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Training Command
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MM1402
01 Mar 04

STUDENT OUTLINE

OPERATOR MAINTENANCE FOR A M252 81MM MORTAR

LEARNING OBJECTIVES

TERMINAL LEARNING OBJECTIVE. Given a SL-3 complete, M252 81mm mortar, cleaning gear, and lubricant, perform operator maintenance for a M252 81mm mortar in accordance with TM 09922A-10/1. (41TR.02.01)

ENABLING LEARNING OBJECTIVES

a. Given a SL-3 complete, M253 cannon, cleaning gear, and lubricant, perform operator maintenance for a M253 cannon in accordance with TM 09922A-10/1. (41TR.02.01c)

b. Given a SL-3 complete M177 bipod, cleaning gear, perform operator maintenance for a M177 bipod in accordance with TM 09922A-10/1. (41TR.02.01d)

c. Given a M45 boresight and cleaning gear, perform operator maintenance for an M45 boresight in accordance with TM 09922A-10/1. (41TR.02.01e)

1. **INSPECTING THE M252 81MM MORTAR.** The operator must perform scheduled services to be sure the 81mm mortar will operate properly.

a. Before firing. Check to see if your weapon has been bore scoped and pullover gauged within 90 days prior to firing and within 90-day intervals during firing periods.

b. After firing. Update NAVMC 10558A to reflect that day's firing. After firing 5000 rounds, bore scooping is mandatory each additional 500 rounds.

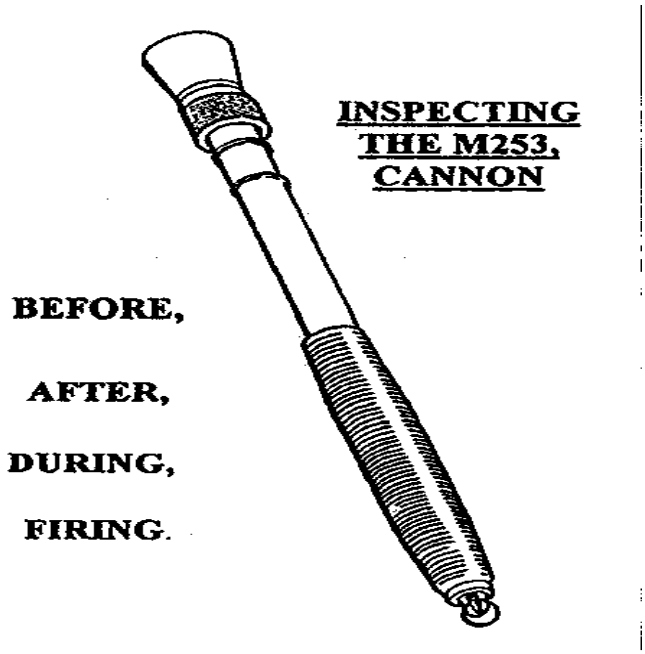
c. M253, Cannon. The exterior surface of the cannon between the upper and lower stop bands must be wiped free of lubrication prior to firing. If this portion is not dry, the barrel clamp assembly will move on the barrel during firing.

(1) Before firing. Check for foreign matter in the barrel and wipe the interior of the barrel dry. Also wipe the exterior surface free of all lubrication. Check for cracks, broken welds, rust, loose, missing, dented or damaged parts on the cannon and blast attenuator device.

(2) Before and during firing. Check for bulges, dents and visible cracks. Check for evidence of gas leakage around the firing pin or breech plug (visible discoloration). The bore will be punched prior to firing to insure that it is clear of excess lubricants and foreign matter. During

firing the bore will be punched after every 10 rounds, every fire for effect, and at every end of mission.

(3) Before, during and after firing. Breech plug must not be loose.

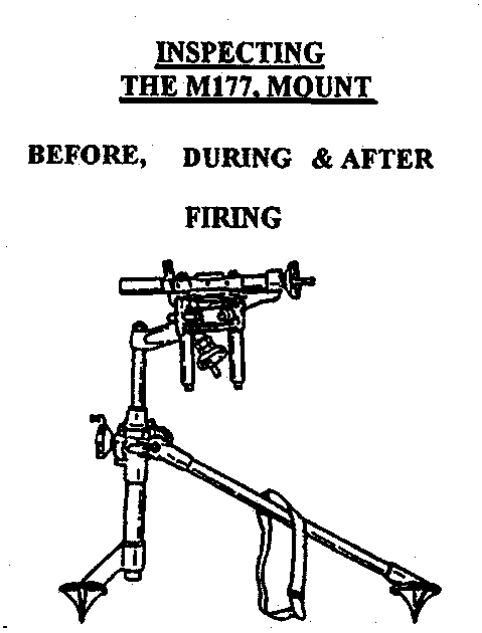


d. M177 Bipod

(1) Before firing. Check for cracks, broken welds, rust and loose, missing or damaged parts. Check that the barrel clamp assembly operates and holds the cannon securely.

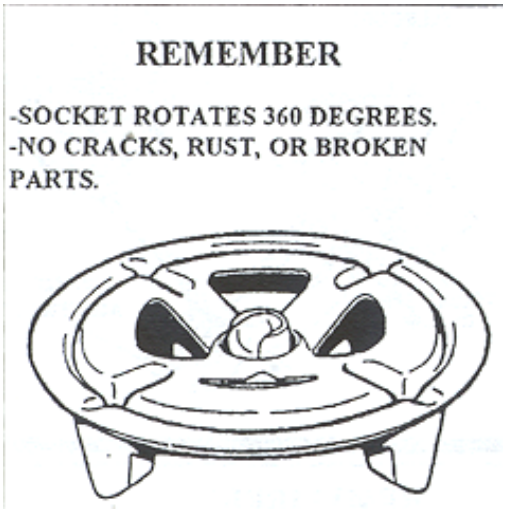
(2) Before and during firing. The elevating leg assembly, traversing gear assembly, and cross-leveling mechanism must operate smoothly and without binding through the entire range of travel.

(3) Before and after firing. Test the function of the mortar mounting buffers by pulling down on both of them at the same time; they should return to the original position when released.



e. M3A1 Base Plate

(1) Before firing. Rotate the U-shaped socket 360 degrees. Check the base plate for cracks, broken welds, and loose, missing or damaged parts.



f. M64A1 Sight Unit. There are ten items on the sight unit that are illuminated by radioactive tritium gas. Before and after firing, check the ten items in a darkened area. If they are damaged or not illuminated, notify the armory.

(1) Before firing

(a) Check the eye shield for damage.

(b) Check lenses and windows for smears, scratches, cracks, or other obstruction.

(c) Level vials must not be cracked, broken, or loose.

(d) Check the azimuth and elevation control knobs for free and easy operation through their entire range.

(e) Check azimuth and elevation mechanism backlash. Must not exceed .5 mils. Check index scales and lines. They must be clear and distinct.

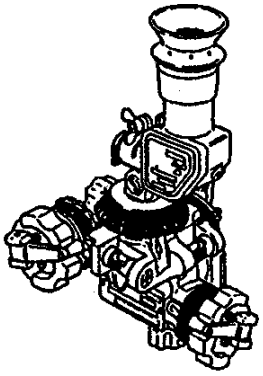
(f) Check the dovetail-locking lever for cracks. Also, check that the locking lever secures the sight unit to the adapter and that the mounting surface is free from nicks and burrs.

(g) Check that the azimuth and elevation control knobs stay in position when the locking knobs are tightened.

(h) Check that the clamping mechanism secures the elbow telescope to the telescope mount.

(i) Before, during and after firing. Check the coarse deflection scale to insure that the scale rotates freely when depressed and returns to a secure position under spring tension when released.

INSPECTING THE M64A1 SIGHT



g. M14, Aiming Posts and Cover

(1) Before firing

(a) Check for completeness and that mating surfaces are clean, free of paint and fit properly.

(b) Ensure that the posts are not bent or broken.

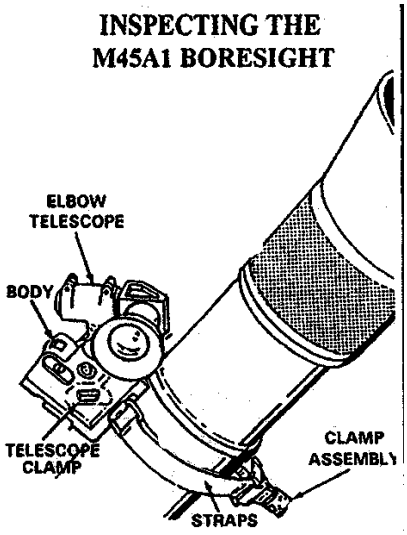
h. M45A1 Boresight

(1) Before firing

(a) Check the eye shield for damage.

(b) Check lenses and window for smears, scratches, cracks or other obstructions.

(c) Level vials must not be cracked, broken or loose in mounting. Covers must not be missing.

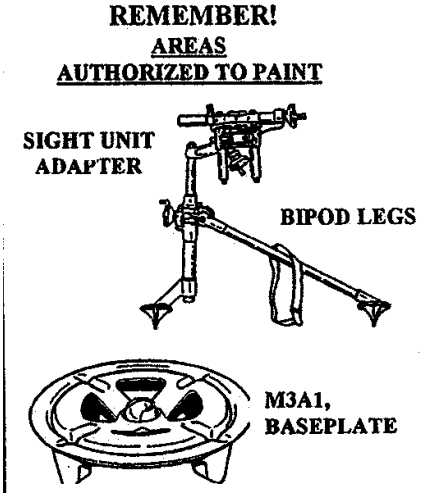


i. M58 and M59 Aiming Post Lights

(1) Before firing

(a) Check the aiming post lights for proper illumination in a darkened area. If they are damaged or not illuminated, notify the armory.

2. PAINTING. The operator may also touch up the paint on the M3A1 base plate and the sight unit adapter using enamel, brush and synthetic thinner. The bipod may be touched up using lacquer.



3. CLEANING AND LUBRICATING. Weekly, clean and wipe the entire outside surface of the cannon, bipod, and base plate with general purpose lubricating oil.

a. M253, Cannon. Use RBC to thoroughly clean the barrel bore after firing and for three consecutive days thereafter. After the third cleaning, wipe dry and lightly coat with general purpose lubricating oil. When this cannot be done immediately, apply oil to prevent corrosion. At the first opportunity, clean, oil and inspect all parts. Clean the vent and firing pin with a toothbrush and bore cleaner.

(1) Dry the parts by using clean rags and apply preservative lubricating oil.

(2) When rifle bore cleaner is not available, use soap solution or plain water.

(3) Remove moisture and dirt from the outside of the mortar. Oil the cannon lightly with preservative lubricating oil.

(4) Weekly, or as needed, carefully clean the cooling fins at the breech end of the cannon to assure maximum heat transfer. Do not allow dirt or foreign matter to build up on the cooling fins.

b. M177, Bipod. When cleaning the mount, remove dirt from all crevices.

(1) Clean and dry all moving parts.

(2) Clean and lubricate exposed bearing surfaces with general purpose lubricating oil. To distribute the oil over the working surfaces, operate the traversing hand wheel and elevating crank.

c. M64A1 Sight Unit. The sight unit is a delicate instrument and must be handled with extreme care and kept clean. It is easily damaged if the correct setting (which is located in the sight box) is not put on when it is placed in its protective carrier.

(1) Wipe the sight unit with a clean dry cloth before storing it in the carrying case.

(2) Use only lens cleaning tissue to wipe the lens. Care must be taken when wiping the lens not to scratch it with foreign material.

d. Authorized Cleaners and Lubricants. The following are authorized cleaning solvents and lubricants to be used on the mortar.

(1) Rifle bore cleaner (RBC).

(2) Preservative lubricating oil, special and medium (PL).

(3) Dry cleaning solvent.

(4) Lubricant, Artic Weather (LAW)

(5) General Purpose Lubrication (GPL)

(6) Hot soapy water (only when nothing else is available).

e. Weapon Record Book. The weapon record book consists of parts I & II. Data pertinent to the major item (mount, recoil mechanism, breech ring, etc.) will be recorded in part I; data pertaining to the tube will be recorded in part II. To prevent confusion regarding the proper place to record data, the following should be remembered:

(1) Part I remains with the major item during its entire service life.

(2) Part II remains with the tube until it is condemned. When a tube is installed on a mount, part I must be combined with part II to form a complete book. Whenever a tube is changed, it is extremely important that appropriate entries are made in both parts I and II so that the historical record remains intact. Failure to record such data could lead to a future unsafe weapon condition.

(3) When part I or II is completely filled before the major item or tube is condemned, a new section, part I or II, will be initiated by the using unit. In order that complete information may be available at all times however, the appropriate part of the old book will be retained by stapling the new and old books together.

REFERENCES. TM 09922A-10/1, Operator's Manual for Mortar, 81mm, M252 pages 2-8 through 2-28.

EXAM ID: MM1402P

EXAM TITLE: Operator Maintenance for a M252 81mm Mortar Performance Examination

TLO/ELO: 41TR.02.01

STUDENT INSTRUCTIONS:

1. You are an infantry mortarman and must perform operator maintenance of a M252 81mm mortar.

2. There is no time limit for this task.

3. To achieve mastery, you must perform each of the performance steps correctly.

PERFORMANCE STEPS AND/OR PERFORMANCE STANDARDS:

Performance Steps	Master	Non-Master	Remarks
M253 CANNON			
1. Check for foreign matter in cannon.			
2. Using the brush, cleaning, artillery, swab the bore with rifle bore cleaner.			
3. Using the hook, artillery, cleaning and clean rags remove all excess rifle bore cleaner.			
4. Look for bulges, dents, cracks, rust, missing or damaged parts, on the cannon or blast attenuator device, and evidence of gas leakage around breech plug and firing pin.			
5. Check to see if the weapon has been bore scoped and pullover gauged within 90 days prior to firing.			
6. Check mount for cracks, broken welds, rust, loose, missing, or damaged parts.			
M177 BIPODS			
7. Check for smooth operation of elevating mechanism.			
8. Clean with a rag and general-purpose lubricant.			
9. Apply a light coat of general-purpose lubricant to prevent binding.			
10. Check for smooth operation of traversing mechanism.			
11. Clean with a rag and general-purpose lubricant.			
12. Apply a light coat of general-purpose lubricant to prevent binding.			
13. Check for smooth operation of cross-leveling mechanism.			
14. Clean with a rag and general-purpose lubricant.			

15.	Apply a light coat of general-purpose lubricant to prevent binding.			
16.	Check that the barrel clamp assembly operates properly and holds the barrel securely.			
17.	Clean with a rag and general-purpose lubricant. Dry completely before firing.			
18.	Extend buffers: they must return smoothly, without binding, to original position when released.			
19.	Clean with a rag and general-purpose lubricant.			
	M3A1 BASEPLATE			
20.	Check baseplate for cracks, loose, missing, or damaged parts.			
21.	Clean with water and rag.			
22.	As necessary paint the external surface with olive drab paint.			
23.	Use a synthetic thinner to remove old or excess paint.			
24.	Check socket cap for smooth 360-degree rotation. If the socket cap does not move freely then turn in to the armory for cleaning.			
	M64A1 MORTAR SIGHT UNIT			
25.	Check M64A1 sight unit for the illumination of telescope, coarse elevation scale, coarse elevation scale arrow, cross-level vial, fine elevation scale, fine elevation index arrow, coarse azimuth (deflection) index arrow, elevation vial, fine azimuth (deflection) scale, coarse azimuth (deflection) scale.			
26.	Check eyepiece for dirt, cracks, or fogging.			
27.	Clean with denatured alcohol and lens paper.			
28.	Check eye-shield vent holes for dirt.			
29.	Clean wit a paintbrush.			
30.	Check that latching lever secures sight unit mount to dovetail.			
31.	Clean with a paintbrush.			
32.	Check that bubbles in level vials will move and vials are not cracked or loose in mount.			
33.	Clean with a paintbrush.			
34.	Check that vial cover rotates freely.			
35.	Clean with a paintbrush.			
36.	Check elevation knob and deflection knob for smooth operation.			
37.	Clean with a paintbrush.			
38.	Check that backlash on knobs doesn't exceed 0.5 mils.			
39.	Check that the fine elevation scale slips only when the screws are loosened.			

40.	Check to assure the locking knobs provide tension on the deflection and elevation control knobs.			
41.	Clean with a paintbrush.			
	M45 BORESIGHT			
42.	Inspect boresight lens for dirt, cracks, or fogging.			
43.	Clean with denatured alcohol and lens paper.			
44.	Check that boresight level bubbles will move and vials are not broken or loose in mounting.			
45.	Check boresight eye-shield for damage.			
46.	Clean with a paintbrush.			
47.	Check that mounting surfaces are free of nicks and burrs.			
48.	Check boresight straps and clamp assembly for serviceability.			
49.	Check night aiming devices for illumination in a darkened area.			
50.	Clean with denatured alcohol and lens paper.			
51.	Check for missing or damaged radiation warning, data plate, or other parts.			
52.	Check for evidence of tampering.			
53.	Check 10558A-SD weapons record book for entries of round expenditure.			
	M14 AIMING POSTS.			
54.	Check M14 aiming posts for accountability.			
55.	Check M14 aiming posts for cleanliness and serviceability.			
56.	Clean with water and rags.			
57.	Check the aiming post case for excessive wear and cleanliness.			
58.	Clean with water and air dry.			