

**M249 SQUAD AUTOMATIC WEAPON (SAW)**

**General.** The squad automatic weapon (SAW), 5.56mm, M249 is a result of a Marine Corps and Army development program to provide combat units with an automatic weapon of extended range and greater accuracy than the Browning automatic rifle. Fabrique Nationale of Herstal, Belgium developed the M249 in 1974 after the Defense Department announced its requirement for a light, automatic weapon to supplement the firepower of the 5.56mm M16A2 rifle.

In the Marine Corps, combat, combat service support, and combat support units as well as Marine Corps security forces use the SAW. In Marine infantry battalions, the SAW is found in each fire team, manned by the automatic rifleman (totaling nine per rifle platoon).

The M249 SAW has recently been upgraded to modify a few selected parts of the weapon. Where feasible, these modifications have been explained in this handout. Those modifications not explained in this handout will be noted, and the appropriate pages in the new Operator's Manual (TM 08671A-10/1A) will be referenced.

**Description.** The SAW is a gas-operated, belt/magazine-fed, air-cooled, automatic, shoulder-fired weapon (see diagram below). The SAW is designed for one Marine to operate it, which increases the agility and mobility of the automatic rifleman in consonance with other members of the fire team. Like the M60E3 machine gun, the SAW fires from the open-bolt position. It can fire ammunition from an M16 magazine as well as from a linked belt. Utilizing M855/SS109 ammunition, the SAW provides the Marine Corps with a light automatic weapon capable of providing increased firepower and much greater effective ranges over threat weapons of similar caliber.



**General Data.** (differences with upgraded SAW included)

Item	Weight (lbs)	Weight (kilograms)
SAW with bipod and tools	15.16	6.88
Upgraded SAW with bipod and tools	17.00	7.72
200-round boxed ammo	6.92	3.14
SAW and 200 rounds	22.08	10.02
Upgraded SAW and 200 rounds	23.92	10.86

Item	Length (inches)	Length (meters)
SAW	40.87	1.038
Upgraded SAW	40.75	1.035

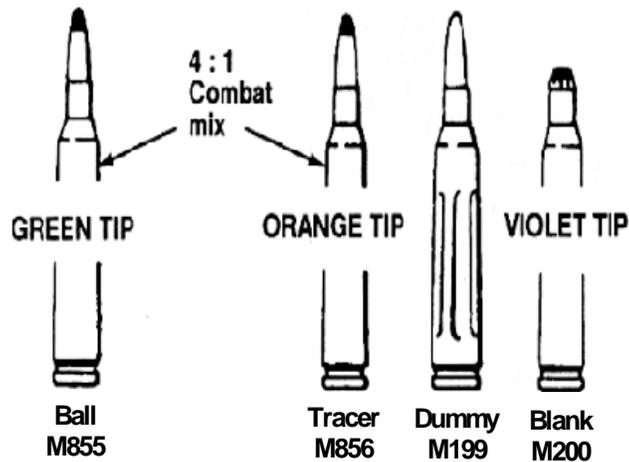
B2111 M249 Squad Automatic Weapon (SAW)

SAW rifling twist	<ul style="list-style-type: none"> <li>• 1 turn in 7 inches</li> <li>• Same as M16A2</li> </ul>
Muzzle velocity:	
• M855 Ball	3,025 feet per second (fps)
• M856 Tracer	2,870 fps

Method of Fire	Rate of Fire (rounds per minute)
Cyclic	
• Normal	725
• Max	1000
Cyclic, upgraded SAW	850
<u>NOTE:</u> Only one cyclic rate of fire exists for the upgraded SAW due to the lack of the variable gas system	
Sustained	50
Rapid	100

Range	Meters
Maximum	3600
Maximum effective	
• Area	1000
• Point	800
Maximum effective grazing	600

**Ammunition.** The M249 uses several different types of 5.56-mm standard military ammunition. Only authorized ammunition that is manufactured to US and NATO specifications should be used (see diagram below).



M249 Ammunition

**Cartridge, 5.56-mm ball M855 (DODIC A059).** The M855 cartridge has a gilding, metal-jacketed, lead alloy core bullet with a steel penetrator. The primer and case are waterproof. A disintegrating metallic split-linked belt links the ammunition for firing from the ammunition box. In an emergency, the M855 round can also be loaded and fired from the M16 20- or 30-round magazine. The M855 round

- Is identified by a green tip
- Has a projectile weight of 62 grains
- Is 2.3 cm long
- Is the NATO standard round
- Is effective against personnel and light materials, not vehicles

Cartridge, 5.56-mm tracer, M856 (DODIC A063). The M856 cartridge

- Has a 63.7-grain bullet without a steel penetrator
- 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 DODIC for ball and tracer mix is A064.

Cartridge, 5.56-mm dummy M199 (A060). The M199 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
- Function checks

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.

### **Sights**

Front Sight. The front sight post is the semi-fixed, hooded post type. It is adjusted at the time of manufacture and should not be adjusted by using units. The front sight is encircled by a metal hood to protect it from breakage or marring.

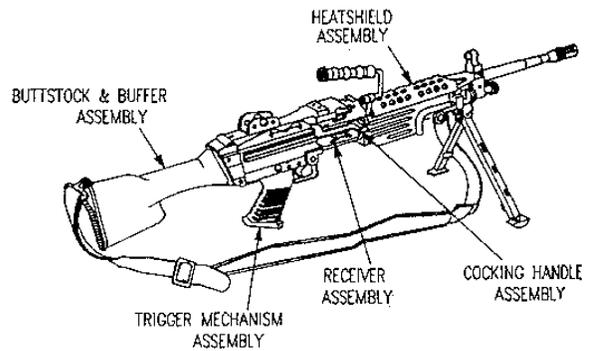
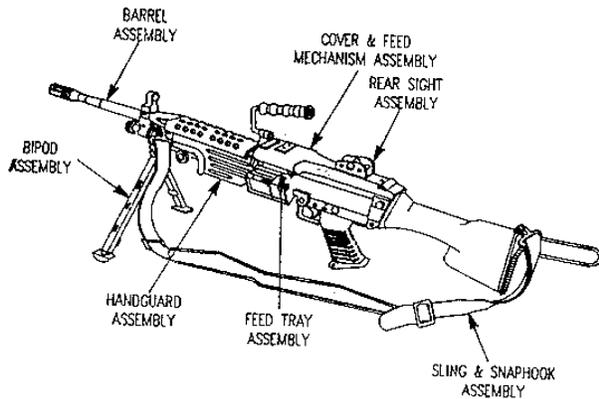
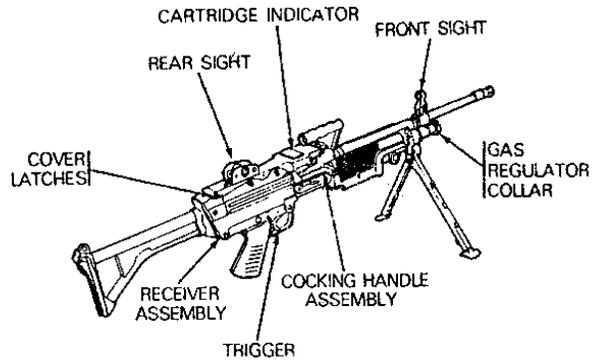
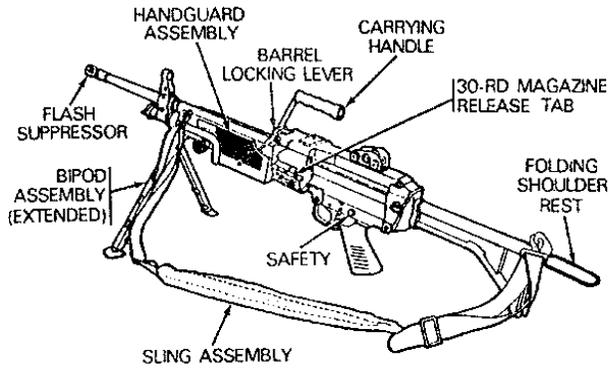
Rear Sight. The rear sight is adjustable for both elevation and windage by the means of two adjustment knobs on the left side of the weapon (loading port side). The front knob is used to adjust windage; the rear knob, to adjust elevation.

One click of either windage or elevation will move the strike of the round 2 inches for every 100m of range. Therefore, one click will move the strike of the round

- 2 inches at 100m,
- 4 inches at 200m,
- 6 inches at 300m, etc.

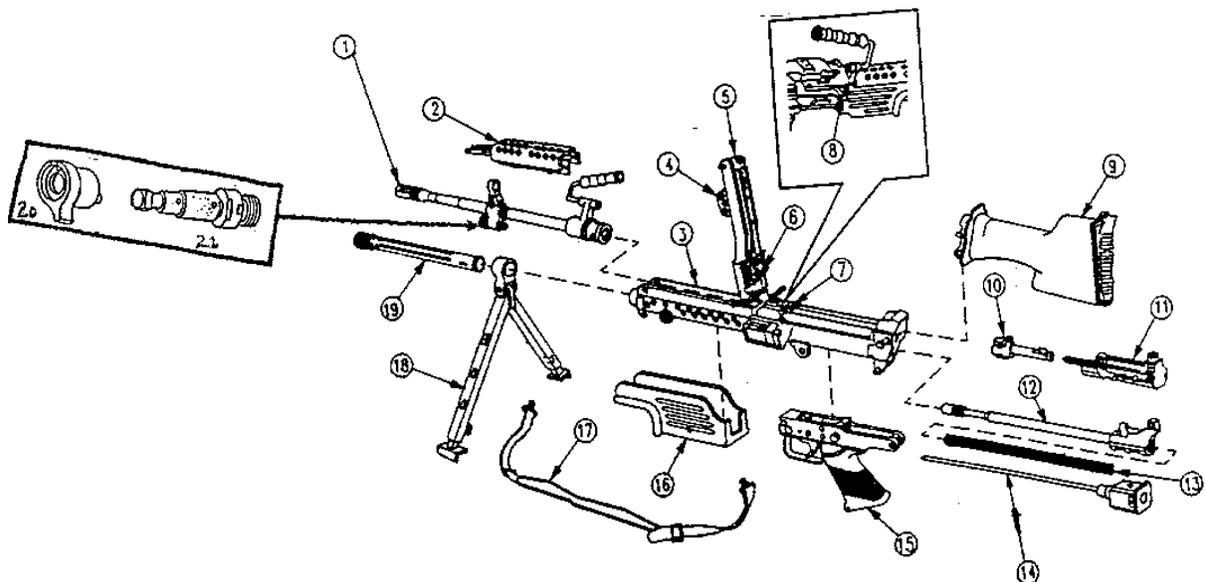
In addition to the elevation adjustment knob, the rear sight aperture may be used to adjust elevation when battlesighting the weapon. To lower the strike of the round with the rear sight aperture, turn the aperture clockwise; to raise the strike of the round, turn the aperture counterclockwise. Each full rotation of the rear sight aperture will move the strike of the round 2 inches for every 100m of range. The use of this aperture to battlesight the weapon will be explained below.

**M249 Nomenclature.** The diagrams below identify additional nomenclature you must be able to identify.



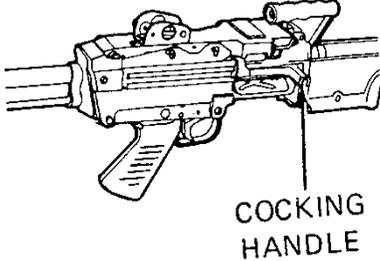
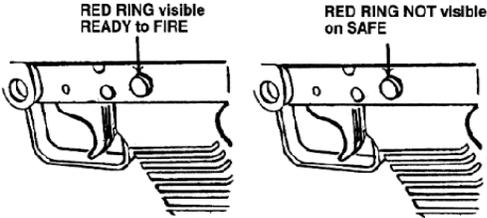
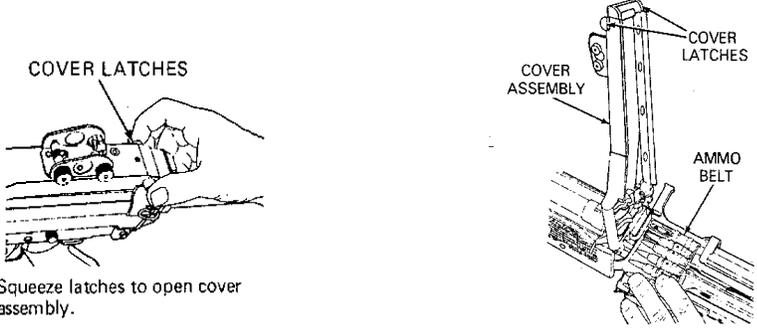
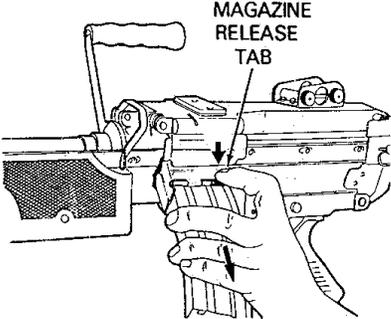
**Location of Major Components.** The table below identifies the M249 major components in the diagram below.

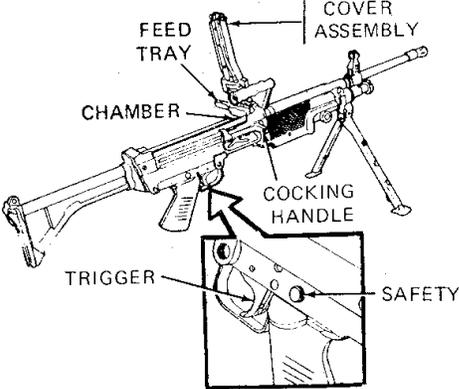
1. Barrel	8. Cocking Handle	15. Trigger mechanism assembly
2. Heat shield	9. Buffer and butt stock assembly	16. Hand guard
3. Receiver assembly	10. Bolt assembly	17. Sling and snap hook assembly
4. Rear sight assembly	11. Slide assembly	18. Bipod assembly
5. Cover and feed mechanism assembly	12. Piston assembly	19. Gas cylinder
6. Feed pawl assembly	13. Drive spring	20. Gas collar
7. Feed tray assembly	14. Operating rod	21. Gas regulator



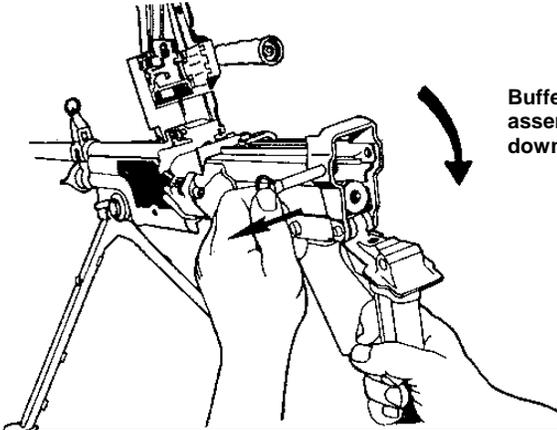
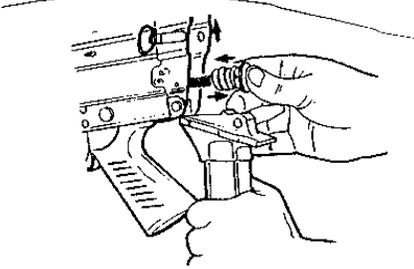
Upgraded SAW Parts Nomenclature

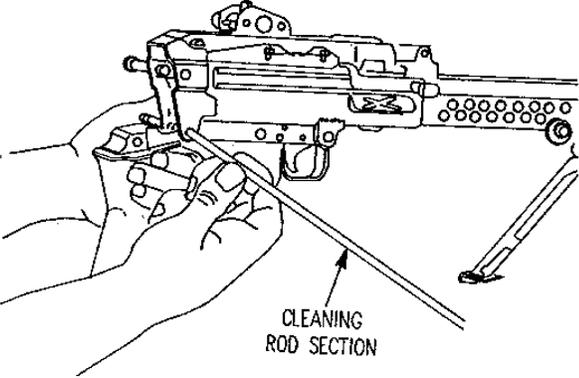
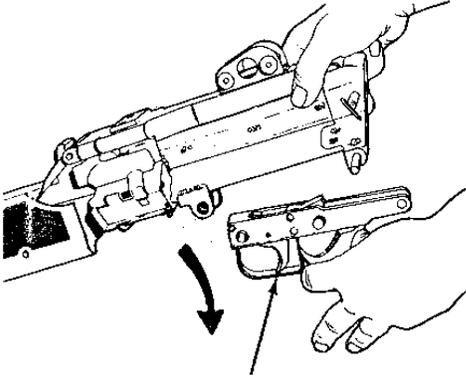
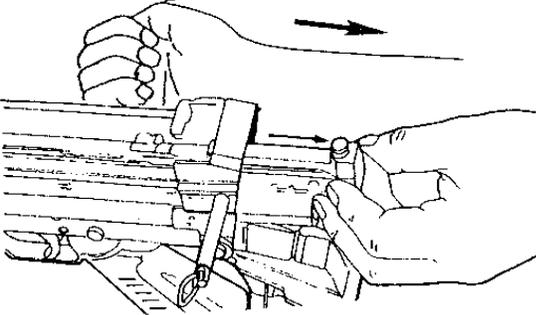
Clearing the SAW. Prior to handling any weapon, ensure that it is not loaded. Follow the steps in the table below to clear the SAW.

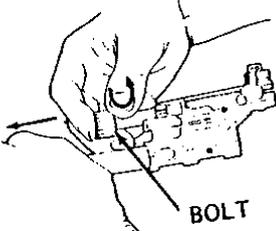
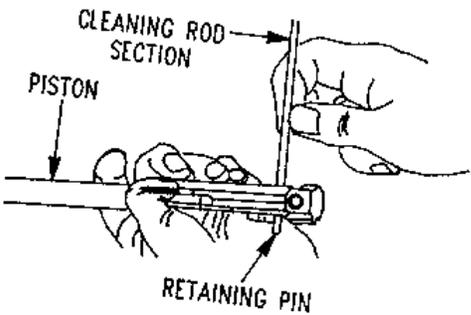
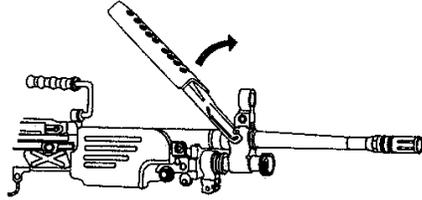
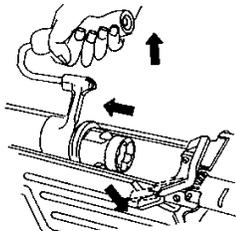
Step	Action
1	<p>Pull the cocking handle to the rear (palm up) and lock the bolt to the rear. Push the cocking handle forward until it clicks (see diagram below).</p> 
2	<p>Push the safety from left (loading side) to right (ejection side). Red should <i>not</i> be visible on the safety (see diagram below).</p> 
3	<p>If the weapon has been firing</p> <ul style="list-style-type: none"> <li>Belted ammunition, raise the cover assembly and remove the belted ammunition (see diagram below)</li> </ul>  <ul style="list-style-type: none"> <li>From a magazine, depress the magazine release tab and remove the magazine (see diagram below) and raise the cover assembly</li> </ul> 
4	<p>Raise the feed tray; inspect the chamber and receiver to ensure that all ammunition and links have been removed.</p>

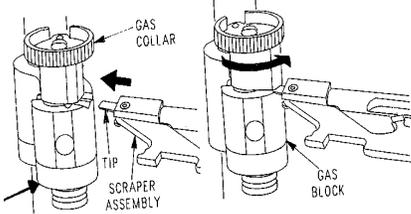
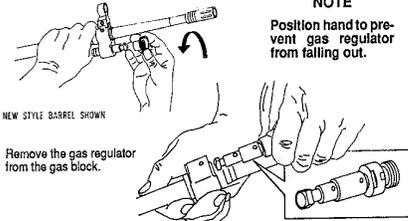
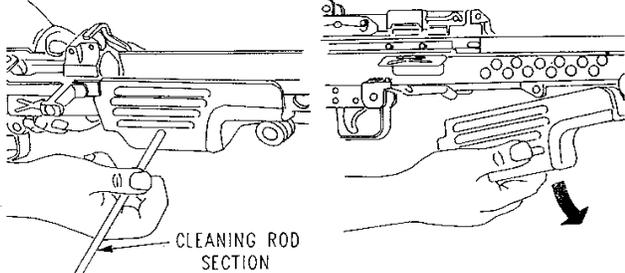
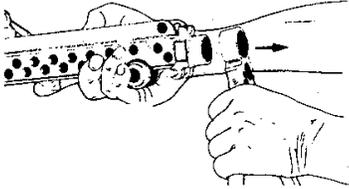
Step	Action
5	When the chamber and receiver are clear, close the cover assembly and lock it.
6	Push the safety from right to left (red now visible).
7	<p>Hold the cocking handle to the rear, squeeze the trigger, and ride the bolt home. The weapon is now clear (see diagram below).</p> <p><b>NOTE:</b> <i>Never</i> allow the bolt to slam home on an empty chamber; doing so will damage the weapon.</p>  <p>The diagram shows a side view of the M249 SAW. Labels include: FEED TRAY, COVER ASSEMBLY, CHAMBER, COCKING HANDLE, TRIGGER, and SAFETY. An inset shows a close-up of the trigger and safety mechanism.</p>

**Disassembly.** Disassembly for the SAW consists only of field stripping for first echelon (operator) maintenance. Operators are not authorized to use any tools other than authorized cleaning gear to disassemble the weapon. When disassembling the SAW, lay parts out from left to right or right to left in the order disassembled so that the weapon can be easily reassembled in reverse order. The steps to disassemble the SAW are in the table below.

Step	Action
1	<p>After ensuring that the weapon is clear, pull the upper retaining pin at the rear of the receiver to the left and allow the buffer and butt stock assembly to pivot downward (see diagram below).</p>  <p>The diagram shows a hand pulling a pin on the left side of the receiver. A curved arrow points to the buffer and butt stock assembly, which is rotating downwards. Text next to the arrow reads: "Buffer and butt stock assembly rotated downward."</p>
2	<p>Remove the operating rod assembly from the receiver by pressing inward and up on the rear of the operating rod with one thumb. Slowly let the drive spring expand and remove it from the receiver. Separate the drive spring and operating rod (see diagram below).</p>  <p>The diagram shows a hand using a thumb to press on the rear of the operating rod, causing it to move upwards and out of the receiver.</p>

Step	Action
3	<p>Remove the buffer and butt stock assembly from the receiver by pressing the lower retaining pin from the right to the left (see diagram below).</p> <p><b>NOTE:</b> Notice that the pin can be pressed outward far enough to let the stock fall free but can still hold the trigger mechanism assembly in place; this is important for assembly. (See Figure 9.)</p> 
4	<p>Pull the lower retaining pin to the left as far as possible (pin will not completely clear the receiver), and remove the trigger mechanism assembly by pulling downward and to the rear on the handgrip (see diagram below).</p> 
5	<p>To remove the piston, bolt, and slide assemblies, pull the cocking handle to the rear. Finish pulling the piston, bolt, and slide assemblies to the rear with finger pressure and pull them from the rear of the receiver (see diagram below).</p> 

Step	Action
6	<p>Separate the bolt from the slide assembly by rotating it counterclockwise (looking at the face of the bolt) and pulling it forward (see diagram below).</p>  <p><b>CAUTION:</b> When bolt is removed, the firing pin spring is free; be careful not to lose it.</p>
7	<p>To separate the slide assembly from the piston, press the retaining pin from the right to the left. Once the pin is shifted, lift the slide assembly upward from the piston. The operating rod may be used to help press the retaining pin (see diagram below).</p> 
8	<p>To remove the heat shield, hold the weapon firmly, grasp the heat shield just forward of the barrel handle, and lift the heat shield off the barrel (see diagram below).</p> 
9	<p>To remove the barrel from the receiver (see diagram below),</p> <ul style="list-style-type: none"> <li>• Close the cover and feed mechanism assembly</li> <li>• Depress the barrel-locking lever with your left hand</li> <li>• Lift the carrying handle using your right hand</li> <li>• Push the barrel forward</li> </ul>  <p>To remove the heat shield, place the barrel with the muzzle end on a hard, flat surface and with the heat shield facing away from your body. Place the index fingers of each hand inside the chamber. Use your thumbs to push up on the top clip.</p> <p><b>CAUTION:</b> Barrels must not be interchanged with those from other M249s unless direct support personnel have certified the headspace for that weapon.</p>

Step	Action
10	<p>Remove the gas regulator from the barrel by positioning the regulator lever between normal and maximum (lever pointing downward away from barrel). With the new barrel, position the gas collar to allow the scraper tool to be installed. Place the tip of the scraper tool in the notch in the front left of the gas block. Holding the tip of the scraper tool in this position, rotate the collar detent up and over the tip and onto the top of the gas block (see diagram below).</p>  <p>Pull forward on the gas collar and separate it from the gas block (see diagram below).</p>  <p><b>NOTE</b> Position hand to prevent gas regulator from falling out.</p>
11	<p>Remove the hand guard by pressing the retaining pin from right to left with a cleaning rod section. (The pin will not separate completely from the handguard.) Pull down on the rear of the handguard and separate it from the receiver (see diagram below).</p> 
12	<p>Remove the bipod and gas cylinder by turning the gas cylinder to the left or right until you hear a click. Pull the gas cylinder forward and separate it from the bipod (see diagram below).</p> <p><b>GAS CYLINDER REMOVAL</b></p>  <p><b>BIPOD REMOVAL</b></p> 

**Assembly.** To reassemble the SAW reverse the disassembly procedures. The following details are important in reassembling the weapon:

- Ensure that the bipod yoke is placed on the end of the receiver, small opening first.
- When re-inserting the gas cylinder into the receiver, some manipulation will be required with the fingers of the free hand to get the base of the cylinder to line up with the receiver. Be sure to turn the gas cylinder until it clicks and is locked in place.
- When replacing the trigger assembly, push the retaining pin inboard just far enough to catch and hold the trigger assembly in place. If you push it too far, you will block the stock recess, and you cannot put the buffer and butt stock assembly in place until the pin is pulled outward.
- When reassembling the gas regulator, ensure that the lug on the rear of the regulator lines up with the lug on the rear of the gas block. Place the gas regulator collar over the front of the gas regulator and align the tapered lug of the regulator with the tapered recess of the collar. Hold the rear of the regulator, press down on the regulator collar, rotate the collar clockwise, and lock it in place. The new collar follows the same procedures. Refer to the TM for additional information on the upgraded SAW (new TM page 3-53).
- When placing the piston, bolt, and slide assemblies in the receiver, be sure that the slide recesses on the sides of the slide assembly are aligned with the slide rails of the receiver.
- See the TM for the proper procedures to install the drive spring and operating rod for the upgraded SAW (new TM page 3-61).
- See TM for the proper procedures to install the heat shield for the upgraded SAW (new TM page 3-63).

**Function Check.** After assembly has been completed, you must perform a function check. Remember that function checks are only to check proper reassembly procedures. Function checks are not meant to take the place of actual live fire operational tests to be done before movement if the tactical situation permits. The table below lists the steps to perform function checks for the SAW.

Step	Action
1	Grasp the cocking handle with the right hand, palm up, and pull the bolt to the rear locking it in place.
2	While continuing to hold the resistance on the cocking handle, use the left hand to move the safety to the SAFE position.
3	Push the cocking handle forward into the forward lock position.
4	Pull the trigger. (The weapon should not fire.)
5	Grasp the cocking handle with the right hand, palm up, and pull and hold it to the rear.
6	Move the safety to the FIRE position.
7	While continuing to hold resistance on the cocking handle, use the left hand to pull the trigger and ease the bolt forward to prevent it from slamming into the chamber area and damaging the face of the bolt.
8	If the weapon fails the function check, check for missing parts or the reassembly procedures. (Before disassembling the weapon, make sure it is positioned where the guide rod and spring cannot cause bodily harm if the bolt is locked to the rear.)

**CAUTION:** The bolt must be eased forward to prevent damage to the cover and feed mechanism assembly and operating rod group.

**NOTE:** The cover and feed mechanism assembly can be closed with the bolt in either the forward or the rearward position.

**Functioning.** The table below lists the sequence for the cycle of functioning of the M249 SAW.

<b>Cycle of Function</b>	<b>Description</b>
Feeding	Feeding takes place as the operator places a belt of ammunition on the feed tray or inserts a loaded magazine in the magazine well. Whichever method is used, the results are the same. A cartridge is placed in the path of the bolt so that as the bolt is driven forward from the force of the expanding driving spring, the face of the bolt makes contact with the rim of the first cartridge and strips it from the links or magazine. As the bolt continues forward, the cam roller on top of the bolt forces the feed cam, in the cover assembly, to the left positioning the feed pawl over the next cartridge to be chambered. When the burning gases of the fired cartridge cause the bolt to move to the rear, the feed cam lever and feed pawl are forced to the right causing the next round in the feed tray to be pulled to the right and placed in the feed tray groove ready for chambering.
Chambering	Chambering occurs as the bolt continues to move forward and forces the cartridge into the barrel chamber.
Locking	Locking occurs as chambering takes place. The locking lugs of the bolt pass through the locking recesses cut into the chamber. When the locking lugs and bolt face make contact with the rear of the chamber, the forward movement of the bolt stops. The slide assembly pushes the rotating lug of the bolt to the right. This rotation of the bolt causes the locking lugs to disalign with the locking recesses, and locking takes place.
Firing	After locking has occurred the piston and slide assemblies continue forward slightly. This forward movement ends when the slide assembly forces the firing pin through the face of the bolt. The firing pin then strikes the primer of the cartridge, and firing takes place.
Unlocking	Unlocking begins when expanding gases from the ignited propellant are vented off through the gas port in the gas regulator. The pressure of the expanding gases is directed rearward through the gas cylinder and forces the piston assembly, slide assembly, and bolt to the rear. As the slide assembly moves to the rear, the camming recess forces the camming lug of the bolt to the left causing the locking lugs on the bolt to align with the locking recesses in the chamber. The slide assembly continues to move to the rear, and the bolt is withdrawn from the chamber.
Extracting	The extraction claw on the face of the bolt grips the cartridge case tightly by engaging the extraction groove. Thus, as the bolt moves rearward, the cartridge case is pulled from the chamber.
Ejecting	The extractor claw grips the lower right portion of the cartridge rim. As the spent casing or cartridge is pulled to the rear, the ejector strikes the upper left of the base of the cartridge, just as the bolt face clears the rear of the ejection port, causing the cartridge case to pivot over the extraction claw and to be thrown clear of the receiver through the ejection port.
Cocking	As the bolt continues its movement to the rear, the piston assembly compresses the driving spring. Cocking is completed when the spring is fully compressed, just before it begins to expand and drive the operating parts forward again.

**Operation**

**Loading.** The table below lists the steps to load the SAW with a belt of ammunition or an M16 magazine.

<b>Step</b>	<b>Belt</b>	<b>Magazine</b>
1	Attach a 200-round box of ammunition to the underside of the receiver. <b>NOTE:</b> The underside of the receiver has a dovetail locking recess that will accept the dovetail lug on the ammo box.	Insert the magazine into the magazine well and push inward until the magazine latch clicks
2	Align the recess and lugs; push them together until they lock.	If the bolt is not already to the rear, pull it rearward and lock it open.
3	Pull outward on the ammo box to ensure that it is locked in place.	Push the cocking handle forward.

Step	Belt	Magazine
4	Locate the green belt tab on the top of the ammo box and pull up on it. <b>NOTE:</b> The belted ammo is affixed to this tab and will be pulled from the ammo box.	Put the weapon on SAFE.
5	Open the cover assembly and place the belt of ammunition on top of the feed tray with the open side of the links facing downward. <b>NOTE:</b> Place the first round against the cartridge stop. Place the belt tab to the right of the cartridge stop.	
6	Hold the belt in place; shut the cover assembly making sure it locks in place.	
7	If the bolt is forward (weapon can be loaded with the bolt closed or open), pull it to the rear and push the cocking handle forward until it clicks.	
8	Place the weapon on SAFE.	

To fire the SAW, take it off SAFE and squeeze the trigger.

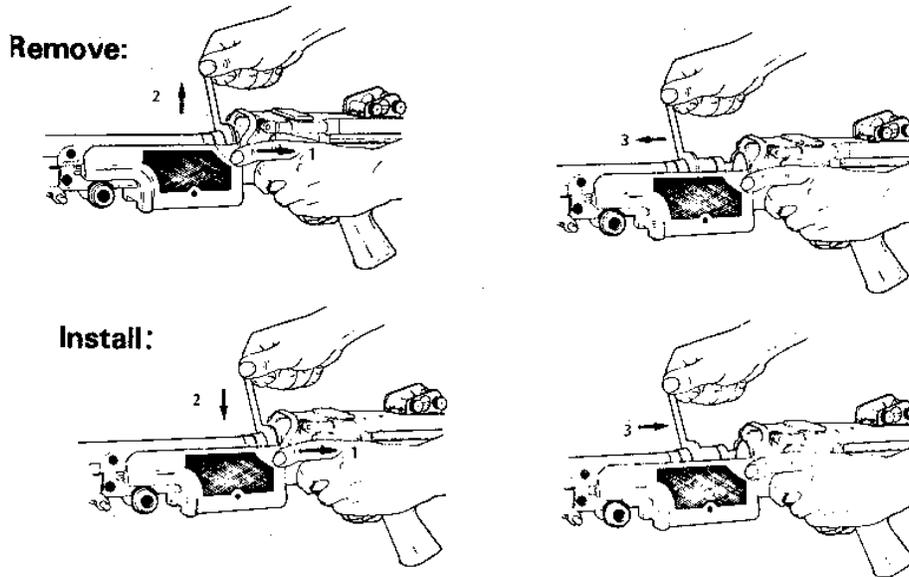
Unloading. To unload the SAW, follow the same procedures for clearing (see table below).

Step	Action
1	Pull the cocking handle to the rear and lock the bolt open.
2	Push the cocking handle forward until it clicks.
3	Place the weapon on SAFE, open the cover assembly, and remove ammo.
4	Raise the feed tray and inspect the chamber.
5	Close the cover assembly.
6	Take the weapon off SAFE.
7	Pull the cocking handle to the rear, squeeze the trigger, and ride the bolt home.

**Changing the Barrel.** The barrel of the M249 SAW should be changed after firing at the

- Sustained rate (85 rds/min) for five minutes
- Rapid rate (200 rds/min) for two minutes

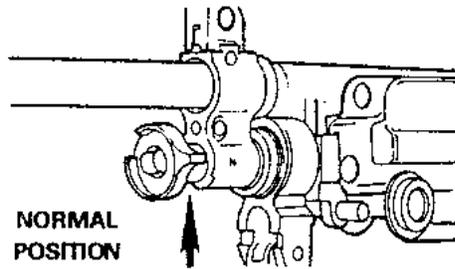
The table below lists the steps to change barrels (see diagram below).



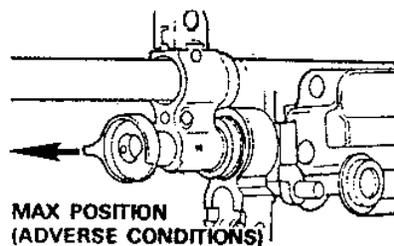
Step	Action
1	Be sure that the bolt is not forward (the locking lugs will be engaged in the locking recesses of the chamber, making removal/installation impossible).
2	Clear the weapon, but leave the bolt locked to the rear.
3	Put the weapon on SAFE.
4	Depress the barrel locking lever, grasp the barrel handle with the other hand, and pull forward and up on the barrel to remove it from the receiver.
5	Handle the barrel carefully and avoid touching it.
6	Install the cool barrel in the reverse order, making sure it is locked in place before attempting to fire.

**Using the Gas Regulator.** The SAW is equipped with a gas regulator that can decrease or increase the pressure of the expanding gases that is applied against the face of the piston. The gas regulator has two different settings, made possible by the use of two gas ports of *different sizes* in the regulator.

Attain the normal setting (smaller gas port) (see diagram below) by turning the gas regulator so that it is pointing to the left (loading port side).



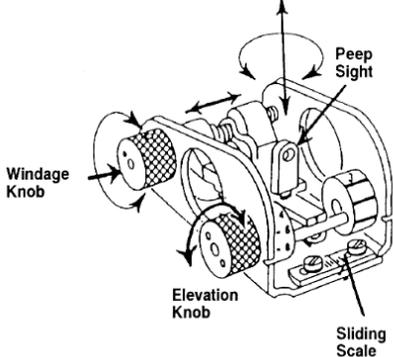
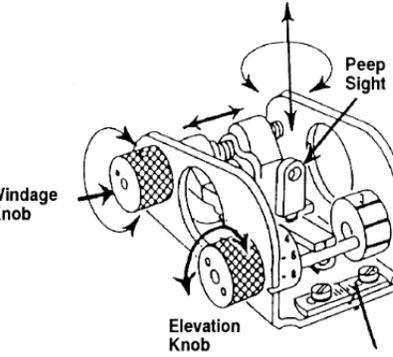
If the functioning of the weapon should become sluggish due to freezing temperatures or dirt and carbon build up, turn the gas regulator to the maximum setting (see diagram below). In the maximum setting, the gas regulator is turned to the right (pointing toward the ejection port side) to allow more gas to escape through the gas port. The result is greater pressure being applied to the face of the piston, which, in turn, drives the operating parts at a much greater operating speed. When using the maximum setting to clear dirt or carbon build-up, only 2-3 bursts need to be fired before returning the regulator to the normal setting.



**NOTE:** The new style barrel does not have the capability of changing/switching the gas regulator to deliver more power. Rotating the gas collar will not affect the cyclic rate.

**Field Zeroing Procedures**

**Mechanical Zero.** Before field zeroing, you must set mechanical zero on the sights of the weapon. The table below lists the steps to set mechanical zero.

Step	Action
1	Rotate the windage knob (front knob, see diagram below) until the sight aperture is all the way to the left or right. <div style="text-align: center;">  <p>The diagram shows a side view of the sight assembly. A 'Windage Knob' is on the left, with an arrow indicating rotation. A 'Peep Sight' is at the top, with an arrow indicating vertical movement. An 'Elevation Knob' is at the bottom, with an arrow indicating rotation. A 'Sliding Scale' is on the right, with an arrow indicating horizontal movement.</p> </div>
2	While counting the number of clicks, rotate the knob all the way back until the sight aperture is on the other side.
3	Divide the number counted in Step 2 by two.
4	Count back the number of clicks calculated in Step 3. <b>NOTE:</b> For example, say you counted 24 clicks from full right windage to full left windage. Then mechanical zero is 12; 24 divided by 2. You would count back 12 clicks from full left windage
5	Rotate the rear sight aperture (using the elevation knob, see diagram below) clockwise until it will not turn any further. <div style="text-align: center;">  <p>This diagram is identical to the one in Step 1, showing the 'Windage Knob', 'Peep Sight', 'Elevation Knob', and 'Sliding Scale' with their respective adjustment arrows.</p> </div>
6	While counting the number of rotations, rotate the aperture counterclockwise until it stops.
7	Divide the number counted in Step 6 by two.
8	Rotate the aperture clockwise the number of clicks calculated in Step 7.
9	Mechanical zero is now set for both windage and elevation

Field Zero. The table below lists the steps to follow to field zero the SAW.

Step	Action
1	Place a range setting of 300m on the rear sight elevation scale.
2	With mechanical zero set, fire a 3- to 5-round burst at a target 300m away.
3	Adjust the rear sight for windage and elevation until the impact of the burst is centered on the target. <b>NOTE:</b> Do <i>not</i> use the elevation adjustment knob to correct elevation. To correct elevation, rotate the rear sight aperture in the desired direction: <ul style="list-style-type: none"> <li>• Clockwise to lower the impact of the burst</li> <li>• Counterclockwise to raise the impact of the burst</li> </ul> When adjusting both the windage knob and rear sight aperture, one click moves the burst two inches for every 100m of range.

**NOTE:** The weapon can be zeroed at any range as long as the range set on the rear sight elevation scale corresponds with the actual range to the target. The table below shows at various distances what one click moves the strike.

Distance from Target (in meters)	One click moves the strike...	
	In Centimeters	In Inches
100	5	2
200	10	4
300	15	6
400	20	8
500	25	10
600	30	12
700	35	14
800	40	16
900	45	18

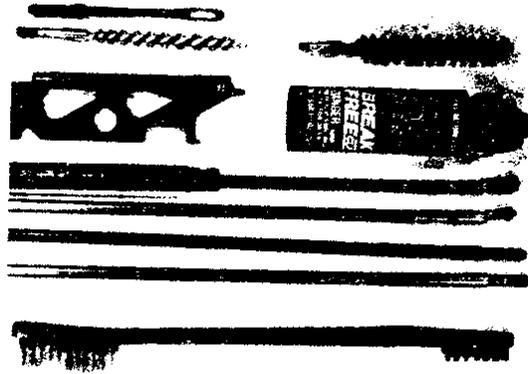
**Immediate Action.** If a stoppage of the M249 SAW occurs, follow the steps in the table below for immediate action.

Step	Action
1	Wait five seconds.
2	Pull the bolt to the rear; observe the ejection port when you push the cocking handle forward. If a round is <ul style="list-style-type: none"> <li>• Ejected, attempt to fire.</li> <li>• Not ejected and the barrel is                             <ul style="list-style-type: none"> <li>• Hot (200 rds fired within two minutes), do not open the cover assembly. Push the safety to the right (red not visible), keep the weapon pointed down range, and remain clear from it for 15 minutes. After 15 minutes, clear the weapon.</li> <li>• Not hot, clear the weapon</li> </ul> </li> </ul>

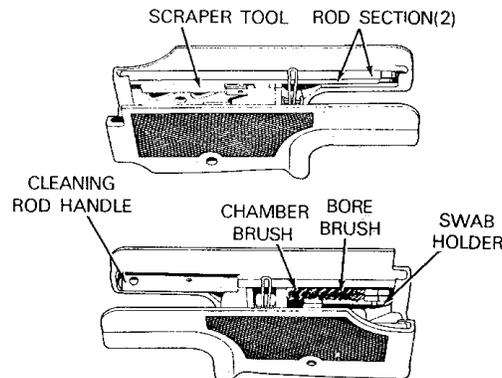
**Runaway Gun Procedures.** A runaway gun is a weapon that continues to fire when the trigger is released. A runaway gun is normally caused by a worn trigger sear but can also be a result of a dirty or worn gas system. To stop a runaway gun, follow the steps listed in the table below.

Step	Action
1	Keep weapon pointed down range.
2	If you are firing from a <ul style="list-style-type: none"> <li>• Magazine or near the end of a 200-round belt, let the weapon continue to fire until the ammunition is expended</li> <li>• 200-round belt and you are not near the end of the ammunition belt,                             <ul style="list-style-type: none"> <li>• Grab cocking handle (palm up), pull it all the way back, and hold.</li> <li>• Push the safety to the right (red not visible).</li> <li>• Clear the weapon (raise cover, remove ammunition, inspect chamber, ride bolt home).</li> </ul> </li> </ul>

**Care and Cleaning.** Like any other weapon, the M249 SAW requires proper maintenance to operate reliably. Only use authorized cleaning agents and equipment (see diagram below) to conduct this maintenance.



Each M249 is designed to hold cleaning tools in the hand guard (see diagram below).



The sections below cover the use of these tools to conduct first echelon care and cleaning. Before cleaning the SAW, field strip the weapon and lay the parts out in order of disassembly.

**Cleaning and Maintenance of the Barrels.** To clean the barrels of the M249 SAW, follow the same barrel cleaning procedures listed for the M16A2 (see Annex P, B2200 Weapons Handling and Safety student handout, section 3).

**NOTE:** Do *not* attempt to exercise the front sight. Adjustment of the front sight is not operator-authorized.

Each M249 will have one spare barrel. The barrels will not have serial numbers or any identifying marks. Each unit should have both barrels for each M249 marked in such a manner that they can be readily "married" to the M249 with which originally issued.

Barrels should *not* be switched among other M249s. The wear on the barrel extension of each M249 will be slightly different; switching barrels from another weapon will cause the weapon to function with a different headspace. Under these conditions a stoppage or malfunction will be likely. (Headspace is the distance between the face of the bolt, when locked, and the rear of the chamber. Headspace is normally very small and usually measured in thousandths of an inch.)

Make every effort to ensure that both barrels receive the same amount of use so that the wear of both barrels will remain uniform and the headspace will not change.

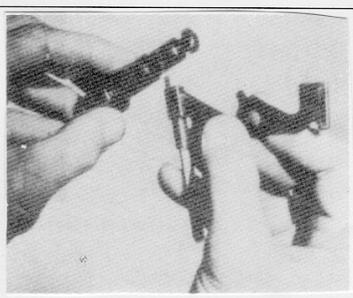
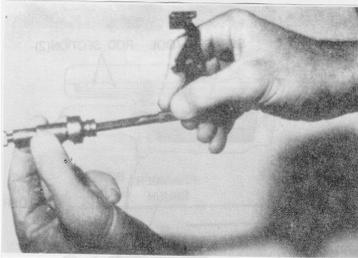
Cleaning the Receiver and Feed Cover Assembly. To clean the receiver and cover assembly use

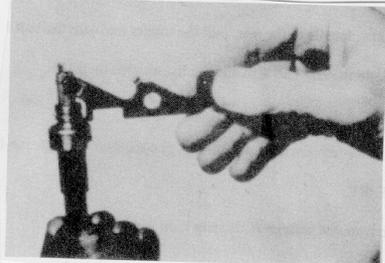
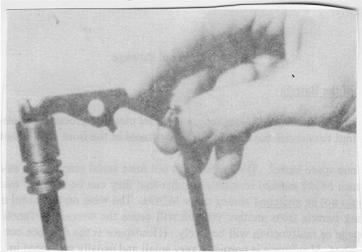
- CLP
- A general purpose brush (tooth brush)
- An M60E3 machine gun receiver brush (if available)

to complete the steps in the table below.

Step	Action
1	Wipe the receiver clean; leave a light coat of CLP on the surface.
2	Leave a moderate coat of CLP on the <ul style="list-style-type: none"> <li>• Slide rails</li> <li>• Surface of the receiver</li> <li>• Moving parts of the cover assembly</li> </ul>
3	Place a light coat of CLP on the rear sight and exercise the windage and elevation knobs.

Cleaning the Gas System. To clean the gas system (regulator, cylinder, gas block, and piston) use CLP or cleaning solvents such as rifle bore cleaner (RBC). Do *not* use any type of oil to clean or lubricate the gas system. Wipe the gas system dry. To utilize the scraper tool to clean the gas system follow the steps in the table below.

Step	Action
1	Clean the gas ports as shown in the diagram below. 
2	Clean the central hole as shown in the diagram below. 
3	Clean the regulator grooves as shown in the diagram below.
4	Clean the internal diameter of the gas cylinder as shown in the diagram below. 

Step	Action
5	Clean the internal grooves of the gas cylinder as shown in the diagram below. 
6	Clean the piston grooves as shown in the diagram below. 
7	Clean the face of the pistons as shown in the diagram below. 

**Handling the M249 Squad Automatic Weapon**

Condition Codes. The table below describes the condition codes for the M249 SAW.

Condition	Description
1	<ul style="list-style-type: none"> <li>• Ammunition in position on feed tray or magazine inserted</li> <li>• Bolt locked to the rear</li> <li>• Safety on</li> </ul>
2	Not applicable to the M249
3	<ul style="list-style-type: none"> <li>• Ammunition in position on feed tray or magazine inserted</li> <li>• Chamber empty</li> <li>• Bolt forward</li> <li>• Safety off</li> </ul>
4	<ul style="list-style-type: none"> <li>• Feed tray clear of ammunition (magazine removed)</li> <li>• Chamber empty</li> <li>• Bolt forward</li> <li>• Safety off</li> </ul>

Commands.

To execute the command, “UNLOAD,” taking the weapon from condition 1 to condition 4, follow the steps in the table below.

Step	Action	
	Belt-Fed Technique	Magazine-Fed Technique
1	Ensure the weapon is on SAFE.	Ensure the weapon is on SAFE.
2	Open the feedtray cover.	Remove the magazine from the weapon and retain it on your person.
3	Remove all ammunition and belt links.	Open the feedtray cover.
4	Lift the feedtray and inspect the chamber to ensure that no ammunition is present.	Lift the feedtray and inspect the chamber to ensure that no ammunition is present.
5	Close the feedtray cover.	Close the feedtray cover.
6	Take the weapon off safe.	Take the weapon off SAFE.

Step	Action	
	Belt-Fed Technique	Magazine-Fed Technique
7	While holding the cocking handle to the rear, pull the trigger and ease the bolt forward to the closed position.	While holding the cocking handle to the rear, pull the trigger and ease the bolt forward to the closed position.
8	Pull the cocking handle to the rear one inch and put the weapon on SAFE.	Pull the cocking handle one inch to the rear and put the weapon on SAFE.
9	Release the cocking handle.	Release the cocking handle.

To execute the command, “LOAD,” taking the weapon from condition 4 to condition 3, follow the steps in the table below.

Step	Action	
	Belt-Fed Technique	Magazine-Fed Technique
1	Ensure the weapon is in condition 4.	Ensure the weapon is in condition 4.
2	Open the feedtray cover.	Withdraw the magazine from the magazine pouch.
3	Place the first round of the belt in the feedtray groove with the open side of the link down.	Look at the top of the magazine to ensure that the magazine is loaded.
4	Close the feedtray cover.	Fully insert the magazine into the magazine well.
5		Tug downward on the magazine to ensure that it is held in the weapon by the magazine catch.
6		Close the magazine pouch.

To execute the command, “MAKE READY,” taking the weapon from condition\* 3 to condition 1, follow the steps in the table below.

Step	Action
1	Take the weapon off SAFE.
2	Pull the cocking handle fully to the rear.
3	Push the cocking handle fully forward to the locked position.
4	Place the weapon on SAFE.

**\*NOTE:** The preferred method of "MAKE READY" is to go from condition 4 directly to condition 1, skipping condition 3 and minimizing damage to the weapon that is caused by placing ammunition on the feedtray with the bolt forward. Condition 3 has tactical viability and should be used only when the situation dictates. To go directly to condition 1 from condition 4, the command, "MAKE READY," is given, skipping the command, "LOAD."

B2111 M249 Squad Automatic Weapon (SAW)

To execute the command, “MAKE READY,” taking the weapon from condition 4 directly to condition 1, follow the steps in the table below.

Step	Action	
	Belt-Fed Technique	Magazine-Fed Technique
1	Take weapon off SAFE.	Ensure weapon is in condition 4.
2	Pull cocking handle fully to the rear.	Take weapon off SAFE.
3	Push cocking handle fully forward to the locked position.	Pull cocking handle fully to the rear.
4	Place the weapon on SAFE.	Push cocking handle fully forward to the locked position.
5	Open the feedtray cover.	Place weapon on SAFE.
6	Place the first round of the belt in the feedtray groove with the open side of the link down.	Withdraw magazine.
7	Close the feedtray cover.	Ensure magazine is loaded.
8		Fully insert magazine into magazine well.
9		Tug downward on magazine to ensure that it is held in the weapon by the magazine catch.

To execute the command, “FIRE,”

Step	Action
1	Take the weapon off SAFE.
2	Place finger on trigger.
3	Engage target.

To execute the command, “UNLOAD, SHOW CLEAR,” follow the steps in the table below.

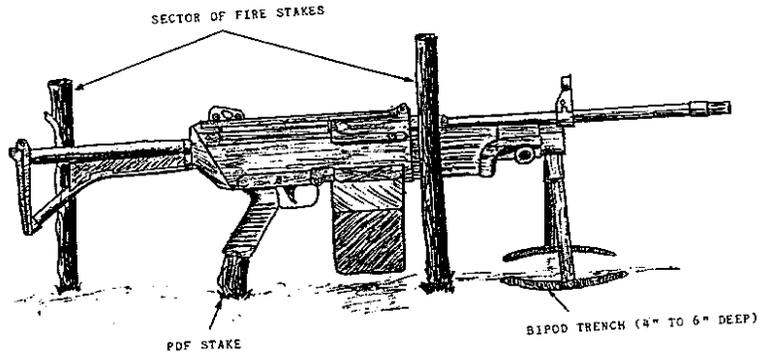
Step	Action	
	Belt-Fed Technique	Magazine-Fed Technique
1	Pull the cocking handle to the rear.	Remove the magazine from the weapon and retain it on your person.
2	Put the weapon on SAFE.	Pull cocking handle to rear.
3	Open the feedtray cover.	Put the weapon on SAFE.
4	Remove all ammunition and belt links.	Open the feedtray cover.
5	Lift the feedtray and inspect the chamber to ensure that no ammunition is present.	Lift the feedtray and inspect the chamber to ensure that no ammunition is present.
6	Have a second individual inspect the chamber to ensure no ammunition is present.	Have a second individual inspect the chamber to ensure no ammunition is present.
7	Close the feedtray cover.	Close the feedtray cover.
8	Take the weapon off SAFE.	Take the weapon off SAFE.
9	While holding the cocking handle to the rear, pull the trigger and ease the bolt forward to the closed position.	While holding the cocking handle to the rear, pull the trigger and ease the bolt forward to the closed position.
10	Pull the cocking handle one inch to the rear and put the weapon on SAFE.	Pull the cocking handle on inch to the rear and put the weapon on SAFE.
11	Release the cocking handle.	Release the cocking handle.

**CAUTION:** After a live-fire exercise with the M249 SAW, *all* SAWs should be broken down so that the

- Operating rod assembly and piston assembly are removed
- Receiver is visually and physically inspected for rounds that may have lodged there during firing
- Magazine well is inspected for live rounds or empty casings.

**M249 SAW Aiming Stakes** . Guidelines for using aiming stakes (see diagram below) are listed below.

- When the bipod legs are utilized, do *not* emplace a yoke stake. Dig a trench 4 to 6 inches deep for the bipod.
- Emplace right and left sector stakes near the stock of the weapon. Position the sector stake to the right further forward near where the ammunition drum is located to prevent any obstruction to the firing hand.
- Use a shorter stake as a PDF stake. The pistol grip will rest on the stake to ensure proper direction and elevation.



**References.**

FM 23-14, *M249 Light Machine Gun in the Automatic Rifle Role*  
MCWP 3-15.1, *Machine Guns and Machine Gun Gunnery*  
TM 08671A-10/1A M249, *Technical Manual for the M249 Squad Automatic Weapon*

**Review Questions**

**Short Answer.** Write your answers in the space provided.

1. Before you disassemble the M249, what must you do first?

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2. What is the sustained rate of fire for the M249?

---

3. What is Condition 1 for the M249?

---

4. What is the rule of thumb used to determine if the barrel is hot or cold?

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5. During training, while performing immediate action, if nothing is ejected and the barrel is hot, how long must you wait before clearing the weapon?

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6. What is Condition 3 for the M249?

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7. When clearing the weapon, if the barrel is hot and a round is in the chamber, what should be done immediately?

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8. With the SAW in Condition 4, can the safety be engaged?

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9. If you have a failure to fire, how can you prevent a cook off from occurring?

---

10. Which DODIC designates blank ammunition?

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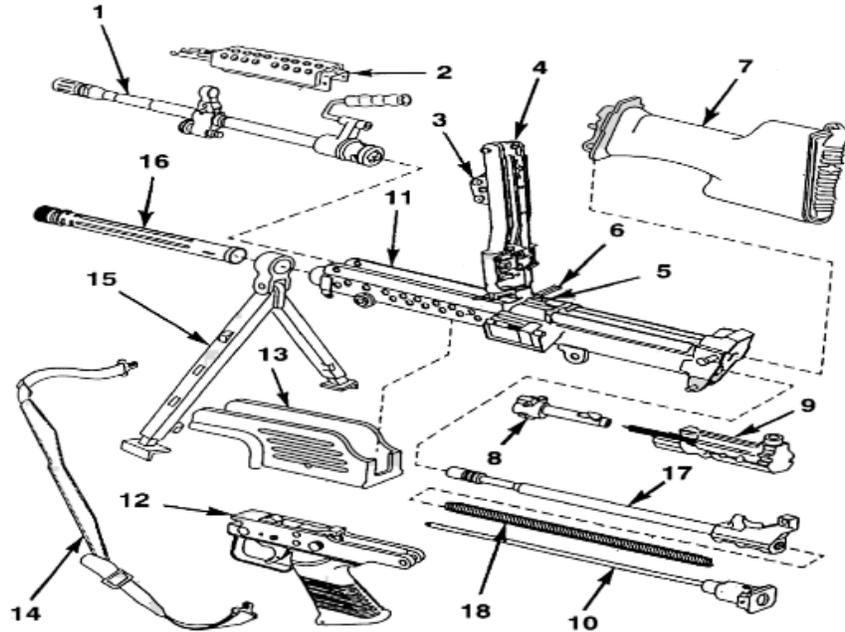
11. How far will one click of rear sight elevation or windage move the strike of the round at 300 meters?

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12. What is Condition 4 for the M249?

---

**Matching.** Use the illustration below to answer questions 13 through 20.



- 13. Barrel assembly \_\_\_\_\_
- 14. Bolt assembly \_\_\_\_\_
- 15. Cocking handle assembly \_\_\_\_\_
- 16. Feed tray assembly \_\_\_\_\_
- 17. Gas cylinder assembly \_\_\_\_\_
- 18. Rear sight assembly \_\_\_\_\_
- 19. Slide assembly \_\_\_\_\_
- 20. Trigger mechanism \_\_\_\_\_

**True or False.** Mark your answer in the appropriate box.

- 21. The barrel of the M249 SAW can be changed with the bolt forward.  True  False
- 22. The M249 can be placed on safe when the bolt is forward.  True  False
- 23. The cover and feed mechanism assembly cannot be closed with the bolt to the rear.  True  False
- 24. When loading belted ammunition the first round of the belt is placed against the cartridge stop with the open side of the link up.  True  False

**Review Question Answers**

**Short Answers.**

1. What must you do before you disassemble the M249?

You must clear the weapon.

2. What is the sustained rate of fire for the M249?

50 rds/min

3. What is Condition 1 for the M249?

Ammunition in position on feed tray (or magazine inserted), bolt locked to the rear, weapon on safe.

4. What is the rule of thumb used to determine if the barrel is hot or cold?

200 or more rounds fired in less than two minutes

5. During training, while performing immediate action, if nothing is ejected and the barrel is hot, how long must you wait before clearing the weapon?

15min

6. What is Condition 3 for the M249?

Ammunition in position on feed tray (or magazine inserted), chamber empty, bolt forward, safety off.

7. When clearing the weapon, if the barrel is hot and a round is in the chamber, what should be done immediately?

Immediately remove the barrel.

8. With the SAW in Condition 4, can the safety be engaged?

No

9. If you have a failure to fire, how can you prevent a cook off from occurring?

By applying immediate action within 10 seconds.

10. Which DODIC designates blank ammunition?

AO75

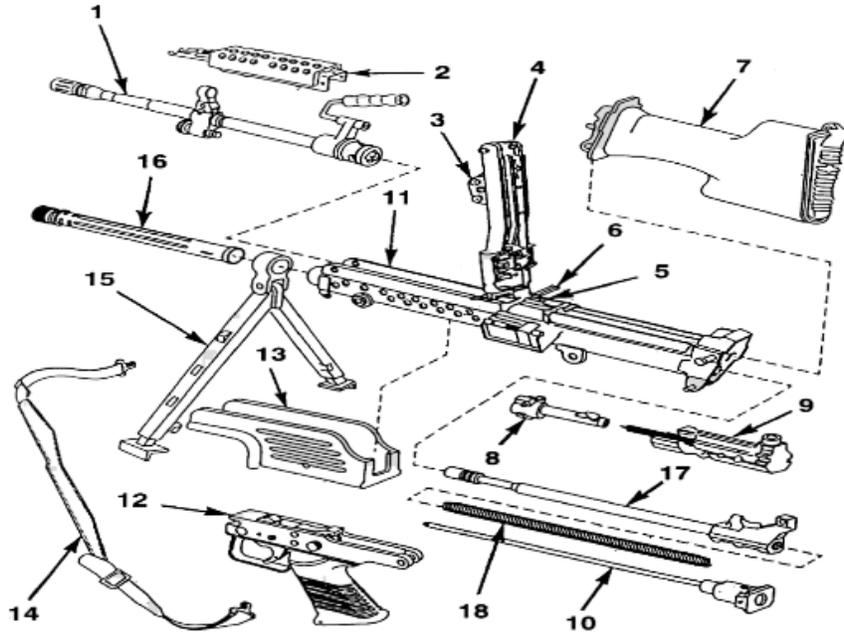
11. How far will one click of rear sight elevation or windage move the strike of the round at 300 meters?

6 in.

12. What is Condition 4 for the M249?

Feed tray clear of ammunition (magazine removed), chamber empty, bolt forward, safety not engaged.

**Matching.** Use the illustration below to answer questions 13 through 20.



- |                             |           |
|-----------------------------|-----------|
| 13. Barrel assembly         | <u>1</u>  |
| 14. Bolt assembly           | <u>8</u>  |
| 15. Cocking handle assembly | <u>6</u>  |
| 16. Feed tray assembly      | <u>5</u>  |
| 17. Gas cylinder assembly   | <u>16</u> |
| 18. Rear sight assembly     | <u>3</u>  |
| 19. Slide assembly          | <u>9</u>  |
| 20. Trigger mechanism       | <u>12</u> |

**True or False.** Mark your answer in the appropriate box.

21. The barrel of the M249 SAW can be changed with the bolt forward.  True  False
22. The M249 can be placed on safe when the bolt is forward.  True  False
23. The cover and feed mechanism assembly cannot be closed with the bolt to the rear.  True  False
24. When loading belted ammunition the first round of the belt is placed against the cartridge stop with the open side of the link up.  True  False