INCH-POUND

MIL-DTL-001298D (AR)
w/ AMENDMENT 1
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DETAIL SPECIFICATION

GUN, MACHINE; CALIBER .50, BROWNING, M2, HEAVY BARREL

This specification is approved for interim use by the U.S. Army Armaments Research, Development and Engineering Center (ARDEC). Other activities in the Department of Defense may use this interim revision or may continue using MIL-G-1298A.

1. SCOPE

1.1 Scope. This detail specification prescribes the requirements and identifies the verification procedures for the gun, machine, caliber .50, browning, M2, heavy barrel, hereafter referred to simply as the M2.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 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 cited in the solicitation or contract.

Comments, suggestions, or questions on this document should be addressed to Commander ARDEC, ATTN: AMSRD-AAR-QES-E, Picatinny, NJ 07806-5000) or emailed to (ardec-stdzn@pica.army.mil). Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at http://assist.daps.dla.mil.

AMSC N/A FSC 1005

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-W-63150	Weapons and Support Material, Standard Quality Assurance Provisions for

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-130	Identification Marking of US Military Property

(Copies of these documents are available online at http://assist.daps.dla.mil/quicksearch/ or http://assist.daps.dla.mil or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

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

ARMY TECHNICAL MANUALS

TM 9-1005-213-10	Operator's Manual for Machine Guns, caliber .50; M2, Heavy Barrel

(This TM may be viewed and printed at https://www.logsa.army.mil/etms/online.htm.)

U.S. ARMY ARDEC DRAWINGS

5009271	Pin; Straight, Headed
5009275	Pin, Straight, Headless
5009300	Spring, Helical Comp
5009351	Spring, Helical Comp
5009352	Spring, Helical Comp
5009356	Spring, Helical Comp
5009369	Tube, Handle
5009394	Screw, Handle Tube
5009524	Spring, Helical Comp
5013424	Pin, Shoulder, Headless
5013515	Plunger, Belt Feed Lever
5013516	Spring, Helical Comp
5013523	Pin, Straight, Headless
5013524	Plunger, Bolt Latch
5013525	Spring, Helical Comp
5013526	Nut, Bolt Latch Rod
5013527	Spring, Helical Comp
5013539	Stop, Front Cartridge
5013540	Stop, Rear Cartridge
5013541	Stripper, Link

5013556	Nut, Slotted Hexagon
5013581	Pin, Straight Headed
5013583	Spacer, Back Plate
5013588	Cover, Trunnion Block
5013622	Screw, Machine Hex Hd
5013623	Nut, Plain Hex
5013681	Shoulder Bolt
5013686	Nut, Slotted, Hexagon
5013691	Spring, Helical Torsion
5013692	Spring, Helical Torsion
5013693	Spring, Helical Comp
5013697	Washer, Thrust
5140428	Spring, Locking, Elevating Mech.
5152750	Piece Filler
5152834	Screw, Adjusting
5152835	Disk, Buffer Fiber
5152839	Plunger, Adjusting Screw
5152854	Pin, Headed
5152869	Plate, Buffer
5152896	Spring, Trigger Safety
5152897	Screw, Trigger Safety
5152939	Nut, Slotted Hexagon
5153191	Screw, Machine
5351211	Headspace Gage Caliber .50
5351213	Timing Gage, Caliber .50, (No Fire)
5351214	Timing Gage, Caliber .50, (Fire)
5351220	Slide, Sear
5504060	Latch, Bolt or Alt Latch, Bolt
5504062	Switch, Bolt
5504067	Sear
5504071	Release, Bolt Latch
5504080	Carrier Assy, Barrel
5504081	Receiver Select Fit Assy & Cover Subassembly
5504082	Extension Assy, Barrel
5504091	Barrel Support
5504094	Sleeve, Buffer Tube
5508141	Accelerator, Oil Buffer
5520627	Firing Pin Indent Test Fixture
5564278	Lever, Belt Feed
5564305	Rod Assy, Driving Spring
5564307	Plate Assembly, Back
5577409	Stop Assy, Cartridge
6008763	Rod Assy, Oil Buffer Piston
6008782	Guide Assy, Buffer Spring
6008784	Pin Assy, Breech Lock
6008790	Pin Assy, Accelerator

6008914	Arm, Belt Feed Pawl
6008919	Rod, Bolt Latch
6008931	Spring, Cover Latch
6008939	Cover, Top Plate
6008943	Spring, Switch
6008949	Latch, Back Plate
6008959	Extractor Assy
6008961	Pawl Assy, Belt Feed
6008962	Pin Assy, Belt Feed Pawl
6008976	Extension Assy, Firing Pin
6008990	Retracting Slide Plunger
6009718	Lever, Cocking
6009741	Spring, Cover Extractor
6009832	Spring, Helical Comp
6047008	Firing Pin Protrusion Gage
6147085	Lever, Retracting Slide
6147461	Switch, Extractor
6147463	Bolt Subassembly
6147511	Safety, Trigger
6147583	Cam, Lock Breech
6147893	Slide, Retracting
6243607	Spring, Back Plate Latch Lock
6257592	Bar, Trigger
6261110	Slide Assy, Belt Feed
6313799	Handle Assy, Retracting Slide
6511053	Testing Fixture Assembly
6535475	Plate, Back
6535480	Receiver Select Fit Assy
7160628	Spring, Helical Comp
7161300	Lock, Accelerator Stop
7161301	Stop, Accelerator
7161302	Lock, Breech
7162872	Pin, Belt Holding Pawl
7265156	Barrel Assembly
7265212	Stop Assy, Adjustable Trigger Bar
7265561	Grip Handle
7265596	Screw, Machine, Fillister Head
7265636	Cal .50, M2 Browning Machine Gun, Flexible
7266131	Barrel Assy
7266835	Body Assy, Barrel Buffer
7266955	Targeting and accuracy diagram
7267936	Leaf Assy, Rear Sight
7267982	Charger, M10
7268490	Stud Assy, Bolt
7270150	Weighing Gage
7310080	Pin, Firing

7312028	Screw, Externally Relieved Body
7312078	Pin, Cocking Lever
7312517	Pin, Locking
7312970	Pin, Locking
7313068	Spring, Helical Comp
7313069	Pawl, Cover Detent
7313083	Pawl Assy, Belt Holding
7313106	Pin Assy, Trigger Bar
8440920	Cylinder, Pressure (copper)
8440929	Function Firing Fixture (with safety cover)
9340485	Nut, Buffer Piston Rod
9340486	Tube, Barrel Buffer
11010440	Retracting Slide Bracket
11010453	Lock, Back. Plate Latch
12002953	Machine Gun, Caliber .50, Browning, M2, Turret Type
12003047	Sight Assy, Rear
12003958	Headspace Gage
12003959	Timing Gage
13016069	Trigger
7265580-91	Shim, Trunnion Block
MS35266-68	Screw, Machine

(Copies of ARDEC drawings may be requested online at Drawing-Request@pica.army.mil or from US Army ARDEC, ATTN: AMSDR-AAR-AIS-TD, Picatinny, NJ 07806-500.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

ASTM INTERNATIONAL

ASTM E 1444	Magnetic Particle Inspection, Standard Practice for

(Copies of these documents are available from http://www.astm.org or ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document shall take precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article inspection. When specified a sample of the M2 shall be subjected to first article inspection in accordance with Table II and 4.2.

3.2 Conformance inspection. Unless otherwise specified, all M2's shall be subjected to conformance inspection in accordance with Table II and 4.3.

3.3 Sear engagement. The cocking lever, when operated by hand, shall retract the firing pin assembly sufficiently to insure engagement of the firing pin extension hook to the sear hook.

3.4 Firing pin protrusion. The firing pin protrusion shall not be less than 0.072 inch and not more than 0.079 inch when measured from the bolt face.

3.5 Headspace. Each machine gun shall be capable of being adjusted for proper headspace. With the bolt retracted until the barrel extension and the trunnion block are separated approximately 1/16 inch, the distance between the rear face of the barrel and the face of the bolt shall not be more than 0.206 inch and not less than 0.202 inch. This adjustment is essential for proper weapon function and must be maintained during all firing schedules.

3.6 Timing. After having been adjusted for headspace, each machine gun must then be timed. The firing pin shall not release upon actuation of the triggering mechanism when the gap between the barrel extension and the trunnion block exceeds 0.116 inch. However, at some point in the interval where the gap between the barrel extension and the trunnion block is not more than 0.116 inch and not less than 0.020 inch, the firing pin shall release upon actuation of the triggering mechanism. This setting must also be maintained during subsequent firing schedules.

3.7 Firing pin release. The firing pin shall be released by a load not exceeding 38 pounds applied to the sear slide and by a load not exceeding 26 pounds applied to the sear.

3.8 Firing pin indent. The firing pin indent shall be within the range of 0.017 to 0.040 inch and shall not be off center more than one-half the diameter of the indent.

3.9 High pressure resistance. Each M2 shall withstand the firing of one Government standard caliber .50, M1 high pressure test cartridge.

3.9.1 Magnetic particle inspection. All parts of the M2 shall be free of cracks, seams, or other defects after proof firing. The bolt subassembly, barrel extension assembly, and barrel assembly of each M2 shall be magnetic particle inspected and proof marked as specified on the applicable Drawings 6147463, 5504082, and 7266131. Those assemblies which receive a second proof test shall be marked with a prefix "2" at the location of the previous proof marking.

3.10 Functioning. The M2 shall function without malfunctions attributable to the weapon, and without evidence of unserviceable parts.

3.11 Belt pull. The M2 shall be capable of functioning while a 20 pound free hanging weight is attached to the ammunition belt.

3.12 Cyclic rate of fire. The M2 shall maintain an average rate of fire of 450 to 600 shots per minute.

3.13 Targeting and accuracy.

3.13.1 Targeting and accuracy M2 Browning machine gun flexible. The M2 flex Drawing 7265636 shall have the rear sight set at zero elevation, the windage scale adjusted to zero and the sights aligned at 6 o'clock on the sighting image of a target meeting the requirements of Drawing 7266955 the center of impact of a 10 round burst shall be within the 8.0 inch diameter circle shown on the drawing and all shots shall group within or cut the edge of a 8.0 inch diameter circle at a range of 100 feet.

3.13.2 Accuracy M2 Browning machine gun turret type (M48 Series). The M2 turret type Drawing 12002953 shall be bore sighted on the point of aim on the sighting image of a target meeting the requirements of Drawing 7266955, the center of impact of a 10 round burst shall be within the 8.0 inch diameter circle shown on the drawing and all shots shall group within or cut the edge of a 8.0 inch diameter circle at a range of 100 feet.

3.14 Endurance. The M2 shall be capable of firing a test schedule of 10,000 rounds of M33 ball cartridges, using M9 links, without substitution of any components and without malfunctions in excess of the limits shown in Table I.

3.15 Barrel Erosion. The M2 barrel assembly shall be capable of firing a 10,000 round test schedule without experiencing a muzzle velocity drop of more than 200 feet per second.

3.16 Interchangeability. All M2 parts shall be interchangeable, unless otherwise specified.

3.17 Interplant interchangeability. All M2s manufactured concurrently by more than one contractor shall be interchangeable. Each contractor shall submit monthly six M2s for verification, unless otherwise specified.

TABLE I. Malfunctions and unserviceable components.

Malfunctions (attributable to gun) 2/	Number permitted per, 10,000 rounds
Extruded primer	1
Failure to eject	1
Failure to extract (cartridge case from chamber)	1
Failure to extract (cartridge from feed belt)	1
Failure to feed (bullet striking face of barrel)	2
Failure to feed (insufficient recoil)	1
Hangfire (noticeable)	0
Misfire caused by light blow	2
Pierced primer	1
Uncontrolled fire	0
All other malfunctions:	
If correctable by recharging	3
If not correctable by recharging	1
Unserviceable components	Number permitted per, 10,000 rounds 1/
Accelerator	0
Back Plate	0
Barrel extension	0
Barrel support	0
Belt feed pawl	0
Belt feed slide	0
Bolt	0
Breech lock cam	0
Cocking lever	0
Cover pin	0
Driving springs, (inner and outer)	0
Ejector	1
Extractor	0
Extractor cam	0
Firing pin	1
Firing pin spring	0
Sear	1

TABLE I. Malfunctions and unserviceable components - Continued

Unserviceable components	Number permitted per, 10,000 rounds 1/
Set back of recoil plate in face of bolt (in excess of .0002 inch)	0
Side, top, or bottom plates (receiver assembly)	0
All other unserviceable components (different)	2
Notes: 1/ No unserviceable components shall be allowed within the first 5,000 rounds. 2/ When malfunctions (within the allowances of Table I) are traceable to particular components, it is permissible to replace such components and record them as unserviceable, subject to limitations of Table I. When it is definitely established by the inspector that previously recorded malfunctions are attributable to an unserviceable component, such malfunctions shall not be counted against the machine gun being tested, provided that they occurred not more than 200 rounds prior to replacement of the unserviceable component. However, such malfunctions shall remain recorded and properly identified.	

3.18 Marking. Each M2 and each component thereof for which markings are prescribed, shall be clearly marked in accordance with the applicable drawing and MIL-STD-130.

3.18.1 UID. A UID label shall be firmly affixed to the receiver assembly. Each M2 shall be identified by a serial number which shall appear on both the top plate of the receiver assembly and on the UID label. The UID label shall not negatively affect the receiver's protective finish and must withstand all requirements of this specification.

3.19 Hangfires and misfires. If hangfires and misfires occur during any of the tests, that are not attributed to ammunition, the M2 shall be subjected to the firing pin indent test per 3.8.

3.20 Workmanship. Workmanship shall be in accordance with the workmanship requirements of MIL-W-63150. In addition, the M2 shall be free from 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. All parts shall function without binding. No parts shall fall off or become loose during any of the firing in this specification.

4. VERIFICATION

TABLE II. Requirement/verification cross-reference matrix

METHOD OF VERIFICATION	CLASSES OF VERIFICATION
1 - Analysis	A - First article inspection
2 - Demonstration	B - Conformance inspection
3 - Examination	
4 - Test	

Section 3 Requirement		Section 4 Method	Verification Methods				Verification Class/Qty.	
			1	2	3	4	A	B
3.1	First article inspection	4.2			X	X	X	-
3.2	Conformance inspection	4.3			X	X	-	X
3.3	Sear engagement	4.4				X	100%	100%
3.4	Firing pin protrusion	4.5				X	100%	100%
3.5	Headspace	4.6				X	100%	100%
3.6	Timing	4.7				X	100%	100%
3.7	Firing pin release	4.8				X	100%	10-0-1[1]
3.8	Firing pin indent	4.9				X	100%	10-0-1
3.9	High pressure resistance	4.10				X	100%	100%
3.9.1	Magnetic particle inspection	4.10.1				X	100%	100%
3.10	Functioning	4.11				X	100%	100%
3.11	Belt pull	4.12				X	100%	100%
3.12	Cyclic rate of fire	4.13				X	100%	100%
3.13.1	Targeting and accuracy M2 Browning machine gun flexible	4.14.1				X	100%	100%
3.13.2	Accuracy M2 browning machine gun Turret type (M48 & M48 Series)	4.14.2				X	100%	100%
3.14	Endurance	4.15				X	3-0-1	1-0-1
3.15	Barrel Erosion	4.16				X	6-0-1	1-0-1
3.16	Interchangeability	4.17				X	10-0-1	10-0-1
3.17	Interplant interchangeability	4.18				X	6-0-1	6-0-1
3.18	Marking	4.19			X		100%	100%
3.18.1	UID	4.19.1			X		100%	100%
3.19	Hangfires and misfires	4.20				X	100%	100%
3.20	Workmanship	4.21			X		100%	100%

Note:
[1] Test ten (10) - Accept with zero (0) failures - Reject with one (1) failure.

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

a. First article inspection (4.2)
b. Conformance inspection (4.3)

4.2 First article inspection. When specified, a sample of the M2 shall be subjected to first article inspection in accordance with Table II.

4.2.1 Submission. The first article shall be representative of the manufacturing methods and processes to be used for lot production.

4.2.2 Inspections to be performed. The first article sample shall be subjected to all tests in the order specified in Table II.

4.2.3 First article rejection. If any M2 fails to comply with any of the first article requirements, the first article sample shall be rejected.

4.3 Conformance inspection. Unless otherwise specified, all M2s shall be subjected to conformance inspection in accordance with Table II.

4.3.1 Inspection lot formation. Unless otherwise specified a lot shall consist of not more than 500 M2s or the number produced in one month, whichever is smaller (see 6.10).

4.3.2 Lot identification. Each inspection lot shall be identified with a lot number. The reason for rejection of any inspection lot shall be recorded. When a rejected inspection lot is resubmitted after reconditioning, it shall be identified as such.

4.3.3 Conformance procedures. Conformance inspections and tests are specified in the requirement/verification cross-reference matrix, Table II. Unless otherwise specified, alternative conformance procedures, methods or equipment may be proposed to the Government.

4.3.4 Inspections to be performed. The conformance quantity shall be subjected to all tests in the order specified in Table II.

4.3.5 Lot rejection. If any sample fails to comply with the specified requirements the lot shall be rejected unless otherwise specified.

4.4 Sear engagement. Manually retract the firing pin of each machine gun by moving the cocking lever rearward, the firing pin shall engage the sear.

4.5 Firing pin protrusion. The M2 firing pin protrusion shall be tested using government approved Standard Measuring & Test Equipment (SMTE) with the firing pin in the fired position.

4.6 Headspace. Using the procedure provided in TM-9-1005-213-10, and the headspace gage, 12003958 or 5351211, adjust and verify the headspace.

4.7 Timing. Using the procedure provided in TM-9-1005-213-10 and timing gage, 12003959, or 5351213 and 5351214 adjust and verify the timing.

4.8 Firing pin release. Ten bolt assemblies taken at random from each lot of M2s shall be tested. The firing pin release test shall be performed using approved fixture

Drawing 6511053 or 7270150. A load shall be applied slowly and uniformly at the following points until the firing pin is released: First to the sear slide on one side; second, with the sear slide reversed to the other side; and third, directly to the sear from the top. The load shall be applied five times at each of the three points.

4.9 Firing pin indent. The firing pin indent, when taken in Government Standard copper compression cylinders Drawing 8440920 inserted into a holding fixture Drawing 5520627, shall be computed by measuring the distance from the original surface before indentation) of the cylinder to the bottom of the impression.

4.10 High pressure resistance. Each M2 shall be mounted in a firing fixture with safety cover conforming to Drawing 8440929 or approved equivalent and tested by firing one high pressure test cartridge. After proof firing, the high pressure cartridge case shall be visually examined for bulges, splits, rings, and other defects caused by defective barrels.

4.10.1 Magnetic particle inspection. The M2 shall be visually inspected for cracks, deformations, or other damage; and the bolt subassembly, barrel extension assembly, and barrel assembly shall be magnetic particle inspected in accordance with ASTM E 1444 and drawings 6147463, 5504082, and 7266131.

4.11 Functioning. Each M2 shall fire 50 rounds right side feed and 50 rounds left side feed using a test fixture Drawing 8440929 or approved equivalent. Each 50 round segment shall be fired 25 rounds spasmodic and 25 rounds continuous burst. Parts within the receiver group, cover group, and bolt group shall be disassembled from right side feed and reassembled for left side feed. If a M2 fails to fire 50 rounds on either side, it can be retested and accepted by completing two consecutive successful test.

4.11.1 Functioning alternate sample size. If 500 consecutive M2s meet the requirement, the number of M2s to be tested each month of production shall be reduced to two M2s or 5% of the total monthly production rounded up to the next higher whole number, whichever is greater (see 6.11).

4.12 Belt pull. Each M2 shall be tested for belt pull using the applicable pieces of the belt pull test fixture Drawing 8440929. Fire a 10 round burst right side feed and a ten round burst left side feed. The ten round metallic linked belts shall be loaded with ten rounds of live and two rounds of dummy ammunition. The live ammunition shall feed into the machine gun first. The turn-buckle part 15 of the fixture shall be adjusted to feed the rounds horizontally or with not over a 5 degree rise from the pulley to the feedway of the weapon. M2s that fail to fire the initial ten round burst right or left hand feed may be retested and accepted if the above procedure is successfully repeated. M2s may be mechanically gymnasticated for a period not longer than ten minutes prior to retesting.

4.12.1 Belt pull alternate sample size. If 500 consecutive M2s meet the requirement the number of M2s to be tested each month of production shall be reduced to two M2s or 5% of the total monthly production rounded up to the next higher whole number, whichever is greater (see 6.11).

4.13 Cyclic rate of fire. Each M2 shall be tested for cyclic rate of fire using test fixture Drawing 8440929 or approved equivalent. This test may be performed concurrently with the 25 round continuous fire burst described in paragraph 4.11. Record the cyclic rate of fire of each M2.

4.14 Targeting and accuracy.

4.14.1 Targeting and accuracy test M2 Caliber .50 Heavy Machine Gun, Flexible. The M2 Caliber .50 Heavy Machine Gun, Flexible shall be mounted in a firing fixture conforming to Drawing 8440929 or an approved equivalent. With the leaf of the rear sight in the folded-down position and the windage scale adjusted to zero, the sights shall be aligned at 6 o'clock on the sighting image of the targeting and accuracy diagram 7266955 made with target paper, at a range of 100 feet, fire a 10 round continuous burst.

4.14.2 Accuracy test M2 Caliber .50 Heavy Machine Gun, Turret Type (M48 Series). With the weapon bore sighted on the point of aim on the sighting image of a target meeting the requirements of Drawing 7266955 made with target paper, at a range of 100 feet, fire a 10 round continuous burst.

4.15 Endurance. One M2 from each lot shall be tested, after having been found to be satisfactory in all tests 4.4 - 4.14. The M2 shall be mounted in a firing fixture conforming to Drawing 8440929 or an approved equivalent. The test shall be started with left hand feed and the direction of feed shall be changed every 1000 rounds. The firing schedule shall be 50 rounds in interrupted bursts followed by a 50 round continuous burst. The barrel shall be air cooled to ambient temperature after each 100 rounds fired. The ammunition may be linked in 50 round belts or in 100 round belts with a dummy inert round separating each 50 rounds. During the interrupted burst firing, the bolt latch release (if applicable) shall be released at least twice to stop the firing and the trigger shall be released at least three times to stop firing. The average cyclic rate of fire for 25 rounds shall be measured and recorded during the first 50 round continuous burst of each 1000 rounds. The average muzzle velocity of 10 consecutive rounds shall be determined during the first 50 rounds fired, during, 4900-5100 rounds fired and during 9900-10,000 rounds fired. Ten rounds may be fired for warm-up before the velocity is measured. For maintenance schedule (see 6.5).

4.15.1 Endurance retest. If the M2 representing any lot fails to meet the specified requirements in the test, a retest shall be performed. For the retest, another M2 shall be selected from the retest lot under consideration. However, if the failure indicates defects in the M2, a retest shall be performed only if authorized by the procuring agency. If a retest is not performed or the M2 selected fails in the retest, the lot shall be rejected subject to conditioning and further testing.

4.16 Barrel Erosion. M2 Barrels failing to remain within the requirements for barrel erosion shall be cause for rejection of the lot of M2s. Each barrel used in the endurance test shall be evaluated concurrently for barrel erosion.

4.17 Interchangeability. Ten M2s shall be selected from each lot, be inspected for and shall comply with the requirements for firing pin protrusion, headspace, timing and firing pin release before and after interchange of parts using the inspection methods specified in 4.5, 4.6, 4.7, and 4.8. M2s shall be tested for interchangeability by disassembling and then reassembling parts using the parts and the prearranged system. Interchange of parts shall be accomplished by dividing the parts of each machine gun into 10 groups of non-mating parts as shown Tables III and IV (as applicable), and distributing the groups into 10 different trays until each tray contains parts for a complete M2. Groups of parts from the first M2 shall be taken in order and placed in trays 1 through 10 in that sequential order; groups of parts from the second M2 shall be taken in order and placed starting at tray 2 through tray 10 and finishing in tray 1; groups of parts from the third M2 shall be taken in order and placed starting in tray 3 through tray 10 and finishing in tray 2; and so on. Commercial parts such as screws, spring pins, etc., 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 M2s shall be reassembled using only those parts which are in the same tray. In addition, the M2s shall be tested for functioning requirements 3.10, and targeting and accuracy (flexible) or accuracy (turret type), 3.13 as applicable after interchange of parts using the test methods specified in 4.11 and 4.14. Test frequency may be reduced; by approval of the procuring agency, to not less than one test of ten M2s from each lot when a record of consistently satisfactory results has been established. Failure of the interchangeability test shall cause retest or rejection of the lot. An interchangeability retest may be allowed without reconditioning the lot. Failure in the retest shall cause rejection of the lot subject to reconditioning and further test as a reconditioned lot. A sample of 20 M2s from each retest or reconditioned lot shall be tested using the same procedure described above.

4.17.1 Repair parts. At least two parts from each M2 inspection lot of repair parts shall be subjected to interchangeability by disassembling two M2s, previously tested in 4.17, as necessary, and then reassembling them using the repair parts. Any modification of parts to fit is not allowed. The M2s shall operate and function properly. This test shall be performed independently of the M2 interchangeability test specified in 4.17 and at more frequent intervals using accepted M2s taken from current production. Failure of any part to meet the requirements shall be cause for rejection of the represented lot of parts subject to reconditioning and further test as a reconditioned lot. A sample of double the number parts used in the original test shall be tested from each reconditioned lot.

TABLE III. M2 caliber .50 heavy machine gun, flexible

Groups of non-mating parts flexible				
Group I			Group II	
Bar, Trigger	6257592		Bolt Subassembly	6147463
Barrel Assy	7266131		Rod Assy, Oil Buffer Piston	6008763
Extension Assy, Firing Pin	6008976		Pin, Locking	7312970
Extractor Assy	6008959		Spring, Cover Extractor	6009741
Pin, Cocking Lever	7312078		Pawl, Cover Detent	7313069
Spring, Cover Latch	6008931		Pin Assy, Breech Lock	6008784
Cam, Lock Breech	6147583		Pin Assy, Trigger Bar	7313106
Shoulder Bolt	5013681		Spring, Helical Corn	5013693
Slide, Retracting	6147893		Carrier Assy, Barrel	5504080
Spring, Switch	6008943		Nut, Slotted, Hexagon	5013686
Sight Assy, Rear	12003047			
Group III			Group IV	
Slide, Sear	5351220		Lever, Cocking	6009718
Switch; Bolt	5504062		Sear	5504067
Tube, Barrel Buffer	9340486		Stop, Accelerator	7161301
Pin Assy, Belt Feed Pawl	6008962		Spring, Helical Comp	6009832
Spring, Helical Comp	5013516		Plunger, Belt Feed Lever	5013515
Plunger, Adjusting Screw	5152839		Release, Bolt Latch	5504071
Leaf Assy, Rear Sight	7267936		Lever, Retracting Slide	6147085
Handle Assy, Retracting Slide	6313799		Stop, Front Cartridge	5013539
Spring, Helical Torsion	5013691 or 5013692			
Stop Assy, Adjustable Trigger Bar	7265211			
Rod, Bolt Latch	6008919			
Group V			Group VI	
Lock, Accelerator Stop	7161300		Accelerator, Oil Buffer	5508141
Spring, Helical Comp	5009524		Slide Assy, Belt Feed	6261110
Guide Assy, Buffer Spring	6008782		Pin, Shoulder, Headless	5013424
Spring, Helical Comp	5009351		Nut, Slotted Hexagon	5152939
Pawl Assy, Belt Holding	7313083		Screw, Externally Relieved Body	7312028
Sleeve, Buffer Tube	5504094		Retracting Slide Plunger	6008990
Rod Assy, Driving Spring	5564305		Washer, Thrust	5013697
Stop, Rear Cartridge	5013540		Stripper, Link	5013541
Spring, Helical Comp	5013525		Spring, Helical Comp	5013527
Trigger	13016069		Plate Assembly, Back	5564307
			with Tube Handle	5009369
			& Grip Handle	7265561
			& Screw, Handle Tube	5009394

TABLE III. M2 caliber .50 heavy machine gun, flexible - Continued

Groups of non-mating parts flexible - Continued				
GROUP VII			GROUP VIII	
Body Assy, Barrel Buffer	7266835		Pin Assy, Accelerator	6008790
Arm, Belt Feed Pawl	6008914		Disk, Buffer Fiber	5152835
Lock, Back. Plate Latch	11010453		Latch, Back Plate	6008949
Plate, Buffer	5152869		Pin, Locking	7312517
Screw, Adjusting	5152834		Spring, Locking, Elevating Mechs.	5140428
Spring, Helical Comp	5009352		Spring, Helical Comp	7160628
Switch, Extractor	6147461		Plunger, Bolt Latch	5013524
Pin, Straight, Headless	5013523		Spring, Helical Come	5009300
Stop Assy, Cartridge, Rear RH	5577409			
GROUP IX			GROUP X	
Lever, Belt Feed	5564278		Nut, Buffer Piston Head	9340485
Lock, Breech	7161302		Pawl Assy, Belt Feed	6008961
Pin, Straight Headed	5013581		Extension Assy, Barrel	5504082
Pin, Belt Holding Pawl	7162872		Nut, Slotted Hexagon	5013556
Spring, Back Plate Latch Lock	6243607		Pin, Straight, Headless	5009275
Spring, Helical Comp	7313068		Spring, Helical Comp	5009356
Screw, Machine, Fillister Head	7265596		Pin; Straight,.Headed	5009271
Latch, Bolt	5504060		Screw, Machine	5153191
with Nut, Plain Hex	5013623		Retracting Slide Bracket	11010440
Screw, Machine Hex Hd	5013622		Nut, Bolt Latch Rod	5013526
or Alt Latch Bolt	5504060		Receiver Select Fit Assy	6535480
Pin, Firing	7310080		with Shim (One)	7265580-91
			Barrel Support	5504091
			& Cover Subassembly	5504081

TABLE IV. M2 caliber .50 heavy machine gun, turret type (M48 series).

Groups of non-mating parts turret type				
Group IB			Group IIB	
Bar, Trigger	6257592		Bolt Subassembly	6147463
Barrel Assy	7266131		Rod Assy, Oil Buffer Piston	6008763
Extension Assy,Firing Pin	6008976		Pin, Locking	7312970
Extractor Assy	6008959		Spring, Cover Extractor	6009741
Pin,Cocking Lever	7312078		Pawl, Cover Detent	7313069
Spring, Cover Latch	6008931		Pin Assy, Breech Lock	6008784
Cam, Lock Breech	6147583		Pin Assy, Trigger Bar	7313106
Cover, Top Plate	6008939		Spring, Helical Comp	5013693
Cover, Trunnion Block	5013588		Safety, Trigger	6147511
Spring, Switch	6008943			
Group IIIB			Group IVB	
Slide, Sear	5351220		Lever, Cocking	6009718
Switch, Bolt	5504062		Sear	5504067
Tube, Barrel Buffer	9340486		Stop, Accelerator	7161301
Pin Assy, Belt Feed Pawl	6008962		Spring, Helical Comp	6009832
Spring, Helical Comp	5013516		Plunger, Belt Feed Lever	5013515
Plunger, Adjusting Screw	5152839		Spring, Trigger Safety	5152896
Spacer, Back Plate	5013583		Lever, Retracting Slide	6147085
Screw, Trigger Safety	5152897		Stop, Front Cartridge	5013539
Stop Assy, Adjustable Trigger Bar	7265212			
Group VB			Group VIB	
Lock, Accelerator Stop	7161300		Accelerator, Oil Buffer	5508141
Spring, Helical Comp	5009524		Slide Assy, Belt Feed	6261110
Guide Assy, Buffer Spring	6008782		(3) Pin, Locking	7312517
Trigger	13016069		Nut, Slotted Hexagon	5152939
Spring, Helical Comp	5009351		Screw, Externally, Relieved Body	7312028
Pawl Assy, Belt Holding	7313083		Stud Assy, Bolt	7268490
Sleeve, Buffer Tube	5504094		Plate, Back	6535475
Rod Assy, Driving Spring	5564305		Washer, Thrust	5013697
Stop, Rear Cartridge	5013540		Stripper, Link	5013541
Spring, Helical Comp	5013525			

TABLE IV. M2 caliber .50 heavy machine gun, turret type (M48 Series) - Continued

Groups of non-mating parts turret type - Continued				
Group VIIB			Group VIIIB	
Body Assy, Barrel Buffer	7266835		Pin Assy, Accelerator	6008790
Arm, Belt Feed Pawl	6008914		Piece Filler	5152750
(2) Pin, Headed	5152854		Disk, Buffer Fiber	5152835
Lock, Back Plate Latch	11010453		Latch, Back Plate	6008949
Plate, Buffer	5152869		Pin, Locking	7312517
Screw, Adjusting	5152834		Spring, Locking Elevating	5140428
Spring, Helical Comp	5009352		Spring, Helical Comp	7160628
Switch, Extractor	6147461		Plunger, Bolt Latch	5013524
Stop Assy, Cartridge, Rear RH	5577409		Spring, Helical Comp	5009300
Group IXB			Group XB	
Lever, Belt Feed	5564278		Nut, Buffer Piston Head	9340485
Lock, Breech	7161302		Pawl Assy, Belt Feed	6008961
Pin, Straight Headed	5013581		Extension Assy, Barrel	5504082
Pin, Belt Holding Pawl	7162872		Nut, Slotted Hexagon	5013556
Spring, Back Plate Latch Lock	6243607		Pin, Straight, Headless	5009275
Screw, Machine (3)	MS35266-68		Spring, Helical Comp	5009356
Spring, Helical Comp	7313068		Pin, Straight, Headed	5009271
Pin, Firing	7310080		Screw, Machine	5153191
			Charger, M10	7267982
			Receiver Select Fit Assy	6535480
			with Shim (One)	7265580-91
			Barrel Support	5504091
			& Cover Subassembly	5504081

4.18 Interplant interchangeability. M2s to be subjected to the interplant interchangeability test shall be given preliminary hand functioning to assure proper operation before parts are disassembled. In addition, the M2s shall be inspected for firing pin protrusion, headspace, timing, firing pin release, functioning and accuracy before and after interchange of parts using the inspection methods specified in 4.4, 4.5, 4.6, 4.7, 4.10 and 4.13 as appropriate respectively. M2s shall be interchanged in a manner similar to the, detailed plan specified in 4.16. When disassembling, every other M2 used shall be one produced by a different manufacturer. Before M2s are returned to the contractors, the original parts, shall be reassembled to their respective machine guns, and the machine guns shall be hand functioned, to assure proper operation.

4.19 Marking. The M2 and each component shall be visually examined to determine compliance with the drawings and MIL-STD-130.

4.19.1 UID. The M2 shall be visually and electronically examined to determine compliance with MIL-STD-130.

4.20 Hangfires and misfires. The M2 shall be subjected to a firing pin indent test per 4.9 for failures that are not attributed to ammunition. In the event the firing pin indent is not within the specified limits of 3.8, the M2 shall be rejected.

4.21 Workmanship. Workmanship shall be in accordance with the workmanship requirements of MIL-W-63150 and visual inspections.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order. When actual packaging of material is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service of Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

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

6.1 Intended use. To provide automatic weapon suppression fire for offensive and defensive purposes. This weapon can be used effectively against personnel; light armored vehicles; low, slow flying aircraft; and small boats. The caliber .50 M2 flexible version is used as a ground gun on the M3 tripod mount or various Naval mounts. The caliber .50 M2, M48 turret type, fixed type, and soft mount are installed on mounts of several different types of combat vehicles and ships. The caliber .50 M2 flexible and M48 turret type are both military unique weapons.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification, and of all reference documents cited in Section 2 and applicable documents.

b. List of drawings, specifications, and publications pertinent to the machine gun showing revisions and dates of revisions.

c. Block of serial numbers for quantity of machine guns or order.

d. Inspection lot size, if other than specified (see 4.3.1).

f. Quantity, shipping instructions and test procedures for machine guns required for interplant interchangeability test (see 4.17 and 4.18).

g. Bar code marking requirements.

6.3 Failure data. Unless otherwise specified herein, all tests should be conducted on a complete M2. If test requirements cited herein are not met, acceptance of the M2 should be deferred and the contractor should perform, as applicable, the following actions:

a. Conduct a failure analysis study performing a dimensional, physical and visual examination of the components which are suspected to be the cause of failure or malfunction.

b. Evaluate and correct the applicable production processes and procedures to prevent recurrence of the same defect(s) in future production.

c. Examine machine guns, partially assembled machine guns, and components (including components and subassemblies at in process or final assembly) to insure that material containing the same defect is purged from the inventory and not presented to the Government for acceptance.

d. Submit the results of the failure analysis and the corrective actions taken to the Government for review and approval prior to submitting a reconditioned lot or reconditioned subassembly for retest.

6.4 Malfunctions. Malfunctions in any test assignable to improper linking of ammunition, improper feeding of ammunition to the weapon, or defective ammunition, links or testing equipment, should not count against the machine gun being tested.

6.5 Endurance test maintenance. The M2 should be cleaned, oiled and inspected after each 1,000 rounds and at the close of firing each day. No component should be altered or replaced, except those components which are broken or worn to the extent that they are unserviceable.

6.6 Construction. The M2, components and assemblies should conform to the construction requirements specified previously and in MIL-W-13855.

6.7 Inspection of packaging. Unless otherwise specified, inspection to determine compliance with preservation, packing and marking requirements of the applicable packaging documentation, for the level designated in the contract, should be as specified in MIL-STD-2073-1.

6.8 Quality assurance terms and definitions. Quality assurance terms and definitions used herein are in accordance with ASQ A 8402.

6.9 First Article Submission. The first article should be subjected to conformance inspection specified in QAP’s and such other inspection as necessary to determine compliance with requirements.

6.10 Inspection lot formation. The term "inspection lot" is defined as a homogeneous collection of units of product from which a representative sample is drawn at random or which is inspected 100 percent to determine conformance with applicable requirements. Units of product selected for inspection should represent only the inspection lot from which they are drawn and should not be construed to represent any prior or subsequent quantities presented for inspection. Homogeneity should be considered to exist provided the inspection lot has been produced by one manufacturer, in one unchanged process, using the same materials and methods, in accordance with the same drawing revisions, same specifications and same specification revisions. All material submitted for inspection in accordance with this

specification should comply with the homogeneity criteria specified herein, regardless of the type of inspection procedure which is being applied to determine conformance with requirements.

6.11 Alternate sample size. The alternate sample size should apply to new contracts provided production has been uninterrupted.

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

6.13 Subject term (key word) listing.

CALIBER .50
M2
BROWNING

Preparing activity:
Army – AR
Project: 1005-2008-002

"NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at www.dodssp.daps.mil."