INCH-POUND

MIL-STD-849B
25 July2001
SUPERSEDING
MIL-STD-849A
15 March 1974

DEPARTMENT OF DEFENSE
STANDARD PRACTICE

INSPECTION REQUIREMENTS, DEFINITIONS AND CLASSIFICATION OF DEFECTS FOR PARACHUTES

AMSC N/A **FSC 1670**

CONTENTS

CONTENTS

l. SCOPE

1.1 Scope. This standard establishes the inspection requirements and a standard classification of manufacturing and final assembly defects for parachutes.

1.2 Purpose. The purpose of this standard is to:

a. Provide a uniform standard of quality for determining the acceptability of parachutes and their components.

b. Standardize the inspection requirements for all parachute manufacturers.

c. Consolidate, into a single document, definitions of all parachute terms.

1.3 Application. This standard should apply when it is referenced in the specification or contract provisions.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in the tables of this standard. This section does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3, 4, and 5 of this standard, as well as those cited in the tables, whether or not they are listed.

2.2 Non-Government publications. The following document forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents that are DoD adopted are those listed in the issue of the Department of Defense Index of Specifications and Standards (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.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 6193	Standard Practice for Stitches and Seams (DoD adopted).

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

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

3. DEFINITIONS

3.1 General definitions. The following are the definitions for the two classifications of defects used in this standard.

3.1.1 Major defect. A major defect is a defect that is likely to result in failure, or to reduce the usability of the unit of product for its intended purpose.

3.1.2 Minor defect. A minor defect is a defect that is not likely to reduce the usability of the unit of product for its intended purpose, or is a departure from established standards having little bearing on the effective use or the operation of the unit.

3.2 Specific definitions of parachute terms.

3.2.1 Adapter. A rectangular metal fitting with a crossbar incorporated in a parachute harness to permit proper adjustment of harness.

3.2.2 Adapter, harness quick fit. An adapter in which a floating friction grip is used in lieu of a fixed crossbar.

3.2.3 Apex. The center and top most point of the parachute canopy.

3.2.4 Back pad. A pad attached to the inside of the harness to provide comfort for the wearer and help keep the harness in place.

3.2.5 Back strap. Part of the harness webbing extending across the back of the wearer. It may or may not be adjustable.

3.2.6 Bag, deployment. A type of container made of fabric and webbings in which a parachute canopy is packed.

3.2.7 Band, lateral. Webbing inserted in the hem of parachute canopies to reinforce edges of fabric and distribute the load. The lower lateral band is inserted in the skirt hem and the upper lateral band is inserted in the vent hem.

3.2.8 Band, pocket. A piece of textile tape or line attached at the outside of the skirt across main seams in such a manner as to cause the gores to be pulled outward at inflation.

3.2.9 Band, reinforcement. A tape or a ribbon inserted in various positions to reinforce weak points in a canopy.

3.2.10 Band, retainer. A rubber band used to hold folded suspension lines or static lines to deployment bags or parachute packs.

3.2.11 Bias. A cut or seam running obliquely across the threads of a fabric.

3.2.12 Binding. A piece of tape or fabric folded over and stitched to a raw edge of the fabric to prevent raveling or fraying.

3.2.13 Bottom, false. A piece of fabric sewed to the inside of a pack to retain the frame; it also serves as a base for stitching the suspension line retaining loops.

3.2.14 Breakcord. A thread or tape tied between parachute components that is intended to break under desired load during deployment.

3.2.15 Bridle. The cord attaching the pilot chute to the vent of a parachute canopy or to the deployment bag.

3.2.16 Burns, friction. Result of rapid rubbing together of two textile surfaces, generating frictional heat, which reduces tensile strength of the textile and causes the deterioration of individual threads.

3.2.17 Cable, ripcord. A flexible cable, usually made of corrosion resistant steel, joining the locking pins and the ripcord grip.

3.2.18 Canopy. The portion of a parachute consisting of the drag-producing surface and the suspension lines extended to one or more mutual confluence points.

3.2.18.1 Canopy, extended skirt. A canopy made from cloth having a flat circular center to which an annular ring is added.

3.2.18.2 Canopy, flat circular. A canopy made from cloth and constructed as a flat circular surface with a center orifice (vent) and consisting of a number of gores stitched together laterally, the joints forming the radial seams.

3.2.18.3 Canopy, guide surface. A canopy made from cloth similar to flat circular canopy except the alternate roof panels are extended to provide guide surfaces.

3.2.18.4 Canopy, ribbon. A canopy of flat circular design and composed of concentric cloth ribbons, supported by a number of radial ribbons and smaller supporting tapes.

3.2.18.5 Canopy, ring sail. A canopy of annular ring type developed on a spherical surface by a unique system of gore coordinates, basically shaped as a quarter sphere wherein slots in the gore are crescent shaped rather than trapezoidal (except on the crown).

3.2.18.6 Canopy, ring slot. A canopy of flat circular design made from wide concentric cloth strips with intervening air slots. The number of slots vary, depending upon canopy diameter.

3.2.19 Cap seam. The top seam of the pilot chute, which joins the gores and the duck cloth disk together.

3.2.20 Cascade. The junction of two groups of suspension lines before attachment to the risers on gliding type parachutes.

3.2.21 Cell. Two adjacent air intake passages between two adjacent groups of suspension lines.

3.2.22 Channel canopy. The space or opening through which the suspension lines are passed. It is formed by the overlapping of the fabric in the main seams, or by the addition of cover tape to the drag producing surface.

3.2.23 Chest protector. A pad fastened to the inside of the harness to absorb shock.

3.2.24 Chordwise. The direction in which the ribs are attached on the upper and lower glide surfaces.

3.2.25 Chordwise seams. The seams that attach the rib panels to the upper and lower glide surfaces.

3.2.26 Chest strap. A harness strap secured across the chest to prevent the wearer from falling out of the harness.

3.2.27 Chute. The term used interchangeably for the word "parachute."

3.2.28 Chimney effect. A change in the gradual tapering of the gores of the canopy resulting in constriction between the hem and vent.

3.2.29 Clevis. A u-shaped metal fitting with a hole in each end to receive a pin or bolt.

3.2.30 Clip, safety. A special shaped metal fitting used to prevent the accidental opening of the parachute harness release.

3.2.31 Cluster. Two or more parachutes that are attached to a single load and designed to open simultaneously.

3.2.32 Cone, pack. A small cone-shaped metal post, sewn to one of the side flaps of the pack, containing a drill hole through the cone near the top. Grommets positioned on the opposite flap of the pack are placed over the cones and ripcord pins are inserted in the cone hole to keep the pack closed.

3.2.33 Cord, arming. The cord that pulls the firing wire out of a reefing line cutter or other actuating device, thereby arming the device.

3.2.34 Corner, flap. A rectangular tab used on packs to add protection to the canopy when packed.

3.2.35 Cross port vent holes. The elliptical holes cut in the rib panels.

3.2.36 Cross seam. The sewn seam between adjacent main seams holding sections of the canopy gore together.

3.2.37 Crown. A fabric panel used to close or cover the apex vent in certain types of parachute canopies.

3.2.38 Cutter, reefing line. A device designed to cut through the reefing line of a canopy, normally incorporating a delay device (mechanical or pyro-technical), a power device (mechanical or pyro-technical), and a knife-edge cutter.

3.2.39 Dart. A short tapered seam.

3.2.40 Diameter, constructed (Dc). The designation of the size of a parachute canopy, based upon design dimensions.

3.2.41 D-ring. An item of hardware shaped like a "D" into which connector snaps are hooked.

3.2.42 Drogue. A fabric surface shaped like a cone, sometimes used as the name for a small first-stage parachute canopy in a system.

3.2.43 Elastics, pack-opening. Rubber or metal springs with a means of attaching at each end, installed on the pack under tension and used to separate end flaps from side flaps when the parachute ripcord is pulled.

3.2.44 Eye. A small steel-wire loop attached to the pack, into which is fastened a hook of a pack opening elastic.

3.2.45 Eyelet. Small metal reinforcement for a hole in fabrics. It is thinner and smaller than a grommet and has no washer.

3.2.46 Flap, bag or pack. A fabric extension on a side or end of the pack designed to enclose and protect the canopy.

3.2.47 Flap, locking pin protector. A flap that covers the locking pins and cones to prevent the pack from being opened by any means other than pulling the ripcord.

3.2.48 Flaring. Method of splitting, taping, and stitching the end of webbing to widen it and prevent it from slipping through an adapter.

3.2.49 Glide surfaces, upper and lower. The spanwise panels that form the top and bottom glide surfaces.

3.2.50 Gore. The portion of a canopy between two adjacent suspension lines or radial seams.

3.2.51 Grommet. A metal eyelet and washer used as a reinforcement around a hole in fabric.

3.2.52 Handle, ripcord. A metal loop that provides a grip for pulling locking pins from the locking cones on ripcord actuated parachutes.

3.2.53 Hardware. All metal fittings used on parachutes, parachute systems, and suspended loads.

3.2.54 Harness. An arrangement of webbings and hardware designed to conform to the shape of the load in order to secure it properly and to distribute the stress from the opening shock and the weight of the load.

3.2.55 Hem. Fabric folded back upon itself and sewn in this position to form both the peripheral edge and the vent of the canopy.

3.2.56 Hem rigged canopy. A canopy whose suspension lines are attached to the skirt hem and do not pass over the drag-producing surface.

3.2.57 Hesitator, skirt. A device that restricts the skirt of the canopy, thus preventing inflation until completion of snatch force, at which time the hesitator line breaks and allows inflation of the canopy.

3.2.58 Hook, pack opening, elastic. A small formed steel-wire device attached to each end of a pack-opening elastic that hooks into eyes sewn on the pack.

3.2.59 Housing, ripcord. A flexible metal tube in which the ripcord is placed.

3.2.60 Junction. The physical attachment of groups of suspension lines or control lines to each other.

3.2.61 Keeper. A length of webbing sewn on a pack or around suspension lines or risers, and adjusted to hold the pack firmly to the harness or the load on which it is used, or to form a confluence point for suspension lines or risers to prevent relative movement of lines or risers.

3.2.62 Knot, clove or half hitch. A type of knot commonly used for attaching the suspension lines of a parachute to the connector links.

3.2.63 Knot, overhand. A simple knot tied in each running end of a piece of cord above a square knot or surgeon's knot to prevent the ends from slipping back through the knot.

3.2.64 Knot, square. A strong knot for joining two cords or lines that does not slip or loosen easily.

3.2.65 Knot, surgeon's. A type of knot commonly used for tying nylon threads or cords in place of a square knot to prevent mis-tying.

3.2.66 Lanyard. A length of cord, webbing, or other material used to retain parachute subassemblies to each other or a device used to activate the deployment of a parachute system.

3.2.67 Leading edge. The front area in which the air enters the canopy.

3.2.68 Leading edge seams. The two seams sewn on the leading edge in the spanwise direction.

3.2.69 Leg strap. The retention strap, which is part of the harness, used to secure the harness to the wearer's legs.

3.2.70 Lift web. The main harness webbing.

3.2.71 Line, guide or control. Two or more parachute lines that run from a slot or orifice in a steerable canopy to the risers. Control lines for a gliding parachute are connected from the trailing edge to a cascade and routed to the risers.

3.2.72 Line, reefing. A length of cord or line passed through rings on the skirt of the drag-producing surface to delay or control opening of the canopy.

3.2.73 Line, static. A line, webbing, or cable used to open a pack or to deploy the canopy, one end of which is fastened to the pack, canopy, or deployment bag, and the other to some part of the launching vehicle.

3.2.74 Line, suspension. Cords or webbing that connect the drag-producing surface to the harness or the load.

3.2.74.1 Line, suspension, flat. A line made of tape or webbing.

3.2.75 Lines, vent. The lines that cross the vent of a canopy.

3.2.76 Line reinforcement (V tabs or butterfly). A tape wrapped tightly about the suspension line and sewn to the suspension line and skirt hem.

3.2.77 Link, connector. An item of hardware used to connect suspension lines at the load attaching point.

3.2.78 Link, connector, separable. A readily separated link to facilitate assembly of risers to suspension lines.

3.2.79 Loop, locking. A loop sewn to the deployment bag or canopy to sequence the opening of a parachute assembly.

3.2.80 Loop, retaining. A loop of webbing or tape used to hold folded lines or excess webbing in position.

3.2.81 Loop, stow. A tape, webbing, or elastic band on a pack or deployment bag that holds suspension lines in position during the packing and opening process.

3.2.82 Lower cascade. The junction of control lines closest to the risers on gliding type parachutes.

3.2.83 Lug. A flat metal fitting attached to the ends of the harness webbing to provide attachment to the harness release.

3.2.84 Main seam. The seam sewn from skirt to vent holding gores together and used as a guide for the suspension line.

3.2.85 Nominal tension. One percent of the minimum breaking strength of the main strength-bearing material. A maximum pull for nominal tension should be 30 pounds.

3.2.86 Pack or container. The container that encloses the canopy or deployment bag in a packed condition and which provides a means of opening to allow deployment of the canopy.

3.2.87 Pack cover. A piece of duck or canvas material with a static line attached used to cover a packed canopy.

3.2.88 Pack frame. A rigid or flexible frame used to maintain the shape of the pack.

3.2.89 Pack, opening spring, band. A cloth covered steel spring assembly with a hook at each end that rapidly pulls the flaps away from the canopy allowing quick opening of the pack.

3.2.90 Panel. The portion of a canopy between two adjacent suspension lines or radial seams.

3.2.91 Parachute. An assembly consisting of canopy, risers, bridles, deployment bag, and, in some cases, a pilot chute. Pack and attaching webbings (harnesses) are a part of the parachute when they are built into the suspended load as an integral part of the load.

3.2.91.1 Parachute, airdrop (cargo chute). A parachute designed to deliver equipment or supplies from aircraft in flight.

3.2.91.2 Parachute, approach, landing. A parachute used in flight to improve jet aircraft flight characteristics during normal landing approach or in approach under marginal weather conditions.

3.2.91.3 Parachute, back-type. A parachute designed for attachment to the wearer's back.

3.2.91.4 Parachute, chest-type. A parachute designed for attachment to the wearer's chest.

3.2.91.5 Parachute, deceleration (drag). A parachute used on jet aircraft to decrease landing roll.

3.2.91.6 Parachute, extraction. A parachute used to extract cargo from aircraft in flight and to deploy cargo parachutes.

3.2.91.7 Parachute, personnel. A parachute used to lower personnel from aircraft in flight.

3.2.91.8 Parachute, recovery system. Normally these systems are comprised of static lines, a pilot chute, deployment bag(s), first stage parachute (used to decelerate and stabilize the load), intermediate parachute (used to further decelerate the load), final recovery parachute (used for final delivery of load to earth), and controlling/actuating devices.

3.2.91.9 Parachute, reserve. A second parachute, usually worn on chest of personnel making a premeditated jump, to be used in the event that the main parachute fails.

3.2.91.10 Parachute, seat-type. A parachute designed for attachment to the saddle of the harness and may serve as a seat cushion in certain types of aircraft.

3.2.91.11 Parachute, troop. A parachute used by paratroopers for a premeditated jump over a designated area.

3.2.91.12 Pilot chute. A small parachute used to accelerate deployment of the main parachute. Some pilot chutes are equipped with a metal spring device to open the canopy when released from the pack.

3.2.92 Pilot chute frame. A wire frame or spring used in the pilot chute to initiate the opening action of the chute upon release from the pack.

3.2.93 Pin, locking (ripcord). A short metal pin attached to the ripcord cable that is inserted into a pack cone to secure the flaps as a function of closing a parachute pack.

3.2.94 Pocket, log record. A small patch pocket sewn to the pack or riser for carrying the parachute log record.

3.2.95 Radial seam. The seam sewn from skirt to vent holding gores together and used as a guide for the suspension lines. This term is normally used in lieu of main seam for ribbon-type parachutes.

3.2.96 Reefing rings. The rings sewn to the skirt of a canopy at suspension line attaching points through which the reefing line is passed.

3.2.97 Reinforcement tapes. Any tape or webbing sewn to a pack or canopy at a point of high load to distribute the load and strengthen the fabric.

3.2.98 Release, canopy. A device that is designed to permit rapid separation of the canopy and risers from the suspended load.

3.2.99 Release, harness. A device that is designed to permit rapid release of the harness from the wearer.

3.2.100 Release, 3-ring. The rings and webbing that compose the mechanism of the main parachute release assembly.

3.2.101 Ribs. The airfoil shaped panels that are attached to the upper and lower gliding surfaces in the chordwise direction.

3.2.102 Rib panel reinforcements. The tapes that are sewn on the ribs.

3.2.103 Rib pocket. A pocket made by sewing lengths of tape to the pilot chute to contain the ends of the frame.

3.2.104 Ripcord. The device consisting of a ripcord grip, cable, and locking pins used to secure the folded parachute in the pack and to release the canopy for deployment.

3.2.105 Riser. A webbing connecting the harness or the suspended load and the suspension lines of a canopy.

3.2.106 Saddle. The part of the main lift web of the harness that provides a seat or sling for the wearer.

3.2.107 Searing. A method of cutting or sealing ends of nylon cord, tape, or webbing by melting them to prevent raveling.

3.2.108 Section. One of the pieces of cloth making up the gore of a canopy.

3.2.109 Serving. A method of wrapping or binding the ends of lines or cords to prevent raveling.

3.2.110 Shoulder strap. The harness webbing that crosses the shoulders of the wearer.

3.2.111 Skirt. The reinforced hem forming the edge of the canopy.

3.2.112 Slider. The reefing device that controls the opening of the canopy.

3.2.113 Slider reinforcements. The webbing and tapes that are sewn on the slider.

3.2.114 Spanwise. The direction of the leading and trailing edges, perpendicular to the direction of flight.

3.2.115 Spanwise seams. The seams that join the spanwise panels of the upper and lower glide surfaces.

3.2.116 Spring assembly, ejector. A device that assists the deployment of the pilot chute.

3.2.117 Trailing edge. The rear edge of the canopy to which the control lines are attached.

3.2.118 Trailing edge seams. The seams sewn on the trailing edge in the spanwise direction.

3.2.119 Upper cascade. Any junction of control lines before the lower cascade.

3.2.120 Vent. The opening at the top of a parachute canopy.

3.3 Specific definitions of parachute hardware terms and conditions.

3.3.1 Bend test. A prescribed method used to test ripcord pins for rigidity.

3.3.2 Crack. A clear crystalline break caused by localized stresses exceeding the rupture strength.

3.3.3 Hardness. The resistance to indentation or an indirect measure of tensile strength.

3.3.4 Laps. Folds in hot metal that have been rolled or forged into the surface but not welded to it.

3.3.5 Seam. An opening on the surface of metal that has been closed but not welded.

3.3.6 Soldering. The use of low melting point alloys to join metal parts.

3.3.7 Swaging. The joining of metal parts by pressure, such as in attaching ripcord locking pins to ripcord cable.

3.4 Specific definitions of parachute sewing terms and conditions.

3.4.1 Backstitch or backtack. The finishing of a row of stitching by sewing back over the origina1 stitching a short distance to retard raveling.

3.4.2 Bartack. A concentrated series of zigzag-like stitches used to reinforce points of stress.

3.4.3 Basting. A temporary stitching, usually with long loose stitches.

3.4.4 Broken stitch. A break in sewing thread.

3.4.5 Bunched stitching. Stitches too close or more stitches per inch than required.

3.4.6 Cross box. A sewing pattern that consists of a stitched box with an X sewn from corner to corner, usually at the end of a row of stitching to reinforce the seam.

3.4.7 Double W or 4-point. A sewing pattern that consists of two parallel rows of stitching with three equally spaced points between the parallel rows forming a double W or 4-point.

3.4.8 Folder. A device used as an attachment to a sewing machine to guide and fold fabric.

3.4.9 Gage. The measured distance between needles on a sewing machine. Also referred to as the capacity of a folder.

3.4.10 Hand tack. A stitch produced by hand sewing.

3.4.11 Loose stitches. Thread that does not lie smoothly on the surface of the fabric.

3.4.12 Margin. The space from the outer row of stitching to edge of the fabric or fold of the fabric.

3.4.13 Missing stitches. Space between stitches in the same row in which there is no thread.

3.4.14 Needle damage. The partial or complete yarn severance or fiber fusing caused by the needle passing through a fabric during sewing.

3.4.15 Overedge. The stitching around the outer edges of fabric that prevents the edges from raveling or fraying.

3.4.16 Overfold. An excess of material causing the edge of an inner fold to double, wrinkle, or pleat.

3.4.17 Overlap. The distance one material, thread, or cord extends over another material, thread, or cord.

3.4.18 Pleat. A fold sewn in fabric.

3.4.19 Runoff. Stitching not on seam or fabric.

3.4.20 Skipped stitches. Threads that are not interlocked.

3.4.21 Stitches per inch. The number of needle penetrations per linear inch where the threads are interlocked.

3.4.22 Stitching. Sewing, normally by machine, to join two or more pieces of fabric by thread.

3.4.23 Tight stitches. Thread under excess tension causing one sewing thread to lie on surface of fabric or causing puckering of fabric.

3.4.24 Uneven stitching. Inconsistent stitch length within a measured distance.

3.4.25 Tucks. A shortening of material caused by pulling fabric up in folds and stitching across the gathered fabric.

3.4.26 Underfold. Insufficient material folded inside a seam.

4. GENERAL REQUIREMENTS

4.1 Limitation of use. The conditions described in the defect listing herein will not be used for manufacturing purposes to extend specified tolerances of drawing requirements. Items should meet drawing requirements, therefore, immediate action will be taken to correct the causes of all defects. This document is not intended to cover all defects that may be encountered during the manufacture of parachutes and components. When deviations from the drawings or specifications are encountered that are not covered by this standard, final disposition by the procuring activity shall be required.

4.2 Interpretation of classification of defect tables. Conditions listed in tables I through XV apply only in the direction of tolerance specified in the applicable drawings, specification, or standard. When the tolerance is called out in one direction, for example, minus 1, the variation shall apply only in the minus direction. When the tolerance is called out plus or minus, the variation may be taken in either direction. Notes are included as necessary under description of defects to ensure clarity and preclude the misinterpretation of requirements.

5. DETAILED REQUIREMENTS

5.1 Inspections and tests.

5.1.1 Component and material inspection. Components and materials shall be inspected as specified in the applicable end item specification.

5.1.2 In-process inspection of the product.

5.1.2.1 Material cutting. Controls shall be established to assure the accuracy and serviceability of patterns and the accuracy of webbing and cord cutting tables.

5.1.2.2 Manufacturing. Inspection will be performed at the inspection stations established by the contractor to control the quality of the parachute systems and components during manufacture. Any defects found during in-process inspection are to be repaired in accordance with applicable manufacturing specification.

5.1.3 Final inspection of the product.

5.1.3.1 Examination of items. Each parachute assembly or component thereof will be inspected for all manufacturing operations and material requirements that have not been previously inspected and accepted through in-process inspection. The misassembly of any components or individual parachute system will be cause for rejection. The acceptance number for major defects shall be zero and the number of minor defects shall not exceed the quantities set forth in table I or II.

5.1.3.2 Examination of cloth, tape, and webbing. The cloth, tape, and webbing shall be examined visually to detect holes, snags, strains, stains, or other defects. Unless otherwise specified herein, encountered defects shall be classified in accordance with the classification of defect tables in the applicable material specification. Any material defects in the finished canopy (regardless of cause) that are minor will be acceptable, and any major or critical defect will be cause for the canopy to be rejected.

5.1.3.3 Examination of seams, hems, and stitching. The seams of canopies and pilot chutes will be examined for conformance with drawing details by projection of a 40-watt (minimum) fluorescent light through the canopy. Canopies made from tape and webbing shall be examined visually. Seams and hems shall be examined for the proper number of stitches per inch, broken or missing stitches, and proper construction. Defects discovered during these examinations will be classified in accordance with the classification of defect tables herein.

6. NOTES

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

6.1 Intended use. This document is intended for defining the major and minor classifications necessary to determine the acceptability of various parachutes for Government procurement purposes.

6.2 Past usage. Definitions of defects were previously provided in MIL-STD-105, "Sampling Procedures and Tables for Inspection by Attributes". General quality assurance terms were specified in MIL-STD-109, "Quality Assurance Terms and Definitions". These standards are no longer referred to in this document.

6.3 Subject term (key word) listing.

canopy	gliding	MIRPS	seams
cargo	harness	pack	skirt
cascade	hems	personnel	stitching
chute	main	reserve	tape
deployment	MC-4	ripcord	webbing

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

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

No.	Item	Classification	
		Major	Minor
1.	Canopies (solid, 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
2.	Pilot chute	0	3
3.	Deployment bag	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 – main canopy-4 (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

TABLE II. Cargo, deceleration, extraction, recovery, and special weapon parachutes – guideline for maximum allowable errors per canopy.

No.	Item	Classification	
		Major	Minor
1.	Canopies (solid, extended skirt)		
	Up to 25 feet in diameter	0	10
	Over 25 feet in diameter	0	20
	Over 50 feet in diameter	0	30
	Over 75 feet in diameter	0	40
2.	Canopies (ribbon and ring slot)		
	Up to 25 feet in diameter	0	10
	Over 25 feet in diameter	0	20
3.	Canopies (guide surface)	0	5
4.	Pilot chute	0	3
5.	Deployment bags and packs	0	10
6.	Risers, static lines, bridles, straps, retainers, and adapter webs	0	5

NOTE: In all of the following tables, all references in the form of "up to" are inclusive.

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

No.	Defect	Classification Major	Classification Minor
1.	Improper assembly of vent reinforcement band	101	
2.	Vent reinforcement band overlap		
	Up to 1/4 inch minus		201
	Over l/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 (cord or cordless 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		
	Up to 1/4 inch		208
	Over 1/4 inch	111	
10.	Gore width at skirt, centerline to centerline on main seam		
	Up to 1/2 inch		209
	Over 1/2 inch	112	

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

No.	Defect	Classification Major	Classification Minor
11.	Cross and main seams, improper type or improper assembly	113	
12.	Open seams	114	
	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 either restitching or overstitching as specified will not be scored as a defect.		
13.	Underfold (raw edge in main or cross seams)	115	
14.	Overfold in main seam		
	Up to 1/2 inch or extended into center channel		210
	Over 1/2 inch	116	
15.	Underfold in main seam		
	A 4-needle seam not caught by 3 rows of stitches by at least 1/16 inch	117	
	3 intermittent underfolds of a 2-needle seam up to 2 inches long and less than 12 inches apart		211
	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.	Overfold and underfold in cross seam		
	Underfold 1/8 to 3/16 inch and up to 8 inches long		212
	Underfold over 8 inches long	120	
	Up to 3 intermittent underfolds, up to 3/16 inch and up to 2 inches long, over 12 inches apart		213
	More than 3 intermittent underfolds, up to 3/16 inch and up to 2 inches long, and less than 12 inches apart	121	
	Overfold 1/8 to 1/4 inch, full length of seam		214
	Overfold over 1/4 inch any length	122	

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

No.	Defect	Classification Major	Classification Minor
17.	Fullness in seam width		
	Main seam		
	1/8 to 1/2 inch		215
	Over 1/2 inch	123	
	Cross seam		
	1/8 to 1/4 inch		216
	Over 1/4 inch	124	
18.	Wrinkles and pleats in cross and main seams		
	Cross seams		
	1/16 to 1/8 inch and 1 per seam		217
	1/16 inch and more than 1 per seam	125	
	1/16 inch and more than 6 per canopy	126	
	Over 1/8 inch	127	
	Main seams (canopies up to 35 feet in diameter)		
	1/16 to 1/8 inch and 1 per seam		218
	1/16 to 1/8 inch and more than 1 per seam	128	
	1/16 to 1/8 inch and more than 6 per canopy	129	
	Over 1/8 inch	130	
	Main seams (canopies over 35 feet and up to 65 feet in diameter)		
	1/16 to 1/8 inch and 2 per seam		219
	1/16 to 1/8 inch and more than 2 per seam	131	
	1/16 to 1/8 inch and more than 9 per canopy	132	
	Over 1/8 inch	133	
	Main seams (canopies over 65 feet in diameter)		
	1/16 to 1/8 inch and 3 per seam		220
	1/16 to 1/8 inch and more than 3 per seam	134	
	1/16 to 1/8 inch and more than 12 per canopy	135	
	Over 1/8 inch	136	
19.	Vent and skirt hems improperly formed		
	Raw edge	137	
	Intermittent underfold where edge is caught with 2 rows of stitching		221
	Underfold where edge is caught with 1 row of stitching	138	
20.	Vent hem fold over main seam around webbing not straight		222

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

No.	Defect	Classification Major	Classification Minor
21.	Matching of centerlines of seams when folded		
	1/8 to 1/4 inch		223
	Over 1/4 inch	139	
22.	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		224
	Over 1/2 inch and more than 1 per gore	140	
	Over 1/2 inch and more than 12 per canopy up to 35 feet	141	
	Over 1/2 inch and more than 14 per canopy over 35 feet and up to 65 feet	142	
	Over 1/2 inch and more than 18 per canopy over 65 feet	143	
23.	Wrinkles, pleats, or folds in skirt and vent hems extending into the gore fabric		
	1/16 to 1/8 inch and 1 per gore		225
	Over 1/16 inch and more than 1 per gore	144	
	Over 1/16 inch and more than 6 per canopy up to 35 feet in diameter	145	
	Over 1/16 inch and more than 12 per canopy over 35 feet and up to 65 feet in diameter	146	
	Over 1/16 inch and more than 18 per canopy over 65 feet in diameter	147	
	Over 1/8 inch	148	
24.	Skirt hem outside stitching margin from edge of webbing		
	1/16 to 3/16 inch		226
	Over 3/16 inch	149	
	Any row of stitching not through skirt band webbing	150	
25.	Fold over of main seam around skirt webbing not straight		227
26.	Matching of centerline of seams when folded		
	1/8 inch to 1/4 inch		228
	Over 1/4 inch	151	
27.	Skirt hem formed by more than 2 pieces of tape or webbing (personnel parachute canopy)	152	

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

No.	Defect	Classification Major	Classification Minor
28.	Skirt hem formed by more than 2 pieces of tape or webbing unless otherwise specified on the applicable drawing	153	
29.	Tape or webbing used to form skirt hem does not extend across a minimum of 4 gores	154	
30.	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		229
	Over 1/4 inch wide regardless of length	155	
	Over 1/2 inch wide regardless of width	156	
31.	Mismatching of cross seams		
	First seam from vent over 2 inches and up to 2-1/2 inches		230
	First seam from vent over 2-1/2 inches	157	
	All other seams over 2-1/2 inches and up to 3 inches		231
	All other seams over 3 inches	158	
32.	Vent lines out of sequence	159	
33.	Suspension and vent line overlap on canopy		
	Up to 1/8 inch minus		232
	Over 1/8 inch minus	160	
	Over 1/4 inch plus		233
34.	Suspension lines not in proper channel or lines crossed	161	
35.	Cut, frayed, or damaged suspension or vent lines	162	
36.	Variation in suspension line length per set, between vent and skirt		
	Up to 1/2 percent		234
	Over 1/2 percent	163	
37.	Variation in suspension line length between vent and skirt		
	Up to 1 percent		235
	Over 1 percent	164	

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

No.	Defect	Classification Major	Classification Minor
38.	Twisted suspension line, between vent and skirt (flat)		
	In channel, up to 360 degrees		236
	In channel, over 360 degrees	165	
39.	Twisted suspension line between vent and skirt (cord or cordless braid)		
	Over 180 degrees to 360 degrees		237
	Over 360 degrees	166	
40.	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)		
	90 to 180 degrees		238
	Over 180 degrees	167	
	Line not placed between 2 plys of material	168	
41.	Variation in suspension line length between skirt and attaching point		
	Up to 1 percent		239
	Over 1 percent	169	
42.	Variation in suspension line length per set between skirt and attaching point		
	Up to 1/2 percent		240
	Over 1/2 percent	170	
43.	Twisted suspension line between skirt and attaching point (flat), except hem rigged canopy	171	
44.	Twisted suspension line (flat), hem rigged canopy		
	180 to 360 degrees		241
	Over 360 degrees	172	
45.	Twisted suspension line between skirt and attaching point, cord and cordless braid		
	Over 360 degrees		242
	Over 360 degrees causing kinks in the line	173	

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

No.	Defect	Classification Major	Classification Minor
46.	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)		243
	1 stitch per inch over or under the number specified, over 2 inches long (size 3 through 6 thread)	174	
	More than 1 stitch per inch over or under the number specified (size 3 through 6 thread)	175	
	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)		244
	2 stitches per inch over or under the number specified, over 2 inches long (size B through FF thread)	176	
	More than 2 stitches per inch over or under the number specified (size B through FF thread)	177	
	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		
	Up to 1/4 inch	178	
	Over 1/4 inch	179	
	2 or more consecutive skipped stitches	180	
	Missing or incomplete stitch pattern (for example, bartack or zigzag)	181	
	Backstitch missing	182	

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

No.	Defect	Classification Major	Classification Minor
	Backstitch short		
	Less than 1/4 inch		245
	More than 1/4 inch	183	
	Runoff, 2 or more stitches into single cloth or beyond seam or hem margins	184	
	Up to 1/4 inch		246
	Over 1/4 inch	185	
	Zigzag stitches with less than 85 percent penetration through suspension lines	186	
	Tension too loose or too tight, up to 3 inches per seam		247
	Tension too loose or too tight, over 3 inches per seam	187	
	Kinks, intermittent, less than 2 inches apart		248
	Stitch pattern lengths not as specified (stitch patterns up to 5 inches long)		
	Up to 1/8 inch		249
	Over 1/8 inch minus	188	
	Over 1/8 inch plus		250
	Stitch pattern lengths not as specified (stitch patterns over 5 inches long)		
	Up to 1/4 inch		251
	Over 1/4 inch minus	189	
	Over 1/4 inch plus		252
47.	Frequency of repair to stitching and splicing on canopies, regardless of the number of rows of stitching in the seams in excess of that specified below, shall be classified a major defect	190	

Length of seams (inches)	Splices	Repairs
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 - Continued.

No.	Defect	Classification Major	Classification Minor
48.	Length of splices and repairs to stitches		
	Overlap less than 2 inches	191	
	Overlap from 4 inches to 7 inches		253
	Overlap more than 7 inches	192	
49.	Needle damage (cuts or chews)		
	Up to 1/8 inch long and 1 per canopy up to 35 feet in diameter		254
	Over 1/8 inch long or more than 1 per canopy up to 35 feet in diameter	193	
	Up to 1/8 inch long and 2 per canopy 35 feet in diameter and over		255
	Over 1/8 inch long or more than 2 per canopy 35 feet in diameter and over	194	
50.	Holes, darns, and repairs		
	Holes up to 1/8 inch in diameter or up to 1/4 in long	195	
	Darns, more than 1 per section	196	
	Darns, more than 3 per canopy up to 50 feet in diameter	197	
	Darns, more than 10 per canopy from 50 feet in diameter to 75 feet in diameter	198	
	Darns, more than over 15 per canopy 75 feet in diameter and over	199	
51.	Ends of webbing, tape, and cord not seared, waxed, or serged as specified		256
52.	Pocket band free length		
	Up to 1/8 inch		257
	Over 1/8 inch	101a	
53.	Pocket depth, centerline main seam to stitch pattern on skirt band		
	Up to 1/8 inch		258
	Over 1/8 inch	102a	
54.	Suspension line attaching loop, up to 2 inches in length		
	Up to 1/8 inch		259
	Over 1/8 inch	103a	

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

No.	Defect	Classification Major	Classification Minor
55.	Suspension line attaching loop, over 2 inches and up to 4 inches in length		
	Up to 1/4 inch		260
	Over 1/4 inch	104a	
56.	Location of reefing line cutter bracket from edge of skirt		
	Up to 1/8 inch		261
	Over 1/8 inch	105a	
57.	Location of reefing line arming cord from edge of skirt		
	Up to 1/8 inch		262
	Over 1/8 inch	106a	
58.	Improper assembly	107a	
59.	Component missing	108a	
60.	Identification marking illegible, incorrect, or missing		263
61.	Incorrect or defective material	109a	
62.	Dark identification threads not removed or markings not yellow (for special weapon parachutes, other than those identified as training units)		264
63.	Material unclean	110a	
64.	Searing over stitching	111a	

TABLE IV. Classification of defects – ring slot and ribbon parachute canopies.

No.	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 1/2 inch plus		202
3.	Vent loop length (finished dimension)		
	Up to 1/2 inch		203
	Over 1/2 inch	103	
4.	Vent line length (finished dimension)		
	Up to 1/4 inch		204
	Over 1/4 inch	104	
5.	Variation in vent line length per set		
	Up to 1 percent		205
	Over 1 percent	105	
6.	Twisted vent line (flat)	106	
7.	Twisted vent line cord or cordless braid		
	Over 360 degrees		206
	Over 360 degrees causing kinks in line when relaxed	107	
8.	Gore width at vent, measured centerline to centerline on adjacent radial seams		
	Up to 1/4 inch		207
	Over 1/4 inch	108	
9.	More or less than the required number of ribbons per gore	109	
10.	Spacing of horizontal ribbons (ribbon canopy)		
	Up to 3/16inch		208
	Over 3/16 inch	110	
11.	Spacing of verticals		
	Up to 1/4 inch		209
	Over 1/4 inch	111	

TABLE IV. Classification of defects – ring slot and ribbon parachute canopies - Continued.

No.	Defect	Classification Major	Classification Minor
12.	Slot width (ring slot canopy)		
	Up to 1/8 inch		210
	Over 1/8 inch	112	
13.	Leading and trailing edge of section hems (ring slot canopies only)		
	Underfolds where gore fabric is not butted flush with fold of hem and caught with 2 rows of stitches (when specified by drawing)	113	
	Intermittent underfolds up to 2 inches along seam length		211
	Underfold over 2 inches along seam length	114	
	Fullness between lines of stitching		
	Up to 1/8 inch		212
	Over 1/8 inch	115	
14.	Gore width at skirt, measured centerline to centerline on adjacent radial seams		
	Up to 1/4 inch		213
	Over 1/4 inch	116	
15.	Skirt reinforcement band overlap		
	Up to 1/4 inch minus		214
	Over 1/4 inch minus	117	
	Over 1/2 inch plus		215
16.	Improper assembly of skirt reinforcement band	118	
17.	Underfold (raw edge) skirt hem	119	
	NOTE: When raw edge is the result of overfolding, the edge extending more than 1/2 inch but less than 1 inch, the raw edge may be trimmed and will not be scored as a defect. If the condition extends more than 1 inch from the inside edge of the skirt hem, the stitching will be removed and the hem refolded and restitched.		
18.	Pleats (all hems)		
	1/8 to 1/4 inch and 1 per gore		216
	Over 1/8 inch and over 1 per gore	120	
	Over 1/8 inch and over 6 per canopy	121	
	Over 1/4 inch	122	

TABLE IV. Classification of defects – ring slot and ribbon parachute canopies - Continued.

No.	Defect	Classification Major	Classification Minor
19.	Tucks, where section of gore fabric is caught in stitching of hems	123	
20.	Vent lines out of sequence	124	
21.	Suspension lines crossed	125	
22.	Cut, frayed, or damaged suspension or vent lines	126	
23.	Radial and vertical seam length		
	Up to 1 percent		217
	Over 1 percent	127	
24.	Variation in radial seam length per canopy		
	Up to 1/2 percent		218
	Over 1/2 percent	128	
25.	Twist in radial seam	129	
26.	Variation in suspension line length		
	Up to 1 percent		219
	Over 1 percent	130	
27.	Variation in suspension line length per set		
	Up to 1/2 percent		220
	Over 1/2 percent	131	
28.	Twisted suspension line (flat), except hem rigged canopy	132	
29.	Twisted suspension line (flat), hem rigged canopy		
	180 to 360 degrees		221
	Over 360 degrees	133	
30.	Vertical tapes not equally spaced		
	From 1/2 to 1 inch		222
	Over 1 inch	134	
31.	Twisted suspension line (cord and cordless braid)		
	Over 360 degrees		223
	Over 360 degrees causing kinks in line	135	

TABLE IV. Classification of defects – ring slot and ribbon parachute canopies - Continued.

No.	Defect	Classification Major	Classification Minor
32.	Pocket band free length		
	Up to 1/8 inch		224
	Over 1/8 inch	136	
33.	Pocket depth, centerline of radial seam to stitch pattern on skirt band		
	Up to 1/8 inch		225
	Over 1/8 inch	137	
34.	Stitching on canopy		
	1 stitch per inch over or under the number specified, under 2 inches long and one place per seam (size 3 through 6 thread)		226
	More than 1 stitch per inch over or under the number specified (size 3 through 6 thread)	138	
	2 stitches per inch over or under the number specified, under 2 inches long and one place per seam (size E through FF thread)		227
	More than 2 stitches per inch over or under the number specified (size E through FF thread)	139	
	Variation in stitches per inch because of change in material thickness		
	Specified stitches per inch for not more than 3 inches on not more than two places per seam or not less than 36 inches apart, or both		228
	Specified stitches per inch for more than 3 inches on more than two places per seam or less than 36 inches apart, or both	140	
	Broken, skipped, or missing stitches over 1/2 inch in any one row of 4-needle stitching	141	
	Open seams	142	
	NOTE: Seams will be classified as open when one or more stitches joining a seam are broken or where two or more skipped stitches occur. Repairs of open seams will not be scored as defects.		
	Missing or incomplete stitch pattern (for example, bartack or zigzag)	143	
	Backstitch missing	144	

TABLE IV. Classification of defects – ring slot and ribbon parachute canopies - Continued.

No.	Defect	Classification Major	Classification Minor
	Backstitch short		
	Less than 1/4 inch		229
	More than 1/4 inch	145	
	Runoff, 2 or more stitches into single cloth or beyond seam or hem margins	146	
	Zigzag stitches with less than 85 percent penetration through suspension lines	147	
	Tension too loose or too tight, up to 3 inches per seam		230
	Tension too loose or too tight, over 3 inches per seam	148	
	Kinks, intermittent, less than 2 inches apart		231
	Stitch pattern lengths not as specified (stitch patterns up to 5 inches long)		
	Up to 1/8 inch		232
	Over 1/8 inch minus	149	
	Over 1/8 inch plus		233
35.	Frequency of repair to stitching and splicing on canopies, regardless of the number of rows of stitches in the seam in excess of that specified below, shall be classified as a major defect	150	

Length of seams (inches)	Splices	Repairs
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

36.	Needle damage (cuts or chews)		
	Up to 1/8 inch long and 1 per canopy up to 35 feet in diameter		234
	Over 1/8 inch long or more than 1 per canopy up to 35 feet in diameter	151	
	Up to 1/8 inch long and 2 per canopy 35 feet in diameter and over		235
	Over 1/8 inch long or more than 2 per canopy 35 feet in diameter and over	152	

TABLE IV. Classification of defects – ring slot and ribbon parachute canopies - Continued.

No.	Defect	Classification Major	Classification Minor
37.	Holes, darns, and repairs		
	Holes, 1 per canopy under 1/8 inch		236
	Holes, over 1/8 inch or more than 1 per canopy	153	
	Darns, more than 1 per gore	154	
	Darns, more than 10 per canopy up to 50 feet in diameter	155	
	Darns, more than 15 per canopy from 50 feet in diameter to75 feet in diameter	156	
	Darns, more than 20 per canopy 75 feet in diameter and over	157	
38.	Foldback of suspension lines at connector link or skirt attachment loop		
	Up to 1/4 inch minus		237
	Over 1/4 inch minus	158	
	Over 1/2 inch plus		238
39.	Misalignment of cutter pockets	159	
40.	Ends of webbing, tape, and cord not seared, waxed, or serged as specified		239
41.	Loop, up to 2 inches in length		
	Up to 1/8 inch		240
	Over 1/8 inch	160	
42.	Loop, 2 to 4 inches in length		
	Up to 1/4 inch		241
	Over 1/4 inch	161	
43.	Improper assembly	162	
44.	Component missing	163	
45.	Identification marking illegible, incorrect, or missing		242
46.	Incorrect or defective material	164	
47.	Dark identification threads not removed or markings not yellow (for special weapon parachutes, other than those identified as training units)	165	

TABLE IV. Classification of defects – ring slot and ribbon parachute canopies - Continued.

No.	Defect	Classification	
		Major	Minor
48.	Material unclean	166	
49.	Searing over stitching	167	

TABLE V. Classification of defects – pilot chutes.

No.	Defect	Classification	
		Major	Minor
1.	Inertia plate buffer missing	101	
2.	Inertia plate tape length		
	Up to 1/8 inch		201
	Over 1/8 inch	102	
3.	Impact tape, improper construction or assembly	103	
4.	Radial seam length		
	Up to 1/4 inch		202
	Over 1/4 inch	104	
5.	Gore width at skirt, centerline to centerline on radial seam		
	Up to 1/8 inch		203
	Over 1/8 inch	105	
6.	Skirt webbing overlap		
	Up to 1/4 inch minus		204
	Over 1/4 inch minus	106	
	Over 1/4 inch plus		205
7.	Seam folding (raw edge)	107	
8.	Pleats		
	1/16 to 1/8 inch and 1 per gore		206
	Over 1/8 inch or more than 1 per gore	108	
9.	Variation in suspension line length		
	Up to 1/2 percent		207
	Over 1/2 percent	109	
10.	Suspension line twisted		
	Over 360 degrees		208
	Over 360 degrees causing kinks in line	110	
11.	Suspension lines fold back or overlap skirt		
	Up to 1/8 inch minus		209
	Over 1/8 inch minus	111	
	Over 1/4 inch plus		210

TABLE V. Classification of defects – pilot chutes - Continued.

No.	Defect	Classification Major	Classification Minor
12.	Loop length		
	Up to 1/8 inch minus		211
	Over 1/8 inch minus	112	
	Over 1/4 inch plus		212
13.	Suspension line out of sequence at the loop collar	113	
14.	Spring tension below required loading	114	
15.	Spring not hand stitched to pilot chute cone	115	
16.	Stitching on pilot chute		
	Open seam		
	NOTE: Seam will be classified as open when one or more stitches joining a seam are broken or where two or more skipped stitches occur. Repair of open seams will not be scored as defects.	116	
	2 stitches per inch over or under number specified, one place per seam		213
	More than 2 per inch over or under number specified	117	
	Missing or incomplete stitch pattern	118	
	Backstitch missing or short		214
	Runoff, 3 or more stitches into single cloth or beyond seam or hem margins	119	
	Tension too loose or too tight up to 4 inches per seam		215
	Tension too loose or too tight over 4 inches per seam	120	
	Kinks, intermittent, less than 2 inches apart		216
	Stitch pattern lengths not as specified (stitch patterns up to 5 inches long)		
	Up to 1/8 inch		217
	Over 1/8 inch minus	121	
	Over 1/8 inch plus		218
	Stitch pattern lengths not as specified (stitch patterns over 5 inches long)		
	Up to 1/4 inch		219
	Over 1/4 inch minus	122	
	Over 1/4 inch plus		220
17.	Improper assembly	123	
18.	Component missing	124	

TABLE V. Classification of defects – pilot chutes - Continued.

No.	Defect	Classification	
		Major	Minor
19.	Identification markings illegible, incorrect, or missing		221
20.	Incorrect or defective material	125	
21.	Material unclean	126	
22.	Searing over stitching	127	

TABLE VI. Classification of defects – personnel parachute packs or containers and deployment bags.

No.	Defect	Classification Major	Classification 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		
	Up to 1/4 inch		202
	Over 1/4 inch	104	
5.	Grommet, cone and snap fastener spacing		
	1/16 to 1/8 inch		203
	Over 1/8 inch	105	
	Loose, broken, or sharp edges	106	
	Improper method of installation (for example, base hole in fabric too large)	107	
6.	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	108	
	More than 2 stitches per inch over or under the number specified and over 2 inches in length	109	
	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	110	
	Missing or incomplete stitch pattern (for example, bartack or cross box)	111	
	Backstitch short		
	Less than 1/4 inch		205
	More than 1/4 inch	112	
	Runoff on edge binding, over 1/2 inch in any one place or over 1 inch in length per pack	113	

TABLE VI. Classification of defects – personnel parachute packs or containers and deployment bags - Continued.

No.	Defect	Classification Major	Classification Minor
	Tension too loose or too tight, up to 4 inches per seam		206
	Tension too loose or too tight, over 4 inches per seam	114	
	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	115	
	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	116	
	Over 1/4 inch plus		211
7.	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	117	
8.	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	118	
	Holes, more than 2 per pack	119	
	Darns, more than 3 per pack	120	
9.	Improper assembly	121	
10.	Component missing	122	
11.	Ends of webbing, tape, and cord not seared, waxed, or serged as specified		214
12.	Pleats over 1/16 inch		215
13.	Stow loop dimensions		
	23/32 and 25/32 dimensions		
	From 1/32 to 1/16 inch plus and up to 5 per bag		216
	From 1/32 to 1/16 inch plus and more than 5 per bag	123	
	Over 1/8 inch plus	124	
	Over 1/16 inch minus	125	

TABLE VI. Classification of defects – personnel parachute packs or containers and deployment bags - Continued.

No.	Defect	Classification Major	Classification Minor
	2-5/8 inch dimension between zigzag stitching		
	Up to 1/8 inch plus and 5 per bag		217
	Up to 1/8 inch plus and more than 5 per bag	126	
	Over 1/8 inch plus	127	
	Over 1/16 inch minus	128	
14.	Identification marking illegible, incorrect, or missing		218
15.	Searing over stitching	129	

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

No.	Defect	Classification	
		Major	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.	Item or hardware missing	105	
5.	Ends of webbing, tape, and cord not seared, waxed, or serged as specified		203
6.	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	106	
	More than 1 stitch per inch over or under the number specified and over 2 inches in length	107	
	Broken, missing, or skipped stitches up to 1/2 inch in any one place		205
	NOTE: None permitted in risers or leg and chest straps. Broken stitches caused by needle penetrations by an over stitching pattern (for example, bartack or cross box) will not be scored as defects.		
	Loops in stitching due to stitching over varying thickness of webbings		
	3/16 to 3/8 inch in length		206
	Over 3/8 inch in length	108	
	Missing or incomplete stitch pattern (for example, bartack or cross box)	109	
	Runoff, 2 or more stitches off webbing	110	
	Missing backstitch	111	
	Backstitch short		207

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

No.	Defect	Classification Major	Classification Minor
	Tension too loose or too tight in any one row		
	Up to 2 inches		208
	Over 2 inches	112	
	Kinks, intermittent, less than 2 inches apart		209
	Stitch pattern length not as specified (stitch patterns up to 5 inches long)		
	Up to 1/8 inch		210
	Over 1/8 inch minus	113	
	Over 1/8 inch plus		211
	Stitch lengths pattern not as specified (stitch patterns over 5 inches long)		
	Up to 1/4 inch		212
	Over 1/4 inch minus	114	
	Over 1/4 inch plus		213
7.	Needle damage (cuts or chews)		
	1 cut warp end		214
	More than 1 cut warp end	115	
	Damage to filling thread over 3/8 inch	116	
	NOTE: Damage to more than 1 fill thread not allowed in risers or leg and chest straps.		
8.	Repairs		
	Broken or missing stitching not reinforced by restitching	117	
	NOTE: Repairs in risers and leg straps not permitted.		
9.	Improper assembly	118	
10.	Component(s) missing	119	
11.	Marking illegible, incorrect, or missing		215
12.	Searing over stitching	120	

TABLE VIII. Classification of defects – deployment bags and packs (other than personnel).

No.	Defect	Classification Major	Classification Minor
1.	Incorrect or defective material	101	
2.	Seam folding improperly formed or hem exposing raw 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, overall outside, including bag circumference		
	Up to 1/4 inch		202
	Over 1/4 inch	104	
5.	Grommet or snap fastener spacing		
	Up to 1/8 inch		203
	Over 1/8 inch	105	
6.	Loose, broken, or sharp edges on grommets, snaps, or eyelets	106	
7.	Improper method of grommet installation (for example, base hole in fabric too large)	107	
8.	Stitching on bags		
	2 stitches per inch over or under the number specified, up to 2 inches in length		204
	2 stitches per inch over or under the number specified, over 2 inches in length	108	
	More than 2 stitches per inch over or under the number specified and over 2 inches in length	109	
	Broken, skipped, or missing stitches over 1/2 inch in length in any one place or over 1-1/2 inch total length per bag	110	
	Missing or incomplete stitch pattern (for example, bartack or cross box)	111	
	Backstitch short		
	Less than 1/4 inch		205
	More than 1/4 inch	112	
	Runoff on edge binding, over 1/2 inch in length or over 1 inch in length per pack	113	

TABLE VIII. Classification of defects – deployment bags and packs (other than personnel) - Continued.

No.	Defect	Classification Major	Classification Minor
	Tension too loose or too tight, up to 4 inches per seam		206
	Tension too loose or too tight, over 4 inches per seam	114	
	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	115	
	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	116	
	Over 1/4 inch plus		211
9.	Pleats over 1/16 inch	117	
10.	Needle damage		
	Up to 1/4 inch and 2 per bag		212
	Over 1/4 inch or more than 2 per bag	118	
11.	Holes, darns, and repairs		
	Holes over 1/8 inch diameter	119	
	Holes, 3 per bag under 1/16 inch diameter		213
	Holes, more than 3 per bag	120	
	Darns and repairs		
	From 1/4 inch to 1/2 inch		214
	Over 1/2 inch	121	
	Darns, more than 4 per bag	122	
12.	Improper assembly	123	
13.	Component(s) missing	124	
14.	Ends of webbing, tape, and cord not seared, waxed, or serged as specified		215
15.	Marking illegible, incorrect, or missing		216
16.	Searing over stitching	125	

TABLE IX. Classification of defects – risers, static lines, bridles, straps, adapter webs, and retainers (other than personnel).

No.	Defect	Classification Major	Classification Minor
1.	Length (finished dimensions)		
	Up to 1 percent		217
	Over 1 percent	126	
2.	Incorrect or defective material	127	
3.	Twisted or malformed part	128	
4.	Spacing dimensions		
	Up to 1 percent		218
	Over 1 percent	129	
5.	Loop, up to 2 inches in length		
	Up to 1/8 inch		219
	Over 1/8 inch	130	
6.	Loop, over 2 inches up to 4 inches in length		
	Up to 1/4 inch		220
	Over 1/4 inch	131	
7.	Improper assembly	132	
8.	Component(s) missing	133	
9.	Stitching		
	2 stitches per inch over or under the number specified, up to 4 inches in length		221
	2 stitches per inch over or under the number specified, over 2 inches in length	134	
	More than 2 stitches per inch over or under the number specified and over 4 inches in length	135	
	Broken, missing, or skipped stitches over 1/2 inch in length	136	
	Loops in stitching due to varying thickness of webbings		
	1/8 to 1/4 inch		222
	Over 1/4 inch	137	

TABLE IX. Classification of defects – risers, static lines, bridles, straps, adapter webs, and retainers (other than personnel) - Continued.

No.	Defect	Classification Major	Classification Minor
	Stitch pattern length not as specified (stitch patterns up to 5 inches long)		
	Up to 1/8 inch		223
	Over 1/8 inch minus	138	
	Over 1/8 inch plus		224
	Stitch pattern length not as specified (stitch patterns over 5 inches long)		
	Up to 1/4 inch		225
	Over 1/4 inch minus	139	
	Over 1/4 inch plus		226
	Missing or incomplete stitch pattern (for example, bartack or cross box)	140	
	Runoff, over 1/2 inch in any one place	141	
	Backstitch short		
	Less than 1/4 inch		227
	More than 1/4 inch	142	
	Tension too loose or too tight in any one row		
	Up to 4 inches		228
	Over 4 inches	143	
	Kinks, intermittent, less than 2 inches apart		229
10.	Ends of webbing, tape, and cord not seared, waxed, or serged as specified		230
11.	Identification marking illegible, incorrect, or missing		231
12.	Dark identification threads not removed or markings not yellow (for special weapon parachute systems other than those identified as training units)	144	
13.	Materials unclean	145	
14.	Searing over stitching	146	

TABLE X. Classification of defects – personnel parachute, integrated pack and harness.

No.	Defect	Classification Major	Classification Minor
1.	Incorrect or defective material	101	
2.	Seam folding		
	Improperly formed seam or hem exposing raw edge of fabric	102	
3.	Binding tapes		
	Splicing of binding tape raw edge not turned under 1/4 inch		201
	End of binding tape improperly finished		202
	Corners of binding tape improperly formed, fold not stitched down		203
4.	Grommet, cones, and snap fasteners		
	Spacing		
	1/16 to 1/8 inch		204
	Over 1/8 inch	103	
	Loose, broken, or sharp edges	104	
	Improper method of installation (for example, base hole in fabric too large)	105	
	Location of lift-a-dot less than 10 degrees		205
	Location of lift-a-dot more than 10 degrees	106	
5.	Slide fasteners installed wrong side out	107	
	Opens in wrong direction	108	
6.	Loop, up to 2 inches in length		
	Up to 1/8 inch		206
	Over 1/8 inch	109	
7.	Loop, over 2 inches in length		
	Up to 3/16 inch		207
	Over 3/16 inch	110	
8.	Location of deployment gun attachment point		
	Up to 1/16 inch		208
	Over 1/16 inch	111	

TABLE X. Classification of defects – personnel parachute, integrated pack and harness - Continued.

No.	Defect	Classification Major	Classification Minor
9.	Location of clevis assembly on flap		
	Up to 1/32 inch		209
	Over 1/32 inch	112	
10.	Location of rip cord housing clamp		
	Up to 1/16 inch		210
	Over 1/16 inch	113	
11.	Holes, darns, and repairs (bag, flap, or pad)		
	Hole over 1/8 inch in diameter	114	
	3 holes under 1/16 inch		211
	More than 3 holes	115	
	More than 4 darns or repairs	116	
	1 darn or repair 1/4 inch to 1/2 inch		212
	Darns or repairs over 1/2 inch	117	
12.	Ends of webbing, tape, and cord not seared, waxed, or serged as specified		
	Reinforcement and binding		213
	Harness webbing, chest and leg straps	118	
13.	Variation in length of leg straps		
	Up to 1 inch		214
	Over 1 inch	119	
14.	Item of hardware missing	120	
15.	Twisted chest or leg straps	121	
16.	Lanyard length		
	Up to 1/4 inch		215
	Over 1/4 inch	122	
17.	Stitching		
	1 stitch per inch over or under the number specified, up to 2 inches in length		216
	1 stitch per inch over or under the number specified, over 2 inches in length	123	
	More than 1 stitch per inch over or under the number specified and over 2 inches in length	124	

TABLE X. Classification of defects – personnel parachute, integrated pack and harness - Continued.

No.	Defect	Classification Major	Classification Minor
	Broken, missing, or skipped stitches up to 1/2 inch in any one place		217
	NOTE: None permitted in risers or leg and chest straps.		
	NOTE: Broken stitches caused by needle penetrations by an over stitching pattern (for example, cross box or bartack) will not be scored as defects.		
	Loops in stitching due to stitching over varying thickness of webbings		
	3/16 to 3/8 inch		218
	Over 3/8 inch	125	
	Missing or incomplete stitch pattern (for example, bartack or cross box)	126	
	Runoff, 2 or more stitches off webbing	127	
	Missing backstitch	128	
	Backstitch short		219
	Tension too loose or too tight in any one row		
	Up to 2 inches		220
	Over 2 inches	129	
	Kinks, intermittent, less than 2 inches apart		221
	Stitch pattern length not as specified (stitch patterns up to 5 inches long)		
	Up to 1/8 inch		222
	Over 1/8 inch minus	130	
	Over 1/8 inch plus		223
	Stitch pattern length not as specified (stitch patterns over 5 inches long)		
	Up to 1/4 inch		224
	Over 1/4 inch minus	131	
	Over 1/4 inch plus		225
18.	Needle damage (cuts or chews)		
	1 cut warp end		226
	More than 1 cut warp end	132	
	Damage to filling thread over 3/8 inch	133	
	NOTE: Damage to more than 1 fill thread not allowed in risers or leg and chest straps.		
19.	Repairs		
	Broken or missing stitching not reinforced by restitching	134	
	NOTE: Repairs in risers and leg straps not permitted.		

TABLE X. Classification of defects – personnel parachute, integrated pack and harness - Continued.

No.	Defect	Classification	
		Major	Minor
20.	Improper assembly	135	
21.	Component(s) missing	136	
22.	Marking illegible, incorrect, or missing		227
23.	Searing over stitching	137	
24.	Thread ends not trimmed		228

TABLE XI. Classification of defects – canopies: square, gliding type – main and reserve.

No.	Defect	Classification Major	Classification Minor
1.	Component not conforming as specified	101	
2.	Canopy not assembled as specified	102	
3.	Improper suspension line continuity		
	1 line		201
	2 or more lines	103	
	Lines 4 or 5, A and B cascade not running from link to lower surface without interface	104	
4.	Assembly of grommets		
	Improperly set, 2 or more exposed teeth (except where grommet is set as specified but is in an area of unequal thickness that prevents uniform clinching)	105	
	Clinched loosely, allowing grommet to rotate in hole	106	
	Clinched excessively tight, cutting fabric	107	
	Insecurely clinched, where grommet or washer may become disengaged	108	
	Roll of grommet contains splits, burrs, or sharp edges	109	
5.	Seams not constructed as specified		
	1 seam		202
	2 seams	110	
	Raw edge exposed	111	
	Open seam	112	
	NOTE: Seams will be classified as open when one or more stitches joining a seam are broken or when 2 or more skipped stitches occur. Conditions repaired by either restitching or overstitching as specified will not be scored as a defect.		
6.	Cut, frayed, or damaged suspension lines	113	
7.	Twisted suspension line between canopy and cascade		
	Over 180 degrees to 360 degrees		203
	Over 360 degrees	114	
8.	Twisted suspension line between cascade and connector		
	Over 180 degrees to 360 degrees		204
	Over 360 degrees	115	

TABLE XI. Classification of defects – canopies: square, gliding type – main and reserve - Continued.

No.	Defect	Classification Major	Classification Minor
9.	Twisted suspension line between canopy and connector		
	Over 180 degrees to 360 degrees		205
	Over 360 degrees	116	
10.	Twisted control line between canopy trailing edge and upper cascade		
	Over 180 degrees to 360 degrees		206
	Over 360 degrees	117	
11.	Twisted control line between upper and lower cascade over 90 degrees	118	
12.	Twisted control line, between lower cascade and loop (dimension A, drawing 11-1-3700)		
	Over 180 degrees to 360 degrees		207
	Over 360 degrees	119	
13.	Reinforcement tape on ribs		
	Take-up more than 1/4 inch	120	
14.	Reinforcement tape and suspension line tape, rib panel connection		
	Missing	121	
	Improperly attached	122	
	NOTE: The cross box stitch used to secure the reinforcement tape within the seam shall not cross the primary row of double needle seam stitching. The primary row of stitching shall be understood as the immediate stressed row when load is placed upon the seam.		
15.	Heat sear of cross port vent holes improperly formed		
	1 per rib		208
	More than 6 per canopy	123	
16.	Splicing		
	On canopy fabric	124	
	Webbing or tape		209

TABLE XI. Classification of defects – canopies: square, gliding type – main and reserve - Continued.

No.	Defect	Classification Major	Classification Minor
17.	Stitching		
	Bartack stitching not as specified in applicable drawing	125	
	301 and 308 stitching not in accordance with ASTM D 6193		
	More than 1 stitch per inch over or under the number specified		
	Up to 2 inches		210
	Over 2 inches	126	
	Broken or missing stitching	127	
	2 or more consecutive skipped stitches	128	
	Missing of incomplete stitch pattern (for example, bartacks or cross box)	129	
	Backstitch missing	130	
	Backstitch short		
	Less than 1/4 inch		211
	More than 1/4 inch	131	
18.	Runoff, 2 or more stitches into single cloth or beyond seam or hem margins	132	
19.	Tension too loose or too tight, up to 3 inches per seam	133	
20.	Tension too loose or too tight, over 3 inches per seam		212
21.	Kinks, intermittent, less than 2 inches apart		213
22.	Stitch pattern lengths not in accordance with ASTM D 6193 or applicable drawing	134	
23.	Defective stitching not repaired correctly	135	
24.	Frequency of repairs to stitching exceeding specified limits	136	
25.	Needle damage (cuts or chews)		
	Up to 1/8 inch long and 1 per canopy		214
	Over 1/8 inch long or more than 1 per canopy	137	
26.	Holes (except drill holes), cuts, and tears	138	

TABLE XI. Classification of defects – canopies: square, gliding type – main and reserve - Continued.

No.	Defect	Classification Major	Classification Minor
27.	Darns		
	More than specified		215
	On slider		216
28.	Ends of webbing, tape, and cord not seared, waxed, or serged as specified		217
29.	Identification marking illegible, incorrect, or missing		218
30.	Incorrect or defective material	139	
31.	Material unclean	140	
32.	Searing over stitching	141	
33.	Dimension out of tolerance	142	
34.	Canopy out of trim more than		
	±1/2 inch, A to B line	143	
	±1/2 inch, B to C line	144	
	±1/2 inch, C to D line	145	
	±1 inch, D to tail	146	
	±1 inch on the brake loop setting	147	
35.	Deviation between length of suspension lines greater than 1/2 inch	148	
36.	Canopy not within the minimum specified cell standards		
	Full cell width less than 48 inches at the top of the canopy	149	
	Full cell width 7/8 – 2-1/2 inches less than top measurement	150	
	Full span measured over the lower surface shall be within a 17 inch differential of the total 7 cell top width	151	
	NOTE: When measuring the top surface leading edge, the cell should be measured from loaded seam to loaded seam using minimal tension. When measuring the bottom surface, measure from outside loaded seam to outside loaded seam using minimal tension.		

TABLE XII. Classification of defects – pilot chutes for MC-4 and MIRPS and spring assembly, ejector only.

No.	Defect	Classification Major	Classification Minor
1.	Assembly of grommets		
	Improperly set, 2 or more exposed teeth (except where grommet is set as specified but is in an area of unequal thickness that prevents uniform clinching)	101	
	Clinched loosely, allowing grommet to rotate in hole	102	
	Clinched excessively tight, cutting fabric	103	
	Insecurely clinched, where grommet or washer may become disengaged	104	
	Roll of grommet contains splits, burrs, or sharp edges	105	
2.	Seams not constructed as specified in applicable drawing		
	1 seam		201
	2 seams	106	
	Raw edge exposed	107	
	Open seam	108	
	NOTE: Seams will be classified as open when one or more stitches joining a seam are broken or when two or more stitches occur. Conditions repaired by either restitching or overstitching as specified will not be scored as a defect.		
3.	Pleats exceeding 3/16 inch wide	109	
4.	Stitching		
	Bartack stitching not as specified in applicable drawing	110	
	301 and 308 stitching in accordance with ASTM D 6193		
	More than 1 stitch per inch over or under the number specified		
	Up to 2 inches		202
	Over 2 inches	111	
	Broken or missing stitches	112	
	2 or more consecutive skipped stitches	113	
	Missing or incomplete stitch pattern (for example, bartack or cross box)	114	
	Backstitch missing	115	
	Backstitch short		
	Less than 1/4 inch		203
	More than 1/4 inch	116	

TABLE XII. Classification of defects – pilot chutes for MC-4 and MIRPS and spring assembly, ejector only - Continued.

No.	Defect	Classification Major	Classification Minor
	Runoff 2 or more stitches into single cloth or beyond seam or hem margins	117	
	Tension too loose or too tight		
	Up to 3 inches per seam		204
	Over 3 inches per seam	118	
	Kinks, intermittent, less than 2 inches apart		205
	Stitch pattern lengths not as specified	119	
	Defective stitching not repaired correctly or exceeding specified limits	120	
	Frequency of repairs to stitching exceeding specified limits	121	
	Resewn stitch patterns and bartacks exceeding specified limits	122	
5.	Needle damage (cuts or chews)		
	Up to 1/8 inch long and 1 per pilot chute		206
	Over 1/8 inch long and more than 1 per pilot chute	123	
6.	Holes (except drill holes), cuts, and tears	124	
7.	Darns	125	
8.	Ends of webbing, tape, and cord not seared, waxed, or serged as specified		207
9.	Identification marking illegible, incorrect, or missing		208
10.	Incorrect or defective material	126	
11.	Material unclean	127	
12.	Searing over stitching	128	
13.	Improper assembly or missing component	129	
14.	Spring tension below required loading	130	
15.	Spring not hand stitched to pilot chute cap	131	
16.	Dimension out of tolerance with applicable drawing and/or specification		132

TABLE XIII. Classification of defects – integrated pack and container (without harness), deployment bag and pocket – MC-4 only.

No.	Defect	Classification Major	Classification Minor
1.	Assembly of grommets		
	Improperly set, 2 or more exposed teeth (except where grommet is set as specified but is in an area of unequal thickness that prevents uniform clinching)	101	
	Clinched loosely, allowing grommet to rotate in hole	102	
	Clinched excessively tight, cutting fabric	103	
	Insecurely clinched, where grommet or washer may become disengaged	104	
	Roll of grommet contains splits, burrs, or sharp edges	105	
2.	Seams not constructed as specified in applicable drawing		
	1 seam		201
	2 seams	106	
	Raw edge exposed	107	
	Open seam	108	
	NOTE: Seams will be classified as open when one or more stitches joining a seam are broken or when two or more stitches occur. Conditions repaired by either restitching or overstitching as specified will not be scored as a defect.		
3.	Pleats exceeding 1/16 inch in width		202
4.	Stitching		
	Bartack stitching not as specified in applicable drawing	109	
	301 and 308 stitching not in accordance with ASTM D 6193		
	More than 1 stitch per inch over or under the number specified		
	Up to 2 inches		203
	Over 2 inches	110	
	Broken or missing stitches	111	
	2 or more consecutive skipped stitches	112	
	Missing or incomplete stitch pattern (for example, bartack or cross box)	113	
	Backstitch missing	114	
	Backstitch short		
	Less than 1/4 inch		204
	More than 1/4 inch	115	

TABLE XIII. Classification of defects – integrated pack and container (without harness), deployment bag and pocket – MC-4 only - Continued.

No.	Defect	Classification Major	Classification Minor
	Runoff, 2 or more stitches into single cloth or beyond seam or hem margins	116	
	Tension too loose or too tight		
	Up to 3 inches per seam		205
	Over 3 inches per seam	117	
	Kinks, intermittent, less than 2 inches apart		206
	Stitch pattern lengths not in accordance with ASTM D 6193 or applicable drawing	118	
	Defective stitching not repaired correctly or exceeding specified limits	119	
	Frequency of repairs to stitching exceeding specified limits	120	
	Resewn stitch patterns and bartacks exceeding specified limits	121	
5.	Needle damage (cuts or chews)		
	Up to 1/4 inch long and 1 per pack and container		207
6.	Holes (except drill holes), cuts, tears, and darns	122	
7.	Ends of webbing, tape, and cord not seared, waxed, or serged as specified		208
8.	Identification marking illegible, incorrect, or missing		209
9.	Incorrect or defective material	123	
10.	Material unclean	124	
11.	Searing over stitching	125	
12.	Improper assembly	126	
13.	Component(s) missing	127	
14.	Snap fasteners		
	Loose, broken, or sharp edges	128	
	Improper method of installation	129	
	Base hole in fabric too large	130	
15.	Cable assembly improperly attached	131	

TABLE XIII. Classification of defects – integrated pack and container (without harness), deployment bag and pocket – MC-4 only - Continued.

No.	Defect	Classification Major	Minor
16.	Hook and loop tape (for example, Velcro®) improperly assembled according to drawing or specification	132	
17.	Loop dimension out of tolerance	133	
18.	Dimension out of tolerance	134	

TABLE XIV. Classification of defects – harness, riser, bridle line, strap, and lanyard – MC-4 only.

No.	Defect	Classification Major	Classification Minor
1.	Assembly of grommets		
	Improperly set 2 or more exposed teeth (except where grommet is set as specified but is in an area of unequal thickness that prevents uniform clinching)	101	
	Clinched loosely, allowing grommet to rotate in hole	102	
	Clinched excessively tight, cutting fabric	103	
	Insecurely clinched, where grommet or washer may become disengaged	104	
	Roll of grommet contains splits, burrs or sharp edges	105	
2.	Stitching		
	1 stitch per inch over or under the number specified		
	Up to 1 inch		201
	Over 1 inch	106	
	More than 1 stitch per inch over or under the number specified	107	
	Broken or missing stitches	108	
	2 or more consecutive skipped stitches	109	
	Missing or incomplete stitch pattern (for example, bartack or cross box)	110	
	Backstitch missing	111	
	Backstitch short		
	Less than 1/4 inch		202
	More than 1/4 inch	112	
	Tension too loose or too tight	113	
3.	Kinks		
	Less than 1 inch apart		203
	More than specified	114	
4.	Stitch pattern lengths not in accordance with ASTM D 6193 or applicable drawing	115	
5.	Defective stitching not repaired correctly	116	
6.	Needle damage (cuts or chews)		
	1 cut, warp end		204
	More than 1 cut, warp end	117	

TABLE XIV. Classification of defects – harness, riser, bridle line, strap, and lanyard – MC-4 only - Continued.

No.	Defect	Classification Major	Classification Minor
7.	Damage to filling thread over 3/8 inch NOTE: Damage to more than one fill thread not allowed in risers or leg and chest straps.	118	
8.	Ends of webbing, tape, and cord not seared, waxed, or serged as specified		205
9.	Incorrect or defective material	119	
10.	Material unclean	120	
11.	Searing over stitching	121	
12.	Improper assembly	122	
13.	Component(s) missing	123	
14.	Snap fasteners		
	Loose, broken, or sharp edges	124	
	Improper method of installation	125	
	Base hole in fabric too large	126	
15.	Loop dimension out of tolerance	127	
16.	Hook and loop tape (for example, Velcro®) improperly assembled according to drawing or specification	128	
17.	More than 1/2 inch difference between overall length of riser assembly pairs	129	
18.	Twisted back, chest, or leg strap	130	
19.	Hand stitching of tacking not as specified	131	
20.	Loops in stitching due to stretching over varying thickness of webbing		
	3/16 inch to 3/8 inch		206
	Over 3/8 inch	132	
21.	Dimension out of tolerance	133	

TABLE XV. Classification of defects – solid and extended skirt parachute canopies – cargo.

No.	Defect	Classification Major	Classification Minor
1.	Improper assembly of vent reinforcement band	101	
2.	Vent reinforcement band overlap		
	Up to 1/2 inch minus		201
	Over l/2 inch minus	102	
	Over 1 inch plus		202
3.	Vent hem outside stitching margin from edge of webbing		
	1/16 to 1/4 inch		203
	Over 1/4 inch	103	
	All rows of stitching not through reinforcement webbing	104	
4.	Vent loop length (finished dimension)		
	Up to 3/4 inch plus		204
	Over 3/4 inch plus	105	
	Over 1/2 inch minus	106	
5.	Vent line length (finished dimension)		
	Up to 3/8 inch		205
	Over 3/8 inch	107	
6.	Variation in vent line length per set		
	Up to 1 percent		206
	Over 1 percent	108	
7.	Twisted vent line (flat)		
	Up to 180 degrees		207
	Over 180 degrees	109	
8.	Twisted vent line (cord or cordless braid)		
	Over 360 degrees, causing kinks in line when relaxed	110	
9.	Gore width at vent, centerline to centerline on main seam		
	Up to 1/4 inch		208
	Over 1/4 inch	111	
10.	Gore width at skirt, centerline to centerline on main seam		
	Up to 1/2 inch		209
	Over 1/2 inch	112	

TABLE XV. Classification of defects – solid and extended skirt parachute canopies – cargo - Continued.

No.	Defect	Classification Major	Classification Minor
11.	Improper type of or improper assembly of cross and main seams	113	
12.	Open seam 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 either restitching or overstitching as specified will not be scored as a defect.	114	
13.	Underfold (raw edge in main or cross seams)	115	
14.	Overfold in main seam		
	Up to 1/2 inch or extended into center channel	116	
	Over 1/2 inch		210
15.	Underfold in main seam		
	A 4-needle seam not caught by 3 rows of stitches by at least 1/16 inch	117	
	3 intermittent underfolds of a 2-needle seam up to 2 inches long and less than 12 inches apart		211
	More than 3 intermittent underfolds 1/4 inch wide or over 2 inches long and less than 12 inches apart	118	
	Underfold more than 6 inches in length	119	
16.	Overfold and underfold in cross seam		
	Underfold 1/8 to 3/16 inch regardless of length		212
	Overfold more than 1/4 inch regardless of length		213
17.	Fullness in seam width		
	Main seam		
	1/8 to 1/2 inch		214
	Over 1/2 inch	120	
	Cross seam		
	1/8 to 1/4 inch		215
	Over 1/4 inch	121	

TABLE XV. Classification of defects – solid and extended skirt parachute canopies – cargo - Continued.

No.	Defect	Classification Major	Classification Minor
18.	Wrinkles and pleats in cross and main seams		
	Cross seams		
	1/16 to 1/4 inch and 1 per seam		216
	1/16 to 1/4 inch and more than 1 per seam	122	
	1/16 to 1/4 inch and more than 6 per canopy	123	
	Over 1/2 inch	124	
	Main seams (canopies up to 100 feet in diameter)		
	1/16 to 1/4 inch and 1 per seam		217
	1/16 to 1/4 inch and more than 1 per seam	125	
	1/16 to 1/4 inch and more than 6 per canopy	126	
	Over 1/2 inch	127	
19.	Vent and skirt hems improperly formed		
	Raw edge	128	
	Underfold where edge is caught with 1 row of stitching		218
20.	Vent hem fold over main seam around webbing not straight		219
21.	Matching of centerlines of seams when folded		
	1/8 to 1/4 inch		220
	Over 1/4 inch	129	
22.	Wrinkles, pleats, or folds in skirt and vent hems that do not extend into the gore fabric		
	1/16 to 1/4 inch and up to 2 per gore		221
	Over 1/4 inch and more than 2 per gore	130	
	Over 1/4 inch and more than 12 per canopy up to 65 feet	131	
	Over 1/4 inch and more than 18 per canopy over 65 feet	132	
23.	Wrinkles, pleats, or folds in skirt and vent hems extending into gore fabric		
	1/16 to 1/4 inch and up to 2 per gore		222
	Over 1/4 inch and more than 2 per gore	133	
	Over 1/4 inch and more than 12 per canopy over 65 feet in diameter	134	
	Over 1/4 inch and more than 18 per canopy over 65 feet in diameter	135	
	Over 1/2 inch	136	

TABLE XV. Classification of defects – solid and extended skirt parachute canopies – cargo - Continued.

No.	Defect	Classification Major	Classification Minor
24.	Skirt hem outside stitching margin from edge of webbing		
	1/16 to 1/4 inch		223
	Over 1/4 inch	137	
	Rows of stitching not through skirt band webbing	138	
25.	Overfold of main seam around skirt webbing not straight		224
26.	Matching of centerline of seams when folded		
	1/8 inch to 1/4 inch		225
	Over 1/4 inch	139	
27.	Tape or webbing used to form skirt hem does not extend across a minimum of 1 gore	140	
28.	Tucks, where section of gore fabric caught in stitching of seams or hems		
	Up to 1/4 inch wide and up to 1-1/2 inch long		226
	Over 1/4 inch wide regardless of length	141	
	Over 1-1/2 inch long regardless of width	142	
29.	Mismatching of cross seams		
	First seam from vent over 2-1/2 inches and up to 3 inches		227
	First seam from vent over 3 inches	143	
	All other seams over 3 inches and up to 3-1/2 inches		228
	All other seams over 3-1/2 inches	144	
30.	Vent lines out of sequence	145	
31.	Suspension and vent line overlap on canopy		
	Up to 1/4 inch minus		229
	Over 1/4 inch minus	146	
	Over 1 inch plus		230
32.	Suspension lines not in proper channel or lines crossed	147	
33.	Cut, frayed, or damaged suspension or vent lines	148	

TABLE XV. Classification of defects – solid and extended skirt parachute canopies – cargo - Continued.

No.	Defect	Classification	
		Major	Minor
34.	Variation in suspension line length per set, between vent and skirt		
	Up to 1/2 percent		231
	Over 1/2 percent	149	
35.	Variation in suspension line length between vent and skirt		
	Up to 1 percent		232
	Over 1 percent	150	
36.	Twisted suspension line between vent and skirt (flat)		
	In channel, up to 360 degrees		233
	In channel, over 360 degrees	151	
37.	Twisted suspension line between vent and skirt (cord or cordless braid)		
	In channel, 720 degrees		234
	In channel, any twist causing kinks in line	152	
38.	Twist between line reinforcement at skirt and 3-inch zigzag stitching above 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)		
	90 to 180 degrees		235
	Over 180 degrees	153	
	Line not placed between 2 plys of material	154	
39.	Variation in suspension line length between skirt and attaching point		
	Up to 1 percent		236
	Over 1 percent	155	
40.	Variation in suspension line length per set between skirt and attaching point		
	Up to 1/2 percent		237
	Over 1/2 percent	156	
41.	Twisted suspension line between skirt and attaching point (flat), except hem rigged canopy	157	

TABLE XV. Classification of defects – solid and extended skirt parachute canopies – cargo - Continued.

No.	Defect	Classification Major	Classification Minor
42.	Twisted suspension line (flat), hem rigged canopy		
	180 to 360 degrees		238
	Over 360 degrees	158	
43.	Twisted suspension line between skirt and attaching point, cord and cordless braid		
	Over 360 degrees		239
	Over 360 degrees causing kinks in the line	159	
44.	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)		240
	1 stitch per inch over or under the number specified, over 2 inches long (size 3 through 6 thread)	160	
	More than 1 stitch per inch over or under the number of stitches specified (size 3 through 6 thread)	161	
	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)		241
	2 stitches per inch over or under the number specified, over 2 inches long (size B through FF thread)	162	
	More than 2 stitches per inch over or under number of stitches specified (size B through FF thread)	163	
	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.		

TABLE XV. Classification of defects – solid and extended skirt parachute canopies – cargo - Continued.

No.	Defect	Classification	
		Major	Minor
	NOTE: When the end item specification forbids repair to defective stitching, it shall be classified as a major defect.		
	Broken or missing stitches		
	Up to 1/2 inch		242
	Over 1/2 inch	164	
	2 or more consecutive skipped stitches	165	
	Missing or incomplete stitch pattern (for example, bartack or zigzag)	166	
	Backstitch missing	167	
	Backstitch short		
	Less than 1/2 inch		243
	More than 1/2 inch	168	
	Runoff, 2 or more stitches into single cloth or beyond seam or hem margins		
	Up to 1/2 inch		244
	Over 1/2 inch	169	
	Zigzag stitches with less than 85 percent penetration through suspension lines	170	
	Tension too loose or too tight, up to 6 inches per seam		245
	Tension too loose or too tight, over 6 inches per seam	171	
	Kinks, intermittent, less than 2 inches apart		246
	Stitch pattern lengths not as specified (stitch patterns up to 5 inches long)		
	Up to 1/8 inch minus		247
	Over 1/8 inch minus	172	
	Over 1/4 inch plus		248
	Stitch pattern lengths not as specified (stitch patterns over 5 inches long)		
	Up to 1/4 inch minus		249
	Over 1/4 inch minus	173	
	Over 1/2 inch plus		250

TABLE XV. Classification of defects – solid and extended skirt parachute canopies – cargo - Continued.

No.	Defect	Classification Major	Classification Minor
45.	Frequency of repair to stitching and splicing on canopies, regardless of the number of rows of stitching in the seams in excess of that specified below, shall be classified as a major defect	174	
	Length of seams (inches) / Splices / Repairs: 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		
46.	Length of splices and repairs to stitches		
	Overlap less than 2 inches	175	
	Overlap from 4 inches to 7 inches		251
	Overlap more than 7 inches	176	
47.	Needle damage (cuts or chews)		
	Up to 1/4 inch long and 2 per canopy up to 35 feet in diameter		252
	Over 1/4 inch long or more than 2 per canopy up to 35 feet in diameter	177	
	Up to 1/4 inch long and 4 per canopy 35 feet in diameter and over		253
	Over 1/4 inch long or more than 4 per canopy 35 feet in diameter and over	178	
48.	Holes, darns, and repairs		
	Holes up to 1/4 inch in diameter or up to 1-1/2 inch long		254
	Holes over 1/4 inch in diameter or up to 1-1/2 inch long	179	
	Darns, more than 2 per section	180	
	Darns, more than 5 per canopy up to 50 feet in diameter	181	
	Darns, more than 10 per canopy from 50 feet in diameter up to 75 feet in diameter	182	
	Darns, more than 15 per canopy over 75 feet in diameter	183	
	Repair (sewn patch) of a maximum damaged area size of 7 X 7 inches, 1 per canopy		255
49.	Ends of webbing, tape, and cord not seared, waxed, or serged as specified		256

TABLE XV. Classification of defects – solid and extended skirt parachute canopies – cargo - Continued.

No.	Defect	Classification	
		Major	Minor
50.	Pocket band free length		
	Up to 1/4 inch		257
	Over 1/4 inch	184	
51.	Pocket depth, centerline from main seam to stitch pattern on skirt band		
	Up to 1/4 inch		258
	Over 1/4 inch	185	
52.	Suspension line attaching loop, up to 2 inches in length		
	Up to 1/4 inch		259
	Over 1/4 inch	186	
53.	Suspension line attaching loop, 2 to 4 inches in length		
	Up to 3/8 inch		260
	Over 3/8 inch	187	
54.	Location of reefing line cutter bracket from edge of skirt		
	Up to 1/4 inch		261
	Over 1/4 inch	188	
55.	Improper assembly or component missing	189	
56.	Identification marking illegible, incorrect, or missing		262
57.	Incorrect or defective material	190	
58.	Material unclean	191	
59.	Searing over stitching	192	
60.	Twisted riser webbing (assembly to links)		
	Up to 180 degrees, up to 10 foot web length		263
	Over 180 degrees, up to 10 foot web length	193	
	180 to 360 degrees, over 10 foot web length		264
	Over 360 degrees, over 10 foot web length	194	
61.	Riser webbing length		
	Up to 1 percent		265
	Over 1 percent	195	

Custodians:
Army - GL
Navy - AS
Air Force - 11

Reviewers:
Army - AV, TE
Navy - MC
Air Force - 82

Preparing activity:
DLA - GS1

(Project 1670-0968)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.

2. The submitter of this form must complete blocks 4, 5, 6, and 7.

3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	**1. DOCUMENT NUMBER** MIL-STD-849B	**2. DOCUMENT DATE (YYYYMMDD)** 2001 July 25

DOCUMENT TITLE

Inspection Requirements, Definitions and Classification of Defects for Parachutes

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME *(Last, First, Middle Initial)*	b. ORGANIZATION	
c. ADDRESS *(Include Zip Code)*	d. TELEPHONE (Include Area Code) (1) Commercial (2) DSN *(if applicable)*	**7.DATE SUBMITTED** (YYYYMMDD)

8. PREPARING ACTIVITY

a. NAME Defense Supply Center Richmond	b. TELEPHONE *Include Area Code)* (1) Commercial (804) 279-5019 (2) DSN 695-5019
c. ADDRESS *(Include Zip Code)* ATTN: DSCR-VBD (C. Hammond) 8000 Jefferson Davis Highway Richmond, VA 23297-5610	**IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:** DEFENSE STANDARDIZATION PROGRAM OFFICE (DLSC-LM) 8725 John J. Kingman Road, Suite 2533 Fort Belvoir, Virginia 22060-6221 Telephone (703) 767-6888 DSN 427-6888