

## CHAPTER 2

### Weapon Systems and Ammunition Capabilities

Through its lethal weapons and maneuverability, the high mobility multipurpose wheeled vehicle, (HMMWV) provides the cavalry crew the means to survive as an effective reconnaissance element. This chapter discusses the weapon systems on the HMMWV and the capabilities of ammunition used by those weapon systems.

#### M249 Squad Automatic Weapon

##### DESCRIPTION

The squad automatic weapon (SAW) is an air-cooled, belt-fed, gas-operated automatic weapon that fires from the open-bolt position. It has a regulator for selecting either normal (750 rounds per minute [rpm]) or maximum (1,000 rpm) rate of fire. The maximum rate of fire is authorized only if the weapon's firing rate slows under adverse conditions. Ammunition is fed into the weapon from a 200-round ammunition box holding a disintegrating metallic split-link belt. The SAW also has an alternating feeding method using 20- and 30-round M16 rifle magazines. The weapon has a quick-change barrel; however, barrels *must not be interchanged* with those from other SAWS unless their headspace has been set for that weapon by direct support personnel. The M249 SAW is used to engage dismounted infantry, crew-served weapons, antitank guided missile (ATGM) teams, and thin-skinned vehicles. (See Table 2-1, *Weapon Characteristics*, on page 2-5.)

##### AMMUNITION

The preferred combat ammunition mix for the M249 is a four-ball (M855) and one-tracer (M856) mix. There are other variations of 5.56-mm ammunition available; however, the four-and-one mix allows the gunner to use the tracer-on-target (TOT) method of adjusting fire to achieve target kill.

Type	Use
M855 Ball	Against light materiel targets and personnel.
M193 Ball	Range training.
M856 Tracer	Observation of fire, incendiary effects, and signaling.
M196 Tracer	Training.
M199 Dummy	During mechanical training.
M200 Blank	During training when simulated live fire is desired. (A blank firing attachment must be used to fire this ammunition.)

## M60 7.62-mm Machine Gun

### DESCRIPTION

The M60 machine gun is used to engage dismounted infantry, crew-served weapons, ATGM teams, thin-skinned vehicles, and aircraft. This fully automatic machine gun fires from the open bolt and is belt fed, gas operated, and air cooled. (See Table 2-1, *Weapon Characteristics*, on page 2-5.)

### AMMUNITION

The preferred combat ammunition mix for the M60 is a four-ball (M80) and one-tracer (M62) mix. Again, the four-and-one mix allows the gunner to use the TOT method of adjusting fire to achieve target kill.

Type	Use
M61 Armor-piercing	Against lightly armored targets.
M62 Tracer	For observation of fire, incendiary effects, signaling, and training.
M80 Ball	Against light materiel targets and personnel, and for range training.
M63 Dummy	During mechanical training.
M82 Blank	During training when simulated live fire is desired. (A blank firing attachment must be used to fire this ammunition.)

## M2 HB Caliber .50 Machine Gun

### DESCRIPTION

The M2 heavy barrel (HB) machine gun is used to engage dismounted infantry, crew-served weapons, ATGM teams, lightly armored vehicles, and aircraft. The M2 fires from the closed bolt and is belt fed, recoil operated, air cooled, and crew operated. The gun is capable of single shot and automatic fire. (See Table 2-1, *Weapon Characteristics*, on page 2-5.)

### AMMUNITION

The preferred combat ammunition mix for the M2 is a four (API-M8) and one (API-T-M20) mix.

**Note.** Maximum effective range is 1,830 meters.

<b>Cartridge</b>	<b>Use</b>
M2 Ball	In marksmanship training, against personnel, and light materiel targets.
M1 Tracer	To aid in observing fire—secondary purposes are for incendiary effect and for signaling.
M2 Armor-piercing	Against armored aircraft and lightly armored vehicles, concrete shelters, and other bullet-resisting targets.
M1 Incendiary	Incendiary effect-especially against aircraft.
M8 Armor-piercing	Combined armor-piercing and incendiary effect.
M20 Armor-piercing	Combined armor-piercing and incendiary effect, with the additional tracer feature.
M1 Blank	For simulated fire (contains no bullet).
M2 Dummy	For training (completely inert).

## **MK 19 40-mm Grenade Machine Gun**

### **DESCRIPTION**

The Mark (MK) 19 is used against slow moving, hovering, or low-flying hostile rotary wing aircraft; dismounted infantry; and lightly armored vehicles. The MK 19 automatic fires from the open bolt and is air cooled, blow-back operated, and belt-fed. (See Table 2-1, *Weapon Characteristics*, on page 2-5.)

### **AMMUNITION**

The MK 19 fires six types of cartridges: M430/M430A1 high-explosive dual-purpose grenades, M383 high-explosive grenade, M385/M4918 training practice, and M9221/M922A1 dummy rounds.

### **M430/M430A1 High Explosive Dual Purpose Grenades**

These rounds are designed to penetrate armor and inflict personnel casualties.

- Identification-Olive drab with yellow-olive and yellow markings.
- Fuze—Point initiating, base detonating (PIBD) M549.
- Filler—Composition B.
- Arming distance—18 to 30 meters.
- Kill radius—Approximately 5 meters.
- Maximum range—2,200 meters.
- Wound radius—Approximately 15 meters.
- Maximum effective range—1,500 meters.

### **M383 High-Explosive Grenade**

The M383 is designed to inflict personnel casualties. It is packed in linked, 48-round belts.

- Fuze—Primer detonating (PD) M533.
- Filler—composition A5.
- Arming distance—18 to 36 meters.
- Blast radius—15 meters.
- Maximum range—2,200 meters.

### **M385/M918 Training Practice**

The M385 is an inert round with a propellant charge. The M918 is a flash-bang round with a propellant charge.

- Propellant-M2.
- Maximum range-2,200 meters.
- Maximum effective range-1,500 meters.

### **M922/M922AI Dummy Rounds**

These rounds are totally inert and are used to check gun functioning and to train gun crews. They are issued only to armorers.

## **Tube-Launched, Optically Tracked, Wire-Guided Missile System**

### **DESCRIPTION**

The tube-launched, optically tracked, wire-guided (TOW) weapon system consists of a launcher, with tracking and control capabilities, and a missile encased in a launch container. The launcher is equipped with self-contained replaceable units. (See Table 2-1, *Weapon Characteristics*, on page 2-5.)

### **CAPABILITIES**

The TOW weapon system can be employed in all weather conditions, if the gunner can see his target through the optical sight or nightsight. The TOW is primarily an antitank weapon used to provide long-range engagement of all known armored targets. The TOW also provides a long-range assault capability against heavily fortified bunkers, pillboxes, and gun emplacements.

### **AMMUNITION**

There are six missiles available for the TOW:

- BGM-71A Basic TOW.
- BGM-71A-1 Basic TOW extended range.
- BGM-71C Improved TOW.
- BGM-71D TOW 2.
- BGM-71E TOW2A.
- BGM-71F TOW2B.

**Note.** All missiles have a minimum arming range of 65 meters.

Table 2-1. Weapon Characteristics.

<b>Weapon</b>	<b>M249</b>	<b>M60</b>	<b>M2 HB</b>	<b>MK 19</b>	<b>TOW</b>
<b>Weight (pounds)</b>	17	23	84	76	93 (with overpack)
<b>Length (inches)</b>	40.75	43.5	65.13	43	57.3 (with overpack)
<b>Maximum Range (meters)</b>	3,600	3,725	6,767	2,212	3,750
<b>Arming Range (meters)</b>	NA	NA	NA	18 to 30	65
<b>Minimum Safe Range (meters)</b>	NA	NA	NA	310	NA
<b>Rate of Fire</b>					
<b>Cyclic (rpm)</b>	800	550* (approximate)	500	375	NA
<b>Rapid (rpm)</b>	200*	200* (2 to 3 sec between bursts)	40* (6 to 9 rds per burst at 5 to 10 sec intervals)	60	NA
<b>Sustained (rpm)</b>	85	100* (4 to 5 sec between bursts)	40*	40	NA
<b>Slow (rpm)</b>	NA	NA	<40* (6 to 9 rds per burst at 10 to 15 sec intervals)	NA	NA
<b>Single Shot</b>	NA	NA	(round every 2 to 3 sec, as dictated by target)	NA	NA
<b>Effective Range</b>					
<b>Area (meters)</b>	1,000	1,100	1,829	2,212	NA
<b>Point (meters)</b>	600	900+	1,200	1,500	3,750
<b>Moving (meters)</b>	NA	NA	NA	NA	3,750
<b>Ammunition</b>					
<b>Example Load (rounds)</b>	600	600	NA	NA	NA
*With Barrel change.					