MIL-C-43737B
12 June 1981
SUPERSEDING
MIL-C-43737A
15 February 1974

# MILITARY SPECIFICATION

# CASE MAINTENANCE EQUIPMENT,

# SMALL ARMS, M16A1

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

## 1. SCOPE

1.1 Scope. This specification covers the requirements for the design, materials and fabrication of a case for carrying maintenance equipment for the M16A1 Rifle.

## 2. APPLICABLE DOCUMENTS

* 2.1 Issues of documents. The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

| | | |
|---|---|---|
| V-T-285 | - | Thread, Polyester |
| UU-P-268 | - | Paper, Kraft, Wrapping |
| DDD-L-20 | - | Label: For Clothing, Equipage, and Tentage, (General Use) |
| PPP-B-636 | - | Boxes, Shipping, Fiberboard |

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

FSC 8465

MILITARY

| | | |
|---|---|---|
| MIL-W-4088 | - | Webbing, Textile, Woven Nylon |
| MIL-T-5038 | - | Tape, Textile and Webbing, Textile, Reinforcing, Nylon |
| MIL-C-7219 | - | Cloth, Duck, Nylon |
| MIL-H-9890 | - | Hardware, Individual Load Carrying Equipment: and Hardware, Miscellaneous |
| MIL-F-10884 | - | Fasteners, Snap |
| MIL-F-21840 | - | Fastener Tapes, Hook and Pile, Synthetic |
| MIL-W-27265 | - | Webbing, Textile, Woven Nylon Impregnated |

STANDARDS

FEDERAL

| | | |
|---|---|---|
| FED-STD-751 | - | Stitches, Seams, and Stitchings |

MILITARY

| | | |
|---|---|---|
| MIL-STD-105 | - | Sampling Procedures and Tables for Inspection by Attributes |
| MIL-STD-129 | - | Marking for Shipment and Storage |
| MIL-STD-147 | - | Palletized Unit Loads |
| MIL-STD-1188 | - | Commercial Packaging of Supplies and Equipment |
| MS 27981 | - | Fasteners, Snap, Style 2A (Small Wire Spring Clamp Type) |

DRAWING

U.S. ARMY NATICK RESEARCH AND DEVELOPMENT LABORATORIES

| | | |
|---|---|---|
| 2-2-282 | - | Case, Maintenance Equipment, Small Arms, (For M16A1 Rifle); Assembly Complete |

(Copies of specifications, standards and drawings required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS

* 3.1 Guide samples. Guide samples of the end item, when furnished, are solely for guidance and information to the contractor (see 6.3). Variations from the specification may appear in the sample, in which case the specification shall govern.

3.2 First article. When specified (see 6.2), the contractor shall furnish a sample for first article inspection and approval (see 4.3 and 6.4).

* 3.3 Materials (see 6.5).

3.3.1 Cloth, duck, nylon. The nylon cloth shall be Olive Green 106 and shall conform to type III, class 3 of MIL-C-7219.

* 3.3.2 Webbing, nylon. The nylon webbing shall be Olive Drab 7 and shall conform to type VIIIc, class 2 of MIL-W-4088 and class R of MIL-W-27265.

* 3.3.3 Tape, nylon. The nylon tape used for binding shall be dyed Olive Drab 7 and shall conform to type III, 3/4 inch wide of MIL-T-5038.

* 3.3.4 Fastener tape, hook and pile, nylon. The nylon fastener tape shall be dyed Olive Green 106 and shall conform to type II, class 1, 5/8 inch wide of MIL-F-21840.

* 3.3.5 Thread, polyester. The thread for all stitching shall conform to type I, class 1, sub-class A or B, size E of V-T-285.

3.3.5.1 Color. The thread shall be dyed Olive Drab S-1, C.A. 66022, and shall show fastness to weathering equal to or better than the standard sample.

3.3.6 Keeper, with slide. The keeper with slide shall conform to type X of MIL-H-9890.

3.3.7 Fasteners, snap. The snap fastener shall be style 2A, finish 2 conforming to MIL-F-10884 and the following listed part numbers of MS 27981:

| Component | Part number |
|---|---|
| Button | -1B |
| Socket | -3B |
| Stud | -4B |
| Eyelet | -5B |

3.4 Construction. The construction shall conform in all respects to Drawing 2-2-282 and as specified herein.

* 3.4.1 Stitching, machine. All stitching, except bartacking, shall conform to type 301 of FED-STD-751 with 8 to 10 stitches per inch.

3.4.1.1 Type 301 stitching. Ends of all stitching shall be backstitched or overstitched 1/2 inch minimum except where ends are turned under in a hem or held down by other stitching. Thread tension shall be maintained so that there will be no loose stitching resulting in loose bobbin or top thread, or excessively tight stitching resulting in puckering of the materials sewn. The lock shall be embedded in the materials sewn.

3.4.1.1.1 Repairs of type 301 stitching. Repairs of type 301 stitching shall be as follows:

a. Unless otherwise specified, when thread breaks or bobbin run-outs occur during stitching, the stitching shall be repaired by restarting the stitching a minimum of 1/2 inch back of the end of the stitching. 1/

* b. Unless otherwise specified, thread breaks, or two or more consecutive skipped or runoff stitches noted during inspection of the item (in-process or end item) shall be repaired by overstitching. The stitching shall start a minimum of 1/2 inch in back of the defective area, continue over the defective area and continue a minimum of 1/2 inch beyond the defective area onto the existing stitching. Loose or excessively tight stitching shall be repaired by removing the defective stitching, without damaging the materials, and restitching in the required manner. 1/

1/ When making the above repairs, the ends of the stitching are not required to be backstitched.

3.4.1.2 Bartacking. Unless otherwise specified, bartacking shall be 1/2 ± 1/16 inch in length, 1/8 ± 1/32 inch in width and shall contain 28 stitches. Bartacking shall be free from thread breaks and loose stitching.

3.4.1.3 Automatic stitching. Automatic stitching machines may be used to perform any of the required stitch patterns provided the requirements for the stitch pattern, stitches per inch, and size and type of thread are met; and at least three tying, overlapping or backstitches are used to secure the ends of the stitching.

3.4.1.4 Thread ends. All thread ends shall be trimmed to a length of not more than 1/4 inch.

* 3.4.2 Setting of snap fasteners. A hole shall be prepunched through the materials before insertion of the button barrel of the female component and the eyelet barrel of the male component. The hole shall be smaller than the outside diameter of the button barrel or the eyelet barrel, as applicable, so that the barrel must be forced through the hole. The hole shall not be punched in the setting operation with the button or eyelet barrel. The fastener components shall be securely clinched without cutting the adjacent materials and no more than three splits shall occur in the button or eyelet barrels.

3.4.3 Fusing of nylon tape and webbing ends. All ends of nylon tape and webbing shall be fused. The apparatus used to fuse the tape and webbing ends shall be capable of providing sufficient heat to provide a smooth edge with the cut ends of the tape and webbing yarns all fused together.

3.4.4 Location marks. Location marks shall not be drilled except for locating snap fasteners.

* 3.4.5 Repairs. Repairs such as mends, darns or patches shall not be made to the case.

3.4.6 Replacement of defective components. During the spreading, cutting and manufacturing process, components having material defects or damages that are classified as defects in 4.4.3.1 shall be removed from production and replaced with non-defective and properly matched components.

3.5 Marking. The identification marking shall be applied in the location shown on the drawing and shall conform to type IV, class 5 of DDD-L-20. The nomenclature may be abbreviated to read "Case, Maint. Equip., M16A1 Rifle". The letters "US" shall be applied in the location and in the size characters indicated on Drawing 2-2-282 and shall conform to type IV, class 9 of DDD-L-20. Fastness of the class 9 marking shall be as specified for class 5 marking.

3.6 Workmanship. The finished case shall conform to the quality of product established by this specification. The occurrence of defects shall not exceed the applicable acceptable quality levels.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, 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 specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Certificate of compliance. Where certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification.

4.2 Classification of inspection. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.3).
b. Quality conformance inspection (see 4.4).

* 4.3 First article inspection. When a first article is required (see 6.2), it shall be examined for the defects specified in 4.4.3.1 and 4.4.3.2. The presence of any defect shall be cause for rejection of the first article.

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

4.4.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of referenced specifications, drawings and standards unless otherwise excluded, amended, modified or qualified in this specification or applicable purchase document.

* 4.4.2 In-process inspection. Inspection shall be made at any point or during any phase of the manufacturing process to determine whether construction details which cannot be examined on the finished item are in accordance with specified requirements. This inspection shall include verification that holes punched for snap fasteners conform to 3.4.2. Whenever nonconformance is noted, corrections shall be made to the items affected and lot in-process. Items which cannot be corrected shall be removed from production.

* 4.4.3 End item examination. The end item shall be examined in accordance with 4.4.3.1 and 4.4.3.2. The lot size shall be expressed in units of one case. The sample unit shall be one case.

* 4.4.3.1 Visual examination. The end item shall be examined for the defects listed below. The inspection level shall be II and the acceptable quality level (AQL) shall be 2.5 major and 6.5 total (major and minor combined) defects per hundred units.

| Examine | Defect | Classification Major | Minor |
|---|---|---|---|
| Cloth | Any hole, cut, tear, or abrasion. | X | |
| | Smash, open place, broken or missing yarn, or multiple floats. | X | |
| Webbing and tape | Cut ends not fused or not fused correctly, i.e., yarns not fused together or not smooth. | | X |
| | Frayed or scalloped edges; not firmly and tightly woven. | | X |
| Fastener tape, hook and pile | Any hole, cut, or tear. | X | |
| | Hooks missing or flattened impairing function. | X | |

| Examine | Defect | Classification Major | Minor |
|---|---|---|---|
| Hardware: | | | |
| General | Broken or malformed, corroded area, burr, or sharp edge. | X | |
| | Finish omitted. | X | |
| | Finish defects, i.e., wrinkles, drops, thin or loose film. | | X |
| Keeper | Slide component of keeper jams in open, partly closed, or closed position. | X | |
| | NOTE: Check operation of keeper by fully opening and closing. | | |
| Snap fastener | Any fastener not functioning properly, i.e., fails to snap closed, provide a secure closure, or open freely. | X | |
| | NOTE: The fasteners shall be snapped and unsnapped twice to determine whether parts of fastener separate freely and also effect a secure closure. | | |
| | Clinched excessively tight, cutting adjacent material. | X | |
| | Clinched loosely, permitting any component to rotate freely but not to the degree that any component can be expected to become detached during use. | | X |
| | 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 and insecure clinching. | | |
| | Incorrect style. | X | |
| | More than three splits in eyelet or button barrels. | | X |

| Examine | Defect | Classification Major | Minor |
|---|---|---|---|
| Seams and stitching: | | | |
| Open seams | Less than 1/2 inch. | | X |
| | 1/2 inch or more. | 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. | | |
| Raw edges (except where required) | More than 1/2 inch when securely caught in stitching. | | X |
| NOTE: | Raw edges not securely caught in stitching shall be classified as open seams. | | |
| Seams and stitch types | Wrong seam or stitch type. | X | |
| Stitch tension | Loose, resulting in loose top or bobbin thread. | | X |
| | Excessively tight, resulting in puckering of material. | | X |
| Stitches per inch | One stitch less than minimum specified. 1/ | | X |
| | Two or more stitches less than minimum specified. 1/ | X | |
| | One or more stitches in excess of maximum specified. 1/ | | X |
| | 1/ Defect to be scored when condition exists on major portion of seam. Applicable to each individual seam. | | |
| Stitching ends (on stitch type 301) | Not secured as specified (except where ends are held down by other stitching or turned under in a hem). | | X |
| Thread breaks, skipped stitches or runoffs (on type 301 stitching) | Thread breaks, or two or more consecutive skipped or runoff stitches overstitched less than 1/2 inch in each direction beyond the defective stitching area. | | X |

| Examine | Defect | Classification Major | Minor |
|---|---|---|---|
| Thread breaks, NOTE: skipped stitches or runoffs (on type 301 stitching) (cont'd) | Thread breaks, or two or more consecutive skipped or runoff stitches not overstitched shall be classified as open seams. | | |
| Bartacks | Loose stitching, incomplete or broken. | | X |
| | Any omitted. | X | |
| Rows of stitching | Any row missing except on keeper retainer. | X | |
| | On keeper retainer: | | |
| | - One row of stitching omitted. | | X |
| | - Two or more rows of stitching omitted. | X | |
| Cleanness | Grease or oil stains clearly noticeable. | | X |
| | Thread ends not trimmed throughout as specified. | | X |
| Components and assembly | Any component or required operation omitted (unless otherwise classified herein). | X | |
| | Mend, darn or patch. | X | |
| | Needle chews: | | |
| | - up to 1/8 inch in length. | | X |
| | - 1/8 inch or more in length. | X | |
| Binding tape | Loosely applied but not exposing raw edge of material. | | X |
| | Loosely applied exposing raw edge of material. | X | |
| Fastener tape | Location of hook and pile reversed, i.e., hook attached where pile is required or vice versa. | | X |
| Identification marking | Omitted, incorrect, illegible, misplaced, or size of characters not as specified. | | X |

4.4.3.2 Dimensional examination. Examination shall be made for compliance with all dimensions shown on Drawing 2-2-282 which can be examined on the end item, including stitch margins and gage, excluding reference dimensions. Any dimension exceeding the applicable tolerance shall constitute a defect. The inspection level shall be S-3 and the AQL shall be 10.0 defects per hundred units.

* 4.4.4 Packaging examination. An examination shall be made to determine that the preservation, packing and marking comply with the section 5 requirements. Defects shall be scored in accordance with the list below. The sample unit shall be one shipping container fully packaged except that it need not be closed. Examination of closure defects listed below shall be made on shipping containers fully packaged. The lot size shall be the number of shipping containers in the end item inspection lot. The inspection level shall be S-2 and the AQL shall be 2.5 defects per hundred units.

| Examine | Defect |
|---|---|
| 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. |
| Workmanship | Inadequate application of components, such as incomplete closure of container flaps, improper taping, loose strapping, inadequate stapling.<br>Bulged or distorted container. |
| Content | Number of bundles per shipping container is more or less than required.<br>Number of cases per bundle is more or less than required. 1/ |

1/ For this defect, two bundles from each shipping container in the sample shall be examined.

* 4.4.5 Palletization examination. An examination shall be made to determine that the palletization complies with the section 5 requirements. 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 end item inspection lot. The inspection level shall be S-1 and the AQL shall be 6.5 defects per hundred units.

| Examine | Defect |
|---|---|
| Finished dimensions | Length, width, or height exceeds maximum requirement. |
| Palletization | Pallet pattern not as specified. Interlocking of loads not as specified. Load nto bonded with required straps as specified. |
| Weight | Exceeds maximum load limits. |
| Marking | Omitted; incorrect; illegible; of improper size, location, sequence, or method of application. |

5. PACKAGING

* 5.1 Preservation. Preservation shall be level A or Commercial a specified (see 6.2).

5.1.1 Level A. Each case shall have the keeper and the flap closed. A pair of cases shall be placed together with fronts facing, flaps reversed, and keepers adjacent to each other. The keepers shall rest on the keeper retainer and not on the flap binding tape. Each pair of cases shall measure approximately 9-3/4 inches in length and 4-1/2 inches in width. Ten cases (5 pairs) shall be neatly stacked in a bundle to measure approximately 4 inches in depth. The bundle shall be securely tied at each end with cotton tape or twine.

* 5.1.2 Commercial. Cases shall be preserved in accordance with MIL-STD-1188.

5.2 Packing. Packing shall be level A, B, or Commercial as specified (see [illegible]

* 5.2.1 Level A packing. Four hundred cases, preserved as specified in 5.1.[illegible] be packed in a fiberboard shipping container conforming to style RSC-L, grade [illegible] PPP-B-636. The inside of each shipping container shall be fitted with a box [illegible] conforming to type CF, class weather-resistant, variety DW, grade V15c of PPP-B-636. Level A unit packs shall be packed flat, five in length, two in [illegible] and four in depth within a shipping container. Inside dimensions of the ship[illegible] container shall approximate 23 inches in length, 20 inches in width, and 16 [illegible] in depth. Approximate dimensions are furnished as a guide only. Each con[illegible] shall have the contents completely covered on the top and bottom with a sh[illegible] pound minimum basis weight kraft paper conforming to type I, grade B of UU-P[illegible] Each shipping container shall be closed in accordance with method III, water [illegible] in accordance with method V and reinforced as specified in the appendix o[illegible] PPP-B-636, except that the inspection shall be in accordance with 4.4.[illegible]

* 5.2.2 Level B packing. Four hundred cases, preserved as specified in 5.1, shall be packed in a fiberboard shipping container conforming to style RSC-L, type CF (variety SW) or SF, class domestic, grade 275 of PPP-B-636. The inside of each shipping container shall be fitted with a box liner conforming to type CF, class domestic, variety DW, grade 275 of PPP-B-636. Level A unit packs shall be packed flat, five in length, two in width, and four in depth within a shipping container. Inside dimensions of the shipping container shall approximate 23 inches in length, 20 inches in width, and 16 inches in depth. Approximate dimensions are furnished as a guide only. Each container shall have the contents completely covered on the top and bottom with a sheet of 30 pound minimum basis weight kraft paper conforming to type I, grade B of UU-P-268. Each shipping container shall be closed in accordance with method II as specified in the appendix of the container specification, except that the inspection shall be in accordance with 4.4.4.

* 5.2.2.1 Weather-resistant fiberboard containers. When specified (see 6.2), the shipping container shall be a grade V3c, V3s or V4s fiberboard box fabricated in accordance with PPP-B-636 and closed in accordance with method III as specified in the appendix of the container specification, except that the inspection shall be in accordance with 4.4.4.

* 5.2.3 Commercial packing. Cases, preserved as specified in 5.1, shall be packed in accordance with MIL-STD-1188.

5.3 Palletization. When specified (see 6.2), cases, packed as specified in 5.2, shall be palletized in accordance with load type I of MIL-STD-147. Each prepared load shall be bonded with primary and secondary straps in accordance with bonding means K and L. Pallet patterns shall be in accordance with the appendix of MIL-STD-147. Interlocking of loads shall be effected by reversing the pattern of each course. If the container is of a size which does not conform to any of the pallet patterns specified in MIL-STD-147, the pallet pattern used shall first be approved by the contracting officer.

* 5.4 Marking. In addition to any special marking required by the contract, unit packs, shipping containers and palletized unit loads shall be marked in accordance with MIL-STD-129 or MIL-STD-1188, as applicable. Each fourth unit pack shall have attached a manila colored paper shipping tag for the identification information.

6. NOTES

6.1 Intended use. The case is designed for carrying maintenance equipment for the M16A1 Rifle.

6.2 Ordering data. Procurement documents should specify the following:

(a) Title, number and date of this specification.
(b) When a first article sample is required (see 3.2, 4.3 and 6.4).
* (c) Selection of applicable levels of preservation and packing (see 5.1 and 5.2).
(d) When weather-resistant grade fiberboard shipping containers are required for level B packing (see 5.2.2.1).
(e) When palletization is required (see 5.3).

6.3 Samples. For access to samples, address the procuring activity issuing the invitation for bid.

6.4 First article. When a first article sample is required, it shall be inspected and approved under the appropriate provisions of DAR 7-104.55. The first article should be a preproduction sample consisting of one completed case. The contracting officer should include specific instructions in all procurement instruments, regarding arrangements for inspection and approval of the first article.

* 6.5 Recycled material. It is encouraged that recycled material be used when practical as long as it meets the requirements of the specification.

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

Custodians:

Army - GL
Navy - MC
Air Force - 99

Review activities:

Army - MD
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User activity:

Air Force - 45

Preparing activity:

Army - GL

Project No. 8465-0825

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DOCUMENT IDENTIFIER *(Number)* AND TITLE

MIL-C-43737B SMALL ARMS, M16A1

NAME OF ORGANIZATION AND ADDRESS OF SUBMITTER

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