

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL
FOR
GRENADES

This copy is a reprint which includes current pages from Changes 1 through 12.

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DEPARTMENTS OF THE ARMY
AND THE NAVY
Washington, DC, 17 September 1971

**OPERATOR'S AND
UNIT MAINTENANCE MANUAL
FOR
GRENADES**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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CHAPTER 1

INTRODUCTION

Section 1. GENERAL

1-1 Scope

Information in this manual is limited to responsibilities of operator and organizational support maintenance personnel (i.e., maintenance not beyond the scope of the tools, equipment or supplies normally available to operator and organizational personnel). Specifically, this manual contains instructions for operation; inspection; storage; packaging; and basic maintenance. The prescribed maintenance responsibilities of the direct and general support level apply as reflected in the maintenance allocation chart (MAC) in Appendix B of this manual.

1-2. Forms, Records and Reports

a. *General.* Responsibility for execution of forms, records and reports rests upon the officers of all units maintaining subject materiel. However, the value of accurate documents must be appreciated by all persons responsible for data compilation, maintenance and use. Records, reports and authorized forms normally indicate the type, quantity and condition of materiel to be inspected, to be repaired or to be used in repair. Properly executed forms convey authorization and serve as records for repair or replacement of materiel requiring further repair. Overall forms, records and reports establish work required, progress of the work within the shops and status of the materiel upon completion of its repair.

b. *Authorized Forms.* The forms generally applicable to units maintaining subject materiel are listed in appendix A. For a current listing of all forms, refer to DA Pam 25-30. Refer to DA Pam 738-750 for instructions on use and completion of all forms required for operating and maintaining hand grenades and rifle grenades.

c. *Field Report of Accidents.* Accidents involving injury to personnel or damage to materiel will be reported on DA Form 285 (Accident Report) in accordance with AR 385-40. Marine Corps units will report accidents in accordance with MCO 5101.8.

d. *Malfunctions Involving Ammunition or Explosives.*

(1) A malfunction is defined as the failure of a grenade to function in accordance with the expected performance when fired, launched, or

when explosive components function during a non-functional test. A critical malfunction is one which may cause a hazard in the circumstances described above. For purposes of clarity, malfunctions do not include accidents and incidents resulting from negligence, malpractice, or implication in other situations such as vehicle accidents, fires, etc. However, malfunctions do include abnormal or premature function of explosive ammunition items during normal handling, maintenance, storage, transportation, and tactical deployment.

(2) If a malfunction involving this materiel occurs, *firing of the affected lot will be halted immediately.* The commanding officer or senior individual in charge of the unit will immediately contact the officer under whose supervision the ammunition for the unit involved is maintained or issued and will report all available facts concerning the malfunction.

(3) Ammunition malfunction reports from Army activities will be reported as prescribed in AR 75-1.

(4) Ammunition malfunction reports from Marine Corps activities will be reported as prescribed in MCO 8025.1.

e. *Report of Damaged or Improper Shipment.* All shipments of these munitions received in damaged or otherwise unsatisfactory condition because of deficiencies in preservation, packaging, marking, loading, storage, or handling will be reported on SF 364 (Report of Discrepancy (ROD) in accordance with AR 735-11-2. Reports of damaged or improper shipment due to transportation discrepancies are to be reported on SF 361 in accordance with AR 55-38. Marine Corps units will submit such reports in accordance with MCO 4610.5 and Military Traffic Management Regulations (NAVMC 1175).

f. *Equipment Improvement Recommendations.* Put it on an SF 368 (Product Quality Deficiency Report). Mail it to: U.S. Army TACOM/ARDEC, ATTN: AMSTA-AR-QAW-C, Rock Island, IL 61299-7630. We will send you a reply.

Section II. DESCRIPTION AND FUNCTIONING

1-3. General

Grenades are small bombs of a size and shape convenient for throwing by hand or launching from a rifle or vehicle. The hand grenade is thrown by hand. However, some hand grenades may be launched from a rifle grenade projection adapter and by a special grenade cartridge. The rifle grenade is launched by a special grenade cartridge from a rifle. Hand grenades are used to supplement small arms against an enemy in close combat, for producing a riot control agent, for smoke screening and signaling, and for incendiary purposes. Rifle grenades are used against armored targets, fortifications and personnel, and for screening and signaling. Tables 1-1 and 1-2 contain a listing of authorized hand and rifle grenades, respectively. Table 1-3 lists special type grenades. Table 1-4 lists time to grenade functioning after release of safety lever.

1-4. Hand Grenades

a. *General.* All Army hand grenades have pyrotechnic delay fuzes except for Grenades M68, M59 (M33 with Fuze, M217) (M33A1), M57 and M26A2 which are assembled with an impact-delay-type fuze. A grenade assembled with a pyrotechnic delay fuze will not function by impact action. A grenade assembled with an impact-delay-type fuze will function on impact action after an arming time of 1.6 seconds. If the grenade fails to function on impact, the secondary pyrotechnic delay feature of the fuze will function the grenade within 3 to 7 seconds.

b. *Types.* There are six types of hand grenades (fig. 1-1):

(1) *Fragmentation hand grenades.* These grenades are used to produce casualties by high velocity projection of fragment.

(2) *Illuminating hand grenade.* This grenade is used to provide illumination of terrain and targets.

(3) *Chemical hand grenades.* These grenades are used for incendiary, screening, signaling, training or riot control purposes.

(4) *Offensive hand grenade.* This grenade is used for blast effect.

(5) *Practice and training hand grenades.* These grenades are for training personnel in use, care and handling of service grenades. Model designations of the grenades are indicated in table 1-4.

(6) *Non-lethal hand grenade.* This grenade is used for diversionary purposes.

c. Functioning.

(1) *General.* Release of the safety clip and removal of the safety pin permit release of the safety lever. When the grenade is thrown, the safety lever is released and is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its axis, and then strikes the percussion primer, initiating the fuze. The grenade then functions within the time shown in table 1-4.

(2) *Grenades M47 (fig. 1-2) and M48.* Grenade fuze M227 is restrained from functioning by the safety cotter pin, sliding safety latch, and handle. The exhaust port seal is removed and discarded immediately before pulling the safety cotter pin. When the safety cotter pin is removed and the safety latch is pushed rearward (fig. 1-3) from the lock pin, the handle is unlocked and the GRENADE IS ARMED. Releasing the handle causes the arming pin spring to eject the arming pin. This releases the firing pin, allowing the firing pin to activate the primer. The primer ignites the first-fire mixture, which flashes and ignites the delay mixture. This, in turn, ignites the ignition mixture. The ignition mixture burns through an aluminum foil shield on the bottom of the fuze and ignites the granulated CS pyrotechnic mixture in the grenade body. The burning mixture builds up pressure and opens the tape covering the exhaust port. This pressure also forces release of CS from the grenade, while jet action causes the grenade to move quickly and erratically along the ground. The M48 functions in the same manner as the M47, except that the M48 emits red smoke.

1-5. Rifle Grenades

a. *General.* Rifle grenades (fig. 1-4) are fin-stabilized. They are launched from a rifle. The propelling force for the grenade is provided by a special gas-producing grenade cartridge, which is loaded into the rifle chamber. Rifle grenades