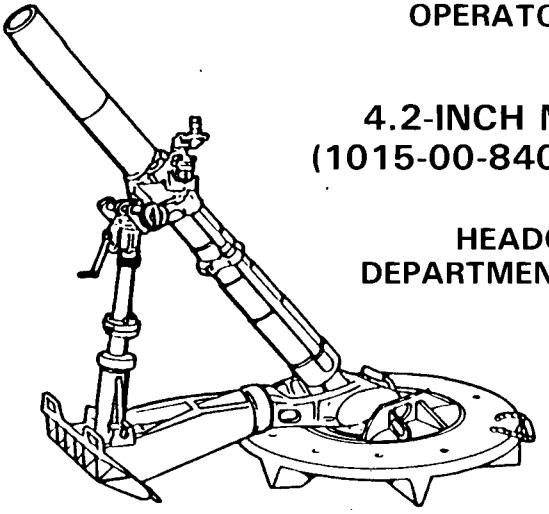
TM 9-1015-215-10

SUPERSEDES COPY DATED 11 MARCH 1985



OPERATOR'S MANUAL FOR

4.2-INCH MORTAR, M30 (1015-00-840-1840) (EIC:4SH)

HEADQUARTERS DEPARTMENT OF THE ARMY

DECEMBER 1993

WARNINGS

Do not move the rotator assembly and the mortar baseplate as a unit; move the rotator assembly by its handles and use two men to move the mortar baseplate by the rope handles.

Do not use rope handles to lift the mortar baseplate if handles are frayed.

Use both hands to carefully lift and balance the bridge assembly since tapered swivel joint is free to turn unless properly balanced.

Do not remove traversing stops on turntable indexing gear. Operation without stops in position can be dangerous.

Prior to beginning any painting operation, refer to TM 43-0139 (Painting instructions for Army Material). Improper application or removal of CARC paint can be extremely dangerous to your health.

When firing cartridges at low charges, there is the potential for burning residue from the propellent charge bag landing near the muzzle or close to the weapon. Therefore, it is necessary to ensure that the lid of the excess increments container is closed or away from the weapon. While loading the next round, ensure there is no burning residue in or around the muzzle as this may prematurely ignite the next propelling charge.

WARNINGS (cont)

Do not fire the M329A2 HE cartridge over friendly units, as non-critical short rounds (not less than 80% of the intended range) may occur when the cartridge is fired at high charge.

Do not insert hand into mortar barrel to remove stuck round.

In case of misfire, refer to misfire procedures on page 2-95.

Wait one full minute before removing a misfire. A hot barrel must be cooled until it can be moved with bare hands before removing a misfire. Personnel should stand clear while misfire is in barrel.

When removing an unfired cartridge, do not lower the breech end of mortar barrel below a horizontal position under any circumstances until cartridge has been removed from the mortar barrel. When removing the cartridge, do not touch the striker; it may be armed.

Wait until the mortar barrel is cool enough to be handled with bare hands (if the barrel is hot) or one (1) minute (if the barrel is cool at the time of the misfire) before pouring water into the barrel. This is to avoid an accident from possible delayed action of the ignition cartridge and possible damage to the barrel from rapid quenching.

At no time shall any part of the gunner's head or body be placed in front of the muzzle of the mortar barrel.

Allow two minutes (minimum) for the water to flow past the cartridge to the bottom of the mortar barrel.

A stuck round could dislodge and fire as the water is being poured into the mortar barrel. This round could land close to the mortar position. All personnel, except the gunner, will take cover. The ramp of the carrier will be in the raised (up) position to protect the gunner.

If the cartridge will not slide out of mortar barrel, see page 2-102. The squad should never try to pry the cartridge from the mortar barrel.

Do not fire an M329A2 cartridge without an obturator. The obturator must be fully seated. The cartridge must be rotated fully clockwise prior to release. Do not shove cartridge down barrel.

Upon releasing cartridge, pass hands downward and, a the same time, turn away from muzzle of mortar barrel to avoid blast which occurs when cartridge is discharged. This also places the assistant gunner in position to accept the next cartridge.

WARNINGS (cont)

Mortar crew is required to use single hearing protection when firing.

Firing site must have mask and overhead clearance.

Double loading of mortar ammunition has resulted in catastrophic accidents. Loading a mortar weapon with two men (alternately) can be very dangerous and could prove fatal. Even with one man loading, double loading can occur. This is especially true in rapid fire exercises. For this reason, it is imperative that there be absolute certainty that the previous round left the mortar barrel before another round is dropped in.

For information on first aid, see FM 21-11.

NOTE

The terms cannon, tube, and barrel indicate an assembly in which ammunition is fired and which controls the initial direction of a projectile. In mortar terminology, barrel is the most commonly used term. The M30 mortar cannon is the complete assembly consisting of the mortar tube, tube cap, firing pin, tube cap trunnion pins, coupling and sight mount assembly, sight socket, and absorbers. The term barrel will be used in reference to the complete cannon assembly.

U.S. ARMY

CHANGE
NO. 1

TM 9-1015-215-10
C1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 28 JUNE 1994

OPERATOR'S MANUAL
FOR
4.2-INCH MORTAR, M30
(1015-00-840-1840) (EIC:4SH)

TM 9-1015-215-10, 15 December 1993, is changed as follows:
1. Remove old pages and insert new pages as indicated below.
2. New or changed material is indicated by a vertical bar in the margin of the page.

Remove Page	Insert Pages
None	2-80.1 (2-80.2 blank)

File this change sheet in the front of the publication for informational purposes.

By Order of the Secretary of the Army:

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

Official:

MILTON H. HAMILTON
Administrative Assistant to the Secretary of the Army
06869

DISTRIBUTION: To be distributed in accordance with DA Form 12-40-E, block 0041 requirements for TM 9-1015-215-10.

*TM 9-1015-215-10

TECHNICAL MANUAL

No. 9-1015-215-10

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 15 Dec 1993

Operator's Manual
For
4.2-INCH MORTAR M30
(1015-00-840-1840) (EIC:4SH)

*This manual supersedes TM 9-1015-215-10, 11 March 1985 (including all changes), and LO 9-1015-215-12, May 1971.

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. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, US Army Armament, Muntions, and Chemical Command, ATTN: AMSMC-MAS, Rock Island, Illinois 61299-6000. A reply will be furnished to you.

TABLE OF CONTENTS

TABLE OF CONTENTS (cont)

HOW TO USE THIS MANUAL

General

Knowing how to use this manual is very important to you.

a. References are to pages in this manual or to other publications.

b. Throughout this manual, text is keyed to the illustrations by use of numbered callouts. When an item is called out in a procedure, a number in parentheses in the text corresponds with a number on the illustration.

Indexes

This manual is organized to help you quickly find the information you need. There are two useful indexes:

a. **Table of Contents.** The table of contents lists, in the order of presentation, all chapters, sections, appendixes, and alphabetical index and gives the page numbers where they begin.

b. **Alphabetical Index.** This index, located at the back of this book, is an extensive subject index for the entire manual. The page numbers following each entry tell you where in the manual to find a particular subject.

Lists

This manual contains lists which will help you understand the use of the M30 mortar nomenclature (names of parts, assemblies, tools, and associated equipment) and US Customary/Metric measurement conversions.

a. **Metric/US Customary Metric Chart.** Measurements in this manual are given in both metric and US customary units. The table inside the back cover compares metric measurements to their equivalent US customary units. Also provided are conversion factors to convert metric units to US customary units.

b. **Nomenclature Cross-Reference List.** Throughout this manual, most items are referred to by their official nomenclature. In the list, the items are referred to by their official nomenclature. In the list, the items referred to by their common names are listed alphabetically, followed by their official nomenclature.

Troubleshooting Overview

This procedure is designed to isolate failures in the mortar system. The troubleshooting table lists possible malfunctions and corrective actions. When the malfunction is located, the operator is sent to the procedure with the correct corrective action to be taken.

Maintenance Procedures

a. **Step-By-Step Procedures.** Maintenance authorized by the Maintenance Allocation Chart (MAC) (TM 9-1015-215-23&P) is listed in illustrated, step-by-step procedures.

b. **WARNINGS and CAUTIONS.** Throughout the manual, you will see WARNING and CAUTION data which must be followed.

(1) **WARNING.** A warning is used to alert the user of hazardous operating and maintenance procedures, practices, conditions, statements, etc., that may result in injury to or death of personnel if not strictly observed.

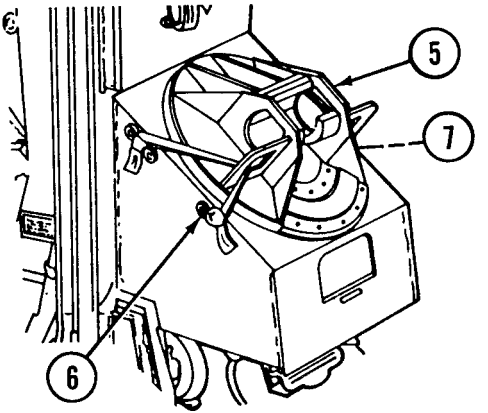
(2) **CAUTION.** A caution is used to alert the user of hazardous operating or maintenance procedures, practices, conditions, statements, etc., that may result in damage to or destruction of equipment or mission effectiveness if not strictly observed.

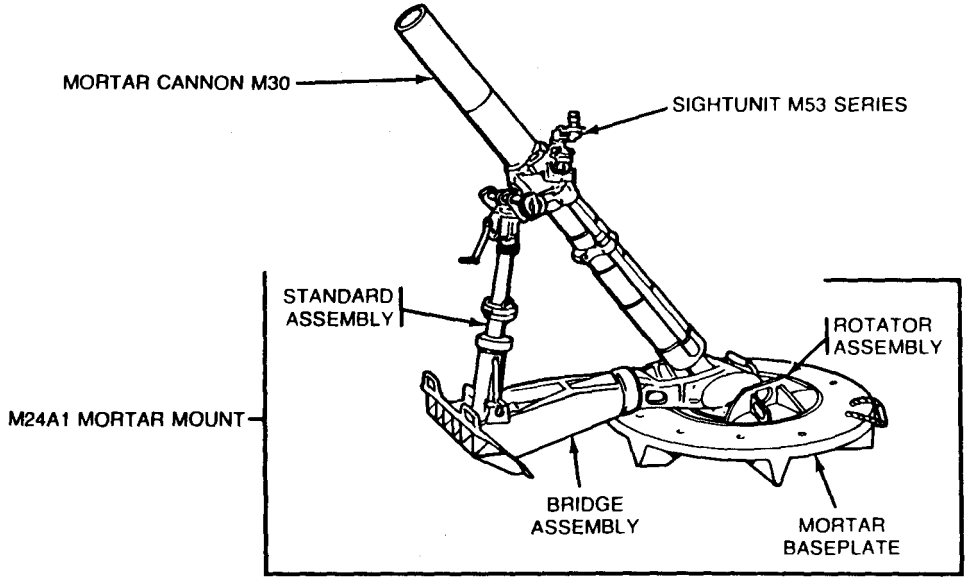
c. **Dashed Callout Arrows.** A dashed callout arrow in the procedure means the part being called out is hidden, i.e., you can't see it on the illustration. For example:

(1) Callout 5 is the rotator assembly.

(2) Callout 6 is the left strap.

(3) Callout 7 is the right strap.


5
7
6



M30 4.2-INCH MORTAR

CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE.

Type of Manual. Operator's manual, including operator maintenance.

M30 4.2-inch Mortar. Consists of:
M30 Mortar Cannon
M24A1 Mortar Mount
Sightunit M53 Series

Purpose of Equipment. The M30 4.2-inch mortar is a rifled bore, muzzle-loaded heavy weapon that provides high angle fire for ground troop support.

1-2. MAINTENANCE FORMS AND PROCEDURES. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS) (Maintenance Management Update).

1-3. HAND RECEIPT (-HR) MANUALS. This manual has a companion document with a TM number followed by "-HR" (Hand Receipt). The TM 9-1015-215-10-HR consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e. COEI, Bll, and AAL) you must account for. As an aid to property accountability, additional -HR manuals may be requisitioned from the following source in accordance with procedures in DA PAM 310-10:

Commander
U.S. Army Publications Distribution Center
2800 Eastern Blvd
Baltimore, MD 21220-2896

1-4. CORROSION PREVENTION AND CONTROL (CPC).

a. Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

b. While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.

c. If a corrosion problem is identified, it can be reported using SF 368, Product Quality Deficiency Report. Use of key words such as "corrosion," "rust," "deterioration," or "cracking" will ensure that the information is identified as a CPC problem.

1-5. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE. For destruction of Army materiel to prevent enemy use, refer to TM 750-244-7.

1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs). If your 4.2-inch mortar needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to us at Commander, US Army Armament, Munitions and Chemical Command, ATTN: AMSMC-QAD, Rock Island, IL 61299-6000. We'll send you a reply

1-7. NOMENCLATURE CROSS-REFERENCE LIST.

Common Name	*Official Nomenclature*
Barrel	Cannon, Tube
Elevating handle	Gear and handle assembly
Elevating mechanism	Elevating screw and housing assembly
Cap assembly trunnion pin	Headless straight pin

1-8. LIST OF ABBREVIATIONS.

AAL	Additional Authorization List
BII	Basic Issue Items
EIR	Equipment Improvement Recommendation
PMCS	Preventive Maintenance Checks and Services

Section II. EQUIPMENT DESCRIPTION

1-9. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

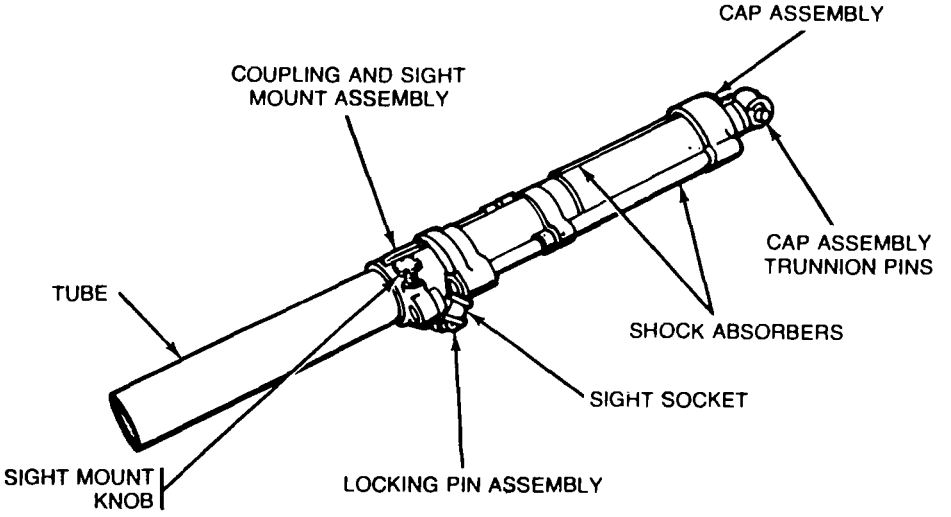
Characteristics.

A heavy mortar that is transported by vehicle.
Can be emplaced on the ground or mounted in a special vehicle.

Capabilities and Features.

Rifled bore cannon is muzzle loaded.
Capable of delivering various types of cartridges/fuzes at a rapid rate of fire.
Breaks down into sections that one or two men can handle.
M53 sightunit series gives indirect fire capability.

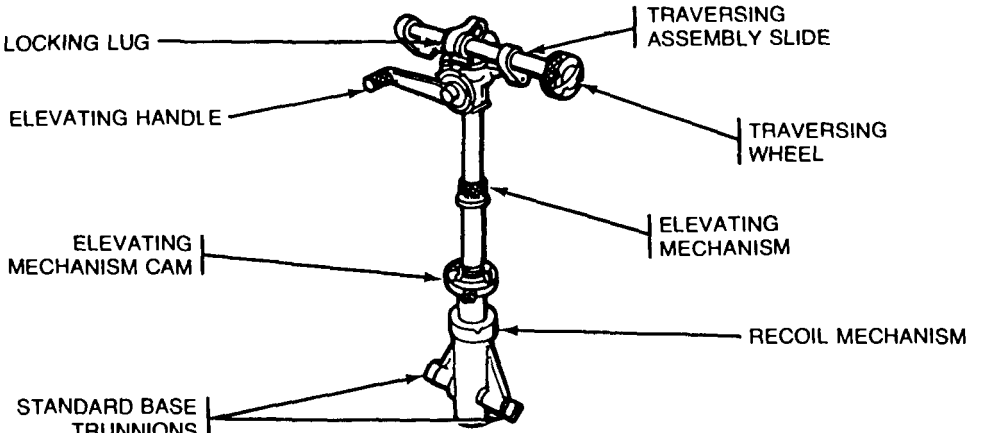
1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.



MORTAR BARREL. Drop fired, rifled bore barrel equipped with shock absorbers.

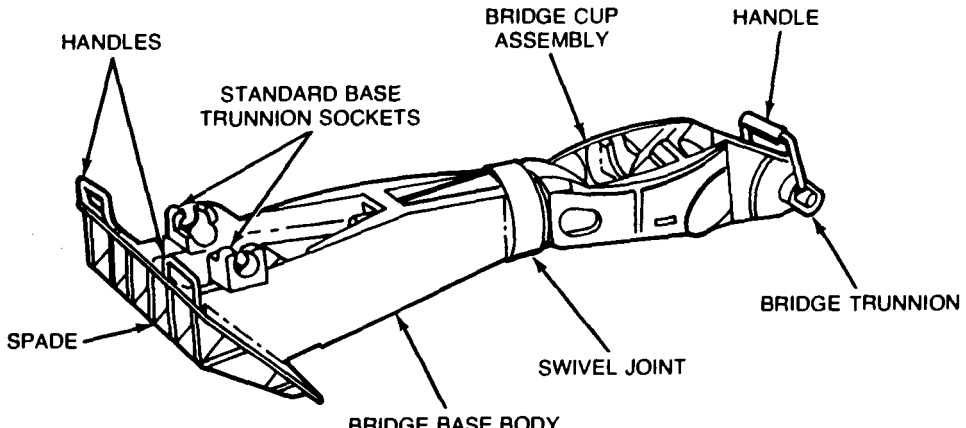
NOTE

M24A1 mortar mount consists of standard assembly, bridge assembly, rotator assembly, and mortar baseplate.

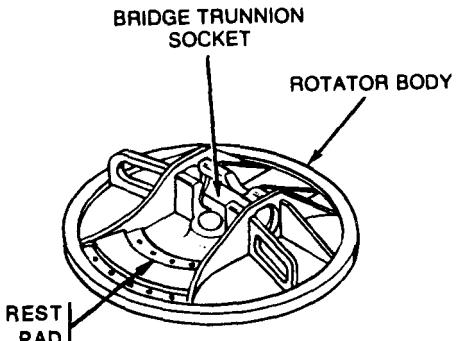


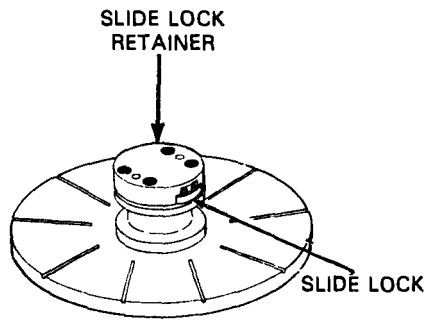
STANDARD ASSEMBLY. Provides adjustment of dual range firing (high or low) and for limited traversing.

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (cont).



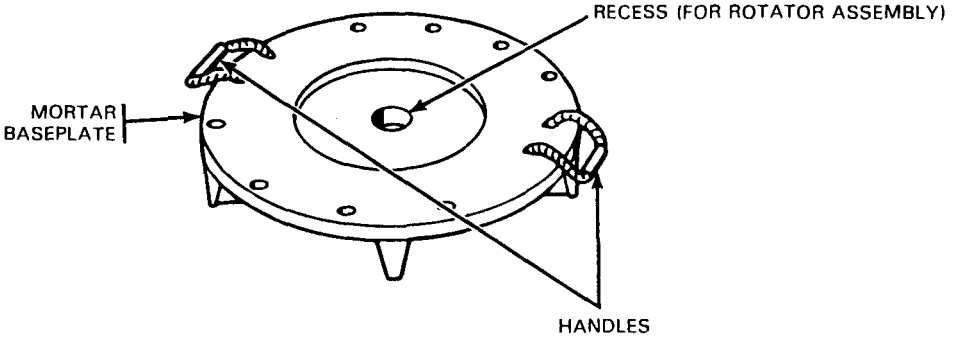
BRIDGE ASSEMBLY. Bridge assembly and standard assembly support the cannon in the firing position.



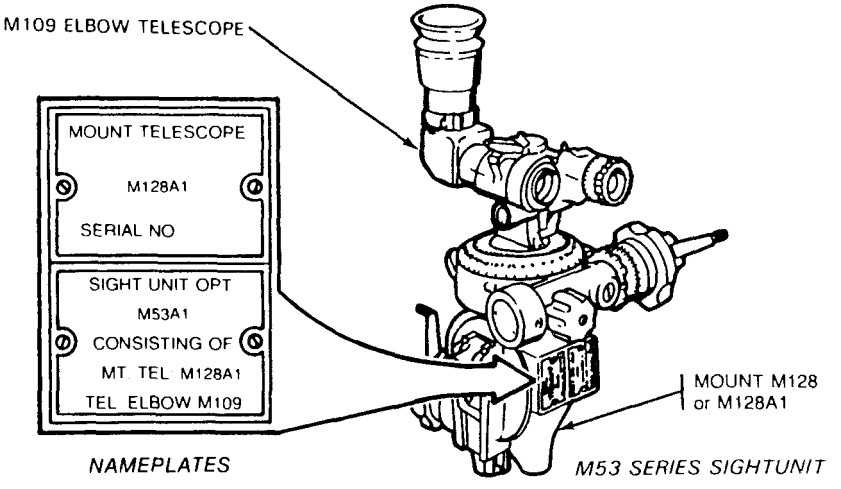


ROTATOR ASSEMBLY. Allows full circle traversing of cannon.

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (cont).

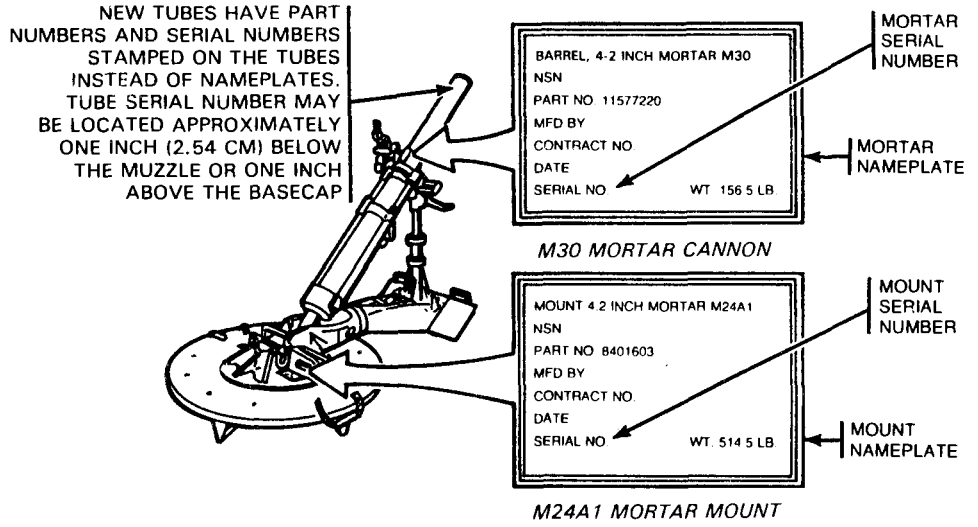


MORTAR BASEPLATE. Provides a base for the weapon and absorbs the shock of firing.



M53 SERIES SIGHTUNIT. A standard sighting device used to lay the mortar in elevation and deflection (azimuth).

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (cont).



1-11. EQUIPMENT DATA.

TOTAL ASSEMBLED WEIGHT . . . .672.3 lb(305 kg)
- Barrel . . . .156.5lb(71 kg)
- Standard Assembly . . . .59.5 lb(27 kg)
- Bridge Assembly . . . . 169.0 lb(77 kg)
- Rotator Assembly . . . .89.0 lb(40 kg)
- Mortar Baseplate . . . . 193.0 lb(88 kg)
- Sighting Equipment . . . . . .5.25 lb(2.4 kg)

ELEVATION

High range		Low range	
Minimum	..919 roils	Minimum	.706 mils
Maximum	..1156 mils	Maximum	...933 roils

One turn of elevating handle = 13 mils (approximate)

1-11. EQUIPMENT DATA (cont).

TRAVERSE

Maximum right or left of center, using traversing wheel 125 mils
One turn of traversing wheel = 10 mils (approximate)

RANGE

Minimum . . . . . 770 meters
Maximum . . . . . 6840 meters

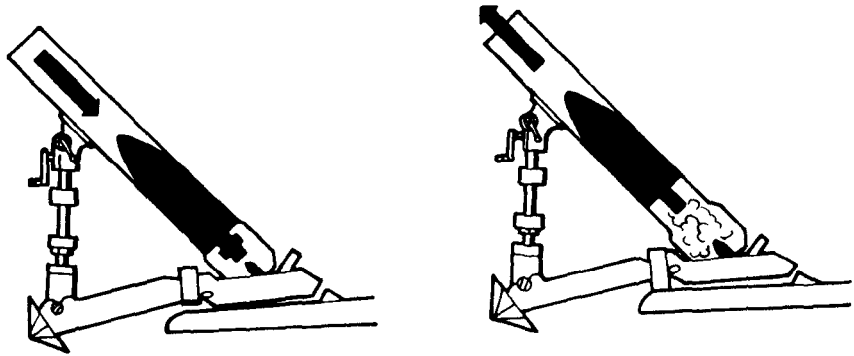
RATE OF FIRE

Maximum (RPM) (for one minute) 18
Immediately followed by (RPM) (for five minutes) 9
Immediately followed by (RPM) (sustained indefinitely) 3

Section III. PRINCIPLES OF OPERATION

1-12. OPERATION OF M30 MORTAR.

1 Shell is fired by dropping a complete cartridge down the mortar barrel.

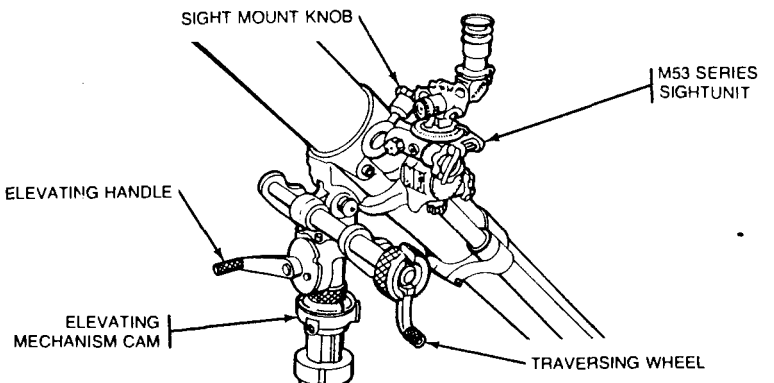


2 As striker nut hits firing pin, primer fires cartridge which ignites propellant.

3 Gas from burning propellant pushes projectile and expands pressure plate so that rotating disk engages rifling, which causes shell to rotate.

CHAPTER 2
OPERATING INSTRUCTIONS

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS



2-1. SIGHTING CONTROLS.

SIGHT MOUNT KNOB
Levels the cross-level vial of the sightunit.

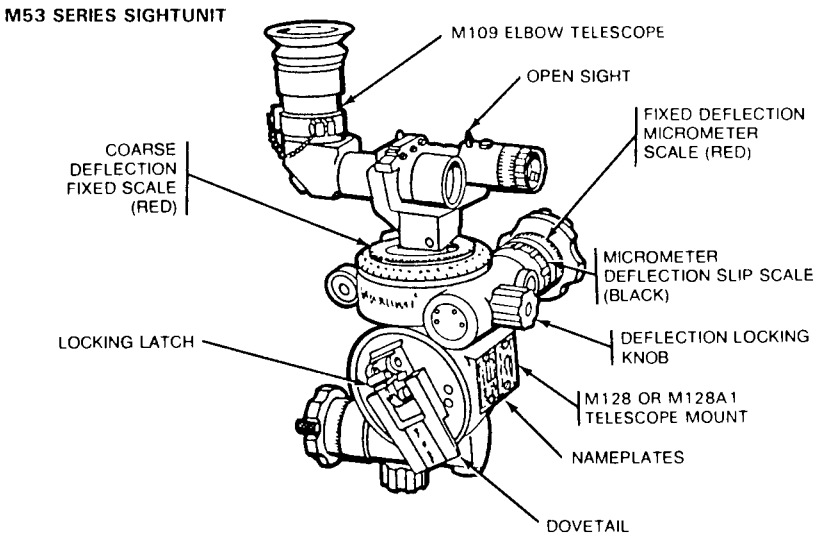
ELEVATING HANDLE
Elevates or depresses mortar.

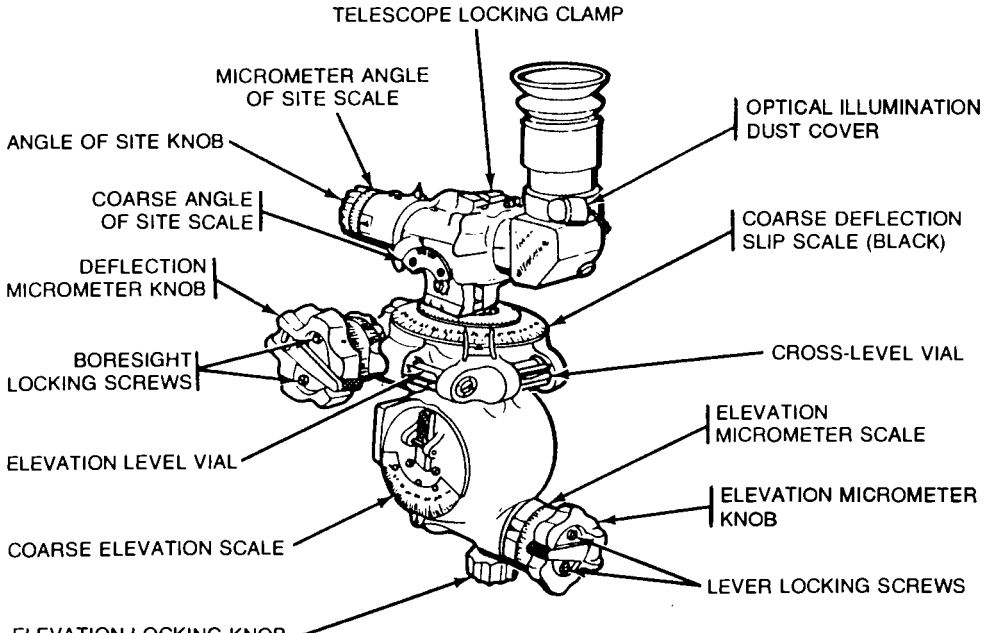
ELEVATING MECHANISM CAM
Locks elevating standard in high elevation or low elevation position.

TRAVERSING WHEEL
Makes fine adjustments in traverse.

M53 SERIES SIGHTUNIT
Lays weapon in elevation and deflection (azimuth).

2-1. SIGHTING CONTROLS (cont).

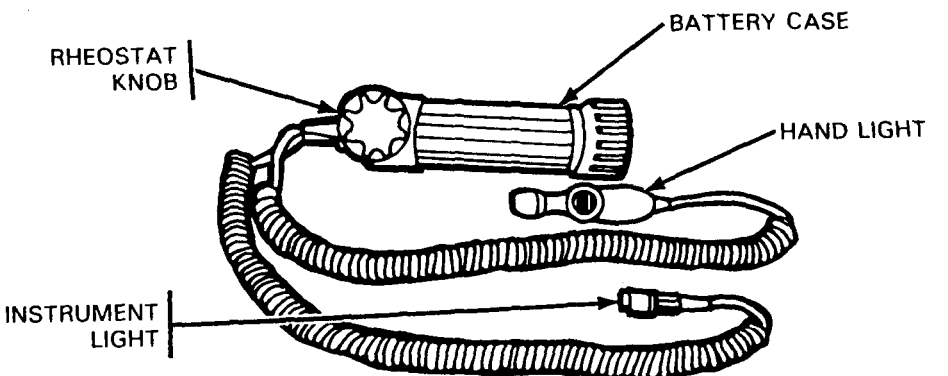



TELESCOPE LOCKING CLAMP
MICROMETER ANGLE OF SITE SCALE
OPTICAL ILLUMINATION DUST COVER
ANGLE OF SITE KNOB
COARSE ANGLE OF SITE SCALE
COARSE DEFLECTION SLIP SCALE (BLACK)
DEFLECTION MICROMETER KNOB
BORESIGHT LOCKING SCREWS
CROSS-LEVEL VIAL
ELEVATION MICROMETER SCALE
ELEVATION LEVEL VIAL
ELEVATION MICROMETER KNOB
COARSE ELEVATION SCALE
LEVER LOCKING SCREWS
ELEVATION LOCKING KNOB

2-1. SIGHTING CONTROLS (cont).

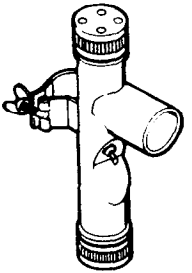
M53E1 INSTRUMENT LIGHT

Illuminates M53 series sightunit for night operation.
Instrument light screws into the sightunit.
Hand light is provided to illuminate scales and level vials



M1A2 AIMING POST

Provides reference point for indirect fire.



M14 AIMING POST LIGHT

Illuminates aiming posts for night operation.
Mounted on aiming posts.

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-2. GENERAL.

This table has been provided so you can keep your equipment in good operating condition and ready for its primary mission.

2-3. WARNINGS AND CAUTIONS.

Always observe the WARNINGS and CAUTIONS appearing in your PMCS table. WARNINGS and CAUTIONS appear before applicable procedures. You must observe these WARNINGS and CAUTIONS to prevent serious injury to yourself and others or to prevent your equipment from being damaged.

2-4. EXPLANATION OF TABLE ENTRIES.

a. Item number column. Numbers in this column are for reference. When completing DA Form 2404, Equipment Inspection and Maintenance Worksheet, include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do checks and services for the intervals listed.

b. Interval column. This column tells you when you must do the procedure in the procedure column. BEFORE procedures must be done before you operate or use the equipment for its intended mission. DURING procedures must be done during the time you are operating or using the equipment for its intended mission. AFTER procedures must be done immediately after you have operated or used the equipment.

c. Location, check/service column. This column provides the location and the item to be checked or serviced. The item location is underlined.

d. Procedure column. This column gives the procedure you must do to check or service the item listed in the Check/Service column to know if the equipment is ready or available for its intended mission or for operation. You must do the procedure at the time stated in the interval column.

e. Not fully mission capable if: column. Information in this column tells you what faults will keep your equipment from being capable of performing its primary mission. If you make check and service procedures that show faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the equipment or reporting equipment failure.

2-5. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS).

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
	NOTE Perform weekly and monthly as well as before operations PMCS if you are operating the item for the first time or if you are the assigned operator and have not used the item since the last monthly. Mortar barrel, shock absorber, and standard assembly must be assembled prior to performing checks.			
1	Before	DA Form 2408-4	Check if your weapon has been borescoped and pull-over gaged in past 180 days.	Weapon has not been borescoped and pull-over gaged in past 180 days.

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
2	Before	Mortar Assembly	Check that mortar is free of cracks, broken welds, rust, and missing or damaged parts.	Mortar has cracks, broken welds, or missing or damaged parts.
3	Before	Mortar Barrel	**a.** Check for foreign matter in barrel and wipe dry. Clean and lubricate exterior bearing surfaces.	

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
3	Before	Mortar Barrel (cont)	b. Check for bulges, dents, and visible cracks. Check for evidence of gas leakage around cap assembly (1).	Mortar barrel has bulges, dents, visible cracks, or visual evidence of gas leakage around cap assembly (1).

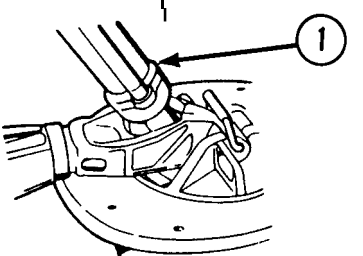


Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

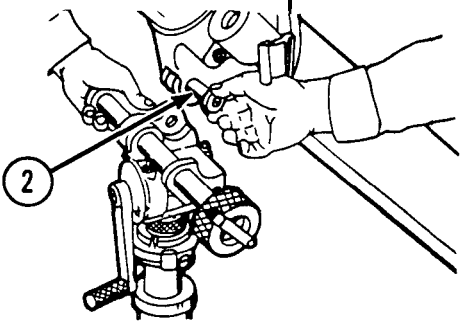
Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
3	Before	Mortar Barrel (cont)	c. Check that mortar locking pin assembly (2) is complete, operates freely, and latches securely. 	Mortar locking pin assembly (2) is missing parts, or will not operate freely or lock securely.

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
3	Before	Mortar Barrel (cont)	d. Check that sight mount worm (3) operates without binding.	Sight mount worm (3) is inoperative or will not rotate freely.
			e. Manually depress cannon tube. Check area of cannon tube underneath collar and sight-mount for cleanliness and binding. Remove all lubrication.	Cannon tube is dirty, binding, and/or lubed.

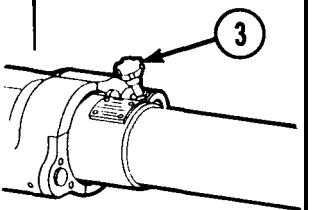


Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location: Item to check/ service	Procedure	Not fully Mission Capable if:
4	Before	Shock Absorber	a. Check inner and outer tube assemblies for looseness.	Inner or outer tube assembly is loose.
			b. Check that shock absorber does not bind by manually depressing the muzzle end of the cannon downward; then releasing while at the different extremes of elevation and deflection.	Cannon does not smoothly return to original position without binding.

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location: Item to check/ service	Procedure	Not fully Mission Capable if:
5	Before	Standard Assembly	a. Check that elevating mechanism (4) and traversing assembly slide (5) operate smoothly and without binding through entire range of travel.	Elevating mechanism (4) or traversing assembly slide (5) binds or is inoperable.

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

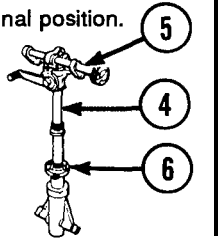
Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
5	Before	Standard Assembly (cont)	b. Check that elevating mechanism cam (6) engages securely at high and low levels of elevation.	Elevating mechanism cam (6) will not lock or unlock.
			c. With stop clamp removed, depress muzzle end of barrel and check that the standard assembly returns to its original position.	The standard assembly fails to return to its original position. 

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

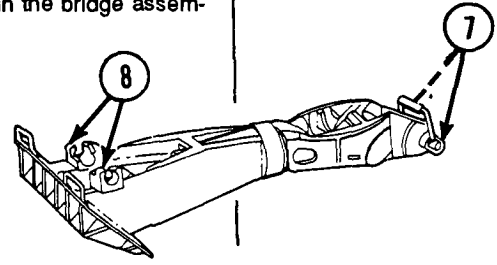
Item No.	Interval	Location: Item to check/ Service	Procedure	Not fully Mission Capable if:
6	Before	Bridge Assembly	Check that bridge trunnions (7) and standard base trunnion sockets (8) permit mating with rotator and standard assembly with no cracks or breaks in the bridge assembly. 	Cracks or breaks in bridge assembly.

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Misslon Capable if:
7	Before	Rotator Assembly	a. Check that rotator side-lock (9) functions freely and returns to unlock when bridge is re-moved.	Rotator assembly is inoperative, is broken, or binds.

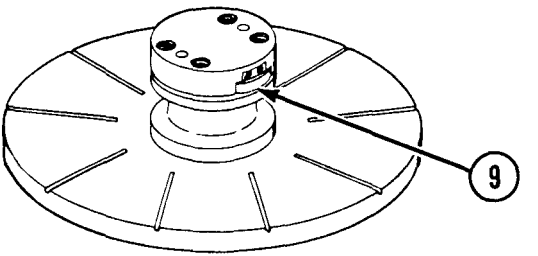


Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location Item to Check/ Service	Procedure	Not fully Mission Capable if:
7	Before	Rotator Assembly (cont)	b. Check that rotator rotates freely and is free of cracks and breaks.	Rotator assembly binds, is inoperative, or is broken.
8	Before	Mortar Baseplate	a. Check that nylon rope and handles (10) are secure and not frayed, cut, or damaged.	

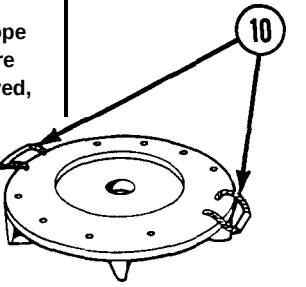


Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location Item to Check/ Service	Procedure	Not fully Mission Capable if:
8	Before	Mortar Baseplate (cont)	b. Check bearing surface of baseplate for lubrication, and check that finished surfaces are free of rust and foreign matter.	Surface rust restricts free movement.
			c. Check baseplate for cracks and broken spades.	Baseplate has cracks or breaks.

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

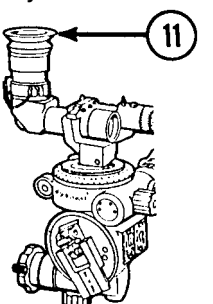
Item No.	Interval	Location Item to Check/ Service	Procedure	Not fully Mission Capable if:
9	Before	M53 Series Sightunit	a. Check eyeshield (11) for damage. Check lenses and windows for smears, scratches, cracks, and other obstructions.	Target image is completely obstructed. 

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location / Item to Check/ Service	Procedure	Not fully Mission Capable if:
9	Before	M53 Series Sightunit (cont)	b. Check that level vials are not cracked, broken, or loose in mounting. Covers must not be missing.	Vials are cracked, broken, or loose in mounting. Covers are missing.
			c. Check rotation of the elevation knob (12) and deflection (azimuth) knob (13) over entire range of movement. Motion must be smooth and even.	Motion is restricted.

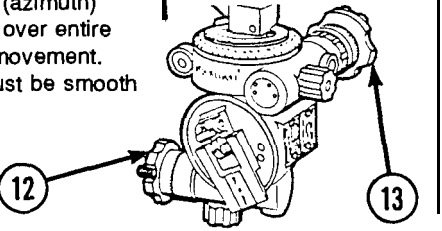


Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location Item to Check/ Service	Procedure	Not fully Mission Capable if:
9	Before	M53 Series Sightunit (cont)	d. Check index lines and scales. They must be clear and distinct.	Scales and indexes cannot be read.
			e. Check elevation worm mechanism (14) and deflection (azimuth) worm mechanism (15) backlash. Backlash must not exceed 0.5 mil.	Worm mechanism's backlash exceeds 0.5 mil.

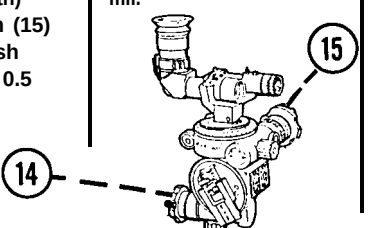


Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

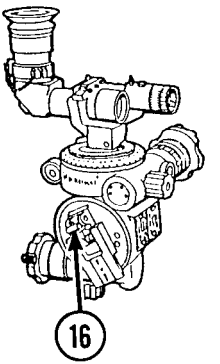
Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
9	Before	M53 Series Sightunit (cont)	f. Check locking latch clamp (16) for looseness, cracks, and that locking latch secures sightunit to mortar.	Locking latch is broken or does not secure sightunit. 

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

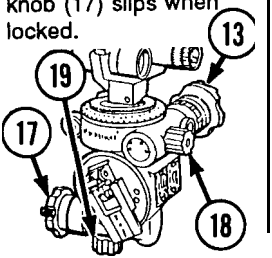
Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
9	Before	M53 series Sightunit (cont)	g.. Check that mounting surfaces are free of nicks and burrs.	Nicks and burrs prevent proper seating in dovetail socket.
			h. Check that deflection (azimuth) knob (13) and elevation knob (17) stay locked in position when locking knobs (18) and (19) are tightened.	Deflection (azimuth) knob (13) or elevation knob (17) slips when locked. 

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

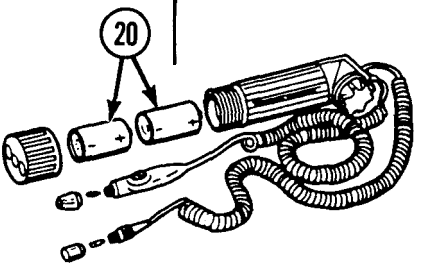
Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
10	Before	M53E1 instrument Light	Install batteries (20) and check switch, lamps, and batteries for operation. 	Lamps do not illuminate.

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

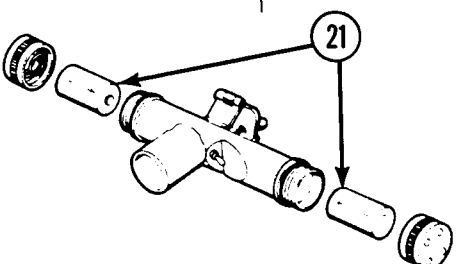
Item No.	Interval	Location Item to Check/ Service	Procedure	Not fully Mission Capable if:
11	Before	M14 Aiming Post Light	a. Install batteries (21). Check switch and batteries for operation and illumination. 	Aiming post light does not illuminate.

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

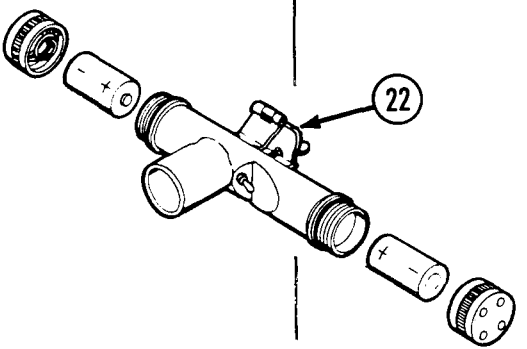
Item No.	Interval	Location Item to Check/ Service	Procedure	Not fully Mission Capable if:
11	Before	M14 Aiming Post Light (cont)	b. Check that clamp (22) holds light securely to aiming post. 	Clamp is broken.

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

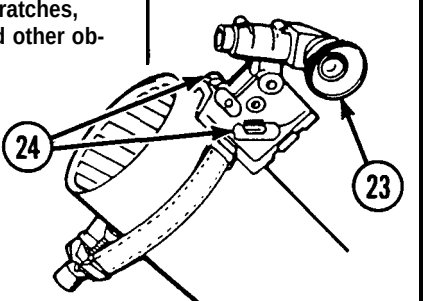
Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
12	Before	M45A1 Boresight	a. Check eyeshield (23) for damage. Check lenses and windows for smears, scratches, cracks, and other obstructions. 	Target image is completely obstructed.

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
12	Before	M45A1 Boresight (cont)	b. Check that level vials (24) are not cracked, broken, or loose in mounting.	Vials are cracked, broken, or loose in mounting.
			c. Check that mounting surfaces are free of nicks and burrs.	Nicks or burrs prevent proper mounting.

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
13	Before	Standard Assembly on M106A1 Carrier	Check that recoil stop clamp (25) is in place on the standard.	Recoil stop clamp is broken, inoperative, or missing.
14	Before	Standard Support Latch	Check that standard support latch (26) secures standard in firing position and guard (27) is present.	Latch fails to support standard or cannot be engaged/released. Guard is missing.

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
15	Before	Turntable on M106A1 Carrier	a. Rotate turntable (28) and check for ease of rotation.	Turntable does not rotate freely.

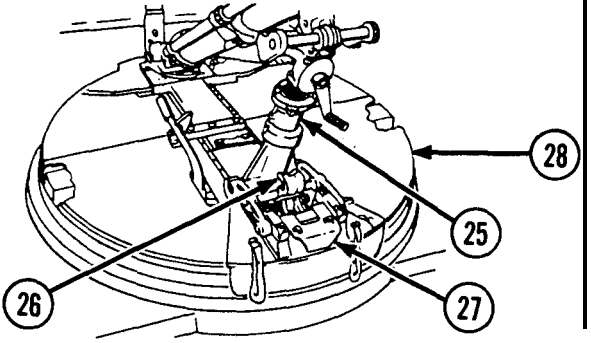


Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

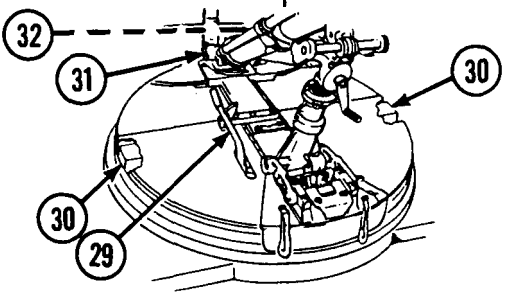
Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
15	Before	Turntable on M106A1 Carrier (cont)	b. Check operation of traverse handle (29) and traversing stops (30). 	Traversing stops (30) or handle/lock (29) are broken, inoperative, or missing.

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
15	Before	Turntable on M106A1 Carrier **(cont)**	c. Check socket detent pins (31) for positive operation. Ensure that pins, springs, and ball bearings are present. Check to ensure swivel stops (32) are present.	Detent pins, springs, or ball bearings are missing or inoperative.

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
16	During	Mortar Barrel	Check for bulges, dents, and visible cracks. Check for evidence of gas leakage around cap assembly (1).	Mortar barrel has bulges, dents, visible cracks, or visual evidence of gas leakage around cap assembly.

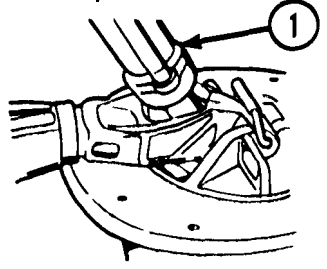


Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
17	During	Shock Absorber	a. Check inner and outer tuba assemblies for looseness.	Inner or outer tube assembly is loose.
			b. Check that shock absorbers do not bind by manually depressing the muzzle end of the cannon downward; then releasing while at the different extremes of elevation and deflection.	Cannon does not smoothly return to original position without binding.
18	After	DA Form 2408-4	Update DA Form 2408-4 to reflect day's firing,	After 4000 rounds fired, weapon has not been borescoped and pull. over gaged every 500 additional rounds,

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
19	After	Mortar Barrel	Thoroughly clean mortar barrel bore after firing and two consecutive days thereafter using RBC. **NOTE** For non-firing periods, the cannon tube, to include the area underneath the collar and sightmount, is cleaned and lubricated on a weekly basis.	

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar

Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
20	After	shock Absorber	a. Clean and lubricate exposed bearing surface. b. Check that shock absorber does not bind by manually depressing the muzzle end of the cannon downward; then releasing while at the different extremes of elevation and deflection.	Recoil and counterrecoil is inoperative. Cannon does not smoothly return to original position without binding.

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location Item to Check/ Service	Procedure	Not fully Mission Capable if:
21	After	Standard Assembly	Clean and lubricate exposed bearing surfaces.	
22	After	M53E1 instrument Light	a. Remove batteries (20) after operation and check for corrosion.	

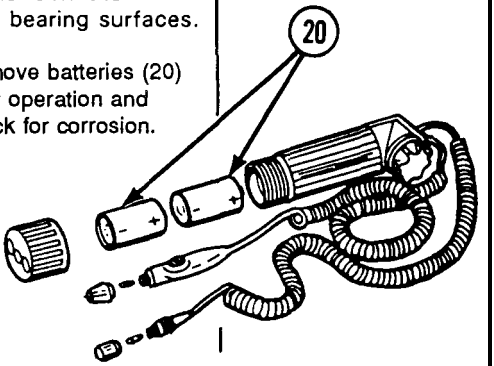


Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

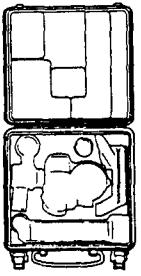
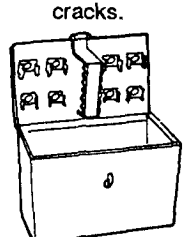
Item No.	Interval	Location: Item to Check/ Service	Procedure	Not fully Mission Capable if:
22	After	M53E1 instrument Light (cont)	b. Check leads for serviceability. c. Check inside of case for cleanliness and proper sealing.	

Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location Item to Check/ Service	Procedure	Not fully Mission Capable if:
23	After	M14 Aiming Post Light and M14 Case	a. Remove batteries (21) after operation and check for corrosion. b. Check case, receptacles, and brackets for cracks.	



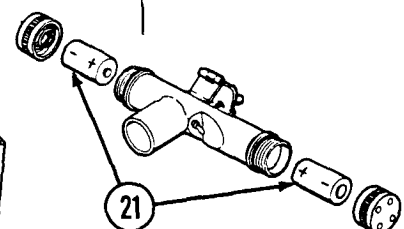
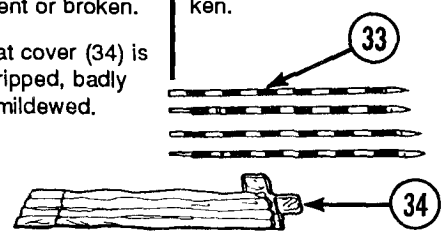


Table 2-1. Preventive Maintenance Checks and Services for M30 Mortar (cont)

Item No.	Interval	Location Item to Check/ Service	Procedure	Not fully Mission Capable if:
24	After	M1A2 Aiming Post and M401 Cover	a. Check for completeness and that mating surfaces are clean, free of paint, and fit properly. b. Check that posts (33) are not bent or broken. c. Check that cover (34) is not torn, ripped, badly worn, or mildewed.	Mating surfaces do not fit securely. Posts are bent or broken.



Section III. OPERATION UNDER USUAL CONDITIONS

2-6. ASSEMBLY AND PREPARATION FOR USE.

EMPLACING MORTAR

WARNING

Firing site must have mask and overhead clearance

NOTE

The mortar squad consists of four soldiers. See FM 23-90.

1 To emplace the mortar, select and prepare a firm, level, horizontal surface for the mortar baseplate and bridge spades.

NOTE

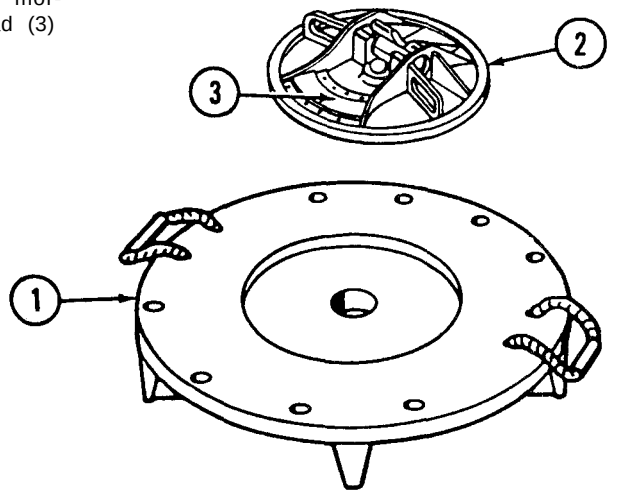
If baseplate position cannot be properly prepared, put sandbags under the bridge spade to level the weapon.

2 Place mortar baseplate (1) on prepared site and set firmly in place.

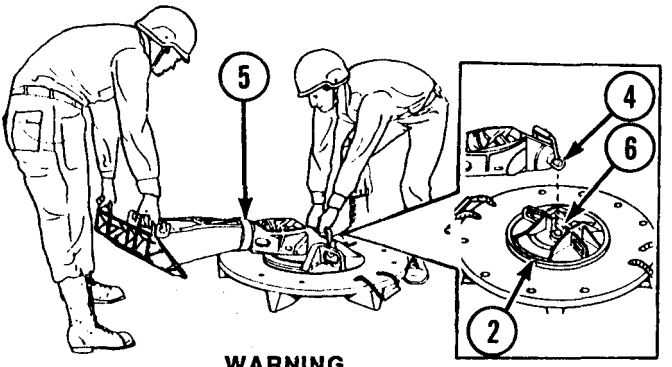
3 Install rotator assembly (2) in mortar baseplate (1) with rest pad (3) facing in direction of fire.

WARNING

Check rope handles and if frayed, don't use handles to lift mortar baseplate.



EMPLACING MORTAR (cont)



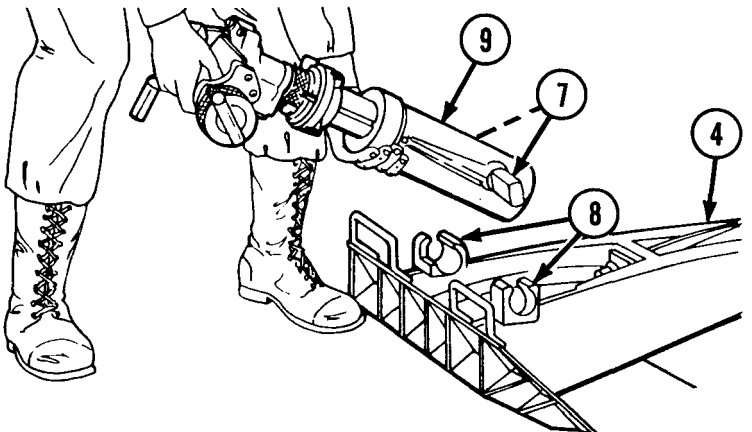
WARNING

To avoid injury to personnel, use both handles to lift and carefully balance bridge assembly since tapered swivel joint (5) is free to turn unless properly balanced.

4 Install bridge assembly (4) into bridge trunnion socket (6) of rotator assembly (2).

5 Aline standard base trunnions (7) with standard base trunnion sockets (8) on bridge assembly (4).

6 Tilt standard assembly (9) forward just enough for standard base trunnions to drop into the sockets.

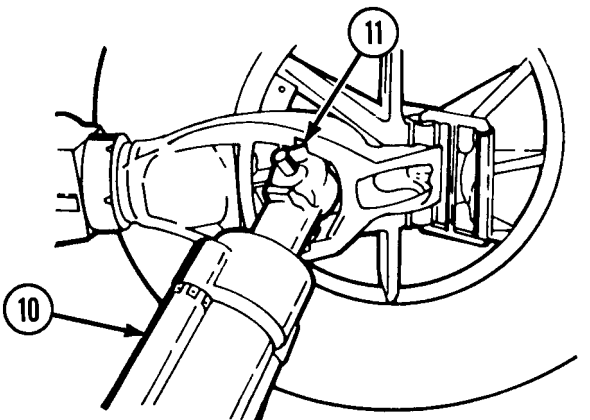


2-6. ASSEMBLY AND PREPARATION FOR USE (cont).

EMPLACING MORTAR (cont)

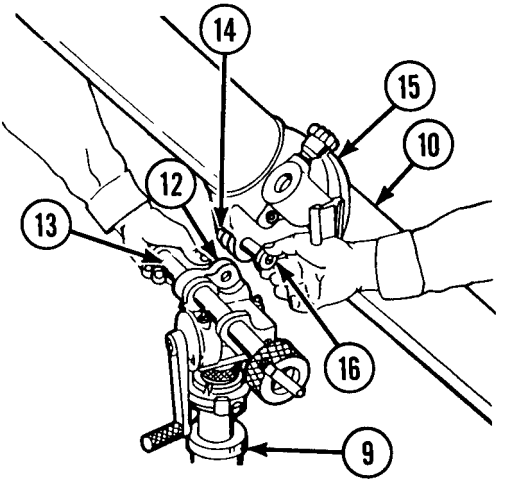
7 Remove muzzle cover from mortar barrel (10).

8 Install mortar barrel into cap assembly trunnion pin socket (11), making sure mortar barrel (10) is alined in cap assembly trunnion pin socket (11).



9 Raise standard assembly (9) and lower mortar barrel (10). Aline locking lug (12) on traversing assembly slide (13) with locking lugs (14) on coupling and sight mount (15).

10 Insert locking pin assembly (16) when holes are alined and rotate it into locked position.



2-6. ASSEMBLY AND PREPARATION FOR USE (cont).

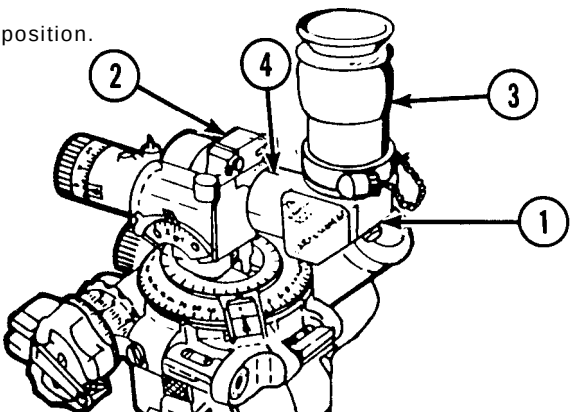
INSTALLING M53 SERIES SIGHTUNIT

1 Remove sightunit (1) from carrying case.

2 Loosen telescope locking clamp (2).

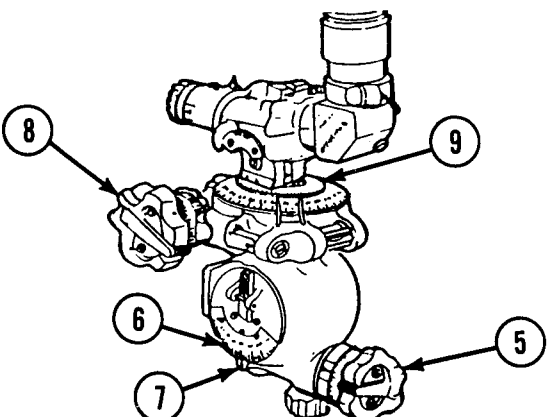
3 Turn M109 elbow telescope (3) to vertical position. Aline indexing lines (4).

4 Lock into position.



5 Rotate elevation knob (5) to aline the 800-mil graduation on coarse elevation scale (6) with elevation reference pointer (7).

6 Rotate deflection (azimuth) knob (8) to set red deflection scale (9) on 3200. If it can't be set, refer to troubleshooting in section III, table 3-1.



2-6. ASSEMBLY AND PREPARATION FOR USE (cont).

INSTALLING M53 SERIES SIGHTUNIT (cont)

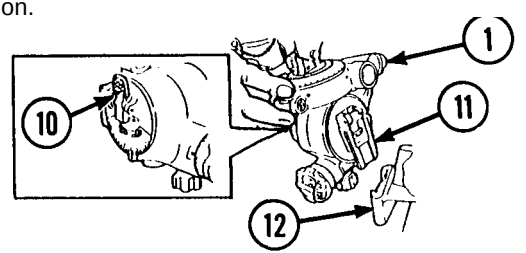
7 Press and hold down locking latch (10).

CAUTION

Do not force dovetail (11) of sightunit (1) into socket (12) of coupling and sight mount assembly. If the parts do not mate easily, remove sighunit and examine dovetail and socket for obstructions, burrs, or corrosion.

8 Install sightunit (1) by inserting dovetail (11) into socket (12) of coupling and sight mount assembly.

9 Release locking latch (10) when sightunit is fully seated. The sightunit is now in position.



INSTALLING M53E1 INSTRUMENT LIGHT FOR NIGHT OPERATION

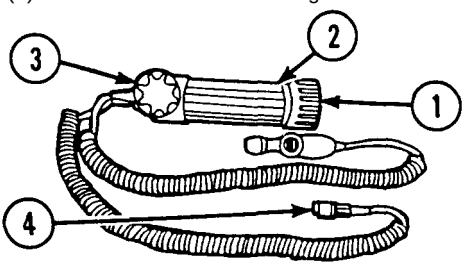
1 Remove M53E1 instrument light from M166 sightunit carrying case.

2 Remove battery case cap (1).

3 Insert two BA-3030U batteries (item 2, app D) into battery case (2) and replace cap.

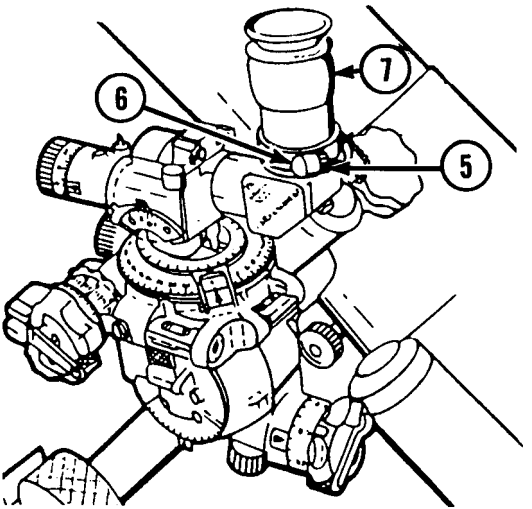
4 Check operation of rheostat knob (3) and also note brightness of light produced.

5 Remove dust cap (4) on M53E1 instrument light.



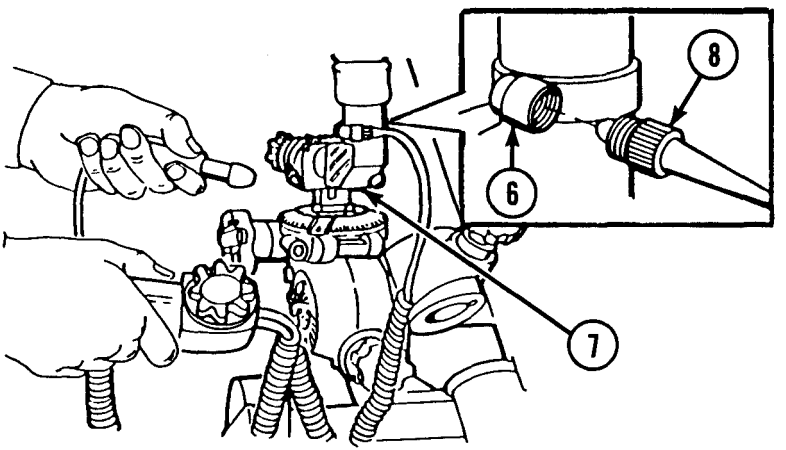
INSTALLING M53E1 INSTRUMENT LIGHT FOR NIGHT OPERATION (cont)

6 Remove dust cover (5) from lamp bracket holder (6) of M109 elbow telescope (7).



INSTALLING M53E1 INSTRUMENT LIGHT FOR NIGHT OPERATION

7 Insert lamp bracket (8) of M53E1 instrument light into lamp bracket holder (6) on M109 elbow telescope (7).



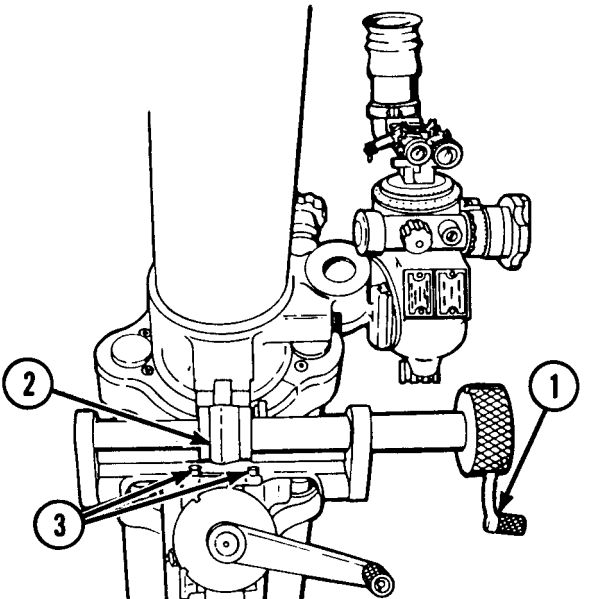
2-7. OPERATING PROCEDURES.

BORESIGHTING

NOTE

See FM 23-90 for alternate method of boresighting. Mortar must be in the ground mount mode to use the alternate boresight method.

1 Center mortar barrel by turning traversing wheel (1) to place traversing nut (2) between two socket head capscrews (3).

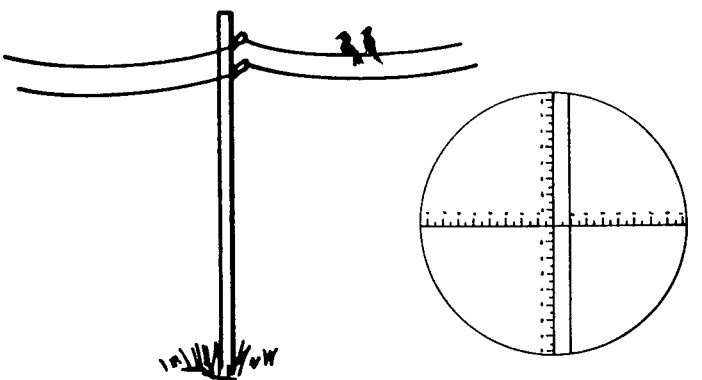


BORESIGHTING (cont)

2 Select an aiming point that has a clearly defined vertical line at a distance of 200 meters or greater.

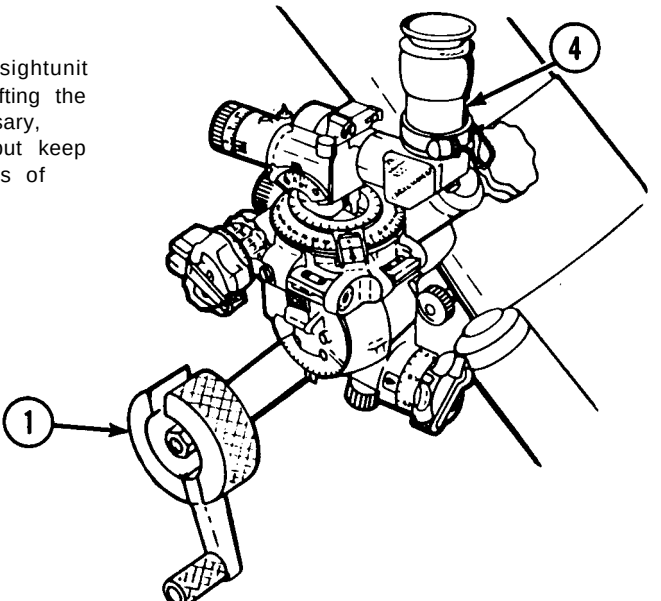
NOTE

Always sight along left edge of aiming point.



BORESIGHTING (cont)

3 Aline vertical crossline of sightunit (4) on aiming point by shifting the bridge assembly. If necessary, turn traversing wheel (1) but keep the mortar within two turns of center of traverse.



4 Make a visual check of the mortar for cant. Remove cant, if possible, and re-lay mortar.

NOTE

Steps 5 through 19 contain procedures for elevation setting.

5 Install boresight M45A1 (5) on top of mortar barrel about one inch back of muzzle.

6 Center cross-level vial (6) bubble of boresight (5) by tapping boresight body lightly from side to side with your knuckles.

NOTE

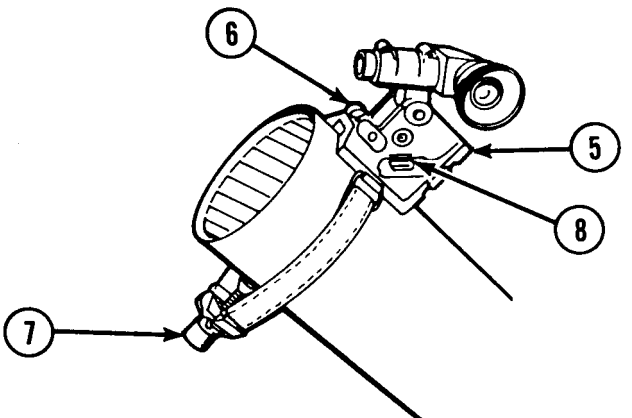
If necessary, clamp screw (7) may be loosened.

7 Tighten clamp screw (7) when bubble centers.

2-7. OPERATING PROCEDURES (cont).

BORESIGHTING (cont)

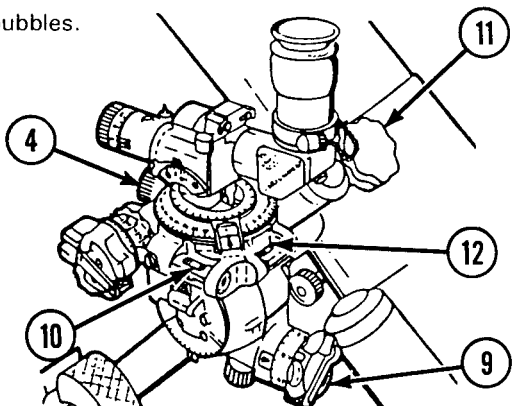
8 Elevate mortar barrel until boresight elevation level vial (8) bubble is centered. Barrel will then be set at 800 mils elevation.



9 Turn elevation micrometer knob (9) until elevation level (10) bubble is centered.

10 Cross-level sightunit (4) by turning sight mount knob (11) until cross-level vial (12) bubble is centered.

11 Recheck all level bubbles.



BORESIGHTING (cont)

12 Coarse elevation scale (13) reading should be 800 mils.

13 Elevation micrometer scale (14) reading should be 0.

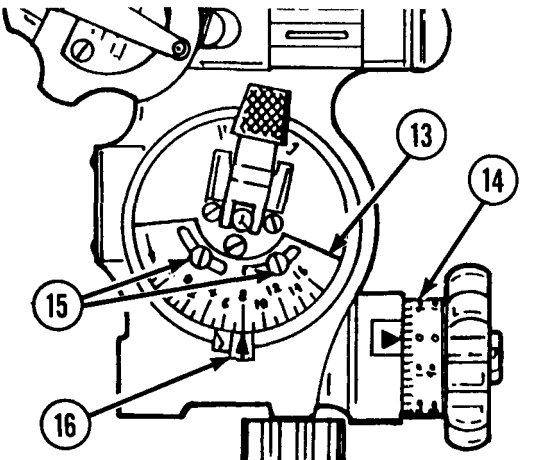
NOTE

Go to step 20 if no adjustment is needed. Go to step 14 if adjustment is needed.

14 Loosen two screws (15) which hold coarse elevation scale (13).

15 Slip scale until 800-mil mark meets reference mark (16) on housing.

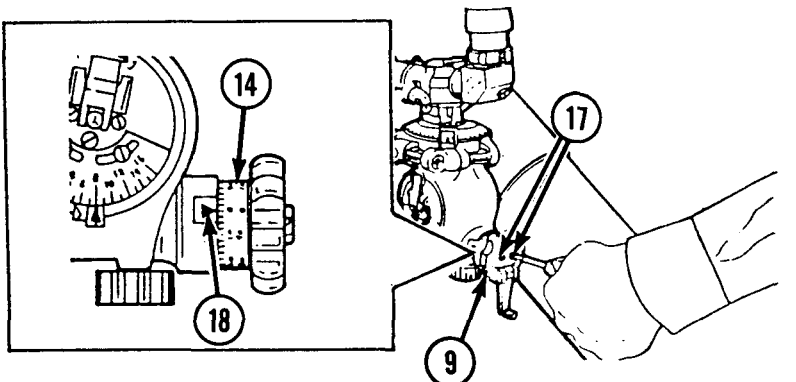
16 Tighten two screws (15) to hold scale.



17 Loosen two screws (17) in elevation micrometer knob (9).

18 Slip elevation micrometer scale (14) until 0 mark on micrometer scale meets the reference mark (18) on housing.

19 Tighten two screws (17) to hold elevation micrometer scale (14). Recheck all-level bubbles.

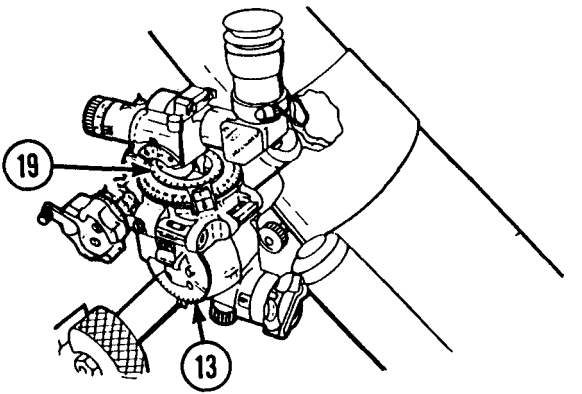


BORESIGHTING (cont)

NOTE

Steps 20 thru 39 contain procedures for deflection setting.

20 Check to be sure that sightunit settings read 3200 mils on coarse deflection fixed (red) scale (19) and 800 mils on coarse elevation scale (13). Repeat steps 5 through 19 if necessary.



21 By traversing mortar no more than two turns from center of traverse, aline vertical crossline of boresight (5) on original aiming point.

22 Recheck boresight cross-level bubble. Adjust as necessary, as the mortar may cant as the mortar is traversed.

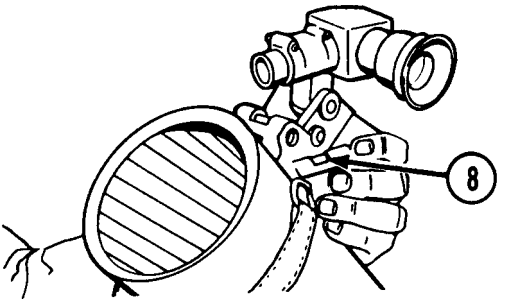
NOTE

If mortar is alined on the aiming point at the beginning of boresighting, it will take less traversing to aline crossline on aiming point.

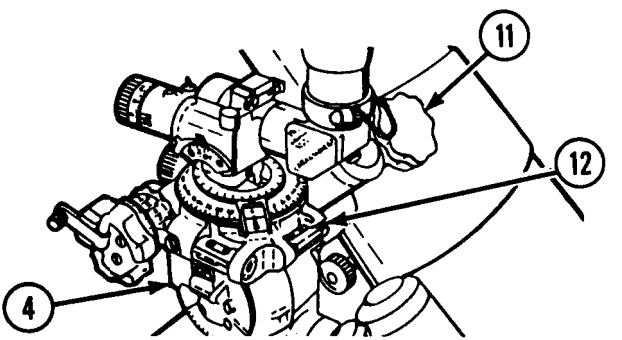
2-7. OPERATING PROCEDURES (cont).

BORESIGHTING (cont)

23 Recheck that boresight elevation level vial (8) bubble is centered. Adjust as necessary by elevating or depressing mortar barrel.



24 Level sightunit (4) by turning sight mount knob (11) until cross-level vial (12) bubble is centered.



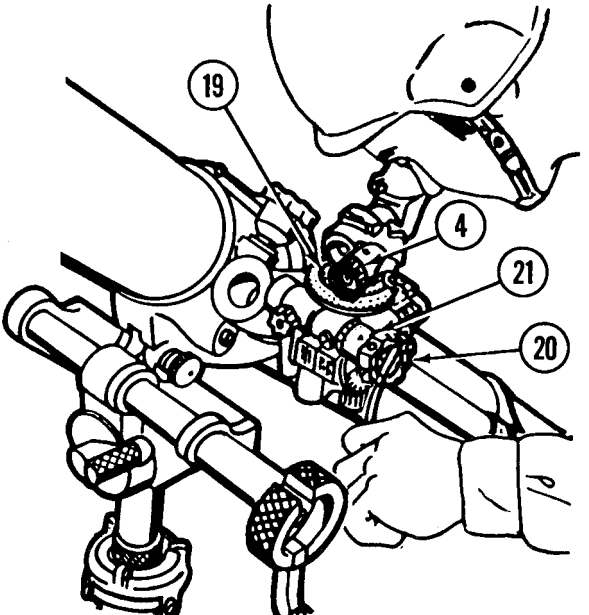
25 Turn deflection micrometer knob (20) until sightunit (4) crossline is aligned on aiming point.

26 Coarse deflection fixed (red) scale (19) should read 3200 mils and fixed deflection micrometer (red) scale (21) should read 0.

NOTE

Go to step 27 if adjustments are needed.

Go to step 33 if no adjustments are needed.

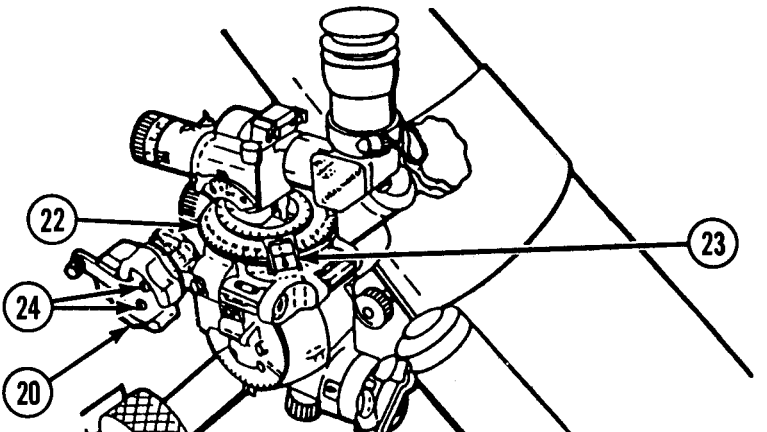


2-7. OPERATING PROCEDURES (cont).

BORESIGHTING (cont)

27 Push down coarse deflection slip (black) scale (22) and turn until 3200 is aligned with index (23). Release.

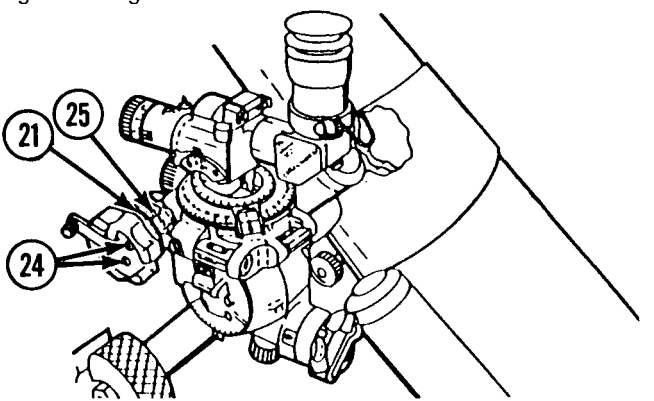
28 Loosen two boresight locking screws (24) in deflection micrometer knob (20).



29 Push micrometer deflection slip (black) scale (25) toward sightunit body, then turn it until the 0 mark on the micrometer scale is aligned to black index arrow. Release.

30 Slip fixed deflection micrometer (red) scale (21) until the arrow on the index is alined with 0 mark on micrometer scale.

31 Tighten two boresight locking screws (24).

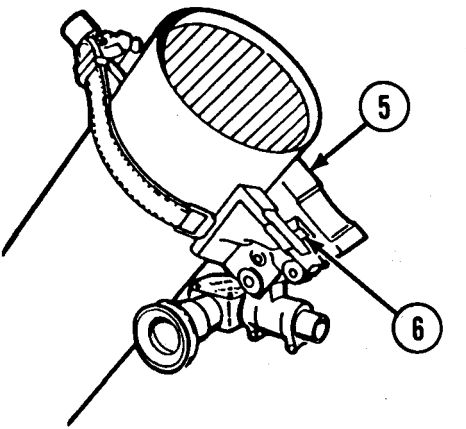


BORESIGHTING (cont)

32 If after these adjustments, the coarse deflection fixed (red) scale still does not read 3200, and the fixed deflection micrometer (red) scale (21) still does not read 0, turn the sightunit in to unit maintenance.

33 To verify boresight alinement, remove and place boresight (5) in position underneath the barrel as shown.

34 Center the boresight (5) cross-level vial (6) bubble and check the vertical crossline to see if it is still on the aiming point. If it is not, this indicates that the true axis of the bore lies halfway between the aiming point and where the boresight is now pointing.

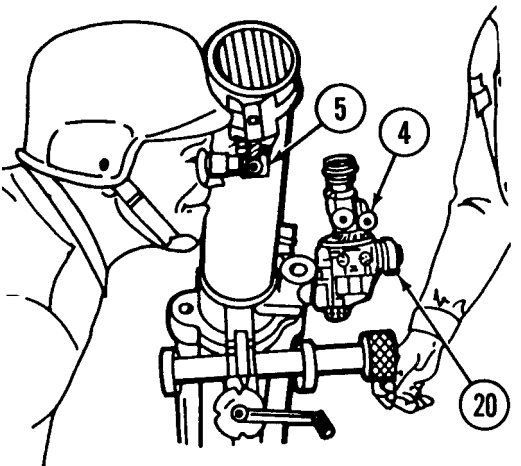


35 To correct the error, look through boresight (5) and traverse mortar onto aiming point.

36 Check all level bubbles.

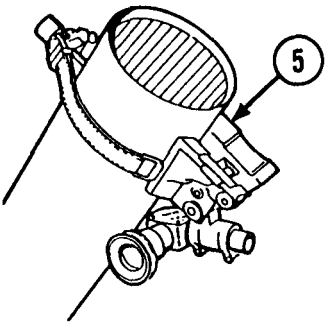
37 Turn deflection micrometer knob (20) to place vertical crossline of sightunit (4) back onto aiming point.

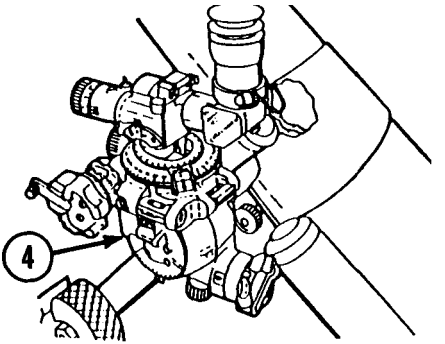
38 With sightunit (4) in this position, the deflection micrometer scales (red and black) should be indexed half the variation (p. 2-65). For example: if the mil variation is 10 mils, then one-half of this value is 5 mils.



BORESIGHTING (cont)

39 Check all level bubbles on boresight (5) and sightunit (4) to make sure they are centered.





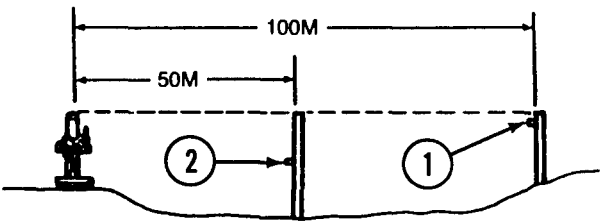
NOTE

Weapon is now boresighted. Repeat boresighting procedure on page 2-53 if there are any errors.

40 Remove boresight (5). Store boresight in carrying case.

EMPLACING AIMING POSTS FOR INDIRECT FIRE

NOTE
Refer to FM 23-90 for laying procedures.



1 Place two sets of assembled aiming posts in the ground at a referred deflection from the direction of fire. The far post should be emplaced first, 100 meters from weapon where possible. Emplace near post halfway between far post and weapon.

2 If required, place an aiming post light on each post. Far post light (1) should be visible above near post light (2).

OPERATION OF M53 SERIES SIGHTUNIT

M1A2 aiming posts are in position during initial laying procedure. If required, M14 aiming post lights are used with aiming posts.

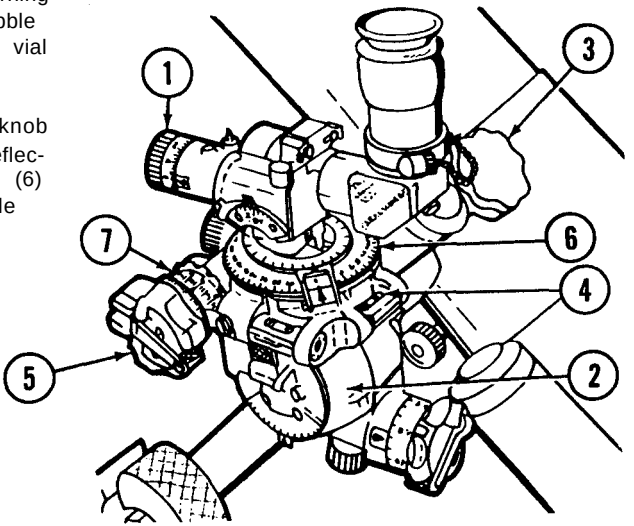
M53E1 instrument light illuminates reticle. Hand light illuminates levels, scales, and micrometers of M53 series sightunit.

M16 plotting board is a portable instrument used to geometrically compute the range and azimuth to target from mortar. Refer to TM 9-1220-243-12&P for more information about the plotting board.

1 Rotate angle of site knob (1) so aiming post can be seen.

2 Cross-level sightunit (2) by turning sight mount knob (3) until bubble centers in sightunit cross-level vial (4).

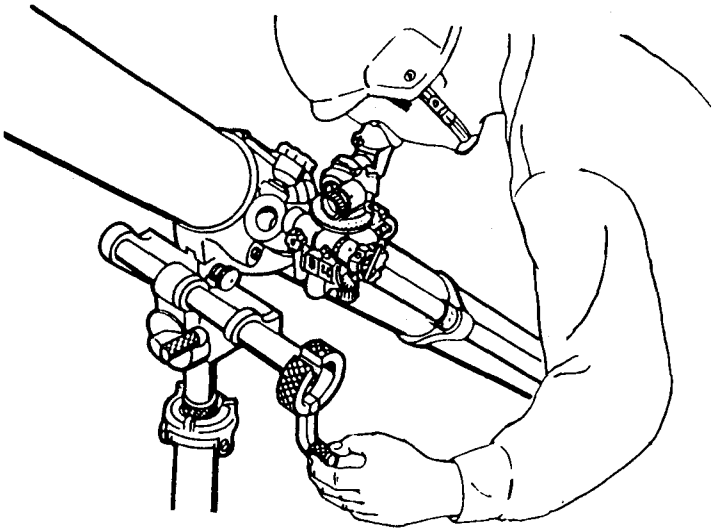
3 Rotate deflection micrometer knob (5) to set announced firing deflection on coarse deflection scale (6) and micrometer deflection scale (7).



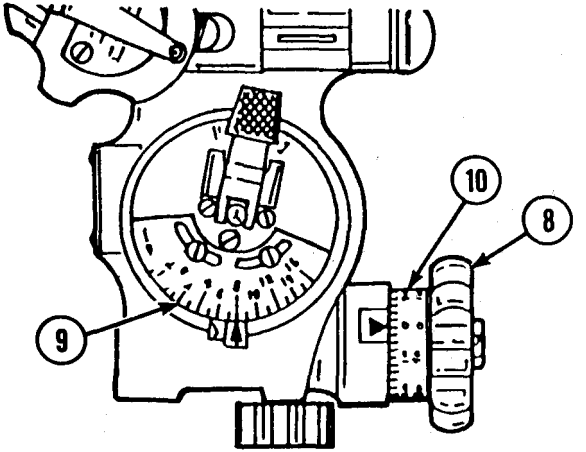
2-7. OPERATING PROCEDURES (cont).

OPERATION OF M53 SERIES SIGHTUNIT (cont)

4 Traverse mortar so vertical line of sightunit reticle pattern alines with the aiming posts.



5 Rotate elevation micrometer knob (8) to set announced elevation on coarse elevation scale (9) and elevation micrometer scale (10).

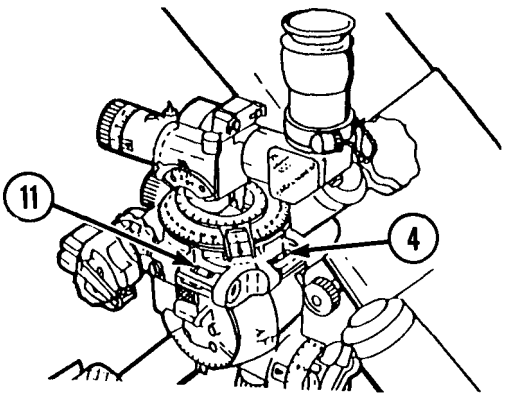


2-7. OPERATING PROCEDURES (cont).

OPERATION OF M53 SERIES SIGHTUNIT (cont)

6 Elevate mortar so bubble centers in elevation level vial (11)

7 Be sure that:
Bubble centers in cross-level vial (4) of sightunit.
Vertical line of reticle pattern alines with aiming posts.
Bubble centers in elevation level vial (11).



LOADING AND FIRING

WARNING

Double loading of mortar ammunition has resulted in catastrophic accidents. Loading a mortar weapon with two men (alternately) can be very dangerous and could prove fatal. Even with one man loading, double loading can occur. This is especially true in rapid fire exercises. For this reason, it is imperative that there be absolute certainty that the previous round has left the mortar barrel before a new round is loaded.

Upon releasing cartridge, pass hands downward and at the same time, turn away from muzzle of mortar barrel to avoid blast which occurs when cartridge is discharged. This also places the assistant gunner in position to accept the next cartridge.

In case of misfire, refer to misfire procedures on page 2-95.

Mortar crew is required to use single hearing protection when firing.

2-7. OPERATING PROCEDURES (cont).

LOADING AND FIRING (cont)

When firing the cartridge at low charges, there is potential for burning residue from the propellent charge bag near the muzzle or landing close to the weapon. Therefore, it is necessary to ensure that the excess increments container is closed or away from the weapon. While loading the next round, ensure there is no burning residue in or around the muzzle, as this may prematurely initiate the propellant charge.

CAUTION

Bottom of mortar barrel is to be checked after every 40 cartridges fired and any propellant holding clip wires removed (see page 4-51 for illustration). Failure to remove these clip wires from inside of cannon bore may result in a misfire. To prevent a possible misfire, ensure propellant holding clip is in the groove provided on the cartridge prior to firing.

Before loading cartridge into mortar barrel, make sure all components are free of sand, mud, snow, ice, moisture, or other foreign matter.

1 Grasp cartridge at bourrelet (over "4.2 INCH-M" marking) with both hands.

2 Lift cartridge and hold it out in front of muzzle (fuze-end up) at about the same angle as mortar barrel.

3 Insert cartridge into mortar barrel (tail-end first) until bourrelet ("4.2 INCH-M" marking) is partially in the muzzle.

LOADING AND FIRING (cont)

NOTE

The M329A2 cartridge has a preengraved rotating band. Insert the tail-end (tail assembly, projectile base, and scrubber obturator) of cartridge into muzzle. Rotate cartridge clockwise until the preengraved band engages the lands and grooves (rifling) in the barrel. Lower the cartridge into barrel (to "4.2 INCH-M" marking). While lowering cartridge, rotate it clockwise. The cartridge must follow the twist of the rifling.

4 On command to fire, release the cartridge. Do not shove cartridge down barrel. It should slide down the barrel under its own weight, strike the firing pin, and fire.

NOTE

Dry swab the bore after every 10 rounds fired. Do not use any cleaners or lubricants. Use clean, dry cloth only.

After firing has been completed for the day, enter the cartridge fired on DA Form 2408-4. No entry is required in column G, Estimated Remaining Life (EFC rounds) of DA Form 2408-4.

SPECIAL LOADING AND FIRING INSTRUCTIONS FOR M329A2 HE CARTRIDGES

WARNING

To avoid possible injury or death, the following precautions/restrictions are provided:

Each mortar shall have verification from the Squad Leader that the round has fired and exited the tube. The Squad Leader must give positive indication that a misfire has occurred

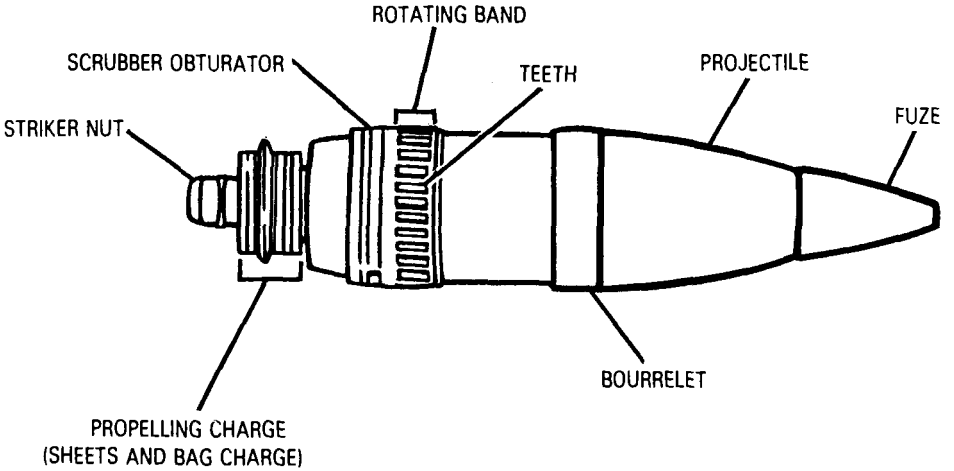
No more than one round will be fired per mortar within any 10 second time period.

Only the assistant gunner is allowed to load the ammunition during any firing mission IAW ARTEP 7-90.

Minimum spacing requirement of 40 meters between mortar squads as specified in FM 23-90 (Sep 90) must be maintained during simultaneous firing of mortars with the M329A2 Ctg.

*U.S. GOVERNMENT PRINTING OFFICE: 1994- 546-042/00008

PIN: 058045-001



M329A2 HE CARTRIDGE

SPECIAL LOADING AND FIRING INSTRUCTIONS FOR M329A2 HE CARTRIDGES (cont)

WARNING

Do not fire the M329A2 HE cartridge over friendly units as non-critical short rounds (not less than 80% of the intended range) may occur when the cartridge is fired at high charge.

CAUTION

The M329A2 cartridge must be rotated fully clockwise (to the right) during insertion and prior to release. The cartridge must follow the twist of the rifling. Fully clockwise is when the teeth are in the deep end of the grooves and in contact with the lands. Failure to properly index the cartridge could lead to a stuck round or misfire from a slow drop.

NOTE

The M329A2 cartridge has a pre-engraved rotating band. The teeth of the rotating band must be lined up with the grooves in the barrel. Insert the tail-end (propelling charge, projectile base, and scrubber obturator) into the muzzle. Rotate cartridge clockwise (to the right) until teeth of rotating band engage grooves in barrel. Upon engagement, insert cartridge further into barrel until bourrelet just enters muzzle.

General

WARNING

Do not fire a cartridge without an obturator.

The obturator must be fully seated.

The cartridge must be rotated “fully” clockwise prior to release.

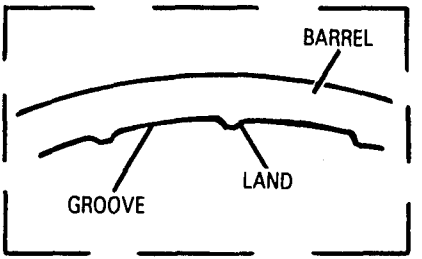
Do not shove cartridge down the barrel

2-7. OPERATING PROCEDURES (cont).

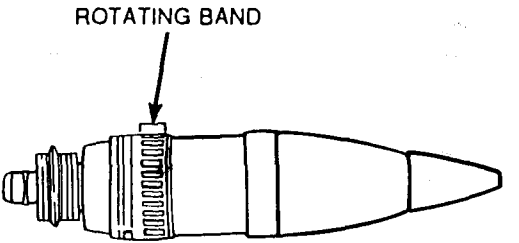
SPECIAL LOADING AND FIRING INSTRUCTIONS FOR M329A2 HE CARTRIDGES (cont)

1 The M30 mortar has a rifled barrel. The rifling consists of lands and grooves (24 each).

2 The M329A2 HE cartridge has a pre-engraved rotating band

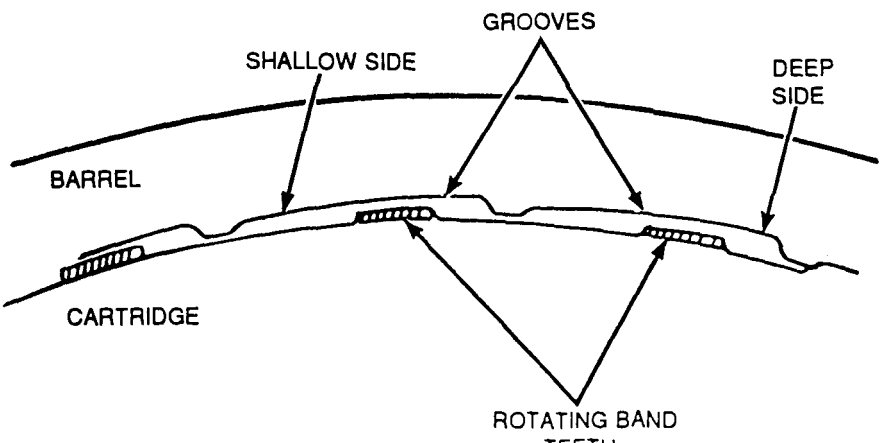


12 O'CLOCK POSITION



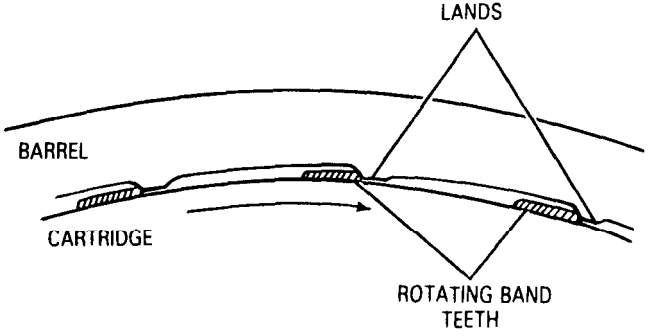
3 The rotating band has 24 teeth which must be aligned with the grooves in the barrel.

4 Each groove in the barrel has a deep side and a shallow side.



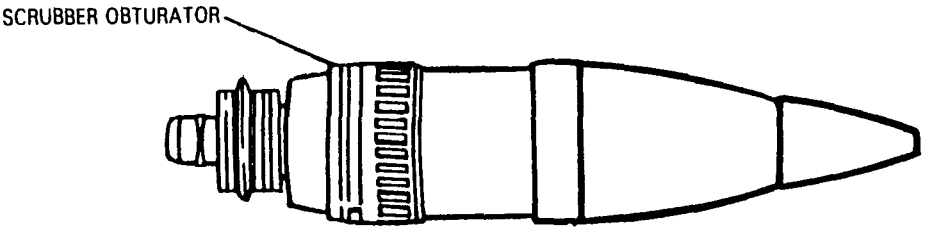
SPECIAL LOADING AND FIRING INSTRUCTIONS FOR M329A2 HE CARTRIDGES (cont)

5 The rotating band teeth must be in the deep side of the grooves when the cartridge is released. This is achieved by rotating the cartridge fully clockwise (to the right). The cartridge is properly indexed when the rotating band teeth are against the lands and further clockwise rotation is not possible. Failure to properly index the cartridges can lead to misfires or stuck rounds from slow drops.



CORRECTLY INDEXED (''FULLY'' CLOCKWISE)

6 The M329A2 HE cartridge has a scrubber obturator. The band seals the propellant gases behind the projectile. The bristle strips clean the bore as the projectile is propelled up the barrel. Do not fire a cartridge without the obturator. A short round or stuck round will result if the cartridge is fired without an obturator.



2-7. OPERATING PROCEDURES (cont).

SPECIAL LOADING AND FIRING INSTRUCTIONS FOR M329A2 HE CARTRIDGES (cont)

Loading and Firing M329A2 HE Cartridges

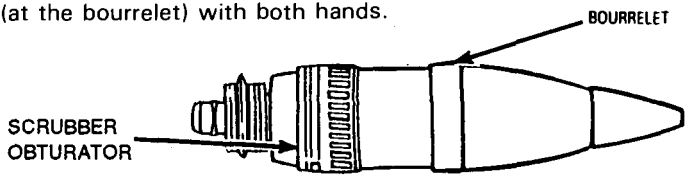
1 Inspect obturator.

NOTE

Assure that obturator is fully seated. If necessary, reseat band in groove.

Assure that obturator is properly oriented. Rear end of obturator band (towards the propelling charge) is identified with two white dots. If white dots are not visible, reverse obturator. If no white dots are visible on the obturator, do not fire round. Return round to the ASP and notify immediate supervisor.

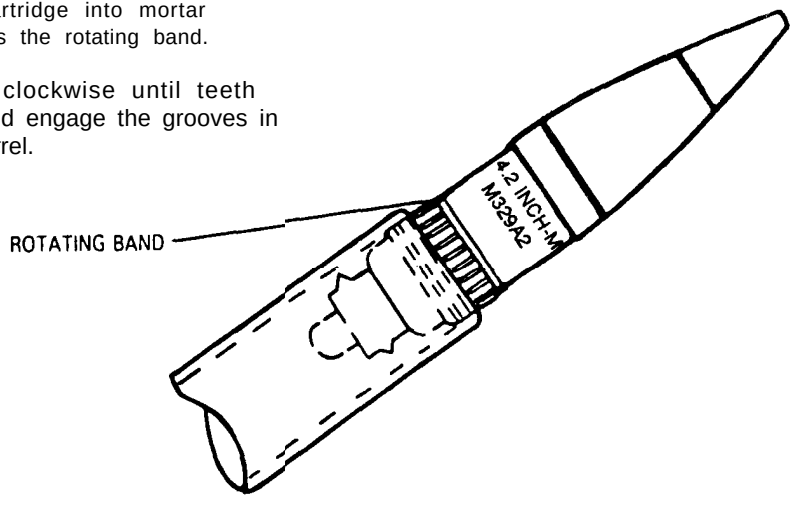
Grasp cartridge (at the bourrelet) with both hands.



3 Hold cartridge out in front of the muzzle at about the same angle as the mortar barrel.

4 Insert tail of cartridge into mortar barrel as far as the rotating band.

5 Rotate cartridge clockwise until teeth of rotating band engage the grooves in the mortar barrel.

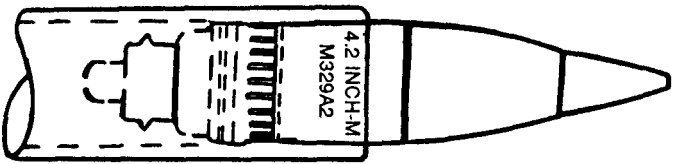


SPECIAL LOADING AND FIRING INSTRUCTIONS FOR M329A2 HE CARTRIDGES (cont)

6 Upon engagement, lower cartridge into barrel until "4.2 INCH-M M329A2'' marking is inside the muzzle.

NOTE

If binding occurs, free the cartridge by turning it clockwise.



7 Rotate cartridge fully clockwise.

8 On command to fire, release cartridge. Pass hands downward and, at the same time, turn away from muzzle of the barrel to avoid blast which occurs when cartridge is discharged. This also places assistant gunner in position to accept next cartridge.

NOTE

Do not shove cartridge down the barrel. Shoving could force the rotating band teeth into the shallow side of the grooves and lead to a stuck round/misfire from a slow drop.

MISFIRE PROCEDURES

General

NOTE

A misfire is a failure to fire after the cartridge is loaded into the mortar barrel. Misfire may be caused by defective ammunition, damaged firing pin, or an obstruction in the bore that prevents the cartridge from sliding down and striking the firing pin.

1 When a misfire is announced, all crew members, except the gunner, move at least 50 meters behind the mortar position.

WARNING

Do not insert hand into the mortar barrel to remove a stuck round.

2 If the round did not slide down the mortar barrel and the projectile body can be grasped, the gunner removes the stuck round from the mortar barrel.

NOTE

Free the M329A2 HE cartridge by rotating it in a clockwise direction.

3 If the round slid completely or partially down the mortar barrel (such that the round is not visible or only the fuze is visible), the gunner stands behind the mortar and kicks the barrel sharply several times with the heel of his boot.

2-7. OPERATING PROCEDURES (cont).

MISFIRE PROCEDURES (cont)

WARNING

Wait until the mortar barrel is cool enough to be handled with bare hands (if the barrel is hot) or one minute (if the barrel is Cool at the time of the misfire) before pouring water into the barrel. This is to avoid an accident from possible delayed action of the ignition cartridge and possible damage to the barrel from rapid quenching.

A stuck round could dislodge and fire as the water is being poured into the mortar barrel. The round could land close to the mortar position. All personnel except the gunner will take cover, If the round dislodges and fires, the gunner will immediately assume a prone position for protection.

Three quarts of water (minimum) will be used.

At no time shall any part of the gunner's hand or body be placed in front of the muzzle of the mortar barrel.

4 If kicking the mortar barrel does not cause the cartridge to fire (dislodge), the gunner pours three quarts of water into the barrel. If temperature is below 32 °F (O °C), a solution of 2 quarts of water and 2 quarts of antifreeze is used.

WARNING

Allow two minutes (minimum) for the water to flow past the cartridge to the bottom of the mortar barrel. If water/antifreeze is used, allow 30 minutes to let the water flow past the cartridge to the bottom of the barrel. See FM 23-90 for more information.

NOTE

The water or water/antifreeze cushions the fall onto the firing pin should a stuck round dislodge during the removal operation outlined on pages 2-99 thru 2-103. This prevents the ignition cartridges from functioning.

The water shall only be used in above freezing weather (temperature).

The gunner moves back with the other crew members when water/anti-freeze is used to remove the cartridge from the ground-mounted mortar.

5 The squad removes the misfired/stuck cartridge as outlined on pages 2-99 thru 2-103 after the required waiting period.

2-7. OPERATING PROCEDURES (cont).

MISFIRE PROCEDURES (cont)

To Remove Cartridge from Barrel

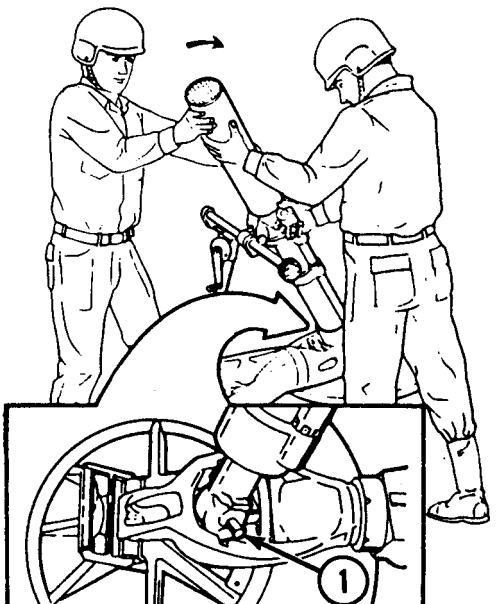
WARNING

Keep body and head away from the front of the mortar.

1 Gunner signals squad to come forward and ‘remove sightunit.

2 Assistant gunner cranks mortar barrel to its highest position in low range or its lowest position in high range.

3 Gunner traverses mortar to the extreme left.

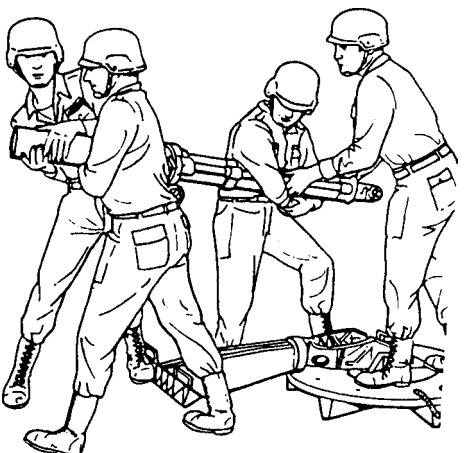


4 Gunner and assistant gunner tilt the mortar barrel, bridge assembly, and standard assembly to the left, allowing cap assembly trunnion pin (1) to slide up in slots.

5 The squad leader and ammo bearer, without getting behind the mortar barrel, should carefully lift the barrel out of bridge trunnion socket and rest it on bridge assembly. The gunner and assistant gunner should return the bridge and standard assemblies to original position.

6 The assistant gunner places his hands around muzzle, making certain that no parts of his hands extend over rim of muzzle.

7 The gunner supports mortar barrel in front of standard assembly.

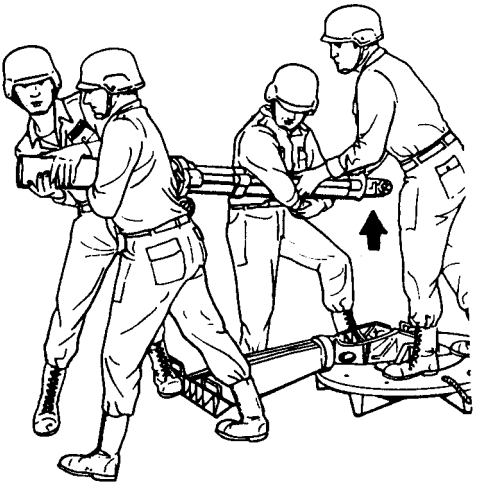


MISFIRE PROCEDURES (cont)

WARNING

Do not lower base end of mortar barrel below a horizontal position under any circumstances until cartridge has been removed.

8 The squad leader and ammo bearer should carefully lift base end of mortar barrel (without getting behind it) and raise it slowly-to horizontal, while cartridge moves slowly toward muzzle.



2-7. OPERATING PROCEDURES.

MISFIRE PROCEDURES (cont)

9 The assistant gunner extends the thumbs of both hands over muzzle as mortar barrel reaches the horizontal position.

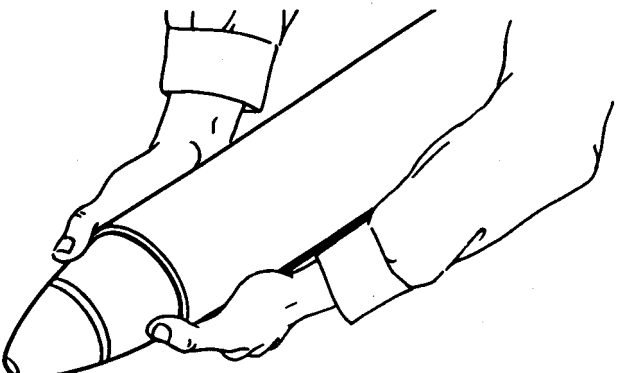
10 Squad leader and ammo bearer continue to raise the rear of the mortar cannon.

11 The assistant gunner stops the cartridge with his thumbs, removes it, and places it a safe distance from the mortar position as prescribed by local policy.

12 Notify Explosive Ordinance Disposal.

13 Gunner and ammo bearer shake out the mortar barrel to remove any debris and then swab the barrel bore.

14 If another misfire occurs when firing is resumed, remove the cartridge as described on page 2-99 and check for damaged or fouled firing pin.



MISFIRE PROCEDURES (cont)

If Cartridge Cannot Be Removed from Barrel

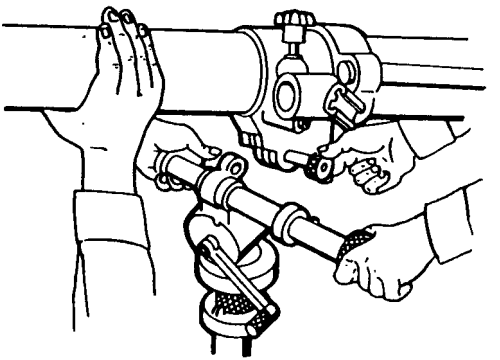
1 Return barrel to horizontal position.

2 Push in, rotate, then disengage mortar locking pin assembly while supporting mortar barrel and standard assembly.

3 Remove mortar barrel from standard assembly.

4 Keeping the mortar barrel horizontal and pointed in the direction of fire, place on ground.

5 Notify Explosive Ordnance Disposal.



NOTE

If mortar is to be dismounted, continue with 2-18. PREPARATION FOR MOVEMENT on page 2-144.

2-8. OPERATING AUXILIARY EQUIPMENT.

OPERATION OF M31 60-MM SUBCALIBER TRAINER. See FM 23-90.

OPERATION OF M32 OR M32A1 PNEUMATIC MORTAR TRAINER. See TM 9-6920-212-14.

Section IV. OPERATION OF M30 MORTAR MOUNTED ON M 106A1/A2 CARRIER

2-9. GENERAL.

This section is for your use in operating the M106A1/A2 mortar carrier. If you don't find an item here, see FM 23-90.

The M106A1/A2 mortar carrier is a modified M113A1/A2 personnel carrier. Its purpose is to provide mobility for the mortar and crew. The major modifications are:

Reinforced rear hull floor.
Turntable on which the mortar is mounted.
Ammunition and fuze stowage racks.
Three-piece folding hatch cover directly above the turntable.

2-10. MORTAR HATCH COVER OPERATION.

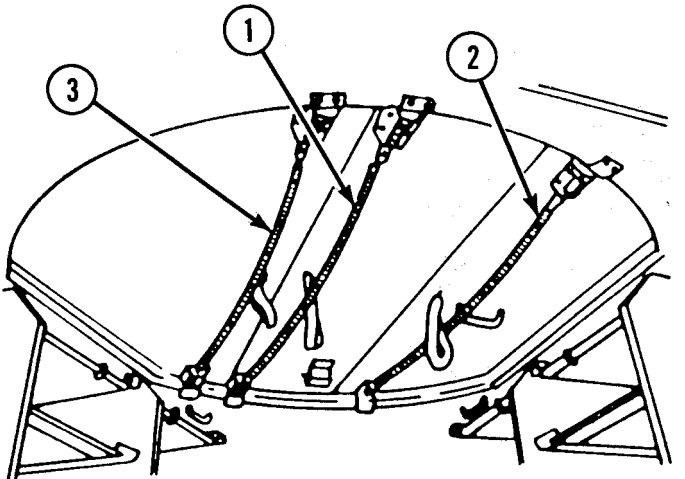
TO OPEN

1 Swing commander's cupola away from mortar hatch cover.

2 Pull on chain (1) to release center section. Fold center section back on right section. Pull on chain (2) to release right section, then push both sections back on top deck.

3 Pull on chain (3) to release left section. Fold it back on top deck.

4 Lock hatch sections in the spring-loaded catches on the top deck.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2
3

2-10. MORTAR HATCH COVER OPERATION (cont).

TO CLOSE

1 Turn left exterior catch handle (1), pull on strap (2), and close left section.

WARNING

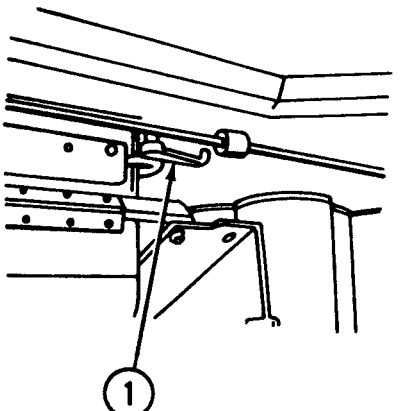
Do not turn center section release handle before the right section is closed.

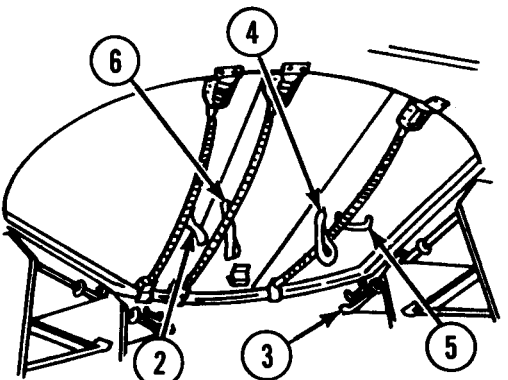
2 Turn right exterior catch handle (3), pull on strap (4), and close right section.

3 Turn center exterior catch handle (5), pull on strap (6), and close center section.

CAUTION

Do not close the sections by pulling down on the chains.


1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2-11. MORTAR TURNTABLE CONTROLS.

1 Standard assembly (1) holds mortar barrel (2) in its firing position.

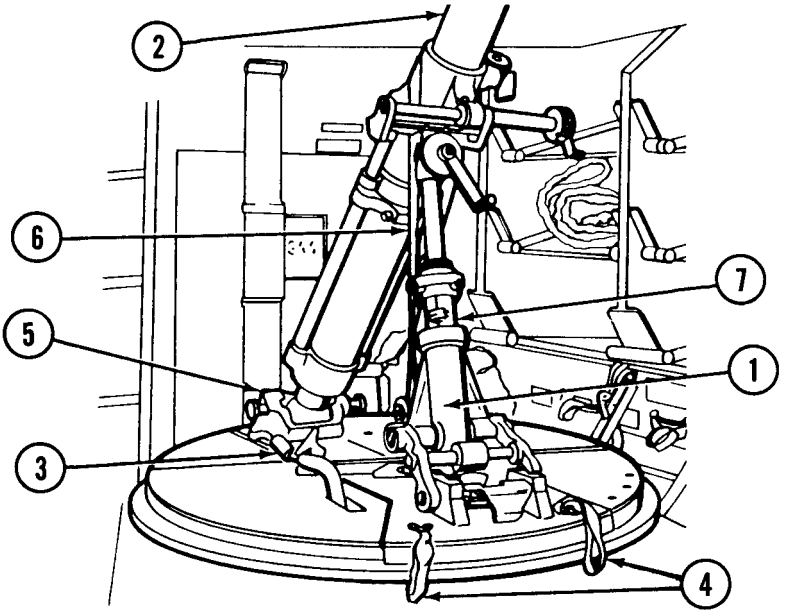
2 Traverse locking handle (3) locks turntable to the indexing ring.

3 Three traversing straps (4) rotate the turntable.

4 Mortar socket (5) retains mortar barrel in turntable.

5 Tie down strap (6) holds the mortar during travel.

6 Recoil stop clamp (7) stops the mortar barrel from being depressed and recoiling below safe limits.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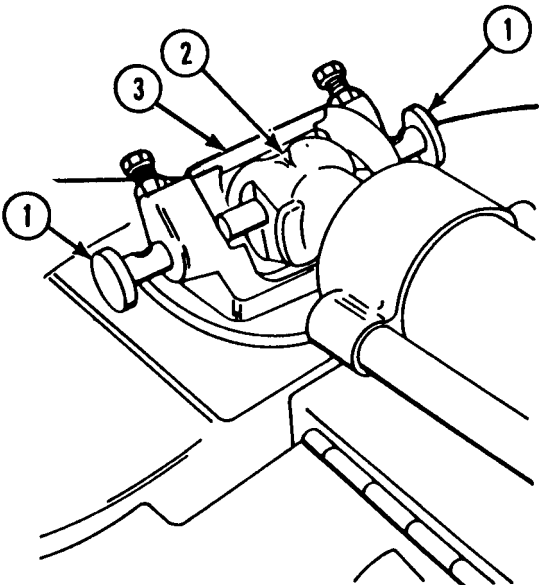
2-12. MOUNTING THE MORTAR ON THE M106A1/A2 CARRIER.

1 Pull out two detent pins (1) and insert mortar barrel (2) in socket (3).

2 Push in two detent pins (1).

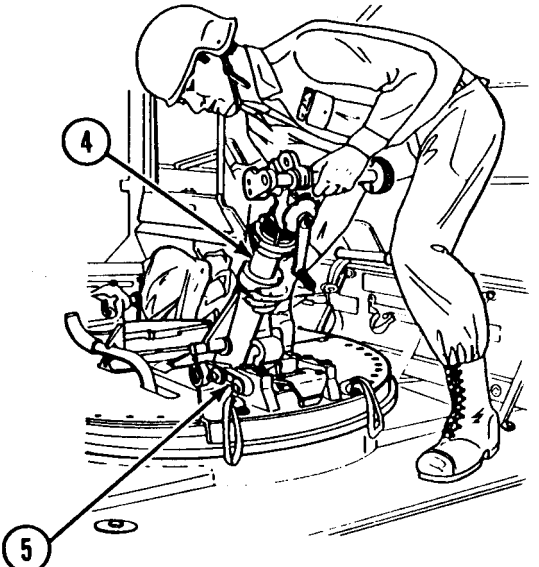
3 Support mortar barrel (2) until standard assembly (4) has been installed.



NOTE

Support (5) should be in the travel position.

4 Install standard assembly (4) in support (5).



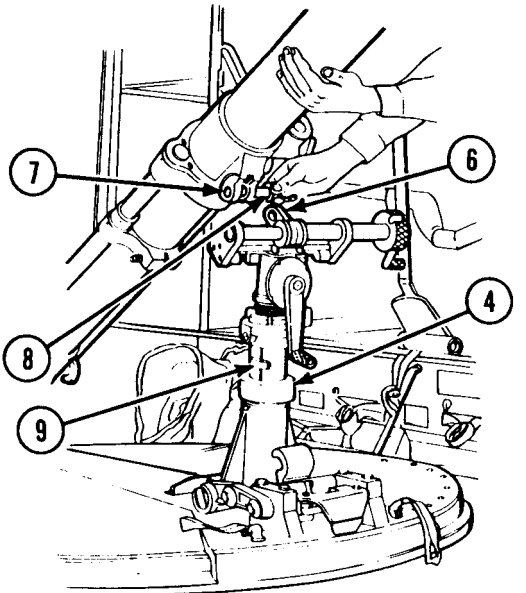
2-12. MOUNTING THE MORTAR ON THE M106A1/A2 CARRIER (cont).

5 Line up traversing nut locking lug (6) with coupling body locking lugs (7), and insert locking pin assembly (8).

6 Push in locking pin assembly (8) and turn to locked position.

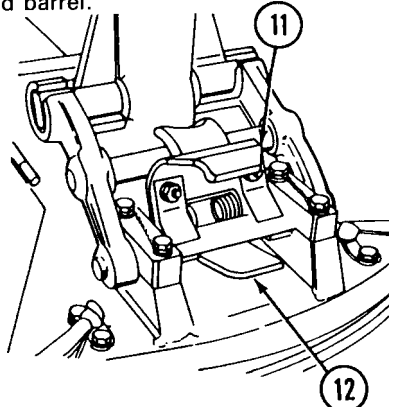
7 Remove muzzle cover from muzzle of mortar barrel and stow it in mortar equipment bag.

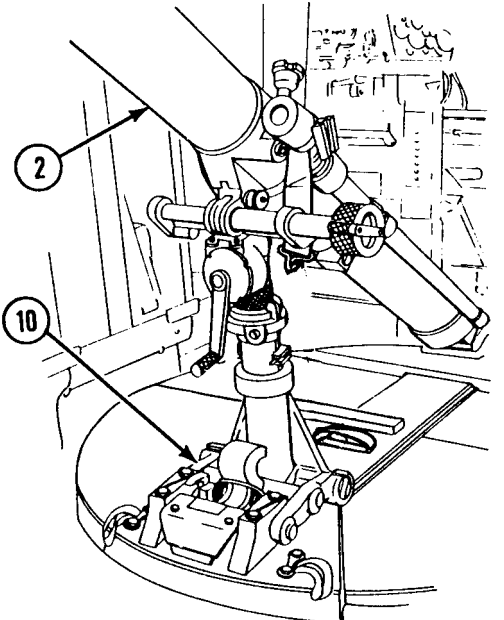
8 Take recoil stop clamp (9) out of mortar equipment bag and install on standard assembly (4).



9 Raise mortar to the firing position by pushing up on the mortar barrel (2). The standard support latch (10) will lock automatically.

10 Lower the mortar to the travel position by lifting the guard (11) and stepping on the release lever (12), gently lowering standard and barrel.

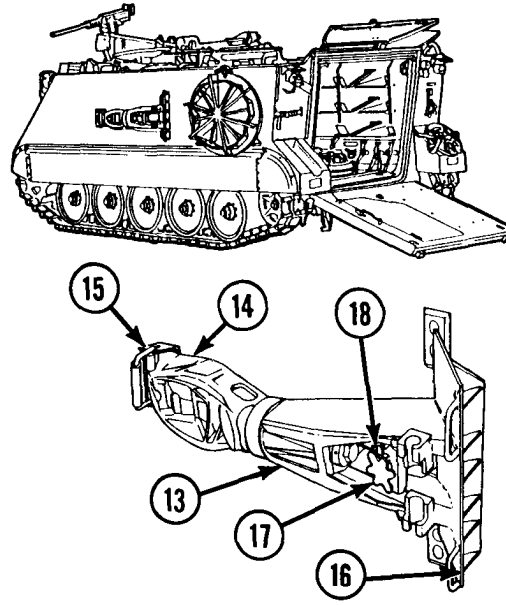




NOTE

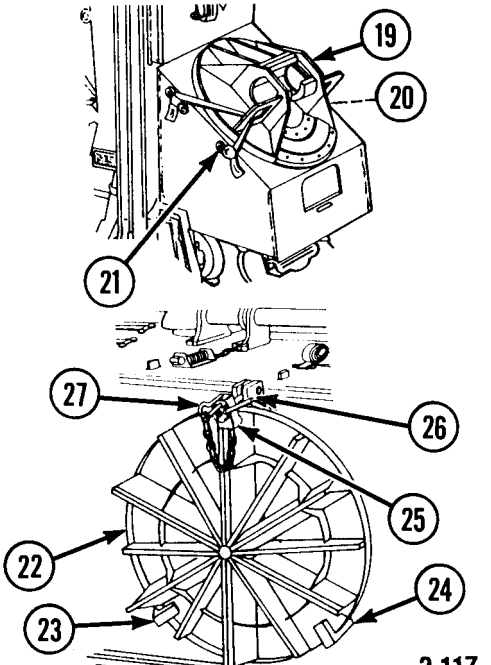
Bridge assembly, rotator assembly, and mortar baseplate are mounted on the outside of the carrier.

11 Install bridge assembly (13) on left side of carrier by placing bridge trunnion (14) into carrier pocket (15). Slide spade (16) over handle (17) and engage the handle. Tighten handle (17) and install locking pin (18).



12 Install rotator assembly (19) on rear of right side sponson. Secure with straps (20 and 21).

13 Install mortar baseplate (22) in lower supports (23 and 24) on left side of carrier. Engage top clamp (25) and tighten handle (26). Install locking pin (27).



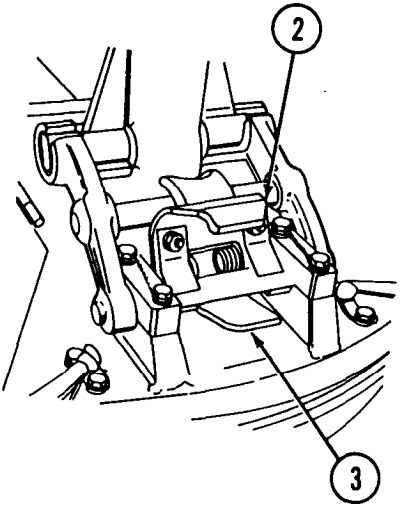
2-13. SECURING MORTAR FOR TRAVELING.

NOTE
Be sure standard assembly is in lowest position of low range.

1 Remove muzzle cover and tie down strap from mortar equipment bag. Install muzzle cover on muzzle of mortar barrel. Remove recoil stop clamp (1).

2 If the mortar barrel is in fire position, lower it to travel position. While supporting barrel and standard, lift guard (2) and step on release lever (3).

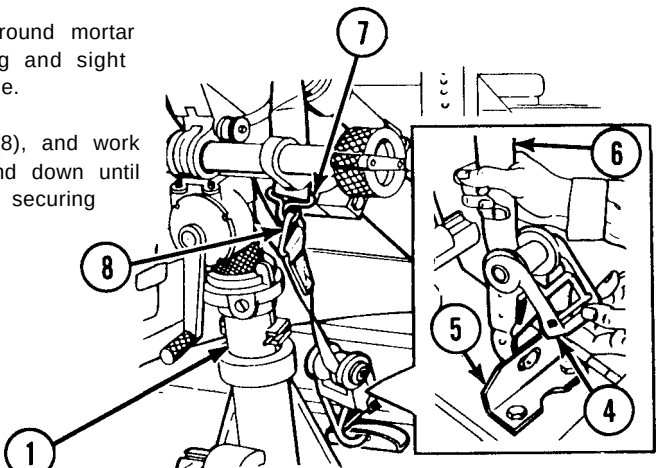
3 Gently lower barrel and standard.



4 Place hook of ratchet (4) into turntable eye (5).

5 Wrap tie down strap (6) around mortar barrel between the coupling and sight mount and the barrel flange.

6 Attach hook (7) to D-ring (8), and work handle of ratchet (4) up and down until tie down strap (6) is tight, securing barrel.



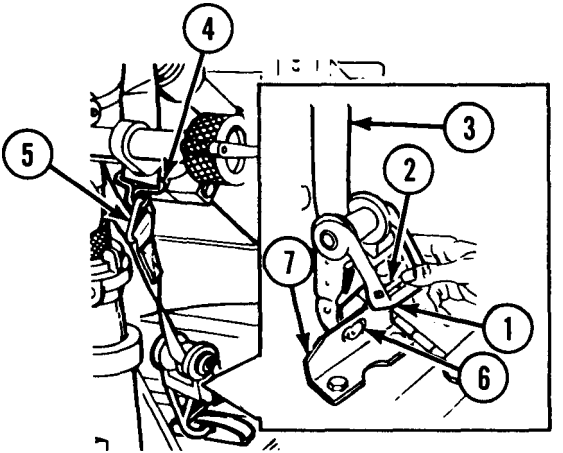
2-14. RELEASING MORTAR FOR FIRING OR DISMOUNTING.

1 Open handle of ratchet (1) all the way.

2 Press release latch (2) and pull up on tie down strap (3) to loosen.

3 Remove hook (4) from D-ring (5).

4 Remove hook (6) of ratchet (1) from turntable eye (7).

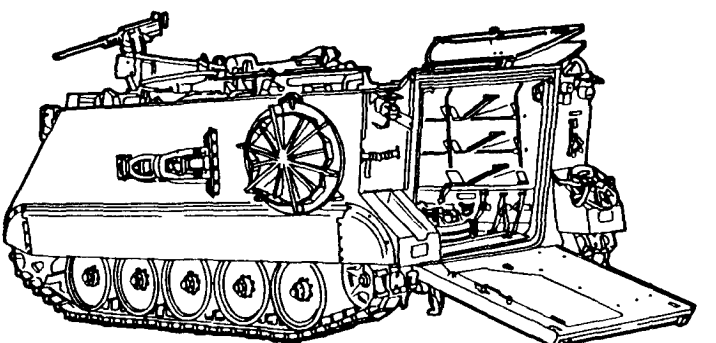


2-15. FIRING FROM CARRIER.

WARNING

Do not park the carrier near any overhead obstructions that would block the projectile and cause a premature burst. You could get hurt or you could hurt other friendly troops.

1 Park the carrier on firm and level ground. Position carrier so the M30 mortar can be moved through the estimated field of fire.



NOTE

The mortar can be fired within the limit of the turntable traversing stops and with carrier on a 5-degree slope. Elevation limit is 5 degrees beyond the scope of the firing table.

2 Apply and lock the carrier brakes.

3 Open the mortar hatch cover (p 2-107).

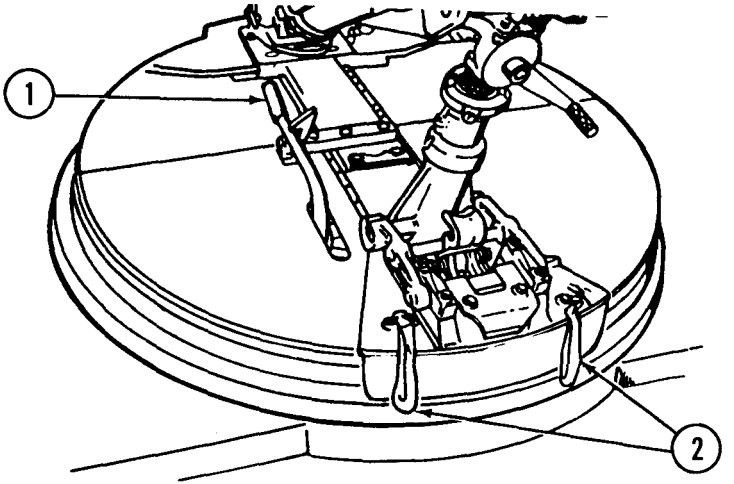
NOTE

Although normally closed, the ramp may be lowered but only when the tactical situation permits.

4 Release mortar for firing (p 2-120).

5 Raise the mortar to the firing position by pushing up on the mortar barrel. The standard support latch will lock automatically. The mortar is now in the low firing position.

6 Unlock traverse locking handle (1) and pull traversing straps (2) to move turntable to desired setting.



2-15. FIRING FROM CARRIER (cont).

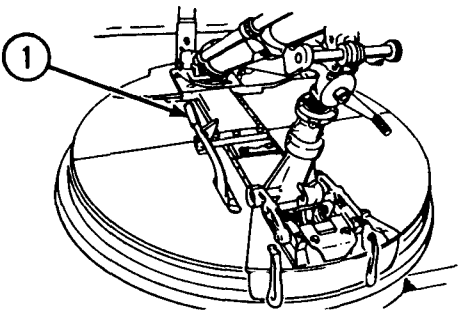
WARNING

Do not remove traversing stops on turntable indexing gear. Operation without stops in position can be dangerous.

NOTE

The M30 mortar can be rotated 775 mils left of center and 825 mils right of center in the direction of fire. Limit stops restrict turntable traverse to 650 mils left of center and 700 mils right of center. The 125-mil difference between mortar and turntable rotation limits is obtained by turning traversing wheel on standard assembly.

7 Push down on and latch traverse locking handle (1) to lock turntable in position.



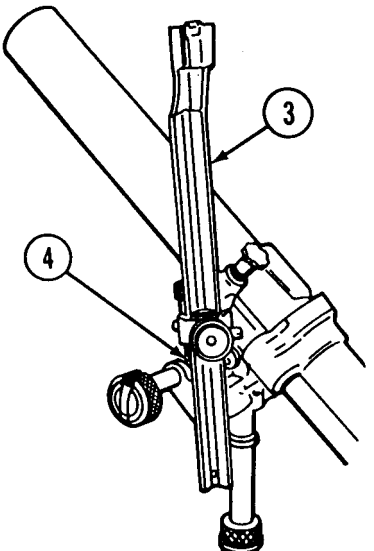
CAUTION

Do not force dovetail of sight extension into socket of the mortar. If the parts do not mate easily, remove sight extension and examine dovetail and socket for obstructions.

8 Insert sight extension (3) into dovetail on coupling and sight mount assembly (4) and make sure sight extension (3) is fully seated.

NOTE

See pages 2-47 thru 2-75 for installation, boresighting, and operation of sighting equipment.



2-15. FIRING FROM CARRIER (cont).

WARNING

Before firing the mortar, make certain the recoil stop clamp (5) is in place and secured on the standard assembly (p 2-114). Should the mortar standard shock absorber bind or become inoperable, the recoil stop clamp will insure clearance of the projection above the roof. This will prevent possible injury to the crew and damage to the carrier.

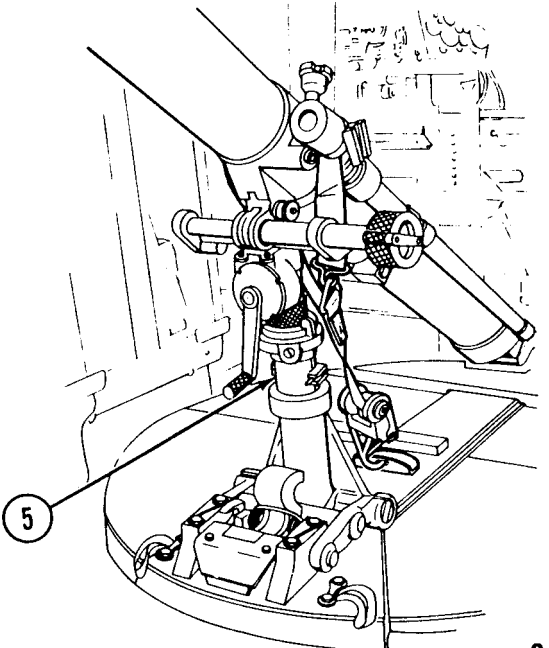
CAUTION

To prevent damage to carrier, do not exceed charge 32 when firing mortar above 900 mils elevation.

9 For loading and firing the mortar, see page 2-76.

NOTE

The elevation limits of the carrier-mounted mortar are from 740 mils to 1125 mils.



2-16. MISFIRES ON BOARD THE CARRIER.

NOTE

A misfire is a failure to fire after a cartridge is loaded into the mortar barrel. Misfires may be caused by defective ammunition, damaged firing pin, or an obstruction in the bore that prevents the cartridge from sliding down and striking the firing pin.

1 When a misfire is announced, all crew members, except the gunner, move at least 50 meters behind the mortar carrier.

WARNING

Do not insert hand into mortar barrel to remove a stuck round.

2 If the round did not slide down the mortar barrel and the projectile body can be grasped, the gunner removes the stuck round from the barrel.

NOTE

Free the M329A2 HE cartridge by rotating in clockwise direction.

3 If the round slid completely or partially down the mortar barrel (such that the round is not visible or only the fuze is visible), the gunner stands behind the mortar and kicks the barrel sharply several times with the heel of his boot.

WARNING

Wait until the mortar barrel is cool enough to be handled with bare hands (if the barrel is hot), or one minute (if the barrel is cool at the time of the misfire) before pouring water into the mortar. This is to avoid an accident from possible delayed action of the ignition cartridge and possible damage to the barrel from rapid quenching.

A stuck round could dislodge and fire as the water is being poured into the mortar barrel. The round could land close to the mortar position. All personnel except the gunner will take cover. The ramp of the carrier will be in raised (up) position to protect the gunner.

Three quarts of water (minimum) will be used

At no time shall be any part of the gunner's hand or body be placed in front of the muzzle of the mortar barrel.

4 If kicking the mortar barrel does not cause the cartridge to fire (dislodge), the gunner pours three quarts of water into the barrel.

2-16. MISFIRES ON BOARD THE CARRIER (cont).

WARNING

Allow two minutes (minimum) for the water to flow past the cartridge to the bottom of the mortar barrel.

NOTE

The water cushions the fall onto the firing pin should a stuck round dislodge during the removal operation outlined on pages 2-99 thru 2-103. This prevents the ignition cartridge from functioning.

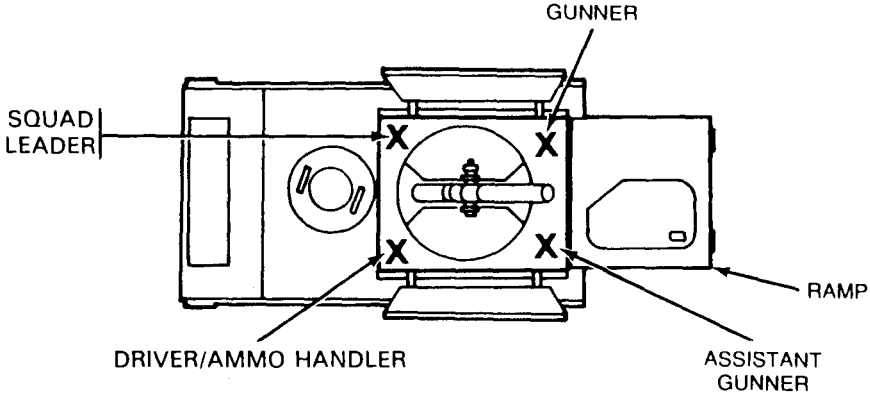
The water shall only be used in above freezing weather (temperatures). Contact EOD to remove stuck rounds if the temperature is below freezing.

5 After a two-minute waiting period, the gunner signals the other crew members to return to the carrier.

6 The driver closes the ramp door, mounts the carrier, and then lowers the ramp.

NOTE

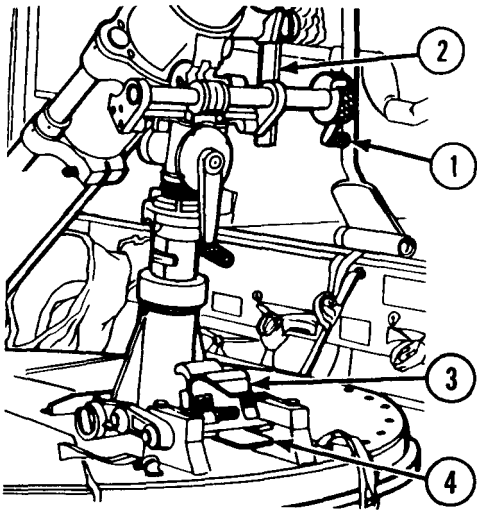
Removal of the misfired/stuck round requires four soldiers



7 The driver moves to the left of mortar, the squad leader moves to the right of mortar, and the assistant gunner and gunner assume the firing position. If the mortar is not centered toward the rear of the carrier, the gunner and assistant gunner center it now.

8 Turn traversing wheel (1) to center mortar toward rear of carrier. Gunner removes sight extension (2) with sightunit and places them on the carrier roof.

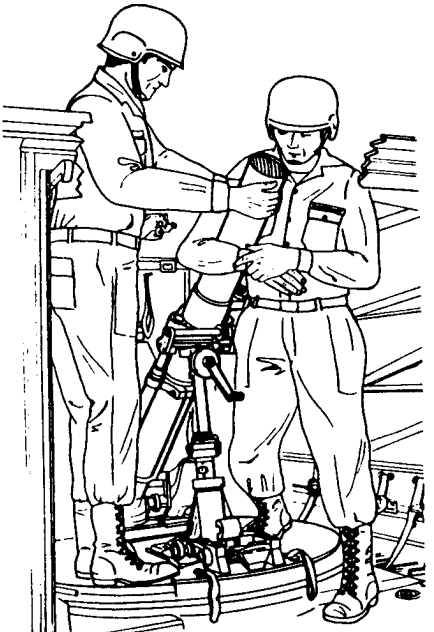
9 The assistant gunner then elevates or depresses the mortar barrel to its lowest position in high range or to its highest position In low range (minus two turns).



10 Gently lower mortar to the travel position by lifting guard (3) and stepping on release lever (4). Gunner and assistant gunner must support mortar barrel while it is being lowered.

11 The gunner places his right arm around mortar barrel with the traversing wheel in the small of his back or against his right hip to prevent the mortar from falling forward.

12 The assistant gunner puts his hands near the muzzle of the mortar barrel, right hand underneath, and left hand on top.



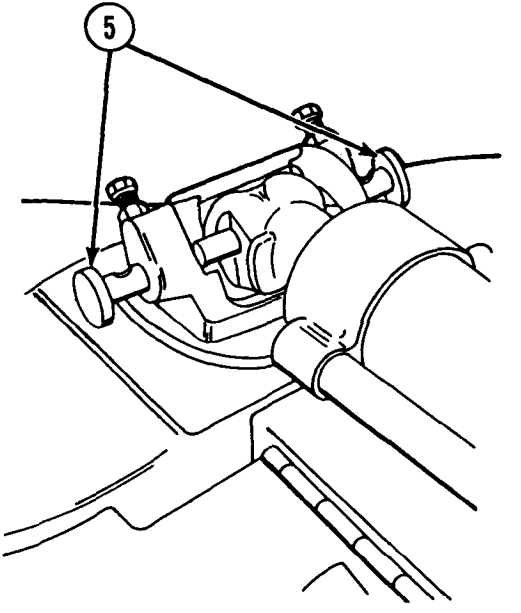
2-16. MISFIRES ON BOARD THE CARRIER (cont).

13 The ammo bearer moves two mortar barrel detent pins (5) to the out position.

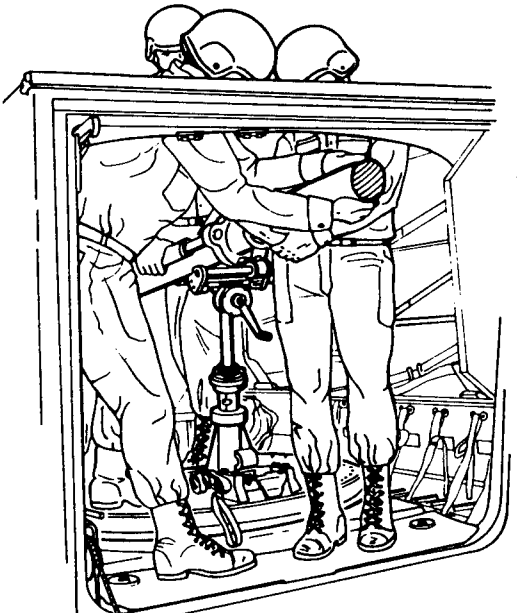
WARNING

Stay clear of the rear of mortar and never lower the mortar below horizontal once it has started upward until the misfire is removed.

14 The squad leader and ammo bearer grasp mortar barrel and lift it on the gunner's command only high enough to clear basecap socket. Move basecap away from direction of fire (toward front of carrier) to travel limit. Barrel must not hit roof plate during step 15.



15 The gunner and assistant gunner prevent the muzzle from moving forward while the squad leader and ammo bearer raise the rear of the mortar barrel smoothly and rapidly. Rapid movement is necessary so the muzzle is masked only briefly by the carrier roof plate.



2-16. MISFIRES ON BOARD THE CARRIER (cont).

WARNING

If the cartridge will not slide out of mortar barrel, see page 2-104. The squad should never try to pry the cartridge from mortar barrel.

16 When mortar barrel is horizontal, gunner and assistant gunner move forward slowly. The assistant gunner extends his thumbs slightly over the muzzle to catch the cartridge. The squad leader and ammo bearer continue to raise the rear of the mortar barrel until the assistant gunner can catch the cartridge as it slides out of the mortar barrel.

2-16. MISFIRES ON BOARD THE CARRIER (cont).

17 The assistant gunner removes the cartridge and places it outside to the left of the carrier, pointed in the direction of fire, so the carrier masks the crew if the cartridge explodes.

18 Notify Explosive Ordnance Disposal.

19 The squad leader and ammo bearer shake out the mortar barrel to remove any debris and then swab the barrel bore.

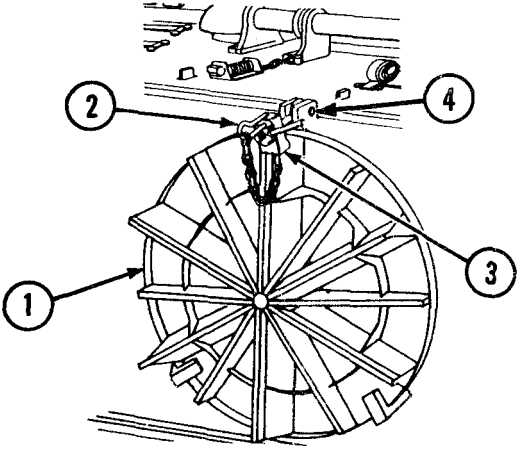
20 The crew then prepares the mortar for firing.

21 If another misfire occurs when firing is resumed, remove the cartridge as described on page 2-128 and check for damaged or fouled firing pin.

2-17. DISMOUNTING THE MORTAR FROM THE M106A1/A2 CARRIER.

NOTE

After you have dismounted mortar from carrier, see page 2-41 for emplacement and operation.

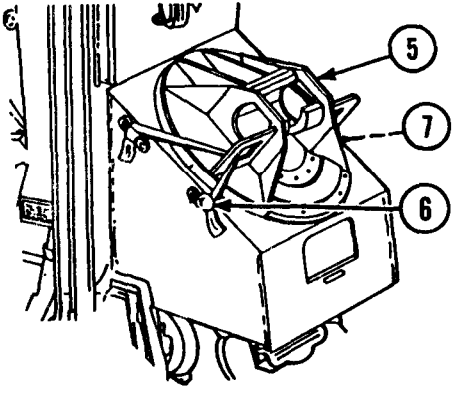


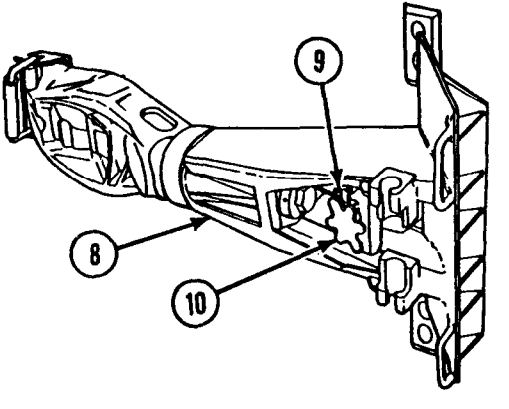
1 Remove mortar baseplate (1) from the left side of the carrier by pulling locking pin (2) and rotating handle (3) to the left to loosen top clamp (4). Lift mortar baseplate from carrier and set it in position on the ground.

2-17. DISMOUNTING THE MORTAR FROM THE M106A1/A2 CARRIER (cont).

2 Remove rotator assembly (5) from rear of right side of sponson by unbuckling straps (6 and 7). Install it in mortar baseplate (p 2-42).

3 Remove bridge assembly (8) by lifting locking pin (9) and rotating handle (10) Lift bridge assembly from carrier and set it in position on the rotator assembly (p 2-43).





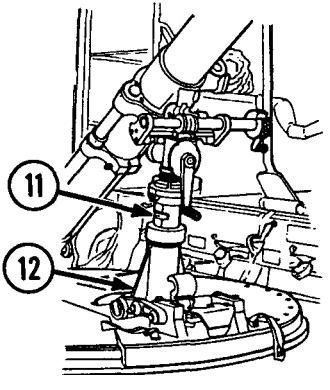
4 Remove recoil stop clamp (11) from standard assembly (12) and place it in mortar equipment bag.

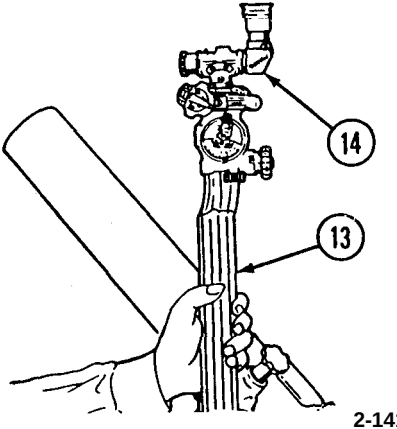
5 Remove sightunit (13), then remove extension (14).

6 Depress mortar to lower elevation in low or high range.

7 Gently lower mortar to travel position.

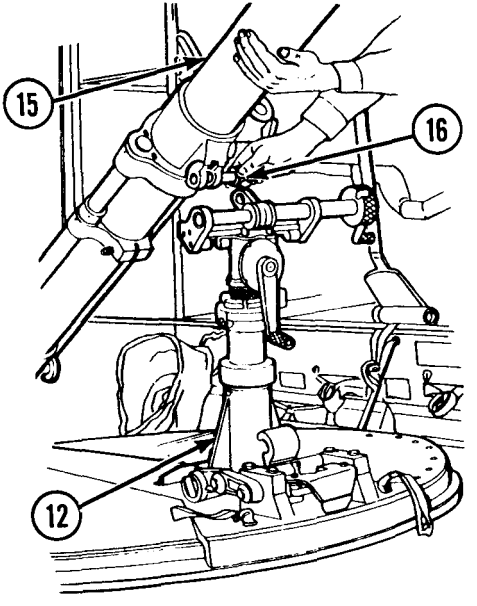
8 Install muzzle cover on mortar barrel.





NOTE
Four soldiers are needed.

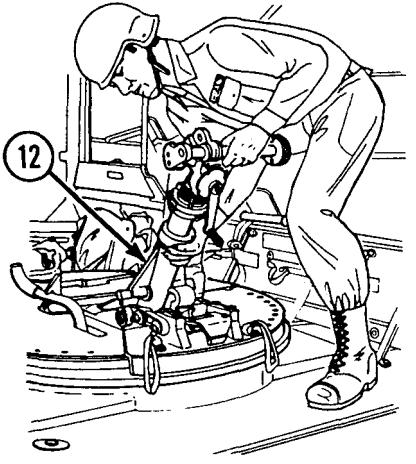
9 While supporting mortar barrel (15) and standard assembly (12), unlock and pull out locking pin assembly (16).

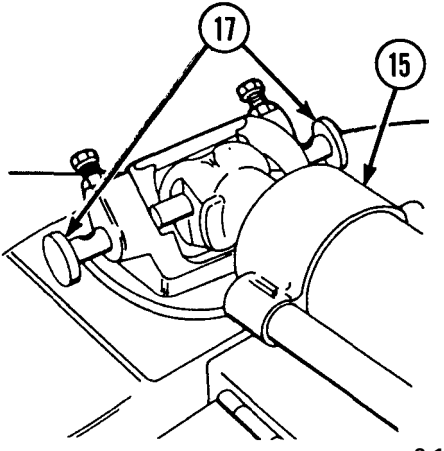


10 Tilt standard assembly (12) forward, then lift and remove from carrier and place in bridge assembly (p 2-44).

11 While still supporting barrel, pull out two detent pins (17).

12 Remove mortar barrel (15) from carrier and install in mortar baseplate (p 2-45).





2-18. PREPARATION FOR MOVEMENT.

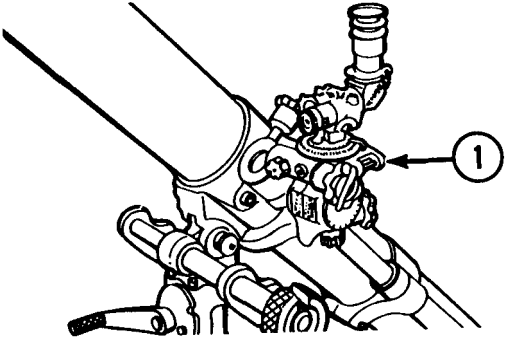
CAUTION

When removing sightunit, avoid striking or otherwise damaging any part of sightunit. Refer to FM 23-90.

1 Remove sightunit (1).

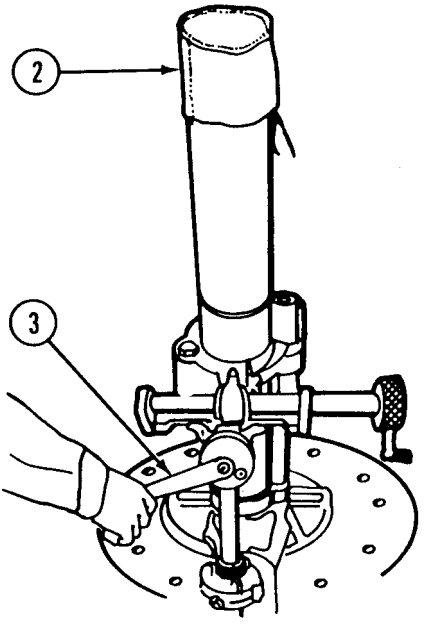
2 Place 800 mils elevation and 3800 mils deflection (red scale) on sightunit and stow in sightunit carrying case.

3 Retrieve aiming posts (and lights, if used) and stow them in their cases.

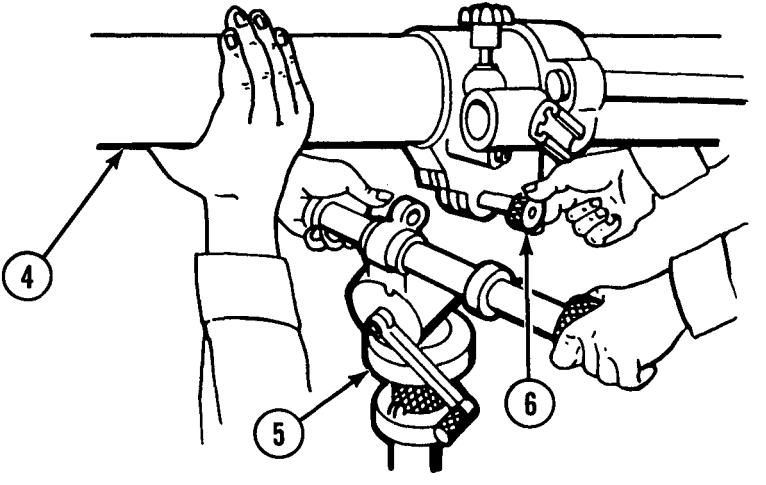


4 Replace muzzle cover (2).

5 Operate elevating handle (3) and fully depress mortar for ease in disassembling.

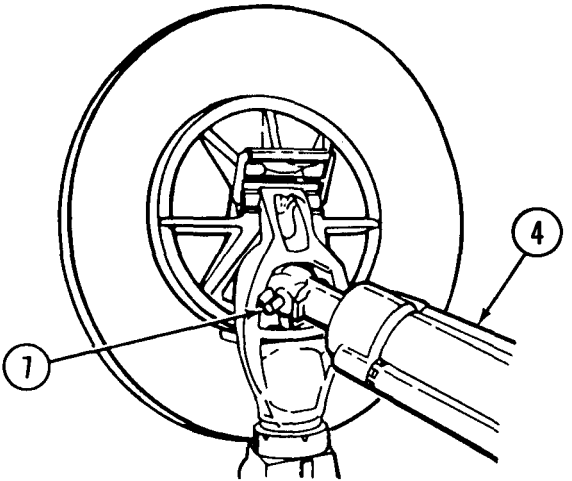


6 While supporting mortar barrel (4) and standard assembly (5), push in, rotate, then disengage mortar locking pin assembly (6).



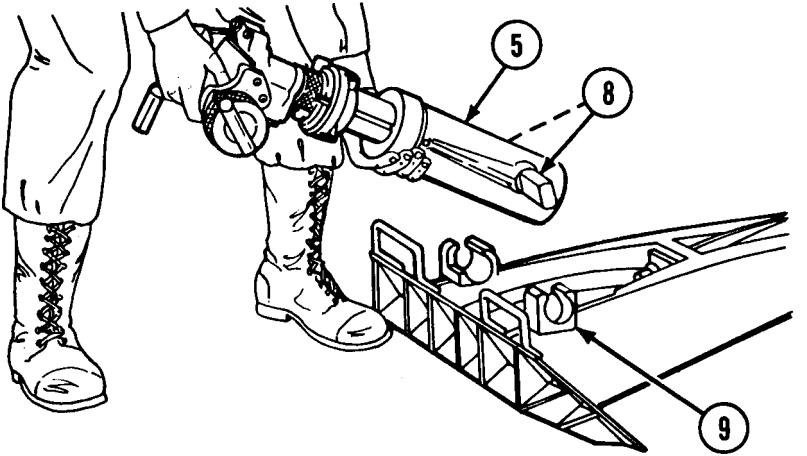
7 Raise and tilt mortar barrel (4) to the left, and unhook cap assembly trunnion pin (7) from socket. At least two (preferably three) soldiers should handle mortar during this operation.

8 Lift mortar barrel (4) out of socket.



2-18. PREPARATION FOR MOVEMENT (cont).

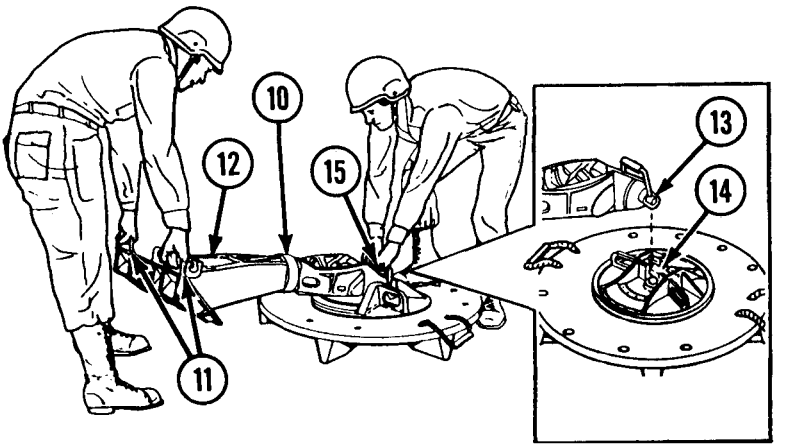
9 Tip standard assembly (5) forward until flats of standard base trunnions (8) aline with opening in standard base trunnion sockets (9). Then raise and remove standard assembly (5). One soldier can perform this operation.



WARNING

Since tapered swivel joint (10) in bridge assembly is free to turn unless properly balanced, use both handles to lift bridge assembly to avoid injuring personnel.

10 Using two handles (11), lift spade end of bridge assembly (12) until bridge trunnion (13) alines with bridge trunnion socket (14). Using handles (11 and 15), remove bridge assembly (12).



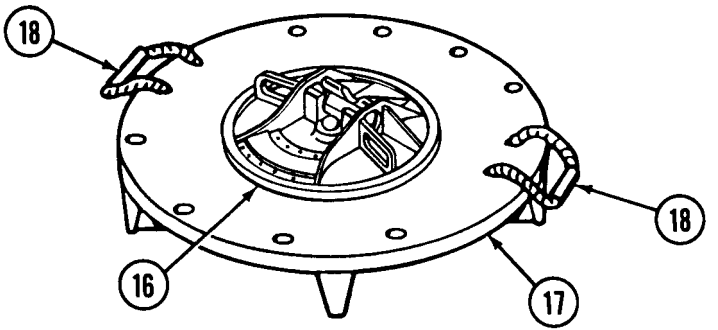
2-18. PREPARATION FOR MOVEMENT (cont).

11 Lift rotator (16) from mortar baseplate (17).

WARNING

Check rope handles and, if frayed, don't use handles to lift baseplate.

12 Use handles (18) to remove mortar baseplate (17).



Section V. OPERATION UNDER UNUSUAL CONDITIONS

2-19. UNUSUAL ENVIRONMENT/WEATHER.

These procedures are necessary for operation under the following conditions.

COLD: Keep ammunition and fire control instruments covered. Do not move fire control instruments from cold to warm areas. Use arctic lubricant. See FM 31-70, FM 31-71, and FM 9-207.

HOT AND DRY: Clean equipment and wipe dry. Lubricate parts very lightly or operate dry. Keep equipment covered.

DAMP AND SALTY: Clean and lubricate more frequently. Keep equipment covered. Check optical instruments for fungus growth.

FROZEN GROUND: Loosen ground and dig in to seat mortar baseplate and bridge spades. Use tripods to support the aiming posts. See FM 31-70, FM 30-71, and FM 9-207.

SAND OR SOFT MUD: Use any available material to keep mortar baseplate from sinking.

CHAPTER 3
MAINTENANCE PROCEDURES

Section I. LUBRICATION INSTRUCTIONS

NOTE

- Remember to lube more often when operating in extreme conditions.
- These lubrication instructions are mandatory.

3-1. GENERAL.

General purpose lubricating (GPL) oil (item 13, app D) is the prime lubricant. LAW (item 14, app D) may be used for continuous sub-zero environments. Clean parts with dry cleaning solvent (item 9, app D). Dry before lubricating (for exception, see page 3-1).

3-2. LUBRICATION PROCEDURES.

NOTES

NOTE 1 –Immediately after firing, and for two consecutive days thereafter, clean the barrel bore with RBC (item 6, app D). After the third cleaning, wipe dry and lightly coat with general purpose lubricating (GPL) oil (item 13, app D). Clean weekly with RBC, wipe dry, and lube with general purpose lubricating oil.

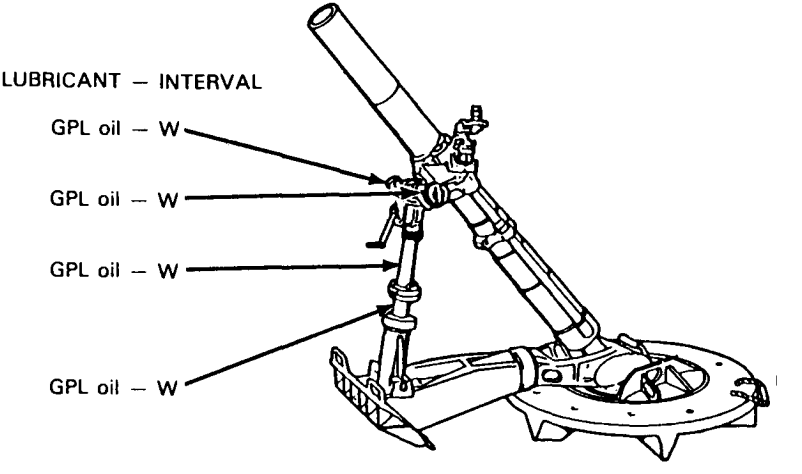
NOTE 2– DO NOT LUBRICATE - Before firing, wipe clean the exposed surface of shock absorber inner tube with a dry cloth, but do not lubricate.

NOTE 3– Mortar must be sent to direct support maintenance for complete service and lubrication semi-annually.

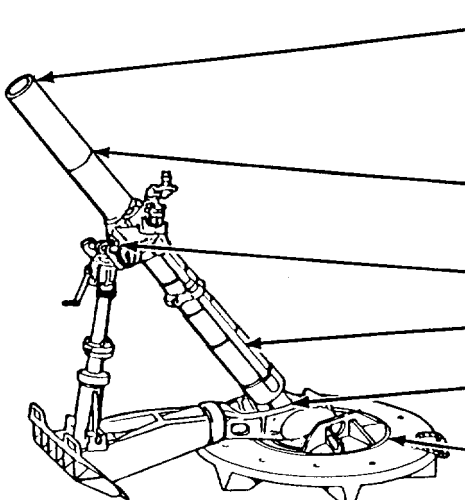
3-2. LUBRICATION PROCEDURES (cont).

INTERVAL = W (Weekly)

Lubricants = General Purpose Lubricating (GPL) Oil (item 13, app D)
GAA (item 11, app D)



Lubricants = General Purpose Lubricating (GPL) Oil (item 13, app D)
GAA (item 11, app D)



INTERVAL – LUBRICANT	
W – GPL oil	**BARREL BORE** Before firing, wipe clean and dry. After firing, clean and lubricate, (See NOTE 1)
W – GPL oil	**BARREL** Outside unpainted surface
W – GPL oil	**BARREL LOCKING PIN**
	SHOCK ABSORBER (See NOTE 2)
W – GPL oil	**PIN AND BEARING** Surface of base cap
W – GAA	**ROTATOR** Underside and mortar baseplate finshed surface (See NOTE 3)

Section II. TROUBLESHOOTING PROCEDURES

3-3. INTRODUCTION.

a. The table lists the common malfunctions which you may find during the operation or maintenance of the M30 mortar or its components. You should perform the tests/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests/inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your superiors.

TABLE 3-1. TROUBLESHOOTING TABLE

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
MORTAR BARREL
1. FAILURE TO FIRE.
Step 1. Check for defective ammunition.
Follow misfire procedures starting on page 2-95.
Step 2. Check for propellant holders or foreign matter in base of tube.

TABLE 3-1. TROUBLESHOOTING TABLE (cont)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
2. FAILURE OF COUPLING AND SIGHT MOUNT ASSEMBLY TO ROTATE.
Step 1. Check for dirt and grit.
Service.
Step 2. Check for broken coupling and sight mount worm.
Notify unit maintenance.
Step 3. Check for broken coupling and sight mount knob.
Notify unit maintenance.

TABLE 3-1. TROUBLESHOOTING TABLE (cont)

MALFUNCTION TEST OR INSPECTION	CORRECTIVE ACTION
Step 4. Check for broken pin in coupling and sight mount knob.	Notify unit maintenance.
MOUNT	
3. DIFFICULTY IN TRAVERSING WEAPON.	
Step 1. Check traversing mechanism for dirt and grit.	Service.
Step 2. Check for bent traversing slide support.	Notify unit maintenance.

TABLE 3-1. TROUBLESHOOTING TABLE (cont)

MALFUNCTION TEST OR INSPECTION	CORRECTIVE ACTION
3. DIFFICULTY IN TRAVERSING WEAPON (cont).	
Step 3. Check for damaged traversing sleeve housing.	Notify unit maintenance.
Step 4. Check for loose capscrews in traversing slide support.	Notify unit maintenance.
4. DIFFICULTY IN ELEVATING OR DEPRESSING WEAPON.	
Step 1. Check elevating mechanism for dirt and grit.	Service.

TABLE 3-1. TROUBLESHOOTING TABLE (cont)

MALFUNCTION TEST OR INSPECTION	CORRECTIVE ACTION
Step 2. Check for bent or broken elevating mechanism.	Notify unit maintenance.
5. IMPROPER RECOIL.	
Step 1. Check for cracked or deformed standard base.	Notify unit maintenance.
Step 2. Check for bent, dented, or inoperative shock absorber assembly.	Notify unit maintenance.

TABLE 3-1. TROUBLESHOOTING TABLE (cont)

MALFUNCTION TEST OR INSPECTION	CORRECTIVE ACTION
6. FAILURE OF ROTATOR TO TURN FREELY.	
Step 1. Check for dirt and grit.	Service.
Step 2. Check for cracked or warped bearing surface on plate assembly.	Notify unit maintenance.
Step 3. Check for cracked bridge trunnion socket.	Notify unit maintenance.

TABLE 3-1. TROUBLESHOOTING TABLE (cont)

MALFUNCTION TEST OR INSPECTION	CORRECTIVE ACTION
7. POOR STABILIZATION OF WEAPON DURING FIRING.	
Check for cracked bridge base body or spade.	Notify unit maintenance.
8. SIGHTUNIT CONTROLS DO NOT OPERATE.	
Step 1. Check to see if locking knobs are tightened.	Release locking knobs.
Step 2. Check for dirt and grit.	Clean thoroughly.

TABLE 3-1. TROUBLESHOOTING TABLE (cont)

MALFUNCTION TEST OR INSPECTION	CORRECTIVE ACTION
9. SIGHTUNIT WON'T ATTACH AND LOCK TO SIGHT SOCKET.	
Step 1. Check dovetail bracket for nicks and burrs.	Notify unit maintenance.
Step 2. Check dovetail bracket for paint.	Remove paint. Be careful not to scratch or nick metal surfaces.
Step 3. Check latch mechanism for proper function.	Notify unit maintenance.

TABLE 3-1. TROUBLESHOOTING TABLE (cont)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
10. POOR VISIBILITY IN SIGHTUNIT LENS.		
	Step 1. Check lens for cracks or breaks.	Notify unit maintenance.
	Step 2. Check lenses for moisture.	Place sightunit in a warm area to see if moisture clears. Don't apply heat directly to sight lenses. If moisture doesn't clear, notify unit maintenance.

Section III. MAINTENANCE PROCEDURES

3-4. MAINTENANCE OF M53E1 INSTRUMENT LIGHT

BATTERY REPLACEMENT

1 Unscrew cap (1) and remove batteries (2).

2 Install new batteries (2) (item 2, app D) and replace cap (1).

LAMP REPLACEMENT

1 Unscrew protective cap (3) from reticle light (4) and remove lamp (5).

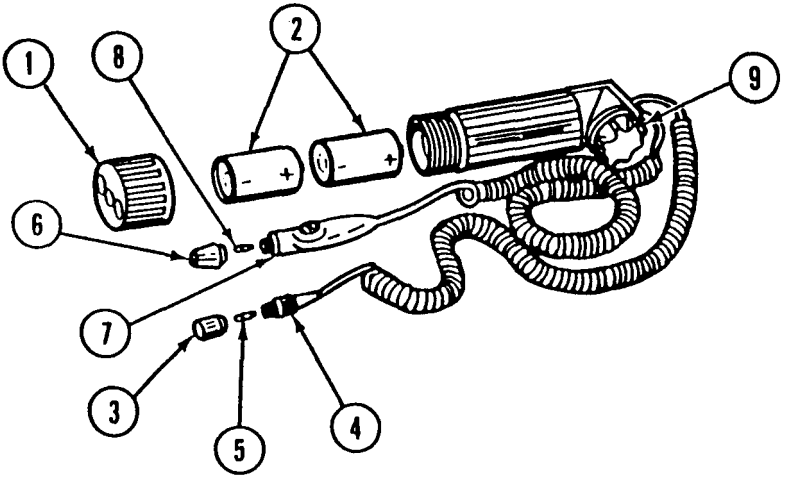
2 Install new lamp (5) (item 12, app D) and replace protective cap (3).

3 Unscrew window (6) from hand light (7) and remove lamp (8).

4 Install new lamp (8) (item 12, app D) and replace window (6).

NOTE

Face positive (+) end of battery toward rheostat knob (9).



3-5. MAINTENANCE OF M14 AIMING POST LIGHT

BATTERY REPLACEMENT

1 Unscrew and remove cap-plugs (1 and 2).

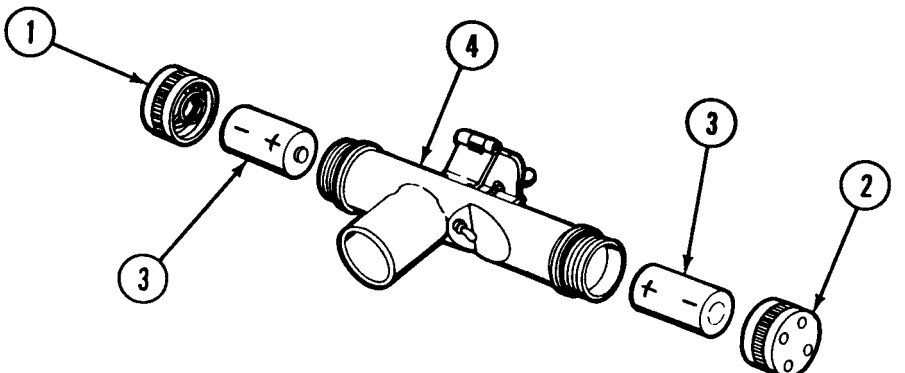
2 Remove batteries (3).

3 Replace batteries (item 2, app D) (3).

4 Install and tighten cap-plugs (1 and 2).

NOTE

Face positive (+) end of battery toward center of case assembly (4).


1
4
3
3
2

Section IV. MAINTENANCE OF AUXILIARY EQUIPMENT

3-6. MAINTENANCE OF M31 60-MM SUBCALIBER TRAINER. See FM 23-90.

3-7. MAINTENANCE OF M32 OR M32A1 PNEUMATIC MORTAR TRAINER. See TM 9-6920-212-14.

CHAPTER 4
AMMUNITION

4-1. AUTHORIZED CARTRIDGES.

The following cartridges are authorized to be fired in the M30 mortar:

Cartridge, 4.2-inch: Gas, M2A1

Cartridge 4.2-inch: HE, M329 series

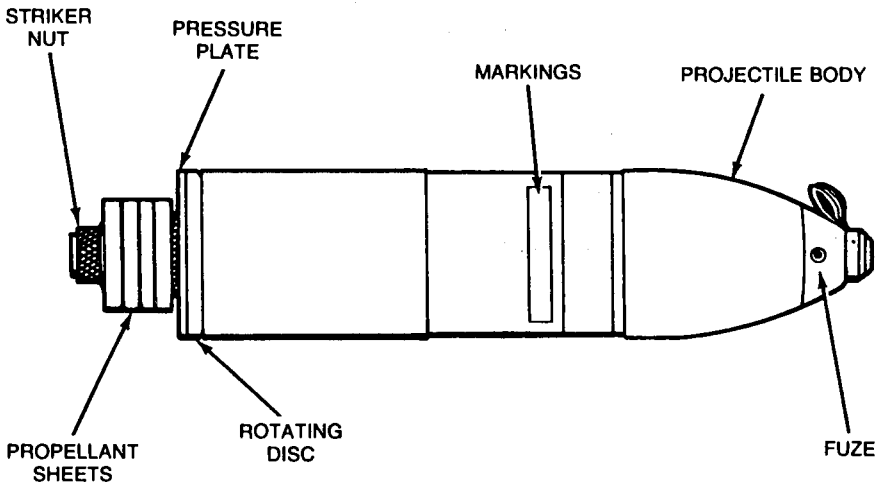
Cartridge, 4.2-inch: Smoke (WP), M328 series

Cartridge, 4.2-inch: Illum, M335 series

Cartridge, 4.2-inch: Tactical (CS), M630

4-1. AUTHORIZED CARTRIDGES (CONT).

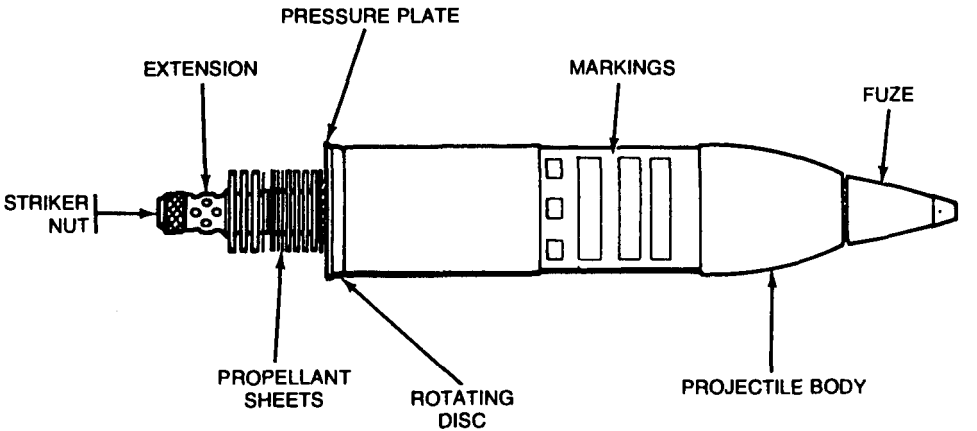
M2A1 GAS CARTRIDGE



Type/Use:	Chemical (CNB, CNS, CK, CG, H, HD, or HT AGENT)/Casualty effect
Identification:	Non-persistent gases (CNB, CNS, CK, or CG) - Gray w/one green band and green markings Persistent gases (H, HD, or HT) - Gray w/two green bands and green markings
Components:	
Fuze:	PD, M8
Propelling charge:	M 6
Max range:	4460 meters
Limitations:	Short rounds may occur when firing below charge 7.

4-1. AUTHORIZED CARTRIDGES (CONT).

M329 AND M329B1 HE CARTRIDGES, M328 SMOKE CARTRIDGE, AND M35 ILLUM CARTRIDGE.



M329 and M329B1 HE Cartridges

Type/Use:	High explosive/Fragmentation and blast
Identification:	Olive drab w/yellow markings
Components:	
Fuze:	PD, M557 PD, M51A5 MTSQ, M520 series MTSQ, M564 VT, M51 3 series
Propelling charge:	M36
Max range:	5420 meters
Limitations:	Duds may be expected when firing below charge 7 with fuze PD, M557 or fuze PD, M51A5. Short rounds may occur when firing below charge 7. Cartridges with fuze VT, M513 series cannot be fired below charge 10.

4-1. AUTHORIZED CARTRIDGES (CONT).

M329 AND M329B1 HE CARTRIDGES, M328 SMOKE CARTRIDGE, AND M35 ILLUM CARTRIDGE (CONT).

M328 Smoke Cartridge

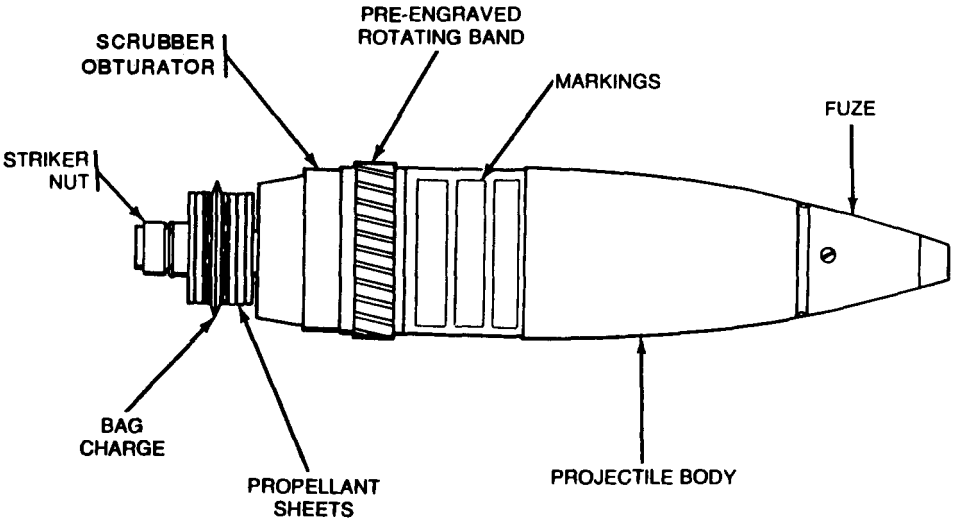
Type/Use:	Smoke (white phosphorus)/Screening/spotting
Identification:	Gray w/yellow band and yellow markings or light green w/yellow band and light red markings
Components:	
Fuze:	PD, M48A3
Propelling charge:	M36
Max range:	5420 meters
Limitations:	Short rounds may occur when firing below charge 7.

M335 Illum Cartridge

Type/Use:	Illumination
Identification:	White w/black markings
Components:	
Fuze:	MTSQ, M501
Propelling charge:	M36
Max range:	4800 meters
Limitations:	None
Remarks:	Cartridge contains an illuminating candle and parachute assembly. The candle provides the following illumination - 500,000 candlepower for 60 seconds.

4-1. AUTHORIZED CARTRIDGES (CONT).

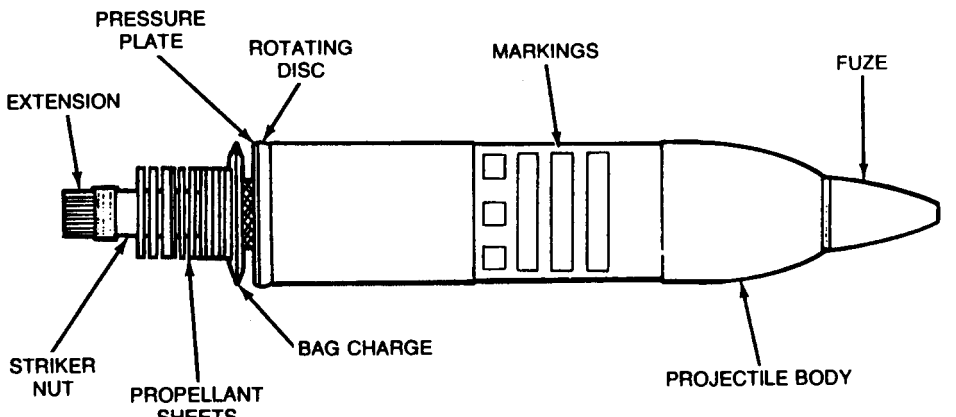
M329A2 (M329A1E1) HE CARTRIDGE



Type/Use:	High explosive/Fragmentation and blast
Identification:	Olive drab w/yellow markings
Components:	
Fuze:	PD, M557 MTSQ, M520A1 MTSQ, M564 VT, M514A1E1
Propelling charge:	M36A2
Max range:	6840 meters
Limitations:	Duds may be expected when firing below charge 7 with fuze PD, M557.

4-1. AUTHORIZED CARTRIDGES (CONT).

M329A1 HE CARTRIDGE, M328A1 SMOKE CARTRIDGE, M335A1 AND M335A2 ILLUM CARTRIDGES, AND M630 TACTICAL CARTRIDGE



M329A1 HE Cartridge

Type/Use:	High explosive/Fragmentation and blast
	Olive drab w/yellow markings
Components:	
Fuze:	PD, M557 PD, M51A5 MTSQ, M520 series MTSQ, M564 VT, M513 series
Propelling charge:	M36A1
Max range:	5650 meters
Limitations:	Duds may be expected when firing below charge 7 with fuze PD, M557 or fuze PD, M51A5. Short rounds may occur when firing below charge 10. Cartridges with fuze VT, M513 series cannot be fired below charge 10.

M329A1 HE CARTRIDGE, M328A1 SMOKE CARTRIDGE, M335A1 AND M335A2 ILLUM CARTRIDGES, AND M630 TACTICAL CARTRIDGE (CONT).

M328A1 Smoke Cartridge

Type/Use:	Smoke (white phosphorous)/Screening/spotting
Identification:	Gray w/yellow band and yellow markings or light green w/yellow band and light red markings.
Components:	
Fuze:	PD, M48A3 w/adapter PD, M521
Propelling charge:	M36A1
Max range:	5650 meters
Limitations:	Short rounds may occur when firing below charge 10.

M335A1 and M335A2 Illum Cartridges

Type/Use:	Illumination	
Identification:	White w/black markings	
Components:	M335A1	M335A2
Fuze:	MTSQ, M501 MT, M562	MT, M565 MTSQ, M577 series
Propelling charge:	M36A1	M36A1
Max range:	5290 meters	5490 meters
Limitations:	None	
Remarks:	Cartridge contains an illuminating candle and parachute assembly. Candles provide the following illumination - 500,000 candlepower for 70 seconds (M335A1 ctg) or 850,000 candlepower for 90 seconds (M335A2 ctg).	

M329A1 HE CARTRIDGE, M328A1 SMOKE CARTRIDGE, M335A1 AND M335A2 ILLUM CARTRIDGES, AND M630 TACTICAL CARTRIDGE (CONT).

M630 Tactical Cartridge

Type/Use:	Tear gas (CS agent) /Harassment
Identification:	Gray w/red band and red markings
Components:	
Fuze:	MTSQ, M548
Propelling charge:	M36A1
Max range:	5650 meters
Limitations:	Short rounds may occur when firing below charge 10.

4-2. PREPARATION FOR FIRING.

WARNING

Do not remove scrubber obturator ring from M329A2 HE cartridge.

Firing temperature limits are -40 to +125 °F (-71 to 52 °C).

Short rounds may occur when firing below 0°F (– 18°C).

Ensure white dot is visible on scrubber obturator ring.

1 Unpack cartridge. Remove all packing stop(s).

2 Assemble fuze to cartridge, if cartridge was shipped unfuzed (p 4-24).

3 Set fuze for required time or desired type of burst (p 4-27).

4 Adjust propelling charge for desired range (p 4-47).

4-3. LOADING AND FIRING.

See section III of chapter 2.

4-4. UNFIRED CARTRIDGES.

1 Reset fuze.

2 Remove fuze if cartridge was shipped unfuzed. Reinstall closing plug.

3 Reinstall propellant increments (and required extensions) so that cartridge has a full charge.

4 Install packing stop(s). Repack cartridge.

4-5. CARE AND HANDLING OF CARTRIDGES.

1 Do not throw or drop live ammunition.

2 Use proper tools to open ammo boxes/containers.

3 Cartridges must be kept in fiber containers until fuzed or immediately prior to firing. This will prevent deterioration of propellant due to high temperatures. Only the minimum necessary quantity of fiber containers should be open and cartridges fuzed. Exposure of unpackaged cartridges to the environment should be minimized.

4 Protect cartridges when removed from ammunition containers. Cover tail assembly and propelling charge with container's end cap/lid. Stack cartridges on top of empty ammo boxes and cover with plastic sheets provided.

5 Protect ammunition from direct rays of sun, rain, and snow.

6 Store WP-loaded cartridges at temperatures below 111 °F (44 °C) to prevent melting of the WP filler. If this is not possible, WP-loaded cartridges must be stored fuze-end up, so that the WP will resolidify with the void space in the nose-end of the cartridge when the temperature returns below 111 °F (44 °C). Failure to observe this precaution could result in rounds with erratic flights.

7 Store WP-loaded and other chemical munitions separately from other types of ammunition.

8 Do not fire leaking chemical munitions. Notify EOD. Avoid contact with any leakers.

9 Do not handle duds.

10 Secure packaged cartridges in M106A2 carrier ammunition racks or to bed of transporting vehicle during movement.

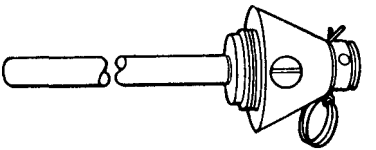
11 Cartridges with composition B on external surfaces will not be fired.

12 Cartridges with visible damage to fuze or propellant will not be fired.

13 Short rounds may occur when firing below 0 °F (– 18 °C).

4-6. FUZES.

PD M8 FUZE



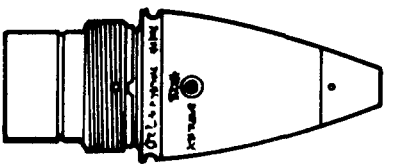
Type: Point detonating

Functions: Impact (superquick action only)

Setting: None

Remarks: Fuze has a burster charge and safety wire which must be removed before firing.

PD M48A3, M51A5, M521, AND M557 FUZES



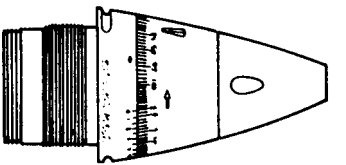
Type: Point detonating

Functions: Impact

Setting: Superquick or 0.05 second delay action

Remarks: M51A5 and M557 fuzes have a booster charge (as pictured).

MT M562 AND M565 FUZES



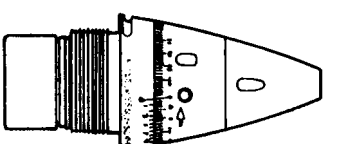
Type: Mechanical time

Functions: Air burst

Setting: 2-100 seconds

Remarks: Fuzes have a vernier scale for time settings with decimal fractions.

MTSQ M548 AND M564 FUZES



Type: Mechanical time superquick

Functions: Graze/impact

Setting: 2-100 seconds

Remarks: M564 fuze has a booster charge (as pictured). Both fuzes have a timing mechanism, PD element, and vernier scale for time settings with decimal fractions.

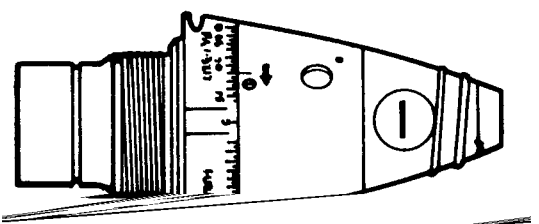
MTSQ M501A1 AND M520A1 FUZES

Type: Mechanical time superquick

Functions: Air burst/graze/impact

Setting: 1.5-75 seconds

Remarks: M520A1 fuze has a booster charge (as pictured). Both fuzes have a timing mechanism, PD element, and safety wire which must be removed before firing.



4-6. FUZES (CONT).

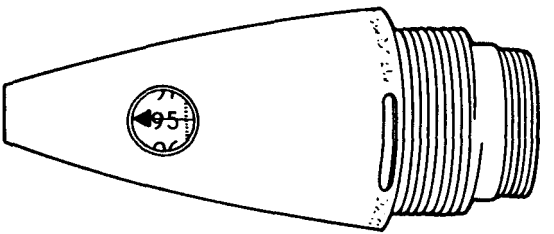
MTSQ M577 SERIES FUZES

Type: Mechanical time superquick

Functions: Air burst/impact

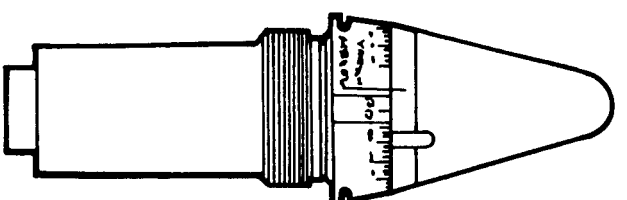
Setting: 0-200 seconds

Remarks: Fuzes have a timing mechanism and PD element. Setting is indicated by three numbered rotating dials that are viewed through a window in the fuze.



VT M513 AND M514 FUZES

Type:	Proximity
Functions:	Prox/impact
Setting:	5-100 seconds (time of flight)
Remarks:	Fuzes have a radio transmitter/detector. Fuze functions when its radio waves are reflected off the target. PD element in fuze functions on impact if fuze fails to function in prox mode.



4-7. INSTALLATION OF FUZES.

WARNING

Do not hammer fuze wrench or use an extension on the handle.

Fuze must be fully seated onto projectile body.

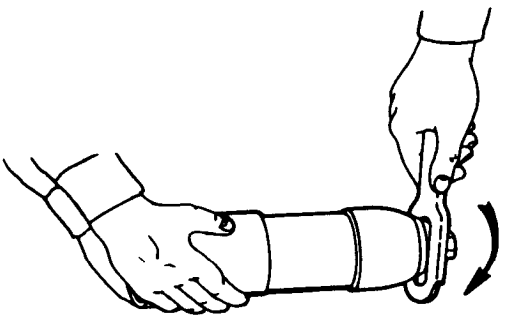
Do not stake fuze to cartridge.

1 Remove closing plug from cartridge.

a. *Metal Closing Plug.*

(1) Loosen closing plug with a M18 fuze wrench. Insert wrench into slots. Turn handle (counterclockwise).

(2) Remove wrench and complete disassembly by hand.



b. *Plastic Closing Plug.*

(1) Bend tab of closing plug inward until torn.

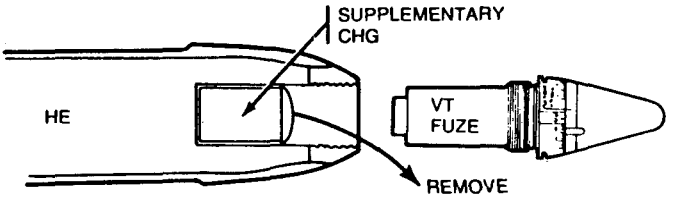
(2) Use tab to pull out closing plug.

2 Remove cardboard spacer from fuzewell.

3 Remove supplementary charge (only if a M513 or M514 VT fuze is to be installed). Pull loop to extract charge.

NOTE

Place all unused supplementary charges in an empty fuze box. Return charges to ASP.



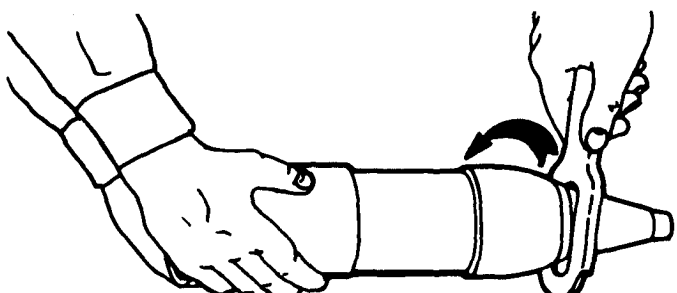
4-7. INSTALLATION OF FUZES (CONT).

4 Inspect fuze threads and fuzewell threads for damage. Do not use any compo nent with thread damage. If any explosive is visible on fuzewell thread, notify EOD.

5 Screw fuze clockwise into projectile body. Seat fuze and secure it with an M18 fuze wrench. There must be no visible gap between fuze and projectile body.

NOTE

If binding occurs, unscrew fuze and recheck threads.



4-8. FUZE SETTING.

The following chart identifies the proper procedure and tools for setting the fuzes:

FUZE							SETTER (WRENCH)	PROCEDURE NO.
PD		MT	MTSQ			VT		
M8	M48A3 M51A5 M521 M557	M562 M565	M548 M564	M501 M520	M577 SERIES	M513 M514		
•							None	1
	•						(M18)	2
		•	•				M34	3
				•			M27	4
					•		M35 or (M18)	5
						•	M27	6

4-8. FUZE SETTING (CONT).

PROCEDURE NO. 1

Remove safety wire before firing.
No other action is required.

PROCEDURE NO. 2

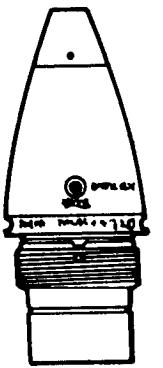
1 Superquick setting.

a. These fuzes are shipped preset to function superquick on impact.

b. Verify setting before firing. Adjust setting as required.

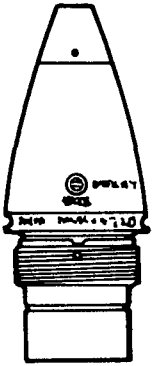
2 Delay setting.

a. Turn slot in fuze interrupter 90 degrees clockwise. Aline slot with delay marking on ogive of fuze.



SUPERQUICK SETTING

b. Use blade end of a M18 fuze wrench to change settings.



0.05 SEC
DELAY
SETTING

PROCEDURE NO. 3

WARNING

Do not rotate lower cap in counterclockwise direction (opposite arrow) to set/reset fuze. Turning cap in opposite direction can damage fuze.

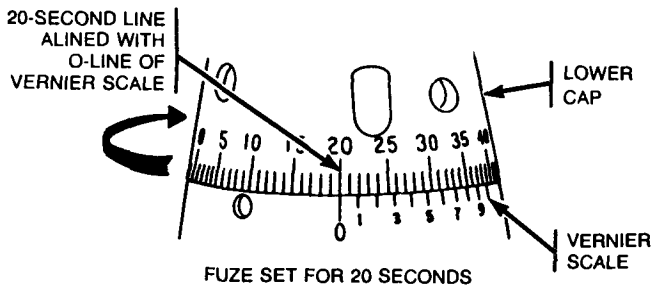
1 Air burst (graze) setting.

a. No decimal fraction in number of seconds.

(1) Rotate lower cap in direction of arrow (clockwise) until correct line and number of seconds on upper scale are lined up with 0-line of vernier scale.

(2) Use M34 fuze setter to turn lower cap.

EXAMPLE

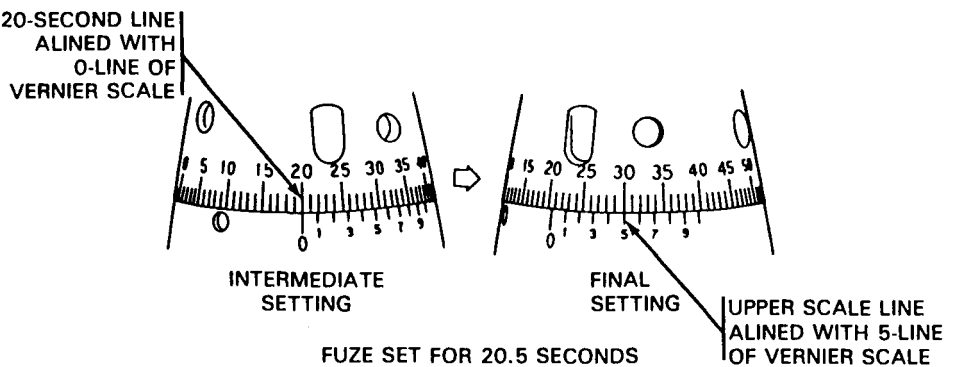


FUZE SET FOR 20 SECONDS

b. Decimal fraction in number of seconds.

(1) Set fuze for whole number as in preceding paragraph: then, continue rotating lower cap in direction of arrow until a line on upper scale lines up with vernier scale line corresponding to decimal fraction.

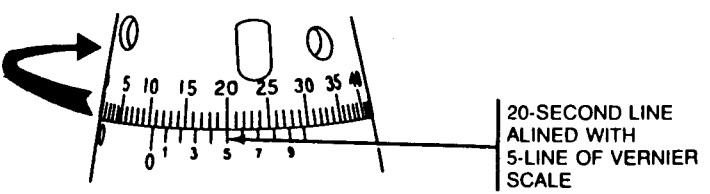
EXAMPLE



(2) Use M34 fuze setter to turn lower cap.

c. Adjacent illustration shows a fuze incorrectly set for 20.5 seconds. Fuze is actually set for 10.5 seconds. See firing tables for correct time settings.

EXAMPLE



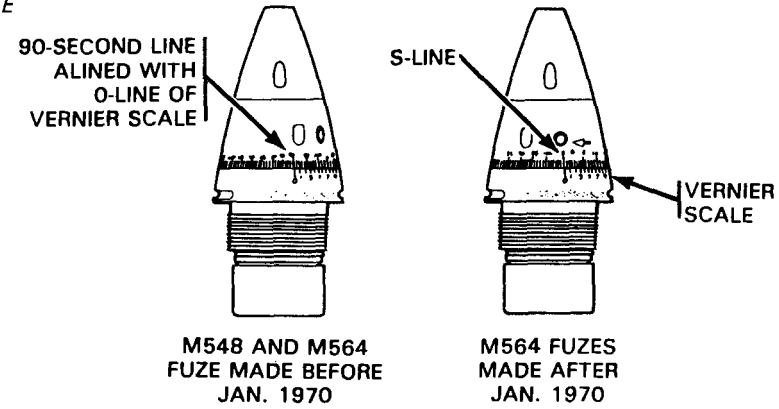
WRONG FUZE SETTING
FOR 20.5 SECONDS

2 PD setting (M548 and M564 fuzes only).

a. Set M548 fuzes and M564 fuzes manufactured before Jan. 1970 for 90 seconds.

b. Use M564 fuzes manufactured after Jan. 1970 as shipped (S-line of upper scale alined with 0-line of vernier scale).

EXAMPLE



4-8. FUZE SETTING (CONT)
PROCEDURE NO. 4

1 Airburst (graze) setting.

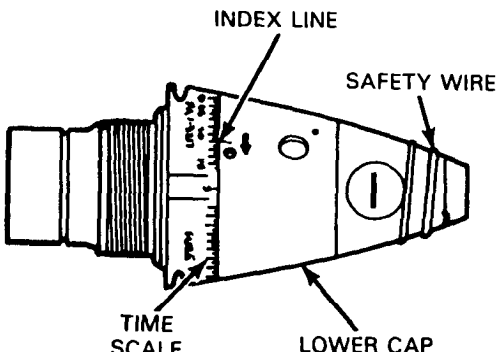
a. Remove safety wire.

b. Rotate lower cap in direction of arrow (counterclockwise) until index line on lower cap is alined with correct line and number of seconds on time scale.

c. Use M27 fuze setter to rotate cap.

d. See firing tables for correct time settings.

EXAMPLE



2 PD setting.

a. Remove safety wire.

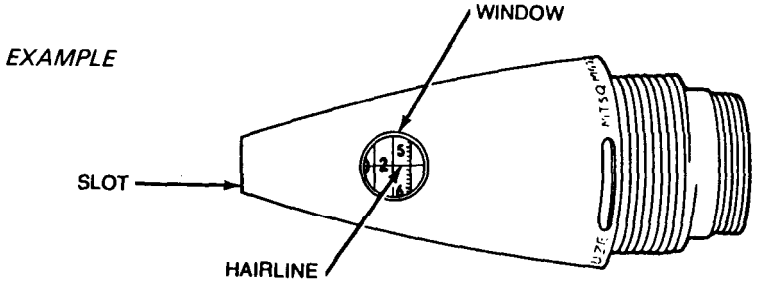
b. Use fuze as shipped (index line alined with S-line of scale).

PROCEDURE NO. 5

CAUTION

Do not attempt to set these fuzes below 93.5 when setting them in the clockwise direction or above 200 seconds when setting them in the counterclockwise direction. The settings of 000 and/or 200 are not authorized service settings.

1 Turn slot in nose (counterclockwise) until correct number of seconds is visible in window and under hairline.



FUZE SET FOR 25.5 SECONDS

2 Adjacent chart shows sequence of settings when turning fuze slot.

3 Use M35 fuze setter or blade end of a M18 fuze wrench to turn setting slot.

4 See firing tables for correct time setting.

Counter-clock wise	*Clockwise*
Shipping and Storage Setting (◄93.5 to 95.5)	1/4 turn
PD setting (◄98.0)	1/4 turn
001 seconds	1/4 turn
200 seconds	20 turns

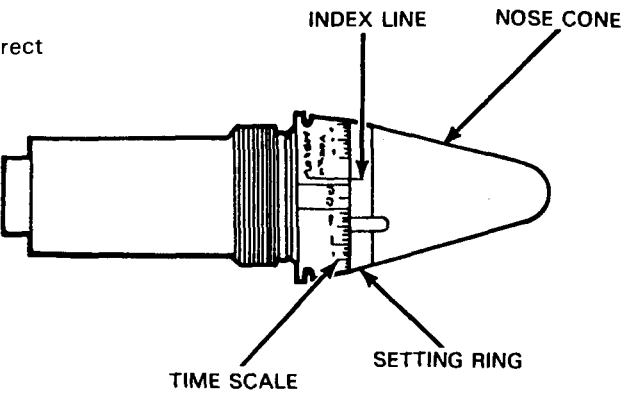
PROCEDURE NO. 6

1 Prox setting.

   a. Rotate setting ring/nose cone assembly (clockwise direction) until index line on setting ring is alined with correct line and number of seconds on time scale.

   b. See firing tables for correct time setting.

2 PD setting. Set fuze for 90 seconds.



4-9. RESETTING FUZES.

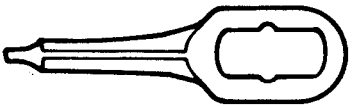
PD M8 Fuze	–Reinstall safety wire.
PD M48A3, M51A5, M521, M557 Fuzes	–Aline fuze interrupter slot with SQ marking on ogive.
MT/MTSQ M562, M565, M548, and M564 Fuzes	–Aline S-line on lower cap with 0-line of vernier scale. Rotate lower cap only in direction of arrow.
MTSQ, M501 and M520 Fuzes	–Aline index line on lower cap of S-line of scale Reinstall safety wire.
MTSQ, M577 Fuze	–Rotate fuze slot (clockwise) until ◄93.5 is showing in window.
VT, M513 and M514 Fuzes	–Aline index line on setting ring with S-line of scale.

4-10. FUZE WRENCH/FUZE SETTERS.

M18 FUZE WRENCH

1 Wrench for assembling fuze to cartridge.

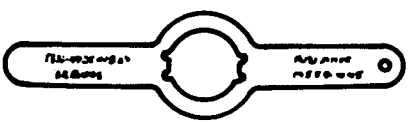
2 Bladed tip on one end for setting PD type fuzes.



M34 FUZE SETTER

1 Spanner wrench-type setter.

2 Sets MT/MTSQ fuzes with double slotted lower caps.



4-10. FUZE WRENCH/FUZE SETTERS (CONT).

M27 FUZE SETTER

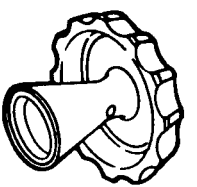
1 T-shaped setter.

2 Sets VT fuzes and MTSQ fuzes with single-slotted lower caps.

M35 FUZE SETTER

1 Flat-tip blade inside cone.

2 Designed to set M577 fuze.



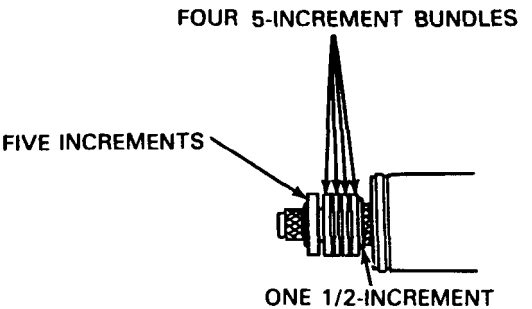
4-11. PROPELLING CHARGES.

M6 PROPELLING CHARGE

Propellant: Sheets

Full charge: 25-4/8 increments (as shown)

Remarks: Each propellant sheet is counted as a 4/8-increment charge. Propellant sheets are sewn together to form increments and 5-increment bundles.



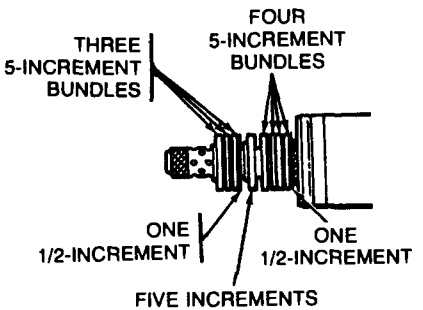
M6

M36 PROPELLING CHARGE

Propellant: Sheets

Full charge: 41 increments (as shown)

Remarks: Each propellant sheet is counted as a 4/8-increment charge. Propellant sheets are sewn together to form increment and 5-increment bundles.



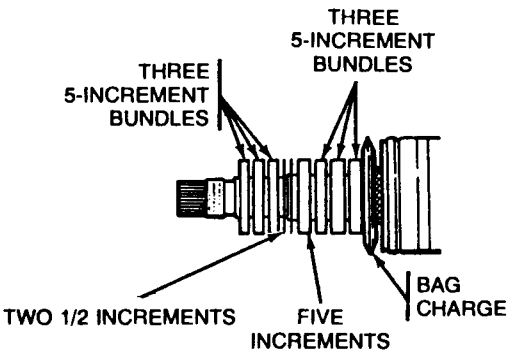
M36

M36A1 PROPELLING CHARGE

Propellant: Sheets and a bag charge

Full charge: 41 increments (as shown)

Remarks: Bag charge is counted as five increments. Each propellant sheet is counted as a 4/8-increment charge. Propellant sheets are sewn together to form increment and 5-increment bundles.



M36A1

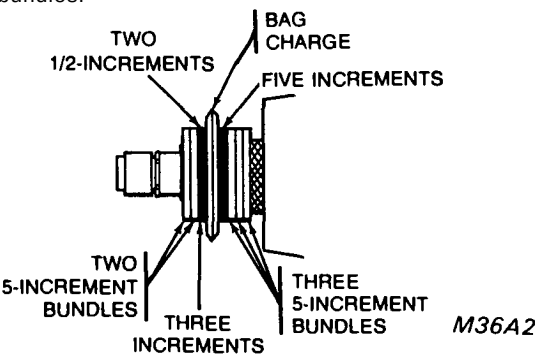
4-11. PROPELLING CHARGES (CONT).

M36A2 PROPELLING CHARGE

Propellant: Sheets and a bag charge

Full charge: 39 increments (as shown)

Remarks: Bag charge is counted as five increments. Each propellant sheet is counted as a 4/8-increment charge. Propellant sheets are sewn together to form increment and 5-increment bundles.



4-12. ADJUSTMENT OF PROPELLING CHARGE.

M36 AND M36A1 PROPELLING CHARGES

WARNING

Cartridge container extension must be used when firing cartridge above 25-4/8.

Cartridge container extension must be removed when firing cartridges below charge 25-4/8.

Use or removal of extension is optional when firing at charge 25-4/8.

4-12. ADJUSTMENT OF PROPELLING CHARGE (CONT).

M36A1 AND M36A2 PROPELLING CHARGES

WARNING

M36A1 propelling charge – bag charge is counted as 5 increments.

M36A2 propelling charge – bag charge is counted as 5 increments.

Do not remove bag charge for adjusting M36A1 and M36A2 propelling charges.

Bag charge must be included in remaining charge for proper ignition.

GENERAL

1 Cartridges are shipped with full charges.

2 Adjust propelling charge by removing propellant increments (5-increment bundles, increments, and half increments) until proper amount of charge is remaining on cartridge.

3 Place excess increments in an empty ammo box for protection. Close lid of box during firing to prevent accidental ignition from burning debris/residue.

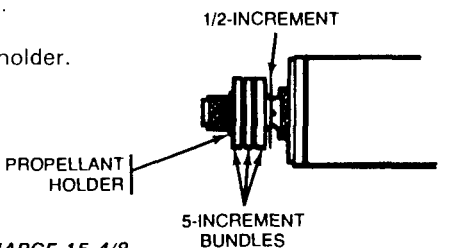
4 Use firing tables to determine proper amount of charge for firing.

M6 PROPELLING CHARGE

1 Remove excess increments from tail assembly.

2 Slide remaining increments toward propellant holder.

EXAMPLE



CHARGE 15-4/8

M36 PROPELLING CHARGE

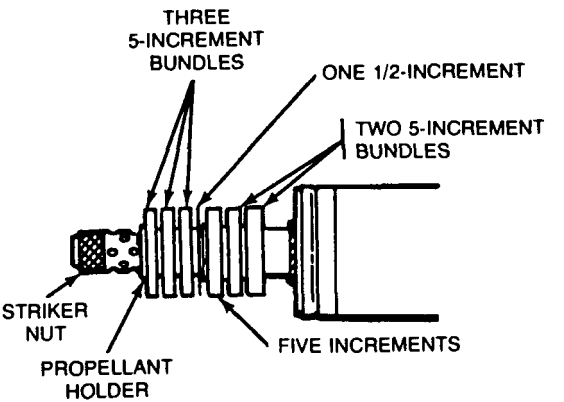
1 Charge 25-4/8 and above.

a. Remove excess increments from cartridge container section of tail assembly.

b. Slide remaining increments toward propellant holder.

c. Handtighten cartridge container extension and striker nut (counterclockwise direction).

EXAMPLE



CHARGE 30-4/8

2 Below charge 25-4/8.

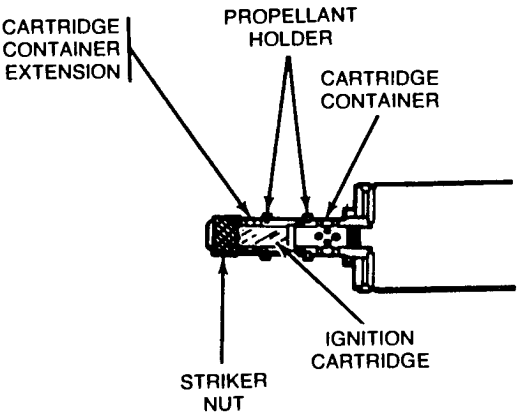
a. Remove striker nut from cartridge container extension. Hold extension while unscrewing nut in clockwise direction (left-hand thread).

b. Remove ignition cartridge from cartridge container extension.

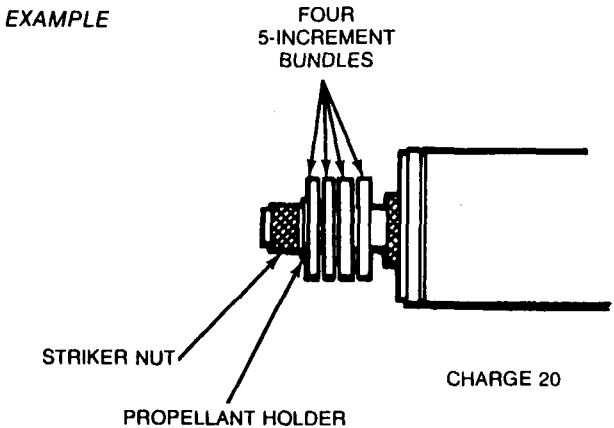
c. Remove cartridge container extension (along with its propellant increments) from cartridge container. Unscrew extension in clockwise direction.

d. Insert ignition cartridge into cartridge container.

e. Assemble striker nut to cartridge container. Screw nut on handtight (in counterclockwise direction).



f. Remove additional propellant increments from cartridge container section to obtain proper charge.



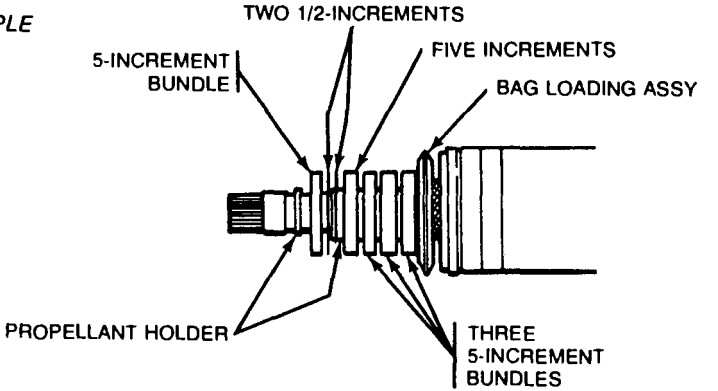
M36A1 PROPELLING CHARGE.

1 Charge 25-4/8 and above.

a. Remove excess increments from striker nut section of tail assembly.

b. Handtighten cartridge container extension and striker nut (counterclockwise direction).

EXAMPLE



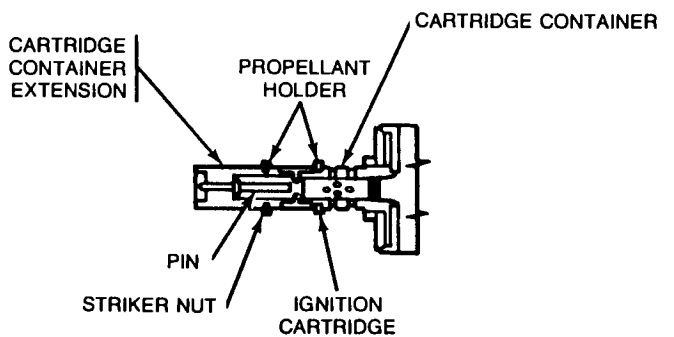
CHARGE 31

2 Below charge 25-4/8.

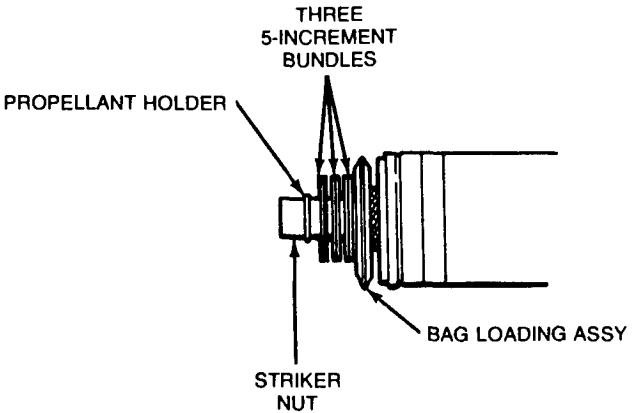
a. Unscrew cartridge container extension from striker nut in clockwise direction.

b. Remove entire set of propellant increments from striker nut section of tail assembly.

EXAMPLE



c. Remove additional propellant increments from cartridge container section to obtain proper charge.

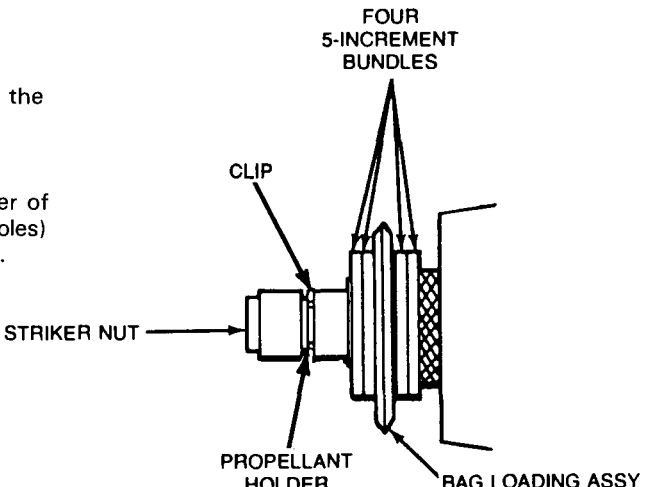


CHARGE 20

M36A2 PROPELLING CHARGE

1 Remove propelling sheets, as equally as possible from both sides of the bag charge, until the proper amount of charge is remaining.

2 Bag charge is located in center of propelling charge (over flash holes) and must not be repositioned.



EXAMPLE

CHARGE 25

CHAPTER 5
FOREIGN AMMUNITION (NATO)

5-1. GENERAL. As a result of recent agreements between the United States (US) and a number of its NATO allies, it is intended to establish the interoperability of many weapon systems and ammunition of the various countries. The goal is to enable the safe and effective firing of major types of ammunition of the same size from the same compatible size and type weapon of the NATO armies (e. g., fire a Netherlands (NL), Belgium (BE), Norway (NO) 4.2 inch (107 mm) mortar from a US 4.2 inch (107mm) Mortar Cannon). Interoperability criteria are now required for many weapons and ammunition items in current development. Determinations are now being made to establish which ammunition is compatible with which weapons. As these are completed, ammunition items will be authorized for use in US weapons manuals. NATO nations will provide similar authorization in their manuals. Only *authorized* NATO ammunition will be used. Those items covered in this paragraph have been authorized. If a munitions item has not yet been authorized, it is because (1) it has not yet been determined to be safe to fire from a US weapon system or (2) it has been determined that the munitions item *cannot be safely* fired from the US weapon system.

5-1. GENERAL (CONT).

WARNING

Do not mix US, NL, or BE components (i.e., cartridge, propelling charge, and fuze). Only fire components from one nation. US and NO are permissible.

5-2. NATO AMMUNITION.

NOTE

The interchange of munitions with NATO nations is for combined training exercise, i.e., US Army troops and NATO nation troops. At the conclusion of any training exercise, muntions drawn from NATO nation troops and not consumed (fired) are to be returned to troops of the NATO nation from whom they were obtained.

a. The following NL munitions are authorized for use in US M30 mortar cannon:

Cartridge	HE, M329A1, M329C1* illuminating, M335C1*
Charge, propelling	M36A1
Fuze:	
Point detonating	M557 or M557C1* (HE ctg)
Mechanical time	NR 151* (illum ctg)
Primer	M2A2
Weapon	M30

*NL manufacture

b. The following BE munitions are authorized for use in US M30 mortar cannon (these munitions are US manufacture):

Cartridge	illuminating, M335A2
Charge, propelling	M36A1
Fuze	Mechanical time, M565, M577 series
Primer	M2A2
Weapon	M30

5-2. NATO AMMUNITION (CONT).

c. The following NO munitions are authorized for use in US M30 mortar cannon:

Cartridge	Illuminating, M335A2
Charge, propelling	M36A1
Fuze	Mechanical time, M565, M577 series
Primer	M2A2
Weapon	M30

NOTE

Preparation for firing NL, BE, and NO munitions in US weapon systems (preparation for firing, precautions during firing, misfire procedures, etc.) are as contained in chapter 2 of this manual.

d. The following US munitions are authorized for use in NL and BE M30 mortar cannon:

Cartridges	HE, M329A1 and illuminating, M335A2
Charge, propelling	M36A1
Fuze:	
Point detonating	M557 (HE ctg)
Mechanical time	M556 (illum ctg), M577 series
Primer	M2A2
Weapon	M30

NOTE

The sustained rate of fire (US, NL, BE, and NO for 4.2 inch (107 mm)) for M30 mortar ammunition is three rounds per minute.

The same firing tables are used by NO and US.

APPENDIX A
REFERENCES

A-1. FIELD MANUALS.

FM 9-207 . . . . . Operation and Maintenance of Ordnance Materiel in Cold Weather (0 to -65° F)
FM 21-11 . . . . . First Aid for Soldiers
FM 23-90 . . . . . Mortars
FM 31-70 . . . . . Basic Cold Weather Manual
FM 31-71 . . . . . Northern Operations

A-2. FIRING TABLES.

FT 4.2-H-2 . . . . . Firing Tables for Mortar, 4.2-inch, M30/Carrier, M107-mm Mortar: M106A1 and M106 Firing Cartridge, HE, M329A1; Cartridge, Smoke, WP M328A1; Cartridge, Tactical CS, XM630; Cartridge, Illuminating, M335A1; and Cartridge, Illuminating, M335A2

FT 4.2-J-1 (ABR) . . . . . Firing Tables for Mortar 4.2-inch M30 Firing Cartridge, illuminating, M335A2, with Fuze, MT, 565, Elevation 900 mils, Height of Burst 400 meters

FT 4.2-K-2 . . . . . Firing Tables for Mortar, 4.2-inch, M30 Firing Cartridge, HE, M329A2

A-3. FORMS.

DA Form 2028 . . . . . Recommended Changes to Publications and Blank Forms

DA Form 2062 . . . . . Preprinted Hand Receipts

DA Form 2404 . . . . . Equipment Inspection and Maintenance Worksheet

DA Form 2408 -4 . . . . . Weapon Record Data

SF 368 . . . . . Product Quality Deficiency Report

A-4. MISCELLANEOUS PUBLICATIONS.

AR 25-30 . . . . . The Army Integrated Publishing and Printing Program

CTA 8-100 . . . . . Army Medical Department Expendable/Durable Item

CTA 50-970 . . . . . Expendable/Durable Items (except: Medical, Class V, Repair Parts and Heraldic Items)

DA PAM 738-750 . . . . . The Army Maintenance Management System (TAMMS) (Maintenance Management Update)

A-5. TECHNICAL MANUALS.

TM 9-1015-215-23&P	Unit and Direct Support Maintenance Manual Including Repair Parts and Special Tools List For 4.2-inch Mortar, M30
TM 9-1015-215-10-HR.	Operator's Manual for 4.2-inch Mortar, M30, Hand Receipt
TM 9-1220-243-12&P	Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools List for Plotting Board, Indirect Fire, M16 W/E (1120-00-601-7941) and M19 W/E (1220-01-059-7989)
TM 9-1300-206	Ammunition and Explosives Standards
TM 9-6920-212-14	Subcaliber Mortar Trainer M32 with 25-mm Training Projectile M379
TM 43-0001 -28	Army Ammunition Data Sheets for Artillery Ammunition: Guns, Howitzers, Mortars, Recoilless Rifles, Grenade Launchers, and Artillery Fuzes (FSC 1310, 1315, 1320, 1390)
TM 43-0139	Painting Instructions for Army Materiel
TM 750-244 -7	Procedures for Destruction of Equipment in Federal Supply Classifications 1000, 1005, 1010, 1015, 1025, 1030, 1055, 1090, and 1095 to Prevent Enemy Use

APPENDIX B
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS

SECTION I. INTRODUCTION

B-1. SCOPE. This appendix lists components of end item and basic issue items for the 4.2-inch mortar to help you inventory items required for safe and efficient operation.

B-2. GENERAL. The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. *Section II. Components of End Item.* This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

B-2. GENERAL (cont).

b. *Section III. Basic Issue Items.* These are the minimum essential items required to place the 4.2-inch mortar in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the 4.2-inch mortar during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

B-3. EXPLANATION OF COLUMNS. The following provides an explanation of columns found in the tabular listings:

a. *Column (1) - Illustration Number (Illus No.).* This column indicates the number of the illustration in which the item is shown.

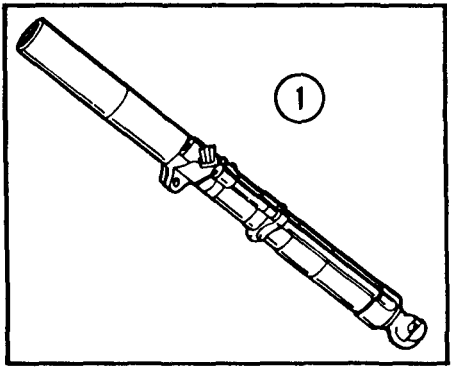
b. *Column (2) - National Stock Number.* Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

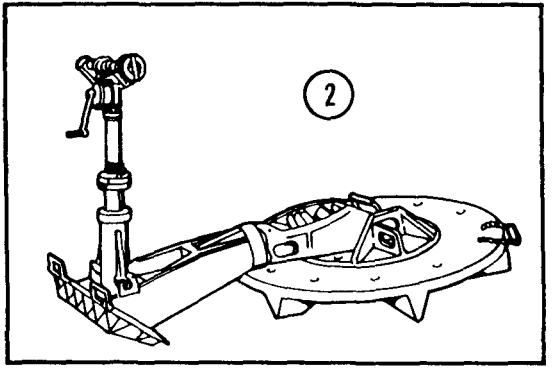
c. *Column (3) - Description.* Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the CAGEC (in parenthesis) followed by the part number.

d. *Column (4) - Unit of Measure (U/M).* Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr).

e. *Column (5) - Quantity required (Qty rqr).* Indicates the quantity of the item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM





(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGEC AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY RQR
1		CANNON, 4.2-INCH MORTAR: M30 (19206) 11577220		EA	1
2		MOUNT, 4.2-INCH MORTAR: M24A1 (19206) 8401603		EA	1

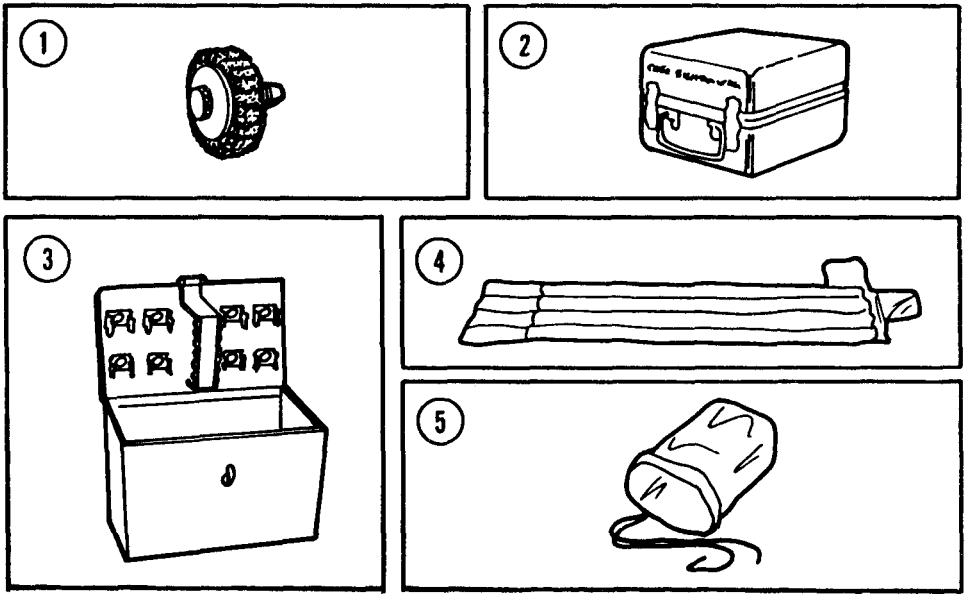
3

TELESCOPE MOUNT M128/M128A1

ELBOW TELESCOPE M109

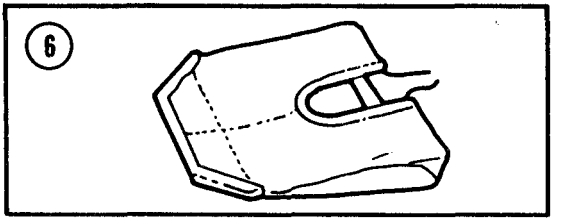
(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGEC AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY RQR
3		SIGHTUNIT M53		EA	1
		(19200) 8245971			
		Consists of:			
	1240-00-823-5613	MOUNT, TELESCOPE M128			
		(19200) (8245970)			
	1240-00-823-5612	TELESCOPE, ELBOW M109			
		(19200) (8588780)			
		OR			
		SIGHTUNIT M53A1		EA	1
		(19200) (10559698)			
		Consists of:			
	1240-00-181-4806	MOUNT, TELESCOPE M128A1			
		(19200) (10559699)			
	1240-00-823-5612	TELESCOPE, ELBOW M109			
		(19200) (8588780)			

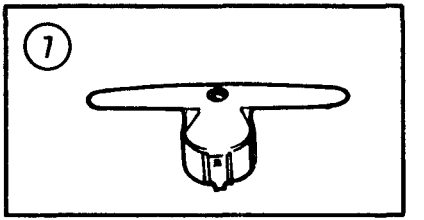
Section III. BASIC ISSUE ITEMS

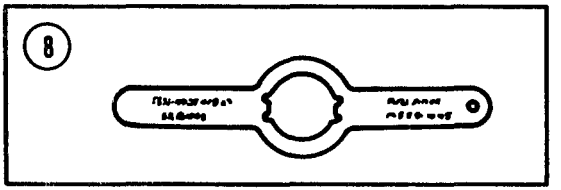


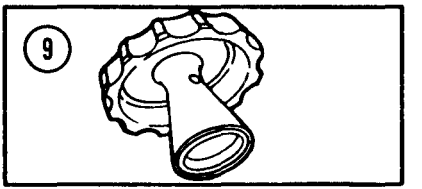
(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGEC AND PART NUMBER USABLE ON CODE	(4) U/M	(5) QTY RQR
1	1015-00-857-0421	BRUSH, CLEANING, ARTILLERY (19206) 8768698	EA	1
2	1240-00-823-5611	CASE, CARRYING, SIGHTUNIT, M166 (19200) 8246041	EA	1
3	1240-00-654-6089	CASE, OPTICAL SPOTTING M14 (19200) 6546089	EA	1
4	1290-00-653-7993	COVER, AIMING POST, M401 (19200) 6537993	EA	1
5	1015-00-830-0254	COVER, GUN MUZZLE: (19206) 8766833	EA	1

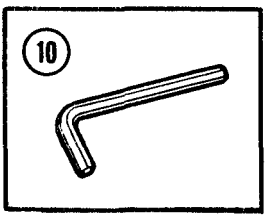
Section III. BASIC ISSUE ITEMS (cont)

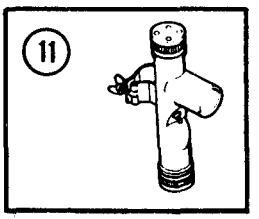


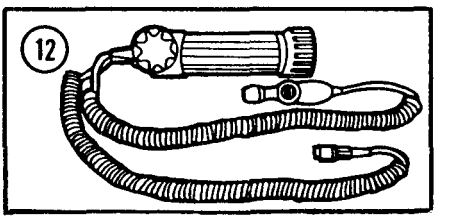












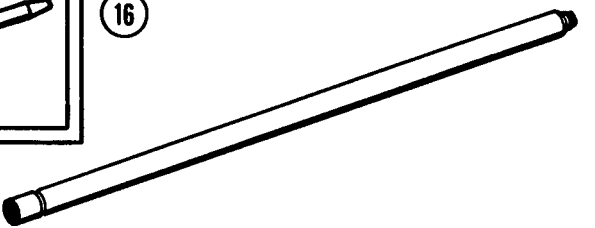
(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGEC AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY RQR
6	1240-00-084-0277	COVER, FIRE CONTROL (19200) 8213198		EA	1
7	1290-00-764-7761	FUZE SETTER, M27 (19200) 7647761		EA	1
8	1290-00-078-4367	FUZE SETTER, M34 (19200) 11747300		EA	1
9	1290-00-201-3507	FUZE SETTER, M35 (19200) 11729019		EA	1
10	5120-00-198-5400	KEY, SOCKET HEAD (81348) GGGK275		EA	1
11	1290-01-148-4821	LIGHT, AIMING POST, M14 (19200) 11785401		EA	2
12	1290-00-089-1876	LIGHT, INSTRUMENT, M53E1 (19200) 10553463		EA	1

13

14

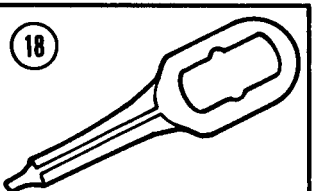
15

16

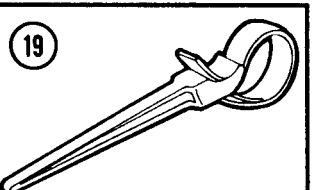


17

18



19



(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGEC AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY RQR
13	1290-00-535-7617	POST, AIMING, M1A2 (19200) 7687114		EA	2
14	5120-00-240-8716	SCREWDRIVER, CROSSTIP (81348) GGG-S-121		EA	1
15	5120-00-278-1269	SCREWDRIVER, FLAT TIP (81348) GGG-S-121		EA	1
16	1015-00-699-0633	STAFF, SECTION, CLEANING, ARTILLERY (19206) 7309259		EA	2
17		TM 9-1015-215-10		EA	1
18	4933-00-723-1161	WRENCH, FUZE, M18 (19206) 7231161		EA	1
19	5120-00-262-8491	WRENCH, PIPE: STRAP STYLE (81348) 5576345		EA	1

APPENDIX C
ADDITIONAL AUTHORIZATION LIST (AAL)

Section I. INTRODUCTION

C-1. SCOPE. This appendix lists additional items you are authorized for the support of the 4.2-inch mortar.

C-2. GENERAL. This list identifies items that do not have to accompany the 4.2-inch mortar and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

C-3. EXPLANATION OF LISTING. National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGEC & PART NUMBER USABLE ON CODE	(3) U/M	(4) QTY AUTH
8105-00-285-4744	BAG, SAND: (81349) MIL-B-1 2233	EA	6
7510-00-889-3494	BINDER, LOOSE LEAF: (81349) MIL-B-43064	EA	1
1240-01-207-5787	BINOCULAR, M22 (19200) 9394727	EA	1
1220-00-602-7941	BOARD, PLOTTING M 16 (19200) 8270330	EA	1
1240-00-152-3512	BORESIGHT, M45A1 (19200) 10549221	EA	1
1290-00-930-4260	COMPASS, MAGNETIC, M2 (19200) 10547166	EA	1
4930-00-537-8977	OILER, HAND (96906) MS15766-1	EA	1

Section II. ADDITIONAL AUTHORIZATION LIST (cont)

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGEC & PART NUMBER USABLE ON CODE	(3) U/M	(4) QTY AUTH
5120-00-180-0728	SCREWDRIVER, JEWELER'S, SWIVEL KNOB (81346) GGG-S-1808	EA	1
5340-00-034-4842	STRAP, TIE DOWN (19207) 10890786	EA	1
2540-00-052-9481	STRAP, WEBBING (19207) 8690467	EA	1
6675-00-240-1881	TRIPOD, SURVEYING (for arctic use only) (81349) MIL-T-11674	EA	1

APPENDIX D
EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. SCOPE. This appendix lists expendable/durable supplies and materials you will need to operate and maintain the 4.2-inch mortar. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic kerns), or CTA 8-100, Army Medical Department Expendable/Durable Items.

D-2. EXPLANATION OF COLUMNS.

a. *Column 1- Item Number.* This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound (item 8, app D)").

D-2. EXPLANATION OF COLUMNS (cont).

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

C-Operator/Crew

c. *Column 3- National Stock Number.* This is the National Stock Number 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 has the Commercial and Government Entity Code (CAGEC) in parenthesis followed by the part number.

e. *Column 5- Unit of Measure (U/M).* Indicates the measure used in performing the actual maintenance function. 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, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	C	6810-00-201-0906	ALCOHOL, DENATURED (81348) OE-760	PT
2	C	6135-00-835-7210	BATTERY, DRY 3030/U (81384) MIL-B-49030	EA
3	C	7920-00-205-2401	BRUSH, CLEANING TOOL AND PARTS: Chinese bristle, rd (81349) MIL-S-43871	EA
4	C	8020-00-242-7266	BRUSH, PAINT: 3 in. size (96906) MS16866	EA
5			CLEANING COMPOUND, OPTICAL LENS: liquid (81349) MIL-C-43454	
	C	6850-00-227-1887	1 qt bottle	QT
	C	6850-00-392-9751	2 oz bottle	OZ

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (cont)

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
6	C	6850-00-224-6657	CLEANING COMPOUND, RIFLE BORE (RBC): solution type (81349) MIL-C-372 8 oz can	OZ
7	C	5350-00-221-0872	CLOTH, ABRASIVE: crocus (81348) PC-458 50 sheet package	SH
8	C	8010-01-229-7546	COATING, POLYURETHANE (81349) MIL-C-53039 1 qt can	QT
9	C	6850-00-281-1985	DRY CLEANING SOLVENT (SD) (81348) P-D-680 1 gal. can	GL
10	C	8415-00-823-7457	GLOVES, CHEMICAL AND SOLVENT RESISTANT (81348) ZZ-G-381	PR

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
11	C	9150-01-197-7689	GREASE, AUTOMOTIVE AND ARTILLERY (GAA) (81349) MIL-G-10924 6.5 lb can	LB
12	C	6240-00-635-9800	LAMP, INCANDESCENT (96906) MS51608-3	EA
13	C	9150-00-231-2361	LUBRICATING OIL, GENERAL PURPOSE (81349) MIL-L-3150	QT
14	C	9150-00-292-9681	LUBRICATING OIL, WEAPONS (LAW) (81349) MIL-L-14107 1 qt can	QT
15	C	8010-01-229-7540	PAINT, BLACK (CARC) (81349) MIL-C-53039	KT
16	C	8010-01-229-7546	PAINT GREEN (CARC) (81349) MIL-C-53039	KT

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (cont)

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
17	C	6640-00-663-0832	PAPER, LENS: tissue, sheet form (81348) NNNP40	EA
18	C	8010-01-193-0516	PRIMER, COATING (CARC) (81349) MIL-P-53022	KT
19	C	7920-00-205-1711	RAG, WIPING (58536) A-A-531 50 lb bale	LB
20	C	8010-00-181-8080	THINNER, SYNTHETIC (81349) MIL-T-81772 1 gal. can	GL

ALPHABETICAL INDEX

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ALPHABETICAL INDEX (cont)

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ALPHABETICAL INDEX (cont)

N

O

ALPHABETICAL INDEX (cont)

P

R

S

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U

W

By Order of the Secretary of the Army:

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

Official:

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army

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