

INCH-POUND

MIL-A-83406B(USAF)  
 AMENDMENT 4  
16 November 1998  
 SUPERSEDING  
 AMENDMENT 3  
 1 February 1982

## MILITARY SPECIFICATION

## ANTI-G GARMENT, CUTAWAY, CSU-13B/P

This amendment forms a part of Military Specification MIL-A-83406B (USAF), dated 3 September 1975, and is approved for use by the Department of the Air Force and is available for use by all Department and Agencies or the Department or Defense.

## PAGE 1

## 2.1, Under SPECIFICATIONS, Military:

## Delete:

"MIL-T-43115 Tape, Pressure-Sensitive, Adhesive, For Packaging and Sealing"

"MIL-C-83429 Cloth, Twill Nylon, High Temperature Resistant."

## Add:

"MIL-T-22085 Tapes, Adhesive, Preservative and Sealing"

"MIL.C-83429 Cloth, Plain and Basket Weave, Aromatic Polyamide, - Non-Melting"

"MIL-C-83489 Cloth, Coated, Nylon, Polyurethane Coated".

## PAGE 2

## 2.1, Under STANDARDS, Federal: Add:

"FED-STD-595 Colors".

## PAGE 3

3.4.1.1 Line 2: Delete "MIL-C-43600" and substitute "MIL-C-83429".

3.4.1.2. delete and substitute:

"3.4.1.2 Polyurethane coated nylon cloth. The material for the bladder(including the attachment patches) shall conform to type I of MIL-C 83489."

## PAGE 4

Tables I and II. Delete in their entirety.

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PAGE 5

3.4.3: Delete in its entirety.

“3.4.4 lines 1 and 2, delete and substitute:

“3.4.4 Spacer material. The spacer material for the bladder shall be 0.0800- to 0.1200-inch thick and shall be Style No. PDH 60498 (manufactured by Chicopee Manufacturing Co., Cornelia, Georgia), Trilok, Style No. 6001-1-1”

3.4.6, line 14: After "specified in 3.4.1.1." insert “The tape of the slide fastener shall have colorfastness in accordance with V-F-106 except that fair colorfastness in lieu of good colorfastness to light will be acceptable.”

PAGE 6

Table IV, third column heading: Add "2/ after "Leg Openings".

Add footnote "2/ The tolerance for the length of the slide. fastener for the leg opening shall be plus or minus 1/4 inch."

3.4.7 Delete and substitute:

“3.4.7 Stiffeners. The stiffeners for the slide fasteners and the stiffeners for the front body and the back body shall be made of nylon cloth that conforms to class 2 of MIL-C-3953. The Nylon cloth shall be natural color for the stiffeners for the slide fasteners and color optional for the stiffeners for the front body and the back body.”

3.4.10 Delete and substitute

“3.4.10 Fastener, Snap. The button, socket, stud and eyelet of fastener snap shall conform to MS27980-1B, -6B, -7B and-8B. The tape for button and socket assembly shall conform to type IV of MIL-T-38328”.

PAGES 6 and 7

3.4.11, 3.4.11.1, 3.4.11.2 and Table V: Delete in their entirety.

3.4.13, line 2, delete and substitute: “except that the sleeve may have 16 carriers in lieu of 20 carriers, the length shall be 39-1/2 inches in lieu of 45 inches for each yard or webbing, and the color shall match the color of the basic fabric spec”.

PAGE 8

3.4.22, line 2, delete and substitute: “the inflation sleeve opening and for the knife pocket reinforcement shall be black and shall conform to type I of”

PAGE 9

3.4.25, line 2: Delete “MIL-T-43115” and substitute "type II of MIL-T-22085".

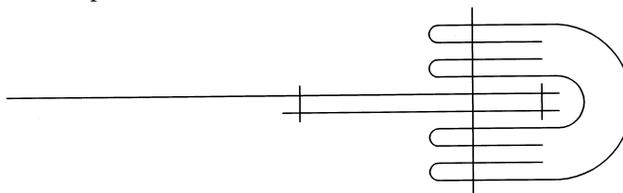
Add: “3.4.26 Rubber band. The rubber band (see figure 6) shall be 3/4 inch (plus or minus 1/32 inch) inside diameter, 1-1/4 inches (plus or minus 1/16 inch) long, and 0.035-inch (minimum) thickness. The color of the rubber band shall be black that conforms to 27040, 37038, or 37056 of FED-STD-595 or shall be green that conforms to 34096, 34097, or 34128 of FED STD-595. The rubber shall comply with class 2, type A of MIL-R-6855.

3.6.1, line 11: Add "Thread ends or all stitching inside and outside of the anti-g garment shall be trimmed flush with the fabric.

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## PAGES 11 AND 12

Table VI, No 5(c), 6(c), and 6(f) under "description of Operation" and add "Before completing the stitching of the binding at the top and the bottom of each lacer cover, fold the raw edges of each end of the binding (two ends per lacer cover) so that no raw edges are exposed (see the turned-under binding in the sketch below), and complete the stitching of the binding to the fastener tape."



PAGE 12

Table VI, No. 7(b), under "Description of Operation", line 1: Insert "outside" between "the" and "body".

Table VI, under "Description of Operation", between No. 7(b) and 7(c):Add:

"Note: The terms ant body bladder cover, front body bladder case, outside cover, and forward cover as indicated in this specification and on the pattern drawings of the bladder cover shall be interpreted as that portion of the bladder cover on the outside (away from the wearer's body) and has a truncated section cut off. The term back body bladder cover or case shall be interpreted as the cover positioned next to the warer's body and is full size as indicated on the pattern drawings."

PAGE 15

Table VI, No. 12(b) delete entirely. Renumber operation (c) to (b). Renumber (d) to (c). Operation (e) delete entirely and substitute by: "(d) Sew two boxes "X" 7/8 X 7/8 inch, 1/8 inch from the edge of two reinforcements described in 12.(a) with single row of stitching". Add: "Operation (e). Punch a hole diameter 1/8 inch in the center of each box "X" described in operation (d), install stud MS27989-7B and eyelet MS27980-8B through the holes at center of box "X" stitch, ensuring the stud is on the side that matching with the socket of tab assembly".

PAGE 17

Table VI, No. 13(b) delete entirely. Renumber operation (c) to (b). Renumber operation (d) to (c). Operation (e) delete entirely and substitute by: "(d) Sew a box "X" 7/8 X 7/8 inch, 1/8 inch from the edge of reinforcement described in 13(a) with a single row of stitching." Add: "Operation (e). Punch a hole diameter 1/8 inch in the center of box "X" described in operation (d), install stud MS27989-7B and eyelet MS27989-8B through the hole at center of box "X" stitch, ensuring the stud is on the side that matching with socket of tab assembly".

PAGE 18

Table VI, No. 14: Under "Description of Operation", add:

"(g) Cut four, 2-3/4-inch squares of the basic fabric to reinforce the slide fasteners. Turn the outside edges of each reinforcement under 1/4 inch on all four sides, and stitch two reinforcements to each pocket with an "X" stitch inside a box. The reinforcements shall be positioned so that a reinforcement will be adjacent to each end of the metal portion of the slide fastener) centered from the top and the bottom on the inside of the pocket).

Under "Stitch Type", add "301".

Under "Seam and Stitching Type", add "LSa-1".

Under "Stitches per Inch", add "10-12".

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Table VI, No. 15(a) delete entirely and substitute by: “(a) Cut two pieces of nylon tape in accordance with the patterns, fold at the center, sew a box “X”  $\frac{3}{4}$  X  $1\frac{1}{4}$  inch,  $\frac{1}{8}$  inch from the folded edge, punch a hole diameter  $\frac{1}{8}$  inch in the center of box “X” stitch, install button MS27980-1B and socket MS27980-6B through the hole at center of box “X” stitch”.

## PAGE 19

\*Table VI, No. 16(a) and 16(b) delete entirely and substitute by : “(a) Cut two pieces of nylon tape in accordance with the patterns, fold on the line, sew a box “X”  $\frac{3}{4}$  x  $1\frac{1}{4}$  inch,  $\frac{1}{8}$  inch from the folded edge, punch a hole diameter  $\frac{1}{8}$  inch in the center of box “X” stitch, install button MS27980-1B and socket MS7980-6B through the hole at the center of box “X” stitch”. Renumber operation (c) to (b)

## PAGE 19 and 20

Table VI, No. 18(c): Delete and substitute:

“18(c) Center the bias-cut pieces of the basic fabric on the stiffeners. Sew three rows of stitching from end to end with one row in the center and one row on the right and the left sides of the center stitching $\frac{1}{8}$ inch.	301	SSa-1	10-12
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Place the stiffeners at the pattern marks On the back body and the front body and stitch A single row of stitching, $\frac{1}{16}$ inch from the edges, each side of the binding.”	301	LSa-1	10-12
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## PAGE 22

\*Table VI, No. 21.(b) delete: “loop tab” and substitute by: “button, socket tab”.

## PAGE 23

\*Table VI, No. 21.(b) delete: “The upper loop shall match the hook on the body protective fly. Sew the lower body loop tab  $5\frac{1}{2}$  inches (center line to center line) below the upper loop tab. The lower loop shall match the lower hook on the body protective fly”, and substitute by: “The upper button, socket tab shall match the stud, eyelet on the body protective fly. Sew the lower button, socket tab  $5\frac{1}{2}$  inches (center line to center line) below the upper button, socket tab. The lower button, socket tab shall match the lower stud, eyelet on the body protective fly”.

Table VI, No. 22(b), under “Description of Operation”, line 5: Delete “inside” and substitute “outside”.

Table VI, No. 22(d), under “Description of Operation”, line 3: Delete “ $\frac{1}{16}$  inch” and substitute “ $\frac{1}{8}$  inch”.

\*Table VI, No. 22(e), delete: “loop assembly (part No. 166 or equal)” and substitute by: “button socket assembly (MS27980-1B, -6B)”.

## PAGE 24

\*Table VI, No. 23(d): Add:

“Place the leather reinforcement piece on the outside of the knife pocket, flat and smooth, with the bottom edge resting on the center notch on the knife pocket and the top edge toward the round end of the knife pocket.	301	SSa-1	10-12
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Stitch the leather reinforcement piece 1/8 inch (plus or minus 1/16 inch) from the edge on all four sides. Double stitch across the top of the leather reinforcement piece with 1/4-inch gage."

Table VI, No 22(e) delete: "The loop shall face the body and shall match the hook on the leg protective fly", and substitute by: "The socket of the button, socket tab shall face the body and shall match the stud on the leg protective fly".

## PAGE 25

Table VI, No 23(e), lines 5 and 6 (third sentence): Delete and substitute "The leather reinforcement piece shall be on the outside after binding.

Table VI, No. 23(i), lines 7 thru 9: Delete and substitute "stitching 1/16 inch from the edge 1/8-inch gage. The distance between the inside longitudinal stitch lines shall be 2-1/4 inches (plus or minus 1/8 inch)."

## PAGE 26

Table VI, No. 23(n), line 3: Delete "1/16 inch" and substitute "1/8 inch".

Table VI, No. 23(o), line 3: Delete "1/16 inch" and substitute "1/8 inch".

## PAGE 28

Table VI, No. 27(a): Add:

"Bartack both ends of each lacer loop, across the full width of the lacer loop including the from the top and the	bartack	21-22 stitches per loop material, 3/8 inch bartack bottom edges."
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## PAGES 30 and 31

Table VI, No 35(b), line 9: Delete "MIL-T-43115" and substitute "MIL-T-22085.

Table VI, No 35(c), line 9: Delete "MIL-T-43115" and substitute "MIL-T-22085".

## PAGE 31

Table VI No 37, under "Description of Operation": Add: "(b) Attach the rubber sleeve to the connector as shown in figure 6."

## PAGES 35 and 36

3.6.2, delete and substitute:

"3.6.2 Bladder.

a. The polyurethane coated cloth specified for the bladder in 3.4.1.2 shall be out in accordance with the applicable patterns. The bottom half of the bladder, with the coated surface face up, shall be laid on a clear flat surface.

b. Four strips of the spacer material specified in 3.4.4 shall be out in lengths required by the applicable pattern, except that the horizontal spacer extending across the inside of the abdominal bladder shall have approximately 2 to 3 inches of slack (the length of spacer between the two patches in the abdominal bladder shall be 2 to 3 inches longer than the distance, in the flat, between the two patches). The width of the spacer in the bladder extension and the abdominal-bladder shall be 3/4 inch. The width of the leg spacers shall be 1 inch.

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c. The ends of the legs and abdominal spacer material shall be overlapped and joined to patches that are made of the polyurethane coated nylon cloth specified in 3.4.1.2 and that are approximately 1 inch by 1-3/4 inches by bartacking as shown on figures 1 and 2. Two additional pieces of spacer material 1 inch wide by 10 inches long shall be sewn to the upper portion of the leg spacer material (one length per leg).

d. The upper end of the piece of spacer material that is 1 inch by 10 inches shall be placed approximately 1 inch below the patch joining the leg spacer to the abdominal spacer and shall be sewn to the leg spacer with two rows of stitching 1/4 inch from each edge of the leg spacer with the thread specified in 3.4.14, seam type LSa-2 or FED-STD-751, 8 stitches per inch, and all ends backstitched a minimum of 1 inch. The bladder extension spacer material shall be overlapped on the abdominal spacer material approximately 2-1/2 inches from the joint between the leg and abdominal spacer material and shall be similarly bartacked (no patch)

e. The spacer material (anti-block system) shall be positioned on the coated side of the bottom half of the bladder as indicated on the applicable pattern and then secured by cementing patches to the bottom of the bladder as shown on figure I.

f. The bladder halves shall be positioned and thermally bonded together so that the bonded area will be 1/8 (plus or minus 1/32) inch wide and the distance from the edge of the bladder to the outside edge of the bond will be 3/8 (plus or minus 1/16) inch. The bonded seam shall be straight continuous, and parallel to the edge of the bladder.

g. The completed bladder shall then be inflated to 2 pounds per square inch (psi). The seams or the inflated bladder shall be inspected for proper joining and adhesion.

h. The upper tab or the finished bladder shall be stamped for identification with the abbreviated anti-garment size."

PAGE 36

3.7.7, delete and substitute:

"3.7.7 Bond strength (bladder). The force required to separate the bonded bladder halves shall be not less than 40 pounds."

PAGE 37

3.8 line 13: Delete "circumference straight" and substitute "circumference, with the thigh take-up slide fasteners closed for the minimum finished measurement and with the thigh take-up slide fastener open for the maximum finished measurement, straight".

PAGE 40

3.11.1, line 4: Delete "clot" and substitute "cloth".

PAGE 41

4.4. Lines 5 thru 7: Delete last sentence.

4.4.1 Lines 3 thru 5: Delete and substitute "regular, two complete bladders in size medium regular, and one complete bladder in size large long. (Note: Although".

4.5 Lines 5 thru 7: Delete last sentence.

PAGE 42

Tables X and XI: Delete in their entirety.

PAGE 43

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4.5.1.1 delete and substitute:

"4.5.1.1 Tested samples. The manufacturer of the anti-g garments shall subject two anti-g garments in size medium long and two bladders in size medium long to the first article inspection described in 4.5."

PAGE 44

4.6.4: Delete in its entirety.

PAGES 47 thru 49

Table XIII: Delete pages 47 thru 49 and substitute pages 47 thru 49, which form pages 8 thru 10 of this amendment.

PAGES 52 and 53

4.7.9, 4.7.9.1, and 4.7.9.2: Delete in their entirety.

PAGE 56

6.6, line 11: Delete "ASD/ENCCE" and substitute "ASD/ENECE".

PAGE 58

Figure 1: Delete the seam tape in section A-A. Delete "(SKI FIGURE 6)" and substitute "(SEE FIGURE 2)".

PAGE 59

Figure 2, section D-D: Delete the seam tape.

PAGE 61

Figure 4: Delete in its entirety.

PAGE 63

Figure 6: Delete "BLACK OR OLIVE GREEN RUBBER BAND (3/4 ID X 1-1/4 LG)" and substitute "RUBBER BAND (SEE 3.4.26)".

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TABLE XIII. Classification of Defects. – (Cont'd)

Defect	Major Defect	Minor Defect
Snap fastener not holding together	X	
Snap fasteners not separating under normal pull <u>2</u> /	X	
<u>Assembly</u>		
Incorrectly assembled, that is, reversed seams, not specified type of seam, not specified type of stitch, or misplaced or reversed components	X	
Incorrectly assembled, that is, any component or required operation omitted	X	
Any component not as specified; any component part or required operation omitted or any operation improperly performed. NOTE: This defect shall be classified and scored as a major defect when it seriously affects the serviceability or appearance; otherwise, it shall be classified and scored as a minor defect.		
<u>Identification of product</u>		
Any label missing, misplaced illegible, or information on label incorrect or incomplete		
<u>Workmanship</u>		
Holes, outs, tears, or needle chews	X	
Darns or mends affecting serviceability	X	
Darns or mends affecting appearance		X
Thread ends not trimmed' flush with fabric		X
Stains, oil spots, or dirt over 1/4 inch in diameter	X	
Stains, oil spots or dirt up to 1/4 inch in diameter in not more than two places		X
Stains, oil spots, or dirt up to I/4 inch in diameter in three or more places	X	
Holes, outs or tears on bladder cover	X	

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TABLE XIII. Classification of Defects. – (Cont'd)

Defect	Major Defect	Minor Defect
All other areas		X
NOTE: These defects shall be classified and scored as a major defect when it seriously affects the serviceability or appearance; otherwise, it shall be classified and scored as a minor defect.		X
Thread ends not trimmed to a maximum of ¼ inch		
<b>Measurements</b>		
Any finished measurement not within specified Tolerance	X	
Distance between inside longitudinal stitch	X	
Lines attaching knife pocket to reinforcement	X	
Patch greater than 2-3/8 inches or less than 2-1/8 inches		
<b>Hook assembly</b>		
Hook assembly not specified type	X	
Hook no aligned with loop (tolerance 1/8 inch) 3/		X
-more than 1/8 inch but less than ¼ inch		
-more than ¼ inch	X	
<b>Stitches and seams</b>		
Open seams shall be defined as one or more broken Stitches or two or more continuous skipped stitches		
Or run-offs	X	
-one or more broken stitches or two or more skipped stitches on bladder cover and let and waist slide fasteners		X
-all others		
Ends of stitching not caught in other seams or	X	
Stitching not securely backstitched for a minimum of ½ inch		
Stitching missing, broken, skipped, or cut	X	
Run-off	X	

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Defect	Major Defect	Minor Defect
Stitching margins unless otherwise classified herein <sup>4/</sup>		
-up to 1/16 inch stitching margins not within tolerance of plus 1/32 inch or minus 0 inch	X	
-over 1/16 inch to 1/4 inch stitching-margins (tolerance plus 1/32 inch or minus 0 inch) that exceed plus tolerance less than plus 1/16 inch		X
-over 1/16 inch to 1/4 inch stitching margins (tolerance plus 1/32 inch or minus 0 inch) that exceed tolerance more than plus 1/16 inch or more than minus 1/32 inch	X	
-over 1/4 inch to 1/2 inch stitching margins (tolerance plus 1/16 inch or minus 1/32 inch) that exceed tolerance by more than plus 1/16 inch or more than minus 1/32 inch	X	
-over 1/4 inch to 1/2 inch stitching margins (tolerance plus 1/16 inch or minus 1/32 inch) that exceed tolerance less than plus 1/16 inch or less than minus 1/32 inch		X
Seams not within tolerance of plus or minus 1/32 inch		
-up to 1/4 inch seams that exceed tolerance up to plus 1/32 inch		X
-up to 1/4 inch seams that exceed tolerance more then plus or minus 1/32 inch	X	
-over 1/4 inch seams that exceed tolerance up to plus 1/16 inch		X
-over 1/4 inch seams that exceed tolerance more than plus 1/16 inch or minus 1/32 inch	X	
More than ¼ inch but less than 1 inch raw edge		
More than 1 inch raw edge	X	

<sup>1/</sup> Fabric imperfections that would affect the appearance or the function of the anti-g garment shall be considered major defects.

<sup>2/</sup> The snap fastener shall be checked for proper function and attachment by snapping closed and unsnapping the snap fastener at least three times.

<sup>3/</sup> The hook assembly shall be checked by attaching the hook to the loop and closing the slide fastener. Alignment of the hook assembly shall not interfere with the slide fastener operation.

<sup>4/</sup> This classification of defect for stitching margins shall not apply to any stitching margins for which a tolerance has been specified in table VI. A stitching margin that is not within the tolerance specified in table VI shall be classified as a major defect.

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Note: The margins of this amendment are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment.

PAGE 57

\*Delete Custodian: Air Force – 11 and substitute with “Air Force – 99”

\*Delete Preparing Activity: Air Force – 11 and substitute with “Air Force – 82”

\*Delete Reviewer: Air Force – 82 and substitute with “Air Force – 11”

Custodian:  
Air Force – 99

Preparing activity:  
Air Force – 82

Reviewer:  
Air Force - 11

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