

NOTICE OF INACTIVATION
FOR NEW DESIGN

INCH POUND

MIL-S-48459B (AR)
NOTICE 2
11 December 1995

MILITARY SPECIFICATION

SELECT UNIT, AMMUNITION: 11732600

This notice should be filed in front of MIL-S-48459B (AR) dated 30 June 1981

MIL-S-48459B (AR) dated 30 June 1981, with Amendment 1, dated 27 May 1993 and Validation Notice 1, dated 30 January 1987 is inactive for new design and is no longer used, except for replacement purposes.

Preparing Activity:
Army - AR

AMSC N/A

FSC 1220

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

INCH-POUND

MIL-S-48459B (AR)
AMENDMENT 1
27 May 1993

MILITARY SPECIFICATION

SELECT UNIT, AMMUNITION: 11732600

This amendment forms a part of MIL-S-48459B (AR), dated 30 June 1981, and is approved for use by the U.S. Army Armament, Munitions, and Chemical Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

PAGE 2

Add "(REF)" following the Inspection Equipment drawing numbers.

PAGE 12

Delete paragraph 4.6.1 in its entirety and substitute:

"4.6.1 Test equipment. The test equipment in Table IX may be used where specified to perform the required test. If alternate test equipment is to be used, the designs shall be submitted for review and approval to US ARMY ARDEC, Picatinny Arsenal, NJ 07806-5000, Attn: SMCAR-QAF-I."

Custodian:
Army - AR

Preparing Activity:
Army - AR

(Project 1220-A401)

1 of 1

AMSC N/A

FSC 1220

Distribution Statement A.
distribution is unlimited.

Approved for public release;

S-37.03

NOTICE
OF VALIDATION

MIL-S-48459B(AR)
NOTICE 1
30 January 1987

MILITARY SPECIFICATION

SELECT UNIT, AMMUNITION: 11732600

MIL-S-48459B(AR), dated 30 June 1981, has been reviewed and determined to be valid for use in acquisition.

Preparing activity:
Army - AR

THIS DOCUMENT CONTAINS 1 PAGES.

AMSC N/A
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FSC 1220

S-37-03

MIL-S-48459B(AR)
 30 June 1981
 SUPERSEDING
 MIL-S-48459A(AR)
 1 March 1976

MILITARY SPECIFICATION

SELECT UNIT, AMMUNITION: 11732600

This specification is approved for use by the US Army Armament Research and Development Command (ARRADCOM) and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification establishes the requirements and quality assurance provisions for the Select Unit, Ammunition: 11732600 which is a unit of the M21 Ballistic Computer, 11732979.

2. APPLICABLE DOCUMENTS

2.1 Issues of documents. 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

FEDERAL

BB-N-411 Nitrogen, Technical

MILITARY

MIL-F-13926 Fire Control Materiel; General Specification
 Governing the Manufacture and Inspection of
 MIL-I-45607 Inspection Equipment, Acquisition,
 Maintenance and Disposition of
 MIL-STD-45662 Calibration System Requirements

FSC 1220

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

THIS DOCUMENT CONTAINS 17 PAGES.

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STANDARDS

MILITARY

MIL-STD-105

Sampling Procedures and Tables for Inspection
by Attributes

MIL-STD-810

Environmental Test Methods

DRAWINGS

ARRADCOM

11732600

Select Unit, Ammunition

Inspection Equipment

11821748

Test Set - Immersion Leak, Purge and Fill

11823000

Ammo Select Test

11823082

Fixture Vibration - 3 Axis Ammo Selector

Packaging Data Sheet

P11732600

Packaging of Select Unit, Ammunition:
11732600

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

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3. REQUIREMENTS

3.1 Fabrication. The ammunition select unit, herein referred to as the assembly, shall be manufactured in accordance with Drawing 11732600 and drawings pertaining thereto and, when assembled, shall meet the requirements of this specification. (See 4.5.1)

3.1.1 Function. The assembly shall provide for the selection and indication of four types of ammunition as follows:

	<u>Type Designation</u>	<u>Color</u>	<u>Type Nomenclature</u>
a.	APDS	red	Armor Piercing Discarding Sabot
b.	HEAT	green	High Explosive Anti-Tank
c.	HEP/WP	blue	High Explosive Plastic/White Phosphorous
d.	FSDS	yellow	Fin Stabilized Discarding Sabot

3.1.2 General specifications. The following provisions of MIL-F-13926 apply: (See 4.5.1)

- a. Order of precedence
- b. Dimensions and tolerances
- c. Inorganic protective surface finishes
- d. Part identification and marking
- e. Workmanship

3.1.3 Ambient conditions. Standard ambient conditions shall be as follows:

- a. Temperature $73^{\circ} \pm 18^{\circ}\text{F}$
- b. Relative humidity 50 percent \pm 30 percent
- c. Atmospheric pressure $28.5 \pm 2.0 - 3.0$ in. Hg.

3.2 First article. When specified (see 6.2), the contractor shall furnish sample units for first article inspection and approval (see 4.4 and 6.2).

3.3 Performance. Unless otherwise specified, the assembly shall meet the performance requirements specified herein under standard ambient conditions of 3.1.3.

3.3.1 Input voltage. The input voltage shall be 24 ± 2 Volts direct current (vdc) applied between pins 3J1-U(+) and 3J1-V(-).

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3.3.1.1 Ammo selection indication. With the input voltage applied, all four selection indicators shall be dimly illuminated under normal room ambient lighting conditions. With the input power return line at 3J1-V connected in any order to each of the pins listed in table I, the corresponding selection indicator shall increase in brightness with respect to the remaining indicators as specified in table I. (See 4.6.2.1)

TABLE I. Brightness of ammo selection indicators.

Item	Input (Connections) 1/				Lamp Indicators			
	3J1-H	3J1-J	3J1-K	3J1-L	APDS	HEAT	HEP/WP	FSDS
1	Gnd	Open	Open	Open	Bright	Dim	Dim	Dim
2	Open	Gnd	Open	Open	Dim	Bright	Dim	Dim
3	Open	Open	Gnd	Open	Dim	Dim	Bright	Dim
4	Open	Open	Open	Gnd	Dim	Dim	Dim	Bright

1/ Gnd = Connection to 3J1-V.
Open = Open, no connection.

3.3.1.2 Ammo selection. With the pushbuttons operated as specified in table II, the associated resistances shall be as specified in table II. (See 4.6.2.2)

TABLE II. Ammo selector continuity.

Button	Connector Pins 3J1		Button Not Pushed	Button Pushed
	From	To		
APDS	G	C	10 megohms min.	0.4 ohms max.
HEAT	G	D	10 megohms min.	0.4 ohms max.
HEP/WP	G	E	10 megohms min.	0.4 ohms max.
FSDS	G	F	10 megohms min.	0.4 ohms max.

3.3.1.3 Tank moving and stationary selection. With the toggle switch in the positions in table III, the corresponding resistance shall be as specified in table III. (See 4.6.2.3)

TABLE III. Moving and stationary continuity test.

Connector Pins 3J1		Toggle Switch Position	
From	To	MOVING	STATIONARY
A	P	0.4 ohms max.	10 megohms min.
A	R	10 megohms min.	0.4 ohms max.
B	S	0.4 ohms max.	10 megohms min.
B	T	10 megohms min.	0.4 ohms max.

3.3.1.4 Tank moving and stationary indication. With the input voltage applied and with the input power return line at 3J1-V connected in any order to each pin specified in table IV, the corresponding specified indicator shall illuminate and the other indicator shall remain off. (See 4.6.2.4)

TABLE IV. Moving and stationary indicators.

Condition	Return connector pin	Moving or stationary indicator
1	3J1-M	MOVING: green
2	3J1-N	STATIONARY: red

3.3.1.5 Brightness control. The light intensity of the illuminated pushbuttons and indicators shall vary between dim and bright in synchronization with movement of the brightness control between its dim position of fully counter-clockwise, DIM position and its bright position of fully clockwise, BRIGHT. (See 4.6.2.5)

3.3.1.6 CTS INTLK. The resistance between 3J1-b and 3J1-c shall be not greater than 0.4 ohms. (See 4.6.2.6)

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3.4 Sealing. With an internal dry nitrogen pressure of 5.0 ± 0.1 pounds per square inch gauge (psig), the assembly shall exhibit a pressure drop not greater than 0.2 psig for not less than 2 hours. All manual controls of the assembly shall be exercised during this time period. The assembly shall be purged with dry nitrogen in accordance with BB-N-411, type I, grade B, class 1 which has a dewpoint not greater than -25°F . The final nitrogen pressure shall be $0.0 \pm 0.2 - 0.0$ psig. (See 4.6.4)

3.5 Environmental.

3.5.1 Shock. The assembly, shall be capable of operating as specified herein after exposure under the conditions of 3.1.3 to three half sine wave shock pulses of 50 ± 5 gravity unit (g) for a duration of 18 ± 3 milliseconds (msec) applied in each direction along three mutually perpendicular axes. In addition, the assembly shall be capable of withstanding three half sine wave shock pulses of 125.0 ± 12.5 g for a duration of 0.6 ± 0.2 msec applied in each direction along three mutually perpendicular axes. (See 4.6.3.1)

3.5.2 Vibration. The assembly, shall be capable of operating as specified herein after exposure under the conditions of 3.1.3 to the vibration profile on figure 1. Duration of exposure shall be not less than 80 minutes in each of three mutually perpendicular axes. (See 4.6.3.2)

3.5.3 Operating Temperature. The assembly shall be capable of operating as specified herein over the operating temperature range of -25°F to $+125^{\circ}\text{F}$. (See 4.6.3.3, 4.6.3.4 and 4.6.3.5)

3.5.4 Storage Temperature. The assembly shall be capable of operating as specified herein after exposure to storage temperatures ranging from -65°F to $+160^{\circ}\text{F}$. (See 4.6.3.3, 4.6.3.4 and 4.6.3.5)

3.5.5 Humidity. The assembly shall operate as specified herein at up to 100 percent relative humidity. (See 4.6.3.6)

3.5.6 Altitude. The assembly shall operate as specified herein under the following conditions: (See 4.6.3.7)

- a. During exposure to an atmospheric pressure equivalent to 10000 feet above sea level.
- b. After exposure to an atmospheric pressure equivalent to 40000 feet above sea level for not less than 1 hour.

3.5.7 Dust. The assembly shall operate under the conditions of 3.1.3 as specified herein after exposure to moving dust for not less than 12 hours at velocities up to 1750 feet per minute. (See 4.6.3.8)

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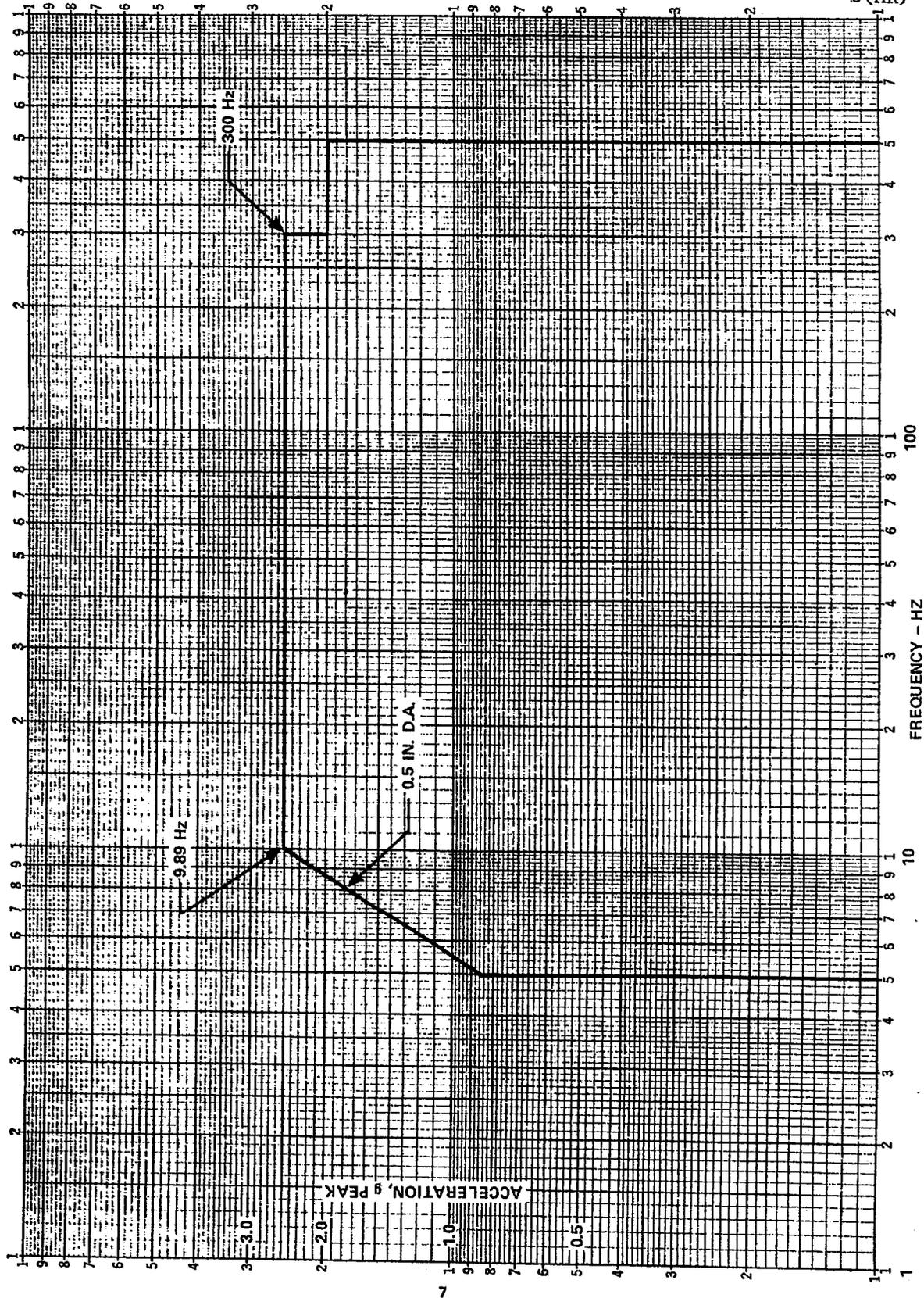


FIGURE 1. Vibration profile.

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3.5.8 Salt fog. The assembly shall operate as specified herein after exposure to a five percent sodium chloride atomized spray for not less than 48 hours. (See 4.6.3.9)

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

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

1. First article inspection (see 4.4).
2. Quality conformance inspection (see 4.5).

4.3 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the quality assurance provisions of MIL-F-13926 and the conditions of 3.1.3.

4.4 First article. The requirements for first article approval and the designation of responsibility for first article inspection to either the Government or the contractor shall be specified in the contract.

4.4.1 Sample. The first article sample shall be two assemblies selected at random by the Government representative from the first five production assemblies.

4.4.2 Inspection. The sample shall be subjected to all the inspections in table V.

4.4.3 Failure. Failure of any assembly to meet any requirement shall be cause for refusal to grant first article approval. The Government reserves the right to terminate first article inspection upon any failure of any assembly to comply with any stated requirement.

4.4.4 Responsibility. The contractor, whether or not responsible, shall inspect the sample for conformance to all contractual requirements and shall submit a record of this inspection with the sample and certificates of conformance for materials. The Government reserves the right to witness inspections performed by the contractor.

TABLE V. First article tests.

Item	Characteristic	Requirement	Test Procedure
1	Ammo selection indication	3.3.1.1	4.6.2.1
2	Ammo selection	3.3.1.2	4.6.2.2
3	Tank moving and stationary selection	3.3.1.3	4.6.2.3
4	Tank moving and stationary indication	3.3.1.4	4.6.2.4
5	Brightness control	3.3.1.5	4.6.2.5
6	CTS INTLK	3.3.1.6	4.6.2.6
7	Fabrication	3.1	Applicable drawings - Visual
8	General Specification	3.1.2	MIL-F-13926 - Visual
9	Sealing A and B	3.4	4.6.4
10	High Temperature	3.5.3 and 3.5.4	4.6.3.3
11	Low Temperature	3.5.3 and 3.5.4	4.6.3.4
12	Vibration A	3.5.2	4.6.3.2
13	Humidity	3.5.5	4.6.3.6
14	Altitude	3.5.6	4.6.3.7
15	Shock	3.5.1	4.6.3.1
16	Dust	3.5.7	4.6.3.8
17	Salt fog	3.5.8	4.6.3.9
18	Temperature cycling	3.5.3 and 3.5.4	4.6.3.5

4.5 Quality conformance inspection.

4.5.1 Procurement conditions. The following inspection plans shall apply where the assembly is procured for use as a:

<u>Use</u>	<u>Plan</u>
a. Logistics spare assembly apart from the next higher assembly	A and C
b. Component assembly of the next higher assembly	B and C

4.5.2 Inspection plan A.

4.5.2.1 General sample and tests. One assembly, as a control sample shall be selected at random by the Government representative from each 100 assemblies produced and shall be subjected to all the tests in table VII.

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4.5.2.2 Environmental sample and tests. Three assemblies, as a control sample, shall be selected at random by the Government representative from each 50 assemblies produced or from each month's production, whichever occurs first. All the tests in table VIII shall be applied separately to each assembly in the sample.

4.5.2.3 Acceptance. Where any one assembly of either sample fails to meet any specified requirement, the lot shall be rejected. Rejected lots shall be subject to the provisions of MIL-STD-105.

4.5.3 Inspection plan B.

4.5.3.1 Sample and tests. The sample shall be selected by the Government representative in accordance with the provisions of MIL-STD-105. All the tests in table VII and only the test of item 307 in table VIII shall be applied.

4.5.3.2 Acceptance. Acceptance and rejection shall be in accordance with MIL-STD-105.

4.5.4 Inspection plan C.

4.5.4.1 Sample and tests. Each assembly in every lot shall be subjected to all the tests in table VI and shall be examined visually for completeness, improper assembly and evidence of poor workmanship.

4.5.4.2 Acceptance. Where any one assembly fails to meet any specified requirement, the defective assembly shall be removed from the lot and resubmitted only after all defects have been corrected.

4.5.5 Inspection equipment. Unless otherwise specified in the contract, the contractor shall supply, maintain and calibrate inspection equipment in accordance with the provisions of MIL-I-45607 and MIL-STD-45662.

4.5.6 Packaging inspection. The sampling and inspection of the preservation - packaging, packing and container marking shall be in accordance with the provisions of packaging data sheet P11732600.

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TABLE VI. Performance tests.

Item	Characteristic	Requirement	Test Procedure
101	Ammo selection indication	3.3.1.1	4.6.2.1
102	Ammo selection	3.3.1.2	4.6.2.2
103	Tank moving and stationary selections	3.3.1.3	4.6.2.3
104	Tank moving and stationary indication	3.3.1.4	4.6.2.4
105	Brightness control	3.3.1.5	4.6.2.5
106	CTS INTLK	3.3.1.6	4.6.2.6
107	Sealing A	3.4	4.6.4

TABLE VII. General tests.

Item	Characteristic	Requirement	Test Procedure
301	Fabrication	3.1	Applicable drawings - Visual
302	General Specification	3.1.2	MIL-F-13926 - Visual

TABLE VIII. Environmental tests.

Item	Characteristic	Requirement	Test Procedure
303	Shock	3.5.1	4.6.3.1
304	Vibration B	3.5.2	4.6.3.2
305	High Temperature	3.5.3 and 3.5.4	4.6.3.3
306	Low Temperature	3.5.3 and 3.5.4	4.6.3.4
307	Temperature Cycling	3.5.3 and 3.5.4	4.6.3.5
308	Sealing B	3.4	4.6.4

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4.6 Methods of inspection.

4.6.1 Test equipment. The test equipment in table IX shall be used to perform the required tests where specified.

TABLE IX. Test equipment.

Item	Part Number	Nomenclature
1	11821748	Test set - Immersion Leak, Purge and Fill
2	11823000	Ammo Select Test
3	11823082	Fixture Vibration - 3 Axis Ammo Selector

4.6.2 Performance tests.

4.6.2.1 Ammo selection indication. Use item 2 of table IX to verify conformance to requirements of 3.3.1.1.

4.6.2.2 Ammo selection. Use item 2 of table IX to verify conformance to requirements of 3.3.1.2.

4.6.2.3 Tank moving and stationary selection. Use item 2 of table IX to verify conformance to requirements of 3.3.1.3.

4.6.2.4 Tank moving and stationary indication. Use item 2 of table IX to verify conformance to requirements of 3.3.1.4.

4.6.2.5 Brightness control. Use item 2 of table IX to verify conformance to requirements of 3.3.1.5.

4.6.2.6 CTS INTLK. Use item 2 of table IX to verify conformance to requirements of 3.3.1.6.

4.6.3 Environmental tests.

4.6.3.1.1 Basic design. Use item 3 of table IX and subject the assembly to the shock test specified in MIL-STD-810, method 516.2, procedure I, figure 516.2-2. Apply three half sine wave shock pulses in each direction along the three axes. Peak amplitude shall be 50 ± 5 g with a time duration of 18 ± 3 msec measured at the 10 percent amplitude points. At the conclusion of this test, subject the assembly to the performance tests of 4.6.2.

4.6.3.1.2 High intensity. Use item 3 of table IX and subject the assembly to the shock test specified in MIL-STD-810, method 516.2, procedure IV, figure 516.2-2. Apply three half sine wave shock pulses in each direction along the three axes. Peak amplitude shall be 125 ± 12.5 g with a time duration of 0.6 ± 0.2 msec measured at the 10 percent amplitude points. At the conclusion of this test, subject the assembly to the performance tests of 4.6.2.

4.6.3.2 Vibration. Application of Vibration A and Vibration B shall be as determined by the procurement conditions of 4.5.1 and the first article conditions of 4.4.

4.6.3.2.1 Vibration A. Use item 3 of table IX and subject the assembly to the vibration test specified in MIL-STD-810, method 514.2, procedure VIII, except that the test level shall be the vibration curve shown in figure 1 and duration of exposure shall be not less than 80 minutes per axis. At the conclusion of this test, subject the assembly to the performance tests of 4.6.2.

4.6.3.2.2 Vibration B. This test shall be conducted as in 4.6.3.2.1 except that the period of vibration shall be not less than 15 minutes in each axis.

4.6.3.3 High temperature. Subject the assembly to the high temperature test specified in MIL-STD-810, method 501.1, procedure I. The highest operating temperature shall be 125°F . The performance tests of 4.6.2 shall be applied.

4.6.3.4 Low temperature. Subject the assembly to the low temperature test specified in MIL-STD-810, method 502.1, procedure I. The storage temperature shall be -65°F . The lowest operating temperature shall be -25°F . The performance tests of 4.6.2 shall be applied.

4.6.3.5 Temperature cycling. With power and loads of 3.3.1 applied, subject the assembly to the temperature profile specified in figure 2. At the conclusion of this test, subject the assembly to the performance tests of 4.6.2.

4.6.3.6 Humidity. Place the assembly in a humidity chamber and subject it to the humidity test specified in MIL-STD-810, method 507.1, procedure IV. During steps 4, 6 and 8 of procedure IV, subject the assembly to the performance tests of 4.6.2. After exposure, subject the assembly to the performance tests of 4.6.2.

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4.6.3.7 Altitude. Place the assembly in an altitude chamber and subject the assembly to the altitude test specified in MIL-STD-810, method 500.1, procedure I, except that:

- a. First, the assembly in a non-operating condition, shall be exposed to an atmospheric pressure equivalent to 40000 feet above sea level for a period of not less than 1 hour.
- b. Second, with the chamber pressure increased to an atmospheric equivalent to 10000 feet above sea level, subject the assembly to the performance tests of 4.6.2.

4.6.3.8 Dust. Subject the assembly to the dust test specified in MIL-STD-810, method 510.1, procedure I. At the conclusion of this test, subject the assembly to the performance tests of 4.6.2.

4.6.3.9 Salt fog. Subject the assembly to the corrosion test specified in MIL-STD-810, method 509.1, procedure I. At the conclusion of this test, subject the assembly to the performance tests of 4.6.2.

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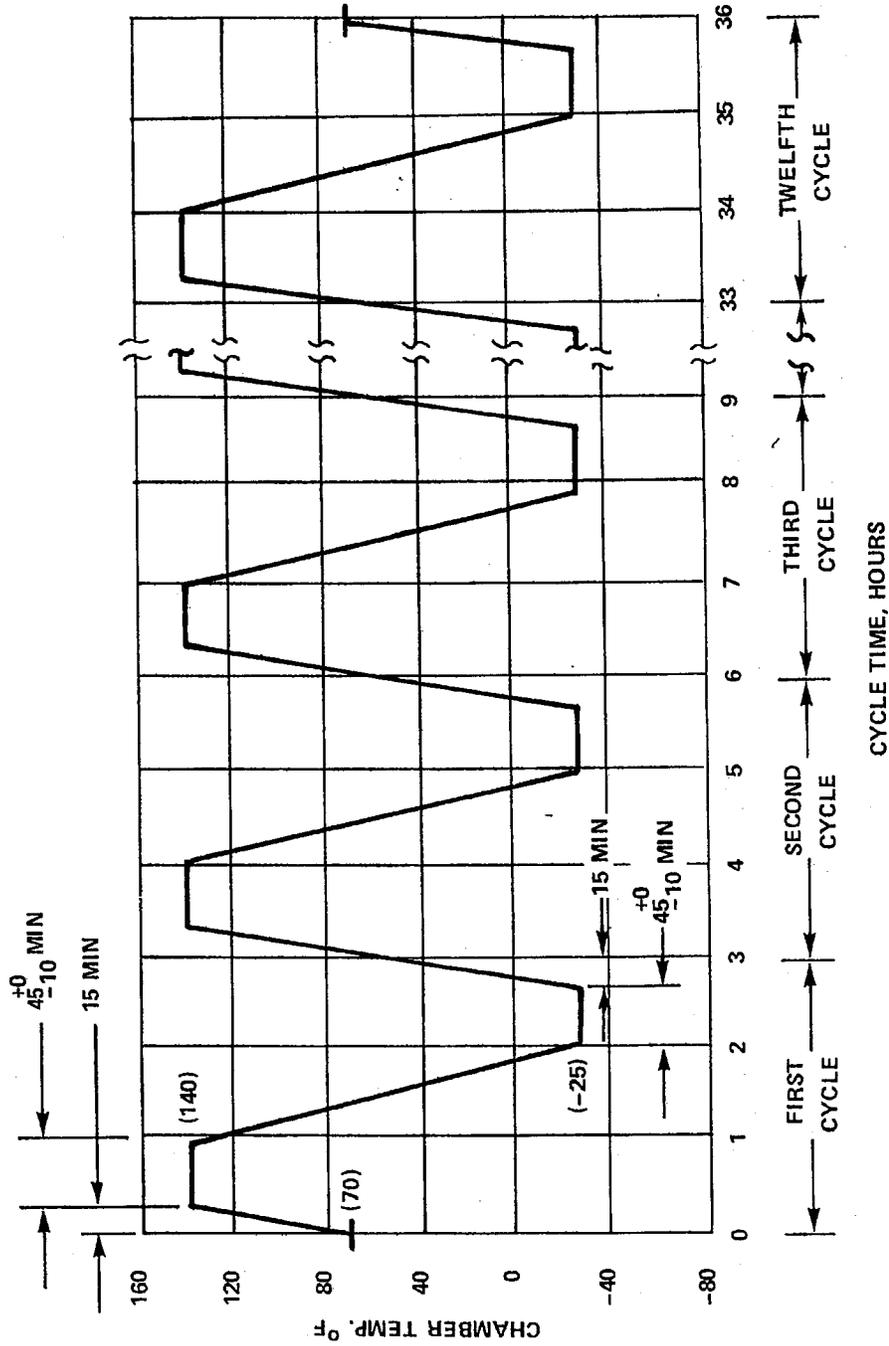


FIGURE 2 Temperature cycling.

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4.6.4 Sealing. Pressurize the assembly with nitrogen to 5.0 ± 0.1 psig and perform either Sealing A or Sealing B leakage tests. After determination of compliance with the sealing requirement, purge the assembly with dry nitrogen at 1 psig for not less than 5 minutes and lower the pressure to $0.0 \pm 0.2 - 0.0$ psig. Nitrogen shall be BB-N-411, type I, class 1, grade B with a dewpoint not greater than -25°F .

4.6.4.1 Test selection. Application of Sealing A and Sealing B shall be as determined by the procurement conditions of 4.5.1 and the first article conditions of 4.4.

4.6.4.2 Sealing A. Use item 1 of table IX and subject the assembly to the leakage (immersion) test specified in MIL-STD-810, method 512.1, procedure IV. The immersion period shall be not less than 5 minutes.

4.6.4.3 Sealing B. Use item 1 of table IX, place the assembly in the following environment for not less than 2 hours and verify that the pressure drop is not greater than 0.2 psig. During the second hour of the two-hour period, each movable control device on the assembly shall be operated to its extreme positions.

- | | |
|-------------------------|--------------------------------------|
| a. Temperature | $73^{\circ} \pm 2.5^{\circ}\text{F}$ |
| b. Relative humidity | 50 percent \pm 5 percent |
| c. Atmospheric pressure | $28.5 \pm 2.0 - 3.0$ in. Hg. |

5. PACKAGING

5.1 Packaging, packing and marking. Packaging, packing and marking shall be in accordance with packaging data sheet P11732600. The level of protection shall be as specified in the procurement document. (See 4.5.6)

6. NOTES

6.1 Intended use. The assembly is a part of the M21 Ballistic Computer System.

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6.2 Ordering data. Procurement documents should specify the following:

- a. Title, number, and date of this specification.
- b. Special tests and examinations required, the type of inspections required, and the activity responsible for testing and its facility.
- c. Applicable packaging data sheet number (see 5.1).
- d. Selection of applicable levels of preservation, packaging and packing.
- e. Applicable stock number.
- f. First article inspection requirements.

6.3 Previous revisions of MIL-S-48459B was for the US Army Armament Research and Development Command's internal use only, and were not forwarded to the Naval Publications and Form Center for publication.

Custodian:
Army-AR

Preparing Activity:
Army-AR
Project 1220-A286

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ATTACHMENT 001
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