

METRIC

MIL-M-70446A(AR)
30 March 1993

SUPERSEDING

MIL-M-70446

31 January 1984

MILITARY SPECIFICATION

MACHINE GUN, 5.56 MM: M249

This specification is approved for use by the U.S. Army Armament Munitions and Chemical Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense (See 6.1).

1. SCOPE

1.1 Scope This specification establishes the performance, firing and quality assurance requirements for the assembly, testing, inspection and packaging for the, Machine Gun, 5.56 mm: M249 with equipment and one assigned barrel.

Beneficial comments (recommendations, additions, deletions, and any pertinent data which may be of use in improving this document should be addressed to:

Commander, u.s. ARMY ARDEC,

Attn: SMCAR-BAC-S

Picatinny Arsenal, NJ 07806-5000

by using the self-addressed Standardization Document

Improvement Proposal (DD Form 1426)

appearing at the end of this document or by letter.

AMSC N/A

DISTRIBUTION STATEMENT A.

Approved for public release;
distribution is unlimited

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2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

MILITARY

MIL-C-9963	- Cartridge 5.56mm, Ball: M193
MIL-W-13855	- Weapons: Small Arms and Aircraft Armament Subsystems, General Specification for
MIL-C-20109	- Copper Pressure Cylinders and Copper Pressure Spheres, Cannon (Major and Medium), Cannon (Minor) Small Arms, and Pistol and Revolve
MIL-I-45607	- Inspection Equipment, Acquisition, Maintenance and Disposition of
MIL-C-46936	- Cartridge, 5.56mm, Test, High Pressure, M197
MIL-D-60254	- Dummy Cartridge, 5.56mm, Inert Loaded, M232
MIL-W-63150	- Weapons and Support Material, Standard Quality Assurance Provision for
MIL-L-63460	- Lubricant, Cleaner and Preservative for Weapons and Weapon Systems
MIL-L-63532	- Link, Cartridge, Metallic Belt, 5.56 mm: M27
MIL-C-63989	- Cartridge, 5.56mm, Ball: M855
MIL-C-63990	- Cartridge, 5.56mm, Tracer: M856

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STANDARDS

MILITARY

MIL-STD-1949 - Inspection, Magnetic Particle

(Unless otherwise indicated, copies of federal and military specifications, standards and handbooks are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications from a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DRAWINGS

US ARMY ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER

(ARDEC)

PRODUCT AND PACKAGING DRAWINGS

8448670	Magazine Assembly, 30 Round
P9348199	Special Packaging Instructions
9348199	Machine Gun, 5.56mm: M249/with Equipment and One Assigned Barrel
9352577	M249 Ammunition Magazine
9348463	Combination Cleaning Tool

INSPECTION EQUIPMENT DRAWINGS

9350100	Gage, Headspace, Minimum
9350101	Gage, Headspace, MAXIMUM
9350128	Gage, Indicating, Firing Pin Protrusion
9350129	Gage, Setting, Firing Pin Protrusion

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(Copies of other Government documents, drawings, and publications required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.2 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, (except for related associated detail specifications, specification sheets, or MS Standards) the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.4) a sample shall be subjected to first article inspection in accordance with Table II.

3.2 Materials and construction. Machine guns and parts shall be in accordance with requirements specified herein, Drawing 9348199 and drawings applicable thereto, and the applicable provisions of MIL-W-13855 and MIL-W-63150.

3.3 Design

3.3.1 Barrel assembly (125570000). The barrel assemblies (main and assigned, see 6.5.1 and 6.5.2) shall be capable of manual assembly to and disassembly from the receiver when the bolt is fully retracted. The barrel assemblies shall be so fabricated that when the machine gun is completely assembled, the requirements for dispersion and targeting prescribed herein shall be met.

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3.3.1.1 Barrel subassembly (12557001) The barrel sub-assembly shall be free of cracks and seams and the bore and chamber shall be free of pits. 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 throat and rifling. Burrs and sharp edges shall be removed from chamber edges. Scratches or marks, occurring in a chamber which otherwise meets the surface roughness requirement, shall be permitted provided they do not cause marks on the case of a high pressure test cartridge fired in the chamber. The barrel assembly shall be proof fired, magnetic particle inspected and marked in accordance with the applicable drawing.

3.3.1.2 Compensator (9349051). The compensator with washer shall be assembled to the barrel and torqued in accordance with the requirements of the barrel assembly drawing.

3.3.1.3 Front front (9348441). The front sight shall be assembled to the barrel assembly in accordance with the requirements of the barrel assembly drawing. There shall be no relative motion between parts.

3.3.1.4 Barrel carrying handle stem (125570081). The barrel carrying handle shall be fixed to the bracket handle. It shall lock in its change position and be capable of being pivoted either to the left eves the barrel or to the right alongside the foregrip and be retained by a detent.

3.3.1.5 Gas regulator plug (9348437). The gas regulator plug retained by the gas regulator collar shall be assembled to the barrel in accordance with the applicable drawing. The regulator shall allow a sufficient amount of gas to pass through to the operating parts so that the weapon will function without misfire.

3.3.1.6 Gas block set screw (12557005). The gas block set screw shall be assembled in the gas block in accordance with the applicable drawing.

3.3.1.7 Heat shield assembly (125404051). The heat shield assembly shall be attached to the barrel assembly and remain attached during firing and when the barrel is removed. It shall be retained by two spring clips and front arms. It shall be readily removable and replaceable by the operator without damage to the clips or plastic parts.

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3.3.2 Bipod assembly (9348320). The biped assembly shall be retained on the receiver assembly by the gas cylinder assembly and when assembled shall be capable by its own weight, of rotating on the receiver between its stop positions. The legs shall be held in a spread position by spring pressure and may be positioned forward, in the operating position (down), or in the fully retracted position (to the rear) for storage during transport. When the biped is retracted it should stay in the up position. The leg length may be changed manually by depressing the latch and adjusting the inner legs to any of the three positions provided. The inner legs shall be retained in the selected position by the latch.

3.3.3 Gas cylinder assembly (9348345). At assembly, there shall be no relative motion between component parts. The gas cylinder assembly shall assemble to the receiver assembly without the use of tools. When assembled to the receiver, the gas cylinder assembly shall lock in the receiver and be positioned by a spring at the front of the barrel supports.

3.3.4 Receiver assembly (9348201). All guide ways shall be smooth and free of burrs and other defects that could impair their function. The ejector shall be capable of operation through its full range of motion without binding. The receiver assembly shall accept the barrel assembly and lock it into place when the bolt is retracted. The receiver assembly shall accept the cover assembly, feed tray assembly and the buttstock assembly using the specified pins, and without the use of tools. The receiver shall be capable of accepting both the M249 ammunition magazine (9352577) and the M16 rifle 30 round magazine (8448670).

3.3.4.1 Cocking handle assembly (12556981). The cocking handle assembly shall be retained on the receiver by the cocking handle guide and shall move without binding through its full range of travel. The cocking handle assembly shall be held in the forward stop position by the spring action of the plunger detent engaging the cocking handle stop. When pulled rearward, the cocking handle shall engage the slide, retract the bolt and piston assembly and cock the weapon.

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3.3.5 Cover, feed mechanism assembly (9348250). The cover and feed mechanism shall be retained on the receiver, with the feed tray assembly, by the specified pin, in accordance with the applicable drawing. The cover assembly shall be locked in the closed position by the cover latches. The cover shall open when the latches are released and be held open by spring pressure. The cover and feed tray assembly shall be capable of movement independently. The cover, feed mechanism assembly shall be capable of feeding linked cartridges (including blanks) into the feed mechanism in any attitude of the weapon.

3.3.5.1 Feed pawl assembly (9348278). The feed pawl assembly shall be retained in the cover assembly in accordance with the applicable drawing and all parts shall be free from burrs and other defects which could adversely affect the function of the parts. The feed pawl assembly shall move freely through its full range of motion without binding.

3.3.5.2 Feed lever (9348299). The feed lever shall be free from burrs and other defects that could adversely affect the function of the part. The feed lever shall be retained in accordance with the applicable drawing and shall move through its full range of motion, without binding, and return to its stop position under spring pressure. The movement of the feed lever shall operate the feed pawl assembly.

3.3.6 Feed tray assembly (9348308). The feed tray assembly shall be assembled to the receiver with the cover and feed mechanism. The feed tray assembly shall be capable of moving through its full range of motion without binding. The feed tray assembly shall be capable of moving independently when the cover is in the open position.

3.3.7 Bolt and Piston assembly (9348390). The bolt and piston assembly shall assemble to the receiver and shall be capable of moving through its full range of motion (under its own weight) without binding.

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3.3.7.1 Slide assembly (9348391). The feed roller assembly shall operate freely through its full range of motion without binding and shall be retained in the slide by a spring pin. The pivot pin shall operate freely within the slide without binding and shall be retained by the spring pin. The firing pin shall be assembled to the slide using spring pins to retain it in position. The firing pin spring shall be capable of assembly over the firing pin and must be positively retained at the base of the firing pin by an interference fit. The bolt assembly shall assemble over the firing pin and into the slide without binding and shall be retained in its operating position within the camway of the slide assembly by the tension of the firing pin spring.

3.3.7.2 Bolt assembly (9348412) The breech bolt shall be free from burrs, cracks, seams, and other defects that could adversely affect the function of the bolt. The bolt shall operate freely within the slide assembly without binding. The cartridge extractor shall assemble to the bolt and shall be retained by the pin. The cartridge extractor shall function through its full range of motion (under spring pressure) without binding. Tools are required for assembly and disassembly of the cartridge extractor from the bolt assembly. The bolt shall be proof fired, magnetic particle inspected and marked in accordance with the applicable drawing.

3.3.7.3 Piston assembly (93484051). The operating rod assembly shall be free of cracks. The piston shall move freely after assembly to the operating rod assembly.

3.3.8 Return rod and transfer mechanism assembly (12540416). The rod shall retain the drive spring at the last coil by an interference fit. The return rod and transfer mechanism shall engage the receiver by the two spring pins in the return rod and transfer mechanism assembly.

3.3.9 Trigger mechanism (934835). The trigger mechanism shall assemble to the weapon using the lower back plate retaining pin in the receiver assembly for positioning. The trigger mechanism shall be capable of assembly to and disassembly from the weapon without the use of tools,

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3.3.9.1 Safety (9348364). The small arms safety shall move manually without binding between the "safe" and "fire" positions and shall remain in the set position under spring pressure until reset. The trigger mechanism shall not function when the safety pin is set in the "safe" position (to the right). The trigger mechanism shall function when the safety is set in the "fire" position (to the left). When in the "fire" position, the red warning ring shall be displayed.

3.3.9.2 Sear (9348368). When assembled in the weapon, the sear shall be capable of full engagement with the sear engagement notches of the operating rod and of holding the operating rod in the rearward, cocked, position. When the safety is "off", (in the "fire" position) and the trigger is pulled, the sear shall disengage from the sear engagement notch on the operating rod assembly allowing the operating rod assembly to move forward under spring action. When the trigger is released, the sear shall remain in the "disengaged position until the tripping lever is moved rearward. The sear shall then return to the engaging position by spring action.

3.3.9.3 Trigger assembly (9348354). The trigger shall be smooth and free from burrs, cracks, seams, and other defects that could adversely affect its function. When the trigger is actuated it shall return to its normal forward position from partial or complete trigger pull, under spring pressure.

3.3.10 Buttstock and buffer assembly (12556935). The buttstock and buffer assembly shall be retained to the receiver with pins. The shoulder rest shall mount to the butt stock assembly and be retained in the stored or raised positions by its own spring pressure.

3.3.11 Rear sight assembly (9349997). The rear sight leaf assembly shall be capable of moving through its full range of motion without binding. The elevator assembly shall be capable of moving through its full range of motion without binding. The rear sight assembly shall be assembled to the cover with screws torqued in accordance with the applicable drawing.

3.4 Performance characteristics.

3.4.1 Headspace. Headspace in the assembled weapon shall be in accordance with drawing (9348200).

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3.4.2 Firing pin.

3.4.2.1 Firing pin protrusion. The firing pin protrusion, in the assembled weapon, shall be in accordance with applicable drawing (9348200) .

3.4.2.2 Firing pin indent. The firing pin indent when utilizing copper pressure cylinders (MIL-C-20109) shall not be less than 0.51mm.

3.4.3 Trigger pull. The force on the trigger required to release the operating group from the sear with the bolt in the open position shall not be less than 35.0 Newtons and shall not be greater than 70.0 Newtons. The trigger shall be free of creep. Creep shall be defined as any perceptible movement between the point where the trigger slack is taken up and the sear is disengaged from the operating rod.

3.4.4 Proof firing. Each bolt assembly, main, and assigned barrel assembly shall be capable of withstanding the firing of a Government standard 5.56mm M197 high pressure test cartridge (MIL-C-46936). After firing, each barrel assembly, and bolt assembly shall be subjected to visual and magnetic particle inspections to determine that these components are free from cracks, seams and or other injurious defects.

3.4.5 Dispersion and targeting. When fired at a target located 50 meters from the muzzle, the machine gun with its main and assigned barrel shall meet the following criteria.

3.4.5.1 Dispersion. Nine out of 10 rounds fired in a single burst shall realize a figure of merit H+L (height + length) not exceeding 33 cm. No keyholing shall be permitted. keyholing is defined as any projectile yaw exceeding 15 degrees.

3.4.5.2 Targeting. The mean point of impact of 9 rounds of a 10 round burst shall be within a 20cm by 20cm square. The center of this square shall be 5cm above the point of aim.

3.4.6 Functioning The machine gun shall meet the following requirements without failure (defined in 3.7) or unserviceable parts (defined in 6.5.4).

3.4.6.1 Thirty round magazine. The machine gun shall be capable of functioning with the M16 30 round magazine (84486770).

3.4.6.2 Cyclic rate of fire. The cyclic rate of fire for each M249 machine gun with its main and assigned barrel shall be between 700 and 850 rounds per minute.

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3.4.6.3 Belt pull. The machine gun shall be capable of functioning while pulling 2.86 kilograms (the equivalent of a 200 round free hanging belt).

3.5 Interchangeability Unless otherwise specified on the drawings, all component parts or inseparable subassemblies shall be interchangeable.

3.6 Endurance. The M249 machine gun shall meet the following requirements when subjected to 10,000 rounds of firing. No unserviceable parts are allowed during the endurance test.

3.6.1 Allowance failures. When using the 200 round magazine each endurance weapon shall exhibit no more than 4 failures attributable to the machine gun. of the 4 failures a maximum of 2 failures are allowed which take more than 10 seconds but less than 10 minutes to clear. All remaining failures must be immediately clearabilty within 10 seconds. No failures which require more than. 10 minutes to clear and no instances of uncontrolled firing are allowed. When firing with the M16 rifle magazine (30 round) 3 failures (attributable to the machine gun), which take less than 10 seconds to clear are allowed in each endurance weapon. Only 1 failure (attributable to the machine gun) is allowed which takes more than 10 seconds but less than 10 minutes to clear. All incidents shall be recorded by the contractor. Any incidents that the contractor considers not chargeable to the weapon shall be substantiated and reported to the Government for concurrence. (see Table I for endurance summary)

TABLE I. Endurance summary.

TIME TO CLEAR FAILURES	WEAPON CHARGEABLE FAILURES PERMITTED	
	200 RD. MAG. (9250 RDS)	30 RD. MAG. (750 RDS)
< 10 Seconds	4	3
< 10 Minutes	2	1
> 10 Minutes	0	0
Uncontrolled Fire	0	0
Unserviceable Parts	0	0
Maximum Allowed Total:	4	3

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3.7 Reliability. In addition to meeting endurance requirements each weapon shall exhibit the following Mean Round Between Failure (MRBF) as a point estimate over a receiver service life of 50,000 rounds.

Failure Class	MRBF	Failures Permitted in 50,000 Rds.
I	1,600	31
II	3,300	15
III	16,000	3

3.7.1 Failure definition. A failure is any of the following:

- a. A stoppage in weapon function not caused by trigger manipulation.
- b. A failure to stop firing when trigger is released.
- c. A malfunction where the weapon does not operate in accordance with design intent.

3.7.2 Failure classifications.

Class I: A failure that may be operator immediately clearable within 10 seconds or less while following prescribed immediate action procedures.

Class II: A failure that may be operator clearable requiring more than 10 seconds but not more than 10 minutes. Only the equipment and tools issued with the weapon may be used to clear the failure.

Class III: A failure of a severe nature. The failure; (1) is operator correctable but requires more than 10 minutes, (2) operator cannot correct and requires assistance (no time limit), (3) requires higher level of maintenance, or authorized operator correction cannot be accomplished because of unavailability of necessary tools, equipment or parts.

3.7.3 Failure scoring. A part determined to be unserviceable during the scheduled maintenance (every 4000 rounds), shall be replaced and not scored as a reliability failure. However, for each weapon, more than 4 changes of the same part shall result in rejection of the reliability test. Failure to meet the barrel life

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requirements shall result in rejection of the reliability test. Barrels becoming unserviceable after meeting barrel life requirements shall not be considered as chargeable failures. Unserviceable parts discovered after the reliability firing is completed shall not be scored as a reliability failure. If one or more Class I and/or Class II failures are found to be related to an unserviceable part, scoring will be as follows.

3.7.3.1 Scheduled maintenance - repetitive failures. If the unserviceable part is found during scheduled maintenance all failures will be scored as one failure. No penalty shall be scored for replacement of the unserviceable part. In the event that both Class I failures and Class II failures were previously scored because of the unserviceable part the failures will be scored as a single Class II failure.

3.7.3.2 Unscheduled maintenance - repetitive failures If unscheduled maintenance is performed to correct the problem, replacement of the unserviceable part shall be scored as a Class III failure and the related Class I and/or Class XI failures not scored.

3.8 Barrel life. The barrel shall exhibit a minimum service life of 15,000 rounds. A barrel is unserviceable if 1) the velocity drops more than 61 meters per second or 2) more than 20 percent of the rounds fired exhibit yaw in excess of 15 degrees when measured 50 meters from the muzzle or 3) cracks develop.

3.9 Marking. Each M249 machine gun and each component thereof, for which markings are prescribed, shall be clearly marked in accordance with contract, drawings, and MIL-W-63150. Each machine gun shall be marked with a serial number assigned by the procuring activity. Each main and assigned barrel shall be identified to the specific weapon to which it has been tested.

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3.10 Workmanship. Workmanship shall be in accordance with the workmanship requirements of MIL-W-63150. In addition, the machine gun shall be free from grease, dust, rust, corrosive products, and other foreign matter. The cleaning method used shall not be injurious to any parts nor shall the parts be contaminated by the cleaning agent.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any 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 this specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

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

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

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4.3 First article inspection. First article inspection requirements shall be as specified in contract and the following:

4.3.1 Submission. The first article sample shall be representative of the manufacturing methods and processes to be used for quantity Production. The first articles shall consist of the following quantities unless otherwise specified in the contract.

Items	Quantity
a. Machine Gun, 5.56mm M249, in pilot pack (9348199, P9348199)	13
b. All components (except unmodified commercial parts)	5
c. All subassemblies	5
d. All assemblies	5
e. Pilot lot pack	5

4.3.2 Inspections to be performed. The first article sample shall be subjected to all inspections specified in table II. Additionally, first article assemblies, components, and test specimens may be subjected by the Government to any or all of the examinations and tests specified in the contract, specifications, and to any or all requirements of the applicable drawings.

TABLE II. First article inspection.

INSPECTIONS	Inspection	Requirement	Inspection
	<u>Level</u>	<u>paragraph</u>	<u>Method</u>
Examination for defects 2/	100%	<u>1/</u> 3.3, 3.9, 3.10	visual/ manual
Proof firing and Magnetic particle inspection	100%	<u>1/</u> 3.4.4	4.7.1
Headspace	100%	<u>1/</u> 3.4.1	4.7.2
Firing pin protrusion	100%	<u>1/</u> 3.4.2.1	4.7.3.1
Presence of proof mark on barrel and bolt	100%	<u>1/</u> 3.3.1.1, 3.3.7.2	visual
Marking	100%	<u>1/</u> 3*9	visual
PERFORMANCE TESTS			
Trigger Pull	100%	<u>1/</u> 3.4.3	4.7.4
Safety, trigger	100%	<u>1/</u> 3.3.9.1	4.7.5
Firing pin indent	100%	<u>1/</u> 3.4.2.2	4.7.3.2
Belt pull	100%	<u>1/</u> 3.4.6.3	4.7.7.3
Cyclic Rate of fire	100%	<u>1/</u> 3.4.6.2	4.7.7.2
Function with 30 round magazine	100%	<u>1/</u> 3.4.6.1	4.7.7.1
Dispersion	100%	<u>1/</u> 3.4.5.1	4.7.6
Targeting	100%	<u>1/</u> 3.4.5.2	4.7.6
Interchangeability	10-0-1	<u>1/</u> 3.5	4.7.8
Endurance	3-0-1	<u>1/</u> 3.6	4.7.9
Barrel life	100%	<u>1/</u> 3.8	4.7.11
Reliability	3-0-1	<u>1/</u> 3.7	4.7.10
FINAL EXAMINATION			
Damaged or missing parts	100%	<u>1/</u> 3.2	visual/ manual
Cleaning and lubrication	100%	3.10	visual/ manual

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TABLE II. First article inspection - Continued

	Inspection Level	Requirement Paragraph	Inspection Method
PACKAGING			
Packaging	13-0-1	5.0	5.0

1/ Any nonconformity shall be cause for rejection of the First Article. A failure report shall be submitted in accordance with the contract.

2/ Examinations are listed in 4.5.

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4.3.3 Rejection. If any assembly, component, or test specimen fails to comply with any of the applicable requirements, the first article sample shall be rejected. The Government reserves the right to terminate its inspection upon non-compliance with any of the stated requirements of an assembly, component or test specimen in the sample. In the event of rejection, the Government reserves the right to require the contractor to take corrective action and submit a new first article quantity. Until the first article quantity is accepted, the contractor is not authorized to proceed with regular production unless otherwise directed by the contracting officer.

4.4 Quality conformance inspection. Quality conformance inspections shall be as specified in table III.

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TABLE III. Quality conformance inspection

INSPECTIONS	Inspection <u>Level</u>	Requirement <u>Paragraph</u>	Inspection <u>Method</u>
Examination for defects 2/	100%	<u>1</u> / 3.3, 3.9, 3.10	visual/ manual
Proof firing and Magnetic particle inspection	100%	<u>1</u> / 3.4.4	4.7.1
Headspace	100%	<u>1</u> / 3.4.1	4.7.2
Firing pin protrusion	100%	<u>1</u> / 3.4.2.1	4.7.3.1
Presence of proof barrel and bolt	100%	<u>1</u> / 3.3.1.1, 3.3.7.2	visual
Marking	100%	<u>1</u> / 3.9	visual
PERFORMANCE TESTS			
Trigger pull	100%	<u>1</u> / 3.4.3	4.7.4
Safety, trigger	100%	<u>1</u> / 3.3.9.1	4.7.5
Firing pin indent	20-0-1	<u>1</u> / 3.4.2.2	4.7.3.2
Belt pull	100%	<u>1</u> / 3.4.6.3	4.7.7.3
Cyclic rate of fire	100%	<u>1</u> / 3.4.6.2	4.7.7.2
Function with 30 round magazine	100%	<u>1</u> / 3.4.6.1	4.7.7.1
Dispersion	100%	<u>1</u> / 3.4.5.1	4.7.6
Targeting	100%	<u>1</u> / 3.4.5.2	4.7.6
Interchangeability	10-0-1	<u>3</u> / 3.5	4.7.8
Endurance	1-0-1	<u>3</u> / 3.6	4.7.9
Barrel life	1-0-1	<u>3</u> / 3.8	4.7.11
FINAL EXAMINATION			
Damaged or missing parts	100%	<u>1</u> / 3.2	visual/ manual
Cleaning and lubrication	100%	<u>1</u> / 3.10	visual/ manual

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TABLE III. Quality conformance inspection - continued

PACKAGING	<u>Inspection Level</u>	<u>Requirement paragraph</u>	<u>Inspection</u>
Package	<u>4/</u>	5.0	5.0

1/ Nonconforming weapons shall be rejected and removed from the lot. A failure report shall be submitted in accordance with the contract.

2/ Examinations are listed in 4.5.

3/ nonconformity shall result in rejection of the lot. A failure report shall be submitted in accordance with the contract.

4/ The inspection level of the packaging is controlled by the Special Packaging Instructions (P9348199).

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4.4.1 Inspection lot. The number of machine guns in an inspection lot shall be as follows:

- a. First month's production - 200 weapons or one month's production, whichever is smaller
- b. After five consecutive acceptable lots of 200 each, 400 weapons or one month's production, whichever is smaller.
- c. After five consecutive acceptable lots of 400 each - 800 weapons or one month's production, whichever is smaller.
- d. When rejection of a lot occurs, the next smaller lot size shall be reinstated and the above procedures shall be repeated in returning to the next larger lot size. The contractor may request that the reduced lot size not be reinstated. Such a request shall be submitted in writing to the Government and shall substantiate why the smaller lot size and associated additional testing is not necessary or beneficial to the Government for the particular failure(s) involved.

4.4.2 Examinations and tests.

- a. Classification of characteristics.
The contractor's quality program or detailed inspection system shall provide assurance of compliance of all characteristics with the applicable drawing and specification requirements utilizing as a minimum the conformance criteria specified shall be cited herein, attributes sampling inspection, conducted in accordance with table IV below using the inspection levels stated in table II and table III.

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TABLE IV. Attributes sampling inspection.

Lot size	Inspection levels					
	I	II	III	IV	V	VI
2 to 8	*	*	*		5	3
9 to 15	*	*	*	13	5	3
16 to 25	*	*	*	13	5	3
26 to 50	*	*	32	13	5	3
51 to 90	*	*	32	13	13	5
91 to 150	*	125	32	13	13	5
151 to 280	*	125	32	32	20	8
281 to 500	*	125	32	32	20	8
501 to 1200	*	125	80	50	20	13
1201 to 3200	1250	125	80	50	32	13
3201 to 10000	1250	125	125	50	32	13
10001 to 35000	1250	315	125	80	50	13
35001 to 150000	1250	315	125	80	50	13

Numbers under inspection levels indicate sample size; asterisks indicate one hundred percent inspection. If Sample size exceeds lot size, perform one hundred percent inspection. Accept on zero and reject on one or more for all inspection levels.

- b. Alternative quality conformance provisions. Alternative quality conformance procedures, methods or equipment, such as statistical process control, tool control, other types of sampling procedures, etc. may be used by the contractor when they provide as a minimum the level of quality assurance required by the provisions specified herein. Prior to applying such alternative procedures, methods or equipment, the contractor shall describe them in a written proposal submitted to the government for evaluation (see 6.2). When required, the contractor shall demonstrate that the effectiveness of each proposed alternative is equal to or better than the specified quality assurance provision(s) herein. In cases of dispute as to whether the contractor's proposed alternative(s) provides equivalent assurance, the provisions of this specification shall apply. All approved alternative provisions shall be specifically incorporated into the contractor's quality program or detailed inspection system, as applicable.

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4.5 Examination for defects. The following components shall be visually and manually inspected for each weapon to verify compliance With the listed requirement.

<u>Inspection</u>	<u>Requirement Paragraph</u>	<u>Inspection Method</u>
Barrel assembly	3.3.1	visual/manual
Barrel subassembly	3.3.1.1	visual/manual
Compensator	3.3.1.2	visual/manual
Front sight	3.3.1.3	visual/manual
Barrel carrying handle stem	3.3.1.4	visual/manual
Gas regulator plug	3.3.1.5	visual/manual
Gas block set screw	3.3.1.6	visual/manual
Heat shield assembly	3.3.1.7	visual/manual
Biped assembly	3.3.2	visual/manual
Gas cylinder assembly	3.3.3	visual/manual
Receiver assembly	3.3.4	visual/manual
Cocking handle assembly	3.3.4.1	visual/manual
Cover, feed mechanism assembly	3.3.5	visual/manual
Feed pawl assembly	3.3.5.1	visual/manual
Feed lever	3.3.5.2	visual/manual
Feed tray assembly	3.3.6	visual/manual
Bolt and piston assembly	3.3.7	visual/manual
Slide assembly	3.3.7.1	visual/manual
Bolt assembly	3.3.7.2	visual/manual
Piston assembly	3.3.7.3	visual/manual
Return rod and transfer mechanism assembly	3.3.8	visual/manual
Trigger mechanism	3.3.9	visual/manual
Safety	3.3.9.1	visual/manual
Sear	3.3.9.2	visual/manual
Trigger assembly	3.3.9.3	visual/manual
Buttstock and buffer assembly	3.3.10	visual/manual
Rear sight assembly	3.3.11	visual/manual
Protective coating	3.2	visual/manual
Workmanship 1/	3.10	visual/manual
Improper assembly 2/	3.2	visual/manual

Notes:

1/ Burrs created due to normal firing are permissible and need not be removed.

2/ Weapons shall be visually examined to assure proper assembly.

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4.6 Inspection equipment. Unless otherwise specified in the contract, the responsibilities for acquisition maintenance, and disposition of measuring and testing equipment and for all other inspection equipment required to perform inspections prescribed herein and by other applicable specifications, shall be in accordance with MIL-I-45607.

4.7 Methods of inspection.

4.7.1 Proof firing. Each barrel assembly (12557000) and bolt assembly (9348412) shall be tested in a Government approved fixture for high pressure resistance by firing a high pressure test cartridge conforming to MIL-C-46936 or approved equivalent. Visual and magnetic particle inspection in accordance with MIL-STD-1949 shall be performed on the bolt assembly and barrel assembly to ensure that no cracks, splits, or other defects are present. Examination of the high pressure test cartridge case for bulges, splits, rings and other indications of defective barrels shall be performed immediately following the firing of each test cartridge. It shall be ascertained that no defects are present and the chamber and barrel remain within specified tolerances before the proof test acceptance mark is applied.

4.7.2 Headspace. Each machine gun with both its assigned barrel and main-barrel shall be gaged for minimum and maximum headspace after proof firing using gages 9350100 and 9350101.

4.7.3 Firing pin.

4.7.3.1 Firing pin Protrusion. Each machine gun shall be inspected for the firing pin protrusion requirement using gages 9350128 and 9350129.

4.7.3.2 Firing pin indent. A random sample of 20 weapons from each inspection lot shall be subjected to the firing pin indent test using Government approved inspection equipment. The machine gun shall be cocked and then held in a horizontal position with the cover assembly opened. The holding fixture containing the copper compression cylinder shall be inserted into the barrel chamber, the cover closed, and the trigger pulled to release the bolt and indent the copper cylinder. The holding fixture shall be removed from the machine gun and the depth of the indent in the copper cylinder computed by measuring the distance from the original surface of the copper cylinder (before indentation) to the bottom of the firing pin impression. All firing pin indent impressions shall not be off-center by more than one-half the diameter of firing pin point as evidenced by visual examination of two spent cartridges. Two cartridges shall be selected for examination from each weapon in a 20 weapon sample during the function test.

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4.7.4 Trigger Pull. The unloaded machine gun shall be fully cocked with the safety off. The force shall be applied gradually to the center of the trigger bow in a direction parallel to the barrel. The weapon shall also be manually tested to assure that the trigger pull is free of creep and that the trigger returns under spring action to its normal forward position after partial or complete trigger pull.

4.7.5 Safety, trigger. After cocking the weapon, the safety shall be placed in the safe position and the trigger shall be pulled to assure that the machine gun can not be fired. After attempting to fire, the weapon shall not fire as the safety is returned to the fire position. The red ring shall be visible when in the fire position and not visible when in the safe position.

4.7.6 Dispersion and targeting. This test shall be performed from a government approved hard mount for both the main and assigned barrels. Ballistic zeroing shall be realized by adjusting the front sight. The rear sight shall be adjusted to the nominal position in both elevation and windage and set at the 300m range setting. No more than 5 warming shots may be permitted prior to performing this test. Ten rounds of M855 (MIL-C-63989) ammunition shall be fired in a burst at a target located 50 meters from the muzzle. The target shall be examined after firing to determine compliance with the requirement. The most unfavorable impact shall be deleted for the measurement of the extreme vertical and horizontal distances of the 9 remaining shots. The same unfavorable impact shall be deleted when evaluating compliance with the targeting requirement. Weapons rejected because of failure to meet the requirements shall be corrected by the contractor and resubmitted to the dispersion and targeting test. All corrective action shall be recorded. Weapons failing the retest shall be rejected.

4.7.7 Function. The machine gun shall be held in a Government approved soft mount. Machine gun operation shall be monitored to determine that all firing is controlled by the trigger and that every spent cartridge case is properly ejected. Function testing consists of 3 subtests as follows.

4.7.7.1 Thirty round magazine. Fire 30 rounds of M193 cartridges (MIL-C-9963) from a fully loaded 30 round magazine in bursts of approximately 5 rounds each. Repeat with M855 cartridges.

4.7.7.2 Cyclic rate of fire. Fire 20 rounds of linked M855 ammunition in 1 continuous burst. Average cyclic rate shall be measured over the full 20 round burst.

4.7.7.3 Belt pull. The test shall be performed with a belt of 20 M855 cartridges, 5 M232 inert cartridges (MIL-M-60254) or equivalent, and a 2.86 + 0.01 kg Weight to provide a 200 round belt simulation. The weight shall be attached to one end of a cable which is suspended over a pulley. The other end of the cable shall be rigidly attached to the linked belt of ammunition. The linked.

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4.7.7.4 Function retest. Should a weapon fail any functioning test due to a weapon failure, the weapon may be corrected (not to include changing the orifice diameter of the gas block screw) by the contractor and resubmitted to test in accordance with table V below. All correction action shall be recorded. Weapon failing the retest shall be rejected

TABLE V. Function retests.

<u>A RETEST REQUIRED FOR:</u>			
IF FAILED FOR :	CYCLIC RATE	BELT PULL	30 RD. MAG.
30 RD. MAG. COND. I			x
30 RD. MAG. COND. II	x	x	x
CYCLIC RATE	x	x	
BELT PULL	x	x	
Condition I - Rework affects only the following parts: Receiver Assembly (magazine well only) PIN 9348201 Magazine opening cover PIN 9348232 Spring, Helical Torsion P/N 9348233 Pin, Grooved, Headless P/N 9348234 Condition IX- Rework affects any other part.			

4.7.8 Interchangeability. The weapons for this test shall be selected at random, by the government, from each lot and assigned a number. Only weapons that have been found satisfactory in all other examinations and tests shall be used. Each weapon shall be disassembled into 10 groups of parts as specified in table VI. Inchange is accomplished by systematically distributing the groups of parts into 10 trays until each tray contains a complete weapon. Specifically , the 10 groups of parts from machine gun number 1 shall be taken in order (Group I, II, III, etc.) and placed in trays 1 through 10; the 10 groups of parts from machine gun number 2 shall be taken in order and placed in trays 2 through 10 to 1. Parts shall be distributed similarly for the remaining 8 guns. Commerical parts (Table VII) such as screws, nuts, washers, and pins shall be placed in the same tray as their mating or associated part. Any commercial part rendered unserviceable by disassembly shall be replaced without penalty to the interchangeability test. The extractor pin must be replaced during this test. The machine gun shall be reassembled using only those parts which are in the same tray.

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4.7.8.1 Interchange examinations and tests. Upon completion of the interchange, each weapon shall be subjected to the following:

- Examination for defects
- Headspace
- Firing pin protrusion
- Firing pin indent
- Trigger pull
- Function with 30 round magazine
- Cyclic rate of fire
- Belt pull
- Dispersion
- Targeting

4.7.8.2 Interplant. The contractor shall perform an interplant interchangeability test using 5 GFE weapons representing production from each of the previous manufacturers and 5 weapons the contractor's manufacture. This test shall be conducted for each set of 5 GFE weapons. The contractor shall inspect all GFE weapons and inform the Government of any noncompliance. Machine guns shall be given preliminary hand functioning to assure proper operation before parts are disassembled from the gun. Machine guns shall be interchanged in a manner similar to the inplant interchangeability (see 4.7.8) . When assembling every other gun used shall be produced by a different manufacturer. Inspection, tests and acceptance criteria normally associated with interchange weapons (see 4.7.8.1) shall be performed. Parts shall be identified with their manufacturer throughout the test.

4.7.8.3 Interchangeability retest. Failure of the interchangeability test shall be cause for a failure analysis and submittal of a report in accordance with contract requirements (see 6.3). Upon submittal of the failure analysis report, and at the discretion of the Government, the contractor may perform a retest using 20 additional weapons. Should any weapon fail the retest the lot is rejected.

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TABLE VI. Groups of non-mating parts.

	<u>Nomenclature (Quantity per weapon)</u>	<u>Drawing</u>
<u>GROUP I</u>		
1.	Barrel subassembly	12557001
2.	Roller, feed, channel assembly	11826042
3.	Spring, helical compression	11826046
4.	Pin, spring	9348404
5.	Clip, retaining	9348298
6.	Pin, retaining (2)	9348303
7.	Spring, helical compression (3)	9350088
8.	Frame, trigger	9348352
9.	Cover, ejection port opening	9350067
10.	Yoke, biped	9348321
11.	Screw, backplate	12556938
12.	Return rod & transfer mechanism assembly	12540416
13.	Shoulder rest	12556941
14.	Pin, spring (2)	MS39086-93
<u>GROUP II</u>		
1.	Collar, gas regulator	11825992
2.	Spring, helical compression	9350090
3.	Lever, feed	9348299
4.	Pawl, cartridge, retaining, front	9348294
5.	Latch, cover (2)	9348305
6.	Pin, spring	9348353
7.	Grip, pistol	12556995
8.	Stop, cocking handle	12556980
9.	Spring, helical, torsion	9350091
10.	Pin, spring (2)	9348325
11.	Pin, spring (2)	9348324
12.	Heat shield assembly	12540405
13.	Buttplate	12556940
14.	Pin, spring	12556996
15.	plunger, indexing ball	12556976

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Table VI. Groups of non-mating parts. - continued

<u>Nomenclature (quantity per weapon)</u>	<u>Drawing</u>
<u>GROUP III</u>	
1. Plug, gas regulator	9340437
2. Pin, firing	9348395
3. Pawl, cartridge, retaining, rear	9348295
4. Clip, retaining	9348306
5. Plug, scope adapter	9348307
6. Pin, straight, headless	11826255
7. Closure, base	9350028
8. Pin, spring	9348240
9. Plunger, detent	9348239
10. Spring, helical compression	9348238
11. Receiver	9348202
12. Pivot	9348327
13. Plug	9348336
14. Pin, retaining, front (2)	9348218
15. Spring, helical, compression (3)	12556977
<u>GROUP IV</u>	
1. Knob, windage	9350007
2. Pin, spring	9348398
3. Pin, spring	9348397
4. Spring, helical compression (2)	9348296
5. Base rear sight	9349998
6. Pin, groove	9350018
7. Sear	9348368
8. Knob assembly	9350015
9. Pin, retaining, front	9348217
10. Body, cocking handle	12556982
11. Pin, spring (2)	9348337
12. Cam assembly, elevator	9350011
13. pin, straight, headless (2)	9348335
14. Screw, machine	9350006
15. Spring, helical, compression	MS24585-C279

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Table VI. Groups of non-mating parts - continued

<u>Nomenclature</u>	<u>quality per weapon</u>	<u>Drawing</u>
<u>GROUP V</u>		
1.	Spring, helical compression (2)	9348334
2.	Grip, carrying handle	9348438
3.	Buffer & backplate assembly	12556951
4.	Pin, spring	9348394
5.	Pivot, slide	9348393
6.	Feed pawl assembly	9348278
7.	Pin, spring	12557012
8.	Screw, base (2)	9350023
9.	Pin, grooved, headless	9348367
10.	Body, handguard	12556974
11.	Gas cylinder assembly	9348345
12.	Ring, retaining	9348235
13.	Pin, grooved, headless	9348234
14.	Latch, biped (2)	12556972
15.	Bolt, machine, aircraft	9348372
<u>GROUP VI</u>		
1.	Nut, locking	9348440
2.	Washer, flat	9348439
3.	Spring, helical compression	9348452
4.	Cover assembly	12557022
5.	Spring, helical compression	9348287
6.	Ring, retaining	9348291
7.	Spring, lock	9350004
8.	Pin, spring (2)	9348240
9.	Spring, helical torsion	9348366
10.	Spring, retaining	9348216
11.	Spring, helical torsion	9348233
12.	Leg, machine gun biped, right	9348339
13.	pin, grooved, headless	12556971
14.	Clip, retaining	9348460
15.	Ball bearing (3)	MS19060-505

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Table VI. Groups of non-mating parts - continued

<u>Nomenclature (quality per weapon)</u>	<u>Drawing</u>
<u>GROUP VII</u>	
1. Pin, spring	9350048
2. Key, base	9350047
3. Piston assembly	9348405
4. Pin, shoulder, headless	9348312
5. Peep, sight	9350001
6. Washer, locking (2)	9350020
7. Clip, closure, base	9350029
8. Spring, retaining	9348365
9. Pin, spring	9348363
10. pin, grooved, headless	9348222
11. Cover, magazine	9348232
12. Ring, indexing, carrying handle	12557020
13. pin, retaining, back plate, upper	12598571
14. Leaf	9350000
<u>GROUP VIII</u>	
1. Post, front sight	9348442
2. Bolt, breech	9350083
3. Clip, retaining, pin (2)	9348314
4. Spring, helical, torsion	9348313
5. Scale, windage	12556978
6. Screw, windage scale (2)	12556979
7. Washer, locking (2)	9350022
8. Trigger assembly	9348354
9. Spring, helical, torsion	9348221
10. Leg, subassembly, machine gun, inner left	9348330
11. Pin, spring	9348461
12. Leg, subassembly, machine gun, inner right	9348340
13. Screw, slotted	12556948
14. Washer, leaf	9350002

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Table VI. Groups of non-mating parts. - continues

<u>Nomenclature (quantity per weapon)</u>	<u>Drawing</u>
<u>GROUP IX</u>	
1. Base, front sight	9348441
2. Extractor, cartridge	12540400
3. Pin, extractor	9350086
4. Feed tray assembly	9348308
5. Cover, cocking channel	9348302
6. Safety, small arms	9348364
7. Lever, locking, barrel	9348220
8. Spring, ejector	9348225
9. Ejector, cartridge	9348223
10. Clip, retaining (2)	9348245
11. Pin, grooved, headless	9348246
12. Stem, handle	12557008
13. Lock washer	12556946
14. Plate, spring windage	12556975
<u>GROUP X</u>	
1. Leg, machine gun biped, left	9348329
2. Body, buttstock	12556939
3. Spring, helical compression	9348415
4. Pin, straight, headless	9348416
5. Slide	9340392
6. Clip, Spring, tension, feed lever	11826202
7. Spring, retaining	9348300
8. Spring, retaining	9348304
9. Guard, trigger	9348370
10. Pin, ejector	9348224
11. Pin, grooved, headless	9348230
12. Spring, helical torsion	9348231
13. Clip, retaining	9348219
14. Bushing, handle	12557009

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TABLE VII. Replaceable parts.

Partial list of parts prone to damage or loss during disassembly for interchangeability testing that may be replaced without penalty.

<u>Nomenclature (Quantity per weapon)</u>	<u>Drawing</u>
Spring, retaining	9348216
Pin, spring (2)	9348218
Ring, retaining	9348235
Pin, spring (2)	9348240
Plug, scope, adapter	9348307
Pin, spring (2)	9348324
Pin, spring (2)	9348325
Pin, straight headless	9348335
Plug (2)	9348336
Pin, spring	9348337
Pin, spring	9348353
Pin, spring	9348363
Pin, spring	9348394
Pin, spring	9348397
Pin, spring	9348398
Pin, spring	9348404
Post, front sight	9348442
Pin, groove	9350018
Washer, locking (2)	9350022
Key, base	9350047
Pin, spring	9450048
Pin, extractor	9350086
Spring, helical compression (3)	9350088
Spring, helical compression (3)	12556977
Pin, spring	12556996
Pin, spring	12557012
Pin, spring (2)	MS39086-93
Ball, bearing (3)	MS19060-505

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4.7.9 Endurance. The machine gun shall be held in a Government approved soft mount. Velocity and projectile yaw measurement (using 20 rounds of M855 ammunition) shall be taken prior to start of the test with the main barrel and the assigned barrel at ambient temperature. Velocity and yaw, measurement shall then be performed from a hot barrel at 5,000 rounds and after the completion of the 10,000 rounds of the endurance firings. projectile yaw shall be measured 50 meters from the muzzle. Inspection shall be performed as specified below.

4.7.9.1 Endurance inspection. Each weapon shall be inspected visually for any defects after 2080, 4350, 6000, 8000 and 10,000 endurance rounds have been fired. Magnetic particle inspection in accordance with MIL-STD-1949 shall be performed after 10,000 endurance rounds on the receiver, slide, bolt, operating rod assembly, and barrel assembly. No cracks shall be permissible no unserviceable parts are allowed.

4.7.9.2 Endurance firing. Two hundred round magazines with M855/M856 ammunition (MIL-C-63989/MIL-C-63990) linked 4 to 1 shall be fired in bursts of 5-7 rounds each at a rate of 85 rounds per minute. Two M16 30 round (M855 ammunition) magazines shall be fired in 5 to 7 round bursts, following each 200 rounds until 25 M16 magazines have been fired. After each 200/260 round cycle the barrel shall be cooled to the point that it can easily be handled with a bare hand. Forced air cooling is permitted. For the purpose of assessing barrel life, the entire endurance test shall be performed on only one barrel. Both the main and assigned barrel may be used when the endurance test is followed by reliability testing.

4.7.9.3 Endurance maintenance. After approximately every 4000 rounds the weapon shall be cleaned, inspected, and lubricated. After approximately each 2000 rounds the weapon shall be re-lubricated without disassembling. The gas regulator shall be cleaned using the combined scraper (9348463) of the maintenance kit. Semi-fluid lubricant conforming to MIL-L-63460 shall be used.

4.7.10 Reliability. The 3 weapons from the first article endurance test shall be used as the sample weapons for the reliability test. The machine gun shall be held in a Government approved soft mount.

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4.7.10.1 Reliability inspection. Each weapon shall be visually inspected for defects after every 4000 rounds of firing (i.e. 4000, 8000, 12,000, etc.). Velocity and yaw measurements shall be taken on the last 20 rounds of every 4000 round internal. Magnetic particle inspection in accordance with MIL-STD-1949 shall be performed on the receiver, slide, bolt, operating rod assembly, and barrel assemblies after every 8000 rounds starting at 10,000 rounds. No cracks shall be permissible to the slide, bolt, or operating rod assembly. If cracks are found on the slide, bolt or operating rod assembly during an 8,000 round magnetic particle inspection cycle, the part shall be removed from the test and a class 111 failure shall not be scored against the weapon. The receiver shall have no cracks in the parent metal or in any of the plug welds. Cracks in any other receiver welds should not present an imminent safety or catastrophic failure condition. All barrel assemblies shall be magnetic particle inspected when subjected to a total of 15,000 rounds minimum and shall meet the barrel life requirements in accordance with paragraph 3.8.

4.7.10.2 Reliability firing. Two hundred round magazines with M855/M856 ammunition linked 4 to 1 shall be fired in bursts of 5-7 rounds at a rate of 85 rounds per minute. The barrel shall then be cooled to the point that it can easily be handled with a bare hand. Forced air cooling is permitted. Utilization of both the main and assigned barrels is permissible. Barrels may be replaced after 15,000 rounds.

4.7.10.3 Reliability maintenance. After every 4000 rounds the weapon shall be cleaned, and lubricated. After each 2000 rounds the weapon shall be re-lubricated without disassembly and the gas regulator shall be cleaned using the combined scraper (9348463) of the maintenance kit. Send-fluid lubricant conforming to MIL-L-63460 shall be used.

4.7.11 Barrel life. The 15,000 round barrel life test shall be conducted simultaneously with the 10,000 round endurance test (and 50,000 reliability test when applicable). If only the endurance test is being performed, an additional 5000 rounds shall be fired on the barrel for a total of 15,000. The ammunition, firing schedule and data recording for the additional 5000 rounds shall be identical to those specified for the endurance test except that use of 30 round magazines is excluded. Likewise, the endurance maintenance schedule shall be continued. Acceptability inspection of the barrel life test shall be determined by magnetic particle inspection in accordance with MIL-STD-1949 of the barrel for cracks, projectile velocity, and yaw measurement at 15,000 rounds. Velocity and projectile yaw measurement (using 20 rounds of M855 ammunition) shall be taken in accordance with the procedures specified for the endurance test.

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5. PACKAGING

5.1 Preservation and packaging. The requirement for packaging of the machine guns shall be in accordance with the Special packaging Instructions P9348199.

5.1.1 Pilot pack. A pilot pack, when specified in the contract or purchase order, shall consist of the complete and packed intermediate package in accordance with Special Packaging Instructions P9348199 (see 6.2).

5.1.2 Pilot lot. A pilot lot, when specified in the contract or purchase order, shall consist of the complete and packed intermediate package in accordance with special Package Instructions P9348199. The samples shall be representative of Production manufacturing method and selected in accordance with the contract or purchase order (see 6.2).

5.2 Packaging and marking. The requirements for packing and marking shall be as specified on Special Packaging Instructions P9348199.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory).

6.1 Intended use. The M249 machine gun is intended to be utilized as a squad automatic weapon. It may also be utilized for automatic small arms or light machine gun fire in perimeter and vehicular (air and ground) roles.

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6.2 Acquisition retirements. Acquisition documents must specify the following:

- a. Title, number, and date of the specification.
- b. Issue-of DODISS to be cited in the solicitation, and if required the specific issue of individual documents referenced (see 2.1).
- c. Quantity required and delivery schedules.
- d. Concurrent repair parts requirements.
- e. Physical security requirements.
- f. Serialization requirements.
- g. Responsibility for test fixing facilities and operating procedures.
- h. Requirements for comparison test weapons.
- i. Quality conformance procedures, plans, and inspections; such as statistical process control (SpC); if other than specified in section 4.
- j. Procedures for Submittal and approval of alternate quality assurance plans.
- k. Certificates of conformance for each lot or shipment of product.
- l. Responsibility for furnishing ammunition and links.
- m. Packaging requirements, if other than specified in section 5.
- n. Requirements for pilot pack, pilot lot pack, and inspection requirements if other than specified in 4.3.1 and 5.0.
- o. Marking for shipment including bar code requirements.
- p. List of repair parts required for refurbishment and refurbishment instructions for endurance weapons.
- q. Disposition of endurance and reliability tested machine guns.

6.3 Consideration of data requirements. The following data requirements should be considered when this specification is applied on a contract. The applicable Data Item Descriptions (DID's) should be reviewed in conjunction with the specific acquisition to ensure that only essential data are requested/provided and that the DID's are tailored to reflect the requirements of the specific acquisition. To ensure correct contractual application of the data requirements, a contract data requirements list (DD Form 1423) must be prepared to obtain the data, except where DOD FAR Supplement 27.475-1 exempts the requirement for a DD Form 1423.

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Reference paragraph	DID Number	DID Title	Suggested Tailoring
3.9	DI-L-1420	Weapons serial number control cards	
4.6	DI-R-1714	Inspection equipment designs	
4.0	DI-R-1765	Quality assurance provisions	
4.0	DI-R-4802	Quality assurance program plan requirements	
4.6	DI-E-7031	Inspection equipment designs	
4.4.2	07-90-12138	Statistical process control (SPC) plan	
4.3.2,	DI-R-21598	Failure analysis	1) par 10.3: delete
4.4		reporting requirements	MIL-STD-2155 and replace with MIL-Q-9858 par 3.5 2) Delete par 10.3.2.f

The above DID's were those cleared as of the date of this specification. The current issue of DOD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), must be researched to ensure that only current, cleared DID's are cited on the DD Form 1423.

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6.4 First article. When first article inspection is required, the contracting officer should provide specific guidance to offers whether the item(s) should be a preproduction sample, a first article sample, a first production item, a sample selected from the first months production items, a standard production item from the contractor's current inventory (see 3.1), and the number of items to be tested as specified in 4.3. The contracting officer should also include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results, and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those-bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract. Bidders should not submit alternate bids unless specifically requested to do so in the solicitation.

6.5 Definitions.

6.5.1 Barrel assigned. The assigned barrel is the second of 2 barrels required to be shipped with each weapon.

6.5.2 Barrel. main. The main barrel is the first of 2 barrels required to be shipped with each weapon.

6.5.3 Barrel spare. A spare barrel is procured as a separate item and is not identified to a particular weapon by serial number.

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6.5.4 Unserviceable parts. Parts shall be considered unserviceable in accord-cc with the weapon technical manual Army TM9-1005-201-23&P, Marine Corp. TM08671A-23&P/2A) except the velocity drop criteria may be used for determination of barrel unserviceability rather than the erosion gage method.

6.6 Government furnished property. The contracting officer shall arrange to furnish the property listed if required:

- a. Ammunition and links
- b. Weapons used for interplant interchange
- c. M16 30 round magazine

6.7 Subject term (key word) listing.

MINIMI
SAW
Weapon, Automatic

6.8 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians
Army - AR

Preparing Activity
Army- AR
(Project 1005-A800)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

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2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

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I RECOMMEND A CHANGE		1. DOCUMENT NUMBER	2. DOCUMENT DATE (YYMMDD)
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4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets if needed.)			
5. REASON FOR RECOMMENDATION			
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a. NAME (Last, First, Middle Initial)		b. ORGANIZATION	
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