

GRENADES AND PYROTECHNIC SIGNALS



JUNE 2005

**HEADQUARTERS
DEPARTMENT OF THE ARMY**

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

This page intentionally left blank.

Change 1
Field Manual
No. 3-23.30

Headquarters
Department of the Army
Washington, DC, 27 November 2006

GRENADES AND PYROTECHNICS SIGNAL

1. Change FM 3-23.30, 7 June 2005, as follows:

Remove old pages:	Insert new pages:
iii through iv.....	iii through iv
1-7 through 1-8.....	1-7 through 1-8
3-3 through 3-6.....	3-3 through 3-6
4-3 through 4-4.....	4-3 through 4-4
5-7 through 5-8.....	5-7 through 5-8
B-3 through B-4.....	B-3 through B-4

- 2. A star (*) marks new or changed material.
- 3. File this transmittal sheet in front of the publication.

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Official:



JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
0631002

DISTRIBUTION: Regular Army, Army National Guard, and U.S. Army Reserve: To be distributed in accordance with initial distribution number 110196 requirements for FM 3-23.30.

This page intentionally left blank.

GRENADES AND PYROTECHNIC SIGNALS

CONTENTS

	Page
Preface	iii
 CHAPTER 1. TYPES OF HAND GRENADES	
1-1. Description.....	1-1
1-2. Types.....	1-1
1-3. Components	1-2
1-4. Mechanical Function.....	1-2
1-5. Fuses	1-3
1-6. M67 Fragmentation Hand Grenade	1-6
1-7. Smoke Hand Grenades.....	1-7
1-8. Riot-Control Hand Grenades	1-10
1-9. Special-Purpose Hand Grenades.....	1-14
1-10. Practice Hand Grenade, M69.....	1-16
1-11. Stun Hand Grenade, M84	1-17
 CHAPTER 2. MAINTENANCE	
2-1. General Assembly	2-1
2-2. Inspection Procedures	2-1
2-3. Cleaning, Lubrication, and Preventive Maintenance.....	2-2
 CHAPTER 3. EMPLOYMENT OF HAND GRENADES	
Section I. Introduction to Hand Grenade Training.....	3-1
3-1. Storing of Hand Grenades.....	3-1
3-2. Hand Grenade Gripping Procedures	3-3
3-3. Throwing of Hand Grenades.....	3-4
Section II. Tactical Employment.....	3-11
3-4. Application.....	3-11
3-5. Close Combat.....	3-11

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

*This publication supersedes FM 3-23.30, 1 September 2000.

	Page
3-6. Plans and Preparations for Combat.....	3-12
3-7. Employment Rules.....	3-12
3-8. Offensive Employment.....	3-12
3-9. Defensive Employment.....	3-16
3-10. Retrograde Operations Employment.....	3-21
3-11. Rear Area Operations Employment.....	3-21
3-12. Use Under Adverse Conditions.....	3-22

CHAPTER 4. TRAINING PROGRAM

4-1. Objectives.....	4-1
4-2. Training Courses.....	4-1
4-3. Collective Training.....	4-13
4-4. Sample Squad Situational Training Exercise.....	4-14

CHAPTER 5. GROUND PYROTECHNIC SIGNALS

5-1. Description.....	5-1
5-2. Capabilities and Uses.....	5-1
5-3. Hand-held Signals.....	5-1
5-4. M49A1 Surface Trip Flare.....	5-5
5-5. Explosive Booby Trap Simulators: Flash, M117; Illuminating, M118; Whistling, M119.....	5-6
5-6. M115A2 Projectile Ground-Burst Simulator.....	5-7
5-7. M116A1 Hand Grenade Simulator.....	5-8
5-8. Illumination Ground Signal Kits.....	5-9

APPENDIX A. LIVE HAND GRENADE RANGE OPERATIONS

CHECKLIST	A-1
------------------------	-----

APPENDIX B. HAND GRENADE SAFETY CONSIDERATIONS.....B-1

APPENDIX C. RANGE CONSTRUCTION/MODIFICATION.....C-1

APPENDIX D. THREAT HAND GRENADES.....D-1

APPENDIX E. NATO HAND GRENADES.....E-1

GLOSSARY..... Glossary-1

REFERENCES..... References-1

INDEX..... Index-1

PREFACE

The purpose of this manual is to orient Soldiers to the functions and descriptions of hand grenades and ground pyrotechnic signals. It provides a reference for the identification and capabilities of various hand grenades and pyrotechnic signals. It also provides a guide for the proper handling and throwing of hand grenades, suggests methods and techniques for the tactical employment of hand grenades, and provides a guide for commanders conducting hand grenade training.

This manual provides information and guidance for operating, using, and training with hand grenades. It is intended for two user groups: *training centers* responsible for introducing and training soldiers to a basic knowledge level; and *field units, officers, and noncommissioned officers* responsible for sustaining basic knowledge level skills and advancing Soldier skills in the employment of hand grenades on the battlefield.

The development of new hand grenades and improvement of existing hand grenades has resulted in many different grenade types within the U.S. inventory. While only a limited number of grenade types are in production today for U.S. Armed Forces, the majority of all hand grenades produced are used by either the armed forces of our allies or countries to which we occasionally provide military assistance. This manual addresses hand grenades common to the U.S. Army.

A blank copy of DA Form 3517-R (Hand Grenade Qualification Scorecard) can be found at the back of this manual. This form is not available through normal supply channels. It may be reproduced locally on 8 1/2- x 11-inch paper. An electronic version is also available on the Army Publishing Directorate website at <http://www.apd.army.mil>.

*This publication applies to the Active Army, the Army National Guard (ARNG)/Army National Guard of the United States (ARNGUS), and the U.S. Army Reserve (USAR) unless otherwise stated.

*The proponent for this publication is the U.S. Army Training and Doctrine Command. The preparing agency is the U.S. Army Infantry School. You may send comments and recommendations by any means, US mail, e-mail, fax, or telephone, as long as you use or follow the format of DA Form 2028, *Recommended Changes to Publications and Blank Forms*. You may also phone for more information. Point of contact information is as follows.

E-mail: 229-DOC-LIT@benning.army.mil
Phone: Commercial: 706-545-8623 or DSN: 835-8623
Fax: Commercial: 706-545-8600 or DSN: 835-8600
US Mail: Commandant, USAIS
ATTN; ATSH-INB, BLDG 74, Room 102
6650 Wilkin Drive, Bldg 74, Rm 102
Fort Benning, GA 31905-5593

Unless otherwise stated, whenever the masculine gender is used, both men and women are included.

This page intentionally left blank.

CHAPTER 1

TYPES OF HAND GRENADES

This chapter describes the various types of hand grenades, their components and mechanical functions, and examples of the grenades used by U.S. forces.

1-1. DESCRIPTION

The hand grenade is a hand-held, hand-armed, and hand-thrown weapon. U.S. forces use colored smoke, white smoke, riot-control, special purpose, fragmentation, offensive, and practice hand grenades. Each grenade has a different capability that provides the soldier with a variety of options to successfully complete any given mission. Hand grenades give the soldier the ability to kill enemy soldiers and destroy enemy equipment. Historically, the most important hand grenade has been the fragmentation grenade, which is the soldier's personal indirect weapon system. Offensive grenades are much less lethal than fragmentation grenades on an enemy in the open, but they are very effective against an enemy within a confined space. Smoke and special purpose grenades can be used to signal, screen, control crowds or riots, start fires, or destroy equipment. Because the hand grenade is thrown by hand, the range is short and the casualty radius is small. The 4- to 5-second delay on the fuse allows the soldier to safely employ the grenade.

1-2. TYPES

The six types of hand grenades are (Figure 1-1, page 1-2):

- **Fragmentation.** These grenades are used to produce casualties by high-velocity projection of fragments.
- **Illuminating.** This grenade is used to provide illumination of terrain and targets.
- **Chemical.** These grenades are used for incendiary, screening, signaling, training, or riot-control.
- **Offensive.** This grenade is used for blast effect.
- **Practice and Training.** These grenades are for training personnel in use, care and handling of service grenades.
- **Nonlethal.** This grenade is used for diversionary purposes or when lethal force is not desired.

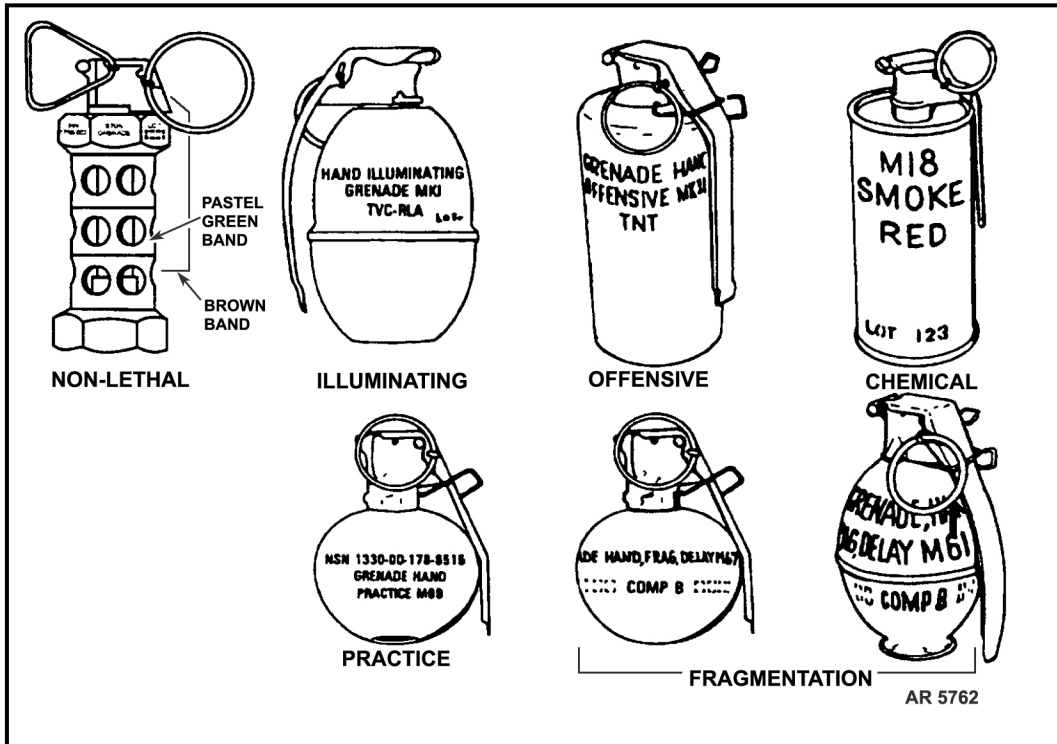


Figure 1-1. Types of hand grenades.

1-3. COMPONENTS

The hand grenade is made up of three components:

- **Body.** The body contains filler and, in certain grenades, fragmentation.
- **Filler.** The filler is composed of a chemical or explosive substance.
- **Fuse Assembly.** The fuse causes the grenade to ignite or explode by detonating the filler.

1-4. MECHANICAL FUNCTION

All U.S. hand grenades function in a similar manner. The sequence for the mechanical functioning of the M67 fragmentation hand grenade is as follows.

a. **Remove Safety Clip and Safety Pin.** First remove the safety clip, then the safety pin, from the fuse by pulling the pull ring. Be sure to maintain pressure on the safety lever--it springs free once the safety clip and the safety pin assembly is removed.

b. **Release Pressure on Lever.** Once the grenade is thrown, the pressure on the safety lever is released, and the striker is forced to rotate on its axis by the striker spring, throwing the safety lever off. The striker then detonates the primer, and the primer explodes and ignites the delay element. The delay element burns for the prescribed amount of time then activates either the detonator or the igniter. The detonator or igniter acts to either explode or burn the filler substance (Figure 1-2).