

UNITED STATES MARINE CORPS
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 Training Command
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MM1401
 08 Mar 04

STUDENT OUTLINE

INTRODUCTION TO THE M252 81MM MORTAR

LEARNING OBJECTIVES

- a. Terminal Learning Objectives. None
- b. Enabling Learning Objectives

(1) Given a list of choices, identify the characteristics of a M252 81mm mortar in accordance with FM 23-90. (41TR.02.01a)

(2) Given a list of choices and a diagram of a SL-3 complete, M252 81mm mortar, identify the nomenclature of a M252 81mm mortar in accordance with FM 23-90. (41TR.02.01b)

INFANTRY BATTALION				
RIFLE COMPANY (A CO)	RIFLE COMPANY (B CO)	RIFLE COMPANY (C CO)	WEAPONS COMPANY	HQ & SUPPORT COMPANY
WEAPONS COMPANY				
HEAVY MACHINEGUN PLATOON	ANTI-ARMOR PLATOON	81MM MORTAR PLATOON		

1. **WEAPONS COMPANY**. The weapons company is located in an infantry battalion. The weapons company is organized into a company headquarters, a mortar platoon (81mm mortars), an anti-armor platoon (M220E4 TOW and M98A1 Javelin), and a heavy machinegun platoon (M2 HMG , MK 19 MOD 3 HMG).

a. Mission: The mission of the 81mm mortar platoon is: To provide continuous indirect fire support to an infantry battalion and its subordinate elements in the offense and defense.

b. Employment: The infantry battalion commander is ultimately responsible for the employment of the 81mm mortar platoon. He has three options for employment.

(1) General support. The mortar platoon fires in support of the entire battalion, receiving requests for support from each of the rifle companies. The mortar platoon commander is responsible to the battalion commander for the tactical, administrative and logistic control of the

platoon. General support allows flexibility, coordination, massing and timing of fires to be exercised fully.

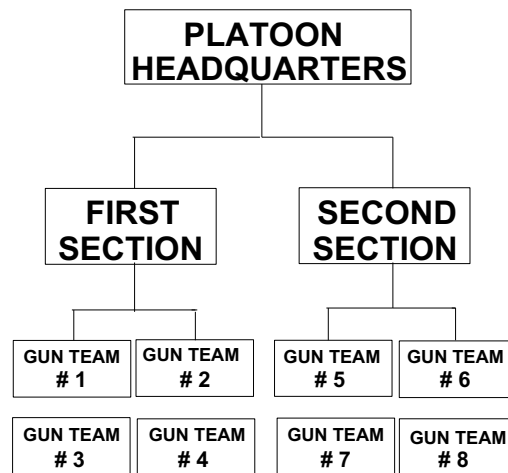
(2) Direct support. The mortar platoon or one section fires in support of a specific rifle company. The mortar platoon commander exercises tactical control by taking necessary actions to deliver fire requested by the supported commander. The mortar platoon commander remains responsible to the battalion commander for the administrative and logistic control of the platoon. Direct support allows the supported commander to control the use of his allotted fires.

(3) Direct support does not prevent the platoon from providing fire support to the rest of the battalion; however, the company being directly supported has a priority of fire.

(4) One or more mortar sections are placed temporarily within a rifle company. The rifle company commander is responsible to the battalion commander for the tactical and logistical control of the mortar section(s). Attachment allows the supported commander to receive mortar fire in situations where it might otherwise not be available.

2. PLATOON ORGANIZATION.

81MM PLATOON



a. The 81mm mortar platoon is located in the weapons company of the infantry battalion and is organized into a platoon headquarters and two 81mm mortar sections. There is 1 officer and 68 enlisted men. The weapons company commander has administrative control (feeding, billeting, clothing, etc.) but tactical control is directly in the hands of the battalion commander working through the 81mm mortar platoon commander. The 81mm mortar is the infantry battalion commander's organic indirect fire weapon in the same manner as the 60mm mortar is the rifle company commander's organic indirect fire weapon. The 81mm platoon is commonly referred as the Battalion Commanders hip pocket artillery.

(1) The Platoon Headquarters. The platoon headquarters contains 1 officer and 4 enlisted Marines. Of these, the functions of the platoon commander and the platoon sergeant are the most relevant.

(a) Platoon Commander. This billet calls for an infantry lieutenant who is directly responsible to the battalion commander for the employment of the mortar platoon. He normally remains with his platoon for reconnoitering new positions and displacements. His primary job is to remain close to the battalion commander, advising him on the employment of his 81mm mortar platoon in much the same manner as a staff officer. Also, as a member of the infantry battalions Fire Support Coordination Center (FSCC), the platoon commander helps to ensure that all supporting arms are working together and that the weapons supporting a particular unit do not produce casualties in adjacent friendly units.

(b) Platoon Sergeant. This billet is the only one within the infantry battalion that is held by a Marine with an artillery MOS 0848. The platoon sergeant is a gunnery sergeant responsible to the platoon commander for the functioning of the platoon's Fire Direction Center. The platoon sergeant ensures that proper fire direction and safety procedures are maintained.

(c) The Fire Direction Center (FDC). The FDC is the brains of the platoon. The FDC receives the "call for fire" from the FO, computes firing data and issues the fire commands to the gunline.

(d) Other members of the platoon Headquarters are an ammunition NCO, 1 ammunition technician and messenger/driver. Their functions are self-explanatory.

3. **THE 81MM MORTAR SECTION**. There are two 81mm mortar sections in the platoon. This allows flexibility in organic fire support for the rifle companies. The 32 men of the section are divided up into a section headquarters and four mortar squads consisting of 6 Marines per squad. The 81mm mortar section is the lowest echelon of the mortar platoon that can be employed independently.

a. Section Headquarters. The primary function of the section headquarters is to provide command and control to the section. To accomplish this, each headquarters contains 3 Marines in the fire direction center (FDC), 2 forward observers, 1 section leader, 1 ammo man, 1 ammo/ driver and enough communication equipment to maintain contact with the forward observers while operating with the rifle companies.

(1) Section Leader. This billet is held by an infantry Staff Sergeant (0369). The section leader is responsible for the laying his mortar section in by aiming circle and is accountable and responsible for all Marines in his section.

(2) Fire Direction Center. This section allows the mortar section to function independently from the platoon if required. However, when the sections operate as part of the platoon, only the platoon FDC is activated, though it is advisable to activate one of the section FDC's as a backup unit, in case the platoon FDC is knocked out by enemy fire.

(3) Forward Observer Team. Each mortar section has 2 forward observers (FO). This team accompanies the rifle company during operations and requests mortar fire via radio or field phone to the mortar FDC. The team's mission is to report targets, inform the FDC of the target's location, adjust fire on the target, and report the effect of the mortar fire to the FDC.

(a) Forward Observer (FO). The FO's are the eyes of the platoon. Since each section contains two FO teams, there are four available to the mortar platoon. Specifically, the FO's job is to locate targets for the rifle company, send a fire request, in the form of a "call for fire", to either the section or the platoon FDC, and adjust the mortar fire.

(4) Mortar gunline. The mortar gunline is the muscle of the platoon. The mortar crew receives the FDC's fire command, places the proper data on the weapon, and delivers fire on the target.

(5) 81mm Mortar Squads. There are four 81mm mortar squads within each section. Each squad consists of six Marines who are responsible for the operation of one (1) mortar. Specifically, the squad consists of:

(a) Squad Leader (Sgt. 0341). Supervises the emplacement, laying, and firing of the mortar, he supervises all other squad activities.

(b) Gunner (Cpl. 0341). The gunner takes a knee to the left side of the mortar, places firing data on the sight and lays the mortar for deflection and elevation.

(c) A-Gunner (LCpl. 0341). The assistant gunner loads and fires the mortar. In addition to loading, he swabs the bore after 10 rounds have been fired or after each fire mission. He may assist the gunner in shifting the mortar when large deflection changes are required.

(d) Ammunition bearer (PFC/Pvt. 0341). The first ammunition bearer prepares the ammunition for firing and passes it to the assistant gunner. The second ammunition bearer maintains ammunition for firing and provides local security for the mortar position. He performs other duties as the squad leader directs.

(e) Ammo-man /Driver (Pvt 0341). He is the squad driver. He maintains the ammunition for firing and provides local security for the mortar position. He performs other duties as the squad leader directs.

4. **CHARACTERISTICS AND CAPABILITIES**. The M252 81mm mortar is a smooth bore, muzzle loaded, high angle of fire weapon.

a. Range. (Minimum to maximum) 83 - 5608 meters.

b. Traverse. (From center traverse approximately 100 mils (10 turns) left or right.

c. Elevation range. Min 0800 - Max 1511 mils. (Each turn of the elevation hand wheel elevates or depresses the elevation of the cannon approximately 10 mils.)

d. Rate of fire.

(1) M362 series, M374A3, M375A3, M821, M889, M819, and M853 cartridges.

(a) SUSTAINED. 15 rounds/minute.

(b) MAXIMUM. 30 rounds/minute for two minutes.

(2) M374, M374A1, M374A2, M375, M375A1, M375A2 and M301 series.

(a) SUSTAINED. 8 rounds/minute.

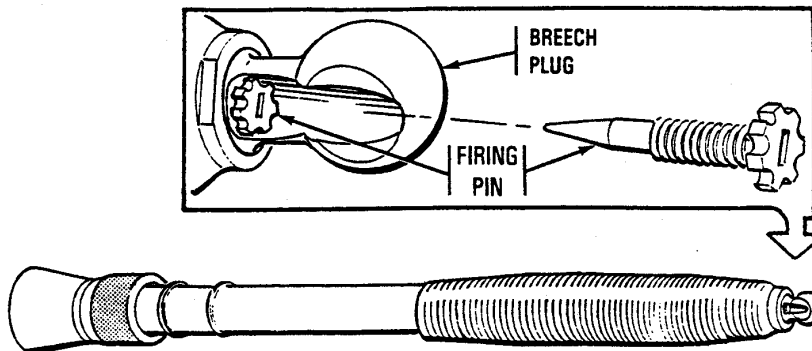
(b) MAXIMUM. 25 rounds/minute for two minutes.

e. Weight of System Components

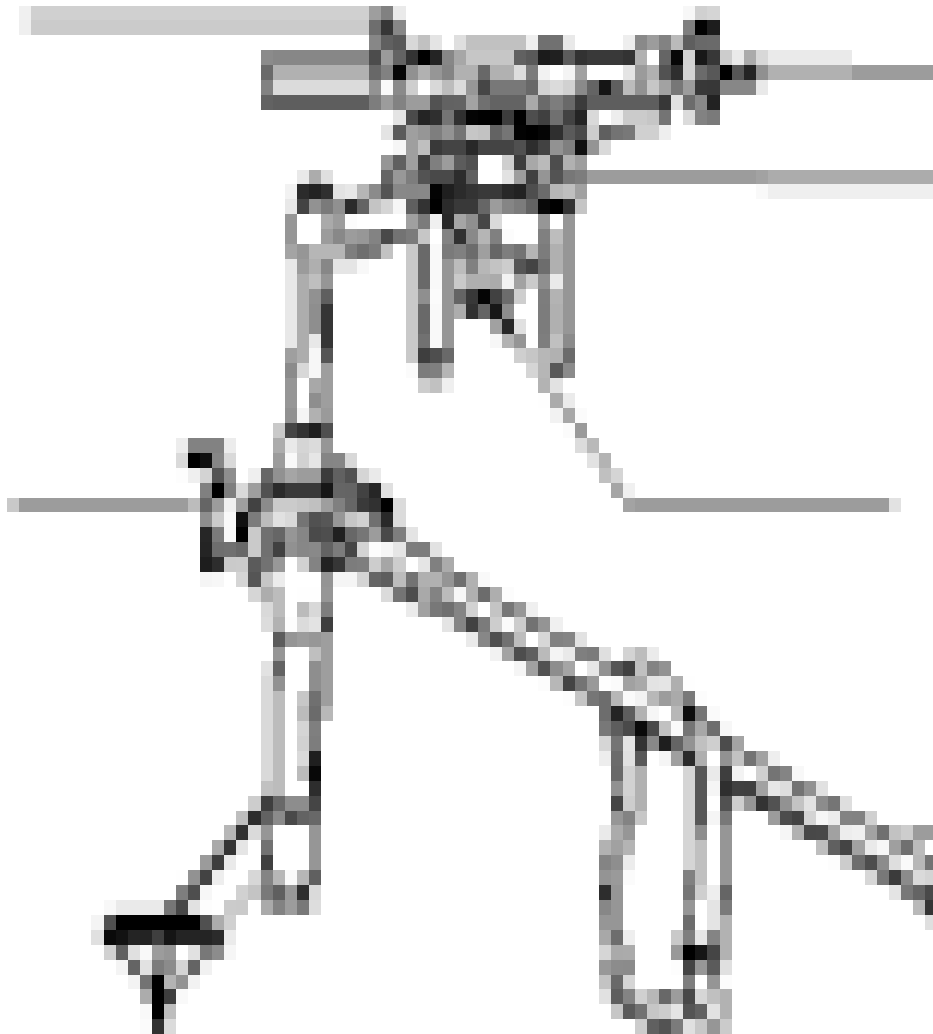
(1) M253 Barrel/w blast attenuator device:	35 pounds
(2) M177 Mount:	27 pounds
(3) M3A1 Baseplate:	29 pounds
(4) M64A1 Sight Unit:	2.5 pounds

5. NOMENCLATURE

a. Cannon Assembly, M253. The cannon assembly (barrel) is sealed at the lower end with a removable breech plug. The breech plug houses a removable firing pin. At the muzzle end is a cone-shaped blast attenuator device (BAD) that reduces noise. A single cooling fin helps air cool the barrel. The upper and lower stop bands keep the barrel clamp assembly in place.



b. Mount, M177. The mortar mount is an offset bipod consisting of a barrel clamp assembly which secures the bipod to the cannon, two mortar mounting buffers which reduce the shock of firing on other components, a traversing gear assembly for adjusting the mortar in azimuth, a cross-leveling mechanism for correcting weapon cant, an elevating mechanism to raise and lower the cannon, and two leg assemblies (fixed and elevating) to provide a stable base.



(1) Barrel Clamp Assembly.

(a) Barrel Clamp Handle. The barrel clamp handle locks the two halves of the barrel clamp assembly together.

(b) Barrel Clamp Locking Lever. The barrel clamp-locking lever prevents the barrel clamp handle from bouncing loose during firing. Press down to release.

(c) Barrel Clamp Latch. The barrel clamp latch prevents the complete release of the barrel clamp assembly should the barrel clamp locking lever fail and the barrel clamp handle bounce loose. Turn clockwise to release.

(2) Traversing Handwheel. Turning the traversing handwheel clockwise traverses the mortar to the right.

(3) Cross-Leveling Handwheel. Turning the cross-leveling handwheel clockwise causes the left side of the mortar to move downward.

(4) Elevating Handwheel. Turning the elevating handwheel clockwise depresses the mortar.

(5) Leg Locking Lever. The leg locking lever positions the fixed leg assembly for emplacement on level ground. Push to release.

(6) Leg Locking Knob. The leg-locking knob is used to lock the fixed leg assembly in any desired position. Turn counterclockwise to release.

(7) Sight Unit Adapter. The sight unit adapter is attached to the sight socket on the traversing gear assembly. It is used to attach the M64A1 sight unit.

(8) Traversing Gear Assembly.

(9) Cross-Leveling Mechanism.

(10) Mortar Mounting Buffers.

(11) Elevating Leg Assembly.

(12) Fixed Leg Assembly.

(13) Securing Strap.

c. Baseplate, M3A1. The baseplate is made of aluminum. It supports and aligns the mortar for firing. The baseplate socket provides a mounting point for the cannon. During firing, the breech plug on the barrel is sealed and locked to the rotatable socket in the baseplate.

d. SL-3 Components.

(1) Brush Section.

(2) Case, Aiming Post. Secures the M14 aiming posts. Store the posts points up.

(3) Case, Sight Unit. Secures the M64A1 sight, night aiming devices, spare firing pin, and firing pin wrench.

(4) Cover, Muzzle.

(5) Fuze Setter, M25. Used to set 300 series illumination.

(6) Light, Aiming Post. (2) M58 (green) and M59 (orange).

(7) Pin, Firing, Spare.

(8) Post, Aiming, M14. Eight to a case.

(9) Screwdriver, Flat Tip. Used to adjust the scales on the M64A1 sight or to remove the firing pin.

(10) Staff Section, Cleaning End.

(11) Staff Section, Cleaning Intermediate.

(12) Stake, Driving, Aiming Post. Used to drive the M14 aiming stake into hard or frozen ground.

(13) Wrench, Firing Pin.

(14) Wrench, Fuze M18. Used to remove or replace a fuze.

(15) Wrench, Fuze Setting, 1 3/4 inch. Used to set time settings on 800 series red phosphorus and illumination rounds.

(16) Wrench, Pipe, Strap. Secures the round when removing or replacing fuzes.

(17) TM 09922A-10/1. The Manual contains instructions for proper use and maintenance of the M252 81mm Mortar.

REFERENCES :

FM 23-90 Mortars; pages 4-1 through 4-6.

TM 09922A-10/1 Operator's Manual for Mortar, 81mm, M252; pages 1-3 through 2-6.