# TECHNICAL MANUAL

# UNIT MAINTENANCE MANUAL

# FOR

# MILITARY PYROTECHNICS

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

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**Unit Maintenance Manual**
**for**
**Military Pyrotechnics**

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# UNIT MAINTENANCE MANUAL

# FOR

# MILITARY PYROTECHNICS

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# UNIT MAINTENANCE MANUAL FOR MILITARY PYROTECHNICS

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. You may mail, e-mail, or FAX your response. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) located in the back of this manual direct to: Logistics Research and Engineering Directorate (AMSRD-AAR-AIL-LS), U.S. Army RDECOM, Armament Research, Development and Engineering Center, Picatinny, NJ 07806-5000. E-mail address is LSB@ PICA.ARMY.MIL. FAX number is Commercial (973) 724-4633, DSN 880-4633. A reply will be furnished to you.



*This manual supersedes TM 9-1370-203-20&P, dated 17 November 1978, including all changes.

## LIST OF ILLUSTRATIONS

# LIST OF TABLES

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# CHAPTER 1
# INTRODUCTION

## SECTION I GENERAL

### 1-1. Scope

a. These instructions apply to military pyrotechnics and are for use by unit maintenance personnel.

b. Operating instructions are contained in:

(1) Pyrotechnic Signals (TM 9-1370-206-10).

(2) Pyrotechnic Simulators (TM 9-1370-207-10).

(3) Photoflash Cartridges, Surface Flares, and Miscellaneous Pyrotechnics (TM 9-1370-208-10).

c. For operator and unit maintenance instructions on the MK 45 MOD 0 Aircraft Parachute Flare, refer to TM 9-1370-201-12.

d. For operator maintenance instructions on the M206 Aircraft Countermeasure Flare refer to TM 9-1095-206-23&P.

### 1-2. Forms, Records and Reports

a. *Forms.* Forms required by unit maintenance personnel are listed in appendix A and in DA Pam 25-30. Department of the Army maintenance forms and reporting procedures are prescribed in DA PAM 738-750.

b. *Field Report of Accidents.* Accidents involving injury to personnel or damage to materiel will be reported on DA Form 285 in accordance with AR 385-40. Malfunctions will be reported in accordance with AR 75-1.

c. *Report of Damaged or Improper Shipment.* Material received in damaged or otherwise unsatisfactory condition because of deficiencies in preservation, packaging, marking, loading, storage, or handling will be reported on SF 364 in accordance with AR 735-11-2. Reports of improper shipment or damage caused by transportation discrepancies will be reported on SF 361 in accordance with AR 55-38.

### 1-3. Destruction of Military Pyrotechnics to Prevent Enemy Use

Destruction of military pyrotechnics, when subject to capture or abandonment, will be undertaken by the user only when, in the judgment of the unit commander concerned, such action is necessary in accordance with orders of, or policy established by the Army commander. (Refer to TM 750-244-5-1).

### 1-4. Safety

a. *Requirements for Safety.* Requirements for safety, care, and handling of pyrotechnic items and accessories are included in AR 385-64, DA PAM 385-64, TM 9-1370-201-12, as applicable.

b. *Specific Safety Precautions.*

(1) Pyrotechnics are more dangerous than many other types of ammunition because they are more easily initiated. Items with primers should be guarded to prevent a blow on the primer, because such a blow could activate the item.

(2) Pyrotechnics must never be exposed to moisture. Items showing any signs of moisture should be forwarded to authorized personnel for disposal.

(3) Protect pyrotechnics from temperatures below -65°F or above 140°F.

(4) Pyrotechnics (except standard emergency use items) should not be left indefinitely in aircraft. They should be removed and restored to their original condition and packing.

### 1-5. Care and Handling

a. Military pyrotechnics must be handled with care at all times. Besides the hazardous pyrotechnic composition, pyrotechnics are composed of sensitive elements, such as, friction compositions and primers.

b. In order to keep military pyrotechnics in a serviceable condition and ready for immediate use, the following general rules apply.

(1) Store pyrotechnics in a dry, well-ventilated place, out of direct sunlight, and protect against excessive or variable temperatures.

(2) Handle pyrotechnics with care and protect against shock.

(3) Do not drop or throw boxed pyrotechnics.

(4) Place boxes containing signal cartridges which are discharged by percussion primers, flat with the top up.

(5) Handle pyrotechnics gently, especially the type which are projected, to avoid denting or deforming the barrel or case.

## Section II. DESCRIPTION AND DATA

### 1-6. Types of Pyrotechnic Devices

Pyrotechnic devices may be grouped as follows: photoflash cartridges, flares, signals, simulators, and miscellaneous pyrotechnics. The tabulated data in this chapter and the Maintenance Allocation Chart in appendix B is organized to reflect these divisions.

### 1-7. Identification

Pyrotechnic devices are identified by markings on the packaging container. These markings include, as appropriate, National Stock Number (NSN), Department of Defense Identification Code (DODIC), nomenclature and model of device, and lot number. Specific colors are painted on some of the containers as a secondary means of identification.

### 1-8. Description

For detailed description of items refer to:

a. TM 9-1370-201-12

b. TM 9-1370-207-10.

c. TM 9-1370-208-10.

d. TM 43-0001-37.

e. TM 9-1370-201-12.

### 1-9. Data

The group number listed in table 1-1 reflects authorized maintenance functions indicated in section II Appendix B.

Table 1-1. Military Pyrotechnics Data

| Item | Model Designation | DODIC | UNO Serial No. | Group No. |
|---|---|---|---|---|
| Flash Powder | M112A1: | | | 0101 |
| | 1-second delay | L135 | 0094 | |
| | 2-second delay | L136 | 0094 | |
| | 4-second delay | L137 | 0094 | |
| Flash powder | M123A1: | | | |
| | 2-second delay | L139 | 0094 | |
| | 4-second delay | L140 | 0094 | |
| | 6-second delay | L141 | 0094 | |
| Cartridges, flash | M121 | L138 | 0050 | |
| Flash powder | M124 | L142 | 0094 | |
| Flare, surface | M49A1 | L495 | 0092 | 0201 |
| Flares, aerial | M206 | L410 | 0093 | 0202 |
| Flares, aerial | MK33, Mod 0 | L477 | 0093 | 0203 |
| Flares, aerial | M211 | LA14 | 0454 | 0204 |
| Flares, aerial | M212 | LA15 | 0454 | 0205 |
| Cartridges, signal | | | | 0301 |
| Illumination, Aircraft | | | | |
| Double star, | | | | |
| Red-Red | AN-M37A2 | L225 | 0054 | |
| Yellow-Yellow | AN-M38A2 | L226 | 0054 | |

Table 1-1. Military Pyrotechnics Data - Continued

| Item | Model Designation | DODIC | UNO Serial No. | Group. No. |
|---|---|---|---|---|
| Green-Green | AN-M39A2 | L227 | 0054 | |
| Red-Yellow | AN-M40A2 | L228 | 0054 | |
| Red-Green | AN-M41A2 | L229 | 0054 | |
| Single Star, | | | | |
| Red | AN-M43A2 | L231 | 0054 | |
| Yellow | AN-M44A2 | L232 | 0054 | |
| Green | AN-M45A2 | L233 | 0054 | |
| Yellow Tracer, | | | | |
| Double Star, | | | | |
| Red-Yellow | AN-M53A2 | L234 | 0054 | |
| Green Tracer, | | | | |
| Double Star, | | | | |
| Red-Red | AN-M54A2 | L235 | 0054 | |
| Green-Red | AN-M55A2 | L236 | 0054 | |
| Red Tracer, Double Star, | | | | |
| Green-Green | AN-M56A2 | L237 | 0054 | |
| Red-Red | AN-M57A2 | L238 | 0054 | |
| Signal devices, hand: | | | | |
| Red | M185 | L116 | 0191 | 0302 |
| Various colors | M186 | L117 | 0191 | |
| Flares, aerial | | | | |
| Foliage Penetrating, Red[1] | | L119 | 0093 | 0310 |
| Cartridges, signal: | | | | |
| Red | M187 | L278 | 0054 | 0303 |
| White | M188 | L279 | 0054 | |
| Green | M189 | L280 | 0054 | |
| Amber | M190 | L281 | 0054 | |
| Green Star, Cluster | M125A1 | L314 | 0054 | 0304 |
| Red Star, Cluster | M158 | L306 | 0054 | |
| White Star, Cluster | M159 | L307 | 0054 | |
| Red Star, Parachute | M126A1 | L311 | 0054 | |
| White Star, Parachute | M127A1 | L312 | 0054 | |
| Green Star, Parachute | M195 | L305 | 0054 | |
| Red Star, Parachute | M131 | L277 | 0054 | 0305 |
| Green Star, Parachute | M19A2 | L310 | 0054 | 0306 |
| Illumination Marine: | | | | |
| Two Star, Red | AN-M75 | L276 | 0254 | 0307 |
| Signal devices, hand | AN-MK 13 Mod 0 | L275 | 0191 | 0308 |
| Cartridges, signal: | | | | |
| Red | M62 | L320 | 0054 | 0306 |
| Yellow | M64 | L322 | 0054 | |
| Green | M5 | L318 | 0054 | |

Table 1-1. Military Pyrotechnics Data - Continued

| Item | Model Designation | DODIC | UNO Serial No. | Group. No. |
|---|---|---|---|---|
| Violet | M66 | L321 | 0054 | 0306 |
| White | M166 | L340 | 0054 | 0309 |
| Green | M167 | L341 | 0054 | |
| Red | M168 | L342 | 0054 | |
| Yellow | M169 | L343 | 0054 | |
| Green, Parachute | M128A1 | L324 | 0054 | 0304 |
| Red, Parachute | M129A1 | L323 | 0054 | |
| Yellow, Parachute | M194 | L293 | 0054 | 0304 |
| Fireworks: | | | | |
| Atomic Explosion | M142 | L605 | 0333 | 0401 |
| Detonation Simulator, Explosive | M80 | L378 | 0333 | 0402 |
| Booby Trap, | | | | 0403 |
| Flash | M117 | L598 | 0335 | |
| Illuminating | M118 | L599 | 0335 | |
| Whistling | M119 | L600 | 0335 | |
| Cartridge, flash | M110 | L596 | 0050 | 0404 |
| Flash, Simulator, Artillery | M21 | L602 | 0431 | 0410 |
| Simulator, Tank, Main Gun Fire | M30 | LA06 | 0403 | 0413 |
| Simulator, Direct-Indirect Fire Cue | M31A1 | LA07 | 0430 | 0414 |
| Simulator, Antitank Guided Missile Signature | M27 | L715 | 0430 | 0415 |
| Pyrotechnic, Cartridge: 50mm[2] | M800 | L602 | 0431 | 0411 |
| Fireworks: | | | | |
| Hand Grenade | M116A1 | L601 | 0335 | 0405 |
| Projectile Air Burst | M27A1B1 | L351 | 0335 | 0406 |
| Projectile Air Burst | M74 or M74A1 | L366 | 0335 | 0407 |
| Projectiles, with bursting charge | | | | 0408 |
| Charge, Smoke Puff, White | | L373 | 0168 | |
| Primer, Percussion Cap | | L130 | 0044 | |
| Bombs, with bursting charge | M115A2 | L594 | 0034 | 0409 |
| Cartridges, Flash: | | | | |
| Simulator, Launching, Antitank Guided Missile and Rocket | M22 | L367 | 0050 | 0412 |
| Miscellaneous Pyrotechnics: | M72 | L506, 10-minute | | |
| Fusee, Warning | | L507, 15-minute | 0038 | 0501 |
| Railroad | | L508 20-minute | 0038 | |
| Cartridges, signal: | | | | |
| Marker, Location, Marine: Dye | AN-M59 | L582 | 0054 | 0502 |
| Igniters: | | | | |
| Starter, Fire | M2 | L621 | 0315 | 0503 |

Notes:
[1] This Signal Kit is a component of the survival kit vest type SRU-21/P.
[2] Use Simulators Flash Artillery, M21 when stocks of Pyrotechnic, Cartridge: 50MM are exhausted.

# CHAPTER 2
# MAINTENANCE INSTRUCTIONS

## Section I. SERVICE UPON RECEIPT OF MATERIEL

### 2-1. General

Upon receipt of military pyrotechnics, verify items against requisition list. If markings on box conflict with nomenclature of item requisitioned, check with pyrotechnic supply personnel to determine if an issue error has been made.

### 2-2. Precautions

All standard precautions for care and handling of ammunition are applicable to military pyrotechnic. For specific precautions, refer to paragraphs 1-4 and 1-5.

### 2-3. Inspection of Packaging Materials

a. *General.* Inspection at unit level consists of a visual check of packaging materials. Do not open any moisture-proof container or barrier bag because the item must be protected from moisture until just prior to use.

b. *Packaging Defects*. Specific inspection criteria and identification of defects (as acceptable, repairable or unrepairable) are outlined in table 2-1. The most commonly encountered packaging defects are listed below: (1) Outer containers (boxes) damaged, weathered, or rotted to the extent contents are not protected.

(2) Inner container damaged to the extent contents are not protected or cannot be readily removed.

(3) Container cap or closure not secured to the extent contents are not protected.

(4) Inner containers wet (except metal), rusted, moldy, or mildewed.

(5) Hardware or banding loose, missing, broken, or ineffective.

(6) Handle or cleat missing or broken.

(7) Contents loose to the extent item may be damaged in handling.

**Table 2-1. Inspection Criteria for Packaging**

| Item | Acceptable | Repairable | Unrepairable |
|---|---|---|---|
| **Wooden Boxes, Crates, and Metal Containers** | | | |
| Hardware | Operative and tight.<br><br>Nails, screws and fasteners present and in good condition. | Inoperative or loose.<br><br>Nails, screws, and fasteners which can be replaced or properly sealed. | None.<br><br>None. |
| Ends | Free from damage. | Broken or missing cleats and handles. | Damage which requires disassembly of box. |
| Wood | Splits less than 3 inches long no closer than 1 inch to edge<br><br>of board or adjoining split. The board must be secured by at least one nail on each side of the split when it extends to the end of the board.<br><br>Warping which does not prevent sealing of box or insertion of required ammunition. | Splits over 3 inches but no closer than 1 inch to edge or<br><br>adjoining split, or 1/8-inch wide, which can be repaired by use of corrugated fasteners.<br><br>None. | Splits closer than 1 inch to edge of board or<br>adjoining split or over 1/8-inch wide.<br><br>Warping which prevents insertion of removal of rounds and/<br>or sealing of the box. |

**Table 2-1. Inspection Criteria for Packaging - Continued**

| Item | Acceptable | Repairable | Unrepairable |
|---|---|---|---|
| | Light mold which can be brushed off. Mildew stains which do not affect legility of markings. | None. | Excessive mildew and mold which cannot be removed and which render markings illegible. |
| | Sound tight knots the diameter which do not exceed 1/3 the width of the board. | None. | Holes or loose knots which exceed 1-1/2 inch. |
| | Skids securely attached to box or crate. Knots no greater than 1/4 the width of skid. | Loose skids. | Knots greater than 1/4 the width of skid. |
| Boxes | | Bulged Container. Build-up of hydrogen gas in certain pyrotechnic munitions sealed in barrier bags (see para 2-11). | |
| Tie wires | Light rust, removable with fin sandpaper. | None. | Broken, excessive rust. |
| Strapping | Present and unweakened by rust or distortion. | Missing, rusted or distorted. | None. |
| Painting and | Marking legible, correct, and complete. Painted orange if light box. | Light box, reused box, marking illegible. Marking on box not in agreement with marking on inner packaging. Marking incomplete (see para 2-3c). | None. |
| Metal ends, wood or fiber container | Minor rust. | None. | Perforations, excessive rust or ends which are crushed or not securely crimped to body. |
| Body and cap, wood or fiber container | No opening through which moisture could penetrate to item.<br>No hole of any kind.<br>No mold or mildew. Slight accumulation of dirt.<br>No mold, milder or rot. Slight accumulation of dirt.<br>Free from wrinkles cased by looseness between layers.<br>Blisters with combined area less than 1/2 square inch.<br>No moisture absorption. | | Holes, perforations, punctures, tears, cuts, loose seals.<br>Cuts, tears or gouges closer than 1 inch to closure, more than ½ square inch in area, or through all imprenated layers.<br>Molded or mildewed. Heavy accumulation of dirt.<br>Molded, mildewed or rotted. Heavy accumulation of dirt.<br>Wrinkled or peeling. |
| Barrier material | | None. | Blisters with combined area of more than ½ square inch. |
| | | None. | Wet or soft containers. |

Table 2-1. Inspection Criteria for Packaging - Continued

| Item | Acceptable | Repairable | Unrepairable |
|---|---|---|---|
| Body and Cap | Minor dents. | None. | Deep dents or scoring in drum. |
| | Minor rust. | None. | Rust which has caused pitting and perforations. |
| | No hole of any kind. | None. | Puncture. |
| **Steel Drum for M142 Atomic Explosion Simulator** | | | |
| Drum<br>Metal Containers | Marking legible and complete. | Marking illegible.<br>Marking incomplete (see para 2-3c). | None. |
| | Dents, not broken through. | None. | Dents broken through. |
| | Minor rust. | Major rust, not broken through. | Major rust on inside. |
| | No hole of any kind. | None.<br>Bulged containers (see para 2-16). | Puncture. |
| **Foam Support Box for M27 Sagger** | | | |
| Foam Support Box | Minor dents. | None. | Deep dents. |
| | No hole of any kind. | None. | Puncture. |
| | | Small cracks. | Large cracks. |
| | No deterioration. | None. | Signs of deterioration. |

c. The following information must be legible on each box; and on steel drum of M142 Atomic Explosion Simulator (see fig. 2-1).

(1) National (or Federal) Stock Number (NSN or FSN).

(2) Department of Defense Identification Code (DODIC) (repeated on ends of box).

(3) Department of Transportation (DOT) designation.

(4) Quantity.

(5) Nomenclature.

(6) Lot number (repeated on ends of box).

(7) Month and year loaded.

(8) Gross weight.

(9) Cubical displacement.

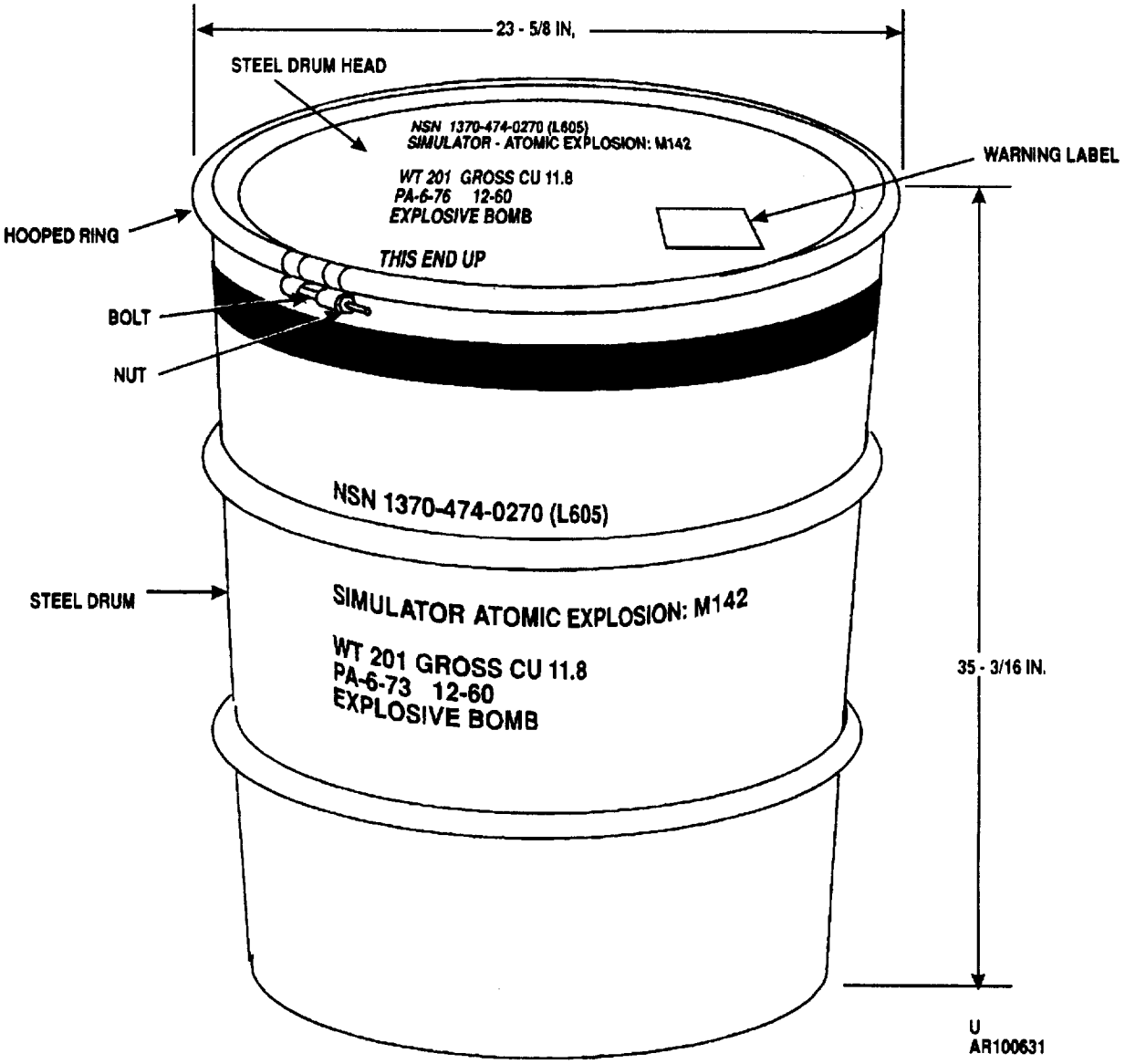


**Figure 2-1. Atomic explosion simulator M142.**

**2-4. Corrective Action**

a. Make repairs as instructed in. the following paragraphs. If serviceable packing has been saved, it may be used instead of making repairs, provided that markings on boxes are changed to agree with contents.

b. If moisture-proof container or barrier bag is penetrated, i.e., hole, tear, perforation, puncture, or cut, forward items contained therein to authorized personnel for disposal. The items have probably been damaged by moisture.

c. Before repairing a damaged box, except for simple re-marking, remove contents.

**2-5. Unpacking Procedures**

**CAUTION**

**DO NOT OPEN BARRIER BAGS OR HERMETICALLY SEALED CONTAINERS UNTIL PYROTECHNIC ITEMS ARE TO BE ISSUED. EXPOSURE TO MOISTURE IN THE AIR CAN RESULT IN DUDS OR OTHER MALFUNCTIONS.**

a. *General.* Organizational maintenance personnel will save some boxes and packing material for immediate reuse. Contact the direct support unit for disposition of remaining boxes. If boxes are needed and none are available, request boxes from direct support units. For repackaging procedures, refer to paragraph 2-15.

b. *Pallets.*

**WARNING**

**WEAR GLOVES AND SAFETY GLASSES OR GOGGLES WHEN CUTTING AND HANDLING METAL STRAPPING. AVOID BEING STRUCK BY ENDS OF STRAPPING WHEN TENSION IS RELEASED.**

(1) Cut strapping with metal cutting shears. Never attempt to break strapping by prying or twisting, this can damage the boxes and their contents.

(2) Remove boxes from pallet.

(3) Dispose of strapping and nonrecoverable materials. Contact the direct support unit for disposition of serviceable pallets and components.

c. *Wooden Ammunition Packing Boxes (fig. C-2).*

**WARNING**

**TO PREVENT INJURY, RELEASE TENSION ON STEEL STRAPPING BY PRESSING DOWN ON TOP OF BOX WHILE CUTTING STRAPS ON SIDE OF BOX IN (1) BELOW.**

(1) Cut steel strapping with metal shears. Remove and dispose of strapping. Never attempt to break strapping by prying or twisting, this can damage the boxes and their contents, and cause possible injury to personnel.

(2) Cut metallic seal with pliers. Discard seal.

(3) Turn hasp catch and open hasps on hinge and hasp boxes, or pull out on spring latch to release on spring-latch boxes.

(4) Lift box top and remove top padding. Note top position for reclosing on springlatch boxes.

(5) Remove inner packs.

d. *Barrier Bag.*

(1) Cut barrier bag open along edge with most excess material as close to sealed edge as possible.

(2) Cut or remove tape and open inner container.

(3) Remove padding, if any.

(4) Remove items. If all items are not removed, close and reseal barrier bag with adhesive tape. (Refer to appendix D for suitable size tape.)

e. *Hermetically Sealed Container.*

(1) Using key attached to container, remove sealing strip.

(2) Remove top of container.

(3) Remove any padding pieces from container.
(4) Remove item.

f. *Fiber Container.*

(1) Remove adhesive tape.
(2) Remove top of container.
(3) Remove any padding pieces from container.
(4) Remove item.
(5) Save all containers-when possible-for repack.

## Section II. TOOLS AND EQUIPMENT

### 2-6. Common Tools and Equipment

Standard and commonly use tools and equipment having general application to military pyrotechnics are authorized for issue by tables of organization and equipment (TOE).

### 2-7. Repair Parts and Special Tools

Repair parts and special tools required at organizational level are listed in appendix C.

## Section III. MAINTENANCE

### 2-8. General

Organizational maintenance is performed by designated personnel in using units and is primarily preventive in nature. It is performed to prevent deterioration of pyrotechnics due to rough handling and exposure. Direct support units may be called upon to provide technical advice, assistance, packing materials, and consumable supplies for accomplishing maintenance. Responsibilities of organizational maintenance units are limited to those functions listed in Section II, appendix B.

### 2-9. Consumable Supplies

a. Paint, cleaning compounds, and other consumable supplies authorized for use by organizational maintenance personnel are listed in Appendix D.

b. Consumable supplies should be requisitioned through normal supply channels on an as-required basis.

### 2-10. Maintenance of Box Hardware

a. *Repair of Damaged Hardware*. Hardware which has been damaged to the point that is inoperable is usually irrepairable; however, minor damage can usually be corrected by straightening, as follows:

(1) Using pliers carefully, bend damaged item unit its configuration is the same as the serviceable item.

(2) Test repaired hardware for proper functioning.

b. *Replacement of Irrepairable Hardware.* Hardware which cannot be repaired can be replaced with a serviceable item cannibalized from an unserviceable container, as follows: (1) Using a screwdriver, remove unserviceable hardware.

(2) Attempt to reinstall serviceable hardware in existing holes. Secure with screws.
(3) If screws are missing or cannot be tightened in existing holes, proceed as follows:

(a) Replace missing screws with others obtained from an unserviceable box.
(b) If screws cannot be tightened, move hardware (with box top in place) to a different location where screws can be secured. IF necessary, carve notch to accommodate hinge pin.
(c) Mark location for attaching screws and remove hardware.
(d) Drive and remove a small nail at each location to provide a pilot hole.
(e) Place hardware and screws in position and secure.

c. *Removing Rust or Corrosion from Hardware*.

(1) Remove rust or corrosion from hardware by first brushing with a wire brush.
(2) Cover with primer or paint.

d. *Replacing Broken, Loose, or Deteriorated Strapping.*

(1) Cut pieces of 5/8-inch banding of sufficient length to go around box plus about 6 to 8 inches.

(2) Position strap(s) under box.

(3) Insert one strap end into strap stretcher so that strap is held firmly by stretcher, with about 3 inches of strap protruding.

(4) Place clip over strap end.

(5) Thread loose end of strap through clip and into stretcher head.

(6) Tighten strap by repeated movement of ratchet lever, until edges begin to cut into box.

(7) Using banding crimper, crimp clip in two places.

(8) Release locking pawl on stretcher and slide stretcher out.

(9) Cut of excess strapping.

(10) Repeat (3) through (9) above, for each strap.

**2-11. Maintenance of Boxes**

a. *Repair of Cracks and Splits in Wood*.

(1) Hold board tight so that the crack or split is closed.

(2) Hammer corrugated fasteners into wood at 4to 6-inch intervals. Fastener should be centered across crack.

b. *Repair of Broken Cleats or Wood Handles.*

(1) Remove broken cleat with claw hammer or pry bar.

(2) Remove serviceable cleat with claw hammer or pry bar from an otherwise unserviceable box.

(3) Position serviceable cleat on box and secure with 3 to 5 small nails.

(4) Bend nails over inside of box with hammer.

c. Repair of Rope or Strap Handles.

(1) Remove cleats holding handle with claw hammer or pry bar.

(2) Remove serviceable handle from an otherwise unserviceable box by removing the holding cleats with claw hammer or pry bar.

**NOTE**

**Do not remove nails or staples attaching handle to cleats.**

(3) Position serviceable handle and cleats and attach to box with 3 to 5 nails in each cleat.

(4) Bend nails over inside box with hammer.

d. *Painting of Wood Boxes*. Normally, used boxes will not be painted except to obliterate previous markings or to indicate less than full pack (see para. 2-14).

e. *Releasing hydrogen gas from bulged boxes*.

(1) Due to possible violent expansion of wooden boxes when banding is cut, boxes must be confined prior to cutting bands.

**NOTE**

- **Due to different types of shipping containers, holding fixture to confine boxes must be locally designed and fabricated to meet needs of the operation.**
- **Gas release should be conducted in a well-ventilated area free of flammables, explosives, fire, open flame and spark-producing devices, other ignition sources or chemical contaminants. All persons opening containers must wear a face shield, flame-retardant clothing, conductive sole shoes, or safety shoes with conductive straps.**

(2) Remove barrier bags from boxes and use non-sparking pick to puncture bag releasing gas. Heat seal barrier bag or replace.

(3) Repair or replace wooden shipping containers and repack items.

## 2-12. Marking of Boxes

a. Normally, box remarking at the organizational level will be a touch-up operation. Faded or damaged box markings may be restored, using a waterproof black ink marker or a small brush and paint. Minor changes, such as a change of lot number to reflect the items actually repacked in a box, may be made by merely crossing out the incorrect number(s) and neatly printing the correct one(s) immediately adjacent, using a waterproof black ink marker or a small brush and paint.

b. If it is necessary to completely re-mark a box:

(1) Determine exactly what must be marked on the box and in what order it must be placed. Refer to paragraph 2-3c and/or copy from the original box, an identical box, or the inner packaging. Note the size of the letters used and the space between lines.

(2) Cover the old, unwanted markings with a coat of marking obliterating lacquer and allow it to dry.

(3) If possible, have a stencil cut by an ammunition company or other nearby organization having the facilities. Using masking tape, secure the stencil over the area to be marked and spray or brush black paint evenly over it to mark the box. If a stencil is not available, proceed to (4) below.

(4) Using a pencil and any available straight edge, draw a series of parallel lines spaced as noted in (1) above.

(5) Neatly letter the required markings, using a waterproof black ink marker or a small brush and paint.

c. Check markings for accuracy and legibility.

d. Allow markings to dry before handling.

## 2-13. Cleaning, Touch-up, and Marking of Steel Drum for M142 Atomic Explosion Simulator

a. Make diagram of markings and record all markings.

b. Remove dirt, mud, and other foreign material, using rags or brushes. Use rags dipped in alcohol to remove grease.

c. Using wire brush, remove flaked, chipped, blistered or peeling paint.

d. Remove rust, using wire brush or sandpaper.

e. Allow alcohol-cleaned surfaces to dry thoroughly before painting.

f. Apply primer to all bare metal.

g. Allow primed surfaces to dry thoroughly

h. Apply white enamel to primed surfaces, or brown lacquer to the band.

i. Allow freshly painted surfaces to dry thoroughly.

j. Mark in accordance with paragraph 2-12.

k. Check markings for accuracy.

l. Allow markings to dry before handling.

## 2-14. Painting and Marking of Boxes with Light Loads

**NOTE**

**Organizational maintenance personnel will apply this procedure only when boxes with less than full contents are returned to storage area or transported to new location. When painting of a light box is required, re-marking (except quantity) may be avoided by applying masking tape over markings prior to painting.**

a. Check contents with markings on box to verify that nomenclature and lot number are correct.

b. Make diagram of markings on box and record all markings except quantity figure (or cover markings per note above).

c. Apply orange enamel to all outer surfaces of box. If enamel is not available, use orange lacquer.

d. When box is dry, re-mark as diagrammed (b above) (see para 2-12), or remove masking tape.

e. Count quantity of items in box and mark number on box in same position as original quantity figure.

f. Print words LIGHT BOX on each side of box, using approximately the same size letters as the original markings.

## 2-15. Repacking Procedures

a. *General.*

(1) Repacking will depend on the availability of packaging materials. Additional packaging materials will be obtained from direct support units. Table 2-2 contains packing and marking data for standard packaging.

(2) Assure that proper nomenclature and lot number for items are marked on both inner and outer packages. Partially filled boxes must be painted and marked as instructed in paragraph 2-14.

(3) For Simulator Launching, Anti-Tank, Guided Missile and Rocket, M22 repacking, use available packing materials or original packing if possible. NSN has not been assigned to the packing materials yet.

b. *Barrier Bag.*

(1) Place protective materials at sensitive points of item.

(2) Place item(s) into bag or carton.

(3) Close carton and seal with tape.

(4) Wrap carton in barrier material.

(5) Seal barrier material or bag with tape (refer to appendix D for correct tape type).

c. *Hermetically Sealed Container.*

(1) Slide item into container.

.

(2) Use adequate filler material to assure a tight fit.

(3) Cover any sensitive components with padding.

(4) Place top on container.

(5) Seal with plastic filament tape or black nylon tape by wrapping around the joint in a double layer and folding edges over top.

d. *Wooden Box.*

(1) Verify that markings on inner pack and box agree.

(2) If necessary, unit maintenance will re-mark box as instructed in paragraph 2-12 to agree with contents.

(3) Place inner packs(s) into box. Position items to balance load for carrying.

(4) Use adequate filler material to assure a tight pack.

(5) Close top.

(6) On hinge and hasp box, close hasp and rotate hasp catch to latch position.

(7) Secure latch or hasp catch with piece of metallic seal wire, if available, otherwise, use light wire.

(8) Unit maintenance personnel will mark partially filled boxes in accordance with paragraph 2-14.

.

e. *Fiber Container.*

(1) Holding container at a slight angle (30°-60°), insert item into the container and seat firmly.

(2) Place padding on item as required. Secure with tape, if necessary.

(3) Slide on end cap.

(4) Seal end cap by covering joint with two layers of plastic filament tape or black nylon tape.

## 2-16. Releasing Gas from PA-19 Metal Containers

a. For protection from cover flying open, a wooden box should be fabricated locally with an open front which will allow a PA-19 container to be inserted. Container handle should be accessible with a clearance of one to two inches between container lid and box.

**NOTE**

Gas release should be conducted in a well-ventilated area free of flammables, explosives, fire, open flame and spark-producing devices, other ignition sources or chemical contaminants. All persons opening containers must wear a face shield, flame-retardant clothing, and conductive sole shoes, or safety shoes with conductive straps.

b. For containers with an end handle, hold handle with downward force, and with a non-sparking tool shaped in the form of a "J", pull latch forward. Keep latch in constant contact with hasp, if possible.

c. For containers without an end handle, hold lower half of container body exerting a downward force, and with a non-sparking tool shaped in the form a "J", pull latch forward. Keep latch in constant contact with hasp, if possible.

d. Due to gas pressure within container, cover may open with considerable force. Be sure that PA-19 container is grounded to work bench or other source insuring continuity to a good ground.

e. If cover does not move from container body breaking container seal, utilize "J"-shaped non-sparking tool to pry lid open releasing entrapped gas.

f. A hissing sound may accompany release of gas. If no hissing sound is detected, check to make sure lid has opened. If it has not, repeat step 5. If container is open, reseal container and remove from fabricated wooden box.

Table 2-2. Packing and Marking Data

| Item | Wood packing box | | | Cube (ft) |
|---|---|---|---|---|
| | Items per box | Items per inner pack | Total weight (lb) | |
| CARTRIDGES | | | | |
| Cartridge, Photoflash: M112A1 | 40 | 10 | 75 | 1.5 |
| Cartridge, Photoflash: M123A1 | 12 | 3 | 74.4 | 1.7 |
| Cartridge, Photoflash, Practice: M121 | 40 | 10 | 75 | 1.5 |
| Cartridge, Photoflash, Practice: M124 | 12 | 3 | 74.4 | 1.7 |
| FLARES | | | | |
| Flare, Surface: Airport, M76 | 1 | 1 | 42 | 1.0 |
| Flare, Surface: Trip, M49A1 | 32 | 32 | 46.5 | 1.74 |
| Flare, Countermeasure: Aircraft, M206 | 100 | 50 | 67 | 1.3 |
| Flare, Countermeasure: Aircraft, M211 | 72 | 36 | 92 | 1.3 |
| Flare, Countermeasure: Aircraft, M212 | 100 | 50 | 75 | 1.3 |
| Flare, Ballistic Aerial Target; Infrared Tracking, MK 33, Mod 0 | 50 | 25 | 55.5 | 0.93 |
| SIGNAL | | | | |
| Signal, Illumination, Aircraft | 80 | 10 | 57.5 | 1.6 |
| Double Star, | | | | |
| AN-M37A2 (Red-Red) | | | | |
| AN-M38A2 (Yellow-Yellow) | | | | |
| AN-M39A2 (Green-Green) | 80 | 10 | 57.5 | 1.6 |
| AN-M40A2 (Red-Yellow) | 80 | 10 | 57.5 | 1.6 |
| AN-M41A2 (Red-Green) | 80 | 10 | 57.5 | 1.6 |
| Single Star, | | | | |
| AN-M43A2 (Red) | 80 | 10 | 57.5 | 1.6 |
| AN-M44A2 (Yellow) | 80 | 10 | 57.5 | 1.6 |
| AN-M45A2 (Green) | 80 | 10 | 57.5 | 1.6 |
| TRACERS | | | | |
| Tracer, Double Star, | | | | |
| AN-M53A2 (Yellow Tracer, Red-Yellow) | 80 | 10 | 57.5 | 1.6 |
| AN-M54A2 (Green Tracer, Red-Red) | 80 | 10 | 57.5 | 1.6 |
| AN-M55A2 (Green Tracer, Green-Red) | 80 | 10 | 57.5 | 1.6 |
| AN-M56A2 (Red Tracer, Green-Green) | 80 | 10 | 57.5 | 1.6 |
| AN-M57A2 (Red Tracer, Red-Red) | 80 | 10 | 57.5 | 1.6 |
| SIGNALS | | | | |
| Signal, Kit, Personnel Distress: | | | | |
| M185 (Red) | 240 | 60 | 135 | 5.7 |
| M186 (various colors) | 240 | 60 | 135 | 5.7 |
| Foliage Penetrating (Red) DODIC L119 | 100 | 100 | 90 | 8 |

**Table 2-2. Packing and Marking Data - Continued**

| Items | Wood packing box | | | Cube (ft) |
|---|---|---|---|---|
| | Items per box | Items per inner pack | Total weight (lb) | |
| SIGNALS - Continued | | | | |
| Signal, Illumination, Ground: M187 (red) M188 (white) M189 (green) M190 (amber) | 1,250 | 50 | 81 | 2.1 |
| Signal, Smoke Ground: M166 (white) M167 (green) M168 (red) M169 (yellow) | 240 | 6 | 56 | 1.2 |
| Signal, Illumination, Ground: Green Star Parachute, M19A2 | 30 | 1 | 62 | 1.8 |
| Signal, Smoke Ground: M62 (red) M64 (yellow) M65 (green) M66 (violet) | 30 | 1 | 62 | 1.8 |
| Signal, Illumination, Ground Green Star, Cluster, M125A1 Red Star, Cluster, M158 White Star, Cluster, M159 Red Star Parachute, M126A1 White Star, Parachute, M127A1 Green Star, Parachute, M195 | 36 | 1 | 55 | 1.5 |
| Signal, Smoke Ground: Yellow, Parachute, M194 Green, Parachute, M128A1 Red, Parachute, M129A1 | 36 | 1 | 55 | 1.5 |
| Signal, Illumination, Ground: Red Star, Parachute, M131 | 25 | 1 | 50 | 1.2 |
| Signal, Illumination, Marine: Two Star, AN-MK75 | 100 | 5 | 57 | 1.68 |
| Signal, Smoke and Illumination, Marine: AN-MK13 Mod 0 Simulators | 108 | 12 | 80 | 3.2 |
| Simulator, Projectile Air Burst: Charge, Smoke, Puff, White | 200 | 5 | 79 | 2.48 |
| Simulator, Projectile Air Burst: M27A1B1 | 36 | 9 | 51.3 | 2.28 |
| Simulator, Projectile, Air Burst: M74A1 | 80 | 10 | 57.5 | 1.6 |
| Simulator, Boobytrap: Flash, M117 Illuminating, M118 Whistling, M119 | 150 | 5 | 47 | 1.5 |
| Simulator, Atomic Explosion: M142 | None | 1 | 201 | 11.8 |
| Simulator, Projectile, Ground Burst: M115A2 | 100 | 5 | 67.35 | 3.8 |
| Simulator, Flash, Artillery: M110 | 30 | 1 | 55 | 1.8 |
| Simulator, Flash, Artillery: M21 | 162 | 9 | 94.6 | 4.34 |
| Simulator, Pyrotechnic, Cartridge, 50MM: M800 | 162 | 9 | 94.6 | 4.34 |
| Simulator, Hand Grenade: M116A1 | 150 | 5 | 65 | 3.1 |
| Detonation Simulator, Explosive: M80 | 2,500 | 50 | 68 | 3.8 |
| Simulator, Launching, Antitank, Guided Missile and Rocket, M22 | 240 | 10 | 40 | 1.5 |

Table 2-2. Packing and Marking Data - Continued

| Item | Wood packing box | | | Cube (ft) |
|---|---|---|---|---|
| | Items per box | Items per inner pack | Total weight (lb) | |
| SIMULATORS - Continued | | | | |
| Simulator, Flash, Artillery: M21 | 162 | 9 | 94.6 | 4.34 |
| Simulator, Pyrotechnic, Cartridge, 50MM: M800 | 162 | 9 | 94.6 | 4.34 |
| Simulator, Tank, Main Gun Fire, M30 | 360 | 30 | 21 | 2.1 |
| Simulator, Direct-Indirect Fire Cue, M31A1 | 360 | 12 | 4.73 | 2.1 |
| Simulator, Antitank Guided Missile Signature: M27 | 12 | 12 | 478 | 83.9 |
| Simulator, Hand Grenade: M116A1 | 150 | 5 | 65 | 3.1 |
| Detonation Simulator, Explosive: M80 | 2,500 | 50 | 68 | 3.8 |
| Simulator, Launching, Antitank, Guided Missile and Rocket, M22 | 240 | 10 | 40 | 1.5 |
| MISCELLANEOUS PYROTECHNICS | | | | |
| Fusee, Warning, Railroad: Red, M72 10-minute, 15-minute, 20-minute | 40 | 10 | 46 | 1.3 |
| Marker, Location, Marine: Dye, AN-M59 | 30 | 10 | 70 | 4.4 |
| Starter, Fire: M2 | 500 | 1 | 35 | 1.12 |

# CHAPTER 3
# SHIPMENT AND STORAGE

## Section I. SHIPMENT

### 3-1. Precautions

Pyrotechnic devices must be adequately protected during shipment. Damaged, contaminated, or otherwise degraded material may be dangerous and its usefulness may be impaired.

### 3-2. Transportation

a. Block and brace pyrotechnic packages being transported in trucks, jeeps, and other tactical vehicles. Blocking and bracing must be adequate to withstand sudden stops and starts, as well as off-road operations.

b. If packing is broken or damaged in shipment, inspect as instructed in paragraph 2-3 and take corrective action as indicated.

### 3-3. Handling

**CAUTION**

**IMPROPER HANDLING OF PYROTECHNIC MATERIALS CAN AFFECT THEIR RELIABILITY AND SAFETY, CREATING CONDITIONS HAZARDOUS TO PERSONNEL.**

Do not roll, drop, throw, or subject boxes to rough handling.

## Section II. STORAGE

### 3-4. Precautions

a. Select level, well-drained sites free from readily ignitable and flammable materials.

b. Provide nonflammable or fire-resistant overhead covers (e.g., tarpaulin) for all items. Maintain overhead space of approximately 18 inches between cover and items. Keep cover at least 6 inches from pile on the ends and at sides to permit circulation of air.

c. Temporarily store unserviceable items in a segregated area.

d. Temporarily store items returned by the using unit in a segregated area for inspection and repacking.

### 3-5. Data

a. *Field Storage Compatibility Groups.*

(1) Storage compatibility groups consist of primary groups of pyrotechnic items, with comparable storage risks grouped together for storage in the field. Storage safety procedures are based on the following: (a) A Field Storage Unit (FSU) is composed of a group of stacks. The maximum quantity of items is stored in each stack within each FSU. The minimum distance between FSU's is specified in table 3-1.

(b) Normally, only one kind of pyrotechnic material is stored in a stack. Items should be arranged in stacks in the best manner to best facilitate inventory and inspection. Where camouflage is a consideration, stacks may be stepped in toward the top (terraced or pyramid stacking) to decrease shadows.

(2) All pyrotechnic items in this technical manual are in field storage category D.

**Table 3-1. Quantity-Distance for Field Storage**

| Gross tons per stacks | Gross tons per FSU | Minimum distance in feet between | | | |
|---|---|---|---|---|---|
| | | Stacks unbarricaded | Stacks barricaded | FSU unbarricaded | Categories |
| Less than 10 | 400 | 40 | 30 | 300 | 750 |
| 10-20 maximum | 400 | 50 | 40 | 300 | 760 |

b. *Quantity-Distance Table For Field Storage.* Data specified in table 3-1 is to be used as a guide when storing military pyrotechnics in the field only. Any reduction of distances or increase in tonnage will increase the probability of loss of life and pyrotechnic devices.

c. *Permanent Installation Storage*. For permanent storage, standard quantity-distance classes and storage compatibility groups given in TM 9-1300-206 apply.

### 3-6. Procedures

a. When stacking, use heavy, well-supported dunnage to prevent the stack from sinking, and to keep the bottom tier off the ground.

b. Use a hardstand of gravel and sand, when possible, rather than excessive dunnage.

c. Allow at least a 6-inch clearance beneath the pile for air circulation.

d. Dig suitable trenches around stacking area to prevent water from flowing under the pile.

# APPENDIX A
# REFERENCES

## A.1 SCOPE.

This appendix lists all Army regulations, forms, pamphlets, supply bulletins, supply catalogs, technical manuals, and miscellaneous publications referenced in this manual. The publication index (DA Pam 25-30) should be consulted frequently for latest changes or revisions of references given in this appendix and for new publications relating to the material covered in this manual.

## A.2 ARMY REGULATIONS.

| | |
|---|---|
| Malfunctions Involving Ammunition and Explosives | AR 75-1 |
| Accident Reporting and Records | AR 385-40 |
| U.S. Army Explosives Safety Program | AR 385-64 |
| Reporting of Supply Discrepancies | AR 735-11-2 |

## A.3 FORMS.

| | |
|---|---|
| Recommended Changes to Publications and Blank Forms | DA Form 2028 |
| Transportation Discrepancy Report | SF Form 361 |
| Report of Discrepancy | SF Form 364 |

## A.4 PAMPHLETS.

| | |
|---|---|
| Consolidated Index of Army Publications and Blank Forms | DA Pam 25-30 |
| Ammunition and Explosives Safety Standards | DA Pam 385-64 |
| Functional Users manual for the Maintenance Management System (TAMMS) | DA Pam 738-750 |

## A.5 TECHNICAL MANUALS.

| | |
|---|---|
| Army Ammuniiton Data Sheets for Military Pyrotechnics (Federal Supply Class 1370) | TM 43-0001-37 |
| Aviation Unit Maintenance and Aviation Intermediate Maintenance Manual (Including Repair Parts and Special Tools List) for Dispenser, General Purpose Aircraft: M130 | TM 9-1095-206-12&P |
| Operator and Organizational Maintenance Manual (Including Repair Parts and Special Tools List) for Flare, Aircraft: Parachute, White, MK 45 Mod 0 with Adapter for Dispenser XM19 and Dispenser, Flare: XM19 | TM 9-1370-201-12 |
| Operators Manual for Pyrotechnic Signals | TM 9-1370-206-10 |
| Operators Manual - Pyrotechnic Simulators | TM 9-1370-207-10 |
| Photoflash Cartridges, Surface Flares and Miscellaneous Pyrotechnic Items | TM 9-1370-208-10 |

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# 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 to maintenance level will automatically be authorized to be performed at any higher maintenance level.

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

### B-2. 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 or 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 groups of similar devices.

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

### B-3. Explanation of Format

a. *Group Number*. Column 1 lists the group numbers, the purpose of which is to identify specific devices or groups of similar devices.

b. *Functional Group.* Column 2 lists the item names of parts and assemblies on which maintenance is authorized.

c. *Maintenance Function*. Column 3 lists the twelve maintenance functions defined in B-2 above. Capital letters are inserted under appropriate maintenance functions, on line with each functional group, to indicate the lowest level of maintenance authorized to perform that function. The symbols used and the maintenance category that each represents are as follows:

| *Symbol* | *Explanation* |
|---|---|
| C | Operator/Crew |
| O | Organizational |
| F | Direct Support |
| H | General Support |
| D | Depot |

d. *Tools and Equipment and Remarks.* Column 4, Tools and Equipment, and Column 5, Remarks, are not applicable.

## Section II. MAINTENANCE ALLOCATION CHART FOR PYROTECHNICS

| (1) | (2) | (3) | | | | | | | | | | | | (4) | (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Maintenance Function | | | | | | | | | | | | | |
| | | | | Service | | | | | | | Renovate | | | | |
| Group No. | Functional Group | Inspect | Test | Unpack | Repack | Clean | Touch up | Mark | Install | Adjust | Paint | Repair | Replace | Tools and equip-ment | Remarks |
| | GROUP 01, CARTRIDGES | | | | | | | | | | | | | | |
| 0101 | Cartridge, Photoflash: M112A1; M123A1, PRACTICE, M121; M124 | | | | | | | | | | | | | | |
| | Cartridge | C | D | C | 0 | - | - | - | C | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| | GROUP 02, FLARES | | | | | | | | | | | | | | |
| 0201 | Flare, Surface: Trip M49A1 | | | | | | | | | | | | | | |
| | Flare | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0202 | Flare, Aircraft, Countermeasure, M206 | | | | | | | | | | | | | | |
| | Flare | C | D | C | O | - | - | - | C | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0203 | Flare Ballistic Aerial Target; Infrared Tracking MK 33, MOD 0 | | | | | | | | | | | | | | |
| | Flare | C | D | C | O | - | - | - | C | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0204 | Flare, Aircraft, Countermeasure, M211 | | | | | | | | | | | | | | |
| | Flare | C | D | C | O | - | - | - | C | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0205 | Flare, Aircraft, Countermeasure, M212 | | | | | | | | | | | | | | |
| | Flare | C | D | C | O | - | - | - | C | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| | GROUP 03, SIGNALS | | | | | | | | | | | | | | |
| 0301 | Signal, Illumination, Aircraft: All | | | | | | | | | | | | | | |
| | Signal | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0302 | Signal Kit, Personnel Distress M185, M186 | | | | | | | | | | | | | | |
| | Signal Kit | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0303 | Signal, Illumination, Ground: M187, M188, M189, M190 | | | | | | | | | | | | | | |
| | Signal | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |

## Section II. MAINTENANCE ALLOCATION CHART FOR PYROTECHNICS

| (1) GROUP NUMBER | (2) Functional group | (3) Maintenance functions | | | | | | | | | | | | (4) Tools and equipment | (5) Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SERVICE | | | | | | | RENOVATE | | | | |
| | | INSPECT | TEST | UNPACK | REPACK | CLEAN | TOUCH UP | MARK | INSTALL | ADJUST | PAINT | REPAIR | REPLACE | | |
| 0304 | Signal, Illumination, Ground: Cluster, M125A1, M158, M159, Signal, Illumination, Ground, Parachute: M126A1, M127A1, M195 Signal, Smoke, Ground: Parachute, M128A1, M129A1, M194 | | | | | | | | | | | | | | |
| | Signal | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0305 | Signal, Illumination, Ground: Parachute, M131 | | | | | | | | | | | | | | |
| | Signal | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0306 | Signal, Illumination, Ground: Green Star, Parachute, M19A2, Signal, Smoke,Ground: M62, M64, M65, M66 | | | | | | | | | | | | | | |
| | Signal | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0307 | Signal, Illumination, Marine: Two Star, Red AN-M75 | | | | | | | | | | | | | | |
| | Signal | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0308 | Signal, Smoke and Illumination, Marine MK 13 MOD 0 | | | | | | | | | | | | | | |
| | Signal | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0309 | Signal, Smoke, Ground: M166, M167, M168, M167 | | | | | | | | | | | | | | |
| | Signal | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0310 | Signal Kit, Personnel Distress: Foliage Penetrating (Red DODIC L119) | | | | | | | | | | | | | | |
| | Signal Kit | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | O | |
| | GROUP 04, SIMULATORS | | | | | | | | | | | | | | |
| 0401 | Simulator, Atomic Explosion: M142 | | | | | | | | | | | | | | |
| | Simulator | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |

## Section II. MAINTENANCE ALLOCATION CHART FOR PYROTECHNICS

| (1) GROUP NUMBER | (2) Functional group | (3) Maintenance functions | | | | | | | | | | | | (4) Tools and equipment | (5) Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SERVICE | | | | | | | RENOVATE | | | | |
| | | INSPECT | TEST | UNPACK | REPACK | CLEAN | TOUCH UP | MARK | INSTALL | ADJUST | PAINT | REPAIR | REPLACE | | |
| 0402 | Simulator, Detonation, Explosive, M80 | | | | | | | | | | | | | | |
| | Detonation Simulator | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0403 | Simulators, Explosive Boobytrap: Flash, M117: Illuminating, M118: Whistling, M119 | | | | | | | | | | | | | | |
| | Simulator | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0404 | Simulator, Flash, Artillery: M110 | | | | | | | | | | | | | | |
| | Simulator | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0405 | Simulator, Hand Grenade, M116A1 | | | | | | | | | | | | | | |
| | Simulator | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0406 | Simulator, Projectile Airburst: M27A1B1 | | | | | | | | | | | | | | |
| | Simulator | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0407 | Simulator, Projectile, Airburst: M74 or M74A1 | | | | | | | | | | | | | | |
| | Simulator | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0408 | Simulator, Projectile Airburst: Charge, Smoke, Puff, White | | | | | | | | | | | | | | |
| | Simulator | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| | Percussion Cap Primer | C | D | C | O | - | - | - | - | - | - | - | - | | |
| 0409 | Simulator, Projectile Groundburst, M115A2 | | | | | | | | | | | | | | |
| | Simulator | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0410 | Simulator, Flash, Artillery: M21 | | | | | | | | | | | | | | |
| | Simulator | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0411 | Simulator, Pyrotechnic, Ctg, 50mm: | | | | | | | | | | | | | | |
| | Simulator: M800 | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0412 | Simulator, Launching, Anti-Tank, Guided Missile and Rocket, M22 | C | - | C | C | - | - | - | C | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |

## Section II. MAINTENANCE ALLOCATION CHART FOR PYROTECHNICS

| (1) | (2) | (3) | | | | | | | | | | | | (4) | (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Maintenance Function | | | | | | | | | | | | | |
| | | | | Service | | | | | | | Renovate | | | | |
| Group No. | Functional Group | Inspect | Test | Unpack | Repack | Clean | Touch up | Mark | Install | Adjust | Paint | Repair | Replace | Tools and equip-ment | Remarks |
| | GROUP 04, SIMULATORS - Continued | | | | | | | | | | | | | | |
| 0413 | Simulator, Tank Main Gun Fire | | | | | | | | | | | | | | |
| | Simulator: M30 | - | O | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0414 | Simulator, Direct-Indirect Fire Cue | | | | | | | | | | | | | | |
| | Simulator: M31A1 | - | P | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0415 | Simulator, Antitank Guided Missile Signature | | | | | | | | | | | | | | |
| | Simulator: M27 | - | O | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| | GROUP 05, MISCELLANEOUS PYROTECHNICS | | | | | | | | | | | | | | |
| 0501 | Fusees, Warning, Railroad: Red, M72, 10, 15, and 20-minutes | | | | | | | | | | | | | | |
| | Fusee | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0502 | Marker, Location, Marine: Dye AN-M59 | | | | | | | | | | | | | | |
| | Marker | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |
| 0503 | Starter, Fire: M2 | | | | | | | | | | | | | | |
| | Starter | C | D | C | O | - | - | - | - | - | - | - | - | | |
| | Packing Material | O | - | - | - | - | - | O | - | - | - | O | O | | |

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# APPENDIX C
# PACKING MATERIALS, ACCESSORIES, AND TOOLS

## Section I. INTRODUCTION

### C-1. Scope

This appendix lists packing materials, accessories, and tools required for the performance of organizational maintenance for Military Pyrotechnics.

### C-2. General

This appendix is divided into the following sections:

a. Section II Packing Materials. A list of packing materials authorized for the performance of maintenance at the organizational level.

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

### C-3. Explanation of Columns

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

a. Part Number (Drawing Number). Indicates the primary number used by the manufacturer which controls the design and characteristics of the item. Drawings can be obtained from originating source (see CAGE Code).

b. Commercial and Government Entity Code (CAGEC) (Formerly known as Federal Supply Code for Manufacturers (FSCM)). A five-digit code used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

c. Figure Number. This column lists the number of the figure where the item is identified/located.

d. Description. Indicates the federal item name and any additional description of the item required.

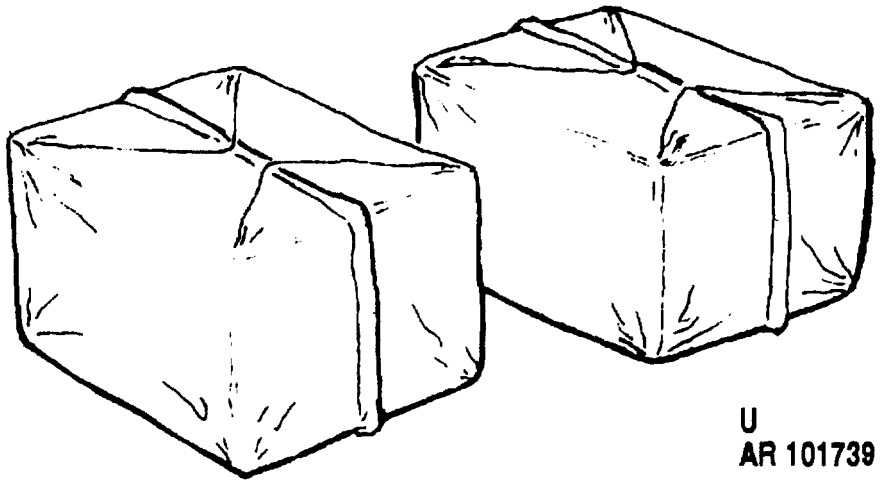


**Figure C-1. Typical Box, Packing**

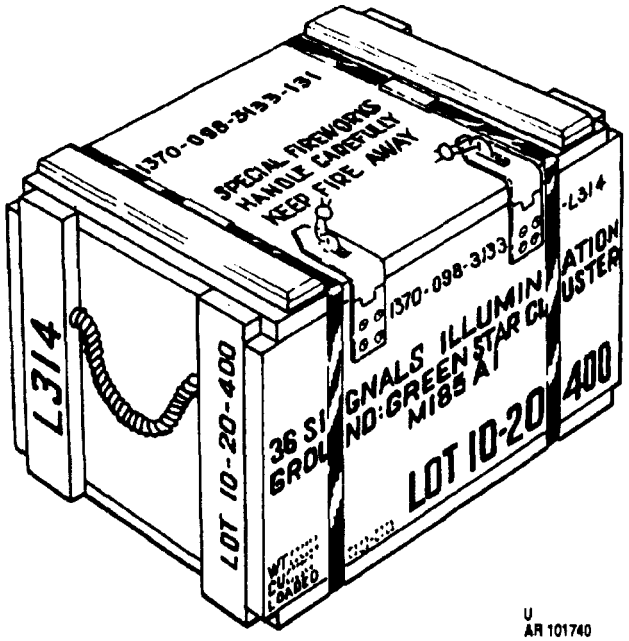


**Figure C-2. Typical Ammunition Packing Box**

## Section II. PACKING MATERIALS

| Part No. (Dwg No.) | CAGE Code | Figure No. | Description |
|---|---|---|---|
| | | | CARTRIDGES |
| | | | CARTRIDGE, PHOTOFLASH: M112A1<br>CARTRIDGE, PHOTOFLASH, PRACTICE: M121 |
| 8860564 | 19203 | C-1 | BOX, PACKING, AMMUNITION: fiberboard |
| 8860565 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| MIL-B-117 | 81349 | C-1 | ENVELOPE, PACKAGING: 9-1/8 in. wide, 15-5/8 in. lg |
| | | | CARTRIDGE, PHOTOFLASH: M123A1<br>CARTRIDGE, PHOTOFLASH, PRACTICE: M124 |
| 7548472 | 19203 | C-1 | BOX, PACKING, AMMUNITION: |
| 7548473 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| MIL-B-117 | 81349 | C-1 | ENVELOPE, PACKAGING: 9-1/8 in. wide, 15-5/8 in. lg |
| | | | FLARES |
| | | | FLARE, SURFACE: TRIP, M49A1 |
| 8830880 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| 8830881 | 19203 | C-1 | BOX, PACKING, AMMUNITION: fiberboard |
| MIL-B-117 | 81349 | C-1 | ENVELOPE, PACKAGING: 9-1/8 in. wide, 15-5/8 in. lg |
| | | | FLARE, AIRCRAFT, COUNTERMEASURE: M211 |
| 12988805 | 19200 | C-12 | BOX, PACKING, AMMUNITION: |
| 12988808 | 19200 | C-13 | BOX, PACKING, AMMUNITION: |
| | | | FLARE, AIRCRAFT, COUNTERMEASURE; M212 |
| 12988844 | 19200 | C-12 | BOX, PACKING, AMMUNITION: |
| 12988845 | 19200 | C-13 | BOX, PACKING, AMMUNITION: |
| | | | SIGNALS |
| | | | SIGNAL ILLUMINATION, AIRCRAFT: |
| 8836949 | 19203 | C-1 | BOX, PACKING, AMMUNITION: fiberboard |
| 8836950 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| MIL-B-117 | 81349 | C-1 | ENVELOPE, PACKAGING: 9-1/8 in. wide, 15-5/8 in. lg |
| | | | SIGNAL KIT, PERSONNEL DISTRESS: M185 AND M186 |
| 9231550 | 19203 | C-1 | BOX, PACKING, AMMUNITION: |
| 9231551 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| MIL-B-117 | 81349 | C-1 | ENVELOPE, PACKAGING: 9-1/8 in wide, 15-5/8 in. lg |

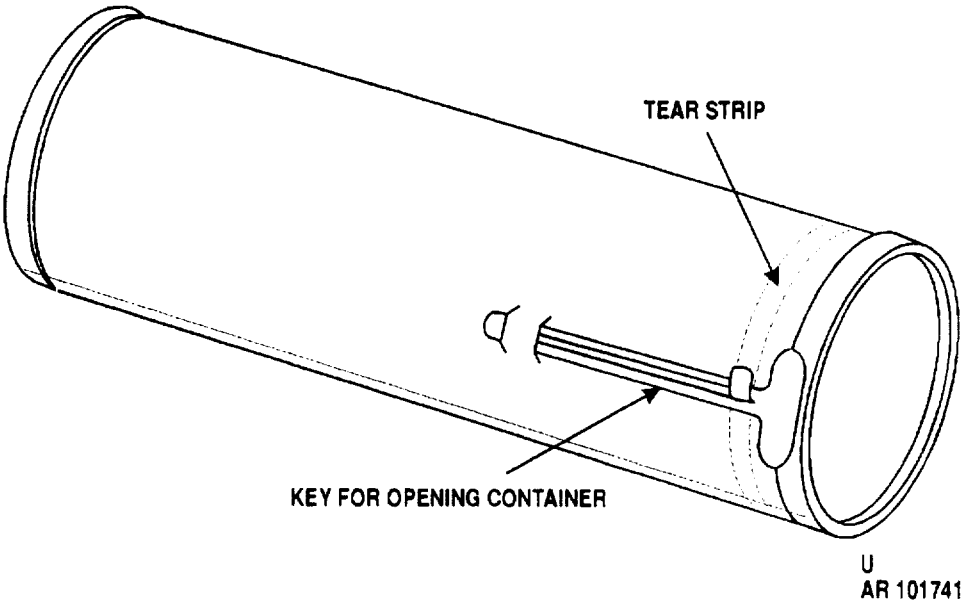


**Figure C-3. Metal Ammunition Container**

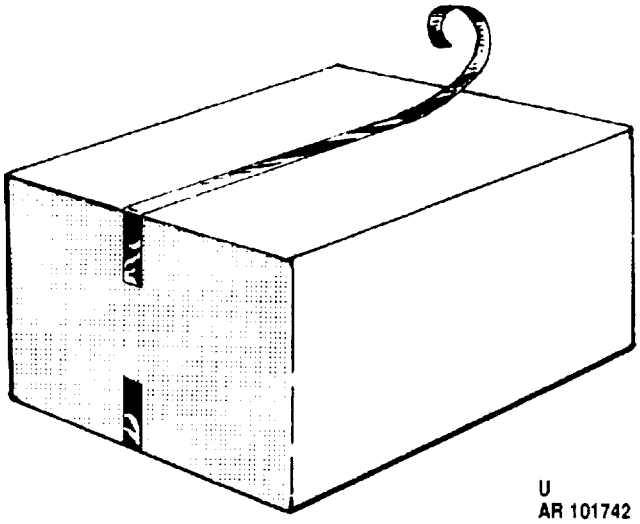


**Figure C-4. Ammunition Fiber Container**

## Section II. PACKING MATERIALS (CONT'D)

| Part No. (Dwg No.) | CAGE Code | Figure No. | Description |
|---|---|---|---|
| | | | **SIGNALS- Cont'd** |
| | | | SIGNAL, ILLUMINATION, GROUND: M187, M188, M189, AND M190 |
| 9234287 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| 9234286 | 19203 | C-2 | BOX, PACKING, AMMUNITION: removable tray and sleeve, inner and outer |
| MIL-B-117 | 81349 | C-1 | ENVELOPE, PACKAGING: 9-1/8 in. wide, 15-5/8 in. lg |
| | | | SIGNAL, ILLUMINATION, GROUND: CLUSTER M125A1, M158, M159; PARACHUTE M126A1, M127A1, M195; SIGNAL, SMOKE, GROUND: PARACHUTE, M128A1, M129A1, M194 |
| 7548415 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| 7548414 | 19203 | C-3 | CAN, HERMETIC SEALING: M492 |
| | | | SIGNAL, ILLUMINATION GROUND: PARACHUTE, M131 |
| 8837837 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| 8837838 | 19203 | C-3 | CAN, HERMETIC SEALING: M291 |
| | | | SIGNAL, ILLUMATION, GROUND: PARACHUTE, M19A2; SIGNAL, SMOKE, GROUND: M62, M64, M65, AND M66 |
| 8866684 | 19203 | C-4 | CONTAINER, AMMUNITION: M104A1, fiber |
| 8866685 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| | | | SIGNAL, ILLUMINATION, MARINE: AN-M75 |
| 76-1-870 | 19203 | C-3 | CONTAINER, PACKING ASSEMBLY: METAL; consists of: bag, packing; bag; bottom; cover; body |
| | | | SIGNAL, SMOKE, AND ILLUMINATION, MARINE: MK13 MOD 0 |
| 563246 | 10001 | C-2 | BOX, AMMUNITION: MK3 Mod 0 |
| 593127 | 10001 | C-1 | BOX, PACKING, AMMUNITION: MK3, Mod 0 fiberboard |

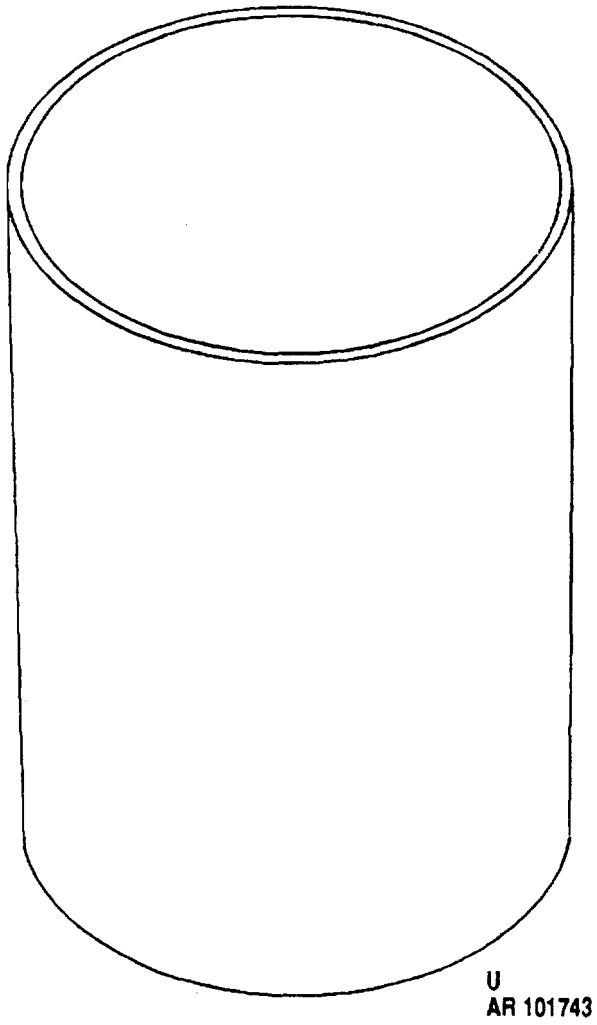


**Figure C-5. Ammunition Fiber Drum**

## Section II. PACKING MATERIALS (CONTD)

| Part No. (Dwg No.) | CAGE Code | Figure No. | Description |
|---|---|---|---|
| | | | **SIGNALS-Cont'd** |
| | | | SIGNAL, SMOKE, GROUND: M166, M167, M168, M169 |
| 9210950 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| MIL-B-117 | 81349 | C-1 | ENVELOPE, PACKAGING: 9-1/8 in. wide, 15-5/8 in. lg |
| | | | SIGNAL KIT: |
| 8799715 | 19203 | C-2 | BOX, PACKING, AMMUNITION: type III; style, C30, cleated panel |
| 6000D7047-1 | 27934 | | SIGNAL KIT, PERSONNEL DISTRESS: |
| | | | **SIMULATORS** |
| | | | SIMULATOR, ATOMIC EXPLOSION: M142 |
| 8864219 | 19203 | C-5 | DRUM, FIBER, AMMUNITION: |
| | | | DETONATION SIMULATOR, EXPLOSIVE: M80 |
| 9362676 | 19203 | C-1 | BOX, PACKING, AMMUNITION: M80 |
| 8853678 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| MIL-B-117 | 81349 | C-1 | ENVELOPE, PACKAGING: 9-1/8 in. wide, 15-5/8 in. lg |
| | | | SIMULATORS BOOBY TRAP: FLASH, MI17; ILLUMINATING M118 |
| 8799712 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| 8799713 | 19203 | C-1 | BOX, PACKING, AMMUNITION: fiberboard |
| MIL-B-117 | 81349 | C-1 | ENVELOPE, PACKAGING: 9-1/8 in. wide, 15-5/8 in. lg |
| | | | SIMULATOR, BOOBY TRAP: WHISTLING, M119 |
| 8799716 | 19203 | C-1 | BOX, PACKING, AMMUNITION: fiberboard |
| 8799717 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| MIL-B-117 | 81349 | C-1 | ENVELOPE, PACKAGING: 9-1/8 in. wide, 15-5/8 in. lg |
| | | | SIMULATOR, FLASH, ARTILLERY: M110 |
| 8880486 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| 8880487 | 19203 | C-4 | CONTAINER, AMMUNITION, FIBER: M242 |

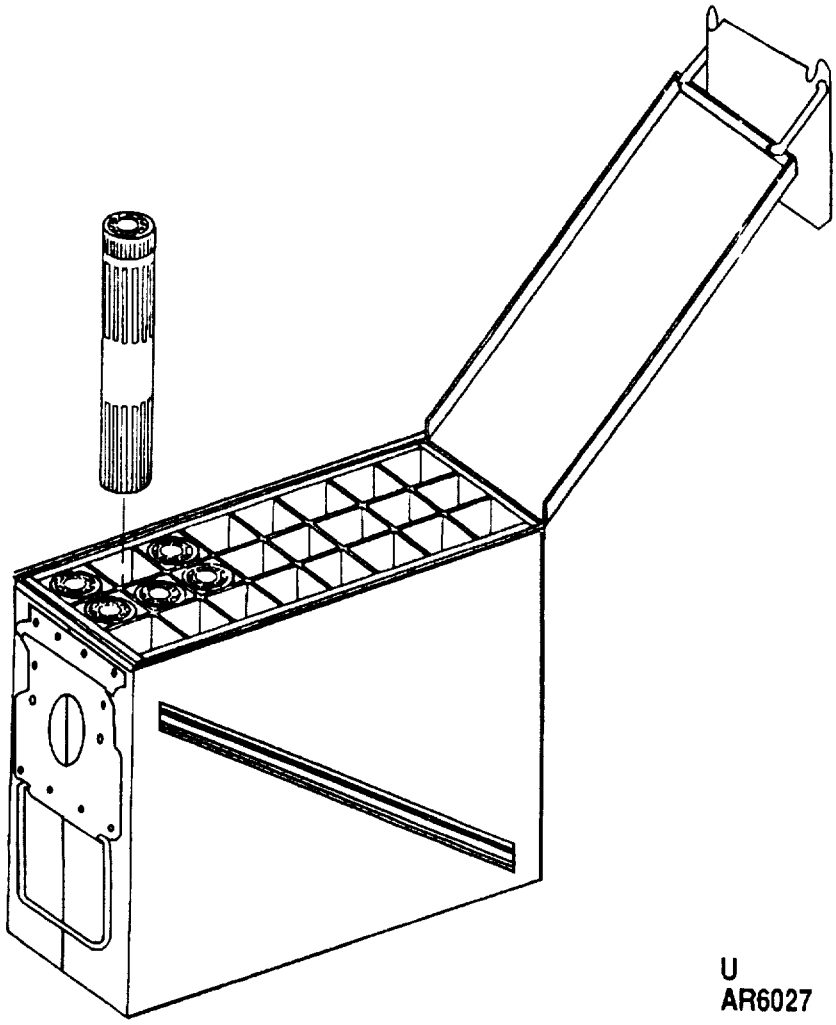


**Figure C-6. Shipping and Storage Container, Cartridge: M548**

## Section II. PACKING MATERIALS - Continued

| Part No. (Dwg No.) | CAG'E Code | Figure No. | Description |
|---|---|---|---|
| | | | SIMULATORS - Continued |
| | | | SIMULATOR, HAND GRENADE: M116A1 |
| 8799714 | 19203 | | BOX, PACKING, AMMUNITION: |
| MIL-B-117 | 81349 | C-1 | ENVELOPE, PACKAGING: 9-1/8 in. wide, 15-5/8 in. lg |
| | | | SIMULATOR, PROJECTILE AIRBURST: M27A1131 |
| 8860597 | 19203 | C-2 | BOX, PACKING AMMUNITION: |
| 8860596 | 19203 | C-1 | CARTON, PACKING, AMMUNITION: |
| MIL-B-117 | 81349 | C-1 | ENVELOPE, PACKAGING: 9-1/8 in. wide, 15-5/8 in. lg |
| | | | SIMULATOR, PROJECTILE AIRBURST: M74 or M74A1 |
| 8836949 | 19203 | C-1 | BOX, PACKING, AMMUNITION: fiberboard |
| 8836950 | 19203 | C-2 | BOX, PACKING, AMMUNITION: plywood, NN-P-530 |
| MIL-B-117 | 81349 | C-4 | ENVELOPE, PACKAGING: 9-1/8 in. wide, 15-5/8 in. lg |
| | | | SIMULATOR, PROJECTILE AIRBURST: CHARGE, SMOKE PUFF, WHITE |
| 20-4072 | 81361 | C-2 | BOX, PACKING, AMMUNITION: M114 fiber containers |
| 76-2-71 | 19203 | C-4 | CONTAINER, PACKING, ASSEMBLY: fiber |
| | | | SIMULATOR, PROJECTILE GROUND BURST: M115A2 |
| 8799710 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| 799711 | 19203 | C-1 | BOX, PACKING, AMMUNITION: B-17, paperboard |
| MIL-B-117 | 81349 | C-1 | ENVELOPE, PACKAGING: 9-1/8 in. wide, 15-5/8 in. lg |
| | | | SIMULATOR, FLASH ARTILLERY: M21 |
| 8880487 | 19203 | | CONTAINER, AMMUNITION, FIBER: M242 |
| | | | SIMULATOR, TANK MAIN GUN SIGNATURE (MGSS): M30 |
| 12975499 | 19200 | C-8 | CONTAINER, AMMUNITION, FIBERBOARD |
| | | | SIMULATOR, DIRECT-INDIRECT FIRE CUE (DIFCUE): M31A1 |
| 12978487 | 19200 | C-9 | CONTAINER, AMMUNITION, FIBERBOARD |
| 12978484 | 19200 | C-2 | BOX, WOOD |
| | | | SIMULATOR, ANTITANK GUIDED MISSILE SIGNATURE: M27 |
| 12598324 | 19200 | C-10 | BOX, FOAM SUPPORT |
| 12598333 | 19200 | C-11 | BOX, PALLET TYPE, WIREBOUND |
| | | | SIMULATOR, MGSS or DIFCUE |
| | | | SIMULATOR, PYROTECHNIC, CARTRIDGE: 50MM, M80 |
| 8880487 | 19203 | | CONTAINER, AMMUNITION, FIBER: M242 |

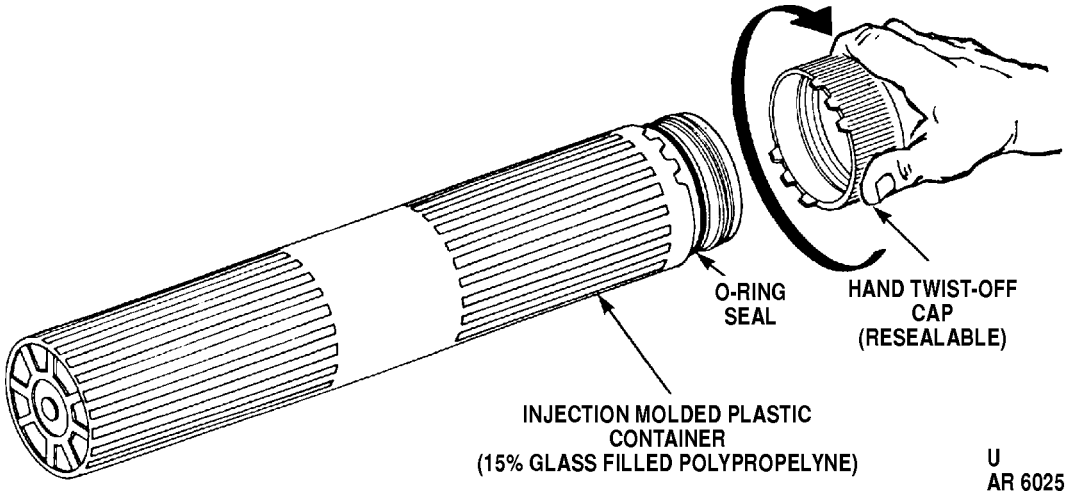


Figure C-7. Packing Preformed: PA142 (for Container, Signal)

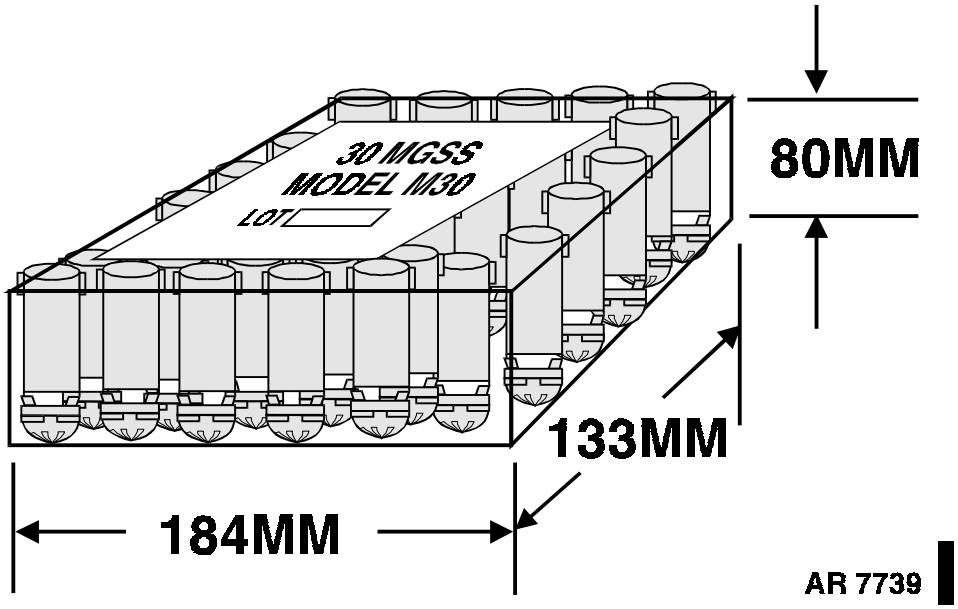


Figure C-8. Packing and Marking for AVCPS, MGSS.

## Section II. PACKING MATERIALS (CONT'D)

| Part No. (Dwg No.) | CAGE Code | Figure No. | Description |
|---|---|---|---|
| | | | SIMULATORS-Cont'd |
| | | | SIMULATOR, LAUNCHING, ANTI-TANK, GUIDED MISSILE AND ROCKET: M22 |
| | | | MISCELLANEOUS PYROTECHNICS |
| | | | FUSES, WARNING, RAILROAD, RED, 20 MIN.: M72 |
| 8835158 | 19203 | C-1 | BOX, PACKING, AMMUNITION: fiberboard |
| 835159 | 19203 | C-2 | BOX, PACKING, AMMUNITION: wood |
| MIL-B-117 | 81349 | C-1 | ENVELOPE, PACKAGING: 9-1/8 in. wide, 15-5/8 in. lg |
| | | | MARKER, LOCATION, MARINE: DYE, AN-M59 |
| 9224974 | 19203 | C-1 | BOX, PACKING, AMMUNITION: fiberboard |
| 9224975 | 19203 | C-2 | BOX, PACKING, AMMUNITION: |
| MIL-B-117 | 81349 | C-1 | ENVELOPE, PACKAGING: 9-1/8 in. wide, 15-5/8 in. lg |
| | | | STARTER, FIRE: M2 |
| C4-14-4 | 81361 | C-2 | BOX, WOOD: |
| 7258943 | 19200 | C-6 | SHIPPING AND STORAGE CONTAINER, CARTRIDGE: M548 |
| 12900007 | 19200 | C-7 | PACKING PREFORMED: FOR CONTAINER, SIGNAL PA142 |

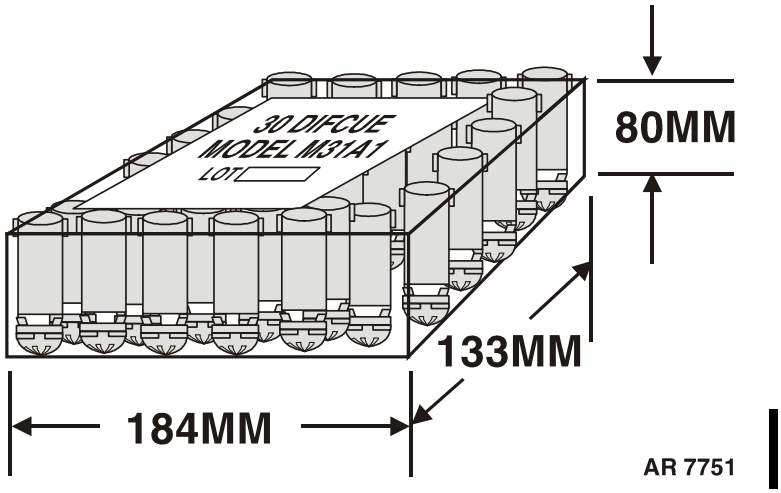


Figure C-9. Packing and Marking for AVCPS, DIFCUE.

## SECTION III. SPECIAL PACKING TOOLS

| Part No. (Dwg No.) | CAGE Code | Figure No. | Description |
|---|---|---|---|
| 8864731 | 19203 | | SALLEE CLOSER: (NSN 5120-00-319-5434) |
| MIL-S-43104 | 81349 | | STRAPPING AND SEALING KIT: type III (5/8-inch strapping) (NSN 3540-00-565-6244) |
| MIL-S-43104 | 81349 | | STRAPPING AND SEALING KIT: type V (I-1/4-inch strapping) (NSN 3540-00-565-6244) |

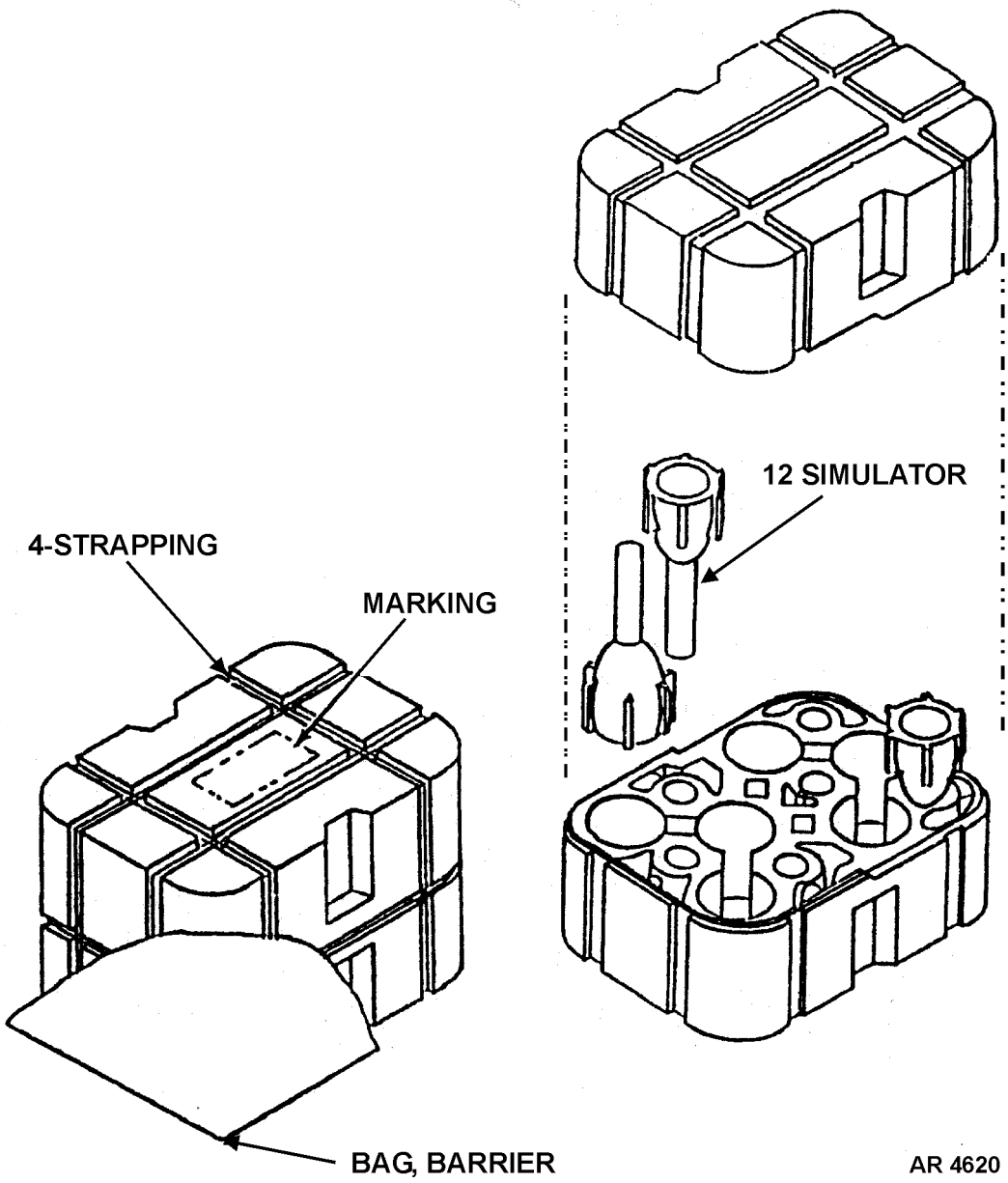


Figure C-10. Packing and Marking for Simulator, Antitank Guided Missile Signature.

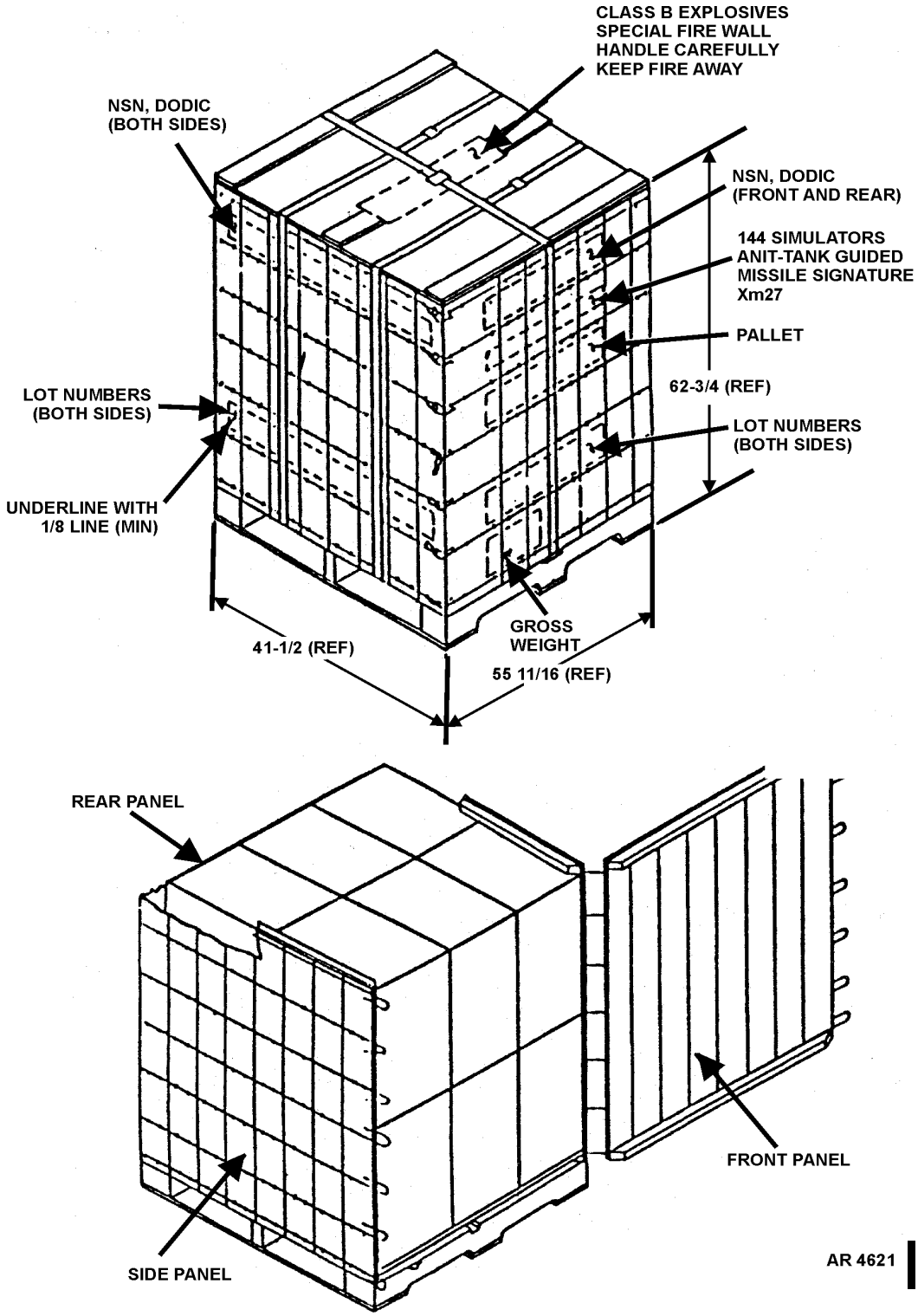


Figure C-11. Packing and Marking for Box, Pallet Type, Wirebound for Simulator, Antitank Guided Missile Signature.

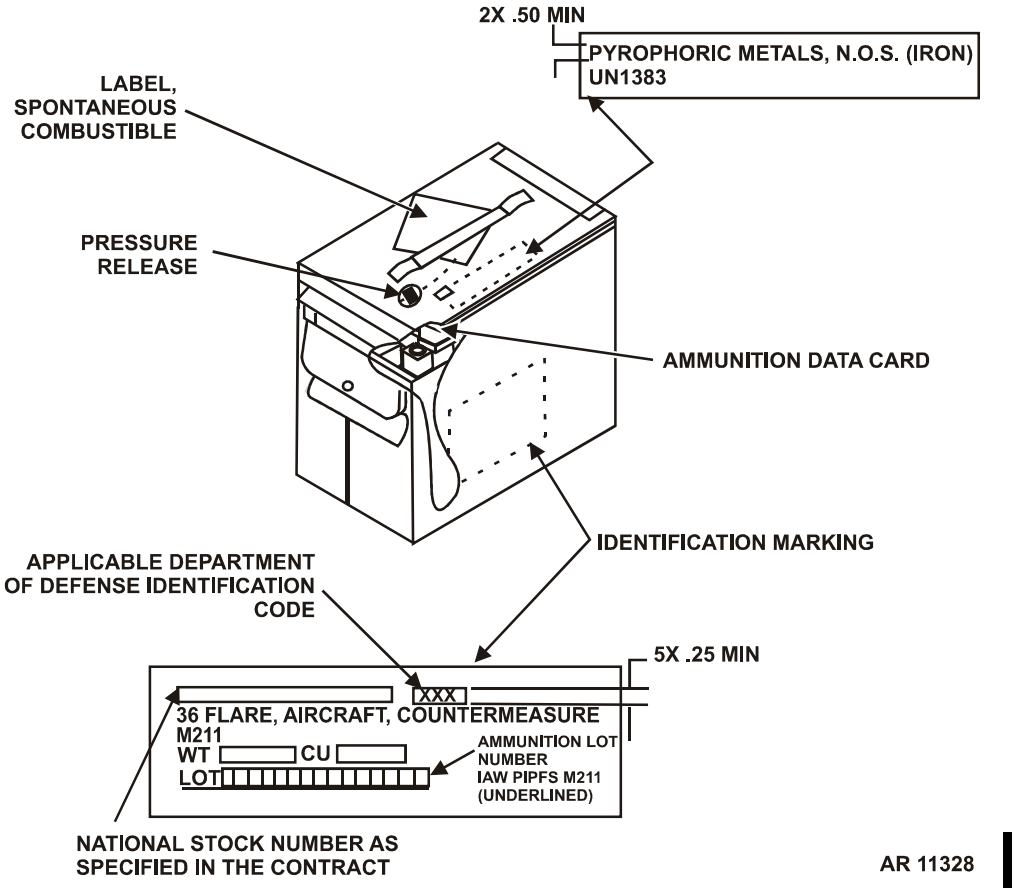


Figure C-12. Packing and Marking for Container, PA19.

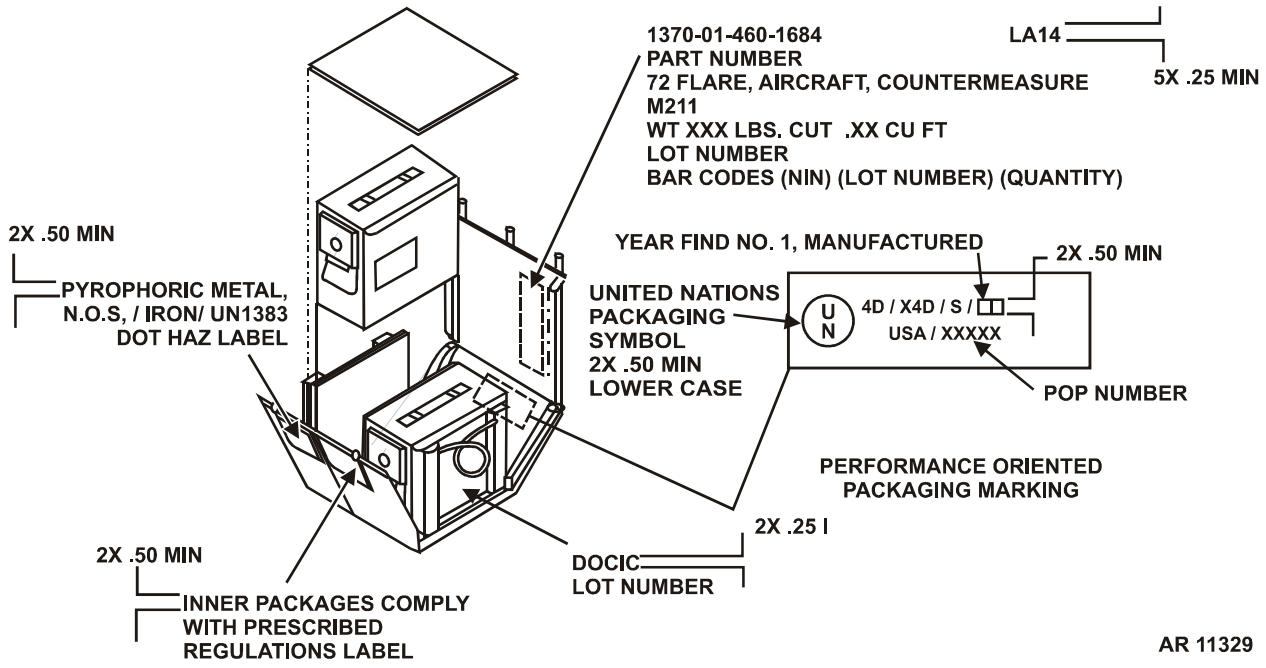


Figure C-13. Packing and Marking for Wood Box.

# APPENDIX D

# EXPENDABLE AND DURABLE ITEMS LIST

## SECTION I. INTRODUCTION

### D-1. SCOPE

a. This appendix lists expendable and durable items needed for Military Pyrotechnics. This listing is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable Items (except Medical, Class V, Repair Parts, and Heraldic items).

b. Expendable and Durable item supplies should be requisitioned through normal supply channels to comply with maintenance requirements.

### 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.

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 (e.g., 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 requirement.

## 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 | 6810-00-184-4796 | Acetone, Technical: liquid, 5 gal can (81348) O-A-51 | CN |
| 2 | O | 6810-00-543-7415 | Alcohol Denatured: grade III, liquid, 1 gal can (81348) O-E-760 | GL |
| 3 | O | 8020-00-597-4767 | Brush, Artist's: flat 5/8 in. EA (81348) H-B-118 | |
| 4 | O | 7920-00-255-5135 | Brush, Wire Scratch: wood and copper beryllium, alloy curved handle, 14in. X 15/16 in. block, 6 in. X 1-1/4 in. wire brush (81348) HB178 | EA |
| 5 | O | 7920-00-269-0933 | Brush, Wire Scratch: wood and copper beryllium alloy, straight handle, 7 in. X 1 in. block, 6 in. X 1-1/4 in. wire brush (81348) HB178 | EA |
| 6 | O | 8010-00-848-9272 | Enamel: olive drab, No. 34088, spray can (81348) TT-E-516 | PT |
| 7 | O | 8010-00-878-5761 | Enamel: white, No. 37875, spray can (81348) TT-E-516 | PT |
| 8 | O | 8010-00-910-8154 | Enamel: black, No. 37038, spray can (81348) TT-E-516 | PT |
| 9 | O | 8010-01-088-0096 | Enamel: orange, No. 32246, spray can (81348) TT-E-515 | QT |
| 10 | O | 8010-00-297-2114 | Enamel: red, No. 31136, can (96906) MS35527-10 | GL |
| 11 | O | 8010-00-297-2111 | Enamel: white, No. 37875 ((81348) TT-E-516 | GL |

## SECTION II. EXPENDABLE AND DURABLE ITEMS LIST (CONT'D)

| (1) ITEM NUMBER | (2) LEVEL | (3) NATIONAL STOCK NUMBER | (4) DESCRIPTION | (5) (U/M)/ (U/I) |
|---|---|---|---|---|
| 12 | O | 8010-00-297-2112 | Enamel: yellow, No. 33538 (96906) MS35527-12 | GL |
| 13 | O | 8010-00-297-2116 | Enamel: olive drab, No. 34088 (96906) MS35527-8 | GL |
| 14 | O | 8010-00-297-2118 | Enamel: green, No. 34108 (81348) TT-E-516 | GL |
| 15 | O | 8010-00-297-2119 | Enamel: blue, No. 35109 (96906) MS35527-3 | GL |
| 16 | O | 8010-00-297-2120 | Enamel: gray, No. 36231 (96906) MS35527-4 | GL |
| 17 | O | 8010-00-297-2122 | Enamel: black, No. 37038 (96906) MS35527-2 | GL |
| 18 | O | 8010-00-828-3193 | Enamel: green, No. 34558 (81348) TT-E-516 | GL |
| 19 | O | 5315-00-597-9766 | Fastener, Corrugated, Wood Joint: saw edge 1/2 in. deep (58536) A-A-1957 | BX |
| 20 | O | 8415-00-926-1674 | Gloves, Barbed Tape-Wire Handlers' (58536) A-A-50054 | PR |
| 21 | O | 7510-00-161-0813 | Ink, Marking, Stencil: black,: No. 37038 (58536) A-A-208 | QT |
| 22 | O | 7510-00-161-0811 | Ink, Marking, Stencil: black, No. 37038 (58536) A-A-208 | GL |
| 23 | O | 7510-00-148-9817 | Ink, Marking, Stencil: black No. 37038, for non porous surface (58536) A-A-208 | QT |
| 24 | O | 7510-00-469-7910 | Ink, Marking, Stencil: black No. 37038 (38512) AN-1 | PT |
| 25 | O | 8010-00-721-9479 | Lacquer: orange, No. 12215 (58536) A-A-665 | PT |

## SECTION II. EXPENDABLE AND DURABLE ITEMS LIST (CONT'D)

| (1) ITEM NUMBER | (2) LEVEL | (3) NATIONAL STOCK NUMBER | (4) DESCRIPTION | (5) (U/M)/ (U/I) |
|---|---|---|---|---|
| 26 | O | 8010-00-584-3148 | Lacquer: orange, No. 12197 (58536) A-A-665 | PT |
| 27 | O | 8010-00-063-8967 | Lacquer: aluminum, No. 17178 (81349) MIL-L-11195 | GL |
| 28 | O | 8010-00-527-3196 | Lacquer: brown, No. 30277 for obibidy markings (81348) TT-L-40 | GL |
| 29 | O | 7520-00-286-5749 | Marker, Tube Type: felt tip, replaceable tip (81348) GG-M-117 | EA |
| 30 | O | 7520-00-973-1059 | Marker, Tube Type: black ink, nonreplaceable felt tip (81348) GG-M-00114 | DZ |
| 31 | O | 5315-00-889-2743 | Nail: style 4, type II, 4d, 1-1/2 in. long (81348) FF-N-105 | LB |
| 32 | O | 5315-00-889-2744 | Nail: style 4, type II, 6d, 2 in. long (81348) FF-N-105 | LB |
| 33 | O | 5315-00-889-2745 | Nail: style 4, type II, 8d, 2-1/2 in. long (81348) FF-N-105 | LB |
| 34 | 0 | 8010-00-899-8825 | Primer Coating: green, pressurized spray can (81348) TT-P-1757 | PT |
| 35 | 0 | 5340-00-491-7632 | Seal, Antipilferage: 1/2 in. dia, 1/8 in. thk, steel, 24 in. long (96906) MS51938-5 | HD |
| 36 | O | 7920-00-205-1711 | Rag, Wiping: unbleached (58536) A-A-2522 | BE |
| 37 | O | 8153-00-239-5291 | Seal, Strapping: 5/8 in. steel (81346) ASTM D 3953-87 | BX |

## SECTION II. EXPENDABLE AND DURABLE ITEMS LIST (CONT'D)

| (1) ITEM NUMBER | (2) LEVEL | (3) NATIONAL STOCK NUMBER | (4) DESCRIPTION | (5) (U/M)/ (U/I) |
|---|---|---|---|---|
| 38 | O | 8135-00-239-5294 | Seal, Strapping: 1-1/4 in.<br>(81346) ASTM D 3953-87 | BX |
| 39 | O | 8135-00-283-0671 | Strapping: stl, 1-1/4 in. wide, nailless<br>(81346) ASTM D 3953-87 | CL |
| 40 | O | 7510-00-823-8073 | Tape, Pressure Sensitive Adhesive: black, 1-1/2 in., 60 yd<br>(81349) MIL-T-43036 | RO |
| 41 | O | 7510-00-266-6715 | Tape, Pressure Sensitive Adhesive: 2 in., 60 yd, colorless<br>(58536) A-A-1830 | RO |
| 42 | O | 7510-00-283-0612 | Tape, Pressure Sensitive Adhesive: masking, 1 in. tan, 60 yd<br>(19203) 8790710 | RO |
| 43 | O | 8010-00-160-5788 | Thinner, Paint Products: clear, 5 gal pail<br>(58536) A-A-857 | GL |
| 44 | O | 5350-00-242-4405 | Wool, Metallic: 1 lb roll<br>(58536) A-A-1043 | LB |

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**By Order of the Secretary of the Army:**

GORDON R. SULLIVAN
*General, United States Army*
*Chief of Staff*

MILTON H. HAMILTON
*Administrative Assistant to the*
*Secretary of the Army*
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| 2 | 2-3 | | | 2-6 | | **Add "LOCKWASHER" to the illustration.**<br>**Reason: Missing from illustration.** |



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| | | |

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|---|---|---|---|---|---|---|---|---|
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|---|---|---|
| | | |

USAPPC V2.00

# 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 |

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