

MIL-G-1298A10 OCTOBER 1955SUPERSEDING
MIL-G-1298
22 JULY 1949**MILITARY SPECIFICATION****GUNS, MACHINE, (CALIBRE .50, BROWNING, M2,
HEAVY BARREL**

This specification has been approved by the Department of Defense and is mandatory for use by the Departments of the Army, the Navy, and the Air Force.

1. SCOPE

1.1 **Scope.** This specification covers automatic, recoil-operated, link-belt fed, air-cooled caliber .50 heavy barrel machineguns for fixed or flexible installation on ground mounts and combat vehicles.

1.2 *Classification.* Machineguns shall be of the following types, as specified (see 6.1):

Gun, Machine, Cal .50, Browning, M2,
Heavy Barrel, Flexible

Gun, Machine, Cal .50, Browning, M2,
Heavy Barrel, Fixed

Gun, Machine, Cal .50, Browning, M2,
Heavy Barrel, Turret Type

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitations for bids, form a part of this specification:

SPECIFICATIONS**MILITARY**

MIL-W-13855 Weapons, Small Arms,
General Specification
for.

STANDARDS**MILITARY**

MIL-STD-105 Sampling Procedures
and Tables for In-
spection by Attri-
butes.

DRAWINGS**ORDNANCE CORPS**

51-70-1A Gun, Machine, Cal .50,
Browning, M2, Heavy
Barrel, Flexible

51-71-1A Gun, Machine, Cal .50,
Browning, M2, Heavy
Barrel, Fixed

51-119-1A Gun, Machine, Cal .50,
Browning, M2, Heavy
Barrel, Turret Type

C-5520627 Compression Cylinder
Holding Fixture

A-5153086 Spring, Belt Feed Test

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

3. REQUIREMENTS**3.1 Design and manufacture.**

3.1.1 *General.* Components and assemblies shall conform to the materials, dimensions,

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tolerance limits, physical properties, degree of surface roughness, and final protective finishes specified on the drawings and shall be in accordance with Specification MIL-W-13855.

3.1.2 *Marking.* Unless otherwise specified, each machinegun, and each component thereof for which markings are prescribed, shall be clearly marked in accordance with the drawings and Specification MIL-W-13855. (See 6.1.)

3.1.3 *Barrel assembly.* The barrel bore shall be straight, and the lands shall be well defined. The bore shall be free of scratches, cracks, seams, and pits. Pockets, rings, and bulges not exceeding .0005 inch in depth or two inches in length shall be allowed in the bore, provided they do not occur within four inches of the muzzle end. Slight scratches or marks, occurring in a chamber which otherwise meets the surface roughness requirements, shall be permitted provided they do not cause marks on the case of a high pressure test cartridge fired in the chamber.

3.1.4 *Cocking lever retraction.* The cocking lever shall retract the firing pin assembly, when operated by hand, sufficiently to insure engagement of the firing pin extension hook to the sear hook.

3.1.5 *Firing pin.* The point of the firing pin shall be smooth and well rounded. There shall be no hand stoning of the firing pin point.

3.1.6 *Firing pin protrusion.* The firing pin protrusion shall be such as to insure proper cartridge ignition.

3.2 **Springs.** When specified on the drawings, springs shall be subjected to an endurance test.

3.3 **Carburization.** Carburized components shall have the depth of case and the hardness prescribed on the drawings.

3.4 **Firing pin release.** The firing pin assembly shall be released by a load not ex-

ceeding 35 pounds applied to the sear slide and by a load not exceeding 23 pounds applied to the sear.

3.5 **Striker indent.** The indent, taken in copper compression cylinders of 99.90 percent pure copper, soft annealed, shall be within the range of 0.017 to 0.023 inch.

3.6 **Interchangeability.** All components and assemblies on lists supplied by the procuring agency, which substantially contain those parts maintained for replacements, shall be interchangeable. (See 6.1.)

3.7 **Headspace.** The distance between the rear face of the barrel and the face of the bolt shall be within the limits specified in 4.3.7.

3.8 **Timing.** Machineguns shall meet the timing requirements specified in 4.3.8.

3.9 **High pressure resistance.** Guns and critical spare parts shall be capable of withstanding the disruptive pressures of a proof cartridge. After proof firing, components and assemblies shall be checked for cracked and weakened conditions and the recoil plate in the face of the bolt shall be checked for setback.

3.10 **Functioning.** Machineguns shall function smoothly and properly without malfunctions or breakages, and shall have sufficient power to withstand the belt pull test specified in 4.3.10.

3.11 **Cyclic rate of fire.** Machineguns shall maintain an average rate of fire of 450 to 600 shots per minute.

3.12 **Targeting.** Machineguns shall meet the targeting requirements specified in 4.3.12.

3.13 **Accuracy.** Machineguns shall meet the accuracy requirements specified in 4.3.13.

3.14 **Endurance.** Machineguns shall be capable of passing an endurance test of 10,000

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rounds without substitution of any components, and without malfunctions, in excess of the limits shown in table 1. The machine-gun shall complete the first 5,000 rounds of the test without replacement of any components.

3.15 **Barrel erosion.** Barrels shall be capable of firing the specified number of rounds without excessive deterioration, and shall meet the specified accuracy and velocity requirements. (See 6.1.)

3.16 **Workmanship.** Finished machineguns shall be free of defects which may affect serviceability, functioning, operation, safety, or appearance.

TABLE I. *Malfunctions, nonacceptable conditions,, and unserviceable components (see note)*

Malfunctions and nonacceptable conditions (attributable to gun)	Number permitted in the 10,000 round endurance test
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) (See 4.4.1).....	0
Misfire caused by light blow (See 4.4.1)	2
Pierced primer	1
Uncontrolled fire	0
All other malfunctions: If correctible by recharging	3
If not correctible by recharging....	1
	Number permitted in the second 5,000 rounds of the endurance test
Unserviceable components	
Accelerator	0
Back Plate	0

TABLE I. *Malfunctions, nonacceptable conditions, and unserviceable components (see note) - Continued*

Unserviceable components	Number permitted in the second 5,000 rounds of the endurance test
Barrell 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
Rivets, loose (not more than one loose rivet on component having 4 or less rivets)	2
Sear	1
Set back of recoil plate in face of bolt (excessive)	0
Side, top, or bottom plates	0
All other unserviceable components...	2

Note. When malfunctions (within the allowances of table I) are traceable to particular components, it is permissible to replace such component 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.

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling.

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4.1.1 *Lot.* Unless otherwise specified, a lot shall consist of not more than 101 machineguns for the initial lot and not more than 501 machineguns for each subsequent lot.

4.1.2 *Inspection sample.* Where practicable, inspection sample sizes shall be in accordance with Standard MIL-STD-105. However, the inspector may subject all or part of any lot of components or assemblies to such inspection as he deems necessary to determine compliance with this specification.

4.1.3 *Test samples.* Unless otherwise specified, the number of test samples shall be as specified for each test.

4.2 **Inspection.** Machineguns shall be visually inspected for completeness of manufacture, assembly, finish, and workmanship. The chamber and bore shall be examined for rust, pits, powder fouling, burrs, and other defects. Each machinegun shall be operated by hand to ascertain that the final adjustments have been made to assure proper operation. Components shall be inspected as necessary to assure compliance with drawing requirements. Before final acceptance of any lot, the inspector shall make whatever final visual inspection deemed necessary to assure that the machineguns have undergone all inspection and tests prescribed therefor, and that the machineguns have been thoroughly cleaned and prepared for shipment as required by section 5.

4.3 Tests.

4.3.1 General.

4.3.1.1 *Ammunition.* Ammunition used in all firing tests, except the proof firing test, shall be caliber .50 Government, standard service ammunition specified by procurement documents. (See 6.1.) Proof firing ammunition shall be as specified in 4.3.9.

4.3.1.2 *Mounts.* Unless otherwise specified, all firing tests except the targeting and accuracy tests shall be accomplished from

Machine Gun Tripod Mount, Cal. 50, M3. The mount shall & suitably braced during firing.

4.3.1.3 Concurrent tests.

4.3.1.3.1 *Functioning and cyclic rate of fire test.* The functioning test and the cyclic rate of fire test may be fired concurrently.

4.3.1.3.2 *Targeting and accuracy test.* The targeting test and the accuracy test may be fired concurrently at a range of 100 feet.

4.3.2 *Spring test.* Springs designated by the drawings shall be tested as specified on the applicable drawings. The contractor shall provide suitable equipment for making these tests, and shall record the conditions and results of each test.

4.3.3 *Carburization test.* A representative sample consisting of not less than 3 items of each lot of each carburized and hardened component shall be fractured and the depth of case determined by microscopic examination. Test samples may be components rejected for other reasons.

4.3.4 *Firing pin release test.* Ten bolt assemblies, taken at random by the inspector from each lot of machineguns, shall be subjected to the firing pin release test. Using an approved fixture with a suitable indicating dial, 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; then, with the sear slide reversed, to the sear slide on the other side; and next, directly to the sear from the top. The load shall be applied 5 times at each of the three points.

4.3.5 *Striker indent test.* The striker indent shall be taken on at least 10 machineguns of each lot. The indent, taken in copper compression cylinders inserted in a holding fixture conforming to Drawing C5520627, is computed by measuring the distance from

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the original surface (before indentation) of the cylinder to the bottom of the impression.

4.3.6 *Interchangeability test.*

4.3.6.1 *Machineguns.* Ten machineguns taken at random by the inspector from each lot shall be tested for interchangeability of components and assemblies. Tests may be made less frequently when consistent satisfactory results have been proven and when authorized by the procuring agency.

4.3.6.2 *Procedure.* Components and assemblies shown in the list to be furnished by the procuring agency shall be disassembled from the weapons. Components of each kind shall be placed together and mixed. The machineguns shall be reassembled without selecting, fitting, or altering any component in any way except that hand fitting will be allowed on not more than 20 percent of the machineguns, provided that, as a result, no component or assembly is rendered unsuitable for assembly in other machineguns. The assembled machineguns shall operate and function properly.

4.3.6.3 *Spare parts.* At least 20 percent of the machineguns previously tested for interchangeability, disassembled as necessary, shall be reassembled using components designated for use as spare parts. There shall be no hand fitting, and the machineguns shall operate and function properly.

4.3.6.4 Guns and spare parts concurrently made by two or more manufacturers shall be subjected to an interplant interchangeability test. Samples required by procurement documents (see 6.1), representing guns and parts from concurrent manufacturers, shall be placed together, mixed, and tested as prescribed in 4.3.6.2 and 4.8.6.3.

4.3.6.5 All weapons assembled from interchanged parts shall be subjected to the function and accuracy firing tests, and when applicable, to the targeting firing test. The contractor shall be responsible for the con-

ditioning of weapons and parts subjected to the interchangeability test.

4.3.7 *Headspace test.* With the bolt retracted until the barrel extension and trunnion block are separated approximately 1/16 inch, each machinegun shall have the distance between the rear face of the barrel and the face of the bolt set within the limits of the headspace gage (0.202 inch "Go" and 0.206 inch "No Go.")

4.3.8 *Timing test.* The timing test shall be performed on each machinegun after setting the headspace. Releasing of the firing pin assembly shall be accomplished through the medium of the trigger bar. Machineguns not equipped with trigger bars shall be tested for timing by using a side plate solenoid set for a protrusion of 0.290 to 0.320. In addition, not less than 10 percent of each lot of heavy barrel fixed and turret type machineguns shall be checked for proper timing by means of a side plate trigger set for a minimum protrusion of 0.285 inch. Protrusion shall be measured from the mounting face to the top of the plunger.

4.3.8.1 With the 0.116 inch "No Fire" gage inserted between the front face of the barrel extension and the trunnion block, an attempt shall be made to release the firing pin assembly. The firing pin assembly shall not release on the first impulse of the firing mechanism. Remove the "No Fire" gage, recharge weapon, and insert the 0.020 inch "Fire" gage. The firing pin assembly shall be released on the first impulse of the firing mechanism.

4.3.9 *High pressure test.*

4.3.9.1 Each assembled machinegun, and those spare parts for which proof firing is prescribed on the applicable drawings, shall be subjected to the firing of one Government standard high pressure proof cartridge under supervision of the inspector.

4.3.9.2 Unless otherwise specified, suitable

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fixtures necessary for proof firing shall be provided by the contractor.

4.3.9.3 Immediately after proof firing acceptance, proof marks shall be applied as indicated on the applicable drawings.

4.3.10 *Function firing test.* Machineguns shall be tested for functioning as follows: each machinegun shall be fired 50 rounds right side feed and 50 rounds left side feed and, in addition, each machinegun shall be fired a 10-round burst right side feed and a 10-round burst left side feed for belt pull test. The 10-round metallic linked belts shall be loaded with 10-rounds of live and 2 rounds of dummy ammunition. The live ammunition shall feed into the machinegun first. Connected to the rear of the link belt shall be a flexible connection extending over a free running pulley and connected to a pendent helically wound compensating spring (Drawing A5153086) to which is attached a 20-pound w-eight. The pulley shall be so located that the metallic linked belt will feed into the gun horizontally or with not over 5° rise from the pulley to the feedway.

4.3.10.1 When consistent satisfactory production has been proven the 50 round left side feed test may be eliminated when authorized by the procuring agency.

4.3.11 *Cyclic rate of fire test.* Each machinegun shall be fired 50 rounds continuous fire and the cyclic rate of fire recorded.

4.3.12 *Targeting firing test.* Using an approved fixed rest fastened to a suitable base, not less than 5 guns from each lot of heavy barrel flexible and fixed machineguns shall be targeted in accordance with the targeting diagram shown on the applicable drawing.

4.3.13 *Accuracy firing test.* Using an approved fixed rest fastened to a suitable base, not less than 5 machineguns from each lot shall be fired for accuracy requirements in accordance with the applicable drawing.

4.3.14 *Endurance test.*

4.3.14.1 One machinegun selected by the inspector from each lot, found satisfactory in other tests, shall be considered as a representative weapon and shall be subjected to a 10,000 round endurance test.

4.3.14.2 The firing schedule throughout the test shall be 50 rounds spasmodic fire, followed by a 50 round continuous burst. The barrel shall be cooled by injection of compressed air into the bore after each 100 rounds. The average cyclic rate of fire shall be taken and recorded on the last burst of each 500 rounds. The average cyclic rate of fire for the endurance test shall be as specified in 3.11. The direction of feed shall be changed after every 500 rounds of firing. The machinegun shall be cleaned, oiled, and inspected after each 1,000 rounds and at the close of a day's firing, but no component shall be altered or replaced, except that components broken or worn to the extent that they are unserviceable shall be replaced. At least two barrels shall be used in the endurance test but not more than 5,000 rounds shall be fired in any barrel.

4.3.14.3 Unless otherwise specified, endurance tested machineguns shall be scrapped.

4.3.15 *Barrel erosion test.*

4.3.15.1 *Sample.* From each lot of machineguns and spare barrels a sample of barrels shall be selected by the inspector for erosion testing. Unless otherwise specified, barrels selected for erosion testing shall be forwarded to Springfield Armory.

4.3.15.2 *Procedure.* Each barrel selected for erosion testing shall be fired as specified in procurement documents, or, in the absence of specific requirements therein, as specified by Springfield Armory.

4.4 **Reinspection and retests.**

4.4.1 *Hangfires and misfires.* If hangfires

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and misfires occur during any of the tests, the machinegun shall be subjected to the firing pin indent test; and in the event that the firing pin blow is not within the specified limits, the machinegun shall not be accepted until properly corrected.

4.4.2 *Malfunctions not attributable to weapon.* Malfunctions in any test assignable to improper linking of ammunition, improper feeding of ammunition up to weapon, or defective ammunition, links or test equipment, shall not count against the machinegun being tested.

4.4.3 *Rejections.* Components or assemblies rejected individually or by lots because of inspection or any test except the interchangeability and endurance tests may be conditioned and resubmitted for inspection or test in which failure occurred and such other inspection and tests deemed necessary by the Government inspector.

4.4.4 *Interchangeability retest.* If the machinegun representing any lot fail to meet the specified requirements in the interchangeability test, the lot shall be subject to retest of double the number of machineguns as were in the original test.

4.4.5 *Endurance retest.* If the machinegun representing any lot fails to meet the specified requirements in the endurance test, a retest shall be made, unless in the opinion of the inspector the failure indicates serious defects in the machineguns, in which case retest shall be made only if authorized by the procuring agency. In case a retest is made, the inspector shall select another machinegun for the purpose from the lot under consideration. If a retest is not made or the machinegun selected therefor fails in the retest, the lot shall be rejected subject to conditioning and further test.

5. PREPARATION FOR DELIVERY

5.1 Machineguns and spare parts shall be prepared for shipment in accordance with

packaging instructions cited on Drawings 51-70-1A, 51-71-1A, or 51-119-1A, as applicable.

6. NOTES

6.1 **Ordering data.** Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Type of machinegun desired. (See 1.2.)
- (c) Marking, if different. (See 3.1.2.)
- (d) List of interchangeable components and assemblies. (See 3.6.)
- (e) Requirements for erosion testing of barrels. (See 3.15.)
- (f) Type of ammunition to be used in test firing. (See 4.3.1.1.)
- (g) Number of preproduction and monthly samples of guns and parts required. (See 4.3.6.4.)
- (h) Place of inspection. (See 6.2.1.)
- (i) Contractor's responsibility in connection with tests. (See 6.2.2.)

6.2 Suggested contractual features.

6.2.1 *Place of inspection.* unless otherwise deemed necessary, place of inspection should be at the plant of the prime contractor.

6.2.2 *Contractor's responsibility.* Unless otherwise specified, all tests prescribed herein should be performed by the contractor under supervision of a Government inspector.

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