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Training Command
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MM1302
16 Apr 04

STUDENT OUTLINE

OPERATOR MAINTENANCE FOR THE M224 60MM MORTAR

LEARNING OBJECTIVES

a. Terminal Learning Objective. Given a SL-3 complete M224 60mm mortar, cleaning gear, and lubricant, perform operator maintenance for a M224 60mm mortar in accordance with TM 08206A-10/1A. (41TR.01.01)

b. Enabling Learning Objectives

(1) Given a SL-3 complete, M224 60mm mortar, cleaning gear, and lubricant, perform operator maintenance for a M225 cannon in accordance with TM 08206A-10/1A (41TR.01.01d)

(2) Given a SL-3 complete M170 bipod, cleaning gear, and lubricant, perform operator maintenance for a M170 bipod in accordance with TM 08206A-10/1A. (41TR.01.01e)

(3) Given a M224 60mm mortar baseplate and cleaning gear, perform operator maintenance of a M224 60mm mortar baseplate in accordance with TM 08206A-10/1A. (41TR.01.01f)

(4) Given a SL-3 complete M64A1 mortar sight unit and cleaning gear, perform operator maintenance of a M64A1 mortar sight unit in accordance with TM 08206A-10/1A. (41TR.01.01g)

(5) Given a M115 boresight and cleaning gear, perform operator maintenance for a M115 boresight in accordance with TM 08206A-10/1A. (41TR.01.01h)

(6) Given M14 aiming posts and cleaning gear, perform operator maintenance for M14 aiming posts in accordance with TM 08206A-10/1A. (41TR.01.01i)

1. Inspection Procedures for the M224 60mm Mortar

a. M225 Cannon

(1) Bore. Look for bulges, dents, cracks or evidence of gas leakage. Check for rust and remove dust and dirt from cooling fins and inside of the barrel.

(2) Selector Switch and Actuator

(a) Place the selector lever on "D" (drop fire) while

watching the actuator. Notify unit armorer if the actuator does not move forward.

(b) Place the selector lever on "T" (trigger), listen for a loud click, and watch for the actuator to snap forward. If no click or movement is noted, notify unit armorer.

(c) Trigger does not fire when selector is in the S or D position, but will fire when selector is on the "T" selection.

(d) The lever will not rotate easily through position T, S and D. If range indicator is not visible, notify unit armorer.

(3) Trigger. Operate the trigger while observing the actuator and trigger. If the actuator and/or trigger do not return to the normal position when activating, notify unit armorer.

b. M177 Bipod. When inspecting the bipod, you should pay particular attention to:

(1) Shock Absorbers. Check for binding. Extend and release to ensure shock absorbers do not return too fast.

(2) Collar and Knob. Check to see if it closes properly. Check for dirt or grit.

(3) Traversing Handcrank. Inspect for difficulty in traversing the weapon. Check for binds and dents in the housing. Inspect for a burred or bent traversing spindle.

(4) Elevation Handcrank. Check for lubrication. Inspect for a bent or burred elevation spindle, damaged elevation nut, or damaged elevation housing.

(5) Left Leg Assembly. Check for travel limit. Inspect for worn parts or binding mechanism.

c. Baseplates

(1) M8 Baseplate. Check for dirt located at the base-plate locking arm.

(2) M7 Baseplate. Check for binding and dents in the socket cap. Check the socket cap on M7 for smooth 360 degrees (6400 mils) rotation.

d. M64A1 Sight Unit

(1) Telescope. Check to assure that the telescope rotates freely when the deflection control knob is rotated. Check the lenses for cracks, scratches or fogging.

(2) Body. Ten items on the sight unit are radioactively illuminated. Check the ten points in a darkened area. If any of the ten items are not illuminated, return the sight unit to the armory and notify the NBC Officer and the Ordnance Officer. The ten illuminated parts are:

(a) Telescope

- (b) Course elevation scale
- (c) Course elevation scale arrow
- (d) Cross-level vial
- (e) Fine elevation scale
- (f) Fine elevation index arrow
- (g) Course deflection index arrow
- (h) Elevation vial
- (i) Fine deflection scale
- (j) Course deflection scale

(3) Check the latching lever to assure that it secures the sight to the dovetail mount on the bipods.

(4) Check all scales to assure they do not slip unless the retaining screws are loosened.

(5) Deflection and elevation knobs should rotate without binding. Backlash should not exceed .5 mils.

(6) Deflection and elevation locking knobs should cause resistance when rotating the deflection and elevation knobs.

(7) Leveling vials should not move within their housing. They should be clear and free of cracks.

e. M115 Boresight

(1) Inspect lens for dirt, cracks, or fogging.

(2) Check that level vial bubbles will move and vials are not broken or loose in mounting.

(3) Check that mounting surfaces are free of nicks and burrs.

f. M14 Aiming Posts and M58 or M59 Aiming Post Lights

(1) Wipe all components with a clean dry cloth prior to use.

(2) Check aiming post lights for illumination in a darkened area.

(3) Check aiming post lights for missing or damaged radiation warning, data plate, or other parts.

(4) Check aiming post lights for evidence of tampering. Aiming post lights are factory sealed and no disassembly is authorized or required.

2. Authorized Cleaning Materials. The crew performs the care and cleaning of the mortar and its accessories. Experience has shown that this weapon

becomes unserviceable, most commonly, through lack of care rather than from use.

a. Authorized Cleaning Materials

- (1) Denatured Alcohol. Used for cleaning the M64 and M64A1 sight rubber eye piece.
- (2) Brush, Cleaning Tool. Used to clean the cannon.
- (3) Brush, Paint. M64A1 sight.
- (4) Cleaning Compound Optical Lens. Used to clean the M64A1 sight.
- (5) General purpose lubricating oil (GPL), rifle bore cleaner (RBC), weapon lubricating oil (LAW).
- (6) Cloth, Abrasive Crocus. Used to break up carbon in the bore.
- (7) Enamel, Forest Green. Used to paint the M7 base plate and M8 base plate. (Care should be taken to prevent painting the sockets).
- (8) Paper, Lens: Used to clean the sight lens.
- (9) Rags

3. Cleaning Before Firing

- a. Check if your weapon has been borescoped and pullover gauged within the past 180 days.
- b. Clean the bore and firing mechanism with clean, dry rags. Do not apply any oil to the bore before firing.
- c. Clean and oil lightly all moving metal parts with (GPL) general purpose lubricant.

4. Cleaning During Firing. During firing, the bore should be swabbed out by the assistant gunner with a clean, dry rag to remove any carbon, metallic deposits or foreign materials after every 10 rounds, after fire for effect, after end of mission.

5. Care and Cleaning After Firing

a. Use GPL (general purpose lubricant) 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. Regular maintenance should be done on the mortar during periods of inactivity. A weekly cleaning should be done to prevent corrosion.

(1) Clean the cooling fin and outside surface of the barrel with a general-purpose brush and GPL.

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

(3) When GPL is not available rifle bore cleaner (RBC) may be substituted. Weapon lubricating oil (LAW) is an acceptable substitute. LAW will be used for continuous subzero environments.

Reference. TM 08206A-10/1A, Operator's Manual for Lightweight Company Mortar, 60mm, M224 pages 00017 00-1 through 00017 00-22.

EXAM ID: MM1302P

EXAM TITLE: Operator Maintenance for a M224 60mm Mortar Performance Examination

TLO/ELO: 41TR.01.01

STUDENT INSTRUCTIONS:

1. You are an infantry mortarman and must perform operator maintenance for a M224 60mm 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
M225 CANNON (41TR.01.01d)			
1. Check for foreign matter in cannon tube.			
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, missing or damaged parts, or evidence of gas leakage around breech cap.			
5. Check to see if the weapon has been bore scoped and pullover gauged within 90 days prior to firing.			
6. Use a light coat of general-purpose lubricant on the external surface to prevent rust.			
7. Place firing selector at T, S, and D and check safety by squeezing the trigger. Trigger should not fire mortar with firing selector on S or D. Trigger should click loudly with firing selector on T.			

8. Apply a light coat of general-purpose lubricant to the trigger spring to keep it moving freely.			
9. Check for illumination of range indicator assembly. If not illuminating turn in to the armory. BIPOD (41TR.01.01e)			
10. Check for smooth operation of elevating 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 traversing mechanism.			
14. Clean with a rag and general-purpose lubricant.			
15. Apply a light coat of general-purpose lubricant to prevent binding.			
16. Check for smooth operation of cross-leveling mechanism.			
17. Clean with a rag and general-purpose lubricant.			
18. Apply a light coat of general-purpose lubricant to prevent binding.			
19. The mechanical leg must move in and out smoothly with the plain wing nut loosened.			
20. Clean with a rag and general-purpose lubricant.			
21. Use an all purpose brush to clean the threads of the plain wing nut.			
22. Apply a light coat of general-purpose lubricant to prevent binding.			
23. Extend the shock absorbers to ensure they return smoothly, without binding, to original the position when released.			
24. Apply a light coat of general-purpose lubricant to prevent binding.			

25.	Check that the collar locks securely.			
	BASEPLATE (41TR.01.01f)			
26.	Check the M7 baseplate for cracks or breaks.			
27.	Clean with water and rag.			
28.	As necessary paint the external surface with olive drab paint.			
29.	Use a synthetic thinner to remove old or excess paint.			
30.	Check the locking cap for smooth 360-degree rotation.			
31.	If the locking cap is binding bring to an armory for cleaning.			
32.	Insert the base cap of the cannon into the socket of the M8 baseplate, close the latch ensuring that the pin seats and locks, and check for retention of the baseplate on the cannon.			
33.	Clean the baseplate with water and a rag.			
34.	As necessary paint the external surface with olive drab paint.			
35.	Use a synthetic thinner to remove old or excess paint.			
	M64A1 MORTAR SIGHT UNIT			
36.	Check the 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. If any parts are not illuminating turn in to the armory.			
37.	Check the eyepiece for dirt, cracks, or fogging.			
38.	Clean with cleaning compound, optical lens and lens paper.			
39.	Check the eye-shield vent holes for dirt.			
40.	Clean with brush, artist.			

41. Check that the latching lever secures the sight unit mount to the dovetail.			
42. Clean with cleaning compound, optical lens and lens paper.			
43. Check that the bubbles in level vials will move and the vials are not cracked or loose in the mount.			
44. Check that the vial cover rotates freely.			
45. Clean with brush, artist.			
46. Check elevation knob and deflection knob for smooth operation.			
47. Clean with brush, artist.			
48. Check that backlash on knobs doesn't exceed 0.5 mils.			
49. Check that the fine elevation scale slips only when the screws are loosened.			
50. Check to assure the locking knobs provide tension on the deflection and elevation control knobs.			
51. Clean with brush, artist.			
M115 BORESIGHT (41TR.01.01h)			
52. Inspect boresight lens for dirt, cracks, or fogging.			
53. Clean with cleaning compound, optical lens and lens paper.			
54. Check that boresight level bubbles will move and vials are not broken or loose in mounting.			
55. Clean with cleaning compound, optical lens and lens paper.			
56. Check that mounting surfaces are free of nicks and burrs.			
57. Check night aiming devices for illumination in a darkened area.			
58. Clean with brush, artist and clean rages.			
59. Check for missing or damaged radiation warning, data plate, or other parts.			
60. Check for evidence of tampering.			
61. Check 10558A-SD weapons record book for entries of round expenditure.			
M14 AIMING POSTS (41TR.01.01i)			

62. Check M14 aiming posts for accountability.			
63. Check M14 aiming posts for cleanliness and serviceability.			
64. Clean with water and rags.			
65. Check the aiming post case for excessive wear and cleanliness.			
66. Clean with water and air-dry.			