

METRIC

MIL-C-70663B (AR)

04 January 1994

SUPERSEDING

MIL-C-70663A (AR)

9 February 1991

MILITARY SPECIFICATION

CARTRIDGE, CALIBER .50 SLAP Ball and Tracer
(Saboted Light Armor Penetrator) - M903 and M962

This specification is approved for use by the U.S. Army Armament, Munitions and Chemical Command, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers requirements, quality assurance provisions, and preparation for delivery for Cartridge, Caliber .50, SLAP Ball M903 and Tracer M962 used with Caliber .50 M2 Browning Machine Guns.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 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 shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS

MILITARY

MIL-P-10831	Paper, Target
MIL-A-46100	Armor Plate, Steel, Wrought, High Hardness
MIL-A-48078	Ammunition, Standard Quality Assurance Provisions, General Specification for

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 ARDEC, ATTN: SMCAR-BAC-S, 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.

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STANDARDS

MILITARY

	MIL-STD-109	Quality Assurance Terms and Definitions
*	MIL-STD-129	Marking for Shipment and Storage
	MIL-STD-636	Visual Inspection Standards for Small Arms Ammunition through Caliber .50
	MIL-STD-644	Visual Inspection Standards and Inspection of Packaging, Packing and Marking of Small Arms Ammunition
	MIL-STD-1167	Ammunition Data Cards
	MIL-STD-1168	Ammunition Lot Numbering
*	MIL-STD-6866	Inspection, Liquid Penetrant

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from: DODSSP - Customer Service, Standardization Documents order Desk, 700 Robbins Avenue, Bldg 4D, Philadelphia, PA 19111-5094.)

2.1.2 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 shall be those in effect on the date of the solicitation.

DRAWINGS (see 6.6)

US ARMY ARMAMENT RESEARCH, DEVELOPMENT, AND ENGINEERING CENTER (ARDEC)		
	9370055	Cartridge, Caliber .50, SLAP Ball, M903
*	12902945	Cartridge, Caliber .50, SLAP Tracer, M962
	5502646	Case, Cartridge, Cal.50 (SLAP & SLAPT)
	9370056	Penetrator, Cartridge, Cal.50 SLAP
	9370057	Sabot Assembly, Cartridge, Cal.50 SLAP
	9370058	Projectile Assembly, Ctg, Cal.50 SLAP
	12624621	Area Multiplier, Ctg, Cal.50 SLAP
	12902950	Penetrator, Cartridge, Cal.50 SLAPT
	12902947	Sabot Assembly, Ctg, Cal.50 SLAPT
	12902946	Projectile Assembly, Ctg, Cal.50 SLAPT
*	12576456	Packing and Marking for Box, Wirebound for Cartridges, Caliber .50
	7643674	Classification of Cartridge Case Defects
*	19-48-4116/14-20PA1002	Unitization Procedures for Boxed Ammunition and Components on Four Way Entry Pallets

INSPECTION EQUIPMENT DRAWINGS

	IL9370055	Inspection Equipment List for Cartridge, Caliber .50, SLAP Ball, M903
*	IL12902945	Inspection Equipment List for Cartridge, Caliber .50, SLAP Tracer, M962

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INSPECTION EQUIPMENT DRAWINGS (CONT.)

8649496	SLAP , Accuracy Test Barrel
8649497	SLAP , Velocity & Action Time Test Barrel
8649498	SLAP , Chamber Test Barrel (made from 8649497)

PUBLICATIONS

US ARMY ARMAMENT RESEARCH, DEVELOPMENT, AND ENGINEERING CENTER

SCATP-7.62mm	SMALL CALIBER AMMUNITION TEST PROCEDURES
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TECP 700-700, Vol. III	Manual of Test Methods for Small Arms Ammunition
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(Copies of other Government documents, drawings and publications required by the suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

* CODE OF FEDERAL REGULATIONS

TITLE 49 - Transportation, Parts 100-199

(The Code of Federal Regulations is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-0001. orders should specify, "49 CFR 100-199 (LATEST REVISION)."

2.2 Nongovernment Publications* The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS

ASTM D 1238	Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer
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(Application for copies should be addressed to the American Society for Testing and materials, 1916 Race Street, Philadelphia, PA 19103-1137.)

2.3 Order of precedence. In the event of 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.

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3. REQUIREMENTS

3.1 First article inspection. Requirements for submission of the first article inspection shall be as specified in the contract.

* 3.2 Materials construction and design. The cartridges shall conform to the materials, construction and design requirements specified herein, on assembly drawings, 9370055 and 12902945, all associated drawings, and with all requirements specified in the applicable specifications and standards.

3.3 Cartridge weight. The cartridge shall not weigh less than 95 grams (1466 grains).

3.4 Bullet extraction. The force required to separate the bullet from the cartridge case shall not be less than 1335 Newtons (300 pounds force).

3.5 Melt flow rate. The melt flow rate determined from reground sabots shall not differ from the melt flow rate of the virgin molding material by more than 2.0 grams per ten minutes.

3.6 Residual stress. The cartridge case shall not split when subjected to a one percent mercurous nitrate solution for 15 minutes.

3.7 Dispersion. The average of the mean radii of all targets of the sample cartridges fired at 550 meters (600 yards) shall not exceed 460 mm (18 inches). Testing may be conducted at 183 meters (200 yards). When tested at 183 meters (200 yards) the average of the mean radii of all targets of the sample cartridges fired shall not exceed 145 mm (5.6 inches).

3.8 Match. The average of the centers of impact of M962 SLAP tracer cartridges shall be within plus or minus .50 mils vertically of M903 SLAP cartridges at a range of 1370 meters (1500 yards).

3.9 Penetration. The M903 penetrator shall perforate 19 mm (3/4") thick MIL-A-46100 High Hardness Armor (HHA) (500 BHN nominal) at 0 degrees obliquity located 1370 meters (1500 yards) from the muzzle of the weapon. The penetrator shall perforate 19 mm (3/4") thick MIL-A-46100 HHA at 57 degrees obliquity located 250 meters (275 yards) from the muzzle of the weapon.

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3.10 Chamber pressure. The average chamber pressure obtained with cartridges conditioned at 20 C (68 F) and fired shall not exceed 380 MPa (55,000 PSIG).

3.10.1 Chamber pressure at high temperature. The average chamber pressure obtained with cartridges conditioned at 65 C (150 F) from four to five hours and fired shall not vary by more than + 52 MPa (7,500 PSIG) or - 104 MPa (15,000 PSIG) from the average chamber pressure obtained with cartridges conditioned at 20 C (68 F) .

3.10.2 Chamber pressure at low temperature. The average chamber pressure obtained with cartridges conditioned at - 46 C (- 50 F) for not less than six hours and fired shall not vary by more than + 52 MPa (7,500 PSIG) or - 104 MPa (15,000 PSIG) from the average chamber pressure obtained with cartridges conditioned at 20 c (68 F).

* 3.11 Velocity. The average velocity of M903 SLAP cartridges conditioned at 20 C (68 F) and fired shall be $1,219 \pm 12$ meters per second ($4,000 \pm 40$ feet per second), at 23.8 meters (78 feet) from the muzzle of the weapon. The standard deviation of the velocities obtained shall not exceed 15.2 meters per second (50 feet per second) . No individual velocity reading shall be less than 1066 meters per second (3,500 feet per second).

* 3.11.1 Velocity at high temperature. The average velocity obtained with cartridges conditioned at 65 C (150 F) from four to five hours and fired shall not vary by more than ± 45 meters per second (150 feet per second) from the velocity of the same lot fired at 20 C (6 8 F) .

* 3.11.2 Velocity at low temperature. The average velocity obtained with cartridges conditioned at - 46 C (- 50 F) for not less than six hours and fired shall not vary by more than + 45 meters per second (150 feet per second) or - 61 meters (200 feet per second) from the velocity-of the same lot fired at 20 C (68 F).

3.12 Waterproof. Cartridges after having been placed under a 25mm (1 inch) head of water for 24 hours, shall not when subsequently- fired obtain an average velocity reading in excess of plus or minus 30 meters per second (100 FPS) from the average velocity results obtained during the velocity test performed for the same lot. In addition all cartridges shall fire, with all bullets clearing the muzzle of the barrel.

* 3.12.1 Waterproof trace. When viewed from behind and to the side of the weapon at least 75% of the tracer ammunition cartridges shall ignite and shall visibly trace after having been placed under a 25mm (1 inch) head of water for 24 hours.

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* 3.13 Yaw. The SLAP penetrator yaw shall not exceed 15 degrees when fired at a target located 36.5 ± 3 meters (120 ± 10 feet) from the muzzle of the weapon.

3.14 Stripping. The sabot shall have stripped from the penetrator at a maximum distance of 45 meters (50 yards) from the muzzle of the weapon.

3.15 Action time. The action time of fired cartridges shall not exceed four milliseconds.

3.16 Function and casualty. The cartridges shall fire without casualty in the Caliber .50 M2 Browning Machine Gun, Heavy Barrel, Flexible and Caliber .50 M2 Browning Machine Gun, Heavy Barrel, Turret, (M48 and M48 Series).

3.16.1 Function and casualty at high temperature. The cartridges shall function without casualty when conditioned at 65 C (150 F)-from four to five hours and fired-.

3.16.2 Function and casualty at low temperature. The cartridges shall function without casualty when conditioned at - 46 C (- 50 F) for not less than six hours and fired.

3.17 Trace. When viewed from a line parallel to the plane of trajectory, with the line of sight perpendicular to the plane of trajectory at each point of observation, 85% of the M962 SLAPT Tracers shall exhibit a visible trace from a point not greater than 275 meters (300 yards) from the muzzle of the weapon to a point not less than 1370 meters (1500 yards) from the muzzle of the weapon.

3.18 Workmanship. The metal parts of the cartridge shall be free of cracks, splits, perforations, burrs, and foreign matter. The cleaning method used shall not be injurious to any part nor shall the parts be contaminated by any cleaning agent. All parts and assemblies shall be fabricated, loaded, and assembled in a thorough and workmanlike manner. In addition, the cartridge shall comply with the standards specified in the Caliber .50 section of MIL-STD-636. Extreme care should be exercised to avoid contamination of primers or propellant by oil, grease, or other foreign matter.

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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, examinations, and tests 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 specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

* 4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5 and all applicable drawings. The inspections 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 ensuring 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.

* 4.1.2 General Provisions. Refer to MIL-STD-109 for definitions of quality assurance terms used.

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

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

4.3 First article inspection.

* 4.3.1 Submission. The contractor shall submit a first article sample as designated by the Contracting Officer for evaluation IAW the provisions of 4.3.2. The first article sample shall consist of the assemblies, components, and test specimens listed below in the quantities indicated.

<u>Part Description</u>	<u>Drawing</u>	<u>Quantity</u>
Cartridge, Cal.50 SLAP	9370055	1660
Case, Cartridge, Cal.50 (SLAP & SLAPT)	5502646	5/tool

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<u>Part</u>	<u>Description</u>	<u>Drawing</u>	<u>Quantity</u>
	Area Multiplier, Ctg, Cal.50 SLAP	12624621	5/tool
	Sabot Assembly, Cartridge, Cal.50 SLAP	9370057	5/cavity
	Penetrator, Cartridge, Cal.50 SLAP	9370056	5/tool
	Projectile Assembly, Ctg, Cal.50 SLAP	9370058	5/tool
*	Cartridge, Cal.50 SLAPT	12902945	1660
*	Area Multiplier, Ctg, Cal.50 SLAPT	12902949	5/tool
	Sabot Assembly, Ctg, Cal.50 SLAPT	12902947	5/cavity
	Penetrator, Cartridge, Cal.50 SLAPT	12902950	5/tool
*	Penetrator Assy, Ctg, Cal.50 SLAPT	12902948	5/tool
	Projectile Assembly, Ctg, Cal.50 SLAPT	12902946	5/tool

* 4.3.2 Inspection to be performed. As determined by the Government, the first article assemblies, components, and test specimens may be subjected to any or all of the examinations and tests specified in this detail specification (See Table I and MIL-A-48078) and be inspected for compliance with any or all requirements of the applicable drawings. Test equal quantities of SLAP and SLAPT on each test except for the following tests where the test and type of ammunition to be tested is shown:

Penetration	- SLAP ammunition only
Waterproof trace	- SLAPT ammunition only
Trace	- SLAPT ammunition only

* 4.3.3 Rejection. See MIL-A-48078 and Table I and II. The sample shall be rejected if the sum of defects from function and casualty testing plus defects observed in all other firing tests exceeds the acceptance numbers specified in Table II. If any assembly, component, or test specimen fails to comply with any of the applicable requirements, the first article sample shall be rejected. The Government reserves the right to terminate inspection upon any failure of an assembly, component, or test specimen to comply with any of the requirements.

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TABLE I. First **article** inspection

CLASSIFICATION OF CHARACTERISTICS

Cartridge, Caliber .50 SLAP M903 & * Cartridge, Caliber .50 SLAPT M962					sh 1 of 2	9370055/ 12902945
CLASS EXAMINATION OR TEST	CONFORMANCE CRITERIA QTY	Ac Re		RQMT PARA	INSPECTION METHOD	REF
Case, (Dwg 5502646) Examination for defects	5 <u>1</u> /	0	1	3.2 3.18	SMTE	
Area Multiplier, (Dwg 12624621) Examination for defects	5 <u>1</u> /	0	1	3.2 3.18	SMTE	
Sabot Assembly, (Dwg 9370057) Examination for defects	5 <u>2</u> /	0	1	3.2 3.18	4.4.2.2	
Penetrator, (Dwg 9370056) Examination for defects	5 <u>1</u> /	0	1	3.2 3.18	4.4.2.1	
Projectile Assembly, (Dwg 9370058) Examination for defects	5	0	1	3.2 3.18	4.4.2.3	
Ctg, Cal.50 SLAP, (Dwg 9370055) Examination for defects	1660	0	1	3.2 3.18	4.4.2.4	
* Area Multiplier, (Dwg 12902949) Examination for defects	5 1/	0	1	3.2 3.18	SMTE	
Sabot Assembly, (Dwg 12902947) Examination for defects	5 <u>2</u> /	0	1	3.2 3.18	4.4.2.6	
Penetrator, (Dwg 12902950) Examination for defects	5 <u>1</u> /	0	1	3.2 3.18	4.4.2.5	
* Penetrator Assembly, (Dwg 12902948) Examination for defects	5 <u>1</u> /	0	1	3.2 3.18	SMTE	
Projectile Assy, (Dwg 12902946) Examination for defects	5	0	1	3.2 3.18	4.4.2.7	
* Ctg, Cal.50 SLAPT, (Dwg 12902945) Examination for defects	1660	0	1	3.2 3.18	4.4.2.0	

NOTES : 1/ Number of samples per tool.

2/ Number of samples per cavity.

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TABLE I. First article inspection

CLASSIFICATION OF CHARACTERISTICS

Cartridge, Caliber .50 SLAP M903 & * Cartridge, Caliber .50 SLAPT M962		sh 2 of 2		9370055/ 12902945	
CLASS	EXAMINATION OR TEST	CONFORMANCE CRITERIA			INSPECTION METHOD REF
		QTY	Ac	Re	
	Cartridge Weight	100%	0	1	3.3 4.5.1
	Bullet extraction	50	<u>1</u>	<u>2</u>	3.4 4.5.2
	Residual Stress	50	<u>0</u>	<u>1</u>	3.6 4.5.4
	Dispersion	150	<u>1</u> /		3.7 4.5.5
	Match	75	<u>2</u> /	<u>1</u> /	3.8 4.5.6
*	Penetration at 1370 meters 3/	20	<u>10</u>	11	3.9 4.5.7
*	Penetration at 250 m with the target at 57 degrees obliquity from the vertical <u>3</u> /	20	<u>10</u>	11	3.9 4.5.7
	Chamber Press at Ambient Temp	40	<u>1</u> /		3.10 4.5.8
	Chamber Press at High Temperature	40	<u>1</u> /		3.10.1 4.5.8
	Chamber Press at Low Temperature	40	<u>1</u> /		3.10.2 4.5.8
	Velocity at Ambient Temp	40	<u>1</u> /		3.11 4.5.9
	Velocity at High Temperature	40	<u>1</u> /		3.11.1 4.5.9
	Velocity at Low Temperature	40	<u>1</u> /		3.11.2 4.5.9
	Waterproof	50	<u>1</u> /		3.12 4.5.10
*	Waterproof trace	50	<u>12</u>	13	3.12.1 4.5.10
	Yaw at Ambient Temp	40	<u>4</u> /	<u>1</u> /	3.13 4.5.11-
	Stripping	40	<u>4</u> /		3.14 4.5.12
	Action Time	80	<u>1</u>	<u>2</u>	3.15 4.5.13
Caliber .50 M2 Browning Machine Gun (BMG) Heavy Barrel Flexible					
	Function and Casualty at Ambient	200	TABLE II		3.16 4.5.14
	Function and Casualty at High Temp	100			3.16.1 4.5.14
	Function and Casualty at Low Temp	100			3.16.2 4.5.14
Caliber .50 M2 BMG Heavy Barrel Turret Type (M48 and M48 Series)					
	function and Casualty at Ambient	200	TABLE II		3.16 4.5.14
	Function and Casualty at High Temp	100			3.16.1 4.5.14
	Function and Casualty at Low Temp	100			3.16.2 4.5.14
	Trace	100	<u>5</u> /		3.17 4.5.15

NOTES : 1/ Failure of the cartridges to comply with the applicable requirement shall result in rejection of the first article sample.

2/ 75 SLAP \pm 75 SLAPT (Tracer)

* 3/ Failure to perforate the plate shall result in the rejection of the first article sample. Perforation shall be defined as the complete passage of the penetrator through the armor plate leaving a hole.

4/ This test may be performed concurrently with the velocity tests. 5/ The lot shall be rejected if more than 15 shots fail to comply with the trace requirement.

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Table 11. First article function and casualty
accept - reject criteria.

<u>NONCONFORMANCE</u>	<u>ACCEPTANCE</u> <u>NUMBER</u>	<u>REJECTION</u> <u>NUMBER</u>
1. Misfire	0	1
2. Sabot/Penetrator separation in bore <u>1/</u>	0	1
3. Sabot/Penetrator remaining in bore	0	1
4. Primer defects:		
a. Perforation in firing pin indent in primer cup	15	16
b. Escape of gas through primer cup other than 4.a.	4	5
c* Escape of gas around primer cup more than 50% of periphery	9	10
d. Blown primer	0	1
5. Case casualties <u>2/</u>		
a. Longitudinal split		
(1) Neck or shoulder (I or S)	8	9
(2) Body (J)	4	5
(3) Body (K)	0	1
(4) To head (L)	0	1
(5) Through head (M)	0	1
b. Circumferential rupture		
(1) Partial, shoulder. or body (J,K, or S)	0	1
(2) Partial head (L)	0	1
(3) Complete	0	1
6. Failure to extract	0	1
7. Weapon stoppage <u>3/</u>	0	1

NOTES :

1/ Excessive muzzle flash, loud report, drop in velocity, or any combination of the three may be an indication of sabot/penetrator separation in the bore. Final determination of a sabot/penetrator failure will be damage to the bore of the weapon.

2/ For location of defects indicated by letter in parentheses see drawing 7643674.

3/ All stoppages attributable to the ammunition with the exception of misfires, complete circumferential rupture, or failure to extract observed in all tests shall be included.

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4.4 Quality conformance inspection.4.4.1 Inspection lot formation. IAW MIL-A-48078.

4.4.1.1 Component parts. Unless otherwise specified, component parts shall be homogeneous and of a size convenient to the contractor and inspected, tested, and accepted by the contractor. The cartridge lot shall contain:

- a. Cartridge cases from one manufacturer.
- b. Penetrators from one unchanged process and one manufacturer.
- c. Primers from one unchanged process and one manufacturer.
- d. Propellant from no more than two lot numbers and from one manufacturer.
- e. Sabots from one unchanged process and one manufacturer.

4.4.1.2 Lot identification. Each lot of ammunition shall be identified as to type, caliber and model, lot number IAW MIL-STD-1168 , and the supplier's identification as assigned by the procuring activity.

4.4.2 Examinations and tests.

* a. Classification of characteristics. Quality conformance examinations and tests are specified in the following Classification of Characteristics paragraphs. The contractor's quality program or detailed inspection system shall provide assurance of compliance of all characteristics with the applicable drawing and specification requirements utilizing as a minimum the conformance criteria specified herein. When using the inspection levels stated in the Classification of Characteristics paragraphs use TABLE III to select the sample size.

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TABLE III. Attributes sampling inspection.

LOT SIZE	<u>Inspection Levels</u>	
	<u>III</u>	<u>VI</u>
	<u>SAMPLE SIZE</u>	
TO 90	32	13
91 TO 150	32	20
151 TO 280	32	20
281 TO 500	50	32
501 TO 1200	80	32
1,201 TO 3200	80	32
3,201 TO 10,000	125	50
10,001 TO 35,000	125	50
35,001 TO 150,000	125	80
150,001 TO 500,000	200	80
500,001 AND OVER	200	80

Numbers listed under the inspection levels indicate sample size. If the sample size exceeds the lot size, perform 100% inspection. Accept with zero defects only and reject with one or more defects for all inspection levels.

★ b. Alternative quality conformance provisions. Unless otherwise specified herein or provided for in the contract, alternative inspection procedures, methods, or equipment, such as statistical process control, tool control, variables sampling, or other types of sampling plans, etc., may be used by the contractor when they provide, as a minimum, the level of quality assurance required by the provisions herein. Prior to applying such alternative procedures, methods, or equipment the contractor shall describe them in a written proposal submitted to the procuring contracting officer for evaluation (see 6.8). When required, the contractor shall demonstrate that the effectiveness of each proposed alternative is equal to or better than the specified quality assurance provision(s) herein. In cases of dispute as to whether the contractor's proposed alternative(s) provides equivalent assurance, the provisions of this specification shall apply. All approved alternative inspection provisions shall be specifically incorporated into the contractor's quality program or inspection system, as applicable.

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QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF CHARACTERISTICS

4.4.2.1	PENETRATOR, SLAP	SH 1 of 1	DRAWING NUMBER 9370056
	Cartridge, Caliber .50 SLAP M903		NEXT HIGHER ASSEMBLY 9370055
CLASS	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH INSPECTION METHOD REF

CRITICAL: NONE DEFINEDMAJOR :

101.	OUTSIDE DIAMETER	LEVEL III	3.2	GAGE
102.	BLUNT POINT	LEVEL III	3.2	VISUAL
103.	UPSET (CROOKED) POINT	LEVEL III	3.2	VISUAL
104.	LIQUID PENETRANT INSPECTION <u>1/</u>	LEVEL III	3.2	VISUAL

MINOR :

201.	DENT	LEVEL VI	3.2	VISUAL
202.	SCRATCH	LEVEL VI	3.2	VISUAL
203.	WORKMANSHIP	LEVEL VI	3.18	VISUAL

1/ Penetrators shall be examined after machining IAW MIL-STD-6866.

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QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF CHARACTERISTICS

4.4.2.2 SABOT ASSEMBLY, SLAP		SH 1 of 1	DRAWING NUMBER 9370057	
Cartridge, Caliber .50 SLAP M903			NEXT HIGHER ASSEMBLY 9370055	
CLASS	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REF
<u>CRITICAL</u> : NONE DEFINED				
<u>MAJOR</u> :				
101.	MISSING AREA MULTIPLIER	100%	3.2	VISUAL
102.	DISPLACED AREA MULTIPLIER	100%	3.2	VISUAL <u>1/</u>
103.	SINK UNDER AREA MULTIPLIER	LEVEL III	3.2	VISUAL <u>2/</u>
104.	MELT FLOW RATE	<u>3/</u>	3.5	4.5.3
105.	CRACK OR SPLIT	LEVEL III	3.2	VISUAL
106.	MISSING CANNELURE	LEVEL III	3.2	VISUAL

MINOR :

201.	WORKMANSHIP	LEVEL VI	3.18	VISUAL
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NOTES :

1/ Reject sabot assemblies with any plastic over (covering) the penetrator side of the area multiplier.

2/ Section sabot assemblies and examine for the stated defect. when a sectioned sabot(s) with a sink in excess of .5mm (.020 inches) is found the lot or that portion of the lot represented by the sabot assembly sample shall be rejected.

3/ At the end of each eight hours of continuous production, sabots from each mold shall be subjected to the melt flow rate test. Failure to meet the requirements of paragraph 3.5 shall result in the rejection of the sabot assemblies produced on that mold during that eight hour period.

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QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF CHARACTERISTICS

4.4.2.3	PROJECTILE ASSEMBLY, SLAP	SH 1 of 1	DRAWING NUMBER	9370058
	Cartridge, Caliber .50 SLAP M903		NEXT HIGHER ASSEMBLY	9370055
CLASS	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REF
<u>CRITICAL:</u> NONE DEFINED				
<u>MAJOR :</u>				
101.	OUTSIDE DIAMETER	LEVEL III	3.2	GAGE
102.	OVERALL LENGTH	LEVEL III	3.2	GAGE
103.	CRACK OR SPLIT IN THE SABOT	LEVEL III	3.2	VISUAL
<u>MINOR :</u>				
201.	WORKMANSHIP	LEVEL VI	3.18	VISUAL

MIL-C-70663B (AR)

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF CHARACTERISTICS

				DRAWING NUMBER
* 4 .4.2.4	Cartridge, Caliber .50 SLAP M903 sh 1 of 2	9370055		
CLASS	EXAMINATION OR TEST	CONFORMANCE	REQUIREMENT	INSPECTION
	<u>1/</u>	CRITERIA	PARAGRAPH	METHOD REF 2/

***CRITICAL:**

1.	CASE SPLIT IN K, L, OR M LOCATION (6)	100%	3.2	VISUAL
2.	CASE SPLIT IN I, S, OR J LOCATION (6) WHEN LOSS OF POWDER OCCURS	100%	3.2	VISUAL
3.	PERFORATED CASE (7)	100%	3.2	VISUAL
4.	WEIGHT UNDER MINIMUM 3/	100%	3.3	GAGE

***SPECIAL:**

a.	PRIMER MISSING (32)	100%	3.2	VISUAL
b.	PRIMER COCKED (33)	100%	3.2	VISUAL
c.	PRIMER INVERTED (34)	100%	3.2	VISUAL

***MAJOR :**

101.	CASE SPLIT IN I, S, OR J LOCATION (6) WHEN NO LOSS OF POWDER	100%	3.2	VISUAL
102.	CORRODED OR STAINED CARTRIDGE, IF ETCHED (2)	LEVEL III	3.2	VISUAL
103.	ROUND HEAD (CASE) (4)	LEVEL III	3.2	VISUAL
104.	DENTED CASE (5)	LEVEL III	3.2	VISUAL
105.	DRAW SCFRATCH (8)	LEVEL III	3.2	VISUAL
106.	BEVELED UNDERSIDE OF HEAD CASE (10)	LEVEL III	3.2	VISUAL
107.	SCALY METAL (CASE) (12)	LEVEL III	3.2	VISUAL
108.	NO CHAMFER ON HEAD (RIM) (13)	LEVEL III	3.2	VISUAL
109.	NO VISIBLE EVIDENCE OF MOUTH ANNEAL (CASE) (21)	LEVEL III	3.2	VISUAL
110.	MISSING, LOOSE, OR INVERTED PENETRATOR	LEVEL III	3.2	VISUAL/MANUAL
111.	LOOSE PRIMER (35)	LEVEL III	3.2	VISUAL/MANUAL
112.	TOTAL LENGTH	LEVEL III	3.2	GAGE
113.	CARTRIDGE PROFILE FAILURE REQUIRING MORE THAN 80 LBS FORCE TO INSERT IN THE PROFILE AND ALIGNMENT' GAGE	LEVEL III	3.2	GAGE
114.	DIAMETER OF EXTRACTOR GROOVE, MAXIMUM	LEVEL III	3.2	GAGE

MIL-C-70663B (AR)

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF CHARACTERISTICS

				DRAWING NUMBER	
4.4.2.4	Cartridge, Caliber .50 SLAP M903 sh 2 of 2	9370055			
CLASS	EXAMINATION OR TEST	CONFORMANCE	REQUIREMENT	INSPECTION	
	<u>1/</u>	CRITERIA	PARAGRAPH	METHOD	REF <u>2/</u>

*MAJOR : (CONT.)

115.	DIAMETER OF HEAD	LEVEL III	3.2	GAGE
116.	THICKNESS OF HEAD	LEVEL III	3.2	GAGE
117.	LENGTH TO SHOULDER DATUM	LEVEL III	3.2	GAGE
118.	DEPTH OF PRIMER	LEVEL III	3.2	GAGE
119.	CRACKED OR DAMAGED SABOT	LEVEL III	3.2	VISUAL

MINOR :

201 .	DISCOLORED, DIRTY, OILY, OR SMEARED (WATERPROOFING) (1)	LEVEL VI	3.2	VISUAL
202.	DENTED CASE (5)	LEVEL VI	3.2	VISUAL
203.	DRAW SCRATCH (CASE) (8)	LEVEL VI	3.2	VISUAL
204.	SCRATCH (CASE) (9)	LEVEL VI	3.2	VISUAL
205.	SCALY METAL (CASE) (12)	LEVEL VI	3.2	VISUAL
206.	FOLD, WRINKLE, BUCKLE, OR BULGE (CASE) (14, 15, 16, 17)	LEVEL VI	3.2	VISUAL
207.	HEAD STAMP MISSING OR ILLEGIBLE (CASE) (18)	LEVEL VI	3.2	VISUAL
208.	DEFECTIVE HEAD (CASE) (19)	LEVEL VI	3.2	VISUAL
209.	DEFECTIVE MOUTH (CASE) (20)	LEVEL VI	3.2	VISUAL
210.	NICKED OR DENTED PRIMER (36)	LEVEL VI	3.2	VISUAL
211.	NO WATERPROOFING MATERIAL AT THE PRIMER POCKET JOINT (37)	LEVEL VI	3.2	VISUAL
212.	DEFECTIVE CRIMP (38)	LEVEL VI	3.2	VISUAL
213.	DIAMETER OF THE EXTRACTOR GROOVE, MINIMUM	LEVEL VI	3.2	GAGE
214.	WORKMANSHIP <u>4/</u>	LEVEL VI	3.18	VISUAL

NOTES : 1/ NUMBERS AFTER DEFECT DESCRIPTIONS REFER TO VISUAL DEFECT STANDARDS IN MIL-STD-636 (CALIBER .50 SECTION).
2/ REFER TO MIL-STD-636 (CALIBER .50 SECTION) FOR VISUAL DEFECT STANDARDS . IN THE EVENT OF A CONFLICT BETWEEN 4.4.2.4 OF THIS DOCUMENT AND MIL-STD-636 THE TEXT OF 4.4.2.4 SHALL TAKE PRECEDENCE.
3/ EACH LIGHTWEIGHT CARTRIDGE SHALL BE DISASSEMBLED AND THE PROPELLANT WEIGHED. ANY CARTRIDGE CONTAINING LESS THAN 8.10 GRAMS (125 GRAINS) OF PROPELLANT SHALL BE CLASSED AS A CRITICAL DEFECT. ANY CARTRIDGE CONTAINING MORE THAN 8.10 GRAMS (125 GRAINS) OF PROPELLANT SHALL BE CLASSED AS A MAJOR DEFECT.
4/ DEFECTS OTHER THAN THOSE LISTED IN MIL-STD-636 (CAL.50 SECTION).

MIL-C-70663B (AR)

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF CHARACTERISTICS

4.4.2.5	PENETRATOR, SLAPT	SH 1 of 1	DRAWING NUMBER 12902950
* Cartridge, Caliber 50 SLAPT M962		NEXT HIGHER ASSEMBLY 12902945	

CLASS	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD	REF
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CRITICAL: NONE DEFINEDMAJOR :

101.	OUTSIDE DIAMETER	LEVEL III	3.2	GAGE
102.	BLUNT POINT	LEVEL III	3.2	VISUAL
103.	UPSET (CROOKED) POINT	LEVEL III	3.2	VISUAL
104.	TRACE CAVITY DIAMETER	LEVEL III	3.2	GAGE
105.	TRACE CAVITY DEPTH	LEVEL III	3.2	GAGE
106.	TRACE CAVITY FINISH	LEVEL III	3.2	VISUAL
107.	LIQUID PENETRANT INSPECTION <u>1/</u>	LEVEL III	3.2	VISUAL

MINOR :

201.	DENT	LEVEL VI	3.2	VISUAL
202.	SCRATCH	LEVEL VI	3.2	VISUAL
203.	WORKMANSHIP	LEVEL VI	3.18	VISUAL

1/ Penetrators shall be examined after machining IAW MIL-STD-6866.

MIL-C-70663B (AR)

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF CHARACTERISTICS

4.4.2.6	SABOT ASSEMBLY, SLAPT	SH 1 of 1	DRAWING NUMBER 12902947
* Cartridge, Caliber 50 SLAPT M962			NEXT HIGHER ASSEMBLY 12902945
CLASS	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH
			INSPECTION METHOD REF

CRITICAL: NONE DEFINEDMAJOR :

101.	MISSING AREA MULTIPLIER	100%	3.2	VISUAL
102.	DISPLACED AREA MULTIPLIER	100%	3.2	VISUAL <u>1/</u>
103.	SINK UNDER AREA MULTIPLIER	LEVEL III	3.2	VISUAL <u>2/</u>
104.	MELT FLOW RATE	<u>3/</u>	3.5	4.5.3
105.	CRACK OR SPLIT	LEVEL III	3.2	VISUAL
106.	MISSING CANNELURE	LEVEL III	3.2	VISUAL

MINOR :

201.	WORKMANSHIP	LEVEL VI	3.18	VISUAL
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NOTES : 1/ Reject sabot assemblies with any plastic over (covering) the penetrator side of the area multiplier

2/ Section sabot assemblies and examine for the stated defect. When a sectioned sabot(s) with a sink in excess of .5mm (.020 inches) is found the lot or that portion of the lot represented by the sabot assembly sample shall be rejected.

3/ At the end of each eight hours of continuous production, sabots from each mold shall be subjected to the melt flow rate test. Failure to meet the requirements of paragraph 3.5 shall result in the rejection of the sabot assemblies produced on that mold during that eight hour period.

MIL-C-70663B (AR)

QUALITY CONFORMANCE INSPECTION

4.4.2.7 PROJECTILE ASSEMBLY, SLAPT SH 1 of 1 DRAWING NUMBER 12902946

* Cartridge, Caliber .50 SLAPT M962 NEXT HIGHER ASSEMBLY 12902945

CLASS	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD	REF
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CRITICAL : NONE DEFINED

MAJOR :

101.	OUTSIDE DIAMETER	LEVEL III	3.2	GAGE	
102.	OVERALL LENGTH	LEVEL III	3.2	GAGE	
103.	CRACK OR SPLIT	LEVEL III	3.2	VISUAL	

MINOR :

201.	WORKMANSHIP	LEVEL VI	3.18	VISUAL	
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MIL-C-70663B (AR)

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF CHARACTERISTICS

					DRAWING NUMBER	
*4.4.2.8 cartridge, Caliber .50 SLAPT M962 sh 1 of 2					12902945	
CLASS	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD	REF <u>2/</u>	
<u>*CRITICAL:</u>						
1.	CASE SPLIT IN K, L, OR M LOCATION (6)	100%	3.2	VISUAL		
2.	CASE SPLIT IN I, S, OR J LOCATION (6) WHEN LOSS OF POWDER OCCURS	100%	3.2	VISUAL		
3.	PERFORATED CASE (7)	100%	3.2	VISUAL		
4.	WEIGHT UNDER MINIMUM <u>3/</u>	100%	3.3	GAGE		
<u>*SPECIAL:</u>						
a.	PRIMER MISSING (32)	100%	3.2	VISUAL		
b.	PRIMER COCKED (33)	100%	3.2	VISUAL		
c.	PRIMER INVERTED (34)	100%	3.2	VISUAL		
<u>*MAJOR :</u>						
101.	CASE SPLIT IN I, S, OR J LOCATION (6) WHEN NO LOSS OF POWDER	100%	3.2	VISUAL		
102.	CORRODED OR STAINED CARTRIDGE, IF ETCHED (2)	LEVEL	III 3.2	VISUAL		
103.	ROUND HEAD (CASE) (4)	LEVEL	III 3.2	VISUAL		
104.	DENTED CASE (5)	LEVEL	III 3.2	VISUAL		
105.	DRAW SCRATCH (8)	LEVEL	III 3.2	VISUAL		
106.	BEVELED UNDERSIDE OF HEAD CASE (10)	LEVEL	III 3.2	VISUAL		
107.	SCALY METAL (CASE) (12)	LEVEL	III 3.2	VISUAL		
108.	NO CHAMFER ON HEAD (RIM) (13)	LEVEL	III 3.2	VISUAL		
109.	NO VISIBLE EVIDENCE OF MOUTH ANNEAL (CASE) (21)	LEVEL	III 3.2	VISUAL		
110.	MISSING, LOOSE, OR INVERTED PENETRATOR	LEVEL	III 3.2	VISUAL/MANUAL		
111.	LOOSE PRIMER (35)	LEVEL	III 3.2	VISUAL/MANUAL		
112.	TOTAL LENGTH	LEVEL	III 3.2	GAGE		
113.	CARTRIDGE PROFILE FAILURE REQUIRING MORE THAN 80 LBS FORCE TO INSERT IN THE PROFILE AND ALIGNMENT GAGE	LEVEL	III 3.2	GAGE		
114.	DIAMETER OF EXTRACTOR GROOVE, . MAXIMUM	LEVEL	III 3.2	GAGE		

MIL-C-70663B (AR)

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF CHARACTERISTICS

					DRAWING NUMBER
*4.4.2.8	Cartridge, Caliber .50 SLAPT M962 sh 2 of 2				12902945
CLASS	EXAMINATION OR TEST	CONFORMANCE	REQUIREMENT	INSPECTION	
	<u>1/</u>	CRITERIA	PARAGRAPH	METHOD	REF <u>2/</u>

*MAJOR : (CONT.)

115.	DIAMETER OF HEAD	LEVEL III	3.2	GAGE
116.	THICKNESS OF HEAD	LEVEL III	3.2	GAGE
117.	LENGTH TO SHOULDER DATUM	LEVEL III	3.2	GAGE
118.	DEPTH OF PRIMER	LEVEL III	3.2	GAGE
119.	CRACKED OR DAMAGED SABOT	LEVEL III	3.2	VISUAL

MINOR :

201.	DISCOLORED, DIRTY, OILY, OR SMEARED (WATERPROOFING) (1)	LEVEL VI	3.2	VISUAL
202.	DENTED CASE (5)	LEVEL VI	3.2	VISUAL
203.	DRAW SCRATCH (CASE) (8)	LEVEL VI	3.2	VISUAL
204.	SCRATCH (CASE) (9)	LEVEL VI	3.2	VISUAL
205.	SCALY METAL (CASE) (12)	LEVEL VI	3.2	VISUAL
206.	FOLD, WRINKLE, BUCKLE, OR BULGE (CASE) (14, 15, 16, 17)	LEVEL VI	3.2	VISUAL
207.	HEAD STAMP MISSING OR LLEGIBLE (CASE) (18)	LEVEL VI	3.2	VISUAL
208.	DEFECTIVE HEAD (CASE) (19)	LEVEL VI	3.2	VISUAL
209.	DEFECTIVE MOUTH (CASE) (20)	LEVEL VI	3.2	VISUAL
210.	NICKED OR DENTED PRIMER (36)	LEVEL VI	3.2	VISUAL
211.	NO WATERPROOFING MATERIAL AT THE PRIMER POCKET JOINT (37)	LEVEL VI	3.2	VISUAL
212.	DEFECTIVE CRIMP (38)	LEVEL VI	3.2	VISUAL
213.	DIAMETER OF THE EXTRACTOR GROOVE, MINIMUM	LEVEL VI	3.2	GAGE
214.	WORKMANSHIP 4/	LEVEL VI	3.18	VISUAL

NOTES :

1/ NUMBERS AFTER DEFECT DESCRIPTIONS REFER TO VISUAL DEFECT STANDARDS IN MIL-STD-636 (CALIBER .50 SECTION).

2/ REFER TO MIL-STD-636 (CALIBER .50 SECTION) FOR VISUAL DEFECT STANDARDS . IN THE EVENT OF A CONFLICT BETWEEN 4.4.2.8 OF THIS DOCUMENT AND MIL-STD-636 THE TEXT OF 4.4.2.8 SHALL TAKE PRECEDENCE.

3/ EACH LIGHTWEIGHT CARTRIDGE SHALL BE DISASSEMBLED AND THE PROPELLANT WEIGHED. ANY CARTRIDGE CONTAINING LESS THAN 8 GRAMS (12 5 GRAINS) OF PROPELLANT SHALL BE CLASSED AS A CRITICAL DEFECT. ANY CARTRIDGE CONTAINING MORE THAN 8 GRAMS (125 GRAINS) OF PROPELLANT SHALL BE CLASSED AS A MAJOR DEFECT.

4/ DEFECTS OTHER THAN THOSE LISTED IN MIL-STD-636 (CAL.50 SECTION).

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4.4.3 Testing Testing is described in 4.4.3.1. Testing shall be conducted IAW the methods and procedures specified in 4.5.

a. Test samples. The quantities for the various tests shall be as specified in 4.4.3.1. Only cartridges having met the visual and dimensional requirements shall be used in the ballistic tests, and shall have been selected in such a manner that the sample is representative of the entire lot. Sufficient cartridges shall be selected so that all testing (including testing of second samples where necessary) can be performed. The cartridges shall be thoroughly mixed before being divided into samples for the various tests.

b. Firing defects and associated acceptance-rejection criteria are specified in Table IV. All defects are classified as major.

MIL-C-70663B (AR)

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF CHARACTERISTICS

					DRAWING NUMBER	
*4.4.3.1 Cartridge, Caliber .50 SLAP M903 sh 1 of 2					9370055	
CLASS	EXAMINATION OR TEST	CONFORMANCE CRITERIA	QTY	RQMT PARA	INSPECTION METHOD	REF
101.	Bullet Extraction	25	<u>1/</u>	3.4		4.5.2
102.	Residual Stress	50	<u>1/</u>	3.6		4.5.4
103.	Dispersion	90	<u>2/</u>	3.8		4.5.5
104.	Penetration	20	<u>4/</u>	3.9		4.5.7
105.	Chamber Press at Ambient Temp	20	<u>2/</u>	3.10		4.5.8
106.	Chamber Press at High Temperature	20	<u>2/</u>	3.10.1		4.5.8
107.	Chamber Press at Low Temperature	20	<u>2/</u>	3.10.2		4.5.8
108.	Velocity at Ambient Temp	20	<u>2/</u>	3.11		4.5.9
109.	Velocity at High Temperature	20	<u>2/</u>	3.11.1		4.5.9
110.	Velocity at Low Temperature	20	<u>2/</u>	3.11.2		4.5.9
111.	Waterproof	20	<u>2/</u>	3.12		4.5.10
112.	Yaw at Ambient Temp	20	<u>5/ 1/</u>	3.13		4.5.11
113.	Stripping	40	<u>1/</u>	3.14		4.5.12
114.	Action Time	50	<u>1/</u>	3.15		4.5.13
	Caliber .50 M2 Browning Machine Gun Heavy Barrel Flexible					
115.	Function and Casualty at Ambient	200	<u>6/</u>	3.16		4.5.14
116.	Function and Casualty at High Temp	100	<u>6/</u>	3.16.1		4.5.14
117.	Function and Casualty at Low Temp	100	<u>6/</u>	3.16.2		4.5.14
	Caliber .50 M2 Browning Machine Gun Heavy Barrel Turret Type (M48 and M48 Series)					
118.	Function and Casualty at Ambient	200	<u>6/</u>	3.16		4.5.14
119.	Function and Casualty at High Temp	100	<u>6/</u>	3.16.1		4.5.14
120.	Function and Casualty at Low Temp	100	<u>6/</u>	3.16.2		4.5.14

NOTES :

1/ Failure of two or more cartridges to comply with the applicable requirement shall be cause for rejection of the lot. If one cartridge fails in the first test a second sample consisting of double the number of cartridges used in the first sample shall be tested. If any additional cartridges fail in the second test the lot shall be rejected.

2/ Failure of the cartridges to comply with the applicable requirement shall result in rejection of the lot subject to testing of a second sample consisting of double the quantity of cartridges used in the first test. Failure of the cartridges in the second sample to comply with the applicable requirement shall result in rejection of the lot.

MIL-C-70663B (AR)

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF CHARACTERISTICS

				DRAWING NUMBER
*4.4.3.1	Cartridge, Caliber . 50 SLAP M903 sh 2 of 2			9370055

CLASS	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD	REF
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NOTES (Cont.):

3/ Fire either the 1370 m portion of the test or the 250 m portion of the test. Failure of 11 or more cartridges in either test to perforate the armor shall be cause for rejection of the lot pending a retest of double the initial test quantity. If on retest more than 50% of the test cartridges fail to perforate the armor, the lot shall be rejected. Perforation shall be defined as the complete passage of the penetrator through the armor plate leaving a hole.

4/ This test may be performed concurrently with the velocity tests.

5/ The lot shall be rejected when function and casualty defects plus firing defects observed in all other firing tests exceed the acceptance number for the cumulative sample in TABLE IV. If the number of nonconformances found in the first test exceeds the acceptance number for the first sample, but is equal to or less than the acceptance number for the cumulative sample, a second sample consisting of double the quantities specified for the function and casualty test, shall be fired in all service weapons specified. This procedure shall apply regardless of the weapon or weapons in which the firing defects occurred in the first test. If the total number of defects in the combined first and second sample exceed the acceptance number for the cumulative sample, the lot shall be rejected. If in testing a second sample, defects other than those for which the second sample is being tested should occur to the extent that those defects exceed the acceptance number for the cumulative sample, the lot shall be rejected.

MIL-C-70663B (AR)

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF CHARACTERISTICS

					DRAWING NUMBER	
*4.4.3.2 Cartridge, Caliber.50 SLAPT M962 sh 1 of 2					12902945	
CLASS	EXAMINATION OR TEST	CONFORMANCE CRITERIA	QTY	RQMT PARA	INSPECTION METHOD	REF
101.	Bullet Extraction	25	<u>1/</u>	3.4		4.5.2
102.	Residual Stress	50	<u>1/</u>	3.6		4.5.4
103.	Dispersion	90	<u>2/</u>	3.8		4.5.5
104.	Match	30	<u>3/ 2/</u>	3.8.1		4.5.6
105.	chamber Press at Ambient Temp	20	<u>2/</u>	3.10		4.5.8
106.	Chamber Press at High Temperature	20	<u>2/</u>	3.10.1		4.5.8
107.	Chamber Press at Low Temperature	20	<u>2/</u>	3.10.2		4.5.8
108.	Velocity at Ambient Temp	20	<u>2/</u>	3.11		4.5.9
109.	Velocity at High Temperature	20	<u>2/</u>	3.11.1		4.5.9
110.	Velocity at Low Temperature	20	<u>2/</u>	3.11.2		4.5.9
111.	Waterproof	20	<u>2/</u>	3.12		4.5.10
112.	Waterproof trace	20	<u>2/</u>	3.12.1		4.5.10.1
*113.	Yaw at Ambient Temp	20	<u>4/ 1/</u>	3.13		405.11
114.	Stripping	40	<u>1/</u>	3.14		4.5.12
115.	Action Time	50	<u>1/</u>	3.15		4.5.13
Caliber .50 M2 Browning Machine Gun Heavy Barrel Flexible						
116.	Function and Casualty at Ambient	200	<u>5/</u>	3.16		4.5.14
117.	Function and Casualty at High Temp	100	<u>5/</u>	3.16.1		4.5.14
118.	Function and Casualty at Low Temp	100	<u>5/</u>	3.16.2		405.14
Caliber .50 M2 Browning Machine Gun Heavy Barrel Turret Type (M48 and M48 Series)						
119.	Function and Casualty at Ambient	200	<u>5/</u>	3.16		4.5.14
120.	Function and Casualty at High Temp	100	<u>5/</u>	3.16.1		4.5.14
121.	Function and Casualty at Low Temp	100	<u>5/</u>	3.16.2		4.5.14
122.	Trace	100	<u>6/</u>	3.17		4.5.15

NOTES : 1/ Failure of two or more cartridges to comply with the applicable requirement shall be cause for-rejection of the lot. If one cartridge fails in the first test a second sample consisting of double the number of cartridges used in the first sample shall be tested. If any additional cartridges fail in the second test the lot shall be rejected.

2/ Failure of the cartridges to comply with the applicable requirement shall result in rejection of the lot subject to testing of a second sample consisting of double the quantity of cartridges used in the first test. Failure of the cartridges in the second sample to comply with the applicable requirement shall result in rejection of the lot.

MIL-C-70663E3 (AR)

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF CHARACTERISTICS

				DRAWING NUMBER
*4.4.3.2	Cartridge, Caliber.50	SLAPT M962 sh 2 of 2		12902945
CLASS	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REF

NOTES (Cont.):

3/ 30 SLAP + 30 SLAPT (Tracer). This test may be performed concurrently with the dispersion tests.

4/ This test may be performed concurrently with the velocity tests.

5/ The lot shall be rejected when function and casualty defects plus firing defects observed in all other firing tests exceed the acceptance number for the cumulative sample in TABLE IV. If the number of nonconformances found in the first test exceeds the acceptance number for the first sample, but is equal to or less than the acceptance number for the cumulative sample, a second sample consisting of double the quantities specified for the function and casualty test, shall be fired in all service weapons specified. This procedure shall apply regardless of the weapon or weapons in which the firing defects occurred in the first test. If the total number of defects in the combined first and second sample exceed the acceptance number for the cumulative sample, the lot shall be rejected. If in testing a second sample, defects other than those for which the second sample is being tested should occur to the extent that those defects exceed the acceptance number for the cumulative sample, the lot shall be rejected.

6/ Failure of 46 or more cartridges to comply with the trace requirement shall be cause for rejection of the lot. If more than 15 but less than 46 cartridges fail during the first test, a second sample consisting of double the number of cartridges tested in the first test shall be fired. The lot shall be rejected if in firing the combined first and second sample a total of 46 or more cartridges fail the trace requirement.

MIL-C-70663B (AR)

Table IV. QUALITY CONFORMANCE INSPECTION FUNCTION AND CASUALTY
FIRING DEFECT CLASSIFICATION AND ACCEPT - REJECT CRITERIA

<u>DEFECT CLASS</u>	<u>ACCEPTANCE NUMBERS</u>		<u>DEFECT CLASSIFICATION</u>
	<u>FIRST SAMPLE</u>	<u>CUMULATIVE SAMPLE</u>	
1. Sabot/Penetrator remaining in bore	0	<u>1</u> /	CRITICAL
2. Misfire Vent hole missing or blocked	0	<u>1</u> /	MAJOR
3. Sabot/Penetrator separation in bore <u>2</u> /	0	1	MAJOR
4. Misfire (excluding 2 above)	1	2	MAJOR
5. Primer defects:			
a. Perforation in firing pin indent in primer cup	16	42	MINOR
b. Escape of gas through primer cup other than 4.a.	5	11	MAJOR
c* Escape of gas around primer cup more than 50% of periphery	10	21	MAJOR
d. Blown primer <u>3</u> /	0	1	MAJOR
6. Case casualties <u>4</u> /			
a. Longitudinal split			
(1) Neck or shoulder (I or S)	9	23	MINOR
(2) Body (J)	5	11	MAJOR
(3) Body (K)	0	1	MAJOR
(4) To head (L)	0	1	MAJOR
(5) Through head (M)	0	1	MAJOR
b. Circumferential rupture			
(1) Partial, shoulder, or body (J,K, or S)	1	2	MAJOR
(2) Partial head (L)	0	1	MAJOR
(3) Complete	0	1	MAJOR
7. Failure to extract	0	1	MAJOR
8. Weapon stoppage <u>5</u> /	0	1	MAJOR

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Table IV. QUALITY CONFORMANCE INSPECTION FUNCTION AND CASUALTY
FIRING DEFECT CLASSIFICATION AND ACCEPT - REJECT CRITERIA

NOTES :

1/ No second sample is permitted. The lot shall be rejected.

2/ Excessive muzzle flash, loud report, drop in velocity, or any combination of the three may be an indication of sabot/penetrator separation in the bore. Final determination of a sabot/penetrator failure will be damage to the bore of the weapon.

3/ Primer defects:

Blown primer. A primer which, when the cartridge is fired, is completely separated from the head of the cartridge case. Both the head of the case and the primer pocket are grossly distorted and deformed. The severity of this condition is such that it is easily seen.

b. Dropped primer. A primer which falls from the primer pocket after the cartridge is fired.

4/ For location of defects indicated by letter in parentheses see drawing 7643674.

5/ All stoppages attributable to the ammunition with the exception of misfires, complete circumferential rupture, or failure to extract observed in all tests shall be included.

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4.4.4 Packaging, packing, and marking inspection. During or immediately prior to the packaging operation, 100% examination of the cartridges shall be performed to ascertain that the cartridge type conforms to the drawing. Discovery of a high pressure test round, dummy cartridge, or blank cartridge shall be classed as a critical defect. Discovery of any incorrect type of caliber .50 ammunition other than those listed in the previous sentence shall be classed as a major defect. All nonconforming cartridges shall be rejected. All packing and marking shall be IAW MIL-STD-644 as applies to the drawing.

4.4.5 Inspection equipment. The inspection equipment required to perform the inspections specified herein is identified in the "Inspection Method Reference" column of the Classification of Characteristics paragraphs starting with 4.4.2.1. Contractor inspection equipment designs shall be submitted for Government approval as specified in the contract. See section 6 of MIL-A-48078 and 6.3 herein.

* 4.4.6 Inspection equipment lists. The examination and tests shall be made using equipment listed on IL-9370055 and IL-12902945 except as specified in 4.5.

4.5 Methods of inspection.

4.5.1 Cartridge Weight. Weigh each cartridge using an approved method and approved equipment design.

4.5.2 Bullet extraction. The cartridge shall be tested in an approved bullet extraction machine. The rate of travel of the test head shall be from 75 mm per minute to 150 mm per minute (3 to 6 inches per minute).

4.5.3 Melt flow rate. Samples of sabots selected at random from the production lot shall be broken to remove the area multiplier and then ground to a grain size approximating the size of virgin molding material. The test sample along with a reference sample of the molding material shall be dried to the specified premolding moisture level and subjected to a melt flow rate determination IAW ASTM D 1238, test condition 343C/6.7 Kg (14.8 pounds mass).

* 4.5.4 Residual stress. The test shall be conducted IAW SCATP 7.62, Section 11, Mercurous Nitrate Test Procedure.

* 4.5.5 Dispersion. The cartridges shall be tested in the accuracy rifle using the SLAP accuracy test barrel, 8649496, (45" long) secured to an accuracy mount. The test shall be conducted IAW TECP 700-700, Vol. III, Section 7-14.

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* 4.5.6 Match. For the match test, the cartridges shall be tested in the accuracy rifle using the SLAP accuracy test barrel, 8649496, (45" long) secured to an accuracy mount. Once properly aimed at the target the rifle shall not be moved during the test. The target holder shall be designed to permit the use of registration marks to permit the removal of the target holder between the firing of the SLAP and the SLAPT cartridges to mark the SLAP bullet holes. Fire 10 SLAP test cartridges IAW TECP 700-700, Vol. III, Section 7-14. Mark the SLAP holes. Without moving the accuracy rifle fire 10 SLAPT test cartridges IAW TECP 700-700, Vol. III, Section 7-14. Repeat the SLAP/SLAPT firing sequence until the required number of test SLAP and SLAPT targets have been fired. Measure and record the vertical distance between the mean points of impact of the SLAP and SLAPT bullet holes on each target.

4.5.7 Penetration. The penetration test shall be performed at a temperature of $20C \pm 14C$ ($68F \pm 25F$), and a barometric pressure of $101.3 \text{ KPa} \pm 7 \text{ KPa}$ (30 ± 2 inches of mercury), IAW TECP 700-700, Vol. III, Section 7-17. The distance to the vertical target shall be 1370 meters (1500 yards) and 250 meters (275 yards) to the MIL-A-46100 High Hardness Armor (HHA) (500 BHN nominal) at 57 degrees obliquity (57 degrees from the vertical). The cartridges shall be fired in the accuracy rifle using the SLAP accuracy test barrel, 8649496, (45" long) secured to an accuracy mount. A sufficient number of rounds shall be fired at the 1370 meter target until 20 hits are recorded on the armor plate. A sufficient number of rounds shall be fired at the 250 meter 57 degree obliquity target until 20 hits are recorded on the armor plate. Record complete perforations, complete penetrations, and other results of the firing using the definitions and pictures in TECP 700-700, Vol. III, Section 7-17, as a reference.

4.5.8 Chamber pressure. Cartridges conditioned at $20C \pm 1C$ ($68F \pm 2F$) for not less than two hours, $-46C \pm 3C$ ($-50 \pm 5F$) for not less than six hours, and $65C \pm 1C$ ($150F \pm 2F$) for four to twelve hours shall be fired one shot at a time for chamber pressure measurements in a universal rifle using the SLAP chamber test barrel, 8649498, (45" long) secured to an accuracy mount. The chamber pressure test shall be conducted IAW TECP 700-700, Vol. III, Section 7-13.

4.5.9 Velocity. Cartridges conditioned at $20C \pm 1C$ ($68F \pm 2F$) for not less than two hours, $-46C \pm 3C$ ($-50 \pm 5F$) for not less than six hours, and $65C \pm 1C$ ($150F \pm 2F$) for four to twelve hours shall be fired one shot at a time for velocity measurements in a universal rifle using the SLAP velocity and action time test barrel, 8649497, (45" long) secured to a rigid mount. The test shall be conducted IAW TECP 700-700, Vol. III, Section 7-13.

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* 4.5.10 Waterproof. Test IAW TECP 700-700, Vol. III, Section 7-13. The maximum time interval between removal from immersion in water for 24 hours and firing shall not exceed three hours. Fire the sample cartridges one shot at a time for velocity measurements in a universal rifle using the SLAP velocity and action time test barrel, 8649497, (45" long) secured to a rigid mount. Record the date and the results of each shot.

* 4.5.10.1 Waterproof trace. Test IAW TECP 700-700, Vol. III, Section 7-18 except that observation for trace ignition is required only from behind the weapon. An observer shall be positioned approximately three meters to the side of the weapon to observe for the presence of visible trace. Observe for ignition of the tracer during the waterproof firing test, 4.5.10. The date and the results of each shot (trace or blind) shall be recorded. During firing, observation shall also be made for (a) bullet bursting before striking bullet stop or target, (b) trace muzzle flash, and (c) erratic flight.

* 4.5.11 Yaw. Place a target with target paper, MIL-P-10831, or a yaw card in the line of fire 36.5 ± 3 meters (120 ± 10 feet) from the muzzle of the weapon. Fire the required number of shots using ammunition conditioned as required for the yaw tests in a universal rifle using the SLAP velocity and action time test barrel, 8649497, (45" long) secured to a rigid mount. After firing examine the target. Each bullet hole over 13 mm (1/2 inch) shall be reported as a failure. The yaw test may be performed concurrently with the velocity testing.

4.5.12 Stripping. The stripping test shall be conducted by firing the sample cartridges one shot at a time in a universal rifle using the SLAP velocity and action time test barrel, 8649497, (45" long) secured to a rigid mount at a target 46 meters (50 yards) from the muzzle of the weapon. Examine the the holes in the target. Holes the size of the penetrator approximately 8 mm show that the sabots performed properly by stripping from the penetrator forward of the target. Large holes approximately 13 mm (.50 inch) in diameter give indication that the sabot(s) did not strip from the penetrator and are, therefore, failures. If the number of 8mm (.30 inch) holes equals the number of rounds fired, the sample cartridges passed the test. Additional holes the size of the area multiplier shall be disregarded. The stripping test may be performed concurrently with the velocity or action time test.

4.5.13 Action time. The action time test shall be conducted IAW SCATP-7.62 firing one shot at a time for action time measurements in a universal rifle using the SLAP velocity and action time test barrel, 8649497, (45" long) secured to a rigid mount.

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4.5.14 Function and casualty. The weapons shall be at room temperature at the beginning of the test and shall be cooled between bursts. The function and casualty test shall be conducted IAW TECP 700-700, Vol. III, Section 7-15, firing ammunition conditioned as required for the function and casualty tests in 100 round bursts in the following weapons:

- a. Caliber .50 M2 Browning Machine Gun Heavy Barrel Flexible
- b. Caliber .50 M2 Browning Machine Gun Heavy Barrel Turret Type (M48 and M48 Series)

Observe for compliance with Table II or Table IV, as applicable. Measure and record the cyclic rate for each test weapon.

4.5.15 Trace. The test cartridges shall be tested in either the:

- a. Caliber .50 M2 Browning Machine Gun Heavy Barrel Flexible
- b. Caliber .50 M2 Browning Machine Gun Heavy Barrel Turret Type (M48 and M48 Series)

* The trace test shall be conducted IAW TECP 700-700, vol. III, Section 7-18, and the following: observation for trace performance shall be made at the weapon and at points 275 meters (300 yards) and 1370 meters (1500 yards) beyond the muzzle of the weapon on a line parallel to and approximately 70 meters (75 yards) from the line of trajectory. Fire at least three warmer shots to sight, warm, and foul the weapon. Then fire the sample cartridges in regular sequence allowing sufficient time between shots for each observer to record trace results. Record the date and record the trace results (trace or blind) at each observation point. Defects reported at more than one observation point for the same shot shall be recorded as a single failure. During firing, observation shall also be made for (a) bullet bursting before striking bullet stop or target, (b) trace muzzle flash, and (c) erratic flight.

5. PACKAGING

5.1 Preservation and packaging. See 5.2.1.

5.2 Packing

* 5.2.1 Packing Level A. The cartridges shall be packed IAW Dwg. 12576456, MIL-STD-129, MIL-STD-644, and CFR TITLE 49 Part 100-199 as applicable.

* 5.3 Marking. Marking shall be IAW Dwg. 12576456 and MIL-STD-129.

* 5.3 Unitized loads. The cartridges packed IAW with 5.2, shall be unitized IAW Dwg. 19-48-4116-20PA1002.

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6. NOTES

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

6.1 Intended use. The cartridges covered by this specification are intended for use in Caliber .50 weapons having chamber and rifling configurations as shown on Dwg. 7312853.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Issue of DODISS to be cited in the solicitation, and, if required, the specific issue of individual documents referenced (see 2.1.1).
- c. Requirements for submission of first article sample.
- d. Type and level of packing for the cartridges.
- e. Provisions for the submission of Inspection Equipment Designs (DI-R-100540) (see 6.3).
- f. Provisions for the submission of acceptance inspection reports containing the final inspection results for each lot of ammunition presented to the government (see 6.4).

6.3 Submission of inspection equipment designs for approval. (See MIL-A-48078). Submit inspection equipment designs as required to Commander, ARDEC, ATTN: AMSMC-QAF-I (D), Picatinny Arsenal, N.J. 07806-5000. This address will be specified on the Contract Data Requirements List, DD Form 1423 in the contract.

6.4 Submission of test data. In addition to the normal distribution of records, when the cartridge is procured by the US AMCCOM, one copy of all ballistic data and the ammunition data card for each lot shall be forwarded to: Commander, ARDEC, ATTN: AMSMC-QAF-S (D), Picatinny Arsenal, N.J. 07806-5000.

6.5 Hazard notice. The cartridge described herein and some of the cartridge components are flammable and explosive and, therefore, present hazards in manufacture, handling, storage, and shipment. the contractor shall recognize these hazards and shall take appropriate measures to prevent fire, explosion, adverse environmental, rough handling, corrosive atmosphere, and electrically induced incidents. Such measures shall include the employment of an effective safety program that addresses the inherent hazards associated with the cartridge.

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6.6 Drawings. Drawings listed in Section 2 of this specification under this 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, U.S. Army Armament Research and Development Command (ARRADCOM), or Picatinny Arsenal drawings. Technical data originally prepared by these activities is now under the auspices of ARDEC.

6.7 Submission of alternative inspection Provisions. Proposed alternative inspection provisions should be submitted by the contractor to the procuring contracting officer for evaluation and approval by the technical activity responsible for preparation of this specification.

6.8 Subject term (key word) listing.

M2 Browning Machine Gun
Machine Gun
Polyetherimide (PEI)
Small Arms Ammunition

* 6.9 Changes from previous issue. The margins of this specification are marked with asterisks to indicate where changes (additions, modifications, corrections, deletions) 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.

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1. DOCUMENT NUMBER

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2. DOCUMENT DATE (YYMMDD)

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3. DOCUMENT TITLE

CARTRIDGE, CALIBER .50 SLAP BALL AND TRACER M903 AND M962

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets if needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, first, middle initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

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(1) Commercial

(2) AUTOVON

8. PREPARING ACTIVITY

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U.S ARMY ARDEC
STANDARDIZATION OFFICE

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