

SPECIFICATION CONVERSION TABLE AND DEVIATION PACKAGE

This package contains the Specification Conversion Table and active deviations applicable to US Army Airdrop. Not all deviations provided in this package will apply to this contract. A deviation shall only apply if its requirement is identified in the associated Technical Data Package (TDP) or contract. Any questions regarding applicability to this contract shall be addressed to the Contracting Officer.

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SPECIFICATION CONVERSION TABLE

1. The following is a tabulation of Parachute Industry Association (PIA) textile specifications which are to be used to replace MILITARY STANDARDS/SPECIFICATIONS. All specified acquisition requirements stated in the MILITARY STANDARDS/SPECIFICATIONS are the same as those specified in the PIA specifications unless otherwise specified in the Technical Data Package (TDP). Future revisions of drawings may or may not reference PIA specifications. The revision levels of the PIA specifications for use are identified in the following list and are obtained on [www.pia.com](http://www.pia.com). These revision levels shall be used unless amended by the contracting officer or otherwise stated in this document.

Textile specifications.

PIA-C-419B	Replaces	CCC-C-419
PIA-C-2001A	"	MIL-C-10296
PIA-C-2002A	"	CCC-C-419, CCC-D-950, NPS001
<b>PIA-C-2003A</b>	"	CCC-C-430
PIA-C-3395D	"	MIL-C-3395
PIA-C-3953F	"	MIL-C-3953
<b>PIA-C-5646D</b>	"	MIL-C-5646
<b>PIA-C-7020E</b>	"	MIL-C-7020
PIA-C-7219C	"	MIL-C-7219
PIA-C-7350D	"	MIL-C-7350
PIA-C-44375B	"	MIL-C-44375
PIA-T-43618C	"	MIL-T-43618
PIA-C-43805C	"	MIL-C-43805 and A-A-55183
PIA-C-44378D	"	MIL-C-44378
PIA-T-1001A*	"	MIL-T-6134, Type I only
<b>PIA-T-5038G</b>	"	MIL-PRF-5038
PIA-T-5661C	"	MIL-T-5661
<b>PIA-T-6134C</b>	"	MIL-T-6134, all types except Type I
PIA-T-87130B	"	MIL-T-87130
PIA-W-530B	"	MIL-W-530
<b>PIA-W-4088F</b>	"	MIL-W-4088
PIA-W-5625D	"	MIL-W-5625
PIA-W-5664B	"	MIL-W-5664
PIA-W-5665D	"	MIL-W-5665
<b>PIA-W-27265D</b>	"	MIL-W-27265
PIA-W-27657B	"	MIL-W-27657 and AMS 3718
PIA-C-2754C	"	T-C-2754
PIA-C-5040E	"	MIL-C-5040
PIA-C-7515D	"	MIL-C-7515

\*PIA-T-1001 replaces only Type I of MIL-T-6134.

1.A The following is a list of PIA textile specifications which are used in TDPs which do not replace military specifications. The revision levels of the following PIA specification shall be used in the solicitation/contract unless amended by the contracting officer.

PIA-W-1002B  
PIA-W-1100A\*

\*PIA-W-1100 replaces PIA-W-1003, -1004, -1005 and -1006.

2. The following is a tabulation of PIA textile specifications which may be used as direct replacements for MILITARY STANDARDS/SPECIFICATIONS. All specified acquisition requirements stated in the MILITARY STANDARDS/SPECIFICATIONS are the same as those specified in the PIA specifications unless otherwise specified in the TDP. Future revisions of drawings may or may not reference PIA specifications. The following specifications are obtained from [www.pia.com](http://www.pia.com) and the ASSIST database at: [www.assist.dsp.dla.mil](http://www.assist.dsp.dla.mil). The revision levels of the following specifications shall be used in the solicitation/contract unless amended by the Contracting Officer.

Textile specifications.

PIA-T-5666C	Replaces	MIL-T-5666 and A-A-55208
PIA-W-25361B	"	MIL-W-25361 and A-A-55242

3. The following is a tabulation of PIA hardware specifications which are to be used to replace MILITARY STANDARDS/SPECIFICATIONS. Future revisions of drawings may or may not reference PIA specifications. The following revision levels are obtained at [www.pia.com](http://www.pia.com), and shall be used in the solicitation/contract unless amended by the Contracting Officer or otherwise stated in this document.

Hardware standards.

<b>PS22002D</b>	replaces	MS22002
PS22003B	"	MS22003
PS22004C	"	MS22004
<b>PS22007C</b>	"	MS22007
PS22010B	"	MS22010
PS22014C	"	MS22014
PS22017C	"	MS22017
PS22018B	"	MS22018
PS22019B	"	MS22019

PS22020C	"	MS22020
PS22021B	"	MS22021
PS22022B	"	MS22022
<b>PS22040C</b>	"	MS22040
PS22042B	"	MS22042
PS22043B	"	MS22043
PS22044B	"	MS22044
PS22045A	"	MS22045
PS22046C	"	MS22046
PS22047C	"	MS22047
PS24553B	"	MS24553
PS27756B	"	MS27756
PS27762C	"	MS27762
PS27763B	"	MS27763
PS27764B	"	MS27764
PS27765B	"	MS27765
PS27767B	"	MS27767
PS70085B	"	MS70085
<b>PS70086C</b>	"	MS70086
PS70087B	"	MS70087
PS70092	"	MS70092
PS70099A	"	MS70099
PS70101C	"	MS70101
PS70102B	"	MS70102
<b>PS70104C</b>	"	MS70104
PS70105	"	MS70105
PS70106B	"	MS70106
PS70107B	"	MS70107
PS70108B	"	MS70108
PS70113B	"	MS70113
PS70114B	"	MS70114
PS70115B	"	MS70115
PS70116B	"	MS70116
PS70118B	"	MS70118
PS70120B	"	MS70120
<b>PS70121E</b>	"	<b>PS70119, MS70119, MS70121</b>
PS70123B	"	MS70123
<b>PS70124C</b>	"	MS70124
PS90295	"	MS90295
<b>PS90296A</b>	"	MS90296

4. The following is a tabulation of specifications which have been approved to replace canceled specifications. Types, classes, etc. remain the same between the replacement specification and the canceled specification. If not specified in the following list, the revision level for use is the latest revision level available at time of contract award unless amended by the Contracting Officer or otherwise stated in this document. The latest revision of the replacement specification may be obtained from the ASSIST database at: [www.assist.dsp.dla.mil](http://www.assist.dsp.dla.mil).

A-A-59291A	replaces	cancels	MIL-I-6903
A-A-55126B	"	"	MIL-F-21840
A-A-52080B	"	"	MIL-T-43435
PIA-H-7195B	"	"	MIL-H-7195
ASTM D 6193	"	"	FED-STD-751
ASTM-D-5486*	"	"	PPP-T-60
NASM 16491	"	"	MIL-G-16491
MIL-DTL-32075	"	"	DDD-L-20
A-A-52094A	"	"	V-T-276
A-A-59826	"	"	V-T-295
AMS-R-6855A	"	"	MIL-R-6855

\*Direct replacement for Type IV only

5. The following is a list of various colors, types and classes called out in specifications which supersede the requirements as specified in the TDPs. The TDPs may have been updated to reflect the changes, thus there may be duplication between this document and TDP requirements. NOTE: Personnel static lines manufactured IAW MIL-DTL-6645 are not included in this tabulation. Materials as specified in the TDP for construction of the static lines must be used.

#### 5.A Color.

When a shade of Olive Drab, Olive Green or Camouflage 483 is specified, use color Foliage Green 504 (FG 504).

When the Woodland Camouflage pattern is specified, use the Universal Camouflage pattern (Desert Sand 500, Urban Gray 501, and Foliage Green 502).

**When Gray 26270 is specified, use FED-STD-595 color number 26270.**

Reference FED-STD-595C for further information on color chip, color selection, color matching and quality control inspection.

#### 5.B Thread, nylon, A-A-59826.

The use of Types I, II or III, and Class A are authorized for use. When Class B is called out, use Class A. For size FF use Types I or II, Class A.

#### 5.C Tape and webbing, nylon, PIA-W-4088 and PIA-T-5038.

Except for PIA-T-5038 Type VII, the use of Class 2 is authorized. When a Class 1 or 1a is called out, Class 2 is authorized for use as an alternative. When Class 2 is called out, Class 1 or 1a is authorized for use as an alternative. For PIA-T-5038 Type VII, only Class 1 is authorized for use.

#### 5.D Cloth, duck, nylon, PIA-C-3953.

Where PIA-C-3953 Class 2 for parachute procurement only, 0.3–0.4 lbs warp/0.4–0.5 lbs filling, is called out, PIA-C-3953 Class 3 is authorized for use. Where PIA-C-3953 Class 2 extra stiff, 0.45–0.65 lbs warp/0.65–0.85 lbs filling, is called out PIA-C-3953 Class 2 is authorized for use, unless amended by the Contracting Officer.

**5.E Cloth, duck, plied-yarns, dyed, army duck, PIA-C-2002.**

Where PIA-C-2002, 8.25oz is called out, PIA-C-2002 Type I is authorized for use. Where PIA-C-2002, 12.29oz is called out, PIA-C-2002 Type II is authorized for use. Where PIA-C-2002, 8.25 or 12.29oz is called out, Type I or II is authorized for use, unless amended by the Contracting Officer.

**5.F Webbing, textile, elastic, PIA-W-5664.**

Where PIA-W-5664, Type I, Class 3, 1 ½ inch is called out, PIA-W-5664 Type I, Class 3, 1 ½ inch or Type I, Class 4, 1 ½ inch is authorized for use, unless amended by the Contracting Officer.

6. The following is a list of all active deviations for specifications, drawings and requirements.

<u>Specification/Requirement</u>	<u>Date</u>
A-A-59467	16 Dec 2009
A-A-59826	29 Oct 2010
MIL-C-43128C	20 Aug 2009
MIL-C-43734	22 March 2012
MIL-DTL-6645J	15 Jan 2013
MIL-DTL-7567C	15 Sept 2011
MIL-DTL-10884H	31 Dec 2012
MIL-DTL-32075	04 Jan 2008
MIL-DTL-44036	13 March 2008
MIL-STD-849C	13 Sept 2011
PS70121	31 Dec 2012
Alternative Mildew Treatment for Copper-8 Quinolinolate	31 Jan 2002
Color Shade Match Requirements	06 Sept 2011
ASTM D6193	15 May 2013

7. Bold print signifies updates to the document.

Engineering Support Changes to: A-A-59467, Webbing, Textile, Woven, Polypropylene

**Page 1, Paragraph 3.:**

- 1 **Delete sentence “The webbing shall be made with 100% Polypropylene yarn.” and**
- 2 **Replace with the following: “The webbing shall be made with 100% Polypropylene yarn and the yarn shall have an Ultraviolet Stabilization package.”**

Page 2, Paragraph 3.3:

- 1 Under “Requirement” column for “Weight” delete “1.4 to 1.8 oz/ yd” and substitute “1.40 to 1.95 oz/yd”.
- 2 Under “Requirement” column for “Elongation”, delete “11% to 15%” and substitute “10% (min)”.
- 3 Under “Requirement” column for “Elongation”, delete “(At the break) and substitute (At 3500 lbs) .
- 4 Under “Requirement” column for “Tensile Strength after Abrasion” delete “80%” and substitute “50%”.
- 5 Under “Test Method” column for “Tensile Strength” delete “ASTM-D-5035” and substitute “PIA STD 4108”.
- 6 Under “Test Method” column for “Elongation” delete “ASTM-D-5035” and substitute “PIA STD 4108”.
- 7 **Under “Requirements” column delete “1200 hours (min.)”. Under “Test Method” column for “Ultra-Violet Protection” delete “ASTM-D-3218 5/” add footnote “6/”.**
- 8 **under “Characteristic” and “Requirement” column delete “Abrasion” and delete “see para 3.5” .Under “Test Method” column for “Abrasion” delete “5309 6/”.**
- 9 **under “Test Method” column for “Tensile Strength after Abrasion” delete “ASTM-D-5035” and add “ASTM-D-6770 5/ and PIA STD 4108”.**
- 10 Footnote 4/ remove “ASTM-D-5035, Breaking Force and Elongation of Textile Fabrics (strip method)” and substitute “PIA STD 4108, Strength and Elongation, Breaking; Textile Webbing, Tape and Braided Items”.
- 11 **Delete footnote “5/ ASTM-D-3218, Standard Specifications for Polyolefin monofilaments.”**
- 12 **Change “footnote 6/ to footnote 5/”.**
- 13 Footnote 5/ remove “FED-STD 191, Federal Standard for Textile Test Methods- Standard Test Method 5309, Abrasion Resistance of Textile Webbing” and substitute “ASTM-D-6770, Standard Test Method for Abrasion Resistance of Textile Webbing (Hex Bar Method).”
- 14 **Add footnote “6/ A certificate of compliance shall be submitted and will be acceptable noting the percentage of Ultraviolet Stabilization package used in the final product.”**

Engineering Support Changes to: A-A-59467, Webbing, Textile, Woven, Polypropylene

Page 2, paragraph 3.4:

1. delete the following “The color shall be white or as specified in the contract or purchase order.”  
and add “The color shall be white or natural or as specified in the contract or purchase order.”

Page 3

1. add paragraph “5.4 End item performance testing. The webbing shall be tested for the characteristics listed in paragraph 3.3. The lot size shall be expressed in units of 1 linear yard. The sample units shall be 20 yards of webbing. The lot shall be unacceptable if one or more sample unit fails to meet any requirement specified. The sample size shall be as follows: Lot size (yards) Sample size (sample units) 800 or less 2 801 up to and including 22,000 3 22,001 and over 5

Page 3, paragraph 7.2 :

1. add “Parachute Industry Association Standard (PIA STD) (Referenced documents can be obtained through the PIA website at [www.pia.com](http://www.pia.com)) .

Deviation List  
 For  
 A-A-59826 dated 03 March 2009  
 Commercial Item Description, Thread, Nylon

Page 2, para 3.1 – Add the following to the end of the paragraph, “For multi-needle 301 stitch operations, Type I thread with a final twist of “S” may be used in the left (outer) needle(s).”

Page 5, para 3.3 – Add the following to the end of the paragraph, “Except for Breaking Strength and Elongation, the physical and chemical values specified in section 3 apply to the average of all the determinations made on a sample unit for test procedures. The lot size shall be expressed in units of one holder except for readymade bobbins which shall be expressed in units of one gross. The sample unit shall be one holder or sufficient holders to provide enough thread for the applicable tests. The inspection level shall be S-1 and the AQL for each characteristic, expressed in terms of defects per hundred units, shall be 6.5 for test failures.”

Page 5, para 3.3 – Delete contents TABLE VIII and replace with the following:

TABLE VIII. Physical characteristics and end item tests

Characteristic	Requirement Paragraph, Reference & Ratings	Test Method	Number of Determinations
Fiber identification (Nylon)	Para 3.0 <sup>6/</sup>	AATCC 20	1
Melting point 472°F (min)	Para 3.0 <sup>6/</sup>	AATCC 20	1
Bright, continuous multifilament	Para 3.0 <sup>6/</sup>	Visual	1
Bonding agent (as applicable)	Para 3.0 <sup>6/</sup>		
Direction of twist (Initial and final)	Para 3.1	ASTM D 204	3
Twist, TPI (Individual and final)	Para 3.2	ASTM D 204	3
Number of plies	Para 3.2	Visual	1
Length per pound	Para 3.2	ASTM D 1907	1
Breaking strength	Para 3.2	ASTM D 204 <sup>1/</sup>	5
Elongation	Para 3.2	ASTM D 204 <sup>1/</sup>	5
Colorfastness (as applicable)	Para 3.5		
Laundering (after 3 cycles)	3-4	AATCC 61, Procedure 1A <sup>2/, 3/, 4/</sup>	1
Light (after 40 hrs. or 170kJ)	3-4	AATCC 16, Opt 3 <sup>5/</sup>	1
Weathering (after 80hrs. or 340kJ)	3-4	AATCC 169, Opt 1 <sup>5/</sup>	1
Finish limitations (as applicable)	Para 3.8 <sup>6/</sup>		

<sup>1/</sup> Except that five determinations shall be made per sample unit, shall be reported on the test report, and shall all be at or above the minimum requirement

<sup>2/</sup> Specimens shall be dried after each of the 3 laundering cycles

<sup>3/</sup> Color transfer cloth evaluation shall not apply. No appreciable change in shade or loss of color of the tested specimen shall be visible when compared to the untested thread retained.

<sup>4/</sup> Rated using the AATCC Evaluation Procedure 1, Gray Scale for Color Change and Procedure 2, Gray Scale for Staining

<sup>5/</sup> Rated using the AATCC Evaluation Procedure 1, Gray Scale for Color Change

<sup>6/</sup> Unless otherwise specified a Certificate of Conformance shall be submitted and will be acceptable for the stated requirement

Deviation List  
 For  
 A-A-59826 dated 03 March 2009  
 Commercial Item Description, Thread, Nylon

Page 8 para 3.12 - Delete the following: "The finished thread shall conform to the quality of product established by this document. The occurrence of defects shall not exceed the contractor's own quality assurance standards and the quality assurance standards defined by the technical data in the bid package."

Replace with the following: "The finished thread shall conform to the quality of product established by this document. The occurrence of defects shall not exceed the contractor's own quality assurance standards as well as the following:

Thread on holder examination. Thread on the holder shall be examined for the defects listed in TABLE VIII. The lot size shall be expressed in units of one holder each except for readymade bobbins which shall be expressed in units of one gross. The sample unit shall be one holder except for readymade bobbins which shall be one gross. The inspection level shall be S-3 and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 4.0.

Thread on holder defects

Examine	Defect
Identification label	Missing, incorrect, incomplete, illegible, or insecurely attached.
Surface condition	Loose ply, cut, tear, chafe, slip, affecting strength of thread or interfering with easy location of end and initial unwinding.
Cleanliness	Dirt, spot, or stain clearly noticeable.
Finish	Other than specified. Uneven, lumpy, bare, or thin spots.

Thread as unwound examination. The thread shall be examined while unwinding for the defects listed in TABLE IX. All defects shall be counted regardless of their proximity to each other. The lot size shall be expressed in units of one holder each except for readymade bobbins which shall be expressed in units of one gross. The sample unit shall be one holder except for readymade bobbins which shall be one gross. The inspection level shall be S-3 and the AQL, expressed in terms of defects per hundred units, shall be 4.0.

Thread as unwound defects

Examine	Defect
Continuous length	Not in continuous length.
Knot	Size FF and finer thread averages more than one thread knot per 2 ounces. Size 3 and heavier thread averages more than one thread knot per 4 ounces.
Color	Other than specified. Uneven, apparent or successive layers or end to end.
Winding	Improperly or not firmly wound resulting in kinks, knots, entangling, or slippage during unwinding or otherwise affecting free unhampered unwinding of the thread.
Tackiness or adhesion	Strands adhere to each other or to holder affecting unwinding tension.

Deviation List  
for  
MIL-C-43128

Note: The purpose of this deviation is to remove the air permeability test requirement for MIL-C-43128 when it is used on item 11-1-7065, Ejector Spring, only

TABLE II. End item tests

- In the 'Characteristic' column, add "5/" to the 'Air permeability' end item test
- Add "5/Air permeability testing is not required for 11-1-7065, Ejector Spring" to the notes section of TABLE II

Deviation List  
For  
Military Specification MIL-C-43734  
Cloth, Duck, Textured Nylon

Page 7, para 3.7.4

Change the organic liquid from "...no wetting by n-dodecane" to "...no wetting by n-tetradecane"

Page 7, para 3.8

Change the pH requirement from "not less than 4.5 nor more than 8.5..." to "not less than 5.5 nor more than 9.0..."

Deviations to MIL-DTL-6645J  
Detail Specification Parachutes Personnel, General Specification for

Paragraph 3.6.4, modify to read as follows:

Each round canopy shall be marked for identification in accordance with figure 1, unless otherwise stated in the TDP for the associated item. The characters shall not be less than ½ inch high. The type designation, if applicable and as specified in the TDP for the associated item, shall precede the drawing number. The using service will insert the date the canopy is placed in service. The format of the date of manufacture shall be as follows: a text month followed by a four digit year (example: JUNE 2006) or a two digit month followed by a two or four digit year (example: 06/06 or 06/2006).

Modify paragraph 4.7.1 as follows:

The cloth of completed parachute canopy assemblies shall be tested for air permeability to determine compliance with the requirements of 3.5.1.2. The test shall be performed in accordance with ASTM D737, making five permeability readings (a minimum of one reading per section excluding the top) in every fourth gore starting with gore number 1; that is, gore numbers 1, 5, 9, etc. Each reading shall be taken at the approximate center, horizontally and vertically, of the gore section. The pilot chutes procured as separate items or as part of the parachute canopies or assemblies shall be subject to this permeability testing requirement, except that the number and locations of the readings shall be as specified by the procuring activity.

For MC-6, SF-10A canopies modify paragraph 4.7.1 as follows:

The cloth of the completed parachute canopy assemblies shall be tested for air permeability to determine compliance with the requirements of 3.5.1.2. The test shall be performed in accordance with ASTM D737 making five permeability readings (a minimum of one reading per section excluding the top) in every fourth gore starting with gore number 1; that is, gore numbers 1, 5, 9, etc. Each reading shall be taken at the approximate center, horizontally and vertically, of the gore section. When the required gore to be tested is a “blank” gore, both the “blank” gore and the “extended” gore shall be tested. In this case, a total of eight air permeability readings shall be made: 1 on the blank gore (panel A per TDP) and 7 on the extended gore that passes over it (panels E, F, G, H, I, J and K per TDP). The pilot chutes procured as separate items or as part of the parachute, canopies or assemblies shall be subject to this permeability testing requirement, except that the number and locations of the readings shall be as specified by the procuring activity.

Deviations to MIL-DTL-6645J  
Detail Specification Parachutes Personnel, General Specification for

For T-11 main parachutes, the following updates apply for air permeability sampling requirements:

Add the following to the end of pgh 3.5.1.2: “For the T-11 only: The average air permeability reading for any center panel or arm shall not exceed the upper limit nor be less than the lower limit of the fabric specification by over 20 percent.”

Add the following new paragraphs:

4.7.1.2 Air permeability, T-11.

The cloth of completed T-11 canopy assemblies shall be tested for air permeability requirements of 3.5.1.2. The test shall be performed in accordance with ASTM D737. Forty (40) Air permeability readings shall be taken in the locations referenced in Figure 3 below. Each reading shall be taken at the approximate center, horizontally and vertically, of each section. The average of the canopy and center panel/arms shall meet requirements identified in 3.5.1.2.

4.7.1.2.1 T-11 sampling, center section: four (4) readings shall be taken from each of the 7 continuous panels in the center section as directed in Figure 3 below. Continuous panels run along the direction of a main seam. The 4 readings from one continuous center panel shall be averaged together and reported. There are a total of 7 center panels and the average of each center panel shall be within the acceptable range stated in pgh 3.5.1.2.

4.7.1.2.2 T-11 sampling, arms: 3 readings shall be taken from each arm, using Figure 3 as a reference. One reading shall be taken from each continuous panel in the arm, at any section location. The 3 readings shall be averaged together and reported. There are a total of 4 arms and the average for each arm shall be within the acceptable range stated in pgh 3.5.1.2.

Deviations to MIL-DTL-6645J  
Detail Specification Parachutes Personnel, General Specification for

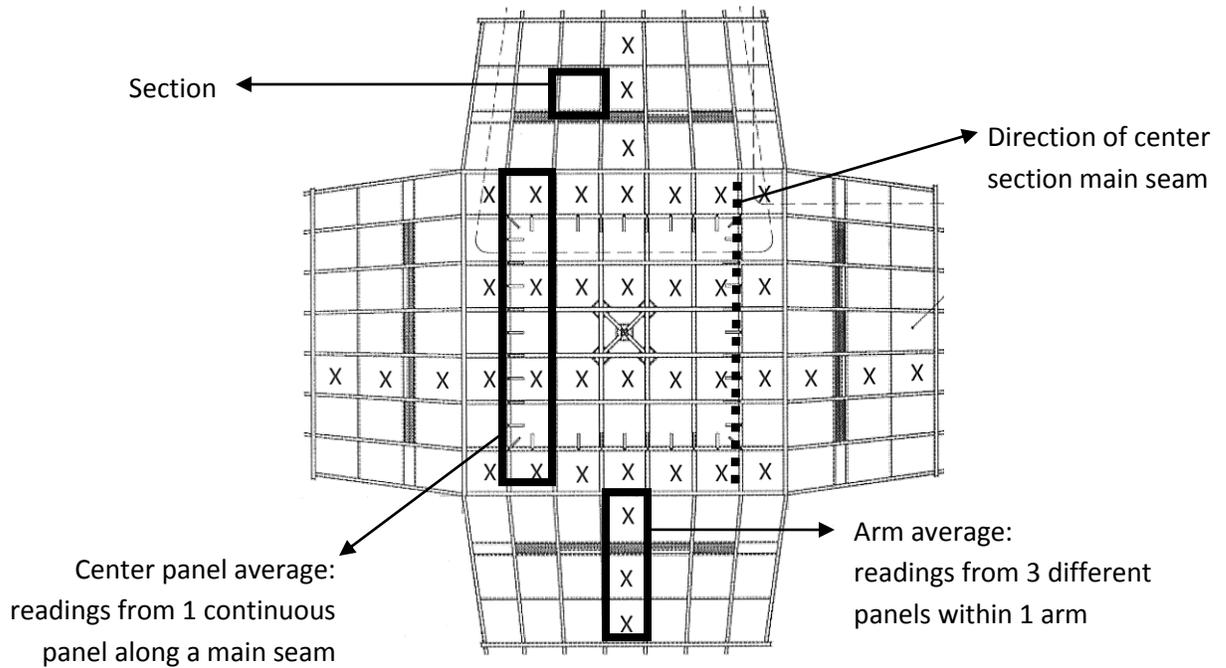


FIGURE 3. Reference schematic for T11 air permeability sampling

NOTE: Taken from drawing 11-1-7104.

It is important to note that in the center section, the test locations and averages are tied to the direction of the continuous panels. Test locations in the arms can be at any section in the continuous panel.

Deviation List  
for  
Detail Specification MIL-DTL-7567C  
Parachutes, Personnel, Detail Manufacturing Instructions For

Paragraph 3.4.5.10, Section E.

Change from:

e. Four-needle repairs shall be a minimum of 36 inches apart per seam. Not more than 2 such defects and 14 per canopy shall be permitted.

To:

e.i Four-needle repairs shall be a minimum of 36 inches apart per seam. Not more than 2 such defects per seam and 14 per canopy shall be permitted.

e.ii Repairs on SF-10A and T-11R shall be a minimum of 36 inches apart per seam. Not more than 2 such defects are allowed per main seam. The number of main seams repaired shall not be more than half the number of main seams on the canopy.

e.iii Repairs on T-11 Main shall be a minimum of 36 inches apart per seam. Not more than 3 such defects are allowed per seam.

Paragraph 3.6, change to read as follows:

3.6 Harnesses, risers, static lines, bridle lines, straps, lanyards, and pockets.

a. Stitching shall lie smoothly on the webbing or tape without looping. The tension of the needle and bobbin thread shall be equal. The thread lock shall be embedded in the webbing or tape.

b. The complete removal and replacement of 3 or 4 point stitch patterns shall not be conducted without the ESA oversight.

c. Broken stitches shall be reinforced by overlapping the stitching 4 stitches on either end of the break. Three reinforcements are allowed in the harness assembly, with no more than 1 reinforcement per stitch formation.

d. One skipped or missing stitch per stitch pattern will be acceptable on the harness, with a total of 3 skipped or missing stitches allowed per harness. In addition, 2 skipped or missing stitches will be acceptable in the zigzag stitching on the saddle assembly. Two consecutive skipped or missing stitches shall not be allowed.

e. A maximum of 3 loops in the harness stitching will be acceptable. No loop shall be in excess of 3/32 inch high or 1 stitch in length. Loops must be a minimum of 2 inches apart.

Deviation List  
for  
Detail Specification MIL-DTL-7567C  
Parachutes, Personnel, Detail Manufacturing Instructions For

f. A maximum of 3 fill yarns on the harness, damaged during stitching (needle damage) will be acceptable. Damaged yarns must not exceed 1/8 inch width and 3/8 inch in length.

g. Broken stitches, skipped stitches, missing stitches, loops, stitching repairs, and needle damage are not permitted in the 3 or 4 point stitching on static and bridle lines, and are not permitted on the risers, except that 1 skipped or missing stitch and 1 stitch repair will be permitted in the riser spreader bar.

Deviation for  
MIL-DTL-10884H Detail Specification Fasteners, Snap

The following deviation to the MIL Detail Specification is for the materials specified herein. For NASM27980 and NASM27983, parts MS27980-6B and MS27983-2:

Page 4, paragraph 3.1.3:

Phosphor Bronze Spring Wire. Replace “copper alloy 510 or ASTM B134” with “copper alloy 510 per ASTM B159”.

Deviation List  
for  
Military Specification MIL-DTL-32075

Page 6: Paragraph 3.2.4.1, delete and replace with: The basic cloth will be a nonwoven material of either spunbonded polyester made from 4.0 denier (44 Tex) continuous filament white polyester fiber, 80/20 polyester cellulose or 70/30 polyester cellulose material. The cloth fibers will be randomly dispersed and bonded at filament junctions. The overall weight of the basic cloth will not be more than 2.2 ounces per square yard when tested as specified in 4.2.3.

Page 6: Paragraph 3.2.4.2., delete first sentence and replace with “The impregnation coating will be a pigmented polyurethane, acrylic, nitrocellulose coating composed of white pigments such as clay, chalk, titanium dioxide, or blane fixe, and affixed by an appropriate polyurethane, acrylic or nitrocellulose resin when tested as specified in 4.2.3.”

Page 6: Table I, under Tearing strength, delete “lb.”, and substitute “grams”.

Page 6: Paragraph 3.2.4.1, line 2, delete “44 Tex”, and substitute “.44 Tex”.

Page 10: Paragraph 3.3.2.10, line 6, under “Service No.” delete “(approximately 1/8 inch)” and substitute “approximately 1 inch”.

13 March 2008

Deviation List  
for  
Detail Specification MIL-DTL-44036

Page 3, pgh. 4.3 Conformance inspection. In the first sentence, delete reference to pgh “4.5” and replace with “4.4”.

Deviation List  
for  
MIL-STD-849C  
Inspection Requirements, Definitions and Classification of Defects for Parachutes

Replace "MIL-STD-849B" on the header of each page with "MIL-STD-849C"

Page iii: Add to the end of the CONTENTS list:

"XX Classification of defects – cross-cruciform parachute canopies – Personnel  
XXI Classification of defects – deployment sleeve – Personnel"

Page 17: Delete TABLE I and replace with the following TABLE I document dated 08 September 2011

Page 19-28: Delete TABLE III and replace with the following TABLE III document dated 10 June 2010

Page 40-42: Delete TABLE VI and replace with the following TABLE VI document dated 13 September 2011

Page 43-44: Delete TABLE VII and replace with the following TABLE VII document dated 08 September 2011

Add the following TABLES to MIL-STD-849C:

TABLE XX. Classification of defects – cross-cruciform parachute canopies with slider – Personnel  
(dated 14 June 10)

TABLE XXI. Classification of defects – deployment sleeve – Personnel (dated 14 June 2010)

All tables: Change "Incorrect or defective material - Major" to "Incorrect material or material with major defects – Major"

**TABLE I. Personnel parachutes – guideline for maximum allowable errors per canopy.**

No.	Item	Classification	
		Major	Minor
1	Canopies (solid cloth, round, extended skirt)		
	Troop and rescue	0	8
	Emergency 24 feet	0	5
	Emergency 26 feet	0	6
	Emergency 28 feet	0	6
	Canopies (square, gliding type, main and reserve)	0	8
	Canopies (cross-cruciform)	0	8
2	Pilot chute and drogue	0	3
3	Deployment bag and diaper	0	3
4	Pack/container		
	Troop and rescue (excluding static line)	0	4
	Emergency (except chest style)	0	5
	Chest style (including reserve)	0	3
	Container (integrated main and reserve) without harness – MC-4 only	0	5
5	Harness	0	5
6	Riser	0	1
7	Static line	0	2
8	Integrated pack and harness	0	8
	Container (integrated main and reserve) with harness – MC-4 only	0	9
9	Bridle lines, straps, lanyards, and pockets	0	2
10	Spring assembly, ejector	0	3
11	Deployment sleeve	0	3

TABLE III. Classification of defects - solid and extended skirt parachute canopies - personnel.

No.	Classification of Defect	Classification	
		Major	Minor
1.	Improper assembly of vent reinforcement band	101	
2.	Vent reinforcement band overlap		
	Up to 1/4 inch minus		201
	Over 1/4 inch minus	102	
	Over 1 inch plus		202
3.	Vent hem outside stitching margin from edge of webbing		
	1/16 to 3/16 inch		203
	Over 3/16 inch	103	
	All rows of stitching not through reinforcement webbing	104	
4.	Vent loop length (finished dimension)		
	Up to 1/2 inch plus		204
	Over 1/2 inch plus	105	
	Minus direction any length	106	
5.	Vent line length (finished dimension)		
	Up to 1/4 inch		205
	Over 1/4 inch	107	
6.	Variation in vent line length per set		
	Up to 1 percent		206
	Over 1 percent	108	
7.	Twisted vent line (flat)	109	
8.	Twisted vent line (core or coreless braid)		
	Over 360 degrees		207
	Over 360 degrees, causing kinks in line when relaxed	110	
9.	Gore width at vent, centerline to centerline on main seam or as stated in TDP		
	Up to 1/4 inch		208
	Over 1/4 inch	111	
10.	Gore width at skirt, centerline to centerline on main seam or as stated in TDP		
	Up to 1/2 inch		209
	Over 1/2 inch	112	
11.	Cross and main seams, improper type or improper assembly	113	

TABLE III. Classification of defects - solid and extended skirt parachute canopies - personnel.

No.	Classification of Defect	Classification	
		Major	Minor
12.	Underfold (raw edge in main or cross seam)	114	
13.	Overfold in main seam		
	Up to 1/2 inch or extended into center channel		210
	Over 1/2 inch	115	
14.	Overfold in SF10-A and T11R main seam		
	1/8 up to 1/4 inch any length		211
	Over 1/4 inch any length	116	
15.	Underfold in main seam		
	A 4-needle seam not caught by 3 rows of stitches by at least 1/16 of an inch	117	
	3 intermittent underfolds of a 2-needle seam, up to 2 inches long and less than 12 inches apart		212
	More than 3 intermittent underfolds up to 2 inches long and less than 12 inches apart	118	
	Underfold more than 4 inches in length	119	
16.	Underfold in SF10-A and T11R main seam		
	1/8 up to 1/4 inch any length		213
	Over 1/4 inch any length	120	
17.	Overfold and underfold in cross seam		
	Underfold 1/8 to 3/16 inch and up to 8 inches long		214
	Underfold over 8 inches long	121	
	Up to 3 intermittent underfolds, 3/16 inch and up to 2 inches long, over 12 inches apart		215
	More than 3 intermittent underfolds, 3/16 inch and up to 2 inches long, and less than 12 inches apart	122	
	Overfold 1/8 to 1/4 inch, full length of seam		216
	Overfold over 1/4 inch any length	123	
18.	Overfold and underfold in SF10-A and T11R cross seam		
	Underfold		
	1/8 up to 1/4 inch any length		217
	Over 1/4 inch any length	124	
	Overfold		
	1/8 up to 1/4 inch any length		218
	Over 1/4 inch any length	125	

TABLE III. Classification of defects - solid and extended skirt parachute canopies - personnel.

No.	Classification of Defect	Classification	
		Major	Minor
19.	Fullness in seam width		
	Main seam		
	1/8 to 1/2 inch		219
	Over 1/2 inch	126	
	Cross seam		
	1/8 to 1/4 inch		220
	Over 1/4 inch	127	
20.	Fullness not evenly distributed along radial tape of SF10-A canopy		221
21.	Wrinkles and pleats in cross and main seams		
	Cross seams		
	1/16 to 1/8 inch and 1 per seam		222
	1/16 inch and more than 1 per seam	128	
	1/16 inch and more than 6 per canopy	129	
	Over 1/8 inch	130	
	Main seams (canopies up to 35 feet in diameter)		
	1/16 to 1/8 inch and 1 per seam		223
	1/16 to 1/8 inch and more than 1 per seam	131	
	1/16 to 1/8 inch and more than 6 per canopy	132	
	Over 1/8 inch	133	
	Main seams (canopies over 35 feet and up to 65 feet in diameter)		
	1/16 to 1/8 inch and 2 per seam		224
	1/16 to 1/8 inch and more than 2 per seam	134	
	1/16 to 1/8 inch and more than 9 per canopy	135	
	Over 1/8 inch	136	
	Main seams (canopies over 65 feet in diameter)		
	1/16 to 1/8 inch and 3 per seam		225
	1/16 to 1/8 inch and more than 3 per seam	137	
	1/16 to 1/8 inch and more than 12 per canopy	138	
	Over 1/8 inch	139	
22.	Vent and skirt hems improperly formed		
	Raw edge showing	140	
	Intermittent underfold where edge is caught with 2 rows of stitching		226
	Underfold where edge is caught with 1 row of stitching	141	
23.	Vent hem fold over main seam around webbing not straight		227
24.	Matching of centerlines of seams when folded		

TABLE III. Classification of defects - solid and extended skirt parachute canopies - personnel.

No.	Classification of Defect	Classification	
		Major	Minor
	1/8 to 1/4 inch		228
	Over 1/4 inch	142	
25.	Wrinkles, pleats, or folds in skirt and vent hems that do not extend into the gore fabric		
	1/4 to 1/2 inch and 1 per gore		229
	Over 1/2 inch and more than 1 per gore	143	
	Over 1/2 inch and more than 12 per canopy up to 35 feet	144	
	Over 1/2 inch and more than 14 per canopy over 35 feet and up to 65 feet	145	
	Over 1/2 inch and more than 18 per canopy over 65 feet	146	
26.	Wrinkles, pleats, or folds in skirt and vent hems extending into the gore fabric		
	1/16 to 1/8 inch and 1 per gore		230
	Over 1/16 inch and more than 1 per gore	147	
	Over 1/16 inch and more than 6 per canopy up to 35 feet in diameter	148	
	Over 1/16 inch and more than 12 per canopy over 35 feet and up to 65 feet in diameter	149	
	Over 1/16 inch and more than 18 per canopy over 65 feet in diameter	150	
	Over 1/8 inch	151	
27.	Skirt hem outside stitching margin from edge of webbing		
	1/16 to 3/16 inch		231
	Over 3/16 inch	152	
	Any row of stitching not through skirt band webbing	153	
28.	Fold over of main seam around skirt webbing not straight		232
29.	Matching of centerline of seams when folded		
	1/8 inch to 1/4 inch		233
	Over 1/4 inch	154	
30.	Skirt hem formed by more than 2 pieces of tape or webbing unless otherwise specified on the applicable drawing	155	
31.	Tape or webbing used to form skirt hem does not extend across a minimum of 4 gores	156	
32.	Tucks, where section of gore fabric caught in stitching of seams or hems Up to 1/4 inch wide and up to 1/2 inch long		234

TABLE III. Classification of defects - solid and extended skirt parachute canopies - personnel.

No.	Classification of Defect	Classification	
		Major	Minor
	Over 1/4 inch wide regardless of length	157	
	Over 1/2 inch wide regardless of width	158	
33.	Mismatching of cross seams		
	First seam from vent over 2 inches and up to 2-1/2 inches		235
	First seam from vent over 2-1/2 inches	159	
	All other seams over 2-1/2 inches and up to 3 inches		236
	All other seams over 3 inches	160	
	All seams on SF10A greater than 1/2 inch	161	
34.	Vent lines out of sequence	162	
35.	Suspension and vent line overlap on canopy		
	Up to 1/8 inch minus		237
	Over 1/8 inch minus	163	
	Over 1/4 inch plus		238
36.	Suspension lines not in proper channel or lines crossed	164	
37.	Cut, frayed, or damaged suspension, control or vent lines	165	
38.	Variation in suspension line length per set, between vent and skirt		
	Up to 1/2 percent		239
	Over 1/2 percent	166	
39.	Variation in suspension line length between vent and skirt		
	Up to 1 percent		240
	Over 1 percent	167	
40.	Twisted suspension line, between vent and skirt (flat)		
	In channel, up to 360 degrees		241
	In channel, over 360 degrees	168	
41.	Twisted suspension line between vent and skirt (core or coreless braid)		
	Over 180 degrees to 360 degrees		242
	Over 360 degrees	169	
42.	Twist between line reinforcement at skirt and 3-inch zigzag stitching above the skirt, when suspension lines are continuous through canopy (measured by pulling line under 5 pounds of tension between vent and line reinforcement and observing the rotation of zigzag stitching)		

TABLE III. Classification of defects - solid and extended skirt parachute canopies - personnel.

No.	Classification of Defect	Classification	
		Major	Minor
	90 to 180 degrees		243
	Over 180 degrees	170	
	Line not placed between 2 ply's of material	171	
43.	Variation in suspension line length between skirt and attaching point		
	Up to 1 percent		244
	Over 1 percent	172	
44.	Variation in suspension line length per set between skirt and attaching point		
	Up to 1/2 percent		245
	Over 1/2 percent	173	
45.	Twisted suspension line between skirt and attaching point (flat), except hem rigged canopy		
		174	
46.	Twisted suspension line (flat), hem rigged canopy		
	180 to 360 degrees		246
	Over 360 degrees	175	
47.	Twisted suspension line between skirt and attaching point (core and coreless braid)		
	Over 360 degrees		247
	Over 360 degrees causing kinks in the line	176	
48.	Twisted suspension line between suspension line loop and attaching point on SF10-A canopy		
	Over 180 degrees	177	
49.	Suspension line length, main seams, extended gore trailing edge length and break slots out of symmetry on SF10-A canopy		
		178	
50.	Open seams		
	NOTE: Seams will be classified as open when one or more stitches joining a seam are broken or when two or more skipped stitches occur. Conditions repaired by reinforcement stitching as specified will not be scored as a defect.	179	
51.	Stitching on canopy		
	1 stitch per inch over or under the number specified, up to 2 inches long and one place per seam (size 3 through 6 thread)		248

TABLE III. Classification of defects - solid and extended skirt parachute canopies - personnel.

No.	Classification of Defect	Classification	
		Major	Minor
	1 stitch per inch over or under the number specified, over 2 inches long (size 3 through 6 thread)	180	
	More than 1 stitch per inch over or under the number specified (size 3 through 6 thread)	181	
	2 stitches per inch over or under the number specified, up to 2 inches long and one place per seam (size B through FF thread)		249
	2 stitches per inch over or under the number specified, over 2 inches long (size B through FF thread)	182	
	More than 2 stitches per inch over or under the number specified (size B through FF thread)	183	
	NOTE: For B or E size thread only, up to 14 stitches per inch, type 301 or 401 stitches in accordance with ASTM D 6193, will be allowed for a length not over 2 inches in any one place with a minimum distance between locations of 12 inches. Over 14 stitches, or 14 stitches more than 2 inches long or less than 12 inches apart, shall be classified a major defect. NOTE: When a double thickness or more occurs in fabric being sewn or where pressure must be applied by an operator to sew over reinforcement tapes and webbings, the number of stitches per inch defects will be classified as follows: within the major defect category, minor defect; and within the minor defect category, no defect. NOTE: When the end item specification forbids repair to defective stitching, it shall be classified as a major defect.		
	Broken or missing stitches	184	
	2 or more consecutive skipped stitches	185	
	Missing or incomplete stitch pattern (for example, bartack or zigzag)	186	
	Backstitch missing	187	
	Backstitch short		250
	Less than 1/4 inch		
	More than 1/4 inch	188	
	Runoff, 2 or more stitches into single cloth or beyond seam or hem margins	189	
	Up to 1/4 inch		251
	Over 1/4 inch	190	
	Zigzag stitches where less than 85 percent of the stitches penetrate through suspension lines	191	
	Tension too loose or too tight, up to 3 inches per seam		252
	Tension too loose or too tight, over 3 inches per seam	192	
	Loose or raveled bartack stitching	193	

TABLE III. Classification of defects - solid and extended skirt parachute canopies - personnel.

No.	Classification of Defect	Classification	
		Major	Minor
	Kinks, intermittent, less than 2 inches apart Stitch pattern lengths not as specified (stitch patterns up to 2 inches) NOTE: Bartack and Box-X stitch pattern lengths shall be according to TDP. Any deviations from TDP shall be classified as a major defect.		253
	More than 1/16 inch and up to 1/8 inch More than 1/8 inch Stitch pattern lengths not as specified (stitch patterns 2 to 5 inches) NOTE: Bartack and Box-X stitch pattern lengths shall be according to TDP. Any deviations from TDP shall be classified as a major defect.	194	254
	Over 1/8 inch shorter Over 1/8 inch longer Stitch pattern lengths not as specified (stitch patterns over 5 inches) NOTE: Bartack and Box-X stitch pattern lengths shall be according to TDP. Any deviations from TDP shall be classified as a major defect.	195	255
	Over 1/8 inch and up to 1/4 inch longer or shorter Over 1/4 inch shorter Over 1/4 inch longer	196	256
			257

NOTE: Stitch splice is used when a bobbin has run out or something similar during sewing; characterized by stitch overlap on one end

NOTE: Stitch repair is used when a section of stitching is removed and replaced due to defective stitching; characterized by stitch overlap on each end

52. Stitching splices and repairs on SF10-A and T-11R main seams with seam lengths up to 240 inches

NOTE: Splices shall be per the table listed in #53

More than 2 repairs per main seam	197
Repairs on more than half the number of main seams in the canopy	198

53. Frequency of repair to stitching and splicing on canopy shall be classified according to the following table.

More than the number of splices and repairs in the table	199
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<u>Length of seams (inches)</u>	<u>Splices per seam</u>	<u>Repairs per seam</u>
0 – 2	0	0
3 – 12	0	1
13 – 72	0	2
73 – 240	1	3
241 – 360	2	4
361 – 480	3	5
481 – 600	4	6
Skirt band	1 per 600 inches	1 per 100 inches

TABLE III. Classification of defects - solid and extended skirt parachute canopies - personnel.

No.	Classification of Defect	Classification	
		Major	Minor
54.	Length of splices and repairs to stitches		
	Overlap less than 2 inches	101a	
	Overlap from 4 inches to 7 inches		258
	Overlap more than 7 inches	102a	
55.	Needle damage (cuts or chews)		
	Up to 1/8 inch long and 1 per canopy up to 35 feet in diameter		259
	Over 1/8 inch long or more than 1 per canopy up to 35 feet in diameter	103a	
	Up to 1/8 inch long and 2 per canopy 35 feet in diameter and over		260
	Over 1/8 inch long or more than 2 per canopy 35 feet in diameter and over	104a	
56.	Holes (except necessary drill holes), linear cuts, tears, darns and repairs		
	NOTE: Cuts, tears, darns, and repairs are not permitted on mesh panels.		
	Holes, linear cuts, tears over 1/8 inch in diameter or over 1/4 inch long	105a	
	Darns, more than 1 per section	106a	
	Darns, more than 3 per canopy up to 50 feet in diameter	107a	
	Darns, more than 10 per canopy from 50 feet in diameter to 75 feet in diameter	108a	
	Darns, more than over 15 per canopy 75 feet in diameter and over	109a	
57.	Ends of webbing, tape, and cord not seared, scissor cut, waxed or serged as specified		261
58.	Improper routing of control line grouping	110a	
59.	Pocket band free length		
	Up to 1/8 inch		262
	Over 1/8 inch	111a	
60.	Pocket depth, centerline main seam to stitch pattern on skirt band		
	Up to 1/8 inch		263
	Over 1/8 inch	112a	
61.	Suspension line attaching loop, up to 2 inches in length		
	Note: On SF10A this refers to loop at bottom of line attachment loop		
	Up to 1/8 inch		264
	Over 1/8 inch	113a	
62.	Suspension line attaching loop, over 2 inches and up to 4 inches in length		
	Up to 1/4 inch		265

TABLE III. Classification of defects - solid and extended skirt parachute canopies - personnel.

No.	Classification of Defect	Classification	
		Major	Minor
	Over 1/4 inch	114a	
63.	Location of reefing line cutter bracket from edge of skirt		
	Up to 1/8 inch		266
	Over 1/8 inch	115a	
64.	Location of reefing line arming cord from edge of skirt		
	Up to 1/8 inch		267
	Over 1/8 inch	116a	
65.	Improper assembly, construction detail or viewer note per TDP	117a	
66.	Component missing per TDP	118a	
67.	Identification marking		
	Incorrect or missing	119a	
	Block stamp wording illegible		268
	Actual part number, contract number, serial number, DOM, or contractor CAGE code illegible	120a	
68.	Incorrect or defective material	121a	
69.	Dark identification threads not removed or markings not yellow (for special weapon parachutes, other than those identified as training units)		269
70.	Oil stains on canopy material		
	Stains greater than 1/4 inch <sup>2</sup>	122a	
	2 - 3 stains on a single gore section		270
	More than 3 stains on a single gore section	123a	
	More than a total of 4 inch <sup>2</sup> per entire canopy	124a	
71.	Material unclean (stain, oil, mold, etc.)	125a	
72.	Searing over stitching	126a	
73.	Thread ends not clipped		
	1/4 up to 2 inches		271
	Over 2 inches	127a	
	Over 1/2 inch at anti-inversion net	128a	

TABLE VI. Classification of defects - personnel parachutes packs or containers, and deployment bags.

No.	Classification of Defect	Classification	
		Major	Minor
1.	Incorrect or defective material	101	
2.	Seam folding		
	Improperly formed seam or hem exposing raveled edge of fabric	102	
3.	Binding tapes		
	Splicing of binding tape raw edge not turned under 1/4 inch		201
	Improperly attached, exposing raw edge of fabric	103	
4.	Finished dimensions for dimensions 10 inches or more		
	Up to 1/4 inch more or less than tolerance		202
	Over 1/4 inch more or less than tolerance	104	
5.	Grommet, cone and snap fastener spacing		
	1/16 to 1/8 inch		203
	Over 1/8 inch	105	
	Loose, broken, burrs or sharp edges	106	
	Improper method of installation (for example, base hole in fabric too large)	107	
6.	Assembly of grommets		
	All, improperly set, 2 or more exposed teeth for spur washers (except where grommet is set as specified but is in an area of unequal thickness that prevents uniform clinching)	108	
	Clinched loosely, allowing grommet to rotate in hole for spur washers	109	
	Clinched excessively tight, cutting fabric	110	
	Insecurely clinched, where grommet or washer may become disengaged	111	
	Roll of grommet contains splits, burrs or sharp edges	112	
7.	Snap		
	Location of lift-a-dot misaligned more than 10 degrees	113	
8.	Stitching		
	Up to 2 stitches per inch over or under the number specified, up to 2 inches in length		204
	Up to 2 stitches per inch over or under the number specified, over 2 inches in length	114	
	More than 2 stitches per inch over or under the number specified, and over 2 inches in length	115	
	Broken, skipped, missing, or runoff over 1/2 inch in length in any one place or over 1-1/2 inch total length per pack	116	
	Missing or incomplete stitch pattern (for example, bartack or cross box)	117	

TABLE VI. Classification of defects - personnel parachutes packs or containers, and deployment bags.

No.	Classification of Defect	Classification	
		Major	Minor
	Backstitch short		
	Less than 1/4 inch		205
	More than 1/4 inch	118	
	Runoff on edge binding, over 1/2 inch in any one place or over 1 inch in length per pack	119	
	Tension too loose or too tight, up to 4 inches per seam		206
	Tension too loose or too tight, over 4 inches per seam	120	
	Kinks, intermittent, less than 2 inches apart		207
	Stitch pattern lengths not as specified (stitch patterns up to 5 inches long)		
	Up to 1/8 inch		208
	Over 1/8 inch minus	121	
	Over 1/8 inch plus		209
	Stitch pattern lengths not as specified (stitch patterns over 5 inches long)		
	Up to 1/4 inch		210
	Over 1/4 inch minus	122	
	Over 1/4 inch plus		211
9.	Needle damage (cuts or chews)		
	Up to 1/4 inch and 1 per pack		212
	Over 1/4 inch or more than 1 per pack	123	
10.	Holes, darns, and repairs		
	Holes, 2 per pack under 3/16 inch diameter or less than 1/4 inch long		213
	Holes over 3/16 inch in diameter or 1/4 inch long	124	
	Holes, more than 2 per pack	125	
	Darns, more than 3 per pack	126	
11.	Improper assembly per TDP	127	
12.	Component missing per TDP	128	
13.	Ends of webbing, tape, and cord not seared, waxed, scissor cut or serged as specified		214
14.	Pleats over 1/16 inch		215
15.	Stow loop dimensions		
	23/32 and 25/32 dimensions		
	From 1/32 to 1/16 inch over tolerance and up to 5 per bag		216
	From 1/32 to 1/16 inch over tolerance and more than 5 per bag	129	
	Over 1/8 inch over tolerance	130	
	Over 1/16 inch below tolerance	131	

TABLE VI. Classification of defects - personnel parachutes packs or containers, and deployment bags.

No.	Classification of Defect	Classification	
		Major	Minor
	2-5/8 inch dimension between stitching		
	Up to 1/8 inch over tolerance and 5 per bag		217
	Up to 1/8 inch over tolerance and more than 5 per bag	132	
	Over 1/8 inch over tolerance	133	
	Over 1/16 inch under tolerance	134	
16.	Identification marking illegible, incorrect or missing		218
17.	Searing over stitching	135	
18.	Thread ends not clipped		
	1/4 inch up to 2 inches		219
	Over 2 inches	136	

TABLE VII. Classification of defects - personnel parachute harnesses, risers, static lines, bridle lines, straps, lanyards, and pockets.

No.	Classification of defects	Classification	
		Major/Critical	Minor
1.	Variations in lengths (finished dimensions leg strap, diagonal back straps and risers)		
	Up to 1 inch		201
	Over 1 inch	101	
	Static lines		
	Up to 1-1/2 inches		202
	Over 1-1/2 inches	102	
2.	Incorrect or defective material	103	
3.	Twisted back, chest, or leg straps	104	
4.	Ends of webbing, tape, and cord not seared, waxed, scissor cut or serged as specified		203
5.	Stitching		
	1 stitch per inch over or under the number specified, up to 2 inches in length		204
	1 stitch per inch over or under the number specified, over 2 inches in length	105	
	More than 1 stitch per inch over or under the number specified and over 2 inches in length	106	
	Any broken stitch	107	
	More than 1 stitch reinforcement per stitch formation	108	
	More than 3 stitch reinforcements per harness	109	
	More than 1 skipped stitch per stitch pattern	110	
	2 or more consecutive skipped stitches	111	
	More than 3 skipped stitches per harness	112	
	Loops in stitching		
	3/32 to 1/8 inch high		205
	Over 1/8 inch high	113	
	Loops more than 1 stitch in length	114	
	Loops spaced closer than 2 inches from one another	115	
	More than 3 loops per harness	116	
	Any broken stitch, skipped stitch, loop or stitch repair in 3 or 4 point stitching on static or bridle lines	117	
	Any broken stitch, skipped stitch, loop or stitch repair on risers	118	
	NOTE: 1 skipped stitch and 1 stitch repair will be permitted in the riser spreader bar		
	Missing or incomplete stitch pattern (for example, bartack or cross box)	119	
	Runoff, 2 or more stitches off webbing	120	
	Missing backstitch	121	
	Backstitch short up to 50%		206
	Tension too loose or too tight in any one row		
	Up to 2 inches		207
	Over 2 inches	122	
	Kinks, intermittent, less than 2 inches apart		208
	Stitch pattern length not as specified (stitch patterns up to 5 inches long)		
	Up to 1/8 inch		209
	Over 1/8 inch minus	123	
	Over 1/8 inch plus		210

TABLE VII. Classification of defects - personnel parachute harnesses, risers, static lines, bridle lines, straps, lanyards, and pockets.

No.	Classification of defects	Classification	
		Major/Critical	Minor
	Stitch lengths pattern not as specified (stitch patterns over 5 inches long)		
	Up to 1/4 inch		211
	Over 1/4 inch minus	124	
	Over 1/4 inch plus		212
	1 point on 3 and 4 point stitching does not carry over edge of webbing		213
	More than 1 point on 3 and 4 point stitching does not carry over edge of webbing	125	
	Loose or raveled bartack stitching	126	
	Bird nest (stitching nest)	127	
6.	Needle damage (cuts or chews)		
	1 cut warp end		214
	More than 1 cut warp end	128	
	Damage to filling yarn over 3/8 inch long or 1/8 inch wide	129	
	Damage to more than 1 fill yarn on the risers or static and bridle line webbing	130	
	More than 3 damaged filling yarns on the harness	131	
7.	Repairs		
	Broken or missing stitching not repaired by reinforcement	132	
	Repairs to risers and 3 or 4 point stitching on static and bridle lines	133	
8.	Improper assembly per TDP	134	
9.	Component(s) missing per TDP	135	
10.	Identification marking		
	Incorrect or missing	136	
	Block stamp wording illegible		215
	Actual part number, contract number, serial number, DOM, or contractor CAGE code illegible	137	
11.	Searing over stitching	138	
12.	Thread ends not clipped		
	Up to 2 inches		216
	Over 2 inches	139	

TABLE XX. Classification of defects – cross-cruciform parachute canopies with slider – personnel.

No.	Classification of Defect	Classification	
		Major	Minor
	NOTE: T-11 contains center section, arm section, and arm attaching seams		
1	Seams, improper type or improper assembly	101	
2	Underfold (raw edge in seam)	102	
3	Overfold and underfold in center section, arm section, and arm attaching seams		
	Underfold		
	1/8 up to 1/4 inch, any length		201
	Over 1/4 inch, any length	103	
	Overfold		
	1/8 up to 1/4 inch, any length		202
	Over 1/4 inch, any length	104	
4	Fullness in seam width		
	NOTE: T11 center section contains seams in one direction only and no cross seams. Fullness can occur in opposite direction where reinforcement tape is sewn to canopy cloth.		
	Arm or center section seams		
	1/8 to 1/2 inch		203
	Over 1/2 inch	105	
	Arm section cross-tapes		
	1/8 to 1/4 inch		204
	Over 1/4 inch	106	
5	Wrinkles and pleats in seams		
	NOTE: Pleat is defined as a fold sewn in fabric		
	Arm section cross-tapes		
	1/16 to 1/8 inch and 1 per seam		205
	1/16 inch and more than 1 per seam	107	
	1/16 inch and more than 6 per canopy	108	
	Over 1/8 inch	109	
	Arm section and center section seams		
	1/16 to 1/8 inch and 1 per seam		206
	1/16 inch and more than 1 per seam	110	
	1/16 inch and more than 6 per canopy	111	
	Over 1/8 inch	112	
	Center section seams connecting reinforcement panels		
	1/8 to 3/16 inch and 1 per corner		207

TABLE XX. Classification of defects – cross-cruciform parachute canopies with slider – personnel.

No.	Classification of Defect	Classification	
		Major	Minor
	1/8 inch and more than 1 per corner	113	
	Over 3/16 inch	114	
6	Skirt hems improperly formed		
	Raw edge showing	115	
	Intermittent underfold where edge is caught with 1 rows of stitching		208
	Underfold where edge is caught with 1 row of stitching		
	Up to 1/4 inch any length		209
	Over 1/4 inch any length	116	
7	Wrinkles, pleats, or folds in skirt hem that do not extend into the arm section		
	Up to 1/8 inch and 1 per gore		210
	Up to 1/8 inch and less than 4 per canopy		211
	Over 1/8 inch	117	
8	Wrinkles, pleats, or folds in skirt hem extending into the arm section		
	Up to 1/8 inch and 1 per gore		212
	Up to 1/8 inch and less than 4 per canopy		213
	Over 1/8 inch	118	
9	Skirt hem outside stitching margin from edge of webbing		
	1/16 to 3/16 inch		214
	Over 3/16 inch	119	
	Any row of stitching not through skirt band webbing	120	
10	Skirt hem formed by more than 2 pieces of tape or webbing	121	
11	Tucks, where section of fabric caught in stitching of seams or hems	122	
	NOTE: Tuck is defined as a shortening of material caused by pulling fabric up in folds and stitching across the gathered fabric		
12	Cut, frayed, or damaged suspension lines	123	
13	Twisted suspension line between skirt and attaching point	124	
14	Open seams	125	

TABLE XX. Classification of defects – cross-cruciform parachute canopies with slider – personnel.

No.	Classification of Defect	Classification	
		Major	Minor
	NOTE: Seams will be classified as open when one or more stitches joining a seam are broken or when two or more skipped stitches occur. Conditions repaired by reinforcement stitching as specified will not be scored as a defect.		
15	Stitching on canopy		
	2 stitches per inch over or under the number specified, up to 2 inches long and one place per seam		215
	2 stitches per inch over or under the number specified, over 2 inches long	126	
	More than 2 stitches per inch over or under the number specified	127	
	NOTE: For B or E size thread only, up to 14 stitches per inch, type 301 or 401 stitches in accordance with ASTM D 6193, will be allowed for a length not over 2 inches in any one place with a minimum distance between locations of 12 inches. Over 14 stitches, or 14 stitches more than 2 inches long or less than 12 inches apart, shall be classified a major defect.		
	NOTE: When the end item specification forbids repair to defective stitching, it shall be classified as a major defect.		
	Broken or missing stitches	128	
	2 or more consecutive skipped stitches	129	
	Missing or incomplete stitch pattern (for example, bartack or zigzag)	130	
	Backstitch missing	131	
	Backstitch short		
	Less than 1/4 inch		216
	More than 1/4 inch	132	
	Runoff, 2 or more stitches into single cloth or beyond seam or hem margins		
	Up to 1/4 inch		217
	Over 1/4 inch	133	
	Tension too loose or too tight, up to 3 inches per seam		218
	Tension too loose or too tight, over 3 inches per seam	134	
	Loose or raveled bartack stitching	135	
	Kinks, intermittent, less than 2 inches apart		219
	Stitch pattern lengths not as specified (stitch patterns up to 5 inches long)		
	NOTE: Bartack and Box-X stitch pattern lengths shall be according to TDP. Any deviations from TDP shall be classified as a major defect.		

TABLE XX. Classification of defects – cross-cruciform parachute canopies with slider – personnel.

No.	Classification of Defect	Classification	
		Major	Minor
	Over 1/8 inch shorter	136	
	Over 1/8 inch longer		220
	Stitch pattern lengths not as specified (stitch patterns over 5 inches long)		
	NOTE: Bartack and Box-X stitch pattern lengths shall be according to TDP. Any deviations from TDP shall be classified as a major defect.		
	Up to 1/4 inch longer or shorter		221
	Over 1/4 inch shorter	137	
	Over 1/4 inch longer		222
	NOTE: Stitch splice is used when a bobbin has run out or similar during sewing; characterized by stitch overlap on one end		
	NOTE: Stitch repair is used when a section of stitching is removed and replaced due to defective stitching; characterized by stitch overlap on each end		
16	Stitching repairs on center section, arm section, and arm attaching seams NOTE: Splices shall be per the Splice and Repair table listed in # 19 More than 3 repairs per main seam		138
17	Stitch repairs to center section cross-tapes NOTE: Splices shall be per the Splice and Repair table listed in # 19 More than 3 repairs per tape		139
18	Stitch repairs to arm section radial webbing NOTE: Splices shall be per the Splice and Repair table listed in # 19 More than 2 repairs per radial webbing		140
19	Total number of repairs and splices to stitching on canopy that is not addressed in no.'s 16, 17 or 18 shall be classified according to the following table. More than the number of splices and repairs in the table		141
	<u>Length of seams (inches)</u>	<u>Splices per seam</u>	<u>Repairs per seam</u>
	0-2	0	0
	3-12	0	1
	13-72	0	2
	73-240	1	3
	241 - 360	2	4
	361 - 480	3	5

TABLE XX. Classification of defects – cross-cruciform parachute canopies with slider – personnel.

No.	Classification of Defect	Classification	
		Major	Minor
	481 - 600 Skirt band	4 1 per 600 inches	6 1 per 100 inches
20	Length of splices and repairs to stitches NOTE: A single section of overlap stitching sewn with a multi-needle machine shall be considered one overlap Overlap less than 2 inches Overlap more than 4 inches	142	223
21	Needle damage (cuts or chews) Up to 1/8 inch long and 1 per canopy Over 1/8 inch long More than 1 per canopy	143	224
22	Holes (except necessary drill holes), linear cuts, tears, darns, and repairs. NOTE: Cuts, tears, darns and repairs are not permitted on mesh panels. Holes, linear cuts, tears over 1/8 inch in diameter or over 1/4 inch long Darns, more than 1 per section Darns, more than 3 per canopy	145 146 147	
23	Ends of webbing, tape, and cord not seared, scissor cut, waxed, or serged as specified		225
24	Splicing of any webbing or tape except hem tape	148	
25	Improper assembly, construction detail or view	149	
26	Any dimension outside of tolerance, except stitch patterns (see defect number 15)	150	
27	Any component missing	151	
28	Identification marking Incorrect, or missing Block stamp wording illegible Actual part number, contract number, serial number, DOM, or contractor CAGE code illegible	152 153	226
29	Incorrect or defective material	154	

TABLE XX. Classification of defects – cross-cruciform parachute canopies with slider – personnel.

No.	Classification of Defect	Classification	
		Major	Minor
30	Oil stains on canopy material		
	Stains greater than 1/4 inch <sup>2</sup>	155	
	2 - 3 stains on a single panel section		227
	More than 3 stains on a single panel section	156	
	More than a total of 4 inch <sup>2</sup> per entire canopy	157	
	NOTE: Single panel section refers to the square sections of cloth that are created in the center section by the grid-like pattern of the center section cross-tapes, and in the arm sections by the arm section radial webbings and horizontal french felled seams.		
31	Material unclean (stain, oil, mold, etc.)	158	
32	Searing over stitching	159	
33	Thread ends not clipped		
	1/4 up to 2 inches		228
	Over 2 inches	160	
34	Assembly of grommets		
	Improperly set, 2 or more exposed teeth for spur washers (except where grommet is set as specified but is in an area of unequal thickness that prevents uniform clinching)	161	
	Clinched loosely, allowing grommet to rotate in hole for spur washers	162	
	Clinched excessively tight, cutting fabric	163	
	Insecurely clinched, where grommet or washer may become disengaged	164	
	Roll of grommet contains splits, burrs, or sharp edges	165	

TABLE XXI. Classification of defects – deployment sleeve – personnel.

No.	Classification of Defect	Classification	
		Major	Minor
1	Incorrect or defective material	101	
2	Seam folding		
	Improperly formed seam or hem exposing raveled edge of fabric	102	
3	Stitching		
	Up to 2 stitches per inch over or under the number specified, up to 2 inches in length		201
	Up to 2 stitches per inch over or under the number specified, over 2 inches in length	103	
	More than 2 stitches per inch over or under the number specified and over 2 inches in length	104	
	Broken, skipped, missing, or runoff up to 1/2 inch in length in any one place or up to 1-1/2 inch total length per sleeve		202
	Broken, skipped, missing, or runoff over 1/2 inch in length in any one place or over 1-1/2 inch total length per sleeve	105	
	Missing or incomplete stitch pattern (for example, bartack or cross box)	106	
	Backstitch short		
	Less than 1/4 inch		203
	More than 1/4 inch	107	
	Tension too loose or too tight, up to 4 inches per seam		204
	Tension too loose or too tight, over 4 inches per seam	108	
	Kinks, intermittent, less than 2 inches apart		205
	Stitch pattern lengths not as specified (stitch patterns up to 5 inches long)		
	NOTE: Bartack stitch pattern lengths shall be according to TDP. Any deviations from TDP shall be classified as a major defect.		
	Over 1/8 inch minus	109	
	Over 1/8 inch plus		206
4	Needle damage (cuts or chew)	110	
5	Holes of any size	111	
6	Darns of any size	112	

TABLE XXI. Classification of defects – deployment sleeve – personnel.

No.	Classification of Defect	Classification	
		Major	Minor
7	Improper assembly, construction detail, or viewer note per TDP	113	
8	Component missing per TDP	114	
9	Ends of webbing and tape not seared, surged, scissor cut or waxed as specified		207
10	Pleats over 1/16 inch		208
11	Identification marking		
	Incorrect or missing	115	
	Block stamp working illegible		209
	Actual part number, contract number, serial number, DOM, or contractor CAGE code illegible	116	
12	Searing over stitching	117	
13	Thread ends not clipped		
	1/4 up to 2 inches		210
	Over 2 inches	118	
14	Edge of hook tape extends beyond folded edge of cotton	119	
15	Edge of loop tape extends beyond folded edge of cotton		211
16	Material unclean (stain, oil, mold, etc.)	120	

Deviation for  
Parachute Industry Association (PIA) Drawing PS70121 Revision E  
Snap, Connector-Parachute Chest Type Pack

The following deviation to the PS drawing is for the material specified herein. For Part Number PS70121-1, -2, -3, or -4

Sheet 5, Notes:

Material:

1B) Guard and Ear – Replace “ASTM A109” with “ASTM A109/A 109M”

1D) Rivet - Replace “ASTM A580” with “ASTM A580 or ASTM A493”

Alternative Mildew Treatment

31 January 2002

For

Copper-8-Quinalinaolate

1. When Technical Data Packages specify "Copper-8-Quinalinaolate" mildew resistant treatment for cotton textile materials, "Ultra-Fresh DM-50" as an alternative treatment is authorized for use.

2. The product may be obtained from: Eastern Color & Chemical Company  
35 Livingston Street  
Providence, RI 02904  
Telephone (401) 331-9000  
Fax (401) 331-2155

3. Textile materials which are treated with Ultra-Fresh DM-50 must so state the treatment in the Certificates of Compliance (C of Cs). The acceptable proof of treatment specified in the C of Cs is: "Tested in accordance with AATCC Test Method 30, Test III" and rated no more than "Microscopic Growth".

File: DM-50

Released by  
Date;

6 September 2011  
Supersedes  
19 March 1992

Color Shade Matching Requirements  
for  
Parachute Canopies, Personnel and Cargo

Finished parachute canopies made with cloth which meets finished color and matching requirements, as detailed in the cloth specification, shall be acceptable if fabricated with shade variation. This shade variation may be seen panel to panel, gore to gore, section to section, canopy to canopy, etc., and does not affect fit, form, or function. It is not considered a defect or poor workmanship, and is not cause for rejection of the parachute system.

Deviation for  
ASTM D6193  
Standard Practice for Stitches and Seams

Deviation to paragraph X1.4 and Figure X1.45

Zigzag stitches per inch (Types 304 and 308) shall be measured per Figure 35 in ANSI/AIAA S-017A as follows:

