

TECHNICAL MANUAL

**OPERATOR'S MANUAL,
CARTRIDGE, 40-MM:
TACTICAL CS, M651
(NSN 1310-00-849-2083)**

**HEADQUARTERS,
DEPARTMENT OF THE ARMY**

JANUARY 1975

WARNING

Observe all the safety precautions in this manual. They can prevent severe injury and exposure to extremely irritating effects of CS clouds to you and your buddies.

TECHNICAL MANUAL }
No. 3-1310-243-10 }

HEADQUARTERS
DEPARTMENT
OF THE ARMY
WASHINGTON, D.C.
10 January 1975

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*This manual supercedes TM 3-1310-243-10, 28 September 1968, including all changes.

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CHAPTER 1 INTRODUCTION

Section I. GENERAL

1-1. Purpose and Scope

This manual is for your use in operating and maintaining the M651 tactical CS 40-mm cartridge.

1-2. Accidents, Malfunctions, and Forms

- a. Accidents involving injury to personnel or damage to material will be reported as specified in AR 385-40.
- b. Accidents or malfunctions in combat or training will be reported as specified in AR 75-1.
- c. Maintenance forms and records are explained in TM 38-750.

1-3. Recommending Improvements

You can help to improve this manual by recommending improvements. Mail your comments to Commander, Edgewood Arsenal, Attn: SAREA-DE-ET, Aberdeen Proving Ground, Md 21010, using DA Form 2028 (Recommended Changes to Publications and Blank Forms) or a letter. A reply will be sent direct to you.

1-4. Use

Your M651 cartridge can be used in combat against any target vulnerable to its CS agent. Fire the cartridge from the M79 grenade launcher or the M203 grenade launcher which attaches to the M16A1 rifle. This cartridge is especially effective when fired into an enclosed area. The projectiles will penetrate window glass or up to 19 millimeters (3/4 inch) thick pine wood at 200 meters (656 feet) and release CS after penetration. The projectiles will also function against other materials such as earth, gravel, brush, sandbags, and bamboo. You can engage targets at ranges up to 400 meters (1312 feet).

Section II. DESCRIPTION AND DATA

1-5. Description

a. *Cartridge.* The M651 cartridge (fig. 1-1) is similar in appearance to other 40-mm cartridges but has a flat nose. Two ridges act as projectile rotating bands when the round is fired. The cartridge case contains a percussion primer and has six equally spaced notches located around the cartridge case base.

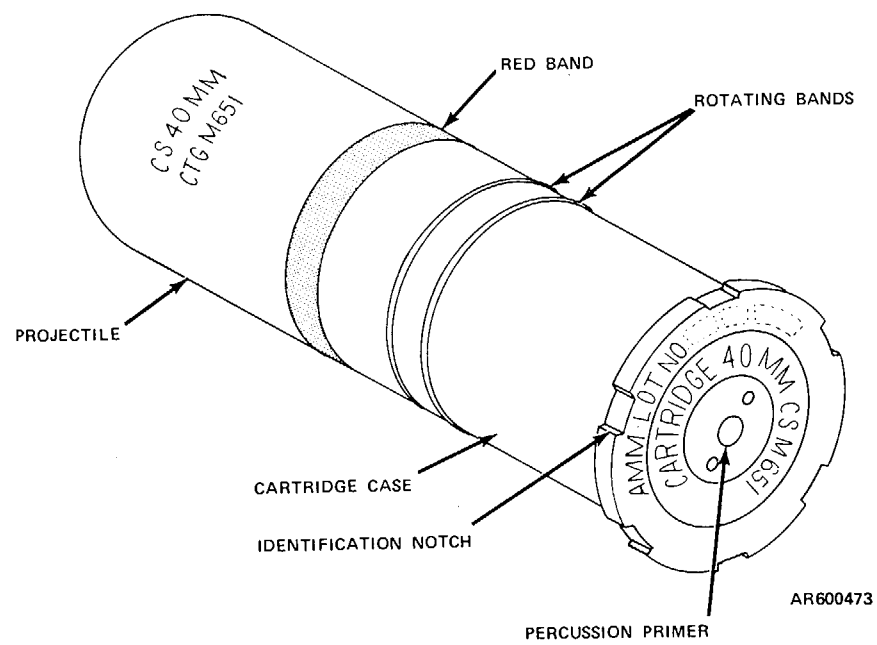


Figure 1-1. M651 cartridge exterior view.

b. Packaging. Six cartridges are packed in a bandolier. The bandolier (fig. 1-2) consists of six molded cups with flaps and a web carrying strap.

c. Packing. Your bandolier is packed in one compartment of a four-compartment fiberboard box. An instruction card is packed with each bandolier. A filled fiberboard box containing four bandoliers (24 cartridges) is wrapped in vapor barrier material and is packed in a wirebound wood box.

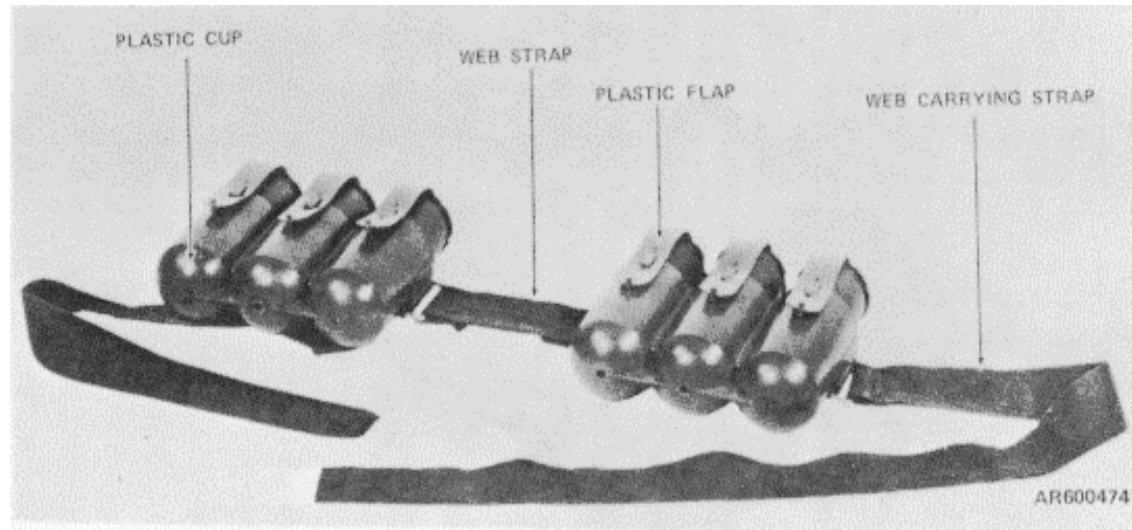


Figure 1-2. Bandolier.

1-6. *Tabulated Data (approximate)*

Length of round	11 cm (4 ¹ / ₂ in)
Caliber	40-mm
Weight of round	282 grams (10 oz)
Length of projectile	10 cm (4 in)
Weight of projectile	205 grams (7 ¹ / ₄ oz)
Type of filling	CS-pyrotechnic mixture
Weight of filling	53 grams (2 oz)
Maximum accurate range	200 meters (656 ft)
Maximum range	400 meters (1312 ft)
Fuze arming distance	10 to 30 meters (32.8 to 98.4 ft)
Burning time	20 to 30 sec
National Stock Number (NSN)	1310-00-849-2083

CHAPTER 2 OPERATING INSTRUCTIONS

Section I. OPERATING PROCEDURES

CAUTION

Keep your powder dry. Firing the M651 cartridge into water will increase the dud rate and decrease the amount of CS cloud disseminated. Immersion of unpacked M651 cartridges in water may cause the cartridges to misfire.

2-1. *Loading and Unloading, Firing and Targets*

a. Loading and Unloading.

(1) Load and unload the M651 cartridge from the M79 grenade launcher in accordance with procedures outlined in TM 9-1010-205-10.

(2) Load and unload the M651 cartridge from the M203 grenade launcher in accordance with procedure outlined in TM 9-1010-221-10.

b. Firing. Make sure you carry your field protective mask when firing the M651 cartridge. The M651 cartridges are not explosive rounds; however, a malfunctioning projectile may explode upon target impact. Adequate protection should be afforded friendly troops in the immediate vicinity of the target. Make sure that someone informs friend-

ly personnel to wear their masks to avoid temporary irritation from the CS cloud which will result from the use of the M651 cartridge.

c. Targets. When firing into thinly constructed or easily penetrable buildings, the projectile should enter the building at a point close to the ground so that the munition does not pass through the building before functioning. When used against personnel in the open, the point of impact should be upwind of the target area.

2-2. Failure to Fire

Any time a launcher fails to fire an M651 cartridge, assume a hangfire has occurred and observe the procedures listed below until the round has been fired or removed from the launcher.

a. Keep the launcher aimed at the target and keep all personnel clear of the muzzle.

b. Wait 30 seconds, open the breech to recock the weapon, and examine the percussion primer (fig. 1-1) to see if it has been dented. If the percussion primer has not been dented, the firing mechanism of the weapon may be at fault. The round may be reloaded and fired after the cause of failure to fire has been corrected.

c. If the percussion primer has been dented, attempt to fire the round again. If the round fails to fire, consider the round a misfire.

d. Wait 30 seconds and then remove the round from the launcher.

e. After the round is removed from the launcher, keep the round separate from other ammunition. If it is determined that the round is faulty, keep it separate from other ammunition and notify Explosive Ordnance Disposal (EOD) personnel for disposal.

NOTE

A hangfire is a temporary failure or delay in the action of a primer, igniter or propelling charge. For a few seconds it cannot be distinguished from a complete failure or misfire.

NOTE

A misfire is the failure of a primer or the propelling charge of a projectile to function wholly or in part.

NOTE

A dud is an explosive munition which has not been armed as intended or which fails to explode after being armed.

Section II. AMMUNITION

2-3. Identification

a. *Cartridge.* The base of each cartridge case is marked with the nomenclature and ammunition lot number as shown in figure 1-1. The 1/4-inch wide red band on the gray projectile indicates that the CS filling is a nonpersistent-effect irritant agent. The cartridge nomenclature is also marked in red on the projectile.

NOTE

The ammunition lot number and nomenclature may be marked on the side of the cartridge case, instead of on its base.

b. *Packing Box.* The wood packing box is marked with nomenclature, weight, cubic feet, and National Stock Number. The box is also marked on diagonally opposite edges with a red stripe and a brown stripe on a gray background. The red stripe signifies that the box contains a nonpersistent-effect irritant agent. The brown stripe signifies a low explosive.

2-4. Safety Precautions

a. Cartridges must be free of sand, mud, grease, moisture, ice or other foreign matter when loaded into an M79 grenade launcher or M203 grenade launcher attached to an M16A1 rifle.

b. A damaged, corroded, or separated cartridge shall not be fired. Friendly personnel must never be immediately forward of the muzzle of a launcher.

c. Cartridges shall not be dropped. If the cartridge accidentally functions, the cartridge-case and/or projectile will cause injury to personnel in its path.

d. The CS cloud is irritant in nature and will temporarily incapacitate unmasked personnel. Make sure that masks are worn by the firer and friendly troops who may be exposed to the CS cloud either in enclosed areas or downwind of the impact area.

e. Any time a cartridge fails to fire, keep the muzzle end of the launcher on, target. Keep all friendly personnel clear of the muzzle end of the launcher.

f. Always wait 30-seconds before unloading a cartridge that has failed to fire.

g. Refer any damaged or misfired ammunition to Explosive Ordnance Disposal (EOD) personnel.

h. Do not handle fired projectiles. Notify Explosive Ordnance Disposal (EOD) personnel of the quantity and location of projectiles.

i. When destroying cartridges, take cover to avoid being hit by projectiles or cartridges which may be propelled through the air.

j. The projectile will cause injury to personnel in its path.

k. Always carry a field protective mask.

2-5. *Preparing for Firing*

a. Open the top of the wood box and remove the vapor barrier covered fiberboard box.

b. Remove the vapor barrier, open the top of the fiberboard box, and remove the bandolier with six cartridges and the instruction card.

c. Fit the bandolier in a carrying position to suit the user.

NOTE

Unfired cartridges must be returned to their original packing boxes or to other suitable packing boxes. Repackaged cartridges must be used first in subsequent firings, so the stocks of open boxes will be kept to a minimum.

APPENDIX A REFERENCES

AR 75-1	Malfunctions Involving Ammunition and Explosives, Reports Control/ Symbol AMC-132 (MIN)
AR 310-25	Dictionary of United States Army Terms (Short Title: AD)
AR 310-50	Authorized Abbreviations and Brevity Codes
AR 385-40	Accidents Reporting and Records
AR 385-63	Regulations for Firing Ammunition for Training, Target Practice and Combat
FM 23-31	40-mm Grenade Launchers M203 and M79
TM 9-1005-249-10	Operator's Manual M16A1 Rifle
TM 9-1010-205-10	Operator's Manual 40-mm Grenade Launcher M79 (1010-00-691-1382)
TM 9-1010-205-24	Organizational, Direct Support and General Support Maintenance Manual Including Repair Parts and Special Tools List for 40-mm Grenade Launcher M79 (1010-00-691-1382)
TM 9-1010-221-10	Operator's Manual 40-mm Grenade Launcher M203
TM 9-1300-206	Ammunition and Explosives Standards
TM 38-750	The Army Maintenance Management Systems (TAMMS)

By Order of the Secretary of the Army

Official:

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The Adjutant General

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