

MIL-F-48388A (AR)

1 July 1985

SUPERSEDING

MIL-F-48388 (AR)

18 January 1977

## MILITARY SPECIFICATION

## FUZE, M934E6, LAUNCH SENSING SWITCH FOR

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

## 1. SCOPE

1.1 Scope. This specification establishes the performance, test, manufacture and quality assurance requirements for the launch switch for use in the M934E6 Fuze Assembly.

## 2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. Unless otherwise specified, the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation, form a part of this specification to the extent specified herein.

## SPECIFICATIONS

## MILITARY

MIL-A-48078 - Ammunition, Standard Quality Assurance Provisions, General Specifications for

## STANDARDS

## FEDERAL

FED-STD-209 - Clean Room and Work Station Requirements, Controlled Environment

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 Center, Attn: AMSMC-QA, Dover, New Jersey 07801-5001 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 1336

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## MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
- MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts
- MIL-STD-331 - Fuze and Fuze Components, Environmental and Performance Test for
- MIL-STD-810C - Environmental Test Methods
- MIL-STD-1169 - Packaging, Packing and Marking for Shipment of Inert Ammunitions Components, General Specifications for

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this specification to the extent specified herein.

## DRAWINGS

### US ARMY ARMAMENT RESEARCH AND DEVELOPMENT CENTER (ARDC)

9297015 - Switch Assembly, Launch

(Copies of specifications, standards, handbooks, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.1.3 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. Parts, materials, and processes shall be in accordance with the applicable drawings, specifications and standards.

### 3.2 Performance characteristic.

3.2.1 Launch acceleration sensing. The launch switch shall function when subjected to a longitudinal acceleration in the N to M direction along the M-N Axis of Figure 1, of 29g or greater and shall not function when subjected to a longitudinal acceleration in the N to M direction along the M-N Axis of 23g or less.

3.2.2 Closing time. The closing time for the launch switch shall be 10 +7 milliseconds.

3.2.3 Lead resistance. The resistance between switch leads during switch function shall be less than 5 ohms.

3.2.4 Insulation resistance. The insulation resistance shall be a minimum of 10 megohms.

3.2.5 Solderability. The dipped surface of the termination shall be at least 95 percent covered by a continuous new solder coating, and shall not have pinholes or voids that are concentrate in one area or that exceed 5 percent of the total area.

3.2.6 Transportation vibration. Following vibration, the switches shall meet the performance requirements of 3.2.1 thru 3.2.4.

3.2.7 Handling shock. Following handling shock, the switches shall meet the requirements of 3.2.1 thru 3.2.4.

3.2.8 Temperature. The switches shall meet the performance requirements of 3.2.1 thru 3.2.4 after exposure to the storage temperature environments, i.e. between +160°F and -50°F and during exposure to the operating temperatures between +140°F and -50°F.

3.2.9 Vibration - acceleration, operating. The launch switch contacts shall not close while the switch is exposed to acceleration vibration. After vibration, the switches shall meet the performance requirements of 3.2.1 thru 3.2.4.

3.2.10 Shock, operating. Following the shock test, there shall be no evidence of physical damage and the switches shall meet the performance requirements of 3.2.1 thru 3.2.4.

3.3 First article inspection. This specification contains technical provision for first article inspection. Requirements for the submission of first article samples shall be as specified in the contract.

3.4 Assembly conditions. The launch switch shall be assemble in an environmentally controlled room. The temperature of the roc shall be maintained at 75°F +10°F. Relative humidity shall be maintained at 30 to 50 percent. A positive pressure differential of 0.2 inches of water shall be maintained in the room. The work station for the assembly operation shall meet, as a minimum, the requirements of a Class 10,000 environment as defined in FED-STD-209.

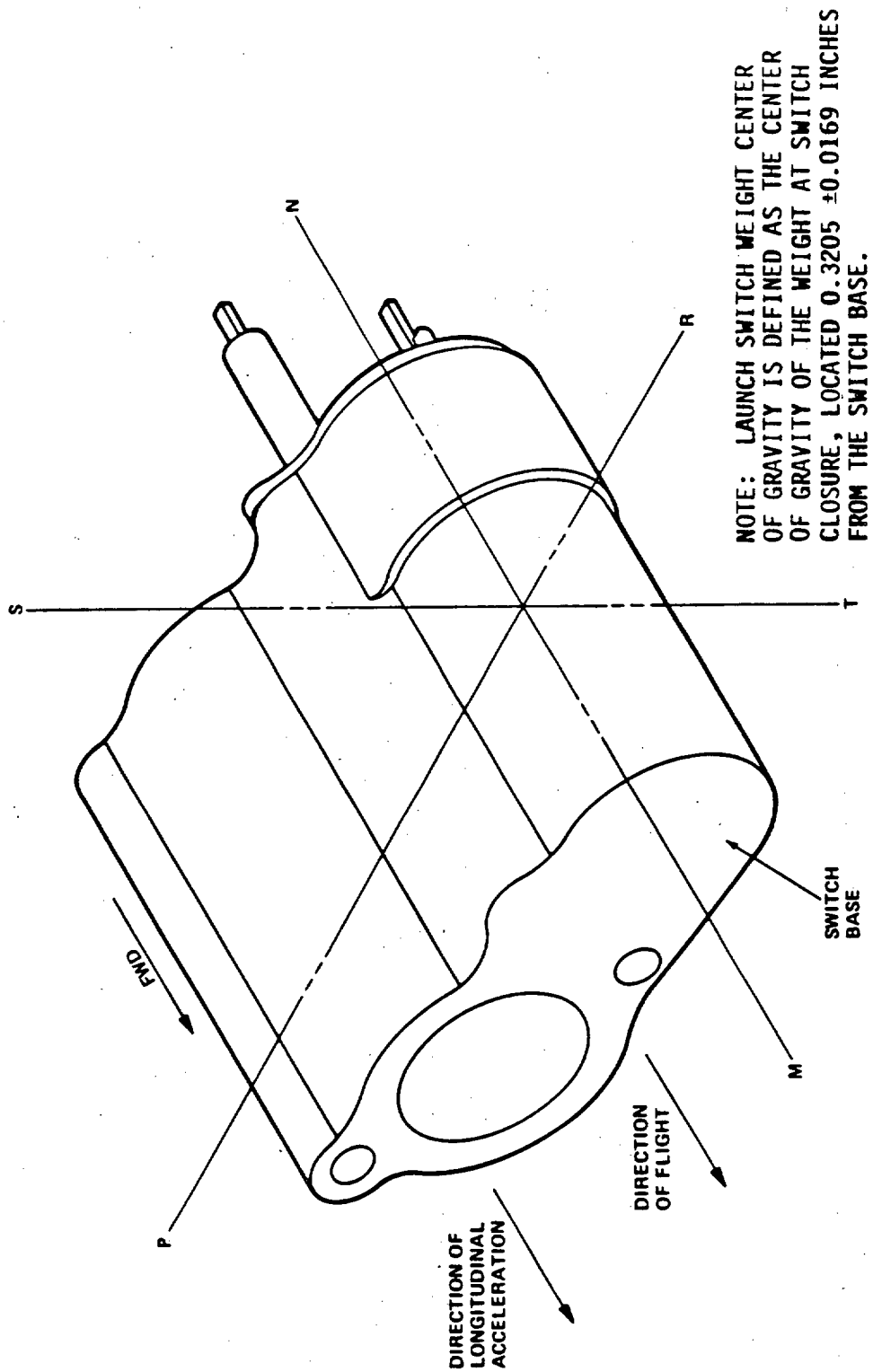


FIGURE 1. Launch switch assembly (9297015)

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3.5 Workmanship. The launch switch shall be fabricated and finished in a thorough, workmanlike manner. It shall be free of burrs, chips, sharp edges, unblended radii, cold solder joints, cracks, surface defects, dirt, grease, rust, corrosion products and other foreign matter. The cleaning methods used shall not be injurious to any part, nor shall the parts be contaminated by the cleaning agents.

## 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.

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

- a. First Article Inspection
- b. Quality Conformance Inspection

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 the provisions of 4.3.2. The first article sample shall have passed the applicable criteria of 4.4.2.1 through 4.4.2.11. The first article sample shall consist of the items in the quantities listed herein.

<u>PART DISCRIPTION</u>	<u>DRAWING NO.</u>	<u>QUANTIT</u>
Contact, Electrical-Launch Switch, Inner	92 97058	5
Contact, Electrical-Launch Switch, Outer	92 97057	5
Housing, Switch	92 97055	5
Spring, Helical, Compression-Launch Switch	92 97060	5
Contact Electrical-Launch Switch	9282612	5
Plug, Contact-Launch Switch	92 97059	5
Rivet, Tubular-Launch Switch	92 97056	5
Weight-Launch Switch	92 97061	5
Contact Assembly-Launch Switch	92 97013	5
Weight Assembly-Launch Switch	92 97014	5
Switch Assembly-Launch	92 97015	18

4.3.2 Inspections to be performed. See MIL-A-48078 and Table I specified herein.

4.3.3 Rejection. See MIL-A-48078.

TABLE I First article inspection

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**CLASSIFICATION OF DEFECTS & TESTS**

PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	SHEET 1 OF 3		DRAWING NUMBER
				AQL OR 100%	REQUIREMENT PARAGRAPH	
	Switch Assembly, Launch, and Components					9297015 NEXT HIGHER ASSEMBLY
CATEGORY						PARAGRAPH REFERENCE / INSPECTION METHOD
	<u>Switch assembly, launch</u>		6			
	<u>GROUP A</u>					
	Marking			3.1		Visual
	Solderability			3.2.5		4.5.5
	Examination for defects			--		4.4.2.11 (Group A)
	<u>GROUP B</u>		12			
	Closing time			3.2.2		4.5.2
	Examination for defects			--		4.4.2.11 (Group B)
NOTE:						

TABLE 1 First article inspection**CLASSIFICATION OF DEFECTS & TESTS**

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PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	SHEET 2 OF 3		DRAWING NUMBER
				AOL OR 100%	REQUIREMENT PARAGRAPH	
	Switch Assembly, Launch, and Components					See Below NEXT HIGHER ASSEMBLY
CATEGORY						PARAGRAPH REFERENCE /INSPECTION METHOD
	<u>Contact, electrical - inner</u> (Dwg 9297058) Examination for defects		5		3.1, 3.5	4.4.2.1
	<u>Contact, electrical - outer</u> (Dwg 9297057) Examination for defects		5		3.1, 3.5	4.4.2.2
	<u>Housing - switch</u> (Dwg 9297055) Examination for defects		5		3.1, 3.5	4.4.2.3
	<u>Spring, helical, compression</u> (Dwg 9297060) Examination for defects		5		3.1, 3.5	4.4.2.4
	<u>Contact, electrical</u> (Dwg 9282612) Examination for defects		5		3.1, 3.5	4.4.2.5
	<u>Plug, contact</u> (Dwg 9297059) Examination for defects		5		3.1, 3.5	4.4.2.6
	<u>Rivet, tubular</u> (Dwg 9297056) Examination for defects		5		3.1, 3.5	4.4.2.7

NOTES:

TABLE I First article inspection

CLASSIFICATION OF DEFECTS & TESTS

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PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	SHEET 3 OF 3		DRAWING NUMBER See Below NEXT HIGHER ASSEMBLY
				AQL OR 100%	REQUIREMENT PARAGRAPH	
CATEGORY	PARAGRAPH REFERENCE / INSPECTION METHOD					
	Switch Assembly, Launch, and Components					
	Weight (Dwg 9297061) Examination for defects		5		3.1,3.5	4.4.2.8
	Contact assembly (Dwg 9297013) Examination for defects		5		3.1,3.5	4.4.2.9
	Weight assembly (Dwg 9297014) Examination of defects		5		3.1,3.5	4.4.2.10

NOTES



4.4 Quality conformance inspection

4.4.1 Inspection lot formation. Inspection lot formation shall be in accordance with MIL-A-48078.

4.4.2 Examination. Examination shall be in accordance with MIL-A-48078. Unless otherwise specified, sampling shall be in accordance with MIL-STD-105, Inspection Level II. AQL levels, and requirements for 100 percent inspection are specified in 4.4.2.1 through 4.4.2.11.

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

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PARAGRAPH	TITLE	SHEET 1 OF 1		NO. OF SAMPLE UNITS	EXAMINATION OR TEST	AQL OR 100%	REQUIREMENT PARAGRAPH	DRAWING NUMBER 9297058	NEXT HIGHER ASSEMBLY 9197013	PARAGRAPH REFERENCE / INSPECTION METHOD
4.4.2.1	Contact, Electrical-Launch Switch, Inner									
<u>Critical</u>										
<u>Major</u>										
101	None defined					0.25%	3.1			Gage
102	Outside diameter					0.25%	3.1			Gage
103	Inside diameter					0.25%	3.1			Gage
104	Thickness					0.25%	3.1			Gage
	Width of tab									Gage
<u>Minor</u>										
201	Length of tab					0.40%	3.1			Gage
202	Tab bend radius					0.40%	3.1			Gage
203	Distance from centerline to bend of tab					0.40%	3.1			Gage
204	Workmanship					0.40%	3.5			Visual
<b>NOTE:</b>										

QUALITY CONFORMANCE INSPECTION  
**CLASSIFICATION OF DEFECTS & TESTS**

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PARAGRAPH	TITLE	SHEET 1 OF 1	DRAWING NUMBER
CATEGORY	EXAMINATION OR TEST	AQL OR 100%	REQUIREMENT PARAGRAPH
		NO. OF SAMPLE UNITS	PARAGRAPH REFERENCE / INSPECTION METHOD
4.4.2.2	Contact, Electrical-Launch Switch, Outer		9297057
			NEXT HIGHER ASSEMBLY 9297015
<u>Critical</u>	None defined		
<u>Major</u>	Outside diameter	0.25%	Gage
101	Inside diameter	0.25%	Gage
102	Thickness	0.25%	Gage
103	Width of slots	0.25%	Gage
104	Width of tab	0.25%	Gage
105			
<u>Minor</u>	Length of tab	0.40%	Gage
201	Depth of slots	0.40%	Gage
202	Tab bend radius	0.40%	Gage
203	Distance from centerline to bend of tab	0.40%	Gage
204	Workmanship	0.40%	Visual
205			

NOTE:

QUALITY CONFORMANCE INSPECTION

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CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	SHEET 1 of 1	DRAWING NUMBER 9297055	NEXT HIGHER ASSEMBLY 9297015	PARAGRAPH REFERENCE / INSPECTION METHOD
4.4.2.3	Housing, Switch							
<b>CATEGORY</b>								
<u>Critical</u>	None defined		10/Lot					
<u>Major</u>	Material							Chemical analysis
101	Depth of blind hole 1/			0.25%	3.1			Gage
102	Diameter of blind hole			0.25%	3.1			Gage
103	Diameter of counterbore in blind hole			0.25%	3.1			Gage
104	Overall Height (.740 - .010)			0.25%	3.1			Gage
105	Diameter of small hole in Section A-A			0.25%	3.1			Gage
106	Diameter of large counterbore in Section A-A			0.25%	3.1			Gage
107	Depth of large counterbore, Section A-A			0.25%	3.1			Gage
108	Hole pattern			0.25%	3.1			Gage
109	Depth of medium size counterbore			0.25%	3.1			Gage
110	Datum C			0.25%	3.1			Gage
<u>Minor</u>	Depth of slot shown in Detail C			0.40%	3.1			Gage
201	Depth of slot shown in Detail D			0.40%	3.1			Gage
202	Size of the three .073-64 UNC threaded holes			0.40%	3.1			Gage
203	Outside contour			0.40%	3.1			Gage
204	Length of slot in large thru hole			0.40%	3.1			Gage
205	Width of slot in large thru hole			0.40%	3.1			Gage
206	Width of slot in blind hole			0.40%	3.1			Gage
207	Height of shoulder			0.40%	3.1			Gage
208	Workmanship			0.40%	3.1			Gage
209				0.40%	3.5			Visual

**Notes:** 1/ Any failure is cause for rejection of the lot.

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

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PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	SHEET 1 OF 1		DRAWING NUMBER 9297060	NEXT HIGHER ASSEMBLY
				AQL OR 100%	REQUIREMENT PARAGRAPH		
CATEGORY				AQL OR 100%	REQUIREMENT PARAGRAPH	9297015	PARAGRAPH REFERENCE / INSPECTION METHOD
4.4.2.4	Spring, Helical, Compression-Launch Switch						
<u>Critical</u>	None defined						
<u>Major</u> 101 102 103	Outside diameter Load at compressed length Diameter of wire			0.25% 0.25% 0.25%	3.1 3.1 3.1		Gage Gage Gage
<u>Minor</u> 201	Workmanship			0.40%	3.5		Visual

NOTES:

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

MIL-F-48388A (AR)

PARAGRAPH	TITLE	SHEET 1 OF 1		NO. OF SAMPLE UNITS	EXAMINATION OR TEST	AQL OR 100%	REQUIREMENT PARAGRAPH	DRAWING NUMBER
4.4.2.5	Contact Electrical-Launch Switch							9282612 NEXT HIGHER ASSEMBLY 9297014
<u>Critical</u>	None defined							
Major <u>101</u>	Finish					--	3.1	Certificate of compliance Certificate of compliance
102	Material					--	3.1	
Minor <u>201</u>	Workmanship					0.408	3.5	
<b>NOTES:</b>								

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**CLASSIFICATION OF DEFECTS & TESTS**

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PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE / INSPECTION METHOD
4.4.2.6	Plug, contact				1 of 1	DRAWING NUMBER 9297059 NEXT HIGHER ASSEMBLY 9297013
<b>Critical</b>						
Major 101		None defined				
102		Diameter of large cylindrical body adjacent to flange		0.25%	3.1	Gage
103		Height of large cylindrical body adjacent to flange		0.25%	3.1	Gage
104		Height of small cylindrical body extending from large cylindrical body		0.25%	3.1	Gage
		Length of hole thru the large cylindrical body		0.25%	3.1	Gage
Minor 201		Height of plug		0.40%	3.1	Gage
202		Location of radius in standoff		0.40%	3.1	Gage
203		Location of hole in standoff		0.40%	3.1	Gage
204		Location of hole with countersink		0.40%	3.1	Gage
205		Diameter of hole in standoff		0.40%	3.1	Gage
206		Outside profile		0.40%	3.1	Gage
207		Diameter of hole thru large cylindrical body		0.40%	3.1	Gage
208		Diameter of countersunk hole		0.40%	3.1	Gage
209		Profile of hole in large body (min.)		0.40%	3.1	Gage
210		Workmanship		0.40%	3.5	Visual

NOTES:

QUALITY CONFORMANCE INSPECTION

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CLASSIFICATION OF DEFECTS & TESTS

PARAGRAPH	TITLE	SHEET 1 OF 1		NO. OF SAMPLE UNITS	EXAMINATION OR TEST	AQL OR 100%	REQUIREMENT PARAGRAPH	DRAWING NUMBER	PARAGRAPH REFERENCE / INSPECTION METHOD
4.4.2.7	Rivet, Tubular-Launch Switch							9297056	
								NEXT HIGHER ASSEMBLY 9297013	
CATEGORY									
<u>Critical</u>	None defined					--	3.1		Certificate of compliance
<u>Major</u> 101	Finish					0.40%	3.1		Gage
<u>Minor</u> 201 202 203	Diameter of shank Head profile Workmanship					0.40%	3.1		Gage
						0.40%	3.5		Visual
<b>NOTES:</b>									



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PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	SHEET 1 OF 1		DRAWING NUMBER 8297061
				AQL OR 100%	REQUIREMENT PARAGRAPH	
CATEGORY	PARAGRAPH REFERENCE / INSPECTION METHOD					
4.4.2.8	Weight-Launch Switch					
<u>Critical</u>	None defined					
<u>Major</u>						
101	Large outside diameter			0.25%	3.1	Gage
102	Small outside diameter			0.25%	3.1	Gage
103	Overall length			0.25%	3.1	Gage
104	Length of small outside diameter			0.25%	3.1	Gage
105	Diameter of thru hole			0.25%	3.1	Gage
106	Diameter of large counterbore			0.25%	3.1	Gage
107	Depth of large counterbore			0.25%	3.1	Gage
108	Width of shoulder at bottom of large counterbore			0.25%	3.1	Gage
109	Depth of small counterbore			0.25%	3.1	Gage
110	True position of large counterbore			0.25%	3.1	Gage
111	Surface finish			0.25%	3.1	Gage
<u>Minor</u>						
201	Radius at corner of large counterbore			0.40%	3.1	Gage
202	Radius at corner of small counterbore			0.40%	3.1	Gage
203	Radius of edge at junction of large and small counterbore			0.40%	3.1	Gage
204	Radius of corner of small outside diameter			0.40%	3.1	Gage
205	Radius at edge of small outside diameter			0.40%	3.1	Gage
206	Workmanship			0.40%	3.1	Gage
				0.40%	3.5	Visual

NOTES:

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**CLASSIFICATION OF DEFECTS & TESTS**

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PARAGRAPH	TITLE	SHEET 1 OF 1		DRAWING NUMBER
4.4.2.9	Contact Assembly-Launch Switch			9297013
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH
<u>Critical</u>	None defined			
Major <u>101</u>	Contact location		0.25%	3.1
Minor <u>201</u>	Workmanship		0.40%	3.5
				Gage
				Visual
<b>NOTES:</b>				

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PARAGRAPH	TITLE	SHEET 1 OF 1		NO. OF SAMPLE UNITS	EXAMINATION OR TEST	AQL OR 100%	REQUIREMENT PARAGRAPH	DRAWING NUMBER 9297014	NEXT HIGHER ASSEMBLY 9297015	PARAGRAPH REFERENCE /INSPECTION METHOD
4.4.2.10	Weight Assembly-Launch Switch									
<u>CATEGORY</u>										
	None defined									
	Roll-over of lip	0.25%	3.1					Visual		
	Workmanship	0.40%	3.5					Visual		

NOTE:

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PARAGRAPH	TITLE	SHEET 1 OF 2		DRAWING NUMBER	
		NO. OF SAMPLE UNITS	AGL OR 100%		REQUIREMENT PARAGRAPH
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AGL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE / INSPECTION METHOD
4.4.2.11	Switch, Assembly-Launch			9297015	
				9297030	
	<u>GROUP A</u>				
<u>Critical</u>	None defined				
<u>Major</u>	Launch acceleration sensing		100%	3.2.1	4.5.1
101	Lead resistance		100%	3.2.3	4.5.3
102	Insulation resistance		100%	3.2.4	4.5.4
103					
<u>Minor</u>	Workmanship		0.40%	3.5	Visual
201					
<b>NOTES:</b>					

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PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	SHEET 2 OF 2		DRAWING NUMBER	NEXT HIGHER ASSEMBLY	PARAGRAPH REFERENCE / INSPECTION METHOD
						REQUIREMENT PARAGRAPH			
4.4.2.11	Switch, Assembly-Launch						9297015	9297030	
		GROUP B 1/	3/						
	None defined								
Major	Transportation Vibration				3.2.6				4.5.6/4.5.1/4.5.2/ 4.5.3/4.5.4
104	Handling Shock				3.2.7				4.5.7/4.5.1/4.5.2/ 4.5.3/4.5.4
105	Shock, Operating				3.2.10				4.5.10/4.5.1/4.5.2/ 4.5.3/4.5.4
106	Vibration-Acceleration, Operating				3.2.9				4.5.9/4.5.1/4.5.2/ 4.5.3/4.5.4
107	Temperature, 2/				3.2.8				4.5.8/4.5.1/4.5.2/ 4.5.3/4.5.4
108	Solderability				3.2.5				4.5.5
Minor	Marking				3.1				Visual
202	Workmanship				3.5				Visual
203									
204									

NOTES: 1/ Destructive test.  
 2/ 1/2 hot, 1/2 cold. The units subjected to hot storage temperature shall also be subjected to hot operating temperature. The units subjected to cold storage temperature shall also be subjected to cold operating temperature.  
 3/ Test Sample 5% of the lot but not less than 5 units, with no defects permitted.

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4.4.3 Testing to be performed. All tests are specified in 4.4.2.1 through 4.4.2.11.

4.4.4 Inspection equipment. The inspection equipment required to perform the examinations and tests prescribed in this specification is identified, either directly or by reference, in the "Paragraph Reference/Inspection Method" column of the First Article or Quality Conformance Inspection Tables herein. The contractor shall submit inspection equipment designs to the Government for approval in accordance with the terms of the contract. See 6.4.

4.5 Methods of inspection. Unless otherwise specified herein, all inspections shall be performed in accordance with the test conditions specified in the general requirements of MIL-STD-331.

4.5.1 Launch acceleration sensing. The switch shall be positioned on a centrifuge such that the resultant acceleration on the switch is in the N to M direction along the longitudinal M-N Axis of Figure 1. To verify switch function, the centrifuge shall be operated such that the acceleration at the Launch Switch Weight center of gravity, defined in Figure 1, is  $29 + 0.5g$ . To verify switch non-function, the centrifuge shall be operated such that the acceleration at the Launch Switch Weight center of gravity, defined in Figure 1, is  $23 - 0.5g$ .

4.5.2 Closing time. The switch shall be mounted on a shock machine capable of producing a  $29 + 0.5g$  square wave pulse of 17 to 20 milliseconds in width. An accelerometer shall be mounted on the drop fixture to measure the shock pulse. Data shall be recorded showing the shock pulse and closure time of the launch switch using a storage oscilloscope. The wave forms shall be photographed to provide a permanent record of the test. To verify switch closing time, the launch switch shall be subjected to an acceleration in the N to M direction along the longitudinal M-N Axis of Figure 1.

4.5.3 Lead resistance. This test shall be performed while the launch acceleration sensing test of 4.5.1 is being performed. The circuit resistance of the switch during closure shall be measured by the voltmeter-ammeter method using a test current of 20 milli-amps and an open circuit voltage of  $40 \pm 2$  volts.

4.5.4 Insulation resistance. The resistance between the two switch leads shall be measured with a megohmmeter at a potential of  $100 \pm 10$  volts.

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4.5.5 Solderability. Solderability shall be performed as specified in MIL-STD-202, Method 208.

4.5.6 Transportation vibration. Transportation vibration shall be conducted in accordance with MIL-STD-331, Test 119, Procedure 2, with the following clarifications:

a. The switch shall be mounted parallel to each of the three major axes of Figure 1, with support applied to the entire outer surface of the switch (no cantilevering).

b. The switch shall be vibrated at a frequency of  $50 \pm 2.0$  hertz for a duration of  $60 \pm 3$  minutes along each of the three major axes. Intensity of vibration shall be 10g peak.

4.5.7 Handling shock. Switches shall be hard mounted to a suitable fixture and subjected to a shock test as follows:

- |                    |   |
|--------------------|---|
| a. Intensity:      | $400 \pm 32g$   |
| b. Pulse Shape:    | Half sine, per MIL-STD-810C, Method 516.2, Figure 516.2-2 |
| c. Pulse Duration: | 3, $\pm 2$ , $-1$ milliseconds                            |
| d. Direction:      | Perpendicular to M-N Axis of Figure 1 (any quadrant)      |

4.5.8 Temperature. Switches shall be stabilized for one hour at either of the two storage temperature extremes. The switches shall be tested at either of the operating temperature extremes.

4.5.9 Vibration - acceleration, operating. Switches shall be subjected to acceleration vibration in accordance with MIL-STD-810C, Method 514.2, Procedure V, Part Number 2, Curve AG. The duration shall be 5 minutes per axis. The switches shall be vibrated along the two major axes - longitudinally along the M-N Axis of Figure 1 and transversely along any plane perpendicular to the M-N Axis of Figure 1. The switch shall be monitored in accordance with 4.5.3.

4.5.10 Shock, operating. Switches shall be mounted with the M-N Axis vertical, terminals downward, and subjected to a free-fall shock developing the following attributes:

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- a. Intensity: 250, +0, -20g
- b. Pulse Shape: Half sine, per MIL-STD-810C, Method 516.2, Figure 516.2-2
- c. Pulse Duration: 3 ±1 milliseconds
- d. Resultant Deceleration Force Direction: Parallel to the M-N Axis in an M to N direction

## 5. PACKAGING

5.1 Packaging and packing. Switches shall be prepared for delivery in accordance with packaging and packing requirements specified in MIL-STD-1169 unless otherwise stated in the detail drawing.

## 6. NOTES

6.1 Intended use. The launch switches covered by this specification are intended for use in the M934E6 fuze for the Stinger missile.

6.2 Sensor characteristics. A launch sensing switch closure is defined as a reduction of resistance to 5 ohms or less which includes the swaged terminals, the surface contact of the loosely held trifurcated spring contact, and the multi-turn wire helical compression spring resistances in series. Multiple closures or bounce are acceptable since fuze timing starts and latches with the first closure of the launch sensing switch that exceeds 75 microseconds, and the sampling to determine closure continues for up to 40 milliseconds.

6.3 Ordering data. See MIL-A-48078.

6.4 Submission of designs for approval - See MIL-A-48078. Submit equipment designs, as required, to ARDC, ATTN: AMSMC-QAR-I, Dover, New Jersey 07801-5001.

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



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6.6 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Custodian:  
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Preparing activity  
Army-AR

(Project 1336-A506)

## STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER MIL-F-48388A		2. DOCUMENT TITLE FUZE, M934E6, LAUNCH SENSING SWITCH FOR	
3a. NAME OF SUBMITTING ORGANIZATION		4. TYPE OF ORGANIZATION (Mark one)	
b. ADDRESS (Street, City, State, ZIP Code)		<input type="checkbox"/> VENDOR <input type="checkbox"/> USER <input type="checkbox"/> MANUFACTURER <input type="checkbox"/> OTHER (Specify): _____	
5. PROBLEM AREAS			
a. Paragraph Number and Wording:			
b. Recommended Wording:			
c. Reason/Rationale for Recommendation:			
6. REMARKS			
7a. NAME OF SUBMITTER (Last, First, MI) - Optional		b. WORK TELEPHONE NUMBER (Include Area Code) - Optional	
c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional		8. DATE OF SUBMISSION (YYMMDD)	