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21 March 1988
SUPERSEDING
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29 October 1975

MILITARY SPECIFICATION

RIFLE, CALIBER .22 LR, COMMERCIAL, FOR MATCH AND TRAINING

This Specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers one type of manually operated, bolt-action, heavy barrel, rimfired rifle of commercial design, chambered for caliber .22 long rifle cartridges, used for marksmanship matches and training.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues 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.

SPECIFICATION

FEDERAL

TT-L-190	- Linseed Oil, Boiled (for use in Organic Coatings)
O-I-503	- Insect Repellent, Clothing and Personal Application
VV-F-800	- Fuel Oil, Diesel
VV-G-1690	- Gasoline, Automative, Leaded or Unleaded
VV-L-800	- Lubricating Oil, General Purpose, Preservative, (Water-displacing, Low Temperature)
PPP-B-601	- Boxes, Wood, Cleated-Plywood
PPP-B-636	- Boxes, Shipping Fiberboard

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, U.S. Army Armament, Munitions and Chemical Command, Attn. AMSMC-QA, Picatinny Arsenal, New Jersey 07806-5000 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A
FSC 1005
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

PPP-B-640 - Boxes, Fiberboard, Corrugated, Triple Wall
PPP-C-843 - Cushioning Material, Cellulosic
PPP-F-320 - Fiberboard; Corrugated & Solid Sheet Stack, (Container Grade), and Cut Shapes
PPP-P-1660 - Pallet, Expendable
PPP-T-60 - Tape, Packaging, Waterproof

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MIL-P-116 - Preservation-Packaging, Methods of
MIL-I-12123 - Insect Repellent, Clothing Application, Formula M-1960
MIL-W-13855 - Weapon, Small Arms and Aircraft Armament Subsystems, General Specification for
MIL-I-14107 - Lubricating Oil, Weapons, Low Temperature
MIL-B-22019 - Barrier Material, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated
MIL-L-46000 - Lubricant, Semi-fluid (Automatic Weapon)
MIL-L-46150 - Lubricant, Weapons, Semi-fluid (High Load-carrying Capacity)
MIL-I-51022 - Insect Repellent, Clothing Application (Benzyl Benzoate)
MIL-W-63150 - Weapons and Support Materiel Standard Quality Assurance Provisions for
MIL-I-63460 - Lubricant, Cleaner and Preservative for Weapons and Weapons System (Metric)

STANDARDS

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-109 - Quality Assurance Terms and Definitions
MIL-STD-129 - Marking for Shipment and Storage
MIL-STD-130 - Identification Marking of US Military Property

2.1.2 Other government documents, drawings and publications. The following Government drawings form a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation.

DRAWINGS

US ARMY ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER (ARDEC)

B7266299 - Tube, Bore, VCI Treated

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

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless

otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS shall be the issue of the nongovernment documents which is current on the date of the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM-D3951
Standard Practice for Commercial Packing

(Application for copies of ASTM publications should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.)

Sporting Arms and Ammunition Manufacturers Institute

SAAMI Technical Committee Manual
Rimfire .22 Long Rifle

(Applications for copies should be addressed to the Sporting Arms and Ammunition Manufacturers Institute, P.O. Box 838 Branford, CT 06405.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. Unless otherwise specified in the contract, the contractor shall perform a first article inspection on three weapons in compliance with this specification (see 4.4) and any other stipulations required by the Government. Rifles shall be representative of the latest commercially available design, modified as necessary to conform with this specification. The contractor shall indicate the commercial nomenclature and model designations of the first article.

3.2 Materials, design and construction. Materials, design and construction shall conform to this specification and to the approved manufacturing models. The action and parts in rolling or sliding contact shall be 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.

TABLE I.

General Characteristics

Weight (unloaded, with sight, and Sling Swivel without sling)	10 to 10-3/4 pound
Barrel	Free floating
Barrel length	25 to 26 inches
Overall length	42 to 46 inches
Action	Turn-bolt, single shot with loading platform or solid bottom receiver
Stock	Target type, with full length metal rail on bottom fore-end which will accept a palm rest and an adjustable fore-end stop. Adjustable length of pull from 12 to 13-1/2 inches. (Further adjustment beyond the required range is acceptable) Non-slip rubber butt plate (see 3.2.10)
Telescope sight bases	Mounted on rifles. Compatible with commercial target-type telescopes with external adjustment.
Trigger pull	Adjustable in weight from 2 to 4 pounds. Adjustable in sear engagement. Adjustable in movement after release. Trigger may be single stage or two stages.

3.2.2 Balance. The center of balance shall be 4 to 8 inches forward of the trigger.

3.2.3 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, pits and toolmarks. Minor scratches and toolmarks which do not adversely affect the rifle's ability to meet the requirements of this specification and which are in conformity with good commercial practice shall not be considered defects.

3.2.3.1 Barrel and receiver assembly. The barrel and receiver shall be rigidly joined to assure that the interface shall not loosen during normal handling or extended use to the detriment of accuracy, center of impact, reliability, or durability.

3.2.4 Bolt assembly. The bolt shall be free of cracks, burrs, toolmarks, scratches and mutilations. Minor scratches and toolmarks which do not adversely affect the rifle's ability to meet the requirements of this specification and which are in conformity with good commercial practice shall not be considered defects. It shall move freely through its full range of travel without binding. When the rear sight is zeroed for 50 yard firing, there shall be a minimum of 5/16 inch clearance between the sight and the bolt as it is cycled.

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

3.2.6 Sights. The iron sights shall be mounted so that the sight aperture is not more than 1-3/8 inches and not less than 1-1/4 inches above the centerline of the bore when the rifle is zeroed for 50 yard shooting. The iron sights shall be readily removable/attachable by the shooter to facilitate interchange of iron and telescopic sights. After adjustment, the sight shall maintain its setting during firing (see 3.3.5 and 3.3.6). Any tools needed for removal, replacement, or adjustment of the sights shall be provided with each rifle.

3.2.6.1 Rear sight. The rear sight shall be target-type, click-adjustable for windage and elevation. The nominal movement per click shall be the same for both windage and elevation. The nominal movement per click shall be specified in the operator's manual in minutes of angle shift of bullet impact. Movement from click to click shall be distinct, but not difficult to achieve. Clicks shall be nominally 1/4 minute or finer in windage and elevation. The rear sight shall have a threaded removeable aperture disc with an aperture diameter of forty five thousandths plus or minus five thousandths of an inch (.045 +/- .005). The aperture disc shall be designed such that the aperture can be reamed out to a diameter of at least one hundred thousandths (.100) if the shooter so desires. The sight shall be clearly and indelibly marked to show the direction of knob rotation needed to move the point of impact up (or down) and left (or right). The sight shall be capable of accepting a variety of common US and foreign aperture discs. When tested as specified 4.6.2, backlash and free movement shall not exceed one thousandths of an inch (.001). When tested as specified in 4.6.2, the average movement per click shall be within $\pm$ 15% of the nominal movement specified in the operator's manual. The sum of any two consecutive click movements shall be within $\pm$ 50% of the nominal movement.

3.2.6.2 Front sight. The front sight shall be a target type. It shall fit the standard 3/8 inch dovetail sight base. It shall have at least nine (9) interchangeable inserts including at least six (6) aperture type. The smallest aperture shall be

within the range of .100 to .120 inches. The largest aperture shall be within the range of .150 to .170 inches. The remaining apertures shall be equally spaced throughout the range bounded by the smallest and largest apertures. Inserts shall also include at least three metal post-type sized 0.080 inch, 0.090 inch and 0.100 inch. The inserts shall be readily interchangeable by the user. Nominal insert sizes shall be specified in the operator's manual. Actual sizes shall be within one-thousandths (± .001) of the nominal.

3.2.7 Safety device. A safety device shall be provided which, when set at the safe position, shall prevent firing of the rifle. It shall be moveable manually between the safe position and the fire position and shall remain in the position set until reset manually. Safety actuation forces shall be as specified in 3.3.2.

3.2.8 Finishes.

3.2.8.1 Machine finish. Machine finishes shall be in accordance with good commercial practice for the type of rifle furnished.

3.2.8.2 Final protective finish. The exterior metallic surfaces shall be polished (or matte finished) and blued, or blackened, and shall be uniform in texture and appearance. The finish shall be applied so as not to draw the temper or alter the form of dimensions of components sufficiently to affect functioning.

3.2.9 Stock.

3.2.9.1 Material - wooden. The stock shall be of dense walnut (black), beech or birch (yellow or sweet). 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. Stocks shall be free of patches. Small checks, cracks and knotholes shall be filled with plastic fillers or other suitable material approved by the procuring agency.

3.2.9.2 Color. After protective finish treatment (see 3.2.9.3), wooden stocks shall have a uniform nonbleeding color. Black walnut or birch may be stained prior to the protective finish treatment.

3.2.9.3 Protective finish compound. Wooden stocks shall be treated with boiled linseed oil comforming to TT-L-190 or other suitable finish approved by the procuring agency.

3.2.9.4 Alternative material - synthetic. Synthetic stocks shall have an infused black or brown color. If brown, it shall be no lighter than color standard 11018988-W. Synthetic stocks shall meet the requirements of 3.3.7 for chemical resistance. Synthetic stocks shall be capable of withstanding the impact when dropped from a height of four feet onto a hard surface without damage. Testing shall be as specified in 4.6.10.

3.2.9.5 Shape. The stock shall be equally useable for either right or left handed use. The stock shall have a drop of 1/2 inch ± 1/8 inch at the comb and at the heel. Measurements shall be made from centerline of the bore. The bottom of the fore-end shall be not more than 3-1/8 inches and not less than 2-1/4 inches below the ceterline of the bore at a point just ahead of the trigger guard. The fore-end depth may taper or decrease to not less than 2 inches at the end of the fore-end. The butt plate shall be mounted such that its rear surface is perpendicular to the bore. The length of pull (the distance from the trigger to the rear face of the butt plate measured parallel to the bore) shall be adjustable through at least the range specified in Table I. The adjustment may be accomplished either through the addition/deletion of spacers or through an adjustment mechanism. Each increment of adjustment shall not be larger than 1/2 inch. Any tools needed for adjustment of the stock shall be provided with the rifle.

3.2.10 Butt plate. The butt plate shall be of soft synthetic rubber compound which is resistant to oil and cleaning solvents. It shall be at least 1/4 inch thick. It shall have stippling, checkering, horizontal serrations, or other similar surface roughness which in the judgment of the government, is adequate to preclude slipping. Color scheme shall be consistent with good commercial practice. Mounting screws shall not protrude above the rear surface of the butt plate.

3.2.11 Swivel. The rifle shall be equipped with a moveable front sling swivel adaptable to slings 1-5/8 inches wide and 1/8 inch thick. The front swivel shall be moveable permitting adjustment of hand and sling position on fore-end. After adjustment, the front swivel shall maintain its position during normal usage.

3.3 Performance characteristics.

3.3.1 Trigger pull. The trigger pull shall be safe and free of detectable creep and shall be capable of adjustment throughout the range specified in Table I (see 3.2.1). Creep shall be interpreted to mean any detectable movement between the time positive resistance is met and the firing mechanism is released.

There shall be additional adjustment remaining in the adjusting device when the trigger pull has been set to meet the specified trigger pull requirements. With the trigger adjusted to the minimum and maximum pulls specified in Table I, the rifle shall demonstrate the ability to repeat the trigger pull setting within +/- four ounces. Testing shall be as specified in 4.5.3.2. If the trigger is a two stage trigger, creep is considered only with regard to the second stage after the slack has been taken out. Each rifle shall have its trigger pull adjusted to between three and one half (3-1/2) and four and one half (4-1/2) lbs when it is shipped.

3.3.2 Safety actuation force. The safety device shall be positively retained in both the extreme "SAFE" and extreme "FIRE" positions and shall require not less than two and one half (2-1/2) lbs nor more than eight (8) lbs to initiate movement from either extreme position.

3.3.3 High-pressure resistance and headspace. Each rifle shall withstand the firing of one high-pressure cartridge containing the SAAMI standard commercial proof load of 310 to 330 Copper Units of Pressure (CUP) with no evidence of cracks, seams and other injurious defects. After proof-firing, the head-space shall be forty-two thousandths (0.042) inch minimum to forty-six thousandths (0.046) inch maximum.

3.3.4 Functioning. The rifle shall operate without malfunctions, unserviceable parts, punctured or ruptured cartridge cases and loose stock or screws, using standard velocity commercial cartridges conforming to Sporting Arms and Ammunition Manufacturers' Institute (SAAMI) standards. 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 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.

3.3.5 Targeting and accuracy.

3.3.5.1 Ammunition. The rifle shall meet the following targeting and accuracy requirements using selected lots of match grade ammunition conforming to SAAMI standards having an average extreme spread of all targets at 100 yards of 1.25 inch or less.

3.3.5.2 Targeting. Sights shall be capable of being zeroed to the rifle within the limits of the windage and elevation index plates and still have additional adjustment remaining on the index plates in both directions. Each of a series of 10 shots fired

from the rifle at a range of 100 yards shall be within or cut the edge of, a bull's eye four (4) inches in diameter, or each of a series of 10 shots fired at a range of 50 yards shall be within or cut the edge of a bull's eye two (2) inches in diameter.

3.3.5.3 Accuracy. The average extreme spread, measured from center to center of shot holes, of three consecutive 10-shot groups fired at a range of 100 yards shall not exceed 1.50 inches and no individual group shall exceed 1.75 inches, or 3 consecutive 10-shot groups fired at a range of 50 yards shall not exceed 0.70 inch average extreme spread and no individual group of the series shall exceed 0.80 inch.

3.3.6 Endurance. The rifle shall be capable of withstanding the firing of 5,000 rounds and five hundred snaps on an empty chamber with not more than the malfunctions or unserviceable parts shown in Table II, using cartridges specified in 3.3.4. After the 5,000 rounds and 500 snaps, the rifles shall meet the trigger pull (see 3.3.1) and targeting and accuracy (see 3.3.5) requirements of this specification.

Table II. Endurance Test Requirements

Malfunctions, Unacceptable conditions and Unseviceable Parts	Total Number Pemitted in 3-Rifles Tested for First Article
Major components (1) cracked, broken or unserviceable	0
Other unserviceable parts	1
Malfunctions (2)	6

(1) Major components are defined as the barrel, bolt, receiver, stock, trigger assembly and sear.

(2) The malfunctions and unserviceable parts shall not exceed those specified for the rifles combined. When a malfunction is traceable to a particular part, it is permissable to replace such parts and record it as unserviceable, subject to the limitations of Table II. When it is definitely established by the contractor through failure analysis, and agreed to by the Government representative, that previously recorded malfunctions are attributeable to the unserviceable part, such malfunctions shall not be counted against the rifle being tested, provided they occurred not more than 200 rounds prior to replacement of the

unserviceable part. These 200 rounds shall have been fired with the unserviceable part. All malfunctions shall remain recorded and properly identified. Unserviceable parts are those which cause malfunctions or impair safety of the weapon. Malfunctions attributable to the ammunition, as substantiated by the contractor to the satisfaction of the Government shall not be counted against the rifle; however, such malfunctions shall be recorded.

3.3.7 Chemical resistance. Synthetic or plastic parts shall not be affected by standard Government insect repellents (O-I-503, MIL-I-12123, MIL-I-51022), small arms lubricants (VV-L-800, MIL-L-14107, MIL-L-46000, MIL-L-46150), small arms cleaner and preservative (MIL-L-63460), gasoline (VV-G-1690) and diesel fuel (VV-F-800).

3.4 Model number identification. The contractor shall indentify models of weapons with positive identification. If in previous commercial or military production, the manufacturer identified a weapon model with a certain designation and intends incorporation of a component or an assembly change which would affect functional characteristics, reliability, safety or interchangeability, the contracting officer should be notified. Such changes may or may not require a new model identification. Upon request from the contracting officer, the contractor shall apply a new model number identification to the new procurement.

3.5 Operator's manual. An operator's manual, which clearly and fully explains the physical characteristics, operation, field stripping and maintenance of the rifle and its sights, shall be provided with each rifle. The manual shall include a parts list keyed to an exploded view. The manual shall indentify all parts which are not fully interchangeable among weapons.

3.6 Marking. Each rifle shall be identified by a serial number assigned by the contractor. The contractor shall obtain approval of the serial number range to be used from the procuring agency. As a minimum, each rifle shall be marked with the following in accordance with MIL-STD-130.

a. Manufacturer's name.

b. Serial number (on the receiver).

c. ".22 long rifle" (on the barrel).

d. Model number indentification.

e. "US" (marked on the receiver near the serial number).

3.7 Workmanship. Workmanship and finish shall be in accordance with the highest grade practice used in manufacturing commercial weapons. Workmanship shall be in accordance with MIL-W-63150.

4 QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specifications where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

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

4.2 Quality assurance terms and definitions. Quality assurance terms and definitions used herein are in accordance with MIL-STD-109.

4.3 Classification of inspection. The inspection requirements specified herein are classified as follows:

a. First Article Inspection (see 4.4).

b. Quality Conformance Inspection (see 4.5).

4.4 First article inspection. Unless otherwise specified in the contract, three first article rifles shall be subjected to all the quality conformance inspection specified herein (see 4.5.2), the endurance test (see 3.3.6 and 4.6.8) and such other inspection as necessary to determine compliance with the contract. In addition, the first article test shall include the chemical resistance test (see 4.6.9) and the synthetic stock impact resistance test (if applicable, see 4.6.10). Failure of one or more of the rifles or components to meet the requirements shall be cause for rejection of the first article.

4.5 Quality conformance inspection.

4.5.1 Inspection lot. The formation, size and presentation of inspection lots of rifles shall be in accordance with MIL-STD-105. Initially, lots shall not exceed one hundred (100) items. After five consecutive lots successfully pass a test, lot size for that test may be increased to five hundred (500) items. MIL-W-13855 applies.

4.5.2 Examination. Each rifle shall be examined as specified in 4.5.2.1 and 4.5.2.2. All rifles shall have been submitted to and passed the criteria specified in 4.5.2.2 prior to being tested in 4.5.3.

4.5.2.1 Inspection methods. The following descriptions shall be applicable to the prescribed inspection methods. Requests for a method other than that specified shall be submitted for Government approval. The examination provisions should be applied at the earliest practical point in manufacture at which it is feasible to inspect for acceptance without risk of change in the characteristic by subsequent operations. Reinspection of these characteristics on the completed product is not required provided assurance exists the characteristic has not been changed, degraded or damaged by subsequent manufacturing, assembly or handling and that adequate inspection records are maintained. Rifles failing to meet the requirement shall be rejected.

a. Where "Visual" is specified as the inspection method for dimensional and machine finish inspection, the characteristic shall be scaled and compared with a specimen of known acceptable quality that has been established as an inspection standard (if applicable).

b. Where "Visual" is specified as the inspection method for functioning requirements, the assembly shall be visually examined for completeness and manually operated for functioning requirements as specified.

c. Where "Visual" is specified as the inspection method for protective coating, the coating shall be visually examined for completeness, uniformity in appearance and color, freedom from pits, corrosion, scratches and worn or bare spots.

d. Where "SMTE" (Standard Measuring and Test Equipment) is specified as the method of inspection, the contractor may use any type of industry-developed, commercially available, multi-usage equipment or special inspection equipment approved by the Government.

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE		SHEET 1 OF 2		DRAWING NUMBER
4.5.2.2	Rifle, Caliber .22 LR, Commercial, for Match and Training				As Appropriate
					NEXT HIGHER ASSEMBLY
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
Critical:	None defined.				
Major					
101.	General characteristics 1/		100%	3.2.1	SMTE/Visual
102.	Balance 1/		100%	3.2.2	SMTE
103.	Bolt Assembly		100%	3.2.4	SMTE/Visual
104.	Stock shape 1/		100%	3.2.9.5	SMTE
105.	Butt plate 1/		100%	3.2.10	SMTE/Visual
106.	Swivels 1/		100%	3.2.11	SMTE/Visual
Minor					
201.	Materials, design and construction		100%	3.2	Visual
202.	Barrel		100%	3.2.3	Visual
203.	Barrel and receiver		100%	3.2.3.1	Visual
204.	Trigger		100%	3.2.5	Visual
205.	Sights		100%	3.2.6, 3.2.6.1, 3.2.6.2	Visual
206.	Safety device		100%	3.2.7	Visual
207.	Finishes		100%	3.2.8	Visual
208.	Stock		100%	3.2.9.1, 3.2.9.4	Visual, 4.6.10

NOTES: 1/ The portions of these characteristics (except for trigger pull) requiring SMTE need only be inspected during first article and as necessary in accordance with 4.1.1.

AMSMC Form 1570, 1 Feb 85 Replaces DRSMC-QA (D) Form 160, 1 Aug 83, which may not be used.

CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE		SHEET 2 OF 2		DRAWING NUMBER
4.5.2.2	Rifle, Caliber .22 LR, Commercial, for Match and Training				As Appropriate
					NEXT HIGHER ASSEMBLY
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
209.	Stock color		100%	3.2.9.2	Visual
210.	Operator's manual		100%	3.5	Visual
211.	Marking		100%	3.6	Visual
212.	Workmanship		100%	3.7	Visual
NOTES:					

AMSMC Form 1570, 1 Feb 85 Replaces DRSMC-QA (D) Form 160, 1 Aug 83, which may not be used.

4.5.3 Testing.

4.5.3.1 Failure data. Unless otherwise specified, all tests shall be conducted on a complete rifle. If test requirements cited herein are not met, acceptance of the rifle shall be deferred and the contractor shall accomplish, 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 rifles, partially assembled rifles 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 rifle for retest.

4.5.3.2 Trigger pull, rear sight, safety actuation force, high-pressure resistance and headspace, functioning, and targeting and accuracy testing. Each rifle shall be tested as specified in 4.5.3.3.

CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH 4.5.3.3	TITLE Rifle, Caliber .22 LR, commercial, for match and training		SHEET 1 OF 1		DRAWING NUMBER As Appropriate NEXT HIGHER ASSEMBLY
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
	Trigger pull 1/ 4/	*		3.3.1	4.6.1
	Rear sight 1/ 3/	*		3.2.6.1	4.6.2
	Safety actuation 5/	100%		3.3.2	4.6.3
	Functioning 2/ 5/	100%		3.3.4	4.6.5
	High pressure resistance and head space 5/	100%		3.3.3	4.6.4
	Targeting and Accuracy 2/ 5/	100%		3.3.5	4.6.6, 4.6.7

*Refer to appropriate notes on the following page.

4.5.3.3 Continued notes:

1/ Failure of any item in the sample to pass the test shall cause retest or rejection of the represented lot. At the discretion of the Government representative, a retest may be allowed without reconditioning the lot. Sample size for the retest shall be ten (10) items. Failure in the retest shall cause rejection of the represented lot subject to reconditioning. Failure of a test of the larger size lot shall cause reinstatement of the smaller lot size until five consecutive lots have again passed (see 4.5.1).

2/ The tests for functioning and targeting and accuracy may be performed concurrently.

3/ Rear sight requirements (see 3.2.6.1) may be tested with the sights separate from the rifle if the contractor can demonstrate that the results are consistent with those obtained when sights are tested to assembled rifles. At the cotractor's discretion, he may choose to conduct the rear sight test on a lot basis rather than on each rifle.

4/ At the contractor's discretion, he may choose to conduct the trigger pull test on a lot basis rather than on each rifle. If the contractor chooses to conduct the trigger pull test on a lot basis, he shall still be required to test each individual rifle to assure that its trigger is adjusted within the range of three and one half (3-1/2) to four and one half (4-1/2) pounds before it is shipped.

5/ Failure of a rifle to meet this requirement shall cause rejection of the individual rifle.

4.5.4 Packaging examination and testing. Unless otherwise specified (see 6.2), the packaging examination and testing shall be in accordance with MIL-P-116.

4.5.5 Inspection equipment.

4.5.5.1 Accuracy of standard measuring equipment. When commercial and modified commercial inspection and test equipment is used, it must be capable of repetitive measurements to an accuracy of 10 percent of the total tolerance of the characteristic being inspected.

4.5.5.2 Ammunition. Cartridges used in various tests shall be as specified in 3.3.3, 3.3.4, and 3.3.5. When functioning and targeting and accuracy tests are performed concurrently, cartridges specified in 3.3.5.1 shall be used. Malfunctions attributable to defective ammunition shall not be counted against the rifle being tested.

4.6 Test methods.

4.6.1 Trigger pull test. The trigger guard or stock may be removed to facilitate this test if its removal, absence or replacement can be demonstrated to have no effect on test results. Prior to each phase of this test the rifle shall be cocked. All loads shall be applied gradually to the center of the finger area of the trigger and exerted in a line parallel to the axis of the bore. The safety shall be put in the fire position. The weight of pull shall be adjusted until a two (2) pound weight causes the firing pin to fall. The rifle shall be cocked and the safety shall be put on. A ten (10) pound weight shall be applied to the trigger. The firing pin must not fall. The load shall be removed and then the safety shall be moved to the fire position. The firing pin must not fall. The actual weight of pull needed to cause the firing pin to fall shall be measured five times. The average weight of pull shall be calculated. The average shall be not less than one and one-half (1-1/2), nor more than two (2) pounds. No reading may be more than four (4) ounces from the average. The weight of pull shall then be adjusted until a four (4) pound load will cause the firing pin to fall. The actual weight of pull needed to cause the firing pin to fall shall be measured five times. The average weight of pull shall be calculated. The average shall be not less than four (4) nor more than four and one-half (4-1/2) pounds. No reading may be more than four (4) ounces from the average.

4.6.2 Rear sight test.

4.6.2.1 Movement-per-click and backlash tests. The rear sight shall be adjusted to approximately the middle of both elevation and windage travel. The elevation knob shall be turned three (3) clicks clockwise. The height of the aperture disc shall be recorded. Then the elevation knob shall be turned ten (10) more clicks clockwise then ten (10) clicks counterclockwise. The actual amount of elevation change of the aperture disc shall be recorded for each of the twenty clicks.

The nominal movement per click shall be calculated as follows:

$$CM_{nom} = (SR)\left(\text{Tangent } \frac{MOA_{nom}}{60}\right)$$

Where: CM_{nom} = Nominal Movement per click in inches

SR = Distance between rear of rear sight aperture and rear of front sight aperture of a typical rifle in inches

MOA nom = nominal sight movement specified in the operator's manual (in minutes of angle)

The average movement-per-click shall not vary from the nominal by more than ± 15% of the nominal. The actual sum of the movement of the first two counterclockwise clicks shall not vary more than ± 50% from the nominal per click. The difference in height of the disc before and after the twenty clicks (backlash) shall not exceed one thousandths (.001) of an inch. The test shall be repeated for windage with the same acceptance criteria.

4.6.2.2 Free movement test. A four-ounce load shall be applied to the aperture disc parallel to the elevation screw and at right angles to the line of sight. The location of the aperture disc in the plane of the force shall be determined. The force shall then be applied in the opposite direction and the location of the disc determined. The difference between the two locations shall not exceed one-thousandths (.001) of an inch. The test shall be repeated with the force applied parallel to the windage screw using the same acceptance criteria.

4.6.3 Safety actuation force test. The rifle shall be tested using a contractor designed, Government approved measuring device. The rifle shall be cocked and the safety device shall be in the fire position. The load shall be gradually applied to the finger-piece of the safety device and exerted in a line parallel to the line of movement of the finger-piece. The test shall be repeated with the safety device in the safe position. For each test, the safety must move from its initial position within the range of force specified in 3.3.2.

4.6.4 High-pressure resistance and headspace tests. The rifle shall be tested by firing one high-pressure test cartridge in each 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 bolt face, chamber or incorrect headspace. Headspace (see 3.3.3) shall be checked using a contractor designed, Government approved measuring device.

4.6.5 Functioning test. The rifle shall be tested by hand functioning and function firing. Prior to firing, five dummy cartridges shall be chambered, extracted, and ejected by hand operation of the bolt without pulling the trigger. Rifles shall then be function fired by firing at least 10 rounds. Chambering of each of the 10 rounds shall be accomplished by thrusting the bolt forward sharply with the safety off. Before each round is fired, the safety device shall be checked (see 3.2.7) by attempting to fire the rifle with the safety device set at the safe position.

4.6.6 Targeting test. The rifle shall be fired with the sights set at zero windage and elevation on the index plates and aligned at the center of bull's-eye using aperture front sight insert. 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 3.3.5.2).

4.6.7 Accuracy firing test. The rifles shall be shoulder fired or fired using a forend and elbow rest or a machine rest simulating shoulder firing. Each rifle may have up to a 10-shot warmup, prior to test, for adjustment of test equipment and rifle. One refiring of one individual target of 10 shots will be permitted to eliminate nonrepresentative results due to ammunition "flyers". A "flyer" is defined as a shot hole which is a greater distance from the nearest shot hole than the extreme spread of the other 9-shots of the 10-shot group. One refiring of any target will be permitted to eliminate nonrepresentative results induced by faulty test procedure or malfunctioning test equipment.

4.6.8 Endurance test. The rifle shall be tested by firing 5,000 rounds of ammunition. Cleaning and lubricating shall be performed after each 500 rounds and at the end of each day's firing. In addition, the rifle shall be tested by 500 falls of the firing pin upon an empty chamber. Lubrication shall be performed after each 100 snaps. Dry firing and live firing shall be alternated in cycles of 1,000 rounds followed by 100 snaps. Upon completion of the endurance test, rifles shall be subjected to the trigger pull test and the targeting and accuracy firing tests specified in 4.6.1, 4.6.6 and 4.6.7.

4.6.9 Chemical resistance. One sample of each synthetic or plastic material shall be submerged in each chemical listed in 3.3.7 for 24 hours at ambient temperature. The sample shall be removed, rinsed, dried and visually and manually inspected. No sample shall display softening, checking, deformation or other adverse effect.

4.6.10 Synthetic stock impact resistance. Three synthetic stocks shall be chosen. Each shall be dropped a minimum distance of four (4) feet in each of the following four modes: left side down, right side down, butt down, muzzle end down. The drop surface shall be a 85 +5 Durometer (Shore A) rubber mat, one inch thick, backed by concrete.

5. PACKAGING

5.1 Preservation.

5.1.1 Level A.

5.1.1.1 Cleaning. The rifle shall be disassembled as necessary to accomplish the required cleaning. All metallic surfaces shall be cleaned by process C-3 or C-1 of MIL-P-116. Non-metallic surfaces, such as the stock and handguard, shall be cleaned by process C-1 of MIL-P-116. The internal surfaces of the trigger mechanism need not be cleaned and relubricated if they were clean and lubricated during their assembly. However, if they are not to be cleaned and relubricated as specified herein, they must be protected to assure that the original cleaning and lubrication is not compromised during preparation for delivery.

5.1.1.2 Drying. All surfaces of rifle shall be dried in accordance with process D-1 of MIL-P-116, except that the barrel bore and chamber shall be dried by procedure D-4, utilizing clean, dry and lint-free swabs.

5.1.1.3 Preservative application. All lubricants removed during cleaning of the rifle shall be replaced in accordance with the item requirements. Metal parts of the rifle shall be preserved with P-9 preservative oil.

5.1.1.4 Unit packaging. The assembled rifle shall be unit packed Method IC-1 of MIL-P-116. Insert a VCI treated bore tube (P/N B7266299) into the bore and place in a barrier bag made from material which complies with MIL-B-22019. Position the packaged rifle in a fiberboard box complying with PPP-B-636 (RSC W5C). (Note: Packed components shall be secured to the bagged rifle with tape conforming to Type III, Class 2, size 1-inch wide of PPP-T-60, to preclude movement within container.) Use cushioning material, PPP-C-843 or fiberboard, PPP-F-320 to ensure a tight pack. Close and seal in accordance with PPP-B-636.

NOTE: Packed components may include tools, front sight, rear sight, front sight insert set. Each packed component shall be packaged in its own barrier bag in accordance with MIL-B-22019 and other such packaging as required to preclude damage to it or other items. The operator's manual shall be packaged in a waterproof plastic bag.

5.1.2 Level B. Not applicable.

5.1.3 Level C. Preservation shall be in accordance with an approved commercial design. The unit pack will contain one rifle.

5.2 Packing. A quantity of weapons not to exceed 1,000 pounds shall be packed in a minimum size shipping container.

5.2.1 Level A. The shipping container shall comply with PPP-B-601, Style A, B, I or J; Type OS, Grade B.

5.2.2 Level B. The container for level B shall comply with PPP-B-640 (Style E, Class 2). The packed container shall be secured to an expendable pallet conforming to PPP-P-1660, Type I, Class A, Grade 2.

5.2.3 Level C. Packaging shall be in accordance with an approved commercial design (see 6.2.e).

5.3 Marking. Marking for levels A and B, and for commercial packaging, shall be in accordance with MIL-STD-129. The special instructions in MIL-STD-129 regarding omission of certain markings from containers of sensitive, controlled, and pilferable items apply.

6. NOTES

6.1 Intended use. The rifle furnished to this specification are intended for marksmanship matches and training.

6.2 Ordering data. Procurement documents should specify the following:

a. Title, number and date of this specification.

b. Responsibilities for furnishing acceptance inspection equipment.

c. Packaging examination and testing, if different (see 4.5.4).

d. Selection of applicable levels of preservation, packing and marking (see 5.1, 5.2 and 5.3).

e. The contractor may submit a detailed description of a commercial packaging/packing design to the procurring activity for review for possible use as a level C.

6.3 Subject term (key word) listing.

Caliber .22 Long Rifle
Commercial
Match Grade
Training Grade

6.4 Drawings. Drawings listed in Section 2 of this specification under the heading US Army Armament Research, Development and Engineering Center (ARDEC) may also include drawings prepared by, and identified as Edgewood Arsenal, Frankford Arsenal, Rock Island Arsenal, Picatinny Arsenal, US Army Armament Research and Development Command (ARRADCOM) or US Army Armament

Research and Development Center (ARDC) drawings. Technical data originally prepared by these activities are now under the cognizance of ARDEC.

6.5 Changes from previous issue. Asterisks (or vertical lines) are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:
Army-AR
Navy-OS
Air Force-84

Preparing activity:
Army-AR

(Project 1005-A662)

User activity:
Navy-MC

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-R-1296E	RIFLE, CALIBER .22 LR, COMMERCIAL, FOR MATCH AND TRAINING

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR
b. ADDRESS *(Street, City, State, ZIP Code)*	☐ USER
	☐ MANUFACTURER
	☐ OTHER *(Specify)*: _____

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8. DATE OF SUBMISSION *(YYMMDD)*

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