*TM 10-8400-203-23

TECHNICAL MANUAL

UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL

GENERAL REPAIR PROCEDURES FOR INDIVIDUAL EQUIPMENT

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***This manual together with TM 10-8400-201-23 supersedes TM 10-8400-201-23, 30 June 1986, including all changes.**

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7 MAY 1990

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TM 10-8400-203-23
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NO. 10

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

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A and B	A and B
iv through ix/(x blank)	iv through x
--------	26-1 through 26-27/(26-28 blank)
Index 1 and Index 2	Index 1 and Index 2

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	25–1 thru 25–17

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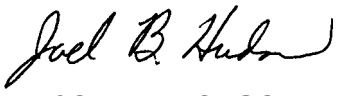

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1-5 and 1-6	1-5 and 1-6
1-14.1/(1-14.2 blank)	1-14.1 and 1-14.2
1-17 and 1-18	1-17 and 1-18
1-18.1/(1-18.2 blank)	1-18.1/(1-18.2 blank)
14-53 through 14-56	14-53 through 14-56
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20-19 and 20-20	20-19 and 20-20
---	24-1 through 24-17/(24-18 blank)
Index 3 and Index 4	Index 3 and Index 4

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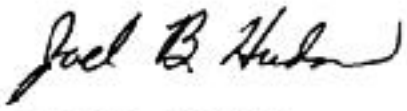

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Remove pages	Insert pages
1-9 through 1-12	1-9 through 1-12
1-1 2.1/(1-12.2 blank)	1-12.1/(1-12.2 blank)
1-17 and 1-18	1-17 and 1-18
23-29 through 23-33/(23-34 blank)	23-29 through 23-33/(23-34 blank)

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Remove pages	Insert pages
i and ii	i and ii
1-1 and 1-2	1-1 and 1-2
1-5 through 1-8	1-5 through 1-8
----	1-8.1/(1-8.2 blank)
1-9 through 1-12	1-9 through 1-12
----	1-12.1/(1-12.2 blank)
1-13 and 1-14	1-13 and 1-14
----	1-14.1/(1-14.2 blank)
1-15 and 1-16	1-15 and 1-16
----	1-16.1 and 1-16.2
1-17 and 1-18	1-17 and 1-18
----	1-18.1/(1-18.2 blank)
1-19 and 1-20	1-19 through 1-21/(1-22 blank)
2-1 through 2-4	2-1 through 2-4
2-15 through 2-20	2-15 through 2-20
3-1 and 3-2	3-1 and 3-2
3-15 and 3-16	3-15 and 3-16
4-7 through 4-9/(4-10 blank)	4-7 through 4-9/(4-10 blank)
6-1 and 6-2	6-1 and 6-2
6-9/(6-10 blank)	6-9/(6-10 blank)
7-1 and 7-2	7-1 and 7-2
7-9 and 7-10	7-9 and 7-10
8-5 through 8-7/(8-8 blank)	8-5 through 8-7/(8-8 blank)
9-1 and 9-2	9-1 and 9-2
9-17 and 9-18	9-17 and 9-18
9-25 through 9-27/(9-28 blank)	9-25 through 9-27/(9-28 blank)
10-1 and 10-2	10-1 and 10-2
11-1 and 11-2	11-1 and 11-2
11-9 through 11-11/(11-12 blank)	11-9 through 11-11/(11-12 blank)

Remove pages	Insert pages
13-15 through 13-19/ (13-20 blank)	13-15 through 13-19/ (13-20 blank)
14-49 and 14-50	14-49 and 14-50
14-50.1/(14-50.2 blank)	14-50.1/(14-50.2 blank)
14-51 through 14-57/ (14-58 blank)	14-51 through 14-57/ (14-58 blank)
15-17 and 15-18	15-17 and 15-18
16-1 and 16-2	16-1 and 16-2
16-9/(16-10 blank)	16-9 and 16-10
17-1 and 17-2	17-1 and 17-2
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19-4.1 and 19-4.2	19-4.1 and 19-4.2
19-5/(19-6 blank)	19-5/(19-6 blank)
20-1 and 20-2	20-1 and 20-2
20-5 and 20-6	20-5 and 20-6
20-15 through 20-20	20-15 through 20-20
21-5 and 21-6	21-5 and 21-6
21-11 and 21-12	21-11 and 21-12
21-21 through 21-28	21-21 through 21-28
22-1 through 22-4	22-1 through 22-4
23-1 and 23-2	23-1 and 23-2
23-29 through 23-33/ (23-34 blank)	23-29 through 23-33/ (23-34 blank)
Index-1 through Index-14	Index-1 through Index-15/ (Index-16 blank)

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4-3 through 4-8	4-3 through 4-8

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Remove pages	Insert pages
iii and iv	iii and iv
vii/(viii blank)	vii/(viii blank)
1-3 and 1-4	1-3 and 1-4
2-13 and 2-14	2-13 and 2-14
14-15 and 14-16	14-15 and 14-16
14-49 and 14-50	14-49 and 14-50
- - - -	14-50.1/(14-50.2 blank)
19-3 and 19-4	19-3 and 19-4
- - - -	19-4.1 and 19-4.2
- - - -	23-1 through 23-33/ (23-34 blank)
Index 1 through Index 6	Index 1 through Index 6
Index 13 and Index 14	Index 13 and Index 14

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1-11 through 1-14	1-11 through 1–14
1–17 through 1–20	1–1 7 through 1–20
2-3 and 2-4	2–3 and 2-4
2-15 and 2-16	2-15 and 2–16
3-1 and 3-2	3-1 and 3-2
3–15 and 3–16	3-15 and 3–16
4-1 and 4-2	4-1 and 4-2
6-1 and 6-2	6-1 and 6-2
9-1 and 9-2	9-1 and 9-2
10-1 and 10-2	10–1 and 10-2
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19-5/(19-6 blank)	19-5/(19-6 blank)
20–3 and 20-4	20-3 and 20-4
21-5 and 21-6	21-5 and 21-6
22-1 through 22-8	22-1 through 22-8

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Remove pages	Insert pages
2–1 7 and 2–18	2-17 and 2-18
9–15 and 9–16	9–15 and 9–1 6
9-27/(9-28 blank)	9-27/(9-28 blank)
14-57/(14-58 blank)	14-57/(14–58 blank)

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1–5 through 1 –8	1–5 through 1–8
1–11 through 1–14	1–1 1 through 1–14
2–1 and 2–2	2-1 and 2–2
2–1 5 through 2–20	2–15 through 2–20
4–3 and 4-4	4–3 and 4–4
5-1through 5-17/(5-18 blank)	5–1/(5-2 blank)
6-3 and 6-4	6-3 and 6–4
6-9/(6-10 blank)	6-9/(6-10 blank)
9–1 and 9-2	9–1 and 9–2
10–5/(10–6 blank)	10–5/(10-6 blank)
13-9 and 13-10	13–9 and 13–1 0
14–1 and 14-2	14–1 and 14–2
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14–55 and 14–56	14-55 and 14–56
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19–3 and 19-4	19–3 and 19–4
20–1 through 20-6	20–1 through 20–6
- - - - -	20–6.1 and 20–6.2
20–7 through 20–1 8	20-7 through 20-20
- - - - -	22-1 through 22-20
Index 1 through Index 14	Index 1 through Index 14

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WARNING

Toluene is a poisonous, flammable compound. Use only in well ventilated areas. Avoid repeated and prolonged contact with skin. Keep away from heat and open flame.

The coveralls are not fireproof and will char at about 700 to 800° F (370 to 430° C); therefore, ground egress procedures cannot be over emphasized.

The shirt and trousers are not fireproof and will char at about 700 to 800° F (370 to 430° C); therefore, egress cannot be over emphasized.

The jackets are not fireproof and will char at about 700 to 800° F (370 to 430° C); therefore, egress cannot be over emphasized.

Failure to correctly position release knob could result in a safety hazard. If the knob is in the up position it could interfere with the parachutist's reserve parachute.

Personnel engaged in welding should be equipped with welding goggles or hoods proper for type welding being done, and adequate precautions taken to prevent injury to the welder or other personnel.

Improper use of these garments can produce heat exhaustion within thirty minutes of hard work.

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INSERT LATEST UPDATED PAGES/WORK PACKAGES, DESTROY SUPERSEDED DATA

LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE: The portion of text affected by the updates is indicated by a vertical line in the outer margins of the page. Updates to illustrations are indicated by miniature pointing hands. Updates to wiring diagrams are indicated by shaded areas.

Dates of issue for original and changed pages/work pages are:

Original .. 0 .. 7 May 90

Change .. 1 .. 26 Feb 91

Change .. 2 .. 30 Sep 91

Change .. 3 .. 26 May 92

Change .. 4 .. 26 Feb 93

Change .. 5 .. 30 Apr 93

Change .. 6 .. 31 May 94

Change .. 7 .. 4 Aug 95

Change .. 8 .. 5 May 97

Change .. 9 .. 30 Aug 00

Change .. 10 .. 1 Mar 02

TOTAL NUMBER OF PAGES IS 538 CONSISTING OF THE FOLLOWING:

Page/WP No.	*Change No.	Page/WP No.	*Change No.	Page/WP No.	*Change No.
a-b	0	1-15	0	3-16	6
A-B	10	1-16 - 1-16.2	6	4-1	3
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iii – x	10	1-18	6	4-4 - 4-7	5
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1-3 - 1-4	4	1-19 - 2-3	6	5-1 - 5-2	1
1-5	8	2-4 - 2-13	0	6-1 - 6-2	6
1-6 - 1-9	6	2-14	4	6-3 - 6-8	0
1-10	7	2-15	0	6-9 - 7-1	6
1-11	3	2-16 - 2-20	6	7-2 - 7-8	0
1-12 - 1-12.2 blank	7	3-1	0	7-9 - 7-10	6
1-13 - 1-14	6	3-2	6	8-1 - 8-5	0
1-14.1 - 1-14.2	8	3-3 - 3-15	0	8-6 - 9-1	6

* Zero in this column indicates an original page or work package.

Page/WP No.	*Change No.	Page/WP No.	*Change No.	Page/WP No.	*Change No.
9-2 - 9-15	0	14-41 - 14-46	0	21-13 - 21-21	0
9-16	2	14-47	1	21-22 - 21-28	6
9-17	0	14-48 - 14-49	0	22-1	1
9-18	6	14-50	4	22-2	6
9-19 - 9-25	0	14-50.1 - 14-53	6	22-3	3
9-26 - 10-1	6	14-54 - 14-55	8	22-4	6
10-2 - 10-4	0	14-56 - 14-58(blank)	6	22-5 - 22-7	3
10-5 - 10-6(blank)	1	15-1 - 15-16	0	22-8 - 2-30	1
11-1 - 11-2	6	15-7 - 16-2	6	23-1	4
11-3 - 11-8	0	16-3	1	23-2	6
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12-1 - 12-54(blank)	0	16-9 - 17-1	6	23-30 - 23-34	7
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13-2 - 13-8	0	17-6 - 18-2	6	25-1 - 25-17	9
13-9	1	18-3 - 18-6	0	26-1 - 26-27/(28 blank)	10
13-10 - 13-14	0	18-7 - 18-8	6	Index 1 - Index 2	10
13-15 - 13-20(blank)	6	19-1 - 19-2	0	Index 3 - Index 16	9
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14-2 - 14-4	0	19-4 - 19-4.1	4		
14-5 - 14-6	3	19-4.2 - 20-1	6		
14-7	1	20-2 - 20-3	1		
14-8 - 14-13	0	20-4	3		
14-14	1	20-5	1		
14-15 - 14-16	4	20-6	6		
14-17	1	20-6.1 - 20-8	1		
14-18 - 14-22	0	20-9	0		
14-22.1 - 14.22.2	1	20-10 - 20-15	1		
14-23	0	20-16 - 20-19	6		
14-24	1	20-20	8		
14-25 - 14-34	0	21-1 - 21-4	0		
14-35	3	21-5	6		
14-36 - 14-39	0	21-6 - 21-11	0		
14-40	1	21-12	6		

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TECHNICAL MANUAL
DEPARTMENT OF THE ARMY
NO. 10–8400–203–23

HEADQUARTERS

WASHINGTON, D.C., 7 May 1990

UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL
GENERAL REPAIR PROCEDURES FOR INDIVIDUAL EQUIPMENT

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, U.S. Army Soldier and Biological Chemical Command, ATTN.: AMSS–RIM–E(N), Kansas Street, Natick, MA, 01760–5052. You may also submit your recommended changes by E–mail directly to <AMSSB–RIM–E@natick.army.mil>. A reply will be furnished directly to you. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028.

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LIST OF ILLUSTRATIONS (continued)

LIST OF ILLUSTRATIONS (continued)

LIST OF ILLUSTRATIONS (continued)

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. SCOPE

This manual provides standards for the classification and repair of individual equipment. Each type of equipment is covered separately by a single chapter.

1-2. MAINTENANCE FORMS AND RECORDS

DA Forms and records used for the equipment maintenance will be only those prescribed in DA PAM 738-750.

1-3. DESTRUCTION OF ARMY MATERIAL TO PREVENT ENEMY USE

Demolition to prevent enemy use will be in compliance with instructions outlined in TM 750-244-3.

1-4. ADMINISTRATIVE STORAGE

Preparation, care, and removal of equipment in administrative storage will be in accordance with the following:

a. Placement of equipment in administrative storage should be for short periods of time when a shortage of maintenance efforts exists. Items should be in mission readiness within 24 hours or within the time factors as determined by the directing authority. During the storage period appropriate maintenance records will be kept.

b. Before placing equipment in administrative storage, current maintenance services and equipment serviceable criteria (ESC) evaluations should be completed, shortcomings and deficiencies should be corrected, and all modification work orders (MWO's) should be applied.

c. Storage site selection. Inside storage is preferred for items selected for administrative storage. If inside storage is not available, trucks, vans, conex containers and other containers may be used.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRI)

EIRs will be prepared using a DA Form SF 366, (Quality Deficiency Report). Instructions for preparing EIRs are provided in DA PAM 738-750, The Army Maintenance Management System. EIRs should be mailed directly to Commander, U.S. Army Aviation and Troop Command, ATTN: AMSAT-I-MDO, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1796. A reply will be furnished directly to you.

Section II. ITEM CLASSIFICATION

1-6. ITEM CLASSIFICATION CRITERIA

a. ITEM CLASSIFICATION CODES. Refer to the table below for explanation of codes used to classify items by degree of serviceability.

CODE	EXPLANATION
A	New and unused property possessing original appearance and serviceability.
B	Serviceability as to be acceptable for issue or sale in lieu of class A like-new property.
	(1) Items peculiar to the clothing allowance system will possess a high degree of appearance and serviceability. These items affect the personal appearance of the individual and should be in such condition as to be readily acceptable for issue and cash sale purposes. In no case should the wear expectancy be less than 75 percent of a like-new item.
	(2) Items of organizational clothing and equipage will possess such appearance and degree of serviceability as to justify their issue to troops and afford a satisfactory military appearance. As a guide only and where practicable for application, these items should possess not less than 50 percent of the life of a like-new item.
F	Unserviceable items which are economically repairable. Economically repairable items are those which may be restored to Class B condition for not more than 65 percent (clothing) or equipage of prices contained in current Army Master Data File.
H	Unserviceable items which are obviously scrap or salvage, for which any use would require a repair cost exceeding 65 percent for clothing or equipage of the current cost of the item.
X	Items which do not possess the appearance or degree of serviceability to justify the classification of B or which cannot be repaired economically for the purpose originally intended, but which can be used as an end item (without benefit of repair) for duties which are harmful to clothing, i.e., mechanics, painters, construction workers, etc.

b. STANDARDS. As a general guide, classification of all clothing and equipment items will be subject to the stipulations and limitations listed below:

(1) Items of personal clothing and footwear will be classified as new only when they show no evidence of color fading, stains, uncleanliness, and/or rotting of stitching or fabric. Each item will be complete in every detail, and all parts properly designed and attached. A new item which has been tried on for size purposes, or from which the tags have been removed, will not be classed as used; nor will such items be soiled to the extent that dry cleaning or laundering is required. When dry cleaning or laundering is required, garment will be reclassified from new to a used category. Only pressing of new garments or polishing of new leather footwear does not lower the classification.

(2) Items of personal clothing and footwear will require the following for classification in a serviceable category (A or B):

(a) Complete state of repair. All repairs necessary to render the item completely serviceable will have been made.

(b) Cleaned. Must be in a clean (laundered, dry cleaned, or sterilized) condition.

1-6. ITEM CLASSIFICATION CRITERIA–Continued

(c) Buttons. Replacement buttons visible on outer garments when worn should be of a size, shape, and color like those originally affixed. Buttons which are not visible when a garment is being worn need not be specifically of the same color but should be of the same size.
(d) Buttonholes. Buttonholes should not be enlarged or ripped.
(e) Frayed Edges. No edge should appear ragged due to worn or broken threads.
(f) Linings. Linings in all outer garments must be in a complete state of repair. Repair may include minor patches. The patch does not have to exactly match the color of the lining, but should be reasonably similar in color.
(g) Patches and darns. Patches and darns should not be visible on outer dress clothing when worn.
(h) Pockets. Pockets must be clean and in a complete state of repair. Any repairs will be of a wear expectancy similar to that of the remainder of the garment. Replaced pockets must be of a size consistent with those originally in garment.
(i) Belt loops. All belt loops on trousers will be the same as on any new garment of a like make, including shade, material, and number.
(j) Fading, Except for those items designed as work-type garments, there should be no obvious fading.

NOTE

Fading which does not cause conspicuous deviation from original shade will be permitted for work-type garments.

(k) Insignia marks. Chevron, overseas service organizational shoulder, or other insignia marks, caused by fading or discoloration, will prohibit serviceable classification. Insignia marks which are not conspicuous will be permitted on work-type garments.
(l) Identification marks. Marks of identification include those made at issue point and those made by individuals. These should be lined out or obliterated. A mark is considered obliterated when its cancellation is readily evident.
(m) Spots and stains. Spots and stains should not be easily discernible at a casual glance when the garment is being worn.
(n) Hardware. Hardware will not be bent, broken, or missing. Bright and shiny hardware will not disqualify items from a serviceable classification.

(3) Items of organizational clothing and equipment will require the following for classification in serviceable condition codes (A or B):

(a) Complete state of repair. See (2)(a) above.
(b) Cleaned. Must be in a clean (laundered, dry cleaned, sterilized, or painted) condition.
(c) Buttons. See (2)(c) above.
(d) Fasteners. All present and of the same size originally affixed to item.
(e) Buttonholes. See (2)(d) above.
(f) Frayed edges. Frayed edges of an inconspicuous or minor nature will be permitted.
(g) Linings. See (2)(f) above.
(h) Patches and darns. Patches and darns will be permitted, provided their color is similar to that of the original material.
(i) Pockets. See (2)(h) above.
(j) Belt loops. See (2)(i) above.
(k) Fading. Fading will be permitted.
(l) Identifying marks. See (2)(1) above.
(m) Spots or stains.
1. Items worn by individuals. Small paint, grease, or other spots or stains will be permitted if garment or other item is otherwise completely serviceable.
2. All other organizational items. Spots and stains will not be considered a determining factor in classifying this category of property if such spots and stains are of a minor nature.

1-6. ITEM CLASSIFICATION CRITERIA - cont.

(n) Hardware. See (2)(n) above.

(o) Footwear (Shoes and Boots),

(1) This item classification criteria applies to only Central Issue Facility (CIF), Organizational Clothing and Individual Equipment (OCIE) and Central Initial Issue Point. Army Military Clothing Sales stores are not affected by this item classification criteria.

(2) Shoes and Boots can be reissued if footwear is treated with a fungicidal spray designed for shoes and boots (procured Iocally) and is in like new condition, free from obvious stretching or creasing of leather upper. Indentations insoles of footwear causal by minimal wear is acceptable and suitable for Code A (See paragraph 1-6a).

(3) Rubber and canvas footwear, and boots, ski, men's leather will be classified in condition Codes A or Bin accordance with the applicable provisions of (2) above.

(4) The Woodland Temperate, Daytime Desert, and Hot Weather Camouflage Clothing and Individual Equipment items will be considered serviceable from a fading standpoint if the pattern is visually discemable and the colors are still subdued in nature.

C. DISPOSITION OF DISTINCTIVE ITEMS OF UNIFORM (AR 670-1).

(1) Decorations, badges, service awards, medals, ribbons, lapel buttons and other insignia and items of uniform, to include items cited in AR 670-1, will be mutilated to remove their distinctive characteristics prior to turn-in to the Defense Reutilization and Marketing Office (DRMO). Property will be turned in as scrap.

(2) Items not considered distinctive, i.e., Army Green Coat and shirts will be turned in to the DRMO after the removal of distinctive buttons, insignia, and other such items, for disposition in accordance with DOD 4160.21M.

d. PRIORITY FACTORS. In the classification of clothing and equipment, factors of appearance and serviceability inherent in the items will be considered on the following priority basis to determine final classification:

(1) Items of personal clothing and footwear (excluding work-type uniforms). Appearance and serviceability - equal priority.

(2) Organizational clothing and equipment and work-type uniforms.

(a) Serviceability - first priority.

(b) Appearance - second priority.

1-7. INSPECTION/CLASSIFICATION PROCEDURES

a. Instructions contained in this paragraph will be used as a guide in making inspections of clothing and individual equipment in the hands of units or individuals for the purpose of determining serviceability and repair eligibility.

b. Restitching of open seams NOT to be counted as a tear with no limitation length.

c. Previous repairs are NOT to be counted when determining maximum number of repairs.

(1) Maximum repairs mean the number of repairs authorized on an item each time it is turned in for repair.

(2) Additional repairs are authorized as long as expenditure limits do not exceed 65 percent replacement cost. Refer to TB 43-0002-27, Maintenance Expenditure Limits.

1-7. INSPECTION/CLASSIFICATION PROCEDURES- Continued

Bag, Barracks
LIN B13907

1. Inspection Procedure: inspect for missing or damaged grommets and drawstrings. Check for rips, tears, bums, snags, oil, grease, or other contaminants.

2. Classification:
   - Code A. New and unused items possessing original appearance and serviceability.
   - Code B. Used items that are not suitable for Code A. They must be complete, clean, having no more than 3 repaired areas and suitable for issue as is.
   - Code F Unserviceable items that can be repaired by replacing grommets or drawstrings. Rips or holes cannot exceed 8 inches in length or diameter. No more than 3 repaired areas per bag. Burned areas exceeding 3 inches are cause for salvage.
   - Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Bag, Duffel
LIN B14729

1. Inspection Procedure: Inspect for rips, tears, holes, dry rot, mildew, missing parts, or weakened material. Check to determine if the bag has a hard painted area for stenciling owner's name.

2. Classification:
   - Code A. New and unused items possessing original appearance and serviceability.
   - Code B. Used items that are not suitable for Code A but are complete and suitable for issue as is. Item will have no more than 8 patches.
   - Code F. Unserviceable items that can be repaired by replacing missing or damaged parts or by patching rips or tears (maximum length 10 inches and no more than 8 patches per item). Burned areas exceeding 4 inches are not repairable.
   - Code H. Unserviceable items that are obviously scrap or cannot meet the cri teria for Code F.

Bag, Flyers Helmet
LIN B14797

1. Inspection Procedure: Inspect for rips, tears, holes, and bums on outside or on the inside liner. Check for broken or missing zippers and snaps. Check velcro fasteners and handles for damage. Check inside pockets for rips and tears.
2. Classification:
   - Code A. New and unused items possessing original appearance and serviceability.
   - Code B. Used items that are not suitable for Code A but are dean, undamaged, and have no more than 4 repaired areas.
   - Code F. Unserviceable items that can be repaired by no more than 4 repairs (maximum length of repair 3 inches) or by replacing zippers, snaps, or velcro fasteners.
   - Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Bag, Stuff, Intermediate Cold Weather Sleeping System /Extreme Cold Weather Sleeping System; Chapter 20 No Assigned LIN

1. Inspection Procedure: Inspect for rips, tears, holes, burns, grease, oil, stains, missing or broken double bar buckles and single cord locks and discoloration or fading.
2. Classification:

Code A. New and unused items possessing original appearance and serviceability.

Code B. Used items that are not suitable for Code A but are dean, undamaged, and have no more than 4 repaired areas.

Code F. Unserviceable items that can be repaired by replacing missing or damaged cords, well-being, double bar buckles, single cord locks or by patching holes, rips or tears that do not exceed 1 inch diameter or length. Some fading or discoloration is acceptable. Maximim of 4 repairs per item.

Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Bag, Waterproof, Clothing LIN B15825

1. Inspection Procedure: Inspect each item for holes, tears, separated seams, or missing tie cord. Check loops to assure they are present and serviceable. Check that item is not deteriorated. Check for oil, grease, or other soiled areas. Inspect for mildew, rot, or other deterioration.
2. Classification:

Code A. New and unused items possessing original appearance and serviceability.

Code B. Used items that are not suitable for Code A, but are complete and acceptable for issue as is. The item will be free of mildew and rot. The synthetic rubber coating will be intact and serviceable.

Code F. Unserviceable items that require only repairs to the loops or have missing tie cords. Small holes in the bag maybe patched, (1 inch or less). Rips or tears exceedhg 3 inches are not repairable. All patches will be applied to the inside of the bag.

Code H. Unserviceable items that have holes requiring more than 5 patches or have rips and tears. Pin holes in bag are not criteria for Code H.

1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Band, Helmet, canvas
LIN B24265

1. Inspection Procedure: Inspect for rips, tears, and frays.
2. Classification:

Code A. New and unused items possessing original appearance and serviceability.

Code B. Used items not suitable for Code A but are undamaged and suitable for issue as is.

Code F. Item does not qualify for Code F. No repair is authorized.

Code H. Any item not suitable for issue as is will be scrapped.

Belt, Individual Equipment (Pistol Belt)
LIN B59567

1. Inspection Procedure: Inspect item for damaged or missing parts. Check for damage to metal parts. Check webbing for fraying or discoloration.
2. Classification:

Code A. New item with no evidence of use, discoloration, or weakened material. No missing parts.

Code B. Used items that are not suitable for Code A but are complete and suitable for issue as is with no rips, tears, holes, or frayed edges.

Code F. Unserviceable items that can be repaired by replacing missing or damaged parts. Some fraying is acceptable as long as it can be repaired by trimming without distorting or changing the original configuration of the belt.

Code H. Unserviceable items that are obviously scrap, or cannot meet the criteria for Code F.

Binding, Ski; Chapter 9
LIN

1. Inspection Procedure: Inspect bindings for frays, cracks, chips, burns, loose fasteners, malfunctioning springs and pivot points. Inspect for mildew, rot or cracks.
2. Classification:

Code A. New and unused item possessing original appearance and serviceability.

Code B. Items that are not suitable for Code A but are undamaged, functional, clean, and are suitable for issue as is.

Code F. Unserviceable items that can be repaired by replacing missing screws or damaged parts. Malfunctioning release mechanisms, springs, and pivot points are cause for salvage.

Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Binding Assembly, Snowshoe; Chapter 9
LIN B65807

1. Inspection Procedure: Inspect bindings for frays, burns, tears, grease, oil or stains. Check metal components for cracks or corrosion. Check for damaged or broken fasteners and loose or broken stitching.
2. Classification:

Code A. New and unused item possessing original appearance and serviceability.

Code B. Items that are not suitable for Code A but are undamaged, clean, and are suitable for issue as is.

Code F. Unserviceable items that can be repaired attaching new webbing, minimum fraying is permissible. replacing damaged or broken fasteners. Small tears or rips (3/4 inch diameter or in length), may be replaced, no more than three per binding. Holes, rips or cracks in bottom of pivot section of the binding is cause for salvage.

Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Boot, Combat, Rubber, Black (Cold-Wet); Chapter 9
LIN C08119

1. Inspection Procedure: Inspect each boot for holes, tears, separated seams, or missing tie cord. Check loops to make sure they are present and serviceable. Check for oil, grease or stains. Inspect for mildew, rot, or cracking.
2. Classification:

Code A. New and unused item possessing original appearance and serviceability.

Code B. Items that are not suitable for Code A but are undamaged, clean, and are suitable for issue as is.

Code F. Unserviceable items that can be repaired by patching rips, tears or cuts and replacing leaky valve stems. Worn or broken laces shall be replaced. Small tears or rips (3/4 inch diameter or in length), may be repaired, no more than three per boot. Holes, rips or cracks in bottom sole or seams is cause for salvage.

Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Boot, Combat, Rubber, White (Cold-Wet); Chapter 9
LIN C08256

1. Inspection Procedure: Inspect each boot for holes, tears, separated seams, or missing tie cord. Check loops to make sure they are present and serviceable. Check for oil, grease or stains. Inspect for mildew, rot, cracking or stains.
2. Classification:

Code A. New and unused item possessing original appearance and serviceability.

Code B. Items that are not suitable for Code A but are undamaged, clean, and are suitable for issue as is.

Code F. Unserviceable items that can be repaired by patching rips, tears or cuts and replacing leaky valve stems. Worn or broken laces shall be replaced. Small tears or rips (3/4 inch diameter or in length), may be repaired, no more than three per boot. Holes, rips or cracks in bottom sole or seams is cause for salvage.

Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Carrier, Club Police
No Asslgned LIN

1. Inspection Procedure: Inspect for loose, missing, or broken seam threads. Check snap fasteners for serviceability and proper mounting and that main body rivet assembly is not pulling through leather. Check entire body of carrier for tears, slices, cracks, or pieces of the leather missing.

2. Classification:

Code A. New and unused item possessing original appearance and serviceability.

Code B. Used items that are not suitable for Code A but are complete, undamaged except for small cuts and cracks that do not impair serviceability, are clean, and are suitable for issue as is.

Code F. Unserviceable items that can be repaired by replacing snap or minor seam stitching. Damage to main body or main body rivet is criteria for Code H.

Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Carrier, Intrenching Tool
LIN D11812

1. Inspection Procedure:

a. Canvas Carrier--Inspect item for damaged or missing parts. Check for rips, tears, burns, oil, grease, or other contaminants. Check for shrinkage where the flap will not close when the entrenching tool is inserted.

b. Plastic Carrier--Check for missing or damaged keepers and snaps. Check for rips or tears in the flap or case.

2. Classification (Plastic and Canvas Carriers):

Code A. New items with no evidence of use, missing parts, or damage.

Code B. Used items that are not acceptable for code A, but are complete, undamaged, clean, and suitable for issue as is. Cuts or tears not impairing serviceability are acceptable for classification as Code B.

Code F. (1) Canvas--Items that can be repaired by replacing missing or damaged parts, repairing small holes or tears, 1 inch maximum. No more than 4 repairs per item. Shrinkage that can be repaired so the flap can be fastened when the intrenching tool is installed is permissible. Bumed areas are not repairable.

(2) Plastic--Items that can be repaired by replacing missing or damaged parts. However, small cracks or cuts on plastic material are not criteria for salvage.

Code H. Unserviceable items that are obviously scrap or cannot meet criteria of Code F.

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1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Case, Field First Aid or Compass
LIN D64043

1. Inspection Procedure: Inspect item for missing or damaged snaps, rips, tears, fraying, oil, grease, burns, and other contamination.
2. Classification:

   Code A. New and unused items possessing original appearance and serviceability.

   Code B. Used items that are not suitable for Code A but are complete, clean, undamaged, and suitable for issue as is.

   Code F. Unserviceable items that can be repaired by replacing snaps and keepers, minor sewing, or cleaning. Bums are criteria for salvage.

   Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Case, Handcuff Leather, MP
LIN D65687

1. Inspection Procedure: Inspect for rips, tears, cracks, or holes in the leather. Check for damaged or missing flap fastener. Check for separated seams.
2. Classification:

   Code A. New and unused items possessing original appearance and serviceability.

   Code B. Used items that are unsuitable for Code A, but are undamaged and of good military appearance.

   Code F. Unserviceable items that can be repaired by sewing the seams or replacing the metal flap fastener. No repairs to the leather are authorized.

   Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Case, Parachutist Individual Weapons; Chapter 12
LIN D67057

1. inspection Procedure: Inspect each item for holes, tears, separated seams, broken or missing hardware. Check for broken or missing slide fasteners or snaps. Inspect tor mildew, rot or stains.
2. Classification:

   Code A. New and unused items possessing original appearance and serviceability.

   Code B. Used items that are not suitable for Code A but are complete and suitable for issue as is.

   Code F. Unserviceable items that can be repaired by no more than 5 repairs (maximum length 18 inches), or by replacing slide fasteners or snaps.

   Code H. Unserviceable items that are obviousiy scrap or cannot meet the criteria for Code F.

1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Case, Small Arms Ammunition
LIN D70550

1. Inspection Procedure: lnspect item for damaged or missing parts. Check for damaged or broken plastic flap fasteners and metal parts. Check for rips, tears, holes, burns, grease, oil or other contaminants. Check inside case for missing or damaged separation straps. Cracks or splits in the plastic stiffener in the wall of the case shall not be considered unserviceable unless the stiffener interferes with placing magazines in or taking them out of the case.
2. Classification:

Code A. New items with no evidence of use, missing parts, or damage.

Code B. Used items that are not suitable for Code A, but are complete, undamaged, clean, and suitable for issue as is.

Code F. Unserviceable items that can be repaired by replacing missing or damaged parts (velcro or snap fasteners are suitable for flap fasteners), repairing small holes or tears (1/2 inch diameter or length), no more than 4 repairs per case, and cleaning. Holes or rips in the bottom corners or along the bottom seams (or burn holes) are nonrepairable and are cause for salvage.

Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Cover, Bivy, lCWSS/ECWSS; Chapter 20
LIN Not Available

1. Inspection Procedure: Inspect for rips, tears, holes, burns, grease, oil, discoloration or fading, dry rot. missing or broken snap fasteners or single cord locks (barrel locks), or damaged draw cords.
2. Classification:

Code A. New and unused items possessing original appearance and serviceability.

Code B. Items that can be repaired (maximum length of repair totaling 15 inches) by replacing missing or damaged cords, webbing, snap fasteners, single cord locks, double bar buckles and repair or patch holes, rips or tears that do not exceed one inch in diameter or length.

Code F. Unserviceable items that can be repaired by replacing missing or damaged cords, webbing, double bar buckles, single cord locks and repair or patch holes, rips or tears that do not exceed one inch in diameter or length. Some discoloration or fading is acceptable. Maximum of 4 repairs.

Code H. Unsericeable items that are obviously scrap or cannot meet the criteria for Code F.

Cover, Canteen 1 Quart
LIN F30391

1. Inspection Procedure: Inspect item for damaged or missing parts. Check for rips, tears, holes, burns, grease, oil, or other contaminants.
2. Classification:

Code A. New item with no evidence of use or missing/damaged parts.

Code B. Used items that are not suitable for Code A but are complete, undamaged, clean, and suitable for issue as is.

Code F. Unserviceable items that can be repaired by replacing missing or damaged parts (snap fasteners are a suitable substitute for plastic fasteners), repairing small holes or team (1/2 inch diameter or length maximum and no more than 4 repairs per case), or cleaning. Holes or rips in the bottom corners or along the bottom seams or any burn hole is nonrepairable and is cause for salvage.

Code H. Unserviceable items that are obviously scrap or does not meet the criteria for Code F.

1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Cover, Canteen 2 Quart
LIN F30117

1. Inspection Procedure: Inspect for rips, tears, holes, fraying, and loose or broken stitching. Check the outside for "D" rings (2), plastic snap fastener, pocket, velcro, and metal grommet. Check the inside for damaged, loose, or fraying synthetic fur. Inspect for stains, grease, oil, or other contaminants.
2. Classification:

Code A. New and unused items possessing original appearance and serviceability.

Code B. Used items that are not suitable for Code A but are clean, complete, and in a serviceable condition with all attached hardware.

Code F. Unserviceable items that can be repaired by replacing missing or damaged hardware, patching small holes and tears (1 inch diameter or length), or replacing missing or broken stitching. Damage requiring more than 4 patches or a 25 percent loss of synthetic fur is cause for salvage. Replacement of plastic fastener with a metal snap is authorized. Minimal fraying is permissible.

Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F or are obviously scrap.

Cover, Helmet, Camouflage Pattern
LIN F28747

1. Inspection Procedure: Inspect item for rips, tears, holes, burns, snags, discoloration, oil, grease, and other contamination.
2. Classification:

Code A. New and unused items possessing original appearance and serviceability.

Code B. Used item that is not suitable for Code A but is undamaged, has minimal discoloration and is suitable for issue as is.

Code F. Item does not qualify for Code F; no repair is authorized.

Code H. Any item that is not suitable for issue as is (Code A or B) will be scrapped.

1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Cover, Helmet, Chemical Protective
No Assigned LIN

1. Inspection Procedures: Inspect cover for rips, tears, holes, and/or damaged elastic webbing enclosed in hem.
2. Classification:

Code A. New and unused items that possess original appearance and serviceability.

Code B. Used items which are not suitable for Code A but are serviceable and can meet their intended purpose.

Code F. Item does not qualify for Code F. No repair is authorized.

Code H. Unserviceable items that cannot meet the criteria or are obviously scrap.

Cup, Canteen; Chapter 14
LIN F54817

1. Inspection Procedure: Inspect for dents, abrasions, discoloration, and cleanliness. Check to see that handle is present and operable. Check to see that rivets are secure.
2. Classification:

Code A. New and unused items that possess original appearance and serviceability.

Code B. Used items that are not suitable for Code A, but are clean, serviceable and complete. The canteen must fit in the cup. The cup, canteen shall be considered serviceable with or without straight bar on handle.

Code F. Item does not qualify for Code F. No repair is authorized.

Code H. Any item that cannot meet condition Code A or B or obviously scrap. Dents that cause the canteen not to fit on the cup, handle missing or any corrosion on the handle or cup itself.

Field Pack Combat Large; Chapter 14
LIN H39835

1. Inspection Procedure: Inspect for missing or damaged hardware or drawstrings. Check for rips, tears, fraying, burns, loose binding, oil, grease, and stains.
2. Classification:

Code A. New and unused items possessing original appearance and serviceability.

Code B. Used items which are not suitable for Code A but are complete and in serviceable condition with all attached hardware, have minimal discoloration, are clean, and suitable for issue as is.

Code F. Unserviceable items that can be repaired by replacing missing or damaged parts or hardware, or by patching holes or tears or repairing binding.

Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Field Pack, Combat Medium; Chapter 14
LIN H39835

1. Inspection Procedure: Inspect for missing or damaged hardware or drawstrings. Check for rips, tears, fraying, burns, loose binding, oil, grease, and stains.
2. Classification:

Code A. New and unused items possessing original appearance and serviceability.

Code B. Used items which are not suitable for Code A but are complete and in serviceable condition with all attached hardware, have minimal discoloration, are clean, and suitable for issue as is.

Code F. Unserviceable items that can be repaired by replacing missing or damaged parts or hardware, or by patching holes or tears or repairing binding.

Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Footwear Cover, Chemical Protective
No Assigned LIN

1. Inspection Procedure: Inspect footwear cover for rips, tears, holes, and/or missing nylon laces.
2. Classification:

Code A. New and unused items that possess original appearance and serviceability.

Code B. Used items which are not suitable for Code Abut are serviceable and can meet their intended purpose.

Code F. Item does not qualify for Code F. No repair is authorized.

Code H. Unserviceable items that cannot meet the criteria or are obviously scrap.

Gloves, Chemical Protective
No Assigned LIN

1. Inspection Procedure: Inspect gloves for rips, tears, holes, and abrasions. Check to see that fingers are properly secured to glove palm and that fingertips are serviceable.
2. Classification:

Code A. New and unused items that possess original appearance and serviceability.

Code B. Used items which are not suitable for Code A but are serviceable and can meet their intended purpose.

Code F. Item does not qualify for Code F. No repair is authorized.

Code H. Unserviceable items that cannot meet the criteria or are obviously scrap.

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1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Helmet, Combat Vehicle Crewmans; Chapter 4
LIN K33400

1. Inspection Procedure:

   a. Helmet shell - Inspect for cuts, blisters, delamination, chipped paint, pitting, indentations, damaged straps, loose or missing hardware.

   b. Rubber edging - Inspect for cuts, tears, and that edging is bonded to shell.

   c. Helmet liner - Inspect for torn cloth, cut or damaged parts, loose or damaged straps or hardware.

   d. Foam rubber - Inspect for tears, odor, and separation of vinyl skin.

2. Classification:

   code A. New and unused items that possess original appearance and serviceability.

   Code B. Items that are not suitable for Code A but are clean and undamaged.

   Code F. Unserviceable rubber edging that can be repaired by bonding the edging to the helmet shell edge or by bonding the appropriate length of new rubber edging to the helmet shell to replace a section of damaged edging. Maximum of three repairs per item.

   Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Helmet, Ground Troops' - parachutists
No Assigned LIN

1. Inspection Procedure: Inspect the helmet for split or cut rubber edging, chipped paint, loose or missing hardware on suspension system or chin strap. Inspect suspension band for tears, pulled or ripped stitching, and for cleanliness.

2. Classification:

   Code A. New and unused items possessing original appearance and serviceability.

   Code B. Used items that are not suitable for Code A but are clean, serviceable and have only minor scratches or abrasions on the helmet. There is no limitation on length of scratches or size of abrasions.

   Code F. Unserviceable items that can be repaired by replacing missing hardware, suspension and chin straps, rubber edging and by repairing chipped paint areas on helmet.

   Code H. Unserviceable items that cannot meet the criteria for Code F or are damaged beyond one layer of Kevlar material.

1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Hood and Socks Set, ECWSS; Chapter 20
No Assigned LIN

1. Inspection Procedure: Inspect for rips, tears, holes, burns, grease, oil, stains, missing or broken snap fasteners or single cord locks (barrel locks), or damaged draw cords, ripped seams or loose stitching..
2. Classification:
   Code A. New and unused items possessing original appearance and serviceability.

   Code B. Items that are not suitable for Code A but are clean, unstained, undamaged and have no more than five repaired areas.

   Code F. Unserviceable items that can be repaired by replacing missing or damaged cords, single cord locks, by repairing holes, rips or tears that do not exceed 2 inch in diameter or length and by restitching ripped seams or loose stitching.

   Code H. Unserviceable items that are obviously scrap or do not meet the criteria for Code F.

Hood, Combat Vehicle Crewman's (CVC), Balaclava; Chapter 17
LIN H46881

1. Inspection Procedure: Inspect for rips, tears, stains discoloration or fading and cleanliness. Check for missing opening tab and for damaged elastic cord.
2. Classification:
   Code A. New and unused items possessing original appearance and serviceability.

   Code B. Items that are not suitable for Code A but are clean, unstained, undamaged and have no more than three repaired areas (not including replacing tab or elastic cord). Slight fading is acceptable.

   Code F. Unserviceable items that can be repaired (no more than three repaired areas) or by replacing tab or elastic cord.

   Code H. Unserviceable items that are obviously scrap or do not meet the criteria for Code F.

Hood, Sleeping Bag; Chapter 2
No Assigned LIN

1. Inspection Procedure: Inspect for rips, tears, holes, burns, grease, oil, stains, damaged hook and pile fastener tape, ripped seams or loose stitching..
2. Classification:
   Code A. New and unused items possessing original appearance and serviceability.

   Code B. Items that are not suitable for Code A but are clean, unstained, undamaged and have no more than two repaired areas.

   Code F. Unserviceable items that can be repaired by replacing missing or damaged missing or damaged hook and pile fastener tapes, by repairing holes, rips or tears that do not exceed 2 inch in diameter or length and by restitching ripped seams or loose stitching.

   Code H. Unserviceable items that are obviously scrap or do not meet the criteria for Code F.

1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Ice and Mountain Climbing Equipment; Chapter 10
(Creeper, Ice; Hammer Hand, Piton, Mountain; Piton, Mountain, Steel; Snap, Link, Mountain, Piton, Steel; Type I);
No Assigned LIN

1. Inspection Procedure: Inspect item for rips, tears, frays, burrs, edges, nicks, loose or damaged hardware, rust or corrosion, and damaged finish (chipped or scratched).

2. Classification:
   - Code A. New and unused items possessing original appearance and serviceability.
   - Code B. Used items that are not suitable for Code A, but are clean, serviceable and complete. The cutting edges must be sharp and free of nicks or burrs. The color may vary slightly in shade.
   - Code F. Unserviceable items that can be repaired by replacing buckles, straps, and rivets or by sharpening points on crampons and creepers
   - Code H. Unserviceable items that do not meet the criteria for Code F or are obviously scrap.

Liner, Helmet
LIN L71200

1. Inspection Procedure: Inspect for cracks, dents, fraying, and missing or damaged webbing and strap retainers.

2. Classification:
   - Code A. New and unused items possessing original appearance and serviceability.
   - Code B. Used items that are not suitable for Code A but are clean, undamaged, and complete.
   - Code F. Unserviceable items that can be repaired by replacing the webbing (snap in type) or painting the outside of the liner. Note: Cracked or damaged liners or broken webbing that is riveted to the liners is cause for salvage.
   - Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Overboots, Antipersonnel Mine Protective
(Limited Procurement Urgent Configuration); Chapter 24
No Assigned LIN

1. Inspection Procedure: Inspect for cuts or tears in soles or upper material.

2. Classification:
   - Code A. New and unused items of original appearance and serviceability.
   - Code B. Used items not suitable for Code A but undamaged and serviceable in every respect.
   - Code F. Item meeting Code B criteria but missing shoe strings.
   - Code H. Unserviceable items that have sustained damage to the soles or upper material.

Mask, Cold Weather, Green
No Assigned LIN

1. Inspection Procedure: Check for rips, tears, damaged or missing straps, buckles, or snaps. Check for brittle or cracked material.

2. Classification:
   - Code A. New and unused items possessing original appearance and serviceability.
   - Code B. Used items that are not suitable for Code A but are laundered, dean, complete, undamaged, and unsoiled.
   - Code F. No repair authorized.
   - Code H. Unserviceable items that cannot meet the criteria for Code B.

1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Mask Cold Weather White
No Assigned LIN

1. Inspection Procedure: Inspect for rips, tears, missing or broken straps, damaged or worn velcro fasteners, missing nose cups, and bibs. Check for discoloration.
2. Classification:

   Code A. New and unused items possessing original appearance and serviceability.

   Code B. Used items that are not suitable for Code A but are clean, complete, undamaged, and only slight discoloration. Only new nose cups are acceptable.

   Code F. No repairs authorized on this item. Nose cups should be replaced on used items.

   Code H. Any damaged or discolored item.

Mat Sleeping Bag (Foam Rubber)
No Assigned LIN

1. Inspection Procedure: Inspector rips, tears, and holes. Check for presence of ties. Inspect for grease, oil, and other stains.
2. Classification:

   Code A. New and unused items possessing original appearance and serviceability.

   Code B. Used items that are not suitable for Code A. Complete and suitable for issue as is. No rips, tears, or holes.

   Code F. Items with no more than 3 repaired rips or tears, with tear up to 6 inches in length. Repair by applying adhesive to tear and replacing missing tie tape.

   Code H. Unserviceable items that are obviously scrap. Rips, tears, or holes are cause for salvaging these items.

1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Mattress, Insulated, Air
LIN M17642

1. Inspection Procedure: Check for rips, tears, dry rot, holes, missing plugs, or damaged air valve. Inflate the mattress and check for small tears and holes. Check to determine if the mattress has been filled with water. Inspect for seam separation and excessive delamination.
2. Classification:

Code A. New and unused items that possess original appearance and serviceability.

Code B. Used items that are not suitable for Code A but are clean, undamaged, have no more than 6 repaired areas (patches), and have not been filled with water.

Code F. Unserviceable items that can be repaired (no more than 6 repairs and maximum length of repair 1 inch), or by replacing plugs. Mattresses that have been filled with water or have dry rot are not repairable. Seam separation ardor excessive delamination is not repairable.

Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Pack and Harness Assembly, Parachutists Indlvidual Equipment; Chapter 12
LIN N48077

1. Inspection Procedure: Inspect each item for holes, tears, separated seams, frayed webbing, broken or missing hardware, missing felt, properly lubricated hardware (dry lubricant only). Inspect for mildew, rot or cracks.
2. Classification:

Code A. New and unused items possessing original appearance and serviceability.

Code B. Items that are not suitable for Code Abut are complete and acceptable for issue as is. The items will be free from mildew or rot. The webbing will be free of frays and tears. The hardware will be free of corrosion and slide easily when activated.

Code F. Unserviceability items that can be repaired by no more than eight repairs to the pack assembly (maximum length of repair is 18 inches) and 5 repairs to the harness assembly.

Code H. Unserviceable items that are obviously scrap and cannot meet the criteria for Code F.

1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Pole SKI; Chapter 9
LIN P15510

1. Inspection Procedure: Inspect for straightness, cracks in shaft, and tip of pole. Check fasteners for serviceability and proper mounting. Inspect grip for looseness, cracks, frays, bums, tears or pieces of leather missing. Inspect basket for attachment, frays, tears, burns, cracks, and completeness of stitching. Inspector mildew, rot, or cracking.

2. Classification:

Code A. New and unused items possessing original appearance and serviceability.

Code B. Items that are not suitable for Code A but are undamaged, clean and suitable for issue as is.

Code F. Unserviceability items that can be repaired by replacing grips, leather strap, tip or basket. Cracks, severe bends or dents or dents leading to cracks or permanent deformation is cause for salvage.

Code H. Unserviceable items that are obviously scrap and cannot meet the criteria for Code F.

Sleeping Bag
LIN's T70930, Z74116, Z74138, T71478 T71615, T71673, T71706

1. Inspection Procedure: Inspect for rips, tears, holes, burns, dry rot, oil, grease, and other contaminants. Check slide fasteners for damage and freedom of movement. Assure there are no missing teeth in the zipper. Check for torn or loose tape and bead. Check snap fasteners and eyelets for damage (crushed or loose) and that they are positioned in the original location. Check the bag for loss of filling material (feathers and down). Check reinforcement tape for tears, loose ends, and loose or missing thread.

NOTE

Assure that both the inside and outside of the bag are inspected.

2. Classification:

Code A. New and unused items possessing original appearance and serviceability,

Code B. Used items that are not suitable for Code A but are clean, undamaged, and have no soiled areas which make the material stiff or odor saturated.

Code F. Unserviceable items that can be repaired by:

(1) No more than 5 repairs exceeding 2 inches in length. (Patches must be sewn.)

(2) Repairs less than 2 inches in length are unlimited. (Patches may be applied with heat sealant material.) Glues and adhesives are strictly forbidden.

Code H. Unserviceable items that are obviously scrap and cannot meet the criteria for Code F.

1-7. INSPECTION/CASSIFICATION PROCEDURES - Contlnued

Sleeping Bags, Intermediate and Extreme Cold Weather,ICWSS/ECWSS;Chapter 20
No Assigned LIN

1. Inspection Procedure: Inspect for rips, tears, holes, burns, grease, oil, missing or broken snap fasteners and single cord locks (barrel locks), damaged slide fasteners and frayed webbing, missing or damaged draw cords, ripped seams or loose stitching.
2. Classification:

Code A. New and unused items possessing original appearance and serviceability.

Code B. Items that are not suitable for Code A but are clean, unstained, undamaged and have no more than 10 repaired areas.

Code F. Unserviceable items that can be repaired by replacing missing or damaged cords, single cord locks, slide fasteners, webbing, snap fasteners, by repairing holes, rips or tears that do not exceed 15 inches in length, and by restitching ripped seams or loose stitching.

Code H. Unserviceable items that are obviously scrap and cannot meet the criteria for Code F.

SKI, Military; Chapter 9
LIN:T64512

1. Inspection Procedure: Inspect for straightness, rough edges, cracks, holes, burns and gouges. Inspect for shape, delamination and sharpness of steel edges. Inspect for mildew, rot or cracks.
2. Classification:

Code A. New and unused items possessing original appearance and serviceability.

Code B. Items that are not suitable for Code A but are clean, undamaged and suitable for for issue as is.

Code F. Unserviceable items that can be repaired by waxing, filling gouges and sharpening steel edges. Holes, cracks, or gouges lessening the overall stability or strength of ski is cause for salvage.

Code H. Unserviceable items that are obviously scrap and cannot meet the criteria for Code F.

Snowshoes Trail, Magnesium; Chapter 9
LIN:T89527

1. Inspection Procedure: Inspect shoes for cracks, pits, scratches, chips or burrs. Inspect plastic coated steel for cracks, tightness, unbound ends, cut or bare steel. Inspect for mildew, rot or stains.
2. Classification:

Code A. New and unused items possessing original appearance and serviceability.

Code B. Items that are not suitable for Code A but are clean, undamaged and suitable for for issue as is.

Code F. Unserviceable items that can be repaired by restringing the plastic coated wire. Cracks, bends, or dents severely lessening the overall strength of shoe is cause for salvage.

Code H. Unserviceable items that are obviously scrap and cannot meet the criteria for Code F.

1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Special Protective Eyewear Cylindrical Systems (SPECS)
(Limited Procurement Urgent Configuration); Chapter 24
No assigned LIN

1. Inspection Procedure: Inspect for damage or discoloration of dear protective shield material or damage to the frame.

2. Classification:
   - Code A. New and unused items of original appearance and serviceability.
   - Code B. Used items not suitable for Code A, but undamaged and serviceable in every respect.
   - Code F. Item does not qualify for Code F. No repair is authorized.
   - Code H. Any item not meeting Code B criteria.

Suit, Chemical Protective; Chapter 16
(Training Only) LIN U57960

1. Inspection Procedure: Inspect the jacket and the trousers for rips, tears, stains, bums, and loose stitching. Check inside liner for necessary repairs. Inspect zippers, snap fasteners, velcro, drawstrings, and adjusting straps for damage and serviceability.

2. Classification:
   - Code A. New and unused items possessing original appearance and serviceability.
   - Code B. Used items that are not suitable for Code A, but are complete, clean, and issue as is. Slight fraying is acceptable and minimal soiling or discoloration is permitted.
   - Code F. Unserviceable items that can be repaired by replacing or repairing zippers, snaps, buckles, textile tapes, drawstrings or patching holes, rips, and tears 1/2 inch or greater. Items requiring more than 10 patches or replacement of the inside liner is not authorized. Repair to the inside liner is authorized. Missing drawstring is not cause for Code H. Permanent stains are acceptable.
   - Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Suspenders, Individual Equipment
LIN U73323

1. Inspection Procedure: Inspect item for damaged or missing parts. Check for damage to metal components. Check webbing and pads for fraying, discoloration, stretched material, grease, oil, or other contamination.

2. Classification:
   - Code A. New item with no evidence of use, discoloration, weakened, or stretched material.
   - Code B. Used items that are not suitable for Code A, but are complete, have minimal discoloration, dean, and suitable for issue as is. Minimal fraying on the straps is acceptable provided the frayed edges can be trimmed without distorting the strap.
   - Code F Unserviceable items that can be repaired by replacing missing or damaged parts, trimming frayed edges of the straps, or cleaning. Small holes can be sewn. No patches authorized.
   - Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

1-7. INSPECTION/CLASSIFICATION PROCEDURES - Continued

Vest, Body Armor Fragmentation Protective, with 3/4 Collar
LIN A92145

1. Inspection Procedure: Inspect for rips, tears, holes, burns, loose binding, oil, or grease. Check that all zippers are serviceable and velcro is undamaged.
2. Classification:

Code A. New and unused items possessing original appearance and service ability.

Code B. Used items that are not suitable for Code A but are clean, undamaged, and having no soiled areas that make the material stiff or odor saturated.

Code F. Unserviceable items that can be laundered so that the material is pliable and odor free. Stains are not a criteria for washout. Maximum length of repair is 3 inches and not more than 5 repaired areas in the body of the garment. All pockets must conform to original size and design.

Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Vest, Grenade Carrying, M-79; Chapter 8
LIN Y00790

1. Inspection Procedure: Inspect for rips, tears, loose binding, loose or broken stitching, oil, grease, or stains. Check that hook and loop fastener tapes are undamaged. Check that all snap fasteners and other hardware are serviceable.
2. Classification:

Code A. New and unused items possessing original appearance and serviceability.

Code B. Items that are not suitable for Code A but are complete, have minimal discoloration, clean, and suitable for issue as is.

Code F. Unserviceable items that can be repaired by replacing missing or damaged parts, by patching holes or tears, or repairing binding.

Code H. Unserviceable items that cannot meet the criteria for Code F or are obviously scrap.

Vest, Safety Orange
LIN Y00950

1. Inspection Procedure: Inspect for rips, tears, and loose or broken stitching. Inspect the body of the garment for missing or damaged reflective tape. Check for stains and peeling of lamination and that velcro is serviceable.
2. Classification:

Code A. New and unused items possessing original appearance and serviceability.

Code B. Used items that are not suitable for Code A but are clean, undamaged, and possess no more than 3 repaired areas on the front and 3 repaired areas on the backsides.

Code F. Unserviceable items that can be repaired by resewing loose or broken stitching. Items requiring more than 3 patches to the front or 3 patches to the back are cause for salvage. Maximum length of repair is 4 inches. Damage rendering the reflective tape unserviceable or defects in the lamination are cause for salvage. Replacement of velcro is authorized.

Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

1.7. INSPECTION/CLASSIFICATION PROCEDURES – Continued

Vest, Tactical Load Bearing; Chapter 21
No Assigned LIN

1. Inspection Procedure: Inspect for rips, tears, loose binding and loose or broken stitching, damaged drawstrings, oil, grease and stains. Check that all hook and pile tapes are undamaged. Check that all plastic and metal hardware is serviceable and undamaged.

2. Classification:
   - Code A: New and unused items possessing original appearance and serviceability.
   - Code B. Used items that are not suitable for Code A but are complete, have minimal discoloration or fading, are clean and suitable for issue as is.
   - Code F. Unserviceable items that can be repaired by replacing missing or damaged parts or hardware, or by patching holes or tears or repairing binding.
   - Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Trousers, Fragmentation Protective
for Body Armor Set
Individual Countermine (BASIC)
(Limited Procurement Urgent Configuration); Chapter 24
No Assigned LIN

1. Inspection Procedure: Inspect for cuts, tears, open seams in shell fabric and webbing material. Inspect ballistic inserts for damage.

2. Classification:
   - Code A. New and unused items of original appearance and serviceability.
   - Code B. Used items not suitable for code A but undamaged and serviceable in every respect.
   - Code F. Unserviceable items without damage to the ballistic inserts, that can be repaired by replacing missing or damaged cloth or webbing components.
   - Code H. Items that are damaged beyond Code F criteria

1.7. INSPECTION/CLASSIFICATION PROCEDURES – Continued

Interceptor Body Armor System; Chapter 25
Body Armor, Interceptor Outer
Tactical Vest, Woodland Camouflage.
No Assigned LIN

1. Inspection Procedure: Inspect for missing or damaged buckles, snap fasteners, webbing, velcro hook and pile. Check for rips, tears, holes, burns, loose or broken stitching, oil or grease.

2. Classification:

   Code A. New and unused possessing original appearance or serviceability.

   Code B. Used items that are not suitable for code A but are complete, clean, have no large repaired areas and suitable for issue as is.

   Code F. Unserviceable items that can be repaired by replacing missing or damaged buckles, snaps, velcro fasteners, webbing or outer shells or by repairing small holes, rips or tears or by restitching broken stitching or ripped seams. Damage to ballistic panel is criteria for code H.

   Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F.

Interceptor Body Armor System; Chapter 25
Small Arms Protective Insert.
No Assigned LIN

1. Inspection Procedure: Inspect for rips, tears, holes, cracks, loose pieces, burns, snags, oil, grease, or other contaminants

2. Classification:

   Code A: New and unused items possessing original appearance and serviceability.

   Code B. Used items that are not suitable for Code A but are clean, undamaged, and have only minor repairs to outer cover material,

   Code F. Unserviceable items that can be repaired by covering small outside cover material holes or tears with a patch of the same cover material and adhesive. The outer cover is damaged exposing the black ceramic tile material, the SAPI is cracked and you hear loose pieces rattling around when the SAPI is shaken, the composite back face is delaminated and the individual fabric piles are separating is criteria for code H.

   Code H. Unserviceable items that are obviously scrap or cannot meet the criteria for Code F

Section III. SOURCE, MAINTENANCE AND RECOVERABILITY

1-8. SOURCE, MAINTENANCE AND RECOVERABILITY (SMR) CODES

The 5 character SMR Code indenties the Source Code (SRC-CD), Maintenance Level and Recoverability Code (RECOV-CD).

a. Source Code (first two positions). The some Code is a two digit code assigned to an item to indicate the manner in which it is to be required for maintenance, repair or overhaul of an end item.

CODE	EXPLANATION
PA	Item procured and stocked for anticipated or known usage.
PB	Item procured end stocked for insurance purposes because essentiality dictates that a minimum quantity must be available in the supply system.
PC	Item procured and stocked which otherwise would be waled PA except that it is deteriorative in nature.
PD	Support item, excluding support equipment, procured for initial issue or outfittings and stocked only for subsequent or additional initial issues or outfittings. Not subject to automatic replinishment; i.e., installation kits, Modification Work Order (MWO) kits, and special purpose crew/operator tool kits.
PE	Support equipment procured and stocked for initial issue or outfitting to specified maintenance repair activities.
PF	Support equipment which will not be stocked but which will be centrally procured on demand.
PG	Item procured and stocked to provide sustained support for the life of the equipment. It is applied to an item peculiar to the equipment which, because of probable discontinuance or shutdown of production facilities, would prove uneconomical to reproduce at a later time.
KD	An item of depot overhau/repair kit and not purchased separately. Depot kit defined as a kit that provides items required at the time of overhaul or repair.
KF	An item of a maintenance kit and not purchased separately. Maintenance kit defined as a kit that provides an item that can be placed at unit or intermediate categories of maintenance.
KB	Item included in both a depot overhaul repair kit and a maintenance tit.
MO	Item to be manufactured or fabricated at the unit category of maintenance.
MH	Item to be manufactured or fabricated at the Intermediate General Support (IGS) maintenance category.
ML	Item to be manufactured or fabricated at the specialized Repair Activity (SRA).
MF	Item to be manufactured or fabricated at the Intermediate Direct Support (IDS) maintenance category.
MD	Item to be manufactured or fabricated at depot maintenance category.
AO	Item to be assembled from stock numbered components at the unit category of maintenance.
AF	Item to be assembled at the IDS maintenance category.
AH	Item to be assembled at IGS maintenance category.

1-8. SOURCE, MAINTENANCE AND RECOVERABILITY (SMR) CODES-continued

CODE	EXPLANATION
AL	item to be assembled at the SRA.
AD	Item to be assembled at depot maintenance category.
XA	Item is not procured or stocked, because the requirements for the item will result in the replacement of the next higher assembly.
XB	Item is not procured or stocked. If not available through salvage, requisition.
XC	Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number.
XD	A low mortality support item that is not stocked When required, items will be requested and provided through normal supply channels.

b. Maintenance Use Code (third position). This position will indicate the lowest maintenance category authorized to remove, replace, and use the support item. The maintenance use entered in the third position will indicate one of the following categories of maintenance.

CODE	EXPLANATION
o	Support item is removed, replaced, and used at organizational (or AVUM/ON-SITE) category of maintenance.
F	Support item is removed, replaced, and used at direct support (or AVIM/OFF-SITE) category of maintenance.
H	Support item is removed, replaced, and used at general support (or AVIM/OFF-SITE) category of maintenance.
D	Support item is removed, replaced, and used only at depot.

c. Maintenance Repair Code (fourth position). This position will indicate whether or not the item is to be repaired, and will identify the lowest category with the capability to perform complete repair. This complete repair excludes overhaul or rebuild functions prescribed by Depot Maintenance Work Requirements (DMWR), but encompasses performing all other authorized maintenance functions, services (inspect, test, service adjust, align, calibrate), or actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) required to restore an item to serviceable condition by correcting specific failures or damage. Complete repair coding does not preclude repair which may be authorized to a lower category of maintenance. The MRC entered in the fourth position will indicate one of the following:

CODE	APPLICATION/EXPLANATION
O	The unit (AVUM/ON-SITE) category of maintenance is the lowest level capable of complete repair.
F	The IDS (AVIM/OFF-SITE) category of maintenance is the lowest level capable of complete repair.
H	The IGS (AVIM/OFF-SITE) category of maintenance is the lowest level capable of complete repair.
L	The SRA is the lowest activity capable of complete repair.

1-8. SOURCE, MAINTENANCE AND RECOVERABILITY (SMR) CODES - Continued

CODE	APPLICATION/EXPLANATION
D	The depot category of maintenance is the lowest level capable of complete repair.
B	No repair is authorized. The item maybe reconditioned by adjusting lubricating, etc. at the user level. No parts or special tools are required for the maintenance of this item.
Z	Nonrepirable. No repair is authorized.

d. Recoverability Code (fifth position). Indicates the disposition action on unserviceable items.

CODE	EXPLANATION
o	Repairable item. When uneconomically repairable, condemn and dispose at organizational level.
F	Repairable item. When uneconomically repairable condemn and dispose at Direct Support.
H	Repairable. When uneconomically repairable, condemn and dispose at General Support.
D	Repairable. When beyond lower maintenance level repair capability, return to depot for disposal.
L	Repairable. When uneconomically repairable, condemn and dispose at a specialized repair activity.
A	Item requires special handling or condemnation procedures because of specific reasons (i.e. precious metal content, high dollar value, critical material or hazardous material). Refer to appropriate manuals/directives for specific instructions.
Z	Nonrepairable item. When unserviceable condemn and dispose at the maintenance level indicated in the third position.

Section IV. ADMINISTRATIVE PUBLICATIONS

PUB. NO.	TITLE
AR 710-1	Centralized Inventory Management of the Army Supply System
AR 725-50	Requisitioning, Receipt and Issue System
AR 750-1	Army Material Maintenance Concepts and Policies
DOD 4160-21-M	Defense Disposal Manual
Fed Std 757	Stitches, Seams, and Stitching
TB 43-0002-27	Maintenance Expenditure Limits for FSC Groups 72,83,84 and FSC Classes 7210-8340, and 8400
FM 10-16	General Fabric Repair
FM 31-70	Basic Cold Weather Manual

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CHAPTER 2

MAINTENANCE OF BAG, SLEEPING, INTERMEDIATE COLD AND EXTREME COLD; MATRESS, PNEUMATIC, INSULATED; BAG, WATERPROOF CLOTHING; AND HOOD, SLEEPING

Section I. INTRODUCTION

2-1. SCOPE

This chapter prescribes the procedures and instructions for the repair of the sleeping bags, air mattress, waterproof bag and hood.

2-2. COMMODITY SPECIFICATIONS

a. Items

ITEM	SPECIFICATION
Bag, Waterproof Clothing.	MIL-B-3108
Sleeping Bags, (Feathers/Down and Polyester Batting).	MIL-S-43880
Sleeping, Bags (Polyester Batting).	MIL-S-44016
Mattress, Pneumatic, (Insulated).	MIL-M-43968
Hood, Sleeping.	MIL-H-43879
Sleeping, Mat, Foam	MIL-M-44104

b. Components

ITEM	SPECIFICATION
Cloth, Balloon, Cotton.	MIL-C-332
Cloth, Cheesecloth, Cotton; Bleach and Unbleached.	CCC-C-440
Cloth, Wind Resistant, Oxford, Cotton. Quarpel Treated.	MIL-C-484

2-2. COMMODITY SPECIFICATIONS - Continued

ITEM	SPECIFICATION
Braid, Textile (Cotton, Tubular).	MIL-B-371
Feathers and Down, Water-fowl; Tan-O-Quil-Treated.	MIL-F-43097
Eyelets, Metallic, With Washers.	MIL-E-20652
Fasteners, Slide, Interlocking.	V-F-106
Tape, Textile, Cotton, General Purpose, Natural or in Colors.	MIL-T-43566
Fasteners, Snap.	MIL-F-10884
Tape, Textile, Cotton, General Purpose (Unbleached, Bleached or Dyed).	DDD-T-86
Stopper, Inflating Tube Pneumatic Mattress.	MIL-S-43659
Adhesive, Polychloroprene Class 3.	MIL-A-5540
Maintenance Kit, Cold Weather, Insulated Boot-Pneumatic Mattress.	MIL-M-14545
Webbing,Textile, Cotton, General Purpose (Natural or in Colors).	MIL-W-530
Thread and Twine: Mildew Resistant or Water Repellent Treated Federal Standard 751 Stitches, Seams and Stitchings.	MIL-T-3530
Soap, Laundry, Chip and Powdered.	P-S-579
Laces, Nylon.	V-L-61
Thread, Cotton.	V-T-276
Thread Polyester.	V-T-285
Toluene, Technical.	TT-T-548
Label; for clothing, Equipage and Tentage, (General Use).	DDD-L-20
Cloth, Parachute, Synthetic-Fiber, (For Ammunition Parachutes).	MIL-C-498
Bag, Waterproof, Clothing.	MIL-B-3108
Fastener, Tape, Hook and Pile, Nylon.	MIL-F-21840
Batting, Polyester, (Quilted and Unquilted).	MIL-B-41826
Cloth, Knitted, Nylon/Triacetate, Tricot.	MIL-C-43358
Thread, Polyester, Cotton Covered.	MIL-T-43548
Cloth, Wind Resistant, Oxford, Nylon and Cotton Quarpel Treated.	MIL-C-43876

2-2. COMMODITY SPECIFICATIONS - Continued

c. Technical Publications

NUMBER	TITLE
FM 10-280	Field Laundry, Bath, and Clothing Exchange Operations
FM 10-16	General Fabric Repair

2-3. IDENTIFICATION AND DESCRIPTION OF ITEMS

a. Sleeping Bag, Intermediate Cold, Synthetic Filling, with Hood.

NSN	SIZE	SPECIFICATION
8465-01-049-0888	One Size	MIL-S-44016

The Intermediate Cold Sleeping Bag is designed in a mummy-shaped configuration utilizing quilted construction; the outer fabric is a 6.5 ounce cloth oxford, 50 percent n-percent cotton, Olive Green 107, Quarpel water repellent treated; the inner fabric is a 3.9 ounce cloth balloon cotton, durable water repellent treated; both the inner and outer fabrics are quilted with a 6 oz/yd sq polyester batting as the insulating material. A full length free-running slide fastener is provided at the front of the bag with webbing loops attached to the slider for ease of operation. An adjustable drawstring face closure, to eliminate the flow of cold air into the bag and escape of warm air at the opening, is provided. Snap fasteners are provided on the flap of the bag for emergency use, if a failure of the slide fastener occurs. Each bag has two tie tapes attached at the foot of the bag, which are used for tying the rolled sleeping bag for carrying and storage purposes. The tie tapes for this bag have a finished length of 25 inches (63.5 cm). The bag is intended for use by personnel in locations where temperature ranges from +50°F to +10°F. (10 to -12°C). A previous model of this sleeping bag, NSN 8465-01-033-8056, is also in use. This bag is identical to that described above except the outer fabric is quilted with a diaphragm cloth to form channels which are filled with a mixture of 50/50 waterfowl feathers and down. The sleeping bags should be protected by a waterproof clothing bag when not in use.

b. Sleeping Bag, Extreme Cold, Type II, with Hood

NSN	SIZE	SPECIfICATION
8465-01-033-8057	One Size	MIL-S-43880

The Extreme Cold Sleeping Bag is a single unit design, with cotton Balloon cloth inner panel with 9 oz. Polyester Batting filling; cotton/nylon oxford outer panel filled with 100% waterfowl down; dive green Army shade 107; water repellent treated and wind resistant; universal size; approximately 83 inches (236.22 CM) long, 35 inches (88.5 CM) wide with slide fastener snap fastener and drawstring closure; with hood: without carrying bag. The minimum dimension for the sleeping bag is 73 1/2 inches (200.50 CM) in length, and 21 3/4 inches (55.25 CM) in width, for 99th percentile soldiers. The Type II, Sleeping Bag Extreme Cold is for use in locations where average monthly temperatures are below+ 10° (-12°C).

2-3. IDENTIFICATION AND DESCRIPTION OF ITEMS - Continued

c. Mattress, Pneumatic (Insulated).

NSN	SIZE	SPECIFICATION
8465-01-136-5855	One Size	MIL-M-43968

The Pneumatic Mattress is fabricated of plain weave, nylon cloth coated on both sides with natural and/or synthetic rubber. The inner area is coated black in color and the outer surface has a thinner cover of Olive Green 207 coating. A 5 oz/sq yd polyester batting is cemented into each of the channels. The mattress is inflated by mouth and is intended for use with the sleeping bags.

d. Mat, Sleeping, Foam.

NSN	SIZE	SPECIFICATION
8465-01-109-3369	One Size	MIL-M-44104

The foam sleeping mat is made of closed-cell, cross linked polyethylene foam. The mat is equipped with tie tapes at one end to hold it in the rolled condition for carrying. The mat weighs about 1 1/4 pounds and is 24 inches wide by 75 inches long. The mat will not absorb water and remains flexible in extreme cold temperatures. Downsizing is authorized at the commander's discretion subject to CIF manager/PBO approval. Authorized modifications should be performed using available cutting instruments such as scissors, pocket knife, or razor knife. Since the foam is of a closed cell composition, the cut edge need not be sealed. The minimum width authorized is 20 inches. Length will be determined by soldier's height. Tie straps are not to be removed. Soldiers are not authorized to cut sleeping mat to his/her size without written approval from CIF manager/PBO.

e. Bag, Waterproof, Clothing.

NSN	SIZE	SPECIFICATION
8465-00-261-6909	One Size	MIL-B-3108

The Waterproof Clothing Bag is fabricated of Olive Green, 106 Cloth, Nylon coated on one side with synthetic rubber. The color of the coating compound shaft be black. The coated side of the fabric is on the inside of the bag and the seams are fully vulcanized with no stitching. The waterproof clothing bag is provided for protecting the sleeping bag when it is stored, carried, transported, or not in use.

f. Hood, Sleeping.

NSN	SIZE	SPECIFICATION
8465-00-518-2769	One Size	MIL-H-43879

The Sleeping Hood is fabricated of cloth, knitted, nylon/triacetate, tricot, color OG-106. It is secured to the head by means of touch-and-close fastener chin flaps. The hood is intended to be worn on the head to keep the head area of the sleeping bag clean from head oils, perspiration and dirt.

Section II. REPAIR PROCEDURES

2-4. MATERIALS

Materials used in the repair of sleeping bags and accessories, will be serviceable materials recovered from similar salvaged items, when authorized, or will be new material as specified in section Ill. New materials will be requisitioned from stock under the stock numbers and/or item description and will conform to the appropriate specifications. When not available from stock, materials may be purchased locally that conform as closely as possible to the standard material.

2-5. REPAIR AND MAINTENANCE OF SLEEPING BAGS, INTERMEDIATE COLD AND EXTREME **COLD TYPE II.**

a. Inspection. Inspect the sleeping bag to determine the extent of damage, normal wear, and the need for repair.

b. Cleaning. Clean off mud or other foreign matter with brush, damp or dry cloth, or scrub the exceedingly dirty areas with limited amounts of water that will not saturate the insulation; then rinse off and dry.

c. Repair.

(1) Any filling material (feathers and down) which has been lost through holes or tears will be replaced with filling material taken from sleeping bags classified as condition “H” or with material obtained which conforms to Type II of MIL-F-43097 for the intermediate cold and extreme cold. Insert sufficient filling material to obtain about the same bulk as in adjacent undamaged channels,

(2) Iron-on patches.

(a) Cut patches to the desired size and shape such that the patch, when applied, will extend approximately 3/4 inch (1.9 CM) in all directions from the tear or damaged area. Patches will have rounded corners.

(b) With the sleeping bag unzipped, place the area to be patched on a wooden or other nonmetallic surface not effected by heating or ironing. Smooth out by hand. Remove any feathers on the area to be patched. Pre-warm the area to be patched by pressing with a household electric dry or steam iron. Use a dry iron set at “cotton” or high as possible without scorching the fabric for about 5 seconds,

(c) Immediately cover with patching material previously cut in the desired size and shape. Hold the iron on the patch for about 8 seconds. Use only a slight rotating or reciprocal motion of the iron. Allow to cool about 5 seconds or long enough so that the patch will not drift off when the patched bag is removed from the table. Adjust the heating, pressing, and cooling times as required for the specific iron being used, Check the quantity of the adhesive bond periodically as follows and adjust heating times and temperatures of the iron accordingly.

(d) Test a patch that has cooled for about 5 minutes by picking with the fingers at an edge of the patch until a tab 1/4-to 1/2-inch (0.635 to 1.27 CM) long is formed. Pull hard on the tab with fingers. A well-bonded tab will be difficult to peel off, This will indicate that iron adjustment and time heating the patch is adequate. Replace the test patch with a new patch or re-iron the old patch.

2-5. REPAIR AND MAINTENANCE OF SLEEPING BAGS, INTERMEDIATE COLD AND EXTREME COLD TYPE II.–Continued

(e) Patches larger than the iron may be applied in sections, starting at the center and completing each section, before proceeding to the next section. Overlapping of the iron over a bonded section is permissible:

CAUTION

A **small amount of patch adhesive strike-through is not objectionable for sleeping bag repair, provided the patch meets the check test.**

(f) A bonded patch which has a lifted edge or which is suspected or found by the check test to be weakly bonded may be re-ironed, e.g., replacement is not required.

d. Cleaning and Drying. Sleeping bags should be laundered and dried using procedures outlined in Formula II of FM 10-280.

NOTE

Dry cleaning shall not be used.

e. Replacement of the 70-inch (177.8 CM) Slide Fastener.

Removal and Installation.

(1) Arctic, Mountain, Intermediate and Extreme Cold Sleeping Bag with Snap Fasteners on Chapes. Carefully cut off the slide fastener tape lengthwise as close as possible to the outer row of stitching holding slide fastener.

(2) Intermediate and Extreme Cold Sleeping Bags with Snap Fasteners Attached Directly to 1 1/4 Inch (3.175 cm) Webbing.

(a) Left Side. Cut outer two rows of stitching holding slide fastener. Cut slide fastener tape lengthwise as close as possible to the remaining row of stitching.

(b) Right Side. Cut the outer row of stitching holding the slide fastener. Cut the slide fastener tape lengthwise as close as possible to the remaining rows of stitching.

(c) Left Side (Intermediate and Extreme Cold Sleeping Bags with Snap Fasteners on Chapes.) Position the slide fastener tape between the 1 1/4 inch (3.175 cm) top guard webbing and the 2 1/2 inch (6.35 cm) weather strip tape with the inside edge of the slide fastener chain along the edge of the 1 1/4 inch (3.175 cm) webbing. Attach the slide fastener tape either to the weather strip tape or the guard webbing with a row of stitching 1/4 inch (0.635 cm) minimum from the inside edge of the slide fastener chain for the full length of the opening. Sew an additional row of stitching through the guard webbing, the weather strip tape, and the slide fastener tape which when sewn will not interfere with the movement of the slider.

2-5 REPAIR AND MAINTENANCE OF SLEEPING BAGS, INTERMEDIATE COLD AND EXTREME COLD TYPE II. – Continued

(d) Left Side (Intermediate and Extreme Cold Sleeping Bags with Snap Fasteners Attached Directly to 1 1/4 Inch (3.175 cm) Webbing.) Position the slide fastener between the 1 1/4 inch (3.175 cm) top guard webbing and the 2 1/2 inch (6.35 cm) weatherstrip tape with the edge of the tape abutting the remaining row of stitching. Sew two rows of stitching, a minimum of 1/8 inch (0.3175 cm) apart, between the edge of the snap fastener and the remaining row of stitching.

(e) Left Side (Intermediate and Extreme Cold Sleeping Bags with Snap Fasteners on Chapes.) Position the slide fastener tape between the 4 inch flap and the 1 1/4 bottom guard webbing, with the inside edge of the slide fastener chain along the edge of the 1 1/4 inch (3.175 cm) webbing. Attach the slide fastener tape either to the bottom guard webbing or the flap with a row of stitching 1/4 inch (0.635 cm) minimum from the inside of the slide fastener chain for the full length of the opening. Sew an additional row of stitching through the guard webbing, flap and slide fastener tape which when sewn will not interfere with the movement of the slider. Sew the slide fastener tapes (beyond the bottom edge of the chain) to the outside guard webbing and flap with a double row of stitching across the webbing and flap.

(f) Right Side (Intermediate and Extreme Cold Bags with Snap Fasteners Attached Directly to the 1 1/4 inch (3.175 cm) Webbing.) Position the slide fastener between the 4 inch flap and the 1 1/4 inch (3.175 cm) bottom guard webbing with the edge of the tape abutting the remaining row of stitching. Sew one row of stitching through the slide fastener tape, a minimum of 1/4 inch (0.175 cm) from the inside edge of the chain, and the 1 1/4 inch (3.175 cm) bottom guard webbing. Sew one row of stitching through the entire assembly a maximum of 3/8 inch (0.9525 cm) from the remaining row of stitching. Sew the slide fastener tapes (beyond the bottom edge of the chain) to the outside guard webbing and flap with a double row of stitching across the webbing and flap.

f. Replacement of the 74 Inch (187.36 cm) Slide Fastener (Mountain and Arctic Sleeping Bags).

(1) Removal. Carefully cut off the slide fastener tape along the edges of the metal chain.

(2) Installation.

(a) Install the 72-inch (187.88 cm) slide fastener in the same manner as the 70-inch (177.8 cm) slide fastener (para 2-5e.)

(b) Refer to figure 2-1 and sew together two inches of the weather strip tape at the foot end of the sleeping bag.

g. Foot Tie Straps-Repair.

(1) Darning. There is no limit to the number of times that the tie straps may be darned. Darn a hole or tear that does not exceed 1/4 inch (0.25 cm) in length or diameter.

(2) Removal. Replace the straps which have holes or tears exceeding 1/4 inch (0.175 cm) in length and diameter. Carefully cut the stitching securing the damaged tie strap to the sleeping bag and remove the damaged strap.

2-5. REPAIR AND MAINTENANCE OF SLEEPING BAGS, INTERMEDIATE COLD AND EXTREME COLD TYPE II. - Continued

(3) Replacement. Cut a length of 3/4 inch (1.905 cm) tape 57 inches long or 76 inches long (144.78 cm) (Mountain and arctic sleeping bags); 58 inches (147.32 cm) long (Type I, Intermediate Cold Sleeping bags); 68 inches (172.72 cm) long (Type II, Extreme Cold Sleeping Bags). Hem both ends of tape 3/4-plus or minus 1/4-inch (0.635 cm) with the raw edge turned under and bartacked or seamed. Fold the tape in half and insert the strap, forming a 1-inch (2.54 cm) inside loop and seam to outer plies of casing. Turn the edges of the inner pliers to the inside, catching the foot straps in the stitching 1-plus or minus 1/4-inch from the seams of the outer ply. Bartack or seam the tie straps together 1/4 inch (0.635 cm) from outside ply casing at foot end of bag.

h. Splicing. Cut damaged tape and overlap tape 1 inch and stitch with a boxstitch formation. Fold end of tape and bartack or seam end as in original construction.

i. Repair or Binding Tape. Overlap the binding tape with new tape (Section Ill), extending the new tape at least one inch beyond the damaged area. Turn the binding edges under 1/2 inch (1.27 cm) and stitch 1/8 inch (0.31 75 cm) in from edge of tape. If the damaged area is at the face opening eyelets, remove the eyelets prior to performing the above repair. Remove and replace the eyelets as specified in j below.

j. Eyelets (Mountain and Arctic Sleeping Bags).

(1) Resetting. Reset a loose eyelet by using appropriate dies.

(2) Removal. Remove a damaged eyelet by cutting it with diagonal wire cutters. Be careful not to cut or damage the fabric, webbing or tape.

(3) Installation. Without damage to the fabric, install the new eyelet (with proper sized dies) according to the original construction.

k. Stitching. The following thread sizes, stitches per inch and types of stitch (as illustrated in Federal Standard 751) will be used where stitching is required. Backstitch thread ends and breaks at least 3/4 inch (1 .905 cm). Maintain thread tension to prevent loose stitching; using material listed in Section Ill and table 2-1 or table 2-2.

Table 2-1. Stitching (Mountain and Arctic Sleeping Bags)

OPERATION	STITCH TYPE	THREAD TYPE I- CLASS I NEEDLE AND BOBBIN	STITCHES PER INCH
General	301	20/4	10-14
General	301	50/3	10-14
Bartack	304	50/3	28 ea.

2-5. REPAIR AND MAINTENANCE OF SLEEPING BAGS, INTERMEDIATE COLD AND EXTREME COLD TYPE II. – Continued

Table 2-2. Stitching (Intermediate and Extreme Cold Sleeping Bags)

OPERATION	STITCH TYPE	THREAD TYPE I - CLASS I NEEDLE AND BOBBIN	STITCHES PER INCH
General	301	30/3	8-12
General	301	50/2	8-12
Bartack	304	50/2	28 ea.

l. Repair of Flap Closure (Intermediate and Extreme Cold Sleeping Bags).

(1) Darning. There is no limit to the number of times that the flap may be darned. Darn a hole or tear that does not exceed 1/2 inch (1.27 cm) in length or diameter.

(2) Patching. Patch holes or tears exceeding 1/2 inch in length or diameter with heat-sealed patches.

m. Replacement of Snap Fastener Retainer (Intermediate and Extreme Cold Sleeping Bags).

(1) Removal. Replace retainers which have damaged snap fasteners, holes, tears by carefully cutting the bartack stitching securing the damaged retainer to the sleeping bag, and remove.

(2) Replacement. Cut a length of 5/8 inch (1.5875 cm) wide tape plus or minus 1/4 inch (0.635 cm). Fold the tape 1 1/4 inch (3.175 cm) from each end. Install a new snap fastener (with proper sized dies), according to original construction. Bartack or stitch (3 rows of stitching) 1/16 inch (0.476 cm) from the retainer edges to the guard strip webbing in the original location.

n. Flap closure Snap Fasteners. (Intermediate and Extreme Cold Sleeping Bags).

(1) Resetting. Reset a loose snap fastener by using appropriate dies.

(2) Removal. Remove a damaged snap fastener by cutting it with a pair of diagonal wire cutters, Be careful not to cut or damage the fabric, or tape.

(3) Installation. Without damage to the fabric, install the new snap fastener (with proper sized dies), according to the original construction,

o. Repair and Replacement of Drawstring Casing and Drawstring (Intermediate and Extreme Cold Sleeping Bags).

(1) Darning. There is no limit to the number of times that the casing maybe darned. Darn a hole that does not exceed 1/2-inch (1.27 cm) in length or diameter. Caution should be exercised that the drawstring is not caught in the stitching.

(2) Drawstring. Replace defective and missing drawstring.

2-5. REPAIR AND MAINTENANCE OF SLEEPING BAGS, INTERMEDIATE COLD AND EXTREME COLD TYPE II. – Continued

(3) Replacement. Replace by cutting the drawstring at the edge of binding tape where it is attached to the face opening. Cut a length of nylon braid 30 ± 1/2 inches (76.2 ± 1.27 cm) long and fuse cut ends. Knot one end of drawstring with a figure eight knot located 3/8 to 5/8 inch (0.953 to 1.588 cm) from end. At one end of casing pass unknotted end of drawstring through opening formed by a bartack and position drawstring within the casing with the unknotted end protruding approximately two inches from other end of casing and on opposite side of bartack, i.e., not within the opening formed by the bartack. Fold the end of drawstring that is unknotted under 1/2 inch and position folded end even with edge of binding tape and against end of drawstring casing. Bartack or stitch through folded end of drawstring within a 1/2 inch (1.27 cm) bartack or with 3 rows of stitching. Install other drawstring in the same manner except start from other end of casing.

p. Lubrication. Use zipper ease stick (Section Ill), apply lubricant to slide fastener and chain. This will maintain free sliding action and aid in preventing breakage of slide fastener chain.

q. Alternate Repair Method.

Repair may also be accomplished through the use of iron-on patches conforming to either Type I or Type II of MIL-C-43677, applied to the exterior of the bag. The repair procedure is as follows:

(1) Trim loose threads and frayed edges of the torn or damaged areas.

(2) Clean dust and dirt from area with a dry brush.

(3) Cut patches to the desired size and shape, such that the patch, when applied will extend 3/4 inch in all directions from the tear or damaged areas. Patches will have rounded corners.

(4) Place area to be patched on a wooden or other non-metallic surface not affected by heat of patching. Smooth out by hand. The area to be patched maybe rewarmed with a household electric dry iron set at cotton for 5 seconds or less.

(5) Apply the previously cut patch: Apply heat either through use of a household electric iron or a commercial type hot press such as Thermopress Model HP-8. If household electric dry iron is used the setting should be cotton and heat should be applied for 8 to 12 seconds using a gentle motion of the iron. If a hot press is used the pressure shall be 20 psi, the temperature 415°F (212.77°C) and the dwell time 11 seconds. The patch should be maintained in a static condition for 5 minutes after application.

(6) The above material may be obtained through the supply system by requisitioning NSN 8305-00-460-4200, Cloth, Coated.

2-6. REPAIR AND MAINTENANCE OF PNEUMATIC MATTRESSES

a. Inspection. Prior to repair each item will be inspected to determine the amount of repair necessary. Repair will be made as fully as skills, facilities, funds and local conditions permit, if cost does not exceed 65 percent of the acquisition cost of the item.

b. Cleaning. Place mattress requiring cleaning on a flat surface with plug tightly in place and scrub thoroughly, using water and a mild soap or detergent which will have no harmful effect on the fabric. Do not wash items with holes or other defects which might permit entry of water into the air chamber until after such defects are repaired. Exception of this is in instances when sufficient air pressure can be maintained in the mattress during cleaning to prevent the entry of water. During the cleaning process, examine partially or wholly inflated items for bubbles or other indications of leaks and clearly mark such areas for repair. Rinse thoroughly in clear water after scrubbing. When the proper Quartermaster or commercial type laundry equipment is available, tightly stoppered and leak-free mattresses may be tumbled, using two 3-minute rinses in cold water followed by a laundry sour rinse, When this method is used, exercise care to prevent over washing or use of excessive heat. Petroleum base solvents or other cleaning compounds which may have an injurous effect on the mattresses will not be used. Cleaning will be accomplished in such manner as to insure against damage to the coating. Thoroughly clean stoppers and wing tubing with castile soap or by other antiseptic, nontoxic, and nonirritating process.

WARNING

Toluene, Federal Specification TT-T-548, is toxic and flammable. Use only in a well-ventilated area. Avoid prolonged breathing of vapors. Keep away from open flame. Do not use excessive amounts,

c. Installing the Inflator Tube.

(1) The inflating tube will be cleaned for cementing as follows: Abrade the entire face and back of the circular flange by means of a motor driven wheel or by hand sanding; using abrasive fabric such as Gritcloth C-120. After abrading, none of the previously applied adhesive will be visible. Wash the surface with a clean cloth wetted with toluene (NSN 6810-00-281-2002) **to remove abrasion dust.**

(2) Abrade by hand the area where the inflating tube and the circular reinforcement piece are to be affixed, using Gritcloth C-120 (Comprising an area approx. 4 1/2 inches (11.43 cm) in diameter on the exterior surface of the mattress).

(3) Cut a circular piece of the same material as used in the fabrication of the mattress approx. 4 inches in diameter with an approximate 1 1/4 inch (3.175 cm) diameter hole. Wipe one side of each piece with toluene in preparation for the adhesive. Circular pieces can be cut from salvaged pneumatic mattress.

(4) Apply a medium-thickness brush coat of a two-part neoprene cement (NSN 8040-00-515-2246) to the entire bottom side of the inflating tube flange and to the 4 1/2 inch (11.43 cm) diameter area around the valve hole of the mattress. Allow the coats to dry at room temperature for 15 to 30 minutes. Apply a second coat of cement to the flange bottom. Allow to dry at room temperature for two to three minutes before affixing the inflating tube to the mattress. Role the flange down by means of a two-pound, two-inch wide steel roller for best adhesion.

2-6. REPAIR AND MAINTENANCE OF PNEUMATIC MATTRESS–Continued

(5) Apply one coat of cement to the top of the flange and to the surrounding area of the mattress (the 4 **1/2** inch (11.43 cm) diameter abraded area) and to one side of the circular reinforcement piece. Allow the coats to dry at room temperature for 15 to 30 minutes. Apply a second coat to the top of the flange and the surrounding area of the mattress (4 1/2 inch (11.43 cm) diameter). Set the reinforcing piece over the top of the flange, after the second coat has dried at room temperature for two to three minutes. Roll down the entire cemented unit.

(6) After repair, dust the smaller areas of exposed cement with talc, starch, or soapstone.

d. Body Patching.

(1) The repair kit (NSN 8465-00-753-6335) is satisfactory for punctures and short tears; however, in production repair the use of bulk adhesive and patches from salvaged mattresses is recommended.

(2) Repair procedure is as follows: Cut a patch overlapping the damaged area with a margin of at least 3/4 inch (1.9 cm) on all sides.

(3) Apply a medium-thickness brush coat of cement (NSN 8040-00-515-2246) to the patch and mattress at area of repair. Allow the coats to dry at room temperature for 15 to 30 minutes.

(4) Apply a second coat. Dry the second coat at room temperature for two to three minutes. Apply the patch over the damaged area. Roll down the entire cemented area.

(5) Dust the area with talc, starch, or soapstone.

NOTE

Do not inflate for at least 24 hours after cementing. Replace defective or missing inflating tube stoppers (NSN 8465-00-319-4183).

e. Border Seams.

(1) Equipment shall consist of a sewing machine with these recommended accessories: Use the finest practicable size chrome plated round point needle, Teflon presser foot, knurled feed dog, Singer needle cooler. Thread may be run over a pad saturated with water. Use no wax, oil, or grease thread lubricant. Avoid high sewing speeds. Stitch Type 301; 8 to 10 stitches per inch.

(2) The repair consists of cementing together the separated border seam, stitching the seam along the inner edge and sealing the stitch holes. The detailed procedure is as follows:

(a) Open the blown-out seam so that the seam separation extends the full width of the seam, i.e. the separated area is squared off.

(b) Prop the seam open and apply a heavy coat of cement to both sides of the open seam. (Excess cement beyond the seam will do no harm).

2-6. REPAIR AND MAINTENANCE OF PNEUMATIC MATTRESSES–Continued

(c) Allow the cement to dry at least 10 minutes, then press the two parts of the seam firmly into place. Allow the bonded seam to dry at room temperature 18-24 hours before stitching. (Proper drying will allow the seam to develop optimum green strength; incompletely dried cement will cause debris to form on the needle).

(d) Stitch along the seam, 5/16 ± 1/16 inch (0.79 ± 0.15 cm) in from the outer edge. Start 2 inches ahead of the defective portion of the seam and stitch 2 inches beyond it.

(e) Seal the stitch holes with 3 coats of the cement, allowing 10 minutes drying time between coats. When the final coat has dried, dust with talc or mica dust.

(f) Allow the sealant to set overnight, then inflate and test for leaks. This may be done by immersing the repaired edge in water, or by applying soapy water. Alternatively, the inflated mattress may be allowed to stand overnight; although this method will not give the location of any leaks that maybe present.

f. Repair of Blown-Out Border Seams.

(1) Recommended sewing machine equipment. Use the finest practicable size chrome plated round point needle. Teflon presser foot, knurled feed dog, Singer needle cooler. Thread may be run over a pad saturated with water. Use no wax, oil, or grease thread lubricant. Avoid high sewing speeds. Stitch Type 301; 8 to 10 stitches per inch.

(2) Repair procedure. The repair consists of cementing together the separated border seam, stitching the seam along the inner edge, and sealing the stitch holes. The detailed procedure is as follows:

(a) Open the blown-out seam so that the seam separation extends the full width of the seam, i.e., the separated area is squared off.

(b) Prop the seam open and apply a heavy coat of cement to both sides of the open seam. (Excess cement beyond the seam will do no harm).

(c) Allow the cement to dry at least 10 minutes, then press the two parts of the seam firmly into place. (Incompletely dried cement will cause debris to form on the needle.)

(d) Stitch along the seam, 5/16 ± 1/16 inch (0.79 ± 0.15 cm) in from the outer edge. Start 2 inches (5.1 cm) ahead of the defective portion of seam and stitch 2 inches (5.1 cm) beyond it.

(e) Seal the stitch holes with 3 coats of cement, allowing 10 minutes drying time between coats. When the final coat has dried, dust with talc or mica dust.

(f) Allow the sealant to set overnight, then inflate and test for leaks. This maybe done by immersing the repaired edge in water, or by applying soapy water. Alternatively, the inflated mattress may be allowed to stand overnight, although this method will not give the location of any leaks that maybe present.

2-6. REPAIR AND MAINTENANCE OF PNEUMATIC MATTRESSES-Continued

g. To replace the tie cord cut a 2 inch (5.1 cm) circular piece of material from a salvaged bag. In the center of this 2 inch circular piece make two bartacks spaced 1/2 inch (1.27 cm) apart over the tie cord 63" long ± 1" (160.02 ± 2.54 cm). Apply a medium thickness brush coat of cement, NSN 8040-00-514-1880, to the coated side of the patch and to the bag at the area of repair. Allow the cement to dry at room temperature for 5 minutes. Assemble while surface is still wet and tacky, smooth patch by hand, if possible use a hand roller, dust the area with talc.

2-7. REPAIR AND MAINTENANCE OF MAT, SLEEPING, FOAM

Repair and Maintenance of the mat shall consist of hand cleaning by sponging with soap and water or by brushing using a soft bristle brush. To repair tears in the mat, coat both edges of the tear with adhesive (NSN 8040-00-165-8614) hold the tear apart until the adhesive becomes tacky (2-5 minutes) then press both sides of the tear together and allow to stand overnight. To replace a missing tie tape cut a 2 inch square patch of chloroprene coated cloth (NSN 8305-00-082-2372). Cut a piece of nylon tape (NSN 8315-00-176-8083) 45 inches long. Boxstitch the tape to the patch in the center. Abrade the patch on the opposite side from the tape and the surface of the mat using abrasive fabric such as Gritcloth C120. Apply a coat of adhesive to the abraded surfaces of the patch and mat and allow the adhesive to dry until it is tacky (2-5 minutes). Then place the patch on the mat and smooth out by hand or with a roller. Allow the adhesive to setup overnight.

2-8. REPAIR AND MAINTENANCE OF SLEEPING HOOD

a. Inspection. Prior to repair, each item will be inspected to determine the amount of repair necessary. Repairs will be made as fully as skills, facilities, funds and local conditions permit.

b. Cleaning.

(1) Handwashing. Close fastener before washing. Wash liner by handsqueezing in lukewarm solution of laundry detergent with 1/2 to 2 ounces (14.2 to 56.7 g) per gallon of water. Rinse thoroughly in lukewarm water. Squeeze out excess water. Do not wring to dry.

(2) Cleaning and Drying. Launcer using a lukewarm temperature (90-100°F) (32.2-37°C) using Formula II of FM 10-280. Tumble-dry at temperature not exceeding 150°F.

NOTE

If the hoods are badly soiled with hair oil stains, pre-treat before laundering with a mixture of 95 percent by weight of dry cleaning solvent MIL-D-12150, NSN 7930-00-234-6237, 3 3/4 percent detergent, type I of MIL-D-16791, NSN 7930-00-282-9699, and 1 1/4 percent detergent, Type II of MIL-D-16791, NSN 7930-00-531-9715.

c. Darning. There is no limit to the number of times that the hood may be darned. Darn a hole or tear that does not exceed 3/4 inch (1.9 cm) in length of diameter.

d. Restitching. Remove loose or broken stitching and restitch the hood, following the original construction.

2-8 REPAIR AND MAINTENANCE OF SLEEPING HOOD - Continued

e. **Fastener, Tape Closure. Replace defective and missing hook or pile fastener tape with NSN 8315-00-151-6479. Remove defective fastener tape without damaging material, cut replacement items to size of original and attach in position of the original using thread, stitch type, and stitches per inch specified in Table 2-1 and Table 2-2.**

2-9. WORKMANSHIP

Repair and cleaning will be done by personnel skilled in the particular trade applicable to their duties.

2-10. INSPECTION

The inspection or quality control unit is responsible for determining compliance with repair instructions and requirements for classification. In process inspections will be performed for quality of workmanship and correct application of repair procedures. The completed item will be inspected for serviceable appearance and condition to insure against return of a substandard product to supply channels.

Section III. MATERIALS

(1) SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
		SLEEPING BAG, M-1 949 PATCHING MATERIAL	
PAOZZ	8305-00-460-4200	Cloth, Coated, Balloon, **Cotton, For Heat Seal Patching Conforming to MIL-C-43677, Type I**	Yd
		INNER LINER	
PAFZZ	8305-00-222-2423	**Cloth, Cotton, Cheesecloth, CCC-C-40, Type 1, Class I**	Yd
		PULL	
PAOZZ	8315-00-262-2784	Braid, **Textile, Cotton, Tubular Flat, Green 107, MIL-B-371, Type Vll, Class 2**	Yd
		WEATHER STRIP	
PAFZZ	8315-00-253-6286	**Tape, Textile, Cotton, General Purpose Slide Fastener Assembly, Mil-T-43566, Type 1, Class 8,2.5 Inch Width**	Yd
		SLIDE FASTENER ASSEMBLY	
PAFZZ	8305-00-260-1750	**Webbing, Textile, Cotton, General Purpose, MIL-W-530, 1.250 Inch Width, Type 2A, Class 8**	Yd
PAFZZ	5325-01-133-2296	**Fastener, Slide, Polyester Type, V- F-106, Type 3, Style 1, Size MHS, 69-71 Inches Length, 1 Inch Width**	Ea
		FACE OPENING BINDING	
PAFZZ	8315-00-496-9906	**Tape, Textile, Cotton OD-7, Type 1, Class 3, DDD-T-86, 1.250 Inches Width**	Yd
		FOOT TIE STRAPS AND FRONT OPENING REINFORCEMENT	
PAFZZ	8315-00-253-6285	**Tape, Textile, Cotton, MIL-T-43566, Type 1, Class 8,0.750 (3/4) Inches width**	Yd
		THREAD FOR SEWING SLIDE FASTENER ASSY, ETC.	
PAFZZ	8310-00-187-3873	**Thread Cotton, Olive Drab Shade S-1, C.A. 66022, Type 1A3 of A-A-52094**	SL
		THREAD, GENERAL PURPOSE SEWING	
PAFZZ	8310-01-066-0973	**Thread, Polyester Core, Cotton-Rayon, or Polyester-Covered, Olive Drab, C.A. 66022, MIL-T-43548 (81349), Size 50, 3 Ply**	SL

Section III. MATERIALS - Continued

SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
		HARDWARE	
PAFZZ	5325-00-543-3074	Fastener,Slide, Interlocking, 70 Inches Long, Type I, Style 2,	Ea
PAFZZ	5325-00-276-9718	Fastener. Slide, Interlocking, 72 Inches Long, Type I, Style 2, CL A	Ea
PAFZZ	5325-00-221-1516	Eyelets, Brass, Bronze Finish, 8460214 (19200)	HD
PAFZZ	5310-00-209-1767	Washer, Brass, Bronze Finish, MS63033-6-4096	Ea
		LUBRICANT	
PAOZZ	9150-00-999-7548	Lubricant, Interlocking Slide Fastener, Zipperease (96980), Stick Form	Bx
		MAT, SLEEPING COLD WEATHER	
PAFZZ	8040-00-514-1880	Adhesive, Rubber, Synthetic	Qt
PAFZZ	8305-00-082-2373	Cloth, Coated Nylon, Chloroprene Coating both sides. Green, Type II Class 3 of MIL-C-20696.	YD
PAFZZ	8315-00-176-8083	Tape, Textile, Nylon. OD-7, 3/4 Inch Wide Type II of MIL-M-5038	Yd
		SLEEPING BAGS, INTERMEDIATE AND EXTREME COLD PATCHING MATERIAL - OUTER FABRIC	
PAFZZ	8305-01-003-5435	Cloth, Cotton, Nylon Oxford, 6.5 Oz, Quarpel Treated, with an Adhesive Coating on One Side, For Heat Seal Patching Conforming to MIL-C-43677, Type IL	Yd
		INNER FABRIC	
PAOZZ	3305-00-460-4200	Cloth, Coated, Balloon, Cotton, for Heat Seal Patching. Conforming to MIL-C-43677 Type I.	Yd
PAOZZ	8305-00-207-1291	Cloth, Parachute, Nylon 1.1 Oz./Yd., Conforming to Type I, MIL-C-7020(CAGEC 81349), 36 Inch Width.	Yd
		PULL	
PAOZZ	8315-00-262-2784	Braid, Textile, Cotton, Tubular, Flat, OG-107, Water Repellent, Conforming to MIL-B-371, .344 Inches Wide, Type Vll, class 2	Yd

Section III. MATERIALS - Continued

(1) SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
		WEATHER STRIP	
PAFZZ	8315-00-253-6286	Tape, Textile Cotton, OD-7 Conforming to Type I, Class 8,2 1/2 Inch Width of MIL-T-43566.	Yd
		SLIDE FASTENER ASSEMBLY	
PAFZZ	8305-00-260-1750	Webbing, Textile, Cotton OD-7, Conforming to Type IIA, Class 8, 1 1/4 Inch Width of MIL-W-530.	Yd
PAFZZ	8305-01-169-2375	Webbing Textile, Polypropylene OG 106, conforming to Type IIA, Class 4, 1 1/4 Inch Width of MIL-W-44049	Yd
		FOOT TIE STRAPS AND FRONT OPENING REINFORCEMENT	
PAFZZ	8315-00-253-6285	Tape, Textile, Cotton, OD-7 Conforming to Type I, Class 8, 3/4 Inch Width of MIL-T-43566.	Yd
		SNAP FASTENER RETAINER	
PAFZZ	8315-00-262-3375	Tape, Textile, Cotton, OD-7, Conforming to Type I, Class 8, 5/8 Inch Width of MIL-T-43566.	Yd
		FACE OPENING CLOSURE	
PAFZZ	8315-00-641-8328	Braid, Tubular, Nylon, OG-107, Conforming to V-L-61, .312 (5/16) Inch Width, Green 107	Yd
		THREAD FOR SEWING THE SLIDE FASTENER ASSEMBLY, AND FOR JOINING THE ASSEMBLY, ETC.	
PAFZZ	8310-00-187-3873	Thread, cotton, Shade S-1 conforming to Type IA3 of V-T-276.	SL
PAFZZ	8310-00-187-3920	Thread, Cotton, OD-S-1, C.A. 66022, A-A-52094, Type I, Size 50,3 Ply	CE
		HARDWARE	
PAFZZ	5325-01-133-2296	Fasteners, Slide Interlocking, Conforming to Type 3, Style 1, Size MHS, with Plastic (Nylon) Chain, Reversible, Double Pull Slider, Wire Stirrup Pulls, 70 Inches Long, 1 Inch Wide Tape of V-F-106. Conforming to YKK Part No. CFC-95HT.	Ea

Section III. MATERIALS - Continued

(1) SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
		HOOD, SLEEPING	
PAFZZ	8315-00-450-9837	Fastener, Tape, Hook, Nylon, OG-106, Type II,2 Inch Width of MIL-F-21840, class 1	Yd
PAFZZ	8315-00-498-6631	Fastener, Tape, Pile, Nylon, OG-106, 2 Inch Width of MIL-F-21840, Class 1	Yd
PAFZZ	8310-00-986-1288	Thread, Cotton, OD-S-1, C.A. 66022, V-T-285, Type I, Class 1, Subclass A or B, Size E (70), 3 Ply	Yd
		DETERGENTS	
PAFZZ	7930-00-252-6797	Detergent, Laundry, Powder 50 lb, Type II, of P-D-245	Bg
PAFZZ	7930-00-234-6237	Detergent, Dry Cleaning Solvent of A-A-50293	Gl
PAFZZ	7930-00-282-9699	Detergents, General Purpose, Type I of MIL-D-16791	Gl
PAFZZ	7930-00-531-9715	Detergents, General Purpose, Type II of MIL-D-16791	Gl
		BAG Waterproof CLOTHING	
PAFZZ	8315-00-252-3004	Braid, Textile, Cotton, OG-107, 0.1875 (3/16) Inch Width, Type III, Class 1, Conforming to MIL-B-371.	Yd
PAFZZ	8310-00-988-1298	Thread, Bartack Stitching, OD-S-1, C.A. 66022, Ty I, CL I, Sub-class A or B	Yd
PAFZZ	6810-00-281-2002	Toluene, Technical of TT-T-548	Gl
PAFZZ	8040-00-515-2246	Adhesive, Polychloroprene, Class 3 of MIL-A-5540	Kt
PAFZZ	8040-00-165-8614	Adhesive, Rubber Synthetic, MM-A-139	Qt
PCOZZ	8465-00-753-6335	Maintenance Kit, Cold Weather, Insulated Boot, MIL-M-14545	Ea
PAFZZ	8040-00-514-1880	Adhesive, Rubber, Synthetic	Qt
PAFZZ	6810-00-270-9989	Talc, Technical	Lb

Section III. MATERIALS - Continued

(1) SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
		MATTRESS, PNEUMATIC	
PAFZZ	8465-00-319-4163	Stopper, Inflating Tube, Pneumatic Mattress, MIL-S-43659	Ea
PAFZZ	8040-00-515-2246	Adhesive, Polychlroprene, Class 3, MIL-A-5540	Kt
PACZZ	8465-00-753-6335	Maintenance Kit, Cold Weather, Insulated Boot, MIL-M-14545	Ea
		MATRESS, PNEUMATIC INSULATED	
PAFZZ	8040-00-515-2246	Adhesive, Polychloroprene Class 3 of MIL-A-5540.	Kt
PAFZZ	6810-00-281-2002	Toluene, Technical of Fed. Spec. TT-T-548.	Gl
PAFZZ	8465-00-753-6335	Maintenance Kit Cold Weather, Insulated Boot of MIL-M-14545.	Ea
PAFZZ	8465-00-319-4183	Stopper, Inflating Tube, Pneumatic Mattress of MIL-S-43659.	Ea
		REPAIR OF BLOWN-OUT SEAMS OF THE PNEUMATIC MATTRESS	
PAFZZ	6040-00-291-6361	Adhesive, Natural or Synthetic-Natural Rubber, Class 3 (Self Curing), MMM-A-139A.	Kt
PAFZZ		Thread, Polyester, Letter Size B, Shade S-1, Class 1, Sub-Class A (Req Finish), Spec. MIL-T-40040.	Cone
PAFZZ	6810-00-270-8889	Talc, Technical, 1 lb can.	Lb

CHAPTER 3

MAINTENANCE OF BODY ARMOR

Section I. INTRODUCTION

3-1. SCOPE

This chapter prescribes the procedures and instructions for the repair of body armor, fragmentation protective; vest, with 3/4-collar, with internal stiffeners.

3-2. COMMODITY SPECIFICATIONS

a. ITEM.

ITEM	SPECIFICATION
Body Armor, Fragmentation Protective; Vest, With 3/4-collar	MIL-B-12370

b. Components.

ITEM	SPECIFICATION
Cloth, Oxford, Nylon, 3-Ounce	MIL-C-508
Fastener Tape, Hook and Pile, Nylon	MIL-F-21840
Webbing, Textile, Cotton, General Purpose, Natural or in Colors	MIL-W-530
Plastic, Polyethylene and Copolymers, High Density, Molding and Extrusion Material	MIL-P-22748A
Ink Marking (For Parachute and Other Textile Items)	MIL-I-6903
Plastic, Film, Flexible, Vinyl Chloride.	L-P-375
Thread, Nylon	V-T-295
Label, for Clothing, Equipage, and Tentage (General use)	DD-L-20
Webbing, Textile (Cotton, Elastic) Elastic Cord	JJ-W-155
Stitches, Seams, and Stitchings	Fed. Std. No. 751

3–2. COMMODITY SPECIFICATIONS - Continued

c. Technical Publications

NUMBER	TITLE
FM 10-280	Field Laundry, Bath, and Clothing Exchange Operations
FM 10-16	General Fabric Repair

3–3. IDENTIFICATION AND DESCRIPTION

a. Identification. Body Armor, Fragmentation Protective; Vest with 3/4 collar, with internal stiffners.

NSN	SIZE	SPECIFICATION
8470-00-122-1299	Small	MIL-B-12370
8470-00-122-1300	Medium	MIL-B-12370
8470-00-122-1301	Large	MIL-B-12370
8470-00-122-1302	X-Large	MIL-B-12370

b. Description. The vest provides all-around protection from shoulders to waist, against shell mortar, mine, booby trap, and grenade fragments. The outer shell is made from 3-ounce nylon oxford cloth, olive green shade No. 106. The body consists of a ballistic filler encased in a waterproof casing of vinyl film and inserted into the outer shell. Ballistic filler insert consists of a back, a right front, and a left front which fold over the shoulders to join at the back yoke where they are also joined in the back yoke area by the back action center (five inch (12.7 cm) wide elastic webbing). The back insert overlaps the yoke and is attached by two pieces of nylon cloth called action back pieces. There are two bellows patch pockets and flaps on the outer shell, dosed by means of snap fasteners; a slide fastener front closure with a snap fastening flap; open overlapping sides with elastic lacing. The latest model vest has a hook-and-pile fastener tape front closure in lieu of the slide fastener and snap fasteners. The patch pockets also have hook-and-pile fastener tape closures in lieu of snap fasteners.

Section II. REPAIR PROCEDURES

3-4. GENERAL

Materials used in the repair of vests will be serviceable materials recovered from similar salvaged items, when authorized, or preferably, will be new materials as specified in section Ill. New materials will be requisitioned from stock under the national stock numbers and/or item descriptions as listed and will conform to the appropriate specifications. When not available from stock, materials may be purchased locally that conform as closely as possible to the standard material for emergency repair. Extreme care should be exercised in respect to emergency materials as replacement for the vinyl casing, The vinyl casing is critical in maintaining the ballistic integrity of the nylon ballistic insert material as the ballistic protection of the armor is significantly decreased if the ballistic insert becomes wet.

3-4. REPAIR AND MAINTENANCE OF BODY ARMOR

a. Inspection.

(1) Inspect the overall condition of the outer shell. It should be carefully examined to determine whether it is worthy of cleaning and repair of whether it should be replaced with a new outer shell.

(2) Inspect vest for a complete set of internal stiffeners. Any vest without a set of internal stiffeners will bear a stock number such as 8470-00-823-7370, 8470-00-823-7371, 8470-00-823-7372, or 8470-00-823-7373, and shall be automatically classified as a condition code H. A vest without stiffeners will be disposed of in accordance with AR 755-20.

(3) Each vest will be inspected to determine the proper classification and identification (item description, size, and stock number).

(4) Prior to the removal of the outer cover for cleaning, inspect the cover to make sure that the identification labels (size and stock number is secure and/or the markings are legible). If the vest can not be properly identified as to size, refer to table 3-1 to determine vest size in relation to measurements listed.

3-4. REPAIR AND MAINTENANCE OF BODY ARMOR–Continued

Table 3-1. Body Armor Vest Measurements

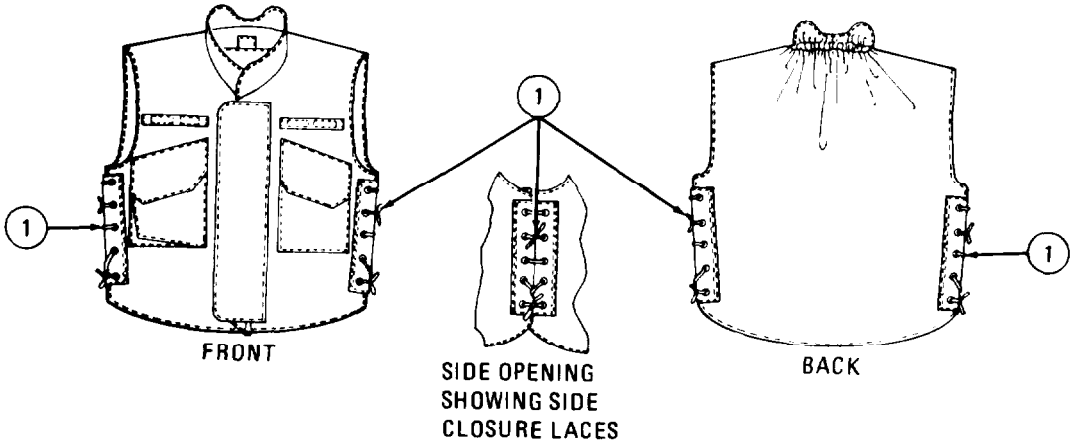
MEASUREMENTS	SIZE			
	SMALL INCHES	MEDIUM INCHES	LARGE INCHES	X-LARGE INCHES
Front Width	13 3/8	14 3/8	15 3/8	16 3/8
Front Length	18 3/8	23 1/8	23 7/8	24 5/8
Back Width	20	22	24	26
Back Length	22 5/8	23 1/8	23 5/8	24 1/8

NOTE

Front width measurement taken from edge-to-edge at base of armhole level (each front measured separately). Back width measurement taken from edge-to-edge at base of armhole level. Back length measurement taken along center of back from top edge of neck to bottom edge of vest. Front length measurement taken from point of shoulder seam at neck to bottom edge of vest at point in line with back edge of front flap.

When the size is determined the stock number may be determined on the basis of whether the item contains internal stiffeners. Presence of the stiffeners can be felt by flexing the cover material and feeling the inserts with the hands or stiffeners maybe visually evident by the patterns developed in the material. If the outer shell is to be removed and cleaned, it is important that the size information be retained during the cleaning operation and that the vinyl casing and insert be checked to insure that the size is marked and will be retained.

b. Cleaning. Remove the side closure laces (1) from the vest.



3-5. REPAIR AND MAINTENANCE OF BODY ARMOR–Continued

CAUTION

Do not use dry cleaning solvents, gasoline, or similar products to clean the vest.

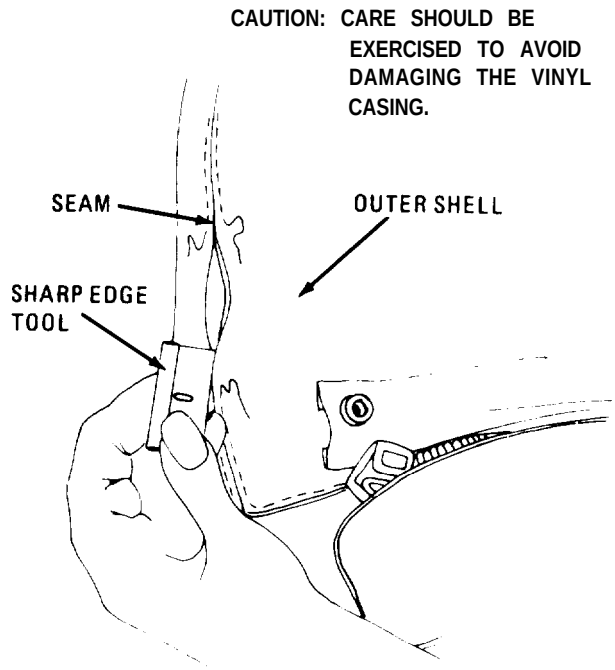
(2) Spot removal.

NOTE

Do not clean vest with any solutions if vinyl casing is damaged. Apply a warm water and soap (or deterent) solution to the soiled area. Rub or brush the area vigorously to wet and loosen the soil. Rinse thoroughly with warm water and air dry the vest away from heat or open flame. Minor stained areas remaining after cleaning are not cause to down grade an item from condition code B to condition code F.

(3) Outer Shell.

(a) Remove the vinyl casing and ballistic insert by opening the bottom seam (1) on the back panel of the vest and then pull the outer shell over the casing with insert, taking care not to damage the components. The seam may be opened by cutting the stitching threads with a sharp edge tool, taking care not to cut the cloth or vinyl casing.



3-5. REPAIR AND MAINTENANCE OF BODY ARMOR-Continued

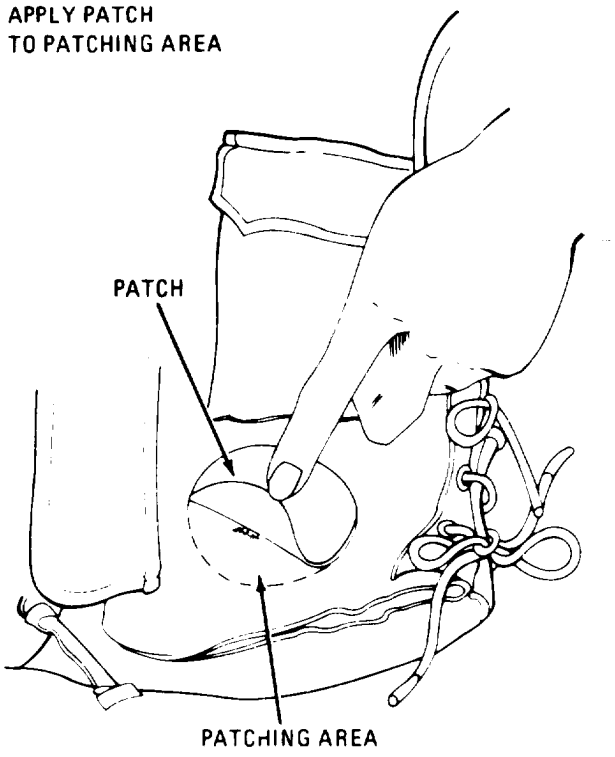
(b) Check that the “size” is clearly and legibly marked to insure that the size designation of the insert unit (vinyl casing and ballistic insert) will not be lost. If the size designation is not legible, mark the proper size designation on the vinyl casing or the ballistic insert with ink in accordance with MIL-I-6903C, Type IV, Black, or equal (Interchemical Corp. BL-13347 has been found satisfactory).

(c) The outer shells shall be cleaned by machine using Formula II of FM 10-280.

c. Inspection. Inspect the outer shell after cleaning to insure that seams have not opened up during cleaning and that components operate satisfactorily.

d. Outer Shell Repair Procedure.

(1) Small holes or tears. When repairing a small hole or tear in the outer shell of a vest in which the vinyl casing is not damaged, the repair may be made on the outer cover without removal of the vinyl casing with ballistic insert. To repair the hole or tear in the outer cover, cut a patch of matching cloth (nylon oxford) 1-inch (2.54 cm) larger in each direction than the hole tear to be repaired (preferably circular patches). Apply the adhesive patching cement on the patch over the hole and press or roll the surface firmly together. Allow the adhesive to set for 15-20 minutes before subjecting the vest to severe handling or water immersion.

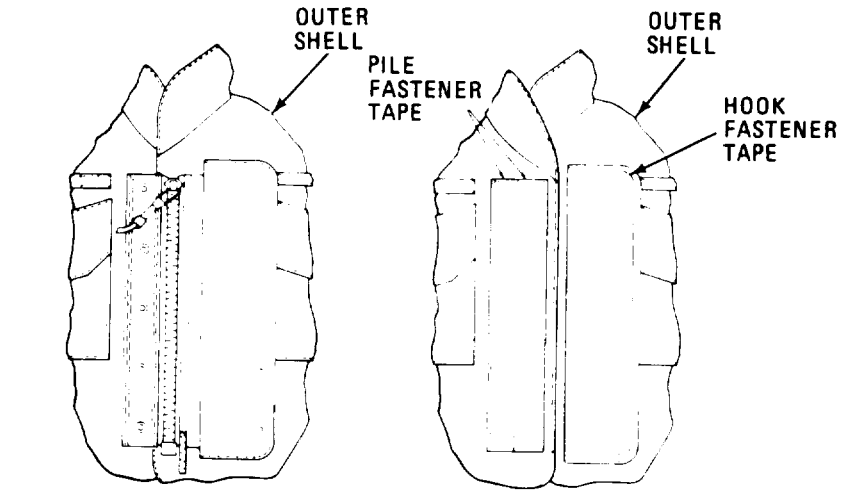


3-5. REPAIR AND MAINTENANCE OF BODY ARMOR–Continued

(2) Open seams and broken stitches in outer shell and components. When it is necessary to remove the outer cover from the vest, open seams and broken stitches may be repaired by using the adhesive patching cement.

CAUTION

Care should be exercised to avoid damaging the vinyl casing. This can be accomplished by opening the seam with a sharp edge tool or other suitable device to where good stitching is encountered.

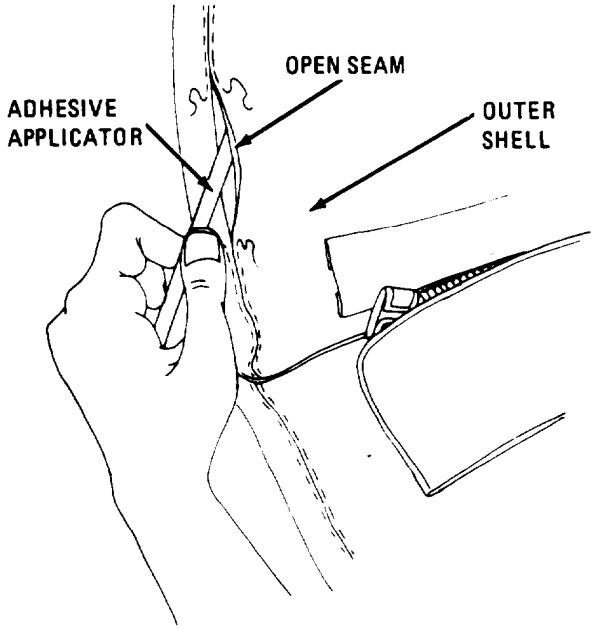


A. FRONT OPENING WITH SLIDE FASTENER

B. FRONT OPENING WITH HOOK-AND-PILE FASTENER

3-5. REPAIR AND MAINTENANCE OF BODY ARMOR–Continued

Apply the adhesive to each surface to be joined and press the surfaces firmly together. When using adhesive for repairing open seams or broken stitches, it is recommended that the adhesive not be used for repair of bartacking nor for the repair of pocket to shell seam. Use of adhesive is not recommended on open or broken seams in excess of one and a half inches (3.81 cm). When the outer shell has been removed from the vest, open seams and broken stitches may be repaired by the above adhesive patching cement procedure or by following types of stitch, thread size, and stitches per inch specified in table 3-2. Machines will be used for all servicing except in emergency repair. Adjust thread tension so that there will be no loose stitching or excessively tight stitching resulting in puckering of the material sewn. When restitching an open seam or when a thread breaks during normal stitching, backstitch not less than 3/4 inch (1.91 cm). For stitch-type illustrations, see Federal Standard 751. In general, stitching, will conform to that of original manufacture and be performed with nylon thread conforming to Type I, II, or Ill, any type of Specification V-T-295.



3-5. REPAIR AND MAINTENANCE OF BODY ARMOR–Continued

Table 3-2. Stitching Instructions

LOCATION	STITCH TYPE	THREAD SIZE		STITCHES PER INCH
		NEEDLE	BOBBIN	
General	301	B	B	10-14
Bartack	Bartack (1/2 in)	B	B	28 per tack
Overedge side webbing	503 or 504	E	E	8-12
Closing bottom edge at back of armor	401 or 301	E	E	10-14
Elastic webbing on center yoke and action back pieces	301	E	E	4-8
Attaching front and breast pocket flaps, grenade hanger, side webbing, slide and hook-and-pile fasteners, and webbing	301	E	E	10-14
Attaching inner action yoke support and inner action supports	301	E	E	4-8
Attaching Label	301	B	B	10-14

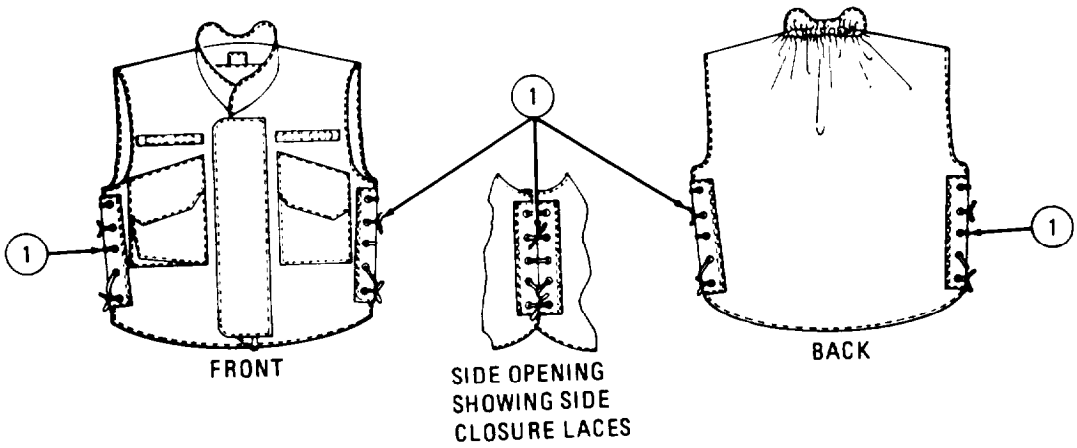
e. Outer Shell Replacement. Due to the light weight of the outer covering material and low cost of the complete outer shell it is not considered economical to repair badly torn, worn, or damaged outer shells, including replacement of slide or hook-and-pile fasteners, webbing, snap fasteners, and grenade hangers. In lieu thereof when a vest exhibits large holes or tears, or an outer shell that is severely worn or soiled, contains inoperative slide or hook-and-pile fastener, badly torn pocket or pocket flaps, damaged front protective flap, inoperative snap fasteners, torn or damaged grenade hanger, and damaged or badly abraded side webbing, replace the entire outer shell. Questionable fabric may be tested with a hand pull test. When replacing the outer shell completely, remove the old outer shell taking care not to damage the vinyl casing, After removal, thoroughly examine the vinyl casing for ruptured heatseals, holes, stiffness or discoloration.

3-5. REPAIR AND MAINTENANCE OF BODY ARMOR–Continued

CAUTION

Do not stitch through the vinyl casing. If the vinyl casing is determined to be serviceable, place the casing with insert into a new outer shell of appropriate size insuring that the ballistic insert is smooth within the casing and outer shell; turn the edges of the open end of the shell to the inside, and close opening at back by stitching 1/16- to1/8-inch (0.159 to 0.318 cm) from edge. Care is required in this operation as damage by needle puncture of the vinyl film will invalidate the repair.

f. Slide Closure Lace Replacement. If any side closure lace is visibly damaged (cut, abraded, or has lost elastic properties) or not proper length, replace all the laces (1) in the vest with new side closure laces.



g. Vinyl Casing Replacement.

(1) The vinyl casing is critical to maintaining the integrity of protection afforded by the ballistic insert. If the vinyl casing appears stiff or discolored, contains any ruptured heat seals, contains any holes, or is in any way damaged, replace the vinyl casing with a new one.

3-5. REPAIR AND MAINTENANCE OF BODY ARMOR–Continued

(2) When replacing the vinyl casing, remove the ballistic insert from old casing. If the ballistic insert (after examination) is found to be dry, not damaged, and contains stiffeners, place it into a new casing, insuring that the ballistic insert lies flat and unbunched in the casing and that the collar is inside the casing collar. Force excess air out of the casing then heat seal the bottom opening of the vinyl casing to form a water tight closure.

(3) Heat sealing of vinyl casing. Insure that ballistic insert is properly positioned in the vinyl casing; force excess air out of casing: smooth the bottom open end so as to be free of wrinkles or folds, and seal the end in the dielectric heat sealer platens. The closing seal shall be not more than 3/8 inch (0.953 cm) from the end. Care should be taken in the sealing operation that no loose threads, fuzz, or any other foreign matter is in the area to be heat sealed. The heat seal on the end should intersect and cross both of the side heat seal areas. The closing seal shall be obtained in accordance with good heat sealing practice to produce a seam of equal strength to that of the side seams. It is recommended prior to each production run that machine settings be checked on a vinyl casing by performing at least three or four trials to insure an adequate seal.

(4) Heat sealing of vinyl casings by hand. Perform hand sealing in the same way as described above except as follows:

(a) An electric hand sealing iron (para 3-11) shall be used.

(b) The sealer shall be set at its maximum high setting.

(c) The heat sealing shall be done on a smooth wooden or hardboard surface.

(d) The wooden or hardboard working surface shall be covered in the heat sealing area with a 5 MIL teflon film to prevent sticking of the film to the surface when sealing. Alternatively, the heat sealing area may be covered with silicone coated release paper, coated side up.

(e) The envelope open end to be heat sealed shall be placed on the working surface, smoothed out, and covered by a transparent or translucent ironing film (5 MIL thick teflon (sec Ill)). The ironing film allows the operator to see whether thorough fusion of the two layers of vinyl casing has taken place along the entire closure.

(f) The sealing shall be aided by the use of a guide, such as 1/4 inch (0.635 cm) thick steel bar stock, along which the sealing iron shall be drawn. The sealing iron shall be tilted approximately 20° so that the sealing is done by the edge of the sole plate only, to produce a seal line between 1/16-to 3/16-inch (0.159 to 0.476 cm) wide.

(9) The sealing shall be conducted at an approximate rate of one inch per second.

(h) After sealing, allow several seconds of cooling to take place, then peel off the ironing film slowly.

(5) After heat sealing, place the casing with ballistic insert into the nylon outer cover. Fold the excess bottom length of the vinyl casing under and stitch the end of the outer shell, taking care that the stitching does not pass through any portion of the vinyl casing,

3-5. REPAIR AND MAINTENANCE OF BODY ARMOR – Continued

h. Ballistic Insert Assembly.

(1) Inspection of ballistic insert.

(a) Carefully examine the insert for any damage. If the insert has been ballistically or physically damaged in any manner such as evidenced by a hole, or cut, do not repair and do not put the assembly back into service.

CAUTION

Do not dry ballistic insert near heat or flame.

(b) Examine insert; if it is damp or wet, thoroughly air dry the ballistic insert before it is placed in a new vinyl casing.

(2) Inspect the inner and outer yoke supports and inner and outer action back supports for open seams or open stitching prior to sealing the ballistic inserts into the vinyl casing.

CAUTION

Do not use any defective inserts to repair an item.

(3) Inspect button stitching and spot lamination of filler. If the material in spot laminated ballistic inserts has become delaminated, or if button stitching on button stitched inserts has become ruptured resulting in separation of the piles of material, or if internal stiffeners have loosened or become separated, dispose of the insert. If the ballistic insert does not possess the inner action yoke support, inner action supports, or internal polyethylene plastic stiffeners, incorporate these features before utilizing the insert in a repaired item.

3-6. LABELS

If the stock number and size designation on the identification label of the outer shell or the instruction label is in such condition that it is apparent that it will not retain legibility when subjected to wear after re-issue, a new label should be incorporated either by stitching over the old label or by use of the adhesive specified in section III.

3-7. WORKMANSHIP

Repair and cleaning will be done by personnel skilled in the particular trade applicable to their duties. Patches will be tightly sewn or applied and all reseaming will be secure and free of loose or broken threads. Hardware will work properly and be securely and properly attached. The finished item will be complete, clean, well repaired, free from all defects affecting its serviceability and appearance.

3-8. INSPECTION

The inspection or quality control element is responsible for determining compliance with repair instructions and requirements for classification. In-process inspections will be performed for quality of workmanship and correct application of repair procedures. The completed item will be inspected for serviceable appearance and condition to insure against return of a sub-standard product to supply channels.

3-9. TESTING

a. Vinyl Casing with Ballistic Insert. Test for water absorption prior to incorporation of the vinyl casing with ballistic insert into the outer shell. It shall be tested for water absorption to check for efficiency of heat sealing and for possible damage during processing. Divide units into lots of 25 or less of completed vinyl casings with ballistic insert. Select one of the units from the twenty-five and weigh accurately to the nearest 1 ounce (28.35 g). Record this weight. The assembly shall then be totally immersed in water 11 -to 7-inches (27.94 to 17.78 cm) deep and temperature of 70 ± 10°F (21.1 ± 5.5°C) for 30 minutes. The test assembly shall not be folded unless material such as netting is interlaid between folds which will permit free entry of water to all surfaces of the specimen. Upon removal at the end of the thirty minute immersion period, hang the assembly on a line or hanger and allow to drain for approximately 10 minutes. Wipe or blot dry any visable drops of water on the outside of the envelope and allow to dry another twenty minutes. At the end of 1/2 hour reweigh the assembly. If the weight is more than 1 percent over that of the original weight, leakage is indicated. If leakage is indicated, the item should be returned for the application of a new vinyl casing and all items in the lot of twenty-five should be tested and treated as outlined above.

NOTE

In view of the possible rejection of complete vests in the final test for water leakage of completed items which do not have new vinyl casings, it is suggested that these vests be checked 100 percent for water leakage due to the inability to visibly examine for possible physical damage that could occur in the translucent casing material.

b. Complete Vest.

(1) Dry weight tests. All vests (100 percent inspection) being returned to supply channels should be compared against the following weights for the applicable size and stock number.

NSN	SIZE	MAXIMUM WEIGHT OUNCES
8470-00-122-1299	Small	143
8470-00-122-1300	Medium	154
8470-00-122-1301	Large	166
8470-00-122-1302	X-Large	181

Any vest exceeding the dry weight criteria above for the applicable size shall be returned for replacement of vinyl casing and drying of ballistic insert or possibly for correction of size designation. It is recommended that an appropriate in process examination be established to check on possible ballistic inserts prior to incorporation of the outer shells which will minimize possible rejections of the complete item. All weighings shall be determined to the nearest 1 ounce (28.35 g).

(2) Water absorption test. The vests which have satisfactorily passed the test for dry weight shall be arranged in lots of fifty or less vests. Select one of the completed vests and weigh it accurately to the nearest 1 ounce (28.35 g). Record this weight. The vest with front closure completely closed shall then be totally immersed in water 11-to 7-inches (27.94 to 17.78 cm) deep at a temperature of 70 ± 10°F. (21. 1 ± 5.5°C) for 30 minutes. The test vest shall not be folded unless material such as netting is interlaid between folds which will permit free entry of water to all surfaces of the test vest. At the end of the immersion period, remove vest, open front fasteners, and hang vest loosly so as to permit free air circulation. Allow the vest to drain until dry for 24- to 48-hours, depending on climatic conditions. At the end of this time check to make sure vest is dry and reweigh the vest. If an increase in weight over the original weight of the vest prior to submersion of more than 1 percent is noted, leakage of envelope is indicated due to faulty fabrication technique. If the vest selected for test shows more than one percent increase in weight after immersion and drying, then all vests in the lot shall be tested for water immersion. All vests showing absorption (increase in weight) in excess of one percent shall be returned for new vinyl casing and drying of ballistic insert.

3-10. LABELS

a. Identification repair label for body armor shall be Type II, combined Class 1 and 2, except finish and fastness shall conform to class 3. The information required of the class 2 label shall be placed above the information required of the class 1.

b. Instruction label for body armor fragmentation protective vest shall contain the following:

(1) ARMOR, BODY, FRAGMENTATION PROTECTIVE. THIS ARMOR MAY SAVE YOUR LIFE! WHEN PROPERLY CLOSED AND PROPERLY WORN IT WILL PROTECT VITAL AREAS AGAINST SHELL AND GRENADE FRAGMENTS WHICH CAUSE MOST COMBAT CASUALTIES.

(2) INSTRUCTIONS.
1. WEAR ARMOR OVER SHIRT AND UNDER FIELD JACKET,
2. With front properly closed, adjust side laces to make armor fit the body but still provide proper ventilation. Do not fit too tightly.
3. Use protective flaps to cover opening under side laces and front closure. Protect front closure by snap fastening front flap,
4. DO NOT DRY THE ARMOR NEAR AN OPEN FLAME OR HOT STOVE,
5. IF VINYL CASING IS PUNCTURED, TURN IN ARMOR,
6. Care in handling of the vest will prevent bunching of the ballistic insert. If bunching occurs smooth out to prevent discomfort and unprotected areas.

(3) CLEANING INSTRUCTIONS.
1. DO NOT USE DRY CLEANING SOLVENTS OR MACHINE LAUNDER.
2. DO NOT CLEAN VEST IF VINYL CASING IS VISIBLY PUNCTURED.
3. Remove loose soil using cloth of soft brush.
4. Wet armor in shower or immerse in water,
5. Apply soap or detergent solution and scrub vigorously.
6. Rinse armor with warm water and AIR DRY.

3-11. EQUIPMENT

a. Dielectric Heat Sealing Machine. The heat sealing machine shall be a straight bar sealer of a capacity suitable for heat sealing two layers of 6 MIL thick vinyl film to protect seal lines 1/16 inch (0.1 59 cm) minimum width and form 21 1/2- to 27 1/2-inches (54.61 to 69.85 cm) in length. When a machine is being ordered, requisitioner shall describe available power characteristics (line voltage-220 volts source preferred, line frequency, No. of phases AC or DC), and require supplier to furnish a detailed instruction manual and complete repair and maintenance procedures, including parts listing. Shielding of the work area about the machine or other suitable means shall be provided to meet local regulations concerning radiation. A compressed air supply is generally required (approximately 100- to 125-psi line pressure) for operation of the sealing press. Suggested commercial source of supply for the dielectric heat sealing machine are as follows:

THERMATRON ELECTRONICS
DIV. OF WILCOX& GEBLES
AVENUE OF THE AMERICAS
NEW YORK, NEW YORK 10018

SEALOMATIC ELECTRONICS CORP.
69 SCOTT AVENUE
BROOKLYN 37, NEW YORK

CENTURY CHICAGO INC.
1225 S. 8th. AVENUE
MAYWOOD, ILL. 60153

FMC CORPORATION
EXECUTIVE OFFICES
1105 COLEMAN AVENUE
SAN JOSE, CALIFORNIA 95110

PACKAGE MACHINERY CO.
PUTMAN BLDG.
EAST LONGMEADOW, MASS.

b. Hand Sealing Iron. Electric hand sealing iron, approximately 125 watts, Hand-I-Seal model, Packrite Machines Company, 407 E. Michigan St., Milwaukee, Wisconsin 53201, or equal.

Section III. MATERIALS

(1) SMR CODE	NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
		BODY ARMOR, FRAGMENTATION PROTECTIVE, VEST WITH 3/4 COLLAR	
		PATCHING MATERIAL	
PAFZZ	8305-00-261-8140	Cloth, Oxford, Nylon, 3 Ounce Type I, Class 1, Olive Green No.106,42 in. Wide, MIL-C-508	YD
		ADHESIVE	
PCOZZ	8040-00-266-0850	Adhesive, Liquid, Tent Patching, Pint Can, MIL-C-2399	PT
		THREAD	
PAFZZ	8310-00-244-0602	Thread Nylon, Olive Drab, Shade No. S1 V-T-295, Type I, Thicket B, Class A 2/3 ply	SL
PAFZZ	8310-00-262-2772	Thread Nylon, Olive Drab, Shade No. S1 V-T-295, Type I, Ticket E, Class A, 3 ply	TU
		LACE	
PAOZZ	8305-00-262-3316	Cd, Elastic, Olive Green 160, 3/1 6 Inch Diameter, MIL-A-12370, 24 Inch Length	EA
PAOZZ	7510-00-634-6583	Ink Marking; Orange-Yellow MIL-I-6903, Type IV	PT
PAFZZ		Teflon Film, Tetrafluroethylene, Grade, 5 MIL Thick Translucent or Transparent, Smooth (Unetched) Surfaces, Approximately 12 Inches Wide and 3 Feet Long. Source: Cadillac Plastic and Chemical Company, 269 McGrath Highway, Somerville, MASS.	YD
		HARDWARE	
PAFZZ	8315-00-151-6480	Fastener Tape, Hook, Nylon, Olive Green 106, Type II, Class 2, 1 inch, MIL-F-21840	YD
PAFZZ	5325-00-221-1516	Eyelet, Metallic, 8460214 (16200)	HD
PAFZZ	5310-00-209-1767	Washer, Flat, MS63033-6-4096 (96906)	EA
PAFZZ	8315-00-151-6484	Fastener Tape, Pile, Nylon, Olive Green 106, Type II, Class 2, 1 inch, MIL-F-21840	YD
PAFZZ	8315-00-151-6479	Fastener Tape, Hook, Nylon, Olive Green 106, Type II, Class 2,2 inch, MIL-F-21840	YD
PAFZZ	8315-00-151-6482	Fastener Tape, Pile, Nylon, Olive Green 106, Type II, Class 2, 2 inch, MIL-F-21840	YD

CHAPTER 4
MAINTENANCE OF COMBAT VEHICLE CREWMAN'S HELMET

Section I. INTRODUCTION

4–1. SCOPE

This chapter provides information and instructions for the maintenance of combat vehicle crewman's helmets, Models DH-132A, with Ballistic Shell, and DH–132. National stock numbers for complete helmet, Model DH-132, Standard B, are as follows:

NSN	SIZE
Model DH–132	
8415–00–094–2679	Medium with small inner liner.
8415–00–094–2691	Medium with medium inner liner.
8415–00–094–2684	Large with large inner liner.
Model DH–132A	
8470-01-130-8180	Small with small inner liner with medium shell
8470-01-130-3794	Medium with medium inner liner with medium shell
8470-01-130-3795	Large with large inner liner with large shell

4-2. TECHNICAL PUBLICATIONS

NSN	SIZE
FM 10-16	General Fabric Repair

4-2. TECHNICAL PUBLICATIONS -Continued

NUMBER	TITLE
TM 11-5965-286-14	Operational, Organizational, Direct Support, General Support and Depot Maintenance Manual (Including Repair Parts and Special Tools Lists): Headset-Microphone Kit MK-1697/G.

4-3. IDENTIFICATION AND DESCRIPTION OF ITEMS

The principal items comprising the Models DH-132A and DH-132 may be identified and divided into three categories: Helmet shell items, liner items, and communication items (figures 4-1, 4-2, and 4-3).

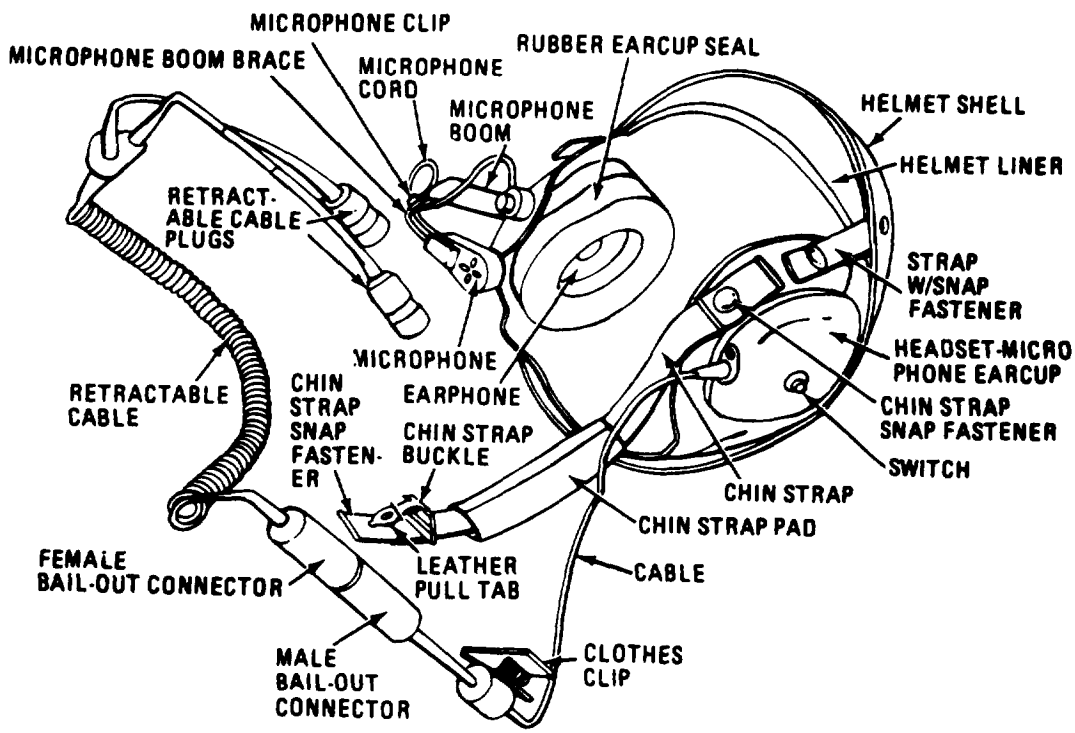


Figure 4-1. Helmet model DH-132, left front view with microphone-headset,

4-3. IDENTIFICATION AND DESCRIPTION OF ITEMS - Continued

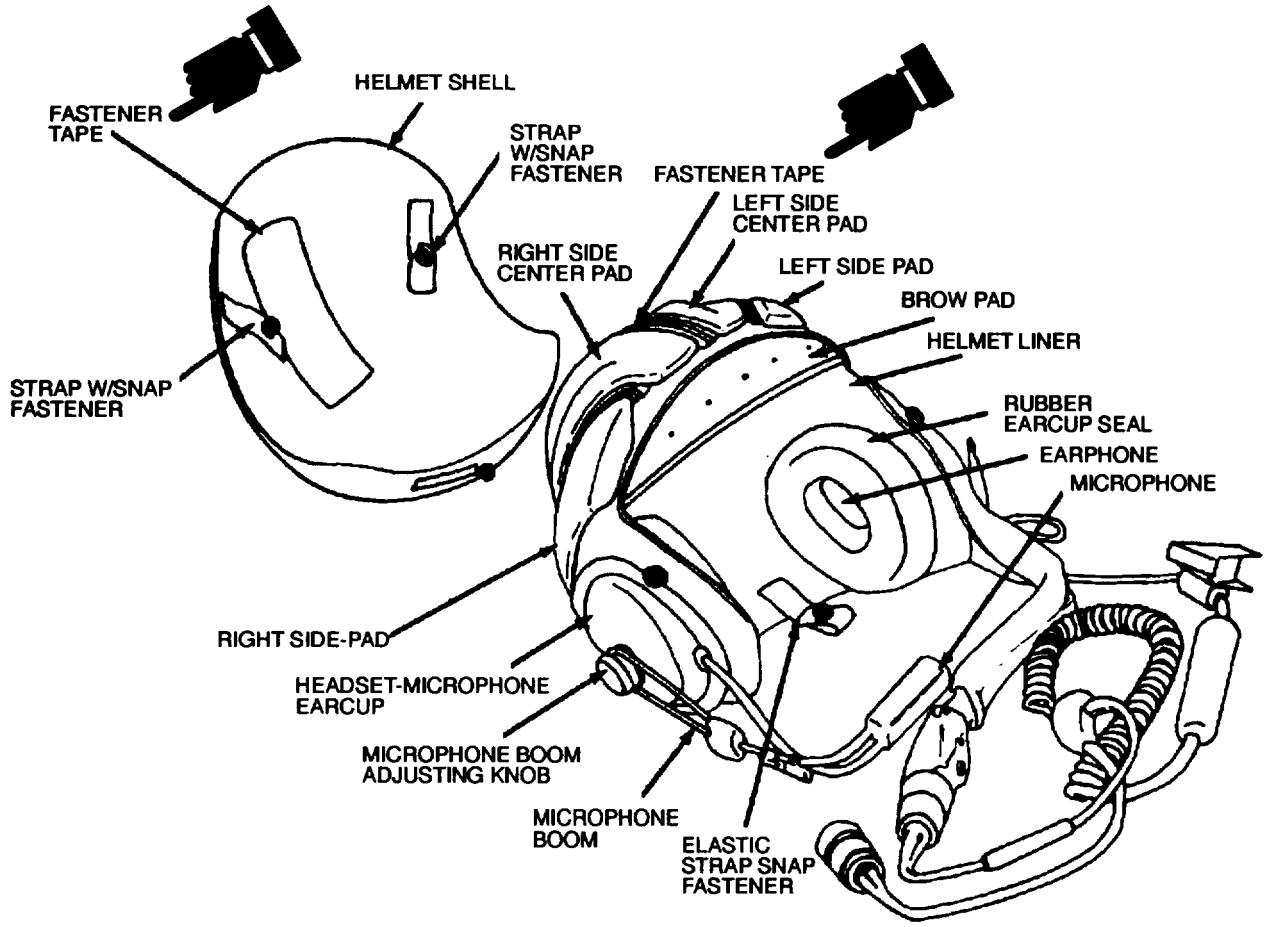


Figure 4-2. Helmet model DH-132, right front view with liner removed.

4-3. IDENTIFICATION AND DESCRIPTION OF ITEMS - Continued

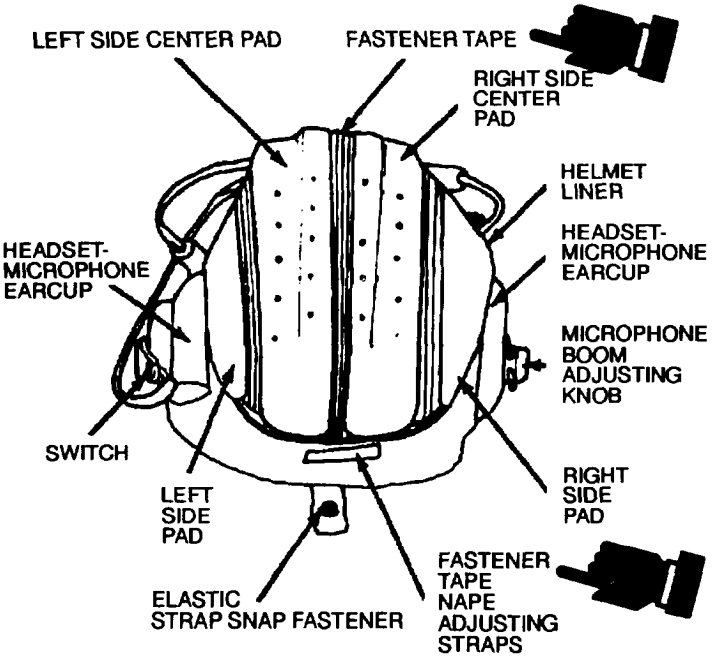


Figure 4-3. Helmet model DH-132 liner, rear view.

4-4. HELMET

a. Helmet Shell. The model DH-132 helmet shell has two web straps, equipped with snap fasteners, riveted on each side of the front of the shell for attaching the helmet liner. A fastener is riveted on the rear of the shell for snap fastening the liner elastic strap, A 4 1/2- by 2-inch (11.43 by 5.06 cm) size fastener tape is cemented to the inside top front of shell. It engages with fastener tape on the liner to hold the liner in the shell. The shell is edged with rubber at an equal Width on each side of the shell. The Model DH-132A's helmet shell is designed to provide ballistic protection to the wearer. It is made of multiple layers of high-strength Aramid Ballastic cloth bonded with a hard plastic resin. If helmet is cracked, has lamination separation or any fabric fibers are visibly cut or raised on the shell body, helmet is not repairable.

b. Headset-Microphone Kit. Models DH-132A and DH-132 helmet liners are equipped with headset-microphone kit MK-1697-G.

4-4. HELMET - Continued

c. Helmet Liner. The helmet liner is made of nylon cloth netting and contains protective padding on the sides, front, and top. A headset-microphone kit is mounted in the liner. Two fastener tape mounted straps at the rear of the liner adjust the liner to the nape of the crewman's neck. There is also fastener tape on the top front of the helme liner which engages the fastener tape inside the top front of the helmet shell. The front of the liner contains two fasteners for snap fastening to the two web straps on the helmet shell. Mounted on the rear of the liner is an elastic strap with a snap fastener which snaps to the fastener on the rear of the helmet shell. An adjustable chin strap of nylon webbing with a chin pad and leather pull is snap fastened to each lower front side for fitting the liner and helmet shell securely to the crewman's head.

d. Adjusting the Models DH-132A and DH-132 Helmets for Wear. Refer to Figure 4-4 for instructions to adjust the helmet for wear.

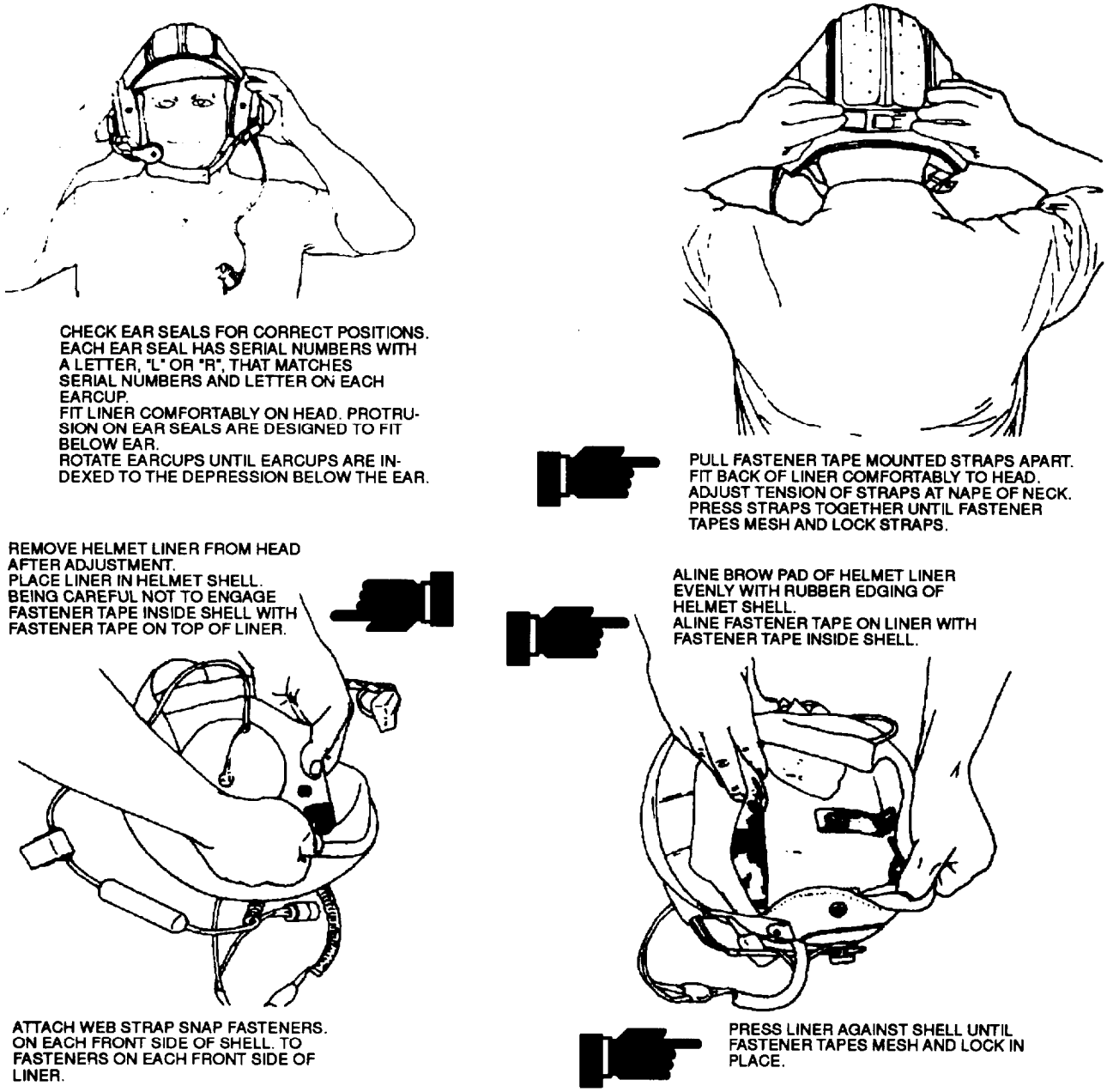
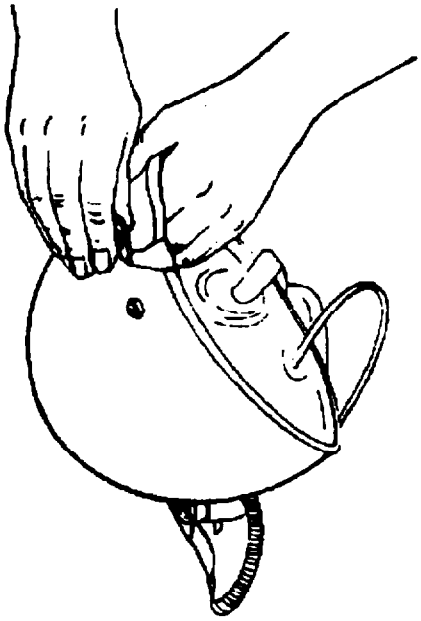


Figure 4-4. Adjusting model DH-132 helmet for wear (Sheet 1 of 2)

4-4 HELMET - Continued



ATTACH ELASTIC STRAP FASTENER ON REAR OF HELMET LINER TO FASTENER RIVETED ON REAR OF HELMET SHELL.
THE FASTENED ELASTIC STRAP ALSO ACTS AS A GOGGLE STRAP RETAINER.

PUT HELMET ON HEAD AND SNAP FASTEN CHIN STRAP, WITH PAD UNDER CHIN, TO FASTENERS ON FRONT OF HELMET. BE SURE STITCHED SIDE OF CHIN PAD FACES OUTWARD.
ADJUST TENSION BY PULLING ON WEBBING TAB OF STRAP THAT PROTRUDES THROUGH BUCKLE. RELEASE TENSION BY LIFTING UP LEATHER PULL TAB ATTACHED TO BUCKLE.

ADJUST MICROPHONE TO SPEAKING POSITION IN FRONT OF MOUTH.
THE MICROPHONE BOOM LENGTH IS ADJUSTABLE AND THE MICROPHONE BOOM BRACE SWIVELS ON THE BOOM.
TURN THE BOOM ADJUSTING KNOB COUNTERCLOCKWISE TO TIGHTEN BOOM.
ATTACH CLOTHES CLIP TO FRONT OF CLOTHING TO SECURE HEADSET MICROPHONE CABLE.

Figure 4-4. Adjusting model DH-132 helmet for wear (Sheet 2 of 2)

Section II. REPAIR PROCEDURES

4-5. GENERAL

The instructions in this section are published for the information and guidance of organizational and direct support maintenance personnel. Repair and cleaning will be performed by personnel skilled in the particular trade applicable to their duties.

4-6. INSPECTION, CLEANING, AND REPAIR

a. Helmet Shell.

(1) Inspect the helmet shell for cleanness, cracks, loose rivets, and damaged straps.

(2) Inspect the two screws and nuts located at the front of the helmet shell for looseness. These are the screws that hold the snap fasteners in place. Apply thread sealant, NSN 8030-00-081-2330, to the screws and re-thread the screws through the nuts on the inside of the helmet shell.

(3) Clean the helmet with soap and warm water, and rinse it with water. Wipe the helmet dry with a clean cloth.

4-6. INSPECTION, CLEANING, AND REPAIR - Continued

b. Rubber Edging.

(1) Inspect the rubber edging to see that there are no cuts and that the edgings are securely adhered to the helmet shell.

(2) Clean the edging with a clean cloth to remove dirt, dust, oil, grease, and perspiration.

(3) Repair the black synthetic rubber edging by rebonding the edging to the helmet shell edge or bonding the appropiate lengths of edging to replace the damaged edging. Clean the surfaces with a cloth moistened in toluene solvent Fed Spec TT-T-548. Roughen the surfaces before applying the adhesive edging.

c. Foam Rubber Inserts.

(1) Inspect the inserts for tears, filth, bad odor and soft spots. Soft spots can be detected by compressing the inserts with fingertip.

(2) Replace the foam inserts if any defects are found, as per 4-6 c (1).

d. Helmet Liner.

(1) Inspect the helmet liner for torn cloth, cut or loose pads, and loose or damaged straps and fasteners.

(2) Inspect the headset-microphone set for cleanness, cracks, loose switch, and loose or broken electrical lines and connections. Be certain that the ear seals are properly installed on the ear cups.

(3) Clean the liner using the following procedure:

(a) Remove Liner.

1 Remove liner from helmet shell by unfastening the two side and one rear strap snap fastener.

2 Pull liner from shell.

3 Detach fastener tape tunnel from earphone connecting wire.

4 Starting from inside the liner, pullback liner away from earcup channel and insert blade of 3 inch screwdriver (NSN 5120-00-293-3311) between liner earcup opening and earcup channel. Slide screwdriver around earcup until liner seperates from earcup.

5 Pull liner from earcup. Repeat steps 4 and 5

6 To remove pads: turn liner inside out and remove foam pads leaving the brow pad intact.

(b) Clean liner.

1 Hand wash in warm water (120°F) and mild laundry detergent or machine wash on permanent press cycle. Rinse thoroughly with dear warm water after laundering.

2 Hang liner and let air dry.

(c) Instal liner.

1 Insert foam pads into liner.

2 Starting from outside liner opening on one side place liner earcup into channel and insert screwdriver blade between liner and earcup channel. Slide screwdriver around earcup until liner seats in earcup channel. Repeat for other earcup.

3 Attach fastener tape tunnel in back of liner to earphone connecting wire.

4 Attach liner to shell by mating hook fastener tape on outside liner with pile fastener tape on inside shell.

5 Fasten the two side and rear strap snap fasteners.

(4) Replace lost or damaged items.

Section III. MATERIALS

SMR CODE	NATIONAL STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE
		HELMET	
		MISCELLANEOUS SUPPLIES	
PCOFF	8010-01-123-9278	Enamel, Forest Green, IR Reflective, MIL-E-52798	CN
		HELMET MODEL DH-132	
PAOZZ	8415-01-207-1197	Attachment Kit, Helmet: Combat vehicle crewman's, Tab 1 ea., Screw 1 ea., Washer 1 ea., Post 1 ea., Paper Identification and Instruction Label 1 ea. MIL-H-44117.	EA
PAOZZ	8415-00-134-9396	Liner, Combat vehicle Crewman's Helmet: w/o communications system, size small 97427 72D2521 -1.	EA
PAOZZ	8415-00-134-9397	Liner, Combat vehicle Crewman's Helmet: w/o communications system, size medium 97427 72D2521 -2.	EA
PAOZZ	8415-00-134-9398	Liner, Combat vehicle Crewman's Helmet: w/o communications system, size large 97427 72 D2521-3.	EA
PAOZZ	8415-00-163-9040	Pad Set, Fitting: Combat vehicle crewman's helmet, center, c/o left side and right side for small helmet 97427 71C-2400-1.	
PAOZZ	8415-00-163-9041	Pad Set, Fitting: Combat vehicle crewman's helmet, side, do left side and right side for small helmet 97427 71C-2400-2.	EA
PAOZZ	8415-00-163-9046	Pad, Helmet: For brow, for all sizes 97427 71C-2400-3.	EA
PAOZZ	8415-00-163-8042	Pad Set, Fitting: Combat vehicle crewman's helmet-center, c/o left side and right side for medium helmet 97427 71C-2401-1.	EA
PAOZZ	8415-00-163-9043	Pad Set, Fitting: Combat vehicle crewman's helmet, side, c/o left side and right side for medium helmet 97427 71C-2401-2.	EA
PAOZZ	8415-01-207-1196	Atachment Kit, Combat Vehicle Crewman's, MIL-H-4417 (81349), Strip 1 ea., Adhesive Pack 1 ea., Paper Identification and Instruction Label 1 ea.	EA

Section Ill. MATERIALS - Continued

SMR CODE	NATIONAL STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE
PAOZZ	8415-00-163-9044	Pad Set, Fining: Combat vehicle crewman's helmet, center, c/o left side and right side for large helmet 97427 71C-2402-1.	EA
PAOZZ	8415-00-163-9045	Pad Set, Fitting: Combat vehicle crewman's helmet, side, c/o left side and right side for large helmet 9742771C-2402-2.	EA
PAOZZ	8415-00-163-9052	Strap Assembly, Chin: w/o pad 97427 72B2478	EA
PAOZZ	8415-00-163-9048	Pad, Chin Strap: For all sizes 97427 72B2477	EA
PAOZZ	8470-01-259-1693	Shell, small and medium, 97427 D-5399-1	EA
PAOZZ	8470-01-259-1694	Shell, large, 97427 D-5399-2	EA
PCOZZ	8040-00-165-8614	Adhesive, liquid, MMM-A-121	QT
PAOZZ	9390-00-710-4355	Molding, 36 in. strip,10515443 (19200)	EA

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CHAPTER 5

MAINTENANCE OF LIGHTWEIGHT LOAD CARRYING EQUIPMENT

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CHAPTER 6

MAINTENANCE OF BARRACKS BAGS AND DUFFEL BAGS

Section I. INTRODUCTION

6-1. SCOPE

This chapter provides instructions and prescribes the materials, methods, and procedures for the repair and maintenance of barracks bags and duffel bags.

6-2. COMMODITY SPECIFICATIONS

a. Items.

ITEM	SPECIFICATION
Bag, Barracks	MIL-B-2378
Bag, Duffel	MIL-B-829

b. Components.

ITEM	SPECIFICATION
Cords, Cotton, General and Special Purpose, Sash and Venetian Blind	T-C-571
Thread, Polyester	V-T-285
Cloth, Duck Cotton, Unbleached, Piled Yarns, Army and Numbered	CCC-C-419
Wire, Copper Alloy	QQ-W-321
Wire, Steel, Carbon (Round Bare and Coated)	QQ-W-461
Zinc Coating, Electrodeposites, Requirements For	QQ-Z-325
Webbing, Textile, Cotton, General Purpose, Natural or in Colors	MIL-W-530
Webbing, Textile, Woven Nylon	MIL-W-4088
Cloth, Sateen, Cotton	MIL-C-10296
Fasteners, Snap	MIL-F-10884

6-2. COMMODITY SPECIFICATIONS- continued

b. Components - Continued

ITEM	SPECIFICATION
Snaphook, 1 1/8 Fixed Loop, Witih Spring Closure	MIL-S-11699
Grommets, Metallic	MIL-G-16491
Webbing, Textile, Woven Nylon, Impregnated	MIL-W-27265
Enamel, Baking, Phenol or Urea Formaldehyde	JAN-E-480
Cloth, Plain Weave, Nylon, Water Repellent, 0106	MIL-C-43128
Cloth, Spacer Treated	MIL-C-43204
Finish, Chemical Black for Copper Alloys	MIL-F-495
Adapter, Reversible, Quick Fit, 1 3/4 Inch	MIL-A-43671
Cloth, Duck, Nylon, **9 ounce**	MIL-C-43734

6-3. TECHNICAL PUBLICATIONS

NUMBER	TITLE
FM 10-269	General Repair for Canvas and Webbing
FM 10-280	Field Laundry, Bath and Clothing Exchange Operations
TM 10-300	Fixed Dry Cleaning Plants
FM 10-16	General Fabric Repair

6-4. IDENTIFCATION AND DESCRIPTION

a. Bag, Duffel, Cordura, Nylon, Type H, NSN 8465-01-117-8699. This item is fabricated from Olive Green 106 Nylon Duck and is provided with a handle and straps for either hand or over the shoulder carrying. The bag is provided with a pocket to accommodate shipping documents. Nylon webbing is used for fabrication of the straps (Figure 6-1).

b. Bag, Barracks, Cotton, Sateen, w/Draw Cord; MIL-B-2378, Olive Green Shade 107, NSN 8465-00-530-3692. This item is fabricated essentially of sateen cotton cloth. It is intended for use as a laundry bag for soiled clothing of Army personnel (Figure 6-2).

6–4. IDENTIFICATION AND DESCRIPTION–Continued

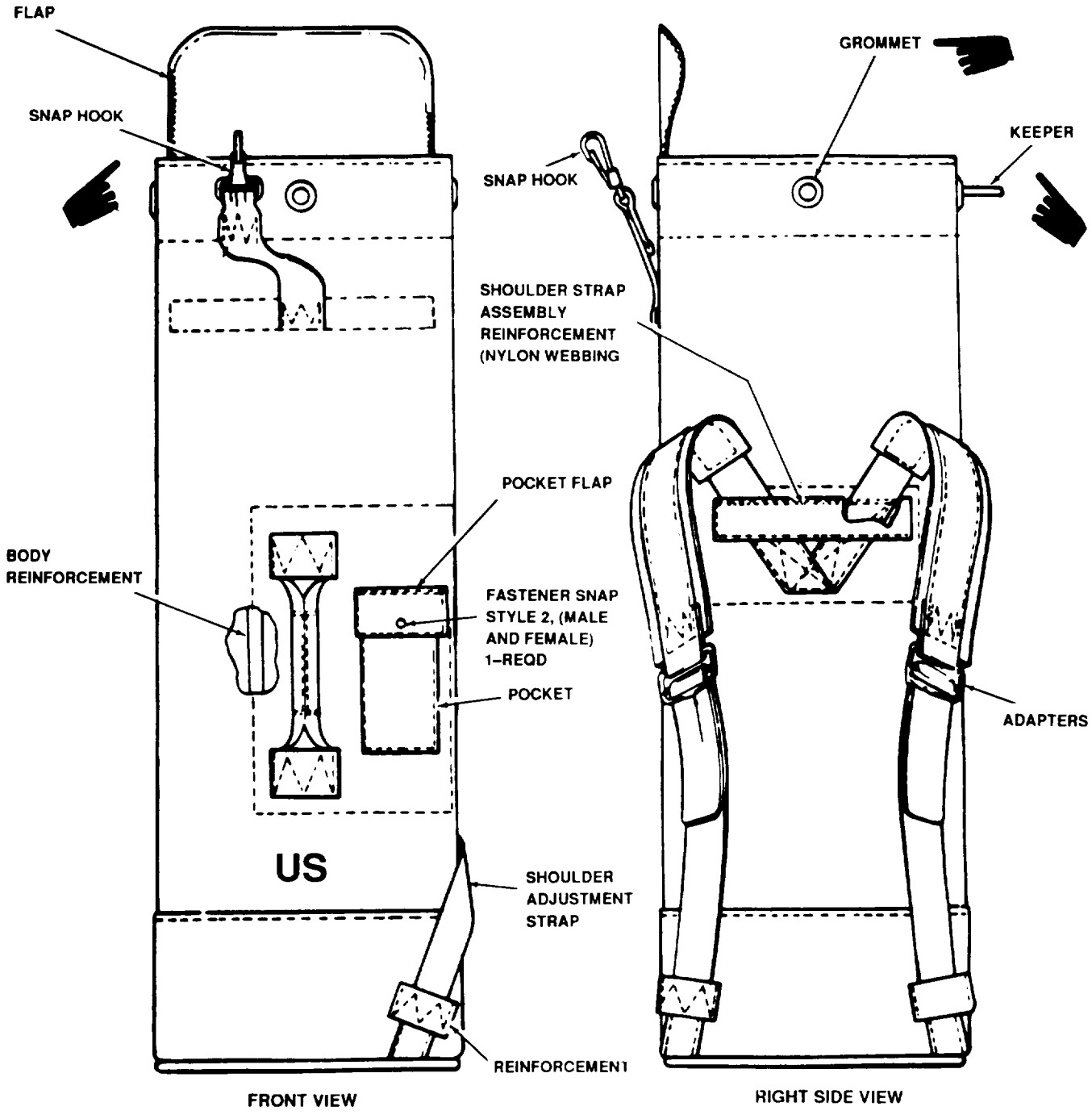

Figure 6-1. Duffel bag, Cordura, Nylon, Type II.

Section II. REPAIR PROCEDURES

6-5. MATERIALS

Materials used in the repair of the bags will be serviceable materials recovered from similar salvaged items when authorized, or will be new materials as specified in Section III. When not available from stock, the materials may be purchased locally when they closely conform to the standard material,

6-6, CLASSIFICATION

The inspector of classifier will carefully examine items to determine their proper identification (stock number and item description). Each item will be individually classified and processed in accordance with standard requirements as prescribed in Chapter 1.

6-6. CLASSIFICATION–Continued

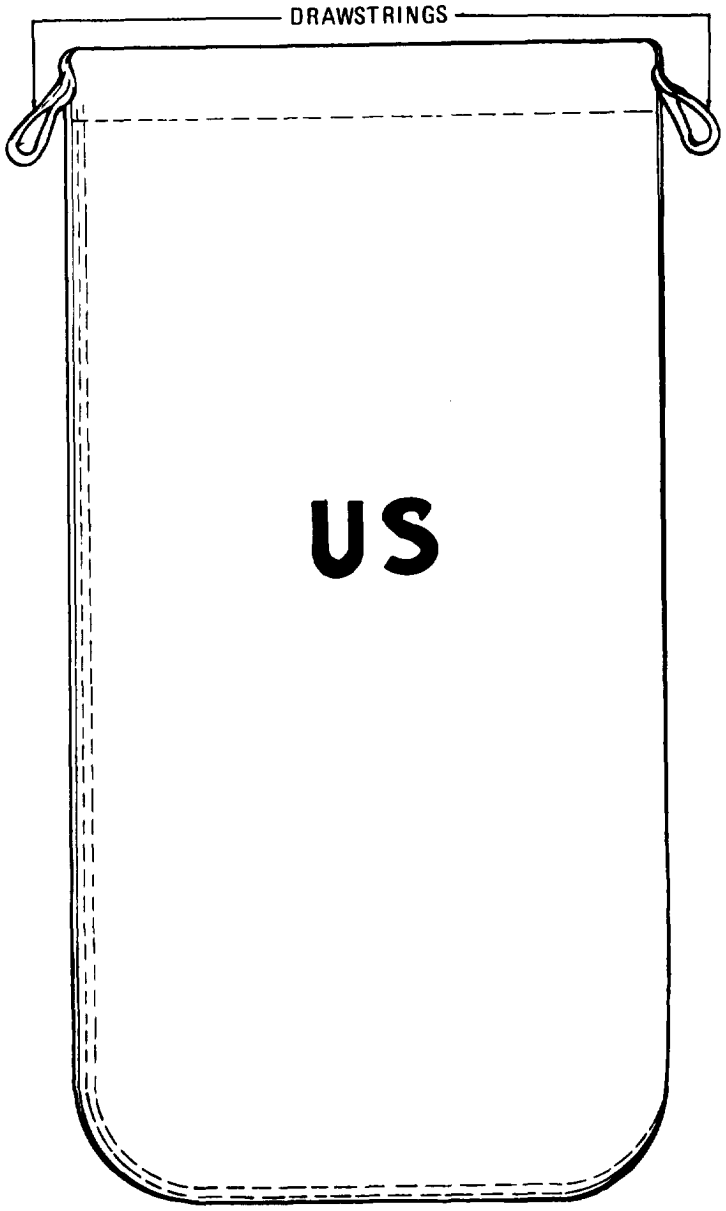

Figure 6-2. Barracks bag.

6-7. REPAIR AND MAINTENANCE

Prior to repair, each item will be inspected to determine the amount of repair necessary. Repairs will be made as fully as skills, facilities, funds, and local conditions permit.

a. Organizational Maintenance.

(1) Cleaning. Thoroughly clean each item with damp or dry cloths or brush, or by scrubbing with mild soap and water.

(2) Repair. Replace missing or defective drawcords.

(3) Iron-on patches (barracks bag only)

(a) Materials (Sec. Ill).

(b) Cut patches to the desired size and shape, such that the patch, when applied, will extend approximately 3/4 inch (1.9 1 cm) in all directions from the tear or damaged area. Patches will have rounded corners.

(c) Place the area to be patched on a wooden or other nonmetallic surface not affected by heat of ironing. Pre-warm the area to be patched by pressing with a household electric dry iron or steam iron used dry. Set the iron at “cotton” or as high as possible without scorching the fabric for about 5 seconds.

(d) Immediately cover with patching material cut in the desired size and shape. Hold the iron on the patch for about 8 seconds. Use only a slight rotating or reciprocal motion of the iron. Allow to cool for about 5 seconds, or long enough so that the patch will not lift off when the patched bag is removed from the table. Adjust the heating time as required for the specific material being used. Check the quality of the adhesive bond periodically as follows:

When adjusting the iron periodically during the work, test a patch by picking at the edge until a tab is formed 1/4 inch (0.635 cm) long. Pull hard on the tab. A well bonded patch will be difficult to peel off. This will indicate that your iron adjustment and heating time is adequate for the application. Replace the check test patch with a new patch or re-iron the old patch.

(e) Patches that are longer than the iron may be applied in sections, starting at the center and completing each section before proceeding to the next section. Overlapping of the iron over a bonded section is permissible.

(f) If the adhesive strikes through the patch cloth, too much heat has been applied. Reduce time of pressing or temperature of iron. A small amount of strike-through is not objectionable for barrack bag repair, provided the patch meets the check test.

(g) A bonded patch which has a lifted edge or which is found by the check test to be weakly bonded may be re-ironed, i.e., replacement is not required.

6-7. REPAIR AND MAINTENANCE–Continued

b. Direct Support Maintenance.

(1) Cleaning. Items will be processed in Army laundry facilities in accordance with FM 10-280. When such facilities are not available, item will be laundered by contract with private industry in accordance with accepted commercial laundry practices.

(2) Repair.

(a) Stitching. Restitch all loose and. defective stitching. Maintain proper thread tension to prevent loose stitching and to imbed lock of type 301 stitch in center of material. Chain portion of type 401 stitch will be on inside of bags. Backstitch all type 301 stitches 1-to 11/2-inch (2.54 to 3.81 cm) at breaks and ends, unless held down by other stitching. The types of stitches (Fed. Std. 751), thread size, and stitches per inch will be used when stitching is permitted are listed in Table 6-1.

(b) Bartacking. Bartack for barracks bags and duffel bags will be no less than 3/4 inch (1.91 cm) in length and will contain not less than 42 stitches. Bartacks will be free from thread breaks and loose stitching.

(c) Darning and patching. Darn holes in abraded areas 1/4 inch (0.635 cm) or less in greatest dimension. Patch such defects larger than 1/4 inch (0.635) by cutting away damaged area, turning edges under 3/8 inch (0.953 cm), and applying square or rectangular patch cut large enough to extend at least 1/2 inch (1.27 cm) around perimeter of damaged area with 3/8-inch (0.953 cm) turn under. Sew patch to outer surface of bar with two parallel rows of stitching; the inner row of stitching 1/8-inch (0.318 cm) from edge of hole and the outer row1/8- or 1/4-inch (0.318 to 0.635 cm) from the edge of patch. When there are holes or tears involving a seam or webbing, rip out seam or webbing, apply patch, and resew seam or webbing. Patches on barrack bags will be limited to 3 per bag. There is no limit to the number of patches on duffel bags, except when serviceability or general appearance is seriously affected.

Table 6-1. Stitching Instructions

ITEM	OPERATION	STITCH TYPE	THREAD	STITCHES PER INCH
DUFFEL BAG TYPE II	General	301	FF	6-8
	Handle, carrying and shoulder straps and reinforcements	301	FF	6-8
	Overedge	304	E	6-8
	Optional “Z” stitching on body	401	FF Needle F Looper	
BARRACKS BAG	General	301	E	8-10
	Optional “Z” stitching on body	401	E	8-10
	Bartack, 3/4 inch long, 1/8 inch wide		E	*42* per bartack (min)

6-7. REPAIR AND MAINTENANCE–Continued

(3) Drawcords. Replace damaged or missing barrack bag drawcord with new 62 inch (157.5 cm) cord. Retack loose drawcords.

(4) Webbing (duffel bag). Darn webbing which have slight cuts. Replace badly frayed, broken, or missing webbing strap and reinforcements with new ones cut from material specified in Section Ill. Restitch loose, broken, or otherwise defective sewing or webbing.

(5) Grommets and keepers (duffel bag). Repair holes caused by torn out grommets and keepers, first by ripping out the hem seam, and then patching with a double thickness patch (one over and one under the damaged area). Secure patches with a double row stitch. Replace missing, loose, badly split, or corroded grommets and missing or defective keepers.

(6) Snaps (duffel bag). Replace missing, broken, or otherwise damaged snaps with new ones by ripping out stitching in webbing, inserting snap, and then resewing to original design.

6-8. WORKMANSHIP

Repair and cleaning will be done by personnel skilled in the particular trade applicable to their duties. Patches will be tightly sewn or applied, and all reseaming will be secure and free of loose or broken thread. Hardware will be securely and properly attached. The finished item will be complete, clean, well repaired, and free from all defects affecting its serviceability and appearance.

6-9. **INSPECTION**

The inspection or quality control unit is responsible for determining compliance with repair instructions and requirement for classification. In-process inspections will be performed for quality of workmanship and correct application of repair procedures. The completed item will be inspected for serviceable appearance and condition to insure against return of a substandard product to supply channels.

Section III. MATERIALS

SMR CODE	NATIONAL STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE
		DUFFEL BAG	
XBFZZ		CLOTH, NYLON; for shoulder strap spacer, Type II. Obtain from salvaged bags.	
PAFZZ	8310-00-988-1301	THREAD, POLYESTER; OD-Shade 1, Ticket FF, MIL- V-T-285, Type 1, Class 1, Subclass A or B, 3 Ply	TU
PAFZZ	8310-00-988-1298	THREAD, POLYESTER; OD-Shade 1, Ticket E, MIL- V-T-285, Type 1, Class 1, Subclass A or B, 3 Ply	TU
PAFZZ	8310-00-988-1300	THREAD, POLYESTER; OD-Shade 1, Ticket F, MIL- V-T-285, Type I, Class 1, Subclass A or B, 3 Ply	TU
PAFZZ	8305-00-926-5995	CLOTH, NYLON; water repellent, Shade OG106, shoulder strap rover fabric, MIL-C-43128	YD
PAFZZ	8305-00-260-2546	WEBBING, COTTON; Type IIb, OD 7, MIL-W-530	YD
PAFZZ	8305-00-261-8585	WEBBING, NYLON; Type VIII, OD 7, MIL-W-4088	YD
PAFZZ	5325-00-641-1609	GROMMET No. 5, Type III, brass, black, MIL-G-16491 B	EA
		GROMMET Source Stimpson; No. 5, Type 1, Class 3, MIL-G-16491 will be used on Cordura duffel bags only.	EA
XBFZZ		KEEPER, STEEL; Round, Zinc-coated, Black Finish, PN 845 CAGE 82388 or PN 4969 CAGE 76786	EA
XBFZZ		KEEPER, BRASS; Round, black finish North & Judd, New Britain, Corm. or Prentice Co., Kensington, Corm.	EA
PAFZZ	5340-00-275-5983	SNAPHOOK, Spring blade type, steel; 1 1/4 x 3 1/4 in., MIL- S-11699, Type- II	EA
PAFZZ	5325-00-292-5340	FASTENER, SNAP; Style 2, size 1 or 2, MIL-F-10884	EA
XBFZZ		ADAPTER, REVERSIBLE,Quick-fit, 1 3/4 in. Obtain from salvaged bags.	EA
		BARRACKS BAG	
PAFZZ	8310-00-988-1298	THREAD, POLYESTER; OD-shade 1, Ticket E, MIL- V-T-285	TU
PAOZZ	4020-00-262-1775	CORD, COTTON: 3/16 in. dia, Size 6, Type 1, T-C-751.	FT
PAOZZ	8305-00-460-4200	PATCHING MATERIAL, IRON-ON CLOTH, MIL-C-43677, Type I	YD

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CHAPTER 7

STEEL HELMETS AND HELMET LINERS

Section I. INTRODUCTION

7-1. SCOPE

This chapter provides instructions for repair and maintenance of the steel helmets and helmet liners.

7-2. COMMODITY SPECIFICATIONS

ITEM	SPECIFICATION
Helmet, Ground Troop's, Parachutist's, Steel M-1, Type I and II	MIL-H-1988
Liner, Ground Troop's-Parachutist's Helmet, Type I and II	MIL-L-41800

7-3. IDENTIFICATION AND DESCRIPTION

a. Helmet, Ground Troop's Steel, M-1, Type I, NSN 8470-00-255-8579. The ground troop's steel helmet (Figure 7-1) is fabricated of special armor steel and consists of the body or shell with rolled steel edging and two hinged loop assemblies for attaching a two-piece chin strap. The chin strap consists of a long and a short strap with hardware for attaching to the helmet and a quick release buckle and hook. The new airborne type chinstrap consists of two pieces with pressure clips for attaching to the helmet and has a snap fastener closure. The helmet is painted with olive green enamel paint containing silica sand. (See Figure 7-1.)

b. Helmet, Parachutist's M-1, Type ll, NSN 8470-00-161-9414. The parachutist's steel helmet is the same as the type I helmet except the chin strap is equipped with snap fasteners for attaching the helmet to the parachutist's helmet finer. (See Figure 7-2.)

c. Liner, Ground Troop's Helmet, Type I, NSN 8470-00-935-6842. The ground troop's helmet liner is fabricated of polyvinyl butyral modified phenolformaldehyde resin laminated nylon; ballistic for armor cloth shell, of olive green odor. The liner is equipped with a headband, neckband, and removable suspension.

d. Liner, Parachutist's Helmet, Type ll, NSN 8470-00-761-6323. The parachutist's steel helmet liner (Figure 7-3) is the same as the type M-1 helmet finer except it is equipped with a chin strap and a chin strap suspension assembly. The suspension is permanent and riveted in place.

e. Helmet Band, NSN 8415-01-110-9981. An elasticized helmet band is available for use in conduction with the helmet.

7-3. IDENTIFICATION AND DESCRIPTION - Continued

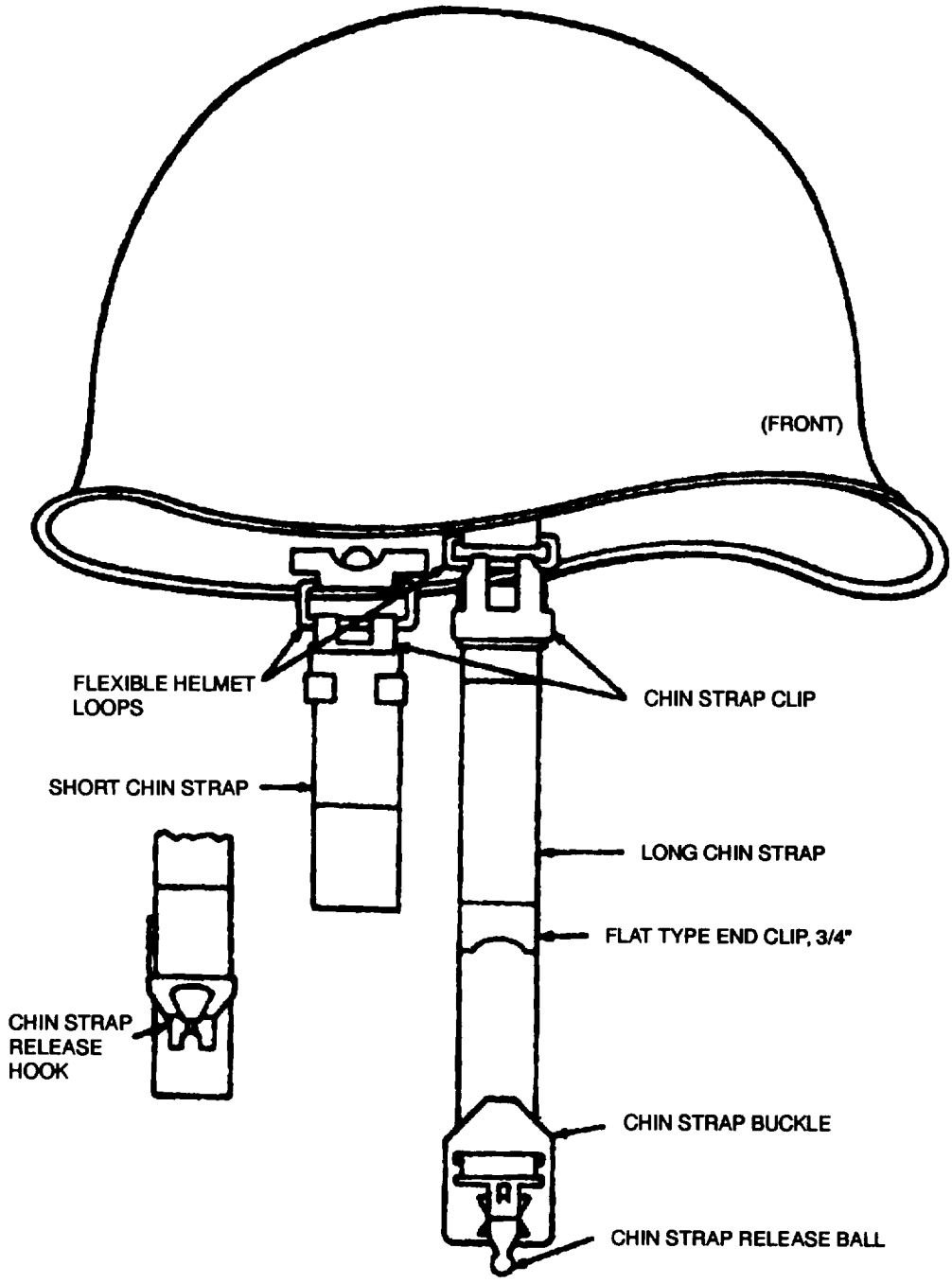


Figure 7-1. Ground troop's steel helmet.

7-3. IDENTIFICATION AND DESCRIPTION–Continued

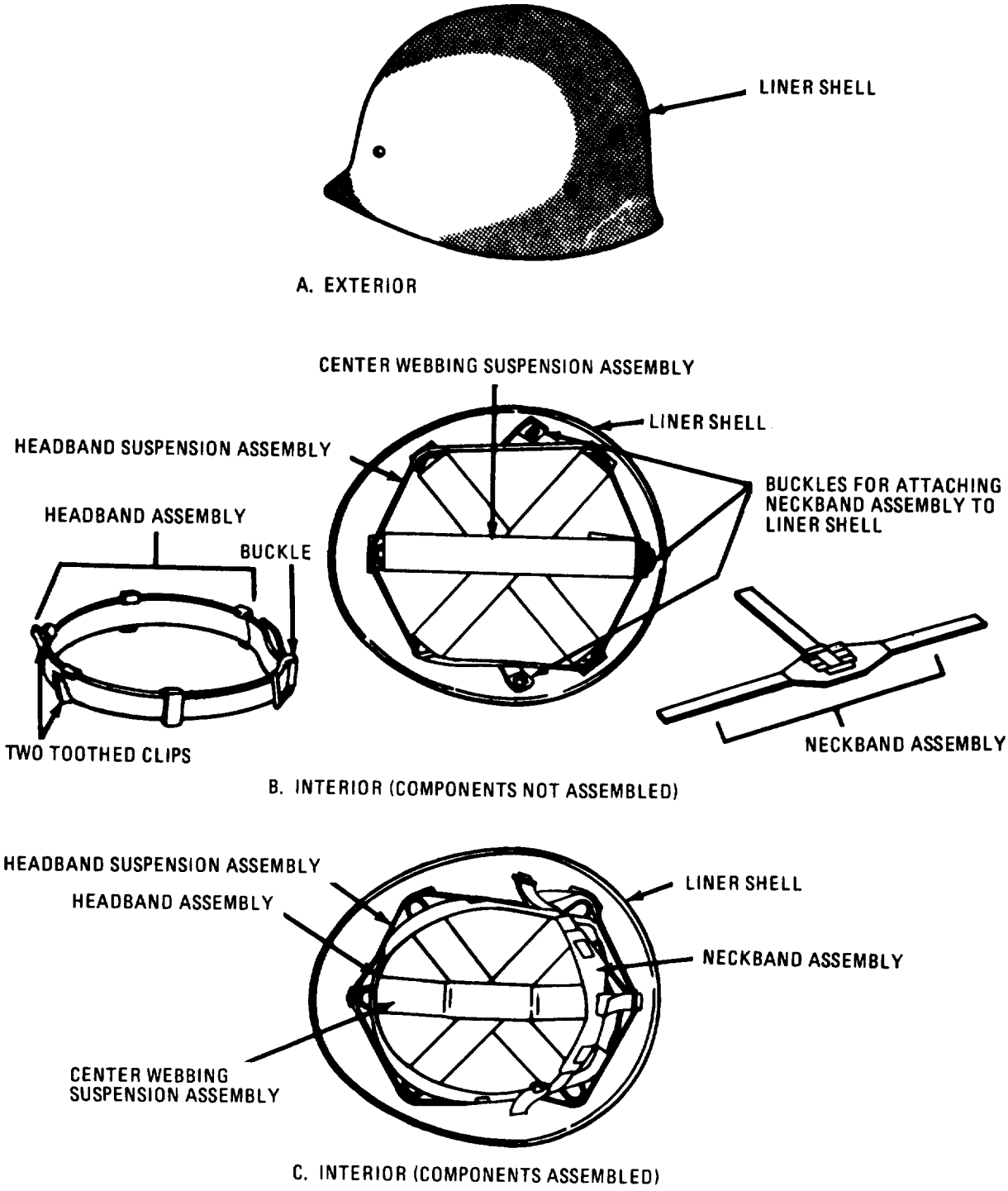


Figure 7-2 Ground Troop's helmet liner,

7-3. IDENTIFICATION AND DESCRIPTION–Continued

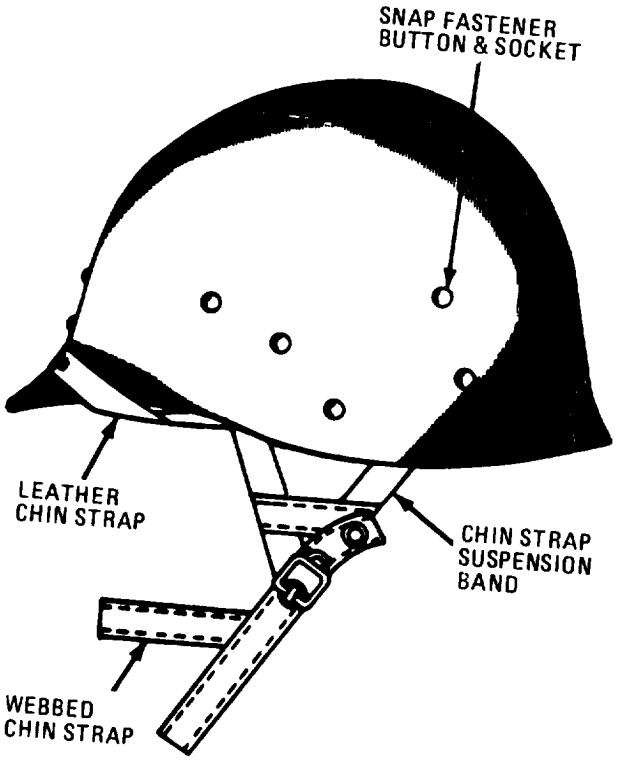


Figure 7-3. Parachutist's helmet liner.

Section II. REPAIR PROCEDURES

7-4. GENERAL

The instructions in this section are for the information and guidance of organizational and direct support maintenance personnel. Cleaning and repair will be performed by personnel skilled in the particular trade applicable to their duties.

7-5. INSPECTION AND CLEANING

a. Steel Helmets. Inspect the steel helmets for rust, dents, holes, and loose edges (dents interfering with helmet liner insertion are the only dents requiring repair). Inspect for correct color, glare, chips, and rust. Minor rust areas and those worn bare of pain, or with thin coverage will be touchup painted. Inspect the chin strap for bent, rusty, or missing clips and/or quick-release devices. Clean the helmet by washing it with soap and water or other mild solution that will not penetrate the abrasive painted surfaces, Scrub the straps by rubbing them with a cloth and soapy water. Rinse them well and allow them to dry.

b. Helmet Liners. Inspect the helmet liner shell for frayed edges, cracks, holes, loose or missing studs and rivets, loose lamination, and loose or missing hardware on the chin strap and head suspension. Inspect the suspension bands for tears, pulled or ripped stitching, ravelled or missing laces, cleanliness, and missing, loose, or bent hardware. Clean the helmet liner by washing it with a mild soap and water solution, rinse, and dry thoroughly. Clean headbands, neckbands, and chin straps by scrubbing them with a cloth and soapy water. Rinse them well and allow them to dry.

7-6. ORGANIZATIONAL MAINTENANCE

a. Steel Helmets.

(1) Sand the areas for touchup painting to remove rust and loose paint scales. Wipe the areas clean with a cloth.

(2) Brush on one coat of the enamel specified in Section Ill for helmets.

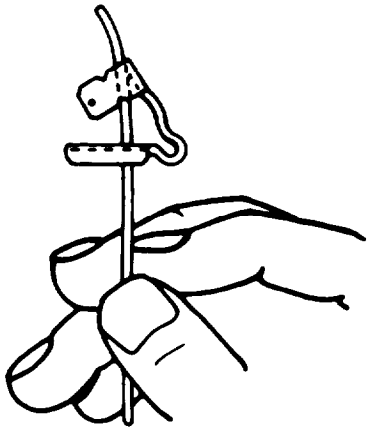
(3) Sprinkle a small amount of silica sand on the freshly painted area until the quantity of sand is equal to that in the original finish. Let the area dry for approximately one hour.

(4) Lightly apply a second coat of enamel to cover the unpainted sand, and allow the area to dry for 12 to 15 hours beforeusing the helmet.

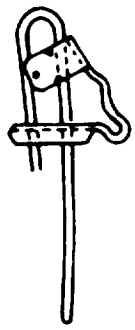
(5) Install a new chin strap as described in Figure 7-4.

7-6. ORGANIZATIONAL MAINTENANCE–Continued

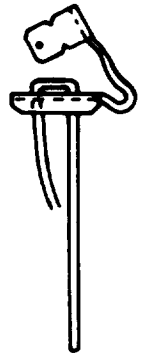
1. INSERTING WEB STRAP UP THROUGH INSIDE SLOT IN METAL CLIP.



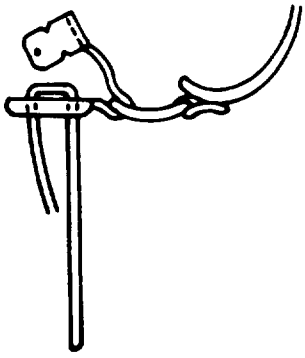
2. PASSING WEB STRAP DOWN THROUGH OUTSIDE SLOT IN METAL CUP.



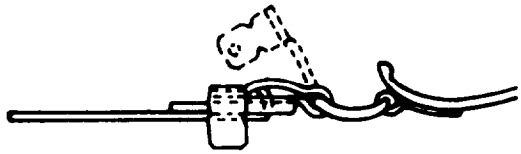
3. PULLING WEB STRAP TIGHT AND HOLDING STRAP IN POSITION.



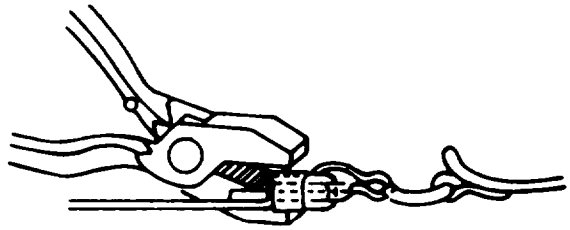
4. ATTACHING METAL CHIN STRAP CLIP TO FLEXIBLE HELMET LOOP.



5. PRESSING TWO-PRONGED END OF METAL CLIP AGAINST WEB STRAP.



6. BENDING TWO PRONGS OF METAL CLIP FIRMLY AGAINST WEB STRAP.



NOTE

The procedure shown is for attaching the replaced chinstrap to the helmet. The current chinstrap does not utilize this clip.

Figure 7-4. Attaching chin strap to helmet.

b. Helmet Liners.

(1) Sand the scuffed or marred exterior surfaces and touchup the areas with paint as specified in Section III.

(2) Install a replacement headband by opening all clips on the new band and adjusting it to fit the individual head size. Install the band in the helmet liner with the buckle at the back and the open clips up; slip the clips over the fixed suspension band (center the two front clips), and close the clips. Do not attach the headband to the neckband suspension.

7-6. ORGANIZATIONAL MAINTENANCE–Continued

(3) Install a replacement neckband by snapping it to the liner.

(4) Install a webbing chin strap on the parachutist's liner by buckling it to the chin strap suspension band.

(5) Install a replacement leather chin strap by securing the holders to the liner garter studs.

(6) Replace the liner if a stud is damaged. If the stud is damaged, the hole in the liner will be damaged, making the liner uneconomically repairable. The clip can be straightened if it is bent, or the complete suspension assembly can be replaced.

7-7. DIRECT SUPPORT MAINTENANCE

a. Steel Helmets. Remove small dents in the helmet by cold working, using a mallet, post dies, dollies, or hydraulic equipment. Restore the helmet to its original contour only if working the metal will not lessen the strength at any point. Reroll slightly loose rims; apply sufficient pressure in the forming machine to tightly clinch the rim to the helmet without stretching or cracking the metal. Spotweld completely loose rims as required to hold them securely. Remove defective hinge loop assemblies or loops of the nonhinged type by use of power driven shears or a cutting torch. Exercise care not to damage the helmet body or rim. Spotweld new hinge loop assemblies to helmet. Refinish the painted surfaces as follows:

(1) When complete paint stripping is required, remove the chin straps and submerge the helmet for 3 to 5 minutes in an open tank of stripping compound mixed with 12 ounces (340.2g) of paint remover (NSN 8010-00-227-1693) to 1 gallon (3.79L) of water. Keep the solution at a boiling point, adding water and compound as necessary to maintain the solution at a constant level.

(2) Rinse the helmet thoroughly in hot water (180°to 200°F (82.2°to 93.3° C)), or use a spray of sufficient force to flush off any remaining paint.

(3) After rinsing, treat the helmets with a metal conditioner and corrosion remover (NSN 6850-00-174-9670); prepare a solution of one part concentrated compound to three parts of water by volume in an acid resisting mixing tank. Dip the helmets only long enough to wet the surface for etching and to remove light rust, Remove heavy rust with a wire brush. Rinse the helmets in clear hot water and allow them to dry thoroughly.

(4) Apply a coat of primer (NSN 8010-00-161-7425) to the inside and outside surfaces of the helmet and allow it to dry.

(5) Coat the outside surfaces with one coat of enamel (NSN 8010-00-753-4960) thick enough to cover the primer. Allow the surfaces to dry only until the enamel becomes tacky.

(6) Apply a second coat of enamel containing silica sand (mix 6 pounds (2.72 kg) of sand to 1 gallon (3.79 L) of enamel reduced to spraying consistency. Bake the finish until it is hard (15 minutes at 250°F (121.1 °C)).

(7) Spray the interior of the helmet with unsanded enamel and allow it to dry.

(8) Install replacement chin straps (Fig. 7-4).

7-7. DIRECT SUPPORT MAINTENANCE–Continued

b. Helmet Liners.

(1) Machine washing.

(a) Detach chin straps by unhooking holders from garter studs. Remove the headbands and neckbands by releasing the clips attaching them to the liner. Do not remove the webbing suspension band.

(b) Nest the liners and place them in the washing machine in a manner that will prevent excessive movement. Wash them 15 to 20 minutes in a 0.5 percent soap solution (NSN 5985-00-129-0815) at a water temperature of 120°F (48.9°C), rinse them in clear warm water until all soap is removed. Allow them to dry thoroughly in temperature not exceeding 140°F 60°C).

(2) Paint Stripping and cleaning.

(a) Prepare the helmets as for machine washing (1) (a) and (b) above.

(b) Prepare a stripping solution of 1 pound of paint remover and 5 ounces of soap (NSN 7930-00-129-0815) to 5 1/2 gallons (20.8L) of water to maintain a depth of 6 inches in the washer. Wash 15 to 20 minutes, maintaining a solution temperature at 160°F (71.1 °C). Repeat the operation if desired results are not obtained. Abrade loose paint with a vegetable fibre brush to facilitate removal of the paint.

(c) Rinse the liners for 5 minutes in clear water at 160°F (71.1 °C). Drain the rinse water and repeat the process twice.

(d) After the three hot rinses, neutralize the liners by rinsing them in a solution of laundry sour or oxalic acid (NSN 6810-00-264-6625). Mix the laundry sour at a ratio of 1 ounce to 5 gallons (18.9L) of water, and the oxalic acid at a ratio of 1 ounce (28.35g) to 10 gallons (37.85L) of water. Maintain a neutralizing solution temperature of 160°F (71. 1°C).

(e) After neutralizing the liners rinse them 5 minutes in clear water, and allow them to dry at a temperature not exceeding 140°F (60°C).

(f) Apply a coat of enamel to the exterior surface and air or bake it dry. Insure that the coverage is complete and free of runs, blisters, cracks, or orange peel.

(g) Install replacement chin straps, headbands, and neckbands when the liners are thoroughly dry (para 7-6 b).

7-8 INSPECTION

The inspection or quality control unit is responsible for determining compliance with repair instructions and requirements for classification. In-process inspections will be performed for quality of workmanship and correct application of repair procedures. The completed item will be inspected for serviceable appearance and condition to insure against return of a substandard product to supply channels.

Section III. MATERIALS

(1) SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
		STEEL HELMETS	
PAOZZ	8470-00-032-2735	LOOP ASSEMBLY, HINGED:MIL-H-1988, para 3.4.2.	EA
PAOZZ	8470-00-032-2737	STRAP, CHIN: For parachutist's helmet, MIL-S-43912	EA
PAOZZ	8470-00-030-8003	STRAP, CHIN: Adjustable, MIL-S-43841	EA
PAOZZ	8010-00-753-4960	ENAMEL, Green; Munsell Co. color No. 10Y 3/3, lusterless for brushing or spraying Fed. Spec. TT-E-527.	QT
PAOZZ	8010-00-753-4961	ENAMEL, Green: Munsell Co. color No. 10Y 3/3, lusterless for brushing or spraying Fed. Spec. TT-E-527.	GAL
PAOZZ	8010-00-161-7425	PRIMER COATING, Fed. Spec. TT-P-636	GAL
PAOZZ		SAND, SILICA: Kilndried, free of salts and deleterious matter, commercial screen average No. 70	
		HELMET UNERS	
PAOZZ	8470-00-935-6843	LINER, GROUND TROOPS HELMET Nylon, ballistic for armor cloth shell; olive green color, shade 10Y 3/3; Weight 13 1/2 oz. w/o chin strap assembly or chin strap; w/o headband and neckband; with removable suspension; designated fragmentation protective (infantry) MIL-L-41800 type 1.	EA
PAOZZ	8470-00-753-5793	LINER PARACHUTISTS HELMET (Combat) nylon ballistic for armor cloth shell; olive green color, shade 10Y 3/3; weight 15 1/2 oz; with chin strap and assembly for chin strap; designated fragmentation protective (parachutist's) MIL-L-41800, type II.	EA
PAOZZ	8470-00-153-6671	HEADBAND: Soldier's and parachutist's steel helmet liner, MIL-H-41802	EA
PAOZZ	8470-00-753-6166	NECKBAND: soldier's and parachutist's steel helmet liner, MIL-H-41802 for new suspension system.	

Section III. MATERIALS - Continued

(1) SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
PAOZZ	8470-00-032-2738	STRAP CHIN: Cotton Webbing parachutist's helmet liner MIL-S-43355 Type 1	EA
PAOZZ	8470-00-880-8814	SUSPENSION ASSEMBLY Soldier's helmet liner. MIL- S-43620	EA
PAOZZ	8470-00-073-8223	BUCKLE AND CLIP ASSEMBLY, NECKBAND MIL-H-43178	EA
MOOZZ		LACE, HEADBAND: 11-in. lg. cut from webbing, textile, FSN 8305-264-2088.	EA
PAOZZ	8305-00-264-2088	WEBBING TEXTILE: Cotton, olive drab #7, MIL-T-5661.	YD
PAOZZ	8470-01-005-2081	PAD, Parachutist liner MIL-P-43918	EA
PAOZZ	8010-00-111-7837	ENAMEL, GREEN; Munsell Co. Color #1OY 3/3, lusterless for brushing or spraying. Fed. Spec. MIL-E-52798	GL

CHAPTER 8

MAINTENANCE OF GRENADE CARRYING VEST, M-79

Section I. INTRODUCTION

8-1. SCOPE

This chapter provides instructions covering the materials, methods, and procedures for repair and maintenance of the Grenade Carrying Vest, M-79.

8-2. COMMODITY SPECIFICATIONS

a. Item.

ITEM	SPECIFICATION
Vest, Grenade Carrying, M-79	MIL-V-43707

b. Components.

ITEM	SPECIFICATION
Thread, Polyester	V-T-285
Tape, Textile and Webbing, Textile, Reinforcing Nylon	MIL-T-5038
Cloth, Duck, Nylon, Parachute Packs	MIL-C-7219
Cloth, Nylon, Raschel Knit	MIL-C-8061
Fasteners, Snap	MIl-F-10884
Webbing, Textile, Woven Nylon	MIl-W-17337
Fastener, Tape, Hook-and-Pile, Nylon	MIL-F-21840

c. Drawings.

NUMBER	TITLE
2-3-282	Vest, G. C. M-79, Assembly Complete
2-3-283	Vest, G. C. M-79, Details
2-3-284	Vest, G. C. M-79, Details and Sections

8-3. TECHNICAL PUBLICATIONS

NUMBER	TITLE
FM 10-280	Field Laundry, Bath and Clothing Exchange Operations

8-4. IDENTIFICATION AND DESCRIPTION

a. Identification. The vest, grenade carrying, M-79, (Fig. 8-1) has a carrying capacity of 24 grenades, each in an individual pocket closed with a flap and snap fastener. There are 12 pockets on each side of the front of the vest.

NSN	SPECIFICATION	SIZE
8415-00-146-1667	MIL-V-43707	Small
8415-00-146-1668	MIL-V-43707	Medium
8415-00-146-1669	MIL-V-43707	Large

b. Description. The front of the vest and pockets are made of 7.25 oz. (205.5 g) nylon duck with raschel knit nylon knit over the shoulders and back to give increased ventilation. The front closure is the touch and close type reinforced with two snap fasteners, one each at the top and bottom of the closure. Proper fitting is provided at the back by means of a strap and quick operating buckle. It is intended that the carrier vest be worn over the armored vest and suspenders of the Load carrying system. Three sizes of Vests are provided, size small for chest size 38 inches (96.5 cm) and under; size medium for chest size 39 inches to 42 inches (99 cm to 106.7 cm); size large for chest size 43 inches (109.2 cm) and over.

8-4. IDENTIFICATION AND DESCRIPTION–Continued

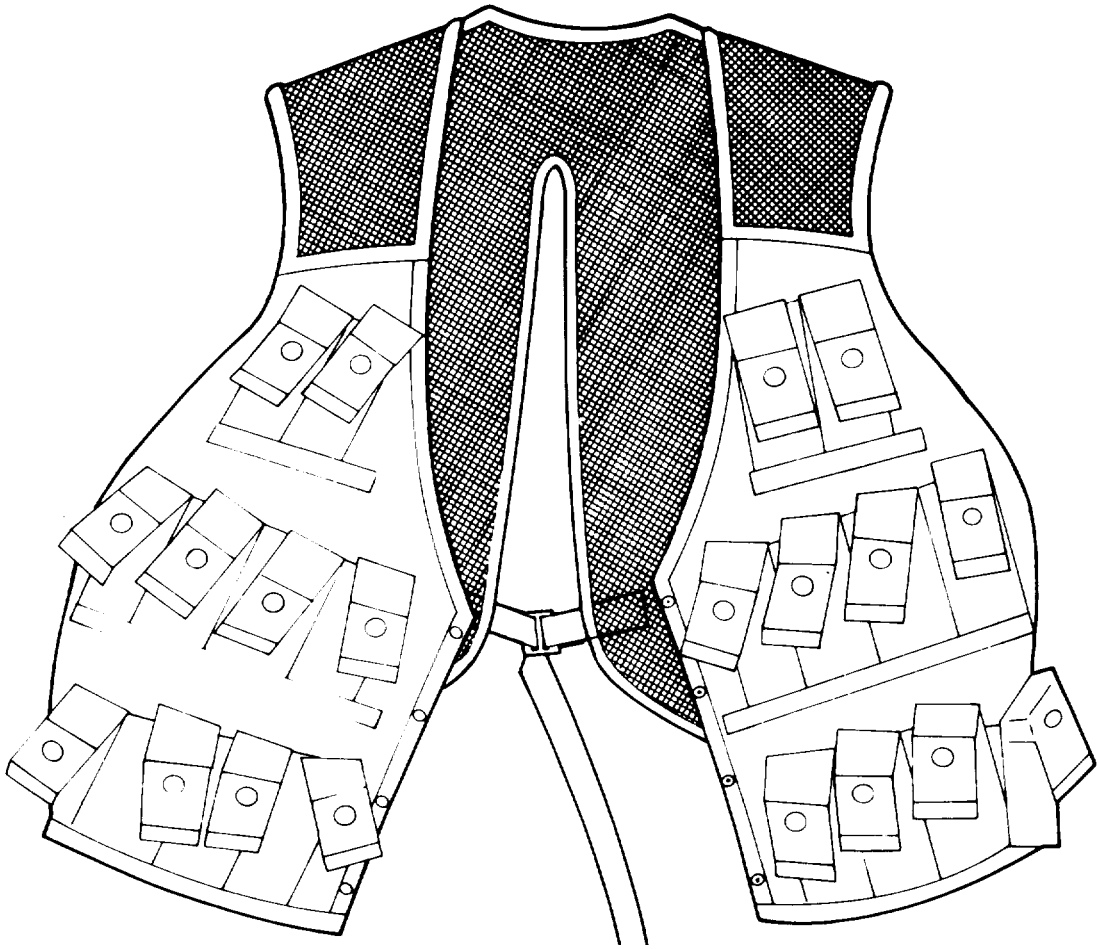


Figure 8-1, Grenade carrying vest, M-79.

Section II. REPAIR PROCEDURES

8-5. GENERAL

Materials used in the repair of the Grenade Carrying Vest will be serviceable materials recovered from similar salvaged items, when authorized, or will be new materials as specified in Section Ill. New materials will be requisitioned from stock under the stock numbers and/or items descriptions as listed in Section III and will conform to the appropriate specifications. When not available from stock materials may be purchased locally that conform as closely as possible to the standard material.

8-6. REPAIR AND MAINTENANCE

Prior to repair, each item will be inspected to determine the amount of repair necessary. Repairs will be made as fully as skills, facilities, funds, and local conditions permit.

a. Organizational Maintenance.

(1) Cleaning. Clean off mud or other foreign matter with brush, damp or dry cloth, or scrub exceedingly dirty areas with limited amount of water; then rinse off and dry.

(2) Repair. Make “field expedient” temporary repairs of small holes and cuts by use of adhesive materials such as pressure sensitive tape. This should be done to prevent further damage.

(3) Turn in. Thoroughly clean and dry items which cannot be repaired at organizational level prior to turning in for repair at higher level of maintenance.

b. Direct Support Maintenance.

(1) Cleaning. Remove dirt, mud, mildew and other foreign matter from subject items with a brush, or damp or dry cloth. Launder exceedingly dirty items by hand, using a mild soap or detergent and warm water.

(2) Preliminary Examination, Inspect the items for weakened areas, holes, tears, open seams, and missing hardware. Test for weakness by applying pressure on the areas in question and attempting to tear the material. Mark weakened areas found with tailor’s crayon. Inspect items for condition of all hardware and mark where repair or replacement is required.

(3) Repair. Use repair procedures described in TM 10-269, Repair of Canvas and Webbing, in conjunction with these instructions as applicable.

(a) Stitching. Use machine stitching for all sewing. Re-sew loose, broken or defective stitches using thread specified in Table 8-1. Maintain proper tension to prevent loose stitches and backstitch breaks and ends not less than 1 inch (2.54 cm) to prevent raveling. Use the following types of stitches, thread size and stitches per inch for sewing.

8-6. REPAIR AND MAINTENANCE - Continued

Table 8-1. Stitching

SEWING OPERATION	STITCH TYPE	THREAD NEEDLE & BOBBIN	STITCHES PER INCH
All stitching except barracking	301	Size E	8 to 10
Bartacking		Size E	*28

* 1/2" to 3./4" bartack -28 stitches

3/4” bartack and wider -42 stitches

(b) Patching.

1. Patch holes and tears exceeding 1 inch in length or diameter with a single patch of the required nylon duck or raschel knit nylon cloth as specified in Section Ill and using thread specified in Table 8-1. Cut away the damaged area to a square rectangular shape depending upon the shape of the hole. Cut patch of sufficient size to exceed 1 inch beyond the hole area to be patched, allowing 3/8 inch (0.953 cm) turn under of raw edges.

2. Dam a hole or tear that does not exceed 1 inch in length or diameter.

3. There is no limit to the number of times that the item may be patched or darned.

(c) Replacement of webbing and tape.

1. Flap and chape webbing. Replace defective and missing webbing using appropriate material specified in Section Ill. Remove defective webbing by carefully cutting attaching stitches without damaging material. Cut replacement items to size and contour of original and attach in position of the original, using thread, stitch types, and stitches per inch specified in Table 8-1.

2. Back strap. Carefully cut the stitching securing the back strap to the back panel. Cut a length of 1 -inch (2.54 cm) webbing to size of original and attach in position of the original using thread, stitch type, and stitches per inch specified in Table 8-1.

3. Repair of binding tape. Overlap the binding tape with new tape (Section Ill), extending the new tape at least one inch beyond the damaged area. Turn the binding edges under 1/2 inch (1 .27 cm) and stitch 1/8 inch (0.31 8 cm) in from edge of tape.

8-6. REPAIR AND MAINTENANCE -Continued

(d) Hardware. Straighten bent hardware or replace missing, damaged, or otherwise unserviceable items with hardware as specified and described in Section Ill. Remove rust and corrosion from metal hardware with soft wire brush.

(1) Snap fasteners.

(a) Resetting. Reset a loose snap fastener by using appropriate dies.

(b) Removal. Remove a damaged snap by cutting it with a pair of diagonal wire cutters or rippers. Be careful not to cut or damage the fabric.

(c) Installation. Without damage to the fabric, install the new snap fastener (with proper sized dies) according to the original construction.

(2) Replacement of defective buckle. Carefully cut the stitching securing the buckle chape to the back panel. Cut a length of 1 -inch (2.54 cm) webbing to size of original. Attach buckle to chape and position as the original, using thread, stitch type and stitches per inch specified in Table 8-1.

8-7. FINAL INSPECTION

After complete repair inspect each item for classification Code B (Chapter 1). The inspector is charged with the responsibility for determining that phases of repair are in compliance with these instructions to preclude return of substandard materials to supply channels.

Section Ill. MATERIALS

SMR CODE	NATIONAL STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE
PAFZZ	8305-00-926-6869	Cloth Duck Nylon; 7.25 ounce, Olive Green Shade No. 106; Conform to Type Ill MIL-C-7219; 40 inches wide	Yard
PAFZZ	8305-00-263-2472	Webbing, Textile; woven Nylon; 1 1/2 inches wide; OD Shade No. 7; Type IV, conform to MIL-T-5038	Yard

Section III. MATERIALS- Continued

CODE	NATIONAL STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE
PAFZZ	8305-00-881-0604	Webbing, Textile; Woven, Nylon; 1 inch wide; OD Shade No. 7; Conform to MIL-W-1 7337	Yard
PAFZZ	8315-00-935-4741	Tape, Textile; Nylon, 1 inch; OD Shade No. 7; Type III; conform to MIL-T-5038	Yard
PAFZZ	8315-00-255-7673	Tape, Textile; Nylon 1/2 inch; OD Shade No. 7; Type III; conform to MIL-T-5038	Yard
PAFZZ	8315-00-448-5663	Fastener Tape, Hook Nylon, 1 1/2 in. OG Shade 106; Type II; conform to MIL-F-21840	Yard
PAFZZ	8315-00-448-5664	Fastener Tape, Pile; Nylon; 1 1/2 inch OG Shade 106; conform to MIL-F-21840	Yard
PAFZZ	8310-00-988-1298	Thread, Polyester; OD-S1, Ticket No. E, 3 ply; 5700 pkg, yds.	TU
PAFZZ	5325-00-985-6718	Fastener, snap; style 2, finish 2; conform to MIL-F-10884 Note. The male component shall be the stand with size 1 eyelet and the female component shall be the socket with size 1 button.	HD
XBFZZ		Buckle, Non-slip, 1 inch; No. 240; dull black oxide-finish	Each

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CHAPTER 9

MAINTENANCE OF SKIS, SNOWSHOES, INSULATED BOOTS AND ACCESSORIES

Section I. INTRODUCTION

9-1. SCOPE

This chapter provides the materials, procedures, and standards for classification and repair of subject items.

9-2. COMMODITY SPECIFICATIONS

a. Items.

ITEM	SPECIFICATION
Boots, Cold Weather, Men's and Women's, Rubber Black, Insulated with Release Valve, Cold-Wet	MIL-B-41816, Type I
Boots, Cold Weather, Men's and Women's, Rubber White, Insulated with Release Valve, Cold-Dry	MIL-B-41816, Type II
Pole, Ski; Steel Shaft Non-Adjustable; Size 2; 54 Inches, NSN 8465-00-753-6145, Size 3; 58 Inches, NSN 8465-00-753-6142	MIL-P-41806
Snowshoes, Trail; Magnesium; 47 1/2 Inches Long, 12 1/2 Inches Wale, NSN 8465-00-965-2174	MIL-S-43272
Binding, Assembly, Snowshoe, NSN 8465-00-865-2175	MIL-B-43246

b. Components.

ITEM	SPECIFICATION
Laces, Footwear, Nylon	V-L-61

c. Technical Publications.

NUMBER	TITLE
AR 750-5	Organizational Policies and Responsibilities for Maintenance Operation
FM 31-70	Basic Cold Weather Manual
TM 10-275	Cold Weather Clothing and Sleeping Equipment

9–3. IDENTIFICATION AND DESCRIPTION

a. Military Skis. NSN 8465-01-085-1935. The all-terrain military type skis are intended for use in tactical operations for mass movement of troops over level or hilly snow-covered terrains. The ski has an outer plastic composite material construction with a foam core, steel edges and an aluminum tail protector. The tip of the ski has a hole for towing the skis and the tail is notched to accept the strap on a ski climber. The skis are 78 inches (200 cm) brig. (Figure 9-1.)

b. Ski Binding. The ski bindings are commercial Silvretta Alpine Touring Bindings. This binding is a cable binding consisting of a front throw, a toe piece, a heel plate and cable with guides. The cable is engaged in the guides for down hill skiing and release from the guides to allow the heel to lift for cross country skiing. The front throw is equipped with a release mechanism to release the cable in the event of a fall while in the down hill mode. (Figure 9-1.)

c. Pale, Ski. The ski pale, NSN 8465-00-753-6145 (53 in), (134.6 cm), NSN 8465-00-753-6142 (58 in) (147.32 cm), (Figure 9-2) is composed of a steel shaft, rubber grips, leather wrist straps, and rubber snow ring assembly.

d. Snowshoes. The snowshoes, MIL-S-43272, NSN 8465-00-965-2174, are standard type snowshoe with ski type upturned front and sharply tapered rear. The frame is magnesium, laced with plastic covered steel cable. (Figure 9-3.)

e. Binding, Snowshoe. The snowshoe binding, MIL-B-43246, NSN 8465-00-965-2175 (Figure 9-4) is intended for use with the magnesium trail snowshoe and will accommodate either the left or right boot.

f. Boots, Cold Weather, Men's and Women's, Rubber Black Insulated, with Release Valve, MIL-B-41816 (NSN'S 8430-00-823-7024 thru 7078). (Figure 9-5.) The black rubber insulated boots have a seamless inner and outer carcass, direct molded sole, and sealed insulation. An air valve on the outside of each boot is used to compensate for air pressure differentials.

g. Boots Cold Weather, Men's and Women's, Rubber White, Insulated, with Release Valve, MIL-B-41816 (NSN 8430-01-056-0815, 8430-01-057-3500, 8430-00-655-5541 and 8430-00-823-6902). (Figure 9-6.) The white rubber insulated boots have a seamless inner and outer carcass, direct molded sole and sealed insulation greater than the black boots for protection against the hazards of a cold-dry environment.

9-3. IDENTIFICATION AND DESCRIPTION–Continued

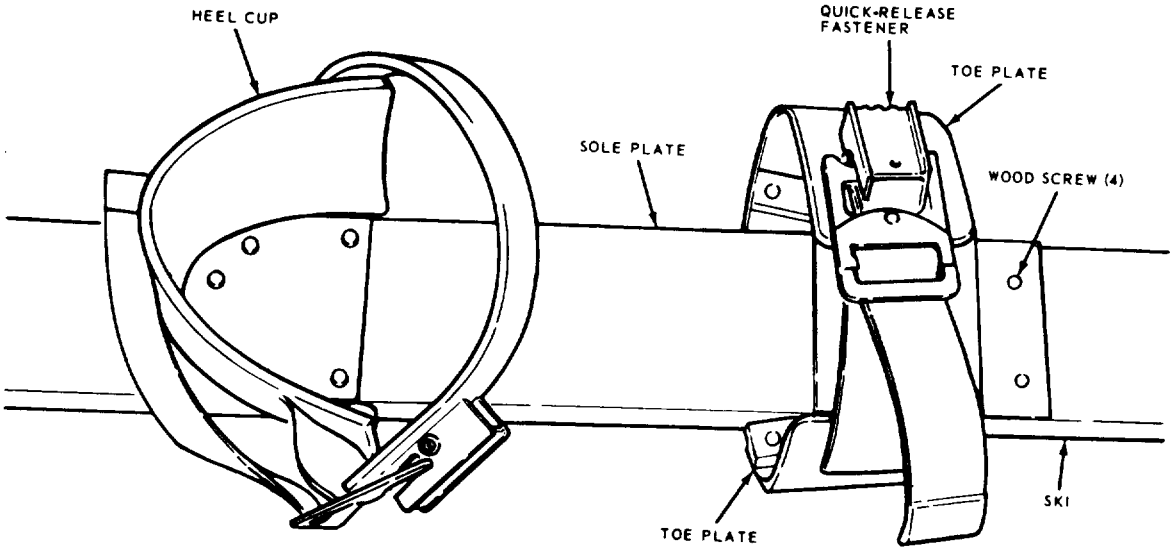


Figure 9-1. Ski Binding.

9-3. IDENTIFICATION AND DESCRIPTION–Continued

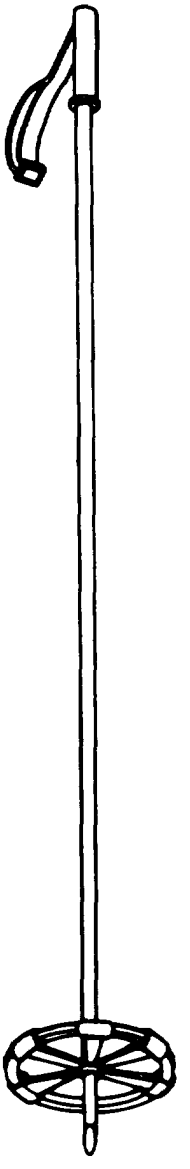


Figure 9-2. Ski Pole.

9-3. IDENTIFICATION AND DESCRIPTION–Continued

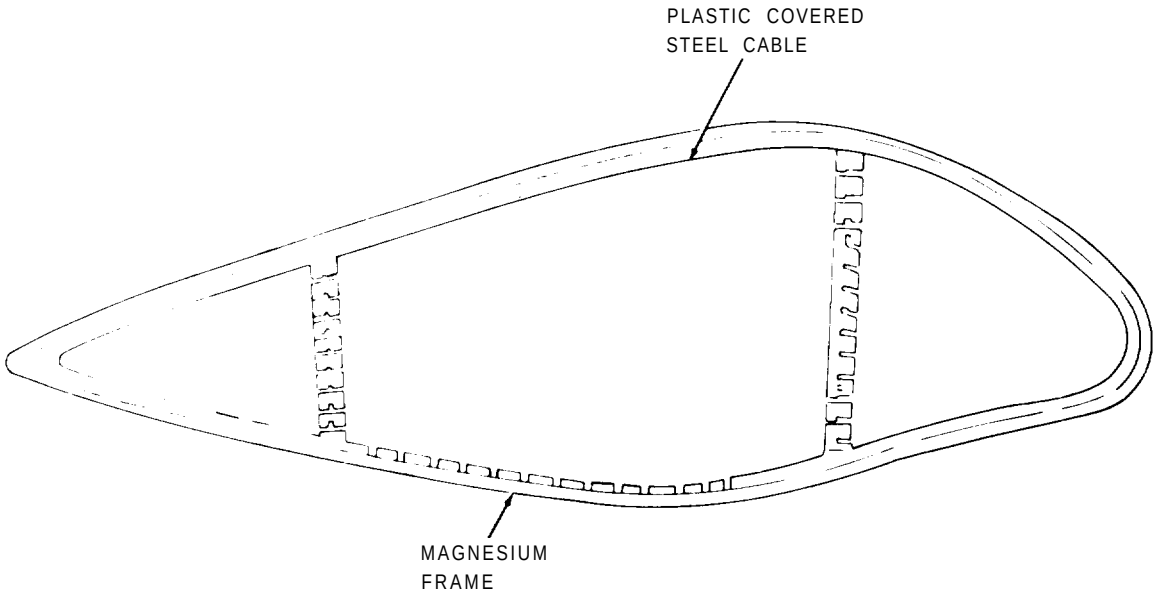


Figure 9-3. Magnesium frail Snowshoes.

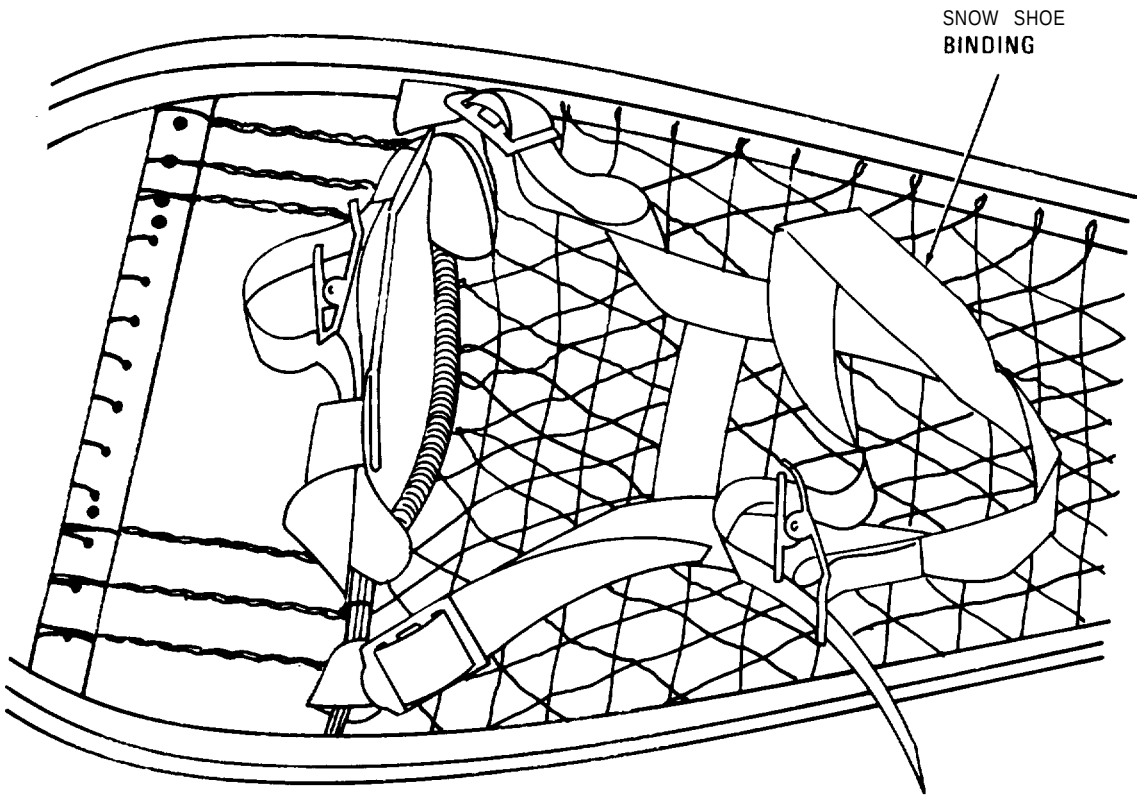


Figure 9-4. Snowshoe Binding.

9-3. IDENTIFICATION AND DESCRIPTION–Continued

Figure 9-5. Boot, Combat, Rubber Insulated, Black (Cold-wet).

9-3. IDENTIFICATION AND DESCRIPTION–Continued

Figure 9-6. Boot, Combat, Rubber Insulated, White (Cold-dry).

Section II. REPAIR PROCEDURES

9-4. GENERAL

Materials used in the repair of items will be serviceable materials recovered from similar salvaged items when authorized, or will be new materials. Procure new materials under the stock numbers and/or item descriptions in Section Ill to conform to specifications designated.

9-5. LABELS

If the stock number and size designation label is in such condition that it is apparent that it will not retain legibilit y, when subject to wear after reissue, then item in question should be relabeled to original markings,

9-6. WORKMANSHIP

Repair and cleaning will be done by personnel skilled in the particular trade applicable to the work to be performed. Hardware will work properly and be securely and properly attached. The finished item will be complete, clean, well repaired, free from all defects affecting its serviceability and appearance.

9-7. INSPECTION

The inspection or quality control element is responsible for determining compliance with repair instructions, and requirements for classification. In-process inspections will be performed for quality of workmanship and correct application of repair procedures. The completed item will be inspected for serviceable appearance and condition to insure against return of a substandard product to supply channels.

9-8. REPAIR AND MAINTENANCE OF SKIS

a. Organizational Maintenance

(1) Cleaning. Thoroughly clean each item, removing mud, dirt or other foreign matter, using brush, cloth, steel wool or other type of suitable cleaners. To clean molded leather, wipe with a moist cloth; apply saddle soap working lather well into leather, rinse with sponge and clean water, and allow to air dry, Apply in well-ventilated area and thoroughly wash hands with cool water and soap after using.

9-8. REPAIR AND MAINTENANCE OF SKIS–Continued

(2) Repair. The repair of skis (Type I), snowshoes, and accessories under normal conditions is usually of an emergency type consisting of tightening and/or replacing screws, steel edge, and bindings. To facilitate repair, the following items are necessary: repair kit, ski, replacement components, and bindings.

(a) Ski poles. Keep the steel point of ski poles sharp by filing. Turn in damaged poles for replacement.

(b) Bindings.

1. Binding Placement Instructions.

a. Use a tape to measure the ski in a straight line from the tail of the ski to the tip (Fig. 9-7).

b. Divide the total distance in half (which gives you your center or mid-point); half of a 82 3/4 inches (210 cm) ski, for example, would be 41 3/8 inches (105 cm). Always measure from the tail of the ski (Fig. 9-7 and 9-8).

c. Mount the binding so that the swivel point of the toe piece is on the mid-point of the ski (Fig. 9-9).

d. In mounting the toe piece, insure that it is centered with the long axis of the ski.

2. Mounting Instructions.

a. Use the toe piece, front throw, and cable guides (side hitches) as templates in marking holes to be drilled. Locate the binding parts as shown in Fig. 9-9.

b. Center punch holes before drilling.

c. Use sharp drills to prevent walking, keep points centered, and drill at 90° angle to prevent oversize holes.

d. Use the right size drill for the screws used in mounting the various parts of the binding.

e. Bindings are installed using high quality hardened sheet metal screws. Do not use a screw which is too long; it will act as a jack and separate the various laminations or pierce the bottom. When you have a screw that is not short enough, grind the point off to the desired length. Do not force a sheet metal screw into too small a hole as it will cause the top skin to lift and not take a good seat, (skis constructed with metal topskin). Countersink screw hole slightly. Use some form of lubricant on the screw before insertion. Wax is effective and will help seal the hole against water seepage. When installing bindings on fiberglass skis, it is imperative that holes be countersunk through the top plastic.

9-8. REPAIR AND MAINTENANCE OF SKIS–Continued

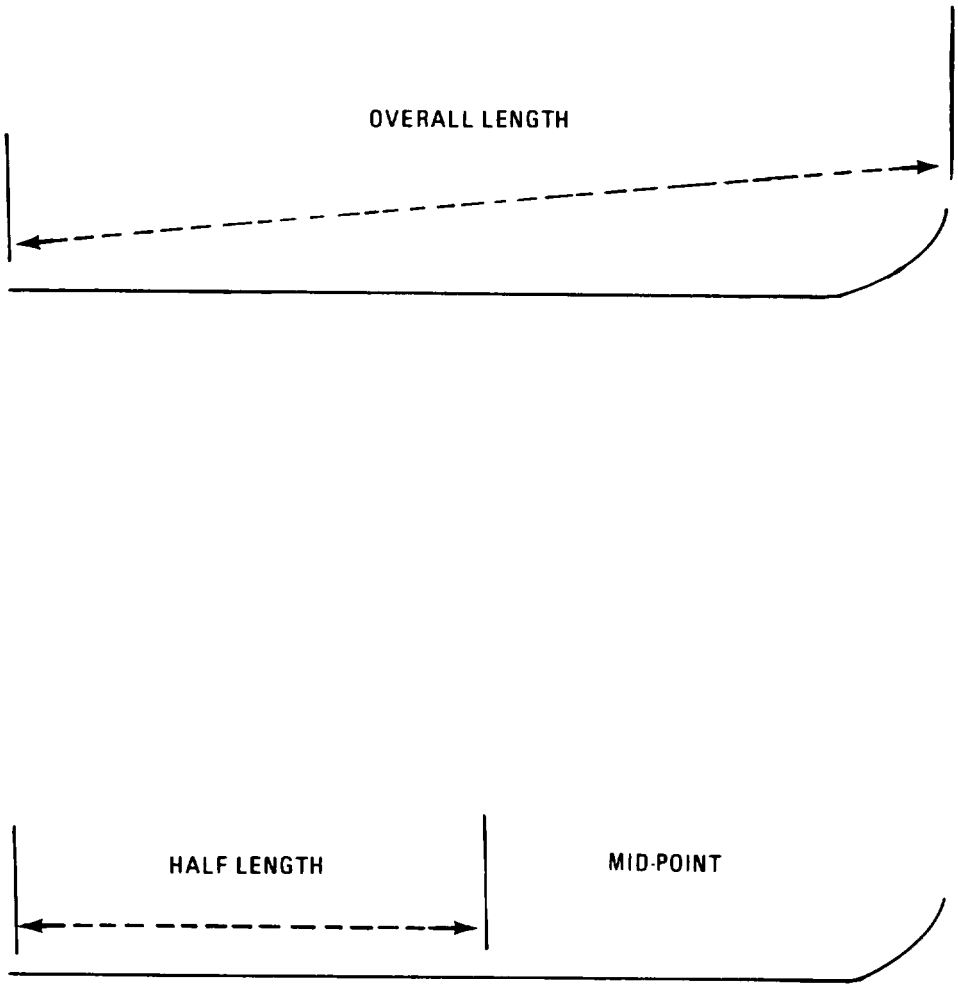


Figure 9-7. Measuring the Ski.

9-8. REPAIR AND MAINTENANCE OF SKIS–Continued

SKI SIZE	DIMENSION A	
m	m	in
120	60.0	23 5/8
130	65.0	25 5/8
140	70.0	27 5/8
150	75.0	29 1/2
160	80.0	31 1/2
165	82.5	32 1/2
170	85.0	33 1/2
175	87.5	34 1/2
178	89.0	35
180	90.0	35 3/8
183	91.5	36
185	92.5	36 3/8
188	94.0	37
190	95.0	37 3/8
193	96.5	38
195	97.5	38 3/8
198	99.0	39
200	100.0	39 3/8
203	101.5	40
205	102.5	40 3/8
208	104.0	41
210	105.0	41 3/8
213	106.5	42
215	107.5	42 3/8

Dimensions are always measured from tail of ski to tip. Mark ski at correct distance (see chart). Place swivel point of binding at this point

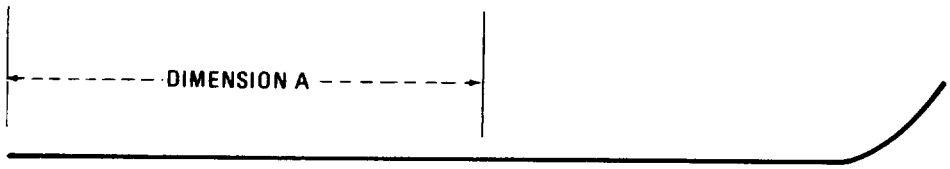
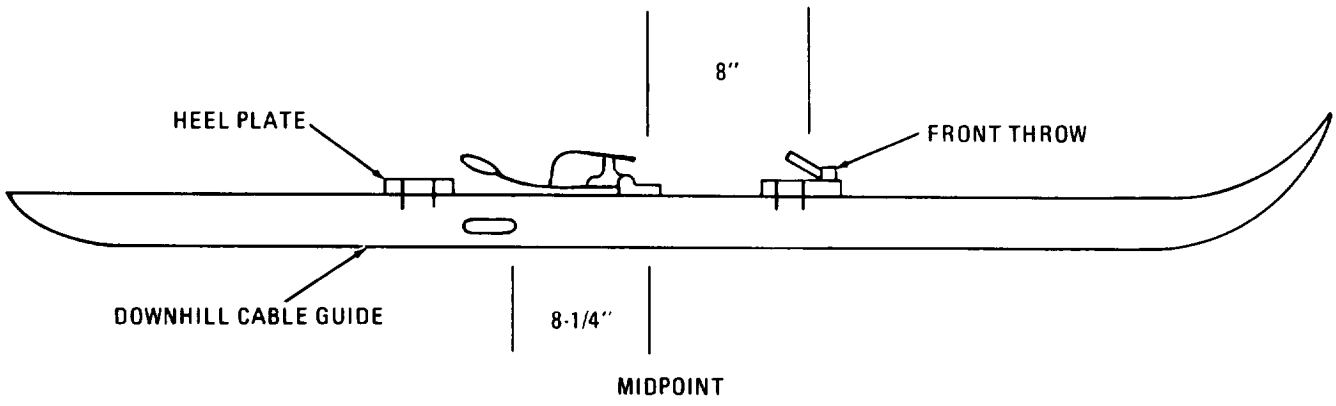


Figure 9-8. Measuring Swivel Point of Binding.

9-8. REPAIR AND MAINTENANCE OF SKIS—Continued

1. Large Front Throw



2. Small Front Throw

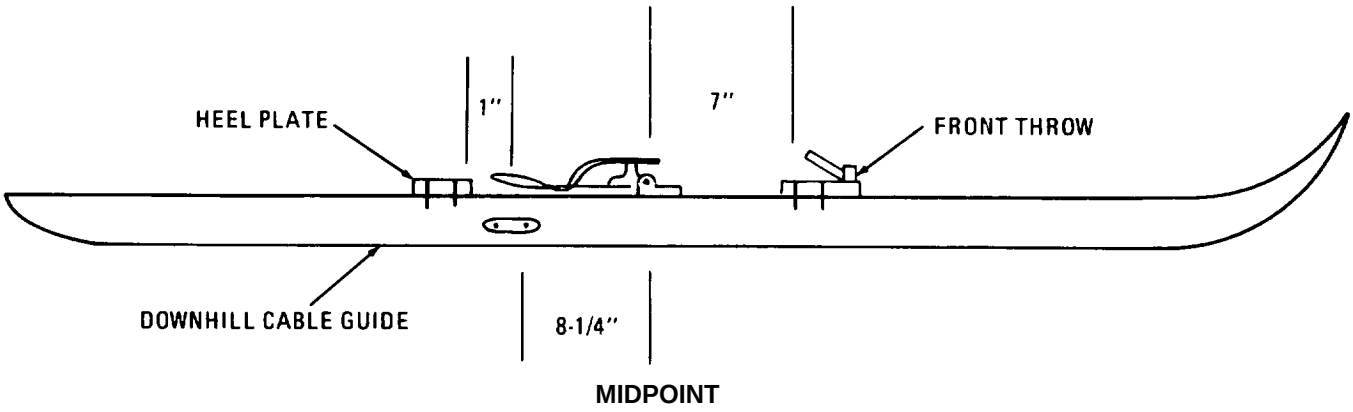


Figure 9-9. Locating Binding Parts.

NOTE

- **Swivel point of toe piece at midpoint.**
- **8 in. from swivel point of toe piece to center of rear of front throw (large), 7 in. from swivel point of toe piece to center of rear screw of front throw (small)**
- **8 1/4 from swivel point of toe piece to front screw of downhill cable guide**
- **Forward edge of heel plate even w/center of downhill cable guide if heel plate is large (2½" x 2¼"); 1" further rearward if small heel plate (1¼" x 2¼")**

9-8. REPAIR AND MAINTENANCE OF SKIS—Continued

- To determine a large front throw from a small front throw, measure from the front mounting holes (those nearest the tip of the ski) to the back end of the lever in the closed position. This distance is approximately 5 1/2 inches for the large throw and 4 1/2 inches for the small throw. (Figure 9-10.)

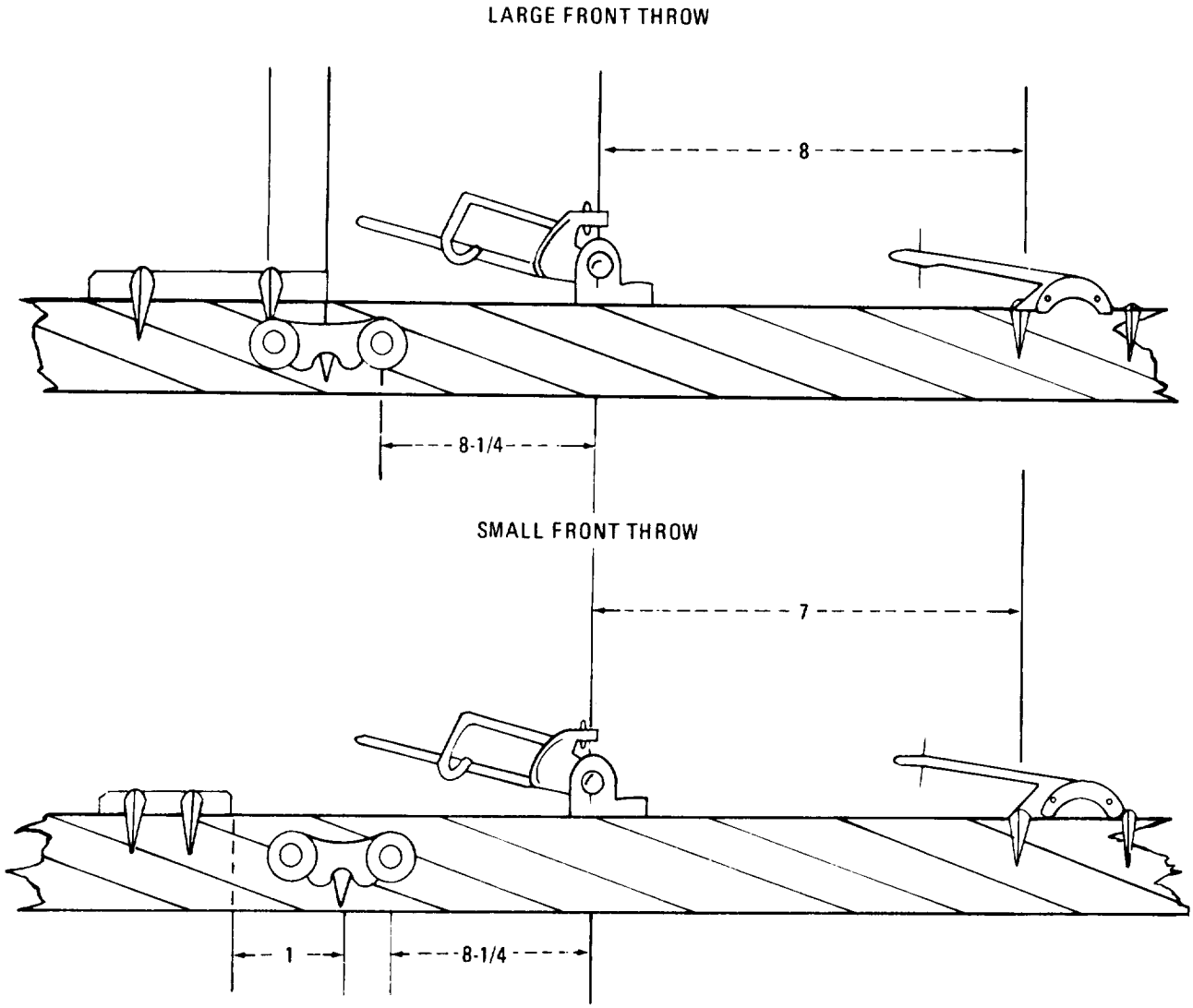


Figure 9-10. Front Throws.

9-8. REPAIR AND MAINTENANCE OF SKIS–Continued

3. Special Problems and Solutions.

a. Broken Screw, If a screw breaks off flush and cannot be removed with pliers, simply punch it through into the inner core of the wood or polyurethane. A new screw, usually the next larger size, can be installed in the same hole. (Where old shank remains imbedded, the new screw will go in slightly crooked but will still do the job). If a screw breaks so that the above procedure cannot be followed, it will require moving to a new hole location. In order to avoid moving the binding and drilling all new holes, a new hole can be drilled adjacent to the plugged hole, through the toe plate into the ski. Drill the right size for screw threads then countersink to receive screw head.

b. If a screw should loosen up or strip, due to an oversize hole, use any of the following procedures:

(1) Use next larger size screw.

(2) Drill a new hole through both binding and ski.

(3) Fill hole with steel wool soaked in epoxy and insert in hole, then let cure for 24 hours.

c. If the binding is being mounted on a ski from which a binding of another type (using a different set of drilled holes) was removed, all old holes must be filled with epoxy. This will keep water from penetrating and weakening the inner core of the ski.

4. Cable Sizes.

With careful adherence to the recommended mounting instructions, the following guide to cable and boot sizes has proven to be effective and should be considered standard.

CABLE SIZE	MOUNTAIN BOOT SIZE	VB BOOT SIZE
Short	6 and below	3 N through 14xW
Medium	7 through 13	
Long	2/	

1/ Since the smallest VB Boot is a size 5 and is adequately restrained by a medium cable, the short cable is not needed with the VB Boot.

2/ Since the largest Mountain Boot is a size 13 and is adequately restrained by the medium cable, the long cable is not needed with the Mountain Boots.

9-8. REPAIR AND MAINTENANCE OF SKIS–Continued

(3) Preparation and Waxing of Skis. Keep the running surfaces of skis well waxed at all times. This is necessary not only to help sliding and climbing but also for waterproofing to avoid warping. Use appropriate wax, depending on type of snow on which skis are to be used. For waxing, refer to pages 66-69 of FM 31-70.

b. Direct Support Maintenance.

(1) Cleaning. Remove dirt and mud or any foreign matter by brushing, use of a vacuum or other mechanical means, or by scrubbing with mild soap and water. Clean mildewed parts with mild soap and water, allowing to dry thoroughly.

(2) Disassembly. Remove all bindings on skis and snowshoes requiring repair and refinishing. To remove bindings on snowshoes unbuckle the straps, and pull them through the loops. To detach bindings on skis, remove screws securing the binding.

(3) Wood Components. Do not repair severely warped or misshapen wood components.

(a) Skis (Type I).

1. Pairing and marking. Match skis in pairs for appearance, type, size, and weight. Do not remark for flexibility. On skis requiring rematching, obliterate the old pair numbers and stamp new pair numbers on each ski. Skis remaining as paired by original manufacture will retain the original numbers. Remark skis with faint paint numbering with the original numbers. Skis will have the proper size, length, pair number, and the letters US indented thereon. All remarking will be placed as an original marking in an area 8 to 11 inches (20.3 to 27.9 cm) forward of binding location point, located to read from the heel of ski.

a. Place the letters US in characters not less than 3/8 inch (0.952 cm) or more than 1/2 inch (1.27 cm) high.

b. Identification serial numbers will be 1/4 inch (0.635 cm) high on each ski of a pair. Number pairs commencing with 0001 each year.

(b) Snow shoes. Smooth or feather out by sanding or other approved mechanical means, edges and surfaces that are slightly nicked provided that the strength or serviceability of the part will not be materially reduced. After thoroughly cleaning all loose paint and corrosion, apply a coat of Primer Coating Zinc Yellow, Federal Specification TT-P-666, allowing to dry completely. Then apply two coats of white finish. After complete cleaning, repair and refinishing of snowshoes, assemble the proper type bindings to the snowshoes as applicable. Match snowshoes for appearance, pairing one right and one left as applicable. Initials indicating the repair depot and the year of repair, and a serial number beginning with 0001 each year will be indented on both snowshoes of each pair, adjacent, or as near as possible to the obliterated previous marking. Exercise care when marking to prevent injury or distortion to the snowshoes. If finish is inadvertently broken while marking, refinish as originally specified.

9-8. REPAIR AND MAINTENANCE OF SKIS-Continued

(c) Ski pole. Replace broken wrist straps by opening sewing on the hand grip as required, and remove screw located on end of pole. Fabricate a new wrist strap from leather or use material specified in Section IV, attaching strap in position on pole with screw. Resew hand grip using same holes where possible. Replace damaged or missing leather cross straps and suspension strap on snow ring with straps fabricated from leather in manner of original construction. Treat leather with dressing. Replace damaged or missing aluminum snow ring (basket (NSN 8465-00-753-5962)) on ski poles with servicable item, or with new item (Section Ill).

NOTE

Snow rings tend to slip off in extreme cold conditions. To eliminate this problem a push-on nut (shaft retainer), CAGEC 02768, P/N 8063–37–01-0531 or equivalent can be placed on the shaft directly beneath the snow ring. Install by pushing nut onto shaft with a pair of pliers. The push-on nut can be obtained from Fastex, 195 Algonquin Road, Des Plains, IL 60010.

(d) Bindings. Pair all bindings to contain one right and one left shoe, as determined by the position of the buckle straps on the binding, when applicable.

(4) Repair

(a) General. To facilitate repair of the skis, the repair kit (NSN 8465-01-016-4207) should be used.

(b) Ski Maintenance Procedure. The maintenance of the skis is limited to repair of gouges to the running polyethylene surface, sharpening of steel edges, and general cleaning with a dry cloth only.

1. Repair of gouges. The repair of gouges in the running surface is accomplished with a polyethylene repair candle as follows:

a. Using a scraper and 120 grit emery (aluminum-oxide abrasive) cloth, remove wax and dirt from the area to be repaired.

b. Ignite the polyethylene candle and hold the candle very close to the ski to prevent plastic from cooling and not bonding properly.

c. Let the candle drip into the gouge, filling slightly higher than the surrounding material. Allow the gouge to cool.

d. Remove excess material with a scraper and smooth the surface with emery cloth.

2. Sharpening edges. Sharpen the edges using a blunt mill file. Beginning at the tip of the ski and working toward the rear and with the file parallel with the side of the ski, remove only that amount of metal necessary to restore the square corner to the edge. Only in the event of local damage to the edge should any filing be done on the bottom of the edge. When the skis are not to be used for any period of time, the steel edges should receive a thin film of oil to prevent corrosion and skis stored in a dry place.

9–9. REPAIR AND MAINTENANCE OF INSULATED BOOTS

a. General. This section covers instructions for the repair of the boots, combat, rubber, insulated, black (8430-823 Series) and white (8430-655 Series) used in extreme cold weather. These boots contain insulation sealed between two waterproof layers of rubber. The insulation must be kept absolutely dry. If the insulation becomes wet, the protection afforded the wearer will be lost and may result in frostbite or other similar injuries to the wearer.

b. Cleaning. Prior to inspection, the boots must be cleaned by washing the outside with a mild soap and rinsing with water.

CAUTION

Do not apply any all-based paint or advent-based polish to any part of the boot since paint or polish will cause the rubber to deteriorate.

c. Emergency Repair (by Individual User). Emergency repair must be made promptly to a puncture, cut, tear, or hole (within 1 hour, if possible) in order to prevent severe damage to the insulation. To make an emergency repair, use maintenance kit, cold weather, insulated boot gray rubber patch (NSN 8335-00-753-6335), for use with both black and white boots, and proceed as follows:

- Clean the area to be patched.
- Buff the area thoroughly with abrasive.
- Tear off the end of the tube of cement and apply a coat of cement to the area to be patched; allow to dry 3 to 5 minutes. Twist and tear off backing from patch (do not touch fresh surface).
- Press patch firmly in place.
- If a repair kit is not available, make a temporary repair by patching the hole with a cold tire patch or with tape, such as rubber tape, friction tape, or scotch tape. Even chewing gum may serve as a temporary patch. The important thing is to seal the hole as quickly as possible so that the insulation will not get wet.

d. Inspection.

(1) General. An inspection of the boots at the unit or organizational level should be made prior to winter use and after the winter season to determine whether the boot is serviceable or in need of repair. A deficiency in one boot of a pair will result in only that boot being considered unserviceable. The single boot should be saved and matched with another boot of same size, width, and manufacturer, where possible.

(2) Unserviceable Deficiencies. A boot having any of the following deficiencies will be considered unserviceable:

(a) A sole that is worn smooth (no cleat design) or shows holes.

9 -9. REPAIR AND MAINTENANCE OF INSULATED BOOTS- Continued

(b) Missing reinforcement pieces, such as foxing, toecaps, heel pieces, missing eyelets, tom eyelet stays, missing valves.

(c) Rips, tears, and cuts in the rubber or in the surface of the boot.

(d) A weight increase in excess of 1 ounce (28 grams) of the weight imprinted on the heel of the boot.

(3) Specific Inspection.

(a) Immerse boots which show severe cracking (but are within 1-ounce weight increase) in water for 1 hour to a height above the areas of cracking. Use a suitable weight or other means to insure that no water gets into the inside of the boot; wipe, dry, and reweigh the boot. If the weight increase does not exceed 1 ounce over the weight imprinted on the heel, the boot will be considered serviceable.

(b) Subject the boots on which the valve appears defective to the air leak test as detailed in paragraph e.(2) below. Replace an unsatisfactory valve.

e. Testing. After the boot has been inspected and found free of defects, test the boot for leaks and excess moisture in the insulation, using the following methods:

(1) Insulation Valve Test. Use the test set, insulated boot, AN/GSM-83 (NSN 6685-00-868-8326) to determine whether excess moisture is in the sealed insulation area. Operating and maintenance instructions are affixed to the tester. A boot rejected by the leak tester will be discarded. A boot accepted by the leak tester will be air-leak tested. (Figure 9-11.)

(2) Air-Leak Test. A boot that has been accepted by the test set, insulated boot, AN/GSM-83 will be tested on the insulated boot leak tester (NSN 3520-00-752-8472) for leaks within the insulation area as follows (Figure 9-12):

(a) Remove laces and air release valve from boot.

(b) Fill tank with water to a height about 4inches (10.2 cm) below the top surface of the boot. (Water should be added to the tank at intervals to maintain this level.) Allow sufficient time for small scattered bubbles rising from the boot interior to dissipate. These bubbles are usually caused by trapped surface air escaping and do not necessarily indicate a leak

(c) Start air compressor motor.

(d) Close all six petcock valves.

9-9. REPAIR AND MAINTENANCE OF INSULATED BOOTS–Continued

NOTE

The six hoses, with needles, are used only for testing the black insulated boot which has no air release valve.

(e) On the right side of the excess moisture tester unit is a pressure gage, hand valve, and rubber hose. Attached to the end of the rubber hose is a plexiglass spring-loaded device, used to hold open the self-closing, air release valves so that they maybe billed with air. Hold the boot in the left hand, and using the right hand, place the end of the plexiglass unit over the valve assembly, The prong on the end of this unit will engage the head of the valve. Press downward to engage the valve, and release.

(f) Turn hand valve on the tester unit to allow air to go into the boot.

(9) As soon as the arrow on the pressure gage reaches the red mark on the pressure gage (indicating 7 inches (178 mm) of water pressure), carefully disengage the plexiglass unit. The valve on the boot will close and the boot will have air in the insulating chamber and will be inflated slightly. Do not overfill; overfilling may damage the boot.

(h) Place the boot in the water tank with the toe forward and under the toe bar to keep the boot from rising. Fill the inside of the boot with water to approximately 4 inches (10.2 cm) from the top edge of the boot. Three pairs of boots may be placed in the tank at the same time.

(i) Observe whether there is a continuous flow of air bubbles escaping from the outside or inside area of the boot; bubbles indicate a possible leak, Mark leak area with crayon. Small bubbles escaping from around the eyelets or edge of the boot or eyelet stay do not constitute a leak, because there is no insulation in this area. A boot with many pinhold leaks is considered unrepairable from an economical viewpoint.

(j) If there is a continuous flow of bubbles from the air release valve, replace the valve.

(k) Remove the excess air in the insulation chamber of a boot to be repaired by opening the air release valve for a few seconds.

(1) Boots manufactured in 1962 and after have a manually-operated screw type valve (Schraeder No. 9917). To inflate these boots, open the valve slightly and insert the end of the air hose over the valve until desired pressure is obtained. Then close the valve.

f. Routine Repair. After the boot has passed the tests successfully, make repairs as follows:

(1) Cuts, Holes, Tears and Punctures. Refer to paragraph 9-9c for repair procedures.

(2) Leaky Air Release Valve or Missing and Bent Air Release Valve, The insulated boot has either a self-closing or manually-operated air release valve, which provides for equalization of air pressure within the insulation chamber when the boot is worn at a high altitude. If pressure is felt, rotate the manually-operated valve stem counter-clockwise or pull the thong on the self-closing valve to release the air pressure in the boot insulation.

9-9. REPAIR AND MAINTENANCE OF INSULATED BOOTS–Continued

(a) Procedure for removal of damaged valves. With a sharp, narrow bladed knife, make a shallow cut through the round rubber cover or patch which covers the valve assembly. The cut should be made at a relatively flat angle to prevent cutting through the boot. Completely cut around the valve assembly just inside the printed instructions, and remove the valve assembly, being careful not damage the rubber of the boot. (Fig. 9-13.)

(b) Replacement of valve assembly. An air release valve with rubber protective buffer, equal to Schraeder valve No. 9917, should be used as the replacement valve.

1. Buff the rubber area on the boot where the old valve was removed with sandpaper or wire brush.

2. Spread an even coat of Schraeder No. 338 self-vulcanizing fluid on the buffed area. Allow to dry thoroughly (about 5 minutes).

3. Remove the polyethylene protective covering from the base of the new valve. Do not touch the tacky surfaces.

4. Center the new valve assembly over the buffed area and press firmly in place. Roll the edges of the valve assembly with a hand roller or stitcher.

(c) Repair of peeled, loose, or separated eyelet hinge stay.

1. Apply two coats of adhesive to the exposed surface of the hinge stay that has peeled, separated, or been broken.

2. Allow each coat of adhesive to dry until it becomes tacky (about 15 minutes).

3. Press together and clamp all surfaces; allow to dry for 1 hour.

9.Preparation for Reissue.

(1) After boots have been restored to a serviceable condition, replace worn laces. Single-lace the lace through the bottom eyelet, double-lace through the second eyelet, and single-lace through the remaining eyelets.

Attach an instruction tag to the lace of the right boot. Replacement laces are:

- Laces, footwear, nylon, flat, both ends tipped, black (NSN 8335-00-945-3969).
- Laces, footwear, nylon, flat, both ends tipped, white (NSN 8335-00-131-6538).

NOTE

Boots that have been prepared for reissue but are subject to temporary storage should have masking tape affixed over the valve to prevent entry of dirt, dust, and moisture, and to prevent the valve from rubbing against and abrading other boots.

9-9. REPAIR AND MAINTENANCE OF INSULATED BOOTS–Continued

(2) Softening Leather. If leather is dry and stiff, apply a light coat of neat's-foot oil (NSN 8030-00-597-61 05) with cloth or brush.

(3) The following are examples of the instruction tags for the boots:

(a) Black Insulated Boot

INSTRUCTION TAG

BOOTS, COLD WEATHER, INSULATED, RUBBER (BLACK) FOR WET-COLD USE

TYPE 1, CLASS 1, RIGID SOLE
TYPE 1, CLASS 2, FLEXIBLE SOLE AND WITHOUT VALVE

h. Facts about the insulated boot.

(1) These boots have been designed to protect your feet from cold injury and frost bite in areas where moisture and cold are critical factors, and where the mean monthly temperature ranges between 14°F and 68°F. The boot should not be worn where temperatures fall below – 20%

(2) The part of the boot that keeps the foot warm consists of layers of wool and felt that are sealed between the rubber inner and outer layers of the boot so that no water can get into the insulation areas.

(3) Marching, running, or heavy work for long periods will cause the feet to sweat, However, this moisture cannot damage the insulation because of the water-proof rubber lining inside the boot. The feet, even if damp, will stay warm, After a few days, your feet become used to this feeling. If these boots are worn continuously, the skin appears wrinkled and white as if it had been soaked in water. Drying the feet and putting on dry clean socks will cause this condition to disappear. If ice water spills into the boot, it warms to body temperature rapidly.

(4) FOLLOW THESE INSTRUCTIONS: Wear with one pair of Socks, Wool, Cushion Sole! Fold the top of the sock over top of boot to prevent slipping and wrinkling. Field trousers are to be worn outside the boots.

(5) SIZES: Boots are supplied in whole sizes. Widths are Extra Narrow, Narrow, Regular, Wide, Extra Wide. Try on the same size insulated boots as your leather boot. If you wear a half size in leather boots, try on the next larger or smaller size for proper fit. MAKE SURE THAT INSULATED BOOTS FIT PROPERLY. THEY HAVE A "SOFT" FIT. Be sure yours are large enough. Fit snug, but not tight. The boot is double laced through the second eyelets. Loosen laces and draw boot onto foot, seating the back of the heel firmly into the boot. Pull laces right about the second eyelet firmly to anchor the boot to the foot. Lace rest of boot comfortably. Fold or tuck fullness of gusset rearward on outerside of leg, per instructions imprinted on the boot. When doffing boot, loosen laces above second eyelet, then complete by loosening laces directly below second eyelet.

9-9. REPAIR AND MAINTENANCE OF INSULATED BOOTS–Continued

(6) Change socks at least once daily.

(7) If your feet begin to get cold, button up all your garments and exercise the entire body by swinging the arms, stamping the feet, and rapid movement of the toes.

(8) Wash the inside of boots with soapy water once a month.

(9) Boots should be inspected after each use for holes, cuts and punctures as the insulation can become wet if the boot is accidentally punctured. Repair all outside and inside punctures immediately to prevent moisture from wetting the sealed insulation, using the Emergency Individual Repair Patch Kit for Insulated Boots. If this kit is not available, temporary repairs can be made by patching with rubber or friction tape, pressure sensitive adhesive cellophane tape or even chewing gum. Damaged boots should be turned in for repair or for new boots.

(10) The shelf on the heel holds a ski or snowshoe binding in place.

(11) For type I class 1, the air release valve on the outside of the boot equalizes air pressure at different altitudes. To reduce boot swelling and foot discomfort when the boot is worn in unpressurized aircraft or at high altitudes, open the valve allowing pressure to escape. Back at lower altitudes, close again. Be sure to keep closed, except while airborne, to eliminate moisture penetration, DO NOT TAMPER WITH AIR VALVE. USE ONLY WHEN NEEDED! For type I, class 2, no valves are required.

(12) Do not paint the inside of the boot for identification purposes or polish the boots with shoe polish as this will result in deterioration of the rubber.

(13) Cleaning: Sprinkle lightly with general purpose scouring powder or similar cleaning powder. Wet a soap impregnated steel wool pad and rub lightly. Rinse with water.

(14) Trench foot and frostbite are serious cold injuries which can cause painful and permanent disability. These injuries can be prevented by proper care of your feet. No boot will keep your feet from freezing if in sub-zero weather you remain motionless for several hours. Wear the insulated boot properly and DO NOT BECOME A COLD WEATHER CASUALTY.

9-9. REPAIR AND MAINTENANCEOF INSULATED BOOTS—Continued

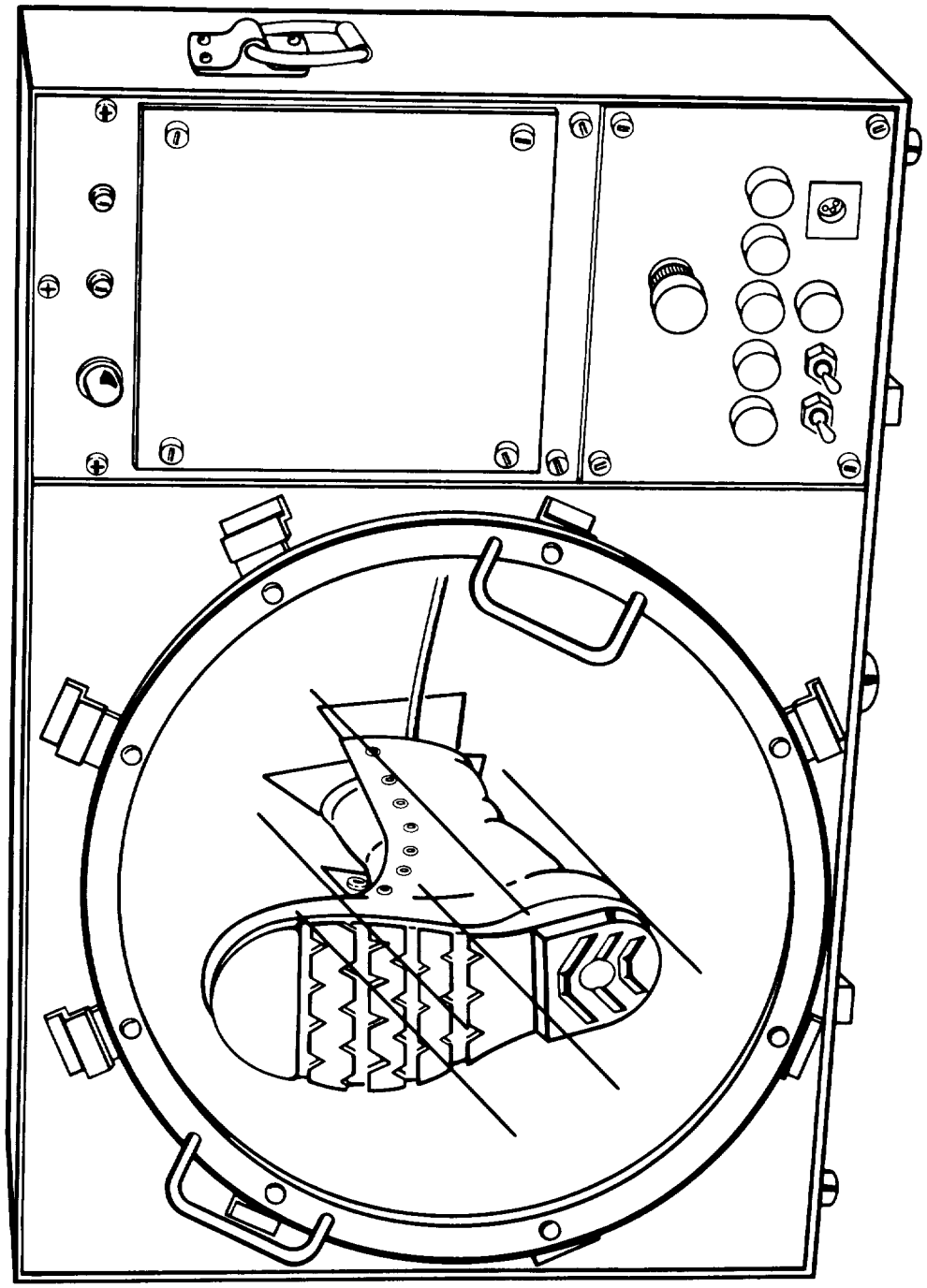


Figure 9-11. Test Set, Insulated Boot, AN/GSM-83 for Determining the Presence of Moisture Within the Insulation Area of an Insulated Boot.

9-9. REPAIR AND MAINTENANCE OF INSULATED BOOTS—Continued

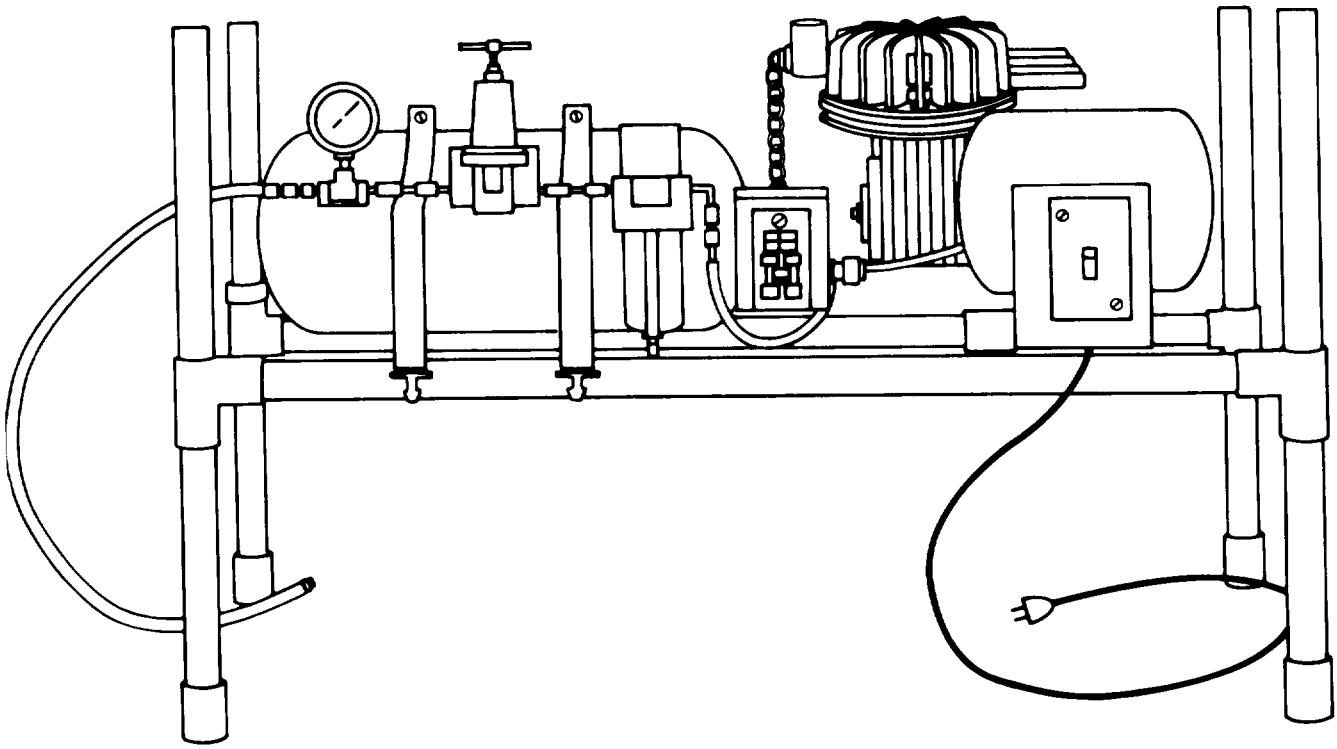


Figure 9-12. Insulated Boot Leak Tester Unit for Determining the Presence of an Air Leak in an Insulated Boot.

9-9. REPAIR AND MAINTENANCE OF INSULATED BOOTS - Continued

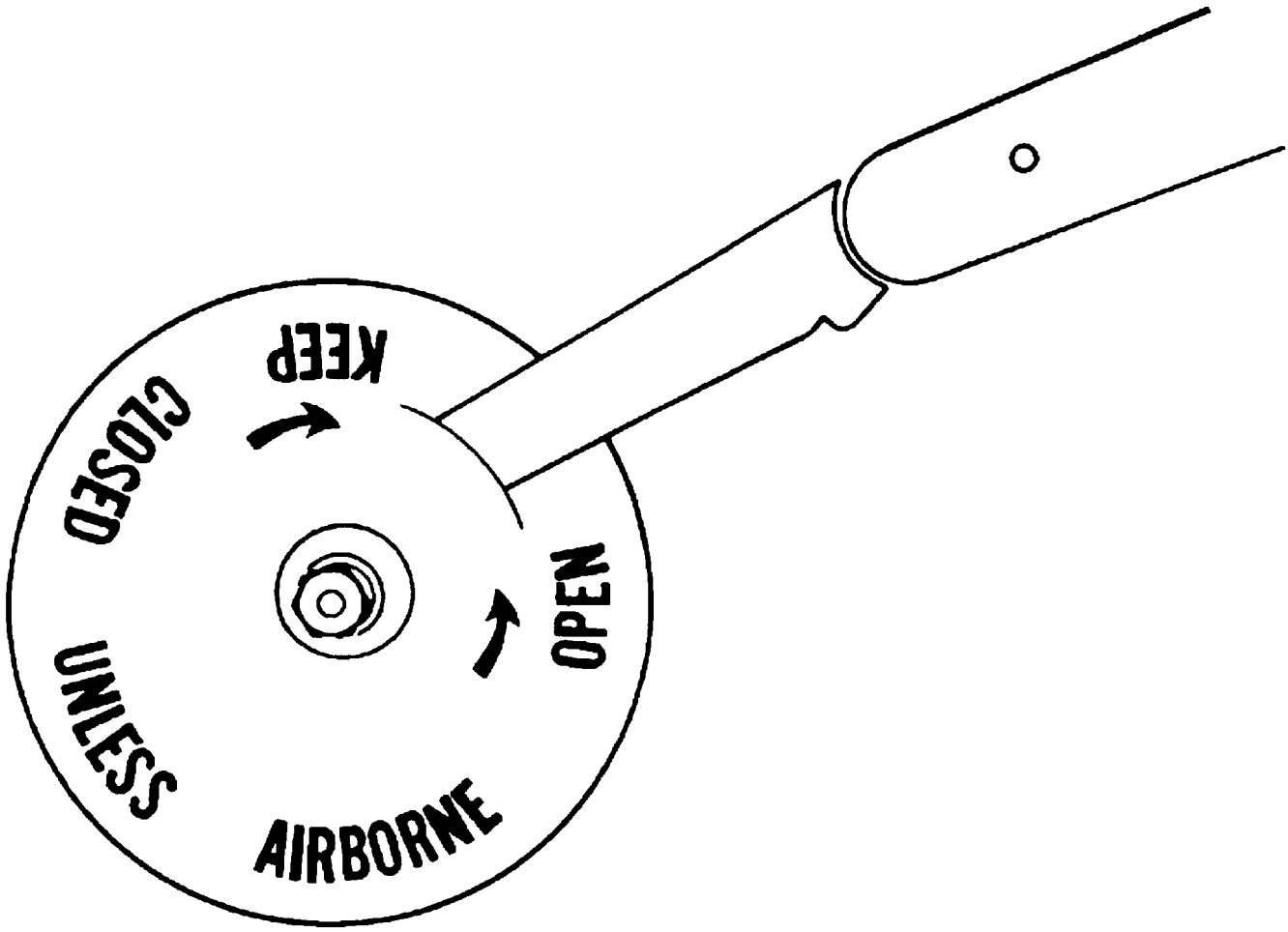


Figure 9-13. Cutting the Valve Assembly.

Section III. MATERIALS

(1) CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
		SKIS	
PAO		Silvretta Alpine Touring Binding	PR
PAO	8465-01-016-4207	Kit, Ski Repair Consisting of:	
		Scraper, Ski Repair	EA
		File, Hand	EA
	5110-00-725-1095	Gimlet	EA
	5110-00-293-3410	Push Drill	EA
	5120-00-223-7396	Pliers, Slip Joint	EA
	5120-00-596-8502	Screwdriver, Flat Tip	EA
		Screws, Tapping-FF-S-107; Type A, Cadmium Plated, Steel, #8 x 3/8 Inch Long, Slotted, Pan Head; #7x 5/8 Inch Long, Slotted, Round Head; #12x 5/8 Inch Long, Slotted, Flat Head	
	8465-00-240-2963	Laces, Ski Repair	PR
	8465-00-965-4823	Case, Ski Repair Kit	EA
	9505-00-288-6400	Wire, Steel, Carbon	CL
PAO		Leather Dressing, Mildew-preventive Paranitrophenol, Liquid form, Fed-O-L-1 64a, amend 1,1 pt can, type 1	PT
MDO		Emergency Thong: made from NSN: 4020-00-236-1801, two pieces cut 55 inches long	AR
PAO	7930-00-170-5467	Soap, Saddle, Paste Form 1 lb can Fed P-S 609	LB
PAO		Adhesive, Room Temperature and Intermediate Temperature Setting Resin (Phenol Resoranol and Melamine base) MIL-397B	
PAO	8010-00-160-5799	Remover, Paint and Varnish; Organic Solvent Non-flammable, Liquid 1 qt can, type III, class A Spec. TT-R-251	QT
PAO		Sealer type II Alkyd-resin Type, MIL-S-135188	
PAO	8010-00-160-5851	Varnish, Oleoresinous Base; 100%, Kauri Reduction; 8 hr max., air dry had time C to H Gardner-Holdt units viscosity; 1 qt can, Fed TT-V-121	Can
PAO		Aluminum part will be obtained as a separate paste or powder conforming to Specifications TT-A-468a(11) and a separate varnish (vehicle) conforming to Spec TT-V-8lb, or may be obtained as ready mixed aluminum paint conforming to the material requirements of the above two specifications.	
		Wax, Ski, MIL-W-1510, 2 oz. tube	
PAO	9160-00-903-3999	Blue-Dry Snow	Tube

Section III. MATERIALS - Continued

(1) SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
PAO	9160-00-903-8339	Orange-Wet and Corn Snow	Tube
PAO	9160-00-261-7462	Red-Speed	Tube
PAO		Polyethylene Repair Candle (Ski, Type II), Color : Clear	EA
		Epoxy Kit, U-ounce, P/N 3535 (Ski, Type II)	Kit
PAO	5350-00-192-5049	Emery Cloth, 120 Grit	Package
PAO	8465-00-753-5962	Snow Ring, P/N MIL-C-41806 (CAGEC 81349)	EA
		BOOT, COLD WEATHER	
PAO	8335-00-945-3969	Laces, Footwear, Nylon, Flat, Both Ends Tipped, Black V-L-61	PR
PAO	8335-00-131-6538	Laces, Footwear, Nylon, Flat, Both Ends Tipped, White, V-L-61	PR
PAF	6685-00-868-8326	Test Set, Insulated, Boot, AN/GSM-83	EA
PAF	3520-00-752-8472	Leak Tester, Insulated Boot	EA
		Valve, Screw-type, Manually-operated, Schraeder No. 9917	EA
		Self-vulcanizing fluid, Schraeder No. 338	EA
		Purchase locally from: Schraeder Automotive Products Dwision of Scovill Dickson, TN 37055	

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CHAPTER 10

MAINTENANCE OF ICE AND MOUNTAIN CLIMBING EQUIPMENT

Section I. INTRODUCTION

10-1. SCOPE

This chapter provides instructions covering the materials, procedures, and standards for classification and repair of ice and mountain climbing equipment.

10-2. COMMODITY SPECIFICATION

ITEM	SPECIFICATION
Creepers, ice; electroplated with 3 in. NSN 8465-00-240-2953	MIL-C-1476F
Hammer, Hand, Piton; Mountain; 9 oz. Head NSN 5120-00-255-7560	MIL-H-1431
Pitons, Mountain, Steel	MIL-P-1474J
Snap, Link Mountain, Piton; Steel; Type I, NSN 8465-00-360-0228	MIL-S-1478E

10-3. TECHNICAL AND TRAINING PUBUCATIONS

NUMBER	TITLE
FM 31-70	Basic Cold Weather Manual
TM 10-270	General Repair of Quartermaster Items of General Equipment
TC 80-6-1	Military Mountaineering

10-4. IDENTIFICATION AND DESCRIPTION

a. Axe, Ice, Mountain. Locally Procured (Figure 10-1). The axe consists of a head and tines fabricated of chrome-molybdenum or tool steel with a hickory handle and nylon wrist strap. The handle is fitted between the tines and extends into the head without penetrating it. A spike is held in the end of the handle by a ferrule and rivet. The nylon wrist strap is fastened to the handle by a sliding ring. The motion of the ring is limited by a stop in the handle.

b. Hammer, Hand, Piton. M IL-H1431, NSN 5120-00-255-7560. The piton hammer (Figure 10-1) consists of a 9 oz. head fabricated of steel with a hickory handle and leather wrist thong. The handle, which extends through the hammer bed, is tightly wedged in place and further secured by metal retaining strips which extend through the hammer eye and along the handle. The wrist thong is laced through a hde in the handle. See Figure 10-1.

c. Piton, Mountain; Steel, MIL-P-1474D.

NSN	TERRAIN USE	DESIGN
8465-00-240-2971	Rock	Horizontal
8465-00-240-2972	Rock	Short Vertical
8465-00-240-2973	Rook	Water
8465-00-240-2974	Ice	Tubular
8465-00-240-2975	Rock	Angle

The piton (figure 10-1) is fabricated of steel; consisting of the piton body, collar, and shackle, with or without ring. It is a metal spike which is driven into ice or cracks in rocks as an aid in mountain climbing. There are five distinct types of pitons. See Figure 10-1.

d. Snap Link Mountain, Piton; NSN 8465-00-360-0228. The snap link (Figure 10-1) is fabricated of alloy steel; consisting of a hook keeper, and pressure pin. It is an oval shaped metal ring with a hinged gate to permit fastening to a rope or piton. See Figure 10-1.

e. Crampons, Mountain. The crampons (Figure 10-2) are constructed of an alloy steel, with ten (10) spikes on the underside, and with neoprene straps for attachment to boots. The crampons are used to provide traction while traversing ice fields, glaciers, and crusted snow.

f. Creeper, Ice. MIL-C-l 476A, NSN 8465-00-240-2953. Constructed of steel with spikes on the underside and is provided with web straps for attaching to shoes or boots. It is primarily used to prevent slipping when walking on ice or hardpacked snow. For further identification see Figure 10-3.

10-4, IDENTIFICATION AND DESCRIPTION–Continued

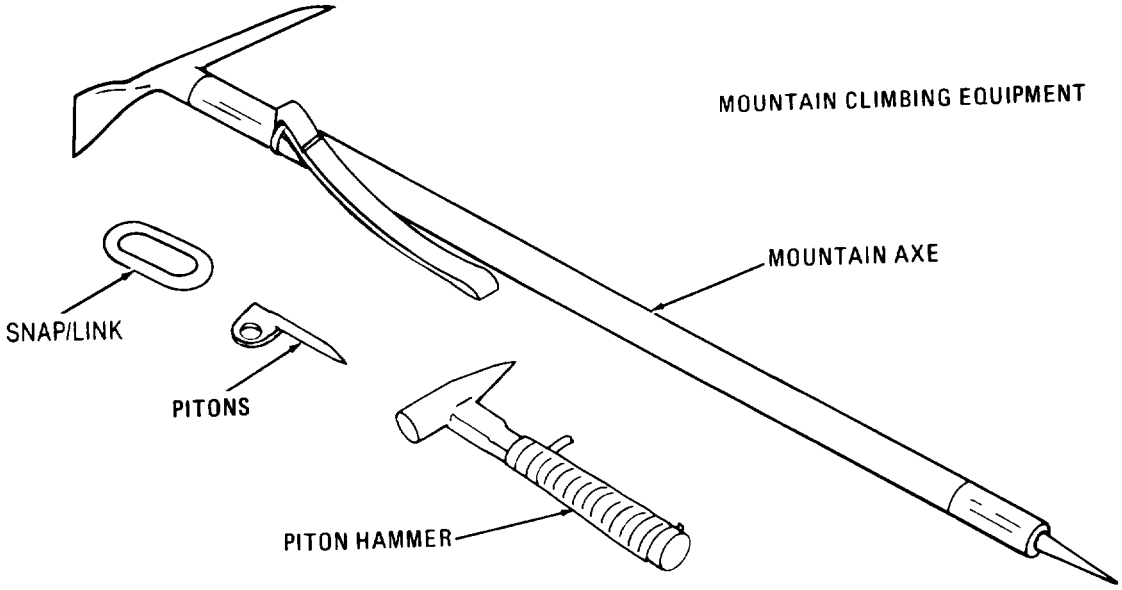

Figure 10-1. Mountain Climbing Equipment.

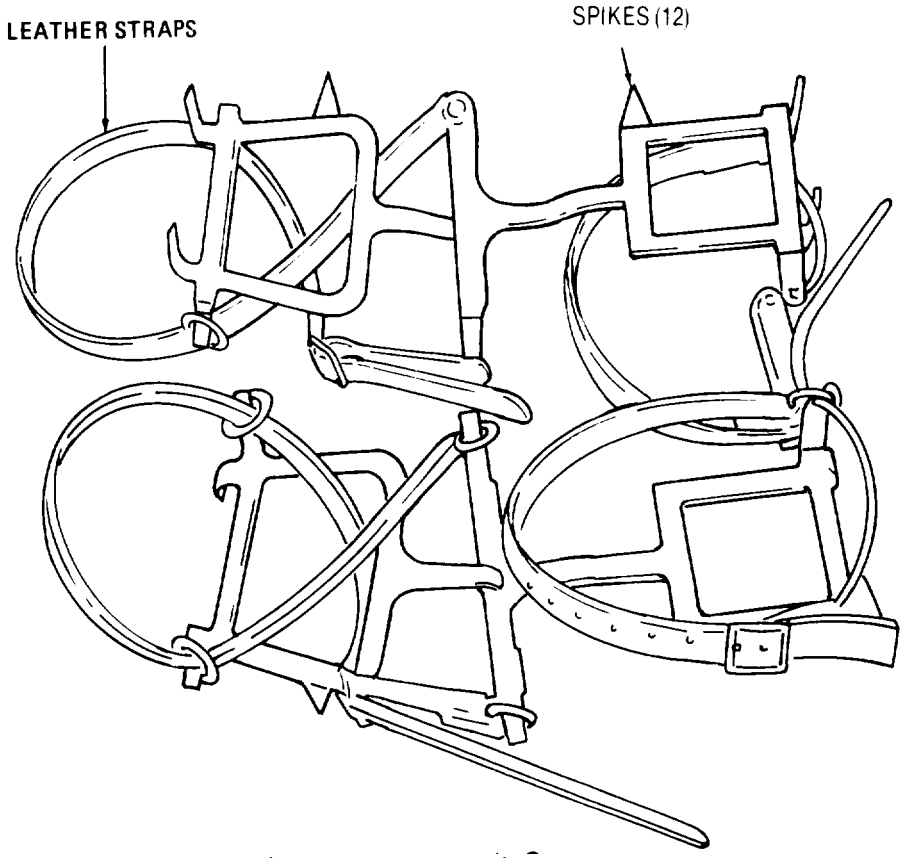

Figure 10-2. Mountain Crampons.

10-4. IDENTIFICATION AND DESCRIPTION–Continued

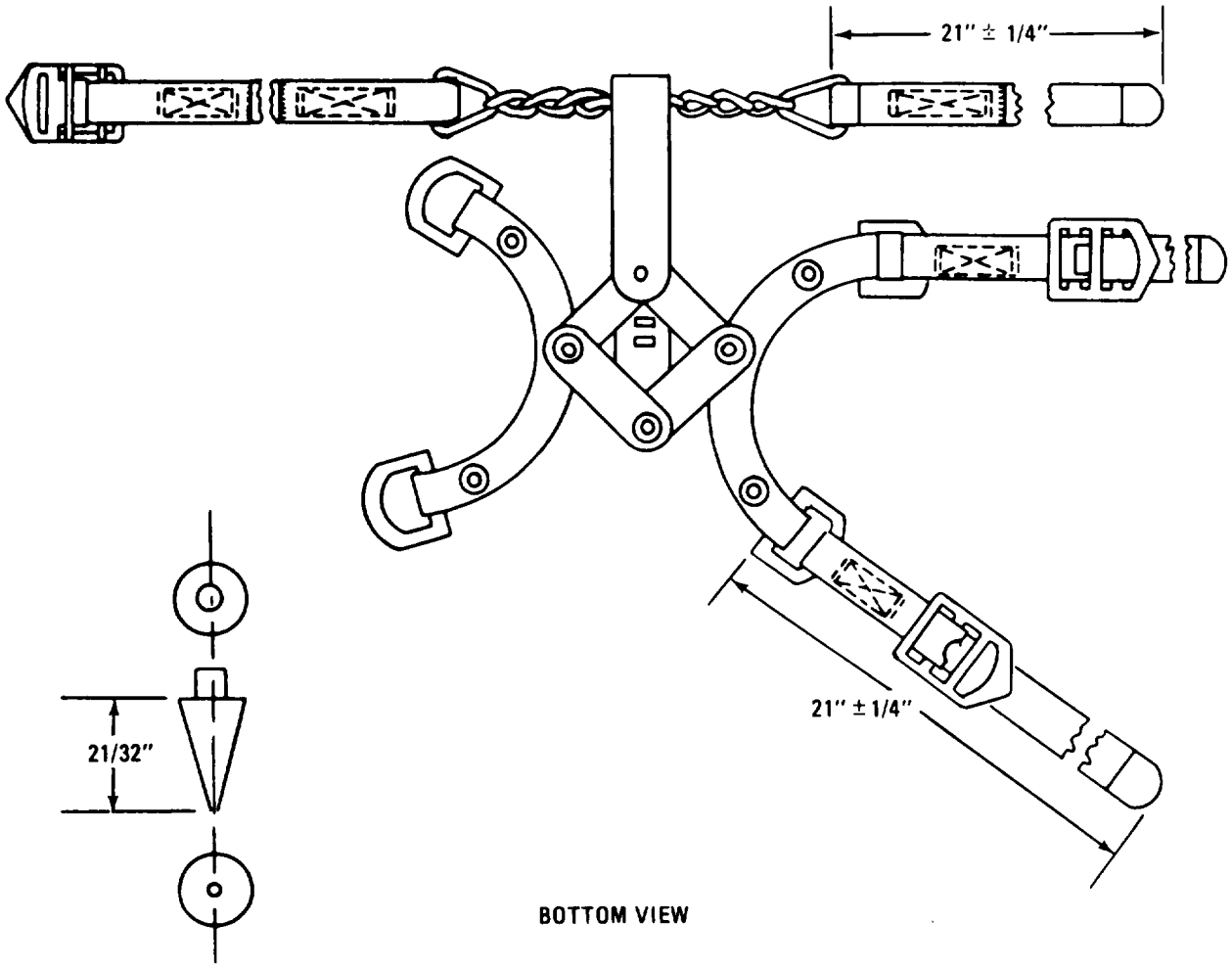

Figure 10-3. Steel Ice Creepers.

Section II. REPAIR PROCEDURES

10-5. GENERAL

Materials used in repair of ice and mountain climbing equipment will be serviceable materials recovered from similar salvaged items.

10-6. REPAIRS

a. Organizational Maintenance. Sharpen points on crampons and creepers.

b. Direct Support Maintenance. Buckles, straps, and rivets will be replaced at Direct Support level.

10-7. LABELS

If stock numbers or size designation is in such a condition that it is apparent that it will not retain legibility when subject to wear after re-issue, then item in question must be renumbered.

10-8. WORKMANSHIP

Repair operations will be performed by personnel skilled in the particular trade applicable to their duties in the repair of subject items. The metal components will be brushed, sanded or ground free of burrs, edges, deep nicks, or irregularities of the striking edges or face. The handles and shafts will be finished relatively smooth without breaks, splits or other defects which may affect serviceability of the item. Leather thongs and straps will be properly constructed and attached and present a satisfactory and serviceable appearance. Hardware that is slightly corroded or rusty will be cleaned and finished without defacing the end item. The finished item will be complete, thoroughly clean, and free from all defects which may affect the serviceability or general appearance.

Section III. DELETED

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CHAPTER 11

MAINTENANCE OF PACKBOARD, PLYWOOD

Section I. INTRODUCTION

11-1. SCOPE

This chapter prescribes the procedures and instructions for the maintenance and repair of the plywood packboard and its components.

11-2. COMMODITY SPECIFICATIONS

a. Items.

ITEM	SPECIFICATION
Packboard, Plywood, Packboard Back Canvas	MIL-P-10941
Packboard, Cargo Attachment	MIL-S-I812
Pad, Shoulder, Packboard	MIL-P-1814
Strap, Quick-Release Packboard	MIL-S-10055

b. Components.

ITEM	SPECIFICATION
Cord, Cotton, Green, Water and Mildew Resistant Treated	T-C-571
Cloth, Cotton, Duck, Olive Drab, Army Shade 7, Water and Mildew Resistant, Water Repellent	CCC-D-950
Enamel, Olive Drab, Semigloss, Class A	TT-E-529
Grommet, Metallic, Rolled Rim with Spur Washer	MIL-G-16491
Stiffener, Cover, Steel Clip, Rifle Pin, Steel Rivet Truss Head, Steel Hook Lashing, Steel, Enameled Pin, Rifle, Wire, Spring Steel Rivets, Solid Trunk, Copper	MIL-P-10941
Buckles, Brass, Black and Dull Black Chemical Finish	MIL-B-543
Chip, End, Brass, Ball Type	MIL-C-496
Thread, Polyester	MIL-T-40040
Webbing, Textile, Cotton Olive Drab, Army Shade 7, Mildew Resistant, Water Repellent	MIL-SPECW-530

11-3. TECHNICAL PUBLICATIONS

NUMBER	TITLE
FM 10-16	General Fabric Repair
FM 31-70	Basic Cold Weather Manual

11-4. IDENTIFICATION AND DESCRIPTION

a. Packboard, plywood, with cotton webbing shoulder strap pulled through openings in upper part of packboard frame and engaging billet straps at lower sides of frame, ends equipped with tongueless buckles, packboard equipped with canvas back laced to packboard with rope, load secured by means of rope, and lashing hooks, MIL-P-10941, Type II (QMC), 24 inch (61.0 cm) length, 15 1/8 inch (38.4 cm) width. NSN 8465-00-656-0663, Figures 11-1 and 11-2.

b. Packboard back canvas, 20 1/2 in. (52.1 cm) long, 11 3/4 in. (29.8 cm) wide, MIL-P-10941 (QMC), NSN 8465-00-255-8220, Figure 11-2.

c. Packboard, cargo attachment, steel, electro-zinc plated and olive drab enamel finished, 13 3/8 in. (34.0 cm) wide, 3 in. (7.62 cm) high, MIL-S-1812, NSN 8465-00-270-0415 (Figure 11-3). The packboard attachment is used to support heavy rigid loads, and is attached to the packboard by placing the flanges over lower edge of one of the openings in packboard frame.

d. Pad, shoulder, packboard, pressed felt padding with cotton drill cover, olive drab, Army shade 7, mildew resistant and water repellent treated, MIL-P-1814, length 11-3/4 inches (29.8 cm), width 3 inches (7.62 an), NSN 8465-00-244-0737.

11-4. IDENTIFICATION AND DESCRIPTION–Continued

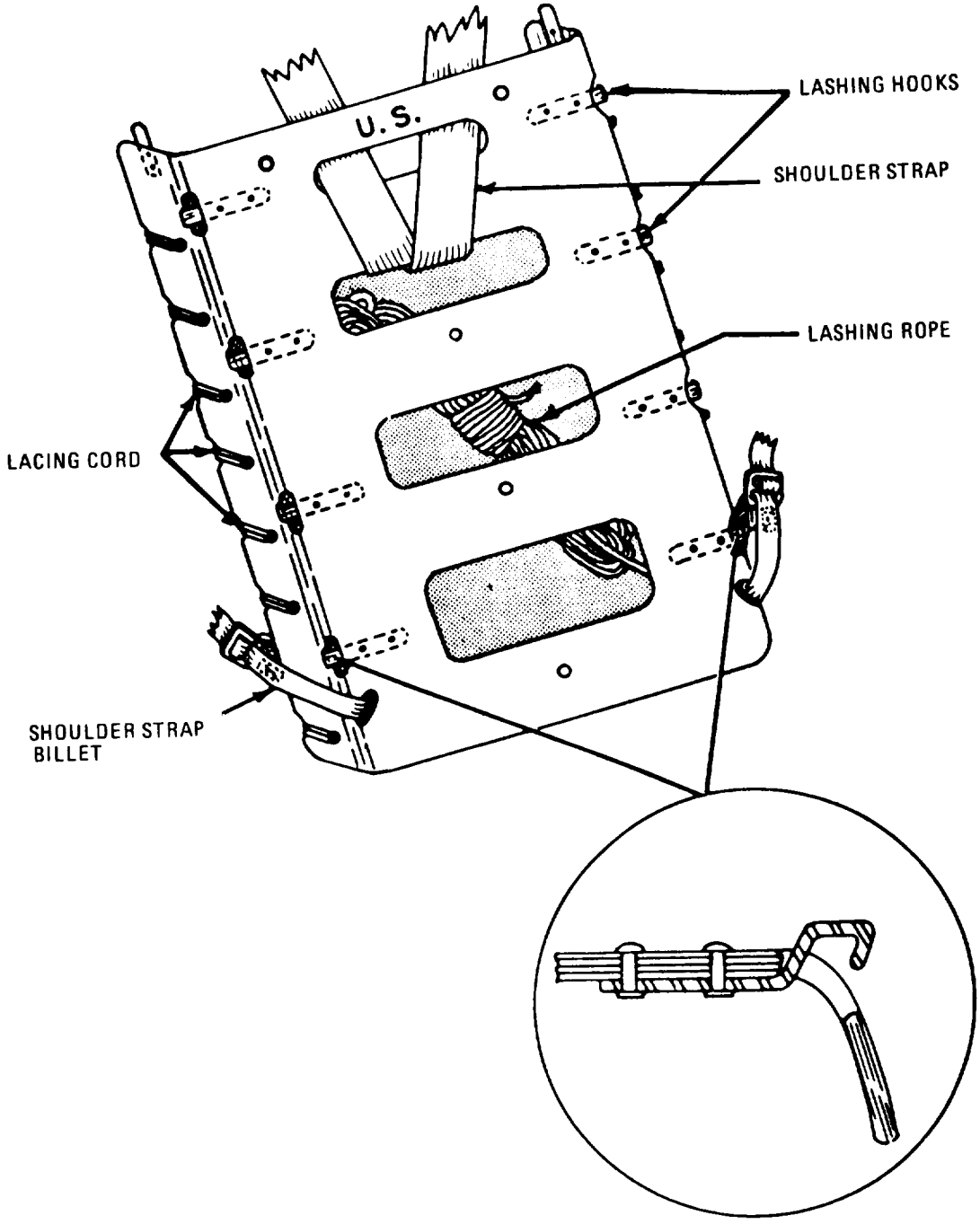

Figure 11-1. Packboard, plywood, outside view.

11-4. IDENTIFICATION AND DESCRIPTION–Continued

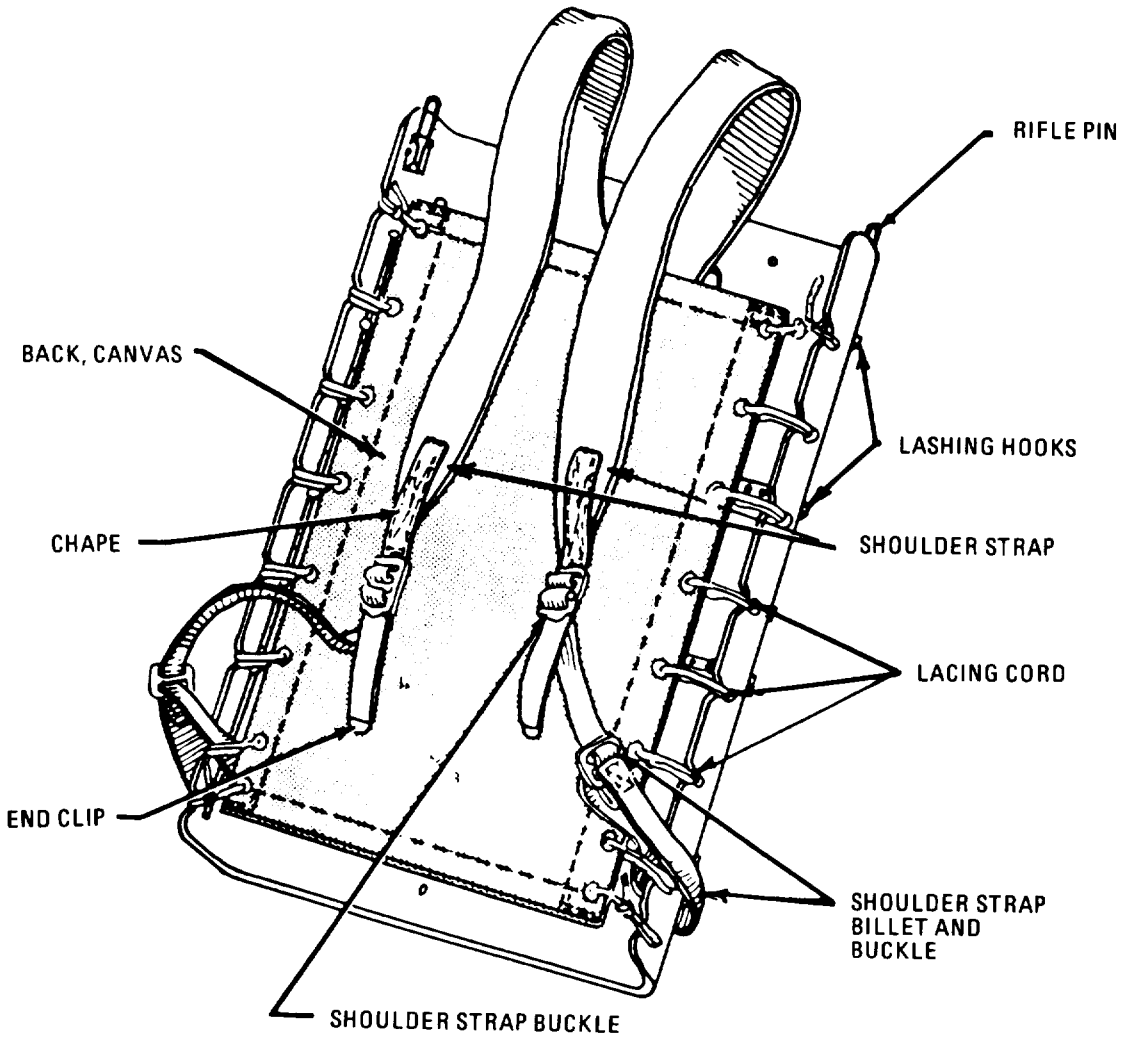

Figure 11-2. Packboard, plywood, inside view.

11-4. IDENTIFICATION AND DESCRIPTION–Continued

e. Strap, quick-release, packboard, cotton webbing, olive drab, mildew resistant and water repellent treated, 59 in. long, 1 in. wide, with steel electro-zinc plated and backed enamel finish buckle located one end with 3/8 in. (0.952 cm) wide, 12 in. (30,5 cm) long cotton webbing thong attached thereto, and a brass end clip located other end, MIL-S-10055 (QMC), NSN 8465-00-360-0233. The quick release strap is generally used in lieu of rope to lash loads to the packboard when it is necessary to pack and unload quickly. The load is placed on the packboard attachment, and the desired number of straps is inserted between the frame and canvas back and fastened around the load.

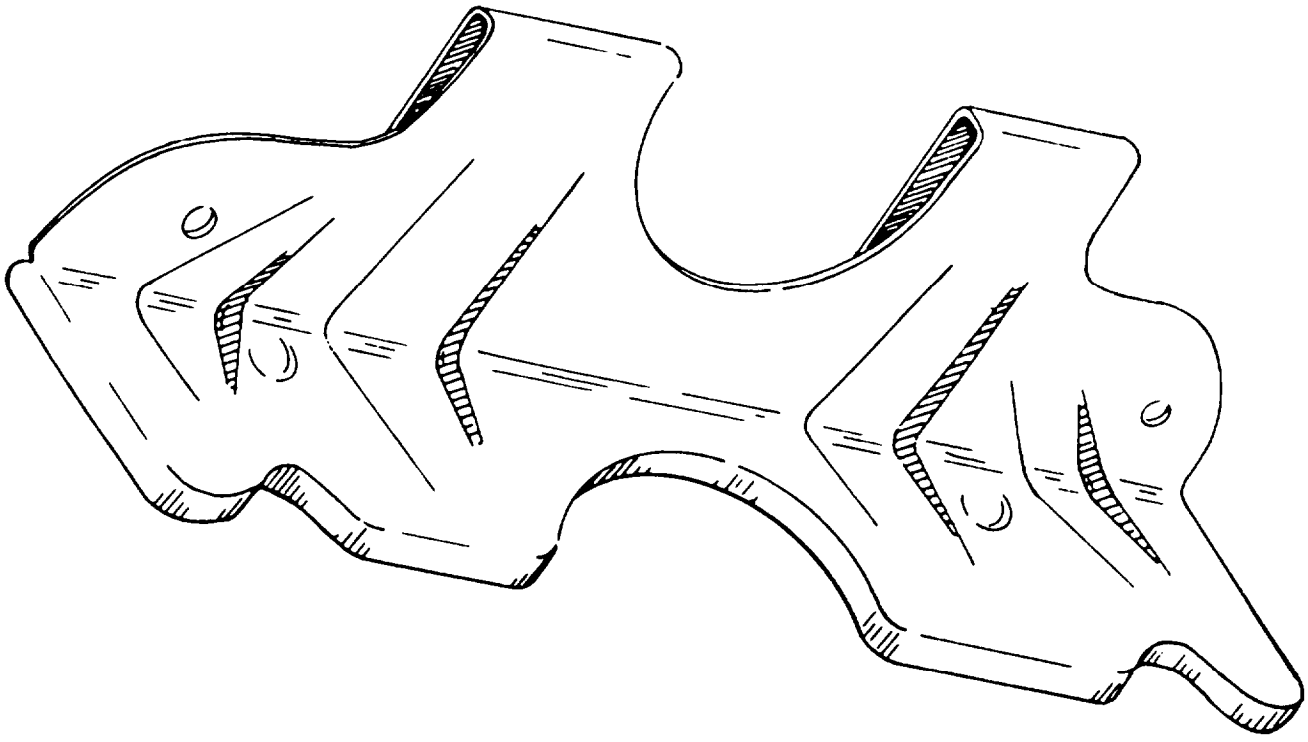

Figure 11-3. Packboard, cargo attachment.

Section II. REPAIR PROCEDURES

11-5. MATERIALS

Materials used in the repair of the plywood packboard and components will be serviceable materials recovered from similar salvaged items when authorized, or will be new materials as specified in Section III. When not available from stock, the materials may be purchased locally when they closely conform to the standard material.

11-6, REPAIR AND MAINTENANCE OF PLYWOOD PACKBOARD

a. Canvas Back.

(1) Service. Thoroughly clean the canvas back of mud or other foreign matter, using a brush, damp or dry cloth, or scrub with water and mild soap; rinse and dry.

(2) Inspection. Inspect the canvas back as follows:

(a) Inspect for rips, tears holes, cuts, broken, missing, or loose stitching, badly worn or deteriorated areas, and bent or missing wire stiffeners.

(b) Check to see that all grommets and lacing cords are present, in a serviceable condition, and properly utilized.

(3) Repair. Hand sew open seams and straighten bent wire stiffeners as appropriate. Repair minor rips and tears by hand sewing or with cement patches.

(a) Sewing. Use machine for all sewing. Resew loose, broken, or defective stitches, using stitch type 301 (Fed Std 751), seven to eight per inch, and size FF thread. Maintain proper thread tension to prevent loose stiches, and backstitch thread breaks not less than 1 inch (2.54 cm) at each break.

(b) Darning. Darn small holes or tears not exceeding 3/4 inch (1 .90 cm) in diameter or length. Use a circular darn for holes under 1/2 inch (1 .27 cm) in diameter and a zigzag darn for slits and tears. Use a reinforcing piece of like material on the underside of canvas back when hole is 1/2 to 3/4 inch (1 .90 cm) in diameter.

(c) Patching. Patch tears and rips exceeding 3/4 inch (1 .90cm) and up to 4 inches (10.20 cm) in length. Cut path of sufficient size to extend 1/2 inch (1.27 cm) beyond the area to be patched, allowing for 1/2 inch (1.27 cm) turnunder of raw edges. Draw torn edges together and fasten with a zigzag stitch. Turn under raw edges of patch, apply inverted patch to underside of canvas back, and sew 1/8 inch (0.318 cm) from the outer edges. If the area to be patched contains several small holes, cut away the damaged area after applying the inverted patch and fold edges under; sew 1/8 inch (0.318 cm) from edge of fold.

11-6. REPAIR AND MAINTENANCE OF PLYWOOD PACKBOARD–Continued

(d) Cement Patching. To apply cement patch, use cement furnished in tentage repair kit, NSN 8340-00-262-5767, and proceed as follows:

1. Place a board under the damaged area to provide a flat working surface.

2. Select a patch that overlaps the damage with a margin of at least three-fourths inch on all sides.

3. Center the patch over the damage, and while holding it in place, apply cement to it.

4. Apply cement over the edge of the patch to make a cement-guide circle on the canvas back.

5. Lift the patch and apply cement to the area inside the circle.

6. Allow the cement to dry to a gummy state and apply a second coat.

7. Press the cemented surfaces together while they are still wet.

8. Finish the repair by sealing the edge of the patch with the tip of the finger.

(4) Replace. Replace damaged canvas backs which have other than minor rips and tears or missing parts with serviceable ones.

b. Plywood Frame.

(1) Service. Brush or wash off mud and foreign matter using brush, damp or dry cloth, or scrub with water and mild soap; rinse and dry.

(2) Inspection. Inspect the plywood frame as follows:

(a) Inspect the frame for damage, splinters, rough areas, and areas of thin or missing paint.

(b) Check to see that rifle pin clips, rifle pins, rivets lashing hooks and lashing cord are present, in serviceable condition, and properly utilized.

(3) Repair. Repair the plywood frame as follows:

(a) Sand and touch up painted areas that are nicked, scuffed or badly worn.

(b) Replace rifle pin if missing, badly rusted or damaged.

(4) Replace. Replace items as listed below:

(a) Replace damaged or missing lashing hook with a serviceable item. Remove old rivets and hook, and rivet new hook in same location.

11-6. REPAIR AND MAINTENANCE OF PLYWOOD PACKBOARD– Continued

(b) Replace missing or defective lashing rope and lacing cords by fabricating new ones. Sew each end of replacement rope or cord a distance of 2 inches (5.08 cm) to prevent fraying, using overcast type 304 stitch (Fed Std 751), 14 to 16 stitches per inch (2.54 cm), and size E thread.

c. Shoulder Straps and Billets.

(1) Service. Brush webbing to remove dirt and dust. If excessively dirty, wash with water and mild soap; rinse and allow to dry thoroughly.

(2) Inspection. Inspect shoulder strap and billets as follows:

(a) Inspect the webbing for cleanliness, broken or missing stitching, cuts, rips, tears, signs of extreme wear, and other visible damage of any nature,

(b) Check to see that buckles, rivets, and end clips are present, in a serviceable condition, and properly utilized.

(3) Repair. Re-sew broken or loose stitching on webbing with size F thread in the same manner as the original construction.

(4) Replace. Replace worn, badly abraded, or damaged and missing webbing with serviceable webbing fabricated to design and dimensions of part being replaced. Detailed fabrication of strap construction and billet is covered in paragraphs 21 and 22 of FM 10-16.

d. Quick-Release Strap.

(1) Service. Remove mud and foreign matter with brush, damp or dry cloth, or scrub with water and mild soap; rinse and dry.

(2) Inspection. Inspect the quick-release strap as follows:

(a) Inspect the webbing for broken or missing stitching, cuts, rips, tears, signs of extreme wear, and other visible damage of any nature.

(b) Check to see that buckle (with thong) and end clip is present and serviceable.

(3) Repair. Sew loose or broken stitching which secures buckles.

(4) Replace. Replace worn or damaged strap as appropriate.

e. Shoulder Pads.

(1) Service. Brush or wash off mud and foreign matter. Use damp or dry cloth as appropriate.

(2) Inspection. Inspect stitching for loose, broken, or deteriorated threads. Insure that loops on shoulder pads are securely sewed to pad.

11-6. REPAIR AND MAINTENANCE OF PLYWOOD PACKBOARD - Continued

(3) Repair. Hand sew loose or damaged stitching and secure webbing loops which have become detached.

(4) Replace. If damaged to the extent that hand sewing cannot make a serviceable repair, replace with new or serviceable pads.

f. Cargo Attachment.

(1) Service. Clean off mud and foreign matter with brush, damp or dry cloth. Touch up paint on bare or badly worn surfaces.

(2) Inspection. Inspect for rust, bare or badly worn painted surfaces, and bent or damaged attachment.

(3) Replace. Replace badly rusted, damaged, or missing attachments as necessary.

Section III. MATERIALS

(1) SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
		CANVAS BACK	
PAOZZ	8465-00-255-8220	Packboard Back: Canvas 20 1/2 In. Long, 11 3/4 In. Wide, MIL-P-10941	EA
MFFZZ		Cord, Lacing, 76 In. Long (Cut From NSN 4020-00-233-6555, Cord, Cotton), See Bulk Material.	EA
PAFZZ	5325-00-641-1278	Grommet Metallic, Rolled Rim with Spur Washer, Type III, Class 3, Size No. O, SPEC MIL-G-16491.	EA
		PLYWOOD FRAME	
PAFZZ		Rivets: Truss Head, Steel 1/8 In. Dia. 1/2 In.	EA
MFFZZ		Cord: Lashing, 30 Ft. Long (Cut from NSN 4020-00-233-6556, Cord, Cotton), See Bulk Material.	EA
XBFZZ	8465-00-215-1998	Hook: Lashing, Steel, Enameled, MIL-P-10941	EA
XBFZZ	5340-00-825-4840	Pin: Rifle, Wire, Spring Steel, 0.1483 In. Dia.	EA

Section III. MATERIALS - Continued

(1) SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
		SHOULDER STRAP	
MFFZZ		Shoulder Strap: Cotton, 50 In. Long (Cut From NSN 8305-00-260-2546, Webbing, Textile), See Bulk Material.	EA
PAFZZ	5340-00-290-0970	Buckle: Brass, Black Chemical Finish, 1 1/32 Inch Width of Strap Accommodations, 1 5/8 Inch Overall Length, 1 7/32 Inch Overall Width, 100 Per Pkg. MIL-B-543, Type II, Style 1, Class 1.	EA
MFFZZ		Chape, Cotton (Cut From NSN 8305-00-260-2544, Webbing, Textile, w/o the Following Application: Buckle, 8 In. Long), See Bulk Material.	EA
PAFZZ	5320-00-972-5268	Rivet Solid Trunk Copper No. 9, w/Burr, 5/8 In. Long.	EA
PAFZZ	5320-00-972-5269	Rivet: Solid Trunk, Copper, No. 9 w/Burr, 9/16 In. Long	EA
		SHOULDER STRAP BILLETS	
MFFZZ		Shoulder Strap Billets: Cotton, 28 In. Long (Cut from NSN 8305-00-260-2544, Webbing, Textile), See Bulk Material.	EA
PAFZZ	5340-00-290-0969	Buckle: Brass, Dull Black Chemical Finish, 13/16 In. Width of Strap Accommodation, 57/64 In Overall Length, 1 5/16 In. Overall Width, 50 Per Pkg., MIL-B-543, Type 1, Style 2, Class 1.	EA
PAFZZ	5340-00-078-7029	Clip: End, Strap Brass, Ball Type, 1 In., SPEC MIL-C-496	EA
		BULK MATERIAL	
PAOZZ	8305-00-170-5854	Cloth: Cotton, Duck No. 6 Olive Drab, Army Shade 7, Water and Mildew Resistant, Water Repellent, 36 In. Wide, Type 1, Class B, SPEC CCC-D-950	YD
PAFZZ	4020-00-233-6555	Cord: Cotton, Green, Water and Mildew Resistant Treated, 1/8 In. Dia., Type 1, Class 2, Fed Spec T-C-571.	LB

Section III. MATERIALS - Continued

(1) SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF iSSUE
PAFZZ	4020-00-233-6556	Cord: Cotton, Green Color, Water and Mildew Resistant Treated, 3/16 In. Dia, Typa 1, Class 2, Fed Spec T-C-571.	LB
PCOZZ	8010-00-297-0586	Enamel: Oiive Drab, Semi-Gloss, Class A, Spec TT-E-529, Color No. X24087, Fed Std 595.	
PAFZZ	8310-00-988-1297	Thread: Polyester, Class 2, Size E, MIL-T-40040, Natural (24/4)	TU
PAFZZ	8310-00-823-6888	Thread: Polyester, Class 2, Size FF, MIL-T-40040, Natural (10/3 and 12/4).	TU
PAFZZ	8305-00-260-2544	Webbing: Textile, Cotton Olive Drab, Army Shade 7, Mildew Resistant, Water Repellent, 1 In. Wide, 475 Lb. Breaking Strength, Type llb, Ciass 4, MILSPEC WN-530.	YD
PAFZZ	8305-00-260-2546	Webbing: Textile, Cotton Olive Drab, Army Shade 7, Mildew Resistant, Water Repellent, 2 In. Wide, 925 Lb. Breaking Strength, Type llb, Class 4, MILSPEC W-530.	YD

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CHAPTER 12

MAINTENANCE OF PACK AND HARNESS ASSEMBLY, PARACHUTIST'S WEAPONS AND INDIVIDUAL EQUIPMENT: AND CASE, PARACHUTIST'S INDIVIDUAL WEAPONS

Section I. INTRODUCTION

12-1. SCOPE

This chapter prescribes the procedures and instructions for the maintenance and repair of the parachutist's weapons and individual equipment pack and harness assembly and the parachutist's individual weapons case.

12-2. TECHNICAL PUBLICATIONS

TM 5-725 . . . . Rigging
FM10-16 . . General Repair for Tents, Canvas, and Webbing.

12-3. IDENTIFICATION AND DESCRIPTION

a. Pack and Harness Assembly (NSN 8465-00-753-6549). The parachutist's weapons and individual equipment pack and harness assembly (Fig. 12-1) is a general purpose item used by the parachutist to carry designated combat equipment. The pack is made of cotton duck cloth, 1/4 inch (0.635 cm) thick felt, and cotton-nylon webbing. Adjustable carrying straps permit the container to be carried in the same manner as afield pack. When rigging for jumping, the pack is encased in the harness. The harness, made of cotton duck cloth and cotton-nylon webbing, is equipped with a release assembly. When packed the pack and harness assembly measure 12 inches (30.5 cm) by 12 inches (30.5 cm) by 36 inches (91.4 cm) and are adjustable to dimensions of 12 inches (30.5 cm) by 6 inches (15.2 cm) by 18 inches (45.7 cm). The assembly weighs 16½ pounds (7.49 Kg).

b. Case, Parachutist's, Individual Weapons, M-1950 (NSN 8465-00-261-4995). The parachutist's individual weapons case (Fig. 12-2) is used by the parachutist to carry individual or crew-served weapons. The weapons case is made of cotton duck cloth, M-inch (0.635 cm) thick felt, cotton tape, and cotton or cotton-nylon webbing. A quick-release snap fastener secures the case to the parachutist's harness, and two tapes which are tied to the case and to the parachutist keep the case from swaying when the parachute deploys. The case is 10 inches (25.4 cm) wide and is adjustable in length from 33 1/2 inches (85.1 cm) to 50½ inches (128 cm). It weighs 7 pounds 13 ounces (3.54 Kg).

12-3. IDENTIFICATION AND DESCRIPTION–Continued

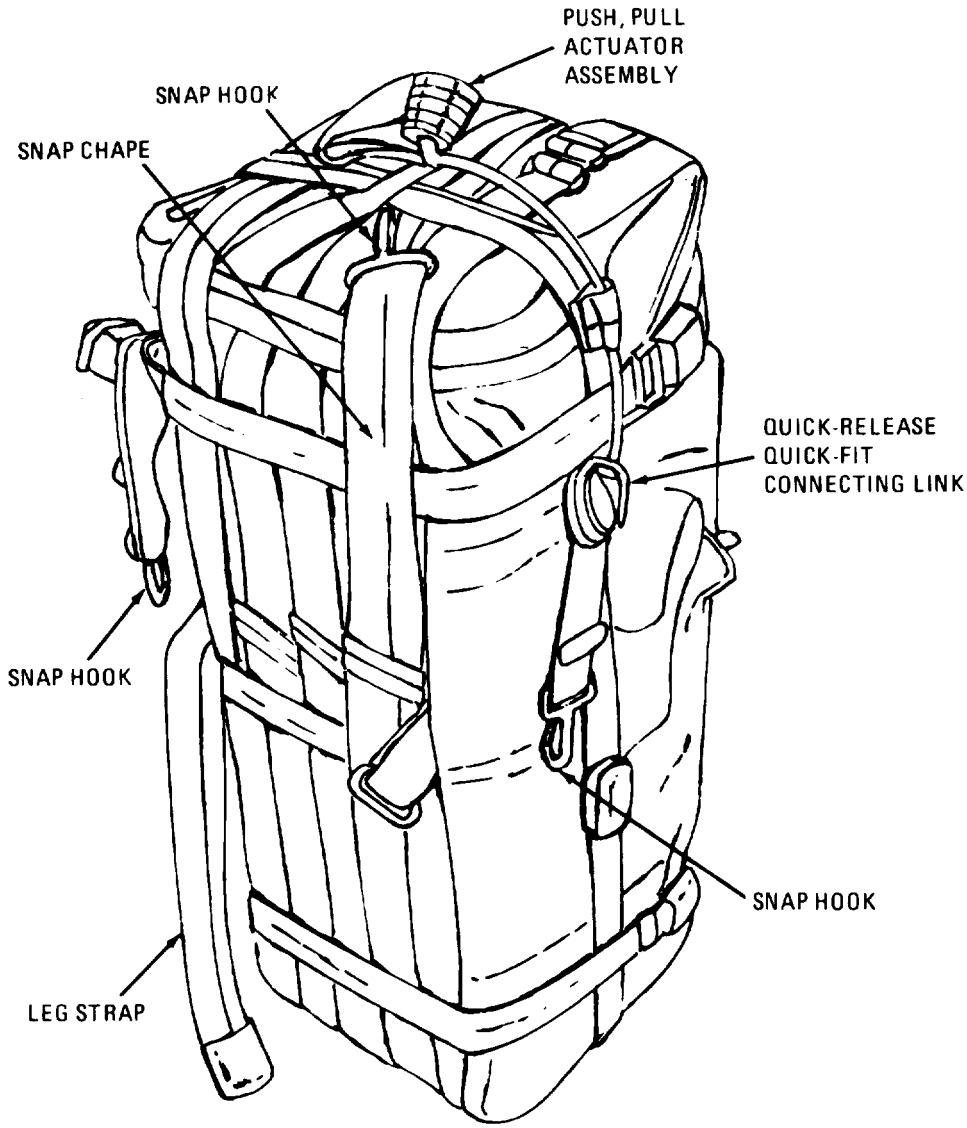


Figure 12-1. Parachutist's weapon and individual equipment pack and harness assembly.

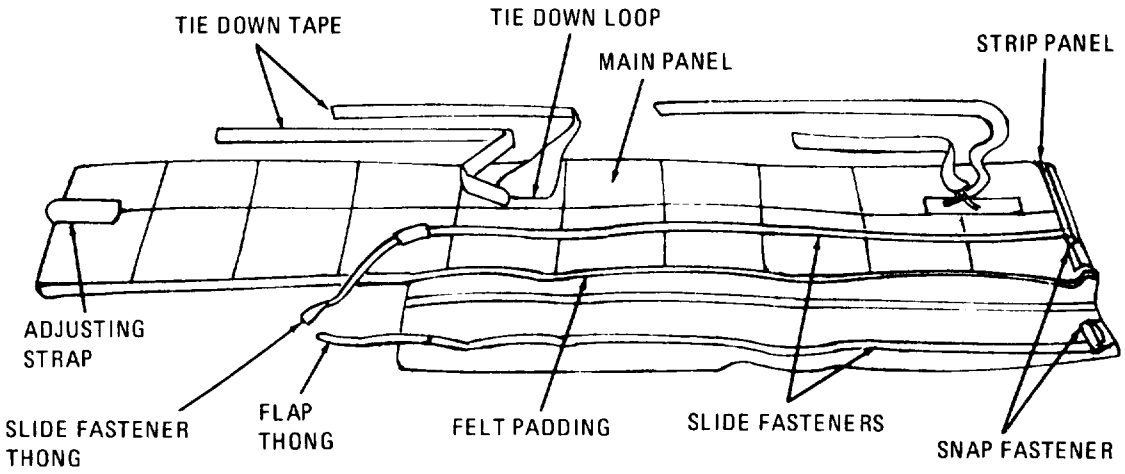


Figure 12-2. Parachutist's individual weapons case,

Section II. REPAIR PROCEDURES

12-4. MATERIALS

a. General. Materials used in the repair of the parachutist's weapons and individual equipment pack and harness assembly and the parachutist's individual weapons case will be serviceable materials recovered from similar salvaged items when authorized, or will be new materials as specified in Section Ill.

b. New Materials. New materials will be requisitioned from stock under the stock numbers and/or item description as listed in Section Ill and will conform to the appropriate specifications. When not available from stock, materials may be purchased locally that conform as closely as possible to the standard material,

12-5. GENERAL REPAIR

a. Repair Limitations. Only those maintenance functions prescribed and amplified in succeeding paragraphs and sections are authorized. Cost allowances for repairs and man-hour limitations are specified in AR 750-1. Other repair limitations are specified under pertinent repair procedures in this manual.

12-5. GENERAL REPAIR–Continued

b. Searing and Dipping Tape and Webbing.

(1) Searing. Ends of nylon webbing may be seared by pressing the ends lightly against a hot surface until the nylon has melted sufficiently to prevent fraying. Care must be exercised to avoid forming a sharp edge or creating a lumped effect by oversearing.

(2) Dipping. Ends of all cotton or nylon tape and webbing maybe dipped in a melted mixture of 50 percent beeswax and 50 percent paraffin. Dip ends to a depth of 1/2-inch (1.27 cm) unless otherwise specified. Make certain that paraffin-beeswax mixture is fully melted before dipping tape or webbing.

12-6. REPAIR AND MAINTENANCE OF PACK (NSN 8465-00-753-6547)

a. General.

(1) The hexagonal-shaped pack (Fig. 12-3) consists of a Type I cotton duck body, which is lined with 1/4-inch (0.635 cm) felt, and a network of Type Vlll cotton-nylon webbing suspender and securing straps. The straps are reinforced and are equipped with quick-fit reversible adapters of 750-pound (340.5 Kg) breaking strength. The pack is folded at the top and each side is held to the top by a rivet. When the container body is fully extended, its maximum dimensions are 53 inches by 75 inches (135 by 190 cm).

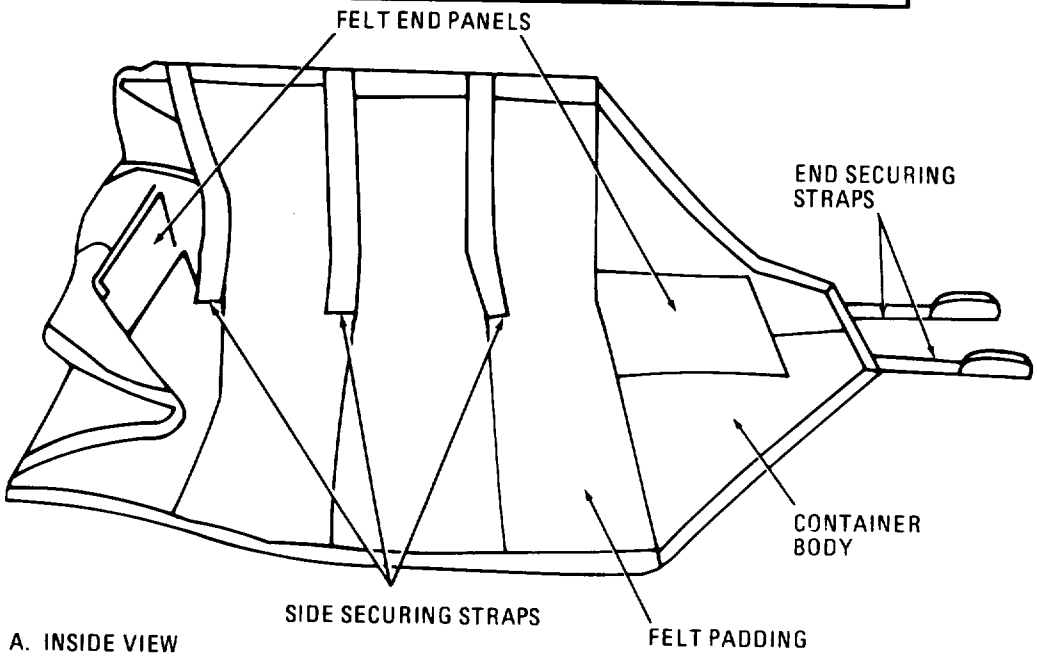
(2) Prior to repair, each item will be inspected to determine the amount of repair necessary. Repairs will be made as fully as skills, facilities, funds, and local conditions permit.

b. Repairing Duck and Felt Fabrics.

(1) General. The cotton duck fabric of the pack body maybe restitched, darned, and patched. The felt lining may be restitched and plugged.

(2) Restitching. Restitch loose or broken stitching on body of Container directly over old stitching, using Model 111W155 sewing machine or equivalent with size FF nylon thread. Make 7 to 9 stitches per inch (2.54 cm), and Iockstitch at least 1/2 inch (1.27 cm).

12-6. REPAIR AND MAINTENANCE OF PACK (NSN 8465-00-753-6547)—Continued



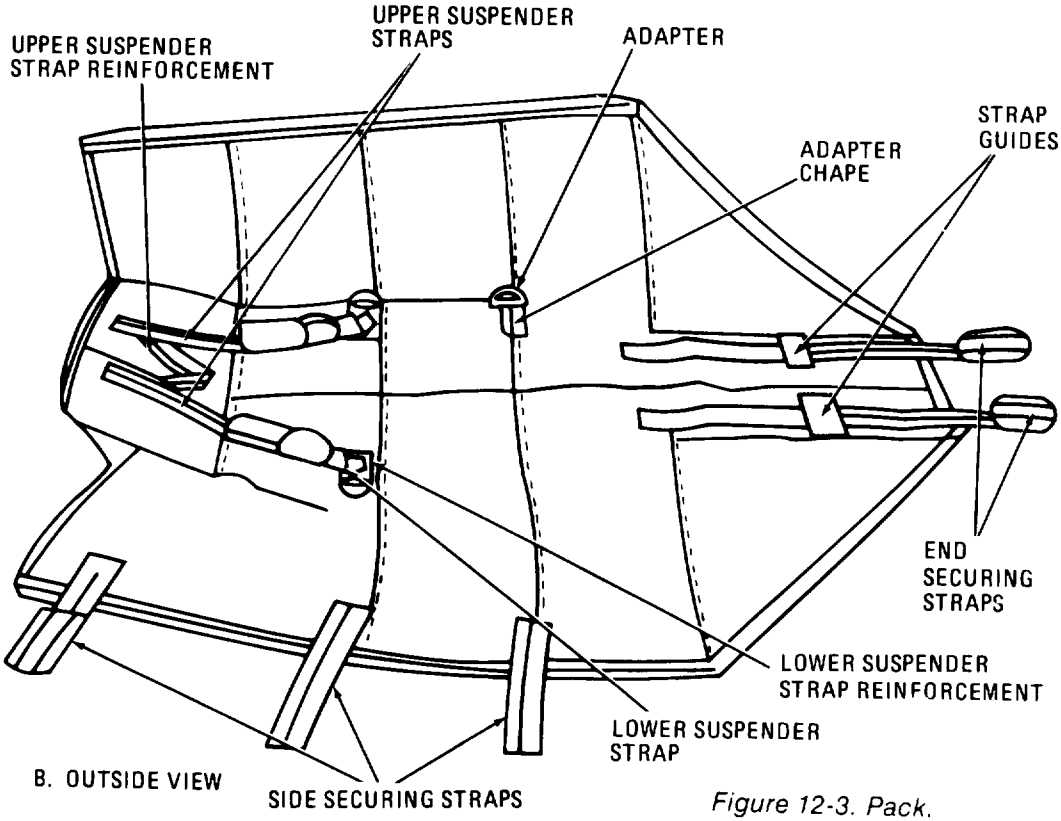


Figure 12-3. Pack.

12-6. REPAIR AND MAINTENANCE OF PACK (NSN 8465-00-753-6547) –Continued

(3) Darning. There is no limit to darns if it does not weaken or reduce the original strength of the cloth more than 10 percent. Darn a hole or tear that does not exceed 1 inch (2.54 cm) in length or diameter using Model 47W70 darning machine or equivalent with ticket No. E nylon thread. If damage is in the lined area of the container body and only the cotton duck is damaged, darn through duck and felt. If the felt is also damaged, remove damaged area before darning duck fabric. Then plug felt as in (5) below.

(4) Patching. There is no limit to the number of times the container body maybe patched. Patch a hole or tear that exceeds 1 inch (2.54 cm) in length or diameter, following procedures in (a) or (b) below. Use type 1 cotton duck cloth for patching outside of container body, and 1/4-inch (0.635 cm) thick felt for plugging lining. Use Model 111W155 sewing machine or equivalent with size FF nylon thread, and sew 7 to 9 stitches per inch (2.54 cm).

(a) Patching lined portion. If felt is not damaged, cut cotton duck patch 2 inches (5.08 cm) longer and 2 inches (5.08 cm) wider than damaged area. Turn under edges of patch 1/2 inch (1.27 cm) and center patch over damaged area. Sew patch to container body with a double row of stitching as shown in A, Figure 12-4. If felt lining is damaged, remove damaged area as shown in (b) below. Cut a piece of felt the same size as piece removed, and position cotton duck patch and felt plug over damaged area. Sew a single-X box stitch formation as shown in B, Figure 12-4.

(b) Patching unlined portion. Figure 12-5 shows details for patching the unlined portions of the container body. Apply patch on outside of container as follows:

1. Make a square or rectangle around damaged area. Be sure that marking is parallel to wrap filling of fabric.

2. Cut fabric along lines marked in 1 above. Cut fabric diagonally at corners so that edges can be turned under 1/2 inch (1 .27 cm).

3. Cut patch 2 1/2 inches (6.35 cm) longer and 2 1/2 inches (6.35 cm) wider than prepared hole. Center patch over prepared hole, turn under edges of patch 1/2 inch (1.27 cm), and sew patch to container with one row of stitching 1/8 of an inch (0.318 cm) from edge of patch. Lockstitch at least 1/2 inch (1.27 cm).

4. Turn container over. Turn under edges of prepared hole 1/2 inch (1 .27 cm), and sew container to patch with one row of stitching 1/8 of an inch (0.318 cm) from edge of prepared hole. Lockstitch at least 1/2 inch (1.27 cm).

(5) Plugging felt. Plug main panel and end panels of felt lining as follows:

(a) Mark a rectangle around damaged area. Remove damaged felt, being careful not to cut cotton duck fabric.

12-6. REPAIR AND MAINTENANCE OF PACK (NSN 8465-00-753-6547) –Continued

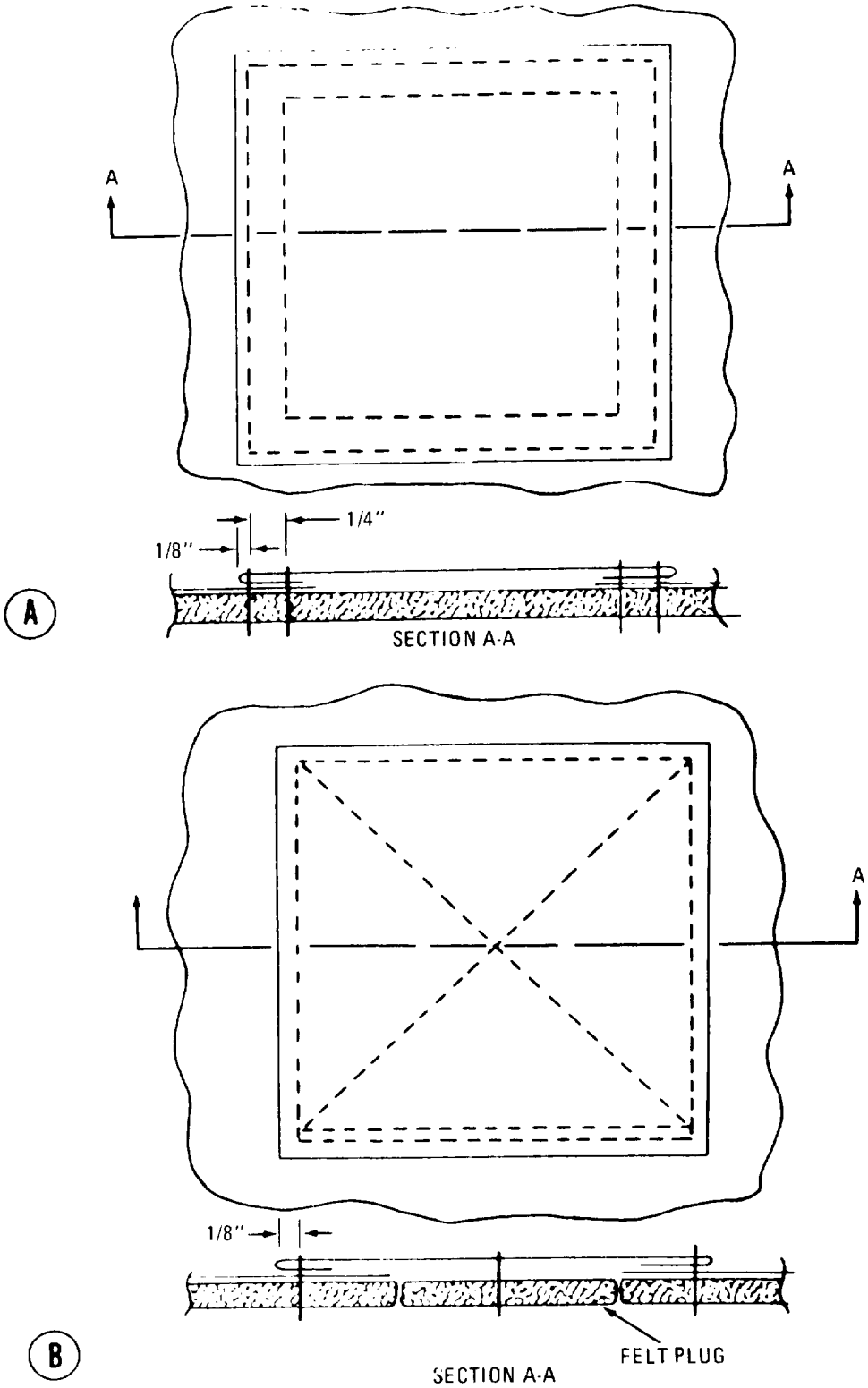


Figure 12-4. Patching lined portion of pack.

12-6. REPAIR AND MAINTENANCE OF PACK (NSN 8465-00-753-6547) –Continued

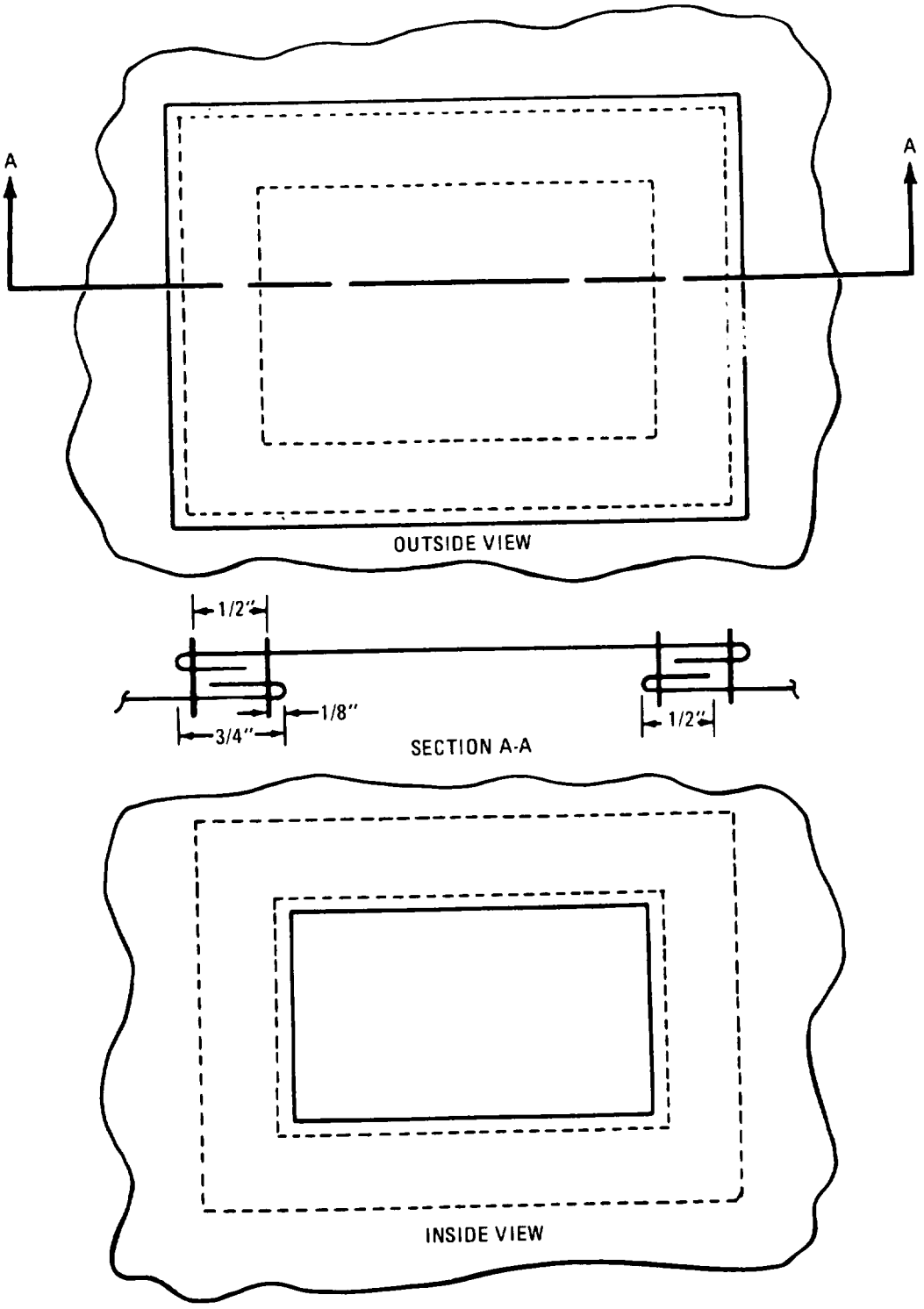


Figure 12-5. Patching unlined portion of container.

12-6. REPAIR AND MAINTENANCE OF PACK (NSN 8465-00-753-6547) – Continued

(b) Cut a piece of felt the size of the piece removed. Position felt plug and sew according to details in A, Figure 12-6. Use Model 111W155 sewing machine or equivalent and size FF nylon thread, making 7 to 9 stitches per inch (2.54 cm). Lockstitch at least 1/2 inch (1.27 cm).

(c) If damage is in an area that cannot be sewed by machine, tack felt plug securely to cotton duck as shown in B, Figure 12-6, using doubled and waxed ticket No. 5 nylon thread. Secure thread ends on felt side of container with a suitable knot.

c. Replacing Felt End Panel,

(1) Cut stitching, and remove damaged end panel.

(2) Cut a 12-inch by 13-inch (30.5 by 33.0 cm) piece of 1/4-inch (0.635 cm) thick felt, and position it on inside of container as in original construction. Stitch new panel to container, M of an inch (0.635 cm) from edge of panel, using Model 111W155 sewing machine or equivalent with size FF nylon thread. Sew 7 to 9 stitches per inch (2.54 cm), and Iockstitch at least 1/2 inch (1.27 cm).

(3) Turn container right side out, and restitch loosened webbing according to original construction, using same machine, thread, and stitch range as in b(5)(b) above,

12-6. REPAIR AND MAINTENANCE OF PACK (NSN 8465-00-753-6547) – Continued

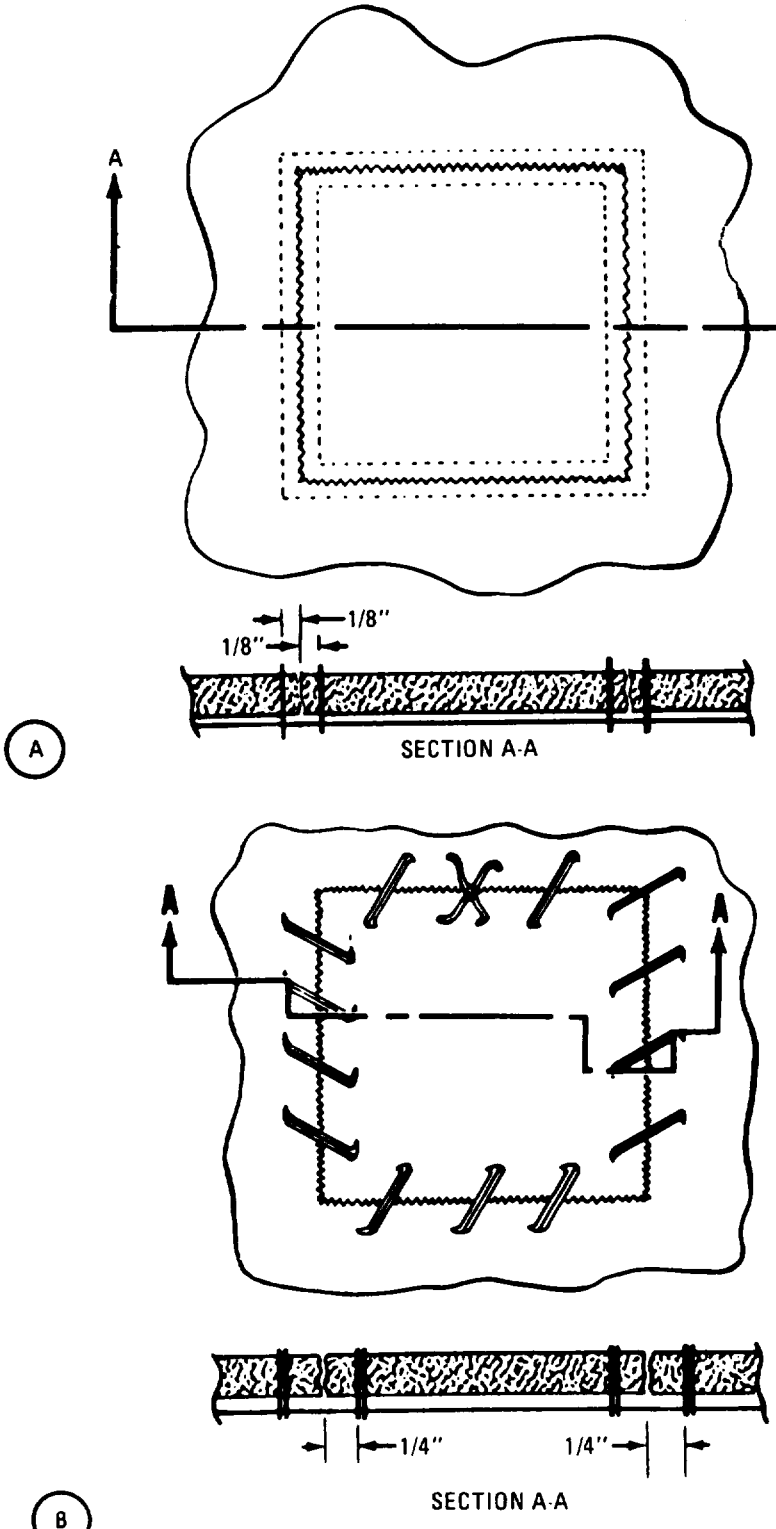


Figure 12-6. Plugging felt.

12-6. REPAIR AND MAINTENANCE OF PACK (NSN 8465-00-753-6547) – Continued

d. Repairing Webbing.

(1) General, The webbing on the container may be restitched, and the upper suspender strap may be sliced. These are the only repairs authorized.

(2) Restitching. Restitch loose or broken stitching as prescribed b(5)(b) above.

(3) Splicing upper suspender strap. Splice a frayed, torn, or cut upper suspender strap as follows:

(a) Cut apiece of type Vlll nylon webbing long enough to extend 4 inches (1 0.2 cm) beyond each side of damaged area, and sear ends of webbing.

(b) Center webbing lengthwise over damaged area, and sew a 3-point WW stitch formation at each end of webbing according to details in Figure 12-7. Use Model 111W155 sewing machine or equivalent and size FF nylon thread, making 7 to 9 stitches per inch (2.54 cm). Overstitch reinforcement 1/8 of an inch (0.318 cm), and Iockstitch at least 1/2 inch (1.27 cm).

e. Replacing Webbing.

(1) General. All of the webbing items listed in (2) through (9) below may be replaced. Fabricate each of the items from the prescribed length of type Vlll nylon webbing, Sear ends of nylon webbing smooth and even. Do all stitching with Model 111 WI 55 sewing machine or equivalent and size FF nylon thread. Make 7 to 9 stitches per inch (2.54 cm) and Iockstitch at least 1/2 inch (1.27 cm).

(2) Upper suspender strap. Replace a damaged upper suspender snap with a 50-inch (122 cm) length of webbing as follows:

(a) Cut stitching, and remove suspender strap and suspender strap reinforcement from container,

(b) Pass one end of webbing through an adapter, and fold end of webbing through a second adapter in the opposite direction, and fold end over 4 inches (1 0.2 cm). The 4-inch (10.2 cm) folds will be on opposite sides of the webbing. Sew a triple-X box-stitch formation at each end of strap according to details in Figure 12-8.

(c) Cut two 1 3/4 by 13-inch (4.45 by 33.0 cm) pieces of 1/4-inch (0.635 cm) thick felt. Position a piece of felt at each end of strap over 4-inch (10.2 cm) fold, and sew to strap 1/4 of an inch (0.635 cm) from the edges (Fig. 12-8).

(d) Fold strap at fold line (Fig. 12-8), and sew strap to container with two modified single-X box-stitch formations as shown in Figure 12-9.

12-6. REPAIR AND MAINTENANCE OF PACK (NSN 8465-00-753-6547) –Continued

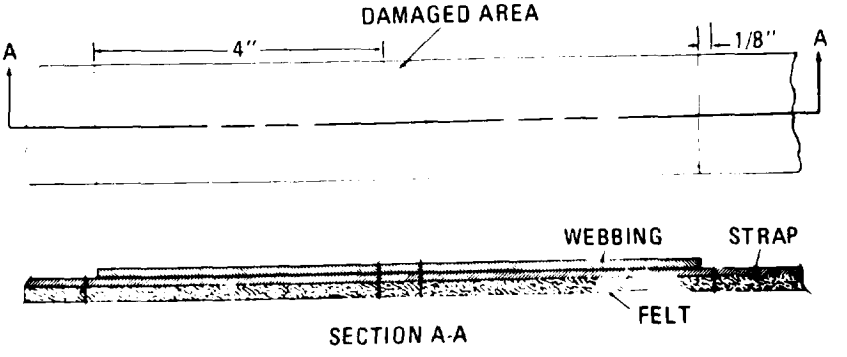


Figure 12-7. Splicing upper suspender **strap.**

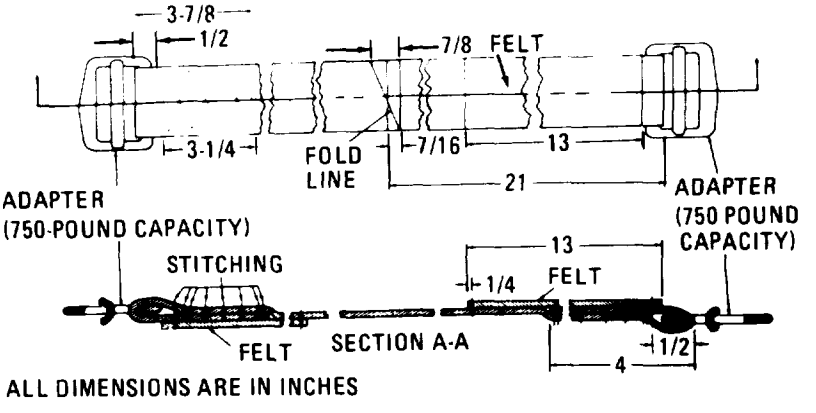


Figure 12-8. Upper suspender strap fabrication details.

12-6. REPAIR AND MAINTENANCE OF PACK (NSN 8465-OO-753-6547) – Continued

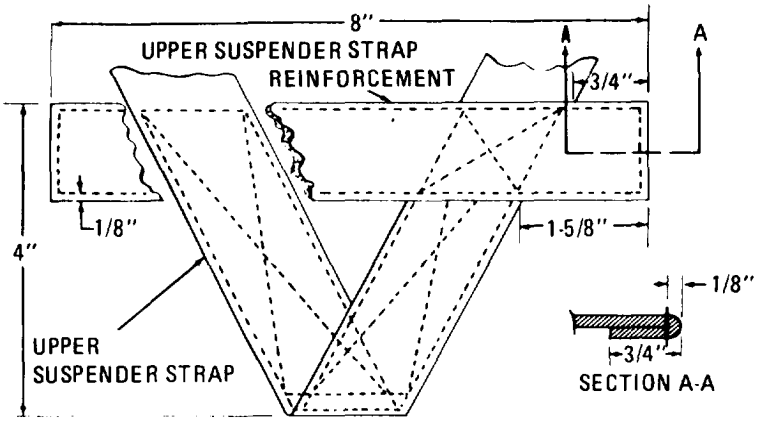


Figure 12-9. Details for attaching upper suspender strap and reinforcement to container.

12-6. REPAIR AND MAINTENANCE OF PACK (NSN 8465-00-753-6547) – Continued

(e) Position suspender strap reinforcement over suspender strap, and sew reinforcement to strap and container with a box-stitch formation and two hourglass stitch formations (Fig. 12-9).

(3) Upper suspender strap reinforcement. Replace a damaged upper suspender strap reinforcement with a 9 1/2 inch (24.1 cm) length of webbing. Cut stitching, and remove damaged reinforcement. Turn under ends of replacement webbing 3/4 of an inch (1.91 cm), and sew webbing to suspender strap and container as in (2)(c) above and as shown in Figure 12-9.

(4) Lower suspender strap. Replace a damaged lower suspender strap with a 26-inch (66.0 cm) length of webbing as follows:

(a) Cut stitching that secures suspender strap and strap reinforcement to container.

(b) Sear ends of replacement webbing.

(c) Turn end under 1 1/2-inch (3.81 cm), position on container as in original construction, and sew a 3-inch (7.62 cm) single-box-stitch formation.

(d) Reposition reinforcement over suspender strap as in original construction. Sew a single-X box-stitch formation, 1/8 of an inch (0.318 cm) from edges of webbing.

(5) Lower suspender strap reinforcement. Replace a damaged lower suspender strap reinforcement with a 4-inch (1 0.16 cm) length of webbing. Cut stitching, and remove damaged reinforcement. Turn under edges of replacement webbing 1/2-inch (1.27 cm), and sew webbing to suspender strap and container as in (4)(d) above.

(6) Side securing straps. Replace a damaged side securing strap with a 30-inch (76.2 cm) length of webbing as follows:

(a) Cut stitching, and remove damaged strap.

(b) Sear ends of replacement webbing and sew according to details in A, Figure 12-10.

(c) Fold end under 1/2 inch (1.27 cm), position webbing on container as in original construction and sew according to details in A, Figure 12-10.

(7) End securing straps. Replace a damaged end securing strap with a 60-inch (152.4 cm) length of webbing, adapting procedures in (6) above.

12-6. REPAIR AND MAINTENANCE OF PACK (NSN 8465-00-753-6547)—Continued

(8) Strap guide. Replace a damaged strap guide with a 6-inch (15.24 cm) length of webbing as follows:

(a) Cut stitching, and remove damaged strap guide.

(b) Turn under ends of replacement webbing 1 inch (2.54 cm), position webbing on container as in original construction, and sew according to details in B, Figure 12-10.

(9) Adapter chape. Replace a damaged adapter chape with a 8-inch (20.32 cm) length of webbing as follows:

(a) Cut stitching that secures chape to container and remove adapter.

(b) Position adapter on replacement webbing as shown in C, Figure 12-10.

(c) Position webbing on container as in original construction, and sew according to details in C, Figure 12-10.

f. Replacing Hardware.

(1) Adapters. Replace a damaged adapter with a serviceable like item from stock. Do not attempt to straighten a bent adapter or otherwise repair a cracked or broken adapter. Remove damaged adapter by removing adapter chape. Install serviceable adapter, and fabricate new adapter chape as prescribed in e above,

(2) Rivets. Replace a loose or damaged rivet with a serviceable rivet and washer from stock. Remove damaged rivet by cutting or filing end of rivet so that it may be withdrawn through fabric. Exercise care in removing rivet so as not to damage fabric. Install new rivet following procedures in FM 10-16.

12-6. REPAIR AND MAINTENANCE OF PACK (NSN 8465-00-753-6547) – Continued

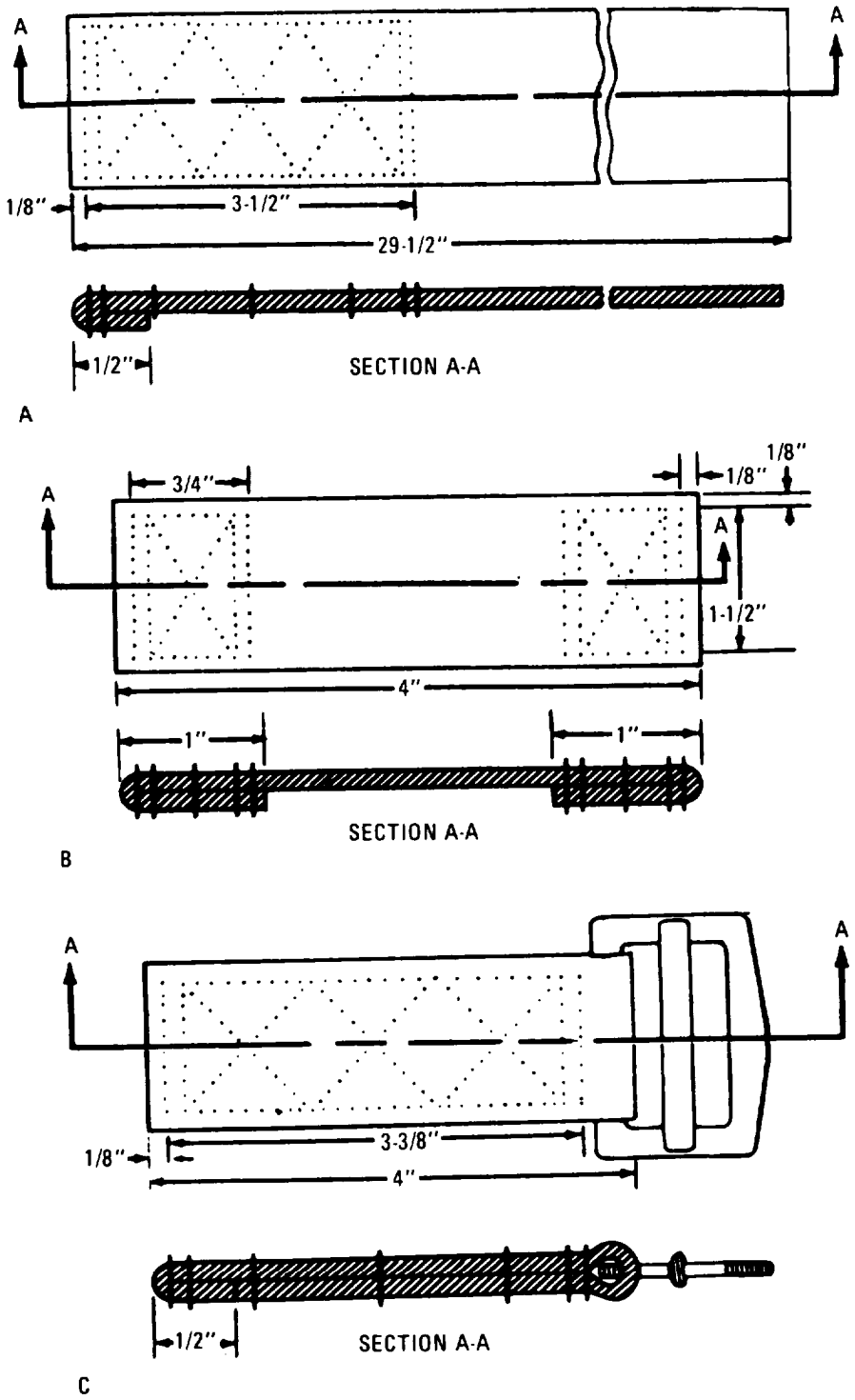


Figure 12-10. Container webbing attaching details.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548)

a. General. The harness (Fig. 12-11) consists of a type 1 cotton duck body and flap, a network of securing and suspension straps made of type Vlll nylon webbing and appropriate items of hardware, and a push pull actuator assembly. The release assembly (Fig. 12-12) is made up of push-pull actuator assembly with release knob, a keeper pin with a type IV nylon webbing strap, a left and right-hand fastener and a type X nylon webbing quick-release strap equipped with a snaphook at one end and a quick-release quick-fit connecting link at the other end,

b. Repairing Duck Fabric.

(1) General. The cotton duck fabric in the harness may be restitched or darned. These are the only repairs authorized.

(2) Restitching. Restitch loose or broken stitching on lowering line pocket flap and ties with Model 111WI 55 sewing machine or equivalent and ticket No. E nylon thread, making 7 to 11 stitches per inch (2.54 cm). If stitching that secures lowering line pocket to harness is damaged, restitch with Model 7-33 sewing machine or equivalent and ticket No. 3 nylon thread. Make 5 to 8 stitches per inch (2.54 cm). Lockstitch at least 1/2 inch (1.27 cm).

(3) Darning. There is no limit to darns if it does not weaken or reduce the original strength of the cloth more than 10 percent. Darn holes or tears that do not exceed 1 inch (2.54-cm) in length or diameter with Model 47W70 darning machine or equivalent and ticket No. E nylon thread. Darn long narrow cuts and tears with Model 17W15 sewing machine or equivalent and ticket No. E nylon thread. Set the machine to permit the stitching to include at least 1/8 of an inch (0.318 cm) of undamaged material on each side of cut or tear. Sew back and forth until damaged area has been restored to original strength. Sew at least 1/4 of an inch (0.635 cm) beyond each end of cut or tear.

c. Replacing Lowering Line Pocket, Pocket Flap and Pocket Tie.

(1) Pocket. Replace a damaged lowering line pocket as follows:

(a) Cut stitching and remove damaged pocket from harness. If pocket flap is not damaged, remove flap from pocket.

(b) Cut a piece of type I cotton duck material to the dimensions shown in A, Figure 12-13. Make selvaged edge of material the 8 3/4 inch (22.2 cm) end of pocket.

(c) Align corner (1) with corner (2), and sew aligned sides together 1/2 inch (1.27 cm) from edge. Sew corner (3) to corner (4) in the same manner.

(d) Turn pocket right side out, and position pocket flap (1) above on pocket so that right edge of flap is 1 1/2 inches (3.81 cm) from right edge of pocket, and bottom of flap is 3/4 of an inch (1.91 cm) below selvaged edge. If necessary, fabricate a flap as shown in (2) below.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) – Continued

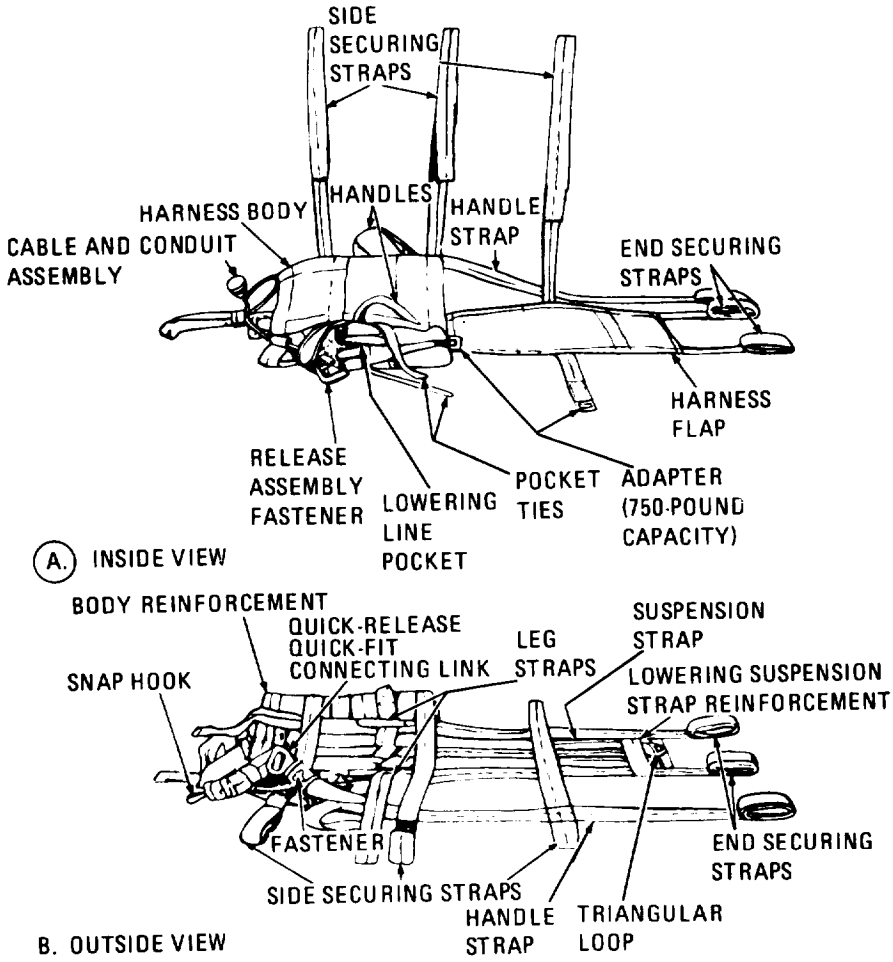


Figure 12-11. Harness.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) – Continued

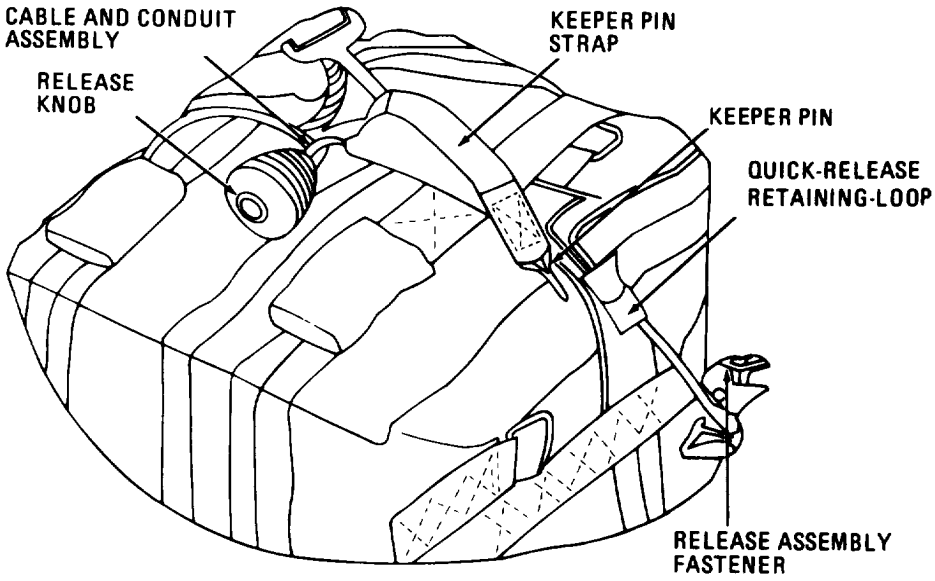


Figure 12-12. Push-pull actuator assembly

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) - Continued

(e) Turn back selvaged edge of pocket 3/4 of an inch (1.91 cm), and sew according to details in B, Figure 24-13. Then fold flap back, and sew across it with two rows of stitching. Use Model 111 WI 55 sewing machine or equivalent and size FF nylon thread, making 7 to 9 stitches per inch (2.54 cm).

(f) Turn under raw edges of pocket 1/2 inch (1 .27 cm), and position pocket on harness as in original construction. Sew around pocket 1/8 of an inch (0.318 cm) from edge. Use Model 7-33 sewing machine or equivalent and ticket No. 3 nylon thread, making 5 to 8 stitches per inch (2.54 cm).

(2) Pocket flap. Fabricate pocket flap from type 1 cotton duck cloth and 3/4-inch (1 .91 cm) Type 1 cotton binding tape according to details in C, Figure 12-13. Use Model 111W155 sewing machine or equivalent and size FF nylon thread, making 7 to 9 stitches per inch (2.54 cm).

(3) Pocket ties. Replace a damaged pocket tie with a 14-inch (35.6 cm) length of 3/4-inch (1.91 cm) type 1 cotton tape. Sear ends of tape and turn under one end of tape 1/4 of an inch (0.635 cm), Position this end of tape on edge of lowering line pocket, 2-inches (5.08 cm) from the top. Sew pocket tie to pocket with Model 111W155 sewing machine or equivalent and size FF nylon thread, making 7 to 9 stitches per inch (2.54 cm).

d. Repairing Webbing. Webbing on the harness may be restitched, and certain items of webbing (2) below may be spliced. These are the only repairs authorized. Repair webbing as follows:

(1) Restitching. Restitch loose or broken stitching on all nylon webbing items except the lower suspension strap reinforcement and the fastener chape reinforcement with Model 7-33 sewing machine or equivalent and ticket No. 3 nylon thread making 5 to 8 stitches per inch (2.54 cm). Restitch lower suspension strap reinforcement and a fastener chape reinforcement with Model 111W155 sewing machine or equivalent and ticket No. E nylon thread, making 7 to 11 stitches per inch (2.54 cm). Restitch elastic keepers and keeper pin strap with Model 31-15 sewing machine or equivalent and ticket No. E nylon thread making 7 to 11 stitches per inch (2.54 cm). Lock all stitching at least 1/2 (1.27 cm).

(2) Splicing. Splicing of harness webbing is restricted to the suspension straps, body reinforcement, handle strap, end securing straps, and side securing straps. Only those portions of the handle strap, end securing straps, and side securing straps that are sewed to the cotton duck fabric maybe spliced. Splice webbing as follows:

(a) Cut a piece of type VIll nylon webbing long enough to extend 4 inches (10.2 cm) beyond each end of the damaged area, and sear ends of webbing.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) – Continued

(b) Center splicing material lengthwise over damaged area. Sew a 3-point WW stitch formation at each end of splice, using Model 7-33 sewing machine or equivalent and ticket No. 3 nylon thread. Make 5 to 8 stitches per inch (2.54 cm). Overstitch ends of splice at least 1/8 of an inch (0.318 cm), and lockstitch at least 1/2 inch (1 .27 cm).

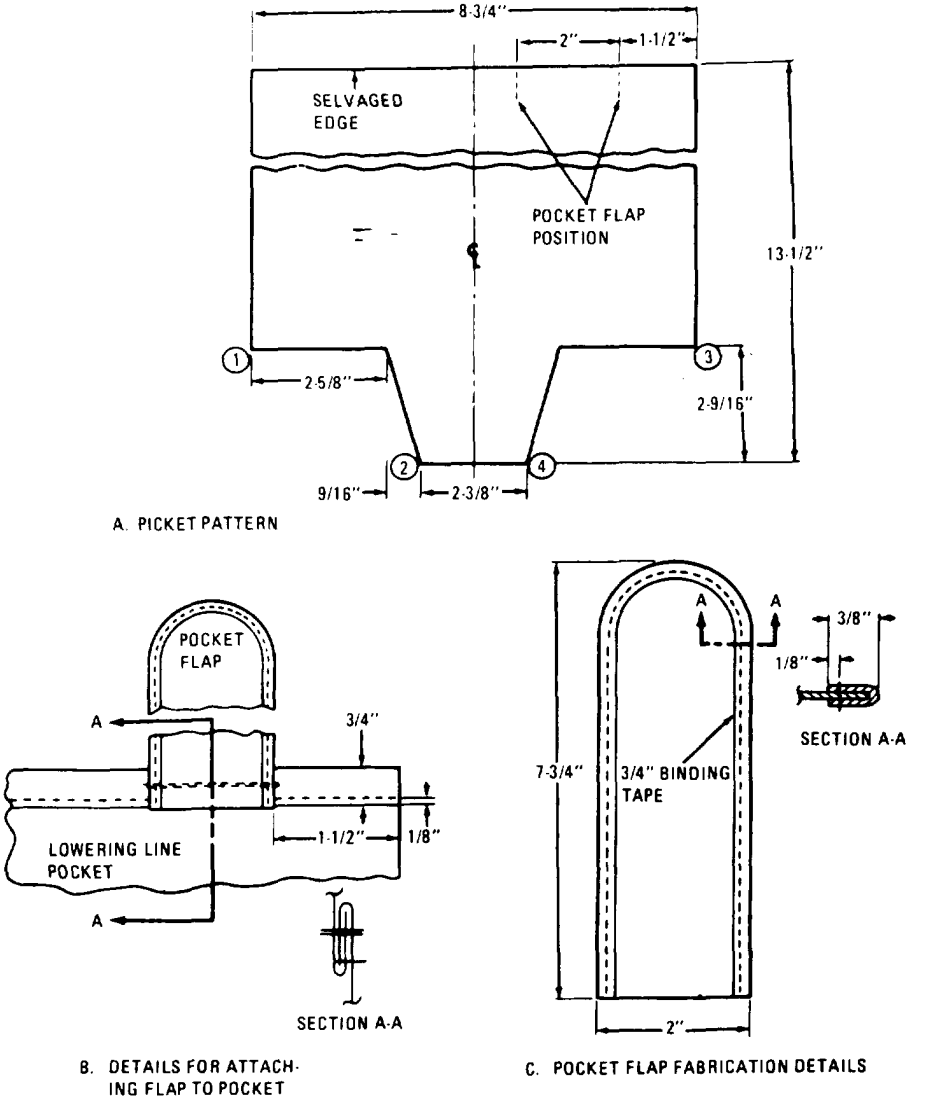


Figure 12-13. Lowering line pocket fabrication details.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) – Continued

e. Replacing Webbing.

(1) General. All of the webbing items listed in (2) through (19) below maybe replaced. Unless otherwise specified, fabricate each of the items from the prescribed length of type VIII nylon webbing and sew with Model 7-33 sewing machine or equivalent and ticket No. 3 nylon thread, making 5 to 8 stitches per inch (2.54 cm). Lock stitching at least 1/2 inch (1.27 cm). Sear exposed ends of nylon webbing smooth and even.

(2) Upper suspension strap reinforcement. Replace a damaged upper suspension strap reinforcement with 21¾-inch (55.24 cm) length of webbing as follows:

(a) Remove reinforcement by cutting webbing along edge of harness, leaving stitched ends attached.

(b) Thread replacement webbing through triangular loop, and position ends of webbing or harness over old webbing.

(c) Sew each end of replacement webbing to harness according to details in Figure 12-14.

(3) Suspension straps. Replace a damaged suspension strap as follows:

(a) Upper suspension strap. Replace a damaged upper suspension strap with a 15-inch (38.1 cm) length of webbing as follows:

1. Remove damaged strap by cutting both thicknesses of webbing along edge of harness, leaving stitched ends attached.

2. Pass one end of webbing through triangular loop, under reinforcement (Fig. 12-14) and fold end under 7¼inches (18.4 cm).

3. Position replacement strap on harness over old webbing with long end extending to leading edge of second perpendicular web. Stitch replacement to harness as shown in Figure 12-14.

(b) Lower suspension strap. Replace a damaged lower suspension strap as follows:

1. Remove damaged strap by cutting both thicknesses of webbing along edge of lower suspension strap reinforcement, leaving stitched ends attached. Remove triangular loop.

2. Cut a 14½-inch (36.8 cm) length of webbing for a replacement strap and a 3½-inch (8.89 cm) length of webbing for a buffer.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) – Continued

3. Pass one end of replacement strap through triangular loop, and fold under end of strap 5-inches (12.7 cm). Position buffer between triangular loop and strap.

4. Position replacement strap on harness over old webbing, with long and extending to leading edge of second perpendicular web. Stitch replacement strap to harness as shown in Figure 12-15.

(4) Body reinforcement. Replace a damaged body reinforcement with a 25½-inch (64.8 cm) length of webbing as follows:

(a) Cut stitching, and remove quick-release retaining loops.

(b) Position replacement webbing over old webbing, and sew around replacement with a box-stitch formation, 1/8 of an inch (0.318 cm) from the edge.

(c) Replace quick-release retaining loops according to original construction.

(5) Lower suspension strap reinforcement. Replace a damaged lower suspension strap reinforcement with a 10-inch (25.4 cm) length of webbing. Position replacement over old reinforcement, and sew around replacement with a box-stitch formation, 1/8 of an inch (0.318 cm) from edge. Use Model 7-33 sewing machine or equivalent with size No. 3 nylon thread, and make 5 to 8 stitches per inch (2.54 cm).

(6) Fastener chape reinforcement. Replace a damaged fastener chape reinforcement with a 7-inch (1 7.8 cm) length of webbing as follows:

(a) Cut stitching that secures fastener chape to reinforcement.

(b) Position replacement over old reinforcement, and sew around replacement with a box-stitch formation, 1/8 of an inch (0.318 cm) from edge. Use Model 7-33 sewing machine or equivalent with size 3 nylon thread, making 5 to 8 stitches per inch (2.54 cm).

(c) Restitch fastener chape according to original construction. Use Model 7-33 sewing machine or equivalent with ticket No. 3 nylon thread, and make 5 to 8 stitches per inch (2.54 cm).

(7) Handle strap. The handle, adapter, and running end portions of the handle strap may be replaced.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) – Continued

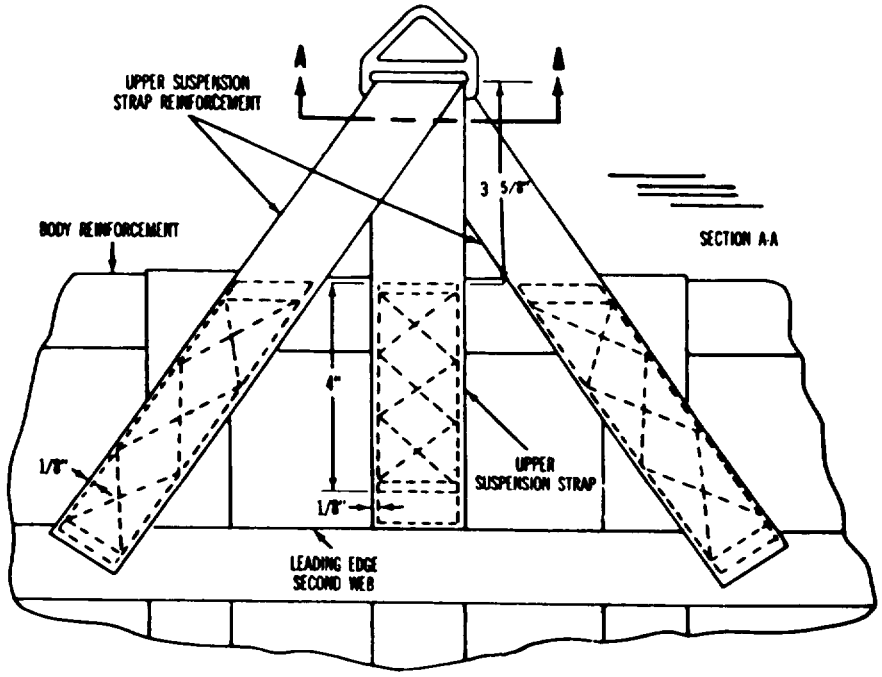


Figure 12-14. Replacement details, upper suspension strap and reinforcement.

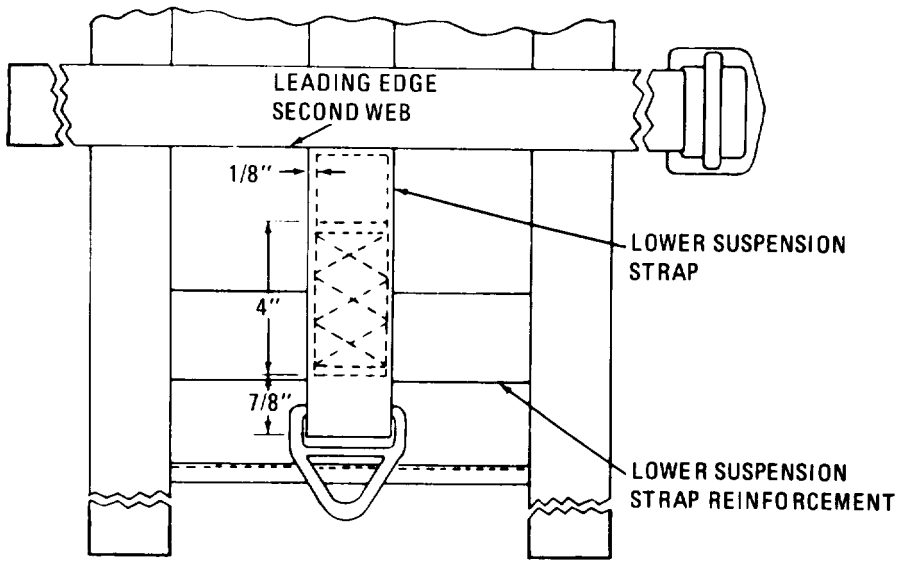


Figure 12-15. Replacement details, lower suspension strap.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) – Continued

(a) Handle portion. Replace damaged handle portion of handle strap with a 20-inch (50.8 cm) length of webbing as follows:

1. Remove cable and conduit assembly, lowering line, and quick-release retaining loops.

2. Remove handle by cutting webbing along edge of harness.

3. Fabricate new handle according to details in A, Figure 12-16.

4. Position replacement handle on harness, and sew each according to details in B, Figure 12-16.

5. Replace quick-release retaining loops according to original construction. Replace cable and conduit assembly.

(b) Adapter portion. Replace damaged adapter portion of handle strap with a 14½-inch (36.8 cm) length of webbing as follows:

1. Cut strap along edge of harness, and remove adapter.

2. Cut stitching, and remove lowering line pocket.

3. Pass one end of replacement webbing through adapter and fold end under 2½ inches (6.35 cm).

4. Position webbing on harness, with long end extending to leading edge of second perpendicular web. Stitch webbing to harness as shown in Figure 12-17.

5. Replace lowering line pocket according to original construction.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) - Continued

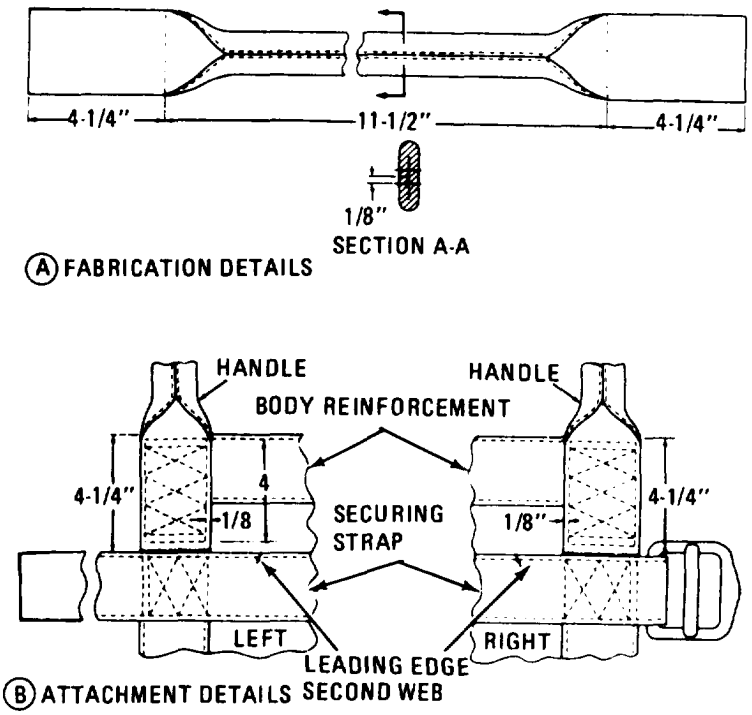


Figure 12-16. Replacement details, handle portion of handle strap.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) – Continued

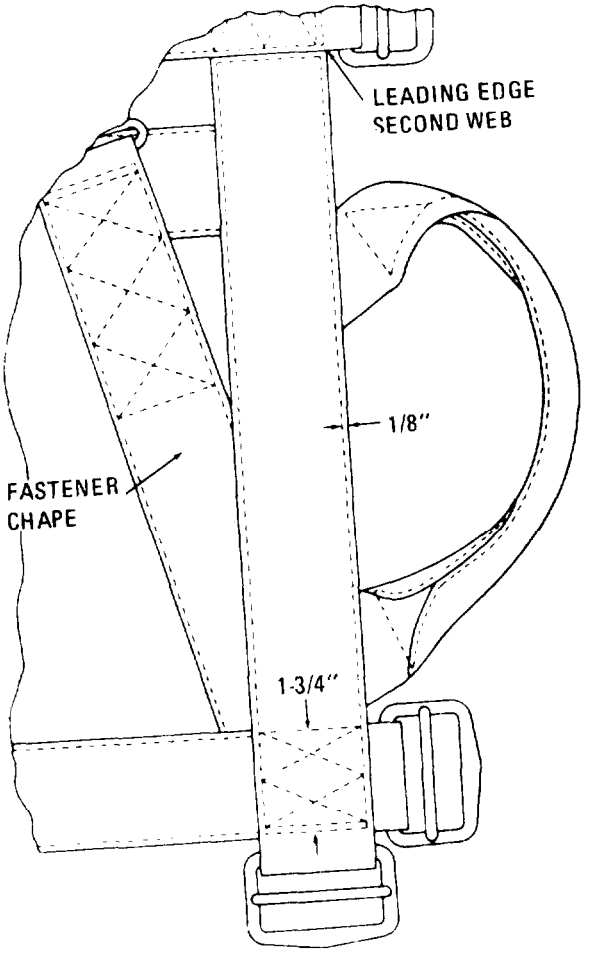


Figure 12-17. Replacement details, adapter portion of handle strap.

(c) Running end portion. Replace damaged running end portion of handle strap with a 76-inch (1.93 m) length of webbing as follows:

1. Remove damaged end by cutting strap along edge of harness.

2. Round one end of replacement webbing, and dip end to a depth of 2 inches (5.08 cm).

3. Position webbing on harness, with straight end extending to leading edge of second perpendicular web. Sew webbing to harness according to details in Figure 12-18.

(8) Securing strap adapter ends. Replace damaged adapter end of securing strap as in (a) or (b) below.

(a) Cut a piece of webbing 2½ inches (6.35 cm) longer than distance from adapter to leading edge of second perpendicular web.

(b) Remove damaged end by cutting strap along edge of harness, and remove adapter.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) – Continued

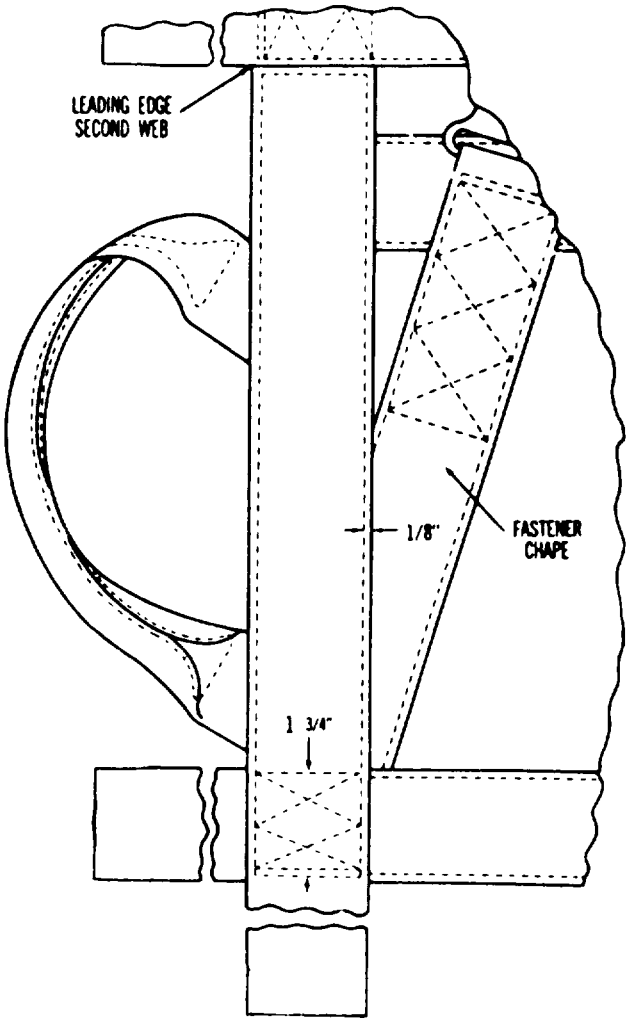


Figure 12-18. Replacement details, running end portion of handle strap.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) – Continued

(c) Pass one end of replacement webbing through adapter, and fold end under 2½ inches (6.35 cm). Position replacement on harness, and sew according to details in A, Figure 12-19.

(9) Securing strap running ends. Replace damaged running end of side securing strap or end securing strap as follows:

(a) Remove damaged end by cutting strap along edge of harness.

(b) Cut a length of webbing equal to length of end removed plus distance from edge of harness to leading edge of second perpendicular web.

(c) Sear exposed ends of nylon webbing smooth and even.

(d) Position webbing on harness, with straight end extending to leading edge of second perpendicular web. Sew webbing to harness according to details in Figure 12-20.

(1 O) Leg strap. Replace a damaged leg strap with a 41½-inch (1.05 m) length of webbing as follows:

(a) Cut stitching, and remove leg strap from harness. Remove adapter and buffer. If buffer is damaged, replace it with a 3½ inch (8.89 cm) length of webbing.

(b) Sear exposed ends of nylon webbing smooth and even. Pass straight end of replacement webbing through adapter, and fold under end of webbing, 3¾ inches (9.53 cm). Position buffer between adapter and strap, and sew according to details in Figure 12-21.

(c) Pass replacement webbing under suspension strap from right to left, leaving 7¾ inches (19.7 cm) of webbing between adapter end of replacement and suspension strap. Pass replacement webbing back over and under suspension.

(11) Leg strap guide. Replace a damaged leg strap guide with a 6-inch (15.2 cm) length of webbing as follows:

(a) Align edges of webbing, and sew them together 1/8 of an inch (0.318 cm) from edge.

(b) Cut stitching, and remove damaged guide from harness.

(c) Position replacement guide on harness as in original construction, and sew according to details in Figure 12-21.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) – Continued

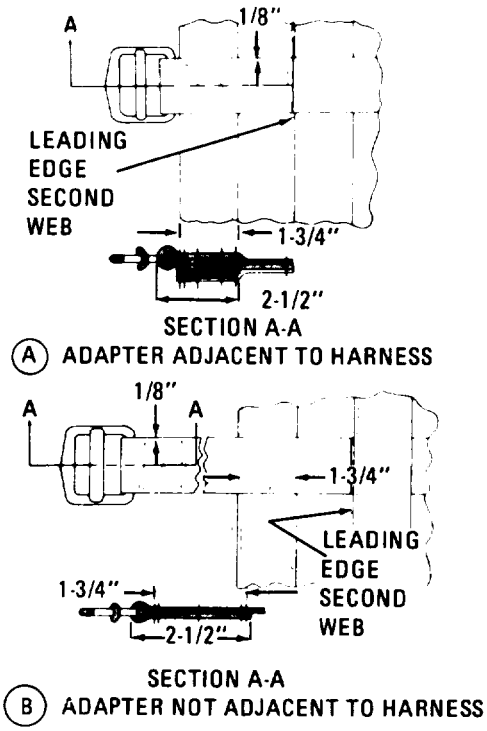


Figure 12-19. Replacement details, securing strap adapter ends.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) – Continued

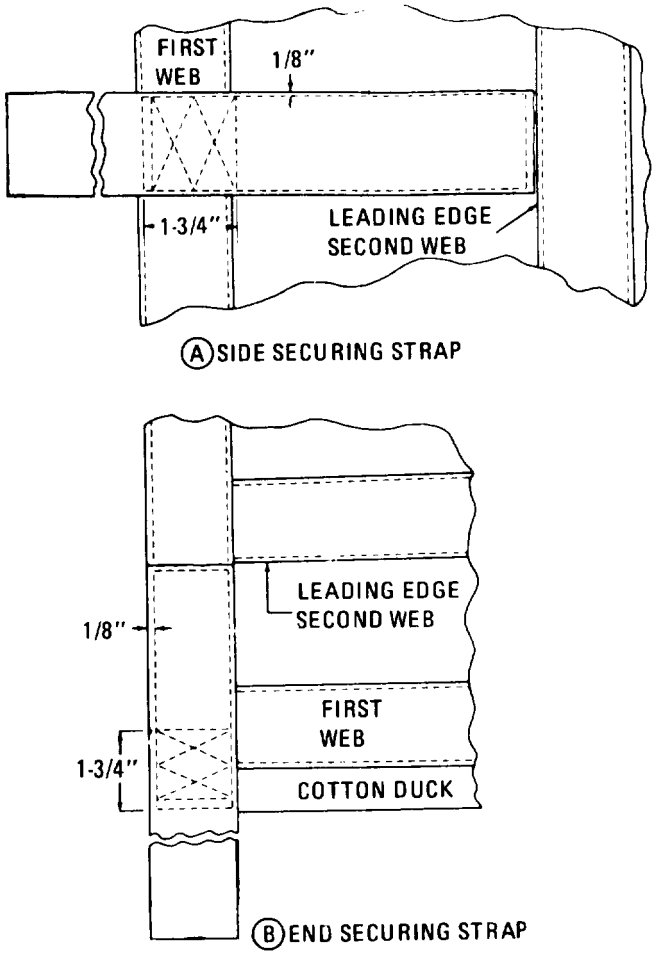


Figure 12-20. Replacement details, securing strap running ends.

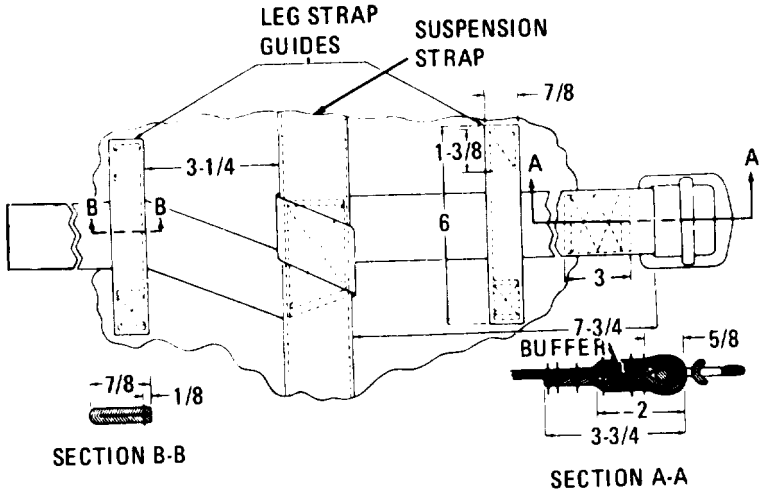


Figure 12-21. Replacement details, leg strap and guide.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) - Continued

(12) Handle. Replace a damaged handle with a 15½-inch (39.4 cm) length of webbing as follows:

(a) Remove handle by cutting stitching that secures handle to harness. Cut sufficient stitching so that replacement handle may be inserted between webbing and cotton duck and sewed to the duck without difficulty. If handle on lowering line pocket side of harness is damaged, remove pocket.

(b) Fabricate handle according to details in A, Figure 12-22.

(c) Position handle on harness as in original construction, and sew according to details in B, Figure 12-22.

(d) Restitch loosened stitching according to original construction. If lowering line pocket has been removed, replace it according to original construction.

(13) Quick-release retaining loop. Replace a quick-release retaining loop with a 3-inch (7.62 cm) length of webbing. Cut stitching, and remove damaged loop. Sew replacement loop to handle strap as in original construction.

(14) Keeper pin strap. Replace a damaged keeper pin strap with a 13-inch (33.0 cm) length of 1-inch (2.54 cm) type IV nylon webbing as follows:

(a) Remove damaged keeper pin strap from cable and conduit assembly, and remove keeper pin from keeper pin strap.

(b) Sear ends of replacement webbing.

(c) Pass one end of webbing through keeper pin, fold end under 2 inches (5.08 cm) and sew according to details in Figure 12-23. Use Model 31-15 sewing machine or equivalent and ticket No. E nylon thread, making 7 to 11 stitches per inch (2.54 cm).

(d) Pass other end of webbing through cable and conduit assembly, fold end under 2 inches (5.08 cm), and sew according to details in Figure 12-23. Use same machine, thread and stitch range as in (c) above.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) – Continued

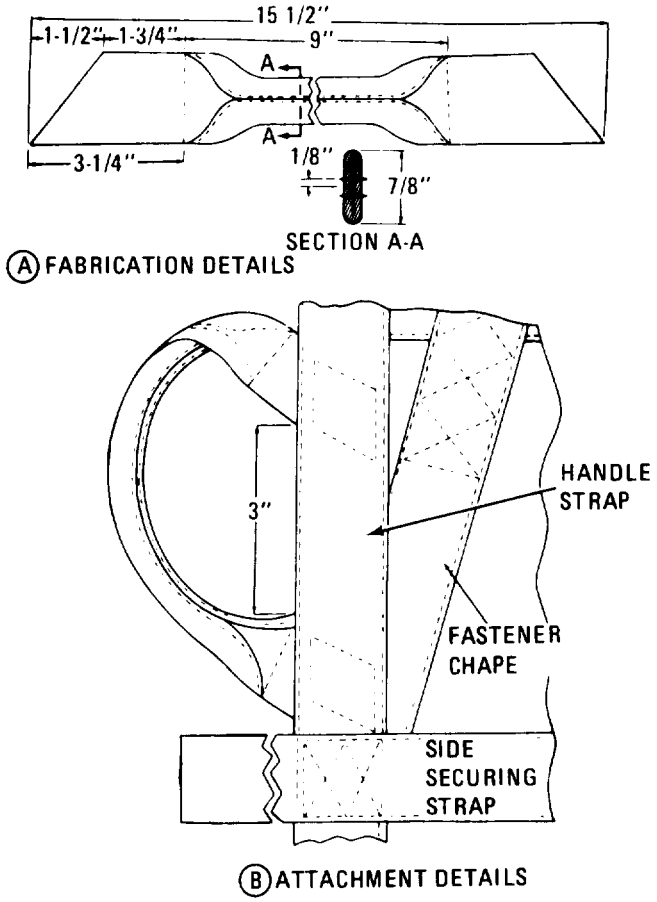


Figure 12-22. Handle replacement details.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-7548) – Continued

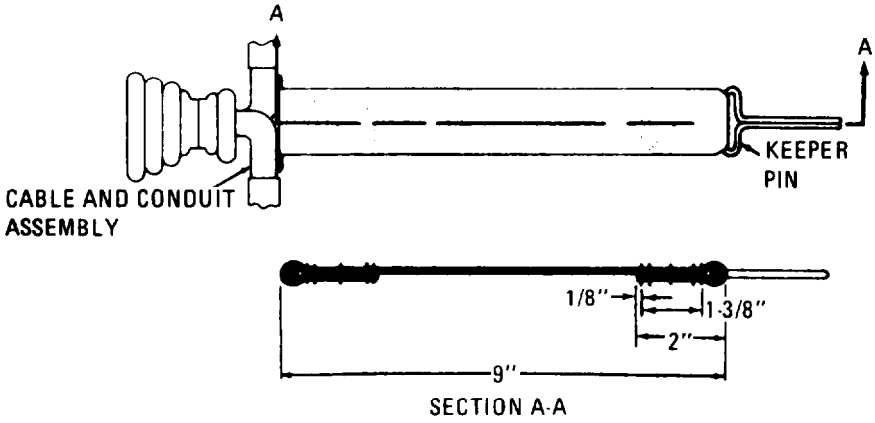


Figure 12-23. Replacement details, keeper pin strap.

f. Replacing Hardware.

(1) Keeper pin. Replace a bent, sprung, burred or nicked keeper pin with a serviceable like item from stock. Open damaged pin, and remove it from keeper pin strap. Thread strap loop into place between forks of new pin.

(2) Cable and conduit assembly.

(a) Removal. Refer to Figure 12-24, unscrew push-pull actuator assembly from release fasteners, and withdraw assembly through quick-release retaining loop.

(b) Installation.

1. Position a 20 x 10 inch (50.8 x 25.4 cm) preformer, using a rigid wooden or paperboard box, in the top part of the top part of harness and secure with two “F” web straps as shown in Figure 12-24.

WARNING

Failure to correctly position release knob could result in a safety hazard. If the knob is in the up position it could interfere with the parachutist’s reserve parachute.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) – Continued

2. With the words “Pull to Release” on the actuator knob facing up as shown in Figure 12-24, insert the push-pull actuator assembly through the retaining loops on both sides of the harness and attach to release fasteners with nuts. Remove preformer.

NOTE

When tightening the nuts, assure that the release fasteners are not twisted away from the harness. When the nuts are fully tightened the actuator knob should be in position shown in Figure 12-24.

(3) Other items of hardware. Replace other damaged items of hardware on the harness with serviceable like items from stock. Do not attempt to straighten bent hardware or otherwise repair cracked or broken hardware. When it is necessary to cut any stitching to remove damaged hardware from webbing, replace hardware and webbing following procedures in the appropriate section of subparagraph e above. Do not restitch the webbing.

12-7. REPAIR AND MAINTENANCE OF HARNESS (NSN 8465-00-753-6548) – Continued

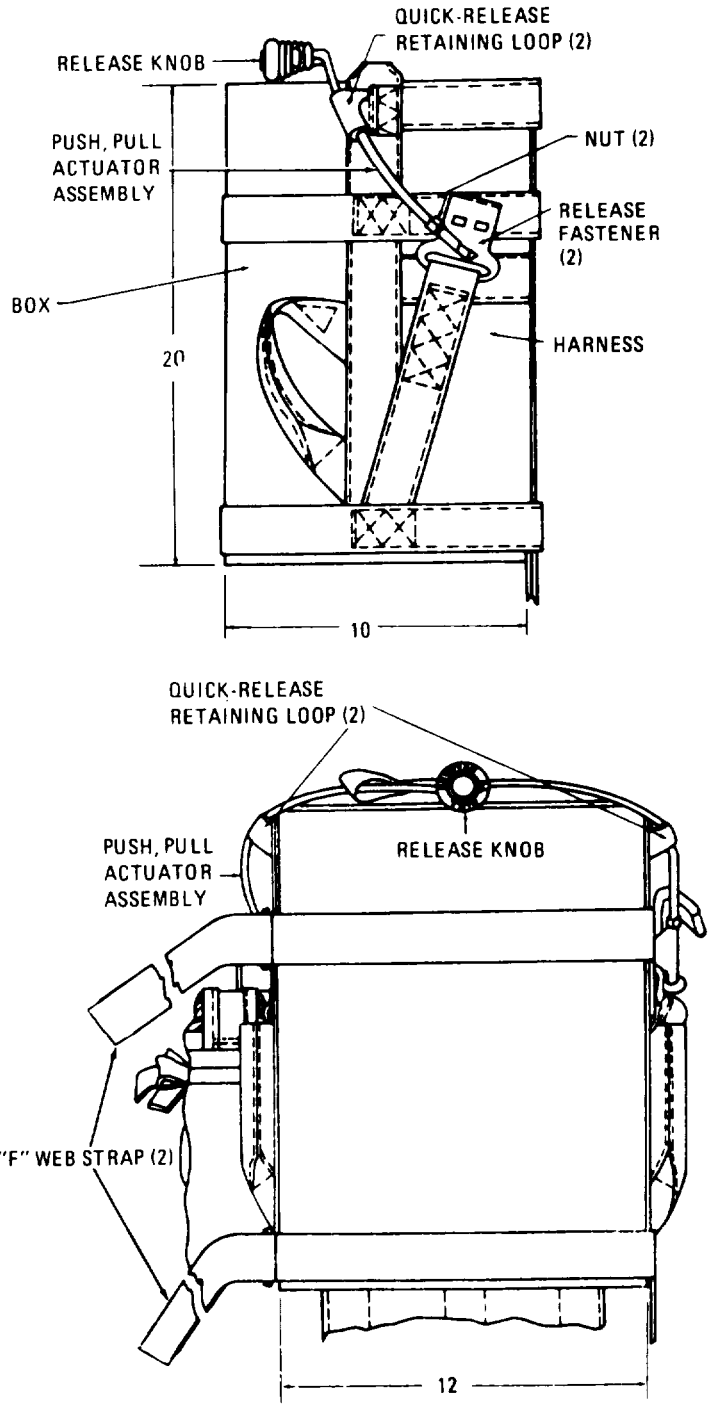


Figure 12-24. Cable and conduit assembly, removal and installation.

12-8. REPAIR AND MAINTENANCE OF INDIVIDUAL WEAPONS CASE

a. General. The parachutist's individual weapons case (Fig. 12-25) is made of type I cotton duck lined with ¼-inch (0.635 cm) thick felt. The bottom of the case is reinforced on the inside with leather. The case is closed at the side by means of a slide fastener thong and a snap fastener. The weapons case is equipped with a quick-release snap link and several metal loops, all of which are attached to the case by webbing chapes. The snap link is provided for accommodation of the quick-release snap-hook which secures the weapons case to the parachutist's harness. The weapons case also has a webbing adjusting strap; an upper tiedown tape, which is attached to a webbing tie-down loop; a lower tiedown strap (velcro) sewn to the weapons case; a 20-foot (6.10 m) lowering strap; and a lowering strap pocket.

b. Repairing Duck and Felt Fabrics.

(1) General. The cotton duck and felt fabrics in the weapons case may be restitched, darned, and patched. The felt may be plugged. When making any of these repairs, remove stitching from side and end of case and from one side of the leather reinforcement as necessary to provide access to the damaged area. After repairs have been made, replace any stitching that has been removed according to original construction.

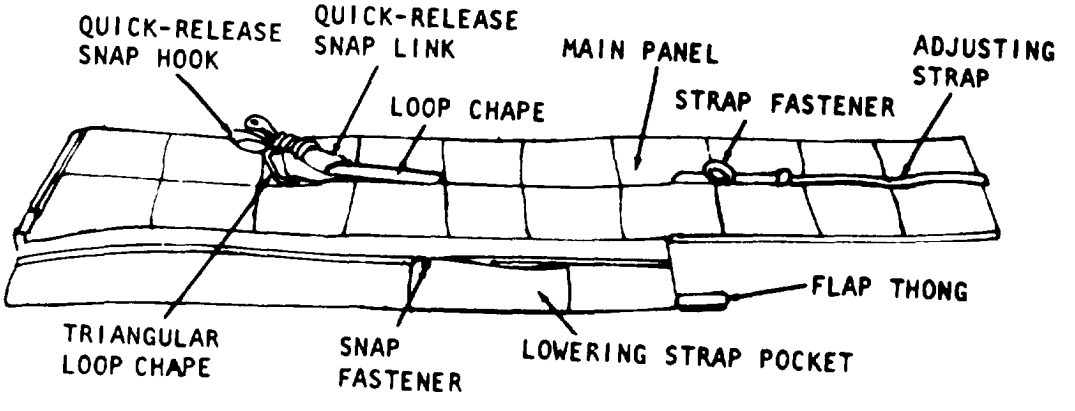


Figure 12-25. Individual weapons case.

12-8. REPAIR AND MAINTENANCE OF INDIVIDUAL WEAPONS CASE – Continued

(2) Repair. Repair duck and felt fabrics as follows:

(a) Restitching. Restitch loose or broken stitching on felt padding and lowering strap pocket with Model 7-33 sewing machine or equivalent and ticket No. 3 nylon thread, making 5 to 8 stitches per inch (2.54 cm). Restitch sides and end of weapons case with Model 97-10 sewing machine or equivalent and ticket No. 5 nylon thread, making 5 to 8 stitches per inch (2.54 cm). Restitch strip panel with Model 97-10 sewing machine or equivalent and ticket No. 3 nylon thread making 5 to 8 stitches per inch (2.54 cm). Lockstitch at least ½ inch (1.27 cm).

(b) Darning. There is no limit to darns if it does not weaken or reduce the original strength of the cloth more than 10 percent. Darn holes and tears that do not exceed 1 inch (2.54 cm) in length or diameter according to procedures in paragraph 12-6b.

(c) Patching. There is no limit to the number of times the weapons case maybe patched. Patch holes or tears that exceed 1 inch (2.54 cm) in length or diameter according to procedures in paragraph *12-6b.*

(d) Plugging felt. Plug felt on main panel of weapons case according to instructions in paragraph *12-6b.*

c. Replacing Duck and Felt Fabrics. The lowering strap pocket and the strip panel are replaced as follows:

(1) Lowering strap pocket.

(a) Cut stitching and remove damaged pocket.

(b) Cut a 14 by 11 inch (35.6 by 27.9 cm) piece of type I cotton duck cloth. Be sure that one of the 14-inch (35.6 cm) sides runs along the selvaged edge of the material.

(c) Mark fold lines and positions of snap fasteners on material, as shown in A, Figure 12-26.

12-8. REPAIR AND MAINTENANCE OF INDIVIDUAL WEAPONS CASE – Continued

(d) Turn under selvaged edge ½ inch (1.27 cm), and sew along material ¼ of an inch (0.635 cm) from edge. Use Model 111W155 sewing machine or equivalent and size FF nylon thread, making 7 to 9 stitches per inch (2.54 cm).

(e) Fold material along fold lines, placing selvage on inside. Sew material along fold line 1/8 of an inch (0.318 cm) from fold. Install snap fasteners following procedures in FM 10-16.

(f) Position new pocket on weapons case, turn edges under ½ inch (1.27 cm), and sew pocket to case according to details in B, Figure 12-26. Use Model 7-33 sewing machine or equivalent and ticket No. 3 nylon thread, making 5 to 8 stitches per inch (2.54 cm). Be careful not to sew through slide fastener when sewing pocket to case.

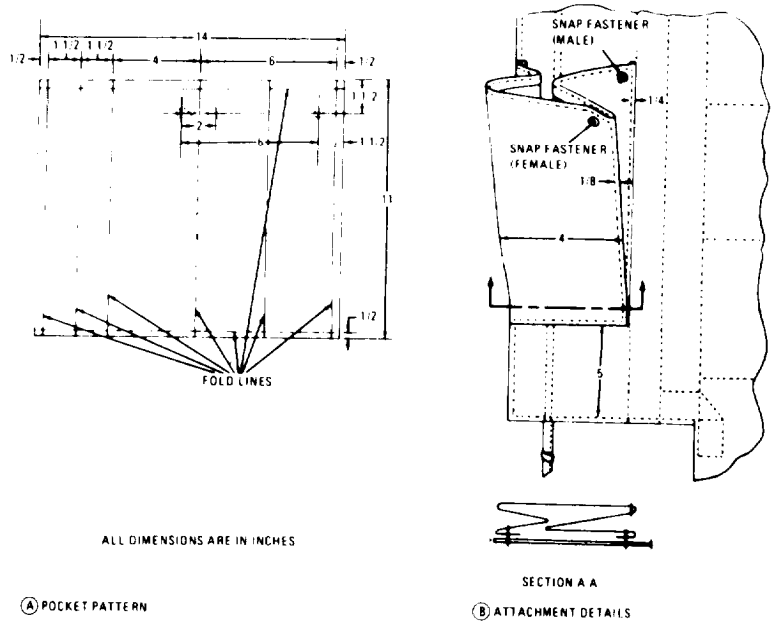


Figure 12-26. Replacement details, lowering strap pocket.

12-8. REPAIR AND MAINTENANCE OF INDIVIDUAL WEAPONS CASE – Continued

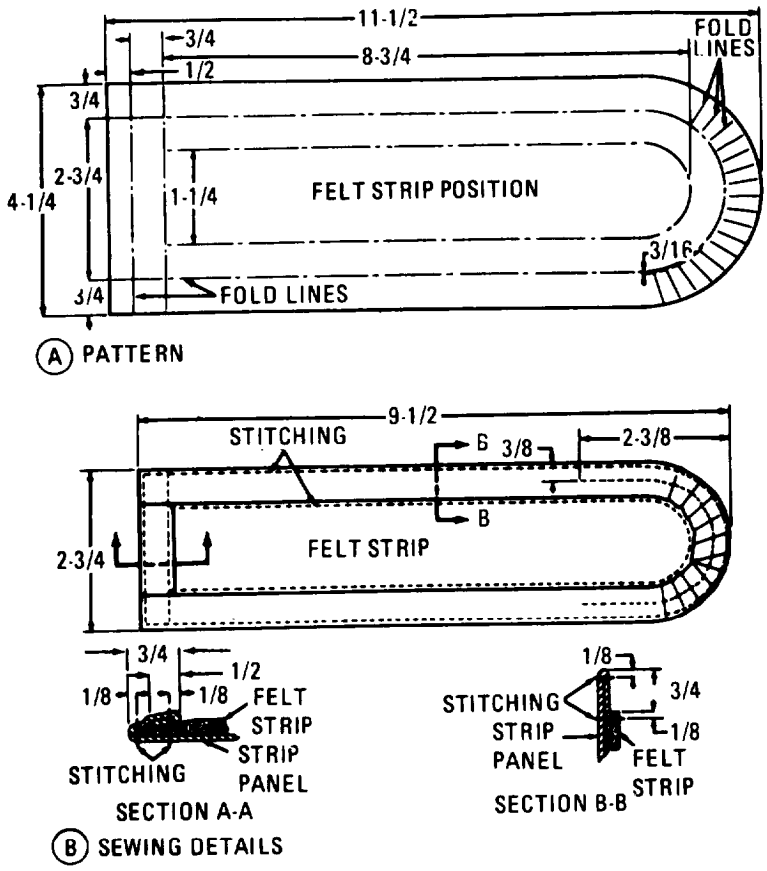


Figure 12-27. Replacement details, strip panel.

(2) Strip panel.

(a) Cut stitching and remove damaged strip panel from weapons case.

(b) Cut a 4¼ by 11½-inch (10.8 by 29.2 cm) piece of type I cotton duck cloth and a 1¼ by 8¾-inch (3.18 by 22.2 cm) piece of ¼-inch (0.635 cm) thick felt. Round one end of duck and felt as shown in Figure 12-27.

12-8. REPAIR AND MAINTENANCE OF INDIVIDUAL WEAPONS CASE – Continued

(c) Position felt on duck, and sew according to details in B, Figure 12-27. Use Model 111W155 sewing machine or equivalent and size FF nylon thread, making 7 to 9 stitches per inch (2.54 cm).

(d) Position new strip panel on case, and sew according to original construction details. Use Model 97-10 sewing machine or equivalent and ticket No. 3 nylon thread, making 5 to 8 stitches per inch (2.54 cm).

d. Repairing Tape, Webbing and Leather. Restitching is the only repair authorized for the tape, webbing, and leather items on the weapons case. Restitch loose or broken stitching on the corner reinforcement, tiedown loops, quick-adjustable buckle loop, and shock absorber loop with Model 7-33 sewing machine or equivalent and ticket No. 3 nylon thread, making 5 to 8 stitches per inch (2.54 cm). Restitch flap thong and slide fastener thong with Model 111W155 sewing machine or equivalent and size FF nylon thread, making 7 to 9 stitches per inch (2.54 cm). Restitch the leather reinforcement and all items of webbing not listed above with Model 97-10 sewing machine or equivalent and ticket No. 5 nylon thread, making 5 to 8 stitches per inch (2.54 cm). Lock all stitching at least ½ inch (1.27 cm).

e. Replacing Tape. The slide fastener thong, flap thong, tiedown tapes, and corner reinforcement may be replaced. Replace items as follows:

(1) Slide fastener thong, Replace a damaged or missing slide fastener thong with a 20-inch (50.8 cm) length of ¾-inch (1.90 cm) type I cotton tape. Fold tape lengthwise, aligning edges and sew 1/8 of an inch (0.318 cm) from the edge. Use Model 111W155 sewing machine or equivalent and size FF nylon thread, making 7 to 9 stitches per inch (2.54 cm). Tie ends of tape together with an overhand knot, and install tape on slide fastener.

(2) Flap thong. Replace a damaged or missing flap thong with a 6-inch (1 5.2 cm) length of ¾-inch (1.90 cm) type I cotton tape. Fold tape lengthwise, aligning edges, and sew 1/8 of an inch (0.318 cm) from the edge. Stitch thong to case as in original construction. Use Model 111W155 sewing machine or equivalent and size FF nylon thread, making 7 to 9 stitches per inch (2.54 cm).

(3) Tiedown tape or strap.

(a) Replace a damaged or missing upper tiedown tape with a length of 1-inch (2.54 cm) type I cotton tape. Cut a 54-inch (137.2 cm) length for the upper tiedown tape. Sear ends of tape as in paragraph 12-5. Pass one end of the tape under tiedown loop, pull tape halfway through, and tie tape to loop with a square knot.

(b) Replace a damaged or missing lower tiedown strap by fabrication of a hook and pile lower leg strap in accordance with following (Fig. 12-28 and 12-29):

12-8. REPAIR AND MAINTENANCE OF INDIVIDUAL WEAPONS CASE - Continued

NOTE

All stitching used in installation and fabrication of hook and pile leg tiedown strap shall be Type 301 FED STD No. 751 as follows:
*** Size 3 thread – 5 to 8 stitches/inch**
*** Size FF thread – 6 to 8 stitches/inch**
*** Ends of stitching shall be backstitched not less than ½ inch unless turned under in a hem or held down by other stitching.**

1 Cut a 43-inch (109 cm) length of Type VIII nylon webbing, cutting one end to form tapered end. Sear to prevent fraying.

2 Cut a 5-inch (12.7 cm) length of hook tape. Cut width to 1¾ inches (4.45 cm).

3 Cut a 6-inch (15.24 cm) length of pile tape. Cut width of pile tape to 1¾ inches (4.45 cm).

4 Mark webbing 3 inches from and also 8 inches from tapered end.

5 Position the 5-inch (12.7 cm) hook tape between the marks and stitch with a double X-box stitch using size FF nylon thread.

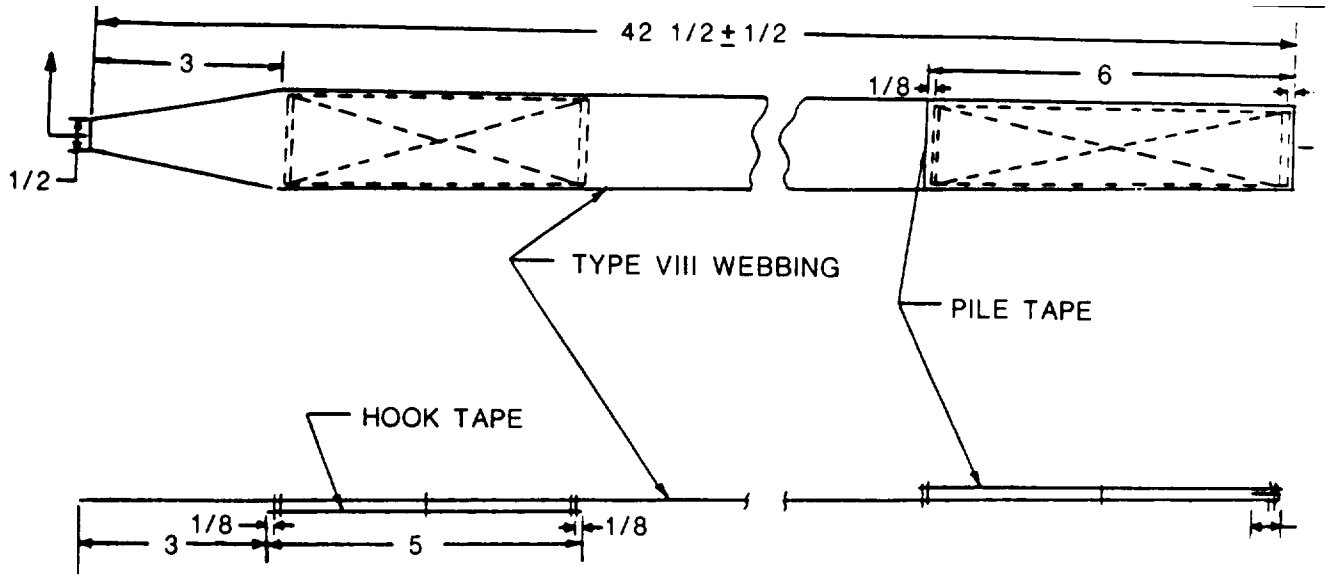
6 Turn webbing over and fold untapered end over ½ inch. Position the 6-inch (15.24 cm) pile tape even with edge of folded end, and stitch with a double X-box stitch using size FF nylon thread.

7 Position weapons case on repair table with lowering strap pocket facing upward.

8 Remove lower tiedown strap from loop of M-1950 weapons case.

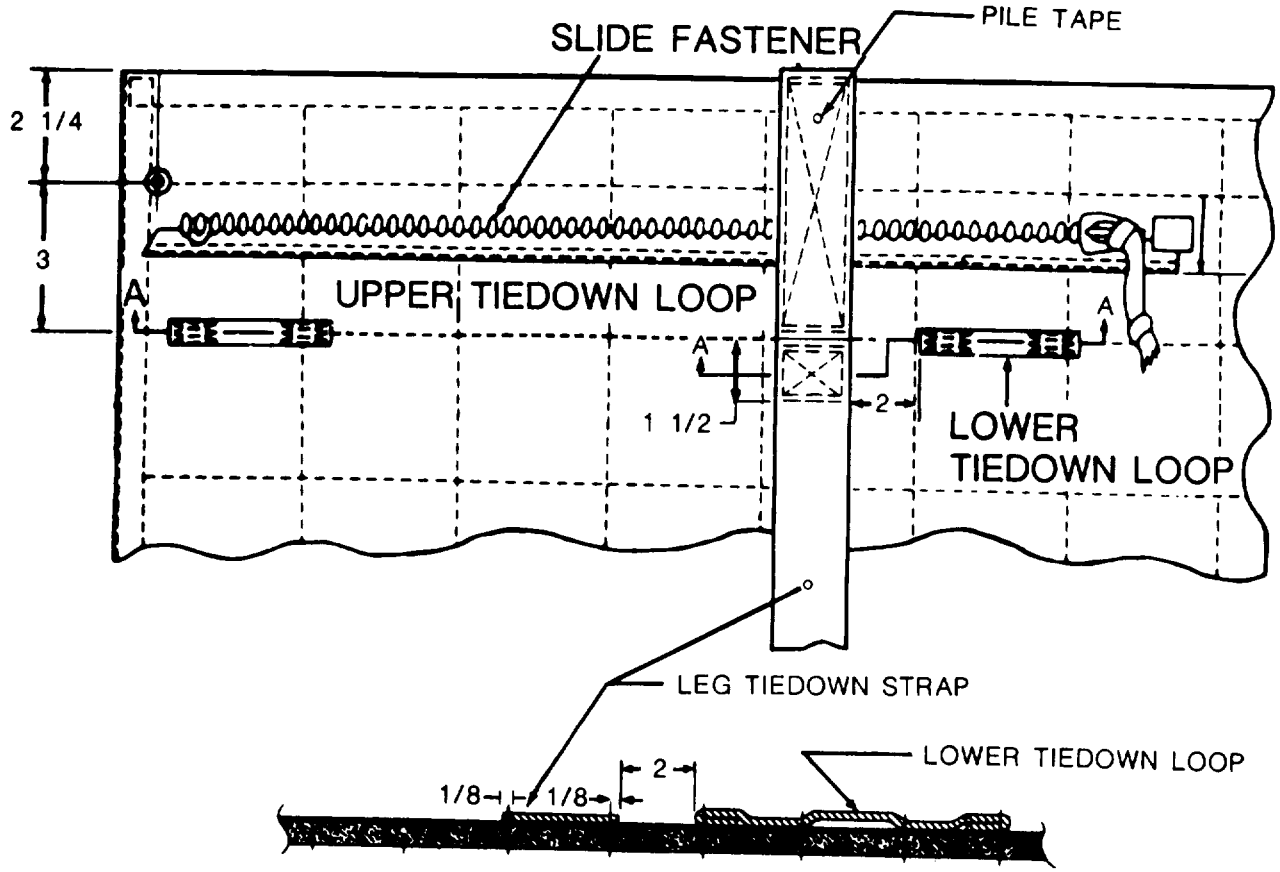
9 Unzip slide fastener and open flap.

10 Position hook and pile leg tiedown assembly (with pile facing up and toward slide fastener) 2 inches from lower tiedown loop end and 2 inches from end of pile tape alined on center line of lower tiedown loop. Stitch with double X-box stitch with size 3 nylon thread through single layers of cotton duck and felt pad.



SECTION A-A

Figure 12-28. Fabrication of Hook and Pile Leg Tiedown Strap.



SECTION A-A

Figure 12-29. Attachment of Hook and Pile Leg Tiedown Strap.

12-8. REPAIR AND MAINTENANCE OF INDIVIDUAL WEAPONS CASE – Continued

(4) Corner reinforcement. Replace a damaged corner reinforcement with a 5½ inch (14.0 cm) length of 1½ inch (3.81 cm) type I cotton tape as follows:

(a) Cut sufficient stitching to expose damaged corner reinforcement.

(b) Mark and fold tape as shown in Figure 12-30.

(c) Position replacement over damaged reinforcement. Sewing 1/8 of an inch (0.318 cm) from the edge, stitch replacement to case as shown in Figure 12-30. Use Model 111W155 sewing machine or equivalent and size FF nylon thread, making 7 to 9 stitches per inch (2.54 cm).

(d) Restitch loosened stitching according to original construction.

f. Replacing Leather Reinforcement. Replace a damaged leather reinforcement with an 8-inch (20.3 cm) square of 6/64-inch (0.238 cm) thick leather as follows:

(1) Cut stitching along side and bottom of weapons case. Cut stitching and remove damaged reinforcement from case.

(2) Position leather square on one side of case with rough side of leather next to felt as shown in Figure 12-30.

(3) Sew along one side of reinforcement, 1/8 of an inch (0.318 cm) from edge. Use Model 97-10 or 7-33 sewing machine or equivalent and ticket No. 5 nylon thread, making 5 to 8 stitches per inch (2.54 cm).

(4) Fold case, aligning sides as in original construction. Fold leather reinforcement and sew to other side of case, 4¾ inches (12.1 cm) from bottom of case.

(5) Restitch side and bottom of case according to original construction.

g. Replacing Webbing.

(1) All of the webbing items listed in (2) (a) through (2) (g) below may be replaced. To facilitate replacement of damaged webbing, cut stitching along side and end of weapons case and along one side of leather reinforcement. After installing new webbing, restitch leather reinforcement and side and end of case according to original construction.

(2) Replace webbing items as follows:

12-8. REPAIR AND Maintenance OF INDIVIDUAL WEAPONS CASE - Continued

(a) Tiedown loop. Replace a damaged tiedown loop with a 6-inch (15.2 cm) length of 1-inch (2.54 cm) type III cotton webbing as follows:

1. Cut stitching, and remove damaged loop.

2. Turn under ends of replacement webbing ½-inch (1.27 cm) and position replacement on weapons case.

3. Sew each end of replacement to weapons case with a 3-point WW stitch formation as shown in Figure 12-31. Use Model 7-33 sewing machine or equivalent and ticket No. 3 nylon thread, making 5 to 8 stitches per inch (2.54 cm).

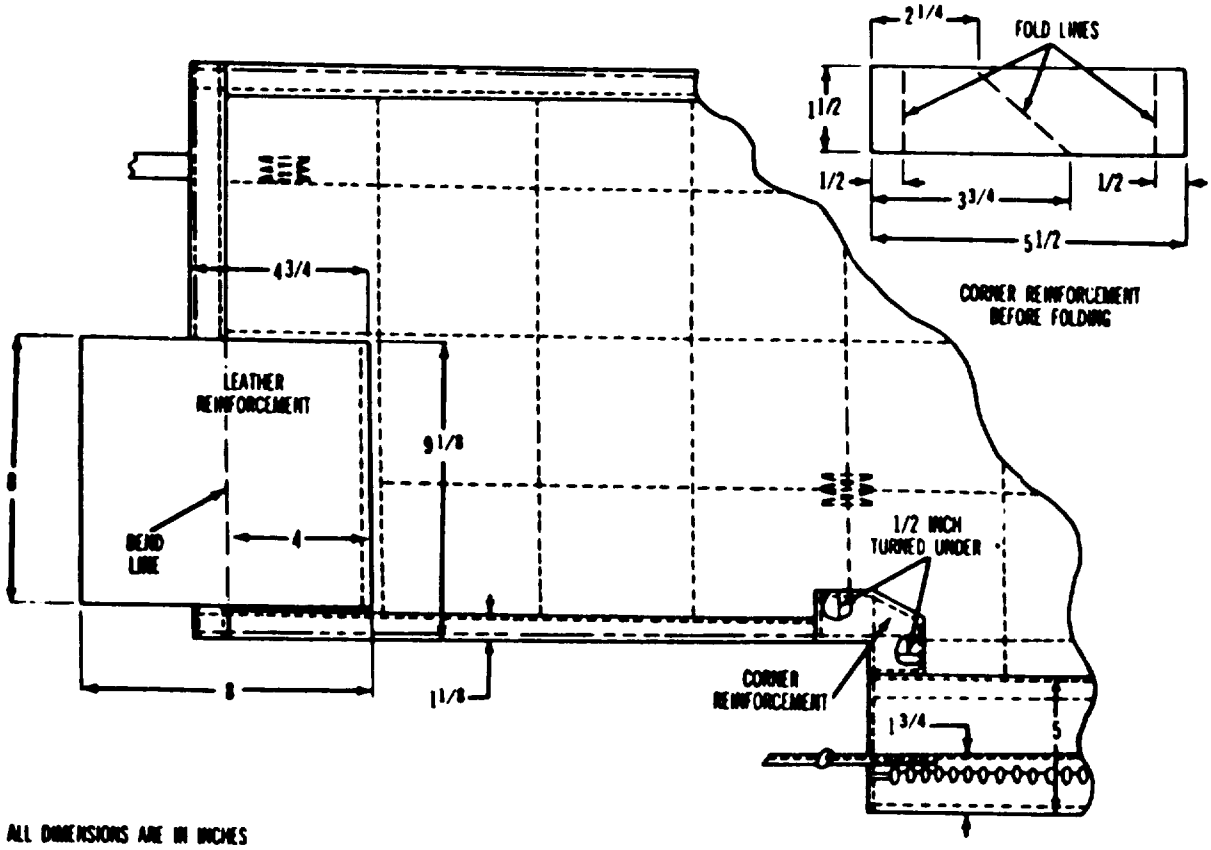


Figure 12-30. Replacement details, corner reinforcement and leather reinforcement.

12-8. REPAIR AND MAINTENANCE OF INDIVIDUAL WEAPONS CASE – Continued

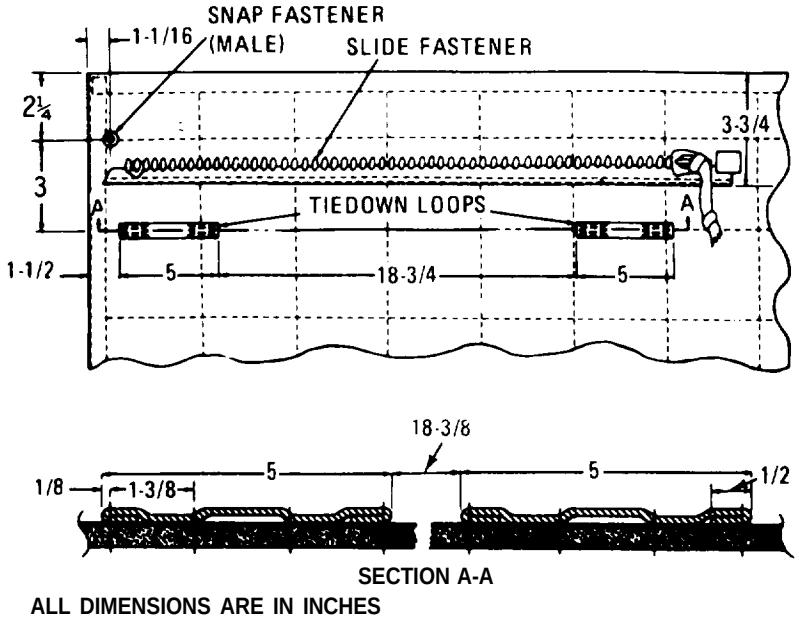


Figure 12-31. Replacement details, tiedown loop.

(b) Loop chape. Replace a damaged upper or lower loop chape with a 7-inch (17.8 cm) length of 1-inch (2.54 cm) type III cotton webbing as follows:

1. Cut stitching, and remove damaged chape and loops. When removing upper loop chape be careful not to cut stitching that secures triangular loop chape to case.

12-8. REPAIR AND MAINTENANCE OF INDIVIDUAL WEAPONS CASE–Continued

2. Install loops on replacement webbing, and sew webbing to case with a 3-point WW stitch formation as shown in Figure 12-32. Use Model 97-10 or 7-33 sewing machine or equivalent and ticket No. 5 nylon thread, making 5 to 8 stitches per inch (2.54 cm).

(c) Adjusting strap. Replace a damaged adjusting strap with a 25½-inch (64.8 cm) length of 1-inch (2.54 cm) type III cotton webbing as follows:

1. Cut stitching, and remove damaged strap.

2. Install an end clip at one end of replacement webbing. If end clip is not available, dip end of webbing to a depth of 2 inches (5.08 cm). Fold other end of webbing under ½ inch (1.27 cm).

3. Position webbing on weapons case as in original construction, and sew a 2-inch (5.08 cm) 3-point WW stitch formation. Overstitch end of webbing 1/8 of an inch (0.318 cm). Use Model 97-10 or 7-33 sewing machine or equivalent and ticket No. 5 nylon thread, making 5 to 8 stitches per inch (2.54 cm).

(d) Triangular loop chapes. Replace a double-loop or single-loop chape as follows:

1. Double-loop chape.

(a) Cut stitching, and remove upper loop chape and double-loop chape from weapons case. Remove quick-release snap link from double-loop chape, and remove double-loop chape webbing from triangular loop.

(b) Cut a 27½ inch (69.8 cm) length of type VIII cotton-nylon webbing, and pass webbing through quick-release snap link and triangular loop as shown in section AA of Figure 12-33.

(c) Position replacement loop on case, and sew a 3-point WW stitch formation according to details in Figure 12-33. Use Model 97-10 or 7-33 sewing machine or equivalent with ticket No. 5 nylon thread, making 5 to 8 stitches per inch (2.54 cm).

(d) Stitch upper loop chape in place as in (b)2, above.

2. Single-loop chape.

(a) Cut stitching, and remove damaged chape from weapons case. Remove chape webbing from triangular loop.

12-8. REPAIR AND MAINTENANCE OF INDIVIDUAL WEAPONS CASE–Continued

(b) Cut an 8-inch (20.3 cm) length of type VIII cotton nylon webbing. Thread webbing through triangular loop, position webbing on case, and sew a 3-point WW stitch formation according to details in Figure 12-33. Use same sewing machine thread, and stitch range as in (d)1(c) above.

(3) Restitching and Lubricating Slide Fastener.

(1) Restitching. Restitch loose or broken stitching on slide fastener tape with Model 111W155 sewing machine or equivalent and size FF nylon thread, making 7 to 9 stitches per inch (2.54 cm).

(2) Lubricating. Apply a limited amount of “zipper ease” lubricant to slide fastener when it becomes difficult to operate.

(f) Replacing Slide Fastener.

(1) Replace a damaged slide fastener with a serviceable item from stock as indicated in (2) through (5) below.

(2) Cut stitching, and remove slide fastener from case. Remove slide fastener thong and flap thong. Remove lowering strap pocket. Cut stitching along side of weapons case.

(3) Position new slide fastener on case. Sew each slide fastener tape to weapons case with two rows of stitching. Use Model 111W155 sewing machine or equivalent and size FF nylon thread, making 7 to 9 stitches per inch (2.54 cm).

(4) Restitch sides of weapons case as in original construction.

(5) Replace slide fastener thong, flap thong, and lowering strap pocket. Be careful not to sew through slide fastener when replacing lowering strap pocket.

(g) Replacing Hardware.

(1) Snap fastener. Replace a damaged snap fastener with a serviceable like item from stock. Install fastener in accordance with procedures in FM 10-16.

12-8. REPAIR AND MAINTENANCE OF INDIVIDUAL WEAPONS CASE–Continued

(2) Other items of hardware. Replace other damaged items of hardware on the weapons case with serviceable like items from stock. Do not attempt to straighten bent hardware or otherwise repair cracked or broken hardware. When it is necessary to cut any stitching to remove damaged hardware from webbing, replace hardware and webbing following procedures in the appropriate section of g above. Do not restitch the webbing.

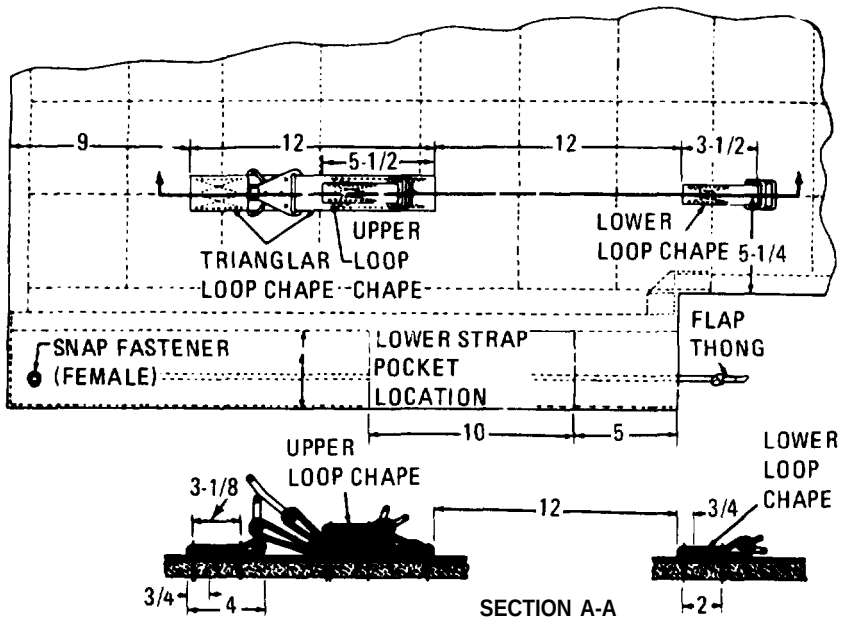
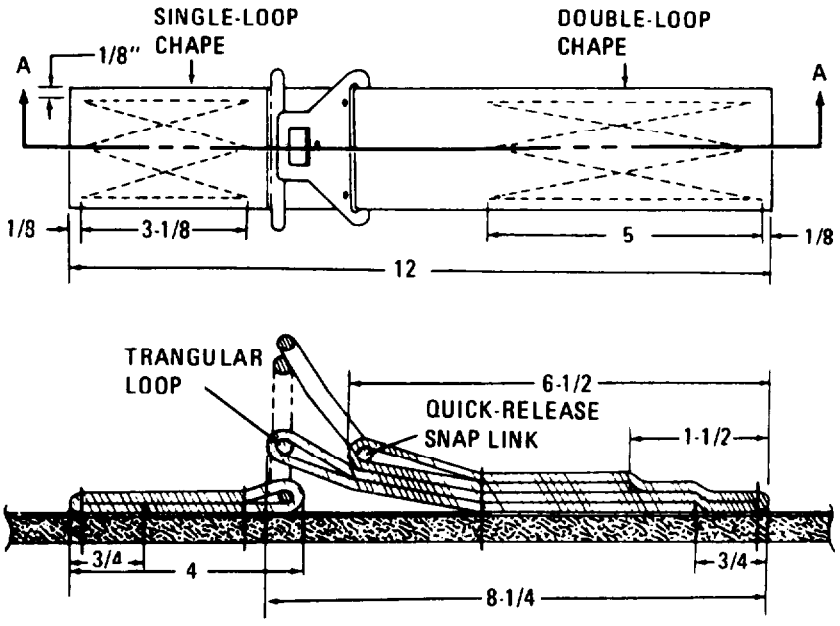


Figure 12-32. Replacement details, loop chape.

12-8. REPAIR AND MAINTENANCE OF INDIVIDUAL WEAPONS CASE–Continued



SECTION A-A

ALL DIMENSIONS ARE IN INCHES

Figure 12-33. Replacement details, triangular loop chapes.

Section III. MATERIALS

(1) SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
PAO	5340-00-981-6905	Adapter, Reversible, Quick Fit, 500 Lb, 1¾ Inch, MS70101	EA
PAO	5340-00-733-8212	Adapter, Reversible, Quick Fit, 2500 Lb, 1¾ Inch, Part No. 56C6028	EA
PAO	5340-00-297-6833	Clip, End, Ball Type: Brass, Black Chemical Finish, 1 In., Type 1, MIL-C-496.	EA
PAO	5340-00-856-5982	Fastener: Quick Release, Left Hand, Part No. 11-1-181 LH.	EA
PAO	5340-00-856-5981	Fastener: Quick Release, Right Hand, Part No. 11-1-181 RH.	EA
PAO	5325-00-599-9173	Fastener, Slide, Type IV, Style 12, Size MH, V-F-106.	EA
PAO	5325-00-286-9554	Fastener, Snap, Style I, Socket/Clinch Plate, Part No. MS27977	EA
PAO	5325-00-292-5345	Fastener, Snap, Style I, Stud/Washer, Part No. MS27977.	EA
PAO	5325-00-231-6882	Grommet, Metallic: Brass, Size O, Type Ill, Class 3, MIL-G-16491.	EA
PAO	5340-00-733-8213	Link, Adapter, Quick Release, 1¾ Inch, 2500 Lb, Part No. 11-1-183.	EA
PAO	5340-00-305-0843	Link: Snap, Quick Release, 1¾ Inch, Part No. MS70098.	EA
PAO	5340-00-663-9457	Loop Strap Fastener: Brass, Black Finish, Type I, Style B, 1 1/16 by ½ Inch, MlL-L-11075.	EA
PAO	5340-00-376-1326	Loop, Triangular: 1¾ In. Type IV, MlL-H-10050.	EA
PAO	5340-00-846-5980	Pin, Keeper: Quick Release, Locking, 1 7/16 In., Part No. 11-1-182.	EA
PAO	5340-00-856-5979	Push, Pull Actuator Assembly: Quick Release, Part No. 11-1-182	EA
PAO	1670-00-360-0471	Ring, Parachute Harness, “V”, 2500 Lb, 1¾ Inch, Part No. MS22045.	EA
PAO	5320-00-270-2814	Rivet, Tubular: Oval Head, Brass, 3/16 In. Dia., ½ In, Lg.	EA
PAO	5340-00-094-8004	Snap, Hook-Coil Spring, Parachute 2500 Lb. 13/4 Inch, Part No. MS22044.	EA
PAO	5340-00-377-6625	Snap, Hook, Quick Release, Part No. MS70099.	EA
PAO	5310-00-616-6353	Washer, Flat: Round Brass, 3/16 In. Id.	EA

Section III. MATERIALS–Continued

(1) SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
		TEXTILE	
PAO	8305-00-170-5854	Cloth, Duck Cotton, Color 0-7, MRWRT, 36-Inch Width conforming to Type I, No. 6 of CCC-C-419.	YD
PAO	8305-00-227-1247	Felt, ¼-Inch Thick, Color Gray, Class 12R2, MRT, 72-Inch Width of C-F-206.	YD
PAO	8305-00-290-5587	Felt, 1¼ Inch Thick	YD
PAO	8315-00-253-6290	Tape, Textile, Cotton, Type I, 1-Inch Wide, Olive Drab-7 of MIL-T-43566.	YD
PAO	8315-00-253-6292	Tape, Textile, Cotton, Type I, 1½ Inch Wide, Olive Drab-7 of MIL-T-43566.	YD
PAO	8315-00-253-6289	Tape, Textile, Cotton, Type I, ¾-Inch Wide, Olive Drab-7 of MIL-T-43566.	YD
PAO	8315-00-498-6631	Fastener Tape, Hook, Nylon, Color OG-106, 2-Inch Width, Type II, Class I of MIL-F-21840.	YD
PAO	8315-00-450-9837	Fastener Tape, Pile, Nylon, Color OG-106, 2-Inch Width, Class I of MIL-F-21840.	YD
PAO	8305-00-263-2477	Webbing, Textile, Cotton, Type III, 1-Inch Wide, Olive Drab-7 of MIL-W-530.	YD
PAO	8305-00-260-2564	Webbing, Textile, Cotton, Type VIII, 1¾ Inch, Olive Drab-7 of MIL-W-5665.	YD
PAO	8305-00-270-1894	Webbing, Textile, Elastic, Cotton, 1-Inch Wide, Olive Drab-7 of MIL-W-5664.	YD
PAO	8305-00-261-8579	Webbing, Textile, Nylon, Type IV, 1-Inch Wide, Olive Drab-7 of MIL-T-5038.	YD
PAO	8305-00-261-8585	Webbing, Textile, Nylon, Type VIII, 1 23/32 Inch, Olive Drab-7 of M IL-W-4088.	YD
PAO	8305-00-559-6871	Webbing, Textile, Nylon, Color Yellow No. 1365, MIL-W-4088, Type VIII, Class I and Class R, MIL-W-27265.	YD
PAO	8305-00-261-8584	Webbing, Textile, Nylon, Type X, 123/32 Inch Wide, Olive Drab-7 of MIL-W-4088.	YD
PAO	8305-00-753-6497	Webbing, Type IV, Nylon Webbing	YD
		THREAD	
PAO	8310-00-262-2772	Thread, Nylon, Size E, Green, 2800 yd tube, Type I, Class 1 of V-T-295	TU
PAO	8310-00-227-1244	Thread, Nylon, Size FF, Olive Drab, 1362 yd per tube, Type I, Class 1 of V-T-295.	TU
PAO	8310-00-267-3027	Thread, Nylon, Size No. 3, Olive Drab, 900 yd per tube, Type I, Class 1 of V-T-295.	TU
PAO	8310-00-262-2777	Thread, Nylon, Size No. 5, Olive Drab, 500 yd per tube, Type I, Class 1 of V-T-295.	TU

Section III. MATERIALS–Continued

(1) SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
		MISCELLANEOUS	
PAO	7510-00-286-5362	Ink, Marking Parachute, Color Strata Blue, Type IV of MIL-T-6903.	BT
PA	9150-00-999-7548	Lubricant Stick form Zipper Ease	BX

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CHAPTER 13
MAINTENANCE OF RUCKSACK

Section I. INTRODUCTION

13-1. SCOPE

This chapter prescribes the procedures and instructions for the maintenance and repair of the rucksack.

13-2. TECHNICAL PUBLICATIONS

NUMBER	TITLE
TM 9-237	Welding Theory and Application
FM 10–16	General Fabric Repair

13-3. IDENTIFICATION AND DESCRIPTION

a. General Description. The rucksack (Figs. 13–1 and 13-2) is fabricated essentially of cloth, cotton duck; it is supported by a tubular steel frame, and is equipped with shoulder straps for carrying purposes. The frame fits into a leather frame support on the body of the rucksack, and is attached by a snap fastener installed in the support. The bottom of the rucksack is secured to the frame with web straps. There are three outside pockets which close by means of leather straps and buckles. The top of the rucksack closes by a drawstring laced through 10 grommets inserted in the top hem, and is covered by a pouch flap which fastens down with two straps and buckles. There is an inside pocket in the pouch flap which closes with a 10-inch (25.4 cm) slide fastener. The body of the rucksack is also provided with three cotton duck tabs equipped with grommets for attaching various field equipment. The rucksack is normally used in cold areas, and a white cover is provided for camouflage purposes.

b. Components.

(1) Rucksack. Rucksack, NSN 8465-00-935-6825, cotton duck and webbing, olive drab, Army shade 7, mildew resistant and water repellent treated, four pockets, with rifle securing strap and hook assembly, with shoulder strap billets, without quick release device, MIL–R-1619, type I.

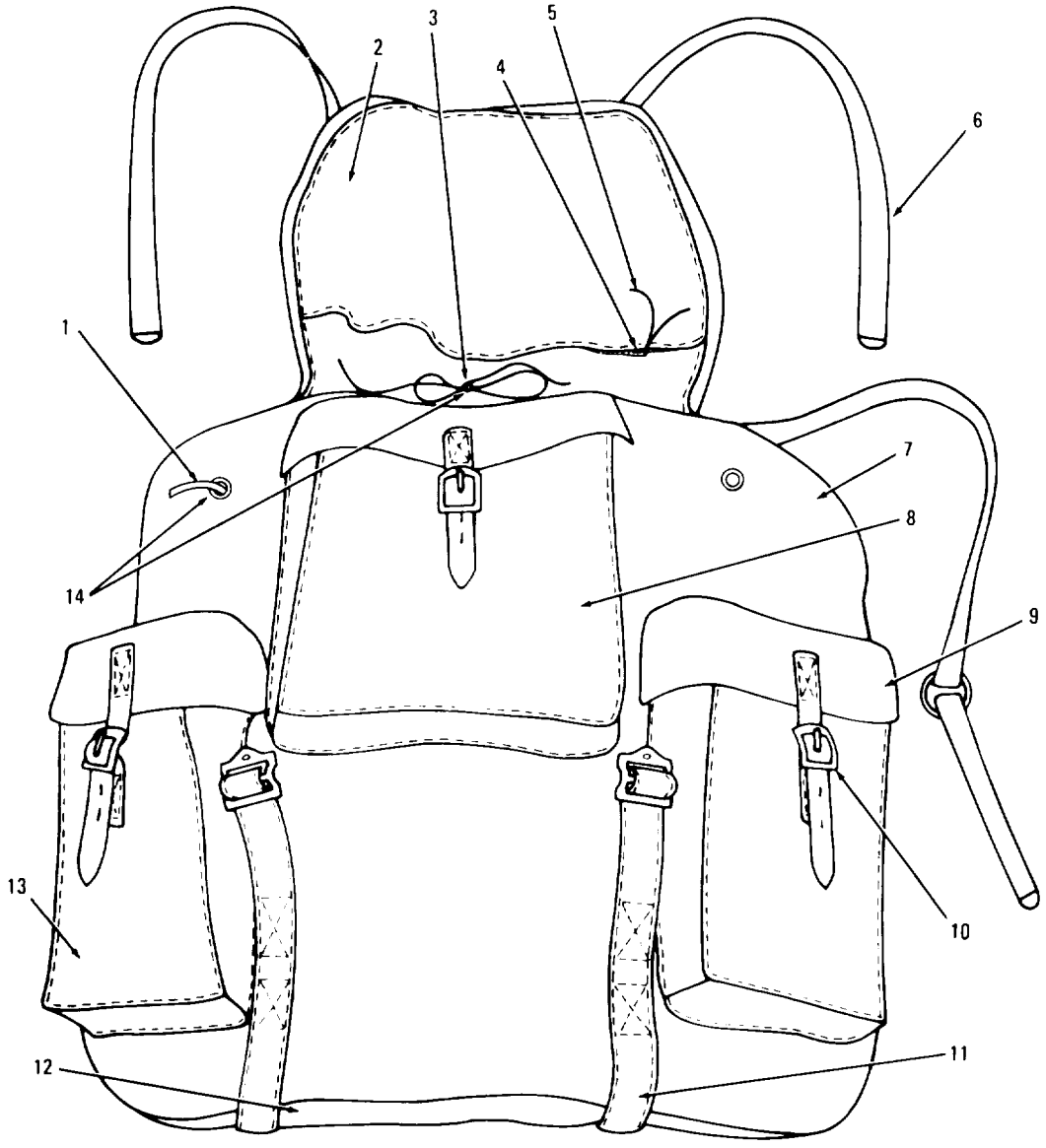
13-3. IDENTIFICATION AND DESCRIPTION–Continued

(2) Cover. Cover, rucksack, cotton fine plain balloon cloth, white, length 47¾ in. (121 cm), width 47¾ in. (121 cm), NSN 8465-00-001-6478 (Fig. 13-3).

(3) Frame. Frame, rucksack, steel tubing, reinforced with crossplates and sleeve, olive drab enameled finish, 19 in. (48.3 cm) long 17 in. (43.2 cm) wide, 6¼ in. (15.9 cm) deep, MIL-F-43673, NSN 8465-00-558-0151 (Fig. 13-4).

(4) Snap hook and thong assembly. Snap hook and thong assembly, rucksack, one 2¾ in. (6.98 cm) long, 1 5/32 in. (2.94 cm) wide, bronze finish bronze hook, with 6/64 in. (0.238 cm) to 8/64 in. (0.318 cm) thick mildew resistant and water repellent treated leather thong, MIL-R-1619, NSN 8465-00-551-2169.

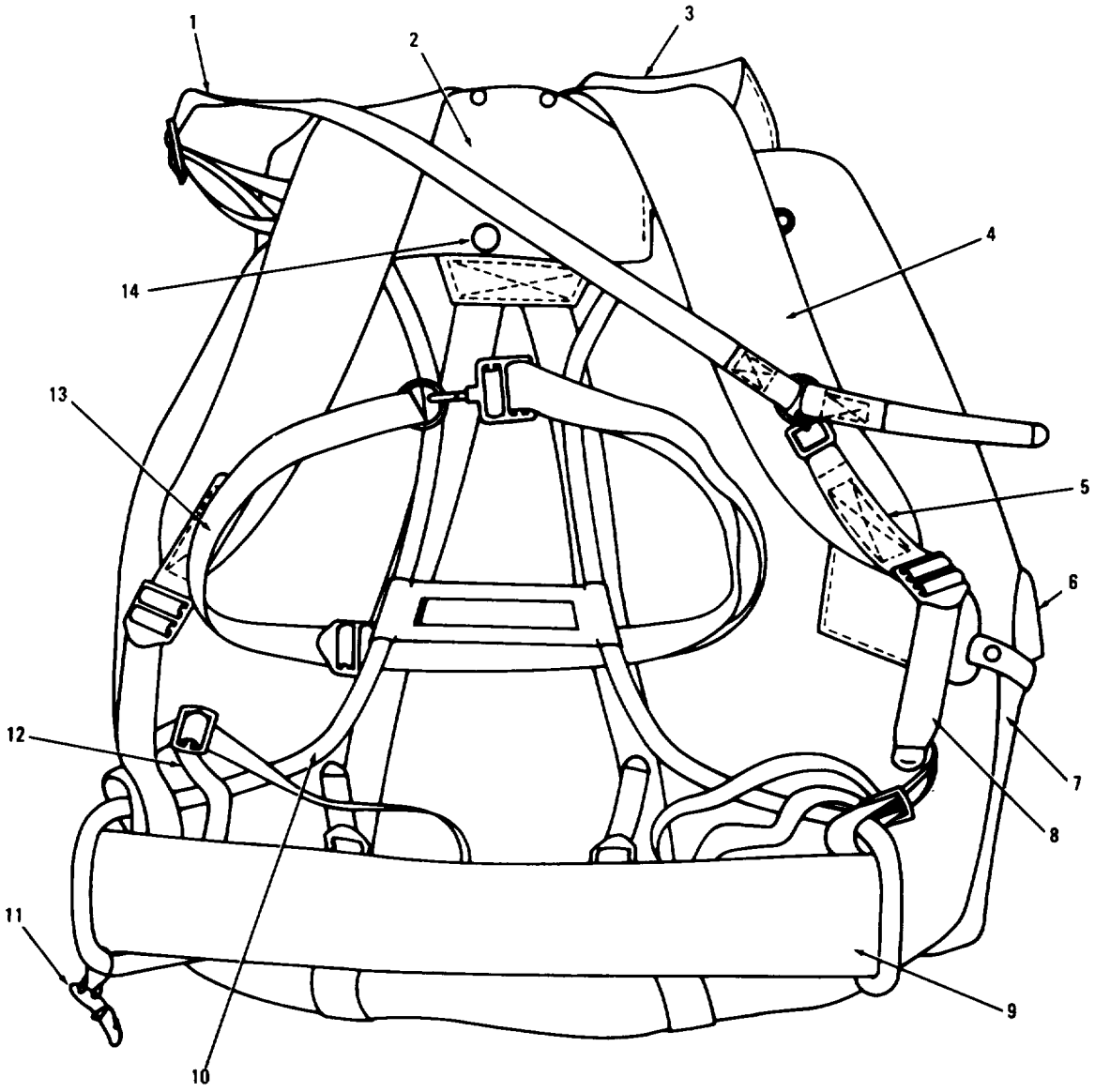
13-3. IDENTIFICATION AND DESCRIPTION–Continued



1. TAB
2. POUCH FLAP ASSEMBLY
3. DRAWSTRING
4. SLIDE FASTENER
5. SLIDE PASTENER THONG
6. POUCH REINFORCEMENT STRAP BILLET
7. POUCH BODY
8. MEAT CAN POCKET
9. SIDE POCKET FLAP W/BILLET
10. POCKET BUCKLE CHAPE
11. POUCH REINFORCEMENT STRAP
12. POUCH BOTTOM
13. SIDE POCKET
14. NO. 0 GROMMET W/TOOTHED WASHER

Figure 13-1. Rucksack w/pouch flap open (front view)

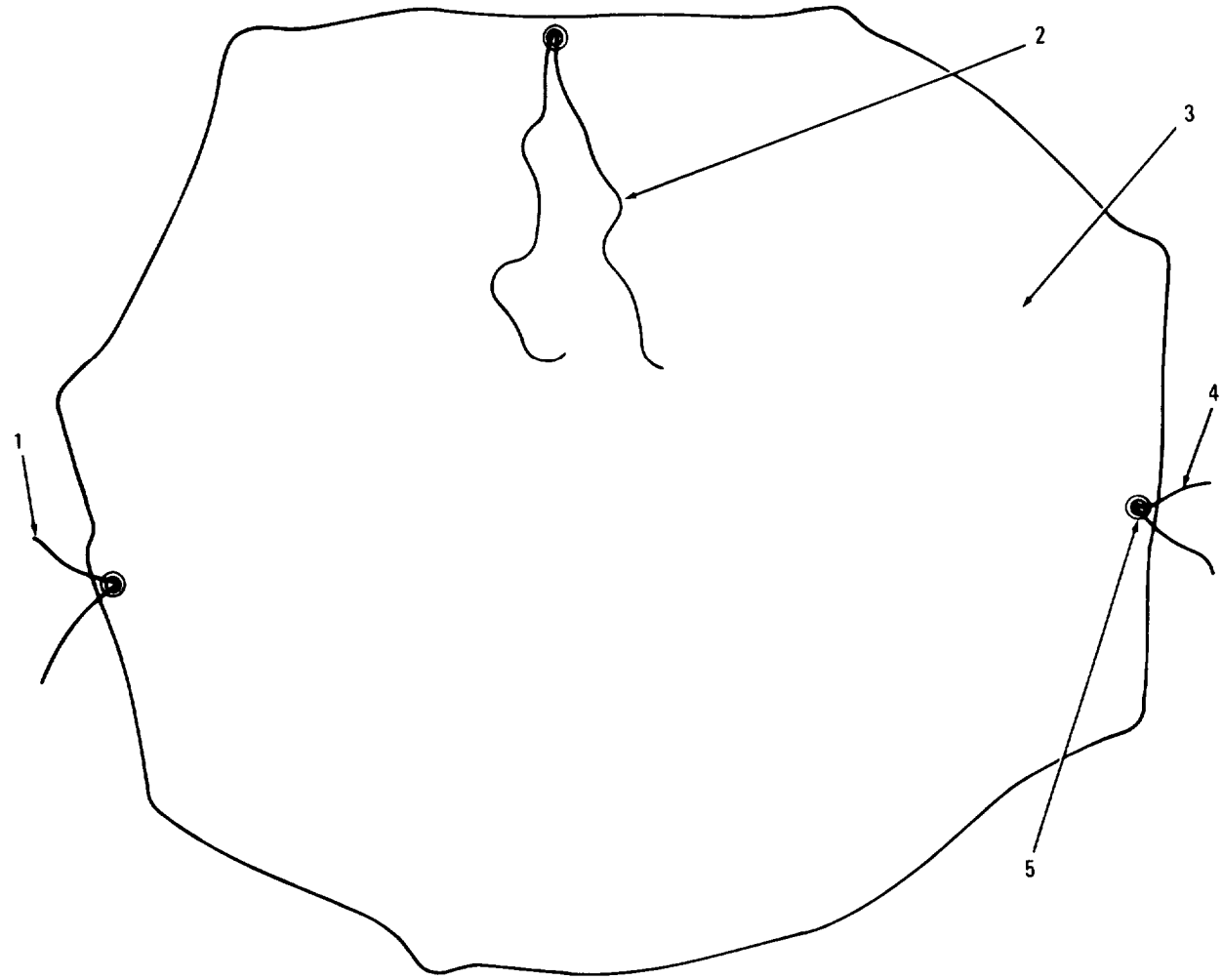
13-3. IDENTIFICATION AND DESCRIPTION-Continued



1. RIFLE SECURING STRAP
2. FRAME SUPPORT
3. SHOULDER CONNECTING STRAP
4. SHOULDER STRAP
5. SHOULDER STRAP CHAPE W/BUCKLE
6. LOOP AND BUCKLE CHAPE
7. LOOP AND BUCKLE CHAPE BILLET
8. SHOULDER STRAP BILLET
9. BACK STRAP
10. FRAME
11. LOCK SNAP
12. FRAME SECURING STRAP
13. WAIST STRAP
14. SNAP FASTENER

Figure 13-2. Rucksack w/frame assembled, rear view.

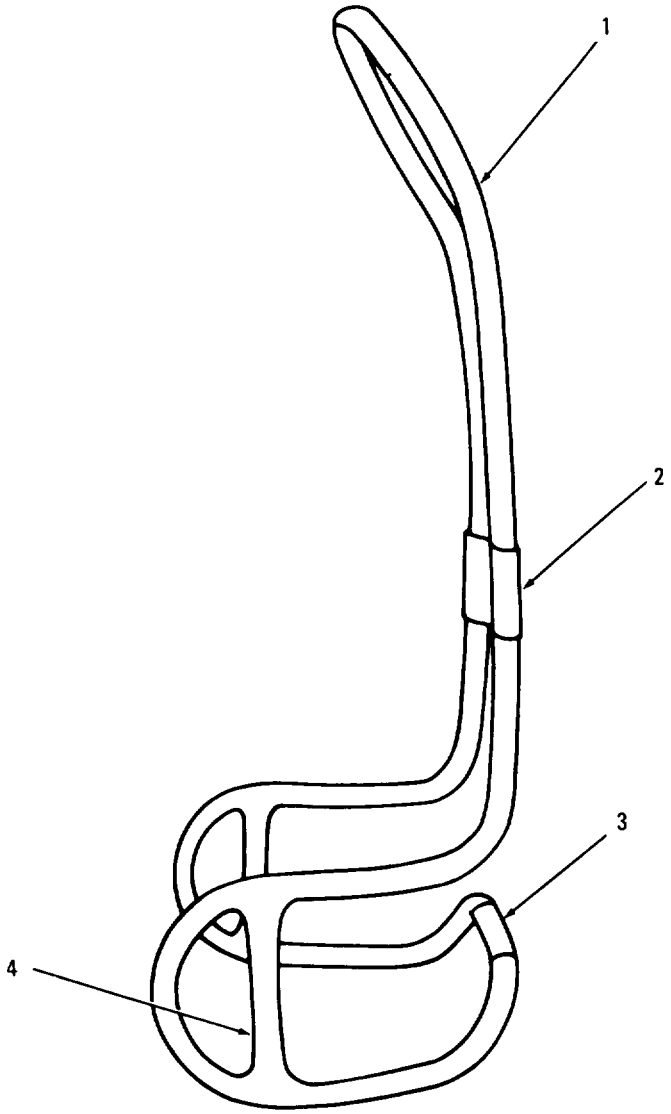
13-3. IDENTIFICATION AND DESCRIPTION–Continued



1. DRAWSTRING NO. 1, 12 FT LONG
2. TIE STRING, 30 IN. LG
3. BODY
4. DRAWSTRING NO. 2, 12 FT LONG
5. GROMMETS, SIZE 2

Figure 13-3. Camouflage cover.

13-3. IDENTIFICATION AND DESCRIPTION–Continued



1. FRAME BODY
2. REINFORCEMENT
3. SLEEVE
4. CROSSPLATES

Figure 13-4. Rucksack frame.

Section II. REPAIR PROCEDURES

13-4. ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

a. Rucksack Cover

(1) Complete cover.

(a) Inspect.

1. Inspect for rips, tears, holes, cuts, broken or missing stitches, and badly worn areas.

2. Check to see that all grommets, drawstrings, and tie strings are present, in a serviceable condition and properly attached.

(b) Replace. Replace complete cover when it cannot be made serviceable by minor hand sewing of fabric and replacement of drawstrings.

(2) Drawstrings. Replace drawstrings (1 and 4, Fig. 13-3) when missing, badly worn, or damaged. Fasten or twist a piece of rigid wire to one end of new drawstring and use it as a needle to thread the twine through channel of cover hem; be careful not to puncture the fabric with the wire.

(3) Fabric. Mend minor rips and tears in body (3, Fig. 13-3) of cover by hand sewing. If patching is necessary, make a neat patch by turning under raw edges and keeping stitches small. Sew ripped seams to prevent additional damage. Refer to FM 10-16 for basic sewing and patching procedures.

b. Frame

(1) Inspect.

(a) Inspect for rust, bare or badly painted surfaces, and bent or damaged areas.

(b) Check to see that all welds are sound and firmly attached, and sleeve firmly crimped in place.

(2) Repair. Place frame in a vise and straighten minor bends to original contour, when possible. Touch up badly worn and bare metal surfaces with appropriate enamel to prevent rust.

(3) Replace. Replace frames which are unserviceable, and beyond scope of repairs authorized.

c. Rucksack Body.

(1) Assembly complete.

(a) Inspect.

13-4. ORGANIZATIONAL MAINTENANCE INSTRUCTIONS–Continued

1. Inspect cloth for rips, tears, holes, cuts, broken or missing stitches, and badly worn areas.

2. Inspect leather for cuts, holes, broken or missing stitches, and badly worn areas.

3. Inspect webbing for cuts, rips, tears, broken or missing stitches, and signs of extreme wear.

4. Check to see that all hardware, slide fastener w/thong, and drawstring are present and in a serviceable condition.

(b) Replace. Replace complete assembly when beyond repair and parts replacement authorized.

(2) Fabric. Repair minor rips and tears in rucksack body by hand sewing. To mend ripped seams, place the two edges together and sew, keeping the stitches small and in line with the original. To repair small tears in the fabric, pinch the two edges together on the underside and sew together neatly. A straight tear over ¾-inch (1.91 cm) long or an L-shaped tear requires a patch. For details on patching and sewing of canvas see FM 10-16.

(3) Back strap. Replace entire backstrap (9, Fig. 13-2) if missing or if webbing is damaged; replace end clips if damaged or missing, provided the webbing is serviceable.

(4) Shoulder strap billet. Replace entire shoulder strap billet (8, Fig. 13-2) when missing, badly frayed, or damaged; replace missing or damaged end clips, provided rest of billet is serviceable.

(5) End clips. Replace defective or missing end clips with serviceable ones. When replacing an original strap or billet, cut off a small portion of old webbing so it will be straight at point of entrance into the clip. Insert webbing into clip and flatten with hammer (or appropriate machine if available).

(6) Waist strap. Replace waist strap (13, Fig. 13-2) when damaged or missing.

(7) Drawstring. Replace drawstring (3, Fig. 13-1) when damaged or missing.

(8) Slide fastener.

(a) Lubrication. Wipe slide fastener with clean cloth to remove foreign matter, and apply stick lubricant. Work slider back and forth a few times to lubricate and to check for proper functioning.

(b) Replace thong. Replace missing or damaged slide fastener thong (5, Fig. 13-1). Fabricate thong 7 inches (17.8 cm) long and in width to fit slider from appropriate leather; insert into slide fastener pull, center and tie knot.

13-4. ORGANIZATIONAL MAINTENANCE INSTRUCTIONS – Continued

d. Snap Hook and Thong Assembly.

(1) Inspect. Check to see that the thong and snap hook are present and that snap hook functions properly.

(2) Replace. Replace wire lock snap (11, Fig. 13-2) when damaged or missing, with new snap hook and thong.

13-5. DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

a. Rucksack Cover.

(1) Grommets. Replace missing or damaged grommets (5, Fig. 13-3) with new ones. Refer to FM 10-16 for installation procedures.

(2) Tie string. Replace missing or damaged tie string on camouflage cover. Cut the tie string (2, Fig 13-3) 30 inches (76.2 cm) long, double it, and sew 1 inch (2.54 cm) of the loop in hem with 14 inches (35.6 cm) hanging free at each end. Tie overhand knots in ends of the string.

b. Frame. Repair rucksack frame (Fig. 13-4) by spot-welding broken reinforcements (2) and crossplates (4) to the frame body (1) as attached in original constructions. For welding instructions see TM 9-237. If sleeve (3) is loose, crimp tightly with pliers to insure against frame spreading.

WARNING

Personnel engaged in welding should be equipped with welding goggles or hoods proper for type welding being done, and adequate precautions taken to prevent injury to the welder and other personnel.

c. Rucksack Body.

(1) Fabric. Patch tears and rips on the rucksack pouch bottom (12, Fig. 13-1) with 12.29 ounce (348 g) cotton duck. For all other parts of pouch body (7), pouch flap assembly (2), and all pockets, use 9.85 ounce (279 g) cotton duck. For basic patching and sewing procedures, see FM 10-16.

(2) Sewing. All sewing will be by machine, using stitch type 301 per Federal Standard 751. Maintain proper thread tension to prevent loose stitches and backstitch thread breaks not less than 1 inch (2.54 cm) at each break. Use size FF thread for sewing leather frame support and shoulder strap to pouch back, center reinforcement and leather reinforcement; frame supports together; and billets, chapes and webbing reinforcement straps, sewing six stitches per inch. For all other sewing, use F thread, sewing eight stitches per inch.

13-5. FIELD MAINTENANCE INSTRUCTIONS-Continued

(3) Binding, pouch flap assembly. Replace badly worn or damaged binding on pouch flap assembly (2, Fig. 13-1). Carefully open seams and remove the old binding, and sew on new ¾-inch (1.91 cm) webbing to match original constructions.

(4) Billets and chapes. Replace damaged or missing billets and chapes by fabricating from applicable webbing or leather to conform to original construction, and machine sew in place. Methods of fabrication and attachment are described in FM 10-16.

(5) Hardware. Replace damaged or missing buckles, loop strap fastener, round and D-rings, and loops with serviceable like item. Exception is the waist strap for which no repair is authorized.

(6) Slide fastener. Replace slide fastener (4, Fig. 13-1) in pouch flap assembly when damaged. Carefully remove stitching securing slide fastener tape to pouch flap assembly and remove defective fastener. Position new fastener in place and sew tape to pouch in position of original item.

(7) Snap fastener. Replace damaged snap fastener (14, Fig. 13-2) in the leather frame support (2, Fig. 13-2) as prescribed in FM 10-16.

(8) Grommets. Replace missing or damaged grommets (14, Fig. 13-1 – in the pouch body and in tabs with No. 0 grommets and in frame support for rifle securing strap with No. 5 grommet. For grommet installation refer to FM 10-16.

(9) Rivets and washers. Replace missing or damaged rivets and washers in frame support. For installation procedures refer to FM 10-16.

(lo) Straps. Replace damaged or missing straps designated below by fabrication of new strap from applicable webbing to conform to size, length, and design illustrated.

(a) Shoulder strap and shoulder connecting strap (Fig, 13-5).

(b) Frame securing strap (Fig. 13-6).

(c) Pouch reinforcement strap (Fig. 13-7).

(d) Rifle securing strap (Fig. 13-8).

(11) Tabs. Replace missing or damaged tabs (1, Fig. 13-1) by fabricating new ones from appropriate cotton cloth to match originals, insert grommets, and sew in place.

13-5. FIELD MAINTENANCE INSTRUCTIONS–Continued

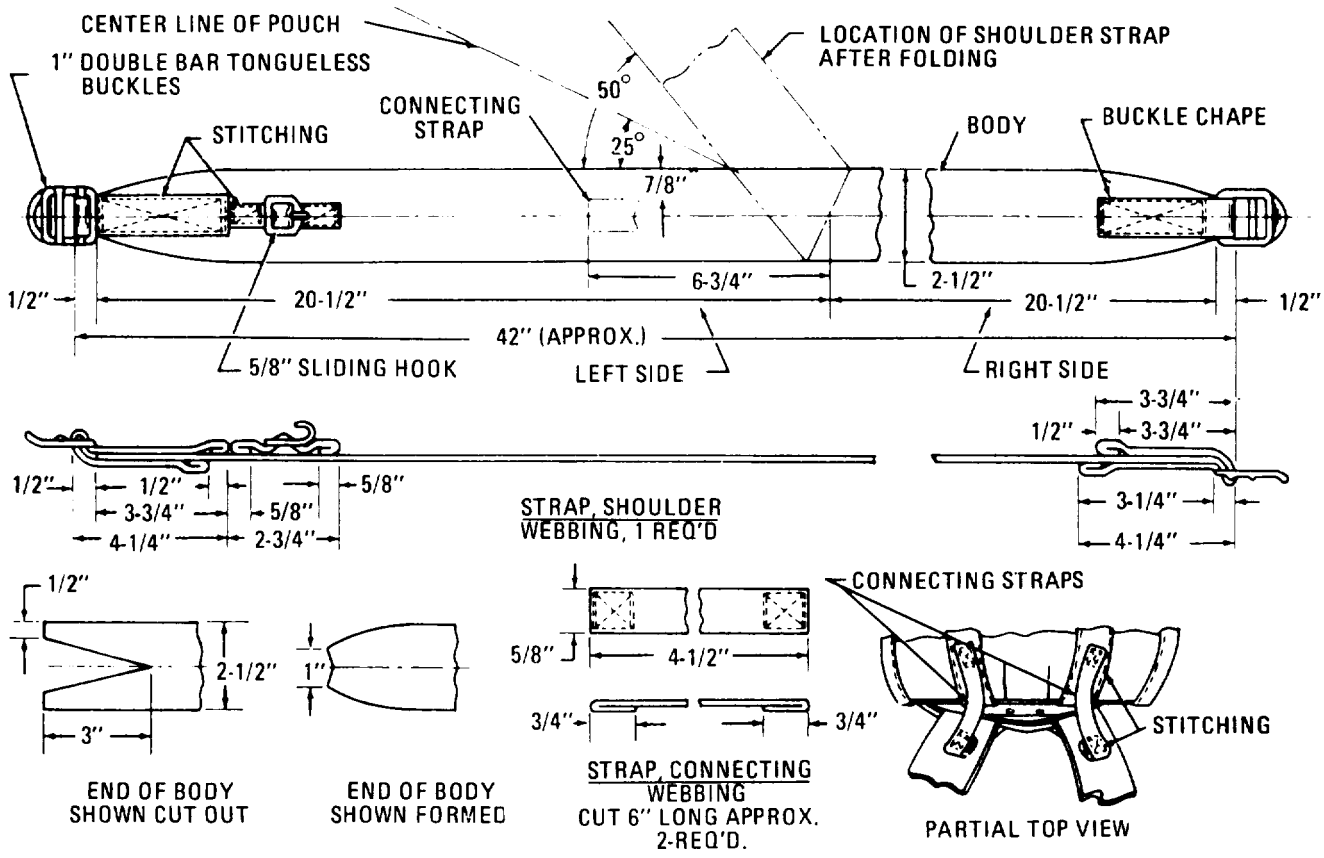
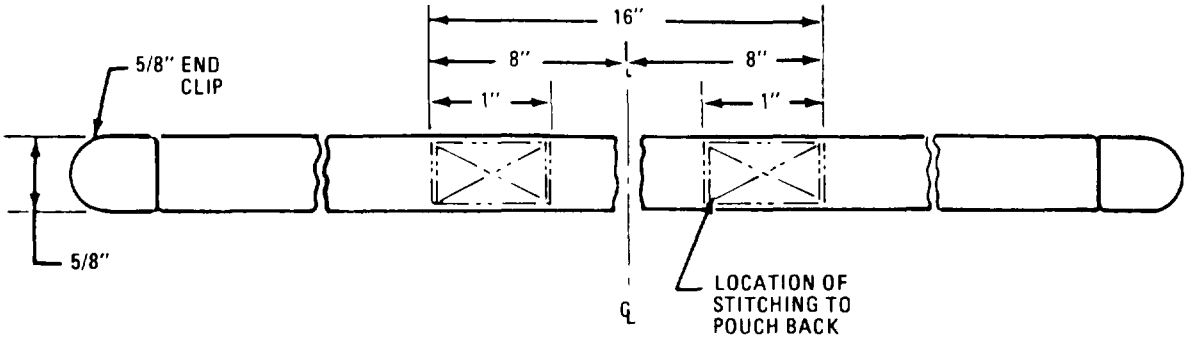


Figure 13-5. Shoulder strap and shoulder connecting strap.

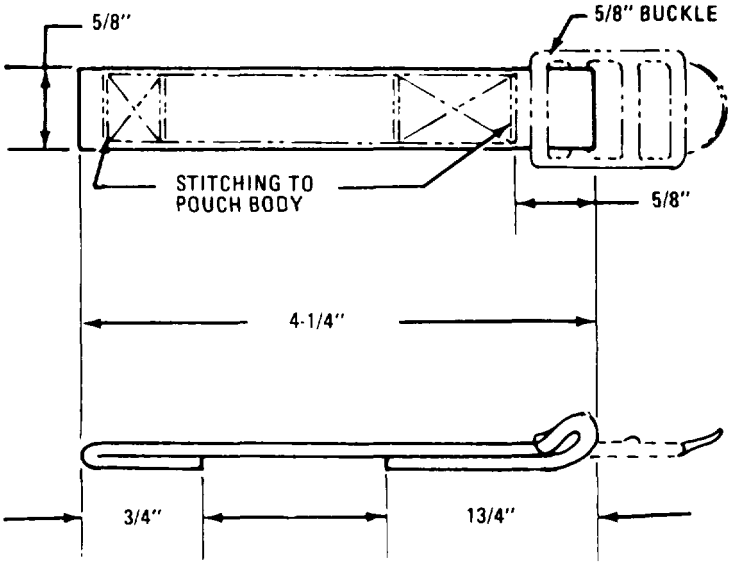
13-5. FIELD MAINTENANCE INSTRUCTIONS–Continued



STRAP, FRAME SECURING

WEBBING

CUT 36" LONG, 1 REQ'D



CHAPE, BUCKLE, FRAME SECURING STRAP

WEBBING CUT 6-3/4" LONG APPROX.

2 REQ'D

Figure 13-6. Frame securing strap.

13-5. FIELD MAINTENANCE INSTRUCTIONS–Continued

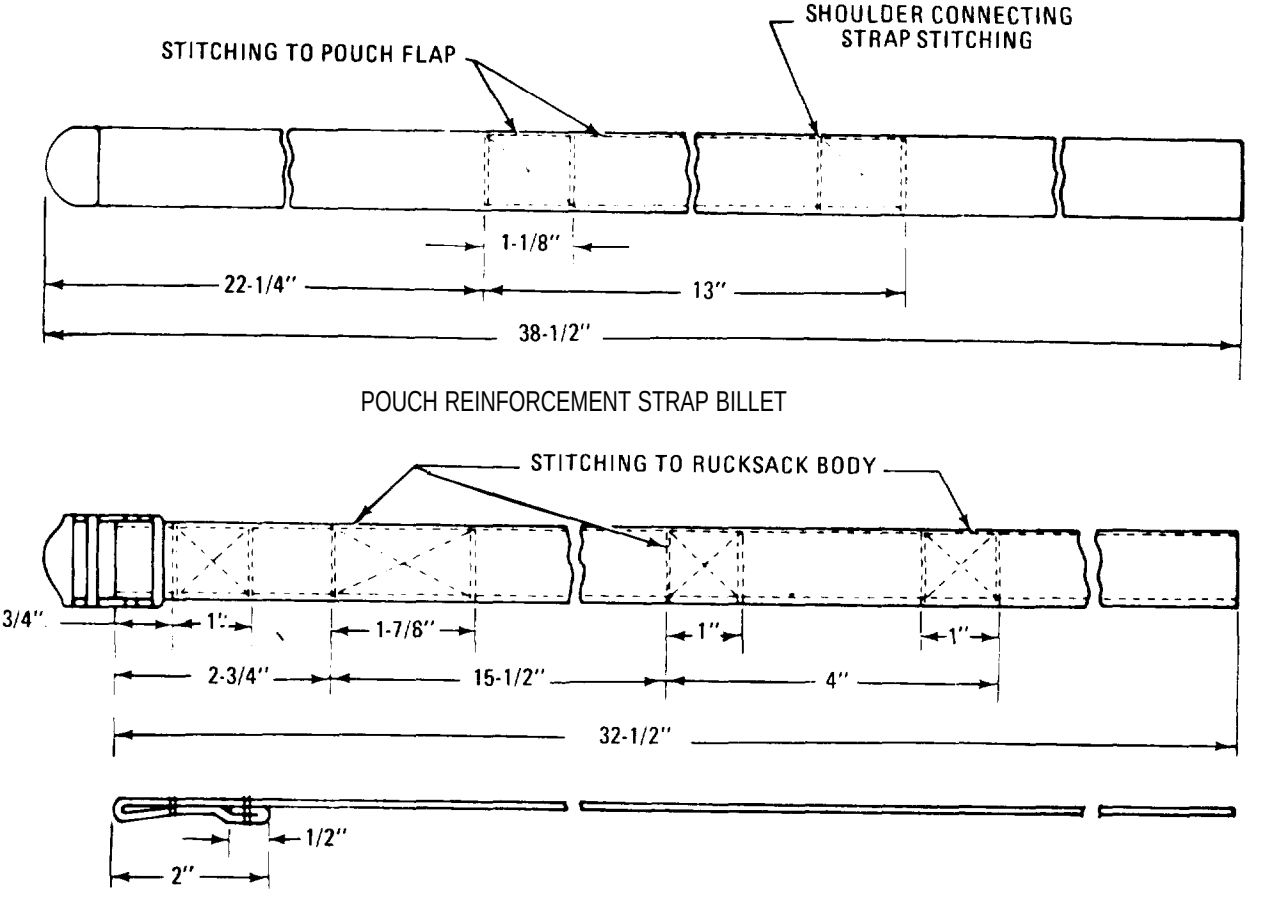
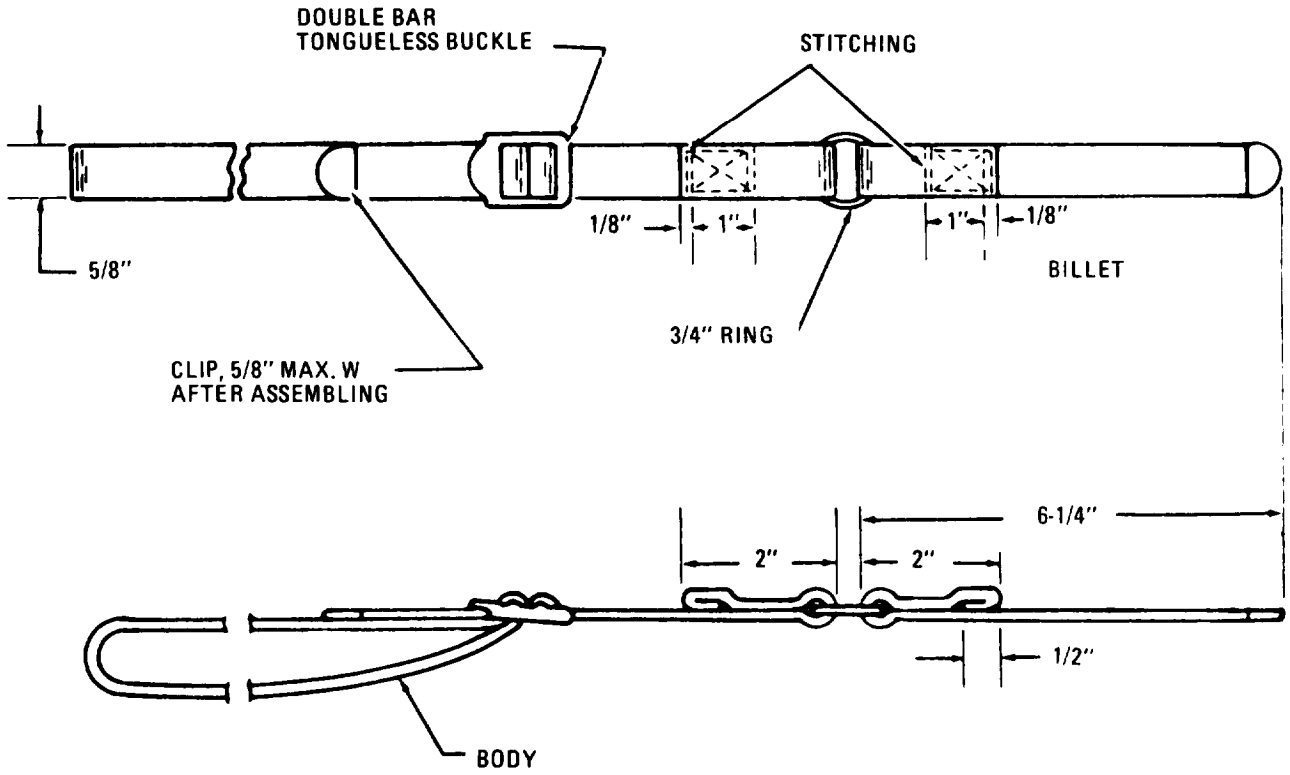


Figure 13-7. Pouch reinforcement strap.

13-5. FIELD MAINTENANCE INSTRUCTIONS–Continued



STRAP, RIFLE SECURING

BODY, WEBBING, CUT 37" LONG

BILLET, WEBBING, CUT 9" LONG APPROX.

1 REQUIRED

Figure 13-8. Rifle securing strap.

Section III. MATERIALS

SMR CODE	NATIONAL STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE
PAOZZ	8465-00-270-0414	Cover, Rucksack: Cotton, Fine Plain Balloon Cloth, White, Length 443/4 In. Width 44 3/4 In. MIL-R-1619.	EA
MFFZZ		Body: Camouflage Cover (Fabricated of Cloth, Cotton, Percale, 3 Oz. Minimum Weight Per Square Yd, White, Shrink 36 In. Wide, CCC-C-447, NSN 8305-00-205-3168)	
MOZZ		Drawstring: Seine Twine, 12 Ft. Lg. (Cut from NSN 4020-00-132-8346.	EA
PAFZZ	8310-00-988-1298	Thread, Polyester OD-S1 (C.A. 66022) Size (70),3 Ply, Type 1, Subclass A, Class 1, V-T-285	
MFFZZ		Tie String: Seine Twine, 30 In. Long (Cut From NSN 4020-00-132-8346)	EA
PAFZZ	4020-00-132-8346	Twine: Cotton, Cable Laid, Z Twist, Commercial No. 96, 3 Strands, 32 Plies Per Strand, 195 Ft. Per Lb., 156 Lb. Minimum Breaking Strength, T-T-881.	TU
		FRAME	
POOZZ	8465-00-558-0151	Frame, Rucksack Steel Tubing, Reinforced With Crossplates and Sleeve, Olive Drab Enameled Finish, 19 In. Lg., 17 In., W., 6¼ In. Deep, MIL-F-43673	EA
		RUCKSACK LESS COVER, FRAME AND SNAP HOOK AND THONG ASSEMBLY	
MFFZZ		Billet: Shoulder Strap, 19¼ In. Lg. (Fabricated from NSN 8305-00-253-2477, Webbing, NSN 5430-00-297-6833, Clip, and NSN 5430-00-663-9355 Loop).	EA
MFFZZ		Billet: Loop and Buckle Chape 6¾ In. Lg. (Fabricate from NSN 8305-00-263-2475), Webbing, and (NSN 5340-00-297-6847, Clip).	EA
MFFZZ		Billet: Rifle Securing Strap 9 In. Lg. (Fabricate from NSN 8305-00-263-2475, Webbing and NSN 5340-00-297-6847, CliP).	EA
MFFZZ		Billet: Pouch Reinforcement Strap, 37 In. Lg. (Fabricate from NSN 8305-00-263-2477, Webbing).	EA
MFFZZ		Billet: Pocket Flap, 60 In. Lg. (Fabricate from NSN 5340-00-J28-0022. Leather).	EA

Section III. MATERIALS - Continued

SMR CODE	NATIONAL STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE
PAFZZ	8340-00-820-7838	Buckle: Tongueless, Double Bar, w/Lip, Brass, Black Finish, 5/8 In., Class A, Type XII, MIL-H-9890, U/O the Following Applications: 2-Back straps 2-Frame Securing Strap Buckle Chapes 1-Loop and Buckle Chape 1-Rifle Securing Strap	EA
XBFZZ	5340-00-297-6628	Buckle: End, Waist Strap, Brass or Bronze, Black Enamel Finish, 1 1/64 In. Width Strap Accommodation, 3/4 In. Overall Length 1 17/64 In. Width, MIL-B-1962, Class A	EA
XBFZZ	5325-00-221-1519	Eyelet: Waist Strap, No. 4132.	EA
PAFZZ	5340-00-297-6644	Buckle: Pouch Reinforcement Strap, Steel Cadmium or Zinc Plated Finish, Black Enamel, 1 In. Width Strap Accommodations, 1 33/64 In. Lengths 1 7/16 In. W.	EA
PAFZZ	5340-00-290-0970	Buckle: Tongueless, Double Bar, Brass, Black Chemical Finish 1 1/32 In. Width Strap Accommodation, 1 5/8 In. Length, U/O the Following Application: 1-Backstrap 2-Shoulder Straps	EA
MFFZZ		Chape: Buckle, Frame securing Strap, 6 3/4 In. Lg. (Fabricate from NSN 8305-00-263-2475, Webbing).	EA
MFFZZ		Chape: Buckle, shoulder Strap, 9 In. Long (Fabricate From NSN 8305-00-263-2477, Webbing).	EA
MFFZZ		Chape Hook Sling Shoulder Strap, 4 In. Long (Fabricate From NSN 8305-00-263-2475, Webbing).	EA
MFFZZ		Chape: Loop and Buckle, 5 1/2 In. Long (Fabricate From NSN 8305-00-263-2475, Webbing)	EA
MFFZZ		Chape: Leather, Buckle, Pocket, 4 In. Long (Fabricate From NSN 5340-00-J28-0022, Leather).	EA
PAOZZ	5340-00-297-6847	Clip, End, Ball Type: Brass MIL-C496, 5/8 In. Size, U/O The Following Applications: 2-Back Straps 2-Frame Securing Straps 1-Loop and Buckle Chape Billet 1-Rifle Securing Strap Billet 1-Rifle Securing Strep	EA
PAOZZ	5340-00-297-6833	Clip, End, Ball Type: Brass MIL-C-486, 1 In. Size, U/O the Following Applications: 1-Back Strap 2-Shoulder Strap Billets	EA

Section III. MATERIALS - Continued

SMR CODE	NATIONAL STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE
	8305-00-185-9730	Cloth, Cotton Duck Basic Fabric of Pouch Pockets, Flaps and Tabs, 9.85 Oz., Olive Drab, 36 In. Wide, FED CCC-C-419	YD
	4020-00-233-6555	Cord: Cotton, Natural, 1/8 In. Dia., Type I, Class 2, Fed. Spec. T-C-571 .	FT
MOOZZ		Drawstring: No 4, Solid Braided Cotton Tent Rope, 60 In. Long (Cut From NSN 4020-00-233-6555, Cord).	EA
PAFZZ	5325-00-550-1125	Fastener, Slide: Interlocking Pouch Flap Pocket 10 In. Long, Type I, Style 2, Size M, Fed. Spec. V-F-106.	EA
PAFZZ	5325-00-290-5933	Fastener, Snap: Frame Support, Brass, Black Finish, Style 2, MIL-F-10884, 100 Per Pkg, Consisting of Stud and Post.	HD
PAFZZ	5325-00-292-5340	Fastener, Snap: Frame Support, Brass, Black Finish, Style 2, MIL-F-10884, 500 Per Pkg, Consisting of Cap and Socket.	SE
PAFZZ	5325-00-231-6603	Grommet: Metallic, Brass, Black Finish, w/Toothed Washer, Size 0, Type II, Class 3, MIL-G-16491, U/O the Following Applications: 10-Pouch Body 6-Tabs	GR
PAFZZ	5325-00-231-6608	Grommet: Metallic, Frame Support, Brass; Black Finish w/ Toothed Washer, Size 5, Type II, Class 3, MIL-G-16491.	GR
MFFZZ		Reinforcement, Cotton (Fabricate From NSN 8305-00-185-9730, Cloth) U/O The Following Applications: 1-Bottom, Pouch Back 1-Center, Pouch Back	EA
PAFZZ	5340-00-264-1222	Ring, Connecting, Round: Rifle Securing Strap, Endless Construction, MIL-R-2327 (QMC), Type I, 0.75 In. Inside Diameter.	EA
PAFZZ	5340-00-260-1415	Ring, D: Waist Strap, Brass or Bronze, Bronze Finish, MIL-R-3390, Class 1, 1 In. Inside Width, 0.85 In. Height.	EA
PAFZZ	5320-00-054-9462	Rivet: Belt, Tapered, Frame Support, Brass, Black Finish, No. 12, 3/8 In., Class A, MIL-R-2583.	LB
XBFZZ	5340-00-291-3551	Snap Hook: Waist Strap, Brass, Bronze Finish, 1 1/8 In. Inside Length, 9/32 In. Inside Width, 2 1/16 In. Length, Class A, MIL-5-51828	EA

Section III. MATERIALS - Continued

SMR CODE	NATIONAL STOCK NUMBER	DESCRIPTION	Unit OF ISSUE
MFFZZ		Strap Connecting, Cotton Shoulder Strap to Pouch Reinforcement Strap Billet, 6 In. Long (Cut from NSN 8305-00-263-2475, Webbing).	E A
MFFZZ		Strap, Frame Securing: 36 In. Long (Fabricate From NSN 8305-00-263-2475, Webbing, and NSN 5340-00-297-6847 Clip).	EA
MFFZZ		Strap, Pouch Reinforcement: 31 1/2 In. Long (Fabricate from NSN 8305-00-263-2477), Webbing, and NSN 5340-00-297-6644, Buckle).	EA
MFFZZ		Strap, Rifle Securing: Cotton, 46 In. Long, Including Billet (Fabricate from NSN 8305-00-263-2475, Webbing, NSN 5340-00-820-7838, Buckle NSN 5340-00-297-6847, Clip and NSN 5340-00-264-1222, Ring).	EA
MFFZZ		Strap, Shoulder: Cotton, 42 In. Long (Fabricate from NSN 8350-00-263-2475, Webbing NSN 8305-00-263-2477, Webbing NSN 8305-00-263-2481, Webbing, NSN 5340-00-310-4416, Hook and NSN 5340-00-290-0970, Buckle).	EA
PAFZZ	8310-00-988-1299	Thread: Polyester, Natural Class 1, Size F, V-T-285, Type I	TU
PAFZZ	8310-00-823-6888	Thread: Polyester, Natural Class 1, Size FF, V-T-285, Type I	TU
MOFZZ		Thong, Leather: SIide Fastener, 7 In. Long (Cut from NSN 8330-00-254-3006. Leather).	EA
PAFZZ	5310-00-054-8210	Washer: Burr Rivet, Frame Support, Brass, Black Finish No. 12, Class A, MIL-R-2583.	EA
PAFZZ	8305-00-263-2475	Webbing: Textile, Cotton Olive Drab 5/8 In. Wide.	YD
PAFZZ	8305-00-260-1733	Webbing: Textile, Cotton Olive Drab, 3/4 In. Wide (For Binding on Pouch Flap Assembly).	YD
PAFZZ	8305-00-263-2477	Webbing: Textile, Cotton Olive Drab, 1 In. Wide.	YD
PAFZZ	8305-00-263-2481	Webbing: Textile, Cotton, Olive Drab, 2 1/2 In. Wide.	YD
		SNAP HOOK AND THONG ASSEMBLY	
XBOZZ		Snap Hook Bronze, Bronze Finish, 2 3/4 In. Long, 1 5/32 In. Wide, Class A, MIL-S-1920.	EA
MOOZZ		Thong; Leather, Snap Hook 9 In. Long (Cut from NSN 8330-00-254-3006, Leather).	EA
		BULK MATERIAL	
XBOZZ	8305-00-185-9730	Cloth, Cotton Duck 9.85 Oz., Olive Drab, Army Shade 7, Mildew Resistant, Water Repellent, 36 In. Wide, CCC-C-419, Type III, CCC-D-950, Type 1, Class B.	YD
XBOZZ	8305-00-205-3168	Cloth, Cotton, Percale: 3 Oz. Minimum Weight Per Square Yard, Whale, Shrunk, 36 In. Wide, CCC-C-447, Basic Fabric of Cover, Rucksack.	BO

Section III. MATERIALS - Continued

SMR CODE	NATIONAL STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE
PAOZZ	4020-00-233-6555	Cord, Cotton: Natural, Water and Mildew Resistant Treated, 9 Strands, 3 Plies Per Strand, 1/8 In. Dia, 181 FT. Per Lb., 100 Lb. Minimum Breaking Strength, Type I, Class 3,3000 Ft. Per Coil, SPEC T-C-571.	SL
PAOZZ	8330-00-254-3006	Leather: Cattlehide, Chrome Tanned, Cold Climate, Russet, 6/64 In. Thick MIL-L-40069.	SF
PAFZZ	8310-00-988-1297	Thread: Polyester, Class 1, Size E, Natural, MIL-I-40040, Bonded Finish, Replacing Size 24/4	TU
PAFZZ	8310-00-988-1299	Thread: Polyester, Class 1, Size F, Natural, MIL-V-T-285, Bonded Finish, Replacing Size 16/4.	TU
PAFZZ	8305-00-263-2475	Webbing: Textile, Cotton Olive Drab, Army Shade 7, Mildew Resistant, Water Repellent, 5/8 in. Wide, 380 Lb. Breaking Strength, Type III, Ciass 4, MIL-W-530.	YD
PAFZZ	8305-00-260-1733	Webbing: Textile, Cotton, Olive Drab, Army Shade 7, Mildew Resistant, Water Repellent, 3/4 In. Wide, 235 Lb. Breaking Strength, Type II, Class 4, MIL-W-530.	YD
PAFZZ	8305-00-263-2477	Webbing: Textile, Cotton, Olive Drab, Army Shade 7, Mildew Resistant, Water Repellent, 1 In. Wale, 550 Lb. Breaking Strength, Type Ill, Class 4, MIL-W-530.	YD
PAFZZ	8305-00-263-2481	Webbing: Textile, Cotton Olive Drab, Army Shade 7, Mildew Resistant, Water Repellent, 2 1/2 In. Wide, 1360 Lb. Breaking Strength, Type Ill, Class 4, MIL-W-530.	YD
		MAINTENANCE SUPPLIES	
PCOZZ	8010-00-297-0586	Enamel; Olive Drab, Semigloss, Class A, TT-E-529 Color No. X24087, (U/O The Frame).	GAL
PCOZZ	8010-00-161-7425	Primer Coating, Synthetic: Wood or Ferrous Metal, Red or Brown Iron Oxide, TTP-636 (U/O The Frame)	GAL

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CHAPTER 14

MAINTENANCE OF ALL-PURPOSE LIGHTWEIGHT INDIVIDUAL CARRYING EQUIPMENT (ALICE)

Section I. INTRODUCTION

14-1. SCOPE

This chapter prescribes the procedures and instructions for the repair of All-Purpose Lightweight Individual Carrying Equipment (ALICE).

14-2. COMMODITY SPECIFICATIONS

a. Item.

ITEM	SPECIFICATION
Belt, Individual Equipment.	MIL-B-43826
Suspenders, Individual Equipment Belt.	MIL-S-43829
Case, Small Arms Ammunition, 30-Round Magazine (M-16 Rifles).	MIL-C-43827
Case, Field First Aid Dressing - Unmounted Magnetic Compass.	MIL-C-43745
Carrier, Entrenching Tool, Hand, Folding, Lightweight, Plastic.	MIL-C-43831
Cover, Water Canteen.	MIL-C-43742
Cover, Water Canteen, 2 Qt.	MIL-C-43689
Field Pack, Combat, Nylon, Medium.	MIL-F-43833
Field Pack, Combat, Nylon, Large.	MIL-F-43832
Frame Pack, Ground Troops and Shelf.	MIL-F-43834
Straps, Lightweight Pack Frame and Strap/Frame Assembly.	MIL-S-43835
Strap, Webbing, Cargo Tie-down, Lightweight Pack Frame.	MIL-S-43828
Cover, Field Pack, Camouflage.	MIL-C-43830

14-2. COMMODITY SPECIFICATIONS – Continued

ITEM	SPECIFICATION
Thread, Polyester.	V-T-285
Plastic Sheet and Strip, Thin Gauge, Polyolefin.	L-P-378
Plastic, Molding and Extrusion Material, Polyethylene and Copolymers (Low, Medium and High Density).	L-P-390
Cloth, Drill, Cotton	CCC-C-426
Buckles, Tongueless and Web Strap.	MIL-B-543
Rings, Dee.	MIL-R-3390
Webbing, Textile, Woven, Nylon.	MIL-W-4088
Tape, Textile and Webbing, Textile, Reinforcing, Nylon.	MIL-T-5038
Cord, Nylon.	MIL-C-5040
Webbing, Textile, Elastic, Cotton,	MIL- W-5664
Cloth, Duck, Nylon.	MIL-C-7219
Hardware, Individual Load Carrying Equipment; and Hardware Miscellaneous.	MIL-H-9890
Fasteners, Snap.	MlL-F-10884
Loops, Strap Fastener.	MlL-L-11075
Grommets, Metallic,	MIL-G-16491
Webbing, Textile, Woven, Nylon.	MlL-W-17337
Eyelets, Metallic, with Washers.	MIL-E-20652
Eyelets, Metallic, Rolled Flange Type; and Eyelet Washer.	MIL-E-20652/1
Eyelets, Metallic, Telescopic type.	MIL-E-20652/3
Fastener Tapes, Hook and Pile, Synthetic.	MIL-F-21840
Webbing, Textile, Woven, Nylon, Impregnated.	MIL-W-27265
Cloth, Plain Weave, Nylon: Water Repellent, OG-106.	MIL-C-43128
Cloth, Spacer (Olefin).	MIL-C-43204
Cloth, Pile, Acrylic Fiber Pile.	MIL-C-43251
Cord, Polyester, Solid Braid.	MIL-C-43256
Cloth, Duck, Nylon, 12.5 Ounces.	MI L-C-43375
Fastener, Plastic, for Equipage Items.	MIL-F-43514
Webbing, Textile, Bulked Nylon.	MIL-W-43668
Cord, Elastic, Nylon.	MIL-C-43701
Snaphooks, Wire Body, Fixed Loop Eye, Side Retaining Closure.	MIL-S-43770/2
Cloth, Coated, Nylon, Polyurethane Double Coated.	MIL-C-43906

14.2. COMMODITY SPECIFICATIONS–Continued

c. Drawings. US Army Natick Research and Development Command, Natick, MA 01760.

NUMBER	TITLE
2-2-29	Case, Field First Aid Dressing-Unmounted Magnetic Compass; Illustration, Assembly and Details.
2-2-30	Cover, Water Canteen; Assembly, Details and Sections.
2-2-31	Cover, Water Canteen; Details “A”.
2-2-32	Cover, Water Canteen; Details “B”.
2-2-306	Case, Small Arms Ammunition, 30-Round Magazine, M-16 Rifles; Assembly.
2-2-307	Case, Small Arms Ammunition, 30-Round Magazine M-16 Rifles; Subassemblies and Sections.
2-2-308	Case, Small Arms Ammunition, 30-Round Magazine M-16 Rifles; Patterns.
2-2-309	Belt, Individual Equipment: Assembly and Details.
2-2-310	Cover, Field Pack, Camouflage.
2-2-312	Strap, Waist, Lightweight, Pack Frame.
2-2-313	Strap, Webbing, Cargo Tie-Down, Lightweight Pack Frame.
2-2-315	Strap, Lower Back, Lightweight Pack Frame.
2-2-323	Suspenders, Individual Equipment Belt, Assembly and Sections.
2-2-324	Suspenders, Individual Equipment Belt, Assembly and Sections.
2-2-336	Field Pack, Combat, Nylon, Large; Assembly, Front and Side View.
2-2-337	Field Pack, Combat, Nylon, Large; Assembly, Back and Bottom View.
2-2-338	Field Pack, Combat, Nylon, Large; Sections.
2-2-339	Field Pack, Combat, Nylon, Large; Pattern, Main Panel and Details.
2-2-340	Field Pack, Combat, Nylon, Large; Patterns, Back Panel, Reinforced Upper and Lower, and Details.
2-2-341	Field Pack, Combat, Nylon, Large; Patterns, Center Pocket, Main Panel Reinforcement, Bottom and Details.
2-2-342	Field Pack, Combat, Nylon, Large; Patterns, Pouch Flaps, Radio and Ammunition Pockets, Ammunition Pocket Flap and Details.

14-2. COMMODITY SPECIFICATIONS–Continued

NUMBER	TITLE
2-2-343	Field Pack, Combat, Nylon, Large; Patterns, Pocket Flaps, Side Pocket, Side Reinforced Pocket, Center Reinforced Pocket and Details.
2-2-344	Field Pack, Combat, Nylon, Medium; Assembly, Front and Side View.
2-2-345	Field Pack, Combat, Nylon, Medium; Assembly, Back and Bottom View.
2-2-346	Field Pack, Combat, Nylon, Medium; Sections.
2-2-347	Field Pack, Combat, Nylon, Medium; Pattern, Main Panel.
2-2-348	Field Pack, Combat, Nylon, Medium; Patterns, Back Panel, Pouch Flaps, and Details.
2-2-349	Field Pack, Combat, Nylon, Medium; Patterns, Radio Pocket and Main Panel Reinforcements and Details.
2-2-350	Field Pack, Combat, Nylon, Medium; Patterns, Pocket, Pocket Reinforcement and Pocket Flap and Details.
2-2-357	Field Pack, Combat, Nylon, Medium and Large; Frame Pocket Assembly and Details.
2-2-358	Strap, Shoulder, Pack Frame and Field Packs, Left; with Quick Release Strap Assembly.
2-2-359	Strap, Shoulder, Pack Frame and Field Packs, Right; Without Quick Release Strap Assembly.
2-2-360	Strap, Shoulder, Pack Frame and Field Packs, Patterns, Left and Right,
4-1-231	1 Inch Non-Slip, Quick Release Buckle Assembly with Spring.
4-1-233	Adjuster, Webbing
4-1-453	Buckle, Clinch, Adjustment, 2 1/4; Assembly Complete.
4-1-563-1	Buckle, Female Half, Plastic
4-1-563-2	Buckle, Male Half, Plastic
8-2-316	Carrier, Plastic for Intrenching Tool; Assembly Complete.
8-2-550	Retainer Clip.
8-2-389	Fastener, Plastic, for Equipage Items; Attaching Tools.

Section II. REPAIR PROCEDURES

14-3. MATERIALS

a. General. Materials used in ALICE will be serviceable materials recovered from similar salvaged items when authorized, or will be new materials as specified in the appropriate materials list.

b. New Materials. New materials will be requisitioned from stock under the stock numbers and/or item descriptions as listed in the appropriate materials list and will conform to the appropriate specifications. When not available from stock, materials may be purchased locally and should conform as closely as possible to the standard material.

14-4 REPAIR AND MAINTENANCE OF ALICE

Prior to repair, each equipage item will be inspected to determine the amount of repair necessary.

a. Organizational Maintenance.

(1) Hand laundering procedure.

(a) Scrape dirt or mud from the equipment using a flat stick or a dull instrument which will not cut the fabric or webbing.

(b) Remove loose dirt from soiled surfaces using a cloth or soft brush.

CAUTION

Do not use Chlorine Bleach, yellow soap, cleaning fluids or solvents. Such products will discolor and deteriorate component materials.

(c) Clean the exceedingly dirty areas by wetting out the surface and applying a warm solution of Detergent, Laundry, Powdered, MIL-D-12182, Type II (NSN 7930-00-252-6797) per gallon (3.79 L) of water. Scrub with soft brush, cloth, or sponge.

(d) Flush the item thoroughly with clean, warm water until all the cleaning solution has been rinsed away.

CAUTION

Do not launder or dry items in fixed, commercial/home laundry equipment. Material will be degraded.

(e) Dry the item or equipment away from direct sunlight, direct heat, and open flames.

(2) Repair. Make a field expedient repair of rips, tears, holes, or loose stitching by hand sewing, by use of a safety pin or pressure sensitive tapes. Replace damaged or missing keepers on the small arms case, field first aid dressing/compass case, intrenching tool carrier, and water canteen cover.

(3) Turn in. Thoroughly clean and dry the items which cannot be repaired at organizational level prior to turning them in for repair by a higher maintenance level.

b. Direct Support Maintenance.

(1) Cleaning procedures. Lightweight load-carrying equipment shall be cleaned in soak and wash tanks. Laundry wash wheels shall not be used.

14-4. REPAIR AND MAINTENANCE OF ALICE - Continued

(a) Soak and wash tank procedure.

1. Remove loose dirt or dust from items using a brush, cloth, or a vacuum attachment.

2. Soak items for 5 minutes or longer in a tank containing warm water.

CAUTION

Do not use Chlorine Bleach, yellow soap, cleaning fluids or solvents. Such products will discolor and deteriorate component materials.

3. Wash items in a warm solution of Detergent, Laundry, Powdered, MIL-D-12182, Type II (NSN 7330-00-252-6797), scrubbing vigorously with a soft brush, cloth, or sponge.

4. Flush the washed item with clean, warm water until all the cleaning solution has been rinsed away.

CAUTION

Do not launder or dry items in fixed, commercial/home laundry equipment. Material will be degraded.

5. Air dry items away from direct sunlight, direct heat, and open flames.

(2) Preliminary examination. The repairman will inspect the items for weakened areas, holes, tears, opened seams, and missing hardware. Test for weakness by applying pressure on the area in question and attempting to tear the material. Mark the weakened areas found with tailor's crayon. Inspect the items for presence and condition of all hardware, and mark them where repair or replacement is required.

(3) Repair. Use repair procedures described in TM 10-269 in conjunction with these instructions as applicable.

(a) Stitching. Use machine stitching for all sewing. Re-sew loose, broken or defective stitches using thread specified in Table 14-1. Maintain proper thread tension to prevent loose stitches, backstitch breaks and ends not less than one inch (2.54 cm) to prevent raveling. Use the types of stitches, thread size, and stitches per inch for sewing as shown in Table 14-1.

(b) Darning. Darn rips, tears, and holes in areas one inch (2.54 cm) or less in greatest dimension. There is no limit to the number of darns which may be applied.

(c) Patching. Patch rips, tears, and holes exceeding one inch (2.54 cm) with a single patch of nylon cloth specified in Section III using thread as specified in Section III. Cut the patch of sufficient size to extend at least 1/2 inch (1.27 cm) beyond the hole or area to be patched, allowing for a 3/8-inch (0.952 cm) turn under. Place the patch on the outside and sew it 1/8-inch (0.318 cm) from the edge of the patch. Cutaway the damaged area to a square or rectangular shape, depending upon the shape of the hole. Turn the raw edges under 3/8-inch (0.952 cm) and sew 1/8-inch (0.318 cm) from the edge.

14-4. REPAIR AND MAINTENANCE OF ALICE - Continued

NOTE

If the damaged area does not extend to the inside, do not cut away damaged area. Stitch with an additional row of stitching 1/4-inch (0.635 cm) from the edge. There is no limit to the number of times that the items may be patched.

(d) Restitching. Restitch broken or loose stitching according to original construction details using thread specified in Table 14-1.

(e) Repair of binding tape. Overlap the binding tape using Tape, Nylon, NSN 8315-00-935-4741, extending the new tape at least 1/2-inch (1.27 cm) beyond the damaged area. Turn the binding edges under 1/2-inch (1.27 cm) and stitch 1/8-inch (0.318 cm) in from edge of tape.

Table 14-1. Stitching

ITEM REF. PARA. 14	SEWING OPERATION	STITCH TYPE	THREAD NEEDLE AND BOBBIN	STITCHES PER INCH
-5,-8,-10,-17,-18	All stitching except barracking	301	Size E	8 to10
-6,-14,-15,-16	All stitching except barracking	301	Size F	8 to10
-7,-11,-12	All stitching except binding, overedging and barracking	301 or 401	Size F Size E for bobbin	8 to10
-7,-10,-11,-12	Binding	301	Size E	8 to10
-6,-7,-8,-10,-11 -14,-15,-16,-17	*Barracking		Size E	
-7,-11,-12,-18	*Zigzag	304 or 308	Size E	10 to 14

*3/8” bartack-minimum 28 stitches
1/2” bartack-minimum 28 stitches
3/4” bartack-minimum 42 stitches
1“ bartack-minimum 42 stitches
1/8” ± 1/32 inch wide
*3/16 inch minimum gage

14-5. REPAIR AND MAINTENANCE OF BELT, INDIVIDUAL EQUIPMENT

a. Identification and Description.

(1) Belts, Individual Equipment. (Figure 14-5).

NSN	SIZE	SPECIFICATION
8465-01-120-0675	Large	MIL-B-43826
8465-01-120-0674	Medium	MIL-B-43826

(2) This belt is made from Army shade 7 olive drab nylon webbing with black chemical finish adjusting buckles, keepers, and a belt buckle. The medium size belt is for soldiers with waists measuring under 30 inches (76.2 cm) and size large is for those with waists measuring 30 inches (75.2 cm) or over. The belts are adjusted from each end by means of clamp-type buckles which slide on the belt when open. The individual equipment items are attached by interlocking slide keepers or are hooked through eyelets along the bottom of the belt. The eyelets along the top of the belt are for attaching the suspenders.

b. Materials. (See section III.)

c. Darning. (See paragraph 14-4.)

d. Patching. (None.)

e. Restitching. (None.)

f. Repair of Binding Tape. (None.)

g. Hardware.

(1) Eyelet and washer.

(a) Resetting. Reset a loose eyelet and washer by using appropriate dies.

(b) Removal. Remove a damaged eyelet and washer by cutting it with a pair of diagonal wire cutters. Be careful not to cut or damage the webbing.

(c) Installation. Without damage to the webbing, install the new eyelet and washer using items 5 and 6, figure 14-1, (with proper sized dies), according to the original construction.

14-5. REPAIR AND MAINTENANCE OF BELT, INDIVIDUAL EQUIPMENT – Continued

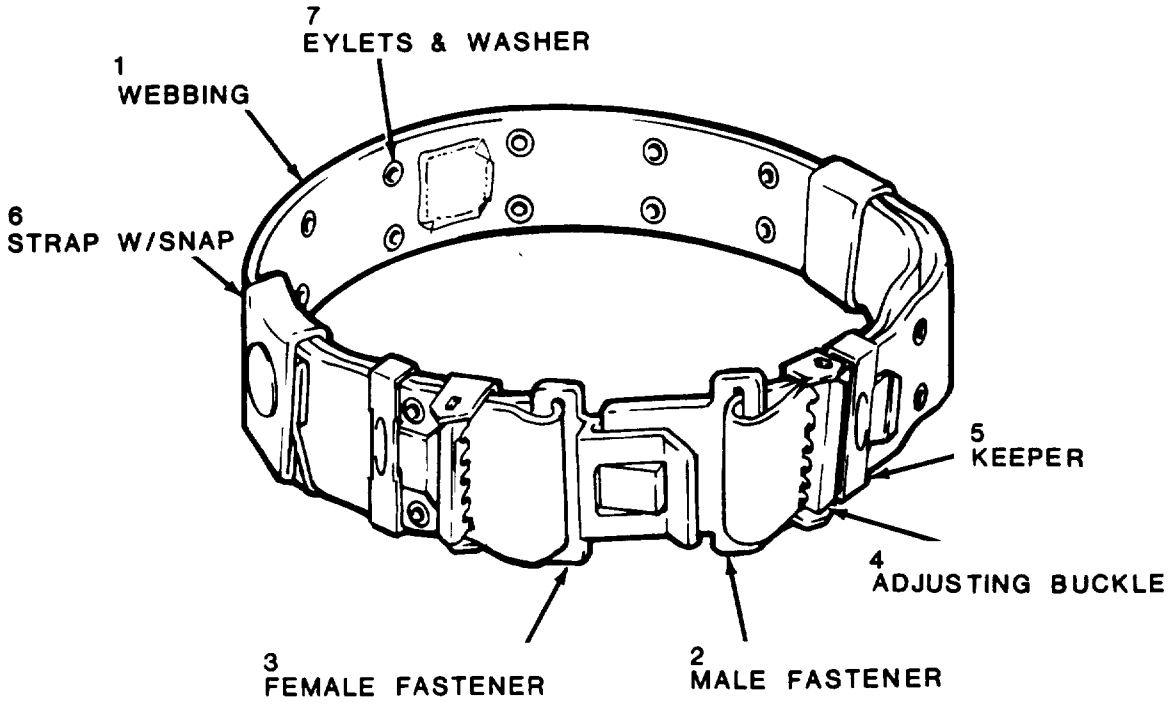

Figure 14-1. Belt, Individual Equipment.

(2) Female and male belt fastener, sliding keeper.

(a) Removal. Remove damaged or missing female or male fasteners, a sliding keeper, or an adjuting buckle by sliding them out from the end of the webbing.

(b) Replacement. Replace damaged or missing fastener(s) or sliding keeper according to original construction using items 2, 3, 4, or 5, figure 14-1.

(3) Strap. Replace a damaged strap by fabricating as follows:

(a) Cut bartack stitching which secures the strap on the belt and remove the original strap webbing.

(b) Cut a 7-inch length of 1-inch wide, Type III webbing using item listed in Section III, and sear ends.

14-5. REPAIR AND MAINTENANCE OF BELT, INDIVIDUAL EQUIPMENT – Continued

(c) Double fold both ends of the webbing 1/2 inch and stitch with 3/4 inch bartack or three rows of stitching.

(d) Place the folded webbing in the original location and secure by stitching with two 1-inch bartacks or three rows of stitching according to original construction details.

(4) Snap fasteners.

(a) Removal. Remove a damaged snap by cutting it with a pair of diagonal wire cutters or nippers. Be careful not to cut or damage the fabric.

(b) Installation. Without damage to the fabric, install new snap fastener (with proper sized dies) according to the original construction item 9, figure 14-1.

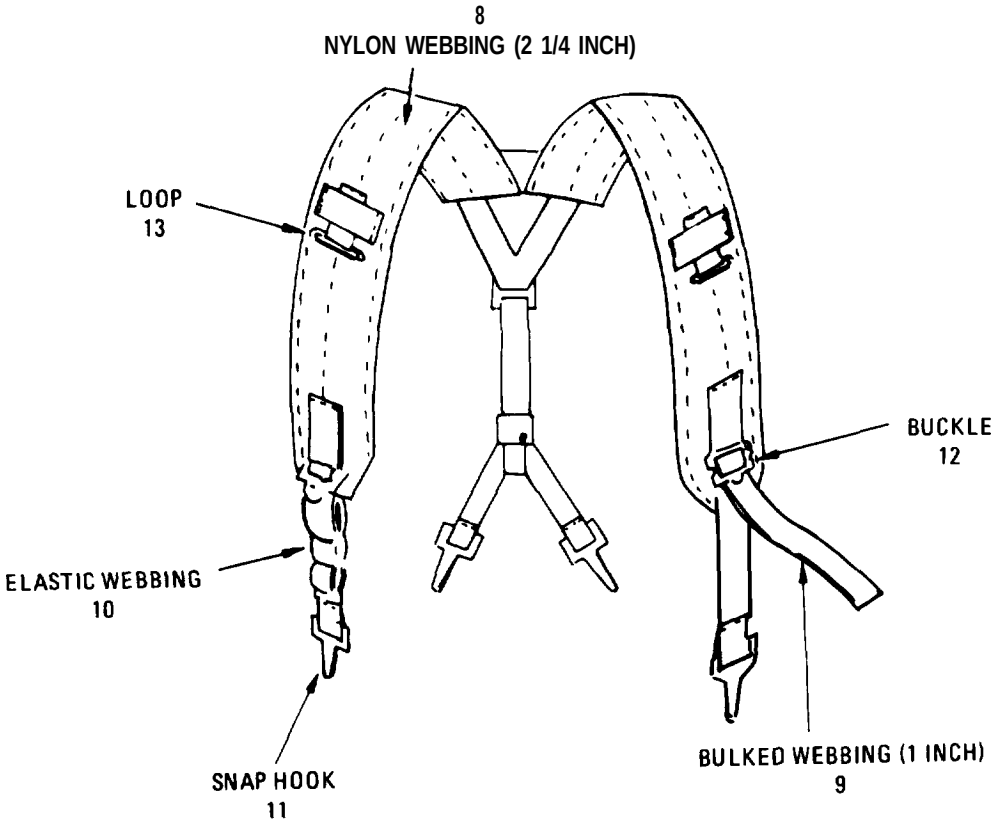

Figure 14-2. Suspenders, Individual Equipment Belt.

14-6. REPAIR AND MAINTENANCE OF SUSPENDERS, INDIVIDUAL EQUIPMENT BELT

a. Identification and Description.

(1) Suspenders, Individual equipment belt. (Figure 14-2.)

14-6. REPAIR AND MAINTENANCE OF SUSPENDERS, INDIVIDUAL EQUIPMENT BELT–Continued

NSN	SIZE	SPECIFICATION
8465-00-001-6471	One Size	MIL-S-43829

(2) The suspenders are Y shaped with three adjusting straps, but four points of attachment to the belt and ammunition cases. The shoulder straps are padded with spacer cloth. Each shoulder strap has a web loop and a non-slip buckle on each of the straps in the front and one at the back through which the adjusting straps pass. There are rectangular wire loops located between the web loops and the buckles on the front of the straps. The 1-inch (2.54 cm) wide adjusting straps have side-retaining snap hooks at one end. The back adjusting strap has an inverted V of which each end has a side-retaining snaphook. Each of the adjusting straps has a loop around it made of 1-inch (2.54 cm) elastic material.

b. Materials. (See Section Ill.)

c. Darning. (See paragraph 14-4.)

d. Patching. (See paragraph 14-4.)

e. Restitching. (See paragraph 14-4.)

f. Repair of Binding Tape. (None.)

g. Repair.

(1) Backstrap. Replace a damaged backstrap by fabricating as follows:

(a) Cut bartack stitching which secures the strap on the yoke strap and remove the original strap webbing.

(b) Cut an 18-inch (45.7 cm) length of 1-inch (2.54 cm) wide, Type Ill nylon webbing using item listed in Section Ill, and sear ends.

(c) Double fold one end of the webbing 1/2-inch (1.27 cm) and stitch with 3/4-inch (1.91 cm) bartack or three rows of stitching.

(d) Thread the webbing through the 1-inch (2.54 cm) non-slip buckle as in original construction.

(e) Fold the free end of webbing 1-inch (2.54 cm).

(f) Place the folded webbing in the original location and secure the webbing by stitching with two 1-inch (2.54 cm) bartacks or three rows of stitching according to original construction details.

14-6. REPAIR AND MAINTENANCE OF SUSPENDERS, INDIVIDUAL EQUIPMENT BELT—Continued

(2) Yoke strap. Replace a damaged yoke strap by fabricating as follows:

(a) Cut and remove the original snaphooks from the yoke strap.

(b) Cut bartack stitching which secures the strap on the back strap and remove the original strap webbing.

(c) Cut a 14-inch (35.6 cm) length of 1-inch (2.54 cm) wide, Type Ill nylon webbing using item 9, figure 14-2, and sear ends.

(d) Fold the webbing 2-inches (5.08 cm) from each end. Attach the snaphooks to yoke according to original construction and secure by stitching with 1 1/2 inch (3.81 cm) three-point ww stitch pattern.

(e) Fold yoke strap in half and spread V as in original construction and stitch with two 1-inch (2.54 cm) bartacks or three rows of stitching.

(3) Back buckle, chape. Replace a damaged yoke strap by fabricating as follows:

(a) Replace chape by carefully cutting off the webbing as close to the 2 1/4 inch (5.72 cm) webbing as possible.

(b) Cut a 6-inch (15.2 cm) length of 1-inch (2.54 cm) Type Ill nylon webbing, using item 9, figure 14-2, sear ends and fold the webbing length according to original and place on top of 2 1/4 inch (5.72 cm) wide webbing according to the details in original construction.

(c) Stitch with two 1-inch (2.54 cm) bartacks 1/8-inch (0.318 cm) from edge of 1-inch and 2 1/4 inch (2.54 and 5.72 cm) webbings or three rows of stitching.

(4) Front strap. Replace a damaged front strap by fabricating as follows:

(a) Cut and remove the original snaphooks from the yoke strap.

(b) Cut a 25-inch (63.5 cm) length of 1-inch (2.54 cm) wide, Type Ill nylon webbing using item 9, figure 14-2, and sear ends.

(c) Double fold one end of the webbing 1/2-inch (1.27 cm) and stitch with a 3/4-inch (1.91 cm) bartack or three rows of stitching.

14-6. REPAIR AND MAINTENANCE OF SUSPENDERS, INDIVIDUAL EQUIPMENT BELT—Continued

(d) Thread the webbing through the 1-inch (2.54 cm) non-slip buckle as in original construction.

(e) Fold the webbing 2-inches (5.08 cm) from end according to original construction and secure by stitching with 1 1/2-inch (3.81 cm) three point ww stitching.

(5) Front buckle chape and strap loop chape. Replace a damaged front buckle chape, or strap loop chape as follows:

(a) Cut three-point ww stitching which secures the chapes on suspender strap.

(b) Cut a 4-inch (10.2 cm) length of 1-inch (2.54 cm) wide, Type Ill nylon webbing using item 9, figure 14-2, and sear ends.

(c) Mark the chape 1/2 and 2 1/2 inches (1.27 and 6.35 cm) from one end and fold.

(d) Thread the webbing through the l-inch (2.54 cm) non-slip buckle or loop as in original construction.

(e) Place as in original construction and secure by stitching with 1 1/2-inch (3.81 cm) three-point ww stitch pattern.

NOTE

When replacing loop chape, remove bartack and stitching which secures one end of retainer loop. After removal and replacement of loop chape, restitch retainer with 3/4-inch (1.91 cm) bartack or three rows of stitching as in original construction.

(6) Equipment retaining loop. Replace a damaged equipment retaining loop as follows:

(a) Cut bartacks and stitching which secures the retainer on suspender strap.

(b) Cut a 3 3/8-inch (8.57 cm) length of 1-inch (2.54 cm) wide, Type Ill nylon webbing using item 9, figure 14-2, and sear ends.

(c) Fold the retainer 1/2-inch (1.27 cm) from each end, place as in original construction and secure by stitching with 3/4-inch (1.91 cm) bartacks 1/4-inch (0.635 cm) from edge of retainer.

14-6. REPAIR AND MAINTENANCE OF SUSPENDERS, INDIVIDUAL EQUIPMENT BELT - Continued

h. Hardware. 1-inch (2.54 cm) non-slip buckle, loop strap and 1-inch (2.54 cm) side retainer snaphooks. Straighten bent hardware or replace missing, damaged or otherwise unserviceable items as follows:

(1) Cut three-point ww or bartack stitching which secures the hardware to the straps or chapes.

(2) Thread the webbing through the hardware using items 12, 13, and 14, figure 14-2, place as in original construction and bartack or ww stitch as in original construction.

14-7. REPAIR AND MAINTENANCE OF CASE, SMALL ARMS AMMUNITION, 30-ROUND MAGAZINE, M-16 RIFLE

a. Identification and Description.

(1) Case, small arms ammunition, 30-round magazine (M-16 Rifles). (Figure 14-3.)

NSN	SIZE	SPECIFICATION
8465-00-001-6482	One Size	MIL-C-43827

14-7. REPAIR AND MAINTENANCE OF CASE, SMALL ARMS AMMUNITION, 30-ROUND MAGAZINE, M-16 RIFLE - Continued

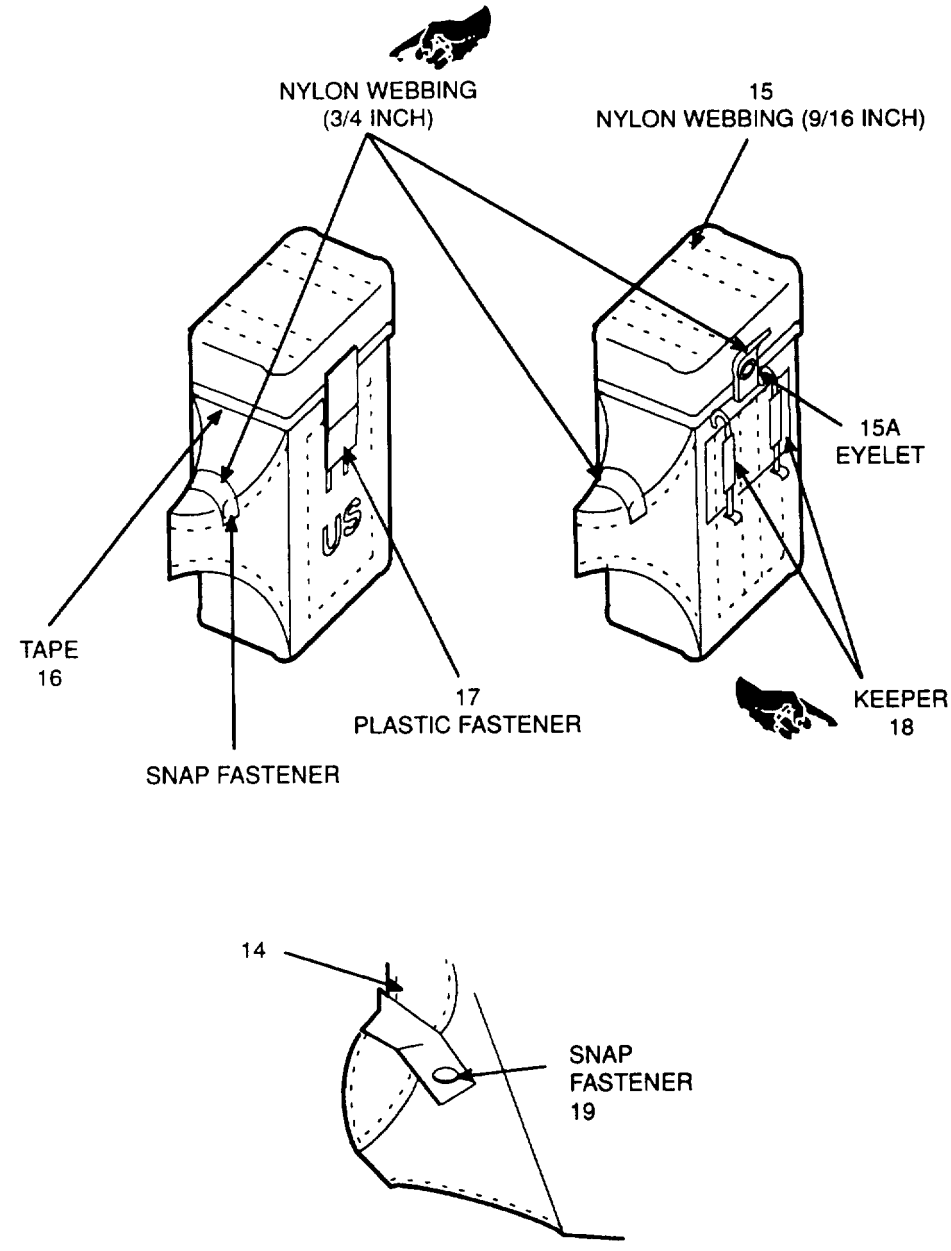

Figure 14-3. Case, Small Arms Ammunition, 30-Round Magazine (M-16 Rifle).

14-7. REPAIR AND MAINTENANCE OF CASE, SMALL ARMS AMMUNITION, 30-ROUND MAGAZINE, M-16 RIFLE - Continued

(2) This small arms ammunition case is designed for the 30-Round magazine used with the M-16 rifle. It is fabricated of nylon duck and webbings with polyester sheet stiffeners in the front, rear and lid of the case. Each magazine is held in place by means of 3/4-inch (1.91 cm) wide webbing spacers which cross the top of the case. The lid is closed by means of a plastic latch. Grenade carrying pockets are located on each side of the case which are secured by means of a nylon web strap and metal snap fastener. A tab with a metal eyelet is located at the top back of the case to which the suspenders are attached. The case is attached to the heft by keepers with interlocking slides.

b. Materials. (See Section Ill.)

c. Darning. (See pargraph 14-4.)

d. Patching. (See paragraph 14-4.)

e. Restitching. (See paragraph 14-4.)

f. Repair of binding tape. (See paragraph 14-4.)

g. Repair.

(1) Grenade retaining strap. Replace a damaged retaining strap by fabricating as follows:

(a) Replace strap by carefully cutting off webbing as dose to bartack stitching as possible.

(b) Cut a 5 1/2-inch (14.0 cm) length of 3/4-inch (1.91 cm) wide Type la nylon webbing using item 14, figure 14-3, and sear ends.

(c) Double fold one end of webbing 1/2-inch (1.27 cm) and stitch with a 1/2-inch (1.27 cm) bartack or three rows of stitching.

(d) Fold other end 1/2-inch (1.27 cm) and position in the original location and secure the webbing by stitching with 1/2-inch (1.27 cm) bartack or three rows of stitching 3/16-inch (0.476 cm) from the folded webbing edge.

(e) Install anew snap fastener (with proper sized dies), according to original construction using item 19, figure 14-3.

(2) Suspender tab and eyelet. Replace a damaged tab by fabrication as follows:

(a) Remove damaged tab by cutting bartack threads and cutting tab even with top of 2½-inch horizontal webbing if stitched under it.

(b) Cut a 6-inch piece of webbing conforming to MIL-W-4088, 3/4-inch type la and fold in thirds. Stitch three layers together around outer edge 1/8-inch from edge.

(c) Center an eyelet and washer conforming to MIL-E-20652/1, BBE117 and BBW101, position 5/16-inch down from folded edge and set it.

(d) Sear the cut end of the folded webbing. Position the webbing so the cut end is touching the top edge of the 2 1/4-inch horizontal webbing on the back of the case. Center the tab and stitch to the case with a 3/4-inch bartack 1/2-inch above the cut end and a second bartack 1/4-inch higher to hold to the case.

14-7. REPAIR AND MAINTENANCE OF CASE, SMALL ARMS AMMUNITION, 30-ROUND MAGAZINE, M-16 RIFLE - Continued

h. Hardware.

(1) Snap fasteners.

(a) Resetting. Reset a loose snap fastener by using appropriate dies.

(b) Removal. Remove a damaged snap by cutting it with a pair of diagonal wire cutters or nippers. Be careful not to cut or damage the fabric.

(c) Installation. Without damage to the fabric, install new snap fastener (with proper sized dies) according to the original construction using item 19, Figure 14-3.

(2) Keeper with slide. Replace defective, damaged or missing keeper using item 18, Figure 14-3.

(3) Plastic fastener.

WARNING

Eye protection must be worn when removing damaged fastener to prevent eye injury.

(a) Removal. Remove a damaged fastener by placing a screwdriver between the latch and fabric and raise to disengage. Discard fastener.

(b) Installation of a new plastic fastener requires the use of a special tool which is costly. It is therefore recommended that style 2 snap fastener, NSN 5325-00-985-6718 be used to replace the plastic fastener when it becomes unserviceable.

(c) Cut two pieces of webbing 1" x 4 1/2" and 1" x 1 1/2" long. Use webbing, bulked nylon 1", OD-7 Type Ill, MIL-W-43668, NSN 8305-01-062-7050.

(d) Fuse the ends of both pieces.

(e) On one end of the long piece, fold over 1/4" twice and bartack.

(f) On the other end, fold over 1/2" and bartack.

(9) Sew the end of the webbing described in item (G) to the cover of the case so that it is on the outside of the cover, centered over the existing holes and overlapping 1 5/8" beyond the edge of the cover. Stitch it along the stitch line of the binding tape and again 1/8" from the end of the webbing.

(h) Open the right side seam of the case so the inside can be reached with a bartack machine.

(i) Center the 1" x 1 1/2" piece of webbing lengthwise over the two existing holes on the case, and abutting the binding tape. Bartack both ends in place.

(j) Set the stud of the snap 1 5/16" from the top edge of the case and centered on the small piece of webbing.

(k) On the pull tab, set the snap socket 3/8" from the edge of the cover, and centered on the webbing.

(l) Restitch the opened seam of the case.

14-8. REPAIR AND MAINTENANCE OF CASE, FIELD FIRST AID DRESSING-UNMOUNTED MAGNETIC COMPASS.

a. Identification and Description.

(1) Case, field first aid dressing –unmounted magnetic compass (Figure 14-4).

NSN	SIZE	SPECIFICATION
8465-00-935-6814	One Size	MIL-C-43745

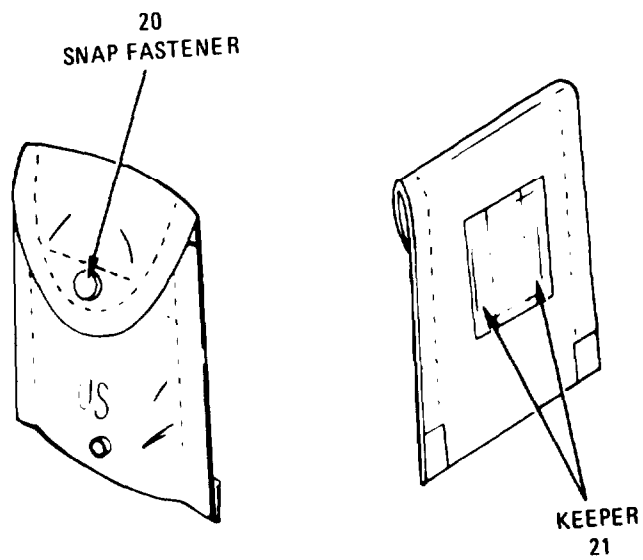

Figure 14-4, Case, Field First Aid *Dressing– Unmounted Magnetic Compass.*

(2) The case is fabricated of Army shade 106 olive green water repellent treated 7.25 ounce (206 g) nylon duck. It is 8½ inches (21.6 cm) long with flap open; approximately 4 1/2 inches (11.4 cm) wide, and forms a 4 inch (10.2 cm) deep pocket. It has a metal snap-type fastener closure and is attached to the belt by a keeper with interlocking slide.

b. Materials. (See Section Ill.)

c. Darning. (See paragraph 14-4.)

14-8. REPAIR AND MAINTENANCE OF CASE, FIELD FIRST AID DRESSING–UNMOUNTED MAGNETIC COMPASS–Continued

d. Patching. (See paragraph 14-4.)

e. Restitching. (See paragraph 14-4.)

f. Repair of binding tape. (See paragraph 14-4.)

g. Hardware.

(1) Snap fasteners.

(a) Resetting. Reset a loose snap fastener by using appropriate dies.

(b) Removal. Remove a damaged snap by cutting it with a pair of diagonal wire cutters or nippers. Be careful not to cut or damage the fabric,

(c) Installation. Without damage to the fabric, install new snap fastener (new proper dies) according to original construction using item 20, Figure 14-4.

(2) Keeper with slide. Replace defective, damaged, or missing keeper using item 21, Figure 14-4.

26-9. REPAIR OF CARRIER, INTRENCHING TOOL, PLASTIC

a. Identification and Description.

(1) Carrier, entrenching tool, plastic. (Figure 14-5.)

NSN	SIZE	SPECIFICATION
8465-00-001-6474	One Size	MIL-C-43831

(2) The carrier is molded of ethylene-vinyl acetate (EVA) and the top flap is secured by means of two metal snap fasteners. It attaches to the belt by means of two keepers with interlocking slides.

b. Materials. (See Section Ill.)

c. Darning. (None.)

d. Patching. (None.)

e. Restitching. (None.)

f. Repair of binding tape. (None.)

g. Hardware.

14-9. REPAIR OF CARRIER, INTRENCHING TOOL, PLASTIC - Continued

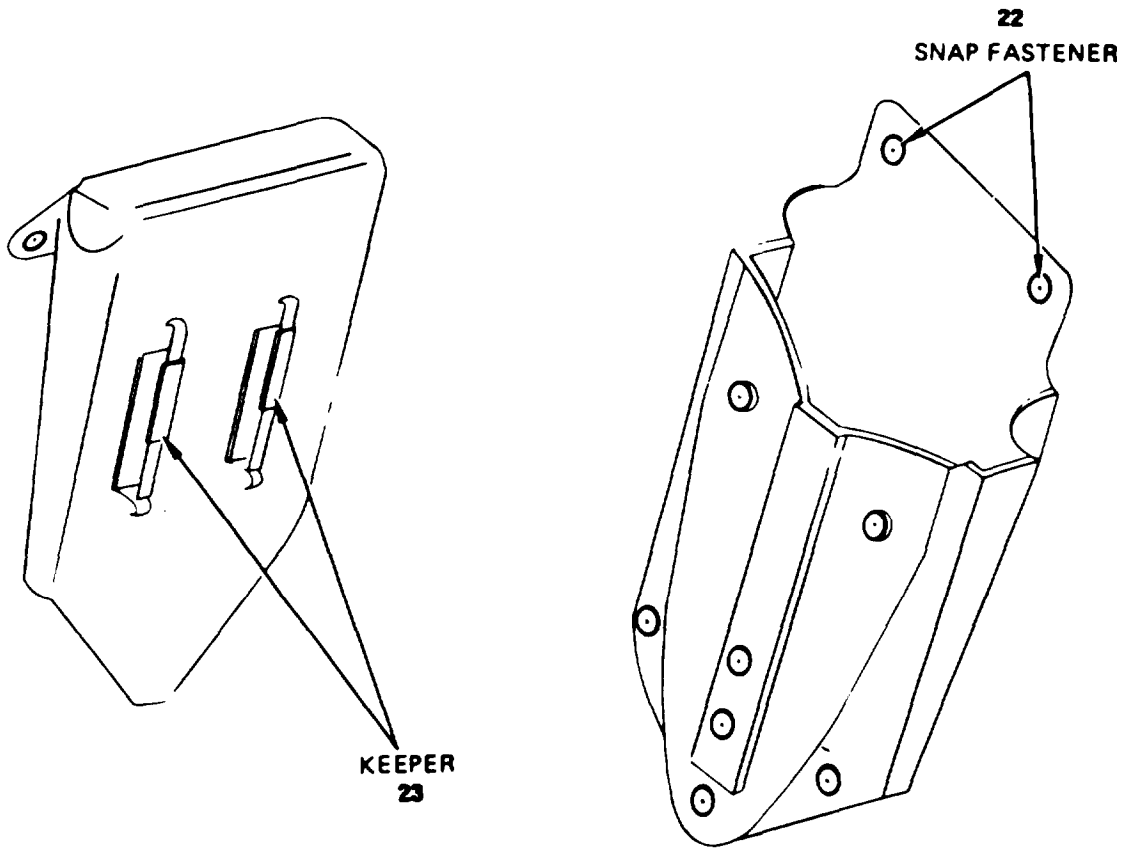

Figure 14-5. Carrier Intrenching Tool, Plastic.

(1) Snap fasteners.

(a) Resetting. Reset a loose snap fastener by using appropriate dies.

(b) Removal. Remove a damaged snap by cutting it with a pair of diagonal wire cutters or nippers. Be careful not to cut or damage the plastic material.

(c) Installation. Without damage to the material, install the new snap fastener (with proper dies) according to original construction using item 22, Figure 14-5.

(2) Keeper with slide. Replace a defective, damaged, or missing keeper using item 23, Figure 14-5.

14-9. REPAIR OF CARRIER, INTRENCHING TOOL, PLASTIC–Continued

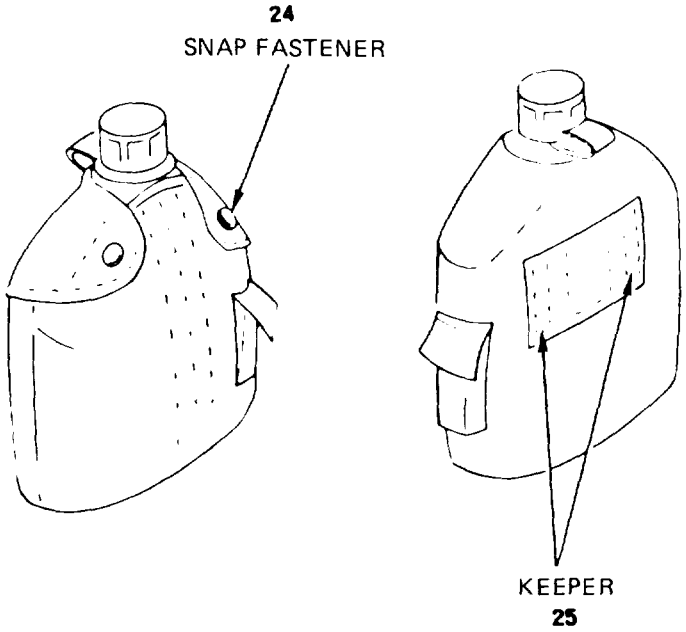

Figure 14-6. Cover, Water Canteen.

14-10. REPAIR AND MAINTENANCE OF COVER, WATER CANTEEN

a. Identification and Description.

(1) Cover, water canteen. (Figure 14-6.)

NSN	SIZE	SPECIFICATION
8465-00-860-0256	One Size	MIL-C-43742

(2) The cover is fabricated of nylon cloth and webbing and acrylic pile liner material. The two-flap closure is secured by means of metal snap fasteners. There is a small pocket on the front of the cover for carrying water purification tablets. The lid of this small pocket is secured by means of hook and pile fastener tape. The cover attaches to the belt by means of two keepers with interlocking slides.

b. Materials. (See Section Ill.)

c. Darning. (See paragraph 14-4.)

14-10. REPAIR AND MAINTENANCE OF COVER, WATER CANTEEN – Continued

d. Patching. (See paragraph 14-4.)

e. Restitching. (See paragraph 14-4.)

f. Repair of binding tape. (See paragraph 14-4.)

g. Hardware.

(1) Snap fasteners.

(a) Resetting. Reset a loose snap fastener by using appropriate dies.

(b) Removal. Remove a damaged snap by cutting it with a pair of diagonal wire cutters or nippers. Be careful not to cut or damage the fabric.

(c) Installation. Without damage to the material, install the new snap fastener (with proper dies) according to original construction using item 24, Figure 14-6.

(2) Keeper with slide. Replace a defective, damaged, or missing keeper using item 25, Figure 14-6.

14-10.1. REPAIR AND MAINTENANCE OF COVER, WATER CANTEEN, 2 QT

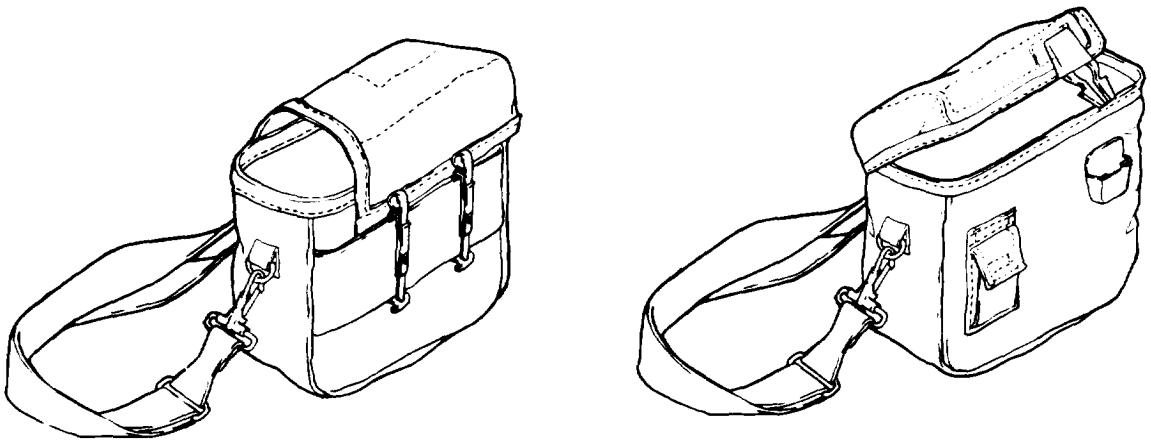

Figure 14-6.1. Cover, Water Canteen, 2 Qt.

a. Identification and Description.

(1) Cover, water canteen, 2 Qt. (Figure 14-6.1).

NSN	SIZE	SPECIFICATION
8465-00-927-7485	One Size	MIL-C-43689

(2) The cover is fabricated of nylon cloth and webbing and acrylic pile liner material. The two-flap closure is secured by means of a plastic fastener. There is a small pocket on the front of the cover for carrying water purification tablets. The lid of this small pocket is secured by means of hook and pile fastener tape. The cover attches to the belt by means of two keepers with interlocking slides.

b. Materials. (See Section III.)

c. Darning. (See paragraph 14-4.)

14-10.1. REPAIR AND MAINTENANCE OF COVER, WATER CANTEEN, 2 QT — Continued

d. Patching. (See paragraph 14-4.)

e. Restitching. (See paragraph 14-4.)

f. Repair of binding tape. (See paragraph 14-4.)

g. Hardware.

(1) Plastic fastener.

(a) Removal. Remove a damaged fastener by placing a screwdriver between the latch and fabric and raise to disengage. Discard fastener.

(b) Installation. Installation of the new plastic fastener requires use of a special tool which is costly. It is therefore recommended that two snap fasteners, NSN 5325-00-985-6718, replace the plastic fastener once it becomes unserviceable. Attach the snaps in the same hole location of the plastic fastener.

(2) Keeper with slide. Replace a defective, damaged, or missing keeper using item 25, Figure 14-6.

14-11. REPAIR AND Maintenance OF FIELD PACK, COMBAT, NYLON, MEDIUM

a. Identification and Description.

(1) Field pack, combat, nylon, medium. (Figure 14-7.)

NSN	SIZE	SPECIFICATION
8465-00-001-6480	Medium w/liners	MIL-F-43833
8465-01-019-9102	Medium w/o liners	MIL-F-43833

(2) This pack is made of water repellent treated nylon duck and webbing, spacer fabric, and metal hardware. The main compartment closes by means of a drawstring secured by a plastic cord clamp. A radio pocket is located against the back on the inside. Three pockets on the outside with strap and buckle adjustable closures and with snap fasteners for quick access are provided for miscellaneous items. The top flap has a pocket with a hook and pile fastener tape sealed closure. Equipment hangers are located above each outside pocket and on each side. Drainage eyelets are provided in the bottom of the main compartment and the outside pockets. An envelope pocket is located at the top, back of the pack and padded with spacer cloth, into which the pack frame is inserted when the pack is used on the frame. Buckles and straps at each side near the bottom are used for anchoring the pack to the frame. Two rectangular wire loops located at the top back of the pack and D rings on each side at the bottom of the pack are used to provide shoulder strap attachment when the pack is carried without the frame. A waterproof bag is located in the main compartment and each of the three outside pockets for keeping the equipment dry.

b. Material. (See Section Ill.)

c. Darning. (See paragraph 14-4.)

d. Patching. (See paragraph 14-4.)

e. Restitching. (See paragraph 14-4.)

f. Repair of binding tape. (See paragraph 14-4.)

g. Repair.

(1) Securing strap. Cut webbing at edge of damaged area and discard. Cut new webbing using item 28, Figure 14-7, turn edges of tapes under 1/2-inch (1.27 cm) and overlap tape 1-inch (2.54 cm) with turnunders on inside and stitch with a boxstitch formation. Cut webbing at an angle making sure the length is the same as the other securing strap. Sear end of webbing.

14-11. REPAIR AND MAINTENANCE OF FIELD PACK, COMBAT, NYLON, MEDIUM-Continued

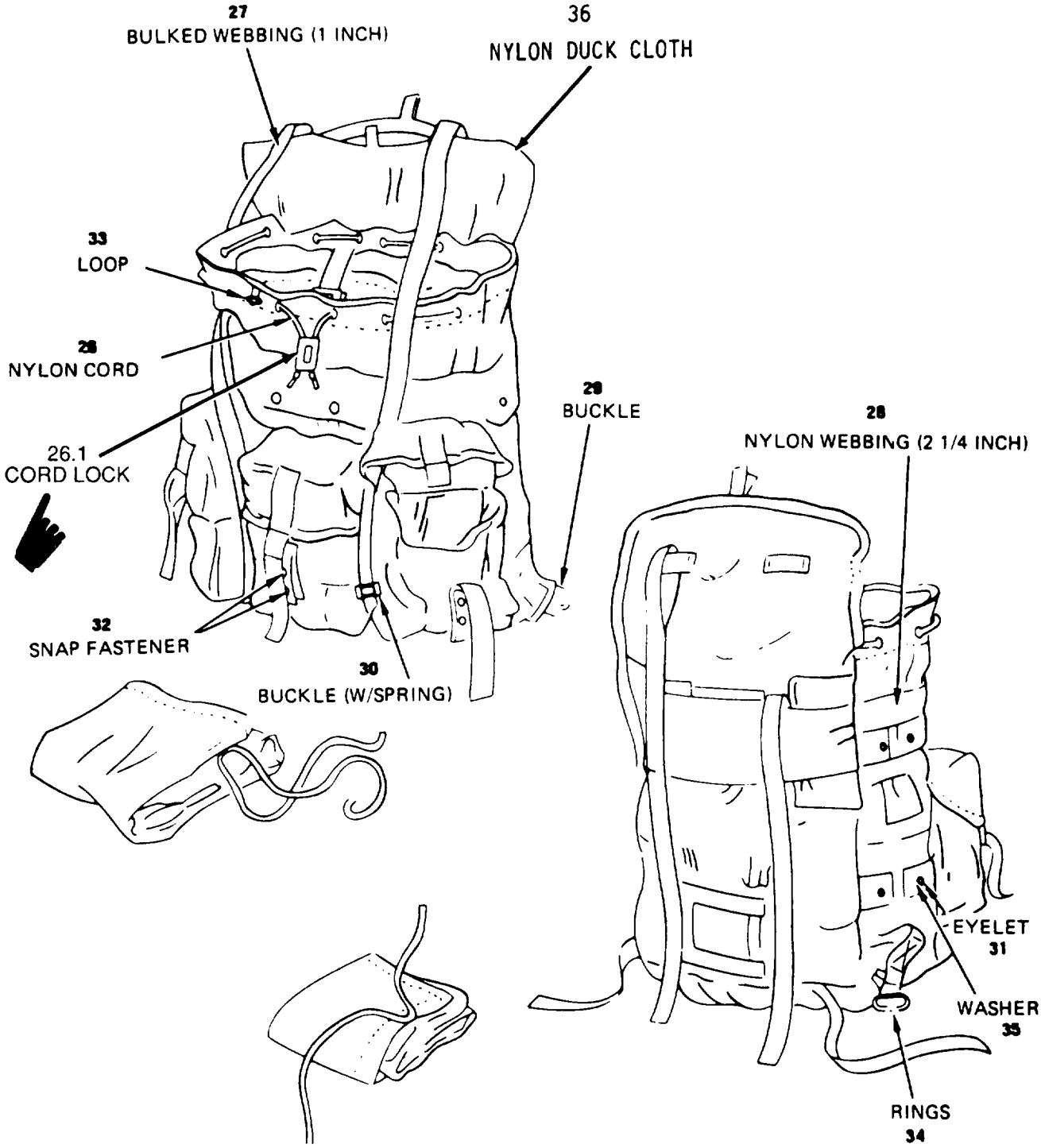

Figure 14-7. Field Pack, Combat, Nylon, Medium.

14-11. REPAIR AND MAINTENANCE OF FIELD PACK, COMBAT, NYLON, MEDIUM - Continued

NOTE

The splice should be performed above the pouch flap as the additional folded webbing will not pass through the buckle for adjustment purposes.

(2) Securing strap, buckle. Replace a damaged or missing buckle as follows:

(a) Carefully cut and remove stitching for a distance of two inches (5.08 cm) from the buckle end.

(b) Cut the single bottom layer of the strap webbing and discard buckle.

(c) Sear cut ends of webbing.

(d) Replace with new buckle using item 30, Figure 14-7.

(e) Secure webbing by stitching with 1 1/2 inch (3.81 cm) three point ww stitch pattern 1/2 inch (1.27 cm) from folded webbing edge.

(3) Radio pocket strap. Replace a damaged strap as follows:

(a) Cut stitching which secures the strap to the pack.

(b) Cut a 12-inch (30.5 cm) length of new webbing using item 27, Figure 14-7, with one end diagonally cut and sear ends.

(c) Place the buckle strap in the original location and secure the webbing by stitching with one row of stitching.

(4) Frame buckle chape. Replace a damaged chape or buckle as follows:

(a) Cut stitch pattern which secures the chape to the pack and discard.

(b) Cut a 4-inch (10.2 cm) length of new webbing using item 27, Figure 14-7, and sear ends. If buckle is damaged discard and use item 29, Figure 14-7.

(c) Fold webbing 1/2 and 2 1/2 inches (1.27 and 6.35 cm) from one end.

(d) Place the buckle chape in the original location and secure the webbing with a 1 1/2 inch (3.81 cm) three point ww stitch pattern.

(5) Buckle chape. Replace a damaged chape or buckle as follows:

(a) Cut three point stitch pattern which secures the chapes to the pocket flap and remove. Discard damaged webbing or buckle.

14-11. REPAIR AND MAINTENANCE OF FIELD PACK, COMBAT, NYLON, MEDIUM – Continued

(b) Cut a 5-inch (12.7 cm) length of new webbing using item 27, Figure 14-7, and sear ends or replace buckle using item 30, Figure 14-7.

(c) Fold webbing 1/2 and 2 1/2 inches (1.27 and 6.35 cm) from one end.

(d) Place the buckle chape in the original location and secure the webbing with a 1 1/2, inch (3.81 cm) three-point ww stitch pattern.

(6) Strap pocket. Replace a damaged pocket strap as follows:

(a) Replace by cutting webbing and remove from buckle and discard.

(b) Cut a 14 1/2 inch (36.8 cm) length of webbing using item 27, Figure 14-7, and sear ends.

(c) Fold webbing 3 1/4, inches (8.26 cm) and stitch with one row 1/8-inch (0.318 cm) from edge around folded strap.

(d) Install a new snap fastener (with proper sized dies) using item 32, Figure 14-7, according to the original construction and locations,

(e) Thread webbing through buckle as other pocket straps, double fold free end of webbing 1/2-inch (1.27 cm) length, and stitch with one 3/4-inch (1.91 cm) bartack or three rows of stitching in the center of the fold.

(7) Loop chape. Replace a damaged chape or loop as follows:

(a) Cut the webbing as close to the 1 inch (2.54 cm) reinforcement webbing as possible.

(b) Cut a 5 inch (12.7 cm) length of new webbing using item 27, Figure 14-7, and sear ends or replace loop using item 33, Figure 14-7.

(c) Fold webbing 1/2 and 2 1/2 inches (1.27 and 6.35 cm) from one end.

(d) Place the loop chape on top of the original and secure the webbing with a 1 1/2 inch (3.81 cm) three point ww stitch pattern.

(e) Stitch with one 1-inch (2.54 cm) bartack or three rows of stitching 1/8-inch (0.318 cm) from edge of 1-inch (2.54 cm) reinforcement webbing (stitching should be sewn through reinforcement webbing).

(8) Frame tie down strap. Replace a damaged strap as follows:

(a) Replace strap by carefully cutting off the webbing as close to the bartack as possible.

14-11. REPAIR AND MAINTENANCE OF FIELD PACK, COMBAT, NYLON, MEDIUM – Continued

(b) Cut a 14 1/2 inch (36.8 cm) length of new webbing with one end at an angle using item 27, Figure 14-7, and sear ends.

(c) Fold end 1/2-inch (1.27 cm) and stitch with a 1 1/2 inch (3.81 cm) three-point ww stitch positioned on top of the cut original tie down strap.

(9) Chape, D ring, 1-inch wide. Replace a damaged chape or D ring as follows:

(a) Replace by carefully cutting off the webbing as close to the bartack as possible,

(b) Cut a 3 inch (7.62 cm) length of webbing using item 27, Figure 14-7, and sear ends or replace D ring using item 34, Figure 14-7.

(c) Fold webbing in half with D ring in center, place the chape on top of the original location of D ring and secure the webbing with two 1-inch (2.54 cm) bartacks located close to the D ring and 3/16 inch (0.476 cm) from the seared edges.

(10) Lower equipment hanger. Replace a damaged hanger as follows:

(a) Carefully cut webbing 5/8-inch (1.59 cm) from the pocket, side seam and cut stitching which secures the hanger to the pack.

(b) Cut a 6 1/2 inch (16.5 cm) length of webbing using item 28, Figure 14-7, and sear ends.

(c) Make a mark 3 1/4 inches (8.26 cm) for the center line location. From the center line make a mark 1 1/4 inches (3.18 cm) from each side 1/2-inch (1.27 cm) from webbing edge. Install a new eyelet and washer (with proper sized dies) using items 31 and 35, Figure 14-7.

(d) Fold webbing 1/2-inch (1.27 cm) each end and position as in original location and stitch with a 1/2-inch (1.27 cm) wide box stitch on the folded ends and center of the hanger.

(11) Keeper. Replace a damaged keeper as follows:

(a) Carefully cut stitching which secures the keeper to the side or bottom of the pack.

(b) Cut a 2 3/8 inch (6.03 cm) length of webbing using item 28, Figure 14-7, and sear ends,

(c) Fold webbing 1/2 inch (1.27 cm) each end and position as in original location and stitch with two 1-inch (2.54 cm) bartacks or three rows of stitching.

(12) Upper equipment hanger. Repair a damaged section as follows:

(a) Cut a length of webbing of sufficient length to overlap the stitch patterns 1/2-inch (1.27 cm) using item 28, Figure 14-7, and sear ends.

14-11. REPAIR AND MAINTENANCE OF FIELD PACK, COMBAT, NYLON, MEDIUM – Continued

(b) Fold webbing 1/2 inch (1.27 cm) each end and position over damaged section and stitch with a 1/2-inch (1.27 cm) wide box stitch 1/8-inch (0.318 cm) from the folded ends.

NOTE

If the section to be repaired falls within an eyelet and washer, install a new eyelet and washer (with proper sized dies) using items 31 and 35, Figure 14-7, and position in the original location.

(13) Flap pouch with liner. Replace item as follows:

(a) Carefully cut the stitching which secures the flap to the pack.

(b) Replace the new flap with liner on the pack using the type 3 seam. Repair procedures are described in FM 10-16.

14-11. REPAIR AND MAINTENANCE OF FIELD PACK, COMBAT, NYLON, MEDIUM–Continued

(13) Cord, drawstring, pouch. Replace a damaged or missing drawstring as follows:

(a) Remove cord from grommets and plastic clamp cord.

(b) Cut a 55 inch (140 cm) length of cord using item 26, Figure 14-7.

(c) Thread cord through the back panel center two grommets and tie with a square knot on the outside.

(d) Thread each cord end through the six grommets.

(e) Thread each end of cord through plastic clamp cord, tie with overhand knot and sear ends.

14-12. REPAIR AND MAINTENANCE OF FIELD PACK, COMBAT, NYLON, LARGE

a. Identification and Description

(1) Field pack, combat, nylon, large. (Figure 14-8.)

NSN	SIZE	SPECIFICATION
8465-00-001-6481	Large w/liners	MIL-F-43832
8465-01-019-9103	Large w/o liners	MIL-F-43832

(2) The construction and materials in this pack are similar to the medium pack with the differences being: it is much larger in size; the center outside pocket is larger than the other two main outside pockets; and the addition of three small outside pockets above the larger pockets.

b. Materials. (See Section III.)

14-12. REPAIR AND MAINTENANCE OF FIELD PACK, COMBAT, NYLON, LARGE–Continued

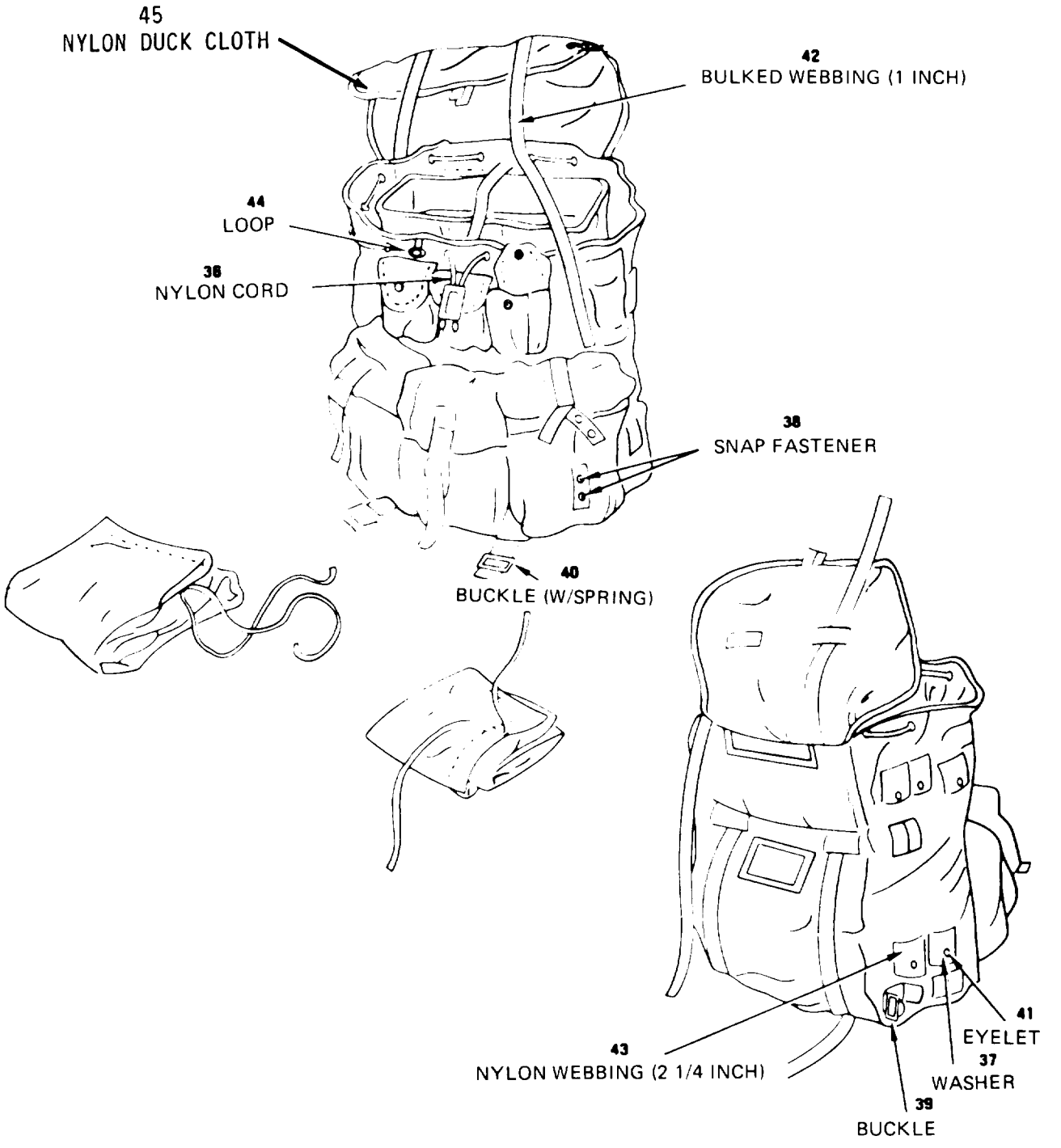

Figure 14-8. Field Pack, Combat, Nylon, Large.

14-12. REPAIR AND MAINTENANCE OF FIELD PACK, COMBAT, NYLON, LARGE – Continued

c. Darning. (See paragraph 14-4.)

d. Patching. (See paragraph 14-4.)

e. Restitching. (See paragraph 14-4.)

f. Repair of binding tape. (See paragraph 14-4.)

g. Repair.

(1) Securing strap. Cut webbing at edge of damaged area and discard. Cut new webbing using item 42, Figure 14-8, turn edges of tapes under 1/2-inch (1.27 cm) and overlap tape 1-inch (2.54 cm) with turnunders on inside and stitch with a boxstitch formation. Cut webbing at an angle making sure the length is the same as the other securing strap. Sear end of webbing.

NOTE

The splice should be performed above the pouch flap as the additional folded webbing will not pass through the buckle for adjustment purposes.

(2) Securing strap, buckle. Replace a damaged or missing buckle as follows:

(a) Carefully cut and remove stitching for a distance of two inches from the buckle end.

(b) Cut the single bottom layer of the strap webbing and discard buckle.

(c) Sear cut ends of webbing.

(d) Replace with new buckle using item 40, Figure 14-8.

(e) Secure the webbing by stitching with 1 1/2 inch (1.27 cm) three point ww stitch pattern 1/2 inch (1.27 cm) from folded webbing edge.

(3) Radio pocket strap. Replace a damaged strap as follows:

(a) Cut stitching which secures the strap to the pack.

(b) Cut a 12-inch (30.5 cm) length of new webbing using item 42, Figure 14-8, with one end diagonally cut, and sear ends.

(c) Place the buckle strap in the original location and secure the webbing by stitching with one row of stitching.

(4) Frame buckle chape, Replace a damaged chape or buckle as follows:

(a) Cut stitch pattern which secures the chape to the pack and discard.

(b) Cut a 4-inch (10.2 cm) length of new webbing using item 42, Figure 14-8, and sear ends. If buckle is damaged discard and use item 39, Figure 14-8, for replacement.

14-12. REPAIR AND MAINTENANCE OF FIELD PACK, COMBAT, NYLON, LARGE – Continued

(c) Fold webbing 1/2 and 2 1/2 inches (1.27 and 6.35 cm) from one end.

(d) Place the buckle chape in the original location and secure the webbing with a 1 1/2 inch (3.81 cm) three point ww stitch pattern.

(5) Buckle chape. Replace a damaged chape, buckle as follows:

(a) Cut three point stitch pattern which secures the chapes to the pocket flap and remove. Discard damaged webbing or buckle.

(b) Cut a 5-inch (12.7 cm) length of new webbing using item 42, Figure 14-8, and sear ends or replace buckle using item 40, Figure 14-8.

(c) Fold webbing 1/2 and 2 1/2 inches (1.27 and 6.35 cm) from one end.

(d) Place the buckle chape in the original location and secure the webbing with a 1 1/2 inch (3.81 cm) three-point ww stitch pattern.

(6) Strap pocket. Replace a damaged pocket strap as follows:

(a) Replace by cutting webbing and remove from buckle and discard.

(b) Cut a 14 1/2 inch (36.8 cm) length of webbing using item 42, Figure 14-8, and sear ends.

(c) Fold webbing 3 1/4 inches (8.26 cm) and stitch with one row of stitching 1/8-inch (0.318 cm) from edge around folded strap.

(d) Install a new snap fastener (with proper sized dies) using item 38, Figure 14-8, according to the original construction and locations.

(e) Thread webbing through buckle as other pocket straps, double fold free end of webbing 1/2-inch (1.27 cm) length and stitch with one 3/4-inch (1.91 cm) batack or three rows of stitching in the center of the fold.

(7) Loop chape. Replace a damaged chape or loop as follows:

(a) Cut the webbing as close to the 1 inch (2.54 cm) reinforcement webbing as possible.

14-12, REPAIR AND MAINTENANCE OF FIELD PACK, COMBAT, NYLON, LARGE – Continued

(b) Cut a 5-inch (12.7 cm) length of new webbing using item 42, Figure 14-8, and sear ends or replace loop using item 44, Figure 14-8.

(c) Fold webbing 1/2 and 2 1/2 inches (1.27 and 6.35 cm) from one end.

(d) Place the loop chape on the top of the original and secure the webbing with a 1 1/2 inch (3.81 cm) three-point ww stitch pattern.

(e) Stitch with one 1-inch (2.54 cm) bartack or three rows of stitching 1/8 inch (0.318 cm) from edge of 1-inch (2.54 cm) reinforcement webbing (stitching should be sewn through reinforcement webbing).

(8) Frame tiedown strap. Replace a damaged strap as follows:

(a) Replace strap by carefully cutting off the webbing as close to the bartack as possible,

(b) Cut a 14 1/2 inch (36.8 cm) length of new webbing with one end at an angle using item 42, Figure 14-8, and sear ends.

(c) Fold end 1/2-inch (1.27 cm) and stitch with a 1 1/2 inch (3.81 cm) three-point ww stitch pattern positioned on top of the cut original tiedown strap.

(9) Upper and lower equipment hanger. Replace a damaged hanger as follows:

(a) Carefully cut stitching which secures the hanger to the pack.

(b) Cut a 6-inch (15.2 cm) length of webbing using item 43, Figure 14-8, and sear ends.

(c) Make a mark 3 inches (7.62 cm) for the center line location. From the centerline make a mark 1 1/4 inches (3.18 cm) from each side 1/2-inch (1.27 cm) from webbing edge. Install a new eyelet and washer (with proper sized dies) using items 37 and 41, Figure 14-8.

(d) Fold webbing 1/2 inch (1.27 cm) each end and position as in original location and stitch with two 1-inch (2.54 cm) bartacks or three rows stitching on the folded ends and center of the hanger.

(10) Keeper. Replace a damaged keeper as follows:

(a) Carefully cut stitching which secures the keeper to the side or bottom of the pack.

(b) Cut a 2 3/8 inch (6.03 cm) length of webbing using item 43, Figure 14-8, and sear ends.

(c) Fold webbing 1/2 inch (1.27 cm) each end and position as in original location and stitch with two 1-inch (2.54 cm) bartacks or three rows of stitching.

14-12. REPAIR AND MAINTENANCE OF FIELD PACK, COMBAT, NYLON, LARGE – Continued

(11) Cord, drawstring, pouch. Replace a damaged or missing drawstring as follows:

(a) Remove cord from grommets and plastic clamp cord.

(b) Cut a 72 inch (183 cm) length of cord using item 36, Figure 14-8.

(c) Thread cord through the back panel center two grommets and tie with a square knot on the outside.

(d) Thread each cord end through the six grommets.

(e) Thread each end of cord through plastic clamp cord, tie with overhand knot and sear ends.

(12) Cord, drawstring, pocket. Replace a damaged or missing cord as follows:

(a) Cut the cord as close to the pocket as possible.

(b) Cut a 14 inch (35.6 cm) length of cord using item 36, Figure 14-8, remove inner yarns, discard, and sear coreless cord.

(c) Fold cord 1/2 inch (1.27cm), position on top of pocket as in original location, and stitch with 1/2 inch (1.27 cm) bartack or three rows of stitching.

(d) Thread cord through eyelets as in original and tie cord end with an overhand knot.

14-12. REPAIR AND MAINTENANCE OF FIELD PACK, COMBAT, NYLON, LARGE–Continued

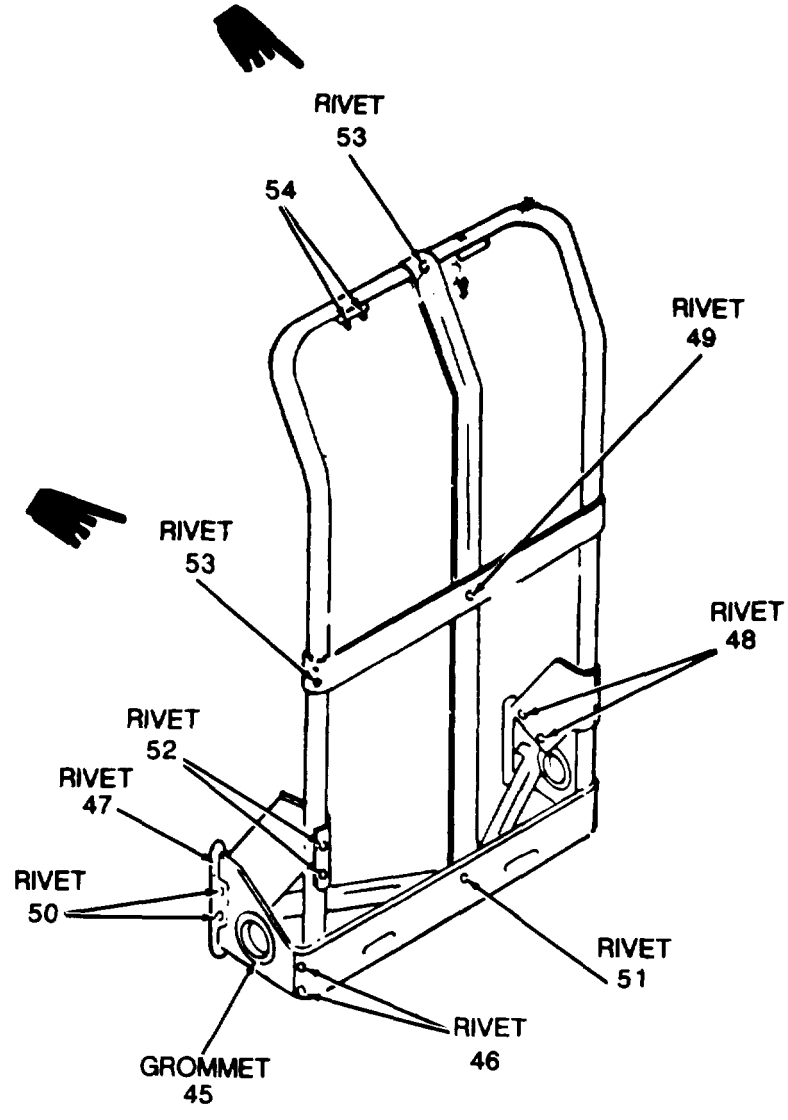

Figure 14-9. Frame. Pack, Ground Troops W/Straps. Grommet Rivet.

14-13. REPAIR AND MAINTENANCE OF FRAME PACK, GROUND TROOPS AND SHELF

a. Identification and Description.

(1) Frame, pack, ground troops with straps. (Figure 14-9).

NSN	SIZE	SPECIFICATION
8465-01-073-8326	One Size	MIL-F-43834

14-13. REPAIR AND MAINTENANCE OF FRAME PACK, GROUND TROOPS AND SHELF - Continued

(2) The ground troops pack frame is used as a mount for either the medium combat field pack or the large combat field pack. The frame, when requisitioned, comes with all straps. The frame is of aluminum construction.

(e) Shelf, cargo support. (Figure 14-10).

NSN	SIZE	SPECIFICATION
8465-00-001-6476	One Size	MIL-F-43834

(4) The cargo support shelf is used to support bulky loads such as water, gasoline, and ammunition cans, field rations, and radios. The shelf is of aluminum construction.

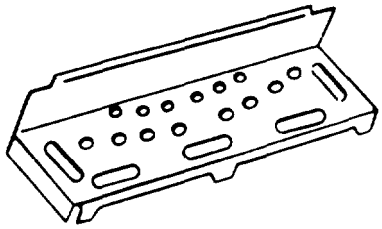

Figure 14-10. Shelf Cargo Support.

b. Materials. See Section Ill.

c. Inspection. Inspect for rust spots on rivets, scratched surfaces and bent or damaged areas. Check that rivets are sound, firmly attached and crimped in place.

d. Repair. Place frame in a vise and straighten bends to original contour. Touch up badly worn and bare metal surfaces using coating listed in Section Ill.

NOTE

In order to prevent frame scratching, cover vise with brass or aluminum attachments.

e. Replacement of Rivets. Replace a damaged or missing rivet as follows:

(1) Drill damaged rivets with a 1/8 inch (0.318 cm) diameter drill bit. Care must be taken not to enlarge rivet holes while drilling.

(2) Replace the rivets with the proper lengths as shown on Figure 14-9 and referenced in Section III using appropriate dies.

14-13. REPAIR AND MAINTENANCE OF FRAME PACK, GROUND TROOPS AND SHELF - Continued

(3) When replacing the 1/8-inch (0.318 cm) diameter blind rivets, use riveting tool No. PRG402 H. D. Manual Pop Riveter made by the USM Corporation, Fastener Division, 510 River Road, Shelton, CT 06484.

f. Plastic Grommet. Replace a damaged or missing grommet as follows:

(1) Remove grommet with a pair of diagonal cutters or nippers being careful not to damage frame.

(2) Install a new grommet using item 45, Figure 14-9, and setting tools Model No. WSI-T-18 male and female grommet attachment. Source of supply for setting tool is:

Western Sky Industries
Division of Atlas Corporation
21300 Cloud Way
Hayward, CA 94545

14-13. REPAIR AND MAINTENANCE OF FRAME PACK, GROUND TROOPS AND SHELF–Continued

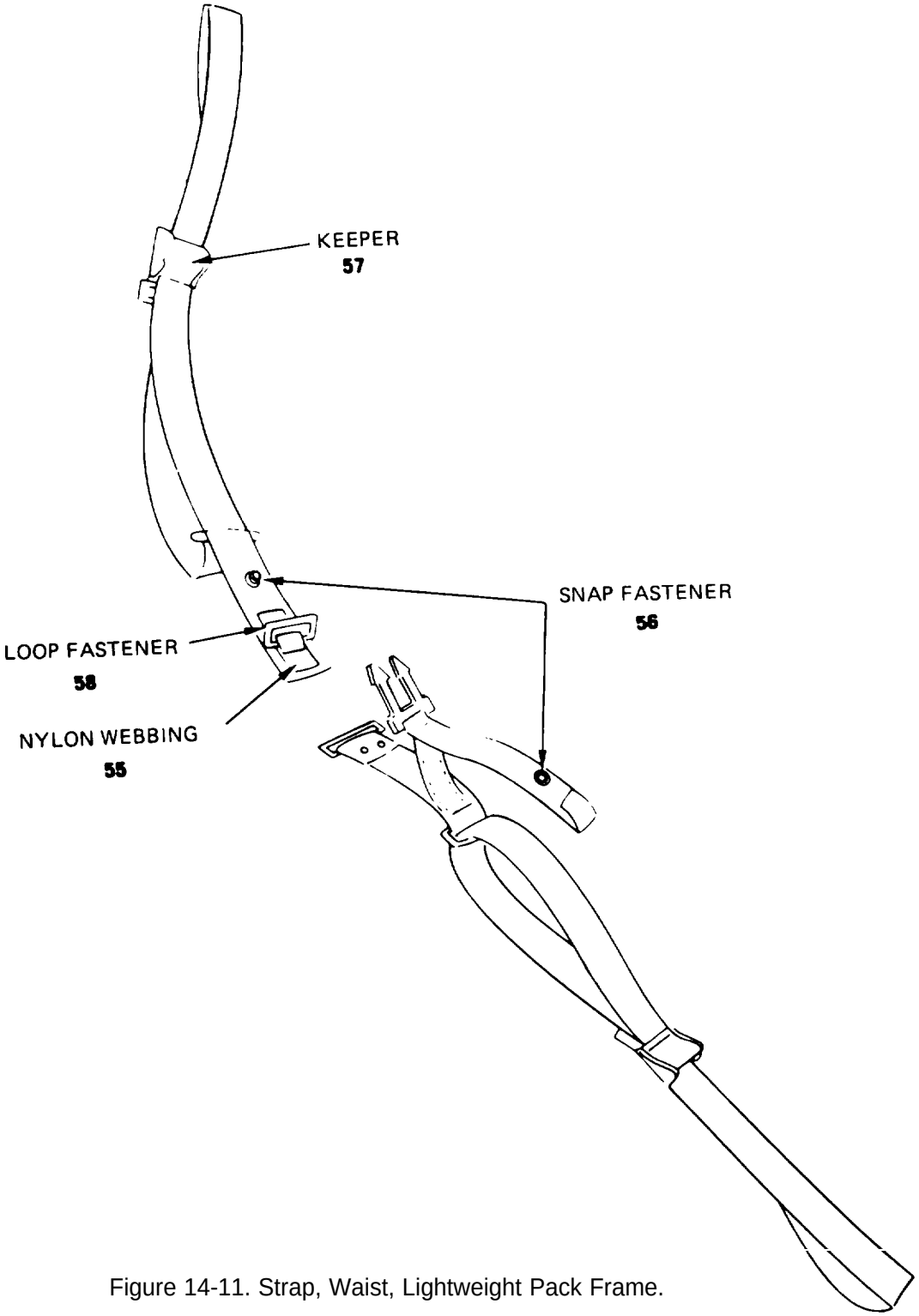

Figure 14-11. Strap, Waist, Lightweight Pack Frame.

14-14. REPAIR OF STRAP, WAIST, LIGHTWEIGHT PACK FRAME

a. Identification and Description.

(1) Strap, waist, lightweight pack frame. (Figure 14-11).

NSN	SIZE	SPECIFICATION
8465-00-269-0481	One Size	MIL-S-43835

(2) The waist strap is made in two sections of 1-inch (2.54 cm) wide nylon webbing. It has a quick release fastener which consists of a plastic retainer clip used in conjunction with interlocking wire loops. Adjustment is by means of keeper clamps attached to each section of the strap.

b. Materials. See Section Ill.

c. Darning. (See paragraph 14-4.)

d. Patching. (None.)

e. Restitching. (See paragraph 14-4.)

f. Repair of Binding. (None.)

9. Hardware.

(1) Snap fasteners.

(a) Resetting. Reset a loose snap fastener by using appropriate dies.

(b) Removal. Remove a damaged snap by cutting it with a pair of diagonal wire cutters or nippers. Be careful not to cut or damage the webbing.

(c) Installation. Without damage to the material install the new snap fastener (with proper dies) according to original construction using item 56, Figure 14-11.

(2) Keeper clamp with loop. Replace a damaged clamp as follows:

(a) Cut three point ww stitching which secures clamp to the strap.

(b) Replace keeper clamp w/loop using item 57, Figure 14-11.

(c) Place as in original construction and secure by stitching with 1 1/2 inch (3.81 cm) three point ww stitch pattern.

(3) Male fastener, web loop chape. Replace a damaged web loop or fastener loop as follows:

14-14. REPAIR OF STRAP, WAIST, LIGHTWEIGHT PACK FRAME—Continued

(a) Cut 3/4-inch (1.91 cm) wide webbing as close to bartack stitching as possible and discard webbing or metal loop.

(b) Cut a 2 3/4 inch (6.98 cm) length type la nylon webbing using item 55, Figure 14-11, and sear ends. If fastener loop is damaged, discard and use item 58, Figure 14-11.

(c) Fold the ends 5/8-inch (1.59 cm).

(d) Place the chape with metal loop in the original location and secure the webbing by stitching with two 3/4 inch (1.91 cm) bartacks or three rows of stitching 3/16 inch (0.476 cm) from webbing edge and 1/4 inch (0.635 cm) from center of loop each side.

14-15. REPAIR AND MAINTENANCE OF STRAP, LOWER BACK

a. Identification and Description.

(1) Strap, lower back, lightweight pack frame. (Figure 14-12).

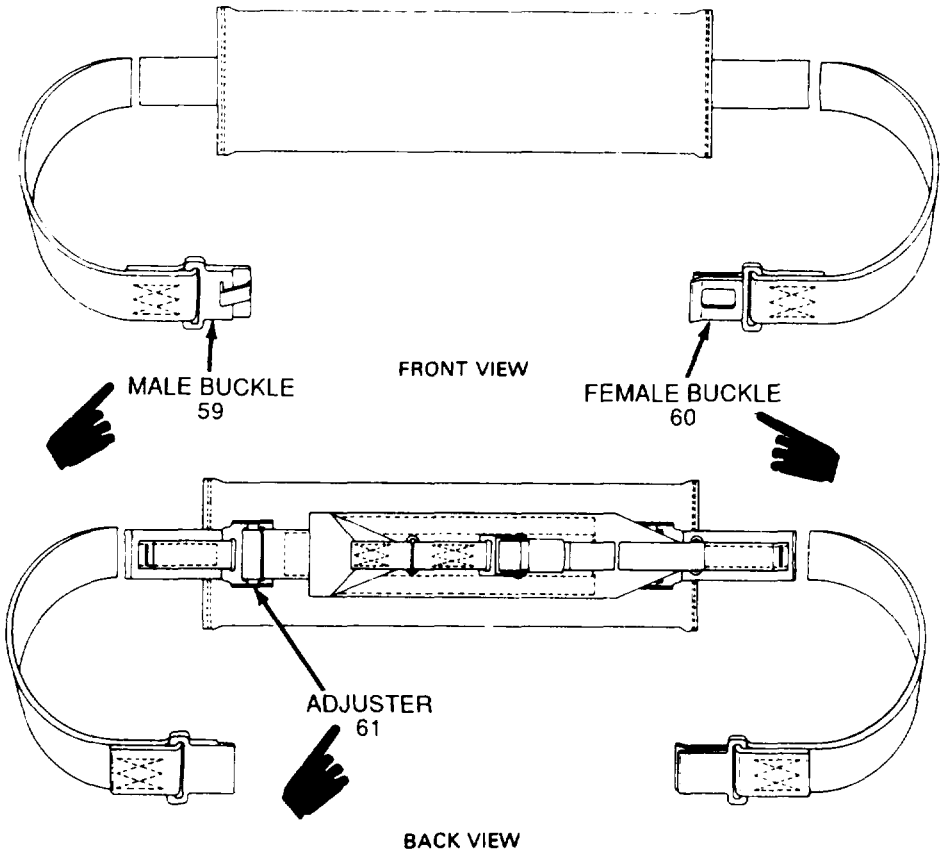

Figure 14-12. Strap, Lower Back, Lightweight Pack Frame.

14-15. REPAIR AND MAINTENANCE OF STRAP, LOWER BACK – Continued

NSN	SIZE	SPECIFICATION
8465-01-075-8164	One Size	MIL-S-43835

(2) The lower back strap is made of a 3-inch (7.62 cm) wide nylon webbing which has sewn to it a nylon fabric covered spacer cloth pad. A steel hook and fastener are attached to each end of the webbing which makes up the cargo tiedown strap.

b. Materials. See Section Ill.

c. Darning. (See paragraph 14-4.)

d. Patching. (See paragraph 14-4.)

e. Restitching. (See paragraph 14-4.)

f. Repair. Replace a damaged or missing steel hook and fastener by replacing the strap, cargo tiedown which includes steel fastener, buckle, and 24 long, 1" wide nylon webbing.

(3) Strap, waist, pack frame LCZ 24 inches, NSN 8465-01-151-2891 is used in conjunction with strap, lower back, NSN 8465-01-075-8164.

g. Repair. Replace damaged adjuster buckle with new adjuster buckle conforming to DWG #4-1-233, MIL-S-43835 (Section Ill, Adjuster, Webbing).

14-16. REPAIR AND MAINTENANCE OF STRAP, SHOULDER, RIGHT HAND, WITHOUT QUICK RELEASE AND LEFT HAND WITH QUICK RELEASE ASSEMBLY

a. Identification and Description.

(1) Strap, shoulder, lightweight pack frame, right hand, without quick release assembly. (Figure 14-13.)

NSN	SIZE	SPECIFICATION
8465-01-078-9282	One Size	MIL-S-43835

14-16. REPAIR AND MAINTENANCE OF STRAP, SHOULDER, RIGHT HAND, WITHOUT QUICK RELEASE AND LEFT HAND WITH QUICK RELEASE ASSEMBLY–Continued

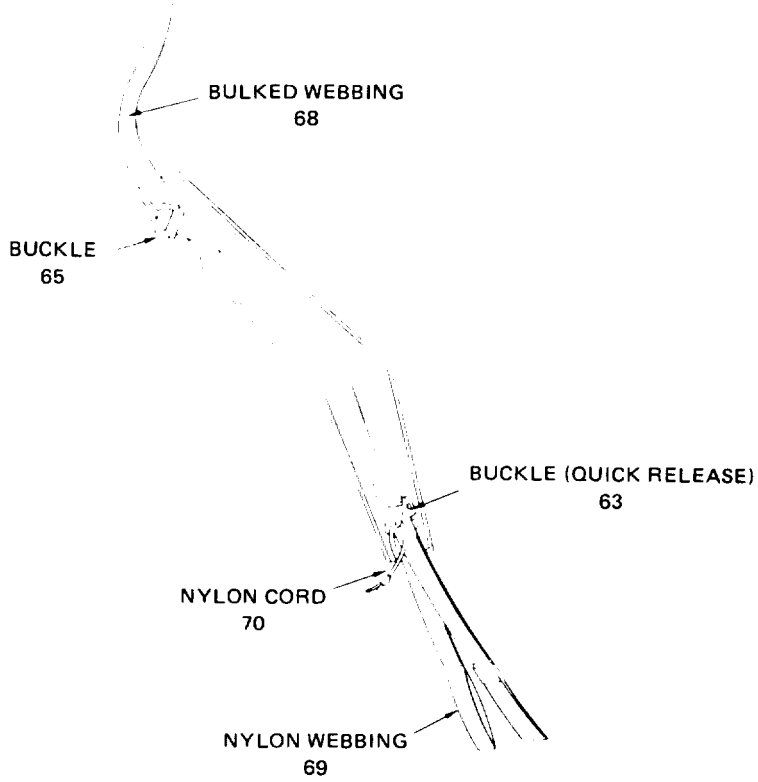

Figure 14-13. Strap, Shoulder Lightweight Pack Frame, Right Hand; Without Quick Release Assembly.

(2) The right hand shoulder strap is curved type with a strap and non-slip buckle at the top for use in attaching to either the medium pack or to the frame. A spring loaded, cam type buckle at the lower end with the adjusting strap is used in attaching to either the pack D ring or to the frame nylon ring. Spacer cloth is used for the padding material.

(3) Strap, shoulder, pack frame and field packs, left hand, with quick release assembly. (Figure 14-14.)

NSN	SIZE	SPECIFICATION
8465-00-269-0482	One Size	MIL-S-43835

b. Materials. See Section Ill.

c. Darning. (See paragraph 14-4.)

d. Patching. (See paragraph 14-4.)

e. Restitching. (See paragraph 14-4.)

14-16. REPAIR AND MAINTENANCE OF STRAP, SHOULDER, RIGHT HAND, WITHOUT QUICK RELEASE AND LEFT HAND WITH QUICK RELEASE ASSEMBLY–Continued

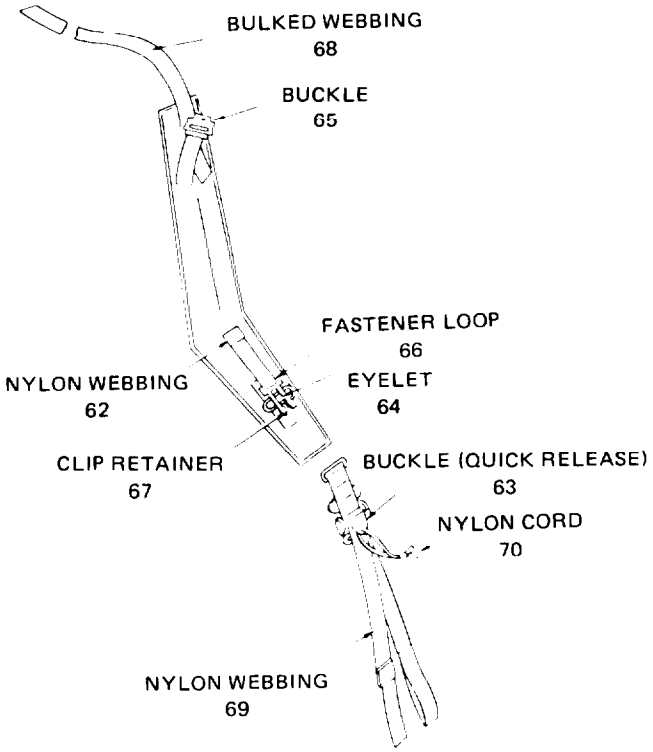

Figure 14-14. Strap, Shoulder Pack Frame and Field Packs, Left Hand; With Quick Release Assembly.

f. Repair

(1) Strap, adjusting lower shoulder. Replace a damaged or missing strap as follows:

(a) Cut and remove strap from non-slip buckle and discard.

(b) Cut a 40 inch (102 cm) length of 1 inch (2.54 cm) webbing using item 69, Figure 14-13 and sear ends.

(c) Fold webbing, thread through buckle, and stitch as in original construction.

(2) Strap, frame and field pack. Replace a damaged or missing strap as follows:

(a) Cut webbing as close to bartack stitching as possible.

(b) Cut a 12 inch (30.5 cm) length of 1 inch (2.54 cm) webbing using item 68, Figure 14-13, with one end at an angle and sear ends.

(c) Position webbing on top of original and secure by stitching through entire strap with 1-inch bartacks or three rows of stitching 1/8 and 1 1/2 inch (0.318 and 3.81 cm) from edge.

14-16. REPAIR AND MAINTENANCE OF STRAP SHOULDER, RIGHT HAND, WITHOUT QUICK RELEASE AND LEFT HAND WITH QUICK RELEASE ASSEMBLY – Continued

(3) Buckle, chape. (1 inch (2.54 cm) non-slip). Replace a damaged buckle or chape as follows:

(a) Cut stitching which secures the chape on the strap and discard webbing or buckle.

(b) Cut a 5 3/4 inch (14.6 cm) length of 1 inch (2.54 cm) webbing using item 68, Figure 14-13, and sear ends. If buckle is damaged, discard and use item 65, Figure 14-13.

(c) Fold each end of webbing 1/2 inch (1.27 cm), thread webbing through 1-inch (2.54 cm) non-slip buckle and position as in original construction, Stitch with two 1 1/2 inch (3.81 cm) three point ww stitch patterns.

(4) Buckle, chape. (1-inch (2.54 cm) non-slip quick-release). Replace a damaged buckle or chape as follows:

(a) Cut stitching which secures the chape on the strap and discard webbing or buckle. It quick release buckle is damaged, discard and use item 63, Figure 14-13.

(b) Cut a 4 1/4 inch (10.8 cm) length of 1 inch (2.54 cm) webbing using item listed in Section Ill and sear ends.

(c) Fold the webbing 1/2 and 2 1/2 inches (1.27 and 6.35 cm) from one end, thread 1-inch (2.54 cm) non-slip buckle and position as in original construction.

(d) Secure by stitching through entire strap with 1 1/2 inch (3.81 cm) three point ww stitch pattern.

(5) Loop retainer, loop fastener, male. (Left hand assembly with quick release.) Replace a damaged web loop or fastener male loop as follows:

(a) Cut the 3/4-inch (1.91 cm) wide webbing using item 62, Figure 14-14, as close to bartack stitching as possible and discard webbing or metal loop.

(b) Cut a 2 3/4 inch (6.98 cm) length type la webbing using item 62, Figure 14-14.

(c) Fold the ends 7/8-inch (2.22 cm).

(d) Place the chape with metal loop on top of the original and secure the webbing by stitching with two 3/4 inch (1.91 cm) bartacks or three rows of stitching % and 3/4 inches (0.318 and 1.91 cm) from webbing edges.

(6) Chape loop and buckle. (Left hand assembly with quick release.) Replace a damaged webbing chape, loop or buckle as follows:

(a) Cut 1-inch (2.54 cm) webbing and discard webbing, loop or buckle.

14-16. REPAIR AND MAINTENANCE OF STRAP, SHOULDER, RIGHT HAND, WITHOUT QUICK RELEASE AND LEFT HAND WITH QUICK RELEASE ASSEMBLY – Continued

(b) Cut a 3 inch (7,62 cm) length 1 inch (2.54 cm) wide webbing using item 68, Figure 14-13, and sear ends.

(c) Fold webbing 1 inch (2.54 cm) from each end.

(d) Thread webbing through non-slip buckle using item 63, Figure 14-13, and female fastener loops as in original construction.

(e) Secure fastener loop to webbing with eyelets using item 64, Figure 14-14 by using appropriate dies.

(7) Strap retaining, quick release. (Left hand assembly with quick release.) Replace a damaged or missing strap retainer as follows:

(a) Cut stitching which secures the quick release strap to the Ieft hand assembly.

(b) Cut a 12 inch (30.5 cm) length of 3/4 inch (1.91 cm) wide Type la webbing using item 62, Figure 14-14, and sear ends.

(c) Fold webbing in half and stitch with a row of stitching 1/8 inch (0.318 cm) from edge along four sides.

(d) Double fold seared edges 1/2 inches (1.27 cm) and stitch with 1/2 inch (1.27 cm) bartack or three rows of stitching in center of fold.

(e) Fold opposite end 2 1/4 inches (5.72 cm) from end of webbing. Insert plastic clip retainer using item listed in Section Ill, to folded loop. Secure with a 1/2 inch (1.27 cm) bartack or three rows of stitching 1/2-inch (1.27 cm) from fold edge.

(f) Attach quick release retainer strap to left hand assembly as in original location with two 1/2-inch (1.27 cm) bartacks or three rows of stitching 1/8 and 1/2 inches (0.318 and 1.27 cm) from folded edge.

(8) Buckle cord. Replace a damaged or missing cord as follows:

(a) Cut a 12-inch (30.5 cm) length of cord using item 70, Figure 14-14, remove inner yarns and discard. Sear ends of coreless cord.

(b) Thread cord through buckle hole in half and tie with an overhand knot.

14-17. REPAIR AND MAINTENANCE OF STRAP WEBBING, CARGO TIEDOWN, LIGHTWEIGHT PACK FRAME

a. Identification and Description.

(1) Strap, webbing, cargo tiedown, lightweight pack frame. (Figure 14-15).

NSN	SIZE	SPECIFICATION
8465-00-001-6477	One Size	MIL-S-43828

(2) The cargo tiedown strap is made of 1 -inch (2.54 cm) wide nylon webbing with a hook sewn to one end which attaches to a cam-locking buckle which moves on the strap for adjustment.

b. Materials. See Section Ill

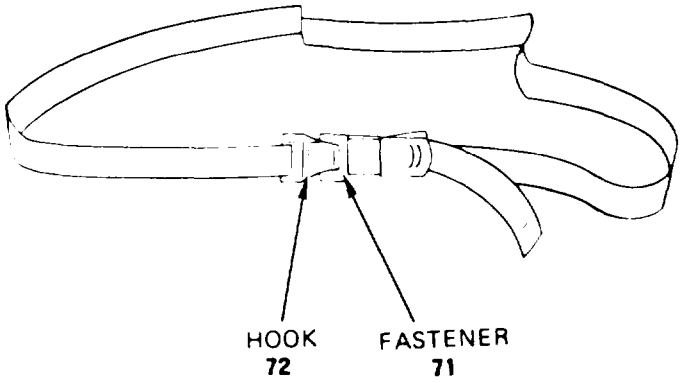

Figure 14-15. Strap, Webbing, Cargo Tiedown, Lightweight Pack Frame

14-17. REPAIR AND MAINTENANCE OF STRAP, WEBBING, CARGO TIEDOWN, LIGHTWEIGHT PACK FRAME — Continued

c. Darning. (See paragraph 14-4.)

d. Patching. (None.)

e. Restitching. (See paragraph 14-4.)

f. Repair of Binding tape. (None.)

g. Hardware. Replace a defective or damaged buckle as follows:

(1) Cut three point ww or bartack stitching which secures the fastener or hook on the strap. Remove fastener or hook and replace using items 71 or 72, Figure 14-15.

(2) Place as in original construction and secure by stitching with 1 1/2-inch (3.81 cm) three point ww stitch pattern or 3/4-inch (1 .91 cm) bartack or three rows of stitching.

14-18. REPAIR AND MAINTENANCE OF COVER, FIELD PACK, CAMOUFLAGE

a. Identification and Description.

(1) Cover, field pack, camouflage. (Figure 14-16.)

NSN	SIZE	SPECIFICATION
8465-00-001-6478 (Snow)	One Size	MIL-C-43830
8465-01-192-6616 (Woodland)	One Size	MIL-C-43830
8465-01-103-0659 (Desert)	One Size	MIL-C-43830

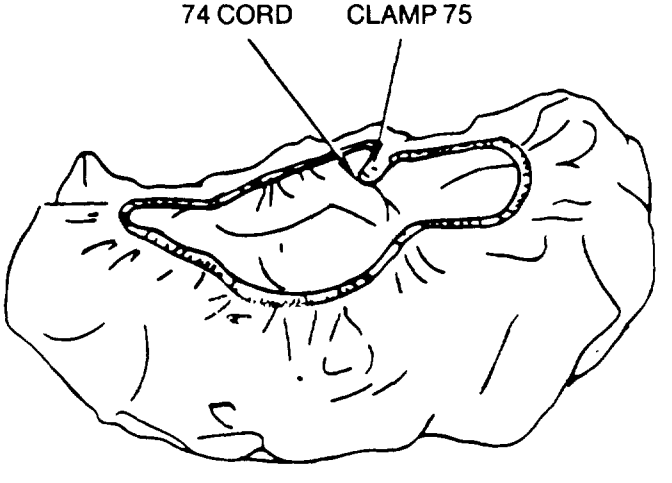

Figure* 14-16. *Cover, Field Pack, Camouflage.

14-18. REPAIR AND MAINTENANCE OF COVER, FIELD PACK, CAMOUFLAGE–Continued

(2) This camouflage cover is octagonal and is made of oxford cloth, quarpel treated, bleached white or cloth, desert camouflage pattern, cotton and nylon.

b. Materials. See Section Ill.

c. Darning. (See paragraph 14-4.)

d. Patching. (See paragraph 14-4.)

e. Restitching. (See paragraph 14-4.)

f . Replacement. Replace a damaged elastic cord as follows:

(1) Carefully cut stitching on hem for a distance of approximately three inches (7.62 cm) and cut cord.

(2) Cut a 40 inch (102 cm) length of elastic cord using item 74, Figure 14-16, and dip cut ends of cord 1/2 inch (1.27 cm) minimum using item 73 listed in Section Ill.

(3) Attach heavy string to existing cord in channel and new cord with a square knot. Pull existing cord and string until new cord ends are at hem opening.

(4) Remove string and overlap cord ends 11/2 inches (3.81 cm) and clamp using item 75, Figure 14-16 (with proper sized dies),

(5) Restitch hem as in original, overlapping stitching a minimum of 1 inch (2.54 cm).

14-19. WORKMANSHIP

Repair and cleaning will be done by personnel skilled in the particular trade applicable to their duties.

14-20. INSPECTION

The inspection or quality control unit is responsible for determining compliance with repair instructions and requirements for classification. In-process inspections will be performed for quality of workmanship and correct application of repair procedures. The completed item will be inspected for serviceable appearance and condition to insure against return of a sub-standard product to supply channels.

Section III. MATERIALS

FIG NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				INDIVIDUAL EQUIPMENT BELT MATERIALS	
14-1	1	PAF	8305-00-148-9740	Nebbing, Textile Bulked, Nylon 2 1/4" Wide OD-7, Type 1, Conforming to MIL-W-43668	Yd
14-1	2	PAF	8315-01-287-0803	Buckle, Male Half, Each Plastic, 2-5/16" Wide, Male (82399) 857-H	Ea
14-1	3	PAF	8315-01-287-0604	Buckle, Female Half, Plastic, 2-5/16" Wide (82399) 847-E	Ea
14-1	4	PAF	5340-01-016-1941	Buckle, Adjusting, Each 2 1/4" Wide Type XV MIL-H-9890	Ea
14-1	5	PAF	5340-00-753-5581	Keeper, Sliding, 2 1/4" Wide, Type Xl CL A MIL-H-9890	Ea
14-1	6	PAF	8305-01-015-9434	Webbing, Textile, Bulked, Nylon 1" Wide, OD-7, Type III Conforming to MIL-W-43668	Yd
14-1	7	PAF	5325-00-221-1516	Eyelet, Style A, Size 4094, Black, Conforming to MIL-E-20852	Ea
14-1	7	PAF	5310-00-209-1767	Washer, Style A, Size 4096, Black, Conforming to MIL-E-20652/l	Ea
14-1	6	PAF	5235-00-985-6718	Fastener, Snap Black, Conforming to Style 2 of MIL-F-10884	EA
		PAF	8310-00-998-1298	Thread, Polyester OD-S1, Size E, 3 Ply, Type 1, Subclass B, Conforming to V-T-285	(5700 Pk. Yd.)
				INDIVIDUAL EQUIPMENT BELT SUSPENDERS	
14-2	8	PAF	8305-01-015-9434	Webbing, Textile, Nylon, 2 1/4" w. OD-7, Type VIIIc, Conforming to R of MIL-W-4088 FSCM 83219; 87312	
		PAF	8305-01-014-9740	Cloth, Spacer, Color Optional, Conforming to MI L-C-43204	Yd
14-2	9	PAF	8305-01-062-7050	Webbing, Textile, Bulked, Nylon 1" w., OD-7, Type II 1, Conforming to MI L-W-43668	Yd
14-2	10	PAF	8305-00-270-1894	Webbing, Textile, Elastic Cotton 1" w., OD-7, Conforming to MI L-W-5664	Yd
14-2	11	PAO	5340-01-022-8584	Snaphook, Side Retaining, 1", Black Enamel Finish, Conforming to Dash No. CWBC2 of MIL-S-43770/2	Ea
14-2	12	PAF	5340-01-070-9440	Buckle, Non-slip, Steel, l", Black Chemical Finish, Conforming to V, Class 3 of MIL-B-543, FSCM 83477	Ea
14-2	13	PAO	5340-01-062-6751	Loop, Strap Fastener, Black Chemical Finish, Conforming to Type 1, Style LL of MIL- L-11075 FSCM 83477	Ea

Section III. MATERIALS - Continued

FIG NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
		PAF	8310-00-988-1300	Thread, Polyester, OD-S1, Size F, 4 Ply, Type 1, Subclass B, Conforming to V-T-285	(4,200 Pk.. Yd)
		PAF	8310-00-988-1298	Thread, Polyester, OD-S1, Size E, 3 Ply, Type 1, Subclass B, Conforming to V-T-285	(5,700 Pk Yd.)
				SMALL ARMS AMMUNITION CASE	
	14	PAF	8305-01-015-9434	Webbing, Textile, Nylon, 2 1/4 " w., OD-7, Type Vllc, Conforming to MIL-W-4088 Treated in Accordance With Class R of MIL-W-27265, FSCM 83219; 87312	Yd
14-3	15	PAF	8305-00-782-3224	Webbing, Textile, Nylon, 3/4" w., OD-7, Type la, Conforming to MIL-W-4088, Treated in Accordance With Class R of MIL-W-27265	Yd
14-3		PAF	8305-00-261-8565	Webbing, Textile, Nylon, 9/16" w., OD-7, Type 1, Conforming to MIL-W-4088, Treated in Accordance With Class R of MIL-W-27265	Yd
		XBF		Stiffener, Polyethylene, High Density Virgin Polyethylene, Natural Color, 0.040-0.007 in., Conforming to Type 1, Class H, Grade 3, L-P-390I	Sheet
		PAF	8305-00-107-0079	Cloth, Duck, Nylon 12.5 oz., OG-1 06, 4& w., class 2 of MIL-C-43375	Yd
14-3	15a	PAF	5325-01-069-0578	Eyelet, Metallic, Brass, Black, (81349) M20652/1-BBE-1~17	Ea
		PAF		Eyelet, Washer, Brass, Black, (81 349) M20652/1-BBW101	Ea
14-3	16	PAF	8315-00-935-4741	Tape, Nylon, 1" w., OD-7, Type Ill Conforming to MIL-T-5038	Yd
14-3	17	XBF		Fastener, Plastic, Color Black, Conforming to MIL-F-43514 (not to be replacd in the field)	Ea
14-3	18	PAO	5340-00-753-5580	Keeper w/Slide, Chemical Finish, Conforming to Type X of MIL-H-9890	Ea
		PAF	5325-01-060-9126	Eyelet, Aluminum Black Enamel Finish, Conforming to Dash No.ABE131 of MIL-E-20652/1	Ea
14-3	19	PAF	5325-00-292-5340	Fastener, Snap, Black Chemical Finish, Conforming to Style 2A of MIL-F-1 0884	Ea

Section III. MATERIALS - Continued

FIG. NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
		PAFZZ	8310-00-988-1300	Thread, Polyester, OD-S1, Size F, 4 Ply, Type 1, Subclass B, Conforming to V-T-285	TU (4,200 Pk. Yd)
		PAFZZ	8310-00-988-1298	Thread, Polyester, OD-So, Size E, 3 Ply, Type 1, Subclass B, Conforming to V-T-285	TY (5,700 Pk. Yd.)

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Section III. MATERIALS - Continued

FIG NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				FIELD FIRST AID DRESSING - UNMOUNTED CASE	
14-4	20	PAFZZ	5325-00-985-6718	Fastener, Snap, Black Chemical Finish, Conforming to Style 2 of MIL-F-10884	Ea
		PAFZZ	8310-00-988-1298	Tlvread, Polyester, 00-S1, Size B, 3-Ply, Type 1, Subclass B, Conforming to V-T-285	(5,700 Pk. Yd.)
14-4	21	PAOZZ	5340-00-753-5580	Keeper w/Slide, Black Chemical Finish, Conforming to Type X of MIL-H-9890	Ea
				PLASTIC INTRENCHING TOOL CARRIER	
14-5	22	PAFZZ	5325-00-985-6718	Fastener, Snap, Black Chemical Finish, Conforming to Style 2 of MIL-F-10884	Ea
14-5	23	PAOZZ	5340-00-753-5580	Keeper w/Slide, Black Chemical Finish, Conforming to Type X of MIL-H-9890	Ea
				WATER CANTEEN COVER	
		PAFZZ	8315-00-935-4741	Tape, Nylon 1” w., 00-7, Type III, Conforming to MIL-T-5038	Yd
		PAFZZ	8310-00-988-1298	Thread, Polyester, OD-S1, Size E, 3-Ply, Type 1, Subclass B, Conforming to V-T-285	(5,700 Pk. Yd.)
14-6	24	PAFZZ	5325-00-985-6718	Fastener, Snap, Black Chemical Finish, Conforming to Style 2 of MIL-F-10884	Ea
14-6	25	PAOZZ	5340-00-753-5580	Keeper w/Slide, Black Chemical Finish, Conforming to Type X of MIL-H-9890	Ea
		PAFZZ	8305-00-263-3604	Webbing, Textile, Nylon, 1 1/4” w., OD-7, Type III, Conforming to MIL-W-4088 Treated in Accordance with Class R of MIL-W-27265	Yd
				WATER CANTEEN PARTS	
		PAOZZ	8465-01-082-6449	Strap, Cap, Canteen, MIL-C-43103	Ea
		PAOZZ	8465-00-930-2077	Cap, Canteen,MIL-C-51 278	Ea
		PAOZZ	8465-00-165-6838	Cup, Canteen, MIL-C-43761	Ea

Section III. MATERIALS - Continued

FIG NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				WATER CANTEEN COVER, 2 QT.	
14-6.1	25.1	PAOZZ	5340-00-753-5580	Keeper w/Slide, Black Chemical Finish, Conforming to Type X of MIL-H-9890	Ea
14-6.1	25.2	PAFZZ	8465-00-269-0682	Sling, General purpose, Conforming to Type I of MIL-S-1698	Ea
14-6.1		PAFZZ	8315-00-935-4741	Tape, Nylon, 1" w., OD-7, Type III, Conforming to MIL-T-5038	Yd
14-6.1		PAFZZ	8310-00-988-1298	Thread, Polyester, OD-S1, Size E, 3-Ply, Type 1, Subclass B, Conforming to V-T-285	TU (5,700 Pk Yd.)
				NYLON COMBAT FIELD PACK - MEDIUM	
14-7	26	PAFZZ	4020-00-262-2019	Cord, Nylon, Conforming to Type II of MIL-C-5040	Spool
		PAFZZ	8315-00-835-4741	Tape, Nylon, 1" w., OD-7, Type Ill, Conforming to MIL-T-5038	Yd
		PAFZZ	8310-00-988-1300	Thread, Polyester, OD-S1, Size F, 4-Ply, Type 1, Subclass B, Conforming to V-T-285	TU 5,700 Pk Yd.)
		PAFZZ	8465-01-248-0979	Flap with Liner, Medium, 2-2-234 FSCM 81337	Ea
		PAFZZ	8310-00-988-1298	Thread, Polyester, OD-S1, Size E, 3-Ply, Type 1, Subclass B, Conforming to V-T-285	TU (5,700 Pk Yd.)
14-7	26.1	XBOZZ		Lock, Cord, Olive Drab, ITW Nexus or Equivalent, P/N 194, FSCM 02786, Source: ITW Nexus, 230 Gerry Drive, Woodale, IL 60191	Ea
14-7	27	PAFZZ	8305-01-062-7050	Webbing, Textile, Bulked, Nylon 1" w., OD-7, Type III, Conforming to MIL-W-43668, FSCM 83219; 87312	Yd
14-7	28	PAFZZ	8305-01-015-9434	Webbing, Textile, Nylon, 2 1/4" w., OD-7, Type Vllc, Conforming to MIL-W-4088, Treated in Accordance with Class R of MIL-W-27265, FSCM 83219:87312	Yd

Section III. MATERIALS - Continued

FIG NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				NYLON COMBAT FIELD PACK - MEDIUM Continued	
14-7	29	PAFZZ	5340-00-070-9440	Buckle, Non-slip, Steel, 1", Black Chemical Finish, Conforming to Type V, Class 3 of MIL-B-543	Ea
14-7	30	PAFZZ	5340-01-062-6749	Buckle, Non-slip, w/Spring, 1" No. 240, Dull Black Oxide Finish FSCM 82399	Ea
14-7	31	PAFZZ	5325-00-221-1516	Eyelet, Style A, Size 4094, Black Chemical Finish, Conforming to MIL-E-20652	Ea
14-7	32	PAFZZ	5325-00-985-6718	Fastener, Snap, Black Chemical Finish, Conforming to Style 2 of MIL-F-10884	Ea
14-7	33	PAOZZ	5340-00-753-5577	Fastener, Loop Black Type IV of MIL-A-9890 FSCM 83477	Ea
14-7	34	PAOZZ	5365-01-063-8996	Rings, DEE, Black Chemical Finish, Conforming to Configuration K, Class 1 or 2, 1" by 3/4" of MIL-R-3390 FSCM 83477	Ea
14-7	35	PAFZZ	5310-00-209-1767	Washer, Style A, Size 4096, Black Chemical Finish, Conformig to MIL-E-20652/1	
14-7	36	PAFZZ	8305-00-926-6870	Cloth, Duck, Nylon Basic 7.25 oz. sq. yd., 43" width, Army 106 Green, both sides, MIL-C-7219, FSCM 81349	Yd
				NYLON COMBAT FIELD PACK - LARGE	
14-8	40	PAFZZ	5340-01-062-6749	Buckle, Non-slip, w/Spring, 1" w., No. 240., Dull Black Oxide Finish FSCM 82399	Ea
14-8	41	PAFZZ	5325-00-221-1516	Eyelet, Style A, Size 4094, Black Chemical Finish, Conforming to MIL-E-20652	Ea
14-8	42	PAFZZ	8305-01-062-7050	Webbing, Textile, Bulked, Nylon 1" w., OD-7, Type III, Conforming to MIL-W-43668 FSCM 83219;87312	Yd
14-8	43	PAFZZ	8305-01-015-9434	Webbing, Textile, Nylon 2 1/4" w., OD-7, Type VIIc Conforming to MIL-W-4088 Treated in Accordance With Class R of MIL-W-27265 FSCM 83219; 87312	Yd
14-8		PAFZZ	8465-01-248-0978	flap with Liner, Large, 2-2-348 FSCM 81337	Ea
14-8	44	PAOZZ	5340-00-753-5577	Fastener, Loop, Black Type IV, Conforming to MIL-H-9890 FSCM 83477	Ea
14-8	36	PAFZZ	4020-00-262-2019	Cord~ Nylon,Conforming to Type II of MIL-C-5040	spool
		PAFZZ	8315-00-835-4741	Tape, Nylon 1" w., OD-7, Type III Conforming to MIL-T-5038	Yd

Section III. MATERIALS - Continued

FIG. NO	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				NYLON COMBAT FIELD PACK- LARGE Continued	
		PAFZZ	8310-00-988-1300	Thread, Polyester, OD-S1, Size F, 4 Ply, Type 1, Subclass B, Conforming to V-T-285	TU (4,200 Pk. Yd.)
		PAFZZ	8310-00-988-1298	Thread, Polyester, OD-SI, Size E, 3 Ply, Type 1, Subclass B, Conforming to V-T-285	TU (5,700 Pk. Yd.)
14-8	37	PAFZZ	5310-00-209-1767	Washer, Style A, Size 4096, Black Chemical Finish, Conforming to MIL-E-20652/1	Ea
14-8	38	PAFZZ	5325-00-985-6718	Fastener, Snap, Black Chemical Finish, Conforming to Style 2 of MIL-F-10884	Ea
14-8	39	PAFZZ	5340-00-070-9440	Buckle, Non-slip, Steel, 1", Black Chemical Finish, Conforming to Type V, Class 3 of MIL- B-543	Ea
14-8	45	PAFZZ	8305-00-926-6870	Cloth, Duck, Nylon Basic 7.25 oz. sq. yd., 43" width, Army 106 Green, both sides, MIL-C-7219, FSCM 81349	Yd
				PACK FRAME - CARGO SHELF	
14-9	45	PAFZZ	5325-00-887-8870	Grommet, Plastic, Black Model No. WSI-G-18-B FSCM 04169 (Item 1, Fig.14-9)	Ea
14-9	46	PAOZZ	5320-01-068-1910	Rivet, Steel, Semi-tubular, Oval Head, 1/8" d., 53/64" lg., Zinc Plated, Conforming to QQ-Z-325, Class 2, Type II (Item 2, Fig. 14-9) FSCM 49551	Ea
		PAOZZ	8010-00-830-1822	Coating, Black, Conversion Finish for Aluminum, Black, Aluma Black A-15 FSCM 22976, Table 26-9	Gal.
14-9	47	PAOZZ	5320-01-063-3812	Rivet, Steel, Semi-tubular, Oval Head, 1/8" d., 17/64" lg., Zinc Plated., Conforming to QQ-Z-325, Class 2, Type II (Item 3, Fig. 14-9) FSCM 49551	Ea
14-9	48	PAOZZ	5320-00-993-5575	Rivet, Steel, Semi-tubular, Oval Head, 1/8"d., 9/32" lg., Zinc Plated, Conforming to QQ-Z-325 Class 2, Type II (Item 4, Fig. 26-9) FSCM 49551	Ea
14-9	49	PAOZZ	5320-01-063-2211	Rivet, Steel, Semi-tubular, 1000 Countersunk Head, 1/8" d., 9/32" lg., Zinc Plated Conforming to QQ-Z-325, Class 2, 49551 Type II FSCM (Item 5, Fig.14-9)	Ea
14-9	50	PAOZZ	5320-01-063-3813	Rivet, Steel, Semi-tubular, Oval Head, 1/8" d., 13/32" lg., Zinc Plated, Conforming to QQ-Z-325, Class 2, Type II FSCM 49551 (Item 6, Fig.14-9)	Ea

Section III. MATERIALS - Continued

FIG. NO	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				PACK FRAME - CARGO SHELF-Continued	
14-9	51	PAOZZ	5320-01-062-3407	Rivet, Steel, Semi-tubular, 100 Countersunk Head, 1/8" d., 7/16" lg., Zinc Plated, Conforming to QQ-Z-325, Class 2, Type II, FSCM 49551 (Item 7, Fig.14-9)	Ea
14-9	52	PAOZZ	5320-01-063-3814	Rivet, Steel, Semi-tubular, Oval Head, 1/8"d., 25/32" lg., Zinc Plated, Conforming to QQ-Z-325, Class 2, Type II, (Item 8, Fig. 14-9) FSCM 49551	Ea
14-9	53	PAFZZ	5320-01-256-0399	Pop Rivet, Corrosion Resistant Steel, Part No.SSD68SSBS, Pop Fastener, 510 River Rd., Shelton, CT 06484, CAGEC07707	Ea
14-9	54	PAOZZ	5320-00-173-8625	Rivet, Blind, 1/8" d., Black Oxide Finish, CRESF404, Conforming to MIL-R-24243/1 (Item 9, Fig.14-9)	Hd
				LIGHTWEIGHT WAIST STRAP	
		PAFZZ	8315-00-935-4741	Tape, Nylon, 1" w., OD-7, Type I1, Conforming to MIL-T-5038	Yd
		PAFZZ	8315-00-988-1300	Thread, Polyester, OD-S1, Size F, 4-Ply, Type 1 Subclass B, Conforming to V-T-285	TU (4,200 Pk Yd.)
		PAFZZ	8310-00-988-1298	Thread, Polyester, 013-51, Size E, 3 Ply, Type 1, Subclass B, Conforming to V-T-285	TU (5,700 Pk Yd.)
14-11	55	PAFZZ	8305-00-782-3224	Webbing, Textile, Nylon 3/4" w., OD-7, Type 1A, Conforming to MIL-W-4088, Treated in Accordance With Class R, MIL-W-27265	Yd
14-11	56	PAFZZ	5325-00-292-5340	Fastener, Snap, Black Chemical Finish, Conforming to Style 2A of MIL-F-10884	Ea
14-11	57	PAOZZ	5340-01-062-3525	Keeper, Clamp, 1" w/Loop, Brass Black Chemical Finish, Conforming to Type IX, Style 2, Class A of MIL-H-9890, FSCM 83477	Ea
14-11	58	PAOZZ	5340-01-061-2891	Fastener, Loop, Male, Black Chemical Finish, Conforming to Type III w/o Clip, MIL-H-9890, FSCM 83477	Ea
				LIGHTWEIGHT LOWER BACK STRAP	
		PAFZZ	8310-00-988-1298	Thread, Polyester, OD-SI, Size E, 3 Ply, Type 1, Subclass B, Conforming to V-T-285	TU (5,700 Pk Yd.)
14-12	59	PAOZZ	8465-01-079-7839	Buckle, Male Half, Plastic, MIL-S-43835	Ea
14-12	60	PAOZZ	8465-01-079-7840	Buckle, Female Half, Plastic, MIL-S-43835	Ea

Section III. MATERIALS - Continued

FIG NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				SHOULDER STRAP	
		PAFZZ	8310-00-988-1300	Thread, Polyester, OD-S-1, Size F, 4 Ply Type 1, Subclass B, Conforming to V-T-285	TU (4,200 Pk Yd.)
		PAFZZ	8310-00-988-1298	Thread, Polyester, OD-S1, Size E, 3 Ply, Type 1, Subclass B, Conforming to V-T-285	TU (5,700 Pk Yd.)
14-14	62	PAFZZ	8305-00-782-3224	Webbing, Textile, Nylon, 3/4" w., OD-7, Type la., Conforming to MIL-W-4088, Treated in Accordance With Class R of MIL-W-27265	Yd
14-13	63	PAFZZ	5340-01-062-6750	Buckle, 1" Non-slip, Quick Release, Black Oxide Finish, Conforming to Type XIV of MIL-H-9890 FSCM 83477	Ea
14-14	64	PAFZZ	5325-00-221-1518	Eyelet,Black Chemical Finish, Conforming to Dash No. BBE104 of MIL-E-20652/1	Ea
14-13	65	PAFZZ	5340-00-523-6303	Buckle, Non-slip, Steel, 1", Black Chemical Finish, Conforming to V, Class 3 of MIL-B-543 FSCM 83477	Ea
14-14	66	PAOZZ	5340-01-063-5352	Fastener, Loop, Male, Black Chemical Finish, Conforming to Type III w/o Clip, MIL-H-9890 FSCM 83477	Ea
14-14	67	PAFZZ	5340-01-061-2891	Retainer, Clip, Conforming to Type I Class 2 of L-P-382 FSCM 83477	Ea
14-13	68	PAEZZ	8305-01-062-7050	Webbing, Textile, Bulked, Nylon 1" w., OD-7, Type III, Conforming to MIL-W-43888 FSCM 83219; 87312	Yd
14-13	69	PAFZZ	8305-00-881-0604	Webbing, Textile, Nylon, 1" w., OD-7, Conforming to MIL-W-17337	Yd
14-13	70	PAFZZ	4020-00-262-2019	Cord, Nylon,Conforming to Type II MIL-C-5040	Spool
				CARGO TIEDOWN STRAPS	
		PAFZZ	8310-00-988-1298	Thread, Polyester, OD-S1, Size E, 3 Pty, Type 1, Subclass B, Conforming to V-T-285	(5,700 Pk Yd.)
14-15	71	PAOZZ	5340-01-060-7530	Fastener, Steel, Black Enamel Finish, No. K415-ZPB (08982)	Ea
14-15	72	PAOZZ	5340-01-022-8584	Snap Hook Steel, Black Enamel Finish, M43770/2-CWBC2 (81346)	Ea

Section III. MATERIALS - Continued

FIG. NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				CAMOUFLAGE FIELD PACK COVER	
		PAFZZ	8310-00-988-1297	Thread, Polyester, Natural, White, Size E, 3 Ply, Type 1, Subclass B, Conforming to V-T-285	(5,700 Pk.Yd.)
	73	PCOZZ	8040-00-062-4173	Adhesive, Conforming to Bostik-Adhesive No. 7004 (92528)	PT
14-16	74	PAFZZ	8305-01-068-0348	Cord, Elastic, Nylon, 7/32" d., Conforming to Type I, MIL-C-43701 FSCM 81349	Yd
14-16	75	PAOZZ	5340-01-061-2893	Clamp, Steel, Cadmium Plate Finish, No. D3525 FSCM 57771	Ea
		PAFZZ	8305-01-149-2147	Cloth, Class 1 Cover, oxford cloth, quarpel treated, conforming to MIL-C-3924	Yd
		PAFZZ	8305-01-149-6630	Cloth, Class 2 Cover, desert camouflage pattern, cotton and nylon, conforming to MIL-C-44034.	Yd
		XBFZZ	8305-01-327-5319	Cloth, Twill, Cotton and Nylon, Class 3, 3-Color Desert Camouflage, Conforming to MIL-C-44034.	Yd

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CHAPTER 15

MAINTENANCE OF BODY ARMOR, FRAGMENTATION PROTECTIVE VEST, GROUND TROOPS

Section I. INTRODUCTION

15-1 SCOPE

This chapter prescribes the procedures and instructions for the repair and maintenance of body armor, fragmentation protective vest, ground troops; with an aramid ballistic filler inclosed in a nylon ballistic cloth shell (PASGT).

15-2. COMMODITY SPECIFICATIONS

a. Items.

ITEM	SPECIFICATION
Body Armor, Fragmentation Protective Vest, Ground Troops.	MIL-B-44053

b. Components.

ITEM	SPECIFICATION
Thread, Polyester	V-T-285
Thread, Nylon	V-T-295
Paper, Kraft, Wrapping	UU-P-268
Label: For Clothing, Equipage and Tentage (General Use)	DDD-L-20
Boxes, Shipping, Fiberboard	PPP-B-636
Cloth, Oxford, Nylon, 3 Ounce	MIL-C-508
Webbing, Textile, Woven Nylon	MIL-W-4088
Tape, Textile and Webbing, Textile, Reinforcing, Nylon	MIL-T-5038
Webbing, Textile, Elastic, Cotton	MIL-W-5664
Fasteners, Snap	MIL-F-10884
Webbing, Textile, Woven Nylon	MIL-W-17337
Eyelets, Metallic, Rolled Flange Type; and Eyelet Washer	MIL-E-20652/l

15-2. COMMODITY SPECIFICATIONS–Continued

b. Components – Continued.

ITEM	SPECIFICATION
Fastener Tapes, Hook and Pile, Synthetic	MIL-F-21840
Cloth, Plain Weave, Nylon: Water Repellent, OG-106	MIL-C-43128
Cloth, Wind Resistant Sateen, Cotton and Nylon	MIL-C-43191
Cloth, Duck, Nylon, 9 Ounce	MIL-C-43734
Cloth, Ballistic, Nylon, Lightweight, Water Repellent Treated	MIL-C-44043
Cloth, Ballistic, Aramid	MIL-C-44050
Stitches, Seams and Stitchings	FED STD 751

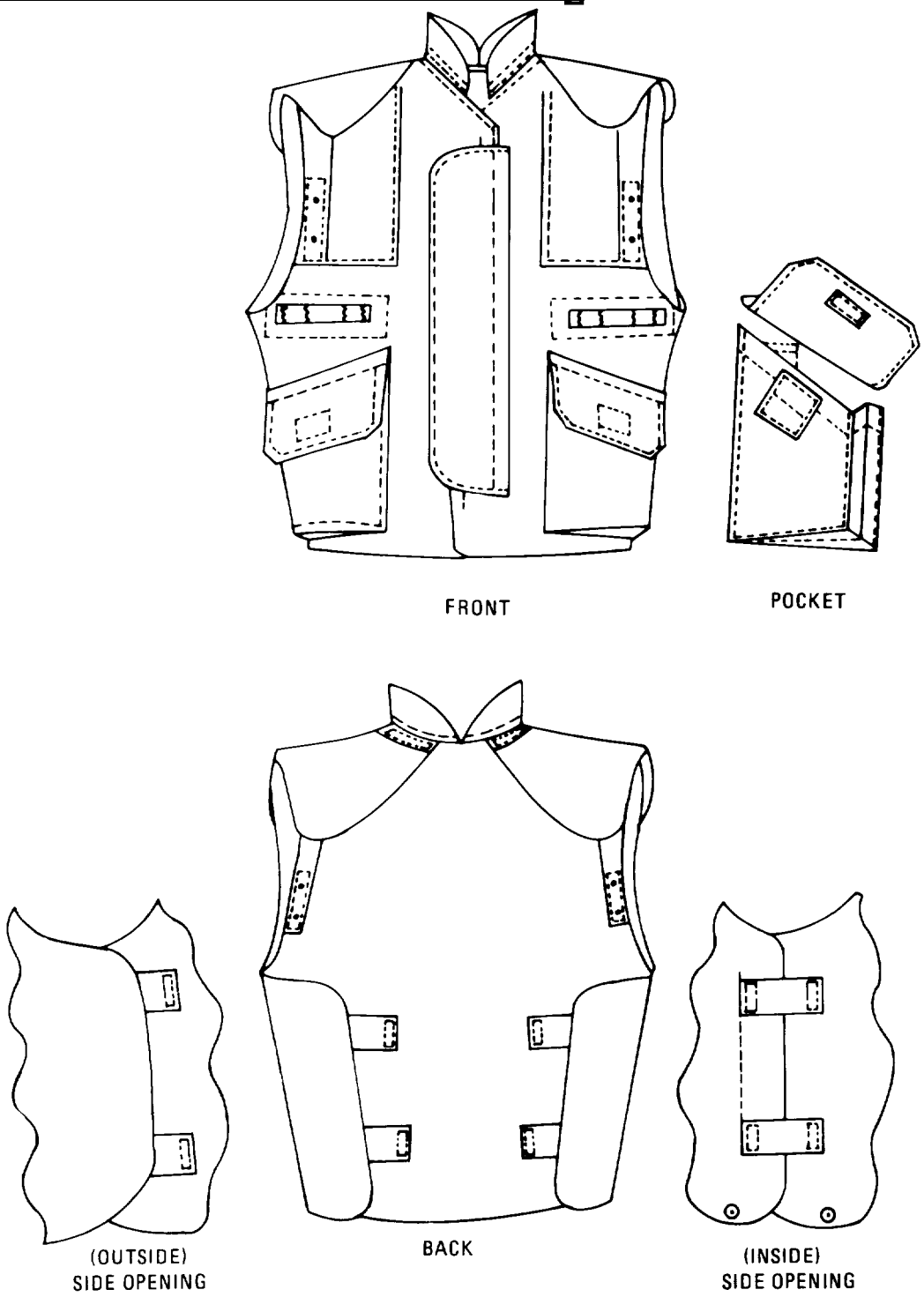
15-3. IDENTIFICATION AND DESCRIPTION

a. Identification. Body Armor, Fragmentation Protective Vest, Ground Troops, with an aramid ballistic filler enclosed in a nylon ballistic cloth.

NSN	SIZE
8470-01-092-8497	X-Small
8470-01-092-8498	Small
8470-01-092-8499	Medium
8470-01-092-8500	Large
8470-01-092-8501	X-Large

b. Description. The vest covers the upper torso and consists of a ballistic filler of 14 oz/yd^2 (475 g/m2) water repellent treated Kevlar fabric. The inner and outer shell, shoulder pads and front closure flap of the vest is water repellent treated 8 oz/yd2 (271 g/m2) ballistic nylon cloth. The layer which makes up the inner shell of the vest is olive green and the layer which is the outer cover of the vest is camouflage printed. The Kevlar ballistic filler in the back is made in four sections. The three upper sections slide over each other and over the lower back section to allow for any changes in body dimensions associated with various movements. The front closure is hook and pile fastener tape. The side overlaps are made flexible through the use of sewn-in 1 1/2 inch (3.81 cm) wide elastic webbing. The vest also has a 3/4 collar, articulating shoulder pads, two front pockets, two grenade hangers, and rifle butt, patches at the front shoulder area.

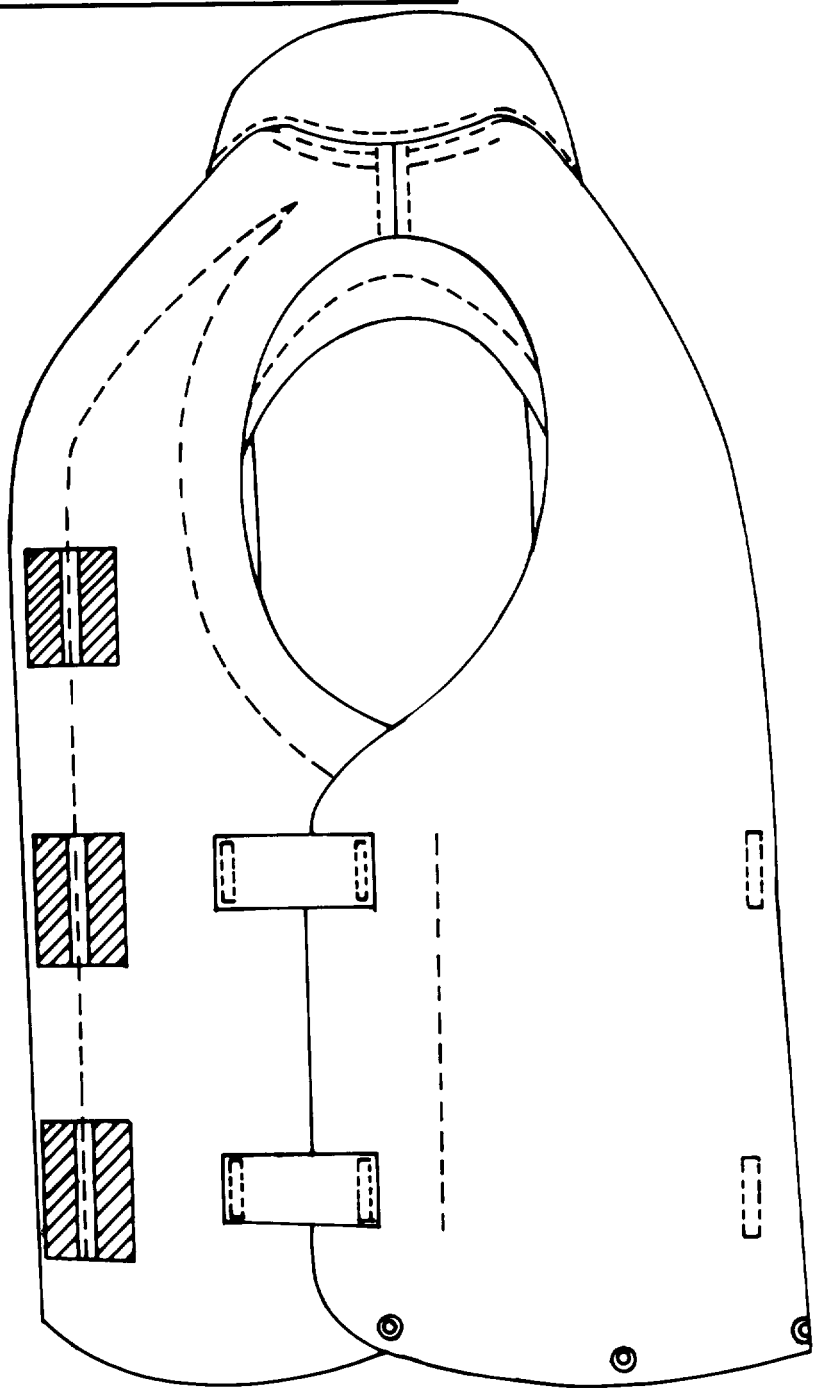
15-3. IDENTIFICATION AND DESCRIPTION–Continued



BODY ARMOR, FRAGMENTATION PROTECTIVE VEST, GROUND TROOPS

Figure 15-1. Body Armor Fragmentation Protective Vest, Ground Tioops.
(Sheet 1 of 2.)

15-3. IDENTIFICATION AND DESCRIPTION—Continued



INSIDE SIDE VIEW

BODY ARMOR, FRAGMENTATION PROTECTIVE VEST, GROUND TROOP
INSIDE SIDE VIEW

Figure 15-1. Body Armor Fragmentation Protective Vest, Ground Troops. (Sheet 2 of 2.)

Section II. REPAIR PROCEDURES

15-4. MATERIALS

a. General. Materials used in repair of vests will be serviceable materials recovered from similar salvaged items, when authorized or preferably, will be new materials as specified in Section III. New materials will be requisitioned from stock under the national stock numbers and for item descriptions as listed and will conform to the appropriate specifications. When not available from stock, materials may be purchased locally that conform as closely as possible to the standard material for emergency repairs. Care and cleaning shall be done by the individual user. All other maintenance should be accomplished at Depot Maintenance Activities,

b. Fusing of ends of nylon webbing and dipping ends of elastic.

(1) Fusing of ends of nylon webbing and tape. All ends of nylon webbing and tape shall be fused. The apparatus used to fuse the webbing and tape ends shall be capable of providing sufficient heat to provide a smooth edge and with the cut ends of the webbing and tape yarns all fused together. Fusing of the webbing and tape ends shall be accomplished prior to being assembled for stitching.

(2) Dipping of ends of elastic webbing. All ends of elastic webbing, except the turned under end (snap fastener end) on the shoulder pad retainer strap shall be dipped in a melted mixture of 50 percent beeswax and 50 percent paraffin to a depth of 3/16 $\pm$ 1/16 inch (0.476 $\pm$ 0.159 cm). Temperature of the melted mixture shall be 180° ± 20”F (82.2° $\pm$ 6.67 C).

15-5. REPAIR AND MAINTENANCE OF BODY ARMOR

a. Inspection,

(1) Inspect the overall condition of the outer shell and components. It should be carefully examined to determine whether it is worthy of cleaning and repair or whether the vest shall be turned-in for salvage as unserviceable.

(2) Each vest will be inspected to determine the proper classification and identification (item description, size, and stock number).

(3) Prior to the removal of the outer cover for replacing, inspect the cover to make sure that the identification labels (size and stock number) are secure and/or the markings are legible. If the vest cannot be properly identified as to size, refer to table 15-1 to determine vest size in relation to measurements listed,

15-5. REPAIR AND MAINTENANCE OF BODY ARMOR – Continued

Table 15-1, Body Armor Vest (PASGT) Measurements

MEASUREMENTS	SIZE (INCHES)				
	X-SMALL	SMALL	MEDIUM	LARGE	X-LARGE
1/2 Chest	18 1/2	19 1/2	21 1/2	23 1/2	25 1/2
Back Length	20 1/2	23 1/4	23 3/4	24 1/4	24 3/4

NOTE

One-half chest measurement taken from folded edge to folded edge of the vest at the base of armhole level. Back length measurement taken along center of back from top edge of neck (center back) to bottom edge of shell.

If the outer shell is to be removed and replaced, it is important that the label containing the size, stock number and cleaning instructions be retained for stitching to the new shell. If label is unusable replace label entirely. The aramid ballistic insert should be checked to insure that the size is marked and will be retained.

b. Cleaning Instructions

(1) Remove loose dirt from touch and close fastener and outer cover surface using a cloth or soft brush. NEVER USE A STIFF BRISTLE BRUSH.

(2) Wet the vest in the shower or immerse in water. Use warm, not hot water.

(3) Apply toilet soap or detergent to the soiled areas and scrub with a soft brush. Badly soiled areas may be scrubbed with GI soap. Scrub only long enough to remove soil.

(4) Grease and oil stains may be pre-spotted with a detergent mixture and scrubbed with a soft brush. If stubborn stain persists, repeat the above procedure.

(5) Rinse the vest with warm water until suds are completely gone.

(6) Hang the vest to dry, away from heat or open flame by placing a stick or pole through the armholes.

CAUTION

Do not use dry cleaning solvents, gasoline or similar products to clean the vest.

c. Outer Shell Repair Procedure.

15-5. REPAIR AND MAINTENANCE OF BODY ARMOR – Continued

(1) Small holes or tears. When repairing a small hole or tear in the outer shell of a vest in which the Kevlar ballistic insert is not damaged, the repair may be made on the outer cover without removal of the Kevlar ballistic insert. Repair the hole or tear in the outer cover by drawing the edges together and darning by hand.

(2) Open seam and broken stitches in outer shell and components. When it is necessary to repair an open seam or broken stitching all sewing, except emergency repair, shall be machine sewn. Open seam or broken stitching may be made in all areas of the vest except the pockets, pocket flaps, grenade hangers, patch, shoulder rifle butt lower and flap, front closure outer. Stitching on replacement sections and restitching of seams will be the same as an original construction.

Adjust thread tension so that there will be no loose stitching or excessively tight stitching resulting in puckering of the material sewn. When restitching an open seam or when a thread breaks during normal stitching, backstitch not less than 3/4 inch. For stitch type illustrations, see Federal Standard 751. In general, stitching will be performed with nylon Type 1, Class B conforming to V-T-295 or polyester, Type 1, Class 1, Subclass B, conforming to V-T-295. All threads visible on the exterior of the vest shall be Olive Drab S-1, C.A. 66022. Thread size shall be as specified in Table 15-2.

CAUTION

Care should be exercised to avoid stitching through the Kevlar ballistic filler.

Table 15-2. Stitching Instructions

LOCATION	THREAD SIZE			STITCHES PER INCH
	STITCH TYPE	NEEDLE	BOBBIN	
General	301	E	E	8-10
Bartack – pockets & pocket flaps	Bartack	B	B	*28* per tack
Bartack – Grenade hanger	Bartack	B	B	42 per tack
Overedging	502,503 504 or 505	B	B	6-10
Labels, make pockets and pocket flaps, hem and attach pencil pocket	301	B	B	10-12
Velcro fastener tape, except all front closure hook and pile tapes	301	B	B	8-10

15-5. REPAIR AND MAINTENANCE OF BODY ARMOR–Continued

Table 15-2. Stitching Instructions –Continued

LOCATION	THREAD SIZE			STITCHES PER INCH
	STITCH TYPE	NEEDLE	BOBBIN	
Overedging ballistic insert	*502, 503 504* or *505*	E	E	*6-8*
Attach front ballistic fillers to front inner shells, attach back ballistic filler assembly to back inner shell, close neck, attach shoulder pads, attach ends of side closure to back inner shell and attach side closure elastic webs to back of vest.	301	F	F	*6-8*
Join inner and outer shells and catch side closure	301	**F**	F	8-10

d. Outer Shell Replacement. Due to the low cost of the complete outer shell, it is not considered economical to repair badly torn, worn, or damaged outer shells, including replacement of hook and pile fasteners and grenade hangers. In lieu, thereof when a vest exhibits large holes or tears, or an outer shell that is severely worn or soiled, contains inoperative hook and pile fastener, badly torn pocket or pocket flaps, and torn or damaged grenade hangers, replace the entire shell. The complete shell need not be replaced for tears less than 1” long or open seams which can be repaired by top stitching. See paragraphs 15-5c and 15-5c(2). Questionable fabric may be tested with a hand pull test, When replacing the outer shell completely, remove the old outer shell taking care not to damage the Kevlar ballistic filler. After removal, thoroughly examine the Kevlar ballistic filler in accordance with paragraph 15-5h.

CAUTION

Do not stitch through the Kevlar ballistic filler except where accomplished in the original construction. If the Kevlar ballistic filler is determined to be serviceable, attach front ballistic fillers to front inner shells typical left and right, attach back ballistic filler assembly to back inner shell. The filler components shall be flat with no puckering. Join inner and outer shells and catch elastic side closures.

15-5. REPAIR AND MAINTENANCE **OF BODY ARMOR – Continued**

Turn vest right side out and fully work out edges of inner and outer shells, close neck area of vest and stitch through vest along front opening. Attach left and right shoulder pads, attach ends of side closure retainers to back inner shell 4 places and attach side closure elastic webs to back of vest 4 places.

e. Eyelets. Replace missing, damaged or otherwise unserviceable items with eyelets as specified,

f. Snap Fastener,

(1) Resetting. Reset a loose snap fastener by using appropriate dies.

(2) Removal. Remove a damaged snap by cutting it with a pair of diagonal wire cutters or rippers. Be careful not to cut or damage the fabric.

(3) Installation, Without damage to the fabric, install the new snap fastener (with proper sized dies) according to the original construction.

g. Replacing Webbing,

(1) General. All of the webbing items listed in (2), (3), and (4) below may be replaced, Cut each of the items from the prescribed length and webbing type. Dip ends of elastic webbing, except the turned under (snap fastener end), shoulder pad retainer strap to a depth of 3/16 inch ± 1/16 inch (0.477 ± 0.159 cm), see paragraph 15-4-b(2), unless otherwise specified, Use machine stitching for stitching and restitching webbings. Use Table 15-2 for the type of stitches, thread size and stitches per inch that are required for the repairs. When it is necessary to open seams to remove webbings, care should be exercised to avoid damaging the Kevlar ballistic filler. This can be accomplished with a sharp edge tool or other suitable device to where good stitching is encountered.

(2) Strap, retainer, shoulder pad, back and front. Replace a damaged, cut, or abraded strap or one that has lost elastic properties using appropriate material specified in Section Ill. Remove defective elastic strap by carefully slitting the attaching stitches without damaging material (see Figure 15-2). Cut replacement items to size of original (plus amount turned under for snap fastener reinforcement) and attach in original position by top stitching with two rows of stitching.

(3) Side closure elastic webbing (typical 4 places). If any side elastic webbing is visibly damaged (cut, abraded, or has lost elastic properties) replace with new side elastic webbings. Dislodge the defective elastics at the side seams by carefully cutting the attaching stitches without damaging the material (see Figure 15-1, Sheet 1). Remove side elastic webbings from the vest by cutting the stitching at the back of the vest. Cut replacement elastic, dip ends in wax and attach to side seams first by two rows of top stitching. Fold ends under 3/8 inch (0.954 cm). Stitch side closure elastic webs to outer back of vest through inner and outer shells and ballistic filler with a box stitch pattern 1/4 ± 1/8 inch (0.635 ± 0.318 cm) wide and 1 1/4 ± 1/8 inch (3.18 ± 0.318 cm) long, located 1/16 to 1/8 inch (0.159 to 0.318 cm) from folded edge of side closure and side edges of closure,

15-5. REPAIR AND MAINTENANCE OF BODY ARMOR – Continued

(4) Side closure retainers (typical 4 places, see Figure 15-1, Sheet 2). Replace the side closure retainers as follows:

1. Dislodge the side elastic webbings at the outer back of the vest only by carefully cutting the stitching. Leave stitched ends at the front side seam attached.

2. Remove damaged or worn side closure retainer webbings by cutting the stitching at the back side seam and front of the vest.

3. Cut replacement webbing, fuse ends of the webbing (see paragraph 15-4-b(1)).

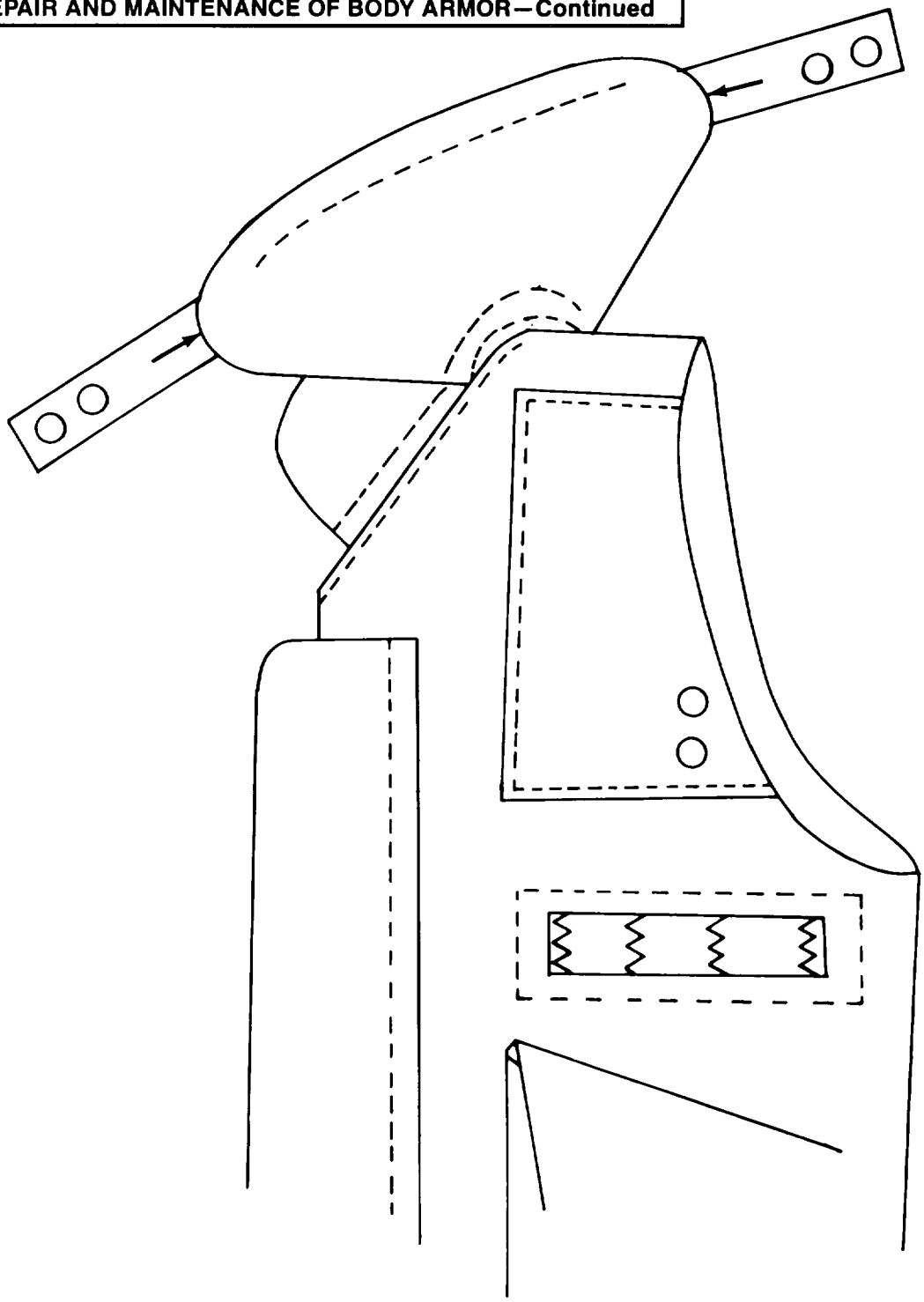


Figure 15-2, View of Shoulder Pad (released).

15-5. REPAIR AND MAINTENANCE OF BODY ARMOR–Continued

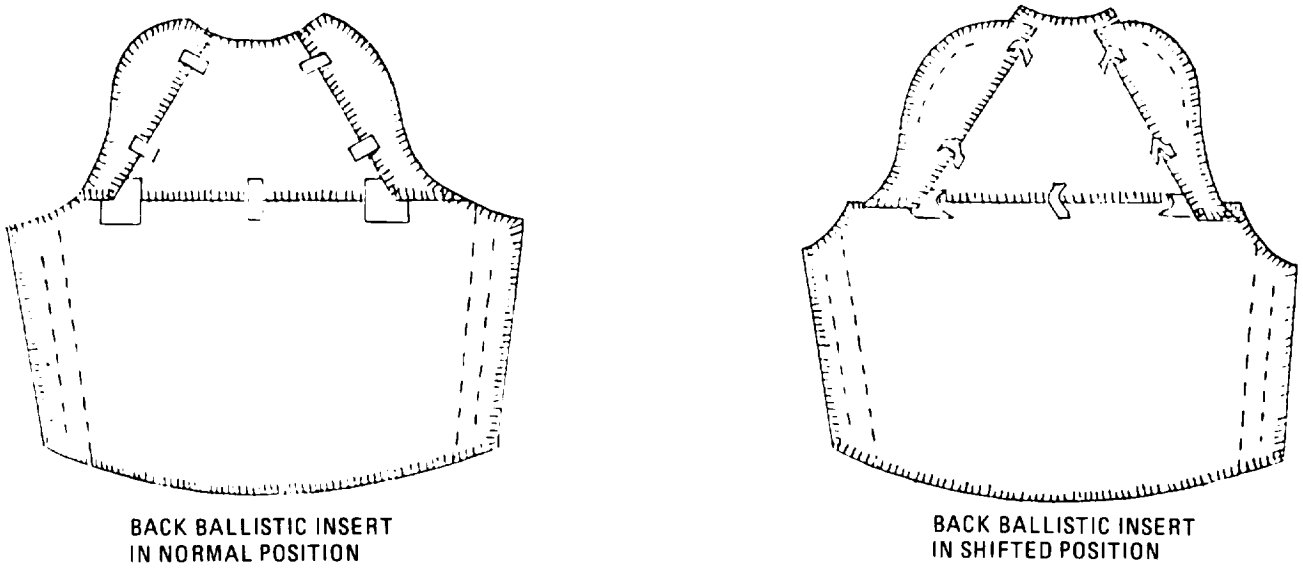


Figure 15-3. Back Kevlar Ballistic Insert with adjustable straps.

4. Fold ends of side closure under 3/8 inch (0.954 cm) and position on back inner shell in location as marked. Stitch through vest with a box stitch. If the ballistic filler falls under the retainer, it shall be caught in the stitching.

NOTE

The ballistic filler shall not be folded under or pushed aside to avoid being caught in the stitching.

5. Attach side retainer webbing on front inner vest with a box stitch, through inner and outer shells and ballistic filler. Do not catch pocket in the stitching.

6. Replace side elastic of step one above to the outer back of the vest with a box stitch outer and inner shells and ballistic filler.

15-5, REPAIR AND MAINTENANCE OF BODY ARMOR – Continued

h. Ballistic Insert Assembly.

(1) Inspection of ballistic insert (see Figure 15-3),

1. Carefully examine the insert for any damage, If the insert has been ballistically or physically damaged in any manner such as evidenced by a hole, or cut, do not repair and do not put the assembly back into service.

CAUTION

Do not dry ballistic inserts near heat of flame.

2. Examine insert, if it is damp or wet, thoroughly air dry the ballistic insert before it is stitched to new inner and outer shell.

(2) Inspect the shoulder and outer action back supports for open seams prior to stitching the ballistic inserts to the new inner and outer shell.

CAUTION

Do not use any defective inserts to repair an item.

(3) Inspect overedge stitching of fillers. If overedge stitching of the ballistic material has become loose or ravened or if any holding stitching has become ruptured resulting in separation of the plies of material, repair the insert before utilizing the insert in a repaired item.

15-6. LABELS

If the stock number and size designation on the identification label on the back inner shell or the instruction label is in such condition that it is apparent that it will not retain legibility when subjected to wear after re-issue, a new label should be incorporated by removing the old label and stitching a new label.

15-7. USE AND CARE BOOKLET

Look behind the instruction label, which is attached to the back inner shell. If the booklet is missing, torn, illegible, or back page omitted, replace with a new booklet before re-issue of the vest.

15-8. WORKMANSHIP

Repair and cleaning will be done by personnel skilled in the particular trade applicable to their duties. Patches will be tightly sewn or applied and all reseaming will be secure and free of loose or broken threads. Hardware will work properly and be securely and properly attached. The finished item will be complete, clean, well repaired, free from all defects affecting its serviceability and appearance.

15-9. INSPECTION

The inspection or quality control element is responsible for determining compliance with repair instructions and requirements for classification. In-process inspections will be performed for quality of workmanship and correct application of repair procedures. The completed item will be inspected for serviceable appearance and condition to insure against return of a sub-standard product to supply channels.

15-10. TESTING

a. Complete Vest

(1) Dry Weight Test. All vests (100 percent inspection) being returned to supply channels shall be compared against the following weights for the applicable size and stock number:

FSN	SIZE	WEIGHTS (OUNCES)	(Kg)
8470-01-092-8497	X-Small	120	(3.2)
8470-01-092-8498	Small	133	(3.7)
8470-01-092-8499	Medium	144	(4.0)
8470-01-092-8500	Large	165	(4.6)
8470-01-092-8501	X-Large	176	(4.9)

Any vest minus or exceeding the dry weight criteria by * 2 ounces (±56.7 g) shall be returned for replacement of ballistic insert or possibility for correction of size designation. It is recommended that an appropriate in-process examination be established to check on proper sizing of the ballistic inserts prior to incorporation of the outer shells which will minimize possible rejections of the complete item. All weighing shall be determined to the nearest 1 ounce.

15-11. LABELS

a. The body armor shall have a combination size, identification and instruction label conforming to type VI, Class 14 of DDD-L-20 with the following exceptions and detailed requirements:

(1) The size of characters for the instruction label, except capital letters, shall be 1/16 inch (0.159 cm) minimum. All capital letters shall be 1/32 inch (0.238 cm) minimum.

(2) The label material shall be nylon conforming to MIL-C-43128, except it shall not be water repellent treated. The label material shall be dyed Medium Green 614 matching the standard sample.

(3) The required permanent coating shall not apply.

15-11. LABELS–Continued

(4) The combination label shall be printed with the instruction label first and the size and identification label placed below the instruction label. The size and identification label shall be combined with the size label contents placed above the identification label.

(5) The label shall show fastness to accelerated launderings.

(6) The contents of the size label shall be as follows for the specific size:

X-Small	Small	Medium
Chest: Up to 33 in.	Chest: From 33 to 37 in.	Chest: From 37 to 41 in.
Stock No.	Stock No.	Stock No.
NATO Size: 7080/7484	NATO Size: 7080/8494	NATO SIZE: 7080/9404
NSN 8470-01-092-8497	NSN 8470-01-092-8498	NSN 8470-01-092-8499

Large	X-Large
Chest: From 41 to 45 in.	Chest: From 45 in. and upward
Stock No.	Stock No.
NATO Size: 7080/0414	NATO Size: 7080/1424
NSN 8470-01-092-8500	NSN 8470-01-092-8501

b. Format and contents of the instruction label shall be as follows:

READ, THEN KEEP THE “USE AND

CARE” BOOKLET IN THIS POCKET

THIS ARMOR MAY SAVE YOUR LIFE!!

When worn properly, this armor vest will protect YOUR vital areas against shell and grenade fragments which cause most combat casualties.

INSTRUCTIONS

(1) Wear armor over shirt and under field jacket.

(2) Be sure the snaps at the shoulders are fastened.

(3) Close the vest by overlapping the right side over the left so that the full length of the edge meets the joining seam inside the flap. Fold the flap over making sure that the flap completely covers the pile tape of the closure. For maximum protection, wear the collar in upright position.

15-11. LABELS–Continued

(4) Cleaning instructions.

a. Remove loose dirt from touch and close fastener and outer cover surface using a cloth or soft brush.
NEVER USE A STIFF BRISTLE BRUSH.

b. Wet the vest in the shower or immerse in water. Use warm, not hot water.

c. Apply toilet soap or detergent to the soiled areas and scrub with a soft brush. Badly soiled areas may be scrubbed with GI soap. Scrub only long enough to remove soil.

d. Grease and oil stains may be pre-spotted with a detergent mixture and scrubbed with a soft brush. If stubborn stain persists, repeat the above procedure.

e. Rinse the vest with warm water until suds are completely gone.

f. Hang the vest to dry, away from heat or open flame, by placing a stick or pole through the armholes.

(5) Turn in your vest to supply points for exchange

When:
a. The outer cover is torn or damaged.

b. The vest is “bunched” and lumps cannot be flattened.

c. The front touch and close fastener will not close completely.

d. The flap is damaged and will not function.

e. The side elastic webbing is torn or frayed.

f. You cannot clean the vest.

g. Any shoulder strap is damaged or does not snap properly.

h. Your vest is hit and damaged by fragments.

Section III. MATERIALS

SMR CODE	NATIONAL STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE
		PATCHING MATERIALS AND SHELL	
XBFZZ		Cloth, Ballistic, Nylon, Lightweight Water Repellant Treated, Camouflage Printed, 8 oz., Class 3 (Outer Shell), MIL-C-444043	YD
XBFZZ		Cloth, Ballistic, Nylon, Lightweight, Water Repellant Treated, 8 oz., Class 2 (Inner Shell), MIL-C-444043	YD
		Cloth, Oxford, Nylon, 3 oz., Quarpel Treated, Camouflage Printed, Type 1, Class 3 (Collar), MIL-C-508	YD
PAFZZ	8305-01-097-9236	Cloth, Wind Resistant Sateen, Cotton and Nylon, Quarpel Treated, Camouflage Printed, Class 3 (Pockets and Flaps) MIL-C-43191	YD
XBFZZ		Cloth, Duck Nylon, 9 oz., Water Repellant Treated, Camouflage Printed, Class 2, (Rifle Butt and Shoulder Patches), MIL-C-43734	YD
PAFZZ	8305-00-926-5995	Cloth, Plain Weave Nylon, Water Repellant (Label), MIL-C-43128, Green 106	YD
		BALLISTIC INSERT	
XBFZZ		Cloth Ballistic, Aramid, Water Repellant Treated, Color Natural, Type II, Class 2, MIL-C-44050	YD
		WEBBING	
PAFZZ	8305-00-881-0604	Webbing, Nylon, 1-inch Wide, OD-7, Class 2, MIL-W-17337	YD
PAFZZ	8305-00-965-1692	Tape, Nylon 1 l/2-inch, Type II OD-7, MIL-T-5038	YD
PAFZZ	8305-00-782-3224	Webbing, Nylon, 3/4-inch, Type la, Class 2, MIL-W-4088, Olive Drab 7	YD
		Webbing, Elastic, 1-inch, Type II, Class 1, OD-7, MIL-W-5664 Thomas Taylor & Sons Hudson, MA 01749	YD
		Webbing, Elastic, 1 l/2-inch, Type II, Class 1, OD-7, MIL-W-5664 Thomas Taylor & Sons Hudson, MA 01749	YD
PAFZZ	5325-00-985-6718	Snap Fasteners, Style 2, Finish 2 (Button, Socket, Eyelet, and Stud), MIL-F-10884	HD
PAFZZ	5310-00-209-1767	Washer, M20652/1 - BBW 101	EA
XBFZZ		Eyelet - M20652/1 - BBE 114, Brass With Black Chemical Finish Stimpson Co. Pompano Beach, FL 33060	EA
PAFZZ	6315-00-498-6631	Fastener Tape, Nylon, 2-inch, Type II, Class 1, OG-106, Center Channel - Wide Selvege Edge Velcro USA Inc. 406 Brown Ave. Manchester, NH 03108	YD

Section III. MATERIALS - Continued

SMR CODE	NATIONAL STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE
PAFZZ	8315-00-106-5973	Fastener Tape, Hook, Nylon, 1-inch, Type II, Class 1, OG-106, Wide Selvege Edge Velcro USA Inc. 408 Brown Ave. Manchester, NH 03108	YD
		THREAD	
PAFZZ	8310-01-182-4444	Thread, Nylon, Olive Drab S-1, C.A.66022 VT-295, Type I, Class B, Ticket Numbers E	TU
		OR	
PAFZZ	8310-01-107-0224	Thread, Polyester, Olive Drab S-1, C.A. 86022 VT-285. Type I, Class I. Subclass B, Ticket Number E, 3 Ply	SL
		BOOKLET	
		Defense Personnel Support Center ATTN: DPSC-ITEF 2800 South 20th street Philadelphia, PA 19101	

CHAPTER 16

MAINTENANCE OF THE COMBAT CHEMICAL PROTECTIVE CLOTHING SYSTEM

Section I. INTRODUCTION

16-1. SCOPE

This chapter prescribes the procedures and instructions for repair and maintenance of the Combat Chemical Protective clothing System.

16-2. COMMODITY SPECIFICATIONS I

a. End Item

ITEM	SPECIFICATION
Suit, Chemical Protective	MIL-S-43926
Footwear Cover, Chemical Protective (Overboot)	MIL-F-43987
Glove Set, Chemical Protective	MIL-F-43976
Cover, Helmet, Chemical Protective	MIL-C-44001

b. Components.

ITEM	SPECIFICATION
Fasteners, Slide, Interlocking	V-F-106
Webbing, Textile (Cotton, Elastic)	JJ-W-155
Thread, Gimp, Cotton, Buttonhole	V-T-280
Braid, Textile, Tubular	MIL-B-871
Buckle, Tongueless and Web strap	MIL-B-543
Thread and Twine; Mildew Resistant or Water Repellent Treated	MIL-T-3530
Fasteners, Snap	MIL-F-10884
Cloth, Coated, Butyl Coated Toxicological Agent Protective	MIL-C-12189
Grommet, Metallic	MIL-G-16491
Fastener Tapes, Hook and Pile, Synthetic	MIL-F-21840
Cord, Elastic, Cotton	MIL-C-43303
Thread, Polyester, Cotton-Covered	MIL-T-43548
Tape, Textile, Cotton, General Purpose, Natural or in colors	MIL-T-43566
Cloth, Laminated, Nylon Tricot Knit, Polyurethane Foam Laminate for Chemical Protection	MIL-C-43858
Cloth, Camouflage Pattern: Woodland, Cotton and Nylon	MIL-C-44031

16-2. COMMODITY SPECIFICATIONS - Continued

c. Technical Publications.

NUMBER	TITLE
TM 3-220	Chemical, Biological and Radiological Decontamination
TM 9-2665	Instruction Guide: Repair of Slide Fasteners
TM 10-277	Packaging, Marking, Storage, Handling, Care and Use of the Individual Chemical Protective Clothing and Equipment System
FM 10-16	General Fabric Repair

16-3. IDENTIFICATION AND DESCRIPTION

a. Suit, Chemical Protective (Overgarment) (Figure 16-1).

STD A	SIZE	SPECIFICATION
8415-01-137-1700	XXX-Small	MIL-S-43926
8415-01-137-1701	XX-Small	MIL-S-43926
8415-01-137-1702	X-small	MIL-S-43926
8415-01-137-1703	small	MIL-S-43926
8415-01-137-1704	Medium	MIL-S-43926
8415-01-137-1705	Large	MIL-S-43926
8415-01-137-1706	X-Large	MIL-S-43926
8415-01-137-1707	XX-Large	MIL-S-43926

(1) The chemical protective (CP) overgarment is a two-layer two-piece garment consisting of a coat and trousers. The outer layer is a Woodland Camouflage nylon-cotton twill with a Quarpel (water repellent) treatment. The liner is a charcoal impregnated polyurethane foam/nylon tricot laminate which provides protection against vapors, aerosols, and small droplets of chemical agents. The hip length coat has a stand-up collar, elasticized sleeve hems, two side-opening chest pockets, a full length slide fastener front opening with protective flap, two bellows pockets with flaps located at the side, two hip pockets with flaps, waist adjustment buckles and straps, suspender loops and belt loops. Each leg has a slide fastener at the outside to control the adjustment opening and a drawcord on the hem.

16-3. IDENTIFICATION AND DESCRIPTION-Continued

(2) The overgarment is issued to all troop units. When maximum protection is required, the overgarment is worn with the M17A1 field protective mask and the M6A2 field protective hood; the glove set, chemical protective; and the footwear covers, chemical protective (overbooks). These items are issued separately. The overgarment is available in eight sizes: XXX-Small, XX-Small, X-Small, Small, Medium, Large, X-Large, XX-Large. The proper size overgarment will vary depending on the uniform it is to be worn over. The following size prediction chart should be consulted as a guideline in determining which size overgarment should fit. The chart is also printed on the vapor barrier bag of the CP overgarment. Proper fit should be checked during training exercises.

CP Overgarment Size Prediction Chart

WAIST SIZE	OVER SUMMER UNDERWEAR	OVER COMBAT COAT & TROUSERS (BATTLEDRESS-HOT, DESERT, TEMPERATE)	OVER COAT AND TROUSERS MEN'S FIELD WEAR	OVER PARKA AND TROUSERS MEN'S ARCTIC WEAR
19	xxx-s	xxx-s	xx-s	x-s
23	xx-s	xx-s	x-s	s
27	x-s	x-s	s	M
31	s	s	M	L
35	M	M	L	X-L
39	L	L	X-L	XX-L
43	X-L	X-L	XX-L	XX-L

Finished measurements (inches)

	COAT		TROUSERS	
	1/2 Chest 1/	Back Length 2/	1/2 Waist 3/	Inseam 4/
XXX-Small	17	*28*	13	32
XX-Small	19	*28-1/2*	15	32
X-Small	21	*29*	17	32
Small	23	*29-1/2*	19	34
Medium	25	30	21	34
Large	27	30-1/2	23	36
X-Large	29	31	25	36
XX-Large	31	31-1/2	27	36
Tolerance	± 3/4	± 3/4	± 3/4	±1/2

1/ Measure across chest from folded side edge to folded side edge at base of armholes.
2/ Measure down center of back from collar joining seam to bottom edge of coat.
3/ Measure across waist from side edge to side edge with snap fastener at waist secured and fly closed.
4/ Measure from crotch seam along inseam to bottom edge of leg.

16-3. IDENTIFICATION AND DESCRIPTION–Continued

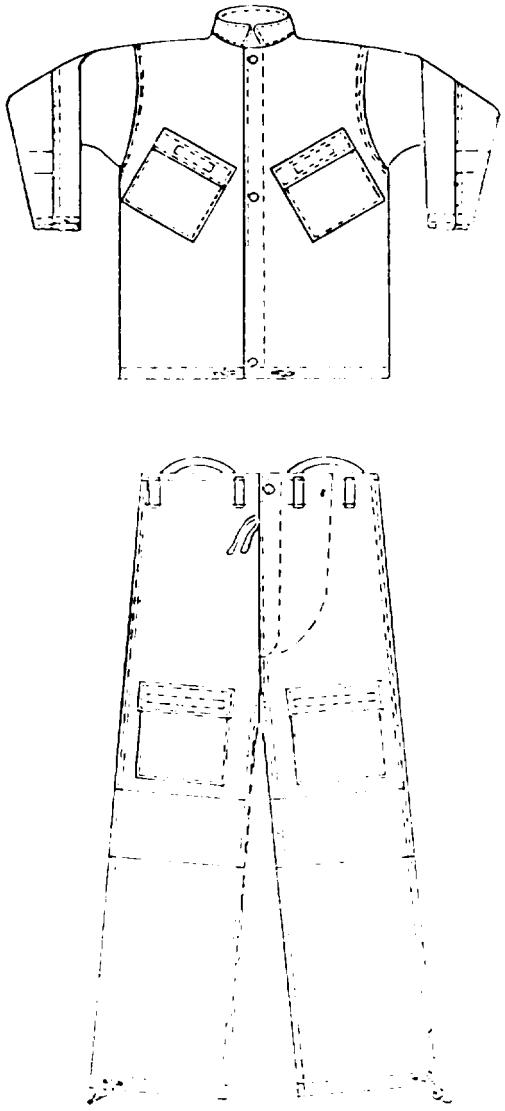


Figure 16-1. Suit, Chemical Protective

16-3. IDENTIFICATION AND DESCRIPTION – Continued

b. Glove Set, Chemical Protective (CP) (Fig. 16-2).

NSN	SIZE	SPECIFICATION
8415-01-144-1862	X-Small	MIL-G-43976
8415-01-033-3517	Small	MIL-G-43976
8415-01-033-3518	Medium	MIL-G-43976
8415-01-033-3519	Large	MIL-G-43976
8415-01-033-3520	X-Large	MIL-G-43976

(1) The components of the packaged set consist of an outer rubber glove to provide the chemical protection and an inner glove to assist in absorption of perspiration. The outer, five-finger gloves (right and left hands) are of an impermeable unsupported black butyl rubber.

(2) The glove set gives protection against vapors, aerosols, and small droplets of chemical agents. One pair each of the glove sets and an instruction sheet are packaged and sealed in a clear polyethylene film bag with excess air removed. The sets are issued as initial issue and as replacement items for use with the Suit, Chemical Protective (Overgarment). The gloves are available in five sizes: X-Small, Small, Medium, Large, arid X-Large. Cotton inserts are provided with the gloves to be worn as a liner to aid in the absorption of perspiration. Proper fit should be checked upon issue. In addition to the above, the standard issue leather gloves or other work gloves can be worn over the CP glove set. It is important to wear the leather gloves when handling rough objects to protect the butyl rubber of the CP glove set from punctures and tears.

c. Footwear Covers, Chemical Protective (Overboots) (Fig. 16-3).

NSN	SIZE	SPECIFICATION
8430-01-118-8172	Small	MIL-F-43987
8430-01-021-5978	Large	MIL-F-43987

(1) The overboots are loose fitting, black, impermeable butyl rubber covers with nonslip soles with either four or five holes to allow lacing with nylon laces around the foot and can be worn on either the right or left foot. The overboots (one pair) are packaged, with two pairs of laces and an appropriate instruction sheet, in a close fitting sealed flat or square style polyethylene bag with excess air removed.

(2) The overboots are issued as initial issue and as replacement items with the suit, chemical protective (overgarment). The footwear covers are available in two sizes. Instructions for lacing are provided with each pair. The procedure should be studied upon receipt of the overboots, and practiced during training exercises to facilitate lacing in an emergency.

16-3. IDENTIFICATION AND DESCRIPTION–Continued

d. Cover, Helmet, Chemical Protective (Fig. 16-4).

NSN	SIZE	SPECIFICATION
8415-01-111-9028	**1** size only	MIL-C-44001

The chemical protective helmet cover is a one-piece configuration consisting of butyl coated nylon cloth gathered at the opening by an elastic webbing enclosed in the hem. It is intended to provide the Personnel Armor System Ground Troops PASGT Helmet with protection from chemical and biological contamination. The helmet cover is designated for use in all climatic categories.

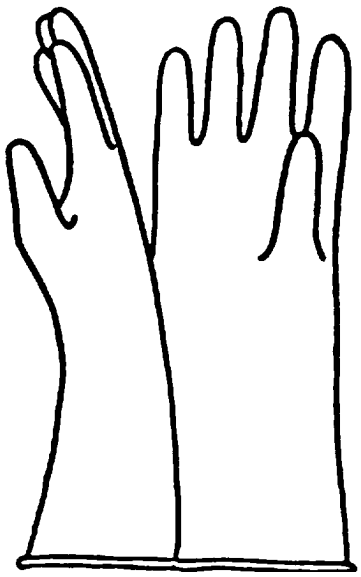


Figure 16-2. Glove Set, Chemical Protective

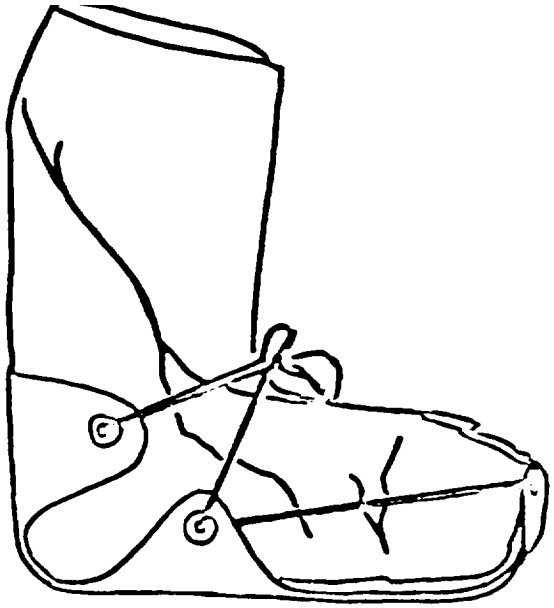


Figure 16-3. Footwear Cover, Chemical Protective

Figure 16-4. Helmet cover, Chemical Protective

Section II. REPAIR PROCEDURES

(applicable to training items only)

16-4. MATERIALS

Materials used in repair of any item of the Chemical Protective Clothing System shall be serviceable materials recovered from similar salvage items when authorized, or will be new materials as specified in Section III. New materials will be requisitioned from stock number and/or item description and shall conform to the appropriate specification. When not available from stock, materials may be purchased locally that conform as closely as possible to the standard material.

16-5. CLASSIFICATION

Refer to Chapter 1 for serviceability classification of the components of the chemical protective clothing ensemble.

16-6. REPAIR AND MAINTENANCE

Prior to repair operations, each item shall be inspected by qualified personnel to determine the amount of repair necessary. The following methods shall be observed as fully as skills, facilities, funds, and local conditions permit. The sequence of operations shall be determined by the repairing organization, unless otherwise prescribed,

a. Inspection — Inspect all items to determine the amount of repairs needed and whether such repairs can be accomplished within the organization or evacuate to direct support level of maintenance.

b. Repair — Repair to be accomplished at organization maintenance is limited to hand sewing and to the application of patches issued with the impermeable clothing repair kit (see III).

c. Refer to TM 3-220 for cleaning and decontamination of protective clothing ensembles.

d. Direct support Maintenance

(1) Suit, Chemical Protective

(a) Stitching and restitching. Use machine sewing wherever possible for all stitching and restitching of overgarments. Backstitch or bartack all stitching at ends to prevent raveling. Maintain proper thread tension to prevent loose stitching and to imbed the lock in the center of the material sewn. Overlock all thread breaks in overedge stitching not less than 3/4 inch (1 .91 cm) at each break. Restitch seams containing loose and/or broken threads. Overstitch thread breaks in type 301 stitching not less than 1/2 inch (1.27 cm) at each break. For illustrations of the various types of stitches used, see FED. STD. 751.

16-6. REPAIR AND MAINTENANCE–Continued

(b) Patching and darning. Repair rips and tears by drawing the edges together and darning with a zig-zag stitch. Repair holes, rips, and tears greater than 1/2 inch (1.27 cm) by patching when acceptable to appearance standards. Cut patch from material matching that being repaired and insert under the damaged area. Cut patch large enough to extend from 1/4 to 3/8 inch (0.635 to 0.952 cm) around the perimeter of the opening. Darn or patch areas in waistbands, or other areas that will not be visible when garment is worn.

(c) Pockets and Flaps. Repair or replace torn, missing, or defective pockets and flaps. Restitch ripped seams on flaps and pockets. Darn small holes and tears when necessary; patch slightly larger holes if the darning and patching will not be visible when garment is worn.

(d) Slide fastener. Replace missing or damaged slide fasteners of the type prescribed in Section Ill.

(e) Buckles. Replace missing or damaged buckles with the type prescribed in Section Ill.

(2) Cover, Helmet, Chemical Protective.
Follow repair procedures listed in TM 10-8400-201-23 Chapter 11-6d(2) “Toxicological agents protective clothing.”

(3) Glove Set, Chemical Protective.
The glove set is not repairable. When gloves become unserviceable, replacement items should be obtained.

NOTE

Glove fingers tend to stick together when stored. Talcum powder can be used to prevent sticking and does not damage the glove’s chemical protection.

(4) Footwear Covers, Chemical Protective.
The footwear covers are not repairable. When they become unserviceable, replacement items should be obtained.

Section III. MATERIALS

(1) SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
PAFZZ	5325-01-273-2340	Fasteners, Slide, Interlocking, 6.5-Inch Long, Type 1, Style 3 or 4, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-274-4532	Fasteners, Slide, Interlocking, 7-Inch Long, Type 1, Style 3 or 4, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-273-2341	Fasteners, Slide, Interlocking, 7.5-Inch Long, Type 1, Style 3 or 4, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-273-1705	Fasteners, Slide, Interlocking, 8-Inch Long, Type 1, Style 3 or 4, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-272-6584	Fasteners, Slide, Interlocking, 8.5-Inch Long, Type 1, Style 3 or 4, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-274-3313	Fasteners, Slide, Interlocking, 9-Inch Long, Type 1, Style 3 or 4, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-274-3314	Fasteners, Slide, Interlocking, 9.5-Inch Long, Type 1, Style 3 or 4, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-274-3315	Fasteners, Slide, Interlocking, 10-Inch Long, Type 1, Style 3 or 4, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-274-3316	Fasteners, Slide, Interlocking, 18.75-Inch Long, Type 1, Style 3 or 4, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-273-0068	Fasteners, Slide, Interlocking, 25-Inch Long, Type 1, Style 8, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-273-4623	Fasteners, Slide, Interlocking, 25.5-Inch Long, Type 1, Style 8, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-276-5860	Fasteners, Slide, Interlocking, 26-Inch Long, Type 1, Style 8, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-274-3311	Fasteners, Slide, Interlocking, 26.5-Inch Long, Type 1, Style 8, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-280-6940	Fasteners, Slide, Interlocking, 27-Inch Long, Type 1, Style 8, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-273-4624	Fasteners, Slide, Interlocking, 27.5-Inch Long, Type 1, Style 8, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-274-3312	Fasteners, Slide, Interlocking, 28-Inch Long, Type 1, Style 8, Size MS, (PN) V-F-106	EA
PAFZZ	5325-01-280-2635	Fasteners, Slide, Interlocking, 28.5-Inch Long, Type 1, Style 8, Size MS, (PN) V-F-106	EA
PAFZZ	8310-00-262-0096	Thread, Gimp, Cotton, Buttonhole, V-T-280, Type I, OD C.A. 66022	TU
PAFZZ	8305-00-810-5270	Webbing,Textile, Cotton Elastic JJ-W-155, .5 inch Width, Type 1, Class 20	YD
PAFZZ	8315-01-066-5851	Braid, Textile Tubular MIL-B-371	YD
PAFZZ	5340-00-157-7987	Buckle,Tongueless and Web Strap MIL-B-543, Ty 2, Style 3, CL 3	EA

Section III. MATERIALS -Continued

(1) SMR CODE	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE
PAFZZ	5340-00-157-7987	Buckle,Tongueless and Web Strap MIL-B543, Ty 2, Style 3,	EA
PAFZZ	5325-00-985-6718	Fasteners, Snap MIL-F-10884, Style 2, Finish 2	HD
PAFZZ	8305-00-823-7230	Cloth, Coated, Butyl Coated Toxicological Agents Protective MIL-C-12189	YD
PAFZZ	5325-01-070-9180	Grommet, Metallic MIL-G-16491, Size O, Type I, Class 3	EA
PAFZZ	8315-01-010-7204	Fastener Tape, Pile, Synthetic MIL-F-21840, Class 1	YD
PAFZZ	8315-01-010-7203	Fastener Tape, Hook, Synthetic MIL-F-21840, Type II,Class 1	YD
PAFZZ	8305-00-410-8418	Cord, Elastic, Cotton MIL-C43303, Class 2,0.188 inch Dia	YD
PAFZZ	8310-01-066-0973	Thread, Polyester, Cotton-covered MIL-T-43548, 50/3 Ply,OD C.A. 66022	TU
PAFZZ	8310-01-069-1631	Thread, Polyester, Cotton-Covered MIL-T-43548 70/2 Ply Khaki	TU
PAFZZ	8315-00-935-6444	Tape, Textile, Cotton, General Purpose, Green 107, MIL-T-43566, Type I, Class 3, 0.625 inches Width	YD
PAFZZ	8305-01-084-1670	Cloth, Camouflage Pattern: Woodand, Cotton and Nylon MIL-C44031 , Class 1	YD
PAFZZ	8305-00-113-3171	Cloth, Coated, CBTR Protective MIL-C-51251	YD
PAFZZ	8415-00-268-8353	Gloves, Cloth, Cotton, Knitted, Lightweight MIL-G-3866, Type I, Medium#	PR
PAFZZ	8335-01-107-6998	Laces, Nylon V-L-61, Black , Type I, Class 2,84 inches Length, 0.312 inches Width	PR
PAFZZ	6850-00-267-6653	Decontainminating Agents, STB MIL-D-l 2468,50 lb Drum	DR
PAFZZ	8415-00-268-8354	Gloves,Cloth,Cotton, Knitted, Lightweight MIL-G-3866, Type I, Small.	PR

CHAPTER 17

MAINTENANCE OF HOOD, COMBAT VEHICLE CREWMAN'S COVERALLS (BALACLAVA)

Section I. INTRODUCTION

17-1. SCOPE

This chapter prescribes the procedures and instructions for repair and maintenance of Hood, Combat Vehicle Crewman's, Coveralls (Balaclva).

17-2. COMMODITY SPECIFICATIONS

a Item.

ITEM	SPECIFICATION
Hood, Combat Vehicle Crewman's, Coveralls (Balada-va)	MIL-H-44265

b. Components

ITEM	SPECIFICATION
Cuffs, Knit, Wrist and Ankle and Cloth, Knitted	MIL-C-3735
cloth, Knitted, Aramid Bi-ply	MIL-C-44236
Cloth, Laminated, Waterproof, Moisture Vapor Perme-able and Flame Resistant (WT. 3.4 oz.)	MIL-C-44263
Cord, Elastic Cotton	MIL-C-43303
Webbing, Tape, Textile, Aramid Fiber	MIL-W-43685
Thread, Aramid	MIL-T-43636
Label: For Clothing, Equipage, and Tentage (General Use]	DDD-L-20

17-3. TECHNICAL PUBLICATIONS

NUMBER	TITLE
FM 10-280	Field Laundry, Bath and Clothing Exchange Operations

17-4. IDENTIFICATION AND DESCRIPTION

a. Identification - Hood, Combat Vehicle Crewman's, Coveralls (Balaclava); NSN 8415-01-111-1159

b. Description - The hood shall be the pull-over-the-head type with attached bib. The hood shall have a facial opening which allows for placement variation by means of a pull tab. (See Figure 17-1.)

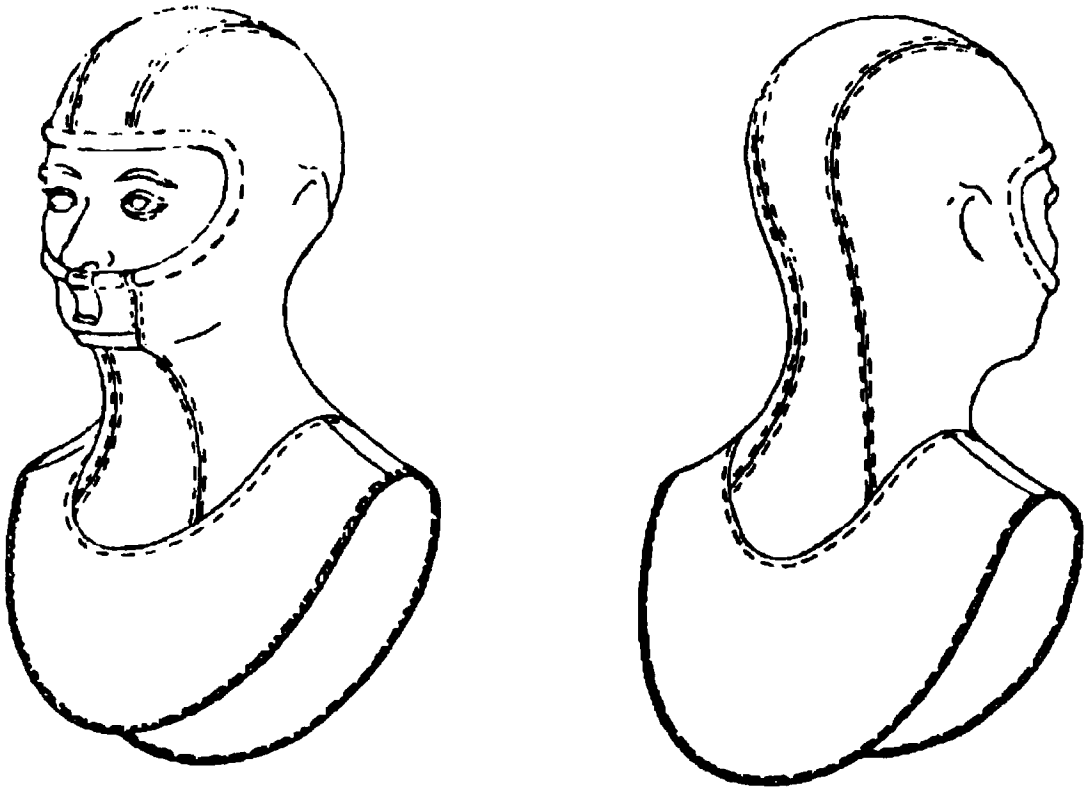


Figure 17-1. Hood, Combat Vehicle Crewman's, Coveralls (Balaclava)

Section II. REPAIR PROCEDURES

17-5. GENERAL

Materials used in the repair of the hoods shall be serviceable materials from similar salvaged items, when authorized or preferably, will be new materials as specified in Section Ill. New materials will be requisitioned from stock under the national stock numbers and for item descriptions as listed and will conform to the appropriate specifications. When not available from stock, materials may be purchased locally that conform as closely as possible to the standard material for emergency repairs. Care and cleaning shall be done by the individual user. All other maintenance should be accomplished at Depot Maintenance Activities.

17-6. REPAIR AND MAINTENANCE

a. Inspection–Inspect the overall condition of the hood. It should be carefully examined to determine if it is worthy of cleaning and repair or if it should be turned in for salvage as unserviceable.

b. Cleaning

(1) Launder in accordance with FM 10-280

(2) Do not tumble dry, or wring/twist. Air dry at room temperature.

(3) Hand wash in warm water using mild detergent

(4) Rinse in clear warm water and hang to drip dry at room temperature

(5) Do not dry clean

c. Repair

(1) Sewing machine repairs, stitching and restitching. All sewing, except emergency repair, shall be machine sewn. When ends of machine stitching type 301 are not caught in other seams or stitching, they shall be back-stitched not less than 1 inch (2.54 cm) at each break. Ends of a continuous line of stitching shall overlap not less than 1/2 inch (1.27 cm). Thread breaks (all stitch types) shall be repaired by stitching back of the break not less than 1/2 inch (1.27 cm) at end of break. Thread tension shall be properly maintained to avoid loose stitching and locks shall be imbedded in the center of the materials sewn. Thread breaks in overedge stitching shall be overlock stitched not less than 3/4 inch (1.91 cm) at each end of break. Stitch spacing used for restitching and other type of seams shall be the same as in the original construction. Seams with loose and/or weak thread shall be restitched,

(2) Small holes or tears. Small holes or tears may be repaired by drawing the edges together and darning by hand.

17-6. REPAIR AND MAINTENANCE – Continued

d. Replacements

(1) Replace missing or torn pull tabs with new tabs fabricated of respective materials specified in Section Ill.

(2) Replace missing or defective elastic cords with elastic cord as specified in Section Ill, cut 18 inches (44.7 cm) in length, and attach in same manner as the original: Center abutted ends of elastic cordon seam allowance at center top cover (cloth, knit aramid) and attach to cover seam allowance with a 1/2 inch (1 .27 cm) bartack placed through each end of the elastic cord, The long dimension of each bartack shall be in the length direction of the cord. Repair the stitching for the tunnel elastic, taking care not to catch elastic in stitching.

(3) Cut away faded or missing instruction labels and replace with new labels in same location, using type 301 stitch and label cloth specified.

17-7. STITCHING INSTRUCTIONS

LOCATION	STITCH TYPE	NEEDLE	BOBBIN	STITCHES PER INCH
Bartack-Pull tab	Bartack	B	B	38-42 per tack
Join front and back bib at side seams	515, 516 or 519	B	B	6-10
Overedging	503 or 504	B	B	6-10
General	401	B	B	8-12
Attach label to face side of lining, attach side vent insert to side interlining, and join edge of each interlining to insert bartack	301 or 401	B	B	8-12
Bartack-Center interlining to center abutted ends of elastic cord on seam allowance and attach to cover seam allowance		B	B	24-28 per tack

17-8. FINISHED MEASUREMENTS IN INCHES

AREA TO BE MEASURED	MEASUREMENT	TOLERANCE
length*	24	± 1 inch
width**	9	± 3/4 inch
face opening***	9 1/2	± 1/2 inch

** Place hood face side upon a flat surface, align bottom edges of front and back of bib and butt top and bottom edges of facial opening. With hood in this position measure in a straight line from folded edge of crown at highest point to bottom of hood at lowest point on bib.

** With hood positioned in footnote * measure across the hood in a straight line from folded edge to folded edge. The line of measurement shall be perpendicular to the length measurement and 1 /2 to 1 inch (1 .27 to 2.54 cm) below the tuck.

*** Fold hood in half lengthwise so fold runs in the length direction of the center top cover and center neck cover. Place folded hood on flat surface with edges of face opening even. Place one hand on neck end of face opening, holding hood against surface with other hand, slide top of hood along surface toward back of hood until curvature along side edges of face opening approximates a straight line. With hood in this position measure along the edge of face opening from fold at center neck cover to fold at center of top cover.

17-9. WORKMANSHIP

Repair and cleaning will be done by personnel skilled in that particular trade applicable to their duties. All stitching will be secure and free of loose or broken thread. The finished item will be complete, dean, well repaired, and free from defects affecting its serviceability and appearance.

17-10. INSPECTION

The inspection or quality control element is responsible for determining compliance with repair instructions and requirements for classification. In-process inspections will be performed for quality of workmanship and correct application of repair procedures. The completed items will be inspected for serviceable appearance and condition to insure against return of a substandard product to supply channels.

17-11. LABELS

a. The label **shall conform to type VI, class 14, of DDD-L-20. Fastness to laundering requirements of DDD-L-20 shall apply. The label shall contain the following information in capital letters:**

HOOD, COMBAT VEHICLE CREWMANS, COVERALLS (Balaclava) WASHING INSTRUCTIONS: LAUNDER IN ACCORDANCE WITH FM 10-280. DO NOT TUMBLE DRY, OR WRING/TWIST. AIR DRY AT ROOM TEMPERATURE. HAND WASH IN WARM WATER USING MILD DETERGENT. RINSE IN CLEAR WARM WATER AND HANG TO DRIP DRY AT ROOM TEMPERATURE. DO NOT DRY CLEAN.

Section III. MATERIALS

SMR CODE	NATIONAL STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE
PAFZZ	8315-01-024-5725	Cuffs. Knit aramid, Otive green type IV, Class 3 of MIL-C-3735	Yd
XBFZZ		Cloth, Knitted aramid hi-ply Olive green 106 conforming to MIL-C-44236	Yd
XBFZZ		Cloth, laminated waterproof, moisture vapor permeable and flame resistant conforming to MIL-C-44263	Yd
PAFZZ	8305-00-410-8418	Elastic Cord, Olive Drab 7, conforming to Class 2 of MIL-C-43303, 0.188 inches dia.	Yd
PAFZZ	8305-00-406-3496	Webbing, Olive Green 106, conforming to type II of MIL-W-43685, width 0.625 inches.	Yd
PAFZZ	8310-00-405-2260	Thread, Olive Drab S-1, CA 66022, conforming to size B of MIL-T-43636, 2 ply	TU

CHAPTER 18

MAINTENANCE OF BODY ARMOR, COMBAT VEHICLE CREWMEN'S FRAGMENTATION PROTECTIVE UNDERGARMENT

Section I. INTRODUCTION

18-1. SCOPE

This chapter prescribes the procedures and instructions for repair and maintenance of Body Armor, Combat Vehicle Crewmen's Fragmentation Protective Undergarment.

18-2. COMMODITY SPECIFICATIONS

a. Item.

ITEM	SPECIFICATION
Body Armor, Combat Vehicle Crewmen's Fragmentation Protective Undergarment	MIL-B-44194

b. Components.

ITEM	SPECIFICATION
Thread, Polyester	V-T-285
Thread, Nylon	V-T-295
Label: For Clothing, Equipage, and Tentage (General Use)	DDD-L-20
Cloth, wind Resistant, Poplin, Cotton	MIL-C-342
Webbing, Textile, Elastic Cotton	MIL-W-5664
Fastener Tapes, Hook and Pile, Synthetic	MIL-F-21840
Thread, Aramid	MIL-T-43636
Cloth, Plain and Basket Weave Aromatic, Polyamide Non-Melting	MIL-C-63429
Cloth, Ballistic, Aramid	MIL-C-44050
Tape, Binding, Polyester/Cotton 50/50	

18-3 TECHNICAL MANUALS

NUMBER	TITLE
FM 10-16	General Fabric Repair
FM 120-280	Field Laundry, Bath and Clothing Exchange Operations

18-4. IDENTIFICATION AND DESCRIPTION

a. Identification--Body Armor, Combat Vehicle Crewmen's Fragmentation Protective Undergarment.

8470-01-110-6102	X-small short
8470-01-110-6103	X-small regular
8470-01-110-6104	Small regular
8470-01-110-6105	Medium regular
8470-01-110-6106	Large regular
8470-01-110-6107	X-large regular
8470-01-110-6108	small long
8470-01-110-6109	Medium long
8470-01-110-6110	Large long
8470-01-110-6111	X-large long

b. Description--This is an over-the-head type undergarment with two removable back and two removable front 8-ply ballistic protective inserts. The lower portion of the inserts are sufficiently wide to provide protection at the sides with the back panel overlapping the front panel. The inserts are made of 8.25-oz.(234 g), (280 g/m^2) 1000-denier, water repellent treated "Kevlar" cloth. The outer part of the carrier is of 4.3oz.(122g),(146 g/m^2) plain weave, aromatic polyamide, non-melting cloth conforming to type II, class 3 of MIL-C-83429 olive green 106. The inner part of the carrier is of 6-02.(170 g) cotton poplin cloth, O.G.The carrier has elastic webbing/hook-and-pile fastener, tape straps at the sides for size and comfort adjustment.

Section II. REPAIR PROCEDURES

18-5. GENERAL

Materials used in the repair of vests will be serviceable materials recovered from similar salvaged items, when authorized, or preferably, will be new materials as specified in Section Ill. New materials will be requisitioned from stock under the national stock numbers and from item descriptions as listed and will conform to the appropriate specifications. When not available from stock, materials may be purchased locally that conform as closely as possible to the standard material for emergency repair. Care and cleaning shall be done by the individual user. All other maintenance should be accomplished at Depot Maintenance Activities.

18-6. REPAIR AND MAINTENANCE

a. Inspection: Inspect the overall condition of the carrier, the inserts and all components. They should be carefully examined to determine if they are worthy of cleaning and repair or if they should be turned in for salvage as unserviceable,

b. Cleaning: Wash the carrier and the inserts according to the following instructions:

(1) Remove the ballistic inserts from the carrier and mate the hook-and-pile fasteners of the carrier for washing. Wash the carrier and the inserts separately. Wash the inserts as seldom as possible.

(2) DO NOT STARCH THE CARRIER OR THE INSERTS.

(3) DO NOT BLEACH OR DRY CLEAN THE INSERTS.

(4) HAND WASH THE CARRIER AND THE INSERTS IN WARM TO HOT WATER AND MILD DETERGENT. RINSE PER INSTRUCTION NO. 7 AND DRY IN ANY CONVENTIONAL MANNER or follow the procedures in No. 5 below.

(5) Field Laundry Procedure: Wash the inserts and the carrier according to Laundry Wash Formula “l” of FM 10-280, Field Laundry, Bath and Clothing Exchange Operations. Rinse per instruction No. 7, lightly extract, then tumble dry at 180°F (82°C) maximum.

(6) Rinse thoroughly in clear warm water after laundering, Remove all soaps, alkalis and detergent or the vest will lose its ballistic or flame resistance. If the vest has accidentally been starched, its ballistic and flame resistance can be restored by rinsing thoroughly with warm water. If the inserts have been accidentally bleached, TURN THEM IN for replacement.

(7) Inspect the carrier and the inserts after washing to insure that there are no open seams, tears, or holes and that components operate satisfactorily.

18-6. REPAIR AND MAINTENANCE–Continued

c. Replacement of carrier: Due to the low cost of the complete carrier, it is not considered economical to repair badly torn, worn, or damaged carriers, including replacement of hook-and-pile fasteners, and elastic webbing. When a carrier has large holes or tears, is severely worn or soiled, has inoperative hook-and-pile fasteners, or has badly abraded or otherwise damaged elastic webbing, replace the entire carrier. The carrier need not be replaced for tears or holes less than 1 inch long that can be repaired by hand darning, and for open seams that can be repaired by top-stitching.

d. Repair of carrier:

(1) Small holes or tears. With the ballistic inserts out of the carrier, the hole or tear in the carrier may be repaired by drawing the edges together and darning by hand.

(2) Open seams and broken stitches. When it is necessary to repair an open seam or broken stitching, use machines for all servicing except in emergency repair. Top stitch with Aramid (Nomex) thread conforming to MIL-T-43636, size B, color olive drab S-1, E. A. 66022, size 50 for both needle and bobbin/looper. Use stitch type 301 of Federal Standard 751 and 8 to 10 stitches per inch. Adjust the thread tension so that there will be no loose stitching or excessively tight stitching resulting in puckering of the sewn material. Backstitch thread breaks and ends of stitching by 1/2 inch (1.27 cm) minimum.

e. Replacement of Ballistic Inserts: If any insert has any hole, tear, or cut in the ballistic cloth or if the insert has lumps or other damage, replace the insert. The insert need not be replaced for open seams or tears in the binding which can be repaired by topstitching, or even if the entire binding can be replaced.

f. Repair of Ballistic Inserts: When it is necessary to repair open seams, broken stitching, damaged binding or to completely replace the binding, use machines for all servicing except in emergency repair, and follow the instructions in No. 1 and 2 below. Top-stitch with polyester thread conforming to Type 1, Class 1, Subclass A, size B, color natural of V-T-285 or nylon thread conforming to Type 1, Class A, size B, color natural of V-T-295. Adjust the thread tension so that there will be no loose stitching or excessively tight stitching resulting in puckering of the sewn material. Back-stitch thread breaks and ends of stitching by 1/2 inch (1.27 cm) minimum.

(1) Open seams or broken stitches: Fold binding under as originally folded and top-stitch with 8 to 10 stitches per inch.

(2) Replace binding, partially or completely: To replace a section of damaged binding, cut out the damaged area or completely remove the old binding and replace it with Atlantic Bias Products Style “Polyfrost” or equal, 45° bias binding tape, 1 7/8 inch (4.77 cm) wide. Fold the binding as originally folded and top-stitch with 8 to 10 stitches per inch so that the finished binding covers 1/2 inch (1.27 cm) and stitching is 3/8 inch (0.925 cm) from the edge of the insert. Overlap ends of the binding tape 1 inch (2.54 cm) minimum, and turn under the ends of the outside tape 1/2 inch (1.27 cm) minimum.

18-6. REPAIR AND MAINTENANCE–Continued

g. Repair of Labels: if the label is in good condition, top-stitch the label using the appropriate thread specified in 18-6, d, 2 and 18-6, f. In the carrier, stitch only to the back inner part; in the inserts, stitch through all of the Kevlar plies.

h. Replace of Labels: If it is apparent that the stock number and size will not be legible when subjected to wear after re-issue, or if the stitching is excessively damaged, remove the old label and stitch in a new one using the appropriate thread and stitching procedure specified in 18-6, g.

18-7. WORKMANSHIP

Repair and cleaning will be done by personnel skilled in the particular trade applicable to their duties. All stitching will be secure and free of loose or broken thread. The finished item will be complete, clean, well repaired, and free from all defects affecting its serviceability and appearance.

18-8. INSPECTION

The inspection or quality control element is responsible for determining compliance with repair instructions and requirements for classification. in-process inspections will be performed for quality of workmanship and correct application of repair procedures. The completed items will be inspected for serviceable appearance and condition to insure against return of a substandard product to supply channels. The completed item shall be further inspected to insure that two ballistic panels of the proper size have been inserted into each of the front and back pockets of the carrier.

18-9. LABELS

a. Ballistic Inserts: Each ballistic insert shall have a combination size, identification and instruction label conforming to Type Vl, Class 14 of DDD-L-20. The size and identification label shall be combined. The item description for the front insert shall be “Ballistic Insert, Front; Body Armor, Combat Vehicle Crewmen’s Fragmentation Protective Undergarment”. The item description for the back insert shall be the same as for the front except substitute “Back” for “Front”. The label shall show fastness to accelerated laundering. Contents of the size label shall be as follows for the specific size:

18-9 LABELS–Continued

SIZE	NATO SIZE	CHEST, INCHES (CM)	HEIGHT, INCHES (CM)
X-small short	4462/7686	Under 34 (86)	Under 64 (162)
X-small regular	6280/7686	Under 34 (86)	67-71 (172-180)
Small regular	6280/8697	34-38 (86-97)	Under 71 (180)
Small long	8098/8697	34-38 (86-97)	71 (180) and over
Medium regular	6280/9707	38-42 (97-107)	Under 71 (180)
Medium long	8098/9707	38-42 (97-107)	71 (180) and over
Large regular	6280/0717	42-46 (107-117)	Under 71 (180)
Large long	8098/0717	42-46 (107-117)	71 (180) and over
X-large regular	6280/1727	46-50 (117-127)	Under 71 (180)
X-large long	8098/1727	46-50 (117-127)	71 (180) and over

Format and contents of the instruction label shall be as follows:

WASHING INSTRUCTIONS FOR BALLISTIC INSERTS

(1) Wash the inserts as seldom as possible.

(2) HAND WASH IN WARM TO HOT WATER AND MILD DETERGENT AND DRY lN ANY CONVENTlON-AL MANNER or follow the procedures in 3 below.

(3) Field Laundry Procedure: Wash the inserts according to Laundry Wash Formula “l” of FM 10-280, Field Laundry, Bath and Clolthing Exchange Operations. Lightly extract, then tumble dry at 180°F (82.2°C) maximum.

(4) Read the instructions on the carrier.

(5) DO NOT DRY CLEAN, BLEACH OR STARCH.

18-9. LABELS - Continued

b. Carrier The carrier shall have a combination size, identification and instruction label conforming to Type VI, Class 14, of DDD-L-20. The size and identification label shall be combined. The label shall show fastness to accelerated laundering. Contents of the size label shall be the same as for the inserts (see 18-9, a).

INSTRUCTIONS

(1) Make sure the ballistic protective inserts are in place and are of the correct size. Two front inserts and back inserts are required.

(2) Wear Armor over your T-shirt.

(3) Close the body armor by overlapping the back over the front at the sides. Adjust straps by putting a little tension on the elastic and pressing the strap hook tape to the front loop tape. DO NOT KEEP THE ELASTIC STRETCHED TO ITS MAXIMUM LENGTH.

(4) Washington Instructions:

(a) Remove ballistic inserts before washing the carrier. Attach the hook tape to the loop tape before washing. Wash inserts separately from the carrier and as seldom as possible.

(b) HAND WASH THE CARRIER IN WARM TO HOT WATER AND MILD DETERGENT AND DRY IN ANY CONVENTIONAL MANNER or follow the procedures in (c) below. DO NOT STARCH.

(c) Field Laundry Procedure: Wash the carrier according to Laundry Wash Formula"l" of FM 10-280, Field Laundry Bath and Clothing Exchange Operations. Lightly extract, then tumble dry at 180°F (82.2°C) maximum.

(5) Read the washing instructions on the inserts.

(6) Turn in your armor to supply points for exchange when:

(a) Any component is torn, damaged or missing.

(b) The fastener tapes do not hold.

(c) You cannot dean it.

Section III. MATERIALS

NATIONAL STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE
	BODY ARMOR,COMMBAT VEHICLE CREWMEM'S FRAGMENTATION Protection UNDERGARMENT	
	BINDING TAPE	
	Tape, Binding, 45° Bias-Cut Polyester/Cotton 50/50, 3.5-oz/Sq Yd, 76x60 min. Texture, White or Bleached, Atlantic Bias Products Style "Polyfrost" or Equal 1 7/8 ± 1/1 6 in. wide	YD
	THREAD	
8310-00-405-2260	Thread, Aramid (Nomex), Olive Drab, Shade No. S-1, C. A. 66022, MIL-B-43636, Size B	TU
8310-00-988-1296	Thread, Polyester, Type 1, Class 1, Sub-Class A, Natural Color, V-T-285, Size B	TU

CHAPTER 19

HELMET, GROUND TROOPS'–PARACHUTISTS' (PERSONNEL ARMOR SYSTEM GROUND TROOPS (PASGT))

Section I. INTRODUCTION

19-1 SCOPE

This chapter provides instructions for the repair and maintenance of PASGT helmets.

19-2. COMMODITY SPECIFICATIONS

a. Item.

ITEM	SPECIFICATION
Helmet, Ground Troops'–Parachutists'	MIL-H-44099

19-3. IDENTIFICATION AND DESCRIPTION

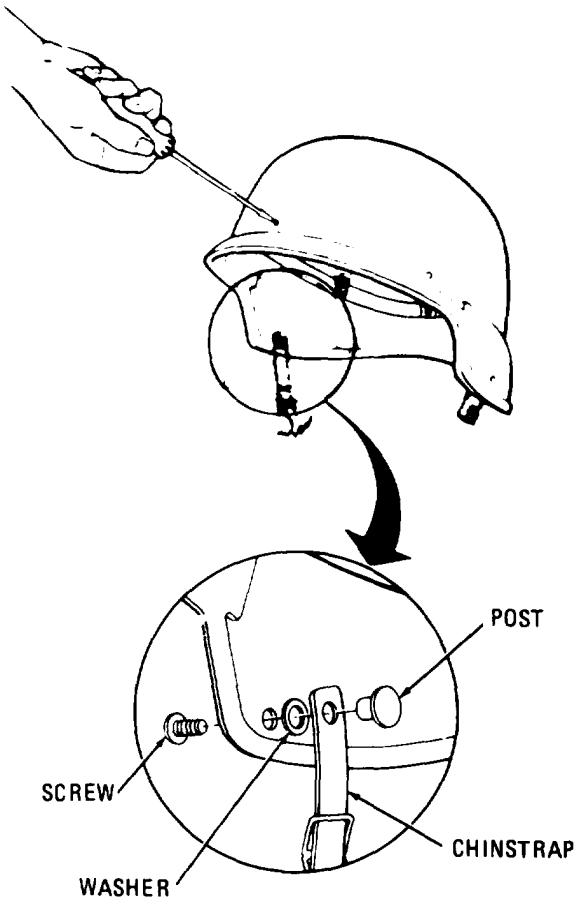
Helmet, Ground Troops'– Parachutist X-Small NSN 8470-01-092-7525, Small NSN 8470-01-092-7526, Medium NSN 8470-01-092-7527, Large NSN 8470-01-092-7528. The Ground Troops'– Parachutists' Helmet or PASGT is a rigid one-piece ballistic protective item molded of laminated Kevlar fabric, It covers the front of the head, the temple region, the ears and the lower rear region of the head. The helmet has a small brim and rubber edging around the periphery. The helmet contains a cradle suspension system, a head band employing a buckle to adjust to size, and a pull tab with pile and hook closure to make the drawstring height adjustment. The chin strap is a two point suspension open chin cup having two adjustable buckles and a single pull-the-dot snap fastener closure on the left side.

Section II. REPAIR PROCEDURES

19-4. GENERAL

The instructions in this section are for the information and guidance of organizational and direct support maintenance personnel. Cleaning and repair will be performed by personnel skilled in the particular trade applicable to their duties.

19-4. GENERAL–Continued



Suspension:

Remove the six mounting screws and A-nuts; remove the suspension. Replace new suspension and hardware if necessary by lining up the holes in the helmet, making sure the drawstring pull tab is at the rear of the helmet. Insert the A-nut (peak of A toward the rim) through the holes and replace the six screws.

Chin Strap:

Remove the screws and remove the chin strap. Replace new chin strap as shown making sure the snap fastener is on the left side of the helmet as worn.

Figure 19-1. Remove & Replace *Suspension & Chin Strap.*

19-5. INSPECTION AND CLEANING

PASGT Helmet. Inspect the PASGT helmet for split or cut rubber edging, chipped paint, raised or abraded fibers, cuts, delamination, blistering, pitting or slight indentations, loose or missing hardware on suspension system or chin strap. There is no restriction on size of chipped area o be repaired. Inspect suspension bands for tears, pulled or ripped stitching, and for cleanliness. Replace defective items. See Section IV for ordering replacement parts. Clean the helmet shell by washing it with mild soap and warm water, rinse, and air dry thoroughly. Clean head band, suspension system, and chin strap by scrubbing them with a cloth and warm soapy water. Rinse them well and allow them to air dry.

19-6. ORGANIZATIONAL MAINTENANCE

a. PASGT Helmet.

(1) Sand chipped area slightly before touch up painting, making sure not to cause any raised fibers. Clean area with a cloth.

(2) Brush on one coat of the paint listed in Section IV.

(3) Sprinkle a small amount of silica sand or walnut shell flour (Section IV) on the freshly painted area until the quantity of sand or walnut shell is equal to that in the original finish.

(4) Lightly apply a second coat of paint to cover the unpainted particles and allow the area to dry at least eight hours.

(5) Install a new suspension system and chin strap as described in Figure 19-1.

(6) Examine the inside and outside surfaces of the helmet shell for raised or abraded fibers, cuts, pitting or slight indentations. If it is determined that the above defects are limited to the outside plies only (on the inside and outside of the shell), and the defects do not extend beyond one ply deep, then the helmet shell can be repaired. If damaged extends beyond one ply deep, then the helmet shell is not serviceable. Repair of the above defects is accomplished by the following procedures:

(a) Remove paint around the immediate area of damage, making sure not to cause additional raising of fibers.

(b) Wipe clear with cloth to remove dirt and dust particles.

(c) Apply one coat of epoxy adhesive cited in Section IV to sufficiently cover damaged area. Let cure.

(d) After epoxy has cured, sand lightly and blend smoothly into shell.

(e) Apply second coat if required.

(f) Apply paint as described in (1) through (4) above.

(g) For damage on the inside surface of the helmet shell, follow steps (b), (c), (d), and (e) above.

19-7. DIRECT SUPPORT MAINTENANCE

a. PASGT Helmet.

(1) Remove suspension systems and chin straps. (See Figure 19-1.)

(2) Wash the helmets 10-15 minutes in a 0.5 percent soap solution (NSN 7930-00-129-0815) at a water temperature of 120° F (40° C). Rinse them in clear warm water until soap is removed. Allow them to dry thoroughly in a temperature not exceeding 140°F (60°C).

(3) Examine the rubber edging for cuts, slits, and areas of non-adherence. If it is determined that the edging is no longer serviceable, then remove the edging by using a heat gun to loosen the adhesive where the edging ends butt together at rear of helmet. Once one end of the edging has been loosened, grasp edging with pliers and pull edging away from helmet while still using heat gun to loosen adhesive. Remove any remaining adhesive before installing new edging to helmet. The rubber edging, slightly longer than the periphery of the helmet, should be opened up and wound around a cylinder so that the inside of the channel is exposed. The inside of the edging should be lightly abraded with a wire brush and the adhesive cited in Section Ill applied. Adhesive should also be applied to the helmet edge. When the adhesive becomes tacky, the edging should be applied to the helmet edge. The application of the edging should start at the bench mark at the rear of the helmet and follow the periphery of the helmet completely around to the starting point at the rear of the helmet. The edging should be cut so that the ends butt each other.

(4) Examine the helmet shell for chipped paint. Repair these places without stripping the paint from the helmet. Using the paint cited in Section Ill and the procedure described in Section II paragraph 6, apint the helmet, except that the second coat should cover the entire outside of the helmet (including rubber edging).

(a) Examine the inside and outside surfaces of the helmet shell for blistesrs. If it is determined that the defects limited to the outside plies only (on the inside and outside of the shell), and the defects do not extend beyond one ply deep, then the helmet shell can be repaired. If damage extends beyond one ply deep, then the helmet shell is not serviceable. Repair of the above defect is accomplished as follows:

1. Remove paint around the immediate area of damage, making sure not to cause additional raising of fibers.

2. Make a single cut in the blister (fabric ply) with a sharp knife sufficiently long enough to allow placing of epoxy resin under the cut ply.

3. Insert epoxy resin (cited in Section Ill) under ply in sufficient quantity to achieve a strong bond.

4. Apply pressure to defect area to ensure mating of plies.

5. After epoxy has cured, sand lightly and blend smoothly into shell.

6. Apply second coat of resin if required.

7. Apply paint as described in paragraph 19-6.

19-7. DIRECT SUPPORT MAINTENANCE - Continued

(5) Install replacement suspensions and chin straps. Replace any damaged or missing hardware (screws, A-nut or posts). Insert new head band beneath the suspension system.

(a) Examine the inside and outside surfaces of the helmet shell for delaminations. If it is determined that the defect is limited to the outside plies only (on the inside and outside of the shell), and the defect does not extend beyond one ply deep, then the helmet shell can be repaired. If damage extends beyond one ply deep then the helmet shell is not serviceable.

(b) Repair of the above defect is accomplished as follows:

1. Remove paint around the immediate area of the damage. making sure not to cause additional raising of fibers.
2. Wipe dean with cloth to remove dirt and dust particles.
3. Apply one coat of epoxy adhesive under raised ply. Apply pressure to defect area to ensure mating of plies.
4. After cure is achieved, sand lightly and blend smoothly into shell.
5. Apply second coat if required.
6. Apply paint (if damage was on outside of shell) as described in parqraph 19-6.

19-8.. INSPECTION

The inspection or quality control unit is responsible for determining compliance with repair instructions and requirements for classifications. In-process inspections will be performed for quality of workmanship and correct application of repair procedures. The completed item will be inspected for serviceable appearance and condition to insure against return of a substandard product to supply channels.

Section III. MATERIALS

SMR CODE	NATIONAL STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE
PCOZZ	8010-01-055-2319	Polyurethane Coating, MIL-C-46185 Type II, Color O.D. 34088 of FED STD 595 (1 1/4 Gal Kit)	KT
PCOZZ	8010-01-144-9875	Polyurethane Coating, MIL-C-46168, Color D.D. 34087 of FED STD 595(4 GL Component A, 1 GL Component B).	KT
PAOZZ	5350-00-115-3297	Grain, Abrasive, MIL-G-5634, Type 6	LB
XBOZZ		Walnut Shell Flour, 40/1 00 Mesh.	LB
PAOZZ	8470-01-156-0372	Edging, 8-2-644-8.	YD
PCOZZ	8040-00-165-8614	Adhesive, EC 1357, (52152)	QT
PAOZZ	8470-01-092-7516	Suspension Assembly, 8-2-644-1 X-Small, MIL-S-44097	EA
PAOZZ	8470-01-082-7517	Suspension Assembly, 8-2-644-1 Small, MIL-S-44097.	EA
PAOZZ	8470-01-092-7518	Suspension Assembly, 8-2-644-1 Medium, MIL-S-44097.	EA
PAOZZ	8470-01-092-7519	Suspension Assembly, 8-2-644-1 Large, MIL-S-44097.	EA
PAOZZ	8470-01-144-2813	Screw, 8-2-644-6.	EA
PAOZZ	8470-01-144-5368	A-nut, 8-2-647	EA
PAOZZ	8470-01-092-7534	Strap Assembly Chin, 2-1-1400, MIL-S-44091.	EA
PAOZZ	8470-01-144-5367	Post, 8-2-647.	EA
PAOZZ	8470-01-144-2811	Screw, 8-2-644-5.	EA
PAOZZ	8470-01-144-2812	Washer, 8-2-644-7.	EA
PAOZZ	8470-01-082-8492	Headband Assembly, 1-2-1384-1 X-Small, MIL-H4098.	EA
PCOZZ	8040-00-162-9704	Adhesive, Paste, 2 oz., PN: Devcon 2 Ton (Clear Epoxy), CAGEC 16059	KT

Section III. MATERIALS - Continued

SMR CODE	NATIONAL STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE
PAOZZ	8470-01-092-8493	Headband Assembly 2-1-1384-1 S, M, L, MIL-H-44088.	EA
PAOZZ	8470-01-144-2814	clip, 2-1-1384-7.	EA
PAOZZ	8470-01-092-8494	Pad, Ground Troops-Parachutists' Helmet, MIL-P-44081.	EA
PAOZZ	8470-01-082-7524	Srap, Retention, Ground Troops-Parachutist's Helmet, MIL-S-44022.	EA
PAOZZ	8415-01-103-1349	Cover, Helmet, Camouflage, Daytime Desert Pattern, X-Sin & Sm Sizes (6 Color), MIL-C-44107, Class 3	EA
PAOZZ	8415-01-103-1350	Cover, Helmet, Camouflage, Daytime Desert Pattern, Med & Lrg Sizes (6 Color), MIL-C-44107, Class 3.	EA
PAOZZ	8415-01-144-1860	Cover, Helmet, Camouflage, White, Snow, X-Sin & Sm Sizes, MIL-C-44107, Class 2.	EA
PAOZZ	8415-01-144-1861	Cover, Helmet, Camouflage, White, Snow, Med & Lrg Sizes, MIL-C-44107, Class 2.	EA
PAOZZ	8415-01-092-7514	Cover, Helmet, Camouflage, Woodland, X-Sin & Sm Sizes, MIL-C-44107, class 1.	EA
PAOZZ	8415-01-092-7515	Cover, Helmet, Camouflage, Woodland, Med & Lrg Sizes, MIL-C-44107, class 1.	EA
PAOZZ	8415-01-111-9028	Cover, Helmet, Chemical Protective, MIL-C-44001.	EA
PAOZZ	8415-00-105-0605	Cover, Helmet, Non-Reversible, MIL-C-17502.	EA
PAOZZ	8415-01-303-8945	Cover, Helmet, Woodland Camouflage Pattern, X-Large, MIL-C-44107, Class 1.	EA
PAOZZ	8415-01-327-4824	Cover, Helmet, Desert Camouflage Pattern, Daytime 3 Color, X-Small to Small, MIL-C-44107, Class 4.	EA
PAOZZ	8415-01-327-4825	Cover, Helmet, Desert Camouflage Pattern, Daytime 3 Color, Medium to Large, MIL-C-44107, Class 4.	EA
PAOZZ	8415-01-327-4826	Cover, Helmet Desert Camouflage Pattern, Daytime 3 Color, X-Large, MIL-C-44107, Class 4.	EA
PAOZZ	8415-01-110-9981	Band, Helmet, Camouflage MIL-B-1851.	EA
PAOZZ	8470-01-303-8946	Headband, Ground Troop, X-large, CAGEC 81348 MIL-H-44098	EA

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CHAPTER 20

MAINTENANCE OF THE EXTREME COLD WEATHER SLEEPING SYSTEM (ECWSS) AND INTERMEDIATE COLD WEATHER SLEEPING SYSTEM (ICWSS)

Section I. INTRODUCTION

20-1. SCOPE

This chapter prescribes the procedures and instructions for repair of the following individual components of the ECWSS and ICWSS.

a ECWSS Components.

(1) Sleeping Bag, Extreme Cold Weather Sleeping System

(2) Hood and Socks, Extreme Cold Weather Sleeping System

(3) Cover, Bivy, Extreme Cold Weather Sleeping System

(4) Bag, Stuff, Extreme Cold Weather Sleeping System

b. ICWSS Components.

(1) Sleeping Bag, Intermediate Cold Weather Sleeping System

(2) Cover, Bivy, Extreme Cold Weather Sleeping System

(3) Bag, Stuff, Extreme Cold Weather Sleeping System

The ECWSS and ICWSS are intended for use with the Sleeping, Mat, Foan, MIL-M-44104, which is described in Chapter 2.

20-2. SPECIFICATIONS AND PUBUCATIONS

a. Items.

SPECIFICATION	ITEM
MIL-S-44361	Sleeping Bag System (ECWSS)
MIL-S-44309	Sleeping Bag (ECWSS) Type 1
MIL-S-44309	Sleeping Bag (ICWSS) Type II
MIL-H-44308	Hood and Socks (ECWSS)
MIL-B-44306	Bag, Stuff (ECWSS)
MIL-B-44307	Cover, Bivy (ECWSS)

20-2. SPECIFICATIONS AND PUBLICAONS - Continued

b. Components.

SPECIFICATION	ITEM
MIL-B-41826	Batting, Polyester, Continuous Filament Fiber
V-F-106	Fastener, Slide, Interlocking
MIL-F-10884	Fastener, Snap, Style 2, Finish 2 (Regular Wire Spring Clamp Type)
MIL-W-4088	Webbing, Textile, Woven, Nylon
MIL-W-17337	Webbing, Textile, Woven, Nylon
V-T-285	Thread, Polyester
DDD-L-20	Label: For Clothing, Equipage and Tentage (General Use)
MIL-C-21852	Cloth, Taffeta, Nylon
MIL-C-43701	Cord, Elastic, Nylon
MIL-C-83489	Cloth, Coated Nylon, Polyurethane Coated
MIL-C-44307	Tape, Heat Sealed
MIL-C-44187	Cloth, Laminated, Waterproof and Moisture Vapor Permeable
MIL-C-43128	Cloth, Plain Weave, Nylon Water Repellent
MIL-F-21840	Fastener Tapes, Hook and Pile Synthetic
MIL-W-5664	Webbing, Textile, Elastic Cotton
MIL-C-16481	Grommet, Metallic
MIL-C-43307	Cord, Nylon, Solid Braid, General Purpose
MIL-S-85634(AS)	Sealer, Heat, Seam Tape and Patch
MIL-T-43548	Thread Polyester Core, Cotton-rayon

c. Drawings. US Army Natick Research and Development Center

CAGEC NUMBER	DRAWING NUMBER	TITLE
81337	2-2-433	Sleeping Bag, ECWCS, Assembly
81337	2-2-433 1	Sleeping Bag, ECWSS, Parts List
81337	2-2-433 2	Sleeping Bag, ECWSS, Parts List
81337	2-2-434	Sleeping Bag, ECWSS, Upper Body Top& Bottom
81337	2-2-435	Sleeping Bag, ECWSS, Lower Body Top& Bottom
81337	2-2-436	Sleeping Bag, ECWSS, Upper Body Lining Top & Bottom
81337	2-2-437	Sleeping Bag, ECWSS, Lower Body Lining Top & Bottom
81337	2-2-438	Sleeping Bag, ECWSS, Foot Piece Assembly
81337	2-2-438 1	Sleeping Bag, ECWSS, Parts List
81337	2-2-439	Sleeping Bag, ECWSS, Foot Shell
81337	2-2-440	Sleeping Bag, ECWSS, Foot Lining
81337	2-2-441	Sleeping Bag, ECWSS, Insulation, Foot
81337	2-2-442	Sleeping Bag, ECWSS, Neck Band Assembly
81337	2-2-442 1	Sleeping Bag, ECWSS, Parts List
81337	2-2-443	Sleeping Bag, ECWSS, Hood Assembly
81337	2-2-443	Sleeping Bag, ECWSS, Hood Parts List
81337	2-2-444	Bivy cover, ECWSS, Assembly
81337	2-2-444 1	Bivy Cover, ECWSS, Parts List
81337	2-2-444 2	Bivy Cover, ECWSS, Parts List
81337	2-2-445	Bivy Cover, ECWSS, Upper Body Top

20-1. SPECIFICATIONS AND PUBLICATIONS - Continued

c. Drawings. US Army Natick Research and Development Center - Continued

CAGEC NUMBER	DRAWING NUMBER	TITLE
81337	2-2-446	Bivy Cover, ECWSS, Upper Body Bottom
81337	2-2-447	Bivy Cover, ECWSS, Bottom, Lower Body
81337	2-2-448	Bivy Cover, ECWSS, Front Piece
81337	2-2-449	Bivy Cover, ECWSS, Flap Assembly
81337	2-2-449 1	Bivy Cover, ECWSS, Flap Parts List
81337	2-2-450	Bivy Cover, ECWSS, Inside Pocket Assembly
81337	2-2-450 1	Bivy Cover, ECWSS, Inside Pocket Parts List
81337	2-2-451	Hood, Sleeping, ECWSS, Assembly
81337	2-2-451 1	Hood, Sleeping, ECWSS, Parts List
81337	2-2-452	Hood, Sleeping, ECWSS, Left & Right Side
81337	2-2-453	Hood, Sleeping, ECWSS, Center Crown
81337	2-2-454	Sock, Sleeping, ECWSS, Assembly
81337	2-2-454 1	Sock, Sleeping, ECWSS, Parts List
81337	2-2-455	Sock, Sleeping, ECWSS, Left & Right Side
81337	2-2-456	Sock, Sleeping, ECWSS, Rear & Bottom
81337	2-2-457	Sock, Sleeping, ECWSS, Bottom, Inner
81337	2-2-458	Sock, Sleeping, ECWSS, Front
81337	2-2-459	Sock, Sleeping, ECWSS, inner Reinforcement
81337	2-2-460	Sock, Sleeping, ECWSS, Nylon Bottom
81337	2-2-461	Sleeping Bag, ECWSS, Center Hood, Bottom
81337	2-2-462	Sleeping Bag, ECWSS, Side Hood, Bottom
81337	2-2-463	Sleeping Bag, ECWSS, Lining Hood, Center, Top
81337	2-2-464	Sleeping Bag, ECWSS, Side Hood Lining
81337	2-2-465	Sleeping Bag, ECWSS, Center Hood, Outer Insulation
81337	2-2-466	Sleeping Bag, ECWSS, Side Hood, Outer Insulation
81337	2-2-467	Sleeping Bag, ECWSS, Center Hood, Inner Insulation
81337	2-2-468	Sleeping Bag, ECWSS, Side Hood, Inner Insulation
81337	2-2-469	Bivy Cover, ECWSS, Hood Piece
81337	2-2-470	Bivy Cover, ECWSS, Neck Band Assembly
81337	2-2-470 1	Bivy Cover, ECWSS, Neck Band Parts List
81337	2-2-471	Sleeping Bag, ECWSS, Draft Flap Assembly
81337	2-2-471 1	Sleeping Bag, ECWSS, Draft Flap Parts List
81337	2-2-472	Bag Stuff, ECWSS, Assembly
81337	2-2-472 1	Bag Stuff, ECWSS, Parts List
81337	2-2-472 2	Bag Stuff, ECWSS, Parts List
81337	2-2-500	Bivy Cover, ECWSS, Top, Lower Body
81337	2-2-501	Sleeping Bag, ICWSS, Assembly
81337	2-2-501 1	Sleeping Bag, Assembly, Parts List
81337	2-2-501 2	Sleeping Bag, Assembly, Parts List
81337	2-2-502	Sleeping Bag, ICWSS, Upper Body Top& Bottom
81337	2-2-503	Sleeping Bag, ICWSS, Lower Body Top& Bottom
81337	2-2-504	Sleeping Bag, ICWSS, Upper Body Lining Top& Bottom
81337	2-2-505	Sleeping Bag, ICWSS, Lower Body Lining Top& Bottom
81337	2-6-101	Buckle, Double Bar, 1-Inch
81337	2-6-104	Cord Lock, Single Cord

20-2 SPECIFICATIONS **AND PUBLICATIONS -** Continued

d. Publications.

NUMBER	TITLE
FED-STD-751	Stitches, Seams, Stitchings
FM 10-16	General Fabric Repair
FM 10-280	Field Laundrv, Bath and Clothing Exchange Operations
FM 21-15	Care and Use of Individual Clothing and Equipment
FM 31-70	Basic Cdd Weather Manual

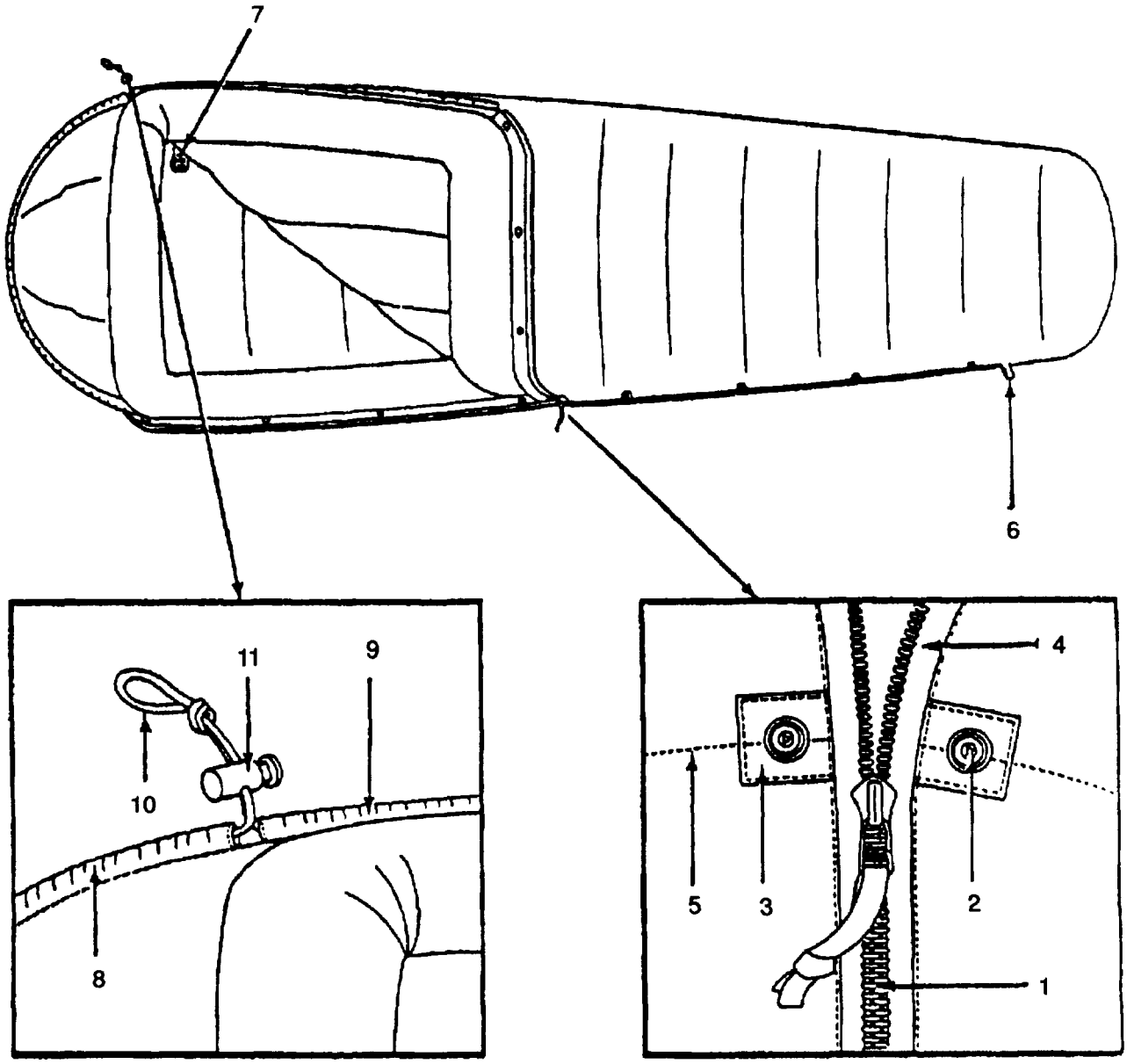
20-3. IDENTIFICATION AND DESCRIPTION OF ITEMS

a. Sleeping Bag, Extreme Cold Weather Sleeping System

NSN	SIZE	SPECIFICATION
8465-01-305-6991	One Size	MIL-S-44309

The sleeping bag (Figure 20-1) is constructed of a 1.65 ounce nylon fabric and utilizes a continuous filament polyester insulation. The sleeping bag has a double draft tube configuration to improve protection in the slide fastener area. It also has a full draft collar which protects both the front and the back of the neck. Locking drawcords are used to adjust tension on the sleeping bag and cover hood. The drawcords are positioned to allow adjustments to be made from within the bag. The sleeping bag is designed to be used with the insulating clothing layers of the Extended Cold Weather Clothing System (ECWCS) as supplemental insulation. Additional shoulder and leg room has been added to the sleeping bag so that a user wearing clothing will be more comfortable and less likely to compress the loft of tho sleeping bag. The sleeping bag is a part of the Extreme Cold Weather Sleeping System, NSN 8465-01-306-2681, described in paragraph 20-1a

20-3. IDENTIFICATION AND DESCRIPTION OF ITEMS - Continued



LEGEND

1. Slide Fastener
2. Snap Fastener Button
3. Snap Fasteners Reinforcement
4. Slide Fastener Tape
5. Polyester Thread (Seam)
6. Pull Tab
7. Labels
8. Drawcord Tunnel
9. Drawcord Tunnel
10. Drawcord
11. Cord Lock

Figure 20-1. Sleeping Bag, ECWSS.

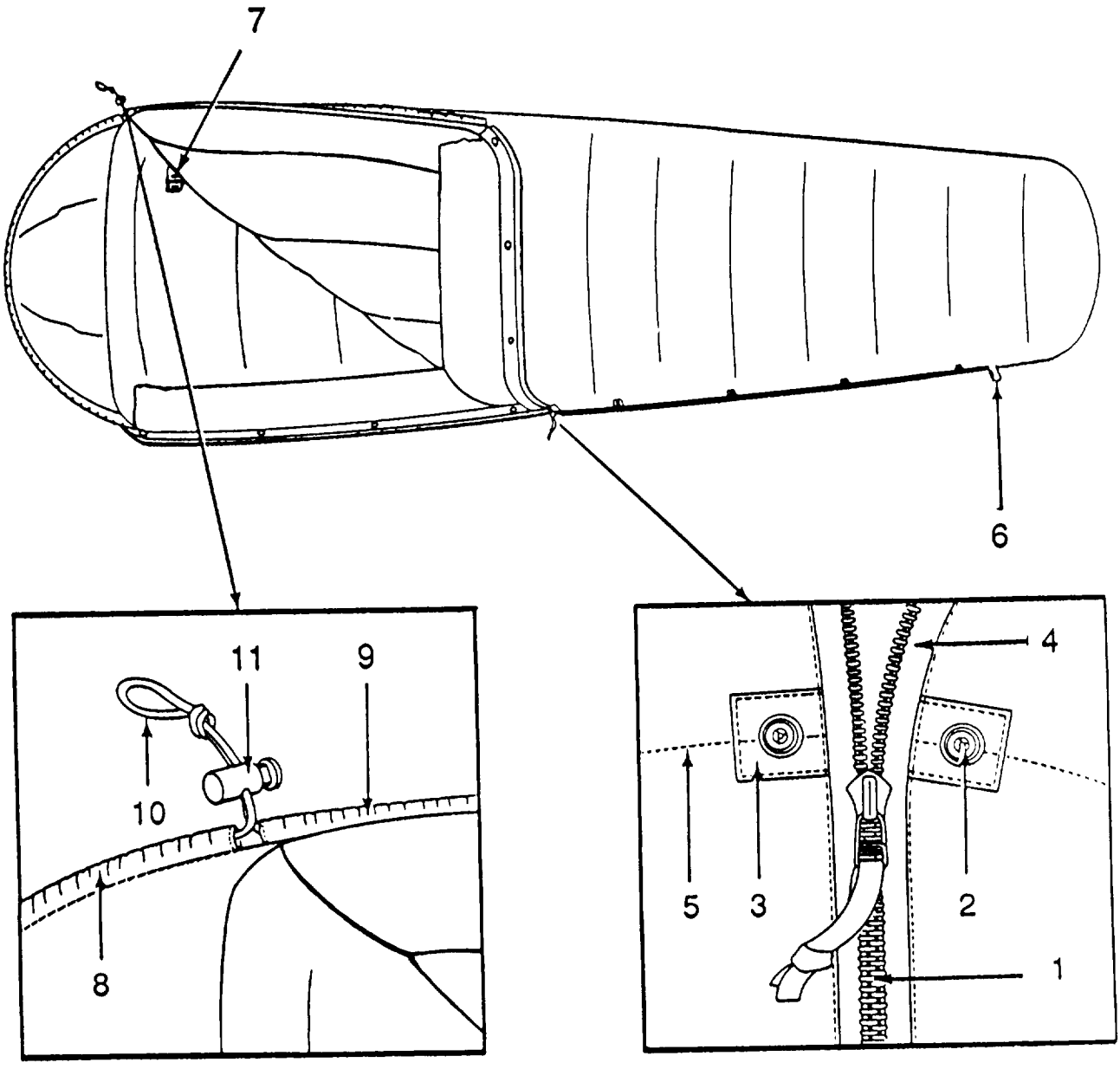
20-3. IDENTIFICATION AND DESCRIPTION OF ITEMS - Continued

a. 1 Sleeping Bag, Intermediate Cold Weather Sleeping System

NSN	SIZE	SPECIFICATION
	One Size	MIL-S-44309

The sleeping bag (Figure 20-1.1) is constructed of a 1.65 ounce nylon fabric and utilizes a continuous filament polyester insulation. The sleeping bag has a single draft tubs configuration. Locking drawcords are used to adjust tension on the sleeping bag and cover hood. The drawcords are positioned to allow adjustments to be made from within the bag. Additional shoulder and leg room has been added to the sleeping bag so that a user wearing clothing will be more comfortable and less likely to compress the loft of the sleeping bag. The sleeping bag is a part of the Intermediate Cold Weather Sleeping System described in paragraph 20-1 b.

20-3. IDENTIFICATION AND DESCRIPTION OF ITEMS - Continued



LEGEND

1. Slide Fastener
2. Snap Fastener Button
3. Snap Fasteners Reinforcement
4. Slide Fastener Tape
5. Polyester Thread (Seam)
6. Pull Tab
7. Labels
8. Drawcord Tunnel
9. Drawcord Tunnel
10. Drawcord
11. Cord Lock

Figure 20-1.1. *Sleeping Bag, ICWSS.*

20-3. IDENTIFICATION AND DESCRIPTION OF ITEMS - Continued

c. Hood and Socks, Extreme Cold Weather Sleeping System

NSN	SIZE	SPECIFICATION
8465-01-305-6359	One Size	MIL-H-44308

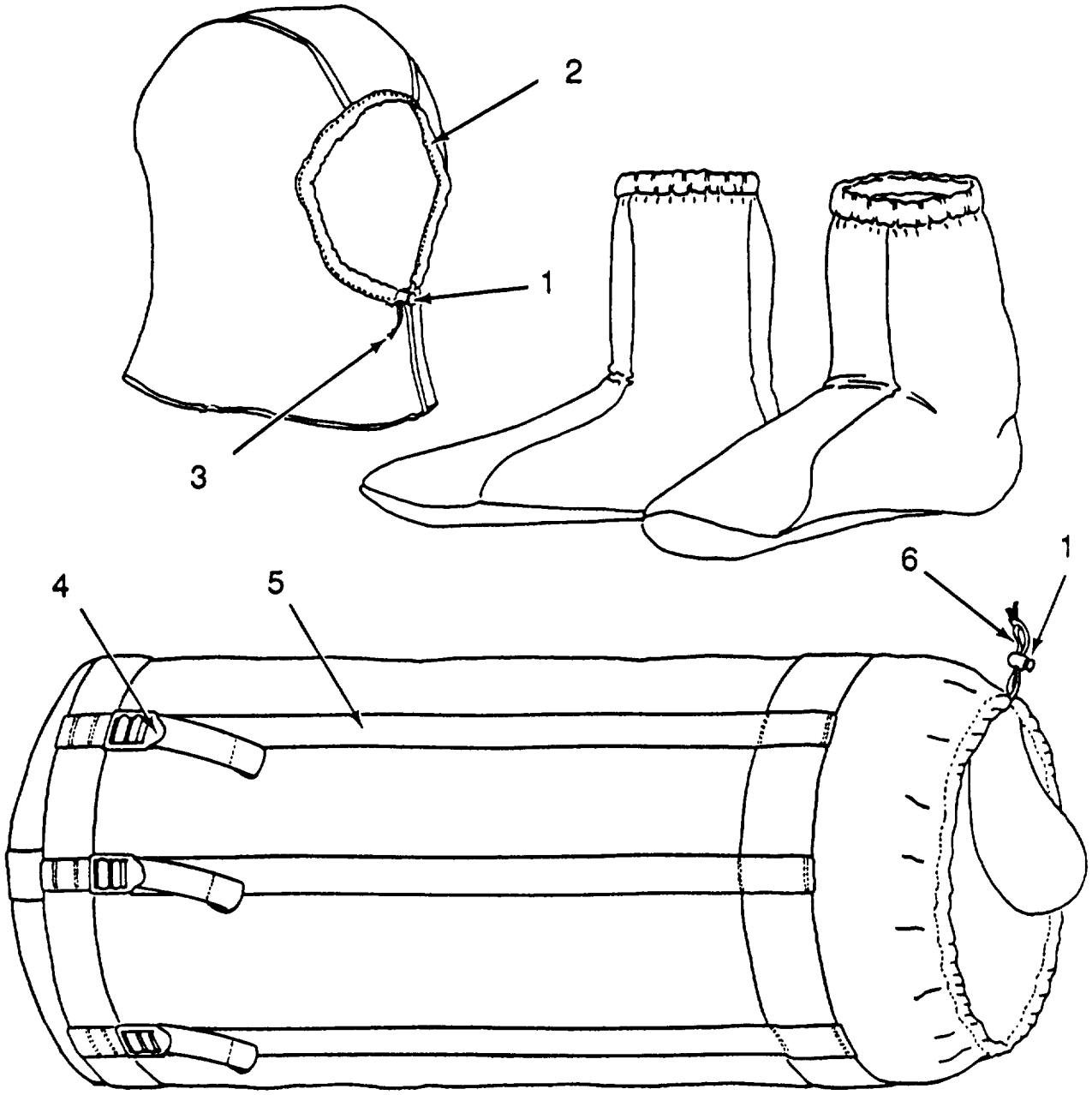
The Hood and Socks (Figure 20-2) are provided as accessories for improved head and foot protection. They are constructed of a polyester fiberpile material and intended to be worn with other appropriate items of the Extended Cold Weather Clothing System (ECWCS).

d. Bag, Stuff, Extreme Cold Weather Sleeping System and Intermediate Cold Weather Sleeping System

NSN	SIZE	SPECIFICATION
8465-01-305-6360	One Size	MIL-B-44306

The bag (Figure 20-2) is used to pack and carry the components of the ECWSS and ICWSS. It is a compression stuff sack constructed of a waterproof nylon fabric, with six compression straps running lengthwise around the sack allowing the bulk to be reduced to less than one cubic foot.

20-3. IDENTIFICATION AND DESCRIPTION OF ITEMS - Continued



LEGEND

1. Cord Lock
2. Binding
3. Drawcord
4. Buckle
5. Compression Straps
6. Drawcord

Figure 20-2. Hood, Socks, and Bag, Stuff.

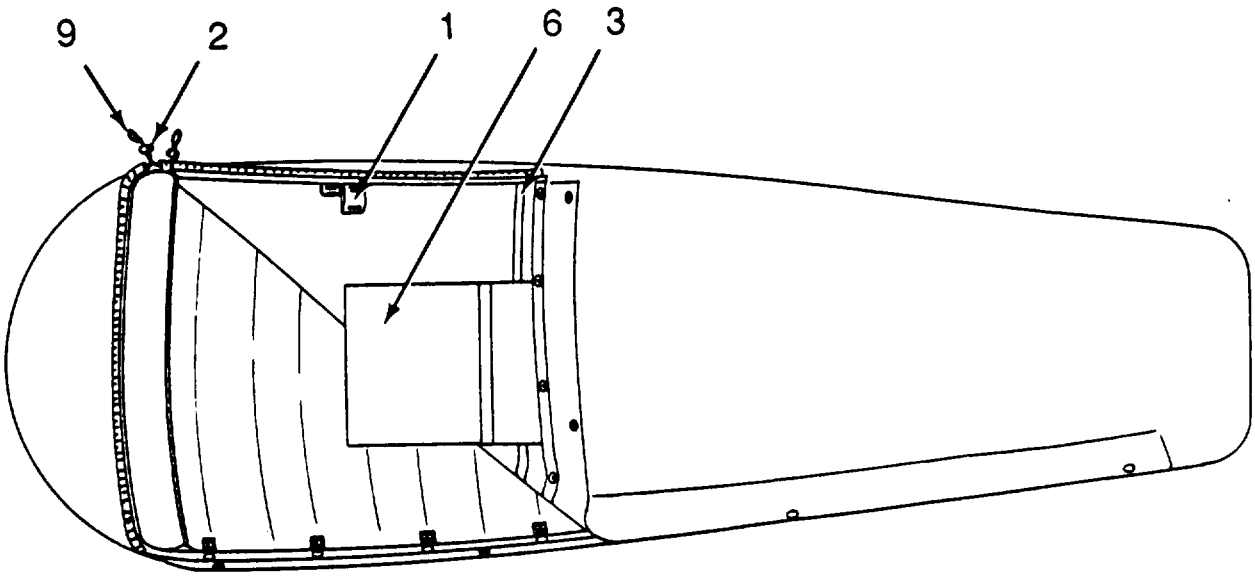
20-3. IDENTIFICATION AND DESCRIPTION OF ITEMS - Continued

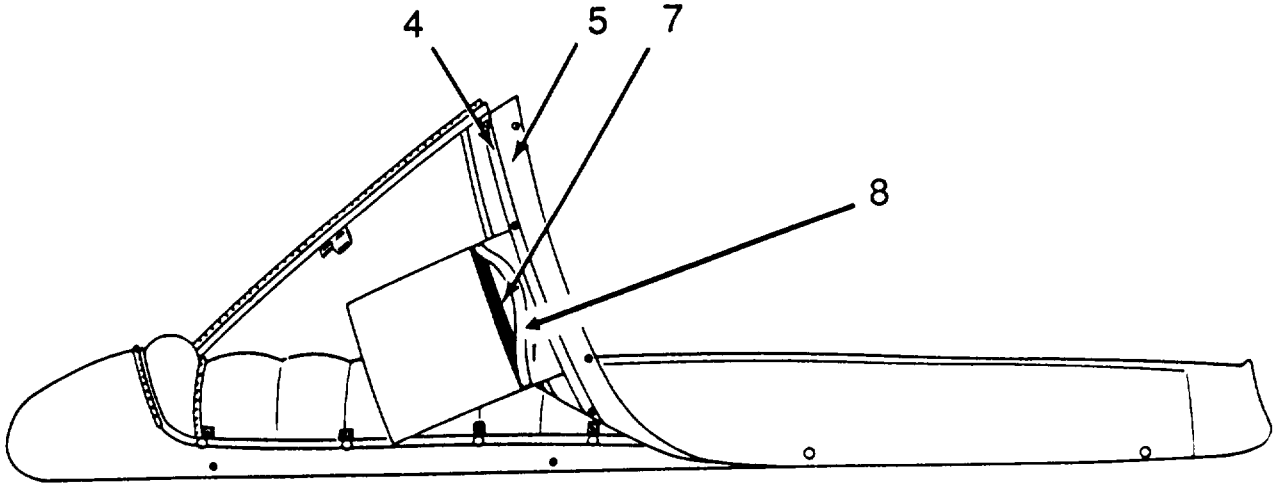
Cover,Bivy, Extreme Cold Weather Sleeping System and Intermediate Cold Weather Sleeping System

NSN	SIZE	SPECIFICATIONS
8465-01-305-4688	One Size	MIL-C-44307

The removable sleeping bag cover (Figure 20-3) is constructed of a moisture vapor permeable waterproof fabric. The cover is attached to either the Extreme or Intermediate Cold Weather Sleeping Bag by two rows of snaps located above and below the slide fastener. The cover is designed to be removable from the bag to allow for better air drying of the bag and to permit its use as a protective enclosure separate from the sleeping bag. In addition, the cover serves as an excellent wind breaker.

20-3. IDENTIFICATION AND DESCRIPTION OF ITEMS–Continued





LEGEND

1. Label
2. Cord Lock
3. Tape Heat Sealed
4. Binding
5. Bivy Cover Closure
6. Storage Compartment
7. Fastener Pile
8. Fastener Hook
9. Drawcord

Figure 20-3. Covet Bivy

Section II MAINTENANCE PROCEDURES

20-4. MATERIALS

Materials used in the repair of the ECWSS and ICWSS will be serviceable materials recovered from similar salvaged items, or new materials as specified in Section III. New materials must be requisitioned in accordance with normal supply procedures.

20-5. CLASSIFICATION

Serviceability classification for the Extreme Cold Weather Sleeping System and Intermediate Cold Weather Sleeping System shall be determined in accordance with Chapter 1.

20-6. CLEANING AND LAUNDERING

a. Field Laundry. The Sleeping Bags (ECWSS and ICWSS), Hood and Socks will be laundered using formula II of FM 10-280. Bivy Cover will be laundered using formula VIII of FM 10-280.

CAUTION

Do not starch, bleach, or dry clean. Discoloration and degradation of infrared protection capacity of the material will result.

b. Machine/Hand Laundering. Sleeping Bags, Hood and Socks may be machine laundered using the delicate/gentle fabric cycle or by hand, using cold water (Up to 85° F/30°C) and cold water laundry detergent. Rinse in clean cold water. The Bivy Cover may be washed using the wash & wear/permanent press fabric cycle or by hand, using warm water (Up to 90°F/32°C) and formula VIII of FM 10-280. Rinse thoroughly in clean warm water.

CAUTION

Do not use starch or bleach. Discoloration and degradation of infrared protection capacity of the material will result.

20-6. CLEANING AND LAUNDERING - Continued

c. Drying.

CAUTION

Drying temperature for sleeping bag must not exceed 130°F (54°C). Degradation of the component materials will result.

Tumble dry the Hood and Socks at lowest fabric cycle delicate/gentle. Do not exceed 90°F (32°C) at not more than 2/3 capacity. Remove immediately at end of drying. Avoid overdrying. To drip dry, remove from water and place on rustproof hanger. Tumble dry the Bivy Cover at low temperature(100° F/38°C) and remove immediately from dryer. Avoid overdrying. To drip dry, remove from water and place on rustproof hanger.

CAUTION

Do not press. Degradation of the component materials will result.

20-7. REPAIR OF THE EXTREME COLD WEATHER SLEEPING SYSTEM AND INTERMEDIATE COLD WEATHER SLEEPING SYSTEM

a. Inspection. Inspect the sleeping bags to determine the extent of damage, normal wear, and the need for repair. The materials of which the hood and socks are constructed may begin to pill after some use (loose fibers may form on the surface of the material). This condition is normal and does not degrade the items serviceability. These pills may be removed by hand.

b. Cleaning. Clean off mud or other foreign matter with brush, damp or dry cloth, or scrub exceedingly dirty areas with water; then rinse off and dry.

c. Repair.

(1) The filling material (batting) of the ECWSS and ICWSS sleeping bag is so constructed that it will not separate or fall out unless tears or holes are large. If the bag lining cannot be patched as described below, the item should be classified code H.

(a) Cut patches to the desired size and shape so that the patch, when applied, will extend approximately 3/4 inch (1.9 cm) in all directions from the tear or damaged area. Patches will have rounded corners.

(b) With the sleeping bag unzipped, place the area to be patched on a wooden or other nonmetallic surface not affected by heating or ironing. Smooth out by hand. Pre-warm the area to be patched by pressing with a household electric dry or steam iron. Use a dry iron set at “cotton” or as high as possible without scorching the fabric for about five seconds.

(c) Immediately cover the damaged area with the patching material previously cut in the desired size and shape. Hold the iron on the patch for about eight seconds. Use a slight rotating or reciprocal motion with the iron. Allow to cool for about five seconds or long enough so that the patch will not drift off when the patched bag is removed from the table. Adjust the heating, pressing, and cooling times as required for the specific iron being used. Check the quantity of the adhesive bond periodically as follows and adjust heating times and temperatures of the iron accordingly.

(d) Test a patch that has cooled for about five minutes by picking with fingers at an edge of the patch until a tab 1/4 to 1/2 inch (0.63 to 1.27 cm) long is formed. Pull hard on the tab with fingers. A well bonded tab will be difficult to pull off. This will indicate that iron adjustment and patch heating time is adequate. Replace the test patch with a new patch or re-iron the old patch.

(e) Patches larger than the iron may be applied in sections, starting at the center and completing each section, before proceeding to the next section. Overlapping of the iron over a bonded section is permissible.

NOTE

A small amount of patch adhesive strikethrough is not objectionable for sleeping bag repair, provided the patch meets the check test.

(f) A bonded patch that has a lifted edge or that is suspected or found by the check test to be weakly bonded may be re-ironed. Replacement is not required.

(2) Repair of rips, tears, and open seams not exceeding 15 inches (38 cm) on the Bivy Cover.

CAUTION

Any stitching/restitching/patching required to repair the ECWSS and ICWSS bivy cover must be heat sealed before it may be placed back into service. This will prevent water from penetrating through the holes created during the stitching operation.

(a) Heat sealing tape is used to repair rips up to 15 inches (38 cm) missing the inner tricot knit of the Bivy Cover and to seal restitched seams. Sealing is necessary to maintain the waterproof characteristics of the Bivy Cover. The entire width of the sealing tape shall be hot adhesive sealed over the seam or stitching on the inside. The Sealer, Heat Seam, Coverall, NSN 3540-01-186-7869 (Part no, 1525AS102-1, FSCM 81337) is used to apply heat and pressure to the adhesive coated seam tape and patches in order to affaix them permanently to the outer shell cloth. All seam tapes shall overlap a minimum of 3/4 inch (1.9 cm) at joining points. Up to three repairs totaling 15 inches (38 cm) may thus be applied to any one cover. Seam tape may also be used to repair areas where the original tape does not overlap sewn seams by the minimum 1/8 inch (0.32 cm) on both sides.

20-7. REPAIR OF THE EXTREME COLD WEATHER SLEEPING SYSTEM AND INTERMEDIATE COLD WEATHER SLEEPING SYSTEM - Continued

(b) If the Heat Seam Sealer is not available, a commercial iron on a high steam setting, or a tailoring iron on a medium steam setting may be used.

CAUTION

Temperature of iron shall not exceed 350° F (176°C) with the addition of steam to prevent melting of the nylon tricot layer of the fabric.

The following steps are to be followed:

1. Test temperature of iron to ensure proper setting. Apply heat to sample piece of heat sealing tape to ensure nylon tricot layer does not melt. Adjust setting if necessary.

2. To apply heat sealing tape, place appropriate length of tape to inside of garment on area to be repaired. With adhesive side of the tape against repair, apply iron in one location at a time. Do not slide the iron back and forth. Apply pressure for 15 seconds. Turn garment to right side and apply iron to same area again for 15 seconds to allow heat sealing tape to set.

3. Stitching and restitching. Repair all stitching and seams on the ECWSS and ICWSS components. The type of stitching for various applications with the ECWSS and ICWSS are listed in Table 20-1. Seam allowances shall be maintained with seams sewn so that no raw edges, runoffs, twists, pleats, puckers, or open seams occur. Overedge stitching shall be 3/16 to 1/4 inch gauge.

(a) Type 301 stitching. Ends of all stitching shall be backstitched or overstitched not less than 1/2 inch (1.27 cm) except where ends are turned under or caught in other seams or stitching. Ends of continuous line of stitching shall be overlapped not less than 1/2 inch (1.27 cm). Thread tensions shall be maintained so that there will be no loose stitching resulting in loose bobbin or cut thread or excessively tight stitching resulting in puckering of the material sewn. The lock shall be imbedded in the material sewn.

(b) Repairs of type 301 stitching. When thread breaks, skipped stitches, runoffs, or bobbin runouts occur during sewing, the stitching shall be repaired by restarting the stitching a minimum of 1/2 inch (1.27 cm) back of the end of the stitching. Thread breaks or two or more consecutive skipped or runoff stitches shall be repaired by overstitching. The stitching shall start a minimum of 1/2 inch (1.27 cm) beyond the defective area onto the existing stitching. Loose or excessively tight stitching shall be repaired by removing the defective stitching without damaging the materials, and restitching in the required manner. When making above repairs, the ends of the stitching are not required to be backstitched.

(c) Type 401, 503, 504, 515, and 516 stitching is repaired in the same manner as type 301, except that repairs to type 401 stitching requires both ends of all seams to have a 1/2 inch (1.27 cm) minimum chain extending beyond each end unless they are caught in a seam or other stitching.

20-7. REPAIR OF THE EXTREME COLD WEATHER SLEEPING SYSTEM AND INTERMEDIATE COLD WEATHER SLEEPING SYSTEM - Continued

(3) Snap Fasteners. Replace missing, loose, or damaged snap fasteners. Repair damaged area surrounding snap fastener sockets and studs prior to attaching new fasteners. A hole shall be prepunched through the materials before inserting the sockets or studs. The prepunched hole shall be smaller than the outside diameter of the fastener barrel, so that the barrel must be forced through the hole. The fasteners shall be securely clinched without cutting the adjacent material and no more than three splits shall occur in the button or eyelet barrels.

(4) Bartacks. Unless otherwise specified, bartacks shall be one inch (2.54 cm) long, and 1/8±1/32 inch (0.32 ± 0.08 cm) wide and shall contain 40 to 44 stitches. Barracking shall be free from thread breaks and loose stitching,

(5) Slide Fasteners. Replace damaged, missing, or malfunctioning slide fastener on the sleeping bag as necessary. Remove a damaged 71 inch (180.34 cm) slide fastener by carefully cutting off the slide fastener tape lengthwise as close as possible to the outer row of stitching holding the slide fastener. Trim any raveled yarns off the remaining fastener tape. Attach the new slide fastener by sewing it onto the bag using type 301 stitching, 10 to 14 stitches per inch with size B, subclass B polyester yarn. Position the new fastener 1/8 inch (0.32 cm) from the snap fasteners of the sleeping bag.

(6) Drawcords and Cord Locks. Replace missing or defective drawcords in lengths matching the original construction. Drawcord ends shall be heat seared and knotted. Replace missing or damaged cord locks. Refer to Table 20-2 for proper drawcord lengths.

(7) Thread ends. All thread ends shall be trimmed to a length of not more than 1/4 inch (0.63 cm) unless otherwise specified.

Table 20-1. Stitching

ITEM	OPERATION	STITCH TYPE	STITCHES PER INCH
Sleeping Bag (ECWSS)	General	301	7-11
Sleeping Bag (ECWSS)	Safety Stitch	515, 516 or 519	10-14
Sleeping Bag (ICWSS)	General	301	7-11
Sleeping Bag (ICWSS)	Safety Stitch	515,516 or 519	10-14
Hood and Socks	General	301	8-12
Hood and Socks	Overedge	503 or 504	10-14
Cover, Bivy	General	301	8-12
Bag, Stuff	General	301	8-12
Bag, Stuff	Bartack	301	40-44

20-7. REPAIR OF THE EXTREME COLD WEATHER SLEEPING SYSTEM AND INTERMEDIATE COLD WEATHER SLEEPING SYSTEM-Continued

Table 20-2. Drawcord Lengths

ITEM	FUNCTION	LENGTH
Sleeping Bag	Neck Band Adjustment	78 inches (196.12 cm)
Hood	Facial Opening Adjustment	30 inches (76.20 cm)
Cover, Bivy	Neck Band Adjustment	78 inches (196.12 cm)
Bag, Stuff	Bag Closure	38 inches (96.52 cm)

20-8 WORKMANSHIP

The finished items of equipment shall be complete, clean, and free from defects affecting their serviceability. Sealed seams and stitchings shall show no leakage. Threads shall be neatly trimmed. Drawcords shall not be missing or caught in hem, tunnel, or waist band stitching. Drawcords shall be of sufficient lengths with ends heat seared and knotted. Slide fasteners shall close properly, be of specified length and color, and contain thongs as specified Seams shall not be twisted, pleated or puckered. Stitch tension shall be adequate, not loose or tight, with specified number of stitches per inch on major portions of seam. The material shall not be defective or damaged in any manner.

20-9. INSPECTION

The inspection or quality control unit is responsible for determining compliance with repair instructions and requirements for classification. In-process inspections shall be performed for quality of workmanship and correct application of repair procedures. The completed item will be inspected for serviceable condition and appearance to ensure against return of substandard products to supply channels.

Section III. MATERIALS

FIG. NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				SLEEPING BAG, EXTREME COLD WEATHER	
20-1	1	PAFZZ		Fastener, Slide, Type III, Style 1, Size MHS Black or OD, 1 ± 1/16 703/4 inches long. Conforming to V-F-106. Source: YKK (USA) Inc, National Manufacturing Corp., 4234 Ocumulgee East Blvd., Macon,GA31297 or Talon, P.O. Box 518, Stanley, NC 28164.	EA
20-1	2	PAFZZ	5325-00-985-6718	Fastener, Snap, Button, Style 2, (Regular Wire Spring Clamp Type). Conforming to MIL-F-10884.	EA
20-1	3	PAFZZ	8305-00-262-1643	Webbing, Snap Reinforcement. Cut to 1 1/4 inches, Type II, Class-2, 1 inch wide, OD-7. Conforming to MIL-W-4088. Source: Elizabeth Webbing Malls Co., Inc., P.O. Box 1168, Pawtucket, RI 02662.	YD
20-1	4	PAFZZ	8305-00-881-0604	Webbing, Textile, Woven Nylon, Cut to 70 3/4 inches, 1 inch wide, Class 2, OD-7. Conforming to MIL-W-17337.	YD
20-1	5	PAFZZ	8310-00-988-1298	Thread, Polyester, Size B, Type 1, Class 1, Subclass B, Color S-1, CA 66022. Conforming to V-T-285.	TU
20-1	6	PAFZZ		Pull Tab, Cut 3 x 6 inches, Type III, Class 2, Color CG 483. Conforming to MIL-C-21852.	EA
20-1	7	XBFZZ		Label: For Clothing Equipage and Tentage (General Use), Type VI, Class 15. Conforming to DDD-L-20. Source: E. 1 DuPont de Nemours and Co., Inc., Textile Fiber Dept, Wilmington, DE 19898.	
20-1	8	PAFZZ		Drawcord, Tunnel, Type III, Class 2, Color CG 483. Cut to 3x39 1/2 inches. Conforming to MIL-C-21852.	YD

Section III. MATERIALS - Continued

FIG. NO.	ITEM No.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
20-1	9	PAFZZ		Drawcord, Tunnel, Type Ill, Class 2, Color CG 483. Cut to 3 x 34 inches. conforming to MIL-C-21852.	YD
20-1	10	PAOZZ		Cord, Elastic, Nylon, 3/8 inch diameter, Type II, Black. Cut to 78 inches. Conforming to MIL-C-43701. Source: Thomas Taylor & Sons, 50 Houghton St., Hudson, MA 01749.	EA
20-1	11	PAOZZ		Cord Lock US Army Natick Drawing 2-6-104, Black. ITW Nexus Barreloc or equivalent. FSCM 02768. Source: ITW, 230 Gerry Dr., Wood Dale, IL 60191	EA
				SLEEPING BAG, INTERMEDIATE COLD WEATHER SLEEPING SYSTEM	
20-1.1	1	PAFZZ		Fastener, Slide, Type Ill, Style 1, Size MHS Black or OD, 1 ± 1/16 inch x 70 3/4 inches long. Conforming to V-F-106. Source: YKK (USA) Inc., National Manufacturing Corp., 4234 Ocumulgee East Blvd., Macon, GA 31297 or Talon, P.O. Box 518, Stanley, NC 28164	EA
20-1.1	2	PAFZZ	**5325-00-985-6718**	Fastener, Snap, Button, Style 2, (Regular Wire Spring Clamp Type). Conforming to MIL-F-10884	EA
20-1.1	3	PAFZZ	**8305-00-262-1643**	Webbing, Snap Reinforcement. Cut to 1 1/4 inches, Type II, Class 2, 1 inch wide, OD-7. Conforming to MIL-W-4088. Source: Elizabeth Webbing Mills Co., Inc., P.O. Box 1168, Pawtucket, RI 02862.	YD
20-1.1	4	PAFZZ	**8305-00-881-0604**	Webbing, Textile, Woven Nylon, Cut to 70 3/4 inches, 1 inch wide, Class 2, OD-7. Conforming to MIL-W-17337.	YD
20-1.1	5	PAFZZ	**8310-00-988-1298**	Thread, Polyester, Size B, Type 1, Class 1, Subclass B, Color S-1, CA 66022. Confroming to V-T-285.	TU
20-1.1	6	PAFZZ		Pull Tab, Cut 3 x 6 inches, Type Ill, Class 2, Color CG 483. conforming to MIL-C-21852.	EA

Section III. MATERIALS - Continued

FIG. NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
20-1.1	7	XBFZZ		Label: For Clothing Equipage and Tentage (General Use), Type VI, Class 15. Conforming to DDD-L-20. Source: El. DuPont de Nemours and Co., Inc., Textile Fiber Dept., Wilmington, DE 19888.	
20-1.1	8	PAFZZ		Drawcord, Tunnel, Type Ill, Class 2, Color CG 483. Cut to 3 x 39 1/2 inches. Conforming to MIL-C-21852.	YD
20-1.1	9	PAFZZ		Drawcord, Tunnel, Type III, Class 2, Color CG 483. Cut to 3 x 34 inches. Conforming to MIL-C-21852.	YD
20-1.1	10	PAOZZ		Cord, Elastic, Nylon, 3/16 inch diameter, Type II, Black. Cut to 78 inches. Conforming to MIL-C-43701. Source: Thomas Taylor& Sons, 50 Houghton St., Hudson,MA 01748.	EA
20-1.1	11	PAOZZ		Cord Lock US Army Natick Drawing 2-6-104, Black ITW Nexus Barreloc or equivalent. FSCM 02768. Source: ITW, 230 Gerry Dr., Wood Dale, IL 60191.	EA
				HOOD, SOCKS, AND BAG, STUFF	
20-2	1	PAOZZ		Cord Lock US Amy Natick Drawing 2-6-104, Black. ITW Nexus Barrleoc or equivalent. FSCM 02768. Source: ITW, 230 Gerry Dr., Wood Dale, IL 60191.	EA
20-2	2	PAFZZ		Cloth, Plain Weave, Nylon (Binding), Water Repellent, Type Ill, Class 2, Camouflage Green 483. Conforming to MIL-C-43128.	YD
20-2	3	PAFZZ		Cord, Elastic, Nylon 3116 inch diameter, Type II, Black. Cut to 30 inches. Conforming to MIL-C-43701. Source: Thomas Taylor & Sons, 50 Houghton St., Hudson, MA 01749.	YD

Section III. MATERIALS - Continued

FIG. NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
20-2	4	PAFZZ		Buckle, Double Bar, 1 inch, US Army Natick Drawing 2-6-101. ITW Nexus, Ladderlock 1 inch, Black Acetal, or equivalent, FSCM 02768. Source: ITW, 230 Gerry Dr., Wood Dale, IL 60191.	EA
20-2	5	PAFZZ	8305-00-881-0604	Webbing, Textile, Woven Nylon, Class 2, OD 7, 1 inch wide. Cut to 30 inches long. Conforming to MIL-W-17337.	YD
20-2	6	PAFZZ	4020-00-262-2019	Cord, Elastic, Nylon, 1/8 inch diameter, Type II, Black. Cut to 38 inches. Conforming to MIL-C-43701 .	SP
				BIVY COVER	
20-3	1	XBFZZ		Label: For Clothing Equipage and Tentage (General Use), Type VI, Class 15. Conforming to DDD-L-20. Source: El. DuPont de Nemours & Co., Inc., Textile Fiber Dept., Wilmington, DE 19898.	
20-3	2	PAOZZ		Cord Lock, US Army Natick Drawing 2-6-104, Black. ITW Nexus Barreloc or equivalent. FSCM 02768. Source: ITW, 230 Gerry Dr., Wood Dale, IL 60191.	EA
20-3	3	XBFZZ		Tape, Seam Sealing, 1 ± 1/16 inch wide strip. Olive Green 106, laminated cloth, fabricated in layers as follows: Nylon 6.6 tricot weighing 1.5 ± 0.3 oz/yd^2. The middle layer of microporous expanded polytetraflouroethelene film weighing 0.6 ± 0.2 or -0.1 oz/yd^2. Adhesive thermoplastic not less than 5.4 roils thick. Source: W.L. Gore Associates, 3 Blue Ball Rd., Elkton, MD 21921. Part No: HIKO16GT	
20-3	4	PAFZZ		Binding Cloth, Nylon, Polyurethane coated, Type II, Color OD-7. Conforming to MIL-C-43473.	YD

Section III. MATERIALS - Continued

FIG. NO	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
20-3	5	XBFZZ	8305-01-243-3193	Cloth, Laminated, Waterproof and Moisture Vapor Permeable. Cut to 11 x 74 1/4 inches. Woodland Camouflage. Conforming to MIL-C-44187.Source: W.L. Gore Associates, 3 Blue Ball Rd., Elkton, MD 21921.	YD
20-3	6	PAFZZ	8305-01-269-9746	Cloth, Plain Weave, Nylon Water Repellent, Type III. Cut to 14 x 24 inches, Class 2, Camouflage Green 483.Conforming to MIL-C-43128.	YD
20-3	7	PAFZZ	8315-00-168-3161	Fastener Tapes, Pile, Synthetic, Type 1, Class 1.Cut to 5/8 x 7 1/2 inches. Conforming to MIL-F-21840.	YD
20-3	8	PAFZZ	8315-00-926-1612	Fastener Tapes, Hook, Synthetic, Type 1, Class 1.Cut to 5/8 x 7 1/2 inches. Conforming to MIL-F-21840.	YD
20-3	9	PAFZZ	8305-01-068-0348	Cord, Elastic, Nylon 3/18 inch diameter, Type II, Black Cut to 78 inches. Conforming to MIL-C-43701. Source: Thomas Taylor & Sons, 50 Houghton St., Hudson, MA 01749.	YD
20-3	10	PAOZZ	8305-00-460-4200	Cloth, Coated, Balloon, Cotton, for Heat Seal Patching. Conforming to MIL-C-43677, Type 1	YD

CHAPTER 21

MAINTENANCE OF THE INDIVIDUAL TACTICAL LOAD BEARING VEST (ITLBV); THE FIELD PACK, LARGE, WITH INTERNAL FRAME; PACK, PATROL, COMBAT; AND VEST, 40MM GRENADE.

Section I. INTRODUCTION

21-1. SCOPE

This chapter prescribes the procedures and instructions for the repair of the Individual Tactical Load Bearing Vest (ITLBV); the Field Pack, Large, with Internal Frame; the Pack, Patrol, Combat; and Vest, 40MM Grenade.

21-2. SPECIFICATIONS AND PUBLICATIONS

a. Items.

ITEM	SPECIFICATION
Vest, Tactical Load Bearing	MIL-V-44323
Field Pack, Large, with Internal Frame	MIL-F-44324
Pack Patrol, Combat	MIL-F-44324
Vest, Grenade, Carrier (for 40MM Grenade)	MIL-V-44362

b. Components.

ITEM	SPECIFICATION
Cord Lock, Double Cord	2-6-103 US Army Natick
Cord, Nylon	MIL-C-5040
Thread, Polyester	V-T-285
Ink, Marking, Black	MIL-6903
Webbing, Textile, Bulked Nylon	MIL-W-43668
Webbing, Textile, Woven, Nylon	MIL-W-4088
Eyelets, Metallic, Rolled Flange Type	MIl-E20652/1
Tape, Nylon	MIL-T-5038
Fasteners, Snap	MIL-F-10884
Buckle, Tongueless and Webstrap	MIL-B-543
Fastener Tapes, Hook and Pile Synthetic	MIL-F-21840
D-Ring, 11/2 inch, Acetal, Black	2-1-2156 US Army Natick
Cloth, Duck, Nylon	MIL-C-43734
Slide Fastener, Water Repellent Treated	V-F-106
Foam, Pad, Vinyl Nitrylg, Textile, Closed Cell	MIL-R-6130
Grommet, Black, Chemical Finish	MIL-G-16491
Buckle, Double Bar, 2 inch	2-6-101 US Army Natick
Cord Lock, Single Cord	2-6-104 US Army Natick
Webbing, Textile, Polypropylene	MIL-W-44049

21-2. SPECIFICATIONS AND PUBLICATIONS–Continued

ITEM	SPECIFICATION
Screw, Truss Head	2-6-27 US Army Natick
Webbing, Textile, Elastic, Nylon	MIL-W-5664
Thread, Nylon	V-T-295
Quick Release Buckle	5-10-47 US Army Natick
Non-Slip Quick Release Buckle	MIL-H-9890
Fastener, Snap	MS-27980
Cloth, Nylon, Plain Weave	MIL-C-43128
Grommet	MIL-G-16491
Webbing, Nylon	MIL-W-1733

a. Drawings. US Army Natick Research and Development Center

NUMBER	TITLE
2-1-1981	Vest, Tactical Load Bearing, Assembly
2-1-1982	Vest, Assembly, Right Panel
2-1-1983	Vest, Assembly, Left Panel
2-1-1984	Shoulder Strap Assembly
2-1-1985	Vest, Back Assembly
2-1-1986	Pouch, Double Magazine, Assembly
2-1-1987	Pouch, Single Magazine, Assembly
2-1-1988	Pouch, Vest, Grenade Assembly
2-1-1989	Buckle Assembly, Male End
2-1-1990	Buckle Assembly, Female End
2-1-1991	Loop, Equipment Belt Attachment Assembly
2-1-1992	D-Ring Assembly
2-1-1993	Vest, Pattern, Right Pane
2-1-1994	Vest, Pattern, Left Panel
2-1-1995	Pad, Cover, Outside
2-1-1996	Pad, Cover, Inside
2-1-1997	Vest, Back Pattern
2-1-1998	Pouch, Pattern, Double
2-1-1999	Reinforcement Double Magazine Pouch, Pattern
2-1-2000	Pouch, Pattern, Single Magazine, 30 Rounds
2-1-2001	Reinforcement, Single Magazine, Pouch, Pattern
2-1-2002	Pouch, Pattern, Grenade
2-1-2003	Reinforcement, Grenade Pouch, Pattern
2-1-2004	Backhanger, 3 inch
2-1-2005	Pad, Shoulder Strap
2-1-2006	Backhanger 2 1/4 inch
2-1-2007	Upper Hanger

21-2. SPECIFICATIONS AND PUBLICATIONS–Continued

c. Drawings. US Army Natick Research and Development Center–Continued.

NUMBER	TITLE
2-1-2008	Hanger, Lower Back
2-1-2143	Vest, Grenade, 40 MM, Assembly
2-1-2144	Vest, Assembly, Left Panel
2-1-2145	Vest, Assembly, Right Panel
2-1-2146	Shoulder Strap Assembly
2-1-2147	Vest, Back Assembly
2-1-2148	Pouch, Multiple, Assembly, 4 1/2" Shell
2-1-2149	Pouch, Double, Assembly, 5 1/4" Shell
2-1-2150	Pouch, Single, Assembly, 4 1/2" Shell
2-1-2151	Tab, Pull, Assembly, 4 1/2" Shell
2-1-2152	Tab, Pull, Assembly, 5 1/4" Shell
2-1-2153	Buckle, Assembly, Female End
2-1-2154	Buckle, Assembly, Male End
2-1-2155	Loop, Equipment Belt, Attachment
2-1-2156	D-Ring Assembly
2-1-2157	Vest, Pattern, Left Panel
2-1-2158	Vest, Pattern, Right Panel
2-1-2159	Pouch, Multiple, Pattern, 4 1/2" Shell
2-1-2160	Pouch, Double Pattern, 5 1/4" Shell
2-1-2161	Pouch, Single, pattern, 4 1/2" Shell
2-1-2162	Tab, Pull, Pattern, 4 1/2" Shell
2-1-2163	Tab, Pull, Pattern, 5 1/4" Shell
2-1-2164	Pad, Cover, Outside
2-1-2165	Pad, Cover, Inside
2-1-2166	Pad, Shoulder, Strap
2-1-2167	Back, Hanger, 3
2-1-2168	Back, Hanger, 2 1/4
2-1-2169	Upper Hanger
2-1-2170	Vest, Back, Pattern
2-1-2171	Hanger, Lower Back
5-10-47	Buckle, Quick Release (Male) 1" Wide
2-6-5	Pack, Patrol, Combat, Assembly
2-6-6	Front Assembly
2-6-7	Back Panel Assembly
2-6-8	Front Pocket Assembly
2-6-9	Flap, Pocket Assembly
2-6-10	Shoulder Strap Assembly
2-6-11	Cover, Pad Assembly
2-6-12	Panel, Main
2-6-13	Flap, Weather Barrier
2-6-14	Pocket, Flap
2-6-15	Shoulder Strap
2-6-16	Draw Cord Tunnel Assembly

21-2. SPECIFICATIONS AND PUBLICATIONS–Continued

c. Drawings. US Army Natick Research and Development Center–Continued.

NUMBER	TITLE
2-6-17	Buckle Assembly
2-6-18	Back Panel
2-6-19	Cover, Holdown Assembly
2-6-20	Field Pack, Large, With Internal Frame, Assembly
2-6-21	Front Assembly
2-6-22	Back Assembly
2-6-23	Side, Right Assembly
2-6-24	Side, Left Assembly
2-6-25	Bottom Assembly
2-6-26	Cover Assembly
2-6-27	Suspenders Assembly
2-6-28	Back Pad Assembly
2-6-29	Waistbelt Assembly
2-6-30	Harness Release Assembly
2-6-31	Spindrift Collar Assembly
2-6-32	Stave Assembly
2-6-33	Webbing, Upper Front Assembly
2-6-34	Strap, Upper Front Assembly
2-6-35	Horizontal Divider Assembly
2-6-36	Back Panel
2-6-37	Stave Tunnel
2-6-38	Buckle 1 inch
2-6-39	Track
2-6-40	Basket, Radio Assembly
2-6-41	Basket, Radio
2-6-42	Buckle, Snap Assembly
2-6-43	Antenna Flap
2-6-44	Antenna Reinforcement Assembly
2-6-45	Antenna Reinforcement
2-6-46	Panel, Right Side
2-6-47	Pocket, Right Side Assembly
2-6-48	Pocket, Side Right
2-6-49	Pocket Flap Assembly
2-6-50	Pocket, Side Flap
2-6-51	Panel, Left Side
2-6-52	Pocket, Left Side Assembly
2-6-53	Pocket, Left Side
2-6-54	Bottom, Front Assembly
2-6-55	Bottom, Panel
2-6-56	Bottom, Side, Outside Panel Assembly
2-6-57	Bottom, Side, Inside, Panel
2-6-58	Cover, Pouch Flaps

21-2 SPECIFICATIONS AND PUBUCATIONS. - Continued

c. Drawings. US Army Natick Research and Development Center - Continued.

NUMBER	TITLE
2-6-59	Shoulder Strap Assembly
2-6-60	Shoulder Strap Panel
2-6-61	Torso Track
2-6-62	Plate
2-6-63	Back Pad Panel
2-6-64	Pad Posture
2-6-65	Waistbelt, Inner Casing
2-6-66	Waistbelt Outer Casing
2-6-67	Waistbelt Pad
2-6-68	Harness Wing
2-6-69	Stave
2-6-103	Cord Lock, Double Cord

d. Publications.

NUMBER	TITLE
FED-STD-751	Stitches, Seams, Stitchings
FM 10-16	General Fabric Repair

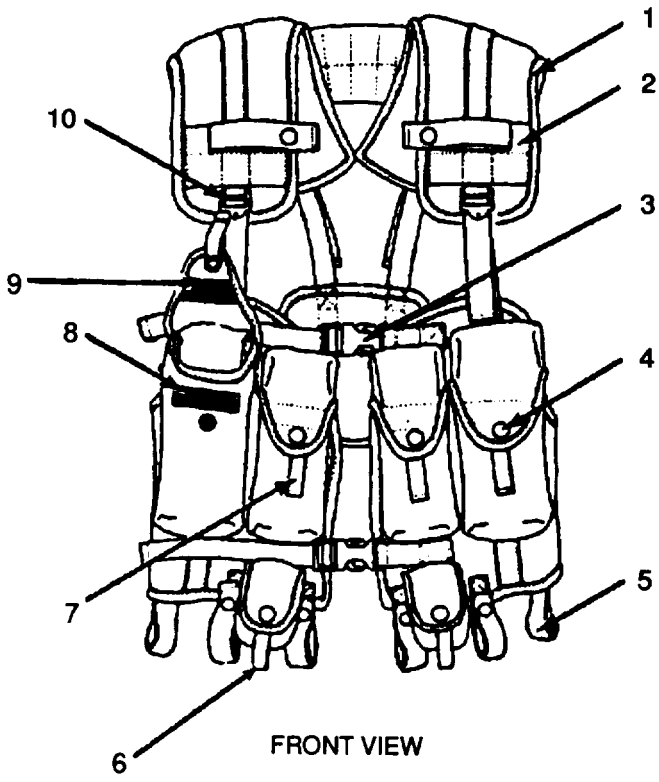
21-3. IDENTIFICATION AND DESCRIPTION

a. Vest, Tactical, Load Bearing.

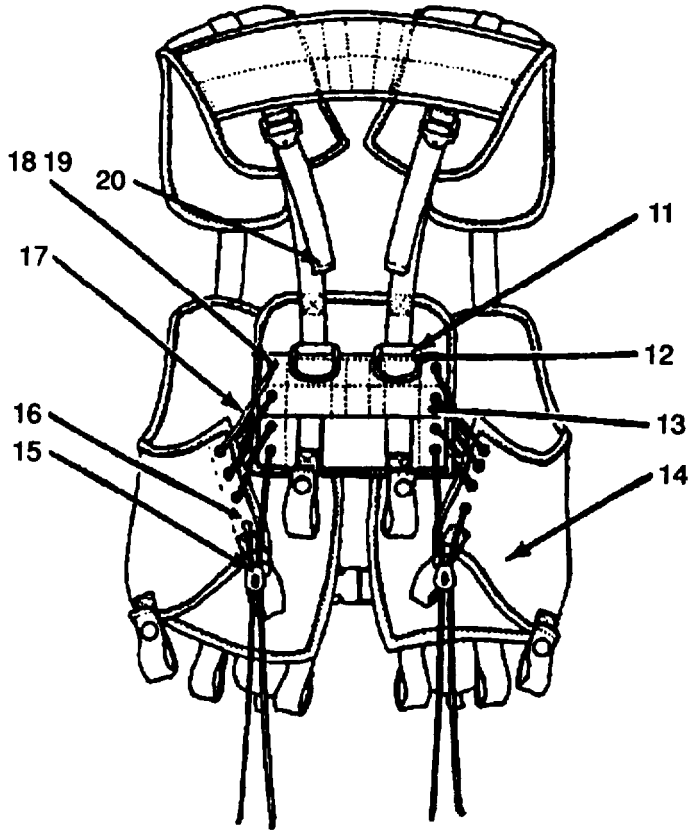
NSN	SIZE	SPECIFICATION
8415-01-296-8878	One Size	MIL-V-44323

The Tactical Load Bearing Vest (Figure 21-1) is constructed of a seven ounce nylon fabric and weighs 1.8 Ibs empty. The vest is compatible with the standard equipment belt. The equipment belt is secured to the vest with 10 belt loops that use both hook and pile fasteners and snaps. The vest has four permanently attached ammunition pockets that can carry six thirty round magazines. The pocket covers are secured by one snap and a strip of hook and pile. A pull tab is used to open the pocket. Located directly below the ammunition pockets are two fragmentation grenade pockets. The shoulders are protected by 1/2 inch (1.27 cm) foam padding. The vest closes in front with two chest straps using plastic quick release buckles. Two 2 1/4 inch (5.71 cm) webbing and two D-Rings sewn to the back of the vest can be used as equipment attachment points.

21-3. identification AND DESCRIPTION - Continusd



FRONT VIEW



REAR VIEW

LEGEND

1. Binding (Nylon Tape)
2. Seam (Thread)
3. Quick Release Fastener
4. Snap Fastener
5. Belt Loop (Textile Webbing)
6. Grenade Pouch Pull Tab
7. Ammunition Pouch Pull Tab
8. Pile Fastener Tape
9. Hook Fastener Tape
10. Buckle
11. Holder (Nylon Tape)
12. D-Ring
13. Reinforcement (Textile Webbing)
14. Nylon Duck Cloth
15. Cord Lock, Double Cord (Two Locations)
16. Reinforcement (Textile Webbing)
17. Nylon Cord
18. Eyelet
19. Washer
20. Bartack (Thread)

Figure 21-1. Individual Tactical Load Bearing Vest

21-3. IDENTIFICATION AND DESCRIPTION–Continued

a. Field Pack, Large with Internal Frame.

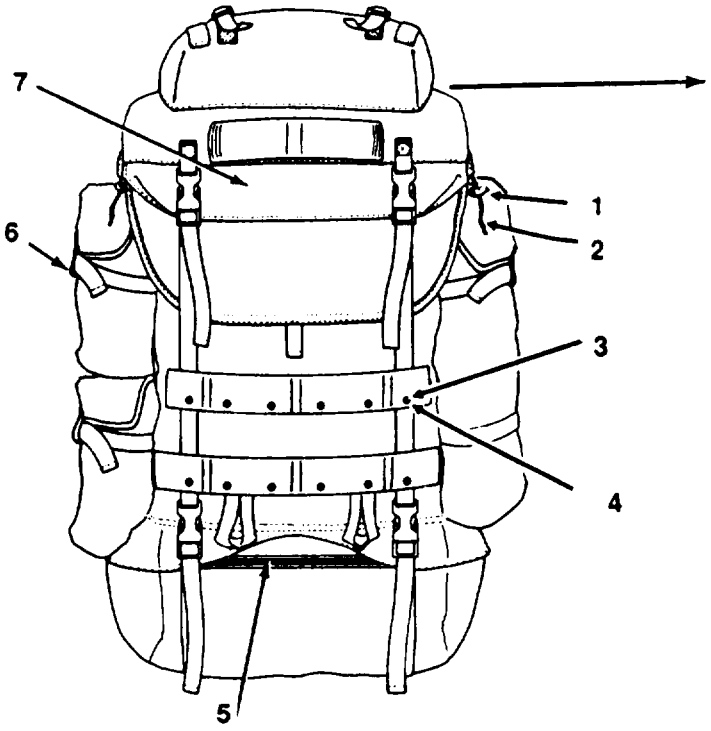
NSN	SIZE	SPECIFICATION
8465-01-286-5356	One Size	MIL-F-44324

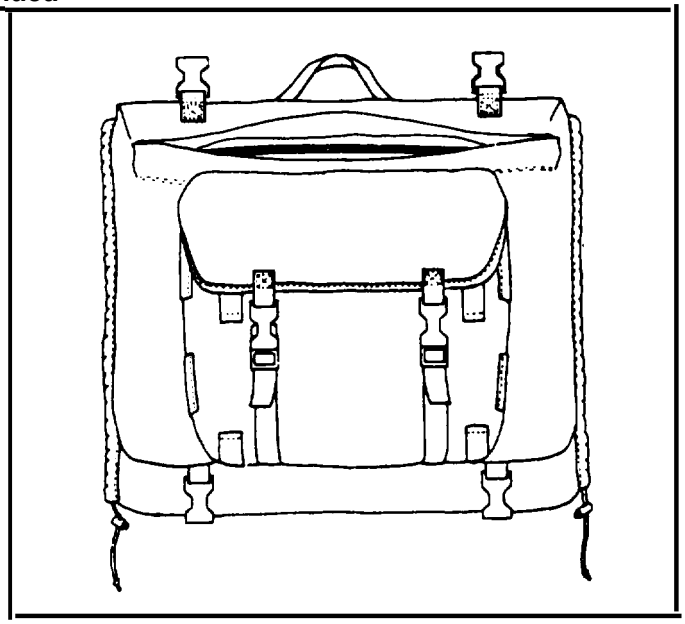
The Field Pack, Large With Internal Frame (Figure 21-2) is constructed of an 8.0 ounce backcoated nylon fabric which has excellent abrasion resistance and water repellency. The weight of the empty pack is 8 Ibs, The pack has two major sections; the sleeping bag compartment, and the main compartment, The main compartment has a false bottom that may be opened for full use of the pack when a sleeping bag is not carried. The outside of the pack has one long tunneled pocket and two smaller cargo pockets, all using compression straps for securing contents, Equipment attachment points in the form of 2 1/4 inch (5.71 cm) webbing and 1 inch (2.54 cm) webbing loops are located throughout the pack.

The internal frame is comprised of two aluminum staves running the full height of the pack. The staves are removable. The suspension system is adjustable allowing the user to position the pack where it is most comfortable. The pack has lower back padding as well as an extended lombar suppoort pad and the shoulder pads are made of bi-laminate foam. A softer, open cell foam is against the body for comfort followed by a stiffer closed cell foam for stability and good recovery after compression.

Two straps assemblies with quick release buckles allow for the attachment of the Combat Patrol Pack atop the field pack when both packs are used together. When used in combination with either the 40MM Grenade Vest or the Tactical Load Bearing Vest, the Field Pack shoulder pads are worn over those of the vest, where they are retained by two one inch (2.54 cm) of webbing.

21-3. IDENTIFICATION AND DESCRIPTION –Continued





Detachable Combat Patrol Pack

LEGEND

1. Cord Lock, Single Cord
2. Nylon Cord (Two Locations)
3. Eyelet
4. Washer
5. Sllde Fastener
6. Pull Tab (Webbing)
7. Nylon Duck Cloth
8. Truss Head Screw
9. Cross Strap (Webbing)
10. Quick Release Fastener
11. Loop and Clip
12. Non-slip Quick Release Buckle
13. Posture Pad
14. 3-Bar Adjuster Buckle
15. Quick Release Buckle 2“
16. Snap Fastener
17. Stave Tunnel (Webbing)
18. Track
19. Yoke (Torso Track)

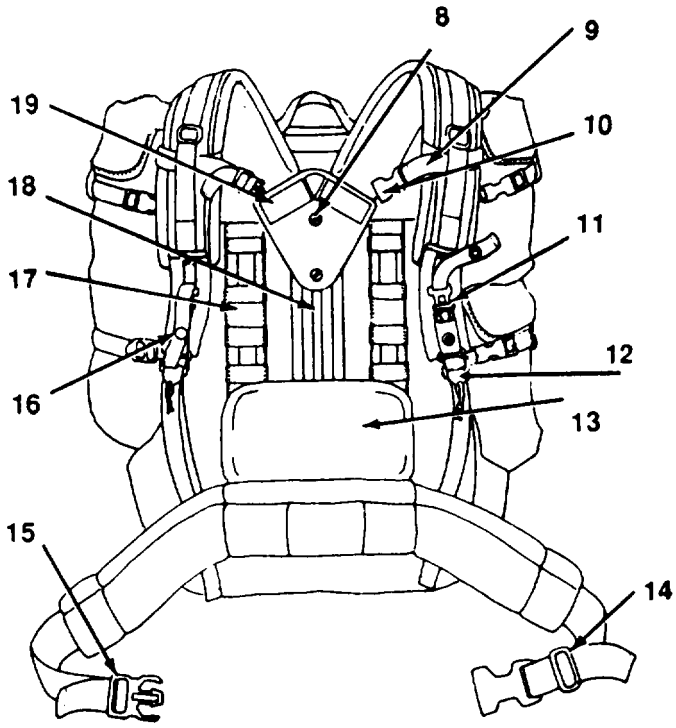
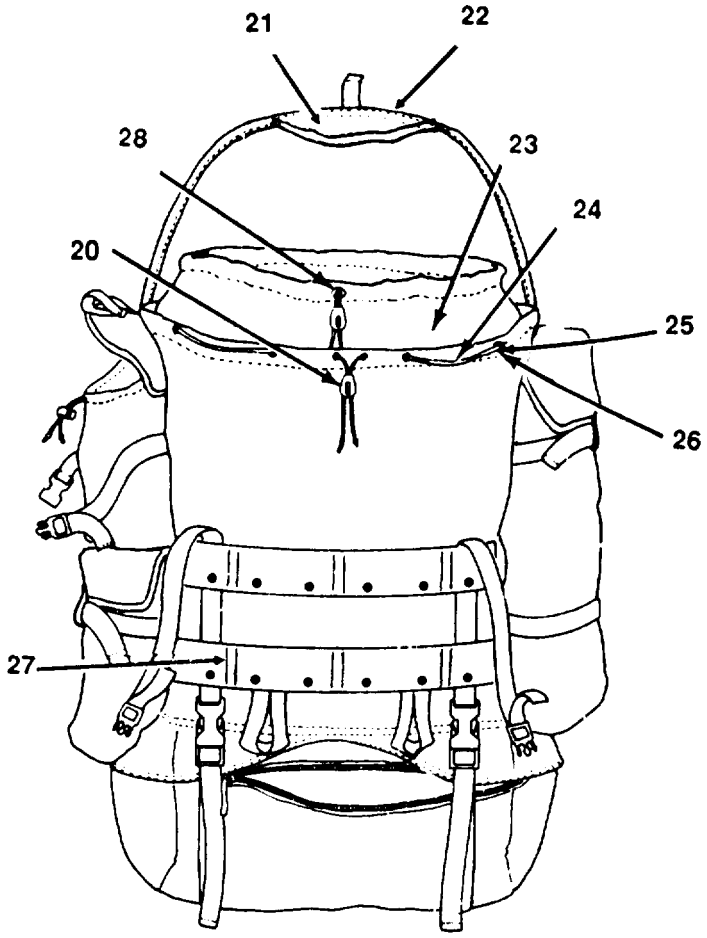


Figure 21-2. Field Pack, Large with Internal Frame. (Sheet 7 of 2)

21-3. IDENTIFICATION AND DESCRIPTION–Continued



LEGEND

20. Cord Lock, Double Cord (Two Locations)
21. Hook Fastener Tape
22. pile Fastener Tape
23. Spindrift Collar (Nylon Cloth)
24. Label (Not shown. Located on Inside seam of Field Pack)
25, Eyelet
26. Washer
27. Bartack (Thread)
28. Grommet

Figure 21-2. Field Pack, Large with Internal Frame. (Sheet 2 of 2)

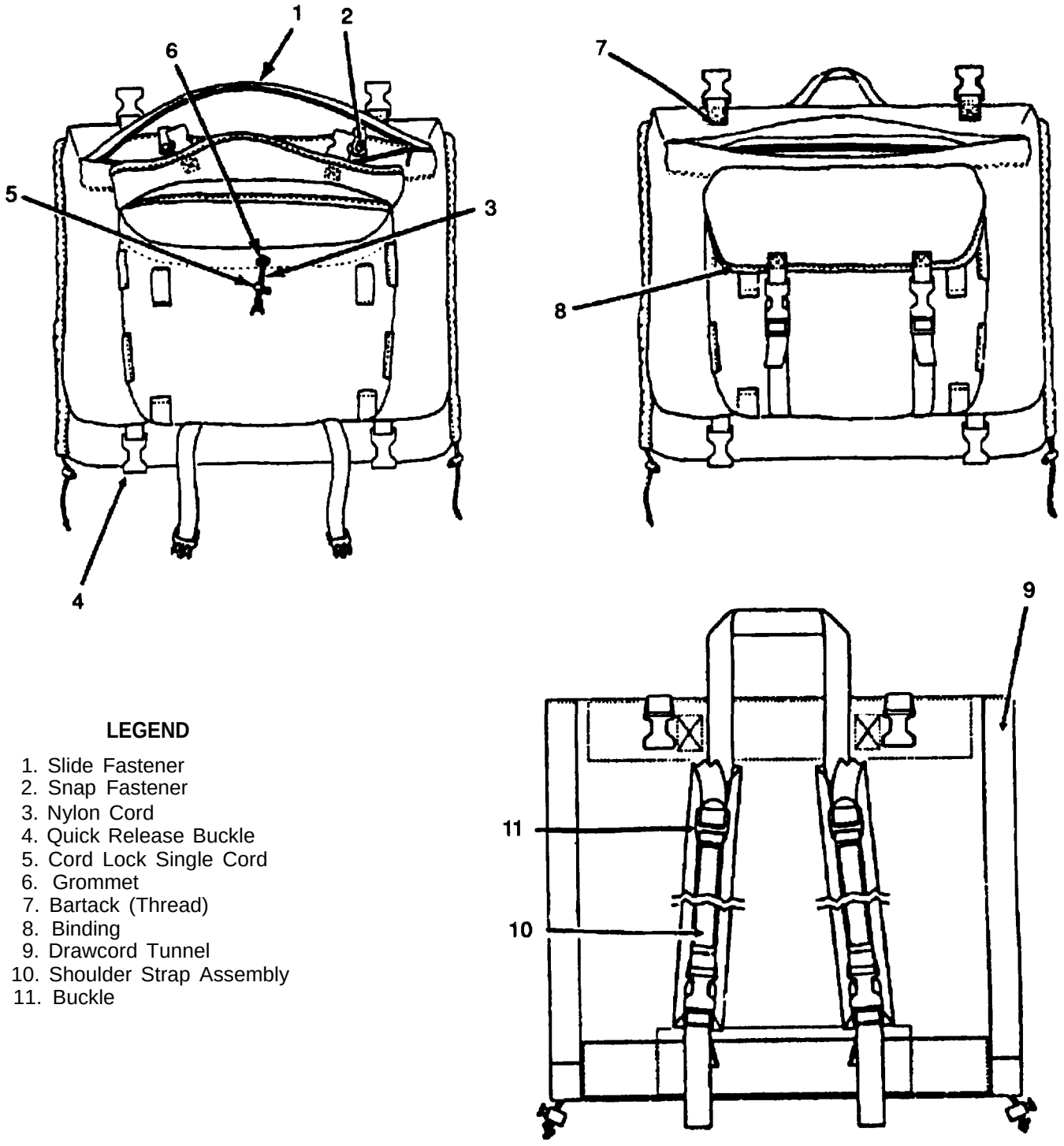
21-3. IDENTIFICATION AND DESCRIPTION-Continued

c. Pack, Patrol, Combat

NSN	SIZE	SPECIFICATION
8465-01-287-8128	One Size	MIL-F-44324

The Combat Patrol Pack (Figure 21-3) was designed for short missions and offers 1200 cubic inches of cargo space in two compartments. The main compartment is padded to protect the back from heavy, sharp items. The main compartment incorporates two tiedown straps that can be used to stabilize equipment such as a field radio. The patrol pack has a separate shoulder harness. When used in combination with either the 40MM Grenade Vest or the Tactical Load Bearing Vest, the Combat Patrol Pack shoulder pads are worn over the vest shoulder pads, and retained for stability by two one inch (2.54 cm) pieces of webbing. The pack can also be used in conjunction with the Field Pack, Large with Internal Frame.

21-3. IDENTIFICATION AND DESCRIPTION-Continued



LEGEND

1. Slide Fastener
2. Snap Fastener
3. Nylon Cord
4. Quick Release Buckle
5. Cord Lock Single Cord
6. Grommet
7. Bartack (Thread)
8. Binding
9. Drawcord Tunnel
10. Shoulder Strap Assembly
11. Buckle

Figure 21-3. Combat Patrol Pack

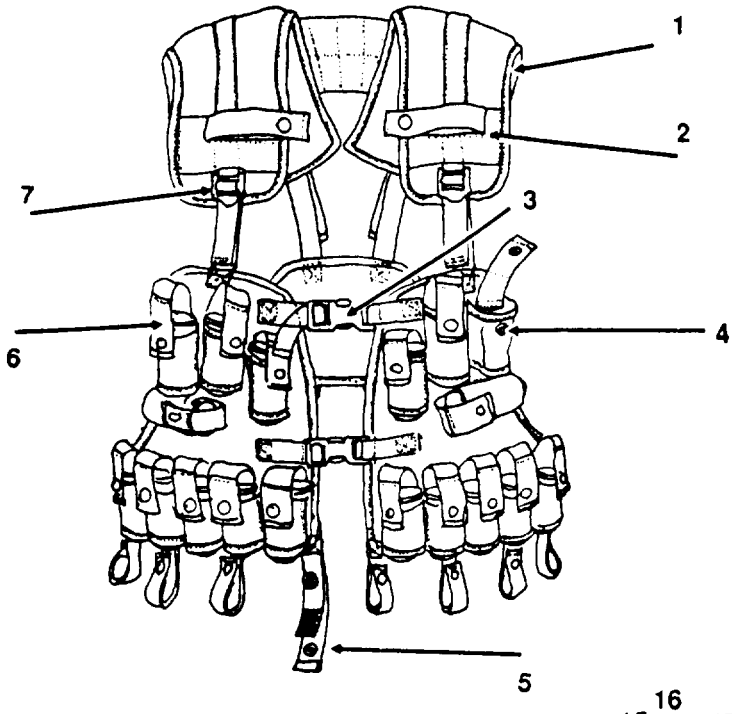
21-3. IDENTIFICATION AND DESCRIPTION- Continued

d. Vest, Grenade, Carrier (for Grenade 40MM)

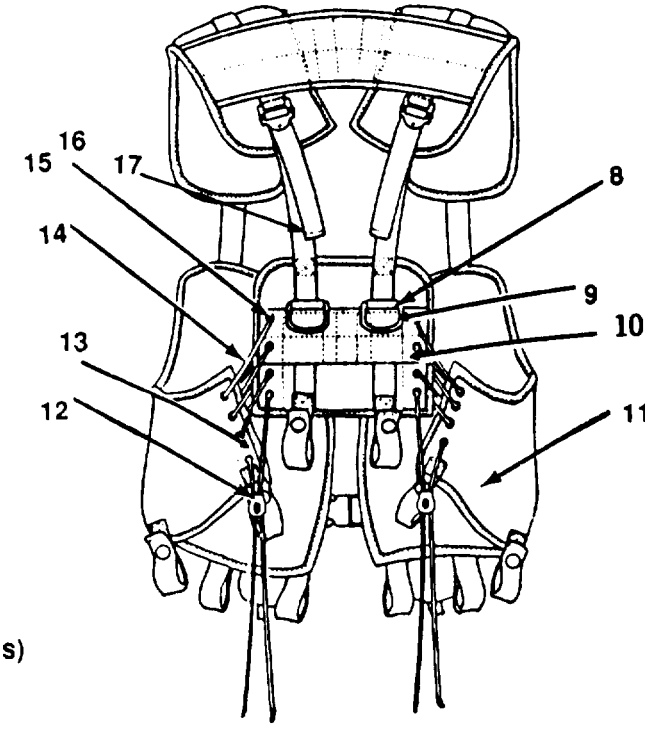
NSN	SIZE	SPECIFICATION
8415-01-317-1622	One Size	MIL-V-44362

The 40MM Grenade Vest (Figure 21-4) is intended for use by the combat soldier (grenadier) armed with the M203 or M79Grenade Launcher. It is constructed of a seven ounce nyion fabric and weighs 2.1 Ibs. empty. The vest incompatible with the standard equipment belt which is Secured to the vest with 10 belt loops. The loops use hook and pile fasteners and snaps. The vest has 18 permanently attached ammunition pockets that can carry 4 pyrotechnic and 14 high explosive rounds. The pocket covers are secured by one snap. A pull tab is used to open the pocket. The shoulders are protected by 1/2 inch (1.27 cm) foam padding. The vest doses in front with two chest straps using plastic quick release buckles. Two 2 1/4 inch (5.71 cm) webbing and two D-Rings sewn to the back of the vest can be used as equipment attachment points.

21-3. IDENTIFICATION AND DESCRIPTION–Continued



FRONT VIEW



REAR VIEW

LEGEND

1. Binding (Nylon Tape)
2. Seam (Thread)
3. Quick Release Fastener
4. Snap Fastener
5. Belt Loop (Textile Webbing)
6. Grenade Pouch Pull Tab
7. Buckle
8. Holder (Nylon Tape)
9. D-Ring
10. Reinforcement (Textile Webbing)
11. Nylon Duck Cloth
12. Cord Lock, Double Cord (Two Locations)
13. Reinforcement (Textile Webbing)
14. Nylon Cord
15. Eyelet
16. Washer
17. Bartack (Thread)

Figure 21-4. Vest, Grenade, Carrier (for 40MM Grenade)

Section II. MAINTENANCE PROCEDURES

21-4. MATERIALS

Materials used in the repair of the load bearing vest, field pack and grenade vest will be serviceable materials recovered from similar salvaged items or new materials, New materials will be requisitioned from stock using National Stock Numbers, complete military standard numbers, or part number and Contractor and Government Entity Code (CAGEC) listed in Section Ill.

21-5. CLASSIFICATIONS

Serviceability classifications for the equipment shall be determined in accordance with Chapter 1.

21-6. CLEANING AND LAUNDERING

a. Field Cleaning.

(1) Scrape dirt or mud from the equipment with a flat stick or dull instrument that will not cut the fabric or webbing.

(2) Remove loose dirt from soiled surfaces using a brush or cloth.

CAUTION

Do not use Chlorine Bleach, yellow soap, cleaning fluids or solvents. Such products will discolor and deteriorate component materials.

(3) Wash item by immersing in a solution of Detergent, Laundry, Powdered, MIL-D-12182, Type II (NSN 7930-00-252-6797) or any mild commercial detergent or soap and one gallon of warm water. Scrub surfaces with soft brush, cloth or sponge.

(4) Flush the equipment thoroughly with clean, warm water until all the cleaning solution has been rinsed out.

CAUTION

Do not launder or dry items in fixed, commercial/home laundry equipment. Material will be degraded.

(5) Air dry the equipment away from direct sunlight, heat or open flames.

b. Direct Support Cleaning.

(1) Turn in. Thoroughly clean and dry the equipment prior to turn in for repair at a higher maintenance level.

(2) Cleaning Procedures. The equipment will be cleaning in soak and wash tanks in the same manner as other light weight load carrying equipment. Laundry washing machines will not be used.

21-6. CLEANING AND LAUNDERING–Continued

b. Direct Support Cleaning–Continued.

(a) Soak and Wash Procedure:

1. Remove loose dirt or dust from the items to be washed using a brush, cloth, or vacuum attachment, Remove staves from field pack.

2. Soak items for at least five minutes or longer as necessary in a tank containing warm water.

CAUTION

Do not use Chlorine Bleach, yellow soap, cleaning fluids or solvents. Such products will discolor and deteriorate component materials.

3. Wash the items in a solution of Detergent, Laundry, Powdered, MIL-D-12182, Type II (NSN 7330-00-252-6797) scrubbing vigorously with a soft brush cloth or sponge as necessary.

4. Flush the washed equipment with clean, warm water until all cleaning solution has been rinsed out.

CAUTION

Do not launder or dry items in fixed, commercial/home laundry equipment. Material will be degraded.

5. Air dry the equipment away from direct sunlight and heat, or open flames.

21-7. REPAIR AND MAINTENANCE OF VEST, TACTICAL LOAD BEARING; FIELD PACK, LARGE, WITH INTERNAL FRAME; PACK, PATROL, COMBAT AND VEST, 40MM GRENADE

a. General, Prior to repair operations, each item shall be inspected by qualified personnel to determine the extent of repair necessary. All repairs to the load bearing vest, field pack, patrol pack and grenade vest will be accomplished at the direct support level. FM 10-16 will be used as a general guide.

b. Repair Procedures:

(1) Preliminary Examination. Remove all dirt, mud, dust, and other foreign matter with a brush before examining the garment. Rotten items will be discarded. Seams will be tested by grasping the item with both hands and pulling at right angles to the seams. Areas to be repaired shall be marked with tailor crayons. Nonspecific and personal marks shall be erased or obliterated. Inspect the items for presence and condition of ail hardware. Mark items where replacement or repair is required.

21-7. REPAIR AND MAINTENANCE OF VEST, TACTICAL LOAD BEARING; FIELD PACK, LARGE, WITH INTERNAL FRAME; PACK, PATROL, COMBAT AND VEST, 40MM GRENADE–Continued

b. Repair Procedures–Continued

(2) Rips and tears. Repair rips and tears of one inch (2.54 cm) or less by darning in greatest dimension. Patch rips, tears, and holes exceeding one inch (2.54 cm) with a single patch of nylon cloth specified in Section Ill. Cut the patch of sufficient size to extend at least 1/2 inch (1 .27 cm) beyond the hole or area to be patched, allowing for a 3/8 inch (0.95 cm) turn under. Place the patch on the outside and sew it 1/8 inch (0.32 cm) from the edge of the patch using size E or F thread and type 301 stitching. Cut away the damaged area to a square or rectangular shape, depending upon the shape of the repaired area. Turn the raw edges under 3/8 inch (0.95 cm) and sew 1/8 inch (0.32 cm) from the edge. When Webbing Straps are frayed or worn, replace them with material specified in Section Ill in the appropriate lengths listed in Table 40-5.

(3) Stitching and restitching. Repair all stitches, seams and stitchings, except barracking, on the vests and packs using stitch type 301 conforming to the specifications found in FED-STD-751 and Table 20-1. Seam allowances will be maintained with seams sewn so that no raw edges, runoffs, twists, pleats, puckers, or open seams occur. Overedge stitching will be 3/16 to 1/4 inch (0.47 to 0.63 cm) gauge.

(4) Repair of type 301 stitching. Ends of all stitching, except box and box-x, shall be backstitched or overstitched not less than 1 inch (2.54 cm) except where ends are turned under in a hem or held down by other seams or stitching. On box and box-x stitching, all ends shall be backstitched or overstitched 1/2 inch (1.27 cm) minimum. Ends of a continuous line of stitching shall overlap not less than 1/2 inch (1.27 cm). Thread tensions shall be not less than 1/2 inch (1.27 cm). Thread tensions shall be maintained so that there will be no loose stitching resulting in puckering of materials sewn. The lock shall be embedded in the materials sewn. When thread breaks, skipped stitches, run-offs, or bobbin runouts occur during stitching, the stitching shall be repaired by restarting the stitching a minimum of 1 inch (2.54 cm), or 1/2 inch (1.27 cm) for box and box-x stitching, back of the interrupted stitching. Except for prestitching, thread breaks of two or more consecutive skipped or run-off stitches noted during inspection of the item shall be repaired by overstitching. The stitching shall start a minimum of 1 inch (2.54 cm), or 1/2 inch (1.27 cm) for box and box-x stitching, in back of defective area, continue over the defective area onto the existing stitching. Loose or excessively tight stitching shall be repaired by removing defective stitching without damaging the materials, and restitching in the required manner. When making above repairs, ends of stitching need not be backstitched.

(5) Bartacks. Unless otherwise specified, all bartacks shall be as follows:

(a) 1/2 + 1/16 inch (1 .27 + 0.1 cm) long x 1/8 ± 1/32 inch (0.32 ± 0.1 cm) wide containing 28 stitches

(b) 3/4 ± 1/16 inch (1 .91 ± 0.1 cm) long x 1/8 ± 1/32 inch (0.32 ± 0.1 cm) wide containing 42 stitches

(c) 1 + 1/16 inch (2,54 + 0.1 cm) long x 1/8 + 1/32 inch (0.32 + 0.1 cm) wide containing 42 stitches

(d) 2 ± 1/16 inch (5.08 ± 0.1 cm) long x 1/6 ± 1/32 inch (0.32 ± 0.1 Cm) wide containing 80-84 stitches

Barracking shall be free from thread breaks and loose stitching.

21-7. REPAIR AND MAINTENANCE OF VEST, TACTICAL LOAD BEARING; FIELD PACK, LARGE, WITH INTERNAL FRAME; PACK, PATROL, COMBAT AND VEST, 40MM GRENADE–Continued

b. Repair Procedures–Continued

(6) Slide Fasteners. Replace malfunctioning or damaged slide fasteners on the field pack, as necessary. Remove damaged fasteners by carefully cutting off the fastener tape as close as possible to the outer row of stitching holding the slide fastener. Trim any raveled yarns from the remaining fastener tape. Attach a new fastener of appropriate length and type as specified in Table 21-2 and Section Ill using type 301 stitching, size F thread and six to eight stitches per inch (2.54 cm).

(7) Snap Fasteners. Replace missing, loose, or damaged snap fasteners. Repair damaged area surrounding snap fastener sockets and studs prior to attaching new fasteners. A hole will be pre-punched through the material before inserting the sockets or studs. The pre-punched hole will be smaller than the outside diameter of the fastener barrel, so that the barrel must be forced through the hole. The fasteners will be securely clinched without cutting the adjacent material and no more than three splits shall occur in the button or eyelet barrels.

(8) Drawcords and cord locks. Replace damaged, missing, or defective drawcords in lengths matching the original construction. Drawcord ends will be heat seared and knotted. Replace cord locks of the type specified in Section Ill, as necessary. The specific lengths are listed in Table 21-4.

(9) Eyelets and washers. Replace loose or missing eyelets and washers as required. Remove damaged eyelets and washers by carefully cutting them with diagonal wire cutters and not cut or damage the webbing. Install new eyelets and washers of the type specified in Section Ill. Holes shall be prepunched or drilled to receive the eyelets and shall be smaller than the outside diameter of the eyelet barrel. Eyelets will be clinched without splitting and shall not damage the adjacent material.

(10) Repair of binding tape. Overlap the binding tape using material specified in Section Ill; extending the new tape at least 1/2 inch (1.27 cm) beyond the damaged area. Turn the binding edges under 1/2 inch (1.27 cm) and stitch 1/8 inch (0.33 cm) in from the edge of the tape. Material lengths and widths for specific applications are listed in Table 21-3.

(11) Hardware. Replace damaged missing, or malfunctioning D-rings, double bar, and quick release fasteners as necessary. Remove stitching holding damaged hardware or trim any raveled yarns from torn stitching, Cut appropriate webbing specified in Section Ill, to the length indicated. Thread hardware to be replaced through webbing. Sew webbing as in original construction and bartack as appropriate.

(12) Replacement of staves and lower back pad. When these items become unserviceable on the field pack, they must be replaced with new or serviceable items conforming to the specifications listed in Section Ill. These items are removed by sliding the staves out of their tunnel and the webbing slots of the pad. Install serviceable items by reinstalling the staves.

21-7. REPAIR AND MAINTENANCE OF VEST, TACTICAL LOAD BEARING; FIELD PACK, LARGE, WITH INTERNAL FRAME; PACK, PATROL, COMBAT AND VEST, 40MM GRENADE–Continued

(13) Replacement of Torso Track Channel and Yoke. When the yoke does not move freely along the track channel after the screws have been loosened, or is damaged so that it cannot serve its intended function, it must be replaced. To replace the torso track, remove stitching along the damaged torso track panel. Trim any raveling yarns from from the field pack back panel. Stitch the new torso track to the pack back panel using type 301 stitching, size F yarn, and six to eight stitches per inch (2.54 cm). To replace the yoke, remove stitching that holds the yoke to the shoulder straps. Trim any raveling yarns from the shoulder straps. Stitch the new yoke to the shoulder straps using type 301 stitching size F yarn and six to eight stitches per inch (2.54 cm). Slide new yoke onto the track from the bottom and secure with friction screws.

Table 21-1. Stitching

ITEM	OPERATION	STITCH TYPE	THREAD SIZE	STITCHES PER INCH
Vests	General	301	E or F	7 to 11
Field Pack	General	301	F	6 to 8
Vests	Barracking		E	3/4 inch (1.91 cm); 42 1 inch (2.54 cm); 42 2 inches (5.08 cm); 80-84
Field Pack	Barracking		E	1/2 inch (1 .27 cm); 28 3/4 inch (1.91 cm); 42 1 inch (2.54 cm); 42 2 inches (5,08 cm); 80-84

Table 21-2. Slide Fastener Lengths

ITEM	FUNCTION	LENGTH
Patrol Pack	Main Compartment Closure	17 1/4 inches (42.26 cm)
Field Pack	Bottom Assembly	15 inches (36.75 cm)

21-7. REPAIR AND MAINTENANCE OF VEST, TACTICAL LOAD BEARING; FIELD PACK, LARGE, WITH INTERNAL FRAME; PACK, PATROL, COMBAT AND VEST, 40MM GRENADE–Continued

Table 21-3. Binding Material Lengths

ITEM	APPLICATION	WIDTH	LENGTH
Vests	Right and left Panel Seams	1 inch (2.54 cm)	As Required
Vests	Shoulder Strap Seams	1 inch (2.54 cm)	As Required
Vests	Back Assembly	1 inch (2.54 cm)	As Required
Vest (TLB)	Pouches (Magazine and Grenade)	1 inch (2.54 cm)	As Required
Vest (Gr)	Pouches (Grenade)	1 1/2 inches (3.81 cm	As Required
Vests	D-Ring Holder	1 1/2 inches (3.81 cm	2 inches (5.08 cm)
Patrol Pack	Pull Tabs	3/8 inch (0.91 cm)	6 inches (14,70 cm)
Patrol Pack	Pocket Flaps	1 inch (2.54 cm)	33 inches (80.85 cm)
Field Pack	Side Pocket (Long) Assembly	1 inch (2.54 cm)	18 inches (44.10 cm)
Field Pack	Side Pocket (Short) Assembly	1 inch (2.54 cm)	11 5/8 inches (28.47 cm)
Field Pack	Spindrift Collar	1 inch (2.54 cm)	14 1/4 inches (34.91 cm)
Field Pack	Basket, Radio Assembly	1 inch (2.54 cm)	22 1/2 inches (55.12 cm)
Field Pack	Rt/L Side Pocket Assembly	1 inch (2.54 cm)	8 inches (19.60 cm)
Field Pack	Pocket Flap	1 inch (2.54 cm)	12 3/4 inches (31.23 cm)

21-7. REPAIR AND MAINTENANCE OF VEST, TACTICAL LOAD BEARING; FIELD PACK, LARGE, WITH INTERNAL FRAME; PACK, PATROL, COMBAT AND VEST, 40MM GRENADE–Continued

Table 21-4. Drawcord Lengths

ITEM	APPLICATION	LENGTH
Vest	Width Adjustment. Side to Back Panel Connectors	*72* inch (176.40 cm)
Patrol Pack	Top Compartment	30 inch (73.50 cm)
Patrol Pack	Main Compartment (2)	21 inch (51.45 cm)
Field Pack	Harness Release Assembly	6 inch (14.70 cm)
Field Pack	Spindrift Collar Assembly	45 inches (1 10.25 cm)
Field Pack	Right Side Pocket	14 inches (34.30 cm)
Field Pack	Pocket Flap Assembly	18 inches (44.10 cm)
Field Pack	Left Side Pocket	14 inches (34.30 cm)
Field Pack	Main Frame Assembly	61 inches (149.45 cm)

Table 21-5. Webbing (MIL-W-43668) (1 inch width) Replacement Lengths

ITEM	APPLICATION	LENGTH
Vests	Front Strap	22 1/2 inches (55.12 cm)
Vests	Shoulder Strap Buckle Assy	13 1/8 inches (32.15 cm)
Vests	Retainer Strap	8 3/4 inches (21 .43 cm)
Vests	Back Strap	19 3/4 inches (48.38 cm)
Vest (TLB)	Grenade Pouch Inside Hanger	2 5/8 inches (6.43 cm)
Vest (TLB)	Grenade Pouch Outside Hanger	3 5/8 inches (8.88 cm)
Vests	Buckle Strap (Male end)	13 1/8 inches (32.15 cm)
Vests	Buckle Strap (Female end)	5 inches (12.25 cm)
Vests	Equipment Belt Loop	13 7/8 inches (33.99 cm)
Patrol Pack	Front Pocket Assembly	4 inches (9.80 cm)
	(Buckle Strap Attachment)	1 inch (2.54 cm)
Patrol Pack	Shoulder Strap Assembly	20 inches (49.00 cm)
Patrol Pack	Pack Cover Assembly	12 inches (29.40 cm)
Patrol Pack	Pack Cover Assembly	13 inches (31 .85 cm)
Patrol Pack	Quick Release Buckle Assy	4 inches (9.80 cm)
Patrol Pack	Holddown Cover	5 1/4 inches (1 2.86 cm)
Field Pack	Front Assembly	12 inches (29.40 cm)
Field Pack	Hanger	10 inches (24.50 cm)
Field Pack	Hanger Support Strap	15 1/2 inches (37.97 cm)
Field Pack	Quick Release Buckle Straps	15 inches (36.75 cm)
Field Pack	Right/Left Side Assembly Quick Release Buckle Straps (Male End)	18 inches (44.1 O cm)
Field Pack	Cover Assembly Flap	4 inch (9.80 cm)
Field Pack	Suspender Assy Lateral Quick Release Buckle Strap	11 1/2 inches (28.17 cm)

21-7. REPAIR AND MAINTENANCE OF VEST, TACTICAL LOAD BEARING; FIELD PACK LARGE, WITH INTERNAL FRAME; PACK PATROL COMBAT AND VEST, 40MM GRENADE - Continued

Table 21-5. Webbing (MIL-W-43668) (1 inch width) - Continued
Replacement Lengths

ITEM	APPLICATION	LENGTH
Field Pack	Suspender Assy Lateral Quick Release Buckle Strap (Female End)	21 1/2 inches (52.67 cm)
Field Pack	Back Pad Assembly	10 5/16 inch (24.80 cm)
Field Pack	Harness Release Assembly	29 inches (71 .05 cm)
Field Pack	Non-Slip Buckle Attachment	3 1/16 inches (7.50 cm)
Field Pack	Upper Front Assembly Strap	28 inches (68.60 cm)
Field Pack	2 inch Buckle Assembly	4 inches (9.80 cm)
Field Pack	Side Pocket Flap Assembly	6 inches (1 4.70 cm)
Field Pack	Front Bottom Assembly (2)	27 inches (66.15 cm)

21-8. WORKMANSHIP

All work shall be accomplished only by qualified personnel. The finished items of equipment shall be complete, clean, and free from defects affecting their serviceability and appearance. Sealed seams and stitchings shall show no leakage when tested. Threads shall be neatly trimmed. Drawcords shall not be missing or caught in hem, tunnel, or waistband stitching. DrawCord shall be of sufficient lengths with ends heat seared and knotted. Slide fasteners shall close property, be of specified length and color, and contain thongs as specified. Seams shall not be twisted, pleated or puckered. Stitch tension shall be adequate, not loose or tight, with specified number of stitches per inch on major portions of seam. The material shall not be defective or damaged in any manner. The material shall not contain cuts, tears, mends, needle or chew holes. Hardware shall be free from corroded and unfinished areas, burrs and sharp edges.

21-9. INSPECTION

The inspection or quality control unit is responsible for determining the compliance with repair instructions and requirements for classification. In-process inspections shall be performed for quality of workmanship and correct application of repair procedures. The completed item will be inspected to for serviceable condition and appearance to ensure against return of substandard products to supply channels.

Section III. MATERIALS

FIG. NO.	ITEM NO.	S M R CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				VEST, TACTICAL LOAD BEARING	
21-1	1	PAFZZ	8315-00-935-4741	Tape, Nylon, Type III CL-2, OD-7, 1 inch wide. Conforming to MIL-T-5038. (See Table 21-3 for length). Source: Bally Ribbon Mills, 23 N 7th St., Bally, PA 19503.	YD
21-1	2	PAFZZ	8310-00-988-1302	Thread, Polyester, OD S1, Size F, CL-1, Sub Class B. Conforming to V-T-285.	TU
21-1	3	PAFZZ	8465-01-286-5352	Fastener, Quick Release, 1 inch wide, US Army Natick Drawing 5-10-47 (FSCM 81337) ITW Nexus or equivalent (FSCM 02768) PN SR-1 Source: ITW, 230 Gerry Dr., Wood Dale, IL 60191.	EA
21-1	4	PAFZZ	5325-00-985-6718	Fastener, Snap Black Chemical Finish. Conforming to Style 2 of MIL-F-10884.	EA
21-1	5	PAFZZ	8305-01-062-7050	Webbing, Textile, Bulked Nylon, Type III, OD-7, 1 inch wide (See Table 21-5 for lengths). Conforming to MIL-W-43668.	YD
21-1	6	PAFZZ		Webbing, Textile, Nylon Type Ia, CL-2, OD-7, 1 inch wide. Cut tape to 5 inches. Conforming to MIL-W-4088. Source: Hope Webbing Co., PO Box 6387, Providence, RI 02840.	YD
21-1	7	PAFZZ		Webbing, Textile, Nylon Type Ia, CL-2, OD-7, 1 inch wide. Cut tape to 5 3/8 inches. Conforming to MIL-W-4088. Source: Hope Webbing Co., PO Box 6387, Providence, RI 02840.	YD
21-1	8	PAFZZ	8315-00-106-5974	Fastener Tapes, Pile Synthetic Type II, CL-1, 1 inch wide. Cut tape to 1 3/4 inches, OG. Conforming to MIL-F-21840. Source: Velcro USA, Inc., 405 Brown Ave., PO Box 5218, Manchester, NH 03108.	YD
21-1	9	PAFZZ	8315-00-106-5973	Fastener Tapes, Hook Synthetic, Type II, CL-1, 1 inch wide. Cut tape to 1 3/4 inches, (OG 106. Conforming to MIL-F-21840. Source: Velcro USA, Inc., 406 Brown Ave., PO Box 5218, Manchester, NH 03108.	YD
21-1	10	PAFZZ	5340-01-070-8440	Buckle, Non-Slip, Steel, 1 inch, Black chemical finish. Conforming to Type 5, CL-3 of MIL-B-543.	EA
21-1	11	PAFZZ	8315-01-352-9305	Tape, Nylon, Type III CL-2, OD-7, 1 1/2 inches wide. Conforming to MIL-T-5038 (See Table 21-3 for length). Source: Bally Ribbon Mills, 23 N 7th St., Bally PA 19503.	YD

Section III. MATERIALS - Continued

FIG. NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
21-1		PAFZZ		**D-Ring, 1 1/2, Acetal, Black, ITW Nexus,** FSCM 02786, PN DR-1 1/2. **Source: ITW, 230 Gerry Dr., Wood Dale, IL 60191.**	EA
21-1	13	PAFZZ	8305-00-260-6910	**Webbing, Textile, Nylon Type II, CL-2, OD-7, 1 in. wide. Cut tape to 7 1/8 inches. Conforming to MIL-W-4088. Source: Hope Webbing Co., PO Box 6387, Providence, RI 02940.**	YD
21-1	14	XBFZZ		**Cloth, Duck, Nylon. Conforming to CL-5 of MIL-C-43734. Source: West Point Pepperell, PO Box 76, West Point, GA 31833.**	YD
21-1	15	PAFZZ		**Cord Lock, Double Cord. Black body, natural wheel. US Army Natick Drawing 2-6-103 (FSCM 81337) ITW Nexus, Lock Body 238-380203-00-561 3; Lock Wheel 238-082051-00-0101, Acetal, FSCM (02768). Source: ITW 230 Gerry Dr., Wood Dale,IL60191.**	EA
21-1	16	PAFZZ	8305-00-260-6910	**Webbing, Textile, Nylon Type II, CL-2, OD-7, 1 inch wide. Cut tape to 5 3/4 inches. Conforming to MIL-W-4088. Source: Hope Webbing Co., PO Box 6387, Providence, RI 02940.**	YD
21-1	17	PAFZZ	4020-00-262-2019	**Cord, Nylon, Conforming to Type IIa, of MIL-C-5040.**	SP
21-1	18	PAFZZ	5325-01-069-0578	**Eyelet, Brass, Black. Conforming to BBE 117 of MIL-E-20652/1. Source: Stimpson Co., Inc., BayPort, NY 11705.**	**EA**
21-1	19	PAFZZ		**Washer, Brass, Black Conforming to BBW 101, of MI L-E-20652/1. Source: Stimpson Co., Inc., Bayport, NY 11705.**	**EA**
21-1	20	PAFZZ	8310-01-162-4444	**Thread, Nylon, Type 1, CL-I, Subclass B, Size E, OD, 8-1. Conforming to V-T-295.**	**TU**
				FIELD PACK LARGE WITH INTERNAL FRAME	
21-1	1	PAFZZ		**Cord Lock, Single Cord, black, US Army Natick Drawing 2-6-104, (FSCM 81 337) Source: ITW, 230 Gerry Dr., Wood Dale, IL 60191.**	**EA**
21-2	2	PAFZZ	4020-00-262-2019	**Cord, Nylon, Conforming to Type IIa, of MIL-C-5040.**	SP

Section III. MATERIALS - Continued

FIG. NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
21-2	3	PAFZZ	5325-01-069-0578	Eyelet, Brass, Black. Conforming to BBE117 of MIL-E-20652/1. Source: Stimpson Co., Inc., BayPort, NY 11705.	
21-2	4	PAFZZ		Washer, Brass, Black. Conforming to BBW 101, of MIL-E-20652/1. Source: Stimpson Co., Inc., Bayport, NY 11705.	EA
21-2	5	PAFZZ		Fastener, Slide (Water Repellent Treated) Tape, Continuous chain acceptable. Conforming to Type I, Style 18, Size H of V- F-106, (FSCM 81348) Source: YKK (U. S. A.) Inc., Nescaminny Interplex, Suite 209, Trevose, PA 19047.	EA
21-2	6	PAFZZ	8305-01-062-7050	Webbing, Textile, Bulked Nylon, 1 inch wide, OD-7, Type III. Conforming to MIL-W-43668.	YD
21-2	7	XBFZZ		Cloth, Duck, Nylon. Conforming to CL-5 of MIL-C-43734. Source: West Point Pepperell, PO Box 76, West Point, GA 31833.	YD
21-2	8	PAFZZ		Screw, Truss Heal, 0.25 x 20 UNC-0.50 long, CRES, Black Chromat Finish, US Army Natick Drawing 2-6-27 (FSCM 81 337) ITW Nexus Torso Track Screw, (FSCM 02768) Source: ITW, 230 Gerry Dr., Wood Dale, IL 60191.	EA
21-2	9	PAFZZ		Webbing, Textile, Polypropylene, Type IIa, CL-2, 1 1/2 inches wide. Cut to 15 1/2 inches long. Conforming to MIL-W-44040.	YD
21-2	10	PAFZZ	8465-01-286-5352	Fastener, Quick Release, 1 inch wide, US Army Natick Drawing 5-10-47 (FSCM 81337) ITW Nexus or equivalent (FSCM 02768) PN SR-1 Source: ITW, 230 Gerry Dr., Wood Dale, IL 60191.	EA
21-2	11	PAFZZ		Loop and Clip, Type IV Class B. Conforming to MIL-H-9890.	EA
21-2	12	PAFZZ		Buckle, Nonslip, Quick Release, Type XIV. Conforming to MIL-H-9890.	EA
21-2	13	PAFZZ		Pad, Posture. US Army Natick Drawing 2-6-64 (FSCM 81337)	EA
21-2	14	PAFZZ		Buckle, 3 Bar Adjuster 2 inches wide, Acetal, Back. US Army Natick Drawing 2-6-29 (FSCM 81337) ITW Nexus Triglide, (FSCM 02768) Source: ITW 230 Gerry Dr., Wood Dale, IL 60191.	EA

Section III. MATERIALS - Continued

FIG. NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
21-1	15	PAFZZ		Buckle, Quick Release, 2 inch wide, Acetal, Black. US Army Natick Drawing 2-6-100 (FSCM 81337)	EA
21-2	16	PAFZZ		Fastener, Snap, Style 2 Button -1 B/Socket-6B. Conforming to MIL-E-20652/1.	EA
21-2	17	PAFZZ		Webbing, Nylon, 2 inches wide, OD-7, Cl-2. Conforming to MIL-W-17337.	YD
21-2	18	PAFZZ		Track US Army Natick Drawing 2-6-39 (FSCM 81337) ITW Nexus Torso Trac TTC Channel (FSCM 02768) Source: TTW 230 Gerry Dr., Wood Dale, IL 60181.	EA
21-2	19	PAFZZ		Torso Track, US Army Natick Drawing 2-6-61 (FSCM 81337) Torso Trac Yoke and Retainer (FSCM 02768) Source: ITW 230 Gerry Dr., Wood Dale, IL 60191.	EA
21-2	20	PAFZZ		Cord Lock, Double Cord. Black body, Natural wheel. US Army Natick Drawing 2-6-103 (FSCM 81337) ITW Nexus, Lock Body 238-380203-00-5613; Lock Wheel 238-082051410-0101, Acetal, FSCM (02768). Source: ITW 230 Gerry Dr., Wood Dale, IL 60191.	EA
21-2	21	PAFZZ		Fastener Tape, Hook OD-7, 1 inch wide. Cut to 10 inches. Conforming to MIL-F-21840.	EA
21-2	22	PAFZZ		Fastener Tape, Pile, OD-7, 1 inch wide. Cut to 10 inches. Conforming to MIL-F-21840.	EA
21-2	23	PAFZZ	8305-01-269-9743	Cloth, Nylon, Plain weave, black cut 10 x 46 1/8; Conforming to MIL-C-43128.	YD
21-2	24	XBFZZ		Label: For clothing, equipage and tentage. (General Use) Type VI Class 15. Conforming to DOD-L-20.	EA
21-2	25	PAFZZ	5325-01-269-0578	Eyelet, Brass, Black. Conforming to BBE 117 of MIL-E-20652/1. Source: Stimpson Co., Inc., Bayport, NY 11705.	EA
21-2	26	PAFZZ		Washer, Brass, Black Conforming to BBW 101, of MIL-E-20652/1. Source: Stimpson Co.,Inc, Bayport, NY 11705.	EA
21-2	27	PAFZZ	8310-01-162-4444	Thread, Nylon, Type 1, Class 1, Subclass B, size E, OD, 5-1. Conforming to V-T-295.	TU
21-2	28	PAFZZ		Grommet, Brass, Black chemical finish, Type III, No 0, Cl-3, MIL-G-16491 .	EA

Section III. MATERIALS - Continued

FIG. NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				COMBAT PATROL PACK	
21-3	1	PAFZZ		Fastener, Slide, Polyester, monofilament, continuous element chain, Style 6, Size MH, Type 1, Black 17 1/4 inch long, Conforming to V-F-106 Source: YKK (U. S. A.) Inc., 7 Nescaminy Interplex, Suite 209, Trevose, PA 19047.	EA
21-3	2	PAFZZ	5325-00-985-6718	Fastener, Snap Black Chemical finish. Conforming to Style 2 of MIL-F-10884.	EA
21-3	3	PAFZZ	4020-00-262-2019	Cord, Nylon, Olive Drab, Type IIa. Conforming to MIL-C-5040.	SP
21-3	4	PAFZZ	8465-01-286-5352	Fastener, Quick Release, 1 inch wide, US Army Natick Drawing 5-10-47 (FSCM 81337) ITW Nexus or equivalent (FSCM 02768) PN SR-1 Source: ITW, 230 Gerry Dr., Wood Dale, IL 60191.	EA
21-3	5	PAFZZ		Cord Lock Single Cord, black US Army Natick Drawing 2-6-104, (FSCM 81 337) Source: ITW, 230 Gerry Dr., Wood Dale, IL 60191.	EA
21-3	6	PAFZZ		Grommet, Brass, Black chemical finish, Type III, No O, Cl-3 MIL-G-16491 .	EA
21-3	7	PAFZZ	8310-01-162-4444	Thread, Nylon, Type 1, CL-I, Subclass B, Size E, OD, S-1. Conforming to V-T-295.	TU
21-3	8	PAFZZ	8315-00-935-4741	Tape, Nylon, Type III CL-2, OD-7, 1 inch wide. Conforming to MIL-T-5038. (See Table 21-3 for length). Source: Bally Ribbon Miils, 23 N 7th St. Bally, PA 19503.	YD
21-3	9	XBFZZ		Cloth, Duck, Nylon Conforming to CL-4 of MIL-C-43734. Source: West Point Pepperell PO Box 76, West Point, GA 31833	YD
21-3	10	PAFZZ	8305-01-062-7050	Webbing, Textile, Bulked Nylon, Type III, OD-7, 1 inch wide (See Table 21-5 for lengths). Conforming to MIL-W-43668.	YD
21-3	10	PAFZZ		Buckle, black Acetal, 1 inch wide. ITW Nexus Ladderlock 1“, (FSCM 02786) Source: ITW, 230 Gerry Dr., Wood Dale, IL 60191.	YD

Section III. MATERIALS - Continued

FIG. NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				VEST, 40MM GRENADE	
21-4	1	PAFZZ	8315-00-935-4741	Tape, Nylon, Type III CL-2, OD-7, 1 inch wide. Conforming to MIL-T-5038. (See Table 21-3 for length). Source: Bally Ribbon Mills, 23 N 7th St., Bally, PA 19503.	YD
21-4	2	PAFZZ	8310-00-988-1300	Thread, Polyester, OD 51, Size F, CL-1, sub Class B. Conforming to V-T-285.	TU
21-4	3	PAFZZ	8465-01-286-5352	Fastener, Quick Release, 1 inch wide ITW Nexus or quivalent (FSCM 02768) PN SR-1, Natick Drawing 5-10-47 (FSCM 81337) source: ITW, 230 Gerry Dr., Wood Dale,IL 60191.	EA
21-4	4	PAFZZ	5325-00-985-6718	Fastener, Snap Black Chemical Finish. Conforming to Style 2 of MIL-F-l 0884.	EA
21-4	5	PAFZZ	8305-01-062-7050	Webbing, Textile, Bulked Nylon, Type III, OD-7, 1 inch wide (See Table 21-5 for lengths). Conforming to MIL-W-43668.	YD
21-4	6	PAFZZ	8315-01-352-9305	Tape, Nylon, Type III CL-2, OD-7, 1 1/2 inches wide. Conforming to MIL-T-5038 (See Table 21-3 for length). Source: Bally Ribbon Mills, 23 N 7th St., Bally, PA 19503.	YD
21-4	7	PAFZZ	5340-01-070-9440	Buckle, Non-Slip, Steel, 1 inch, Black chemical finish. Conforming to Type 5, CL-3 of MIL-B-543.	EA
21-4	8	PAFZZ	8315-01-352-9305	Tape, Nylon, Type III CL-2, OD-7, 1 1/2 inches wide. Conforming to MIL-T-5038 (See Table 21-3 for length). Source: Bally Ribbon Mills, 23 N 7th St., Bally, PA 19503.	YD
21-4	9	PAFZZ		D-Ring, 1 1/2, Acetal, Black, ITW Nexus, FSCM 02786, PN DR-1 1/2. Source: ITW, 230 Gerry Dr., Wood Dale, IL 60191.	EA
21-4	10	PAFZZ	8305-00-260-6909	Webbing, Textile, Nylon Type II, CL-2, OD-7, 1 in wide. Cut tape to 7 1/8 inches. Conforming to MIL-W-4088. Source: Hope Webbing Co., PO Box 6387, Providence, RI 02940.	YD
21-4	11	XBFZZ		Cloth, Duck, Nylon. Conforming to CL-5 of MIL-C-43734. Source: West Point Pepperell, PO Box 76, West Point, GA 31833.	YD

Section III. MATERIALS - Continued

FIG. NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
21-4	12	PAFZZ		Cord Lock Double Cord, Black body, natural wheel. US Army Natick Drawing 2-6-103 ITW Nexus, Lock Body 238-380203-00-561 3; Lock Wheel 238-082051-00-0101, Acetal, FSCM (02768). Source: ITW 230 Gerry Dr., Wood Dale, IL 60191.	EA
21-4	13	PAFZZ		Webbing, Textile, Nylon Type II, CL-2, OD-7, 1 inch wide. Cut tape to 5 3/4 inches. Conforming to MIL-W-4088. Source: Hope Webbing Co., PO Box 6387, Providence, RI 2840.	YD
21-4	14	PAFZZ	4020-00-262-2019	Cord, Nylon, Conforming to Type IIa, of MIL-C-5040.	SP
21-4	15	PAFZZ	5321-01-069-0578	Eyelet, Brass, Black Conforming to BBE 117 of MIL-E-20652/1. Source: Stimpson Co., Inc., Bayport, NY 11705.	EA
21-4	16	PAFZZ		Washer, Brass, Black. Conforming to BBW 101, of MIL-E-20652/1. Source: Stimpson Co., Inc., Bayport, NY 11705.	EA
21-4	17	PAFZZ	8310-01-162-4444	Thread, Nylon, Type 1, CL-1, Subclass B, Size E, OD, S-1. Conforming to V-T-295.	TU

CHAPTER 22

MAINTENANCE OF SPECIAL OPERATIONS FORCES MOUNTAINEERING EQUIPMENT (SOFME)

Section I INTRODUCTION

22-1. SCOPE

This chapter provides instructions covering the materials, procedures, and standards for classification and repair of ice and mountain climbing equipment.

22-2. COMMODITY SPECIFICATION

SPECIFICATION	ITEM
A-A-50120	Harness, Climbing Full-Body
A-A-50096	Hammer, Rock and Ice
A-A-50111	Piton, Mountain, Flat, Type I
A-A-50111	Piton, Mountain, Flat, Type II
A-A-50111	Piton, Mountain, Flat, Type III
A-A-50111	Piton, Mountain, Flat, Type IV
A-A-50112	Piton, Mountain, Angle, Type I
A-A-50112	Piton, Mountain, Angle, Type II
A-A-50112	Piton, Mountain, Angle, Type III
A-A-50139	Rope, Kernmantle, Type 1
A-A-50139	Rope, Kernmantle, Type II
A-A-50139	Rope, Kernmantle, Type III
A-A-50139	Rope, Kernmantle, Type IV
A-A-50139	Rope, Kernmantle, Type VI, Size 1-1/4 Inch
A-A-50114	Piton, Mountain Knifeblade, Offset
A-A-50098	Stopper, Hexagon, Irregular, Size I
A-A-50098	Stopper, Hexagon, Irregular, Size IIB
A-A-50115	Piton, Mountain, Cliffhanger
A-A-50041	Snap Link, Locking, Type II
A-A-50041	Snap Link, Nonlocking, Type III
A-A-50127	Ascenders, Cam Action
A-A-50106	Stopper, Wired, Wedged, Type I
A-A-50106	Stopper, Wired, Wedged, Type II

22–2. COMMODITY SPECIFICATION - Continued

SPECIFICATION	ITEM
A-A-50106	Stopper, Wked, Wedged, Type Ill
A-A-501 06	Stopper, Wired, Wedged, Type IV
A-A-501 06	Stopper, Wired, Wedged, Type V
A-A-501 06	Stopper, Wired, Wedged, Type VI
A-A-501 06	Stopper, Wired, Wedged, Type VII
A-A-501 06	Stopper, Wired, Wedged, Type VIII
A-A-50125	Descender, Figure 8
A-A-50097	Pulley, Mountain Rescue
A-A-50116	Axe, Ice
A-A-50113	Piton, Ice, Type
A-A-50113	Piton, Ice, Type II
A-A-50119	Anchor, Snow, Wired, Size
A-A-50119	Anchor, Snow, Wired, Size II
A-A-50117	Crampons, Hinged
A-A-50121	Protectors, Crampon
A-A-50118	Straps, Crampon
MIL-W-5625	Webbing, Tubular Nylon, 9/1 6 Inch Wide x 75 Feet
MIL-W-5625	Webbing, Tubular Nylon, Inch Index x 75 Feet

22–3. TECHNICAL AND TRAINING PUBLICATIONS

NUMBER	TITLE
TC90-6-1	Military Mountaineering

22–4. IDENTIFICATION AND DESCRIPTION

a. Harness, Climbing; NSN 8465-01-319-5612 (Figure 22-1). The climbing harness is constructed of nylon webbing with metal buckles. The harness has two ice/axehammer holster and a sling for attaching equipment.

b. Hammer. Rock and Ice;NSN 5120-01-312-7588, (Figure 22-2). The rock and ice hammer has a 12-inch fiberglass core handle with a polyethylene outer sheath to dampen vibrations. The head is made of stainless steel with three steel sockethead capscrews to hold a removable serrated ice climbing pick. The ice climbing stainless steel pick has a hole for the attachment of a wrist loop. Each hammer has a replaceable nylon lanyard and an Allen Wrench with which to remove the serrated pick.

22-4. IDENTIFICATION AND DESCRIPTION-Continued

c. Piton, Mountain, Flat (Figure 22-3). The flat mountain piton is made of chrome-molybdenum steel with an eye hole.

Type 1; Replaced by NSN 8465-00-240-2971, PN MIL-P-1474 Type I. Type I has a blade 3 1/4 inches, 3/16 inch blade length at midpoint, and a width of 7/8 inch at blade length midpoint The eye hole is 1-1/16 inch in diameter.

Type H; NSN 8465-01-322-7828. Type II has a blade 3-3/8 inches, a thickness of 1/4 inch at blade length midpoint, a width of 11/16 inch at blade length midpoint The eye hole is 1-1/16 inch in diameter.

Type III; NSN 8465-01-322-7429. Type III has a blade 3-1/2 inches, a thickness of 5/16 inch, a blade length midpoint, and a width of 11/16 inch at blade length midpoint The eye hole is 1-1/16 inch in diameter.

Type IV; NSN 8465-01-322-7430. Type IV has a blade length of 6 inches, a thickness of 5/32 inch a blade length midpoint, and a width of 1-1 /16 inch at blade length midpoint The eye hole is 1 -1/16 inch in diameter. Type IV has a 3/1 6 inch radius hook cut into the side of the blade tip end of the piston.

d. Piton, Angle. (Figure 22-4). The angle piton is made of chrome-molybdenum steel with an eye hole.

Type 1; NSN 8465-01-322-7426. Type I has a blade 4-1/4 inches, a thickness of 5/8 inch, and an approximate wedge width of 3/4 inch. The eye hole has a diameter of 1 -1/16 inch.

Type II; Replaced by NSN 8465-00-240-2975, PN MIL-P-1474 Type V. Type II has a blade 5-5/8 inches, a thickness of 3/4 inch, and an approximate wedge width of 7/8 inch. The eye hole has a diameter of 1-1 /16 inch.

Type III; NSN 8465-01-322-7427. Type III has a blade 5-5/8 inches, a thickness of 1 -1/4 inches, and an approximate wedge width of 7/8 inch. The eye hole has a diameter of 1 -1/1 6 inch.

e. Rope, Kernmantle, (Figure 22-5). The kernmantle rope is nylon in construction consisting of a braided outer nylon sheath (mantle) and an inner nylon core (kern). All ends of kernmantle ropes are to be cut with a hot knife and taped to prevent fraying. The 11 mm type IV kernmantle rope is water repellent treated to resist water penetration into the rope.

Type 1; NSN 4020-01-317-8183. Type I is 7 mm in diameter and 150 feet long.

Type H; NSN 4020-01-317-0127. Type II is 8 mm in diameter and 150 feet long.

Type III; NSN 4020-01-318-9712. Type III is 9 mm in diameter and 150 feet long.

Type Iv NSN 4020-01-318-9713. Type IV is 11 mm in diameter and 165 feet long.

22–4. IDENTIFICATION AND DESCRIPTION - Continued

f. Rope, Kernmantle, Type Vl; NSN 4020-01-320-4113 (Figure 22-6). The three strand mountain rope is nylon in construction. All ends of the rope should be cut with a hot knife and taped or heat sealed to prevent fraying. The rope is 150 feet of uninterrupted unspliced length and 1-1/4 inch diameter.

g. Piton, Mountain Knifeblade, Offset; Replaced by NSN 8465-00-240-2972, PN Ml L-P-l 474 Type II and NSN 8465-00-240-2973, PN MIL-P-1474 Type Ill (Figure 22-7). The offset mountain knifeblade piton is made of chrome-molybdenum steel. The overall length is 3-3/8 inch. The piton has a rounded offset 90 degrees to the blade. There are two combiner holes, one on the offset and another one adjacent to the offset on the main blade. The holes are 5/8 inches in diameter. The blade is tapered from a thickness of .025 inch at the end opposite the carabiner holes to a thickness of .120 inch. The blade width is .870 inch minimum of 1.28 inch maximum.

h. Stoppers, Hexagon, Irregular, (Figure 22-8). The hexagon stoppers are made of aluminum. The holes are sufficiently wide to accept an 8 mm with which to sling the hexagon stopper.

Size I; NSN 8465-01-319-4687 Size I is approximately 1-5/8 inch long X 1-1 /8 inches wide.

Size IIB; NSN 8465-01-319-4688 Size IIB is approximately 2-1/4 inch long X 1-5/8 inches wide.

i. Piton Mountain Cliffhanger; NSN 8465-01-322-7431 (Figure 22-9). The cliffhanger piton is made of chrome-molybdenum steel. The thickness is.1 25 inch overall except the end of the hook is tapered. The hook end has a radius of .750 inch. The base of the cliffhanger is curved to create a biped base. The curved width of the base is 1.125 inches tapering uniformly to a width of .420 inch at the end of the hook. The base has two holes. A large hole of .370 inch diameter at the base and a smaller hole of .330 inch diameter located directly above the large hole.

j. Snap Link, Mountain Piton, Locking, Type II; NSN 8465-01-322-7432 (Figure 22-10). The locking mountain piton snap link is D shaped and made of steel and zinc plated. The gate is threaded and fitted with a nut. The nut may be screwed into place over the opening between the gate and the snaplink body to prevent inadvertent opening of the gate during use. The gate and the locking nut operates easily without jamming in either the open or closed position.

22-4. **Identification AND DESCRIPTION-Continued**

k. Snap Link, Mountain Piton, Nonlocking, Type Ill; NSN 8465-01-322-7433 (figure 22-11). The nonlocking snap link is made of aluminum. The gate is operated easily without jamming in either direction.

l. Ascenders, Cam Action; NSN 8465-01-319-4689 (figure 22–12). The cam action ascender frame is aluminum in construction. The cam, rivets and springs are made of stainless steel. There are plastic molded hand grips and an attachment hole for use with a snapling for hauling. The rope groove is large enough to accommodate an 11 mm kernmantle rope. A safety device is incorporated so the cam will only release the rope when a trigger is pressed and the cam is sprung back out of position.

m. Stoppers, Wired. (figure 22-13). The wedged portion of the wired stopper is made of aluminum and the wired portion is made of either galvanized steel or stainless steel construction.

Type I; NSN 8465-01-3194677. Type I is .335 inches in height and .170 inches in width. The wire size is .0625 inches in diameter. The wire loop protrudes 7.5 inches below the bottom of the stopper head.

Type II; NSN 8465-01-319-4678. Type II is .400 inches in height and .195 inches in width. The wire size is .0625 inches in diameter. The wire loop protrudes 7.5 inches below the bottom of the stopper head.

Type Ill; NSN 8465-01-319-4679. Type Ill is .475 inches in height and. 238 inches in width. The wire size is .093 inches in diameter. The wire loop protrudes 7.5 inches below the bottom of the stopper head.

Type IV; NSN 8465-01-319-4680. Type IV is .520 inches in height and .330 inches in width. The wire size is .093 inches in diameter. The wire loop protrudes 7.5 inches below the bottom of the stopper head.

Type V; NSN 8465-01-319-4681. Type V is .650 inches in height and .460 inches in width. The wire size is .125 inches in diameter. The wire loop protrudes 7.5 inches below the bottom of the stopper head.

Type Vl; NSN 8465-01-319-4682. Type VI is .750 inches in height and .530 inches in width, The wire size is .125 inches in diameter. The wire loop protrudes 7.5 inches below the bottom of the stopper head.

22-4. **IDENTIFICATION AND DESCRIPTION — Continued**

Type Vll; NSN 8465-1-319-4683. Type Vll is .855 inches in height and .600 inches in width. The wire size is. 125 inches in diameter. The wire loop protrudes 7.5 inches below the bottom of the stopper head.

Type Vlll; NSN 8465-01-319-4684. Type Vlll is 1.250 inches in height and .900 inches in width. The wire size is.125 inches in diameter. The wire loop protrudes 7.5 inches below the bottom of the stopper head.

n. Descender, Figure 8; NSN 8465-01-319-4690, (figure 22–14). The figure 8 descender is made of aluminum with a soft anodized finish. The small end is large enough to accommodate two carabiners. The large end can accommodate two 11 mm ropes.

o Pulley, Mountain Rescue; NSN 3020-01-312-5112, (figure 22-15). The mountain rescue pulley has split halves that enables the climber to put the rope in the pulley without having to thread the rope through the pulley. The pulley sides and wheel are made of aluminum. The center bolt is made of steel and has a 3/8 diameter shaft. The shaft nut has a self-locking nylon insert. The pulley wheel has roller bearings and is large enough to accommodate a 1 /2 inch diameter rope. The snap link hole is large enough to accommodate two snap links.

p. Axe, Ice; NSN 5110-01-313-0197, (figure 22-16). The ice axe is 70 cm in length from top of head to point of spike. The head is made of either stainless steel with a riveted chrome-molybdenum steel pick or a one piece chrome-molybdenum steel head. The pick has ground teeth on its underside and a 15 degree angled droop. The adze (chopping portion of the head) is 5 1/2 cm wide and ground to a sharp edge. The head has a hole directly above the shaft for attachment of the wrist loop. The shaft is made of hollow aluminum or fiberglass. The spike is chrome-molybdenum steel and comes to a sharp tapered point.

q. Piton, Ice. (figure 22-17). The ice pitons are made of chrome-molybdenum steel. The eye is permanently and firmly affixed to the top of the pitons. The tip is milled or hand ground teeth to create sharp points so it will grab the ice when screwing the pitons into ice. The pitons have right hand threads to penetrate when turned clockwise into the ice.

Type 1; NSN 8465-01-322-7425 Type I is 6-5/8 inches in overall length.

Type II; Replaced by NSN 8465-00–240-2974, PN MIL-P-1474 Type I. Type II is 8-5/8 inches in overall length.

224. IDENTIFICATION AND DESCRIPTION — Continued

r. Anchors, Snow, Wired, (figure 22-18). The fluted anchor portion of the snow anchors is made of aluminum. The wired portion k made of either galvanized steel or stainless steel.

Size I; NSN 8465-01-319-4685. Size I is 8-1/2 inches long with 5-1/2 inches fluted anchor portion. The wire portion has a 1/8 inch diameter and the outstretched wire cable assembly is 2 feet, 3 inches long.

Size II; NSN 8465-01-319 4686. Size II is 7-1/2 inches long with 10-1/2 inches fluted anchor pertion. The wire portion has a.156 inch diameter and the outstretched wire cable assembly is 5 feet, 3 inches long.

s. Crampons, Hinged; NSN 8465-01-320-0887, (figure 22-19). The hinged crampons come in pairs and are made of chrome-molybdenum steel. The crampon has 12 spikes and an adjustable center hinge to adjust the length of the crampon. The crampon is fully adjustable in width to be compatible with all stem dard military boots and commercial plastic mountaineering boots with the aid of a big foot center piece when necessary. The crampon has six attachment points for a 1/2 inch wide strap binding, and is furnished with all tools necessary to assemble and adjust the crampon.

t. Protectors, Crampon; NSN 8465-01-319-5611, (figure 22-19). The crampon protectors are made of natural rubber latex. Each arm has 3 slotted caps evenly spaced in each arm (for a total of 12 slotted caps).

u. Straps, Crampon; NSN 8465-01-320-0884, (figure 22-20). The crampon straps are made of neoprene coated nylon with brass center bar buckles, copper or brass rivets and corrosion resisting steep or brass slide buckles. The straps are 1/2 inch wide and .080 inches thick and come with assembly and lacing instructions.

v. Webbing, Textile, Nylon, Tubular; (figure 22-21). The tubular nylon webbing is olive drab #7 in color.

Tubular nylon webbing is 9/16 inch wide X 75 feat long; NSN 8305-00-261-8582.

Tubular nylon webbing is 1 inch wide X 75 feet long; NSN 8305-00-268-2455.

22-4. IDENTIFICATION AND DESCRIPTION — Continued

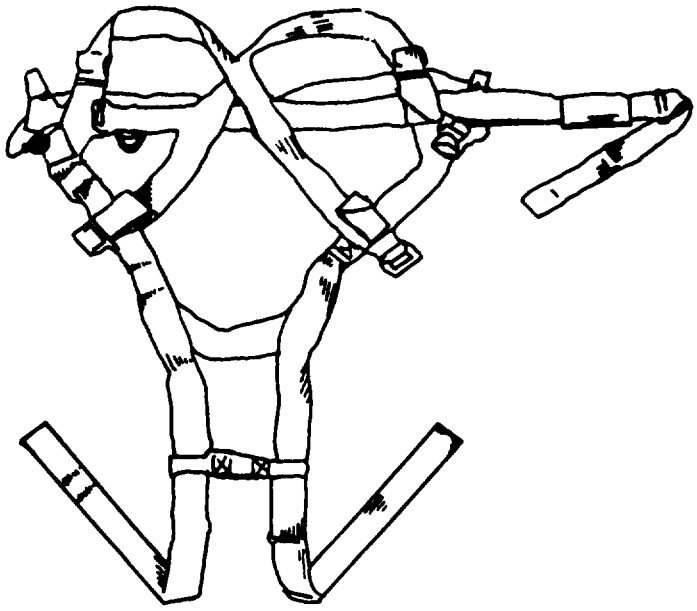


Figure 22-1. Full-Body Climbing Harness

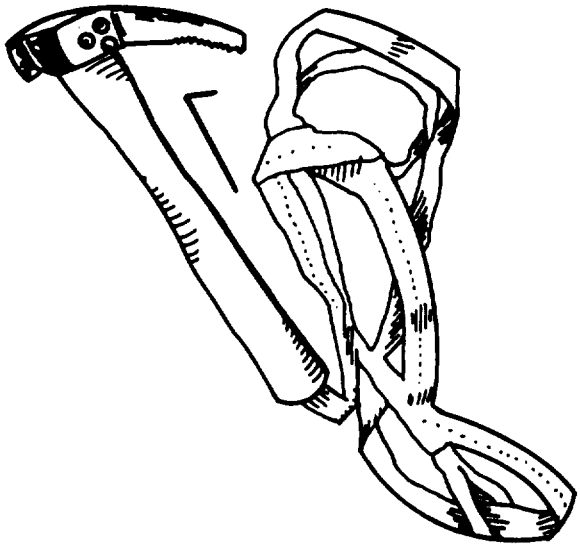


Figure 22-2. Rock and Ice Hammer With Allen Wrench Tool And Lanyard

22-4. IDENTIFICATION AND DESCRIPTION – Continued

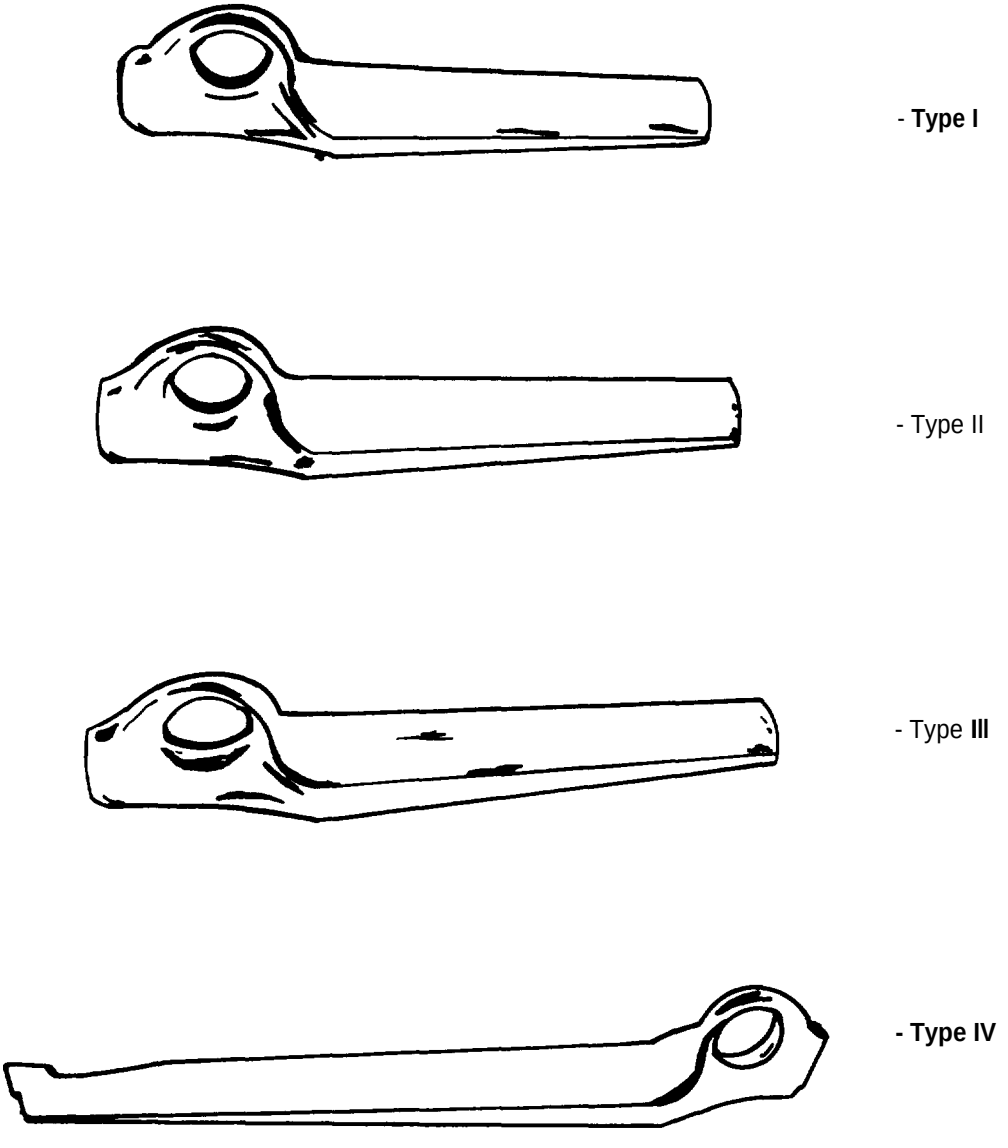


Figure 22-3. Mountain Flat Pitons

22-4. IDENTIFICATION AND DESCRIPTION — Continued

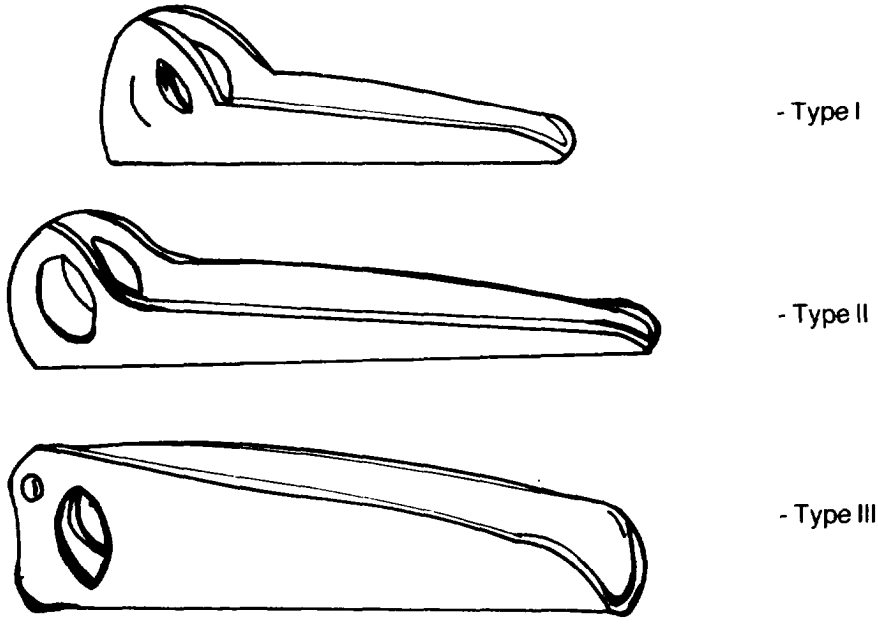


Figure 22-4. Angle Mountain Pitons

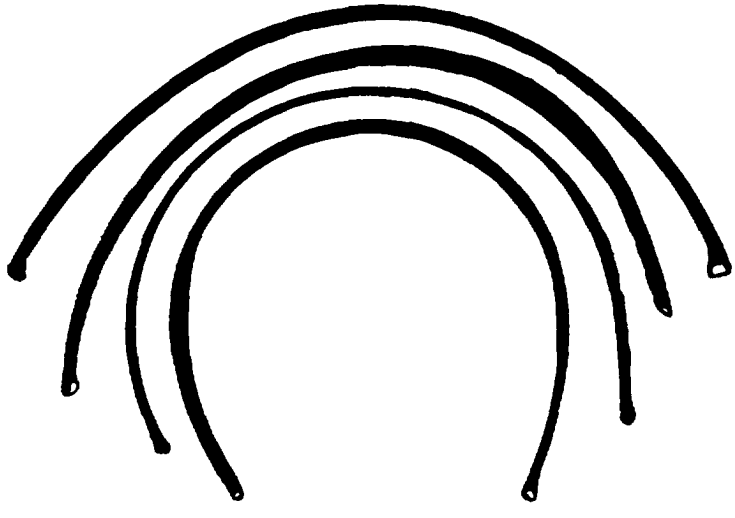


Figure 22-5. Kernmantle Ropes

22-4. IDENTIFICATION AND DESCRIPTION — Continued

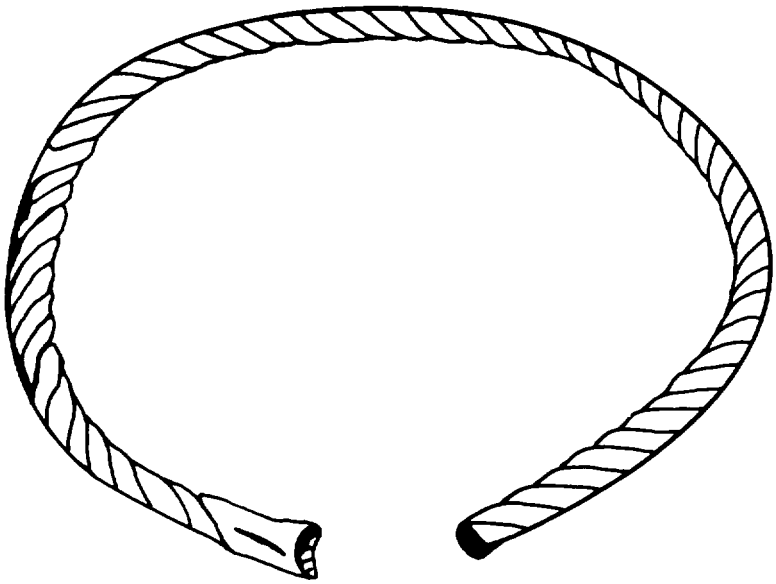


Figure 22-6. ***Kernmant/e Rope, Type*** **Vl**

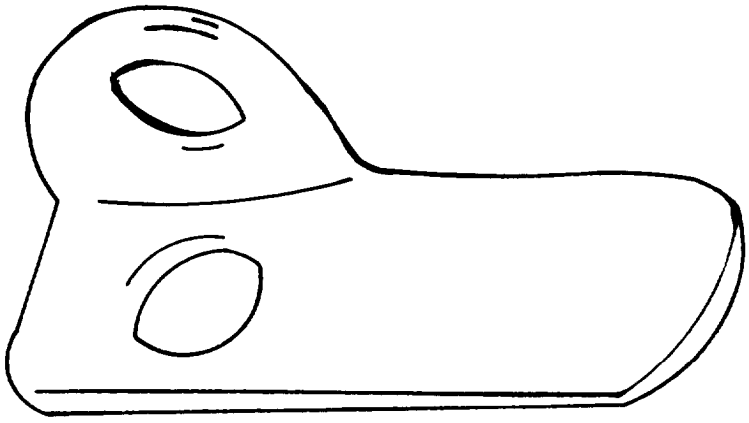
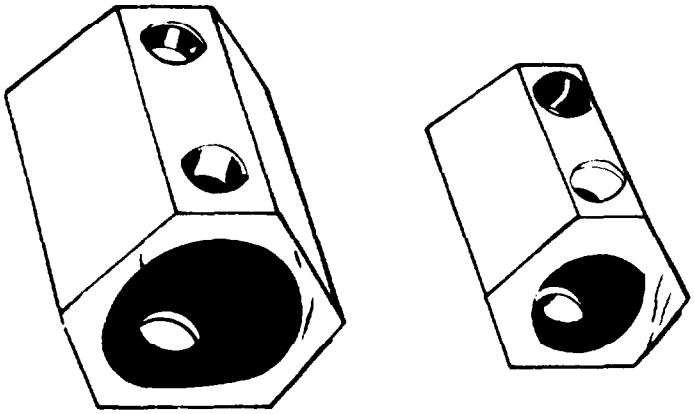


Figure 22-7. Offset Mountain Knifeblade Piton

22-4. IDENTIFICATION AND DESCRIPTION – Continued



Size IIB Size I

Figure 22-8. Irregular Hexagon Stoppers

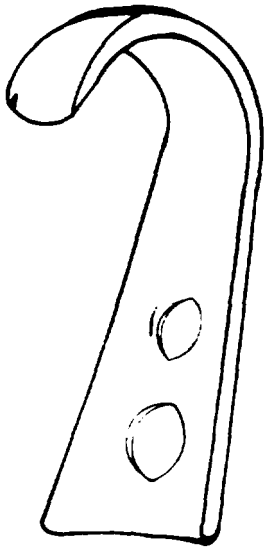


Figure 22-9. Cliffhanger Mountain Piton

22-4. IDENTIFICATION AND DESCRIPTION — Continued

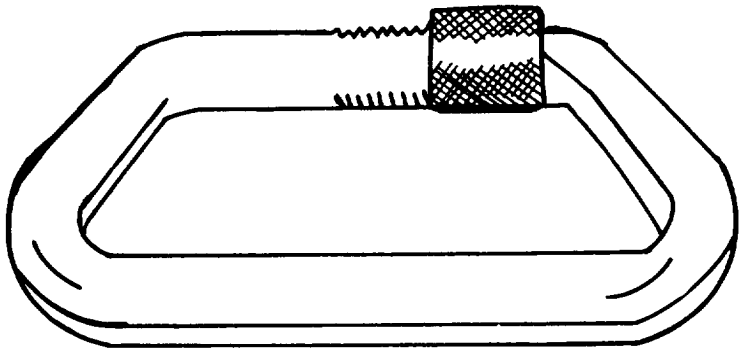


Figure 22-10. Locking Mountain Piton snap Link

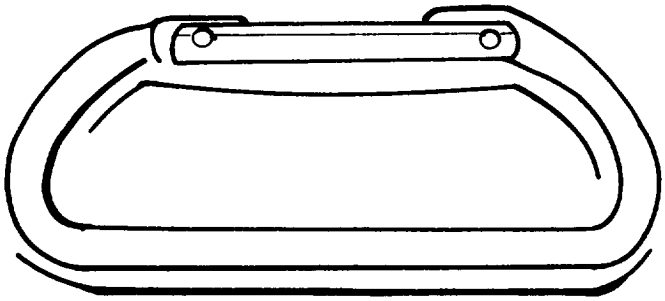


Figure 22-11. Nonlocking Mountain Piton Snap Link

22-4. IDENTIFICATION AND DESCRIPTION — Continued

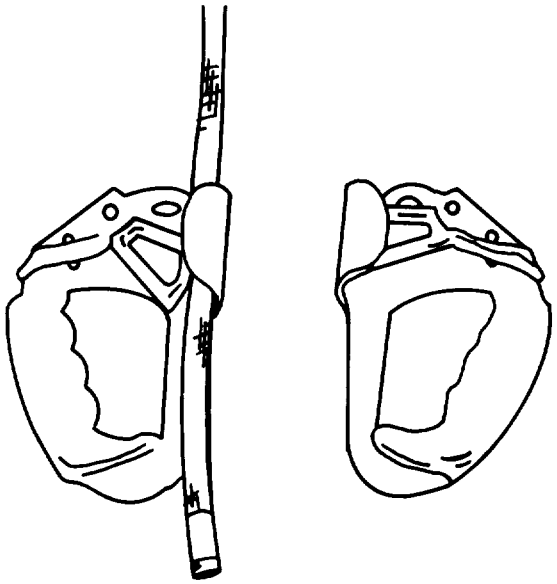


Figure 22-12. Cam Action Ascenders

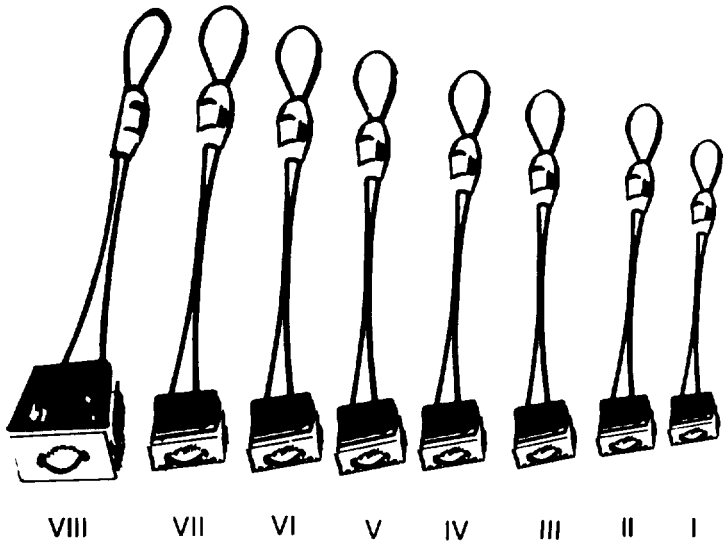


Figure 22-13. Wired Stoppers

22-4. IDENTIFICATION AND DESCRIPTION — Continued

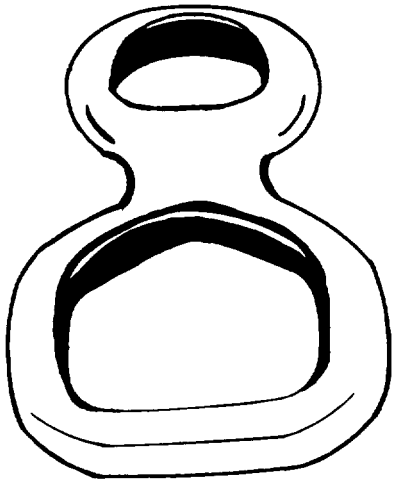


Figure 22-14. Descender

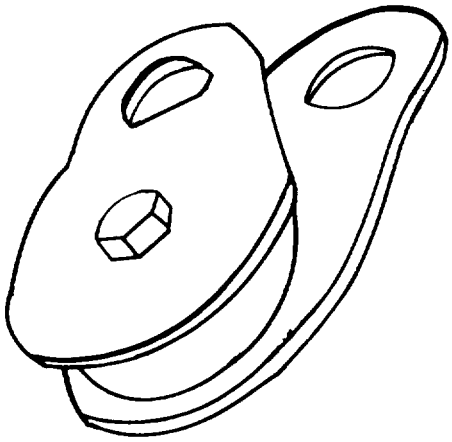


Figure 22-15. Mountain Rescue Pulley

22-4. IDENTIFICATION AND DESCRIPTION — Continued

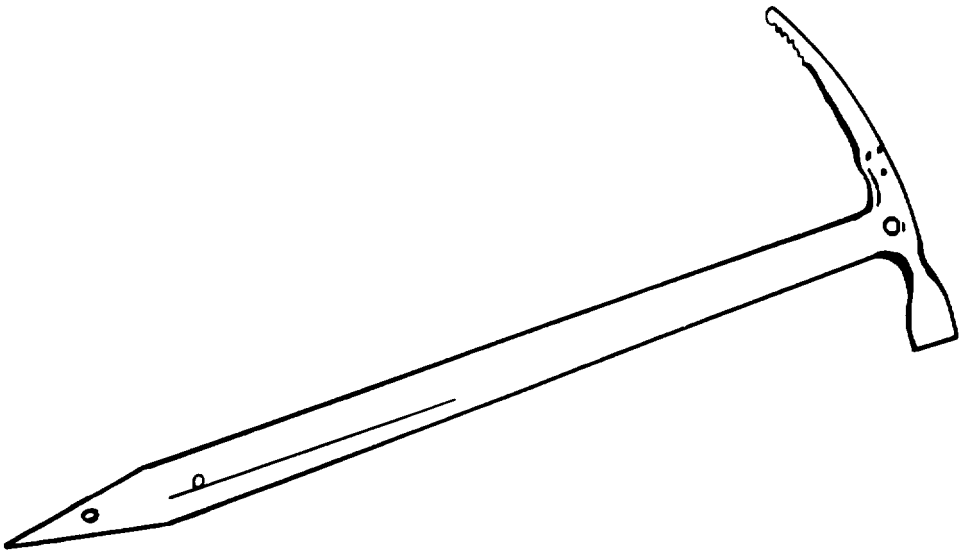
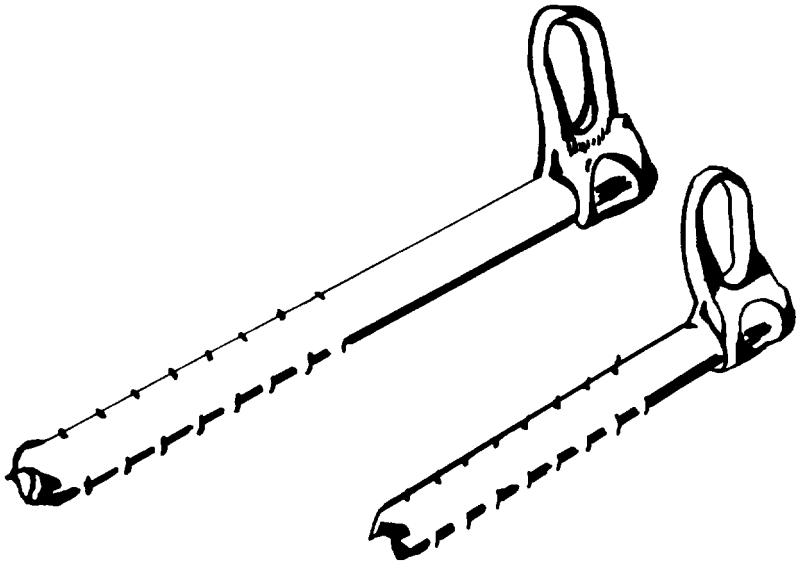


Figure 22-16. Ice Axe



Type II **Type I**

Figure 22-17. Ice Pitons

22-4. IDENTIFICATION AND DESCRIPTION — Continued

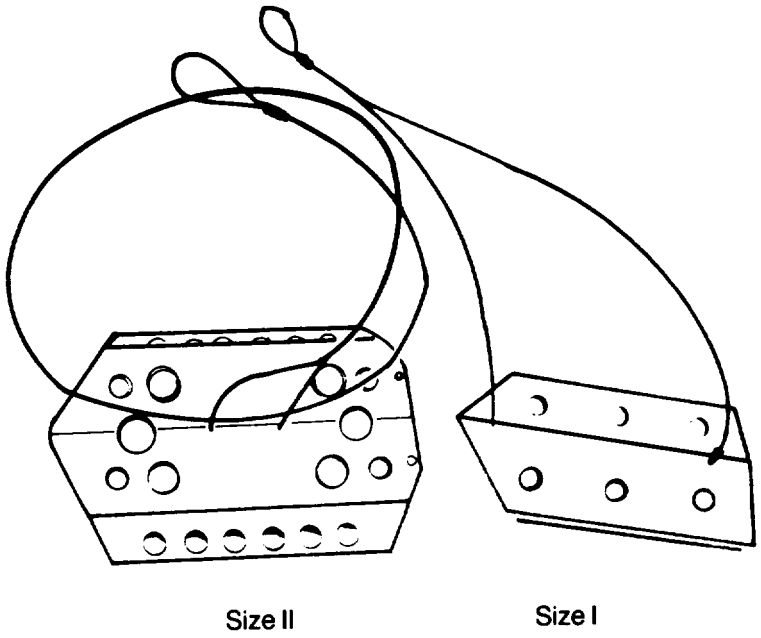


Figure 22-18. Wired Snow Anchors

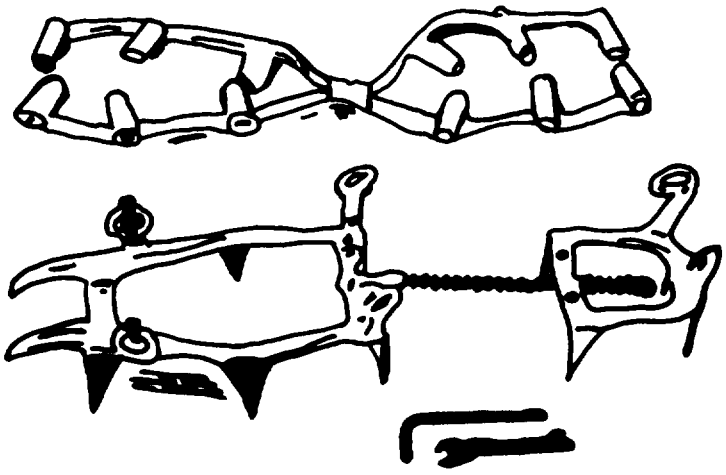


Figure 22-19. Hinged Crampons and Crampon Protectors
(With Adjusting Tools)

22-4. IDENTIFICATION AND DESCRIPTION — Continued

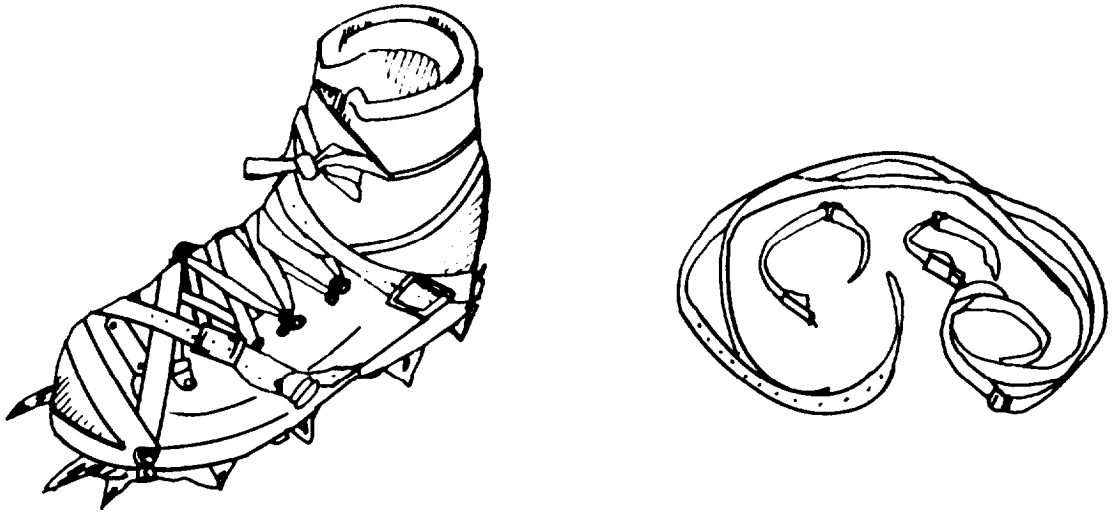


Figure 22-20. Crampon Straps

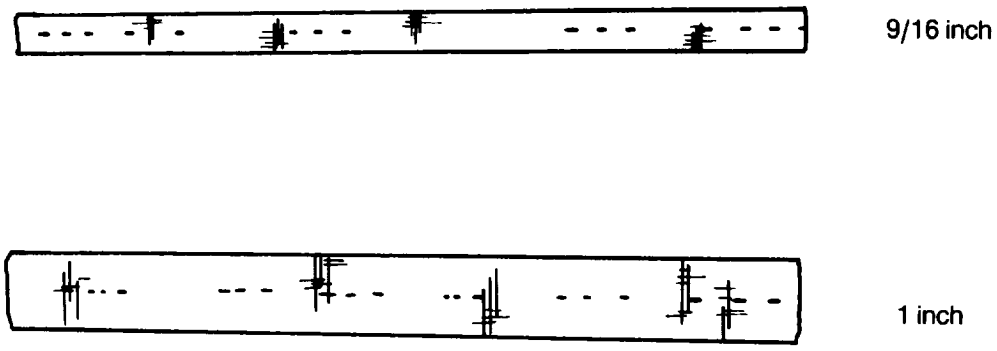


Figure 22-21. Tubular Nylon Webbing

Section II. **REPAIR PROCEDURES**

22-5. GENERAL

No materials are required in repair of components of ice and mountain climbing equipment,

22-6. REPAIRS

a. Organizational Maintenance. Sharpen points on crampons, ice pitons, ice axe and rock and ice hammer.

22-7. LABELS

If stock numbers or size designation is in such a condition that it is apparent that it will not retain legibility when subject to wear after re-issue, then item in question must be renumbered.

22-8. WORKMANSHIP

Repair operations will be performed by personnel skilled in the particular trade applicable to their duties in the repair of subject items. The metal components will be brushed, sanded or ground free of burrs, edges, deep nicks or irregularities of the striking edges or face. The handles and shafts will be finished relatively smooth without breaks, splits or other defects which may affect serviceability of the item. Straps will be properly constructed and attached and present a satisfactory and serviceable appearance. Hardware that is slightly corroded or rusty will be cleaned and finished without defacing the end item. The finished item will be complete, thoroughly clean, and free from all defects which may affect the serviceability or general appearance.

Section III. MATERIALS

No parts or bulk materials are authorized for repair of end items covered in this chapter.

CHAPTER 23

MAINTENANCE OF BODY ARMOR SYSTEM FOR EXPLOSIVE ORDNANCE DISPOSAL (EOD)

Section I. INTRODUCTION

23–1. SCOPE

This chapter describes the procedures and materials used in maintenance of the Body Armor System for Explosive Ordnance Disposal (EOD). The Body Armor Syste (EOD) consists of a body armor coat, trousers, bonnet, chest plate and face shield, and carrying bag.

NOTE

PASGT Helmet (sea Chapter 19 **of** this TM) Is to be used with the Body Armor System (EOD).

23–2. COMMODITY SPECIFICATIONS

a. items.

SPECIFICATION	END ITEM
MIL-B-44155	Body Armor, Coat, for Explosive Ordnance Disposal (EOD) System
MIL-B-44266	Body Armor, Trousers, Explosive Ordnance Disposal (EOD) System
MIL-B-44127	Body Armor, Bonnet, for Explosive Ordnance Disposal (EOD) Units
MIL-B-44315	Body Armor, Chest Plate and Face Shield, Explosive Ordnance Disposal
MIL-B-44332	Bag, Carrying, Protective Suit, Explosive Ordnance Disposal

b. Components.

SPECIFICATION	ITEM
V-F-106	Fasteners, Slide, Interlocking
V-T-295	Thread, Nylon
DDD-L-20	Label, For Clothing, Equippage and Tentage (General Use).
PPP-B-636	Box, Shipping, Fiberboard
MIL-B-371	Braid, Textile, Tubular
MIL-W-4088	Webbing, Textile, Woven Nylon
MIL-B-543	Buckle, Tongueless and Web Strap
MIL-T-44100	Thread, Para-Aramid, Spun, Intermediate Modulus

23-2. COMMODITY SPECIFICATIONS- **Continued**

SPECIFICATION	ITEM
MIL-T-5038	Tape, Textile and Webbing, Textile, Reinforcing, Nylon
MIL-W-5664	Webbing, Textile, Elastic Cotton
MIL-W-17337	Webbing, Textile, Woven Nylon
MIL-F-21840	Fastener Tapes, Hook and Pile, Synthetic
MIL-C-44050	cloth, Ballistic, Aramid
MIL-C-43842	cloth, Oxford, Aramid
MIL-B-5213	Buckle, Quick Release
MIL-C-43128	Cloth, Plain Weave, Nylon, Water Repellent, OG-106
MIL-C-43375	Cloth, Duck Nylon, 12.5 Ounce

c. Drawings.

NUMBER	TITLE
8-1-448	Body Armor for Explosive Ordnance Disposal (EOD); Assembly
8-1-448	Coat, Detachable Collar and Groin Protector (EOD)
8-1-450	Trousers and Spats (EOD)
2-1-1618	bonnet, Body Armor for Explosive Ordnance Disposal (EOD)
2-1-1651	Face and Chest Protective Armor Assembly
2-3-468	Bag, Carrying, Protective Suit, Explosive Ordnance Disposal (EOD)

23–3. TECHNICAL PUBLICATIONS

NUMBER	TITLE
FM 10-16	General Repair for Clothing and Textiles
FM 10-280	Field Laundry, Bath and Clothing and Exchange Operations
TM 9-2865	Instruction Guide: Repair of Slide Fasteners

23-4. IDENTIFICATION AND DESCRIPTION

a. Coat, Body Armor, Explosive Ordnance Disposal.

NSN	SIZE	SPECIFICATION
8470-01-294-5573	Extra small	MIL-B-44155
8470-01-294-5574	Small	MIL-B-44155
8470-01-294-5575	Medium	MIL-B-44155
8470-01-294-5576	Large	MIL-B-44155
8470-01-294-5577	Extra large	MIL-B-44155

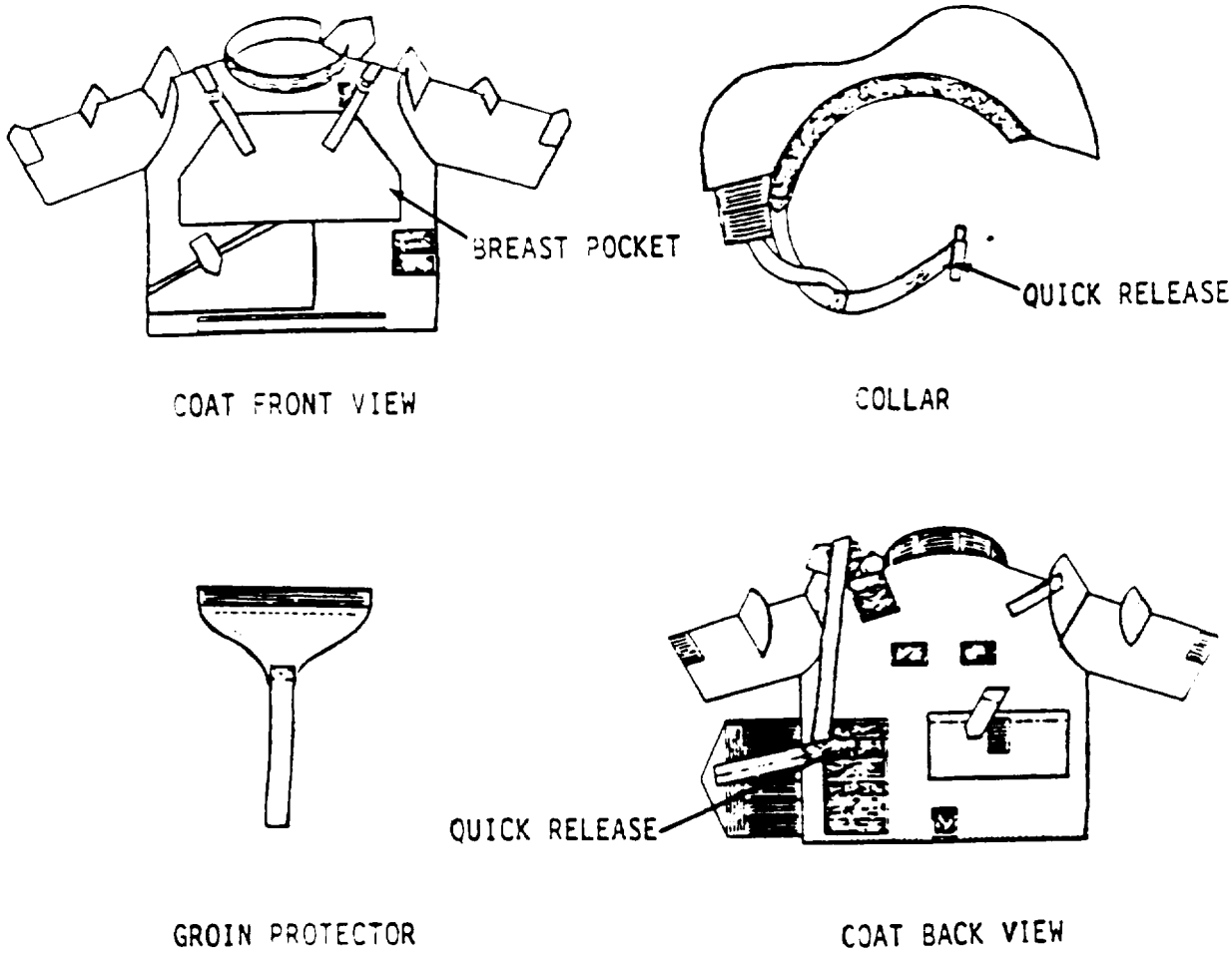


Figure 23-1. Coat, Body Armor

23-4. IDENTIFICATION AND DESCRIPTION–Continued

(1) The coat is made of 16-ply, 14-oz/sq. yd. KEVLAR ® covers. The KEVLAR® is staggered at the side seams and at the underseam of the sleeves in an alternating manner in order to conform to the body.

(2) The left shoulder and left side are equipped with a quick-release hook and pile fastener closure which enables the wearer to quickly doff the coat. The back of the armholes are not attached to the coat back in order to allow the wearer greater forward arm movement. There are pockets on the front of the coat to install the chest protector and to carry tools.

(3) The neck protective collar and the groin protector, although separately attached items, are parts of the coat, body armor, EOD.

(a) The collar is made of 16-ply, 14-oz/sq. yd. KEVLAR® ballistic material inserted into an inner and outer NOMEX® cover. A hook and pile fastener system connects the protective collar to the coat. The collar is designed with one open end so that the ballistic insert (KEVLAR®) can be removed and the cover washed when it becomes soiled.

(b) The groin protector is made of 16-ply, 14-oz/sq. yd. KEVLAR® ballistic material permanently installed within a NOMEX® cover. A hook and pile fastener system connects the groin protector to the coat.

b. Body Armor, Trousers, Explosive Ordnance Disposal (EOD).

NSN	SIZE	SPECIFICATION
8470-01-294-5579	Small	MIL-B-44266
8470-01-294-5580	Medium	MIL-B-44266
8470-01-294-5581	Large	MIL-B-44266

23-4. IDENTIFICATION AND DESCRIPTION—Continued

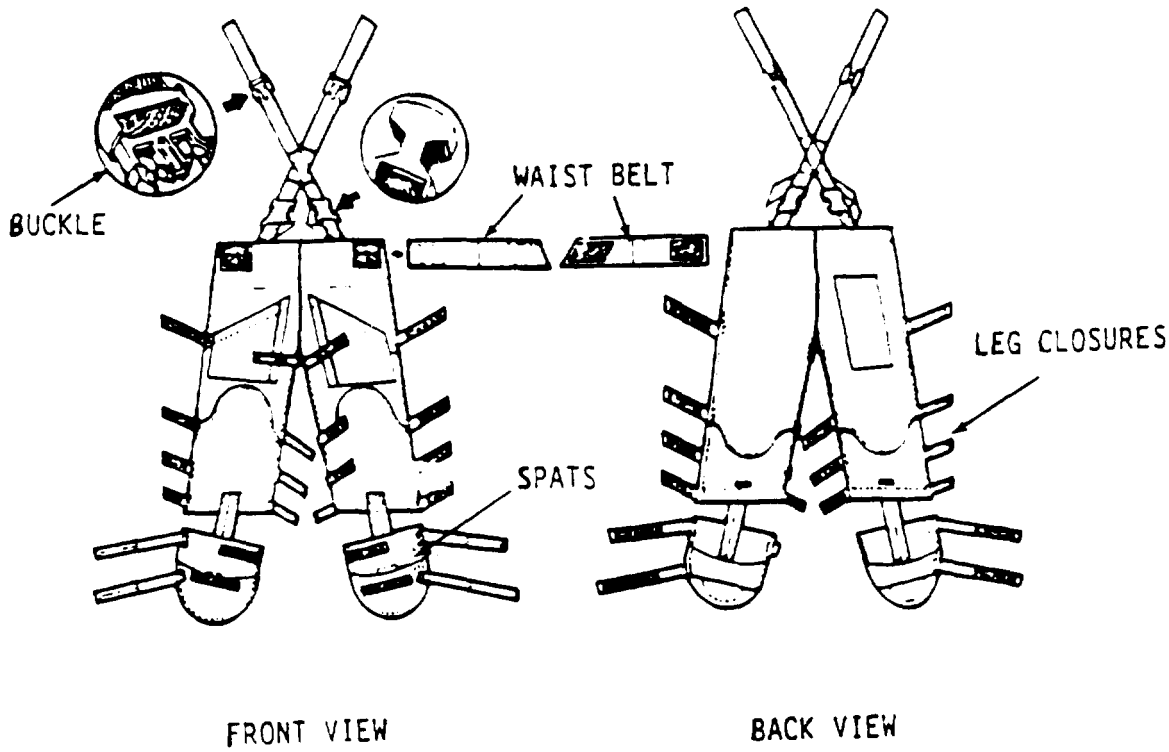


Figure 23-2. Trousers

(1) The trousers are made of 16-ply, 14-oz/sq. yd. KEVLAR® ballistic material permanently attached to an inner and outer water-repellant NOMEX® cover. A waist belt attaches to each side of the trousers by means of a hook and pile fastener.

(2) A scissor-type suspender consisting of 1 1/2 inch wide nylon webbing is sewn to the trousers at two points at the front of the waist, An adjustable buckle with a squeeze-type quick release is attached to each strap 4 inches above the attachment point on each front panel.

(3) The bottom of each leg front has a spat-type armor which is permanently attached, Two straps of hook and pile fastener are attached to each spat to wrap around the wearer's ankle and foot. Each trouser leg has two-piece components (upper and lower leg) attached at the outseams. The trouser front has a pocket located on each leg in the thigh area.

23-4. IDENTIFICATION AND DESCRIPTION—Continued

c. Body Armor, Bonnet, Explosive Ordnance Disposal (EOD).

NSN	SIZE	SPECIFICATION
8470-01-294-5586	Extra small	MIL-B-44127
8470-01-294-5587	Small	MIL-B-44127
8470-01-294-5588	Medium	MIL-B-44127
8470-01-294-5589	Large	MIL-B-44147

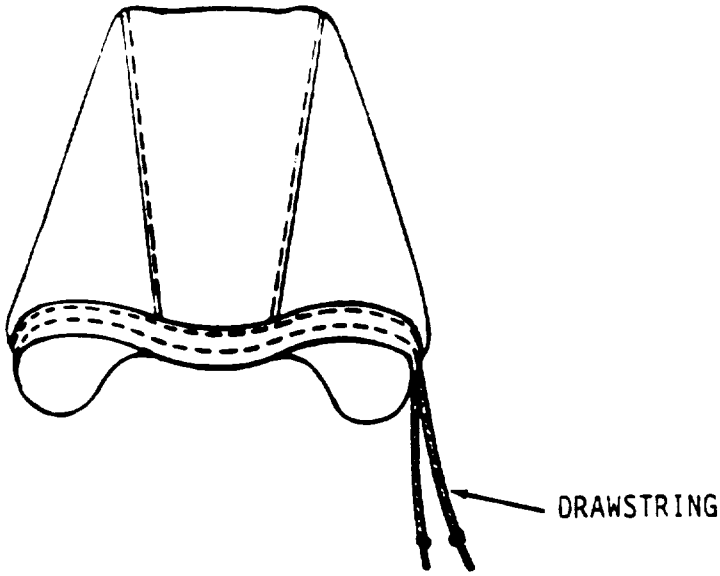


Figure 23-3. Bonnet

(1) The bonnet consists of 12 plies of 14-oz/sq. yd. KEVLAR® enclosed in a NOMEX® cover.

(2) The bonnet has a retention strap (drawstring) for attaching and adjusting the bonnet to the helmet issued to the individual (Ground Troop's or Parachutist).

23-4. IDENTIFICATION AND DESCRIPTION—Continued

d. Body Armor, Chest Plate and Face Shield, Explosive Ordnance Disposal (EOD).

NSN	SIZE	SPECIFICATION
8470-01-294-5583	Small	MIL-B-44315
8470-01-294-5584	Medium	MIL-B-44315
8470-01-294-5585	Large	MIL-B-44315

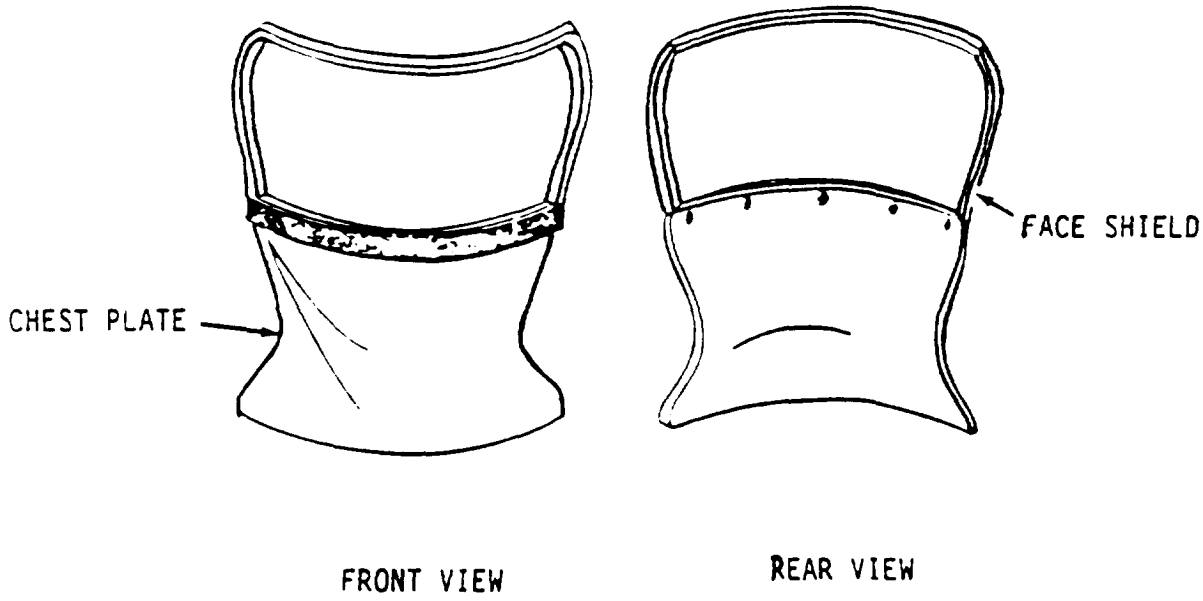


Figure 23-4. Chest Plate anti Face Shield

(1) The chest plate consists of a molded 18-ply fiberglass fabric/resin composite. The plate is designed to fit the contour of the body and is held in place by the breast pocket of the coat.

(2) The face shield is a transparent composite consisting of a curved acrylic/polycarbonate laminate.

23.4 IDENTIFICATION AND DESCRIPTION—Continued

e. Bag, Carrying, Protective Suit, Explosive Ordnance Disposal (EOD).

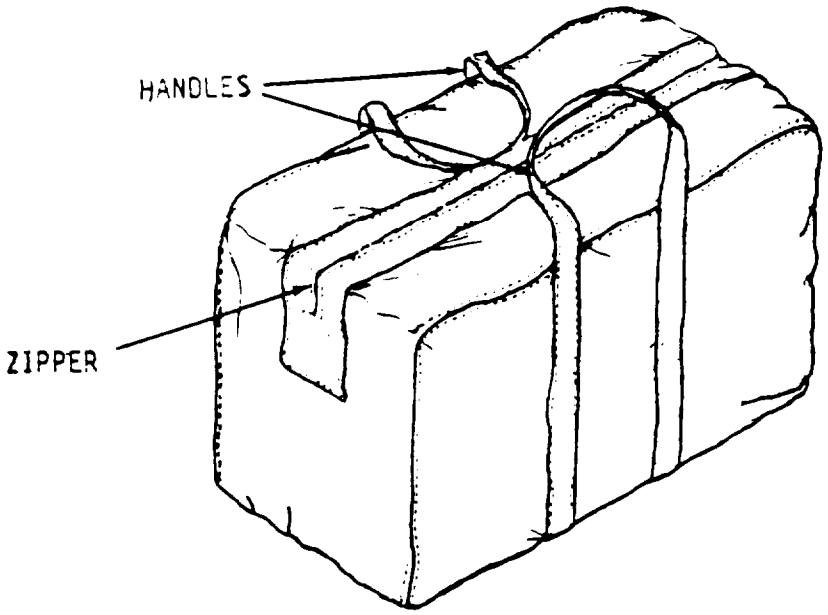


Figure 23-5. Bag, Carrying, Protective Suit

(1) The bag is designed to carry all items/components of the Body Armor System for EOD. Bag dimensions: 29 1/2 inches long by 17 1/2 inches high by 15 inches deep.

(2) The nylon bag has a full-length zipper (with flap) and webbing handles.

Section II. REPAIR PROCEDURES

23-5. MATERIALS

Materials used in the repair of the Body Armor System for EOD components will be serviceable materials recovered from similar salvaged items, except where specifically prohibited, or will be new materials. New materials will conform to the appropriate specifications and will be requisitioned from stock using National stock numbers (NSNs), complete military standard numbers, or part number and contractor and Government entity code (CAGEC) listed in Section III. When not available from stock, materials conforming to the standard material may be purchased locally.

23-6, REPAIR AND MAINTENANCE OF BODY ARMOR SYSTEM FOR EOD

Prior to repair operations, each item shall be inspected by qualified personnel to determine the amount of repair necessary. Carefully inspect the overall condition of all components to determine whether they are worthy of cleaning and repair or whether they should be turned in for salvage as unserviceable. Refer to Chapter 1 for serviceability classification of components of the body Armor System, EOD.

a. Organizational Maintenance.

(1) Cleaning procedure. Clean Body Armor System, EOD, as follows:

CAUTION

Never use a stiff bristle brush. Damage to the material will result.

(a) Remove loose dirt and lint from hook and pile fastener and outer cover surface of the system's components using a cloth or soft to medium soft bristle brush. Never use a stiff bristle brush on the system components.

CAUTION

Never use a drycleaning solvent. Damage to the material will result.

(b) Wet the system's components in the shower or immerse in water. Use warm, not hot, water.

(c) Apply toilet soap or detergent to the soiled areas and scrub with a soft to medium soft bristle brush. Badly soiled areas may be scrubbed with laundry bar soap (GI soap). Scrub only long enough to remove soil.

(d) Heavy grease and oil stains may be pre-spotted with a detergent mixture and scrubbed with a soft brush.

(e) Rinse the system's components with warm water until the suds are completely gone.

(f) Hand the system's components to dry away from heat or open flame.

(g) Inspect the system's components after cleaning to ensure that seams have not opened during cleaning and that components operate satisfactorily.

(2) Repair. Repair of Body Armor System EOD components is limited to the handstitching of small rips or tears in the NOMEX® (apparel items) or nylon (bag) fabric.

(3) Turn in. Thoroughly clean and dry the items which cannot be repaired at organizational level prior to turning them in for repair by a higher maintenance leve.

b. Direct Support Maintenance.

(1) Preliminary examination. The repairman will inspect the items for weakened areas, holes, tears, opened seams, and missing hardware. Test for weakness by applying pressure on the area in question and attempting to tear the material. Mark the weakened areas found with tailor's crayon. Inspect the items for presence and condition of all hardware, and mark them where repair or replacement is required.

23-6. REPAIR AND MAINTENANCE OF BODY ARMOR SYSTEM FOR EOD—Continued

(2) Repair. Use repair procedures described in FM 10-16 in conjunction with these instructions as applicable,

NOTE

Repair of KEVLAR® inserts is not authorized.

(a) Stitching. Use machine stitching for all sewing. Re-sew loose, broken, or defective stitches according to original construction using thread specified in Table 23-1 of this chapter. Maintain proper thread tension to prevent loose stitches, backstitch breaks, and ends not less than one inch (2.54 cm) to prevent raveling. Use the types of stitches, thread size, and stitches per inch for sewing as shown in Table 23-1 of this chapter.

(b) Replacement of webbing, straps, buckles, and fasteners.

1 Webbing, straps, and hook and pile fasteners are obtained from bulk stock. Cut each item from the correct material (Section Ill) and to the same Iength, as the item to be replaced.

2 Fuse the cut ends of webbing and straps before assembling for stitching. The method used to fuse the webbing and strap ends shall provide sufficient heat to form a smooth uniform edge.

3 Using care not to damage attached fabric, cut away defective item by using a sharp edged tool or other suitable device.

3 Using care not to damage attached fabric, cutaway defective item by using a sharp edged tool or other suitable device.

CAUTION

Do not stitch through the KEVLAR® ballistic filler except where stitched in the original construction. Damage to the KEVLAR® would result.

NOTE

If the ballistic filler falls under any retainer, it shall not be folded under or pushed aside to avoid being caught in the stitching,

4 When it is necessary to open seams to remove defective webbings and other tabs, care should be exercised to avoid damaging the KEVLAR ® ballistic filler. Opening of seams can be accomplished by using a sharp-edged tool or other suitable device.

5 Use matching stitching for stitching and restitching replacement items. Use Table 23-1 for the type of stitches, thread size, and stitches per inch that are required for repair.

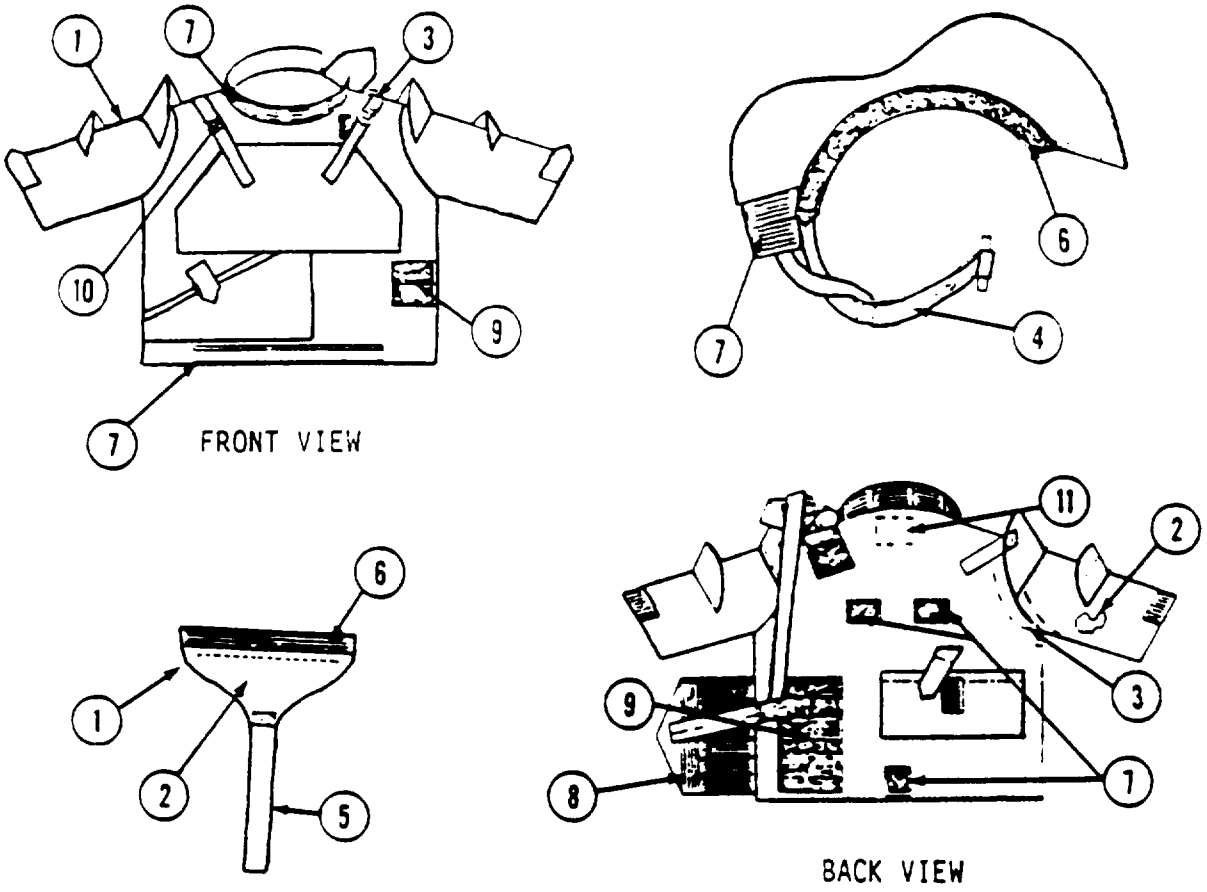
23-6. REPAIR AND MAINTENANCE OF BODY ARMOR SYSTEM FOR EOD—Continued

Table 23-1. Stitching Instructions

OPERATION	STITCH TYPE	THREAD SIZE		STITCHES PER INCH
		NEEDLE	BOBBIN	
General	301	E	**E**	8-10
Bartack, pockets and pocket flaps	Bartack	B	**B**	28 per tack
Bartack, upper leg panel to bottom panel	Bartack	B	**B**	42 per tack
Overedging	502,503, 504, or 505	B	**B**	6-10
Labels, make pockets and pocket flaps	301	B	**B**	10-12
Hook and pile fastener tape, except all front closure hook and pile tapes. (Front closure hook and pile tapes use general stitching instructions)	301	B	**B**	8-10
Attach the upper leg to bottom leg, backstitch sides of leg panels.	301	F	F	6-8

23-7. REPAIR OF COAT, BODY ARMOR SYSTEM FOR EOD

Repair of the coat and associated collar and groin protector is limited to restitching the NOMEX inner and outer covers, and replacing webbing, straps, buckles, and fasteners. Replacement items are shown in Figure 23-6 and the item numbers correspond to the materials listed in Section III. Table 23-2 contains stitching instructions and finished measurements are in Table 23-3,



LEGEND

1. CLOTH, Aramid
2. CLOTH, Ballistic
3. WEBBING
4. WEBBING
5. WEBBING
6. FASTENER, (hook)
7. FASTENER, (pile)
8. FASTENER, (hook)
9. FASTENER, (pile)
10. BUCKLE
11. LABEL

Figure 23-6, Replaceable Items on Body Armor Coat

23-7. REPAIR OF COAT, BODY ARMOR SYSTEM FOR EOD—Continued

a. Restitching The Inner And Outer Covers.

(1) Remove all loose or broken threads from the seams to be restitched.

(2) Use the types of stitches, thread size and stitches per inch as shown in Table 23-2 below.

b. Replacement Of Webbing, Straps, Buckles, And Fasteners.

(1) Webbing, straps, and hook and pile fastenes are obtained from bulk stock. Cut each item from the correct material (Section Ill) and to the same length as the item to be replaced.

(2) Fuse the cut ends of webbing and straps before assembling for stitching. The method used to fuse the webbing and strap ends shall provide sufficient heat to form a smooth uniform edge.

(3) Using care not to damage attached fabric, cut away defective item by using a sharp edged tool or other suitable device.

CAUTION

Do not stich through the KEVLAR ® ballistic filler except where stitched in the original construction. Damage to the KEVLAR ® would result.

NOTE

If the ballistic filler falls under any retainer, it shall not be folded under or pushed aside to avoid being caught in the stitching.

(4) When it is necessary to open seams to remove defective webbings and other tabs, care should be exercised to avoid damaging the KEVIAR ® ballistic filler. Opening of seams can be accomplished by using a sharp-edged tool or other suitable device.

(5) Use matching stitching for stitching and restitching replacement items. Use Table 23-2 for the type of stitches, thread size, and stitches per inch that are required for repair.

23-7. REPAIR OF COAT, BODY ARMOR SYSTEM FOR EOD—Continued

Table 23-2. Stitching Instructions

OPERATION	STITCH TYPE	THREAD SIZE		STITCHES PER INCH
		NEEDLE	BOBBIN	
General	301	E	E	8-10
Bartack, pockets and pocket flaps	Bartack	B	B	28 per tack
Overedging	502,503, 504, or 505	B	B	6-10
Labels, pockets and pocket flaps	301	B	B	10-12
Hook and pile fastener tape, except all front closure hook and pile tapes. (Front closure hook and pile tapes use general stitching instructions)	30	B	B	8-10

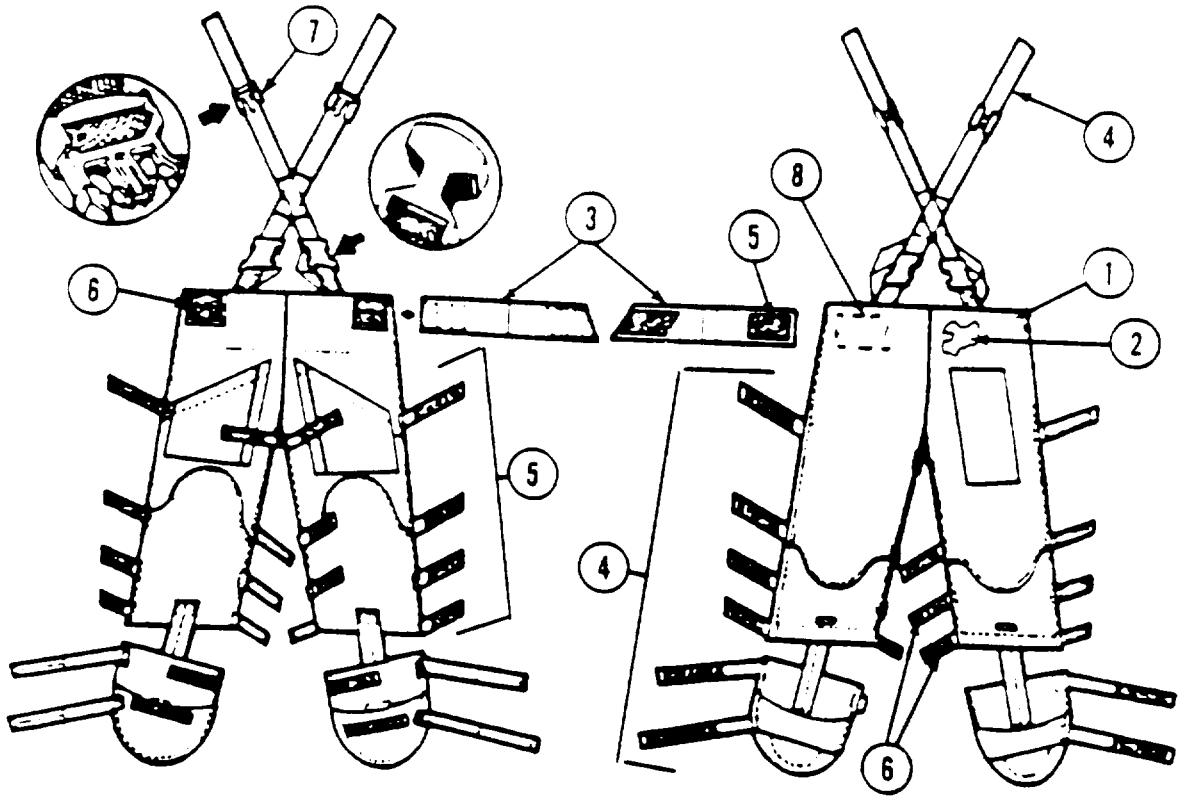
Table 23-3. Coat Finished Measurements (Inches)

SIZE	X-SMALL	SMALL	MEDIUM	LARGE	X-LARGE	TOLERANCE
Across chest, below armholes from side seam to side seam	21	23	25	27	29	±1/2
Across back, below armholes from side seam to side seam	21	23	25	27	29	±1/2
Coat back length[1]	27	27-1/2	28	28-1/2	29	±1/2
Sleeve (inseam)	19-5/8	19-3/4	19-7/8	20	20-1/8	± 1/4
Groin[2] and	12	13	14	15	16	±1/4
Groin[3]	10	10-1/2	11	11-1/2	12	±1/8

[1] Measure from neck seam to bottom of coat.
[2] Measure across top edge of groin.
[3] Measure the center, from top edge to bottom edge of groin.

23.8 REPAIR OF TROUSERS, BODY ARMOR SYSTEM FOR EOD

Repair of the trousers and associated waist belt is limited to restitching the NOMEX@ inner and outer covers, and replacing webbing, straps, buckles, and fasteners. Replacement items are shown in Figure 23-7 and the item numbers correspond to the materials listed in Section III. Table 23-4 contains stitching instructions and finished measurements are in Table 23-5.



LEGEND

1. CLOTH, Aramid
2. CLOTH, Ballistic
3. WEBBING
4. WEBBING
5. FASTENER, (hook)
6. FASTEN, (pile)
7. BUCKLE
8. LABEL

Figure 23-7. Replaceable Items on Trousers

23-8. REPAIR OF TROUSERS, BODY ARMOR SYSTEM FOR EOD—Continued

a. Restitching The Inner And Outer Covers.

(1) Remove all loose or broken threads from the seams to be restitched.

(2) Use the types of stitches, thread size and stitches per inch as shown in Table 23-4 below.

b. Replacement Of Webbing, Straps, Buckles, And Fasteners.

(1) Webbing, straps, and hook and pile fasteners are obtained from bulk stock. Cut each item from the correct material (Section Ill) and to the same length as the item to be replaced.

(2) Fuse the cut ends of webbing and straps before assembling for stitching. The method used to fuse the webbing and strap ends shall provide sufficient heat to form a smooth uniform edge.

(3) Using care not to damage attached fabric, cut away defective item by using a sharp edged tool or other suitable device.

CAUTION

Do not stitch through the KEVLAR® ballistic filler except where stitched in the original construction. Damage to the KEVLAR® would result.

NOTE

If the ballistic filler falls under any retainer, it shall not be folded under or pushed aside to avoid being caught in the stitching.

(4) When it is necessary to open seams to remove defective webbings and other tabs, care should be exercised to avoid damaging the KEVLAR® ballistic filler. Openings of seams can be accomplished by using a sharp-edged tool or other suitable device.

(5) Use matching stitching for stitching and restitching replacement items. Use Table 23-4 for the type of stitches, thread size, and stitches per inch that are required for repair.

23-8. REPAIR OF TROUSERS, BODY ARMOR SYSTEM FOR EOD—Continued

Table 23-4. Stitching Instructions

OPERATION	STITCH TYPE	THREAD SIZE		STITCHES PER INCH
		NEEDLE	BOBBIN	
General	301	E	E	8-10
Bartack, pockets and pocket flaps	Bartack	B	B	28 per tack
Bartack, Upper leg panel to bottom panel[1]	Bartack	B	B	42 per tack
Overedging	502,503, 504, or 505	B	B	6-10
Labels, make pockets and pocket flaps	301	B	B	10-12
Hook and pile fastener tape, except all front closure hook and pile tapes. (Front closure hook and pile tapes use general stitching instructions)	301	B	B	8-10
Attach the upper leg to bottom leg, backstitch sides of leg panels.	301	F	F	6-8

Table 23-5. Finished Measurements (Inches)

SIZE	SMALL	MEDIUM	LARGE	TOLERANCE
Waist breadth'	23-1/2	25-1 /2	27-1/2	± 1/2
Inseam[2]	30	32	34	± 3/4
Knee height[1]	9-1/2	20-1/2	21-1/2	± 3/4

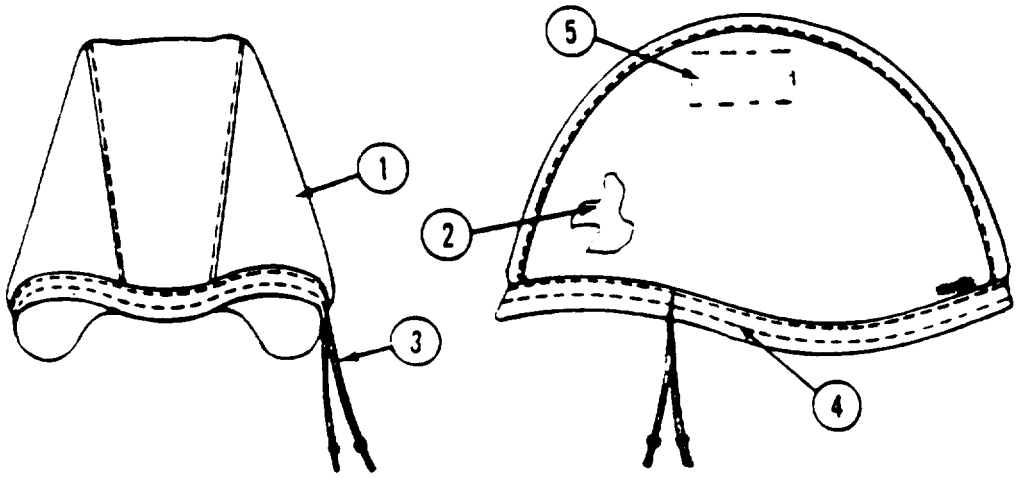
[1] Measure across waist with the trousers spread flat.
[2] Measure from seam line at base of crotch to bottom of leg.
[3] Measure from top of knee to bottom of leg.

NOTE

Spats are not included in the inseam or knee height.

23-9. REPAIR OF BONNET, BODY ARMOR SYSTEM EOD

Repair of the bonnet is limited to restitching of the NOMEX® cover and drawstring replacement. Replacement items are shown in Figure 23-8 and the item numbers correspond to the materials listed in Section Ill. Table 23-6 contains stitching instructions and finished measurements are in Table 23-7.



LEGEND

1. CLOTH, Aramid
2. CLOTH, Ballistic
3. BRAID, Tubular
4. WEBBING, Nylon
5. LABEL

Figure 23-8. Replaceable Items on Bonnet

a. Restitching The Inner And Outer Covers.

(1) Remove all loose or broken threads from the seams to be restitched.

(2) Use the types of stitches, thread size and stitches *per inch* as shown in Table 23-6 below,

b. Drawstring Replacement.

(1) Remove defective drawstring (3) by pulling through eyelet(s).

(2) Cut appropriate length of replacement drawstring and fuse cut ends.

(3) Insert one end of drawstring through eyelet and feed it through the drawstrng tunnel until the leading end can be extracted from the second eyelet.

(4) Tie large knots at both ends of drawstring,

23-9. REPAIR OF BONNET, BODY ARMOR SYSTEM EOD—Continued

Table 23-6. Stitching Instructions

OPERATION	STITCH TYPE	THREAD SIZE		STITCHES PER INCH
		NEEDLE	BOBBIN	
General	301	E	E	8-10
Overedging	502,503, 504, or 505	B	B	6-10

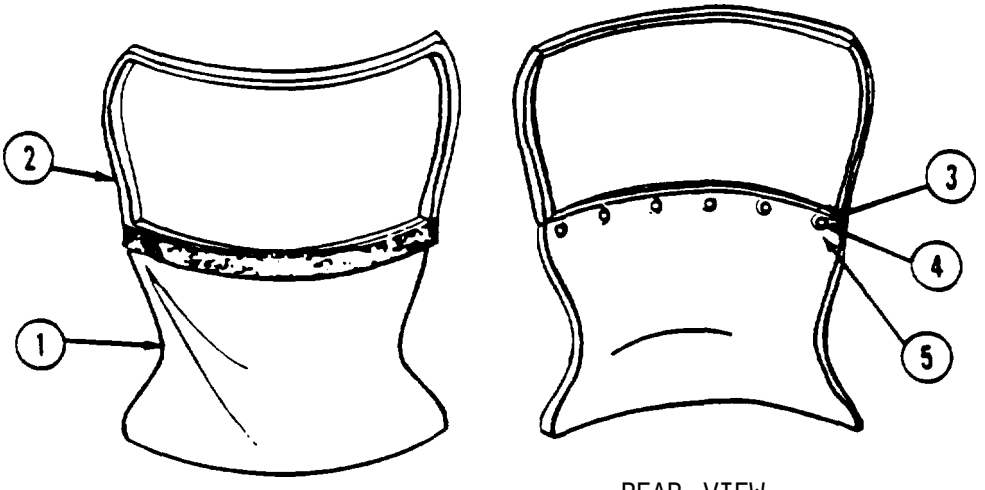
Table 23-7. Finished Measurements (Inches)

SIZE	X-SMALL	SMALL	MEDIUM	LARGE	TOLERANCE
Front to back[1]	18-1/2	19-1/2	20-1/2	21	±1/2
Side to side[2]	19-1/2	20-1/2	21-1/2	22	±1/2

[1] Measure center front to center back stitching line to stitching line.
[2] Measure side to side at longest points from stitching line to stitching line.

23-10. REPAIR OF CHEST PLATE AND FACE SHIELD

Replace Chest Plate/Face Shield. The chest plate or the face shield may be replaced separately if either one is damaged. The chest plate should be replaced if it is cracked and/or ballistic damaged. The face shield should be replaced if scratched or stained so that it impairs vision, or if cracked or chipped. Replacement items are shown in Figure 23-9 and the item numbers correspond to the materials listed in Section III. Finished measurements are in Table 23-8.



FRONT VIEW REAR VIEW

LEGEND

1. PLATE, Chest
2. SHIELD, Face
3. NUT, Blind
4. WASHER, Flat
5. SCREW, Machine

Figure 23-9. Replaceable Items on Chest Plate and Face Shield

(1) Separate chest plate (1) from face shield (2) by removing 6 mounting nuts, washers, and screws.

(2) Attach replacement item to the serviceable item by installing 6 mounting screws, washers, and nuts.

Table 23-8. Finished Measurements (Inches)

SIZE	SMALL	MEDIUM	LARGE
Height	21	22	34
Width	15	16	17

23-11. REPAIR OF CARRYING BAG

Repair of the carrying bag consists of patching, restitching the seams, replacing the web handles, and slide fastener. Replacement items are shown in Figure 23-10 and the item numbers correspond to the materials listed in Section Ill.

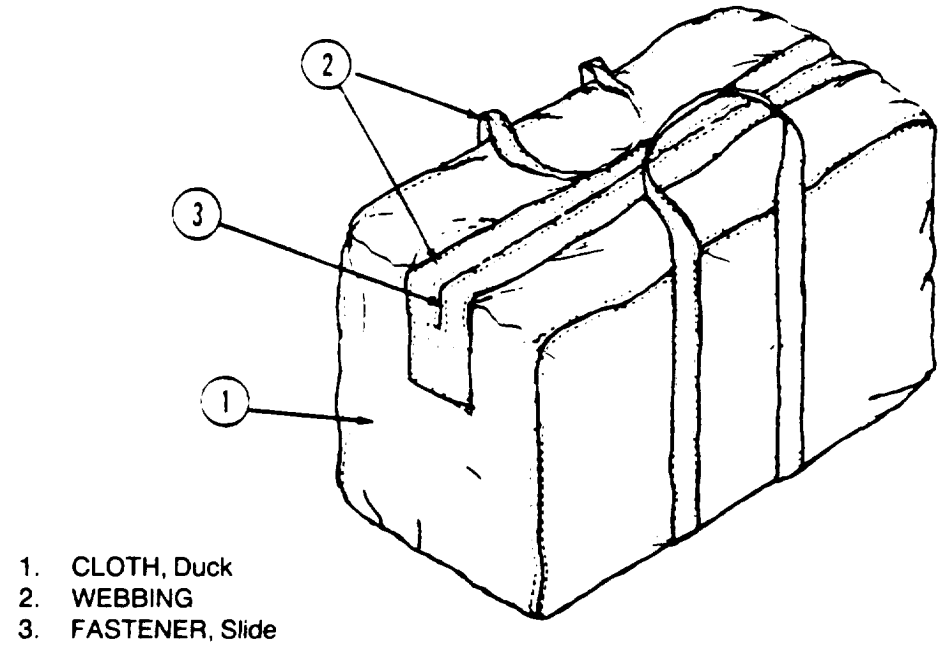


Figure 23-10. Replaceable Items on Carrying Bag

a. Restitching the seams.

(1) Remove all loose or broken threads from the seams to be restitched.

(2) Use the types of stitches, thread size and stitches per inch as shown in Table 23-9 below.

b. Replacement Of Webbing And Fasteners.

(1) Webbing, straps, and slide fastener are obtained from bulk stock. Cut each item from the correct material (Section II)I) and to the same length as the item to be replaced,

(2) Fuse the cut ends of webbing and straps before assembling for stitching. The method used to fuse the webbing and strap ends shall provide sufficient heat to form a smooth uniform edge.

(3) Using care not to damage attached fabric, cut away defective item by using a sharp edged tool or other suitable device.

23-11. REPAIR OF CARRYING BAG—Continued

(4) Use matching stitching for stitching and restitching replacement items. Use Table 23-9 for the type of stitches, thread size, and stitches per inch that are required for repair.

c. Patching the Carrying Bag. Patch rips, tears, and holes exceeding one inch (2.54 cm) with a single patch of replacement fabric using threads as specified in Table 23-9. Cut the patch of sufficient size to extend at least 1/2 inch (1.27 cm) beyond the hole or area to be patched, allowing for a 1 /8 inch (0.953 cm) turn under. Place the patch on the outside and sew it 1/8inch (0.318 cm) from the edge of the patch. Cut away the damaged area to a square or rectangular shape, depending upon the shape of the hole. Turn the raw edges under 3/8 inch (0.953 cm) and sew 1/8 inch (0.318 cm) from the edge.

Table 23-9. Stitching Instructions

OPERATION	STITCH TYPE	THREAD SIZE		STITCHES PER INCH
		NEEDLE	BOBBIN	
General	301	E	E	8-10
Overedging	502,503, 504, or 505	B	B	6-10

Carrying Bag Finished Measurements are: Length, 29-1/2 inches; Height, 17-1/2 inches; Depth, 15 inches.

23-12. LABELS

Each component of the Body Armor System for EOD, i.e., coat, trousers, bonnet, chest plate, face shield, and carrying bag, shall have combination, size, identification, and instruction label conforming to Type IV, Class 14 of DD-L- 20. The label material shall be dyed medium green 614. Small letters and figures shall be 1/16-inch (0.159 mm) minimum, capital letter, 3/32-inch (0.238 mm) minimum.

a. Identification Label. The identification label shall read either: Coat, Body Armor for EOD; Trousers, Body Armor for EOD; Bonnet, Body Armor for EOD; Chest Plate, Body Armor for EOD; Face Shield, Body Armor for EOD; or Carrying Bag for Body Armor System (EOD).

b. Size Label. Tables 23-10 through 23-14 identify size labels to be used on components of the Body Armor System.

c. Instruction Label. The instruction label for components of the system shall contain the following information:

> READ, THEN KEEP THE "USE AND CARE" BOOKLET IN THIS POCKET. THIS ARMOR MAY SAVE YOUR LIFE.
>
> When worn properly, this body armor will protect your vital areas against fragments which can cause casualties.

Table 23-10. Size Label Information (Coat)

X-Small Chest: Up to 33 inches Stock No.: NATO Size: 708-/7484	Small Chest: from 33 to 37 inches Stock No.: NATO Size: 7080-8494
Medium Chest: from 37 to 41 inches Stock No.: NATO Size: 7080/9404	Large Chest: from 41 to 45 inches Stock No.: NATO Size: 7080/0414
X-Large Chest: 45 inches and up Stock No.: NATO Size: 7080/1424	

23-12. LABELS–Continued

Table 23-11. Size Label Information (Trousers)

Small Inseam: 30 inches 1/2 Waist: 23-1 /2 inches stock No.:	Medium Inseam: 32 inches 1/2 Waist: 25-1 /2 inches Stock No.:
Large Inseam: 34 inches 1/2 Waist: 27-1 /2 inches Stock No.:	

Table 23-12. Size Label Information (Bonnet)

X-Small Use with X-Small helmet	Small Use with Small helmet
Medium Use with Medium helmet	Large Use with Large helmet

23-12. LABELS–Continued

Table 23-13. Size Label Information (Chest Plate)

Small Use with Small and X-Small coat	Medium Use with Medium coat
Large Use with Large and X-Large coat	

Table 23-14. Size Label Information (Face Shield)

Small Use with Small and X-Small coat	Medium Use with Medium coat
Large Use with Large and X-Large coat	

23-13. TAPES, CORDS, AND FASTENER LENGTHS

The following tables (15 through 18) give the lengths and quantity of the tapes, cords, and fasteners by item.

Table 23-15. Replacement Cord and Tape Lengths (Coat)

ITEM	SIZE					QTY
	X-SMALL INCHES	SMALL INCHES	MEDIUM INCHES	LARGE INCHES	X-LARGE INCHES	
COAT						
Webbing, Nylon, 1-inch wide,	21	22	23	24	25	1
Webbing Nylon,	14	14	14	14	14	1
1-23/32 inches	25	25	25	25	25	1
wide	7	7	7	7	7	1

23-13. TAPES, CORDS, AND FASTENER LENGTHS—Continued

Table 23-15. Replacement Cord and Tape Lengths (Coat) (Continued)

ITEM	SIZE					QTY
	X-SMALL INCHES	SMALL INCHES	MEDIUM INCHES	LARGE INCHES	X-LARGE INCHES	
Webbing, Textile,	15	15	15	15	15	1
Elastic, 1-1 /2	6	6	6	6	6	1
inches	5-3/4	5-3/4	5-3/4	5-3/4	5-3/4	1
NOMEX®, Strap,	4-1/2	4-1 /2	4-1/2	4-1/2	4-1 /2	1
2-1 /8	5	5	5	5	5	1
COLLAR						
Webbing, Nylon,	19	19	19	19	19	1
1-inch wide	10-1/2	10-1/2	10-1/2	10-1/2	10-1/2	1
NOMEX®, Strap, 2-inches wide	3	3	3	3	3	1
NOMEX®, Strap, 4-inches wide	6-1/4	6-1 /4	6-1 /4	6-1/4	6-1 /4	1

23-13. TAPES, CORDS, AND FASTENER LENGTHS—Continued

Table 23-16. Replacement Fastener Tape Length Chart (Coat)

ITEM	SIZE					QTY
	X-SMALL INCHES	SMALL INCHES	MEDIUM INCHES	LARGE INCHES	X-LARGE INCHES	
COAT						
Fastener Tape,	3-1 /2	3-1/2	3-1 /2	3-1/2	3-1/2	6
Hook, 1-inch	3	3	3	3	3	4
and 2-inch	2	2	2	2	2	2
	4	4	4	4	4	6
	6	6	6	6	6	5
	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2	2
Fastener Tape,	3	3	3	3	3	4
Pile, 1-inch	2	2	2	2	2	2
and 2-inch	4	4	4	4	4	6
	6	6	6	6	6	5
	2	2	2	2	2	1
COLLAR						
Fastener Tape,	26-1/2	26-1/2	26-1 /2	26-1/2	26-1/2	1
Hook, 1-inch	2	2	2	2	2	1
	4	4	4	4	4	2
Fastener Tape,	1 -3/4	1 -3/4	1 -3/4	1 -3/4	1 -3/4	1
Pile, 2-inch	4	4	4	4	4	2
	2	2	2	2	2	1

23-13. TAPES, CORDS, AND FASTENER LENGTHS—Continued

Table 23-17. Cord, Tape, and Fastener Tape Lengths (Trousers)

ITEM	SIZE			QTY
	SHORT INCHES	MEDIUM INCHES	LONG INCHES	
Webbing, Textile, Nylon, 1-1 /2 inch	51	53	55	2
	7-1/4	7-1/4	7-1/4	2
	9	9	9	2
Webbing, 2-inch wide	16	16	16	2
	14-1/2	14-1/2	14-1/2	2
	6	6	6	2
NOMEX@, Strap, 2-1 /8 inches wide	5	5	5	4
	6-1/4	6-1/4	6-1/4	4
	6-3/4	6-3/4	6-3/4	4
	9-114	9-1/4	9-1/4	4
NOMEX@, Strap, 4-1 /2 inches wide	25	25	25	1
Fastener Tape, Hook, 2-inch	6-1/2	6-1/2	6-1/2	2
	5-1/5	5-1/2	5-1/2	2
	4-1/4	4-1/4	4-1/4	8
	5	5	5	2
	6	6	6	2
	6-1/4	6-1/4	6-1/4	2
Fastener Tape, Pile, 2-inch	6-1/2	6-1/2	6-1/2	2
	5-1/2	5-1/2	5-1/2	2
	4-1/4	4-1/4	4-1/4	6
	5	5	5	2
	6	6	6	2
	6-1/4	6-1/4	6-1/4	2

23-13. TAPES, CORDS, AND FASTENER LENGTHS - Continued

Table 23-18. Cord, Taps, and Fastener Tape Lengths (Bonnet)

ITEM	SIZE				QTY
	X-SMALL INCHES	SMALL INCHES	MEDIUM INCHES	LARGE INCHES	
Webbing, Nylon, 3/4 inches wide	26	26	26	26	1
Drawstring	45	45	45	45	1
Fastener Tape, Pile, Nylon, 1/2-inch wide, Type 11, Class 1, OG-106	7-1/2	7-1/2	7-1/2	7-1 /2	2
Fastener Tape, Hook,Nylon, 1/2-inch wide, Type 11, Class 1, OG-106	3	3	3		2

23-14. WORKMANSHIP

Repair and cleaning will be performed by personnel skilled in their duties. All stitching will be secure and free of loose or broken thread. The finished item will be complete, clean, well repaired, and free from all defects affecting serviceability and appearance.

23-15. INSPECTION

After complete repair, inspect each item to determine if it meets the criteria in Chapter 1 listed under classification B. The inspection or quality control unit is responsible for preventing return of substandard product to supply channels.

Section III. MATERIALS

FIG. NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				COAT	
23-6	1	XDFZZ	8305-00-483-1344	Cloth, Oxford, Aramid, OG-106, 45 inch wide (NOMEX®) MIL-C-43842 (81349)	Yd
23-6	2	XDFZZ		Cloth, Ballistic, Aramid, Natural (KEVLAR®), MIL-C-44050, Ty II, Cl2 (81349)	Yd
		XDFZZ		Thread, Para-Aramid, OD S-1, T-35, MIL-T-44100, CA 66022 (81349)	Tu
		XDFZZ		Thread, Para-Aramid, OD S-1, T-50, MIL-T-44100, CA 66022 (81349)	Tu
23-6	3	XDFZZ	8305-00-263-3598	Webbing, Textile, Nylon, OD-7, 1-23/32 inch MIL-W-4088 (81349)	Yd
23-6	4	XDFZZ	8305-00-261-8579	Webbing, Textile, Nylon, OD-7, 1-inch MIL-T-5038 (81349)	Yd
23-6	5	XDFZZ	8305-00-262-1655	Webbing, Textile, Elastic, Cotton, OD, 1-1/2 inch, MIL-W-5664, Type I, Class 3 (81348)	Yd
23-6	6	PAFZZ	8315-01-114-2110	Tape, Fastener (hook), Nylon OG-106, 1-inch 192753 (11153)	Yd
23-6	7	PAFZZ	8315-01-114-2111	Tape, Fastener (pile), Nylon, OG-108, 1-inch 192732 (11153)	Yd
23-6	8	PAFZZ	8315-01-086-9635	Tape, Fastener (hook), Nylon, OG-106, 2-inch 06S (11153)	Yd
23-6	9	PAFZZ	8315-00-498-6631	Tape, Fastener (pile), Nylon, OG-106, 2-inch MIL-F-21840 (81349)	Yd
23-6	10	XDFZZ	5340-01-062-6749	Buckle, Adjustable, Quick-Release, Nonslip MIL-B-543, Type V, Class 3 (81349)	Ea
23-6	11	XBFZZ		Label, Combination, Identification, Instruction, and Size, DDD-L-20, Type VI, Class 4	Ea

Section III. MATERIALS - Continued

FIG. NO.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				TROUSERS	
23-7	1	XDFZZ	8305-00-483-1344	Cloth, Oxford, Aramid, OG-106 (NOMEX®) MIL-C-43842 (81349)	Yd
23-7	2	XDFZZ		Cloth, Ballistic, Aramid, Natural (KEVLAR®), Type II, Class 2, MIL-C-44050 (81349)	Yd
		XDFZZ		Thread, Para-Aramid, OD S-1, T-50, MIL-T-44100, CA 66022	Tu
23-7	3	XDFZZ	8305-00-082-2142	Webbing, Textile, Nylon, OD-7, 2-inch, MIL-T-5038 Type IV. (81349)	Yd
23-7	4	XDFZZ	8305-00-263-2472	Webbing, Textile, Nylon, OD-7, 1-1/2 inch MIL-T-5038 (81349)	Yd
23-7	5	XDFZZ	8315-01-086-9635	Tape, Fastener (hook), Nylon, OG-106 2-inch MIL-F-21840, Type II, Class I	Yd
23-7	6	XDFZZ	8315-00-498-6631	Tape, Fastener (pile), Nylon, In OG-106, 2-inch MIL-F-21840 Type II, Class I (81349)	Yd
23-7	7	XDFZZ		Buckle, Adjustable, Quick-Release, 1/2-inch, FASTEX #SR-1	Ea
23-7	8	XBFZZ		Label, Combination, Identification, Instruction, and Size, DDD-L-20, Type VI, Class 4	Ea

Section III. MATERIALS - Continued

Fig. No.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				BONNET	
23-8	1	XDFZZ	8305-00-483-1344	Cloth, oxford, Aramid,OG-106 (NOMEX®) MIL-C-43842 (81349)	Yd
23-8	2	XDFZZ		Cloth, Ballistic, Aramid, Natural Water Repellent (KEVLAR®29), MIL-C-44050, Type II, Class 2 (81349)	Yd
		XDFZZ		Thread, Para-Aramid, Intermediate Modulus, OD S-1, T-35 (2 ply), MIL-T-44100, CA 66022 (81349)	Tu
		XDFZZ		Thread, Para-Aramid, Intermediate Modulus, OD S-1, T-50 (3 ply), MIL-T-44100, CA 66022 (81349)	Tu
23-8	3	XDFZZ	83-00-267-3125	Braid, Textile, Tubular, OG-107, 1/8 inch, MIL-B-371, Type IV, Class 2 (81349)	Yd
23-8	4	XDFZZ	8305-00-261-8579	Webbing Tape, Nylon, OD-7, 1-inch MIL-T-5038 (81349)	Yd
23-8	5	XBFZZ		Label, Combination, Identification, Instruction, and Size, DDD-L-20, Type VI, Class 4	Ea
				CHEST PLATE AND FACE SHIELD	
23-9	1	XDOZZ		Plate, Chest, Impregnated Fiberglass, Drawing 2-1-1652 (81337)	Ea
23-9	2	XDOZZ		Shield, Face, Laminated Acrylic/Urethane/Polycarbonate, Drawing 2-1-1653 (81337)	Ea
23-9	3	XDOZZ		Nut, Blind, Rivet, Flat-Head Open End, .312-24UNF38, MS27130-31 (96906)	Ea
23-9	4	XDOZZ		Washer, Flat, Round, Steel, .312ID, MS27183-11 (96906)	Ea
23-9	5	XDOZZ		Screw, Machine, Pan Head, Slotted, .312-24UNF2A MS335228-95 (96906)	Ea

Section III. MATERIALS - Continued

FIG. No.	ITEM NO.	SMR CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				BAG, CARRYING, PROTECTIVE SUIT, EOD	
23-10	1	XDFZZ	8305-00-107-0079	Cloth, Duck, Nylon, Green 106, Class 2, MIL-C-43375 (81349)	Yd
23-10	2	XDFZZ	8305-00-082-2142	Webbing, Textile, Nylon, OD-7, 2-inch MIL-W-4088, Type IX, (81349)	Yd
		XDFZZ	8310-00-244-0609	Thread, Nylon, OD-106, Size E, 3 Ply, V-T-295 Type 1 Class 1 (81349)	Tu
23-10	3	XDFZZ		Fasteners, Slide, Interlocking, OG, Size MHS, Type 1, Style 6 V-F-106 (81 349) As an alternate to pre-assembled slide fastener, use of continuous zipper chain is allowed.	Ea

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CHAPTER 24

MAINTENANCE OF BODY ARMOR SET, INDIVIDUAL COUNTERMINE (BASIC) (Limited Procurement Urgent Configuration Only)

Section I. INTRODUCTION

24-1. SCOPE

a. This chapter describes the procedures and materials used in maintenance of the Body Armor Set, Individual Countermine (BASIC).

b. The BASIC consists of Body Armor, Fragmentation Protective Trousers For BASIC, Anti-personnel Mine Protective Overboots and Special Protective Eyewear Cylindrical System (SPECS).

c. The following end item abbreviations will be used throughout the chapter:

OFFICIAL NOMENCLATURE	COMMON
Body Armor, Fragmentation Protective Trousers for Body Armor Set, Individual Countermine (BASIC)	Protective Trousers
Anti-personnel Mine Protective Overboots	Protective Overboots
Special Protective Eyewear Cylindrical Systems (SPECS)	Protective Eyewear

24-2. COMMODITY SPECIFICATIONS

a. End Items:

ITEM	SPECIFICATION
Body Armor, Fragmentation Protective Trousers for Body Armor Set, Individual Countermine (BASIC)	PD 93-05
Anti-personnel Mine Protective Overboots	FQSE/PD-93-06
Special Protective Eyewear Cylindrical Systems (SPECS)	Spectacles set, ballistics protective, A-A-52120, 31 DEC 1992

b. Components:

ITEM	SPECIFICATION
Thread, polyester	V-T-285
Thread, nylon	V-T-295
Paper, Kraft, wrapping	UU-P-286

24-2. COMMODITY SPECIFICATIONS - Continued

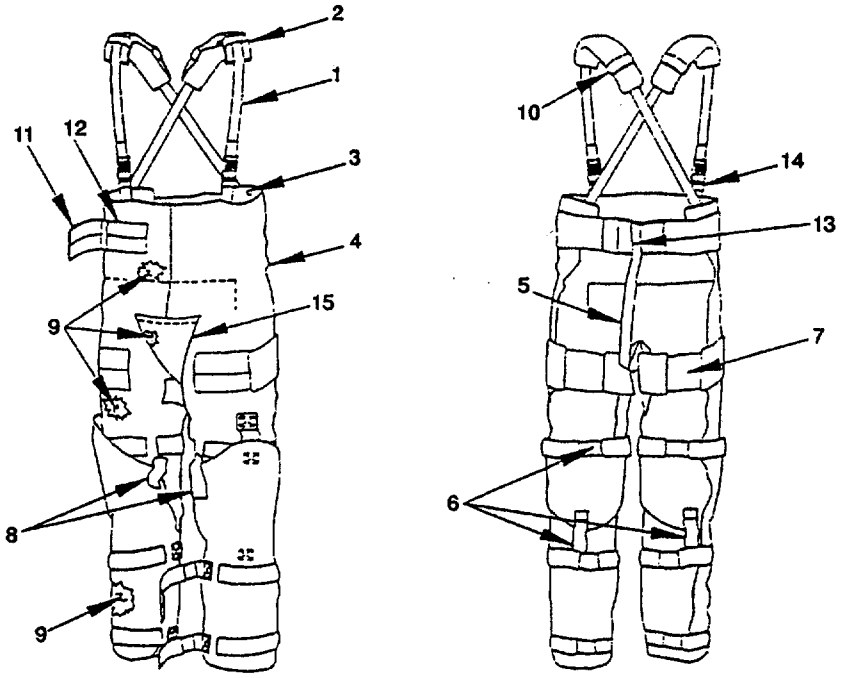
ITEM	SPECIFICATION
Label	DDD-L-20
Box, shipping, fiberboard	PPP-B-636
Cloth, ballistic, aramid	MIL-C-44050
Cloth. ballistic, nylon, lightweight	MIL-C-44043
Webbing, nylon	MIL-W-1 7337
Tape, textile	MIL-T-5038
Fastener tape, hook and loop, nylon	MIL-F-21840
Webbing, elastic	MIL-W-5664
Webbing, elastic, textured nylon	See SECTION III, Figure 1, Item 6/7
Buckle, side release	See SECTION III, Figure 1, Item 14
Padding material, plaztazote (R)	See SECTION III, Figure 1, Item 2
Lace, nylon	V-L-61

24-3. PUBUCATIONS

TITLE	NUMBER
Textile Test Methods	FED STD 191
Stitches, Seams, and Stitchings	FED STD 751
Marking for Shipment and Storage	MIL STD 129
General Fabric Repair	FM 10-16

24-4. IDENTIRCATION AND DESCRIPTION

a. Protective Trousers.



1. SHOULDER STRAPS
2. SHOULDER PADS
3. INNER SHELL
4. OUTER SHELL
5. CROTCH PROTECTOR STRAP
6. ELEASTIC KNEE STRAP
7. WIDE UPPER LEG STRAPS
8. LEG ATTACHMENT WEBBING
9. INSERTS
10. SHOULDER PAD RETAINER
11. FASTENER TAPE (LOOP)
12. FASTENER TAPE (HOOK)
13. FASTENER TAPE (HOOK)
14. BUCKLE
15. CROTCH REINFORCEMENT

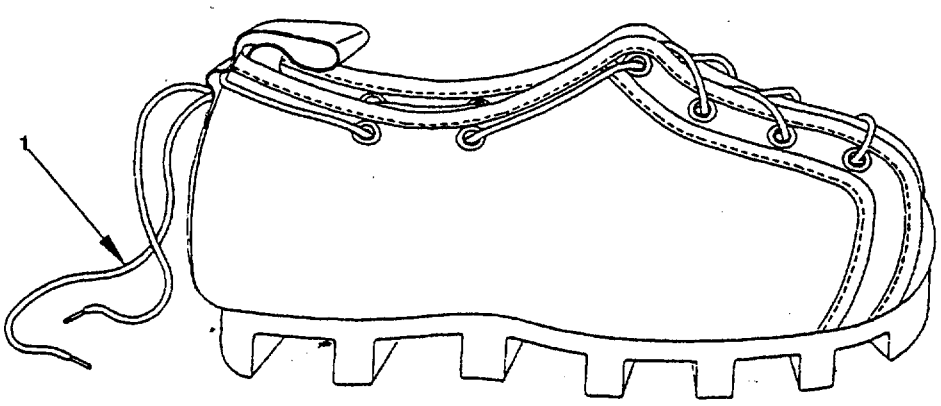
Figure 24-1. Fragmentation Protective Trousers For BASIC

NSN	SIZE	SPECIFICATION
	Small	PD 93-05
	Medium	PD 93-05
	Large	PD 93-05

The protective trousers (Figure 24-1) provide coverage from the upper waist to the top of the feet, with special emphasis on the groin and shin areas. Thirteen plies of 14 oz/sq yard, water-repellent treated Kevlar 29 is used for the ballistic insert. The inner and outer shell, and shoulder pads, are fabricated with water-repellent treated 8 oz/sq yard ballistic nylon cloth. The layer comprising the inner shell is camouflage green; the layer which comprises the outer shell is woodland camouflage printed. Three types of ballistic insert sections are used: abdominal, upper leg, and lower leg. The abdominal and upper leg sections are connected with webbing tabs that allow the insert sections to slide over each other for various changes in the body movements. In addition to the ballistic inserts are adjustable shoulder straps, permanently attached groin protector, an articulated knee joint, and hook and loop fastener straps. Refer to Paragraph 24-6 for maintenance actions.

24-4. IDENTIFICATION AND DESCRIPTION - Continued

b. Protective Overboots.



1. SHOE LACE

Figure 24-2. Anti-personnel Mine Protective Overboots

NSN	SIZE	SPECIFICATION
	8	FQSE/PD-93-06
	10	FQSE/PD-93-06
	12	FQSE/PD-93-06

The protective overboots (Figure 24-2) consist of three sections: the upper part, inner sole, and outer sole. The upper part is made from black nylon duck cloth laminated to two plies of 14 oz/sq yard Kevlar; the inner sole is made from 11 plies of laminated Kevlar 29; and the outer sole consists of a special wedge-shaped shank molded within a rubber sole. Refer to Paragraph 24-7 for maintenance actions.

24-4. IDENTIFICATION AND DESCRIPTION - Continued

c. Protective Eyewear.

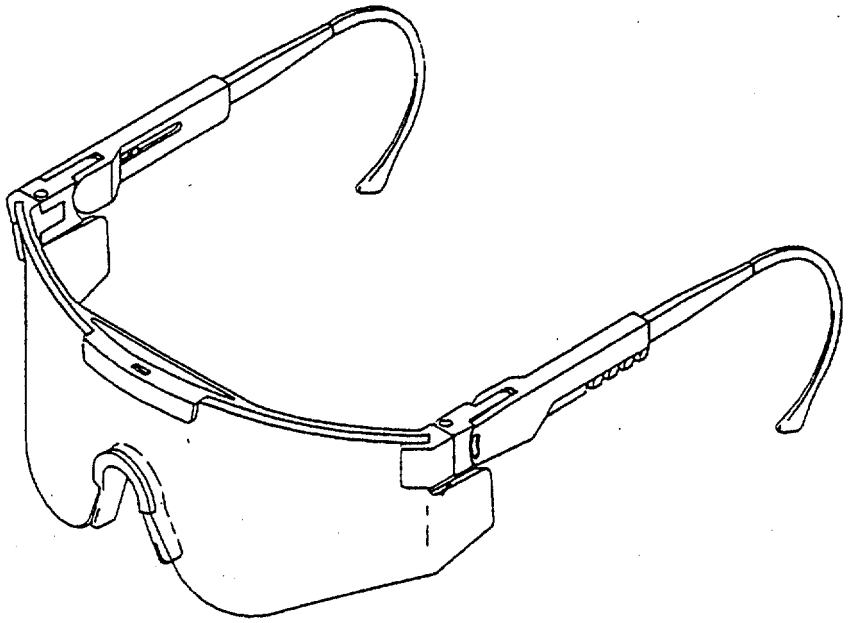


Figure 24-3. Special Protective Eyewear Cylindrical Systems (SPECS

NSN	SIZE	SPECIFICATION
	Small	Spectacles set, ballistics protective, A-A-52120 31 DEC 1992
	Large	Spectacles set, ballistics protective, A-A-521 20 31 DEC 1992

The protective eyewear (Figure 24-3) is made from a scratch resistant material of high optical quality and ultra violet light absorbency. Refer to Paragraph 24-8 for maintenance actions.

Section II. REPAIR PROCEDURES

24-5. MATERIALS

a. Materials used in the repair of BASIC will be serviceable materials recovered from similar salvaged items (except where specifically prohibited), or new materials.

b. New materials will conform to the appropriate specifications and will be requisitioned from stock using National Stock Numbers, complete military standard numbers, or part number and Contractor and Government Entity Code (CAGEC) listed in Section III. When not available from stock, materials conforming as closely as possible to the standard material may be purchased locally.

c. Treatment of nylon and elastic webbing ends.

(1) Searing ends of nylon webbing and tape. All nylon webbing and nylon tape ends will be seared prior to assembly for stitching.

(2) Dipping of elastic webbing ends. 3/36 ± 1/16 inch of all ends of elastic webbing, except the elastic sewn into straps, will be dipped in a melted mixture of 50% beeswax and 50% paraffin.

24-6. REPAIR OF BODY ARMOR PROTECTIVE TROUSERS

a. Inspection.

(1) Inspect the overall condition of the outer shell and components. Check for cuts, tears or holes, frayed or open seams, and missing fastener tape hooks and loops. The protective trousers should be carefully examined to determine whether it is worthy of cleaning and repair, or whether it must be turned in for salvage as unserviceable.

(2) Each protective trouser will be inspected to determine the proper classification (refer to Paragraph 1-7) and identification (item description, size and stock number).

(3) Prior to removal of the outer shell for replacement, inspect the shell to ensure the identification label (size and stock number) is secure and markings are legible. If the size cannot be properly identified, refer to Table 24-1 for determination.

Table 24-1. Protective Trouser Dimensions

	DIMENSIONS		
	SMALL	MEDIUM	LARGE
INSEAM	29.50-31.00	31.50-33.00	33.50-35.00
OUTSEAM	43.25-44.75	45.00-47.00	47.75-49.25
RISE	13.25-14.25	13.50-14.50	13.75-14.75
WAIST*	22.00-23.00	24.00-25.00	26.00-27.00

* Measured 1 inch down from the top of the protective trousers, side seam to side seam.

24-6. REPAIR OF BODY ARMOR PROTECTIVE TROUSERS - Continued

(4) Ballistic Insert Inspection:

(a) Carefully examine the inserts for any damage. Do not repair if an insert (Figure 24-1) has been ballistically or otherwise damaged, as evidenced by a hole, cut, tear or frayed yam. Mark protective trousers as unserviceable.

CAUTION

If ballistic inserts are wet, do not dry them near heat or open flame as this will degrade their protective capacity

(b) Air dry any damp or wet ballistic insert before it is stitched into a new shell.

b. Cleaning Instructions.

CAUTION

Do not use a stiff brush to dean any part of the trouser as this may damage the material

(1) Remove loose dirt from hook and loop fasteners and outer cover surface using a cloth or soft brush.
(2) Immerse the protective trouser in warm (90° F) water.

CAUTION

Never use bleach, dry cleaning solvents, gasoline or similar products to clean the protective trousers as this will stain and damage the materials

(3) Apply soap or detergent to the soiled areas and scrub with a soft brush. Badly soiled areas may be scrubbed with soap.

(4) Grease and oil stains may be pre-spotted with a detergent mixture and scrubbed with a soft brush. Repeat this process if stains persist.

(5) Rinse all detergent out of the protective trousers with dean water.

(6) Fasten shoulder straps and place on a hangar to air dry, away from heat or open flame.

c. Organizational Maintenance. Organizational maintenance of the protective trousers is limited to cleaning specified in Paragraph 24-6.b. and repair of small holes and tears in the outer shell not exceeding 1 inch in length or diameter provided the ballistic insert is not damaged. Repair a small hole or tear without removing the inserts by drawing the edges of the outer shell material together and darning by hand. There is no limit to the number of small hole or tear repairs that can be applied to the outer shell.

d. Direct Support Maintenance.

(1) General.

(a) When repairing a hole or tear 1 to 3 inches in length or diameter in the outer shell, remove the ballistic insert by opening the bottom seam and strap stitchings. Repair the outer shell by machine sewing as specified in Table 24-2. Inspect the ballistic insert, referring to Paragraph 24-6.a(4) to determine its serviceability. Re-install a serviceable ballistic insert into the repaired outer shell and machine sew as specified in Table 24-2.

24-6. REPAIR OF BODY ARMOR PROTECTIVE TROUSERS - Continued

Table 24-2. Stitching Instructions for Protective Trousers

LOCATION	STITCH TYPE	THREAD		STITCHES (per inch)
		NEEDLE/BOBBIN		
General	301	E	E	8-10
Bartack	Bartack	E	E	28 per tack
Overedge	502-503	E	E	6-8
Label 301	E	E		9-11
Hook and loop fastener tape	301	E	E	9-11
Overedge ballistic insert	502, 503, 504, or 505	E/F	E/F	6-8
Sewing ballistic inserts into the shell components	301	F	F	6-8
Sewing inner or outer shell	301	E	E	9-11
Assemble wide and narrow upper leg and lower leg strap	301	E	E	9-11
Assemble shoulder pad	301	E	E	9-11

(b) Open seams and broken stitches in the outer shell not exceeding 3 inches in length or diameter may be repaired by machine sewing. Seam and stitching repairs may be applied to all parts of the protective trousers and must be comparable to the original construction as specified in Table 24-2.

(c) Adjust thread tension so that there will be no loose stitching which could result in puckering of the sewn material. When restitching an open seam or when the thread breaks during normal stitching, backstitch not less than 3/4 inch. For stitch type illustrations refer to FED-STD-751. In general, stitching will be performed with nylon Type I, Class B conforming to V-T-285 or V-T-295. All threads visible on the exterior of the trousers will be Camouflage Green 483. Thread size shall be as specified in Table 24-2.

CAUTION

Avoid damage to the ballistic inserts during stitching operation. Lay Inserts on flat surface and prevent folds in the material. Damage to the Inserts will degrade their protective capacity

(2) Outer Shell Replacement. The outer shell, including the hook and loop fastener tape, may be replaced it is badly tom, worn or damaged. If the protective trousers exhibit holes or tears, seam openings or frayed areas larger than 3 inches, or the hook and loop fasteners are inoperative, replace the entire shell section by removing the ballistic inserts (refer to Paragraph 24-6.d.(1).(a)). Cut material for new outer shell to dimensions specified in Table 24-3. Sew as specified in Table 24-2. If the outer shell is to be removed and replaced, it is important that the label containing the size, National Stock Number, and cleaning instructions be retained and stitched to the new shell. Check the ballistic insert size markings for legibility and remark if necessary. If the label is illegible, replace it with a new one.

24-6. REPAIR OF BODY ARMOR PROTECTIVE TROUSERS - Continued

Table 24-3. Cloth, Ballistic, Nylon, Class 3, Woodland Camouflage Printed, MIL-C-44043, Measurements for Protective Trousers

APPLICATION	DIMENSIONS (inches)	
	LENGTH*	WIDTH
Upper leg, shell, outer	36	19 1/2
Lower leg, shell, outer	24 1/2	14 1/4
Crotch protector, shell, outer	11 1/2	7 1/2
Waistband, inside	9 1/2	2 1/2
Waistband, outside	21 1/2	9 1/2
Strap, wide, upper leg, inside	6	9 1/2
Strap, wide, upper leg, outside	9 3/4	9 1/2
Strap, narrow, upper leg, inside	4 1/2	5 1/2
Strap, narrow, upper leg, outside	10 1/2	5 1/2
Strap, lower leg, inside	4	5 1/2
Strap, lower leg, outside	91/2	5 1/2
Shoulder pad, shell	10 3/4	4

*Measurements specified are : ±1/8 inch.

CAUTION

Do not stitch through an insert except where it was stitched during original construction, as this may damage the material.

(3) Hook and Loop Fastener Tape Replacement on Leg, Waistband or Crotch Protector Straps. Carefully remove the damaged hook and loop fastener tape from the strap while avoiding damage to the strap. Cut fastener tape of the type and dimensions specified in Table 24-4. Machine stitch as specified in Table 24-2.

24-6. REPAIR OF BODY ARMOR PROTECTIVE TROUSERS - Continued

Table 24-4. Hook and Loop Fastener Tape Measurements for Protective Trousers

APPLICATION	TYPE TAPE	DIMENSIONS (inches)	
		LENGTH*	WIDTH
Strap waistband	Hook	10	2
Strap waistband	Loop	7	2
Waistband, abdomen	Loop	10	2
Strap, upper leg, wide	Hook	6	2
Strap, upper leg, wide	Loop	10	2
Strap, upper leg, narrow	Hook	6	2
Strap, upper leg, narrow	Loop	9	2
Strap, lower leg	Hook	6	2
Strap, lower leg	Loop	9	2
Strap, groin protector	Hook	4	1 1/2

*Measurements specified are ± 1/8 inch.

(4) Leg Strap Replacement. Carefully remove the damaged leg strap while avoiding damage to the outer shell. Cut new straps from new or reusable outer shell material to the dimensions specified in Table 24-3 and elastic webbing to the dimensions specified in Table 24-5. Also cut a new piece of hook fastener tape of the type and dimensions specified in Table 24-4. Use the machine stitching specified in Table 24-2 for strap assembly and attachment of the hook fastener tape. Position the completed strap in the location of the removed strap. Stitch the strap as specified in Table 24-2.

24-6. REPAIR OF BODY ARMOR PROTECTIVE TROUSERS - Continued

Table 24-5. Webbing Measurements for Protective Trousers

APPLICATION	TYPE WEBBING	SPECIFICATION	DIMENSIONS (inches)	
			LENGTH*	WIDTH
Shoulder pad, strap	Nylon	MIL-W-17337	4	1
Crotch, reinforcement	Nylon	MIL-T-5038	30	1
Ballistic insert attachment tabs	Nylon	MIL-W-17337	3	1 1/2
Strap, buckle	Nylon	MIL-W-17337	9	1 1/2
Strap, shoulder	Nylon	MIL-W-17337	44	1 1/2
Strap, knee	Elastic	MIL-W-5664	7 1/2	1 1/2
Strap, crotch protector	Elastic	MIL-W-5664	19	1 1/2
Strap, waistband	Elastic	Style # 562	2 1/2	4
Strap, upper leg, wide	Elastic	Style # 562	5	4
Strap, upper leg, narrow	Elastic	Style # 572	4 1/2	2
Strap, lower	Elastic	Style # 572	4 1/2	2

*Measurements specified are ± 1/8 inch.

(5) Crotch Protector Elastic Webbing Strap Replacement. Carefully remove the damaged crotch protector elastic webbing strap while avoiding damage to the outer shell of the crotch protector. Cut a piece of hook fastener tape, and a piece of elastic webbing, of the types and dimensions specified in Table 24-4.Fold under cut edge of elastic webbing 1 inch. Position hook fastener tape over folded edge. Stitch hook fastener tape to elastic webbing as specified in Table 24-2. Fold under cut edge of elastic webbing 1 inch on opposite end and position on crotch protector. Stitch webbing in position as specified in Table 24-2 while avoiding damage to the ballistic insert.

NOTE

If patterns are unavailable, the component to be replaced must be removed so that its overall shape is retained; use the removed component to trace the replacement

(6) Upper Leg, Lower Leg, or Crotch Protector Shell Replacement. Carefully remove the shell to be replaced, avoiding damage to the ballistic insert. Open inner or outer shell seams and remove ballistic insert. Cut out component materials for the new shell of the type and dimensions specified in Table 24-4 and Table 24-6. Cut elastic knee straps and leg attachment webbing of the type and dimensions specified in Table 24-5. Stitch knee straps and leg attachment webbing to shell as specified in Table 24-4. Prepare and stitch leg straps to the new shell, referring to Paragraph 24-6.d.(5). Place ballistic insert into shell and machine stitch as specified in Table 24-2.

24-6. REPAIR OF BODY ARMOR PROTECTIVE TROUSERS - Continued

Table 24-6. Cloth, Ballistic, Nylon, Class 2, Camouflage Green, MIL-C-44043B Measurements for Protective Trousers

APPLICATION	DIMENSIONS (inches)	
	LENGTH*	WIDTH
Upper leg, shell inner	36	19 1/2
Lower leg, shell, inner	24 1/2	14 1/4
Crotch protector, shell, inner	11 1/2	7 1/2

*Measurements specified are ± 1/8 inch.

(7) Replacing Shoulder Straps Webbing. Carefully open protective trousers along waist seam. Remove damaged shoulder strap while avoiding damage to the ballistic insert. Remove shoulder pads and buckle if serviceable. Cut a piece of webbing as specified in Table 24-5 and sear ends. Replace buckles and shoulder pads. Position webbing on the ballistic insert. Stitch webbing to insert as specified in Table 24-2. Avoid catching the shell during stitching. Stitch shell waist dose while keeping straps vertically positioned.

(8) Shoulder Pads Replacement. Carefully open pad along seam to remove a serviceable foam pad. Cut ballistic nylon cloth for the pad shell to the dimensions specified in Table 24-3. Cut 1 inch webbing for the shoulder pad straps as specified in Table 24-5. If new padding material is required, cut 1/2 thick material to 9 X 2 1/2 inches. Assemble pad: (a) Position 1 inch shoulder pad strap webbing on right side of shoulder pad shell material.

(b) Stitch shoulder pad strap to shell with two rows of stitching, as specified in Table 24-2.

(c) Evenly position two halves of shoulder pad shell with right side facing each other and stitch together, leaving the bottom open.

(d) Turn the shell inside out, and insert foam padding.

(e) Fold under bottom edge of shoulder pad and stitch to dose off bottom

(9) Label Replacement. Each pair of protective trousers must have a combination size and instruction label. If a National Stock Number (NSN) and size designation on the label is not legible or will not retain legibility after re-issue, remove the old and install a new label, stitching in an appropriate new label as specified in Table 24-2. If label is missing or illegible, perform a dry weight test (adjusting to the nearest whole ounce) and refer to Table 24-7 for size and corresponding NSN determination.

Table 24-7. Dry Weight Test

WEIGHT RANGE (pounds)	SIZE	NSN
13.00-14.25	Small	
14.26-15.49	Medium	
15.50-16.75	Large	

24-6. REPAIR OF BODY ARMOR PROTECTIVE TROUSERS - Continued

(a) Format and content of the label is as specified below:

BODY ARMOR, ANTI-FRAGMENTATION PROTECTIVE TROUSERS

When properly worn, this armor will provide a degree of protection to your lower limbs against the effects of fragmentation from small anti-personnel mines.

CLEANING INSTRUCTIONS

1. Remove loose dirt from hook and loop fasteners and outer cover surface using a cloth or soft brush. NEVER USE A STIFF BRISTLE BRUSH.

2. Wet the trousers in the shower or immerse in water. Use warm (90°F), not hot water.

3. Apply toilet soap or detergent to the soiled areas and scrub with soft brush. Badly soiled areas may be scrubbed with GI soap. Scrub only long enough to remove soil. NEVER USE BLEACH TO CLEAN TROUSERS.

4. Grease and soil stains may be pre-spotted with detergent mixture and scrubbed with a soft brush. It a stubborn stain persists, repeat the above procedure.

5. Rinse the trousers with water until suds are completely gone.

6. Fasten shoulder straps. Place straps on hangar and air dry. Hang the trousers to dry away from heat or open flame.

SIZE:
IN-SEAM LENGTH:
CONTRACT #:
CONTRACT MANUFACTURER:

24-7. REPAIR OF PROTECTIVE OVERBOOTS

a. Inspection (Figure 25-2). Inspect overboots for cuts or tears in the upper material and soles. Also check for wear of the soles. Check for missing eyelets and missing, tom or frayed laces. A protective boot is unserviceable if: any part of the sole is missing or loose; a cut or hole greater than 1/2 inch is present in the upper part; tong is missing, ripped or tom; any seam is open.

b. Maintenance. The only maintenance authorized is lace replacement (Figure 24-2). Cut lace from nylon material to a minimum length of 97 inches. Single ends and install.

24-8. REPAIR OF PROTECTIVE EYEWEAR

a Inspection (Figure 24-3). Inspect eyewear for scratches, cracks, and broken arm hinges.

b. Replacement. No maintenance is authorized to this item. Replace eyewear if item does meet Code A or B criteria

24-9. WORKMANSHIP

Repairing and cleaning will be done by personnel skilled in their duties. Patches will be tightly sewn or applied and all re-seaming will be secure and free of loose or broken threads. Hardware will operate properly and be properly and securely attached. The finished item will be complete, dean, well repaired, and free from all defects affecting its serviceability and appearance.

24-10. INSPECTIONS

After complete repair, inspect each item and its components to determine if they meet the criteria in Chapter 1 listed under Classification Code B. The inspection or quality control element is responsible for preventing return of sub-standard product to supply channels.

(1) FIG. NO	(2) ITEM NO.	(3) SMR CODE	(4) NATIONAL STOCK NUMBER (NSN)	(5) DESCRIPTION	(6) UNIT OF ISSUE
				BODY ARMOR FRAGMENTATION PROTECTIVE TROUSERS FOR BODY ARMOR SET, INDIVIDUAL COUNTER-MINE (BASIC)	
24-1	1	XDFZZ		Webbing, nylon, MIL-W-17337, Class 2, 1 1/2 inch width, dyed Camouflage Green 483 or Black 375. Elizabeth Webbing Mills / PO Box 1168 / Pawtucket, RI /02862/ (85938) P/N: N721014405-U	YD
24-1	2	XDFZZ		Plastazote, LD-70, 1/2 inch thick Foam Design, Inc./ 444 Transport Court / Lexington, KY / 40581 / (IT579) P/N: FDI-XL-D70	SH
			6510-01-233-4413	**SUBSTITUTE**: Padding, Cast-splint, orthopedic, 1/2 inch thick, 36 inches long, 21 inches wide, cotton.	
24-1	3	XDFZZ		Cloth, ballistic, nylon, lightweight water repellant treated, Camouflage Green 486, 8 oz, MIL-C-44043, Class 2 (inner shell). Brookwood Companies, Inc./ 10 East 39th Street/ New York, NY / 10016 (5V549)	YD
24-1	4	XDOZZ		Cloth, ballistic, nylon, lightweight water repellant treated, Woodland Camouflage printed, 8 oz, MIL-C-44043, Class 3 (outer shell). Brookwood Companies, Inc./ 10 East 39th Street / New York, NY / 10016 (5V549)	YD
24-1	5	XDFZZ		Webbing, elastic, 1 1/2 inch wide, dyed Camouflage Green 483, MIL-W-5664, Type II. Thomas Taylor & Sons, Inc./ 50 Houghton Street / Hudson, MA /01749/ (78693)	YD
24-1	6	XDFZZ		Webbing, elastic, textured nylon 2 inch wide, Camouflage Green, Style 572. George C. Moore, Inc./ Beach Street / Westerly, RI / 02891 / (74460)	YD
24-1	7	XDFZZ		Webbing, elastic, textured nylon 4 inch wide, Camouflage Green, Style 562. George C. Moore, Inc./ Beach Street / Westerly, RI /02891 / (74460)	YD

(1) FIG. NO	(2) ITEM NO.	(3) SMR CODE	(4) NATIONAL STOCK NUMBER (NSN)	(5) DESCRIPTION	(6) UNIT OF ISSUE
24-1	8	XDFZZ		Webbing, tubular, nylon black identification yam, 1 inch wide, MIL-W-5625, Camouflage Green 483. Bally Ribbon Mills / 23 N 7th Street / Bally, PA / 19503/ (83435) P/N: 8444	YD
24-1	9	XDFZZ	8305-01-025-4920	Cloth, ballistic aramid, water repellant treated, MIL-C-44050, Type II, Class 2. Clark Schwebel Fiber Glass Corp./ 2200 South Murray Ave./ Box 2627 / Anderson, SC / 29622 (OYGNO) Substitute: Cloth, ballistic, water repellent, 48 inches long, 13.5 to 18 ounces per square yard, nylon basic, Class II, U.S. Army Green 106.	YD
24-1	10	XDFZZ		Webbing, nylon, MIL-W-17337, Class 2, 1 inch width, Camouflage Green 483 or Black 375. Elizabeth Webbing Mill / PO Box 1168 / Pawtucket, RI / 02862 / (85938) P/N: 721010405	YD
24-1	11	XDFZZ		Fastener tape, loop, Type II, Class I, MIL-F-21840, 2 inch wide, Camouflage Green 483. VELCRO, USA, Inc./ 406 Brown Ave./ Manchester, NH /03103(11153) P/N: 196903	YD
24-1	12	XDFZZ	8315-00-450-9837 8315-01-111-7170	Fastener tape, hook, Type II, Class I, MIL-F-21840, 1 1/2 inch wide, Camouflage Green 483. VELCRO, USA, Inc./ 406 Brown Ave./ Manchester, NH / 03103 (11153) P/N: 196903 Substitute: Fastener tape, hook, nylon, Type II, Class 1, 2 inches wide, U.S. Army Green 106. Substitute: Tape, hook with Velcro type pressure sensitive backing, polyester, Type II, Class 1, 2 inches wide, U.S. Army Green 106.	YD

(1) FIG. NO	(2) ITEM NO.	(3) SMR CODE	(4) NATIONAL STOCK NUMBER (NSN)	(5) DESCRIPTION	(6) UNIT OF ISSUE
24-1	13	XDFZZ		Fastener tape, hook, Type II, Class I, MIL-F-21840, 1 1/2 inch wide, Camouflage Green 483. VELCRO, USA, Inc./ 406 Brown Ave./ Manchester, NH /03103 (11153) P/N: 196903	YD
			8415-00-448-5663	Substitute: Fastener tape, hook, Type II, Class 1, nylon, 1 1/2 inches wide, U.S. Army Green 106.	
24-1	14	XDFZZ		Buckle, 1 1/2 inch wide, FASTEX #SR-1. ITW Waterbury / 952 South Main Street / Waterbury, CT /06721 P/N: 01-0150	EA
24-1	15	XDFZZ	8315-01-352-9304	Tape, textile and webbing, textile reinforced nylon,1 inch wide, olive drab, MIL-T-5038, Type III, Class 2. (81349)	YD
		PAFZZ	9160-00-253-1171	Beeswax, technical, ILB, (59148)	LB
		PAFZZ	8310-00-285-2044	Wax, paraffin, Type i, technical, Grade A, (81348), VV-W-95	LB
24-1	PAOZZ			Thread, nylon, Type I, Class B, V-T-295, Size F, Camouflage Green 483. American and Efire / PO Box 926 / Mount Holly, NC /28120 FED-STD-34094, (5B758)	YD
24-1	PAOZZ			Thread, Polyester, TYPE Class B, V-T-285, Size E, Camouflage Green 483. American and Efire / PO Box 926 / Mount Holly, NC /28120 FED-STD-34094, (5B758)	YD
24-1	PAFZZ		7520-00-973-1059	Marker, felt tip, black GG-M-00114. (81348)	EA
24-2	PAOZZ		8335-01-234-8148	Laces, footwear, nylon, V-L-61, Type III, Class I, black, 0.125 inches, each (81348)	YD

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CHAPTER 25
MAINTENANCE OF INTERCEPTOR BODY ARMOR SYSTEM

Section I. INTRODUCTION

25-1. SCOPE

This chapter describes the procedures and materials used in maintenance of the Interceptor Body Armor System. The Interceptor Body Armor System consists of Body Armor, Interceptor, Outer Tactical Vest, Woodland Camouflage and Body Armor, Interceptor, Small Arms Protective Insert (SAPI). The following end item abbreviations will be used throughout the chapter:

Official Nomenclature	Common Name
Body Armor, Interceptor, Outer Tactical Vest Woodland Camouflage	Outer Tactical Vest (OTV)
Body Armor, Interceptor, Small Arms Protective Insert	Small Arms Protective Insert (SAPI)

25-2. COMMODITY SPECIFICATIONS

a. End Items.

ITEM	SPECIFICATION
Body Armor, Interceptor, Outer Tactical Vest, Woodland Camouflage	Performance Requirements; "Interceptor" – Multiple Threat Body Armor, dated 26 June 1999 or future amendments
Body Armor, Interceptor, Small Arms Protective Insert (SAPI)	Performance Requirements; Personnel Armor, Small Arms Protective Insert, dated 13 May 1999 or future amendments

b. Components.

ITEM	SPECIFICATION
Fabrics Fabric, Ballistic Panel Cover Fabric, Outer Shell Fabric Inner Shell Fabric, Ballistic Panel	MIL-C-508 MIL-C-43637 CL1 RIP STOP MIL-C-43734 10000 CL III CAMO MIL-C-43734 5000 CL IV SOLID Kevlar KM2-706WR 600denier or future upgrades
Webbing Textile Textured or Multi-Filament Webbing, Textile Elastic	A-A-55301 TYPE III 1" MIL-W-4088 TYPE VIIIB 2.0" or MIL-W-17337 2.0"
Tape, Textile and Webbing, Textile, Reinforcing Nylon	MIL-PRF-5038 TYPE III CL2 1.0"
Velcro	A-A-55126 TYPE I CLASS I 5/8"-1"-2"
Foam	ASTM D-3575
Side Adjustment	1" solid loop (as manufactured) and thread on loop (individual repair)
Thread	TEX 90 Bonded Nylon TEX 120 Poly Wrap Core
Snaps/Eyelets	Stimpson DWG 4-1-176
Label: For Clothing, Equipage, and Tentage	DDD-L-20
SAPI	Composite ceramic plate
SAPI Outer Cover	MIL-C-7219 Type III Class 2.
SAPI Cover Adhesive	MIL-A-5340 Class 5

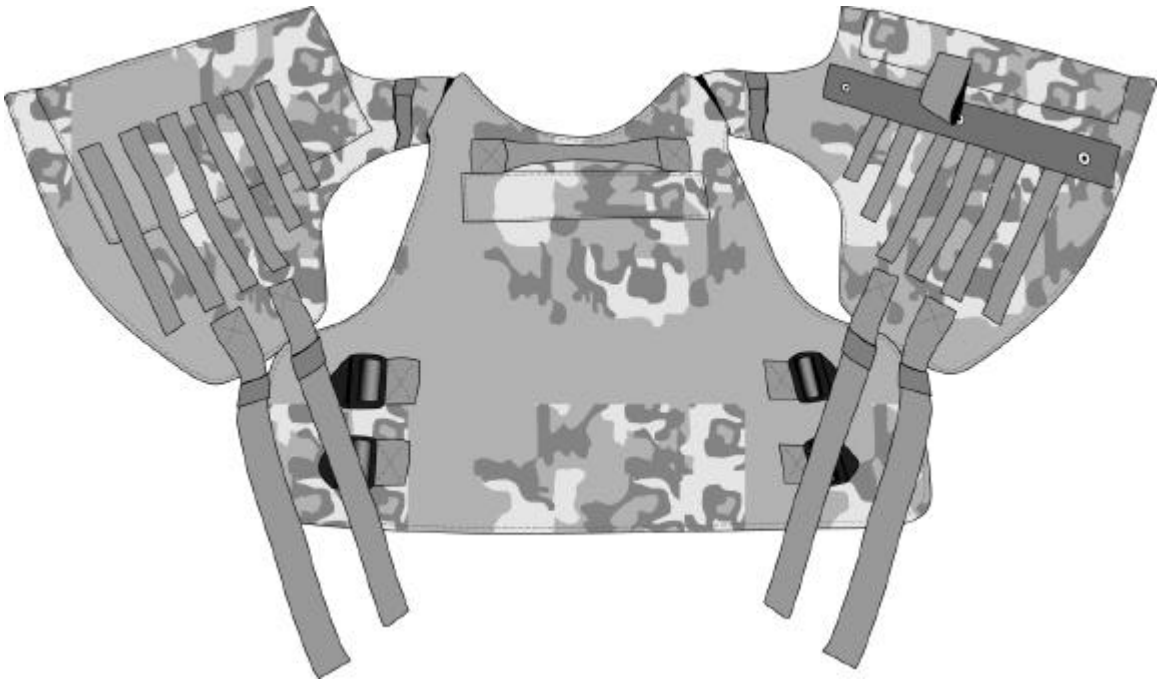
25-3. IDENTIFICATION AND DESCRIPTION

a. Identification. Interceptor Body Armor System. The system includes the Outer Tactical Vest (OTV) and may be separately issued two small arms protective Inserts (SAPI) according to mission. The OTV consists of modular components; a camouflaged outer shell with one back and two front ballistic panels, collar, a groin protector, and a throat protector. For National Stock Numbers (NSNs), see Section IV, National Stock Numbers.

b. Description. Interceptor is a modular body armor system providing multiple levels of ballistic protection. The modular components are the outer shell and ballistic panel for each base vest, collar, groin protector, and throat protector. All ballistic panels are placed in their corresponding camouflage outer shell. The number of modular components worn dictates the area of protective coverage of the body. The OTV consists of the base vest with velcro, and redundant snap center front closure system, modular fold-down collar, throat protector, and groin protector. The throat protector, modular fold-down collar, and the groin protector can be removed from the vest according to the threat and associated area of body coverage needed. Size adjustments and ventilation can be performed by the use of side webbing strap adjustments. The OTV includes a front and back pocket for the small arms protective inserts which are available in sizes corresponding to the OTV. When inserted into the OTV, the SAPI provide increased protection of vital organs from multiple hits against small arms ammunition and indirect fire flechettes. The issue of SAPI is mission dependent. If issued, a set of two SAPI must be provided in the same size as the OTV for proper protection and fit into the vest pockets. SAPI are interchangeable between front or back pockets.

25-3. IDENTIFICATION AND DESCRIPTION-Continu

OTV OUTER SHELL (INSIDE

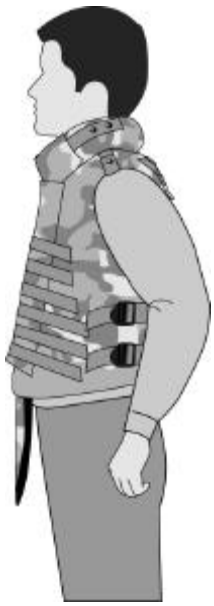


OTV OUTER SHELL (OUTSIDE

25-3. IDENTIFICATION AND DESCRIPTION-Continu

CLOSED VEST (FRONT

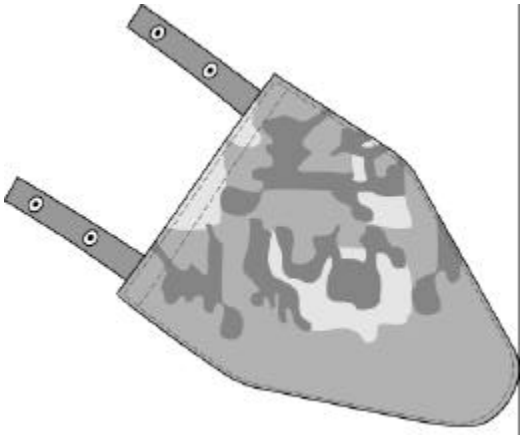
CLOSED VEST (BACK



CLOSED VEST (SIDE

25-3. IDENTIFICATION AND DESCRIPTION-Continu

Collar

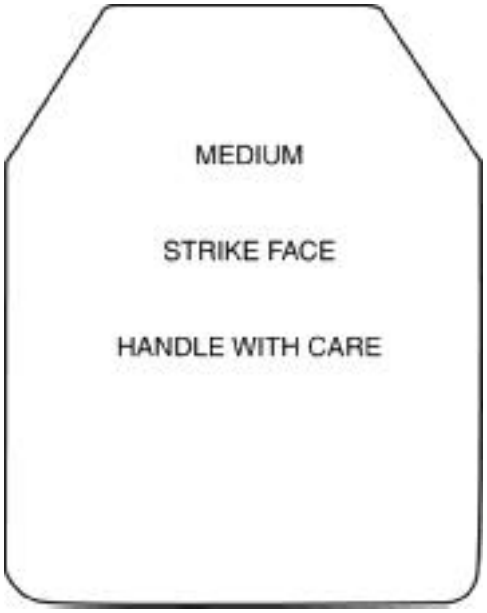


Groin Protecto

Throat Protecto

25-3. IDENTIFICATION AND DESCRIPTION-Continu

Front

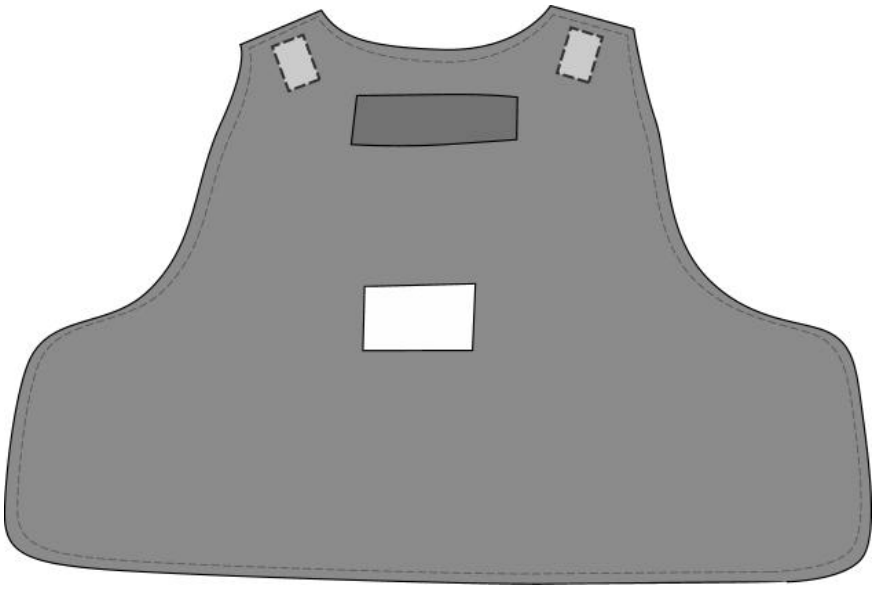


Back

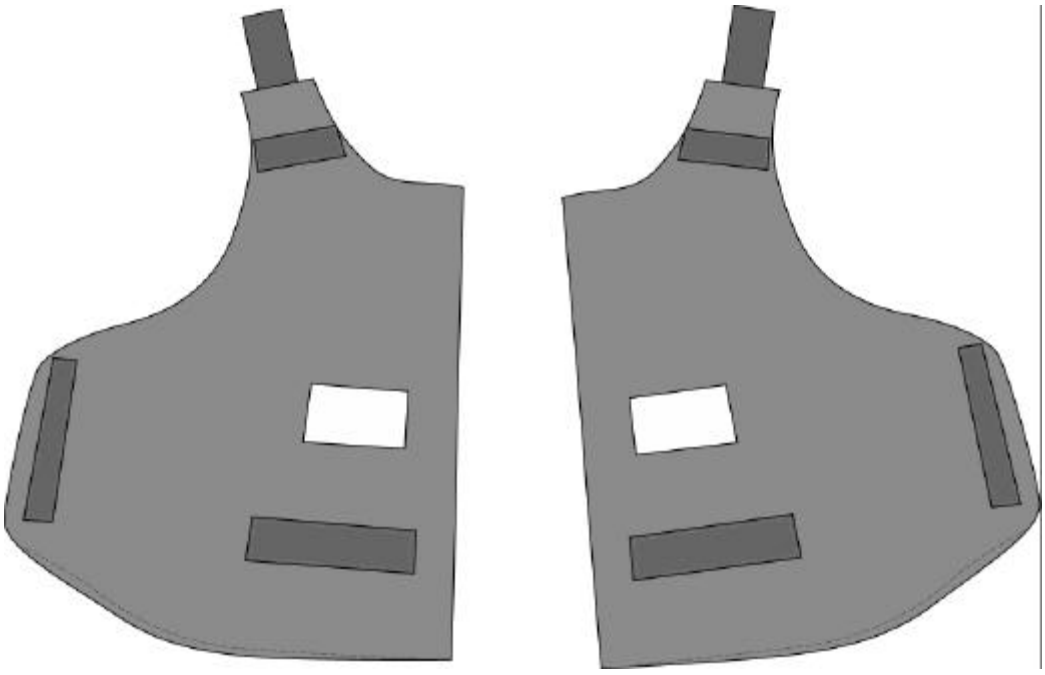
Side

Small Arms Protective Panel (SAPI)

25-3. IDENTIFICATION AND DESCRIPTION-Continu

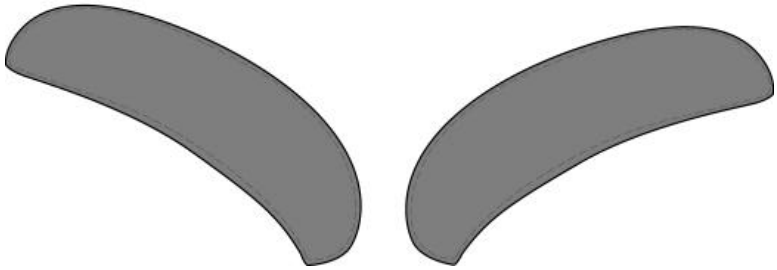


Back Ballistic Pane

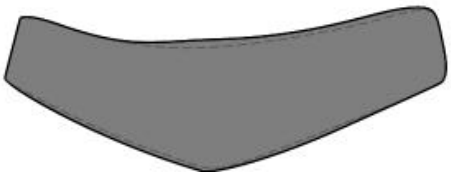


Front Ballistic Panels

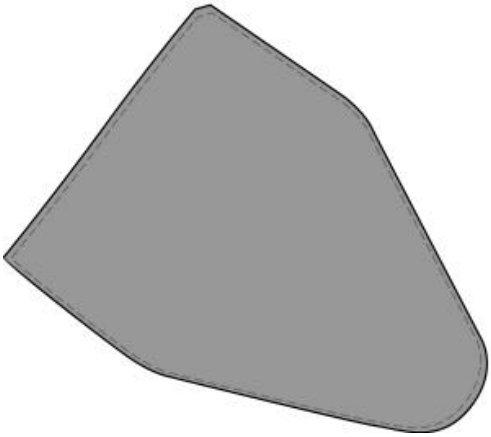
25-3. IDENTIFICATION AND DESCRIPTION-Continu



Collar BallisticPanels



Throat BallisticPanel



Groin Protector BallisticPanel

Section II. REPAIR PROCEDURES

25-4. MATERIALS

a. General. Materials used in repair of vests will be new materials as specified in Section III. New materials will be requisitioned from stock under the national stock numbers and for item descriptions as listed and will conform to the appropriate specifications. When not available from stock, materials may be purchased locally that conform as closely as possible to the standard material for emergency repairs. Care and cleaning shall be done by the individual user. All other maintenance should be accomplished at Intermediate level Maintenance Activities.

b. Fusing of ends of nylon webbing and tape. All ends of nylon webbing and tape shall be fused. The apparatus used to fuse the webbing and tape ends shall be capable of providing sufficient heat to provide a smooth edge and with the cut ends of the webbing and tape yarns all fused together. Fusing of the webbing and tape ends shall be accomplished prior to being assembled for stitching.

25-5. REPAIR AND MAINTENANCE OF BODY ARMOR OUTER TACTICAL VEST

a. Inspection.

(1) Inspect the overall condition of the outer shell and components. Check for cuts, tears or holes, loose or broken stitching, or broken buckles or snaps. (Army) The outer tactical vest should be carefully examined to determine whether it is worthy of cleaning and repair or whether it must be turned in for salvage as unserviceable.

(2) Each outer tactical vest will be inspected to determine the proper supply condition code classification in accordance with chapter 1, paragraph 1-7, and identification (item description, size, and stock number).

(3) Prior to the removal of the outer shell for replacement, inspect the outer shell to make sure that the identification labels (size and stock number) are secure and/or the markings are legible. If the OTV cannot be identified as to size, refer to table 25-1 to determine the size. If the outer shell is to be removed and replaced, it is important that the label containing the size, stock number and cleaning instructions be retained for stitching to the new shell. If the label is unusable, replace label entirely. The ballistic panels should be checked to insure that the sizes are marked and will be retained.

Table 25-1 Interceptor Body Armor Measurements +/- ½ Inch

CHARACTERISTIC	X-SMALL	SMALL	MEDIUM	LARGE	X-LARGE
Chest Width; IN	23.25	24.25	26.25	28.25	30.25
Center Front Length; IN	17.5	17.75	18.25	19	19.75

NOTE

One-half chest width is measured from the top of each side-opening flap in line with the bottom of the armhole and across the chest. The measurement is taken by fully loosening side buckles and measuring to and from side finished edge at second row of webbing below armhole of the vest at the base of armhole level. Center front length is taken from a straight line along the front snap closure.

(4) Ballistic Panel Inspection.

(a) (Army) Carefully examine the ballistic panel for any damage. (Marine Corps) Carefully examine the ballistic panel for any damage prior to each field revolution. If the panel has been ballistically or physically damaged in any manner such as evidenced by a hole, or cut; do not repair. (Army) Mark the item as unserviceable. (Marine Corps) Return the item to the manufacturer.

(b) Inspect the ballistic panel to ensure the identification label is secure and/or the markings are legible.

b. Cleaning Instructions.

(1) Outer Shell.

CAUTION

Do not use a stiff brush to clean any part of the OTV as this will damage the material.

(a) Remove loose dirt from outer shell surface using a cloth or soft bristle brush.

(b) Remove all soft ballistic panels and SAPI from the outer shell.

(c) Hand wash outer shell only in cold or lukewarm water using mild detergent or soap. Badly soiled areas may be scrubbed. Scrub only long enough to remove soil. Do not use chlorine bleach, yellow soap, cleaning fluids or solvents, which will discolor/deteriorate the item.

CAUTION

Never use bleach, yellow soap, cleaning fluids or solvents to clean the outer shell as this will stain and damage the materials.

(d) Grease and oil stains may be pre-spotted with a detergent mixture and scrubbed with a soft brush. If stubborn stain persists, repeat the procedure.

(e) Rinse the cover thoroughly in clean, lukewarm water until suds are completely gone.

(f) Drip-dry indoors or in shade. Do not dry in direct sunlight, near direct heat or near an open flame.

(g) Do not launder or dry item in field/commercial/home type laundering machines. Do not attempt to dye your OTV.

(h) Avoid immersing the ballistic panels in water. Wipe with soft cloth.

CAUTION

Do not machine wash or dry. Failure to follow these instructions may render your OTV useless against ballistic threats.

(2) Ballistic Panel Cleaning. Clean Ballistic panels ONLY by removing loose dirt from the surface with a cloth or soft brush. Avoid submerging the inserts in any liquid. DO NOT bleach; DO NOT machine wash; DO NOT dry clean; DO NOT apply solvents to the ballistic panels. If the ballistic panels become wet, allow to air dry in a flat position away form heat sources and direct sunlight. If ballistic panel becomes saturated with liquids such as gasoline, bleach or other lubricants turn in for replacement as soon as possible.

CAUTION

Avoid immersing the ballistic panels in water due to long drying time. Do not immerse in chlorine bleach, yellow soap, cleaning fluids or solvents which will discolor or deteriorate the item. Do not machine wash or dry. Do not dry clean.

c. Organizational/Field Maintenance. Organizational/field maintenance of the OTV is limited to cleaning described in paragraph 25-5.b.(1), repair of small holes and tears in the outer shell provided the ballistic insert is not damaged, repair of small open seams, and the replacement of defective buckles. A small hole or tear or a small open seam can be temporarily repaired by using rigger's tape. Replacement of defective buckles can be performed using spare buckles provided to unit maintenance.

d. Direct/Intermediate Level Support Maintenance.

(1) Small Holes or Tears. Before repairing a small hole or tear, remove the ballistic panels. Repair the outer shell by machine sewing as specified in Table 25-2. Inspect the ballistic panel as described in paragraph 25-5.(a)(4) to determine its serviceability. Re-install a serviceable ballistic panel into the repaired outer shell. The perimeter seam of the ballistic panel nylon cover may be repaired and unstitched velcro may be re-secured provided its exact location is maintained. (Marine Corps) If the ballistic panel cannot be returned to serviceable condition, intermediate level repair will return it to the manufacturer for final evaluation and inspection.

CAUTION

Do not stitch through the ballistic panel when repairing the outer shell. Remove the ballistic panels prior to any OTV repairs. The ONLY time the ballistic filler panel can be stitched through is to re-attach the velcro attachment to the ballistic panel. When re-attaching the velcro, ensure it is sewn in the original location.

(2) Open seam and broken stitches in outer shell. When it is necessary to repair an open seam or broken stitch, all sewing shall be machine sewn. Open seam or broken stitching may be made in all areas of the vest. Stitching on replacement sections and re-stitching of seams will be the same as the original construction.

(3) Adjust thread tension so that there will be no loose stitching or excessively tight stitching resulting in puckering of the material sewn. When re-stitching an open seam or when a thread breaks during normal stitching, backstitch not less than ¾ inch. For stitch type illustrations, see Federal Standard 751 (ASTM D6193). In general, stitching will be performed with nylon Type 1, Class B conforming to V-T-295. All threads visible on the exterior of the vest shall be Olive Drab S-1, C.A. 66022. Thread size shall be as specified in Table 25-2.

Table 25-2. Stitching Instructions

Table 25-2. Stitching Instructions LOCATION	THREAD SIZE			STITCHES PER INCH
	STITCH TYPE	NEEDLE	BOBBIN	
General	301	E	E	8-10
Plate pocket openings	Bartack	B	B	28 per tack
Webbing hangers	Bartack	B	B	42 per tack
Labels, pockets and pocket flaps, hem pencil pocket	301	B	B	10-12
Velcro	301	B	B	8-10
Ballistic Panel	301	E	E	4-6
	301	F	F	6-8
Join inner and outer shells and catch side closure with ribbon	301	F	F	8-10
Side webbing	Box X	B	B	8-10
Ribbon closure on side	Box X	B	B	8-10
Handle	Box X	B	B	8-10
Webbing ends	301	B	B	8-10

(4) Snaps Fasteners.

(a) Resetting. Reset a loose snap fastener by using appropriate dies.

(b) Removal. Remove a damaged snap by cutting it with a pair of diagonal wire cutters or rippers. Be careful not to cut or damage the fabric.

(c) Installation. Without damage to the fabric, install the new snap fastener (with proper sized dies) according to the original construction.

(5) Eyelets. Replace missing, damaged or otherwise unserviceable items with eyelets as specified.

(6) Stitching. Replace stitching in accordance with Table 25-2.

(7) Webbing. For horizontal webbing hangers on front of OTV outer shell, note length of bar tack, perform specification for spacing which is critical for pocket lacing on easily and properly. Lastly, cut the webbing using heat so it does not have sharp or burred edges.

(8) Velcro. Replace in fashion similar to original construction with the materials listed in Section III OTV Materials. Stitch in accordance with Table 25-2.

(9) Fabric. Replace with the fabric listed in Section III. Stitch in accordance with Table 25-2.

(10) Outer Shell Replacement. The outer shell of the base vest or any of the modular components may be replaced if they are extensively worn and appear not to be economically repairable. The entire outer shell can be obtained from the manufacturer already fabricated. See Section IV for NSNs. Replace the entire outer shell when the outer shell exhibits large holes or tears, is severely worn or soiled, or shows badly torn pockets or pocket flaps, or badly frayed collar. If the outer shell is to be removed and replaced, it is important that the label containing the size, national stock number, and cleaning instructions be retained and stitched to the new shell. Check the ballistic panel size markings for legibility and remark if necessary. If the label is unusable, replace it with a new one.

25-6. TESTING

Complete Vest.

Dry Weight Test. The dry weight test may be conducted to ensure that the OTV being returned to supply channels contains the proper size ballistic panel and the OTV size designation is correct. The following table contains the weights of the OTV and SAPI in pounds. The tolerance for each is 0.2 lbs.

COMPONENT	X-SMALL	SMALL	MEDIUM	LARGE	X-LARGE
Base Vest including: Collar assembly, throat protector and groin protector	8.10	8.55	9.25	10.25	11.30
SAPI, ea.	2.8	3.5	4.0	4.6	5.3

25-7. REPAIR OF BODY ARMOR SMALL ARMS PROTECTIVE INSERT

a. Inspection. (Army) Inspect the overall condition of the SAPI. (Marine Corps) Inspect the overall condition of the SAPI prior to each field evolution and once per day during field use. Check for rips or tears, surface cracks in the plate itself, or if the plate flexes and crunching sounds can be heard, or loose pieces can be heard inside plate when it is shaken. Each SAPI will be inspected to determine the proper classification in accordance with chapter 1, paragraph 1-7, and identification (item description, size and stock number). (Marine Corps) If there are surface cracks in the plate itself, or if the plate flexes and crunching sounds can be heard, or loose pieces can be heard inside plate when shaken, the plate should be returned to the manufacturer.

b. (Marine Corps) The SAPI shall have a storage life of a minimum of 15 years when stacked no more than 7 plates high.

CAUTION

Do not use a stiff brush to clean any part of the SAPI as this will damage the material.

c. Cleaning Instructions.

(1) Remove loose dirt and lint from the outer surface of the SAPI using a cloth or soft bristle brush.

(2) Wet the SAPI in a sink or shower by running warm, not hot water over it. Do not submerge it in a container of water.

(3) Apply a mild soap or detergent to the soiled areas and scrub with a cloth or soft bristle brush. Badly soiled areas may be scrubbed with GI Soap. Scrub only long enough to remove soil.

(4) Heavy grease and oil stains may be pre-spotted with a dry cleaning solvent and detergent mixture and scrubbed with a soft brush.

(5) Rinse the SAPI with warm water until all suds are completely gone. Avoid immersing the SAPI in water.

(6) Let the SAPI dry by itself, away from heat or open flame.

CAUTION

Do not machine wash or dry. Failure to follow these instructions may render your SAPI useless against ballistic threats. Do not submerge your SAPI in a container of any liquid.

d. Organizational/Field Maintenance. Minor repairs, such as small tears in the outer fabric cover, may be performed in the field using rigger's tape.

e. Direct/Intermediate Level Support Maintenance. Minor repairs, such as small tears in the outer fabric cover, may be performed using a patch made of the fabric material and adhesive. (Marine Corps) All other repairs must be performed by the manufacturer.

f. SAPI Replacement. The SAPI should be marked unserviceable when:

(1) The outer cover is damaged exposing the black ceramic tile material, or
(2) The SAPI is cracked or loose pieces rattling around can be heard when the SAPI is shaken, or
(3) The composite back face is delaminated and the individual fabric piles are separating.

25-8 LABELS

a. OTV. If the stock number and size designation on the identification label or the instruction label is in such condition that it is apparent that it will not retain legibility when subjected to wear after re-issue, a new label should be incorporated by removing the old label and replacing it with a new label. Replacement labels can be purchased individually from the manufacturer and must be ordered by size.

Sample Label:

SIZE: X-LARGE
CHEST: **45" - 49"**
INTERCEPTOR OUTER TACTICAL VEST (OTV) Outershell

THE INTERCEPTOR OTV WITH ALL SOFT BALLISTIC PANELS INSTALLED PROVIDES PROTECTION FROM FRAGMENTATION AND 9mm SUBMACHINE GUN OR LESSER THREATS. THIS VEST DOES NOT PROTECT AGAINST KNIVES OR SHARP OBJECTS.

CLEANING INSTRUCTIONS

DO NOT MACHINE WASH OR DRY. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY DESTROY YOUR VEST.

1. Remove dirt from outer surface using a cloth or soft bristle brush.
2. Remove ALL ballistic panels and the Small Arms Protective Inserts (SAPI) from the OTV Outershell and the component carriers. Soft Ballistic panels are cleaned ONLY by removing loose dirt from the surface and wiping clean with a moistened cloth or soft brush. Avoid submerging the panels in water, DO NOT bleach, DO NOT machine wash, DO NOT dry clean, DO NOT apply solvents to the Ballistic panels. If Ballistic panels become wet allow to air dry in a flat position away from heat sources and out of direct sunlight. If ballistic panel becomes saturated with liquids such as gasoline, bleach, or other lubricants, turn in for replacement as soon as possible.
3. Hand wash OTV base vest and component outershells only in cold or lukewarm water, using mild detergent or soap. **DO NOT USE CHLORINE BLEACH, YELLOW SOAP, CLEANING FLUIDS OR SOLVENTS, WHICH WILL DISCOLOR OR DETERIORATE THE ITEM.**
4. Rinse the outershells thoroughly in clean, lukewarm water
5. Air dry indoors, or in shade, **AWAY FROM HEAT SOURCES.**
6. **DO NOT ATTEMPT TO DYE ITEM OR FIX DISCOLORATIONS.**

TURN IN YOUR VEST/BALLISTIC PANELS IF:

1. They have been hit by fragment or bullets.
2. The outer cover is torn or damaged beyond repair.
3. The vest is all bunched and lumps cannot be flattened.
4. The Velcro cannot be closed completely or repaired.
5. The webbing is torn or damaged beyond repair.
6. The vest can no longer be adequately cleaned, or is discolored.
7. The vest has broken stitching, buckles, or snaps.

REFER TO USE AND CARE MANUAL FOR DONNING AND DOFFING INSTRUCTIONS AND REPAIR PROCEDURES.

LOT NUMBER:XXXXXXXXXXXXXXX
DATE OF MFG:XX / XX
LOCATION OF MFG:XXX
NSN:XXXXXXXXXXXXXXXXXXXXXX
CONTRACT #DAAN02-98-D-5006

b. SAPI. The SAPI Labels shall contain the following:

(1) Orientation labels. Permanent labels or markings shall be placed on the back-face of the SAPI clearly displaying the "TOP" orientation. Orientation marking will be approximately 1.25 inches from its respective edge. A permanent label or marking shall be centered on the front of the armor insert, 4.5 inches from the top clearly displaying "STRIKE FACE." All characters will be 0.50 inches high.

(2) Performance labels. A permanent label or marking shall be placed on the back-face clearly displaying "7.62 mm M-80 Ball Protection" in characters 0.25 inches high. The marking will be displayed on the center of the plate approximately 3.0 inches from the top edge.

(3) Complete SAPI markings. The manufacturer's code number, contract number, lot number, serial number, date of manufacturer as well as the nomenclature and federal stock number shall be permanently and legibly marked on the mid-center back face (approximately 5.0 inches from the bottom edge) in characters 0.125 inches minimum. The letters "U.S." shall be applied approximately 0.5 inches above the identification markings and centered on the plate in characters 1.0 inches high. The size identification of the insert shall be clearly displayed centered on the front surface 3.0 inches below the top edge in all capital characters 0.50 inches high (i.e., SIZE MEDIUM). The words "HANDLE WITH CARE" shall be printed in characters 0.50 inches high at approximately 2.0 inches below the marking "STRIKE FACE" and centered on the front face surface. All marking shall conform to type IV, class 9 of DDD-L-20. The fastness for the class 9 label shall be as specified for class 5 labels.

Sample Label:

Insert, SAPI, Medium
P/N 54786-109900-5
Contract No. DAAN02-98-D5007-XXX
Date of Manufacture: xx/xx
Lot No.
S/N: XXXXXXXXXXXXX
NSN: 8470-01-465-1043
FSCM: 3T951

25-9. WORKMANSHIP

Personnel skilled in the particular trade applicable to their duties will do repair and cleaning. Patches will be tightly sewn or applied and all re-seaming will be secure and free of loose or broken threads. Hardware will work properly and be securely and properly attached. The finished item will be complete, clean, well repaired, free from all defects affecting its serviceability and appearance.

25-10. INSPECTION

After complete repair, inspect each item and its components to determine if they meet the criteria in Chapter 1 listed under Classification Code B. (Army) The inspection or quality control element is responsible for preventing return of sub-standard product to supply channels. (Marine Corps) After repairs are made, inspect the article per the Technical Manual.

Section III. OTV MATERIALS

Item Description	SMR Code	Color	Vendor	U/M
5/8" Sew on Hook	XBFZZ	Camo	YKK (USA)	Yd
5/8" Sew on Loop	XBFZZ	Camo	YKK (USA)	Yd
1" Sew on Hook	XBFZZ	Camo	YKK (USA)	Yd
1" Sew on Loop	XBFZZ	Camo	YKK (USA)	Yd
1 ½" Sew on Hook	XBFZZ	Camo	YKK (USA)	Yd
1 ½" Sew on Loop	XBFZZ	Camo	YKK (USA)	Yd
2" Sew on Hook	PAFZZ	Camo	YKK (USA)	Yd
2" Sew on Loop	PAFZZ	Camo	YKK (USA)	Yd
1" Mil C 43668 T III	XBFZZ	Camo	Narricot	Yd
1 ½" Mil W 43668 T IV	XBFZZ	Camo	Elizabeth Webbing	Yd
2" Mil W 4088 T VIIIB	XBFZZ	Camo	Narricot	Yd
¾" Mil T 5038 T III Cl 2	XBFZZ	Camo	Narricot	Yd
1" Mil T 5038 T III Cl 2	XBFZZ	Camo	Narricot	Yd
1" Self Thread Buckle	PAFZZ	Black	John C Tucker Co	Ea
Snap Assembly Female	XBFZZ	Black	Universal / Stimpson	Ea
Snap Assembly Male	XBFZZ	Black	Universal / Stimpson	Ea
Eyelet Assembly	XBFZZ	Black	Stimpson	Ea
Foam	XBFZZ	N/A	Der Tex	S/F
500 D Cl IV	PAFZZ	Black	Brand & Oppenheimer / HLC	Yd
1000 D Cl III	PAFZZ	Camo	Brand & Oppenheimer	Yd
Mil C 508 Collar Mtrl	XBFZZ	Camo	Brand & Oppenheimer / HLC	Yd
Mil C 43637 Ripstop	XBFZZ	OD Green	Brand & Oppenheimer / HLC	Yd
Label Material	XBFZZ	Camo	Tags & Labels	Ea
Thread	PAFZZ	Camo	Coats American Ultra Dee	Lb
Use & Care Manual	N/A	N/A	Delta Colorgraphics	Ea

SECTION III. SMALL ARMS PROTECTIVE INSERT MATERIALS

ITEM	SMR CODE	COLOR	VENDOR	UNIT OF ORDER
Composite Ceramic Plate	XAFZZ	Gray	SDS	Ea
Cloth, Nylon, Duck, MIL-C-7219 Type III, Class 2	PAFZZ	Black	Zap	Yd
Adhesive MIL-A-5340 Class 5	PAFZZ	N/A	Clifton	Gallon

SECTION IV. NATIONAL STOCK NUMBERS

DESCRIPTION: Body Armor, Interceptor (Woodland Camouflage)	COMPONENT LEVEL: EA	ASSEMBLY LEVEL: EA	SYSTEM LEVEL: EA
BASE VEST			
Base Vest Outershell XS-XL; 5 sizes; XS-XL	8470-01-465-1918 thru 1929		
Ballistic Panel, Right Front XS-XL; 5 sizes; XS-XL	8470-01-465-1614 thru 1677		
Ballistic Panel, Left Front XS-XL; 5 sizes; XS-XL	8470-01-465-0396 thru 1571		
Ballistic Panel, Back XS-XL; 5 sizes; XS-XL	8470-01-465-9481 thru 9487		
Base Vest Assembly: Outer shell w/ballistic panels; left front, right front and back in 5 sizes; XS-XL		8470-01-465-1875 thru 1911	
Ballistic Panel Set, 5 sizes; XS-XL		8470-01-465-1194 thru 1199	
YOKE AND COLLAR			
Yoke and Collar Outershell; 5 sizes; XS-XL	8470-01-465-4621 thru 4661		
Ballistic Panel, Collar Right; 5 sizes; XS-XL	8470-01-465-1683 thru 1688		
Ballistic Panel, Collar Left; 5 sizes; XS-XL	8470-01-465-1773 thru 1781		
Yoke and Collar Assembly; Outershell w/collar left and collar right panels OR Outershell w/collar set assembly		8470-01-465-0889 thru 0910	
Ballistic Panel, Collar Set; 5 sizes; XS-XL		8470-01-465-1791 thru 1828	
THROAT PROTECTOR			
Throat Protector Outer Shell; one size	8470-01-465-1857		
Ballistic Throat Protector; one size	8470-01-465-1769		
Throat Protector Assembly; one size		8470-01-465-9393	
GROIN PROTECTOR			
Groin Protector Outershell; 2 sizes; XS-M and L-XL	8470-01-465-1098 thru 1100		
Ballistic Panel, Groin Protector; 2 sizes; XS-M and L-XL	8470-01-465-1763 thru 1765		
Groin Protector Assembly; Outershell w/Ballistic Panel in 2 sizes; XS-M and L-XL		8470-01-465-0872 thru 0881	

VEST SYSTEM			
Outer Tactical Vest (OTV); system consists of all the components in a selected size; 5 sizes; XS-XL			8470-01-465-1863 thru 1868
SMALL ARMS BALLISTIC INSERT (SAPI); 5 sizes; XS-XL corresponds to OTV. A set of 2 SAPI are required when issued with OTV.	8470-01-465-1181 thru 1189		
MOCK-UP SAPI; 5 sizes; XS-XL corresponds to OTV. A set of 2 SAPI are required when issued with OTV. Mock-up SAPI are for **TRAINING PURPOSES ONLY**	8470-01-465-1039 thru 1047		

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CHAPTER 26

MAINTENANCE OF ADVANCED COMBAT VEHICLE CREWMAN (ACVC) HELMET

Section I. INTRODUCTION

26-1. SCOPE

This chapter describes the maintenance procedures for the United States Marine Corp (USMC) Advanced Combat Vehicle Crewman (ACVC) helmet. Section I identify and describe the ACVC Components. Section II provides laundry and repair procedures, as well as sizing guidelines. Material specifications and suggested sources are provided in Section III.

26-2. SPECIFICATIONS AND PUBLICATIONS

a. Items

SPECIFICATION/DRAWING/CAGE	ITEM
MIL-H-444II7B/ 8-20-830/	Helmet Shell
PDA3261199/F105104 (S, M) F105103 (L)/	Camouflage Cover, Desert
PDA3261199/F105106 (S, M) F105105 (L)/	Camouflage Cover, Arctic
PDA3261199/F105102/	Impact Liner Spider
MIL-P-15280/F105102-D/	Suspension Crown Pad
MIL-P-15280 /F105102-A/	Impact Liner Large Pad Set
MIL-P-15280 / F105102-B/	Impact Liner Medium Pad Set
MIL-P-15280 / F105102-C/	Impact Liner Small Pad Set
PDA3261199/W13181/	Retention System
PDA3261199/F105107/	ACVC Headset Assembly
PDA3261199/R00494/	Ear Cup Tension/Adjustment Strap Assembly
PDA3261199/R00436\437/	Face Guard and Attachment Struts
PDA3261199/W13221/	ACVC Carrying Bag

b. Publications

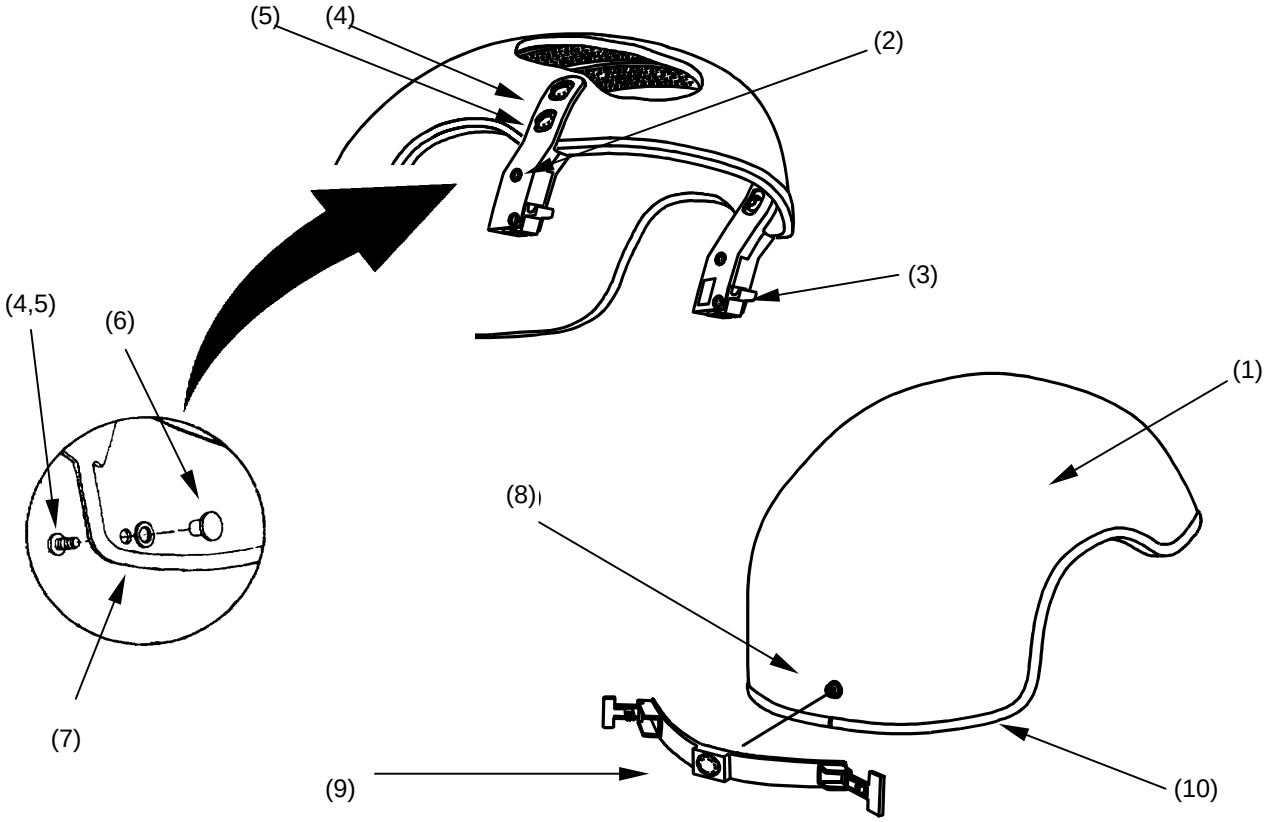
NUMBER	TITLE
FM 10-16	General Fabric Repair
MIL-STD-105	Quality Performance Inspection
MIL-STD-109	Quality Assurance Terms and Definitions
MIL-STD-129	Marking

26-3. IDENTIFICATION AND DESCRIPTION

a. Helmet Shell

ITEM (NSN)	SIZES	SPECIFICATION
Helmet Shell	Two Sizes	
CVC Shell, Increased Ballistic, (DH-132B), 8470-01-389-3815	Small/Medium	MIL-H-444117B
CVC Shell, Increased Ballistic, (DH-132B), 8470-01-389-3821	Large	MIL-H-444117B

The helmet shell is a rigid compression molded composite constructed of KM-2 (Kevlar) molded with phenolic and polyvinyl butyral resins. Two 4 inch long x 2 inch wide pieces of hook tape fastener adhered to the inside crown area provide a means of attaching the impact liner to the shell. Left and Right Hand struts that support the face guard are mounted to each side of the face opening of the shell. Mounted to the rear of the shell by a single snap fastener is a headset tension assembly.



(See Section III, Materials for Specific NSN's and Part Numbers)
(1) Helmet Shell
(2) Faceguard Strut, Right Hand
(3) Faceguard Strut, Left Hand
(4) Upper Screw, Strut
(5) Lower Screw, Strut
(6) Post
(7) Washer
(8) Snap Fastener
(9) Headset Tension Assembly
(10) Rubber Edging

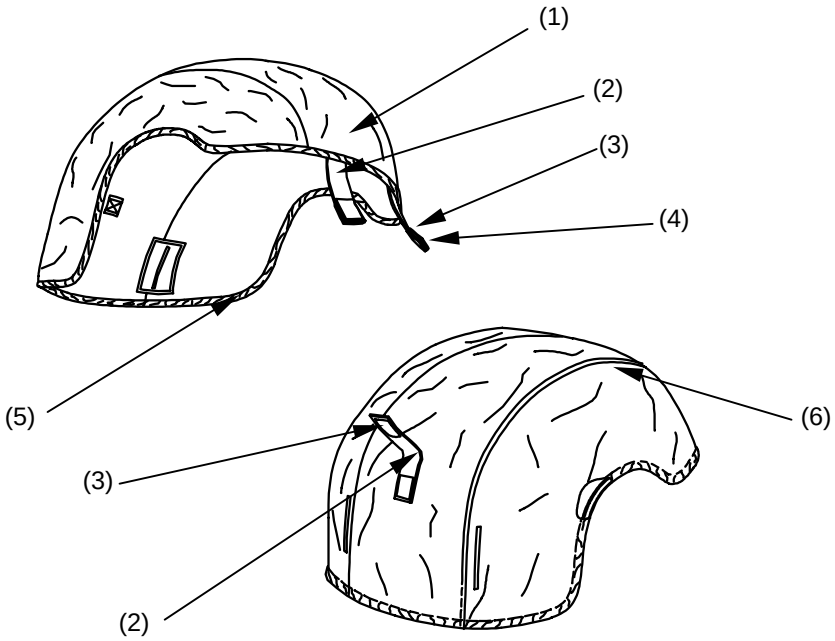
Figure 26-1. Helmet Shell

26-3. IDENTIFICATION AND DESCRIPTION - continued

b. Camouflage Cover

ITEM (NSN)	SIZES	SPECIFICATION
Camouflage Cover, Arctic (8415-01-NIB-0068)	Small and Medium	PDA3261199
Camouflage Cover, Arctic (8415-01-NIB-0068)	Large	PDA3261199
Camouflage Cover, Desert (8415-01-467-2211)	Small and Medium	PDA3261199
Camouflage Cover, Desert (8415-01-467-2215)	Large	PDA3261199
Camouflage Cover, Reversible	Small and Medium	
Camouflage Cover, Reversible	Large	

The camouflage cover is made of cotton fabric with a one-inch tunnel around its edge, containing a rubber band. Reinforced cutouts at the rear allow the tension adjustment strap assembly to be threaded through the cover. A 3 ½ inch long and ¾ inch wide binding tape with a 1 inch long and ¾ inch wide pile fastener tape at its end, is sewn to the rear of the cover to secure the sun, wind, and dust goggles retainer strap. Similar pieces of binding tape but with both hook, and pile fastener tapes at opposite sides of its end, are sewn to the sides of the face opening.



(See Section III, Materials for Specific NSN's and Part Numbers)
(1) Cotton Fabric
(2) Binding Tape, ¾ Inch
(3) Pile Fastener Tape, ¾ Inch
(4) Hook Fastener Tape, ¾ Inch
(5) Rubber Band
(6) Thread Figure

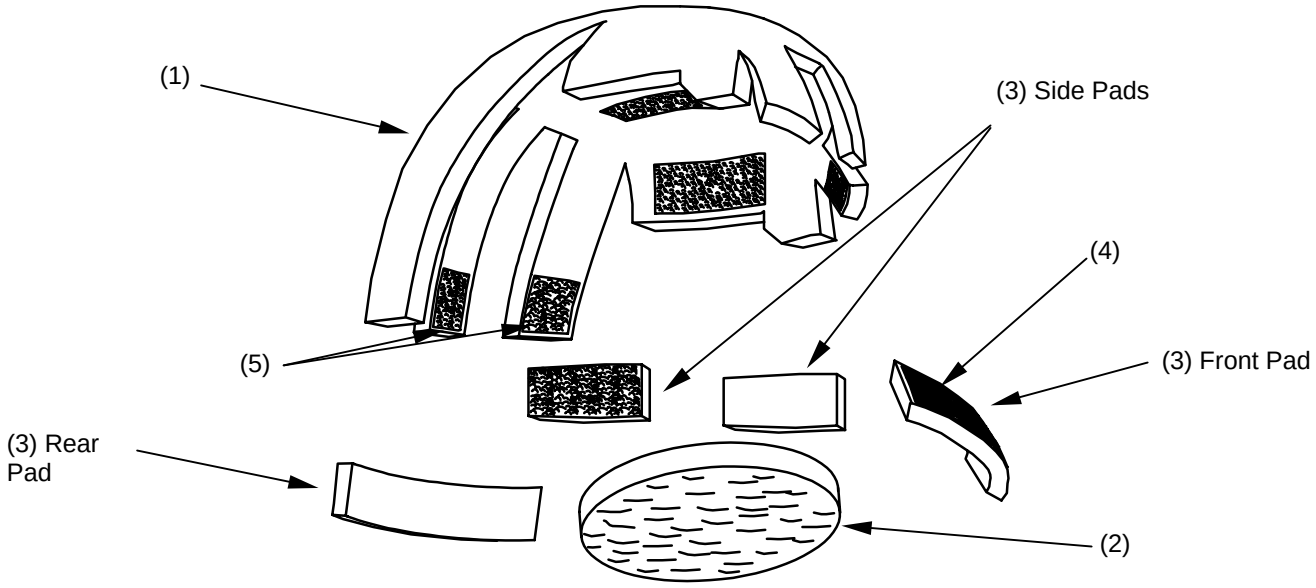
26-2. Camouflage Cover

26-3. IDENTIFICATION AND DESCRIPTION - continued

c. Impact Liner Assembly

ITEM (NSN)	SIZES	SPECIFICATION
Impact Liner Spider (8415-01-467-2216)	One Size	PDA3261199
Impact Liner Crown (8415-01-467-2189)	One Size	MIL-P-15280
Impact Liner Small (8415-01-467-2178)	Small	MIL-P-15280
Impact Liner Medium (8415-01-467-2181)	Medium	MIL-P-15280
Impact Liner Large (8415-01-467-2183)	Large	MIL-P-15280

The spider is constructed of a rigid one-piece, 3/8-inch thick, polyurethane foam. Two pieces of 3 ½ inch long and 1 ½ inch wide pile fastener strips adhered to the crown of the liner provide adhesion when pressed against the corresponding hook fastener tapes in the helmet shell. The inside of the liner is fitted with two, 1 ½ inch wide and 3 ½ inch long, pieces of pile fastener strips along the crown and the sides. In addition, 1-inch wide and 1½-inch long patches of pile fastener tape are attached to each of the fingers of the spider. The fitting pads Consist of a crown, front, rear, and left and right side pads. They are cut from a smooth leather/vinyl material on the outside, and both a flexible and semi-flexible foam urethane material on the inside. The pads are fitted with 1-½ inch wide and 3 ½ inch long hook fastener strips that provide adhesion when pressed against the correspondingly sized hook fastener pads on the liner.



(See Section III, Materials for Specific NSN's and Part Numbers)
(1) Spider
(2) Crown Pad
(3) Front, Rear, and Side Impact Liner
(4) Hook Fastener Tape
(5) Pile Fastener Tape

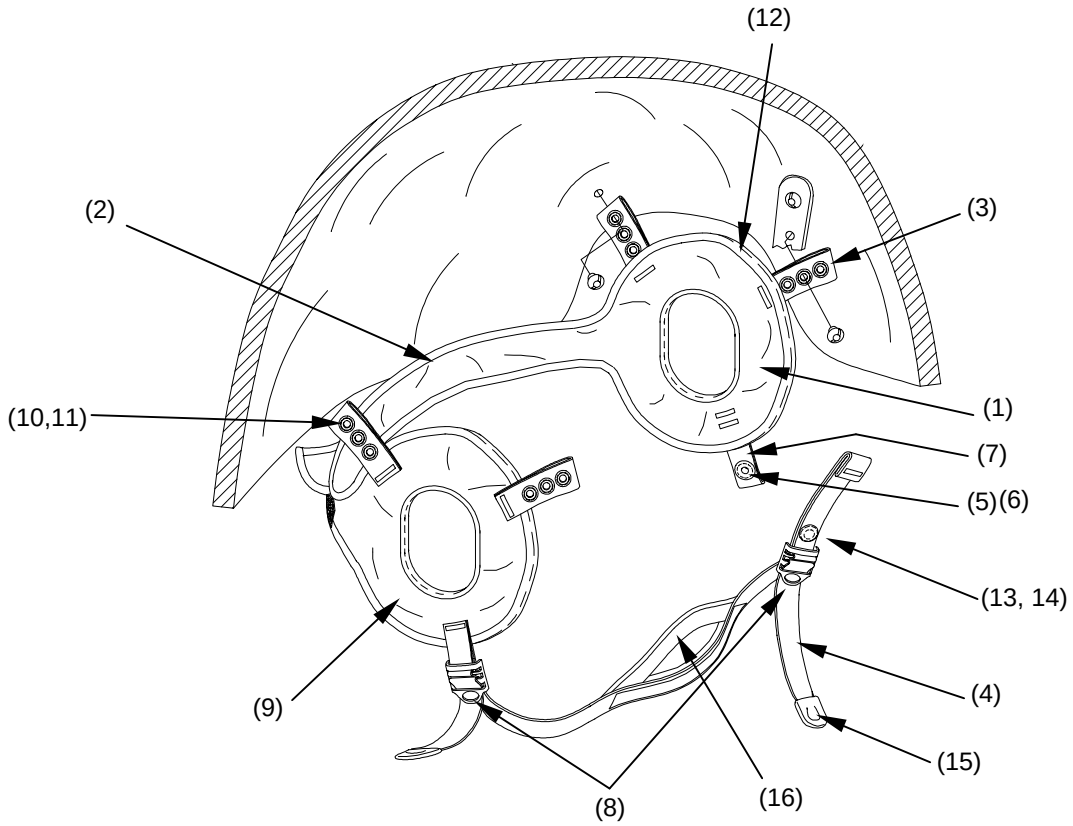
Figure 26-3. Impact Liner Assembly

26-3. IDENTIFICATION AND DESCRIPTION - continued

d. Retention System

ITEM (NSN)	SIZES	SPECIFICATION
Retention System (8470-01-467-2176)	One Size	PDA3261199
Chinstrap (8470-01-4672175)	One Size	PDA3261199

The retention system consists of polyaramid/cotton fabric onto which the chinstrap is sewn and the headset housings are mounted. The basic pattern includes a nape strap with hook and pile fastener tapes at the seams that allow the headset ear-to-ear cord to be enclosed within the nape strap. The system is attached to the helmet shell on the right and left rear, and the faceguard adjustment struts on front using two screws. Each nylon tape attachment loop has 3 eyelets through which the system can be attached to achieve the optimum fit. The chinstrap includes two adjustment buckles and a snap fastener at one side.



(See Section III, Materials for Specific NSN's and Part Numbers)

(1) Polyaramid/Cotton Fabric
(2) Nomex Hook and Loop Fastener
(3) Nomex Webbing, 1"
(4) Nomex Webbing, ¾"
(5) Stud
(6) Eyelet
(7) Polyaramid Binding
(8) Buckle
(9) Cotton Duck Cloth
(10) Eyelet Female
(11) Eyelet Male
(12) Nomex Thread
(13) Socket
(14) Button
(15) End Clip
(16) Webbing Cotton

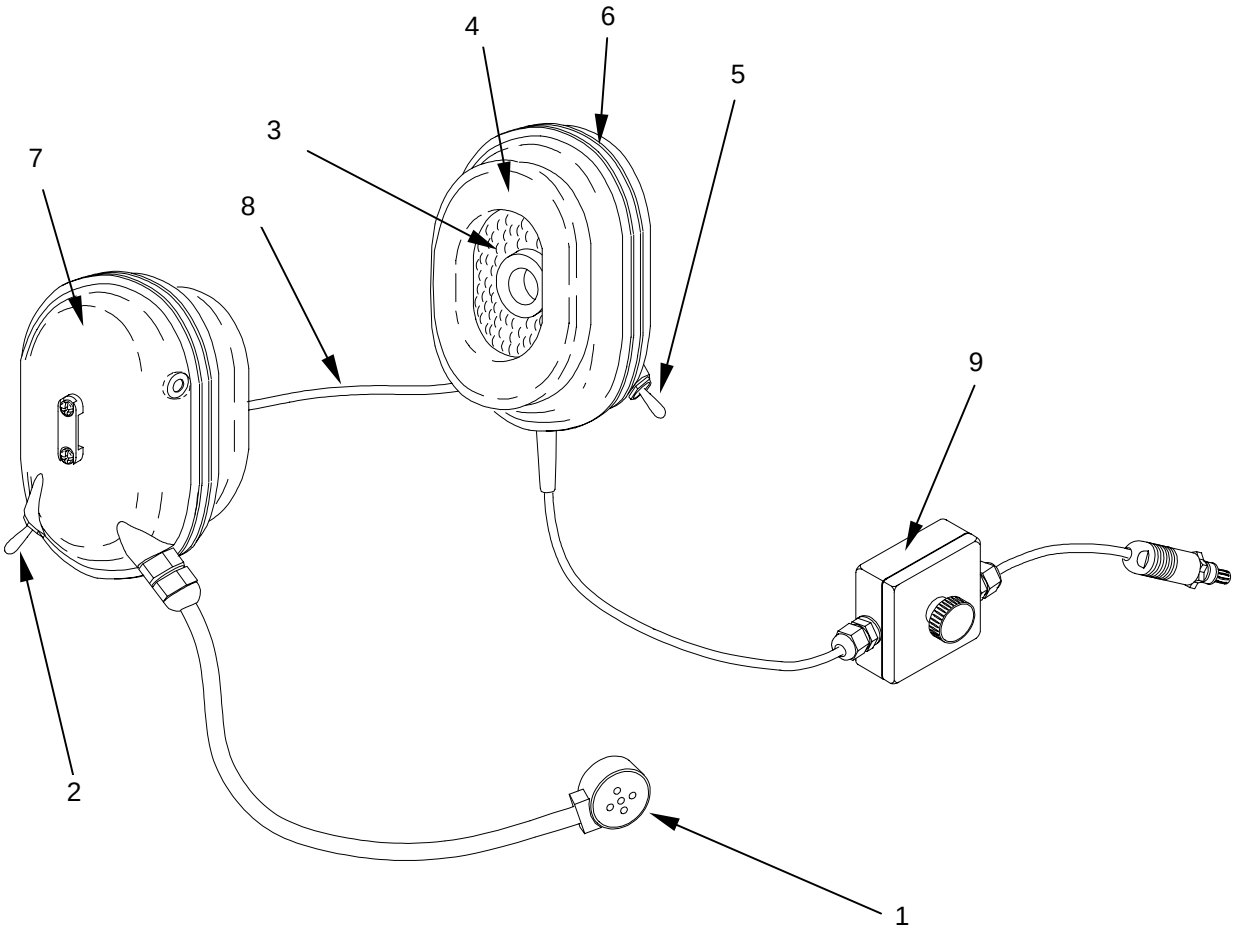
Figure 26-4. Retention System

26-3. IDENTIFICATION AND DESCRIPTION - continued

e. Headset and Microphone Kit

ITEM (NSN)	SIZES	SPECIFICATION
ACVC Headset Assembly (PN F105107)	One Size	PDA3261199

The headset assembly consists of the left and right earcups, connected by the ear-to-ear cord. The microphone boom assembly, talk-through switch, foam ear cushion, and seal, are attached to the right earcup. The push-to-talk switch, upper cord with battery box, and foam ear cushion are attached to the left earcup. The upper cable assembly is connected to the left earcup and incorporates the battery box.



(See Section III, Materials for Specific NSN's and Part Numbers)
(1) Sound Canceling Microphone Boom Assembly
(2) Talk-through Switch
(3) Earcup Foam
(4) Earseal
(5) Three-Position Push-to-talk Switch
(6) Earcup Left
(7) Earcup Right
(8) Ear to Ear Cord
(9) Battery Box, Upper Cable

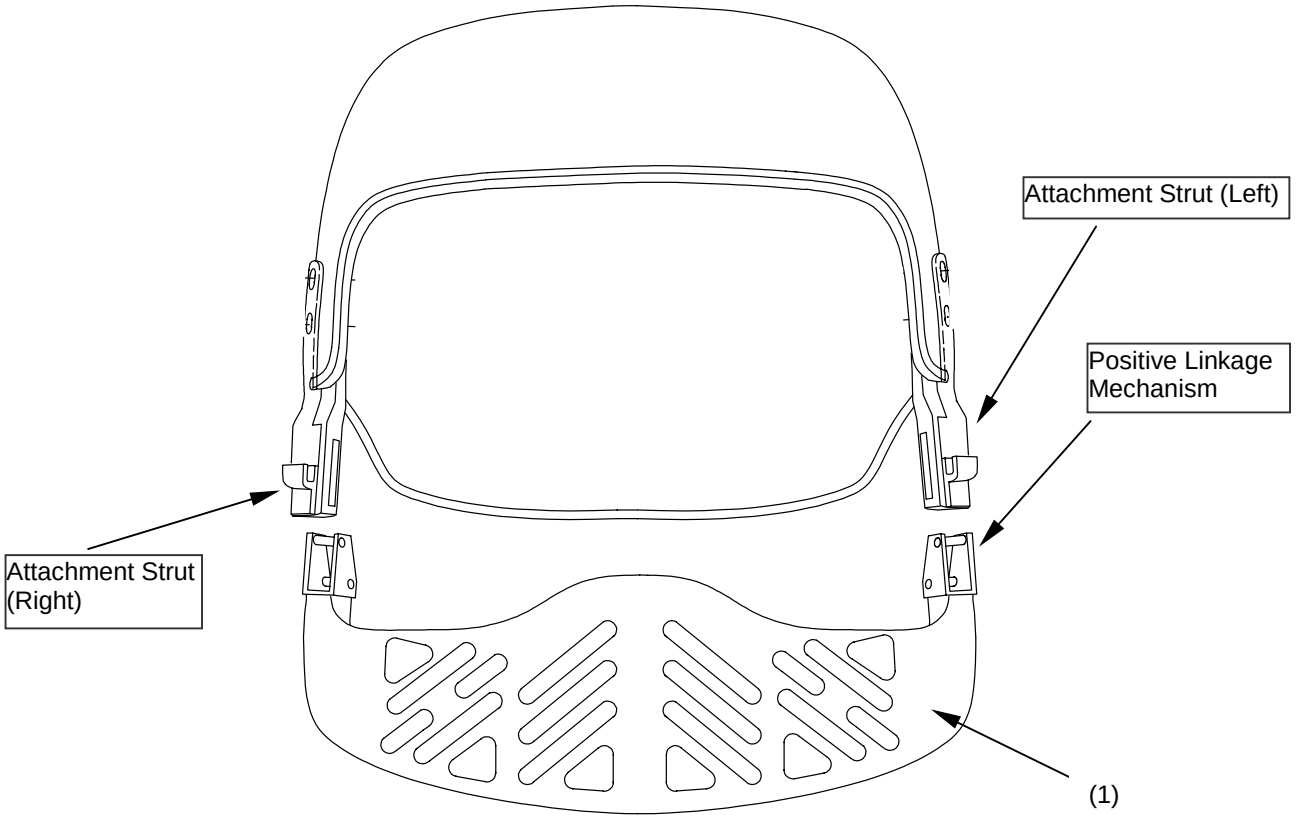
Figure 26-5. Headset Assembly

26-3. IDENTIFICATION AND DESCRIPTION - continued

f. Faceguard and Attachment Struts

ITEM (NSN)	SIZES	SPECIFICATION
Faceguard (8470-01-467-1550)	One Size	PDA3261199

The faceguard is a single piece of a high impact plastic material. Positive latch mechanisms are attached to each side of the guard, that hooks directly onto the attachment struts. The attachment struts are mounted to the helmet shell with four metal screws, washers, and posts.



(See Section III, Materials for Specific NSN's and Part Numbers)
(1) Faceguard

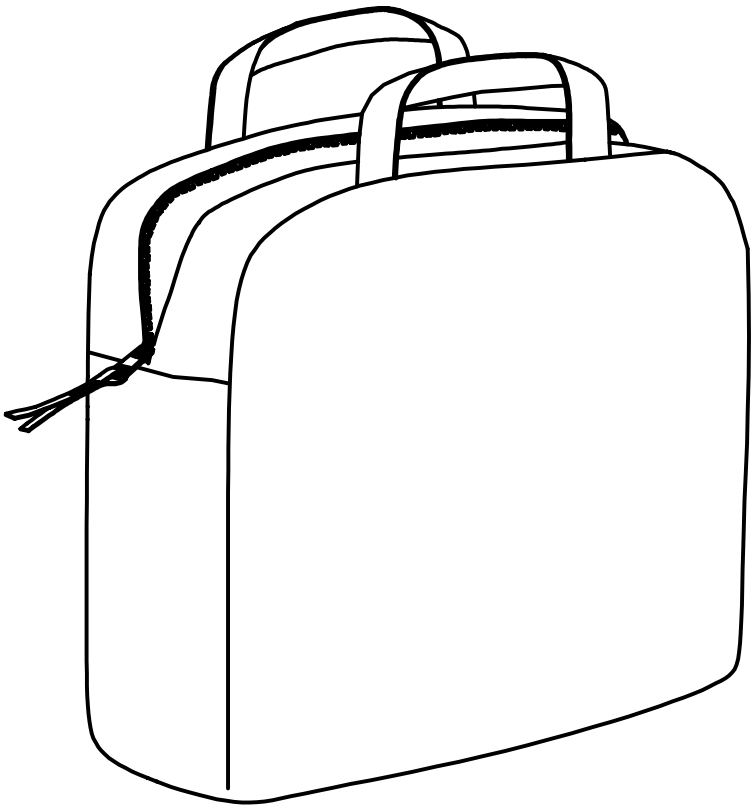
Figure 26-6. Faceguard and Attachment Struts

26-3. IDENTIFICATION AND DESCRIPTION - continued

g. Carrying Bag

ITEM (NSN)	SIZES	SPECIFICATION
Carrying Bag (PN W13221)	One Size	PDA3261199

The carrying bag is a non-repairable item. Replace as required.



(See Section III, Materials for Specific NSN's and Part Numbers)
(1) Carrying Bag

Figure 26-7. Carrying Bag

Section II. MAINTENANCE PROCEDURES

26-4. MATERIALS

Materials used to repair the ACVC shall be serviceable materials recovered from similar, salvaged or new materials that conform to the specifications listed in Section III.

26-5. CLASSIFICATION

Serviceability classification for the ACVC Components shall be determined in accordance with Chapter 1.

26-6. CLEANING

Prior to repair of the ACVC, all components must be removed and cleaned. Disassemble the ACVC as described in paragraph 26-8, Repair. Remove batteries from the battery box before cleaning.

Clean the helmet shell with soap and warm water. Rinse with clean water. Clean the synthetic rubber edging of the shell with a clean cloth to remove dirt, dust, oil, grease, and perspiration.

Ensure that all communication components such as: cords, microphone, microphone boom, connectors, and ear pads are free of any dirt or contamination. Remove loose dirt with a clean, soft cloth damped with a mild detergent solution. Remove grease, fungus, or difficult to remove dirt, with a soft brush and mild detergent.

Hand wash camouflage cover in warm water (120^0F) and mild laundry detergent or machine wash on permanent press cycle. Rinse thoroughly with clean warm water after laundering. Hang and let air-dry.

Clean the Helmet Liner Assembly Components as necessary by removing and washing the components with a mild solution of detergent and water. Air dry after washing.

26-7. INSPECTION

Inspect the helmet shell for cleanliness, cracks, cuts, deep gouges and delimitation. Check the hook fastener strips for serviceability. Inspect the rubber edging to see that there are no cuts and that the edgings are securely adhered to the helmet shell. For the helmet shell, all inspection, cleaning, and maintenance will be done in accordance with TM 10-8400-203-23, Chapter 19.

Inspect the camouflage cover for tears, and loose or missing fastener strips. Also check for broken stitching.

Inspect the impact liner assembly inserts for tears, cuts, filth, bad odor, soft spots, and improper adhesion of components. Soft spots can be detected by compressing the inserts with fingertip.

Check the retention system for proper closure operation of the chinstrap. Check for cuts, tears or broken stitching in the polyaramid cloth. Check for serviceability on the hook and pile fastener strips in the nape strap.

Inspect the headset assembly for physical damage such as abrasion, cuts, loose wires and connectors in the microphone and earphones. Inspect all swivel joints and moveable parts. Check for foreign matter stuck in the microphone.

Inspect the headset-microphone set for cleanness, cracks, loose switch, and loose or broken electrical lines and connections. Be certain that the ear seals are properly installed on the ear cups.

Inspect all openings in the microphone and earphones. Inspect all swivel joints and moveable parts. Remove all foreign matter, but do not use a pointed tool. Be careful not to puncture ear-cushioning seals. The assembly is built to withstand breakage under normal and even abnormal operating conditions. Routine maintenance involves replacing damaged earcup seals and batteries for the talk-through system, as needed.

SALT WATER OPERATIONS: Specifically, for saltwater operations, complete headset (including internal electronics) must be FRESH WATER rinsed and air dried daily. Look for signs of damage, salt-water corrosion or wear: a pulled out cable or worn spots, parts missing, leaking switches or microphone boom (check for silicon on the backs of switches and wires and inside and out of all earcup pass thru locations) and so on (See Section 3 Parts List).

This headset and microphone kit is designed to come apart easily, and since everything plugs together with connectors, tools are not needed to replace most parts. There is only one way that things fit together. You can't make a mistake unless you force something into place.

Inspect the security and serviceability of the snap fastener securing the earcup tension/adjustment strap assembly. Ensure proper function of adjustment straps and slide-through ratchet buckles.

Check that the faceguard struts are securely mounted and not damaged. Inspect for any physical damage to the faceguard.

Inspect the carrying bag for rips, tears, holes, or loose threading present. Clean out any foreign matter that may be inside the bag and result in affecting the helmet in any way. Check that the stitching attaching the bag handles are secure. Check that the slide fastener slides smoothly and that there are no damaged areas.

The inspection or quality control unit is responsible for determining compliance with repair instructions and requirements for classification. In-process inspection shall be performed for quality of workmanship and correct application of repair procedures. The completed item will be inspected for serviceable condition and appearance to ensure against return of substandard products to supply channels.

26-8 REPAIR

The following are instructions for repairing the helmet shell. All repairs on helmets shell only will be done in accordance with TM 10-8400-203-23, Chapter 19. Repair synthetic rubber edging by rebonding it to the helmet shell edge or bonding the appropriate lengths of new edging to replace a damaged portion. Roughen the surfaces before bonding adhesive edging. Remove and replace hook fastener strips as necessary.

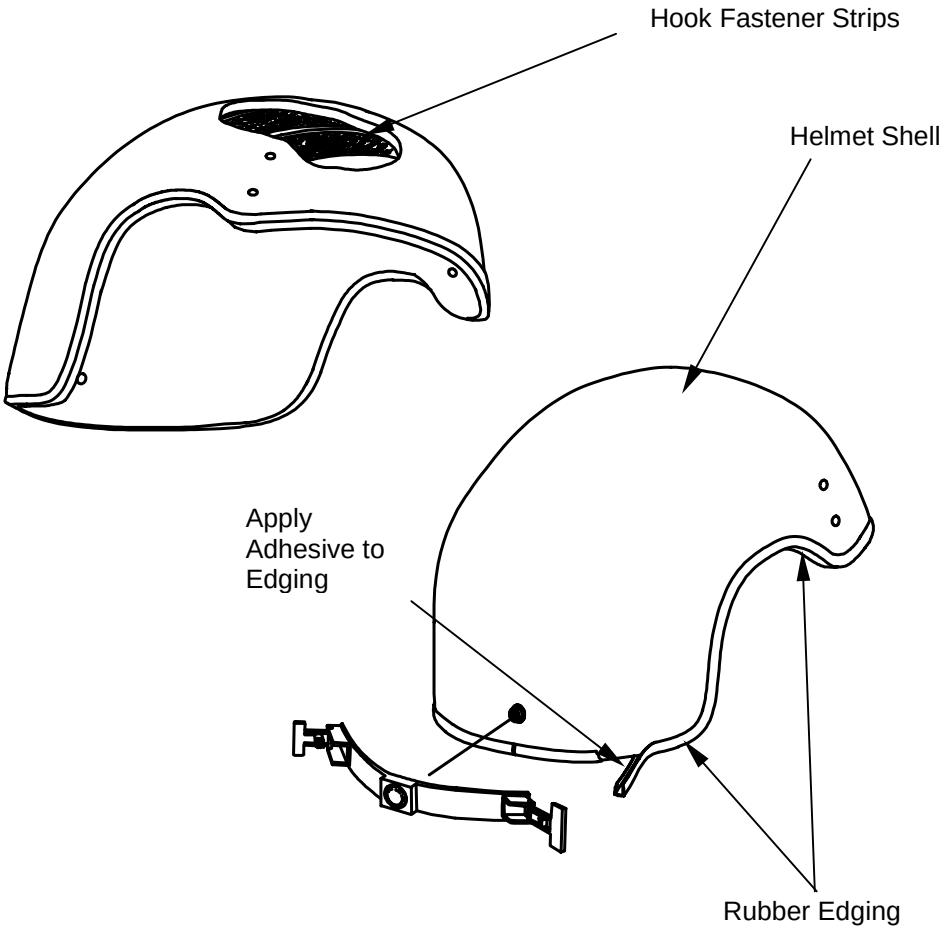


Figure 26-8. Helmet Shell

26-8 REPAIR - Continued

To remove a camouflage cover, slide headset tension adjustment straps through the rear holes of cover, and simply remove cover from helmet shell. To replace camouflage cover slide adjustment tension straps through the cover's rear holes and pull the rest of the cover over the entire helmet shell making sure the nylon elastic keeper is securing the cover to the shell.

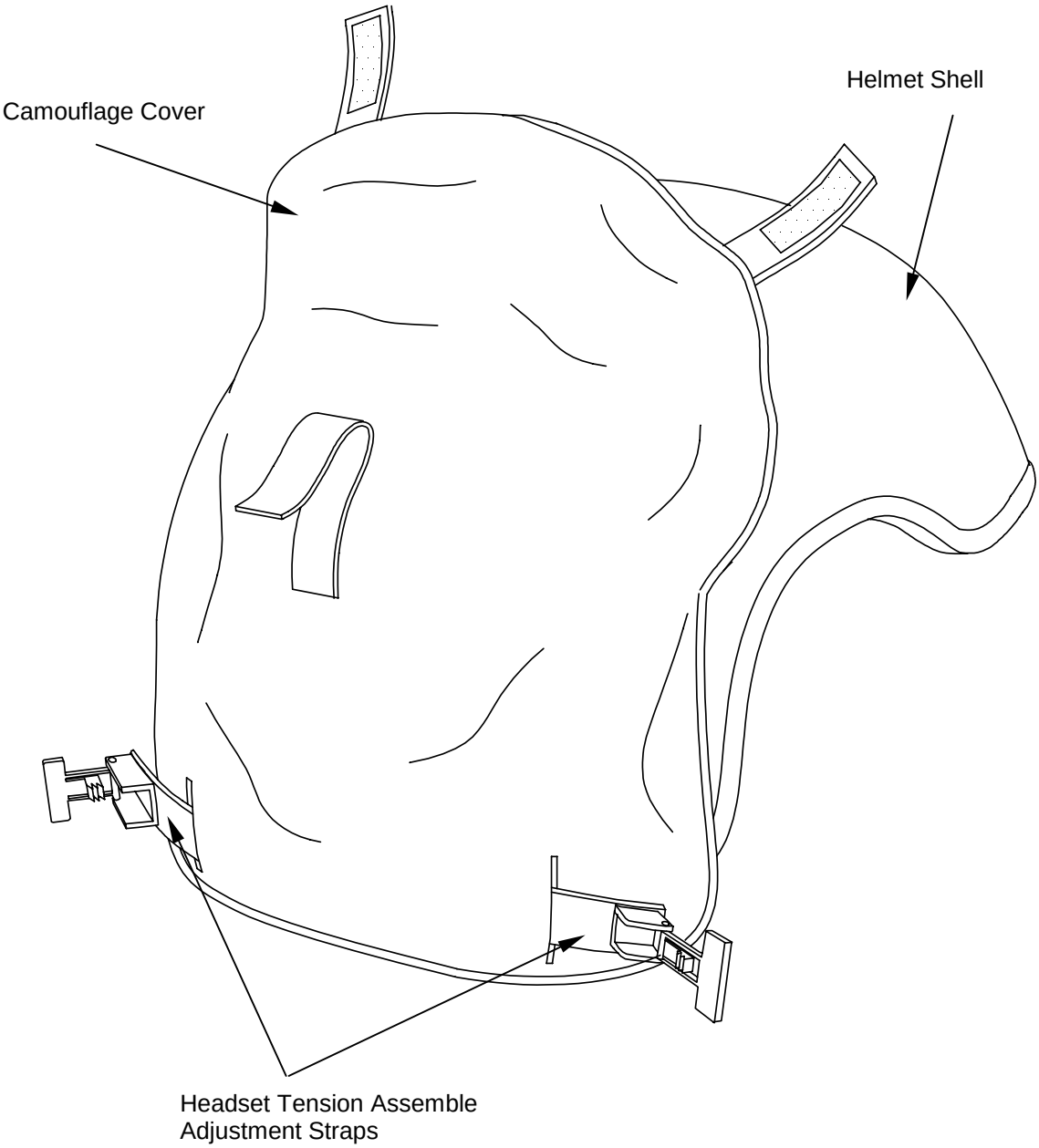


Figure 26-9. Camouflage Cover

26-8 REPAIR - Continued

To repair any components of the Impact Liner Assembly, simply replace parts as necessary.

To repair the retention system, take out impact liner assembly. Starting with the right side, unscrew the retention straps from the upper inside faceguard strut while holding the outside screw in place. Unscrew the retention straps from the inner backside of the helmet shell. Release the ratchet buckles on the back of the helmet, and pull the adjustment straps through. Push/pull the adjustment straps free, through and out of the headset tunnels and struts. Remove the earcup to earcup cable from the nape strap. Remove earcups from damaged retention system by pulling apart retention system cloth free from earcup notch. Remove damaged retention system.

To install new retention system, place right earcup on top of hole opening on right side. Insert edge of retention system cutout into the earcup notch. While pushing up on earcup from bottom, slide remaining retention system edge into earcup notch until earcup is completely engaged. Attach the retention system to helmet shell, by screwing the retention straps onto the inside of the struts, and to the inside rear of helmet shell. Repeat procedure for second earcup. Slide earcup adjustment strap through the strut, through the headset tunnel and finally through the ratchet buckle in the rear. Secure earcup tension adjustment strap by fastening the ratchet buckle. Repeat for opposite side. Secure earcup-to-earcup cable within the nape strap by fastening the cable into the hook and pile fastener.

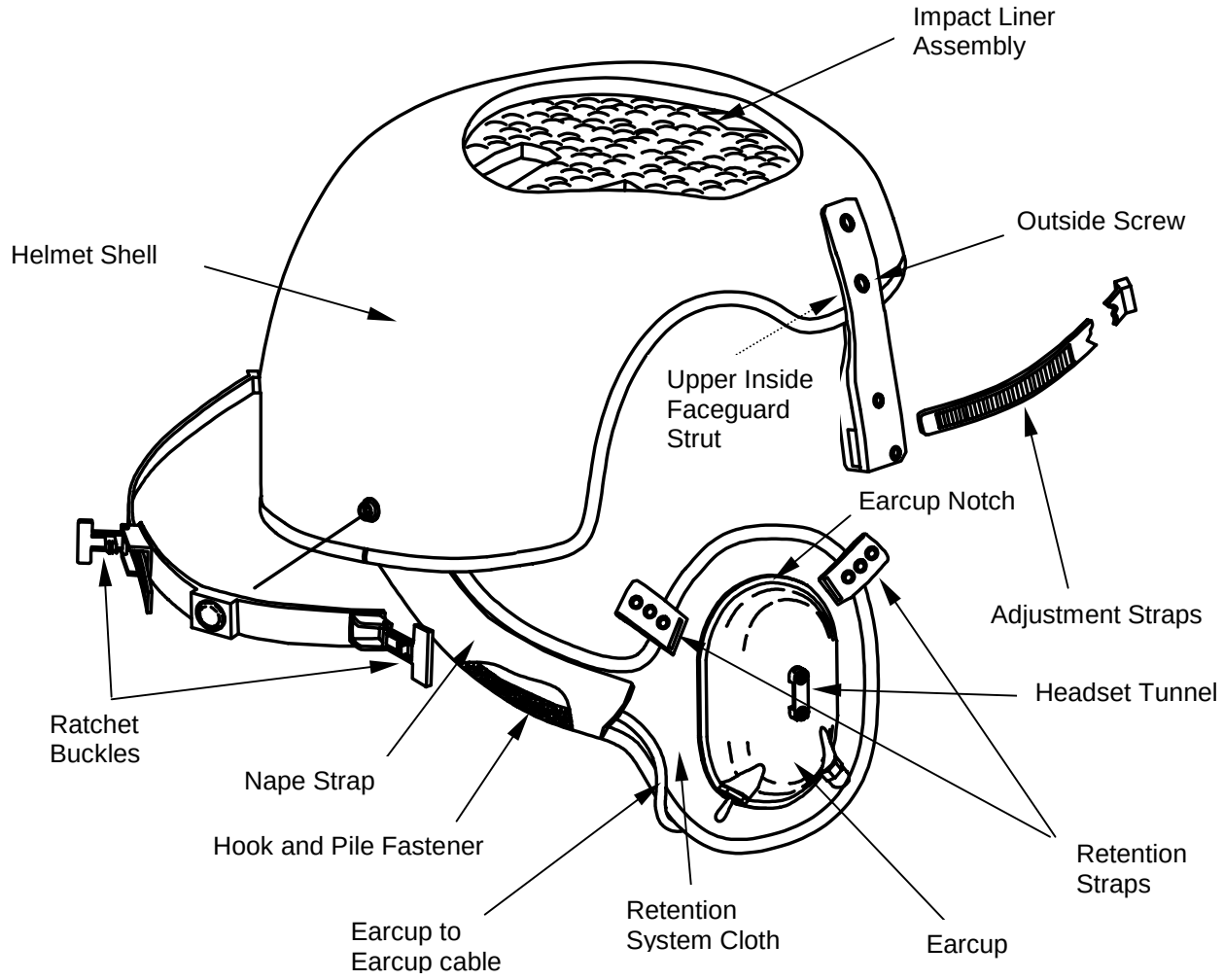


Figure 26-10. Retention System

26-8 REPAIR - Continued

When repairing any headset component (as seen below for the left and right earcups), care should be taken to identify cables during disassembly to facilitate proper reassembly. All cables are colored coordinated (I.E. Red to Red, Blue/White to Blue/White, Green to Green, etc). All cable and switch entries should be resealed after assembly with any standard commercially available silicone sealant to preserve waterproofing and the sound attenuation, which protects hearing and aid in intelligible communications.

To repair the Mic/Boom Assy, remove the foam inserts from the right earcup. Take note of the order of assembly. Unplug the connectors with the red & white wires inside the earcup and unscrew the Assy from the outside using a wrench or pliers. Remove any sealant from the threads of the earcup and carefully hands tighten the Assy into the earcup. Using the same removal tool, grasp the hex nut closest to the threads and tighten the Assy into the earcup taking care not to strip the plastic threads. Seal around the Assy from inside the cup with silicone sealant to preserve waterproof characteristics and the noise cancellation characteristics, plug in the connector with the red & white wires.

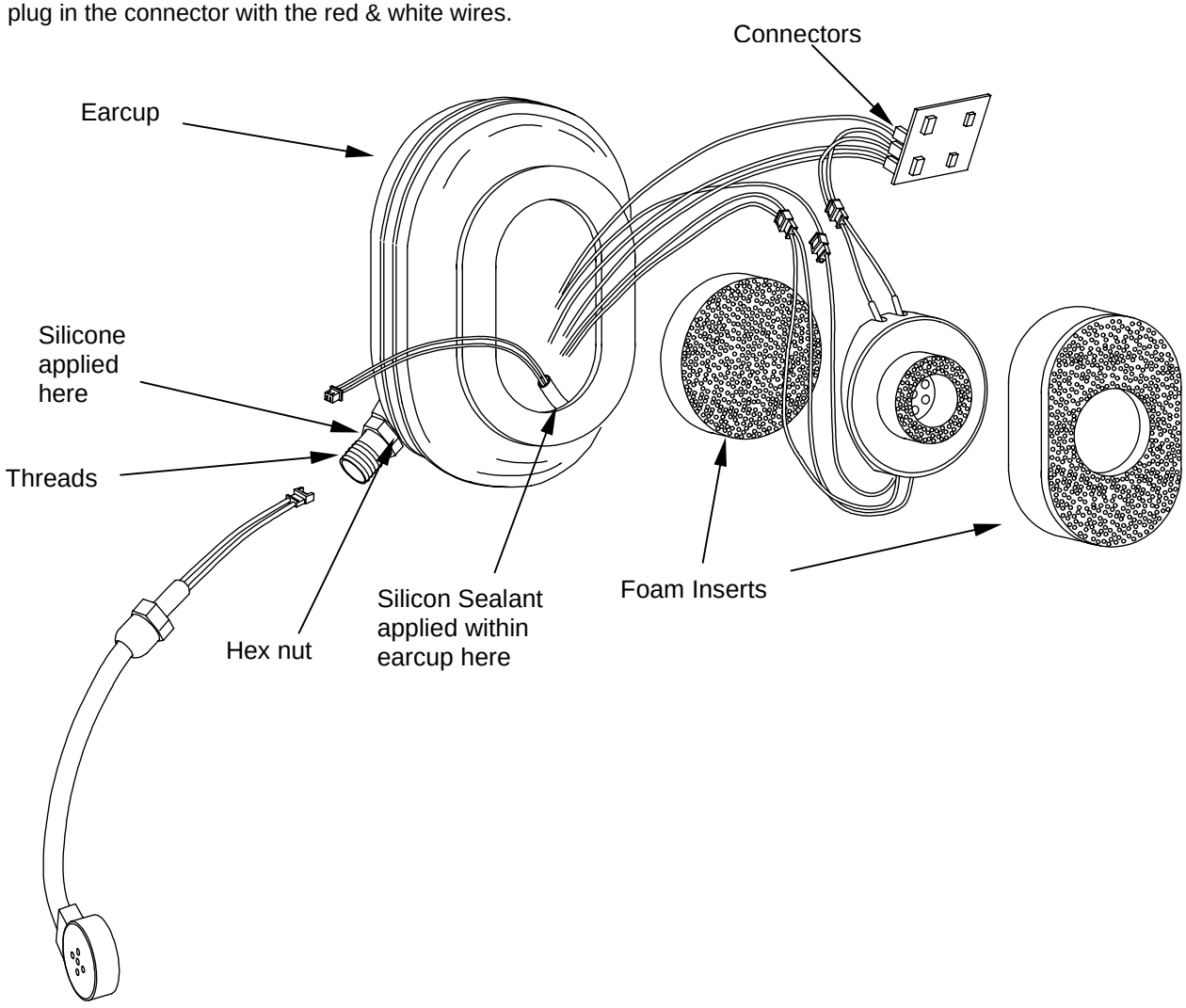


Figure 26-11. Headset Assembly

26-8 REPAIR - Continued

When repairing any headset component, care should be taken to identify cables during disassembly to facilitate proper reassembly. All cables are colored coordinated (I.E. Red to Red, Blue/White to Blue/White, Green to Green, etc). All cable and switch entries should be resealed after assembly with any standard commercially available silicone sealant to preserve waterproofing and the sound attenuation, which protects hearing and aid in intelligible communications. When replacing earphones simply remove the foam inserts from the earcup, taking note of the order of assembly. Unplug the color-coded wires/connectors from within and reconnect the same way. Replace the earphone Assy and foam inserts in the same order as removed

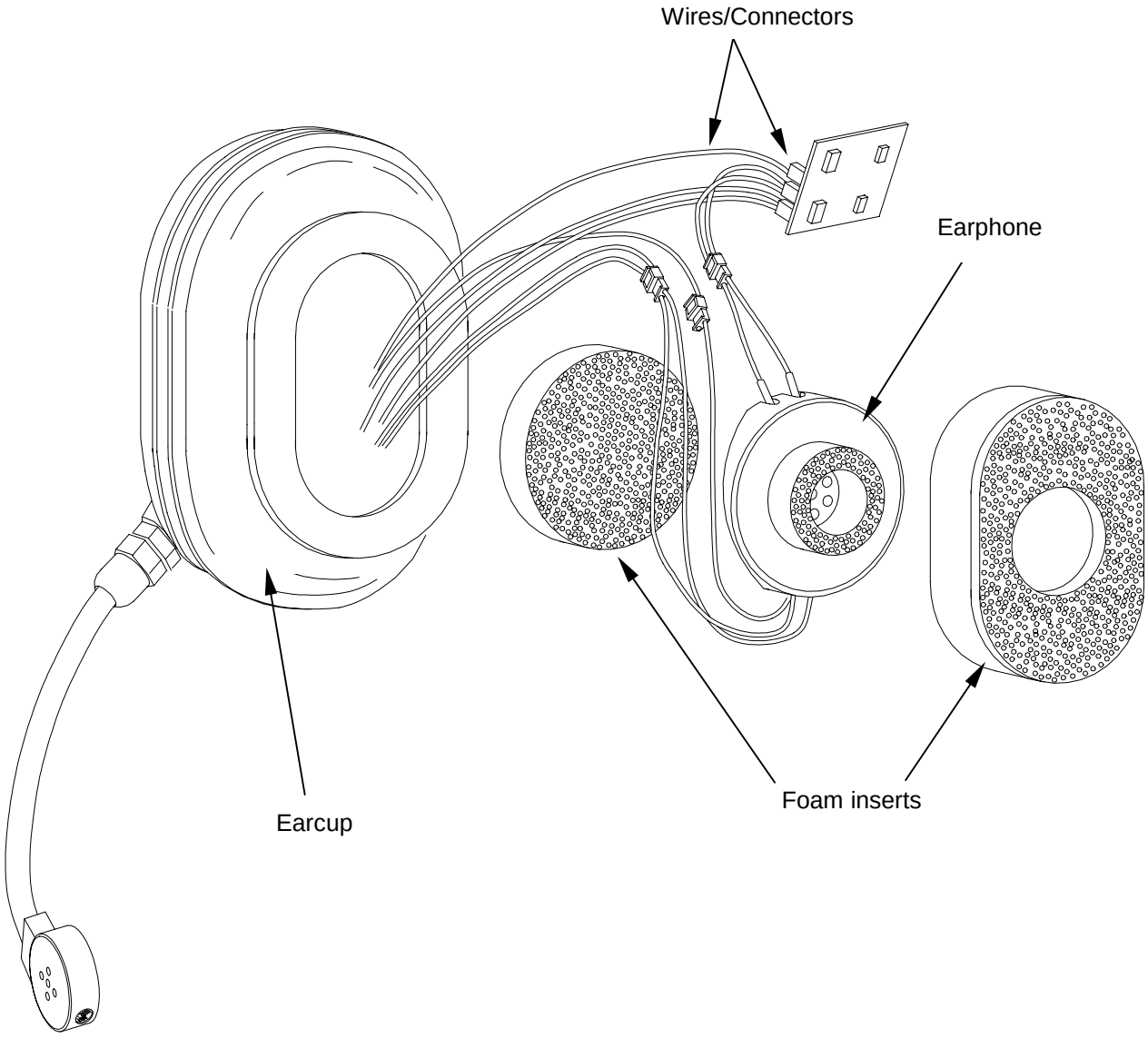


Figure 26-12. Headset Assembly

26-8 REPAIR - Continued

When repairing any headset component, care should be taken to identify cables during disassembly to facilitate proper reassembly. All cables are colored coordinated (I.E. Red to Red, Blue/White to Blue/White, Green to Green, etc). All cable and switch entries should be resealed after assembly with any standard commercially available silicone sealant to preserve waterproofing and the sound attenuation, which protects hearing and aid in intelligible communications. When repairing the Talk Circuit, remove the foam inserts and earphone from the right earcup. Take note of the order of assembly for replacement. Unplug the Printed Circuit Board from the three mini-connectors. Replace the Printed Circuit Board and test the talk circuit. If fault persists, remove the screen and washer from the outside front of the earcup with a small screwdriver. Push the Microphone into the earcup. Remove the silicone sealant from the inside of the earcup and replace the microphone from the inside. Seal the microphone in place with silicone sealant. Use a small amount of sealant around the edge of the new screen assembly packaged with the Microphone and press into place on the outside of the earcup. Re-assemble earcup.

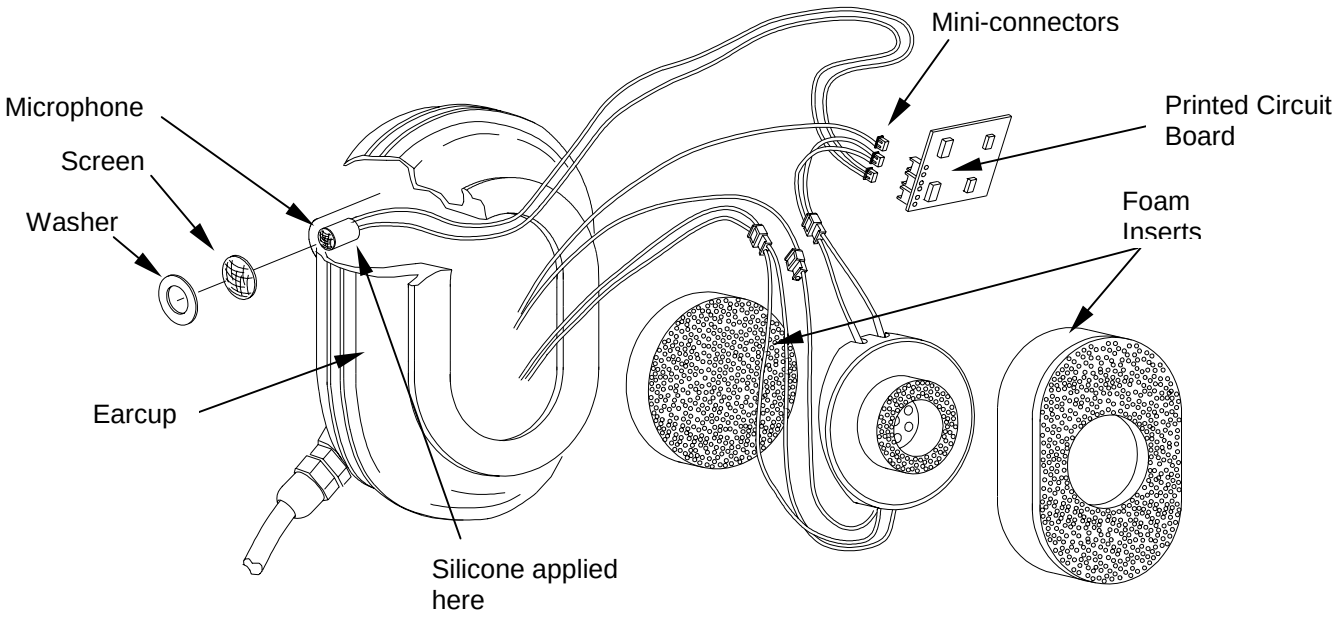


Figure 26-13. Headset Assembly

26-8 REPAIR - Continued

When removing function switch, remove the foam inserts and earphone from the left earcup. Take note of the order of assembly. Unplug the mini connectors on the wires coming from the switch and the cables. Remove the hex nut from the switch on the outside of the earcup and slide the switch out through the inside of the earcup. Re-assemble in reverse order and seal the switch inside the earcup with silicone sealant.

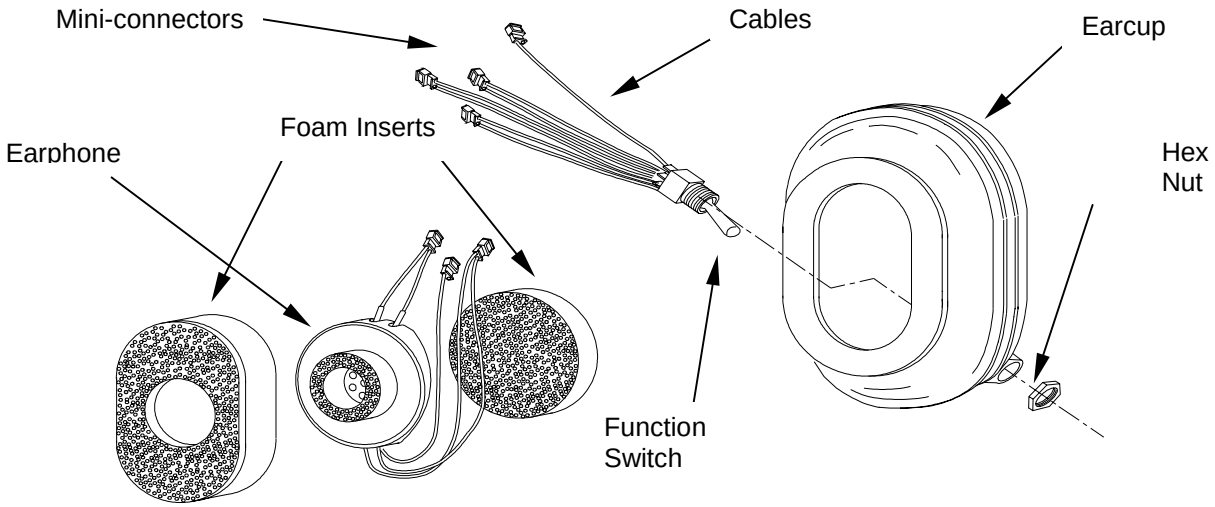


Figure 26-14. Headset Assembly

26-8 REPAIR - Continued

When repairing any headset component, care should be taken to identify cables during disassembly to facilitate proper reassembly. All cables are colored coordinated (I.E. Red to Red, Blue/White to Blue/White, Green to Green, etc). All cable and switch entries should be resealed after assembly with any standard commercially available silicone sealant to preserve waterproofing and the sound attenuation, which protects hearing and aid in intelligible communications. To repair the talk-through switch, remove the foam fillers and earphone assembly from the right earcup-taking note of the assembly order. Unplug the mini connectors coming from the switch to the cables and printed circuit board. Unscrew the hex nut from the outside of the earcup and slide the switch out thru the inside of the earcup. Replace in reverse order and seal around switch with silicone on the inside of the earcup.

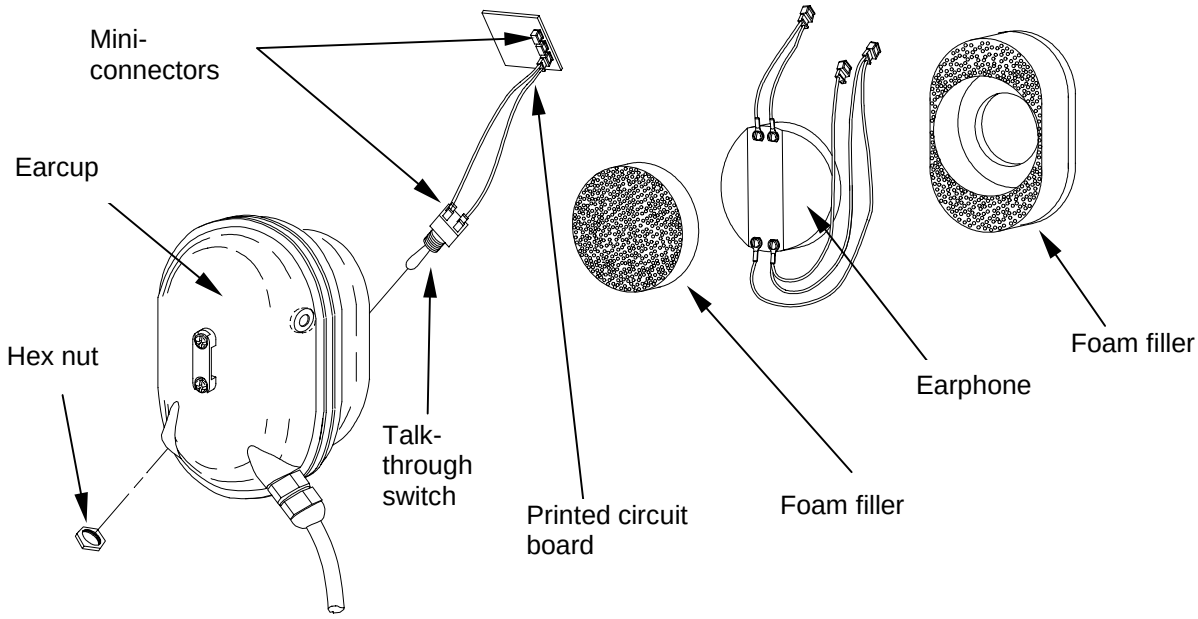


Figure 26-15. Headset Assembly

26-8 REPAIR - Continued

To replace upper cable, remove the foam fillers and earphone from the left earcup. Unplug all mini connectors leading from the upper cable. Remember, all cables are colored coordinated. From the outside of the earcup, unscrew the two screws holding the cable into the earcup. Replace in reverse order and seal around upper cable entry inside the earcup with silicone sealant.

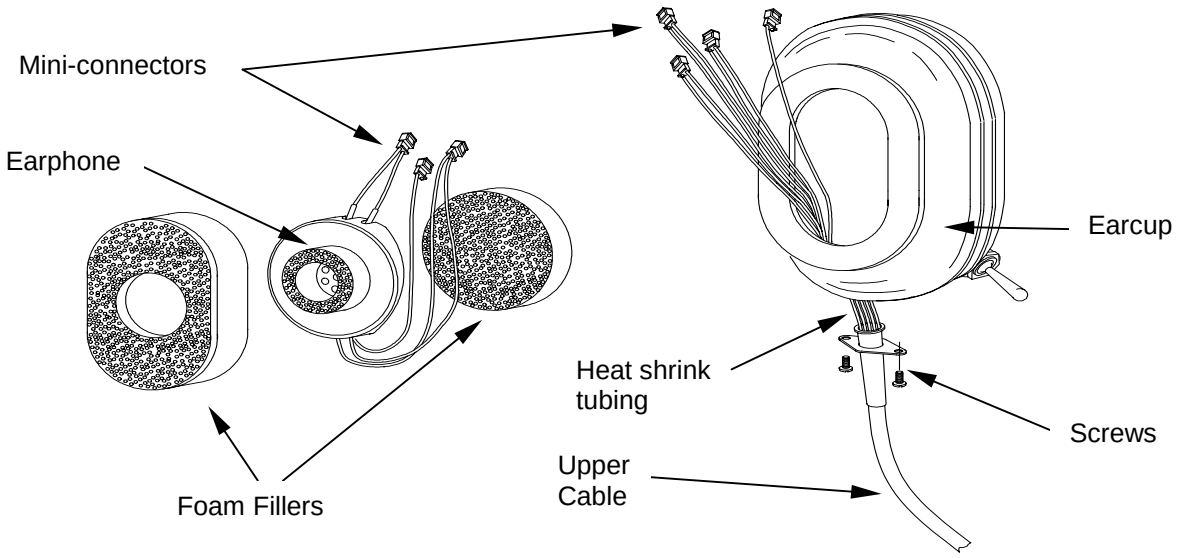


Figure 26-16. Headset Assembly

26-8 REPAIR - Continued

When repairing the neck cable assembly remove all internal components from both earcups taking care to notice the order of placement. Cut the tie wrap off of both ends of the neck cable from within the earcups. Cut off all mini connectors from both ends of the neck cable from within the earcups, and remove the neck cable.

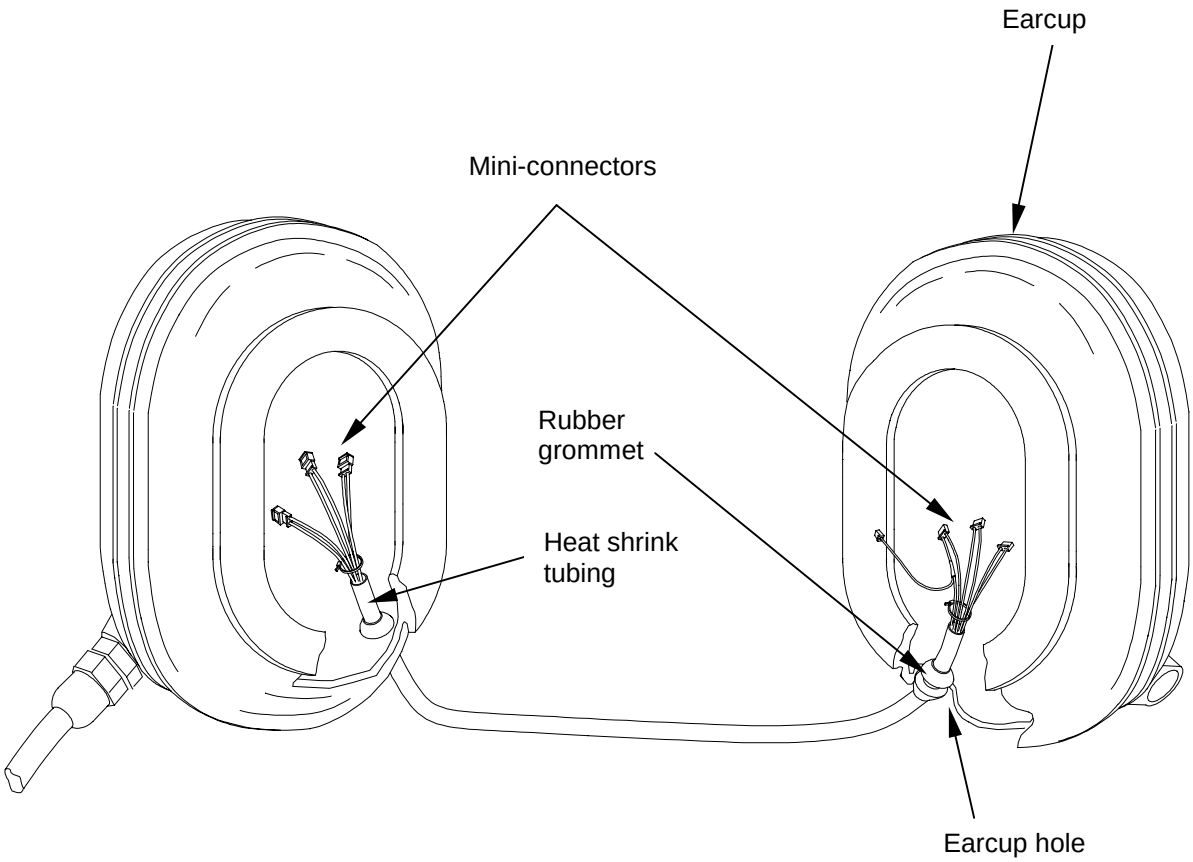


Figure 26-17. Headset Assembly

Start inserting the new neck cable with the side showing the extra white conductor and Black and Orange conductors mounted on the same mini connector, into the left ear cup. The left ear cup is the side without the boom/microphone. Fish the mini connectors into the earcup. Then lubricate the rubber grommet with a soapy water solution and push and twist them into the ear cup holes. A small flathead screwdriver may be necessary to move the grommets. After inserting the grommets into the ear cups, lubricate the inside of the grommets with soapy water solution and pull the cable into the grommet so that the neck cable is into the ear cup ¼ inch past the heat shrink tubing on the cable. Tightly pull a nylon tie wrap around the cable assembly on this ¼ inch portion of the neck cable to prevent the cable from being pulled out of the ear cups. Plug in all the mini connectors.

26-8 REPAIR - Continued

To remove, repair, and replace the earcup Tension/Adjustment Strap, first make sure camouflage cover is removed from shell. Open ratchet buckles on retention system, and pull adjustment straps out of ratchet buckles. Fully extract adjustment strap. Perform this procedure for both sides. Unsnap the back piece of the tension strap assembly. Replace damaged components as necessary. Attach right headset tension strap to faceguard attachment strut by sliding tension strap through slot opening. Slide tension strap through tunnel on Earcup as shown. With ratchet adjustment lock open, slide strap end through adjustment lock slightly, but still comfortable. Close adjustment lock. Repeat procedure for other side. To release, and before removing helmet, pull up on adjustment lock buckles and slide straps sufficiently back to clear ears.

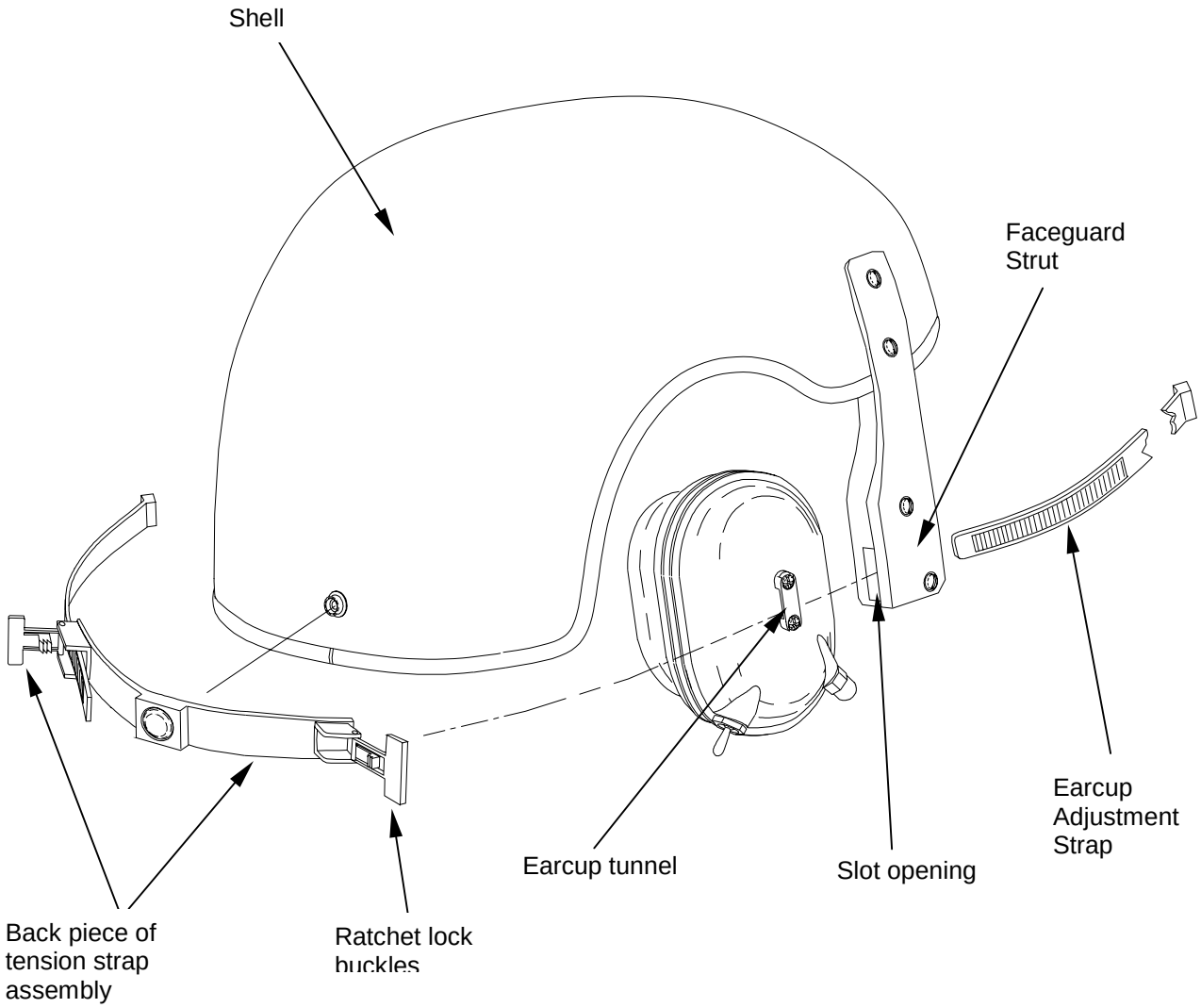


Figure 26-18. Headset Tension Assembly

26-8 REPAIR - Continued

To replace faceguard, remove it simply by flipping up the faceguard and pulling it away until it is disengaged. To replace the faceguard, have it in the “up” position and engage the two metal swivel posts on the faceguard to the mating slots on the faceguard attachment strut. Swivel faceguard down until it engages in detents of attachment strut. Grasp the right side of the faceguard and the right struts and rotate downward and back to lock the faceguard into position. A clicking noise indicates proper engagement. Repeat for left side.

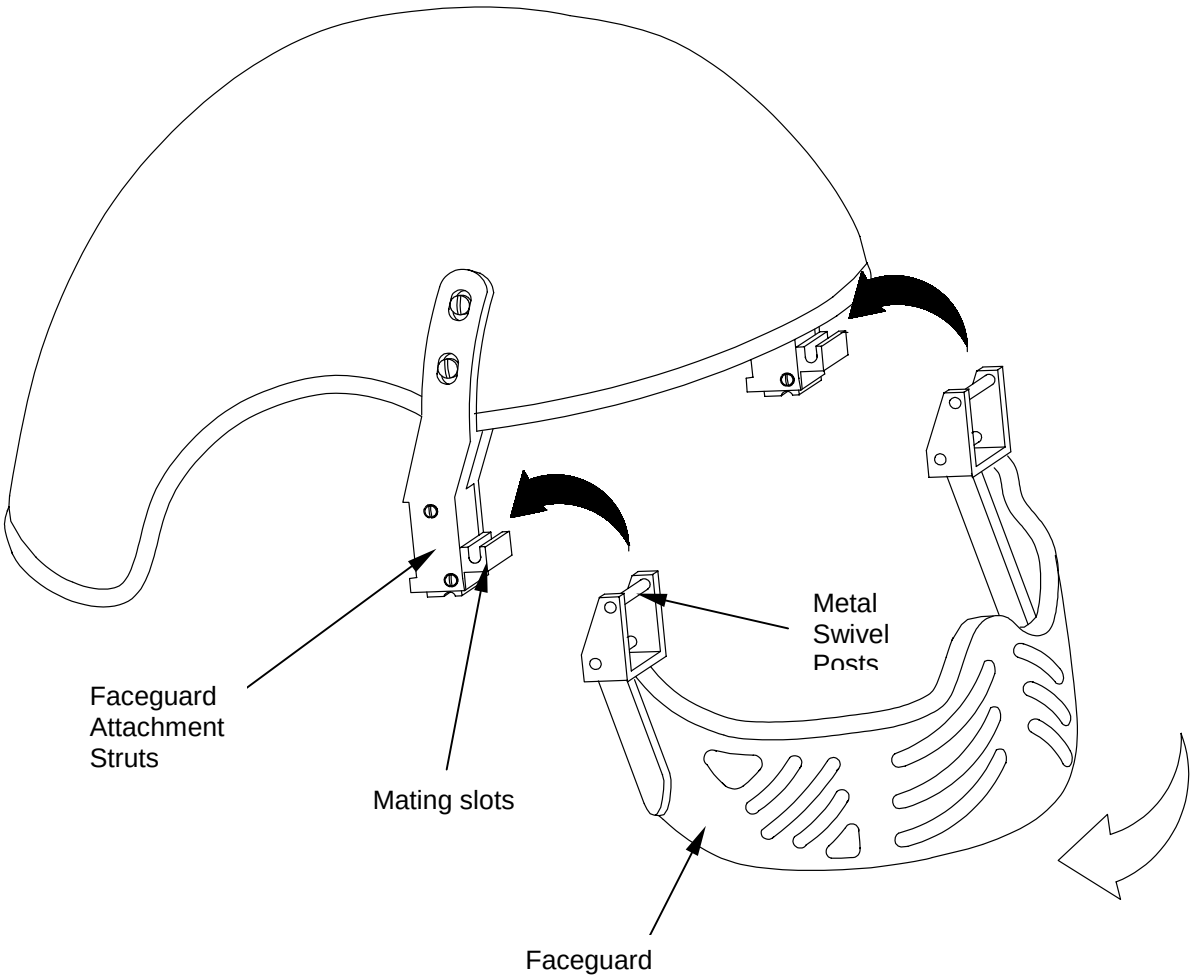
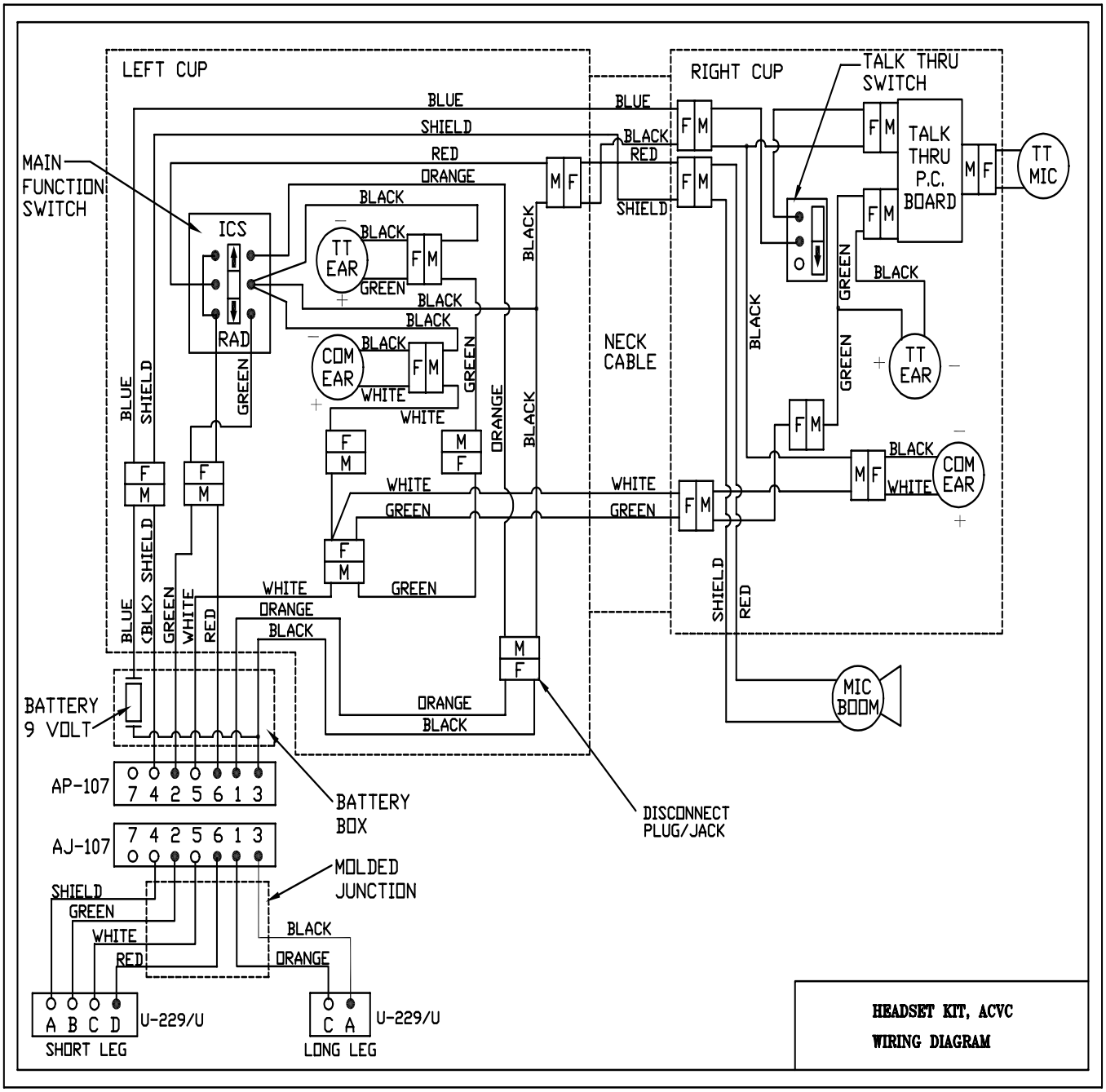


Figure 26-19. Faceguard and Struts


LEFT CUP
RIGHT CUP
TALK THRU SWITCH
MAIN FUNCTION SWITCH
ICS
RAD
TT EAR
COM EAR
NECK CABLE
TALK THRU P.C. BOARD
TT MIC
MIC BOOM
BATTERY 9 VOLT
BATTERY BOX
DISCONNECT PLUG/JACK
MOLDED JUNCTION
AP-107
AJ-107
7 4 2 5 6 1 3
A B C D
C A
U-229/U
SHORT LEG
LONG LEG
BLUE
SHIELD
BLACK
RED
ORANGE
GREEN
WHITE
HEADSET KIT, ACVC
WIRING DIAGRAM

26-9 WORKMANSHIP

Only qualified personnel shall accomplish work. The finished ACVC components shall be complete, clean, and free from defects affecting their serviceability and appearance. Threads shall be neatly trimmed. Sealed seams shall show no leakage when tested. Seams shall not be twisted, pleaded, or puckered. Stitch tension shall be adequate, not loose or tight, with specified number of stitches per inch on major portions of seam. The material shall not be defective or damaged in any manner. The material shall not contain cuts, tears, mends, burns, needle chews or holes.

Section III. Materials

FIG NO.	ITEM NO.	SM&R CODE	NSN	DESCRIPTION	UNIT OF ISSUE
26-1	1	PAOZZ	8470-01-389-3815	CVC Shell, Increased Ballistic, (DH-132B) Small/Medium, MIL-H-444117B	EA
26-1	1	PAOZZ	8470-01-389-3821	CVC Shell, Increased Ballistic, (DH-132B) Large, MIL-H-444117B	EA
26-1	2	PAOZZ	8470-01-467-1815	Faceguard Strut, Right Hand, Large PN ROO439 (3T951)	EA
		PAOZZ	8470-01-467-1896	Faceguard Strut, Right Hand, Small PN ROO437 (3T951)	EA
26-1	3	PAOZZ	8470-01-467-1811	Faceguard Strut, Left Hand, Large PN ROO438 (3T951)	EA
		PAOZZ	8470-01-467-1793	Faceguard Strut, Left Hand, Small PN ROO436 (3T951)	EA
26-1	4	PAOZZ		Upper Screw, Strut, SDS PART #R00408, #8-32 X 7/8" LONG, SLOTTED PAN HEAD MACHINE SCREW, STAINLESS STEEL, FINISH: BLACK OXIDE	1 PER STRUT
26-1	5	PAOZZ		Lower Screw, Strut, SDS PART #R00409, #8-32 X 1" LONG, SLOTTED PAN HEAD MACHINE SCREW, STAINLESS STEEL, FINISH: BLACK OXIDE	1 PER STRUT
26-1	6	PAOZZ		SDS PART #R00350, POST, PASGT HELMET, DWG 8-2-647C, 3/6/91, TYPE 302 OR TYPE 303 STAINLESS STEEL, #8-32 UNC-28, 0.192" DIA. X 3/16" LONG	2 PER STRUT
26-1	7	PAOZZ		SDS PART #R00372, WASHER, AN 960 C, DASH NO. C8, 300 SERIES, STAINLESS STEEL, 0.174" ID X 0.375" OD, FINISH: BLACK OXIDE	2 PER STRUT
26-1	8	PAOZZ		Snap Fastener	EA
26-1	9	PAOZZ	5965-01-466-9374	Headset Tension Assembly PN ROO494 (3T951)	EA

FIG NO.	ITEM NO.	SM&R CODE	NSN	DESCRIPTION	UNIT OF ISSUE
26-1	10	PAOZZ		Rubber Edge, (D9307R00787) Color, OD	YD
				Camouflage Cover (Figure 26-2)	
26-2	1	PAOZZ		Cotton Fabric	YD
26-2	2	PAOZZ		Binding Tape, ¾ Inch	YD
26-2	3	PAOZZ		Pile Fastener Tape. ¾ Inch	YD
26-2	4	PAOZZ		Hook Fastener Tape, ¾ Inch	YD
26-2	5	PAOZZ		Rubber Band	EA
26-2	6	PAOZZ		Thread, Nylon	YD
				Impact Liner Assembly (Figure 26-3)	
26-3	1	PAOZZ	8415-01-467-2216	Impact Liner Spider, 3/8” PE Foam, 3.5 lbs, PN F105102 (3T951)	EA
26-3	2	PAOZZ	8415-01-467-2189	Impact Liner Crown Pad, ½ “ Foam, MIL-P-15280, F105102-D, (3T951)	EA
26-3	3	PAOZZ	8415-01-467-2178	Impact Liner, Small, 3/8 “ Foam, MIL-P-15280, F105102-C, (3T951)	EA
		PAOZZ	8415-01-467-2181	Impact Liner, Medium, 1/2 “ Foam, MIL-P-15280, F105102-B, (3T951)	EA
		PAOZZ	8415-01-467-2183	Impact Liner, Large, 3/4 “ Foam, MIL-P-15280, F105102-A, (3T951)	EA
26-3	4	PAOZZ		Nylon, Hook, 1 ½”, YKK #CSM 15D HK	AR
26-3	5	PAOZZ		Nylon, Loop, 1 ½”, YKK #CSM 15D LP	AR
				Retention System (Figure 26-4)	
26-4	1	PAOZZ		Polyaramid Cloth, MIL-C-24500, Type I, Color OG 106	YD
26-4	2	PAOZZ		Nomex Hook, 3/8”, MIL-F-21840, Type I –6.5 MIL, (220 Denier) Class 2, Non-melting Aramid, Color: Green 3421	YD
26-4		PAOZZ		Nomex Loop, 3/8”, MIL-F-21840, Type I –6.5 MIL, (220 Denier) Class 2, Non-melting Aramid, Color: Green 3421	YD
26-4	3	PAOZZ		Nomex Webbing, 1”, Pattern No. 9650-1, Bally Ribbon Mills, Type 432, Color OG 106	YD
26-4	4	PAOZZ		Nomex Webbing, 3/4”, Pattern No. 9650-3/4, Bally Ribbon Mills, Type 432, Color OG 106	YD

FIG NO.	ITEM NO.	SM&R CODE	NSN	DESCRIPTION	UNIT OF ISSUE
26-4	5	PAOZZ		Stud 7B, MS27980-7B, MIL-F10884F, Style 2, Finish 2 - Black	EA
26-4	6	PAOZZ		Eyelet 8B, MS27980-8B, MIL-F10884F, Style 2, Finish 2 - Black	EA
26-4	7	PAOZZ		Polyaramid Binding, MIL-C-24500, ROO640	YD
26-4	8	PAOZZ		Buckle, ¾", MIL-B-543	EA
26-4	9	PAOZZ		Cotton Duck Cloth, Dyed CCC-C419, ROO624	EA
26-4	10	PAOZZ		Eyelet (Female Component), Stimpson PN A3574, ROO363	EA
26-4	11	PAOZZ		Eyelet (Male Component), Stimpson PN A2617, ROO363	EA
26-4	12	PAOZZ		Nomex Thread, 60 Tex, A-A-50195, RO4990	YD
26-4	13	PAOZZ		Socket, 6B, MS27980-6B, MIL-F-10884F, Style 2, Finish 2 - Black	EA
26-4	14	PAOZZ		Button, 1B, MS27980-1B, MIL-F-10884F, Style 2, Finish 2 - Black	EA
26-4	15	PAOZZ		End Clip, #014, MIL-C-496, ROO440	EA
26-4	16	PAOZZ		Webbing, Cotton, 5/8", MIL-W-5665, ROO535	YD
				Headset and Microphone Kit (Figure 26-5)	
26-5	1	PAOZZ	5965-01-466-9380	Sound Canceling Microphone Boom Assembly	EA
26-5	2	PAOZZ	5930-01-466-9377	Talk-through Switch	EA
26-5	3	PAOZZ	8470-01-467-2168	Earcup Foam (Earphone Plug) ROO477-1	EA
26-5	4	PAOZZ	8470-01-467-2162	Earseal, Left and Right, ROO445	EA
26-5	5	PAOZZ	5930-01-466-9375	Three-Position Push-to-talk Switch	EA
26-5	6	PAOZZ	8470-01-467-1693	Earcup Left	EA
26-5	7	PAOZZ	8470-01-467-2165	Earcup Right	EA
26-5	8	PAOZZ	8470-01-467-9372	Ear to Ear Cord	EA
26-5	9	PAOZZ	8470-01-467-9373	Battery Box, Upper Cable	EA
				Faceguard (Figure 26-6)	
26-6	1	PAOZZ	8470-01-467-1550	Faceguard	EA

FIG NO.	ITEM NO.	SM&R CODE	NSN	DESCRIPTION	UNIT OF ISSUE
				Carrying Bag (Figure 26-7)	
26-7	1	PAOZZ	8465-01-467-2163	Carrying Bag	EA

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By Order of the Secretary of the Army

CARL E.VUONO
General United States Amy
Chief of Staff

Official:

THOMAS SIKORA
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-25E, Unit and Direct Support and General Support Maintenance requirements for Clothing Repair Shop, Trailer Mounted, Model D8700337, D8700860 and Unit and Direct Support and General Support Maintenance requirements for Clothing Repair Shop, Trailer Mounted, Model CRS.

***U.S. GOVERNMENT PRINTING OFFICE:1995-392-230/30201**

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These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

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To: amssb−rim−e@natick.army.mil

Subject: DA Form 2028

1. ***From:*** Joe Smith
2. *Unit:* home
3. ***Address:*** 4300 Park
4. ***City:*** Hometown
5. ***St:*** MO
6. ***Zip:*** 77777
7. ***Date Sent:*** 19−OCT−93
8. ***Pub no:*** 55−2840−229−23
9. ***Pub Title:*** TM
10. ***Publication Date:*** 04−JUL−85
11. *Change Number:* 7
12. *Submitter Rank:* MSG
13. ***Submitter FName:*** Joe
14. *Submitter MName:* T
15. ***Submitter LName:*** Smith
16. ***Submitter Phone:*** 123−123−1234
17. ***Problem:*** **1**
18. *Page:* 2
19. *Paragraph:* 3
20. *Line:* 4
21. *NSN:* 5
22. *Reference:* 6
23. *Figure:* 7
24. *Table:* 8
25. *Item:* 9
26. *Total:* 123
27. ***Text:***

This is the text for the problem below line 27.

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RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN . .JOT DOWN THE DOPE ABOUT IT ON THIS FORM, CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)
PFC John DOE
CO A 3rd Engineer Bn
Ft. Leonardwood, MO 63108

DATE SENT: 22 August 1992

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 1-1520-250-10	15 June 1992	Operator's manual MH60K Helicopter

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
6	2-1 a		
B1		4-3	

IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

In line 6 of paragraph 2-1a the manual states the engine has 6 cylinders. The engine on my set only has 4 cylinders. Change the manual to show 4 cylinders.

Callout 16 on figure 4-3 is pointed at a bolt. In key to figure 4-3, item 16 is calle a shim. Please correct one or the other

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER: JOHN DOE, PFC (268) 317-7111

SIGN HERE: JOHN DOE John Doe

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PREVIOUS EDITIONS ARE OBSOLETE.

DRSTS-M verprint2, 1 Nov 80

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REVERSE OF DA FORM 2028–2 Reverse of DRSTS-M Overprint 2, 1 Nov 80

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U.S. ARMY SOLDIER AND BIOLOGICAL CHEMICAL COMMAND
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NATICK, MA 01760–5052

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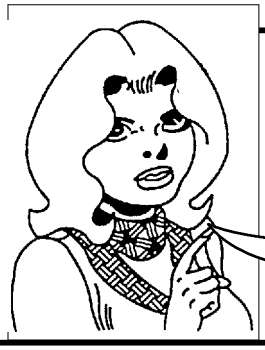

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PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 10–8400–203–23	7 MAY 1990	General Repair Procedures For Individual Equipment

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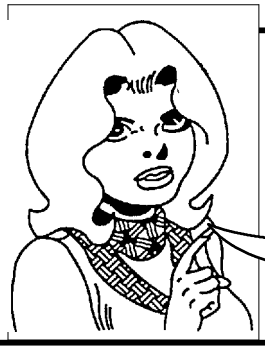

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DEPARTMENT OF THE ARMY

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 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 milliters = .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: 067861-010