

INCH-POUND

MIL-DTL-1318C (AR)

23 May 2007

SUPERSEDING

MIL-C-1318B (AR)

3 April 1985

## DETAIL SPECIFICATION

### CARTRIDGE, CALIBER .50, TRACER, M17

Inactive for new design after 12 February 1996.

This specification is approved for use by the U.S. Army Armament Research, Development and Engineering Center (ARDEC), and is available for use by all Departments and Agencies of the Department of Defense.

#### 1. SCOPE

1.1 Scope. This specification covers the requirements and verification methods for the Cartridge, Caliber .50, Tracer, M17.

#### 2. APPLICABLE DOCUMENTS

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

#### 2.2 Government documents.

Comments, suggestions, or questions on this document should be addressed to: Commander, U.S. Army ARDEC, ATTN: AMSRD-AAR-QES-E, Picatinny, New Jersey 07806-5000 or e-mailed to [pica-stdzn@pica.army.mil](mailto:pica-stdzn@pica.army.mil). Since contact information can change, you may want to verify the currency of this information using ASSIST Online database at <http://assist.daps.dla.mil>.

AMSC N/A

FSC 1305

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2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

## DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-636	Visual Standards for Small Arms Ammunition Through Caliber .50
MIL-STD-1168	Ammunition and Ammunition Data Card
MIL-STD-1916	DOD Preferred Methods of Acceptance of Product

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

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

## U.S. ARMY ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER (ARDEC) DRAWINGS

5502646	Cartridge, Caliber .50, Tracer, M17, Case
6174992	Cartridge, Caliber .50, Tracer, M17, Jacket
7585150	Cartridge, Caliber .50, Tracer, M17, Disc Closer
7643674	Classification of Cartridge Case Defects
7672165	Cartridge, Caliber .50, Tracer, M17
12953485	Cartridge, Caliber .50, Tracer, M17, Core
12953486	Cartridge, Caliber .50, Tracer, M17, Bullet

(Copies of these drawings are available from US Army ARDEC, AMSRD-AAR-AIS-TD, Picatinny, NJ 07806-5000, or email [Drawing-Request@pica.army.mil](mailto:Drawing-Request@pica.army.mil))

## U.S. ARMY ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER (ARDEC) PUBLICATIONS

SCATP-7.62mm	Ammunition Ballistic Acceptance Test Methods, Test Procedures for 7.62 mm Cartridges
TECP 700-700	Manual of Test Methods for Small Arms Ammunition

(Application for copies should be addressed to Quality Engineering and System Assurance, U.S. Army, ARDEC, Picatinny, NJ 07806-5000, ATTN: AMSRD-AAR-QEM-D or email [QESA-QEM-D@pica.army.mil](mailto:QESA-QEM-D@pica.army.mil))

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

## 3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample of the M17 cartridges shall be subjected to first article inspection in accordance with 4.3.

3.2 Conformance inspection. A sample of the M17 cartridges shall be subjected to conformance inspection in accordance with 4.4.

3.3 Cartridge. The cartridge shall comply with all requirements specified on Dwg 7672165.

3.4. Bullet extraction. The force required to separate the bullet from the cartridge case shall not be less than 200 pounds.

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

3.6 Waterproof. The cartridge shall not release more than one bubble of air when subjected to a pressure differential of 7.5 pounds per square inch (psi) for 30 seconds.

3.7 Accuracy. The average of the mean radii of all targets of the sample cartridges, fired at 600 yards, shall not exceed 12.0 inches or, when fired at 200 yards, shall not exceed 6.25 inches.

3.8 Action time. The action time (overall primer ignition, propellant burning, plus the time taken for the bullet to exit the barrel) of the cartridge, conditioned at  $70^{\circ}\text{F} \pm 2^{\circ}\text{F}$ , shall not exceed 4 milliseconds (ms).

3.9 Velocity. The average velocity of the sample cartridges, conditioned at  $70^{\circ}\text{F} \pm 2^{\circ}\text{F}$ , shall be 2,905 ft/sec  $\pm$  30 ft/sec at 78 feet from the muzzle of the weapon. The standard deviation of the velocities shall not exceed 36 ft/sec.

3.10 Chamber pressure. The average chamber pressure of the sample cartridges, conditioned at  $70^{\circ}\text{F} \pm 2^{\circ}\text{F}$ , shall not exceed 65,000 psi.

3.11 Function and casualty. The cartridge shall function without casualty.

3.12 Air tightness of base closer seal. The bullet shall not release more than one bubble of air under the application of a pressure differential of 2 psi for 5 seconds.

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3.13 Trace. When viewed at night from a line parallel to the plane of the trajectory, with the line of sight perpendicular to the plane of the trajectory at each point of observation, the bullet of the tracer cartridge shall exhibit a visible trace of full luminosity from a point not less than 100 yards from the muzzle of the weapon to a point not greater than 1600 yards from the muzzle.

3.14 Stripping. The bullet of the cartridge shall not burst either in its passage through the barrel or in flight and shall not exhibit trace muzzle flash nor shall the jacket of the bullet or any part thereof strip from the slug when the cartridge is fired.

3.15 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 parts, nor shall the parts be contaminated by any cleaning agent.

3.16 Ammunition lot numbering. Ammunition lot numbers shall be in accordance with MIL-STD-1168.

3.17 Mixed ammunition. There shall be no other type of ammunition in the lot other than M17 Tracer ammunition.

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## 4. VERIFICATION

Table I. Requirements/verification cross-reference matrix

Section 3 Requirement		METHOD OF VERIFICATION						CLASSES OF VERIFICATION
		1 - Analysis 2 - Demonstration 3 - Examination 4 - Test						A - First article B - Conformance
		Verification Methods				Verification Class		Section 4 Verification Procedures
		1	2	3	4	A	B	
3.1	First Article			X	X	X		4.3, Table II, Table III, Table VI
3.2	Conformance			X	X		X	4.4, Table IV, Table V, Table VI
3.3	Cartridge				X	X	X	Table III, Table IV, Table V, Table VI
3.4	Bullet Extraction				X	X	X	4.5.1
3.5	Residual Stress				X	X	X	4.5.2
3.6	Waterproof				X	X	X	4.5.3
3.7	Accuracy				X	X	X	4.5.4
3.8	Action Time				X	X	X	4.5.5, 4.5.12
3.9	Velocity				X	X	X	4.5.6, 4.5.12
3.10	Pressure				X	X	X	4.5.7, 4.5.12
3.11	Function & Casualty				X	X	X	4.5.8
3.12	Air Tightness				X	X	X	4.5.9
3.13	Trace				X	X	X	4.5.10
3.14	Stripping				X	X		4.5.11
3.15	Workmanship			X		X	X	4.5.13, Table V
3.16	Ammo Lot Number			X		X	X	4.5.14
3.17	Mixed Ammunition			X		X	X	4.5.15

4.1 Classifications of inspections. The inspection requirements specified herein are classified as follows:

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

4.2 Inspection conditions. Unless otherwise specified, all inspection shall be performed in accordance with the test conditions specified in 4.5.

4.3 First article. When specified, a sample of the M17 cartridges shall be subjected to first article verification in accordance with Table III and Table VI.

4.3.1 First article quantity. The first article sample shall consist of the following items in sample quantities as indicated in Table II.

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Table II. First article quantities

<b>Part Description</b>	<b>Drawings</b>	<b>Quantity</b>
Ctg, Cal .50, Tracer, M17	7672165	1880
Case	5502646	<u>1/</u>
Core	12953485	<u>1/</u>
Jacket	6174992	<u>1/</u>
Bullet	12953486	<u>1/</u>
Disc, Closer	7585150	<u>1/</u>
Notes:		
<u>1/</u> . The quantity shall be 5 parts per machine or tooling operation that is performed to produce that component in the manufacturing process.		

4.3.2 First article rejection. If any assembly, component or test specimen fails to comply with any of the applicable requirements, the first article sample shall be rejected (see 6.10).

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Table III. First article tests and inspection

EXAMINATION OR TEST	CONFORMANCE CRITERIA			REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE
	QTY	Ac	Re		
Examination for Defects <u>1/</u>					
Case (Dwg 5502646)	Table II	0	1	3.3, 3.15	Gage <u>1/</u>
Core (Dwg 12953485)	Table II	0	1	3.3, 3.15	Gage <u>1/</u>
Jacket (Dwg 6174492)	Table II	0	1	3.3, 3.15	Gage <u>1/</u>
Bullet (Dwg 12953486)	Table II	0	1	3.3, 3.15	Gage <u>1/</u>
Disc Closer (Dwg 7585150)	Table II	0	1	3.3, 3.15	Gage <u>1/</u>
Ctg, Cal .50, Tracer, M17 (Dwg7672165)					
Critical	1880	0	1	3.3, 3.15	Table V
Major <u>4/</u>	256	1	2	3.3, 3.15	Table V
Minor <u>4/</u>	64	5	6	3.3, 3.15	Table V
Bullet extraction	50	1	2	3.4	4.5.1
Residual stress	50	0	1	3.5	4.5.2
Waterproof	50	<u>2/</u>	<u>2/</u>	3.6	4.5.3
Alternative Waterproof	50	4	9	3.6	4.5.3
Action time	50	0	1	3.8	4.5.5, 4.5.12
Velocity	50	<u>2/</u>	<u>2/</u>	3.9.2	4.5.6, 4.5.12
Chamber Pressure	50	<u>2/</u>	<u>2/</u>	3.10.2	4.5.7, 4.5.12
Function and casualty					
Gun, Machine, Cal..50 Browning M2, Heavy Barrel (Turret Type)	400	TableVI		3.11	4.5.8
Gun, Machine, Cal..50 Browning M2, Heavy Barrel (Flexible)	400	TableVI		3.11	4.5.8
Air-tightness of base closure seal	50	5	6	3.12	4.5.9
Trace	150	30	31	3.13	4.5.10
Stripping	<u>3/</u>	TableVI		3.14	4.5.11
Notes:					
<u>1/</u> . To be inspected for all drawing requirements using standard measuring and test equipment (except for workmanship which is inspected for visually).					
<u>2/</u> . Failure of the cartridge to comply with the applicable requirements shall result in rejection of the first article sample.					

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Table III. First article tests and inspection - Continued

EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE
<p><u>Notes</u> - Continued:</p> <p>3/. These tests to be performed concurrently with the function and casualty test.</p> <p>4/ A random sample of 256 cartridges for major defects shall be selected from the 1880 cartridges. The first 64 shall be inspected for major and minor defects and the rest shall be inspected for major defects.</p>			

4.4 Conformance inspection.

4.4.1 Inspection lot formation. Lot formation shall be verified with MIL-STD-1916. Unless otherwise specified, component parts shall be homogenous and of a size convenient and inspected, tested and accepted. The cartridge lot shall contain:

- a. Cartridges cases from one unchanged process and from one manufacturer.
- b. Bullets from one unchanged process and one manufacturer
- c. Primers from one lot interfix number and one manufacturer.
- d. Propellant from no more than two lot numbers and from one manufacturer

4.4.2 Classification of characteristics.

a. Sampling requirements. Inspection sampling requirements for critical, major and minor characteristics are defined in MIL-STD-1916. Unless specified otherwise, Inspection Level IV shall be used for all characteristics defined as Majors and Inspection Level II for all Minor characteristics; Critical characteristics shall be addressed in accordance with MIL-STD-1916.

b. Conformance inspection. Conformance inspection shall be performed in accordance with Table IV, Table V, and Table VI. For all conformance inspections the same sample specimen may be used for all non-destructive examinations or tests.

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Table IV. Conformance tests

CARTRIDGE, CALIBER .50, TRACER, M17					DRAWING NUMBER	
					7672165	
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA			REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE
		QTY	Ac	Re		
<u>Critical</u>	None defined					
<u>Major</u>						
101	Bullet extraction	25	<u>1/</u>	3.4		4.5.1
102	Residual stress	50	<u>1/</u>	3.5		4.5.2
103	Waterproof	20	<u>2/</u>	3.6		4.5.3
104	Accuracy	90	<u>1/</u>	3.7		4.5.4
105	Action time	30	<u>1/</u>	3.8		4.5.5, 4.5.12
106	Velocity	30	<u>3/</u>	3.9.2		4.5.6, 4.5.12
107	Chamber pressure	30	<u>3/</u>	3.10.2		4.5.7, 4.5.12
108	Function and casualty					
	Gun, Machine, Cal..50 Browning M2, Heavy Barrel (Turret Type)	400	<u>4/</u>	3.11		4.5.8
	Gun, Machine, Cal..50 Browning M2, Heavy Barrel (Flexible)	400	<u>4/</u>	3.11		4.5.8
109	Air-tightness	<u>5/</u>	<u>5/</u>	3.12		4.5.9
110	Trace	100	<u>6/</u>	3.13		4.5.10
<u>Minor</u>	None defined					
Notes:						
<p><u>1/</u>. 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 in the first sample shall be tested. If any failing cartridges are found in the second sample, the lot shall be rejected.</p>						
<p><u>2/</u>. Failure of nine or more cartridges to comply with the applicable requirement shall be cause for rejection of the lot. If more than four, but less than nine cartridges fail in the first test, a second sample consisting of double the number of cartridges in the first sample shall be tested. The lot shall be rejected if in the combined first and second sample, nine or more cartridges fail to comply with the applicable requirements.</p>						
<p><u>3/</u>. Failure of the cartridges to comply with the applicable requirement shall be cause for 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 be cause for rejection of the lot.</p>						

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TABLE IV. Conformance tests - Continued

EXAMINATION OR TEST	CONFORMANCE CRITERIA			REQUIREMENT PARAGRAPH	DRAWING NUMBER 7672165
	QTY	Ac	Re		
Notes - Continued:					
<p><u>4/</u> 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 defects found in the first tests 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 under function and casualty shall be fired in the service weapons in which the firing defects occurred in the first test. If the total number of defects in the combined first and second sample exceeds 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 they exceed the acceptance number for the cumulative sample, the lot shall be rejected.</p>					
<p><u>5/</u> The bullets extracted from the cartridges in the bullet extraction test shall be used for this test. Failure of seven or more bullets to comply with the applicable requirement shall be cause for rejection of the lot. If more than three but less than seven bullets fail in the first, a second sample consisting of double the number of bullets in the first sample shall be tested. The lot shall be rejected if, in the combined first and second sample, seven or more bullets fail to comply with the applicable requirements.</p>					
<p><u>6/</u> Failure of thirty one or more cartridges to comply with the applicable requirements shall be cause for rejection of the lot. If more than ten but less than thirty-one cartridges fail in the first test, a second sample consisting of double the number of cartridges in the first sample shall be tested. The lot shall be rejected if the combined first and second sample, thirty-one or more cartridges fail to comply with the applicable requirements.</p>					

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Table V. Conformance inspections

CARTRIDGE, CALIBER .50, TRACER, M17		DRAWING NUMBER 7672165		
CLASSIFICATION	EXAMINATION OR TEST <u>1/</u>	CONFORMANCE CRITERIA <u>3/</u>	REQUIREMENT PARAGRAPH	INSPECTION METHOD <u>2/</u> REFERENCE
<u>Critical</u>				
1	Case split in K, L, or M location (6)	100%	3.3	Visual
2	Case split in I, S, or J location (6) when loss of powder occurs	100%	3.3	Visual
3	Perforated case (7)	100%	3.3	Visual
4	Primer missing (32)	100%	3.3	Visual
5	Primer cocked (33)	100%	3.3	Visual
6	Primer inverted (34)	100%	3.3	Visual
7	Weight under minimum <u>3/</u>	100%	3.3	Balance
<u>Major</u>				
101	Case split in I, S, or J location (6) with no loss of powder	100%	3.3	Visual
102	Corroded or stained (if etched) case (2)		3.3	Visual
103	Round head (case) (4)		3.3	Visual
104	Dented case (5)		3.3	Visual
105	Draw scratch in case (8)		3.3	Visual
106	Beveled underside of head (10)		3.3	Visual
107	Case mouth not crimped in cannelure (11)		3.3	Visual
108	Scaly metal (case) (12)		3.3	Visual
109	No chamfer on head (rim) (13)		3.3	Visual
110	No visible evidence of mouth anneal (case) (21)		3.3	Visual
111	Split bullet jacket (24)		3.3	Visual
112	Loose bullet (25)		3.3	Visual/ Manual
113	Missing cannelure (26)		3.3	Visual
114	Scaly metal (bullet) (27)		3.3	Visual
115	Loose primer (35)		3.3	Visual/ Manual
116	Total Length		3.3	Gage

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Table V. Conformance inspections - Continued

CARTRIDGE, CALIBER .50, TRACER, M17		DRAWING NUMBER 7672165		
CLASSIFICATION	EXAMINATION OR TEST <u>1/</u>	CONFORMANCE CRITERIA <u>3/</u>	REQUIREMENT PARAGRAPH	INSPECTION METHOD <u>2/</u> REFERENCE
117	Cartridge profile failure requiring more than 80 lbs dead weight to insert profile and alignment gage		3.3	Gage
118	Diameter of extractor groove, maximum		3.3	Gage
119	Diameter of head, maximum		3.3	Gage
120	Thickness of head, maximum		3.3	Gage
121	Distance to shoulder datum		3.3	Gage
122	Depth of primer		3.1	Gage
123	Missing lead slug in bullet <u>5/</u>		3.3	Gage
<u>Minor</u>				
201	Discolored, Dirty, oily, or smeared (waterproofing) (1)		3.3	Visual
202	Dented case (5)		3.3	Visual
203	Draw scratch in case (8)		3.3	Visual
204	Scratch in case (9)		3.3	Visual
205	Scaly metal on case (12)		3.3	Visual
206	Fold, wrinkle buckle, or bulge in case (14, 15, 16, 17)		3.3	Visual
207	Head stamp missing or illegible (18)		3.3	Visual
208	Defective head (19)		3.3	Visual
209	Defective mouth (case) (20)		3.3	Visual
210	Dented bullet (22)		3.3	Visual
211	Bullet scratched (23)		3.3	Visual
212	Scaly metal (bullet) (27)		3.3	Visual
213	Upset (crooked) point (28)		3.3	Visual
214	Exposed steel (clad jacket) (bullet) (29)		3.3	Visual
215	Blunt point (bullet) (30)		3.3	Visual
216	Defective cannellure (31)		3.3	Visual
217	Nicked or dented primer (36)		3.3	Visual

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TABLE V. Conformance inspections - Continued

CARTRIDGE, CALIBER .50, TRACER, M17				DRAWING NUMBER 7672165
CLASSIFICATION	EXAMINATION OR TEST <u>1/</u>	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE
218	No waterproofing material (primer pocket joint) (37), if applicable		3.3	Visual
219	Defective crimp (38)		3.3	Visual
220	Diameter of extractor groove, minimum		3.3	Gage
221	Workmanship <u>4/</u>		3.15	Visual

## Notes:

1/. Numbers after defect description refer to visual 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 Table V of this specification and MIL-STD-636 as to defect classification the classification specified in Table V shall apply.

3/. One hundred percent examination for propellant weight may be either by weighing the cartridge or by measuring for propellant fill. If the cartridge weight method is used, each lightweight cartridge shall be disassembled and the propellant weighed. Any cartridge that contains more than 100 grains of propellant shall be classified as a major defect. Any cartridge containing less than 100 grains of propellant shall be classified as a critical defect.

4/. Defects other than those listed in MIL-STD-636 (Caliber .50 Section).

5/. Examination for this may be performed by either weighing the overall cartridge or an inspection method that can determine directly if the lead slug is present.

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Table VI. Function and casualty firing defect criteria

CARTRIDGE, CALIBER .50, TRACER, M17					DRAWING NUMBER 7672165
Defect Description	Criteria				Classification
	First Article		Lot Acceptance		
	Acc	Rej	First Sample	Cumulative Sample	
Bullet in bore	0	1	0	1/	Critical
Misfire – Vent hole missing or blocked	0	1	0	1/	Critical
Misfire (excluding 2 above)	0	1	1	2	Major
Primer defects:					
a. Escape of gas through primer cap other than d. below	6	7	7	15	Minor
b. Escape of gas around primer cap for more than 50% of periphery	13	14	14	30	Major
c. Blown primer (Primer separates from casehead and primer pocket is grossly distorted) or Dropped primer (Primer falls out of pocket upon retraction of bolt)	0	1	0	1	Minor
d. Perforation in firing pin indent in primer cup	23	24	24	60	Major
Case casualties <u>2/</u>					
a. Longitudinal split					
(1) Upper body (J)	6	7	7	15	Major
(2) Body (K) extending to case base	0	1	1	2	Major
(3) To head (L)	0	1	0	1	Major
(4) Through head (M)	0	1	0	1	Major
(5) Neck or shoulder (I or S)	26	27	27	65	Minor
b. Circumferential rupture					
(1) Partial – neck, shoulder, or body (S, J, or K)	1	2	2	4	Major
(2) Partial, head (L)	0	1	0	1	Major
(3) Complete	0	1	0	1	Major
Failure to extract	0	1	0	1	Major
Weapon stoppage attributable to Ammunition <u>3/</u>	0	1	0	1	Major
Stripping	0	1	0	1	Major

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Table VI. Function and casualty firing defect criteria - Continued

CARTRIDGE, CALIBER .50, TRACER, M17					DRAWING NUMBER 7672165
Defect Description	Criteria				Classification
	First Article		Lot Acceptance		
	Acc	Rej	First Sample	Cumulative Sample	
<p>Notes:</p> <p><u>1/</u>. No second sample permitted. Lot shall be rejected.</p> <p><u>2/</u>. For location of defects indicated by letter in parentheses, see Dwg 7643674.</p> <p><u>3/</u>. All stoppages attributable to the ammunition, which the exception of misfire, complete rupture or failure to extract, observed in all tests shall be included.</p>					

4.5 Methods of verification.

4.5.1 Bullet extraction. The cartridge shall be tested in a bullet extraction machine in accordance with SCATP - 7.62mm Chapter 1, Bullet Extraction Test Procedure. The rate of travel of the test head shall be not less than 3 or more than 6 inches per minute.

4.5.2 Residual stress (mercurous nitrate). The test shall be conducted in accordance with SCATP-7.62mm Chapter 1, Mercurous Nitrate Test Procedure.

4.5.3 Waterproof. The test shall be conducted in accordance with SCATP-7.62mm Chapter 1, Waterproof Test Procedure. The number of bubbles liberated from the mouth of primer of each cartridge shall be observed.

4.5.4 Accuracy. The test shall be conducted in accordance with SCATP-7.62mm Chapter 1, Accuracy Test Procedure. The size of the target shall be adjusted to suit the target range (200 or 600 yards).

4.5.5 Action time. The test shall be conducted simultaneously with velocity and chamber pressure using the methods and procedures in SCATP - 7.62mm Chapter 1, Electronic Pressure, Velocity and Action Time (EPVAT).

4.5.6 Velocity. The test shall be conducted in accordance with SCATP - 7.62mm Chapter 1, Electronic Pressure, Velocity and Action Time (EPVAT). Prior to this test the cartridges shall be temperature conditioned in accordance with 4.5.12.

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4.5.7 Chamber pressure. The test shall be conducted in accordance SCATP - 7.62mm Chapter 1, Electronic Pressure, Velocity and Action Time (EPVAT). Prior to this test the cartridges shall be temperature conditioned in accordance with 4.5.12.

4.5.8 Function and casualty. In these firings, the weapons shall be at room temperature at the beginning of the test and shall be cooled between bursts. Observation for compliance with Table VI, as applicable, shall be made. Cyclic rate of each weapon shall be observed for informational purposes only. The function and casualty test shall be conducted in accordance with SCATP - 7.62mm Chapter 1, Function and Casualty Test Procedure, and as indicted below:

- a. Gun, Machine, Cal .50, Browning, M2, Heavy Barrel (Turret type) – Fire in bursts of 100 cartridges.
- b. Gun, Machine, Cal .50, Browning, M2, Heavy Barrel (Flexible) – Fire in bursts of 100 cartridges.

4.5.9 Air-tightness of base closer seal. The bullets from the bullet extraction test shall be placed base up under 1.5 to two inches head of freshly boiled water contained in a vacuum jar test unit. The desiccators or jar shall be evacuated to a pressure of two pounds per square inch (4 inches of mercury) below atmospheric pressure and held at that pressure for not less than 5 seconds. The number of bubbles liberated from each bullet shall be observed.

4.5.10 Trace. The test shall be conducted in accordance with SCATP - 7.62mm Chapter 1, Trace Test Procedure, and the following: Observation for trace performance shall be made at the weapon and at points 100 yards beyond the muzzle of the gun on a line parallel to and approximately 75 yards from the plane of the trajectory. Lights or other suitable visible markers shall be placed opposite the 100 and 1600 yards observing points to insure a line sight from each point perpendicular to the plane of the trajectory. During the performance of this test, observation of the following three assurances, will be made for informational purposes only.

- a. Bullet bursting before striking terminal or target
- b. Trace muzzle flash
- c. Erratic flight.

4.5.11 Stripping. The test shall be conducted in accordance with SCATP - 7.62mm Chapter 1, Stripping Test Procedure. Observation for bullet burst and trace muzzle flash shall be in accordance with TECP 700-700, Section 7-19 Incendiary Flash Tests.

4.5.12 Temperature conditioning. The test sample shall be conditioned at 70°F, plus or minus 2 degrees F, for 2 hours minimum and fired at that temperature.

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4.5.13 Workmanship. Visually verify that all parts and assemblies meet requirements of 3.15.

4.5.14 Ammunition lot numbering. Visually verify that an ammunition lot number has been applied to each lot as described in MIL-STD-1168.

4.5.15 Mixed ammunition. Immediately prior to the packaging operation, 100 percent examination of the cartridges shall be performed to ascertain that the cartridge type conforms to the drawing. Occurrence of a high pressure test, dummy, blank, grenade trace or overhead fire trace cartridges shall be classed as a critical defect. Occurrence of any other incorrect type shall be classed a major defect. All non-conforming cartridges shall be rejected.

## 5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DOD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity

## 6. NOTES

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

6.1 Intended use. The cartridges covered by this specification are intended for use in Caliber .50 weapons. The M17 is a military unique cartridge.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number and date of this specification.
- b. Type and level of packing for the cartridges.
- c. Provisions for the submission of Inspection Equipment Designs (see 6.3)
- d. Provisions for the submission of acceptance inspection reports containing final inspection results for each lot of ammunition presented to the Government (see 6.4).

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- e. Requirements for submission of first article sample (see 3.1).
- f. Applicable national stock number.
- g. Packaging requirements. See section 5.1 and applicable contract requirements. Packaging can be done in accordance with reference packaging drawing 12576456.
- h. Contractor acceptance inspection equipment (AIE). Provision concerning the contractor's AIE used to verify the requirements of this specification should be specified in the contract.

6.3 Submission of inspection equipment designs for approval. (See MIL-A-48078). Submit inspection equipment designs as required to Commander, ARDEC, ATTN: AMSRD-QEM-D, Picatinny Arsenal, NJ 07806-5001.

6.4 Submission of test data. In addition to the normal distribution of records, when the cartridge is procured by the US ARDC, one (1) copy of all ballistic data and the ammunition data card for each lot should be forwarded to: Commander, ARDEC, ATTN: AMSRD-QEM-D, Picatinny Arsenal, NJ 07806-5001.

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

6.6 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, US Army Armament Research, Development, and Engineering Command (ARRADCOM) or Picatinny Arsenal drawings. Technical data originally prepared by these activities is now under the cognizance of ARDEC.

6.7 Submission of alternative conformance provisions. All contractor proposed alternative conformance provisions will be submitted to the Government for evaluation/approval as directed by the contracting activity.

6.8 Ammunition lot numbers. Ammunition lot numbers requires ammunition data cards in accordance with MIL-STD-1168B.

6.9 Classification of characteristics. For examinations and tests cited herein or when required by contract; critical, major, and minor characteristics are defined in Section 3 of MIL-STD-1916.

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6.10 First article rejection. 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.

6.11 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

### 6.12 Key word listing.

M2 Browning Machine Gun  
Munitions  
Small Arms Ammunition  
Tracer

Preparing activity:  
Army-AR

(Project 1305-2007-006)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <http://assist.daps.dla.mil>