

UNITED STATES MARINE CORPS
School of Infantry
Training Command
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MM1403
27 Feb 04

STUDENT OUTLINE

MOUNT AND PREFIRE SAFETY CHECK FOR A M252 81MM MORTAR

LEARNING OBJECTIVES

TERMINAL LEARNING OBJECTIVES

a. Given an SL-3 complete, M252 81mm mortar, a direction stake, and a baseplate stake, as a mortar squad, mount a M252 81mm mortar by preparing the gun for action within 90 seconds and within 2 mils of the bottom left edge of the direction stake. (41TR.04.05)

b. Given a mounted, SL-3 complete, M252 81mm mortar, perform a prefire safety checks for a M252 81mm mortar in accordance with FM 23-90. (41TR.02.03)

ENABLING LEARNING OBJECTIVES

a. Given a M3A1 baseplate and a baseplate stake, position a baseplate by emplacing it against the baseplate stake at the eleven o'clock position. (41TR.04.05a)

b. Given a SL-3 complete, M252 81mm mortar with the baseplate positioned on the baseplate stake, assemble a M252 81mm mortar in accordance with FM 23-90. (41TR.04.05b)

c. Given an assembled, SL-3 complete, M252 81mm mortar and a direction stake, perform the five steps of crew drill in accordance with FM 23-90. (41TR.04.05c)

d. Given a SL-3 complete, M252 81mm mortar, perform premount checks for a M252 81mm mortar in accordance with FM 23-90. (41TR.02.03a)

e. Given a list of choices, identify prefire safety checks for a M252 81mm mortar in accordance with FM 23-90. (41TR.02.03b)

1. **PRE-MOUNT CHECKS**. Before the mortar is mounted, the squad must perform premount checks. Each squad member should be able to perform all the premount checks.

a. The ammo man checks the baseplate to ensure:

(1) The socket cap will rotate 360 deg or 6400 mils.

(2) The ribs and braces have no brakes, cracks and dents.

(3) The circlip is correctly located, securing the rotating socket to the baseplate.

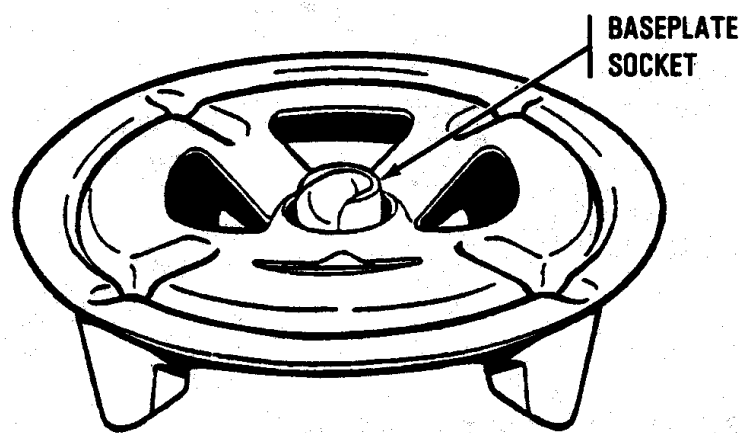
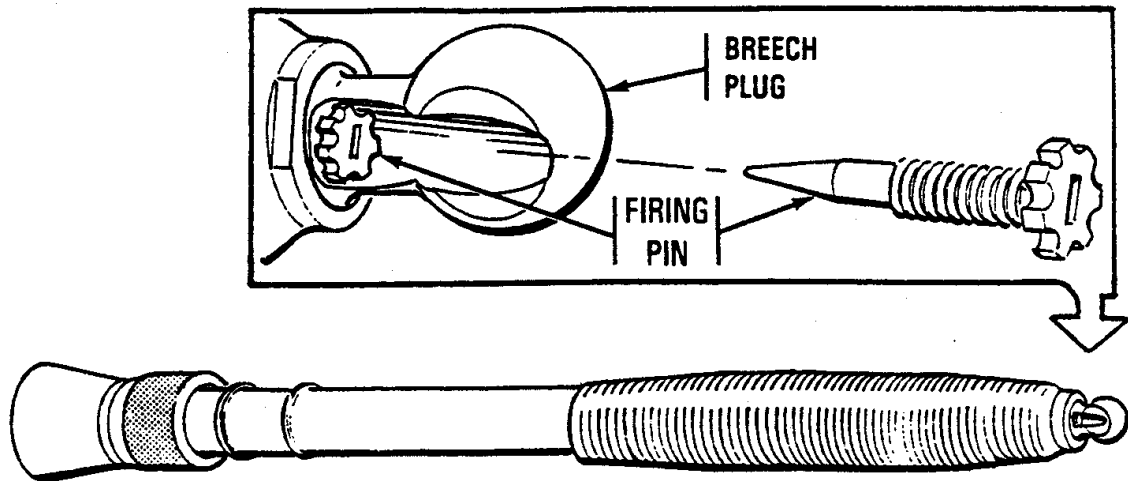
b. The gunner checks the bipod to ensure:

(1) Barrel clamp is clean and dry.

(2) The traversing mechanism is centered.

(3) The fixed leg-locking knob is hand tight.

(4) Four inches of elevation shaft are exposed and the shaft is not bent.



c. The assistant gunner checks the barrel to ensure:

(1) The barrel is clean and free from grease and oil both inside and out.

(2) The breech plug is screwed tightly to the barrel.

(3) The firing pin is secured correctly.

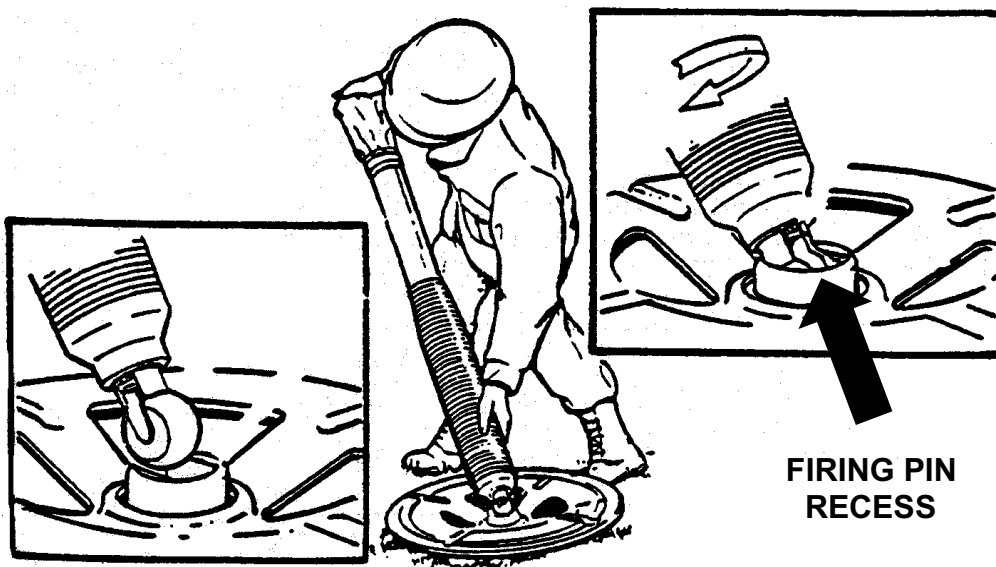
(4) The Blast Attenuator Device is secured correctly.

d. The squad leader supervises the squad drill and is responsible for supervising the laying out of the equipment. The equipment is placed out the same as for the gunner's examination.

2. **MOUNTING THE MORTAR.** The squad leader picks up the sight case and aiming posts, and moves to the exact position where the mortar is to be mounted. He places the sight case and the aiming posts to the left front of the mortar position, and points to the exact spot where the mortar is to be mounted. He indicates the initial direction of fire by pointing in that direction.

a. The ammo man places the outer edge of the baseplate against the baseplate stake. The stake will be at the 11 o'clock position on the baseplate. He rotates the socket so the open end is pointing in the direction of fire.

b. When the baseplate is in position, the assistant gunner lowers the breech plug into the rotating socket and rotates the barrel a quarter of a turn to lock it. He ensures the firing pin recess is facing upward. He should stand to the rear of the baseplate and support the barrel until the bipod is fitted.



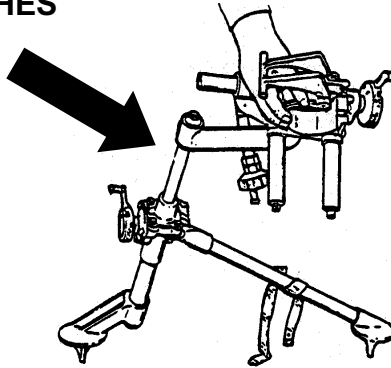
c. The gunner:

(1) Lifts the bipod and stands it on its elevating leg so the elevating handwheel is to the rear and the plain leg is to the front.

(2) Loosens the fixed leg-locking knob, and lowers the fixed-leg until the locating catch engages in the recess. The fixed-leg locking knob is then tightened by hand, ensuring the teeth on either side are correctly meshed. The gunner

(3) Exposes 8 inches of elevation shaft, leaving the elevation handwheel unfolded.

8 INCHES



(4) Opens the cross-level handwheel, traversing handwheel, and barrel clamp.

(5) Carries the bipod to the front of the barrel and places the bipod feet on the ground from 18 to 24 inches in front of the baseplate and astride the line of fire.

(6) Positions the lower barrel clamp against the lower stop band on the barrel and secures the upper barrel clamp. He ensures the ball-shaped end of the locking rod is secured in its recess by the locking latch.

(7) Removes the sight from its case, mounts it on the mortar, and sets a deflection of 3200 mils and an elevation of 1100 mils. He levels all bubbles. The bubbles are leveled by following the five steps of crew drill:

(a) Move bipods. Pick up and move the bi-pods while maintaining your eye in the eyepiece of sight, until you are on the left edge of the aiming posts.

(b) Rough level. Gunner will place his right hand on the barrel clamp assembly for support, and will pick up the right leg (dead leg) and either pull the leg in or push it out in order to cause the cross-level vial to float freely.

(c) Level elevation. Gunner will use the elevating handwheel to level the elevation bubble.

(d) Level cross level. Using the cross-level handwheel, the gunner will level the cross-level vial.

(e) Traverse halfway and level cross-level. With the right hand on the traversing handwheel from behind the mortar, and the left hand on the cross-level hand wheel, the gunner will commence to traverse halfway to his aiming posts and then level the cross-level. He will continue to do this

until he has the vertical index line of his sight along the left edge of his aiming post.

3. SAFETY CHECKS BEFORE FIRING

a. The gunner is responsible for the safety checks. He will perform the following seven steps:

(1) Mask and overhead clearance.

(a) The mortar is normally mounted in defilade and will almost always be behind a tree, hill, building, or rise in the ground. Overhead interference can be branches of trees or roofs of buildings. In any case, the gunner must ensure that the cartridge does not strike an obstacle.

(b) In selecting the exact mortar position, the leader looks quickly for mask clearance and overhead interference. After the mortar is mounted, the gunner makes a thorough check for mask and overhead clearance.

(c) The gunner determines mask clearance by sighting along the barrel with his eye near the breech plug. If the line of sight clears the mask, it is safe to fire. If not, he may still fire at the desired range by selecting a higher charge and a higher elevation. When firing under the control of an FDC, he reports to the FDC that mask clearance cannot be obtained at a certain elevation.

(d) Firing is slowed if mask clearance must be checked before each firing, but this can be eliminated if minimum mask clearance is determined. This is accomplished by depressing the barrel until the top of the mask is clear. The gunner levels the elevation bubble by turning the elevation control knob and reading the setting on the elevation course scale and elevation fine scale this setting is the minimum mask clearance. The squad leader notifies the FDC of the minimum mask clearance elevation. Any target that requires that elevation, or a lower one, cannot be engaged from that position.

(e) If the mask is not regular throughout the sector of fire, the gunner determines the minimum mask clearance as described above. Placing the mortar in position at night does not relieve the gunner of the responsibility of checking for mask clearance.

(2) Open end of the Socket Cap facing the direction of fire.

(3) Breech Plug fully seated and locked into the Socket Cap.

(4) Firing Pin Recess straight up and to the rear.

(5) Barrel Clamp Assembly flushed against the Lower Stop Band.

(6) Fix Leg lowered to the lowest point.

(7) Fix Leg Locking Knob hand or wrist tight.

(8) M64A1 Sight Unit is locked and fully seated in the sight unit Dovetail.

(9) Teeth are meshed.

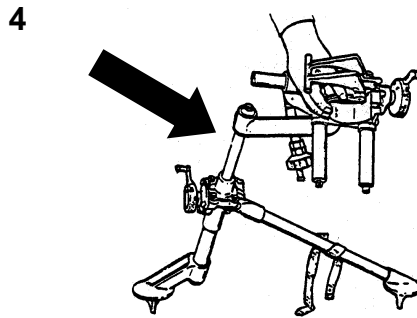
b. The assistant gunner cleans the bore and swabs it dry.

c. The ammunition bearer ensures that each cartridge is clean, the safety pin is present, and the ignition cartridge is in good condition.

4. **DISMOUNTING THE MORTAR.** To dismount the mortar, the squad leader commands, "OUT OF ACTION". On this command, the following procedures are followed:

a. The gunner removes the sight and places it into the sight box.

b. The assistant gunner holds the barrel until the gunner has removed the mount. The barrel is then rotated 1/4 turn to unlock it from the socket, and places in an area designated by the squad leader.



c. The gunner disengages the barrel clamps from the barrel and moves the bipod from the immediate area of the mortar position. The barrel clamps are then closed. With the clamps facing away from the gunner, he traverses the buffer carrier to the traversing handwheel and folds the handle. The gunner exposes 1 inch of cross-level shaft and folds the handle.

d. The gunner exposes 4 inches of elevation shaft and folds the handle. Finally, the gunner loosens the locking-leg handwheel, presses the spring-loaded locking catch, and raises the plain leg behind the buffer cylinders until it touches the traversing handwheel. He tightens the leg-locking handwheel (ensuring the teeth are correctly meshed) and fastens the securing strap over the arm and around the buffers.

e. The ammunition bearer retrieves the aiming posts and recovers the baseplate to the area designated by the squad leader.

REFERENCES: FM 23-90, Mortars, pages 4-8 through 4-11.

EXAM ID: MM1403P

EXAM TITLE: Mount and Prefire Safety Check for a M252 81mm Mortar Performance Examination

TLO/ELO: 41TR.02.03

STUDENT INSTRUCTIONS:

1. You are an infantry mortar gunner and must perform prefire safety checks for 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
PRE-MOUNT INSPECTION			
1. Ensure the rotating socket is free to move in a complete circle.			
2. Inspect the ribs and braces for brakes, cracks and dents.			
3. Ensure the circlip is correctly located and securing the rotating socket to the baseplate.			
4. Inspect that the baseplate barrel clamps are clean and dry.			
5. Ensure the traversing mechanism is centered.			
6. Ensure the securing strap is correctly located and securing the barrel clamps and buffers to the fixed leg.			
7. Ensure the leg-locking handwheel is hand tight.			
8. Ensure four inches of bipod elevation shaft are exposed and the shaft is not bent.			
9. Ensure the barrel is clean and free from grease and oil both inside and out.			
10. Ensure the breech plug is screwed tightly to the barrel.			
11. Ensure the firing pin is secured correctly.			
12. Ensure the blast attenuator device is secured correctly.			
MOUNT A M252 81MM MORTAR			
13. The Ammunition Man places the baseplate against the baseplate stake at approximately 11 o'clock with the open end of the socket cap facing the direction of fire.			

14. The Assistant Gunner places the breach plug into the socket cap and rotates the firing pin recess up.			
15. The Gunner prepares the bipod by loosening the fixed leg-locking knob and lowering the fixed leg until the location catch engages in the recess. He tightens the fixed leg locking knob, ensuring the teeth are meshed, and opens the barrel clamp.			
16. The Gunner exposes 8 inches of the elevation shaft and leaves the elevation hand wheel open.			
17. The Gunner places the bipod approximately 2 feet in front of baseplate.			
18. The Gunner places the barrel clamp around the cannon, against the lower stopping band of the cannon, and locks the barrel clamp.			
19. The Gunner removes the sight unit from the sight case and checks the sight data. The deflection is placed on 3200 and the elevation on 1100. The Gunner closes the sight case.			
20. The Gunner places the sight unit dovetail in the dovetail slot.			
21. The Gunner looks through the sight and moves the bipods until the vertical hairline of the M64A1 sight is on, or near, the direction stake.			
22. The Gunner rough levels the mortar by manipulating the left leg assembly.			
23. The Gunner levels the elevation bubble by turning the elevation hand crank until the elevation bubble on the M64A1 sight is level.			
24. The Gunner re-levels the cross level by manipulating the fine cross level mechanism.			
25. If the Gunner's vertical line in the sight is within 20 mils of the post, the Gunner traverses half the distance to the stake and minor adjusts.			
26. If the Gunner's vertical line in the sight is in excess of 20 mils, the Gunner must repeat steps 15 through 17.			
27. The Gunner continues step 14 until the vertical line is within 2 mils of the stake and both bubbles on the sight are level.			
28. The Gunner announces "Gun up."			
PREFIRE SAFETY CHECKS			
29. Check mask by ensuring there are no obstructions forward of the gun, such as hills, buildings, or trees.			

30. Check overhead clearance by ensuring there are no obstructions above or over the gun such as camouflage netting, trees, or building eaves.			
31. Notify the Fire Direction Center (FDC) of any mask or overhead interference.			
32. Ensure the sight is locked into the dovetail slot of the bipod.			
33. Ensure the open end of the socket cap is pointed in the direction of fire.			
34. Ensure the barrel is locked to the base plate.			
35. Ensure the firing pin recess is facing upward and the firing pin is present and tight.			
36. Ensure the bipod locking latch is locked, securing the barrel clamp against the lower stop band.			
37. Ensure the fixed leg-locking knob is tight and the fixed leg teeth are meshed.			