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~~RESEEDING~~
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MILITARY SPECIFICATION

RIFLES, CALIBER .22, M12 AND M13

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 manually operated, bolt-action, rimfired rifles of commercial design, chambered for caliber .22 long rifle cartridges, used for marksman training and match-shooting purposes.

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

- Rifle, Caliber .22, M12 - Match-grade rifle.
- Rifle, Caliber .22, M13 - Marksman training rifle.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

- Federal
TT-L-215 - Linseed Oil, Raw, (for Use in Organic Coatings).

FSC 1005

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Military

- MIL-C-556 - Cartridge, Ball, Caliber .22, Long Rifle (Commercial).
- MIL-F-13088 - Finish, Protective, Tung (Chinawood) Oil Base (for Wooden Components of Small Arms).
- MIL-W-13855 - Weapons, Small Arms, General Specification for.
- MIL-R-20690 - Rifles, Cal .22 (Commercial) Packaging of.

STANDARDS

Military

- MIL-STD-10 - Surface Roughness, Waviness, and Lay.
- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-109 - Inspection Terms and Definitions.

DRAWINGS

Ordnance Corps

- A7268278 - Rifle, Cal .22, M12.
- A7263282 - Rifle, Cal .22, M13.

(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 Manufacturing models. Sample rifles shall be forwarded free on board (f.o.b.) contractor's plant to the designated testing agency. (See 4.2 and 6.1.)

3.2 Materials, design, and construction. Materials, design, and construction shall conform to the applicable drawings for part numbers listed on Drawings A7268278 and A7263282, to this specification, and to the applicable requirements of Specification MIL-W-13855. The action and parts in rolling or sliding contact shall be of hardened steel. Staked or dovetailed members shall have sufficient temper to retain their original fit after extended use.

3.2.1 General characteristics. General characteristics shall be in accordance with table I.

3.2.2 Barrel. The barrel shall be so fabricated that, upon assembly to the receiver, the requirements for accuracy and targeting hereinafter prescribed shall be met. The bore and chamber shall be free of scratches, cracks, seams, and pits.

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Table I. General Characteristics

	M12 rifle	M13 rifle
Weight (unloaded and without accessories)	9 to 13 pounds	8 to 10 pounds
Length of barrel	27 to 29 inches	24 to 29 inches
Over-all length	45 to 48 inches	43 to 48 inches
Sights		
Rear	Redfield Olympic with master sighting disk and inserts or Sure-X selective aperture sighting disk, or approved equals	Redfield 75 or approved equal
Front	Redfield Olympic globe target front sight, or approved equal, with 10 interchangeable inserts	Redfield 68 globe target front sight, or approved equal, with standard set of inserts
Feed	Single shot or magazine and single-shot adapter	Magazine
Marksmen-type stock	Yes	Not required
Trigger pull	3 to 4 pounds	4 to 6 pounds
Adjustable trigger pull	Yes	Not required
Telescopic sight blocks mounted on rifle	Yes	Not required

3.2.3 Bolt assembly. The bolt shall be free of cracks, burrs, tool marks, scratches, and mutilations. It shall move freely through its full range of travel as evidenced by manual examination.

3.2.4 Trigger. The trigger shall return to its normal forward position immediately upon release after partial or complete trigger pull.

3.2.5 Sights. The front sight shall have no looseness as evidenced by manual examination. At least one of the interchangeable inserts furnished with each front sight shall be of the post type. The rear sight shall be adjustable by hand. After adjustment, the sight shall maintain its setting during normal firing conditions.

3.2.6 Safety device. A safety device shall be provided which, when set at the safe position, shall prevent firing of the rifle. It shall be movable manually between the safe position and the fire position and shall remain in the position set until reset manually.

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3.2.7 Finishes.

3.2.7.1 Machine finish. Machine finishes shall be in accordance with commercial practice for the type of rifle furnished. Approved manufacturing models (see 3.1) shall be used as standards for machine finishes for rifles to be supplied under contract. Comparison of machine finishes shall be made in accordance with Standard MIL-STD-10.

3.2.7.2 Final protective finish. The exterior metallic surfaces shall be polished and blued, or finished in such other manner as approved by the procuring agency. The finish shall be applied so as not to draw the temper or alter the form or dimensions of components sufficiently to affect functioning. The finish shall be uniform in texture and appearance. Approved manufacturing models (see 3.1) shall be used as standards for final protective finishes for rifles to be supplied under contract.

3.2.8 Stock.

3.2.8.1 Material. Stocks shall be of black walnut wood. Birch or other suitable wood may be substituted upon approval of the procuring agency. The grain shall be straight and in the longitudinal direction of the stock. Slight deviations in grain, small knots in the butt of the stock, slight sap streaks, small checks, and small cracks shall not be cause for rejection provided they do not cause weakness, particularly in a thin section. Small checks, cracks, and knotholes shall be filled with plastic wood or other suitable material approved by the procuring agency.

3.2.8.2 Color. Stocks shall have a uniform nonbleeding color matching the color of black walnut heartwood. (Birch, similar light colored woods, and black walnut sapwood may be stained prior to the protective finish treatment.)

3.2.8.3 Protective finish compound. Stocks shall be treated with tung (chinawood) oil base protective finish compound conforming to Specification MIL-F-13088, raw linseed oil conforming to Specification TT-L-215, or other suitable finish approved by the procuring agency.

3.2.9 Swivels. Rifles shall be equipped with swivels adaptable to slings 1 1/4 inches wide. The front swivel shall be movable permitting adjustment of handhold with relation to the sling. After adjustment, the front swivel shall maintain its position during normal usage.

3.2.10 Magazine. When magazine-fed rifles are furnished, each magazine shall be free of dents, cracks, burrs, scratches, sharp edges, spread or bent lips, and other defects which may affect functioning of either the magazine or the rifle. It shall fit into its recess, be held firmly in place, and release freely as evidenced by manual examination. Each magazine shall be of the "box type" and have a capacity of from 5 to 7 cartridges.

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3.2.11 Trigger pull. The trigger pull shall be free of creep and shall be within the range specified in table I when tested as specified in 4.4.1. Creep shall be interpreted to mean any perceptible rough movement between the time positive resistance is met and the firing mechanism is released. When rifles are furnished with adjustable trigger pull, there shall be additional adjustment remaining in the adjusting device when the trigger pull has been set to meet the specified trigger pull requirements.

3.2.12 Functioning. Each rifle shall operate without malfunctions, unserviceable parts, punctured or ruptured cartridge cases, and loose stock or screw when tested as specified in 4.4.2. Malfunctions attributable to defective ammunition shall not be counted against the rifle being tested. Drawing the bolt entirely to the rear shall extract the cartridge or cartridge case from the chamber and eject it freely and completely out of the receiver. Returning the bolt forward to the closed position shall push the top cartridge from the magazine, or a cartridge from the loading platform, into the chamber. Thrusting the bolt forward sharply by hand in chambering a cartridge shall not fire the cartridge.

3.2.13 High-pressure resistance. Each rifle shall withstand the high-pressure resistance test (proof firing) specified in 4.4.3. Parts shall be free of cracks, seams, and other injurious defects after proof firing, as evidenced by visual examination, and the headspace shall be 0.002 inch minimum to 0.046 inch maximum.

3.2.14 Sighting. Sights shall be capable of being zeroed to the rifle within the limits of the adjustable windage and elevation index plates and still have additional adjustment remaining on the index plates in both directions.

3.2.14.1 M12 rifle. A series of 5 shots fired from the rifle at a range of 100 yards shall be within or cut the edge of a bull's-eye 4 inches in diameter, or a series of 5 shots fired at a range of 50 yards shall be within or cut the edge of a bull's-eye 2 inches in diameter when tested as specified in 4.4.4.

3.2.14.2 M13 rifle. A series of 5 shots fired from the rifle at a range of 50 yards shall be within or cut the edge of a bull's-eye 4 inches in diameter when tested as specified in 4.4.4.

3.2.15 Accuracy.

3.2.15.1 M12 rifle. The average extreme spread, measured center to center, of 3 consecutive groups of 10 shots each fired from the rifle at a range of 100 yards shall not exceed 1 1/2 inches when tested as specified in 4.4.5.

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3.2.15.2 M13 rifle. A series of 5 shots fired from the rifle at a range of 50 yards shall group within or cut the edge of a circle 1 inch in diameter when tested as specified in 4.4.5.

3.2.16 Reliability. Rifles shall be capable of withstanding a reliability test of 2,000 rounds without malfunctions or unserviceable parts when tested as specified in 4.4.6. At the completion of the test, rifles shall meet the targeting, accuracy, and trigger pull requirements of this specification (see 3.2.14, 3.2.15, and 3.2.11).

3.3 Marking. Unless otherwise specified, rifles shall be marked in accordance with the marking provisions of Specification MIL-W-13855. (See 6.1.) The letters "U.S." and serial number shall be placed on the receiver.

3.4 Workmanship. Workmanship shall be in accordance with the requirements of Specification MIL-W-13855 and the approved manufacturing models.

4. QUALITY ASSURANCE PROVISIONS

4.1 General quality assurance provisions. The quality assurance provisions contained herein, together with those contained in applicable specifications, cover the Government prescribed inspection for assurance that the established requirements have been met. The supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own or any other inspection facilities and services acceptable to the Government. Inspection records of the examination and tests shall be kept complete and available to the Government as specified in the contract or order. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Contractor inspection system. The contractor shall provide and maintain an effective inspection system acceptable to the Government covering the supplies under the contract. A current written description of the system shall be submitted to the contracting officer prior to initiation of production. The written description will be considered acceptable when as a minimum, it provides the quality assurance required by this specification and other applicable documents referenced herein. The contractor will not be restricted to the inspection station or to the method of inspection listed provided that an equivalent control is included in the approved quality assurance procedure. In cases of dispute as to whether or not certain procedures of the system provide equal assurance, the comparable procedure specified herein shall be used. The contractor shall notify the Government of and obtain approval for any change to the written procedure that might affect the degree of assurance required by this specification or other applicable documents referenced herein.

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4.1.2 Government verification. All quality assurance operations performed by the contractor will be subject to Government verification at unscheduled intervals. Verification will consist of (a) surveillance of the operations to determine that the practices, methods, and procedures of the written inspection plan are being properly applied, and (b) Government product inspection to measure quality of product offered for acceptance. Deviation from the prescribed or agreed upon procedures, or instances of poor practice which might have an effect upon the quality of the product will be immediately called to the attention of the contractor. Failure of the contractor to promptly correct deficiencies discovered shall be cause for suspension of acceptance until correction has been made or until conformance of product to prescribed criteria has been demonstrated. To avoid interference with operations, the contractor shall designate a responsible official or officials to whom the inspector will report such instances. Where there is satisfactory evidence of high quality of the product which is a definite result of the contractor's quality control system, the amount of Government examination may be adjusted to a minimum.

4.1.3 Inspection terms and definitions. Inspection terms and definitions used herein are in accordance with Standard MIL-STD-109. Whenever the term "inspector" is used herein, it denotes Government inspector.

4.2 Preliminary inspection. Unless otherwise specified, three rifles of each type being procured shall be submitted to the designated testing agency for Government approval as inspection standards in accordance with Specification MIL-W-13855. (See 3.1, 3.2.7, 3.4, 4.3.2, and 6.1.) Rifles shall be representative of manufacturer's normal production. Acceptance of the initial lot shall be deferred pending approval of the manufacturing models.

4.3 Inspection provisions.

4.3.1 Inspection lot. The formation, size, and presentation of inspection lots shall be in accordance with Standard MIL-STD-105. The inspector shall insure that inspection lots are as large as practicable, in consideration of quality history, manufacturing conditions, and contractor's delivery schedule, and within the limitations of Specification MIL-W-13855.

4.3.2 Examination. Examination shall be in accordance with the applicable provisions of Specification MIL-W-13855. Each rifle shall be examined by the contractor for completeness of manufacture, general characteristics, assembly, finishes, marking, and workmanship, and the barrel, bolt, trigger, sights, safety, stock, swivels, and magazine shall be examined for compliance with the requirements listed in 3.2.1 through 3.2.10. Approved manufacturing models shall be utilized as standards.

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4.3.3 Testing.

4.3.3.1 Trigger pull, functioning, high-pressure resistance, and targeting and accuracy firing testing. The contractor shall test each rifle for trigger pull, functioning, high-pressure resistance, and targeting and accuracy firing using the test methods specified in 4.4.1, 4.4.2, 4.4.3, 4.4.4, and 4.4.5 respectively. The tests for functioning, targeting, and accuracy may be performed concurrently. Failure of a rifle to meet any of the tests shall cause rejection of the individual rifle. If rejections on any test exceed 10 percent of the lot, the entire lot shall be rejected.

4.3.3.2 Reliability testing. One rifle selected by the inspector from each lot shall be tested by the contractor for reliability using the test methods specified in 4.4.6. Failure of the rifle to meet the requirements shall cause retest or rejection of the represented lot. A retest of two other rifles from the same lot shall be made, unless in the opinion of the inspector, the failure indicates serious defects in the item, in which case retest shall be made only if authorized by the procuring agency. Failure of any rifle 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 rifles as a reconditioned lot, the cause of failure shall be determined and contractor correction shall be effected on all rifles in the lot. Sample size and test methods for reconditioned lots shall be the same as for retest.

4.3.4 Inspection equipment.

4.3.4.1 Acceptance inspection equipment shall be in accordance with Government drawings or, in the absence of drawings, shall be approved by the procuring agency. The inspector will determine that the contractor has available and utilizes correctly, gages, measuring, and test equipment of required accuracy and precision and that the instruments are of proper type and range to make measurements of the required accuracy. The contractor shall have available a set of master gages, standards, and appropriate instruments for regularly scheduled calibration of his inspection equipment. Records of such regularly scheduled calibration shall be maintained by the contractor and made available for review by the Government. The calibration of gages, standards, and instruments will be periodically checked by authorized Government personnel.

4.3.4.2 Unless otherwise specified, Match grade cartridges conforming to Specification M1-C-566 shall be used in all firing tests.

4.4 Test methods.

4.4.1 Trigger pull test. Rifles shall be tested for trigger pull requirement (see 3.2.11) using an approved measuring device. The rifle

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shall be cocked and the safety shall be in the "fire" position. The load shall be gradually applied to the center of the trigger and exerted in a line parallel to the axis of the bore. The trigger pull shall also be tested for creep by applying pressure manually to the trigger at a uniform rate of increase over a period of not less than 3 seconds.

4.4.2 Functioning test. Rifles shall be tested for functioning requirement (see 3.2.12) by hand functioning and function firing. Prior to firing, five cartridges shall be chambered, extracted, and ejected by hand operation of the bolt. In magazine-fed rifles, cartridges shall be fed from the magazine to the chamber. Chambering of the cartridge shall be accomplished by thrusting the bolt forward sharply. The test shall be performed without pulling the trigger. During firing, the safety device shall be checked (see 3.2.6) by attempting to fire the rifle with the safety device set at the safe position.

4.4.2.1 M12 rifle. Each rifle shall be function fired by firing at least 10 rounds. Magazine-fed rifles shall be fired at least 5 rounds from the magazine and at least 5 rounds from the single-shot adapter.

4.4.2.2 M13 rifle. Each rifle shall be function fired by firing at least five rounds from the magazine.

4.4.3 High-pressure resistance test. Rifles shall be tested for high-pressure resistance requirement (see 3.2.13) by firing one round of high-pressure test ammunition, loaded to develop a mean breech pressure of 31,000 to 33,000 pounds per square inch, in each test rifle. After proof firing, rifles shall be visually examined for cracks, deformations, and other evidence of damage, and cartridge cases shall be visually examined for bulges, splits, rings, and other defects caused by defective barrels. Headspace shall be checked using an approved measuring device.

4.4.4 Targeting test. Rifles shall be fired for targeting with the sights set at zero windage and elevation and aligned at 6 o'clock on the bull's-eye using post-type front sight inserts. The targets shall be checked to determine whether the targeting requirements have been met, and the rifles shall be checked to determine whether additional index plate adjustment is available (see 3.2.14).

4.4.5 Accuracy firing test. Rifles shall be tested for accuracy requirement (see 3.2.15) using a muzzle and elbow rest or a machine rest simulating a muzzle and elbow rest.

4.4.6 Reliability test.

4.4.6.1 Rifles shall be tested for reliability requirement (see 3.2.16) by firing 2,000 rounds using Standard velocity grade cartridges conforming to Specification MIL-C-565. Cleaning and lubricating shall be performed after each 500 rounds and at the end of a day's firing. Upon completion of the reliability test, rifles shall be subjected to the trigger pull test and the targeting and accuracy firing tests specified in 4.4.1, 4.4.4, and 4.4.5 respectively.

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4.4.6.2 Reliability tested rifles shall be disposed of as specified in procurement documents (see 6.1).

5. PREPARATION FOR DELIVERY

5.1 Rifles shall be prepared for shipment in accordance with Specification MIL-R-20690.

6. NOTES

6.1 Ordering data. Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Type required (see 1.2).
- (c) Marking of rifles if other than specified (see 3.3).
- (d) Shipping instructions for manufacturing models (see 3.1).
- (e) Disposition of reliability tested rifles (see 4.4.6.2).
- (f) Selection of applicable levels of preservation and packaging, and packing (see section 5).
- (g) Place of final inspection and acceptance (see "Notes" in Specification MIL-W-13855).
- (h) Responsibilities for furnishing acceptance inspection equipment.
- (i) Responsibilities for furnishing ammunition.
- (j) Government property to be furnished the contractor and responsibilities therefor.
- (k) Disposition of Government furnished property.
- (l) Work programing for examination and testing of manufacturing models should be effected with the testing agency at the earliest practicable date.

Notice. When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

Custodians:

Army - Ordnance Corps
Navy - Bureau of Naval Weapons
Air Force

Preparing activity:

Army - Ordnance Corps

Other interest:

Navy - MC