

INCH-POUND

MIL-DTL-0063092B (AR)
05 April 2004
USED IN LIEU OF
(See 6.15)

DETAIL SPECIFICATION

CARTRIDGES, 40MM, WHITE STAR, PARACHUTE, M583A1 GREEN STAR, PARACHUTE, M661 RED STAR, PARACHUTE, M662 METAL PARTS AND LOADING, ASSEMBLIES

This specification is approved for interim use by the U.S. Army Armament Research, Development and Engineering Center (ARDEC). Other activities in the Department of Defense may use this interim revision or may continue using documents listed in paragraph 6.16.

1. SCOPE

1.1 Scope. This specification covers the metal parts and loading, and assembling for three cartridges with different color illuminants designated as Cartridge, 40mm, White Star Parachute, M583A1, Green Star, Parachute, M661 and Red Star Parachute, M662.

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 sections 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 requirements documents cited in sections 3 or 4 of this specification, whether or not they are listed.

2.2 Government documents.

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 (see 6.2).

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 ardec-stdzn@pica.army.mil . Since contact information can change, you may want to verify the currency of this address information using the ASSIST online database at http://assist.daps.dla.mil .
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SPECIFICATIONS

DEPARTMENT OF DEFENSE

MIL-P-223	- Black Powder
MIL-C-5541	- Chemical Conversion Coatings on Aluminum and Aluminum Alloys
MIL-A-8625	- Anodic Coatings, For Aluminum and Aluminum Alloys
MIL-P-20444	- Primer, Percussion, M42 Parts For Loading, Assembling and Packaging
MIL-P-22264	- Powders, Ignition, Gasless
MIL-A-70625	- Automated Acceptance Inspection Equipment Design, Testing and Approval of

STANDARDS

DEPARTMENT OF DEFENSE

MIL-STD-331	- Fuze and Fuze Component, Environmental and Performance Tests for
MIL-STD-1168	- Ammunition Lot Numbering and Ammunition Data Card
MIL-STD-1234	- Pyrotechnics Sampling, Inspection and Testing
MIL-STD-1916	- DoD Preferred Method for 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 of these documents are those cited in the solicitation or contract. (see 6.2).

US ARMY ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER (ARDEC) DRAWINGS (see 6.8)

PRODUCT AND PACKING DRAWINGS

9243881	- Cartridge, 40mm White Star Parachute, M583A1
9317509	- Cartridge, 40mm Green Star Parachute, M661
9255145	- Cartridge, 40mm Red Star Parachute, M662
9207988	- Cartridge Case Loading Assembly, M195
9207989	- Cartridge Case, 40MM, M195
8844611	- Plug, Base
8844612	- Cup, Powder Charge

INSPECTION EQUIPMENT DRAWINGS

8801470	- Flush Pin
8827895	- Limit Check
8841561	- Gage, Concentricity
9200964	- Photometer Head with Cell
9200965	- Tube, Sight

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INSPECTION EQUIPMENT DRAWINGS (Cont.)

9200966	- Cover
9200967	- Bracket, Tube
9200968	- Gasket, Rear
9200969	- Gasket
9200970	- Cabinet
9200971	- Hood
9200972	- Bracket
9200973	- Holder
9200974	- Spring
9201136	- Tunnel for Light Intensity Measurement
9201268	- Procedures for Light Output Measurement
9201390	- Photocell Checkout Procedure
9201392	- Procedure for Color Value Measurement
9202532	- Gage, Automatic
9202770	- Chamber Gage
9202783	- Alignment Check
9247071	- Photocell

(Copies of these drawings may be requested online at drawing-request@pica.army.mil, or from U.S. Army ARDEC, ATTN: AMSRD-AAR-AIS-TD, Picatinny NJ 07806-5000.)

2.3 Non-Government publications. The following documents 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 (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E18	- Standard Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials
ASTM B117	- Method of Test for Salt Spray (fog) Testing
ASTM D3951	- Standard Practice for Commercial Packaging

(Copies of this document are available online at www.astm.org or from the ASTM International, 100 Barr Harbor Drive, Conshohocken, PA 19428-2959)

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 in the solicitation or contract order (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.3.

3.2 Materials. Materials, parts and assemblies shall comply with requirements specified on the applicable drawings, and referenced specifications.

3.3 Primer functioning. The primer shall function without evidence of squibbing or hang fire. There shall be no primer blow back as evidenced by perforation of the cup and extrusion of the primer around the firing pin causing difficulty in opening weapon.

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3.4 Transportation vibration. The cartridge shall be safe to transport and there shall be no evidence of external damage to the cartridge that will affect the intended function (see 6.11 and 6.12).

3.5 Functioning. The cartridge shall comply with the following requirements:

3.5.1 Altitude. The projectile shall function at an average altitude of 600 ± 100 feet over the temperature range of -65 degrees F to 160 degrees F.

3.5.2 Burning of illuminant assembly. The illuminant assembly shall burn in the air for 30 seconds min. while suspended from the parachute at ambient temperature.

3.5.3 Parachute. Parachute shall properly deploy within 5 seconds of ejection and remain attached to illuminant assembly over the temperature range of -65 degrees F to 160 degrees F.

3.5.4 Firing. No projectile shall stick in the gun bore. No cartridge case shall stick in the gun chamber. These requirements shall be applicable over the temperature range of -65 degrees F to 160 degrees F.

3.6 Hardness. The hardness of the area near the mouth and on the base of the cartridge case shall be 67 ± 10 on the Rockwell 30 T Scale.

3.7 X-ray examination of ballistic samples. Prior to forwarding the sample cartridges for ballistic testing, they shall be x-rayed for critical and major defects. A critical defect is defined as no delay column or no delay carrier. A major defect is defined as missing parachute assembly, visible cracks in illuminant composition, and blocked or missing delay vent hole.

3.8 Hydrostatic pressure. The cartridge case, less vent holes, shall be capable of withstanding a hydrostatic pressure of 48,000 pounds per square inch (psi), minimum (min), without evidence of a rupture of the bottom of the charge cup cavity. Cases especially prepared for this test shall be identified from regular cases by painting a red strip around the open end, or any positive identification approved by the procuring activity.

3.9 Workmanship. All parts and assemblies shall be fabricated, loaded and assembled in a thorough, workmanlike manner. They shall be free of burrs, sharp edges, cracks, dirt, grease, rust and other foreign matter. The cleaning method used shall not be injurious to any parts, nor shall the parts be contaminated by the cleaning agents. Exterior surface coatings shall be continuous; however, a few light scratches not exposing base materials may be permitted. All required marking and stamping shall be neat and sharply defined.

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

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4. VERIFICATION

TABLE I. Requirement/inspection cross reference matrixMethod of inspection

N/A - Not Applicable

1 - Analysis

2 - Demonstration

3 - Examination

4 - Test

Class of inspection

A - First Article

B - Conformance

Section 3 Requirement	<u>Inspection Methods</u>					<u>Inspection Class</u>		Section 4 <u>Inspection Method</u>
	N/A	1	2	3	4	A	B	
3.1			X	X	X	X		4.3
3.2			X	X	X	X	X	4.4
3.3			X			X	X	4.5.7
3.4			X	X	X	X	X	4.5.11
3.5					X	X	X	4.5.12
3.6					X	X	X	4.5.4
3.7				X		X	X	4.5.13
3.8					X	X	X	4.5.2
3.9				X		X	X	4.5.19
3.10				X		X	X	4.5.5

4.1 Classification 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 Condition. Unless otherwise specified, all inspection shall be performed in accordance with the test conditions specified in section 4.5 and 4.6.

4.3 First article inspection. When specified in the contract, a sample of the applicable cartridge shall be subjected to first article verification in accordance with Table II and 4.3.2.

4.3.1 First Article Quantity. The contractor shall submit a first article as designated by the Contracting Officer for evaluation in accordance with the provision of 4.3.2. The first article sample shall consist of the following items in sample quantities as indicated:

<u>Parts description</u>	<u>Drawings</u>	<u>Quantity</u>
Cartridge Case Loading Assy. M195	9207988	360
Cartridge Case, M195, 40MM	9207989	100
Base Plug	8844611	50
Cup, Powder Charge	8844612	50
Illuminant Loading Assembly	9244310 / 9282351 / 9252412	25
Body (prior to painting)	9243900	10
Body (after painting)	9243900	5

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Ogive	9243882 / 9317511 / 9251920	5 per mold cavity
Tube	9244311	10
Delay Carrier	9243886	10
Plug Anchor	9243907	5 per mold cavity
Cartridge	9243881 / 9317509 / 9255145	25
Parachute Assembly	9243906	25

4.3.2 Inspections to be performed. The first article inspection shall be 100 % examination of all drawing characteristics (listed and unlisted) including workmanship requirements for the parts and assemblies listed in 4.3.1 and the tests specified in Table II herein.

4.3.3 First article rejection. If any item of the sample fails to comply with the first article requirements, the 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.

TABLE II. First article inspection

M583A1 Cartridge, Sub-Assemblies and Components				
	EXAMINATION OR TEST	N0. OF SAMPLE UNITS	REQUIREMENT PARAGRAPH	INSPECTION METHOD
	<u>Cartridge Case (Dwg.9207989)</u>			
	-Hardness	100	3.6	4.5.4
	-Salt spray	10	3.2	4.5.1
	-Diameter of vent holes	25 1/	3.2	Gage
	-Hydrostatic	100	3.8	4.5.2
	<u>Base Plug (Dwg.8844611)</u>			
	-Salt spray	10	3.2	4.5.1
	<u>Cartridge Case Loading Assembly (Dwg. 9207988)</u>			
	-Security of crimp of base plug	20	3.2	4.5.6
	<u>Body, Prior to painting (Dwg.9243900)</u>			
	-Salt spray	5	3.2	4.5.1
	<u>Delay Carrier (Dwg.9243886)</u>			
	-Salt Spray	5	3.2	4.5.1
	<u>Illuminant Assembly (Dwg.9244310/9282351/9252412)</u>			
	-Static Test	25	3.2	4.5.9
Notes:				
1/ Cases especially prepared for this test shall be identified from regular cases by painting a red strip around the open end, or any positive identification approved by the Contracting Officer.				

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TABLE II. First article inspection

M583A1 Cartridge, Sub-Assemblies and Components				
	EXAMINATION OR TEST	N0. OF SAMPLE UNITS	REQUIREMENT PARAGRAPH	INSPECTION METHOD
	<u>Cartridge (Dwg.9243881/9317509/9255145)</u>	25	3.2	4.5.9
	-Pull Test of Projectile	25	3.2	4.5.10
	-Transportation vibration	440	3.4	4.5.11
	-Air Pressure	440	3.2	4.5.8
	Functioning	440 2/	3.5	4.5.12
	- Hot	80 3/	3.5.5	4.5.12.1
	- Ambient	280 3/	3.5.6	4.5.12.2
	- Cold	80 3/	3.5.7	4.5.12.3
Notes:				
2/ The Lot shall be rejected if:				
a) Two (2) or more of the total samples have an altitude less than (350) ft.				
b) Average altitude of total sample fails to have emission of light at an average altitude of 600±100 ft.				
c) Burning time of two (2) or more of the total sample at ambient temperature is less than 22 seconds				
d) Any primer blow back (as evidenced by perforation of cup and extrusion of the primer around the firing pin causing difficulty in opening the weapon				
e) Two (2) or more primer misfires				
3/ In addition to note two (2) the lot shall be rejected if the criteria in Table IV is not met				

4.4 Conformance inspection.

4.4.1 Lot formation. Lot formation shall be in accordance with the lot formation requirement of MIL-STD-1916. For the components identified below, each inspection lot of cartridges shall be produced with components complying with the following constraints:

- a) Metal parts or components from one interfix lot number from one manufacturer.
- b) Primers from one interfix lot number from one manufacturer.
- c) Propellant from one interfix lot number from one manufacturer.
- d) Projectile metal parts from one interfix lot number from one manufacturer.
- e) Delay composition from not more than one lot number.
- f) Igniter composition from not more than one lot number.
- g) Black powder from not more than one lot number.
- h) Cartridge case loaded assemblies from one interfix lot number from one manufacturer.
- i) Illuminant assemblies from one interfix lot number from one manufacturer.
- j) First fire composition from not more than one lot number.
- k) Delay assemblies from one interfix lot number from one manufacturer.

4.4.1.1 Lot identification. Visually verify that each lot is identified as the type, caliber, model, and lot number in accordance with MIL-STD-1168.

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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 MIL-STD-1916.

b. Conformance inspection. Conformance inspection shall be performed in accordance with the paragraph 4.4.2.1 through 4.4.2.19 of Table III. For all conformance inspections the same sample specimen may be used for all non-destructive examinations or tests.

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.1	TITLE Case, Cartridge	SHEET 1 OF 2		DRAWING NUMBER 9207989
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	NEXT HIGHER ASSEMBLY 9207988
				INSPECTION METHOD REFERENCE
<u>Critical</u> 1.	Three (3) or more vent holes blocked or missing	100%	3.2	AAIE/4.5.15
<u>Major</u> 101.	One (1) or two (2) vent holes blocked or missing	100%	3.2	Visual / manual
102.	Hardness	Level IV	3.6	Gage/ 4.5.4
103.	Concentricity of largest outside diameter with second largest outside diameter	Level IV	3.2	Gage
104.	Concentricity of largest inside diameter with second largest outside diameter	Level IV	3.2	Gage
105.	Concentricity of base plug cavity with second largest outside diameter	Level IV	3.2	Gage
106.	Concentricity of powder charge cup cavity with base plug cavity	Level IV	3.2	Gage
107.	Diameter of powder charge cup cavity, min.	Level IV	3.2	Gage
108.	Diameter of base plug cavity	Level IV	3.2	Gage
109.	Depth from base to bottom of powder charge cup cavity	Level IV	3.2	Gage
110.	Second largest outside diameter <u>1</u> /	Level IV	3.2	Gage
111.	Diameter of node	Level IV	3.2	Gage
112.	Parallelism of open end with base	Level IV	3.2	Gage
113.	Perpendicularity of base to second largest outside diameter	Level IV	3.2	Gage
114.	Diameter of vent holes	Level IV	3.2	Gage
115.	Largest inside diameter <u>2</u> /	Level IV	3.2	Gage
116.	Distance of flat of inside projection	Level IV	3.2	Gage
117.	Diameter of flange, max.	Level IV	3.2	Gage
118.	Total length	Level IV	3.2	Gage
119.	Burr in vent hole	Level IV	3.2	Visual Equipment
120.	Unconfined second largest outside diameter	Level IV	3.2	Gage

NOTES:

1/ If the requirements cannot be met in the free state, the go inside diameter plug gage may be inserted in the cartridge case while inspecting the “go” and “no go” second largest outside diameter. If the “go” inside diameter plug gage is utilized, the data cards shall be annotated accordingly.

2/ If the requirements cannot be met in the free state, a restricted confining fixture may be utilized while inspecting the “go” and “no go” largest inside diameter. If the restricted fixture is utilized, the data cards shall be annotate accordingly.

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.1	TITLE Case, Cartridge (Cont.)		SHEET 2 OF 2		DRAWING NUMBER 9207989
					NEXT HIGHER ASSEMBLY 9207988
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE	
<u>Major</u>					
121.	Depth of largest inside diameter, min	Level IV	3.2	Gage	
122.	Depth of base plug cavity	Level IV	3.2	Gage	
123.	Metal defective	Level IV	3.2	Visual	
<u>Minor</u>					
201.	Thickness of flange	Level II	3.2	Gage	
202.	Length of base plug seating projection from bottom of base	Level II	3.2	Gage	
203.	Wall thickness, min.	Level II	3.2	Gage	
204.	Stamping misleading or unidentifiable	Level II	3.2	Visual	
205.	Protective coating with bare spot, except anode rack marks	Level II	3.2	Visual	
206.	Color Incorrect	Level II	3.2	Visual	
207.	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	
NOTES:					

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.2	TITLE Base Plug		SHEET 1 OF 1		DRAWING NUMBER 8844611
					NEXT HIGHER ASSEMBLY 9207988
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE	
<u>Critical</u> 1.	Depth of primer cavity	100%	3.2	AAIE/4.5.15	
<u>Major</u> 101.	Salt Spray	<u>1/</u>	3.2	4.5.1	
102.	Largest outside diameter	Level IV	3.2	Gage	
103.	Concentricity of smallest outside diameter with largest outside diameter	Level IV	3.2	8841561	
104.	Concentricity of primer cavity diameter with largest outside diameter	Level IV	3.2	8841561	
105.	Smallest outside diameter	Level IV	3.2	Gage	
106.	Diameter of primer cavity	Level IV	3.2	Gage	
107.	Length of primer end to shoulder including angle	Level IV	3.2	Gage	
108.	Diameter of flash hole	Level IV	3.2	Gage	
109.	Radius of intersection of primer cavity missing	Level IV	3.2	Gage	
110.	Total length	Level IV	3.2	Gage	
<u>Minor</u> 201.	Second largest outside diameter	Level II	3.2	Gage	
202.	Length from primer end to far side of shoulder	Level II	3.2	Gage	
203.	Protective coating with bare spot except anode rack marks	Level II	3.2	Visual	
204.	Finish improper	Level II	3.2	Visual	
205.	Color incorrect	Level II	3.2	Visual	
206.	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	

NOTES:

1/ Sampling and rejection shall be in accordance with MIL-A-8625

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.3	TITLE Cup, Powder Charge		SHEET 1 OF 1		DRAWING NUMBER 8844612
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	NEXT HIGHER ASSEMBLY 9207988	
				INSPECTION METHOD REFERENCE	
<u>Critical</u>	None defined				
<u>Major</u>					
101.	Length to datum	Level IV	3.2	8801470	
102.	Inside diameter	Level IV	3.2	Gage	
103.	Diameter of flange, maximum	Level IV	3.2	Gage	
<u>Minor</u>					
201.	Wall thickness	Level II	3.2	Gage	
202.	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	
NOTES:					

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.4	TITLE Cartridge case loading assembly, prior to assembling base plug and primer		SHEET 1 OF 1		DRAWING NUMBER 9207988
					NEXT HIGHER ASSEMBLY
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE	
<u>Critical</u>					
1.	Powder charge cup missing	100%	3.2	AAIE/4.5.15	
2.	Spilled powder from cartridge case	100%	3.2	AAIE/4.5.15	
3.	Propellant charge weight more than 25% above or below nominal load weight	100%	3.2	AAIE/4.5.15	
<u>Major</u>					
101.	Propellant charge weight outside tolerance range but less than 25% of nominal load weight	100%	3.2	Gage	
<u>Minor</u>					
201.	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	

NOTES:

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.5	TITLE Cartridge case loading assembly		SHEET 1 OF 1		DRAWING NUMBER 9207988
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	NEXT HIGHER ASSEMBLY 9243909 / 9317510 / 9252411	
				INSPECTION METHOD REFERENCE	
<u>Critical</u>					
1.	Primer above flush with respect to base of case	100%	3.2	AAIE/4.5.15	
<u>Major</u>					
101.	Base plug above flush	Level IV	3.2	Gage	
102.	Depth to base plug, maximum	Level IV	3.2	Gage	
103.	Primer above flush or more than .005 below with respect to base plug	Level IV	3.2	Gage	
104.	Primer damaged	Level IV	3.2	Visual plus magnification <u>1</u> /	
105.	Vent hole blocked or missing (prior to case loading)	Level IV	3.2	Automatic / Gage	
106.	Primer function	800	3.3	4.5.7	
107.	Primer deterioration	<u>2</u> /	3.2	4.5.14	
<u>Minor</u>					
201.	Excessive varnish on exterior surface or primer	Level II	3.2	Visual	
202.	Marking misleading or unidentifiable	Level II	3.2	Visual	
203.	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	

NOTES:

1/ Magnification power should not be less than 3 X.2/ Sampling and rejection shall be in accordance with MIL-P-20444

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.6	TITLE Body, prior to painting		SHEET 1 OF 1		DRAWING NUMBER 9243900
					NEXT HIGHER ASSEMBLY 9243909 / 9317510 / 9252411
	CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE
<u>Critical</u>	None defined				
<u>Major</u>					
101.	Largest diameter	Level IV	3.2	Gage	
102.	Concentricity of largest outside diameter with second largest outside diameter	Level IV	3.2	Gage	
103.	Second largest outside diameter	Level IV	3.2	Gage	
104.	Concentricity of second largest outside diameter with smallest inside diameter	Level IV	3.2	Gage	
105.	Concentricity of largest inside diameter with smallest inside diameter	Level IV	3.2	Gage	
106.	Salt Spray	1/	3.2	4.5.1	
107.	Pitch diameter of thread	Level IV	3.2	Gage	
108.	Minor diameter of thread	Level IV	3.2	Gage	
109.	Perpendicularity of open end with smallest inside diameter	Level IV	3.2	Gage	
110.	Metal defective	Level IV	3.2	Visual	
<u>Minor</u>					
201.	Smallest outside diameter	Level II	3.2	Gage	
202.	Groove diameter	Level II	3.2	Gage	
203.	Width of rotating bands	Level II	3.2	Gage	
204.	Total length	Level II	3.2	Gage	
205.	Width of flange	Level II	3.2	Gage	
206.	Distance to rotating band	Level II	3.2	Gage	
207.	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	
NOTES: 1/ Sampling and rejection shall be in accordance with MIL-C-5541					

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.7	TITLE Body after painting		SHEET 1 OF 1		DRAWING NUMBER 9243900
					NEXT HIGHER ASSEMBLY 9243909 / 9317510 / 9252411
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE	
<u>Critical</u>	None defined				
<u>Major</u> 101.	Second largest outside diameter	Level IV	3.2	Gage	
<u>Minor</u> 201.	Color incorrect	Level II	3.2	Visual	
202.	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	
NOTES:					

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.8	TITLE Ogive		SHEET 1 OF 1		DRAWING NUMBER 9243882 / 9317511 / 9251920
					NEXT HIGHER ASSEMBLY 9243882 / 9317511 / 9251920
	CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE
<u>Critical</u> 1.	Incorrect letter designation for color of candle	100%	3.2	AAIE/4.5.15 See 4.5.18	
<u>Major</u> 101.	Excessive flash below shoulder in groove	Level IV	3.2	Gage	
102.	Second largest outside diameter	Level IV	3.2	Gage	
<u>Minor</u> 201.	Length from shoulder to top of letter	Level II	3.2	Gage	
202.	Large outside diameter	Level II	3.2	Gage	
203.	Diameter of groove	Level II	3.2	Gage	
204.	Width of groove	Level II	3.2	Gage	
205.	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	
NOTES:					

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.9	TITLE Tube		SHEET 1 OF 1		DRAWING NUMBER 9244311
					NEXT HIGHER ASSEMBLY 9244310 / 9282351 / 9252412
	CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE
<u>Critical</u>	None defined				
<u>Major</u>					
101.	Outside diameter	Level IV	3.2	Gage	
102.	Perpendicularity of ends	Level IV	3.2	Gage	
<u>Minor</u>					
201.	Total length	Level II	3.2	Gage	
202.	Wall thickness	Level II	3.2	Gage	
203.	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	
NOTES:					

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.10	TITLE Delay Carrier		SHEET 1 OF 1		DRAWING NUMBER 9243886
					NEXT HIGHER ASSEMBLY 9243885
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE	
<u>Critical</u>	None defined				
<u>Major</u>					
101.	Salt Spray	<u>1</u> /	3.2	4.5.1	
102.	Pitch diameter of thread	Level IV	3.2	Gage	
103.	Small inside diameter	Level IV	3.2	Gage	
104.	Concentricity of small inside diameter with large inside diameter	Level IV	3.2	Gage	
105.	Large inside diameter	Level IV	3.2	Gage	
106.	Moisture content	<u>2</u> / and <u>3</u> /	3.2	4.5.17.1/4.5.17.5	
<u>Minor</u>					
201.	Length to flange	Level II	3.2	Gage	
202.	Concentricity of body diameter with large inside diameter	Level II	3.2	Gage	
203.	Diameter of thread undercut	Level II	3.2	Gage	
204.	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	

NOTES:

1/ Sampling and rejection shall be in accordance with MIL-C-5541.2/ Major 106 will be performed at assembly level (Dwg. 9243885)3/ Sampling shall be in accordance to section 4.5.17 and rejection shall be in accordance to applicable drawings

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.11	TITLE Plug Anchor		SHEET 1 OF 1		DRAWING NUMBER 9243907
					NEXT HIGHER ASSEMBLY 9244310 / 9282351 / 9252412
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE	
<u>Critical</u>	None defined				
<u>Major</u> 101	Largest outside diameter	Level IV	3.2	Gage (see 4.5.18)	
<u>Minor</u> 201	Total length	Level II	3.2	Gage	
202	Holes missing	Level II	3.2	Visual	
203	Width of slot incorrect	Level II	3.2	Gage	
204	Depth of slot incorrect	Level II	3.2	Gage	
205	Flange thickness	Level II	3.2	Gage	
206	Second largest outside diameter	Level II	3.2	Gage	
207	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	
NOTES:					

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.12	TITLE Illuminant Loading Assembly		SHEET 1 OF 1		DRAWING NUMBER 9244310 / 9282351 / 9252412
					NEXT HIGHER ASSEMBLY 9243909 / 9317510 / 9252411
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE	
<u>Critical</u>	None defined				
<u>Major</u>					
101.	Length from shoulder to end	Level IV	3.2	Gage	
102.	Diameter, max.	Level IV	3.2	Gage	
103.	Anchor plug insecure	Level IV	3.2	Manual / Visual	
104.	Assembly damaged to extent that function may be impaired	Level IV	3.2	Visual	
105.	Static Test	<u>1/</u> <u>2/</u>	3.2	4.5.9	
106.	Moisture content	<u>3/</u>	3.2	4.5.17.2/4.5.17.3/ 4.5.17.4	
<u>Minor</u>					
201.	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	

NOTES:

1/ The sample size shall be eighty (80) assemblies for the first three lots of production. With approval of the Contracting Officer the sample size may be dropped to thirty-two (32) assemblies for subsequent lots if the first three lots successfully meet all requirements specified on the applicable drawing (lots not accepted by disposition). If any subsequent lot fails to meet all requirements specified on the applicable drawing, or when there has been a lapse of 90 days, or when a major design change occurs determined by Government Inspector the sample size shall be returned to eighty (80) assemblies until three consecutive lots have successfully met all requirements specified on the applicable drawing (lots not accepted by waiver/deviation).

2/ For the sample size of eighty (80) assemblies the lot shall be rejected if three (3) or more assemblies fail to comply with the requirements specified on applicable drawing. For the sample size of thirty-two (32) assemblies the lot shall be rejected if two (2) or more cartridges fail to comply with the requirements specified on applicable drawing.

3/ Sampling shall be in accordance with section 4.5.17 and rejection shall be in accordance with applicable drawings.

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.13	TITLE Parachute Assembly		SHEET 1 OF 1		DRAWING NUMBER 9243906
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	NEXT HIGHER ASSEMBLY 9243909 / 9317510 / 9252411	
				INSPECTION METHOD REFERENCE	
<u>Critical</u>	None defined				
<u>Major</u>					
101.	Tears or holes in parachute	Level IV	3.2	Visual	
102.	Shroud lines not attached to parachute	Level IV	3.2	Visual	
103.	Shroud lines tangled	Level IV	3.2	Visual	
104.	Coupling not secure to shroud lines	Level IV	3.2	Visual	
<u>Minor</u>					
201.	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	
NOTES:					

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.14	TITLE Projectile Assembly, Prior to Assembling Illuminant Assembly		SHEET 1 OF 1		DRAWING NUMBER 9243909 / 9317510 / 9252411
					NEXT HIGHER ASSEMBLY 9243881 / 9317509 / 9255145
	CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE
<u>Critical</u> <u>Major</u> 101. <u>Minor</u> 201	None defined				
	Coupling of illuminant assembly not secure to chain	Level IV	3.2	Visual	
	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	
NOTES:					

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.15	TITLE Projectile Assembly, Prior to Assembling Ogive		SHEET 1 OF 1		DRAWING NUMBER 9243909 / 9317510 / 9252411
					NEXT HIGHER ASSEMBLY 9243881 / 9317509 / 9255145
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE	
<u>Critical</u>	None defined				
<u>Major</u>					
101.	Parachute missing	Level IV	3.2	Visual	
102.	O-ring missing	Level IV	3.2	Visual	
103.	Spring pin missing	Level IV	3.2	Visual	
<u>Minor</u>					
<u>201.</u>	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	
NOTES:					

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.16	TITLE Projectile Assembly		SHEET 1 OF 1		DRAWING NUMBER 9243909 / 9317510 / 9252411
					NEXT HIGHER ASSEMBLY 9243881 / 9317509 / 9255145
	CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE
<u>Critical</u> <u>Major</u> 101. 102. <u>Minor</u> 201.	None defined				
	Gap present between delay assembly and body	Level IV	3.2	Visual	
	Color incorrect	Level IV	3.2	Visual	
	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	
NOTES:					

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.17	TITLE Cartridge		SHEET 1 OF 1		DRAWING NUMBER 9243881 / 9317509 / 9255145
					NEXT HIGHER ASSEMBLY
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE	
<u>Critical</u>					
1.	Chamber gage failure	100%	3.2	9202770 / 9202783 / 8827895	
2.	Incorrect ogive	100%	3.2	AAIE/4.5.15	
3.	Marking incorrect	100%	3.2	AAIE/4.5.15	
4.	X-ray examination of ballistic samples	100%	3.7	4.5.13	
<u>Major</u>					
101.	Marking unidentifiable	Level IV	3.2	Visual	
102.	Pull test	4 per hr. <u>1/</u>	3.2	4.5.10	
103.	Air pressure before TV	100% <u>2/</u>	3.2	4.5.8	
104.	Transportation-vibration	<u>3/ 7/</u>	3.4	4.5.11	
105.	Air pressure after TV	<u>3/ 4/</u>	3.2	4.5.8	
106.	Functioning	264 <u>3/ 5/</u>	3.5	4.5.12	
	-Hot	44 <u>6/</u>	3.5	4.5.12.1	
	-Ambient	176 <u>6/</u>	3.5	4.5.12.2	
	-Cold	44 <u>6/</u>	3.5	4.5.12.3	
	Functioning	132 <u>3/ 5/</u>	3.5	4.5.12	
	-Hot	26 <u>6/</u>	3.5	4.5.12.1	
	-Ambient	80 <u>6/</u>	3.5	4.5.12.2	
	-Cold	26 <u>6/</u>	3.5	4.5.12.3	
<u>Minor</u>					
201.	Total length	Level II	3.2	Gage	
202.	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	

NOTES:

1/ If any sample fails to comply with the drawing requirement, the hour's production represented by the sample shall be rejected.

2/ Any cartridge which fails to comply with the requirement specified on the applicable drawing shall be classified defective and removed from the lot.

3/ The sample size shall be 264 for the first three lots of production. With approval of the Contracting Officer the sample size may be dropped to 132 for subsequent lots if the first three lots successfully meet all functional requirements (lots not accepted by disposition). If any subsequent lot fails to meet all functional requirements the sample size shall be returned to 264 until three consecutive lots have successfully met all functional requirements (lots not accepted by disposition).

4/ For the sample size of 264 cartridges the lot shall be rejected in nine (9) or more cartridges fail to comply with the requirements specified on applicable drawing. For the sample size of 132 cartridges the lot shall be rejected if eight (8) or more cartridges fail to comply with the requirements specified on applicable drawing.

5/ The Lot shall be rejected if:

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- a) Two (2) or more of the total samples have an altitude less than (350) ft.
- b) Average altitude of total sample fails to have the first emission of light at an average altitude of 600+-100ft.
- c) Burning time of two (2) or more of the total sample at ambient temperature is less than 22 seconds
- d) Any primer blow back (as evidence by perforation of cup and extrusion of the primer around the firing pin causing difficulty in opening the weapon
- e) Two (2) or more primer misfires

6/ In addition to note five (5) the lot shall be rejected if the criteria in Table IV is not met

7/ The lot shall be rejected if any requirement in section 3.4 is not met.

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.18	TITLE Unsealed Metal Box		SHEET 1 OF 1		DRAWING NUMBER 9209204
					NEXT HIGHER ASSEMBLY
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE	
<u>Critical</u>	None defined				
<u>Major</u>					
101.	Incorrect number of cartridges	Level IV	3.2	Visual	
102.	Desiccant bags missing	Level IV	3.2	Visual	
103.	Rubber gasket damaged or improperly assembled	Level IV	3.2	Visual	
<u>Minor</u>					
201.	Fillers missing	Level II	3.2	Visual	
202.	Tube missing	Level II	3.2	Visual	
203.	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	
NOTES:					

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Table III. Conformance Inspection.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH 4.4.2.19	TITLE Sealed Metal Box		SHEET 1 OF 1		DRAWING NUMBER 9209204
					NEXT HIGHER ASSEMBLY
CLASSIFICATION	EXAMINATION OR TEST	CONFORMANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD REFERENCE	
<u>Critical</u>	None defined				
<u>Major</u> 101.	Air Pressure	<u>1/</u>	3.2	4.5.16	
<u>Minor</u> 201.	Marking misleading or unidentifiable	Level II	3.2	Visual	
202.	Contents loose	Level II	3.2	Manual	
203.	Evidence of poor workmanship	Level II	3.9	Visual/4.5.19	

NOTES:

1/ One (1) packed, sealed box shall be selected from each twenty (20) boxes packed. If one (1) box fails, the quantity represented by the sample shall be rejected.

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Table IV. FUNCTIONING DEFECT CLASSIFICATION & ACC/REJ CRITERIA

	Acceptance criteria			Rejection criteria			Defect Classification
	Hot	Ambient	Cold	Hot	Ambient	Cold	
First Article (440)							
Incorrect illuminant candle color	0	0	0	1	1	1	Critical
Burst or ejects illuminant within 50 feet from the launcher	0	0	0	1	1	1	Critical
Any projectile assembly sticks in gun bore or any cartridge case sticks in the gun chamber	0	0	0	1	1	1	Critical
Item fails to function - No ejection - Improper parachute deployment (see 3.5.3) - No Illumination - Burning time incorrect (see 3.5.2)	-----	-----	-----	<u>1/ 7/</u>	<u>2/</u>	<u>1/ 7/</u>	Major
Lot Acceptance Testing (264)							
Incorrect illuminant candle color	0	0	0	1	1	1	Critical
Burst or ejects illuminant within 50 feet from the launcher	0	0	0	1	1	1	Critical
Any projectile assembly sticks in gun bore or any cartridge case sticks in the gun chamber	0	0	0	1	1	1	Critical
Item fails to function - No ejection - Improper parachute deployment (see 3.5.3) - No Illumination - Burning time incorrect (see 3.5.2)	-----	-----	-----	<u>3/ 7/</u>	<u>4/</u>	<u>3/ 7/</u>	Major
Lot Acceptance Testing (132)							
Incorrect illuminant candle color	0	0	0				Critical
Burst or ejects illuminant within 50 feet from the launcher	0	0	0				Critical
Any projectile assembly sticks in gun bore or any cartridge case sticks in the gun chamber	0	0	0	1	1	1	Critical
Item fails to function - No ejection - Improper parachute deployment (see 3.5.3) - No illumination - Burning time incorrect (see 3.5.2)	-----	-----	-----	<u>5/ 7/</u>	<u>6/</u>	<u>5/ 7/</u>	Major
Notes:							
1/ If a combined total of eight (8) or more samples fail the listed major defects the lot shall be rejected.							
2/ If a combined total of twenty-two (22) or more samples fail the listed major defects the lot shall be rejected.							
3/ If a combined total of six (6) or more samples fail the listed major defects the lot shall be rejected.							
4/ If a combined total of fifteen (15) or more samples fail the listed major defects the lot will be rejected.							
5/ If a combined total of four (4) or more samples fail the listed major defects the lot shall be rejected.							
6/ If a combined total of eight (8) or more samples fail the listed major defects the lot shall be rejected.							
7/ Burning time of functioned items for cold temperature and hot temperature shall be recorded for informational purposes.							

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4.5 Methods of inspection

4.5.1 Salt spray. The specified part shall be subjected to the salt spray test in accordance with ASTM B117. This test shall be conducted for 72 hours, or for the duration specified on the applicable drawing, using a salt solution of 5 percent. This test is a destructive test. Parts so tested shall not be returned to the lot.

4.5.2 Hydrostatic pressure of cartridge case. The cartridge case, less vent holes, shall be placed in a Government-approved test fixture. The protrusions inside the case shall not be supported. The fixture shall be assembled in a hydrostatic machine and a load applied, no greater than 0.25 inch per minute, until the required pressure is reached. This is a destructive test, and parts so tested shall not be returned to the lot. The cartridge case minimum pressure requirements are specified in 3.8.

4.5.3 Process control inspection of bath temperature for anodic coating. Continuous monitoring inspection shall be conducted for bath temperature requirement specified on the applicable drawings. If the bath temperature for a batch of parts does not comply with the applicable drawing requirement, the batch shall be suitably identified, classified defective and removed from the lot.

4.5.4 Hardness. The cartridge case shall be subjected to the Rockwell hardness test in accordance with ASTM E 18. This test is a non-destructive test. Parts so tested may be returned to the lot. The cartridge case hardness requirement is specified in 3.6.

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

4.5.6 Security of crimp of base plug on cartridge case assembly. Twenty (20) each cartridge case, base plug and powder charge cup shall be selected from each lot and assembled without propellant and subjected to this test. The assembly shall be placed in an approved fixture and the minimum unseating force specified on the applicable drawing shall be applied. The force shall then be increased to the dead load required minimum of the applicable drawing. The lot shall be rejected if the average unseating force for the sample is less than the required average or if any one sample has an unseating force below the minimum, on the applicable drawing.

4.5.7 Primer functioning. Sampling shall be in accordance with paragraph 4.2.3.2.2 of MIL-P-20444C, except that the sample size shall be 800 primers from each lot. Each primer of the 800 samples shall be tested as specified in MIL-P-20444C, paragraph 4.3.2.2. If one or more primers fail to comply with the applicable requirement, the lot shall be rejected.

4.5.8 Air pressure -The cartridge shall be placed in an approved fixture and a measured quantity of air shall be applied to produce the required air pressure. Cartridges shall be used for subsequent testing.

4.5.9 Static test of illuminant assembly - This test shall be conducted in accordance with equipment drawings 9201136, 9201268, 9201390, 9200965, 9200966, 9200967, 9200968, 9200969, 9200970, 9200971, 9200972, 9200973, 9200974, 9201392, and 9247071. Observation shall be made for the static characteristics of the applicable drawing.

4.5.10 Pull test of cartridge - The cartridge shall be placed in an approved fixture and the axial force specified on the applicable drawing shall be applied. Cartridge shall be pulled until total separation occurs and data shall be annotated. The projectile assembly so tested shall be

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visually inspected for damage that would impair proper functioning of the round. Projectile assemblies not exhibiting such damage may be returned to the lot. Projectile assemblies exhibiting such damage and the cartridge case loading assembly shall be rejected.

4.5.11 Transportation vibration - The cartridges shall be packaged and packed in accordance with dwgs. 9209204 and 9209205 and tested in accordance with Test No. 81 (ambient temperature), of MIL-STD-331, except that each box shall be vibrated at the specified amplitudes for four (4) hours in each of three (3) different positions (i.e., box positioned so that the cartridges are vertical with case end down, box positioned so that the cartridges are horizontal, and box positioned so that the cartridges are vertical with case end up). After the test, the box packing and the cartridges shall be observed and examined visually without disassembly for failure to comply with the requirements of section 3.4. Cartridges shall be used for subsequent tests. A Critical defect is classified as cartridge not safe to transport following test (see 6.11) and a major defect is classified as Cartridge damaged after test (see 6.12).

4.5.12 Functioning. The sample cartridges shall be randomly pulled from the lot for ballistic testing. The selection shall be by the Government inspector, or contractor if approved by the Contracting Officer. Any reworked cartridges shall be represented within this sample on a prorated basis. Procedures and rejection criteria are defined below.

4.5.12.1 Hot temperature (160 degrees F. plus or minus 5 degrees F.) The cartridges shall be packed in their regular shipping containers and conditioned for a minimum of 16 hours at a temperature of 160 degrees F. plus or minus 5 degrees F. The cartridge shall be taken from the conditioning chamber, removed from the packing container, and fired from an approved launcher placed on an approved mount at 90 degrees quadrant within 2 minutes. Observation shall be made for proper functioning and the requirements of 3.5.1, 3.5.3, and 3.5.4.

4.5.12.2 Ambient temperature (70 degrees F. plus or minus 5 degrees F.) The cartridges shall be packed in their regular shipping containers and conditioned for a minimum of 16 hours at a temperature of 70 degrees F. plus or minus 5 degrees F. The cartridge shall be taken from the conditioning chamber, removed from the packing container, and fired from an approved launcher placed on an approved mount at 90 degrees quadrant within 2 minutes. Observation shall be made for proper functioning with the requirements of 3.5.1, 3.5.2, 3.5.3, and 3.5.4.

4.5.12.3 Cold temperature (-65 degrees F. plus or minus 5 degrees F.) The cartridges shall be packed in their regular shipping containers and conditioned for a minimum of 16 hours at a temperature of -65 degrees F. plus or minus 5 degrees F. The cartridge shall be taken from the conditioning chamber, removed from the packing container, and fired from an approved launcher placed on an approved mount at 90 degrees quadrant within 2 minutes. Observation shall be made for proper functioning and the requirements of 3.5.1, 3.5.3, and 3.5.4.

4.5.13 X-ray examination of ballistic samples. Prior to forwarding the sample cartridges for ballistic testing, they shall be x-rayed for critical and major defects. If any critical defect is found the sample shall be removed and the lot rejected including the ballistic sample. Prior to submitting a new ballistic sample, 100 % x-ray examination of the lot shall be performed. If any major defect is found it shall be noted and the sample forwarded for testing.

4.5.14 Check test for deterioration of primers. If the total time between original acceptance of any lot and the assembly of that lot into the cartridge exceeds two years, or if the primers have been subjected to adverse conditions, however brief, at any time since previous tests, the primer lot shall be subjected to and must satisfactorily pass, the check test for deterioration, specified in MIL-P-20444, immediately before the primer lot is assembled into the cartridge. This test shall be performed by the contractor on primers selected by the Government

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Inspector at the facility assembling the primers into the cartridge.

4.5.15 Inspection equipment. The inspection equipment required to perform the examination and tests prescribed herein is described in the Inspection Method Column in the tables starting with paragraph 4.4.2.1. Inspection equipment used for acceptance of product shall be capable of repeatable measurements, by various experienced inspection/test personnel, to an accuracy of 10% or better of the total tolerance of the characteristic being inspected. Any automated acceptance inspection equipment (AAIE) prove-out shall be performed in accordance with MIL-A-70625 (see 6.15).

4.5.16 Air pressure of packed sealed metal box. The sealed metal box shall be placed in an approved fixture and a measured quantity of air shall be applied to produce the required air pressure. Observation shall be made for leakage. This test is a non-destructive test. Boxes so tested may be returned to the lot.

4.5.17 Moisture content. The contractor shall provide adequate controls to insure compliance with the requirements and shall test for verification at least one (1) sample of each material from each eight hour's production of cartridges. Composite samples shall not be used. If the moisture content of a sample exceeds the requirement and loading has not begun, that quantity of material represented by the sample shall be rejected. If assemblies have been loaded with material containing excessive moisture, the remaining material that is represented by the sample together with all cartridges loaded with the non-conforming material shall be rejected.

4.5.17.1 Delay Composition (Dwg. 9243885). The moisture content of the delay composition at the time and place of loading shall be determined in accordance with Method 102.1.1 of MIL-STD-1234.

4.5.17.2 Black Powder (Dwg. 9244310/9282351/9252412). The moisture content of the black powder at the time and place of loading shall be determined in accordance with 4.4.3 of MIL-P-223.

4.5.17.3 First Fire / Ignition Composition (Dwg. 9244310/9282351/9252412). The moisture content of the first fire and ignition composition at the time and place of loading shall be determined in accordance with method 102.1.1 of MIL-1234.

4.5.17.4 Illuminant Composition (Dwg. 9244310/9282351/9252412). The moisture content of the illuminant composition at the time and place of loading shall be determined in accordance with Method 102.1.1 of MIL-STD-1234.

4.5.17.5 Igniter Composition (Dwg. 9243885). The moisture content of the igniter composition at the time and place of loading shall be determined in accordance with 4.6.4 of MIL-P-22264.

4.5.18 Dimensional control of molded and plastic parts. In place of the normal sampling and inspections associated with the Classification of Defects, and after a curing time (3) parts (as molded) from each cavity shall be fully inspected dimensionally to qualify a new or reworked cavity for use in production. The molded parts shall carry the individual cavity identification. As a control of each cavity during production, the above quantity of parts from each cavity shall be inspected for at least the defects listed in 4.4.2.8 and 4.4.2.11 after continuous production of each 5,000 parts or at the end of the week, whichever occurs first. Of the three (3) samples, one (1) sample shall be the last part produced. If any defective parts are found during qualification of the cavity, the cavity producing the defective part will not be used in production. If any defective parts are found when inspection is performed for the control of the cavity, the cavity producing the defective part shall be removed from production. Further, that portion of production since the

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last control check shall be returned to the contractor for inspection for each separate type of defect according to MIL-STD-1916, using Level IV for each major defect and Level II for each minor defect. All cavities removed from production because of some fault may, after reworking, be returned to production providing they pass the qualification test above. The contractor may request a change of inspection frequency providing he presents objective evidence to the Contracting officer to substantiate the request. Contractor designs of gages and test equipment required to perform the inspections listed herein shall be forwarded for approval prior to manufacture of equipment. The noted sub-paragraphs identify those items and minimum inspection subject to the requirements of this paragraph.

4.5.19 Workmanship. Visually verify that all parts and assemblies meet requirements of paragraph 3.9.

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 requisite 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

6.1 Intended use. This specification covers the metal parts and loading, and assembling for Cartridge, 40MM, White Star Parachute, M583A1, Green Star, Parachute, M661, Red Star, Parachute, M662.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. ASSIST Online to be cited in the solicitation, and, if required, the specific issue of individual documents referenced (see Section 2).
- c. Requirements for submission of first article sample.
- d. Requirement for submission of design verification sample (if applicable).
- e. Requirement for submission of inspection equipment designs.
- f. Applicable national stock number.
- g. Packaging requirements, if other than specified in Section 5.
- h. Serialization requirements, if applicable.
- i. Certificate of conformance for each lot or shipment of product, if applicable.
- j. Government-Furnished Material or equipment, if applicable.
- k. Provisions for critical characteristics controls.
- l. Critical Inspection Equipment Requirement (See 6.15)

6.3 Submission of results of contractor conducted examinations and tests. Unless otherwise specified by the contracting officer, the contractor should forward requested records of examinations or tests to Commander, ARDEC, Picatinny, NJ 07806-5000, Attn: AMSRD-AAR-QEM-D.

6.4 Submission of test data. In, addition to the normal distribution of records, when the cartridges are procured by ARDEC, one copy of all ballistic data and ammunition data cards

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should be forwarded to Commander, ARDEC, Picatinny, NJ 07806-5000, Attn: AMSRD-AAR-QEM-D.

6.5 Submission of inspection equipment designs for approval. Submit equipment designs as required to Commander, ARDEC, ATTN: AMSRD-AAR-QEM-D, Picatinny, NJ 07806-5000. Request letter of submittal should state contractor, contract number, specification number, item nomenclature and classification of defects or test paragraph. Inspection equipment, inspection method and the frequency of inspection should be submitted for approval to ARDEC, ATTN: AMSRD-AAR-QEM-D, Picatinny, NJ 07806-5000.

6.6 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.

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

6.8 Drawings. Drawings listed in Section 2 of this specification under the heading U.S. Army Armament, Research, Development, and Engineering Center (ARDEC) may also include drawings prepared by, and identified as U.S. Army Armament, Research, and Development Command (ARRADCOM), Edgewood Arsenal, Frankford Arsenal, Rock Island Arsenal, or Picatinny Arsenal drawings. Technical data originally prepared by these activities is now under cognizance of ARDEC.

6.9 Definitions.

6.9.1 Critical defect. A critical defect is a defect that judgment and experience indicate is likely to result in hazardous or unsafe conditions for individuals using, maintaining, or depending upon the product; or a defect that judgment and experience indicate is likely to prevent performance of the tactical function of a major end item such as a ship, aircraft, tank, missile, or space vehicle.

6.9.2 Major defect. A major defect is a defect, other than critical, that is likely to result in failure or to reduce materially the usability of the unit of product for its intended purpose.

6.9.3 Minor defect. A minor defect is a defect that is not likely to reduce materially the usability of the unit of product for its intended purpose or is a departure from established standards having little bearing on the effective use or operation of the unit.

6.10 Subject term (key word) listing.

Grenade Launcher, M203
Burning Time
Burst

6.11 Transportation-Vibration. The cartridges will be considered safe to transport providing no evidence exists of loose propellant powder or illuminant composition in the box.

6.12 Transportation-Vibration. The cartridges will be considered free of damage that will affect the intended function provided the top seal has not been broken by movement or displacement of the top, or the case side has not been distorted sufficiently to prevent ejection of the illuminant assembly.

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6.13 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.

6.14 Critical Inspection Equipment

6.14.1 System Reliability. The contractor should provide for each defect identified as critical, a manufacturing and inspection system that assures no more than one in a million contain the defect. This should be assured by controlling the maximum defect rate produced and the error rate of the inspection equipment such that the product of the two terms when multiplied together is less than one in a million.

6.14.2 Maximum defect rate produced. The maximum defect rate produced should be defined as the largest defect rate expected for the characteristic of concern on a monthly or lot basis. The contractor should establish the maximum defect rate, however, it may not exceed one percent without approval of the procuring contracting officer. Once established, the contractor should monitor the defect rate to assure it does not exceed the maximum rate allotted. If the established maximum defect rate is exceeded, the production of that feature should be terminated until the cause is determined and corrected. Additionally, all products for that period of time should be rejected and re-inspected.

6.14.3 Maximum error rate of the inspection system. The error rate of the inspection equipment should be defined as the expected ratio of the number of defective parts accepted to the number of defective parts inspected by the equipment. The contractor, to meet the system reliability as defined in contract, defines the maximum error rate allowed. However, it may not exceed 1/500 without approval of the procuring contracting officer. Based on the maximum error rate defined for the equipment, the contractor should develop a demonstration test procedure to demonstrate the error rate of the equipment. The test should be performed using defective parts or reject standards. No part or standard should be accepted during the test. If a part or standard is accepted, the cause for failure should be isolated and corrected and the test rerun. Unless otherwise specified in the detailed item specification, the minimum number of test samples to be run should be equal to 0.7 divided by the error rate (e.g. If the required error rate is 1/1000, the sample size would be $0.7 \div (1/1000) = 700$.)

6.14.4 Periodic verification. Periodic verification of the system error rate should be performed.

6.14.5 Redundant inspection equipment. The contractor may elect to use redundant inspection equipment in lieu of using a single piece of equipment with a very low error rate. Where redundant equipment is used, the inspection system error rate is defined as the error rates of the two pieces of equipment multiplied together.

6.14.6 Automated acceptance inspection equipment. Equipment for which no, or minimal, human involvement is required in the acceptance determination. This would include equipment employing probes/sensors/transducers that are automatically manipulated to perform measuring and detection functions. If readout is provided, the equipment will be categorized as automated even if operator interpretation is needed in the accept/reject decision.

6.15 Used in Lieu of Documents.

MIL-C-63092A (AR)
28 May 1991

MIL-DTL-0063092B (AR)

MIL-C-50447A (AR)

14 May 1975

MIL-C-60452A (MU)

12 November 1971

6.16 Revisions /Amendments History. The following is a record of changes incorporated into this document

ECP	Description	Date Approved
M6Y3013	<ol style="list-style-type: none"> 1. Deletion of reference MIL-P-48240 2. Made change to Major 105 of Body (prior to painting) 3. Standard change to Moisture content to the Illuminant composition 4. First Fire / Ignition composition standard changed from MIL-P-223 to MIL-STD-1234 5. Verbal change 	04/21/1997
R3Y5003	<ol style="list-style-type: none"> 1. Changed inspection method of Major 104 of Cartridge Case Loading Assembly 	08/07/2003

6.17 Interim Revision This interim revision has been prepared at Program Manager request to document in ASSIST Online the version of a draft specification that was placed on contract in 2004. This interim revision has been dated to match the date of the draft specification that was placed on contract. It has been modified slightly to comply with MIL-STD-961 requirements for format, but not content. A fully coordinated revision, compliant with both MIL-STD-961 format and content requirements, will be approved for publication.

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

Preparing activity:

Army-AR

(Project 1310-2006-0011)

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>.