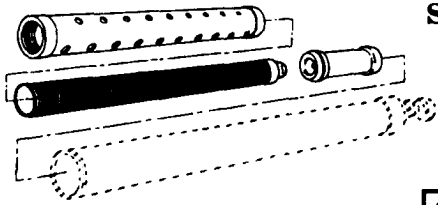


TM 9-1015-254-13&P

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE MANUAL WITH REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) FOR MORTAR, SUBCALIBER INSERT: M303 (1015-01-377-4824) (EIC: 4SR)

See back cover for distribution and destruction information.

HEADQUARTERS
DEPARTMENT OF THE ARMY

March 1994

WARNING

When installing subcaliber insert, ensure that fingers are clear of the cannon tube lip.

At anytime during the misfire procedure, if smoke is seen coming from the cannon and/or a hissing sound is heard coming from the cannon, the crew will move 100 meters to the rear of the mortar. The crew must notify the range safety officer/local range control and follow local Standard Operating Procedures (SOP). Do not approach the weapon until the cartridge has completely functioned.

At no time shall any part of the gunner's head and body be placed in front of the muzzle of the cannon.

Do not stand directly behind the cannon.

Do not insert hand into cannon to remove a stuck cartridge.

Do not reposition the hands and do not place fingers in the insert sleeve holes.

WARNING

Use extreme care when handling loaded subcaliber insert.

Hearing protection is required during firing.

Use care to avoid double loading.

Dry cleaning solvent is flammable. Do not use near an open flame or in a smoking area.

Keep live ammunition out of area and ensure barrel is empty before maintenance is done.

Only authorized 81mm cartridges may be fired from the M303 subcaliber insert.

The authorized cartridges include:

M374A2, M374A3 - High Explosive
M375A2, M375A3 - Smoke
M301A3 - Illuminating
M880 - Short Range Practice Cartridge

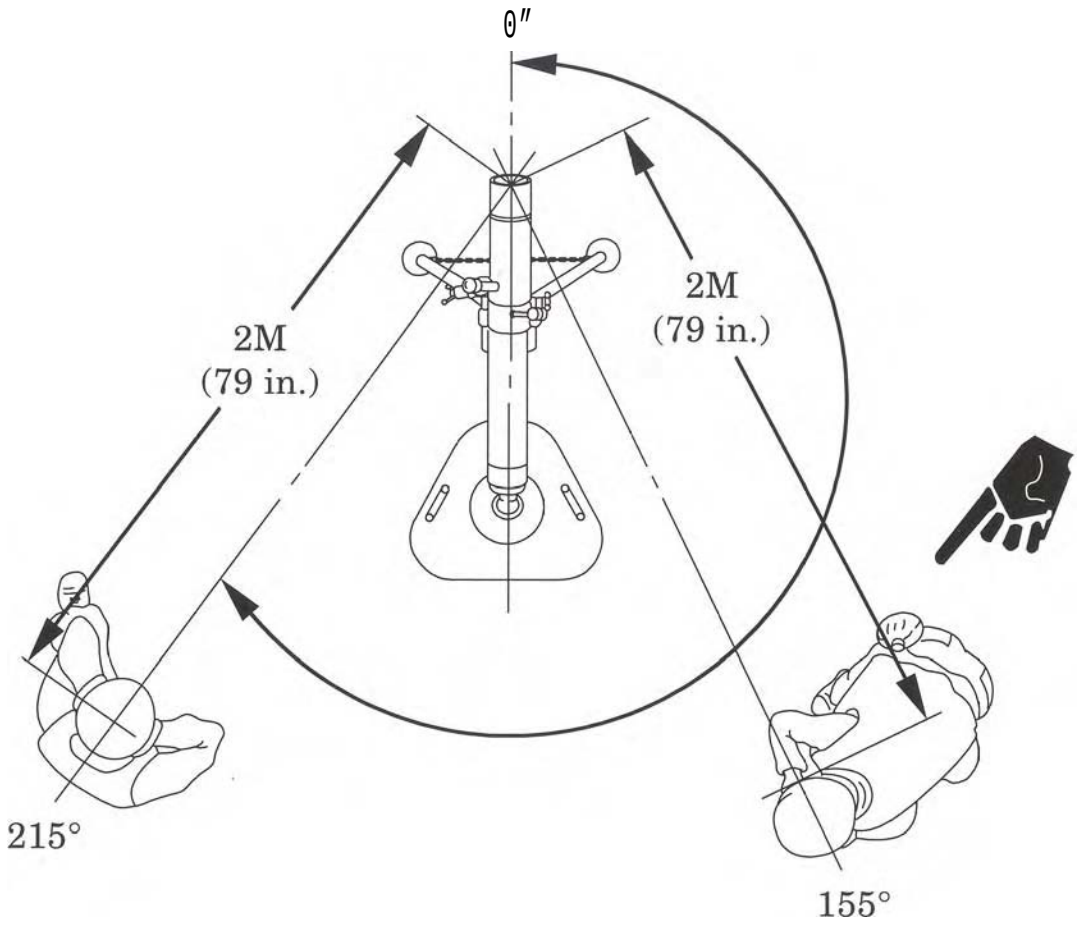
WARNING

Current 800 series 81mm cartridges are not authorized for use with the M303 subcaliber insert. (The M880 Short Range Practice Cartridge is not included in this restriction.) The current 800 series cartridges produce pressures which exceed the capability of the cannon tube portion of the M303 Mortar, Subcaliber Insert.

The M84A1 time fuze on the M301A3 illuminating cartridge will function if the M303 subcaliber insert is lifted more than 6 in. (15 cm) prior to being released. This can cause severe injuries to the crew and/or weapon damage.

When handling a hot M29A1 cannon assembly or hot insert sleeve, leather gloves should be worn.

WARNING



LIST OF EFFECTIVE PAGES

Dates of issue for original and changed pages are:

Original	0	2 March 1994
Change	1	8 February 1995
Change	2	5 July 1999
Change	3	1 August 2001

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DEPARTMENT OF THE ARMY
WASHINGTON D.C., *1 August 2001*

CHANGE
No. 3

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE MANUAL WITH REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) FOR MORTAR, SUBCALIBER INSERT: M303 (1015-01-377-4824) (EIC:4SR)

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A through D	A through D
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v and vi	v through vii/(viii blank)
1-3 and 1-4	1-3 and 1-4
2-36.3 and 2-36.4	2-36.3 and 2-36.4
2-36.13 through 2-38	2-36.13 through 2-38
None	6-7 and 6-8

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B-9 through B-11/(B-12 blank)	B-9 through B-12
C-3-1	C-3-1 through C-4-1
F-3 and F-4	F-3 and F-4
Back Cover	Back Cover

By Order of the Secretary of the Army

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army

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i through iv	i through iv
1-3 and 1-4	1-3 and 1-4
2-31 through 2-36	2-31 through 2-36
None	2-36.1 through 2-36.14
2-37 and 2-38	2-37 and 2-38
Back Cover	Back Cover

By Order of the Secretary of the Army

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:

JOEL B. HUDSON
Administrative Assistant to the
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OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE MANUAL WITH REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) FOR MORTAR, SUBCALIBER INSERT: M303 (1015-01-377-4824)

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iii thru vi	iii thru vi
1-7 and 1-8	1-7 and 1-8
2-17 and 2-18	2-17 and 2-18
2-23 and 2-24	2-23 and 2-24
2-27 thru 2-30	2-27 thru 2-30
None	2-43/(2-44 blank)
3-7 and 3-8	3-7 and 3-8
D-5 thru D-9/(D-10 blank)	D-5 thru D-9/(D-10 blank)
F-5/(F-6 blank)	F-5/(F-6 blank)
None	G-1 thru G-7/(G-8 blank)

4. File this sheet in the back of the manual for reference purposes.

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

Official:

MILTON H. HAMILTON
Administrative Assistant to the
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06041

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TECHNICAL MANUAL

NO. 1015-254-13&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D.C., 2 March 1994

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE MANUAL WITH REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) FOR MORTAR, SUBCALIBER INSERT: M303 (1015-01-377-4824) (EIC: 4SR)

Current as of 15 November 1993 for Appendix C

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028 (Recommended Changes to Publications and Blank Forms), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is http://aeps.ria.army.mil. If you need a password, scroll down and click on "ACCESS REQUEST FORM". The DA Form 2028 is located in the ONLINE FORMS PROCESSING section of the AEPS. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax, or email your letter or DA Form 2028 direct to: AMSTA-LC-CI / TECH PUBS, TACOM-RI, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The email address is TACOM-TECH-PUBS@ria.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

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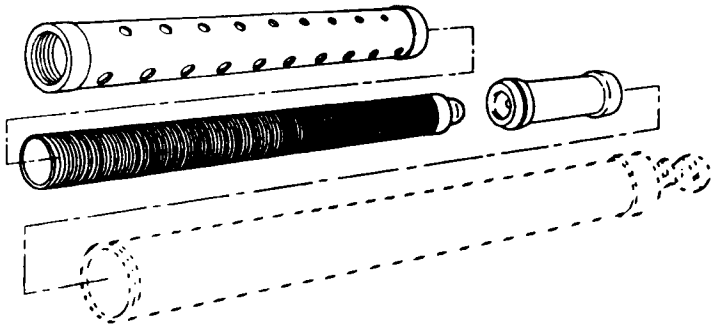
INTRODUCTION

Section I. GENERAL INFORMATION



Mortar, Subcaliber Insert

SCOPE.

Type of Manual. Operator's, unit, and direct support maintenance manual.

Equipment Name and Model Number. Mortar, Subcaliber Insert: M303.

Consists of:

M29A1 Cannon Assembly
Insert Sleeve
Filler Block

Purpose of Equipment. The subcaliber insert makes it possible to use 81mm ammunition while training troops in the use of M120/M121 120mm mortar.

MAINTENANCE FORMS AND PROCEDURES.

a. 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)) as contained in the Maintenance Management UPDATE.

b. Accidents involving injury to personnel or damage to materiel will be reported on DA Form 285 (Accident Report) in accordance with AR 385-40. Explosives and ammunition malfunctions will be reported in accordance with AR 75-1.

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, plastic, and felt. 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 assure that the information is identified as a CPC problem.

d. The form should be submitted to: Commander, U.S. Army Armament Research, Development and Engineering Center, ATTN: AMSTA-AR-QAW-A (R)/Customer Feedback Center, Rock Island, IL 61299-7300 (FAX: DSN 793-6653, Commercial (309) 782-6653) (E-Mail: qawqdrs@ria.army.mil).

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.
Procedures and materials used for the destruction of the subcaliber insert in order to prevent enemy use will be found in TM 750-244-7.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs).
If your subcaliber insert 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, U.S. Army Armament Research, Development and Engineering Center, ATTN: AMSTA-AR-QAW-A(R)/ Customer Feedback Center, Rock Island, IL 61299-7300 (FAX: DSN 793-6653, Commercial (309) 782-6653) (E-Mail: qawqdrs@ria.army.mil). We will send you a reply.

Section II. EQUIPMENT DESCRIPTION

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

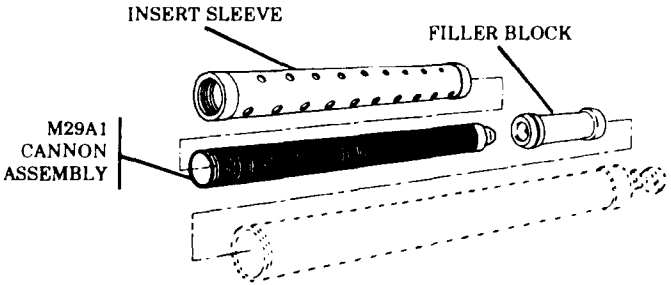
Characteristics.

Provides 120mm mortar systems realistic live fire training using 81mm insert.

Capabilities and Features.

Provides a high angle of fire.
Is portable in a container.
Smooth bore barrel is muzzle loaded.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.



M29A1 CANNON ASSEMBLY. Smooth bore barrel for the firing of approved 81mm ammunition.

INSERT SLEEVE. Centers the 81mm cannon tube in the 120mm cannon tube.

FILLER BLOCK. Provides a firing platform for the 81mm cannon tube when inserted in 120mm cannon tube for training use.

EQUIPMENT DATA.

PHYSICAL CHARACTERISTICS

M29A1 Cannon Assembly
- Weight ..... 28.0 lb (12.7 kg)
- Length ..... 51.0 in. (129.5 cm)

Insert Sleeve
- Weight ..... 5.9 lb (2.7 kg)
- Length ..... 42.1 in. (106.9 cm)

Filler Block
- Weight ..... 17.0 lb (7.7 kg)
- Length ..... 15.9 in. (40.4 cm)

RATE OF FIRE

300 series cartridges

The maximum and sustained rates of fire for M303 Insert should not exceed 15 rounds for the first minute and 3 rounds per minute thereafter.

M880 training cartridge ..... No restriction

Section III. PRINCIPLES OF OPERATION

1 With 120mm cannon's fire selector on SAFE, filler block is lowered down bore using filler block adapter.

2 Insert sleeve is assembled onto M29A1 cannon assembly and secured with set-screws.

3 Subcaliber device is placed into bore, resting on filler block.

4 Training system is utilized in same way as other mortars.

CHAPTER 2
OPERATING INSTRUCTIONS

Section I. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

GENERAL. Table 2-1 (PMCS Table) has been provided so you can keep your subcaliber insert in good operating condition and ready for its primary mission.

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 prevent your subcaliber insert from being damaged.

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.

EXPLANATION OF TABLE ENTRIES (Cont).

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 subcaliber insert 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, Item to 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 Item to Check/Service column to know if the subcaliber insert 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 subcaliber insert 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.

Table 2-1. Operator Preventive Maintenance Checks and Services for Mortar, Subcaliber Insert

Item No.	Interval	Location / Item to Check/Service	Procedure	Not Fully Mission Capable if:
		FORMS		
1	Before	DA Form 2408-4	Check to see if your weapon has been borescoped and pullover gaged within the past 180 days.	Weapon has not been borescoped and pullover gaged within the past 180 days.
		M120/M121 MORTAR		
2	Before	Mortar	Check for cracks, broken welds, rust, and missing or damaged parts.	Mortar has cracks, broken welds, missing or damaged parts.

Table 2-1. Operator Preventive Maintenance Checks and Services for Mortar, Subcaliber Insert (Cont)

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable if:
		M29A1 CANNON ASSEMBLY		
3	Before	Barrel	Check for foreign matter in barrel and wipe dry. Clean and lubricate exterior surface.	

Table 2-1. Operator Preventive Maintenance Checks and Services for Mortar, Subcaliber Insert (Cont)

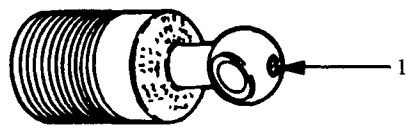
Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable if:
		M29A1 CANNON ASSEMBLY (CONT)		
4	Before	Barrel	Check for bulges, dents, and visible cracks. Check for evidence of gas leakage around firing pin (1) (discoloration).	Barrel is bulged, dented, visibly cracked, or shows evidence of gas leakage around firing pin (discoloration).

Table 2-1. Operator Preventive Maintenance Checks and Services for Mortar, Subcaliber Insert (Cont)

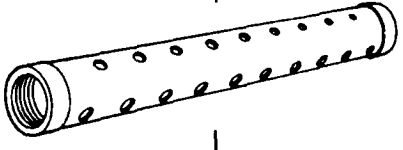
Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable if:
		INSERT SLEEVE		
5	Before	Insert Sleeve	 Check for cracks, broken welds, rust, and missing or damaged parts.	Insert sleeve has cracks, broken welds, rust, missing or damaged parts.

Table 2-1. Operator Preventive Maintenance Checks and Services for Mortar, Subcaliber Insert (Cont)

Item No.	Interval	Location / Item to Check/Service	Procedure	Not Fully Mission Capable if:
		INSERT SLEEVE (CONT)		
6	Before	Insert Sleeve	Check that insert sleeve assembles onto cannon assembly, can be secured with setscrews, and is free of any nicks or burrs.	Insert sleeve cannot be assembled or secured, or has nicks or burrs.

Table 2-1. Operator Preventive Maintenance Checks and Services for Mortar, Subcaliber Insert (Cont)

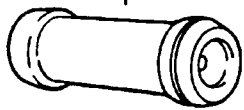
Item No.	Interval	Location / Item to Check/Service	Procedure	Not Fully Mission Capable if:
		FILLER BLOCK		
7	Before	Filler Block	 Check for cracks, broken welds, rust, nicks, burrs, and damaged threads.	Filler block has cracks, broken welds, rust, nicks, burrs, or damaged threads.

Table 2-1. Operator Preventive Maintenance Checks and Services for Mortar, Subcaliber Insert (Cont)

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable if:
		FILLER BLOCK (CONT)		
8	Before	Filler Block	Check that filler block fits with breech plug of M29A1 cannon, seats in base of 120mm bore, and can be emplaced/retrieved using adapter tool.	Filler block does not fit or seat, or cannot be emplaced/ retrieved using adapter tool.

Table 2-1. Operator Preventive Maintenance Checks and Services for Mortar, Subcaliber Insert (Cont)

Item No.	Interval	Location / Item to Check/Service	Procedure	Not Fully Mission Capable if:
		BASIC ISSUE ITEMS		
9	Before	Staff Assembly with Adapter	a. Check that staff assembly extends fully and locks.	Staff assembly does not extend fully or lock properly.
			b. Check that staff assembly fits and secures adapter.	Staff assembly does not fit or secure adapter.
			c. Check for damaged threads on adapter.	Adapter has damaged threads.

Table 2-1. Operator Preventive Maintenance Checks and Services for Mortar, Subcaliber Insert (Cont)

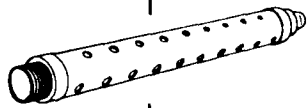
Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable if:
		M29A1 CANNON ASSEMBLY/INSERT SLEEVE		
10	During	Barrel with Insert Sleeve	Disassemble every 50 rounds (approximately) and check for bulges, dents, and visible cracks. Check for evidence of gas leakage around firing pin (1) (discoloration).	Barrel is bulged, dented, visibly cracked, or shows evidence of gas leakage around firing pin (discoloration).

Table 2-1. Operator Preventive Maintenance Checks and Services for Mortar, Subcaliber Insert (Cont)

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable if:
		M29A1 CANNON ASSEMBLY		
11	During	Barrel	Dry swab barrel bore after the firing of every ten rounds (approximately) or at end of fire mission.	Barrel bore has not been dry swabbed.
		FORMS		
12	After	DA Form 2408-4	Update DA Form 2408-4 to reflect day's firing.	After 5000 rounds fired, weapon has not been borescoped every 500 additional rounds.

Table 2-1. Operator Preventive Maintenance Checks and Services for Mortar, Subcaliber Insert (Cont)

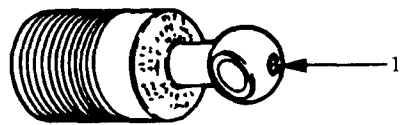
Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable if:
		M29A1 CANNON ASSEMBLY		
13	After	Barrel	Check for bulges, dents, and visible cracks. Check for evidence of gas leakage around firing pin (1) (discoloration).	Barrel is bulged, dented, visibly cracked, or shows evidence of gas leakage around firing pin (discoloration).

Table 2-1. Operator Preventive Maintenance Checks and Services for Mortar, Subcaliber Insert (Cont)

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable if:
		M29A1 CANNON ASSEMBLY (CONT)		
14	After	Barrel	Use rifle bore cleaning compound (RBC) (item 2, appx F) to thoroughly clean barrel bore after firing and two consecutive days thereafter.	
		NOTE **For nonfiring periods, barrel is cleaned and lubricated on a weekly basis.**		

Table 2-1. Operator Preventive Maintenance Checks and Services for Mortar, Subcaliber Insert (Cont)

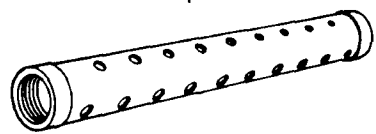
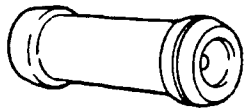
Item No.	Interval	Location / Item to Check/Service	Procedure	Not Fully Mission Capable if:
15	After	**INSERT SLEEVE** Insert Sleeve	 Check for cracks, broken welds, rust, and missing or damaged parts.	Insert sleeve has cracks, broken welds, rust, missing or damaged parts.

Table 2-1. Operator Preventive Maintenance Checks and Services for Mortar, Subcaliber Insert (Cont)

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable if:
16	After	**FILLER BLOCK** Filler Block	 Check for cracks, broken welds, rust, nicks, burrs, and damaged threads.	Filler block has cracks, broken welds, rust, nicks, burrs, or damaged threads.

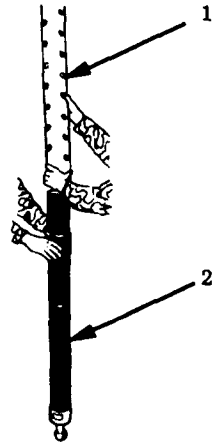
Section II. OPERATION UNDER USUAL CONDITIONS

INSTALLATION OF SUBCALIBER INSERT IN 120MM MORTAR ON THE GROUND.

NOTE

Ensure that 120mm mortar is at lowest elevation.

1 To attach the insert sleeve (1) to the M29A1 cannon assembly (2), the gunner stabilizes the M29A1 cannon assembly while the assistant gunner slides the insert sleeve over the barrel until the internal threads on the upper sleeve ring match the threads on the barrel. When the threads match, the assistant gunner screws the insert sleeve onto the barrel until the bottom sleeve ring is flush with the smooth portion of the barrel, leaving approximately 4 in. (10 cm) of the muzzle end of the barrel showing.



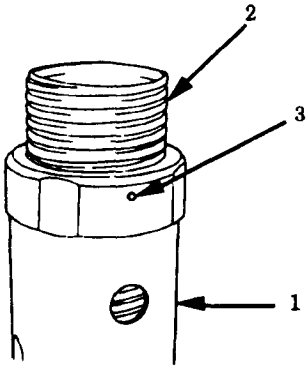
INSTALLATION OF SUBCALIBER INSERT IN 120MM MORTAR ON THE GROUND (Cont).

2 Prior to insertion of the subcaliber insert, assistant gunner dry swabs the bore of the 120mm cannon tube.

CAUTION

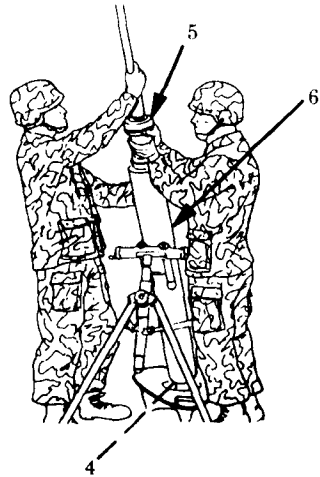
To avoid damage to the 120mm cannon tube, ensure that setscrews are properly tightened and are below the surface of the upper sleeve ring.

3 The assistant gunner aligns two setscrews (3) between the threads on the M29A1 cannon assembly (2) and tightens the setscrews with 0.0625 in. socket head key to secure the insert sleeve (1) to the M29A1 cannon assembly.



4 The gunner places the safety mechanism (4) on the 120mm mortar on SAFE (S).

5 The assistant gunner assembles the filler block adapter (item 1, appx D) to the 120mm artillery cleaning staff assembly (extended using only 2 sections). While the filler block is standing upright on the ground, the assistant gunner carefully threads the filler block adapter into the filler block just enough to support the filler block. The assistant gunner, assisted by the gunner, places the filler block (5) into the muzzle of the 120mm cannon bore (6). The filler block is lowered to the base of the 120mm cannon bore. Assistant gunner unscrews the adapter and removes the staff assembly from the cannon bore.

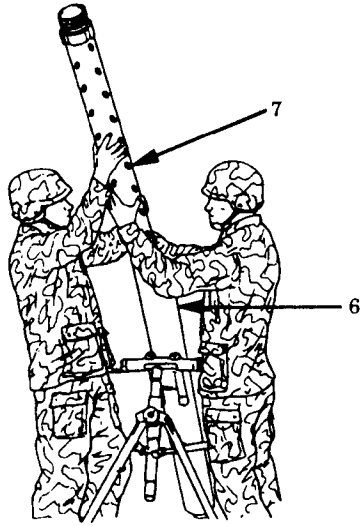


WARNING

During installation of subcaliber insert, ensure that fingers are clear of cannon tube lip and sleeve vent holes.

6 Grasping the base end of the subcaliber insert (7) and aligning it with the 120mm cannon bore (6), the gunner and assistant gunner carefully slide the subcaliber insert into the 120mm cannon bore until it rests on the filler block.

7 The gunner installs sight unit, levels the mortar, and awaits a fire mission.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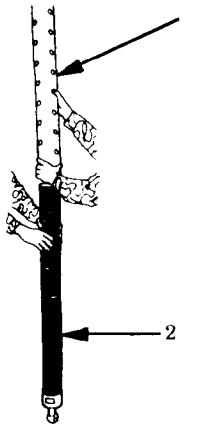
6

INSTALLATION OF SUBCALIBER INSERT IN 120MM MORTAR ON M1064 CARRIER.

NOTE

- **Blast Attenuator Device (BAD) is not used when using the subcaliber insert.**
- **Ensure that 120mm mortar is in LOW RANGE, at lowest elevation.**



1 To attach the insert sleeve (1) to the M29A1 cannon assembly (2), the gunner stabilizes the M29A1 cannon assembly while the assistant gunner slides the insert sleeve over the barrel until the internal threads on the upper sleeve ring match the threads on the barrel. When the threads match, the assistant gunner screws the insert sleeve onto the barrel until the bottom sleeve ring is

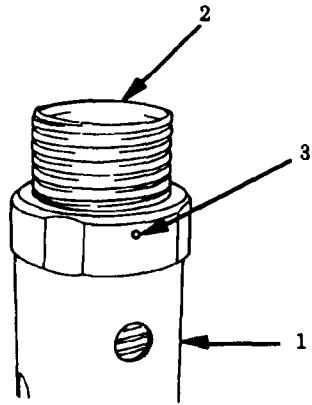
flush with the smooth portion of the barrel, leaving approximately 4 in. (10 cm) of the muzzle end of the barrel showing.

2 Prior to insertion of the subcaliber insert, assistant gunner dry swabs the bore of the 120mm cannon tube.

CAUTION

To avoid damage to the 120mm cannon tube, ensure that setscrews are properly tightened and are below the surface of the upper sleeve ring.

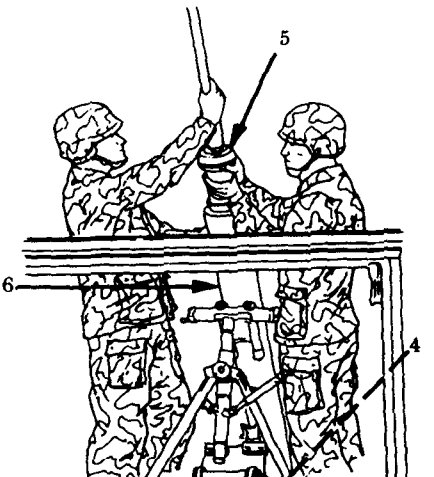
3 The assistant gunner aligns two setscrews (3) between the threads on the M29A1 cannon assembly (2). Tighten the setscrews with 0.0625 in. socket head key to secure the insert sleeve (1) to the M29A1 cannon assembly.



4 Assistant gunner places subcaliber insert inside carrier.

5 The gunner mounts the carrier and places the safety mechanism (4) on the 120mm mortar on SAFE (S).

6 The assistant gunner assembles the filler block adapter (item 1, appx D) to the 120mm artillery cleaning staff assembly (extended using only 2 sections). While the filler block is standing upright on the floor, the assistant gunner carefully threads the filler block adapter into the filler block just enough to support the filler block. The assistant gunner, assisted by the gunner, places the filler block (5) into



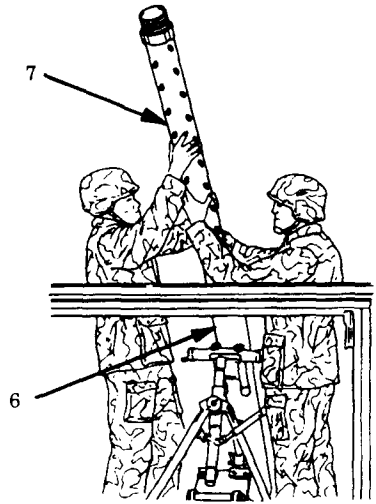
the muzzle of the 120mm cannon bore (6). The filler block is lowered to the base of the 120mm cannon bore. Assistant gunner unscrews the adapter and removes the staff assembly from the cannon bore.

WARNING

During installation of subcaliber insert, ensure that fingers are clear of cannon tube lip and sleeve vent holes.

7 Grasping the base end of the subcaliber insert (7) and aligning it with the 120-mm cannon bore (6), the gunner and assistant gunner carefully slide the subcaliber insert into the 120mm cannon bore until it rests on the filler block.

8 The gunner installs sight unit with extension, levels the mortar, and awaits a fire mission.



BEFORE FIRING CHECKS.

1 Check that all checks and services for 120mm mortar system have been performed.

2 Check that 120mm cannon bore and insert sleeve were wiped clean prior to assembly, with setscrews below flush and secure.

3 Check that subcaliber device and filler block have mated correctly and are seated in base of 120mm cannon.

4 Check that firing site has enough mask clearance and no overhead obstructions.

5 Check that only authorized ammunition will be fired. Check that each round is clean, that the safety pin is present, and that the ignition cartridge is in good condition.

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 left the mortar tube before a new round is dropped in.

- Upon releasing cartridge, pass hands downward and, at the same time, bend at the waist and turn away from muzzle of mortar cannon to avoid blast which occurs when cartridge fires.

- Do not try to force a cartridge down mortar cannon.

- Dented barrels must be replaced, as they are unsafe for firing.

- In case of misfire, refer to misfire procedures on page 2-31.

- Mortar crew is required to use single hearing protection during firing.

WARNING (Cont)

- **ALLOWABLE NUMBER OF ROUNDS PER DAY (ANOR)**
  To reduce hazards from blast overpressure during firing, the mortar crew is required to use hearing protection. Using the preferred head positions and single hearing protection, the ANOR that can be fired each day from the mortar insert when carrier mounted and when ground mounted are noted below.

Cartridge	Charge	Carrier Mtd	Charge	Ground Mtd*
M880	at 3 and below	no limit	at 3 and below	no limit
M301A1	at 5 and below	19	at 8 and below	289
M374A2	at 7 and below	29	at 9 and below	354
M374A3	at 2 and below	47	at 4 and below	24
M375A2	at 7 and below	29	at 9 and below	354
M375A3	at 2 and below	47	at 4 and below	24

*** Head positions during firing must be below and to the rear of the muzzle. Distance from muzzle to head position must be two meters or more.**

To minimize blast pressure when firing, the 120mm mortar crew members should observe the preferred head locations noted below. During firing, crew members should never be in front of the mortar.

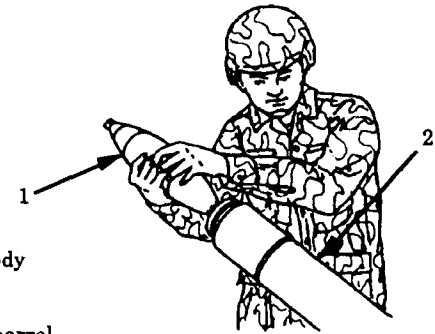
PREFERRED HEAD LOCATIONS-CARRIER MOUNT
The head locations are defined relative to the direction of fire of the mortar.
Gunner. The preferred head location is 31 cm left and 31 cm downrange of the breechcap socket and no higher than 90 cm above the turntable.
Assistant Gunner. The head location should be 31 cm right and 31 cm downrange of the breechcap socket and no higher than 125 cm above the turntable.
Ammunition Handler. The head location is 80 cm behind breechcap socket and under the carrier roof.
Squad Leader. The head location is in the center of carrier commander's hatch and no higher than 32 cm above the carrier roof.

WARNING (Cont)

PREFERRED HEAD LOCATIONS-GROUND MOUNT
All Crew Members. The head location for all crew members when firing from the ground mode is greater than 2 meters from the muzzle and lower than 1.2 meters to the ground.

NOTE

- **Dry swab the bore of the 81mm cannon before firing and after every ten rounds (approximately) fired or after each fire mission (assistant gunner).**
- **Check setscrews for tightness (assistant gunner) every 30 rounds fired.**
- **During nonfiring periods, protect muzzle with 120mm cannon tube cover.**



1 Hold cartridge (1) near center of body with both hands.

2 Insert fin-end of cartridge (1) into barrel (2).

3 Release cartridge (1). Assume proper position before cartridge slides down barrel (2), strikes firing pin, and fires.

4 After firing has been completed for the day, enter the cartridges fired on DA Form 2408-4 (no entry is necessary in columns e, g, and h).

MISFIRE PROCEDURES FOR CARRIER M121.

WARNING

At anytime during the misfire procedure, if smoke is seen coming from the cannon and/or a hissing sound is heard coming from the cannon, the crew will move 100 meters to the rear of the mortar. The crew must notify the range safety officer/local range control and follow local SOP. Do not approach the weapon until the cartridge has completely functioned.

1 When a misfire occurs, any member of the squad who notices the misfire immediately announces "MISFIRE."

2 All personnel, except the gunner, move 100 meters to the rear of the mortar. Personnel will exit through the cargo hatches and climb over the front of the carrier. The gunner stands to the left and vigorously kicks the cannon several times with the heel of his boot to attempt to dislodge the cartridge. If the cartridge fires, swab the bore to remove any debris that may have caused the misfire, relay the mortar, and continue fire mission.

MISFIRE PROCEDURES FOR CARRIER M121 (Cont).

3 If the cartridge fails to fire, the gunner dismounts by climbing over the front of the carrier, joins the mortar crew, and waits 5 minutes.

WARNING

- **At no time shall any part of the gunner's head and body be placed in front of the muzzle of the cannon.**
- **Do not stand directly behind the cannon.**
- **At no time will the buffer housing assembly be loosened.**
- **Do not insert hand into cannon to remove a stuck cartridge.**

4 After 5 minutes, the gunner approaches the mortar by climbing over the front of the carrier and feels the 120mm cannon for heat, starting from the muzzle end, using fingertips of bare hand.

WARNING

If excessive heat is found below or around the lower collar stop on the exterior of the 120mm cannon, the subcaliber insert is too hot to handle. The gunner rejoins the crew and waits an additional 5 minutes.

5 After the required waiting period, the gunner returns to the carrier, enters through the cargo hatch on the gunner's side, and feels the 120mm cannon for heat. If the 120mm cannon still radiates excessive heat, he attempts to cool it with water or snow.

WARNING

- **The M84A1 time fuze on the M301A3 illuminating cartridge will function if the M303 subcaliber insert is lifted more than 6 in. (15 cm) prior to being released. This can cause severe injuries to the crew and/or weapon damage.**
- **Do not reposition the hands and do not place fingers in the insert sleeve holes.**

CAUTION

If mortar is in high range, the gunner must depress the cannon to the lowest elevation, leaving approximately 1/4 in. (0.64 cm) exposed on the elevation shaft to achieve the required lifting distances for the subcaliber insert (maximum 6 in. (15 cm) for M301A3 cartridge only, and minimum 12 in. (30.5 cm) for HE, Smoke, and Practice (SR) cartridges).

MISFIRE PROCEDURES FOR CARRIER M121 (Cont).

NOTE

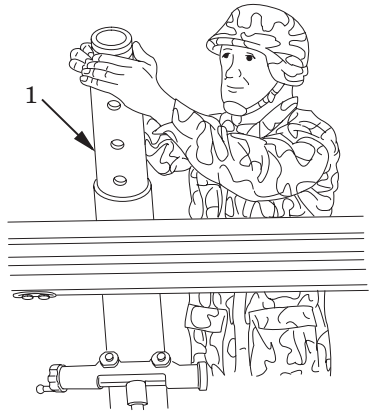
If using M301A3 illuminating cartridge, proceed to step 6. If using HE M374 Series, Smoke M375 Series, or Practice (SR) M880 cartridge, proceed to step 7.

6 If the cannon is cool enough to handle, the gunner locks down the data on the sight, removes the sight and sight extension, and places them in a location near gunner position. The gunner grasps the subcaliber insert (1) just below the muzzle with both hands, and gently lifts the subcaliber insert from the 120mm cannon (maximum 6 in. (15 cm)). Do not reposition the hands and do not place fingers in the holes. Gunner then releases subcaliber insert and assumes the correct firing body position.

a. If smoke is seen coming from the cannon and/or a hissing sound is heard coming from the cannon, the fuze has initiated. The gunner quickly moves to the rear of the mortar, joining the crew. The crew must notify the range safety officer/local range control and follow SOP.

b. If the cartridge fires, swab the bore to remove any debris that may have caused the misfire, relay the mortar, and continue fire mission.

c. If the cartridge does not fire, the gunner calls the crew forward. If the ramp is closed, the driver/ammo bearer lowers the ramp. Proceed to step 8.

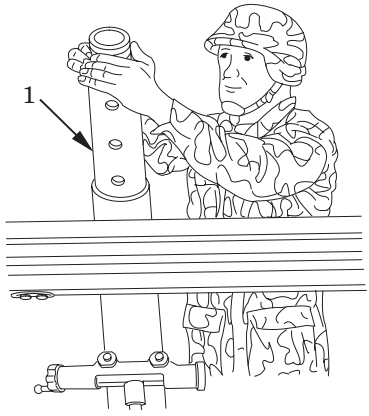


MISFIRE PROCEDURES FOR CARRIER M121 (Cont).

7 If the cannon is cool enough to handle, the gunner locks down the data on the sight, removes the sight and sight extension, and places them in a location near gunner position. The gunner grasps the subcaliber insert (1) just below the muzzle with both hands, and gently lifts the subcaliber insert from the 120mm cannon until both arms are fully extended (minimum 12 in. (30.5 cm)). Do not reposition the hands and do not place fingers in the holes. Gunner then releases subcaliber insert and assumes the correct firing body position.

a If the cartridge fires, swab the bore to remove any debris that may have caused the misfire, relay the mortar, and continue fire mission.

b. If the cartridge does not fire, the gunner calls the crew forward. If the ramp is closed, the driver/ammo bearer lowers the ramp. Proceed to step 8.


1

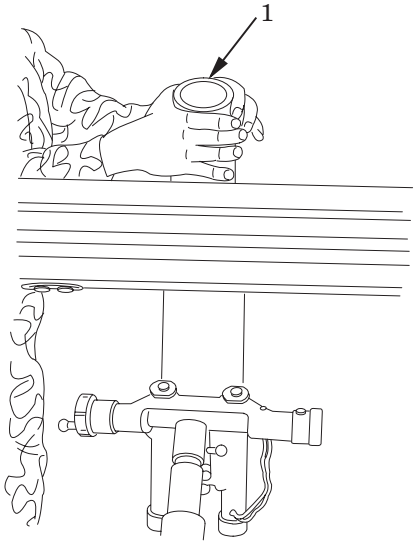
MISFIRE PROCEDURES FOR CARRIER M121 (Cont).

8 Assistant gunner assumes proper firing position. Gunner depresses the cannon to the lowest elevation, leaving approximately 1/4 in. (0.64 cm) exposed on elevation shaft. Do not change the range of the mortar.

WARNING

To avoid injury to personnel, use extreme care when handling loaded subcaliber insert. Never lower the base of the insert below horizontal until the cartridge has been removed.

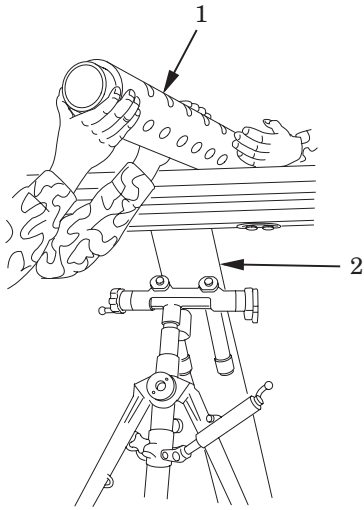
9 The assistant gunner grasps the subcaliber insert (1) just below the muzzle with both hands. Ensuring that no part of his body is in front of the muzzle, he lifts the insert until the upper ring of insert sleeve clears the muzzle. Then the gunner assists the assistant gunner in removing the subcaliber insert.


1

MISFIRE PROCEDURES FOR CARRIER M121 (Cont).

10 When the subcaliber insert (1) clears the 120mm cannon (2), the gunner and assistant gunner carefully move the insert to a horizontal position. Remove firing pin from cannon tube. The insert is balanced across the carrier crossbar, on the gunner's side of carrier. Gunner stabilizes the insert while the assistant gunner exits carrier and positions his hands with thumbs at the muzzle end of the 81mm cannon, ready to grasp the cartridge. At this time the assistant gunner gives the command to lift the base of the insert. When the cartridge comes out of the cannon, assistant gunner grasps the cartridge and gives it to ammunition bearer, who will inspect the cartridge and attempt to replace the safety pin. He then will dispose of cartridge according to unit SOP. Install firing pin into cannon tube. The insert is turned upside down to shake out any debris that may have caused the misfire and then is inserted back into 120mm cannon. Swab the bore, relay the mortar, and continue fire mission.

11 If cartridge cannot be dislodged, with firing pin removed, gunner carefully hands the subcaliber insert over top of crossbar to assistant gunner and ammo bearer. Keeping insert horizontal and pointing in the direction of fire, assistant gunner and ammo bearer place insert in dud pit or designated area for EOD disposal.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MISFIRE PROCEDURES FOR TOWED M120.

WARNING

At anytime during the misfire procedure, if smoke is seen coming from the cannon and/or a hissing sound is heard coming from the cannon, the crew will move 100 meters to the rear of the mortar. The crew must notify the range safety officer/local range control and follow local SOP. Do not approach the weapon until the cartridge has completely functioned.

1 When a misfire occurs, any member of the squad who notices the misfire immediately announces "MISFIRE."

2 All personnel, except the gunner, move 100 meters to the rear of the mortar. The gunner stands to the left rear of the mortar and vigorously kicks the cannon several times with the heel of his boot to attempt to dislodge the cartridge. If the cartridge fires, swab the bore to remove any debris that may have caused the misfire, relay the mortar, and continue fire mission.

3 If the cartridge fails to fire, the gunner joins the crew at the rear of the mortar, and waits 5 minutes.

WARNING

- **At no time shall any part of the gunner's head and body be placed in front of the muzzle of the cannon.**
- **At no time will the buffer housing assembly be loosened.**
- **Do not insert hand into cannon to remove a stuck cartridge.**

4 After 5 minutes, the gunner approaches the mortar and feels the 120mm cannon for heat, starting from the muzzle end, using fingertips of bare hand.

WARNING

If excessive heat is found below or around the lower collar stop on the exterior of the 120mm cannon, the subcaliber insert is too hot to handle. The gunner rejoins the crew and waits an additional 5 minutes.

MISFIRE PROCEDURES FOR TOWED M120 (Cont).

5 After the required waiting period, the gunner returns to the mortar and feels the 120mm cannon for heat. If the 120mm cannon still radiates excessive heat, he attempts to cool it with water or snow.

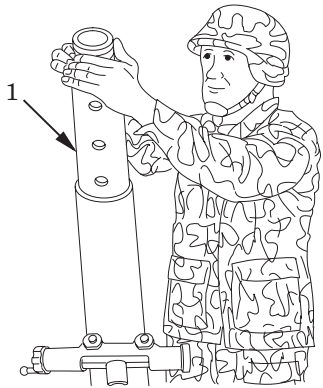
WARNING

- **The M84A1 time fuze on the M301A3 illuminating cartridge will function if the M303 subcaliber insert is lifted more than 6 in. (15 cm) prior to being released. This can cause severe injuries to the crew and/or weapon damage.**
- **Do not reposition the hands and do not place fingers in the insert sleeve holes.**

NOTE

If using M301A3 illuminating cartridge, proceed to step 6. If using HE M374 Series, Smoke M375 Series, or Practice (SR) M880 cartridge, proceed to step 7.

6 If the cannon is cool enough to handle, the gunner locks down the data on the sight, removes the sight, and places it in a location near gunner position. The gunner grasps the subcaliber insert (1) just below the muzzle with both hands, and gently lifts the subcaliber insert from the 120mm cannon (maximum 6 in. (15 cm)). Do not reposition the hands and do not place fingers in the holes. Gunner then releases subcaliber insert and assumes the correct firing body position.



MISFIRE PROCEDURES FOR TOWED M120 (Cont).

a. If smoke is seen coming from the cannon and/or a hissing sound is heard coming from the cannon, the fuze has initiated. The gunner quickly moves to the rear of the mortar, joining the crew. The crew must notify the range safety officer/local range control and follow SOP.

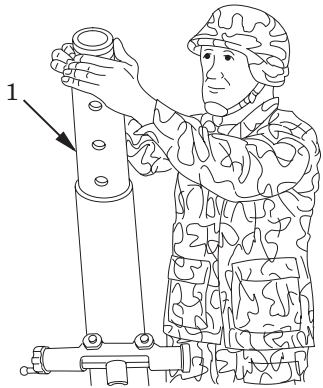
b. If the cartridge fires, swab the bore to remove any debris that may have caused the misfire, relay the mortar, and continue fire mission.

c. If the cartridge does not fire, the gunner calls the crew forward. Proceed to step 8.

7 If the cannon is cool enough to handle, the gunner locks down the data on the sight, removes the sight, and places it in a location near gunner position. The gunner grasps the subcaliber insert (1) just below the muzzle with both hands, and gently lifts the subcaliber insert from the 120mm cannon until both arms are fully extended (minimum 12 in. (30.5 cm)). Do not reposition the hands and do not place fingers in the holes. Gunner then releases subcaliber insert and assumes the correct firing body position.

a If the cartridge fires, swab the bore to remove any debris that may have caused the misfire, relay the mortar, and continue fire mission.

b. If the cartridge does not fire, the gunner calls the assistant gunner forward. Proceed to step 8.

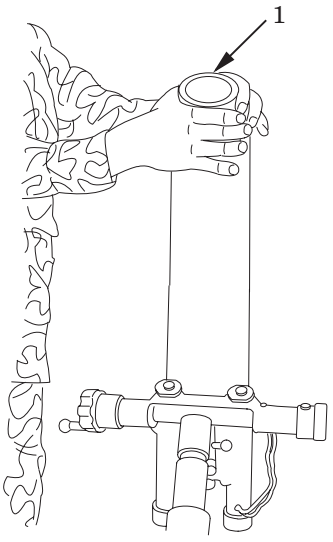


8 Assistant gunner assumes proper firing position. Gunner depresses the 120mm cannon to the lowest elevation, leaving approximately 1/4 in. (0.64 cm) exposed on elevation shaft.

WARNING

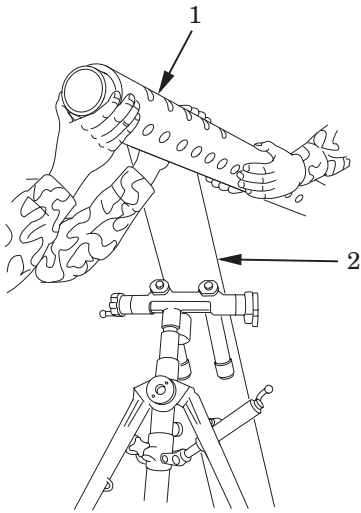
To avoid injury to personnel, use extreme care when handling loaded subcaliber insert. Never lower the base of the insert below horizontal until the cartridge has been removed.

9 The assistant gunner grasps the subcaliber insert (1) just below the muzzle with both hands. Ensuring that no part of his body is in front of the muzzle, he lifts the insert until the upper ring of insert sleeve clears the muzzle. Then the gunner assists the assistant gunner in removing the subcaliber insert.


1

MISFIRE PROCEDURES FOR TOWED M120 (Cont).

10 When the subcaliber insert (1) clears the 120mm cannon (2), the gunner and assistant gunner carefully move the insert to a horizontal position. Remove firing pin from cannon tube. Gunner stabilizes the insert while the assistant gunner positions his hands with thumbs at the muzzle end of the 81mm cannon, ready to grasp the cartridge. At this time the assistant gunner gives the command to lift the base of the insert. When the cartridge comes out of the cannon, assistant gunner grasps the cartridge and gives it to ammunition bearer, who will inspect the cartridge and attempt to replace the safety pin. He then will dispose of cartridge according to unit SOP. Install firing pin into cannon tube. The insert is turned upside down to shake out any debris that may have caused the misfire and then is inserted back into 120mm cannon. Swab the bore, relay the mortar, and continue fire mission.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2

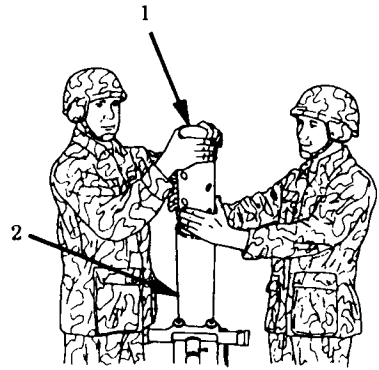
MISFIRE PROCEDURES FOR TOWED M120 (Cont).

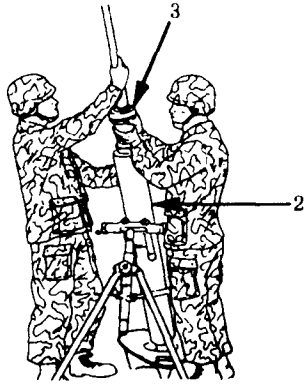
11 If cartridge cannot be dislodged, with the firing pin removed, the ammo bearer is called forward. Keeping subcaliber insert horizontal and pointing in the direction of fire, assistant gunner and ammo bearer place insert in dud pit or designated area for EOD disposal.

REMOVAL OF SUBCALIBER INSERT FROM 120MM MORTAR ON THE GROUND.

1 The gunner depresses the 120mm mortar to its lowest elevation and removes and stores the sight unit.

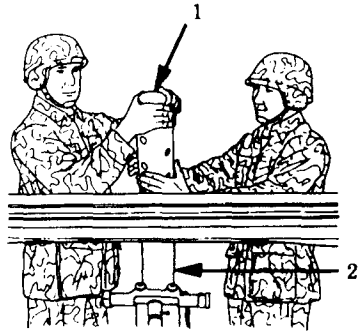
2 The assistant gunner grasps the subcaliber insert (1) just below the muzzle and extracts the insert. When the gunner can grasp the insert, he guides and helps to extract the insert. When the insert has cleared the 120mm cannon tube (2), a crew member stores it according to unit SOP.





3 The assistant gunner inserts the 120mm artillery cleaning staff assembly with the filler block adapter into the 120mm cannon tube (2) and carefully threads the adapter into the filler block (3). Filler block is lifted and grasped at muzzle end. Staff assembly is removed. Filler block is removed from 120mm cannon tube and is replaced in container.

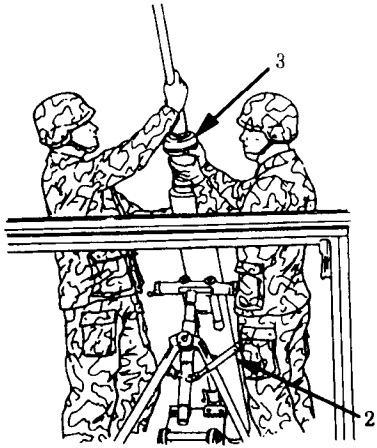
REMOVAL OF SUBCALIBER INSERT FROM 120MM MORTAR ON M1064 CARRIER.



1 The gunner depresses the 120mm mortar to its lowest elevation in LOW RANGE and removes and stores the sight unit and sight extension.

2 The assistant gunner grasps the subcaliber insert (1) just below the muzzle and extracts the insert. When the gunner can grasp the insert, he guides and helps to extract the insert. When the insert has cleared the 120mm cannon tube (2), a crew member stores it according to unit SOP.

3 The assistant gunner inserts the 120mm artillery cleaning staff assembly with the attached filler block adapter into the 120mm cannon tube (2) and carefully threads the adapter into the filler block (3). Filler block is lifted, grasped at muzzle end, and removed from 120mm cannon tube. With filler block resting on floor, staff assembly is removed. Filler block and staff assembly are stored in proper location per unit SOP.



Section III. OPERATION UNDER UNUSUAL CONDITIONS

SAND AND DUST

When firing subcaliber insert under conditions of dust and sand, inspect and swab the bore of both the 81mm cannon and the 120mm cannon more frequently. Ensure muzzle of 120mm cannon is protected during non-firing periods.

CHAPTER 3
OPERATOR MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

NOTE

- **These lubrication instructions are mandatory.**
- **General purpose lubricating oil (item 6, appx F) is the prime lubricant. LAW (item 7, appx F) may be used for continuous subzero environments.**
- **See FM 9-207 for arctic operations.**

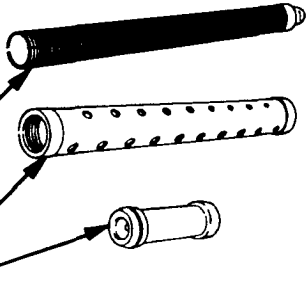
Intervals are based on usual operating conditions. For unusual operating conditions, do the lubricating procedures more often. When the weapon is not being used, the intervals may be extended if proper lubrication procedures have been followed.

WARNING

Dry cleaning solvent is flammable. Do not clean parts near an open flame or in a smoking area. Dry cleaning solvent evaporates quickly and has a drying effect on the skin. When used without protective gloves, this chemical may cause irritation to, or cracking of, the skin.

INTERVAL W-Weekly

	LUBRICANT	-	INTERVAL
Barrel, Barrel Bore, and Firing Pin. Before firing, wipe clean with dry cleaning solvent (item 4, appx F) and dry. After firing, clean and lubricate.	GPL Oil	-	W
Insert Sleeve	GPL Oil	-	W
Filler Block	GPL Oil	-	W



Immediately after firing and for two consecutive days thereafter, clean the cannon bore with RBC (item 2, appx F). Wipe dry and lightly coat with general purpose lubricating oil (item 6, appx F). Clean weekly with RBC, wipe dry, and lube with general purpose lubricating oil.

Section II. TROUBLESHOOTING PROCEDURES

1 The table lists common malfunctions which you may find during the operation or maintenance of the subcaliber insert. You should perform the tests/inspections and corrective actions in the order listed.

2 This table cannot list all malfunctions that may occur, all the tests and inspections needed to find the fault, or all the corrective actions needed to correct the fault. If the equipment malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

Table 3-1. Troubleshooting Table

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
1. MORTAR FAILS TO FIRE.
Step 1. Check for defective ammunition.
Follow misfire procedures (page 2-31).
Step 2. Check for propellant holders or foreign matter in base of tube.
Remove propellant holders or foreign matter.
Step 3. Check for broken firing pin.
Replace firing pin.
2. SUBCALIBER DEVICE IS DIFFICULT TO ASSEMBLE.
Check insert sleeve for straightness, burrs, and damaged threads.
Repair or replace insert sleeve.

Section III. OPERATOR'S MAINTENANCE PROCEDURES

MORTAR, SUBCALIBER INSERT.

This task covers:

a. Inspection **b.** Cleaning

INITIAL SETUP

References
TM 9-1015-200-10
TM 9-1015-250-10

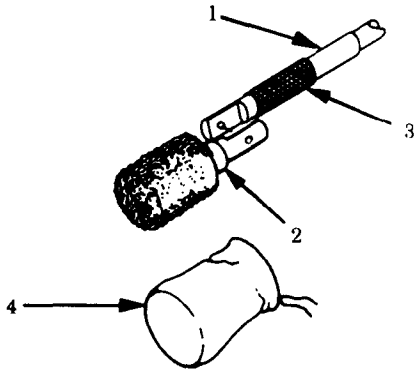
Equipment Condition
Mortar, subcaliber insert disassembled

INSPECTION

1 Inspect for damage, deformation, corrosion, cracks, and missing or loose parts.

2 Inspect for burrs, nicks, and protruding setscrews.

3 Inspect cannon assembly for discoloration.



NOTE

Cleaning the barrel bore is accomplished with the use of a cleaning rod and brush. A bore cleaning sleeve wrapped around the bristle surface is employed to fine clean and lubricate.

1 Extend cleaning rod (1) until fully deployed and attach cleaning brush (2) by pulling back locking sleeve (3), mating brush with rod, and releasing locking sleeve.

2 Apply RBC (item 2, appx F) to cleaning brush (2) (item 2, appx D) for initial cleaning, then follow with bore cleaning sleeve (4) (item 9, appx F) saturated with same cleaning compound. Insert cleaning brush in barrel and thoroughly scrub all surfaces with push-pull action for the entire length of barrel. Ensure that firing pin is thoroughly cleaned during the process (cleaning brush is tipped with center brush which provides rotary cleaning surface). Ensure that all RBC which has settled around the firing pin is removed.

3 Tie a new bore cleaning sleeve (item 9, appx F) on cleaning brush (2). Dry bore thoroughly. Inspect bore for cleanliness.

WARNING

- **Firing a round with cleaning fluid, rain water, or excess oil left in barrel will result in discharge of heavy black smoke, and will result in the projectile falling short of its expected range.**

- **Use caution while cleaning the barrel bore in the carrier when it requires standing on top of the carrier.**

NOTE

- **Use crocus cloth (item 3, appx F) for minor deburring and to remove minor corrosion from unpainted surfaces.**

- **Immediately after firing and on the next two days, thoroughly clean with RBC (item 2, appx F), making sure that all surfaces are well coated. Wipe dry and lightly coat with GPL (item 6, appx F). Clean weekly with RBC. Wipe dry and lubricate with GPL when weapon is not being fired.**

4 Use cleaning brush (item 1, appx F) and wiping rags (item 8, appx F) to remove all foreign matter from insert sleeve, filler block, and exterior of barrel.

5 Lubricate items per lubrication instructions, page 3-1.

CHAPTER 4
AMMUNITION

Section I. AUTHORIZED CARTRIDGES

WARNING

Firing of unauthorized cartridges can cause SEVERE damage to the mortar and SEVERE injury to the crew. DO NOT FIRE unauthorized cartridges.

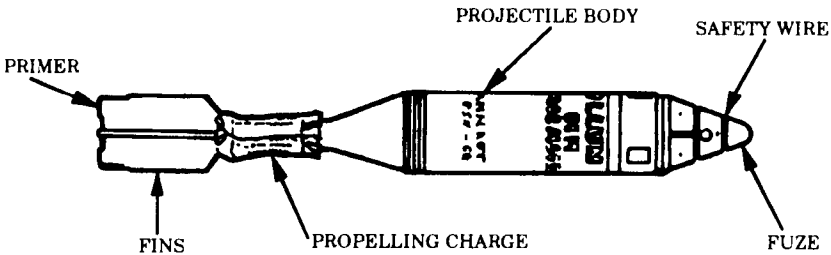
NOTE

For approved cartridges, no change is required in the use of present firing tables.

The following cartridges are authorized to be fired in the 81mm subcaliber insert:

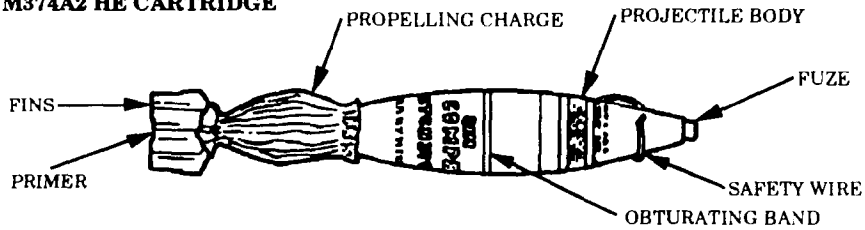
Cartridge 81mm: ILL, M301A3
Cartridge 81mm: HE, M374A2, M374A3
Cartridge 81mm: WP, M375A2, M375A3
Cartridge 81mm: TP, M880

M301A3 ILLUMINATING CARTRIDGE



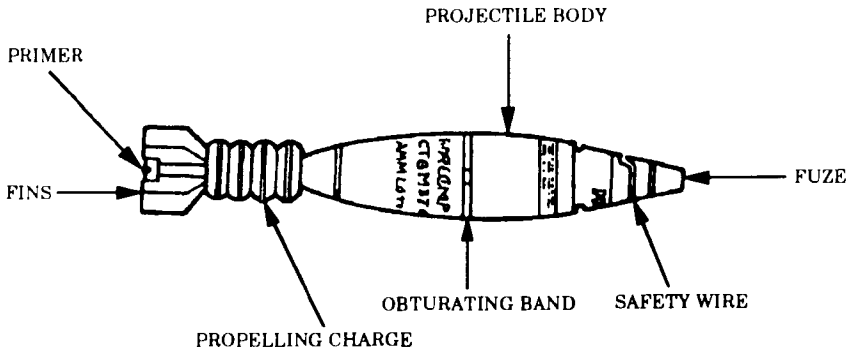
Type/Use: Illumination
Identification: White with black markings
Components: M84A1 Time fuze; M185 propelling charge
Range (Burst): 3150 meters
Limitations: Cartridge cannot be fired below charge 3.
Remarks: Cartridge contains an illuminating candle parachute assembly. Candle provides a minimum of 500,000 candlepower illumination for at least 60 seconds.

M374A2 HE CARTRIDGE



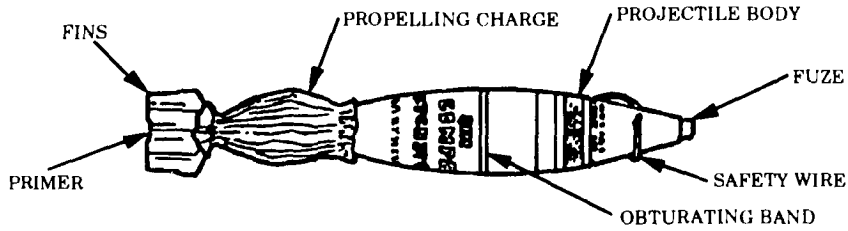
Type/Use: High explosive/Fragmentation and blast
Identification: Olive drab with yellow markings
Components: M524 series PD fuze, M526 series PD fuze, M567 PD fuze, or M532 (proximity) fuze; M90A1 (M374A2) propelling charge
Maximum range: 4500 meters
Limitations: Cartridges assembled with fuze, PD M524A1, M524A2, M524A3, and M524A4 are for USMC/USN use only.
Cartridges assembled with fuze, M532 (proximity) must be fired above charge 0. Short rounds may be expected when firing below charge 4.

M374A3 HE CARTRIDGE



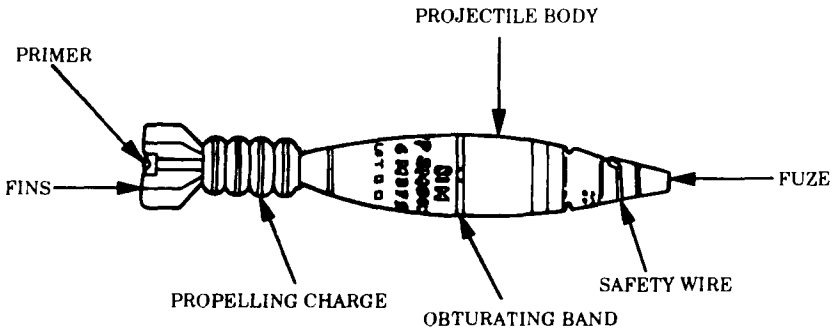
Type/Use: High explosive/Fragmentation and blast
Identification: Olive drab with yellow markings
Components: M524 series PD fuze or M567 PD fuze; M205 propelling charge
Maximum range: 4800 meters

M375A2 SMOKE (WP) CARTRIDGE



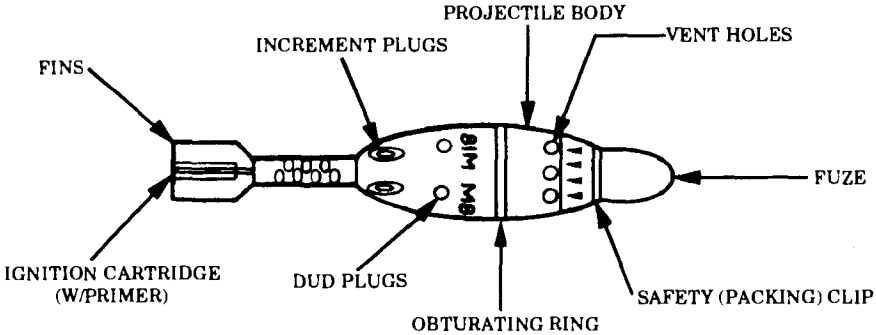
Type/Use: Smoke (white phosphorous)/Screening, spotting, and incendiary
Identification: Light green with yellow band and light red markings
Components: M524 series PD fuze, M526 series PD fuze, or M567 PD fuze; M90A1 (M375A1 and M375A2) propelling charge
Maximum range: 4500 meters
Limitations: Cartridges assembled with fuze, PD M524A1, M524A2, M524A3, and M524A4 are for USMC/USN use only.
Short rounds may be expected when firing below charge 4.

M375A3 SMOKE (WP) CARTRIDGE



Type/Use: Smoke (white phosphorus)/Screening, spotting, and incendiary
Identification: Light green with yellow band and light red markings
Components: M524 series PD fuze or M567 PD fuze; M205 propelling charge
Maximum range: 4800 meters

M880 PRACTICE CARTRIDGE



Type/Use: Target practice (short range)/training
Identification: Blue with white markings and one brown band
Components: M775 (Type I or Type II) PD (Practice) fuze; propelling charge—ignition cartridge only
Maximum range: 458 meters

M880 PRACTICE CARTRIDGE (Cont).

Remarks: Projectile body is hollow.
Range of cartridge is reduced by removing plastic plugs from projectile body. Removal of plugs allows gases to escape through the body and out the vent holes. A pyrotechnic smoke charge in the fuze produces a flash, an audible sound, and a smoke cloud on impact.
The spent (fired) projectiles can be recovered for rebuilding and reuse. Refer to TM 9-1315-252-12&P for instructions and limitations.

Section II. PREPARATION FOR FIRING

1 Unpack cartridge. Handle with utmost care. Do not drop, drag, throw, tumble, or strike packaged or unpackaged ammunition or related components. Attempting to fire ammunition that has been roughly handled is extremely dangerous.

   a. Remove packing stop from fuze (or closing plug).

   b. Remove any protective bags, shell insert assemblies, and desiccant bags secured to or covering fin assembly.

2 Assemble fuze to cartridge, if cartridge was shipped unfuzed (p 4-19).

3 Set fuze for required time or desired type of burst (p 4-21).

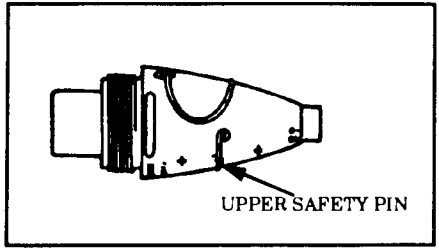
4 Adjust propelling charge for desired range (p 4-30).

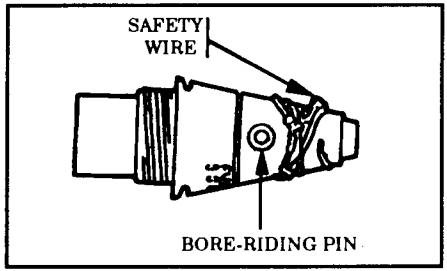
5 Remove safety pin/pull wire from fuze (just prior to loading and firing cartridge).

WARNING

- **M524 PD FUZE - Do not fire cartridge if eye of upper safety pin breaks off and/or safety pin cannot be removed. Notify EOD.**

- **M526 PD FUZE - Do not fire cartridge if fuze makes a buzzing sound when removing safety pins. Check fuze for presence of bore-riding pin after removing safety pin. Do not fire cartridge if bore-riding pin is missing. Notify EOD.**





Section III. LOADING AND FIRING

WARNING

- **PD and proximity fuzes may prematurely detonate when fired during heavy rainfall.**
- **Firing temperature limits are -40 to +125 °F (-40 to +52 °C).**
- **All cartridges must be inspected for damage prior to firing.**
- **Do not fire ammunition with damaged fins, leaking or missing propellant containers, damaged obturators, or damaged fuzes.**
- **Do not fire ammunition through overhead obstructions or over the heads of unprotected personnel.**

CAUTION

Before loading cartridge into cannon, ensure that all components are free of sand, mud, moisture, frost, snow, ice, or other foreign matter.

Refer to TM 9-1015-250-10 for instruction on loading and firing.

Section IV. UNFIRED CARTRIDGES

1 Replace safety wire, if removed from fuze.

CAUTION
Replace upper safety pin first on PD M524 and M526 fuzes.

2 If safety pins cannot be fully reinserted into fuze, notify EOD.

NOTE

Do not attempt to reset M532 PD fuzes. Fuzes set for PD action cannot be returned to prox mode.

3 Reset fuze.

4 Remove fuze, if cartridge was shipped unfuzed. Reinstall closing plug.

5 Reinstall propellant increments so that cartridge has a full charge.

6 Install packing stop. Repack cartridge in original packaging.

Section V. CARE AND HANDLING OF CARTRIDGES

1 Do not throw or drop live ammunition.

2 Do not break moisture resistant seal of ammunition containers until cartridges are to be fired.

3 Protect cartridges when removed from ammo container. Protect ammunition from rain and snow. Do not remove plastic shell/insert assembly around propelling charge until propelling charge is to be adjusted. If protective bags were packed with cartridge, cover fin assembly and propelling charge to prevent moisture contamination. Stack cartridges on top of empty ammo boxes. Cover cartridges with provided plastic sheets.

4 Do not expose cartridges to direct sunlight, extreme temperatures, flame, or other sources of heat.

5 Store WP-loaded cartridges at temperatures below 111.4 °F (44.1 °C) to prevent melting of WP filler. If this is not possible, WP-loaded cartridges must be stored fuze-end up so that the WP will resolidify with void space in the nose end of cartridge (when temperature returns below 111.4 °F (44.1 °C)). Failure to observe this precaution could result in rounds with erratic flight.

6 Store WP-loaded ammunition separate from other types of ammunition.

7 Notify EOD of leaking WP cartridges. Avoid contact with any leakers.

8 Protect primer of cartridge during handling.

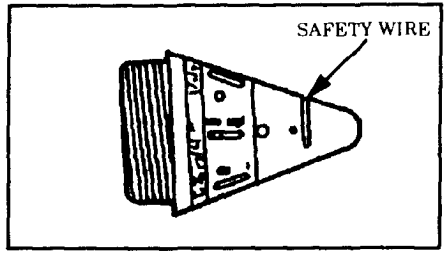
9 Do not handle duds.

TIME, M84A1 FUZE

FUNCTIONS: Airburst

SETTINGS: 0 to 50 seconds

REMARKS: Fuze has an expelling charge and safety wire.

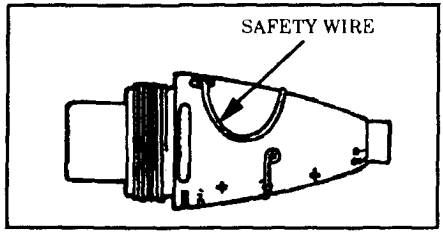


POINT DETONATING, M524 (SERIES) FUZE

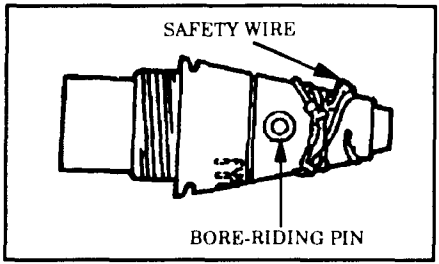
FUNCTIONS: Impact

SETTINGS: Superquick or 0.05 second delay action

REMARKS: Fuze has a safety wire.



POINT DETONATING, M526 (SERIES) FUZE

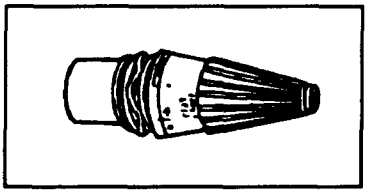


FUNCTIONS: Impact

SETTINGS: Superquick action only

REMARKS: Fuze has a safety wire and bore-riding pin.

M532 PROXIMITY FUZE



TYPE: Proximity

FUNCTIONS: Proximity/impact

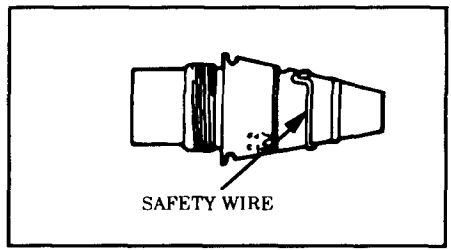
REMARKS: Fuze has a booster charge, radio transmitter/detector, and PD element. Fuze functions when its radio waves are reflected off the target (prox mode).

POINT DETONATING, M567 FUZE

FUNCTIONS: Impact

SETTINGS: Superquick or 0.05 second delay action

REMARKS: Fuze has a safety wire.

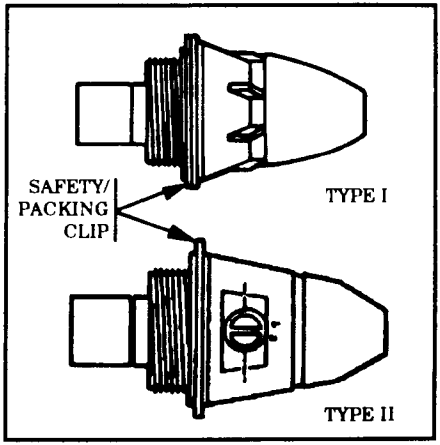


POINT DETONATING, M775 FUZE

FUNCTIONS: Impact

SETTINGS: Dummy multi-option -- PRX/NSB/IMP/DLY (Type I Ogive)
Functional point detonating -- SQ/D (Type II Ogive)

REMARKS: Fuze has a smoke charge and safety/packing clip.

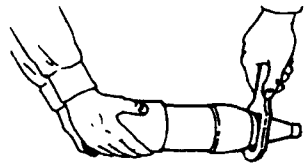


Section VII. INSTALLATION OF FUZES

WARNING

- **Do not hammer on fuze wrench or use an extension on the handle.**
- **Fuze must be fully seated onto the projectile body. Do not stake fuze.**
- **Use only authorized cartridge/fuze combinations.**

1 Remove closing plug from cartridge. Use an M18 fuze wrench to loosen closing plug. Turn handle of wrench in counterclockwise direction.



2 Inspect fuze threads and fuzewell threads for damage. Do not use fuze if thread is damaged. Do not use projectile if fuzewell thread is damaged or if explosive is visible on thread.

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

4 If binding occurs, unscrew fuze and recheck threads.

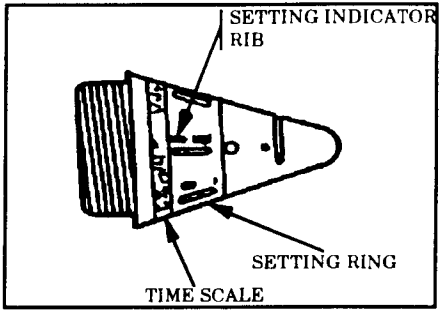
Section VIII. FUZE SETTING

M84A1 TIME FUZE

1 Rotate setting ring in counter-clockwise direction until setting indicator rib (marked set) is aligned with correct line (boss) and number of seconds of time scale.

2 Use an M25 fuze setter to turn the setting ring.

3 See firing tables for correct time settings.



M524 PD FUZES

Superquick setting

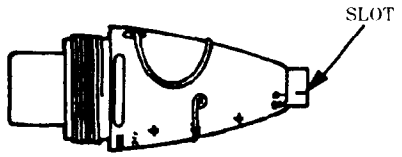
1 These fuzes are shipped preset to function superquick on impact.

2 Verify setting prior to firing. Slot in striker should be aligned with SQ-marking and notch on ogive.

Delay setting

1 Turn striker slot in clockwise direction until slot is aligned with D-marking and line on ogive.

2 Use bladed end of M18 fuze wrench to change settings.



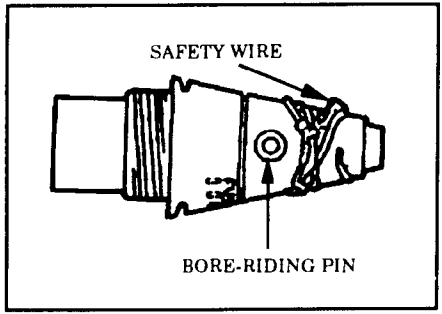
SUPERQUICK SETTING

M526 PD FUZE

1 This fuze only functions superquick on impact.

2 Remove safety wire from M526 PD fuze just prior to firing.

3 No other action is required.



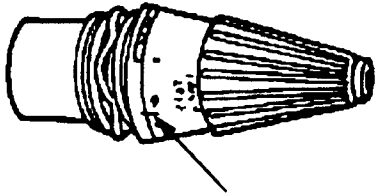
M532 PROXIMITY FUZE

Proximity setting. Use fuze as shipped.

Examine shear pin of fuze to determine if it may once have been set.

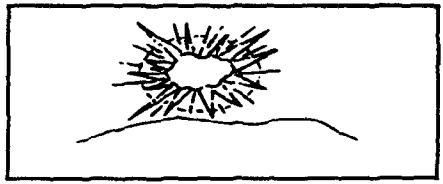
NOTE

Fuzes set for PD action cannot be returned to prox mode. Fuzes with broken shear pins may function PD instead of prox.

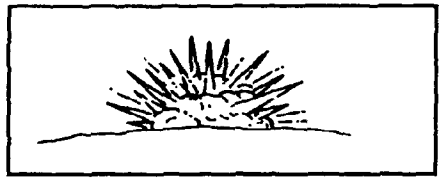


PD setting. Rotate nose of fuze (by hand) a minimum of 1/3 turn (120 degrees) in either direction.

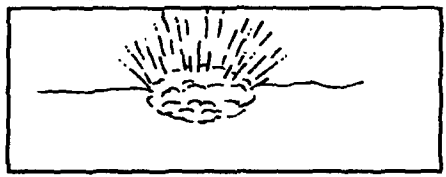
PRX—Proximity. The fuze comes set to PRX. (Burst height is 3 to 13 ft. (1 to 4 m)).



IMP—Impact (SQ).



DLY—Delay (0.050 seconds).



M567 PD FUZE

Superquick setting

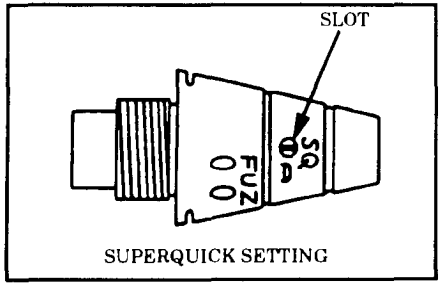
1 These fuzes are shipped preset to function superquick on impact.

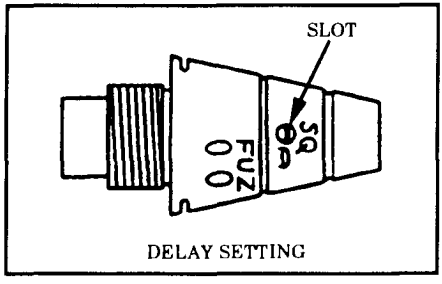
2 Verify setting prior to firing. Selector slot should be aligned with SQ-mark on ogive.

Delay setting

1 Turn selector slot in clockwise direction until slot is aligned with D-marking on ogive.

2 Use bladed end of a M18 fuze wrench to change settings.





M526 AND M775 PD FUZES

1 These fuzes function on impact with superquick action only.

2 Remove safety wire from M526 PD fuze just before firing.

3 Remove safety/packing clip from M775 PD fuze just before firing.

4 No other action is required.

5 M775 PD fuze has a dummy multi-option — PRX/NSB/IMP/DLY or dummy PD — SQ/D settings (for practice only).

Section IX. RESETTING FUZES

M84A1 Time Fuze - Align setting indicator rib with S-marking of time scale. Turn setting ring in counterclockwise direction only.

M524 Series PD Fuze - Align slot in striker with SQ-marking and notch in ogive.

M532 Proximity Fuze - Do not reset fuze.

M526 PD Fuze - None.

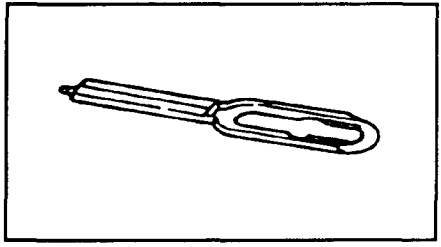
M567 PD Fuze - Align selector slot with SQ-marking on ogive.

Section X. FUZE WRENCH/SETTER

M18 FUZE WRENCH

1 Wrench for assembling fuze to cartridge.

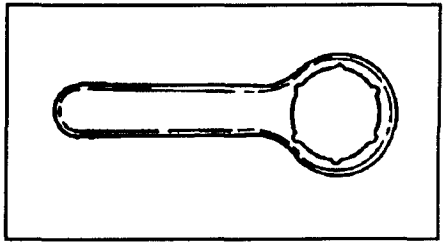
2 Bladed tip on end for setting PD type fuzes.



M25 FUZE SETTER

1 Sets M84A1 time fuzes.

2 Notches in setter engage ribs in setting ring of fuze.



Section XI. PROPELLING CHARGES

MODEL NO.	NO. OF INCREMENTS	TYPE OF CONTAINER	TYPE OF PROPELLANT
M90A1	1 - Charge A 8 - Charge B	Silk or acrylic (acetate laminated) cloth bags	M9 flake
M185	8	Water-repellant cotton (cloth) bags	M9 flake
M205	4	Nitrocellulose/fiber containers (horseshoe-shaped)	M10 flake

Section XII. ADJUSTMENT OF PROPELLING CHARGE

WARNING

- **Propelling charges are not interchangeable. Do not substitute one model for another. Do not mix lots.**
- **Reposition remaining propellant increments rear of fin assembly when firing M374A3 HE or M375A3 WP, with less than full charge (4 increments).**
- **Charge A increment of M90/M90A1 propelling charge must be used when firing above Charge 0.**

1 Cartridges are shipped with a complete propelling charge, ignition cartridge, and primer.

2 Use firing table to determine proper charge for firing.

3 With exception of M880 TP cartridge, reduce range of cartridge by removing appropriate number of increments from fin assembly. Adjacent chart shows number of increments that should be remaining.

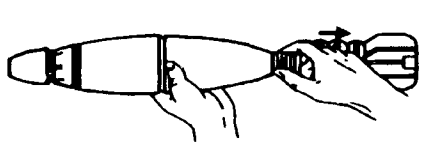
Charge 0 — Ignition cartridge only

Charge 1 — Ignition cartridge and one increment

Charge 2 — Ignition cartridge and two increments

Charge 9 — Ignition cartridge and nine increments

4 Slide remaining increments towards rear until charge is against fins (M374A3 HE and M375A3 WP cartridges only). Failure to reposition increments could result in improper ignition and a short round.



5 Reduce range of M880 TP cartridge by removing plastic plugs from projectile body. Adjacent chart shows number of plugs that should be remaining.

Charge 0 — Ignition cartridge only
Charge 1 — Ignition cartridge and one plug
Charge 2 — Ignition cartridge and two plugs
Charge 3 — Ignition cartridge and three plugs

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

Section XIII. UNUSED PROPELLING CHARGE INCREMENTS

WARNING

When burning excess increments:

- **Burning area must be at least 100 meters from the nearest mortar position, parked vehicles, and ammunition piles.**
- **Burning area shall be cleared of all dead grass or brush within 30 meters.**

1 Excess increments should be destroyed daily.

2 Destroy increments by burning.

3 Place increments on the ground. Form a row 4 to 6 in. (10 to 15 cm) wide and as long as necessary. Do not pile increments more than 1 to 2 in. (3 to 5 cm) high.

4 End train of increments with a row of single increments, followed by at least a meter of combustible material.

5 Ignite combustible material.

6 Allow ensuing fire to self-extinguish.

CHAPTER 5
FOREIGN AMMUNITION (NATO)

NO foreign ammunition is authorized to be fired in mortar, subcaliber insert.

CHAPTER 6
UNIT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS; TOOLS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

REPAIR PARTS. Repair parts are listed and illustrated in Appendix C of this manual.

Section II. SERVICE UPON RECEIPT

GENERAL. When a new or reconditioned subcaliber insert is first received, it is the responsibility of the officer-in-charge to determine whether the insert has been properly prepared for service by supplying organization and whether it is in proper condition to perform its mission.

INSPECTING AND SERVICING THE MATERIAL.

WARNING

Inspect the barrel to make sure it is empty. Keep live ammunition out of the area during maintenance operations.

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364, Report of Discrepancy (ROD).

b. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA PAM 738-750.

c. Check to see whether the equipment has been modified. Refer to the authorized equipment configuration changes listed in DA PAM 25-30.

Table 6-1. SERVICE UPON RECEIPT FOR MORTAR, SUBCALIBER INSERT

LOCATION	ITEM	ACTION	REMARKS
1. Container	Cannon assembly, M29A1	Remove from container. Check to make sure barrel is clear of obstructions.	
2. Container	All items	a. Clean and lubricate.	See operator's maintenance, page 3-1.
		b. Assemble components to assure proper assembly.	See operating instructions, page 2-17.
		c. Check for damaged or missing parts.	See PMCS table, page 2-1.
3. Container	Basic issue items	Check for missing or damaged items.	See Appendix D.

MORTAR, SUBCALIBER INSERT.

a. Inspection **b.** Repair **c.** Replacement

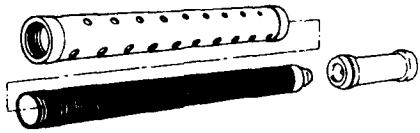
INITIAL SETUP

Tools/Special Tools
Key, socket head (0.0625 in.) (AW2)
Key, socket head (0.3125 in.) (BO1185)

Equipment Condition
Subcaliber insert removed from 120mm mortar and disassembled

References
TM 9-1000-202-14
TM 9-1015-200-10
TM 9-1015-250-10

INSPECTION



1 Inspect for damage, deformation, corrosion, cracks, and missing or loose parts.

2 Inspect for burrs, nicks, and protruding setscrews.

3 Inspect insert for missing setscrews.

4 Inspect cannon for broken firing pin.

5 Inspect cannon for discoloration.

NOTE

Refer to TM 9-1000-202-14, Evaluation of Cannon Tubes, for borescope and pullover gaging requirements.

REPAIR

1 Replace firing pin.

2 Replace setscrews.

REPLACEMENT

Replace subcaliber insert components as authorized in Repair Parts and Special Tools List, appendix C.

CONTAINER, STORAGE.

a. Inspection **b.** Repair **c.** Replacement

INITIAL SETUP

Tools/Special Tools
Small Arms Repairman Tool Kit (SC 5180-95-A07)

Materials/Parts
Field Repair Kit, Container (12901249)

Equipment Condition
Container is empty

INSPECTION

1 Inspect for missing or damaged parts.

2 Inspect latches, hinges, and handles for proper operation.

CONTAINER, STORAGE (Cont).

REPAIR

1 Using punch or screwdriver with a hammer, remove defective latch, hinge, and/or handle by straightening bent tabs in channel fin and hardware's slot body.

2 Position new hardware at old hardware's location.

3 Insert T-tool into slot body of hardware; turn T-tool 1/4 turn clockwise and 1/4 turn counterclockwise.

4 Using punch and hammer, stake channel fin to hardware body at two locations (top and bottom).

REPLACEMENT

Replace storage container components as authorized in Repair Parts and Special Tools List, appendix C.

CHAPTER 7
DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

MORTAR, SUBCALIBER INSERT.

This task covers:

a. Inspection

b. Replacement

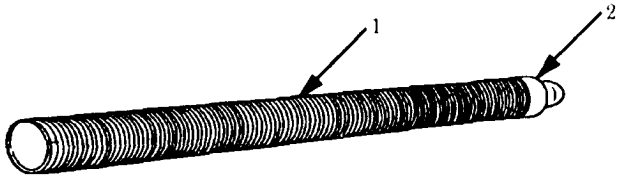
INITIAL SETUP

Tools/Special Tools
Accessory Outfit for Pullover Gages
Borescope: Cannon Bore Inspecting, M3

Equipment Condition
M29A1 cannon assembly removed from insert sleeve

References
TM 9-1000-202-14
TM 9-6650-235-13&P

INSPECTION



1 Inspect M29A1 barrel (1) for wear, dents, fouling, and corrosion.

2 Inspect breech cap (2) for signs of gas leakage (discoloration).

3 Borescope and pullover gage barrel according to instruction in TM 9-1000-202-14. Refer to TM 9-6650-235-13&P for borescope operation.

4 Using pullover gage, determine if barrel bore meets or exceeds condemnation limit of 3.227 in. (81.965 mm).

REPLACEMENT

If barrel bore meets or exceeds condemnation limits, replace M29A1 cannon assembly as authorized by Repair Parts and Special Tools List, appendix C.

APPENDIX A
REFERENCES

SCOPE. This appendix lists all forms, field manuals, technical manuals, and related publications needed by the user of this manual.

FIELD MANUALS.

FM 3-4	NBC Protection
FM 3-5	NBC Decontamination
FM 5-20	Camouflage
FM 5-103	Survivability
FM 6-30	Observed Fire Procedures
FM 7-10	The Infantry Rifle Company (Infantry, Airborne, Air Assault, Ranger)
FM 7-20	The Infantry Battalion (Infantry, Airborne, and Air Assault)
FM 7-90	Tactical Employment of Mortars
FM 9-207	Operation and Maintenance of Ordnance Materiel and Cold Weather
FM 21-11	First Aid for Soldiers
FM 21-26	Map Reading and Land Navigation
FM 23-90	Mortars

FIELD MANUALS (Cont).

FM 23-91	Mortar Gunnery
FM 24-1	Combat Communications
FM 24-18	Tactical Single-Channel Radio Communications Techniques
FM 25-2	Unit Training Management
FM 25-100	Training the Force
FM 71-2	The Tank and Mechanized Infantry Battalion Task Force
FM 101-5-1	Operational Terms and Symbols

FIRING TABLES.

FT 81-AI-2	Mortar, 81-mm, M29
FT 81-AI-3	Mortar, 81-mm: M29A1 and M29; Mortar, 81-mm, Self-Propelled: M125A1 and M125; Carrier, 81-mm Mortar: Tracked, XM755; Firing Cartridge, HE, M374A2 and M374; Cartridge, WP, M375A2 and M375; Cartridge, Illuminating: M301A3; Cartridge, Training: M68 and Training Device, M1

FT 81-AQ-1	Mortar, 81-mm: M29A1 and M29; Mortar, 81-mm, Self-Propelled, M125A1 and M125; Carrier, 81-mm Mortar, Tracked, M755 and Firing Cartridge, HE, M374A3
FT 81-AR-1	Firing Tables for Mortar, 81mm: M252 Firing Cartridge, HE, M821; Cartridge, HE, M889; Cartridge, RP, M819; Cartridge, TP, M879; Cartridge, Illum, M853A1; Cartridge, HE, M984; Cartridge, HE, M983; and Cartridge, TP (SR), M880

FORMS.

DA Form XXXA-R	Gunner's Examination Scorecard (Mortars)
DA Form 285	Accident Report
DA Form 2028	Recommended Changes to Publications
DA Form 2028-2	Recommended Changes to Equipment Technical Manuals
DA Form 2404	Equipment Inspection and Maintenance Worksheet
DA Form 2408-4	Weapon Record Data
SF 364	Report of Discrepancy
SF 368	Product Quality Deficiency Report

PAMPHLETS.

DA Pam 25-30	Consolidated Index of Army Publications and Blank Forms
DA Pam 350-38	Standards in Weapons Training
DA Pam 351-20	Army Correspondence Course Program Catalog
DA Pam 738-750	The Army Maintenance Management System (TAMMS)

TECHNICAL BULLETINS.

TB 9-1300-256	Ammunition National Stock Numbers and Department of Defense Codes
TB 34-9-93	NATO Design Mark

TECHNICAL MANUALS.

TM 5-200	Camouflage Materials
TM 9-1000-202-14	Evaluation of Cannon Tubes
TM 9-1015-250-10	Operator's Manual for Mortar, 120mm: Towed M120 and Mortar, 120mm: Carrier-Mounted M121

TM 9-1220-243-12&P	Board, Plotting, Indirect: M16
TM 9-1240-278-24&P	Unit, Intermediate Direct Support, and Intermediate General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Optical Boresight, M45/M45A1
TM 9-1290-262-24P	Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Aiming Circle, M2 W/E and M2A2 W/E
TM 9-1290-333-15	Operator's, Organizational, Direct Support, General Support, and Depot Maintenance (Including Repair Parts and Special Tools List): Compass, Magnetic, Unmounted: M2
TM 9-1300-200	Ammunition, General
TM 9-1300-206	Ammunition and Explosives Standards
TM 9-1315-252-12&P	Cartridge 81-mm Target Practice, Short Range, M880

TECHNICAL MANUALS (Cont).

TM 9-4933-258-13&P	Operator's, Organizational, and Direct Support Maintenance Manual (Including Repair Parts and Special Tools List) for Pullover Gage Kit
TM 9-6650-235-13&P	Operator's, Organizational, and Direct Support Maintenance Manual Including Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts) for Borescope: M3
TM 38-750-1	The Army Maintenance Management System (TAMMS) Field Command Procedures
TM 43-0001-28	Army Ammunition Data Sheets for Artillery Ammunition: Guns, Howitzers, Mortars, Recoilless Rifles, Grenade Launchers, and Artillery Fuzes
TM 750-244-7	Procedures for Destruction of Equipment in Federal Supply Classifications 1000, 1005, 1010, 1015, 1020, 1025. 1030, 1055, 1090, and 1095 to Prevent Enemy Use

MISCELLANEOUS PUBLICATIONS.

AR 75-1	Malfunctions Involving Ammunition and Explosives
AR 385-40	Accident Reporting and Records
AR 385-63	Policies and Procedures for Firing Ammunition for Training, Target Practice, and Combat
AR 750-1	Army Materiel Maintenance Policies
ARTEP 7-90-Drill	Battle Drills for the Infantry Mortar Platoon, Section, and Squad
ARTEP 7-90-MTP	Mission Training Plan for the Infantry Mortar Platoon, Section, and Squad
CTA 8-100	Army Medical Department Expendable/ Durable Items
CTA 50-970	Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)
GTA 25-6-7	Instructor's Controller Training Guide
SC 4933-95-CL-A12	Shop Equipment, Artillery Maintenance, Field Set N
STP 7-11C14-SM-TG	Soldier's Manual and Trainer's Guide, MOS 11C, Indirect Fire Infantryman, SL 1, 2, 3, 4

APPENDIX B
MAINTENANCE ALLOCATION CHART (MAC)

SECTION I. INTRODUCTION

THE ARMY MAINTENANCE SYSTEM MAC.

a. This introduction (section I) provides a general explanation of all maintenance and repair functions authorized at various maintenance levels under the standard Army Maintenance System concept.

b. The Maintenance Allocation Chart (MAC) in section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:

Unit—includes two subcolumns, C (operator/crew) and O (unit) maintenance.

Direct support—includes an F subcolumn.

General support—includes an H subcolumn.

Depot—includes a D subcolumn.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

MAINTENANCE FUNCTIONS. Maintenance functions are limited to and defined as follows:

a. **Inspect.** To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

b. **Test.** To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. **Service.** Operations required periodically to keep an item in proper operating condition; e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

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

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and assigned maintenance level is shown as the 3d position code of the SMR code.

i. Repair. The application of maintenance services[1] including fault location/troubleshooting[2], removal/installation, and disassembly/assembly[3] procedures, and maintenance actions[4] to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

---

[1]Services—Inspect, test, service, adjust, align, calibrate, and/or replace.

[2]Fault location/troubleshooting—The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).

[3]Disassembly/assembly—The step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).

[4]Actions—Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

j. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles) considered in classifying Army equipment/components.

EXPLANATION OF COLUMNS IN THE MAC, SECTION II.

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

b. Column 2, Component/Assembly. Column 2 contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Function. Column 3 lists the functions to be performed on the item listed in Column 2. (For detailed explanation of these functions, see page B-2.)

d. Column 4, Maintenance Level. Column 4 specifies each level of maintenance authorized to perform each function listed in Column 3, by indicating work time required (expressed as manhours in whole hours or decimals) in the appropriate subcolumn. This work-time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work-time figures are to be shown for each level. The work-time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

C	Operator or crew maintenance
O	Unit maintenance
F	Direct support maintenance
L	Specialized Repair Activity (SRA)[5]
H	General support maintenance
D	Depot maintenance

e. Column 5, Tools and Test Equipment reference code. Column 5 specifies, by code, those common tools sets (not individual tools), common TMDE, and special tools, special TMDE, and special support equipment required to perform the designated function. Codes are keyed to tools and test equipment in section III.

f. Column 6, Remarks. When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks contained in Section IV.

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[5]This maintenance level is not included in Section II, column (4) of the Maintenance Allocation Chart. Functions to this level of maintenance are identified by a work-time figure in the "H" column of Section II, column (4), and an associated reference code is used in the Remarks column (6). This code is keyed to Section IV, Remarks, and the SRA complete repair application is explained there.

EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III.

a. Column 1, Reference Code. The tool and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.

b. Column 2, Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

d. Column 4, National Stock Number. The National Stock Number of the tool or test equipment.

e. Column 5, Tool Number. The manufacturer's part number, model number, or type number.

EXPLANATION OF COLUMNS IN REMARKS, SECTION IV.

a. Column 1, Remarks Code. The code recorded in column 6, Section II.

b. Column 2, Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

Section II. MAINTENANCE ALLOCATION CHART FOR MORTAR, SUBCALIBER INSERT

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		Direct Support	General Support	Depot		
Group Number	Component/ Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment Ref Code	Remarks Code
00	Mortar, Subcaliber Insert	Inspect	0.1	0.1					
		Replace	0.1						
		Repair		0.3					
01	Cannon Assembly, M29A1	Inspect	0.1	0.2	0.6			1, 2, 3	A, B
		Service	0.1	0.1					
		Replace		0.2	0.3				
		Repair	0.1	0.2					
02	Insert Sleeve	Inspect	0.1					4	
		Replace		0.3					
		Repair		0.2					

MAINTENANCE ALLOCATION CHART
FOR
MORTAR, SUBCALIBER INSERT (Cont)

(1)	(2)	(3)	(4) Maintenance Level						(6)
			Unit		Direct Support	General Support	Depot	Tools and Equipment	
Group Number	Component/ Assembly	Maintenance Function	C	O	F	H	D	Ref Code	Remarks Code
03	Container, Storage	Inspect Replace Repair	0.1 0.1 0.1					5	

Section III. TOOLS AND TEST EQUIPMENT FOR MORTAR, SUBCALIBER INSERT

Tool or Test Equipment Ref Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
1	F	Accessory Outfit for Pullover Gages	4933-00-348-8652	SC 4933-95-A12
2	F	Borescope: Cannon Bore Inspecting, M3	6650-01-063-0035	11584701
3	O	Key, Socket Head, 0.3125 in.	5120-00-240-5274	BO1185
4	O	Key, Socket Head, 0.0625 in.	5120-00-198-5398	GGG-K-275

TOOLS AND TEST EQUIPMENT
FOR
MORTAR, SUBCALIBER INSERT (Cont)

Tool or Test Equipment Ref Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
5	O	Small Arms Repairman Tool Kit	5180-00-357-7770	SC 5180-95-A07

Section IV. REMARKS
FOR
MORTAR, SUBCALIBER INSERT

Remarks Code	Remarks
A	Refer to TM 9-1000-202-14.
B	Refer to TM 9-6650-235-13&P.

APPENDIX C
REPAIR PARTS AND SPECIAL TOOLS LIST

SECTION I. INTRODUCTION

C-1. SCOPE.

This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of unit and direct support maintenance of the subcaliber insert. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the source, maintenance, and recoverability (SMR) codes.

C-2. GENERAL.

This repair parts and special tools list is divided into the following sections:

a. Section II, Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. This list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Bulk materials are

C-2. GENERAL (Cont).

listed by item name in FIG. BULK at the end of the section. Repair parts kits are listed separately in their own functional group within section II. Repair parts for reparable special tools are also listed in section II. Items listed are shown on the associated illustration.

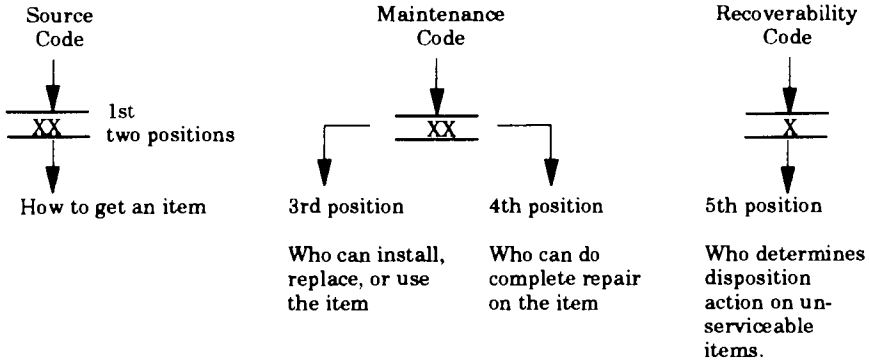
b. Section III, Special Tools List. A list of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE (UOC) column).

c. Section IV, Cross-Reference Indexes. There are two cross-reference indexes in this RPSTL: The National Stock Number Index and the Part Number Index. The National Stock Number Index refers you to the figure and item number. The Part Number Index refers you to the figure and item number.

C-3. EXPLANATION OF COLUMNS (SECTIONS II AND III).

a. ITEM NO. (Column (1)). Indicates the number used to identify items called out on the illustration.

b. SMR CODE (Column (2)). The source, maintenance, and recoverability (SMR) code contains supply/requisitioning information, maintenance level authorization criteria, and disposition instruction, as shown in the following breakout:



NOTE

Complete repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

(1) **Source Code.** The source code tells you how you get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

Source Code	Application/Explanation
PA PB PC PD PE PF PG	Stock items; use the applicable NSN to requisition/request items with these source codes. They are authorized to the level indicated by the code entered in the 3d position of the SMR code. **NOTE** **Items coded PC are subject to deterioration.**
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance level indicated in the 3d position of the SMR code. The complete kit must be requisitioned and applied.

Source Code	Application/Explanation
MO— Made at unit/AVUM level MF— Made at DS/AVIM level MH—Made at GS level ML— Made at SRA MD—Made at depot	Items with these codes are not to be requisitioned/requested individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group of the repair parts list of the RPSTL. If the item is authorized to you by the 3d position code of the SMR code, but the source code indicates it is made at higher level, order the item from the higher level of maintenance.
AO— Assembled by unit/AVUM level AF— Assembled by DS/AVIM level AH— Assembled by GS level AL— Assembled by SRA AD— Assembled by depot	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3d position of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.

XA—Do not requisition an "XA" coded item. Order the next higher assembly. (Refer to NOTE below).

XB—If an item is not available from salvage, order it using the CAGEC and part number.

XC—Installation drawing, diagrams, instruction sheet, field service drawing; identified by manufacturer's part number.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes except for those source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

(2) Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to use and repair support items. The maintenance codes are entered in the third position of the SMR code as follows:

(a) The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use the item. The maintenance code entered in the third position will indicate authorization to the following levels of maintenance:

Maintenance Code		Application/Explanation
C	-	Crew or operator maintenance done within unit/AVUM maintenance.
O	-	Unit level/AVUM maintenance can remove, replace, and use the item.
F	-	Direct support/AVIM maintenance can remove, replace, and use the item.
H	-	General support maintenance can remove, replace, and use the item.
L	-	Specialized repair activity can remove, replace, and use the item.
D	-	Depot can remove, replace, and use the item.

C-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) (Cont).

(b) The maintenance code entered in the fourth position tells you whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (perform all authorized repair functions).

NOTE

Some limited repair may be done on the item at a lower level of maintenance, if authorized by the maintenance allocation chart and SMR codes.

Maintenance Code	Application/Explanation
O	Unit/AVUM is the lowest level that can do complete repair of the item.
F	Direct support/AVIM is the lowest level that can do complete repair of the item.
H	General support is the lowest level that can do complete repair of the item.
L	Specialized repair activity is the lowest level that can do complete repair of the item.

Maintenance Code	Application/Explanation
D -	Depot is the lowest level that can do complete repair of the item.
Z -	Nonreparable. No repair is authorized.
B -	No repair is authorized. No parts or special tools are authorized for maintenance of "B" coded items. However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

(3) Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is shown in the fifth position of the SMR code as follows:

Recoverability Code	Application/Explanation
Z -	Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the 3d position of the SMR code.
O -	Reparable item. When uneconomically reparable, condemn and dispose of the item at unit level.

C-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) (Cont).

Recoverability Code	Application/Explanation
F -	Reparable item. When uneconomically reparable, condemn and dispose of the item at direct support level.
H -	Reparable item. When uneconomically reparable, condemn and dispose of the item at general support level.
D -	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item are not authorized below depot level.
L -	Reparable item. Condemnation and disposal not authorized below specialized repair activity (SRA).
A -	Item requires special handling or condemnation procedures because of specific reasons (such as precious metal content, high dollar value, critical materiel, or hazardous materiel). Refer to appropriate manuals/ directives for specific instructions.

c. NSN (Column (3)). The National stock number for the item is listed in this column.

d. CAGEC (Column (4)). The Contractor and Government Entity Code is a 5-digit code which is used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

e. PART NUMBER (Column (5)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the number listed.

f. DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). This column includes the following information:

(1) The Federal item name, and, when required, a minimum description to identify the item.

C-3. **EXPLANATION OF COLUMNS (SECTIONS II AND III) (Cont).**

(2) Part numbers of bulk materials are referenced in this column in the line entry to be manufactured/fabricated.

(3) The statement "END OF FIGURE" appears just below the last item description in column (5) for a given figure in both Sections II and III.

g. QTY (Column (7)). The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column instead of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

C-4. **EXPLANATION OF INDEX FORMAT AND COLUMNS (SECTION IV).**

a. National Stock Number (NSN) Index.

(1) STOCK NUMBER Column. This column lists the NSN in National item identification number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN.

NSN
(e.g., 5385-01-574-1476).
NIIN

When using this column to locate an item, ignore the first four digits of the NSN. Use the complete NSN (13 digits) when requisitioning items by stock number.

(2) **FIG. Column.** This column lists the number of the figure where the item is identified/located. The figures are in numerical order in sections II and III.

(3) **ITEM Column.** The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

b. Part Number Index. Part numbers in this index are listed by part number in ascending alphanumeric sequence (vertical arrangement of letter and number combination which places the first letter or digit of each group in order A thru Z, followed by the numbers 0 thru 9 and each following letter or digit in like order).

(1) **PART NUMBER Column.** Indicates the part number assigned to the item.

(2) **FIG. Column.** This column lists the number of the figure where the item is identified/located in Section II or III.

(3) **ITEM Column.** The item number is the number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

C-5. **REFERENCE DESIGNATOR INDEX.** Not applicable.

C-6. **SPECIAL INFORMATION.**

a. **Usable on Code.** Not applicable.

b. **Fabrication Instructions.** Bulk materials required to manufacture items are listed in the bulk material functional group of this RPSTL. Part numbers for bulk material are also referenced in the Description Column of the line item entry for the item to be manufactured/fabricated.

c. **Index Numbers.** Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the National stock number/part number index and the bulk material list in section II.

d. **Associated Publications.** Not applicable.

e. **Illustrations-Listing.** Not applicable.

C-7. HOW TO LOCATE REPAIR PARTS.

a. When National Stock Number or Part Number is Not Known.

(1) **First.** Using the table of contents, determine the assembly or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

(2) **Second.** Find the figure covering the functional group or the subfunctional group to which the item belongs.

(3) **Third.** Identify the item on the figure and note the item number.

(4) **Fourth.** Look in the repair parts list for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

b. When National Stock Number or Part Number is Known.

(1) **First.** If you have the National stock number, look in the STOCK NUMBER column of the National Stock Number Index. The NSN is arranged in National item identification number (NIIN) sequence (see paragraph C-4a). Note the figure and item number next to the NSN.

C-7. HOW TO LOCATE REPAIR PARTS (Cont).

(2) Second. Turn to the figure and locate the item number. Verify that the item is the one you are looking for.

NOTE

If you have the part number, look in the PART NUMBER column of the part number index. Identify the figure and item number, and look up the item on the figure in section II.

C-8. ABBREVIATIONS. Not applicable.

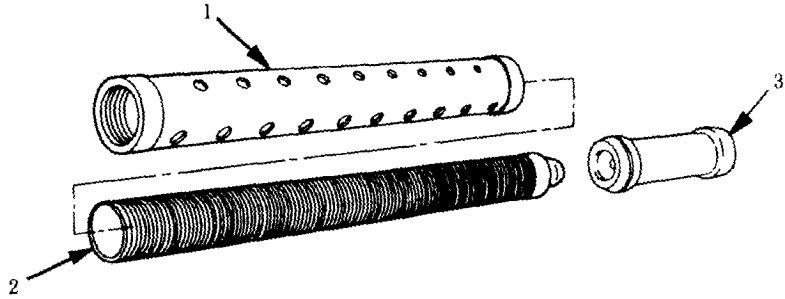


Figure C-1. Mortar, Subcaliber Insert 12901230.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)		(7) QTY
					FIG. C-1 GROUP 00 MORTAR, SUBCALIBER INSERT 12901230		
1	PAOOO	1015-01-381-1752	19206	12901235	Sleeve, Insert	V89	1
2	PAOFA	1015-00-722-5535	19206	8766507	Cannon Assembly, M29A1	V89	1
3	PAOZZ	1015-01-381-2250	19206	12901231	Block, Filler	V89	1

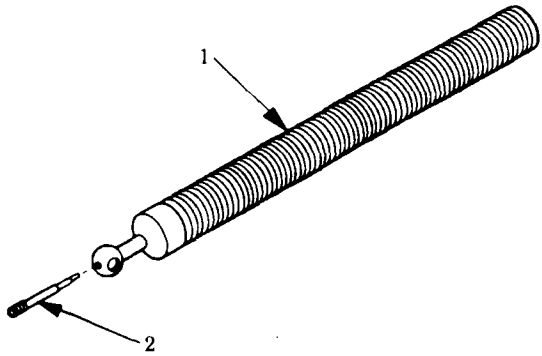


Figure C-2. Cannon Assembly, M29A1 8766507.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)		(7) QTY
					FIG. C-2 GROUP 01 CANNON ASSEMBLY, M29A1 8766507		
1	XAOFA		19206	8766506	Barrel	V89	1
2	PAOZZ	1015-00-928-3797	19206	11577647	Pin, Finng	V89	1

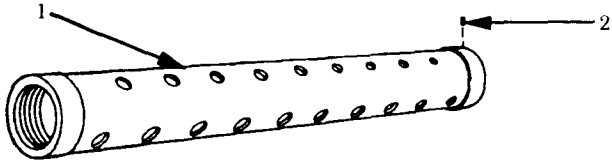


Figure C-3. Insert Sleeve 12901235.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG C-3 GROUP 02 INSERT SLEEVE 12901235	
*1	XAOOO		19206	12901246	Sleeve, Insert V89	1
2	PAOZZ	5305-00-054-9250	96906	MS51045-23	Setscrew V89	2

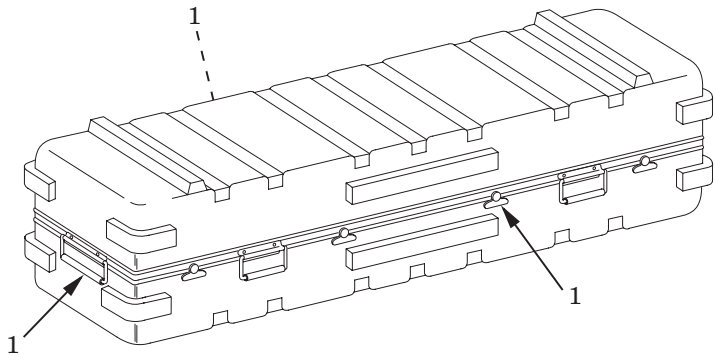


Figure C-4. Container, Storage 12901248.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG C-4 GROUP 03 CONTAINER, STORAGE 12901248	
*1	PAOZZ	1015-01-414-4456	19200	12901249	Field Repair Kit, Container V89 Assembly Tool (1) (102702-T) Handle (2) (103000) Hinge (2) (102714) Latch (2) (102917)	V

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

Section I. INTRODUCTION

SCOPE. This appendix lists components of the end item and basic issue items for the subcaliber insert to help you inventory the items required for safe and efficient operation of the equipment.

GENERAL. The Components of End Item (COEI) and Basic Issue Items (BII) Lists are divided into the following sections:

a. Section II. Components of End Item. This listing is for information purposes only, and is not authority to requisition replacements. These items are part of the subcaliber insert. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.

b. Section III, Basic Issue Items. These essential items are required to place the subcaliber insert in operation, to operate it, and to do emergency repairs. Although shipped separately packaged, BII must be with the subcaliber insert during operation and when it is transferred between property accounts. This list is your authority to request/requisition them for replacement based on authorization of the end item by the TOE/MTOE. Illustrations are furnished to help you find and identify the items.

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

a. Column (1) - Illustration Number (Illus Number). Gives you the number of the item illustrated.

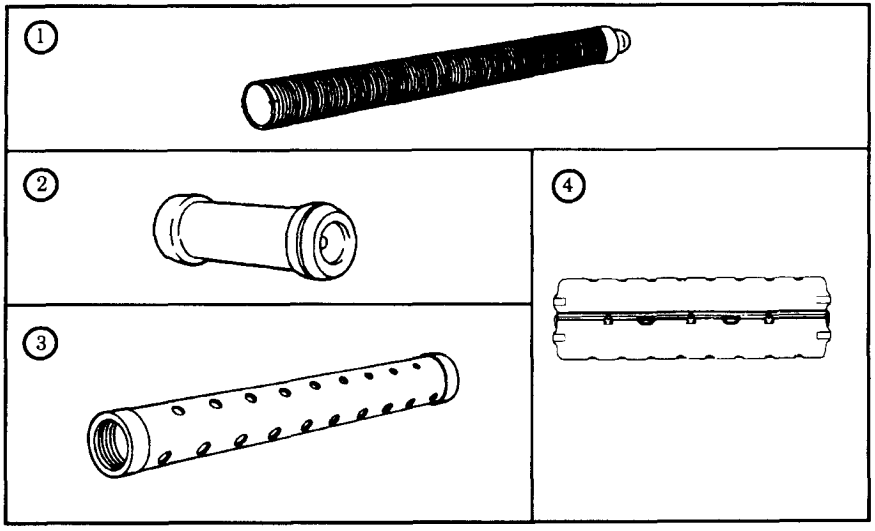
b. Column (2) - National Stock Number. Identifies the stock number of the item to be used for requisitioning purposes.

c. Column (3) - Description and Usable On Code. Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the Contractor and Government Entity Code (CAGEC) (in parentheses) and the part number.

d. Column (4) - Unit of Issue (U/I). Indicates how the item is issued for the National Stock Number shown in column (2).

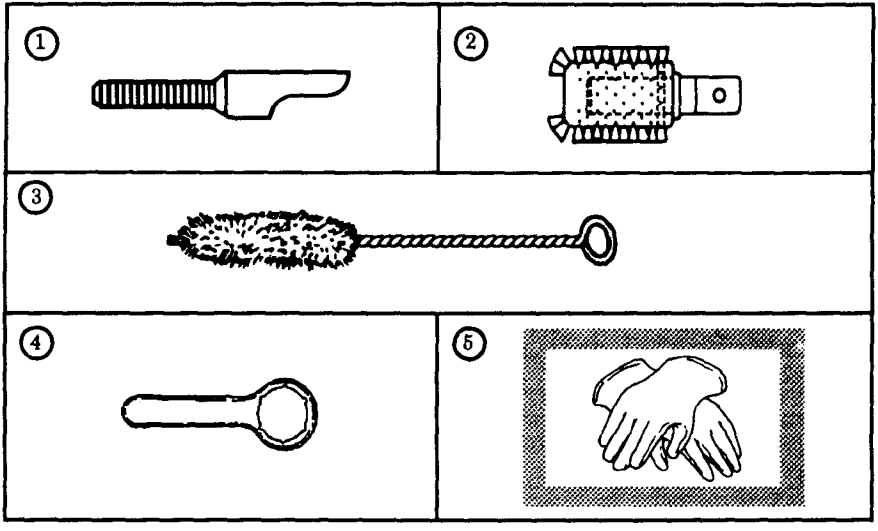
e. Column (5) - Quantity Required (Qty Rqr). Indicates the quantity required.

Section II. COMPONENTS OF END ITEM

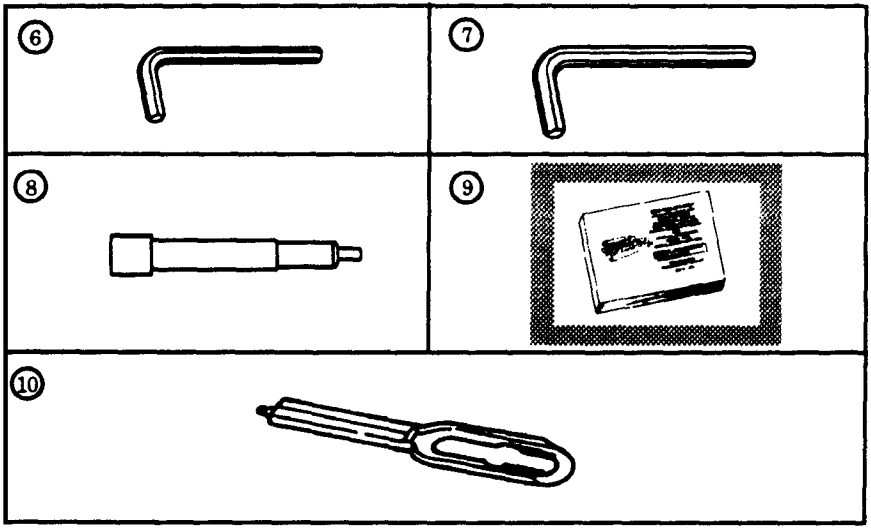


(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number	Usable On Code	(4) U/I	(5) Qty Rqr
1	1015-00-722-5535	CANNON ASSEMBLY, M29A1 (19206) 8766507		EA	1
2	1015-01-381-2250	FILLER BLOCK (19206) 12901231		EA	1
3	1015-01-381-1752	SLEEVE, INSERT (19206) 12901235		EA	1
4	1010-01-391-5127	CONTAINER, STORAGE (19200) 12901248		EA	1

Section III. BASIC ISSUE ITEMS



(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number	Usable On Code	(4) U/I	(5) Qty Rqr	
1	5120-01-392-7613	ADAPTER, FILLER BLOCK (19200) 12901243		EA	1	■
2	1015-01-384-5662	BRUSH, CLEANING, BORE (19206) 12901240		EA	1	■
3	1005-00-610-8828	BRUSH, CLEANING, SMALL ARMS: M6 (19206) 6108828		EA	1	
4	1290-00-767-6038	FUZE SETTER: M25 (19200) 7676038		EA	1	
5	8415-00-268-7870	GLOVES, LEATHER (81349) MIL-G-2366		PR	1	■


⑥
⑦
⑧
⑨
⑩

(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number	Usable On Code	(4) U/I	(5) Qty Rqr
6	5120-00-198-5398	KEY, SOCKET HEAD, 0.0625 IN. (81348) GGG-K-275		EA	1 ■
7	5120-00-240-5274	KEY, SOCKET HEAD, 0.3125 IN. (54936) BO1185		EA	1 ■
8	1015-00-928-3797	PIN, FIRING (19206) 11577647		EA	1 ■
9		TM 9-1015-254-13&P		EA	1 ■
10	4933-00-723-1161	WRENCH, FUZE: M18 (19206) 7231161		EA	1 ■

APPENDIX E
ADDITIONAL AUTHORIZATION LIST (AAL)

Section I. INTRODUCTION

SCOPE. This appendix lists additional items you are authorized for the support of the subcaliber insert.

GENERAL. This list identifies items that do not have to accompany the subcaliber insert and that do not have to be turned in with it. These items are authorized to you by CTA, MTOE, TDA, or JTA.

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. The items are listed in alphabetical sequence by item name.

Section II. ADDITIONAL AUTHORIZED ITEMS LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGEC AND PART NUMBER	USABLE ON CODE	(3) U/I	(4) QTY RECM
7510-00-889-3494	BINDER, LOOSE LEAF (19207) 11677003		EA	1
1220-00-602-7941	BOARD, PLOTTING: M16 (19200) 8370330		EA	1

APPENDIX F
EXPENDABLE AND DURABLE ITEMS LIST

Section I. INTRODUCTION

SCOPE. This appendix lists expendable and durable items that you will need to operate and maintain the subcaliber insert. This listing is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

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 item (e.g., "Use dry cleaning solvent (item 4, appx F)").

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

EXPLANATION OF COLUMNS (Cont).

c. **Column (3) - National Stock Number.** This is the National stock number assigned to the item which you can use to requisition it.

d. **Column (4) - Item Name, Description, Contractor and Government Entity Code (CAGEC), and Part Number.** This provides the other information you need to identify the item.

e. **Column (5) - Unit of Measure (U/M).** This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

Section II. EXPENDABLE AND DURABLE ITEMS LIST

(1) ITEM NUM-BER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC, PART NUMBER	(5) U/M
1	C	7920-00-205-2401	BRUSH, CLEANING, TOOL AND PARTS: Chinese bristle, rd (81349) MIL-B-43871	EA
2			CLEANING COMPOUND, RIFLE BORE (RBC): Solution type	
	C	6850-00-224-6657	8 oz can	CN
	C	6850-00-224-6663	1 gal. can (81349) MIL-C-372	GL
3	C	5350-00-221-0872	CLOTH, ABRASIVE: crocus 50 sheet pack (58536) A-A-1206	PG

EXPENDABLE AND DURABLE ITEMS LIST (Cont)

(1) ITEM NUM-BER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC, PART NUMBER	(5) U/M
4	C	6850-00-281-1985	DRY CLEANING SOLVENT (SD) 1 gal. can (58536) A-A-711	GL
5	C	8415-00-823-7460	GLOVES, CHEMICAL AND SOLVENT RESISTANT (81348) ZZ-G-381	PR
6			LUBRICATING OIL, GENERAL PURPOSE	
	C	9150-00-231-2361	1 gal. can	GL
	C	9150-00-231-2356	1 qt can (81349) MIL-L-3150	CN

(1) ITEM NUM-BER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC, PART NUMBER	(5) U/M
7	C	9150-00-292-9687	LUBRICATING OIL, WEAPONS (LAW) 1 qt can (81349) MIL-L-14107	CN
8	C	7920-00-205-1711	RAG, WIPING 50 lb bale (58536) A-A-2522	BL
9	C	1010-01-384-9271	SLEEVE, CLEANING: with ties (19200) 12901064-2	PK

APPENDIX G
FABRICATION INSTRUCTIONS FOR AMMO RACK MODIFICATION INSERTS FOR THE M1064 CARRIER

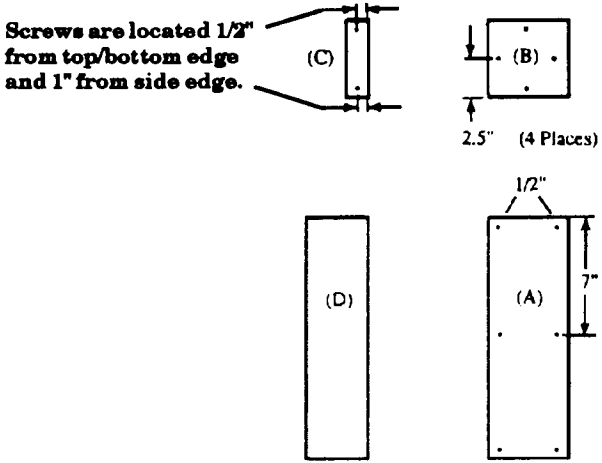
GENERAL ASSEMBLY INSTRUCTIONS. All mating surfaces shall have 1/8 in. bead of wood glue (ASTM D4689) applied prior to insertion of screws (#6-1 5/8 in.) as designated in the instructions for the construction of both inserts. All screws are located 1/2 in. from joined edges, unless otherwise specified.

HORIZONTAL INSERT CONSTRUCTION.

a. Parts List.

Material: Plywood, Specification NN-P-530, Grade C, 3/4 in. thick.

(A) 2 each -- 14.25 in. long x 5.00 in. wide.
(B) 1 each -- 5.00 in. long x 5.00 in. wide.
(C) 1 each -- 5.00 in. long x 2.00 in. wide.
(D) 2 each -- 14.25 in. long x 3.50 in. wide.


Screws are located 1/2" from top/bottom edge and 1" from side edge.
(C)
(B)
2.5" (4 Places)
1/2"
(D)
(A)
7"

b. Assembly.

Using Figure G-1 as a guide, join parts (A) and (D) in accordance with the GENERAL ASSEMBLY INSTRUCTIONS. Join parts (B) and (C) to assembled box as shown.

Following completion of assembly, use a belt sander to smooth all irregularities. Clearly mark insert with "TOP RIGHT" as indicated to denote proper configuration in ammo rack.

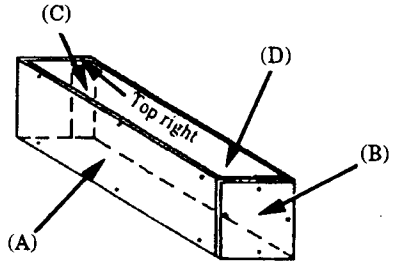
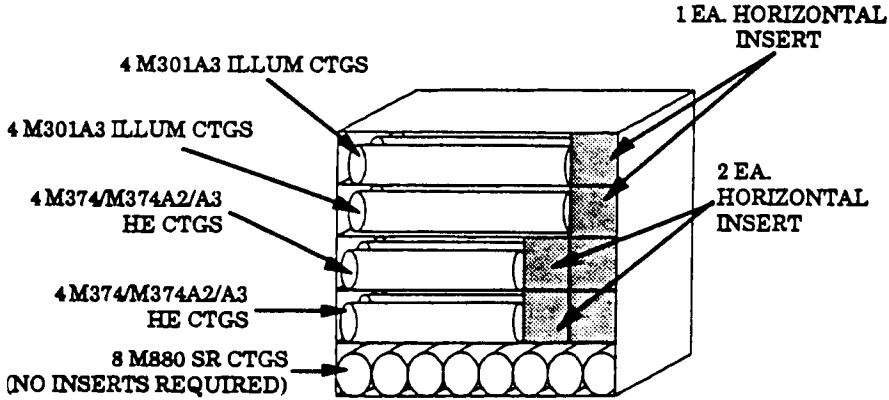


Figure G-1.

HORIZONTAL INSERT CONSTRUCTION (Cont).

c. Placement of Ammo.



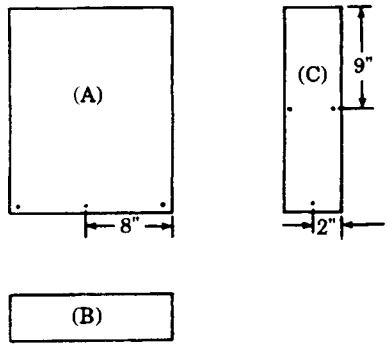
HORIZONTAL RACK

VERTICAL INSERT CONSTRUCTION.

a. Parts List.

Material: Plywood, Specification NN-P-530, Grade C, 3/4 in. thick.

(A) 2 each -- 18.00 in. high x 15.63 in. wide.
(B) 1 each -- 15.63 in. long x 4.00 in. wide.
(C) 1 each -- 18.00 in. long x 5.50 in. wide.



VERTICAL INSERT CONSTRUCTION (Cont).

b. Assembly.

Using Figure G-2 as a guide, join parts (A) and (B) as shown in accordance with the GENERAL ASSEMBLY INSTRUCTIONS. Join part (C) to assembled box as shown.

Following completion of assembly, use a belt sander to smooth all irregularities.

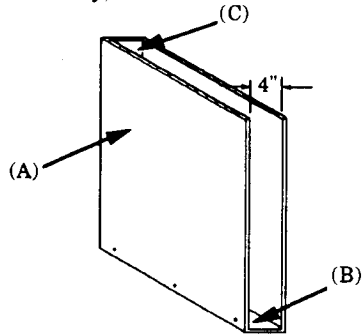
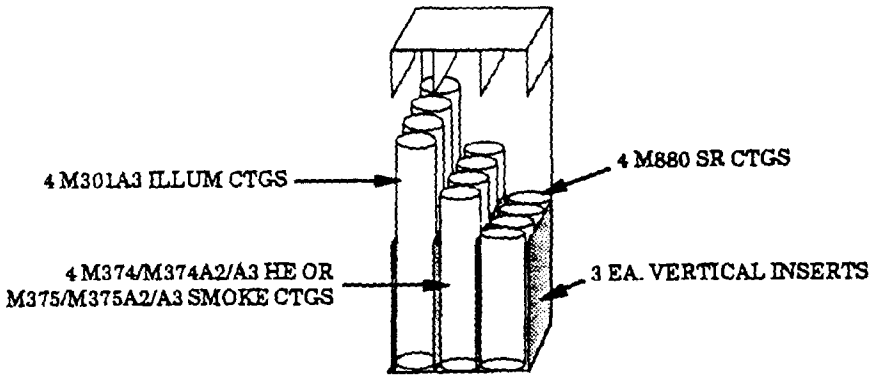


Figure G-2.

c. Placement of Ammo.



VERTICAL RACK

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