

CHAPTER 1

DESCRIPTION AND COMPONENTS

This chapter describes the weapon and the types of ammunition in detail and provides a table of general data.

1-1. DESCRIPTION

The M249 AR is a gas-operated, air-cooled, belt-and magazine-fed, automatic weapon that fires from the open-bolt position (Figure 1-1). It has a maximum rate of fire of 850 rounds per minute. Primarily, ammunition is fed into the weapon from a 200-round ammunition box containing a disintegrating metallic split-link belt. As an emergency means of feeding, the M249 AR can use a 20- or 30-round M16 rifle magazine, but this will increase the chance of stoppages. Although the M249 AR is primarily used as an automatic rifle, it is also used as a light machine gun. It can be fired from the shoulder, hip, or underarm position; or from the biped-steadied position. When employed as a machine gun, it has a tripod with a T&E mechanism and a spare barrel; however, barrels must not be interchanged with those from other M249s unless the headspace has been set for that weapon by direct support personnel.

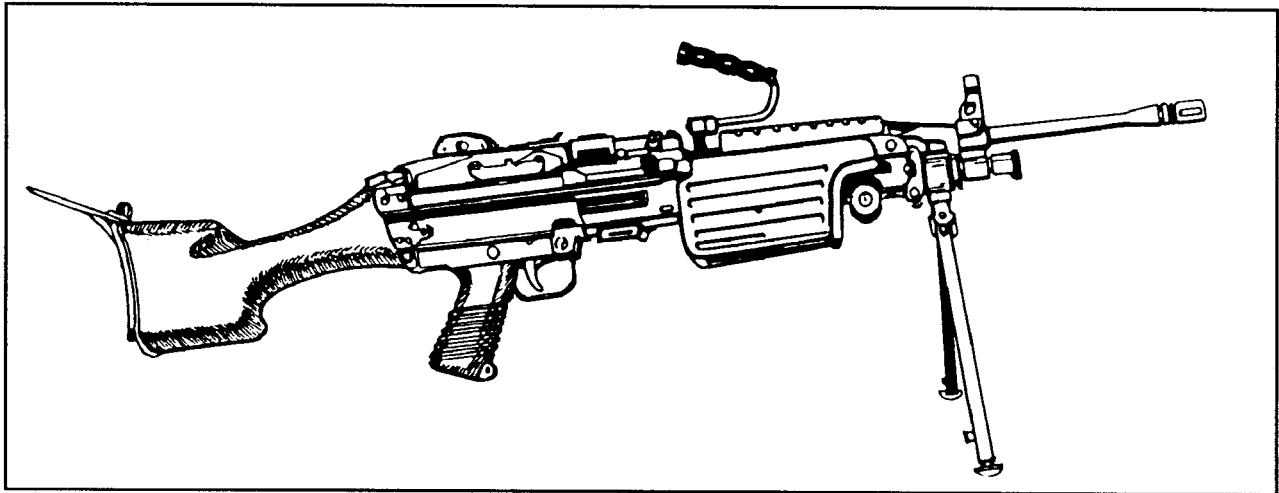


Figure1-1. M249 automatic rifle.

1-2. COMPONENTS

The major components of the M249 AR and their purposes are shown in Table 1-1, page 1-2; and Figure 1-2, page 1-3. The sights and safety button are discussed in paragraphs a and b and shown in Figures 1-3 and 1-4, pages 1-5 and 1-6, respectively. See Table 1-2, page 1-4, for general data.

| COMPONENTS | PURPOSES |
|---|---|
| Barrel assembly (1) | Houses cartridges for firing, directs projectile, and supports the gas regulator. |
| Heat shield assembly (2) | Provides protection for the automatic rifleman's hand from a hot barrel. |
| Rear sight assembly (3) | Adjusts for both windage and elevation. |
| Cover and feed mechanism assembly (4) | Feeds linked belt ammunition, and positions and holds cartridges in position for stripping, feeding, and chambering. |
| Feed tray assembly (5) | Positions belted ammunition for firing. |
| Cocking handle assembly (6) | Pulls the moving parts rearward. Moves in a guide rail fixed to the right side of the receiver. |
| Buttstock and buffer assembly (7) | Contains a folding buttplate. Serves as a shoulder support for aiming and firing M249. Contains a buffer to absorb recoil. |
| Bolt assembly (8) | Provides feeding, stripping, chambering, firing, and extraction, using the projectile gases for power. |
| Slide assembly (9) | Houses firing pin and roller assembly. |
| Return rod and transfer mechanism assembly (10) | Absorbs recoil for bolt and operating rod assembly at the end of recoil movement. |
| Receiver assembly (11) | Serves as a support for all major components and houses action of weapon. Through a series of cam ways, controls functioning of weapon. |
| Trigger mechanism (12) | Controls the firing of the weapon. Provides storage area for lubricant in grip portion. |
| Handguard assembly (13) | Provides thermal insulation to protect the automatic rifleman's hands from heat or extreme cold and houses the cleaning equipment. |
| Sling and snap hook assembly (14) | Provides a means of carrying the weapon. |
| Bipod (15) | Supports M249 AR in prone position. The telescopic legs can be individually adjusted to three different lengths. |
| Gas cylinder assembly (16) | Locks bipod in place and provides passageway for operating gases. |
| Piston assembly (17) | Holds the bolt and slide assemblies and houses the return spring. |
| Return spring (18) | Returns bolt, slide, and piston assemblies to locked position during counter-recoil cycle. |

Table 1-1. Components and purposes.

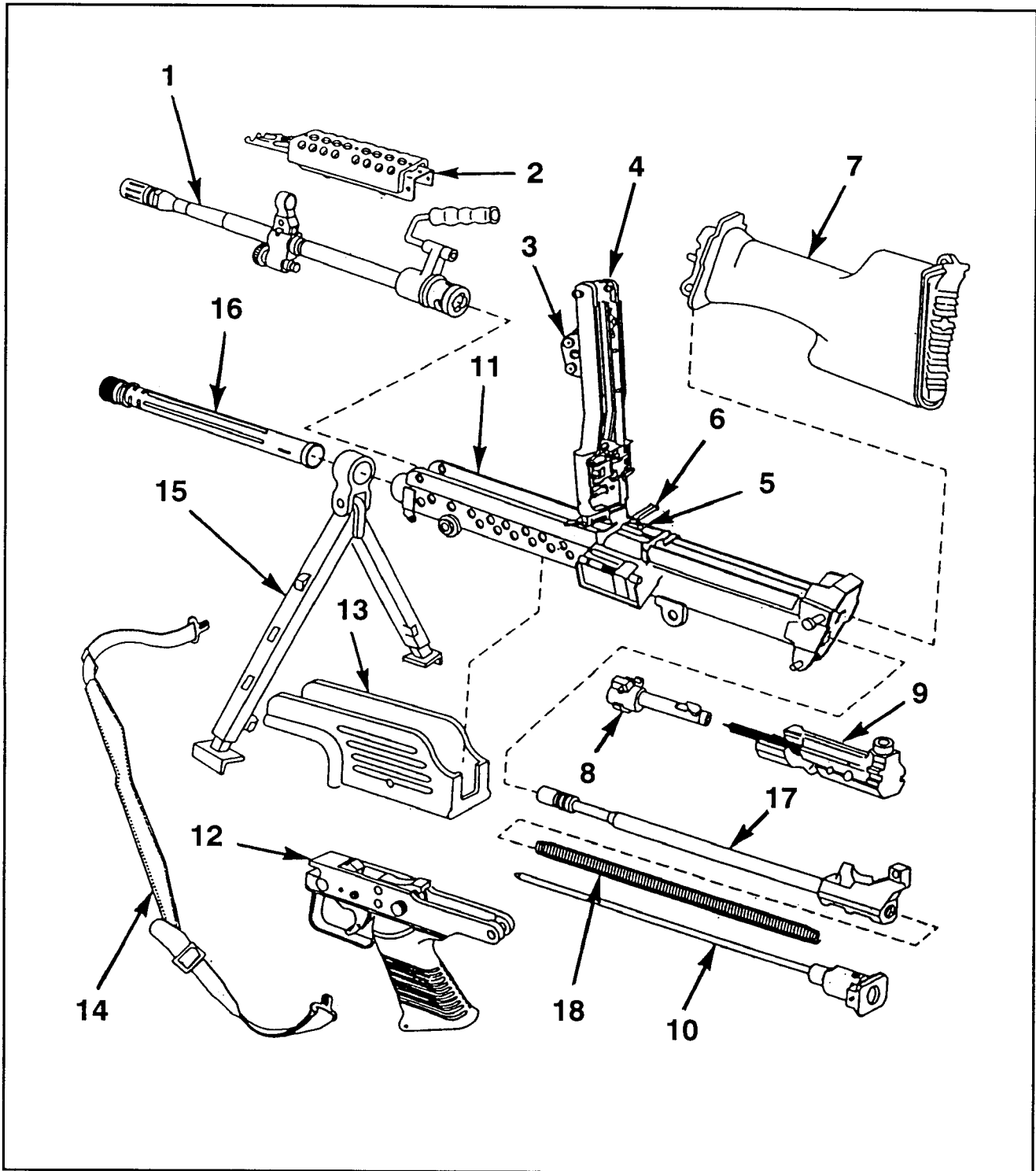


Figure 1-2. M249 AR components.

| | |
|---|--|
| Ammunition | .5.56-mm ball and tracer (mix) ammunition is packaged in 200-round boxes, each weighing 6.92 pounds; 20-round magazines, each weighing .7 pound or 30-round magazines, each weighing 1.07 pounds. Other types of ammunition available are tracer, blank, and dummy. |
| Tracer burnout | .900 meters (+) |
| Length of M249 | .40.87 inches |
| Weight of M249 | |
| With modification kit | .16.41 pounds |
| Without modification kit | .15.30 pounds |
| Maximum range | .3,600 meters |
| Point targets | .600 meters |
| Area targets | .800 meters |
| Suppression | .1,000 meters |
| Rates of Fire: | |
| Sustained | .85 rounds per minute (with no barrel changes) |
| Rapid | .200 rounds per minute (with barrel change after 2 minutes) |
| Cyclic | .850 rounds per minute (with barrel change after 1 minute) |
| Basic load, ammunition | .600 rounds carried by automatic rifleman in three 200-round boxes. |
| Maximum extent of grazing fire obtainable over uniformly sloping terrain | .600 meters |

Table 1-2. General data.

a. **Sights.** The M249 AR has a hooded and semi-tied front sight (Figure 1-3). The rear sight assembly mounts on the top of the cover and feed mechanism assembly. The elevation knob drum has range settings from 300 meters to 1,000 meters. Range changes are made on the M249 AR sight by rotating the elevation knob to the desired range setting. Rotation of the rear sight aperture (peep sight) is used for fine changes in elevation or range adjustments, such as during zeroing. Each click of the

peep sight equals one-half-mil change in elevation, which is .5 cm at 10 meters. The sight adjusts for windage by rotating the windage knob. Each click of windage adjustment also equals a one-half-mil change, which is .5 cm at 10 meters. There is also a windage sliding scale marked with index lines for centering the rear sight aperture.

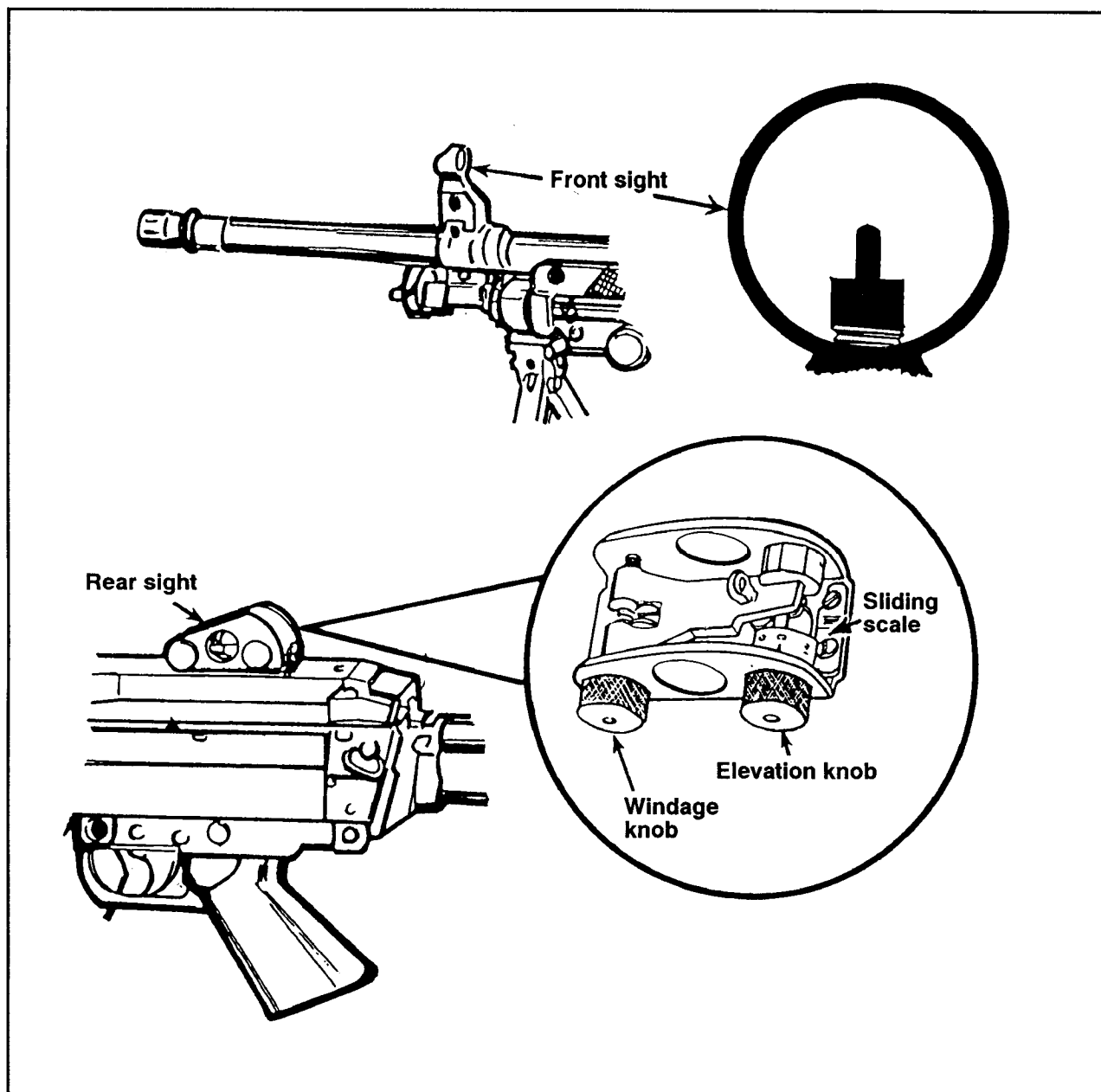


Figure 1-3. Sights.

b. **Safety.** The safety (Figure 1-4) is in the trigger housing. The safety is pushed from left to right (red ring NOT visible) to render the weapon SAFE, and the bolt cannot be released to go forward. The safety is pushed from right to left (red ring visible) to render the weapon ready to fire. The cocking handle on the right-side of the weapon is used to pull the bolt to the rear.

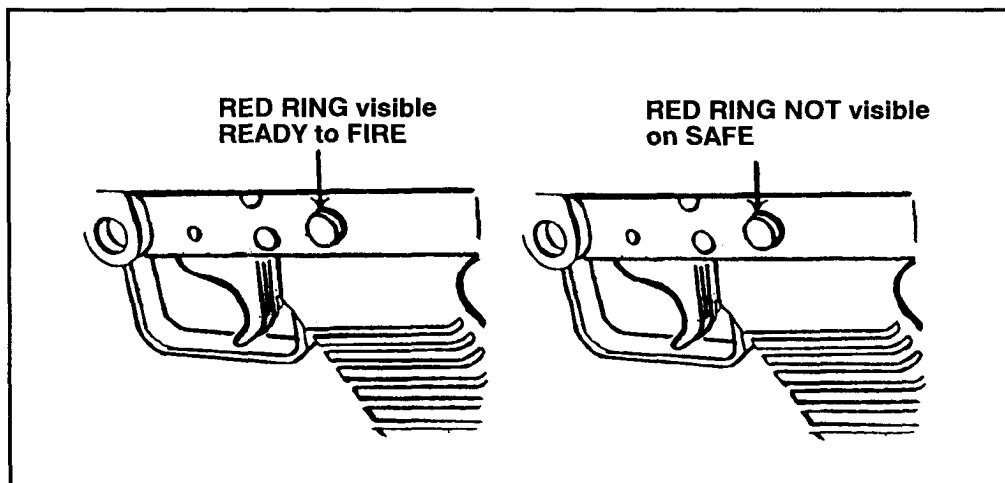


Figure 1-4. M249 AR safety.

1-3. AMMUNITION

The M249 AR uses several different types of 5.56-mm standard military ammunition. Soldiers should use only authorized ammunition that is manufactured to US and NATO specifications.

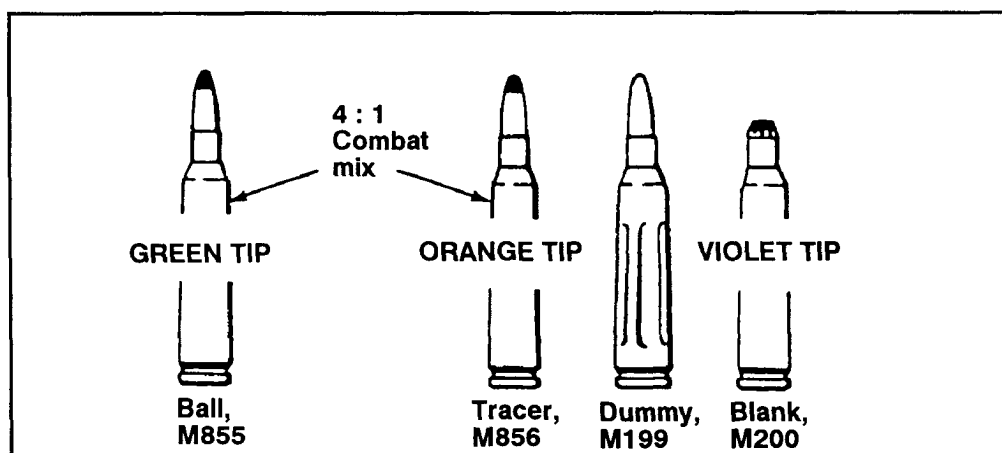


Figure 1-5. Cartridges for the M249.

a. **Type and Characteristics.** The specific type ammunition (Figure 1-5) and its characteristics are as follows.

(1) *Cartridge, 5.56-mm ball M855 (A059).* The M855 cartridge has a gilding, metal-jacketed, lead alloy core bullet with a steel penetrator. The primer and case are waterproof. The ammunition is linked by a disintegrating metallic split-linked belt for firing from the ammunition box (Figure 1-6). In an emergency, the M855 round can also be loaded and fired from the M16 20- or 30-round magazine. It is identified by a green tip, has a projectile weight of 62 grains, and is 2.3 cm long. This is the NATO standard round. It is effective against personnel and light materials, not vehicles.

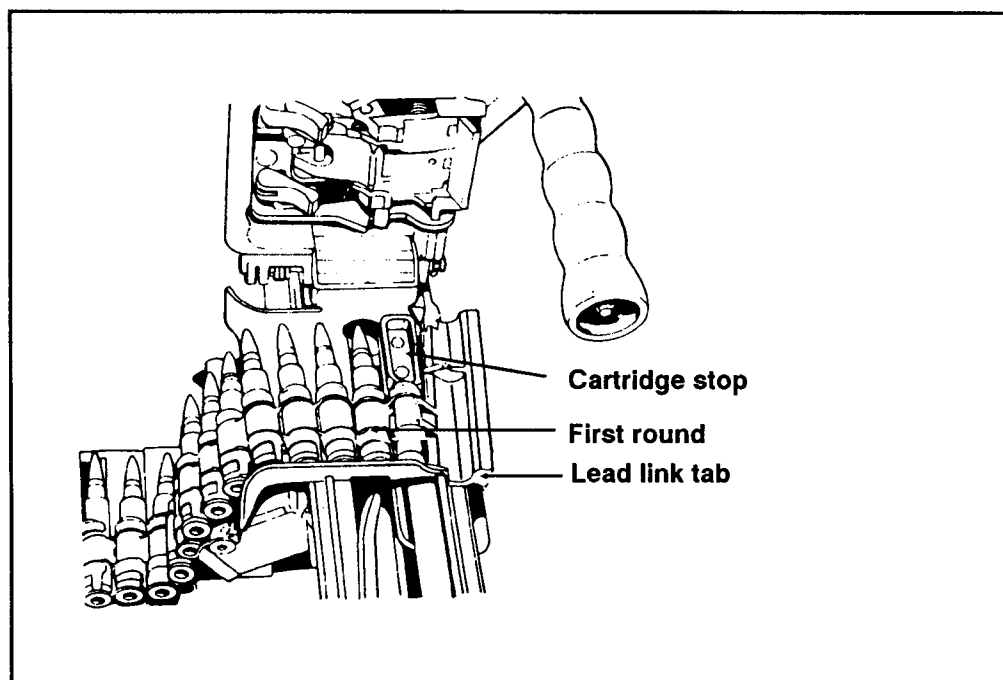


Figure 1-6. M855 cartridges in metallic belt.

(2) *Cartridge, 5.56-mm tracer, M856 (A064).* This cartridge has a 63.7 grain bullet without a steel penetrator. It is identified by an orange tip. The tracer is used for adjustments after observation, incendiary effects, and signaling. When tracer rounds are fired, they are mixed with ball ammunition in a ratio of four ball rounds to one tracer round. The DODAC for ball and tracer mix is A064.

(3) *Cartridge, 5.56-mm dummy M199 (A060).* This cartridge can be identified by the six grooves along the side of the case beginning about one-half inch from its head. It contains no propellant or primer. The primer

well is open to prevent damage to the firing pin. The dummy round is used during mechanical training, dry-fire exercises, and function checks.

NOTE: The 5.56-mm NATO cartridge may be identified by its appearance, the painting of projectile tips, the stamping of the manufacturer's initials and year of manufacture on the base of the cartridge case, and the markings on the packing containers. When removed from the original packing container, the cartridge may be identified by its physical characteristics. The M193 and M196 cartridge for the M16 can be fired with the M249, but accuracy is degraded; therefore, it should only be used in emergency situations when M855 or M856 ammunition is not available.

(4) *Cartridge, 5.56-mm blank M200 (M2 link, A075)*. The blank cartridge has no projectile. The case mouth is closed with a seven-petal rosette crimp and has a violet tip. The original M200 blank cartridge had a white tip. Field use of this cartridge resulted in residue buildup, which caused malfunctions. Only the violet-tipped M200 cartridge should be used. The blank round is used during training when simulated live fire is desired. An M15A2 blank-firing attachment must be used to fire this ammunition. (See paragraph 1-4).

DANGER

Do not fire blank ammunition at any person within 20 feet, because fragments of a closure wad or particles of unburned propellant can cause injury.

b. **Storage.** Ammunition is stored under cover. If ammunition is in the open, it must be kept at least 6 inches above the ground and covered with a double thickness of tarpaulin. The cover must be placed so that it protects the ammunition yet allows ventilation. Trenches are dug to divert water from flowing under the ammunition.

c. **Care, Handling, and Preservation.** Ammunition should not be removed from the airtight containers until ready for use. Ammunition removed from the airtight containers, particularly in damp climates, may corrode.

(1) Ammunition must be protected from mud, dirt, and moisture. If it gets wet or dirty, the ammunition must be wiped off before using. Lightly corroded cartridges are wiped off as soon as the corrosion is discovered. Heavily corroded, dented, or loose projectiles should not be fired.

(2) Ammunition must be protected from the direct rays of the sun. Excessive pressure from the heat may cause premature detonation.

(3) Oil should never be used on ammunition. Oil collects dust and other abrasives that may possibly damage the operating parts of the weapon.

d. **Packaging.** The ammunition can contains two plastic ammunition boxes. Each box contains 200 rounds and weighs 6.92 pounds. Dummy ammunition (M199) is packed in boxes of 20 rounds each.

1-4. BLANK FIRING ATTACHMENT

The M15A2 BFA is the same attachment used for the M16 rifle.

a. **Installation.** The BFA is attached to the M249 AR by using the three steps in Figure 1-7.

b. **Care of the M249 While Using the BFA.** A buildup of carbon inside the weapon causes friction between the moving parts. Carbon deposits build rapidly when blanks are fired. When these deposits become excessive, stoppages occur. Therefore, keeping the weapon clean, especially the gas system and chamber, during blank firing is very important. To get the best performance with the BFA, the automatic rifleman performs the following:

- (1) Inspects the weapon for damaged parts, excessive wear, cleanliness, and proper lubrication before firing.
- (2) When feasible, test fires the weapon using ball ammunition before attaching the BFA.
- (3) Adjusts the BFA to fit the weapon.
- (4) Applies immediate action when stoppages occur.
- (5) Cleans the gas system after firing 500 rounds.
- (6) Cleans and lubricates the entire weapon after firing 1,000 rounds.

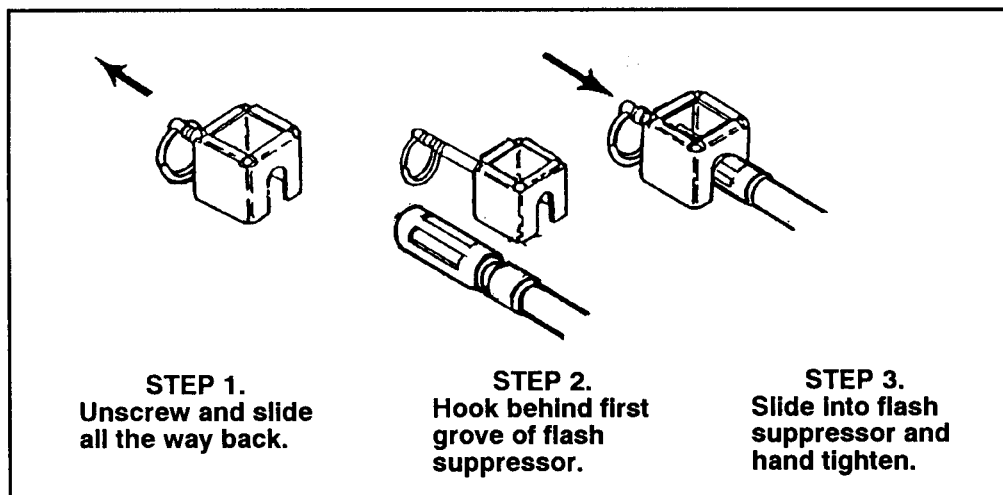


Figure 1-7. M15A2 BFA.