

MIL-F-14943D (AR)

7 December 1982

SUPERSEDING

MIL-F-14943C (PA)

5 January 1976

MILITARY SPECIFICATION

FUZE, GRENADE, HAND, PRACTICE: M228, PARTS FOR,
AND LOADING, ASSEMBLING AND PACKING

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

1. SCOPE

1.1 This specification covers the requirements, quality assurance provisions, metal parts, and the loading, assembling and preparation for delivery for one type of fuze designated as Fuze, Grenade: Hand, Practice, M228.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

MILITARY

MIL-P-116	Preservation, Method of
MIL-P-223	Powder, Black.
MIL-C-13739	Composition, delay.
MIL-P-20444	Primer, Percussion, M42 Loading, Assembling and Packing.
MIL-A-48078	Ammunition, Standard Quality Assurance Provisions, General Specification For.

STANDARDS

MILITARY

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
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Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, US Army Armament Research and Development Command, Attn. DRDAR-QA, Dover, New Jersey 07801 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1428) appearing at the end of this document or by letter.

MIL-F-14943D (AR)

MIL-STD-414	Sampling Procedures and Tables for Inspection by Variables for Percent Defective
MIL-STD-1235	Single and Multilevel Continuous Sampling Procedures and Tables for Inspection by Attributes

DRAWINGS (see 6.10)

U.S. ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND

PRODUCT AND PACKAGING DRAWINGS

9235210	Fuze, Grenade: Hand, Practice, M228
9251665	Box, Wirebound, Packing, Ammunition, for Fuze, Hand Grenade, M213, M215 or Practice, Delay, M228
9251666	Carton, Packing, Ammunition, for Fuze, Hand Grenade, M213, M215 or Practice, Delay, M228

INSPECTION EQUIPMENT DRAWINGS

8816636	Adapter Drop Test.
9278658	Training Manual For Radioisotopic Automatic Hand Grenade Fuze Checker.

(Copies of specifications, standards and drawings required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the Contracting Officer.)

*(For meaning of asterisk see paragraph 6.11).

2.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 Materials and parts. Materials and parts shall be in accordance with the applicable drawings, specifications and standards.

3.2 Fuze. The fuze shall comply with all requirements specified on Drawing (Dwg.) 9235210, all associated drawings, and with all requirements specified in applicable specifications and standards.

3.3 Functioning. The fuze shall not dud (see 6.6) nor fail to function because of a "hung" striker (see 6.7). It shall function high order (see 6.8), and shall comply with the following delay time requirements:

3.3.1 Premature. The fuze shall not function in less than three (3) seconds.

3.3.2 Normal Delay. The fuze shall function in not less than four (4) nor more than five (5) seconds.

3.3.3 Excessive Delay. No fuze shall have a functioning delay time greater than ten (10) seconds.

3.4 Embrittlement. The spring and safety clip shall not break when tested as specified.

3.5 Release Resistance. The safety clip shall not be disengaged from its assembled position over the lever by a load of twenty-five (25) ounces, but shall be completely disengaged from the lever by a load of eighty (80) ounces, when tested as from the lever by a load of eighty (80) ounces, when tested as specified. The safety clip shall be considered disengaged from its assembled position over the lever when the square end of the safety clip moves upon the flat surface of the lever to the extent that the clip does not return to its original assembled position when the load is removed.

3.6 Delay composition.

3.6.1 Consolidation of delay composition. The loading equipment shall include consolidating punches which shall reach the required consolidation pressure before stopping. The punch travel and method of actuation of any punch shall not be dependent on the punch travel or method of actuation of any other punch. A pressure gage shall be incorporated as an integral part of each consolidation station to measure directly the pressure of each consolidating punch. The overall height of the delay column shall be gaged automatically by the loading machine. In the event any punch does not reach the required consolidating pressure or the overall height of the delay column does not meet the requirement specified, the loading machine shall automatically reject the fuze or fuzes in question.

3.6.2 Contamination control. There shall be no contamination including lubricating oil, hydraulic fluids etc., in the delay composition.

MIL-F-14943D (AR)

3.6.3 Adherence of delay composition. No delay composition shall be allowed to adhere to the devices used to feed the delay composition to the processing equipment which includes mixing and loading machines. The devices used to feed delay composition to the processing equipment shall be disassembled and cleaned periodically to insure that delay composition shall not be allowed to build up on these devices. The devices shall be seamless and of such a design as to minimize adherence of delay composition.

3.6.4 Moisture content. The moisture content of the delay composition shall not exceed 0.04% throughout assembly of the fuze.

3.7 Delay column density. The delay column shall be packed as required on Dwg. 9235210 and shall contain no voids, shall not be inadequately consolidated nor be less than seven tenths (0.7) inch in height.

3.8 First article inspection. This specification contains technical provisions for first article inspection. Requirements for the submission of first article samples by the contractor shall be as specified in the contract.

3.9 Workmanship. All parts and assemblies shall be fabricated and loaded in a thorough, workmanlike manner, and all manufacturing, processing, and assembly operations shall be correctly performed. They shall be clean and free of burrs, sharp edges, unblended radii, surface defects, chips, dirt, grease and oil (except where specifically required), corrosion products and other foreign matter. The cleaning method used shall not be injurious to any part or assembly nor shall they be contaminated by the cleaning agent. Exterior surface coatings shall be continuous except for a few light scratches not exposing base material. All required markings shall be neat and sharply defined. Required packing shall be dry.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection and Standard Quality Assurance Provisions. Unless otherwise specified herein or in the contract, the provisions of MIL-A-48078 shall apply and are hereby made a part of this detail specification.

4.1.1 Submission of product. See MIL-A-48078. In addition, inspection lots of fuzes shall contain the following with each lot submitted for acceptance.

MIL-F-14943D (AR)

- a. Certificates of Conformance denoting body aging as per Dwg. 8822132 and Primer Holder as per dwg. 7548591.
- b. Statement of Findings denoting primer composition as per Dwg. 8799925.
- c. Certificate of Conformance denoting the drying procedure as per Dwg. 7548576.
- d. Certificate of Conformance denoting the drying procedure of the body in the event of excess exposure as per Dwg. 9235210.
- e. Statement of Findings denoting diecast material composition as per Dwg. 8822132 or 7548591 with each lot of bodies or primer holders.
- f. a statement of Findings for each lot of delay composition, per MIL-C-13739.

4.2 Classification of inspections. The following types of inspection shall be conducted on this item.

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

4.3 First article inspection.

4.3.1 Submission. The contractor shall submit a first article sample as designated by the Contracting Officer for evaluation in accordance with provisions of 4.3.2 and 4.3.3. The first article sample shall consist of: sets of parts, loaded fuze assemblies less igniter case assembly, as specified in Table 1.

4.3.2 Inspections to be performed. See MIL-A-48078 and paragraphs. 4.4.2.1 thru 4.4.2.12 testing per paragraph 4.4.3, and Table I specified herein.

4.3.3 Rejection. see MIL-A-48078.

TABLE I. - First article inspection

MIL-F-14943D (AR)

CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	SHEET		DRAWING NUMBER See Below
				1	3	
CATEGORY				AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
	Fuze, Grenade; Hand Practice, M228					
	<u>Igniter Case Assembly</u> (Dwg. 9235948) Weight of black powder Moisture content of black powder		25 (d)		3.2	Balance 4.4.3.5/4.5.6
	<u>Body</u> (Dwg. 8822132) Examination for Defects		25		3.2	4.4.2.2
	<u>Lever</u> (Dwg. 8822378) Examination for Defects		25		3.2	4.4.2.4
	<u>Spring</u> (Dwg. 7548585) Examination for Defects		30		3.2	4.4.2.5
	Embrittlement test		10		3.2	4.5.2
	Spring torque under load		25		3.2	4.5.3
	Spring torque after assembly		25 (a)		3.2	4.5.3
	<u>Striker, Assembly</u> (Dwg. 7548578) Examination for Defects		25		3.2	4.4.2.6
	<u>Clip, Safety</u> (Dwg. 9235366) Examination for Defects		30		3.2	4.4.2.7
	Embrittlement test		10		3.2	4.5.2

NOTES:

DRAW-QA Form 160 Jul 77 Replaces SARPA-QA Form 2567 Feb 74 Which is Obsolete

TABLE I. - First article inspection.

CLASSIFICATION OF DEFECTS & TESTS

MIL-F-14943 D (AR)

PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AGL OR 100%	SHEET		REQUIREMENT PARAGRAPH	DRAWING NUMBER	PARAGRAPH REFERENCE /INSPECTION METHOD
					2	3			
CATEGORY								See Below	NEXT HIGHER ASSEMBLY
	Fuze, Grenade; Hand Practice, M228								
	<u>Fuze Assembly (Prior to Assembly of Striker and Igniter Case Assembly (Dwg. 9235210)</u> Examination for Defects Primer holder assembly push out resistance		25			3.2	3.2	4.4.2.8	
	<u>Fuze Assembly (Dwg. 9235210)</u> Examination for Defects		25			3.2	3.2	4.5.7	
	<u>Testing Functioning</u> Automatic inspection of delay column		500 (b)			3.2	3.2	4.4.3.1	
	Safety pin withdrawal - lower limit		500 (b)			3.7	3.7	4.5.4	
	Safety pin withdrawal - upper limit		500 (b)		(c)	3.2	3.2	4.5.5	
	Functioning		500 (b)		(e)	3.3	3.3	4.5.1	
	Consolidation of delay column		25			3.6.1	3.6.1	4.4.3.8.1	
	Contamination control		25			3.6.3	3.6.3	4.4.3.8.3	
	Adherence of delay composition		25			3.6.4	3.6.4	4.4.3.8.4	
	Moisture content of delay composition		25			3.6.4	3.6.4	4.4.3.8.4	
	Release resistance of safety clip		25			3.6.4	3.6.4	4.4.3.8.4	
			25			3.5	3.5	4.5.9	

NOTES:

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TABLE I. First article inspection.

CLASSIFICATION OF DEFECTS & TESTS

MIL-F-14942 D (AR)

PARAGRAPH	TITLE	SHEET		NO. OF SAMPLE UNITS	EXAMINATION OR TEST	AQL OR 100%	REQUIREMENT PARAGRAPH	DRAWING NUMBER	
		3	3 OF					See Below	NEXT HIGHER ASSEMBLY
	Fuze, Grenade; Hand Practice, M228							PARAGRAPH REFERENCE /INSPECTION METHOD	
CATEGORY	(a) Spring Torque after assembly shall use under load test. (b) Prior to performing the functioning test, the five-hundred samples shall be subjected to these tests. (c) Upper limit to be performed in conjunction with the functioning test. (d) One (1) defect is allowed during test. (e) Five (5) defects as described the 4.4.1.1 are allowed during testing.								

NOTES:

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MIL-F-14943D (AR)

4.4 Quality conformance inspection.

*4.4.1 Inspection lot formation. Inspection lots shall comply with the lot formation provisions of MIL-A-48078. In addition, inspection lots of fuzes shall contain:

- a. Metal parts or metal parts assemblies of one lot interfix number from one manufacturer.
- b. Loaded primer assemblies of one lot interfix number from one manufacturer.
- c. Delay composition from not more than two consecutive lots from one manufacturer.
- d. Black powder of one lot number from one manufacturer.

4.4.2 Examination. (See MIL-A-48078) Unless otherwise specified in the classification of defects and test tables, sampling plans for major and minor defects shall be in accordance with MIL-STD-105, Inspection Level II. Equipment necessary for the performance of the inspections listed shall be in accordance with 4.4.4.

Quality conformance inspection

CLASSIFICATION OF DEFECTS & TESTS

MIL-F-14943D (AR)

PARAGRAPH	TITLE	SHEET 1 of 1		NO. OF SAMPLE UNITS	EXAMINATION OR TEST	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE / INSPECTION METHOD
		DRAWING NUMBER	NEXT HIGHER ASSEMBLY					
4.4.2.1	Igniter Case Assembly	9235948	9235210					
CATEGORY								
<u>Critical</u>	None defined							
<u>Major</u> 101	Weight of black powder	25/1/2	3.2					Balance
102	Moisture content of black powder	(a)	---					4.4.3.4/4.5.6
<u>Minor</u> 201	Poor workmanship	1.0%	3.9					Visual
Notes:	a. Twenty-five (25) random samples shall be selected from every four (4) hours of continuous production or if the production cycle is interrupted due to manufacturing shut down in less than four (4) hours.							
NOTES:								

Quality conformance inspection**CLASSIFICATION OF DEFECTS & TESTS**

MIL-P-14943D (AR)

PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	SHEET 1 OF 1		REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
				AGL OR 100%			
4.4.2.2	Body						DRAWING NUMBER 8822132 NEXT HIGHER ASSEMBLY 9235210
CATEGORY							
<u>Critical</u>							
Major 101	None defined			0.40%	3.2		Gage
102	Location of large datum diameter in primer holder cavity, maximum (max)			0.40%	3.2		Gage
103	Location of small datum diameter in primer holder cavity, max			0.40%	3.2		Gage
104	Width of striker cavity			0.40%	3.2		Gage
105	Pitch diameter of thread			0.40%	3.2		Gage
106	Outside diameter of body below thread pilot, minimum (min)			0.40%	3.2		Gage
107	Distance from bottom of safety clip slot to outside surface			0.40%	3.2		Gage
108	Burr or flash on pivot pin or safety pin hole			0.40%	3.2		Visual/Manual
	Malformed or incomplete casting			0.40%	3.2		Visual
Minor 201	Major diameter of thread, min			0.65%	3.2		Gage
202	Protective finish missing or base metal exposed			0.65%	3.2		Visual
203	Poor workmanship			1.00%	3.9		Visual
NOTE: parts may be inspected in accordance with 4.4.3.10							

Quality conformance inspection

CLASSIFICATION OF DEFECTS & TESTS

MIL-F-14943D (AR)

PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	SHEET		DRAWING NUMBER	PARAGRAPH REFERENCE /INSPECTION METHOD
						1	1 OF		
4.4.2.3	Lever							8822378	
								NEXT HIGHER ASSEMBLY 9235210	
<u>Critical</u>									
<u>Major</u>									
101	None defined			0.40%	3.2				Gage
102	Height of formed edge below min			0.40%	3.2				Gage
103	Length of large formed edge from top surface			0.40%	3.2				Gage
104	Length from hinge pin ears to safety pin hole			0.40%	3.2				Gage
105	Metal thickness, min			0.40%	3.2				Gage
106	Formed edge missing			0.40%	3.2				Visual
	Crack in hinge pin ear or any formed edge radius			0.40%	3.2				Visual
<u>Minor</u>									
201	protective coating missing or base metal exposed			0.65%	3.2				Visual
202	Poor workmanship			1.0%	3.9				Visual

NOTE: Parts may be inspected in accordance with 4.4.3.9

DDI.R-QA Form 160 Jul 77

Quality conformance inspection

CLASSIFICATION OF DEFECTS & TESTS

MIL-P-14943D (AR)

PARAGRAPH	TITLE	SHEET		NO. OF SAMPLE UNITS	EXAMINATION OR TEST	AQL OR 100%	REQUIREMENT PARAGRAPH	DRAWING NUMBER
		1	1					
4.4.2.4	Holder, Primer							7548591 NEXT HIGHER ASSEMBLY
CATEGORY								9235210 PARAGRAPH REFERENCE /INSPECTION METHOD
<u>Critical</u>	None defined							
Major 101	Diameter of counterbore, max					0.40%	3.2	Gage
102	Diameter at datum length					0.40%	3.2	Gage
103	Malformed or incomplete casting					0.40%	3.2	Visual
104	Chamfer missing					0.40%	3.2	Visual
Minor 201	poor workmanship					1.0%	3.9	Visual

NOTE: parts may be inspected in accordance with 4.4.3.10

Quality conformance inspection

CLASSIFICATION OF DEFECTS & TESTS

MIL-F-14943D (AR)

PARAGRAPH	TITLE	SHEET		NO. OF SAMPLE UNITS	EXAMINATION OR TEST	AQL OR 100%	REQUIREMENT PARAGRAPH	DRAWING NUMBER	PARAGRAPH REFERENCE / INSPECTION METHOD
		1	OF 1						
4.4.2.5	Spring							7548585	NEXT HIGHER ASSEMBLY
								9235210	
<u>Critical</u>									
Major									
101	None defined			50/1/2			3.2		Gage
102	Angle between legs			50/1/2			3.2		Gage
103	Length of straight leg			10/0/1(a)			3.4		4.5.2
104	Embrittlement			10/0/1			3.2		4.5.3
105	Spring torque under load			10/0/1			3.2		4.4.3.2/4.5.3
	Spring torque after assembly								
Minor									
201	Protective coating missing or base metal exposed					0.65%	3.2		Visual
202	Poor workmanship					1.0%	3.9		Visual

NOTES: (a) Testing shall be for each heat treat batch of springs. If any spring fails to comply with the specified requirement, the batch shall be rejected.

Quality conformance inspection**CLASSIFICATION OF DEFECTS & TESTS**

MIL-P-14943D (AR)

PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	SHEET		DRAWING NUMBER
				1	1 OF	
CATEGORY				AGL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
4.4.2.6	Striker Assembly					7548578 NEXT HIGHER ASSEMBLY 9235210
<u>Critical</u>	None defined					
Major 101	Burr on outside of striker ear			0.40%	3.2	Visual
102	Striker damaged or malformed			0.40%	3.2	Visual
103	Width of striker			0.40%	3.2	Gage
104	Length from point to pivot pin hole			0.40%	3.2	Gage
105	Striker point missing or damaged to extent tha function may be impaired			0.40%	3.2	Visual
Minor 201	Striker point insecure (can be moved by hand)			0.65%	3.2	Manual
202	Protective finish missing or base metal exposed			0.65%	3.2	Visual
203	Poor workmanship			1.0 %	3.9	Visual

NOTES:

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Quality conformance inspection

CLASSIFICATION OF DEFECTS & TESTS

MIL-F-14943D (AR)

PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AGL OR 100%	REQUIREMENT PARAGRAPH	DRAWING NUMBER	
						SHEET	OF
4.4.2.7	Clip, Safety					1	9235366
CATEGORY							NEXT HIGHER ASSEMBLY 9235210
<u>Critical</u>	None defined						PARAGRAPH REFERENCE / INSPECTION METHOD
<u>Major</u>	Diameter of wire		25/0/1		3.2		Gage
101	Profile of spring section		25/0/1		3.2		Gage
102	Embrittlement		10/0/1 (b)		3.2		4.5.2
103							
<u>Minor</u>	Width of squared section		25/1/2		3.2		Gage
201	Protective finish missing or						
202	contains bare spot		25/0/1		3.2		Visual
203	Poor workmanship			1.0%	3.9		Visual

NOTE: (a) PARTS may be inspected in accordance with 4.4.3.9
 (b) Test shall be performed on each heat treat batch.

Quality conformance inspection

CLASSIFICATION OF DEFECTS & TESTS

MIL-P-14943D (AR)

PARAGRAPH	TITLE	SHEET		AGL OR 100%	NO. OF SAMPLE UNITS	EXAMINATION OR TEST	PARAGRAPH REFERENCE /INSPECTION METHOD
		1	OF 1				
4.4.2.8	Fuze Assembly, Prior to Assembly of Striker and Igniter Case Assembly	1	1				DRAWING NUMBER 9235210 NEXT HIGHER ASSEMBLY --
Critical							
<u>Major</u> 101	None defined						
102	Location of delay charge from bottom of delay cavity			0.40%			Gage
103	Depth to top of primer holder assembly			0.40%			Gage
104	Primer assembly above flush Primer assembly crimp missing, incomplete or off-center			0.40%			Gage/7548576
105	Primer holder assembly crimp missing, incomplete or off-center			0.40%			Visual/7548576
106	Varnish coating of joint and crimp missing or incomplete			0.40%			Visual
107	Primer holder assembly push out resistance			----			Visual
<u>Minor</u> 201	Poor workmanship			1.0%			4.4.3.5/4.5.7 Visual

NOTES:

MIL-F-14943D (AR)

CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	SHEET		DRAWING NUMBER	PARAGRAPH REFERENCE /INSPECTION METHOD
				1	3		
CATEGORY			AQL OR 100%	REQUIREMENT PARAGRAPH	NEXT HIGHER ASSEMBLY		
4.4.2.9	Fuze Assembly					9235210	
<u>Critical</u>	None defined						
<u>Major</u>	Crack in igniter case assembly		100%	3.2		Visual	
101	Safety pin ends incorrectly formed or cracked		100%	3.2		Visual	
102	Automatic inspection mark missing		100%	3.2		Visual	
103	Igniter crimp incomplete, nonuniform or contains cusp		100%	3.2		Visual	
104	Safety clip missing or incorrectly assembled		100%	3.2		Visual	
105	Either or both lever hinge ears missing		100%	3.2		Visual	
106	Both lever hinge ears not bent away from the body past the vertical centerline of the body hinge bosses		100%	3.2		Visual/Figure 1B	
107	Ends of both lever hinge ears not bent upwards		100%	3.2		Visual/Figure 1A	
108	Either lever hinge ear not bent away from the body past the vertical center line of the body hinge bosses		0.40%	3.2		Visual/Figure 1B	
109							
NOTES:							

DDAAR-QA Form 160 Jul 77 Replaces SARPA-QA Form 2567 Feb 74 Which is Obsolete

MIL-F-14943D

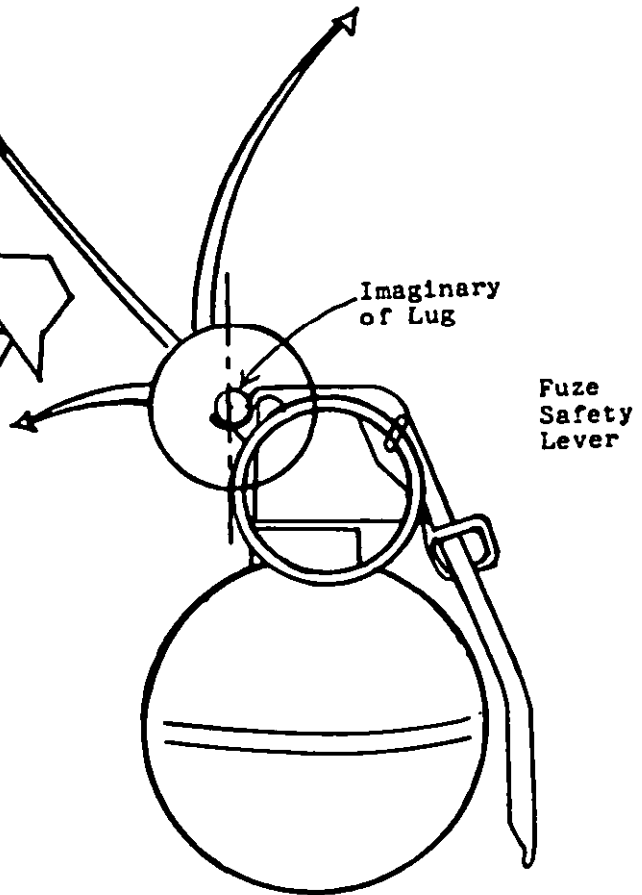
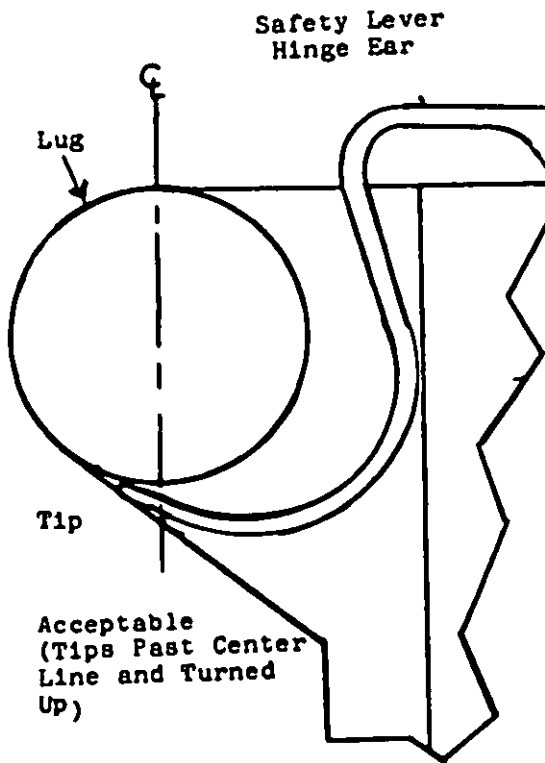
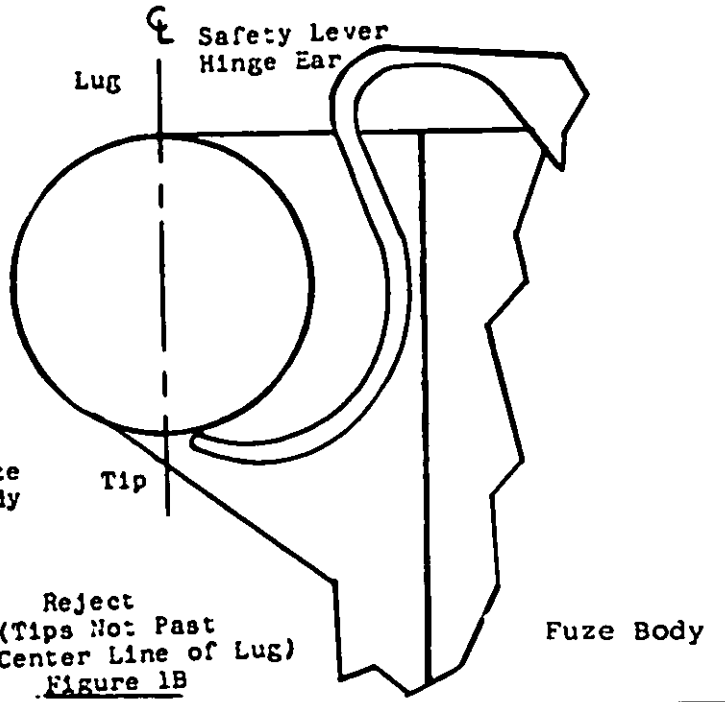
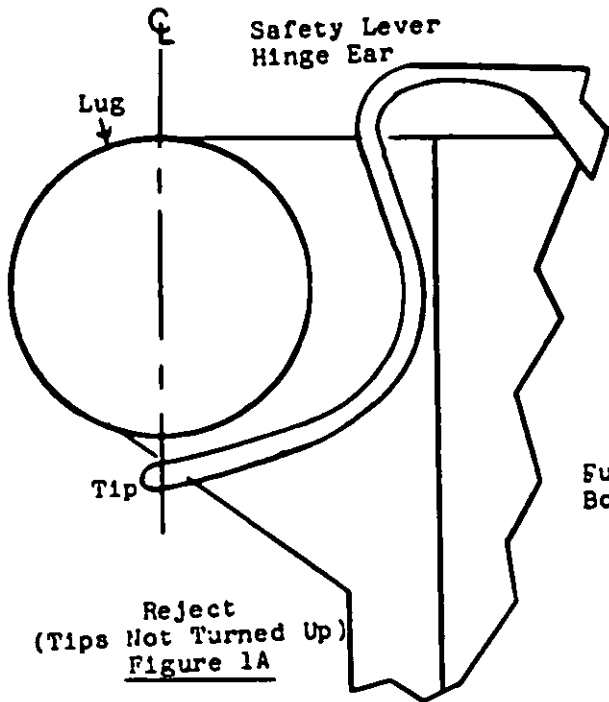


Figure 1C

Figure 1D

Quality conformance inspection

CLASSIFICATION OF DEFECTS & TESTS

MIL-F-14943D (AR)

PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	SHEET		DRAWING NUMBER
				2	3	
CATEGORY				AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
4.4.2.9 (cont'd)	Fuze Assembly					9235210 NEXT HIGHER ASSEMBLY
110		End of either lever hinge ear not bent upwards		0.40%	3.2	Visual/Figure 1A
111		Functional concentricity of igniter case assembly with thread		0.40%	3.2	Gage
112		Distance from flat on body to bottom of igniter case assembly		0.40%	3.2	Gage
113		Diameter of igniter case assembly crimps		0.40%	3.2	Gage
114		Sealing compound missing or incomplete		0.40%	3.2	Visual
115		Safety pin withdrawal		0.40%	3.2	4.4.3.4/4.5.5
116		Consolidation of delay composition		-----	3.6.1	4.4.3.7.1
117		Contamination control		-----	3.6.2	4.4.3.7.2
118		Adherence of delay composition		-----	3.6.3	4.4.3.7.3
119		Moisture content delay composition		-----	3.6.4	4.4.3.7.4
120		Release resistance, safety clip		-----	3.5	4.4.3.8/4.5.8

NOTE:

Quality conformance inspection

CLASSIFICATION OF DEFECTS & TESTS

MIL-P-14943D (AR)

PARAGRAPH	TITLE	SHEET		NO. OF SAMPLE UNITS	EXAMINATION OR TEST	AQL OR 100%	REQUIREMENT PARAGRAPH	DRAWING NUMBER
		3	3 OF					
CATEGORY								PARAGRAPH REFERENCE / INSPECTION METHOD
4.4.2.9 (cont'd)	Puze Assembly							9235210 NEXT HIGHER ASSEMBLY
<u>Special Major</u>								
121	Functioning						3.3	4.4.3.1/4.5.1
122	Delay column density					100%	3.7	4.4.3.3/4.5.4
<u>Minor</u>								
201	Protective coating damaged to extent that base metal is exposed					0.65%	3.2	Visual
202	Marking missing, incorrect or illegible					0.65%	3.2	Visual
203	Poor workmanship					1.0%	3.9	Visual

NOTES:

Quality conformance inspection

CLASSIFICATION OF DEFECTS & TESTS

MIL-F-14943D (AR)

PARAGRAPH	TITLE	SHEET 1 OF 1		NO. OF SAMPLE UNITS	EXAMINATION OR TEST	AQL OR 100%	REQUIREMENT PARAGRAPH	DRAWING NUMBER	PARAGRAPH REFERENCE / INSPECTION METHOD
		NEXT HIGHER ASSEMBLY							
4.4.2.10	Seal Carton							9251666	
<u>Critical</u>	None defined							--	
<u>Major</u> 101 102	Carton punctured, cut or torn Sealing strip incomplete or badly wrinkled	0.40%	3.2					Visual	
<u>Minor</u> 201 202 203	Contents move when shaken Marking missing, misleading or unidentifiable Poor workmanship	0.40%	3.2					Visual	
		0.65%	3.2					Manual	
		0.65%	3.2					Visual	
		1.0 %	3.					Visual	
NOTES:									

DRD:R-QA Form 160 Jul 77 Replaces SARPA-QA Form 2567 Feb 74 Which is Obsolete

Quality conformance inspection

CLASSIFICATION OF DEFECTS & TESTS

MIL-F-14943D (AR)

PARAGRAPH	TITLE	SHEET 1 OF 1		NO. OF SAMPLE UNITS	EXAMINATION OR TEST	AGL OR 100%	REQUIREMENT PARAGRAPH	DRAWING NUMBER 9251666	NEXT HIGHER ASSEMBLY --	PARAGRAPH REFERENCE /INSPECTION METHOD
4.4.2.11	Sealed Barrier Bag									
<u>Critical</u>										
<u>Major</u> 101 102 103	None defined Seal improper or incomplete Bag punctures, torn or cut Sealed bag heat seal test	0.408 0.408 ---	3.2 3.2 3.2					Visual Visual MIL-P-116		
<u>Minor</u> 201 202	Marking missing, misleading or unidentifiable Poor workmanship	0.658 1.08	3.2 3.					Visual Visual		

NOTES:

Quality conformance inspection

MIL-F-14943D (AR)

CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	SHEET		DRAWING NUMBER	PARAGRAPH REFERENCE /INSPECTION METHOD
				1	OF		
CATEGORY				AQL OR 100%	REQUIREMENT PARAGRAPH		
4.4.2.12	Sealed Wooden Packing Box	None defined			1	9251666	
<u>Critical</u>							
Major B							
131	Box damaged exposing contents			0.40%	3.2		Visual
132	DOD symbol misleading or unidentifiable			0.40%	3.2		Visual
133	Wire missing, broken or loose			0.40%	3.2		Visual/Manual
Minor							
201	Metallic seal missing, unsealed or improperly positioned (Level A shipments only)			0.65%	3.2		Visual
202	Marking misleading or unidentifiable			0.65%	3.2		Visual
203	Wire loops improperly engaged			0.65%	3.2		Visual
204	Poor workmanship			1.0 %	3.		Visual
NOTES:							

DRDAR-QA Form 160 Jul 77 Replaces SARPA-QA Form 2567 Feb 74 Which is Obsolete

MIL-F-14943D (AR)

4.4.3 Testing.

4.4.3.1 Functioning (see 3.3). The fuzes shall be observed for any failure to comply with the requirements as classified in Table II when tested as specified in 4.5.1.

TABLE II

<u>Defect</u>		<u>Classification</u>
Premature delay failure	(see 3.4.1)	Special Major
Excessive delay failure	(see 3.4.3)	Special Major
"Hung" striker failure	(see 3.4)	Special Major
Normal delay failure	(see 3.4.2)	Major
Dud	(see 3.4)	Major

*4.4.3.1.1 Beginning with the first lot produced and continuing until three consecutive lots have complied with the acceptance criteria specified, a sample of 800 fuze assemblies shall be taken from each lot and divided into two equally sized groups. One group shall be subjected to the static functioning test as specified in 4.5.1.1 and the other group to the dynamic functioning test as specified in 4.5.1.2. The lot shall be rejected if any of the following test results occur:

- a. A Special Major defective is found (see Table II).
- b. If four (4) or more fuzes dud or function low order (see 6.8).
- c. If six (6) or more normal delay failures occur in either group, or if the combined number of normal delay failures in both groups equals or exceeds ten (10).

4.4.3.1.2 After three consecutive lots have met the criteria of 4.4.3.1.1 and lot quantities are less than seventy-five thousand (75,000), five hundred (500) assemblies shall be selected from each lot for static and dynamic tests using two hundred fifty (250) assemblies for each test phase. The lot shall be rejected if any of the following test results occur:

- a. A Special Major defect is found (see Table II)
- b. Four (4) or more fuzes dud or function low order.
- c. Five (5) or more normal delay failures occur in either group or the combined number of normal delay failures in both groups equals or exceeds eight (8).

After three consecutive lots have met the criteria of 4.4.3.1 and lot quantities are 75,000 or greater, eight hundred (800) assemblies shall be selected from each lot for static and dynamic tests using four hundred (400) assemblies for each test phase. The lot shall be rejected if any of the following test results occur:

MIL-F-14943D (AR)

- a. A special Major defect is found (see Table II).
- b. Six (6) or more fuzes dud or function low order.
- c. Seven (7) or more normal delay failures occur in either group or the combined number of normal delay failures equals or exceeds thirteen (13).

4.4.3.2 Spring torque after assembly. This test shall be performed with the spring sample that has complied with the requirements of the spring torque under load test. If a defective spring was found during the prior spring test, it shall be replaced prior to performing this test. If one (1) or more springs fail to comply with the requirement, the lot shall be rejected. The test shall be performed as specified in 4.5.3 using equipment in accordance with 4.4.4.

4.4.3.3 Automatic inspection of delay column (see Dwg. 9235210 and 9278658). This inspection shall be conducted 100 percent using the specified automatic radioisotopic inspection equipment as per dwg. 9278658 to assure that the fuze assembly does not contain the specified defects. Fuzes rejected by the equipment may be re-inspected one time. Fuzes which are not accepted by the equipment on re-inspection shall be classed defective and removed from the lot.

4.4.3.4 Moisture content of black powder. The contractor shall provide adequate controls to assure compliance with the requirements and shall test for verification a minimum of one sample of black powder selected at the loading station at the time of loading from each eight hours production of igniter case assemblies. A composite sample shall not be used. Failure of the sample to comply with the requirement shall cause the black powder represented by the sample, including any igniter case assemblies loaded with the non-conforming powder to be rejected. The contractor shall maintain adequate records to provide identification of the powder used in the loaded igniter case assemblies. Test shall be performed as specified in 4.5.7 using equipment in accordance with 4.4.4.

4.4.3.5 Primer holder assembly push out resistance. A sample of 100 fuzes with primer holder assemblies and delay columns, but less igniter case assemblies and striker assemblies, shall be selected at random from each lot for this test. The lot shall be rejected if two or more primer holder assemblies are classed defective. (Destructive test)

4.4.3.6 Check test for deterioration of primer. (See MIL-P-20444)- Major A defect - If the total time between original acceptance of any lot and assembly of that lot into the fuze exceeds two years, or if the primers have been subjected to adverse conditions, however brief, at any time since previous test, 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 fuze. This test shall be performed by the contractor on primers selected by the Government Inspector at the facility assembling the primers into the fuze (see 6.5).

MIL-F-14943D (AR)

4.4.3.7 Delay composition.

4.4.3.7.1 Consolidation of delay column. Major A Defect. The contractor shall provide and maintain adequate controls to assure uniformity of delay column consolidation as specified. At the start of every shift and immediately upon restarting any loading machine after a shut down period for a repair or adjustment, each loading machine shall be qualified prior to use in production by observing a sample run of 25 fuzes for compliance with requirements. Consolidation pressures for each increment shall be recorded. Further, a sample of 10 consecutive fuzes from each machine shall be observed and the consolidation pressures recorded at least once every two (2) hours of production. In the event the observed consolidation pressure for any fuze fails to comply with the applicable requirement, the portion of production since the last control check was made shall be rejected, and the loading machine shall be repaired or adjusted and shall be requalified prior to use in production. Fuzes which are rejected by the loading machine for non-compliance with the minimum delay column height of less than seven-tenths (0.7) of an inch shall be reported and corrective action shall be taken to prevent recurrence.

4.4.3.7.2 Contamination control. The contractor shall provide adequate controls to prevent contaminants of any kind from getting into the delay composition. Machinery, environments and operations utilized to load or otherwise handle delay composition shall be visually inspected at least once every two hours of operation to determine that the delay composition does not contain or is not likely to contain lubricating oil, hydraulic oil or other contaminants. Any evidence of contamination which is found in the delay composition shall cause rejection of all production since the last previous inspection. If any evidence is found of conditions that have caused or are likely to cause contamination of the delay composition, such conditions shall be corrected before production may continue.

4.4.3.7.3 Adherence of delay composition. The contractor shall provide adequate controls to prevent delay composition from adhering to the processing equipment which includes mixing and loading machines including tubing and ancillary devices. Such equipment shall be cleaned at least once every four (4) hours of operation to prevent adherence of delay composition. Any evidence of delay composition adhering to the feeding devices shall cause rejection of all production until the equipment is cleaned to the satisfaction of the Government.

MIL-F-14943D (AR)

4.4.3.7.4 Moisture content. The contractor shall provide adequate controls to maintain the moisture content of the delay column during all operations of the Fuze assembly. The contractor shall develop and submit a plan to insure that the moisture content is maintained within the specified limits, including records to be kept and made available to the government upon request. Changes to the approved process will require approval of the Technical Agency in order to insure that the change will not degrade the fuze function.

4.4.3.8 Release resistance. The sampling plan for this test shall be in accordance with Table B-1, Code Letter O of MIL-STD-414 using an AQL for the non-disengagement (lower limit) load test of 0.065 percent and an AQL of 1.00 percent for the disengagement (upper limit) load test. The fuze lot shall be rejected if the acceptance criteria of the sampling plan are not met. (Non-destructive test).

4.4.3.9 Dimensional control of stamped parts. In place of the normal sampling associated with the Classification of Defects, and with the approval of the Contracting Officer, a sample of at least ten (10) parts may be dimensionally inspected to qualify the tool used in the stamping process for use in production. In addition, a random sample of five (5) parts shall be selected from the last portion of each hour's production for dimensional inspection as a control of the tool during production.

If any defective parts are found during qualification of the tool, the tool producing the defective part shall not be used in production.

If any defective parts are found when inspection is performed for control of the tool, the tool producing the defective part shall be removed from production. Further, that portion of production since the last tool control check shall be returned to the contractor for corrective action.

All tools 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.

MIL-F-14943D (AR)

4.4.3.10 Dimensional control of molded parts. The requirements of this paragraph apply to those dimensions which are considered "as molded", and which do not undergo subsequent operations). In place of normal sampling and inspections associated with the Classification of Defects, and with the approval of the Contracting Officer, and after a curing time for the parts has been approved (see Note 1) a sample of five (5) parts (as molded) from each cavity shall be inspected dimensionally to qualify a new or reworked cavity for use in production. The molded parts shall carry the individual cavity identification when more than one cavity is used in production. 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 after continuous production of each 5,000 parts or at the end of each week, whichever occurs first. Of the five (5) 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 shall 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 last control check shall be returned to the Contractor for inspection for each separate type of defect according to MIL-STD-105, using an AQL of 0.40 percent for each major defect and an AQL of 0.65 percent 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 design of gages and test equipment required to perform the inspections listed herein shall be forwarded to Commander, ARRADCOM, Dover, New Jersey 07801, ATTN: DRDAR-QAT-M, for approval prior to manufacture of equipment.

NOTE 1. For establishing the curing time, dimensionally check ten (10) parts from each cavity at periodic intervals (e.g., every 30, 60, etc. mins.) until dimensional stability is attained. The curing time will be from the time the part comes out of the mold until dimensional stability is attained. The inspection data used in determining the curing time shall be sent to ARRADCOM, Dover, New Jersey 07801, ATTN: DRDAR-QAT-M. If any new change in material, cycle time, a reworked cavity, or a new cavity is used, a new curing time shall be established and approved.

4.4.4 Inspection equipment. The inspection equipment required to perform the inspections and tests prescribed in this specification is identified in the 'Paragraph Reference/Inspection Method' column in the tables starting with paragraph 4.4.2.1, and the test method paragraphs (see 4.5). The contractor shall submit for approval, inspection equipment designs in accordance with the terms of the contract. See Section 6 of MIL-A-48078 and section 6.3 herein.

MIL-F-14943D (AR)

4.5. Methods of inspection.

4.5.1 Functioning and Delay Time. The fuzes shall be immersed in water maintained at a temperature of seventy (70) degrees Fahrenheit (F.) plus or minus ten (10) degrees Fahrenheit (F.) for a period of twenty-five (25) plus or minus five (5) minutes. The water shall contain a wetting agent. The fuzes shall be positioned vertically with the top of the fuze approximately six (6) inches below the surface of the water. After removal from the water, the fuzes shall be maintained at a temperature of seventy (70) degrees F. plus or minus ten (10) degrees F. and tested within fifteen (15) minutes by each of the following methods:

4.5.1.1 Static. The fuze assembly shall be assembled in a fixture. The safety pin shall be pulled and the fuze allowed to function. The functioning order and the recorded delay time shall be observed to determine compliance with the requirements.

4.5.1.2 Dynamic. the fuze assembly shall be assembled in a fixture as specified on Dwg. 8816636. The safety pin shall be pulled out and the fuze released to fall four (4) feet to impact on a two (2) inch min. thick steel plate placed with the impact surface perpendicular to the drop axis. The functioning order and delay time shall be observed to determine compliance with the requirements.

4.5.2 Spring embrittlement. The spring shall be pulled to the minimum point of permanent distortion by any approved method. Springs so tested shall be scrapped.

4.5.3 Spring torque under load and after assembly. The sample springs shall be individually identified and the torque determined and recorded for the specified angular displacement. Observation shall be made for compliance with the applicable drawing requirement. The springs, including any replacement spring shall then be assembled for twenty-four (24) hours, min, then removed from the test fixture and the torque retested to determine possible torque loss.

MIL-F-14943D (AR)

4.5.4 Automatic inspection of delay column. The automatic radioisotopic inspection equipment, its operation, calibration, and maintenance shall be in accordance with dwg. 9278658. As a minimum, the inspection equipment shall be checked at each inspection station with the specially designated accept-reject standards, for each hour of production, immediately after each down period, and the prior to starting daily production. In addition, whenever a power failure occurs, the criteria for calibrating and stabilizing the inspection equipment shall be in accordance with dwg. 9278658. If, at any time the testing operation is found to be improper, the testing device shall be declared inoperative until repaired and all assemblies tested since the last satisfactory check shall be rejected subject to retest. Fuze assemblies subject to retest shall be maintained in a humidity-controlled area in order to insure that the requirements of 3.6.4 are maintained. Whenever a defective assembly is found, positive action shall be taken to determine the specific cause of the defect and corrective measures instituted to prevent recurrence. The action taken shall be stated on the Critical Defect Report. The Government representative will examine the testing device, test method, records of inspection and handling, and identification of material undergoing test at regular but unscheduled intervals to determine that the test is being carried out in accordance with these provisions.

4.5.5 Safety pin withdrawal (upper and lower limits). The fuze assembly shall be assembled in a fixture and the required withdrawal force applied to the safety pin.

4.5.6 Moisture content of black powder. The moisture content of the black powder shall be determined in accordance with the procedure specified in MIL-P-223.

4.5.7 Primer holder assembly push out resistance. The sample fuze bodies shall be cut at the intersection of the bouchon and the threaded portion of the fuze body and the delay cavity hole reamed to 5/16 inch diameter, min. The bouchon shall be placed in a holding fixture and a punch inserted through the delay cavity hole to make contact with the primer holder assembly. A force shall be applied at a rate not to exceed 1/4 inch per minute until the primer holder assembly shows evidence of moving. The force required to move the primer holder assembly shall be recorded to determine compliance with the applicable requirement.

MIL-F-14943D (AR)

4.5.8 Release resistance. The sample fuzes shall be assembled to the inspection equipment. The load shall be applied slowly and steadily in the clip releasing direction until the clip disengages from its assembled position. The applied load that caused disengagement shall be recorded for determination of lot disposition. The test samples may be returned to the lot after safety clips have been reattached if test results are satisfactory.

5. PACKAGING5.1 Preservation and packaging.

5.1.1 Level A. The fuzes shall be preserved and packaged in accordance with dwg. 9251666.

5.2 Packing.

5.2.1 Level A. The cartons shall be packed in accordance with dwg. 9251665.

5.3 Marking. Marking shall be in accordance with dwg. 9251665 and 9251666.

6. NOTES

*6.1 Intended Use. This fuze is intended to be used with the M69 practice hand grenade.

*6.2 Ordering Data. (See MIL-AT-48078)

6.3 Submission of Inspection Equipment Designs for Approval (See MIL-A-48078). Submit equipment designs as required, to: Commander, US ARRADCOM, ATTN: DRDAR-QAT-I, Dover, New Jersey 07801.

6.4 Distribution of ammunition data cards. (See MIL-A-48078) Distribution of data cards shall include the following: Commander, US ARRADCOM, ATTN: DRDAR-QAT-M, Dover, New Jersey 07801.

6.5 Cost of check test. The contracting officer will arrange for the contractor to be reimbursed for the expense incurred in the performance of the check test for deterioration of the primer assemblies. The tests shall be conducted at Government expense without cost to the contractor assembling the primer assemblies into the fuze and shall not constitute a basis for rejection against either contractor except where deterioration has occurred as a direct result of carelessness in handling, storage, etc., permitted while the primer assembly lot was under the jurisdiction of either contractor.

MIL-F-14943D (AR)

6.6 Dud. A dud is defined as a fuze failure caused by non-initiation of the primer assembly when impacted by the striker assembly on the first attempt.

6.7 "Hung" striker. A hung striker is defined as a striker assembly that fails to rotate and impact the primer assembly due to a burr (including flash), or other cause, which results in sufficient restraint to prevent rotation of the striker assembly upon release of the lever.

6.8 High and low order functioning. High order functions are characterized by a complete and instantaneous explosion accompanied by a loud sharp report. Low order functions are characterized by an abnormally low level of explosive sound.

6.9 The automatic equipment designated for the delay column inspection is specifically designed to positively screen out fuzes with delay columns less than 0.7 inch in height or delay columns which have not been consolidated at the required minimum pressure. Fuzes with properly consolidated delay columns having the required height of 0.8 inch, minimum, will be accepted. The equipment may occasionally accept fuzes with delay columns between 0.7 inch and 0.8 inch depending on the specific combination of column length and column density contained in a particular fuze.

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

6.11 The margins of this specification are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contracts are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

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