TECHNICAL MANUAL

OPERATOR'S AND ORGANIZATIONAL

MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)

WARHEAD SECTION, GUIDED MISSILE: HIGH EXPLOSIVE M251 (NSN 1336-00-123-8072) AND M251A1 (NSN 1336-01-095-0131) AND WARHEAD SECTION, GUIDED MISSILE: TRAINING, M201 (NSN 6920-00-933-2532)

This copy is a reprint which includes current pages from Changes 1 through 5.

HEADQUARTER, DEPARTMENT OF THE ARMY
FEBRUARY 1982

Change)
)
No. 6)

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 20 May 1994

TECHNICAL MANUAL
OPERATOR'S AND UNIT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)
FOR
WARHEAD SECTION, GUIDED MISSILE: HIGH EXPLOSIVE
M251 (NSN 1336-00-123-8072)
AND
M251A1 (NSN 1336-01-095-0131)
AND
WARHEAD SECTION, GUIDED MISSILE: TRAINING
M201 (NSN 6920-00-933-2532)

TM 9-1336-489-12&P, 12 February 1982, is changed as follows:

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Remove pages	Insert pages
A and B	A and B
3-5 and 3-6	3-5 and 3-6
D-1 thru D-4	D-1 thru D-4

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TECHNICAL MANUAL
OPERATOR'S AND UNIT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)
WARHEAD SECTION, GUIDED MISSILE
HIGH EXPLOSIVE M251 (NSN 1336-00-123-8072)
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AND
WARHEAD SECTION, GUIDED MISSILE;
TRAINING, M201 (NSN 6920-00-933-2532)

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Remove pages	Insert pages
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NO. 4

TM 9-1336-489-12&P
C4

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Washington, DC, 30 June 1988

Technical Manual
Operator's and Unit Maintenance Manual
(Including Repair Parts and Special Tools List)
WARHEAD SECTION, GUIDED MISSILE:
HIGH EXPLOSIVE M251 (NSN 1336-00-123-8072)
AND M251A1 (NSN 1336-01-095-0131)
AND
WARHEAD SECTION, GUIDED MISSILE:
TRAINING, M201 (NSN 6920-00-933-2532)

TM 9-1336-489-12&P, 12 February 1982, is changed as follows:

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Remove pages	Insert pages
A	A
i and ii	i and ii
1-1 and 1-2	1-1 and 1-2
1-7 and 1-8	1-7 and 1-8
2-3 and 2-4	2-3 and 2-4
2-7 and 2-8	2-7 and 2-8
2-9 and 2-10	2-9 and 2-10

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TM 9-1336-489-12&P C3

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DEPARTMENT OF THE ARMY
Washington, DC, 16 June 1986

Technical Manual
Operator's and Unit Maintenance Manual
(Including Repair Parts and Special Tools List)
WARHEAD SECTION, GUIDED MISSILE:
HIGH EXPLOSIVE M251 (NSN 1336-00-123-8072)
AND M251A1 (NSN 1336-01-095-0131)
AND
WARHEAD SECTION, GUIDED MISSILE:
TRAINING, M201 (NSN 6920-00-933-2532)

TM 9-1336-489-12&P, 12 February 1982, is changed as follows:

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Remove pages	Insert pages
A	A
i and ii	i and ii
2-3 and 2-4	2-3 and 2-4
2-9 and 2-10	2-9 and 2-10
3-1 and 3-2	3-1 and 3-2
None	3-2.1 (3-2.2 blank)
C-3 and C-4	C-3 and C-4
D-1 and D-2	D-1 and D-2

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C2

HEADQUARTERS
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CHANGE
No. 2

Technical Manual
Operator's and Organizational Maintenance Manual
(Including Repair Parts and Special Tools List)
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HIGH EXPLOSIVE M251 (NSN 1336-00-123-8072)
AND M251A1 (NSN 1336-01-095-0131)
AND
WARHEAD SECTION, GUIDED MISSILE:
TRAINING, M201 (NSN 6920-00-933-2532)

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Remove pages	Insert pages
A	A
i thru iii(iv blank)	i thru iii (iv blank)
1-1 and 1-2	1-1 and 1-2
1-7 and 1-8	1-7 and 1-8
2-1 thru 2-10	2-1 thru 2-10
3-1 thru 3-8	3-1 thru 3-8
4-1 thru 4-4	4-1 thru 4-4
5-3 (5-4 blank)	5-3 (5-4 blank)
A-1 (A-2 blank)	A-1(A-2 blank)
B-1 and B-2	B-1 and B-2
C-1 thru C-4	C-1 thru C-4
D-1 and D-2	D-1 and D-2

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HEADQUARTERS
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Washington, DC, 30 June 1983

CHANGE
No. 1

Technical Manual
Operator's and Organizational Maintenance Manual
(Including Repair Parts and Special Tools List)
WARHEAD SECTION, GUIDED MISSILE:
HIGH EXPLOSIVE M251 (NSN 1336-00-123-8072)
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Remove pages	Insert pages
1-5 and 1-6	1-5 and 1-6
1-9 and 1-10	1-9 and 1-10
2-9 and 2-10	2-9 and 2-10
3-1 and 3-2	3-1 and 3-2
3-5 thru 3-8	3-5 thru 3-8
4-1 thru 4-4	4-1 thru 4-4
5-1 and 5-2	5-1 and 5-2
A-1 (A-2 blank)	A-1 (A-2 blank)
B-1 thru B-3 (B-4 blank)	B- thru B3 (B4 blank)
C-3 and C-4	C-3 and C-4
D-1 and D-2	D1 and D-2

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When applicable, insert latest change pages and dispose of superseded pages in accordance with applicable regulations.

LIST OF EFFECTIVE PAGES

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 66 CONSISTING OF THE FOLLOWING:

Page No.	**Change No.*	*Page No.*	**Change No.*
Cover	0	3-5	6
A and B	6	3-6 and 3-7	1
i	4	3-8	2
ii and iii	2	4-1	5
iv blank	2	4-2 thru 4-4	2
1-1 and 1-2	4	4-5	0
1-3 and 1-4	0	4-6 blank	0
1-5	1	5-1 and 5-2	1
1-6	0	5-3	2
1-7	4	5-4 blank	2
1-8	0	A-1	2
1-9	1	A-2 blank	2
1-10	0	B-1	0
2-1	2	B-2	2
2-2	0	B-3	1
2-3	4	B-4 blank	1
2-4	3	C-1 and C-2	2
2-5 and 2-6	2	C-3	3
2-7 thru 2-10	4	C-4	2
3-1 and 3-2	3	C-5 thru C-9	0
3-2.1	3	C-10 blank	0
3-2.2 blank	3	D-1 thru D-4	6
3-3	2	Authentication Page	0
3-4	0		

* Zero indicates an original page.

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TECHNICAL MANUAL
No. 9-1336-489-12&P

*** TM 9-1336-489-12&P**

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *12 February 1982*

OPERATOR'S AND UNIT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST) WARHEAD SECTION, GUIDED MISSILE: HIGH EXPLOSIVE, M251 (NSN 1336-00-123-8072) AND M251A1 (NSN 1336-01-095-0131) AND WARHEAD SECTION, GUIDED MISSILE: TRAINING, M201 (NSN 6920-00-933-2532)

REPORTING OF ERRORS

You can help improve this manual. If you find any mistakes or know of a way to improve the procedures, please let us know. Mail your DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to Commander, US Army Armament, Munitions and Chemical Command, ATTN: AMSMCMAY-T(D), Picatinny Arsenal, NJ 07806-5000. A reply will be furnished to you.

* This manual supersede TM 9-1336-489-12&P, April 1975, including all changes.

LIST OF ILLUSTRATIONS

LIST OF TABLES

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope

a. These instructions are for use by operator/crew and organizational maintenance personnel. They apply to Warhead Section, Guided Missile: High Explosive, M251; Warhead Section, Guided Missile: High Explosive, M251A1; and Warhead Section, Guided Missile: Training, M201.

b. Appendix A contains a list of current references including supply and technical manuals, forms, and other available authorized publications applicable to this materiel.

c. Appendix B contains a maintenance allocation chart and instructions concerning its use.

d. Appendix C contains a list of repair parts and special tools that are required to perform maintenance of this materiel.

e. Illustration references prefixed with C (e.g., fig C-1, fig C-2, etc.) refer to illustrations in appendix C, Repair Parts and Special Tools List.

f. Refer to TM 43-0002-33 for procedures for destruction of ammunition to prevent enemy use.

1-2. Forms, Records, and Reports

a. *General* Department of the Army maintenance forms and reporting procedures are prescribed in DA PAM 738-750. Lot numbers of the affected items will be included in all reports. The forms required by using units issued this ammunition are listed in the appendix. For a listing of all forms, refer to the current DA PAM 310-2.

b. *Field Report of Accidents*. Any accident involving injury to personnel or damage to materiel will be reported on DA Form 285 (Accident Report) in accordance with AR 385-40.

c. Malfunctions Involving Ammunition or Explosives. A malfunction is defined as the failure of an explosive ammunition item to function in accordance with the design, intent, and expected performance when fired or launched, or when explosive components function during a nonfunctional test. Malfunctions do not include accidents and incidents resulting from negligence, malpractice, or implications in other situations such as vehicle accidents, fires, etc. However, malfunctions do include abnormal or premature function of explosive ammunition items as a result of normal handling, maintenance, storage, transportation, and tactical deployment. Explosive ammunition malfunctions will be reported in accordance with AR 75-1. Ammunition malfunctions involving nonexplosive components that are not safety hazards will be reported on Standard Form 368 (Quality Deficiency Report) in accordance with DA PAM 738-750.

d. Report of Damaged or Improper Shipment. All shipments received in damaged or unsatisfactory condition because of deficiencies in preserving, packaging, marking, loading, storage, or handling will be reported on SF 364 (Report of Discrepancy) in accordance with AR 735-11-2 and/or SF 361 (Discrepancy in Shipment Report), in accordance with AR 55-38.

e. Equipment Improvement Recommendations. Standard Form 368 (Quality Deficiency Report) will be used to submit equipment improvement recommendations (EIR's) in accordance with DA PAM 738-750.

f. Disposition of Unserviceable Ammunition and Components.

(1) An ammunition condition report will be submitted on all unserviceable ammunition components in order that appropriate disposition instructions may be issued.

(2) Reports will be prepared on DA Form 2415, in accordance with DA PAM 738-750. Multiple reports of a similar nature may be submitted on the same DA Form 2415.

g. Inspection and Maintenance Records.

(1) Records of inspections and maintenance will be maintained on DA Form 2409 (Equipment Maintenance Log (Consolidated)) or other applicable documents, as required. This record provides a complete inspection and maintenance history of the munition. When there is a change of custody of warhead sections, these records will be forwarded to the organizations receiving the warhead sections.

NOTE

Equipment Maintenance Logs are not stored inside containers since some inspections do not require opening containers.

(2) The record will be prepared in accordance with DA PAM 738-750, except as follows:

(a) Block 7-Change title to read: LOT NUMBER. Enter lot number.

(b) Block 4, 8, 10, 11, and 12-leave blank.

(c) Section C-Use columns a through d.

(d) Insert organization designation in section B when warhead section is transferred to another organization.

(3) When the DA Form 2409 is completely filled, a photostatic copy will be forwarded to Headquarters, U.S. Army Armament Munitions and Chemical Command, ATTN: AMSMC-DSM-AC(D), Picatinny Arsenal, N.J. 07806-5000. A new DA form 2409 will be used as a continuation sheet. As each form is filled, a copy will be forwarded to the above address. When the warhead section is expended, the completed original form(s) will be forwarded to the above address as soon as tactically feasible.

h. Data Card. A data card is prepared for each lot of ammunition. The data cards will not physically accompany shipments from the manufacturer, but will be shipped separately. Master data card files will be maintained at Headquarters. U.S. Army Armament Munitions and Chemical Command, ATWN: AMSMCQAD(R), Rock Island, IL 61299-6000, and distributed as required These cards are used to record the lot and serial numbers of the warhead sections, the lot and serial numbers of each major component, applicable drawings, and other pertinent data such as date of manufacture, National stock number, and applicable instructions or remarks, when required.

Section ll. DESCRIPTION AND DATA

1-3. Warhead Sections M251 and M251A1

a. General. The high-explosive guided-missile warhead sections M251 and M251A1 are tactical warhead sections. The electronic time guided missile fuze M811 is used to initiate the functioning of the warhead sections. The warhead sections are shipped and stored in the shipping and storage container M544.

b. Station References. Specific locations on the warhead section are expressed as "stations." A station number indicates the distance in inches from a point 3 inches before the tip of the ogive to a particular station. Measurements to determine station locations are made along a line parallel to the longitudinal axis of the warhead section. Station locations cannot be measured along the surface of the warhead section.

c. Description. The M251 warhead section (fig 1-1) houses the M811 fuze and 825 fragmentation bombs BLU-63/B. The M251A1 warhead section (fig 1-2) houses the M811 fuze and 580 fragmentation grenades M74. For descriptive purposes, the warhead section may be divided into four general categories: the structure, the fuzing system, the cargo, and the cargo release system.

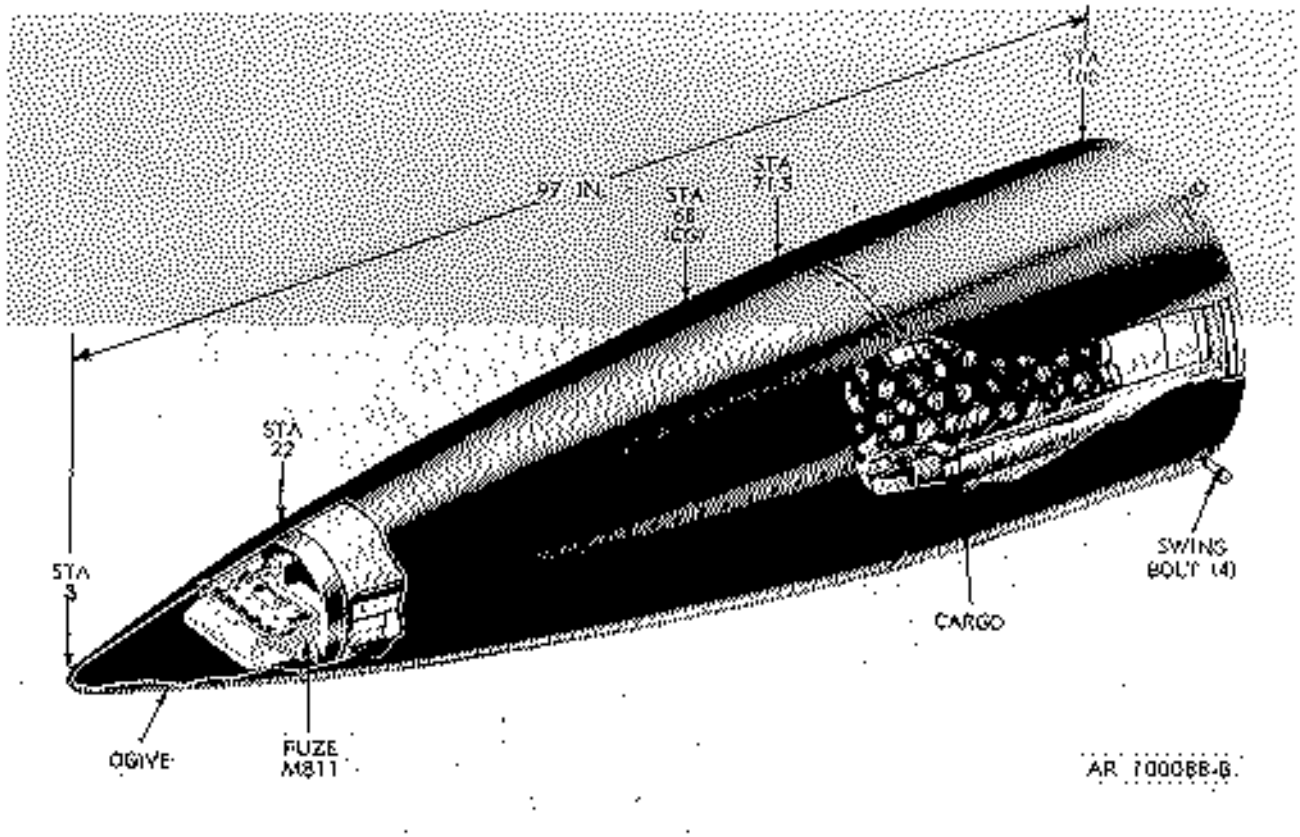


Figure 1-1. High explosive guided-missile warhead section M251-cutaway view.

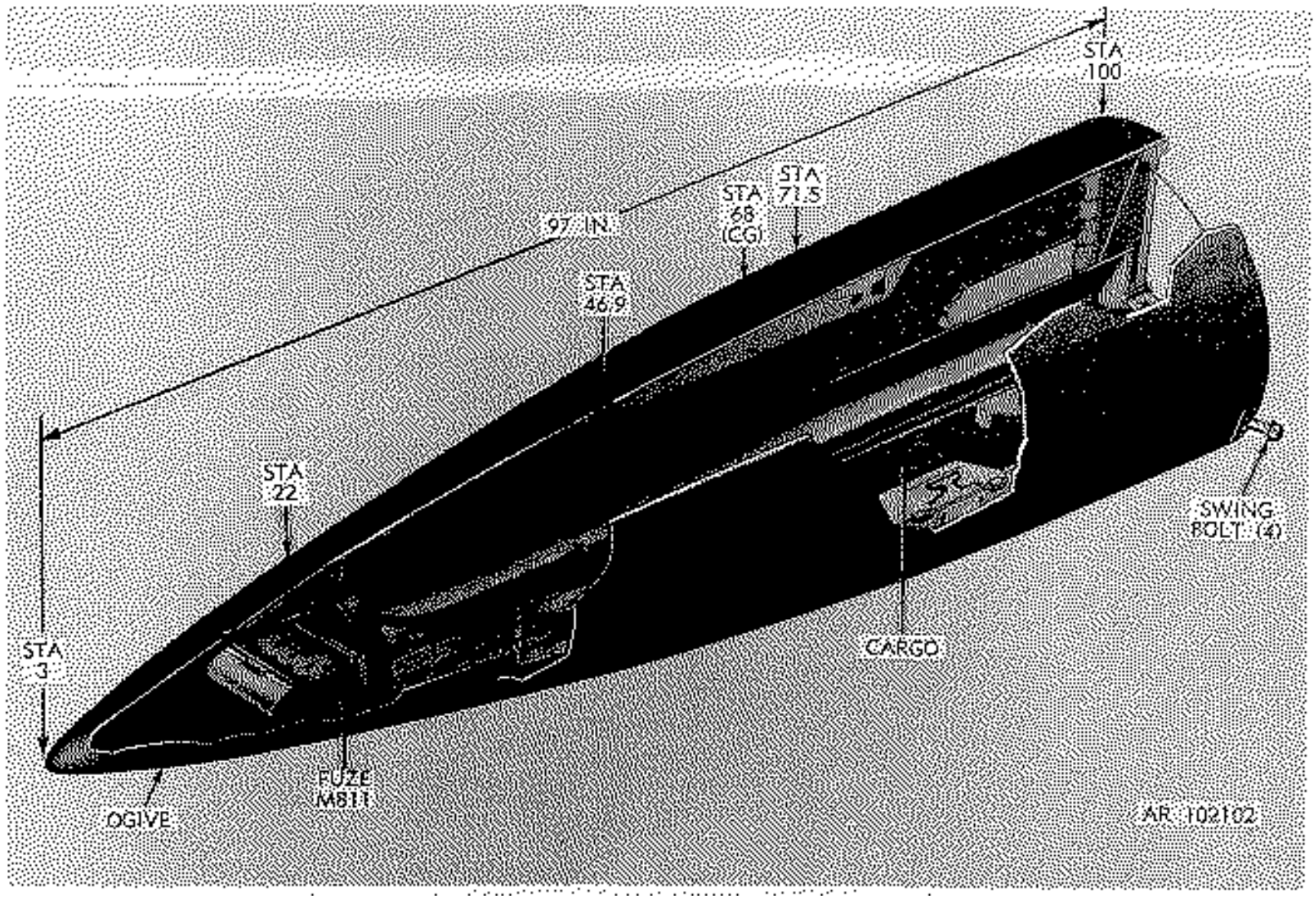


Figure 1-2. High explosive guided-missile warhead section M251A1-cutaway view.

(1) *Structure.* The warhead section M251 or M251A1 is 97 inches long and terminates in a 12inch long cylinder, 22 inches in diameter. This cylinder is preceded by a windshield in the form of a 4-caliber ogive. This is faired into a rounded nose which has a radius of 0.96 inches. Establishing the configuration in terms of stations (distance along horizontal axis, measured from theoretical point of nose); the warhead section starts at station 3, and the tangential transition between ogive and straight cylinder is at station 88. The warhead section weights 1000 pounds. The longitudinal center-of gravity is at station 68. The structure is fabricated mainly from aluminum. Its major parts are as follows:

(a) An aerodynamic skin assembled from three formed aluminum sections having skin breaks at stations 22 and 71.5. The thickness of the aluminum skin is 1/8 inch before forming.

(b) A bulkhead at station 21 for fuze mounting, which is secured to the forward skin, and the aft bulkhead beginning approximately at station 98 in which are anchored four swing bolts that secure the warhead section to the missile main assemblage at the station 100 interface.

(2) *Fuzing system*. The fuze M811 is used to initiate the detonating cord release system in the warhead sections M251 or M251A1.

CAUTION

The M251 or M251A1 warhead sections have a decal affixed to the aft bulkhead directly above the cable connector (lAlJ1). The words read "Remove cap only when connecting warhead section to main missile assemblage. Do not touch exposed connector pins." This is a caution to prevent possible electrostatic damage to the warhead section and fuze. Early production warhead sections do not have this decal but the caution still applies.

(3) *Cable connector (1A1J1*). The warhead section is connected electrically to the missile main assemblage on the aft bulkhead of the warhead section by means of the 1A1JI cable connector (fig 3-3). This allows missile inputs to the warhead section fuze and allows the fuze to transmit a sustainer engine cutoff (SECO) to the missile.

(4) *Cargo*. The bomb BLU-63tB is the payload of the warhead section M251. A total of 825 bombs are contained in the bomb compartment located between station 38.2 and station 90. The bomb BLU-631B, which is initiated by a centrifugally armed fuze, detonates upon impact.

(5) *Grenade M74*. The grenade M74 is the TM 9-1336-489 -12& P payload of the Warhead Section M251A1. A total of 580 grenades are contained in the grenade compartment located between station 46.9 and station 90. The grenade M74, which is initiated by a centrifugally armed fuze, detonates upon impact.

(6) *Cargo release system*. Release of the cargo of bombs BLU-631B or grenades M74 is achieved by freeing the skin sections which contain the cargo within its compartments. The skin is sheared longitudinally by the detonating cord into two sections.

d. Painting and Marking (fig. 3-3). The M251 warhead section is painted with olive drab enamel. The M251A1 warhead section is painted with forest green chemical agent resistant coating (CARC). All markings are white. Matchmarks. to assure correct locking of the ogive to the forward bulkhead. are painted at the sides of the warhead section. Also on the sides of the warhead section, pairs of parallel strips are painted near the aft end. These are present to identify the M251 and M251A1 as a "heavy" warhead section, which, when in a mated configuration, will require M30 control surfaces (small fins) with the same markings to be attached to the missile main assemblage. At station 68, the letters CG are stenciled in white enamel at the top and 120 degrees apart around the warhead section. These are joined by a WL-inch stripe. Forward and aft sling strap locations are indicated by two sets of two stripes on each side of the warhead section. The location and dimensions of these strap marks are shown in figure 3-3. "REAR SLING" and "FWD SLING" are stenciled between the aft and forward pairs of stripes, respectively. At station 71.5 on top of the warhead section, two parallel stripes with "TIE DOWN STRAP" are marked for use in transportation of mated missiles. Four, 4-inch yellow squares are painted around the circumference of the warhead section 90° apart at stations 90.5 through 94.5. These color-coded squares indicate that the item is a tactical warhead section containing high explosives. Item nomenclature is stenciled on the top of the warhead section along with lot number, serial number, loading date, and gross weight at a location approximately between the strap locations. Loading date will be included in lot number on those warhead sections marked per MIL-STD-1168A. At the top of the warhead section, at station 97, the word "TOP" is stenciled in 3/4-inch high letters.

1-4. Warhead Section Ml201

The warhead section M201 is the training counterpart of the tactical warhead sections M251 and M251A1. Description and particulars are contained in chapter 5.

1-5. Electronic Time Guided-Missile Fuze M811

a. Arming. Arming of the fuze M811 is ac-

complished by a combination of electrical and mechanical elements of the fuze. The action starts when the guided missile is fired.

b. Description. The fuze M811 (fig 1-3) is a precision electronic-timing device used to initiate the warhead sections M251 and M251A1. It also controls sustainer engine cutoff for the LANCE missile. The fuze is bolted to the fuze ring at station 21 in the warhead section and is accessible through a retractable ogive. The fuze is manually set. Four rotary switches permit setting warhead "EVENT" from 11.1 to 199.9 seconds in 0.1 second increments. The warhead 'EVENT' setting will not be set less than 11.1 seconds or the fuze will fail to function. Another rotary switch selects final "ARM" time of the explosive train, which can be 10, 20, 40 or 80 seconds.

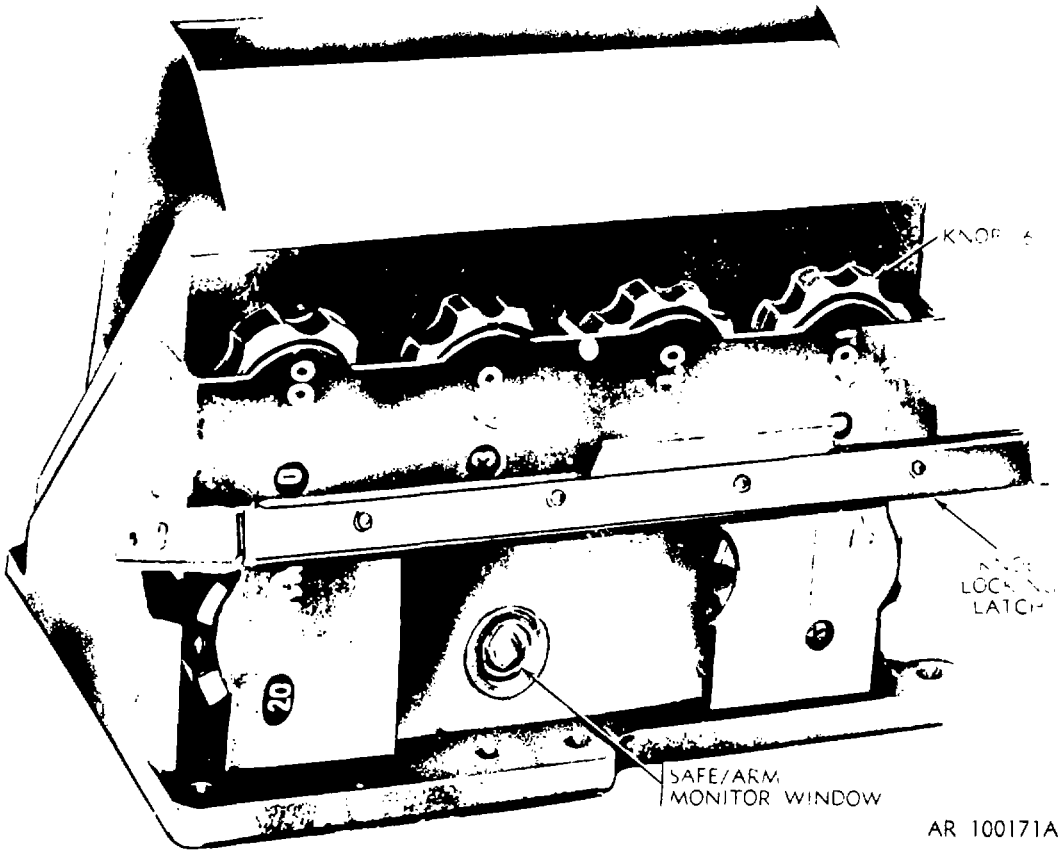


Figure 1-3. Electronic time guided-missile fuze M811and training guided-missile fuze M816.

Fuze event time (sec)	*Arming time (sec)*
11.1-21.0	10
21.1-41	20
41.1-81	40
81.1--and higher	80

By use of another rotary switch (SECO switch), the missile-sustainer engine can be cut off at any one of line fixed times or allowed to burn itself out (OFF setting).

Setting	*SECO time (scJ*
A	55
B	66
C	72
D	77
E	83
F	90
G	100
H	110
J	120
OFF	

The fuze incorporates the following safety features:

(1) The safe/arm condition of the fuze is monitored through a window on the face of the fuze. Green (green with white letter "S" on later production fuzes) indicates safe. Red (red with a white letter "A" on later production fuzes) indicates that the fuze is partially armed. Do not set or remove a fuze in this condition. Notify Explosive Ordnance Disposal personnel.

(2) The fuze M811 is of modular construction. It is encased in a two-piece, machined aluminum housing. The two housing sections are bolted together forming a waterproof and radio frequency interference shielded enclosure.

c. Painting and Marking. The nomenclature and lot number are stamped on a plate attached to the fuze. The fuze is painted with olive drab enamel

1-6. Warhead Section Shipping and Storage Container M544

a. Description The container (fig. 1-4) is used for shipping and storage of warhead sections M251, M251AI, and M201. Constructed of steel-reinforced sheet metal, the skid-mounted container is reusable. It consists of a cover assembly secured to a base assembly with 20 T-head bolts. A shock mounted suspension frame assembly is secured to the sides of the base assembly through resilient rubber-shear mounts. A rubber-cushioned saddle and strap assembly, and an aft support plate which are attached to the suspension frame provide the means for securing the warhead section in the suspension frame. The container is equipped with facilities for cover lift, container lift, forklift, towing, and tiedown. Bolts and associated hardware for stacking containers are provided in stacking brackets. The stacking bolts are placed in a "stowed" position on the stacking brackets when not in use. Two H4 244 wrenches (fig. C-6) are supplied as part of the Lance tool kit special weapons and one used to disengage or engage the T-head bolts -that secure the cover to the base.

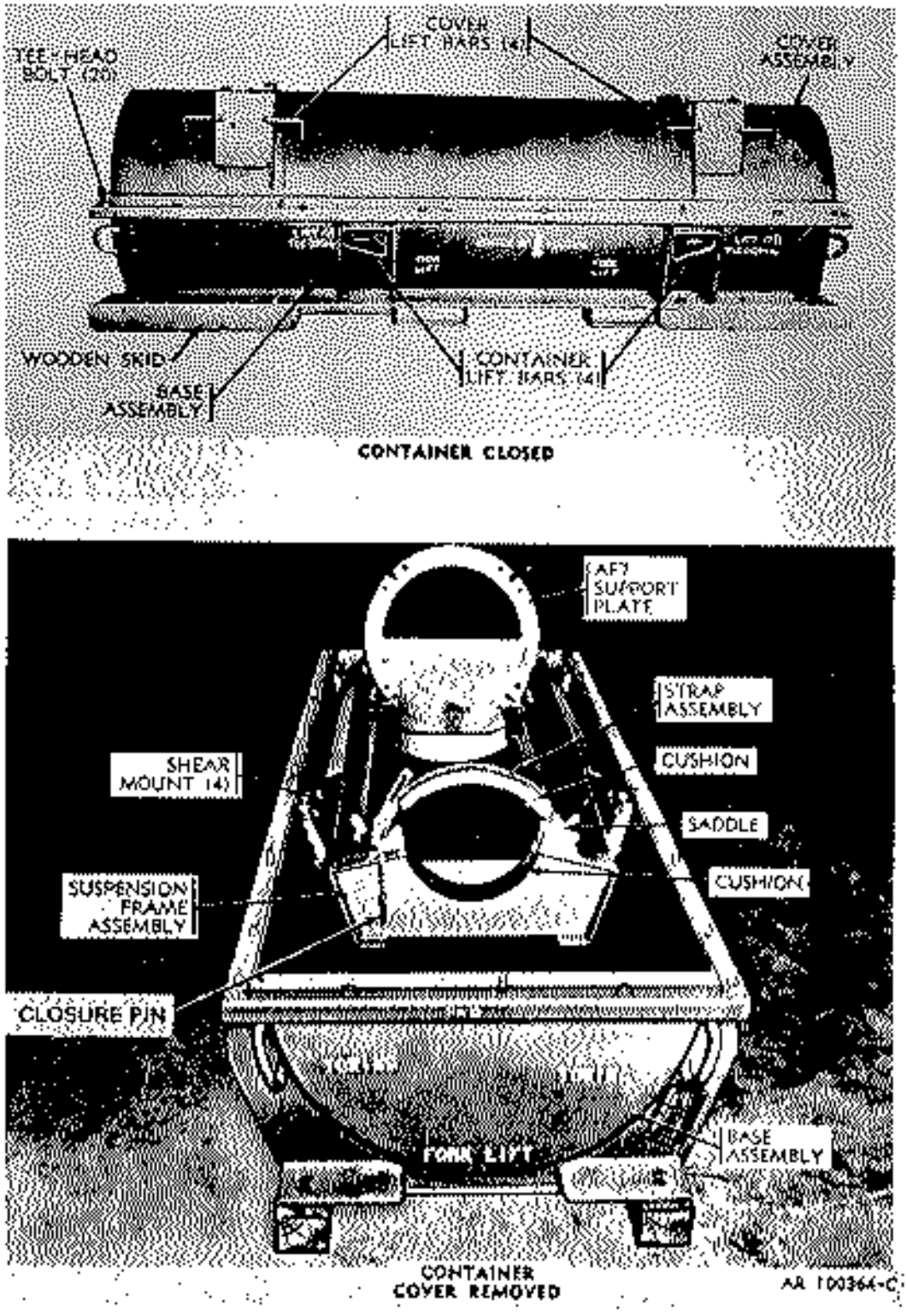


Figure 1-4. Shipping and storage container M544.

b. Painting and Marking (fig. 3-4). The container, when used with the M201 and M251 warhead sections, is painted with either lusterless olive drab enamel or forest green (camouflage) enamel. When used with the M251A1 warhead section, the exterior of the container is painted with forest green chemical agent resistant coating. Nomenclature, serial number, and lot number of the warhead section are stenciled on the M544 container with white ink on olive drab containers and black (camouflage) enamel on forest green containers. Six 4-inch color-coded squares are painted on the container. Squares are yellow when M251 or M251A1 is packaged; bronze when M201 is packaged.

1-7. Functioning

a. Arming and Fuzing. At the instant of depression of the control which fires the LANCE missile, power is supplied to the fuze which activates its batteries. As the missile leaves the launch area, G-forces mechanically align the safe and arm device in the fuze which partially arms the warhead section. Subsequent to missile boost engine cutoff (BECO) and a boost good-guidance signal sent to the fuze, the fuze initiates the electronic counting process. When "ARM" time is reached, an electromechanical action drives explosive leads into line and the warhead section is completely armed. At the expiration of the "SECO" time, if this was set, a signal is sent back to the missile which cuts off the sustainer engine.

b. Warhead Event. At the expiration of "EVENT" time, the fuze fires the detonators which sever the warhead section ogive and cut the skin longitudinally into two sections. This event allows dispersion of the bomb BLU-63/B or grenade M74 payload.

c. BombBLU-63/B. When the bomb enters the air stream, flutes on the body cause the bomb to spin. This spinning action forces lockweights in the fuze M219A1 (inside the bomb) outward, allowing the fuze to arm. At the moment of impact, a spring restrained weight in the fuze drives a firing pin into the detonator, the bomb explodes and disperses a large number of small, high-velocity fragments.

d. Grenade M74. When the grenade enters the air stream, flutes on the body cause the grenade to spin. This spinning action forces lockweights in the fuze M219A2 (inside the grenade) outward, allowing the fuze to arm. At the moment of impact, a spring restrained weight in the fuze drives a firing pin into the detonator, the grenade explodes and disperses a large number of small, high-velocity fragments and incendiary material.

1-8. Tabulated Data

Warhead section M251 and M251A1:
- Weight (with fuze) ..... 1,000 lb
- Length ..... 97 in
- Diameter Imax)..... 22 in
- Net explosive weight, warhead section M251 (approx) ..... 207 lb (incl M811 fuze)
- Net explosive weight, warhead section M251 Al (approx)..... 164 lb (incl M811 fuze)
- Operation temperature range ..... - 25° F. to + 140 ° F.
- Storage temperature range ..... -65° F. to + 155° F.

Fuze M811 (one required):
- Length 7.25 in
- Width 5.00 in
- Height 5.50 in
- Weight 7.7 lb
- Setting range:
  - Maximum..... 199.9 sec
  - Minimum..... 1.1 sec
- Setting type..... Digital readout for EVENT (in 0.1 sec increments) and ARM.
- Alpha..... readout for SECO
- Activation..... Two external signals from G & C section
- Power source ..... Two selfcontained ammonia batteries, 8.3 volts nominal
- Arming ..... Settable, 10, 20, 40, or 80 sec
- Explosives ..... 0.5 gram RDX 0.14 gram PETN 0.12 gram Lead Azide

Shipping and storage container M544: (approximate date)
- Length..... 116 in
- Width ..... 35 in
- Height ..... 37 in
- Volume 87 ft3
- Weight:
  - Empty ..... 900 lb
  - Loaded..... 19001b

Quantity-distance class:
- Warhead sections M251 and M251A1 ..... class (04)1.2
- Fuze M811 ..... Class 1.4

Storage compatibility group:
- Warhead sections M251 and M251A1..... D
- Fuze M811 ..... B

DOT hazard class:
- Warhead sections M251 and M251A1 ..... A
- Fuze, M811..... C

DOT container marking:
- Warhead sections M251 and M251A1 ..... Explosive projectile
- Fuze, M811..... Time fuze-handle carefully

DOT container label:
- Warhead sections M251 and M251A1..... Explosive A
- Fuze, M811 ..... Explosive C

Fragmentation bomb BLU-631B:
- Weight ..... 0.93 lb
- Diameter..... 2.94 in
- Explosive weight ..... 0.25 lb
- Explosive filler ..... Composition B

No. ..... of bombs in warhead
section M21 825

Fragmentation grenade M74:
Weight ..... 1.3 lb
Diameter ..... 2.94 in
Explosive weight ..... 0.28 lb
Explosive filler ..... Composition B
No. ..... of grenades in warhead
section M251A1 580

CHAPTER 2

HANDLING AND USE

Section I. SAFETY PRECAUTIONS

2-1. General

WARNING

Any bombs or grenades accidentally released from the warhead section will not be handled or moved under any circumstances. Personnel will evacuate the area to covered position not less than 500 meters away and notify Explosive Ordnance Disposal or other qualified personnel.

WARNING

When inspecting or setting M811 fuze in M251 or M251A1 warhead sections, inspect the arming window of the fuze to assure green is showing (green with white letter "S" on later production fuzes). If red (red with white letter "A" on later production fuzes) is showing, indicating that the fuze is at least partially armed, do not set or remove fuze. Personnel will evacuate the area to a covered position not less than 500 meters away and notify Explosive Ordnance Disposal personnel.

WARNING

Do not place hands or other parts of body under a suspended warhead section. However, hands may be placed under the suspended load when connecting the two bottom swing bolts of warhead section to main missile assemblage.

The safety requirements appropriate to the storage and handling of conventional explosive-type warhead sections apply to the warhead sections M251 or M251A1. No equipment or techniques peculiar to the warhead sections M251 or M251A1 are necessary. Strict adherence to all safety practices must be emphasized to prevent dropping the warhead sections.

2-2. Safety Precautions

The procedures in this section prescribe minimum safety standards and requirements that must be observed during all operations involving a high-explosive warhead section. In addition, the general instructions on storage, care, handling, preservation, and quantity-distance requirements for ammunition, outlined in TM 9-1300-206, will apply.

a. Disassembly of a warhead section beyond the extent described in this manual is strictly prohibited.

b. The contents of M251 and M251A1 warhead sections are explosive. Perform all operations carefully.

c. Operations involving a warhead section may require the observation of safety precautions or requirements in addition to those specified herein, and as local conditions dictate.

d. These warhead sections, in common with other types of ammunition, are designed to be as safe in handling as is consistent with their function and are packed to withstand all conditions ordinarily encountered in storage and transit. In order to assure that a warhead section will be in a serviceable condition when required for use and to provide the highest possible protection to personnel and materiel, the precautions outlined in this section will be observed.

e. Exercise care, especially during handling, unpacking, and packing to avoid denting, or otherwise damaging a warhead section. A warhead section should be handled only with beam-type sling M22, and when removed from container, should be placed on a suitable maintenance stand. Containers will not be tumbled, rolled, dropped, or otherwise roughly handled.

f. Before initiating any operation involving a warhead section, an adequate unit standing operating procedure (SOP) should be prepared. Personnel concerned should be aware of the contents of the unit SOP which will include, as a minimum, the following information:

(1) Specific and general safety requirements applicable to the operation and situation.

(2) Personnel and explosive limits.

g. Before the warhead section is unpacked, inspect the shipping and storage container to determine that lift bars, wooden skids, tiedown rings, stacking brackets, and locking devices, i.e., Thread bolts and lead wire seals are present, and that there is no evidence of structural failure. Badly

damaged containers, containing M251 or M251A1 warhead sections will not be opened, but will be reported to Explosive Ordnance Disposal personnel.

h. When the warhead section or container is lifted by means of handling equipment or hoist, it should not be lifted higher than required for the operation, and should not remain suspended longer than necessary.

i. Keep area around warhead section clear of trash, flammable material, or any material that could interfere with the safety and efficiency of the operation.

j. Do not expose the warhead section to sparks, open flames, unapproved sources of possible ignition, electrically powered handtools or open electrical motors. The warhead section will be kept at least 60 feet away from these hazards.

k. The warhead section and container will be handled only with issued or approved equipment. The container is designed to protect the warhead section from damage during shipping, handling, and storage. The warhead section, packed in the shipping container, will be lifted only with equipment approved for use on the LANCE system. Refer to TM 9-1410-485-12 for description of equipment and procedure.

l. Be extremely careful not to strike the fuze or drop any tools or other metal items on the fuze or ogive when the ogive is open.

m. The fuze shall not be removed from the warhead section.

n. The fuze should be left in the following state until set for launch: EVENT: 000.0, ARM: 80, SECO: OFF.

o. When mating or demating, place a block of wood approximately 24 in. x 4 in. x 4 in. between interface surfaces of the warhead section and missile main assemblage when connecting or disconnecting cable.

Section II. INSPECTIONS

2-3. General

a. This section outlines inspection procedures required on the warhead section and the shipping and storage container. The purpose of the following inspections is to ensure that material is acceptable for its intended use.

(1) Receipt Inspection.
(2) Premate and Mate Inspection.
(3) Prefire Inspection.
(4) Repackage Inspection.

b. All rejected material shall be reported for disposition on DA Form 2415 (Ammunition Condition Report) in accordance with TM 38-750.

2-4. Receipt Inspection

a. When a warhead section is received from a Supporting Unit, or when there is change of custody, the receiving organization will perform a receipt inspection in accordance with table 2-1.

b. The Receipt Inspection is a container exterior inspection only. However, containers may be opened, if desired, for internal inspection at the discretion of the Unit Commander.

2-5. Premate and Mate Inspection

Before a container is opened for the purpose of removing a warhead section for mating to the missile main assemblage, the using organization will perform inspection of item 1 in Table 2-2, Premate and Mate Inspection. The container will then be opened to accomplish the inspection of item 2 of Table 2-2. Perform touch up of warhead section and correction of sling marks as time permits.

2-6. Prefire Inspection

When a warhead section is mated to the missile main assemblage and in location for firing, the firing crew will perform a prefire inspection in accordance with table 2-3.

2-7. Repackage Inspection

If a warhead section is demated and repackaged, a two-phase inspection is required. Initially, the empty container is inspected; then the warhead section is inspected prior to repackaging. Repackage inspection is conducted in accordance with table 2-4. If a container is to be repackaged empty, repackage inspection is conducted on the empty container.

Table 2-1. Receipt Inspection.

Item	Inspection	Action to be taken
1. Shipping and Storage Container Exterior	a. Lead seals missing or broken.	If defect cannot be accounted for, report defect in accordance with local directives.
	b. Container deformed, punctured, or structurally damaged.	If damage to warhead section is suspected, reject container and contents and report for disposition.
	c. Cover lilt bars cracked, broken, or loose.	Notify Support Unit.
	d. Container lift bars/stacking brackets cracked, broken or loose.	Notify Support Unit.
	e. Markings do not agree with figure 3-4; or illegible.	Touch up; if extensive remarking is required, notify Support Unit.
	f. Forklift slots, bars unserviceable.	Notify Support Unit.
	g. Wooden runner (skid) Unserviceable:	
	(1) a. Cracks up to 5 inches long which extend through skid.	(1) a. Repair.
	b. Skid loose.	b. Torque bolts holding wooden runners to 35 ± 5 root-pounds.
	(2) a. Cracks more than 5 inches long which extend through skid.	(2) a., b. Notify Support Unit.
	b. Skid broken or worn more than1/3 of load bearing surface.	
	(3) Cracks which do not extend through skids will be considered season checks and are acceptable.	(3) No action required.
	h. Peeling or inadequate paint.	Touch up, or notify Support Unit.
	i. Missing or unserviceable hardware (i.e., T- head bolts, stacking bolts).	Replace. Torque stacking bolts to 15 ± 4 ft-lb in stowed position.
	j. Fungus, or other foreign material.	If paint damage is extensive, notify Support Unit. Clean.
	k. Corrosion.	Clean and touch up. If extensive, notify Support Unit.
	l. T-head bolt threads not covered with thin protective coating of primer TT- P-664.	Coat threads with primer TT-P-664.

Table 2-2. Premate and Mate Inspection

Item	Inspection	Action to be taken
1. Shipping and Storage Container Exterior.	a. Leads seals missing or broken.	If defect cannot be accounted for, report defect in accordance with local directives.
	b. Container deformed, punctured, or structurally damaged.	If damage to warhead section is suspected. reject container and con tents and report for disposition.
2. Warhead Section (ogive closed).	a. Markings do not agree with figure 3-3 (M251 and M251A1) or figure 5-1 (M201); illegible.	Touch up; if extensive remarking is required, notify Support Unit.
	b. Sling strap location incorrect (fig. 3-3).	Correct.
	c. Punctures.	Reject warhead section and report for disposition.
	d. Dents in ogive.	Replace.
	e. Dents in skin beyond ogive which exceed either 3/16 inch deep or 6 inches long.	Reject and report for disposition.
	f. Swing-bolt locks unserviceable, missing, or loose.	Replace.
	g. Headless shoulder pins (alignment and shear pins) loose, missing, unserviceable.	Tighten, replace.
	h. Bulkhead (Station 100) punctured or deformed.	Reject warhead section and report for disposition.

Table 2-2. Premate and Mate Inspection-Continued

Item	Inspection	Action to be taken
2. Warhead Section (ogive closed). -Continued	i. Cable connection (Station 100) unserviceable.	(1) Straighten bent pins. (2) Reject warhead section and report for disposition.
	j. Gasket(Station 100 ring) (M251 and M251A1 only) loose, missing or broken.	Notify Support Unit.
	k. Swing bolts unserviceable.	Replace.
	l. Swing bolts difficult to move; swing too freely.	Adjust spring plunger; replace.
	m. Ogive loose.	(1) Reattach ogive. (2) Adjust devises. (3) Replace clamping catches. (4) Replace ogive.
3. Warhead section (ogive opened).	a. Red (red with white letter "A" on later production fuzes) shows in fuze safe/arm monitor window (M251 and M251A1 only.	Notify EOD. See Warning, paragraph 2-1.
	b. Fuze damaged, lead wire seals missing, broken.	(1) Replace seal and report in accordance with local directives (M251 and M251A1 only). (2) Replace latch assembly. (3) M251 and M251Al-report for disposition (4) M201-notify Support Unit.
	c. Fuze setting not on EVENT:000.0 ARM:80,SECO:OFF.	Correct settings.
	d. Fuze dials damaged; stuck (when locking latch is open).	M251 or M251A1 report for disposition. M201: notify Support Unit.
	e. Fuze loose.	Tighten four socket head screws to 30 ± 5 inch-pounds.
	f. Clamping catches or clevises unserviceable.	Replace

Table 2-3. Prefire Inspection

Item	Inspection	Action to be taken
1. Warhead Section (ogive opened).	a. Red (red with white letter A" on later production fuzes) shows in SAFE/ARM monitor window (M251 and M251A1 only).	Notify EOD. See Warning paragraph 2-1
	b. Fuze damaged; lead wire seals missing or broken.	(1) Replace seal(s) and report in accordance with local directives (M251 and M251A1 only). (2) Replace latch assembly. (3) M251 and M251A1-report for disposition (4) M201-notify Support Unit.
	c. Dials damaged; stuck.	M251 and M251A1: report for disposition. M201: notify Support Unit.
	d. Fuze loose.	Tighten four socket head screws to 30 ± 5 inch-pounds.
	e. Ogive dented or unserviceable.	Replace.
	f. Clamping catches unserviceable.	Replace.
	g. Clamping catch levers do not swing out freely.	Oil linkage.
	h. Ogive does not open/close freely.	Apply silicone compound to telescope rod.
2. Warhead Section (ogive closed).	a. Punctures.	Demate and reject warhead section. Report for disposition.
	b. Warhead section visibly out of concentricity.	Demate and reject warhead section. Report for disposition.
	c. Ogive loose.	(1) Reattach ogive. (2) Adjust clevises. (3) Replace clamping catches or clevises. (4) Replace ogive.

Table 2-4. Repackage Inspection

Item	Inspection	Action to be taken
1. Warhead Section.	a. Red (red with white letter "A" on later production fuzes) shows in SAFE/ARM monitor window (M251 and M251A1 only).	Notify EOD. See Warning, paragraph 2-1.
	b. Fuze setting not on EVENT: 000.0, ARM: 80, SECO: OFF.	Set to correct values.
	c. Markings do not agree with figure 3-3 (M251 and M251A1) or figure 5-1 (M201).	Touch up; if extensive remarking is required, notify Support Unit.
	d. Sling strap location incorrect (fig 3-3).	Correct.
	e. Punctures.	Reject warhead section and report for disposition.
	f. Dents in ogive.	Replace.
	g. Dents in skin beyond ogive which exceed either 3/16 in. deep or 6 in. long.	Reject warhead section and report for disposition.
	k. Swing-bolt locks unserviceable, missing or loose.	Replace.
	l. Headless shoulder pins (alignment and shear pins) loose; missing, unserviceable.	Tighten, replace.
	j. Bulkhead (Station 100) punctured or deformed.	Reject warhead section, and report for disposition.
	k. Cable connector (Station 100) unserviceable.	(1) Straighten bent pins. (2) Reject warhead section and report for disposition.
	l. Gasket (Station 100 ring) loose, missing or broken (M251 and M251A1 only).	Notify Support Unit.
	m. Swing bolts unserviceable.	Replace.
	n. Swing bolts difficult to move; swing too freely.	Adjust spring plunger; replace.
	o. Fungus, or other foreign material.	Clean and touch up. It paint damage is extensive. notify Support Unit.
	p. Peeling or inadequate paint.	Touch up or notify Support Unit.
	q. Scratches.	Touch up.
	r. Corrosion.	Clean and touch up. Notify Support Unit if corrosion is extensive.
	s. Protective cover and flange assembly (on Station 100 cable connector) missing or unserviceable.	Replace.
	t. Spring plunger frozen	Notify Support Unit
2. Shipping and Storage Container Exterior.	a. Container deformed, punctured, or structurally damaged.	Notify Support Unit.
	b. Cover lift bars cracked. broken, or loose.	Notify Support Unit.
	c. Container lift bars/stacking brackets cracked, broken or loose.	Notify Support Unit.
	d. Marking do not agree with figure 3-4 or illegible.	Touch up; if extensive remarking is required, notify Support Unit.
	e. Forklift slots, bars, unserviceable.	Notify Support Unit.
	(1) (a) Cracks up to 5 inches long which extend through skid. (b) Skid loose.	(1) (a) Repair. (b) Torque bolts holding wooden runners to 35 ±5 ft-lb.
	(2) (a) Cracks more than5 inches long which extend through skid. (b) Skid broken or worn more than 1/3 of load bearing surface.	(2) (a), (b) Notify Support Unit.

Table 2-4. Repackage Inspection - Continued

Item	Inspection	Action to be take
2. Shipping and Storage	(3) Cracks which do not extend through skids will be considered season checks and are acceptable	(3) No action required
	g. Peeling or inadequate paint.	Touch up, or notify Support Unit.
	h. Missing hardware(i.e., T-head bolts or stacking bolts).	Replace. Torque stacking bolts to 15 ± 4 ft-lb in stowed position.
	i. Fungus, or other foreign material	Clean. If paint damage is excessive, notify Support Unit.
	j. Corrosion	Clean and touch up. Notify Support Unit if corrosion is extensive.
	k. Lead seals missing or broken.	Replace.
	l. T-head bolt threads not covered with thin protective coating of primer TT-P-664.	Coat threads with primer TT-P-664.
3. Shipping and Storage Container Interior	a. Guide pins bent	Straighten.
	b. Guide pins missing.	Notify Support Unit.
	c. Drain hole clogged.	Clean.
	d. Forward retaining strap unserviceable; missing.	Notify Support Unit.
	e. Cushions on strap or saddle unservice-able; missing	Replace.
	f. Suspension frame and resilient mounts unserviceable	Notify Support Unit.
	g. Support plate loose.	Torque to 30 ± 5 ft-lb.
	h. Peeling, or inadequate paint.	Touch up, or notify Support Unit.
	i. Fungus, or other foreign material.	Clean. If paint damage is extension, notify Support Unit.
	j. Corrosion	Clean and touch up, or notify Support Unit.
4. Warhead Section in Container	Swing bolts not correctly placed in support plate slots and/or torqued.	Engage into slot, torque to 75 ± 5 ft-lb. replace swing bolt

2-8. Unpackaging Warhead Section From Container

a. Perform receipt inspection in accordance with Table 2-1, if required.

b. Opening Shipping and Storage Container

(1) Inspect container in accordance with table 2-2, item 1.

(2) Remove metallic seals if present.

(3) Release side T-head bolts, then end bolts, that secure container cover to base. Each bolt is released by turning T-head counterclockwise 90 degrees with H4244 wrench until bolt head falls into slot in container cover assembly (quick release), or by loosening nuts underneath with a 3/4-inch socket head wrench until bolts can easily be turned 90 degrees by hand. Quick release capability should be reserved for tactical opening only.

CAUTION

Use extreme care when removing container cover assembly to avoid damaging warhead section.

NOTE

If desired, the container cover may be manually removed, using four or more men. If manually removed, perform inspection (table 2-2) and proceed to paragraph 2-8c. When container is moved with hoist and sling, use lifting bars on sides of base assembly (fig. 1-4; do not use cover lift bars on cover assembly to lift container. Open container as instructed below.

(4) Using beam-type sling M22 (para 3-4a and fig. C-5), position sling over container and perpendicular to container's length (fig 2-1). Connect sling to hoist or other suitable lifting device. Attach four sling cables (44-in.) to four cover lift bars and remove container cover assembly by lifting straight up until cover is clear of warhead section. Place cover on dunnage out of immediate work area and retain for future use.

(5) Perform as much of premate and mate inspection as is practical.

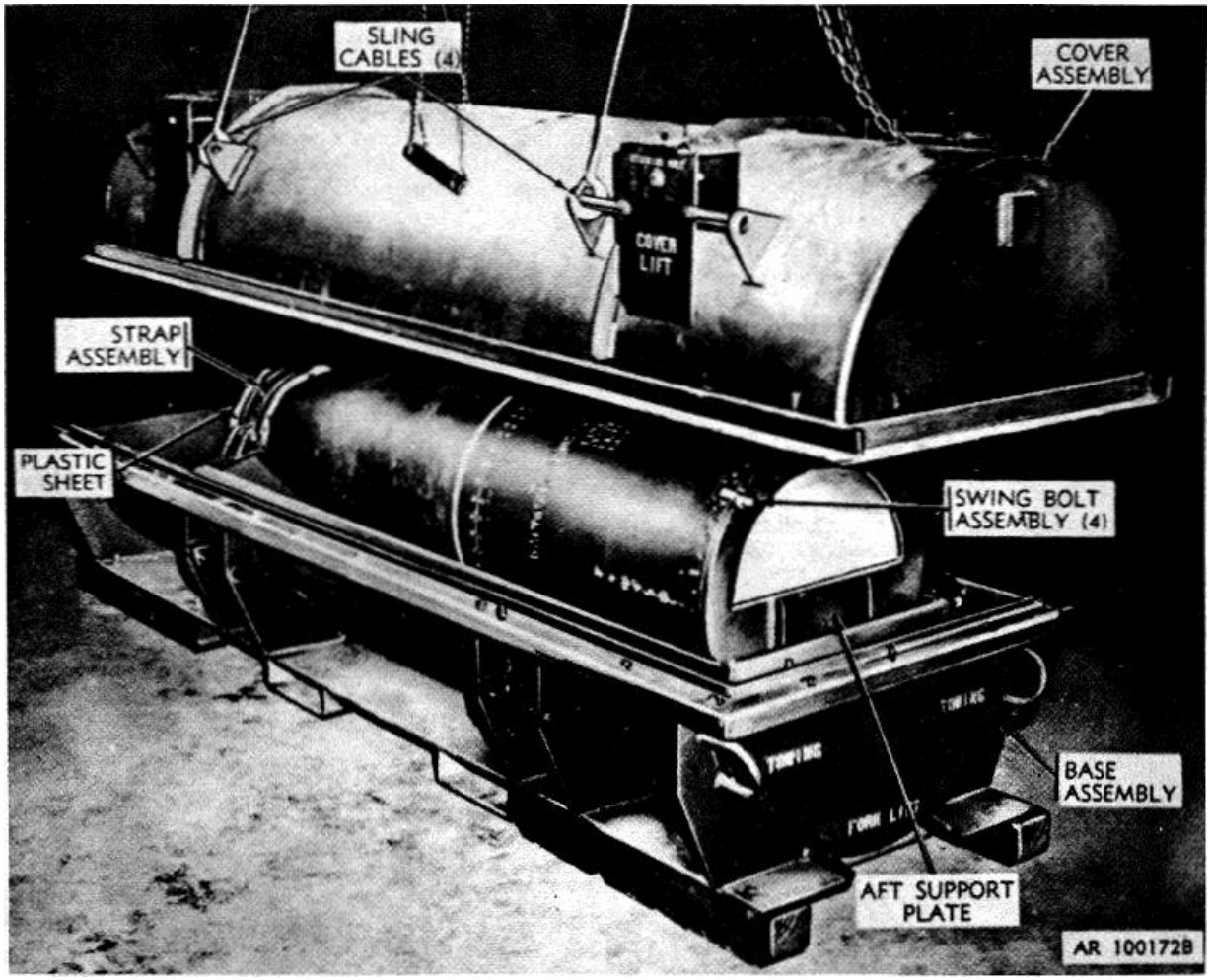


Figure 2-1. Removing or installing cover of container M544 using beam-type sling M22.

c. Attaching Beam-Type Sling to Warhead Section.

(1) Pull closure pin and open strap assembly (fig 1-4) which secures forward part of warhead section in saddle of suspensions frame assembly. Open flaps of plastic sheet, if present, protecting warhead section in suspension frame saddle. Plastic sheet is an option item and may be saved for repacking if desired.

(2) Prepare sling for attachment to warhead section by installing sling straps and guidelines on sling beam (fig 202).

(3) Lower sling until beam is slightly above warhead section. Loop two sling straps under warhead section, aligning rear strap between sling location marks. Rear strap is the strap with only one connector loop. Forward strap contains two connector loops.

(4) Position two sling straps in proper positions around warhead section as follows:

NOTE

Buckle on forward strap should be positioned so it does not contact warhead section.

(a) Connect rear strap loop to buckle by pulling inside part of strap with buckle over top of warhead section to make connection. Position strap and buckle so that buckle is slightly above the side of warhead section, (approximately 2 o'clock position). Ensure rear strap is between "REAR SLING" markings (fig 2-2).

(b) Connect forward strap in the second connector loop of strap, resulting in a smaller diameter. Ensure forward is between "FWD SLING" markings (fig 2-2).

(5) Slowly take up slack by raising sling until straps are taut.

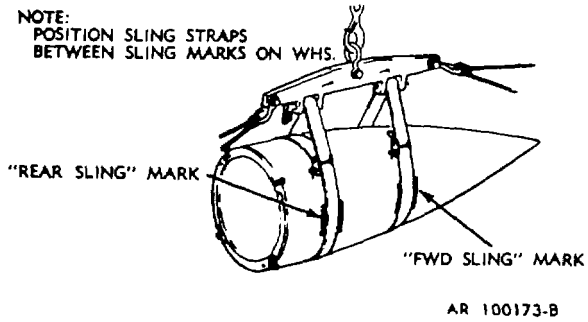


Figure 2-2. Warhead section with sling straps between "SLING" markings.

d. Removing Warhead Section from Container.

CAUTION

Do not continue to loosen swing bolt nuts after stop pin has been reached or nut will become locked over stop pin.

(1) Loosen swing bolt assembly nuts on the four swing bolt assemblies (fig 1-2) with a 12 point, 13/16 inch deepwell socket wrench in the following order: Loosen nuts on each of the top two swing bolts to their stop pins and disengage. Then loosen the nuts on each of the bottom two swing bolts to their stop pins and disengage. Ensure all bolts are locked into their fully extended positions.

(2) Apply more tension on sling so that warhead section can be moved forward. This will disengage warhead section headless shoulder pins from container aft support plate.

WARNING

Do not place hands or other parts of body under a suspended warhead section while removing from the container.

(3) Lift the warhead section clear of the container.

(4) Conduct remainder of premate and mate inspection.

2-9 Mating Warhead Section To Missile Main Assemblage.

NOTE

The Firing Platoon Commander is required to have in his possession a dust cap with streamer (protective cover and flag assembly) from the 1A1J1 cable connector for each mated missile in his platoon.

a. Mate warhead section to missile main assemblage in accordance with procedures given in TM 9-1410-485-12.

b. Repackage empty container in accordance with paragraph 2-15, as soon as possible.

Section III. PREPARATION FOR FIRING

2-10. Fuze Setting and Prefire Inspection.

WARNING

(M251 and M251A1 ONLY) If red indicator (red with white letter "A" on later production fuzes) is showing in SAFE/ARM monitor window of fuze M811 (fig 1-2) indicating that fuze is partially armed, do not set fuze. Evacuate the area to a covered position not less than 500 meters away and notify Explosive Ordinance Disposal personnel.

CAUTION

Do not use excessive force when opening or closing ogive, as damage may result to the telescope rod. The ogive clamping catches may strike and damage the fuze if proper procedures are not followed. Do not drop or force the ogive into the open position.

a. Disengage ogive by depressing two pushbuttons (fig 3-1). Catch levers should swing outward. If this does not occur, a screwdriver may be used to pry the levers out. Slide ogive forward keeping arrows aligned. DO NOT force ogive to turn or twist while sliding. When the ogive is fully extended, a guide pin on the telescope tube will reach a stop. At this position the guide pin aligns with a slot, and will allow the ogive to be rotated downward in a counterclockwise direction to the open position. Check the SAFE/ARM window of the M811 fuze in M251 or M251A1 warhead section to assure green is showing (green with white letter "S" on later production fuzes) (fig 1-3).

b. Conduct prefire inspection of warhead section in accordance with table 2-3, Item 1.

c. Pull knob locking latch to release setting knobs.

CAUTION

Open locking latch carefully to prevent damage to latch or to its pins.

d. Set fuze to desired event time by turning four setting knobs and aligning the numbers which make up the event time with marks on the case labeled "event". These numbers can be changed any time prior to launch since there is no power on the fuze prior to launch. The sustainer engine cutoff (SECO) switch is set by selecting one of nine letters, corresponding to the selected SECO time.

CAUTION

The arming time must be less than the event time; otherwise, a dud will result.

e. Select and set appropriate arming time and close locking latch.

CAUTION

Do not use excessive force when opening or closing ogive, as damage may result to the telescope rod. The ogive clamping catches may strike and damage the fuze if proper procedures are not followed.

f. Rotate ogive clockwise to align telescope tube guide pin and lengthwise slot which will allow ogive to slide aft. Slide ogive aft, keeping painted arrow on ogive aligned with arrow on warhead section, until closed, then depress two catch clamp levers. Clamps will engage devises (fig. 3-1) and lock ogive to fuze ring assembly. If the telescope tube does not move freely, refer to paragraph 3-6.6 for maintenance procedures. If ogive cannot be locked, or is too loose, refer to paragraph 3-6.d for adjustment of clevises. There should be no lateral movement of ogive.

g. Conduct remainder of prefire inspection (table 2-3, item 2).

2-11. Change in Target Requirement

In case of a change of target, fuze settings may be changed at any time prior to firing.

2-12. Safing Warhead Section

a. It sometimes becomes necessary to safe the warhead section due to various occurrences. These are:

(1) Cancelled Firing.
(2) Traverse Limited/Change Fire.
(3) Cease Fire March Order.
(4) NO-GO.
(5) Misfire.
(6) Hangfire.

b. Procedures applicable to a mated missile in the event of one of the above occurrences are described in TM 9-1425-485-10-2. Safe warhead section as prescribed below:

(1) Open ogive following procedures in paragraph 2-10a., and reset fuze event time to 000.0.

(2) Set arm time to 80.

(3) Set SECO to OFF.

(4) Close knob locking latch and ogive, following procedures in paragraph 2-10*f*:

c. (M251 and M251A1 only) In the event of a misfire or hangfire, power supplied to the missile may have activated fuze batteries and caused the batteries to be expended. Do not attempt to refire the affected warhead sections, except as authorized by TM 9-1425485-10-2. Demate the affected warhead sections (refer to TM 9-1410-485-12) and report for disposition in accordance with paragraph 1-2e.

Section IV. REPACKING AND INSPECTION

2-13. Demating and Warhead Section Inspection.

a. Demate warhead section from missile main assemblage in accordance with procedures outlined in TM 9-1410-285-12. Reinstall protective cover and flag assembly on 1A1J1 cable connector at Station 100 of warhead section.

b. Perform repackaging inspection on warhead section (table 2-4, item 1).

2-14. Repackaging Warhead Section

a. Inspect container in accordance with table 2-4, items 2 and 3.

b. With warhead section in sling M22, suspend warhead section over container. Assure warhead section is at or near level position.

c. Loosen the four swing-bolt nuts on warhead section as far as possible to facilitate repackaging. Rotate swing bolts outward.

d. Lower warhead section into container until it is approximately 2 inches above front saddle.

e. Tilt aft end of warhead section down and move warhead section to rear until upper shear and alignment pins are engaged in support plate holes and upper edge of warhead section contacts support plate.

f. Rotate upper swing bolts into support plate slots and tighten until warhead section is held against support plate.

g. Lower forward end of warhead section into saddle and remove M22 sling from vicinity.

h. Engage lower swine bolts into support plate slots. Tighten and then torque all four swing bolts to 75 ± 5 ft-lb.

i. Secure the forward retaining strap and insert closure pin to prevent strap from opening.

j. Install container cover assuring FWD markings are mated.

k. Turn T-head bolts to "lock" position.

l. Torque T-head bolts to 35 ± 5 ft-lb with 1-inch socket wrench. Use either procedure (1) or (2) as follows:

(1) Using two individuals, start at diagonally opposite corners of container. Both individuals will proceed around cover in the same direction and tighten each nut in sequence (holding top of bolt with H4244 wrench) until opposite corner is reached.

(2) If desired, use four individuals. Position two at any corner and two at the diagonally opposite corner. In each pair, one individual shall hold the top of the bolt with an H4244 wrench while the other individual torques the nut. The individuals will proceed around the cover in the same direction and tighten each nut in sequence until opposite corner is reached.

m. Install lead seals, one on each end of container closure flange.

n. Apply a thin coat of primer (TT-P-664) to exposed threads of the T-head bolts.

2-15. Repackaging Empty Container

a. Inspect container in accordance with table 2-4, items 2 and 3.

b. Secure the forward retaining strap and insert closure pin to prevent strap from opening.

c. Install container cover ensuring "FWD" markings are mated.

d. Turn T-head bolts to the lock position.

e. Perform 2-141(1) or (2) above, except torque each nut to 7 ± 3 ft-lb.

f. Apply a thin coat of primer (TT-P-664) to exposed threads of T-head bolts.

g. The using unit shall tag container in such a manner that it is readily identified as an empty container. Do not obliterate markings on the container. Do not remove tag if the container is to be returned to the Ordnance Support Unit.

h. Upon receipt of an empty container from a using unit, the Support Unit shall remove tag and apply markings on container in accordance with figure 3-4.

CHAPTER 3
ORGANIZATIONAL MAINTENANCE

Section I. REPAIR PARTS, TOOLS, AND EQUIPMENT

3-1. General
Repair parts, tools, and equipment are issued to the using unit for operating and maintaining the warhead section. Tools and equipment should not be used for purposes other than those prescribed and, when not in use, should be stored properly. The use of unauthorized tools and equipment could damage or detonate the materiel. When using a torque wrench or torque screwdriver, do not select a wrench or screwdriver that requires torque values to be read below twenty percent of the full scale value.

3-2. Repair Parts
Repair parts are supplied to the using organization for replacement of those parts that become worn, broken, or otherwise unserviceable, provided replacement of these parts is within the scope of organizational maintenance. These repair parts are listed in appendix C, which is the authority for requisitioning.

3-3. Common Tools and Equipment
Standard and commonly used tools and equipment having general application to the warhead section are contained in missile mating and organizational maintenance tool kits.

3-4. Special Tools and Equipment
Special tools and equipment authorized for .issue to using unit personnel for use with the warhead section are listed in appendix C. The authority for requisitioning are the appropriate loader-transporter or launcher manuals, tables of organization and equipment, and appendix C. A brief description of beam-type sling M22 and LANCE wooden maintenance stand are given below.

a. Beam-Type Sling M22.

(1) The sling beam (fig C-5) is a multipurpose piece of hoisting equipment used in conjunction with either loader-transporter or the tripod hoist. 'The sling beam consists of an aluminum-alloy beam assembly, two strap assemblies, and removable cables on either end of the beam assembly.

(2) The strap assemblies are used for lifting warhead section, missile main assemblages, or complete missile rounds. One strap assembly is adjustable and the other is of a noose-type construction, which functions by tightening as lifting force becomes greater. The noose-type strap assembly will prevent load slippage in the event the sling beam is not positioned directly over the center-of-gravity (CG) of an item being lifted.

(3) Ten (six 16-inch and four 44-inch) removable cables are included with each sling beam. The cables are used in various combinations with each other, depending on the item to be lifted, and are used to lift main assemblage containers, warhead section containers or the base launch fixture. When not in use, the sling beam is stowed on the intermediate support assembly in the loader transporter.

b. LANCE Maintenance Stand. The LANCE maintenance stand (fig C-7) may be used to support the warhead section for maintenance work it is fabricated, locally, of wood by the supporting unit.

Section II. ORGANIZATIONAL MAINTENANCE

3-5. General
a. Maintenance functions prescribed for the M251, M251A1, and M201 warhead sections and M544 container are authorized in the MAC (app B).

b. Some repairs may be performed on warhead section while it is resting in suspension frame assembly of the shipping and storage container (cover removed). These repairs include those which are performed on upper, more accessible part of warhead section. Other repairs may require removal of warhead section to a Lance maintenance stand (fig C-7). Warhead section may be turned in sling, if necessary, before placing on stand.

3-6. Ogive

CAUTION

Do not use excessive force when opening or closing ogive, as damage may result to the telescope rod. The ogive clamping catches may strike and damage the fuze if proper procedures are not followed. Do not drop or force the ogive into the open position.

a. Removal

(1) Disengage ogive (fig. 3-1) from warhead section by depressing two pushbuttons, one on each side of the ogive. As pushbuttons are depressed, catch levers will swing out. If the levers do not swing out, a small screwdriver may be used to pry the levers out. Refer to para 3-6.(4) for lever lubrication procedures.

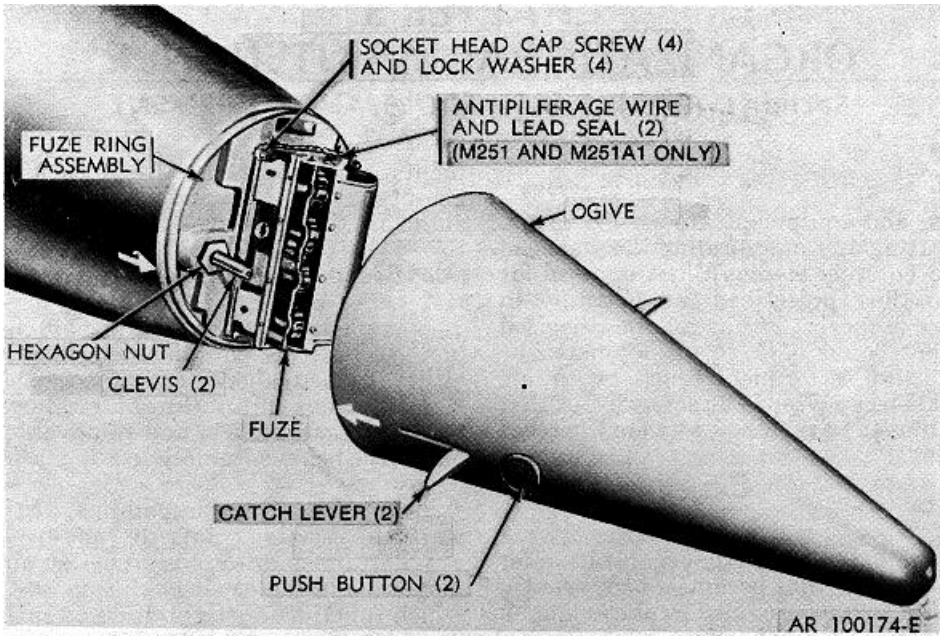


Figure 3-1. Fuze ring assembly and ogive.

(2) Slide ogive forward keeping arrows aligned. DO NOT force ogive to turn or twist while sliding. When the ogive is fully extended, a guide pin on the telescope tube will reach a stop. At this position the guide pin aligns with a slot and will allow the ogive to rotate downward in a counterclockwise direction to the open position. Check the SAFE/ARM window of the M811 fuze in the M251 or M251A1 warhead section to assure green is showing (green with a white letter "S" on later production fuzes) (fig 1-3).

WARNING
(M251, M251A1 ONLY)
If red (red with white letter "A" on later production fuzes) is showing in SAFE/ARM monitor window of fuze M811 (fig. 1-3), partially armed, do not proceed with maintenance. Personnel will evacuate the area to a covered position not less than 500 meters away and notify Explosive Ordnance Disposal Personnel.

(3) Loosen (about six turns) but do not remove capscrew (11, fig C-1) holding ogive tube to warhead section fuze plate, using a 3/16-inch hexagon-head screw key, (or 5/16-inch open-end wrench on some M201 warhead sections). Capscrew is located inside a cavity within fuze plate.

(4) Remove ogive from warhead section.

b. Repair

(1) Replace ogive is it is crushed or dented. Dents in ogive may interfere with fuze. If there is any noticeable dent in the ogive, replace ogive. There is no repair authorized. If the telescope tube does not move freely, apply a thin coating of silicone compound type DC-6, GE-81508, or equivalent to the telescope rod. Open and close the ogive several times to distribute the silicone compound, wipe off the contaminated compound with a clean cloth and reapply.

(2) Inspect loosened capscrew (11, fig C-1). If capscrew is socket-head type, replace if unserviceable. If capscrew is hexagon-head type (some M201's only), report for disposition, if unserviceable.

c. Installation

(1) Install ogive tune in fuze ring assembly by installing capscrew (11, fig C-1) loosely on fuze ring assembly, with a 3/16-inch hexagon-head screw key.

(2) Position hole in tube to align with capscrew and retighten capscrew with 3/16-inch hexagon-head screw key.

CAUTION
Do not use excessive force when opening or closing ogive, as damage may result to the telescope rod. The ogive clamping catches may strike and damage the fuze if proper procedures are not followed. Do not drop or force ogive into open position.

(3) Close ogive by rotating clockwise to align ogive telescope tube guide pin and lengthwise slot. Slide ogive aft until closed. Depress two catch levers to lock ogive to forward assembly. A gap between ogive and forward assembly indicates possible nonengagement of clevises or necessity of clevis adjustment (d below).

(4) If clamping catch (13, fig. C-1) is unserviceable (broken, bent, worn, missing spring, or badly corroded), with ogive removed from warhead remove four machine screws (12, fig. C-1) holding catch to ogive. Retain screws, if serviceable. Install replacement catch clamp by securing four screws with a no. 2 cross-tip Phillips-type screwdriver. If the catch lever does not swing out freely, apply several drops of lubricating oil, general purpose, light, type VV-1,-820C to the linkage. Work linkage until it swings out freely. Wipe off all excess oil with a clean cloth.

(5) Replacement ogive does not have match mark arrows. After ogive has been successfully closed, paint arrows using white stencil ink, to align with existing arrows on warhead section.

c. Replacement of Clevis Assembly.

(1) Open ogive.

(2) Loosen adjustment nut using a 1-1/8-inch open-end wrench.

(3) Remove clevis assembly and adjustment nut from fuze ring assembly. The alignment roll pin may be loose in the assembly. DO NOT allow the roll pin to fall out of the shaft.

(4) Remove the spring from the fuze ring assembly and retain for reassembly.

(5) Slide adjustment nut off clevis and retain for reassembly. If clevis is badly damaged and the adjustment nut cannot be removed, cut the clevis in half to remove nut.

(6) Install adjustment nut over clevis (threaded portion toward threaded shank on clevis).

(7) Place spring over threaded shank of clevis. Install assembly into fuze ring. Tighten adjustment nut several turns by hand.

(8) Rotate clevis until guide pin engages slot in fuze ring. Tighten adjustment nut until hand tight.

(9) Adjust clevis in accordance with paragraph 3.6.e.

CAUTION

Care must be taken when adjusting the devises for tightness of the ogive, and also when closing the catches on the ogive. If the devises are adjusted too tight, excess force could be applied to the catch hook and the hook may break.

e. Adjustment of Clevises.

(1) If ogive catches cannot be engaged, each of the two devises on the fuze ring assembly may be loosened by turning hexagon nuts counterclockwise with a 1-1/8 inch open-end wrench.

(2) If ogive is loose after closing, devises must be tightened by turning hexagon nuts clockwise with a 1-1/8 inch open-end wrench. Tighten until there is no lateral movement of the ogive. Care should be used when turning hexagon nuts. A slight turn of one-eighth of a revolution or less may be enough to adjust devises.

NOTE

After closing the ogive, use a screwdriver or similar tool to press against the catch levers. This will ensure that the ogive is in the latched position and that the pushbuttons have snapped back flush with the ogive skin.

3-7. Guided-Missile Fuzes M811 and M816

a. Removal and replacement of fuzes at the Organizational Maintenance level is not authorized. Fuze replacement for M251 or M251A1 warhead sections shall be accomplished at Depot level only. Fuze replacement for M201 warhead sections shall be accomplished at General Support Maintenance level.

b. *Knob Cover and Latch Assembly Repair*. Using pliers, turn bent pins on knob locking latch so that they are perpendicular to the latch.

c. *Knob Cover and Latch Assembly Replacement*.

(1) Remove damaged knob cover and latch assembly by removing eight screws and washers and four spacers which secure the latch assembly to the fuze. Retain screws, washers, and spacers, if serviceable.

(2) Open kit containing knob cover and latch assembly and remove contents. There are five of each type of attaching hardware supplied. Only four of each type are actually used.

(3) Install replacement knob cover and latch assembly (fig C-1) by securing four screws and washers on sides of assembly.

(4) Install four screws and washers on front of assembly while holding spacers between assembly and fuze with curved needle-nose pliers.

3-8. Swing-Bolt Assembly.

a. *General.* If double hexagon extended washer nut is unserviceable, replace nut after removing spring pin from swing-bolt assembly. If swing-bolt assembly is unserviceable, replace entire assembly.

b. *Swing-Bolt Assembly.*

(1) Removal (fig 3-2).

(a) Using a cross-tip screwdriver, remove teebolt lock by removing two machine screws. A flatblade screwdriver may be needed to pry lock out of warhead section. A few blows with a brass hammer on ends of tee-bolt lock may also be required.

(b) Remove swing-bolt assembly.

c. Double Hexagon Extended Washer Nut.

(1) Removal (fig. 3-2).

(a) Using a 1/4-inch diameter punch and a hammer, drive spring pin partially from teehead bolt, and remove with pliers.

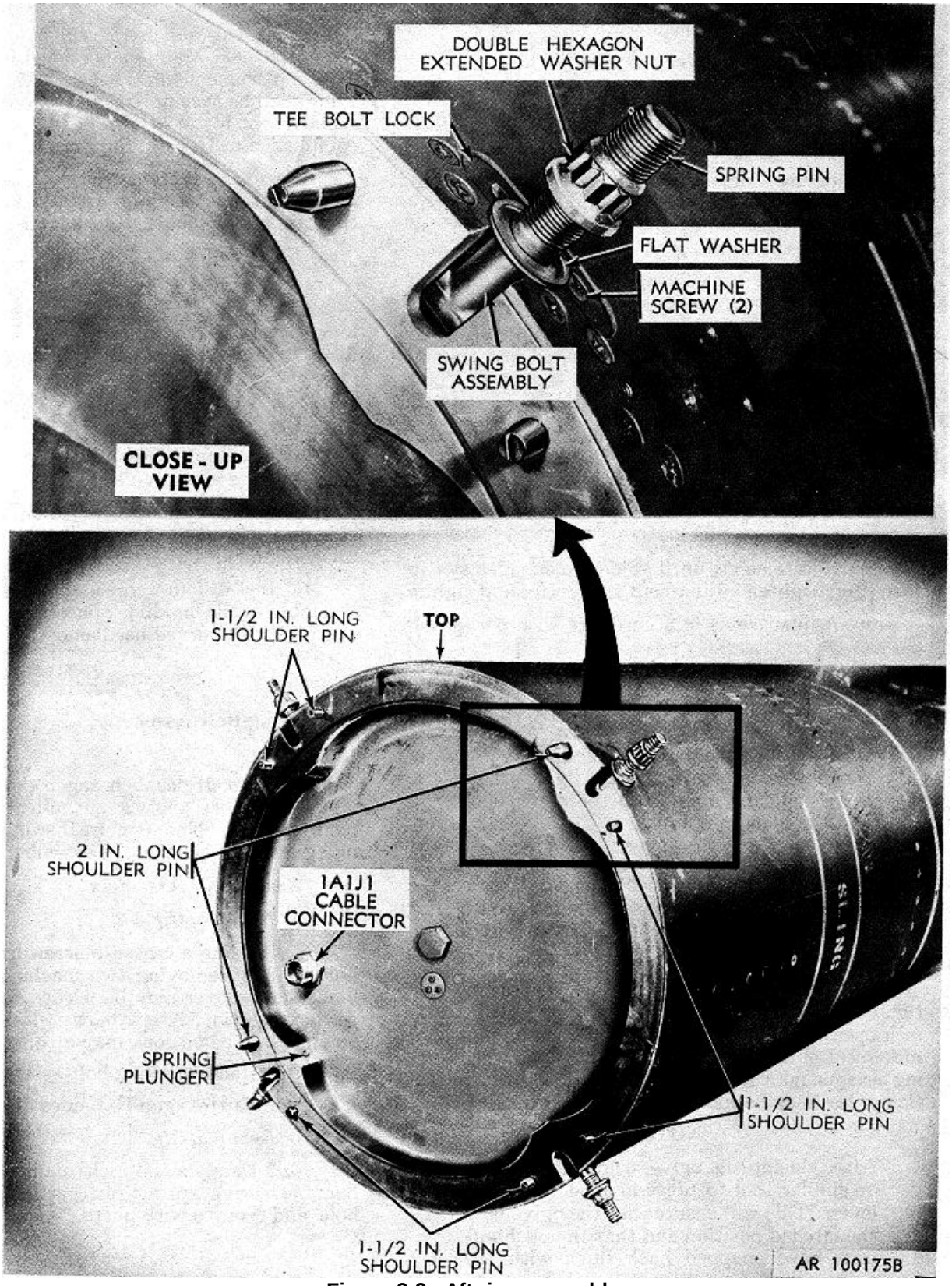


Figure 3-2. Aft ring assembly.

(b) Remove nut and flat washer from bolt.

(2) Installation (fig. C-2).

(a) Place flat washer on threaded portion of tee-head bolt.

(b) Screw double hexagon extended washer nut onto tee-head bolt with double hexagon end outward. Nut must be advanced far enough so that hole in tee-head bolt is exposed.

(c) Using a hammer, install spring pin into opening in bolt so that ends of spring pin protrude approximately equally from either side of bolt.

d. Installation (fig. C-2).

(1) Place serviceable swing-bolt assembly into receptacle on warhead section.

(2) Place tee-bolt lock into receptacle on warhead section.

(3) Insert two machine screws and tighten to 25 ± 5 inch-pounds.

(4) Assure swing-bolt assembly can be turned easily. If swing-bolt assembly swings too freely, adjust spring plunger with a 1/16-inch hexagon-head screw key.

3-9. Spring Plunger

NOTE

If swing-bolt assembly has been removed, do not install spring plunger until swingbolt assembly is reinstalled.

a. Removal. Using a 1/16-inch hexagon-head screw key, turn spring plunger (fig. 3-2) counterclockwise until spring plunger can be removed. If spring plunger is frozen or cannot be easily removed, do not apply excessive force. Notify support unit.

b. Installation. Place light film of silicone compound (G-697) on the threaded body of the spring plunger. DO NOT allow compound on the plastic tip. Install spring plunger (7, fig. C-2) into threaded opening on side of aft ring (fig. 3-2) and turn clockwise with a 1/16-inch hexagon-head screw key. Turn until resistance is felt and swingbolt assembly can be turned to any position without swinging too freely. Wipe excess compound from aft ring. Test resistance by setting bolt at approximately 45° from fully swung-out position and releasing it. If bolt remains in this position, resistance is correct.

3-10. Headless Shoulder Pins (Alignment Pins and Shear Pins)

a. Tighten loose headless shoulder pins (fig. 3-2) on aft ring assembly of warhead section with a flat-blade screwdriver.

b. Replace missing or unserviceable 1-1/2 inch long headless shoulder (shear) pin or 2-inch long headless shoulder (alignment) pin. Long and short pins are not interchangeable.

c. Do not attempt to repair pins which have been broken off flush with aft ring assembly. Return warhead section to support unit.

3-11. Painting and Marking the Warhead Section

a. Touch up warhead section paint and/or markings, if necessary, in accordance with instructions in figure 3-3. Restore original type and color paint unless otherwise directed. Use forest green chemical agent resistant coating (CARC) for M251A1 warhead sections; lusterless olive drab enamel for M251 warhead sections; and lusterless olive drab enamel or forest green (camouflage) enamel for M201 warhead sections. Different shades of paint are permitted provided specification requirements are met. Use pretreatment and primer on exposed metal. When CARC is used, apply epoxy primer, specification MIL-P-23377 (Class 1 or 2 only).

b. If warhead section requires extensive painting or remarking, return it to support unit.

3-12. Cable Connector 1A1J1 at Station 100

CAUTION

TO PREVENT POSSIBLE ELECTROSTATIC DAMAGE TO THE WARHEAD SECTION FUZE, THE CONNECTOR PINS MUST NOT BE TOUCHED, EXCEPT WITH A NONCONDUCTING NONMETALLIC TOOL OR THROUGH THE INSULATED HANDLES OF THE AUTHORIZED SMOOTH-JAW NEEDLENOSE PLIERS.

a. Carefully straighten bent electrical connector pin(s) using smooth-jaw needle-nose pliers.

b. Pins may be straightened without regard to number bent, providing correct mating of connector results.

c. Reject warhead section if pins are broken or missing.

d. Replace protective cover and flag assembly (11, fig. C-2) if defective or missing.

3-13. Shipping and Storage Container M544

a. T-Head Bolls.

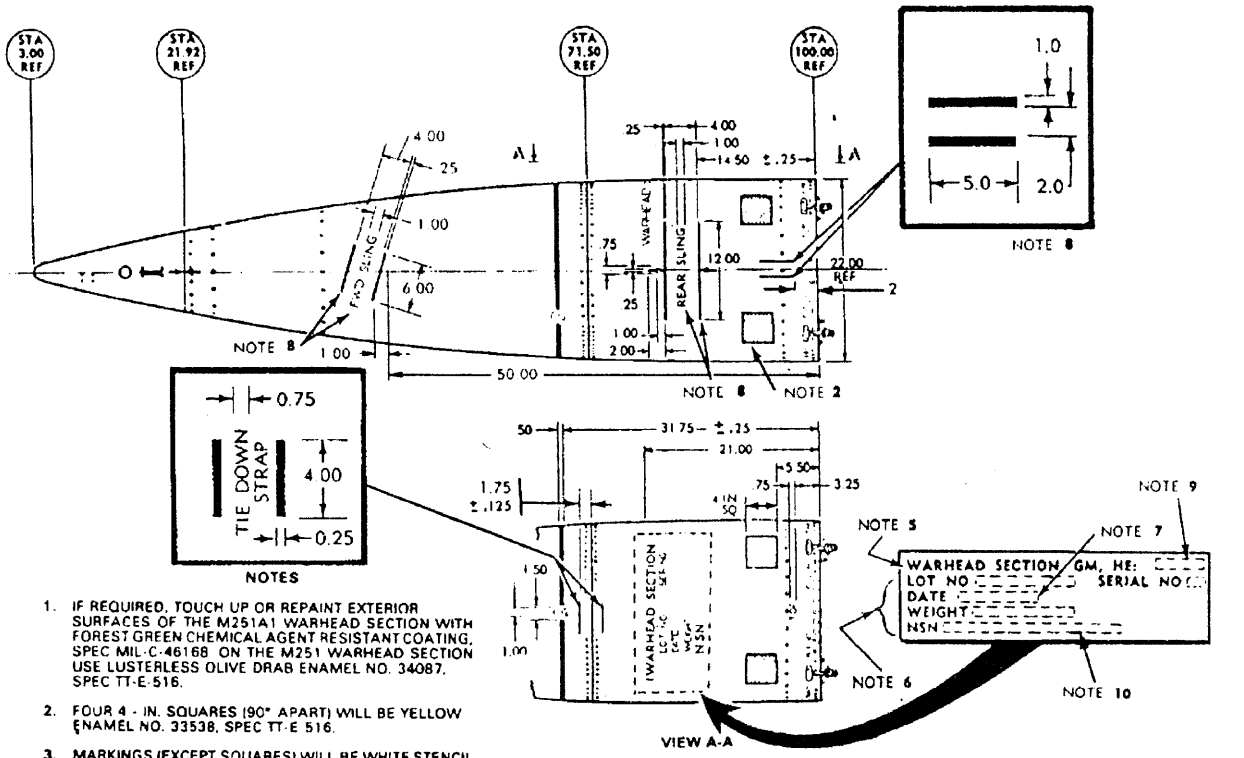
(1) Removal. Using H4244 wrench and a 3/4-inch socket wrench, remove hexagon nut (7, fig. C-3) and lock washer from T-head bolt (9, fig. C-3) and remove bolt.

(2) Installation. Install T-head bolt in base assembly and secure with lock washer and hexagon nut. Torque to 35 ± 5 foot-pound. Apply a thin coat of primer (TT-P-664) to exposed threads of T-head bolts.

b. Wood Runner (Skid). Repair skid by driving corrugated fasteners crosswise to the splits, spaced not less than 1-inch apart along the length of the split. Do not use fasteners on the bottom of the skid. This could cause sparks when container is moved.

c. Spring Tension Clips. Using flat-blade screwdriver, secure clip (16, fig. C-3) to container with machine screw, flat washer, and hexagon self-locking nut.

d. Alignment (Guide) Pins. Straighten bent pins by carefully tapping with a hammer.



NOTES

1. IF REQUIRED, TOUCH UP OR REPAINT EXTERIOR SURFACES OF THE M251A1 WARHEAD SECTION WITH FOREST GREEN CHEMICAL AGENT RESISTANT COATING, SPEC MIL-C-46168. ON THE M251 WARHEAD SECTION USE LUSTERLESS OLIVE DRAB ENAMEL NO. 34087, SPEC TT-E-516.
2. FOUR 4 - IN. SQUARES (90° APART) WILL BE YELLOW ENAMEL NO. 33538, SPEC TT-E 516.
3. MARKINGS (EXCEPT SQUARES) WILL BE WHITE STENCIL INK NO. 37875, SPEC TT-I-1795.
4. ALL DIMENSIONS ARE IN INCHES AND ARE APPROXIMATE EXCEPT WHERE TOLERANCES ARE SHOWN.
5. MARKING TO BE 1-INCH HIGH.
6. MARKING TO BE 3/4-INCH HIGH. INSERT LOT NUMBER, SERIAL NUMBER, AND DATE, AS APPLICABLE. INSERT WEIGHT, IF UNKNOWN, USE 1000. USE ADDITIONAL LINES IF REQUIRED.
7. WARHEAD SECTIONS MARKED PER MIL-STD-1168A DO NOT HAVE SEPARATE LINE FOR DATE. THIS INFORMATION INCLUDED IN LOT NO.
8. LOCATE MARKINGS 180° APART.
9. INSERT M251 OR M251A1 AS APPLICABLE.
10. INSERT 1336-00-123-8072 FOR M251 WARHEAD SECTION OR INSERT 1336-01-095-0131 FOR M251A1 WARHEAD SECTION.

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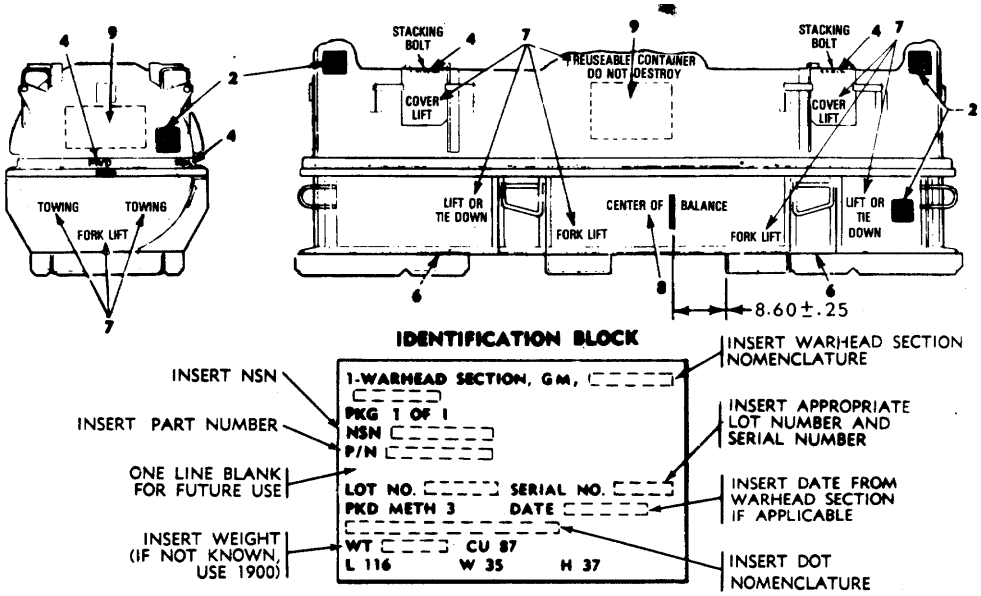
Figure 3-3. Warhead section M251 and M251A1 - painting and marking.



MARKING TABLE

NOMENCLATURE	NSN	PART NUMBER	DOT NOMENCLATURE	COLOR OF SQUARE (NOTE 2)
WARHEAD SECTION, GM, HE: M251	1336-00-123-8072	9284000	EXPLOSIVE PROJECTILE	YELLOW 33538
WARHEAD SECTION, GM, TRAINING: M201	6920-00-933-2532	9215598	(NONE)	BRONZE 17043
WARHEAD SECTION, GM, HE: M251A1	1336-01-095-0131	9332549	EXPLOSIVE PROJECTILE	YELLOW 33538

NOTES:

1. IF REQUIRED, TOUCH UP OR REPAINT EXTERIOR OF THE M201 OR M251 WARHEAD SECTION CONTAINERS WITH LUSTERLESS OLIVE DRAB ENAMEL 34087, SPEC TT-E-516, OR FOREST GREEN (CAMOUFLAGE) ENAMEL, SPEC MIL-E-52798. FOR THE M251A1 WARHEAD SECTION CONTAINER USE FOREST GREEN CHEMICAL AGENT RESISTANT COATING, SPEC MIL-C-46168.
2. POSITION 4-INCH SQUARE DIAGONALLY OPPOSITE, APPROXIMATELY AS SHOWN (4 EACH) AND ON LONGITUDINAL CENTER LINE (2 EACH) USING ENAMEL TT-E-516 OR TT-E-488, COLOR IN ACCORDANCE WITH MARKING TABLE.NO SQUARES FOR EMPTY CONTAINER
3. ALL OTHER MARKINGS TO BE MADE WITH STENCIL INK WHITE 37875 FOR OLIVE DRAB CONTAINERS AND BLACK ENAMEL MIL-E-52798 FOR FOREST GREEN CONTAINERS. ALL MARKING LOCATIONS ARE APPROXIMATE, EXCEPT CENTER OF BALANCE BAR SHALL BE EQUIDISTANT FROM FORK LIFT SLOTS.
4. USING 1/2-INCH HIGH LETTERS, MARK "**FWD**" 2 PLACES AS SHOWN. "**STACKING BOLT**" 4 PLACES ON STACKING BRACKETS: AND "**SEAL**" 2 PLACES OPPOSITE CORNERS
5. DELETED
6. USING 1/2-INCH HIGH LETTERS, MARK "**M599 M544 M511**" 4 PLACES NEAR INNER STACKING BOLT HOLES.
7. USING 1-INCH HIGH LETTERS, MARK "**COVER LIFT**" 4 PLACES ON STACKING BRACKETS, "**LIFT OR TIE DOWN**" 4 PLACES OUTSIDE OF LOWER LIFT HANDLES: "**FORK LIFT**" 6 PLACES, 2 ON EACH SIDE ABOVE FORK LIFT SLOTS FAR ENOUGH UP TO BE EASILY READ AND 1 ON EACH END; "**TOWING**" 4 PLACES, 2 ON EACH END; "**REUSEABLE CONTAINER DO NOT DESTROY**" 1 PLACE ON TOP.
8. USING 1-INCH HIGH LETTERS, MARK "**CENTER OF BALANCE**" 2 PLACES, 1 ON EACH SIDE. BAR MEASURES 1 INCH X 6 INCHES.ELIMINATE MARKING, IF CONTAINER IS EMPTY.
9. WITH WARHEAD SECTION PACKED,REFER TO IDENTIFICATION BLOCK AND MARKING TABLE. ENTIRE DETAIL IS IN 1/2-INCH LETTERS. WHEN CONTAINER IS EMPTY IGNORE DETAIL AND MARK **EMPTY** IN 1-INCH HIGH LETTERS FOLLOWED BY "**WT 900 CU87**" "**L116 W35 H37**" IN 1/2-INCH HIGH LETTERS IN PLACE OF THE DETAIL.

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Figure 3-4. Shipping and storage containerM544-painting and marking.

e. Painting and Marking.

(1) Touch up paint and/or markings, if necessary, in accordance with instructions given in figure 3-4. Restore original type and color paint unless otherwise directed. Use forest green chemical agent resistant coating for containers with M251A1 warhead sections. Use lusterless olive drab enamel or forest green (camouflage) enamel for containers with M251 or M201 warhead sections. Different shades of paint are permissible, provided specification requirements are met. Use pretreatment and primer on exposed metal. When chemical agent resistant coating is used, apply epoxy primer, specification MIL-P-52192. Apply a thin coat of primer (TTP-664) to exposed threads of T-head bolts.

(2) If shipping and storage container requires extensive repainting and remarking, return container to support unit.

3-14. Cleaning

Remove foreign material in accordance with table 3-1.

Table 3-1. Cleaning Foreign Material

Foreign material	Cleaning method
Rust and corrosion	Use abrasive cloth, paper, or wire brush until bright metal surfaces are exposed. Prevent particles from entering interior areas. Wipe surfaces with a clean cloth moistened with cleaning compound.
Grease and oil on unpainted surfaces.	Use a clean cloth moistened with cleaning compound.
Mud, salt water, grease or oil on painted surfaces.	Use a soft clean cloth, moistened with detergent and water. Avoid getting water or detergent in interior areas.
Fungus	Use a clean cloth moistened with alcohol and water solution (60 to 70 percent alcohol).

3-15. Strap Assembly and Saddle Cushion

a. General. Replace missing or unserviceable rubber cushions on strap assembly and suspension frame saddle.

b. Removal. Strip rubber cushions from strap assembly and suspension frame saddle. Remove old adhesive, if present, with toluene. Clean surfaces and refinish surfaces as required.

c. Installation. Place serviceable rubber cushion on strap assembly in proper position (see fig. 1-4). Place serviceable rubber cushion on suspension frame saddle in proper position (see fig. 1-4).

CHAPTER 4
SHIPMENT AND STORAGE

4-1. Shipment
Shipment of warhead sections will be In accordance with TM 9-1300-206.

4-2. Storage
Storage of warhead sections will be in accordance with TM 9-1300-206. In addition, the warhead section in containers may be stacked not more than four high and will be monitored in accordance with paragraph 4-3.

NOTE

M480 and XM1480E1 container bases (Caster Mounted) may be used as wheeled storage platforms for the M544 containers, if available.

4-3. Storage Monitoring
a. General

(1) monitoring is a periodic inspection of major items in stockpile or operational storage to determine if containers have been damaged and if markings are legible:

(2) Every 12 months, DA Form 2409 (Equipment Maintenance Log (Consolidated) or other applicable documents will be annotated to indicate the date and results of each storage monitoring.

(3) Storage monitoring will also be performed whenever a warhead section has been in transit. However, a storage inspection in accordance with paragraph 4-4, may also be performed at the discretion of the unit commander.

WARNING

Any bombs or grenades accidentally released from the warhead section will not be handled or moved under circumstances. Personnel win evacuate the area to a covered position not less than 500 meters away and notify Explosive Ordnance Disposal or other qualified personnel.

b. Storage Monitoring Procedures. Examine exterior of shipping and storage container for damage and illegible markings in accordance with table 4-2. Perform maintenance in accordance with chapter 3 or notify higher authority if repair is not within capability of the unit. If major defects are found, perform storage inspection (pare 4-4). If damage is found which could affect warhead section, notify Support Unit.

4-4. Storage Inspection
a. General

(1) Storage Inspection once a year or on special occasions, is a continuing program of inspection to ensure that warhead sections and their components will function within specified requirements.

(2) An equal number of samples will be selected from upper and lower tiers when containers are stored in this fashion.

(3) Controls will be established (i.e. lot and serial number recording) to assure that same warhead section is not utilized as a sample during subsequent storage inspections until an warhead sections in storage location have been subjected to this inspection.

b. Definitions

(1) *Critical defect.* A defect which could result in hazardous or unsafe conditions for individuals using or maintaining the warhead section, or which could prevent tactical function of the warhead section

(2) *Major defect.* A defect other than critical which could result in failure or in significant reduction of the intended performance of the warhead section.

(3) *Minor defect.* A defect which could not significantly reduce the intended performance of the warhead section and is not considered essential to repair. but only desirable to repair except that minor corrosion should be removed as soon as possible.

(4) *Visual inspection.* To take note of listed defects and any other obvious abnormalities (e.g., deformation, missing part, etc.).

(5) *Manual inspection.* To inspect by moving the part by hand to determine presence of listed defects (e.g.. looseness. Stiffness, weakness, etc.).

(6) *Gage inspection.* To check with a measuring instrument or a standard mating piece to determine whether size is acceptable in specified areas.

(7) *Inspection lot.* Inspection lots will be formed by placing serial numbered warhead sections hand into homogeneous lots, not to exceed 100 warhead sections. Lots will consist of items with identical stock numbers, manufactured unde similar conditions and stored under similar conditions and time periods.

c. Procedures

(1) Sample size and acceptance criteria shall be per table 4-1.

(2) Inspection shall be in accordance with classification of defects and inspection method used in table 4-2.

WARNING

Do not stand under suspended warhead section.

(3) Instructions in paragraph 2-8 will be used for removal of warhead sections from containers. Lower part of warhead section will be inspected while the warhead section is suspended. Warhead section will then be placed on a Lance Maintenance Stand (fig. C-7) prior to inspecting upper portion of warhead section and interior of container.

CAUTION

Do not use excessive force when opening or closing ogive, as damage may result to the telescope rod. The ogive clamping catches may strike and damage the fuze if proper procedures are not followed. Do not drop or force ogive into the open position.

(4) Open ogive by depressing two pushbuttons. Catch levers will swing out. If this does not occur, use a screwdriver to pry catch levers open. Slide ogive forward keeping arrows aligned. DO NOT force ogive to turn or twist while sliding. When ogive is fully extended. a guide pin on the telescope tube will reach a stop. At this position the guide pin aligns with a slot and will allow the ogive to rotate downward in a counterclockwise direction to the open position. Check the SAFE/ARM window of the M811 fuze in the M251 and M251A1 warhead sections to assure green is showing (green with a white letter "S" on later production fuzes) (fig. 1-3).

WARNING

(M251 AND M251A1 ONLY)

If red (red with white letter "A" on later production fuzes) is showing In EAFE/ARM monitor window of fuze M811 (fig. 1-3) indicating that fuze Is partially armed, do not continue inspection Personnel will evacuate the area to a covered position not less than 500 meters away and notify Explosive Ordnance Disposal personnel.

CAUTION

Open knob-locking latch on fuze carefully to prevent damage to latch or to Its pins

(5) Turn all six knobs on fuze to ensure freedom of movement. Leave knobs in following positions.

(a) Event: 000.0.

(b) Arm: 80.

(c) SECO: OFF.

CAUTION

Do not use excessive force when opening or closing ogive, as damage may result to the telescope rod. The ogive clamping catches may strike and damage the fuze if proper procedures are not followed. Do not drop or force ogive into the open position.

(6) Close knob-locking latch on fuze. Rotate ogive clockwise to align telescope tube guide pin with lengthwise slot which will allow ogive to slide aft. Slide ogive aft while keeping arrow painted on ogive aligned with arrow on warhead section until closed. Depress two catch clamp levers. Clamps will engage clevises (fig. 3-1) and lock ogive to fuze, ring assembly. If ogive cannot be locked, or is too loose, refer to paragraph 3-6.d for adjustment of clevises. There should be no lateral movement of ogive.

(7) Repackage warhead section into container in accordance with paragraph 2-14.

d. Disposition Instructions.

(1) Serviceable samples will be returned to the parent lot.

(2) Items found with critical defects will be turned over to Explosive Ordnance Disposal personnel immediately. Report in accordance with paragraphs 1-2c and f.

(3) All items found with major defects will be repaired before being returned to the lot, or reported to higher authority if repair is not within the capability of the unit.

(4) All items found with minor defects should be repaired before being returned to the lot, but may be used in combat If repair is not immediately practicable

Table 4-1. Sample Sizes and Acceptance Number for Defectives

Number of warhead sections in lot	Major Defects				Minor defects (note 4)
	Sample size	Critical defects (Note 1	A (Notes 2, 4)	B (Notes 3, 4, 5)	
2-8	2	0	0	0	1
9-15	3	0	0	0	1
16-25	5	0	0	0	1
25-50	8	0	0	1	2
51-90	13	0	1	1	3
91-100	20	0	1	2	5

NOTES:
1. If this criteria is exceeded, a 100% inspection of the lot shall be made for critical defects.
2. Major A acceptance number is the maximum number of mechanical (Manual or gage) or electrical inspection failures permitted in the sample, which will cause missile failure.
3. Major B acceptance number is the maximum number of visual inspection defectives permitted in the sample which would cause missile failure or significantly reduce the useability of the warhead section.
4. If this criteria is exceeded, a second sample of the same size, shall be drawn to inspect only for those defects already found. If this second sample is also rejected, a 100% inspection shall be performed for these defects only.
5. If major corrosion is initially found, 100% inspection of the lot shall be performed for this defect.
6. Criteria in the table applies to inspection by class (all defects in a defect category combined) and not to individual characteristics.

Table 4-2. Classification of Material Defects for Storage Inspection

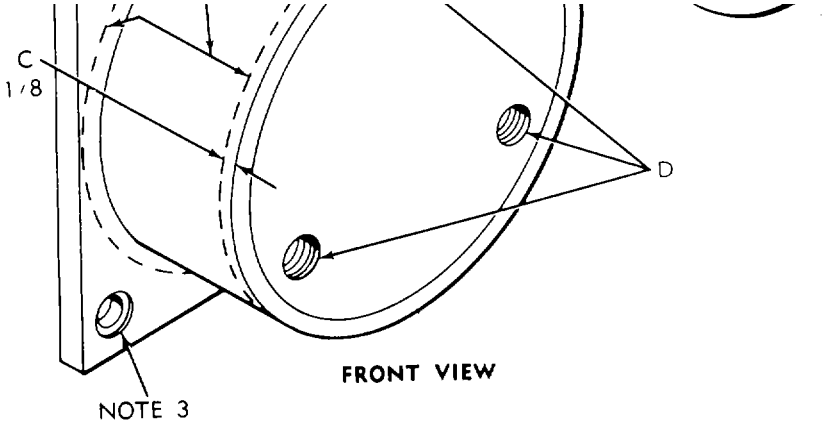
Component	Category	Defect	Method of Inspection
Container Exterior	Minor	Lead seals not in place or broken.	Visual
	Major	Cover lift bars; Stacking brackets cracked broken or loose.	Visual/Manual
	Major	Container lift bars cracked, broken or loose.	Visual/Manual
	Major	Forklifts slots or forklift handling brackets unserviceable.	Visual
	Minor	Cracks up to 5 in. long which extend through wooden runner.	Visual/gage
	Major	Cracks more than 5 in. long which extend through wooden runner	Visual/gage
	Major	Corrugated fasteners on bottom surface of wooden runner.	Visual
	Major	Wooden runner broken or worn more than one-third of load bearing surface.	Visual
	Major	Wooden runner loose or improperly attached.	Visual/Manual
	Major	Stacking bolts missing/unserviceable or not installed in stowed position.	Visual
	Major	T-head bolts missing/unserviceable.	Visual
	Minor	T-head bolt threads not covered with thin protective coating of primer TT-P-664.	Visual
Container Exterior and Interior	Minor	Spring tension clips missing/unserviceable	Visual/Manual
	Major	Markings not in agreement with figure 3-4 or illegible.	Visual
	Major	Corrosion causing pitting and perforations.	Visual
	Minor	Corrosion which can be removed.	Visual
	Major	Peeling or inadequate paint.	Visual
	Minor	Scratches.	Visual
	Minor	Fungus or foreign material	Visual
	Major	Punctures. Dents of any size which impair structural integrity of container.	Visual
	Major	Dents greater than 1/2-in. in depth and greater than 10 sq in. in area	Visual/gage
	Major	Drain holes clogged; water in container	Visual
Container Interior	Minor	Guide pins bent/missing/broken.	Visual
	Major	Forward retaining strap; cushions; chain/safety pin missing or unserviceable.	Visual/Manual
	Major	Suspension frame shear mounts/attaching hardware unserviceable	Figure 4-1
	Major	Aft support plate loose.	Visual/Manual
Warhead Sections M251 and M251A1	Critical	Red (red with white letter “A” on later production fuzes) shows in fuze safe/arm monitor window.	Visual
	Critical	Punctures or damage exposing interior cord; boosters; bomb or grenades.	Visual
	Minor	Fuze lead wire seals missing/broken	Visual
	Table 4-3	RF gasket, table 4-3	Table 4-3

Table 4-2. Classification of Material Defects for Storage Inspection - Continued

Component	Category	Defect	Method of Inspection
Warhead Sections M251, M251A1, and M201	Major	Dents in ogive	Visual
	Major	Ogive loose/clamping catches or clevises unserviceable.	Visual/Manual
	Major	Fuze knob cover and latch assembly damaged.	Visual/Manual
	Major	Fuze damaged; dials stuck.	Visual/Manual
	Major	Fuze loose.	Visual/Manual
	Minor	Fuze settings not on Event: 000.0. ARM: 80, SECO: OFF.	Visual
	Major	Markings do not agree with fig 3-3 or 5-1, or illegible.	Visual
	Minor	Fungus or foreign material.	Visual
	Minor	Corrosion which can be removed.	Visual
	Major	Dents in excess of 3/16-in. deep or 6-in. long. Punctures which are not critical.	Visual/gage
	Major	Peeling or inadequate paint.	Visual
	Minor	Scratches.	Visual
	Major	Swing-bolt locks unserviceable/loose/missing.	Visual/Manual
	Major	Swing-bolts unserviceable/difficult to move/swing too freely.	Manual
	Major	Bulkhead punctured/deformed	Visual
	Major	Cable connector unserviceable/flag and cover missing.	Visual
	Major	Headless shoulder pins (alignment and shoulder pins) loose; missing/unserviceable.	Visual/Manual
	Major	Warhead section visibly out of concentricity.	Visual
Warhead Section in Container	Major	Swing bolts not correctly placed in support plate slots and/or torqued.	Visual/Manual

Table 4-3. Inspection Requirements for RF Gasket

Category	Defect	Method of Inspection
Minor	Foreign material.	Visual
Major	Loose or improperly installed.	Visual/Manual
Major	Gouged: cut from outer edge to inner edge.	Visual
Major	Missing.	Visual
Major	Wire separated from rubber.	Visual
Major	Ends separated by more than 1/4 inch.	Visual/gage



CAUTION

VISUAL INSPECTION WILL BE PERFORMED. NO PROBING OR PHYSICAL PRESSURE EITHER BY FINGER PRESSURE OR WITH A TOOL WILL BE APPLIED WHIL CONDUCTING INSPECTION, SINCE THIS CAN INFLICT DAMAGE TO THE MOUNT.

NOTES:.

1. MOUNTS SHALL NOT BE REMOVED SOLELY FOR INSPECTION PURPOSES.
2. AREA D WILL BE INSPECTED ONLY WHEN DISASSEMBLY OF RESILIENT MOUNTS IS REQUIRED.
3. ANY DAMAGE AT MOUNTING HOLE AREAS IS NOT CAUSE FOR REJECTION.
4. ALL DIMENSIONS SHOWN ARE IN INCHES AND ARE APPROXIMATE.
5. DELETED
6. MOLD INDENTATIONS OR PROJECTIONS ARE NOT CAUSE FOR REJECTION.

INSPECTION CRITERIA FOR RESILENT MOUNTS		
DEFECT	AREA	ACTION
HOLES, CUTS, GOUGES, TEARS AND PUNCTURES	A	REJECT IF METAL PLATE IS EXPOSED AND THERE IS VISIVBLE EVIDENCE OF CORROSION
	B	REJECT (SEE NOTE 6)
	C	REJECT IF WITHIN 1/8 INCH OF EDGE AND METAL PLATE EXPOSED
STRIPPED THREADS	D	REJECT

Figure 4-1. Inspection requirements for resilient mounts.

CHAPTER 5

TRAINING GUIDED MISSILE WARHEAD

SECTION: M201

Section I. INTRODUCTION

5-1. Scope

a. This section contains information and instructions pertaining to the M201 training warhead section as applicable to operation and to organizational maintenance.

b. Instructions for preparation of applicable forms, records, and reports, and reporting of equipment manual improvements are contained in paragraph 1-2.

5-2. Description and Data

a. General. The training guided missile warhead section M201 is a ground handling training warhead section designed to simulate the HE warhead sections M251 and M251A1 in external appearance, fuzing, fuzing access, and prefire procedures. It provides the using troops with experience in field handling prefiring procedures of the HE warhead section.

b. Description. The warhead section is a completely inert item and consists of the following components:

(1) Skin and structure.

(2) Fuze M816.

(3) Ballast assembly.

The warhead section is an exact duplicate of the HE warhead section except that the HE bomb or grenade load is replaced by ballast and the HE operational M811 fuze is replaced by the inert, dummy fuze M816.

c. Training Guided Missile Fuze M816.

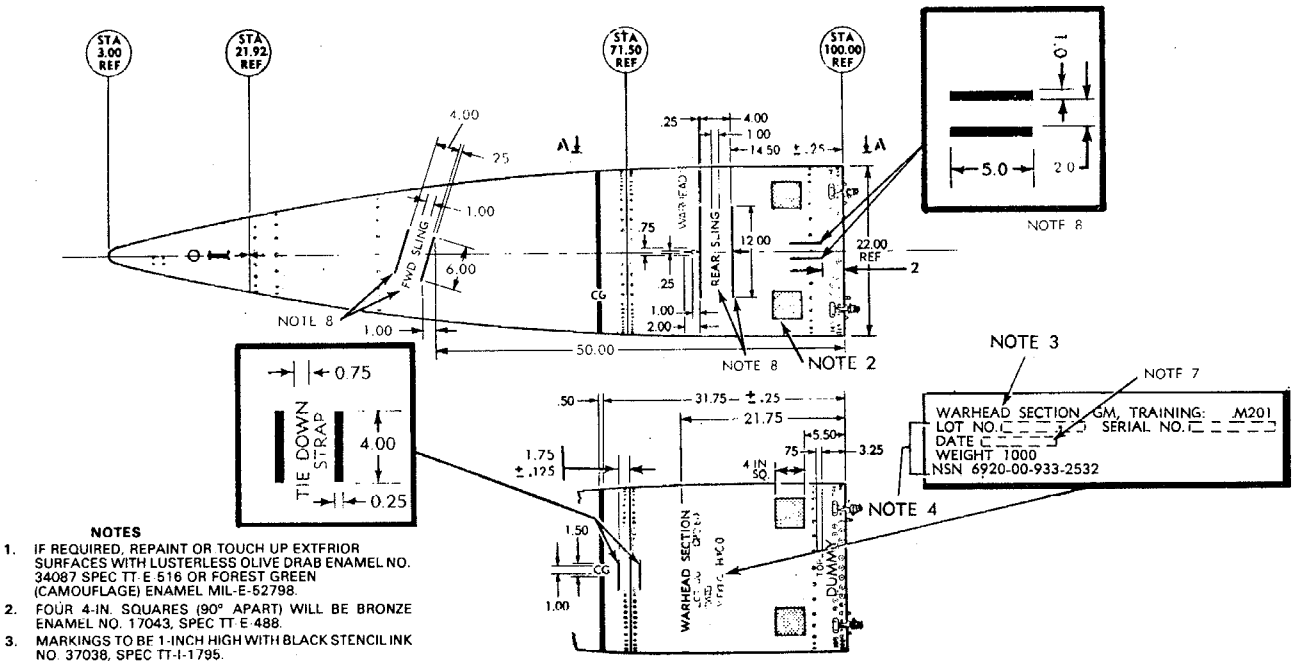
(1) This fuze is an inert dummy fuze designed to simulate the precision, electronic fuze M811 in appearance (fig 1-3) and prefire operations. The fuze is bolted to the fuze ring at station 21 in the warhead section and is accessible through a retractable ogive.

(2) The settings on the fuze M816 are identical to those on the tactical M811 fuze. Refer to paragraph 1-5.

(3) There is a permanent green flag in the SAFE/ARM monitor window on the M816 fuze. Since the fuze is an inert dummy, it cannot be armed.

d. Painting and Marking.

(1) Warhead section (fig 5-1). The warhead section is painted with either olive-drab or forest green (camouflage) enamel Item nomenclature is I stenciled on the top of the warhead section along with lot number, serial number, loading date, weight, and NSN in black stencil ink at a location approximately between the rear sling strap location markings. Four, 4-inch bronze squares are painted around the circumference of the warhead section 90° apart at stations 90.5 through 94.5. These colorcoded squares indicate that the item is a training warhead section. All remaining markings are white for olive drab warhead sections and black for forest green warhead sections. Matchmarks to assure correct locking of the ogive to the forward bulkhead are painted at the sides of the warhead section. Also, on the sides of the warhead section, pairs of parallel strips are painted near the aft end. These are present to identify the M201 as a "heavy" warhead section, which, when in a mated configuration, will require M30 control surfaces (fins) with the same markings that are attached to the training missile main assemblage. At station 68, the letters CG are stenciled at the top and 120° apart around the warhead section. These are jointed by a 1/2-inch stripe. Forward and aft sling strap locations are indicated by two sets of two stripes on each side of the warhead section. The location and dimensions of these strap marks are shown in figure 5-1. "REAR SLING" and "FWD SLING" are stenciled between the aft and forward pairs of stripes, respectively. At station 71.5 on top of the warhead section, two parallel stripes with "TIE DOWN STRAP" are marked for use in transportation of mated missiles. At the top of the warhead section, at station 97, the word "Top" is stenciled in 3/-inch letters. In addition to markings, the word "Dummy" is stamped into the skin near station 100 at the top of the warhead section.



NOTES

1. IF REQUIRED, REPAINT OR TOUCH UP EXTERIOR SURFACES WITH LUSTERLESS OLIVE DRAB ENAMEL NO. 34087 SPEC TT-E-516 OR FOREST GREEN (CAMOUFLAGE) ENAMEL MIL-E-52798.
2. FOUR 4-IN. SQUARES (90° APART) WILL BE BRONZE ENAMEL NO. 17043, SPEC TT-E-488.
3. MARKINGS TO BE 1-INCH HIGH WITH BLACK STENCIL INK NO. 37038, SPEC TT-I-1795.
4. MARKINGS TO BE 3/4-INCH HIGH WITH BLACK STENCIL INK NO. 37038 SPEC TT-I-1795. USE ADDITIONAL LINES IF REQUIRED.
5. OTHER MARKINGS TO BE WHITE STENCIL INK NO. 37875 SPEC TT-I-1795 FOR OLIVE DRAB WARHEAD SECTIONS AND BLACK ENAMEL MIL-E-52798 FOR FOREST GREEN WARHEAD SECTIONS.
6. ALL DIMENSIONS ARE IN INCHES AND ARE APPROXIMATE EXCEPT WHERE TOLERANCES ARE SHOWN.
7. WARHEAD SECTIONS MARKED PER MIL-STD-1168A DO NOT HAVE SEPARATE LINE FOR DATE. THIS INFORMATION INCLUDED IN LOT NO.
8. LOCATE MARKINGS 180° APART.

AR 100468-D

Figure 5-1. Warhead section M201 - painting and marking.

(2) Fuze M816. The fuze is painted olive drab. The word "Inert" is painted in white letters on the side of the fuze opposite the dials and I-inch diameter bronze color patches are painted on each side of the fuze.

(3) Shipping and storage container M544 (fig 3-4). The container is painted with either olive drab or forest green (camouflage) enamel. Nomenclature, serial number, lot number, part number, NSN and other related information are stenciled with white ink on olive drab containers and black camouflage enamel on forest green containers. Six, 4-inch bronze color-coded squares are painted on the container.

5-3. Handling and Use

a. General. Safety requirements appropriate for storage and handling of the HE warhead sections M251 and M251A1 will also apply to the training warhead section M201. While the M201 warhead section is inert and will not burn or detonate, the warhead section's function as a training item dictates the precautions involving sparks, flames, electric tools, and motors be observed to the fullest extent practicable.

b. Inspections. Inspections required for the M201 warhead section are listed in paragraphs 2-3 through 2-7.

c. Unpackaging. Remove warhead section from container in accordance with paragraph 2-8. It is advisable to loosen nuts on underside of container Thread bolts when feasible to save wear and tear on the bolts and container flange.

d. Mating, Demating, Repackaging. Mate, demate, and repackage warhead section in accordance with paragraphs 2-9, 2-13 and 2-14.

5-4. Organizational Maintenance

Except for procedures in paragraphs that follow, training maintenance procedures are identical with those applicable to the M251 and M251A1 warhead sections.

a. Training Fuze M816. There are no organizational maintenance procedures applicable to fuze M816, other than repair and replacement of the knob cover and latch assembly (para 3-7.b. and 3-7.c.).

b. Painting and Marking. Touch up warhead section paint and/or markings in accordance with instructions in figure 5-1. Some M201 warhead sections and containers are painted olive drab; others are painted forest green (camouflage). When touching up, restore original color. Different shades of paint are permitted provided specification requirements are met. If warhead section requires extensive painting or re-marking return it to support unit.

c. Ogive. Replacement ogive may be painted olive drab or forest green. Repaint to match M201 warhead section, if necessary, and install per paragraph 3-6.

d. Shipping and Storage Container M544. Touch up container paint and/or markings in accordance with instructions in figure 3-4. Different shades of paint are permitted provided specification requirements are met. If container requires extensive repainting and re-marking, return to support unit.

5-5. Shipment and Storage

Shipment, storage, storage monitoring, and storage inspection is conducted in accordance with chapter 4.

5-6. Tabulated Data

Warhead Section M201:

Warhead Section M201:

Weight (with fuze)	1000 lb
Length	97 in
Diameter (max)	22 in
Fuze M816	1 required
Net explosive weight	None
Operational temperature range	-25°Fto 140°F
Storage Temperature range	-65°F to 155°F

Fuze M816:

Length	7.25 in
Width	5.00 in
Height	5.50 in
Weight	3.5 lb (Earlier fuzes weigh 7 lb)

Event setting range:

Maximum	199.9 sec
Minimum	11.1 sec
Setting type	Digital read-out (0.1 sec, increments)
Activation	Not applicable
Explosives	None

Quantity-distance class:

Warhead section M201	None
Training fuze M816	None

Storage compatibility group:

Warhead section M201	None
Training fuze M816	None
DOT shipping designation	Ammunition nonexplosive (exempt from markings)
DOT hazard class	None

APPENDIX A

REFERENCES

A-1. Publications Indexes

The following publication indexes should be consulted frequently for the latest changes or revisions of references given in this appendix and for new publications relating to the material covered in this manual:
Consolidated Index of Army Publications and Blank Forms ..... DA Pam 310-1
The Army Maintenance Management System (TAMMS) ..... DA Pam 738-750

A-2. Technical Manuals

Use and Care of Handtools and Measuring Tools ..... TM 9-243
Ammunition and Explosives Standards ..... TM 9-1300-206
Procedures for Destruction of Improved Conventional Munitions (ICM) to Prevent Enemy Use ..... TM 43-0002-33
General Support Maintenance Manual (Including Repair Parts and Special Tools List) Warhead Section, Guided Missile: High Explosive, M251 (NSN 1336-00-123-8072) and M251A1 (NSN 1336-01-095-0131) and Warhead Section, Guided Missile: Training M201 (NSN 6920-00-933-2532) ..... TM 9-1336-489-40&P
Lance Firing Operations ..... TM 9-1425-485-10-2
Operator and Organizational Maintenance Manual M5 MMA Ammunition ..... TM 9-1410-485-12
Tool Kit, Guided Missile Maintenance, Organizational Special Weapons, LANCE (NSN 5180-00-160-8572) line item (W42993) ..... SC 5180-95-CL-A65
Tool Kit, Guided Missile: Missile Mating, LANCE (NSN 4935-009307553) line item (W41617) ..... SC 4935-96-CL-A67

A-3. Army Regulations

Accident Reporting and Records..... AR 385-40
Malfunctions Involving Ammunition and Explosives ..... AR 75-1
Policies and Procedures for Firing Ammunition for Training, Target Practice and Combat ..... AR 385-63
Reporting of Transportation Discrepancies in Shipments ..... AR 55-38
Reporting of Item and Packaging Discrepancies ..... AR 735-11-2

A-4. Forms

Accident Investigation Report ..... DA Form 285
Ammunition Condition Report ..... DA Form 2415
Discrepancy in Shipment Report ..... SF 361
Equipment Maintenance Log (Consolidated) ..... DA Form 2409
Quality Deficiency Report ..... SF 368
Recommended Changes to Publications and Blank Forms ..... DA Form 2028
Report of Discrepancy ..... SF 364
Ammunition Data Card ..... DD Form 1650

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. General

a. The Maintenance Allocation Chart designates responsibility for the performance of maintenance functions.

b. Only the lowest level of maintenance authorized to perform a maintenance function is indicated.

c. A maintenance function assigned a maintenance level will automatically be authorized to be performed at any higher maintenance level.

d. A maintenance function that cannot be performed at the assigned level of maintenance for any reason may be evacuated to the next higher maintenance organization. Higher maintenance levels will perform the maintenance functions of lower maintenance levels when required or directed by the appropriate commander.

B-2. Definitions of Maintenance Functions

The implementation of maintenance tasks will be consistent with the assigned maintenance in accordance with the following definitions.

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition.

(1) *Unpack*. To remove item from packing box for service or when required for the performance of other maintenance operations.

(2) *Repack.* To return item to packing box after service and other maintenance operations.

(3) *Clean.* To rid the item of contamination.

(4) *Touch up.* To spot paint scratched or blistered surfaces.

(5) *Mark.* To restore obliterated identification.

d. Install. To emplace, seat or fix into position an item in a manner to allow the proper functioning of the equipment.

e. Adjust. To maintain within prescribed limits by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

f. Renovate. To restore item to serviceable condition.

(1) *Paint.* To repaint the entire item.

(2) *Repair.* To restore serviceability to an item by correcting specific damage, fault, malfunction, or failure through the application of maintenance services or other maintenance actions.

(3) *Replace*. To substitute a serviceable component in a manner to allow the proper functioning of equipment.

B-3. Explanation of Format

Purpose and use of the format are as follows:

a. Column 1-Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, and subassemblies, with the next higher assembly.

b. Column 2-Functional Group. Column 2 lists the next higher assembly group and item names of components, assemblies, subassemblies, and modules within the group for which maintenance is authorized.

c. Column 3-Maintenance Function. Column 3 lists the maintenance functions defined in B-2 above. Each maintenance function required for an item is specified by the symbol among those listed in d below which indicates the level responsible for the required maintenance. Under the symbol is listed an appropriate work measurement time value.

d. Use of Symbols. The following symbols shall be used to prescribe work function responsibility.

C-Operator/Crew
O-Organization
F-Direct Support
H-General Support
D-Depot

e. Work Measurement Time. The active repair time (man-hours) required to perform the maintenance function is included directly below the symbol identifying the category of maintenance.

f. Column 4-Tools and Equipment. This column specifies, by code, those tools and test equipment required to perform the designated function.

g. Column 5-Remarks. Self-explanatory.

Section II. MAINTENANCE ALLOCATION CHART FOR HIGH EXPLOSIVE GUIDED MISSILE WARHEAD SECTIONS M251 AND M251A1 AND TRAINING GUIDED MISSILE WARHEAD SECTION M201

(1) GROUP NUMBER	(2) Functional group	(3) Maintenance function												(4) Tools and equipment	(5) Remarks
				SERVICE							RENOVATE				
		INSPECT	TEST	UNPACK	REPACK	CLEAN	TOUCH UP	MARK	INSTALL	ADJUST	PAINT	REPAIR	REPLACE		
	01-a. HIGH EXPLOSIVE GUIDED MISSILE WARHEAD SECTIONS M251 AND M251A1			O 0.2	O 0.2	O 0.3									
	b. TRAINING GUIDED-MISSILE WARHEAD SECTION M201			O 0.2	O 0.2	O 0.3									
0101	a. Guided Missile Fuze M811	C 0.1	D									O 0.8	D		
	b. Guided Missile Fuze M816	C 0.1										O 0.8	H 0.3		
0102	Rocket Ogive	C 0.1					O 0.1	O 0.1		C 0.1	O 0.5		O 0.4		
	Clamping Catch												O 0.3		
0103	Aft Ring Assembly: Swing-Bolt Assembly	O 0.1											O 0.3		
	Spring-Plunger	O 0.1								O 0.2			O 0.2		
	Headless Shoulder Pins	O 0.1								O 0.3			O 0.3		
	Cable Connector	O 0.1										O 0.1			
	Aft RF Seal (M251 and M251AI only)	O 0.1											H 0.3		
0104	Skin Assembly	C 0.1					O 0.1	O 0.5			H 1.0				
0105	Fuze Ring Assembly: Clevis Assembly	O 0.1								O 0.1			O 0.2		
	02-WARHEAD SECTION SHIPPING AND STORAGE CONTAINER M544														
0201	Cover Assembly:	O 0.3				O 0.3	O 0.3	O 0.3			H 2.0	H 4.0			
	Stacking Bracket Components	O 0.1											H 0.4		
	Stacking Bolt Hardware	O 0.1											O 0.2		
0202	Base Assembly	O 0.3				O 0.3	O 0.3	O 0.3			H 2.0	H 4.0			
	Tee-Head Bolts	O 0.2											O 2.0		
	Lifting Bars	O 0.1											H 4.0		
	Spring Tension Clips	O 0.1											O 1.0		
	Skids	O 0.1										O 0.3	H 6.0		
	Guide Pins	O 0.1								O 0.2			H 1.0		

(1) GROUP NUMBER	(2) Functional group	(3) Maintenance function												(4) Tools and equipment	(5) Remarks
				SERVICE							RENOVATE				
		INSPECT	TEST	UNPACK	REPACK	CLEAN	TOUCH UP	MARK	INSTALL	ADJUST	PAINT	REPAIR	REPLACE		
0203	SUSPENSION FRAME ASSEMBLY														
	Strap Assembly	O 0.1											H 0.5		
	Cushions	O 0.1											O 1.0		
	Shear Mounts	O 0.1											H 4.0		

APPENDIX C

ORGANIZATIONAL MAINTENANCE REPAIR PARTS

AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

C-1. Scope

This appendix lists repair parts and special tools required for the performance of organizational maintenance of the warhead section.

C-2. General

This appendix is divided into the following sections:

a. Repair Parts List-Section II. A list of repair parts authorized for the performance of maintenance at the organizational level.

b. Special Tools List-Section III. A list of special tools and equipment authorized for the performance of maintenance at the organizational level.

C-3. Explanation of Columns

The following provides an explanation of columns in sections II and III.

a. Illustration. This column is divided as follows:

(1) *Figure number.* Indicates the figure number of the illustration on which the item is shown.

(2) *Item number.* Indicates the callout number used to reference the item on the illustration.

b. Source, Maintenance, and Recoverability Codes (SMR).

(1) Source codes (first and second positions) indicates the source for the listed items. Source codes are:

Code	*Explanation*
KF	An item of a maintenance kit and not purchased separately. Maintenance kit defined as a kit that provides an item that can be replaced at organizational or intermediate levels of maintenance.
PA	Item procured and stocked for anticipated or known usage.
PG	Item procured and stocked to provide for sustained support for the life of the equipment. It is applied to an item peculiar to the equipment which because of probable discontinuance or shutdown of production facilities would prove uneconomical to reproduce at a later date.
MH	Item to be manufactured or fabricated at the general support maintenance level.
Code	*Explanation*
PE	Support equipment procured and stocked for initial issue or outfitting to specified maintenance repair activities.

(2) Maintenance code consists of two parts-use code (third position) and repair code (fourth position). Use code indicates the lowest maintenance level authorized to remove, replace, and use the listed items. Repair code indicates whether the item is to be repaired and identifies the lowest maintenance level authorized to repair the listed items. Maintenance codes are:

Code	*Explanation*
Use	
O	Support item is removed, replaced, and used at organizational level of maintenance.
Repair	
H	The lowest maintenance level capable of complete repair of the support item is the general support level.
D	The lowest maintenance level capable of complete repair of the support item is depot level.
O	The lowest maintenance level capable of complete repair of the support item is the organizational level.
Z	Nonrepairable support item. No repair is authorized.

(3) Recoverability code (fifth position) indicates the disposition action on unserviceable items. Recoverability codes are:

Code	*Explanation*
Z	Nonrepairable item. When unserviceable, condemn and dispose at the level indicated.
D	Repairable item. When beyond lower level repair capability, return to depot. Condemnation and disposal not authorized below depot level.
O	Repairable item. When uneconomically repairable. condemn and dispose at organizational level.

c. National Stock Number. This column indicates the National stock number assigned to the item and -will be used for requisitioning purposes.

d. Part Number. This column indicates the primary number used by the manufacturer (individual, company, firm, corporation, or government activity), which controls the design characteristics of the item by means-of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

e. Federal Supply Code for Manufacturers (FSCM). This column indicates a 5-digit numeric code used to identify the manufacturer, distributor, Government agency that controls the design characteristics of the item.

f. Description. This column indicates the Federal item name and any additional description of the item required.

g. Unit of Measure (U/M). A two-character alphabetic abbreviation indicating the unit upon which the allowances are based; e.g., ft, ea, pr, etc.

h. Quantity Incorporated in Unit. This column indicates the quantity of item used with or on the equipment.

C-4. How to Locate Repair Parts

When National stock number or reference number is unknown:

a. First. Using the table of contents determine the functional or subfunctional group within which the repair part belongs; i.e., warhead section, rocket fuze, etc. This is necessary since illustrations are prepared for groups and listings are located within the same groups.

b. Second Find the illustration covering the functional or subfunctional group to which the repair part belongs.

c. Third. Identify the repair part on the illustration and note the illustration figure and item number of the repair part.

d. Fourth. Using the repair parts listing, find the functional or subfunctional group to which the repair part belongs and locate the illustration figure and item number identified in (2) above. The part is listed opposite the figure and item number shown.

C-5. Abbreviations

cd-pltd .....cadmium plated
ck.....countersunk
cres .....corrosion-resistant steel
fil-hd.....fillister head
fin .....finish
fi .....fiat
h .....high
lg .....long
od .....outside diameter
ru .....rubber
S.....steel
thk .....thick
w.....wide

C-6. Federal Supply Code For Manufacturers

Code	*Manufacturer*
19200	US Army Armament Research and Development Command
92906	Military Standards
19203	Picatinny Arsenal

Section II. REPAIR PARTS LIST

(1) ILLUSTRATION (a) FIG NO.	(1) ILLUSTRATION (b) ITEM NO.	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) Fed supply code for mfg	(6) DESCRIPTION *USABLE ON CODE*	(7) U/M	(8) QTY INC IN UNIT
						GROUP 01-HIGH EXPLOSIVE GUIDED MISSILE WARHEAD SECTIONS M251. M251A1 AND TRAINING GUIDED MISSILE WARHEAD SECTION M201		
						0101-GUIDED MISSILE FUZE		
C-1		PAOZZ	1336-01-015-6186	9298793	19203	Kit, knob cover, and latch assembly. consisting of:	ea	1
C-1	1	KFOZZ		MS35206-208	96906	SCREW, MACHINE	ea	5
C-1	2	KFOZZ		MS35333-69	96906	WASHER, LOCK	ea	5
C-1	3	KFOZZ		MS35206-213	96906	SCREW,MACHINE	ea	5
C-1	4	KFOZZ		MS35338-40	96906	WASHER, LOCK	ea	5
C-1	5	KFOZZ		9208864	19203	STAND OFF, KNOB COVER	ea	5
C-1	6	KFOZZ		9294661	19203	KNOB COVER AND LATCH ASSEMBLY	ea	1

(1) ILLUSTRATION (a) FIG NO.	(1) ILLUSTRATION (b) ITEM NO.	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) Fed supply code for mfg	(6) DESCRIPTION *USABLE ON CODE*	(7) U/M	(8) QTY INC IN UNIT
						0102-OGIVE		
C-1	10	PGOOO	1340-00-057-1741	9208608	19200	OGIVE, ROCKET:	ea	1
C-1	11	PAOZZ	6920-00-615-9045	9293477	19203	SCREW, TELESCOPE TUBE	ea	1
C-1	13	PAOZZ	5340-01-106-8517	9208333	19200	CATCH,CLAMPING	ea	2
C-1	12	PAOZZ	5305-00-191-1789	NAS514P10 3210P	92906	SCREW, MACHINE: cross-recess, fl-ck-hd. alloy-S,cd-pltd, No. 10-32 UNJF-3A x 5/8	ea	8
C-1	14	PAOZZ	5340-01-182-1059	9208775	19203	Clevis Assembly		
C-1	15	PAOZZ	5365-01-187-0894	9208303	19203	Nut, Adjustment	ea	2
C-1	16	PAOZZ	5360-01-191-3504	8836202	19203	Spring, Clevis	ea	2
						0103-AFT RING ASSEMBLY		
C-2	1	PAOZZ	5315-00-841-4442	MS16562-224	96906	PIN, SPRING: cres 1/8 dia, 3/4 lg. 1/32 thk (part of swing bolt assembly).	ea	4
C-2	2	PAOZZ	5310-00-001-1301	9237309	96906	NUT, PLAIN, EXTENDED WASHER, DOUBI,E HEXAGON: S, cd-pltd. 5/8-18 UNJF-3B, 13/16 w, 45/64 h, 1-1/4 od of washer (part of swing-bolt assembly).	ea	4
C-2	3	PAOZZ	5310-00-614-3505	MS15795-820	96906	WASHER, FLAT: cres 5/8 id, 1-5/16 of. 1/8 thk (part of swing-bolt assembly).	ea	4
C-2	4	PAOZZ	5305-00-705-2481	MS24694Sfi69	96906	SCREW, MACHINE: cross-recess fl-ck-hd,Scd-pltd, No. 10-32 NF.3Ax1-23/32.	ea	1
C-2	5	PAOZZ	6920-00-057-7169	9208329	19203	LOCK,TEE-BOI.T: al-alloy, 1-7/16 h, 41/64 1. w, 2-41/64 lg.	ea	4
C-2	6	PAOZZ	5306-00-172-3171	9237322	19203	BOLT, TEE-HEAD: alloy-S, 5/8-18 UNF-3A x3-19/32, 5/8 dia (part of swing-bolt assembly).	ea	4
C-2	7	PAOZZ	6920-00-057-7168	9208288	19203	PLUNGER, SPRING: S, No. 10-32 UNF-2 A x 7/8.	ea	4
C-2	8	PAOZZ	5315-00-933-7586	8877426	19203	PIN, Shoulder, Headless: cres, 1-1/2 in lg	ea	6
C-2	9	PAOZZ	5315-00-189-4661	8877425	19203	PIN, SHOULDER, HEADLESS: cres, 2 in lg	ea	2
C-2	11	PAOZZ	5935-00-279-1587	9281653	19203	COVER, ELECTRICAL CONNECTOR (Protective cover and flag assembly) GROUP 02- WARHEAD SECTION SHIPPING AND STORAGE CON-TAINER M544	ea	1
						0201 -COVER ASSEMBLY		
C-3	4	PAOZZ	5310-00-067-9507	MS51922-37	96906	NUT, SELF-LOCKING, HEXAGON	ea	4
C-3	5	PAOZZ	5310-00-809-3079	MS27183-19	96906	WASHER, FLAT, S, cd-pltd, 1/2 id, 13/8 od, 7/64 thk.	ea	8
C-3	6	PAOZZ	5305-00-719-5275	MS90727-128	96906	SCREW, CAP, HEXAGON HEAD	ea	4
						0202-BASE ASSEMBLY		
C-3	7	PAOZZ	5310-00-732-0560	MS51968-14	96906	NUT, HEXAGON: S,cd-chromate-fin, 1/2-20UNF-2B, 3/4 w, 7/16h.	ea	20
C-3	8	PAOZZ	5310-00-584-5272	MS35338-48	96906	WASHER, LOCK: S, cd-chromate-fin, 1/2 id, 7/8 od, 1/8 thk.	ea	28
C-3	13	PAOZZ	5306-00-061-5671	9211131	19203	BOLT,TEE-HEAD: S,cd-chromate-fin, 1/2-20UNF-2A x 2.	ea	20
C-3	13	PAOZZ	5310-00-081-8087	MS21044-NO6	96906	NUT, SELF-LOCKING HEXAGON: S, cd-pltd, No. 6-32 UNJC-3B	ea	4
C-3	14	PAOZZ	5310-00-082-1404	MS27183-6	96906	WASHER, FLAT: S, cd-pltd, 5/32 id,3/8 od, 3/64 thk	ea	4

Section III. SPECIAL TOOLS AND EQUIPMENT LIST

(1) ILLUSTRATION (a) FIG NO.	(1) ILLUSTRATION (b) ITEM NO.	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) Fed supply code for mfg	(6) DESCRIPTION *USABLE ON CODE*	(7) U/M	(8) QTY INC IN UNIT
C-3	15	PAOZZ	5305-00-889-3001	MS35206-231	96906	SCREW, MACHIINE: cross-recess-pan-hd, s, cd-chromate-fin, No. 6-32NC-2A x 5/8	ea	4
C-3	16	PAOZZ	5340-00-235-9685	9223266	19200	CLIP, SPRING TENSION: S. vinyl-coated, 1.63 w x 2 lg 0203-SUSPENSION FRAME ASSEMBLY	ea	4
C-4	5	PAOZZ	8140-00-060-7417	9211163-1	1920	CUSHION: ru, 13.88 1g(used on strap assembly).	ea	1
C-4	6	PAOZZ	8140-00-063-8149	9211163-2	19203	CUSHI()N: ru, 14.6 lg(used on saddle) GROUP 04-7TO00LS AND EQUIPMENT	ea	1
C-5	-	PEODD	1450-00-937-0894	10162468	18876	SLING, BEAM-TYPE: M22	ea	-
C-6	-	PAOZZ	5120-00-866-6677	9219129	19203	WRENCH OPEN END, FIXED: 114244 (issued two per Lance Missile Mating Tool Kit).	ea	
C-7	-	MHOHZ				LANCE MAINTENANCE STAND	ea	-

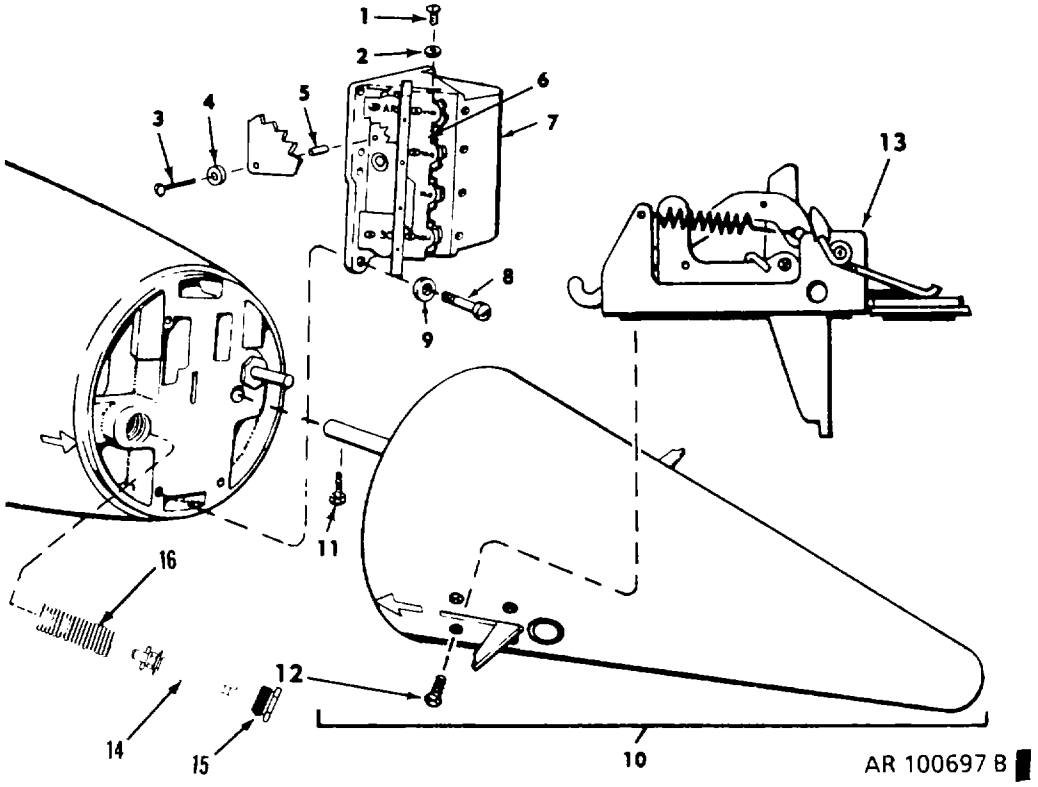


Figure C-1. Warhead section-electronic time guided-missile fuze and rocket ogive.

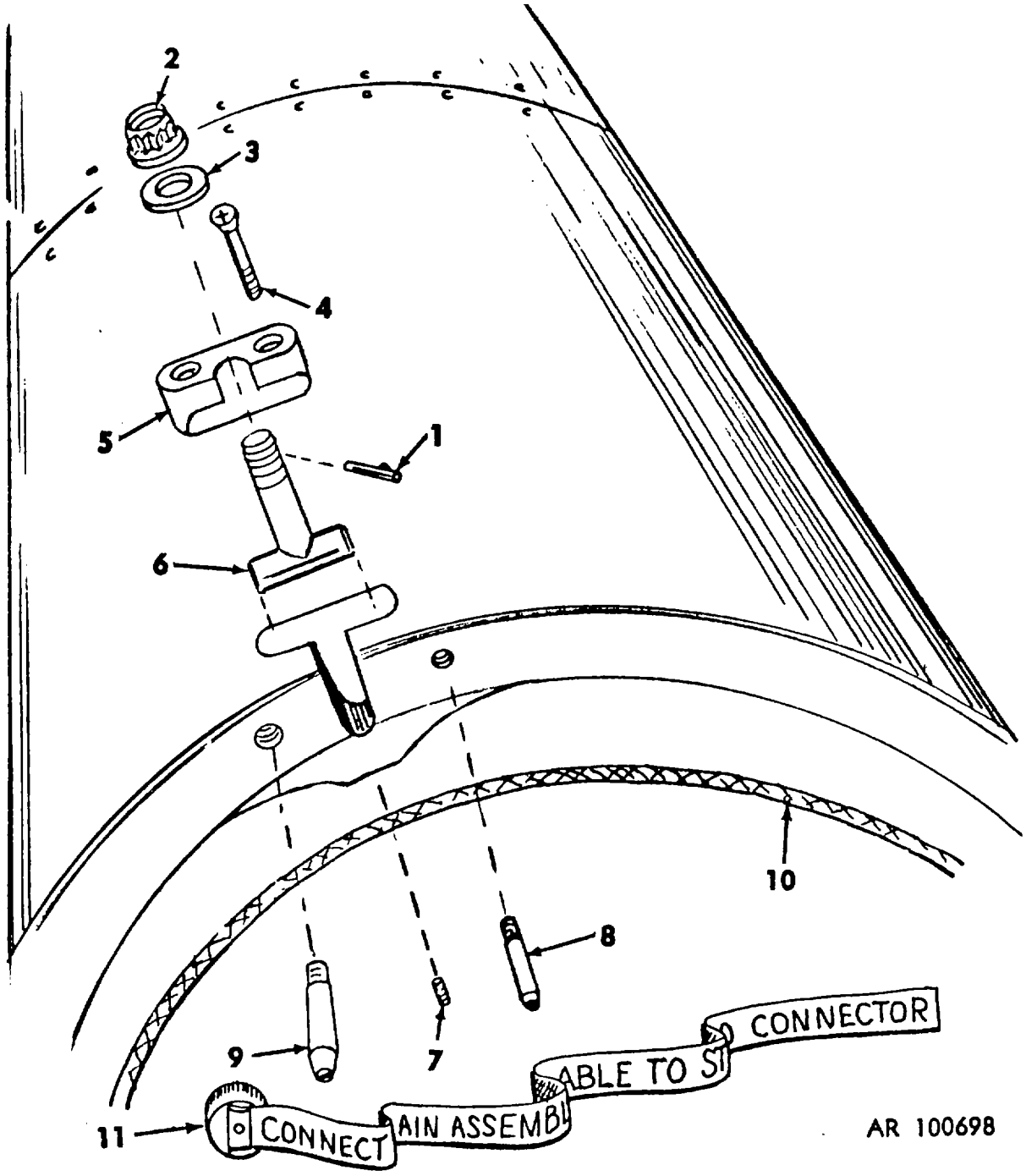


Figure C-2. Warhead section aft ring assembly and skin assembly.

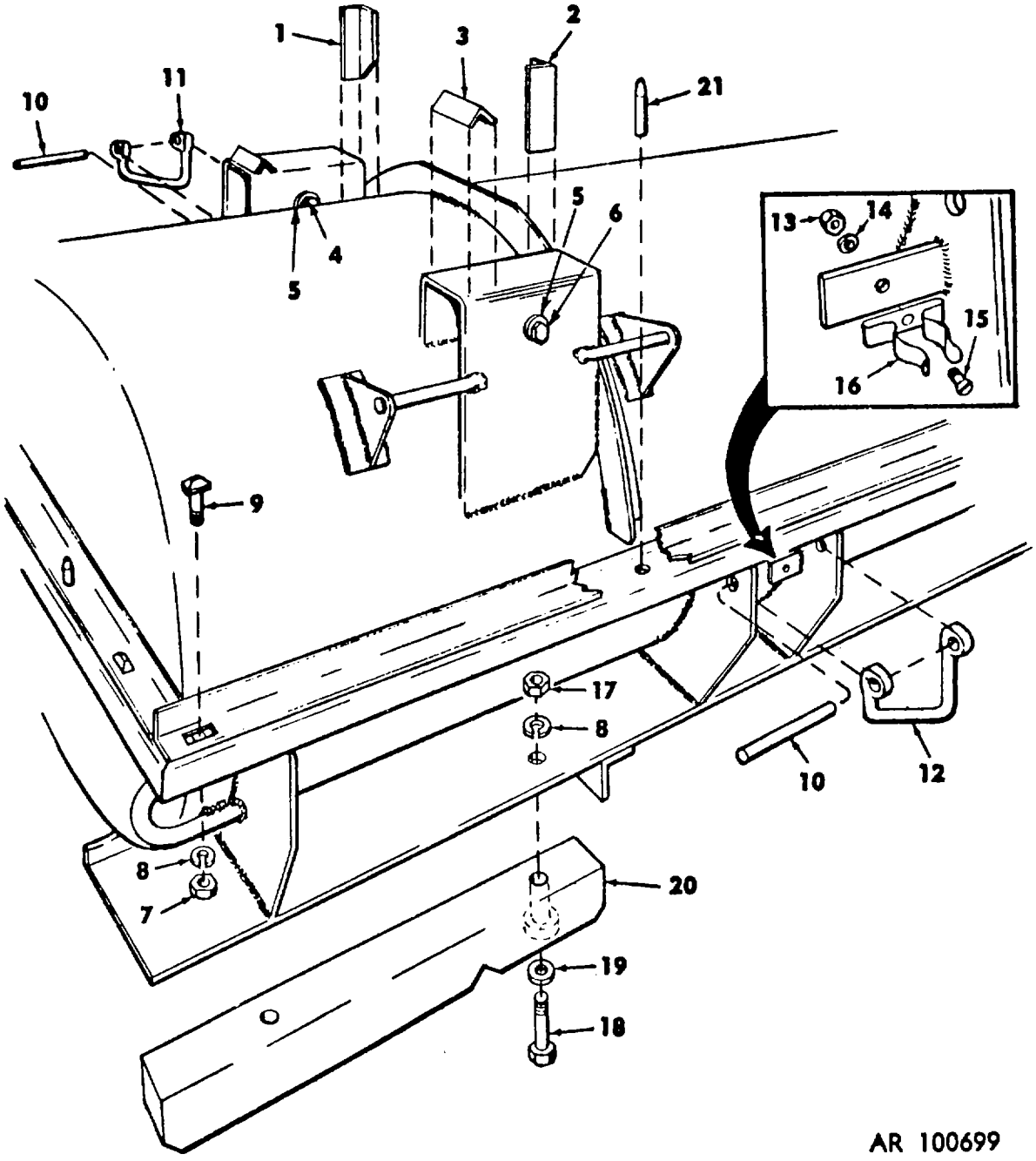


Figure C-3. Shipping and storage containers cover assembly and base assembly.

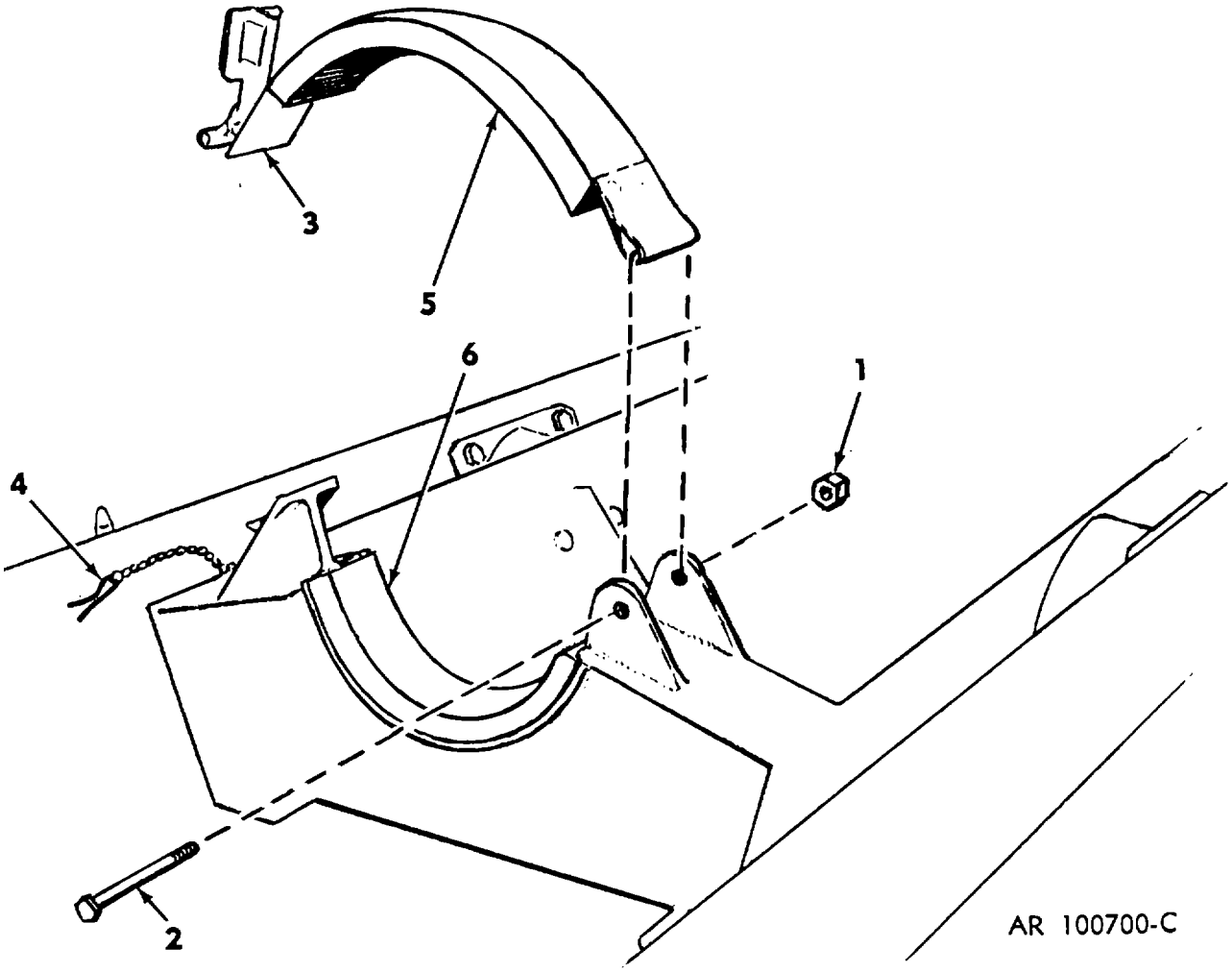


Figure C-4. Shipping and storage container-suspension frame assembly (strap assembly) and saddle cushion.

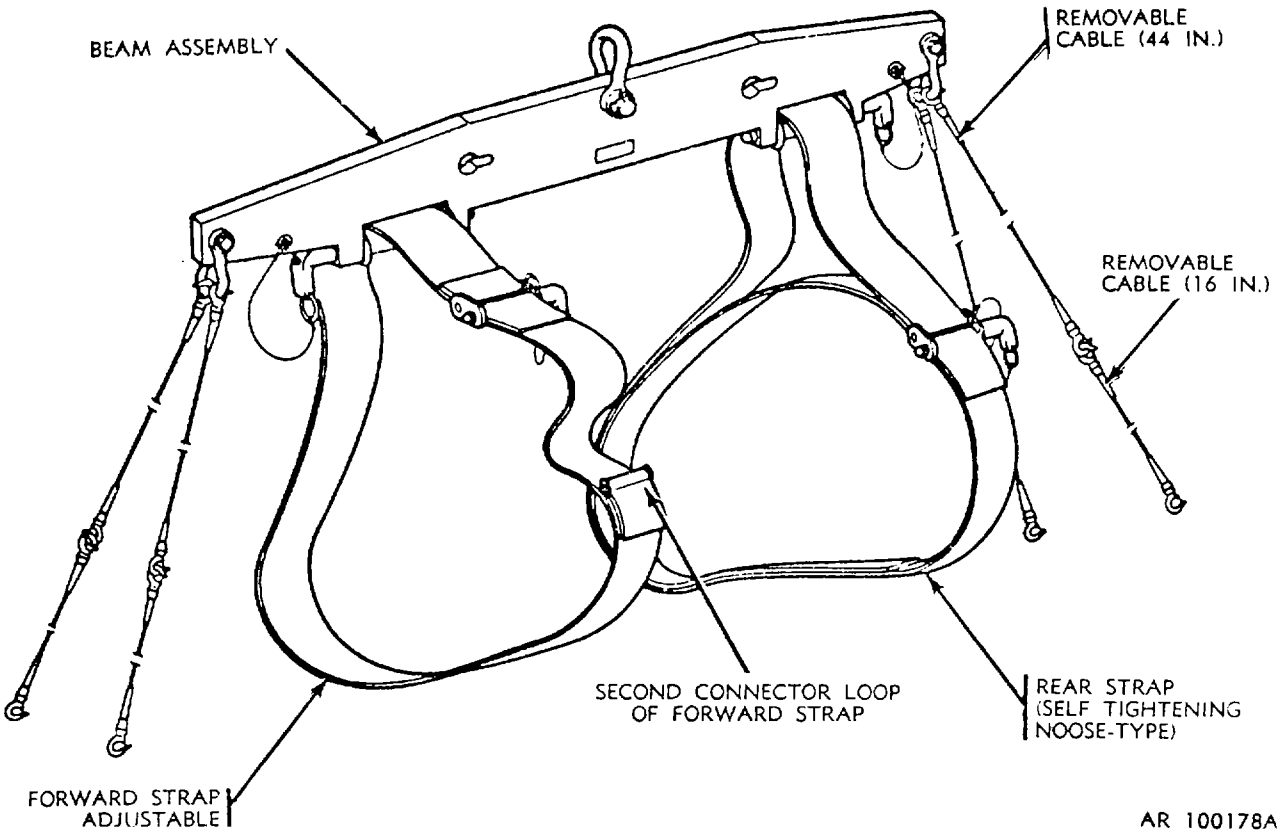
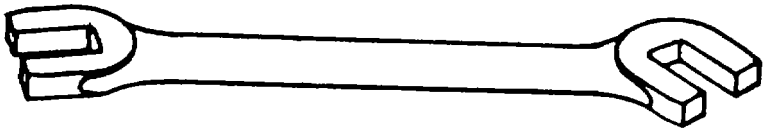


Figure C-5. Beam-type sling M22..



AR 100725

Figure C-6. H4244 wrench.

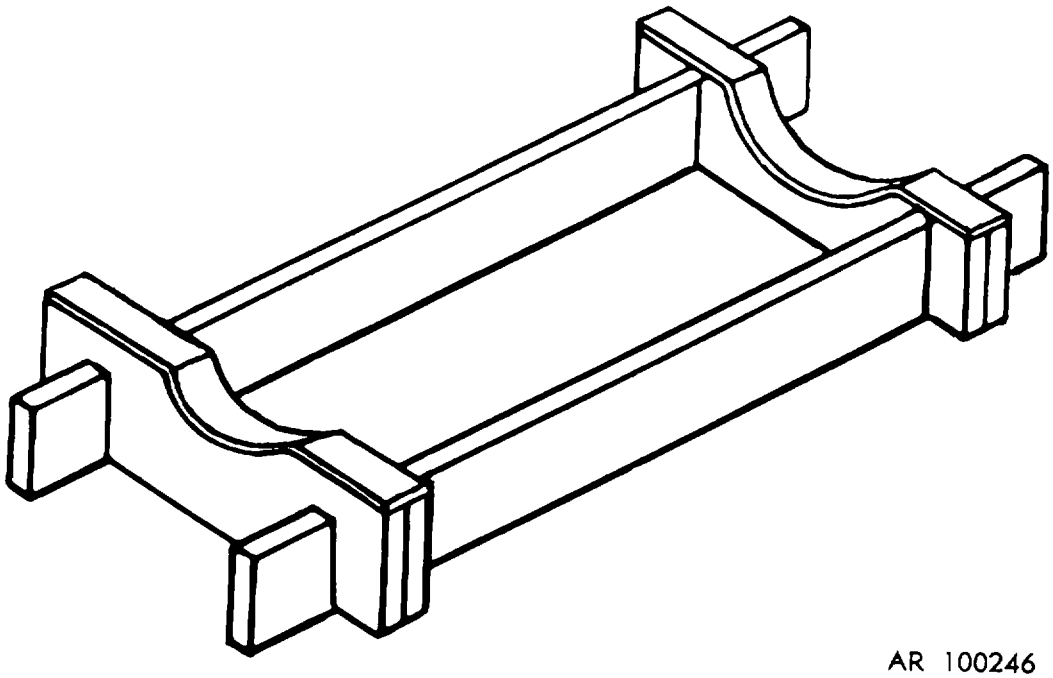


Figure C- 7. LANCE maintenance stand.

APPENDIX D

EXPENDABLE AND DURABLE ITEMS LIST

SECTION I. INTRODUCTION

D-1. SCOPE

This appendix lists expendable and durable items you will need to maintain the Guided Missile warhead and trainer. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (except Medical, Class V, Repair Parts, and Heraldic items).

D-2. EXPLANATION OF COLUMNS

a. Column (1) - Item number. This number is assigned to the entry in the listing for referencing when required.

b. Column (2) - Level. This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew
O - Unit Maintenance
F - Direct Support Maintenance
H - General Support Maintenance

c. Column (3) - National Stock Number. This is the National Stock Number (NSN) assigned to the item; use it to request or requisition the item.

d. Column (4) - Description. Indicates the federal item name and, if required, a description to identify the item. The last line for each item indicates the Commercial and Government Entity Code (CAGEC) in parentheses followed by the part number.

e. Column (5) - Unit of Measure (U/M)/Unit of Issue (U/I). This measure is expressed by a two-character alphabetical abbreviation (i.e., EA, IN, PR). If the unit of measure differs from the unit of issue, as shown in the Army Master Data File (AMDF), requisition the lowest unit of issue that will satisfy your requirements.

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) (U/M)/ (U/I)
1	O	8020-00-242-7266	BRUSH, PAINT: Hog bristle, flat w/sq edge, 3 in. w, 7/8 in. thk, 3-1/4 in. exposed lg. (81348) H-B-420	EA
2	O	8020-00-850-0084	BRUSH, PAINT: Hog bristle oval, w/chisel edge, 1/2 in w, 1-7/8 in min exposed lg. (45092) 456SIZE2	EA
3	O	7920-00-255-5135	BRUSH, WIRE, SCRATCH: Beryllium-copper alloy, curved handle, 14 in. x 15/16 in. block, 6 in. x 1-1/4 in. wire brush (81348) HB178	EA
4	O	6850-00-984-5853	GLEANING COMPOUND SOLVENT: (81349) MIL-C-81302	CN
5	O	5350-00-192-5049	CLOTH, ABRASIVE: Closed coating, aloxide, No. 120 grit, 9 x 11 in. (81349) A-A-1048	PG
6	O	5350-00-221-0872	CLOTH, ABRASIVE: Crocus cloth, 9 x 11 in. (58536) A-A-1206	PG
7	O	7920-00-292-9204	CLOTH, CLEANING: White, lintless fabric, 18 in. x 18 in. (88001) C1851	MX
8	O	8030-00-850-7076	COATING COMPOUND, METAL PRETREATMENT: Resin-acid, 1 qt kt (81349) DOD-P-1532	KT
9	O	7930-00-249-8036	DETERGENT, GENERAL PURPOSE: Powder, 5 lb container (81348) A-A-1376	CO
10	O	8010-00-297-2116	ENAMEL: Olive drab, No. 34087 (81348) TT-E-516	GL
11	O	8010-00-848-9272	ENAMEL: Olive drab, lusterless, No. 34087, spray can (81348) TT-E-51G	PT
12	O	8010-00-297-2112	ENAMEL: Yellow, No. 33538 (81348) TT-E-516	GL

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) (U/M)/ (U/I)
13	O	8010-00-079-2750	ENAMEL: Bronze, No. 17043, pressurized can (81348) T-E-00488	PT
14	O	8010-00-111-8005	ENAMEL: Camouflage, black (81349) MIL-E-52798	GL
15	O	8010-00-935-7080	EPOXY PRIMER, COATING KIT: 1 qt kit, yellow, type 1, class 1 (81349) MIL-P-23377	KT
16	O	8010-01-315-9306	EPOXY PRIMER, COATING KIT: 1 qt kit, yellow, type 1, class 2 (81349) MIL-P-23377	KT
17	O	5315-00-597-9766	FASTENER, CORRUGATED WOOD JOINT: (81348) FF-F-133	BX
18	O	7510-00-224-6732	INK, MARKING STENCIL: White No. 37875 (58536) A-A-208	PT
19	O	7510-00-469-7910	INK, MARKING STENCIL: Black No. 37038 (38512) AN-1	PT
20	O	6810-00-983-8551	ISOPROPYL ALCOHOL TECHNICAL: (81348) TTI735	QT
21	O	9150-00-252-6173	LUBRICATING OIL, GENERAL PURPOSE: Light (81348) W-L-820C	CN
22	O	5350-00-221-0881	PAPER, ABRASIVE: Open coat (58536) A-A-1201	PG
23	O	5350-00-186-8821	PAPER, ABRASIVE: Closed coat (58536) A-A-1201	PG
24	O	8010-01-160-6742	POLYURETHANE COATING: Green No. 383 CARC, 4 gal (81349) MIL-C-46168	KT
25	O	8010-01-162-5578	POLYURETHANE COATING: Green No. 383 CARC, 1 gal (81349) MIL-C-46168	KT
26	O	8010-00-292-1127	PRIMER, COATING: Zinc-chromate GL (81348) TT-P-664	

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) (U/M)/ (U/I)
27	O	8010-00-899-8825	PRIMER, COATING: Zinc-chromate pressurized can (83421) 8010-00-899-8825	PT
28	O	8010-01-193-0517	PRIMER, COATING: Epoxy, 1 gl kt (used on steel surfaces) (81349) MIL-P-53022	KT
29	O	5340-00-902-0426	SEAL, ANTIPILFERAGE: Lead and wire, 4 strand (used on container M544) (96906) MS-51938-6	HD
30	O	5340-00-515-2258	SEAL, ANTIPILFERAGE: Lead and wire, 2 strand, P/N 9267743 (used on M811 fuze) (2 per bag) (96906) MS-51938-5	EA
31	O	6850-00-702-4297	SILICONE COMPOUND: Soft film, 8 oz tube (01139) G-697	TU
32	O	8135-00-836-0810	TAPE, PRESSURE SENSITIVE ADHESIVE: (81348) PPP-1'-60	YD
33	O	8010-00-181-8079	THINNER, AIRCRAFT COATING: (used with chemical agent resistant coating) (81349) MIL-T-81772	CN
34	O	8010-00-160-5794	THINNER, PAINT PRODUCTS: (81348) TT-T-306	GL
35	O	6810-00-281-2002	TOLUENE, TECHNICAL: (81348) TT-Tr-548	GL

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General United States Army
Chief of Staff

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P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 decagram = 10 grams = .35 ounce
1 hectogram = 10 decagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

PIN: 027396-000