

MIL-L-45963

1 October 1974

SUPERSEDING

(See Section 6)

MILITARY SPECIFICATION

LOADER, DELINKING, AIRCRAFT MACHINE GUN, MAU-69A/A

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

1. SCOPE

1.1 This specification covers one type of manually operated delinking loader used on the 7.62 millimeter (mm) aircraft machine gun pods, M18, M18A1, SUU-11A/A, and SUU-11B/A. The loader is used to delink belted ammunition and load the ammunition into the pod linkless feed system. The loader is also used to unload the ammunition from the pod.

2. APPLICABLE DOCUMENTS

2.1 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
TT-P-1757

Primer Coating, Zinc Chromate,
Low Moisture Sensitivity.

Military

- MIL-W-13855 . Weapons, Small Arms and Aircraft
Armament Subsystems, General
Specification For.
- MIL-P-14232 - Parts, Equipment and Tools For
Army Materiel, Packaging and
Packing of.
- MIL-I-45607 - Inspection Equipment, Acquisition,
Maintenance and Disposition of.
- MIL-L-46150 - Lubricant, Weapons, Semi-Fluid
(High Load-Carrying Capacity).

FSC 1005

STANDARDS

<u>Military</u>	
MIL-STD-105	- Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-109	- Quality Assurance Terms and Definitions.

DRAWINGS

<u>Rock Island Arsenal</u>	
65D9843	- Loader Assembly, Delinking, Aircraft Machine Gun MAU-69A/A.
IEL-11013208	- Index of Inspection Equipment Lists.

PUBLICATIONS

<u>Rock Island Arsenal</u>	
64D9843	Packaging Data Sheet for Loader Assembly, Delinking, Aircraft Machine Gun MAU-69A/A

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

3. REQUIREMENT'S

3.1 First article. The requirements for submission of the first article shall be as specified in the contract (see 6.2). Unless otherwise specified (see 6.1), the first article shall include the pilot pack (see 5.1).

3.2 Materials, construction, and design The loader shall conform to the materials, construction, and design requirements, specified herein, on Drawing 65D9843, and in MIL-W-13855.

3.2.1 End cap. The end cap shall be securely retained on the housing assembly by the retaining screw so that there shall be no relative movement.

3.2.2 Handle. The handle shall be securely attached to the loader crank by the self-locking nut and shall rotate without binding on the handle stem.

3.2.3 Identification plate. The identification plate shall be die stamped or etched in accordance with the applicable drawing and shall be securely attached to the housing assembly by the drive screws so that there shall be no relative movement.

3.2.4 Round direction plate. The adhesive backed round direction plate shall be securely attached to the housing assembly so that there shall be no raised edges or corners.

3.2.5 Inner round guide. The inner round guide shall be securely attached to the housing assembly by the retaining screws so that there shall be no relative movement.

3.2.6 Loader crank. The loadercrank shall be retained on the torque adapter by the spring pin.

3.2.7 Loader shaft group. The loader gear, link sprocket, forward guide, and push rod guide shall be securely retained on the loader shaft by the spring pins so that there shall be no relative movement. The loader shaft, with the attached parts, shall rotate in the bearings in the loader housing and the end cap without binding in the bearings or internal surfaces of the housing.

3.2.8 Lubrication. The push rod assemblies, rollers and their guides shall be coated with lubricating oil conforming to MIL-L-46150.

3.2.9 Corrosion prevention. Primer coating conforming to TT-P-1757 shall be applied to the end cap prior to assembly to the loader housing assembly and shall be applied to the crank prior to assembly to the handle.

3.2.10 Push rod assemblies. The push rod assemblies and rollers shall move through their full range of travel in the push rod guide and the loader housing cam respectively without binding when the loader shaft is rotated. The push rod pins shall be a press fit in the push rods and the push rod rollers shall rotate on the pins without binding. The push rod assemblies shall strip the cartridges from the links and position the rounds on the forward sprocket of the loader for transfer into the exit unit assembly sprockets of the pod.

3.2.11 Quick release pin. The quick release pin shall be capable of being manually assembled into and disassembled from the retaining hole in the loader housing. When assembled into the retaining hole, it shall be retained in place by the action of the ball detents.

3.3 Performance characteristics.

3.3.1 Functioning. The loader shall operate without malfunctions or unserviceable parts attributable to the functioning of the loader. The loader shall strip Government standard 7.62MM, inert loaded, M172 dummy cartridges from the links, shall transfer the stripped ammunition into the pod ammunition system, and shall eject links without damage to the links. The loader shall also unload the ammunition from the pod without damage to the ammunition. Testing shall be as specified in 4.5.3.2,

3.3.1.1 Torque adapter. The torque adapter shall be securely attached to the loader shaft by the spring pin. The torque adapter shall not slip until a torque of 80 to 100 inch-pounds is exerted on the crank in a clockwise or counter clockwise direction with the loader shaft in a docked position. Testing shall be as specified in 4.5.3.2.1.

3.3.2 Endurance. Loaders shall be capable of withstanding the loading of 30,000 rounds of Government Standard 7.62mm, inert loaded, M172 dummy cartridges into a pod ammunition system without malfunctions or unserviceable parts attributable to the loader. Testing shall be as specified in 4.5.3.3.

3.4 Interchangeability. Unless otherwise specified on the drawing, all parts and repair parts shall be interchangeable. Testing shall be as specified in 4.5.3.4.

3.5 Markings. Marking of loaders shall be in accordance with MIL-W-13855. The identification plate shall be securely attached to the loader. Each loader shall be identified by serial numbers assigned by the procuring activity (see 6.2).

3.6 Workmanship. Workmanship shall be in accordance with MIL-W-13855.

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.

4.2 Quality assurance terms and definitions. Quality assurance terms and definitions used herein are in accordance with MIL-STD-109.

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

- a. First article inspection (see 4.4).
- b. Quality conformance inspection (see 4.5).

4.4 First article inspection. The first article (initial production unit(s)) shall be submitted for inspection in accordance with the contract (see 6.2). The first article shall be representative of the production processes to be used during quantity production. The first article shall be subjected to the quality conformance inspection specified herein and such other inspections as necessary to determine that all the requirements of the contract have been met,

4.5 Quality conformance inspection.

4.5.1 Inspection log. The formation, size and presentation of inspection lots of loaders and parts shall be in accordance with MIL-STD-105 and MIL-W-13855. Loaders shall be assembled from lots of component parts that have met all inspection requirements specified herein. Endurance test lot size shall be as specified in 4.5.3.3.

4.5.2 Examination.

4.5.2.1 Component parts and concurrent repair parts. Examination of component parts and concurrent repair parts shall be performed in accordance with the criteria specified in the contract (6.2). The contractors examination of these parts shall be accomplished prior to their assembly into the end item or submission for acceptance as repair parts l

4.5.2.2 Loaders. Visually and manually examine each of the following parts and assemblies to determine conformance with the applicable requirements. Each step in the examination shall include a visual examination for proper cleaning and presence of the specified protective coating and to determine the general quality, completeness of manufacture, assembly, and workmanship. The examination provisions shall be applied at the earliest practical point in manufacture at which it is feasible to inspect for acceptance without risk of change in the characteristic by subsequent operations. Reinspection of these characteristics on the completed product is not required provided assurance exists that the characteristic has not been changed, degraded or damaged by subsequent manufacturing, assembly or handling and that adequate inspection records are maintained. Loaders failing to meet the requirements shall be rejected.

4.5.2.2.1 Parts and assemblies. Parts and assemblies shall be visually and manually examined to determine compliance with the materials, construction and design requirements of 3.2 and the applicable requirements of 3.2.1 through 3.2.11. Parts and assemblies failing to meet the requirements shall be rejected.

4.5.2.2.2 Visually examine all marking required by the final assembly drawing to assure they are clear and eligible.

4.5.2.2.3 Visually examine the identification plate for compliance with the applicable drawing, for secure assembly (see 3.5), serialization and to assure that all pertinent data has been applied.

4.5.3 Testing.

4.5.3.1 Failure data. Unless otherwise specified herein, all tests shall be conducted on a complete Loader. If test requirements cited herein are not met, acceptance of the Loader shall be deferred and the contractor shall accomplish as applicable, the following actions:

- a. Conduct a failure analysis study performing a dimensional physical. and visual examination of the components which are suspected to be the cause of failure or malfunction.
- b. Evaluate and correct the applicable production processes and procedures to prevent recurrence of the same defect(s) in future production,
- c. Examine Loaders partially assembled Loaders and components (including components and subassemblies at in-process or final assembly) to insure that material containing the same defect is purged from the inventory and not presented to the Government for acceptance.
- d. Submit the results of the failure analysis and the corrective actions taken to the Government for review and approval prior to submitting a reconditioned lot or reconditioned Loader for retest.

4.5.3.2 Function testing. Each Loader shall be tested for functioning (see 3.3.1 by using the test method specified in 4.6.1. Failure of the loader to meet the requirements shall be cause for rejection.

4.5.3.2.1 Torque adapter testing. Each loader shall be tested for torque adapter requirements (see 3.3.1.1) by using the test method specified in 4.6.1.1. Failure of the loader to meet the requirements shall be cause for rejection.

4.5.3.3 Endurance testing.

4.5.3.3.1 Lot size. The initial endurance test lot size shall consist of the initial month's production; subsequent endurance test lot size shall consist of 100 loaders.

4.5.3.3.2 Procedure. One loader shall be selected from each endurance test lot and tested for endurance (see 3.3.2) using the test method specified in 4.6.2. Failure of the loader to meet the requirements shall be cause for rejection of the represented lot.

4.5.3.4 Interchangeability testing.

4.5.3.4.1 In plant.

4.5.3.4.1.1. Loaders. A sample of three loaders selected from each month's production shall be tested for interchangeability (see 3.4) using the test method specified in 4.6.3.1.1. Loaders taken for interchangeability testing shall have been found satisfactory in all other examinations and test. The three loaders shall be tested for functioning and torque requirements after interchange of parts using the test methods specified in 4.6.1 and 4.6.1.1 respectively. Failure of loaders to meet the requirements of the interchangeability test shall be cause for rejection of the represented lot.

4.5.3.4.1.2 Concurrent repair parts. At least two parts from each inspection lot of concurrent repair parts shall be subjected to the interchangeability test specified in 4.6.3.1.2. Failure of any part to meet the requirements shall be cause for rejection of the represented lot and the contractor shall perform the corrective action as specified in 4.5.3.1. Parts subject to reconditioning and further test shall become a reconditioned lot and a sample of double the number of parts used in the original test shall be tested from each reconditioned lot using the test method specified in 4.6.3.1.1.

4.5.3.4.2 Interplant. When loaders are manufactured concurrently by more than one contractor, each contractor shall forward monthly three loaders for the interplant interchangeability test specified in 4.6.3.2. (see 6.2). The contractor shall be informed of any failure of the loader to meet prescribed requirements. Upon completion of testing agency inspection, samples may be commercially packaged and will be returned to the contractor for repackaging in accordance with procurement documents at the contractor's expense.

4.5.3.5 Certification. Unless otherwise specified, the contractor shall furnish the Government representative with certified statements that each inspection lot conforms to the applicable drawings, specifications of the materials and processes specified on Drawing 65D9843.

4.5.3.6 Component parts and concurrent repair parts testing. Raw material testing, part testing and certification shall be performed in accordance with the criteria specified in the contract (see 6.2). This will include chemical analysis and physical tests of materials and tests of protective finish, heat treatment, bonding and function of parts as applicable. The contractor shall accomplish these tests prior to assembly of parts into the end item.

4.5.4 Packaging, examination and testing. Unless otherwise specified (see 6.2), the packaging examination and testing shall be in accordance with MIL-P-14232.

4.5.5 Inspection equipment.

4.5.5.1 Unless otherwise specified in the procurement documents (see 6.2), responsibilities for acquisition, maintenance and disposition of measuring and testing equipment prescribed on lists contained on the Index of Inspection Equipment Lists, Drawing IEL11013208 and for all other inspection equipment required to perform inspection required by applicable specifications, shall be in accordance with MIL-I-45607.

4.5.5.2 Accuracy of standard measuring equipment. When commercial and modified commercial inspection and test equipment is used, it must be capable of repetitive measurements to an accuracy of 10 percent of the total tolerance of the characteristics being tested.

4.6 Test methods.

4.6.1 Functioning test. Loaders shall be tested for functioning using a M18, M18A1 or SUU-LLA/A, SUU-LLB/A slave pod or contractor designed, Government approved test equipment which simulates the pod ammunition system. One belt of 300 rounds of linked dummy ammunition shall be used by testing each loader. The loader shall be attached to the test equipment by the lugs on the loader housing and the quick release pin. The ammunition belt shall be placed in the loader and the loader crank manually turned counterclockwise to delink the ammunition and load the ammunition into the pod or test equipment. Turn the loader crank manually clockwise to unload the ammunition from the pod or test equipment. During the test, visually assure that the delinked ammunition is transferred into and out of the pod or test equipment; that the links are ejected from the loader, and that the cartridges and links are not damaged.

4.6.1.1 Torque adapter test. Remove the loader crank and block the loader shaft so it cannot turn. Attach a commercial standard torque indicator gage to the torque adapter and apply torque until the torque adapter slips. Observe the torque reading to determine whether the torque requirements (see 3.3.1.1) have been met.

4.6.2 Endurance test. Loaders shall be tested for endurance using a M18, M18A1, SUU-11A/A, or SUU-11B/A slave pod or contractor designed, Government approved test equipment which simulates the pod ammunition system. A total of 30,000 rounds of dummy ammunition in belts of 300 rounds each shall be loaded and unloaded from the slave pod or test equipment. At the completion of the endurance test the loader shall be subjected to the torque adapter test specified in 4.6.1.1. Disposition of endurance tested loaders shall be as specified in the contract (see 6.2).

4.6.3 Interchange of parts.

4.6.3.1 In plant.

4.6.3.1.1 Loaders. Loaders shall be tested for interchange of parts by disassembling and then reassembling parts using the parts and pre-arranged system specified below. Interchange of parts shall be accomplished by dividing the parts of each loader into three groups of non-mating parts as shown below and distributing the groups into three different trays until each tray contains parts for a complete loader. Groups of parts from the first loader shall be taken in order and placed in trays 1 through 3; groups of parts from the second loader shall be taken in order and placed in trays 2,3, and 1; groups of parts from the third loader shall be taken in order and placed in trays 3, 1, and 2. Parts such as screws, spring pins, etc., shall be placed in the same tray as their mating or associate part. Such parts rendered unserviceable by disassembly shall be replaced without penalty to the interchangeability test. The loaders shall be reassembled using only those parts which are in the same trays. Test the reassembled loaders for functioning and torque. (see 4.6.1 and 4.6.1.1).

Groups of non-mating parts

Group I

Adapter, torque (65B10027)
 Gear, loader (65C9836)
 Guide, inner round (65C9851)
 Guide, forward (65C9838)
 Guide, push rod (65C9840)

Group II

Handle (65B9912)
 Housing assembly (65C9898)
 Roller, push rod (63B10821)
 Shaft, loader (65B9829)

Group III

Cap, end (65B9832)
 Crank, loader (65B9831)
 Rod assembly, push (B11686717)
 Sprocket, link (65C9830)

4.6.3.1.2 Concurrent repair parts. Concurrent repair parts shall be tested for interchangeability by disassembling two loaders, previously tested in 4.6.3.1.1, as necessary and then reassembling them using the concurrent repair parts. This test maybe performed independently of the loader interchangeability test specified in 4.6.3.1.1, and at more frequent intervals using accepted loaders taken from current production.

4.6.3.2 Interplant. Loaders to be subjected to the interplant interchangeability test shall be inspected for functioning and torque using the test method specified in 4.6.1 and 4.6.1.1. to assure proper operation before parts are interchanged. Parts shall then be disassembled from the loader and identified as to manufacturer. Disassembled parts shall be mixed and the loaders shall be reassembled by random selection parts. After assembly, the loader shall be inspected for functioning and torque using the test method specified in 4.6.1 and 4.6.1.1. Before loaders are returned to the contractors, the original parts shall be reassembled to their respective loaders.

5. PREPARATION FOR DELIVERY

5.1 Pilot pack. A pilot pack shall consist of a complete loader packaged in accordance with Packaging Data Sheet P65D9843 to the level of protection specified in the contract (see 6.2), packed level C and forwarded in accordance with 3.1.

5.2 Preservation, packaging, packing and marking. Loaders shall be preserved, packaged, packed and marked in accordance with Packaging Data Sheet P65D9843 for the level of protection specified in the contract (see 6.2).

5.3 Repair parts. Repair parts shall be preserved, packaged, packed and marked in accordance with the Packaging Data Sheet or other requirements, and for the level of protection specified in the contract (see 6.2).

6. NOTES

6.1 Intended use. The loader assembly MAU-69A/A is intended to be used, to delink and load 7.62MM ammunition into M18, M18A1, SUU-11A/A, or SUU-11B/A pod ammunition system, and unload ammunition from the pod ammunition system.

6.2 Ordering data. Procurement documents should specify the following:

- a. Title, number and date of this specification.
- b. Lists of drawings and specifications pertinent to the loaders, showing applicable revision dates.

- c. Inspection criteria for components (see 4.5.2.1 and 4.5.3.6),
- d. Index of inspection equipment lists pertinent to the loaders, showing applicable revision dates.
- e. Shipping instructions for first article and pilot pack (see 3.1 and 5.1).
- f. Packaging examination and testing, if different (see 4.5.4).
- g. List of acceptance inspection equipment to be furnished the contractor (see 4.5.5.1) and responsibilities for other Government property to be furnished the contractor.
- h. Shipping instructions for loaders and parts when an interplant interchangeability test is required (see 4.5.3.4.2).
- i. Disposition of endurance tested loaders (see 4.6.2).
- j. Selection of applicable levels of preservation, packaging and packing (see 5.1 and 5.2).
- k. Packaging of repair parts (see 5.3).
- l. Disposition of Government furnished property.
- m. Block of serial numbers (see 3.5).

6.3 Contract data requirements. When warranted, requirements for reports of the results of the examination and testing (e.g. functioning) endurance and interchangeability) etc.) shall be specified on a DD Form 1423 included in the contract.

6.4 Unless otherwise specified (see 6.1) the contract should specify the application of MIL-I-45607 and MIL-C-45662 on the Management Control Summary List, DD Form 1660.

6.5 When warranted, the contract should specify the application of MIL-Q-9858 or MIL-I-45208 as appropriate, on the Management Control Systems Summary List DD Form 1660.

6.6 Supersession data.. This specification includes the requirement of Springfield Armory Purchase Description SAPD-325 dated 5 June 1967.

Custodians:

Army - WC
Navy - OS
Air Force - 84

Preparing activity:

Army - WC

Project number:

1005-A504

Review activities:

Navy - OS
Air Force - 84

User activities:

Navy - AS, MC

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NOTICE
OF VALIDATION

MIL-L-45963
NOTICE 1
13 JUNE 1988

MILITARY SPECIFICATION
LOADER, DELINKING , AIRCRAFT MACHINE GUN,
MAU/69A/A

MIL-L-45963 dated 01 Ott 1974, has been reviewed and determined to be valid for use in acquisition.

custodians:
Army -AR
Navy - OS
Air Force - 99

Preparing activity:
Army-AR

Review Activity:
Navy - OS
Air Force - 84

User activity:
Navy - AS

AMSC N/A
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