

INCH-POUND

MIL-B-43366C

6 March 1990

SUPERSEDING

MIL-B-43366B

30 December 1985

MILITARY SPECIFICATION

BODY ARMOR, FRAGMENTATION PROTECTIVE, GROIN

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This document covers body armor which provides military personnel protection for the groin against fragmentation. This is a special purpose Life Support Clothing and Equipment (LSC&E) item. All Government administrative and surveillance procedures applicable to LSC&E items shall be invoked in accordance with the contract or purchase order (see 6.2)

1.2 Classification. The body armor shall be of one type in the following sizes (see 6.2):

<u>Army - Air Force Groin Protective (Waist)</u>	<u>Navy Groin Protective (Waist)</u>
28	36
30	38
32	40
34	42
36	44
38	46
40	48
42	50

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. Army Natick Research, Development, and Engineering Center, Natick, MA 01760-5014 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 8470

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2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

- A-A-203 - Paper, Kraft, Untreated
- V-F-106 - Fasteners, Slide, Interlocking
- V-T-295 - Thread, Nylon
- DDD-L-20 - Label: For Clothing, Equipage, and Tentage (General Use)
- PPP-B-636 - Boxes, Shipping, Fiberboard

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- MIL-B-371 - Braid, Textile, Tubular
- MIL-R-2327 - Rings, Connecting, Round
- MIL-W-5664 - Webbing, Textile, Elastic, Cotton
- MIL-F-10884 - Fasteners, Snap
- MIL-C-12369 - Cloth, Ballistic, Nylon
- MIL-E-20652/1 - Eyelets, Metallic, Rolled Flange Type; and Eyelet Washer
- MIL-L-35078 - Loads, Unit: Preparation of Semiperishable Subsistence Items; Clothing, Personal Equipment and Equipage; General Specification For
- MIL-C-43842 - Cloth, Oxford, Aramid
- MIL-T-43636 - Thread, Aramid

STANDARDS

FEDERAL

- FED-STD-751 - Stitches, Seams, and Stitchings

MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
- MIL-STD-129 - Marking for Shipment and Storage

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MIL-STD-147 - Palletized Unit Loads
MIL-STD-731 - Quality of Wood Members for Containers and Pallets

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D 3951 - Standard Practice for Commercial Packaging

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

THE COLOR ASSOCIATION OF THE UNITED STATES

Standard Color Card of America

Department of Defense Standard Color Card for Sewing Threads

(Color cards may be available from the Color Association of the United States, 343 Lexington Avenue, New York, NY 10016-9027. If color cards are not available from the Color Association, individual color samples may be obtained from the contracting activity or as directed by the contracting activity.)

(Non-Government standards and other publications are normally available from organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.3.

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3.2 Samples.

3.2.1 Guide sample. Guide samples, when furnished, are solely for guidance and information to the contractor (see 6.4). Variation from this specification may appear in the sample, in which case this specification shall govern.

3.2.2 Standard sample. Unless otherwise specified, standard samples for color shall apply (see 6.4).

3.3 Materials. It is encouraged that recycled materials be used when practical as long as it meets the requirements of this specification.

3.3.1 Cloth, ballistic, nylon. The filler cloth and interlining for front flap shall be nylon ballistic cloth conforming to class 1 of MIL-C-12369.

3.3.2 Cloth, oxford, aramid. The aramid cloth for the armor shell components and reinforcement pieces shall conform to MIL-C-43842, color Olive Drab 106.

3.3.3 Webbing, elastic. The nylon elastic webbing used in the crotch strap shall conform to type II, 1-1/2 inches wide of MIL-W-5664. The webbing shall be dyed to match an approved shade of Olive Drab 7.

3.3.4 Thread, aramid. The thread for all stitching on or through the armor shell, shall be aramid, conforming to MIL-T-43636, color Olive Drab S-1, C.A. 66022. Sizes of thread shall be as specified in table I. As an option wherever size B thread is specified to be used, size E may be used.

3.3.5 Thread, nylon. The thread for all stitching on the ballistic filler shall be nylon conforming to type I, II or III, class A or B, color natural, of V-T-295. Whenever class B thread is used the non-wicking requirements shall not apply. The sizes of thread shall be as specified in table I.

3.3.6 Fastener, slide, interlocking. The slide fastener shall be brass conforming to type IV, style 6, size MHS, 9 inches in length, with single wire stirrup pull of V-F-106. Reinforcement material at the bottom of the slide fastener (separating portions) shall extend across the entire width of each tape.

3.3.6.1 Tape. The tape for the slide fastener shall be as specified in V-F-106 except that the tape width shall be 1 inch wide and the tapes at the top end shall extend to the top raw edge of the outer shell. The tape shall be dyed to match shade OD-7 and shall be water-resistant and mildew resistant treated. The tape shall show good fastness to light and weathering.

3.3.6.2 Thong. The thong for the slide fastener shall be fabricated of flat, tubular cotton braid specified in V-F-106, except that length after assembly to pull shall be 4-1/2 \pm 1/4 inches.

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3.3.6.3 Slide fastener tab. The braid for the tab at the bottom of the slide fastener shall be tubular knit cotton braid, conforming to type VII, class 3, of MIL-B-371 and shall be dyed OD-7.

3.3.7 Snap fasteners. The snap fasteners shall be style 2, finish 2, of MIL-F-10884. The female component shall be the socket with a size 1 button and the male component shall be the stud with a size 1 eyelet.

3.3.8 Ring, steel. The steel ring shall conform to class 2, size number 4, of MIL-R-2327.

3.3.9 Eyelets and washers. The eyelets and washers shall conform to dash numbers BBE114 and BBW101 respectively of MIL-E-20652/1.

3.3.10 Size, identification and instruction label. Each body armor shall have a Army, Air Force and Navy combination size, identification and instruction label, and shall conform to type VI, classes 1, 2 and 3 of DDD-L-20 except the combined label shall be coated as specified for class 3 labels and the color shall be medium green (see 6.7). The printing of the combined label shall show colorfastness to laundering transference and accelerated laundering as specified for class 3 labels. The three labels shall be printed as one continuous label 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. A space of 1/2 inch minimum shall be maintained between the instruction label and the combined size and identification label. In addition a solid line 1/32 inch minimum width shall extend across the entire label approximately midway between the 1/2 inch blank space. The label shall not exceed 3-3/4 inches in width. The combined label shall be attached as specified in operation 3 of table I. Format and contents of the instruction label shall be as follows:

THIS ARMOR CAN SAVE YOUR LIFE

as it will protect you against shell, mortar, and grenade fragments.

DIRECTIONS FOR USE AND CLEANING

1. Fully close slide fastener. Protect fastener by snap fastening flap.
2. Secure crotch strap by placing ring over male portion of snap fastener attached to left side of armor and secure snap fastener.
3. FOR QUICK RELEASE - Open fly flap and pull up on slide fastener pull tab.
4. Remove loose foreign matter using cloth or soft brush. Remove other foreign matter using damp cloth or brush - DO NOT IMMERSE ARMOR IN WATER.
5. AIR DRY - Do not dry near open flame or hot stove.

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3.4 Design. The groin armor shall consist of a ballistic filler encased in an outer fabric shell. The outer fabric shell shall have a slide fastener on the front with a snap fastener flap cover. A crotch strap shall be stitched to the rear of the armor and shall be attached to the front by means of a steel ring and a snap fastener located on the bottom front section (see figure 1).

3.4.1 Ballistic filler. The ballistic filler shall consist of an inner filler and an outer filler, each consisting of 8 layers of nylon ballistic cloth. The two fillers shall be superimposed upon each other and stitched together forming the ballistic filler assembly.

3.5 Patterns. Standard patterns, which provide an allowance for all seams will be furnished by the Government and shall be used as a guide for cutting working patterns. The standard patterns shall not be altered in any manner and the working patterns shall be cut to conform with the standard patterns.

3.5.1 List of pattern parts. The component parts for the groin armor shall be cut from materials as specified in accordance with pattern parts indicated below:

<u>Material</u>	<u>Item</u>	<u>Nomenclature</u>	<u>Cut</u>
Cloth, ballistic, nylon	1	Outside ballistic filler	8
	2	Inside ballistic filler	8
	3	Flap interlining	2
Cloth, oxford, aramid	1	Outer shell	1
	2	Inner shell	1
	3	Flap piece outer shell	1
	4	Flap piece inner shell	1
	5	Reinforcement, outer shell, left	1
	6	Reinforcement, outer shell, right	1

3.5.2 Button stitch marker. A button stitch marker pattern is furnished for the optional construction method specified in operation 15.e of table I.

3.6 Construction. The construction shall conform in all respects to the requirements specified in table I and herein. Figure 1 is furnished solely for guidance and information. Should variation from the document appear in figure 1, this document shall govern.

3.6.1 Stitching, machine. All machine stitching except bartacks shall conform to FED-STD-751. The types of stitching and seams and stitches per inch shall be as specified in table I (see 6.5). Whenever two or more methods for seams and stitches are given for the same part of the operation, any one of them may be used.

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3.6.1.1 Type 301 stitching. Ends of all stitching, except where size 3 thread is used, shall be backstitched or overstitched 1/2 inch minimum except where ends are turned under in a hem or held down by other stitching. On stitching with size 3 thread, all ends shall be backstitched or overstitched one inch minimum. Thread tension shall be maintained so that there will be no loose stitching resulting in loose bobbin or top thread, or excessively tight stitching resulting in puckering of the materials sewn. The lock shall be embedded in the materials sewn.

3.6.1.1.1 Repairs of type 301 stitching. Repairs of type 301 stitching shall be as follows:

a. When thread breaks or bobbin run-outs occur during sewing, the stitching shall be repaired by restarting the stitching a minimum of 1 inch back of the end of the stitching. 1/

b. Thread breaks or two or more consecutive skipped or run-off stitches noted during inspection of the item (in-process or end item) shall be repaired by overstitching. The stitching shall start a minimum of 1 inch in back of the defective area, continue over the defective area and continue a minimum of 1 inch beyond the defective area on to 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. 1/

1/ When making the above repairs, the ends of the stitching are not required to be backstitched.

3.6.1.2 Types 502, 503, 504 and 505 stitching. Thread tension shall be maintained so that there will be no loose stitching. All repairs shall be in accordance with 3.6.1.1.1a and 3.6.1.1.1b except substitute 3/4 inch for one inch wherever 1 inch appears.

3.6.1.3 Type 101 button stitching. Type 101 button stitching shall have at least two ties per tack (see 6.6).

3.6.1.4 Use of automated apparel equipment. Automated apparel equipment may be used to perform any of the operations specified in table I, providing that the seam and stitch type are as specified and the finished component conforms to the required configuration. When a government furnished shaper pattern is forwarded, the component shall conform to that pattern.

3.6.1.5 Bartacking. Bartacking shall be free from thread breaks and loose stitching. Unless otherwise specified, bartacks shall be as specified in table I and as follows:

<u>Length</u>	<u>Width</u>	<u>Stitches per bartack</u>
1/2 ± 1/16 inch	1/8 ± 1/32 inch	28
1 ± 1/16 inch	1/8 ± 1/32 inch	42

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3.6.1.6 Thread ends. All thread ends shall be trimmed to a length of not more than 1/4 inch.

3.6.2 Setting of snap fasteners. The hole punched before inserting the male or female part of the fastener 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 surrounding material.

3.6.3 Setting of eyelets. Holes punched to receive the eyelets shall be smaller than the outside diameter of the eyelet barrel so that the barrel must be forced through the hole. The eyelets shall be securely clinched in a manner that will prevent detachment from, or cutting of, the surrounding material. The eyelets shall be clinched without splitting.

3.6.4 Location marks. Marks for showing location of components on the armor shell may be done with marking ink or by the use of drill holes. Ink marks or drill holes shall be located such that the marks or holes are completely and permanently covered by the component part.

3.7 Repairs. Except as otherwise specified herein, repairs are not allowed to be made to the body armor.

3.8 Manufacturing operations requirements. The armor shall be manufactured by and with the use of all operations specified in table I. Unless otherwise specified the supplier is not required to follow the exact sequence of operations.

3.9 Figures. Figure 1 is furnished solely for guidance and information. Should variation from the written specification appear in the figure, the written specification shall govern.

NO.	TABLE I. MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	T H R E A D		
					NEEDLE	BOBBIN/ LOOPER	COVER
1.	<p><u>Cutting.</u></p> <p>a. The armor shell component parts shall be cut in strict accordance with patterns furnished which show size, directional lines and location marks for proper assembling.</p> <p>b. The nylon ballistic cloth for the ballistic filler shall be cut with the warp or the filling direction and in strict accordance with patterns. The use of drill holes for marking on the ballistic filler is prohibited.</p> <p>NOTE: Cutting of nylon cloth may cause fusing of several plies of material. Care should be taken to prevent fraying when separating these plies.</p>						
2.	<p><u>Replacement of defective components.</u></p> <p>During the spreading, cutting and manufacturing process, components having material defects or damages that are classified as defects in 4.4.5 shall be removed from production and replaced with nondefective and properly matched components.</p>						
3.	<p><u>Attachment of label.</u></p> <p>Position the combination size, identification and instruction label on the outside surface of the inner shell in the approximate center of the back, 2-3/4 ± 1/2 inches below the top edge and stitch on all four sides, 1/16 to 1/8 inch from edges. Label shall read from top to bottom of armor.</p>	301	--	8-10	B	B	

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NO.	TABLE I. (cont'd) MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	T H R E A D		
					NEEDLE	BOBBIN/ LOOPER	COVER
4.	<p><u>Make flap for front closure.</u></p> <p>a. The flap shall consist of 2 plies of the nylon oxford material for the shell, interlined with 2 strips of the nylon ballistic cloth. One nylon ballistic cloth strip shall be used as a reinforcement for the female portion of the snap fasteners and the other as a protective cover for the fasteners.</p> <p>b. Position the reinforcement strip on the inner ply of the flap with rounded corners even and install two snap fasteners, (female portion) in the locations indicated on the pattern $\pm 1/16$ inch, with the socket component on the outside surface of the flap inner ply.</p> <p>c. Evenly superimpose the pieces joined in operation 4.b on top of the outer ply of the flap with the ballistic nylon strip facing up. Evenly superimpose the other ballistic nylon strip on top of the other strip. Stitch around top, front and bottom edges leaving back (straight edge) open. Stitch $1/4 \pm 1/16$ inch from edges.</p> <p>d. Turn flap right side out and work out edges and corners. Raise stitch around top, front and bottom edges $1/4 \pm 1/16$ inch from edges.</p> <p>e. Overedge stitch open side of flap using 3/16 to 1/4 inch gauge.</p>	301	SSe-2 Step (a)	10-12	B	B	
		301	SSe-2 Step (b)	10-12	B	B	
		502, 503, 504 or 505	EFd-1	6-10	B	B	

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NO.	TABLE I. (cont'd) MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	T H R E A D		
					NEEDLE	BOBBIN/ LOOPER	COVER
5.	<p><u>Make crotch strap.</u></p> <p>The crotch strap assembly shall consist of the 3/4 inch steel ring sewn in the folded-over end of a length of 1-1/2 inch wide elastic webbing cut $13 \pm 1/2$ inches long. The webbing shall be folded $1-1/2 \pm 1/8$ inches from the end with the raw edge folded under $1/2 \pm 1/8$ inch. The folded webbing shall be boxstitched with the stitching adjacent to the ring and edges of webbing within 1/8 inch.</p>	301 or bartack	--	6-8 42 per bartack	E B	E B	
6.	<p><u>Seam reinforcement pieces to front closure area of outer shell.</u></p> <p>Position the applicable reinforcement pieces on the inside surface of the outer shell at the left and right ends with edges evenly aligned and stitch along top, front and bottom edges with stitching 3/16 to 1/4 inch from edge.</p>	301	SSa-1	10-12	B	B	
7.	<p><u>Attach tab to slide fastener tape.</u></p> <p>a. Form tab by folding a 4-1/4 to 4-1/2 inch length of braid on itself so that one end extends approximately 1/4 inch beyond the other end. Fold the extended end to abut with the other end.</p> <p>b. Position tab on left slide fastener tape at bottom end and on inner side with the end of the tab $1 \pm 1/8$ inch from bottom of fastener tape and the edge located 1/8 to 3/16 inch from the outer edge of the fastener tape. Butted ends of tab shall lie against surface of fastener tape. Secure tab to</p>	301	--	10-12	E	E	

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NO.	TABLE I. (cont'd) MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	T H R E A D		
					NEEDLE	BOBBIN/ LOOPER	COVER
7.	<p><u>Attach tab to slide fastener tape.</u> (cont'd)</p> <p>fastener tape with a $3/4 \pm 1/8$ inch by $1/4 \pm 1/16$ inch wide box stitch pattern centered on tab. Close open end of tab with same box stitch pattern.</p> <p>NOTE: As an option, stitching for securing tab to fastener tape and closing open end may be performed in one operation.</p>						
8.	<p><u>Attach slide fastener to front shell outer ply.</u></p> <p>Position right and left slide fastener pieces to right and left ends of outer shell on outer surface in locations indicated by marks on pattern, $\pm 3/16$ inch and stitch with two rows of stitching with stitching passing through the front reinforcement pieces. First row shall be $1/16$ to $1/8$ inch from outer edge of fastener tape and second row $3/8 \pm 1/16$ inch from the first. Ends of stitching shall finish $1/8 \pm 1/16$ inch from ends of fastener tape.</p>	301	SSa-2	10-12	E	E	
9.	<p><u>Attach flap.</u></p> <p>a. Position front flap on left front of outer shell in location shown on pattern, $\pm 3/16$ inch, with over-edged edge facing front edge of shell. Stitch to shell and through reinforcement piece on underside with stitching $1/4 \pm 1/16$ inch from overedged edge.</p> <p>b. Turn flap to the front and raise stitch $3/8 \pm 1/16$ inch from folded edge, inclosing the over-edged edge of the flap.</p>	301	LSbl-2 Step (a)	10-12	E	E	
		301	LSbl-2 Step (b)	10-12	E	E	

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NO.	TABLE I. (cont'd) MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	T H R E A D		
					NEEDLE	BOBBIN/ LOOPER	COVER
10.	<p><u>Attach male portion of snap fasteners for flap closure.</u></p> <p>Attach male portions of snap fasteners for flap closure through outer shell, reinforcement piece attached to outer shell and the tape of the right slide fastener in the locations indicated on the pattern, $\pm 1/16$ inch.</p>						
11.	<p><u>Attach snap fastener for crotch strap.</u></p> <p>a. Cut four approximately 1 inch square or round pieces of nylon ballistic cloth for snap fastener reinforcements. Install male portion of snap fastener for crotch strap on left end of outer shell in location shown on pattern, $\pm 1/8$ inch, with two reinforcements approximately centered under the eyelet component of the fastener.</p> <p>b. Install female portion of snap fastener on right end of inner shell in location shown on pattern, $\pm 1/8$ inch, with two reinforcements approximately centered under the button component of the fastener. When installed the stud and socket components of the fastener shall be on the outside surfaces of the shells.</p>						
12.	<p><u>Bartack slide fastener tapes and front flap.</u></p> <p>a. Bartack slide fastener tapes at top and bottom (4 places) with horizontal bartacks. At top of tapes bartacks shall be $1/2 \pm 1/8$ inch from top edge and at bottom $1/8 \pm 1/16$ inch from ends of tapes. Bartacks shall be located $1/16$ to $1/8$ inch from outer edges of tapes.</p>	Bartack	--	28 per bartack	B	B	

NO.	TABLE I. (cont'd) MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	T H R E A D		
					NEEDLE	BOBBIN/ LOOPER	COVER
12.	<u>Bartack slide fastener tapes and front flap. (cont'd)</u> b. Bartack flap at top and bottom with vertical bartacks positioned on top of the raised row of stitching (see operation 9.b) and located $1/4 \pm 1/8$ inch from top and bottom edges.	Bartack	--	28 per bartack	B	B	
13.	<u>Install eyelets to shell inner ply.</u> Install four eyelets with washers on shell inner ply in locations indicated on pattern, $\pm 1/4$ inch. A reinforcement piece, cut from nylon oxford cloth and approximately 1 inch square or in diameter, shall be placed under each eyelet on back side. Washers shall be on inside of shell.						
14.	<u>Join inner and outer shell plies.</u> a. With insides facing out, position inner shell on outer shell with edges even and stitch all around, $3/8 \pm 1/16$ inch from edge, leaving the back open at the top for a distance of 15-20 inches. b. Turn shell assembly right side out, work and smooth out edges and raise stitch all around $1/16$ to $1/8$ inch from edge, leaving top edge of back open.	301	SSe-2 Step (a)	10-12	B	B	
		301	SSe-2 Step (b)	10-12	B	B	
15.	<u>Make ballistic filler assembly.</u> a. The eight plies of ballistic nylon cloth for the inside filler shall be evenly superimposed with all edges even. Tack the plies together with an oscillating needle button sewing machine (see 3.6.1.3 and 6.6) at two locations, one on each end approximately 3 inches from the top and side edges of the filler.	101	--	6-8 per tack	B		

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NO.	TABLE I. (cont'd) MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	T H R E A D		
					NEEDLE	BOBBIN/ LOOPER	COVER
15.	<u>Make ballistic filler assembly.</u> (cont'd)						
	b. The edges of the inside filler shall be overedge stitched together with a 1/2 inch minimum gauge.	502, 503, 504 or 505	EPd-1	4-6	E	E	
	c. Make outside ballistic filler in the same manner as specified in operations 15.a and 15.b.						
	d. Superimpose outer filler on inner filler with top and bottom edges even resulting in the fillers being stepped at the ends. Stitch horizontally across filler with four rows of stitching equally spaced within $\pm 1/4$ inch and with the outer rows located 1-1/2 inches maximum from the top and bottom edges respectively. At each end stitch vertically from top to bottom with stitching located 3/4 to 1 inch from the innermost edge of the outer and inner fillers.	301	--	4-6	3	3	
	e. As an option, inner and outer fillers may be stitched together by button tacking. Button tacks shall be located in accordance with the applicable marker patterns (see 3.5.2 and 3.6.1.3).	101	--	6-8 per tack	B		
16.	<u>Insert ballistic filler into outer shell.</u>						
	Insert filler into the shell so that the stepped joint of the ends is formed by the right side overlapping the left side when worn.						
17.	<u>Close top edge.</u>						
	Turn raw edges of shell at top to the inside 3/8 to 1/2 inch and stitch 1/16 to 1/8 inch from folded edge.	301	SSc-1	10-12	B	B	

NO.	TABLE I. (cont'd) MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	T H R E A D		
					NEEDLE	BOBBIN/ LOOPER	COVER
18.	<p><u>Attach crotch strap.</u></p> <p>Fold unfinished end of webbing under $1/2 \pm 1/8$ inch. Position that end on inner shell of armor at back in location shown on pattern, $\pm 3/16$ inch, with end of elastic webbing folded under facing shell. Secure end of strap with a box stitch pattern through shell and ballistic filler. Size of stitch pattern shall be $1 \pm 1/16$ inch by $1/2 \pm 1/16$ inch with stitching located $1/8 \pm 1/16$ inch from end of strap. One inch dimension shall run across width of strap. Shell on outer surface shall be smoothed out and ballistic filler evenly distributed within the shell prior to stitching.</p>	301	--	8-10	E	E	
19.	<p><u>Secure shell to ballistic filler.</u></p> <p>a. Evenly distribute the ballistic filler within the shell. Stitch horizontally through the shell and filler along top edge starting 12 ± 1 inches from the center (back) of the armor and continuing 12 ± 1 inches beyond the center (total 24 inches) on the opposite side of the armor. Stitch $1-1/2 \pm 1/4$ inches from the top edge.</p> <p>b. Stitch vertically through shell and ballistic filler on left side of armor $1/4 \pm 1/8$ inch from folded edge of flap. Stitching shall start $1/2 \pm 1/8$ inch from top edge of shell and finish even with the bottom edge of the flap, $\pm 1/8$ inch.</p> <p>c. Stitch vertically through shell and ballistic filler on right side of armor $3/4 \pm 1/8$ inch from edge of slide fastener tape. Stitching shall start</p>	301	--	4-6	3	3	
		301	--	4-6	3	3	
		301	--	4-6	3	3	

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NO.	TABLE I. (cont'd) MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	T H R E A D		
					NEEDLE	BOBBIN/ LOOPER	COVER
19.	<p><u>Secure shell to ballistic filler. (cont'd)</u></p> <p>1/2 ± 1/8 inch from top edge of shell and finish even with the bottom edge of the slide fastener tape, ± 1/8 inch.</p> <p>NOTE: For all stitching, the shell fabric on the outer surface shall be smoothed out prior to stitching.</p>						
20.	<p><u>Clean armor.</u></p> <p>a. Trim all thread ends to the required length and remove.</p> <p>b. Remove all spots and stains.</p>						

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3.9 Finished measurements. The finished measurements for the body armor, groin shall conform to the measurements in tables II and III. Circumference measurements shall be taken with the slide fastener in the closed position and with the item lying flat on the table.

TABLE II. Army - Air Force Measurements (inches)

Pattern size	Back length ($\pm 1/2$)	Side length ($\pm 3/8$)	Front length ($\pm 1/2$)	Outer waist Circumference ($\pm 1/2$)
28	13-1/4	5-1/4	11-1/4	35
30	13-1/2	5-1/2	11-1/2	37
32	13-3/4	5-3/4	11-3/4	39
34	14	6	12	41
36	14-1/4	6-1/4	12-1/4	43
38	14-1/2	6-1/2	12-1/2	45
40	14-3/4	6-3/4	12-3/4	47
42	15	7	13	49

TABLE III. Navy Measurements (inches)

Pattern size	Back length ($\pm 1/2$)	Side length ($\pm 3/8$)	Front length ($\pm 1/2$)	Outer waist Circumference ($\pm 1/2$)
36	13-1/4	5-1/4	11-1/4	35
38	13-1/2	5-1/2	11-1/2	37
40	13-3/4	5-3/4	11-3/4	39
42	14	6	12	41
44	14-1/4	6-1/4	12-1/4	43
46	14-1/2	6-1/2	12-1/2	45
48	14-3/4	6-3/4	12-3/4	47
50	15	7	13	49

3.10 Workmanship. The finished body armor shall conform to the quality of product established by this specification and the occurrence of defects shall not exceed the applicable acceptable quality levels. Utmost care shall be taken during component and subassembly fabrication to ensure quality workmanship and safety of the service person using the item.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein.

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Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.1.2 Responsibility for dimensional requirements. Unless otherwise specified in the contract or purchase order, the contractor is responsible for ensuring that all specified dimensions have been met. When dimensions cannot be examined on the end item, inspection shall be made at any point, or at all points in the manufacturing process necessary to ensure compliance with all dimensional requirements.

4.1.3 Certificates of compliance. When certificates of compliance are submitted, the Government reserves the right to inspect such items to determine the validity of the certification.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

4.3 First article inspection. When a first article is required (see 3.1 and 6.2), it shall be examined for the defects specified in 4.4.5.1 and 4.4.5.2.

4.4 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with MIL-STD-105.

4.4.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase document.

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4.4.2 In-process inspection. The cut parts for the shell shall be inspected during the cutting process to determine that parts are cut properly with respect to size and material directional (warp and filling) requirements, location of components are marked in the required locations, and parts containing defects such as holes, cuts, tears, burns, hard creases or wrinkles are removed from production. In addition to the above, in-process inspection shall be made for the areas listed below to ensure that specified requirements are met and also an inspection shall be made of the working patterns to ensure that they conform to the Government patterns in all respects. Whenever nonconformance is noted, corrections shall be made to the items affected and lot in process. Parts which cannot be corrected shall be removed from production.

<u>Check for</u>	<u>Component or operation</u>
Stitching through reinforcement pieces on inside of shell	Slide fastener tapes
Proper stitching	Joining of shell inner and outer plies
Cut length	Crotch strap
Presence of snap	Reinforcement pieces for crotch strap fasteners
Size of holes for snap fasteners and eyelets	Front flap, inner and outer shells
Button stitching ties	For joining inner and outer ballistic fillers

4.4.3 Critical defect examination of ballistic filler plies. Prior to performing the sampling examination in 4.4.4.1, the ballistic filler shall be 100 percent examined for the critical defects listed in table IV. Any filler ply found to contain a critical defect shall be rejected.

4.4.4 Intermediate inspection. Examination of components during process of fabrication.

4.4.4.1 Unstitched inner and outer ballistic filler examination. Filler assemblies shall be examined prior to stitching to determine if cut parts are in accordance with patterns, if parts contain material defects, if plies are properly assembled and if locations marked for button stitching (if applicable) are as specified. The sample unit shall be one assembled inner or outer filler. The lot size shall be expressed in terms of inner and outer fillers. The inspection level shall be II and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 2.5 for major defects and 15 for total (major and minor combined) defects. Any inner or outer filler assembly found to contain a critical defect shall be cause for rejection of the lot. Defects shall be classified in accordance with table IV.

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TABLE IV. Inner and outer ballistic filler defects

Examine	Defect	Classification		
		Critical	Major	Minor
Shape and size of individual plies	Not in accordance with patterns with respect to material directional requirements		101	
	Undersize around majority of or around entire periphery $\frac{1}{8}$ to $\frac{3}{16}$ inch <u>1/</u>			201
Shape and size of individual plies (cont'd)	Undersize more than $\frac{3}{16}$ inch but less than $\frac{1}{2}$ inch at any area around the periphery <u>1/</u> <u>2/</u>		102	
	Undersize $\frac{1}{2}$ inch or more at any area <u>1/</u> <u>2/</u>	1		
	Oversize $\frac{1}{2}$ inch or more at any area <u>1/</u> <u>2/</u>			202
Quality of individual plies	Holes, cut, tear, smash float, loose slub or thin place	2		
	Mend, patch, burn or noticeable scorched area	3		
	Hard crease or wrinkle	4		
	Excessively soiled or stained			203
Assembly	Less than specified number of plies	5		
	More than specified number of plies		103	
	Number and location of button stitch markings not in accordance with marker pattern (use stitching marker pattern as a gauge) (Applicable when optional method of stitching fillers is used.)			204

1/ Use a cutting pattern as a gauge centered on the part or a template with a cutout conforming to the cutting pattern.

2/ To be scored when condition exists for a length of more than 2 inches or if condition exists in several areas with an accumulated distance of 4 inches or more.

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4.4.4.2 Ballistic filler assembly visual examination. The ballistic filler assembly (joined inner and outer fillers) shall be examined for visual defects. The sample unit shall be one ballistic filler assembly. The lot size shall be expressed in terms of ballistic filler assemblies. The inspection level shall be II and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 2.5 for major defects and 15 for total (major and minor combined) defects. Defects shall be classified in accordance with table V.

TABLE V. Ballistic filler assembly visual defects

Examine	Defect	Classification	
		Major	Minor
Seams and stitching:			
Open seam (Type 301 stitching)	Up to 1/2 inch inclusive		201
	More than 1/2 inch	101	
Open seams (Over-edge stitching)	More than 1 inch but not more than 2 inches		202
	More than 2 inches	102	
NOTE: A seam shall be classified as an open seam when one or more stitches joining a seam are broken, or when two or more consecutive skipped stitches or run-offs occur.			
NOTE: On double stitched seams, a seam shall be considered open when either one or both sides of the seam are open.			
Seam and stitch type	Wrong seam or stitch type	103	
Stitch tension	Loose, resulting in loose bobbin or top thread <u>1/</u>		203
Stitches per inch (Type 301 stitching)	One to two stitches less than minimum specified <u>1/</u>		204
	Three or more stitches less than minimum specified <u>1/</u>	104	
	Two or more stitches in excess of maximum specified <u>1/</u>		205

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TABLE V. Ballistic filler assembly visual defects

Examine	Defect	Classification	
		Major	Minor
Seams and stitching: (cont'd)			
Overedge stitching	Stitches per inch:		
	(1) One less than minimum specified		206
	(2) Two or more less than minimum specified <u>1/</u>	105	
	(3) Two or more in excess of maximum specified <u>1/</u>		207
Rows of stitching	Any row missing	106	
Thread breaks, skipped stitches or run-offs (on type 301 stitching)	Overstitched less than 1 inch in each direction beyond defective stitching area		208
Thread breaks, skipped stitches or run-offs (on overedge stitching)	Overstitched less than 3/4 inch in each direction beyond the defective stitching area		209
	NOTE: On all types of stitching, thread breaks or two or more consecutive skipped stitches or run-offs not overstitched shall be classified as open seams.		
Stitching ends (on type 301 stitching)	Ends of stitching not secured as specified (except when caught in other stitching or turned under in a hem)		210
Button stitching (applicable when optional method is used for joining inner and outer fillers)	One or two button stitchings missing, loose or not penetrating all plies <u>2/</u>		211
	Three or more button stitchings missing, loose or not penetrating all plies <u>2/</u>	107	

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- 1/ Defects notated shall be scored only when the condition exists for 3 inches or more in several areas with an accumulated distance of 5 inches or more. Applicable to individual seams.
- 2/ Defects pertaining to button stitchings shall be determined using the marking pattern as a gauge.

4.4.4.3 Ballistic filler assembly dimensional examination. The ballistic filler assembly shall be examined for dimensional defects. The sample unit shall be one ballistic filler assembly. The lot size shall be expressed in terms of ballistic filler assemblies. The inspection level shall be S-3 and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 1.5 for major defects and 6.5 for total (major and minor combined) defects. Defects shall be classified in accordance with table VI.

TABLE VI. Ballistic filler assembly dimensional defects

Examine	Defect	Classification	
		Major	Minor
Assembly:			
General	Edges of inner and outer fillers not even:		
	(1) By 1/8 inch up to 1/4 inch for a distance of 2 inches or more or in several areas with an accumulated distance of 5 inches or more		201
	(2) By more than 1/4 inch for a distance of 2 inches or more in several areas with an accumulated distance of 5 inches or more	101	
	Ends of inner or outer fillers not stepped (overlapped) as specified: <u>1/</u>		
	(1) By 1/4 inch up to 3/8 inch inclusive		202
	(2) By more than 3/8 inch	102	
Stitching	Type 301 stitching not located as specified exceeding tolerance <u>2/</u>		203
	Overedge stitching gauge not as specified <u>2/</u>		204

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TABLE VI. Ballistic filler assembly dimensional defects (cont'd)

Examine	Defect	Classification	
		Major	Minor
Assembly: (cont'd)			
Stitching (cont'd)	More than 3 button stitchings located more than 1/2 inch from mark (Use marking pattern as a gauge) (Applicable when optional method is used to join inner and outer fillers)		205

1/ Required amount of overlap to be determined by superimposing pattern for inner and outer fillers evenly on each other.

2/ To be scored when condition exists on major portion of individual seam. Applicable to individual seam of row of stitching.

4.4.5 Inspection of the end item.

4.4.5.1 Completed body armor assembly visual examination. The body armor assembly shall be examined for visual defects. The sample unit shall be one complete assembled body armor. The lot size shall be expressed in terms of complete body armor assemblies. The inspection level shall be II and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 2.5 for major defects and 15 for total (major and minor combined) defects. Defects shall be classified in accordance with table VII.

TABLE VII. End item visual defects

Examine	Defect	Classification	
		Major	Minor
Cloth	Any hole, (except drill hole) cut or tear	101	
	Any exposed drill hole		201
	Any abrasion marks, broken or missing yarns or multiple floats	102	
	Any mend, darn, or patch	103	
	Parts not cut correctly with respect to material directional lines		202
	Needle chews	104	

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TABLE VII. End item visual defects (cont'd)

Examine	Defect	Classification	
		Major	Minor
Tape and braid (On slide fastener assembly)	Any hole or cut	105	
	Frayed edge		203
	Needle chews: (1) Up to 1/8 inch in length inclusive		204
	(2) More than 1/8 inch in length	106	
Hardware:			
General	Broken or malformed; corroded areas; burrs or sharp edges	107	
	Finish omitted or not as specified	108	
	Any required component improperly installed causing failure to serve intended purpose	109	
Snap fasteners	Any fastener not functioning properly i.e., fails to snap closed, provide a secure closure or to open freely	110	
	NOTE: The fasteners shall be snapped and unsnapped twice to determine whether parts of fastener separate freely and also effect a secure closure.		
	Clinched excessively tight, cutting surrounding material	111	
	Clinched loosely, permitting either component to rotate freely	112	
	Incorrect style	113	
Slide fastener	Not specified type or size	114	
	Does not provide a smooth and secure closure full length of front opening	115	
	Slider jams or fails to interlock chain scoops	116	
	Any portion of fastener broken, bent, missing, or not aligned, making fastener unusable	117	

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TABLE VII. End item visual defects (cont'd)

Examine	Defect	Classification	
		Major	Minor
Slide fastener (cont'd)	NOTE: The slide fastener shall be fully closed and opened to determine whether fastener operates smoothly and provides a secure closure.		
	Thong or pull tab omitted	118	
Ring (For crotch strap)	Not specified size	119	
Eyelet	Clinched excessively tight, cutting surrounding material	120	205
	One omitted	121	
	Two or more omitted	121	
	Insecurely clinched to a degree that eyelet may be detached from material	122	
	Eyelet barrel split		206
Seams and stitchings:			
Open seams	Up to and including 1/2 inch		207
	More than 1/2 inch	123	
	NOTE: A seam shall be classified as an open seam when one or more stitches joining a seam are broken, or when two or more consecutive skipped stitches or run-offs occur. On double stitched seams, a seam shall be considered open when either one or both sides of the seam are open.		
Raw edges (except where required or otherwise classified herein)	More than 1/4 inch when securely caught in stitching		208
	NOTE: Raw edges not securely caught in stitching shall be classified as open seams.		

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TABLE VII. End item visual defects (cont'd)

Examine	Defect	Classification	
		Major	Minor
Seams and stitchings: (cont'd)			
Seam and stitch type	Wrong seam or stitch type	124	
	Seams pleated or badly puckered, clearly noticeable		209
Stitch tension	Tension loose, resulting in loose bobbin or top thread		210
	Tension tight, resulting in puckering of material		211
Stitches per inch	One to two stitches less than minimum specified $\frac{1}{2}$		212
	Three or more stitches less than minimum specified $\frac{1}{2}$	125	
	Two or more stitches in excess of maximum specified $\frac{1}{2}$		213
<p>NOTE: Variation in the number of stitches per inch caused by operator speeding up the machine and pulling the material in order to sew over heavy places, or in turning corners shall be classified as follows:</p> <p>(a) Within the Minor defect classification - no defect.</p> <p>(b) Within the Major defect classification - Minor defect.</p>			
Thread breaks, run-offs or skipped stitches (on type 301 stitching)	Overstitched less than specified		214
	NOTE: Thread breaks or two or more consecutive skipped stitches or run-offs not overstitched shall be classified as open seam.		
Stitching ends (on type 301 stitching)	Ends of stitching not secured as specified (except when caught in other stitching or turned under in a hem)		215

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TABLE VII. End item visual defects (cont'd)

Examine	Defect	Classification	
		Major	Minor
Seams and stitchings: (cont'd)			
Rows of stitching	Any row missing (unless otherwise classified herein)	126	
Bartacks	Stitching loose, incomplete or broken		216
	Any bartack omitted	127	
	Number of stitches not as specified		217
Front flap	Raised stitching omitted that stitches flap to shell	128	
	Raised stitching around sides of flap omitted		218
Crotch strap	Attached with raw end facing outside		219
Assembly-general	Shell smaller than ballistic filler, i.e., not permitting assembly to lie smooth and flat within	129	
	Shell larger than ballistic filler by more than 1/2 inch		220
	Raise stitching omitted around periphery of shell	130	
	Any component part omitted (not otherwise classified herein)	131	
	Any component caught in any un-related operations of stitching, affecting appearance or function (not otherwise classified herein)	132	
	Any unauthorized repair	133	
Labels (size, identification and instruction)	Missing, incorrect or illegible	134	
	Color not green		221
Cleanness	Any spot or stain clearly noticeable		222
	Thread ends not trimmed throughout as specified		223

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- 1/ Defect to be scored only when condition exists for a length of 3 inches or more or in several areas with an accumulated distance of 5 inches or more. Applicable to individual seams.

4.4.5.2 Completed body armor assembly dimensional examination. The body armor assembly shall be examined for dimensional defects. The sample unit shall be one completely assembled body armor. The lot size shall be expressed in terms of complete body armor assemblies. The inspection level shall be S-3 and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 2.5 for major defects and 10 for total (major and minor combined) defects. Defects shall be classified in accordance with table VIII.

TABLE VIII. End item dimensional defects

Examine	Defect	Classification	
		Major	Minor
Overall finished dimensions (as specified in table II)	Smaller than nominal dimensions less applicable minus tolerance specified but not smaller than nominal dimensions less twice the applicable minus tolerance		201
	Smaller than nominal dimensions, less twice the applicable minus tolerance	101	
	Larger than nominal dimensions and applicable plus tolerance		202
Snap fasteners	Mislocated, exceeding tolerances to the degree that snaps cannot be closed (with slide fastener fully closed) without causing excessive puckering of flap or the armor shell	102	
All dimensions other than specified above, including stitch margin or gauge (as specified in table I)	Any not within specified tolerance NOTE: Stitch margin or gauge defects shall be scored only when conditions exists on major portion of seam.		203

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4.4.6 Packaging examination. The fully packaged end items shall be examined for the defects listed below. The lot size shall be expressed in units of shipping containers. The sample unit shall be one shipping container fully packaged. The inspection level shall be S-2 and the AQL, expressed in terms of defects per hundred units, shall be 2.5.

<u>Examine</u>	<u>Defect</u>
Marking (exterior and unit pack)	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application
Materials	Any component missing, damaged, or not as specified
Workmanship	Inadequate application of components, such as: incomplete sealing or closure of flap, improper taping, loose strapping, or inadequate stapling Bulged or distorted container
Content	Number of armor assemblies per container is more or less than required

4.4.7 Palletization examination. The fully packaged and palletized end items shall be examined for the defects listed below. The lot size shall be expressed in units of palletized unit loads. The sample unit shall be one palletized unit load, fully packaged. The inspection level shall be S-1 and the AQL, expressed in terms of defects per hundred units, shall be 6.5.

<u>Examine</u>	<u>Defect</u>
Finished dimensions	Length, width, or height exceeds specified maximum requirements
Palletization	Pallet pattern not as specified Interlocking of loads not as specified Load not bonded as specified
Weight	Exceeds maximum load limits
Marking	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application

5. PACKAGING

5.1 Packing. Packing shall be level A, B or Commercial as specified (see 6.2).

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5.1.1 Level A packing. Ten groin armors, of one size only, shall be packed in a fiberboard shipping container conforming to style RSC-L, grade V2s of PPP-B-636. The inside of each shipping container shall be fitted with a box liner conforming to type CF, class weather-resistant, variety DW, grade V15c of PPP-B-636. Each groin armor shall have the right and left fronts folded in toward the center of the back. The slide fastener shall be closed. The flap with the snap fasteners shall be folded back from the slide fastener. The groin armors shall be arranged flat, alternately reversed waist to crotch, to achieve a balanced pack within the shipping container. Inside dimensions of each shipping container shall approximate 23-3/4 inches in length, 14-1/2 inches in width, and 12-3/4 inches in depth. Approximate dimensions are furnished as a guide only. Each shipping container shall have the contents completely covered on the top and bottom with a sheet of 30-pound minimum basis weight kraft paper conforming to A-A-203. Each shipping container shall be closed in accordance with method V and reinforced as specified in the appendix of PPP-B-636 except that the inspection shall be in accordance with 4.4.6. Shipping containers shall be arranged in unit loads in accordance with MIL-L-35078 for the type and class of load specified (see 6.2).

5.1.2 Level B packing. Ten groin armors, of one size only, shall be packed in a fiberboard shipping container conforming to style RSC-L, type CF (variety SW) or SF, class domestic, grade 275 of PPP-B-636. The inside of each shipping container shall be fitted with a box liner conforming to type CF, class domestic, variety DW, grade 275 of PPP-B-636. Each groin armor shall have the right and left fronts folded in toward the center of the back. The slide fastener shall be closed. The flap with the snap fasteners shall be folded back from the slide fastener. The groin armors shall be arranged flat, alternately reversed waist to crotch, to achieve a balanced pack within the shipping container. Inside dimensions of each shipping container shall approximate 23-3/4 inches in length, 14-1/2 inches in width, and 12-3/4 inches in depth. Approximate dimensions are furnished as a guide only. Each shipping container shall have the contents completely covered on the top and bottom with a sheet of 30-pound minimum basis weight kraft paper conforming to A-A-203. Each shipping container shall be closed in accordance with method II as specified in the appendix of PPP-B-636, except that the inspection shall be in accordance with 4.4.6.

5.1.2.1 Weather-resistant fiberboard containers. When specified (see 6.2), the fiberboard shipping container shall be a grade V3c, V3s, or V4s fiberboard box fabricated in accordance with PPP-B-636 and closed in accordance with method III as specified in the appendix of the container specification, except that the inspection shall be in accordance with 4.4.6.

5.1.3 Commerical packing. Body armor, preserved as specified in 5.1, shall be packed in accordance with ASTM D 3951.

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5.2 Palletization. When specified (see 6.2), body armor, packed as specified in 5.1.2 and 5.1.3, shall be palletized on a 4-way entry pallet in accordance with load type Ia of MIL-STD-147. Pallet type shall be type I (4-way entry), type IV or type V in accordance with MIL-STD-147. Pallets shall be fabricated from wood groups I, II, III or IV of MIL-STD-731. Each prepared load shall be bonded with primary and secondary straps in accordance with bonding means C and D or film bonding means F or G. Pallet pattern shall be number 3 in accordance with the appendix of MIL-STD-147. Interlocking of loads shall be effected by reversing the pattern of each course.

5.3 Marking. In addition to any special marking required by the contract or purchase order, shipping containers and palletized unit loads shall be marked in accordance with MIL-STD-129 or ASTM D 3951, as applicable.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The groin armor is intended for use by military personnel as a protective garment against low velocity shell mortar and grenade fragments.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Special provisions for verification inspection of Life Support Clothing and Equipment (see 1.1).
- c. Size required (see 1.2).
- d. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
- e. When a first article sample is required (see 3.1, 4.3, and 6.3).
- f. Levels of packing (see 5.1).
- g. Type and class of unit load required (see 5.1.1).
- h. When weather-resistant grade fiberboard shipping containers are required for level B packing (see 5.1.2.1).
- i. When palletization is required (see 5.2).

6.3 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of FAR 52.209. The first article should be a preproduction sample. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should also include specific instructions in acquisition documents regarding arrangements for selection, inspection, and approval of the first article.

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6.4 Sample. For access to sample of the end item and shade samples, address the contracting activity issuing the invitation for bids or request for proposal.

6.5 Needle cooling. In order to keep the needle cool when overedging and button stitching the ballistic fillers, it is recommended that either the machines be equipped with a compressed air blower directed at the needle or by affixing a felt pad saturated with silicone oil in a position so that the thread will rub against it during sewing. The use of chromium plated needles have been found to be advantageous in that they do not generate as much heat or deflect as much during use as regular needles. Recommended maximum speed for the overedge machine is 1000 RPM and for the button stitch machine 900 RPM.

6.6 Tacking notes. A Singer oscillating needle button sewing machine, class 175-60 or 175-62 or equivalent, modified as follows, has been found satisfactory for stitching tacks:

- a. All fittings should be removed from the clamp shank.
- b. The clamp shank should be free with only pressure at the bar.
- c. The clamp shank should be replaced by a specially developed foot, Singer part No. 197251.
- d. The pressure spring should be replaced with a heavier spring to provide higher foot pressure.
- e. The releasing screw stud (Singer part No. 175188) should be ground off so that the needle bar at its lowest point will allow the thread to pull free.
- f. The place and looper should be highly polished to reduce friction to a minimum. The looper should be carefully examined for sharp edges which must be avoided.
- g. The automatic tension should be set to open when the needle bar is within 1/4 inch of its highest stroke.
- h. Chrome plated needles should be used (Singer Test No. 3203).
- i. Cans and pinion gears should be changed to produce 8 stitches per tack (6 stitches - 2 ties), Singer part Nos. 197250, 183090, 197254 and 197253.

6.7 Label color. The following cable numbers of the Standard Color Card of America are furnished for information and guidance as to the intensity of the shade of medium green desired for the label:

Cable No. - 70034
 Cable No. - 70130
 Cable No. - 70131

6.8 Subject term (key word) listing.

Abdomen protection
 Protective garment

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6.9 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:

Army - GL
Air Force - 99
Navy - NU

Preparing activity:

Army - GL

(Project 8470-0128)

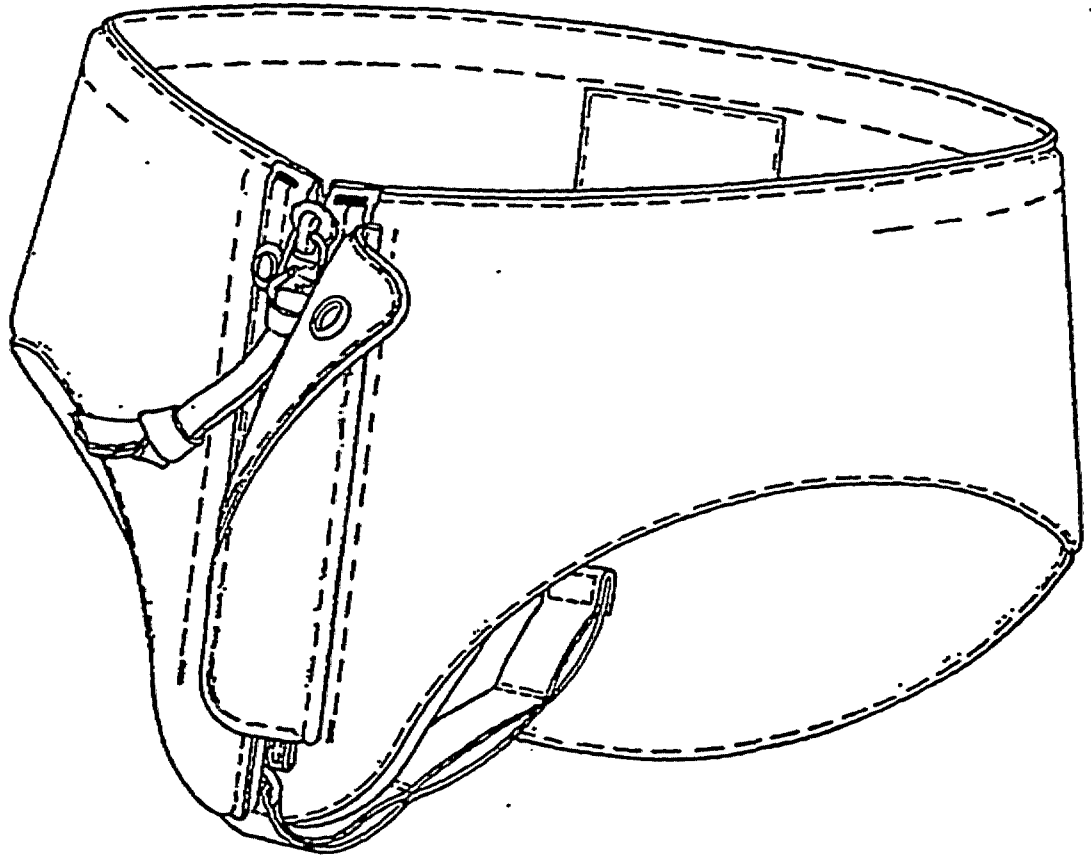
Review activities:

Army - MD
Air Force - 11, 82
DLA - CT

User activity:

Air Force - 45

MIL-B-43366C



*FIG 1. BODY ARMOR,
FRAGMENTATION, PROTECTIVE
(FOR THE GROIN)*

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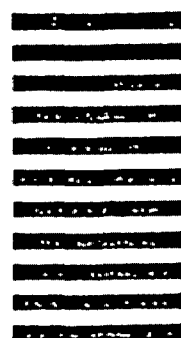
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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL <i>(See Instructions - Reverse Side)</i>	
1. DOCUMENT NUMBER MIL-B-43366C	2. DOCUMENT TITLE BODY ARMOR, FRAGMENTATION PROTECTIVE, GROIN
3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION (Mark one) <input type="checkbox"/> VENDOR <input type="checkbox"/> USER <input type="checkbox"/> MANUFACTURER <input type="checkbox"/> OTHER (Specify): _____
b. ADDRESS (Street, City, State, ZIP Code)	
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