

MIL-M-45547A(WC)

31 March 1970SUPERSEDING
(See 6.5)

MILITARY SPECIFICATION

MACHINE GUN, 7.62MM: FIXED, M73A1

1. SCOPE

1.1 Scope. This specification covers one type of 7.62 millimeter (mm), light-weight, recoil-operated with gas assist, air-cooled, link-belt fed, open-bolt firing, combat vehicle mounted machinegun with quick-change barrel and integral manual charger. The machinegun is fed from either the left hand or right hand side and is fired by either a manual trigger or an electrical solenoid.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

Federal

P-D-680

VV-L-800

- Dry Cleaning Solvent.
- Lubricating Oil, General Purpose, Preservative, (Water-Displacing, Low Temperature).

Military

MIL-P-116

MIL-C-372

MIL-W-13855

MIL-I-45607

MIL-C-45662

- Preservation, Methods of.
- Cleaning Compound, Solvent (For Bore of Small Arms and Automatic Aircraft Weapons).
- Weapons, Small Arms and Aircraft Armament Subsystems, General Specification for.
- Inspection Equipment, Supply and Maintenance of.
- Calibration System Requirements.

FSC 1005

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STANDARDS

Military

- | | | |
|-------------|---|--|
| MIL-STD-105 | - | Sampling Procedures and Tables for Inspection by Attributes. |
| MIL-STD-109 | - | Quality Assurance Terms and Definitions. |

DRAWINGS

U.S. Army Weapons Command

- | | | |
|-------------|---|--------------------------------------|
| B7793717 | - | Diagram, Accuracy. |
| F11013440 | - | Machine Gun, 7.62MM: Fixed, M73A1. |
| IEL11013160 | - | Index of Inspection Equipment Lists. |

(Product drawings referenced in this specification form a part of Drawing F11013440; acceptance inspection equipment drawings form a part of Drawing IEL11013160.)

PUBLICATIONS

U.S. Army Weapons Command

- | | |
|-----------|---|
| F11013440 | Packaging Data Sheet for Machine Gun, 7.62MM: Fixed, M73A1. |
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(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. REQUIREMENTS

3.1 Quality evaluation samples. On each contract, samples of machineguns and parts representing initial production shall be forwarded to a testing agency designated by the procuring activity (see 6.1). Samples shall be representative of materiel which has been inspected and determined to be acceptable. One of the machinegun packs shall be considered the pilot pack (see 5.1).

3.2 Materials and construction. Machineguns and parts shall conform to the materials and construction requirements specified herein, on Drawing F11013440 and drawings applicable thereto, and shall be in accordance with the applicable materials and construction provisions of MIL-W-13855.

3.3 Design. Machineguns and parts shall conform to the design specified herein, on Drawing F11013440 and drawings applicable thereto, and shall be in accordance with the applicable design provisions of MIL-W-13855.

3.3.1 Electrical. Unless otherwise specified, machineguns shall be capable of meeting the requirements specified herein using an input voltage of 18.0 to 30.0 volts direct current (vdc).

3.3.2 Back plate assembly with solenoid. The back plate assembly with solenoid shall be capable of being assembled to and disassembled from the receiver assembly. When assembled to the receiver assembly and with the cover fully closed, there shall be no vertical movement of the back plate assembly with solenoid.

3.3.2.1 Safety.

3.3.2.1.1 The safety shall be capable of being moved manually between the safe and fire positions within the load limit specified on the applicable drawing, and shall remain in the position set under spring action until reset manually.

3.3.2.1.2 The trigger mechanism and the solenoid mechanism shall be capable of operating the sear to release the barrel extension when the safety is positioned so that the letter "F" is visible, and shall not be capable of operating the sear to release the barrel extension when the safety is positioned so that the letter "S" is visible.

3.3.2.2 Sear. The sear shall move through its full range of travel without binding when actuated by the trigger or solenoid. The sear shall engage the sear engagement hooks on the barrel extension and hold the barrel extension in the seared position until the sear is depressed by actuating the trigger or the solenoid. When the trigger is released or the electrical current to the solenoid is discontinued, the sear shall return to the engaging position by action of the trigger springs.

3.3.2.3 Solenoid. The solenoid shall be adjusted on the back plate assembly as specified on the applicable drawing. There shall be no relative movement of the solenoid on the back plate after adjustment, The plunger shall be capable of sliding through its full range of travel without binding.

3.3.2.4 Solenoid lever. The solenoid lever shall be retained on the solenoid by the staked pin and shall be capable of rotating through its full range of travel without binding.

3.3.2.5 Trigger. The trigger shall be retained on the back plate by the flared pin, shall be capable of rotating through its full range of travel without binding, and shall be returned to and held in the extended position by spring action.

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3.3.2.6 Nut shield. The nut shield shall be retained on the back plate assembly by the nuts so that there shall be no relative movement and shall encase the nuts as specified on the applicable drawing after adjustment of the solenoid (see 3.3.2.3).

3.3.3 Barrel. The barrel shall be free of cracks and seams and the bore and chamber shall be free of foreign matter, corrosion, burs, pits, bulges, and deformations. The chromium plating shall be free of nodules, flaking, stripping, anode burns, and evidence of etched base steel. No mechanical methods for removal of chromium plating are permitted in the barrel bore. Burs and sharp edges shall be removed from chamber edges and scratches or marks, occurring in the chamber which otherwise meets the surface roughness requirements, shall be permitted provided they do not cause marks on the case of a high-pressure test cartridge fired in the chamber. The barrel shall be proof and magnetic particle inspection marked in accordance with the applicable drawings.

3.3.4 Barrel extension assembly.

3.3.4.1 Driving studs. The driving studs shall move through their full range of travel without binding and shall be returned to and be held in their extended positions by spring action.

3.3.4.2 Hammer assembly and hammer sear. The hammer sear shall move through its full range of travel without binding and shall be returned to and held in the extended position by spring action. The hammer sear shall engage and hold the hammer assembly in the seared position and when the hammer sear is actuated, it shall release the hammer assembly. After release of the hammer assembly, the hammer spring and plunger shall pivot the hammer assembly forward to strike the firing pin extension. When the hammer assembly is returned it shall be engaged and held by the hammer sear.

3.3.4.3 Rate control pawl. The rate control pawl shall be capable of rotating through its full range of travel without binding and shall be returned to and held in the extended position by spring action.

3.3.4.4 Rammer and extractor assembly. The rammer and extractor assembly shall slide without binding through its full range of travel in the barrel extension. The chromium plating on the rammer surfaces shall be free of nodules, flaking, stripping, anode burns and evidence of etched based steel. The extractor and firing pin extension shall move through their full range of travel without binding and shall be returned to and held in their original positions by spring action. The extractor shall extract cartridge cases or complete rounds from the barrel when the machine-gun is fired or manually operated. Cartridge cases or complete rounds shall be securely gripped between the rammer and extractor.

3.3.4.5 Rollers. The rollers shall rotate without binding.

3.3.5 Barrel jacket with bearing.

3.3.5.1 The barrel jacket with bearing shall be capable of being assembled to and disassembled from the receiver assembly without the use of tools.

3.3.5.2 The barrel locator shall be retained on the mounting block by the spring pin.

3.3.5.3 The front barrel bearing shall be threaded into the barrel jacket, shoulder against the lock, and shall be securely retained by the staked lock in accordance with the applicable drawing so that there shall be no relative movement.

3.3.6 Breechblock assembly. The breechblock assembly shall move in the barrel extension ways, the firing pin shall move through its full range of travel in the breechblock under spring action, and the breechblock roller shall rotate on the roller shaft without binding. Firing pin protrusion and intrusion shall be in accordance with the applicable drawing.

3.3.7 Cartridge stop assembly. The cartridge stop assembly shall slide between the left and right hand feed positions in the feed tray assembly without binding when the cartridge stop plunger is depressed. When the cartridge stop assembly is indexed in either the left or right hand feed position, the plunger shall lock the cartridge stop assembly in the indexed position under spring action.

3.3.8 Charger assembly. The connector shall be capable of being manually moved from one side to the other when the retainer is manually depressed. When the connector is indexed the retainer shall return to the extended position by spring action and retain the connector in the indexed position. The charger assembly shall be capable of being assembled to either side of the receiver and perform its function to engage and pull the barrel extension rearward for engagement with the sear. After the barrel extension engages the sear and the charger handle is released, the charger slide and connector shall return to the forward position under spring action.

3.3.9 Cover assembly. The cover assembly shall assemble to and disassemble from the receiver assembly without the use of tools when the cover latch rods are locked in the forward position. When the cover assembly is assembled to the receiver assembly, the rear cover latch catches shall release the cover latch rods. After the cover latch rods are released, the cover assembly shall be retained on the receiver assembly.

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3.3.9.1 Cover and track assembly. All parts shall be securely fastened to the cover so that there shall be no relative movement, except that the feed cam locator shall be capable of being depressed against the rear of the cover and returned to its forward position by spring action.

3.3.9.2 Feed cam. The feed cam shall slide through its full range of travel in the cover assembly without binding with the cover assembled for the left or right hand feed.

3.3.9.3 Feed slide assembly. The feed slide assembly shall slide in the feed slide track assembly without binding. The feed pawl shall be retained on the feed slide by the spring pin. The feed pawl shall rotate through its full range of travel without binding and shall be returned to and held in the extended position by spring action. The roller shall be retained by the retaining ring and shall rotate without binding.

3.3.9.4 Feed slide track assembly. The feed slide track assembly shall assemble to and disassemble from the cover assembly without the use of tools for left or right hand feed. The retaining pawls shall rotate through their full range of travel without binding and shall be returned to and held in their extended positions by spring action.

3.3.9.5 Feed support assembly. The feed support assembly shall be retained in the cover by the feed support retainer. The cartridge depressor, cartridge stripper, and spring retainers shall be retained on the feed support by the spring pins. The cartridge depressor and the cartridge stripper shall function throughout their full range of travel without binding and shall be returned to and held in their extended positions by spring action.

3.3.9.6 Feed support retainer. The feed support retainer shall be capable of being manually moved without the use of tools through its full range of travel in the housing to allow assembly or disassembly of the cover assembly. The retainer shall remain in the position set under action of the spring and plunger.

3.3.10 Feed tray. The cartridge stop retainer, the feed tray brackets, and the ejector shall be securely retained on the feed tray without relative movement. The ejector shall eject cartridge cases or complete rounds completely out of the machinegun when the machinegun is fired or manually operated.

3.3.11 Guide rods and springs. The guide rods shall position the driving springs in the barrel extension, and shall be capable of being rotated to the locked and unlocked positions under spring action in the back plate retainers. The driving springs shall perform their recoil and counter-recoil functions.

3.3.12 Receiver assembly.

3.3.12.1 Breechblock cam and cam plunger. The cam plunger shall be capable of being depressed through its full range of travel under spring action without binding to allow assembly and disassembly of the breechblock cam. After assembly of the breechblock cam, the cam plunger shall return to its extended position by spring action to retain the cam.

3.3.12.2 Buffer assembly and pivot pin.

3.3.12.2.1 Buffer assembly. The buffer assembly shall pivot of its own weight through its full range of travel on the buffer pivot pin when the buffer support lever is rotated to allow assembly and disassembly of the barrel extension. The buffer assembly shall be assembled in accordance with the applicable drawings.

3.3.12.2.2 Buffer pivot pin. The buffer pivot pin shall assemble to and disassemble from the receiver assembly without the use of tools except for a tool to assemble or disassemble the retaining ring. When the buffer pivot pin is assembled to the receiver assembly, it shall be retained by the retaining ring.

3.3.12.3 Buffer support and support levers. The buffer support and buffer support levers shall pivot through their full range of travel without binding and shall be returned to and held in their original positions by spring action.

3.3.12.4 Cover latch rod assembly. The cover latch rods shall be capable of sliding through their full range of travel to lock and unlock the cover assembly and the feed tray assembly. When the cover latch rods are fully depressed, they shall lock in the forward position and remain in this position until the locks are released either manually or by the cover assembly. After the locks have been released, the cover latch rods shall return to their rearward position by spring action without binding.

3.3.12.5 Disconnecter assemblies. The disconnecter assemblies shall be capable of sliding through their full range of travel to lock and unlock the barrel jacket with bearing. When the disconnecter assemblies are retracted and then released, they shall return to their forward positions by spring action without binding.

3.3.12.6 Rate control guide and support. The rate control guide and support shall be securely retained on the receiver assembly by the staked screws so that there shall be no relative movement. The rate control slide shall be capable of sliding from the rearward position to the forward position on the shaft without binding and when released shall return to the rearward position against the shaft head by spring action without binding.

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3.3.12.7 Receiver shell assembly with cams. All parts shall be securely fastened on the receiver shell so that there shall be no relative movement.

3.3.13 Sear release. The barrel extension shall be released from the seared position when a gradual force of not more than 50 pounds is applied to the top of the solenoid plunger or when the solenoid is energized with not more than 18.0 vdc.

3.3.14 Headspace. The headspace shall be as specified on the applicable drawing.

3.3.15 Sear engagement. When the barrel extension assembly is in the forward position, the safety is in the safe position, and the solenoid energized with 23.5 to 24.0 vdc, the relative sear engagement position from the top of the sear hooks to the bottom of the barrel extension hooks shall be 0.050 inch minimum.

3.3.16 Timing. The hammer assembly shall release when the action is allowed to close on a 0.020 inch stop between the front face of the barrel extension and the trunnion block on the receiver and shall not release when the action is allowed to close on a 0.075 inch stop between the front face of the barrel extension and the trunnion block on the receiver.

3.3.17 Firing pin indent. The firing pin indent shall not be less than 0.017 inch nor more than 0.023 inch and it shall not be off center more than one-half the diameter of the firing pin point when tested as specified in 4.5.3.1 and 4.6.1.

3.3.18 High-pressure resistance. Machineguns shall be capable of withstanding the high-pressure resistance test (proof firing) specified in 4.5.3.2 and 4.6.2. Parts shall be free of cracks, seams, and other injurious defects after proof firing as evidenced by visual and magnetic particle inspection.

3.3.19 Functioning firing. Machineguns shall operate without malfunctions or unserviceable parts and shall have a cyclic rate of fire of 500 to 625 rounds per minute when tested as specified in 4.5.3.3 and 4.6.3. In addition, during this test the machineguns shall exhibit no audible rate fluctuation (erratic rate of fire).

3.3.20 Accuracy. Nine rounds of a 10-round burst fired from the machinegun at a range of 100 yards shall be within or cut the edge of a 10.8-inch diameter circle when tested as specified in 4.5.3.4 and 4.6.4.

3.3.21 Interchangeability. Unless otherwise specified on the drawings, all parts shall be interchangeable. (In normal assembly operations there

shall be no objections interposed to preferential assembly of parts provided that all parts are dimensionally acceptable.) Machineguns and repair parts shall be capable of meeting the interchangeability tests specified in 4.5.3.5 and 4.6.5.

3.3.22 Endurance. Machineguns shall be capable of passing a 10,000 round endurance test as specified in 4.5.3.6 and 4.6.6 with not more than the number of malfunctions and unserviceable parts allowed in Table I. The average cyclic rate of fire for the entire test shall be within the limits specified in 3.3.19.

Table I. Malfunctions and unserviceable parts

| Code | Malfunction ¹ | Number permitted in the 10,000-round endurance test |
|--|---------------------------------|---|
| FEJ | Failure to eject | 2 |
| FEX | Failure to extract | 2 |
| FF | Failure to feed | 2 |
| UF | Uncontrolled fire (runaway gun) | 0 |
| OM | Other malfunctions | 2 |
| * Total number of the above allowable malfunctions shall not exceed 4 | | |

| Code | Unserviceable parts ¹ | Number permitted in the 10,000-round endurance test | |
|------|----------------------------------|---|---------------------------|
| | | First 5,000 rounds | Second 5,000 rounds |
| FP | Firing pin | 0 | 1 |
| FPE | Firing pin extension | 0 | 1 |
| OP | Other parts ² | - | - |

* Only one malfunction may be judged not clearable by immediate action (INC).

¹When malfunctions are traceable to particular parts, it is permissible to replace such parts and record them as unserviceable, subject to limitations of Table I. When it is definitely established by the Government representative that previously recorded malfunctions are attributable to an unserviceable part, such malfunctions shall not be counted against the machinegun being tested, provided that they occurred not more than 200 rounds prior to replacement of the unserviceable part. These 200 rounds shall have been fired with the unserviceable part. However, such malfunctions shall remain recorded and properly identified. An unserviceable part is one that

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causes malfunctions or impairs the safety of the weapon. Malfunctions attributable to links and ammunition shall not be counted against the machinegun, however, such malfunctions shall be recorded. Parts such as spring pins and screws, rendered unserviceable when replacing an unserviceable part shall not be charged against the machinegun being tested.

2 One unserviceable part other than those specified shall be allowed if in the judgement of the Government representative the failure does not represent an unsafe or defective condition which is prevalent throughout the lot of items involved.

3.4 Marking. Each machinegun shall be clearly marked in accordance with the applicable drawings and MIL-W-13855.

3.5 Workmanship. Workmanship shall be in accordance with the workmanship requirements of 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, 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 that 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 as follows:

1. Quality evaluation inspection 4.4
2. Quality conformance inspection 4.5

4.4 Quality evaluation sample inspection. Inspection of quality evaluation samples (see 3.1) and pilot pack (see 5.1) shall be performed at the designated testing agency. Quality evaluation sample and pilot pack shall be subjected to the inspection specified herein and such other inspection as is necessary to determine compliance with the requirements of the contract (see 6.1).

4.5 Quality conformance inspection.

4.5.1 Inspection lot.

4.5.1.1 Machineguns. The number of machineguns in an inspection

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lot shall be either 200 or one month's production, whichever is smaller. Machineguns 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 4.5.3.6.1.

4.5.1.2 Parts and packaging. The formation, size, and presentation of inspection lots of parts and packaging shall be in accordance with MIL-STD-105. Inspection lots shall be as large as practicable, in consideration of quality history, manufacturing conditions, and contractor's delivery schedule, and within the limitations of MIL-W-13855.

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 (see 6.1). The contractor's examination of these parts shall be accomplished prior to their assembly into the end item or submission for acceptance as repair parts.

4.5.2.2 Machineguns. Final examination of each machinegun shall be performed after completion of all testing and just prior to preservation and packaging. Each machinegun shall be examined as specified below. 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, clarity and legibility of markings, and workmanship. Machineguns failing to meet the requirements shall be rejected.

4.5.2.2.1 Charger assembly. Visually and manually examine the machinegun for function of the charger assembly to determine compliance with 3.3.8, then manually return the barrel extension forward to its original position.

4.5.2.2.2 Cover assembly.

- a. Visually and manually examine for ability of the cover assembly and the feed tray to be readily disassembled from the receiver (3.3.9).
- b. Visually and manually examine the feed cam and the feed slide assembly to determine compliance with 3.3.9.2 and 3.3.9.3.
- c. Manually examine the feed support retainer to determine compliance with 3.3.9.6 and disassemble the cover assembly except for the feed support retainer.
- d. Manually reassemble the cover assembly and the feed tray to opposite feed slide without the use of tools and examine as specified in (b) above, then disassemble the cover assembly except for the feed support retainer.

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4.5.2.2.2.1 Feed cam.

- a. Visually examine the cam and track surfaces to assure freedom from burs and deformations.
- b. Visually examine driving stud camming pads and slot to assure freedom from burs and deformations.

4.5.2.2.2.2 Feed support assembly.

- a. Visually examine the retaining lug, spring retainers and trackways to assure freedom from burs and deformations.
- b. Visually and manually examine the feed support assembly for retention of all parts (see 3.3.9.5).
- c. Manually examine the cartridge depressor and stripper to determine compliance with 3.3.9.5.
- d. Visually examine to assure that spring pins do not protrude into either side of the cam tracks (see Drawing C7793613).

4.5.2.2.2.3 Feed slide assembly.

- a. Visually and manually examine the feed pawl and the roller to determine compliance with 3.3.9.3.
- b. Visually examine the roller, the track surfaces of the feed slide, and the feed surfaces of the feed pawl to assure freedom from burs and deformations.

4.5.2.2.2.4 Feed slide track assembly.

- a. Visually examine the feed slide track retaining lug and trackways and the feed surfaces of the retaining pawls to assure freedom from burs and deformations.
- b. Manually examine the retaining pawls to determine compliance with 3.3.9.4.

4.5.2.2.2.5 Cover and track assembly.

- a. Visually examine trackways and slots, feed support openings, feed cam locator, and cover latch rod holes and slots to assure freedom from burs and deformations.
- b. Visually and manually examine the feed support retainer tab height using inspection equipment in accordance with Drawing C7798405 (see Drawing F7793643).
- c. Manually reassemble the cover assembly for left hand feed.

4.5.2.2.3 Feed tray. Manually disassemble the feed tray from the receiver and visually examine to assure freedom from burs, fractures, sharp corners, and deformations.

4.5.2.2.4 Cartridge stop assembly.

- a. Visually and manually examine the cartridge stop assembly to determine compliance with 3.3.7.
- b. Manually position the cartridge stop assembly in the feed tray assembly for the left hand feed.

4.5.2.2.5 Guide rods and springs.

- a. Visually and manually examine for ability of the guide rods and springs to be readily disassembled (see 3.3.11).
- b. Visually and manually examine the guide rods for secureness of the pins and to assure freedom from burs and deformations.
- c. Visually examine the springs to assure freedom from burs and deformations.

4.5.2.2.6 Back plate assembly with solenoid.

- a. Without the use of tools visually and manually examine for ability of the back plate assembly with solenoid to be readily disassembled from the receiver (see 3.3.2).
- b. Visually examine the back plate assembly with solenoid for retention of all parts. The trigger pivot pin shall be flared at both ends, and the solenoid lever pivot pin shall be staked in place at both ends (see 3.3.2.4, 3.3.2.5, and Drawing D11013437).

4.5.2.2.6.1 Safety. Visually and manually examine the safety to determine compliance with 3.3.2.1.1 (see Drawing D11013437).

4.5.2.2.6.2 Trigger. Visually and manually examine the trigger to determine compliance with 3.3.2.5.

4.5.2.2.6.3 Sear.

- a. Visually and manually examine the sear to determine compliance with 3.3.2.2 (see Drawing D11013437).
- b. Visually examine the sear cam and hook surfaces to assure freedom from burs and deformations.

4.5.2.2.6.4 Solenoid. Visually and manually examine the solenoid to determine compliance with 3.3.2.3.

4.5.2.2.6.5 Nut shield. Visually and manually examine the nut shield to determine compliance with 3.3.2.6 (see Drawing D11013437).

4.5.2.2.6.6 Back plate. Visually examine the back plate receiver ways and brace to assure freedom from burs, cracks, and deformations.

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4.5.2.2.7 Barrel extension assembly.

- a. Manually rotate the buffer support lever, use the hand charger assembly to retract the barrel extension assembly, and disassemble the barrel extension assembly, breechblock assembly, and barrel assembly from the machinegun examining the function of the buffer assembly to assure disassembly of the barrel extension assembly (see 3.3.12.2.1). Disassemble the breechblock assembly and the barrel assembly from the barrel extension assembly.
- b. Visually and manually examine the barrel extension assembly for retention of all parts and that the hammer sear housing screw is securely torqued and staked (see Drawing F11013432).
- c. Visually and manually examine the function of the lever assembly to pivot without binding causing the rammer assembly to slide without binding (see 3.3.4.4).
- d. Manually disassemble the rammer assembly and the lever assembly from the barrel extension assembly.
- e. Visually and manually examine the rollers to determine compliance with 3.3.4.5 and to assure freedom from burs and deformations.

4.5.2.2.7.1 Rammer and extractor assembly.

- a. Visually examine the extractor cartridge lip to assure freedom from burs and deformations.
- b. Manually disassemble the firing pin extension only and examine to assure freedom from burs and deformations.
- c. Visually examine the chromium plated rammer track surfaces, ramming end, and firing pin extension retaining surfaces to assure freedom from burs, deformations, and proper plating (see 3.3.4.4).
- d. Manually reassemble the firing pin extension to the rammer and extractor assembly.
- e. Visually examine to assure proper orientation and staking of the extractor retaining pin (see Drawing D8448401).

4.5.2.2.7.2 Rate control pawl and spring.

- a. Manually examine the rate control pawl to determine compliance with 3.3.4.3.
- b. Visually examine the rate control pawl and spring to assure freedom from burs, deformations, grit, scale, and sharp fins.

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4.5.2.2.7.3 Hammer assembly and hammer sear.

- a. Manually pull the hammer sear rearward to release the hammer and visually and manually examine the hammer group to determine compliance with 3.3.4.2.
- b. Visually examine the hammer cocking roller and the striker angle and sear catch of the hammer to assure freedom from burs and deformations.
- c. Disassemble the hammer spring guide and spring, then visually and manually examine the hammer assembly to assure that there is no relative movement between the screw, link, and hammer to assure that the spring pin is flared as both ends locking the spring pin (see Drawing F11013432).
- d. Visually examine the hammer sear slide contact arm, hammer lead radius, and catch surface to assure freedom from burs and deformations, then manually engage the hammer with the hammer sear.

4.5.2.2.7.4 Driving studs.

- a. Visually and manually examine the driving studs to determine compliance with 3.3.4.1.
- b. Visually examine the driving studs to assure freedom from burs and deformations.

4.5.2.2.7.5 Barrel extension.

- a. Visually examine the barrel extension to assure presence of proof and magnetic particle inspection marks (see Drawing F11013431).
- b. Visually examine the barrel extension rammer and receiver ways, breechblock opening, breechblock cam slot, sear and buffer catches, and barrel retaining lugs to assure freedom from burs and deformations.
- c. Manually reassemble the barrel extension assembly.

4.5.2.2.8 Breechblock assembly.

- a. Visually and manually examine the breechblock assembly to determine compliance with 3.3.6.
- b. Visually and manually examine the breechblock assembly to assure for firing pin protrusion using inspection equipment in accordance with Drawing D7798449 (see Drawing C11013422).

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- c. Visually examine the breechblock assembly for firing pin intrusion (see Drawing C11013422).
- d. Visually examine the roller to assure freedom from burs and deformations.
- e. Visually and manually examine the firing pin striker point and back end to assure freedom from burs and deformations.
- f. Visually examine the breechblock to assure presence of proof and magnetic particle inspection marks (see Drawing F11013421).
- g. Visually examine the breechblock front and rear faces and tracks to assure freedom from burs and deformations.

4.5.2.2.9 Barrel.

- a. Visually examine the barrel bore and chamber to assure freedom from foreign matter, corrosion, pits, burs, bulges, and deformations.
- b. Visually examine the chromium plating to determine compliance with 3.3.3.
- c. Visually examine the barrel extension engagement rim, bearing diameter, and piston end to assure freedom from burs, nicks, and deformations.
- d. Visually examine the barrel for presence of proof and magnetic particle inspection marks (see Drawing F7792874).

4.5.2.2.10 Barrel jacket with bearing.

- a. Visually and manually examine for ability of the barrel jacket with bearing to be readily disassembled from the receiver assembly (see 3.3.5.1).
- b. Visually examine the front barrel bearing to assure freedom from burs and deformations.
- c. Visually and manually examine the front barrel bearing to determine compliance with 3.3.5.3.
- d. Visually examine the front barrel bearing lock for staking in the bearing and jacket slots (see Drawing D11013401).
- e. Visually and manually examine the barrel locator to determine compliance with 3.3.5.2.
- f. Visually examine the barrel locator locking lug to assure freedom from burs and deformations.
- g. Visually examine the jacket assembly rear barrel bearing, locking lug, mounting lugs, disconnecter holes, and receiver openings for freedom from burs and deformations.
- h. Visually and manually reassemble the barrel with bearing jacket examining for ability to be reassembled to receiver assembly (see 3.3.5.1).

4.5.2.2.11 Receiver and charger assemblies.

- a. Visually and manually examine the receiver assembly for retention of all parts.
- b. Visually examine to assure that the rate control guide support screws are staked (see Drawing F11013373).
- c. Manually disassemble the charger assembly from the receiver.
- d. Visually and manually examine the indexing and connector functioning to determine compliance with 3.3.8.
- e. Visually examine both sides of the connector to assure freedom from burs and deformations.

4.5.2.2.11.1 Buffer support and support levers.

- a. Manually examine the buffer support and buffer support levers to determine compliance with 3.3.12.3.
- b. Visually examine the buffer support to assure freedom from burs and deformations.

4.5.2.2.11.2 Cover latch rod assembly.

- a. Visually and manually examine the cover latch rods to determine compliance with 3.3.12.4.
- b. Visually examine the flats of the cover latch rods to assure freedom from burs and deformations.

4.5.2.2.11.3 Disconnecter assemblies.

- a. Visually and manually examine the disconnecter assemblies to determine compliance with 3.3.12.5.
- b. Visually examine the disconnecter sleeves to assure freedom from burs and deformations.

4.5.2.2.11.4 Breechblock cam and cam plunger.

- a. Visually and manually examine the cam plunger to determine compliance with 3.3.12.1.
- b. Visually examine the cam to assure freedom from burs and deformations.

4.5.2.2.11.5 Rate control guide and support.

- a. Visually and manually examine the rate control guide and support to determine conformance with 3.3.12.6.
- b. Visually examine the rate control slide pawl engagement and striker surfaces to assure freedom from burs and deformations.

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4.5.2.2.11.6 Buffer assembly. Visually examine the buffer assembly catches to assure freedom from burrs and deformations.

4.5.2.2.11.7 Receiver shell assembly with cams.

- a. Visually examine the barrel extension tracks to assure freedom from burrs and deformations.
- b. Visually examine the camming surfaces of the opening and closing cams to assure freedom from burrs and deformations.

4.5.2.2.12 Machinegun assembly.

- a. Reassemble the machinegun for left hand feed, visually and manually examining for ability of parts to be readily assembled and for retention of all parts (see 3.3.7, 3.3.8, 3.3.9, 3.3.10, 3.3.11, and 3.3.12).
- b. Hand function the machinegun using five dummy rounds to assure proper operation.
- c. Visually examine the receiver for presence of proof mark (see Drawing F11013440).
- d. Manually examine the machinegun to determine that there is no vertical movement of the back plate assembly with solenoid (see 3.3.2).
- e. Visually and manually examine the function of the safety to determine compliance with 3.3.2.1.2 using the trigger and the solenoid.
- f. Visually and manually examine the machinegun for extractor function with the machinegun secured at the barrel jacket mounting diameter in a horizontal position. The barrel extension shall be retracted to the seared position, the cover and feed tray assemblies removed, and a dummy-inert cartridge inserted in the barrel chamber. The barrel extension shall then be released from the sear and manually returned to the forward position to contact the flat plug gage in accordance with Drawing B11015922 placed between the rammer assembly and the dummy-inert cartridge. The flat plug gage shall then be removed, and the barrel extension shall close under spring action and the extractor shall be seated in the cartridge extractor groove.
- g. Manually examine the machinegun to assure freedom from binding with the machinegun secured at the barrel jacket mounting diameter in a horizontal position. The cover assembly, feed tray assembly, drive springs, and rods shall be removed from the machinegun. Then with downward pressure applied to the back plate assembly and the trigger depressed, the barrel extension shall be manually moved through its full range of travel to examine for binding. There shall be no perceptible increase in binding of the barrel and barrel extension through

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- their full length of travel except in the area where the face of the barrel extension is approximately $3/4$ to $1\ 1/2$ inches from the receiver trunnion block.
- h. Machineguns shall be examined for sear release requirement (see 3.3.13) using the inspection equipment in accordance with Drawings B11015942 and A11015874. The machinegun shall be held in a horizontal position (approximately) and the barrel extension retracted to the seared position. The gage adapter shall be attached to the indicator and the telltale hand of the indicator set to zero. The machinegun cover shall be opened and the force indicator, with the adapter attached, shall be placed vertically on the top of the solenoid plunger. The force shall be gradually applied until the barrel extension is released. The maximum load at which the barrel extension is released shall determine whether the sear release requirement has been met. In addition, machineguns shall be examined for sear release requirement with the solenoid energized. The machinegun shall be held in a horizontal position (approximately) and the barrel extension retracted to the seared position. The solenoid shall then be energized with not more than 18.0 vdc to determine if the requirement has been met.
 - i. Machineguns shall be examined for headspace requirement (see 3.3.14) after proof firing, prior to acceptance, using the inspection equipment in accordance with Drawing F7795322. The machinegun shall be held in a horizontal position (approximately), the barrel extension shall be retracted to the seared position, and the cover assembly and the feed tray assembly opened. The spring loaded plug shall then be inserted in the barrel chamber and the barrel extension released from the sear and manually returned to the forward position. The indicator portion of the gage shall be set to zero using the setting check as specified on the applicable drawing and then inserted in the barrel from the muzzle end until it contacts the spring loaded plug. The indicator shall then be read to indicate whether the headspace is within the specified requirement.
 - j. Machineguns shall be examined for sear engagement requirement (see 3.3.15) using the inspection equipment in accordance with Drawing F7798608. The machinegun shall be placed in a horizontal position (approximately) with the barrel extension in the forward position and the safety set in the safe position (letter "S" visible). The cover assembly, feed tray assembly, and drive springs and rods shall be removed from the machinegun and the gage bedded on the receiver tracks so that the pins contact the barrel extension hooks and the sear hooks. The solenoid shall then be energized with 23.5 to 24.0 vdc and the relative position of the sear hooks with the barrel extension hooks measured using the indicator gage.

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- k. Machineguns shall be examined for timing requirement (see 3.3.16) using the inspection equipment in accordance with Drawing C7798406. The machinegun shall be held in a horizontal position (approximately) with the barrel extension in the seared position. The barrel extension shall then be released from the sear and manually returned to the forward position to contact the flat plug gage placed between the front face of the barrel extension and the trunnion block of the receiver through the charger slot in the receiver. With the "no fire" portion of the gage placed between the barrel extension and the trunnion block, the hammer shall not fall; and with the "fire" portion of the gage placed between the barrel extension and the trunnion block, the hammer shall fall.

4.5.2.2.13 Machineguns which have passed all examinations after successful completion of testing shall be stamped by the contractor with the Department of Defense complete inspection approval stamp as specified on the applicable drawing. The Government representative will control the stamps used for such stampings and observe the stamping operation as required to assure successful completion of all required examinations and tests.

4.5.2.3 Packaging. Examination of packaging of machineguns shall be performed in accordance with the classification of defects and acceptable quality levels (AQL's) specified in 4.5.2.3.1 (see 6.1). Sample size shall be in accordance with MIL-STD-105, using inspection level I. The following provisions shall apply:

- a. The AQL's are specified as percent defective.
- b. An individual AQL is specified for each listed defect, not for a group of defects.
- c. Examination for packaging defects specified in 4.5.2.3.1 shall apply to each item of the applicable sample of machineguns, interior packages, or exterior containers, as applicable.

4.5.2.3.1 Classification of defects for packaging. Unless otherwise specified in each listed defect, the packaging requirements are specified on Packaging Data Sheet P11013440.

| <u>Categories</u> | <u>Defect</u> | <u>AQL</u> |
|-------------------|--|------------|
| Critical: | None defined. | |
| Major: | | |
| 101 | Illegible or incorrect marking. | 1.0 |
| 102 | Improper location of marking. | 1.0 |
| 103 | Improper level of packaging and packing. | 1.0 |
| 104 | Inadequate cleaning and drying. | 1.5 |

| | | |
|-----|--|-----|
| 105 | Improper preservative application and drainage. | 1.5 |
| 106 | Improper closure of interior packages. | 1.5 |
| 107 | Improper assembly of package; position of assemblies in supports, position of separators and cells, and assembly of cells. | 1.5 |
| 108 | Improper closure and strapping of shipping containers. | 1.5 |

Minor: None defined.

4.5.2.3.2 Examination of packaging of repair parts shall be performed in accordance with the criteria specified in the contract (see 6.1).

4.5.3 Testing.

4.5.3.1 Firing pin indent testing. The contractor shall test a sample of 10 machineguns selected by the Government representative from each inspection lot for firing pin indent using the test method specified in 4.6.1. Failure of any machinegun in the sample to meet the requirements shall cause rejection of the represented lot.

4.5.3.2 High-pressure resistance and functioning firing testing. The contractor shall test each machinegun for high-pressure resistance using the test methods specified in 4.6.2. Machineguns failing to meet the requirements shall be rejected.

4.5.3.3 Functioning firing test. The contractor shall test each machinegun for function firing using test methods specified in 4.6.3. After 100 machineguns are function fired using the greater number of rounds specified in Table II without failure to meet requirements, subsequent function testing shall be based on the reduced firing schedule. In the event of a failure to meet requirements, the contractor shall resume firing of the greater number of rounds. Changes in the firing schedule shall be subject to Government approval based on test results and corrective actions taken by the contractor. Machineguns failing to meet requirements shall be rejected.

4.5.3.4 Accuracy testing. The contractor shall test each machinegun for accuracy using the test method specified in 4.6.4 until 200 consecutive machineguns meet the requirement. When 200 consecutive machineguns have met the requirement, the contractor shall test a sample of machineguns taken from each inspection lot in accordance with inspection level S2 of MIL-STD-105. Acceptance shall be based on an AQL of 1.0 percent defective. If an inspection lot is rejected, 100 percent testing shall be reinstated until 200 consecutive machineguns meet the requirement, at which time the contractor shall return to the above sampling plan. Machineguns failing to meet the accuracy requirement shall be rejected.

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4.5.3.5 Interchangeability testing.4.5.3.5.1 In plant.

4.5.3.5.1.1 Machineguns. The contractor shall test a sample of 10 machineguns selected by the Government representative from each inspection lot for interchangeability using the test method specified in 4.6.5.1.1. Machineguns taken for interchangeability testing shall have been found satisfactory in all other examinations and tests. Test frequency may be reduced to not less than 1 test of 10 machineguns each month when a record of consistently satisfactory results has been established. The 10 machineguns shall be inspected for and shall comply with the requirements for sear release, headspace, sear engagement, timing, and firing pin indent before and after interchange of parts, using the inspection methods specified in 4.5.2.2.12.h through 4.5.2.2.12.k and 4.6.1 respectively. In addition, the machineguns shall be tested for functioning firing and accuracy requirements after interchange of parts using the test methods specified in 4.6.3 and 4.6.4 respectively. Failure of machineguns to meet the requirements of the interchangeability test or failure of any machinegun to meet the requirements of the functioning firing test and the accuracy test shall cause retest or rejection of the represented lot. Upon authorization from HQ USAWECOM, Attn: AMSWE-QA an interchangeability retest may be allowed without reconditioning of the lot of machineguns. Failure in the retest shall cause rejection of the represented lot subject to reconditioning and further test as a reconditioned lot. A sample of 20 machineguns from each retest or reconditioned lot shall be tested using the same procedure described above.

4.5.3.5.1.2 Concurrent repair parts. The contractor shall subject at least two parts from each inspection lot of concurrent repair parts to the interchangeability test specified in 4.6.5.1.2. Failure of any part to meet the requirements shall be cause for rejection of the represented lot of parts subject to reconditioning and further test as a reconditioned lot. 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 4.6.5.1.2.

4.5.3.5.2 Interplant. When machineguns are manufactured concurrently by more than one contractor, each contractor shall forward monthly six machineguns for the interplant interchangeability test specified in 4.6.5.2 to the testing agency specified in the contract (see 6.1). The contractor will be informed of the results of the test which indicates failure of the machineguns to meet prescribed requirements.

4.5.3.6 Endurance testing.

4.5.3.6.1 Lot size. The first 5 endurance test lots shall each consist of 200 machineguns or a month's production, whichever is smaller. When 5 successive lots meet the endurance requirements, the lot size shall

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be increased to 500 machineguns or a month's production, whichever is smaller. When 5 successive lots of the increased lot size meet the endurance requirements, the lot size shall be further increased to 1,000 machineguns or a month's production, whichever is smaller. If rejection of a lot occurs at any time, the next smaller test lot size criteria shall be reinstated and the above procedure repeated in returning to the larger lot size.

4.5.3.6.2 Procedure. One machinegun selected by the Government representative from each endurance lot shall be tested by the contractor for endurance using the test method specified in 4.6.6. If endurance requirements of 3.3.22 are not met, the represented lot shall be rejected and the contractor shall perform the action cited in 4.5.3.6.2.1, 4.5.3.6.2.2, 4.5.3.6.2.3, 4.5.3.6.2.4, and 4.5.3.6.2.5.

4.5.3.6.2.1 Conduct a failure analysis study by performing a dimensional, physical and visual examination, as applicable, of the parts which are suspected to be the cause of the failed component or malfunction.

4.5.3.6.2.2 Within two days after completing the failure analysis study, forward reports of the study to HQ, USAWECOM, Attn: AMSWE-QA and to the Government representative at the contractor's plant.

4.5.3.6.2.3 Evaluate and correct the applicable production processes and procedures to prevent recurrence of the same defect in future production.

4.5.3.6.2.4 Examine machineguns, partially assembled machineguns and components (including parts 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.

4.5.3.6.2.5 Upon authorization from USAWECOM, Attn: AMSWE-QA, resume testing of the machinegun which failed the endurance test or retest an additional sample of two machineguns from the same lot or reconditioned lot for endurance. In the event the cause of the failed component or malfunction cannot be determined, the contractor shall request, through the Administrative Contracting Officer, technical assistance from the procuring activity.

4.5.3.7 Certification. For each inspection lot of machineguns, the contractor shall provide the Government representative with a certified report of touch-up paint compliance with the applicable drawings.

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4.5.3.8 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 6.1). 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.

4.5.3.9 Packaging testing.

4.5.3.9.1 Machineguns.

4.5.3.9.1.1 The contractor shall furnish the Government representative with certification that the packaging materials conform to the applicable packaging data sheets and specifications.

4.5.3.9.1.2 Determination of cleanliness testing. The contractor shall test items from each inspection lot for determination of cleanliness using the test method specified in 4.6.7.1. Sampling shall be in accordance with MIL-P-116.

4.5.3.9.1.3 Heat-sealed seam and vacuum retention testing. The contractor shall test level A and level B unit packages from each inspection lot for heat-sealed seam and vacuum retention using the test methods specified in 4.6.7.2 and 4.6.7.3 respectively. Sampling shall be in accordance with MIL-P-116.

4.5.3.9.2 Repair parts. Testing of packaging of repair parts shall be performed in accordance with the criteria specified in the contract (see 6.1).

4.5.4 Inspection equipment.

4.5.4.1 Unless otherwise specified in the procurement documents (see 6.1), responsibilities for acquisition, maintenance, and disposition of measuring and testing equipment prescribed on lists contained on the Index of Inspection Equipment Lists, Drawing IEL 11013160, and for all other inspection equipment required to perform inspection required by applicable specifications, shall be in accordance with MIL-I-45607 and MIL-C-45662.

4.5.4.2 When specified in procurement documents, copies of drawings of contractor designed inspection equipment shall be forwarded to Commanding Officer, Rock Island Arsenal, Attn: SWERI-QA, Rock Island, Illinois 61201 (see 4.6.3.6, 4.6.6.4, and 6.1).

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4.5.4.3 Ammunition and links (see 6.1).

4.5.4.3.1 Ammunition. Unless otherwise specified in procurement documents, Government standard 7.62mm, M60 high-pressure test cartridges, M59 or M80 ball cartridges, M62 tracer cartridges, and dummy-inert cartridges shall be used as specified in the firing tests (see 4.5.2.2.12.b, 4.6.2, 4.6.3, 4.6.4, and 4.6.6).

4.5.4.3.2 Links. Government standard 7.62mm, M13 links shall be used for linking ammunition required for firing tests.

4.5.4.4 Power supply. A power supply capable of supplying 10 amperes over a range of 18.0 to 30.0 vdc shall be used to operate the solenoid.

4.6 Test methods.

4.6.1 Firing pin indent test. Machineguns shall be tested for firing pin indent requirement (see 3.3.17) using the inspection equipment in accordance with Drawings D7798448 and C7318984. The machinegun shall be held in a horizontal position (approximately), the barrel extension shall be retracted to the seared position, and the cover assembly and the feed tray assembly opened. The holding fixture, containing the copper compression cylinder, shall be inserted in the barrel chamber and the feed tray and cover assemblies closed. The barrel extension shall then be released to indent the copper compression cylinder. The holding fixture shall be removed from the machinegun and the depth of the indent in the copper compression cylinder computed by measuring the distance from the original surface of the copper compression cylinder (before indentation) to the bottom of the firing pin impression. If the firing pin indent is not within the requirement, three more impressions shall be taken and the average depth of the three indents shall be within the specified requirement. The firing pin indent impression shall be visually examined to determine whether the concentricity requirement has been met.

4.6.2 High-pressure resistance test. Machineguns shall be tested for high-pressure resistance requirement (see 3.3.18) by firing one high-pressure test cartridge in each machinegun. This proof firing shall be accomplished with the machinegun held in a firing fixture conforming to Drawing F7273898 and using a safety shield conforming to Drawing F7273975. Breechblocks, barrel extension assemblies, and barrels to be assembled into production machineguns shall be proof fired only as part of the completed machineguns and magnetic particle inspected and marked in accordance with the applicable drawings and other applicable documents. Breechblocks, barrel extension assemblies, and barrels to be used as repair parts shall be proof fired independently of the production machineguns and magnetic particle inspected and marked in accordance with the applicable drawings and other applicable documents. After proof firing,

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machineguns shall be examined for cracks, deformations, and other evidence of damage and cartridge cases shall be visually examined for bulges, splits, rings, and other defects caused by defective barrels. Proof marks shall be applied as indicated on the applicable drawings on machineguns that have passed this test.

4.6.3 Functioning firing test.

4.6.3.1 Machineguns shall be tested for functioning firing requirement (see 3.3.19) in accordance with the schedule specified in Table II. The machineguns shall be held in a firing fixture conforming to Drawing F7273898. The belt of ammunition (see 4.5.3.2) shall hang unsupported vertically from the firing fixture feed tray for a distance of not less than 4 feet when the belt of ammunition is placed in the machinegun feedway and the first round is in stripping position.

TABLE II. Functioning firing schedule

| Feed direction and method of firing | Number of rounds (see 4.5.3.3) | | Type of firing |
|--|-----------------------------------|-------------------------------|--------------------------------------|
| | First 100 machine- guns | Reduced firing schedule | |
| Left hand feed using the solenoid (see 4.6.3.3). | 50 | 25 | Interrupted bursts (see 4.6.3.4). |
| | 50 | 25 | Continuous burst (see 4.6.3.5). |
| Right hand feed using the back trigger plate. | 50 | 25 | Interrupted bursts (see 4.6.3.4). |
| | 50 | 25 | Continuous burst (see 4.6.3.5). |

4.6.3.2 The ammunition shall be linked in belts in a ratio sequence of four ball cartridges and one tracer cartridge. For the first 100 machineguns, two 50-round belts of ammunition shall be linked together with a dummy-inert cartridge separating each 50 rounds; and for all other machineguns, four 25-round belts of ammunition shall be linked together with a dummy-inert cartridge separating each 25 rounds. Caution should be employed in the use of dummy-inert cartridges to assure that the cartridge case with projectile is ejected from the machinegun before firing is continued.

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4.6.3.3 The voltage for operation of the solenoid shall be 24 ± 6 vdc and the last 100 rounds shall be fired using the solenoid.

4.6.3.4 Firing shall be intentionally stopped (by releasing the back plate trigger or discontinuing the electric current to the solenoid, as applicable) at least five times during the interrupted burst firing. The machineguns shall be checked to assure that the firing stops immediately when the trigger is released or the electric current to the solenoid is discontinued.

4.6.3.5 The cyclic rate of fire shall be measured and recorded for each continuous burst using a timer gage conforming to Drawing B11015934.

4.6.3.6 Prior to any test firing, machineguns may be gymnasticated without ammunition for approximately 300 cycles at a rate of approximately 100 cycles per minute using Government approved equipment of the contractor's design (see 4.5.4.2). When the machineguns are gymnasticated the jacket assembly group and the barrel assembly shall be removed from the machinegun, the forward travel of the barrel extension assembly shall be limited so that the hammer does not release, and the back plate trigger shall be held forward so that the sear does not engage the barrel extension.

4.6.4 Accuracy test.

4.6.4.1 The machineguns shall be tested for accuracy requirement (see 3.3.20) using the firing fixture conforming to Drawing F7273897, and ball cartridges. The firing of a 10-round burst for warmup is allowable before the machinegun is fired for accuracy. A 10-round burst shall then be fired and the target checked for the accuracy requirement. The smallest circle diameter which includes 9 of the 10 rounds as defined in 3.3.20 shall then be recorded.

4.6.4.2 Machineguns may be fired at a range of not less than 1,000 inches with suitable correlations in the accuracy requirement as indicated on the accuracy diagram, Drawing B7793717, and as approved by the contracting officer.

4.6.5 Interchange of parts.

4.6.5.1 In plant.

4.6.5.1.1 Machineguns. Machineguns shall be tested for interchange of parts (see 3.3.21) 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 machinegun into 10 groups of non-mating parts as shown below and distributing the groups

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into 10 different trays until each tray contains parts for a complete machinegun. Groups of parts from the first machinegun shall be taken in order and placed in trays 1 through 10; groups of parts from the second machinegun shall be taken in order and placed in trays 2 through 10 to 1; groups of parts from the third machinegun shall be taken in order and placed in trays 3 through 10 to 2; etc. Commercial parts such as screws, spring pins, etc shall be placed in the same tray as their mating or associate part. Any commercial part rendered unserviceable by disassembly shall be replaced without penalty to the interchangeability test. The machineguns shall be reassembled using only those parts which are in the same tray.

Groups of non-mating parts

Group I

Barrel (7792874)
 Guide, spring (7793554)
 Hammer, assembly (7792908)
 (retain as matched set)
 Handle (7790951-1)
 Pin, lever pivot (7793663)
 Plunger, retainer (7793479)
 Rod, buffer (11013357)
 Roller, lever actuating
 (7793558)(2 each)
 Spring, helical, compression
 (7793489)(used with retainer,
 connector-7793552)
 Spring, helical, torsion (7793473)
 (used with pawl, feed-7792898)
 Spring, helical, torsion (11013364)
 (used with support-7793540)

Group III

Disconnecter assembly (11013381)
 (2 each)
 Extension, barrel (11013431)
 Link, connecting, spring clip
 type (7793740)
 Plunger, cartridge stop (7793543)
 Shaft, roller (7793559)(2 each)
 Spring, helical, compression
 (7793463)(used with extension-
 7793660)
 Spring, helical, compression
 (7793493)(used with slide-
 11013383)

Group II

Bracket, charger, rear (7793681)
 Cover and track assembly (7793643)
 Pin, buffer pivot (11013433)
 Plunger, cam (7793592)
 Rod, hammer spring guide (7792879)
 Slide, feed (7793542)
 Spring, helical, compression
 (7793496)(2 each) (used with
 pawl, retainer-7793618)
 Stripper, cartridge (7793571)
 Stud, driving (11013403)(2 each)
 Stud, mounting, charger (11013434)

Group IV

Bearing, barrel, front (11013349)
 Plunger, lever pivot pin (7793662)
 Roller, charger (11013382)
 Shaft, roller (7793557)(2 each)
 Spring, helical, compression
 (7792838)(2 each)(used with
 rod-7793583)
 Spring, helical, compression
 (7793517)(used with rate control
 guide-7793581)
 Tray, feed (11013441)

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Group V

Cam, breechblock (7793614)
 Locator, barrel (7792854)
 Pawl, retaining (7793618)(2 each)
 Plate assembly, back, with
 solenoid (11013437)
 Retainer, connector slide (7793552)
 Screw, hammer sear housing (7793574)
 Spring, helical, compression
 (MS-24585-75)(used with plunger-
 7793662)
 Spring, helical, compression
 (7793468)(used with sear-7792894)
 Stud, mounting, charger (11013434)

Group VII

Breechblock (11013421)
 Chain, short twist-link (7793173)
 Guide rate control (7793581)
 Lever, buffer support, LH (7793593)
 Pawl, feed (7792898)
 Roller, hammer cocking (7793568)
 Spring, coned disk (7793577)(10 sets
 of 20 springs each)(Maintain each
 set as stacked)
 Spring, helical, compression
 (7793481)(2 each)(used with stud-
 11013403)
 Spring, helical, compression
 (7793522)(2 each)(used with rod,
 assembly-7792833)

Group IX

Body, buffer (11013443)
 Depressor, cartridge (7793617)
 Housing, hammer sear (11013402)
 Jacket, barrel (11013400)
 Rod, drive spring guide (7793583)
 (2 each)
 Roller, rammer actuator (11013447)
 Roller, breech block & rammer
 actuator (7793560)
 Slide, charger (11013383)
 Spring, helical, compression
 (7793504)(used with rod-7792879)

Group VI

Cam, feed (7793600)
 Lock (7793523-1 and -2)
 Pin, firing (7793561)
 Retainer, feed support (7793598)
 Sear, hammer (7792894)
 Shell assembly, receiver, with
 cams (11013374)
 Spring, helical, compression
 (7793518)(used with pawl-7793655)
 Spring, helical, compression
 (7793746)(used with plunger-
 7793705)
 Support, spring (7793555)

Group VIII

Connector, slide (7793551)
 Nut, buffer rod (7793474)
 Pawl, rate control (7793655)
 Retainer, spring (7793544)
 (2 each)
 Ring, pull (11013436)(2 each)
 Support, buffer (7793540)
 Support, guide, rate control
 (7793515)
 Track, feed slide (7793595)
 Rammer and extractor assembly
 (8448401)

Spring, helical, compression
 (7793506)(2 each)(used with
 disconnecter-11013381)
 Spring, helical, compression
 (7793507)(3 each)(used with
 plunger-7793479, plunger-7793543
 pin-7793561)
 Spring, helical, compression
 (7793525)(used with plunger-
 7793592)

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Group X

Extension, firing pin (7793660)
 Housing assembly, charger (7793677)
 Lever, buffer support, RH (7793604)
 Lever, rammer (11013445)
 Plunger, hammer (7793705)
 Rod assembly, cover latch (7792833)(2 each)
 Roller, feed slide (7793478)
 Slide, rate control (7793582)
 Spring, helical, compression
 (7793508)(2 each)(used with retainer-7793544)
 Stop, cartridge (11013394)
 Support, feed (7793599)

4.6.5.1.2 Concurrent repair parts. Concurrent repair parts shall be tested for interchangeability requirement (see 3.3.21) by disassembling two machineguns, previously tested for 4.5.3.5.1.1, as necessary and then reassembling them using the concurrent repair parts. No hand refinement of parts will be allowed, and the machineguns shall operate and function properly. This test may be performed independently of the machinegun interchangeability test specified in 4.5.3.5.1.1, and at more frequent intervals using accepted machineguns taken from current production.

4.6.5.2 Interplant. Machineguns to be subjected to the interplant interchangeability test shall be given preliminary hand functioning to assure proper operation before parts are disassembled. In addition, the machineguns shall be inspected for sear release, headspace, sear engagement, timing, and firing pin indent requirements using the inspection methods specified in 4.5.2.2.12.h through 4.5.2.2.12.k and 4.6.1 respectively before machineguns are disassembled. Machineguns shall be interchanged in a manner similar to the detailed plan specified in 4.6.5.1.1 except that parts shall be divided into six groups and that when disassembling, every other machinegun used shall be one produced by a different manufacturer. After assembly, the machineguns shall be inspected for sear release, headspace, sear engagement, timing, firing pin indent, functioning firing, and accuracy requirements using the inspection methods specified in 4.3.2.2.12.h through 4.5.2.2.12.k, 4.6.1, 4.6.3, and 4.6.4 respectively. Before machineguns are returned to the contractors, the original parts shall be reassembled to their respective machineguns and the machineguns shall be hand functioned to assure proper operation.

4.6.6 Endurance test.

4.6.6.1 Testing of machineguns for endurance requirement (see 3.3.22) shall be accomplished with the machineguns held in a firing fixture conforming to Drawing F7273898. Mounting bolts on firing fixture shall be torqued to 20 ft/lbs.

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4.6.6.2 The ammunition shall be linked in a ratio sequence of four ball cartridges and one tracer cartridge. The linked ammunition shall be positioned so that the belt hangs vertically from the machinegun feed tray assembly for at least 6 inches and no more than 15 inches. The test shall be started using left hand feed and the direction of feed shall be changed after every 2,000 rounds. The first 8,000 rounds of the test shall be fired using the solenoid (see 4.6.3.3); the next 1,000 rounds shall be fired using the back plate trigger and the remaining 1,000 rounds fired using the solenoid as specified in 4.6.6.4.

4.6.6.3 The firing schedule for the first 9,000 rounds shall be 100 rounds in interrupted bursts (see 4.6.3.4) followed by 100 rounds in a continuous burst using 100-round belts. The cyclic rate of fire shall be measured and recorded for the last 100-round continuous burst of each 1,000 rounds using a timer gage conforming to Drawing B11015934. The machinegun shall be completely lubricated with oil conforming to VV-L-800 and gymnasticated prior to the start of each day's test. After each 200 rounds fired, the machinegun shall be cooled by forced air to approximately ambient temperature. After each 3,000 rounds fired and at the end of each day's firing, the machinegun shall be cleaned with dry cleaning colvent conforming to P-D-680, dried and lubricated with oil conforming to VV-L-800. Parts exposed to powder residue may be cleaned with rifle bore cleaner MIL-C-372 prior to cleaning, drying and lubricating as specified above. Weapon's solenoid shall not be cleaned with dry cleaning solvent P-D-680 or rifle bore cleaner MIL-C-372, or lubricated. The 3,000 round firing cycle specified above shall be started and completed during the same working day.

4.6.6.4 The firing schedule for the last 1,000 rounds shall be started and completed during the same working day. Firing shall be in 4-second bursts (approximately 35 to 40 rounds) with 11 seconds cooling (without cooling aids) after each burst, resulting in a rate of approximately 150 rounds per minute. The ammunition shall be linked in a 1,000-round belt stacked in a Government approved container of the contractor's design (see 4.5.4.2). The safety precautions listed below should be followed in handling a "hot gun" when a stoppage occurs. (A "hot gun" is defined as a machinegun which has fired at least 200 rounds within a 2-minute period.)

- a. Do not open cover.
- b. Attempt to charge and fire the machinegun.
- c. If firing cannot be resumed, retract the barrel extension to seared position if possible, position safety in safe position, and wait 30 minutes before attempting to clear the machinegun and continue firing.

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4.6.6.5 No parts shall be altered and only parts broken or worn to the extent that they are unserviceable shall be replaced.

4.6.6.6 Complete accurate records shall be kept for each endurance test, showing each malfunction and part replacement including the number of the round at which each occurred. In addition, complete accurate records shall be kept for all time losses including the time for each stoppage when tested as specified in 4.6.6.4.

4.6.6.7 At the completion of the endurance test, machineguns shall be disposed of as specified in procurement documents (see 6.1).

4.6.7 Packaging tests.

4.6.7.1 Determination of cleanliness. The applicable surfaces (except for barrel bore and chamber) of each sample unit shall be subjected to the determination of cleanliness test in accordance with MIL-P-116, except that the wipe test shall not be applicable to parts with black oxide or anodized protective coatings. The barrel bores and chambers shall be wipe tested for cleanliness using clean white bore cleaning swabs and the degree of cleanliness shall be verified by comparison of test swabs with standard swab samples furnished by the contracting officer.

4.6.7.2 Heat-sealed seam. The sample level A and level B machinegun unit packages shall be subjected to the heat-sealed seam test specified in MIL-P-116.

4.6.7.3 Vacuum retention. A sufficient vacuum shall be drawn to cause the flexible barrier of level A and level B interior packages to cling snugly to the inner container. Care shall be exercised to insure that an excessive amount of vacuum is not applied which might cause puncture or rupture of the barrier.

4.6.7.3.1 Interpretation of results. After remaining undisturbed at room temperature for 2 hours, the barrier shall be examined to determine whether it is still taut and retracts against the inner container when drawn away and quickly released.

5. PREPARATION FOR DELIVERY

5.1 Pilot pack. On each contract, a pilot pack consisting of a complete and packed shipping container representing initial production shall be forwarded in accordance with 3.1. Pilot packs shall be packaged to the level specified in the contract and packed level C in accordance with the requirements of Packaging Data Sheet P11013440.

5.2 Preservation, packaging, packing, and marking. Machineguns shall be preserved, unit packaged, packed, and marked in accordance with

the requirements of Packaging Data Sheet P11013440 for the applicable level of protection specified (see 6.1).

5.3 Repair parts. Repair parts shall be prepared for delivery in accordance with the applicable packaging requirements specified in the contract (see 6.1).

6. NOTES

6.1 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 machinegun on order, showing applicable revision dates.
- c. Inspection criteria for components (see 4.4, 4.5.2.1, 4.5.2.3.2, 4.5.3.8, and 4.5.3.9.2).
- d. Index if inspection equipment lists pertinent to the machinegun on order, showing applicable revision dates.
- e. Number of initial production samples required for tests (see 3.1).
- f. That packages opened for examination shall be repackaged by the contractor at the contractor's expense (see 4.5.2.3).
- g. Disposition of reliability tested machineguns and parts (see 4.5.6.8).
- h. Shipping instructions for quality evaluation samples and pilot pack (see 3.1 and 5.1).
- i. If copies of drawings of contractor's design inspection equipment are required (see 4.5.4.2).
- j. Shipping instruction for drawings of contractor designed inspection equipment if other than specified (see 4.5.4.2).
- k. Selection of applicable levels of preservation, packaging, and packing.
- l. Packaging instructions for repair parts (see 5.3).
- m. Place of final inspection and acceptance (see "Notes" in MIL-W-13855).
- n. List of acceptance inspection equipment to be furnished the contractor (see 4.5.4.1 and responsibilities for other Government property to be furnished the contractor).
- o. Responsibilities for furnishing ammunition and links (see 4.5.4.3).
- p. Responsibility for test firing facilities and operating procedures (see 6.3).
- q. Shipping instruction for machineguns and parts when an inter-plant interchangeability test is required (see 4.5.3.5.2).
- r. Procedures and methods for demilitarizing and disposing of rejected material.
- s. Disposition of Government furnished property.

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6.2 Test firing facilities and operating procedures shall be designed by the contractor in conformance with local, state, and federal regulations and suitable for carrying out prescribed firing tests with safety of operating and visiting personnel. Copies of these contractor designs shall be forwarded to the contracting officer. Government facilities may be viewed upon application to the contracting officer.

6.3 When action by a testing agency is required, work programing will be effected with the testing agency at the earliest practicable date.

6.4 To avoid delay in test firing, the Government representative should maintain a minimum of 2 months' supply of high pressure and standard ammunition as determined by anticipated firing requirements.

6.5 Supersession data. This specification supersedes MIL-M-45547(WC) dated 31 December 1963 and SAPD-320 dated 22 March 1967.

6.6 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.

Custodian:
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| SPECIFICATION ANALYSIS SHEET | | Form Approved Budget Bureau No. 22-R255 |
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| INSTRUCTIONS: This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements. | | |
| SPECIFICATION MTL-M-45547A(WC) Machine Gun, 7.62MM: Fixed, M73A1 | | |
| ORGANIZATION | | |
| CITY AND STATE | CONTRACT NUMBER | |
| MATERIAL PROCURED UNDER A <input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT | | |
| 1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? A. GIVE PARAGRAPH NUMBER AND WORDING. | | |
| B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES | | |
| 2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID | | |
| 3. IS THE SPECIFICATION RESTRICTIVE? <input type="checkbox"/> YES <input type="checkbox"/> NO (If "yes", in what way?) | | |
| 4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity) | | |
| SUBMITTED BY (Printed or typed name and activity - Optional) | | DATE |

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1 JAN 66

REPLACES EDITION OF 1 OCT 64 WHICH MAY BE USED.