MIL-L-45403D
30 September 1982
SUPERSEDING
MIL-L-45403C
12 October 1973

# MILITARY SPECIFICATION

## LINK, CARTRIDGE, METALLIC BELT, 7.62MM, M13

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

## 1. SCOPE

1.1 Scope. This specification covers one type of metallic belt cartridge link intended to hold 7.62MM ammunition in the form of flexible belts for use in 7.62MM machine guns.

## 2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. Unless otherwise specified (See 6.1), the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation, form a part of this specification to the extent specified herein,

SPECIFICATIONS

MILITARY

| | |
|---|---|
| MIL-W-13855 | Weapons, Small Arms, General Specification for |
| MIL-A-48078 | Ammunition Standard Quality Assurance Provisions, General Specification for |
| DOD-P-16232 | Phosphate Coatings, Heavy, Manganese or Zinc Base (for Ferrous Metals) |

STANDARDS

| | |
|---|---|
| MIL-STD-105 | Sampling Procedures and Tables for Inspection by Attributes |
| MI L-STD-109 | Quality Assurance Terms and Definitions |
| MIL-STD-1168 | Lot Numbering of Ammunition |

FSC 1305

**Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, US Army Armament Research and Development Command, Attn. DRDAR-QA, Dover, New Jersey 07801 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.**

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings and publications form a part of this specification to the extent specified herein.

DRAWINGS

U.S. ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND

| | | |
|---|---|---|
| D10521997 | - | Case |
| C11836917 | - | Cartridge, Dummy, 7.62MM |
| C10522688 | - | Dummy Cartridge, 7.62MM, M172, Inert Loaded |
| F7268389 | - | Link, Cartridge, Metallic Belt, 7.62MM, M13 |
| P7268389 | - | Packaging Data Sheet for Link, Metallic Belt, 7.62MM, M13 |

2.2 Other publications.

| | | |
|---|---|---|
| IEL 7268389 | - | Index of Inspection Equipment List |

AMERICAN SOCIETY FOR TESTING AND MATERIALS

| | | |
|---|---|---|
| ASTM E 18 | - | Tests for Rockwell Hardness of Metallic Materials |

(Copies of specifications, standards, handbooks, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the Contracting Officer.)

Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 First article. Requirements for submission of first article shall be as specified in the contract (see 6.1). Unless otherwise specified (see 6.1) the first article shall include the pilot pack (see 5.1).

3.2 Materials, construction and design. Links shall conform to the materials, construction and design requirements specified herein, on Drawing F7268389 and in MIL-W-13855.

3.2.1 Belt strength. A belt consisting of six links and five 7.62MM dummy test cartridges, (Dwg No. 11836917) shall be capable of withstanding a tensile load of 55 pounds (lbs.) without separation. Testing shall be as specified in 4.5.3.

3.2.2 Cartridge stripping The force reqired to strip a NATO approved 7.62MM cartridge case from a link using a centrally applied load without impact shall be not less than 8.5 lbs. and not more than 18 lbs. Links shall assemble and disassemble without shaving resulting in removal of metal from the cartridge cases. Testing shall be as specified in 4.5.4.

3.2.3 Dynamic requirement A belt consisting of 101 links and 100 7.62MM NATO approved dummy cartridges shall withstand a free drop of one end of the belt. Full or partial separation of the links from the cartridges shall be permitted in no more than 10 links from the free end. Partial separation is defined as the disengagement of the link front, rear, or middle loop, or any combination thereof, with the cartridge. Testing shall be in accordance with 4.5.5.

3.2.4 Loop gap position. Links shall meet the loop gap relative position requirements as specified on Drawing F7268389 (Reference detail D). Testing shall be as specified in 4.5.6.

3.2.5 Functioning. Links shall be capable of being assembled into 100 round belts with 7.62MM NATO approved cartridges and fired in an approved 7.62MM machine gun as listed in 4.5.7 without cracking, breaking, separating or malfunctioning. Testing shall be as specified in 4.3.

3.3 Marking. Links shall be marked in accordance with MIL-W-13855 and Drawing No. F 26 389.

3.4 Workmanship. Parts, assemblies, subsystems and systems shall be visually examined to determine compliance with the following requirements. The quality of workmanship shall not adversely affect safety, function, performance, serviceability, interchangeability, and appearance. Completed parts and assemblies shall not exhibit defective material or processing such as: seams, laps, laminations, cracks, fins, extraneous material, visible steps or irregularities, sharp edges, nicks, scratches, burrs, tool scores and gouges, deformations, missing operations, improper assembly, missing parts, stains, corrosion, nonspecified oxidation (rust), unauthorized salvaging operations (e.g., hammering to shape, repair by welding, straightening, bending, etc.).

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or Purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein". Except as otherwise specified in the contract or order, the supplier 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 specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements. Quality assurance terms and definitions used herein are in accordance with MIL-STD-109.

4.2 Classification of inspections. Unless otherwise specified in the specification or contract, the following types of inspection shall be conducted on the unit of the product.

a. First Article Inspection.

b, Quality Conformance Inspection

4.3 First article inspection.

4.3.1 Submission. The contractor shall submit a first article as designed by the Contracting Officer for evaluation in accordance with the provisions of 4.3.2. The first article shall consist of the following items in sample quantities as indicated.

| Part Description | Drawings | Quantity |
|---|---|---|
| Link, Cartridge, Metallic Belt, 7.62MM, M13 | 7268389 | 2600 |

4.3.2 Inspections to be performed. See MIL-A-48078 and Table I herein.

4.3.3 Rejection. Rejection of first article sample shall be in accordance with Table I and MIL-A-48078.

TABLE I. First article inspection

**CLASSIFICATION OF DEFECTS & TESTS** MIL-L-45403D

| PARAGRAPH | TITLE: Link, Cartridge, Metallic Belt, 7.62MM, M13 | | SHEET 1 OF 1 | | DRAWING NUMBER: See Below |
|---|---|---|---|---|---|
| | | | | | NEXT HIGHER ASSEMBLY |
| CATEGORY | EXAMINATION OR TEST | NO. OF SAMPLE UNITS | AQL OR 100% | REQUIREMENT PARAGRAPH | PARAGRAPH REFERENCE /INSPECTION METHOD |
| | Link, Cartridge, Metallic Belt, 7.62MM, M13 (Drawing 7268389) | | Acc/Rej | | |
| | Examination for Defects | 200 | 0/1 | 3.2 | 4.4.2.1 |
| | Corrosion | 8 | 0/1 | 3.2 | 4.5.8 |
| | Supplementary wax coating weight (If Applicable) | 20 | 0/1 | 3.2 | 4.5.1 |
| | Hardness | 50 | 0/1 | 3.2 | 4.5.9 |
| | Decarburization | 10 | 0/1 | 3.2 | 4.5.2 |
| | Belt strength | 60 | 0/1 | 3.2.1 | 4.5.3 |
| | Cartridge stripping | 160 | 0/1 | 3.2.2 | 4.5.4 |
| | Dynamic | 1010 | 0/1 | 3.2.3 | 4.5.5 |
| | Loop gap position | 40 | 0/1 | 3.2.4 | 4.5.6 |
| | Functioning | 1000 | 0/1 | 3.2.5 | 4.5.7 |

NOTES:

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4.4 Quality conformance inspection.

4.4.1 Inspection lot formation. Inspection lots shall comply with the lot formation provisions of MIL-A-48078 and MIL-W-13855. Inspection lots shall not exceed 500,000 links.

4.4.1.1 Heat treat lot. The heat treat lot shall be limited to one heat of steel and shall consist of links heat treated in a batch type furnace at one charge or in a continuous type furnace during an uninterrupted period extending over not more than one eight hour shift.

4.4.2 Examination. See MIL-A-48078.

a. Sampling plans. Unless otherwise specified in the Classification of Defects, sampling plans and procedures for major and minor defects shall be in accordance with MIL-STD-105, Inspection Level II.

TABLE II. QUALITY CONFORMANCE INSPECTION



## CLASSIFICATION OF DEFECTS & TESTS

| PARAGRAPH | TITLE | SHEET | DRAWING NUMBER |
|---|---|---|---|
| 4.4.2.1 | Link, Cartridge, Metallic Belt, 7.62MM, M13 | 1 OF 2 | 7268389 |
| | | | NEXT HIGHER ASSEMBLY |

| CATEGORY | EXAMINATION OR TEST | NO. OF SAMPLE UNITS | AQL OR 100% | REQUIREMENT PARAGRAPH | PARAGRAPH REFERENCE /INSPECTION METHOD |
|---|---|---|---|---|---|
| Critical | None defined | | | | |
| Major | | | | | |
| 101 | Height of tab, incorrect | | 0.65% | 3.2 | D7272519/D7274528 |
| 102 | Height, location, tab, incorrect | | 0.65% | 3.2 | D7272519/D7274528 |
| 103 | Diameter, connecting loop, incorrect | | 0.25% | 3.2 | SMTE |
| 104 | Alignment of front, rear and connecting loop, incorrect | | 0.65% | 3.2 | F7274527 |
| 105 | Feedway clearance height, incorrect | | 0.65% | 3.2 | C7274347 |
| 106 | Width, connecting loop opening, incorrect | | 1.50% | 3.2 | A7274117/A7274118 |
| 107 | Width, front loop opening, incorrect | | 1.50% | 3.2 | A7274112/A7274113 |
| 108 | Width, rear loop opening, incorrect | | 1.50% | 3.2 | A7274114/A7274115 |
| 109 | Corrosion | See Note 1 | | 3.2 | 4.5.8 |
| 110 | Supplementary wax coating weight (from each shift's production) (If Applicable) | 10 | Acc-0 Rej-1 | 3.2 | 4.5.1 |
| 111 | Hardness (See Note 2) | | 0.40% | 3.2 | 4.5.9 |
| 112 | Decarburization (See Note 3) | 5 | Acc-0 Rej-1 | 3.2 | 4.5.2 |
| 113 | Belt strength (See Note 4) | 30 | Acc-0 Rej-1 | 3.2.1 | 4.5.3 |
| 114 | Cartridge stripping (See Note 4) | | .10% | 3.2 3.2.2 | 4.5.4 |
| 115 | Dynamic | 505 | Acc-0 Rej-1 | 3.2 3.2.3 | 4.5.5 |
| 116 | Loop gap position | 20 | Acc-0 Rej-1 | 3.2 3.2.4 | 4.5.6 |

NOTES:

QUALITY CONFORMANCE INSPECTION

## CLASSIFICATION OF DEFECTS & TESTS

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| PARAGRAPH | TITLE | | SHEET 2 OF 2 | | DRAWING NUMBER |
|---|---|---|---|---|---|
| 4.4.2.1 | Link, Cartridge, Metallic Belt, 7.62MM, M13 | | | | ~~7268389~~ NEXT HIGHER ASSEMBLY |
| CATEGORY | EXAMINATION OR TEST | NO. OF SAMPLE UNITS | AQL OR 100% | REQUIREMENT PARAGRAPH | PARAGRAPH REFERENCE /INSPECTION METHOD |
| 117 | Functioning (See Note 5) | 500 | Acc-0<br>Rej-1 | 3.2.5<br>3.2 | <br>4.5.7 |
| Minor | | | | | |
| 201 | Width, location front loop, incorrect | | 2.5% | 3.2 | D7796802/D7272533 |
| 202 | Width, rear loop, incorrect | | 2.5% | 3.2 | C7274349 |
| 203 | Length, overall, incorrect | | 2.5% | 3.2 | D7272519 |
| 204 | Width, connecting loop, over incorrect | | 2.5% | 3.2 | SMTE |
| 205 | Centrality of connecting loop with opening between front & rear loops | | 2.5% | 3.2 | C7274350 |
| 206 | Stock thickness | | 2.5% | 3.2 | C7274348 |
| 207 | Cartridge rim clearance surface | | 2.5% | 3.2 | Visual |
| 208 | Radius, tab, over | | 2.5% | 3.2 | Visual |
| 209 | Width of tab | | 2.5% | 3.2 | SMTE |
| 210 | Radius, edges | | 2.5% | 3.2 | Visual |
| 211 | Incorrect or missing surface treatment and supplementary coating | | 2.5% | 3.2 | Visual |
| 212 | Incorrect or missing marking | | 2.5% | 3.2 | Visual |
| 213 | Workmanship | | 2.5% | 3.2 | Visual |

1. Sampling and rejection shall be in accordance with DOD-P-16232.
2. Inspection Level S-4 of MIL-STD-105. Samples selected from each heat lot (See 4.4.1.1)
3. Selected from each heat lot.
4. Inspection Level S-4 of MIL-STD-105. Cases shall also be examined for evidence of brass metal shavings per Para. 3.2.2.
5. When specified in the contract (See 6.1), a function test will be required as part of the Quality Conformance Inspection.

NOTES:

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QUALITY CONFORMANCE INSPECTION

## CLASSIFICATION OF DEFECTS & TESTS

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| PARAGRAPH | TITLE | | SHEET 1 OF 1 | | DRAWING NUMBER |
|---|---|---|---|---|---|
| 4.4.2.2 | Link, Cartridge, Metallic Belt, 7.62MM, M13<br>Packaging Data Sheet | | | | 7268389<br>NEXT HIGHER ASSEMBLY |
| CATEGORY | EXAMINATION OR TEST | NO. OF SAMPLE UNITS | AQL OR 100% | REQUIREMENT PARAGRAPH | PARAGRAPH REFERENCE /INSPECTION METHOD |
| Critical | None defined | | | | |
| Major | | | | | |
| 101 | Improper level of packaging and packing | | 1.0 | 3.2 | Visual |
| 102 | Incorrect or illegible marking | | 1.0 | 3.2 | Visual |
| 103 | Contaminated links | | 1.5 | 3.2 | Visual |
| 104 | Improper containers | | 1.5 | 3.2 | Visual |
| 105 | Container interior contaminated with dirt, lint, or other foreign matter | | 1.5 | 3.2 | Visual |
| 106 | Improperly oriented links in link cartons | | 1.5 | 3.2 | Visual |
| 107 | Improperly oriented link cartons in shipping containers | | 1.5 | 3.2 | Visual |
| 108 | Incorrect quantity of links per shipping container | | 1.5 | 3.2 | Visual |
| 109 | Improper closure of shipping container | | 1.5 | 3.2 | Visual |
| 110 | Incorrect or missing inspection container | | 1.5 | 3.2 | Visual |
| Minor | | | | | |
| 201 | Workmanship | | 2.5 | 3.2 | Visual |

NOTES:

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4.4.3 Testing. Testing is described in the First Article and Quality Conformance Inspection Tables.

4.4.4 Inspection equipment. The inspection equipment required to perform the examinations and test prescribed herein is described in the "Paragraph Reference/Inspection Method" column in the tables starting with 4.4.2.1. The contractor shall submit for approval inspection equipment designs in accordance with the terms of the contract. See Section 6 of MIL-A-48078 and 6.2 herein.

4.5 Methods of inspection.

4.5.1 Supplementary wax coating weight test (If Applicable). The sample links shall be tested by weighing the links together to the nearest milligram. The supplementary wax coating shall then be completely removed from the links by trichloroethylene or trichloroethane vapor, and the links dried and reweighed. The difference between the total weights before and after removal of the supplementary wax coating divided by the number of links tested shall be considered as the weight of the supplementary wax coating of each link.

4.5.2 Carburization or decarburization test. The sample links for this test shall be cross sectioned along the plane of the center line of the connecting loop which is perpendicular to the center line of the retaining loops. The cross section of the sample links shall be polished, etched with a 3 to 5 percent Nital solution and examined under a microscope of not less than 500 power to determine compliance with the carburization or decarburization requirements on Drawing F7268389.

4.5.3 Belt strength test. The sample links shall be tested using inspecting equipment in accordance with Drawing F11836918 and C11836917. Links shall be assembled into belts of six links per belt and placed into the test fixture. The 55 pound load shall be applied at a uniform rate and the belt shall remain under tension for a minimum of 30 seconds. Upon removal of the load, the links shall show no evidence of separation. At the completion of the belt strength test, the links shall be scrapped.

4.5.4 Cartridge stripping test. The sample links shall be tested using inspection equipment in accordance with Drawing F11836919. The links shall be placed in a holding fixture and an approved NATO brass cartridge case in accordance with Drawing D10521997 inserted into the link to the depth specified on Drawing F7268389. The load shall then be gradually applied until the case is stripped from the link. During assembly and disassembly operations while performing the stripping test, the cartridge cases shall be visually examined for evidence of shaving resulting in the removal of metal. The cases shall not be reused.

4.5.5 Dynamic test. The sample links shall be tested by assembling the links into 100 round belts using 7.62MM NATO approved dummy cartridges in accordance with Drawing C11836917 or C10522688. The test fixture specified on Drawing F11836906 shall be rigidly secured with the two mandrels in-the same horizontal plane. The end of the belt with the free front and rear loops shall be placed on the fixed mandrel with the cartridge bases facing toward the operator. The free mandrel shall be place through the block bushing and middle link loop of the remaining end of the belt. Assuring no movement of the belt prior to the test, the free end of the belt shall be allowed to drop freely by releasing the free mandrel.

4.5.6 Loop gap position test. The sample links shall be tested by placing the links on a hard flat surface with the openings down. Plane F-F, as shown in Drawing F7268389, shall be held firmly on surface and points D nor E shall not touch surface. The process shall be repeated by firmly holding plane J-J on surface and points G & H shall not touch the surface.

4.5.7 Function test. A sample of 500 1 inks shall be taken and tested by the testing agency for functioning requirements (see 3.2.5). The links shall be assembled into 100 round belts using NATO approved 7.62MM cartridges and fired in bursts of 10 to 20 rounds each as follows:

a. An unsupported, linked belt shall be fired through an M60 machine gun.

b. A linked belt shall be fired through an M134 automatic gun using a feeding system simulating the M21 armament subsystem application.

c. A linked belt shall be fired through an M219 machine gun having a feeding system simulasting an M60 tank installation (left-hand feed).

d. A linked belt shall be fired through an M240MG (right-hand feed) with feeding system simulating an M2 Bradley Fighting Vehicle installation.

e. A linked belt shall be fired through an M240MG (left-hand feed) with feeding system simulating an M60A1 Tank installation.

4.5.8 Accelerated corrosion testing. Sample links shall be tested for corrosion resistance of the applied protective coating using either the salt spray (fog) test or the Springfield Immersion test specified in MIL-P-16232.

4.5.9 Hardness testing. Sample links shall be taken from each heat treat lot (see 4. in accordance with MIL-STD-105, using inspection level S-4 and tested for hardness using the test method specified in ASTM Method E 18.

## 5. PACKAGING

5.1 Preservation and packaging. The links shall be preserved and packaged for shipment in accordance with Packaging Data Sheet P7268389 for the levels as specified in the contract (see 6.1).

5,2 Packing. The links shall be packed in accordance with the Packaging Data Sheet P7268389 for the levels as specified in the contract (see 6. 1).

5.3 Marking. Marking shall be in accordance with Packaging Data, Sheet P7268389.

5.4 Shipping. When shipments from more than one lot are shipped as a carload, each lot shall be kept separate and the division between lots clearly indicated to prevent mixing of the lots in transit.

## 6. NOTES

6.1 Ordering data. See MIL-A-48078.

6. 2 Submission of inspection equipment designs for approval. See MIL-A-48078. Submit equipment designs as required to Commander, ARRADCOM, Dover, NJ 07801, ATTN: DRDAR-QAF-I.

6.3 Drawings. Drawings listed in Section 2 of this specification under the heading US Army Armament Research and Development Command (ARRADCOM) may also include drawings prepared by, and identified as Edgewood Arsenal, Frankfort Arsenal, Rock Island Arsenal or Picatinny Arsenal drawings. Technical data originally prepared by these activities is now under the cognizance of ARRADCOM.

6.4 Certain provisions of this specification are the subject of international standardization agreements (ABC-Army-STD-108 and NATO STANAG 2329). When amendment, revision, or cancellation of this specification is proposed which will affect or violate the international agreement concerned, the preparing activity will take appropriate reconciliation action through international standardization channels including departmental standardization offices, if required.

6.5 Safety. The function test (4.5.7) involves storage, handling, and firing of live service ammunition. This test presents potential hazards to personnel. All applicable safety rules, regulation, clauses, and procedures must be followed.

6.6 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Custodian:
Army-AR

Preparing activity:
Army-AR

Review activities:
Army-AR
Air Force-99

(Project 1305-0-883)

Users:
Navy-MC

Other interests:
International (See 6.4)

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DOCUMENT IDENTIFIER *(Number)* AND TITLE

MIL-L-45403D LINK, CARTRIDGE, METALLIC BELT, 7.62MM, M13

NAME OF ORGANIZATION AND ADDRESS OF SUBMITTER

☐ VENDOR ☐ USER ☐ MANUFACTURER

1. ☐ HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? ☐ IS ANY PART OF IT TOO RIGID, RESTRICTIVE, LOOSE OR AMBIGUOUS? PLEASE EXPLAIN BELOW.

A. GIVE PARAGRAPH NUMBER AND WORDING

B. RECOMMENDED WORDING CHANGE

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DATE

DD FORM 1 OCT 76 1426 EDITION OF 1 JAN 72 WILL BE USED UNTIL EXHAUSTED.