

MIL-STD-908(GL)
31 January 1985

MILITARY STANDARD
PROVISIONS FOR EVALUATING THE QUALITY OF
SPARE PARTS FOR MECHANICAL AND TEXTILE END ITEMS



NO DELIVERABLE DATA
REQUIRED BY THIS DOCUMENT

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MIL-STD-908(GL)
31 January 1985

DEPARTMENT OF DEFENSE

Washington, DC 20301

Provisions for Evaluating the Quality of Spare Parts for Mechanical and
Textile End Items

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

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FOREWARD

This standard provides procedure for evaluating the quality of a variety of materials and assemblies, and the packaging thereof, common to purchases of spare parts for major items. It may be used for items other than spare parts when the contents of the standard are considered to be adequate and the documentation for such items does not provide for a visual examination of defects. If there are any inconsistencies between the applicable item drawing or specification and the provisions of this standard, the item drawing or specification shall control unless otherwise specified within the contract or purchase order.

The objectives of this standard are to provide classifications for a wide variety of defects that could be present during the examination of miscellaneous spare part materials and assemblies. The various types of defects are classified in appropriate categories.

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PROVISIONS FOR EVALUATING THE QUALITY OF
SPARE PARTS FOR MECHANICAL AND TEXTILE END ITEMS

1. SCOPE

1.1 Purpose. The purpose of this standard is to provide criteria for the evaluation of the quality of miscellaneous spare parts for mechanical and textile end items when such criteria have not been set forth in the applicable procurement document, or the applicable drawing or specification..

1.2 Application. This standard will be made applicable to procurement documents by reference in the procurement document, or the applicable drawing or specification covering the item. The appropriate group or groups and category or categories of defects for which the item is intended to be examined shall be cited in the procurement document, drawing, or specification (see 5.1).

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2. APPLICABLE DOCUMENTS

2.1 Government documents. Unless otherwise specified, the following documents of the issue in effect on date of the invitation for bids or request for proposal, form a part of this document to the extent specified herein.

STANDARDS

FEDERAL

FED-STD-4 - Glossary of Fabric Imperfections

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by
Attributes

MIL-STD-109 - Quality Assurance Terms and Definitions

MIL-STD-1491 - Glossary of Knitting Imperfections

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3. DEFINITIONS

3.1 Fabric defects. Fabric defects, where applicable, shall be in accordance with FED-STD-4.

3.2 Quality assurance terms and procedures. Definitions of quality assurance terms and procedures, where applicable, shall be in accordance with MIL-STD-109 and MIL-STD-105.

3.3 Raw edge. A raw edge is any non selvage edge of fabric not finished, when specified, by overedge stitching or by being turned under and caught in a seam.

3.4 Knitting defects. Knitting defects, where applicable, shall be in accordance with MIL-STD-1491.

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4. GENERAL REQUIREMENTS

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

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

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

4.3 In-process inspection. Inspection of sub-assemblies shall be made to ascertain that construction details which cannot be examined in the finished item are in accordance with specified requirements. The Government reserves the right to exclude from consideration for acceptance any material for which in-process inspection has indicated non-conformance.

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5. DETAILED REQUIREMENTS

5.1 End item examination. The end item shall be examined for the category or categories of defects (see 5.1.1 and 5.1.2) specified in the applicable drawing or specification, or the purchase document. The lot shall be expressed in units of the end item being procured. The sample unit shall be one each of the end item being procured. Unless otherwise specified in the drawing, specification or purchase document, the inspection level shall be II. The acceptable quality level (AQL), expressed in terms of defects per hundred units, applicable to any category or combination of categories within the group or groups referenced for examination (see 1.2), shall be as follows:

GROUP A Categories I through VI - the AQL shall be 1.5 for major defects and 4.0 for total (major and minor combined) defects.

NOTE: Defects designated by an asterisk (*) shall be scored as "major" when seriously affecting serviceability or appearance and minor when affecting serviceability or appearance but not seriously.

GROUP B Categories VII through XI - the AQL shall be 2.5.

5.1.1 Group A categories of defectsCATEGORY I - Cloth, webbing and tape defects

Examine	Defect	Classification	
		Major	Minor
Cloth	1. Any hole, cut, tear, or open place:	X	
	2. Loose yarn, snagged yarn, misweave, or woven in waste		X
	3. Missing yarn, broken yarn, slub or float		
	- up to 3/4 inch		X
	- more than 3/4 inch	X	
	4. Spot or stain		X
	5. Knot clearly noticeable at a distance of 3 feet or more	X	

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Group A categories of defects (cont'd)

CATEGORY I - Cloth, webbing and tape defects (cont'd)

Examine	Defect	Classification	
		Major	Minor
Webbing and tape	1. Any hole, cut, tear, or smash	X	
	2. Abrasion mark resulting in a weak area.	X	
	3. Slub (more than twice the size of normal yarns)		X
	4. Knot extending above the surface		X
	5. Spot, stain, or streak clearly visible at a normal inspection distance of 3 feet		X
	6. Mispick or double pick (two or more across full width)	X	
	7. Edge slack, scalloped, or otherwise poorly constructed:		
	- up to 3/4 inch in length		X
	- more than 3/4 inch in length	X	
	8. Cut end of webbing or tape not fused as specified (when required)	X	
	9. Width not as specified	X	
	10. Shade not as specified		X

CATEGORY II - Leather Defects

Examine	Defect	Classification	
		Major	Minor
Thickness	1. Thickness more than 1/2 ounce less than the minimum specified	X	
	2. Thickness more than the maximum or up to 1/2 ounce less than the minimum specified		X
General	1. Fat wrinkle, insect damage, factory damage, scratch, scar, slaughter cut, brand, rough or coarse grain, printing or embossing, or flesh cut that shows through to the grain side.		*
	2. Pipey leather seriously affecting serviceability or appearance, or beyond range permitted by the satra scale (when specified)	X	
	3. Off stretch cut	X	

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Group A categories of defects (cont'd)CATEGORY III - Hardware item defects

Examine	Defect	Classification	
		Major	Minor
Design, construction and workmanship - applicable to all components and assemblies	1. Not the type, class, style, etc. specified	X	
	2. Any component missing	X	
	3. Any component that does not function, malfunctions, or is misplaced to the degree that it does not serve its intended purpose, unless otherwise classified herein	X	
	4. Not fabricated as specified by the specification or drawing	X	
	5. Not clean (evidence of oil, grease, or dirt)		X
	6. Sharp edge or burr		X
	7. Puncture, fracture, or malformed	X	
	8. Design detail deviating from specification or drawing requirements	X	
	9. Evidence of scale, rust, discoloration, or deposit of any foreign matter		X
	10. Finish omitted or not as specified: a. On brass or aluminum components b. On steel components	X	X
	11. Area of partial or no finish		X
Riveting	1. Mating surfaces of riveted components not drawn up tightly		*
	2. Rivet head not in contact with its mating surface		*
	3. Rivet loose or not properly set		*
	4. Roll of a rivet contains more than one split		X
	5. Portion of a rivet is set or rolled on itself in lieu of being set or rolled on the mating surface of component	X	
Brass grommets and eyelets	1. Not securely clinched, to a degree that grommet or eyelet may be detached from material	X	

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Group A categories of defects (cont'd)CATEGORY III - Hardware item defects

Examine	Defect	Classification	
		Major	Minor
Brass grommets and eyelets (cont'd)	2. Clinched excessively tight, cutting adjacent material	X	
	3. Washer installed on incorrect side of material		X
	4. Eyelet barrel split		X
	5. Not set with a scored setting (when required)	X	
	6. Installed with scored side on outside (when scored setting is required)		X
Slide fasteners	1. Not functioning properly, failing to effect a secure closure or to open freely	X	
	NOTE: The slide fastener should be fully closed and opened to determine if fastener operates smoothly and provides a secure closure.		
	2. Bottom stop not attached as specified	X	
	3. Not specified type or size	X	
	4. Any portion of fastener broken, bent, missing, or not aligned	X	
	5. Slider jams or fails to interlock scoops	X	
	6. Thong omitted	X	
	7. Fastener tape cut or torn	X	
	1. Any fastener not functioning properly, ie. fails to snap closed, provide a secure closure, or open freely	X	
	NOTE: The fastener shall be snapped and unsnapped twice to determine if parts of fastener separate freely and also effect a secure closure.		
Snap fasteners	2. Clinched excessively tight, cutting adjacent material	X	

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Group A categories of defects (cont'd)

CATEGORY III - Hardware item defects (cont'd)

Examine	Defect	Classification	
		Major	Minor
Snap fasteners (cont'd)	3. Clinched loosely, permitting any component to rotate freely, but not to a degree that any component can be expected to become detached during use		X
	4. Clinched loosely to the degree that components can be expected to become detached during use	X	
	NOTE: Incomplete roll of end of button or eyelet barrel is evidence of improper or insecure clinching.		
	5. More than three splits in eyelet or button barrel		X

CATEGORY IV - Seams and stitching defects

Examine	Defect	Classification	
		Major	Minor
Rows of stitching	1. Any row missing except on box X or WW stitching	X	
	2. On box X or WW stitching		
	- one row of stitching omitted		X
	- two or more rows of stitching omitted	X	
Open seams	1. 1/2 inch or less		X
	2. More than 1/2 inch	X	

NOTE: A seam shall be classified as open when one or more stitches joining a seam are broken or when two or more consecutive skipped or runoff stitches occur. On double stitched seams a seam shall be considered open when either one or both sides of the seam are open.

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Group A categories of defects (cont'd)CATEGORY IV - Seams and stitching defects

Examine	Defect	Classification	
		Major	Minor
Raw edge	1. More than 1/2 inch when securely caught in stitching		X
	NOTE: Raw edge not securely caught in stitching shall be classified as an open seam.		
Run-off (See open seam)			
Seam and stitch type	1. Wrong seam or stitch type	X	
Bartacks	1. Any bartack omitted	X	
	2. Any bartack not as specified or not in specified location		X
	3. Stitching loose, incomplete or broken		X
Stitch tension	1. Loose, resulting in a loose bobbin or top thread		X
	2. Excessively tight, resulting in puckering of material		X
Stitch per inch	1. Size 3 through 6 thread:		
	- one stitch over or under the range specified		X
	- two or more stitches over or under the range specified	X	
	2. Size 8 through FF thread:		
	- up to two stitches less than minimum specified		X
	- three or more stitches less than minimum specified	X	
	- one or more stitches in excess of maximum specified		X

NOTE: Variation in the number of stitches per inch caused by the operator speeding up the machine and pulling the fabric in order to sew over heavy seams, or in turning corners shall be classified as follows:

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Group A categories of defects (cont'd)CATEGORY IV - Seams and stitching defects

Examine	Defect	Classification	
		Major	Minor
Stitches per inch (cont'd)	a. Within the minor defect classification - no defect		
	b. Within the major defect classification - minor defect		
Stitching ends	1. Not secured as specified		X
Thread breaks, skipped stitches or runoffs	1. Overstitching not as specified		X
NOTE: Thread breaks or two or more consecutive skipped or runoff stitches not overstitched shall be classified as open seams.			
Buttonhole or eyelet	1. Omitted, not specified type, or not finished as specified	X	
	2. Ragged edge, incomplete stitching, or stitching not uniform		*
	3. One or more broken stitches, or two or more skipped stitches		X
	4. Stitches less than specified by: - 1 to 3 stitches		X
	- 4 or more stitches	X	
	5. Stitches not securely caught in fabric	X	
	6. Tack on one or both ends omitted		X
	7. Uncut		X

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Group A categories of Defects (cont'd)

CATEGORY V - Components and assembly defects (clothing and textile items)

Examine	Defect	Classification	
		Major	Minor
General	1. Any required component or operation omitted or not as specified (unless otherwise classified herein)	X	
	2. Any component misplaced or not assembled as specified	X	
	3. Number of folds at ends of webbing, where required, less than number specified		X
	4. Any component part not cut in accordance with specified pattern or direction lines on patterns or drawings		X
	5. Any unauthorized repair	X	
	6. Needle chews	X	
	7. Any component caught in an unrelated operation or stitching	X	
Binding	1. Loosely applied but not exposing raw edge of material		X
	2. Loosely applied exposing raw edge of material	X	
	3. End of binding not caught in seam as required (when specified)		X

CATEGORY VI - Identification defects

Examine	Defect	Classification	
		Major	Minor
Markings	1. Missing; incorrect; incomplete; illegible; or of improper size, location, sequence, or method of application	X	
Labels	1. Missing, incorrect, or illegible: - size or combination label	X	
	- identification label		X
	2. Not attached as specified		X
	3. Misplaced or stitching through printing		X

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5.1.2 Group B categories of defects.

CATEGORY VII - Plastic component defects

Defect

1. Color not as specified, not uniform in color, or does not match the standard sample
2. Discolored, faded, or mottled
3. Surface haze, color segregation, or resin streak
4. Any rough or sharp edge, or not free of flash
5. Evidence of application of an unspecified finish
6. Knockout mark that will be clearly visible in use on end item
7. Knock out mark deeper than permitted by the applicable specification or drawing
8. Chalked, burned, bloom, or scaley
9. Thin spot, wrinkle, pimple, or crater
10. Rough surface
11. Design detail deviating from specification or drawing requirements
12. Simulated finish not as specified (when required)
13. Scratch, nick, or other surface damage that will affect appearance
14. Crack, break, rupture, or fracture
15. Bent, twisted, malformed, or otherwise impaired.
16. Crazing, pitted, porous, or bubble (open or closed)
17. Heat mark, blister, or uneven surface
18. Oil, dirt, or foreign matter affecting serviceability or appearance

CATEGORY VIII - Welding defects

Defect

1. Undercut
2. Underfill
3. Overlap
4. Incomplete fusion (where visible)
5. Slag, flux, or spatter
6. Arc strike
7. Burn through
8. Insufficient penetration (where visible)
9. Surface cracking
10. Surface porosity

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Group B categories of defects (cont'd)

CATEGORY VIII - Welding defects (cont'd)

Defect

11. Unfilled craters
12. Misalignment of welded parts
13. Distortion of base metal
14. Poorly formed beads
15. Underwelded or overwelded

CATEGORY IX - Soldering defects

Defect

1. Excessive solder or solder runs
2. Solder spatter or beads
3. Charring or blistering of components
4. Solder points (peaks)
5. Pits, scars or holes
6. Fractured (cracked) solder
7. Contamination (not clean-evidence of foreign matter)
8. Inadequate wetting, or dewetting

CATEGORY X - Molded or cast metal item defects

Defect

1. Any crack in surface
2. Hot tears or cold shuts
3. Foreign matter, adhering to or embedded in surface
4. Tin streak
5. Gas hole
6. Oxides, visible on surface
7. Porosity
8. Segregation
9. Design detail deviating from specification or drawing requirements

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Group B categories of defects (cont'd)CATEGORY XI - Painting, finishing, anodizing defectsDefect

1. Area of no coating
2. Color not as specified
3. Exposed surface due to scratch, buff, dig, or abrasion
4. Run, sag, blistering, cracking, flaking, or peeling
5. Dust, dirt, spot, or stain that cannot be removed
6. Painted or coated surface not uniform in appearance
7. Powdery areas (anodizing)
8. Excessive contact marks (anodizing)
9. Contact marks not in areas of minimum exposure (anodizing-when specified)

5.2 Dimensional examination. Unless otherwise specified in the drawing, specification, or purchase document, the end item shall be examined for all specified dimensions. When the drawing, specification, or purchase document identifies specific dimensions to be examined, only those dimensions shall be examined. Any dimension exceeding the applicable tolerance shall be classified as a defect. The lot shall be expressed in units of the end item being procured. The sample unit shall be one each of the end item being procured. Unless otherwise specified in the drawing, specification, or purchase document the inspection level shall be S-3 and the AQL, expressed in terms of defects per hundred units, shall be 4.0.

5.3 Packaging inspection. An examination shall be made to determine that the preservation, packing and marking comply with the section 5 requirements of the applicable specification, or the packaging requirements of the drawing or purchase document. Defects shall be scored in accordance with the list below. The sample unit shall be one shipping container fully packaged. The lot size shall be the number of shipping containers in the inspection lot. The inspection level shall be S-2 and the AQL, expressed in terms of defects per hundred units, shall be 2.5.

<u>Examine</u>	<u>Defect</u>
Marking (Exterior and Interior)	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application.
Materials	Any component missing, damaged, or not as specified.

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5.3 Packaging inspection. (cont'd)

Examine	Defect
Workmanship	Inadequate application of components, such as incomplete closure of container flaps, loose strapping, improper taping, or inadequate stapling. Bulged or distorted container. Open or non-continuous heat sealed seam of polyethelene bag <u>1/</u>
Content	Number of units, put-ups, or intermediate packs per shipping container is more or less than required <u>1/</u> Number of units or put-ups per intermediate pack is more or less than required <u>1/ 2/</u> Identification marking (size, style, stock number, etc) on one or more unit or intermediate packages not as specified on shipping container <u>1/</u> Preservative (napthalene flakes, dessicant, moisture barrier etc) improperly applied or missing <u>1/</u>

1/ When applicable2/ For this defect, one intermediate pack from each shipping container in the sample shall be examined.

5.4 Palletization inspection.^{1/} An inspection shall be made to determine that the palletization complies with the section 5 requirements of the applicable specification, or the palletization requirements of the drawing or purchase document. Defects shall be scored in accordance with the list below. The sample unit shall be one palletized unit load fully packaged. The lot size shall be the number of palletized unit loads in the inspection lot. The inspection level shall be S-1, and the AQL, expressed in terms of defects per hundred units, shall be 6.5.

Examine	Defect
Finished dimensions	Length, width, or height exceeds specified maximum requirements
Palletization	Pallet pattern not as specified Interlock of loads not as specified Load not bonded with required straps as specified

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5.4 Palletization inspection (cont'd)

<u>Examine</u>	<u>Defect</u>
Weight	Exceeds maximum load limits
Marking	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application

1/ When palletization is required

6. Ordering data - Acquisition document should specify the following:

Catagories of defects to be applicable (see 5.1)

Custodian:

Army - GL

Preparing activity:

Army - GL

Review activities:

Army - AL, AV

DLA - GS, CT

Project No. QCIC-A051

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1. DOCUMENT NUMBER MIL-STD-908 (GL)		2. DOCUMENT TITLE Provisions for Evaluating the Quality of Spare Parts for Mechanical and Textile End Items					
3a. NAME OF SUBMITTING ORGANIZATION		4. TYPE OF ORGANIZATION (Mark one)					
b. ADDRESS (Street, City, State, ZIP Code)		<input type="checkbox"/> VENDOR					
		<input type="checkbox"/> USER					
		<input type="checkbox"/> MANUFACTURER					
		<input type="checkbox"/> OTHER (Specify): _____					
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				b. Recommended Wording:			
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