



FN MANUFACTURING, INC.

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via Datafax
August 28, 2002

Department of the Army
U.S. Army Tank-Automotive and Armaments Command
Building 110
Rock Island, IL 61299-7630

ATTENTION: *Ms. Suzanne McGregor, AMSTA-LC-CSC-A*

SUBJECT: Contract DAAE20-01-d-0065, M240B Machine Gun
Contract DAAE20-02-C-0040, M240N Machine Gun
Product Requirement Document

REFERENCE: TACOM-RI letters dated 19 August 2002

Dear Ms. McGregor:

FN Manufacturing, Inc. has reviewed the Product Requirement Documents, provided as enclosures to the referenced letters, and submits the following:

1. Product Requirement for 7.62mm M240B Machine Gun, Revision 5, 15 August 2002
 - a. FNMI agrees to incorporate this document into Contract DAAE20-01-D-0065, with no impact to cost or delivery schedule.
2. Product Requirement for 7.62mm M240N Machine Gun, Revision 1, 13 August 2002
 - a. FNMI agrees to conditionally incorporate this document into Contract DAAE20-02-C-0040, with no impact to cost or delivery schedule, pending the following corrections are made:
 - i. Group X, Item 6
Change from: Slide, Rear Sight, P/N 12597049
Change to: Slide Assembly Rear Sight, P/N 12597048
 - ii. It appears that Part Number 12988989 was inadvertently omitted, and needs to be re-introduced into the interchange table.

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Please do not hesitate to contact Ms. Beryl Myers, at 803-736-0522, ext. 215 (berylm@fnmfg.com), should you have any questions.

Sincerely,



Jeff Rankin
Director of Contracts

Cc: Ms. Karen Benner, ACO
Mr. Terry Smith, DCMA QAR
Mr. Richard Emory, TACOM-RI Engineering

PRODUCT REQUIREMENT
FOR
7.62MM M240B MACHINE GUN

Revision 5

12 August 2002

PRODUCT REQUIREMENTS FOR MACHINE GUN, 7.62MM: M240B

1.0 SCOPE

1.1 Scope: The product requirements presented in this section establish the performance, design, development, firing, packaging and quality assurance requirements for the M240B, a 7.62 millimeter (mm) gas operated, air cooled, link belt fed, machine gun. Each M240B machine gun is to be furnished with one spare interchangeable barrel assembly, a sling to carry the weapon, and an operator's manual.

2.0 APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and Standards. The following specifications and standards form a part of this product requirement to the extent specified herein. Unless otherwise specified, the issue of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS

MILITARY

DOD-D-1000	-	Drawings, Engineering and Associated Lists
MIL-I-8574	-	Inhibitor, Corrosion, Volatile, Utilization of
MIL-W-13855	-	Weapon, Small Arms and Aircraft Armament
		Subsystems, General Specification for
MIL-I-45403	-	Link, Cartridge, Metallic Belt, 7.62MM, M13
MIL-C-46477	-	Cartridge, 7.62MM, NATO, Test, High Pressure, M60
MIL-C-46931	-	Cartridge, 7.62MM, NATO, Ball, M80
MIL-T-47500	-	Technical Data Package, General Specification For
MIL-T-60530	-	Technical Data Package for AMC Materiel
MIL-D-60573	-	Dummy, Cartridge, 7.82MM, Inert Loaded, M172
MIL-W-63150	-	Weapons and Support Material Standard Quality
		Assurance Provisions For
MIL-L-63460	-	Cleaner, Lubricant and Preservative (CLP)

STANDARDS

MILITARY

MIL-STD-100E	-	Engineering Drawing Practices
MIL-STD-1916	-	DOD Preferred Method For Acceptance of Product
MIL-STD-1235	-	Single and Multi-level Continuous Sampling
		Procedures and Tables for Inspection By Attributes
MIL-STD-1913	-	Dimensioning of Accessory Mounting Rail for Small
		Arms Weapons
MS9266-24	-	Bolt, Machine Hexagon Head
MS16562-122	-	Pin, Spring Release
MS35671-23	-	Pin, Grooved, Headless
MS39086-406	-	Pin, Spring, Tubular
MS39086-146	-	Pin, Spring, Tubular
MS39086-522	-	Pin, Spring, Tubular

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

DRAWINGS

US ARMY ARMAMENT RESEARCH, DEVELOPMENT, AND ENGINEERING CENTER

12976814 - Machine Gun, 7.62 MM, M240B

INSPECTION EQUIPMENT DRAWINGS

11826302 - Gage, Headspace, Minimum
11826303 - Gage, Headspace, Maximum
11826304 - Gage, Flush Pin, Firing Pin Protrusion
11826305 - Gage, Plug, Extractor Engagement
11826306 - Gage, Plug, Extractor Clearance
11826322 - Gage, Functional (Max. Breech Bolt)
11826373 - Gage, Functional (Max. Operating Rod)

PACKAGING DATA SHEETS

SPI I2976814 - Packaging Data Sheet, Machine Gun, 7.62mm
M240B

PUBLICATIONS

Technical Manual

TM-9-1005-313-23P - Technical Manual, Unit and Direct Support Maintenance Manual
(including Depot Maintenance Repair Parts) for,
Machine Gun, 7.62mm, M240 (1005-01-025-8095)
Machine Gun, 7.62mm, M240B (1005-01-412-3129)
Machine Gun, 7.62mm, M240C (1005-01-085-4758)
Machine Gun, 7.62mm, M240E1 (1005-01-252-4288)
Machine Gun, 7.62mm, M240G (1005-01-359-2714)

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

2.2 Other Publications. The following documents form a part of this product requirement to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

American Society Of Mechanical Engineers

ANSI-Y-14.5 - Geometric Positioning and Tolerancing
ANSI Y14.36 - Surface Texture Symbols
ANSI/ASTM E380 - Standard for Metric Practice

(Applications for copies should be addressed to the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, N.Y. 10017).

Department of Defense
DOD-STD-1476 - International System of Units (SE), metric

3.0 REQUIREMENTS

3.1 First Article. Requirements for submission of the First Article (see 4.3) shall be as specified in the contract. Unless otherwise specified, the first article shall include the pilot pack (see 5.2).

3.2 Materials and construction. Machine guns and parts shall conform to the materials, dimensions, conditions and construction requirements specified herein and on drawing 12976814 and drawings applicable thereto and shall be in accordance with the applicable material and construction provisions of MIL-W-13855.

3.2.1 Packaging. Packaging data sheet SPI 12976814 (see 5.1) dimensions are in the Inch-Pound unit system.

3.2.1.1 Drawings. Dimensions of drawings 12976814 and drawings applicable thereto are in the Metric Unit system except for thread callouts which are in the English unit system.

3.2.1.1.1 Surface Roughness. Surface roughness (ANSI Y14.36) is stated in Micro-Meters Units on drawings in accordance with ANSI/ASTM E380.

3.2.2 Manufacturing. Unless otherwise specified, manufacturing processes stated on drawings are for guidance only.

3.2.2.1 Heat treatment. Hardness shall be as specified on the drawing.

3.3 Design. All drawings are presented in third angle projection.

3.3.1 Barrel Assembly. The barrel assembly with gas regulator and front sight assembly shall be so manufactured that when the machine gun is completely assembled, the requirements for accuracy, dispersion and targeting shall be met (see para 3.4.3.2 and 3.4.3.3). The barrel assembly shall accept the front sight assembly which shall be horizontally adjustable by movement of the two opposing front sight adjusting screws which give perceptible clicks when adjusted. The front sight blade shall be capable of being rotated vertically, up or down, for elevation adjustments. Both the horizontal and vertical adjustments shall be capable of being made through their full range of travel without binding. The front sight retaining strap shall positively and securely retain the front sight blade. The flash suppressor shall be securely retained on the barrel assembly without any perceptible movement. The heat shield assembly shall be securely and firmly retained on the barrel assembly without looseness or rotation.

3.3.1.1 Condition. The barrel assembly shall be free of cracks and seams. 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 steel. Mechanical methods for removal of chromium plating in the barrel bore shall not be permitted. Burrs and sharp edges shall be removed from chamber edges prior to chrome plating. Scratches and marks occurring in a chamber which otherwise meets the surface texture requirements, shall be permitted providing those scratches and marks do not cause marks on the case of a high pressure test cartridge fired in the chamber (see 3.4.2). Each barrel assembly shall be marked in accordance with the drawing after proof firing and magnetic particle inspection.

3.3.1.1.1 Gas Regulator Plug and Gas Regulator Collar. The gas regulator plug and the gas regulator collar shall assemble to and disassemble from the barrel without the use of tools so that the gas regulator may be readily positioned at either gas port setting #1, #2, or #3. Gas position #1 and #3 shall produce rates of fire consistent with paragraph 3.4.3.

3.3.1.1.2 Machine Gun Barrel and Barrel Adapter. The carrying handle assembly, barrel bracket catch, and barrel spring catch shall be assembled to the barrel with free movement between all three parts which shall be held in place by the barrel adapter. The barrel adapter shall be tightened against the barrel and then loosened until the barrel bracket catch fits into its notch. The barrel adapter, barrel bracket catch, barrel spring catch, and carrying handle assembly shall be held in place by a straight pin. The front sight protector shall be pressed onto the barrel and pinned in place by the self-locking, front sight screw.

3.3.1.1.3 Heat Shield. The heat shield shall be securely retained on the barrel assembly once installed. The spring appendages of the heat shield shall retain their spring action under manual depression and not be deformed under normal installation onto the barrel assembly.

3.3.2 Complete Receiver Assembly. Each receiver assembly shall operate smoothly and shall function in accordance with the following:

- a) Each receiver assembly shall be capable of accepting a maximum sized bolt and operating rod assembly following the firing of a Government standard 7.62mm M60 High Pressure Test cartridge and the application of a protective finish.
- b) The driving spring rod assembly shall fit into the bolt and operating rod assembly and shall be locked in place in the rear end of the receiver assembly.
- c) The barrel bracket catch shall function without binding. The barrel is locked in position when the assembly of the carrying handle assembly, barrel, barrel spring catch, machine gun barrel adapter, and the straight pin are engaged with the barrel bracket catch with 2 to 5 clicks.
- d) The buffer assembly shall be locked and unlocked without the use of tools.
- e) The infantry trigger assembly shall be assembled to the rear part of the receiver assembly and locked in position with the spring pin, assembly and disassembly being accomplished without the use of tools.
- f) The cover assembly with the feed tray shall be assembled and disassembled without the use of tools by manually placing and removing the spring pin.
- g) The cocking assembly with spring pin and headed straight pin shall be assembled to the receiver assembly and shall function freely.
- h) The rear sight assembly shall be assembled to the receiver assembly and maintain its raised or folded position under action of the rear sight plunger and helical compression spring. The rear sight slide assembly shall assemble to the rear sight leaf and shall be retained from removal by its leaf sight, socket head cap screw, and maintain its setting after both the rear sight catches are depressed and the slide assembly is adjusted to the desired range elevation (200 meters to 1800 meters in 100 meter increments).
- i) The bipod assembly shall assemble to the front gas cylinder tube by inserting the bipod head over the two lugs and rotating a quarter turn. The bipod assembly shall be retained on the gas cylinder tube by driving the tubular, slotted spring pin back toward the muzzle from the rear side of the yoke of the gas cylinder capturing the bipod head.
- j) The bipod latch shall manually depress and return within the guideways of the receiver when assembled with the bipod latch spring and the spring pin. As the bipod legs are brought together and folded to stow under the receiver, the bipod latch shall automatically engage with the bipod legs. See paragraph 3.3.8.
- k) The right leg assembly and left leg assembly shall assemble to and be retained on the bipod head hinge body by inserting the bipod leg axis pin from the front or muzzle side and securing it with the axis pin washer, axis pin leg nut, and axis pin leg ring. When deployed, the right and left bipod legs shall remain fully extended under the action of the leg spring. The bipod head shall attach to and swivel in the bipod head hinge body using the actuating cylinder, bipod retaining plunger, helical compression spring, and the retaining head plunger bushing.
- l) The Accessory Rail Kit shall be firmly attached to the gas cylinder tube of the receiver assembly without any lateral, longitudinal or rotational movement. Stowage and retention of the bipod legs shall not be restricted by the Accessory Rail Kit.
- m) The ejection port cover shall be firmly attached to the bottom plate of the receiver by the hinge pin. Once installed the ejection port cover must swing freely under action of helical torsion spring, and deploy by action of the piston rod assembly during hand charging, and actual cycling of the machine gun during operation. The hinge pin shall remain retained in the bosses of the bottom plate of the receiver.

3.3.2.1 Bolt and Operating Rod Assembly. The bolt and operating rod assembly shall be assembled manually to the rear end of the receiver assembly prior to the assembly of the buttstock and buffer assembly. The bolt and operating rod assembly must readily move forward and backward in the guides in the receiver assembly. The bolt assembly and operating rod assembly shall consist of the firing pin, bolt assembly, spring pin, operating rod assembly, and spring pin. The firing pin shall move freely when

assembled to the operating rod assembly. All surfaces which contact guide ways to shoulders shall be polished in accordance with the applicable drawings.

3.3.2.2 Cartridge Extractor. The cartridge extractor shall be assembled into the bolt breech body. The spring assembly and the exterior of the extractor plunger shall be lubricated with CLP (MIL-L-63460) prior to being assembled into the bolt breech body. The clearance (see drawing 11826057) between the cartridge case seat and the inner face of the cartridge extractor shall be verified after movement of the cartridge extractor has been verified. The cartridge extractor engagement (see drawing 11826057) shall also be verified.

3.3.2.3 Cartridge Ejector. The cartridge ejector and helical spring shall be greased with CLP (MIL-L-63460) and then assembled into the bolt breech body. The cartridge ejector shall be oriented and compressed using the ejector removing tool and shall be secured with a spring pin.

3.3.2.4 Operating Rod Assembly. The piston rod shall be assembled to the piston rod extension and secured with a straight headless pin, and permanently riveted together per drawing 12976867. The piston rod must follow the minimum radius circle prescribed by drawing 12976867.

3.3.2.5 Firing Pin. The firing pin when assembled into the bolt and operating rod assembly shall function freely in the bolt breech body assembly.

3.3.2.6 Driving Spring Rod Assembly. The driving spring rod assembly shall be assembled manually into the bolt and operating rod assembly in the receiver assembly and locked into position by inserting its lower pin into the key hole slot in the rear end of the bottom of the receiver assembly. The driving spring rod assembly shall be disassembled from the bolt and operating rod assembly by manually disengaging the pin of the driving spring rod assembly from the rear of the receiver assembly.

3.3.3 Cover Assembly. The cover assembly contains the mechanism to feed cartridges linked with M13 links through the firing cycle. All rollers, links, pawls and cams shall operate smoothly and freely. When in the operating position the cover assembly shall be latched securely to the receiver assembly to hold both the cover assembly and the left hand feed tray in the operating position. The cover assembly shall be assembled to the feed tray and the receiver assembly with tray and cover axis pin. The cover assembly accessory mounting rail shall be in accordance with MIL-STD-1913.

3.3.4 Feed Tray. The feed tray and the cover assembly together shall be assembled to the receiver assembly. The feed tray shall move easily both with and independently of the cover assembly.

3.3.5 Cocking Assembly. The cocking assembly when assembled to the receiver assembly shall operate freely and allow the bolt and operating rod assembly to move forward and backward as required. The cocking assembly shall engage the detent surfaces of the receiver assembly and remain detented until manually charged. The cocking assembly shall engage the bolt and operating rod assembly via the headed straight pin. The headed straight pin shall be secured to the cocking assembly by the spring pin.

3.3.6 Infantry Trigger Assembly. The infantry trigger assembly shall be held in position by the spring pin. The infantry trigger assembly component parts shall include the trigger frame, small arms safety, sear, helical spring, trigger assembly, two straight pins, a separate straight pin, headed trigger guard pin, trigger guard, right stock assembly, left stock assembly, and two stock screws.

3.3.7 Buttstock and Buffer Assembly. The buttstock and buffer assembly shall be assembled and disassembled, without the use of tools, in the grooves at the rear of the receiver assembly. The buttstock and buffer assembly shall be secured in position by the buffer block catch at the bottom of the buffer assembly under action of the helical compression latch spring and buffer catch detent plunger. The buttstock assembly shall be firmly retained to the buffer assembly under action of the buttstock securing screw. The buttplate shall be attached securely to the buttstock assembly by the two butt plate screws.

3.3.7.1 Buffer Assembly. The components of the buffer assembly shall include the buffer housing, hydraulic buffer, the buffer block catch, buffer catch detent plunger, helical compression latch spring, spring pin, and straight, headed pin.

3.3.7.2 Buttstock Assembly. The buttstock assembly shall accept the buttstock bushing and retaining ring for further assembly to the buffer assembly under action of the buttstock securing screw.

3.3.8 Bipod Assembly and Sling Ring.

3.3.8.1 Bipod Assembly. The left leg assembly and right leg assembly of the bipod assembly shall engage their respective notches in the bipod body hinge head under spring action of the leg spring. Unless each bipod leg assembly (left-hand and right hand) is depressed against the spring, the bipod legs must be unable to fold. Once the left and right leg assemblies are manually folded, the leg assemblies shall easily fold rearward into engagement with their respective notches on the receiver assembly complete (3.3.2). The left and right hand leg assemblies shall be retained in their stowed position under action of the bipod latch.

3.3.8.2 Sling Ring. The sling ring shall be firmly attached to the gas cylinder (front). The spring pin for the sling ring shall retain both the sling ring and the bipod assembly.

3.3.8.3 Complete Receiver Assembly. The bipod assembly and the sling ring shall be firmly restrained on the front end of the gas cylinder by the spring pin. The bipod assembly shall rotate within the stops afforded by the gas cylinder. The left and right bipod leg assemblies shall easily rotate together, independently and fold under hand spring action into engagement with the notches on the receiver assembly. The bipod latch shall securely retain the bipod legs in their respective recesses of the receiver. The bipod latch shall operate under spring action to release the bipod. Once the bipod assembly is released, the legs shall automatically spring free into a fully deployed position ready for weapon emplacement.

3.3.9 Headspace. The headspace shall be as specified on drawing 12976815.

3.3.10 Firing Pin Protrusion. The firing pin protrusion shall be as specified on drawing 12976815.

3.4 Performance Characteristics.

3.4.1 Trigger Pull. The trigger pull shall not be less than 4 kilograms (8.8 lbs) and not more than 8.5 kilograms (18.75 lbs) force.

3.4.2 High Pressure Resistance. Each machine gun barrel, bolt breech body assembly, and receiver body assembly supplied as a repair part, spare part, or as an end item component will be subjected to a high pressure resistance test as specified on their respective drawings. Each of these components shall be capable of withstanding the firing of one standard 7.62mm M60 High Pressure Test Cartridge (MIL-C-46477). The receiver assembly shall be tested in the "white" condition, i.e., prior to final protective finish. After firing, all components proof tested shall be free of cracks, seams, and defects other than material inclusions found in the side plates (Dwg 11826079). Testing shall be as specified in 4.4.3.4.

3.4.3 Functioning. The machine gun shall operate without malfunctions, loose or unserviceable parts. The cyclic rate of fire shall be 550 to 650 rounds per minute with the gas regulator plug in the position #1. The rate of fire shall not be less than 625 rounds per minute with the gas regulator plug set at position #3. Testing shall be as specified in 4.4.3.5.

3.4.3.1 Belt Pull. The machine gun, under normal operating conditions, shall be capable of pulling a belt weighing 4.5 kilograms without malfunction. Testing shall be demonstrated in accordance with 4.5.5

3.4.3.2 Accuracy and Dispersion.

3.4.3.2.1 Accuracy. Accuracy shall be measured at a firing distance of 100 meters. Testing shall be in accordance with 4.4.3.6.

3.4.3.2.2 Dispersion. The extreme spread of a ten-round burst fired from the machine gun at position #1 of the plug, gas regulator shall not exceed 30 centimeters. This is required for both the assigned and spare barrels as determined from targeting the machine gun. Testing shall be in accordance with 4.4.3.6.

3.4.3.3 Targeting. When the machine gun is zeroed with both the assigned and spare barrels, the point of aim and the mean points of impact of a ten-round continuous burst from both the assigned and spare barrels shall lie within a 1.0 mil circle, (i.e., 10 centimeter diameter at 100 meters) from the point of aim. Testing shall be in accordance with 4.4.3.6.

3.4.3.4 **Endurance.** The machine gun with assigned and spare barrel shall be capable of firing a 15,000 round endurance test without incurring more than two immediately clearable stoppages. No loose parts or assemblies, unserviceable parts, uncontrolled fire, or stoppages which require disassembly of the machine gun and/ or an excess of one minute to correct, are allowed. A stoppage is defined as any unplanned cessation in firing or the inability to commence firing. Testing shall be in accordance with 4.4.3.7.

3.4.3.5 **Reliability.** The machine gun shall demonstrate a Mean Round Between Stoppage (MRBS) of 7,500 rounds and a Mean Round Between Failure (MRBF) of 25,000 rounds over a minimum receiver service life of 50,000 rounds. Barrel life shall be 15,000 rounds minimum. Testing shall be in accordance with 4.4.3.9.

3.4.3.5.1 **Mean Round Between Stoppage (MRBS).** MRBS is determined by dividing the total number of rounds fired by the total number of stoppages. A stoppage is defined as any unplanned cessation in firing or the inability to commence or cease firing attributable to the gun. All incidents shall be recorded and any considered as not chargeable to the machine gun shall be substantiated by the contractor.

3.4.3.5.2 **Mean Round Between Failure (MRBF).** MRBF is determined by dividing the total number of rounds fired by the total number of failures. A failure is defined as any stoppage (as described above) which involves part replacement or requires in excess of one minute to correct; or involves any failed or damaged part detected during scheduled preventive maintenance, the replacement of which is not authorized at the crew or organizational level of maintenance as prescribed by Source Maintenance Recoverability Code and TM-9-1005-313-23P. (Note: MRBF is a subset of MRBS). Only parts determined unserviceable may be replaced. Simultaneous replacement of unserviceable parts is treated as one chargeable failure. Incidents attributed to personnel, test equipment, or parts found broken at the conclusion of testing are not chargeable; however, they shall be recorded.

3.4.3.5.3 **Unserviceable Barrel.** A barrel is considered unserviceable when: (a) 20 percent of any burst exhibits yaw of 15 degrees or more, or (b) the mean velocity of a burst drops 200 feet per second below the mean of the velocity initially recorded at the start of the test. Barrels failing to meet the minimum life criteria shall be considered failures for the MRBS/ MRBF computations. Testing shall be performed concurrently with the reliability test in accordance with 4.5.9

3.4.3.6 **Interchangeability.** Unless otherwise specified on the drawings, all parts are interchangeable. Testing shall be as specified in 4.4.3.8.

3.4.4 **Marking.** Marking shall be in accordance with the applicable drawings and MIL-W-13855. The bar code label shall be firmly affixed to the weapon receiver, the bar coding shall be clearly defined and the number on the label shall agree with the serial number stamped on the receiver.

3.4.5 **Workmanship.** Workmanship shall be in accordance with the workmanship requirements of MIL-W-13855. In addition, the machine gun shall be free of dust, grease, rust, corrosion 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. All markings and stampings shall be neat and clearly defined.

4.0 QUALITY ASSURANCE PROVISIONS (QAP)

4.1 **Responsibility For Inspection.** The supplier is responsible for the performance of all inspection requirements as specified herein. The contractor may use his own or any facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. In addition, the Government reserves the right to perform any of the inspections set forth in the product requirement where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements. References shall be made to MIL-STD-1916 to define terms used herein. The provisions of MIL-W-13855 shall apply.

4.1.1 **Responsibility For Compliance.** All items shall meet the requirements of the applicable drawings, Quality Assurance Provisions, and Special Packaging Instructions. The absence of any inspection requirements shall not relieve the contractor of the responsibility of ensuring that all products submitted to the government for acceptance comply with all the contract requirements.

4.1.2 **Requirements For Reporting Failures.** Failure to meet any product requirement through inspection, testing or assembly shall require the filing of a failure analysis and proposed corrective action. The failure analysis and proposed corrective action shall be in contractor format and shall be provided to the government QAR for review and approval.

4.2 **Classification Of Inspections.** The following types of inspection shall be conducted on the product:

- a. First Article Inspection (FA)
- b. Quality Conformance Inspection (QCI)

4.3 **First Article Inspection.** The contractor is responsible for performance of the FA inspection. The FA shall be subjected to the QCI specified herein and QAP and SPI and other inspections as necessary to determine compliance with contract requirements. The requirement to conduct a reliability test as part of first article will be specified in the contract. The first article shall be representative of the manufacturing methods and processes to be used for quantity production. The first article or articles shall be selected, as specified in the contract, from articles produced prior to the beginning of quantity production.

4.3.1 **First Article Submission.** The first article shall consist of the following items in sample quantities as indicated:

Part Description	Drawing	Quantity
Combination of Adopted Item for Machine Gun, 7.62 MM, M240B with Basic Items of Issue	12976814	10

4.3.2 **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 any failure of an assembly, component, or test specimen in the sample to comply with any of the stated requirements.

4.4 **Quality Conformance Inspection.**

4.4.1 **Inspection Lot.**

4.4.1.1 **Machine Guns.** The number of machine guns in an inspection lot shall be one month's production. Adjustments to lot size (see 4.4.3.7 and 4.4.3.8.1) shall be made only on an individual basis.

4.4.1.2 **Parts.** The number of parts in an inspection lot shall be determined in accordance with MIL-STD-1916.

4.4.2 **Examination.** The examination listed in the product requirement and QAPs shall be performed on inspection lots as defined in 4.4.1 of this product requirement.

a. **Sampling Plans.** Sampling plans are incorporated in this product requirement either by reference to appropriate military standards or by stipulating other specific acceptance criteria. In cases where sampling is specified in accordance with MIL-STD-1916, the contractor may request permission from the procuring activity to use an equivalent continuous sampling plan from MIL-STD-1235.

4.4.2.1 **Component Parts And Concurrent Repair Parts.** Examination of component parts and concurrent repair parts shall be performed in accordance with criteria specified in the contract. Machine guns and concurrent repair parts consisting of more than one part shall be assembled with accepted parts.

4.4.2.2 **Machine Guns.** Examination of each machine gun shall be performed after completion of all testing and immediately prior to preservation and packaging. A visual inspection in accordance with MIL-W-13855 shall be performed on the machine gun and on component parts at each examination step below for the following characteristics.

- a. Cleaning, improper
- b. Specified protective coating missing
- c. Evidence of poor general quality
- d. Manufacturing operations incomplete
- e. Assembly improper

- f. Evidence of poor workmanship
- g. Parts damaged
- h. Finish incorrect
- i. Marking incorrect or illegible

Machine guns and component parts failing to meet the requirements shall be rejected.

4.4.2.2.1 **Assembly Characteristics.** Each machine gun shall be examined as specified below by assembly/disassembly into the following majors groups and/or assemblies. Ensure that the operating group is not on sear and the bolt fully home.

a. **Barrel Assembly.**

1. Manually disassemble the barrel assembly from the receiver assembly. Manually assemble to and manually disassemble the spare barrel assembly from the receiver assembly. Determine compliance with 3.3.1.1.2 by examining the operation of the barrel bracket catch.

2. Visually examine both barrel assemblies to determine compliance with 3.3.1.1.

3. Examination of the high pressure test cartridge case to determine whether or not specified scratches and marks occurring in the chamber are permitted, shall be performed immediately following the firing of the designated test cartridge. Visually examine every barrel assembly for proof and magnetic particle inspection.

4. Visually examine the barrel and the gas hole bushing for compliance with 3.3.1.1.1.

5. Visually and manually examine the assembly of the parts to determine compliance with 3.3.1.1.2. Manually examine the assembly for free movement between all parts.

6. Visually and manually examine the assembly of the parts to the barrel to determine that the front sight retaining strap located in the front sight protector positively and securely retains the front sight blade to determine compliance with 3.3.1.

(a.) Manually unlatch the front sight-retaining strap and visually and manually determine that the front sight blade can be rotated for vertical adjustment of elevation during zeroing without any perceptible binding.

(b.) Visually and manually determine that the laterally opposed front sight adjustment screws can laterally move yet retain the front sight protector securely to the front sight collar.

(c.) Verify that adjustment of the front sight adjusting screws gives perceptible evidence of individual clicks for proper windage adjustment of the machine gun during zeroing.

b. **Receiver Assembly.** Visually and manually examine the following characteristics to determine compliance with 3.3.2.

1. The receiver assembly operates smoothly and accepts Functional Gage (maximum operating rod) 11826373 and Functional Gage (maximum breech bolt) 11826322 after firing a high pressure test cartridge and the application of a protective finish.

2. The driving spring rod assembly fits into the bolt and operating rod assembly and is locked in place in the rear end of the receiver assembly.

3. The barrel bracket catch functions without binding and locks the barrel in position.

4. The buffer assembly locks to and unlocks from the receiver assembly without the use of tools.

5. The infantry trigger assembly assembles to and disassembles from the rear part of the receiver assembly and locks in position with the spring pin without the use of tools.

6. The cover assembly with the feed tray assembles to and disassembles from the receiver assembly by placing and removing the tray and cover axis pin without the use of tools.

7. The cocking assembly assembles to the receiver assembly and functions freely. Visually and manually examine the cocking assembly to determine compliance with 3.3.5.

8. The rear sight assembly is securely assembled to the receiver assembly, functions and maintains location and orientation. The rear sight slide assembly shall move freely when both rear sight catches are depressed and shall retain its elevation setting.

9. Manually examine the bipod assembly for secure retention by the gas cylinder. Ensure that the bipod assembly is free to rotate side to side within the limits of the stops. Ensure that the bipod latch is easily depressed against spring action for securing the bipod leg assemblies. The bipod latch should also be easily able to be unlatched for bipod removal purposes.

10. Manually examine for secure fastening of the sling ring. The padded sling assembly must attach easily to the sling ring.

11. Ejection Port Opening Cover. Visually and manually examine the ejection port opening cover for compliance with 3.3.2.

12. Assessor Rail Kit. Visually and manually examine the Assessor Rail Kit for compliance with 3.3.2.

c. Firing Mechanism Group. Ensure that the operating mechanism is not charged. Remove the rear trigger spring pin and withdraw the firing mechanism for examination. Visually and manually examine the infantry trigger assembly for compliance with 3.3.6.

d. Buffer And Buttstock Assembly.

(a.) Manually examine for secure fastening of the buffer and buttstock assembly by the buffer block catch.

(b.) Disassemble and assemble, without the use of tools, the buffer and buttstock assembly from and to the grooves at the rear of the receiver assembly.

e. Bolt And Operating Rod Assembly Group. Visually and manually examine and measure the following characteristics to determine compliance with 3.3.2.1, 3.3.2.2, and 3.3.2.3.

1. The component parts of the assembly are the operating rod assembly, the firing pin, the bolt assembly, spring pin, and spring pin.

2. All surfaces contacting the guide ways or shoulders are polished to their required finish (see paragraph 3.3.2.1).

3. The assembly readily moves forward and backward in the guides of the receiver assembly.

4. The assembly manually assembles to and disassembles from the rear end of the receiver assembly.

5. Cartridge Extractor.

(a.) Visually examine the spring assembly and the exterior of the extractor plunger for the presence of lubrication.

(b.) Using gage number 11826306 measure and record the clearance between the cartridge case seat and the inner face of the cartridge extractor to insure compliance with the drawing requirement (see 3.3.2.2).

(c.) Using gage number 11826305 measure and record the engagement of the cartridge extractor to insure compliance with the drawing requirement (see 3.3.2.2).

6. Cartridge Ejector.

(a.) Visually examine the cartridge ejector for the presence of lubrication (see 3.3.2.3).

(b.) Visually and manually examine the cartridge ejector for proper orientation and the correct fastening with the spring pin (see 3.3.2.3).

7. **Operating Rod Assembly.** Visually and manually examine the following characteristics to determine compliance with 3.3.2.4.

(a.) The firing pin is fastened to the assembly with a spring pin and moves freely.

(b.) The piston rod and piston extension rod is permanently riveted together.

(c.) Measure and record the circle described by the axis of the piston rod for conformance to drawing requirement (see paragraph 3.3.2.4).

8. **Firing Pin.** Using gage number 11826304 measure and record the firing pin protrusion to insure compliance with the drawing requirement (see 3.3.10).

9. **Driving Spring Rod Assembly.** Manually disassemble and assemble the driving spring rod assembly into the bolt and operating rod assembly in the receiver assembly to determine compliance with 3.3.2.6. Unlock and lock the driving spring rod assembly from and into position by disengaging and engaging a pin out of and into the key hole slot in the rear end of the bottom of the receiver assembly.

f. Feed Mechanism Group.

1. **Cover Assembly.** Visually and manually examine the following characteristics to determine compliance with 3.3.3.

(a.) Rollers, links, pawls and cams operate smoothly and freely.

(b.) The cover assembly is latched securely to the receiver assembly and holds both the cover assembly and the feed tray in operating position.

(c) Insure that the accessory mounting rail on the feed cover complies with the requirements of MIL-STD-1913.

2. **Feed Tray.** Visually and manually examine the cover assembly and the feed tray for compliance with 3.3.4.

g. Bipod Assembly and Sling Ring.

1. Manually examine for secure retention of the bipod assembly and sling ring.

2. Compress both the left and right leg assemblies against the bipod hinge spring and fold and latch both leg assemblies into their respective notches on the receiver assembly complete. Ensure both legs are securely retained once stowed. Ensure that once deployed each leg assembly fully engages in their respective hinge notch.

3. Visually and manually ensure that the bipod hinge is free to rotate freely on the gas cylinder housing.

4.4.3 **Testing.** The conformance tests listed in this specification shall be performed on inspection lots as defined in 4.4.1. The sampling plans shall conform to the provisions of 4.4.2.a.

4.4.3.1 **Headspace Testing.** Each machine gun shall be tested for minimum and maximum headspace using the method specified in 4.5.1. Machine guns which fail to meet the requirements (see 3.3.9) shall be rejected. A failure analysis shall be performed and the proposed corrective action shall be submitted to the government QAR for review and approval (See 4.1.2).

4.4.3.2 Trigger Pull Testing. Each machine gun shall be tested for trigger pull using the Methods of Inspection specified in 4.5.2. Failure of any machine gun to meet requirements (see 3.4.1) shall cause rejection of the machine gun. A failure analysis shall be performed and the proposed corrective action shall be submitted to the government QAR for review and approval (See 4.1.2).

4.4.3.3 Firing Pin Protrusion. Each machine gun shall be tested for firing pin protrusion using the test methods specified in 4.5.3. Failure of any machine gun to meet requirements (see 3.3.10) shall cause rejection of the machine gun. A failure analysis shall be performed and the proposed corrective action shall be submitted to the government QAR for review and approval (See 4.1.2).

4.4.3.4 High Pressure Resistance. Each machine gun barrel, bolt breech body assembly, and receiver body assembly for end item application shall be tested for high pressure resistance using the method in 4.5.4. All repair or spare parts shall be similarly tested. Failure to meet the requirements (see 3.4.2) shall cause rejection of the part. A failure analysis shall be performed and the proposed corrective action shall be submitted to the government QAR for review and approval (See 4.1.2).

4.4.3.5 Functioning. Each machine gun shall be tested for function firing using the test method specified in 4.5.5. The cyclic firing rate for two positions of the gas regulator plug setting shall be measured for both the assigned and spare barrel. A machine gun shall be rejected if it does not achieve the cyclic rate requirements (see 3.4.3) or has a malfunction including loose parts. A failure analysis shall be performed and the proposed corrective action shall be submitted to the government QAR for review and approval (See 4.1.2). The belt pull requirement shall be demonstrated concurrently with the function firing. The contractor shall test five machine guns from each inspection lot for the functioning test with the M4 Bandoleer, using the test method specified in 4.5.5.1.

4.4.3.5.1 Rejected Machine Guns. Machine guns rejected because of malfunction, loose parts or failure to meet cyclic rate during the test shall be corrected by the contractor. A failure analysis shall be performed and the proposed corrective action shall be submitted to the government QAR for review and approval (See 4.1.2). The machine guns shall be retested by repeating the firing procedures of paragraph 4.5.5. The machine guns shall operate without malfunction and shall meet the cyclic rate requirements.

4.4.3.6 Accuracy, Dispersion and Targeting. Each machine gun with its assigned and spare barrel shall be tested for the accuracy and dispersion requirements of paragraph 3.4.3.2 and the targeting requirements of 3.4.3.3 using the test method specified in 4.5.6. Failure to meet requirements (see 3.4.3.2 and 3.4.3.3) shall be cause to reject the machine gun. A failure analysis shall be performed and the proposed corrective action shall be submitted to the government QAR for review and approval (See 4.1.2).

4.4.3.6.1 Rejected Machine Guns. Machine guns rejected because of failure to meet either the accuracy, dispersion or targeting requirements shall be corrected by the contractor. A failure analysis shall be performed and the proposed corrective action shall be submitted to the government QAR for review and approval (See 4.1.2). Corrected machine guns shall be retested by repeating the accuracy, dispersion and targeting test twice. The accuracy, dispersion, and targeting requirements shall be met for both tests. Machine guns failing retest shall be rejected.

4.4.3.7 Endurance. One machine gun randomly selected by the Government from each inspection lot shall be tested for endurance in accordance with test method in 4.5.7. The first five endurance test lots shall consist of one month's production. When five successive lots meet the endurance requirements, as prescribed in 3.4.3.4, the frequency of testing shall be decreased to every other month's production. Under the decreased testing frequency, when five tested lots have met the endurance requirements, the frequency of testing shall be further decreased to one lot tested of each three lots produced. If rejection of a lot occurs at any time, a failure analysis shall be performed and the proposed corrective action shall be submitted to the government QAR for review and approval (See 4.1.2), and the frequency of testing shall increase to the previous level successfully completed.

4.4.3.8 Interchangeability Testing.

4.4.3.8.1 Machine Guns. Ten machine guns, selected at random by the Government from each inspection lot shall be tested for interchangeability (see 3.4.3.6) using the test method specified in 4.5.8. Machine guns taken for interchangeability testing shall have been found satisfactory in all other examinations and tests. The first five interchange test lots shall each consist of one month's production. When five successive lots meet the interchange requirements the frequency of testing shall be decreased to every other month's production. Under the decreased testing frequency, when five tested lots have met the

interchange requirements, the frequency of testing shall be further decreased to one lot tested of each three lots produced. If rejection of a lot occurs at any time, a failure analysis shall be performed and the proposed corrective action shall be submitted to the government QAR for review and approval (See 4.1.2), and the frequency of testing shall increase to the previous level successfully completed. After interchange of parts, the 10 machine guns shall be tested for the following:

- a. Firing Pin Protrusion per paragraph 3.3.10, measured in accordance with 4.5.3.
- b. Headspace per paragraph 3.3.9, measured in accordance with 4.5.1.
- c. Trigger Pull per paragraph 3.4.1, tested in accordance with 4.5.2.
- d. Extractor clearance and engagement verified/ measured in accordance with 3.3.2.2.
- e. Functioning per paragraph 3.4.3, tested in accordance with 4.5.5.
- f. Rate of Fire Position #1 per paragraph 3.4.3, tested in accordance with 4.5.5.
- g. Rate of Fire Position #3 per paragraph 3.4.3, tested in accordance with 4.5.5.
- h. Accuracy and Dispersion per paragraph 3.4.3.2, tested in accordance with 4.5.6.1.
- i. Targeting per para 3.4.3.3, tested in accordance with 4.5.6.2.
- j. Belt Pull per Para 3.4.3.1, tested in accordance with 4.5.5.

No failure shall be allowed. Failure of the interchangeability test shall cause retest or rejection of the represented lot. If rejection of a lot occurs at any time, a failure analysis shall be performed and the proposed corrective action shall be submitted to the government QAR for review and approval (See 4.1.2). At the discretion of the Government, an interchangeability retest may be allowed without reconditioning the lot of machine guns. Failure in the retest shall cause rejection of the represented lot subject to reconditioning and the further test as a reconditioned lot. A sample of 20 machine guns from each retest or reconditioned lot shall be tested using the same procedure described above.

4.4.3.8.2 Concurrent Repair Parts. At least two parts from each inspection lot of concurrent repair parts shall be subjected to the interchangeability test specified in 4.5.8. Failure of any part to meet the requirements shall be cause for rejection of the represented lot subject to reconditioning. If rejection of a lot occurs at any time, a failure analysis shall be performed and the proposed corrective action shall be submitted to the government QAR for review and approval (See 4.1.2), and further testing shall be 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 4.5.8.

4.4.3.9 Reliability. As specified in the contract three machine guns randomly selected by the Government shall be each tested to 50,000 rounds using the test method specified in 4.5.9. Failure of the machine guns to meet, collectively, the MRBS and MRBF requirements shall be cause for deferment of acceptance of product, both finished items and items in process. In addition the contractor shall provide corrective action to any items already delivered deemed applicable by the government QAR. A failure analysis shall be performed and the proposed corrective action shall be submitted to the government QAR for review and approval (See 4.1.2). The contractor shall furnish the following spare and repair parts to support this reliability test:

<u>PART NOMENCLATURE</u>	<u>PART NUMBER</u>	<u>QUANTITY</u>	<u>UNIT OF ISSUE</u>
PIN, SPRING ASSEMBLY PIN, AXIS, TRAY AND COVER	11826277	3	EACH
ROD ASSEMBLY, DRIVE SPRING	11826024	4	EACH
PIN, SPRING ASSEMBLY	11826160	4	EACH
BARREL, GUN	12976818	1	EACH
SCREW, FRONT SIGHT	12597043	6	EACH
ADAPTER, BARREL	11826001	2	EACH
CARRYING HANDLE ASSEMBLY	12976819	2	EACH
SPRING, BARREL BRACKET	12976827	2	EACH
CATCH, BARREL BRACKET	12976828	2	EACH
PLUG, GAS REGULATOR	11826003	2	EACH
BLADE, FRONT SIGHT	12597040-2	6	EACH
PIN, SPRING	12976829	2	EACH
HANDLE ASSEMBLY, COCKING	12976835	3	EACH
PIN, SPRING (BIPOD LATCH)	12976850	2	EACH
PIN, STRAIGHT HEADED	11826137	5	EACH
PIN, SPRING	MS16562-106	5	EACH
BUFFER , HYDRAULIC	12988988	1	EACH

PIN, SPRING LOADED	11826054	2	EACH
PIN, FIRING	11826065	3	EACH
PIN, SPRING	11826068-1	4	EACH
ROD, OPERATING	12976867	1	EACH
BOLT, BREECH BODY	11826040	1	EACH
EXTRACTOR, CARTRIDGE	11826060	1	EACH
PLUNGER, EXTRACTOR	11826061	3	EACH
SPRING, EXTRACTOR ASSEMBLY	11826062	3	EACH
SPRING, EJECTOR	11826069	4	EACH
PIN, SPRING	11826068-3	4	EACH
PIN, PAWL RETAINING	11826205	4	EACH
RING, RETAINING	11826200	5	EACH
PAWL, FEED ASSEMBLY	11826177	1	EACH
SPRING, HELICAL	11826201	4	EACH
SPRING, HELICAL	11826189	4	EACH
SPRING, HELICAL	11826182	4	EACH
PIN, LOCK	11826202	4	EACH
CLIP, SPRING, FEED LEVER	11826204	2	EACH
GUIDE, CARTRIDGE REAR	11826207	2	EACH
GUIDE, CARTRIDGE FRONT	11826208	1	EACH
SPRING, TORSION SEAR	11826254	3	EACH
SPRING, BARREL LATCH	11826131	1	EACH
LATCH ASSEMBLY, BARREL	12997500	1	EACH
PIN, GROOVED HEAD	11826130	1	EACH

4.4.4 Inspection Equipment. The inspection equipment required to perform the examinations and tests prescribed herein is described in the applicable paragraphs. The contractor shall submit for approval inspection equipment designs in accordance with the terms of the contract.

4.5 Methods Of Inspection.

4.5.1 Headspace Test. Each machine gun with both its component barrel assembly and spare barrel assembly shall be gaged for minimum headspace and maximum headspace requirements (see 3.3.9) after proof firing, prior to acceptance, using gage number 11826302 for minimum and gage number 11826303 for maximum measurements.

4.5.2 Trigger Pull Test. Place the machine gun in an unloaded firing mode. Apply masses gradually to the center of the trigger bow in a rearward direction parallel to the barrel. For acceptance, applying the minimum mass will not fire the machine gun and applying the maximum mass will fire the machine gun.

4.5.3 Firing Pin Protrusion Test. The firing pin protrusion shall be gaged for compliance using gage number 11826304.

4.5.4 High Pressure Resistance Test. Fire one M60 High Pressure Test Cartridge in each gun barrel, bolt assembly, and receiver assembly. After firing, apply magnetic particle inspection to these parts and examine these components for cracks, deformations and other evidence of damage. After firing, also examine cartridge cases from barrel assemblies for bulges, splits, rings, and other indications of defective barrels. Determine that specific scratches and marks, if present in the chamber which meets surface texture requirements, have not caused marks on the cartridge case.

4.5.5 Functioning Test. Testing for functioning and belt pull requirements of 3.4.3 and 3.4.3.1 shall be accomplished on a government approved firing fixture. Each weapon shall be sequentially tested for rate of fire first, then accuracy, dispersion and targeting (para 4.5.6) and finally belt pull (4.5.5).

a) Firing for cyclic rate measurement shall be accomplished sequentially at gas regulator plug positions #3 and #1 for the assigned and spare barrel. Twenty round link belts are used to obtain cyclic rates. With the assigned barrel, fire a 20 round continuous burst at gas position #3 and determine the cyclic rate over the 20 rounds. Change from the assigned barrel to the spare barrel and repeat firing the machine gun at gas position #3 for cyclic rate. Set the gas regulator plug at position #1. Fire 20 rounds in one continuous burst and measure the cyclic rate. Repeat the cyclic rate firings with the assigned and spare barrel at gas position #1.

b) The weapon will then be tested for the accuracy and dispersion requirements of paragraph 3.4.3.2, and the targeting requirements of paragraph 3.4.3.3 using the method specified in paragraph 4.5.6.

c) The weapon will then be tested for belt pull. Five linked dummy rounds are attached to the end of one 20 round belt forming a 25 round belt. Mounted in a government approved firing fixture similar to that shown in FIGURE 1, the weapon is loaded with the 25 round belt. A 4.5 kg weight shall be attached to the end of the belt and be allowed to hang unsupported vertically. The gas regulator plug is set at position #1 and the 20 rounds (with 5 dummy rounds and weight attached) are fired in interrupted bursts with at least three interruptions. Visually examine the firing operation to determine that the weapon is controlled by the trigger and that every spent cartridge is properly ejected. Refire the cyclic rate of fire test at gas position #1 or #3 if the cyclic rate of fire requirement was not met. Refire the belt pull test if requirement was not met. Only one refire per requirement is allowed.

d) Failure to meet the cyclic rate requirements at gas position #1 or #3 or the occurrence of any malfunction during cyclic rate testing or at gas position #1 for belt pull shall be cause to reject the machine gun. Subsequent retests will then be performed in accordance with the procedure outlined. During retests, the accuracy test will not be repeated if the accuracy requirement was met by prior function firing.

4.5.5.1 M4 Bandoleer Firing. The function testing from paragraph 4.5.5 shall be accomplished with the M4 Bandoleer and ammunition adapter assembly attached, except for the belt pull testing. Belt pull testing may be accomplished without the bandoleer attached if it conflicts with the approved firing fixture.

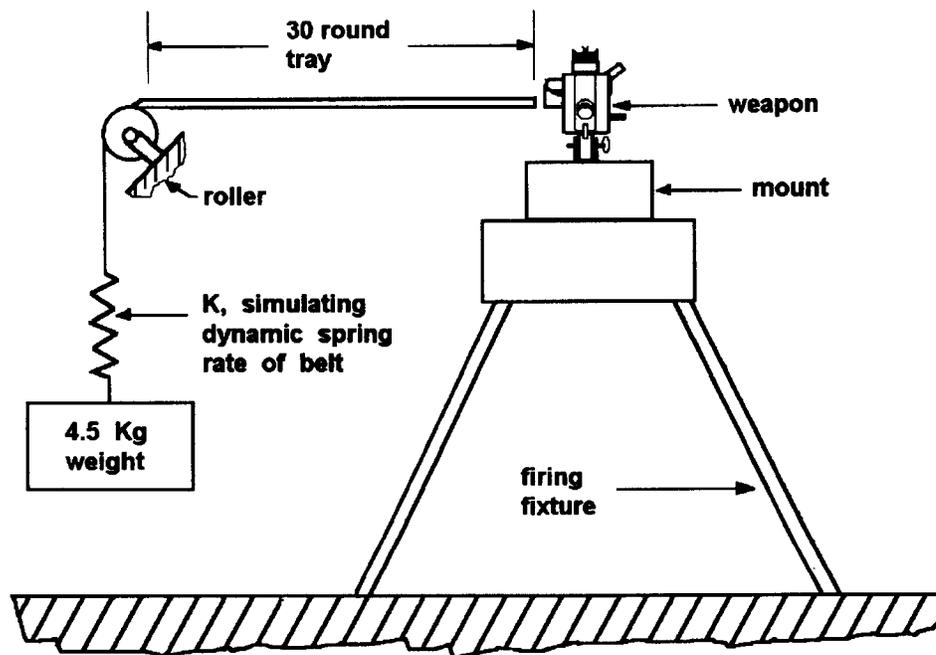


FIGURE 1. Firing Fixture For Testing

4.5.6 Accuracy, Dispersion and Targeting Test.

4.5.6.1 Accuracy and Dispersion Test. From a Government approved firing fixture (FIGURE 1), the machine gun, loaded with its assigned barrel with a 10 round link belt, is fired in one continuous burst at a fixed target 100 meters away. The target shall be checked to assure that the extreme spread of the 10 shot group does not exceed the requirement in paragraph 3.4.3.2. Location of the shot hole shall be determined by its center. Without adjustment to the weapon or fixture, the assigned barrel is replaced by the spare barrel and a second 10 round continuous burst is fired at a target at 100 meters. The extreme spread of the second 10 shot group shall not exceed the requirement. In addition the mean points of impact of both barrels shall be within requirement. A maximum of three warming shots are allowed per barrel prior to firing for record. All firing shall be performed with the gas regulator plug set at the #1 position. Prior to firing, the weapon with assigned barrel shall be aligned with the 100 meter point of aim by visually bore sighting the machine gun or use of a bore-sighting device.

4.5.6.2 Targeting Test. Targeting of this machine gun shall be done in conjunction with the 100 meter precision test. With the rear sight of the machine gun set at minimum elevation (200 meters), the front sight blade set at the low point of elevation and midpoint of windage, and the sights aligned at 6 o'clock on the sighting image (33 centimeter bull) (see FIGURE 2), three (3) sighting shots shall be fired and the front sight adjusted to bring the mean point of impact of a ten (10) round burst from the assigned barrel to approximately the theoretical point of impact 10 centimeters above the actual point of aim. The assigned barrel assembly will then be replaced by the spare barrel assembly and with a 6 o'clock hold on the sighting image, the three (3) sighting shots shall be fired and the front sight adjusted to bring the two barrels within the targeting requirements with the same rear sight setting. The ten round continuous burst shall be fired and extreme spread and mean point of impact determined for comparison to the requirements for both barrels. Starting with a No. 1 blade, adjustment of the front sight blade and protector may be made using the front sight combination tool to meet the targeting requirement (3.4.3.3). If the required elevation correction can not be obtained with the No. 1 blade screwed to the maximum elevation, it must be replaced with the blade marked No. 2 (see TABLE I). The No. 2 blade must be screwed fully home, then raised by two complete turns to reach approximately the same mean point of impact as the No. 1 blade. If either blade is at its maximum, the base of the blade is flush with the flat part of the front sight protector. Adjustment of the front sight shall not cause overhang of the front sight protector over the front sight collar beyond 1.5 mm (See TABLE II).

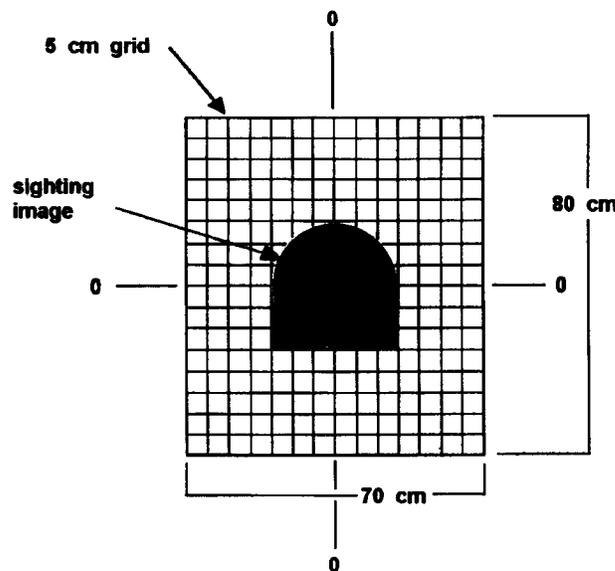


FIGURE 2. Targeting Diagram

TABLE I - Elevation adjustment of front sight blade (No. 1 or 2), in centimeters (cm)

Turns	50 meters	100 meters	200 meters
1/2 turn	2.7 cm	5.4 cm	10.8 cm
1 turn	5.4 cm	10.8 cm	21.6 cm

TABLE II - Windage Adjustment Of Front Sight In Centimeters (cm)

Number Of Clicks	50 Meters	100 Meters	200 Meters
1	0.5 cm	1.0 cm	2.0 cm
2	1.0 cm	2.0 cm	4.0 cm
4 or 1/2 turn	2.0 cm	4.0 cm	8.0 cm
8 or 1 turn	4.0 cm	8.0 cm	16.0 cm

4.5.7 Endurance Test. The machine gun shall be fired 15,000 rounds in 200 round complements, alternating between assigned and spare barrel. Barrels may be compressed air cooled to ambient temperature after each complement. Each complement should be fired in short bursts (10-12) at a rate of one burst every 6-8 seconds. The gas regulator plug shall be set at position #1. The machine guns are lubricated every 2,000 rounds and completely cleaned, inspected, and lubricated after every 4,000 rounds. Firing is from a Government approved firing fixture. If the endurance requirements are not met, the represented lot shall be rejected subject to retest or reconditioning and further test as a reconditioned lot. An endurance retest of two other machine guns from the same lot shall be made without reconditioning the represented lot, unless in the opinion of the Government representative the failure indicates serious defects in the item, in which case retest shall be made only when authorized by the procuring agency. Failure of either machine gun in the retest to meet the requirements shall cause rejection of the represented lot subject to reconditioning and further testing as a reconditioned lot. Prior to submission of a lot of machine guns as a reconditioned lot, a failure analysis shall be performed and the proposed corrective action shall be submitted to the government QAR for review and approval (See 4.1.2). Sample size and test methods for reconditioned lots shall be the same as for retest.

4.5.8 Interchange Of Parts.

4.5.8.1 Machine Guns. Machine guns shall be tested by disassembling and then reassembling parts using the parts and prearranged system prescribed below in TABLE III. Interchange of parts shall be accomplished by dividing the parts of each machine gun into 10 groups of nonmating parts as shown below and distributing the groups into 10 different trays until each tray contains a complete machine gun. Groups of nonmating parts from machine gun number 1 shall be taken in order and placed in trays 1 through 10; groups of parts from machine gun number 2 shall be taken in order and placed in trays 2 through 10 to 1; groups of parts from machine gun number 3 shall be taken in order in and placed in trays 3 through 10 to 2; etc. Commercial parts 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 machine gun shall be reassembled using only those parts which are in the same tray.

4.5.8.2 Concurrent repair parts. Concurrent repair parts shall be tested by disassembling two machine guns, previously tested in 4.4.3.8, as necessary and then reassembling them using concurrent repair parts. The machine guns shall operate and function properly. This test may be performed independently of the machine gun interchangeability test specified in 4.4.3.8, and at more frequent intervals using accepted machine guns taken from production.

4.5.9 Reliability test.

4.5.9.1 Sample. A sample of five weapons shall be test fired for a total of 7500 rounds each. At that point, the reliability will be calculated (point estimate of MRBS) for each weapon. The samples with the lowest and highest MRBS for each type will be set aside and testing will continue with the three remaining samples. The remaining sample of three will be fired for a total of 50,000 rounds each.

4.5.9.2 Firing schedules. Unless otherwise specified, the firing will be conducted in 200 round complements, alternating between firing schedules No.1 and 2 each for a complete complement of 200 rounds. With the weapon mounted on the tripod, the belts will feed from an ammunition can positioned below the weapon. For bipod use, the ammunition will feed from the ammunition adaptor assembly secured to the weapon.

4.5.9.2.1 Schedule No.1. 10 round burst at a rate of one burst every 6 seconds for 200 rounds.

4.5.9.2.2 Schedule No.2. 25 round burst at a rate of one burst every 15 seconds for 200 rounds.

4.5.9.3 Maintenance. The weapons will be cleaned, inspected and lubricated at 4000 round intervals and relubricated at 2000 round intervals. Two barrel assemblies will be used, alternately, in 200 round cycles. The barrels will be forced-air cooled after each 200 rounds and the receiver will be forced-air cooled after each 400 rounds.

4.5.9.4 Mounts. Throughout the test, a variety of mounts or firing positions will be utilized. Unless otherwise noted, the first 20,000 rounds will be fired from the M122A1 Tripod followed by 10,000 rounds on the integral weapon bipod, and then followed by a repeat of the same sequence. The tripod will be the standard M122A1 Tripod. The tripod will be seated in a sandbox and secured with sandbags. The bipod will be the integral bipod assembled to the weapon. The bipod legs will be seated in a sandbox,

unsecured. The sandbox will contain a sand/dirt mixture compacted to 150 + 50 psi, as measured with a cone penetrometer.

4.5.9.5 Barrel life. Each barrel shall be fired for a total of 15,000 rounds (see requirements of 3.4.3.5) and then replaced. If the barrel is still serviceable at 15,000 rounds, firing may continue at a later date, with serviceability checks at 2,000 round intervals, until failure. At the start of the test and during the last 50 rounds of each of the final 200 round complements for each barrel, cyclic rate (gas port setting # 1 & # 3), dispersion, and projectile velocity will be measured and evidence of yaw or keyholing determined. The cyclic rate-of-fire will be recorded over a 20 round burst. The dispersion, projectile velocity and yaw will be measured from the firing of a 10 round burst. The dispersion target will be placed 100 meters from the muzzle. Projectile velocities will be measured at a point 5 meters forward of the muzzle. The yaw or keyholing will be recorded on a target 25 meters from the muzzle. Firing will be from a test stand adapted for the weapon.

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Table III – PARTS INTERCHANGE TABLE

GROUP I

1.	BARREL GUN, (W/FLASH SUPPRESSOR ATTACHED)	12597036 (12976830 Attached)
2.	PIN, SPRING, TUBULAR, SLOTTED	12976829 (REPLACE)
3.	COVER, FRAME WITH ROLLERS	12977102
4.	PIN, SPRING	MS16562-105 (REPLACE)
5.	PIN, STRAIGHT, HEADLESS	11826250
6.	ROD ASSEMBLY, DRIVING SPRING	11826024
7.	RING, SLING	12976847
8.	PIN SPRING	MS39036-205 (REPLACE)
9.	COVER, EJECTION PORT, ASSEMBLY	12976843
10.	CATCH, RETAINING BIPOD	12976848
11.	WASHER, PIN, AXIS LEGS	12976908
12.	PIN SPRING	12976904 (REPLACE)
13.	WASHER, LOCK, FLAT, EXT. TOOTH (6 EACH)	ASME B 18.21.1, #10 (REPLACE)

GROUP II

1.	CATCH, BARREL, BRACKET	12976828
2.	PIN, STRAIGHT, HEADED	11826216
3.	PIN, STRAIGHT CATCH STOP	MS171475 (REPLACE)
4.	PLUNGER, DETENT BUFFER CATCH	11826215
5.	TRAY, FEED	11826006
6.	PIN, STRAIGHT HEADED	11826137
7.	PROTECTOR, FRONT SIGHT	12597039
8.	BUTTSTOCK ASSEMBLY	12976852
9.	LEG, RIGHT, COMPLETE	12976884
10.	NUT, PIN AXIS, LEGS, BIPOD	12976907

GROUP III

1.	BRACKET CARRYING HANDLE	12976823
2.	BUFFER , HYDRAULIC	12988988
3.	PIN, AXIS, TRAY AND COVER	11826277
4.	PIN, SPRING, TRIGGER	11826160
5.	ROD ASSEMBLY, OPERATING	12976867
6.	GUIDE, CARTRIDGE, REAR	11826207
7.	PLUNGER, DETENT	11826156
8.	BLADE, FRONT SIGHT	12597040
9.	PLUNGER, REAR SIGHT	12597055
10.	HEAD, BIPOD	12976900
11.	LEG, LEFT, COMPLETE	12976894
12.	SPRING, PLUNGER, BIPOD	12976899
13.	PIN, SPRING, TUBULAR, COILED, HD	MS39086-91 (REPLACE)

GROUP IV

1.	SPRING, HELICAL COMPRESSION	11826214
2.	GRIP, MACHINE GUN, LEFT	12976881
3.	SEAR	12976882
4.	SLIDE, CHARGER	12976835
5.	ADAPTER, BARREL	11826001
6.	STRAP, RETAINING, FRONT SIGHT	12597041
7.	SPRING, HINGE PIN, EJECTION PORT	12976844
8.	HEAD, HINGE BODY, BIPOD	12976902
9.	SPRING, LEGS, BIPOD	12976905
10.	BUTTON, LATCH	12997499
11.	BUFFER HOUSING	12988989

GROUP V

1.	PIN, SPRING LOADED	11826054
2.	PIN, FIRING	11826065
3.	PIN, PAWL RETAINING	11826205
4.	GUIDE, CARTRIDGE FRONT	11826208
5.	CLIP, RETAINING	11826204
6.	GRIP, MACHINE GUN RIGHT	12976879
7.	SPRING, HELICAL, TORSION, SEAR	11826254
8.	LATCH, BARREL	12997498
9.	SPRING, ADJUSTING, FRONT SIGHT	12597042
10.	LEAF, REAR SIGHT	12597047
11.	PIN, NUT RETAINING, HANDLE	MS 9226-04 (REPLACE)
12.	PIN, AXIS, LEGS, BIPOD	12976897

GROUP VI

1.	PIN, SPRING	11826068-1 (REPLACE)
2.	BOLT, BREECH BODY	11826040
3.	TRIGGER ASSEMBLY	12976870
4.	PAWL, FEED ASSEMBLY	11826177
5.	CLIP, SPRING TENSION, FEED LEVER	11826202
6.	CLIP, RETAINING CATCH	11826203
7.	LATCH, BACK PLATE	12976861
8.	SCREW, ADJUSTING, FRONT SIGHT	12597043
9.	SCREW, STOP, REAR SIGHT LEAF	12597053
10.	HANDLE, CARRYING	12976820
11.	CYLINDER, ACTUATING, BIPOD	12976903
12.	SCREW, CAP (6 EACH)	NAS 1351N-3-9B

GROUP VII

1.	HOUSING, TRIGGER	12976876
2.	RING, RETAINING	11826200
3.	LATCH, COVER (2 EACH)	11826206
4.	LEVER, FEED (R.H.)	11826209
5.	BOLT, MACHINE, HEX HD, SCR STOCK	12976880
6.	SPRING, HELICAL, COMPRESSION DETENT PLUNGER	11826158
7.	EJECTOR, CARTRIDGE	11826067
8.	SPRING, HELICAL, COMPRESSION	11826201
9.	SPRING HELICAL, COMPRESSION	12597054
10.	SPRING, BIPOD, RETAINER, CATCH	12976849
11.	PLUNGER, RETAINING, BIPOD	12976901
12.	SCREW, SECURING BUTTSTOCK	12988985

GROUP VIII

1.	COVER, ACCESS FRONT	11826122
2.	PIN, GROOVED HEAD	11826130
3.	PIN, SPRING PLUNGER	11826068-2 (REPLACE)
4.	PLUNGER, EXTRACTOR	11826061
5.	EXTRACTOR, CARTRIDGE	11826060
6.	PLUG, GAS REGULATOR	11826003
7.	GUARD, TRIGGER	12976875
8.	PIN, SPRING, BIPOD RETAINER	12976850 (REPLACE)
9.	PLUNGER, CATCH, EJECTION PORT	12976845

GROUP IX

1.	SPRING, HELICAL COMP, BARREL LATCH	11826131
2.	SPRING, EXTRACTOR ASSEMBLY	11826062
3.	SPRING, HELICAL, COMP, EJECTOR	11826069
4.	PIN, STRAIGHT, HEADLESS	12597056 (REPLACE AND RESTAKE)
5.	PIN, HEADED, TRIGGER GUARD	12976874
6.	BUSHING, RETAINING HEAD, PLUNGER	12976898
7.	ADAPTER ASSEMBLY, AMMUNITION	12976909
8.	RAIL (2 EACH)	12997574
9.	SCREW, BUTTSTOCK (2 each)	12976864

GROUP X

1.	RECEIVER ASSEMBLY	11826080
2.	SAFETY, SMALL ARMS	11826258
3.	COLLAR, GAS REGULATOR	11825992
4.	PIN, SPRING, STEEL, PHOSPHATE FINISH	11826068-3 (REPLACE)
5.	PIN, STRAIGHT, HEADLESS	11826255
6.	SLIDE ASSEMBLY, REAR SIGHT	12597048
7.	NUT, RETAINING HANDLE	12976821
8.	PLATE, BUTTSTOCK	12976863
9.	HEATSHIELD ASSEMBLY	12976831
10.	RING, AXIS PIN LEG	12976906
11.	INSULATOR (6 EACH)	12997575

4.5.9.6 Serviceability. A barrel is considered unserviceable when: (1) 20 percent of any burst exhibits yaw of 15 degrees or more, or (2) the mean projectile velocity of a burst drops 200 feet per second (ft/s) below the mean of the velocity initially recorded at the start of the test. Barrels failing to meet the minimum life criteria will be considered failures for the reliability computations.

4.5.9.7 Nondestructive Testing. The nondestructive testing (NDT) inspections for discontinuities indicative of cracks or other defects will be repeated on the key components, at intervals of 28,000 and 50,000 rounds on the weapons. Key components will include, but will not be limited to, the receiver, barrels, bolt, and operating rod.

4.5.9.8 Test Data.

4.5.9.8.1 The following test data are required:

- a. Weapon type and ammunition lot number.
- b. All test incidents, categorized by class.
- c. Velocity and dispersion data for each 10,000 round gun cycle.
- d. Part life by round count, weapon number, weapon life, and part succession.
- e. NDT results.

f. Cyclic rate of fire (gas ports # 1 & # 3), headspace, trigger pull, and firing pin indent measurements for each 10,000 round gun cycle.

4.5.9.8.2 Data Analysis/ Procedure. Using standard statistical procedures, the point estimate and lower 80 and 90 percent confidence level of MRBS and MRBF will be defined for each incident class and the total incident count.

4.6 Testing Stipulations.

4.6.1 Mounts. All firing tests shall be accomplished with the machine guns affixed to a Government approved mount, or with the integral bipod, or using the M122A1 Tripod mount depending on the testing conducted.

4.6.2 Ammunition. All firing tests shall use cartridge, 7.62mm Ball: M80, per MIL-C-46931 except the high pressure test which shall use cartridge, 7.62mm, Test, High Pressure: M60, per MIL-C-46477. Dummy Cartridge, 7.62mm, Inert Loaded: M172 shall be used in the belt pull testing and any other test requiring separation of live ammunition from the machine gun. All firing tests requiring linked ammunition shall be linked with Link, Cartridge, Metallic Belt, 7.62mm: M13 per MIL-L-45403.

5.0 PACKAGING

5.1 Preservation. Preservation, packaging, packing and marking shall be in accordance with Special Packaging Instruction SPI 12976814.

5.1.1 Volatile Corrosion Inhibitors. Volatile corrosion inhibitors shall be in accordance with MIL-I-8574.

5.2 Pilot pack. Pilot pack is required for production quantities.