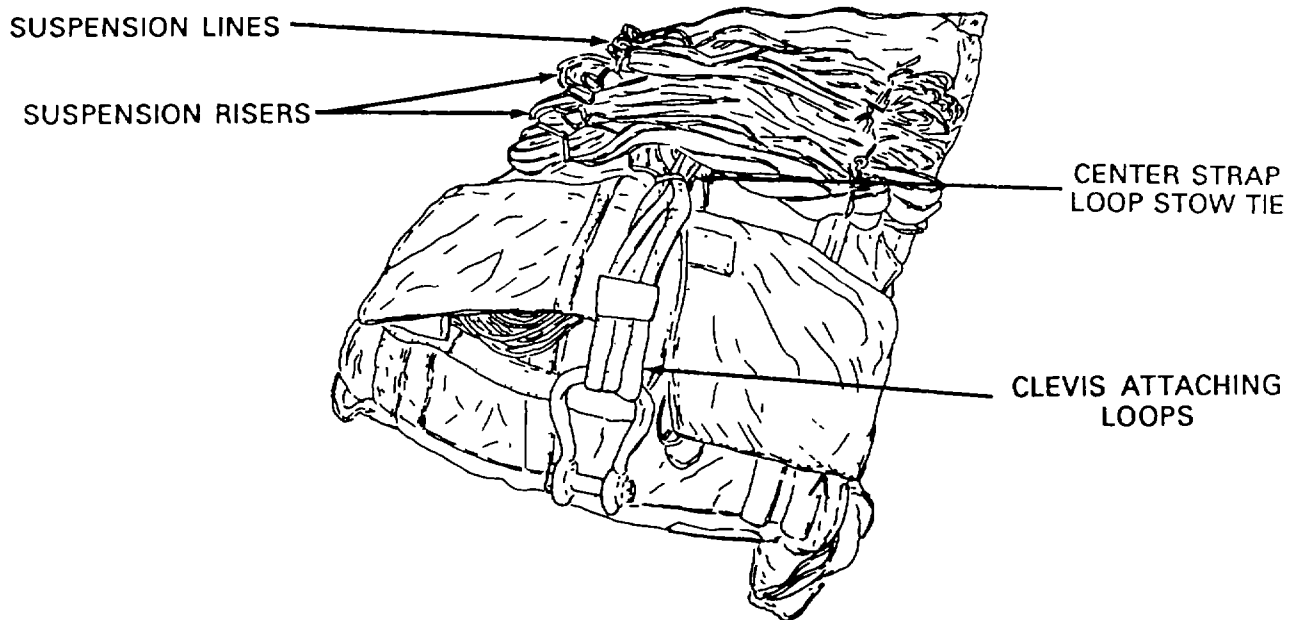
Figure 2-158. First and Second Suspension Line Stows Formed and Secured.

- (e) Using the procedures in (a) through (d), above, stow the remaining length of suspension lines, center line and suspension risers to a point 6 to 10 inches from the clevis attaching loops on the end of the suspension risers. Install an additional stow tie on the center strap loop in order to route the suspension risers from the center of the bag (figure 2-159). Trim all ties to 2 inches.

(19) *Lacing the deployment bag.*

- (a) Bring the suspension line protector flap down over the stowed suspension lines, center line and suspension risers. The grommets on the flap sides should overlap the grommets on the side of the deployment bag.
- (b) Cut two 60-inch lengths of 1/4-inch cotton webbing for use as lacing ties.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).



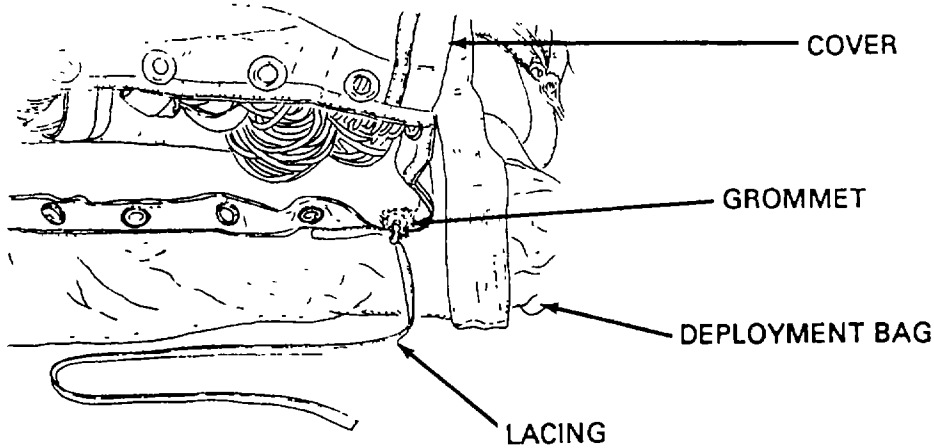
4838-154

Figure 2-159. Suspension Line and Suspension Riser Stows Completed.

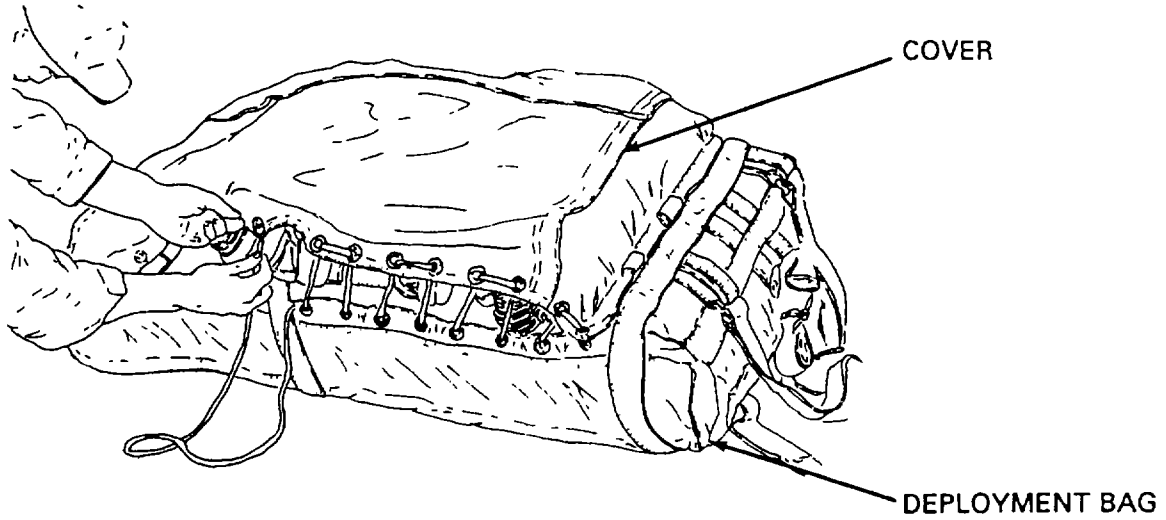
- (c) Secure with two half hitches, an end of each webbing length to the first grommet located on the bottom corner of the deployment bag upper corners (A, figure 2-160).
- (d) With a packer positioned on each side of the deployment bag and using the lacing tie running end, lace the flap to the deployment bag main body, grommet over grommet. (B, figure 2-160).
- (e) Secure the lacing tie free end to the last lace with three half hitches. Trim the tie ends to two inches (C, figure 160).

NOTE

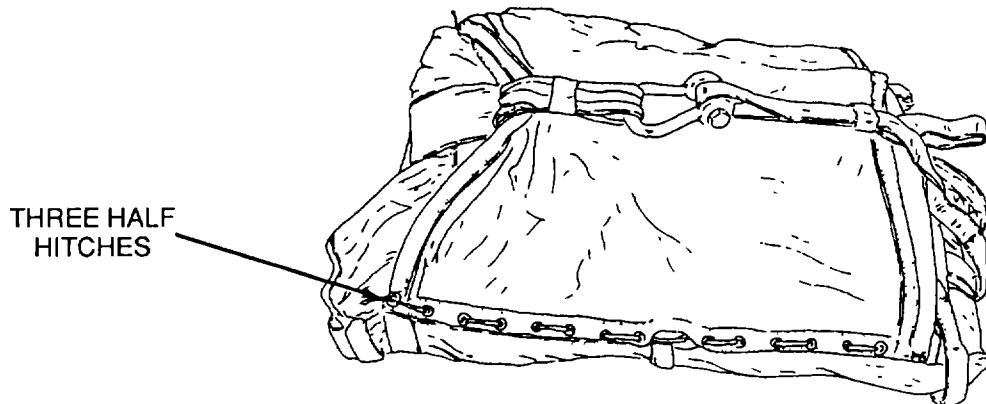
Proceed to step (28) for log book entries.



(A) LACE WEBBING SECURED TO GROMMET ON DEPLOYMENT BAG



(B) LACING THE COVER TO THE DEPLOYMENT BAG



(C) DEPLOYMENT BAG LACING COMPLETE

Figure 2-160. Lacing the Deployment Bag.

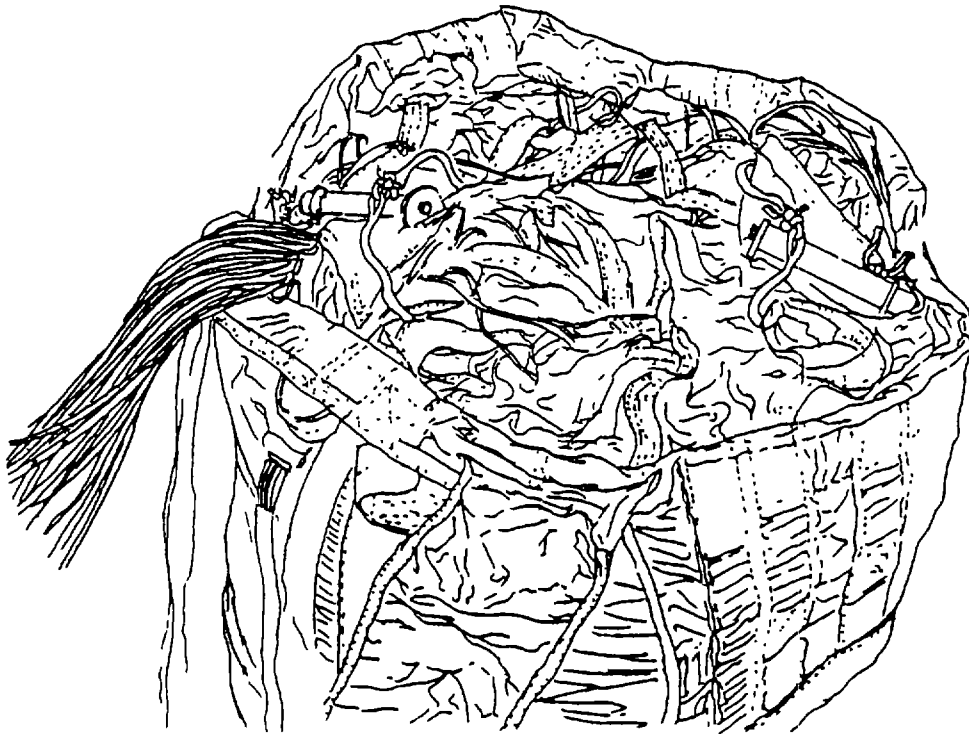
2-18. **Packing 100-Foot Cargo Parachute, Model G-11C (cont).**

NOTE

Paragraphs (20) thru (28) will be used when packing the G-11C in the nylon deployment bag.

(20) *Arming the reefing line cutters.*

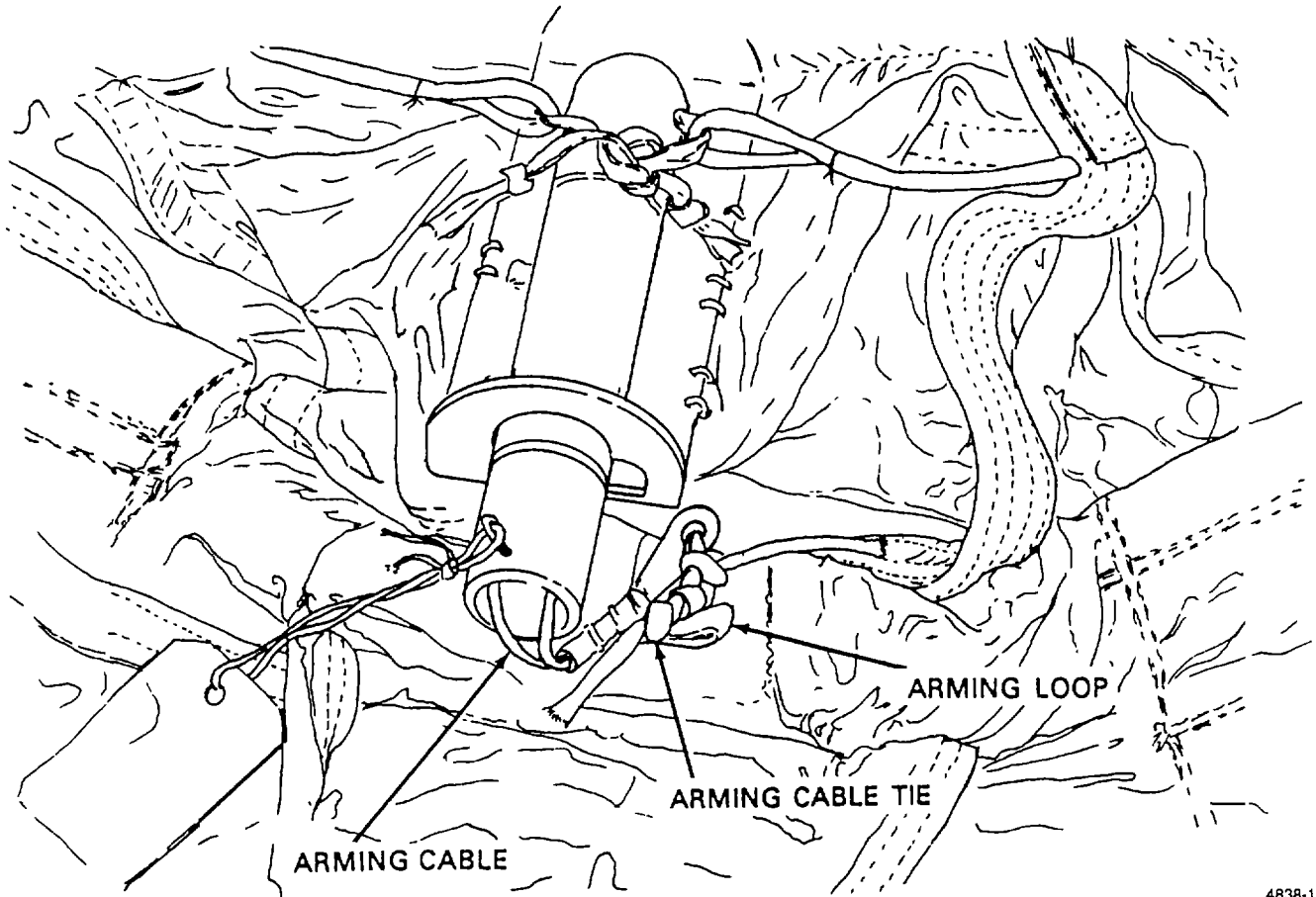
- (a) Position the two reefing line cutters on top of the stowed canopy with the cutter at suspension line 61 placed adjacent to the bag arming loop at the bag bottom and the cutter at suspension line 1 placed adjacent to the bag arming loop on the bag top (figure 2-161).



4838-156

Figure 2-161. MLU58/B Reefing Line Cutters Positioned on Nylon Deployment Bag.

- (b) Cut two 12-inch lengths of type III nylon cord for use as arming cable ties.
- (c) Beginning with the reefing line cutter at line 1 near the bag top, pass the end of one cord through the reefing line cutter arming cable and through the arming loop on the bag top. Draw the cord tight and secure the cord ends with a surgeon's knot and locking knot (figure 2-162). Trim the tie ends at a point 2 inches from the surgeon's knot and locking knot.

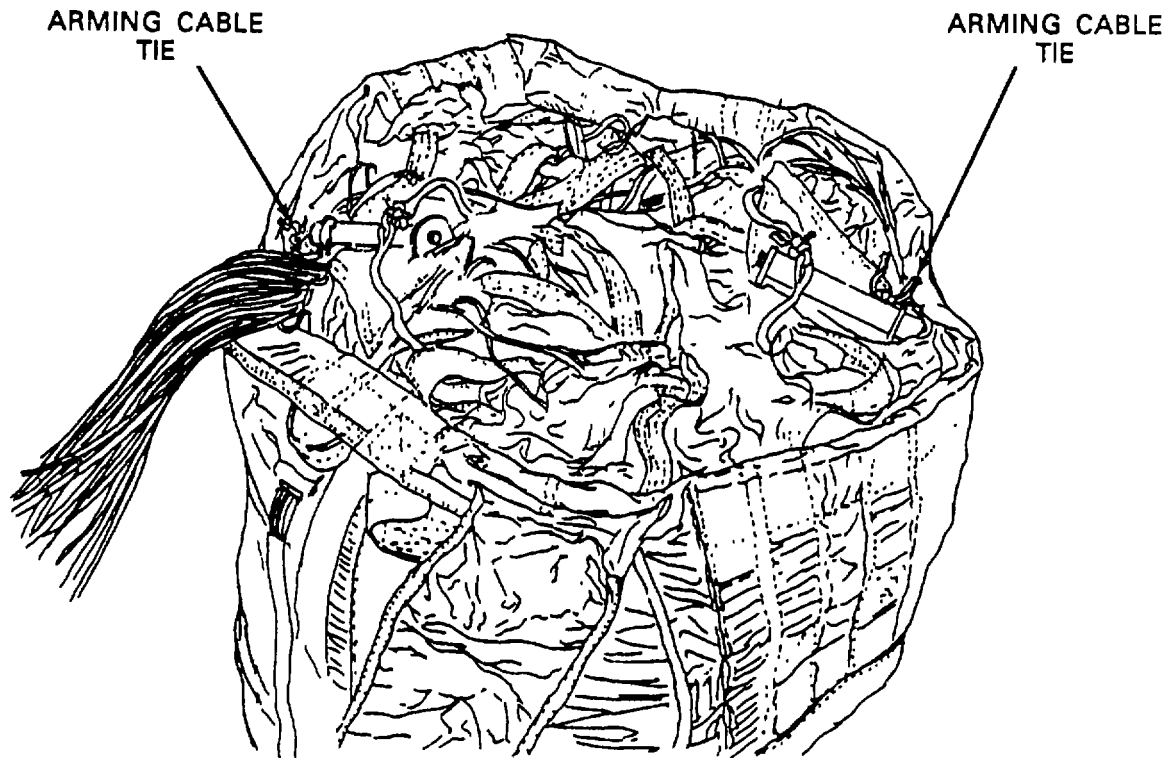


4838-157

Figure 2-162. Threading Reefing Line Cutter Arming Cable Tie at Line 1.

2-18. **Packing 100-Foot Cargo Parachute, Model G-11C (cont).**

- (d) Using the remaining cord length on the reefing line cutter at line 61 near the bag bottom, pass one end of the cord through the hole in top of the reefing line arming cable and through the arming loop. Draw the ends of the tie tight and secure the ends with a surgeon's knot and locking knot (figure 2-163). Trim tie ends 2 inches from the surgeon's knot and locking knot.



4838-158

Figure 2-163. Reefing Line Cutter Arming Cable Ties Completed.

(21) *Installing reefing line cutter safety ties.* To prevent premature firing of a reefing line cutter while stowing the suspension lines, install a safety tie on each of the reefing line cutters and remove the safety cotter pins as follows:

- (a) Using a length of one turn double, ticket no. 8/7 cotton thread, pass open end of the double thread through the slot in each reefing line cutter bracket, through the loop of the arming cable tie previously installed, and draw the tie ends tight. Secure the safety tie with a surgeon's knot and locking knot (figure 2-164). Trim tie ends to 2 inches.
- (b) The senior packer will annotate each cutter tag with reefing line cutter lot number/serial number and parachute pack date. After these entries have been made the senior packer will sign each tag.



4838-159

Figure 2-164. Reefing Line Cutter Safety Ties Completed.

CAUTION

Failure to remove the cutter cotter pins will cause a malfunction of the parachute.

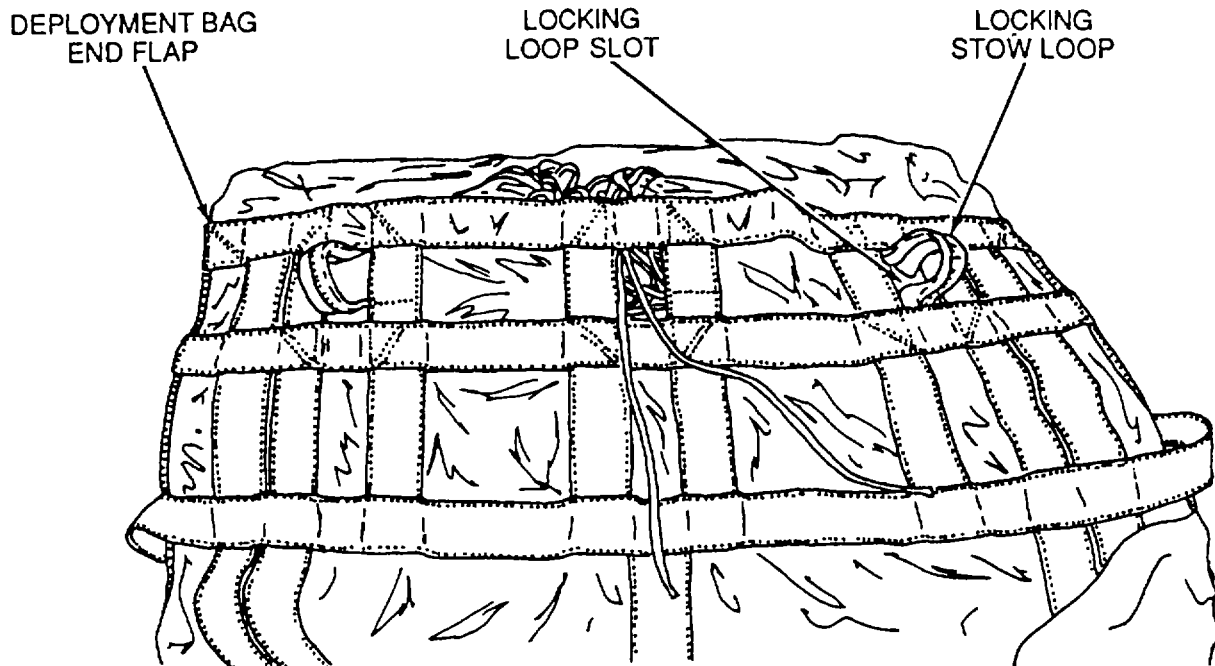
- (c) Remove the safety cotter pin and tag from each reefing line cutter, fold the tags lengthwise and stow safety pins and tags in the parachute inspection data pocket.

(22) *Closing the nylon deployment bag.*

- (a) Bring the suspension lines and center line up over the top of the deployment bag and close the side flaps.

2-18. **Packing 100-Foot Cargo Parachute, Model G-11C (cont).**

- (b) Bring the large end flap of the deployment bag over the bag end and pull the locking loops up through the locking loop slots (figure 2-165).

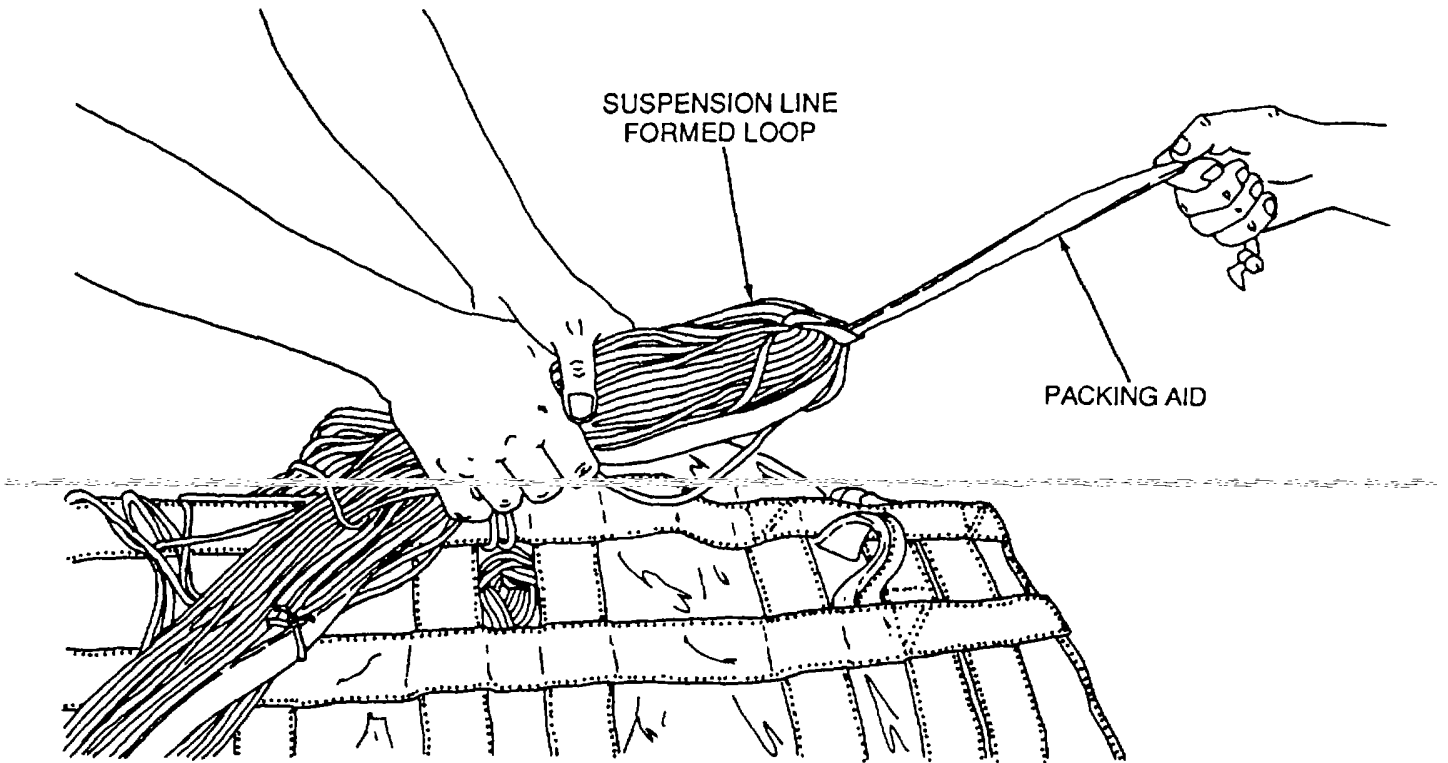


4838-160

Figure 2-165. Inserting Locking Loops Through Locking Loop Slots in Nylon Deployment Bag.

(23) *Making locking stows.*

- (a) Cut a 36-inch length of 1/2-inch wide tubular nylon webbing, or equivalent, for use as a packing aid in making the locking stows. Double the webbing length and make an overhand knot in the aligned ends.
- (b) Fold the suspension lines and center line back over the large end flap and measure and form a loop in the lines that will extend to the right edge of the bag large flap.
- (c) Using the packing aid, encircle the formed loop in the suspension lines and make a girth hitch in the packing aid (figure 2-166).

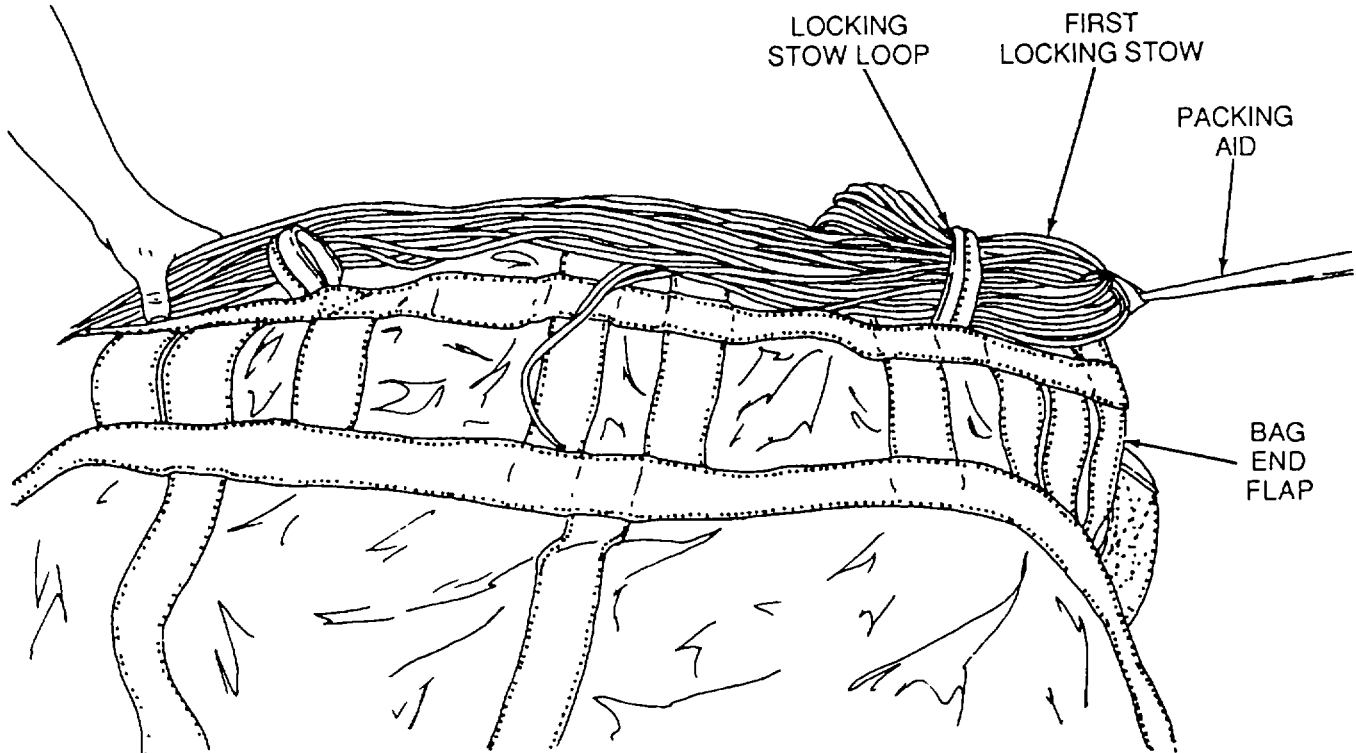


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Figure 2-166. Packing Aid Encircling Formed Suspension Line Loop.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).

- (d) Thread the knotted end of the packing aid through the locking stow loop located at the lower right corner of the deployment bag. Pull the suspension line formed loop until the loop is alined with the right edge of the bag large end flap (figure 2-167). Remove the packing aid.



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Figure 2-167. Making the First Locking Stow.

- (e) Extend the running end of the suspension lines and center line to the locking stow loop at the lower left corner of the deployment bag and measure and form a loop in the lines.
- (f) Using the packing aid, encircle the formed loop in the suspension lines and make girth hitch in the packing aid.
- (g) Thread the knotted end of the packing aid through the locking stow loop located at the lower left corner of the deployment bag. Pull the suspension line formed loop until the loop is alined with the left edge of the bag large end flap (figure 2-168). Remove the packing aid.

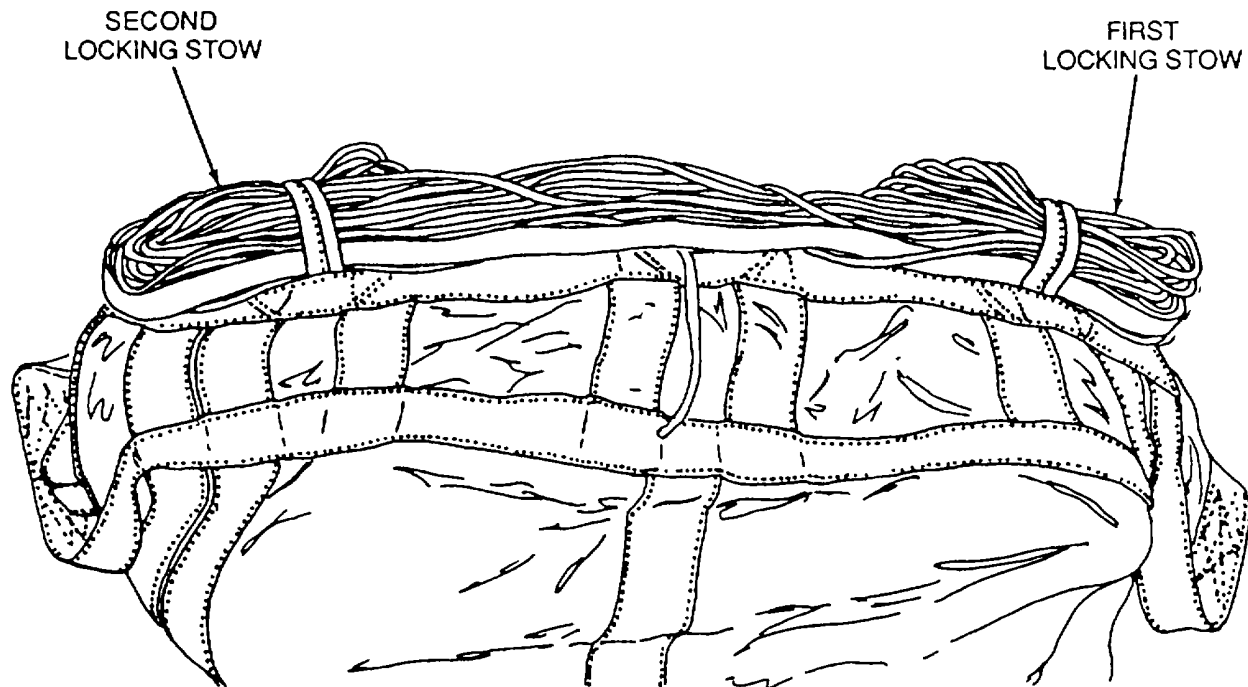


Figure 2-168. Locking Stows Completed.

- (24) *Installing suspension line stow ties.*
- (a) Cut a minimum of thirty-two 1 8-inch lengths of 1/4-inch wide, type I cotton webbing for use as suspension line stow ties.
 - (b) Secure the webbing lengths two per loop along each row of side strap loops by making a girth hitch in each webbing length. Ensure the ends of each webbing length are aligned and positioned toward the respective outer edge of the deployment bag.
- (25) *Wrapping the suspension lines.*
- (a) Extend the suspension lines and center line along the top center of the deployment bag toward the bridle end of the bag.
 - (b) Using a 12-inch wide by 36-inch long piece of kraft paper, wrap the suspension lines and center line extended along the top center of the deployment bag.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).

- (c) Secure each end and the middle of the suspension line wrap with one turn single of ticket no. 8/4 cotton orange thread. Secure each thread end with a surgeon's knot and locking knot (figure 2-169). Trim tie ends to two inches.

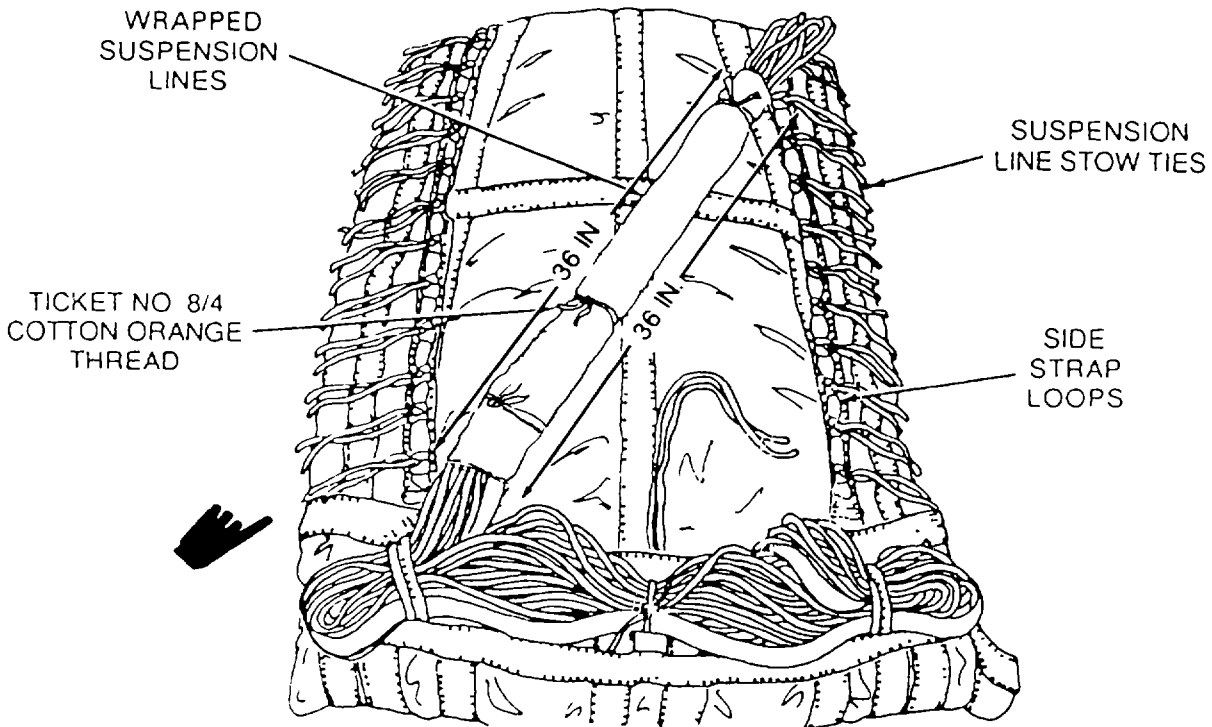
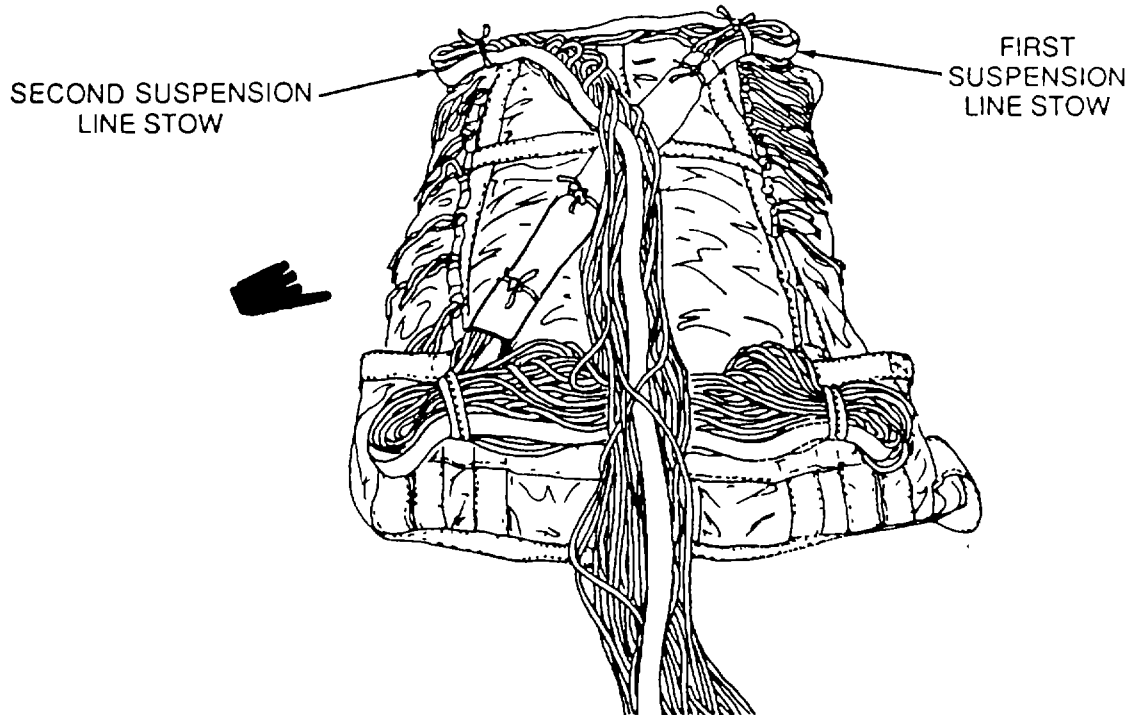


Figure 2-169. Suspension Line Wrapping Details.

- (26) *Stowing the suspension lines and suspension risers.*
- (a) Extend the running end of the suspension lines and center line to the upper right corner of the deployment bag. Measuring to the right edge of the stowage compartment, form the first suspension line stow by making a loop in the suspension lines.
- (b) Secure the first suspension line stow to the upper right outside strap loop using the first stow tie. Secure the stow tie with a surgeon's knot and locking knot.
- (c) Extend the running end of the suspension lines and center line across the deployment bag to the upper left corner of the bag. Measuring to the left edge of the stowage compartment, form the second suspension line stow by making a loop in the suspension lines.

- (d) Secure the second suspension line stow to the upper left outside strap loop using the first stow tie. Secure the stow tie with a surgeon's knot and locking knot (figure 2-170).

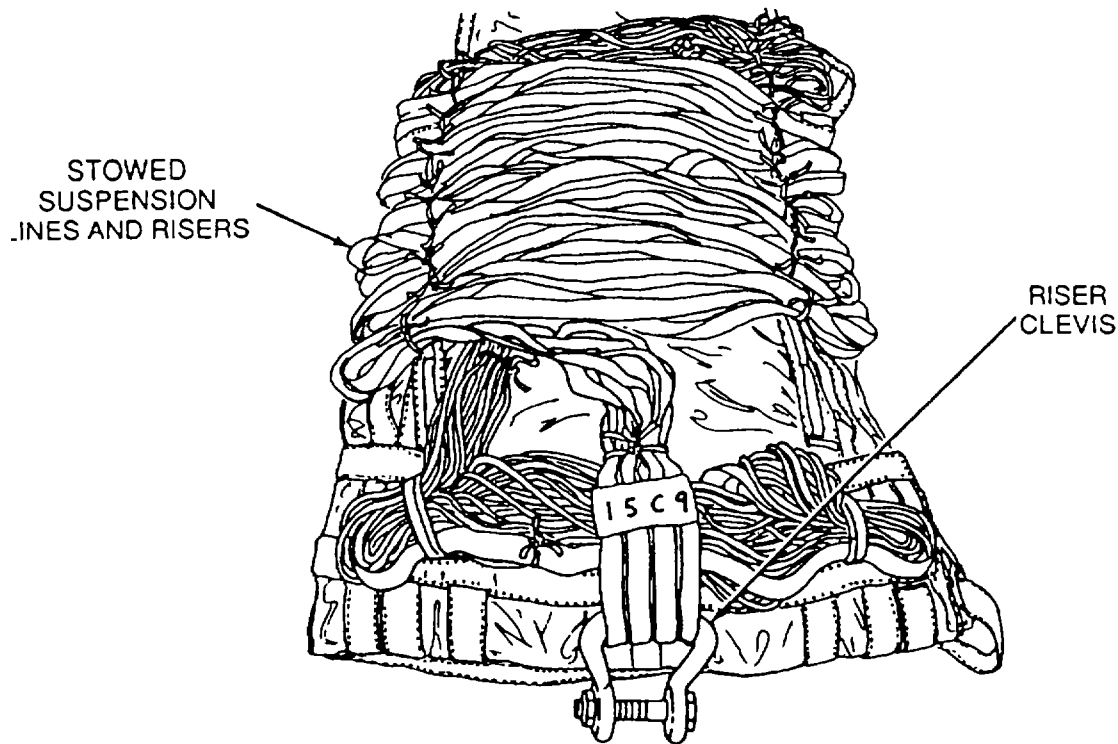


4838 165

Figure 2-170. First and Second Suspension Line Stows Formed and Secured.

2-18. Packing 100-Foot Cargo Parachute, Model G-11C (cont).

- (e) Using the procedures in (a) through (d) above, stow the remaining lengths of suspension lines, center line and suspension risers to a point 6 to 10 inches from the clevis attaching loops on the end of the suspension risers. Install an additional stow tie on the center strap loop in order to route the suspension risers from the center of the bag (figure 2-171). Trim all ties to 2 inches. Remove unused ties.

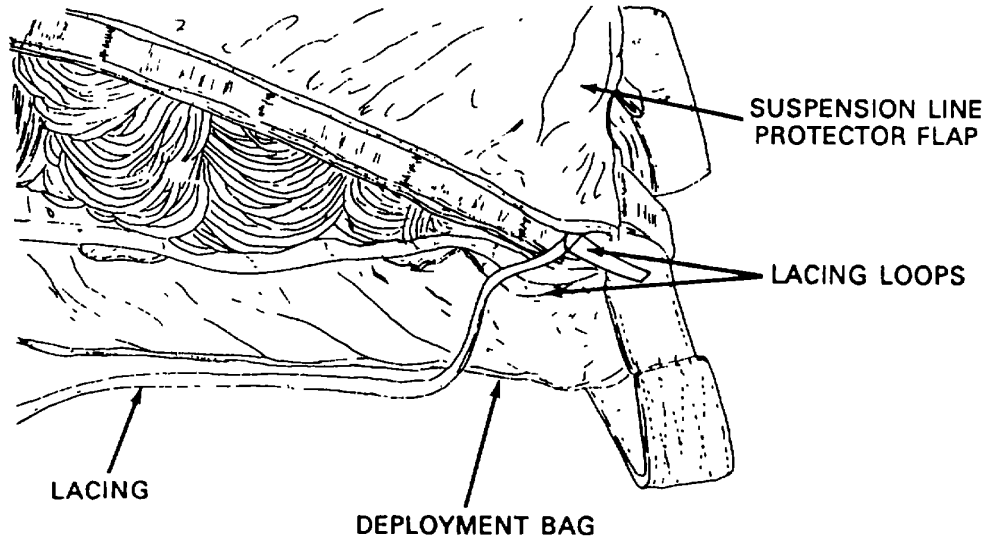


4838-166

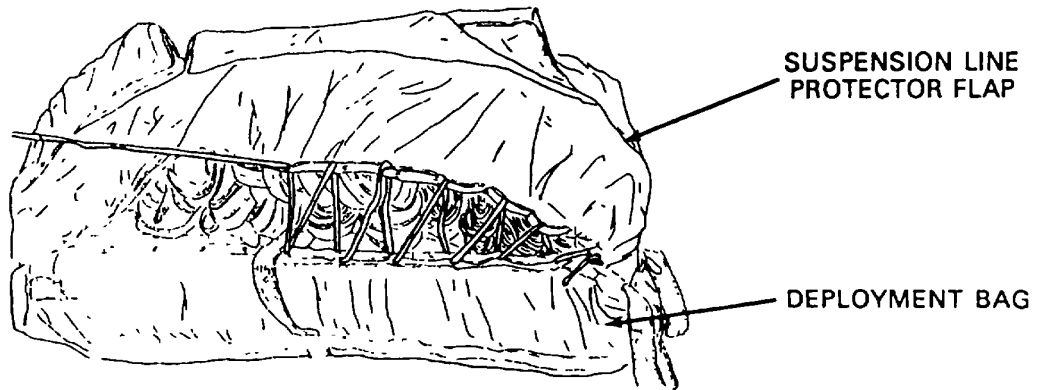
Figure 2-171. Suspension Line and Suspension Riser Stows Completed.

(27) *Lacing the nylon deployment bag.*

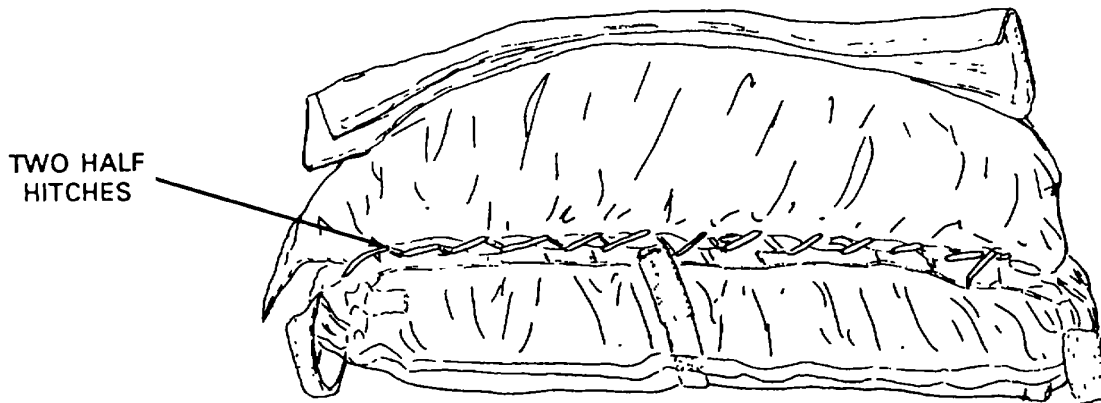
- (a) Bring the suspension line protector flap across the stowed suspension lines and suspension risers.
- (b) Cut a 70-inch length of 1/4-inch cotton webbing for use as lacing tie.
- (c) Secure with two half hitches, an end of the webbing length to the first loop located on the bottom corner of the deployment bag left upper corner (A, figure 2-172).
- (d) Using the lacing tie running end lace the flap to the deployment bag main body (B, figure 2-172).
- (e) Secure the lacing tie free end to the last lace with two half hitches (C, figure 2-172). Trim the tie ends to 2 inches.



(A) LACE WEBBING SECURED TO LOOP ON DEPLOYMENT BAG



(B) LACING THE PROTECTOR FLAP TO THE DEPLOYMENT BAG



(C) DEPLOYMENT BAG LACING COMPLETED

4838-167

Figure 2-172. Lacing the Nylon Deployment Bag.

2-18. Packing 100-Foot Cargo Parachute, Model 11A (cont).

(28) *Log record book entries.*

CAUTION

The inspector MUST ensure that the reefing line cutter tag entries match those made in the log record book. Inspect the cutter tags for the current date and verify that the signature on the tags is that of the senior packer of the parachute.

NOTE

The log record book must be modified for use on the G-11A cargo parachute. On the 'Jump, Inspection and Repack Data' page, change 'BAG NUMBER' to 'LOT/SER NUMBER'.

Senior packer's signature MUST be legible.

- (a) Remove the log record (DA Form 10-42 or DA Form 3912) from the parachute inspection data pocket (log record book pocket) located on the canopy bridle loop.
- (b) Make entries on the "Jump, Inspection and Repack Data" page as follows:
 - 1 *Date.* Enter the pack day, month, and year.
 - 2 *Lot/Ser Number.* Enter the lot number or serial number of the reefing line cutters that are being used for this repack
 - 3 *Routine Inspection.* No entry required.
 - 4 *Jumps or dropped.* No entry required.
 - 5 *Repack.* For initial packing, enter "IN"; thereafter, enter a checkmark in the column each time the parachute is repacked.
 - 6 *Packer's Name.* The senior packer will place his or her signature in this column.
 - 7 *Inspector's Name.* The inspector who performed the pack in process inspection will sign this entry.
 - 8 *Unit.* Enter the unit designation to which the packer and/or inspector are assigned.
- (c) Return the log record book to the log record book pocket upon completion of 8 required entries.
- (d) Route the log record pocket tie cord through the dosing loops at the bottom of the pocket and secure the tie cord ends with a square knot

NOTE

Stow riser extension in accordance with the FM 10-500 series manual.

(29) *Closing the riser extension flap.*

- (a) Temporarily secure the riser extension flap until riser extension has been stowed. Secure the flap at each corner and at the center with 1/4 inch cotton webbing.
- (b) Remove the temporary ties, open riser extension flap and stow riser extension.
- (c) Bring the riser extension flap across the stowed riser extension.
- (d) Cut a 36 inch length of 1/4 inch cotton webbing for use as a lacing tie.
- (e) With two half hitches, secure an end of the webbing length to the first loop on the deployment bag main body at the right upper corner.

- (f) Using the lacing tie running end, lace the riser extension cover flap to the deployment bagmain body.
- (g) Secure the lacing tie free end to the last lace with two half hitches.

Section VI. REPAIR

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NOTE

Repair and replacement of parachute components is performed in accordance with the general repair instructions in this section, and in specific paragraphs applicable to the item being repaired.

2-19. Maintenance Limitations. Only those maintenance functions specified in the Maintenance Allocation Chart (Appendix B) are authorized to be performed on cargo parachutes. Repair cost limitations to preclude uneconomical repair of cargo parachutes shall conform to the requirements of AR 750-1 and TB 43-0002-43.

2-20. Repair - Sewing Procedures.

This task covers:

- | | |
|----------------------------------|----------------|
| a. Basting and Temporary Tacking | c. Darning |
| b. Stitching and Restitchingd. | Zig-Zag Sewing |
-

Tools:

Specified in paragraph applicable to the item being repaired.

Equipment Condition:

Unpacked. Canopy with defects recorded and clean.

Materials/Parts:

Specified in paragraph applicable to the item being repaired.

NOTE

Sewing requirements will vary according to the type of item being repaired and the type of repair being made. The type of sewing machine, type of thread, the stitch range, and the stitch pattern, if applicable, required to accomplish a sewing procedure will be specified in the paragraph applicable to the item being repaired. All original stitching that is cut during the performance of a sewing procedure will be removed from the applicable item. Immediately after the accomplishment of a machine sewing procedure, trim thread ends to a point as close as possible to the material which has been sewn.

a. Basting and Temporary Tacking. Basting and temporary tacking are hand-sewing methods used to temporarily hold layers of cloth fabric together while a repair is being performed. The following is a list of procedures which apply to basting and temporary tacking actions:

- (1) Basting and temporary tacking should be made using thread which is of a contrasting color to the material being worked.
- (2) When basting, do not tie knots at any point in the thread length. Also, the sewing should be made with two stitches per inch.
- (3) Temporary tacking will usually be made using a length of size E nylon thread (item 27/28, Appendix D). However, an alternate type thread may be specified within the paragraph applicable to the item.
- (4) Immediately upon completion of a repair, remove previously made basting or temporary tacking stitches.

b. Stitching and Restitching. Perform stitching and restitching as follows, referring to tables 2-2 and 2-3:

(1) *Parachute canopy assemblies*. The stitching and restitching made on parachute canopies should be accomplished with thread that is contrasting in color to the fabric being restitched. If contrasting color thread is not available, thread of matching color may be used, providing all other specifications are met. Straight stitching and restitching on parachute canopy assemblies should be locked by at least 2 inches at each end of a stitch row, when possible. Zig-zag stitching does not require locking; however, zig-zag restitching should extend at least 1/4 inch into undamaged stitching at each end, when possible. When restitching parachute canopy assemblies, stitch directly over the original stitching and follow the original stitch pattern as closely as possible.

Table 2-2. Sewing Machine Code Symbols.

Code symbol	Sewing machine
LD	SEWING MACHINE, INDUSTRIAL: General sewing; 301 stitch; light duty; NSN 3530-01-177-8590.
MD ZZ	SEWING MACHINE, INDUSTRIAL: Zig-zag; 308 stitch; medium duty; NSN 3530-01-181-1420.
LD ZZ	SEWING MACHINE, INDUSTRIAL: Zig-zag; 308 stitch, light duty; NSN 3530-01-181-1420.
HD	SEWING MACHINE, INDUSTRIAL: General sewing; 301 stitch; heavy duty, NSN 3530-01-177-8588.
MD	SEWING MACHINE, INDUSTRIAL: General Sewing; 301 stitch; medium duty, NSN 3530-01-177-8591.
DN	SEWING MACHINE, INDUSTRIAL: Darning; lock stitch; NSN 3530-01-177-8589.
LHD	SEWING MACHINE, INDUSTRIAL: 301 stitch; light heavy duty; NSN 3530-01-186-3079.
ND	SEWING MACHINE, INDUSTRIAL: 301 stitch, double-needle; NSN 3530-01-182-2873

2-20. Repair - Sewing Procedures (cont).

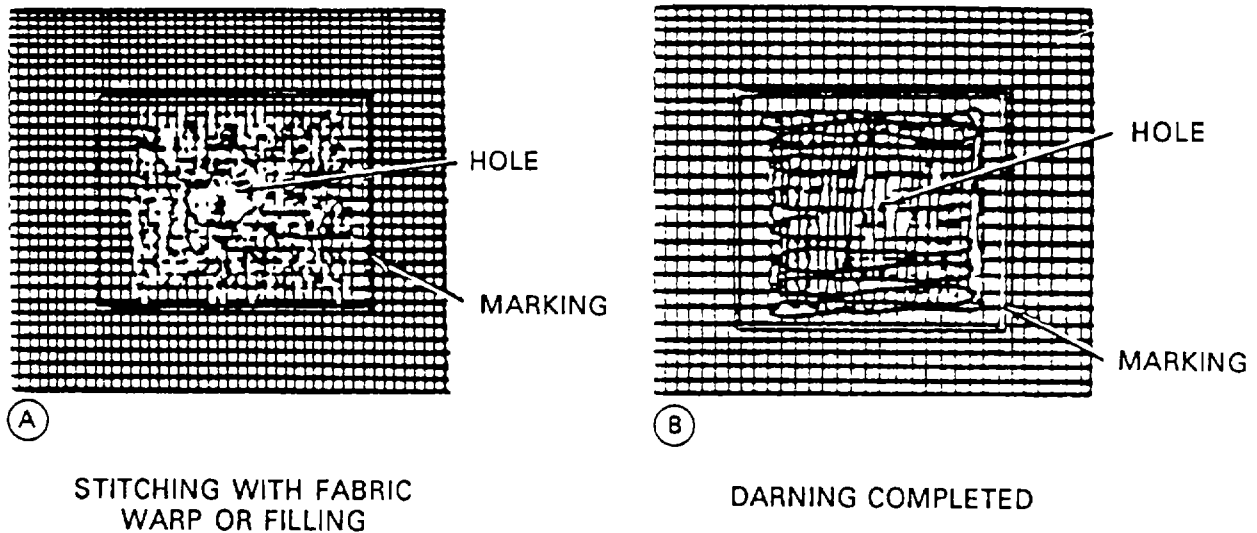
Table 2-3. *Stitching and Restitching Specifications.*

Code symbol	Recommended sewing machine (code symbol)	Stitches per inch	Thread Size
Canopy			
Gore panel	LD	7-11	E
	DN	Darn	E
Vent and skirt bands (upper and lower lateral bands)	MD	7-11	E
Canopy line	ZZ	7-11	E
Suspension line	ZZ	7-11	E
Radial line	ZZ	7-11	E
Vent line	ZZ	7-11	E
Attaching loop (bridle loop)	HD	5-8	3
Parachute inspection data pocket	LD	7-11	E
Tie cord loop	ZZ	7-11	E
Tie cord	ZZ	7-11	E
Pocket band	ZZ	7-11	E
Cutter bracket panel reinforcement	LD	7-11	E
Radial line reinforcement tape	ZZ	7-11	E
Radial seam	LD	7-11	E
Reefing ring retainer	ZZ	7-11	E
Suspension riser	HD	5-8	6
V-tab	LD	7-11	E
	ZZ	7-11	E
Deployment Bag Bridle	HD	5-8	6
Deployment Bag			
Panels and flaps			
Bag body	MD	7-11	E
	HD	5-8	6
	DN	Darn	E
	HD	5-8	3
Bag cover	MD	7-11	E
	DN	Darn	E
Suspension line protector flap	MD	7-11	E
	DN	Darn	E
Edge binding	MD	7-11	E
Locking stow loop	HD	5-8	6
Center line	HD	5-8	6

(2) Other parachute items. Stitching and restitching on other parachute items constructed from cloth, canvas, and webbing should be accomplished with thread which matches the color of the original stitching, when possible. All straight stitching should be locked by backstitching at least 1/2 inch. Restitching should be locked by overstitching each end of the stitch formation by 1/2 inch. Zig-zag stitching does not require locking; however, zig-zag restitching should extend at least 1/4 inch into undamaged stitching at each end, when possible. Restitching should be made directly over the original stitching, following the original stitch pattern as closely as possible:

c. Darning. (Refer to tables 2-2 and 2-3). Darning is a sewing procedure used to repair limited size holes, rips, and tears in assorted air delivery items constructed from textile material such as parachute canopy gore sections and the cloth and reinforcement webbing of deployment bags. A darning machine should be used to darn small holes and tears where fabric is missing. Darning of previously patched material can be performed provided darning size limitations prescribed in the paragraph applicable to the item are not exceeded. A darning repair will be performed using the following procedures:

- (1) Using an authorized marking aid of contrasting color, mark a square around the damaged area and ensure that the marking is at least 1/4 inch back from each edge of the damaged area. The marking will be made with the warp and the filling of the material.
- (2) Darn the damaged area by sewing the material in a back-and-forth manner, using size A or E nylon thread, allowing the stitching to run with the warp or filling of the fabric (A, figure 2-173).



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Figure 2-173. Darning Method Using a Darning Sewing Machine.

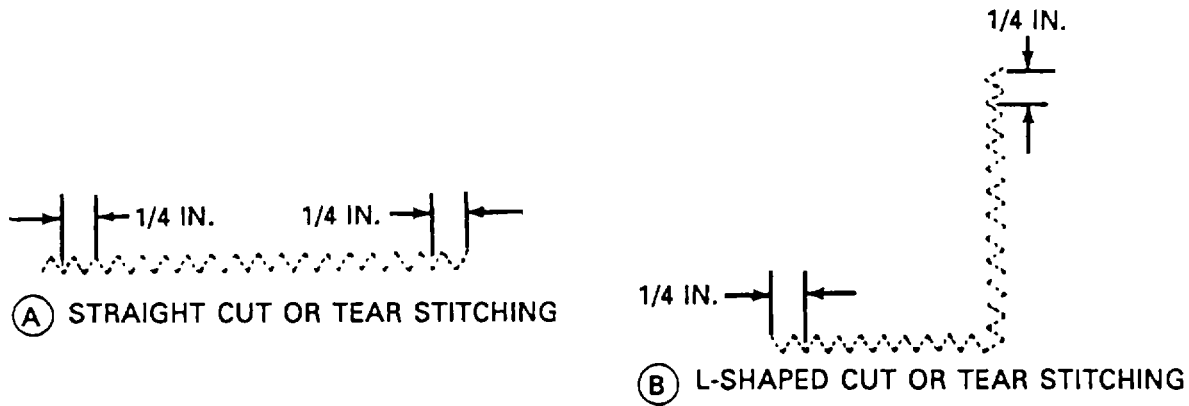
(3) Turn the material and stitch back and forth across the stitching made in (b) above until the hole or tear is completely darned (B, figure 2-173).

(4) If applicable, restencil informational data, gore number(s), or identification marks using the criteria in para. 2-22.

2-20. Repair - Sewing Procedures (cont).

d. Zig-Zag Sewing. (Refer to tables 2-2 and 2-3). Air delivery items, except parachute canopies, made from textile materials that have sustained cut or tear damage may be repaired by zig-zag sewing provided the applicable damaged area does not have any material missing and the cut or tear is straight or L-shaped. Should the damaged area be irregular shaped or have material missing, the repair will be achieved by either darning or patching, as required. A zig-zag sewing repair will be accomplished with a zig-zag sewing machine, using the following procedures:

- (1) Set the sewing machine to the maximum stitch width.
- (2) Beginning at a point 1/4 inch beyond one end of the cut or tear, stitch lengthwise along the damaged area to a point 1/4 inch beyond the opposite end of the cut or tear (A, figure 2-174). The cited stitching procedure will also apply to an L-shaped cut or tear (B, figure 2-174).
- (3) If applicable, restencil informational data or identification marks as prescribed in para. 2-22.



4838-169

Figure 2-174. Repair Method Using a Zig-Zag Sewing Machine.

2-21. Searing and Waxing.

This task covers:

- a. Searing b. Waxing
-

Tools:

Pot, Melting, Item 12, Appendix B
Knife, Hot Metal, Item 5, Appendix B

Equipment Condition:

Unpacked

Materials/Parts:

Beeswax, Item 1, Appendix D
Wax, Paraffin, Item 35, Appendix D

CAUTION

Cotton tape, webbing, or cord will not be seared.

NOTE

Fabric materials such as cord, tape, and webbing that are cut for use in the maintenance of parachutes will normally be heat-seared or dipped in a melted wax mixture, as applicable, to prevent the material from fraying or unraveling. However, in some instances the preparation of the material may not be necessary and will be specified accordingly.

a. Searing. The cut ends of nylon tape, webbing, and cord lengths may be prepared by heat-searing which is performed by pressing the raw end of the material against a hot metal surface (knife) until the nylon has melted sufficiently. Avoid forming a sharp edge or lumped effect on the melted end.

b. Waxing. The fraying or unraveling of cotton or nylon tape, webbing, and cord length ends may be prevented by dipping 1/2 inch of the raw end of the material into a thoroughly melted mixture of half beeswax and half paraffin in an electric melting pot. The wax temperature should be substantial enough to ensure the wax completely penetrates the material rather than just coating the exterior fabric.

2-22. Marking and Restenciling .

This task covers:

- a. Marking b. Restenciling c. Remarking and Restenciling
-

Tools:

Brush, Stenciling, Item 2, Appendix B

Equipment Condition:

Layout on packing table or other suitable area.

Materials/Parts:

Ink, Marking, Item 16, Appendix D
Marker, Felt Tip, Black, Item 18, Appendix D
Pen, Ball Point, Item 20, Appendix D
Stencilboard, Oiled, Item 22, Appendix D

NOTE

Stenciling should be used whenever possible. A ballpoint pen or felt tip marker should be used only where stenciling is not possible, or when stenciling devices are not available. However, only felt tip markers that contain parachute marking ink and marked "FOR PARACHUTE MARKING" is authorized for use in marking air delivery items. Any type ball point pen using black or blue ink may be used for marking on labels only.

Original stenciled data or marking that becomes faded, illegible, obliterated, or removed as a result of performing a repair procedure will be remarked with a ballpoint pen, felt tip marker, or restenciled. All marking or restenciling will be done on or as near as possible to the original location and should conform to the original lettering type and size.

a. Marking. Using marking devices such as ballpoint pen or felt tip marker, mark on or as near as possible to original location and conform to original lettering type and size.

b. Restenciling. Proceed as follows:

- (1) Cut oiled stencilboard to original lettering type and size of data to be restenciled.
- (2) Place cut stencilboard over, or as near as possible to, original marking to be restenciled.
- (3) Place additional sheet of stencilboard beneath the area to be restenciled to prevent the marking ink from penetrating to other areas.
- (4) Hold stencilboard in place and, using stenciling brush filled with parachute marking ink, restencil original marking.

C Remarking and Restenciling. Remark or restencil original stenciled data or markings that become faded, illegible, obliterated or have been removed as a result of performing a repair procedure. Ensure all marking or restenciling is on, or as near as possible to, the original location and conforms to the original lettering type and size.

2-23. Parachute Canopy.

This task covers:

- a. Repair b. Replace
-

Equipment Condition:

Cleaned and dried, paragraph 2-12
Inspected, paragraphs 2-9, 2-13
Unpacked, canopy laid flat

- a. Repair. Refer to individual component/assembly repairs and replacement procedures.
- b. Replace. Replace an unserviceable/unrepairable parachute with a serviceable parachute canopy from stock.

2-24. Attaching Loop (Bridle Loop).

This task covers:

- a. Repair b. Replacement
-

Tools:

Pot, Melting, Item 12, Appendix B
Sewing Machine, Heavy Duty,
Item 17, Appendix B

Equipment Condition:

Cleaned, paragraph 2-12.
Inspected, paragraph 2-9, 2-13.
Lay out on packing surface or other suitable area.

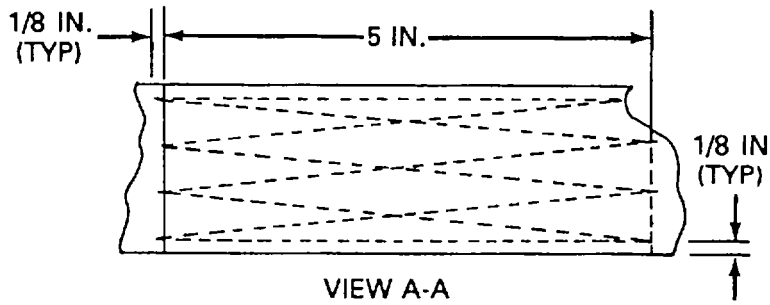
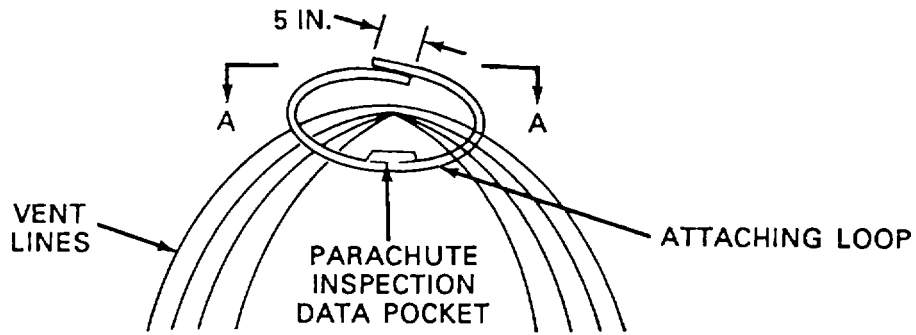
Materials/Parts:

Webbing, Cotton, Type X, Item 38, Appendix D
Thread, Nylon, Size 3, Item 31/32, Appendix D

a. Repair. Restitch broken or loose stitching according to original construction details, using the procedures in paragraph 2-20.

b. Replacement. Replace a damaged attaching loop (bridle loop) by fabricating as follows:

- (1) Cut a 30-inch-length of 1 3/4-inch wide, type X cotton webbing and wax the ends.
- (2) Pass one end of the webbing length through the canopy vent lines and join the webbing ends together above the vent lines with a 5-inch-long overlap (figure 2-175). Insure the webbing encircles all the canopy vent lines.
- (3) Secure the overlapped webbing ends together by stitching a 5-inch-long four-point WW-stitch formation, 1/8 inch in from each side edge. Overstitch each webbing end by 1/8 inch. Stitching will be made in accordance with para. 2-20 using a heavy-duty sewing machine and size 3 nylon thread. Stitching will be 5 to 8 stitches per inch, using the specifics in table 2-3.
- (4) Remove the original canopy attaching loop (bridle loop) from around the canopy vent lines by cutting the loop webbing.
- (5) If the original parachute inspection data pocket (log record pocket) is serviceable, remove the pocket from the damaged attaching loop (bridle loop) by cutting the tacking which secures the pocket to the loop webbing. Install the pocket on the replacement attaching loop (bridle loop) according to original installation details, and the applicable tacking specifics in paragraph 2-38, below.



4838-170

Figure 2-175. Canopy Attaching Loop Replacement Details.

2-25. Vent Reinforcement Band (Upper Lateral Band).

This task covers: Repair

Tools:

Knife, Item 4, Appendix B
Pot, Melting, Item 12, Appendix B
Sewing Machine, Light Duty, Item 15, Appendix B
Shears, Item 13, Appendix B

Equipment Condition:

Cleaned, paragraph 2-12.
Inspected, paragraphs 2-9, 2-13.
Unpacked, canopy laid flat.

Materials/Parts:

Marking Aid, Item 46/47, Appendix D
Thread, Nylon, Size E, Item 29/30, Appendix D
Webbing, Nylon, 1-inch, Tubular, Item 45,
Appendix D

a. Restitching. Restitching of vent reinforcement webbing is authorized. Use a light duty sewing machine and size E, nylon thread of contrasting color. Stitch over the original stitch pattern. Lock each row of stitches two inches at each end.

NOTE

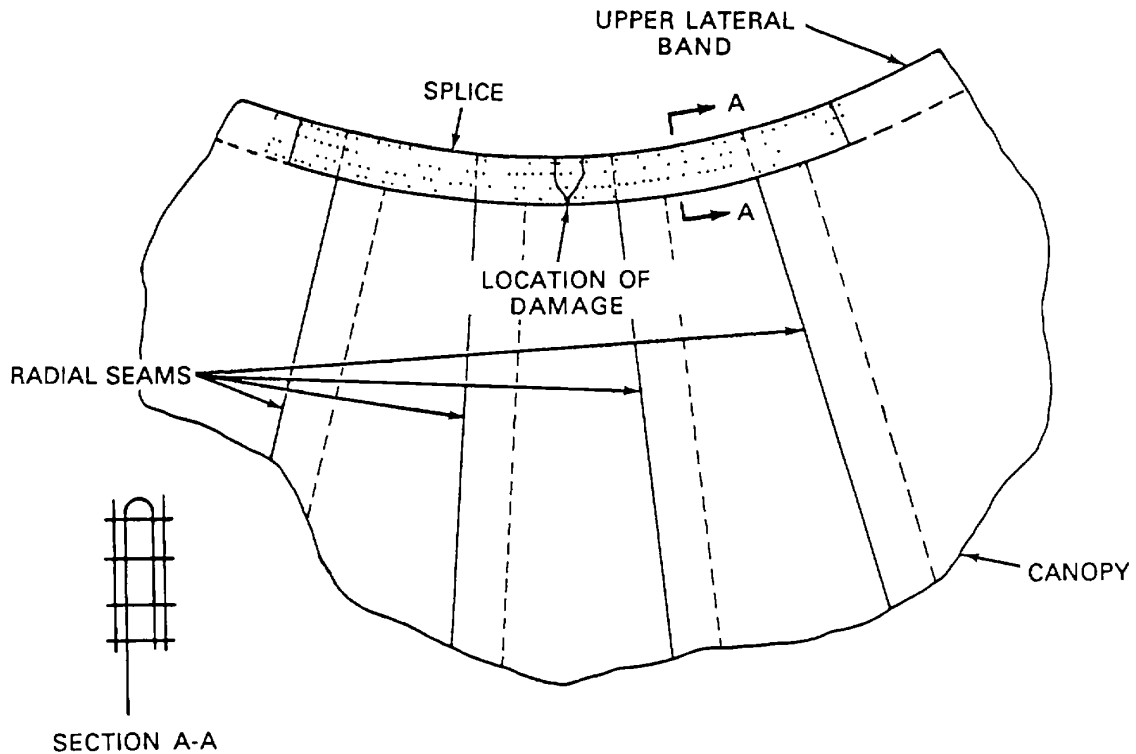
Vent reinforcement bands may be spliced only once and will not be replaced.

b. Damage Between Radial Seams. Repair as follows:

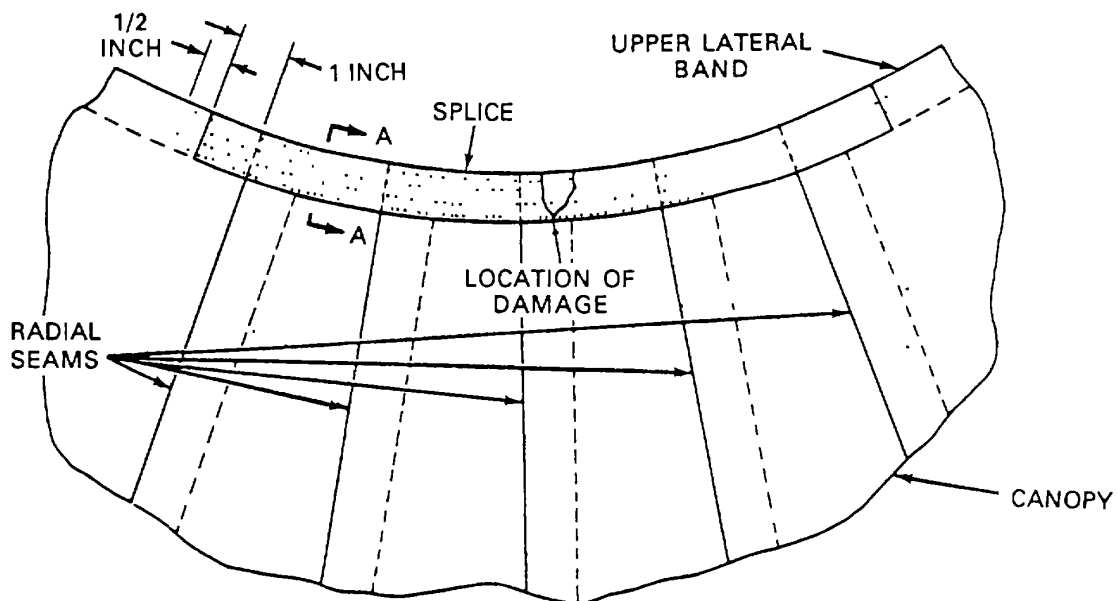
- (1) Mark vent line position and cut stitching of two vent lines on each side of damaged area, and move lines to one side.
- (2) Smooth canopy around damaged area.
- (3) Cut a piece of 1-inch nylon webbing, long enough to extend 1 inch beyond outside edge of second radial seam on each side of damaged area. Wax the ends of webbing (para. 2-21).
- (4) Center webbing over damaged area. Using a light duty sewing machine and size E, nylon thread, sew webbing in place with four continuous rows of stitching 1/8 inch from edge of webbing, 7 to 11 stitches per inch. Overstitch ends of webbing 1/2 inch (A, figure 2-176).
- (5) Reposition vent lines and sew them in place according to original construction.

c. Damage Extending Into Radial Seam. Repair as follows:

- (1) Mark vent line position and cut stitching of vent line attached to damaged radial seam and the stitching of two vent lines on each side of damaged seam. Move lines to one side.
- (2) Smooth canopy around damaged area.



(A) DAMAGE BETWEEN RADIAL SEAMS



(B) DAMAGE EXTENDING INTO RADIAL SEAM

4838-171

Figure 2-176. Vent Reinforcement Band Splicing Details.

- (3) Cut a piece of 1-inch wide nylon webbing long enough to extend 1 inch beyond outside edge of second radial seam on each side of damaged area. Wax ends of webbing (para. 2-21).
- (4) Center webbing over damaged area. Using a light duty sewing machine and size E nylon thread, sew webbing in place with four continuous rows of stitching, 1/8 inch from edge of webbing, 7 to 11 stitches per inch. Overstitch ends of webbing 1/2 inch (B, figure 2-176).
- (
- 5) Reposition vent lines and sew in place according to original construction.

2-26. Canopy Gore Section.

This task covers:

- a. Repair b. Replace
-

Tools:

Knife, Item 4, Appendix B
Needle, Tacking, Item 9, Appendix B
Shears, Item 13, Appendix B
Sewing Machine, Light Duty, Item 15, Appendix B
Sewing Machine, Darning, Item 19, Appendix B
Push Pins
Brush, Stenciling, Item 2, Appendix B

Equipment Condition:

Inspected, paragraph 2-9.
Cleaned, paragraph 2-11.
Parachute laid out on table.

Materials/Parts:

Marking Aid, Item 46/47, Appendix D
Thread, Size, E, Items 29/30, Appendix D
Cloth, Nylon, Parachute, 1.6 Ounce, Type II
Item 9, Appendix D
Cloth, Nylon, Parachute Mending, Adhesive,
Item 8, Appendix D

NOTE

Replacement of a gore section is accomplished at the Intermediate (DS) maintenance level only, in accordance with the Maintenance Allocation Chart (MAC), Appendix B.

a. *Repair.*

- (1) *Restitching.* Stitching and restitching made on parachute canopies should be accomplished with size E nylon thread that is contrasting in color to the fabric being stitched or the original thread being restitched. If contrasting color thread is not available, thread of matching color may be used, providing all other specifications are met. Straight stitching and restitching should be locked by at least two inches at each end of a stitch row, when possible. Restitch directly over the original stitching and follow the original stitch pattern as closely as possible.
- (2) *Darning.* Darn a hole or tear in a gore section which does not exceed 3/4 inch in length or diameter as prescribed in para. 2-20, using size E nylon thread. Each gore section may be darned three times.
- (3) *Patching.* Use a patch to repair holes or tears which exceed 3/4 inch in length or diameter.

(a) *Limitations.* The following limitations apply to the 100-foot cargo parachute.

2-26. Canopy Gore Section (cont).

WARNING

The limitations prescribed for parachute canopy patching will be stringently adhered to under all circumstances and without any deviations.

- 1 A patch will not be applied to a damaged area that has been previously patched.
- 2 There is no limitation to the number of patches or size of patch to each canopy gore section or gore panel. However, determination should be made of the most economical method to be used, i.e., two or more patches versus one large patch or one large patch versus a section replacement. A patch applied to a parachute canopy may extend from radial seam to radial seam.

(b) Making a basic patch. A basic patch is used to repair damaged cloth when the affected area is no closer than 1 inch from a radial seam or lower lateral band. Should a damaged area be closer than 1 inch to the cited areas, a miscellaneous patch will be made as detailed in paragraph (c). There are two methods which may be used to apply a basic patch and the procedures for performing each method are outlined in paragraphs 1 and 2 as follows:

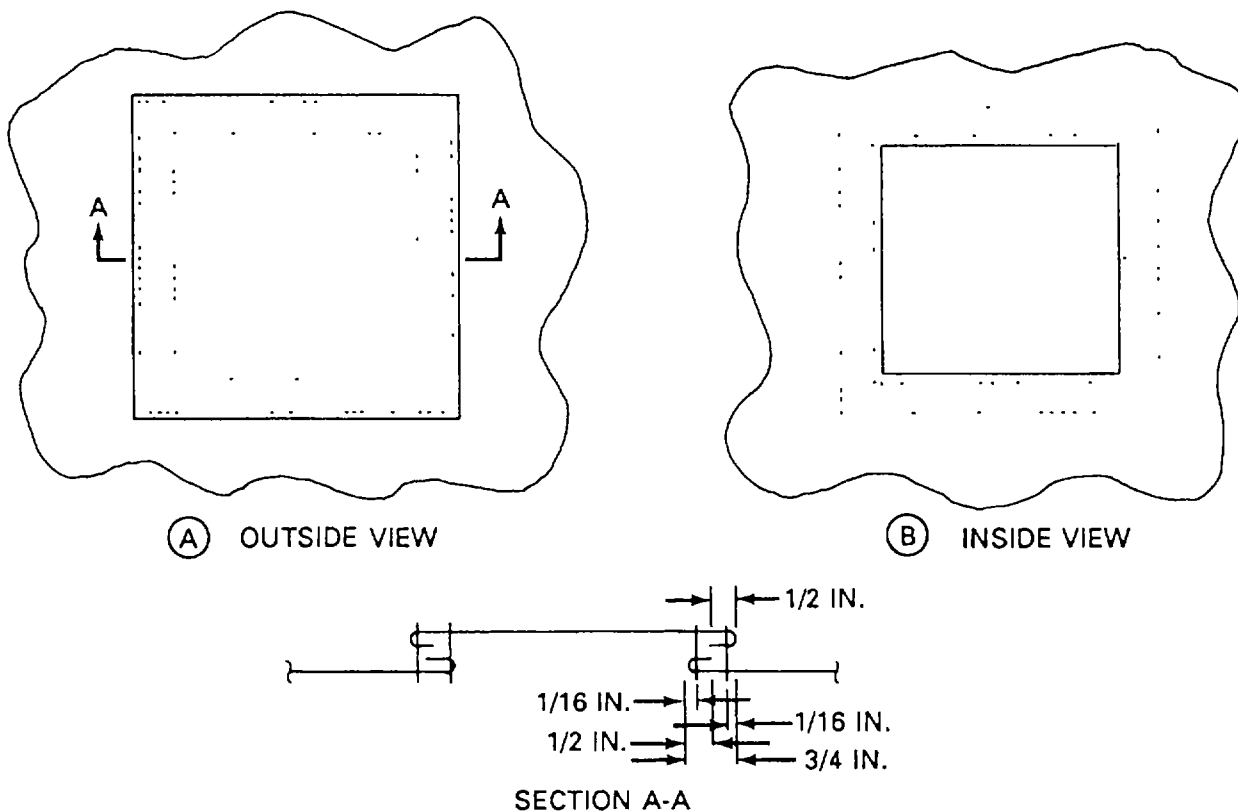
NOTE

A basic patch applied to the parachute canopy by sewing will be square or rectangular in shape. A parachute canopy basic patch constructed from adhesive nylon parachute mending cloth may be shaped, rectangular or triangular as required.

1 *The sewn patch.* The primary method of applying a basic patch is by sewing. When using this method of patching on a parachute canopy, the patch will be applied to the inside of the canopy. (The sewn patch is shown in figure 2-177.) Apply a sewn patch as follows:

- a Place the reparable item on a repair table, smooth the fabric around the damaged area, and secure the item to the table with pushpins. Do not pin the damaged area.
- b Using an authorized marking aid of contrasting color, mark a square or rectangle around the area to be patched and insure that one side of the marked square is parallel to the warp or filling of the material.
- c Cut the damaged area fabric along the lines made in b, above. Further cut the fabric diagonally at each corner to allow a 1/2-inch foldback in the raw edges.
- d Make a 1/2-inch foldback on each raw edge. Pin and baste each foldback to complete the prepared hole. Basting will be performed using the procedures in paragraph 2-20a.
- e Using the same type material as in original construction, mark and cut a patch 2 1/2-inches wider and longer than the inside measurements of the prepared hole.
- f Center the patch material over the prepared hole and insure the warp or filling of each patch material matches the warp or filling of the fabric being patched. Pin the patch material in position.

- g Make a 1/2-inch foldunder on each edge of the patch material and baste the patch to the prepared area. Basting will be performed using the procedures in paragraph 2-20a.
- h Remove the pushpins securing the canopy to the repair table and secure the patch by stitching, using the applicable details in figure 2-177 and paragraph 2-20d. Make the first row of stitching completely around the patch. Turn the canopy over and make a second row of stitching around the prepared hole. Stitching will be performed in accordance with paragraph 2-20b.
- i If applicable, restencil informational data or gore number according to procedures in paragraph 2-22.



4838-172

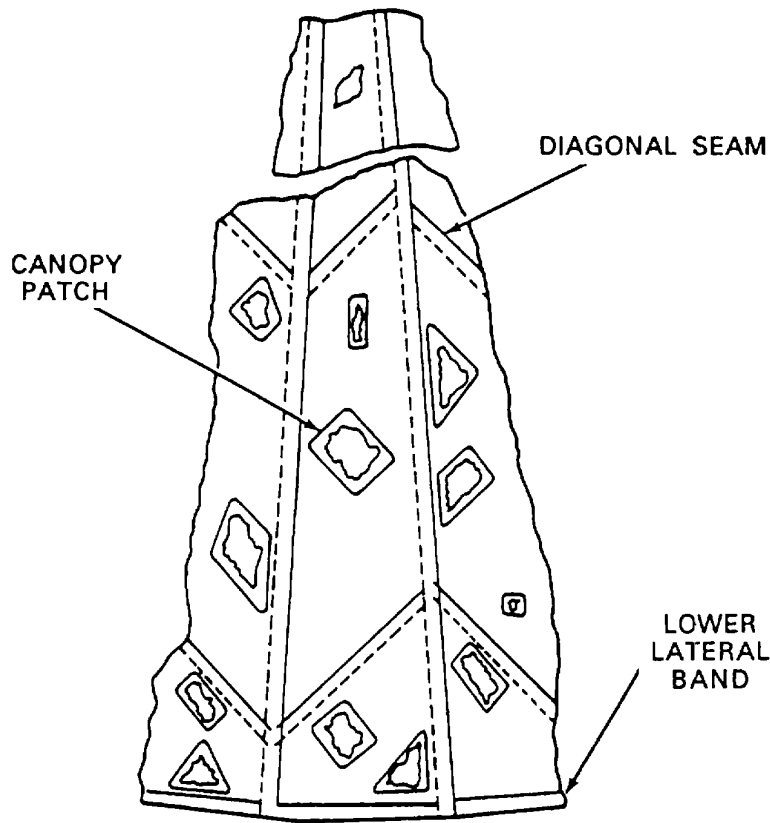
Figure 2-177. Basic Patch Application.

2 *The parachute mending cloth patch.* A second method of applying a basic patch is by use of 36-inch wide adhesive nylon parachute mending cloth. Patching limitations as outlined in paragraph (3)(a), shall be adhered to. Apply a parachute mending cloth patch as follows (figure 2-178):

NOTE

Age life for the nylon parachute mending cloth, prior to application, is three years from the date of adhesive coating which is marked on each roll of mending cloth.

2-26. Canopy Gore Section (cont).



4838-173

Figure 2-178. Basic Patching Details Using Parachute Mending Cloth.

- a Lay out the canopy with the damaged area exposed.
- b To facilitate the application of the mending cloth patch, place a 1/2- by 20-inch smooth wooden board or similar smooth, hard-finished, rigid material, except paper board, under the damaged area.
- c Trim the ragged, frayed, or severely burned areas of the canopy cloth to provide a smooth area for patch application.
- d Using an authorized marking aid of contrasting color, mark a square, triangle or rectangle, as applicable, around the damaged area.
- e Measure and cut lengths of the mending cloth to achieve the shape and size of the intended patch. Cut the patch to provide an overlap of the damaged area using the specifics in table 2-4. Round off patch corners. Patches will be prepared in duplicate to allow for application on the inside and outside of the canopy.
- f Remove the paper backing from the adhesive side of the mending cloth by forming a crease, scoring the paper with a fingernail, and peeling the paper from the adhesive coating. Insure the mending cloth is not damaged when scoring the paper backing.

- g Smooth the canopy material adjacent to the damaged area on the canopy outside and place the formed mending cloth patch over the damaged area.
- h Using the edge of a packing paddle or a roller, apply pressure to smooth the patch on.
- i Apply the duplicate-shaped patch to the damaged area on the canopy inside using the procedures in f, g and h, above. Stitch 1/16 inch in from outer edge of patch using details of tables 2-2 and 2-3.

Table 2-4. Mending Cloth Patching Specifications for Cargo Parachutes.

Damaged area size	Patch minimum size
1 inch to 1 1/2 inches	2 inches
1 1/2 inches to 2 inches	3 1/2 inches
2 inches to 3 inches	4 1/2 inches
3 inches to 5 inches	9 inches
5 inches to 7 inches	10 inches
7 inches to 12 inches	15 1/2 inches
12 inches to 15 1/2 inches	19 1/2 inches

(c) Applying a miscellaneous canopy patch. A miscellaneous canopy patch which may be irregularly shaped, is used to repair damaged canopy material when the location of the damaged area requires the patch to extend into or over a seam, reinforcement, or lateral band. Ascertain the type of patch required for the canopy, using the details in figure 2-179. A canopy gore section that cannot be patched with a basic patch as outlined in paragraph a(3)(b), above, will be patched with a miscellaneous patch. Apply a miscellaneous patch to a gore section as follows:

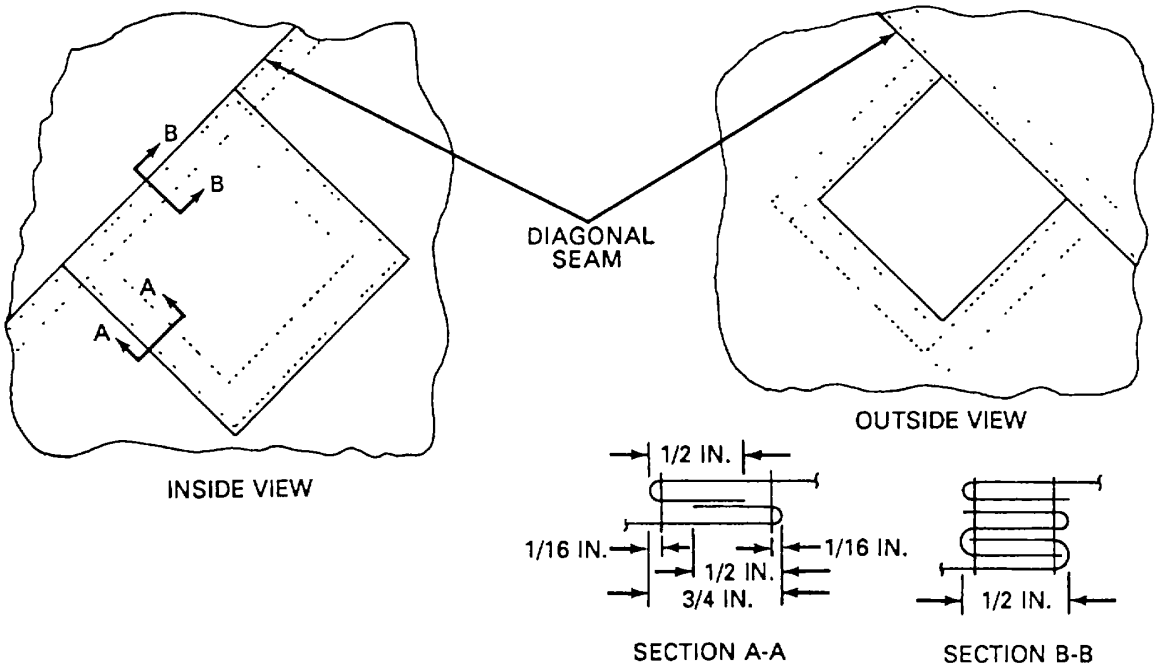
NOTE

Adhesive nylon parachute mending cloth will not be used in the construction or application of a miscellaneous canopy patch.

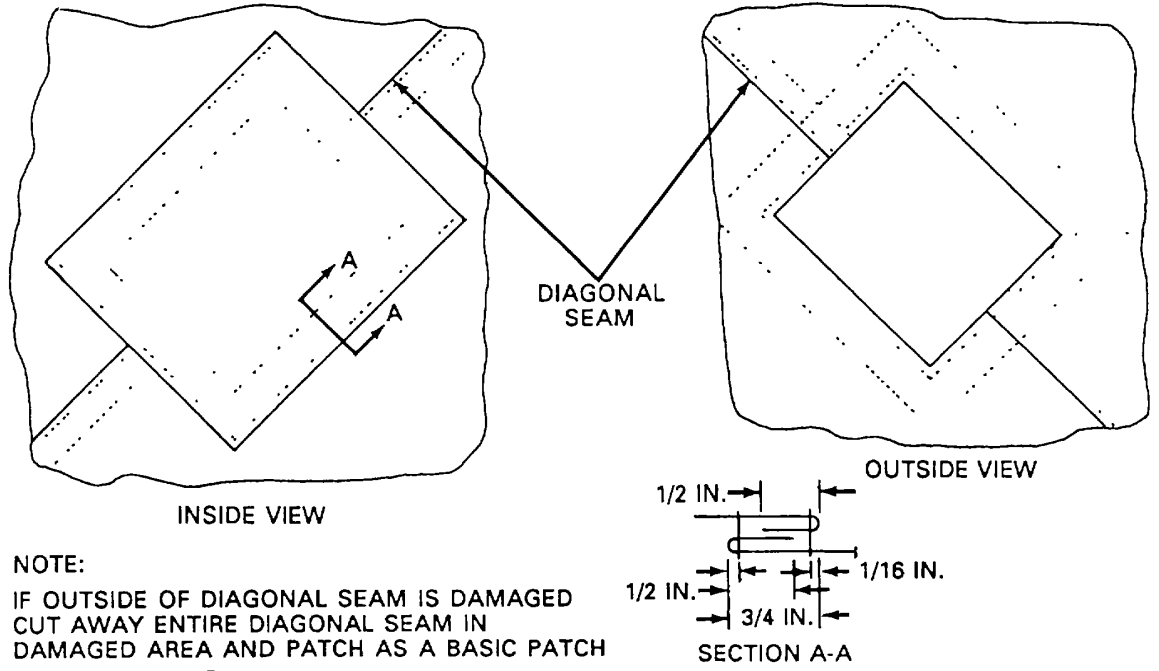
- 1 Place the canopy inside out on a repair table, smooth the fabric around the damaged area, and secure the damaged gore section to the table with pushpins. Do not pin the damaged area of the gore section.
- 2 As required, cut the applicable stitching to remove or lay aside items which may interfere with the patching process.
- 3 Using an authorized marking aid of contrasting color, mark a rectangle or triangle around the damaged area. Make the mark 1/2 inch from any adjacent seam, reinforcement, or lateral band. Insure that one side of the marked rectangle or triangle is parallel to the warp or filling of the canopy material.
- 4 Prepare the damaged area hole by cutting along the marks made in 3. Also make a diagonal cut at each corner of the formed hole to permit a 1/2-inch foldback of each raw edge.

2-26. Canopy Gore Section (cont).

- 5 To complete hole preparation, make a 1/2-inch foldback of each raw edge. Pin and baste each edge foldback using the procedures in paragraph 2-20a.
- 6 Using the same type material as in original canopy construction, mark and cut a patch 2 1/2-inches wider and longer than the inside measurements of the prepared hole.
- 7 Center the patch material over the prepared hole. Insure the warp or filling of the patch material matches the warp or filling of the material to be patched. Pin the patch material in position.
- 8 Make a 1/2-inch foldunder on each edge of the patch material and baste the patch to the prepared area. Basting will be performed using the procedures in paragraph 2-20a.
- 9 Remove the pushpins securing the canopy to the repair table and secure the patch by stitching according to the details in figure 2-179, using the stitching specifics outlined in tables 2-2 and 2-3. Make the first row of stitching completely around the edges of the patch. Turn the canopy right side out and make a second row of stitching around the edges of the prepared hole. Stitching will be performed in accordance with paragraph 2-20b.
- 10 Reposition the canopy items removed or laid aside in 2, in the original location and secure each item to the canopy by restitching according to original construction details and paragraph 2-20b.
- 11 If applicable, restencil informational data or gore numbers according to procedures in paragraph 2-22.



(A) RECTANGULAR PATCH INCLUDING A DIAGONAL SEAM.

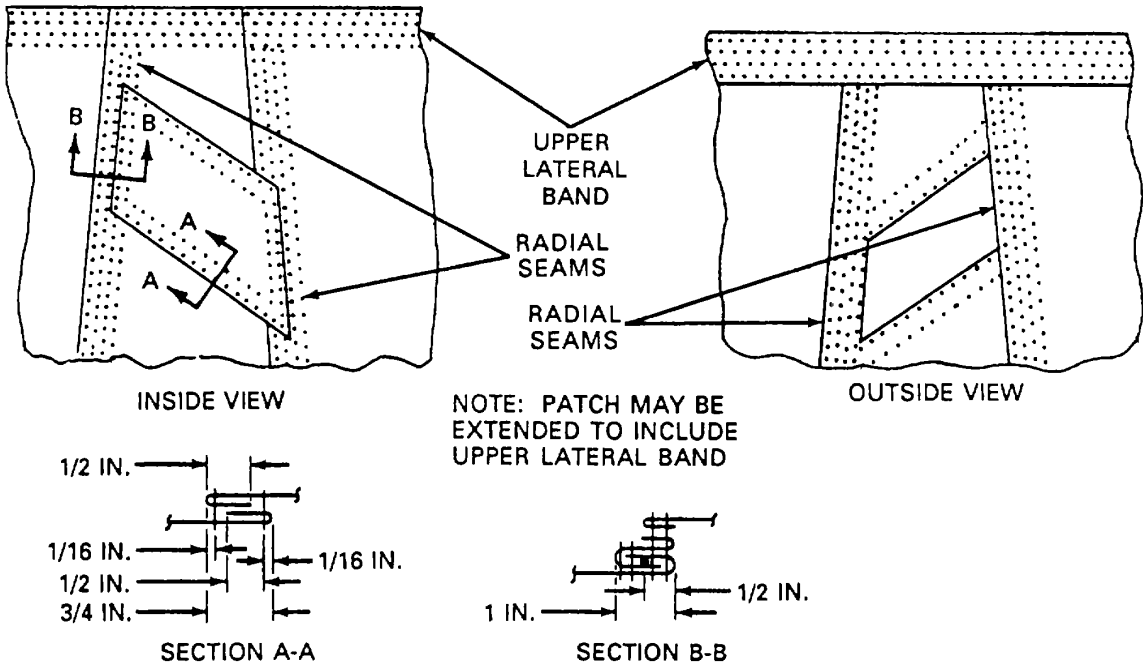


NOTE:
 IF OUTSIDE OF DIAGONAL SEAM IS DAMAGED
 CUT AWAY ENTIRE DIAGONAL SEAM IN
 DAMAGED AREA AND PATCH AS A BASIC PATCH

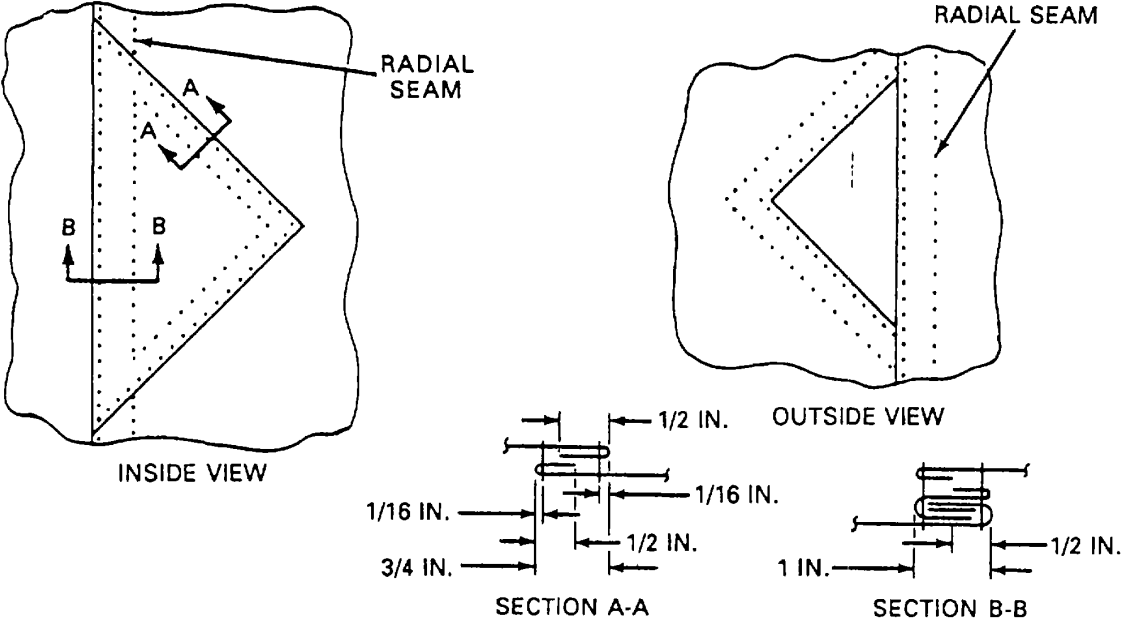
(B) RECTANGULAR PATCH CROSSING A DIAGONAL SEAM

4838-174A

Figure 2-179. Common Miscellaneous Patches (Sheet 1 of 4).



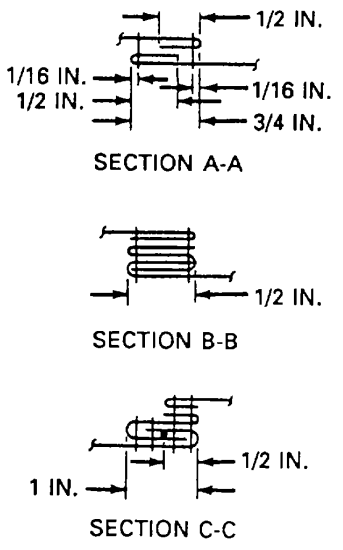
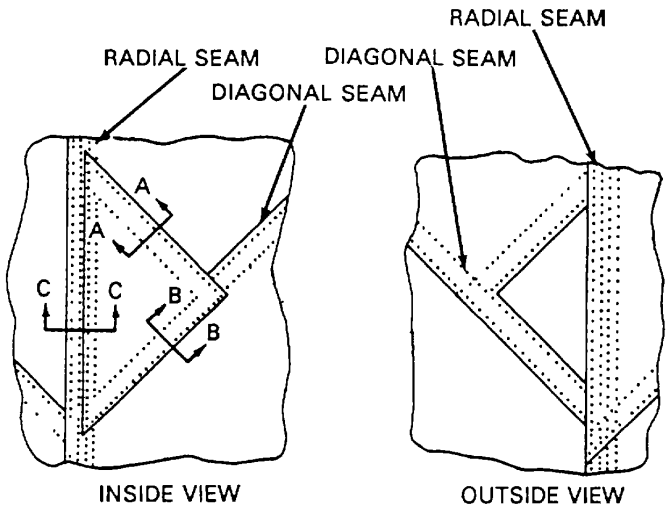
© IRREGULAR SHAPE PATCH INCLUDING TWO RADIAL SEAMS, CONTINUOUS-LINE CANOPY.



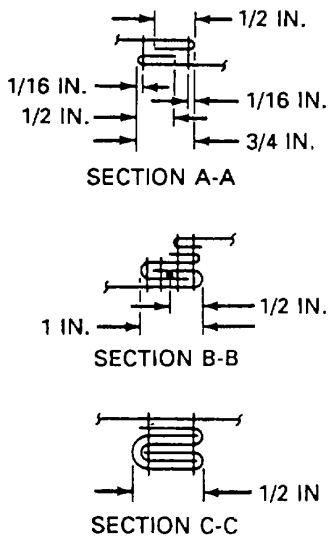
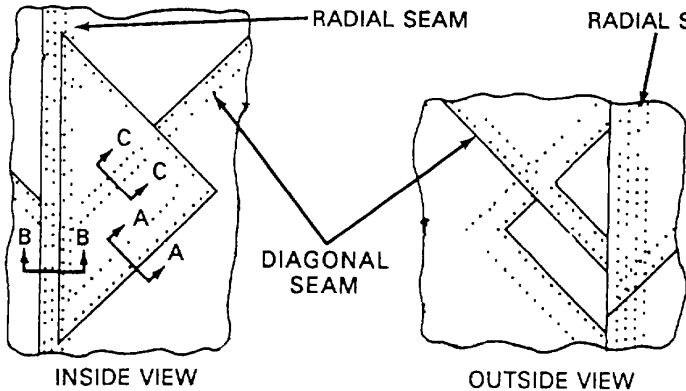
④ TRIANGULAR PATCH INCLUDING RADIAL SEAM, NONCONTINUOUS-LINE CANOPY.

4838-174(B)

Figure 2-179. Common Miscellaneous Patches (Sheet 2 of 4).



(E) TRIANGULAR PATCH INCLUDING A RADIAL SEAM AND A DIAGONAL SEAM, CONTINUOUS-LINE CANOPY.



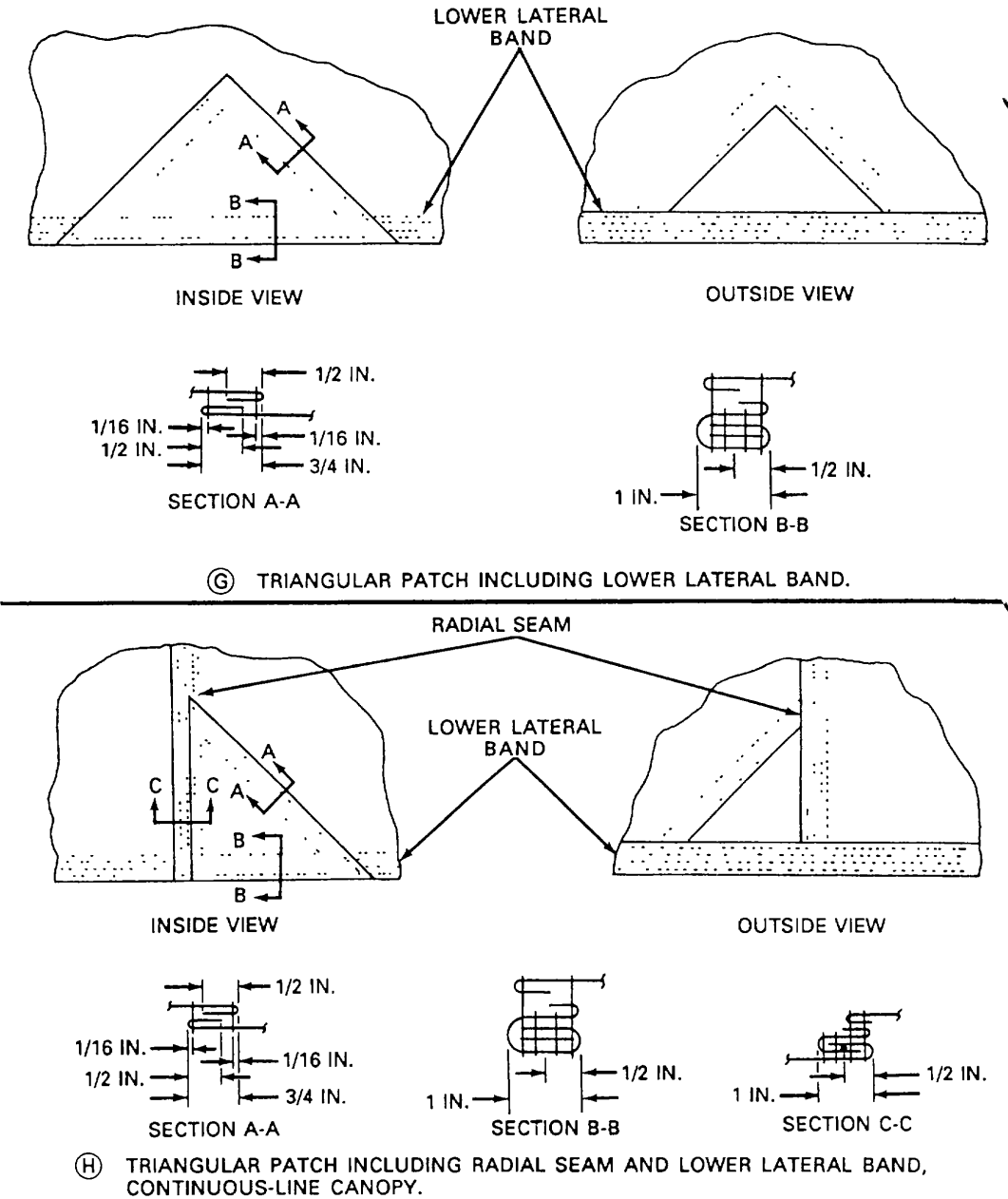
NOTE: IF OUTSIDE OF DIAGONAL SEAM IS DAMAGED, CUT AWAY ENTIRE DIAGONAL SEAM IN DAMAGED AREA AND PATCH IN SAME MANNER AS TRIANGULAR PATCH INCLUDING RADIAL SEAM ONLY (D).

(F) TRIANGULAR PATCH CROSSING DIAGONAL SEAM AND INCLUDING RADIAL SEAM, CONTINUOUS-LINE CANOPY.

4838 174(C)

Figure 2-179. Common Miscellaneous Patches (Sheet 3 of 4).

2-26. Canopy Gore Section (cont).

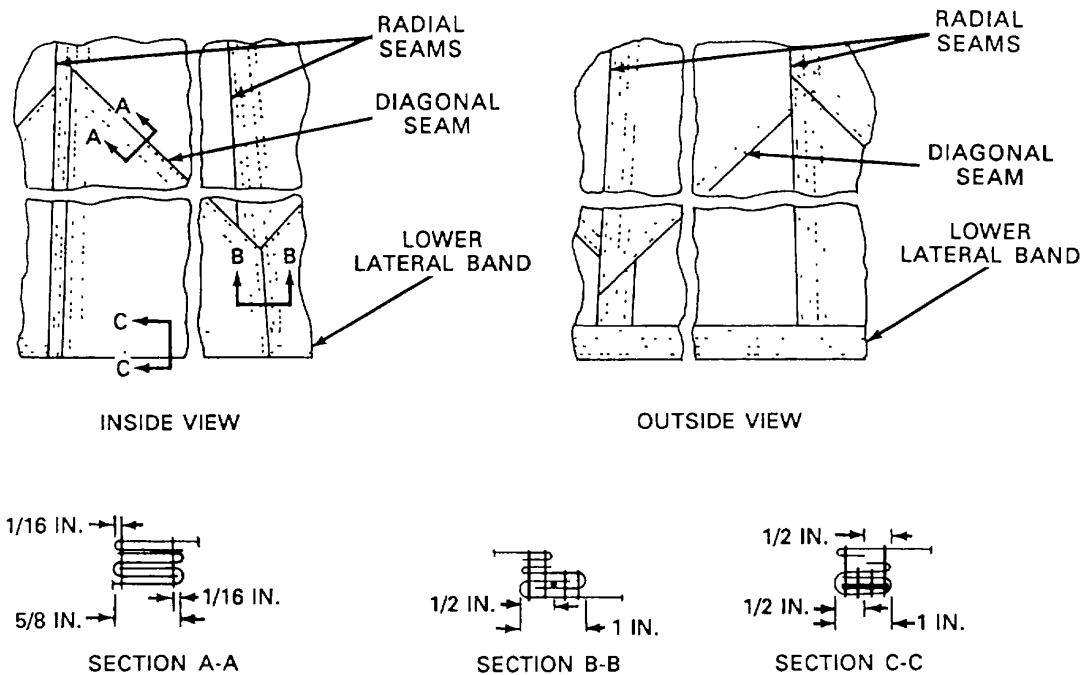


4838-174(D)

Figure 2-179. Common Miscellaneous Patches (Sheet 4 of 4).

b. Replacement. Replace a gore section which is damaged beyond repair by fabricating a replacement section, in accordance with the following procedures.

- (1) Inspection. Inspect the canopy in accordance with table 2-1. To determine the extend of canopy damage, proceed as follows:
 - (a) Invert the canopy on a repair table and locate the damaged section.
 - (b) As required, remove or lay aside items that may interfere with the section replacement process by cutting the stitching securing the items to the canopy.
 - (c) Smooth out the damaged gore section and secure surrounding canopy material to the repair surface by placing pushpins through seams or lateral bands as far above and below the damaged section as necessary. Insure that all adjacent seams or lateral bands are straight and the damaged section is not distorted.
 - (d) Any gore sections that are damaged beyond repair by patching may be replaced individually by the normal procedure, by the modified method, or in multiples, as described in the following paragraphs, using the details in figures 2-180, 2-181 and 2-182.



4838-175

Figure 2-180. Normal Gore Section Replacement Details.

2-26. Canopy Gore Section (cont).

- (2) Normal gore section replacement. Gore sections are normally replaced as follows:
- Remove the damaged section by cutting the section material at a point 1/2 inch in from the inside edge of each adjacent seam or lateral band.
 - Cut the remaining fabric diagonally at each corner to allow the raw edges to be folded back.
 - Fold each raw edge back by 1/2 inch and pin and baste each folded edge to complete area preparation. Basting will be performed according to procedures in paragraph 2-20a.

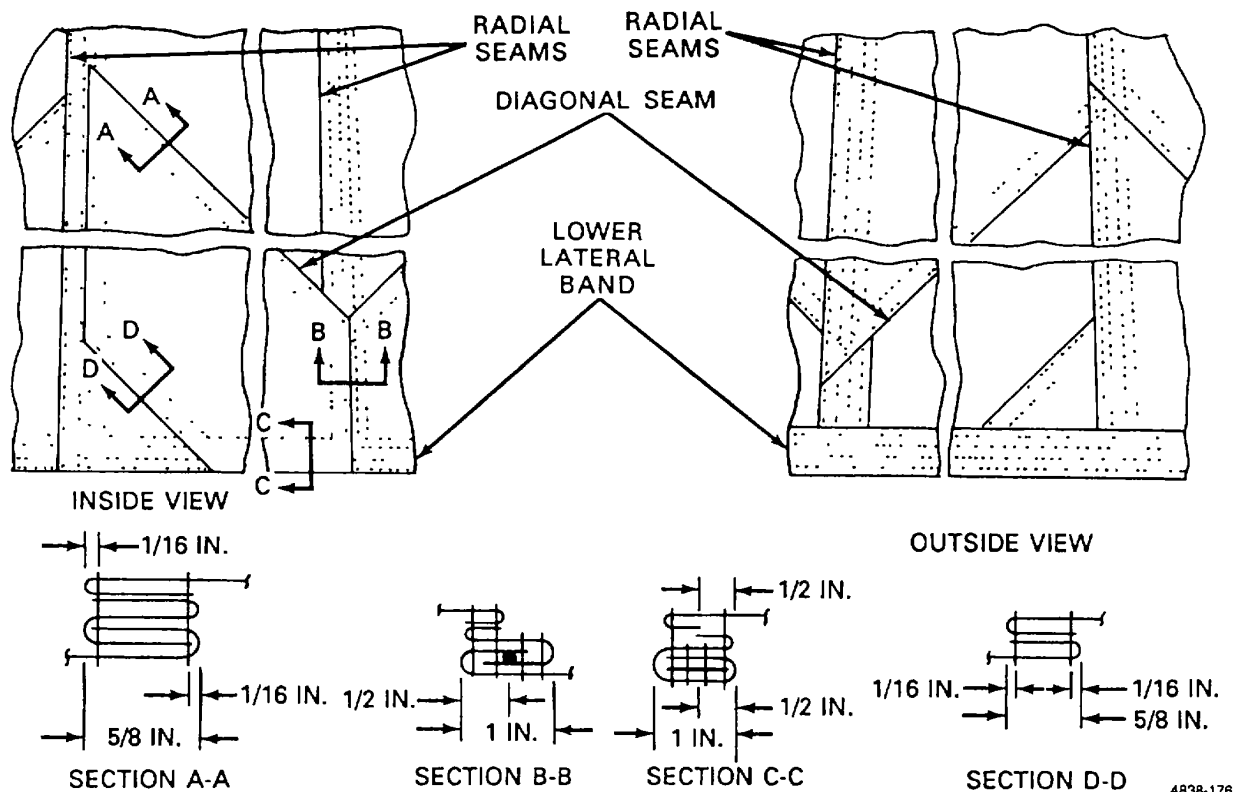


Figure 2-181. Modified Gore Section Replacement Details.

- Position a piece of serviceable parachute cloth, equal to the material used in original gore section construction, over the prepared area.
- Cut the cloth piece to a size that will cover the entire prepared area. Allow as many selvedged edges of the cloth piece to remain as possible. Also allow at least 3 inches of extra fabric to remain on each raw edge.

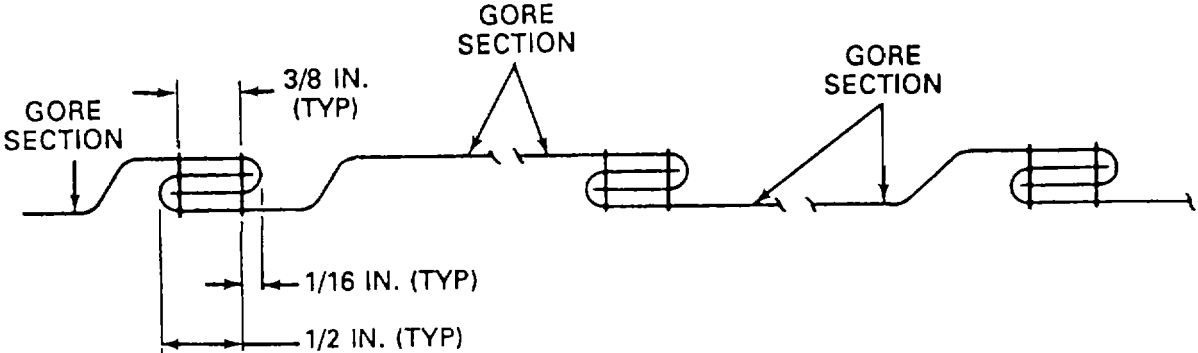
- (f) Fold under each selvedge edge of the cloth piece to a width equal to the width of adjacent seams and align the cloth folded edges with the outside edges of adjacent seams or bands. Secure the seams or bands with pushpins.
 - (g) Fold the raw edges of the cloth piece as follows:
 - 1 Fold under the raw edges located adjacent to a lateral band and align the folded edges with the outside edges of the lateral band. Secure the aligned edges to the applicable lateral band with pushpins.
 - 2 Fold under the raw edges located along radial seams that have four rows of stitching and align the folded edges with the center of the radial seams. Secure the folded edges to the radial seams with pushpins.
 - (h) Secure the situated replacement section cloth to the canopy material by basting along each of the folded edges. Basting will be made according to the procedures in paragraph 2-20a.
 - (i) Remove the pushpins from the edges of the replacement section and secure the section material to the canopy inside by stitching, according to the details in figure 2-180. Use the stitching procedures in paragraph 2-20b, with size E nylon thread, 7 to 11 stitches per inch.
 - (j) Turn the canopy right side out and trim the raw edges of the section material to a point 1/2 inch from the stitching made in step (i), above.
 - (k) On the canopy outside, stitch completely around the prepared area using the stitching criteria in step (i), above.
 - (l) Reposition the item(s) removed or laid aside in step (1)(b) in the original location(s) and reattach each item to the canopy by restitching according to original construction details and paragraph 2-20b. Use size E nylon thread 7 to 11 stitches per inch.
 - (m) Stencil informational data or other markings on the replacement section using the procedures in paragraph 2-22.
- (3) Modified gore section replacement. If a gore section that is located next to the lower lateral band on a bias-constructed canopy does not have damage extending into a corner that is bounded by the lower lateral band and a radial seam, the section may be replaced using a modified method as follows:
- (a) When removing the damaged section, cut the section material diagonally across the corner. Allow the corner material of the original section to remain intact and also allow a sufficient amount of material to remain to preclude the replacement section overlapping the pocket band.
 - (b) Except for the procedure in step (a), complete the section replacement using the applicable procedures outlined in paragraph b(2), and the details in figure 2-181.

NOTE

When replacing a gore section on a bias-constructed canopy using the modified replacement method, it is not necessary to remove the V-tab from the radial seam located alongside the damaged section.

2-26. Canopy Gore Section (cont).

(4) Multiple gore section replacement. If two or more adjacent sections within a bias-constructed gore require replacement, cut and remove all affected sections, including the joining diagonal seams as prescribed in paragraph b(2), above. Prepare the material for the replacement sections and join the replacement sections together with 1/2 inch wide lapped seams (figure 2-182). Install the joined replacement sections using the applicable procedures in paragraph b(2).



4838-177

Figure 2-182. Lapped Seams Completed for Multiple Gore Section Replacement.

2-27. Canopy Line.

This task covers: a. Repair b. Replacement

Tools:

Sewing Machine, Medium Duty, Zig-Zag,
Item 16, Appendix B

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Canopy laid flat on repair surface

Material/Parts:

Cord, Nylon, Type III, Items 11 and 12, Appendix D
Thread, Nylon, Size E, item 29/30, Appendix D
Webbing, Nylon, Type I, 9/16-inch wide, Item 39/40,
Appendix D

a. General. A canopy line is a length of nylon cord which extends from a point of attachment on a connector link assembly on one side of the canopy, up through a canopy radial seam channel, across the canopy vent, and down through a canopy radial seam to a connector link assembly on the opposite side of the canopy. As a result of the routing, a canopy line length is divided into segments which are referred to as suspension line, radial line, and vent line. The procedures that follow include the repair and replacement of individual segments of the canopy line and the entire canopy line.

b. Repair.

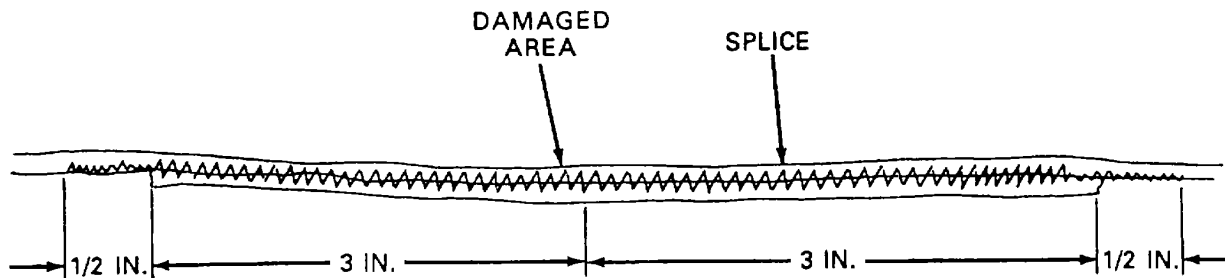
- (1) Restitching. Stitch and restitch with thread, nylon, size E, that is contrasting in color to the fabric being stitched or original thread being restitched. If contrasting color thread is not available, thread of matching color may be used, providing all other specifications are met. Straight stitching and restitching should be locked by at least two inches at each end of the stitch row when possible. Zig-zag restitching should extend at least two inches at each end of a stitch row when possible. Zig-zag restitching should extend at least 1/4 inch into undamaged stitching at each end, when possible. Restitch directly over the original stitching and follow the original stitch pattern as closely as possible.

CAUTION

The radial line portion of a canopy line will not be spliced. Whenever a canopy line is to be spliced, the splice will be located either above the upper lateral band or below the lower lateral band.

- (2) Splicing. A suspension line or vent line may be spliced one time as follows:
 - (a) Cut a length of Type III nylon cord long enough to extend 3 inches beyond each side of damaged area. Sear and wax each end of cord 1/2 inch in accordance with paragraph 2-21.
 - (b) Center cord length over damaged area. Using a medium duty zig-zag sewing machine and size E nylon thread, secure splice by stitching a 1/8-inch wide row of stitching full length of splice, extending stitching 1/2-inch beyond each end (figure 2-183). Stitching will be 7 to 11 stitches per inch.

2-27. Canopy Line (cont).



4838-178

Figure 2-183. Canopy Line Splicing Details.

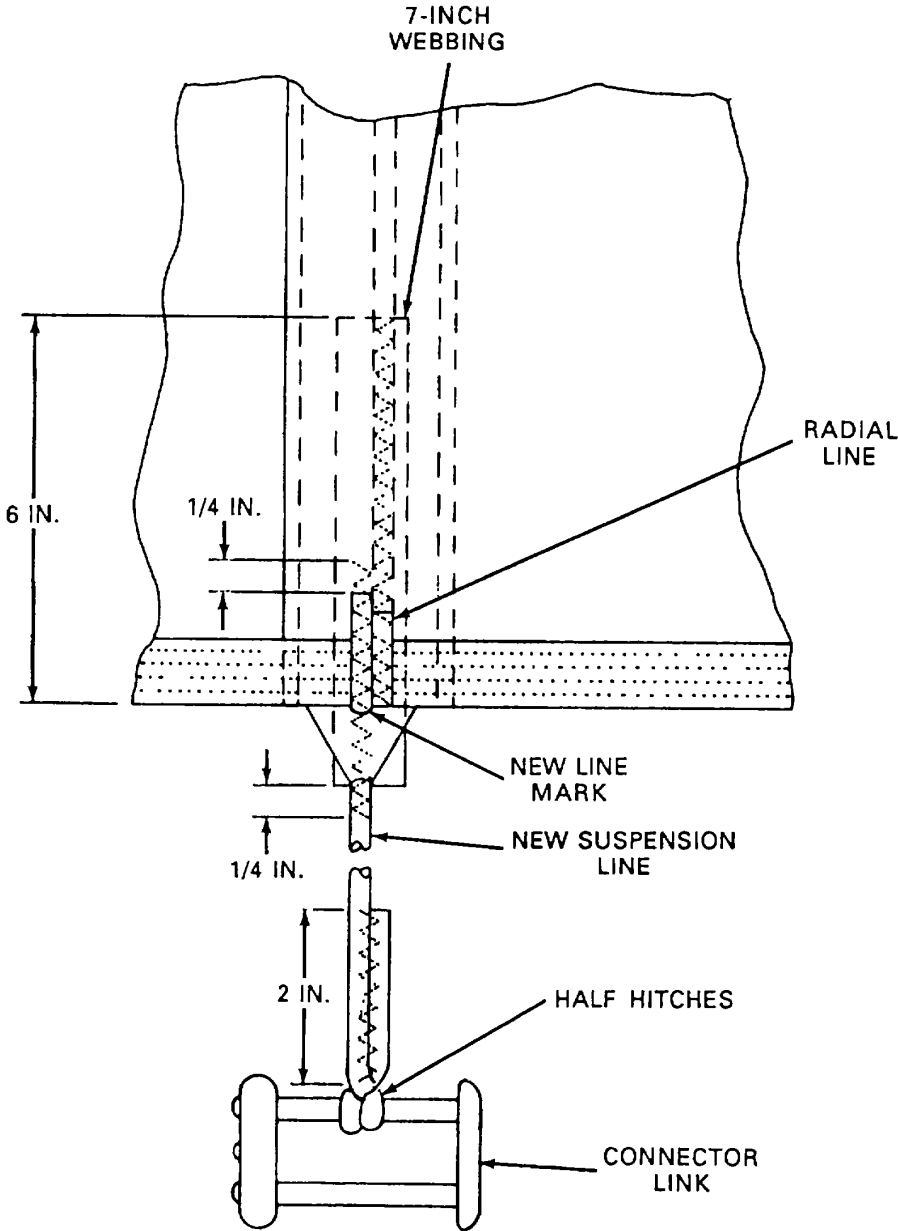
c. Replacement.

NOTE

Replacement of canopy lines is accomplished at the Intermediate Direct Support (DS) Maintenance level only, in accordance with the Maintenance Allocation Chart (MAC), Appendix B.

(1) Replacing a suspension line. When a suspension line portion of a canopy line is damaged beyond the limitations for splicing, or the core threads are damaged to any extent, the suspension line will be replaced. Replace a damaged suspension line from the lower lateral band to the attaching connector link assembly by fabricating as follows (figure 2-184):

- (a) Place the canopy assembly in proper layout on a suitable work surface and trace the affected suspension line from the point of attachment at the lower lateral band to the respective connector link assembly.
- (b) Remove the lower radial line reinforcement tape at the canopy skirt by cutting the stitching securing the tape length to the canopy. Further cut the stitching securing the V-tab and original suspension line together.
- (c) Remove the original suspension line by cutting the line length at the applicable connector link assembly and at the lower edge of the lower lateral band, just above the V-tab. Secure the loose end of the radial line using temporary tacking or pushpins.
- (d) Cut a length of type III nylon cord 36 inches longer than the length of the original suspension line.



4838-179

Figure 2-184. Suspension Line Replacement Details.

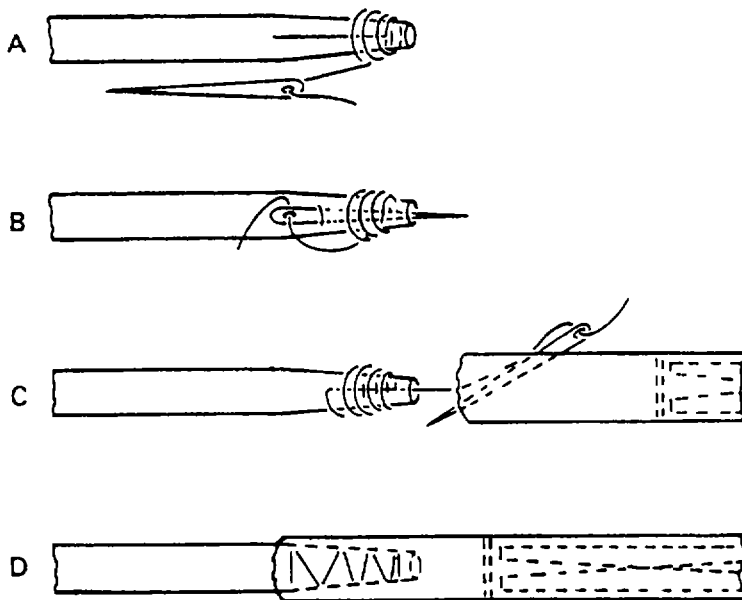
2-27. Canopy Line (cont).

- (e) Position one end of the cord length on the applicable connector link assembly in the original suspension line location. Secure the cord end to the connector link with two half-hitches, leaving a 6-inch-long tie free end.
- (f) Trace the replacement line length and an adjacent suspension line from the connector link assembly to the canopy skirt and allow both lines to settle under equal tension.
- (g) Using a suitable marking aid, mark the replacement line at the point of intersection with the lower edge of the lower lateral band. After marking, apply slight tension to the replacement line and adjacent suspension line to check the accuracy of the mark.
- (h) At a point 6 inches above the mark, cut the replacement line length and wax the cut end.
- (i) Pass the waxed line end up through the original attaching V-tab and temporarily secure the line end to the V-tab with a bow knot.
- (j) Remove one end of the applicable pocket band by cutting the stitching securing the pocket band end to the lower lateral band. Position the loose pocket band end above the secured end and temporarily secure the loose end to the lateral band using a pushpin.
- (k) Remove one end of the applicable reefing ring retainer by cutting the stitching securing the retainer end to the lower lateral band. Position the loose retainer end above the secured end and temporarily secure the loose end to the lower lateral band using a pushpin. Insure the reefing ring is not removed from the retainer during the retainer cutting and relocating process.
- (l) Cut a 7-inch length of 9/16-inch-wide, type I nylon webbing and wax each end by 1/4 inch.
- (m) Place the 7-inch webbing length lengthwise on the original radial seam on the canopy inside, then align the lower end of the webbing length with the lower edge of the V-tab.
- (n) Untie the replacement suspension line at the V-tab and place the upper end of the line length adjacent to the original radial line on the outside of the radial seam. Align the mark made in (g), above, with the lower edge of the lower lateral band. and secure the line end and 7-inch webbing length to the canopy skirt with temporary tacking or pushpins.
- (o) Working on the outside of the canopy skirt, secure the upper end of the replacement suspension line to the V-tab and original radial seam by making a 3/16-inch-wide row of double-throw zigzag stitching from a point 1/4 inch below the V-tab to a point 1/4 inch beyond the end of the replacement line. Use size E nylon thread, 7 to 11 stitches per inch.
- (p) Beginning at the lower edge of the lower lateral band outside, secure the 7-inch-webbing length and original radial line loose end to the radial seam by making a 6-inch-long row of 3/16-inch-wide double-throw zigzag stitching. Stitching will be made using size E nylon thread, 7 to 11 stitches per inch with a medium duty sewing machine. Remove temporary tacking or pushpins installed in (c) and (n), above.

- (q) Reinstall the lower radial line reinforcement tape removed in (c), by restitching according to original construction details and the procedures in paragraph 2-29. Stitching will be made using size E nylon thread, 7 to 11 stitches per inch, with a medium duty sewing machine.
 - (r) Reinstall the loose ends of the reefing ring retainer, with reefing ring, and pocket band removed in (j) and (k), above, by restitching according to original attachment details, Stitching will be made using size E nylon thread, 7 to 11 stitches per inch, with a medium duty sewing machine.
 - (s) Working at the point of attachment to the connector link assembly and beginning at a point 2 inches above the half-hitches made in (e) above, secure the tie free end to the replacement line body by stitching a 2-inch-long row of 3/16-inch-wide double-throw zigzag stitching toward the connector link assembly. Finish the stitch formation as close as possible to the securing knots and trim the remaining tie free end to 1/4 inch. Stitching will be made using size E nylon thread, 7 to 11 stitches per inch, with a medium duty sewing machine.
- (2) Replacing a radial line. When a radial line portion of a canopy line is damaged, the affected radial line will be replaced by fabricating as follows:
- (a) Place the canopy in proper layout on a suitable work surface.
 - (b) Remove the upper, intermediate, and lower radial line reinforcement tapes from the applicable radial line radial seam by cutting the stitching securing the tape lengths to the canopy. Further cut the stitching securing the V-tab and suspension line together.
 - (c) Using a suitable marking aid, mark the damaged radial line at the lower edge of the lower lateral band.
 - (d) Using the procedures in steps (1)(i), (j) and (k), remove and temporarily secure one end of the applicable pocket band and reefing ring retainer.
 - (e) Working below the canopy skirt, pull 10 inches of the original radial line from the radial seam and cut the line length at a point 6 inches above the mark made in (c), above.
 - (f) Slide back the sheath cover of the cut radial line end to expose the line core threads and cut 1 inch of the exposed core threads. Return the sheath cover back to the original position.
 - (g) Cut a 49-foot length of type III nylon cord and wax one end.

2-27. Canopy Line (cont).

- (h) Insert the waxed end of the cord into the sheath cover of the original radial line and secure the two line ends together with whipstitching (figure 2-185).

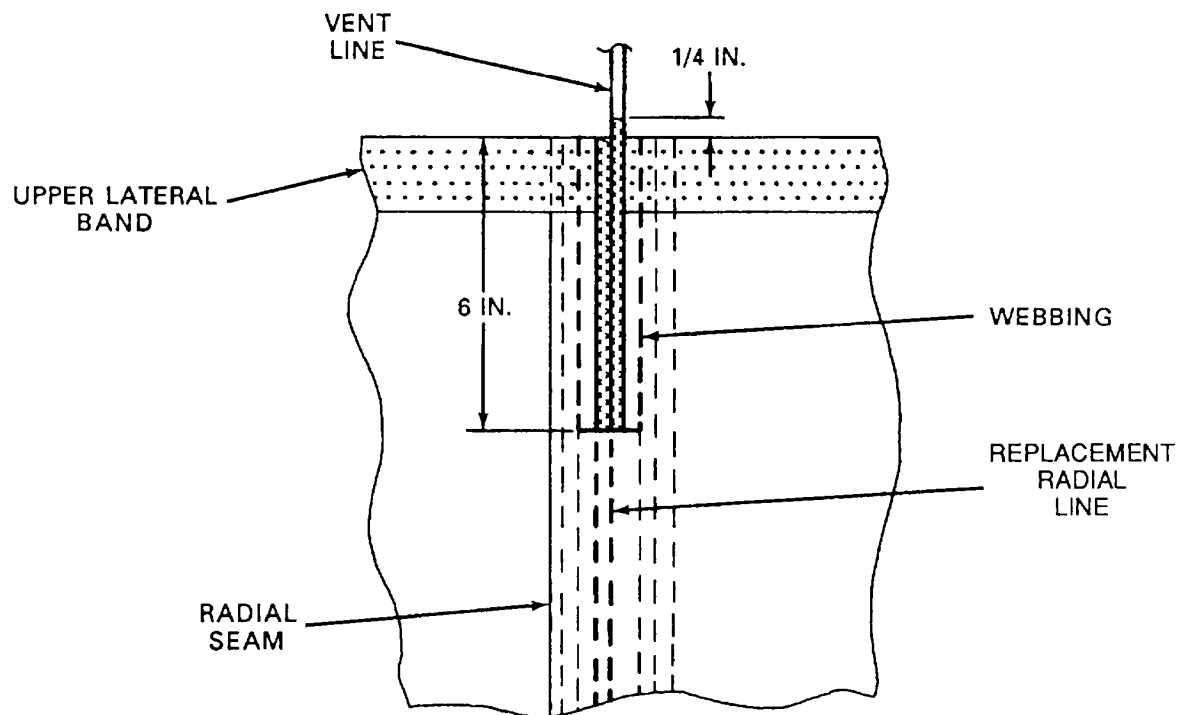


4838-180

Figure 2-185. Securing Damaged Line to New Line for Radial Line Replacement.

- (i) Working at the canopy vent and using a suitable marking aid, mark the original radial line at the upper edge of the upper lateral band.
- (j) Pull 10 inches of the damaged radial line from the upper end of the radial seam and cut the line length at a point 6 inches below the mark made in (i), above.
- (k) Pull the original radial line up through the radial seam until the attached replacement line length extends 2 inches beyond the upper edge of the upper lateral band.
- (l) Cut the replacement radial line length even with the upper edge of the upper lateral band. Temporarily secure the line end to the upper lateral band with tacking or pushpins.
- (m) Cut a 6 inch length of 9/16-inch-wide, type I nylon webbing and wax each end by 1/4 inch.
- (n) Place the webbing length lengthwise over the original radial seam upper end on the canopy inside and align the webbing upper end with the upper edge of the lower lateral band. Secure the webbing length in position using temporary tacking or pushpins.

- (o) Place the loose end of the original vent line on the radial seam outside, adjacent to the replacement radial line. Aline the mark made in (i), with the upper edge of the upper lateral band. Secure the vent line loose end and the upper end of the replacement radial line to the radial seam using temporary tacking or pushpins.
- (p) Working on the outside of the canopy top, secure the 6-inch long webbing seam by making a row of 3/16-inch wide double-throw zigzag stitching from 1/4 inch above the upper lateral band to the end of the vent line. Stitching will be made using size E nylon thread, 7 to 11 stitches per inch, with a medium-duty sewing machine.
- (q) Beginning at a point 6 inches below the upper lateral band upper edge, secure the 6-inch long webbing and the upper end of the replacement radial line by stitching a 6-inch-long row of 3/16-inch wide double-throw zigzag stitching to the upper edge of the upper lateral band. Stitching will be made using a medium-duty sewing machine and size E nylon thread, 7 to 11 stitches per inch (figure 2-186). Remove temporary tacking or pushpins installed in (n) and (o).



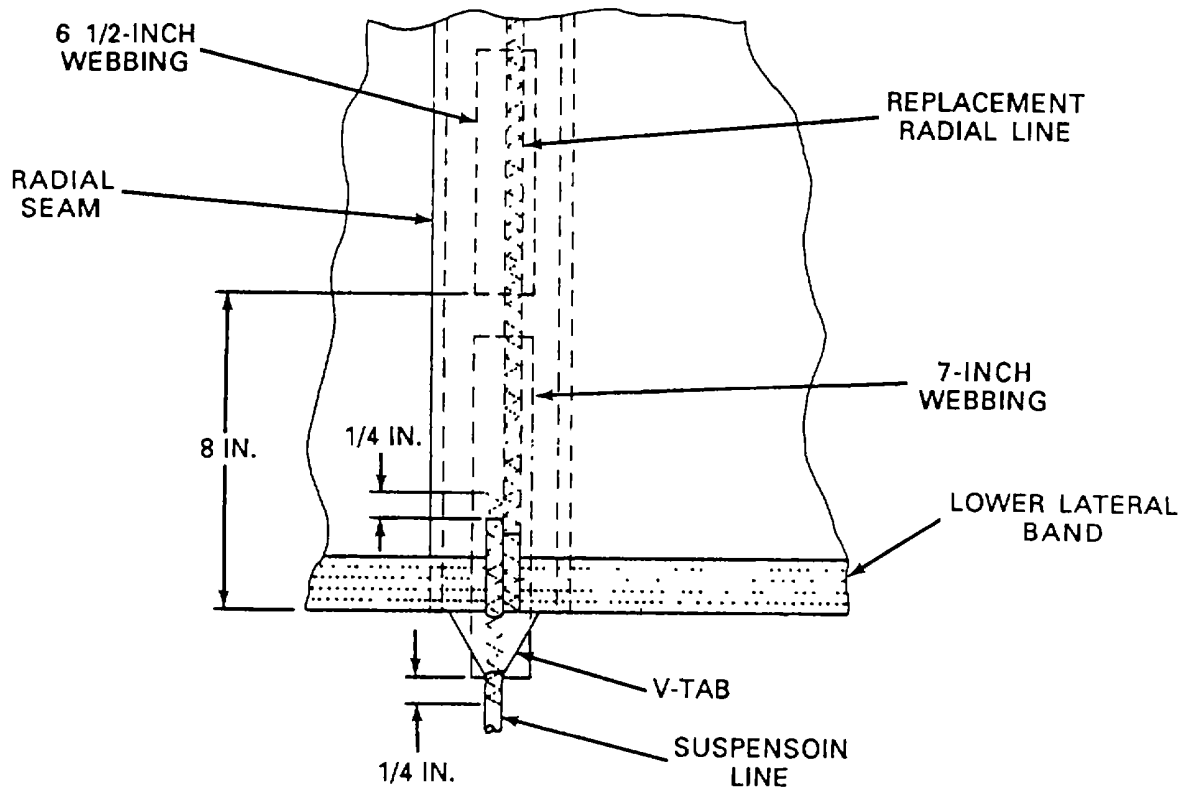
4838-181

Figure 2-186. Securing Radial Line and Vent Line to Canopy.

- (r) Working at the lower lateral band, pick up the loose end of the replacement radial line and an adjacent radial line and allow both lines to settle under equal tension.
- (s) Using a suitable marking aid, mark the replacement line length at the lower edge of the lower lateral band.

2-27. Canopy Line (cont).

- (t) Cut the replacement radial line length at the mark made in (s), above, and temporarily secure the line loose end to the lower lateral band with tacking or pushpins.
- (u) Wax the cut upper end of the original suspension line. Pass the waxed line end up through the V-tab, and position the line end of the canopy outside adjacent to the replacement radial line. The mark made in (c), should be aligned with the lower edge of the lower lateral band. Secure the suspension line end to the radial seam using temporary tacking or pushpins.
- (v) Cut a 6 1/2-inch length and a 7-inch length of 9/16-inch-wide, type I nylon webbing and wax each webbing end by 1/4 inch. Place the 6 1/2-inch long webbing lengthwise on the inside of the affected canopy radial seam with the lower edge of the webbing located 8 inches above the lower edge of the lower lateral band. Secure the webbing to the radial seam center from the canopy outside with a 6 1/2-inch long row of 3/16-inch wide double-throw zigzag stitching. Stitching will be made using a medium-duty sewing machine and size E nylon thread, 7 to 11 stitches per inch.
- (w) Place the 7-inch long webbing lengthwise on the original radial seam on the canopy inside and align the lower end of the webbing with the lower edge of the V-tab. Secure the webbing to the radial seam with temporary tacking or pushpins.
- (x) Secure the 7-inch long webbing to the replacement radial line by stitching a 3/16-inch-wide row of double-throw zigzag stitching from the lower edge of the lower lateral band to the upper end of the webbing length (figure 2-187). Stitching will be made using a medium-duty sewing machine and size E nylon thread, 7 to 11 stitches per inch.
- (y) Secure the upper end of the suspension line to the V-tab and radial seam by making a 3/16-inch wide row of double-throw zigzag stitching from a point 1/4 inch below the V-tab to a point 1/4 inch beyond the end of the suspension line (figure 2-187). Stitching will be made using a medium-duty sewing machine and size E nylon thread, 7 to 11 stitches per inch. Remove the temporary tacking or pushpins installed in (u) and (w), above.
- (z) Reinstall the upper, intermediate, and lower radial line reinforcement tapes removed in (b) by restitching according to original construction details and the procedures in paragraph 2-29. Stitching will be made using a medium-duty sewing machine and size E nylon thread, 7 to 11 stitches per inch. Reinstall the loose ends of the reefing ring retainer, with reefing ring, and pocket band removed in (d), by restitching according to original attachment details. Stitching will be made using a medium-duty sewing machine and size E nylon thread, 7 to 11 stitches per inch.



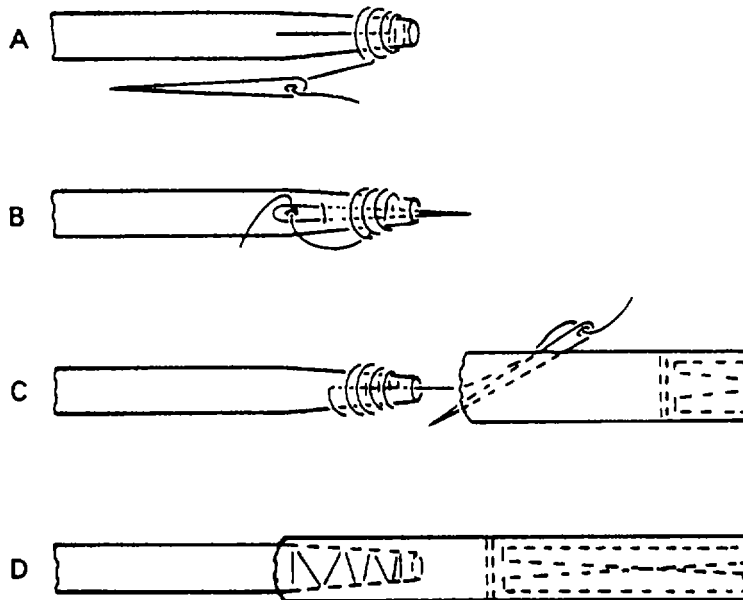
4838-182

Figure 2-187. Securing Radial Line and Suspension Line to Canopy.

- (3) Replacing a vent line. When a vent line portion of a canopy line requires more than one splice or has a core thread severed, the vent line will be replaced by fabricating as follows:
 - (a) Lay the canopy vent out on a suitable work surface.
 - (b) Remove the affected vent line from the canopy vent by cutting the line even with the upper edge of the upper lateral band at two points. Secure the loose upper end of each radial line with temporary tacking or pushpins.
 - (c) Remove the upper radial line reinforcement tape from each of the two applicable radial lines by cutting the stitching securing the tapes to the canopy.
 - (d) Cut a length of type III nylon cord 12 inches longer than the length of the removed original vent line and wax the cord ends.
 - (e) Using a suitable marking aid, mark the cord length at a point 6 inches from each end.
 - (f) Place one end of the cord length on the outside of one applicable radial seam, adjacent to an original radial line. Aline the respective 6-inch mark made in (e) with the upper edge of the upper lateral band. Secure the cord end to the radial seam with temporary tacking or pushpins.

2-27. Canopy Line (cont).

- (g) Pass the loose end of the replacement vent line through the canopy bridle loop and position the end of the applicable radial seam on the opposite side of the canopy using the procedures in (f).
 - (h) Cut two 6-inch lengths of 9/16-inch-wide, type I nylon webbing and wax each webbing end 1/4 inch.
 - (i) Place a 6-inch long webbing lengthwise on the inside of each affected radial seam with the upper end of each webbing length aligned with the upper edge of the upper lateral band. Insure each webbing length is centered on the respective radial line and positioned vent line end. Secure each webbing length with temporary tacking or pushpins.
 - (j) Working on the canopy outside, secure each positioned end of the replacement vent line to the applicable radial seam and 6-inch webbing length by stitching a 3/16-inch-wide row of double-throw zigzag stitching from a point 1/4 inch above the upper lateral band to the lower edge of the applicable vent line end. Stitching will be made using a medium-duty sewing machine, size E nylon thread, 7 to 11 stitches per inch.
 - (k) Beginning 6 inches below the upper edge of the upper lateral band, secure each radial line upper end to the radial seam and 6-inch webbing length by stitching a 6-inch long row of 3/16-inch wide double throw zigzag stitching to the upper edge. Stitching will be made using the procedures outlined in paragraphs (2)(q) and (2)(y). Remove temporary tacking or pushpins installed in (b), (f), (g) and (i), above.
 - (l) Reinstall the upper radial line reinforcement tape removed in (i), above, by restitching according to original construction details and paragraph 2-29. Stitching will be made using a medium-duty sewing machine, size E nylon thread, 7 to 11 stitches per inch.
- (4) Replacing a Canopy Line. Replace an unserviceable canopy line by fabricating as follows:
- (a) Cut and remove all stitching that holds canopy line to canopy. Remove other items as required, allowing entire line to move freely across lateral bands, through V-tabs, and within radial seams. Do not remove V-tabs unless they are damaged.
 - (b) Cut off damaged line (hereafter referred to as old line) 24 inches below skirt on each side of canopy.
 - (c) Select a spool of type III nylon cord (hereafter referred to as new line), and wax end of new line.
 - (d) Insert waxed end of new line into sheath of old line at least 1 inch, and whipstitch, or otherwise temporarily secure ends together (figure 2-188).
 - (e) Grasp cut end of old line at opposite side of canopy skirt and pull old line, working line through V-tabs and channels and across vent, until end of new line extends approximately 10 inches beyond link assembly. Cut old line from new line at whipstitching to include waxed end.

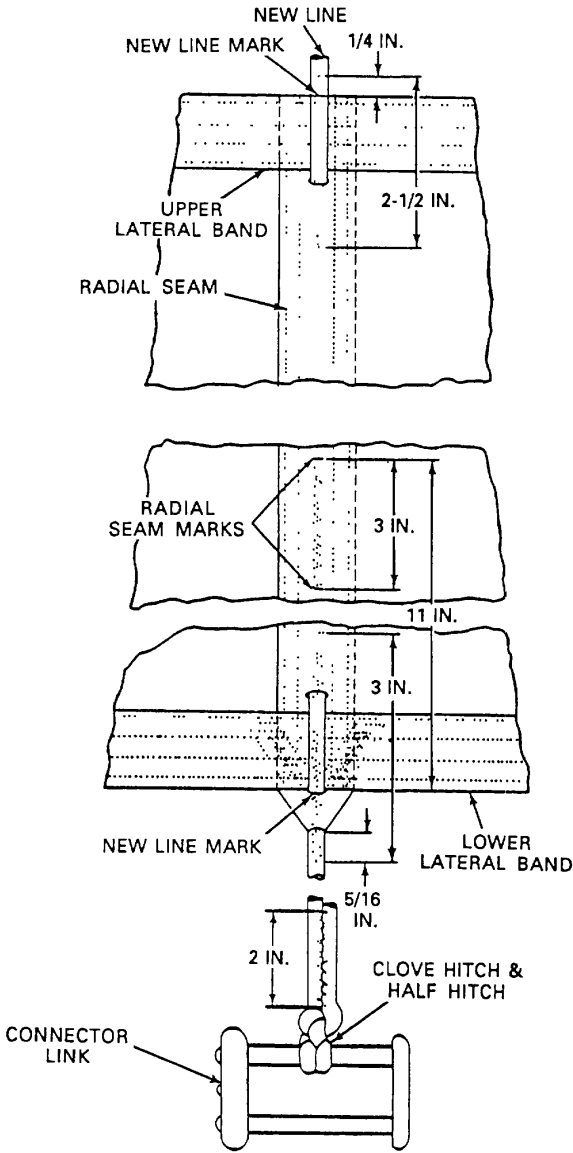


4838-183

Figure 2-188. Securing Damaged Line to New Line for Canopy Line Replacement.

- (f) Make certain that approximately 10 inches of new line still extends beyond link assembly, and mark new line at point even with inside edge of link. Hold adjacent line and new line tightly together at link, and trace both lines from link to canopy skirt under equal tension. Mark new line where lines reach lower edge of lower lateral band (figure 2-189). Check correctness of marking by again applying equal tension to both sides.
- (g) Hold adjacent line and new line together at lower lateral band, grasp both lines at upper lateral band, and apply equal tension to both lines. Mark line at upper edge of upper lateral band. Check correctness of marking.
- (h) Hold adjacent line and new line tightly together at upper lateral band and trace both lines to opposite side of vent under equal tension. Mark new line where lines reach upper edge of upper lateral band. Check correctness of marking.
- (i) Hold adjacent line and new line tightly together at upper lateral band, grasp both lines at lower lateral band, and apply equal tension to both lines. Mark new lines at lower edge of lower lateral band. Check correctness of marking.

2-27. Canopy Line (cont).



4838-184

Figure 2-189. Canopy Line Replacement Details.

- (j) Hold adjacent line and new line tightly together at lower lateral band, and trace both lines from canopy skirt to link assembly under equal tension. Mark new line at point even with inside edge of link. Check correctness of marking, and cut new line from spool at a point approximately 10 inches beyond link assembly.
- (k) Relieve tension from all lines.
- (l) Aline marks on new line with lateral bands, and sew new line to canopy at all attaching points in accordance with figure 2-189, using a medium-duty sewing machine and size E nylon thread, 7 to 11 stitches per inch. On canopies that have a pucker in the radial seams, make certain the radial seam is still correctly puckered after all sewing is completed.

NOTE

To provide one inch pucker at lower lateral band, move mark from bottom of lower lateral band to top edge of lower lateral band. Smooth out canopy material and mark material 11 inches above bottom edge of lower lateral end and sew down toward lower lateral band for 3 inches. Move mark from upper edge of lower lateral band to bottom edge and sew in as shown in figure 2-189. Repeat procedure on opposite side of canopy and then complete sewing of the vent.

- (m) Reposition items removed in step (a), above, and sew in place according to original construction.
- (n) Cut away remaining end of old line from link assembly, noting position of line on link.
- (o) Pass end of new line through link assembly in space left by old line, and fold end back over link.
- (p) Aline mark on line inside edge of link assembly and tie line to link in accordance with figure 2-189.
- (q) Sew line and free end together in accordance with figure 2-189. Cut off excess end of line close to stitching.
- (r) Compare knots with adjacent knots, and trace line from link assembly to canopy skirt for correctness of attachment and position.
- (s) Attach remaining free end of new line to opposite link assembly by repeating the procedures in steps (n) through (r), above.

2-28. Patching Radial Seam.

This task covers: a. Inspect b. Repair

Tools: Equipment Condition:
Sewing Machine, Light Duty, Item 15, Appendix B Unpacked, canopy laid flat

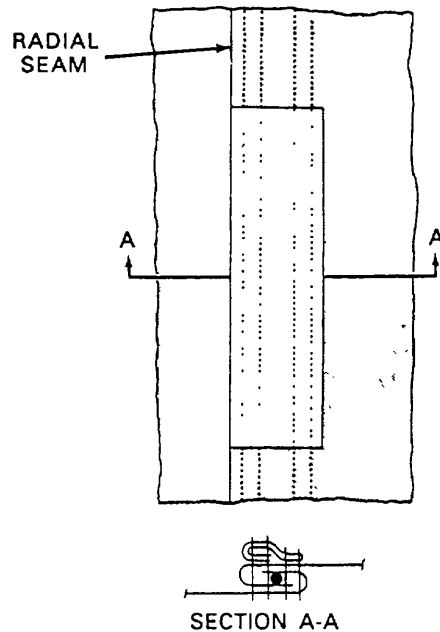
Materials/Parts:
Thread, Nylon, Size E, Items 29/30, Appendix D
Cloth, Parachute, Nylon, Type II, Item 9, Appendix D

- a. **Inspection.** Inspect the radial seam in accordance with table 2-1.
- b. **Preparation for Patching.** Prepare the radial seam for patching as follows:
 - (1) Place the canopy on a repair table with the damaged side of the radial seam facing up.
 - (2) As required, cut the applicable stitching to remove or lay aside items which may interfere with the patching process.
 - (3) Smooth the canopy material surrounding the damaged area and secure the undamaged portion of the seam to the table with pushpins. Do not pin the damaged area of the seam.
 - (4) Using the same type material as in original canopy construction, bias-cut a rectangular patch 3 ½ inches wider and 4 inches longer than the damaged area. If one piece of material is not long enough to achieve the required size, join additional pieces of bias-cut material with 1/2-inch-wide lapped seams.

NOTE

Patch material for a damaged area that does not exceed 1 inch need not be bias cut.

- c. **Patching Radial Seam.** There is no limit to the length of a miscellaneous patch made on a canopy radial seam. In addition, a radial seam may be patched on both the inside and the outside of a canopy, as required. Patch a damaged radial seam as follows (see figure 2-190):
 - (1) Fold the patch material lengthwise and align the raw edges.
 - (2) Make a fold-under on each edge of the patch material and baste each fold-under using the procedures in paragraph 2-20.
 - (3) Make a 1-inch fold-under on each end of the patch material and baste each fold-under using the procedures in paragraph 2-20.



4838-185

Figure 2-190. Radial Seam Patching.

- (4) Center the patch lengthwise over the damaged area with the folded edges facing down. Secure the patch to the canopy with pushpins and baste the patch to the canopy using the procedures in paragraph 2-20.
- (5) Remove the pins securing the canopy to the repair table. Secure the patch to the radial seam by stitching, using the procedures in paragraph 2-20, with size E nylon thread 7 to 11 stitches per inch. Sew the radial seam patch with four rows of stitching.
- (6) When applicable, repeat the stitching procedures in step (5), above, on the opposite side of the radial seam channel.
- (7) Reposition in their original locations the items removed or laid aside in step (2). Reattach each item to the canopy by restitching in accordance with original construction details and paragraph 2-20. Stitch with a light-duty sewing machine and size E nylon thread, 7 to 11 stitches per inch.

2-29. Radial Line Reinforcement Tape.

This task covers: a. Repair b. Replace

Tools:

Knife, Item 4, Appendix B
Knife, Hot Metal, Item 5, Appendix B
Sewing Machine, Zig-Zag, Item 16, Appendix B
Shears, Item 13, Appendix B
Yardstick, Item 22, Appendix B

Equipment Condition:

Cleaned, paragraph 2-12.
Inspected, paragraph 2-9 and 2-13.
Unpacked, laying flat on repair table.

Materials/Parts:

Tape, Nylon, Type III, 1/2-Inch Wide, Item 23,
Appendix D
Thread, Nylon, Size E, Item 29/30, Appendix D

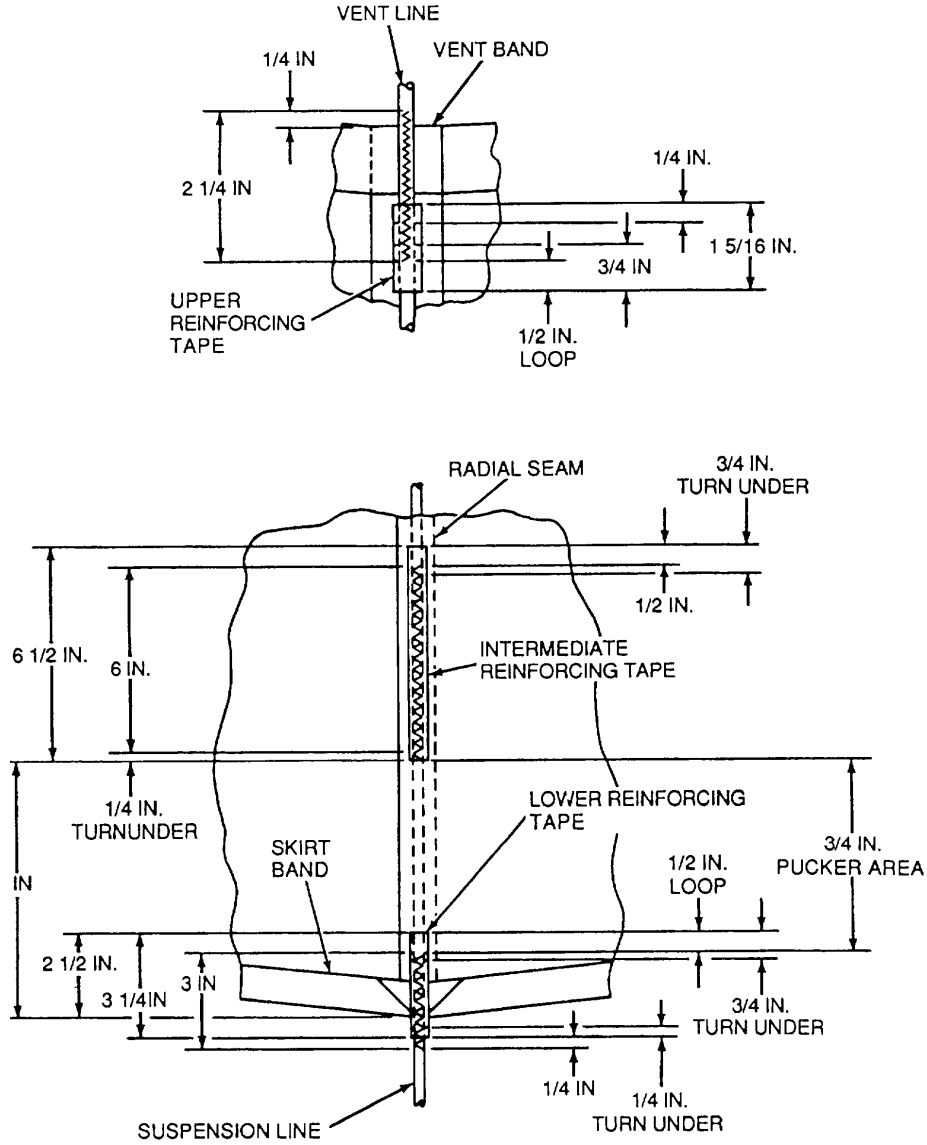
a. Repair. Stitch and restitch (para. 2-20) with nylon thread, size E, which contrasts the color of the original stitching and material when possible. Zig-zag restitching should extend 1/4 inch into undamaged stitching at each end. Restitch directly over the original stitching. Follow the original stitch pattern as closely as possible.

b. Replacement. Replace a damaged upper, intermediate, or lower radial line reinforcement tape by fabricating using the following procedures:

- (1) Remove original reinforcement tape by cutting the stitching securing the tape length to the canopy.
- (2) Cut a length of 1/2-inch wide, type III nylon tape, 1 inch longer than the original tape finished length and sear the ends.
- (3) Make a 3/4-inch long fold under on one end of the tape length and a 1/4-inch long fold under on the opposite end.
- (4) Position the tape length in the original reinforcement tape locaton with the fold unders facing down and the 3/4-inch long fold under directed away from the skirt or vent band (lower or upper lateral band), as applicable (figure 2-191).
- (5) Secure the tape length to the radial line by stitching a 3/16-inch wide single row of double-throw zig-zag stitching according to the details in figure 2-191, using size E nylon thread, 7 to 11 stitches per inch, with a zig-zag sewing machine.

NOTE

When installing the intermediate and the lower radial line reinforcement tapes at the canopy skirt, insure a sufficient amount of canopy fabric is allowed between the two zig-zag stitch rows to form a 3/4-inch pucker in the material.



4838-209

Figure 2-191. Replacement Details for Radial Line Reinforcement Tape.

2-30. Reefing Line Cutter Bracket.

This task covers: a. Repair b. Replace

Tools:

Needle, Tacking, Item 9, Appendix B

Equipment Condition:

Unpacked, canopy laid flat

Materials/Parts:

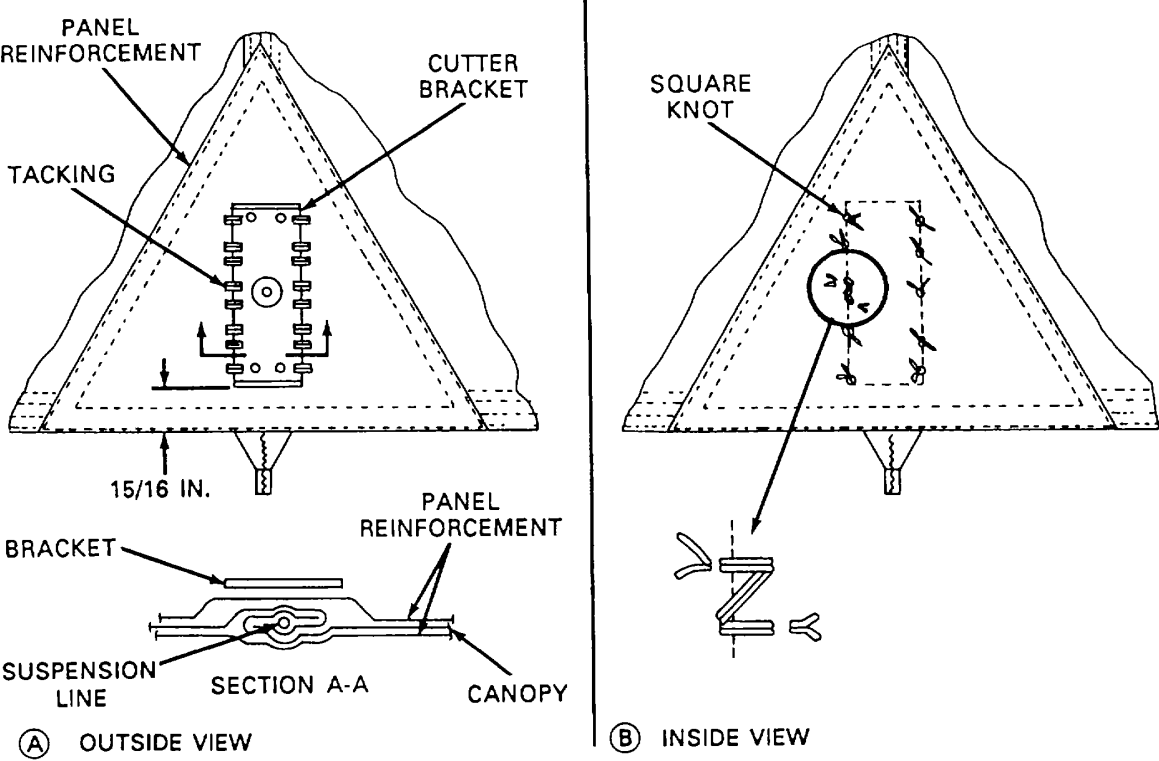
Thread, Cotton, Ticket No. 8/7, Item 28, Appendix D

a. Repair. Replace broken or loose tacking by retacking according to original tacking details using two turns double, ticket no. 8/7 waxed cotton thread at each tacking point. Secure tacking ends at each tacking point with a square knot. Trim tie ends to 1/2 inch.

b. Replacement. Replace a damaged or missing reefing line cutter bracket with a serviceable item from stock. Install the reefing line cutter bracket on the canopy skirt as follows:

- (1) If applicable, remove the original bracket by cutting the tacking securing each side of the bracket to the canopy panel reinforcement.
- (2) Position a serviceable bracket in the original bracket location on the canopy outside and ensure the flange containing the 7/8-inch diameter hole is located at the upper end of the bracket position.
- (3) Holding the bracket in position, begin handtacking the bracket at one top corner hole with two turns double, ticket no. 8/7 waxed cotton thread (A, figure 2-192). The tack will be made by passing the tacking needle from the inside of the canopy up through the canopy material and the bracket corner hole, out over the bracket side edge, and back down through the canopy material to the canopy inside. Repeat the tacking routing to complete the second turn and secure the tacking ends on the canopy inside with a square knot (B, figure 2-192).
- (4) Handtack the opposite top corner hole and each of the two bottom corner holes using the procedures in (3), above.
- (5) Beginning at the first hole next to a corner tacking point, handtack the applicable bracket side edge by passing the tacking needle with a length of double ticket no. 8/7 waxed cotton thread from the inside of the canopy up through the canopy material and the bracket hole, out over the bracket side edge, and back down through the canopy material to the canopy inside.
- (6) Direct the tacking needle to the next free hole in the bracket side edge and pass the needle up through the canopy material and the bracket hole out over the bracket side edge, and back down through the canopy material to the canopy inside.
- (7) Move the needle back to the first side edge hole and repeat the procedure in (5). Further repeat the procedure in (6), finishing on the canopy inside to complete two turns of tacking through each hole. Secure the tie ends with a square knot.

(8) For making the remaining five double-hole tackings along the bracket side edges, repeat the procedures in (5) through 7. Trim all tie ends to 1/2 inch.



4838-189

Figure 2-192. Reefing Line Cutter Bracket Tacking Details.

2-31. Cutter Bracket Panel Reinforcement.

This task covers: a. Repair b. Replace

Tools:

Needle, Tacking, Item 9, Appendix B
Sewing Machine, Light Duty, Item 15, Appendix B
Shears, Item 13, Appendix B
Yardstick, Item 22, Appendix B
Knife, Item 4, Appendix B

Equipment Condition:

Unpacked, canopy laid flat.

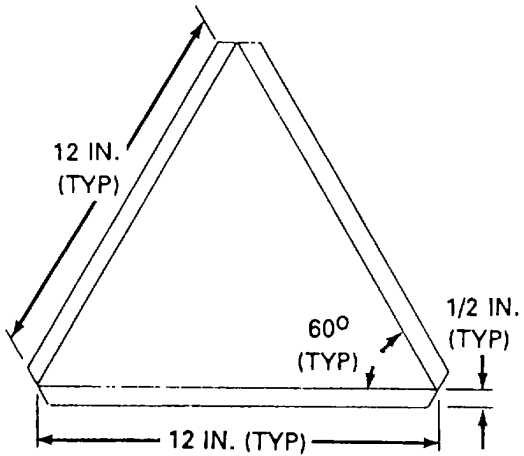
Materials/Parts:

Thread, Cotton, Ticket No. 8/4, Item 27, Appendix D
Thread, Nylon, Size E, Item 29/30, Appendix D
Cloth, Nylon, Duck, Type III, Item 7, Appendix D
Marking Aid, Item 46/47, Appendix D

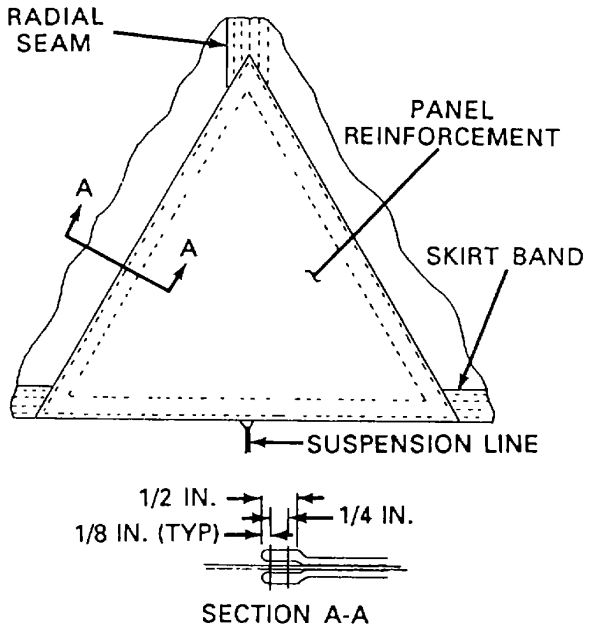
a. Repair. Restitch broken or loose stitching according to original construction details and in accordance with paragraph 2-20.

b. Replacement. Replace a damaged cutter bracket panel reinforcement by fabricating as follows:

- (1) Remove the cutter bracket from original panel reinforcement by cutting the tacking securing the bracket to the reinforcement. Retain the bracket for further use, if serviceable.
- (2) Remove the inside and the outside panel reinforcements from the canopy skirt by cutting the stitching which secures the two pieces of reinforcement material to the canopy.
- (3) Cut two 13-inch wide triangular-shaped pieces of type III 7.25-ounce nylon duck cloth.
- (4) Make a 1/2-inch-wide turn under on each edge of one piece of cloth and trim the cloth piece to conform to the details in A, figure 2-193.
- (5) Position the folded cloth piece in the original reinforcement location on the inside of the canopy skirt and temporarily handtack the cloth to the canopy material using temporary tacking procedures in paragraph 2-20.
- (6) Using the procedures in (4) and (5), above, position the second cloth piece in the original reinforcement location on the outside of the canopy skirt.
- (7) Secure the two panel reinforcements to the canopy by stitching two rows of stitching along each edge according to the details in B, figure 2-193. Stitching will be made in accordance with paragraph 2-20.
- (8) Remove the temporary tacking made in (5) and (6), above.
- (9) Attach a serviceable cutter bracket to the panel reinforcements using the procedures in paragraph 2-30.'



Ⓐ PANEL REINFORCEMENT PATTERN



Ⓑ INSTALLATION DETAILS

4838-190

Figure 2-193. Cutter Bracket Panel Reinforcement Replacement Details.

2-32. Pocket Band.

This task covers: a. Repair b. Replace

Tools:

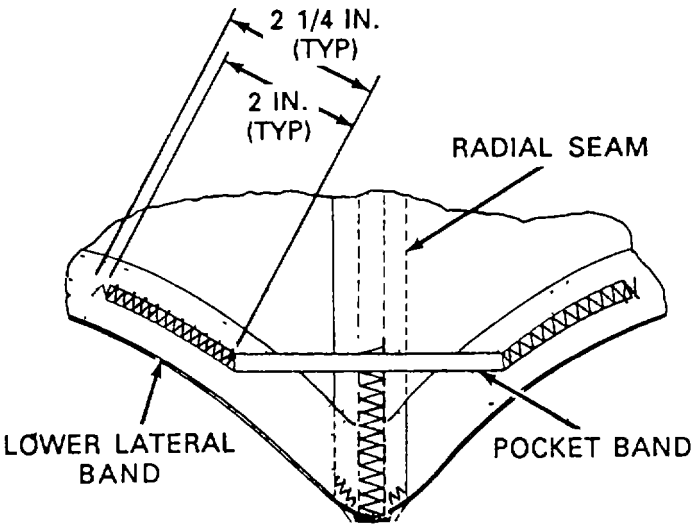
Equipment Condition:

Knife, Item 4, Appendix B	Cleaned, paragraph 2-12.
Knife, Hot Metal, Item 5, Appendix B	Inspected, paragraphs 2-9, 2-13.
Sewing Machine, Light-Duty, Item 16, Appendix B	Unpacked, laid flat on repair table.
Sewing Machine, Zig-Zag, Item 17, Appendix B	
Shears, Item 14, Appendix B	
Yardstick, Item 24, Appendix B	

Materials/Parts:

Thread, size E, Item 29/30, Appendix D
Cord, Nylon, Type III, Item 11/12, Appendix D

- a. Repair. Stitch and restitch (para. 2-20) with size E thread which matches the color of original stitching, when possible. Lock all zig-zag stitching at least 1/2 inch. Restitch directly over the original stitching, following the original stitch pattern as closely as possible.
- b. Replace. Replace an unserviceable pocket band by fabricating as follows:
 - (1) Using a marking aid, mark canopy at each end of original pocket band.
 - (2) Cut stitching on both ends of the original pocket band and remove pocket band from canopy skirt.
 - (3) Cut 6 3/8-inch length of type III nylon cord and sear ends (para. 2-21).
 - (4) Position cord length in original pocket band location.
 - (5) Using a zig-zag sewing machine and size E nylon thread, secure each end of the replacement pocket band by stitching a 2 1/4-inch long row of double-throw zig-zag stitching, 7 to 11 stitches per inch, in accordance with the details of figure 2-194.



4838-187

Figure 2-194. Pocket Band Replacement Details.

2-33. Reefing Ring and Reefing Ring Retainer.

This task covers

a. Repair

b. Replace

Tools:

Knife, Item 4, Appendix B
Knife, Hot Metal, Item 5, Appendix B
Sewing Machine, Zig-Zag, Item 16, Appendix B
Shears, Item 13, Appendix B
Yardstick, Item 22, Appendix B

Equipment Condition:

Unpacked, canopy laid flat.

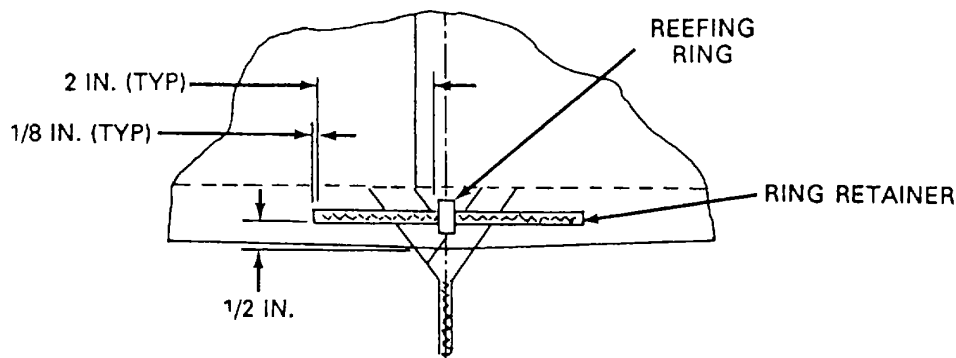
Materials/Parts:

Marking Aid, Item 46/47, Appendix D
Cord, Nylon, Type II, Item 10, Appendix D
Thread, Nylon, Size E, Item 29/30, Appendix D

a. **Repair.** Restitch broken or loose-stitching on the reefing ring retainer according to original construction details in accordance with paragraph 2-20.

b. **Replacement.** Replace serviceable or missing reefing ring with a serviceable item from stock . Replace a damaged or missing reefing ring retainer by fabricating as follows:

- (1) If applicable, remove the original reefing ring by cutting the stitching which secures the ring retainer to the inside of the canopy skirt band.
- (2) Cut a 5-inch length of type II nylon cord and sear the ends.
- (3) Center the cord length in a serviceable reefing ring and position the cord length on the inside of the skirt reinforcement tape (lower lateral band) in the original ring retainer location.
- (4) Secure each end of the ring retainer with a 3/16-inch wide by 2-inch long row of double-throw zig-zag stitching according to the details in figure 2-195, using the specifics in paragraph 2-20.



4838-191

Figure 2-195. Reefing Ring and Ring Retainer Replacement Details.

2-34. **V-Tab.**

This tasks covers: a. Inspect b. Replace

Tools:

Sewing Machine, Light Duty, Item 15, Appendix B
Sewing Machine, Light Duty, Zig-Zag, Item 16,
Appendix B
Yardstick, Item 22, Appendix B

Equipment Condition:

Unpacked, canopy laid flat.

Materials/Parts:

Thread, Nylon, Size E, Items 29/30, Appendix D
Webbing, Nylon, Type I, Item 39/40, Appendix D

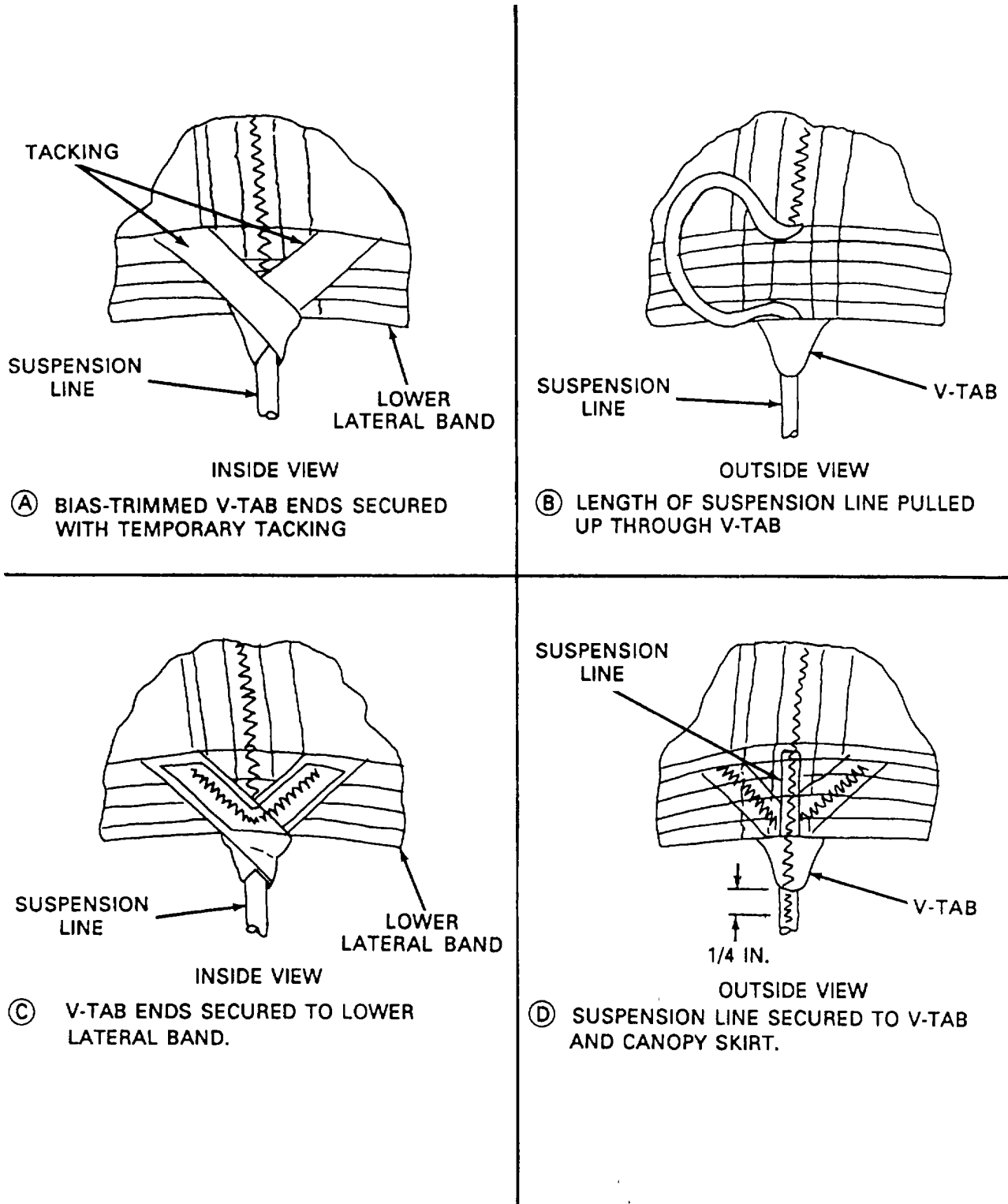
- a. Inspection. Inspect the V-tabs in accordance with table 2-1.

NOTE

Replacement of a V-tab is done at the direct support (intermediate) maintenance level as outlined in the Maintenance Allocation Chart (MAC), Section II, Appendix B.

- b. Replacement. If V-tab requires replacement, proceed as follows:
- (1) Position the canopy assembly on a repair table or other repair surface and turn the inside of the lower lateral band to the outside to place the damaged V-tab facing up.
 - (2) Using an authorized marking aid of contrasting color, mark the suspension line which is contained within the damaged V-tab at the point where the line intersects the lower edge of the lower lateral band.
 - (3) Remove the affected V-tab from the canopy by cutting the stitching securing the V-tab to the lower lateral band and the suspension line.
 - (4) Using nylon webbing, type I , cut a 5-inch length of material and sear the ends.
 - (5) Center the material lengthwise under the applicable suspension line, placing the upper edge of the material immediately adjacent to the lower edge of the lower lateral band.
 - (6) Working from opposite directions, pass each end of the material length over the top of the suspension line. Draw the ends snug to develop a tight wrap around the line and to form a V-shaped design on the lower lateral band inside.
 - (7) Secure each end of the replacement V-tab to the lower lateral band inside with temporary tacking. The temporary tacking will be made using the procedures in paragraph 2-20. Bias-trim each tab end even with the upper edge of the lower lateral band (A, figure 2-196).

2-34. V-Tab (cont.).



4838-188

Figure 2-196. V-Tab Replacement Details.

- (8) Pull a suitable length of the suspension line up through the V-tab on the outside of the lower lateral band (B, figure 2-196) and lay the pulled length to one side.
- (9) Secure the V-tab ends to the lower lateral band inside by stitching a single row of double-throw zig-zag stitching along the center of material, making a V-shaped design.
- (10) Further stitch a single row of stitching 1/8 inch in along the edges of the V-tab ends (C, figure 2-196). Ensure that the pulled suspension line length is held to one side during the stitching process. Also ensure the stitching does not extend above the upper edge or below the lower edge of the lower lateral band. Stitch with size E nylon thread, 7 to 11 stitches per inch, using a light-duty sewing machine.
- (11) Turn the lower lateral band right side out and pull the suspension line length back down through the V-tab. Ensure the mark made in step (2) is aligned with the lower edge of the lower lateral band.
- (12) Beginning at a point 1/4 inch below the V-tab lower edge, secure the suspension line upper end to the installed V-tab and the canopy skirt outside by stitching a single row of double-throw zig-zag stitching (D, figure 2-196) according to original construction.

2-35. **Skirt Reinforcement (Lower Lateral Band).**

This task covers: Repair

Tools:

Knife, Item 4, Appendix B
Knife, Hot Metal, Item 5, Appendix B
Sewing Machine, Light Duty, Item 15, Appendix B
Sewing Machine, Zig-Zag, Item 16, Appendix B
Shears, Item 13, Appendix B
Yardstick, Item 22, Appendix B

Equipment Condition:

Cleaned, paragraph 2-12.
Inspected, paragraphs 2-9, 2-13.
Unpacked, laying flat on repair table.

Materials/Parts:

Webbing, Nylon, 1-inch Wide, Tubular Item 45,
Appendix D
Thread, Nylon, Size E, Item 29/30, Appendix D

NOTE

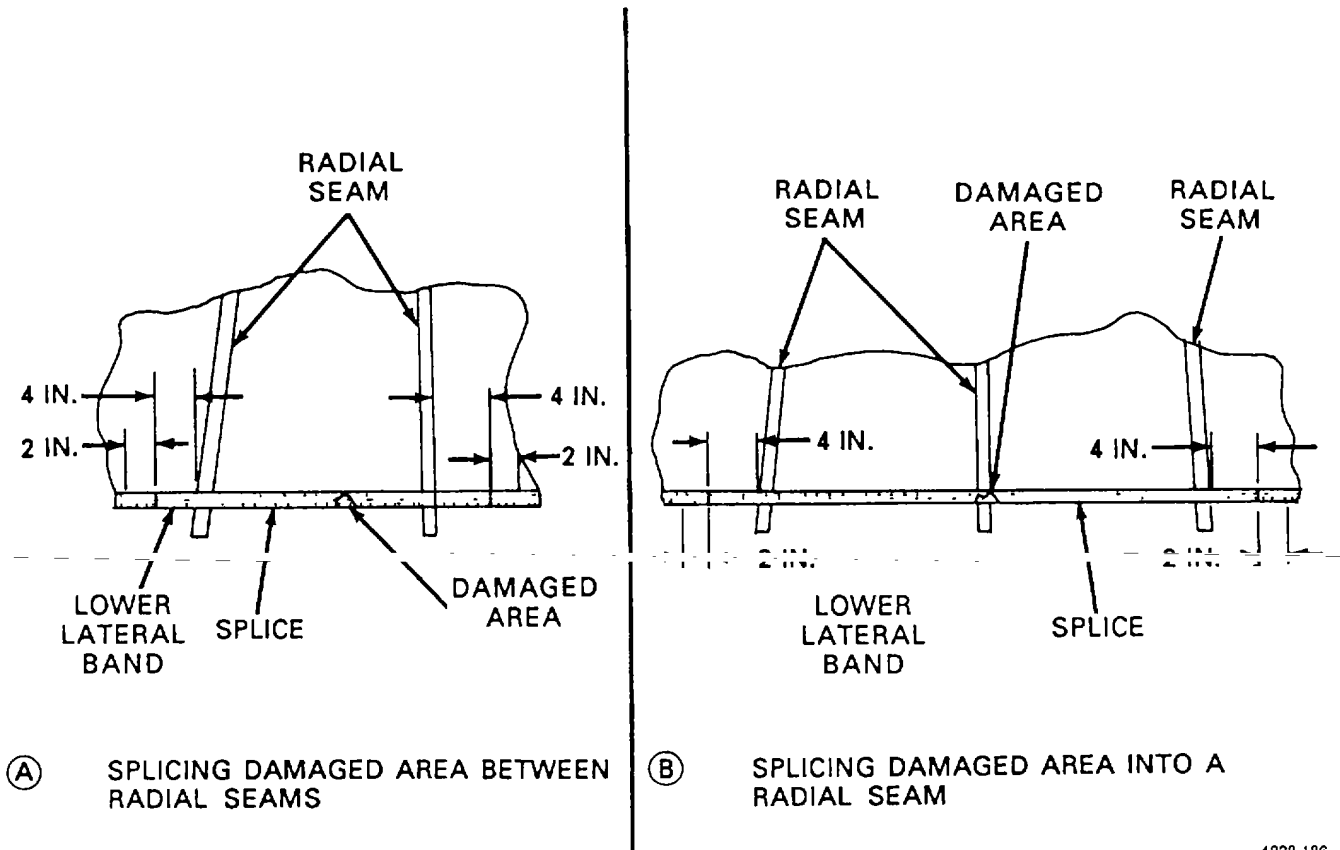
The skirt reinforcement tape may have one splice between any two suspension lines and cannot be replaced.

If the damage is located in a previously spliced area between two suspension lines, the earlier made splice material will be removed before attempting a second splice repair.

a. Stitching and Restitching. Stitch and restitch (para. 2-20) with nylon thread, size E, which contrasts the color of the original stitching and material when possible. Lock all straight stitching by back stitching at least 2 inches. Zig-zag restitching should extend 1/4 inch into undamaged stitching at each end. Restitch directly over the original stitching. Follow the original stitch pattern as closely as possible.

b. Splicing. Splice lower lateral band as follows:

- (1) With damaged side of lower lateral band facing up and affected areas of canopy smoothed out, remove previous splice, if required.
- (2) As required, cut and remove original stitching which secures pocket band end to lower lateral band. Fold pocket band loose end away from repair area.
- (3) Cut a length of 1-inch wide tubular nylon webbing long enough to extend 4 inches beyond each side of damaged area. Sear each end of tape (para. 2-21).
- (4) Center webbing length over damaged area (figure 2-197) and secure splice by making four rows of continuous stitching using a light duty sewing machine and size E nylon thread. Overstitch each webbing end by 1/2 inch. Stitching will be 7 to 11 stitches per inches.
- (5) Reattach pocket band, if required (para. 2-32).



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Figure 2-197. Skirt Reinforcement (Lower Lateral Band) Splice Details.

2-36. **Connector Link.**

This task covers

a. Inspect

b. Repair

c. Replace

Tools:

File, Item 3, Appendix B
Mallet, Rawhide, Item 8, Appendix B
Screwdriver, Flat Tip, Item 20, Appendix B
Separator, Connector Link, Item 21, Appendix B

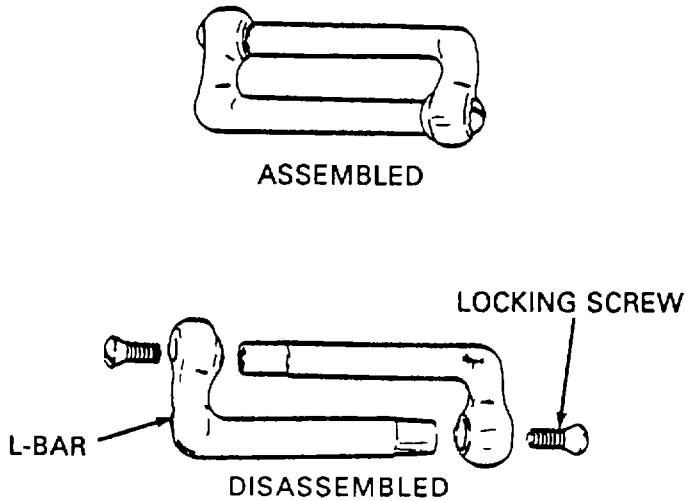
Equipment Condition:

Unpacked, canopy laid flat

Materials/Parts:

Cloth, Abrasive, Item 2, Appendix D

- a. *Inspection.* Inspect connector link assemblies in accordance with table 2-1.
- b. *Repair.* Repair connector link assembly as follows (see figure 2-198):
 - (1) *Cleaning.* Remove burrs, rough spots, rust or corrosion from a parachute connector link assembly by either filing with a metal file or buffing with a crocus cloth.
 - (2) *Replacing a locking screw.* Replace a damaged or missing locking screw on a parachute connector link with a serviceable item from stock.
- c. *Replace.* A parachute connector link assembly that is damaged beyond repair will be replaced with a serviceable L-bar parachute connector link assembly from stock. Use the following procedures:
 - (1) Using suitably sized flat-tip (slotted-head) screwdriver, remove the locking screws from the ends of replacement L-bar parachute connector link assembly and disassemble the link (see figure 2-198).
 - (2) Using suitably sized flat-tip (slotted-head) screwdriver, remove the two locking screws from the damaged original parachute connector link assembly. Disassemble the link assembly, using a link separator, if necessary. If the connector link contains suspension lines, ensure the lines are not allowed to slide off the damaged link during the disassembly process.



4838-192

Figure 2-198. Connector Link Assembly.

- (3) As applicable, position an L-bar of the replacement link assembly adjacent to the disassembled original link assembly and slide the suspension lines from the damaged link onto the replacement link L-bar.
- (4) If required, pass the remaining L-bar link through the attaching loop of the adjoining component.
- (5) Fit the replacement link L-bar together and ensure L-bar leg engagement by tapping the end of each L-bar with a rawhide mallet.
- (6) As applicable, trace the suspension lines from the connector link assembly to the canopy skirt to ensure the lines are properly installed and in the correct sequence.

2-37. **Suspension Riser.**

This task covers:

a. Repair

b. Replace

Tools:

Brush, Stenciling, Item 2, Appendix B
Knife, Item 4, Appendix B
Knife, Hot Metal, Item 5, Appendix B
Sewing Machine, Heavy Duty, Item 17,
Appendix B
Yardstick, Item 22, Appendix B

Materials/Parts:

Ink, Marking, Parachute, Strata-Blue, Item 16,
Appendix D
Stencil board, Oiled, Item 22, Appendix D

Materials/Parts (cont.):

Thread, Nylon, Size 6, Item 33/34, Appendix D
Webbing, Nylon, Tubular, 1-Inch, Item 45, Appendix D
Webbing, Nylon, Type XVIII, 1-Inch, Item 42,
Appendix D

Equipment Condition:

Unpacked, canopy laid flat.

a. Repair.

(1) *Restitching.* Restitch broken or loose stitching according to original construction details using the specifics of paragraph 2-20.

(2) *Restencil.* As required, restencil identification markings using the procedures of paragraph 2-22.

(3) *Splicing.* A suspension riser which is constructed of either 1-inch wide tubular nylon or type XVIII nylon webbing may be spliced. The material used for splicing must be the same material as the riser being spliced. Splicing may be made even though the webbing has been cut completely through. Each suspension riser web is limited to one splice and each riser is limited to three splices for the entire riser. Splice a damaged suspension riser web as follows:

(a) Lightly sear the damaged area to prevent the damaged webbing from fraying.

(b) Cut a piece of type XVIII, 1-inch wide nylon webbing, or 1 -inch wide tubular nylon webbing, whichever is applicable, so it will extend at least 5 inches beyond the damaged area on each side.

(c) Cut three 3 1/2-inch cut lengths of type XII, 1 23/32-inch wide nylon webbing.

(d) Take the type XII, 1 23/32-inch wide nylon webbing in 3-1/2-inch cut lengths and make a fixed keeper in the center of the splice over the damaged area, and at each end of the splice. The keepers at the ends of the splice shall be positioned so as to extend 5/8 inch beyond the end of the splice.

(e) Secure the splice by stitching with two three-point W-W stitch patterns using a heavy-duty sewing machine and size 6 nylon thread, 5 to 8 stitches per inch, according to details in figure 2-199.

b. Replacement. Replace an unserviceable suspension riser with a serviceable item from stock.

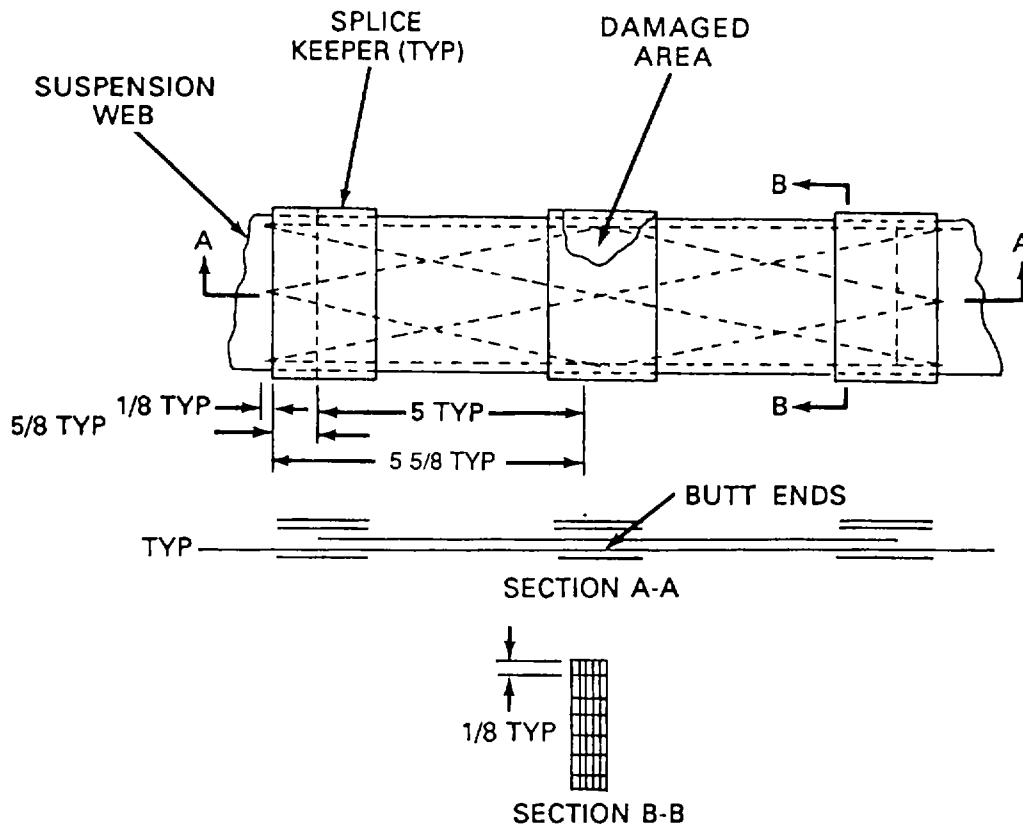


Figure 2-199. Suspension Riser Splicing Details.

4838-193

2-38. **Parachute Inspection Data Pocket.**

This task covers: a. Repair b. Replace

Tools:

Sewing Machine, Light-Duty, Item 15, Appendix B
Sewing Machine, Zig-Zag, Item 16, Appendix B
Tacking Needle, Item 9, Appendix B

Equipment Condition:

Cleaned, paragraph 2-12.
Inspected, paragraph 2-9, 2-13.
Laid out on work surface.

Materials/Parts:

Thread, Nylon, Size E, Item 29/30, Appendix D
Thread, Cotton, Ticket No. 8/7, Item 28, Appendix D

NOTE

The inspection data pocket is located on the bridle loop of the G-11 A and on a riser of the G-11B and G-11C.

a. Repair Stitch and restitch with size E nylon thread which matches the color of original stitching. Lock all straight stitching by backstitching at least 1/2 inch. Restitch directly over the original stitching, following original stitch pattern as closely as possible, according to the specifics in table 2-3. Retacking will be performed using a tacking needle and two turns of double, ticket number 8/7 waxed cotton thread at each tacking point.

b. Replacement. Replace an unserviceable or missing parachute inspection data pocket with a serviceable item from stock. Tack in place at original tacking points using the specifics in a., above.

2-39. **Centerline.**

This task covers: a. Repair b. Replacement

Tools:

Sewing Machine, Heavy Duty, Item 17,
Appendix B
Brush, Stenciling, Item 2, Appendix B

Equipment Condition:

Cleaned, paragraph 2-12.
Inspected, paragraph 2-9, 2-13.
Laid out on work table.

Materials/Parts:

Thread, Nylon, Size 6, Item 33/34, Appendix D
Ink, Marking, Strata-Blue, Item 16, Appendix D
Stencilboard, Oiled, Item 22, Appendix D

a. Repair.

(1) *Restitching.* Stitch and restitch with size 6 nylon thread which matches the color of the original stitching, when possible. Lock all straight stitching by backstitching at least 1/2 inch. Restitch by overstitching each end of the stitch formation by 1/2 inch. Restitch directly over the original stitching, following the original stitch pattern as closely as possible. Stitching will be in accordance with paragraph 2-20 and table 2-3.

(2) *Restencil.* As required, restencil identification marks using the procedures in paragraphs 2-22.

b. Replacement. Replace an unserviceable center line with a serviceable one from stock.

2-40. **Deployment Bag.**

This task covers: a. Inspect b. Service c. Repair d. Replace

Equipment Condition:

Unpacked detached from canopy

- a. *Inspect.* Refer to paragraphs 2-9 and 2-13 for inspection procedures.
- b. *Service.* Refer to paragraph 2-12 for cleaning procedures.
- c. *Repair.* Refer to individual repair procedures.

CAUTION

When performing a repair on deployment bag which requires the cutting of stitching or an original part, ensure that adjacent bag material is not damaged during the cutting process.

- d. *Replace.* An unrepairable deployment bag will be replaced with a serviceable bag from stock.

2-41. Deployment Bag Panels and Flaps.

This task covers: Repair

Tools:

Sewing Machine, Medium Duty, Item 18, Appendix B
Sewing Machine, Heavy Duty, Item 17, Appendix B
Sewing Machine, Darning, Item 19, Appendix B
Brush, Stenciling, Item 2, Appendix B
Shears, Item 13, Appendix B
Yardstick, Item 32, Appendix B

Materials/Parts:

Thread, Nylon, Size E, Item 29/30, Appendix D
Thread, Nylon, Size 3, Item 31/32, Appendix D

Materials/Parts (cont.):

Marking Aid, Item 46/47, Appendix D
Ink, Marking, Item 16, Appendix D
Cloth, Cotton Duck, Type I, Item 3, Appendix D
Cloth, Cotton Duck, Type III, Item 4, Appendix D
Cloth, Nylon, Duck, Type III, Item 7, Appendix D

Equipment Condition:

Unpacked, detached from canopy.

Repair.

(1) *Restitching.* Restitch broken or loose stitching according to original construction details and the specifics in paragraph 2-20.

(2) *Restencil.* As required, restencil identification marks using the procedures in paragraph 2-22.

(3) *Darning.* Darn a hole or tear which does not exceed 3/4 inch in length or diameter and which is accessible using the procedures in paragraph 2-20, and a darning sewing machine with size E nylon thread. There is no limit to the number of times a flap or panel may be darned.

(4) *Patching.* Patch a hole or tear which exceeds 3/4 inch in length or diameter using the procedures in paragraph 2-20, the specifics in table 2-3, and the following patching criteria:

NOTE

A deployment bag cover will not be patched.

(a) *Bag body.* There is no limit to the number of patches that may be applied to the deployment bag body. However, each damaged area must be accessible and there must be at least 1 1/4 inches of undamaged material remaining on all sides of the affected area. In addition, a patch will not exceed 5 inches in length or width. Patch material will be of type I 17.55-ounce, cotton duck cloth or type III, 7.25-ounce nylon duck cloth. Proceed as follows:

- 1 Smooth fabric around the damaged area, and secure with pushpins. Do not pin damaged area.
- 2 Using a marking aid of contrasting color, mark a square or rectangle around the area to be patched and ensure one side of marked square or rectangle is parallel to warp or filling of fabric.
- 3 Cut damaged area fabric along lines made in 2, above. Further cut fabric diagonally at each corner to allow a 1/2-inch foldback in raw edges.

2-41. Deployment Bag Panels and Flaps (cont.).

- 4 Make a 1/2-inch foldback on each raw edge. Pin and baste each foldback to complete prepared hole. Basting will be performed using procedures in paragraph 2-20a.
- 5 Using cotton or nylon cloth, mark and cut a patch 2 1/2 inches wider and longer than inside measurements of the prepared hole. Ensure that patch material is marked and cut along the warp of filling of fabric.
- 6 Center patch material over prepared hole. Pin patch material in position.
- 7 Make a 1/2-inch fold under on each edge of patch material and baste patch to prepared area. Basting will be performed using procedures in paragraph 2-20a.
- 8 Remove pushpins securing the item to repair table and secure the patch on the nylon bag, using a medium-duty sewing machine and size E nylon thread. Stitching will be 7 to 11 stitches per inch. For the cotton bag, use a heavy sewing machine and size 3 nylon thread. Stitching will be 5 to 8 stitches per inch (figure 2-200).

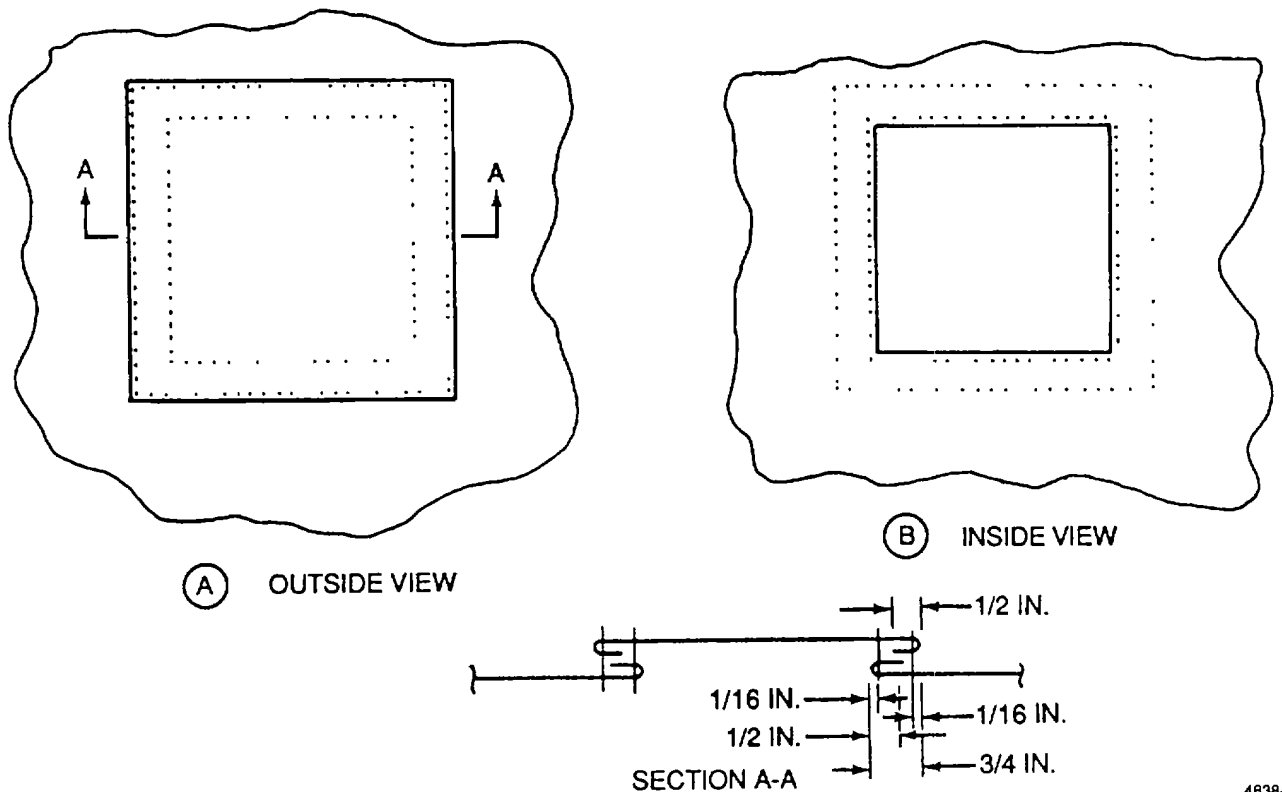


Figure 2-200. Patching Deployment Bag Panels and Flaps.

(b) *Suspension line protector flap.* There is no limit to the size or number of patches that may be applied to the suspension line protector flap. Patch material will be of type III 8.25-ounce cotton duck cloth or type III 7.25-ounce nylon duck cloth. Use the patching procedure in (a).

2-42. **Deployment Bag Edge Binding.**

This task covers: Repair

Tools:

Knife, Item 4, Appendix B
Sewing Machine, Medium Duty, Item 18, Appendix B
Shears, Item 13, Appendix B
Yardstick, Item 22, Appendix B

Equipment Conditions:

Cleaned, paragraph 2-12.
Inspected, paragraphs 2-9, 2-13.
Laid out on work table.

Material/Parts:

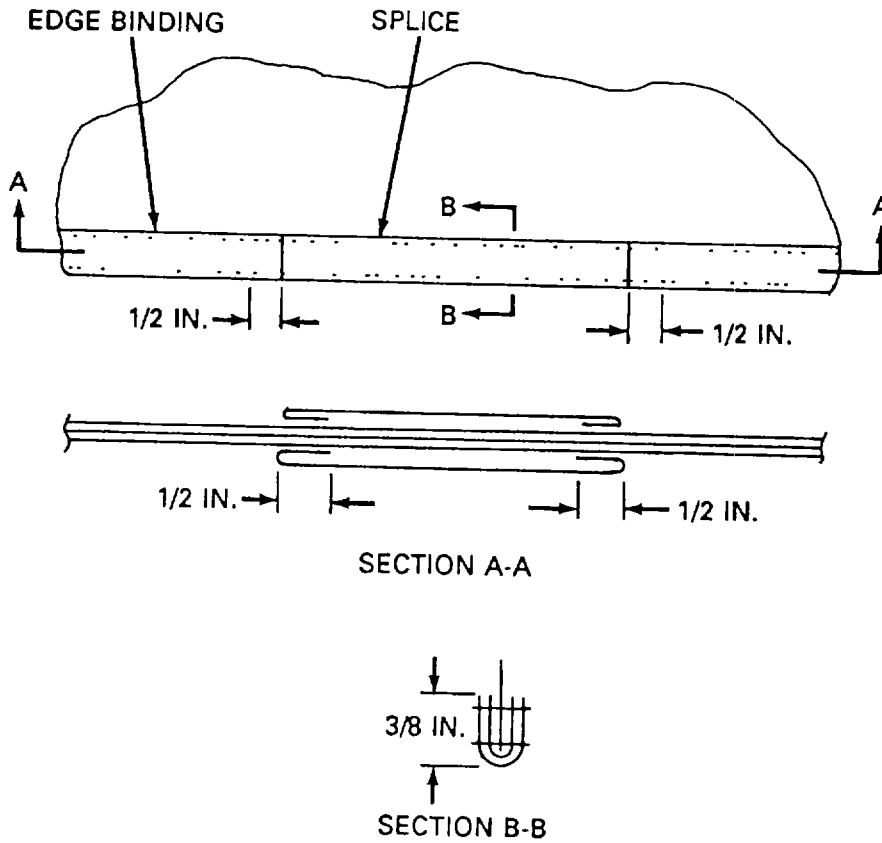
Thread, Nylon, Size E, Item 29/30, Appendix D
Tape, Nylon, 3/4-inch Wide, Type III, Item 48,
Appendix D
Tape, Cotton, 3/4-inch Wide, Type III, Item 49,
Appendix D

a. Stitching. Stitch and restitch broken or loose stitching with size E nylon thread which matches the color of the original stitching, when possible. Lock all straight stitching by backstitching at least 1/2 inch. Restitch by overstitching each end of the stitch formation by 1/2 inch. Restitch directly over the original stitching, following the original stitch pattern as closely as possible. Stitch according to para. 2-20 and table 2-3.

b. Splicing. Splice an edge binding an unlimited number of times as follows:

- (1) Cut a length of 3/4-inch wide type III nylon tape (for the nylon bag) or cotton tape (for the cotton bag) 2 inches longer than the damaged area.
- (2) Make a 1/2-inch fold under on each end of tape length.
- (3) Center and fold the tape lengthwise over the damaged area. Secure the splice by making two rows of stitching over the original stitching, the full length of the splice, to a point 1/2 inch beyond each end of the splice material according to the details in figure 2-201. Use a medium-duty sewing machine and size E nylon thread. Stitching shall be 7 to 11 stitches per inch.

2-42. Deployment Bag Edge Binding (cont.).



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Figure 2-201. Deployment Bag Edge Binding Splicing Details.

2-43. **Grommet.**

This task covers:

a. Repair

b. Replace

Tools:

Pliers, Lineman, Item 11, Appendix B
File, Item 3, Appendix B
Mallet, Item 8, Appendix B
Set, Chuck and Die, Item 14, Appendix B
Sewing Machine, Medium Duty, Item 18,
Appendix B

Equipment Conditions:

Cleaned, paragraph 2-12.
Inspected, paragraphs 2-9, 2-13.

Materials/Parts:

Cloth, Abrasive, Item 2, Appendix D
Thread, Nylon, Size E, Items 29/30, Appendix D

a. Repair. Repair grommet as follows:

- (1) Remove burrs, rough spots, rust, or corrosion from an installed grommet by filing or by buffing with a crocus cloth.
- (2) Reseat a loose grommet using the procedures listed in para. b.
- (3) If fabric area around original grommet has been damaged, repair area by darning using procedures in paragraph 2-20c. If darning does not provide an adequate repair, construct a 2 3/4 by 2 3/4 inch reinforcement cloth and fold under 1/2 inch on all sides. After removing original grommet (para. b., step (1)), sew cloth to inside with size E nylon thread, 7 to 11 stitches per inch, one row of stitches 1/8 inch from outside edge and the second row 3/8 inch from outside edge (figure 2-202).

b. Replace. Proceed as follows:

- (1) Remove original grommet as follows:
 - (a) Using a suitable type tool, lift edge of original washer at one point.
 - (b) Grip lifted washer edge with lineman pliers and roll washer edge back to lift washer from original grommet. Remove original grommet from material.

2-43. Grommet (cont.).

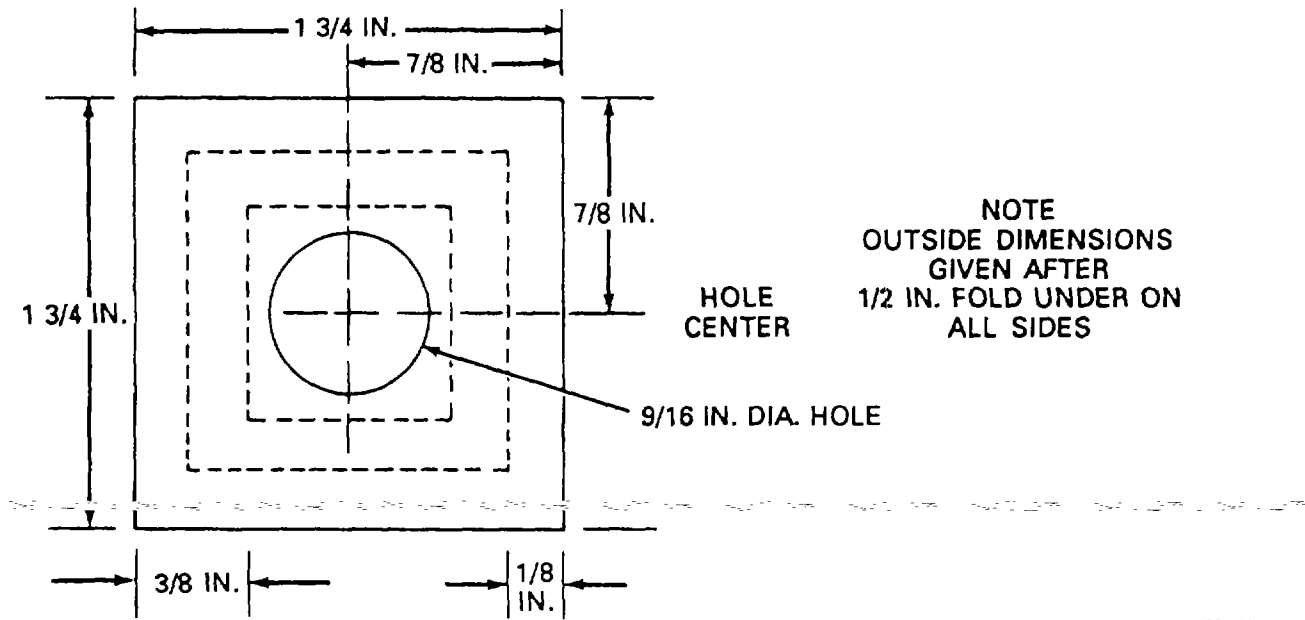


Figure 2-202. Fabricating Grommet Reinforcement.

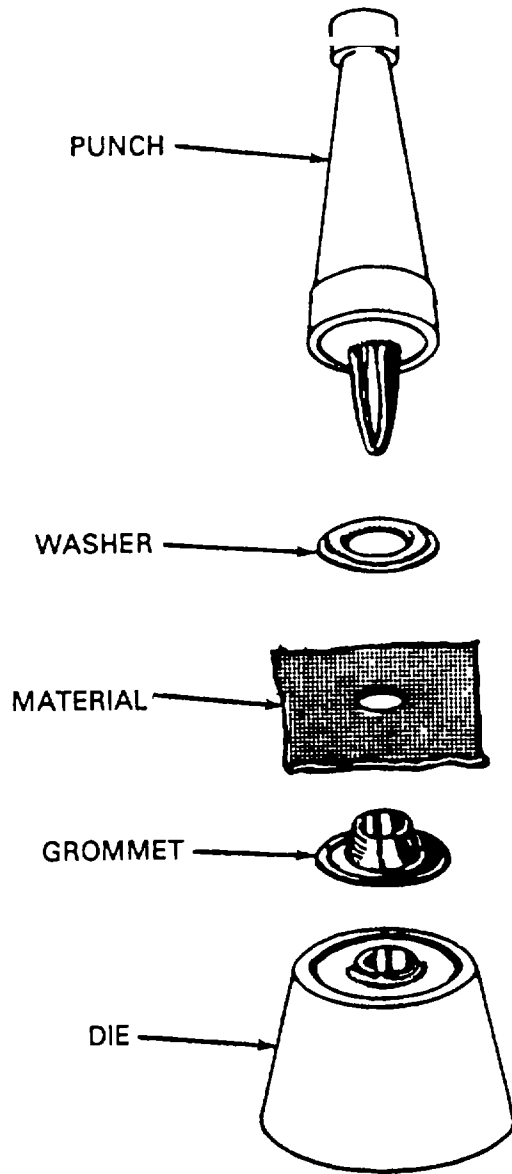
(2) Grommet installation by hand-held method (figure 2-203).

- (a) Insert barrel of replacement grommet through accommodating hole in material and ensure grommet flange is located on same side of material as original grommet.
- (b) Position grommet on die with barrel facing up and place the washer over grommet barrel.

NOTE

When installing a flat grommet by the hand-held method, ensure the grommet barrel and washer are aligned to preclude off-center setting of the grommet.

- (c) Using a punch and a rawhide mallet or other non-steel impact device, spread grommet barrel by hammering until barrel collar is rolled down smooth on washer. If grommet barrel splits during hammering process, remove and replace installed grommet with a serviceable item from stock, repeating procedures in steps (a) and (b), above.
- (d) Check seating of grommet. If grommet can be turned by hand, repeat step (c) until grommet is firmly seated.



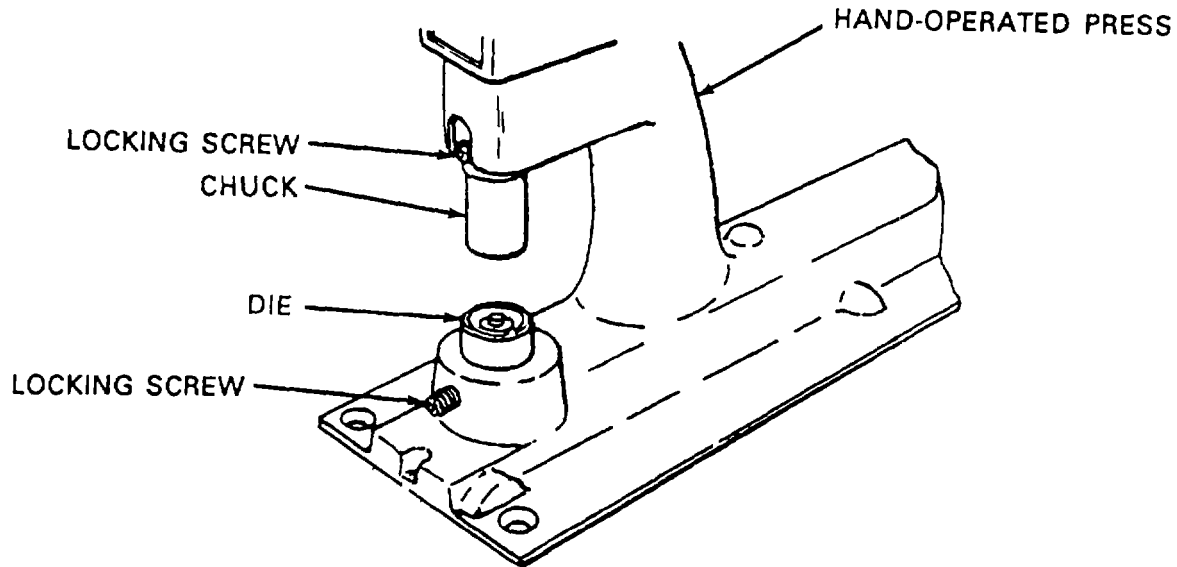
4838-197

Figure 2-203. Grommet Installation by Hand-Held Method.

2-43. Grommet (cont.).

(3) Grommet installation by hand-operated press.

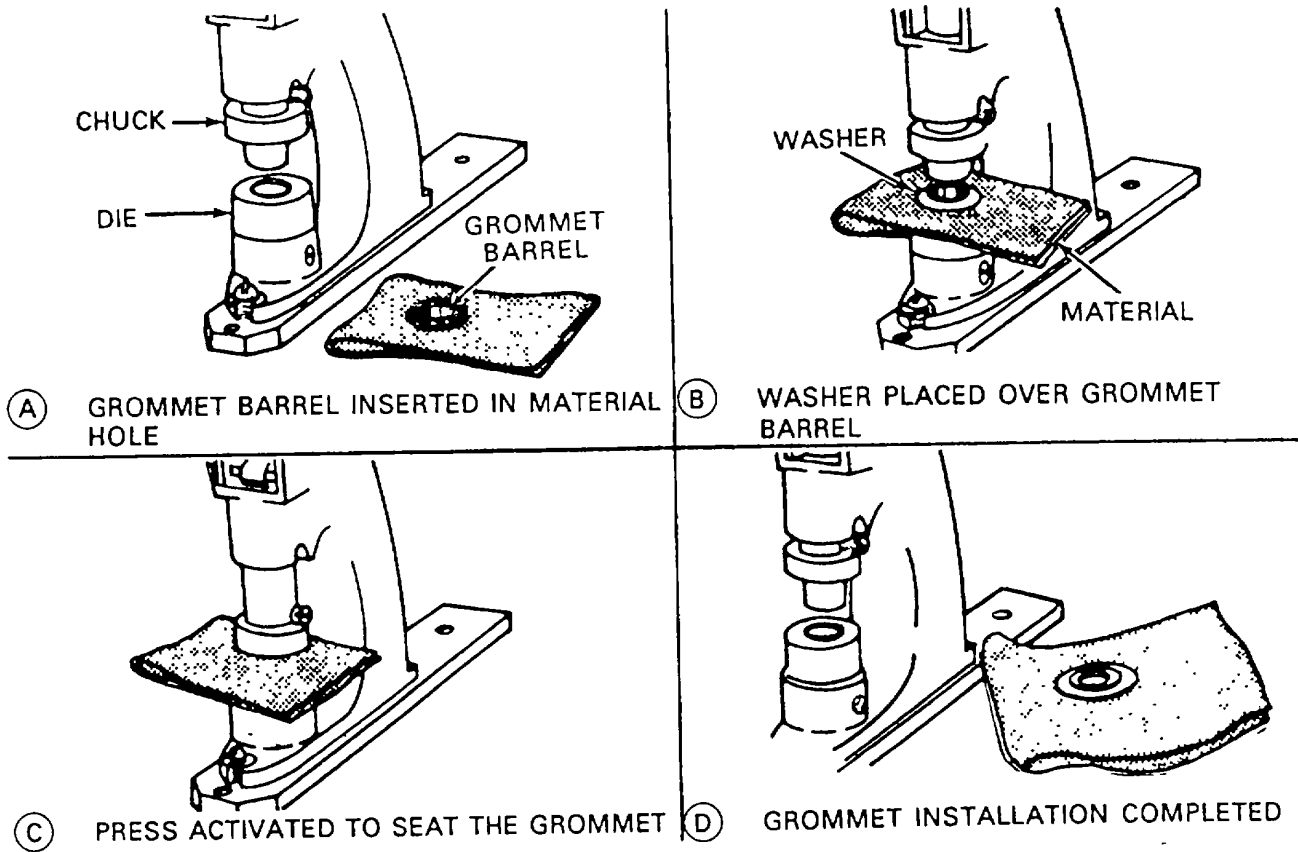
(a) Install 1/4-inch chuck and die in hand operated press, secure locking screws with hex wrench (figure 2-204).



4838-198

Figure 2-204. Chuck and Die Installed in Hand-Operated Press.

- (b) Insert barrel of replacement grommet through hole in material. Ensure grommet flange is on same side of material as original grommet (A, figure 2-205).
- (c) Position grommet on die in press with barrel facing up, place replacement washer over barrel (B, figure 2-205).
- (d) Depress handle or foot pedal, spreading grommet barrel until collar is rolled down smoothly on washer (C and D, figure 2-205).
- (e) Check grommet for firm seating. If grommet can be turned by hand, repeat step (d) above, until a firm seat is achieved.



4838-199

Figure 2-205. Flat Grommet Installation by Hand- or Foot-Operated Press.

2-44. **Deployment Bag Locking Stow Loop.**

This task covers: a. Repair b. Replace

Tools:

Knife, Item 4, Appendix B
Pot, Melting, Electric, Item 12, Appendix B
Shears, Item 13, Appendix B
Sewing Machine, Heavy Duty, Item 17,
Appendix B
Yardstick, Item 22, Appendix B

Materials/Parts:

Thread, Nylon, Size 6, Item 33/34, Appendix D
Wax, Paraffin, Item 35, Appendix D

Materials/Parts (cont.):

Webbing, Cotton, Type VIII, 1 3/4 inch Wide, Item 37,
Appendix D
Marking Aid, Item 46/47, Appendix D

Equipment Condition:

Cleaned, paragraph 2-12.
Inspected, paragraph 2-9, 2-13.
Laid out on work table.

a. Repair. Stitch and restitch broken or loose stitching with size 6 nylon thread, which matches the color of the original stitching. Lock all straight stitching by backstitching at least 1/2 inch. Restitch directly over the original stitching following the original stitch pattern as closely as possible. Stitch according to paragraph 2-20.

b. Replacement. Replace damaged locking stow loops on the cotton bag by fabricating as follows:

NOTE

Replacement of locking stow loops on the nylon bag is not authorized.

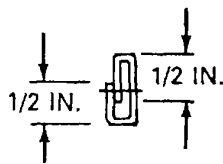
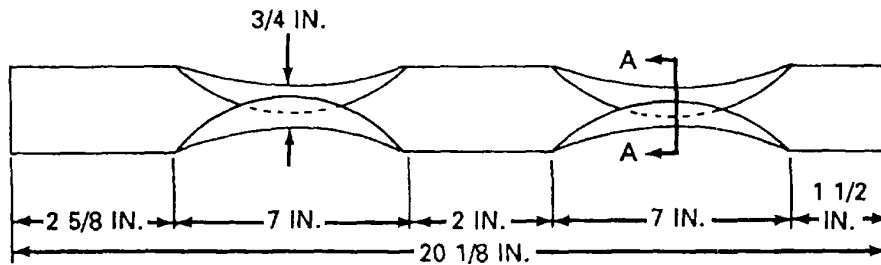
- (1) Cut and remove the stitching which secures the original loop webbing length between points 1 inch back from the edge of the suspension line protector flap.
- (2) Remove the original locking stow loops by cutting the loop webbing length at the points specified in (a), above.
- (3) Cut a 20 1/8-inch length of 1 3/4-inch-wide, type VIII cotton webbing and wax the ends.
- (4) Using a suitable marking aid, mark the webbing length at points 2 5/8, 9 5/8, 11 5/8, and 18 5/8 inches from one end.
- (5) Between the 2 5/8- and 9 5/8-inch marks, roll 1/2 inch of each webbing edge in to the center of the webbing width and allow the webbing edges to overlap. Secure the overlapped webbing edges to the webbing length by stitching a single row of stitching according to the details in A, figure 2-206. Use a heavy duty sewing machine with size 6 nylon thread. Stitching will be 5 to 8 stitches per inch in accordance with paragraph 2-20.
- (6) Repeat the procedure in (5), for the 7-inch-long webbing area between the 11 5/8- and 18 5/8-inch marks made in (4).

- (7) Position the webbing length in the original loop webbing location on the deployment bag. Form the locking stow loops and secure the webbing length by stitching according to the details in B, figure 2-206, using a heavy duty sewing machine with size 6 nylon thread. Stitching will be 5 to 8 stitches per inch, in accordance with paragraph 2-20.

c. Altering Loop Size. If the locking stow loops on a cotton deployment bag do not conform to the dimensions shown in figure 2-206, the loops may be enlarged by alteration as follows:

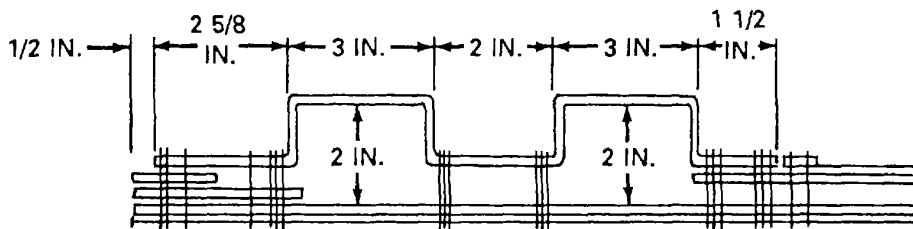
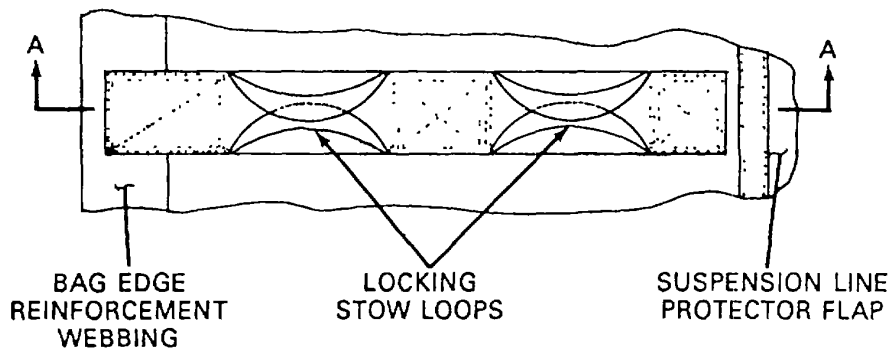
- (1) Cut and remove the stitching from the inside of the front loop to the bag edge reinforcement webbing and from the inside of the edge of the suspension line protector flap. Ensure no material damage is incurred during the cutting process.
- (2) To ensure the loop webbing does not pull away from the deployment bag, stitch a 1 1/2-inch square, single-X box stitch formation, with one double end through the bag edge reinforcement webbing and the end of the locking stow loop webbing. Refer to the details in figure 2-207. Use a heavy duty sewing machine and size 6 nylon thread. Stitching will be 5 to 8 stitches per inch, in accordance with paragraph 2-20.

2-44. Deployment Bag Locking Stow Loop.



SECTION A-A

(A) CONSTRUCTION DETAILS

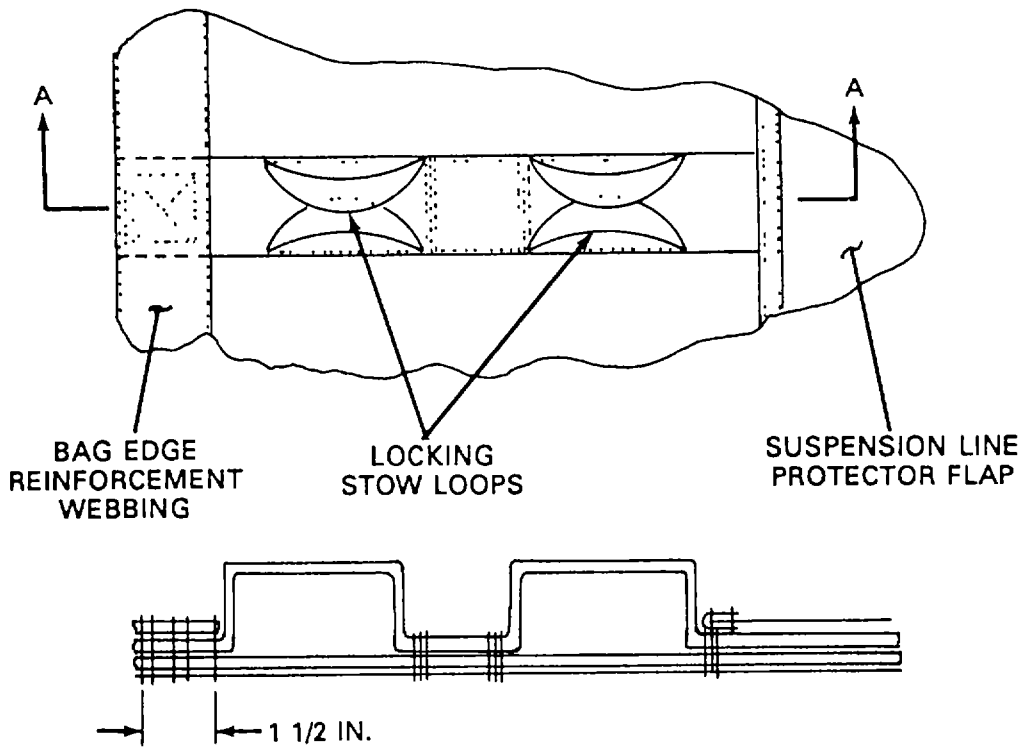


SECTION A-A

(B) INSTALLATION DETAILS

4838-2f

Figure 2-206. Cotton Deployment Bag Locking Stow Loop Replacement Details.



SECTION A-A

4838-202

Figure 2-207. Cotton Deployment Bag Locking Stow Loop Alteration Details.

2-45. **Deployment Bag Bridle (Cotton Bag).**

This task covers: a. Inspection b. Service c. Repair d. Restencil e. Replace

Tools:

Sewing Machine, Heavy Duty, Item 17, Appendix B
Knife, Item 4, Appendix B
Pot, Melting, Item 12, Appendix B
Needle, Tacking, Item 9, Appendix B
Yardstick, Item 22, Appendix B

Materials/Parts

Thread, Nylon, Size 6, Item 33/34, Appendix D
Webbing, Cotton, Type VIII, 1 3/4-Inch Wide, Item 37, Appendix D

Materials/Parts (cont.):

Wax, Paraffin, Item 35, Appendix D
Marking Aid, Item 46/47, Appendix D

Equipment Condition:

Cleaned, paragraph 2-12.
Inspected, paragraphs 2-9, 2-13.
Laid out on work table.

a. **Inspection.** Inspect a deployment bag bridle in accordance with paragraphs 2-9 and 2-13, using the procedures in table 2-1.

b. **Service.** Service a deployment bag bridle by cleaning the bridle webbing in accordance with paragraph 2-12.

c. **Repair.**

(1) ***Restitching.*** Restitch broken or loose stitching according to original construction details. Using a very heavy duty sewing machine and size 6 nylon thread, which matches the color of the original stitching. Lock all straight stitching by backstitching at least 1/2 inch. Restitch directly over original stitching following the original stitch pattern as closely as possible. Stitch according to paragraph 2-20.

(2) ***Retacking.*** Replace broken or loose tacking which secures the buffer in the deployment line attaching loop by retacking according to original tacking details, using one turn double ticket No. 8/7 waxed cotton thread at each of three tacking points. Secure the tacking ends at each tacking point with a surgeon's knot and a locking knot. Trim tie ends to 1/2 inch.

(3) ***Replacing a loop buffer.*** Replace a damaged or missing deployment line attaching loop buffer on the cotton deployment bag bridle by fabricating as follows:

(a) If applicable, remove the original buffer by cutting the tacking securing the buffer within the attaching loop. Insure the loop material is not damaged during the cutting process:

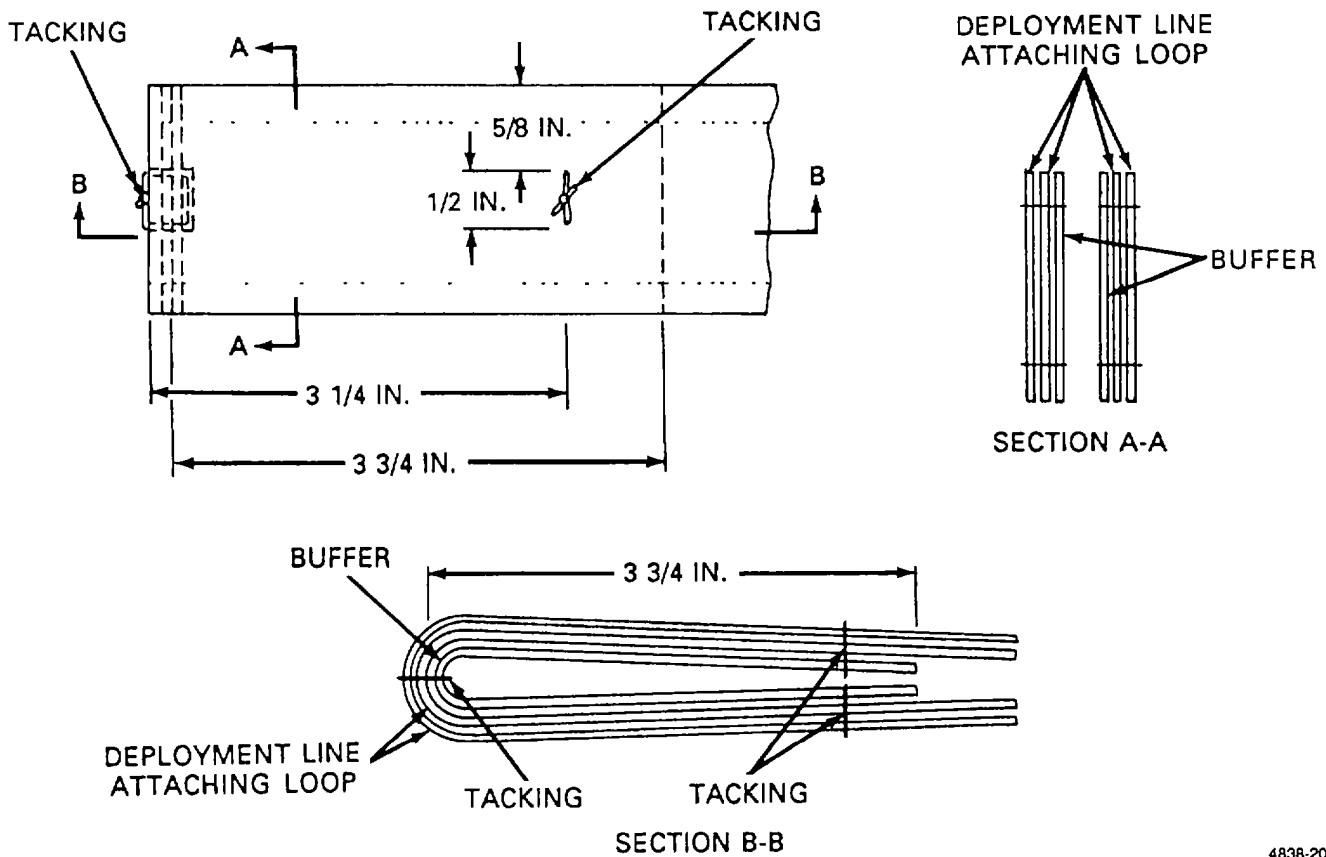
(b) Cut a 7 1/2-inch length of 1 3/4-inch-wide, type VIII cotton webbing and wax the ends.

(c) Double the webbing length and position the folded webbing in the original buffer location within the bridle deployment line attaching loop.

(d) Secure the buffer to the loop webbing by handtacking at three points according to the details in figure 2-208, using one turn double, ticket No. 8/7 waxed cotton thread at each tacking point. Secure each of the tacking ends with a surgeon's knot and a locking knot. Trim tie ends to 1/2 inch.

d. Restenciling. As required, restencil identification marks using the procedures in paragraph 2-22.

e. Replacement. Replace an unserviceable deployment bag bridle with a serviceable item from stock.



4838-203

Figure 2-208. Deployment Bag Bridle Buffer Replacement Details.

Section VII. PREPARATION FOR STORAGE OR SHIPMENT

Paragraph		Page
2-46	Storage.....	2-283
2-47	In-Storage Inspection	2-284
2-48	Shipment	2-285

2-46. Storage.

a. Storage Criteria. Administrative storage of air delivery equipment will be accomplished in accordance with AR 750-1 and the instructions furnished below.

b. General Storage Requirements. To insure that serviceability standards of stored air delivery equipment are maintained, every effort will be made to adhere to the following storage requirements.

- (1) When available, a heated building should be used to store parachutes and other air delivery items.
- (2) Air delivery equipment will be stored in a dry, well-ventilated location and protected from pilferage, dampness, fire, dirt, insects, rodents, and direct sunlight.
- (3) Air delivery equipment will not be stored in a manner which would prevent ventilation or interfere with light fixtures, heating vents, fire fighting devices, cooling units, exits, or fire doors.
- (4) Air delivery items will not be stored in a damaged, dirty, or damp condition.
- (5) All stored air delivery items will be marked, segregated, and located for accessibility and easy identification.
- (6) Air delivery equipment will not be stored in direct contact with any building floor or wall. Storage will be accomplished using bins, shelves, pallets, racks, or dunnage to provide airspace between the storage area floor and the equipment. If preconstructed shelving or similar storage accommodations are not available, locally fabricate storage provisions using suitable lumber or wooden boxes.
- (7) All available materials handling equipment should be used as much as possible in the handling of air delivery items.
- (8) Periodic rotation of stock, conversion of available space, proper housekeeping policies and strict adherence to all safety regulations will be practiced at all times.

c. Storage Specifics for Parachutes. In addition to the storage requirements stipulated in subparagraph b. above, the following is a list of specifics which must be enforced when storing parachutes:

- (1) Except for those assemblies required for contingency operation, parachutes will not be stored in a packed configuration.
- (2) Stored parachute assemblies will be secured from access by unauthorized personnel.
- (3) A parachute which is in storage, and is administered a cyclic repack and inspection, will not be exposed to incandescent light or indirect sunlight for a period of more than 36 hours. In addition, exposure to direct sunlight should be avoided entirely.

2-47. **In-Storage Inspection.**

a. General Information. An in-storage inspection is a physical check conducted on a random sample of air delivery equipment which is located in storage.

b. Intervals. Parachutes in storage will be inspected at least semiannually and at more frequent intervals if prescribed by the local parachute maintenance officer.

- c. Inspection. Inspect to insure that the parachute is ready for issue.
- (1) Check the parachute for proper identification.
 - (2) Check that no damage or deterioration has been incurred.
 - (3) Ensure that all modifications or similar requirements have been completed.
 - (4) Check the adequacy of the storage facilities; efforts taken to control pests and rodents; and protection against unfavorable climatic conditions.

2-48. Shipment

a. Initial Shipment. The initial packaging and shipping of air delivery equipment is the responsibility of item manufacturers who are required to comply with federal and military packaging specifications as stipulated on contractual agreements. Air delivery equipment is normally shipped to depot activities by domestic freight or parcel post, packaged to comply with overseas shipping requirements. Except for those air delivery items which are unpackaged and subjected to random inspections or testing by a depot activity, air delivery equipment received by using unit will be contained in original packaging materials.

b. Shipping Between Maintenance Activities. The shipping of air delivery equipment between organizational and direct support maintenance activities will be accomplished on a signature verification basis using whatever means of transportation are available. Used parachutes and other fabric items will be tagged in accordance with DA PAM 738-751, and rolled, folded, or placed loosely in a parachute pack, deployment bag, or other suitable container, as required. Used wood and metal air delivery items will be tagged as prescribed in DA PAM 738-751 and placed in a suitable type container, if necessary. Unused air delivery equipment will be transported in original shipping containers. During shipment, every effort will be made to protect air delivery items from weather elements, dust, dirt, oil, grease, and acids. Vehicles used to transport parachutes will be inspected to ensure the items are protected from the previous cited material damaging conditions.

c. Other Shipping Instructions. Air delivery equipment destined for domestic or overseas shipment will be packaged and marked in accordance with either AR 700-15, TM 38-230-1, and TM 38-230-2, Preservation, Packaging, Packing of Military Supplies and Equipment (Vols 1 and 2).

APPENDIX A

REFERENCES

A-1. Scope. This appendix lists all forms, technical manuals, and miscellaneous publications referenced in, or to be used with, this manual.

A-2. Publication Indexes. The following publication indexes should be consulted frequently for the latest changes or revisions of references given in this appendix and for new publications relating to the material covered in this manual:

Consolidated Index of Army Publications and Blank Forms.....	DA PAM 25-30
The Army Maintenance Management System (TAMMS).....	DA PAM 738-750
The Army Maintenance Management System Aviation (TAMMSA).....	DA PAM738-751

A-3. Technical Manuals.

Preservation, Packaging, Packing of Military Supplies and Equipment (Vols 1 and 2).....	TM 38-230-1 and TM 38-230-2
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Procedures for the Destruction of Air Delivery Equipment to Prevent Enemy Use.....	TM 43-0002-1
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A-4. Field Manuals.

Airdrop of Supplies and Equipment: General Information for Rigging Airdrop Platform...	FM 10-500
First Aid for Soldiers.....	FM 21-11

A-5. Army Regulations.

Dictionary of United States Army Terms.....	AR 310-25
Authorized Abbreviation and Brevity Codes.....	AR 310-50
Packaging of Material AR 700-15	
Army Materiel Maintenance Concepts and Policies.....	AR 750-1 AR 750-32

A-6. Technical Bulletins.

Maintenance Expenditure Limits for FSC Group 16 (FSC Class 1670).....	TB 43-0002-43
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A-7. Forms.

Army Parachute Log Record	DA Form 3912 DA Form 10-42
Packing Improvement Report.....	SF Form 364
Quality Deficiency Report.....	SF Form 368

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. General.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. Maintenance Functions. Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g. by sight, sound, or feel).

b. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids or gases.

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

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

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipments 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.

g. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and is shown as the 3d position code of the SMR code.

i. Repair. The application of maintenance services, including fault location/troubleshooting, removal/installation, and disassembly/assembly procedures, and maintenance actions to identify trouble and 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.

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

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation include the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

B-3. Explanation of Columns in the MAC, Section II.

a. Column 1. Group Number. Column 1 lists functional group code numbers the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group shall be "00".

b. Column 2. Component/Assembly. Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3. Maintenance/Function. Column 3 lists the functions to be performed on the item listed in Column 2. (For detailed explanation of these functions, see paragraph B-2).

d. Column 4. Maintenance Level. Column 4 specifies, by the listing of work time figure in the appropriate subcolumn(s), the level of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform the function listed in indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time figures will be shown, for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module and item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

- C - Operator or crew
- O - Unit Maintenance
- F - Intermediate Direct Support Maintenance
- H - Intermediate General Support Maintenance
- D - Depot Maintenance

e. Column 5. Tools and Equipment. Column 5 specifies by code, those common tools sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. Column 5. Remarks. This column shall, when applicable contain a letter code, in alphabetic order, which shall be keyed to the remarks contained in Section IV.

B-4. Explanation of Columns in Tool and Test Equipment Requirements, Section III.

a. Column 1. Reference Code. The tool and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.

b. Column 2. Maintenance Category. The lowest category of maintenance authorized to use the tool or test equipment.

c. Column 3. Nomenclature. Name or identification of the tool or test equipment.

d. Column 4. National Stock Number. The National stock number of the tool or test equipment.

e. Column 5. Tool Number. The manufacturer's part number.

B-5. Explanation of Columns in Remarks, in Section IV.

a. Column 1. Reference Code. The code recorded in column 6, Section II

b. Column 2. Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

Section II. MAINTENANCE ALLOCATION CHART

100 FOOT DIAMETER CARGO PARACHUTE ASSEMBLY, MODELS G-11A/B/C

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQPT	(6) REMARKS
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
00	Cargo Parachute								
01	Canopy	Inspect Service Repair		3.4 3.0 1.0				A B,C D,E	
0101	Bridle Loop	Repair Replace		0.3 0.2				E	
0102	Vent Band	Repair		0.5				E	
0103	Gore Section	Repair Replace		1.5	1.0			E	

100 FOOT DIAMETER CARGO PARACHUTE ASSEMBLY, MODELS G-11A/B/C

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQPT	(6) REMARKS
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0104	Canopy Line	Repair Replace		0.7	1.0				E
010401	Vent Line	Repair Replace		0.2 0.5					
010402	Radial Line	Replace			0.5				
010403	Suspension Line	Repair Replace		0.2	0.5				
0105	Radial Seam	Repair		0.4					E
0106	Radial Line Reinforcement Tape	Repair Replace		0.5	0.8				
0107	Cutter Bracket	Repair Replace		0.3 0.3					F
0108	Panel Reinforcement	Repair Replace		0.3 0.5					
0109	Pocket Band	Repair Replace		0.3 0.3					E
0110	Reefing Ring Retainer	Repair Replace		0.1 0.3					E
0111	Reefing Ring	Replace		0.3					E

100 FOOT DIAMETER CARGO PARACHUTE ASSEMBLY, MODELS G-11A/B/C (cont)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP	(6) REMARKS
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
0112	V-Tab	Repair Replace		0.3	0.4				E
0113	Vent and Skirt Bands	Repair		0.5					E
0114	Connector Link	Repair Replace		0.1 0.1					E
02	Riser	Repair Replace		0.3 0.1					E
0201	Inspection Data Pocket	Replace		0.1					
03	Center Line	Repair Replace		0.1 0.1					
04	Deployment Bag	Inspect Service Repair Replace		0.3 0.1 0.4 0.1					A B F
0401	Panels/Flaps	Repair		0.4					E
0402	Edge Binding	Repair		0.3					F
0403	Grommet	Repair Replace		0.2 0.3					F
0404	Locking Stow Loop	Repair Replace		0.3 0.4					E
05	Bridle	Inspect Service Repair Replace		0.3 0.1 0.4 0.1					A B E

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Tool or test equip. ref code	(2) Maintenance category	(3) Nomenclature	(4) National NATO stock number	(5) PN Tool number
1	O	Brush, Scrub, Household	7920-00-282-2490	H-B-1490
2	O	Brush, Stenciling	7520-00-248-9285	H-B-621
3	O	File, Flat	5110-00-249-2848	GGG-F-325
4	O	Knife	5110-00-162-2205	MIL-K-818C
5	O	Knife, Hot Metal	3439-01-197-7656	4025
6	O	Lead, Pig, 5-pounds	9650-00-264-5050	QQ-C-40
7	O	Line Separator	1670-00-092-8660	11-1-17-2
8	O	Mallet, Rawhide	5120-00-293-3397	GGG-H-33
9	O	Needle, Tacking	8315-00-262-3733	FF-N-180
10	O	Packing Paddle	1670-00-764-6381	11-1-152
11	O	Pliers, Lineman	5120-00-756-1156	GG-P-471
12	O	Pot, Melting, Electric	5120-00-242-1276	WG441
13	O	Shears	5110-00-223-6370	GGG-S-278
14		Set, Chuck and Die	5120-00-694-5153	7540756
15	O	Sewing Machine, Light-Duty	See Table 2-2	
16	O	Sewing Machine, Zig-Zag	See Table 2-2	
17	O	Sewing Machine, Heavy-Duty	See Table 2-2	
18	O	Sewing Machine, Medium-Duty	See Table 2-2	
19	O	Sewing Machine, Darning	See Table 2-2	
20	O	Screwdriver, Flat Tip	5120-00-293-0314	GGG-S-121
21	O	Separator, Link	1670-00-072-4941	MIL-S-43243

TOOL AND TEST EQUIPMENT REQUIREMENTS (cont)

(1) Tool or test equip. ref code	(2) Maintenance category	(3) Nomenclature	(4) National NATO stock number	(5) PN Tool number
22	O	Yardstick	5120-00-985-6610	GGG-Y-0035
23	O	Splicing Aid	See Appendix E	
24	O	Broom		
25	O	Fan, Pedestal		

Section IV. REMARKS

Reference Code	Remarks/Notes
A	Inspect is a technical-rigger inspection.
B	Service is to clean equipment.
C	Service is the packing of parachutes.
D	Repair by restitching, darning or restencil canopy panel.
E	Repair at unit maintenance consists of darning, restitching, patching and replacement of parts authorized for unit maintenance. Direct support repair consists of replacing gore sections.
F	Repair by darning, retacking, restitching, splice edge binding and repairing grommets Replacement of parts authorized for unit maintenance.

APPENDIX C

REPAIR PARTS AND SPECIAL TOOLS LIST

SECTION I. INTRODUCTION

1. SCOPE. This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of unit and intermediate direct support maintenance of the 100 ft. Cargo Parachute. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

2. GENERAL. In addition to this section, Introduction, this Repair Parts and Special Tools List is divided into the following sections:

a. Section II. Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Bulk materials are listed in item name sequence. Repair parts kits are listed separately in their own functional group within Section II. Repair parts for repairable special tools are also listed in this section. Items listed are shown on the associated illustration(s)/figure(s).

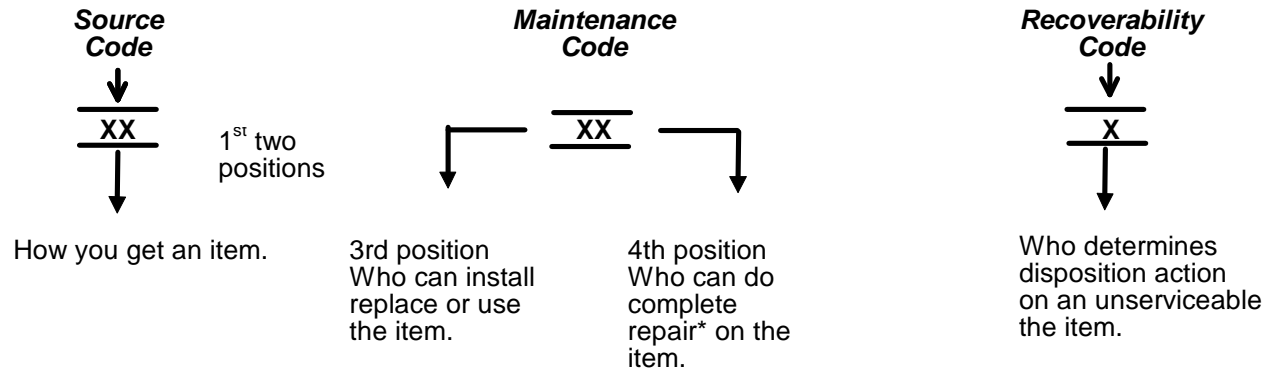
b. Section III. Special Tools List. A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in DESCRIPTION AND USABLE ON CODE column) for the performance of maintenance.

c. Section IV. Cross-references Indexes. A list, in National Item Identification Number (NIIN) sequence, of all National stock numbered items appearing in the listing, followed by a list in alphanumeric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross referenced to each illustration figure and item number appearance. The figure and item number index lists figure and item number in alphanumeric sequence and cross references NSN, CAGEC and part number.

3. EXPLANATION OF COLUMNS (SECTIONS II AND III).

a. ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

b. SMR Code (Column (2)). The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:



*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

(1) Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follows:

Code	Explanation
PA	Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the 3rd position of the SMR code. **NOTE: Items coded PC are subject to deterioration.
PB	
PC**	
PD	
PE	
PF	
PG	Items with these codes are notto be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.
KD	
KF	
KB	
MO - (Made at org AVUM Level)	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION and USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list in this RPSTL. If the item is authorized to you by the 3rd position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.
MF- (Made at DS/AVUM Level)	
MH - (Made at GS Level)	
ML - (Made at Specialized Repair Activity (SRA))	
MD - (Made at Depot)	

Code	Explanation
AO - (Assembled by org/AVUM, Level)	} Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3rd position code of the SMR code authorizes you to replace the item, but the source code indicates the items are assembled at a higher level, order the item from the higher level of maintenance.
AF - (Assembled by DS/AVIM)	
AF - (Assembled by DS/AVIM Level)	
AH - (Assembled by GS)	
AL - (Category)	
AL - (Assembled by SRA)	
AD -- (Assembled by Depot)	

Code	Explanation
XA -	Do not requisition "XA" -coded item. Order its next higher assembly. (Also, refer to the NOTE below.)
XB -	If an "XB" item is not available from salvage, order it using the CAGEC and part number given.
XC -	Installation drawing, diagram, instruction sheet, field service drawing, that is identified by Reciprocating Compressor manufacturer's part number.
XD -	Item is not stocked. Order an "XD" -coded item through normal supply channels using the CAGEC and part number given if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

(2) Maintenance Code. Maintenance codes tells you the level(s) of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

(a) The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following levels of maintenance.

Code	Application/Explanation
C -	Crew or operator maintenance done within organizational or aviation unit maintenance.
O -	Organizational or aviation unit category can remove, replace, and use the item.
F -	Direct support or aviation intermediate level can remove, replace, and use the item.
H -	General support level can remove, replace, and use the item.

- L - Specialized repair activity can remove, replace, and use the item.
- D - Depot level can remove, replace, and use the item.

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do, complete repair (i.e., perform all authorized repair functions.) NOTE: Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes. This position will contain one of the following maintenance codes.

Code	Application/Explanation
------	-------------------------

- | | |
|---|---|
| O | Organizational or (aviation unit) is the lowest level that can do complete repair of the item. |
| F | Direct support or aviation intermediate is the lowest level that can do complete repair of the item. |
| H | General Support is the lowest level that can do complete repair of the item. |
| L | Specialized repair activity is the lowest level that can do complete repair of the item. |
| D | Depot is the lowest level that can do complete repair of the item. |
| Z | Nonreparable. No repair is authorized. |
| B | No repair is authorized. (No parts or special tools are authorized for the maintenance of a "B" coded item). However, the item may be reconditioned by adjusting, lubricating, etc., at the user level. |

(3) **Recoverability Code.** Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR Code as follows:

Recoverability Codes	Application/Explanation
----------------------	-------------------------

- | | |
|---|--|
| Z | Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3d position of SMR Code. |
| O | Reparable item. When not economically repairable, condemn and dispose of the Item at organizational or aviation unit level |
| F | Reparable item. When uneconomically repairable, condemn and dispose of the item at the direct support or aviation intermediate level |
| H | Reparable item. When uneconomically repairable, condemn and dispose of the item at the general support level. |

- D - Repairable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
- L - Repairable item. Condemnation and disposal not authorized below specialized repair activity (SRA).
- A - Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. CAGEC (Column (3)). The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

d. PART NUMBER (Column (4)). Indicates the primary number used by the manufacturer, (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the part ordered.

- e. DESCRIPTION AND USABLE ON CODE (UOC) (Column (5)).** This column includes the following information:
- (1) The Federal item name and, when required, a minimum description to identify the item.
 - (2) The physical security classification of the item is indicated by the parenthetical entry, e.g., PhySec C1 - Confidential, Phy Sec C1 (S) - Secret, Phy Sec C1 (T) - Top Secret.
 - (3) Items that are included in kits and sets are listed below the name of the kit or set.
 - (4) Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry.
 - (5) Part numbers for bulk materials are referenced in this column in the line item entry for the item to be manufactured/fabricated.
 - (6) When the item is not used with all serial numbers of the same model, the effective serial numbers are shown on the last line(s) of the description (before UOC).
 - (7) The usable on code, when applicable (see paragraph 5, Special Information).

(8) In the Special Tools List section, the basis of issue (BOI) appears as the last line(s) in the entry for each special tool, special TMDE, and other special support equipment. When density of equipments supported exceeds density spread indicated in the basis of issue, the total authorization is increased proportionately.

(9) The statement "END OF FIGURE" appears just below the last item description in Column 5 for a given figure in both Section II and Section III.

(10) The indenture, shown as dots appearing before the repair part, indicates that the item is a repair part of the next higher assembly.

f. **QTY (Column (6)).** The QTY (quantity per figure column) indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that the quantity is variable and may vary from application to application.

4. EXPLANATION OF COLUMNS (SECTION IV).

a. NATIONAL STOCK NUMBER (NSN) INDEX.

(1) **STOCK NUMBER column.** This column lists the NSN by National item identification number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN, i.e.

NSN
<hr style="width: 100%;"/>
5305-01-574-1467
NIIN

When using this column to locate an item, ignore the first 4 digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

(2) **FIG. column.** This column lists the number of the figure where the item is identified/located. The figures are in numerical order in Section II and Section III.

(3) **ITEM column.** The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

b. **PART NUMBER INDEX.** Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

(1) **CAGEC column.** The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

(2) **PART NUMBER column.** Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design

and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

(3) **STOCK NUMBER column.** This column lists the NSN for the associated part number and manufacturer identified in the PART NUMBER and CAGEC columns to the left.

(4) **FIG. column.** This column lists the number of the figure where the item is identified/located in Sections II and III.

(5) **ITEM column.** The item number is that number assigned to the item as it appears in the figure referenced in adjacent figure number column.

c. FIGURE AND ITEM NUMBER INDEX.

(1) **FIG. column.** This column lists the number of the figure where the item is identified/located in Section II and III.

(2) **ITEM column.** The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

(3) **STOCK NUMBER column.** This column lists the NSN for the item.

(4) **CAGEC column.** The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

(5) **PART NUMBER column.** Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

5. SPECIAL INFORMATION.

a. **USABLE ON CODE.** The usable on code appears in the lower corner of the Description column heading. Usable on codes are shown as "UOC:" in the Description Column (justified left) on the last line applicable item description/nomenclature. Uncoded items are applicable to all models.

b. **ASSOCIATED PUBLICATIONS.** The publications listed below pertains to the 100-Foot Cargo Parachute and its components.

Publication	Short Title
-------------	-------------

NOT APPLICABLE

6. HOW TO LOCATE REPAIR PARTS.

a. When National Stock Number or Part Number is NOT Known.

(1) **First.** Using the table of contents, determine the assembly group or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

(2) **Second.** Find the figure covering the assembly group or subassembly group to which the item belongs.

(3) **Third.** Identify the item on the figure and note the item number.

(4) **Fourth.** Refer to the Repair Parts List for the figure to find the part number for the item number noted on the figure.

(5) **Fifth.** Refer to the Part Number Index to find the NSN, if assigned.

b. When National Stock Number or Part Number is Known.

(1) **First.** Using the Index of National Stock Numbers and Part Numbers, find the pertinent National Stock Number or Part Number. The NSN index is in National Item Identification Number (NIIN) sequence (see c-4a.(1)). The part numbers in the Part Number index are listed in ascending alphanumeric sequence (see paragraph c-4.b). Both indexes cross-reference you to the illustration figure and item number of the item you are looking for.

(2) **Second.** After finding the figure and item number, verify that the item is the one you are looking for, then locate the item number in the repair parts list for the figure

7. ABBREVIATIONS. Abbreviations used in this manual are listed in MIL-STD-12.

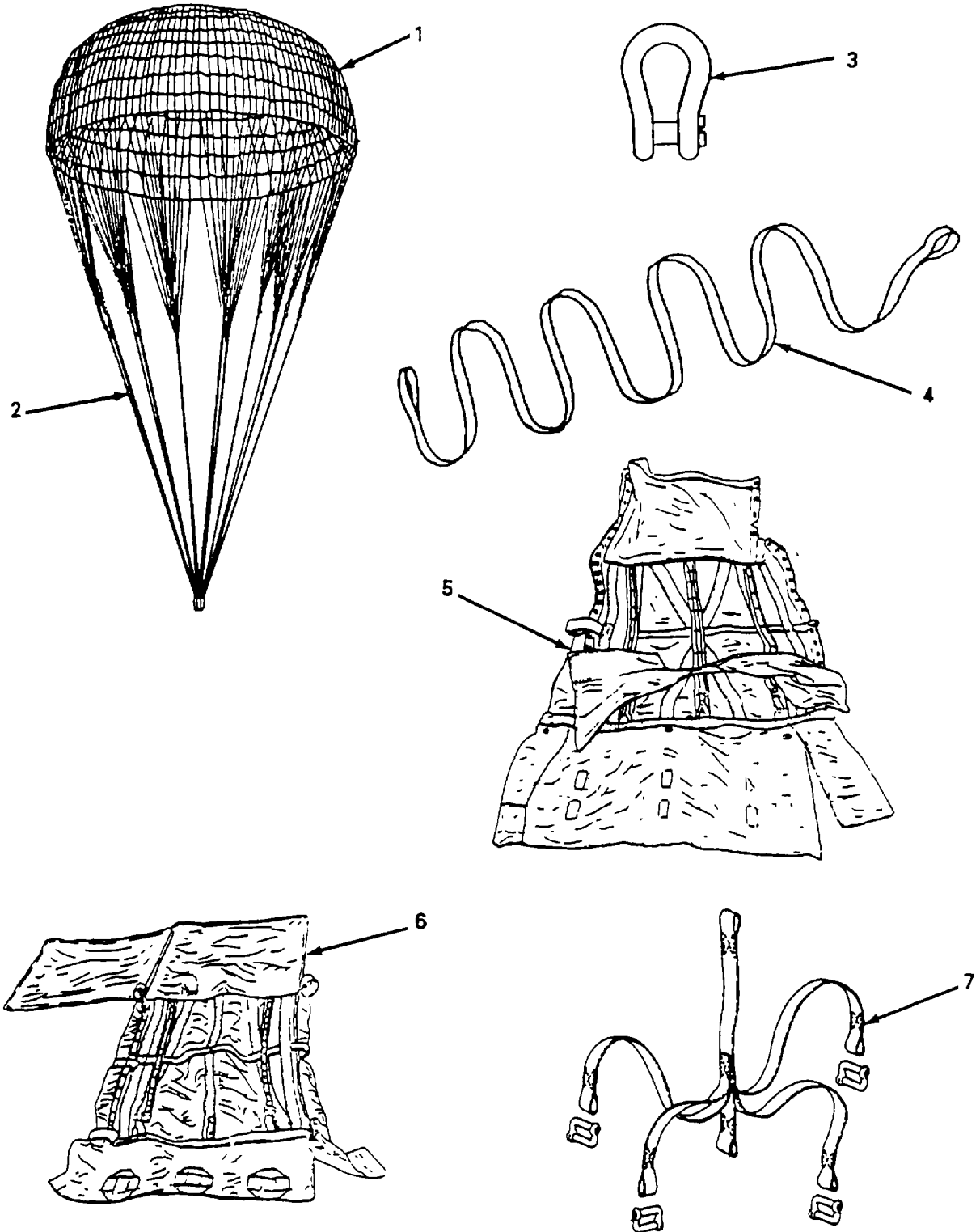


Figure C-1. 100-Foot Diameter Cargo Parachute.

SECTION II

TM 10-1670-280-23&P

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
GROUP 00 CARGO PARACHUTE					
FIG. C-1 100-FOOT DIAMETER CARGO PARACHUTE					
1	XAOOO	81337	11-1-2567	CANOPY, (PDV), 100 FT UOC : DWQ	1
2	PAOOO	81337	11-1-2568	RISER EXTENSION, PAR UOC : DWQ	3
3	PAOZZ	81337	11-1-1631	SHACKLE..... UOC : DWQ	1
4	PAOFF	81337	11-1-1547	CENTER LINE UOC : DWQ, DWR	1
5	PAOOO	81337	11-1-3019	DEPLOYMENT BAG, PARA UOC : DWR	1
6	PAOOO	81337	11-1-3019	DEPLOYMENT BAG, PARA UOC : DWR	1
7	XCOOO	98750	52D6354	BRIDLE, DEPLOYMENT B UOC : DWR	1

END OF FIGURE

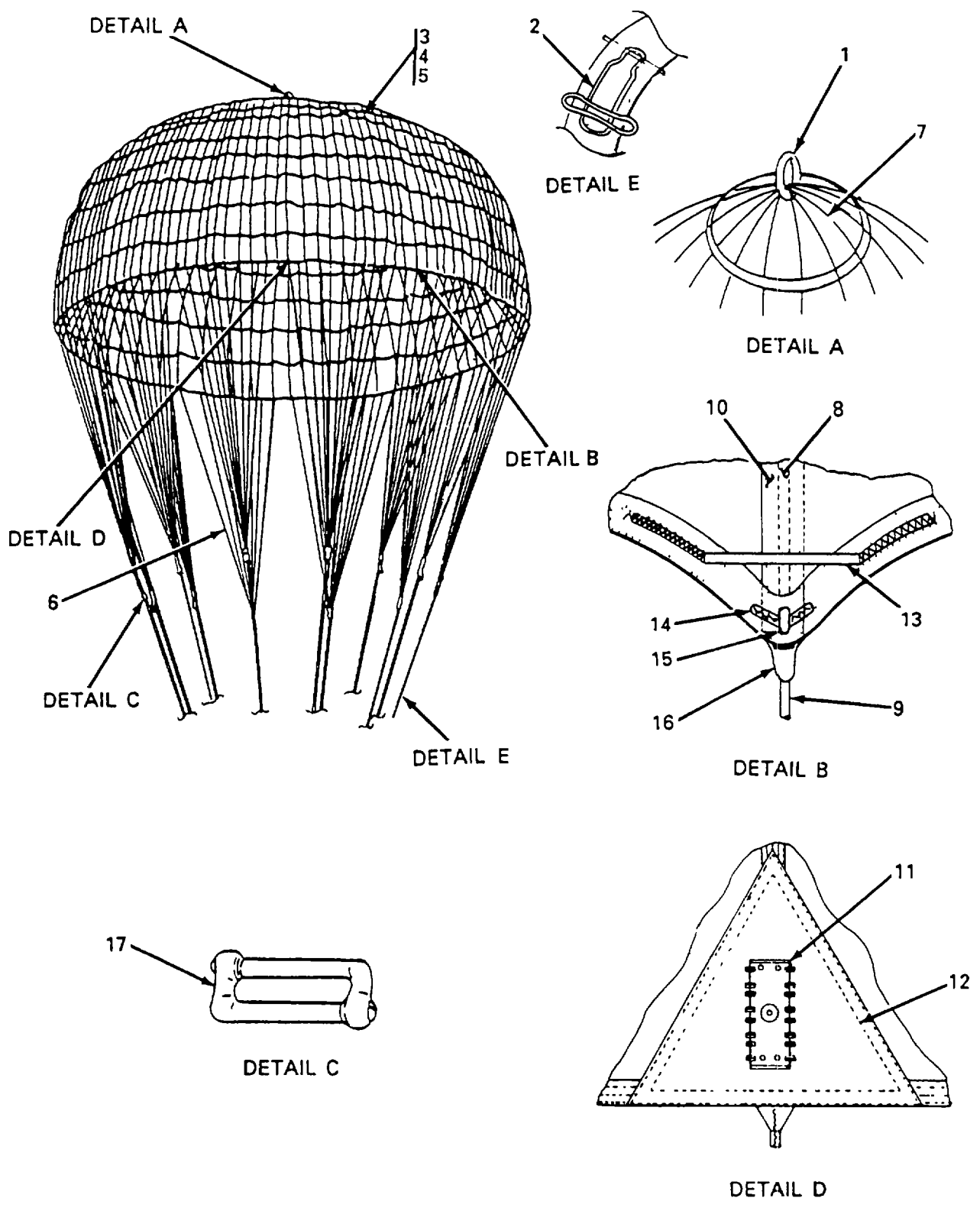


Figure C-2. 100-Foot Diameter Cargo Parachute Canopy.

SECTION II

TM 10-1670-280-23&P

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
GROUP 01 CANOPY					
FIG. C-2 100-FOOT DIAMETER CARGO PARACHUTE CANOPY					
1	MOOOO	81337	11-1-2567-19	LOOP, BRIDLE MAKE FROM WEBBING, COTTON, MIL-W-5665, TYPE X, CLASS 2B, OD AND THREAD, NYLON, V-T-295, SIZE 3, WHITE OR WEBBING, NYLON, MIL-W-4088, TYPE VIII, CLASS 2	1
2	PAOOO	81337	11-1-2587	POCKET, PARACHUTE IN ATA	1
3	MFFFF	81337	11-1-2567-1-13	SECTION, 36 INCH MAKE FROM CLOTH, PARACHUTE, NYLON, MIL-C-7020, TYPE II, 16 OZ, 60 INCH WIDE AND THREAD, NYLON, V-T-295, SIZE E, WHITE	13
4	MFFFF	81337	11-1-3018-1-8	SECTION, 60 INCH MAKE FROM CLOTH, PARACHUTE, NYLON, MIL-C-7020, TYPE II, 16 OZ, 60 INCH WIDE AND THREAD, NYLON, V-T-295, SIZE E, WHITE	8
5	MFFFF	81337	11-1-3018-1-7	SECTION, 72 INCH MAKE FROM CLOTH, NYLON, MIL-C-7020, TYPE II, 16 OZ, 72 INCH WIDE AND THREAD NYLON, V-T-295, SIZE E UOC: DWQ	7
6	MFFFF	81337	11-1-2567-20	LINE, CANOPY MAKE FROM CORD, NYLON, MIL-C-5040, TYPE III AND THREAD, NYLON, V-T-295, SIZE E	60
7	MOOOO	81337	11-1-2567-20V	LINE, VENT MAKE FROM CORD, NYLON, MIL-C-5040, TYPE III AND THREAD, NYLON, V-T-295, SIZE E	60
8	MFFFF	81337	11-1-2567-20R	LINE, RADIAL MAKE FROM CORD, NYLON, MIL-C-5040, TYPE III AND THREAD, NYLON, V-T-295, SIZE E	120
9	MFFFF	81337	11-1-2567-20S	LINE, SUSPENSION MAKE FROM CORD, NYLON, MIL-C-5040, TYPE III AND THREAD, NYLON, V-T-295, SIZE E	120
10	MFFFF	81337	11-1-2567-18	RADIAL LINE REINFORCEMENT MAKE FROM TAPE, NYLON, MIL-T-5038, TYPE III, 1/2 INCH, OD AND THREAD, NYLON, V-T-295, SIZE E	360
11	PAOZZ	81337	11-1-184	BRACKET	4
12	MOOOO	81337	11-1-2578	PANEL REINFORCEMENT MAKE FROM CLOTH, DUCK, NYLON, MIL-C-7219, TYPE III, OG AND THREAD, NYLON, V-T-295, SIZE E	8
13	MOOOO	81337	11-1-2567DETAILW	POCKET BAND MAKE FROM CORD, NYLON, MIL-C-5040, TYPE III AND THREAD, NYLON, V-T-295, SIZE E	116

SECTION II

TM 10-1670-280-23&P

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
14	MOOOO	81337	11-1-2567DETAILV	REEFING RING RETAIN ER MAKE FROM..... CORD,NYLON,MIL-C-5040,TYPE III AND THREAD,NYLON,V-T-295,SIZE E..... UOC : DWQ	116
15	PAOZZ	96906	MS27762-1	RING-REEFING, PARACH..... UOC : DWQ	116
16	MFFFF	81337	11-1-2567DETAILT	V-TAB MAKE FROM WEBBING NYLON, MIL- W-4088,TYPE I, CLASS U,9/16 INCH WIDE AND THREAD,NYLON,V-T-295,SIZE E	120
17	PAOZO	96906	MS22022-1	LINK, PARACHUTE CONN	12

END OF FIGURE

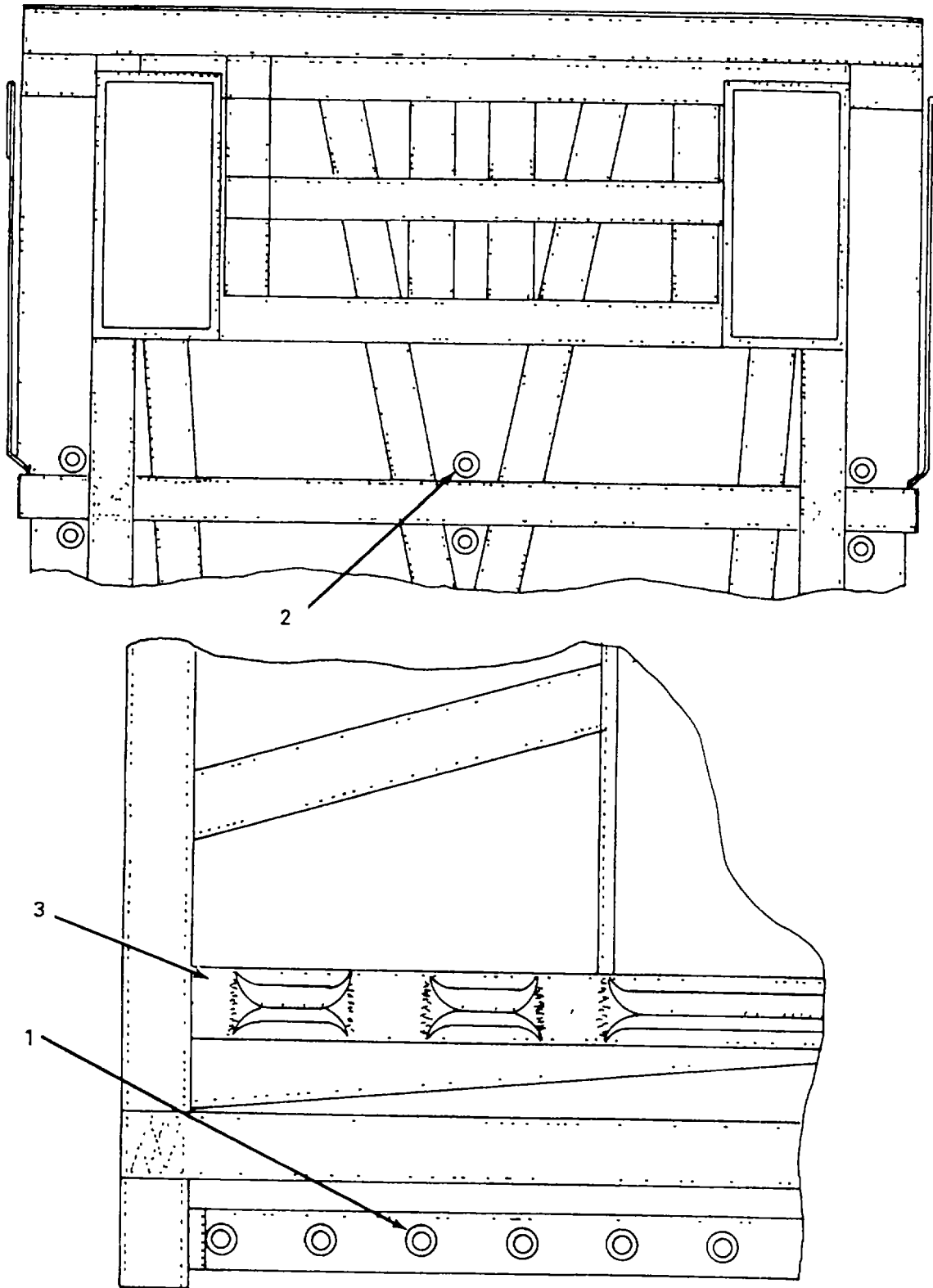


Figure C-3. Deployment Bag.

SECTION II

TM 10-1670-280-23&P

SECTION II			TM-3825-229-14&PCO1		
(1)	(2)	(3)	(4)	(5)	(6)
ITEM	SMR	FSCM	PART	DESCRIPTION AND USABLE ON CODES(UOC)	QTY
NO	CODE		NUMBER		
				GROUP 04 DEPLOYMENT BAG	
				FIG. C-3 DEPLOYMENT BAG	
1	PBOOZ	96906	MS20230B2	.GROMMET, METALLIC.....	64
2	PBOOZ	96906	MS20230B3	.GROMMET, METALLIC	4
				UOC : DWQ	
3	MOOOO	81337	11-1-2580-15F-F	.LOCKING STOW LOOP MAKE FROM	4
				WEBBING,COTTON,MIL-W-5665,TYPE VIII, CLASS 2B,OD AND THREAD, NYLON, V-T-295, SIZE 6,WHITE.....	

END OF FIGURE

SECTION II

TM 10-1670-280-23&P

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
GROUP 05 BULK					
FIG. BULK					
1	XDOZZ	81349	MILC7219	CLOTH,DUCK MIL-C-7219,TYPE III, 7.25 OZ,OG.	V
2	PAOZZ	81349	MILC7020	CLOTH,PARACHUTE MIL-C-7020,TYPE II, 1.6 OUNCE,60 INCH WIDE OD...	V
3	PAOZZ	81349	MIL-C-5040	CORD,FIBROUS MIL-C-5040,TYPE III, NAT	V
4	PAOZZ	81349	MIL-C-5040	CORD,FIBROUS MIL-C-5040,TYPE III,OD	V
5	PAOZZ	81349	MIL-T-5038	TAPE,TEXTILE MIL-T-5038,TYPE III, TEXTILE,1/2 INCH WIDE,OD	V
6	PAOZZ	81348	V-T-295	THREAD V-T-295,TYPE I,CLASS A,SIZE E,AG WHITE.	V
7	PAOZZ	81348	V-T-295	THREAD V-T-295,TYPE I,CLASS A,SIZE 3,WHITE	V
8	PAOZZ	81349	MIL-W-5665	WEBBING,TEXTILE MIL-W-5665,TYPE VIII,1 3/4 INCH WIDE,CLASS 2A,OD	V
9	PAOZZ	81349	MIL-W-5665	WEBBING,TEXTILE MIL-W-5665,TYPE X, 1 3/4 INCH WIDE,CLASS 2B,MILDEW RESISTANT,OD.	V
10	PAOZZ	81349	MILW4088	WEBBING,TEXTILE MIL-W-4088,TYPE I, CLASS U,9/16 INCH WIDE,OD....	V
END OF FIGURE					

**SECTION III
NOT APPLICABLE**

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG	ITEM
1670-00-086-7781	C-2	11			
1670-00-217-2421	C-2	17			
5325-00-231-6590	C-3	1			
4020-00-240-2146	BULK	3			
4020-00-246-0688	BULK	4			
8310-00-248-9714	BULK	7			
8315-00-255-7673	BULK	5			
8305-00-260-2565	BULK	8			
8305-00-260-6909	BULK	10			
8310-00-262-2770	BULK	6			
5325-00-291-0277	C-3	2			
1670-00-360-0469	C-2	15			
1670-00-377-6638	C-1	2			
8305-00-753-6086	BULK	9			
8305-00-782-2988	BULK	2			
1670-01-016-5905	C-1	4			
1670-01-018-6756	C-2	2			
4030-01-027-3380	C-1	3			
1670-01-235-0923	C-1	5			
	C-1	6			
8305-00-261-85851	C-1	1			

CROSS-REFERENCE INDEXES

CAGEC	PART NUMBER	PART NUMBER INDEX		FIG.	ITEM
			STOCK NUMBER		
81349	MIL-C-5040		4020-00-240-2146	BULK	3
			4020-00-246-0688	BULK	4
81349	MIL-T-5038		8315-00-255-7673	BULK	5
81349	MIL-W-5665		8305-00-260-2565	BULK	8
			8305-00-753-6086	BULK	9
81349	MIL-C-7020		8305-00-782-2988	BULK	2
81349	MIL-C-7219			BULK	1
81349	MIL-W-4088		8305-00-260-6909	BULK	10
96906	MS20230B2		5325-00-231-6590	C-3	1
96906	MS20230B3		5325-00-291-0277	C-3	2
96906	MS22022-1		1670-00-217-2421	C-2	17
96906	MS27762-1		1670-00-360-0469	C-2	15
81348	V-T-295		8310-00-262-2770	BULK	6
			8310-00-248-9714	BULK	7
81337	11-1-1547		1670-01-016-5905	C-1	4
81337	11-1-1631		4030-01-027-3380	C-1	3
81337	11-1-184		1670-00-086-7781	C-2	11
81337	11-1-2567			C-1	1
81337	11-1-2567-1-13			C-2	3
81337	11-1-2567-18			C-2	10
81337	11-1-2567-19			C-2	1
81337	11-1-2567-20			C-2	6
81337	11-1-2567-20R			C-2	8
81337	11-1-2567-20S			C-2	9
81337	11-1-2567-20V			C-2	7
81337	11-1-2567DETAILT			C-2	16
81337	11-1-2567DETAILV			C-2	14
81337	11-1-2567DETAILW			C-2	13
81337	11-1-2568		1670-00-377-6638	C-1	2
81337	11-1-2578			C-2	12
81337	11-1-2580-15F-F			C-3	3
81337	11-1-2587		1670-01-018-6756	C-2	2
81337	11-1-3018-1-7			C-2	5
81337	11-1-3018-1-8			C-2	4
81337	11-1-3019		1670-01-235-0923	C-1	5
				C-1	6
98750	52D6354			C-1	7
81348	MIL-W-4088		8305-00-261-8585	C-1	1

CROSS-REFERENCE INDEXES

FIG.	ITEM	FIGURE AND ITEM NUMBER INDEX		PART NUMBER
		STOCK NUMBER	CAGEC	
BULK	1		81349	MILC7219
BULK	2	8305-00-782-2988	81349	MILC7020
BULK	3	4020-00-240-2146	81349	MIL-C-5040
BULK	4	4020-00-246-0688	81349	MIL-C-5040
BULK	5	8315-00-255-7673	81349	MIL-T-5038
BULK	6	8310-00-262-2770	81348	V-T-295
BULK	7	8310-00-248-9714	81348	V-T-295
BULK	8	8305-00-260-2565	81349	MIL-W-5665
BULK	9	8305-00-753-6086	81349	MIL-W-5665
BULK	10	8305-00-260-6909	81349	MILW4088
C-1	1		81337	11-1-2567
C-1	2	1670-00-377-6638	81337	11-1-2568
C-1	3	4030-01-027-3380	81337	11-1-1631
C-1	4	1670-01-016-5905	81337	11-1-1547
C-1	5	1670-01-235-0923	81337	11-1-3019
C-1	6	1670-01-235-0923	81337	11-1-3019
C-1	7		98750	52D6354
C-2	1		81337	11-1-2567-19
C-2	2	1670-01-018-6756	81337	11-1-2587
C-2	3		81337	11-1-2567-1-13
C-2	4		81337	11-1-3018-1-8
C-2	5		81337	11-1-3018-1-7
C-2	6		81337	11-1-2567-20
C-2	7		81337	11-1-2567-20V
C-2	8		81337	11-1-2567-20R
C-2	9		81337	11-1-2567-20S
C-2	10		81337	11-1-2567-18
C-2	11	1670-00-086-7781	81337	11-1-184
C-2	12		81337	11-1-2578
C-2	13		81337	11-1-2567DETAILW
C-2	14		81337	11-1-2567DETAILV
C-2	15	1670-00-360-0469	96906	M527762-1
C-2	16		81337	11-1-2567DETAILT
C-2	17	1670-00-217-2421	96906	MS22022-1
C-3	1	5325-00-231-6590	96906	MS20230B2
C-3	2	5325-00-291-0277	96906	MS20230B3
C-3	3		81337	11-1-2580-15F-F

APPENDIX D
 EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. **Scope.** This appendix lists expendable supplies and materials you need to operate and maintain the 100-Foot Diameter Cargo Parachute. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

D-2. **Explanation of Columns.**

a. Column (1) - Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use Cloth, Abrasive Item 2, App. D").

b. Column (2) - Level. This column identifies the lowest level of maintenance that requires the listed item. (Enter as applicable).

- C - Operator/Crew
- O - Organizational Maintenance - Unit Maintenance
- F - Direct Support Maintenance - Intermediate Maintenance
- H - General Support Maintenance - Intermediate Maintenance
- D - Depot Maintenance

c. Column (3) - National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.

d. Column (4) - Description. Indicates the Federal item name and, if required, a description to identify the item.

e. Column (5) - Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) Item number	(2) Level	(3) National stock number	(4) Description	(5) U/M
1	O	9160-00-253-1171	Beeswax, Technical, 1 lb (8134) C-B-191	lb
2	O	5350-00-221-0872	Cloth, Abrasive, Ferric Oxide & Quartz (81348) P-C-458	sh
3	O	8305-00-170-9268	Cloth, Cotton, Duck, Type 1, 17.55 oz., No. 8, od (81348) CCC-C-419	ft

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (cont)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
4	O	8305-00-171-1203	Cloth, Cotton, Duck, Type III, 8.25 oz., OD (81348) CCC-C-419	ft
5	O	8305-01-014-1318	Cloth, Cotton, Muslin, Type III, 3.6 oz, OD (8134) CCC-C-419	yd
6	O	8305-00-433-5986	Cloth, Cotton, Muslin, Type II, 3.8 oz, OD (81349) MIL-C-4279	yd
7	O	8305-01-173-4436	Cloth, Nylon, Duck, Type 111, 7.25 oz, sg (81349) MIL-C-7219	yd
8	O	1670-00-176-1802	Cloth, Nylon, Parachute Mending, Adhesive, od	yd
9	O	8305-00-577-4599	Cloth, Nylon, Parachute, Type 11, 1.6 oz, Natural, 60 inch (81349) MIL-C-7020	ft
10	O	4020-00-262-2019	Cord, Nylon, Type II, OG (81349) MIL-C-5040	yd
11	O	4020-00-240-2146	Cord, Nylon, Type III, Natural (81349) MIL-C-5040	yd
12	O	4020-00-246-0688	Cord, Nylon, Type III, OD (81349) hAIL-C-5040	yd
13	O	1377-00-060-0885	Cutter, Reefing Line, M21	ea
14	O	1377-01-288-0418	Cutter, Reefing Line, MLU58B	ea
15	O	7930-00-281-4731	Dishwashing Compound, Hand, Flake (81348) P-D-410	lb
16	O	7510-00-286-5362	Ink, Marking, Parachute, Strata-Blue (81349) MIL-1-6903	pt
17	O	9150-00-168-2000	Lubricant, Solid Film	Pt
18	O	7520-00-230-2734	Marker, Felt Tip, Black (81348) GG-M-0014	ft
19	O	8135-00-160-7759	Paper, Kraft, Untreated (81348) UU-P-268	ft
20	O	7520-00-491-2917	Pen, Ballpoint (81348) GG-B-0060	ea
21	O	7920-00-205-3570	Rag, Wiping (81348) DDD-R-30	be

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (cont)

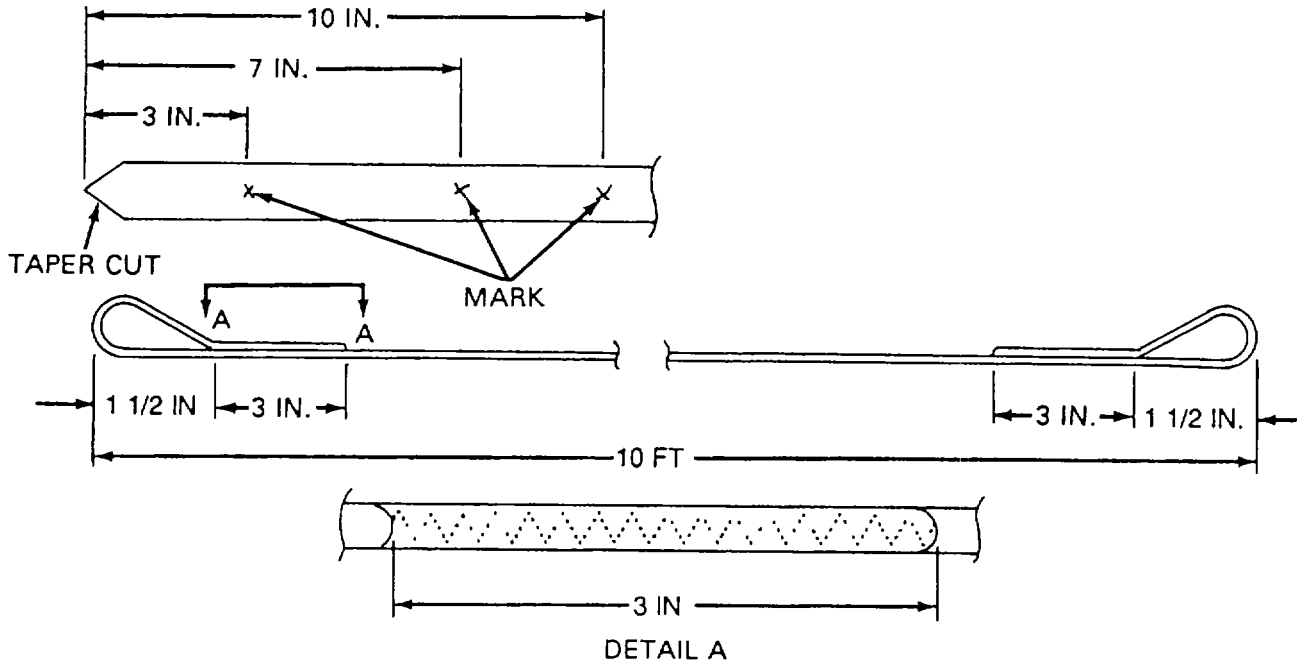
(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
22	O	9310-00-160-7858	Stencilboard, Oiled, Type 11 (81348) UU-S-625	sh
23	O	8315-00-255-7673	Tape, Nylon, Type 111, 1/2 inch, OD (81349) MIL-T-5038	ft
24	O	7510-00-266-6712	Tape, Masking	yd
25	O	7510-00-663-0196	Tape, Adhesive, Masking, 2 inch, OD (81348) PPP-T-60	yd
26	O	6810-00-270-9982	Tetrachorethylene, Technical (81348) O-T-236	gl
27	O	8310-01-279-6073	Thread, Cotton, Ticket No. 8/4, (81348) V-T-276 (Orange)	yd
28	O	8310-00-917-3945	Thread, Cotton, Ticket No. 8/7 (81348) V-T-276	yd
29	O	8310-00-262-2770	Thread, Nylon, Size E, Natural White (81348) V-T-295 Type I, Class A	yd
30	O	8310-00-262-2772	Thread, Nylon, Size E, OD (81348) V-T-295 Type I, Class A	yd
31	O	8310-00-248-9714	Thread, Nylon, Size 3, Natural White (81348) V-T-295 Type I, Class A	yd
32	O	8310-00-267-3027	Thread, Nylon, Size 3, OD (81348) V-T-295 Type I, Class A	yd
33	O	8310-00-248-9716	Thread, Nylon, Size 6, Natural White (81348) V-T-295 Type I, Class A	yd
34	O	8310-00-262-2780	Thread, Nylon, Size 6, OD (81348) V-T-295 Type I, Class A	yd
35	O	9160-00-285-2044	Wax, Paraffin, 1 lb Cake (81348) VV-W-95 Type I Grade A	lb
36	O	8305-00-268-2411	Webbing, Cotton, Type 1, 1/4 inch (81349) MIL-T-5661	ft
37	O	8305-00-260-2565	Webbing, Cotton, Type VIII, OD (81349) MIL-W-5665 Class 2A	ft
38	O	8305-00-753-6086	Webbing, Cotton, Type X, Class 2B, OD (81349) MIL-W-5665	ft

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (cont)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
39	O	8305-00-263-3639	Webbing, Nylon, Type I, 9/16 inch, natural (81349) MIL-W-4088	ft
40	O	8305-00-260-6909	Webbing, Nylon, Type I, 9/16 inch, od (81349) MIL-W-4088	ft
41	O	8305-00-261-8584	Webbing, Nylon, Type X, od (81349) MIL-W-4088	ft
42	O	8305-00-261-6151	Webbing, Nylon, Type XVIII, 1 inch, od (81349) MIL-W-4088	ft
43	O	8305-00-281-3012	Webbing, Nylon, Type XII, od (81349) MIL-W-4088	ft
44	O	8305-00-268-2453	Webbing, Nylon, Tubular, 1/2 inch, od (81349) MIL-W-5625	ft
45	O	8305-00-268-2455	Webbing, Nylon, Tubular, 1 inch, od (81349) MIL-W-5625	ft
46	O	7510-00-240-1525	Pencil, Marking Aid, White (81348), A-A-87	ea
47	O	7510-00-264-4612	Pencil, Marking Aid, Yellow (81348), A-A-87	ea
48	O	8315-00-176-8083	Tape, Nylon, Type III, 3/4 in, od (81349) MIL-T-5038	yd
49	O	8315-00-281-3221	Tape, Cotton, Type 111, 3/4 in, od (81349) MIL-T-5661	yd
50	O	4020-00-262-2020	Cord, Nylon, Type IV, Coreless, OD (81349) MIL-C-7515	yd
51		Deleted		
52		Deleted		
53	O	6630-00-442-8000	Spool, with Color Chart	ea
54	O	8305-00-261-8585	Webbing, Nylon, OD (81348) MIL-W-4088	ft

APPENDIX E
ILLUSTRATED LIST OF MANUFACTURED ITEMS

Complete instructions for making items authorized to be manufactured or fabricated are located in Chapter 2, Section VI of this manual. Fabricate a reefing line for the G-100C cargo parachute in accordance with figure E-1 and fabricate a splicing aid in accordance with figure E-2.

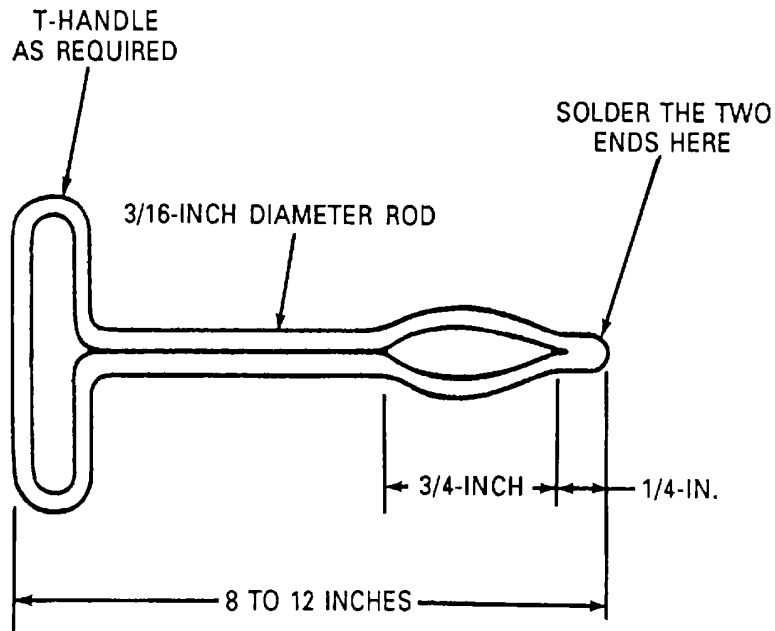


FABRICATION PROCEDURE

1. CUT A 10 FT. 9 IN. LENGTH OF TYPE IV CORELESS NYLON CORD (NSN 4020-00-262-2020) FOR EACH LINE (2 REQ'D)
2. TAPER CUT BOTH ENDS.
3. USING A MARKING AID, MARK CORD AT POINTS 3, 7 AND 10 INCHES FROM EACH TAPERED END.
4. STARTING AT ONE END, INSERT SPLICING AID INTO CORD CASING AT 10-INCH MARK, PASS UP THROUGH CORD CASING AND TO OUTSIDE AT 7-INCH MARK.
5. INSERT CORD TAPERED END INTO EYE OF SPLICING AID.
6. PULL SPLICING AID AND CORD TAPERED END THROUGH CORD CASING UNTIL 3- AND 7-INCH MARKS ARE ALINED.
7. HOLDING ALINED MARKS TOGETHER, PULL SPLICING AID AND CORD TAPERED END TO OUTSIDE AT 10-INCH MARK.
8. REMOVE CORD TAPERED END FROM SPLICING AID. WHILE HOLDING 3- AND 7-INCH MARKS TOGETHER, PULL CORD AT POINT BELOW 10-INCH MARK TO ALLOW CORD TAPERED END TO WITHDRAW INTO CORD CASING.
9. BEGINNING AT THE ALINED 3- AND 7-INCH MARKS, SECURE FORMED LOOP BY STITCHING A 1/8-INCH WIDE, 3-INCH LONG ROW OF ZIG-ZAG STITCHING USING SIZE E NYLON THREAD. STITCHING WILL BE 7 TO 11 STITCHES PER INCH (SEE DETAIL A).
10. REPEAT 4 THROUGH 9, ABOVE, AT OTHER END OF CORD.

4838-204

Figure E- 1. Model G- 11 C Reefing Line Fabrication.



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Figure E-2. Splicing Aid Fabrication.

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
 1 decimeter = 10 centimeters = 3.94 inches
 1 meter = 10 decimeters = 39.37 inches
 1 dekameter = 10 meters = 32.8 feet
 1 hectometer = 10 dekameters = 328.08 feet
 1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
 1 decigram = 10 centigrams = 1.54 grains
 1 gram = 10 decigrams = .035 ounce
 1 decagram = 10 grams = .35 ounce
 acres
 1 hectogram = 10 decagrams = 3.52 ounces
 1 kilogram = 10 hectograms = 2.2 pounds
 1 quintal = 100 kilograms = 220.46 pounds
 1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
 1 deciliter = 10 centiliters = 3.38 fl. ounces
 1 liter = 10 deciliters = 33.81 fl. ounces
 1 dekaliter = 10 liters = 2.64 gallons
 1 hectoliter = 10 dekaliters = 26.42 gallons
 1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

<i>To change</i>	<i>To</i>	<i>Multiply by</i>	<i>To change</i>	<i>To</i>	<i>Multiply by</i>
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit	5/9 (after	Celsius	°C
	temperature	subtracting 32)	temperature	

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