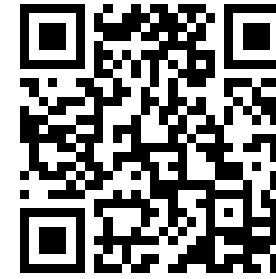
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MARINE CORPS TM 1330–34/1

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# DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL

FOR

# GRENADES

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## WARNING

ure proper condition of safety devices before removing grenade from containers. Do not lift or hold ade by safety devices. Exercise care to avoid rough handling or dropping of grenades.

ot mix ammunition lots.

Keep work area neat, clean and orderly.

Wear face shield and leather gloves. Exercise care to avoid injury from sharp metal edges when removing tear strip from or handling open metal containers or when cutting metal strapping.

Limit number of grenades, fuzes and amount of flammable liquid at work site to amount necessary for safe and efficient operations.

Accomplish all operations involving enamel or solvents in well ventilated area. Keep all solvents in approved plunger type safety can. Wear disposable plastic gloves to prevent liquid enamel and solvent from coming in contact with skin. Avoid inhaling vapors from enamel or solvents.

Keep hand grenade fuzes in sectionalized shielded tray to protect detonator at all times when removed from grenade loading assembly. Never grasp fuzes by detonator.

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# FOR

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DEPARTMENTS OF THE ARMY

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# INTERMEDIATE DIRECT SUPPORT AND INTERMEDIATE GENERAL SUPPORT MAINTENANCE MANUAL FOR GRENADES

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*This manual together with TM 9-1330-200-12, 17 September 1971 and TM 43-0001-29, 31 October 1977 supersedes TM 9-1330-200, 17 September 1971, including all changes.

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# CHAPTER 1
# INTRODUCTION

## Section I. GENERAL

### 1-1. Scope

*a.* This is one of a series of technical manuals (TM's) covering general and technical information, servicing, operation and maintenance of subject materiel. Information in this manual is limited to responsibilities of direct and general support maintenance personnel (i.e., maintenance which is beyond the scope of the tools, equipment or supplies normally available to operator and organizational personnel).

*b.* Information for operator and organizational maintenance personnel is covered in TM 9-1330-200-12. This includes the Maintenance Supplies List in appendix B and the Maintenance Allocation Chart (MAC) in appendix C. Direct support and general support maintenance responsibilities apply as prescribed in the MAC.

*c.* Deleted.

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

*a. General.* Responsibility for complete and accurate accomplishments of forms, records, and reports rests upon the officers of all units maintaining subject material. The value of accurate documents must be appreciated by all persons responsibile for data compilation, maintenance and use. Properly completed forms show the type and quantity of materiel to be inspected, repaired or used in repair and provide work authorization. Completed forms serve as records for:

(1) Condition of materiel inspected.

(2) Maintenance work required.

(3) Repair or replacement of materiel in hands of troops.

(4) Delivery requiring maintenance.

(5) Progress of work in shops.

(6) Status of materiel repaired.

*b. Authorized Forms.* The forms generally applicable to units maintaining subject materiel are listed in appendix A. For a current listing of all forms, refer to DA Pam 310-2. Refer to TM 38-750 for instructions on use and completion of all forms required for maintaining grenades.

## Section II. DESCRIPTION AND FUNCTIONING

### 1-3. General.

For description and functioning of all grenade items and accessories, refer to TM 43-0001-29.

## Section III. SAFETY, CARE AND HANDLING

### 1-4. General

Detailed information on safety, care and handling of all grenade items and accessories can be found in TM 9-1330-200-12, TM 9-1300-206, and FM 23-30.

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# CHAPTER 2

# TOOLS AND EQUIPMENT

## 2-1. General

Tools, equipment and repair parts, in addition to those available to the using organization, are supplied to direct and general support maintenance units for maintaining hand and rifle grenades and accessories.

## 2-2. Tools and Equipment

*a.* Tools and equipment having general application to this materiel are authorized for issue by tables of allowances (TA) and tables of organization and equipment (TOE).

*b.* TM 9-1330-200-12 lists special tools and equipment required by all levels of maintenance personnel. TOE 9-38G, TOE 9-530G, SC 4940-95-CL-A11 and SC 4925-95-CL-A03 serve as a basis for requisitioning.

*c.* Except as otherwise indicated in paragraphs 3-1 through 3-9, local fabrication of tools and equipment is not authorized.

## 2-3. Repair Parts

TM 9-1330-200-12 lists repair parts required by all levels of maintenance personnel. Consumable parts used by direct and general support maintenance personnel are listed in appendix B of TM 9-1330-200-34.

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# CHAPTER 3
# MAINTENANCE INSTRUCTIONS

## 3-1. General

*a.* Direct support maintenance performed by conventional ammunition companies includes surveillance and limited maintenance of stocks under their control. This applies equally to grenade items and accessories. Maintenance operations include, but are not limited to the following:

(1) Cleaning and protection of individual items and/or packing material.

(2) Removal of light rust.

(3) Minor repair of boxes, containers, and crates.

(4) Spot painting and restenciling.

*b.* General support maintenance may require large-scale repainting and re-marking, repacking, disassembly, defuzing and refuzing.

## 3-2. Direct Support Maintenance

*a.* Maintenance to be performed is of such magnitude as to require operational line setups. Ammunition companies are responsibile for, and are equipped to perform recurring care- and preservation-type operations on all conventional ammunition under their control. The companies are also responsible for providing technical assistance to using units. If conditions preclude performing on-site maintenance, user stocks will be removed to a more suitable location.

*b.* Companies are responsible for stocking of authorized replacement components, packing materials, and expendable supplies. Requisitions will be submitted to an Inventory Control Point (ICP) for those components and/or supplies not authorized for stockage. When feasible, items required for maintenance of stocks, such as fiber containers and wooden boxes, will be recovered during expenditures of ammunition.

## 3-3. General Support Maintenance

Maintenance at the general support level is comparable to that at the direct support level, except that it is on a larger scale. It also includes the following:

*a.* Large-scale repacking, repainting, and remarking, and repair of boxes.

*b.* Removing defective fuzes from hand grenades and replacing with acceptable fuzes.

*c.* Demilitarization of unserviceable items.

*d.* Grouping and relotting of small lots or renovated lots.

## 3-4. Safety In Handling

*a.* Handle grenades in accordance with requirements contained in TM 9-1330-200-12, in addition to general instructions in TM 9-1300-206.

*b.* Do not lift or handle grenades by their safety pin pull ring.

*c.*

**WARNING**

WP smoke is poisonous upon prolonged or repeated inhalation, particularly in confined space. Normal concentrations in open air are not likely to be harmful.

*d.* Have container of water close at hand for submerging items in case of WP leakage. Have readily available containers of 1 percent and 5 percent copper sulphate solution and box of baking soda.

*e.* Familiarize personnel with first aid procedures for WP burns.

(1) Wet particles of WP with water or 5 percent copper sulfate solution.

(2) Remove particles from flesh immediately.

(3) Do not use grease or ointment on WP burns. (Such use may result in poisoning).

(4) Wash affected area with soda solution, then with 5 percent copper sulfate solution.

**WARNING**

Do not wash eyes with 5 percent copper sulphate solution.

*f.* Wash eyes immediately with solution of 1 percent copper sulphate. If not available, wash eyes with large quantities of water for at least 15 minutes. Seek medical attention immediately.

*g.* When exposed to red phosphorus (RP) smoke, or hexachloroethane (HC) smoke or any riot control agent, the following precaution applies:

**WARNING**

Red phosphorus smoke, HC smoke or any riot control agent may present an inhalation and irritant hazard. Prolonged exposure of the eyes and respiratory system should be avoided. Wear protective masks to avoid excessive exposure.

NOTE

- Do not use smoke grenades in enclosed or confined areas.
- Smoke grenades produce heat and are a fire hazard.



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## 3-5. Maintenance Planning

*a. General.*

(1) Proper performance of a maintenance operation depends primarily upon planning:

(*a*) What is to be done?

(*b*) How is the work to be done?

(*c*) Who is to do the work?

(*d*) Where is the work to be done?

(2) Before work on any item begins, each operation to be performed must be completely detailed. Tools, equipment, replacement parts and supplies must be distributed and available at the points where they are to be used. Men experienced in the operation must be assigned to various phases of the job. Consideration must be given to conducting each operation so that maximum safety is afforded operator and equipment.

*b. Process Flow Charts.*

(1) A process flo *w* chart (chart 3-1) serves as a guide for layout of the line.

The chart records in proper sequence the operations found in an operating line. The flow chart lists the number of each operation, the personnel required, the tools to be used, and the materials needed. Materials include but are not limted to such items as new components, sealing, paint, etc.

(2) The chart picks up the ammunition to be processed and follows it through each operation until rework is completed. Operations include but are not limited to the following:

(*a*) Unpacking.

(*b*) Disassembly.

(*c*) Replacing.

(*d*) Repairing.

(*e*) Reassembly.

(*f*) Repacking.

*Chart 3-1. Sample Process Flow Chart*

| No. | Operation: Description | Primary | Secondary | Personnel required | Tools and equipment | Materials | Time required (min) |
|---|---|---|---|---|---|---|---|
| 1 | Open boxes, remove fiber containers | X | | 2 | Shears Pliers | | 2 |
| 2 | Inspect boxes and containers | X | | 1 | | | .5 |
| 3 | Strip tape from container, remove fuze, inspect | X | | 1 | | | 1 |

Each operation is listed as a main or secondary operation.

(3) A main line operation is essential to a smooth flow of production.

(4) Secondary operations may be shunted from the main line into branch lines to be returned at a point further along the main line.

*c. Standing Operating Procedure (SOP).* A standing operating procedure must be prepared after the process flow chart is completed.

(1) *General.* The SOP (fig. 3-1) provides a detailed explanation of each operation, as follows:

(*a*) It expands on the information given on the flow sheet by explaining the mechanics of operation in detail.

(*b*) It lists additional information, such as special hazards, and special operating methods.

(*c*) It groups together the operations which will be performed in one unit of the line, operating room or one bay.



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A. STANDING OPERATING PROCEDURE FOR:
C&P Grenade Hand Frag Delay M61

B. OPERATION NO. 3

C. Bay No.

D. SOP NO. AMXZZ-100 DATE 5 May 67

E. Rev No. 1 DATE 10 Aug 67

F. Change No. 1 DATE 21 Aug 67

G. OPERATION: PAINT GRENADE

H. EXPLOSIVE LIMITS: UNITS: 60 EXPLOSIVE LBS: 21

I. PERSONNEL LIMITS: OPERATORS: 1 TRANSIENTS: 1

J.

| Step No. | Description |
|---|---|
| 1. | Receive grenades from operation No. 2. |
| 2. | Fill paint container. |
| 3. | Dip grenade in paint. |
| 4. | Hang on rack until dry. |

Specific Instruction (Safety, Operational, Quality Characteristics.)

1. (QC) Good workmanship-Visual *(DS-3) must be maintained.
2. (QC) Paint coverage must be adequate.
*DS-3: The grenade will be free of dirt, chips, grease, rust and other foreign material.

K. SPECIAL REQUIREMENTS.
Surveillance will perform periodic test to insure that all grounding is adequate.

L. Equipment, tools, gages, and supplies.

| Item | Qty reqd | Spec No. or DWG NO. | FSN |
|---|---|---|---|
| Paint, OD enamel | as req | TT-E-516 | 8010-297-2116<br>8010-297-2113<br>8010-848-9272 |
| Dry rack | as req | Fabricate | |
| Suspension device | as req | Fabricate | |

*Figure 3-1. Sample of standing operating procedure.*

(2) *Instruction for preparation.* Prepare SOP's as follows:

Line A—Standing Operating Procedure For. Indicate operation and nomenclature of item being worked (e.g., "Care and Preservation Grenade, Hand: Fragmentation, Delay M61).

Line C—Bay NO. Show bay, room, or cubicle number.

Line G—Operation. Identify operation (e.g., paint grenade).

Line H—Explosive Limits. Specify maximum number of units and pounds of explosive within limitations established for area, consistent with safe and efficient operation.

Line I—Personnel Limits. Specify maximum number of operators and transients allowed at operation. (Transients may include on-post and off-post visitors, and trainees undergoing cross training.)

Line J—Step NO. Description of Operation, and Specific Instructions. List procedural details of work to be performed under "Description" of operation in numbered and logical sequence. Describe sufficiently to allow operator to accomplish task in safe and technically correct

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manner. (Specific instructions are intended to furnish information that applies to one specific step of the operation not included in the actual description of physical work performed. (Items to be listed here include quality characteristics, specific safety equipment or clothing required, safety precautions to be taken, and technical instructions pertaining to task accomplishment.) Have all specific instructions indicate step and type of instruction: Safety (S), Operational (O) and Quality Control (QC). Locate specific instructions opposite step in operation description to which applicable.

Line K—Special Requirements. Include instructions which apply to one operation only and, normally, not to any other operation or particular step of operation. (Instructions may apply to safety, technical aspects of the operation, defect standards, or equipment inspection requirements. Items covered under item J of the SOP need not be duplicated under item K.)

## 3-6. Work Schedules

Operations for a specific task should be planned for completion on a day-to-day basis to eliminate the accumulation of hazardous materiel.

## 3-7. Line Layout

The line provided for these operations must permit safe and efficient flow of materials. [Where feasible, it will employ such items as roller conveyors, work tables, other tools, equipment (chap. 2) and expendable materials (see app. B)]. Personnel, work stations, type of equipment and material to accomplish the operations will be based on current work directives and results of preliminary inspection. Provisions shall be made, when necessary, to include barricades as required by section VIII, TM 9-1300-206. Figure 3-2 shows a typical line layout.

## 3-8. Lot Numbers

*a. General.* Lot numbering of ammunition serves to identify material.

(1) It assures accurate control of movements of items.

(2) It preserves and maintains surveillance records.

(3) It provides means of withdrawing defective, deteriorated, hazardous, or obsolete ammunition and explosive material from service.

*b. Description and Use.* For all ammunitions, the lot number will normally consist of a manufacturer's identification symbol, an interfix number, and the serial number as illustrated:

ABC-8-124

(1) *Manufacturer's identification symbol.* The manufacturer's identification symbol will consist of one, two, or three letters. They are assigned to identify the arsenal, plant, depot or station, in case of loaded items, or indicate the contractor in case of components.

(2) *The interfix number.* Each lot number, including that of the first lot, will have an interfix number between the manufacturer's identification symbol and the serial number. The interfix number indicates the lots made according to a specific design or manufacturing procedure.

(3) *The serial number.* The serial number will identify the lot according to the sequence of production. Serial number will be changed with the formation of each new group.

*c. Description and Use of Lot Numbers for Maintenance Operations.* For renovated, modified, or regrouped operations, the lotting will be accomplished as follows:

(1) *Maintenance.* Where new components replace like components (same model number), a lot suffix will be assigned by the Commander, US Army Armament Materiel Readiness Command, ATTN: DRSAR-QAD, Rock Island, IL 61201

*Example:* US Army, Korea, Special Ammunition Depot 200 replaces fuzes. The suffix furnished for LOP 1-8 changed the lot number to LOP 1-8A.

(2) *Conversion/modification.* Where components replace different components, components are added or where work is extensive enough to warrant model number change (e.g., from Grenade, Hand, Fragmentation M26 to M26A1) new lots will be formed. Lot numbers will be assigned in the normal manner, except that the interfix number will start with 500 instead of 1, and the manufacturer's symbol will be that of the facility performing the work.

(3) *Regrouping.* Regrouping or mixing of grenade ammunition lots will be permitted only when grenades are assembled with new fuzes from the same fuze lot. DRSAR-QAD will assign an identification symbol for relotting when required.



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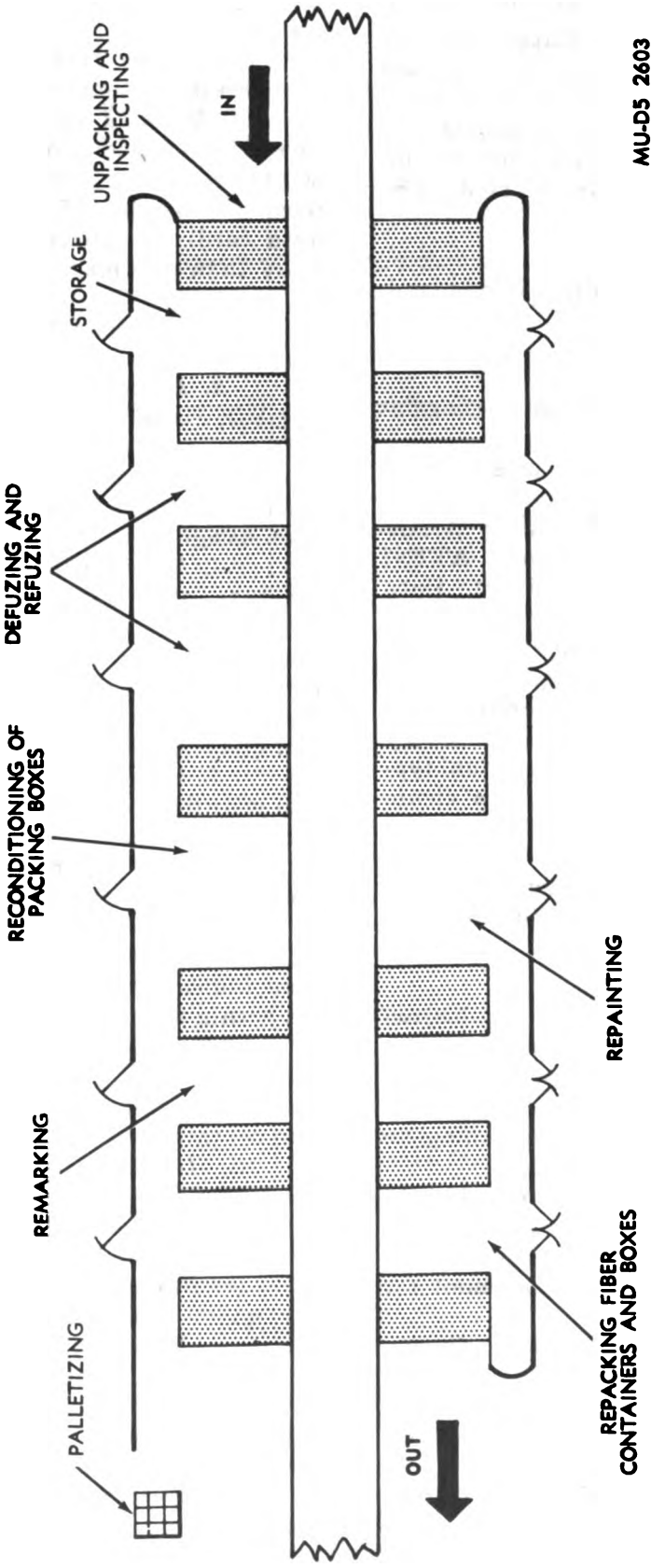



*Figure 3-2. Typical line layout.*

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## 3-9. Ammunition Data Card (DD Form 1650)

*a. General.* An Ammunition Data Card (DD Form 1650) (fig. 3-3) is a historical record of all required data pertaining to each lot of the item. Data cards will be prepared when relotting grenades or whenever a suffix is assigned to the existing lot number. Data cards will be distributed as follows:

(1) Commander
US Army Materiel Readiness Command
ATTN: DRSAR-QAD
Rock Island, IL 61201
2 copies

(2) Recipient of the ammunition (other depot, ASP, etc.)—2 copies

*b. Reproduction and Format.* Copies of original data cards, if not locally available, may be requested from Commander, US Army Armament Materiel Readiness Command, ATTN: DRSAR-QAD, Rock Island, IL 61201. Data cards will be 5 x 8 inches in size and printed on commercial manila tag board, or equal, of approximately 200 pounds ream weight. Local reproduction of the blank form is authorized. Data cards may be hand printed or reproduced by mimeograph, offset printing and individual typing, provided the product results in a clean, black image that lends itself to 35MM microfilm reduction.

*c. Required Information.* Complete Ammunition Data Card in accordance with following instructions:

(1) *Maintenance.*

(*a*) *Blocks 1 through 26, as applicable, except 2-5, 8-9, 11-13, 23-23a and 26.* Transcribe information contained in basic data card to new card.

(*b*) *Block 2.* Change FSN, depending on type of package used.

(*c*) *Block 3.* Insert complete lot number of item represented by data card. Indicate reworked lot by using applicable alphabetical suffix specified in authorization document for renovation of item.

(*d*) *Block 4.* Change activity, depending on agency performing renovation.

(*e*) *Block 5.* Change quantity, depending on number of rejects generated and quantity used.

(*f*) *Block 8.* Indicate PRON on work order number.

(*g*) *Block 9.* Reflect latest drawing number.

(*h*) *Blocks 11-13.* Change start, completion and inspection dates.

(*i*) *Block 23.* For loaded items, furnish information for each component part (e.g., subassembly, explosive, propellant, or other material used in assembly of loaded item described by data card). For inert items manufactured by more than one manufacturer, compile data as follows:

*1. Component.* Give approved item name.

*2. Drawing number.* Enter drawing number, revision letter and applied E.O.'s, if any.

*3. Model.* Enter model number for any item or subassembly to which model number has been assigned.

*4. Manufacturer.* Give name of manufacturer of each lot of each component used. If any parts are furnished by supplier not identified in block 7, furnish complete information required for loaded item description (i.e., identity of supplier, date manufacture, lot number and quantity).

*5. Date manufactured.* Enter month and year (if available) during which each lot of each component was made.

*6. Lot number.* Enter complete lot number of each component used in loading item.

*7. Quantity.* When more that one lot of same component is used is assembly of loaded item, indicate in column five quantity from each lot, within five percent. Do not make entry when all components of each type are from same lot. If inert items are manufactured by single manufacturer, compile data applicable to information contained in *2*, *3*, and *7* above.

(*j*) *Block 23a.* This is a continuation of block 23. Use when required. If additional space is needed beyond that provided, extend list of components into Remarks section.

(*k*) *Block 26.* Include following information under Other Remarks:

*1.* Description of any unusual or important methods of inspection.

*2.* Description of method or rework or renovation used to rework rejected or unserviceable lots.

(2) *Conversion/maintenance and regrouping.*



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DEPARTMENT OF DEFENSE
34594 AMMUNITION DATA CARD

Form Approved
Budget Bureau No. 22-R0269

| 1. ITEM NOMENCLATURE | 2. FSN | 3. LOT NUMBER |
|---|---|---|
| Grenade, Hand Offensive, MK3A2 W/Fuze | 1330-143-6807-G911 | IOP-22-88 |

| 4. MANUFACTURING, LOADING OR ASSEMBLY ACTIVITY | 5. NET QUANTITY | 6. PACKING OF LOT |
|---|---|---|
| IOWA ARMY AMMUNITION PLANT<br>BURLINGTON, IOWA | 67,080 | See Remark #1 |

| 7. CONTRACTOR | 8. CONTRACT OR ORDER NO. | 9. DRAWING OR REVISION | 10. SPECIFICATION & REVISION |
|---|---|---|---|
| MASON & HANGER.<br>SILAS MASON CO., INC. | 3720-A1-0-A0101 | 9215458-D | MIL-G-13706C(MU)<br>W/EO 55924-2 |

| 11. DATE STARTED | 12. DATE COMPLETED | 13. DATE INSPECTED | 14. LINE | 15. ZONE WT SHELL |
|---|---|---|---|---|
| 17 November 1970 | 25 November 1970 | 25 November 1970 | 5A | |

| 16. CHARGE WEIGHT | 16a. INDEX OF POWDER | 16b. MPD IN INCHES | 16c. PPDR IN INCHES |
|---|---|---|---|
| | | | |

| 16d. EXPLOSIVE WEIGHT PER PKG | 17. EXPECTED MUZZLE VELOCITY | 18. EXPECTED PRESSURE | 19. SHELL WEIGHT |
|---|---|---|---|
| | | | |

| 20. NUMBER OF TEST SAMPLES | 21. SENT TO | 22. DATE AND MODE OF SHIPMENT |
|---|---|---|
| 50 | | |

23. COMPONENTS (Continue on reverse, if necessary) Card 1 of 1

| COMPONENT NAME | DRAWING NO. | MODEL | MANUFACTURER | DATE MFG. | LOT NO. | QUANTITY |
|---|---|---|---|---|---|---|
| Body Ass'y | 9215464-D | | Ametek Plymouth | 1970 | PYI-1-20 | 55,650 |
| | | | | | PYI-1-23 | 11,480 |
| Pad, Felt | 9215463-B | | Commonwealth Felt | 1970 | CFC-1-5 | |
| Liner, Fuzewell | 9215461-B | | Riverside Prod. | 1970 | RPD-1-8 | |

| 24. DISPOSITION | 25. TYPED NAME OF GOVERNMENT INSPECTOR |
|---|---|
| ACCEPTED | Clifford McKenzie |
| | SIGNATURE Clifford McKenzie |

DD FORM 1650 (1 FEB 68) (FRONT)

23a. COMPONENTS (Continued) IOP-22-88

| COMPONENT NAME | DRAWING NO. | MODEL | MANUFACTURER | DATE MFG. | LOT NO. | QUANTITY |
|---|---|---|---|---|---|---|
| Charge, TNT | 7548645-L | GR-1 | Volunteer A.A.P. | 1970 | VOL-8-599 | 1,200# |
| | | | | | VOL-8-600 | 32,365# |
| Barium Stearate | MIL-B-366 | | Witco Chemical | 1969 | None | |
| Graphite | MIL-G-155-A | | Superior Graphite | 1969 | None | |
| Fuze, Grenade, Hand | 7548570-M | M206A2 | Ordnance Prod. | 1970 | OPI-7-16 | |
| Sleeve, Fiberglass | 9212255-B | | Voltube Corp. | 1970 | VOL-8-3 | |
| Container, Fiber | 9211614-A | | Platt Corp. | 1970 | PLC-1-19 | |
| Support, Plastic | 9211614-A | | Holland Plastic | 1970 | None | |
| Box, Wood Packing | 9211615-A | | Bennett Box Co. | 1970 | None | |

26. REMARKS (Identify by appropriate symbols; *Changes in process; **Deviations from drawing or specification; ***Unusual occurrences or difficulties).

Remark #1 1 Grenade/Fiber Container
(Double Foil), 20 Containers/
Wood Box (Treated), 45 Boxes/
Pallet (Treated), MIL-P-15011-F.
(Avg. Wt. of Pallet is 1,766 lbs.)

** 100% X-ray of Fuzes prior to loading
per 1050 MSG. No. AEP-W-25-69 dated
27 August 1969, signed Guenzler.

DD FORM 1650 (1 FEB 68) (BACK) 90

MU-D5 2642

*Figure 3-3. Ammunition data card (DD Form 1650).*

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(*a*) *Blocks 6, 9, 10, 15, 17 through 19.* Transcribe information contained in basic card to new card.

(*b*) *Remaining blocks.* Compile required data specifically affecting maintenance operation being performed. Regarding item 23, when regrouping, list lot numbers grouped (regrouped) to form new lot.



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# CHAPTER 4
# INSPECTION REQUIREMENTS

## 4-1. General

Items received at direct and general support levels will be inspected on a lot sampling basis. The purpose of this inspection is to determine quality of the material and need for repair and/or renovation. One hundred percent inspection may be required to remove unserviceable items from the stockpile.

## 4-2. Sample Selection

*a.* The inspector will evaluate the storage condition prior to sample selection. The storage history of the sample should be similar to that of the lot. The sample should include conditions representative of the entire lot and in the approximate percentages in which the conditions occur. Each carton and box from which samples are selected will be identified. Identity will be maintained as long as the lot remains at the storage location.

*b.* Samples from each inspection lot will be selected as follows:

(1) Thirty hand grenades, no more than two from the same wooden box.

(2) Thirty rifle grenades, no more than two from the same wooden box.

(3) Fifty hand grenade fuzes, no more than ten from the same wooden box.

**NOTE**

Rifle grenade cartridges packed with rifle grenades will be inspected under the same sample size as rifle grenades.

(4) Thirty launcher grenades, smoke screening, (L8A1) no more than one from the same metal box.

## 4-3. Visual Inspection

*a. Shipping Container.* Record on inspection sheet (DA Form 984) all pertinent information for lot identification, manufacturer, date, etc.

(1) Inspect exterior of each container and record on inspection sheet evidence of water damage or other defects.

(2) Remove grenades from their containers and number serially; record number on inspection sheet.

(3) Inspect interior of each container and record any damage on inspection sheet.

*b. Grenades.* Record on inspection sheet all pertinent information on grenades, lot identification, manufacturer, date, fuze lot, etc. Inspect grenades and classify defects in accordance with paragraph 4-6.

## 4-4. Evaluation of Grenade Defects

Evaluating acceptability of material exhibiting deterioration or damage defects is a judgment-type decision. The following guidelines will be used in establishing a uniform system for examination for deterioration or damage and to make the inspection report meaningful.

*a. First Stage (Incidental Deterioration).* Incidental deterioration has no effect upon usability. The product is acceptable for issue and does not require reconditioning at the time of inspection.

*b. Second State (Minor Deterioration).* Minor deterioration does not significantly reduce functionability. However, care and preservation are requried to restore the appearance of the material prior to issue for basic load retention in long-time storage.

*c. Third Stage (Major Deterioration).* Major deterioration significantly reduces or precludes usability of the item or packing material. Such deterioration normally calls for replacing the item or component by maintenance-type operations prior to issue.

*d. Fourth Stage (Critical Deterioration).* Critical deterioration is so extensive that it creates a hazardous condition for persons using or maintaining the material.

## 4-5. Evaluation of Packing Material Defects

Packing material will be evaluated in accordance with tables 4-1 through 4-3.

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*Table 4-1. Wooden Boxes and Crates*

| | Reparable | Irreparable |
|---|---|---|
| A. Hardware<br>Must be operative and tight. | A. Hardware<br>Repair or replace. | A. Hardware<br>N/A |
| B. Ends<br>No damaging defects. | B. Ends<br>Replace during repair. | B. Ends<br>N/A |
| C. Wood | C. Wood | C. Wood |
| 1. Splits less than 3 inches long, if not closer than 1 inch to edge of board or to adjoining split, and if each piece is secured by at least one nail when split terminates at end of board. | 1. Repair splits over 3 inches long by using corrugated fasteners; otherwise, replace board(s). | 1. N/A |
| 2. Cracks, ¼-inch wide or less, between boards. | 2. If cracks are more than ¼-inch wide, replace board. | 2. N/A |
| 3. Warp allowed, if it does not prevent sealing of box or prevent insertion or required ammunition. | 3. If warps prevent insertion or removal of grenades or prevent sealing of the box, replace boards. | 3. N/A |
| 4. Light mold which can be brushed off is acceptable. Mildew stains are permitted, if they do not prevent ready identification of markings. | 4. Dryout or replace wet boxes. | 4. N/A |
| 5. Breaks in body. | 5. Replace broken board(s). | 5. N/A |
| 6. Nails, screws and fasteners must all be present and in good condition. | 6. Replace and/or properly seal imperfect nails, screws, and fasteners. | 6. N/A |
| 7. Sound, tight knots allowed, if the dimension measured across the board is not greater than ¼ the width of the skid. | 7. Replace board(s) with loose knots more than 1½ inch in largest diameter, if the diameter is less than ⅓ the width of the board. | 7. N/A |
| 8. Skids securely attached to box or crate. Knots not greater than ¼ the width of the skid. | 8. Replace or repair defective skids. | 8. N/A |
| D. Strapping and banding<br>All present and not weakened by rust or distortion. | D. Strapping<br>Replace where required. | D. Strapping<br>Not applicable. |

*Table 4-2. Fiber Containers*

| | Reparable | Irreparable |
|---|---|---|
| A. Metal ends<br>Must be free from rust, cracks, indentations or splits which would impair waterproofing or serviceability of fiber container. | A. Metal ends<br>Derust and repaint. | A. Metal ends<br>Any perforations, excessive rust or ends which are crushed or not securely crimped to body. |
| B. Body and cap | B. Body and cap | B. Body and cap |
| 1. No tears, cuts or gouges. | 1. Spot paint, with acid-proof, black paint, cuts tears or gouges not closer than 1 inch to closure, less than ½ inch in area, and not through impregnated layers. | 1. Cuts, tears or gouges closer than 1 inch to closure, more than ½ inch in area, or through all impregnated layers. |
| 2. No mold, mildew or rot. | 2. Repair not feasible. | 2. All mold, mildew or rot. |
| 3. No wrinkles caused by looseness between layers. | 3. Repair and repaint w/acidproof, black paint. | 3. N/A |
| 4. Blisters with area totaling less than ½ square inch. | 4. Repaint with acid-proof, black paint. | 4. N/A |
| 5. Slight discoloration, if container is still considered waterproof. | 5. Repaint with acid-proof, black paint. | 5. N/A |
| 6. No loose or missing neck rings. | 6. N/A | 6. Loose or missing rings. |



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*Table 4-3. Metal Containers*

| | *Body* | *Body* |
|---|---|---|
| 1. Seams must be tight to prevent entrance of moisture.<br>2. Rust—none.<br>3. Perforations—none. | 1. Repair not feasible.<br>2. Rust-derust and repaint.<br>3. Repair not practical. | 1. Remove grenade, repack in fiber container.<br>2. Rust which has cause pitting and perforations.<br>3. Perforations. |

## 4-6. Classification of Defects

Grenades, components and packing material defects are outlined below.

*a. Rifle Grenades.*

(1) *Critical defects.*

*(a)* Safety pins missing, broken or unsecurely assembled to the extent that they endanger user.

*(b)* Markings misleading as to type of grenade.

*(c)* Grenades mixed within the lot which can result in hazardous or unsafe conditions for persons using or maintaining the items.

*(d)* Propellant spills out of grenade cartridge to the extent that grenade cartridge is unsafe for use.

*(e)* Grenades show signs of filler leakage.

*(f)* Markings misleading as to color of smoke.

(2) *Major defects.*

*(a)* Damage to the grenade which can materially reduce usability of the item or result in failure.

*(b)* Rust or corrosion to the extent that the grenade cannot be used as intended.

*(c)* Grenades loose in containers to the extent items cannot be adequately protected in transit.

*(d)* Safety devices damaged to an extent which would preclude use of the grenade as intended.

*(e)* Lot number missing or illegible.

*(f)* Grenade cannot be removed from container.

*(g)* Rifle grenade cartridge missing.

*(h)* Head, stabilizer tube, fin assembly or any other component loose or damaged to the extent that use of grenade is precluded.

*(i)* Air hole missing on nose end of grenades M22 Series and M23 Series.

*(j)* Nose plug missing from Grenades M22 Series.

(3) *Minor defects.*

*(a)* Slight scratches attributable to normal handling or shipping

*(b)* Paint defects (e.g., scale, peeling, blistering etc.).

*(c)* Layers of flaked rust which, when removed, leave pitting that will not affect functioning. Care and preservation are required, however, to return items to serviceability.

*(d)* Etching of metal with marked evidence of penetration not affecting functioning. Reconditioning is required, however, to return items to serviceabilty.

*(e)* Marking of grenade is incomplete or illegible, but type of grenade and lot number are identifiable.

*(f)* Tape missing over smoke port holes of Grenades M22 Series and M23 Series.

*(g)* Inadequate paint coverage.

*b.* HE *Hand Grenades.*

(1) *Critical defects.*

*(a)* Safety pins missing, broken or unsecurely assembled to the extent that they endanger user.

*(b)* Safety clip, where applicable, missing or improperly positioned.

*(c)* Either or both lever hinge ears missing.

*(d)* Both lever hinge ears not bent away from the body past the vertical center line of the body hinge bosses.

*(e)* Ends of both lever hinge ears not bent upwards.

*(f)* Markings misleading as to type of grenade.

*(g)* Grenades mixed within the lot which can result in hazardous or unsafe conditions for persons using or maintaining the items.

*(h)* Grenade packed upside down in fiber or metal container.

(2) *Major defects.*

*(a)* Damage to the grenade which can materially reduce usability of the item or result in failure.

*(b)* Rust or corrosion to the extent that the grenade cannot be used as intended.

*(c)* Grenades loose in containers to the extent items cannot be adequately protected in transit.

*(d)* Safety devices damaged to an extent which would preclude use of the grenade as intended.

*(e)* Lot number missing or illegible.

*(f)* Any of the following missing, or damaged to an extent which would preclude use of the grenade: pull ring, safety lever, and/or fuze.

*(g)* Improperly assembled, or seated fuze, or loose fuze.

*(h)* Either lever hinge ear not bent away from the body past the vertical center line of the body hinge boss.

*(i)* End of either lever hinge ear not bent upwards.

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(3) *Minor defects.*

*(a)* Slight scratches attributable to normal handling or shipping.

*(b)* Paint defects (e.g., scale, peeling, blistering etc.).

*(c)* Layers of flaked rust which, when removed, leave pitting that will not affect functioning. Reconditioning is required, however, to return items to serviceable condition.

*(d)* Marking of grenade is incomplete or illegible, but type of grenade and lot number are identifiable.

*(e)* Inadequate paint coverage.

*(f)* Etching of metal with marked evidence of penetration not affecting functioning. Reconditioning is required, however, to return items to serviceability.

c. *Chemical Hand Grenades.*

*(1) Critical defects.*

*(a)* Safety pins missing, broken or insecurely assembled to the extent that they endanger user.

*(b)* Markings misleading as to type of grenade.

*(c)* Grenades mixed within the lot which can result in hazardous or unsafe conditions for persons using or maintaining the items.

*(d)* Grenades show signs of filler leakage.

*(e)* Marking misleading as to color of smoke.

*(f)* Grenade packed upside down in fiber or metal container.

(2) *Major defects.*

*(a)* Damage to the grenade which can materially reduce usability of the item or result in failure.

*(b)* Rust or corrosion to the extent that the grenade cannot be used as intended.

*(c)* Grenades loose in containers to the extent items cannot be adequately protected in transit.

*(d)* Safety devices damaged to an extent which would preclude use of the grenade as intended.

*(e)* Lot number missing or illegible.

*(f)* Grenade cannot be removed from container.

(3) *Minor defects.*

*(a)* Slight scratches attributable to normal handling or shipping.

*(b)* Paint defects (e.g., scale, peeling, blistering etc.).

*(c)* Layers of flaked rust which, when removed, leave pitting that will not affect functioning. Reconditioning is required, however, to return items to serviceabilty.

*(d)* Marking of grenade is incomplete or illegible, but type of grenade and lot number are identifiable.

*(e)* Inadequate paint coverage.

*(f)* Etching of metal with marked evidence of penetration not affecting functioning. Reconditioning is required, however, to return items to serviceabilty.

*d. Hand Grenade Fuze Defects.*

(1) *Critical defects.*

*(a)* Safety pin, pull ring assembly improperly assembled. Safety pin must extend through fuze body and prongs must be spread sufficiently to prevent accidental withdrawal.

*(b)* Safety clip, where applicable, missing or improperly positioned.

*(c)* Either or both lever hinge ears missing.

*(d)* Both lever hinge ears not bent away from the body past the vertical center line of the body hinge bosses.

*(e)* Ends of both lever hinge ears not bent upwards.

*(f)* Striker hinge pin missing or not positioned in both holes at opposite sides of fuze body.

*(g)* Loose or caked powder on outside wall of detonator case.

*(h)* Data stamping missing, incorrect or illegible.

*(i)* Other damage not listed above that is capable of affecting safe handling, assembly or proper functioning of fuze.

(2) *Major defects*

*(a)* Lugs missing or damaged.

*(b)* Detonator case damaged or loose.

*(c)* Either lever hinge ear not bent away from the body past the vertical center line of the body hinge boss.

*(d)* End of either lever hinge ear not bent upwards.

(3) *Minor defect.* Painting inadequate.

*e. Packaging.*

(1) *Critical defects.* None.

(2) *Major defects.*

*(a)* Weathering or dry-rotting of boxes to the extent contents are not adequately protected and require replacement, or damage to the extent contents cannot be readily removed.

*(b)* Looseness of container cap or closure to the extent that contents cannot be adequately protected.

*(c)* Missing, broken or ineffective hardware, packing component or banding.

*(d)* Contents loose to the extent item cannot be adequately protected in transit.

(3) *Minor defects.*

*(a)* Wetness, moldiness or mildew of inner containers (except metal).

*(b)* Missing or broken handle or cleat.

*(c)* No contact between inner layer of sealing tape and surface of the container for at least 1/2 inch (for 1



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1/2-inch tape ); 1/4 inch (for 1 inch tape or under) on each side of the joint around the entire circumference.

*f*. Smoke Screening Grenades, RP, L8A1, L8A3. The L8A1 and L8A3 grenades are used with M239 and similar grenade launchers. Refer to appropriate vehicle operator's manual for additional data.

(1) *Critical defects.*

(*a*) Markings misleading as to type of grenade.

(*b*) Grenades show signs of filler leakage.

(2) *Major defects.*

(*a*) Metal base punctured.

(*b*) Rubber body torn or dry rotted.

*(c)* Electrical contracts corroded or bent.

*(d)* Metal foil covering gas propulsion hole, missing or punctured.

*(e)* Grenade distortion preventing insertion into launcher (discharger).

*(f)* Markings are illegible

(3) *Minor defects.*

(*a*) Slight scratches attributable to normal handling or shipping.

(*b*) Paint defects (e.g., rust scale, peeling, blistering etc.).

(*c*) Inadequate paint coverage.

## 4-7. Disposition of Inspected Lots

A lot of hand, rifle grenades and/or hand grenade fuzes will be inspected and screened 100 percent if one critical defect is observed. Disposition of inspected lots will be in accordance with tables 4-4 and 4-5.

*a*. A lot of hand, rifle-grenades and/or hand grenade fuzes will be acceptable for issue and use if the criteria indicated in table 4-4 are met.

*Table 4-4. Lots Released for Issue and Use*

| Item | Sample size | Defects | | | |
|---|---|---|---|---|---|
| | | Major | | Minor | |
| | | Accept # | Reject # | Accept # | Reject # |
| Grenades | 30 | 1 | 2 | 2 | 3 |
| Hand Grenade Fuzes | 50 | 2 | 3 | 4 | 5 |

*a*. A lot of hand, rifle/grenades and/or hand grenade fuzes will be acceptable with priority of issue if the criteria indicates in table 4-5 are met.

*Table 4-5. Lots Released for Priority of Issue*

| Item | Sample size | Defects | | | |
|---|---|---|---|---|---|
| | | Major | | Minor | |
| | | Accept # | Reject # | Accept # | Reject # |
| Grenades | 30 | 4 | 5 | 6 | 7 |
| Hand Grenade fuzes | 50 | 7 | 8 | 10 | 11 |

**NOTE**

Any lot of hand, rifle grenades and/or hand grenade fuzes not meeting the conditions stated in table 4-4 and 4-5 shall be inspected 100 percent and reworked as required. Any lot of L8A1 grenades not meeting the conditions stated in tables 4-4 and 4-5 shall be inspected 100%. Serviceable items shall be acceptable for issue; unserviceable items shall be forwarded to disposal personnel for their disposition. Prior to release of any lot, the packaging shall meet the requirements covered in paragraph 4-5.

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# CHAPTER 5

# MAINTENANCE PROCEDURES

## 5-1. General

Operations to be performed are not restricted to those outlined below. The number of operations depends on the degree and/or type of maintenance being performed. Refer to Maintenance Allocation Chart (MAC) in TM 9-1330-200-12 for levels of maintenance to be performed. Since ammunition has a long shelf life, some very old items may occasionally be encountered. Ammunition color coding is now in its third generation. The three generations of color coding are illustrated in Table 1-2, pages 1-6 thru 1-10 in TM 9-1300-200, Change 3. Ammunition manufactured prior to 1962 was generally painted as shown for the first generation color code. The second generation coding was used between 1962 and approximately 1976 when the third generation code came into use. The policy used in this matter is that grenades are not reworked solely to change colors or update color code. If grenades are reworked for any other reason, repainting to later color code may be performed if authorized by maintenance directors.

## 5-2. Maintenance Operational Procedures

The following maintenance operational procedures are listed sequentially. They serve as a guide for establishing maintenance plans.

*a. Rust Removal and Touch Up.*

(1) Receive grenades from unpacking or inspecting operation.

(2) Using cloth wet with solvent, remove all traces of minor rust and defective markings.

(3) Use abrasive material or nonferrous wire brush to remove other than minor rust from grenade.

(4) Using paint brush and required enamel, touch up unpainted surfaces of grenade where original coating has been damaged. For paint colors, see tables 5-1 and 5-2.

(5) Following touch up, place grenade in safe location in work area until enamel has dried, then transfer to next operation.

(6) Transfer grenades requiring complete repainting after removing rust or defective markings to repainting operations.

(7) Materials, tools, and equipment include the following:

*(a)* Enamel
*(b)* Solvent
*(c)* Rags
*(d)* Brush, paint
*(e)* Table, work
*(f)* Can, plunger-safety type
*(g)* Gloves, disposable
*(h)* Brush, wire

*b. Repainting Grenades.* For color used to repaint grenaded bodies, see tables 5-1, 5-2 and 5-3.

*Table 5-1. Painting and Marking of Hand Grenade Bodies*

| Grenade | Body color | Color of markings | Height of letters (in.) | Marking |
|---|---|---|---|---|
| Fragmentation | | | | |
| M26 | (1) | (2) | 1/4 | GRENADE HAND FRAG M26 MO.-YR. COMP B LOT NUMBER |
| M26A1 | (1) | (2) | 1/4 | GRENADE HAND FRAG M26A1 MO.-YR. COMP B LOT NUMBER |
| M26A2 | (1) | (2) | 1/4 | GRENADE HAND FRAG M26A2 MO.-YR. COMP B LOT NUMBER |
| M33 | (1) | (2) | 1/8 | GRENADE HAND FRAG DELAY M33 MO.-YR. COMP B LOT NUMBER |
| M57 | (1) | (2) | 1/4 | GRENADE HAND FRAG IMPACT WITH DELAY OVERRIDE M57 MO.-YR. COMP B LOT NUMBER |

See footnotes at end of table.

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*Table 5-1. Painting and Marking of Hand Grenade Bodies - Continued*

| Grenade | Body color | Color of markings | Height of letters (in.) | Marking |
|---|---|---|---|---|
| M59 | (1) | (2) | 1/8 | GRENADE HAND FRAG IMPACT M59 MO.-YR. COMP B LOT NUMBER |
| M61 | (1) | (2) | 1/4 | GRENADE HAND FRAG DELAY M61 MO.-YR. COMP B LOT NUMBER |
| M67 | (1) | (2) | 1/8 | GRENADE HAND FRAG DELAY M67 MO.-YR. COMP B LOT NUMBER |
| M68 | (1) | (2) | 1/8 | GRENADE HAND FRAG IMPACT M68 MO.-YR. COMP B LOT NUMBER |
| Mk2 | (1) | (2) | 1/8 to 1/4 | STRIPE AROUND BODY NEXT TO FUZE SEAT |
| Offensive Mk3A2 | (5) | (2) | 1/4 | GRENADE HAND OFFENSIVE Mk3A2 LOT NUMBER TNT MO.-YR. |
| Chemical Mk1, illumination | (3)( 4) (band only) | (5) | 1/4 | HAND ILLUMINATING GRENADE Mk1 LOT NUMBER |
| M7, riot | (6) | (7) | 1/2 | GAS<br>CN<br>RED BAND<br>LOT NO. |
| M7A1, riot | (6) | (7) | 1/2 | CN<br>RED BAND<br>LOT NO. |
| M7A2, riot | (6) | (7) | 1/2 | ABC-M7A2<br>RIOT<br>CS<br>RED BAND<br>LOT NO. |
| M7A3, riot | (6) | (7) | 1/2 | M7A3<br>RIOT<br>CS<br>RED BAND<br>LOT NO. |
| M8, HC | (9) | (5) | 1/2 | AN-M8<br>SMOKE<br>HC<br>LOT NO. |
| M14, TH3 | (7) | (5) | 1/2 | AN-M14<br>INCEN<br>TH3<br>LOT NO. |
| M15, WP | (6) | (2) | 1/4;<br>1/2<br>(band) | SMOKE<br>WP<br>BURSTING TYPE<br>YELLOW BAND<br>LOADERS ID MO.-YR.<br>LOT NO. |
| M18, smoke | (9);<br>(1)<br>(top of grenade corresponds with color of smoke) | (5) | 1/2;<br>1/4<br>(lot no.) | M18<br>SMOKE<br>RED OR GREEN,<br>YELLOW, VIOLET<br>LOT NO. |
| M25A1, riot | (6) | (7) | 1/2<br>(red letters and band);<br>1/8<br>(yellow band) | RIOT<br>RED CN RED<br>M25A1 RED<br>(Place this information on single line around grenade body.)<br>YELLOW BAND |

See footnotes at end of table.



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*Table 5-1. Painting and Marking of Hand Grenade Bodies - Continued*

| Grenade | Body color | Color of markings | Height of letters (in.) | Marking |
|---|---|---|---|---|
| M25A2, riot | (6) | (7) | 1/2 (red); 1/8 (yellow band) | RIOT RED CS-1 RED ABC-M25A2 RED LOT NO. RED (Place this information single line around grenade body.) YELLOW BAND |
| M34, WP | (9) | [7](lettering) [2](band) | 1/2; 1/4 (date, lot no., and band) | M34 FRONT SIDE WP SMOKE MO.-YR. REVERSE SIDE LOT NO. YELLOW BAND |
| M47, riot, CS | (6) | (7) | 3/8 (red lettering); 1/2 (red band) | GRENADE RED RIOT RED CS RED M47 (Place this information single line around grenade body.) LOT NO. |
| M48, smoke, colored | (9) | (5) | 5/8 (black band); 3/8 (black lettering) | GRENADE BLACK SMOKE RS M48 (Place this information single line around grenade body.) LOT NO. |
| M54, riot | (6) | (7) | 1/2 | M54 RIOT CS RED BAND LOT NO. |
| XM58, riot | (6) | (7) | 1/4 (band also); 1/8 (lot no.) | XM58 GRENADE CS POCKET LOT NO. RED BAND |
| Practice | | | | |
| M30 | (10); (11) (neck) | (4) | 1/4 | GRENADE HAND PRACTICE M30 MO.-YR. LOT NUMBER BROWN BAND |
| M62 | (10); (11) (neck) | (4) | 1/4 | GRENADE HAND PRACTICE DELAY M62 MO.-YR. LOT NUMBER BROWN BAND |
| M69 | (10); (11) (neck) | (4) | 1/8 | FSN 1330-178-8515 GRENADE HAND PRACTICE BROWN BAND |

[1]Olive Drab No. X34087
[2]Yellow No. 33538
[3]Unpainted
[4]White No. 37875
[5]Black No. 37038
[6]Gray No. 36231
[7]Red No. 31158
[9]Light Green No. 34558
[10]Blue No. 35109
[11]Brown No. 30117

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*Table 5-2. Marking of Rifle Grenade Bodies*

| Grenade | Body color | Color of markings | Height of letters (in.) | Marking |
|---|---|---|---|---|
| M31, HEAT | Black No. 37038 | Yellow No. 33538 | 1/4 for all markings, except 1/8 for Lot No. and date | GRENADE RIFLE HEAT M31 LOT NUMBER MO-YR. |
| M19A1 WP | Light Green No. 34558 | Red No. 31136 (lettering); Yellow No. 33538 (band) | 1/4 for grenade and Lot No.; 1/2 for M19A1 and WP | GRENADE M19A1 WP LOT NUMBER MO.-YR. |
| M22-M22A2 Smoke | Green No. 34558 (body); Green No. 34108, Yellow No. 33538, Red No. 31136, corresponding color of smoke (body union) | Black No. 37038 | 1/2 for nomenclature and color smoke; 1/4 for Lot No. and date | GRENADE M22A2 (or M22) RED SMOKE (OR YELLOW, GREEN) LOT NUMBER MO.-YR. |
| M23-M23A1 Streamer | Same as for M22-M22A2 | Black No. 37038 | Same as M22-M22A2 | GRENADE RIFLE M23A1 (or M23) RED STREAMER (OR YELLOW, GREEN) LOT NUMBER MO.-YR. |
| M29 Practice | Blue No. 35109 | White No. 37875 | 1/2 for nomenclature; 1/4 for Lot No. and date | GRENADE RIFLE PRACTICE, M29 LOT NUMBER MO.-YR. |

(1) Receive grenade from rust removal operation.

(2) Apply masking tape over all areas to be protected from enamel, especially over movable portions of hand grenade fuze to prevent possible interference with proper functioning (fig. 5-1). Leave prongs of hand grenade safety pin fully exposed.

(3) Attach hand grenade suspension device (fig. 5-2) beneath lever, between lever and body as shown in figure 5-3. Suspend rifle grenade as shown in figure 5-4.

(4) Apply protective coating.

*(a) Dip method.* While suspending grenade as shown in figure 5-5, dip body portion in enamel. Keep grenade body and fuze joint above surface of paint.

**WARNING**

**WEAR PAINT SPRAY RESPIRATOR.**

*(b) Spray method.* While suspending grenade apply protective coating with paint spray gun or aerosol spray can, if available. Reposition grenade as necessary to expose uncoated portion, then repeat operation to complete coverage.

(5) Hang suspended grenade on rack (fig. 5-2) until coating dries.

(6) Apply masking tape in order to paint body union or rifle grenade.

(7) Allow paint on body union to dry.

(8) Remove suspension device and masking tape. Transfer grenade to next operation.

(9) Material, tools, and equipment include the following:

*(a)* Enamel
*(b)* Solvent
*(c)* Rags
*(d)* Spray outfit, paint
*(e)* Can, safety, flammable liquid
*(f)* Gloves, disposable
*(g)* Suspension device - to be made on site from cord exceeding 25 pound pull capability and tied with square knot (fig. 5-2).
*(h)* Tape, masking
*(i)* Respirator

c. *Remark Grenade.* For specific markings, see tables 5-1 and 5-2.

**CAUTION**

**Clean all marking equipment at end of each shift or termination of job, whichever comes first, and as often as necessary to facilitate use during operations. Dispose of waste contaminated with paints and solvents by submerging in water in approved waste can to await burning.**

(1) Receive grenade from supply operator.

*(a) Rubber type method.*

1. Apply a small dab of paint to paint plate and roll out well with brayer.



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Table 5-3. Painting and Marking of RP Smoke Screening Grenades

| Grenade | Base Color | Color of Marking | Height of Letters Inches | Marking |
|---|---|---|---|---|
| L8A1 | Light green | Brown | 5/16 | GREN DSCHGR SMK SCR L8A1 |
| | | | 1/2 | VM |
| | | | 1/4 | LOT NO.-MFG CODE MO.--YR |
| L8A3 | Light green | Brown | 5/16 | GREN DSCHGR SMK SCR L8A3 |
| | | | 1/2 | VM |
| | | | 1/4 | LOT NO.-MFG CODE MO.--YR |

Table 5-4. Painting and Marking of IR Smoke Screening Grenades

| Grenade | Base Color | Color of Marking | Height of Letters Inches | Marking |
|---|---|---|---|---|
| M76 | Light green | Black No 37038 | 5/16 | GREN LCHR SMK IR SCREENING M76 |
| | | Black No. 37038 | 3/16 | LOT NO. |
| | | Yellow No. 33538 | 5/16 | YELLOW BAND |



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*Figure 5-1. Application of masking tape to grenade.*

*2.* Roll brayer back and forth on paint plate to distribute paint on brayer.

*3.* Roll painted brayer lightly across face of rubber type to apply light film of ink to type.

*4.* Place grenade in position to receive marking, then roll carefully across face of rubber type to apply paint marking to grenade.

(*b*) *Stencil method.*

*1.* Apply small dab of paint to paint plate.

*2.* Rub brush in paint to apply paint to bristles.

*3.* Position stencil cut out over location on grenade to receive marking.

*4.* While holding stencil cut out firmly against grenade, rub bristles of brush over stencil to apply inked marking to grenade.

*5.* Remove stencil cut out.

(2) Check markings to assure they are correct, neat and legible.

(3) Transfer marked grenade to next operation. Transfer grenades not requiring refuzing to operation for assembling safety clip to grenade.

(4) Material, tools and equipment include the following

(*a*) Paint.

(*b*) Solvent.

(*c*) Rags.

(*d*) Rubber type, mounted (alt) stencil and stencil brush.

(*e*) Table, work.

(*f*) Can, safety, plunger-type.

(*g*) Gloves, disposable.

*d. Defuze Grenade, Hand (General Support Maintenance Only).* For defuzing operations, see paragraph 105c(6), TM 9-1300-206.

NOTE

When positioning torque wrench in vise care will be taken to insure that only the gripping portion of the wrench handle is clamped in vise. The vise should be equipped with wooden inserts to prevent damaging torque wrench.

(1) Place torque wrench in vise.

(2) Receive grenade from preceding operation. Engage fuze body in fuze wrench adapter. See figure 5-6.

**WARNING**

Do not use in excess of 100 inch pounds to loosen fuze. Grenades with fuzes requiring in excess of 100 inch pounds to loosen will be repacked for subsequent disposal or rework by depot or loading plant personnel and facilities.

(3) Grasp grenade body, while observing torque indicator, turn body in counter-clockwise direction until completely unscrewed from grenade fuze.

(4) Remove grenade body from fuze.

(5) Place fuze in packing support of shielded tray (fig. 5-7). Transfer to inspection operation or fuze packing operation as required.

(6) Tools and equipment include the following:

(*a*) Work table.

(*b*) Vise, machinist 4 to 6 inches wide jaw with wooden inserts.

(*c*) Wrench, torque 3/8 male sq-drive, 150 inch lb, capacity.

(*d*) Adapter, fuze wrench.

(*e*) Support, packing (fig. 5-7).

(*f*) Pitch-in barricade (fig. 5-8).

*e. Inspect Fuze, Grenade, Hand.*

(1) Receive grenade fuzes from preceding operation or from supply operator. Check lot number and nomenclature to assure fuzes are those for intended work.

(2) Inspect each fuze for defects specified in paragraph 4-6*d*.

(3) Place acceptable grenade fuzes in sectionalized tray and transfer to next operation.

(4) Place defective fuzes in sectionalized reject tray for transfer to destruction area.

(5) Tools and equipment include the following:

(*a*) Work table.



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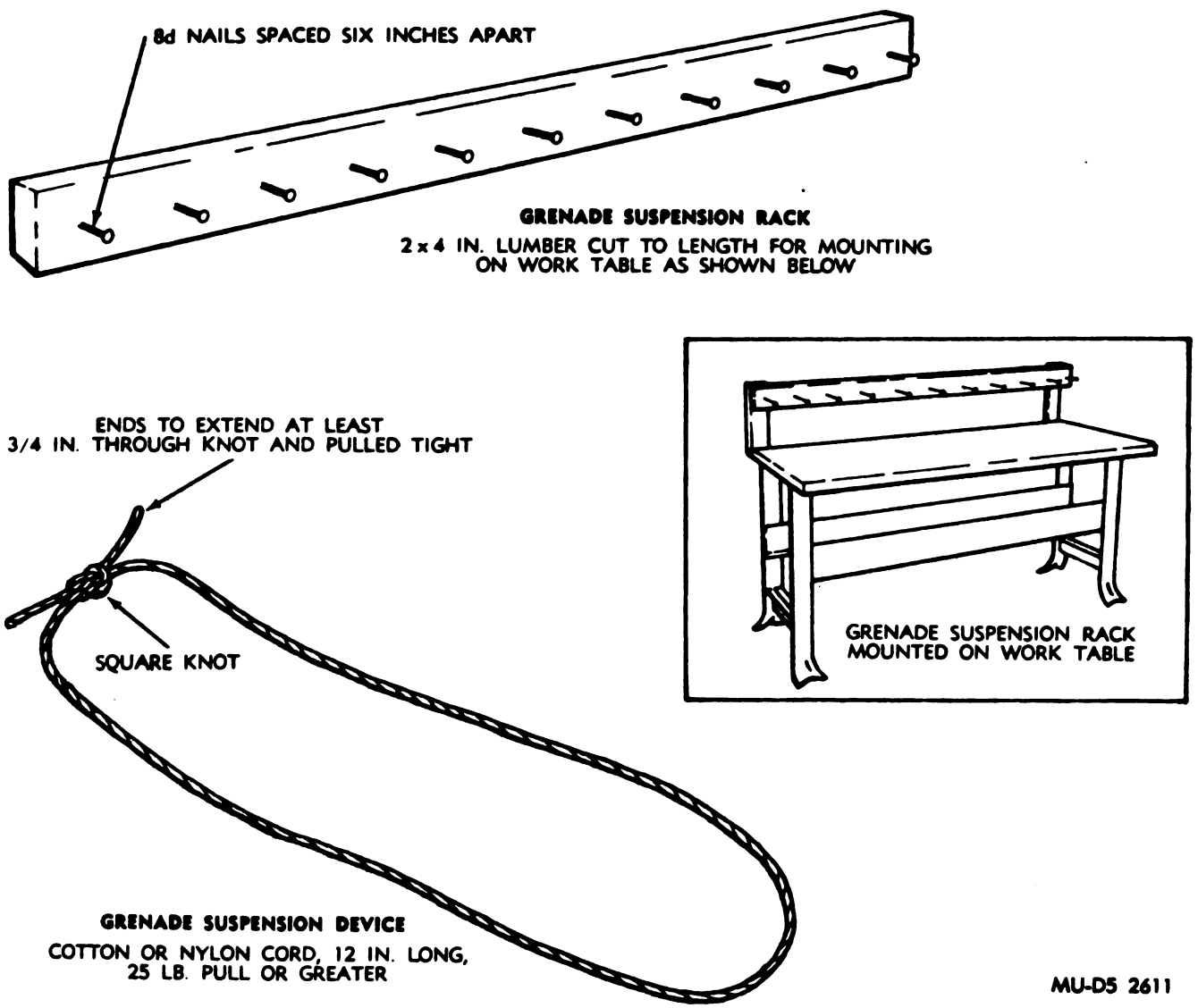



*Figure 5-2. Grenade suspension device and rack.*

(*b*) Fuze tray, support packing (fig. 5–7).

(*c*) Pitch-in, barricade (fig. 5–8).

*f. Assemble Fuze to Hand Grenade (General Support Maintenance Only).*

(1) Receive grenade and fuze from preceding operations.

(2) After assuring safe condition of safety pin, remove from tray or packing support.

(3) If M204A1 or M204A2 Fuze, assemble fiber glass sleeve over fuze delay column housing. Sleeve should slide over fuze housing and butt against shoulder under threads. Adjust or replace if necessary.

(4) Use small brush or equal to coat fuze threads with prescribed adhesive.

(5) Obtain grenade and check to assure fuze well is free of foreign material or any obstruction capable of interfering with assembling of fuze.

**WARNING**

Do not attempt to assemble fuze to grenade before assuring that fuze well is free of obstructions.

If fuze fails to seat with light hand pressure it is an indication that obstruction is present, or that fuze or grenade is defective. *DO NOT FORCE.* Remove fuze and check for defective condition.

(6) Assemble fuze to grenade hand tight. When assembling M206A2 fuze to Hand-Rifle



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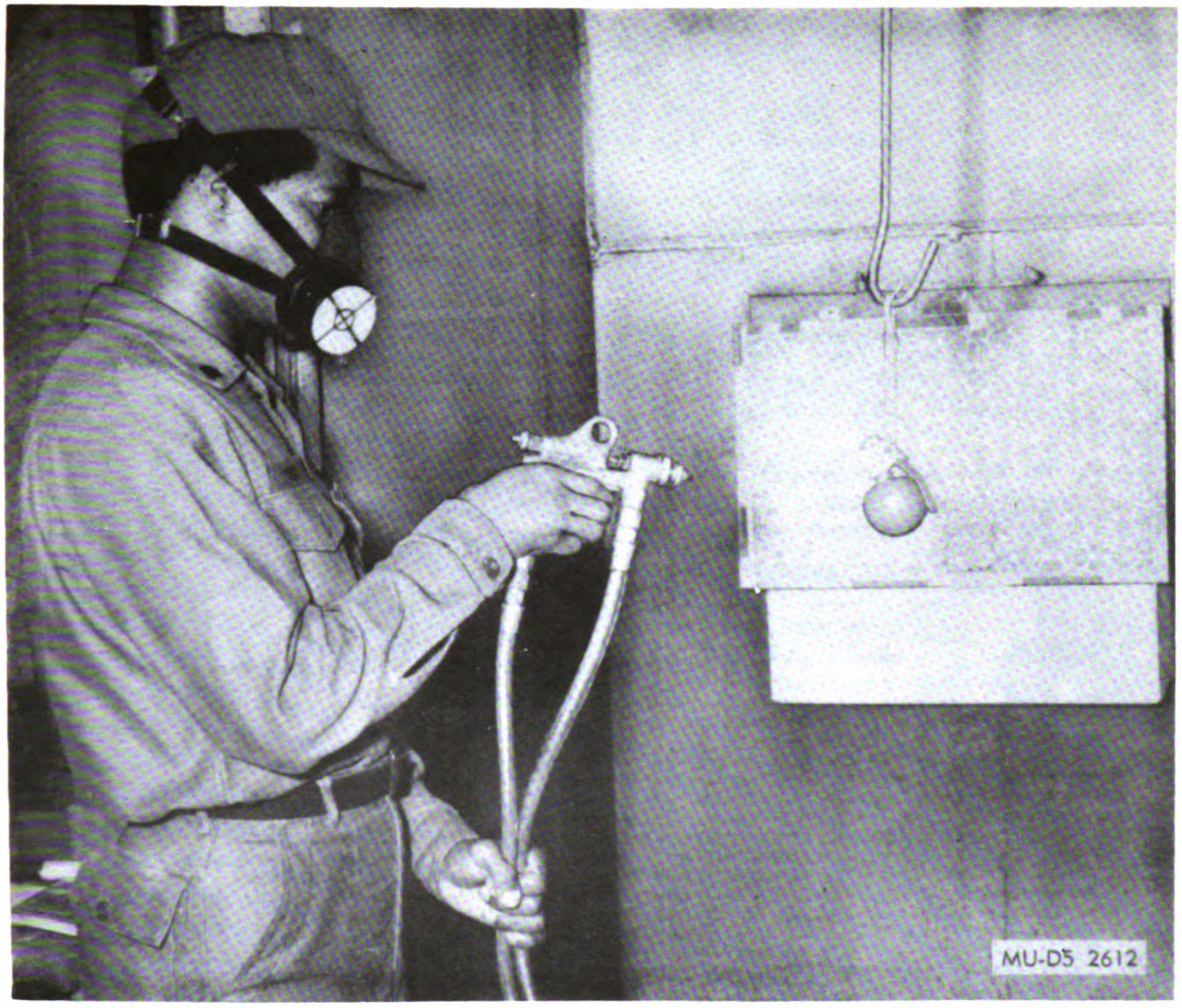



*Figure 5-3. Spray painting of hand grenade.*

Grenade M34 or to Offensive Hand Grenade Mk3, assemble safety clip to fuze prior to assembling fuze to grenade.

(7) Transfer grenade to next operation for torquing before adhesive sets.

(8) Material, tools and equipment include the following:

*(a)* Adhesive.

*(b)* Solvent.

*(c)* Rags.

*(d)* Can, safety, flammable liquid.

*(e)* Gloves, disposable.

*(f)* *Fiber glass tubing, if required.*

*g. Torque Fuze To Hand Grenade (General Support Maintenance Only).*

(1) Receive fuzed grenade from preceding operation.

(2) Engage fuze body in fuze wrench adapter. See figure 5-6.

**WARNING**

**Do not use in excess of the maximum prescribed torque in accordance with the applicable drawings.**

(3) Grasp grenade body. Tighten grenade body to prescribed torque prior to adhesive setting.

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*Figure 5-4. Spray painting of rifle grenade.*

(4) Remove fuzed grenade from fuze adapter and transfer to next operation.

(5) Material, tools and equipment include the following:

*(a)* Work table.

*(b)* Wrench, torque 3/8 male sq-drive, 150 in lb capacity.

*(c)* Adapter, fuze, wrench.

*(d)* Vise, mechanical, with wooden jaws.

*(e)* Pitch-in barricade (fig. 5-8).

h. Assemble Safety Clip to Grenade.

(1) Receive grenade from preceding operation. Receive safety clips from supply operator or obtain from holding area as required.

(2) Check safety clip immediately before



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*Figure 5–5. Dip painting grenade.*

assembly to grenade. Dispose of damaged or otherwise defective clips.

(3) Assemble safety clip to fuze, see paragraph 3–7*a*(7), TM 9–1330–200–12.

(4) Transfer grenade to next operation.

(5) Material, tools and equipment include the following:

(*a*) Table, work.
(*b*) Clips, safety.
(*c*) Receptacle, waste.

*i. Inspect and Recondition Packing Box.*

(1) Receive packing box from unpacking operation.

(2) Examine box and repair, recondition, accept or reject as instructed in paragraph 4–6*e*.

(3) Transfer accepted packing box to packing operation. If rejected, mark and place in reject area pending disposal.

(4) Materials, tools and equipment include the following:

(*a*) Table, work.
(*b*) Conveyor, roller.
(*c*) Scraper, wood.
(*d*) Rags, waste.
(*e*) Hammer, claw.
(*f*) Puller, nail, hand.
(*g*) Stencil or type, rubber (to be made on site).
(*h*) Screwdriver.
(*i*) Brush, paint.
(*j*) Ink, marking.
(*k*) Enamel.
(*l*) Solvent.

*j. Inspect and Recondition Packing Container.*

(1) Receive packing container from grenade unpacking operation.

(2) Inspect container and repair, recondition, accept or reject as instructed in paragraph 4–6*e*.

(3) Transfer accepted container to packing operation. If rejected, mark and place in reject area pending disposal.

(4) Material, tools and equipment include the following:

(*a*) Table, work.
(*b*) Rags, waste.
(*c*) Stencil or rubber type.
(*d*) Brush, paint.
(*e*) Ink, marking.
(*f*) Paint, acid-proof, black.
(*g*) Solvent.

*k. Repack Hand Grenade in Container.*

(1) Receive grenade and packing material from preceding operations.

(2) Open container and remove filler and support.

(3) Place one filler into container.

(4) Place grenade, fuze end up, into container with pull ring in down position.

(5) Place plastic support atop fuze with forward (lug) end of fuze body toward radius portion of recess.

(6) Place one or more fillers atop support as required to provide a tight pack.

(7) Assemble and seat cover on container.

(8) Transfer closed container to next operation.

(9) Material, tools and equipment include a work table.

*l. Tape Container.*

(1) Receive packed grenade in container from preceding operation.

(2) While holding container firmly together,

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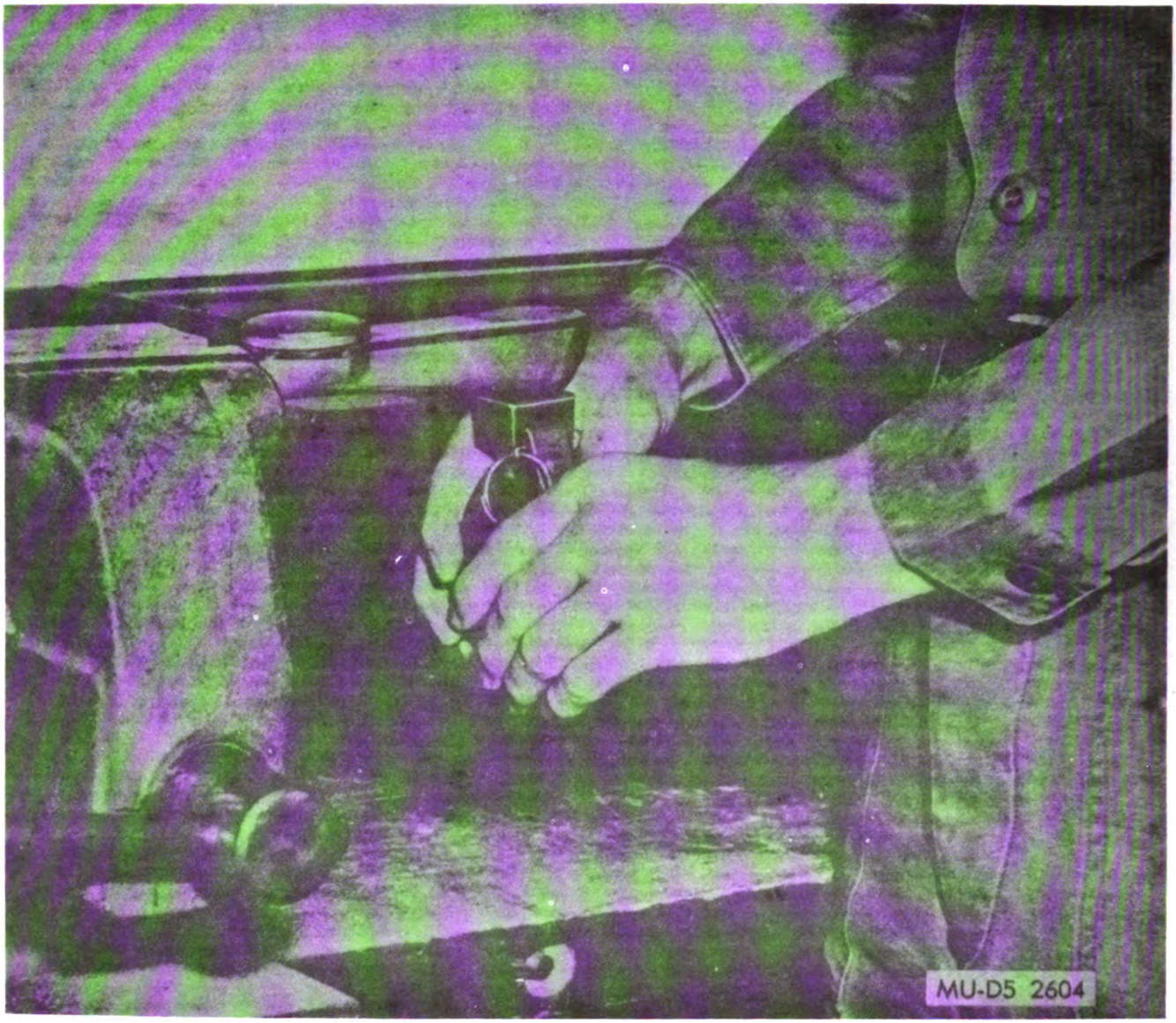



*Figure 5–6. Defuzing or torquing hand grenades fuze.*

apply one and one-fourth wraps of pressure sensitive tape around joint formed by top and bottom of container, leaving a one and one-half inch pull tab. When applying tape to container, use at least 10 pounds tension. Assure gap between container top and bottom does not exceed 1/8 inch.

(3) Transfer sealed container to next operation.

(4) Materials, tools and equipment include the following:

(*a*) Table, work.

(*b*) Tape, pressure sensitive.

*m. Pack Sealed Containers in Box.*

(1) Receive sealed containers and packing material from preceding operations.

(2) Insert sealed containers, top end up, into packing box to form complete rows lengthwise and widthwise.

(3) Place filler atop containers. Continue packing containers if required, to complete second layer.

(4) Add sufficient fillers to ends, side and top as required to assure a tight pack.

(5) Close cover and transfer box to next operation.



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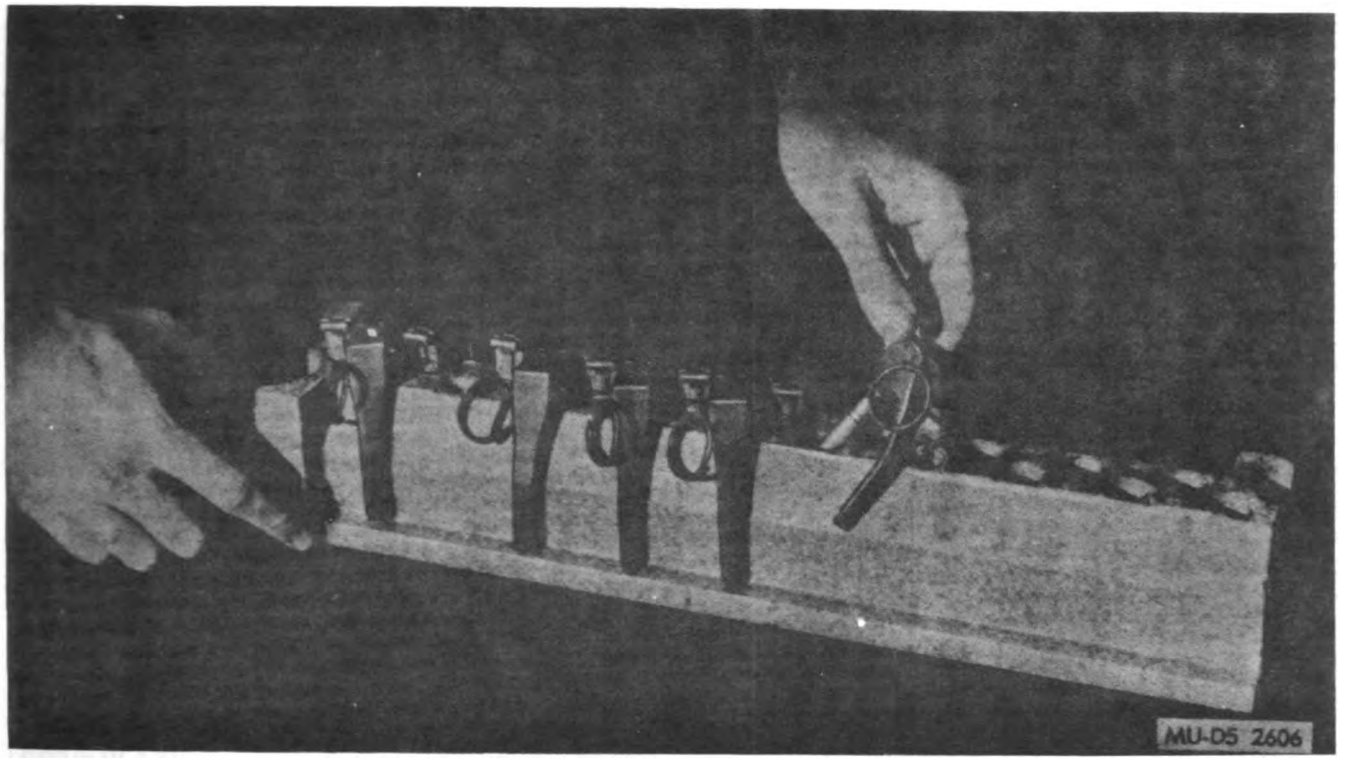



*Figure 5–7. Placing fuze in packing support.*

*n. Seal and Strap Packing Box.*

(1) Receive packed grenade in box from preceding operation.

(2) Swing hasp over swivel and turn swivel 180° to latch hasp.

(3) Pass seal wire through eye in swivel and back through eye in hasp.

(4) Draw end of wire through hole in seal and pull taut to remove slack.

(5) Conceal end of wire in lead seal and crimp seal with hand lead seal press.

(6) Repeat operation to seal remaining hasp and swivel, if present.

(7) Assemble and secure metal strapping tightly around box using hand strapping machine. Do not obstruct marking. Repeat operation, if necessary to apply second strap.

(8) Transfer sealed and strapped box to carrier for return to storage site.

(9) Material, tools and equipment include the following:

(*a*) Conveyor.

(*b*) Strapping and sealing kit: 5/8 inch wide x 0.023 inch thick strapping.

(*c*) Press, lead seal, hand.

(*d*) Seal wires and seals.

(*e*) Gloves, leather palm.

(*f*) Face shield or safety goggles.

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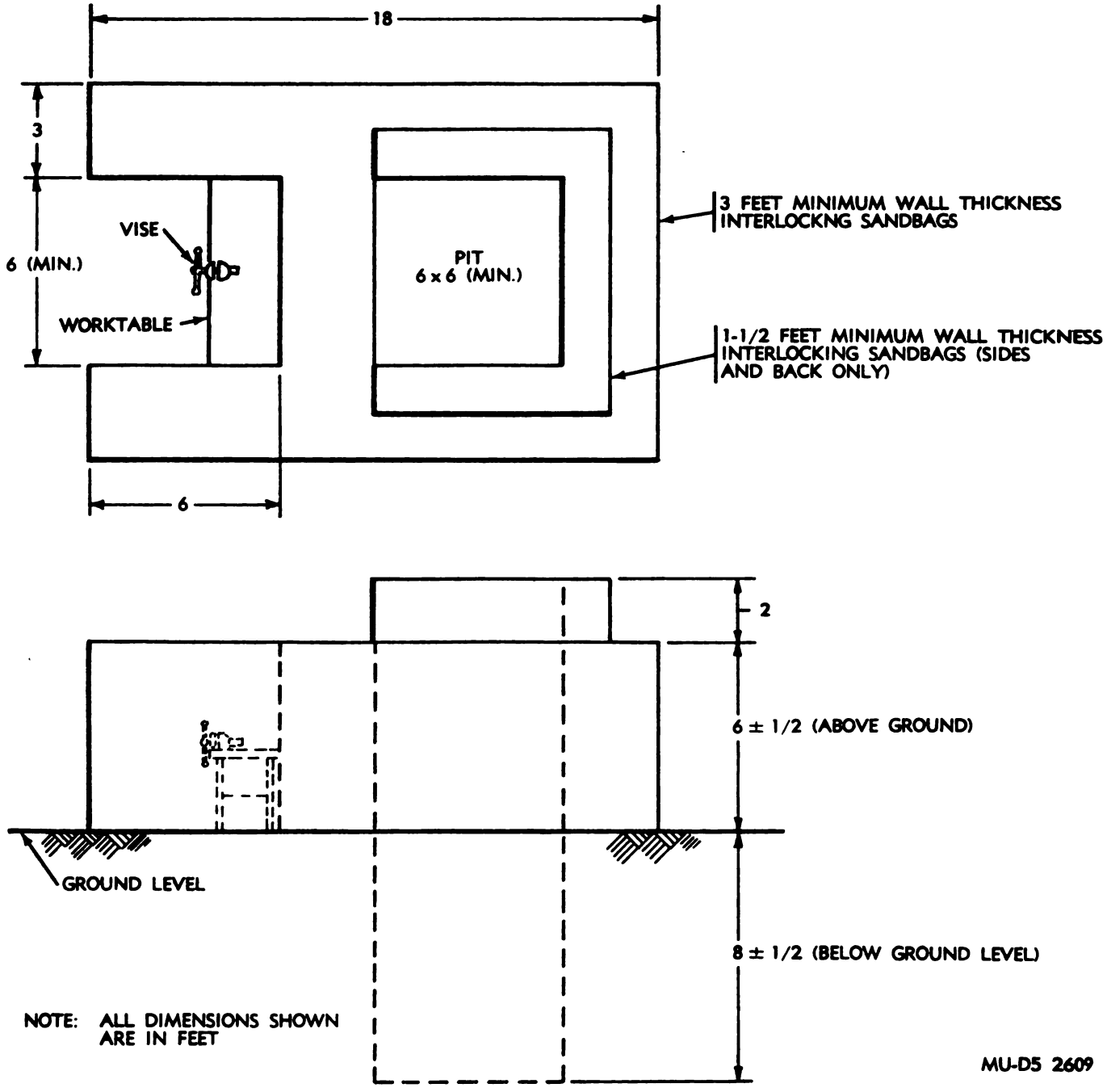



*Figure 5-8. Pitch-in barricade.*



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# APPENDIX A
# REFERENCES

## A-1. Administrative Publications

*a. Army Regulations.*

Identification of Inert Ammunition Components ..... AR 385-65

*b. DA Pamphlets.*

Index of Blank Forms ..... DA Pam 310-2

## A-2. Blank Forms

Munitions Surveillance Report ..... DA Form 984
Recommended Changes to Publications and Blank Forms ..... DA Form 2028

## A-3. Doctrinal, Training and Organizational Publications

Grenades and Pyrotechnic Signals ..... FM 23-30

## A-4. Technical Manuals

Organizational Maintenance Manual (Including RPSTL) Launcher, Grenade, Smoke, Screening, RP M239 (NSN 1040-01-015-0874) ..... TM 3-1040-266-20&P
Ammunition, General ..... TM 9-1300-200
Ammunition Maintenance ..... TM 9-1300-250
Ammunition and Explosives Standards ..... TM 9-1300-206
Operator's and Organizational, Maintenance Manual: Grenades, Hand and Rifle ..... TM 9-1330-200-12
The Army Maintenance Management System (TAMMS) ..... TM 38-750
Army Ammunition Data Sheets for Grenades ..... TM 43-0001-29

## A-5. Supply Catalogs

Shop Equipment, Ammunition Renovation: Field Maintenance Detachment, Less Power (4925-754-0710) (Line Item W59719) and Shop Equipment, Ammunition Renovation: Field Maintenance Detachment, MAP Only (4925-919-0067) 721112.24000 ..... SC 4925-95-CL-A03
Tool Set, Ammunition: Field Maintenance Ordnance Ammunition Company (4940-322-6058) (Line Item W59582, Formerly Line Item 454628 and Tool Set Ammunition: Field Maintenance Ordnance Ammunition Company MAP Only (4940-919-0113) ..... SC 4940-95-CL-A11

## A-6. Other Publications

Ordnance Company, Ammunition, Conventional Direct Support/General Support ..... TOE 9-38G
Ammunition Supply and Renovation Detachments ..... TOE 9-530-G
Ammunition Surveillance Procedures ..... SB 742-1

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# APPENDIX B
# MAINTENANCE SUPPLIES

## Section I. INTRODUCTION

### B-1. Scope

This appendix lists expendable items which are required for direct and general support maintenance.

### B-2. Explanation of Columns in the Tabular List of Expendable Materials, Section II

*a. National Stock No.* Column 1 indicates the national stock number assigned to the item and shall be used for requisitioning purposes.

*b. Description.* Column 2 indicates the Federal item name and the minimum description to identify the item.

*c. Specification No.* Column 3 indicates the specification which controls the design or characteristics of the item.

*d. Unit of Issue.* Column 4 indicates the unit of issue of each item.

## Section II. EXPENDABLE MATERIALS

**NOTE**

Materials should be stocked and requisitioned through normal supply channels on an as-required basis

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| (1) National stock No. | (2) Description | (3) Specification No. | (4) Unit of Issue |
|---|---|---|---|
| 8040-00-264-5840 | ADHESIVE: Thermoplastic, synthetic rubber for hot or cold bonding. | MMM-A-189 | gl |
| 7920-00-255-5135 | BRUSH: Wire Scratch, wood and copper-beryllium alloy with curved handle, 14 in. x 15/16 in. block, 6 in. x 1¼ in. wire brush. | H-B-178 | ea |
| 7920-00-269-0933 | BRUSH: Wire Scratch, wood and copper-beryllium alloy, straight block, 7 in. x 1 in. block, 6 in. x 1¼ in. wire brush. | H-B-178 | ea |
| 8010-00-597-5301 | BRUSH: Paint, oval style, angular, type 1, class 1, size 6. | H-B-491 | ea |
| 7240-00-282-8411 | CAN: Flammable Waste, 6 gallon capacity. | RR-C-114 | ea |
| 8030-00-290-5141 | COATING COMPOUND: Bituminous Solvent, Type 2, medium solids, brushing and spraying consistency. | MIL-C-450 | gl |
| 8030-00-664-7105 | COATING COMPOUND: Bituminous Solvent, Type 1. Low solids, spraying consistency. | MIL-C-450 | gl |
| | ENAMEL: | | |
| 8010-00-297-2122 | Black, No. 37038 | TT-E-516 | gl |
| 8010-00-297-2119 | Blue, light, No. 35109 | TT-E-516 | gl |
| 8010-00-297-2120 | Gray, No. 36231 | TT-E-516 | gl |
| 8010-00-598-5939 | Green, dark, No. 34108 | TT-E-516 | gl |
| 8010-00-828-3193 | Green, light, No. 34558 | TT-E-516 | gl |
| 8010-00-297-2116 | Olive, drab, No. 34087 | TT-E-516 | gl |
| 8010-00-297-2113 | Olive, drab, No. 34087 | TT-E-516 | gl (5) |
| 8010-00-848-9272 | Olive, drab, No. 34087 | TT-E-516 | pt (spray) |
| 8010-00-577-4937 | Red, No. 31168 | TT-E-516 | qt. |
| 8010-00-297-2114 | Red, light, No. 31136 | TT-E-516 | gl |
| 8010-00-297-2111 | White, No. 37875 | TT-E-516 | gl |
| 8010-00-878-5761 | White, No. 37875 | TT-E-516 | pt (spray) |
| 8010-00-297-2112 | Yellow, No. 33538 | TT-E-516 | gl |
| 8415-00-634-4646 | GLOVES: Cloth, knit wristlet, (71983). | JJ-G-451 | pr |
| 8415-00-682-6786 | GLOVES: Plastic, disposable (71983). | PINKIES | pr |
| | INK, MARKING STENCIL: | | |
| 7510-00-161-0811 | Black, f/porous surface | TT-I-1795 | gl |
| 7510-00-161-0815 | White, f/porous surface | TT-I-1795 | gl |
| 7510-00-161-0812 | Gray, f/porous surface | TT-I-1795 | gl |
| 7510-00-161-0814 | Red, f/porous surface | TT-I-1795 | gl |
| 7510-00-161-0810 | Green, f/porous surface | TT-I-1795 | gl |
| 7510-00-191-6030 | Black, f/nonporous surface. | TT-I-1795 | gl |
| 7510-00-224-6733 | Yellow, f/nonporous surface. | TT-I-1795 | pt |
| 7510-00-139-4457 | Brown, f/nonporous surface. | TT-I-1795 | pt |
| 8010-00-063-8968 | LACQUER: Brown, No. 30117 | MIL-L-1195 | gl |
| 5110-00-293-3209 | PLIERS: Diagonal cutting | GGG-P-468 | ea |
| 7920-00-205-1711 | RAG: Wiping, cotton unbleached. | DDD-R-30 | bl (50 lb) |
| 4240-00-817-9233 | RESPIRATOR, AIR FILTERING: Paint Spray, M6. | GGG-M-125 | ea |
| 8030-00-656-1426 | SEALING COMPOUND: thread and gasket, non-hardening (low viscosity). | MIL-D-45180 | pt |
| 7510-00-198-5831 | TAPE, MASKING: 1 in. width | UU-T-93 | ro (60 yd) |
| 7510-00-823-8073 | TAPE, PRESSURE: Black, 1½ in. wide, type 1. | MIL-T-43036 | ro (60 yd) |
| 8010-00-160-5788 | THINNER: Clear, for dope and lacquer. | TT-T-266 | gl |
| 8010-00-242-2089 | THINNER: Paint, mineral spirits. | TT-T-291 | gl |
| 8010-00-160-5794 | THINNER: Synthetic, for use with alkyd resin enamels. | TT-T-306 | gl |



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