*ARMY TM 10-1670-275-23&P
AIR FORCE TO 13C5-25-2
NAVY NAVAIR 13-1-26

TECHNICAL MANUAL

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

PARACHUTE, CARGO TYPE: 12-FOOT DIAMETER, HIGH-VELOCITY CARGO PARACHUTE NSN 1670-00-788-8666

Approved for public release. Distribution is unlimited.

*The following manuals, TM 10-1670-275-23&P, TM 10-1670-276-23&P, TM 10-1670-277-23&P, TM 10-1670-278-23&P, TM 10-1670-279-23&P, TM 10-1670-280-23&P, TM 10-1670-281-23&P, TM 10-1670-282-23&P, in their entirety, supersede TM 10-1670-215-23, dated 7 December 1973, including all changes.

HEADQUARTERS, DEPARTMENTS OF THE ARMY

AND THE AIR FORCE AND HEADQUARTERS, U.S. MARINE CORPS

17 MARCH 1989

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.

For First Aid treatment, refer to FM 21-11

CHANGE NO. 1

HEADQUARTERS, DEPARTMENT OF THE ARMY WASHINGTON, DC, 31 AUGUST 2005

TECHNICAL MANUAL

UNIT AND INTERMEDIATE DIRECT SUPPORT (DS) MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST) FOR PARACHUTE, CARGO TYPE: 12-FOOT DIAMETER, HIGH-VELOCITY CARGO PARACHUTE (NSN 1670-00-788-8666)

DISTRIBUTION STATEMENT A: - Approved for public release; distribution is unlimited.

TM 10-1670-275-23&P, dated 17 March 1989, is updated as follows:

1. File this sheet in front of the manual for reference.

2. This change implements Army Maintenance Transformation and changes the Maintenance Allocation Chart (MAC) to support Field and Sustainment Maintenance.

3. New or updated text is indicated by a vertical bar in the outer margin of the page.

4. Added illustrations are indicated by a vertical bar adjacent to the figure number. Changed illustrations are indicated by a miniature pointing hand adjacent to the updated area and a vertical bar adjacent to the figure number.

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ARMY TM 10-1670-275-23&P
AIR FORCE TO 13C5-25-2
NAVY NAVAIR 13-1-26

C1

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TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 192, CONSISTING OF THE FOLLOWING:

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Title	0
a/(b Blank)	0
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C-1 – C-20	0
D-1 – D-4	0
E-1/(E-2 blank)	0
Index-1 – Index-4	0
Back Cover	0

TECHNICAL MANUAL 10-1670-275-23&P
TECHNICAL ORDER 13C25-22
NAVAIR 13-1-26

HEADQUARTERS, DEPARTMENTS OF
THE ARMY AND THE AIR FORCE AND
HEADQUARTERS, U.S. MARINE CORPS
WASHINGTON, D.C., 17 March 1989

Unit and Intermediate Direct Support (DS) Maintenance Manual (Including Repair Parts and Special Tools List) for PARACHUTE, CARGO TYPE: 12-FOOT DIAMETER HIGH-VELOCITY CARGO PARACHUTE ASSEMBLY

NSN 1670-00-788-8666

Approved for public release. Distribution is unlimited.

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

ARMY

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 direct to: Commander, U.S. Army Troop Support Command, ATTN: AMSTR-MCTS, 4300 Goodfellow Blvd, St Louis, MO 63120-1798. A reply will be furnished directly 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 AFLC/MMILRA, Kelly AFB, TX 78241-5000.

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LIST OF ILLUSTRATIONS

LIST OF ILLUSTRATIONS (cont)

LIST OF TABLES

CHAPTER 1

INTRODUCTION

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

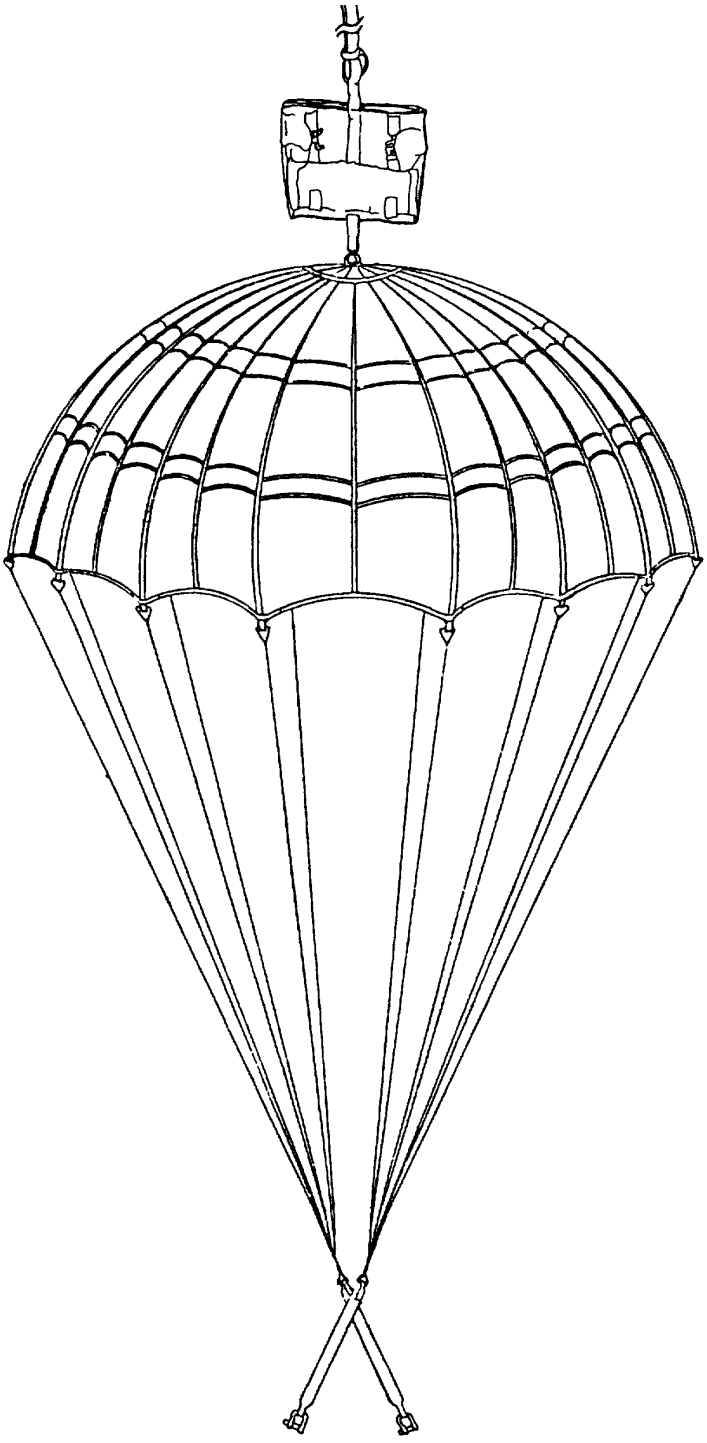
1-1. Scope. The scope of this manual is described in the following subparagraphs.

a. Type of Manual. This manual provides unit and intermediate direct support (DS) maintenance Instructions for parachute. NSN 1670-00-7888666. This is a 12-Foot Diameter High-Velocity Cargo Parachute (Figure 1-1). This manual also provides a Repair Parts and Special Tools List located at Appendix C.

b. Equipment Name. 12-Foot Diameter, High-Velocity Cargo Parachute, hereinafter called the 12-Foot Cargo Parachute.

c. Purpose of Equipment. The parachute provides high velocity air delivery of non-fragile supplies.

1-1. Scope (cont).



4706-001

Figure 1-1. The 12-Foot-Diameter High-Velocity Cargo Parachute Assembly.

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 TB 750-126, Use of Material Condition Tags and Labels on Army Aeronautical and Air Delivery Equipment.

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 air delivery equipment 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 these materials are highly flammable.

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. 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.

1-3. Destruction of Army Materiel to Prevent Enemy Use (cont).

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 TM 10-1670-201-23 T.O. 13C-1-41/NAVAIR 13-1-17, and 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) Mail it to us at Commander, U.S Army Troop Support Command, ATTN AMSTR-QX ,4300 Goodfellow Blvd., St. Louis, MO 63120- 1798 We will send you a reply .

Section II. EQUIPMENT DESCRIPTION AND DATA

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. Provides a capability to deliver non-fragile supplies and equipment using high-velocity air delivery method.

b. Capabilities and Features

(1) Capable of supporting 500 pounds.

(2) Increased accuracy.

(3) Low cost.

(4) Designed for deceleration and stabilization of high-velocity air delivery cargo.

(5) Components of the system.

(a) Canopy assembly.

(b) Static line.

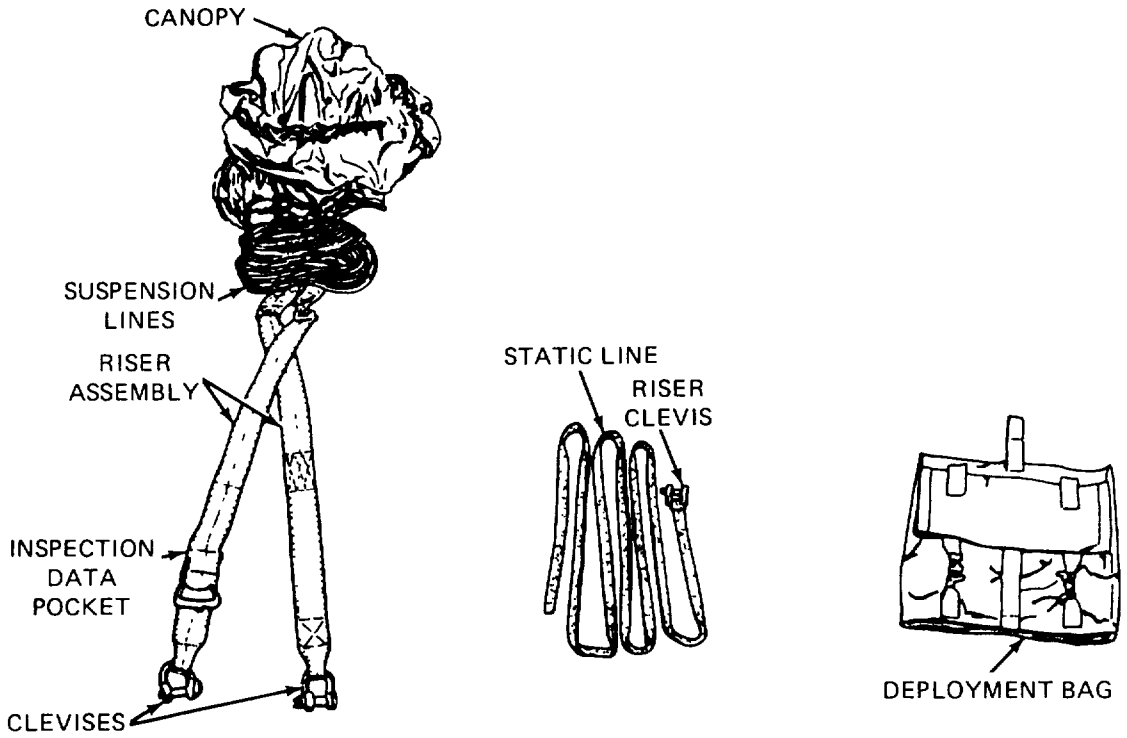
(c) Deployment bag.

1-7. Location and Description of Major Components. The following subparagraphs contain locations and descriptions of major components (figure 1-2).

a. Canopy. A cotton cloth cargo canopy constructed of three annular rings, suspension lines, a riser assembly and devises to attach parachute assembly to cargo bundle.

b. Static Line. A 15-foot 3/4 inch tubular nylon webbing with a large loop formed at one end and a small loop formed and a clevis at the other end.

c. Deployment Bag. A cotton cloth bag used to deploy the cargo canopy.



4706-002

Figure 1-2 . Location and Description .

1-8. Equipment Data. The following listing summarizes the specific capabilities and limitations of the equipment and other critical data needed by the unit and Intermediate maintenance (DS) personnel for maintenance of the 12-foot diameter high-velocity cargo parachute.

a Weight (packed for airdrop)	7.75 lbs (approx)
b Canopy Assembly	
Shape	Flat-circular
Diameter (nominal)	12 feet
Design	Ringslot
No of gores	14
No of sections per gore	3

.

1-8. Equipment Data (cont).

Gore material	Type III, 3.6 oz cotton muslin cloth
No of radial tapes	14
No of vent lines	7
Vent line material	Type II coreless nylon cord
No of suspension lines	14
Suspension line material	Type I coreless nylon cord
Length of suspension line (riser suspension line attaching loop to canopy skirt	12 ft
Length of canopy (skirt reinforcement tape to vent reinforcement tape)	55-112 in.

c. Riser Assembly .

Length	30 in
Number of riser devices used	1 Assembly

d. Deployment Bag .

Bag length	14 in
Bag width	13-112 in

e. Static Line .

Length	15 ft
Number of riser devises used	1

1-9. Functional Description of Major Components.

a. Canopy Assembly. Delivers supplies and equipment rigged for high-velocity air delivery on the drop zone (A, figure 1-3).

b. Static Line. Deploys parachute as cargo bundle leaves the aircraft (B, figure 1-3).

c. Deployment Bag. Retains the cargo parachute in preparation for deployment (C, figure 1-3).

1-10. Safety, Care and Handling. The following subparagraphs summarize the safety, care and handling requirements for the parachute assembly.

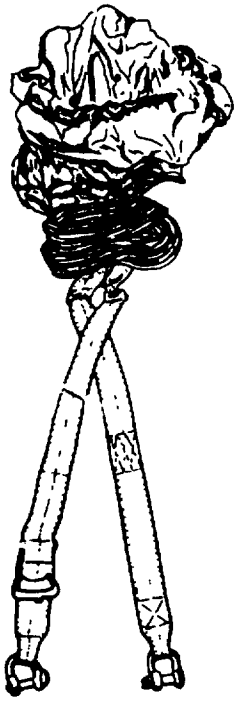
a. Safety. Use care in handling packed parachutes as exposed metal parts could cause painful Injuries.

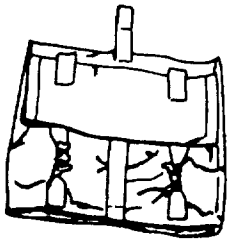
b. Care and Handling.

(1) Every effort shall be made to protect the parachute from weather elements, dust, dirt, oil, grease, and acid.

(2) When available, a heated building should be used to store parachutes.

(3) Parachutes shall be stored in a dry, well-ventilated location and protected from pilferage, dampness, fire, dirt, insects, rodents, and direct sunlight.





(a) CANOPY (b) STATIC LINE (c) DEPLOYMENT BAG

4706-003

Figure 1-3 . Major Components of Parachute Assembly

CHAPTER 2

UNIT AND INTERMEDIATE MAINTENANCE INSTRUCTIONS

OVERVIEW .

This chapter contains information necessary to maintain the 12 Foot Diameter High-Velocity Parachute on the unit and intermediate maintenance (DS) 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 shakoes 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

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.

2-2. Special Tools. TMDE and Support Equipment. Special Tools, TMDE 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

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

a. General Procedures for Air Delivery Equipment. 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 TB 750-126. Serviceable equipment may then be entered either into storage or into use in airdrop operations, as applicable. An unserviceable item will be held and reported in accordance with DA PAM 738-750.

b. Inspection Personnel. Personnel other than parachute rigger personnel may assist in the unpacking process of initially received parachutes as directed by the local airdrop 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 contractors are authorized deviations In material and construction techniques. Airdrop 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 air worthy, 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 assembly through the period of service of the individual assembly. The log record provides a means of recording maintenance actions performed on a parachute assembly. Normally, a log record is initiated and attached to the riser 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 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 airdrop 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 size 6 waxed nylon thread (Item 33, Appendix D) and double thread length to form a 15 inch length, double strand.

(2) Pass looped end of doubled thread length around centerfold of log record and form a slip loop on outside at log record top (A, figure 2-1).

(3) Pass thread length running ends through corner attaching hole from front cover of log record (B, figure 2-1) and insure running ends are routed over that part of thread length located along log record centerfold (C, figure 2-1).

(4) Complete attachment tie by making a half hitch on top of slip loop made in (2) above.

(5) Thread one running end of the log record attachment tie In a tacking needle and pass tacking needle with attached thread end through the edge binding of the applicable parachute log record/inspection data pocket.

(6) Remove thread end from tacking needle and make a finished 10 Inch-long log attaching loop by securing two thread ends together with an overhand knot.

(7) Insert log record into the pocket and secure the record within pocket using pocket flap and applicable type flap fastener.

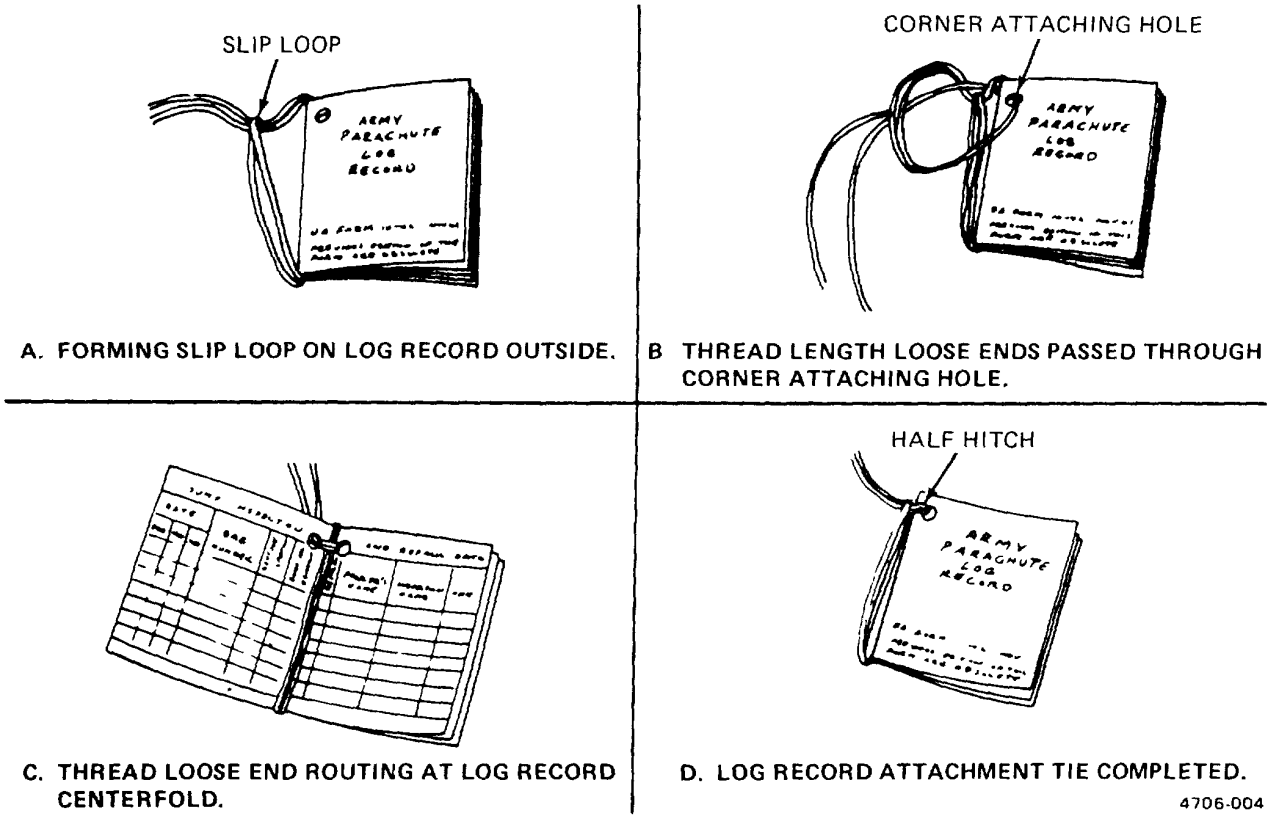


Figure 2-1 . Installing Attachment Tie on Parachute Log Record.

2-4. Initial Receipt (cont).

f. Accomplishing a Log Record. Upon completion of 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 .

NOTE

A parachute canopy serial number is recorded in a log record as a method of establishing control for maintenance, EIR (Equipment Improvement Report) and QDR (Quality Deficiency Report) 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.

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

(b) Type. Enter parachute type.

(c) Part number. Enter part number of parachute canopy.

(d) Date of manufacture. Enter month and year parachute canopy was manufactured.

(e) Manufacturer. Enter name of parachute canopy manufacturer.

(f) Canopy contract number. Enter entire contract number specified for parachute canopy.

(g) Station and unit. Enter name of station and unit to which parachute canopy is currently assigned. When a parachute is transferred permanently to another station and/or unit original entry will be lined out and name of the receiving station and/or unit will be entered.

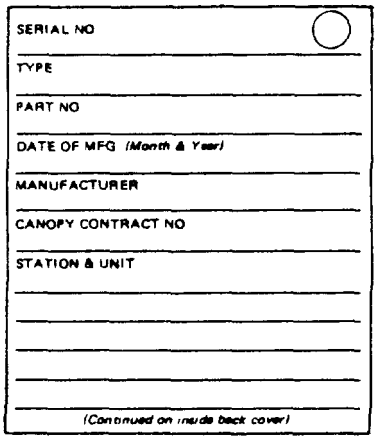


Figure 2-3 . Inside Back Cover of Parachute Log Record.

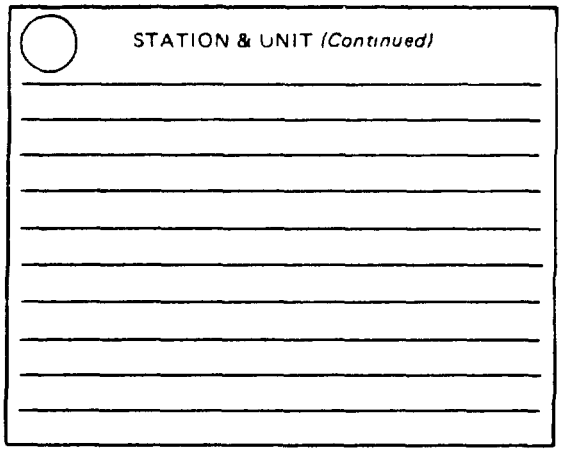


Figure 2-2. Inside Back Cover of Parachute Log Record.

(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).

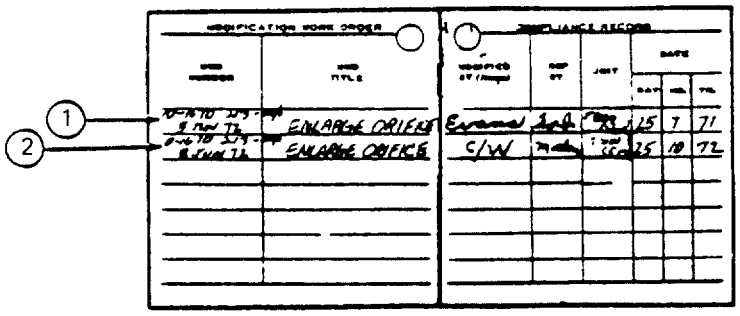
(a) MWO number. Enter publication number and date of Modification Work Order (MWO) which describes MWO (1, figure 2-4).

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

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

2-4. Initial Receipt (cont).



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

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

(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 date (day, month, and year) the modification work was completed.

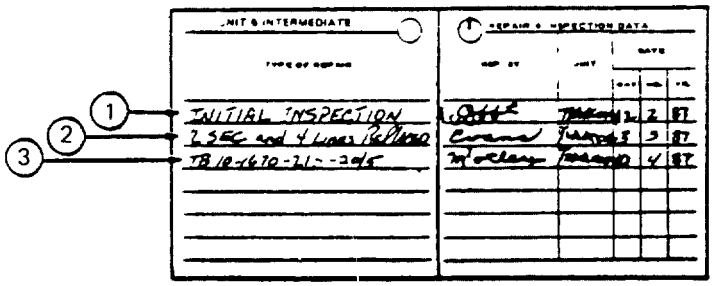
(4) *Unit and intermediate direct support (DS) repair and inspection data.* When a parachute canopy assembly is initially received from a supply source and a technical/rigger-type inspection Is performed, the inspection accomplishment will be documented on the "Unit and Intermediate Repair and Inspection 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 date (day, month and year) the repair was performed.



1. COMPLETION OF INITIAL INSPECTION.
2. REPAIR ACCOMPLISHMENT.
3. TECHNICAL BULLETIN INSPECTION COMPLIANCE

4706-008

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.

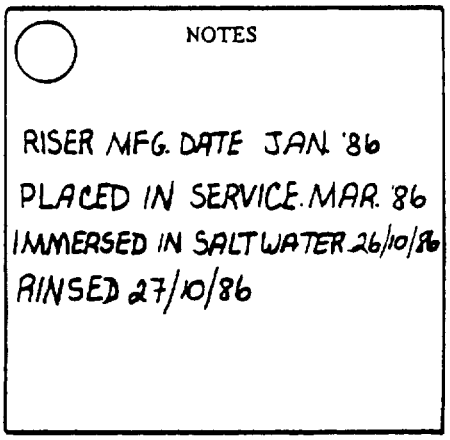


Figure 2-6 . Data Entries for a Log Record Note Page .

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 or 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 is 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 DD Form 6, 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.

c. Check to see whether the equipment has been modified.

Section III. ASSEMBLY

2-8. Assembly of the 12-Foot High-Velocity Cargo Parachute.

NOTE

The procedure for assembling components of parachute is incorporated in paragraph 2-16.

Section IV. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-9. PMCS Procedures. The following describe PMCS procedures on the unit and intermediate levels.

a General. Table 2-1 lists preventive maintenance checks and services. The purpose of PMCS is to assure that the 12 foot high-velocity parachute is operational .

b Frequency of Performing PMCS. PMCS will be performed before equipment is packed for use, during modification and repair, and 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 interval.

(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 73&750, TB 750-126, and TB 43-0002-4.

e. Conservation of Resources. To conserve time and labor, and to avoid evacuation to an intermediate maintenance activity, unit/detachment commanders may designate, in writing, rigger personnel to accomplish classification inspection of average air delivery equipment.

f. Inspection Function Requirement. Normally, a technical/rigger-type inspection will be per- formed 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 table 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. 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 maintenance function for further determination of economic repair and total repair accomplishment, if applicable.

NOTE

Parachutes which are deemed unserviceable by a packing or rigging activity will be rigger-rolled prior to being sent to a repair activity.

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

B - Before A - After

Item No.	Interval B	Interval A	Item to be inspected	Procedures
1	•	•	Parachute packed for use	Visually check visible parts for serviceability and completeness without opening pack. Check parachute Inspection data record for pack date
2	•	•	Canopy	As canopy is raised, lowered, and suspended during shakeout, check for dampness, fungus, acid, grease, oil, dirt, foreign material, holes, cuts, and tears
3	•	•	Deployment Bag and Static Line	Completeness, dampness, fungus, acid, grease, oil, dirt, foreign material, holes, cuts, and breaks.
4	•	•	Hardware Components	Riser clevis assembly for corrosion, rough spots, breaks, cracks, bends, missing tie cord, pin, and safety pin

Section V. UNIT AND INTERMEDIATE MAINTENANCE PROCEDURES .

2-10. General Information. The following paragraphs contain general Information pertinent to unit and intermediate 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).

2-10. General Information (cont).

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**

Materials/Parts

Brush, scrub, household, Item 3, Appendix D

Equipment Condition'

Parachute Suspended

Personnel Required: (2)

43E(10) Parachute Rigger

a. Shakeout. The shakeout will be accomplished by a two-person team, either indoors within a shakeout room or outdoors at a shakeout tower. 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:

(1) With assistance from no 2 person, no 1 person will connect snap on a pulley rope to canopy bridle loop (A, figure 2-7).

(2) 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 of canopy gores. 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.

(3) 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.

(4) Once gore shaking process is completed, no 2 person will slowly raise suspended canopy higher as no. 1 person clears suspension lines of debris and removes entanglements (C, figure 2-7) when possible.

(5) 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 such as risers or deployment bag.

(6) When all components are free of debris, no. 2 person will slowly lower canopy while no. 1 person S-folds suspension lines into deployment bag (D, figure 2-7). After suspension lines have been completely folded, no. 1 person will accordion-fold canopy length on top of folded lines.

(7) As canopy folding Is being completed, no 1 person disconnects canopy vent from pulley rope snap Secure folded canopy assembly for further handling.

2-11. Shakeout and Airing (cont).

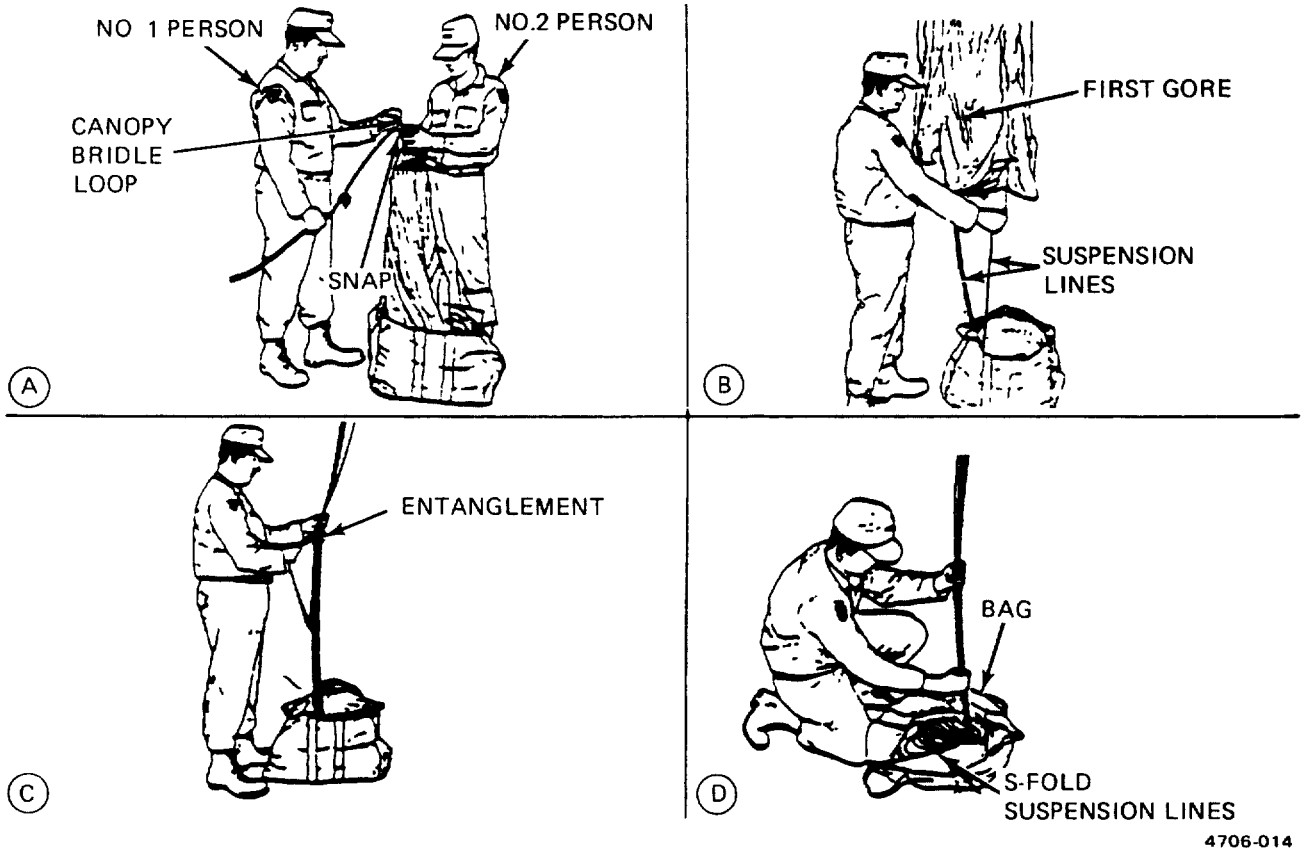


Figure 2-7 . Shakeout .

b. Airing. Where dampness and mildew are prevalent, air delivery equipment will be aired at frequent intervals according to the seventy of the prevailing conditions. 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.
b. Cleaning fabric items with dishwashing compound.
c. Drying fabric items.
d. Cleaning metal Items.
e. Equipment immersed in salt water.
f. Equipment immersed in fresh water.

Materials/Parts:

Tetrachloroethylene, Item 27, Appendix D
Dishwashing Compound, Item 13, Appendix D
Rag, Wiping, Item 21, Appendix D
Lubricant, Solid Film, Item 15, Appendix D
Cloth, Abrasive, Item 5, Appendix D
Brush, Scrub, Item 3, Appendix D

Equipment Condition'

Layout on packing table or other suitable area.

Special Environmental Condition:

Ventilation required as repeated or prolonged inhalation of cleaning solvent vapors can be detrimental to human health.

Personnel Required.

43E(10) Parachute Rigger

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 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 tetracholoroethylene.

(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.

c. 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 (71°C). Preferred temperature is 140°F (60°C).

d. 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.

e. Equipment Immersed in Salt Water. Equipment made of cotton fabric immersed in salt water are to be condemned. See paragraph 2-13e, for equipment disposition.

2.12. Cleaning and Drying (cont).

f. *Equipment Immersed In Fresh Water*. Any air delivery equipment 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 item are as follows:

(1) *Contaminated fresh water*. If air delivery equipment has been immersed in contaminated fresh water, rinse, dry, and, if applicable, repair the item(s). Rinse the item(s) as follows:

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

NOTE

If the 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.

(b) Agitate the container contents by hand for 5 minutes.

(c) 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.

(d) Repeat the procedures In steps (a) through (c) above, twice, using fresh, clean water for each rinse.

(e) After the third rinse, allow the parachute assembly to drain thoroughly. Upon completion of draining, dry the assembly in accordance with procedures In c , above.

(f) 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.

(g) Record any repairs, immersion and rinsing In the NOTES page of the parachute log record (figure 2-6).

(2) *Uncontaminated fresh water.* If air delivery equipment has been immersed in uncontaminated fresh water, item(s) will be cleaned and dried as outlined in this paragraph. 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.

2-13. Inspection.

This task covers:

a. Routine
b. Pack-in-Process
c Technical/Rigger-Type
d. In-storage
e. Equipment Disposition

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition.

Packed/Unpacked

a. Routine Inspection. A routine Inspection is a visual check performed to ascertain the service- ability 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 issue. 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 rigger 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 parachute is placed in proper layout.

(2) After gores are folded and flatfold is completed.

(3) After canopy is longfolded.

(4) After suspension lines are stowed.

(5) After canopy is stowed.

(6) After parachute is completely packed.

c. Technical/Rigger-Type Inspection Procedures.

(1) Overall Inspection. An overall inspection will be made on the 12-foot high-velocity cargo parachute to ascertain the following.

(a) Log record/parachute inspection data pocket and form. As applicable, inspect 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 2-4e Further, remove log record from pocket and evaluate recorded entries to insure compliance with paragraph 2-4e.

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

2-13. Inspection (cont).

(c) Operational adequacy. Check item components and parts to insure proper assembly, which includes attachment and alinement, and that assembled product functions in prescribed manner. Further insure 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 safety pins.

(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 insure 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 reparable (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 TB 750-126. 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 Equipment Improvement Recommendation (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, US Army Troop Support Command, ATTN: AMSTR-QX, 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 TB 750-126. In addition, the equipment will be reported in an Equipment Improvement Recommendation (EIR) in accordance with DA Pam 380-750 and AR 750-1. The item(s) in question will be held as EIR exhibit material as outlined in DA Pam 380-750 pending receipt of disposition instructions from the National Maintenance Point (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 judgment of engineering personnel who have the responsibility for final evaluation of EIR actions.

2-14. Acidity Test.

This task covers: Acidity test

Tools:	*Personnel Required:*
Packing Paddle, Item 11, Appendix B	43E(10) Parachute Rigger
Materials/Parts:	*Equipment Condition:*
Medicine Dropper, Item 17, Appendix D Three-Color pH Paper, Item 18, Appendix D Spool with Color Chart, Item 23, Appendix D	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 a 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 item in Intended test area. If water drops do not penetrate material, gently rub moistened area with a flat side of a clean metal packing paddle.

(2) Tear a suitable length of colorimetric pH paper from dispenser, place piece of pH paper on wetted area and press full surface of paper against material with a flat side of packing paddle used in step (1) above. Insure the pH paper becomes thoroughly wet.

(3) Using color comparison chart enclosed in dispenser, compare the color of 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

Personnel Required:	*Equipment Condition*.
43E (10) Parachute Rigger	Layout on packing table or other suitable area.

NOTE

Condemn equipment known or suspected of salt contamination

Inspection. Look for a white crystaline residue.

2-16. Packing 12-Foot Cargo Parachute.

This task covers:

a. Inspection
b. Orientation
c. Preparing Parachute for Proper Layout
d. Removing Inversion
e. Removing Turns
f. Removing Tangles
g. Removing Twists
h. Proper Layout
i. Assembly
j Folding the Gores
k. Longfolding the Canopy
I. Stowing the Canopy
m. Stowing Suspension Lines
n Riser Securing Ties
o. Completing Pack

Tools:

Packing Weights, Item 1, Section III, Appendix B
Line Separator, Item 2, Section III, Appendix B

Materials/Parts:

Cord, Nylon, Type III, Item 11, Appendix D
Retainer Band, Rubber, Item 1, Appendix D
Tape, Pressure Sensitive, Item 26, Appendix D
Thread, Cotton, Ticket No. 8/7, Item 28, Appendix D
Webbing, Nylon, Tubular, 3/4-In. OD, Item 40, Appendix D
Webbing, Cotton, Type 1, 1/4-in., Item 36, 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:

TM 10-1670-201-23 T.O. 13C-1-41/ NAVAIR 13-1-17
TB 750-126
TB 43-0002-4

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 rigger-rolled and processed for maintenance in accordance with TM 10-1670-201-23 and TB 750-126. A rigger-type inspection and a pack-in-process inspection must be performed in conjunction with each packing of a parachute (refer to para. 2-13).

(1) *Rigger-type inspection*. Before each parachute is packed for air delivery, it must be given a rigger-type inspection by the packer in accordance with para. 2-13.

(2) *Pack-in-process inspection*. A pack-in-process inspection must be performed by a designated supervisory rigger, other than the packer, at six intervals during the packing procedure. The inspection is performed to assure that the parachute Is packed according to authorized packing procedures (refer to para 2-16).

b. Orientation. Throughout this manual, all directions (right, left, upper, lower, top, bottom, clockwise, and counterclockwise) are given from the rigger's view, as the rigger stands at the tension plate end of the packing table facing the apex-hook end of the table (figure 2-8).

(1) Top, that portion of the equipment that is farthest from the packing table surface.

(2) Bottom, that portion of the equipment that is nearest to the packing table surface.

c. *Preparing Parachute for Proper Layout*. Prepare the parachute as follows:

(1) Place packing tools in convenient locations on the packing table. Lay the canopy assembly lengthwise on the packing table, and attach the canopy to the packing table apex hook (figure 2-9).

(2) Attach bridal loop to apex fitting and elongate canopy (figure 2-13).

NOTE

When inversion, turns, tangles and twist are present in the canopy assembly, the proper sequence for removal to achieve proper layout is to remove an inversion first, remove turns secondly, then remove tangles and, finally, remove twist.

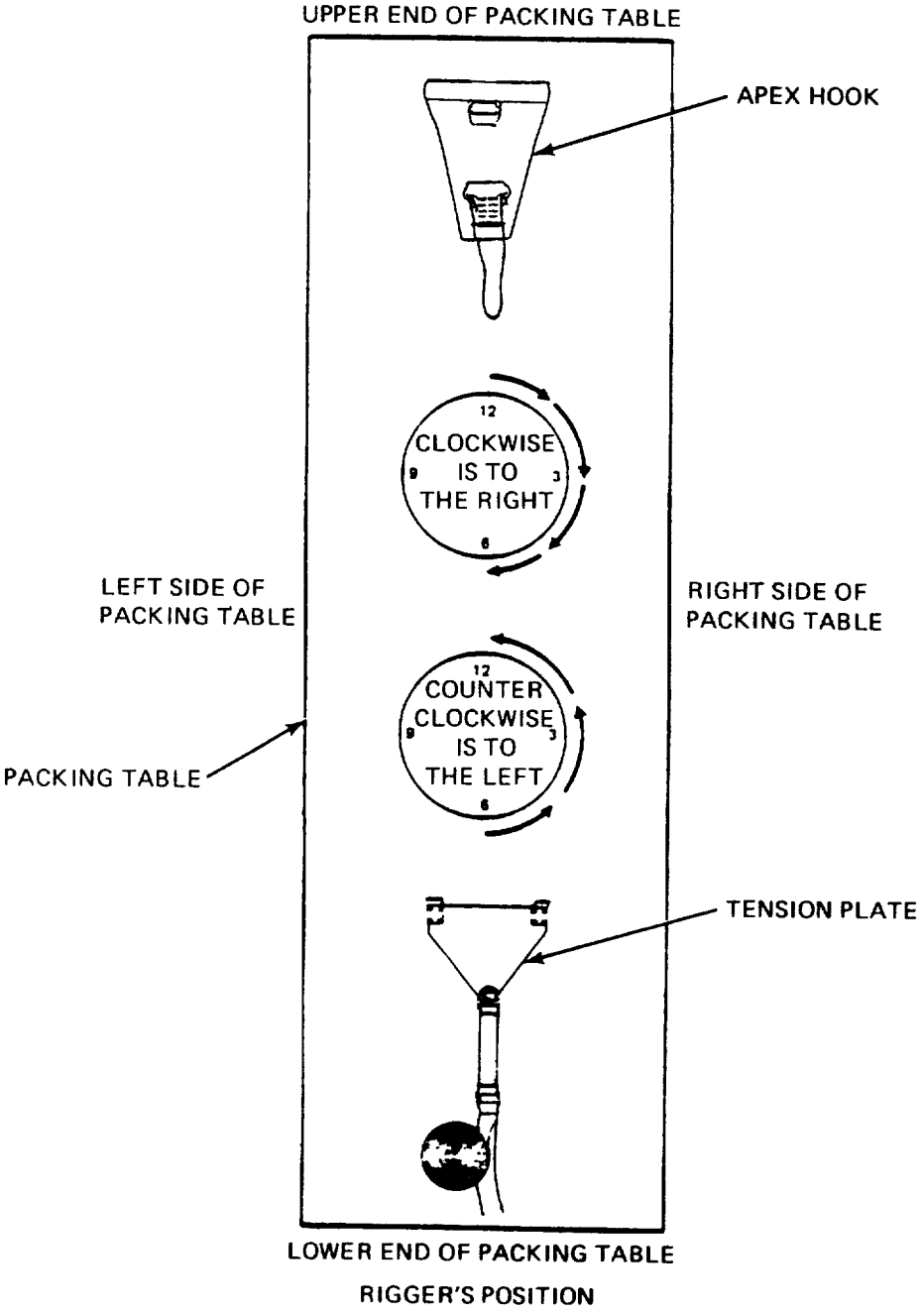
d. Removing Inversions.

(1) *Canopy inversion*. Check canopy vent lines to determine if canopy has been Inverted. Canopy is Inverted when vent lines are located inside upper lateral band (figure 2-9). Remove Inversions as follows:

(a) Detach bridal loop from apex fitting and pass vent through canopy (figure 2-10).

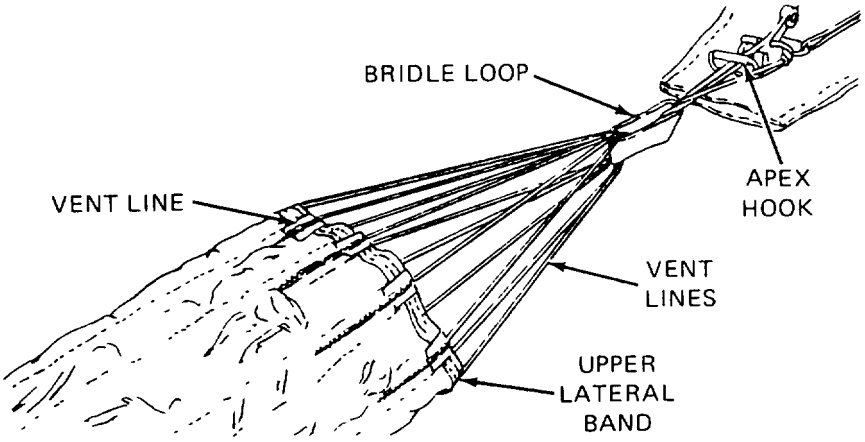
(b) Pass vent out of canopy shirt, between two adjacent suspension lines (figure 2-10).

2-16. Packing 12-Foot Cargo Parachute (cont).



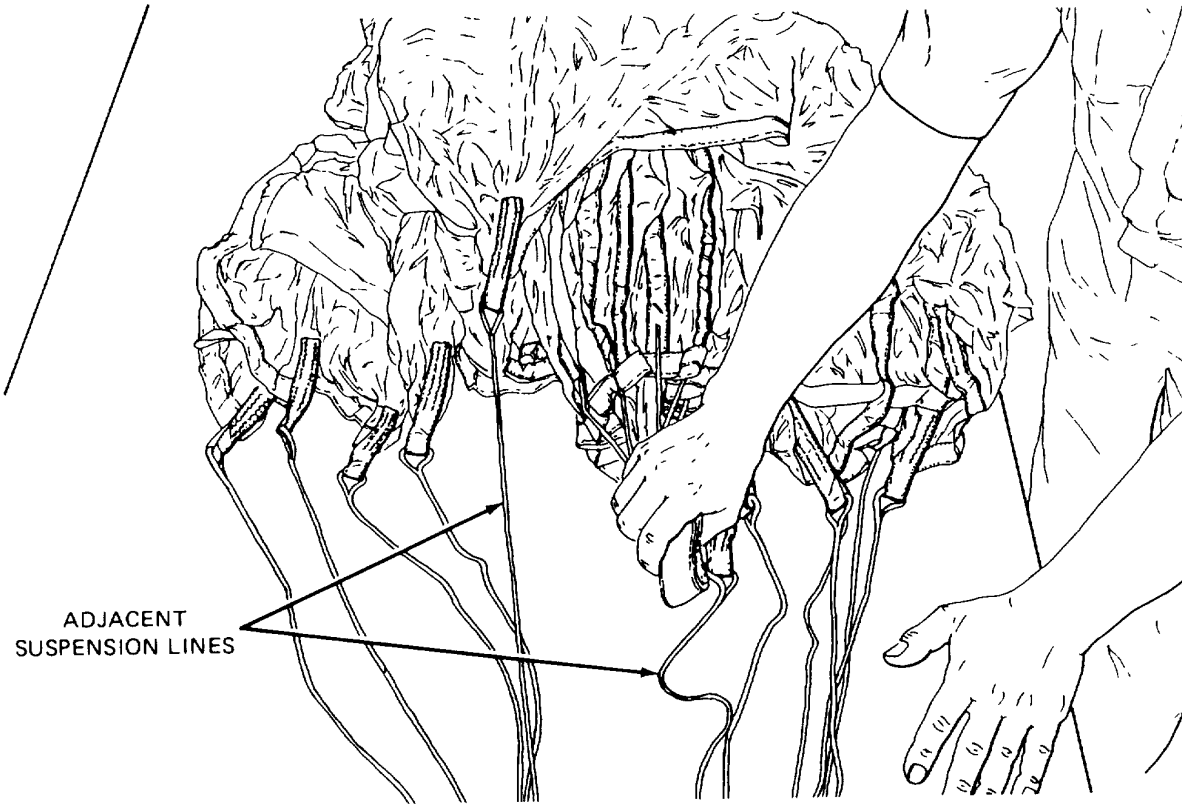
4706-015

Figure 2-8. Rigger's Orientation.



4706-016

Figure 2-9. Canopy Attached to Packing Table Apex Hook.



4706-017

Figure 2-10. Removing Inversion.

2-16. Packing 12-Foot Cargo Parachute (cont).

(2) *Partial inversion*. If vent lines are on outside of canopy and pocket bands are on inside, or visa versa, a partial inversion exists. Remove a partial inversion as follows:

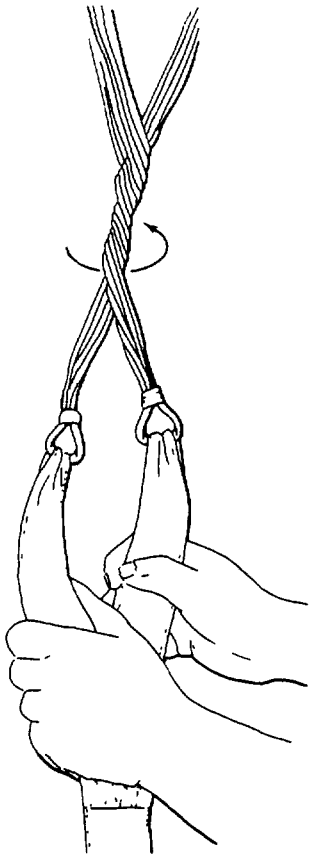
(a) Detach bridle loop from apex fitting. Trace radial and vertical tapes to annular ring where tapes turn under to inside canopy (figure 2-11).

(b) Pull canopy vent or risers through canopy and out through annular ring. Attach bridle loop to apex fitting on packing table

4706-018

Figure 2-11. Removing Partial Inversion.

e. *Removing Turns*. One group of suspension lines is rotated around opposite group of lines. To remove a turn, rotate lines in a direction opposite to direction of turn (figure 2-12).

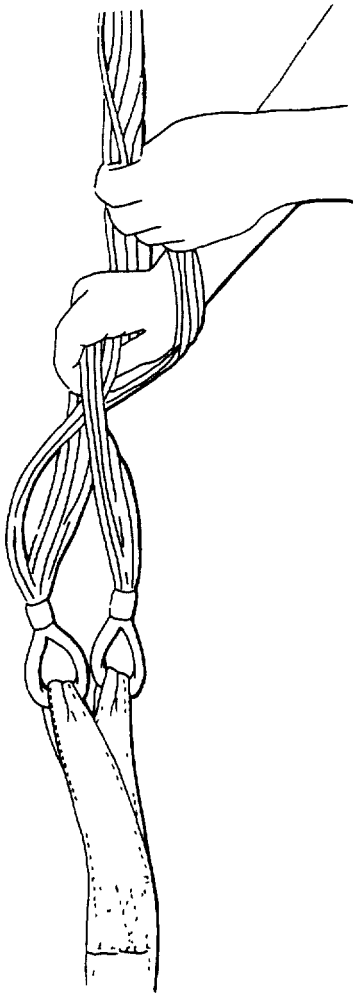


4706-019

Figure 2-12. Removing Turns.

f. *Removing Tangles*. Maintain separation between two line groups and work tangle(s) to a point close to risers. With left hand, select top line(s) forming tangle and lift them away from remaining lines. Reach through formed opening with right hand and pull risers through opening (figure 2-13).

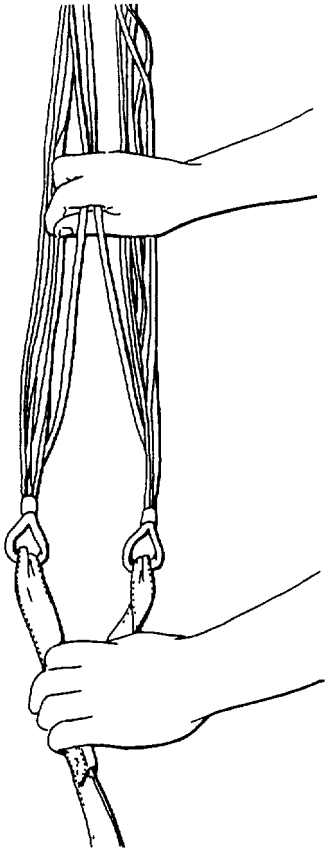
2-16. Packing the 12-Foot Cargo Parachute (cont).



4706-020

Figure 2-13. Removing Tangles.

g. Removing Twists. Grasp top inside suspension lines of canopy skirt and trace these lines down to risers (figure 2-14). Rotate risers between suspension line groups in a direction opposite to that of twist. Attach risers to tension plate.



4706-021

Figure 2-14. Removing Twists.

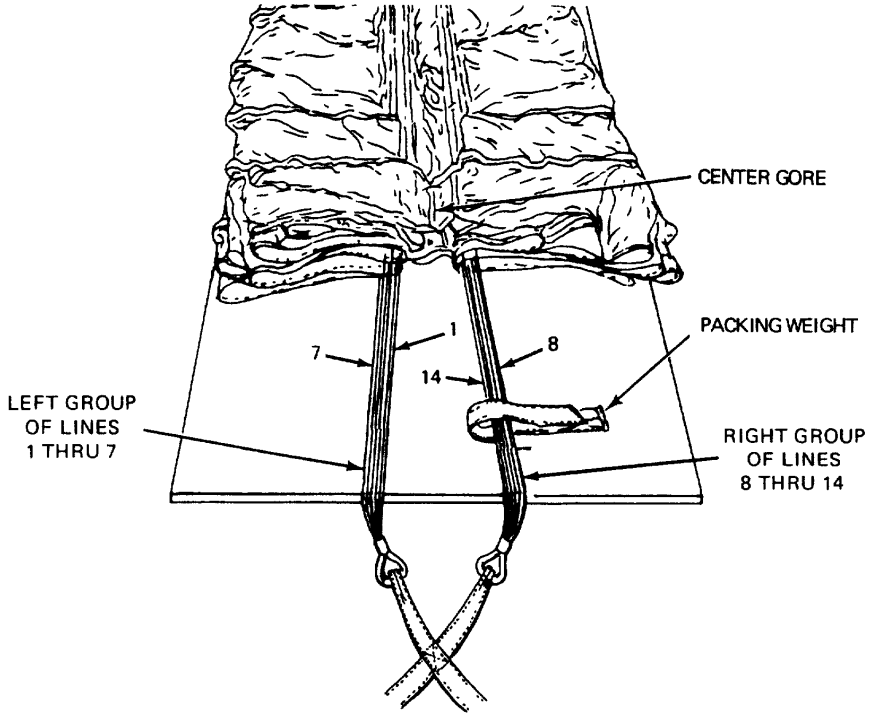
h. Proper Layout.

(1) Locate top center gore of canopy and divide suspension lines into two groups. Lines 1 thru 7 should be in left group, lines 8 thru 14 in right group, lines 1 and 14 should be located on top of their respective group, lines 7 and 8 on bottom (figure 2-15)

(2) Place a packing weight around right group of lines to maintain separation between line groups (figure 2-15).

(3) Check canopy assembly for proper layout by raising top and bottom center gores, and tracing suspension lines to connector loops. Check lines 1, 14, 7 and 8 for proper position (figure 2-15).

2-16. Packing 12-Foot Cargo Parachute (cont).



4706-022

Figure 2-15. Suspension Line Separation.

i. Assembling Components.

NOTE

When the parachute is received from the supply activity and before it is packed for use, the components must be assembled. This must be accomplished during the layout of parachute (para. 2-16c) after removing inversion, turns, tangles or twists, if required. In assembling components, if any component is found to be defective, parachute must be processed for repair. Place components on the packing table and obtain proper layout of canopy assembly; then assemble components in accordance with the following.

(1) *Attaching Deployment Bag*.

NOTE

The canopy is attached to deployment bag attaching loop with either a breakcord or a bag retaining tie.

(a) Attaching deployment bag with breakcord.

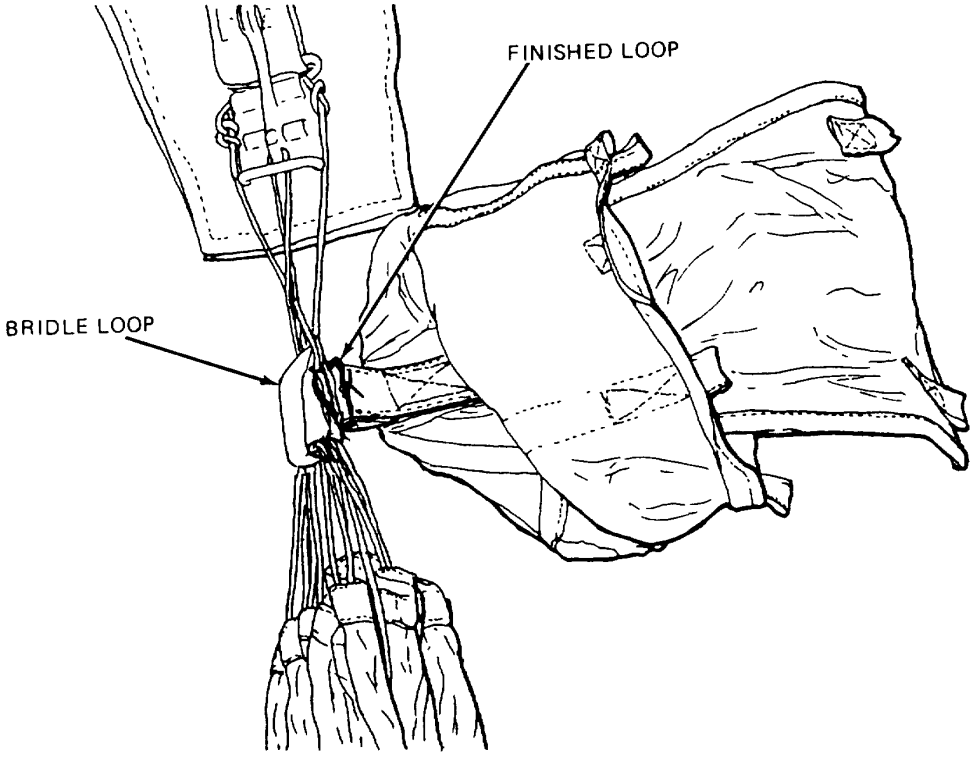
1 Cut a 15 inch-long piece of ticket 8/7 thread, for use as breakcord.

2 Position deployment bag attaching loop (located on inside of bag) adjacent to canopy bridle loop (figure 2-16).

3 Pass one end of breakcord through bridle loop and pull through until center of breakcord length is reached. Pull both ends of centered breakcord taut.

4 Working from opposite directions, pass each end of breakcord through deployment bag attaching loop.

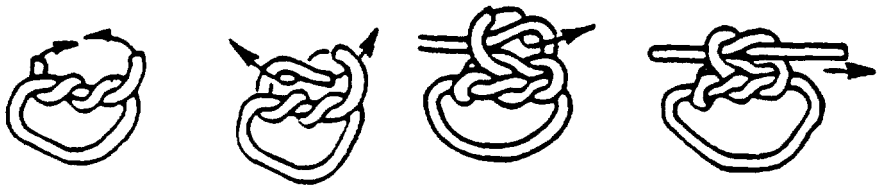
5 Pull two ends of breakcord taut (figure 2-16). Secure two ends over deployment bag attaching loop with a surgeon's knot and locking knot (figure 2-17). Trim end to two inches.



4706-010

Figure 2-16. Attaching Deployment Bag with Breakcord.

2-16. Packing 12-Foot Cargo Parachute (cont).



4706-011

Figure 2-17. Surgeon's Knot.

(b) Attaching deployment bag with retaining tie.

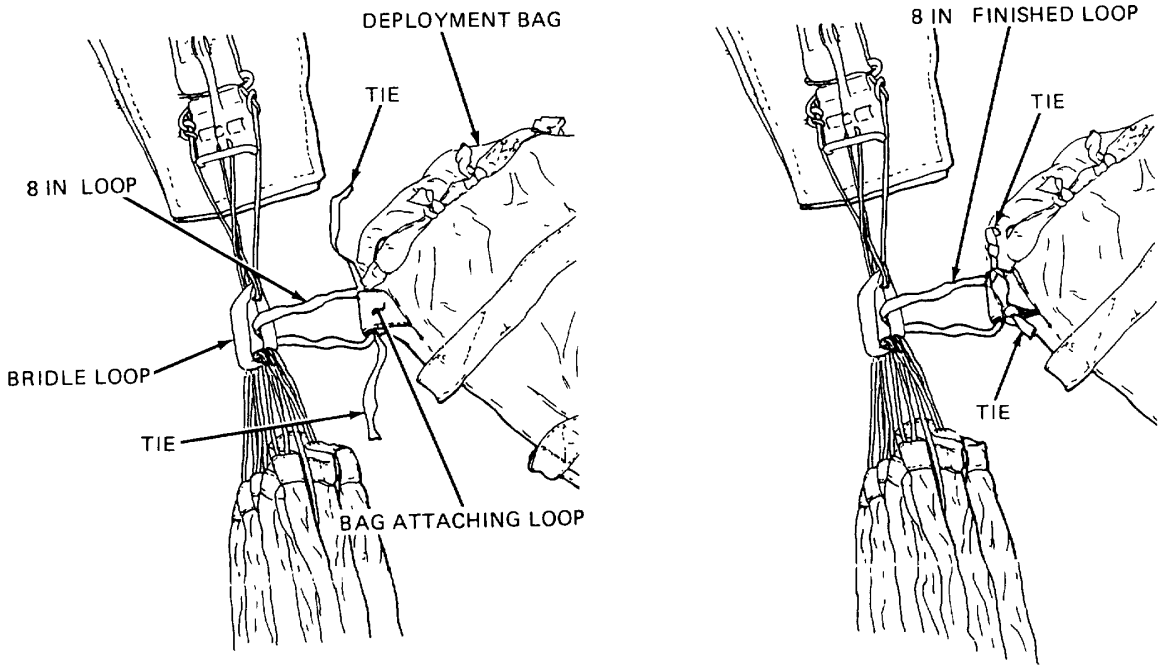
1 Cut a 30 inch length of 1/2 inch wide tubular webbing for use as retaining tie.

2 Position deployment bag attaching loop adjacent to canopy bridle loop.

3 Pass retaining tie through canopy bridle loop and pull tie through evenly. Pull two ends of retaining tie taut (figure 2-18).

4 Working from opposite directions, pass each end of retaining tie through deployment bag attaching loop. Pull end until 8 inch loop is formed in attaching tie between bridle loop and deployment bag attaching loop.

5 Secure two ends over deployment bag attaching loop with a surgeon's knot, as shown in figure 2-17. Make an overhand knot in each running end. Trim end 2 inches from knot.



4706-012

Figure 2-18. Attaching Deployment Bag with Retaining Tie.

(2) *Attaching Static Line*.

(a) Non-breakaway static line

1 If applicable, remove riser clevis from small loop on 15-foot long static line.

2 Pass large loop located on one end of static line through deployment bag main strap attaching loop (A, figure 2-19).

3 Pass opposite end of static line through large loop and draw formed loop tight against main strap attaching loop.

4 Reattach riser clevis to small loop on static line running end and secure clevis with attached clevis pin and safety pin

2-16. Packing 12-Foot Cargo Parachute (cont).

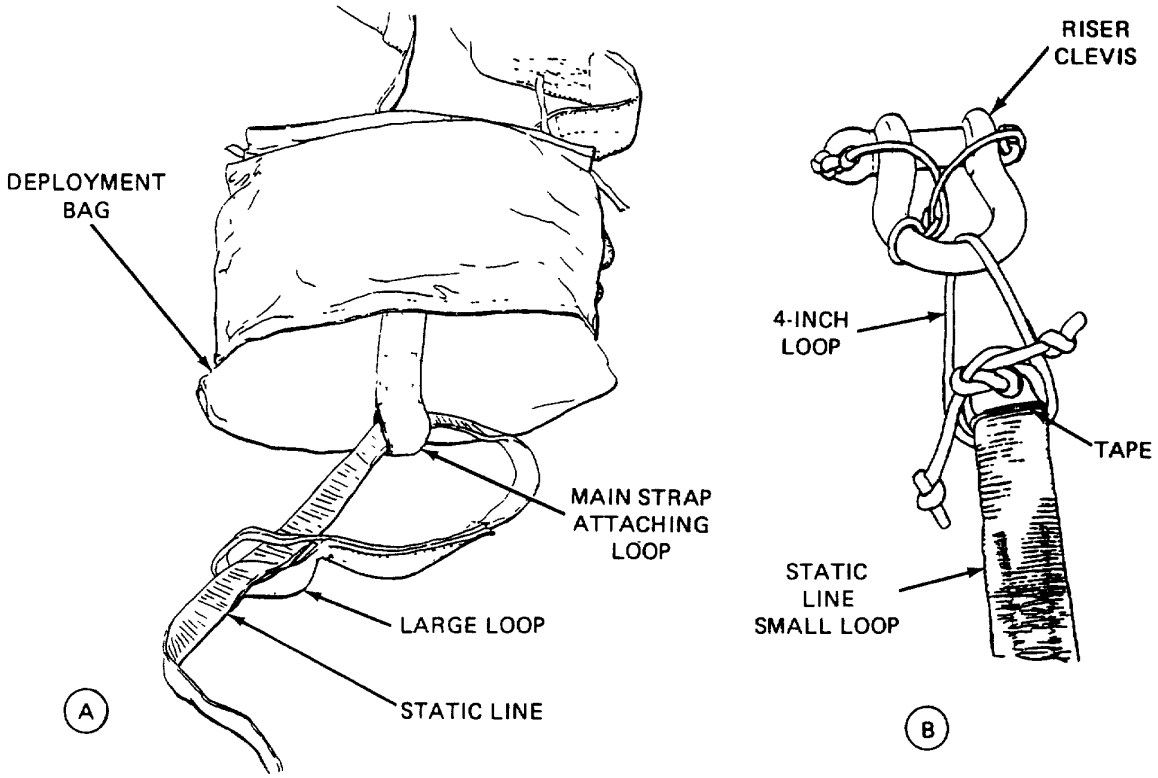


Figure 2-19. Attaching Static Line.

(b) Breakaway static line.

1 Using a 2-1/2 inch length of pressure sensitive tape, make 1-1/2 turns through static line small loop and around small loop end (B, figure 2-19).

2 Cut an 18 inch length of type III nylon cord and remove core threads.

3 Pass one end of cord length through riser clevis body and pull through until center of cord in reached.

4 Working from opposite directions, pass each end of cord through static line small loop. Pull cord ends to form a 4-inch loop.

5 Secure cord ends around static line small loop with a surgeon's knot and locking knot. Make an overhand knot in each cord running end. Trim ends 2 inches from knots (B, figure 2-19).

(3) Preparing deployment bag for stow.

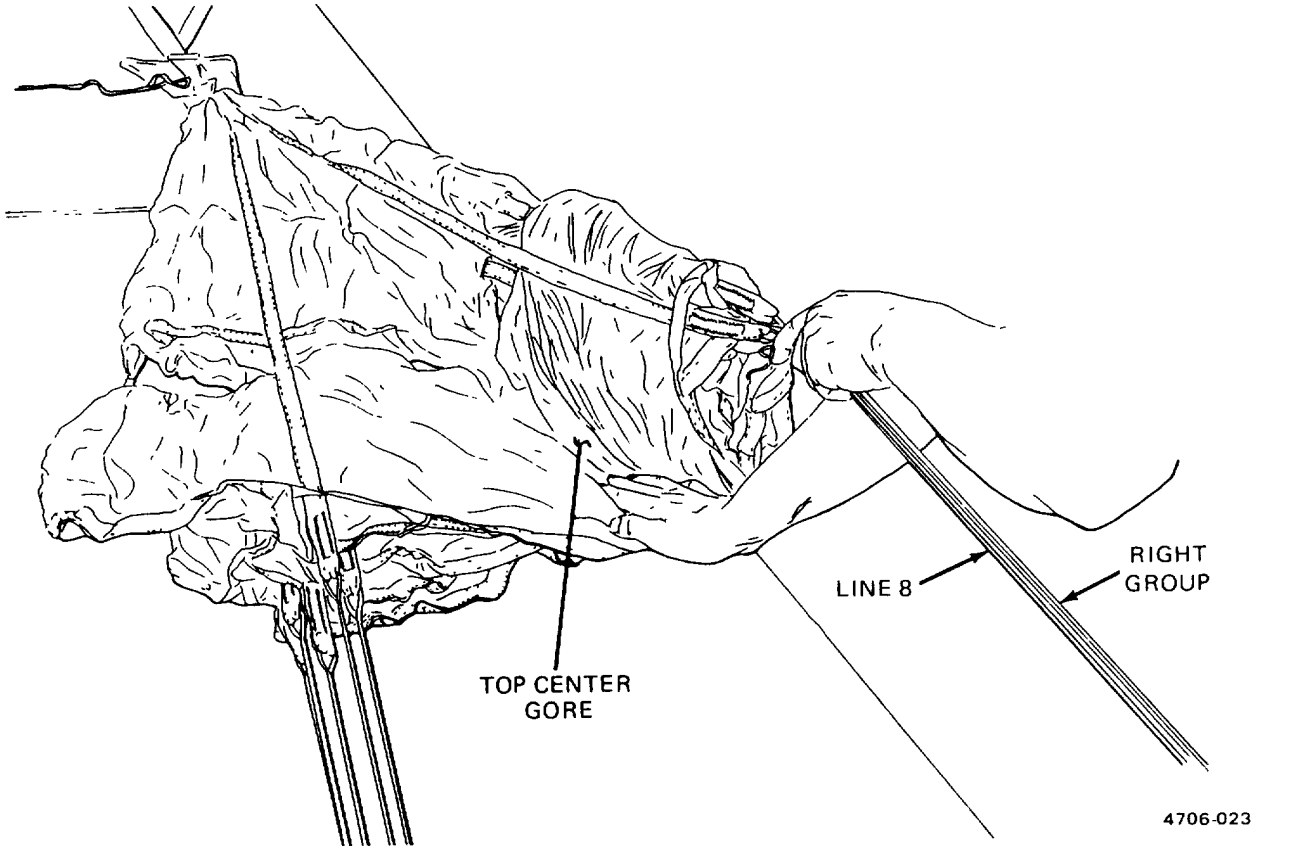
(a) Position deployment bag at top of canopy vent with suspension line retaining straps facing up.

(b) As required, attach rubber retainer bands to two lengths of suspension line retaining straps located on top of bag.

j. Folding the Gores.

(1) Apply tension to canopy assembly.

(2) Pick up right group of suspension lines with left hand. Hold top center gore in position, flip right group of gores over left group of gores (figure 2-20).



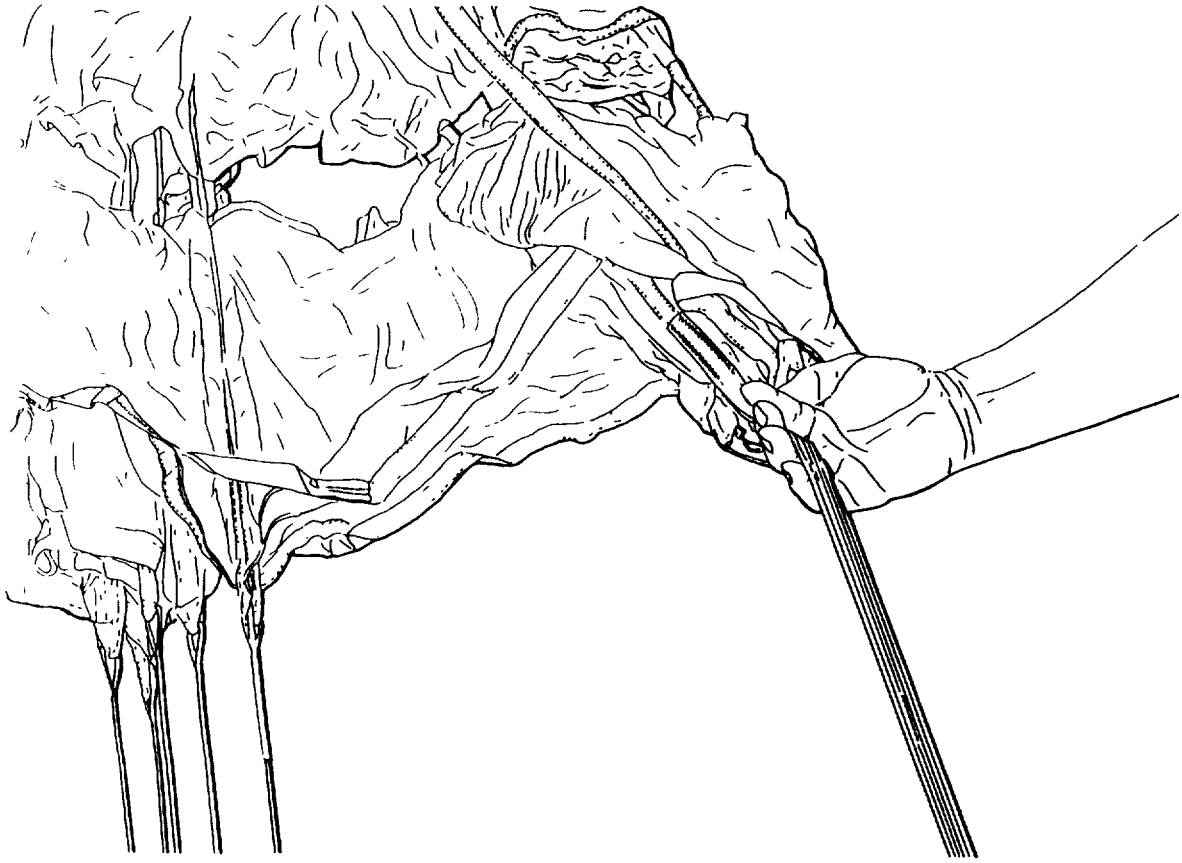
4706-023

Figure 2-20. Flipping Right Gore Group.

2-16. Packing 12-Foot Cargo Parachute (cont).

(3) Beginning with line 8, fold right group of gores.

(4) Using right hand scissors right group of suspension lines between middle and forefingers. Rotate right group one-quarter turn clockwise (figure 2-21).



4706-024

Figure 2-21. Right Gore Group Fold Complete.

(5) Beginning with line 1, fold left group of gores, not including last two gores in group.

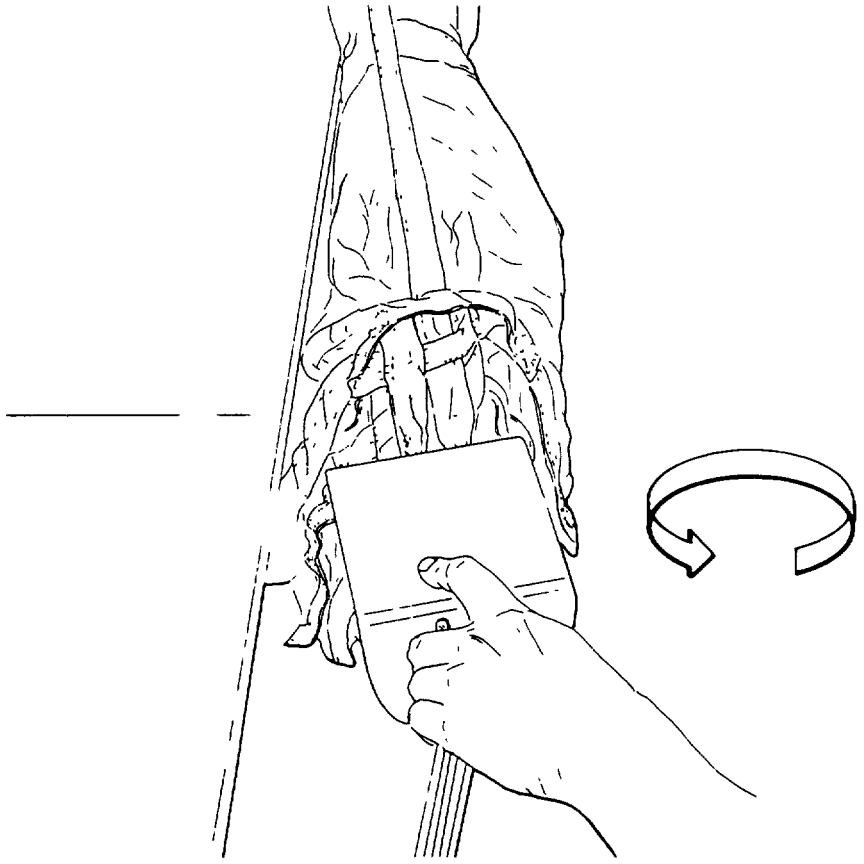
(6) Raise last suspension line of left gore group, drape last gore on left. Drape next to last gore on right. Place last suspension line on top of other lines in left group.

(7) Insert two suspension line groups into line separator, just below canopy skirt

(8) Using left hand, hold line separator and separate suspension lines. Grasp canopy with right hand, pull canopy off right side of table allowing folded gores to drape to side of table (figure 2-22).

(9) Slide canopy back onto table and rotate suspension lines and line separator one-half turn counter-clockwise, allowing separator base to rest on table

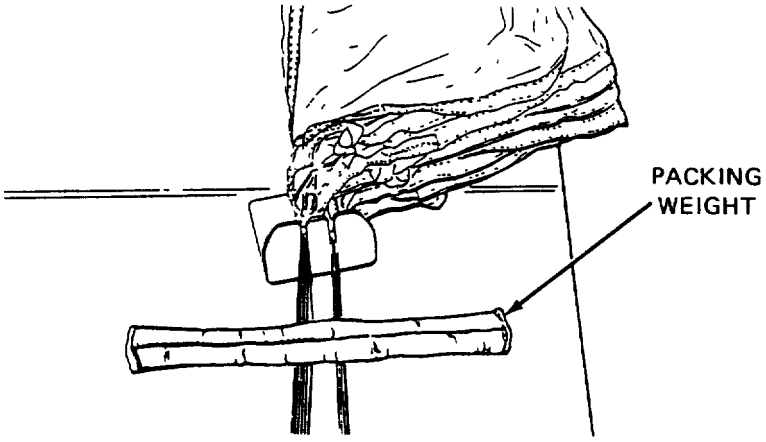
(10) Place packing weight below separator and apply additional tension (figure 2-23).



4706-026

Figure 2-22. Left Gore Group Folding Complete.

2-16. Packing 12-Foot Cargo Parachute (cont).



4706-025

Figure 2-23. Fold Complete, Lines Separated.

(11) To complete canopy flatfold, flip left group of gores to left side and dress gores and skirt reinforcement (lower lateral band). Insure correct number of gores are in each gore group and that a clear channel exists between the two gore groups (figure 2-24).

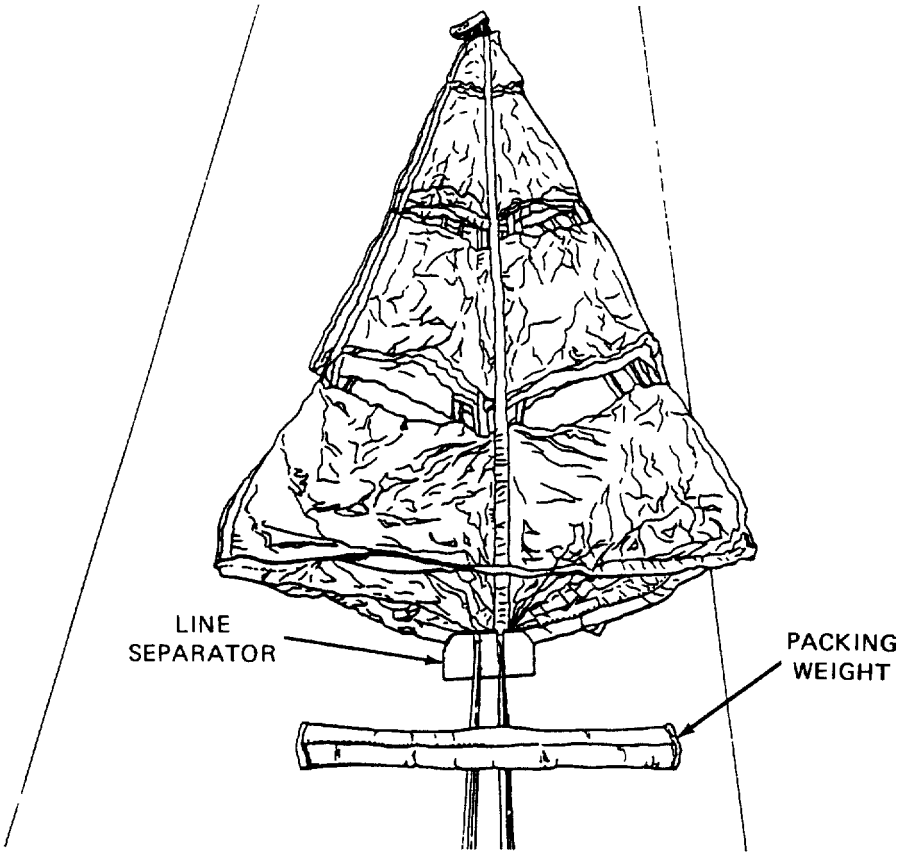
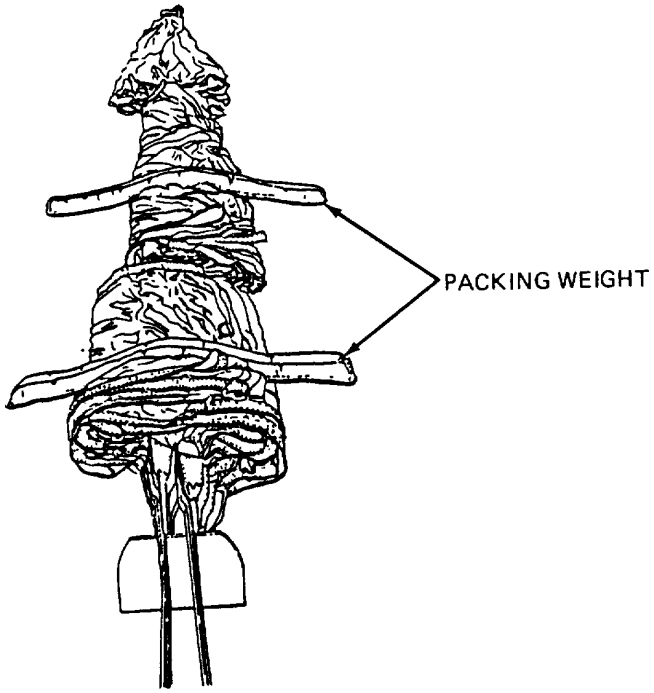


Figure 2-24. Canopy Flatfold.

k. *Longfolding the Canopy*. Longfold canopy to a width equal to width of deployment bag and apply packing weights, as required, to folded canopy material (figure 2-25).



4706-028

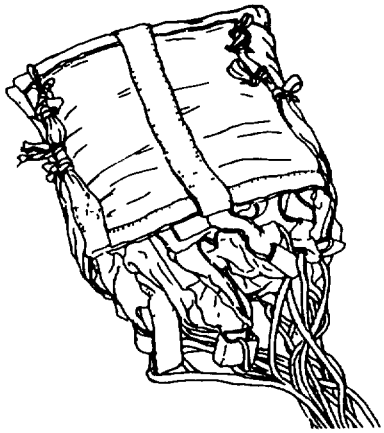
Figure 2-25. Longfold Complete.

I. Stowing the Canopy.

(1) Grasp canopy just below upper lateral band with left hand. Insert canopy vent Into upper right hand corner of deployment bag.

(2) S-fold the canopy into the deployment bag.

(3) Complete canopy stowage with suspension lines extending from center of bag open end (figure 2-26).

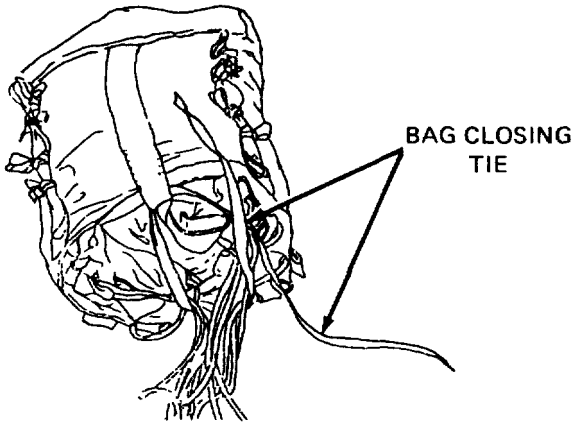


4706-030

Figure 2-26. Canopy Stowage Completed.

2-16. Packing 12-Foot Cargo Parachute (cont).

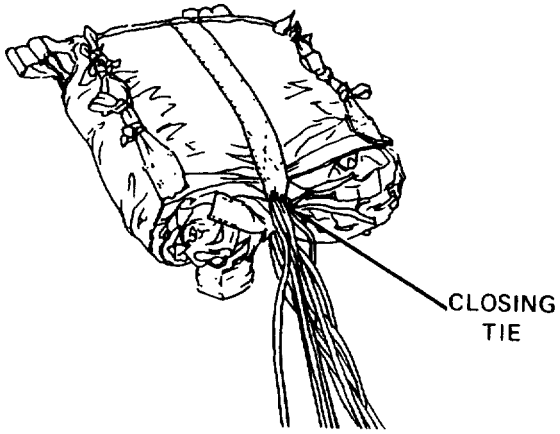
(4) Using a 24 inch length of 1/4 inch wide cotton webbing, make a one turn single bag closing tie by tying top and bottom center bag tie loops around extended suspension lines (figure 2-27).



4706-031

Figure 2-27. Installing Bag Closing Tie.

(5) Secure tie with a surgeon's knot and a locking knot. Trim ends to 2 inches (figure 2-28).

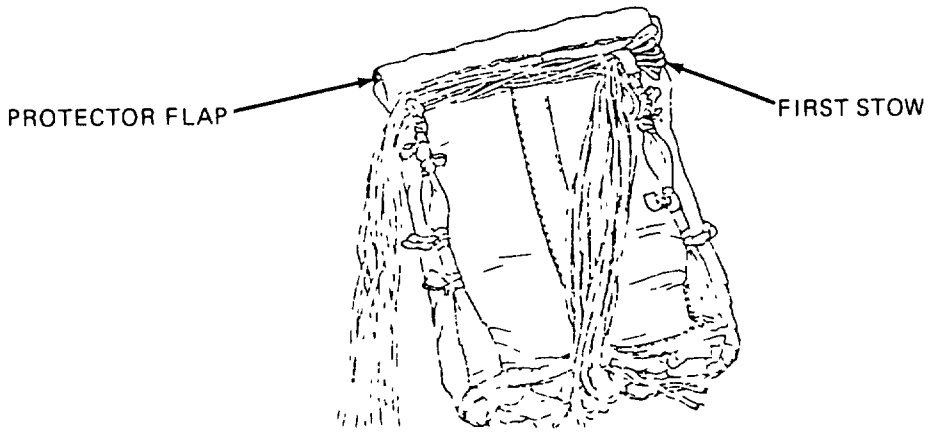


4706-032

Figure 2-28. Closing Tie Completed.

m. Stowing Suspension Lines.

(1) Form and make first suspension line stow at upper right corner of deployment bag. Secure stow with a rubber retaining band (figure 2-29)



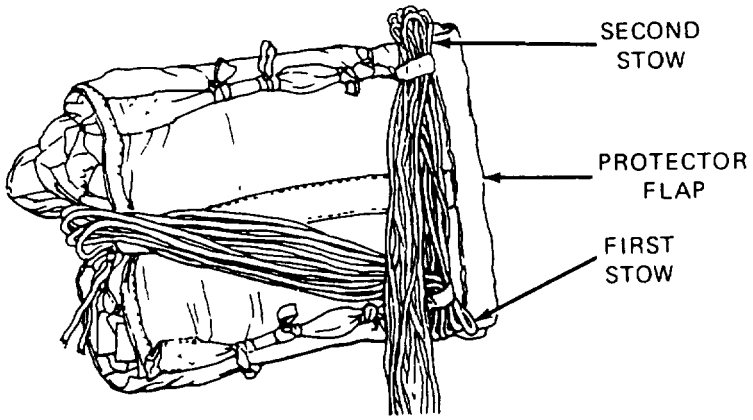
4706-033

Figure 2-29. First Suspension Line Stow

NOTE

The width of stows will not exceed the width of the suspension line protector flap.

(2) Extend suspension lines to left side of bag. Form and make second suspension line stow at upper left corner of bag, simultaneously rotating bag one-quarter turn clockwise. Secure stow with a rubber retaining band (figure 2-30).

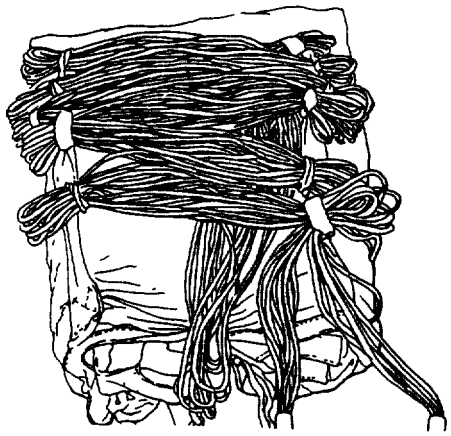


4706-034

Figure 2-30. First and Second Suspension Line Stows Completed.

2-16. Packing 12-Foot Cargo Parachute (cont).

(3) Working from right to left and moving bag toward tension plate, stow remaining suspension lines securing each stow with a rubber retaining band, making last stow at a point 5 Inches from riser connector loops (figure 2-31).



4706-035

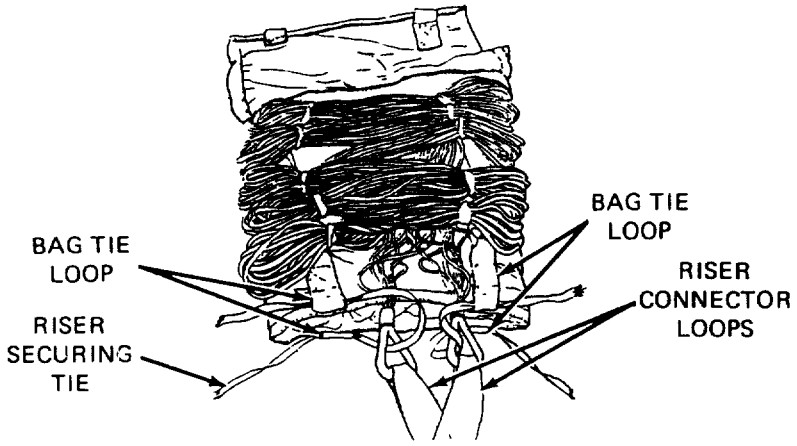
Figure 2-31. Suspension Line Stow Complete.

n. Riser Securing Ties.

(1) Position riser connector loops at a point immediately below open end of bag.

(2) Cut two 18 inch lengths of 1/4 inch wide cotton webbing for use as tie material.

(3) Working in a counterclockwise direction, thread one 18 inch webbing length through the left bottom bag tie loop, through the left riser connector loop and through the left top bag tie loop (figure 2-32).



4706-036

Figure 2-32. Riser Securing Ties.

(4) Working In a clockwise direction, thread second 18 inch length through right bottom bag tie loop, through right riser connector loop and through right top back loop.

(5) Close suspension line protector flap over stowed suspension lines (A, figure 2-33).

(6) Pass one running end of left riser securing tie through protector flap left tie loop and secure riser securing tie running ends with a surgeon's knot and a locking knot. Trim ends to 2 inches (B, figure 2-33).

(7) Secure protector flap right tie loop using procedures in (6) above

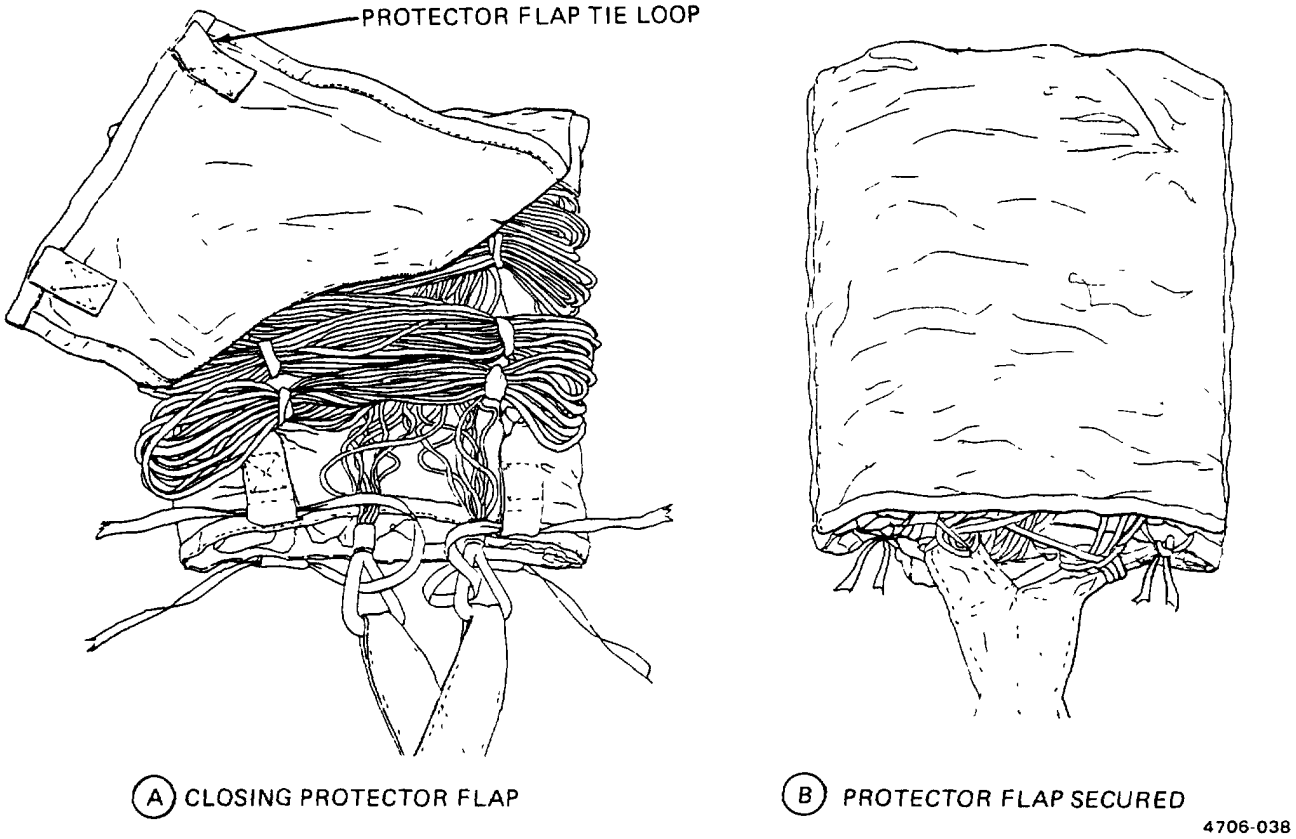


Figure 2-33. Suspension Line Protector Flap Closed and Secured

o. Completing the Pack

(1) Remove log record (DA Form 10-42 or DA Form 3912) from the parachute inspection data pocket (log record pocket) located on the riser

(2) Make entries on the "Jump, Inspection and Repack Data" page as follows:

(a) Date. Enter the day, month and year of each packing action

(b) Bag number. Indicate whether breakaway or non-breakaway static line attachment.

2-16. Packing 12-Foot Cargo Parachute (cont).

(c) Routine inspection. No entry required.

(d) Jumps or dropped No entry required.

(e) Repack For initial packing, enter "IN "; thereafter, enter a check mark in the column each time the parachute is repacked.

(f) Packer's name The packer performing the packing will sign this entry.

(g) Inspector's name. The inspector who has performed the pack-in-process inspection will sign this entry.

(h) Unit. Enter the unit designation to which the packer and/or inspector are assigned.

(3) Return the log record to the log record pocket upon completion of the entries.

(4) Extend risers over bag to upper edge of bag and make a fold back in risers which will allow risers devises to be positioned at open end of bag (figure 2-34).

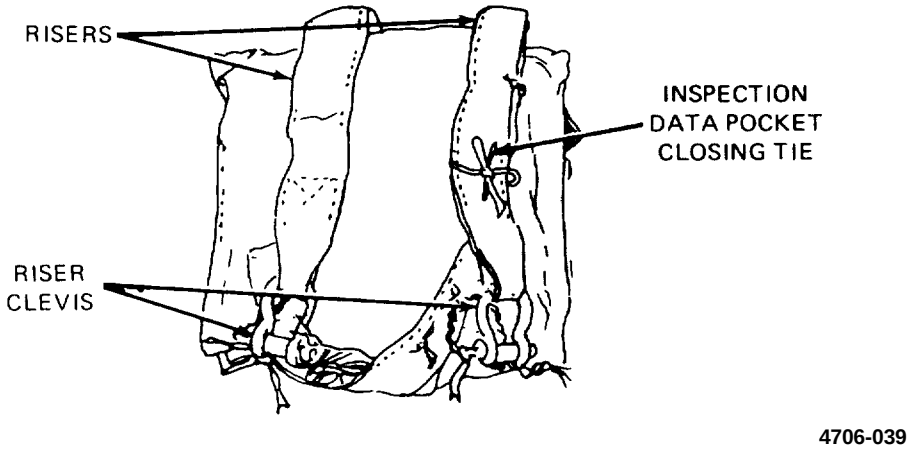
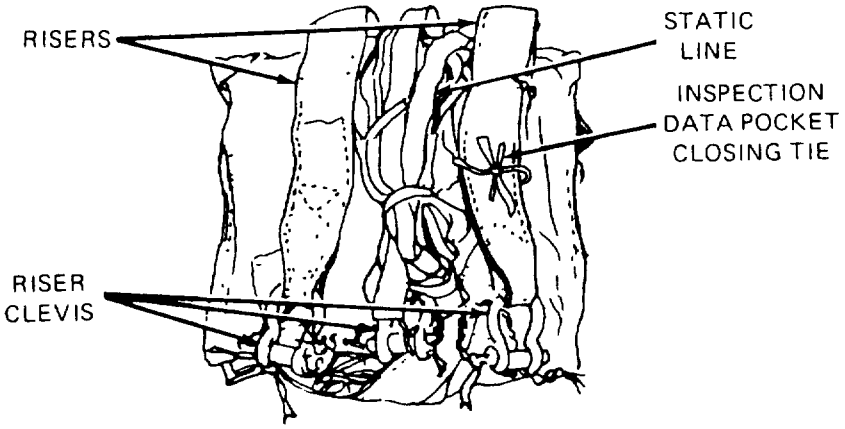


Figure 2-34. Stowed Risers.

(5) S-fold static line length, making folds equal to length of deployment bag (figure 2-35).



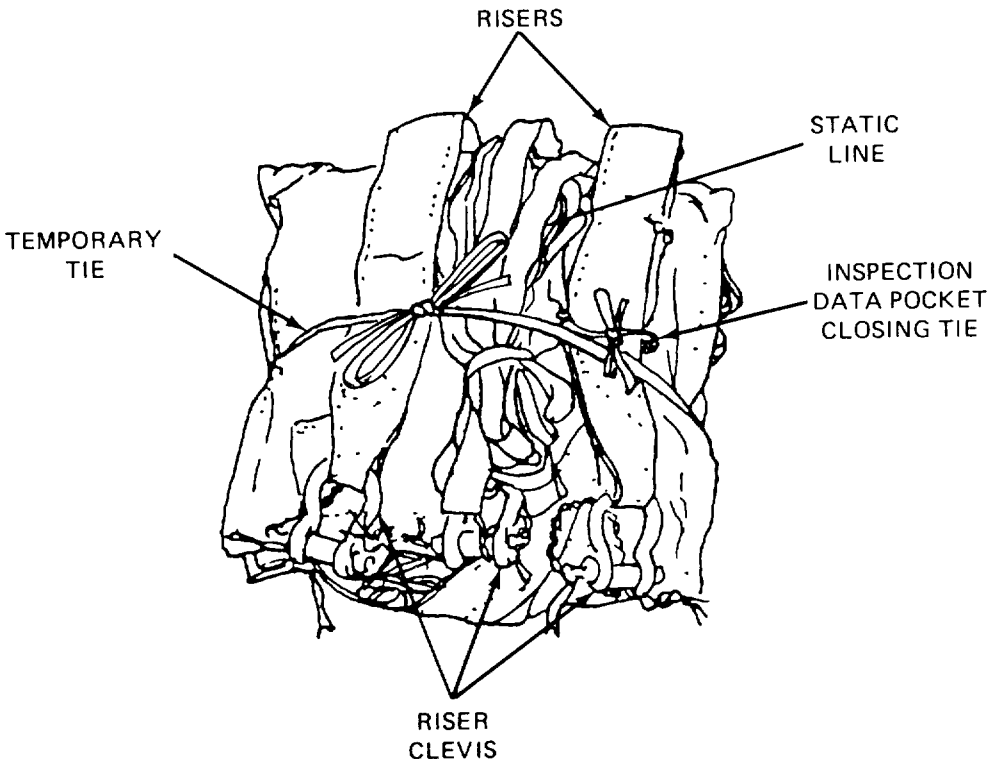
4706-040

Figure 2-35. Stowed Static Line.

(6) Secure static line S-folds at one end with a rubber retaining band

(7) Place folded static line between folded risers.

(8) Using a 36-inch length of 1/4-inch wide cotton webbing, pass one end around deployment bag and secure stowed risers and static line by making a bow knot (figure 2-36)



4706-041

Figure 2-36. Parachute Pack Completed.

SECTION VI. REPAIR

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.

2-17. Repair - Sewing Procedures.

This task covers:
a. Basting and Temporary Tacking
b. Stitching and Restitching
c. Darning
d. Zig-Zag Sewing

Tools:	*Personnel Required:*
Specified in paragraph applicable to the Item being repaired.	43E(10) Parachute Rigger
Materials/Parts:	*Equipment Condition:*
Specified in paragraph applicable to the item being repaired.	Unpacked. Canopy with defects recorded and clean.

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) On small cargo parachute canopies, basting will be made using a single strand of size A nylon thread or ticket No. 24 cotton thread.

(3) When basting, do not tie knots at any point in the thread length. Also, the sewing should be made with two stitches per Inch.

(4) Temporary tacking will usually be made using a length of size E nylon thread. However, an alternate type thread may be specified within the paragraph applicable to the item.

(5) Immediately upon completion of a repair, remove previously made basting or temporary tacking stitches.

2-17. Repair - Sewing Procedures (cont).

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. Zigzag stitching does not require locking; however, zigzag 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 3530-01-181-1421.
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.

Table 2-3. Stitching and Restitching Specifications.

Component	Recommended sewing machine(code symbol)	Stitches per inch	Thread size
Canopy			
Gore section	LD DN	7 to 11 Darn	E E

Table 2-3. Stitching and Restitching Specifications (cont)

Component	Recommended sewing machine(code symbol)	Stitches per inch	Thread size
Skirt reinforcement tape (lower lateral band)	LD	7 to 11	E
Radial tape	LD	7 to 11	E
Suspension line	ZZ	7 to 11	E
Bridle loop	HD	5 to 8	6
Suspension line attaching loop	LD ZZ	7 to 11 7 to 11	E E
Vent line	ZZ	7 to 11	E
Pocket band	ZZ	7 to 11	E
Riser	HD	5 to 8	3
Parachute inspection data pocket	MD ZZ	7 to 11 7 to 11	E E
Tie cord loop	ZZ	7 to 11	E
Tie cord	ZZ	7 to 11	E
Vent reinforcement tape (upper lateral band)	LD	7 to 11	E
Vertical tape	LD	7 to 11	E
Deployment Bag			
Attaching loop	LD	7 to 11	E
Main strap	LD	7 to 11	E
Retaining stow loop strap	LD	7 to 11	E
Tie loop	LD	7 to 11	E
Panels and flaps	LD	7 to 11	E
	DN	Darn	E
Static Line			
Line webbing	ZZ	7 to 11	E

2-17. Repair - Sewing Procedures (cont).

(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 112 inch. Restitching should be locked by overstitching each end of the stitch formation by 112 inch. Zigzag stitching does not require locking; however, zigzag restitching should extend at least 114 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. A darning repair may be made either by hand or sewing machine, depending upon the method preferred and the availability of equipment. However, 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, as appropriate:

(1) *Machine darning*. Proceed as follows:

(a) 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.

(b) 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 2-37).

(c) Turn the material and stitch back and forth across the stitching made in (b) above until the hole or tear is completely darned (A, figure 2-37).

(d) If applicable, re-stencil informational data, gore number(s), or identification marks using the criteria in paragraph 2-19.

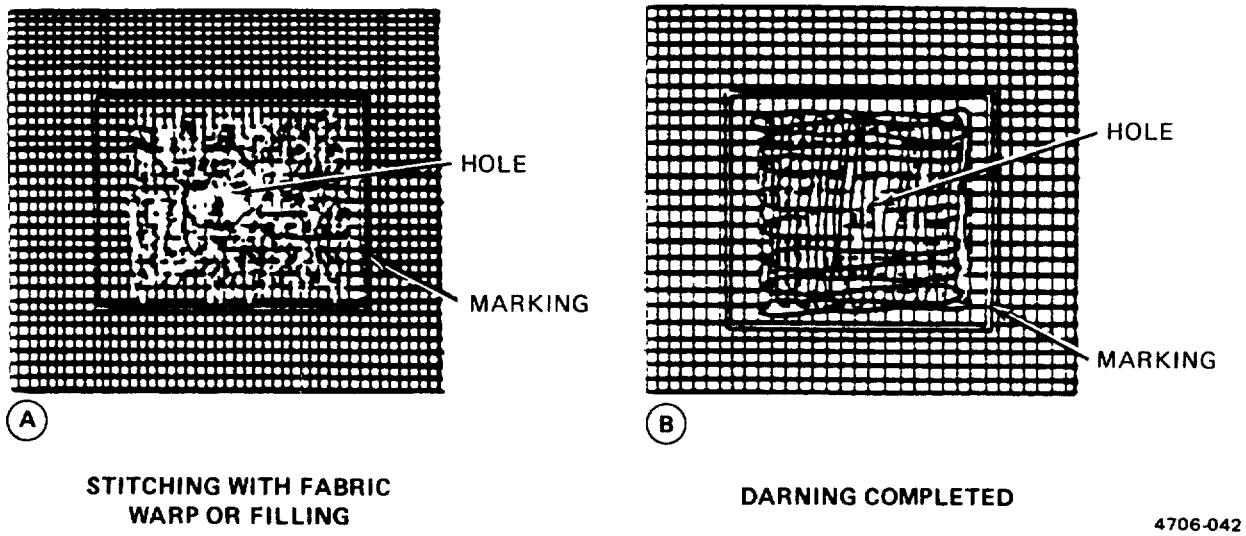


Figure 2-37. Darning Method Using a Darning Sewing Machine.

(2) *Hand darning*. When repair of a hole or tear is made by hand darning, the darn should match the original weave of the damaged material as closely as possible. Hand darning will be performed as follows:

(a) Using an authorized marking aid of contrasting color, mark a square around the damaged area and ensure that the marking is at least 114 inch back from each edge of the damaged area. The marking will be made with the warp and the filling of the material.

(b) Using a darning needle and a length of size A or E nylon thread, begin darning at one corner of the marked area Working in the direction of the fabric warp or filling, pass the needle and thread back and forth through the material until the opposite diagonal corner of the marked area is reached. (A, figure 2-38).

(c) Turn the material and weave the needle and thread back and forth across the stitching made in (b) above until the hole is completely darned (B, figure 2-38).

(d) If applicable, re-stencil informational data or identification marks as outlined in paragraph 2-19.

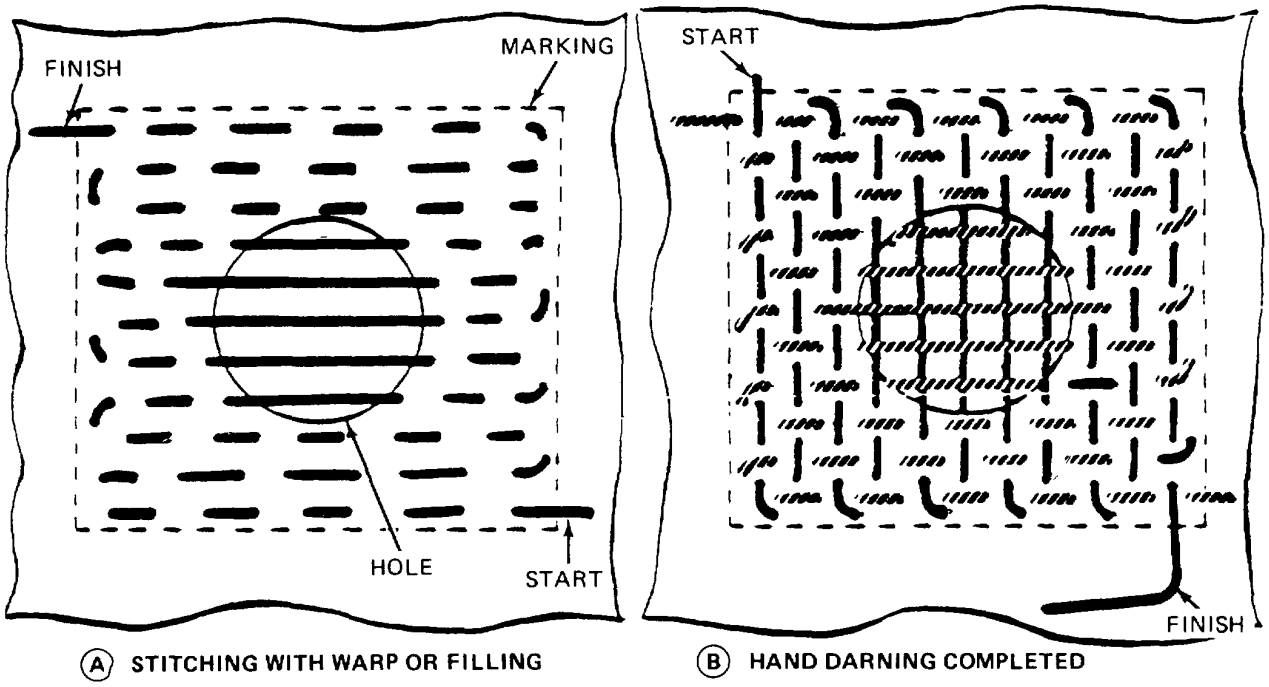


Figure 2-38. Hand Darning Method.

2-17. 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 using 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 2-39). The cited stitching procedure will also apply to an L-shaped cut or tear (B, figure 2-39).

(3) If applicable, re-stencil informational data or identification marks as prescribed in paragraph 2-19.

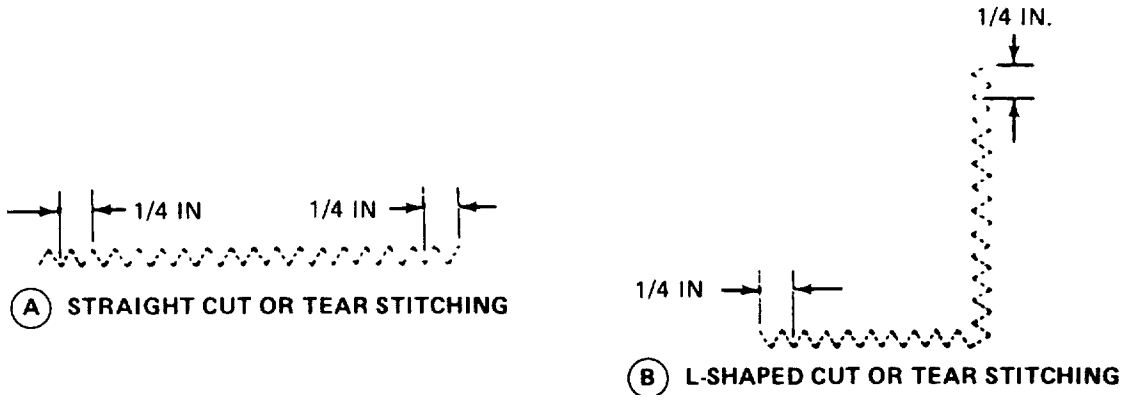


Figure 2-39. Repair Method Using a Zig-Zag Sewing Machine.

2-18. Searing and Waxing.

This task covers: a. Searing b. Waxing

Tools:

Knife; Metal, Hot, Item 8, Appendix B
Pot, Electric, Melting, Item 9, Appendix B

Materials/Parts:

Beeswax, Item 2, Appendix D
Wax, Paraffin, Item 35, Appendix D

Personnel Required.

43E(10) Parachute Rigger

Equipment Condition:

Unpacked

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 insure the wax completely penetrates the material rather than just coating the exterior fabric.

2-19. Marking and Restenciling.

This task covers: a. Marking b. Restenciling

Materials/Parts-

Brush, Stenciling, Item 4, Appendix D
Ink, Marking, Item 14, Appendix D
Marker, Felt Tip, Black, Item 16, Appendix D
Pen, Ball Point, Item 19, Appendix D
Stencil board, Oiled, Item 22, Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Layout on packing table or other suitable area.

NOTE

Stenciling should be used whenever possible. A ball point 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 are removed as a result of performing a repair procedure will be remarked with a ball point pen, felt tip marker, or re-stenciled. All marking or re-stenciling 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 device, such as ball point 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 stencil board to original lettering type and size of data to be re-stenciled.

(2) Place cut stencil board over, or as near as possible to, original marking to be re-stenciled.

(3) Place additional sheet of stencil board beneath the area to be re-stenciled to prevent the marking ink from penetrating to other areas.

(4) Hold stencil board in place and, using stenciling brush filled with parachute marking ink, re-stencil original marking.

c. *Remarking and Restenciling*. Remark or re-stencil 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 re-stenciling is on, or as near as possible to, the original location and conforms to the original lettering type and size.

2-20. Parachute Canopy.

This task covers: a. Repair b. Replacement

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-12)
Unpacked, canopy laid flat

Reference:

Group 01, MAC, Section II, Appendix B

a. *Repair.* Refer to individual component/assembly repairs and replacement procedures.

b. *Replace.* Replace an unrepairable parachute with a serviceable parachute canopy from stock.

2-21. Bridle Loop.

This task covers: a. Repair b. Replace

Tools:

Sewing Machine, Heavy Duty (Table 2-2)

Materials/Parts:

Thread, Nylon, Size 6, Item 33/34, Appendix D
Webbing, Cotton, Type VIII, Item 38, Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-12)
Unpacked, canopy laid flat

Reference:

Group No. 0101, MAC, Section II, Appendix B

a. *Repair.* Repair a bridle loop requiring restitching as follows.

(1) Use a heavy-duty sewing machine to restitch any loose or broken stitches.

(2) Restitch over original stitch pattern using nylon thread, size 6. Overstitch 1/2 inch to lock stitches.

b. *Replace.* Replace a damaged or missing bridle loop by fabricating as follows:

(1) Cut a 10-inch length of cotton webbing, type VIII, wax ends of webbing (para 2-18).

(2) Pass one end of webbing through all canopy vent lines. Join both webbing ends together with a 2-inch overlap (figure 2-40)

(3) Begin at a point 1/4 inch from one overlapped webbing end. Use a heavy duty sewing machine to secure overlapped ends. With nylon thread, size 6, stitch a 1-1/2 inch long, single-X box stitch, 5 to 8 stitches per inch.

(4) Cut and remove damaged bridle loop.

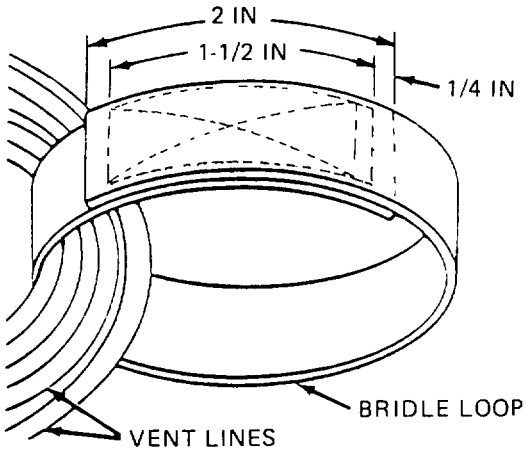


Figure 2-40. Bridle Loop Replacement Details.

2-22. Vent Lines.

This task covers: a. Repair b. Replace

Tools:

Sewing Machine, Zig-Zag (Table 2-2)

Materials/Parts:

Cord, Nylon, Type II, Item 12, Appendix D
Thread, Nylon, Size E, Item 29/30, Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-12)
Unpacked, canopy in proper layout.

Reference:

Group No. 0102, MAC, Section II, Appendix B

a. Repair. Repair vent lines requiring restitching, as follows:

(1) Use a zig-zag sewing machine to restitch any loose or broken stitches.

(2) Restitch over original stitch pattern using nylon thread, size E. Overstitch 112 inch to lock stitches.

b. Replace. Replace missing or damaged vent lines as follows:

(1) Place canopy in proper layout on table and trace damaged vent line from one end of original vent line to other end. Using suitable marker, mark canopy at each end of vent line.

(2) Remove damaged vent line by cutting stitching that holds line to canopy at both sides of apex.

(3) Cut a 14-Inch length of type II, nylon cord. Sear or dip ends of cord (para. 2-18).

(4) Position one end of new vent line In exact location formerly occupied by end of old line (figure 2-41).

NOTE

Measuring from the outside edge of the upper lateral band, the vent line should extend 2 inches into radial seam.

(5) Using a zig-zag sewing machine and nylon thread, size E, stitch new line In place. Begin stitching on line 1/4 inch above upper edge of vent reinforcement tape and sew to 1/4 Inch beyond end of line, 7 to 11 stitches per Inch and 1/8 Inch wide (figure 2-41).

(6) Pass remaining end of line under other vent lines, and through bridle loop as required

(7) Position and sew remaining end of line to opposite side of canopy as In steps (4) and (5) above.

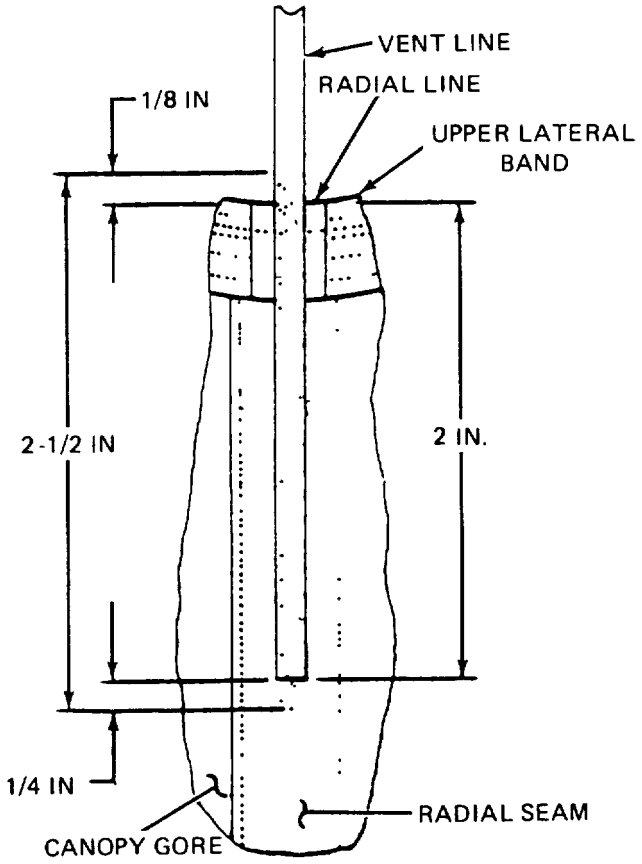


Figure 2-41. Vent Line Replacement Details.

2-23. Vent Reinforcement Tape (Upper Lateral Band).

This task covers: Repair

Tools:

Sewing Machine, Light Duty (Table 2-2)

Materials/Parts:

Tape, Nylon, Type III, 314-inch, Item 25, Appendix D
Thread, Nylon, Size E, Item 29130, Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-12)
Unpacked (canopy laid flat)

Reference:

Group No. 0103, MAC, Section II, Appendix B

a. *Restitching*. Restitching of vent reinforcement tape 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 tapes 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 314 inch nylon tape, long enough to extend 1 inch beyond outside edge of second radial seam on each side of damaged area. Sear or dip ends of tape (para 2-18).

(4) Position webbing on damaged area. Use a light duty sewing machine and size E, nylon thread to stitch Sew webbing in place with two continuous rows of stitching 118 inch from edge of tape, 7 to 11 stitches per inch. Overstitch ends of webbing 2 inches (A, figure 2-42).

(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.

(3) Cut a piece of 3/4 inch nylon tape long enough to extend 1 Inch beyond outside edge of second radial seam on each side of damaged area Sear or dip ends of tape (para. 2-18).

(4) Position tape on damaged area. Use a light duty sewing machine and size E nylon thread to stitch. Sew webbing in place with two continuous rows of stitching, 1/8 inch from edge of tape, 7 to 11 stitches per inch Overstitch ends of tape 2 inches (B, figure 2-42).

(5) Reposition vent lines and sew in place according to original construction.

2-23. Vent Reinforcement Tape (Upper Lateral Band) (cont).

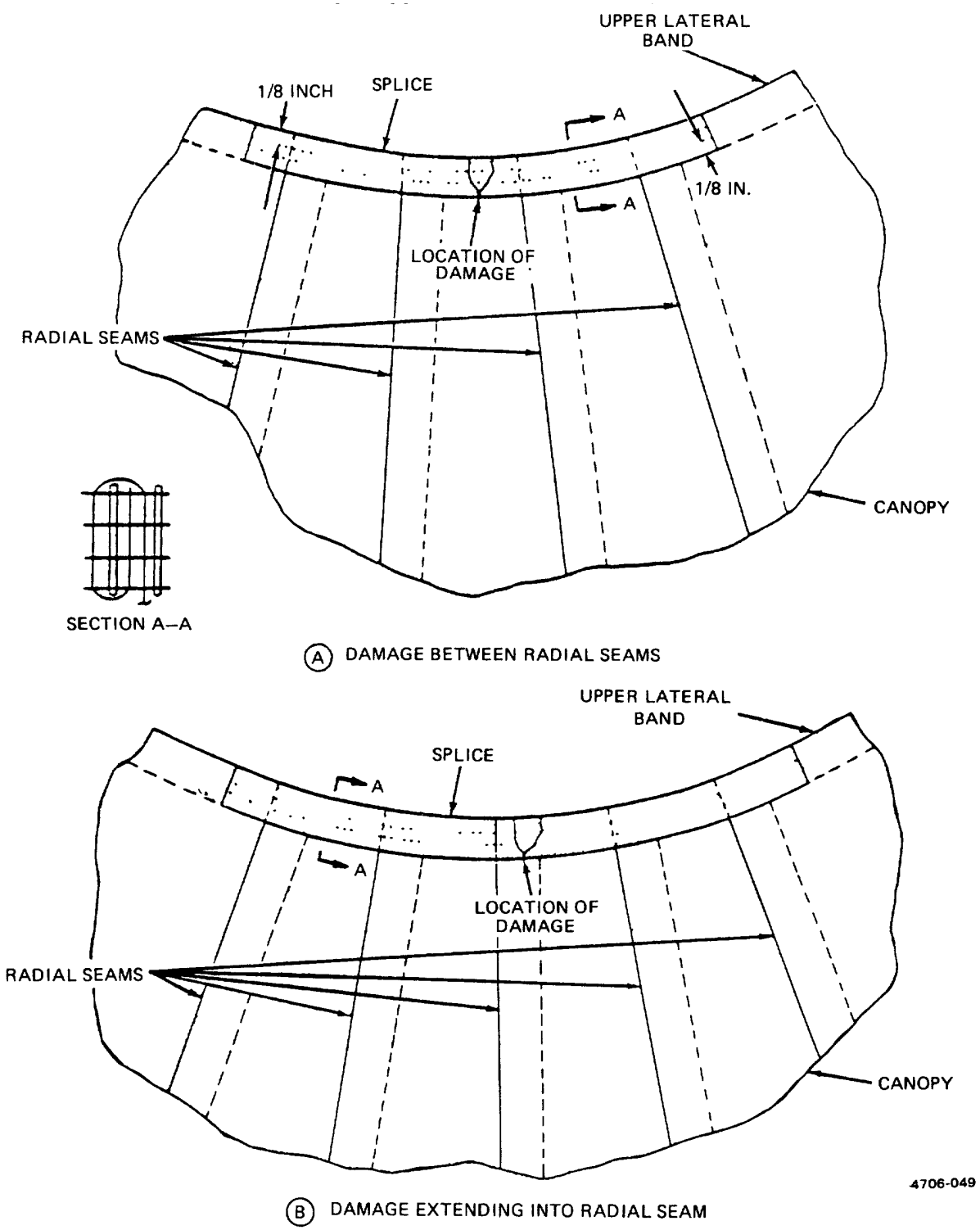


Figure 2-42. Vent Reinforcement Tape Splicing Details.

2-24. Gore Section.

This task covers: a. Repair b. Replace

Tools:

Iron, Household, Item 10, Appendix B
Sewing Machine, Light Duty (Table 2-2)
Sewing Machine, Zig-zag (Table 2-2)

Materials/Parts:

Cloth, Cotton, Item 7/8, Appendix D
Cloth, Cotton Balloon, Coated, Item 6, Appendix D
Thread, Nylon, Size E, Item 29130, Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Parachute laid out on table

Reference:

Group No. 0104, MAC, Appendix B, Section II

NOTE

Repair and/or replacement of a gore section is accomplished at the Intermediate (DS) maintenance level only, in accordance with the Maintenance Allocation Chart (MAC), Appendix B, Section II.

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. 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.

(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 2-17, using size E nylon thread. There is no limit to the number of darns which may be made on a gore section.

(3) *Patching.* Use a patch to repair holes which exceed 3/4 inch in length or diameter using either the sewn patch or the pressure sensitive patch (iron-on) methods

(a) *Limitations.* The following limitations apply to the 12 foot cargo parachute.

WARNING

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

2-24. Gore Section (cont).

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 as to 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) *Sewn patches.* There are two types of sewn patches authorized, the basic and miscellaneous. A basic patch is used to repair damaged cloth when the affected area is no closer than 1 inch from a radial tape, vent reinforcement tape or skirt reinforcement tape Should a damaged area be closer than 1 inch to the cited areas, a miscellaneous patch will be made.

NOTE

Sewn patches on the canopy will be applied to the inside and may be square or rectangular in shape

When a miscellaneous canopy patch is used, cut stitching and remove or lay aside items which may interfere with patch application. Refer to applicable item repair paragraph for proper procedures.

1 Using an authorized marking aid of contrasting color, mark a square or rectangle around area to be patched and insure one side of marked square or rectangle is parallel to warp or filling of fabric.

2 Cut damaged area fabric along lines made in 1 above. Further cut fabric diagonally at each corner to allow a 1/2 inch fold back in raw edges. Cut stitching and lay aside or remove any item which will interfere with miscellaneous patch application.

3 Make 1/2 Inch fold back on each raw edge. Pin and baste each fold back to complete prepared hole. Basting will be performed using procedures in paragraph 2-17a.

4 Using 3.8 ounce muslin cloth, mark and cut a patch 2-1/2 inches wider and longer than Inside measurements of prepared hole. Insure patch material is marked and cut along warp or filling of fabric.

5 Center patch material over prepared hole and insure warp or filling of patch material matches warp or filling of fabric being patched. Pin patch material in position.

6 Make 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 2-17a.

7 Remove pushpins securing item to the repair table and secure patch by stitching, using the applicable details in figure 2-43 and stitching specifics outlined in table 2-3. Make first row of stitching completely around patch Invert canopy and make a second row of stitching around prepared hole. Stitching will be performed in accordance with paragraph 2-17.

8 Replace Items removed for miscellaneous patch, as required, in accordance with applicable item procedures

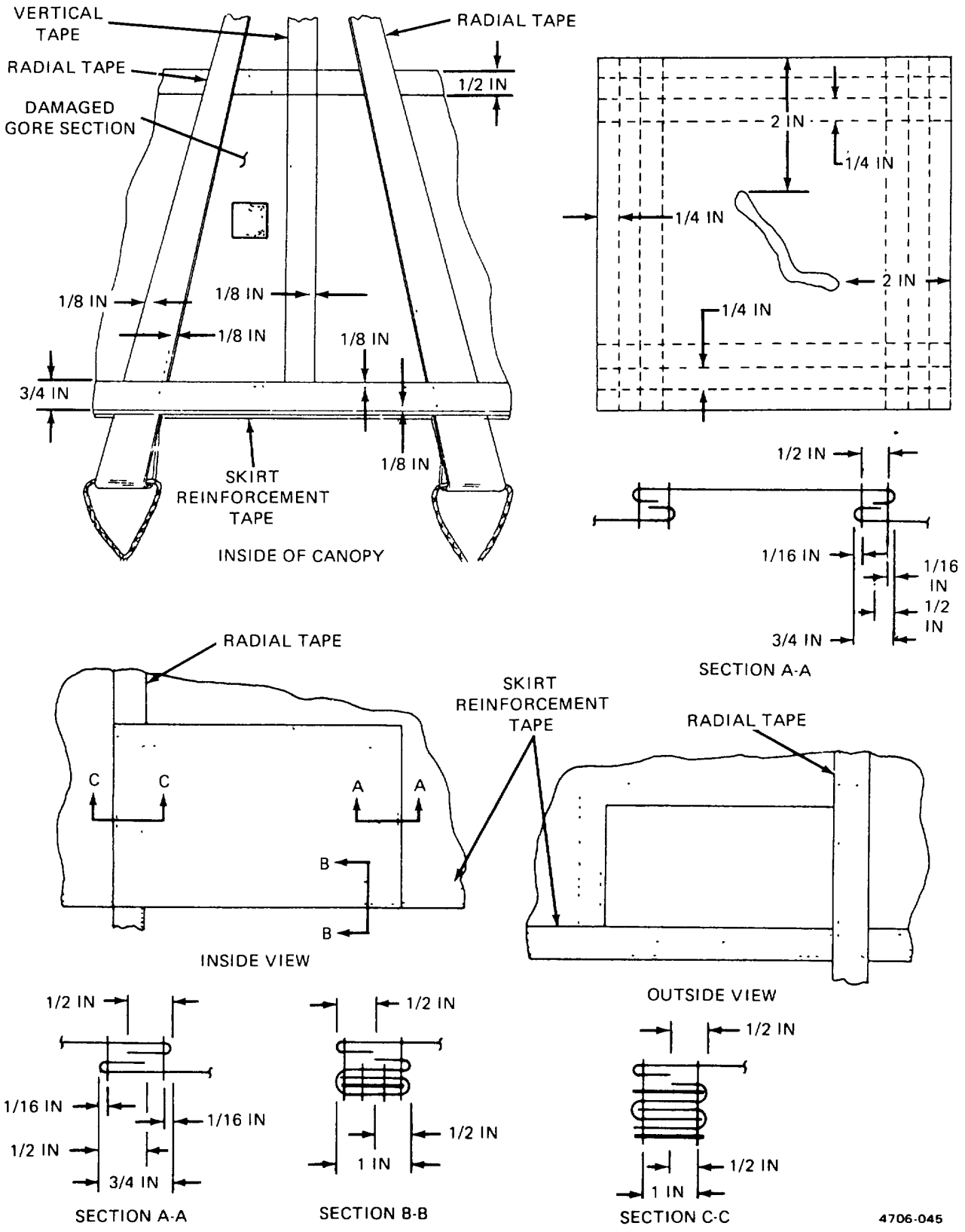


Figure 2-43. Patch Applications, Stitch Method.

2-24. Gore Section (cont).

(b) *Pressure-sensitive (iron-on) patch.* The method of applying a basic patch is a heat and pressure (iron-on) technique using pressure-sensitive-coated cotton balloon cloth. This method is limited to use on the cotton muslin canopies such as the 12-foot cargo parachute. A complete canopy section replacement will be performed when an individual section has been patched extensively with the pressure-sensitive patch material and an apparent stiffening of the section occurs. The stiffening effect may adversely affect the proper layout and packing of a parachute canopy. Apply a pressure- sensitive (iron-on) patch as follows:

1 Smooth all wrinkles from material surrounding the damaged area.

2 Cut a piece of pressure-sensitive-coated cotton balloon cloth large enough to extend 1 inch beyond all edges of the damaged area. If damaged area extends to a point within 1 inch of upper lateral band, only a sewn patch as outlined in procedure (1) above will be allowed.

3 Place coated cloth patch over damaged area with adhesive side facing down. If damaged area has no material missing, patch will be applied to the inside of canopy only. Whenever damaged area has a space between the edges of material which indicates that material is missing, patch will be applied to both inside and outside of canopy (figure 2-44).

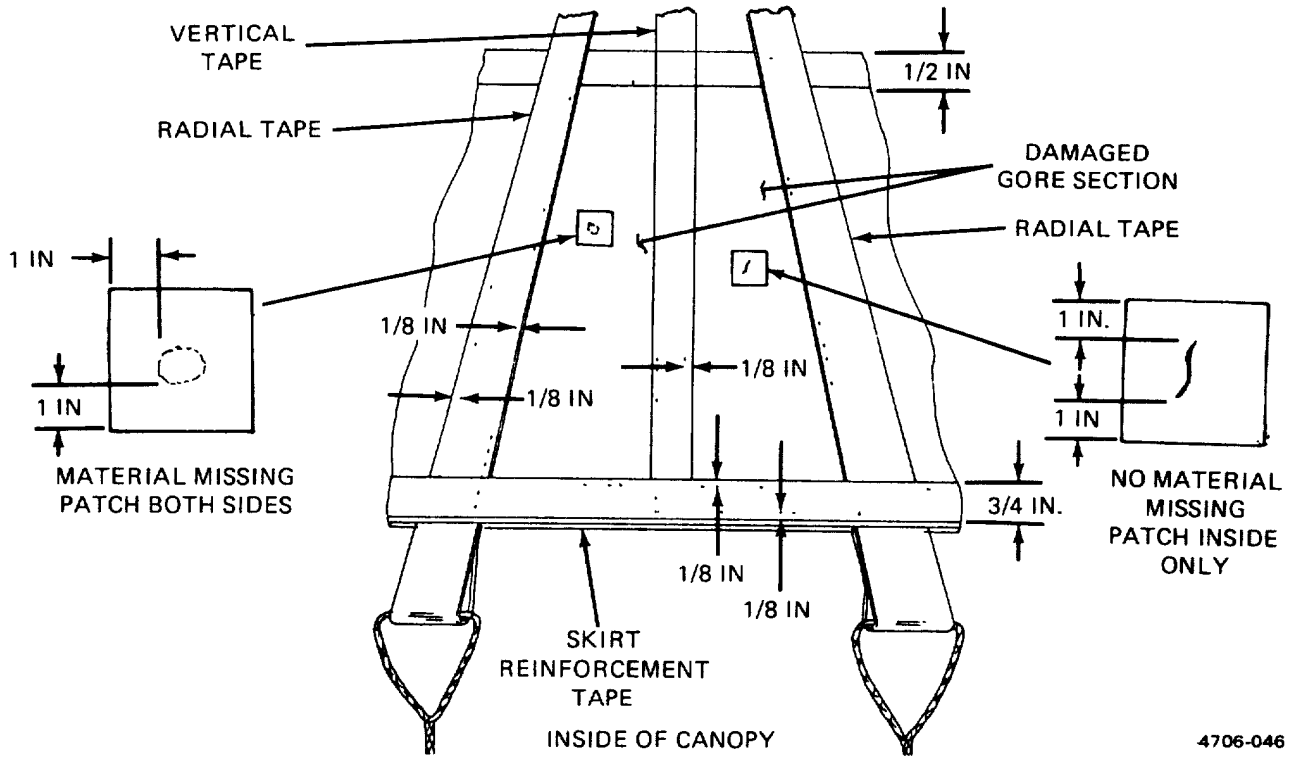


Figure 2-44. Pressure Sensitive Patch.

4 Using a household-type electric iron with heat regulated for cotton material, apply heat and pressure simultaneously to patch material for at least 30 seconds. Insure that all of patch material is subjected to heat and pressure, and that all edges of patch have adhered to canopy material. Also insure that temperature of iron remains constant during patch application effort and that no other part of canopy is underneath area being patched.

(4) *Restenciling*. As required, restencil identification markings using procedures in paragraph 2-19.

b. Replacement. When replacing gore sections, use 3.8 ounce cotton muslin cloth of same color as that being replaced. If the same color cloth is not available, another color may be used. When replacing section 1 of gore 1, restencil gore number and information data block on replacement section. For other gores, stencil gore numbers as necessary using procedures in paragraph 2-19. A gore section which is damaged beyond repair will be replaced as follows:

(1) *Gore section 1.*

(a) Cut a piece of 3.8 ounce cotton muslin cloth 2-112 inches longer and 1-1/2 inches wider than original gore section (figure 2-45).

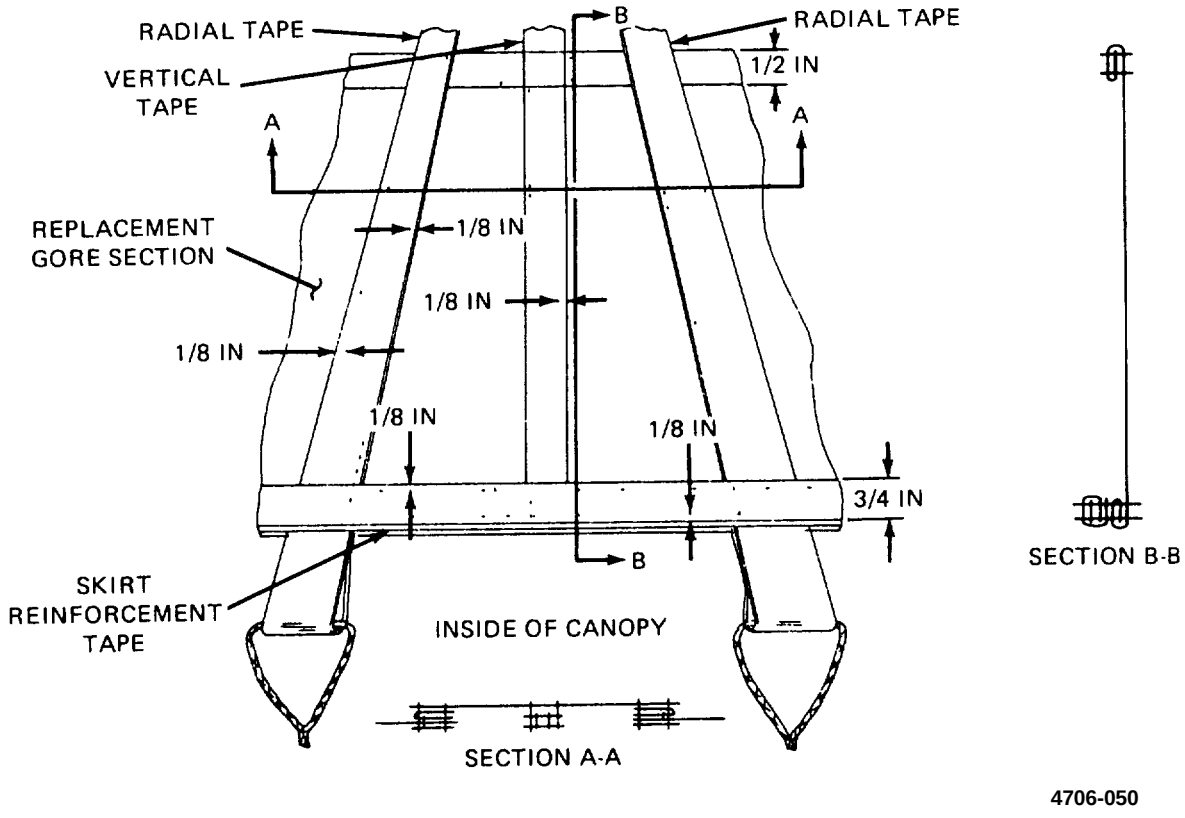


Figure 2-45. Gore Section One, Replacement Details.

2-24. Gore Section (cont).

(b) Place cut material over damaged area and using a suitable marking device, trace outline of original gore section, including width of radial tapes on each side of damaged area and width of skirt reinforcement tape (lower lateral band) at bottom. Allow material to extend 1 Inch beyond original gore section upper edge, 1-1/2 inches below lower skirt reinforcement tape, and 3/4 inch beyond outside edge of each of the radial tapes. Trim excess material, as required.

(c) On upper end of cut material, make a double 1/2 inch-wide fold under. Secure fold under with a single row of stitching sewn through fold under center across width of material. Stitching will be 7 to 11 stitches per inch.

(d) Cut and remove original stitching which secures pocket band ends to skirt reinforcement tape (lower lateral band) In original gore section area. Fold pocket band loose ends away from repair area

(e) Invert canopy to inside and align upper edge of fold under made in (d) above with upper edge of original gore section. Allow each side of replacement gore section material to extend 3/4 inch beyond outside edges of original gore section radial tapes. Insure 112- inch wide fold under faces down. Temporarily secure replacement gore section to original gore section upper edge with pushpins

(f) On each side of replacement gore section, make a 3/4-inch wide fold under and align material folded edge with outside edge of each of original gore section radial tapes. Temporarily secure each of side foldunders with pushpins.

(g) At lower end of replacement gore section, make a doubled 3/4-inch wide fold under and align lower edge of fold with lower edge of skirt reinforcement tape (lower lateral band). Temporarily secure fold under with pushpins.

(h) Baste edges of replacement gore section in accordance with paragraph 2-17a and remove pushpins

(i) Using a light duty sewing machine and size E thread secure replacement gore section to original gore section radial tapes, vertical tape, and skirt reinforcement tape (lower lateral band) with two rows of stitching, using 7 to 11 stitches per inch. Insure lower edge of replacement gore section does not extend beyond bottom of skirt reinforcement tape (lower lateral band).

(j) Remove basting, re-invert canopy to outside, and remove original gore section material by cutting down inside of each applicable radial tape, down both sides of vertical tape, and across upper edge of skirt reinforcement tape (lower lateral band).

(k) Using a zigzag sewing machine and size E nylon thread, reinstall pocket band loose end in original location with a two-inch long, 1/4-inch wide row of stitching (figure 2-46). Stitching will be 7 to 11 stitches per Inch.

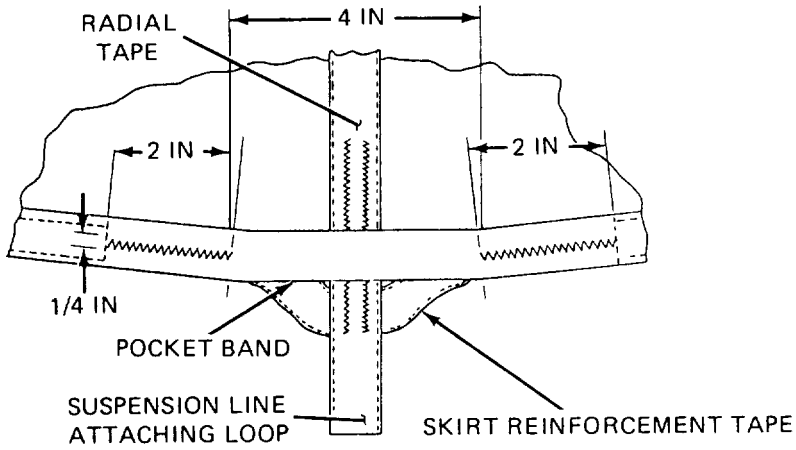


Figure 2-46. Reinstalling Pocket Band

(2) Gore section 2

(a) Place canopy on a repair table with damaged gore section facing up.

(b) Cut a piece of 3.8 ounce cotton muslin cloth 2 inches longer and 1-1/2 inches wider than damaged gore section (figure 2-47).

(c) Place cut material over damaged area and using a suitable marking device, trace outline of original gore section, including width of radial tapes on each side of damaged area Allow material to extend 1 inch beyond top and bottom of original gore section and 3/4 inch beyond outer edge of each of radial tapes Trim excess material, as required.

(d) On upper and lower edges of the replacement material, make a doubled 1/2-inch wide fold under. Secure each fold under with a single row of stitching sewn through the center of fold under, across width of material. Stitching will be 7 to 11 stitches per inch, using size E thread.

(e) Invert canopy to inside and position replacement gore section material over the damaged area with upper and lower edges of material aligned with respective edges of original gore section. Insure fold unders face down and that sides of material extend 3/4 inch beyond outside edge of each of radial tapes

(f) On each side of replacement gore section material, make a 3/4-inch wide fold under and align the folded edge with the outside edge of the damaged area radial tape Temporarily secure fold unders with pushpins.

(g) Baste edges of replacement gore section In accordance with paragraph 2-17a, and remove pushpins.

(h) Using a light duty sewing machine and size E thread, secure replacement gore section to original gore section radial tapes and vertical tape with two rows of stitching, using 7 to 11 stitches per inch.

(I) Remove basting, re-invert canopy to outside and remove original gore section material by cutting down inside of each of the original gore section radial tapes and on either side of vertical tape from upper edge through lower edge of section.

2-24. Gore Section (cont).

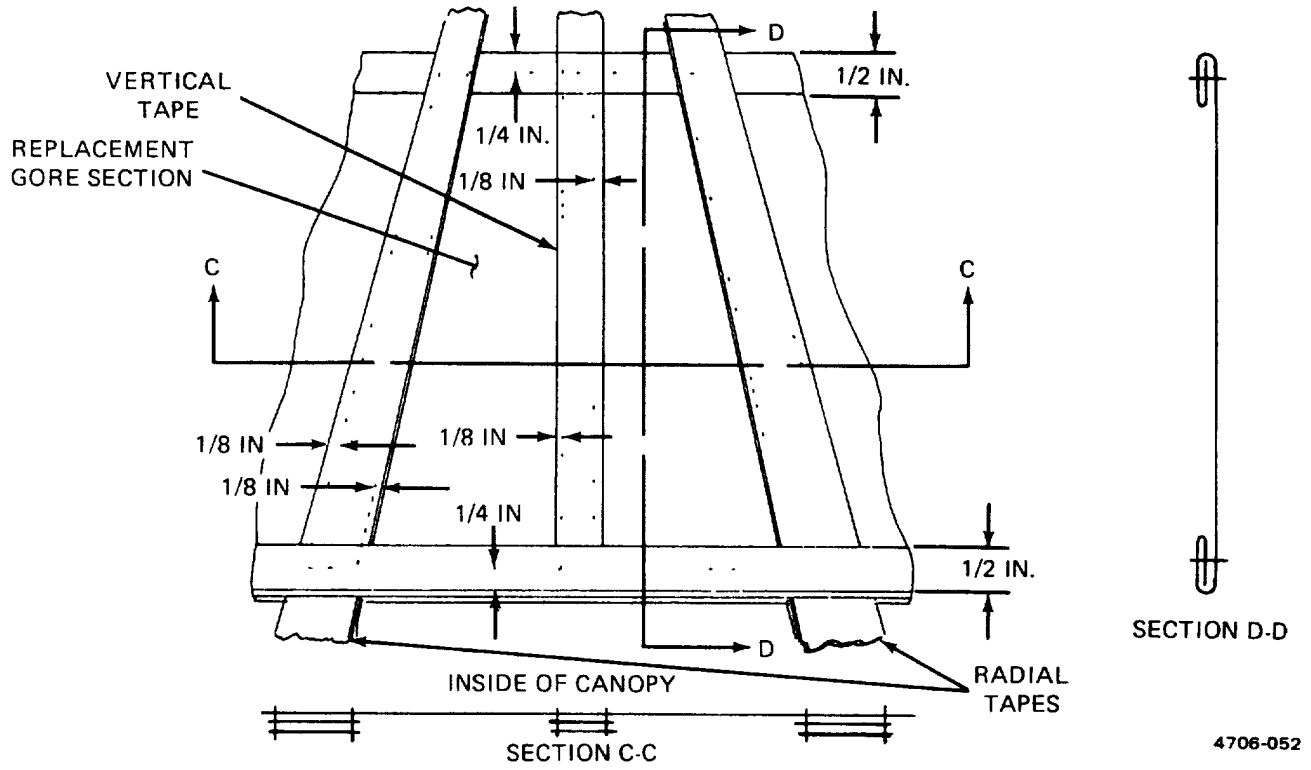


Figure 2-47. Gore Section 2, Replacement Details.

(3) Gore section 3.

(a) Place canopy on a repair table with damaged gore section facing up.

(b) Cut a piece of 3.8 ounce cotton cloth 2-112 inches longer and 1-1/2 inches wider than damaged gore section (figure 2-48).

(c) Place cut material over damaged area and using a suitable marking device, trace outline of original gore section, including width of radial tapes on each side of damaged area and width of skirt reinforcement tape (lower lateral band) at bottom. Allow material to extend 1 inch beyond original gore section upper edge, 1-112 inches below lower skirt reinforcement tape (lower lateral band), and 3/4 inch beyond outside edge of each of radial tapes. Trim excess material, as required

(d) On lower end of cut material, make a double 1/2 inch-wide fold under. Secure fold under with a single row of stitching sewn through fold under center across width of material. Stitching will be 7 to 11 stitches per inch, using size E thread.

(e) Invert canopy inside and align lower edge of fold under made in (d) above with lower edge of the original gore section. Allow each side of replacement gore section material to extend 3/4 inch beyond outside edges of original gore section radial tapes. Insure 1/2-inch wide fold under faces down. Temporarily secure replacement gore section to original gore section lower edge with pushpins.

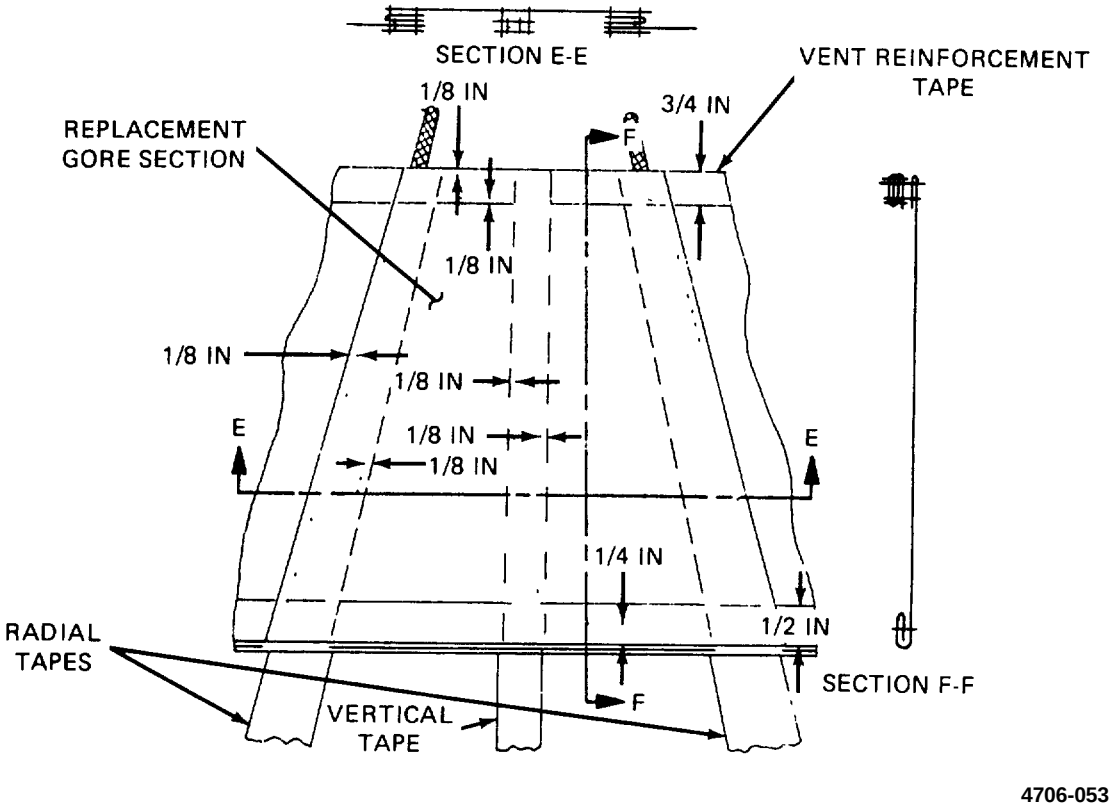


Figure 2-48. Gore Section 3, Replacement Details.

(f) On each side of replacement gore section material, make a 314-inch wide fold under and align folded edge with outside edge of each of original gore section radial tapes. Temporarily secure each of side fold unders with pushpins.

(g) At upper end of replacement gore section, make a doubled 3/4-inch wide fold under and align upper edge of fold with upper edge of vent reinforcement tape (upper lateral band). Temporarily secure fold under with pushpins.

(h) Baste edges of replacement gore section in accordance with paragraph 2-17a and remove pushpins.

(i) Using a light duty sewing machine and thread secure replacement gore section to original gore section radial tapes, vertical tape and vent reinforcement tape (upper lateral band) with two rows of stitching, using 7 to 11 stitches.

(j) Remove basting, re-invert canopy to outside, and remove original gore section material by cutting up inside of each applicable radial tape, up both sides of vertical tape, and across lower edge of vent reinforcement tape (upper lateral band).

2-25. Radial Tape

This task covers: Repair

Tools:

Sewing Machine, Light Duty (Table 2-2)

Materials/Parts:

Tape, Nylon, Type III, 3/4-Inch Wide, Item 25, Appendix D
Thread, Nylon, Size E, Item 29/30, Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-12)
Unpacked, laid flat

Reference:

Group No. 0105 MAC, Section II, Appendix B

a. *Restitching.* Restitch radial tape. Using a light duty sewing machine and size E nylon thread of contrasting color. Stitch over original pattern. Lock each row of stitches two inches at each end.

b. *Splicing.* Splice damaged radial tape as follows:

(1) Place canopy on a repair table with damaged side of radial tape facing up and smooth out canopy material in affected area.

NOTE

There is no limit to the number of splices that may be made on radial tape. When splicing an area previously spliced, remove old splice material before attempting a second splice

(2) Cut a length of 314-inch wide nylon tape long enough to extend 4 inches beyond each side of damaged area and sear ends as specified in paragraph 2-18.

(3) Center tape length over damaged area. Using a light duty sewing machine and size E nylon thread, secure splice by stitching a box-stitch formation along full length of splice (figure 2-49).

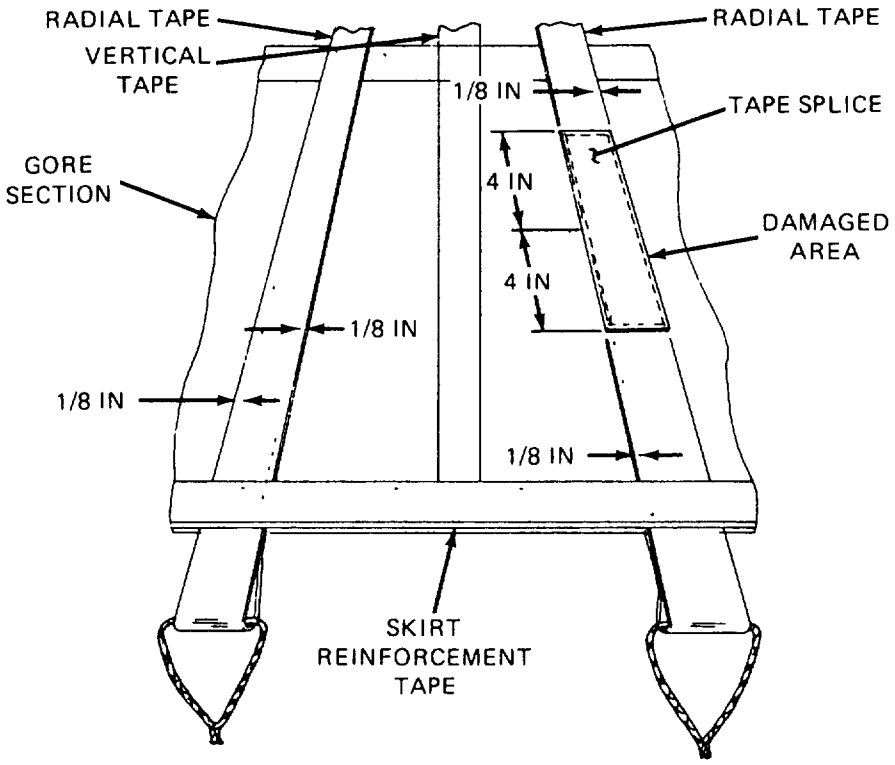


Figure 2-49. Radial Tape Splicing Details.

2-26. Vertical Tape.

This task covers:

Repair

Tools:

Sewing Machine, Light Duty (Table 2-2)

Materials/parts:

Tape, Nylon, Type III, 1/2-Inch Wide, Item 24, Appendix D
Thread, Nylon, Size E, Item 29/30, Appendix D

Personnel Required.

43E(10) Parachute Rigger

Equipment Condition:

Inspection (paragraph 2-9)
Cleaned (paragraph 2-11)
Laid-out on work table

Reference:

Group No. 0106 MAC, Section II, Appendix B

a. Stitching. Stitch and restitch (para 2-17) with thread size E nylon which matches the color of the original stitching, when possible. 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.

b. Splicing. Splice vertical tape as follows:

NOTE

There is no limit to the number of splices allowed on the radial tape.

(1) Cut a length of 1/2 inch nylon tape long enough to extend 4 Inches beyond each side of damaged area and sear the ends.

(2) Center doubled tape length over damaged area (figure 2-50).

(3) Using a light duty sewing machine and size E thread, secure splice by stitching a box-stitch formation full length of splice material. Stitching will be 1/8 inch from edges of splice material, 7 to 11 stitches per inch.

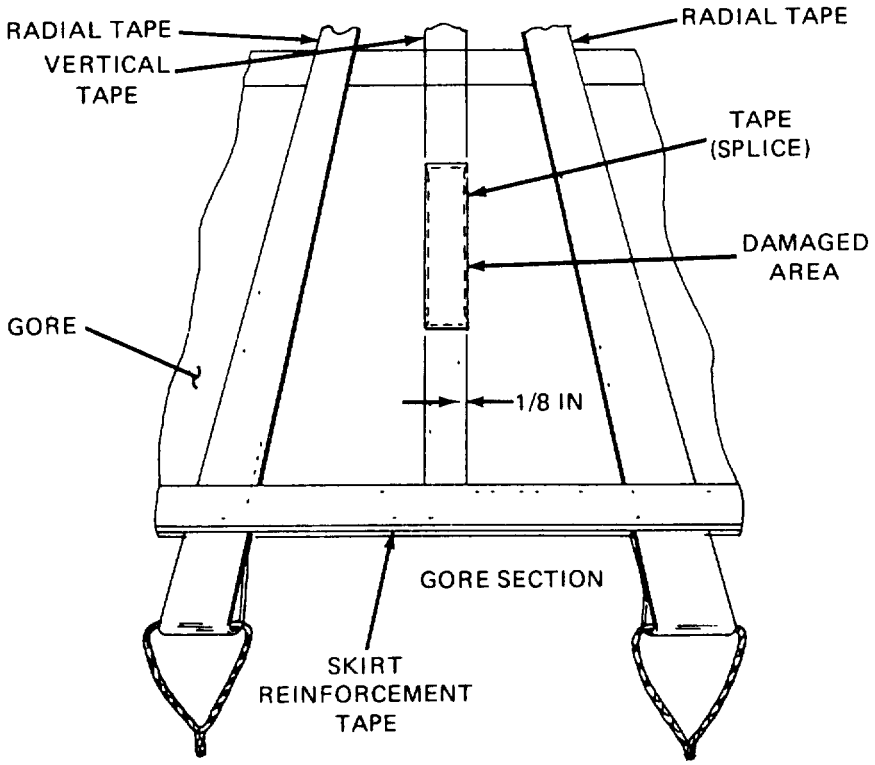


Figure 2-50. Vertical Tape Splicing Details.

2-27. Skirt Reinforcement Tape.

This task covers:

Repair

Tools:

Sewing Machine, Light Duty (Table 2-2)
Sewing Machine, Zig-Zag (Table 2-2)

Materials/Parts

Tape, Nylon, Type III, 3/4 Inch Wide, Item 25, Appendix D
Thread, Nylon, Size E, Item 29130, Appendix D

Personnel Required.

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Unpacked, lying flat on repair table

Reference:

Group No. 0107, MAC, Section II, Appendix B

NOTE

The skirt reinforcement tape may have one splice between any two suspension lines and can not 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 2-17) 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 skirt reinforcement tape as follows:

(1) With damaged side of skirt reinforcement tape facing up, smooth out affected area of canopy Remove previous splice, if required.

(2) As required, cut and remove original stitching which secures pocket band end to skirt reinforcement tape Fold pocket band loose end away from repair area.

(3) Cut a length of 3/4-inch wide nylon tape long enough to extend 6 inches beyond each side of damaged area Sear each end of tape (para. 2-18).

(4) Center tape length over damaged area (figure 2-53) and secure splice by making four rows of continuous stitching using a light duty sewing machine and size E thread Overstitch each webbing end by 1/2 inch. Stitching will be 7 to 11 stitches per inch.

(5) Using a zig-zag sewing machine and size E nylon thread, reinstall pocket band loose end in original location with a two-inch long, 1/4-inch wide row of stitching. Stitching will be 7 to 11 stitches per inch (figure 2-51).

(6) Reattach pocket band, if required, (para. 2-28).

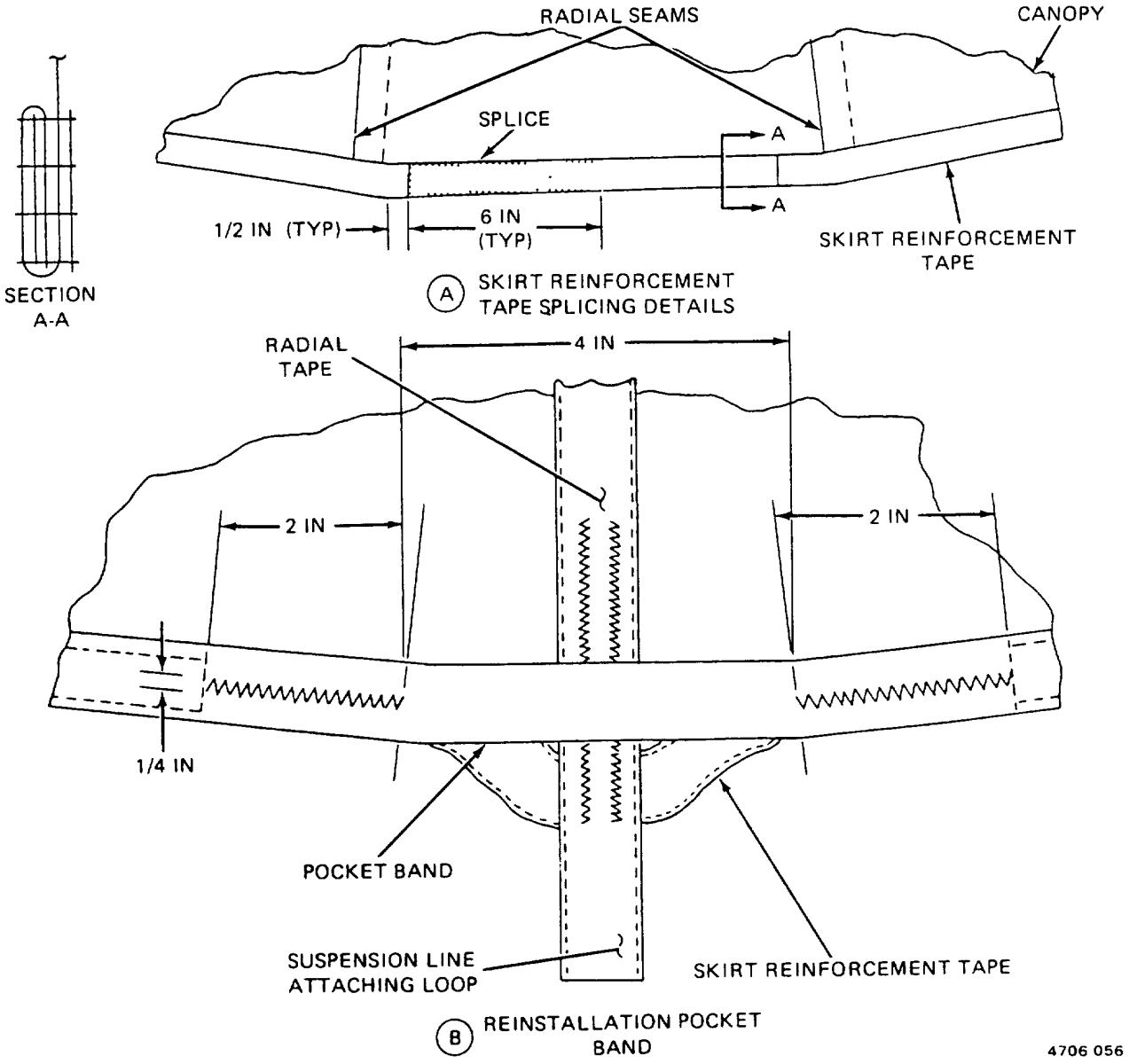


Figure 2-51. Skirt Reinforcement Tape Splicing Details.

2-28. Pocket Band.

This task covers:

a. Repair **b. Replace**

Tools:

Sewing Machine, Medium Duty, Zig-Zag (Table 2-2)

Materials/Parts:

Thread, Nylon, Size E, Item 29/30, Appendix D
Tape, Nylon, Type III, 3/4 Inch, Item 25 Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Unpacked, laid flat on repair table

Reference:

Group No. 0108, MAC, Section II,

a. Repair. Stitch and restitch (para. 2-17) with size E nylon thread which matches the color of the original stitching, when possible. Lock all zig-zag stitching by overstitching at least 1/2 inch. Restitch directly over the original stitching, following the original stitch pattern as closely as possible.

b. Replacement. Replace an unserviceable pocket band by fabricating as follows:

(1) Using a suitable 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 an 8inch length of 3/4-inch wide nylon tape, sear ends (para. 2-19).

(4) Position tape length in original pocket band location.

(5) Using a zig-zag sewing machine and size E nylon thread, secure each end of replacement pocket band with a two-inch long, 114-inch wide row of stitching. Stitching will be 7 to 11 stitches per inch (figure 2-52).

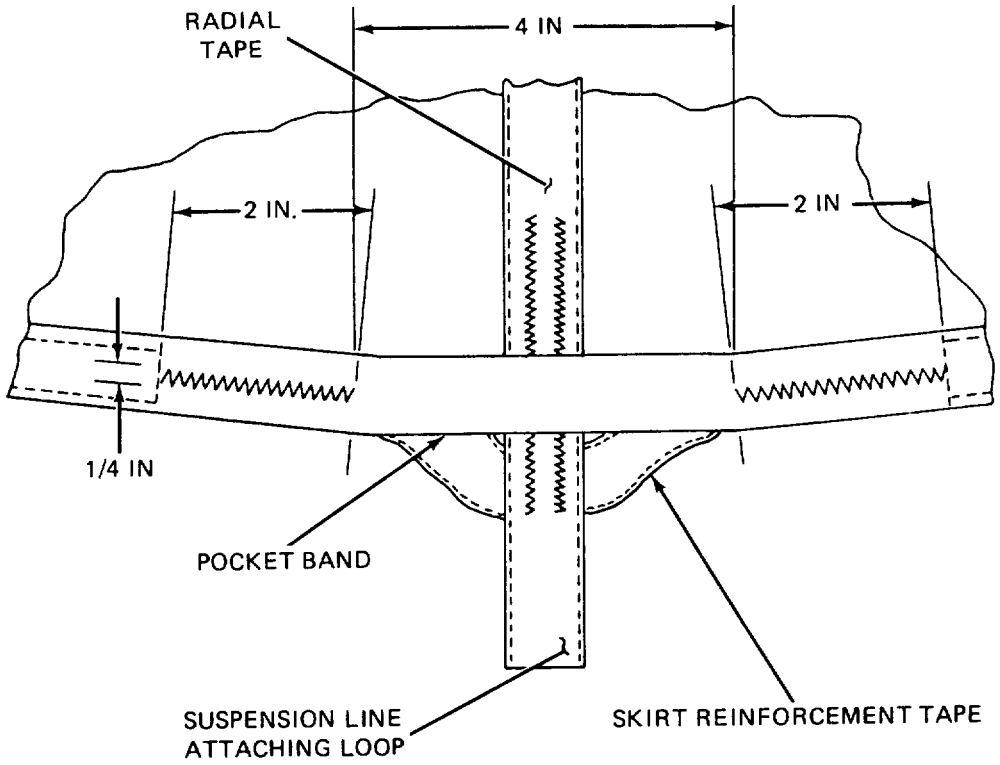


Figure 2-52. Pocket Band Replacement Details.

2.29. Suspension Line Attaching Loop.

This task covers:

a. Repair **b. Replace**

Tools:

Sewing Machine, Light Duty (Table 2-2)
Sewing Machine, Medium Duty, Zig-Zag (Table 2-2)

Materials/Parts:

Thread, Nylon, Size E, Item 29130, Appendix D
Tape, Nylon, Type III, 314 Inch Wide, Item 25, Appendix D

Personnel Required:

43E(10), Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Canopy laid out on repair table

Reference:

Group No. 0109, MAC, Section II, Appendix B

a. Repair. Stitch and restitch (para. 2-17) with thread which matches the color of the original stitching, when possible Lock all straight stitching by backstitching at least 112 inch. Restitch directly over the original stitching, following the original stitch pattern as closely as possible.

NOTE

Replacement of suspension line attaching loops is accomplished at the Intermediate Maintenance level only, in accordance with the Maintenance Allocation Chart (MAC), Appendix B.

b. Replace. A damaged suspension line attaching loop shall be replaced by fabricating as follows:

(1) Remove original suspension line attaching loop by cutting original radial tape at a point immediately below lower edge of skirt reinforcement tape (lower lateral band).

(2) Cut a 19-inch length of 314-inch wide nylon tape and sear ends. Double tape and aline ends.

(3) Using a light duty sewing machine and size E nylon thread, stitch a single row of stitching 1/8 inch in from each side along doubled tape length (figure 2-53). Stitching will be 7 to 11 stitches per inch.

(4) Using a suitable marking aid, mark doubled tape length at a point 3 inches from each end.

(5) Center doubled tape length in top loop of suspension line and aline both ends of tape above suspension line.

(6) Position one end of tape length under and opposite end of tape length over applicable radial tape and aline two 3-inch marks made in (4) above with lower edge of the skirt reinforcement tape to form a loop below canopy skirt.

(7) Using a zig-zag sewing machine and size E nylon thread, secure ends of formed loop to radial tape by stitching two 3/16-inch wide by 3-inch long rows of stitching, 118 inch from tape edges. Stitching will be 7 to 11 stitches per inch.

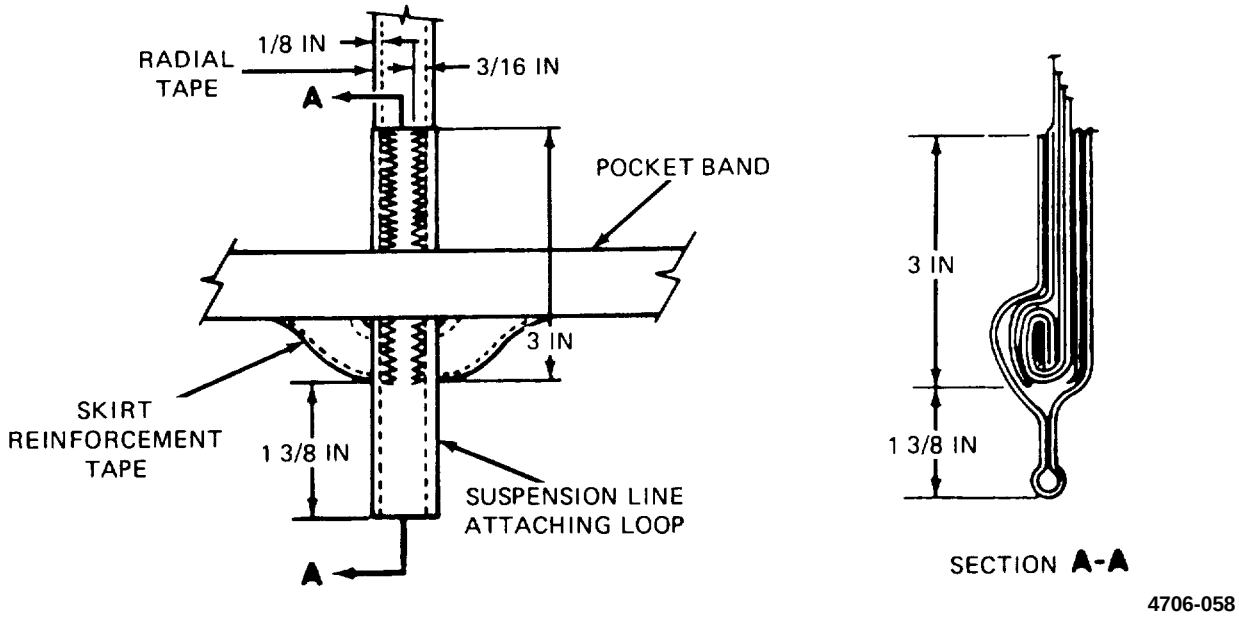


Figure 2-53. Suspension Line Attaching Loop Details.

2.30. Suspension Line.

This task covers:

a. Repair **b. Replace**

Tools:

Sewing Machine, Medium Duty, Zig-Zag (Table 2-2)
Splicing Aid, Item 3, Appendix B

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Canopy laid flat on repair table

Materials/Parts:

Cord, Nylon, Coreless, Item 12, Appendix D
Thread, Nylon, Size E, Item 29/30 Appendix D

Reference:

Group No. 0110, MAC, Section II, Appendix B

Personnel Required:

43E(10) Parachute Rigger

a. 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 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.

(2) *Splicing*. A suspension line may be spliced one time as follows:

(a) Cut a length of coreless 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 2-18.

(b) Center cord length over damaged area. Using a 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 2-54). Stitching will be 7 to 11 stitches per inch (para. 2-17).

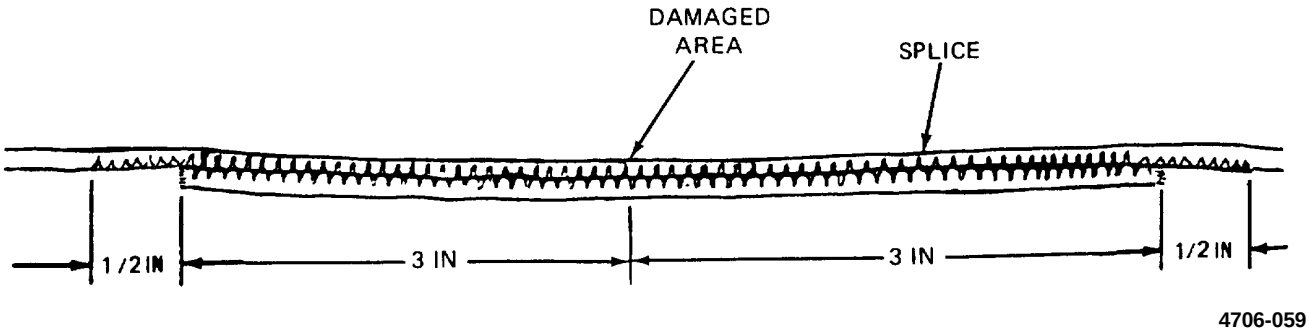


Figure 2-54. Suspension Line Splicing Details.

NOTE

Replacement of suspension lines is accomplished at the Intermediate Maintenance level only, in accordance with the Maintenance Allocation Chart (MAC), Appendix B.

b. *Replacement.* Replace unserviceable suspension line by fabricating as follows:

(1) Place canopy assembly In proper layout on an Inspection table.

(2) Apply partial tension to suspension lines and trace defective suspension line from the riser to suspension line attaching loop at canopy skirt. Upon completion of line tracing, release line tension

(3) Remove original suspension line from canopy and applicable riser by cutting formed loop located on each end of suspension line.

(4) Cut a 13-foot length of coreless nylon cord and taper-cut each end.

(5) Using a suitable marking aid, mark the cord at points 4-1/2, 6-1/2, and 11 inches from each end (figure 2-55).

2-30. Suspension Line (cont).

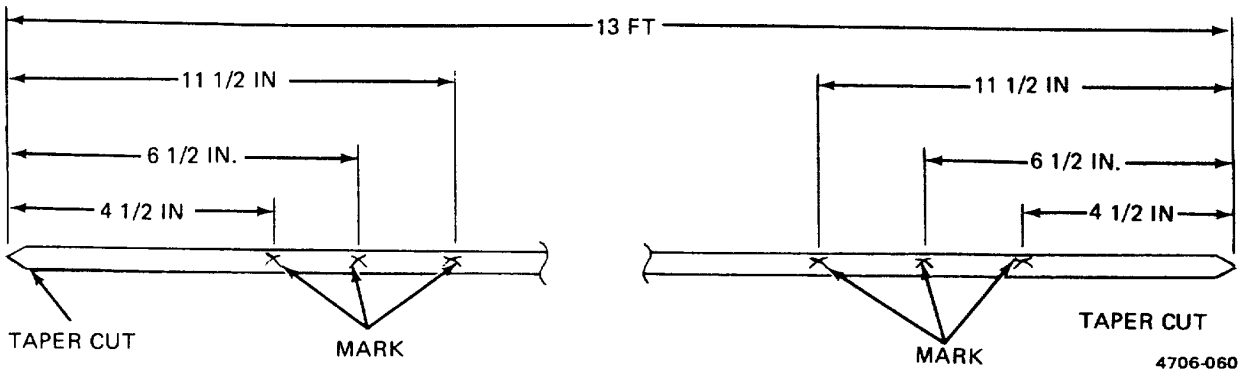


Figure 2-55. Replacement Suspension Line Construction Details.

(6) Pass 6 inches of marked cord through original suspension line attaching loop on canopy skirt.

(7) Insert a suitable splicing aid to cord casing at 11-inch mark and pass inserted aid up through cord casing and to outside at the 6 112-inch mark (figure 2-56).

(8) Insert cord tapered end into eye of the splicing aid.

(9) Pull splicing aid and cord tapered end down inside cord casing until 4 112- and 6 112-inch marks are alined (figure 2-57).

(10) Hold alined marks together, pull splicing aid and cord tapered end down and to outside at 11-inch mark.

(11) Remove cord tapered end from splicing aid and while holding 4 1/2- and 6 1/2-inch marks together, pull cord at a point below 11-inch mark to allow cord tapered end to withdraw into cord casing.

(12) Begin at a point 1/2 inch below alined 4 1/2- and 6 1/2-inch marks. Use a zig-zag sewing machine and size E thread, secure formed loop by stitching a 1/8-inch wide, 2-inch long row of stitching. Stitching will be 7 to 11 stitches per inch (figure 2-58).

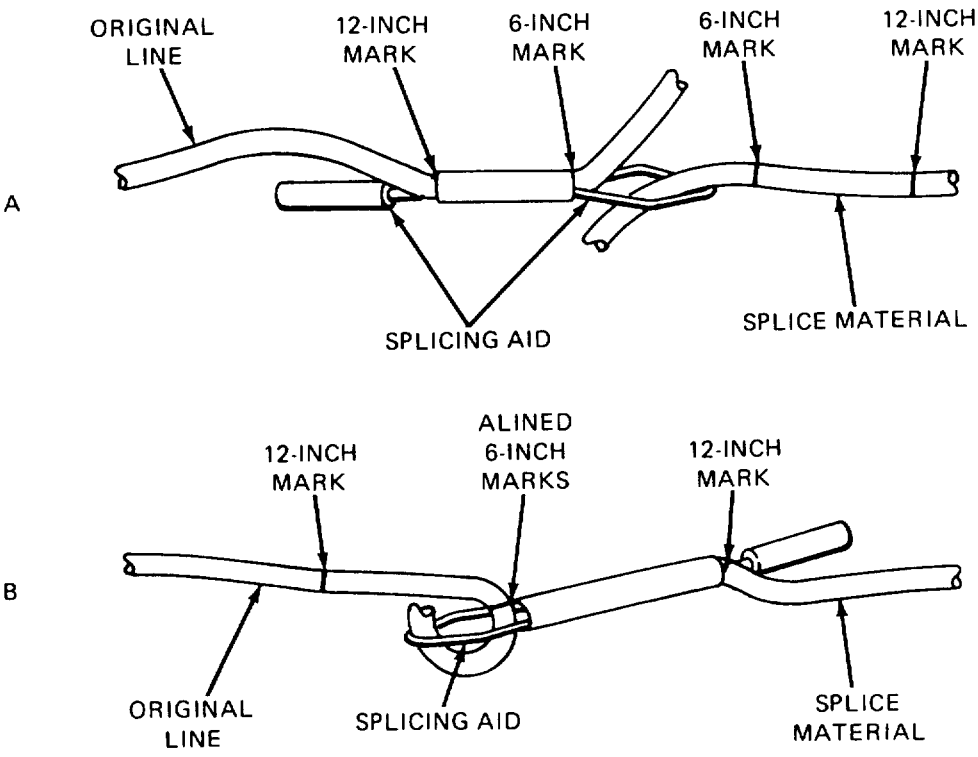


Figure 2-56. Inserting Splicing Aid into Cord Casing.

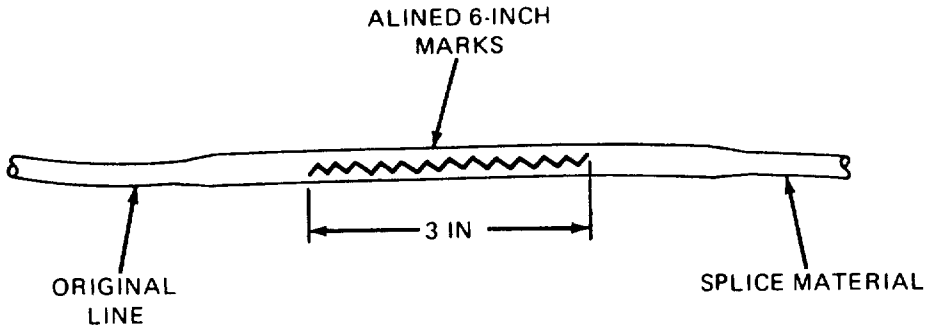


Figure 2-57. Alining Cord.

2-30. Suspension Line (cont).

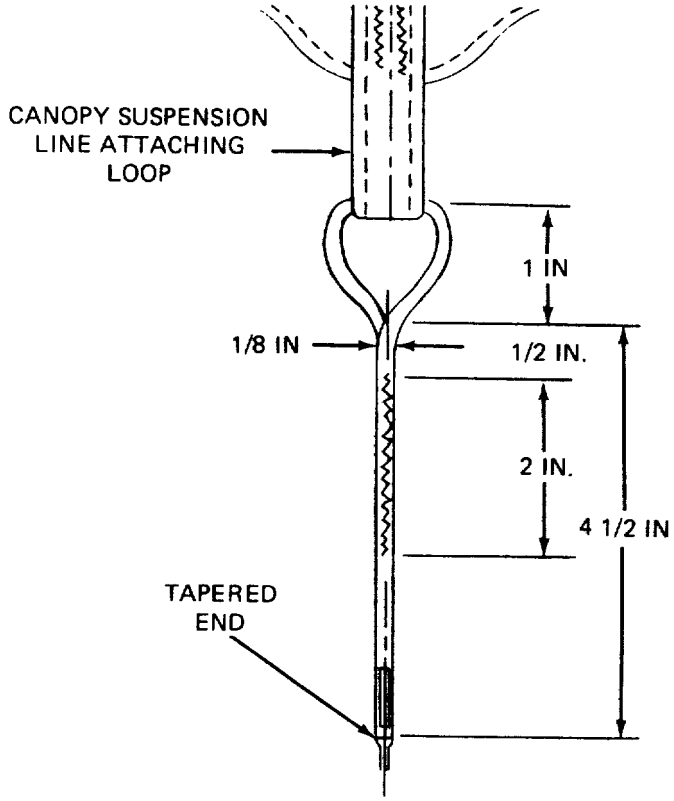


Figure 2-58. Securing Suspension Line at Suspension Line Attaching Loop.

(13) Trace replacement suspension line from canopy skirt down to applicable riser suspension line attaching loop.

(14) Apply tension to replacement suspension line equal to that of an adjacent suspension line to ascertain that marks made on the replacement line are located correctly.

(15) Release tension on suspension lines and attach line length to applicable riser suspension line attaching loop.

NOTE

The suspension line finished length should measure 12 feet, plus or minus 1 inch.

(16) Pass 6 inches of marked cord through original suspension line attaching loop on riser. Suspension lines shall be attached to riser in numerical sequence (figure 2-59).

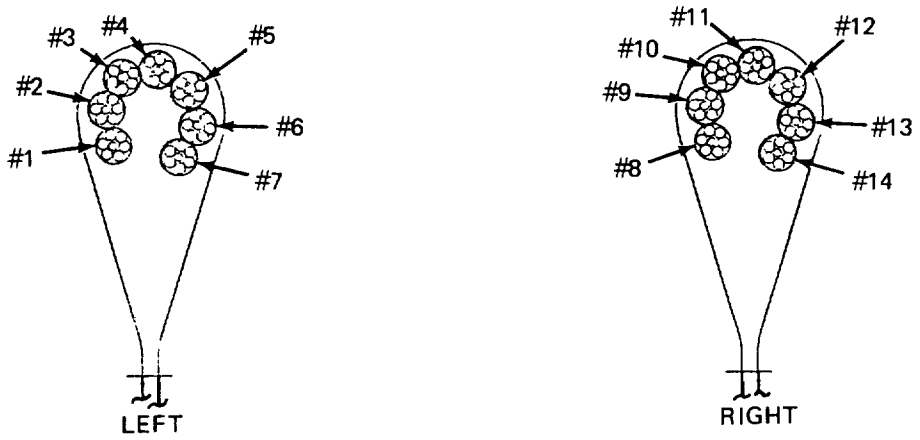


Figure 2-59. Suspension Line Numerical Sequence.

(17) Insert a suitable splicing aid to cord casing at the 11-inch mark and pass inserted aid down through the cord casing and to outside at the 6-1/2-inch mark, in a manner similar to that shown in figure 2-56, but in opposite direction.

(18) Insert cord tapered end into eye of splicing aid.

(19) Pull splicing aid and cord tapered end up inside cord casing until the 4 1/2- and 6 1/2-inch marks are alined (see figure 2-57).

(20) Hold alined marks together and pull splicing aid and cord tapered end up and to outside at 11-inch mark.

(21) Remove cord tapered end from splicing aid and while holding 112- and 6 1/2-inch marks together, pull cord at a point above the 11-inch mark to allow cord tapered end to withdraw into cord casing.

(22) Beginning at a point 1/2 inch above alined 4 1/2- and 6 1/2-inch marks, using a zig-zag sewing machine and size E nylon thread, secure formed loop by stitching a 118-inch wide, 2-inch long row of stitching. Stitching will be 7 to 11 stitches per inch (see figure 2-60).

2-30. Suspension Line (cont).

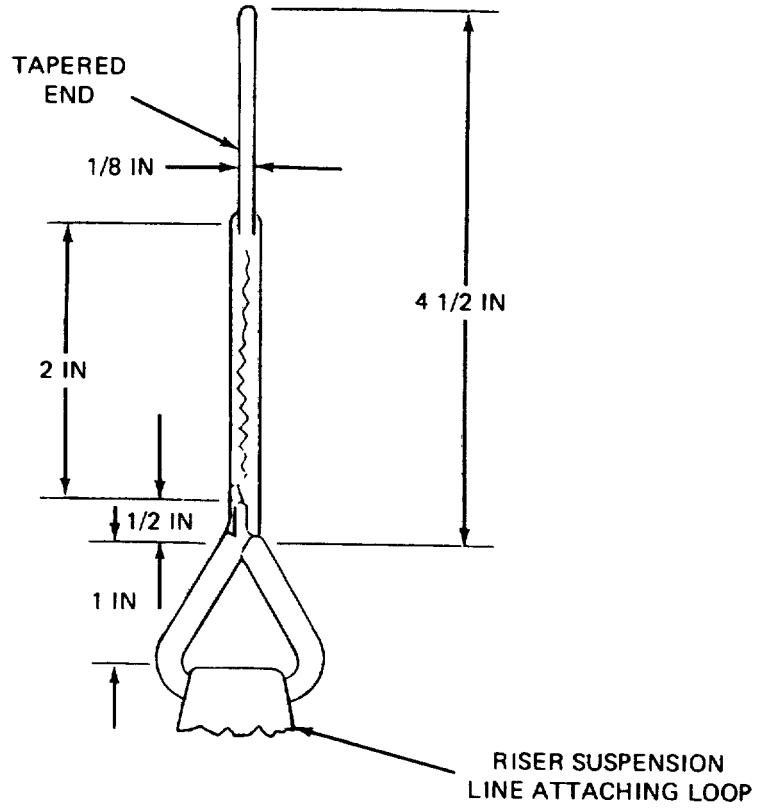


Figure 2-60. Securing Suspension Line at Riser Suspension Line Attaching Loop.

2-31. Riser.

This task covers:

a. Repair **b. Replacement**

Tools:

Sewing Machine, Heavy Duty (Table 2-2)
Tacking Needle, Item 7, Appendix B

Materials/Parts:

Tape, Pressure-Sensitive, 1-Inch Wide, Item 26, Appendix D
Thread, Cotton, Ticket No. 817, Item 28, Appendix D
Thread, Nylon, Size 3, Item 31132, Appendix D
Webbing, Cotton, 1/4 Inch Wide, Item 36, Appendix D
Webbing, Nylon, Type VIII, Item 39, Appendix D

Personnel Required.

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Unpacked, laid flat on repair table

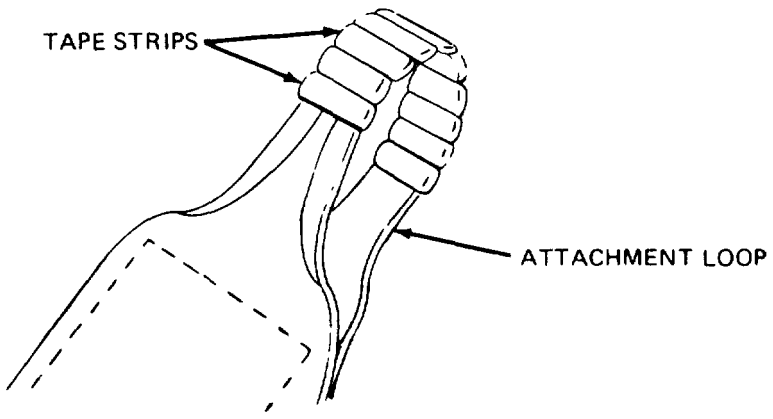
Reference.

Group No. 0111, MAC, Section II, Appendix B

a. Repair.

(1) *Stitching*. Stitch and restitch 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 directly over the original stitching, following the original stitch pattern as closely as possible.

(2) *Retaplng Attachment Loop*. Before retaping, insure remains of all original tape have been removed. Retape rolled portion of suspension line attaching loop using five turns single of 1-inch wide pressure sensitive tape. Cut or split tape to 1/2-inch width (figure 2-61).



4706-066

Figure 2-61. Retaping Attaching Loop.

2-31. Riser (cont).

(3) *Restencil*. As required, restencil identification marking using procedures in paragraph 2-19.

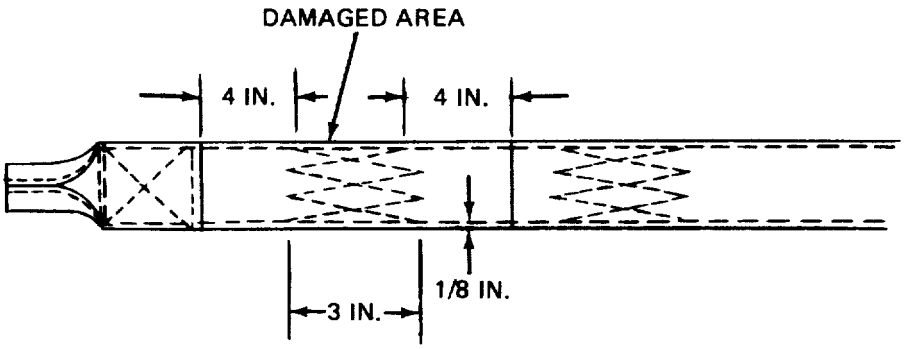
(4) *Splicing.* Each of the two riser straps may be spliced as follows:

NOTE

Each of two risers may be spliced one time.

(a) Cut a length of type VIII webbing long enough to extend 4 inches beyond each side of damaged area and sear ends (para. 2-18).

(b) Center webbing length over damaged area (figure 2-62). Using a heavy duty sewing machine and size 3 nylon thread, secure each end of splice by stitching a 3-inch long, three point WW stitch formation, 1/8 inch in from each side edge of splice material. Overstitch each end of splice material by one stitch on each point of stitch formation. Stitching shall be 5 to 8 stitches per inch.



4706-067

Figure 2-62. Riser Splicing Details.

b. <u>*Replacement*</u>. Replace an unserviceable riser by fabricating a replacement set as follows (refer to figure 2-63):

NOTE

Prior to disconnecting the riser straps from the suspension lines, temporarily secure each suspension line group to prevent disarrangement by passing a suitable length of 1/4 inch cotton webbing through the loops on the lower end of the suspension lines and tying the webbing ends together.

(1) If inspection data pocket (log record pocket) is serviceable, cut tacking which secures pocket to the left riser strap and remove pocket. Retain pocket for use on riser which Is to be fabricated.

(2) Cut two 63-inch lengths of type VIII webbing and sear ends in accordance with paragraph 2-18.

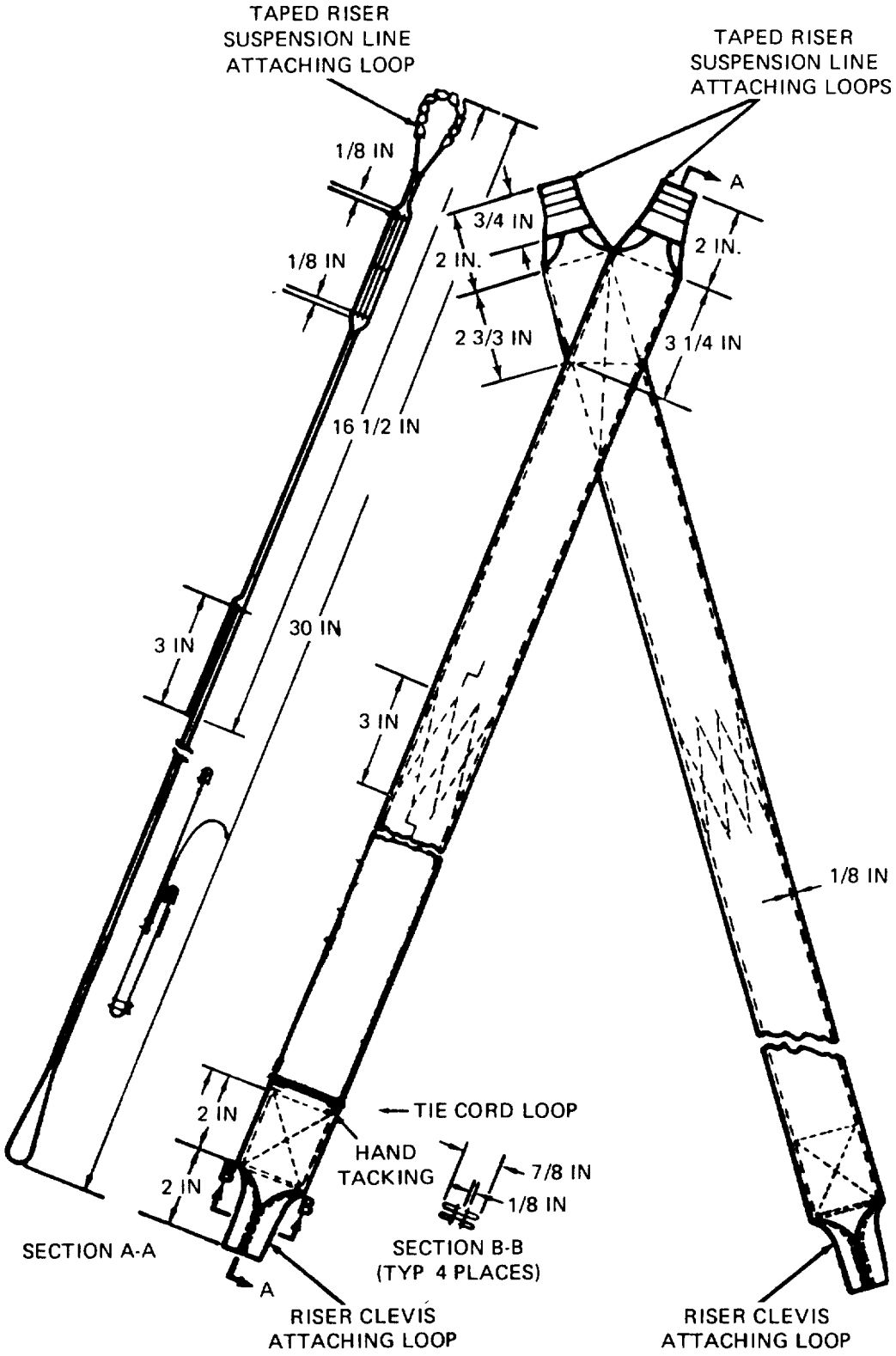


Figure 2-63. Riser Construction Details.

2-31. Riser (cont).

(3) Using a suitable marking aid, mark each webbing length at 14 1/2 inches, 16 1/2 inches and 18 1/2 inches from each end (figure 2-64).

(4) Using a light duty sewing machine and size 3 nylon thread, stitch webbing 5 to 8 stitches per inch as follows:

(a) Start at edge of webbing at a 14 1/2-inch mark, and stitch across width of webbing. Stitch to a point 1/8 inch from edge of webbing width.

(b) Between 14 1/2-inch and 18 1/2-inch mark, roll edge of webbing to center. Secure rolled edge of webbing by stitching 1/8 inch from edge (figure 2-64).

(c) Stitch across width of webbing. Stitch to a point 1/8 inch from edge of webbing width.

(d) Between 18 1/2-inch and 14 1/2-Inch mark, roll edge of webbing to center. Secure rolled edge of webbing by stitching 1/8 inch from edge. Stitch across width of webbing.

(e) Insure this row of stitching Is directly over first row of stitching.

(f) Repeat this procedure at each remaining sets of marks on opposite end of webbing lengths.

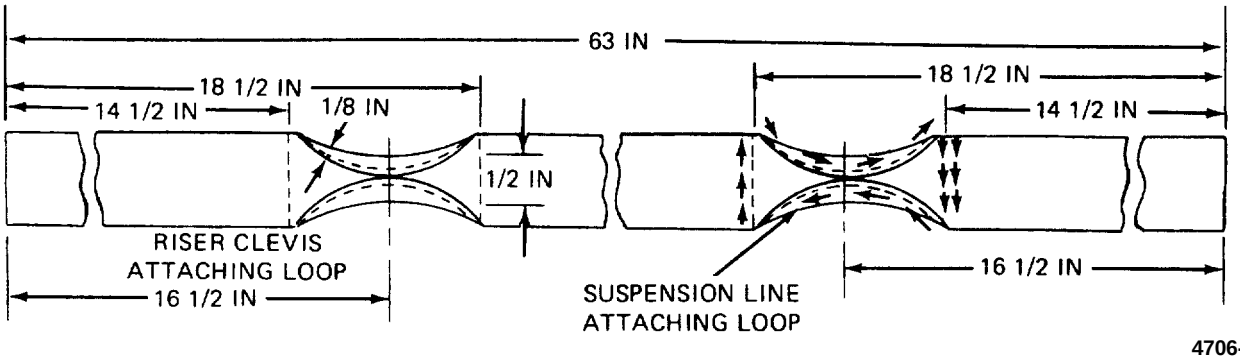


Figure 2-64. Riser Fabrication Details.

(5) Select a rolled portion on each webbing length which will form suspension line attaching loops. Tape center 2-1/2 inches of these rolled portions using five turns single of 1-inch wide tape, cut or split to 1/2-inch width (figure 2-65).

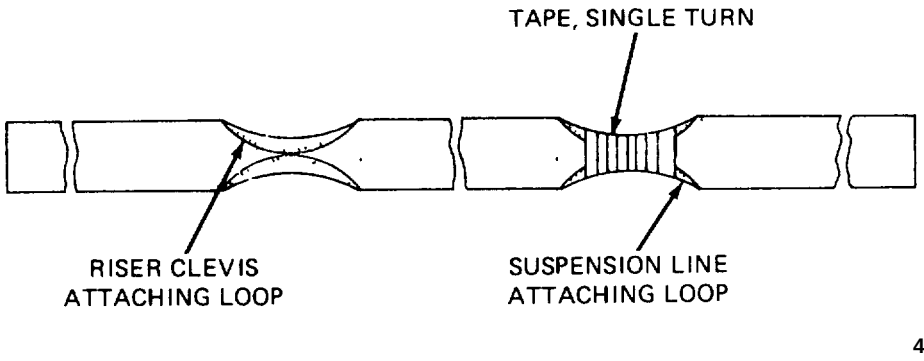


Figure 2-65. Taping Rolled Portion of Webbing.

(6) Begin formation of left riser strap by passing one end of a riser webbing length through attaching loops on right group of suspension lines and center attaching loops in taped webbing area (figure 2-66).

(7) Form riser clevis attaching loop by making a 16 1/2-inch foldback in 46 1/2-inch long running end of riser webbing length (figure 2-67)

(8) Fold 16 1/2-inch long top running end down to overlap webbing bottom foldback by 3 inches (figure 2-67).

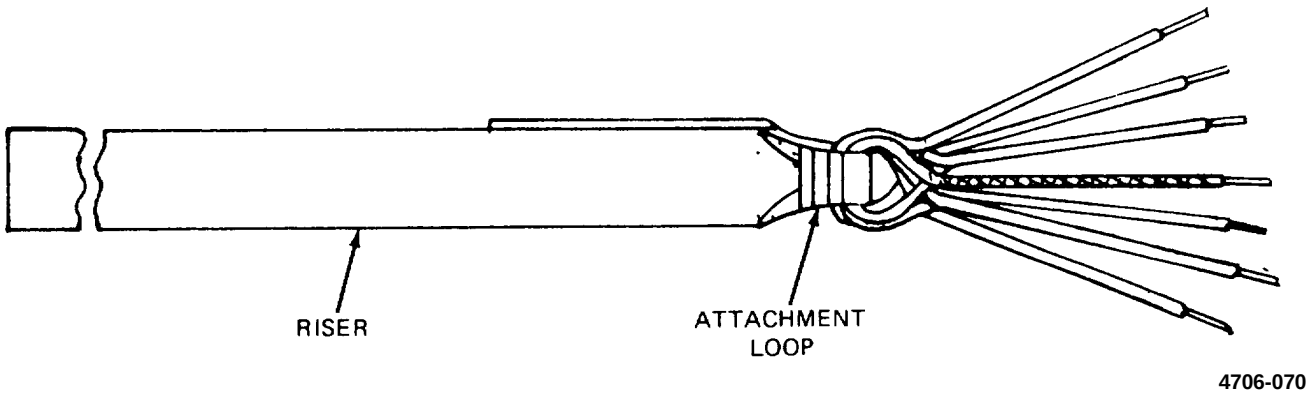
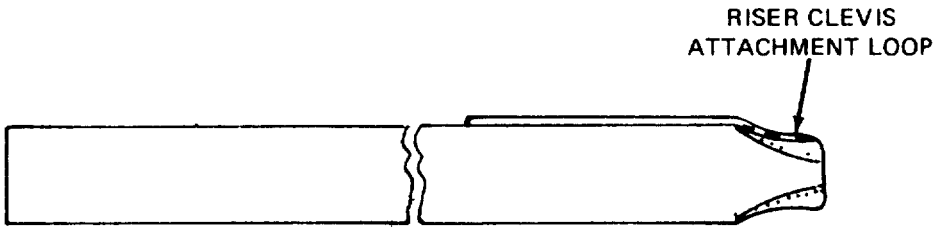


Figure 2-66. Forming Riser Strap Around Right Group of Suspension Line Loops.

2-31. Riser (cont).



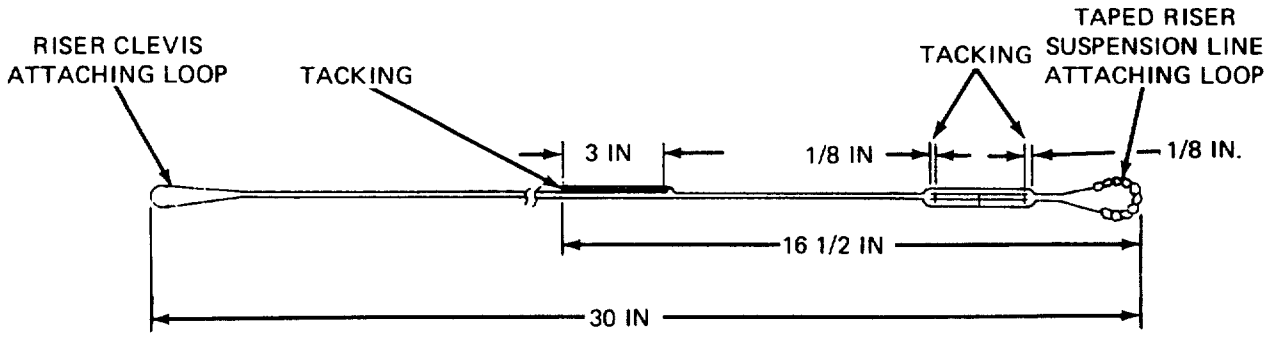
4706-071

Figure 2-67. Forming Riser Clevis Attaching Loop.

(9) Using a tacking needle and ticket no. 8/7 cotton thread, temporarily hand tack riser webbing plies together at center of 3 inch overlap area. Also, temporarily hand tack center of webbing plies together at points 1 3/4- and 5 1/2-inches down from riser suspension line attaching loop (figure 2-68).

(10) Begin formation of right riser strap by passing one end of remaining riser webbing length through left riser webbing plies, between two temporary tacks made at top end of left riser strap. Further, thread right riser webbing length through attaching loops on left group of suspension lines until loops are centered in taped webbing area.

(11) Form riser attaching loop by making a 16 1/2-inch foldback in 46 1/2-inch long running end of riser webbing length.



4706-072

Figure 2-68. Temporary Tacking.

(12) Pass top running end of right riser webbing down through left riser webbing plies and overlap webbing bottom foldback 3 inches.

(13) Using a tacking needle and ticket no. 817 thread, temporarily hand tack center of right riser webbing plies together in 3 inch long overlap area (figure 2-69).

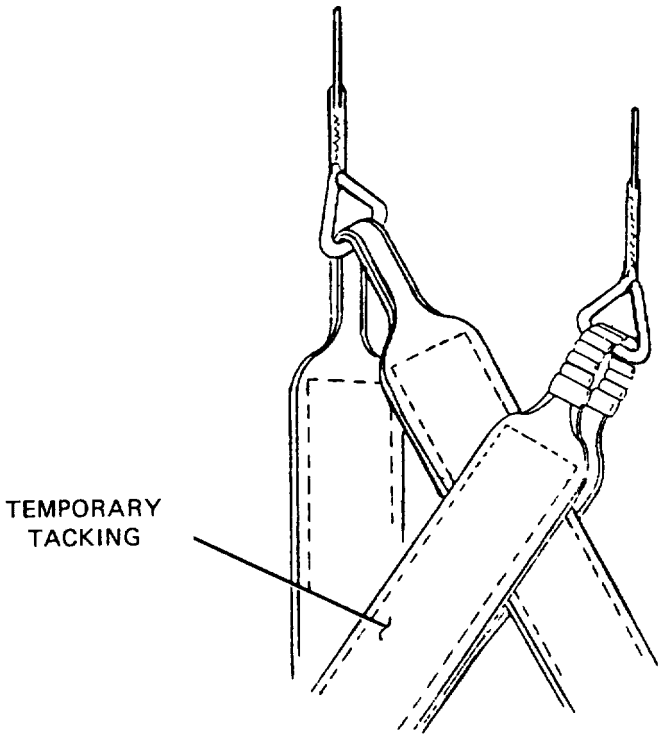


Figure 2-69. Attaching Left and Right Risers.

(14) Using a heavy duty sewing machine and size 3 nylon thread, secure overlapped webbing ends on each riser strap by stitching a 3 inch long four-point WW stitch formation. Insure temporary tacking is removed from each of overlapped webbing end areas prior to stitching. Stitching will be 5 to 8 stitches per inch (figure 2-63).

(15) Aline the riser suspension line attaching loops according to figure 2-63 and secure the webbing plies of each riser length together by stitching a 26-Inch-long box-stitch formation. Also stitch a single-X in the box formed at the point where the left and right riser straps Intersect. Stitching will be 5 to 8 stitches per inch using a heavy duty sewing machine and size 3 nylon thread.

(16) At a point 2 inches above the riser clevis attaching loop on each riser strap, stitch a 2Inch-long single-X box-stitch formation, with one double end, according to the details in figure 2-63. Stitching will be 5 to 8 stitches per inch using a heavy duty sewing machine and size 3 nylon thread. Remove the temporary ties made on the lower end loops of each suspension line group.

2-31. Riser (cont).

(17) Position a serviceable parachute inspection data pocket (log record pocket) on left riser with pocket bottom edge located at a point 4 1/4-inches above riser clevis attaching loop (figure 2-70). Handtack pocket to riser webbing at each of four corners using a tacking needle and two turns double ticket no. 8/7 thread. Wax thread before using (para. 2-19). Secure tacking ends with a surgeon's knot and a locking knot. Trim tie ends to 1/4 inch.

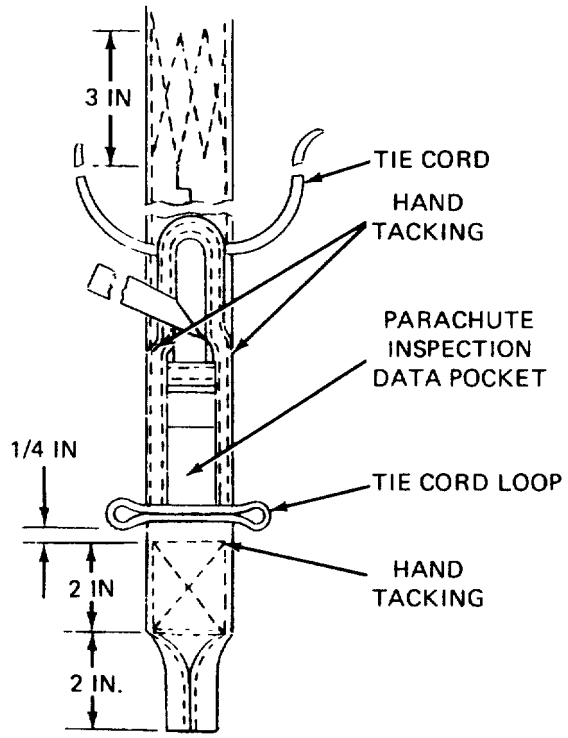


Figure 2-70. Attaching Parachute Inspection Data Pocket to Left Riser.

2-32. Riser Clevis.

This task covers:

a. Repair **b. Replace**

Tools:

Knife, Item 4, Appendix B

Materials/Parts:

Cord, Nylon, Type I, Item 10, Appendix D
Wire, Item 41, Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition.

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Laid out on work table

Reference'

Group No. 0112, MAC, Section II, Appendix B

Group No. 0112, MAC, Section II, Appendix B

a. Repair. Repair a riser clevis using the following procedures.

(1) *Replacing a clevis pin retaining cord*

(a) Cut and remove original clevis pin retaining cord from riser clevis body, clevis pin and safety pin (figure 2-71)

(b) Cut a 16-inch length of type I nylon cord and sear ends.

(c) Pass one half of cord length around riser clevis body, join ends and make a square knot snug against clevis body (figure 2-71).

(d) Pass one tie running end through the eye of clevis pin. Make an overhand knot In running end.

(e) Secure tie end against clevis pin eye with a square knot, leaving a 3/8 inch running end.

(f) Secure opposite cord running end to the eye of safety pin using procedures in (d) and (e) above.

2-32. Riser Clevis (cont).

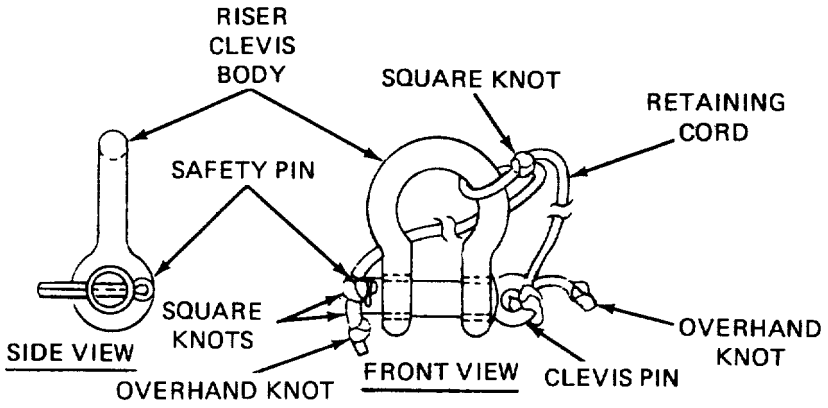


Figure 2-71. Replacing Riser Clevis Retaining Cord

(2) *Replacing a clevis safety pin.*

(a) Remove original safety pin from clevis assembly by untying overhand knot and square knot which secure pin to clevis.

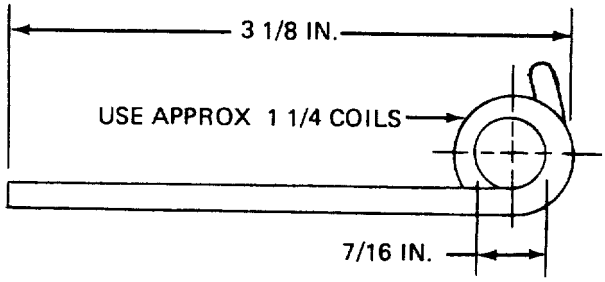


Figure 2-72. Forming Riser Clevis Safety Pin.

(b) Cut a 5-inch length of wire.

(c) Using cut wire length, form a 3 1/8-inch long riser clevis safety pin (figure 2-72).

(d) Reinstall safety pin in clevis pin.

(e) Pass tie running end through eye of safety pin. Make an overhand knot In running end (figure 2-71).

(f) Secure tie end against safety pin with a square knot, leaving a 3/8-inch running end.

b. Replacement. Replace an unserviceable or missing riser clevis with a serviceable item from stock.

2-33. Parachute Inspection Data Pocket.

This task covers: a. Repair b. Replace

Tools:

Needle, Tacking, Item 7, Appendix B

Materials Parts:

Thread, Nylon, Size E, Item 29130, Appendix D
Thread, Cotton, Ticket No. 8/7, Item 28 Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Laid-out on work table

Reference:

Group No. 0113, MAC, Section II, Appendix B

a. *Repair*. Repair a parachute inspection data pocket as follows:

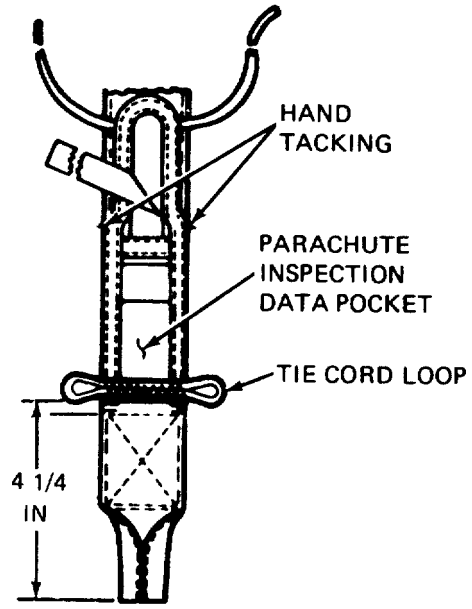
(1) *Stitching*. Stitch and restitch with thread, nylon, size E which matches the color of the original stitching, when possible. Lock all straight stitching by backstitching at least 1/2 Inch. Restitch directly over the original stitching, following the original stitch pattern as closely as possible.

(2) *Retacking*. Replace damaged or missing tacking as follows:

(a) Remove damaged tacking (figure 2-73).

(b) Using a tacking needle and ticket 817 thread, retack log record pocket to riser webbing using two turns of double thread. Wax thread before using (para. 2-18). Secure tacking ends with a surgeon's knot and a locking knot.

2-33. Parachute Inspection Data Pocket (cont).



4706-078

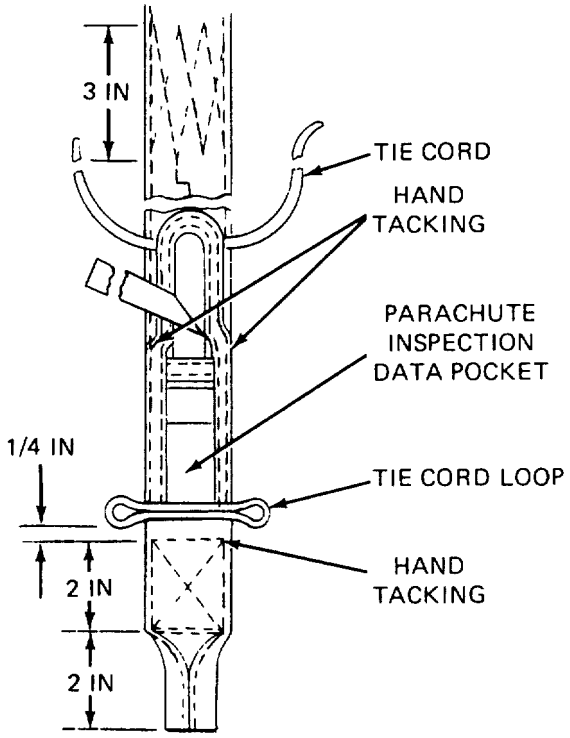
Figure 2-73 . Data Pocket Repair .

b. Replacement. Replace a missing or unserviceable parachute inspection data pocket (log record pocket) as follows:

(1) Position parachute inspection data pocket on left riser with pocket bottom edge located 4 1/4 inches above riser clevis attaching loop (figure 2-74).

(2) Hand tack pocket to riser webbing at four corners using a tacking needle and two turns of doubled, waxed ticket 8/7 thread. Wax thread in accordance with para 2-18.

(3) Secure tacking ends with a surgeon's knot and a locking knot. Trim ends to 1/4 inch.



4706-075

Figure 2-74. Attaching Parachute Inspection data Pocket.

2-34. Deployment Bag.

This task covers: a. Repair b. Replace

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Detached from canopy and static line

Reference:

Group 02, MAC, Section II, Appendix B

a. *Repair*. Refer to individual repair procedures.

b. Replacement. An unrepairable deployment bag will be replaced with a serviceable bag from stock.

2-35. Attaching Loop (Deployment Bag).

This task covers: a. Repair b. Replace

Tools:

Knife, Item 4, Appendix B
Sewing Machine, Light Duty (Table 2-2)

Materials/Parts:

Thread, Nylon, Size E, Item 29/30, Appendix D
Webbing, Cotton, Type II, 1-inch, Item 37, Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Laid out on work table

Reference:

Group No. 0201, MAC, Section II, Appendix B

a. Repair.

(1) *Stitching*. Stitch and restitch with size E 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.

(2) Mark and restencil in accordance with paragraph 2-19.

b. *Replacement*. Replace a damaged attaching loop by fabricating as follows.

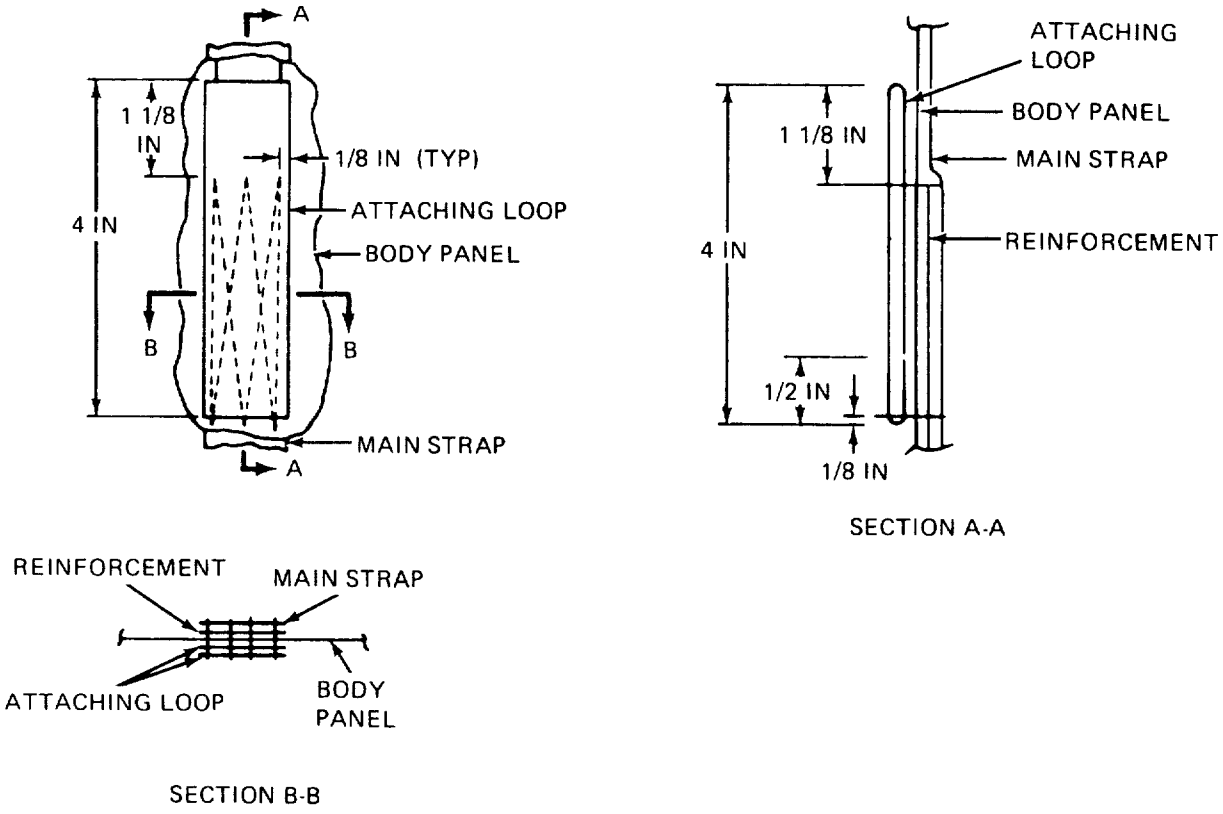
(1) Remove original attaching loop from bag inside by cutting and removing stitching securing loop.

(2) Cut an 8-inch length of 1-inch wide webbing and wax ends (para. 2-18).

(3) Fold webbing length according to original construction details and details in figure 2-75.

(4) Place folded webbing in original attaching loop location and secure webbing loop by stitching a 2-7/8 inch-long three-point-WW-stitch formation according to details in figure 2-75. Stitching will be made with a light duty sewing machine using size E nylon thread, at 7 to 11 stitches per inch.

2-35. Attaching Loop (Deployment Bag) (cont).



4706-079

Figure 2-75. Attaching Loop Fabrication Details.

2-36. Deployment Bag Main Strap.

This task covers: a. Repair b. Replace

Tools:

Knife, Item 4, Appendix B
Sewing Machine, Light Duty (Table 2-2)

Materials/Parts

Thread, Nylon, Size E, Item 29/30, Appendix D
Webbing, Cotton, Type II, 1-inch, Item 37, Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Laid out on work table

Reference:

Group No 0202, MAC, Section II, Appendix B

a. *Repair*. Repair main strap as follows.

(1) *Stitching*. Stitch and restitch 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 (reference paragraph 2-17).

(2) *Splicing*. A deployment bag main strap may be spliced an unlimited number of times as follows.

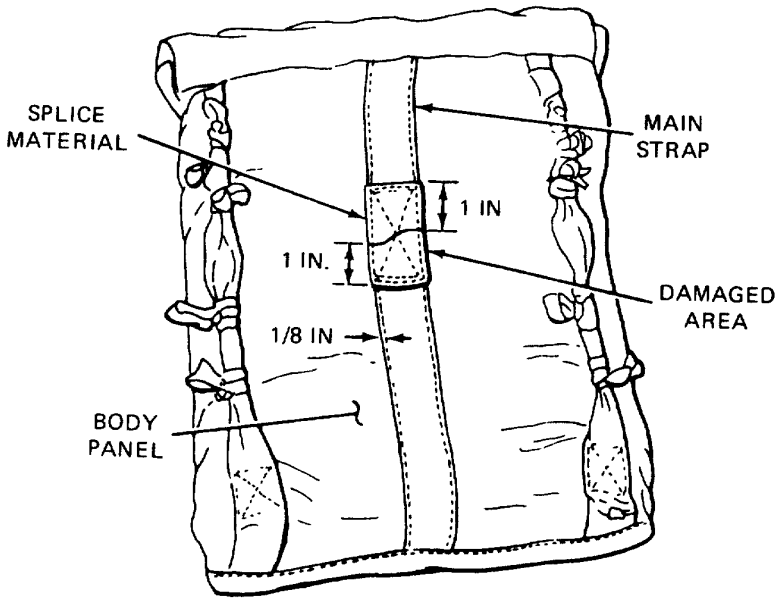
(a) As applicable, according to location of damaged area, cut and remove original stitching which secures tie loop on bag outside, attaching loop on bag inside, or 1 inch of stitching on each side of the main strap which secures suspension line protector flap.

(b) Cut a length of 1-inch wide, type II cotton webbing long enough to extend 4 inches beyond each side of damaged area. Wax ends In accordance with paragraph 2-18.

(c) Center webbing length over damaged area (figure 2-76) and secure each end of splice webbing by stitching a 2-inch long, single-X box-stitch formation with one double end. Stitching will be made In accordance with paragraph 2-17, using specifics in table 2-3.

(d) As applicable, reinstall items removed in (a), above, by restitching according to original construction details and paragraph 2-17.

2-36. Deployment Bag Main Strap (cont).



4706-080

Figure 2-76 . Main Strap Splicing Details .

b. *Replacement*. Replace a main strap which is damaged beyond repair by fabricating as follows:

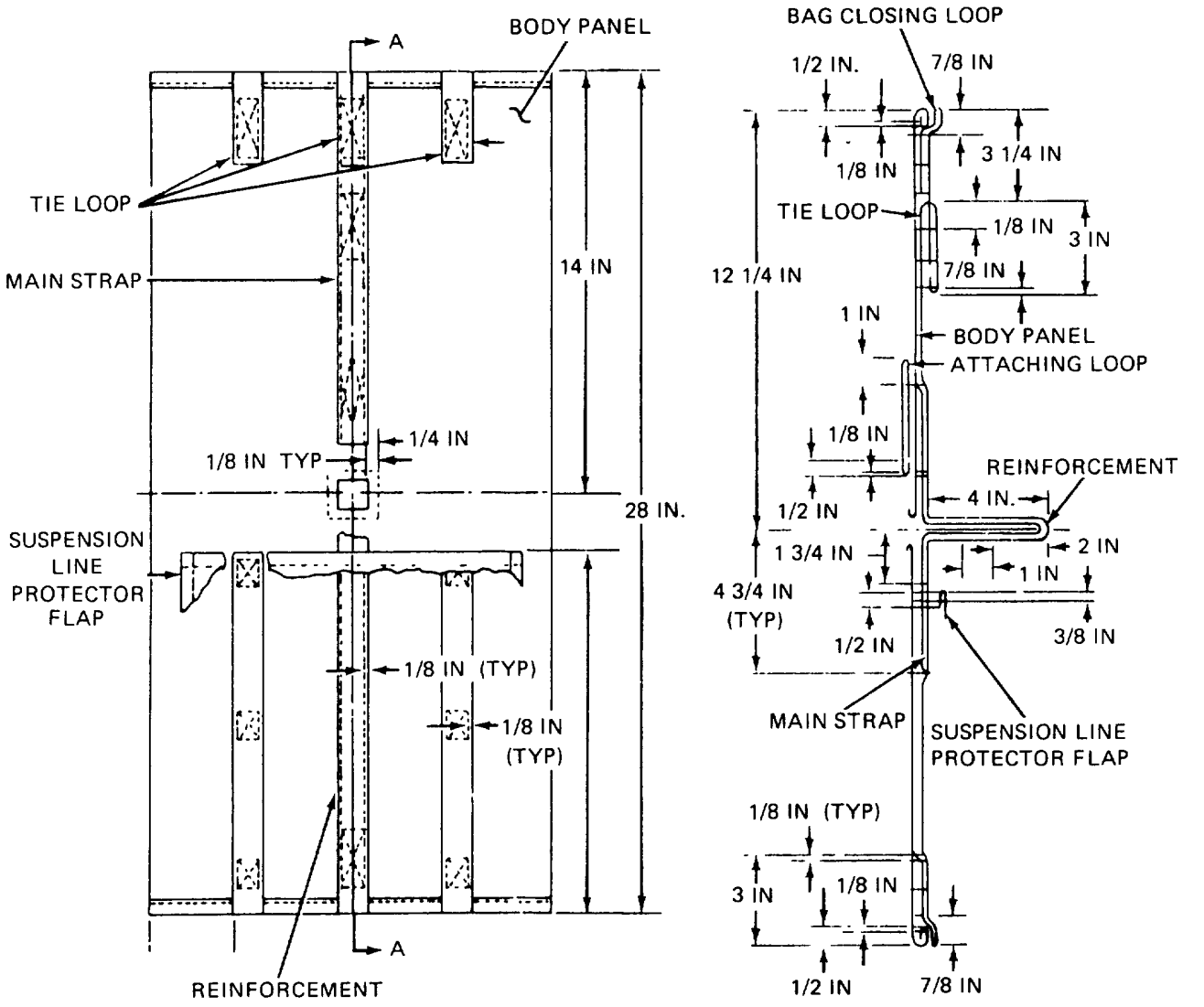
(1) Cut and remove the stitching which secures the tie loop main strap on bag outside, stitching securing attaching loop bag inside, and stitching which secures suspension line protector flap to deployment bag body. Retain two loops and protector flap for further use, if serviceable.

(2) Cut stitching which secures damaged main strap to deployment bag body and remove original strap.

(3) Cut a 42 1/4-inch length of 1-inch cotton webbing and wax ends (para. 2-18).

(4) Position webbing length in original strap location and secure webbing by stitching according to original construction details and details in figure 2-77. Use a light duty sewing machine and size E nylon thread, 7 to 11 stitches per inch.

(5) If serviceable, reinstall original tie loop, attaching loop, and suspension line protector flap removed in (1), above, by stitching according to original construction details (figure 2-77). However, if any of the items require repair or replacement, refer to appropriate paragraph.



4706-081

Figure 2-77. Deployment Bag Main Strap Fabrication Details.

2-37. Deployment Bag Suspension Line Retaining Strap.

This task covers: a. Repair b. Replace

Tools:

Knife, Item 4, Appendix B
Sewing Machine, Light Duty (Table 2-2)

Materials/Parts:

Thread, Nylon, Size E, Item 29/30, Appendix D
Webbing, Cotton, Type 11, 1-inch, Item 37, Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Deployment bag laid out on work table

Reference:

Group No. 0203, MAC, Section II, Appendix B

a. *Repair*. Stitch and restitch 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.

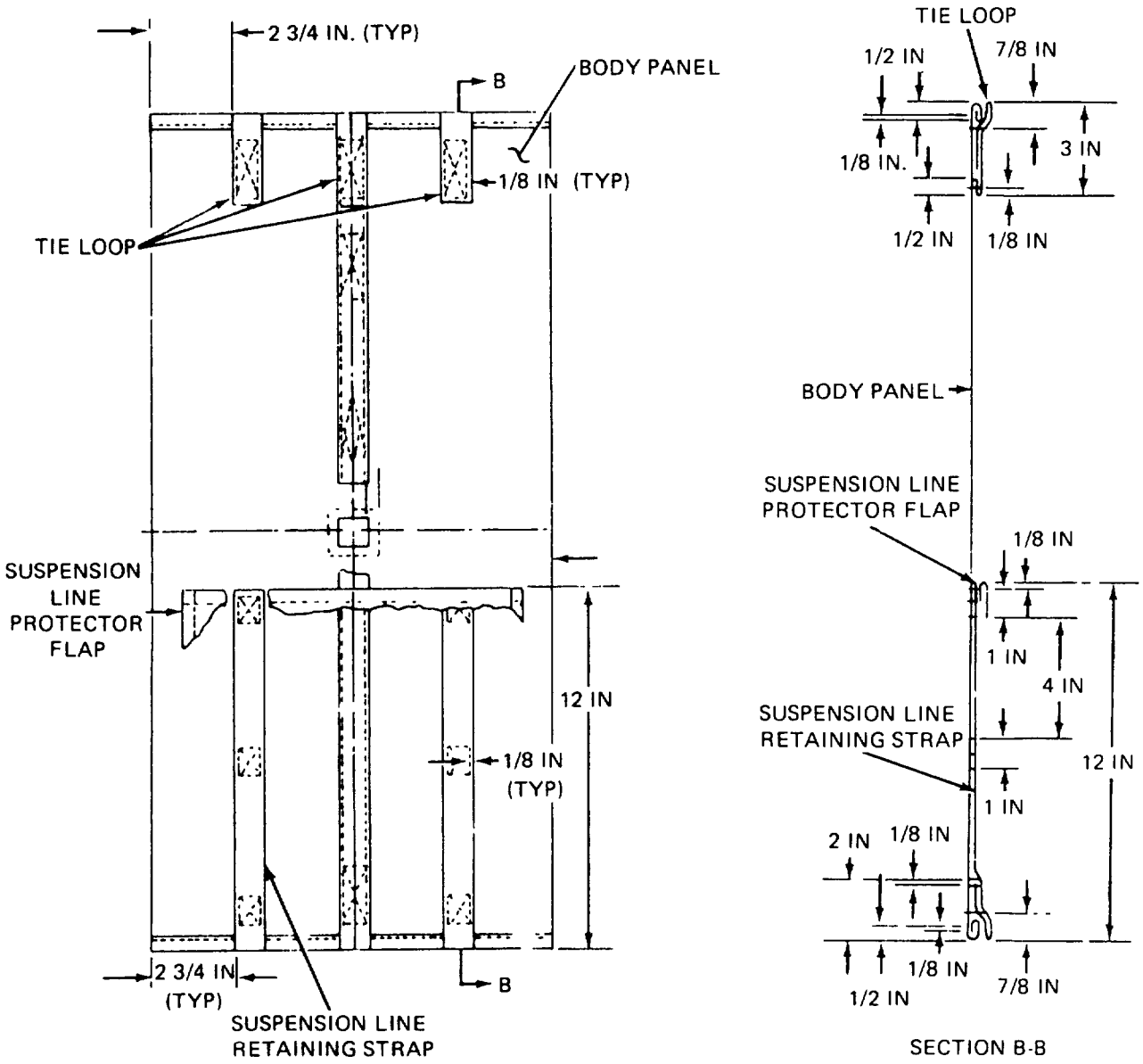
b. Replacement. Replace a damaged suspension line retaining strap by fabricating as follows:

(1) Cut and remove stitching which secures the suspension line protector flap to deployment bag body to a point 1 inch beyond each edge of affected suspension line retaining strap. Further, cut original suspension line retaining strap webbing on each side of the original single-X box-stitch formations.

(2) Cut a 14-inch length of 1-inch cotton webbing and wax ends (para. 2-18).

(3) Make a 2-inch long fold under on one end of the webbing length and place webbing in the original strap location with end of loop formed by fold under alined with lower edge of deployment bag. Secure webbing by stitching according to original construction details. Use a light duty sewing machine, size E nylon thread, 7 to 11 stitches per inch.

(4) Restitch suspension line protector flap according to original construction details (figure 2-78).



4706-082

Figure 2-78. Deployment Bag Suspension Line Retaining Strap Fabrication Details.

2-38. Deployment Bag Tie Loop.

This task covers: a. Repair b. Replace

Tools:

Knife, Item 4, Appendix B
Sewing Machine, Light Duty (Table 2-2)

Materials/Parts:

Thread, Nylon, Size E, Item 29/30, Appendix D
Webbing, Cotton, Type 11, 1-inch, Item 37, Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Laid out on work table

Reference:

Group No. 0204, MAC, Section II, Appendix B

a. *Repair*. Stitch and restitch with 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.

b. *Replacement*. Replace a damaged or missing tie loop by fabricating as follows:

(1) If applicable, remove a damaged tie loop by cutting stitching at point of loop attachment to deployment bag.

(2) Cut a cinch length of 1-inch cotton webbing and wax ends.

(3) Form the replacement tie loop according to original construction details and details in figure 2-79. Position formed replacement loop in original tie loop location and secure loop by stitching according to original construction details (figure 2-79). Use a light duty sewing machine, size E nylon thread, 7 to 11 stitches per inch.

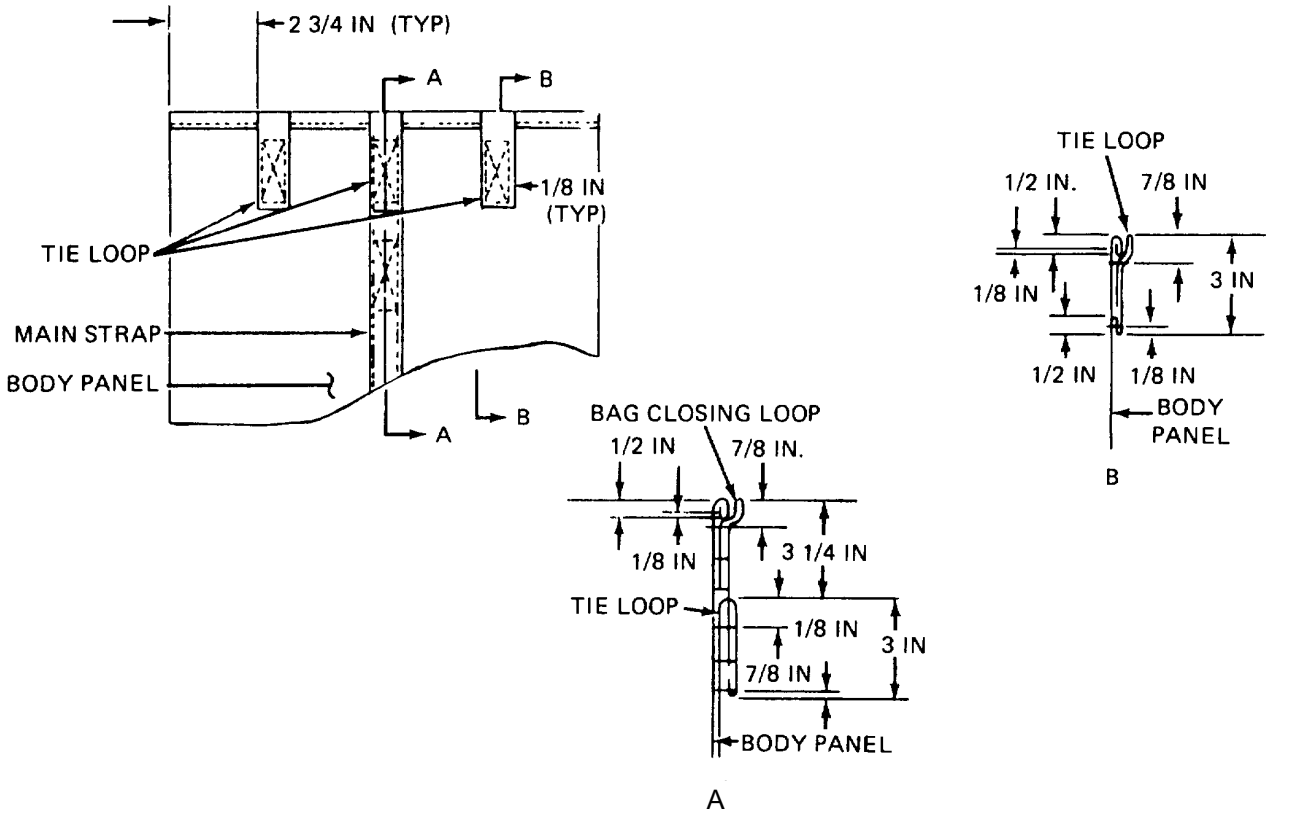


Figure 2-79. Deployment Bag Tie Loop Fabrication Details.

2-39. Deployment Bag Panels and Flaps.

This task covers: a. Repair b. Replace

Tools:

Knife, Item 4, Appendix B
Sewing Machine, Industrial, Darning (Table 2-2)
Sewing Machine, Light Duty (Table 2-2)

Materials/Parts:

Cloth, Cotton, 8.2 oz, Item 9, Appendix D
Thread, Nylon, Size E, Item 29130, Appendix D

Personnel Required:

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Laid out on work table

Reference:

Group No. 0205, MAC, Section II, Appendix B

a. *Repair.*

(1) *Stitching*. Stitch and restitch with 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, in accordance with paragraph 2-17b.

(2) *Darning.* Darn a hole or tear which does not exceed 3/4 inch in length or diameter according to procedures In paragraph 2-17c, using specifics In table 2-3. There is no limit to the number of darns which may be made on the bag panels and flaps.

(3) *Patching.* Patch a hole or tear which exceeds 3/4 inch in length or diameter using 8.2 ounce cotton sateen cloth and specifics in table 2-3. There is no limit to the number of patches which may be made on the bag panels and flaps as follows.

NOTE

Patches may be applied to the inside or outside of Deployment Bag.

(a) Smooth fabric around the damaged area, and secure with pushpins. Do not pin damaged area.

(b) Using an authorized marking aid of contrasting color, mark a square or rectangle around the area to be patched and insure one side of marked square or rectangle is parallel to warp or filling of fabric.

(c) Cut damaged area fabric along lines made in (b) above. Further cut fabric diagonally at each corner to allow a 1/2-inch foldback In raw edges.

(d) 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 2-17a.

(e) Using sateen cloth, mark and cut a patch 2-1/2 inches wider and longer than inside measurements of the prepared hole. Insure that patch material is marked and cut along the warp or filling of fabric

(f) Center patch material over prepared hole and insure the warp or filling of patch material matches warp or filling of fabric being patched. Pin patch material in position

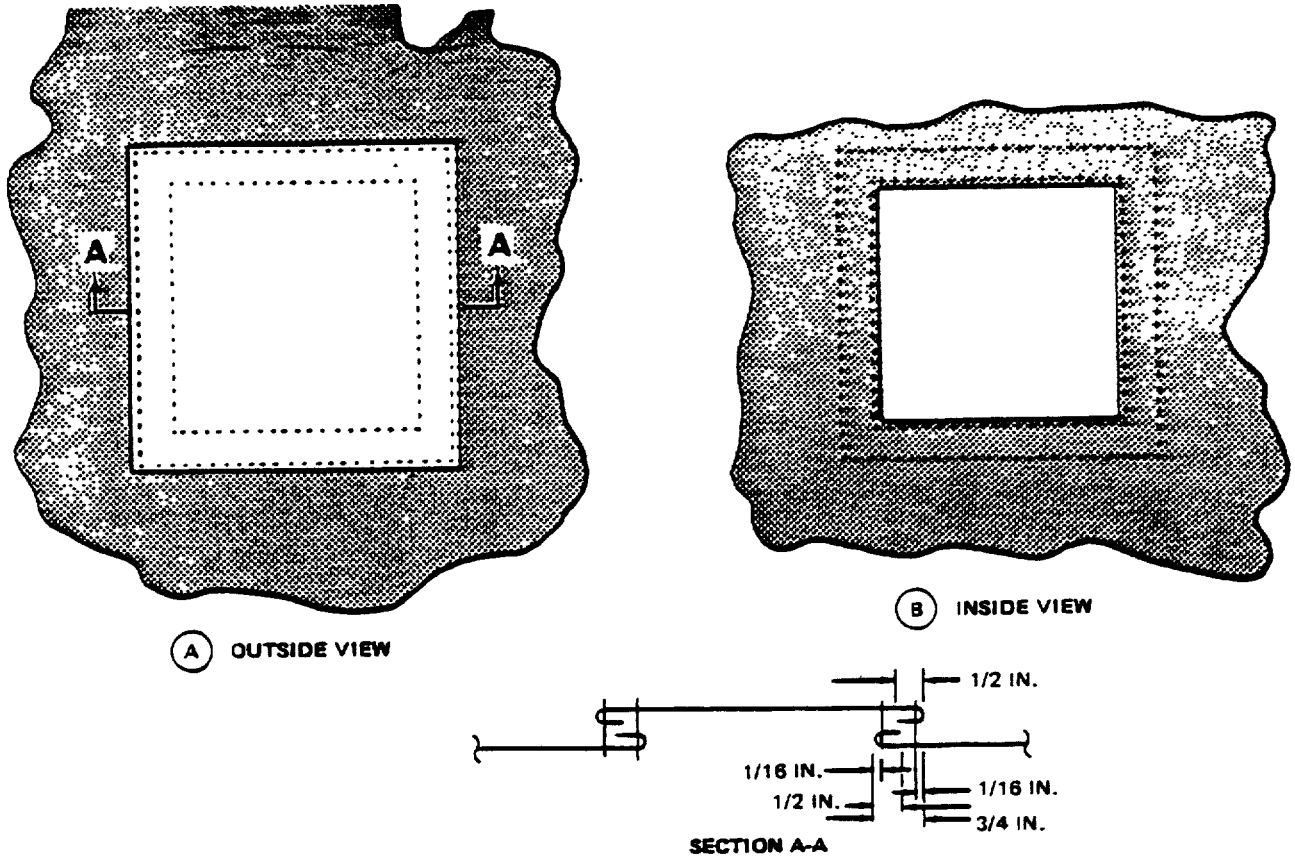
(g) Make a 1/2-inch fold under on each edge of patch material and baste patch to prepared area. Basting will be performed using procedures In paragraph 2-17.

(h) Remove pushpins securing the item to repair table and secure the patch by stitching, using applicable details In figure 2-80 and stitching specifics outlined in table 2-3. Make first row of stitching completely around patch. Turn deployment bag inside out and make a second row of stitching around prepared hole. Stitching will be performed in accordance with paragraph 2-17b.

(4) *Restenciling*. As required, restencil identification markings using procedures in paragraph 2-19.

b. *Replacement.* Replace an unrepairable deployment bag with a serviceable item from stock.

2-39. Deployment Bag Panels and Flaps (cont).



4706-086

Figure 2-80. Patching Deployment Bag Panels and Flaps.

2-40. Static Line.

This task covers: a. Repair b. Replace

Tools:

Sewing Machine, Industrial, Zig Zag (Table 2-2)

Materials/Parts:

Tape, Pressure Sensitive, Item 26, Appendix D
Thread, Nylon, Size E, Item 29/30, Appendix D
Webbing, Nylon, Tubular, 3/4-inch, Item 40, Appendix D

Personnel Required

43E(10) Parachute Rigger

Equipment Condition:

Inspected (paragraph 2-9)
Cleaned (paragraph 2-11)
Laid out on work table

Reference

Group 03, MAC, Section II, Appendix B

a. *Repair*.

(1) *Stitching*. Stitch and restitch 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.

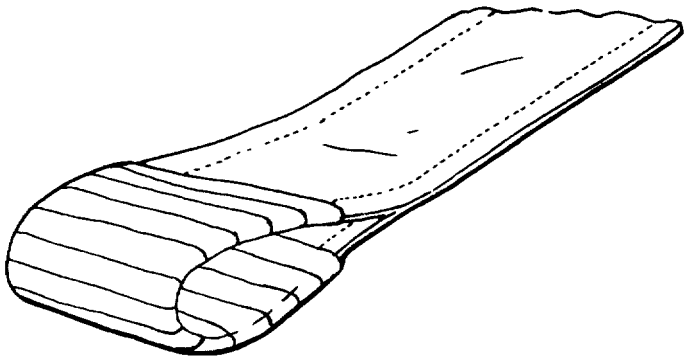
(2) *Marking and Restenciling*. As required, restencil identification marks using the procedures in paragraph 2-19.

(3) *Retaping*. As required, retape riser clevis attaching loop located on one end of static line length as follows:

(a) Remove the remains of the original tape from the riser clevis attaching loop.

(b) Using a 2 1/2-inch length of 1-inch wide, pressure-sensitive tape, serve riser clevis attaching loop with one and a half turns (figure 2-81).

2-40. Static Line (cont).



4706-84

Figure 2-81. Retaping Riser Clevis Attaching Loop.

b. *Replacement*. Replace an unserviceable static line by fabricating as follows:

(1) Remove riser clevis from clevis attaching loop and further remove static line length from attaching loop on deployment bag. Retain riser clevis for further use, if serviceable.

(2) Cut a 192 1/2-inch length of 3/4-inch wide tubular nylon webbing and sear ends.

(3) Place a mark 14 inches from end and make a 7-inch long foldback on one end of the webbing length (figure 2-82). Beginning at seared edge, secure foldback by stitching two 3/16-inch wide by 4-inch long rows of double-throw zigzag stitching according to details in table 2-3. Stitching will be made using specifics in table 2-3.

(4) On opposite end of webbing length, mark 11 inches from end and make a 5 1/2-inch long foldback. Secure foldback using procedure in (3), above

(5) Using a 2 1/2-inch length of 1-inch wide, type I pressure-sensitive tape, serve the 1 1/2-inch long loop with one and a half turns (see figure 2-81).

(6) Stencil part numbers 11-1-219 on static line webbing using procedures in paragraph 2-19.

(7) If required, reattach the static line to static line attaching loop on deployment bag as outlined in paragraph 2-8.

(8) Install a serviceable riser clevis on 1 1/2-inch long clevis attaching loop according to original riser clevis installation details.

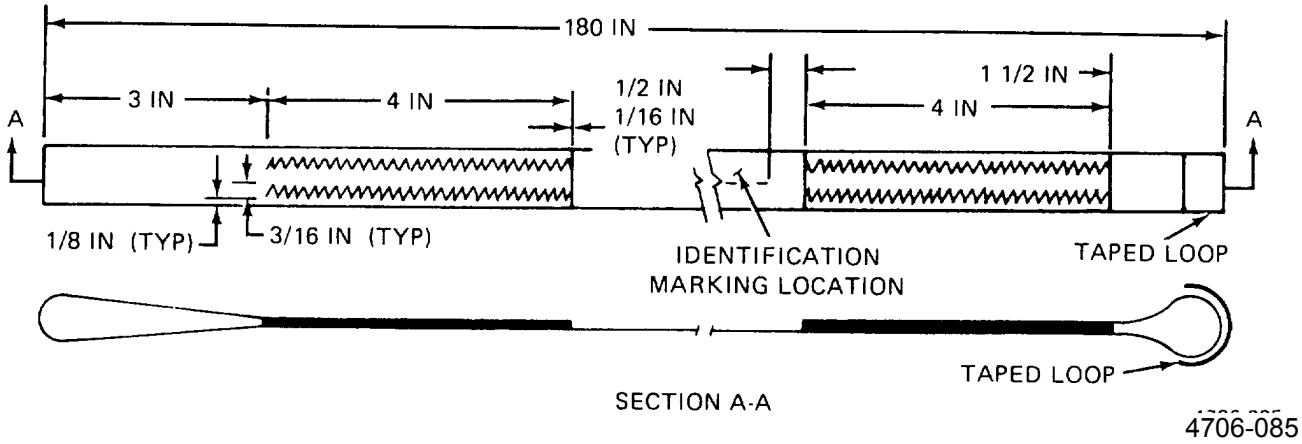


Figure 2-82. Static Line Construction Details .

SECTION VII. PREPARATION FOR STORAGE OR SHIPMENT

Paragraph Page

2-41. 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 exerted 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.

2-41. Storage (cont).

(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.

2-42. 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.

2-43. 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 in 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 a 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 TB 750-126, 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 TB 750-126 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 previously 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 AR 700-15, TM 38-230-1, and TM 38-230-2. Shipment of air delivery items will be accomplished in accordance with TM 10-1670-201-23 T.O. 13C1-41/NAVAIR 13-1-17.

APPENDIX A

REFERENCES

A-1. Scope. This appendix lists all forms, technical manuals, and miscellaneous publications referenced In 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 PAM 738-751

A-3. Technical Manuals.

General Maintenance of Parachutes and Other Airdrop Equipment	TM 10-1670-201-23 T.O 13C-1-41/ NAVAIR 13-1-17
Miscellaneous Airdrop Canvas, Webbing, Metal, and Wood Items	TM 10-1670-240-20/ T.O. 13C7-49-11
Preservation, Packaging, Packing of Military Supplies and Equipment (Vols 1 and 2)	TM 32301 and TM 38-230-2
Procedures for the Destruction of Air Delivery Equipment to Prevent Enemy Use	TM 43-0002-1

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
Air Delivery, Parachute Recovery, and Aircraft Personnel Ejection Systems	AR 750-32

A-6. Technical Bulletins.

Maintenance Expenditure Limits for FSC Group 16	TB 430002-4

A-7. Joint Regulations.

Joint Airdrop Inspection Records, Malfunction Investigations- and Activity Reporting	AFR 55-10 AR 594 OPNAVINST 4630-24B MCO 13480.1B

APPENDIX B
MAINTENANCE ALLOCATION CHART (MAC)

Section I. INTRODUCTION

B-1. The Army Maintenance System MAC

This introduction provides a general explanation of all maintenance and repair functions authorized at the two maintenance levels under the Two-Level Maintenance System concept.

This MAC (immediately following the introduction) 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 levels, which are shown on the MAC in column (4) as:

Field - includes two columns, Unit Maintenance and Direct Support maintenance. The Unit maintenance column is divided again into two more subcolumns, C for Operator or Crew and O for Unit maintenance.

Sustainment – includes two subcolumns, general support (H) and depot (D).

The tools and test equipment requirements (immediately following the MAC) list the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.

The remarks (immediately following the tools and test equipment requirements) contain supplemental instructions and explanatory notes for a particular maintenance function.

B-2. Maintenance Functions

Maintenance functions will be limited to and are defined as follows:

1. 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.) This includes scheduled inspection and gagings and evaluation of cannon tubes.

2. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.

3. Service. Operations required periodically to keep an item in proper operating condition; e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases. This includes scheduled exercising and purging of recoil mechanisms. The following are examples of service functions:

    a. Unpack. To remove from packing box for service or when required for the performance of maintenance operations.

    b. Repack. To return item to packing box after service and other maintenance operations.

    c. Clean. To rid the item of contamination.

d. Touch up. To spot paint scratched or blistered surfaces.

e. Mark. To restore obliterated identification.

4. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.

5. Align. To adjust specified variable elements of an item to bring about optimum or desired performance

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

7. 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.

8. Paint. To prepare and spray color coats of paint so that the ammunition can be identified and protected. The color indicating primary use is applied, preferably, to the entire exterior surface as the background color of the item. Other markings are to be repainted as original so as to retain proper ammunition identification.

9. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. “Replace” is authorized by the MAC and assigned maintenance level is shown as the third position code of the Source, Maintenance and Recoverability (SMR) code.

10. Repair. The application of maintenance services, including fault location/troubleshooting, removal/installation, disassembly/assembly procedures and maintenance actions to identify troubles 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.

NOTE

The following definitions are applicable to the “repair” maintenance function: Services. Inspect, test, service, adjust, align, calibrate, and/or replace.

Fault location/troubleshooting. The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or Unit Under Test (UUT).

Disassembly/assembly. The step- by- step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e. identified as maintenance significant).

Actions. Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

11. 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. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

12. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles.) considered in classifying Army equipment/components.

B-3. Explanation of Columns in the MAC, Section II

Column (1) Group Number. Column (1) lists FGC numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA.)

Column (2) Component/Assembly. Column (2) contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

Column (3) Maintenance Function. Column (3) lists the functions to be performed on the item listed in column (2) (For a detailed explanation of these functions refer to "Maintenance Functions" outlined above).

Column (4) Maintenance Level. Column (4) specifies each level of maintenance authorized to perform each function listed in column (3), by indicating work time required (expressed as man-hours in whole hours or decimals) in the appropriate subcolumn. This work time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work time figures are to be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end 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 time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The system designations for the various maintenance levels are as follows:

Field:

C Operator or Crew maintenance
O Unit maintenance
F Direct Support maintenance

Sustainment:

L Specialized Repair Activity
H General Support maintenance
D Depot maintenance

NOTE

The “L” maintenance level is not included in column (4) of the MAC. Functions to this level of maintenance are identified by work time figure in the “H” column of column (4), and an associated reference code is used in the REMARKS column (6). This code is keyed to the remarks and the SRA complete repair application is explained there.

Column (5), Tools and Equipment Reference Code. Column (5) specifies, by code, those common tool sets (not individual tools), common Test, Measurement and Diagnostic Equipment (TMDE), and special tools, special TMDE and special support equipment required to perform the designated function. Codes are keyed to the entries in the tools and test equipment table.

Column (6) Remarks Code. When applicable, this column contains a letter code, in alphabetic order, which is keyed to the remarks table entries.

B-4. Explanation of Columns in the Tools and Test Equipment Requirements, Section III

Column (1) - Tool or Test Equipment Reference Code. The tool or test equipment reference code correlates with a code used in column (5) of the MAC.

Column (2) - Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

Column (3) - Nomenclature. Name or identification of tool or test equipment.

Column (4) - National Stock Number (NSN). The NSN of the tool or test equipment.

Column (5) - Tool Number. The manufacturer’s part number, model number, or type number.

B-5. Explanation of Columns in Remarks, Section IV

Column (1) - Remarks Code. The code recorded in Column (6) of the MAC.

Column (2) - Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC.

Section II. MAINTENANCE ALLOCATION CHART FOR 12-FOOT DIAMETER HIGH-VELOCITY CARGO PARACHUTE ASSEMBLY

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			FIELD			SUSTAINMENT			
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
00	THE 12-FOOT DIAMETER HIGH VELOCITY CARGO PARACHUTE								A
01	CANOPY	Inspect Service Repair	0.7 0.3 0.3					1, 2, 3	B, C, D, F
0101	BRIDLE LOOP	Replace Repair	0.3 0.1					4	
0102	VENT LINE	Replace Repair	0.3 0.3						
0103	VENT REINFORCEMENT TAPE (UPPER LATERAL BAND)	Repair	0.3						
0104	GORE SECTION	Replace Repair		1.0 0.5				9	E,F
0105	RADIAL TAPE	Repair	0.3						
0106	VERTICAL TAPE	Repair	0.3						
0107	SKIRT REINFORCEMENT TAPE (LOWER LATERAL BAND)	Repair	0.3						
0108	POCKET BAND	Replace Repair	0.3 0.3						
0109	SUPENSION LINE ATTACHING LOOP	Replace Repair	0.3	0.3					F
0110	SUSPENSION LINE	Replace Repair	0.5	0.3					F
0111	RISER	Replace Repair	0.8 0.3						
011101	RISER CLEVIS	Replace Repair	0.1 0.1						
011102	PARACHUTE INSPECTION DATA POCKET	Replace Repair	0.3 0.2						
02	DEPLOYMENT BAG	Inspect Service Replace Repair	0.2 0.1 0.1 0.3						

Section II. MAINTENANCE ALLOCATION CHART FOR 12-FOOT DIAMETER HIGH-VELOCITY CARGO PARACHUTE ASSEMBLY – Continued

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			FIELD			SUSTAINMENT			
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
0201	ATTACHING LOOP	Replace Repair	0.3 0.2						
0202	MAIN STRAP	Replace Repair	0.5 0.3						
0203	SUSPENSION LINE RETAINING STRAP	Replace Repair	0.3 0.3						
0204	TIE LOOP	Replace Repair		0.3 0.3					
0205	PANELS AND FLAPS	Repair		0.5					
03	STATIC LINE	Inspect Service Replace Repair		0.1 0.1 0.1 0.3					
0301	LINE WEBBING	Replace Repair		0.2 0.1					
0302	RISER CLEVIS	Replace Repair		0.1 0.1					

Section III. TOOLS AND TEST EQUIPMENT FOR 12-FOOT DIAMETER HIGH-VELOCITY CARGO PARACHUTE ASSEMBLY

(1) TOOLS OR TEST EQUIPMENT REFERENCE CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL STOCK NUMBER	(5) TOOL NUMBER
1	O	Weight, Parachute Packing	1670-00-375-9134	66C32569
2	O	Separator, Line, Small	1670-00-072-8661	11-1-17
3	O	Splicing Aid		
4	O	Knife	5110-00-162-2205	
5	O	Shears, Straight	5110-00-293-3444	
6	O	Push Pins	7510-00-940-0935	
7	O	Tacking Needle	8315-00-262-3733	
8	O	Knife, Metal, Hot		
9	O	Pot, Electric, Melting		
10	O	Iron, Household		
11	O	Packing Paddle		

Section IV. REMARKS FOR 12-FOOT DIAMETER HIGH-VELOCITY CARGO PARACHUTE ASSEMBLY

(1) REMARKS CODE	(2) REMARKS
A	Prior to issue of stowed parachute.
B	Inspect is a technical-rigger type inspection.
C	Service is clean equipment.
D	Service is the packing of parachutes.
E	Repair by re-stitching, darning, patching, or re-stenciling canopy panel.
F	Repair at Unit Maintenance consists of darning, re-stitching, patching and replacement of parts authorized for Unit Maintenance. Intermediate repair consists of replacing gore sections, suspension line, and suspension line attaching loop.

UNIT, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

C1. SCOPE. This Manual 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 organizational and, direct support maintenance of the 12-Foot Diameter, High-Velocity 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.

C2. GENERAL. 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. This 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.

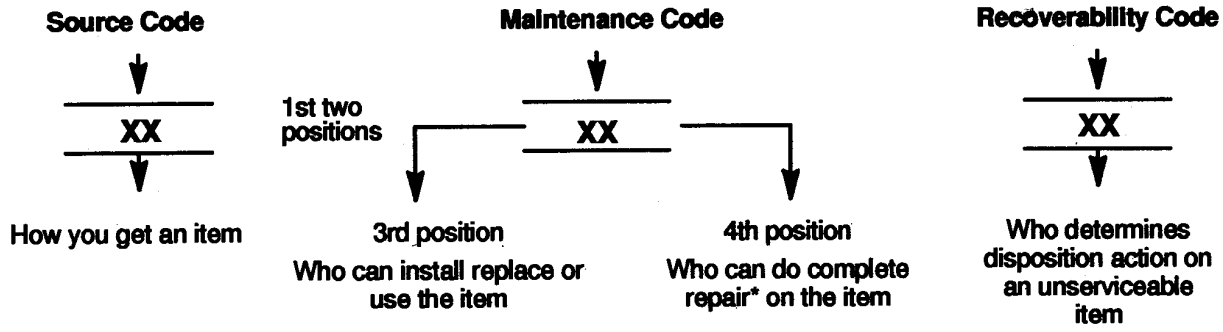
b. Section III. Special Tools List. (Not Applicable). No special tools are required to assemble the 12-foot diameter parachute. Common tools are listed in Appendix B, Section III because they are required for performance of packing and maintenance procedures/tasks. These tools are authorized under Chapter 2, paragraph 2-1 of this manual.

c. Section IV. Cross-Reference Index. 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.

C3. 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 Rear: 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.

C-3. Explanation of Columns (Section II) (cont).

(1) Source Code. The source code tells you how you get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow.

Code	Explanation
PA PB PC** PD PE PF PG	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 3d position of the SMR code. **NOTE : Items coded PC are subject to deterioration.
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3d position of the SMR code. The complete kit must be requisitioned and applied.
MO - (Made at org AVUM level) MF - (Made at DS/AVUM level) MH - (Made at GS level) ML - (Made at Specialized Repair Activity (SRA)) MD - (Made at Depot)	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 the RPSTL. If the item is authorized to you by the 3d 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.
AO - (Assembled by org AVUM Level) AF - (Assembled by DS/AVUM Level) AH - (Assembled by GS Category) AL - (Assembled by SRA) AD - (Assembled by Depot)	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 3d 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.

Code Explanation

XA - Do not requisition an "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 CAGE Code and part number given.
XC - Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number.
XD - Item is not stocked. Order an "XD"-coded item through normal supply channels using the CAGE Code 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".

(2) Maintenance Code. Maintenance codes tell 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 the following levels of maintenance.

Code **Application/Explanation**

C - Crew or operator maintenance done within unit/AVUM maintenance.

O - Unit level VAVUM maintenance can remove, replace, and use the item.

F - Direct support/AVIM maintenance can remove, replace, and use the item.

H - General support maintenance can remove, replace, and use the item.

L - Specialized repair activity can remove, replace, and use the item.

D - Depot 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). This position will contain one of the following maintenance codes.

C-3. Explanation of Columns (Section II) (cont).

Code	Application/Explanation

O - Organizational or aviation unit is the lowest level that can do complete repair of the item.

F - Direct support VAVIM 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 (designate the 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. 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 reparable, condemn and dispose of the item at unit or AVUM level.
F - Reparable item. When uneconomically reparable, condemn and dispose of the item at direct support or aviation intermediate level.
H - Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D - Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L - Reparable 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. FSCM (Column (3)). The Federal Supply Code for Manufacturer (FSCM) 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 number listed.

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., Phy Sec C1 (C)-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 of bulk materials are referenced in this column in the line 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 (reference paragraph 4, 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 equipment 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.

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 instead of a quantity indicates that the quantity is variable and may vary from application to application.

C-4. Special Information.

a. The "Usable on code" title appears in the lower left corner of column (5). Usable on codes are shown in the left-hand margin of the description column. Uncoded items are applicable to all models.

C-4. Special Information (cont).

b. Bulk materials required to manufacture items are listed in the Bulk Material Group of this manual. NSN's for bulk materials are also referenced in the description column of the line item entry for the item to be manufactured/fabricated. Detailed manufacturing instructions for items source coded to be manufactured or fabricated are found in this manual.

c. Detailed assembly instructions for items source coded to be assembled from component spare/repair parts are found In this manual Items that make up the assembly are listed immediately following the assembled item entry.

d. Line item entries for repair parts kits and sets appear as the last entries in the repair parts listing for the figure in which their parts are listed as repair parts.

e. Items which have the word Bulk in the figure number column will have an index number shown in the item number column. This index number is furnished for use as a cross-reference between the National Stock Number/Part Number Index and the bulk material list in Section II.

f. In the repair parts list, some items are indented to show that they are a component or components of the item under which they are indented and indicated by a dot.

C-5. 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
(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

(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) *FSCM column.* The Federal Supply Code for Manufacturer (FSCM) 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 FSCM columns to the left.

(4) *Fig. column*. This column lists the number of the figure where the item is identified/located in Section 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-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 functional group or subfunctional group to which the item belongs. This is necessary since figures are prepared for functional groups and subfunctional groups, and listings are divided into the same groups.

(2) *Second.* Find the figure covering the functional group or subfunctional group to which the item belongs.

(3) *Third*. Identify the item on the figure and note the item number of the item.

(4) *Fourth*. Refer to the Repair Parts List for the figure to find the line item entry for the item number noted on the figure.

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 the National Item Identification Number (NIIN)* sequence. The part numbers in the Part Number index are listed in ascending alphanumeric sequence Both indexes cross-reference you to the illustration figure and item number of the item you are looking for.

NSN

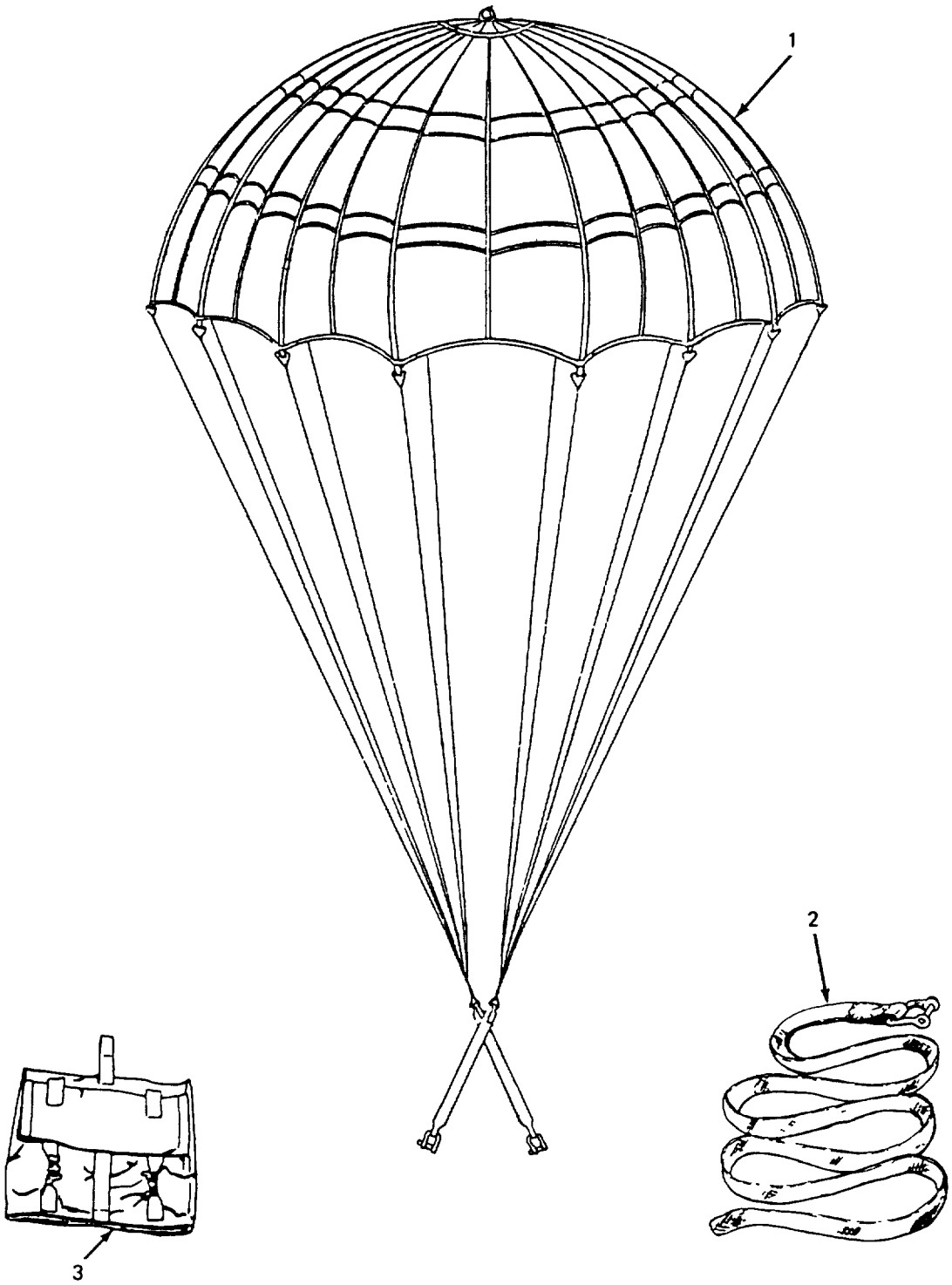
*The NIIN consists of the last 9 digits of the NSN (i.e., 5305-01-675-1467).

NIIN

(2) *Second.* After finding the figure and item number, verify that the Item Is the one you're looking for, then locate the item number in the repair parts list for the figure.

C-7. Abbreviations.

Abbreviations	Explanation
EA	Each
FT	Foot/Feet
IN	Inch/Inches
LG	Long
MTG	Mounting
NF	National Fine (Thread)



4706-087

Figure C-1 . 12-Foot High Velocity Cargo Parachute .

Section II. REPAIR PARTS LIST

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 00 PARACHUTE, CARGO HIGH VELOCITY, 12 FOOT	
				FIG. C-1 12-FOOT HIGH VELOCITY CARGO PARACHUTE PN 11-1-216	
1	XAOFF	81337	11-1-217-1	CANOPY, PARACHUTE, CARGO, 12-FOOT	1
2	XAOOO	81337	11-1-218	BAG, DEPLOYMENT	1
3	MOOOO	81337	11-1-219	STATIC LINE, CARGO MAKE FROM PN MIL-W-5625 3/4-INCH WEBBING NYLON TUBULAR.....	1
				END OF FIGURE	

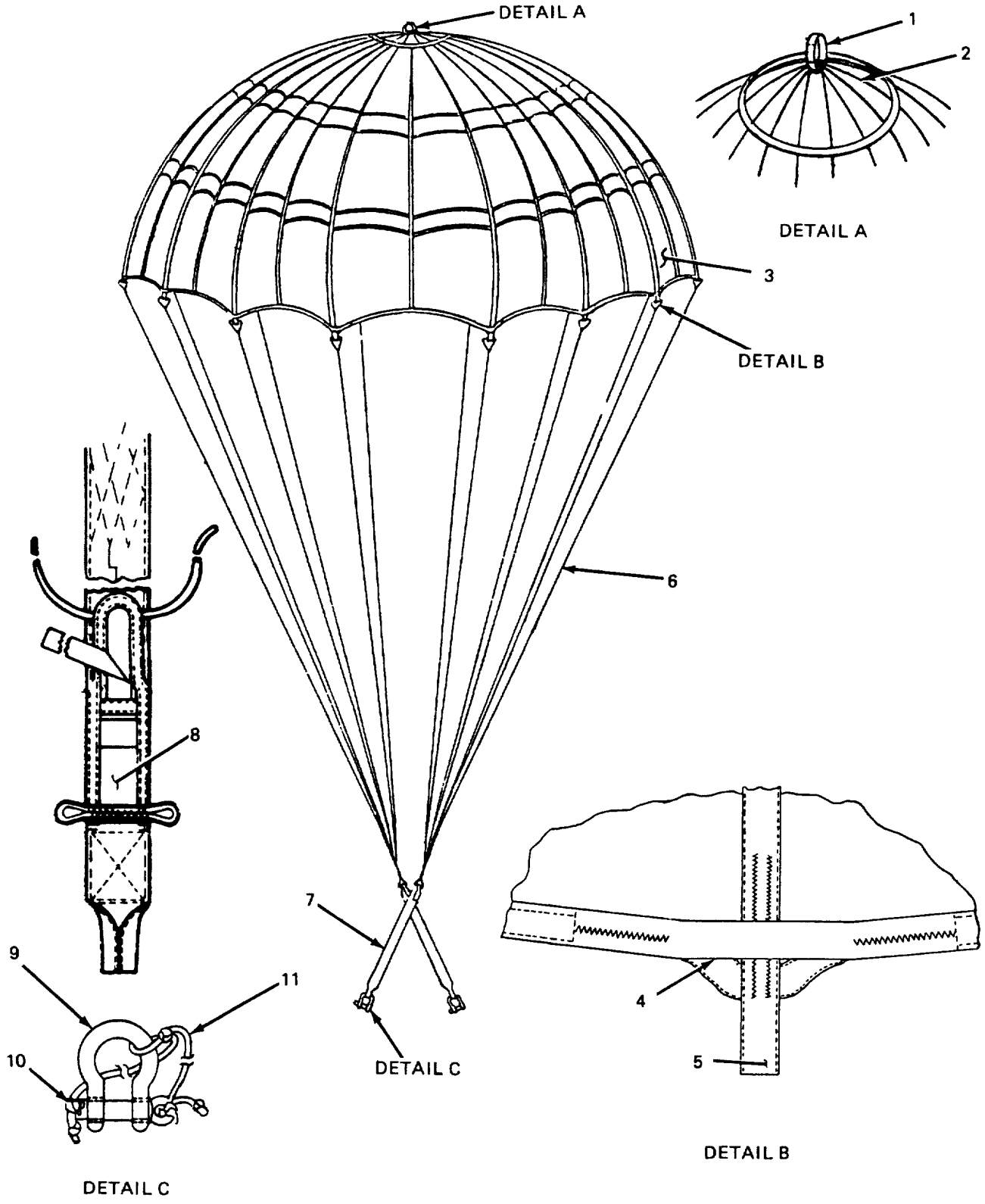
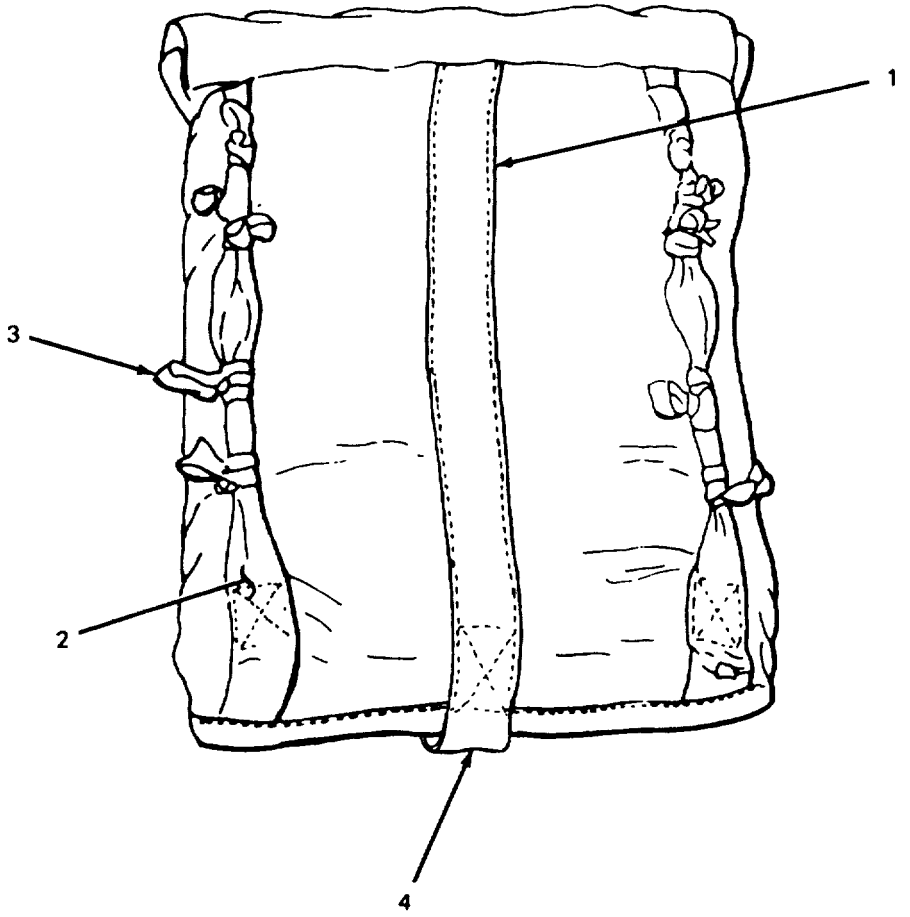


Figure C-2 . 12-Foot Cargo Parachute Canopy .

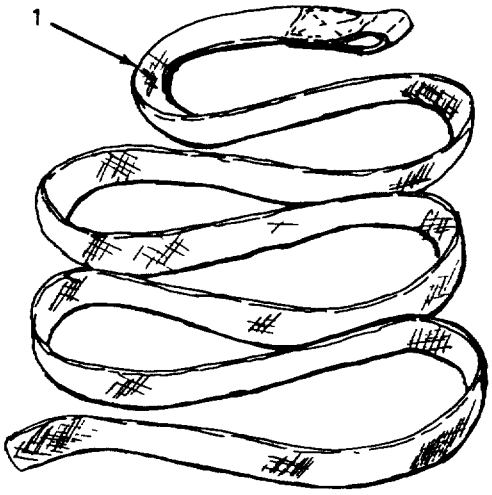
(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 01 CANOPY, PARACHUTE, CARGO, 12-FOOT	
				FIG. C-2 12-FOOT CARGO PARACHUTE CANOPY, PN 11-1-217-1	
1	MOOOO	81337	11-1-217-10	LOOP, BRIDLE, CANOPY MAKE FROM, PN MIL-W-5665 WEBBING COTTON TYPE VIII AND PN V-T-295 THREAD NYLON, SIZE 6	1
2	MOOOO	81337	11-1-217-5V	LINE, VENT MAKE FROM, PN MIL-C-7515 CORD NYLON TYPE II CORELESS, PN V-T-295 THREAD NYLON SIZE E	7
3	MFFFF	81337	11-1-509	SECTION, CANOPY GORE MAKE FROM, PN MIL-C-4279 CLOTH MUSLIN COTTON TYPE III OR PN MIL-C-4279 CLOTH/COTTON POLYESTER 36 OZ, PN V-T-295 THREAD NYLON SIZE E	42
4	MOOOO	81337	11-1-507JJ	POCKET BAND, MAKE FROM, PN MIL-T-5038 TAPE TEXTILE COTTON TYPE III, 3/4-INCH, PN V-T-295 THREAD NYLON SIZE E	14
5	MFFFF	81337	11-1-507FF	LOOP ATTACHING, SUSPENSION LINE MAKE FROM, PN MIL-T-5038 TAPE NYLON TYPE III, 3/4-INCH, AND PN V-T-295 THREAD NYLON SIZE E	14
6	MFFFF	81337	11-1-2175S	LINE SUSPENSION MAKE FROM, PN MIL-C-7515, CORD NYLON TYPE II, PN V-T-295 THREAD NYLON SIZE E	14
7	MOOOO	81337	11-1-508	RISER, CARGO PARACHUTE MAKE FROM, PN MIL-W-4088 WEBBING TEXTILE NYLON TYPE VIII, PN V-T-295 THREAD NYLON SIZE 3	1
8	PBOZZ	81337	11-1-2587	POCKET, PARACHUTE, INSPECTION DATA	1
9	PAOOO	96906	MS70086-1	CLEVIS	2
10	MOOZZ	96906	MS700868	PIN, SAFETY MAKE FROM, PN MS70086-P WIRE STEEL 080 IN DIA	1
11	MOOZZ	96906	MS70086C	CORD, CLEVIS PIN RETAINING MAKE FROM PN MIL-C-5040 CORD NYLON OD TYPE I	1
				END OF FIGURE	

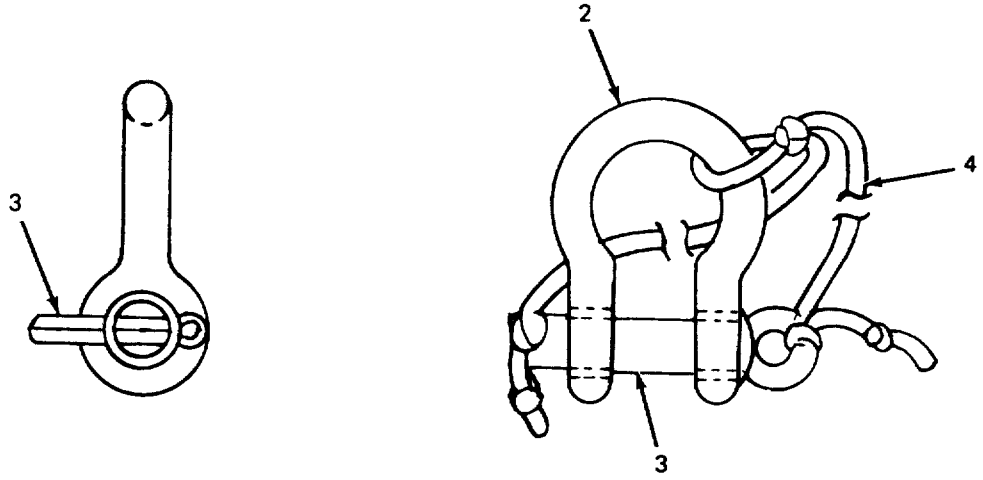


4706-090

Figure C-3 . Deployment Bag .

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 02 BAG, DEPLOYMENT	
				FIG. C-3 DEPLOYMENT BAG PN 11-1-218	
1	MOOO	81337	11-1-218Y	LOOP ATTACHING, DEPLOYMENT BAG MAKE FROM, PN MIL-W-5665 WEBBING COTTON TYPE II	1
2	MOOO	81337	11-1-218DD	STRAP, MAIN DEPLOYMENT, MAKE FROM PN MIL-W-5665, WEBBING COTTON, TYPE II	1
3	MOOO	81337	11-1-218CC	STRAP, RETAINING, STOW LOOP MAKE FROM, PN MIL-W-5665 WEBBING COTTON TYPE II	2
4	MOOO	81337	11-1-218FF	TIE LOOP, DEPLOYMENT BAG MAKE FROM, PN MIL-W-5665 WEBBING COTTON TYPE II	4
				END OF FIGURE	





4706-088

Figure C-4. Static Line.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 03 STATIC LINE, CARGO PARACHUTE	
				FIG. C-4 CARGO PARACHUTE STATIC LINE 11-1-219	
1	MOOOO	81337	11-1-219	STATIC LINE, CARGO PARACHUTE MAKE FROM, PN MIL-W-5625 WEBBING NYLON TUBULAR 3/4-INCH	1
2	PAOOO	96906	MS70086-1	CLEVIS	1
3	MOOZZ	96906	MS70086P	PIN, SAFETY MAKE FROM PN QQ-W-423 WIRE STEEL .080 IN DIA	1
4	MOOZZ	96906	MS70086C	CORD, CLEVIS RETAINING MAKE FROM PN MIL-C-5040 CORD NYLON TYPE I	1
				END OF FIGURE	

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 99 BULK MATERIALS	
				FIG. BULK	
1	PAOZZ	81349	MIL-C-4279	CLOTH MUSLIN 3.6 OZ TYPE III OD	YD
2	PAOZZ	81349	MIL-C-4279	CLOTH MUSLIN, 3.8 OZ TYPE III OD	YD
3	PAOZZ	81349	MIL-C-7515	CORD, NYLON CORELESS TYPE II OD	YD
4	PAOZZ	81349	MIL-C-5040	CORD NYLON TYPE I	YD
5	PAOZZ	81349	MIL-T-5038	TAPE NYLON 3/4 IN W OD	YD
6	PAOZZ	81349	MIL-T-5561	TAPE COTTON TYPE I 3/4 IN W OD	YD
7	PAOZZ	81348	V-T-295	THREAD, NYLON, SIZE 6	TU
8	PAOZZ	81348	V-T-295	THREAD, NYLON, SIZE E	TU
9	PAOZZ	81348	V-T-295	THREAD, NYLON, SIZE 3	TU
10	PAOZZ	81349	MIL-W-5665	WEBBING COTTON TYPE VIII OD	YD
11	PAOZZ	96906	MS24665-355	WEBBING COTTON TYPE II 1 IN W OD	YD
12	PAOZZ	81349	MIL-W-4088	WEBBING NYLON TYPE VIII OD	YD
13	PAOZZ	81349	MIL-W-5625	WEBBING NYLON TUBULAR 3/4 IN W	YD
14	PAOZZ	81348	QQ-W-423	WIRE STEEL .080 IN D	LB
				END OF FIGURE	

SECTION III. SPECIAL TOOLS LIST

Not Applicable

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5315-00-012-0123	BULK	11	8310-00-262-2780	BULK	7
3805-00-082-5751	BULK	13	8310-00-267-3027	BULK	9
8315-00-176-8083	BULK	5	8305-00-433-5986	BULK	2
4020-00-240-2154	BULK	4	4030-00-678-8560	C-2	9
8305-00-260-2564	BULK	10	4020-00-782-5415	BULK	3
8305-00-261-8585	BULK	12	9505-00-892-4616	BULK	14
8310-00-262-2772	BULK	8	8305-01-014-1318	BULK	1

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
81349	MIL-C-4729		8305-01-014-1318	BULK	1
			8305-00-433-5986	BULK	2
81349	MIL-C-5040		4020-00-240-2154	BULK	4
81349	MIL-C-7515		4020-00-782-5415	BULK	3
81349	MIL-T-5038		8315-00-176-8083	BULK	5
81349	MIL-T-5561			BULK	6
81349	MIL-W-4088		8305-00-261-8585	BULK	12
81349	MIL-W-5625		3805-00-082-5751	BULK	13
81349	MIL-W-5665		8305-00-260-2564	BULK	10
96906	MS24665-355		5315-00-012-0123	BULK	11
96906	MS70086C			C-2	11
				C-4	4
96906	MS70086P			C-2	10
				C-4	3
96906	MS70086-1		4030-00-678-8560	C-2	9
				C-4	2
81348	QQ-W-423		9505-00-892-4616	BULK	14
81348	V-T-295		8310-00-262-2780	BULK	7
			8310-00-262-2772	BULK	8
			8310-00-267-3027	BULK	9
81337	11-1-217-1			C-1	1
81337	11-1-217-10			C-2	1
81337	11-1-217-5S			C-2	6
81337	11-1-217-5V			C-2	2
81337	11-1-218			C-1	2
81337	11-1-218CC			C-3	3
81337	11-1-218DD			C-3	2
81337	11-1-218FF			C-3	4
81337	11-1-218Y			C-3	1
81337	11-1-219			C-1	3
				C-4	1
81337	11-1-2587			C-2	8
81337	11-1-507FF			C-2	5
81337	11-1-507JJ			C-2	4
81337	11-1-508			C-2	7
81337	11-1-509			C-2	3

APPENDIX D

EXPENDABLEIDURABLE SUPPLIES AND MATERIALS LIST

SECTION I. INTRODUCTION

D-1. Scope. This appendix lists expendable supplies and materials you will need to maintain the 12- Foot Diameter High Velocity 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 5, 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.

EXPENDABLE/DURABLE SUPPLIES AND MATERIAL LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	O	1670-00-568-0323	Band, Retaining, Rubber (81348) MIL-B-1832	BX
2	O	9160-00-253-1171	Beeswax, Technical, 1 Lb (81348) C-B-191	LB
3	O	7920-00-282-2490	Brush, Scrub, Household (81349) H-B-1490	EA
4	O	7520-00-248-9285	Brush, Stenciling (81348) H-B-00621	EA

EXPENDABLE/DURABLE SUPPLIES AND MATERIAL LIST (cont)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
5	O	5350-00-221-0872	Cloth, Abrasive, Ferric Oxide & Quartz (81348) P-C-458	SH
6	O	8305-00-460-4200	Cloth, Cotton, Balloon, Coated (81349) MIL-C-43677	YD
7	O	8305-01-014-1318	Cloth, Cotton, Muslin, Type III, 3.6 Oz. OD (81349) MIL-C-4279	YD
8	O	8305-00-433-5986	Cloth, Cotton, Muslin, Type III, 3.8 Oz. OD (81349) MIL-C-4279	YD
9	O	8305-00-940-8326	Cloth, Cotton, Sateen, Class I, 8.2 Oz., OD (81349) MIL-C-10296	YD
10	O	4020-00-240-2154	Cord, Nylon, Type I, Natural (81349) MIL-C-5040	YD
11	O	4020-00-246-0688	Cord, Nylon, Type III, OD (81349) MIL-C-5040	YD
12	O	4020-00-782-5415	Cord, Nylon, Type II, Coreless, Natural (81349) MIL-C-7515	YD
13	O	7930-00-281-4731	Dishwashing Compound, Hand, Flake (81348) P-D-410	LB
14	O	7510-00-286-5362	Ink, Marking, Parachute, Strata-Blue (81349) MIL-I-6903	PT
15	O	9150-00-168-2000	Lubricant, Solid Film	
16	O	7520-00-230-2734	Marker, Felt Tip, Black (81349) GG-M-0014	EA
17	O		Medicine Dropper	EA
18	O		Paper, Three Color, PH	
19	O	7520-00-491-2917	Pen, Ballpoint (81348) GG-B-0060	EA
20	O		Pin, Cotter	
21	O	7920-00-205-3570	Rag, Wiping (81348) DDD-R-30	BE
22	O	9310-00-160-7858	Stencilboard, Oiled (81348) UU-S-625 Type II	SH

EXPENDABLE/DURABLE SUPPLIES AND MATERIAL LIST (cont)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
23	O	6630-00-442-8000	Spool W/Color Chart	EA
24	O	8315-00-255-7673	Tape, Nylon, Type 111, 1/2 Inch (81349) MI L-T-5038	YD
25	O	8315-00-176-8083	Tape, Nylon, Type II, 3/4 Inch (81349) MI L-T-5038	YD
26	O	7510-00-663-0199	Tape, Pressure Sensitive, 1 Inch (81348) PPP-T-60	YD
27	O	6810-00-270-9982	Tetracloroethylene, Technical (81348) 0-T-236	DR
28	O	8310-00-917-3945	Thread, Cotton, Ticket No 8/7 (81348) V-T-276	TU
29	O	8310-00-262-2770	Thread, Nylon, Size E, Nat White (81348) V-T-295	TU
30	O	8310-00-262-2772	Thread, Nylon, Size E, OD (81348) V-T-295	TU
31	O	8310-00-248-9714	Thread, Nylon, Size 3, Nat. White (81348) V-T-295	TU
32	O	8310-00-267-3027	Thread, Nylon, Size 3, OD (81348) V-T-295	TU
33	O	8310-00-248-9716	Thread, Nylon, Size 6, Nat. White (813438) V-T-295	TU
34	O	8310-00-262-2780	Thread, Nylon, Size 6, OD (81348) V-T-295	TU
35	O	9160-00-285-2044	Wax, Paraffin, Technical, Type I, Grade A, 1 Lb (81348) VV-W-95	LB
36	O	8305-00-268-2411	Webbing, Cotton, Type 1, 1/4 Inch, OD (81349) MIL-T-5661	FT
37	O	5315-00-012-0123	Webbing, Cotton, Type 11, 1 Inch, OD (96906) MS24665-355	FT

EXPENDABLE/DURABLE SUPPLIES AND MATERIAL LIST (cont)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
38	O	8305-00-260-2564	Webbing, Cotton, Type VIII, Class 2B, OD (81349) MIL-W-5665	FT
39	O	8305-00-261-8585	Webbing, Nylon, Type VIII, OD (81349) MI L-W-4088	FT
40	O	3805-00-082-5751	Webbing, Nylon, Tubular, 3/4 Inch, OD (81349) MIL-W-5625	FT
41	O	9505-00-892-4616	Wire, Steel, .80 Inch Diameter (81348) QQ-W-423	LB

APPENDIX E

ILLUSTRATED LIST OF MANUFACTURED ITEMS

Complete Instructions for making items authorized to be manufactured or fabricated are located in Chapter 2, Section VII of this manual.

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INDEX (cont)

INDEX (cont)

INDEX (cont)

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To be distributed in accordance with DA Form 12-25A, Unit and Direct Support and General Support Maintenance requirements for Parachute, Cargo, Type 12-ft diameter, High Velocity.

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RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS

For use of this form, see AR 25-30; the proponent agency is ODISC4.

Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).

DATE
21 October 2003

TO: *(Forward to proponent of publication or form) (Include ZIP Code)*
COMMANDER
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NATICK, MA 01760-5052

FROM: *(Activity and location) (Include ZIP Code)*
PFC Jane Doe
CO A 3rd Engineer BR
Ft. Leonardwood, MO 63108

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 10-1670-296-23&P	30 October 2002	Unit Manual for Ancillary Equipment for Low Velocity Air Drop Systems

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*
	0036 00-2				*1*	*In table 1, Sewing Machine Code Symbols, the second sewing machine code symbol should be MD ZZ not MD 22.* *Change the manual to show Sewing Machine, Industrial: Zig-Zag; 308 stitch; medium-duty; NSN 3530-01-181-1421 as a MD ZZ code symbol.*

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
Jane Doe, PFC	508-233-4141	Jane Doe *Jane Doe*

DA FORM 2028, FEB 74 REPLACES DA FORM 2028, 1 DEC 68, WHICH WILL BE USED. USAPPC V3.00

TO: (*Forward direct to addressee listed in publication)*	**FROM:** (*Activity and location) (Include ZIP Code)*	**DATE**
COMMANDER U.S. ARMY TANK-AUTOMOTIVE AND ARMAMENT COMMAND ATTN: AMSTA-LC-CECT 15 KANSAS STREET NATICK, MA 01760-5052	*PFC Jane Doe* *CO A 3rd Engineer BR* *Ft. Leonardwood, MO 63108*	*21 October 2003*

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	**DATE**	**TITLE**
TM 10-1670-296-23&P	30 October 2002	Unit Manual for Ancillary Equipment for Low Velocity Air Drop Systems

PAGE NO.	**COLM NO.**	**LINE NO.**	**NATIONAL STOCK NUMBER**	**REFERENCE NO.**	**FIGURE NO.**	**ITEM NO.**	**TOTAL NO. OF MAJOR ITEMS SUPPORTED**	**RECOMMENDED ACTION**
0066 00-1					*4*			*Callout 16 in figure 4 is pointed to a D-Ring. In the Repair Parts List key for figure 4, item 16 is called a Snap Hook. Please correct one or the other.*

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE

TO: *(Forward to proponent of publication or form) (Include ZIP Code)* Commander U.S. Army Tank-automotive and Armament Command ATTN: AMSTA-LC-CECT Kansas Street, Natick, MA 01760-5052	**FROM:** *(Activity and location) (Include ZIP Code)*

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER TM 10-1670-275-23&P	DATE 17 March 1989	TITLE Unit and Intermediate Direct Support (DS) Maintenance Manual (Including Repair Parts and Special Tools list) for Parachute, Cargo Type: 12-Foot Diameter, High-Velocity Cargo Parachute

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

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PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE
TM 10-1670-275-23&P	17 March 1989	Unit and Intermediate Direct Support (DS) Maintenance Manual (Including Repair Parts and Special Tools list) for Parachute, Cargo Type: 12-Foot Diameter, High-Velocity Cargo Parachute

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE

TO: *(Forward to proponent of publication or form) (Include ZIP Code)* Commander U.S. Army Tank-automotive and Armament Command ATTN: AMSTA-LC-CECT Kansas Street, Natick, MA 01760-5052	**FROM:** *(Activity and location) (Include ZIP Code)*

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER TM 10-1670-275-23&P	DATE 17 March 1989	TITLE Unit and Intermediate Direct Support (DS) Maintenance Manual (Including Repair Parts and Special Tools list) for Parachute, Cargo Type: 12-Foot Diameter, High-Velocity Cargo Parachute

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO: (*Forward direct to addressee listed in publication)*	**FROM:** (*Activity and location) (Include ZIP Code)*	**DATE**
Commander U.S. Army Tank-automotive and Armament Command ATTN: AMSTA-LC-CECT Kansas Street, Natick, MA 01760-5052		

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE
TM 10-1670-275-23&P	17 March 1989	Unit and Intermediate Direct Support (DS) Maintenance Manual (Including Repair Parts and Special Tools list) for Parachute, Cargo Type: 12-Foot Diameter, High-Velocity Cargo Parachute

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

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 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 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 acres
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

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
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 temperature	5/9 (after subtracting 32)	Celsius temperature	°C

PIN : 065878-000