

**FM 23-9**

**DEPARTMENT OF THE ARMY FIELD MANUAL**

**RIFLE, 5.56-MM, XM16E1**



**HEADQUARTERS, DEPARTMENT OF THE ARMY  
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No. 23-9

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
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### RIFLE, 5.56-MM, XM16E1

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\* This manual supersedes TC 23-8, 13 April 1964.

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DEPARTMENT OF THE ARMY  
WASHINGTON, D.C.

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# CHAPTER 1

## INTRODUCTION

### Section I. GENERAL

#### 1. Purpose and Scope

This manual provides guidance for presenting instruction with the Rifle, 5.56-mm, XM16-E1. It contains a detailed description of the rifle and its general characteristics, procedures for disassembly and assembly, operation and functioning of the rifle, types of ammunition, and maintenance. When supplemented by FM 23-71 it provides information in sufficient detail for conducting marksmanship training with the rifle. This manual is applicable to both nonnuclear and nuclear warfare.

#### 2. Responsibilities of Commanders

Users of this manual are encouraged to submit recommended changes or comments to improve the manual. Comments should be keyed to the specific page, paragraph, and line of text in which the change is recommended. Reasons should be provided for each comment to insure understanding and complete evaluation. Comments should be forwarded direct to the Commandant, U.S. Army Infantry School, Fort Benning, Ga. 31905

### Section II. CHARACTERISTICS

#### 3. Description of the Rifle

a. The rifle (fig. 1) is a 5.56-mm, magazine-fed, gas-operated, air-cooled, shoulder weapon. It is designed for either semiautomatic or full automatic fire through the use of a selector lever.

b. The rifle is equipped with a flash suppressor which also serves as a stationary piston permitting the launching of grenades without the use of supplementary attachments.

**Caution:** Use of this weapon for grenade launching purposes not presently authorized. The barrel is surrounded by heat resistant, fibre glass material that serves as a handguard and forearm.

c. A rubber pad is attached to the butt of the stock to partially absorb the recoil.

d. A forward assist assembly located on the right rear of the upper receiver permits the closing of the bolt when this is not done by the force of the action spring.

e. A "clothespin" bipod is used in prone and foxhole positions for automatic fire. The bipod

is attached to the barrel directly beneath the front sight between the bayonet lug and the front sling swivel.

#### 4. General Data

##### a. Weights.

Rifle without magazine and sling	6.5 lb.
Empty magazine (aluminum) ---	.2 lb.
Full magazine (20 rounds) -----	.7 lb.
Sling -----	.4 lb.
Firing weight (fully loaded with sling).	7.6 lb.
Bipod M3 -----	.6 lb.
Bipod case -----	.2 lb.
Bayonet-knife M7 -----	.6 lb.
Scabbard M8A1 -----	.3 lb.

##### b. Lengths.

Rifle with bayonet-knife M7 ---	44.25 in.
Rifle overall with flash suppressor.	39 in.
Barrel (with flash suppressor)	21 in.
Barrel (without flash suppressor).	20 in.

##### c. Rifling.

Number of lands -----	6.
Twist -----	Uniform right hand one turn in 12 inches.

*d. Sighting Equipment.*

Front-----Adjustable click type post. Each click equals 2.8 centimeters per every 100 meters of range.

Rear-----Adjustable, flip type. Normal range setting is for 0 to 300 meters. Long-range setting (L) 300 to 500 meters. Each notch of the windage drum equals 2.8 centimeters per every 100 meters of range.

Sight radius-----19.75 inches.

*e. Ammunition (fig. 2).*

Caliber 5.56-mm (complete round) M193. 79 grains.

Projectile----- 55 grains.

Types----- Ball, tracer, and blank\*.

\* Items under development.

*f. Operational Characteristics.*

Muzzle velocity-----3,250 feet per second, (approx).

Muzzle energy (at the muzzle) 1,300 foot pounds, (approx).

Cyclic rate of fire-----700 to 800 rounds per minute.

Maximum rate of fire:  
 Semiautomatic-----45 to 65 rounds per minute.  
 Automatic-----150 to 200 rounds per minute.

Maximum range-----2,653 meters.

Maximum effective range----- 460 meters.

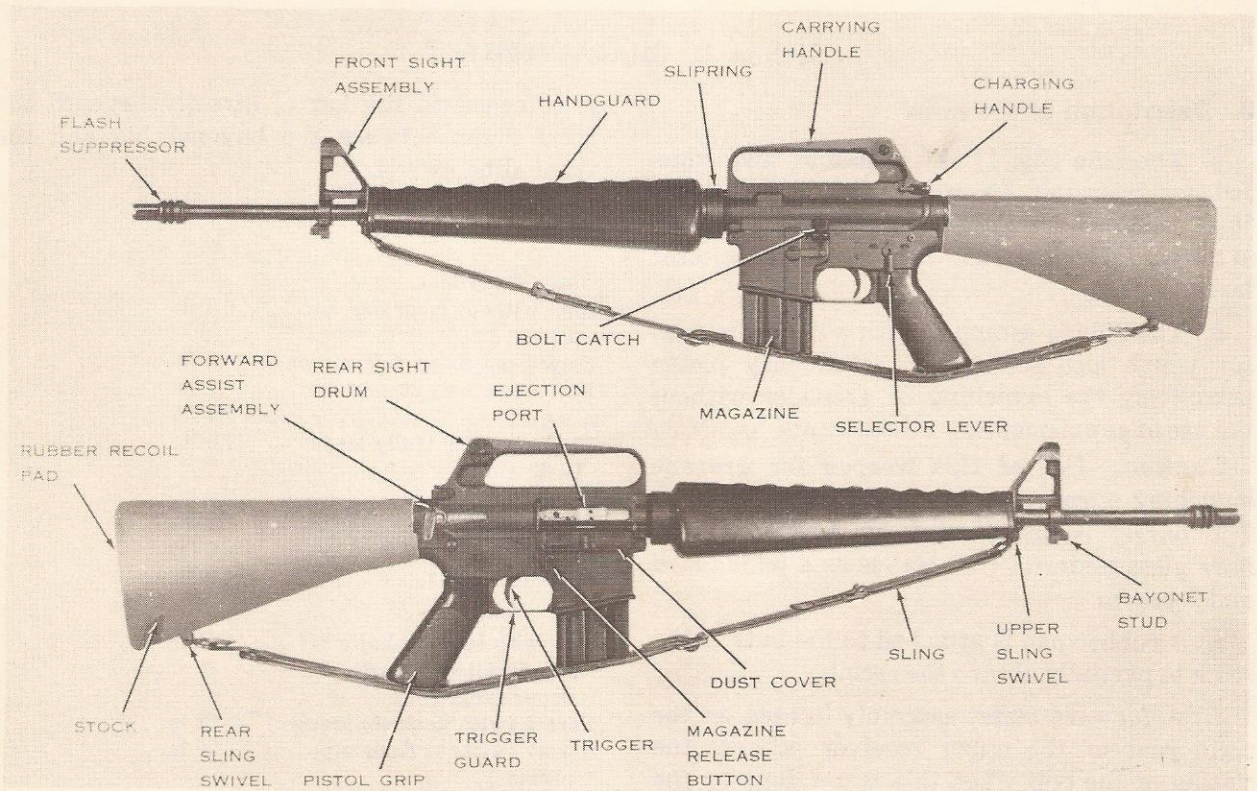
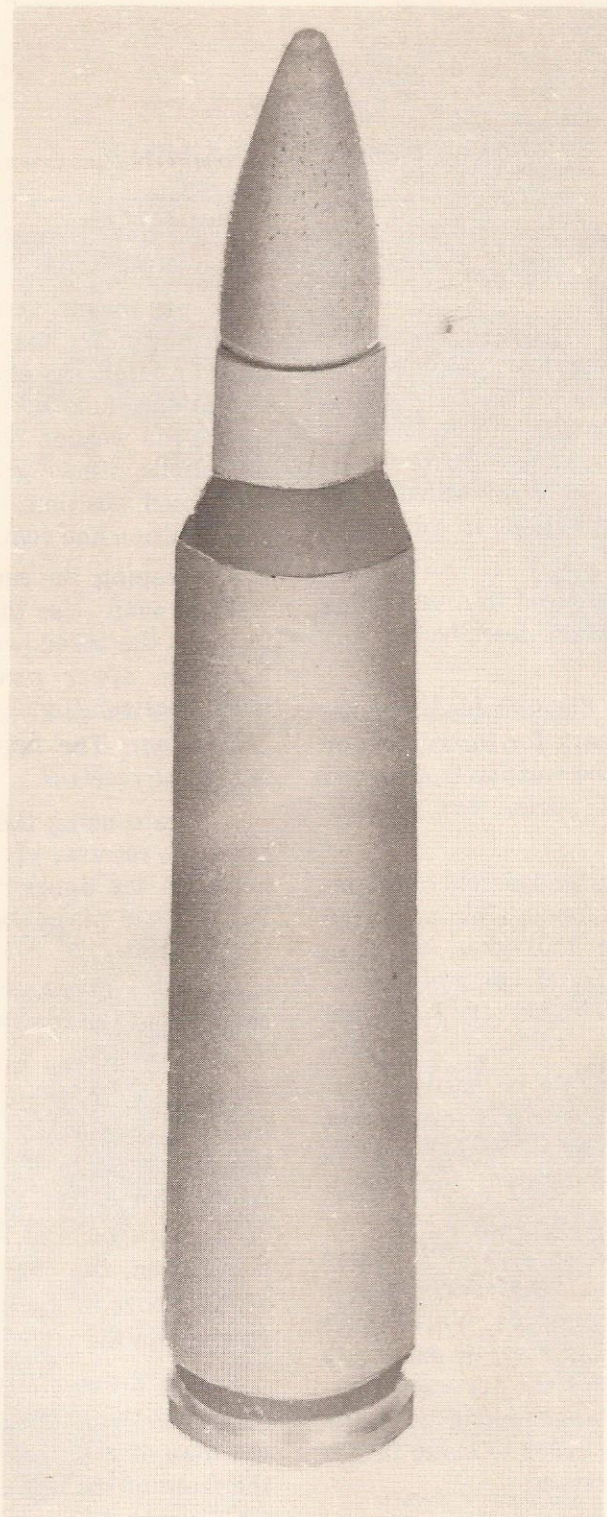


Figure 1. Rifle, 5.56-mm, XM16E1, right and left side views.



*Figure 2. The 5.56-mm round.*

## CHAPTER 2

### MECHANICAL TRAINING

#### Section I. DISASSEMBLY AND ASSEMBLY

##### 5. General

a. The purpose of mechanical training is to give the rifleman a knowledge of the working parts of his weapon so that he will understand its operation and be able to properly care for it. With this knowledge the rifleman will be able to locate and reduce malfunctions in the weapon.

b. The rifleman is authorized to disassemble the weapon only to the extent described in this chapter (para. 6 and 7).

c. The rifle should be disassembled and assembled only when necessary for instruction or for maintenance. While the weapon is designed for interchangeability of parts, this practice should be avoided.

d. In preparation for extended field duty, extended night operations, or during advanced mechanical training, the individual rifleman may practice disassembly and assembly blindfolded. However, timed exercises should NEVER be allowed.

e. The rifle is designed to be easily disassembled and assembled. The use of force is not necessary and should not be allowed; however, certain parts will offer slight resistance which must be overcome.

f. As the XM16E1 is disassembled the parts should be laid out on a clean surface, from left to right, in the order of removal. This makes assembly much easier, as a system or pattern is established. Assembly is in the reverse order. Nomenclature should be taught along with disassembly and assembly in order to make future instruction easier to understand.

##### 6. Field Stripping

a. Place the rifle on a table or flat surface, muzzle to the left, dust cover open and up. Re-

move the magazine by pressing the magazine catch button on the right side of the receiver (fig. 1). Pull the charging handle to the rear and at the same time look into the chamber to insure the weapon is clear. Release the charging handle, allowing the bolt carrier to move to the closed position. Place the selector on the safe position and remove the sling.

b. Keeping the muzzle to the left, turn the weapon over. Use the nose of a dummy round to press the takedown pin to the right (fig. 3) until the upper receiver swings free of the lower receiver (fig. 4).

**Caution:** The takedown pin does not come out of the receiver.

c. Again using the nose of a dummy round, press the receiver pivot pin to the right (fig. 5). Separate the upper and lower receiver groups (fig. 6) and place the lower receiver group on the table.

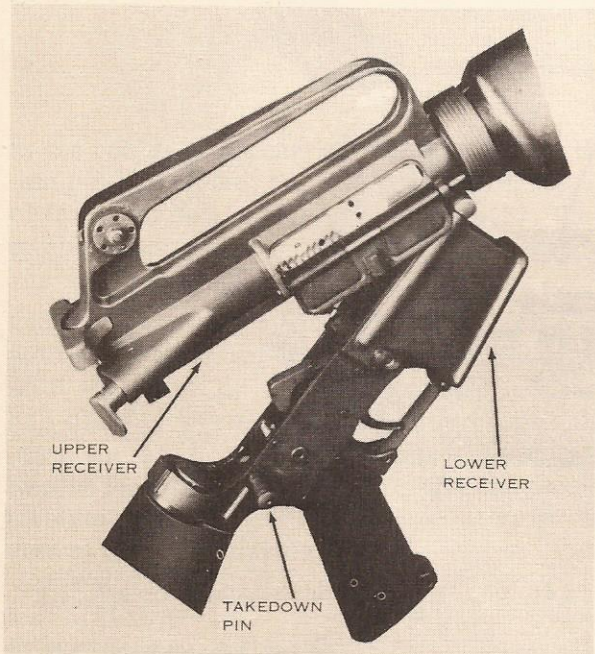
**Caution:** The receiver pivot pin does not come out of the receiver.

d. Pick up the upper receiver group; keep the muzzle to the left. Grasp the charging handle, pressing in on the latch, and pull to the rear (fig. 7) to withdraw the bolt carrier from the receiver. Pull the bolt carrier clear of the receiver (fig. 8). When the bolt carrier is removed, the charging handle will fall free of its groove in the receiver (fig. 9). Place the receiver on the table.

e. To disassemble the bolt carrier group, press out the firing pin retaining pin by using the nose of a dummy round (fig. 10). Elevate the front of the bolt carrier and allow the firing pin to drop from its well in the bolt (fig. 11). Rotate the bolt until the cam pin is clear of the bolt carrier key and remove the cam pin by rotating it  $\frac{1}{4}$ -turn and lifting it out of the well



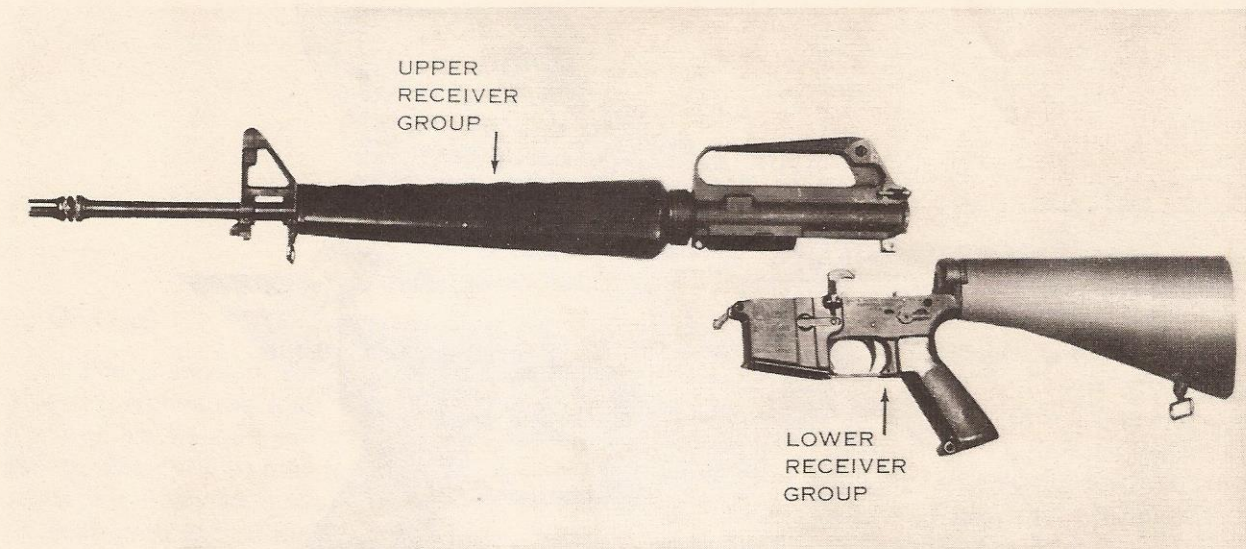
*Figure 3. Pressing the takedown pin to the right.*



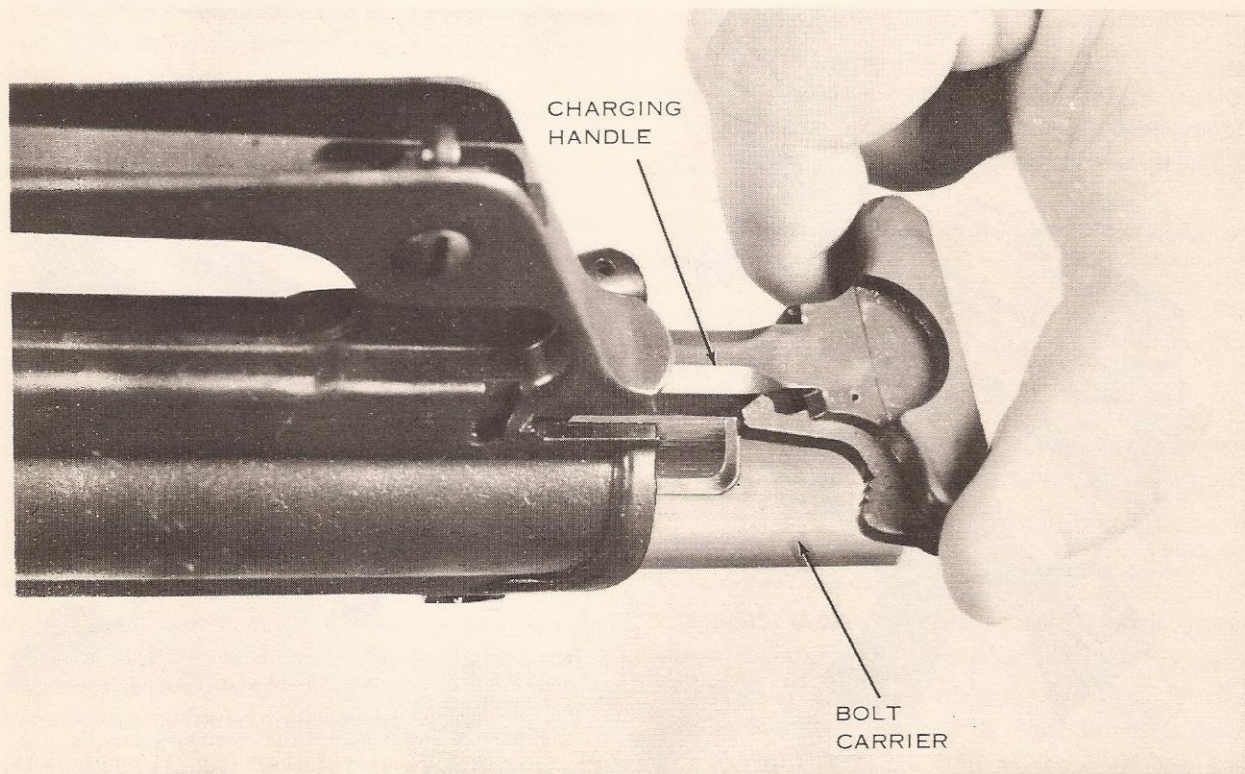
*Figure 4. Breaking the upper receiver away from the lower receiver.*



*Figure 5. Pressing out the receiver pivot pin.*



*Figure 6. Upper and lower receiver groups.*



*Figure 7. Pulling charging handle to the rear.*

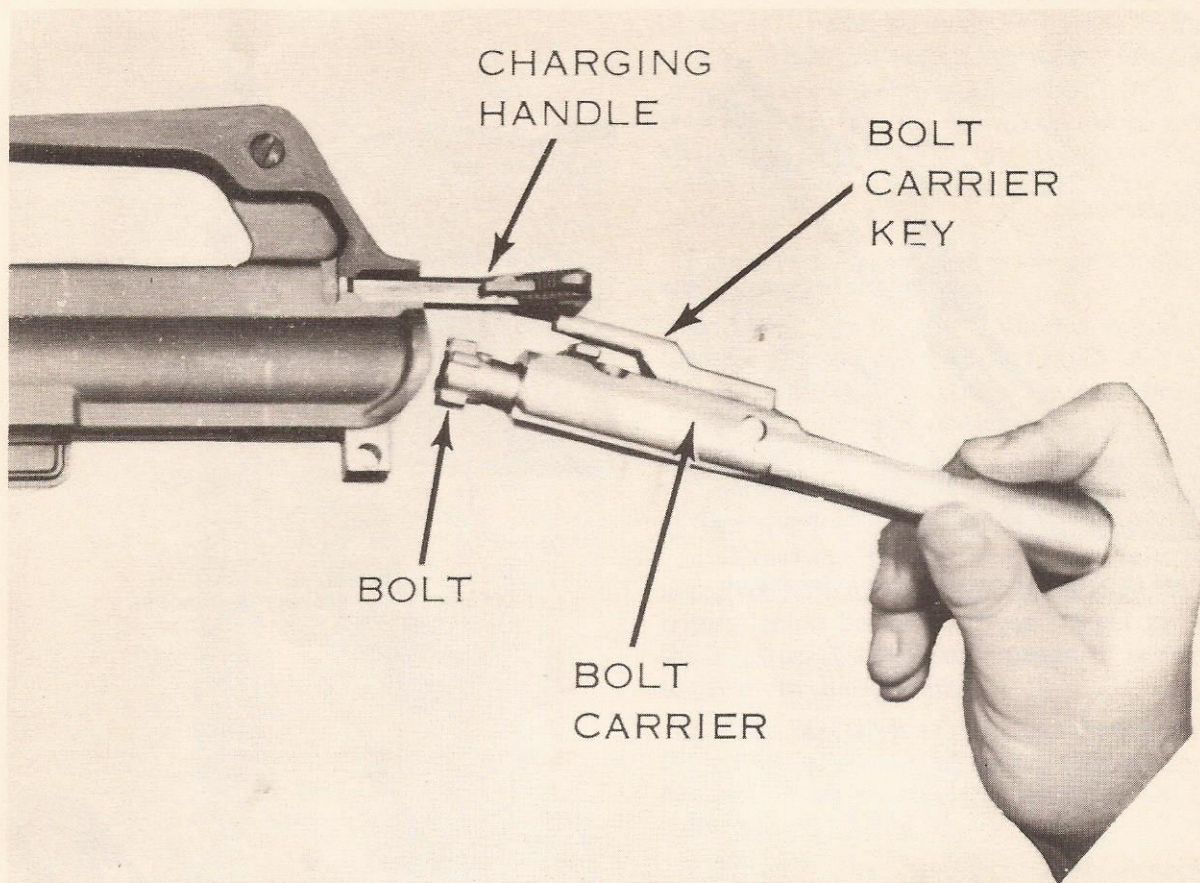


Figure 8. Removing bolt carrier from receiver.

in the bolt and bolt carrier (fig. 12). After the cam pin is removed, the bolt will easily slide out of its recess in the bolt carrier (fig. 13). This completes disassembly of the bolt carrier group.

f. The last parts to be removed are the handguards. Place the upper receiver on the table with the muzzle up. Pull down on the sliping until the lower lip of the handguard is clear; pull out and down on the handguard until the upper lip is free of the handguard cap (fig. 14). Repeat the same operation to remove the second handguard. Considerable pressure must be used to force the sliping down.

g. This completes field stripping (fig. 15).

## 7. Detailed Disassembly

a. The first steps of detailed disassembly of the rifle are identical to field stripping (para. 6a through f). The removal of the operating

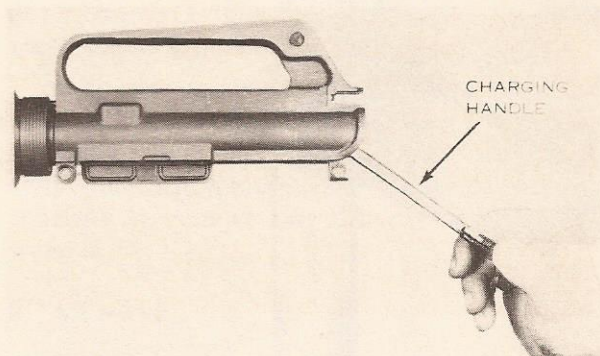


Figure 9. Removing the charging handle.

parts in the lower receiver (fig. 16) completes detailed disassembly.

b. To disassemble the lower receiver place the butt to the right, trigger down. Turn the

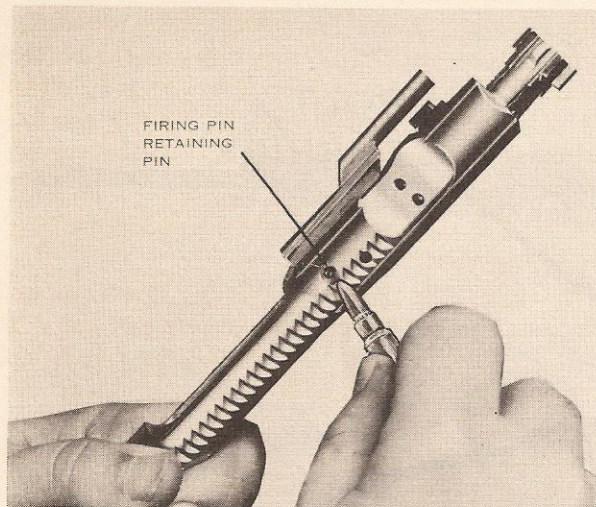


Figure 10. Pressing out firing pin retaining pin.

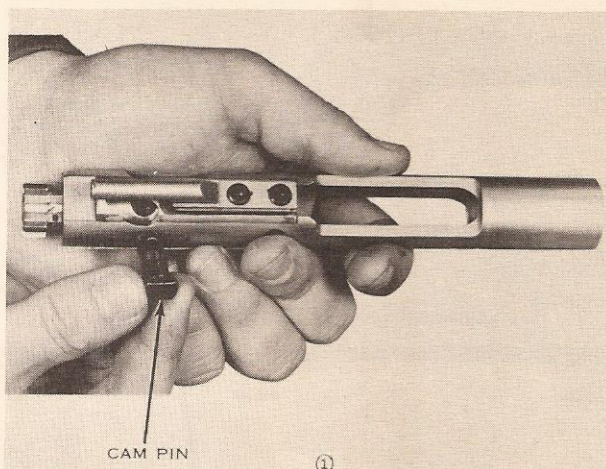


Figure 12. Removing the cam pin.

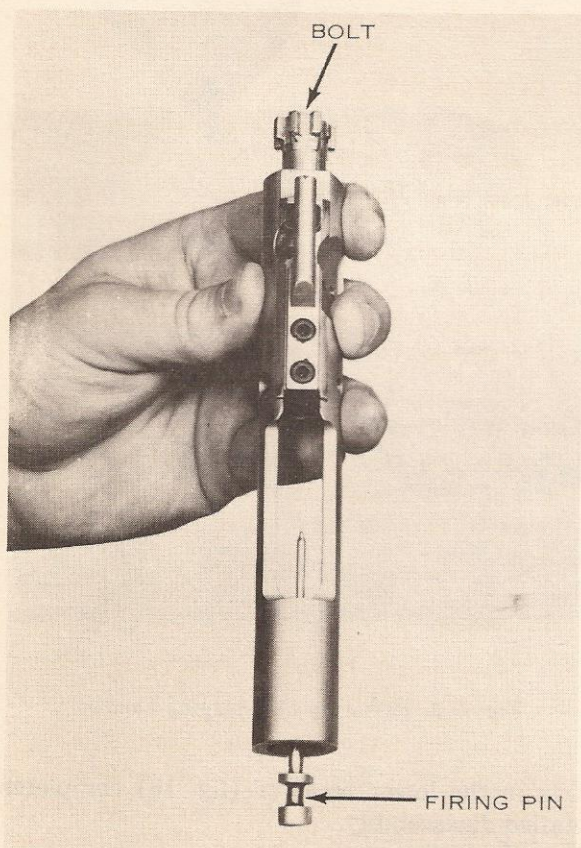


Figure 11. Removing the firing pin.

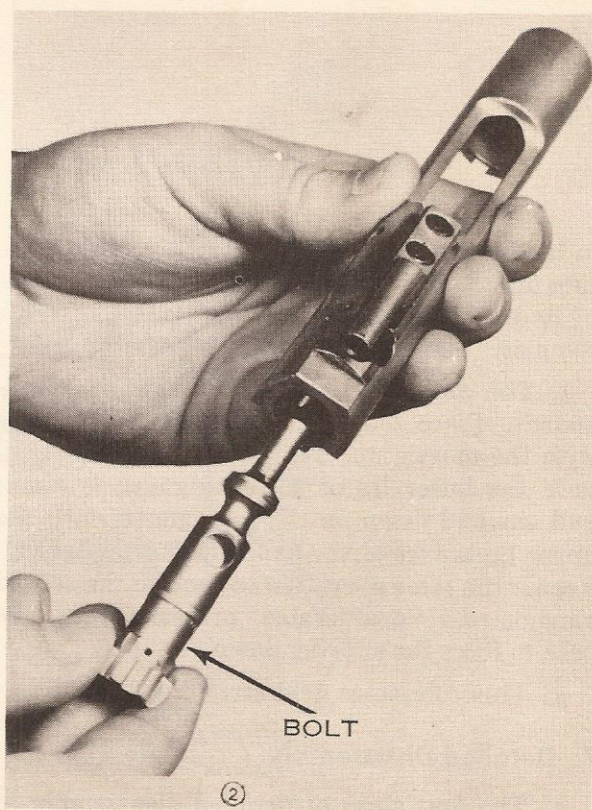


Figure 13. Removing the bolt.

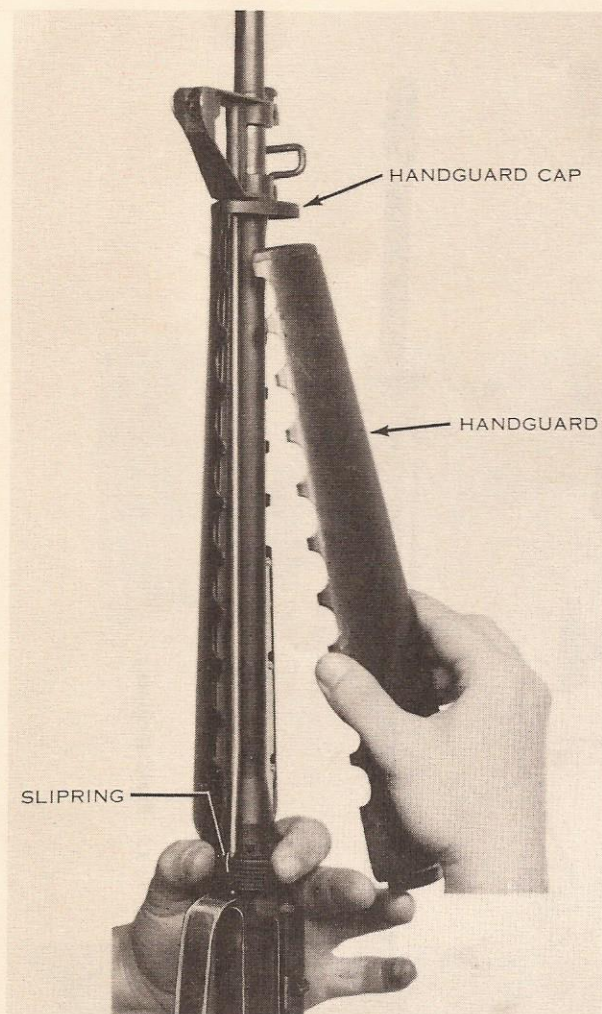


Figure 14. Removing the handguards.

selector lever to the SEMI position; place the thumb of the left hand on top of the hammer and pull the trigger with the index finger of the right hand (fig. 17). Let the hammer move slowly until it is fully forward. Using the nose of a dummy round, press out the hammer pin from right to left (fig. 18).

*Note.* The firing pin may be used to push the hammer pin completely out of its recess once the initial movement is begun. Care should be used when removing the hammer pin to prevent the hammer from jumping out of the receiver. Allow the hammer to ride up until no pressure is felt on the hammer spring. Remove the hammer from the receiver.

**Caution:** The hammer spring is attached to the hammer and should not be removed (fig. 19).

c. Using the index finger of the right hand, push in on the buffer cap. With the index finger of the left hand, push down on the buffer retainer. Allow the action spring guide assembly to move forward slowly until clear of the buffer retainer and remove from the lower receiver along with the action spring (fig. 20). Place the action spring guide assembly and action spring on the table.

*Note.* The action spring is under pressure and care must be taken in removing it.

d. Using the nose of a dummy round, press the sear pin out from right to left and remove it from the receiver. Once the sear pin is removed, lift the automatic sear out of the receiver (fig. 21).

*Note.* The firing pin may be used to complete removal of the sear pin once initial movement is begun.

e. Press out the selector from right to left using the nose of a dummy round (fig. 22). The trigger must be held forward when removing the selector. Considerable pressure is required to press out the selector.

f. The last step in detailed disassembly of the rifle is the removal of the trigger and disconnect. Push out the trigger pin from either side, using the firing pin.

**Caution:** The trigger and disconnect will jump out of the receiver under pressure of the trigger spring. Hold the trigger down with the thumb of the left hand when removing the trigger pin. Once the pin is removed, let the trigger rise slowly until no pressure is felt (fig. 23). Lift the trigger and disconnect out of the receiver and separate (fig. 24).

g. This completes detailed disassembly (figs. 15 and 25). The individual soldier has no need to disassemble the weapon beyond this point. Only qualified maintenance personnel are authorized to remove any other parts from the weapon.

## 8. Assembly

a. To assemble the rifle reverse the procedures of disassembly.

b. Place the trigger in position in the lower receiver, pressing down on the top, compressing the trigger spring until the trigger pin can be inserted through the left side of the receiver. Insert the trigger pin just far enough to hold

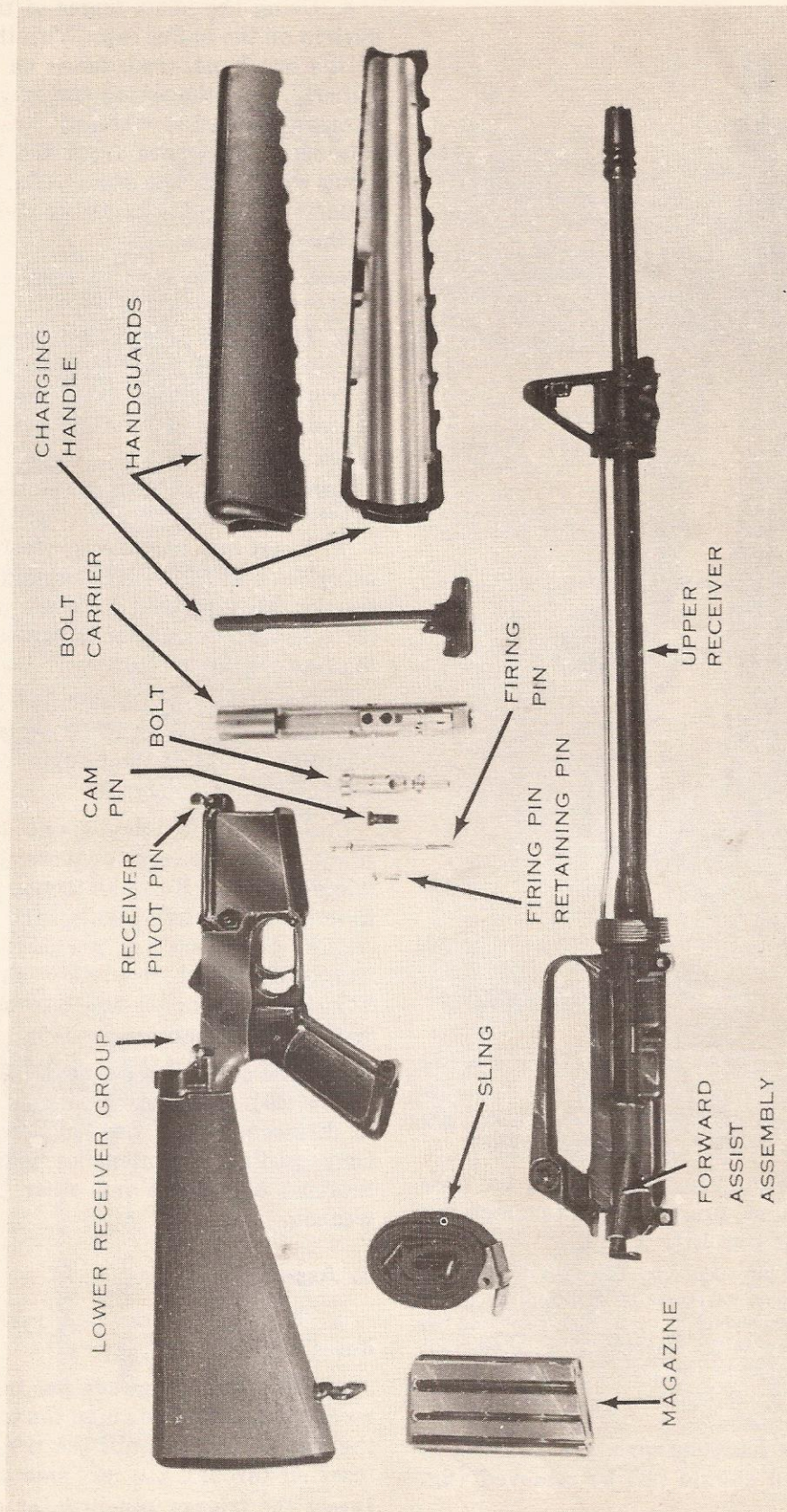


Figure 15. Field stripping.



*Figure 16. Lower receiver group.*

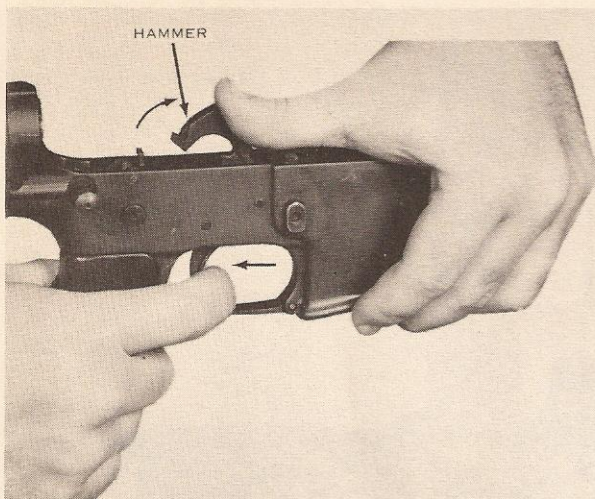


Figure 17. Lowering the hammer.

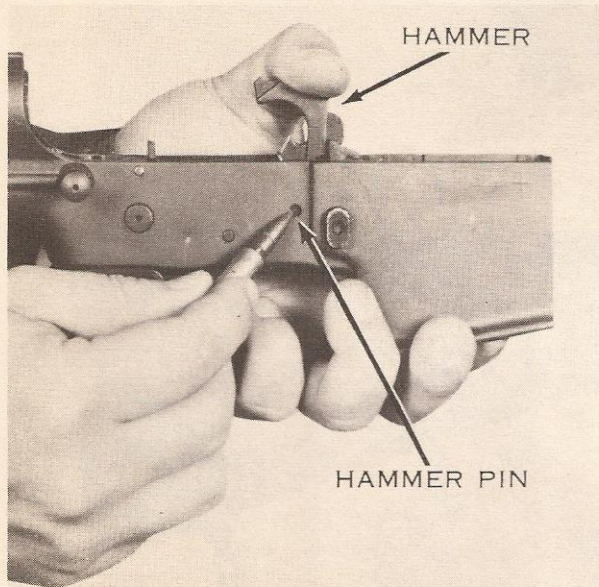


Figure 18. Pressing out the hammer pin.

the trigger in place. Seat the disconnect in its slot on the trigger, pushing down until the hole in the trigger and the hole in the disconnect are aligned. Press the trigger pin completely through the seat. Check the movement of the trigger to insure there is no binding.

c. Place the selector into the side of the receiver from the left. Using the nose of a dummy round, press down on the selector lever



Figure 19. Removing the hammer and spring.

detent plunger and push the selector lever into place until the detent plunger snaps into the notch on the selector lever. The trigger must be held forward when replacing the selector lever.

d. Turn the selector to the automatic position. Insert the automatic sear into its position in the receiver. Insure that the sear tang is positioned in the slot on the left rear side of the selector lever and the long end of the sear spring is in the groove on the left front of the selector lever (fig. 26). This insures that the automatic sear returns to the proper position when the selector lever is turned from SEMI to AUTO. Insert the sear pin into its hole in the receiver from *right to left*.

e. Insert the action spring guide assembly into the action spring, and push the open end of the spring into the well in the receiver extension until the buffer retainer snaps into position.

f. Press the hammer into its position in the receiver, insuring that the tails of the hammer spring are to the rear and in the grooves on either side of the trigger pin (fig. 27). Pushing down and forward on the hammer, align the holes in the receiver and the hammer. Use the



Figure 20. Removing the action spring guide assembly and action spring.

firing pin to line up the holes and press in the hammer pin. The rifleman should check for proper assembly and functioning of parts. This completes assembly of the lower receiver.

g. To assemble the bolt carrier group, grasp the bolt carrier, key up and to the front, insert the bolt into the front of the bolt carrier, insuring that the ejector is down and to the left. Replace the cam pin into its well and rotate the cam pin  $\frac{1}{4}$ -turn to align the holes in the bolt and cam pin. Grasp the lugged rim of the bolt and turn until the cam pin is directly beneath the bolt carrier key. Insert the firing pin through the open end of the bolt carrier and seat fully. Insert the firing pin retaining pin.

*Note.* Check for proper assembly by elevating the front of the bolt. If the firing pin drops out, the firing pin retaining pin is not between the front and rear spool and the bolt carrier group is incorrectly assembled.

**Caution:** Do not attempt to spread the slotted end of the firing pin retaining pin.

h. Replace the handguards and be sure that the slipping is fully seated on the lower lip of both sections of the handguard. Care must be taken to prevent damage to the upper and lower lips and to insure proper seating.

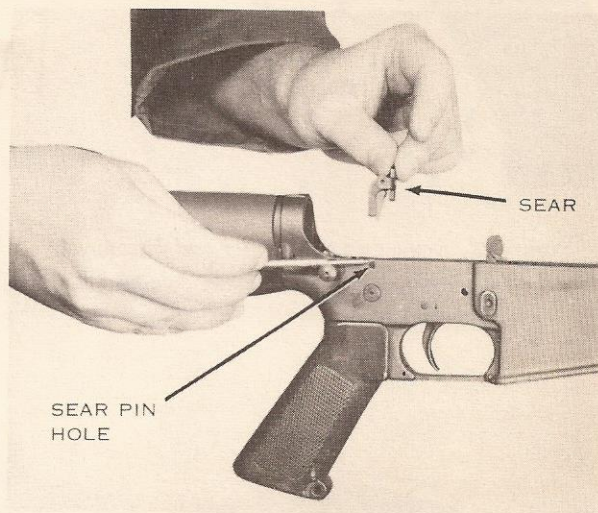


Figure 21. Removing the automatic sear.

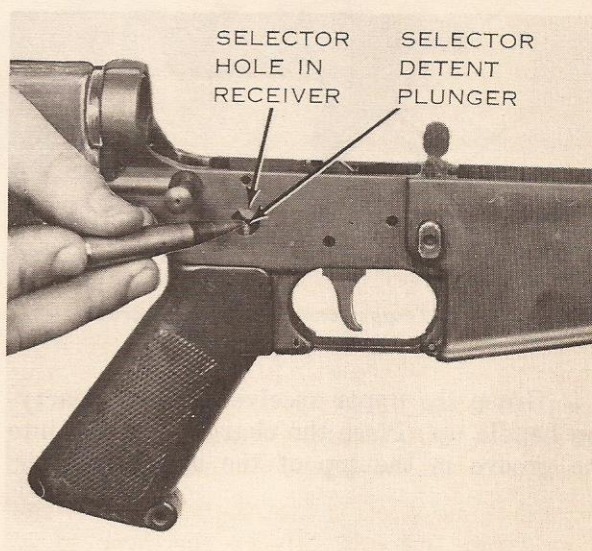


Figure 22. Removing the selector lever.

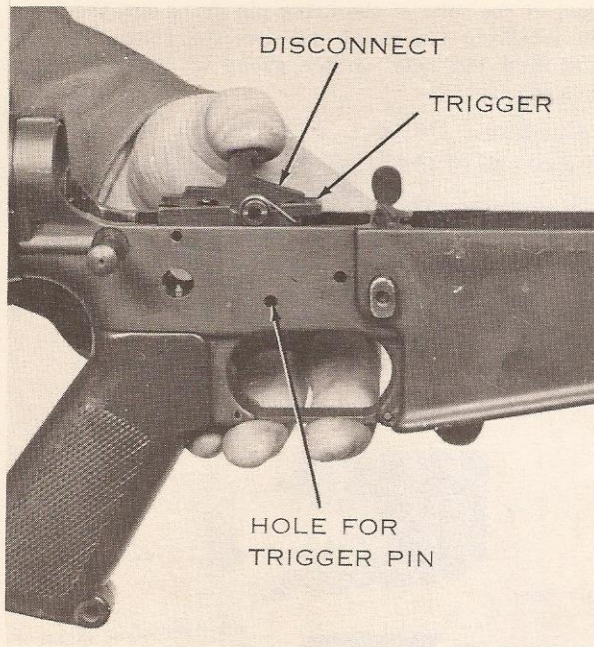


Figure 23. Removing the trigger and disconnect.

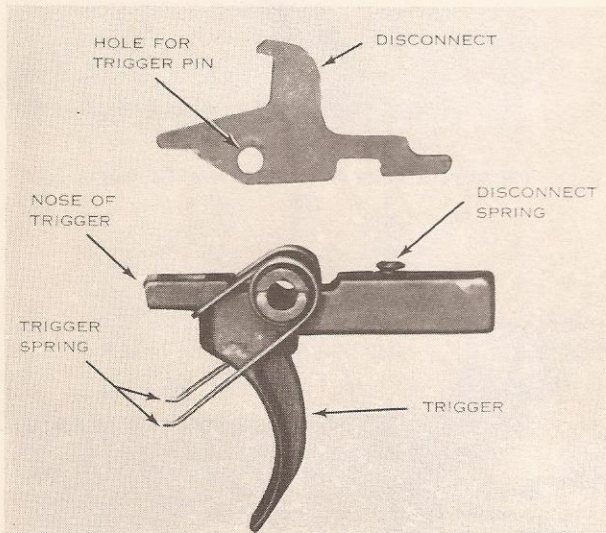


Figure 24. Trigger and disconnect separated.

*i.* Grasp the upper receiver with the carrying handle up. Place the charging handle into the groove in the top of the upper receiver,

latch to the left. The lugs on the charging handle must be seated in their grooves in the receiver. Place the bolt carrier group into the open end of the receiver, insuring that the carrier key is in the slot on the underside of the charging handle. Push forward on the bolt carrier and charging handle until fully seated.

*j.* Place the upper receiver group and lower receiver group together and reseat the receiver pivot pin.

*k.* Cock the hammer and put the selector lever on the safe position. Withdraw the takedown pin and close the weapon. Fully seat the takedown pin and replace the sling.

*l.* A complete function check of the rifle consists of checking the operation of the rifle while the selector is in the SAFE, SEMI, and AUTO positions. The following sequence is used for a rapid, complete check. Any portion of the check may be used alone to determine the operational condition of any specific fire selection. Start with the upper and lower receiver groups in the open position and the rifle cocked and the magazine out.

- (1) SAFE position. Pull trigger. Hammer should not fall.
- (2) SEMI position. Pull trigger. The hammer should fall. Hold trigger to rear, recock hammer and release trigger. Hammer should transfer from hammer hooks and disconnect to the hammer and sear engagement.
- (3) AUTO position. Pull trigger. Hammer should fall. Hold trigger to the rear and recock the hammer. Hammer is now under the automatic sear. Still holding trigger to the rear, push forward on automatic sear. Hammer should fall to the sear engagement.
- (4) Close the upper and lower receiver groups and push the takedown pin into place. Place the selector lever in the SEMI position. Pull the charging handle to the rear. Inspect the chamber for safety and release charging handle. Pull the trigger. Hammer should fall.

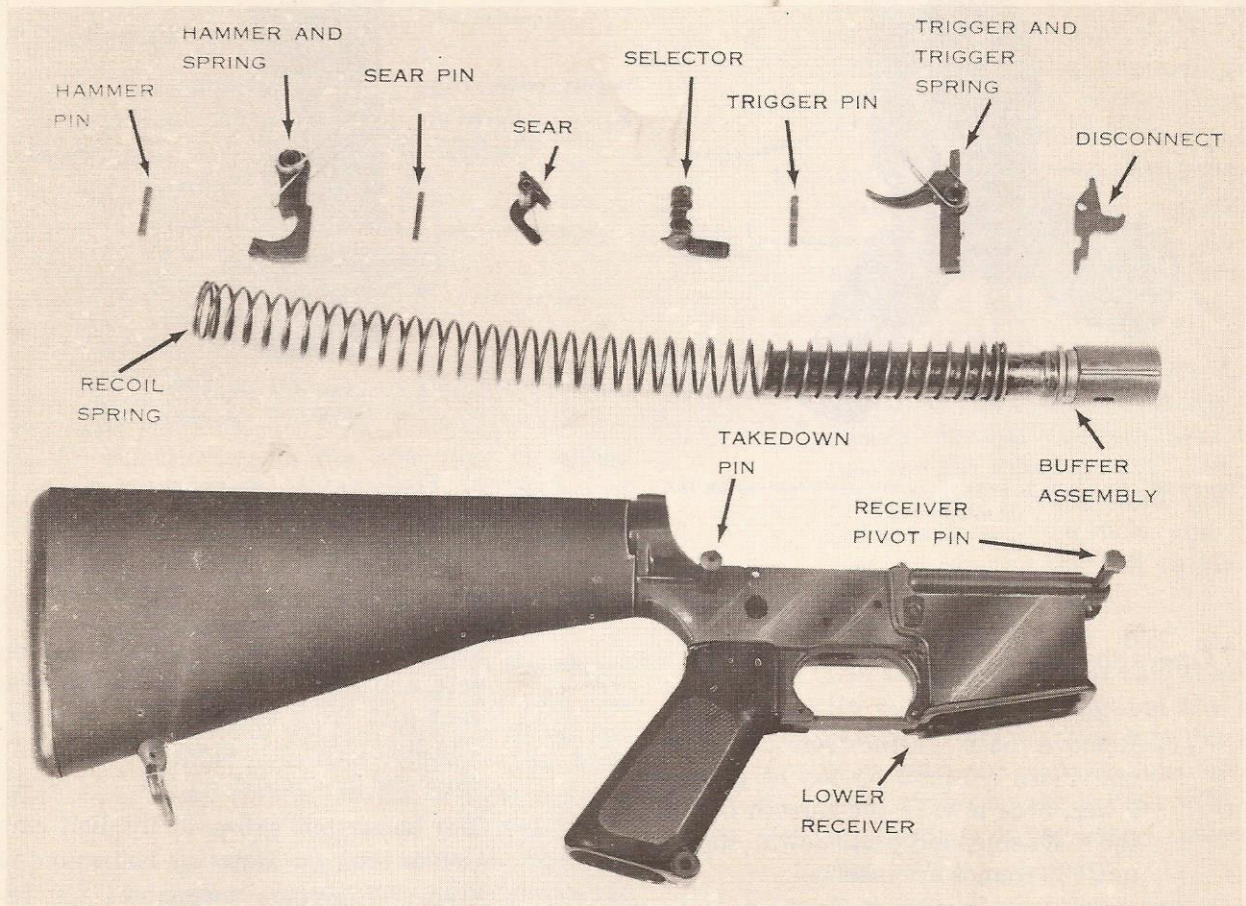


Figure 25. Detailed disassembly of the lower receiver group.

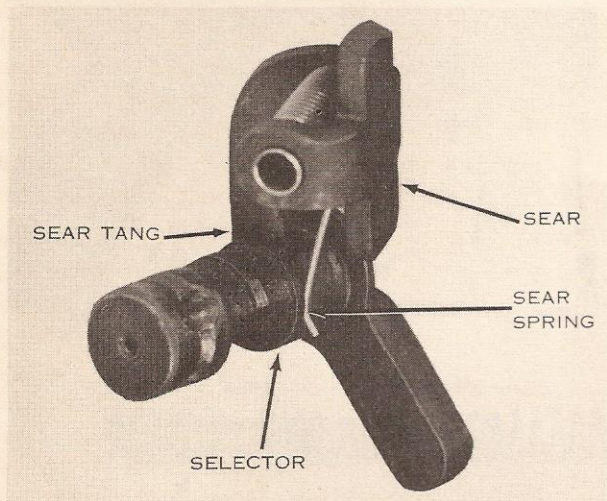


Figure 26. Position of sear tang and sear spring on the selector lever.

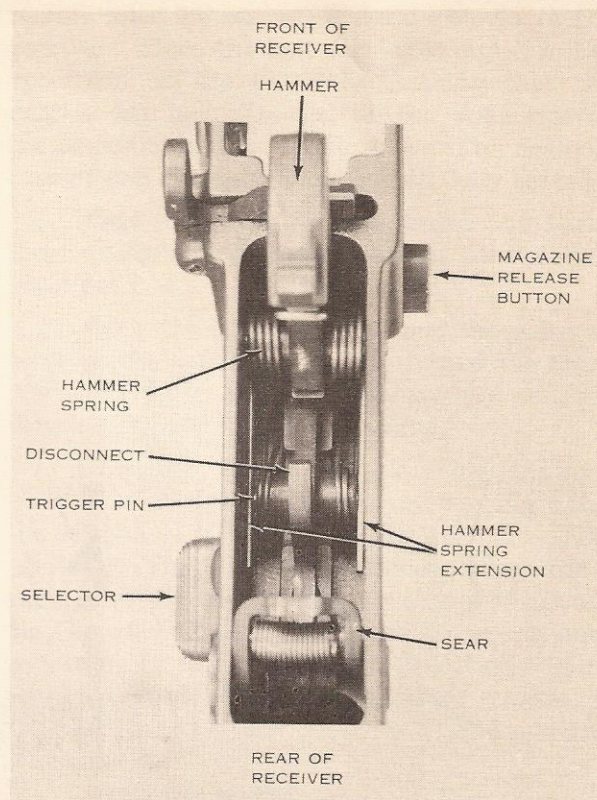


Figure 27. Position of the hammer spring in the receiver.

## Section II. OPERATION AND FUNCTIONING

### 9. Operation

#### a. Loading.

- (1) Remove the magazine from the weapon. Place a round on top of the follower, nose toward the smooth face of the magazine, and press down. Repeat until 20 rounds are inserted.
- (2) Cock the weapon, place the selector lever on safe, insert the magazine into the magazine feedway, and push up until a click is heard, indicating the magazine is fully seated.
- (3) Pull the charging handle fully to the rear and release. Do not ride the charging handle forward. As the bolt carrier moves forward by the force of the action spring, a round is stripped from the magazine and chambered. If the weapon is not to be fired im-

mediately, leave the selector lever on safe and close the dust cover to prevent dirt from entering the receiver. The dust cover will open automatically when the first round is fired.

- (4) The bolt catch will hold the bolt carrier to the rear after the last round is fired. To change magazines for reloading, press the magazine catch button allowing the used magazine to fall from the weapon. Place the new magazine into the magazine feedway and push up until fully seated. Press the bolt catch on the left of the receiver and allow the bolt carrier to go forward. A round is chambered and the weapon is ready to fire.

*Note.* The forward assist assembly is utilized to insure that the bolt is fully seated.

b. *Unloading.* To unload the rifle and make it safe, the firer first places the selector lever on safe, presses the magazine catch button and removes the magazine, pulls to the rear on the charging handle, inspects the chamber to insure it is clear, locks the bolt carrier to the rear by depressing the lower portion of the bolt catch, and returns the charging handle forward. The rifle is clear *only* when no round is in the chamber, the magazine is out, bolt carrier is to the rear, and the selector lever is on the safe setting.

## 10. Functioning

a. Functioning consists of eight basic steps. Keep in mind that more than one of these steps takes place at a time. The eight steps are:

- (1) Firing.
- (2) Unlocking.
- (3) Extracting.
- (4) Ejecting.
- (5) Cocking.
- (6) Feeding.
- (7) Chambering.
- (8) Locking.

b. Functioning in the rifle may be either automatic or semiautomatic through the use of the selector lever. Certain differences in the operation of parts take place when the selection is made.

### (1) *Semiautomatic fire.*

- (a) *Firing.* With a round in the chamber, the hammer cocked and the selector on the SEMI setting, the firer pulls the trigger. The trigger rotates on the trigger pin depressing the nose of the trigger and disengaging the notch on the bottom of the hammer. The hammer is thrown forward by action of the hammer spring. The hammer strikes the head of the firing pin, driving the firing pin through the bolt into the primer of the round. The action of the rifle is so much faster than human reaction that it is impossible for the firer to release the trigger rapidly enough to prevent multiple firing. Therefore, it is necessary for a mechanism to be installed in the weapon to enable the firer to

fire single rounds. In the XM16E1 the disconnect is used for this purpose. The disconnect is attached to the trigger and is rotated forward by action of the disconnect spring. When the hammer is cocked by the recoil of the bolt carrier, the disconnect engages the lower hook of the hammer and holds it until the trigger is released. When the trigger is released, the disconnect rotates down, disengaging the hammer and allowing it to rotate forward until caught by the nose of the trigger. This prevents the hammer from following the bolt carrier forward and causing automatic fire (fig. 28).

- (b) *Action of the gas.* When the primer ignites the powder, the projectile is forced through the barrel. At the same time the gas moves through the barrel until, passing the gas port located on the upper surface of the barrel (under the front sight), a small portion of the gas passes through the gas port and into the gas tube (fig. 29). The gas tube directs the gas into the cylinder between the bolt and bolt carrier, causing the bolt carrier to move rearward.
- (c) *Unlocking.* As the bolt carrier moves to the rear, the cam track in its upper surface acts on the bolt cam pin, rotating the cam pin and bolt until the locking lugs of the bolt are no longer in line with the locking lugs of the barrel extension (fig. 30).
- (d) *Extracting.* The bolt carrier continues to the rear, carrying with it the bolt. By means of the extractor, which is attached to the bolt, the expended cartridge is withdrawn from the chamber. The claw of the extractor is gripping the rim of the cartridge, holding the base of the round against the face of the bolt (fig. 31).
- (e) *Ejecting.* When the base of the round is against the face of the bolt,

the ejector is compressed. As the bolt carrier clears the ejection port, the empty cartridge is thrown out by action of the ejector and spring (fig. 32).

(f) *Cocking.* The rearward movement of the bolt carrier overrides the hammer, forcing it down into the receiver, compressing the hammer spring. The lower hook of the hammer is engaged by the disconnect. When the trigger is released the hammer slips from the disconnect and is caught by the nose of the trigger. The trigger must be pulled again before the next round will fire (fig. 33).

(g) *Feeding.* As the bolt carrier group clears the top of the magazine, the follower and spring in the magazine push a new round up into the path of the bolt (fig. 34).

(h) *Action of the buffer assembly.* As the bolt carrier group is moving rearward, the head of the buffer is struck. This sends the action spring rearward into the receiver extension. The expansion of the action spring sends the action spring guide assembly forward with enough force to drive the bolt carrier group forward toward the chamber. The

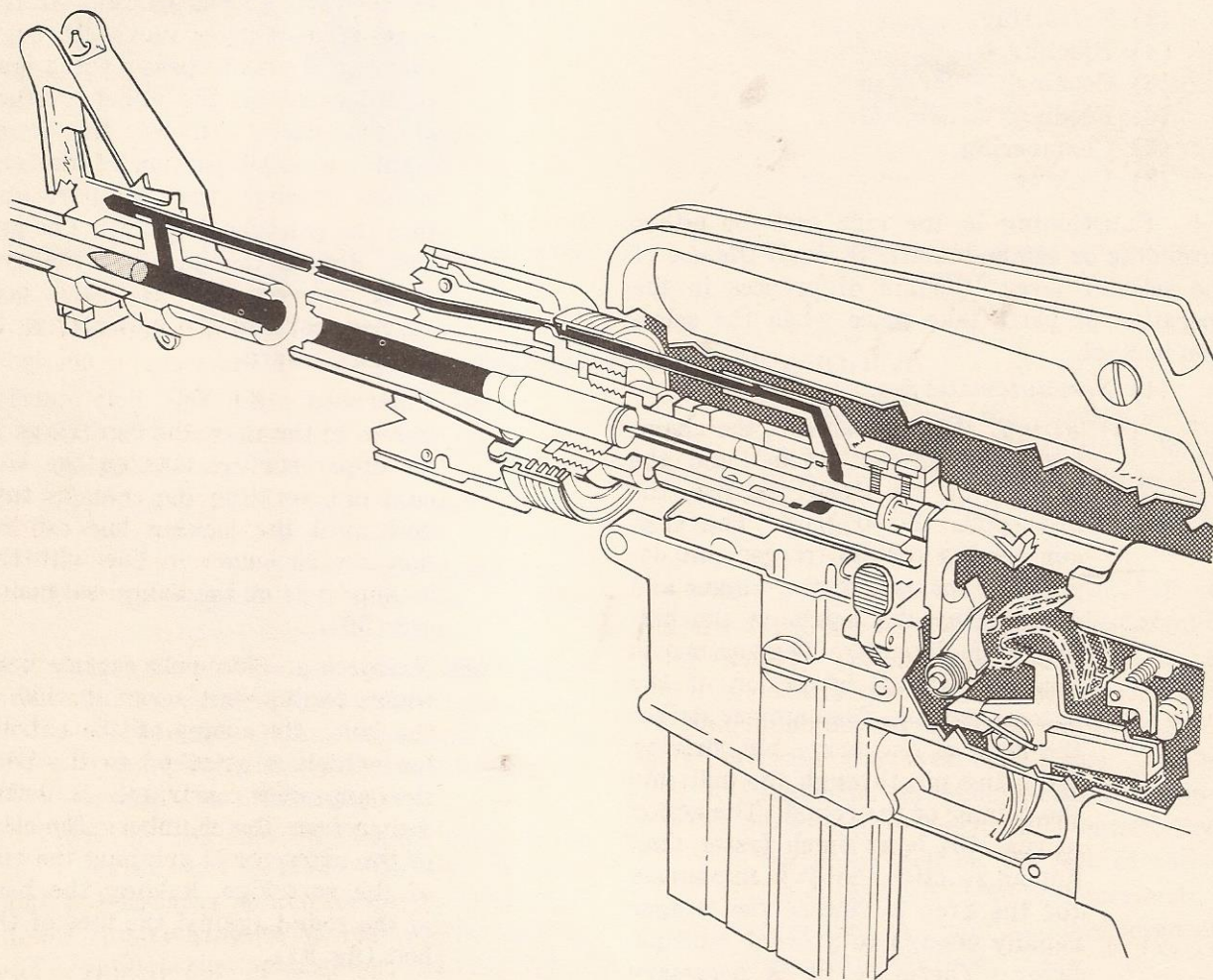


Figure 28. Firing.

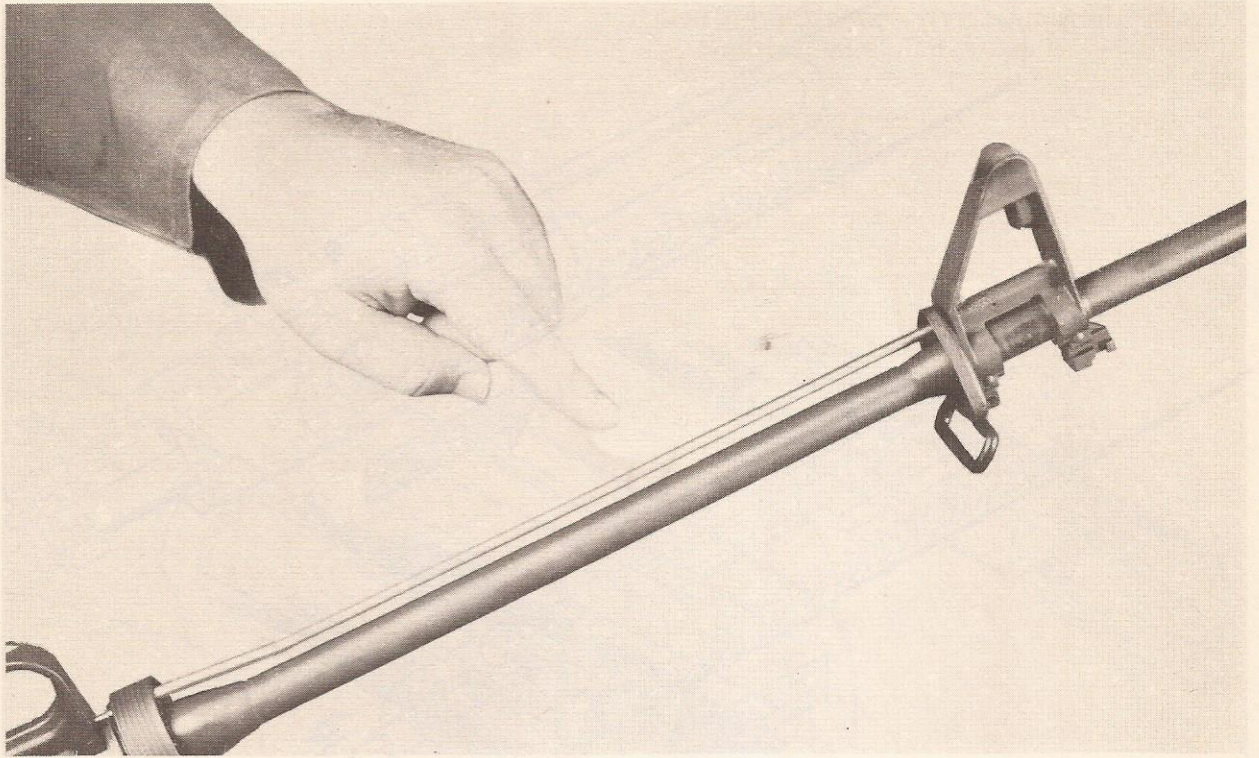


Figure 29. Gas tube.

buffer assembly is designed to reduce the recoil of the weapon.

- (i) *Chambering.* On the forward stroke of the bolt carrier group, the face of the bolt strips a round from the magazine and thrusts it into the chamber. At the same time the extractor claw grips the base of the round and the ejector is compressed (fig. 35).
  - (j) *Locking.* When the bolt carrier group enters the last  $\frac{1}{2}$  inch of its forward movement, the bolt cam pin emerges from the guide channel in the upper receiver and moves along the cam track, rotating the bolt *counterclockwise* into the locked position (fig. 30). The weapon is then ready to fire and the cycle begins again.
- (2) *Automatic fire.*
- (a) When the selector lever is set on the AUTO position, the rifle will continue fire as long as the trigger is held back and ammunition is in the magazine. The functioning of certain parts of the weapon changes when firing automatic.
  - (b) As the rifleman pulls the trigger, the cycle of operation begins. As the bolt carrier group recoils the hammer is cocked, but the center cam of the selector prevents the disconnect from engaging the hammer (fig. 36).
  - (c) By adding an automatic sear, which catches the upper hook of the hammer and holds it until the bolt carrier group moves forward striking the top of the sear, releasing the hammer, the rifle will fire automatic fire (fig. 37).
  - (d) If the trigger is released the hammer moves forward and is caught by the nose of the trigger. This ends the automatic cycle of fire until the trigger is pulled again.

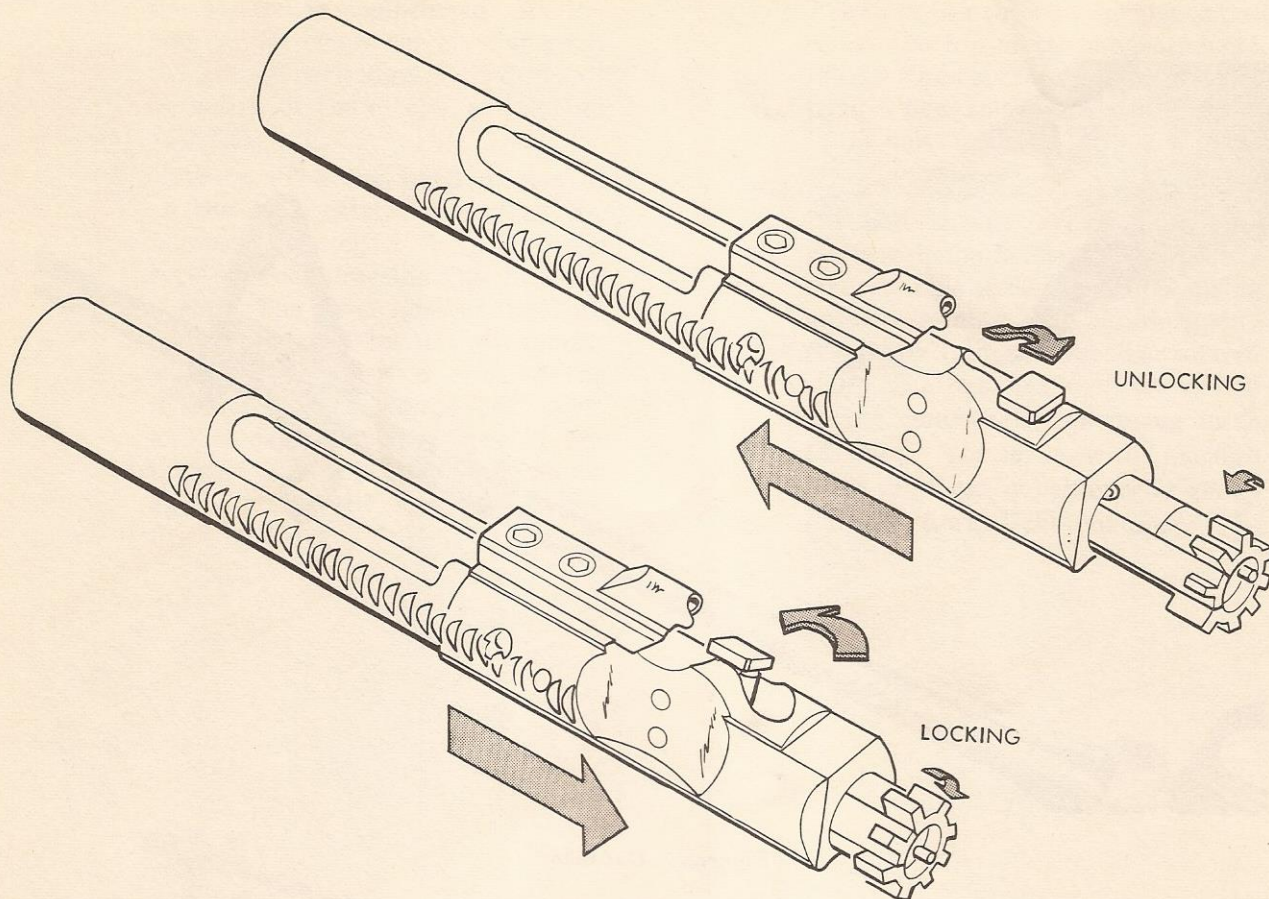


Figure 30. Locking and unlocking.

(e) All other portions of the cycle of operation remain the same as in semiautomatic fire.

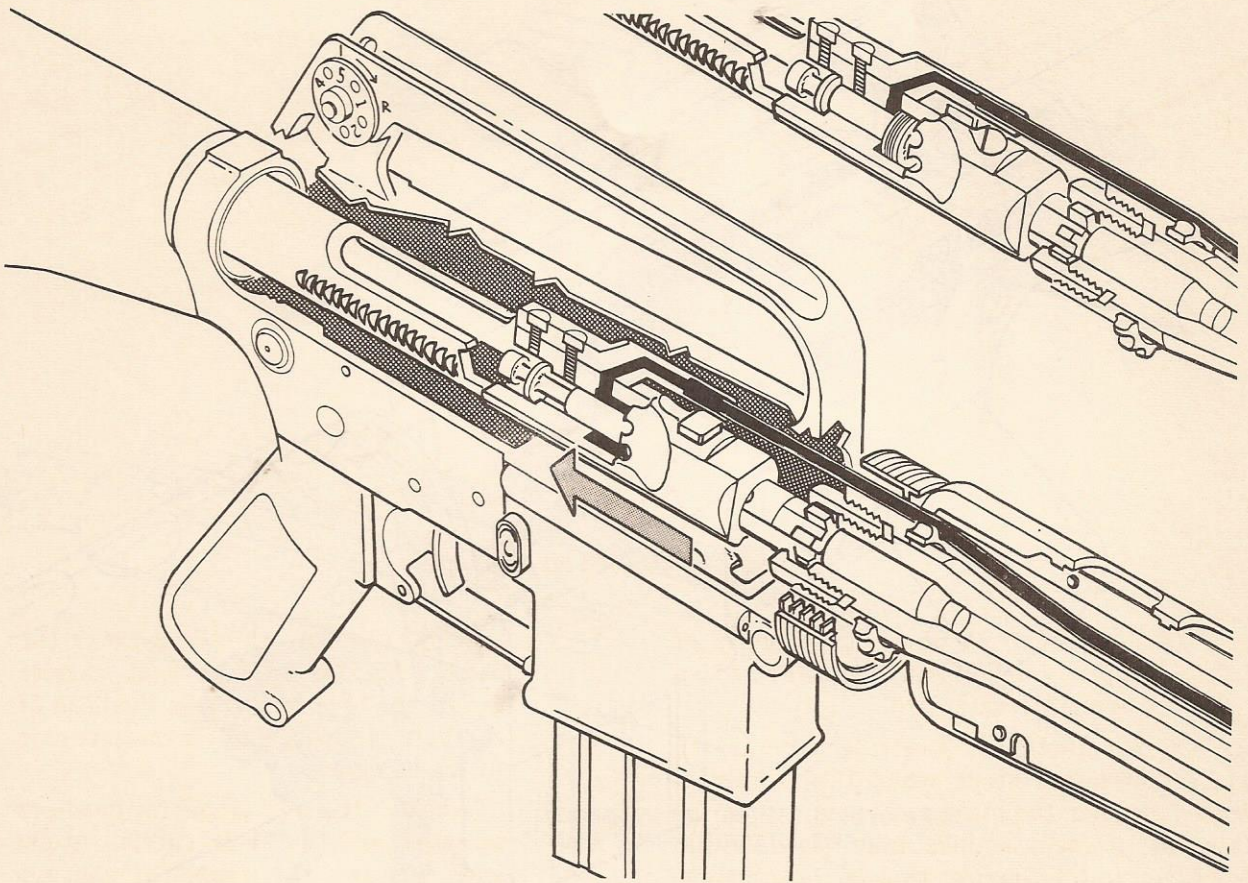
c. The functioning of the rifle through the cycle of operation stops when the trigger is released or when the magazine is empty. In the latter case certain actions take place within the weapon to tell the firer that he must change magazines.

- (1) When the last round of a magazine has been chambered, the magazine follower rises to the top of the magazine and contacts the bolt catch. As the bolt carrier group recoils after the last round is fired, the bolt stop is forced into the path of the bolt face by action of the magazine spring. This holds the bolt carrier group to the rear.
- (2) Removal of the magazine does not release the bolt carrier group due to the force of the action spring holding the

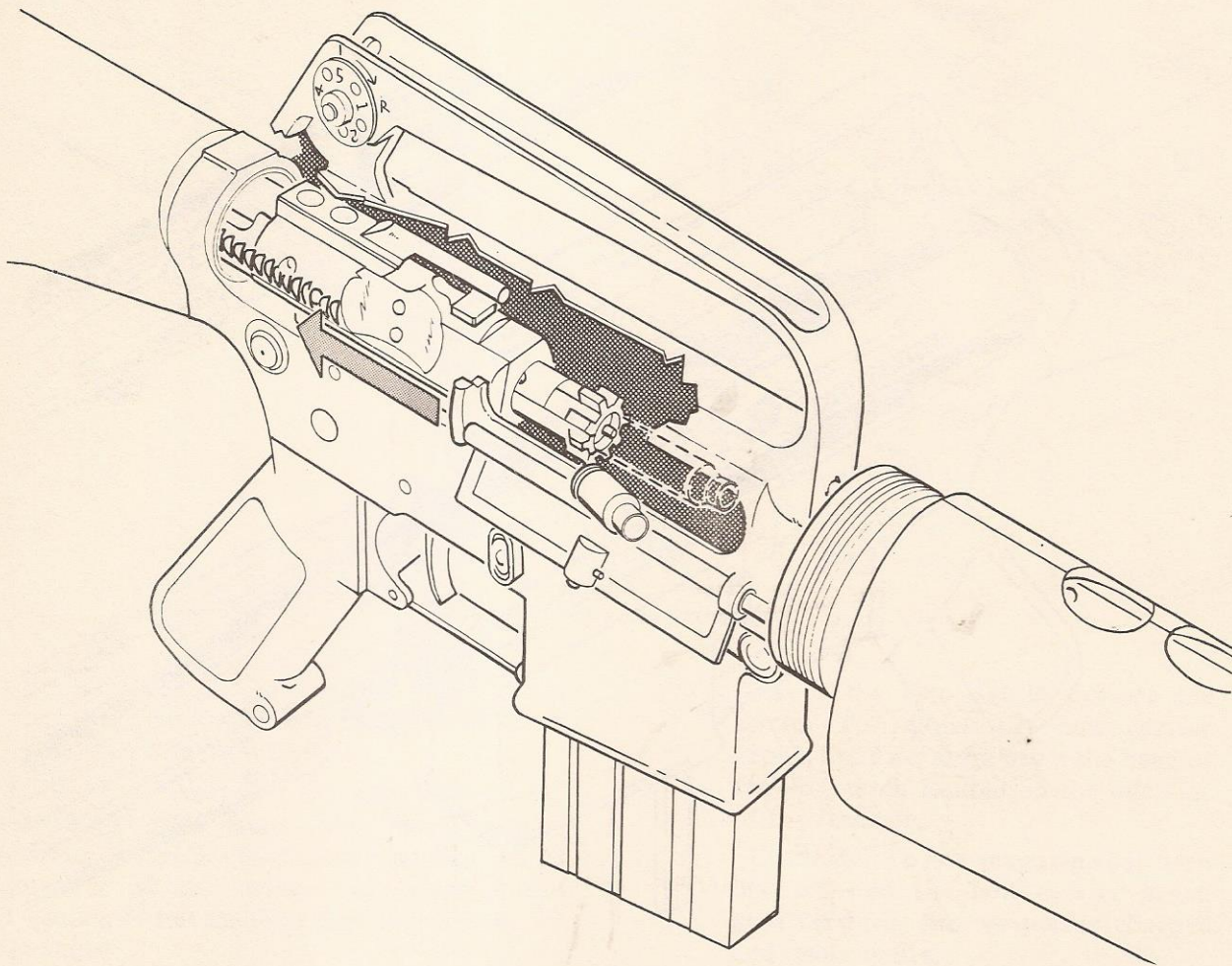
face of the bolt tightly against the catch. To release the bolt carrier group, the firer must press the head of the bolt catch located on the left side of the receiver.

**Caution:** If a new magazine has been inserted and the bolt carrier group goes forward, the weapon is charged and ready to fire.

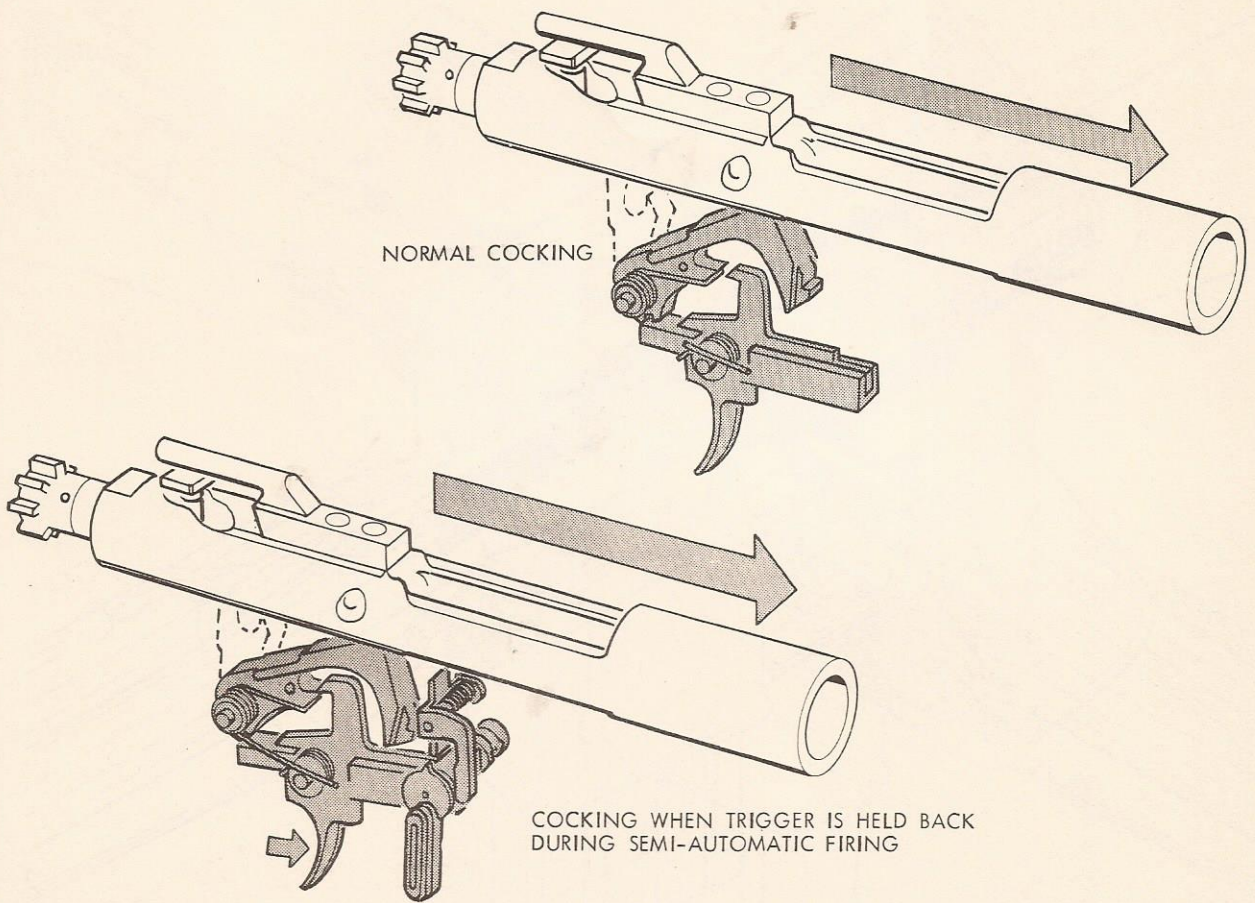
- (3) To hold the bolt carrier group to the rear when making the rifle safe, the firer pulls the charging handle to the rear, presses on the lower portion of the bolt catch, returns the charging handle to the forward position, and places the selector lever on safe. In this manner the bolt is open, the chamber is clear for inspection, and the safety is on. To be completely safe the magazine must also be out of the weapon.



*Figure 31. Extracting.*



*Figure 32. Ejecting.*



*Figure 33. Cocking.*

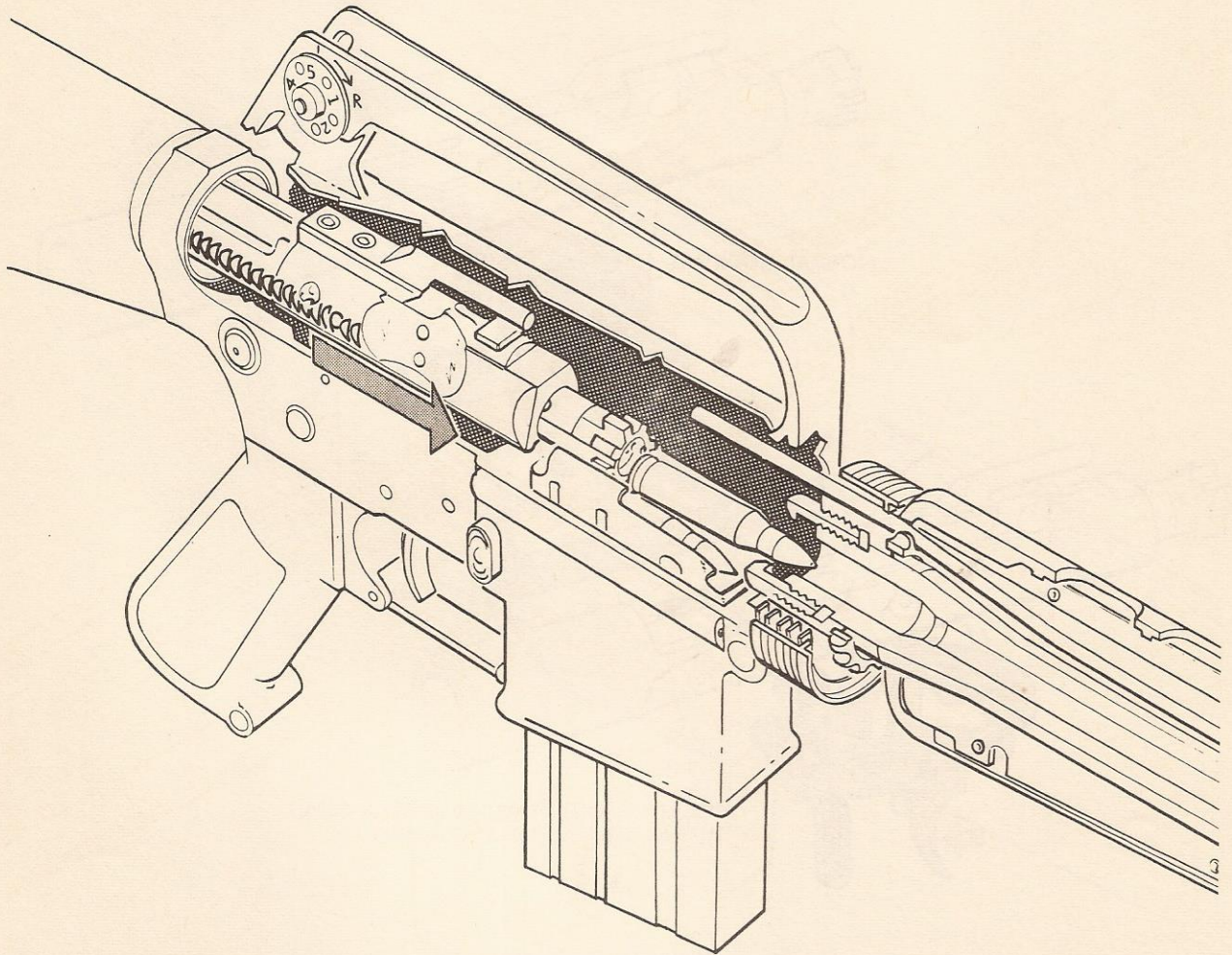
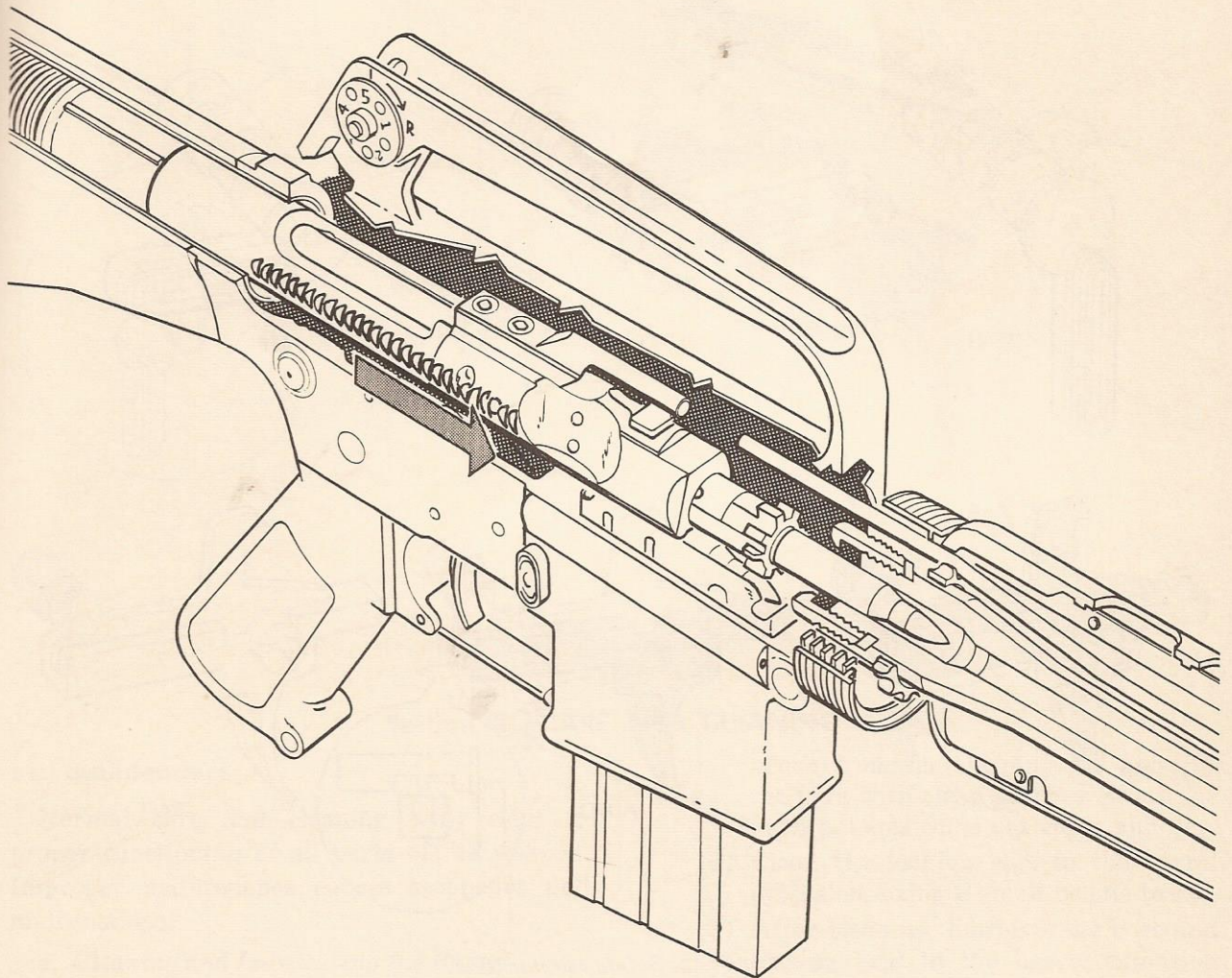


Figure 34. Feeding.



*Figure 35. Chambering.*

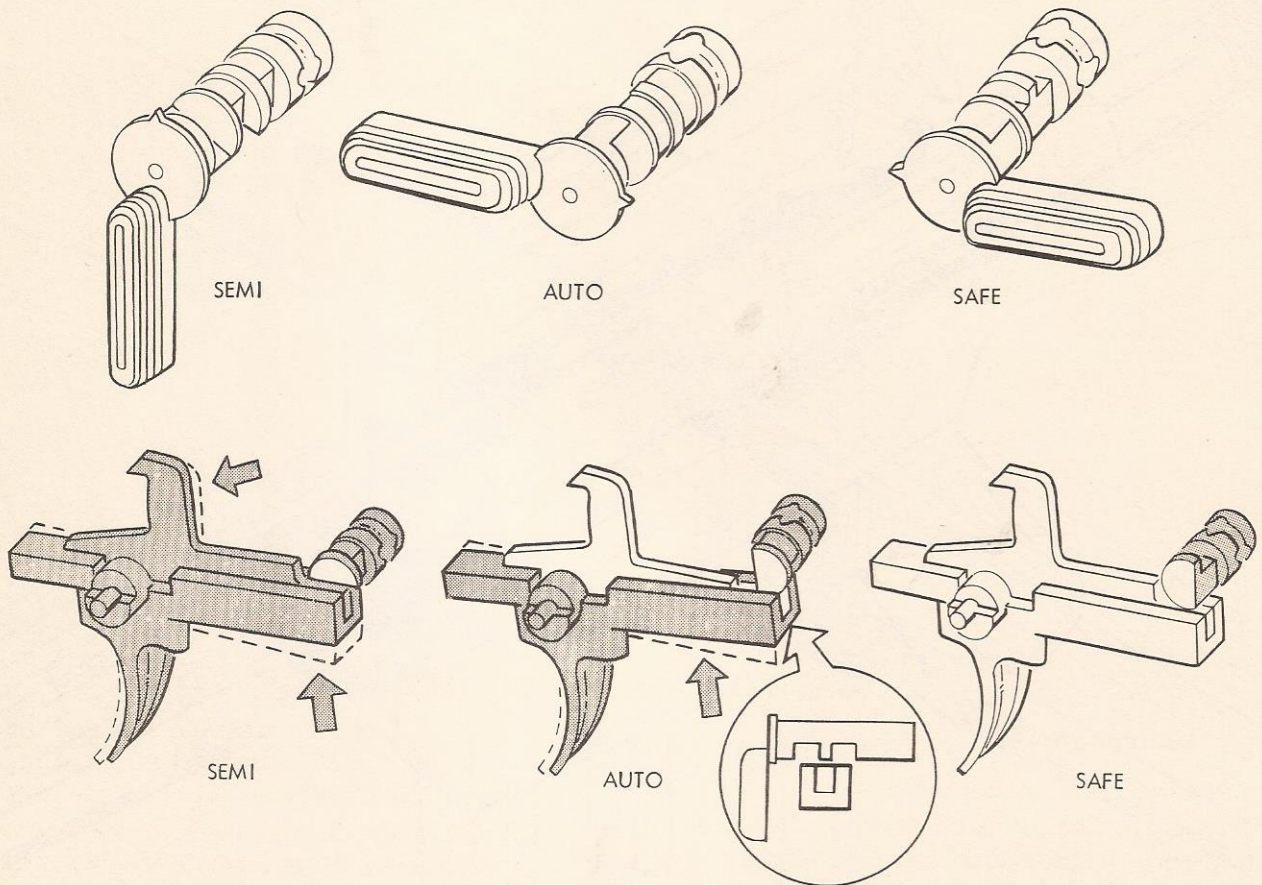


Figure 36. Safety selector lever.

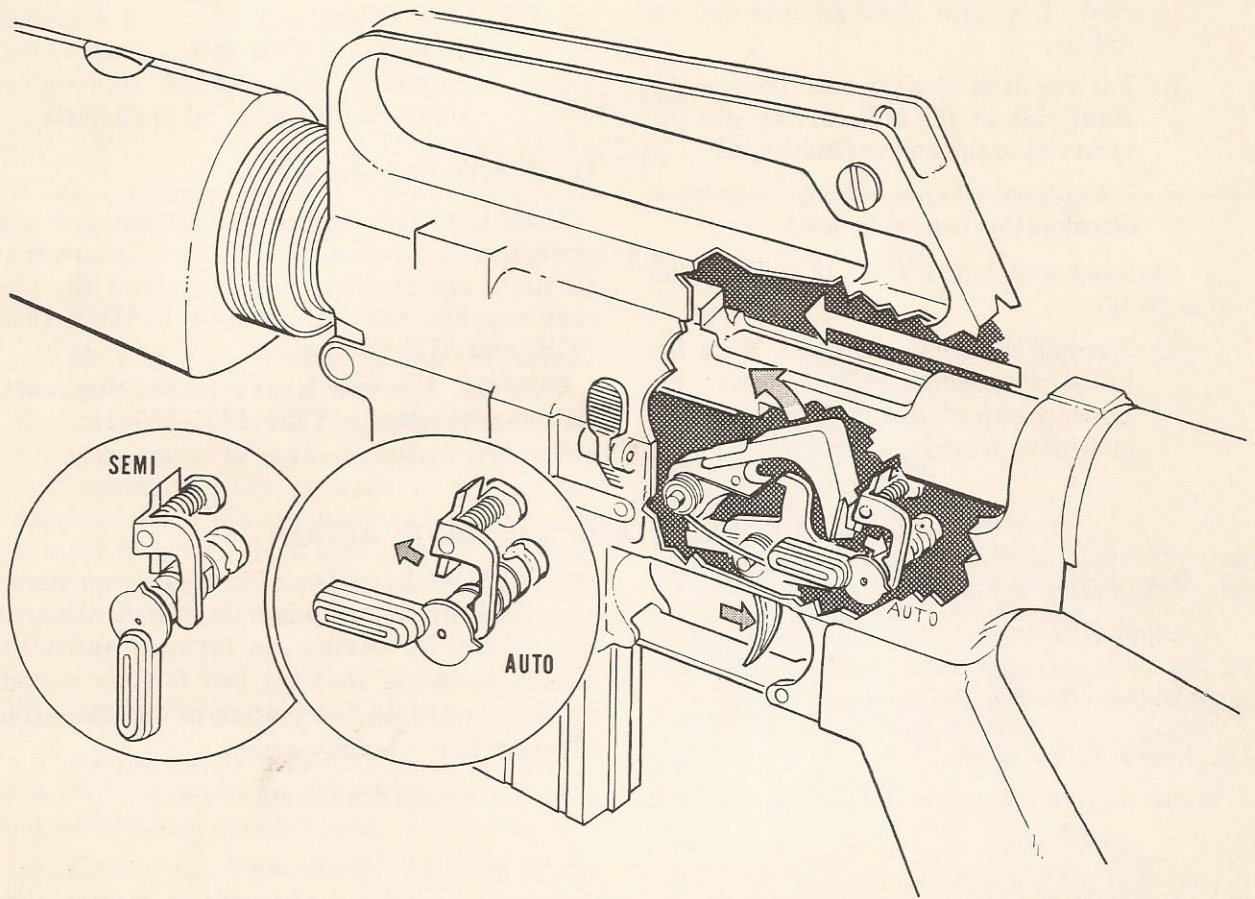


Figure 37. Automatic sear.

### Section III. CARE AND CLEANING

#### 11. Maintenance

Normal care and cleaning will result in proper functioning of all parts of the weapon. Improper maintenance causes stoppages and malfunctions.

##### a. *Cleaning and Lubricating the Barrel.*

- (1) Attach a wire brush to the cleaning rod, dip it in solvent cleaning compound (bore cleaner), and brush the bore thoroughly. Brush from the chamber to the muzzle, using straight-through strokes.

*Note.* Never reverse the direction of the brush while in the bore.

Continue this process until the bore is coated with compound. Remove the

brush from the cleaning rod and dry the bore with clean patches. Continue until patches come out clean and dry.

- (2) Clean the locking lugs in the barrel extension, using a small bristle brush.
- (3) After cleaning, lubricate the bore and locking lugs in the barrel extension by applying a light coat of oil to prevent corrosion and pitting. Rub a light coat of oil on the surface of the barrel inclosed by the handguards.

##### b. *Cleaning and Lubricating the Bolt Carrier Group.*

- (1) Remove the bolt carrier group from the upper receiver group and disassemble. Clean all parts with a patch dipped in solvent cleaning compound.

- (2) Clean the locking lugs of the bolt, using a small brush and cleaning solvent. Dry with clean patches and oil lightly.
- (3) Put one drop of oil in each hole on the right side of the bolt carrier and the open end of the bolt carrier key.

**Caution:** Do not attempt to remove discoloration caused by heat.

*c. Cleaning and Lubricating the Lower Receiver Group.*

- (1) Normal cleaning will not require detailed disassembly of the lower receiver group. Using a clean, dry patch or bristle brush, remove dirt and sand

from the lower receiver. Place a drop of oil on each pin for lubrication.

- (2) After extensive use or field exercises the lower receiver group must be disassembled and cleaned thoroughly. Apply a light coat of oil to all parts.

## 12. Functioning Check

Each time the weapon is disassembled and cleaned, a check should be made to insure that all parts are properly assembled and the mechanisms are working properly in the SAFE, SEMI and AUTO settings.

**Caution:** Use only issue type cleaning materials as authorized in TM 9-1005-249-14.

*Note.* For functioning checks see paragraph 8l.

## Section IV. STOPPAGES AND IMMEDIATE ACTION

### 13. Stoppages

A stoppage is any unintentional interruption in the cycle of operation. Immediate action must be taken to clear the stoppage.

### 14. Immediate Action

Immediate action when clearing a stoppage

in the XM16E1 consists of the following steps:

- a. Pull the charging handle fully to the rear and release it. Strike the forward assist assembly to insure that the bolt is fully seated. Strike upward on the bottom of the magazine to insure that it is fully seated.

- b. Attempt to fire the rifle.

## CHAPTER 3

### MARKSMANSHIP TRAINING

#### Section I. PREPARATORY MARKSMANSHIP

##### 15. General

With very few exceptions, the preparatory marksmanship training for the XM16E1 is identical to that for the M14 rifle (FM 23-71). With any weapon, the foundation upon which good marksmanship is built is preparatory training. Here the rifleman learns the fundamentals which must be applied throughout his training and in combat. This chapter is devoted to the training necessary to produce an effective rifleman.

##### 16. Steady Hold and Positions

The eight steady hold factors, as outlined in FM 23-71, apply to training with the XM16E1, but with certain modifications.

*a. Grip of the Right Hand.* With the XM16E1 the grip of the right hand must be altered due to the pistol grip. The firer grips the pistol grip with the right hand, pulling firmly to the rear. The thumb does not rest on top of the stock, but is closed around the pistol grip. The trigger finger is placed on the trigger so that the finger makes no contact with the receiver or trigger guard (fig. 38).

*b. The Spot-Weld.* Due to the thumb position on the pistol grip, no spot-weld is possible. However, the firer must rest his cheek on the comb of the stock and in the same position each time he aims the weapon, thus forming a stock-weld. This insures a consistent sight picture.

##### 17. Automatic Fire

*a.* Except at close ranges (less than 50 meters), maximum effectiveness of fire against point targets is normally obtained by employing the rifle in its semiautomatic role. Except where enfilade fire is being employed, maximum coverage of an area target will be obtained by



Figure 38. Grip of the right hand.

delivering bursts of two or three rounds of automatic fire. When delivering enfilade fire, longer bursts (three to five rounds) are generally more effective.

*b.* To obtain accurate automatic fire, the firer must master the fundamentals of marksmanship. The volume or rate of automatic fire depends on trigger control and the firer's proficiency in reloading. Trigger control is discussed in the field manual entitled "Automatic

Rifle Marksmanship." Proficiency in reloading is developed through systematic training in changing magazines. This training is conducted as follows:

(1) Magazines should be placed in the ammunition pouch with the open end down and the short edge toward the body. Three magazines may be placed in each universal small arms ammunition pouch. To remove the magazine from the pouch the palm is placed over the exposed end of the magazine so that the thumb is to the rear and the fingers on the front of the magazine (fig. 39). As the magazine is withdrawn from the pouch the arm is extended to the front, rotating the hand and magazine 180 degrees causing the open end of the magazine to be up and in position for loading into the weapon. When a bipod is used, the weapon must be canted to allow the magazine free access to the feedway (fig. 40).

(2) To remove empty magazines, press the magazine catch button with the trigger finger, causing the magazine to drop from the weapon.

c. Positions are as follows:

(1) The rifle can be fired with or without the bipod from any of the eight positions outlined in FM 23-71. For maximum stability the bipod should be used when firing from the prone and foxhole positions. The alinement of the firer's body, with or without the bipod on the weapon, is identical to

that outlined in FM 23-71. The firer grasps the pistol grip with the right hand, exerting firm rearward pressure. The left hand grips the magazine feedwell, also exerting a rearward pressure (fig. 40).

(2) The most effective position for delivering assault fire is the underarm firing position (fig. 41).

## 18. Sight Adjustment

The sights of the XM16E1 are adjustable for both elevation and windage (fig. 42). Windage adjustments are made on the rear sight and elevation adjustments on the front sight.

a. The rear sight consists of two apertures, windage drum, and a spring loaded stud. The aperture marked *L* is used for ranges from 300 to 500 meters and the unmarked aperture for ranges from 0 to 300 meters. Windage is adjusted by pressing in on the spring loaded stud and rotating the windage drum. A clockwise movement (direction of the arrow marked *R*) moves the strike of the round to the right and a counterclockwise movement moves the strike to the left. Each notch moves the strike of the round 2.8 centimeters per each 100 meters of range.

b. The front sight consists of a sight post and a spring loaded stud. The spring loaded stud must be depressed to allow the sight post to turn. Each click the post is rotated moves the strike of the round 2.8 centimeters per 100 meters of range. Moving the post in the direction of the arrow marked *UP*, the strike of the round is raised but the post is lowered.

## Section II. BATTLESIGHT ZEROING

### 19. General

a. *Rifle Zero.* The zero of a rifle is that sight setting in elevation and windage that will cause a hit at the point of aim for a given range.

b. *Battlesight Zero.* Battlesight zero is that sight setting in elevation and windage that will cause a hit at the point of aim at a range of 250 meters.

### 20. Obtaining Battlesight Zero

To obtain a 250-meter battlesight zero on a 25-meter range, the sights are adjusted until the center of a three-round shot group is 2.4 centimeters below the point of aim on the standard 25-meter target.

*Note.* The rear sight leaf is set for normal range firing (0-300 meters).



*Figure 39. Removing the magazine from pouch.*



*Figure 40. Canting the rifle to load or unload the magazine.*



*Figure 41. Foxhole position with bipod showing position of the left hand.*



Figure 42. Underarm position.



Figure 43. Front and rear sights.

### Section III. COURSES OF FIRE

#### 21. Semiautomatic Role

Courses of fire with the XM15E1 are those prescribed in FM 23-71, "Rifle Marksman-ship," and ASubjSed 23-31.

*Note.* When firing the XM16E1 on ranges equipped with electrical target devices, plywood or aluminum targets should be used in order to record hits at close ranges (0 to 150 meters). This is because of the high velocity and light weight of the 5.56-mm projectile. The

use of double thickness cardboard should be avoided to prevent excessive strain to the target device.

#### 22. Automatic Role

Upon completion of the course of fire as described above, the soldier armed with the XM16E1 should fire the courses prescribed for automatic rifleman.

## APPENDIX REFERENCES

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FM 23-8	US Rifle, 7.62-mm, M14.
FM 23-15	Browning Automatic Rifle, Cal. .30, M1918A2.
FM 23-71	Rifle Marksmanship.
ASubjScd 23-14	Interim Automatic Rifle, M14(M) and BAR Qualification.
ASubjScd 23-31	Rifle Marksmanship.
TM 9-1005-249-14	Operation Maintenance, Repair, and Replacement Parts, Rifle 5.56-mm, M16 and Rifle 5.56-mm, XM16E1.
DA Pam 310-4	Military Publications: Index of Technical Manuals, Technical Bulletins, Supply Manuals, Supply Bulletins, Lubrication Orders, and Modification Work Orders.

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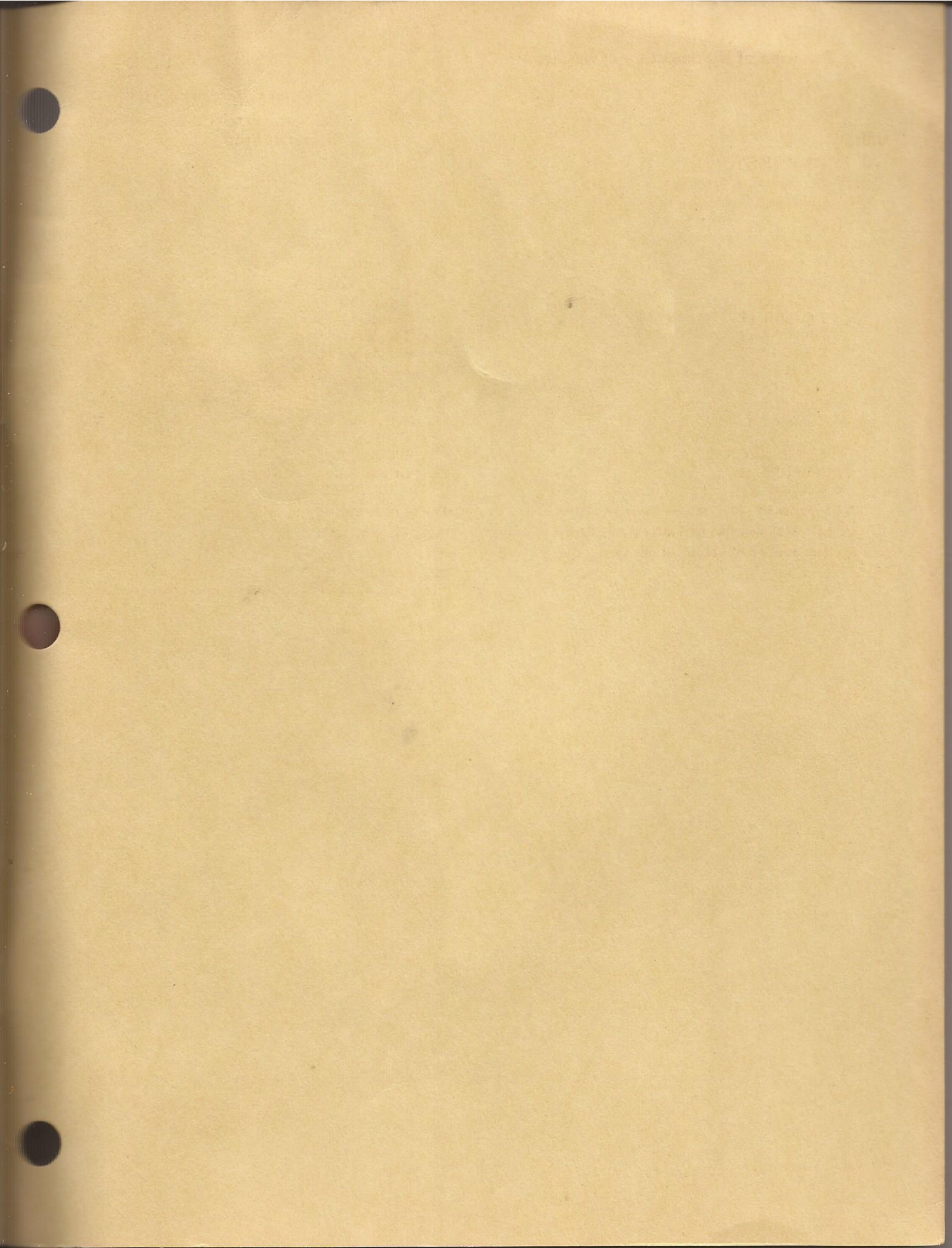
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NG: State AG (3); units—same as Active Army except allowance is one copy to each unit.

USAR: Units—same as Active Army except allowance is one copy to each unit.

For explanation of abbreviations used, see AR 320-50.

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