

TABLE OF CONTENTS

CHAPTER	Page
I INTRODUCTION	1-1
SECTION	
1. PURPOSE AND SCOPE	1-1
1-1. General	1-1
1-3. Suggestions and Recommendations	1-1
2. DESCRIPTION	1-1
1-7. Description	1-1
3. TABULATED DATA	1-2
1-15. Tabulated Data	1-2
4. ACCESSORIES AND SPECIAL TOOLS	1-3
1-17. Accessories	1-3
1-19. Special Tools	1-3
II PREPARATION FOR USE, STORAGE, AND SHIPMENT	2-1
SECTION	
1. PREPARATION FOR USE	2-1
2-1. General	2-1
2. PREPARATION FOR STORAGE AND SHIPMENT	2-1
2-5. Storage	2-1
2-11. Shipping	2-1
III OPERATION INSTRUCTIONS	3-1
3-1. Safety Procedures	3-1
3-3. Controls	3-1
3-5. Cleaning and Lubrication Before Firing	3-3
3-9. Loading	3-3
3-12. Firing	3-3
3-16. Stoppage and Immediate Action	3-3
3-19. Unloading	3-4
3-21. Installing Accessories	3-4
3-23. Disassembly/Assembly	3-4
3-25. Cleaning and Lubrication After Firing	3-10
3-26. Cleaning and Lubricating the Barrel	3-10
3-27. Cleaning and Lubricating the Bolt Carrier Group	3-10
3-28. Cleaning and Lubricating the Lower Receiver Group	3-10
3-28A. Cleaning of Scabbard M8A1 and Sling	3-11
3-28B. Cleaning and Maintenance of Bayonet-Knife, M7	3-11
3-29. Function Check	3-11
IV PREVENTIVE MAINTENANCE AND LUBRICATION	4-1
4-1. General	4-1
4-3. Responsibility	4-1
4-5. Specific Procedures	4-1
V AMMUNITION	5-1
5-1. General	5-1
5-3. Classification	5-1
5-5. Identification	5-1
5-12. Care, Handling, and Preservation	5-2
5-13. Authorized Rounds	5-2
5-15. Preparation for Firing	5-3
5-17. Precaution in Firing	5-3
5-19. Packing and Marking	5-4

TABLE OF CONTENTS (Continued)

VI DESTRUCTION OF MATERIAL TO PREVENT ENEMY USE	6-1
6-1. General	6-1
6-6. Destruction of the 5.56-mm Rifles M16 and XM16E1	6-1
6-7. Method No. 1 - By Mechanical Means	6-1
6-9. Method No. 2 - By Burning	6-2
6-10. Method No. 3 - By Disposal	6-2
VII INSPECTIONS	7-1
SECTION	
1. GENERAL	7-1
7-1. Scope	7-1
7-3. Purpose of Inspection	7-1
7-5. Categories of Inspection	7-1
7-7. Inspection of Materiel in the Hands of Troops in the Field	7-1
7-8. Shop Inspection	7-1
7-9. Preembarkation Inspection	7-1
2. INSPECTION PROCEDURES	7-2
7-11. General	7-2
7-13. Inspection Prior to Disassembly	7-2
VIII REPAIR OPERATIONS	8-1
SECTION	
1. TROUBLE SHOOTING	8-1
8-1. General	8-1
8-4. Trouble Shooting Procedures	8-1
2. DISASSEMBLY AND ASSEMBLY	8-2
8-8. General	8-2
3. CLEANING AND LUBRICATION	8-12
8-10. General	8-12
4. INSPECT, TEST, AND ADJUSTMENT	8-13
8-13. Inspection	8-13
8-15. Replacement of Parts	8-14
8-17. Test	8-14
IX BASIC ISSUE ITEMS, TOOLS, AND REPLACEMENT PARTS	9-1
9-1. General	9-1
9-3. Explanation of Columns	9-1
9-5. Figure and Index	9-1
9-6. Source and Maintenance	9-1
9-11. 15-Day Maintenance Allowance Per 100 Equipments	9-3
9-12. Support Units	9-4
X MAINTENANCE ALLOCATION CHART	10-1
10-1. Purpose	10-1
10-2. Explanations and Definitions	10-1
10-3. Explanation of Maintenance Levels	10-2
XI BAYONET-KNIFE, M7 AND BAYONET-KNIFE SCABBARD, M8A1	
11-1. General	11-1
11-3. Bayonets	11-1
11-4. Installation	11-1
11-6. Trouble Shooting	11-1
11-8. Disassemble/Assemble	11-1
11-11. Cleaning	11-2
11-13. Inspect and Repair	11-2
11-14. Bayonet-Knife Scabbard, M8A1	11-2

LIST OF ILLUSTRATIONS

Number	Title	Page
1-1.	Rifle, 5.56-MM, M16 and XM16E1	vi
1-2.	Bayonet-Knife M7 and Bayonet-Knife Scabbard M8A1	1-5
1-3.	Rifle Bipod, XM3	1-5
1-4.	Bipod Case - 62309	1-5
1-5.	Rifle Grease - 5cc Container - 5621059	1-5
1-6.	Small Arms Cleaning Rod, M11	1-5
1-7.	Cleaning Brush - 11010021	1-5
1-8.	Combination Wrench - 11010033	1-6
1-9.	Barrel Remover Jaws - 11010032	1-6
1-10.	Firing Pin Protrusion Gage - 7799735	1-6
1-11.	Headspace Gage (Field Type) - 7799734	1-6
3-1.	Clearing Rifle	3-1
3-2.	Controls	3-2
3-4.	Rifle, 5.56-MM, M16 and XM16E1 - Major Groups	3-5
3-5.	Disassembly/Assembly of Rifle	3-5
3-6.	Cleaning Bore with Cleaning Rod M11 and Brush 11010021	3-10
3-7.	Oiling Bolt Rings	3-10
5-1.	Cartridge, 5.56-MM; Ball, M193	5-1
8-1.	Organizational Disassembly/Assembly	8-3
8-2.	Direct and General Support Maintenance Disassembly/Assembly Bolt Group	8-3
8-3.	Disassembly/Assembly Lower Receiver Group	8-4
8-4.	Disassembly/Assembly Upper Receiver Group	8-7
8-5.	Disassembly/Assembly Magazine	8-12
8-6.	Checking Bolt with Firing Pin Protrusion Gage - 7799735	8-14
8-7.	Checking Headspace with Headspace Gage - 7799734	8-14
9-1.	Bolt Carrier Group	9-5
9-2.	Lower Receiver Group	9-6
9-3.	Upper Receiver Group	9-9
11-1.	Bayonet-Knife Marking and Identification of Releases	11-1
11-2.	Bayonet-Knife, M7 - exploded view	11-1

LIST OF TABLES

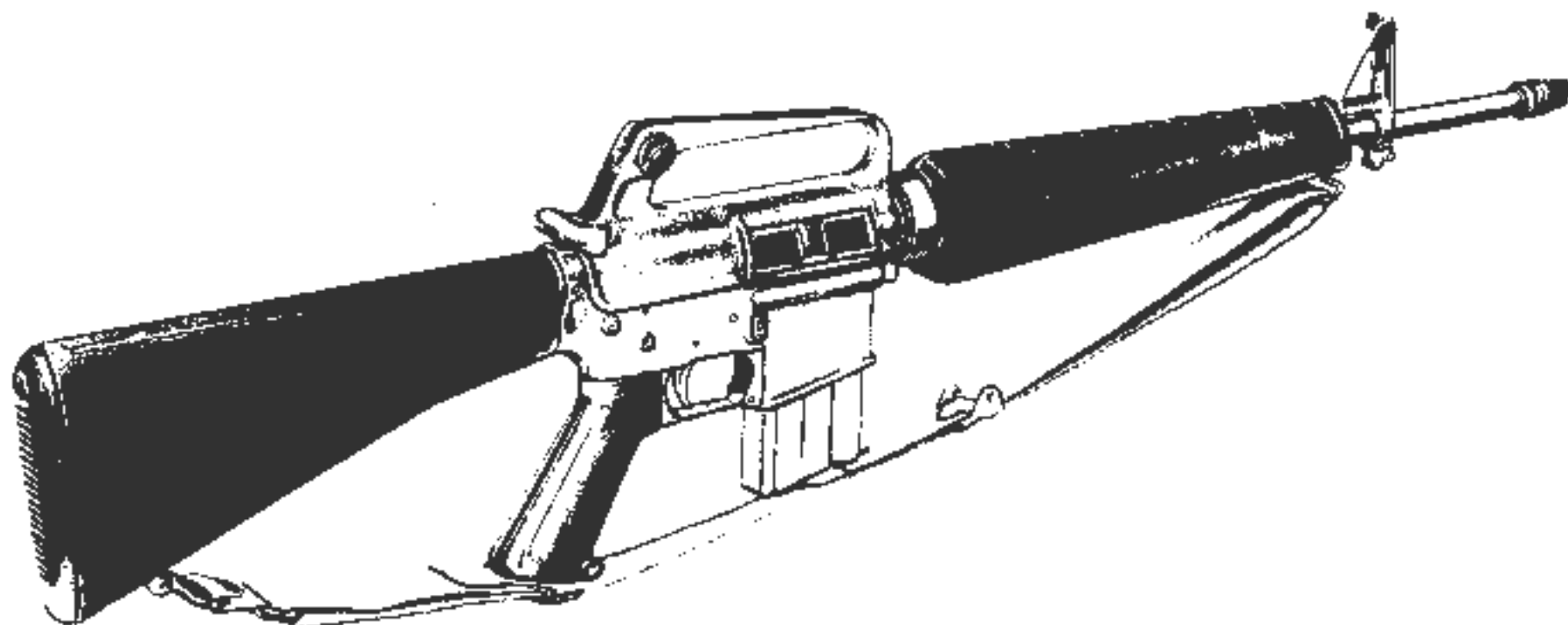
Number	Title	Page
1-1.	Accessories	1-4
1-2.	Special Tools	1-4
4-1.	Preventive Maintenance and Services	4-1
8-1.	Trouble Shooting	8-1
8-2.	Cleaning	8-13
8-3.	Inspection	8-13

Precautions

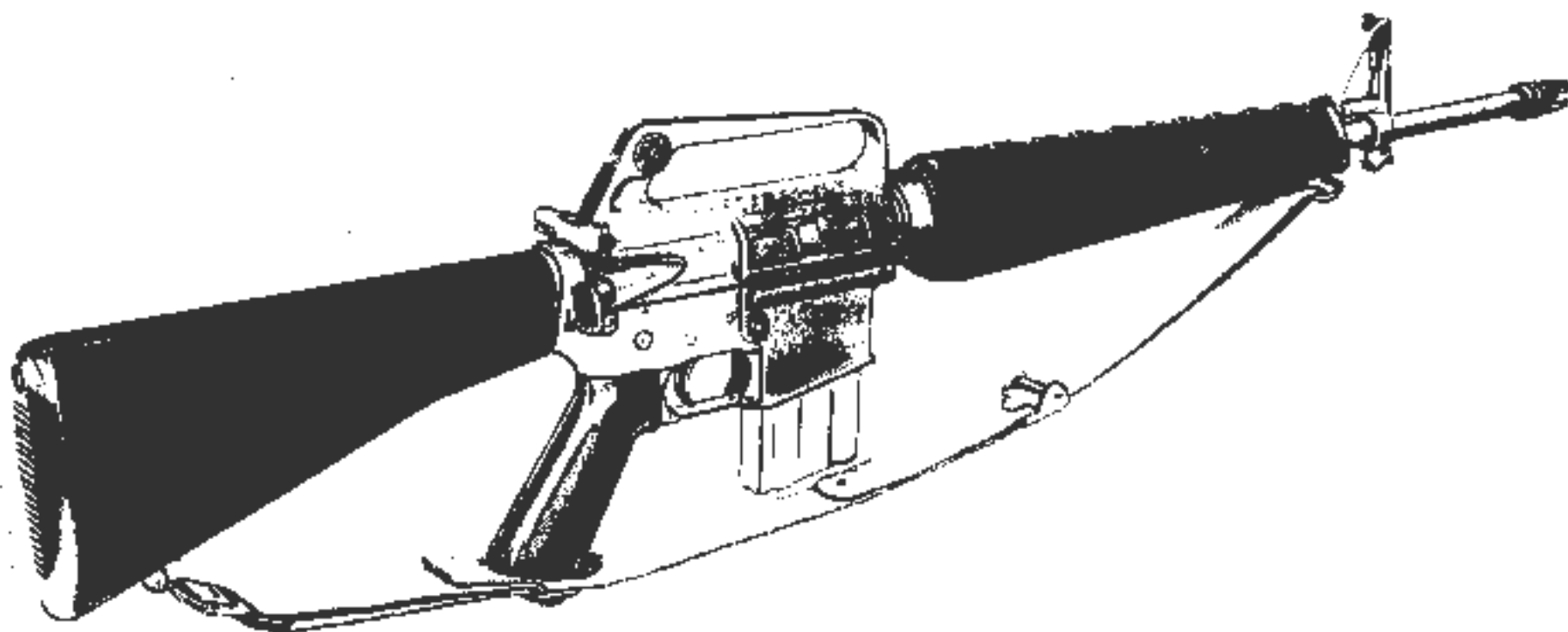
1. Most vapors of cleaning agents are toxic if inhaled in large quantities for extended periods. Use toxic cleaning agents sparingly and only in well ventilated areas.
2. Wash hands thoroughly with soap and water after using cleaning agents. A lanolin base cream may be used after washing.
3. Only the cleaning agents in this manual and a vapor degreaser are authorized for cleaning. Before using a vapor degreaser, the following parts or components shall be removed:

STOCK ASSY, MOLDED:	W/swivel (27, Fig. 9-2)
GRIP, PISTOL:	(21, Fig. 9-2)
GUARD, HAND, GUN: R-H, and L-H.	(1 & 2, Fig. 9-3)
SWIVEL, FRONT:	(10, Fig. 9-3)

When removing stock assembly and pistol grip care should be taken to prevent loss of detents and springs. (22, 23, 33 and 34, Fig. 9-3)



RIFLE, 5.56 MM - M16



RIFLE, 5.56 MM - XM16E1

ORD F9071

Figure 1-1. Rifle, 5.56-MM, M16 and XM16E1.

CHAPTER I INTRODUCTION

SECTION 1 PURPOSE AND SCOPE

1-1. GENERAL.

1-2. This manual is published for the information and guidance of personnel responsible for Operation, Organizational, and Direct and General Support Maintenance of 5.56-mm rifles M16 and XM16E1. Pertinent information includes tabulated data, accessories and special tools, preparation for use, storage and shipment, operating instructions, preventive maintenance and lubrication procedures, ammunition, instructions on demolition, inspections, procedures on disassembly, cleaning, repair and assembly. Also included are basic issue items, tools and replacement parts.

NOTE
THE OPERATOR (USER) PORTION OF THIS MANUAL IS CHAPTER I THROUGH VI.

1-3. SUGGESTIONS AND RECOMMENDATIONS.

1-4. U.S. ARMY. The direct reporting of errors, omissions and recommendations for

improving this equipment manual by the individual user is authorized and encouraged. DA Form 2028 will be used for reporting these improvements. This form will be completed in triplicate, using pencil, pen or typewriter, and forwarded by the individual using the manual. The original and one copy will be forwarded direct to:

Commanding General
Headquarters
U. S. Army Weapons Command
ATTN: AMSWE-SMM-P
Rock Island Arsenal
Rock Island, Illinois 61202

One information copy will be provided to the individual's immediate supervisor (e.g. officer, noncommissioned officer, supervisor, etc.).

1-5. U.S. AIR FORCE. Publication deficiencies will be reported on AFTO Form 22's and processed in accordance with T.O. 00-5-1.

1-6. U.S. NAVY. Publication deficiencies will be reported on Publication Change Guide Form PRNC-NWP-5602-5 (Rev. 4-60).

SECTION 2 DESCRIPTION

1-7. DESCRIPTION.

1-8. Only XM16E1 Rifle has a forward assist assembly with associated parts. Otherwise the M16 has the same components and parts.

Note

The instructions in this manual when different for each model will be noted accordingly.

1-9. The rifles (figure 1-1) are light-weight, air-cooled, gas-operated, magazine-fed, shoulder or hip guns and are designed for either full automatic or semiautomatic fire. The rifles accommodate a 20-round magazine.

1-10. Barrel is air-cooled and is provided with a flash suppressor, and may serve as a grenade launcher and a front support for the bayonet. The barrel is surrounded by a heat resisting fibre glass material, which serves as a hand guard and forearm. The hand guard has a heat

resisting inner shield. The front and rear sights are adjustable.

1-11. Butt stock is made of a durable synthetic material of high impact strength.

1-12. Rifles are easily opened by pressing the take down pin exposing the working parts, making it convenient for cleaning and inspection.

1-13. The forward assist assembly, when actuated, forces the bolt forward to the locked position (XM16E1).

1-14. Bolt locking action is one of the features of the rifles. The bolt contains locking lugs. Lugs on the barrel extension engage the bolt lugs and lock the bolt firmly in the barrel extension with or without cartridge in chamber. Thus the full force of the explosion of the cartridge is absorbed by the barrel extension and bolt. Receiver is made of light-weight aluminum alloys. The safety, durability and function of the rifles is in no way reduced and the portability and logistical values greatly increased, particularly when air transport is used.

SECTION 3
TABULATED DATA

1-15. TABULATED DATA.

1-16. Tabulated data pertaining to the general characteristics and performances are listed as follows:

Weight

M16 Rifle without magazine and sling	6.3 lb
XM16E1 Rifle without magazine and sling	6.5 lb
Sling M1 . . . . .	.4 lb
Empty aluminum magazine . . . . .	.2 lb
Loaded aluminum magazine . . . . .	.7 lb
M16 Rifle with sling and loaded magazine	7.4 lb
XM16E1 Rifle with sling and loaded magazine	7.6 lb
Telescope . . . . .	.9 lb
Bipod M3 . . . . .	.6 lb
Bipod case . . . . .	.2 lb
Bayonet-Knife M7. . . . .	.6 lb
Scabbard M8A1 . . . . .	.3 lb

Length

Rifle with flash suppressor	39 in.
Rifle with bayonet-knife	44.25 in.
Barrel	20 in.
Barrel with flash suppressor	21 in.

Mechanical Features

Rifling, R. H. 6 grooves - 1 turn in 12"	
Bore maximum . . . . .	.220 in.
Groove maximum . . . . .	.2245 in.
Sight radius	19.75 in.

AR-15, CAR-15, M16

Trigger pull	
Maximum	8.5 lbs.
Minimum	5.0 lbs.
Method of operation	Gas
Type of mechanism	Rotating bolt
Method of feeding - magazine	20 rds
Cooling	Air
Ammunition	
Caliber	5.56-mm
Type	Ball and tracer
Firing Characteristics	
Muzzle velocity (approximate)	3250 fps
Muzzle energy	1300 ft - lb
Chamber-pressure	52,000 psi
Cyclic rate of fire	700/800 rds. per min.
Maximum rate of fire	
Semiautomatic	45/65 rds. per min
Automatic	150/200 rds. per min
Sustained rate of fire	12/15 rds. per min
Maximum range	2653 meters
Maximum effective range	460 meters

**SECTION 4
ACCESSORIES AND SPECIAL TOOLS**

1-17. ACCESSORIES.

1-18. Accessories are listed in Table 1-1. Items listed with (USAF) are applicable for Air Force only.

1-19. SPECIAL TOOLS.

1-20. Special tools tabulated in table 1-2 are listed in chapter IX of this manual. This tabulation contains only those tools utilized in performing the operations described in this manual.

AR-15, CAR-15, M16

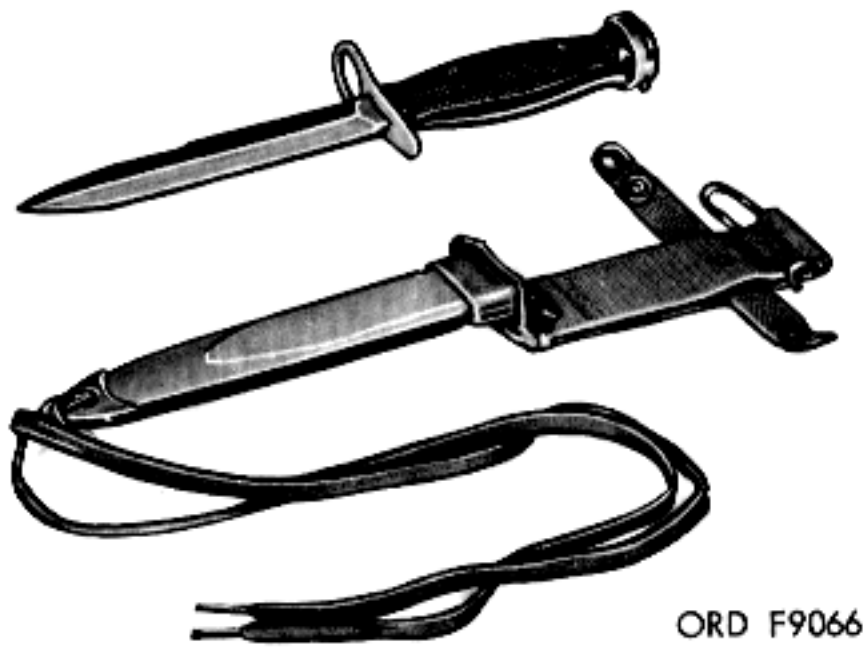
Table 1-1. Accessories

Item	Identifying Number	Figure Number
Bayonet-Knife M7	11010077	1-2
Bipod, Rifle, XM3	62122	1-3
Case, Bipod	62309	1-4
Case, Scope (USAF,	63136	-NI
Grease, Rifle, 5cc cntr.	5621059	1-5
Scabbard, Bayonet-Knife M8A1	7268112	1-2
Scope, Assembly (USAF)	62142	-NI
Scope, Mount Assembly (USAF)	62215	-NI

-NI NOT ILLUSTRATED
(USAF) UNITED STATES AIR FORCE

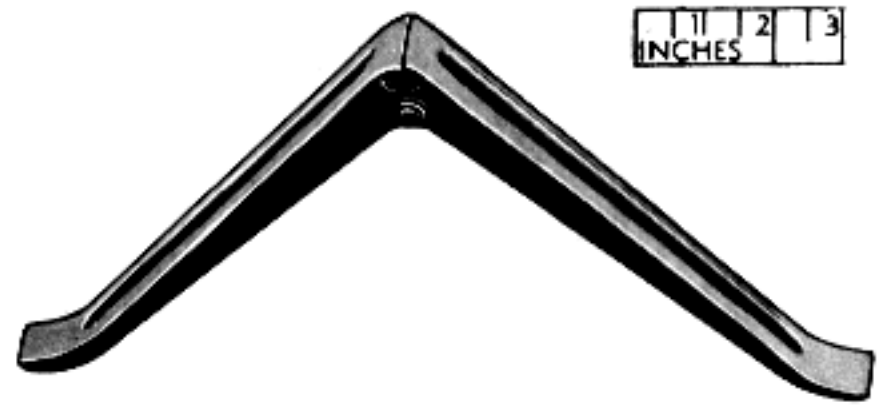
Table 1-2. Special Tools

Item	Identifying Number	References Fig.	Use
Rod, cleaning, small arms, M11	11010020	1-6 3-6	Used with cleaning brush to clean barrel bore.
Brush, cleaning, small arms	11010021	1-7 3-6	To clean barrel bore.
Wrench, combination, barrel nut and flash suppressor	11010033	1-8 8-4	To remove and install barrel nut and slip ring.
Jaw, barrel remover	11010032	1-9 8-4	Used with adapter to remove and install barrel nut and slip ring.
Gage, firing pin protrusion	7799735	1-10 8-6	To check firing pin protrusion.
Gage, headspace (field type)	7799734	1-11 8-7	To gage headspace.



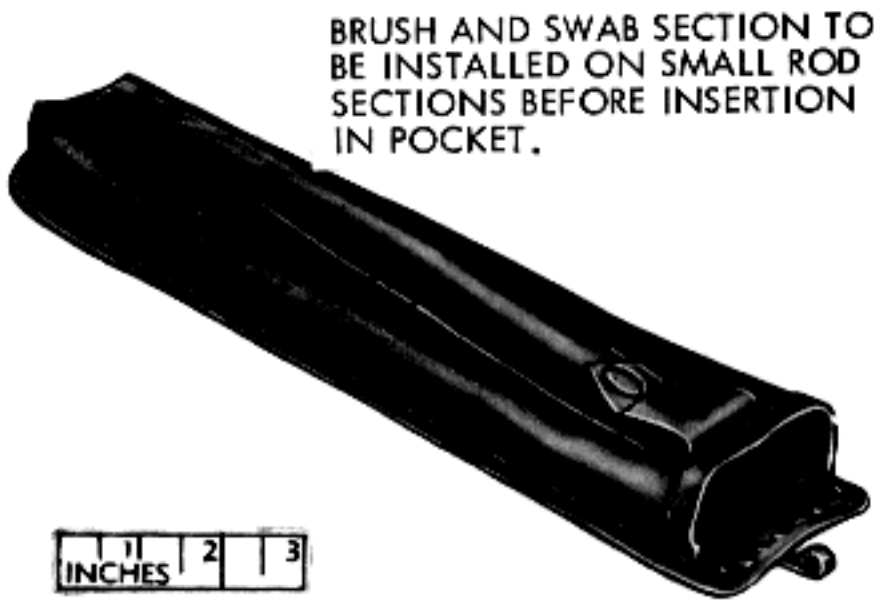
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Figure 1-2. Bayonet-Knife M7 and Bayonet-Knife Scabbard M8A1 (Fig. 3-3)



ORD F8127

Figure 1-3. Rifle Bipod, XM3 (Fig. 3-3)



BRUSH AND SWAB SECTION TO BE INSTALLED ON SMALL ROD SECTIONS BEFORE INSERTION IN POCKET.

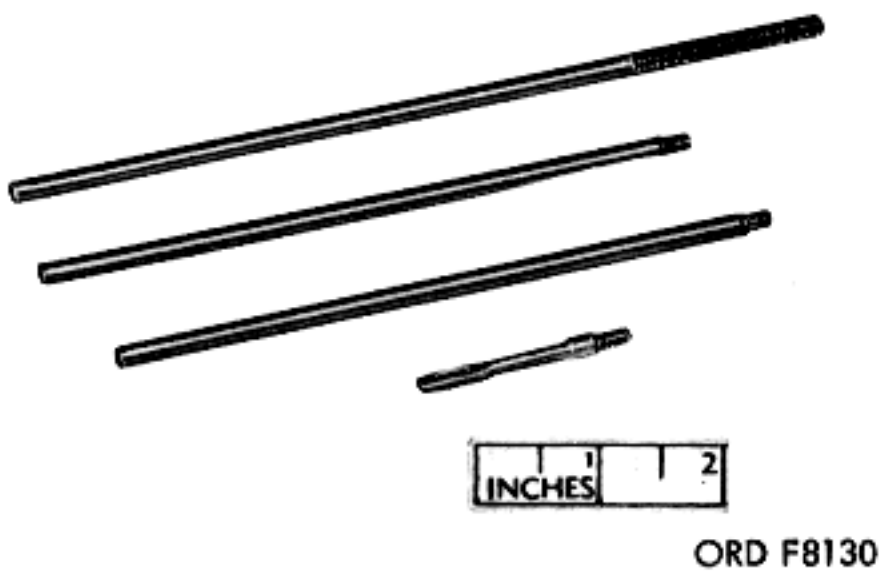
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Figure 1-4. Bipod Case - 62309



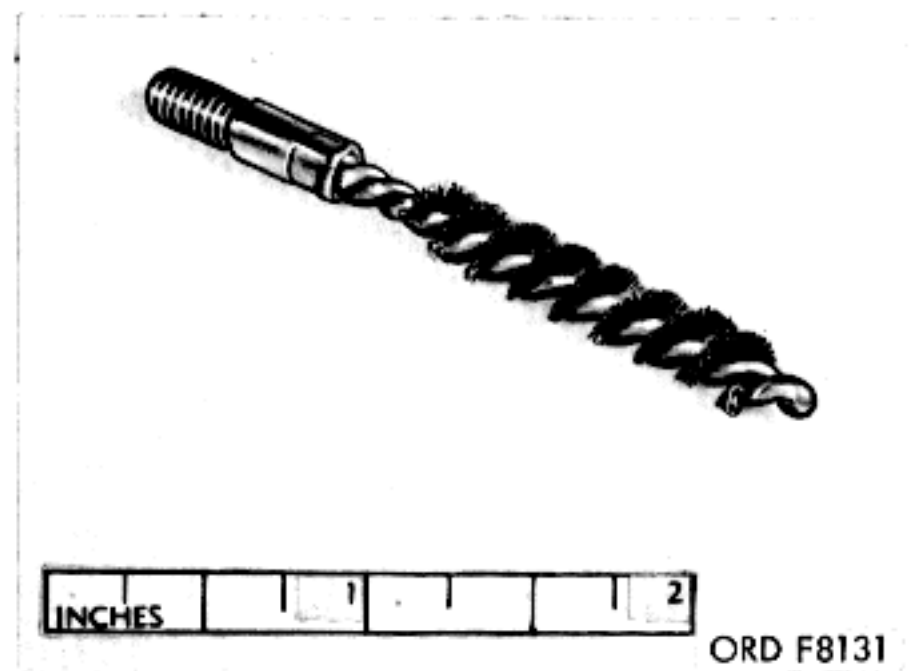
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Figure 1-5. Rifle Grease - 5 cc Container - 5621059



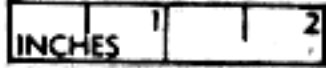
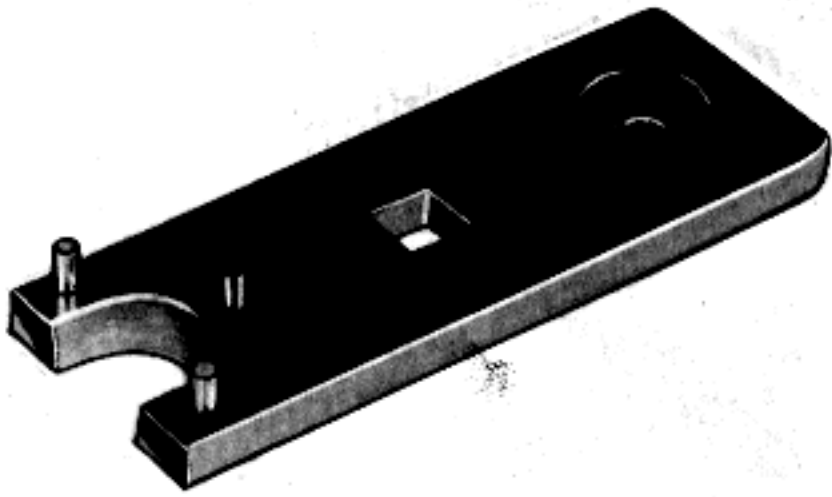
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Figure 1-6. Small Arms Cleaning Rod - 11010020 (Fig. 3-6)



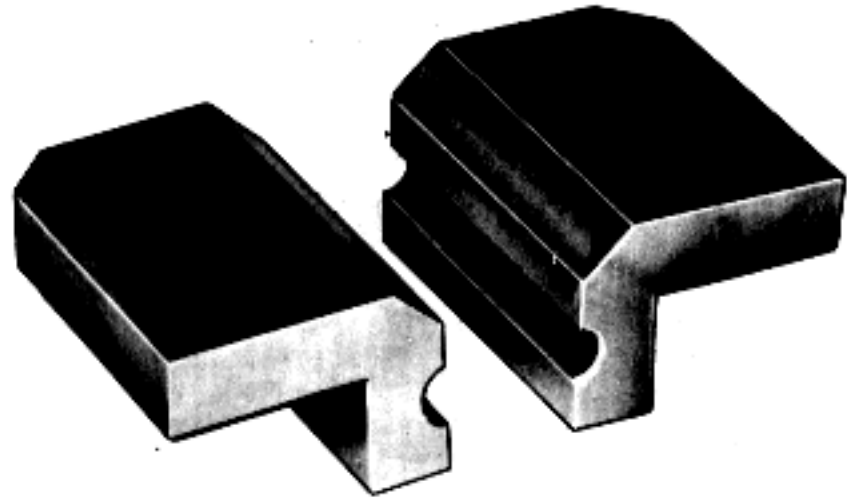
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Figure 1-7. Small Arms Cleaning Brush - 11010021 (Fig. 3-6)



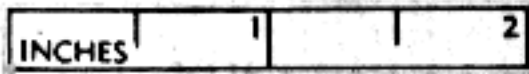
ORD F9069

Figure 1-8. Combination Wrench - 11010033
(Fig. 8-4, Pages 1 and 3)



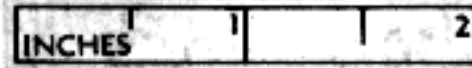
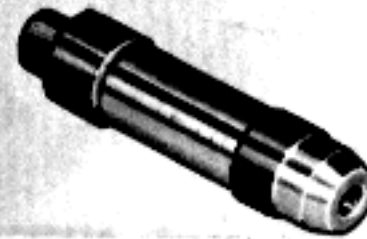
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Figure 1-9. Barrel Remover Jaws - 11010032
(Fig. 8-4, Pages 1 and 3)



ORD F9070

Figure 1-10. Firing Pin Protrusion Gage -
7799735 (Fig. 8-6)



ORD F8135

Figure 1-11. Headspace Gage (Field Type) -
7799734 (Fig. 8-7)

CHAPTER II PREPARATION FOR USE, STORAGE, AND SHIPMENT

SECTION 1 PREPARATION FOR USE

2-1. GENERAL.

2-2. When a new or reconditioned rifle is received it is the responsibility of the officer in charge to determine whether the materiel has been properly prepared for service and to be sure it is in condition to perform its function.

2-3. All basic issue items, replacement parts, tools, and equipment will be checked with listing in chapter IX.

2-4. A record will be made of all missing parts, tools, and equipment and of any malfunctions. Corrective action will be initiated as quickly as possible.

SECTION 2 PREPARATION FOR STORAGE AND SHIPMENT

2-5. STORAGE.

2-6. Rifles to be stored are to be cleaned, dried, preserved, packaged and marked as indicated in paragraphs 2-7 through 2-13 below.

2-7. CLEANING. Remove dust, dirt, grit or other foreign matter from surfaces of the weapon, making certain all components are clean.

2-8. DRYING. Component parts must be thoroughly dried before preserving and packing.

2-9. PRESERVATION AND PACKAGING. Rifles must be preserved with lubricating oil, as indicated in section 3 of chapter VIII, and will be packaged in suitable containers or boxes.

2-10. MARKING. Marking instructions will be in accordance with applicable marking data.

2-11. SHIPMENT.

2-12. RESPONSIBILITY. When shipping the rifle, the officer-in-charge of preparing the shipment will be responsible for furnishing the materiel properly processed for shipment.

2-13. PREPARATION FOR SHIPMENT. Rifles removed from storage for shipment need not be reprocessed unless inspection reveals them to be inadequately preserved.

CHAPTER III OPERATION INSTRUCTIONS

3-1. SAFETY PROCEDURE.

3-2. Clear the rifle by performing operation in figure 3-1.

3-3. CONTROLS.

3-4. Refer to figure 3-2 for controls and operation of controls.

Note

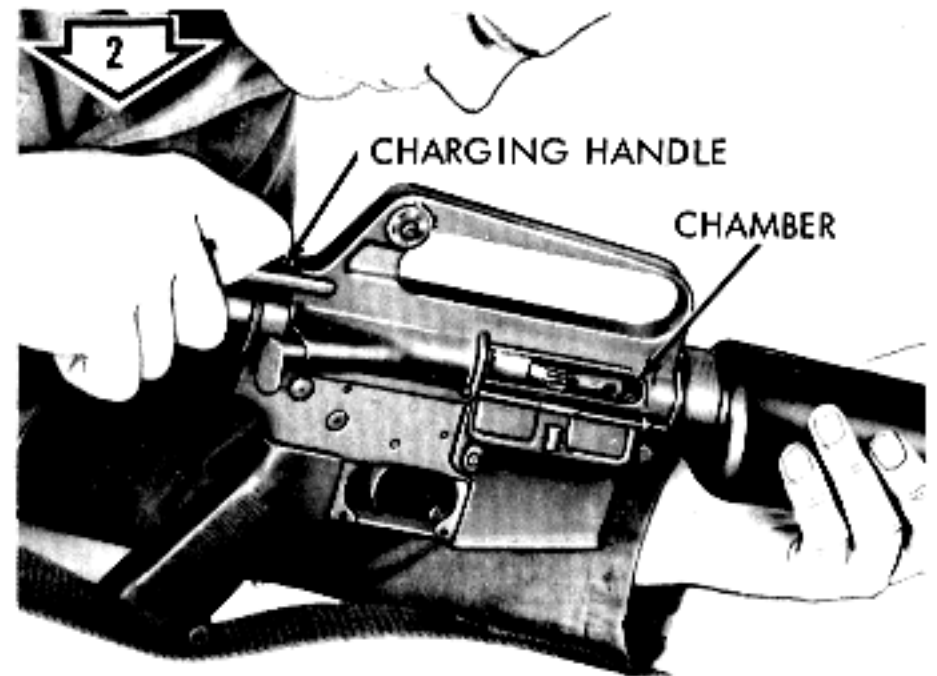
The number in the upper left-hand corner of illustration gives the sequence of operation or disassembly.



The number in the lower right-hand corner gives the sequence of assembly.



Remove magazine.



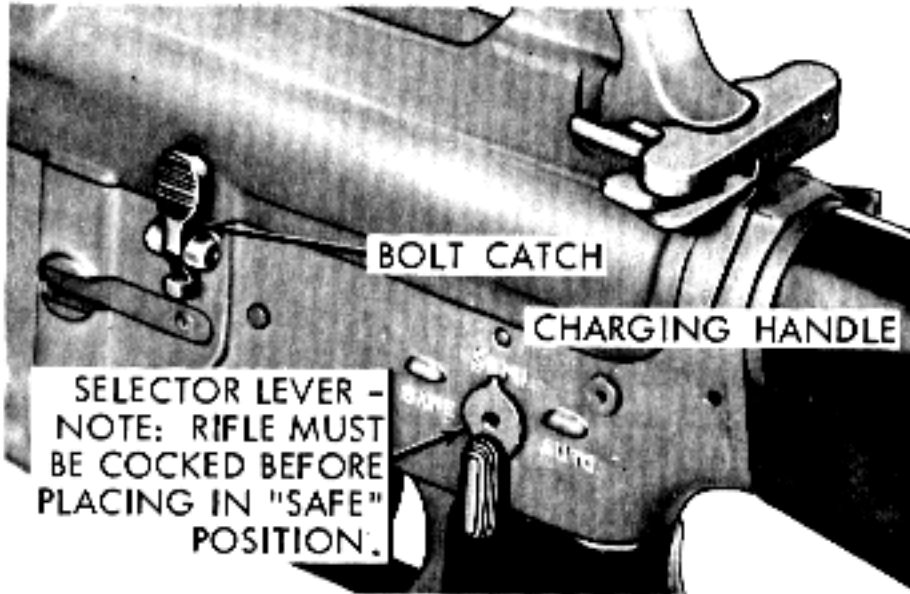
Inspect chamber.



Place selector lever in SAFE position.

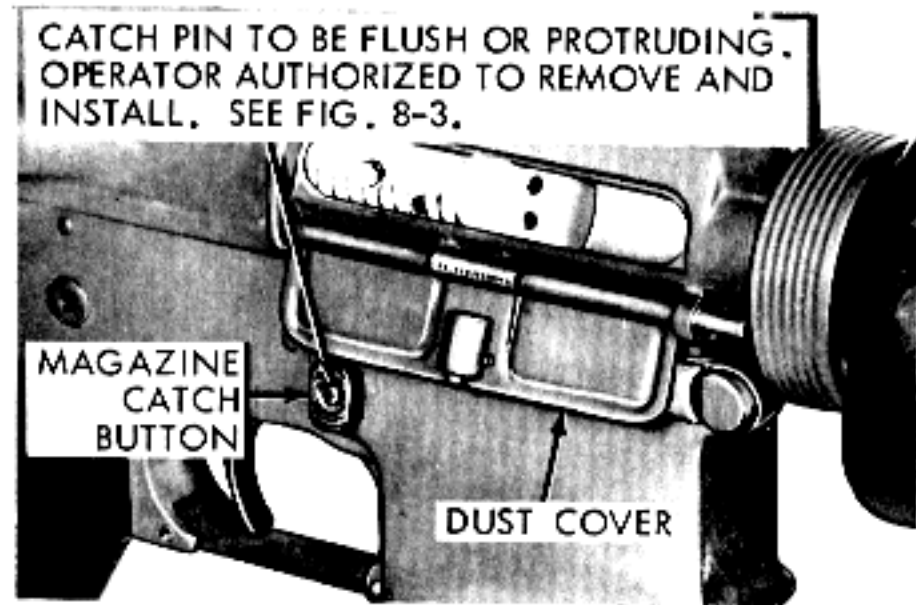
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Figure 3-1. Clearing Rifle



SELECTOR LEVER -
NOTE: RIFLE MUST
BE COCKED BEFORE
PLACING IN "SAFE"
POSITION.

SELECTOR LEVER - Selects "SAFE" position or type of firing.
BOLT CATCH - Holds bolt and bolt carrier in open position. To engage bolt press lower tang of bolt catch. To release bolt press upper tang of bolt catch.
CHARGING HANDLE - Retracts bolt and bolt carrier.

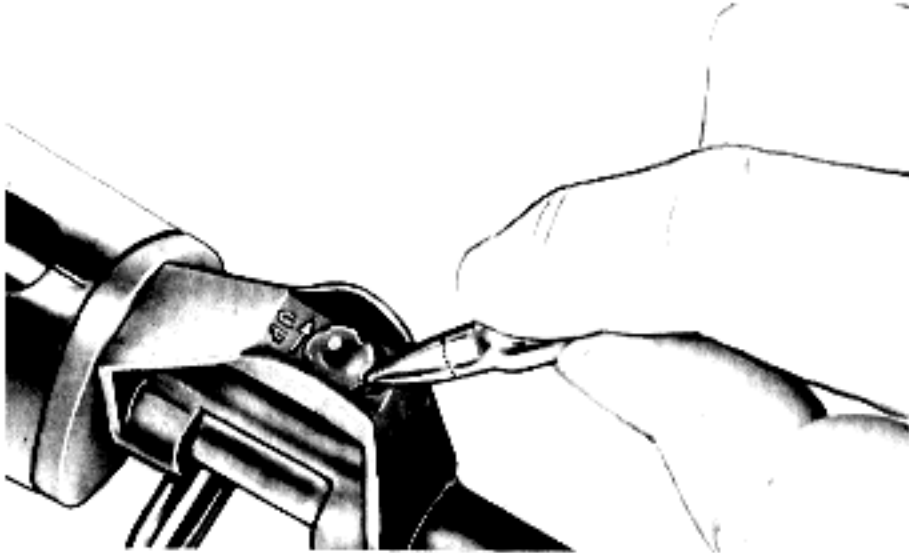


CATCH PIN TO BE FLUSH OR PROTRUDING. OPERATOR AUTHORIZED TO REMOVE AND INSTALL. SEE FIG. 8-3.

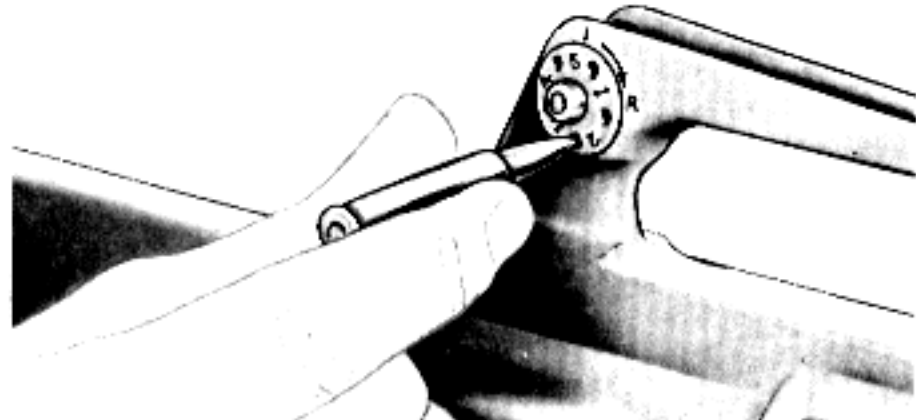
MAGAZINE
CATCH
BUTTON

DUST COVER

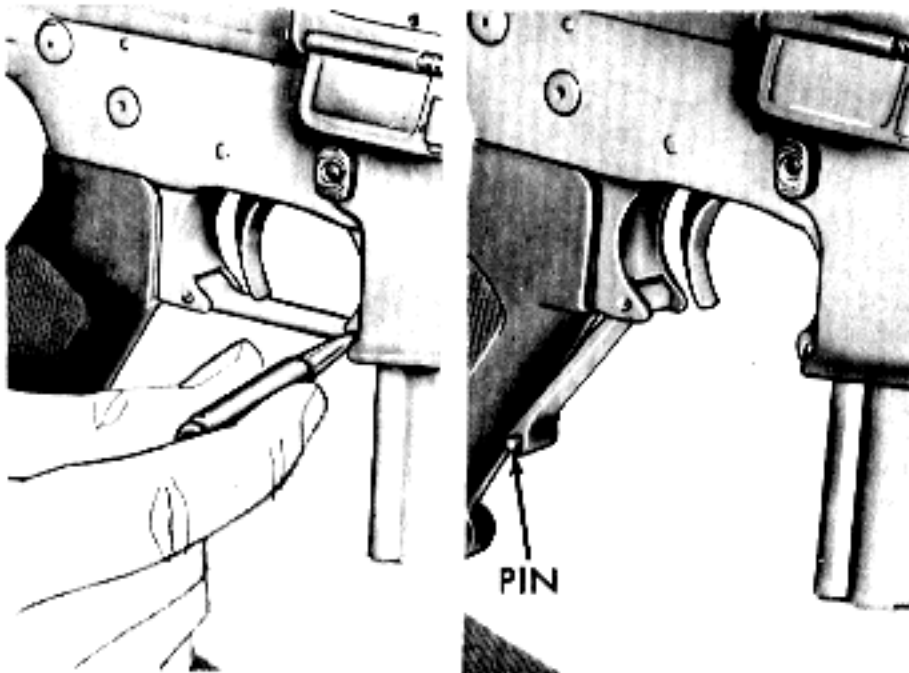
MAGAZINE CATCH BUTTON - Releases magazine when pressed.
DUST COVER - Remains closed to keep dust out and opens automatically when bolt carrier moves rearward or forward.



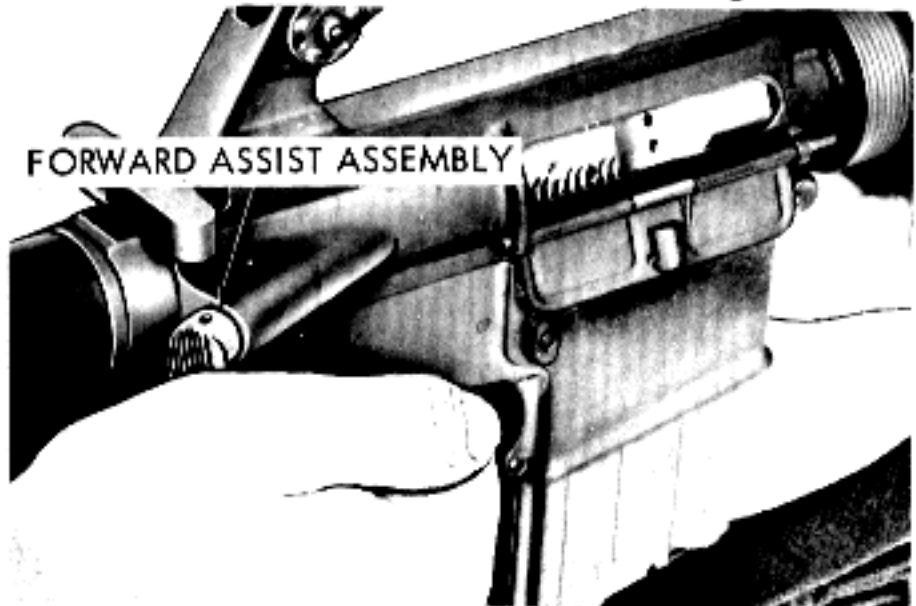
FRONT SIGHT - To adjust elevation; depress detent and rotate post. Each graduation (notch) moves the point of impact of the bullet 2.8 cm at 100 meters, 5.6 cm at 200 meters, etc. UP marked on sight is direction to turn post to raise line of fire.



REAR SIGHT - Has two apertures for range. Unmarked aperture - short (0-300 meters) range. L under aperture - long (300-500 meters) range. To adjust windage - depress detent and rotate drum to desired direction. To move point of impact to right, turn drum clockwise in direction of arrow and letter R. To move left, move drum counterclockwise. Amount of correction same as front sight.



WINTER FIRING - Depress pin and open trigger guard.



FORWARD ASSIST ASSEMBLY

FORWARD ASSIST ASSEMBLY - When bolt (XM16E1) fails to close, press forward assist assembly until bolt is moved into closed position.

ORD F9068

Figure 3-2. Controls

3-5. CLEANING AND LUBRICATION BEFORE FIRING.

3-6. MATERIALS. The necessary cleaning materials consist of a cleaning rod, patches, oil, solvent cleaning compound and a brush. Cal. .30 patches may be used by cutting into 4 square pieces. Do not use cleaning agents other than those authorized in this manual.

3-7. CLEANING THE BARREL. Visually inspect the bore and chamber for condition and obstructions. Clean by pushing clean dry patches through the bore (from the chamber to muzzle) to remove all oil and dirt.

3-8. CLEANING AND LUBRICATING THE BOLT CARRIER GROUP. The bolt carrier group may be removed, as shown in figure 3-5, for oiling and removing excessive oil. Remove any oil or dirt from the external surfaces of the bolt and bolt carrier with clean dry patches or rag. Place a drop of oil in each of the two holes in the bolt carrier to lubricate the bolt (piston) rings. Use oil sparingly since excessive oil might form gum on the rings and impair the operation of the rifle. After lubricating the bolt rings, wipe any excess oil from the surface of the bolt carrier. A light film of grease may be applied to slides of bolt carrier and bolt cam pin area of carrier.

3-9. LOADING.**Note**

Repeat operation in figure 3-1.

3-10. LOADING THE MAGAZINE. The magazine has a capacity of twenty-rounds and may be loaded with any amount up to that capacity. The magazine follower has a raised portion generally resembling the outline of a cartridge. Cartridges are loaded into the magazine so that the tips of the bullets point in the same direction as the raised portion of the follower.

3-11. LOADING THE RIFLE. The magazine may be inserted with the bolt and bolt carrier opened or closed. Hold the stock of the rifle under the right arm with the right hand. Grasp the pistol grip, and point the muzzle in a safe direction. With the left hand, insert a loaded magazine into the magazine housing. Push upwards until the magazine catch engages and holds the magazine. Rap base of magazine sharply with heel of hand to assure positive retention. If the action is open, depress the upper portion of the bolt catch (figure 3-2) with the thumb of the left hand, allowing the action

to close, chambering a round. If the action is closed when the magazine is inserted, pull the charging handle fully to the rear with the right hand and release it.

Note

Do not "ride" the charging handle forward with the right hand. If the charging handle is eased forward from the open position, the bolt may fail to lock. If bolt fails to go fully forward, use the bolt closure forward assist assembly (figure 3-2).

The rifle is now loaded, ready to fire.

WARNING

Make sure the selector lever is in the "safe" position, if not ready to fire.

3-12. FIRING.

3-13. SELECTOR LEVER. The rifle may be fired semi-automatically or fully automatically by moving the selector lever to the desired position described in 3-14 and 3-15.

3-14. SEMI POSITION. With the selector lever in this position, the rifle will fire one round each time the trigger is pulled.

3-15. AUTO POSITION. With the selector lever in this position, the rifle will continue to fire until the magazine is empty or the trigger is released. When the rifle is fired on either SEMI or AUTO, the bolt will lock in open position when the last round from a magazine has been fired.

3-16. STOPPAGE AND IMMEDIATE ACTION.

3-17. A stoppage is an interruption in the cycle of operation. When a stoppage occurs immediate action shall be taken to clear it.

3-18. To apply immediate action follow the sequence below:

a. Wait 10 seconds, then pull charging handle fully to the rear; observe for ejection of cartridge or cartridge case.

1. If a cartridge is ejected, release charging handle to feed a new round. Rap

bolt closing forward assist assembly to assure bolt closure (XM16E1). Attempt to fire the rifle.

2. If a cartridge or case is not ejected, a failure to extract or feed has occurred. Check for round in chamber. If chamber is empty, change magazines, reload and attempt to fire the rifle.

b. If a.1. above occurs, it may indicate a defective round, a broken firing pin, hammer spring or a bolt closure failure.

3-19. UNLOADING.

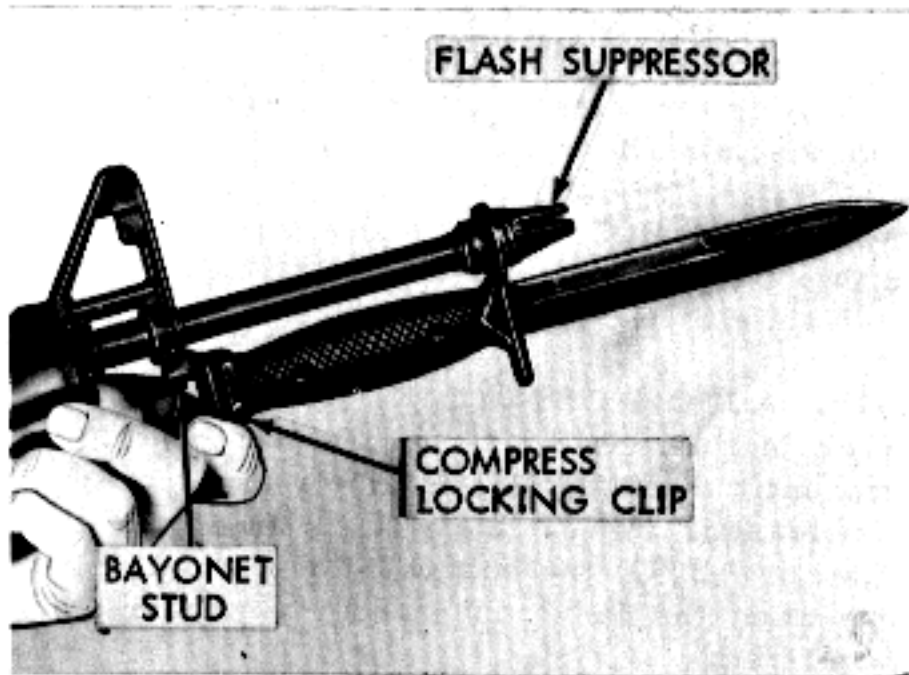
3-20. Repeat operation in figure 3-1.

3-21. INSTALLING ACCESSORIES.

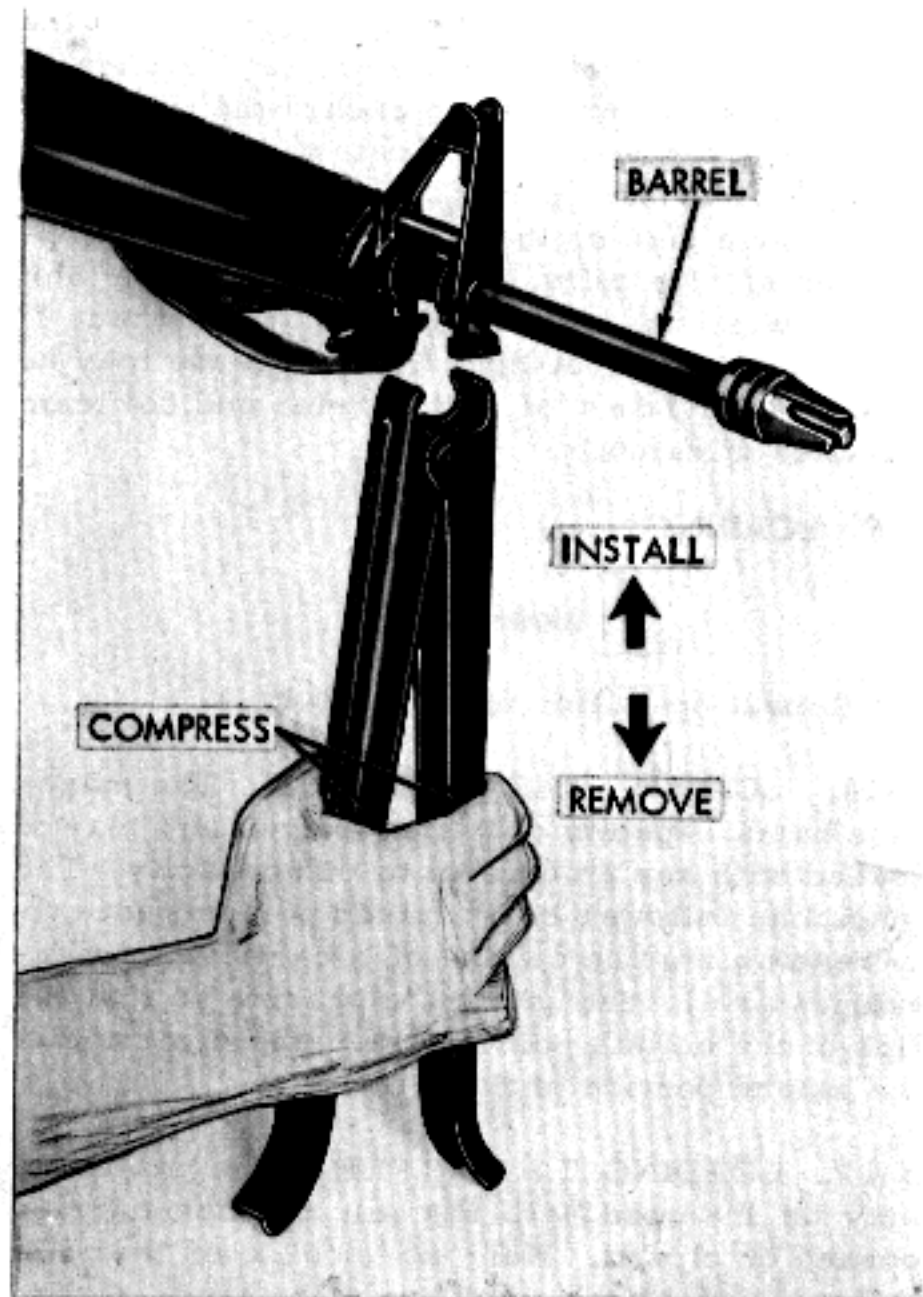
3-22. Refer to figure 3-3 for installing accessories.

3-23. DISASSEMBLY/ASSEMBLY.

3-24. The major groups are illustrated in figure 3-4. For disassembly/assembly refer to figure 3-5.



Remove/Install bayonet-knife.



Remove/Install bipod.

ORD F8138

Figure 3-3. Installing Accessories

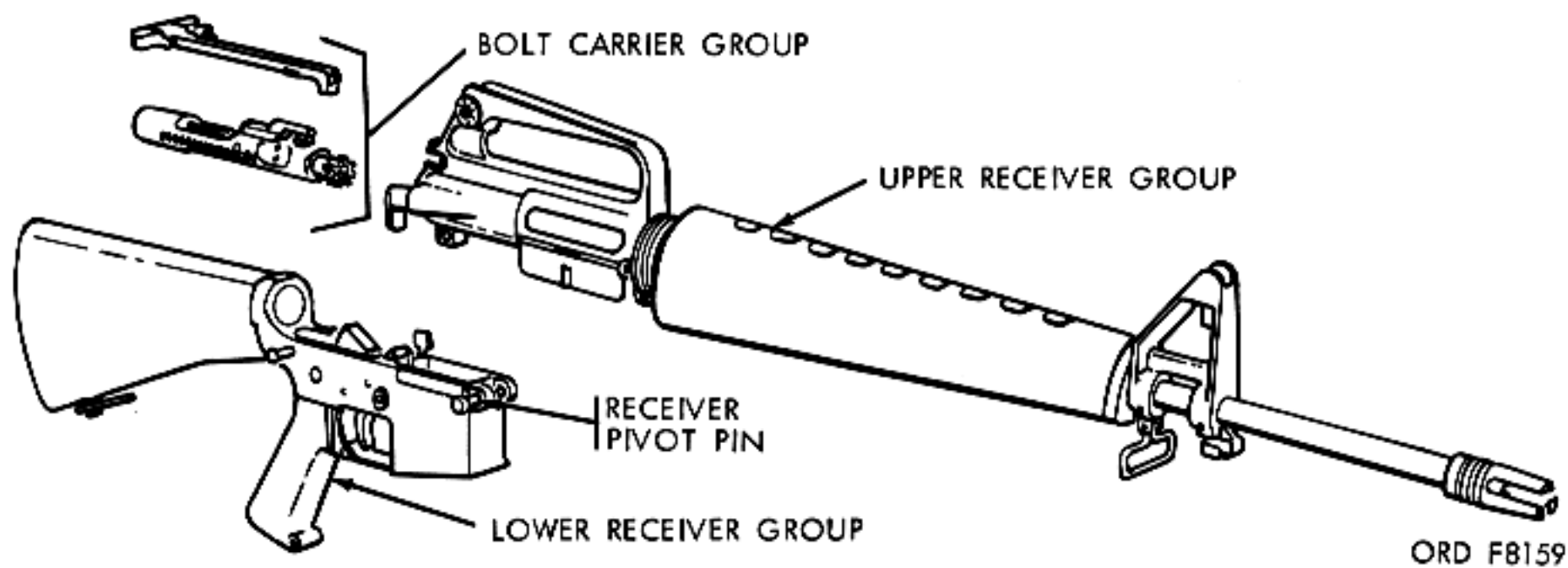
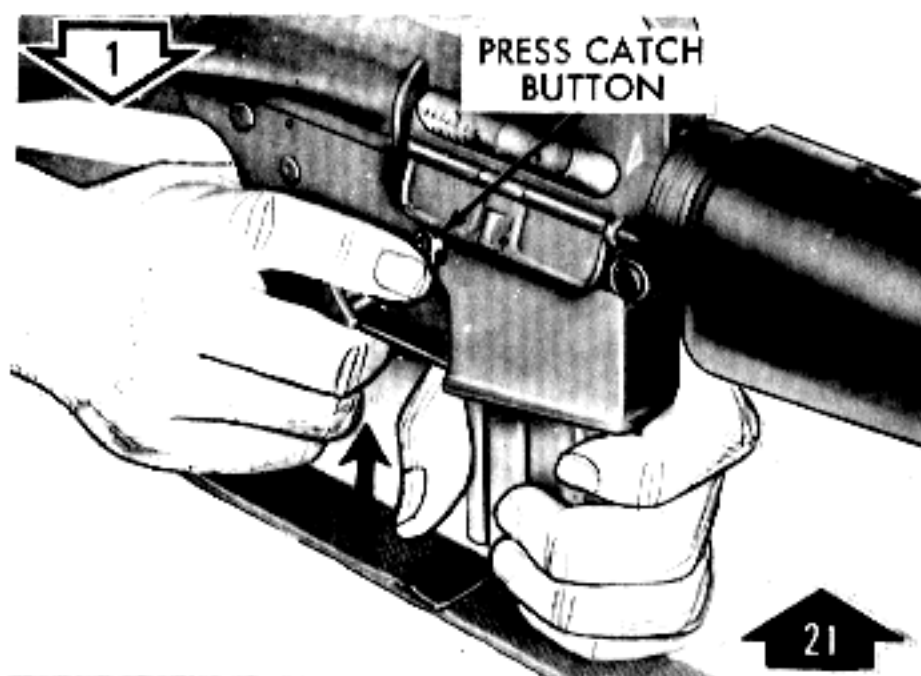
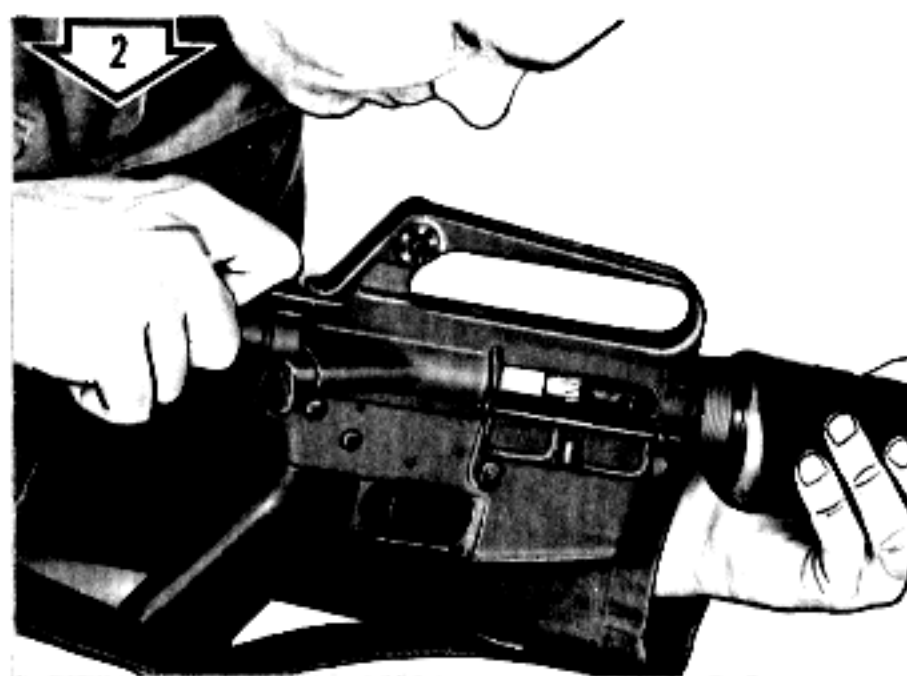


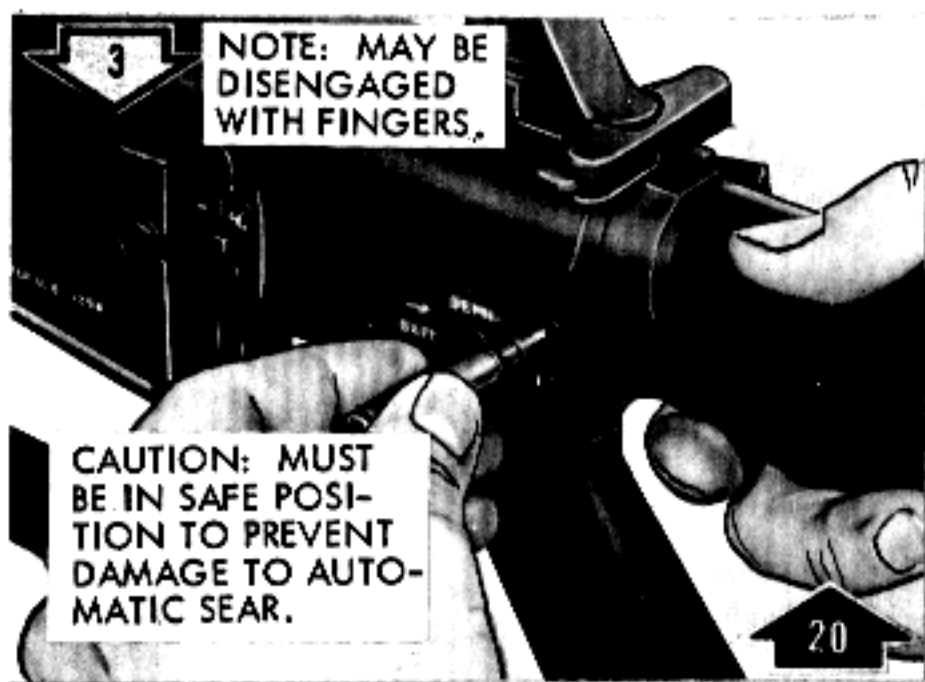
Figure 3-4. Rifles, 5.56-mm, M16 and XM16E1 Major Groups



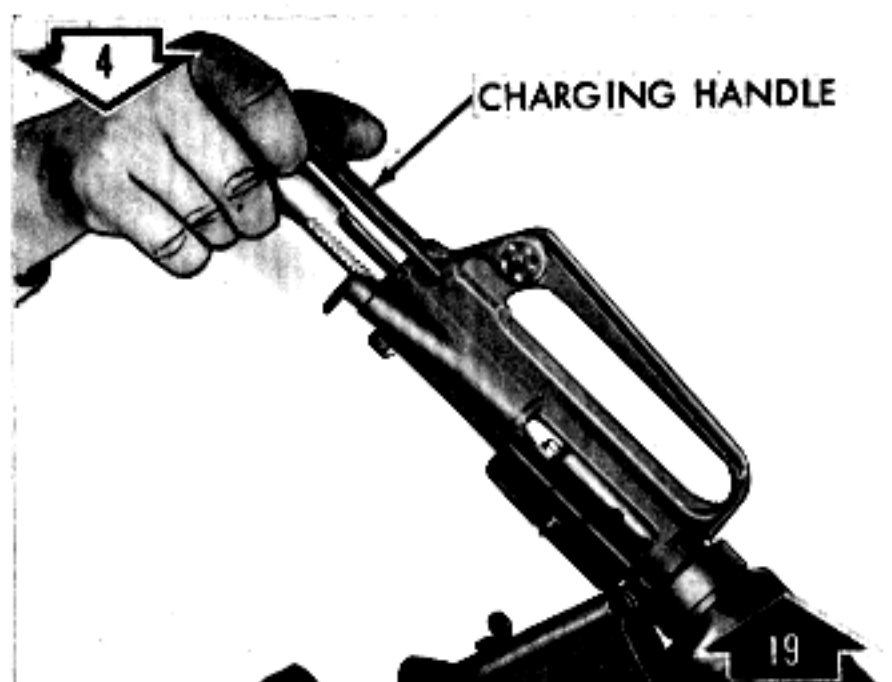
Remove/Install magazine.



Open bolt and inspect chamber.



Disengage/Engage take-down pin.



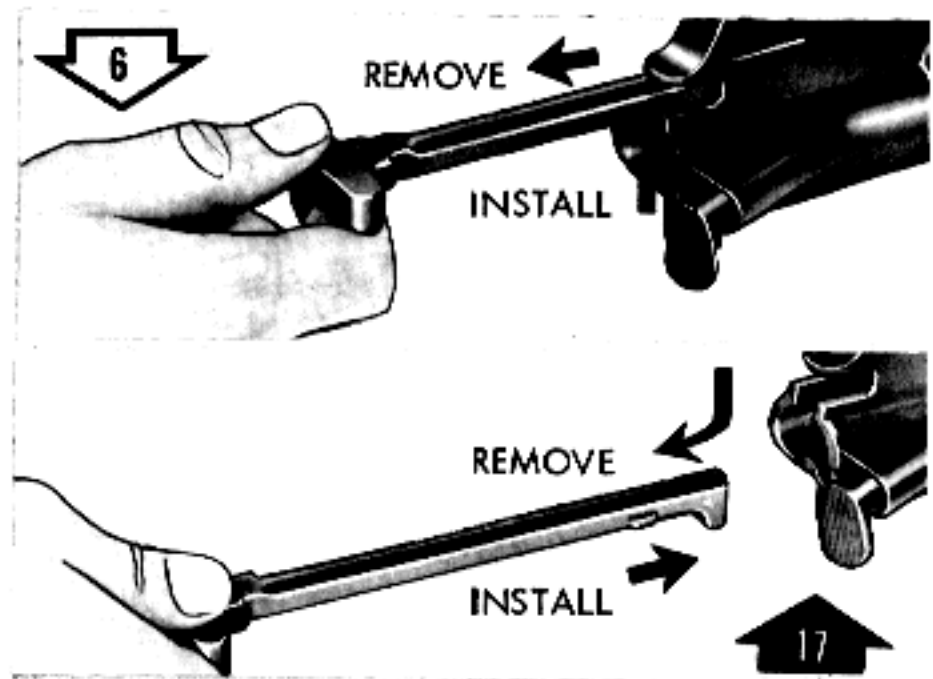
Withdraw/Insert charging handle and bolt carrier and key assembly.

ORD F8139

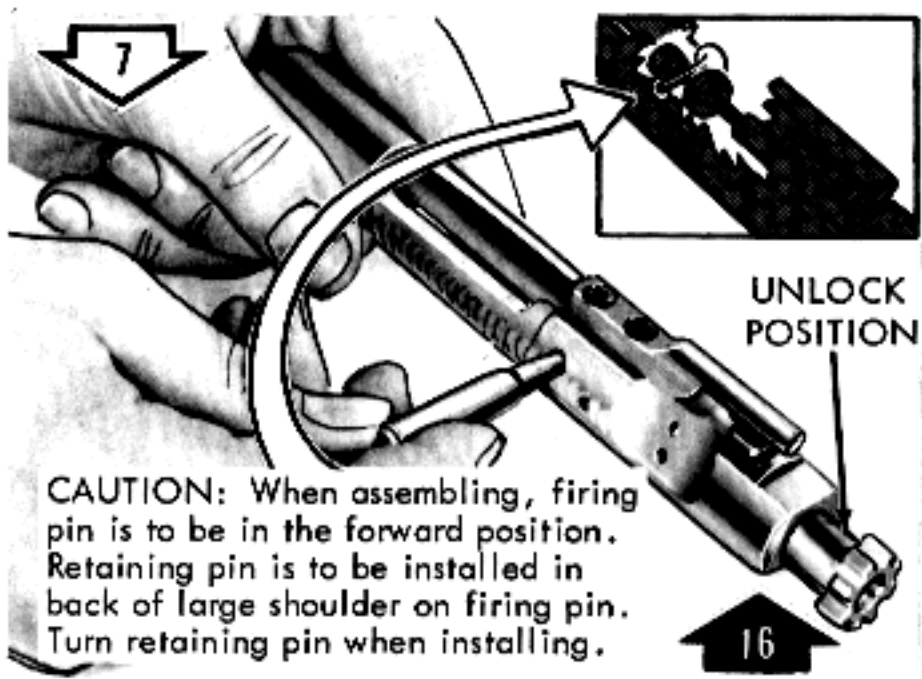
Figure 3-5. Disassembly/Assembly of Rifle (Page 1 of 5)



Remove/Install bolt carrier and key.

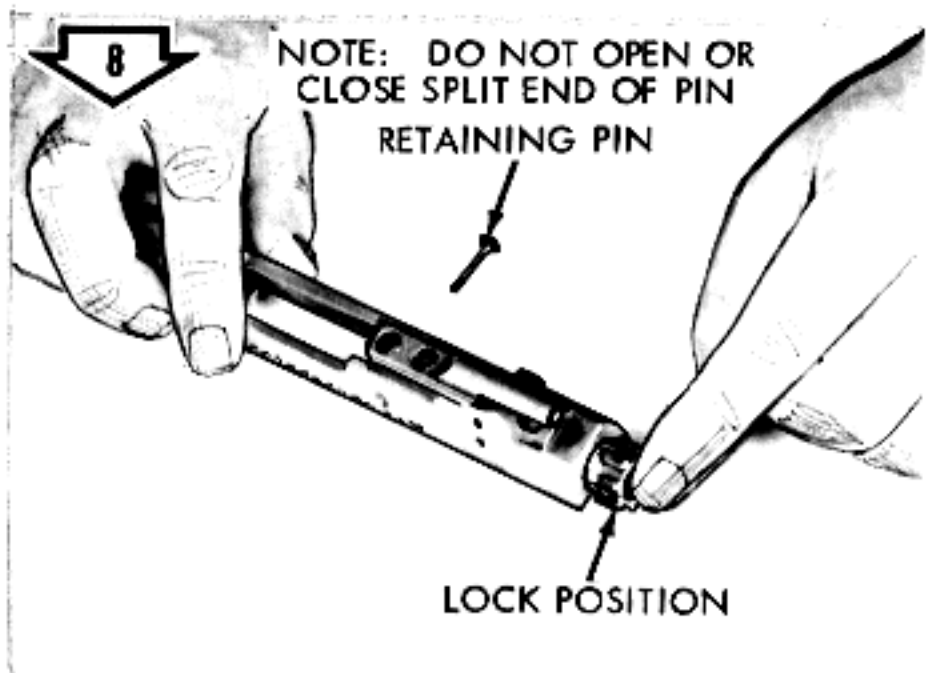


Remove/Install charging handle.

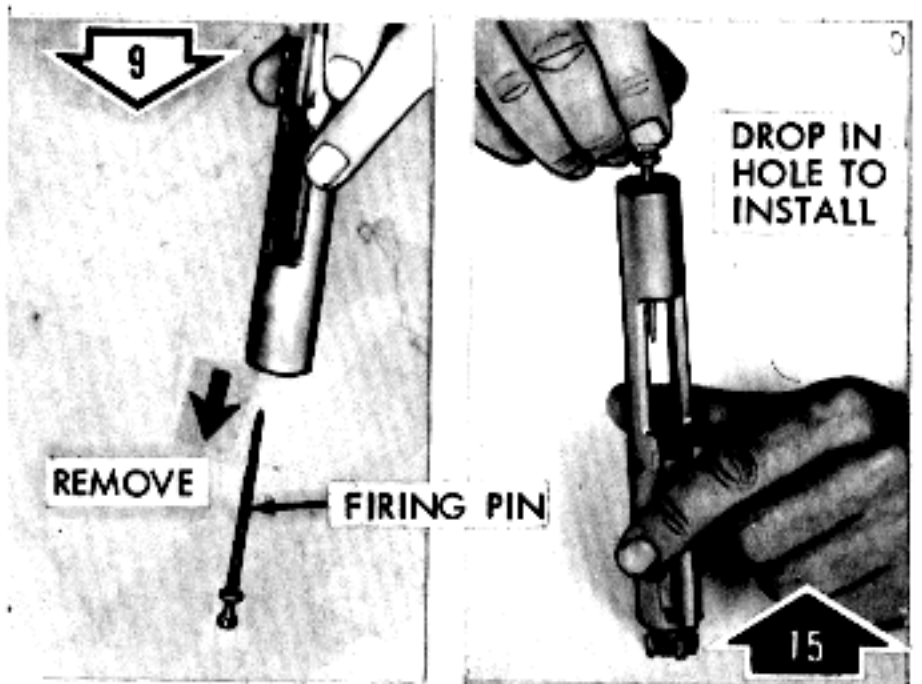


CAUTION: When assembling, firing pin is to be in the forward position. Retaining pin is to be installed in back of large shoulder on firing pin. Turn retaining pin when installing.

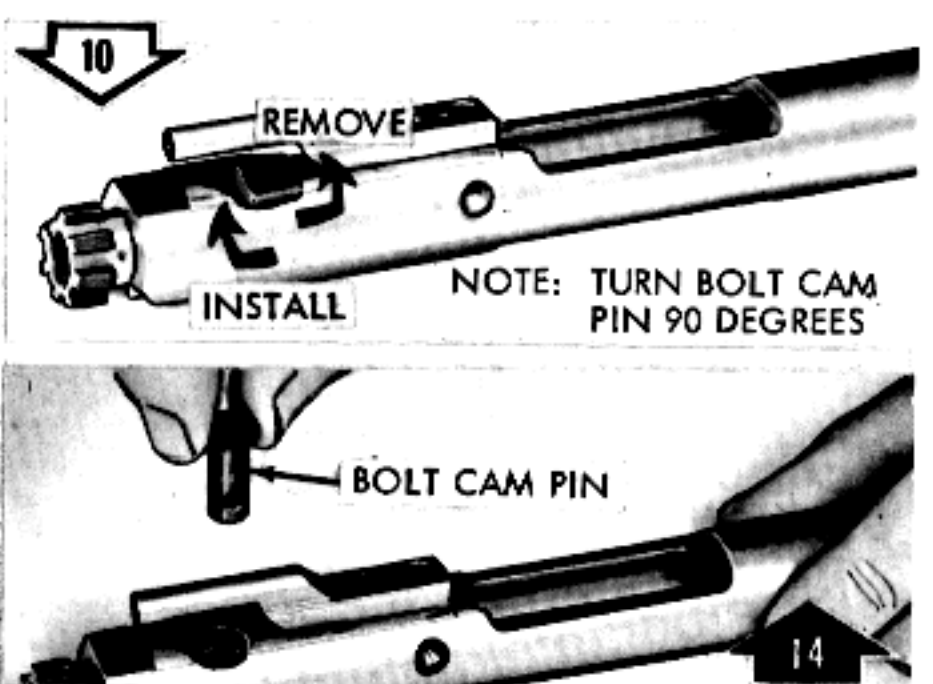
Remove/Install firing pin retaining pin.



Place bolt in lock position.



Remove/Install firing pin.

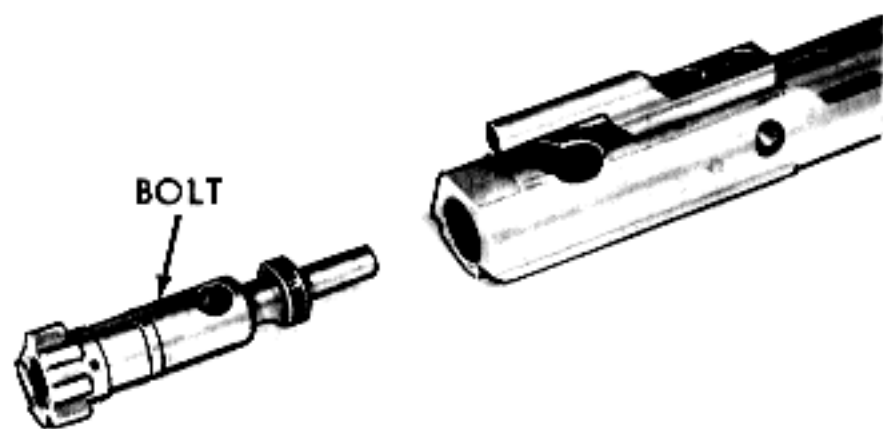


Remove/Install bolt cam pin.

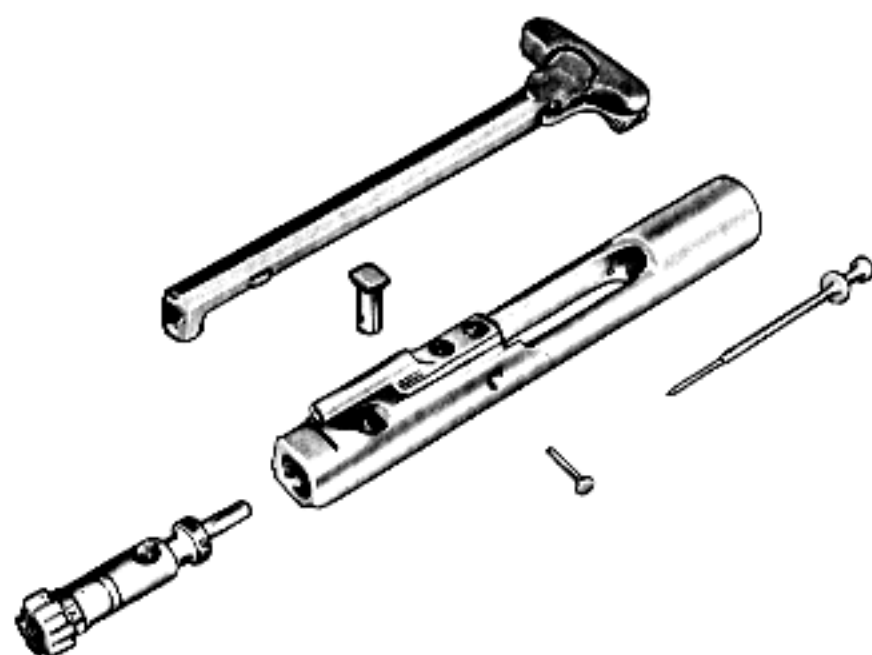
ORD F8140

Figure 3-5. Disassembly/Assembly of Rifle (Page 2 of 5)

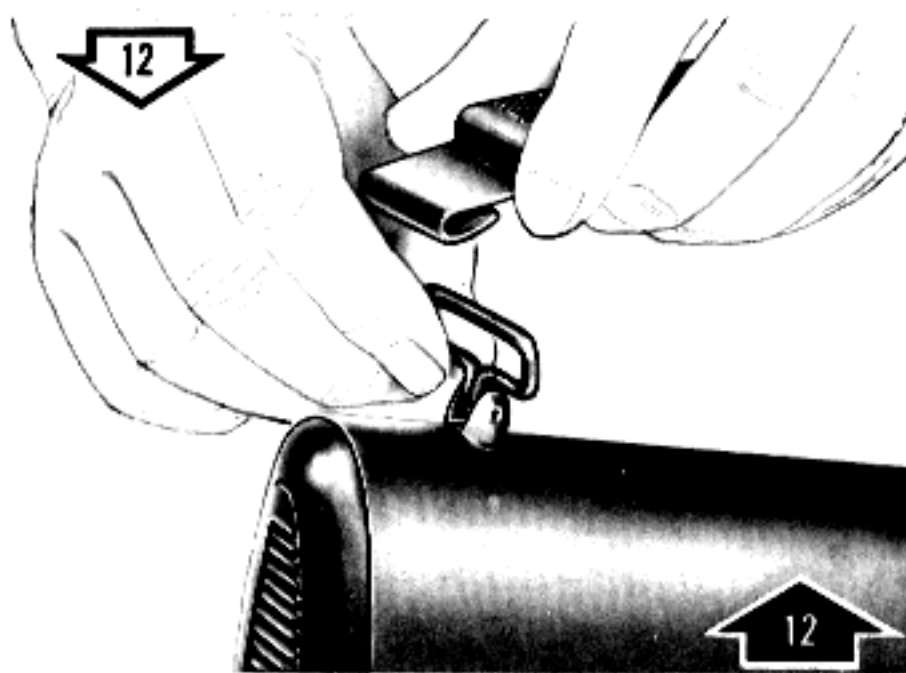
11



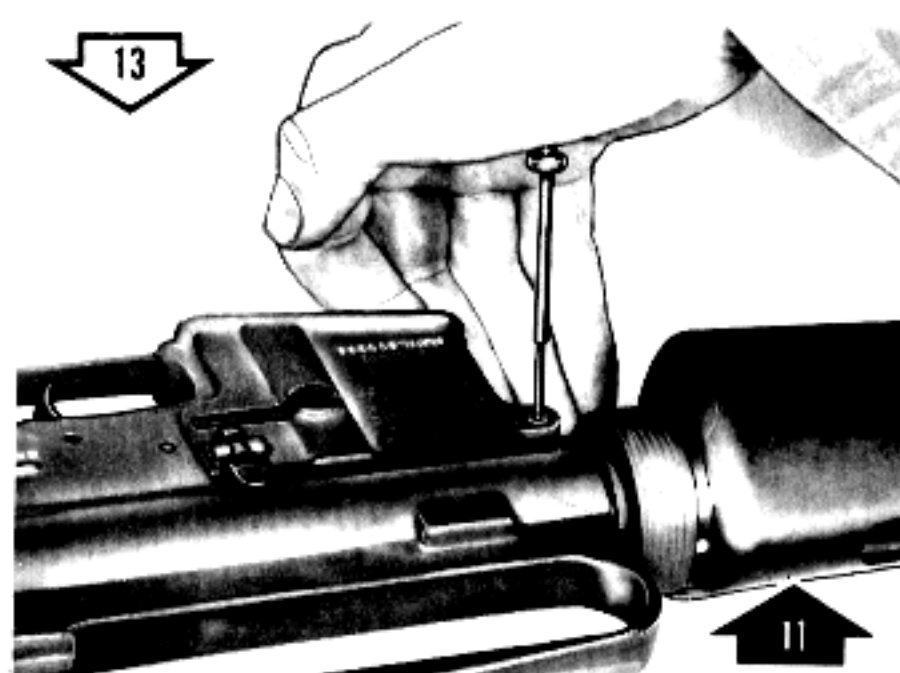
Remove/Install bolt from bolt carrier and key.



Bolt carrier group parts.

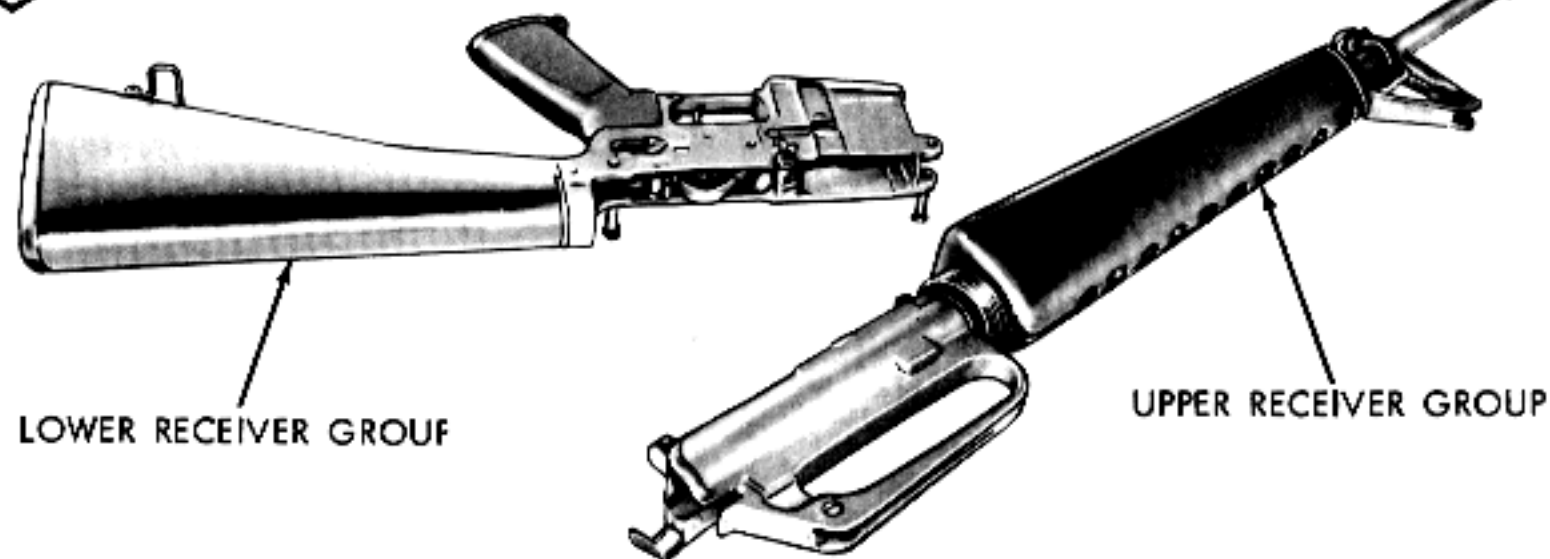


Remove/Install sling.



Disengage/Engage receiver pivot pin.

14



Separate/Join upper receiver and lower receiver groups.

10

ORD F8141

Figure 3-5. Disassembly/Assembly of Rifle (Page 3 of 5)

NOTE: LOWER RECEIVER PARTS SHOULD NOT BE REMOVED EXCEPT FOR DIRTY CONDITION WHICH MAY CAUSE MALFUNCTION.

NOTE: FIRING PIN MAY BE USED AS A GUIDE FOR ALINEMENT OF PARTS FOR INSTALLATION OF PINS.

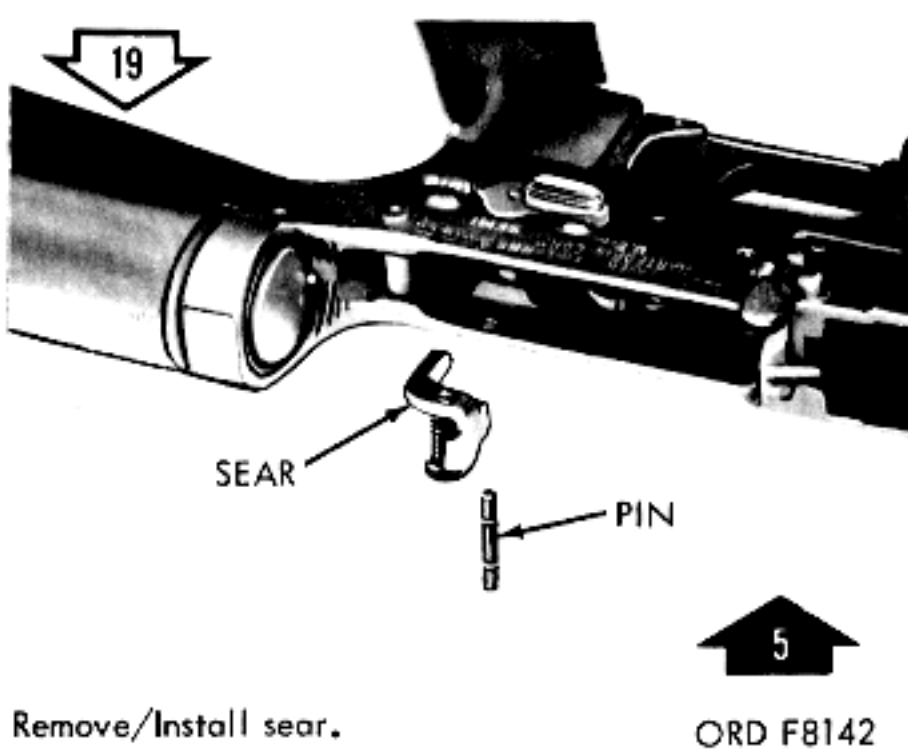
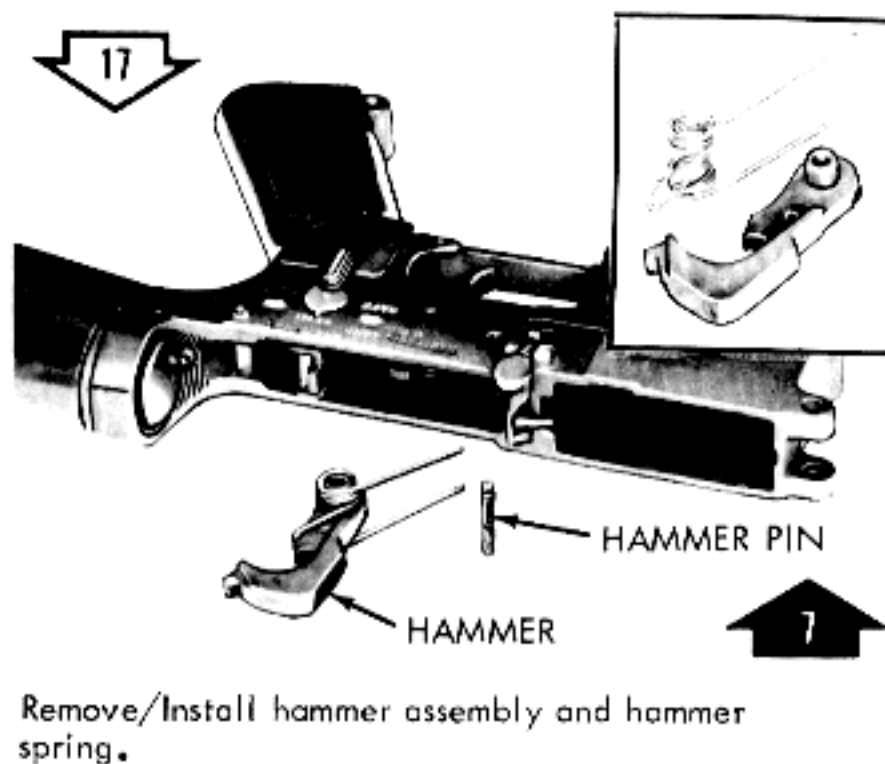
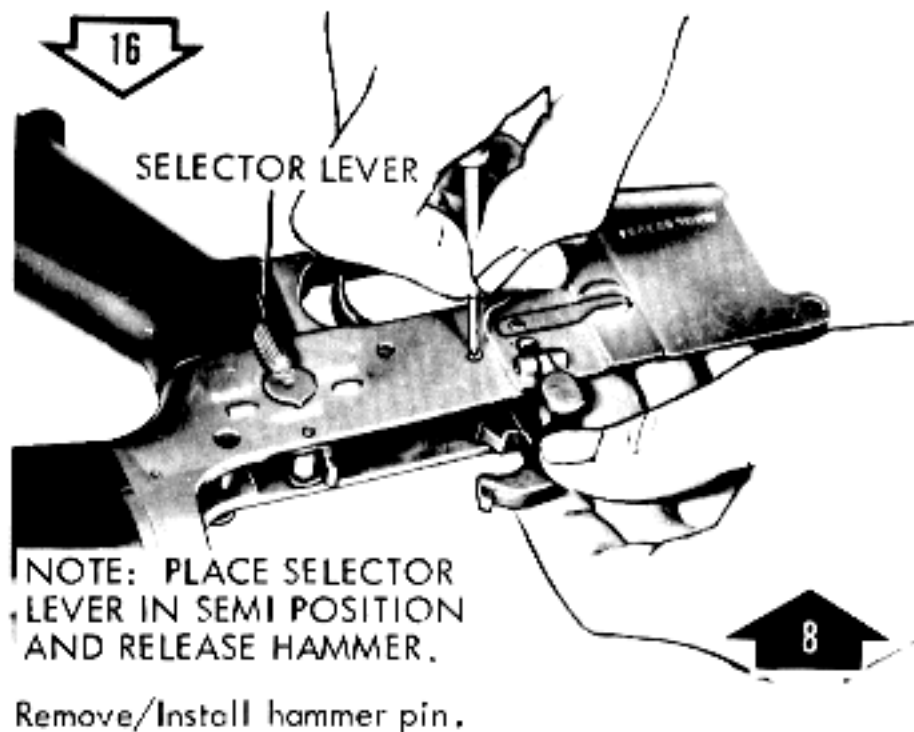
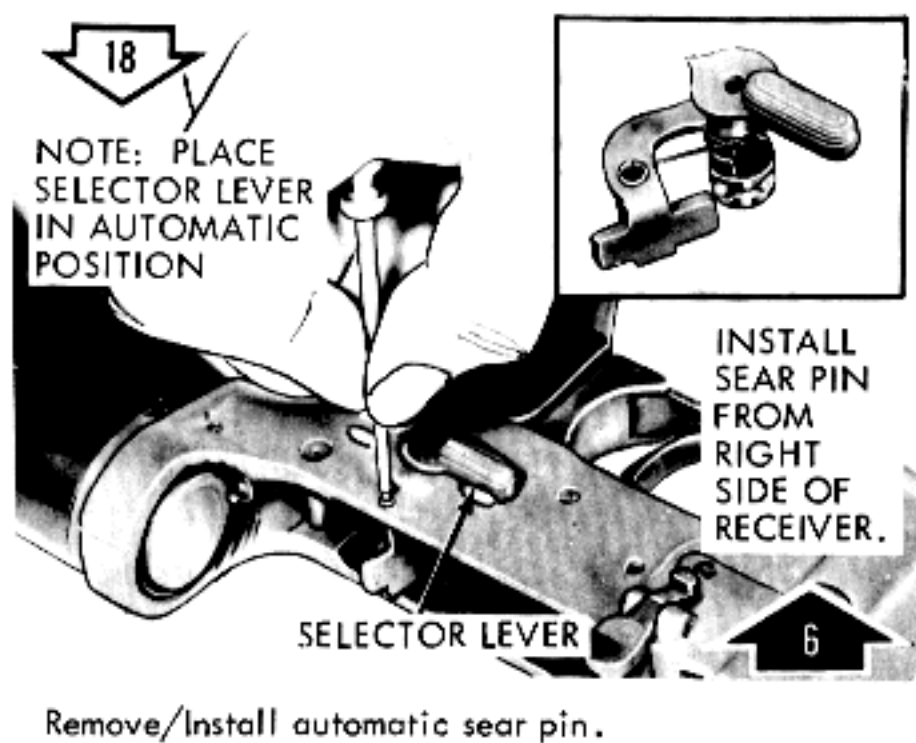
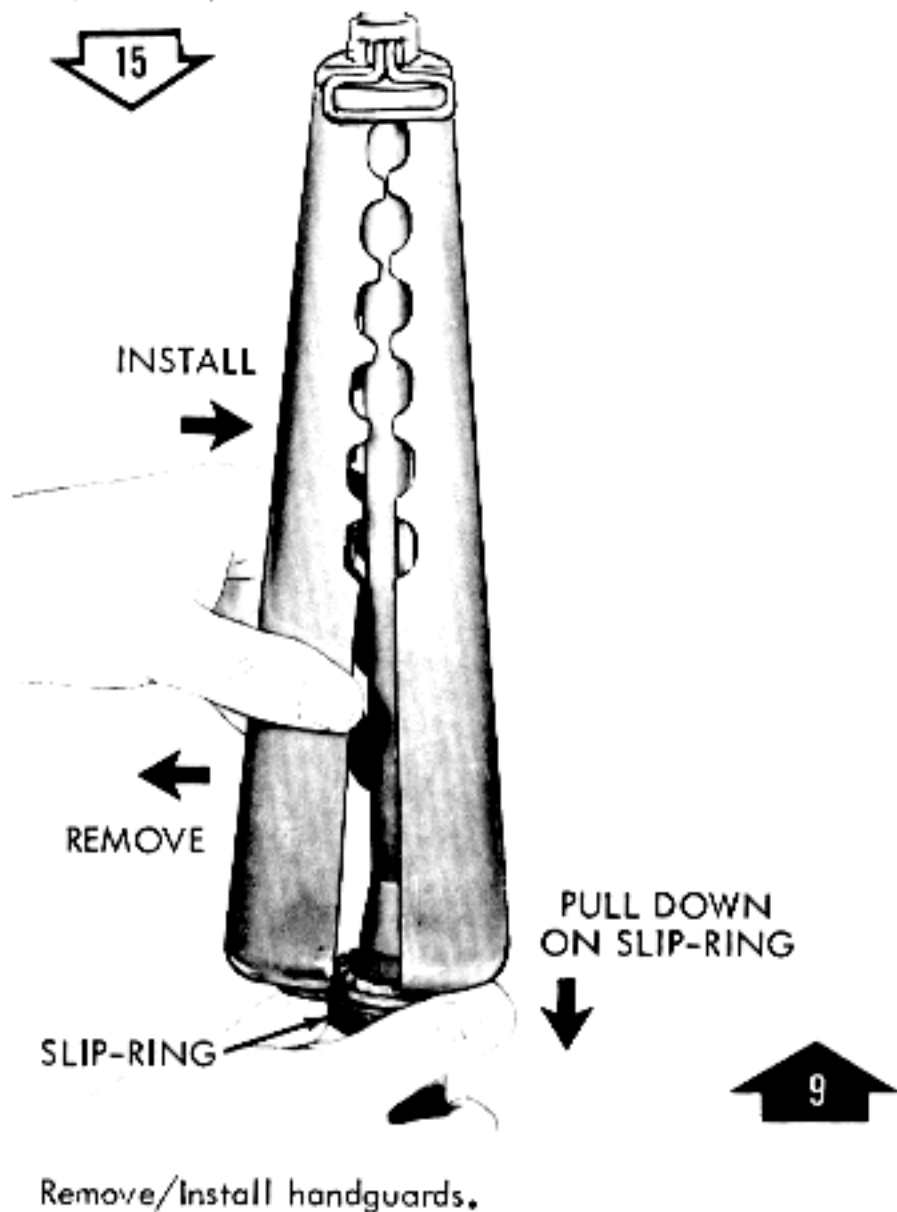
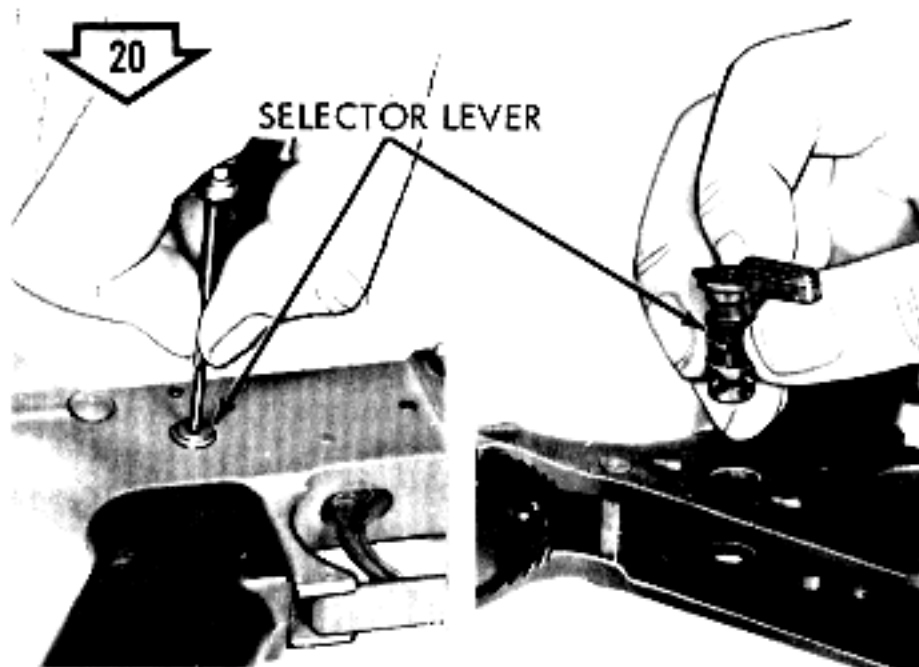
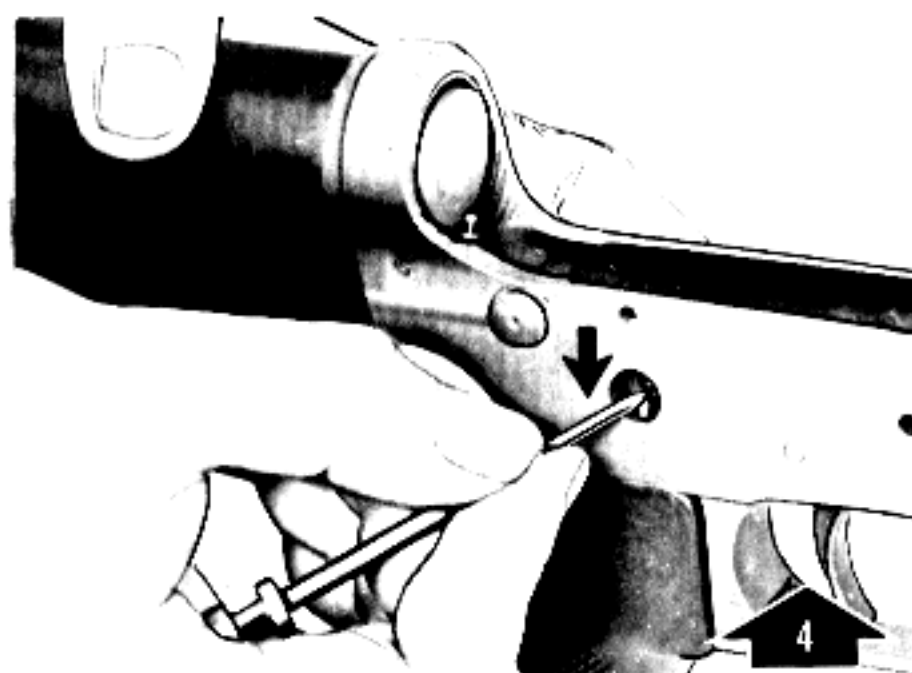


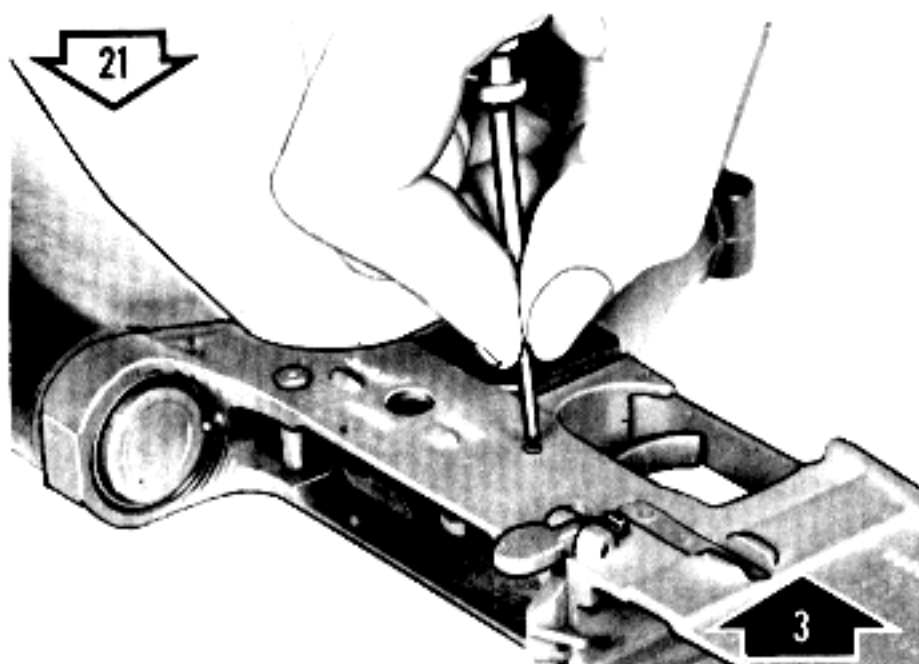
Figure 3-5. Disassembly/Assembly of Rifle (Page 4 of 5)



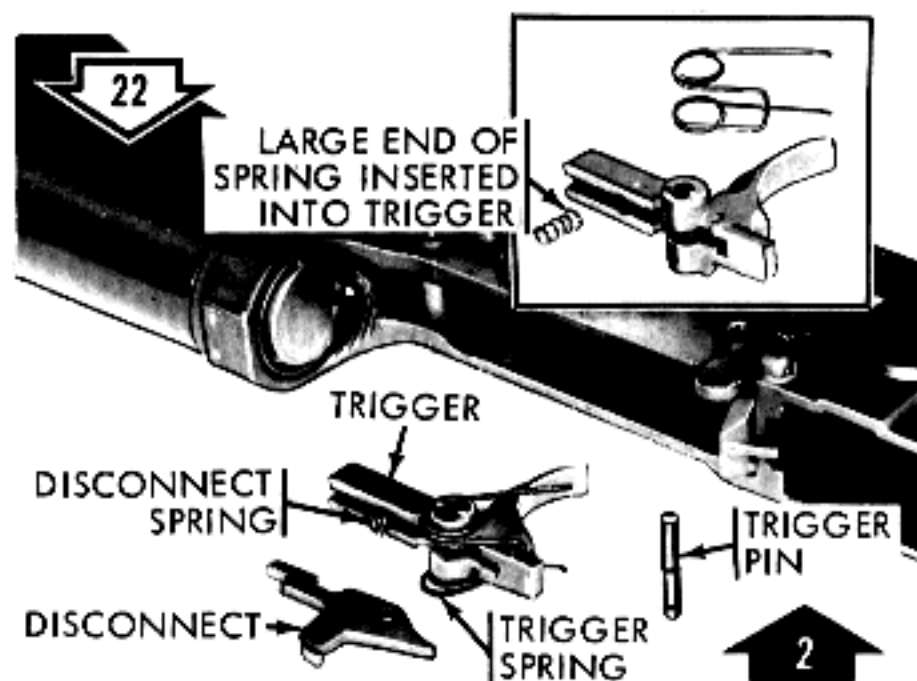
Disengage and remove selector lever.



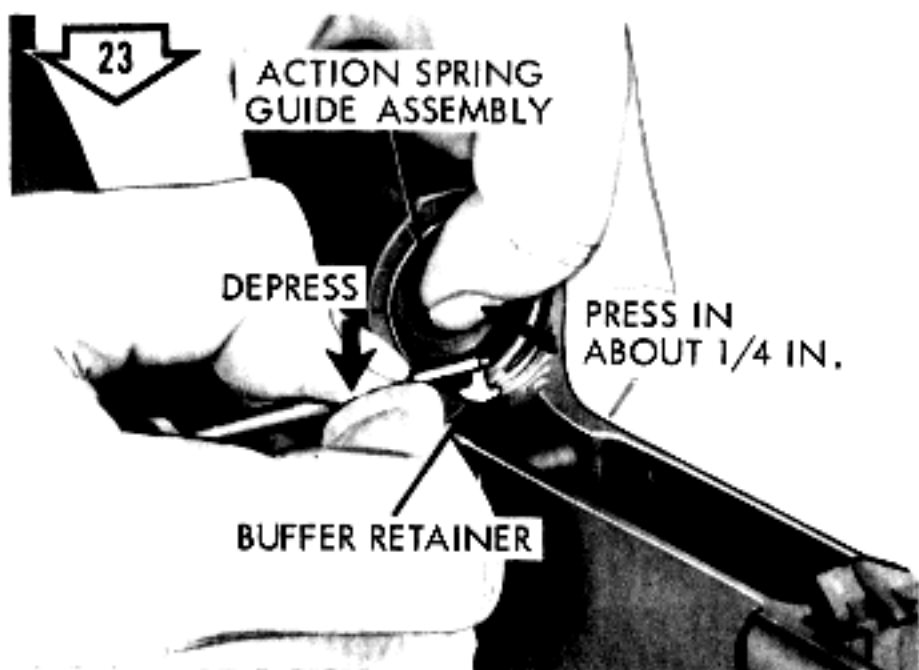
Depress detent - install selector lever.



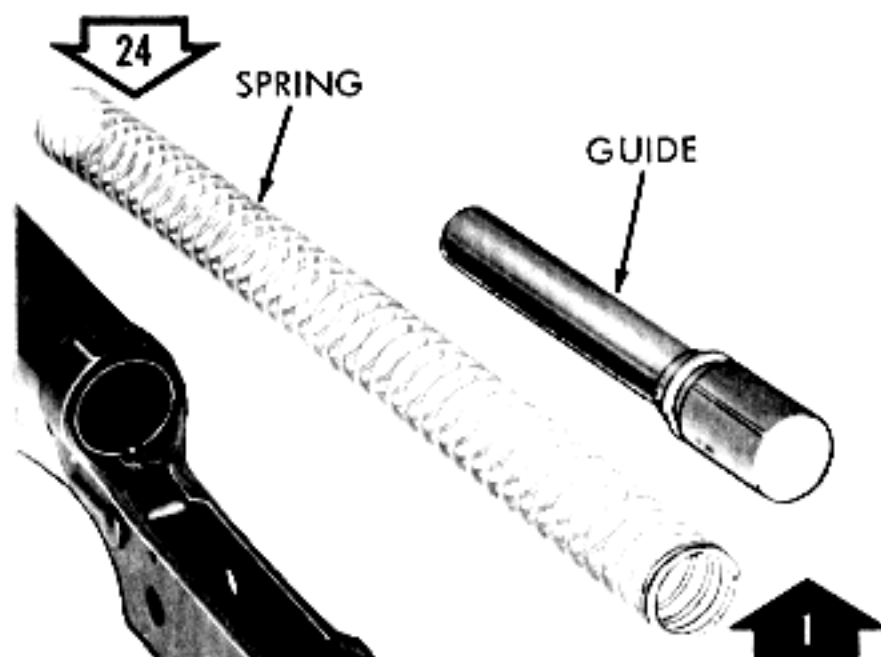
Remove/Install trigger pin.



Remove/Install trigger, trigger spring, disconnect, and disconnect spring.



Press in action spring guide assembly, depress buffer retainer, and then release guide.



Remove/Install action spring guide assembly and action spring.

ORD F8143

Figure 3-5. Disassembly/Assembly of Rifle (Page 5 of 5)

3-25. CLEANING AND LUBRICATION AFTER FIRING. All parts are to be cleaned with cleaning compound solvent (PD 126) and dried thoroughly. Apply a light coat of lubricating oil to all metal surfaces (including barrel under handguards). A light coat of rifle grease from the 5cc container is to be applied to the slides of bolt carrier.

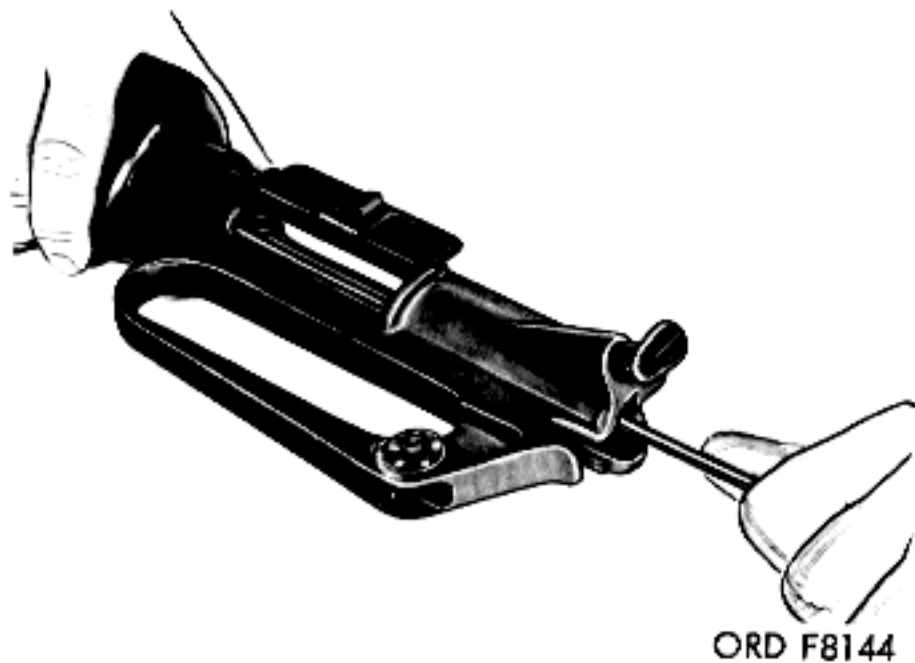


Figure 3-6. Cleaning Bore with Cleaning Rod - M11 and Brush - 11010021

3-26. CLEANING AND LUBRICATING THE BARREL.

a. Attach the wire brush to the cleaning rod, dip in solvent cleaning compound, and brush the bore thoroughly (figure 3-6). Brush the bore from chamber to muzzle using straight through strokes.

Note

Do not reverse direction of brush while in bore.

Push the brush through the bore until it extends beyond the muzzle. Continue until the bore is well covered with compound. Remove the brush from the cleaning rod, and dry the bore by pushing through clean dry patches. Continue until patches come out clean and dry.

b. Clean the locking lugs in the barrel extension, just to the rear of the chamber. Brush the lugs with a small brush.

c. After cleaning, lubricate the bore with a lightly oiled patch to prevent corrosion and pitting. Lightly oil the lugs in the barrel extension.

3-27. CLEANING AND LUBRICATING THE BOLT CARRIER GROUP.

a. Remove the bolt carrier group from the upper receiver group. Field strip the bolt carrier group. Wash all external surfaces with a patch saturated in solvent cleaning compound.

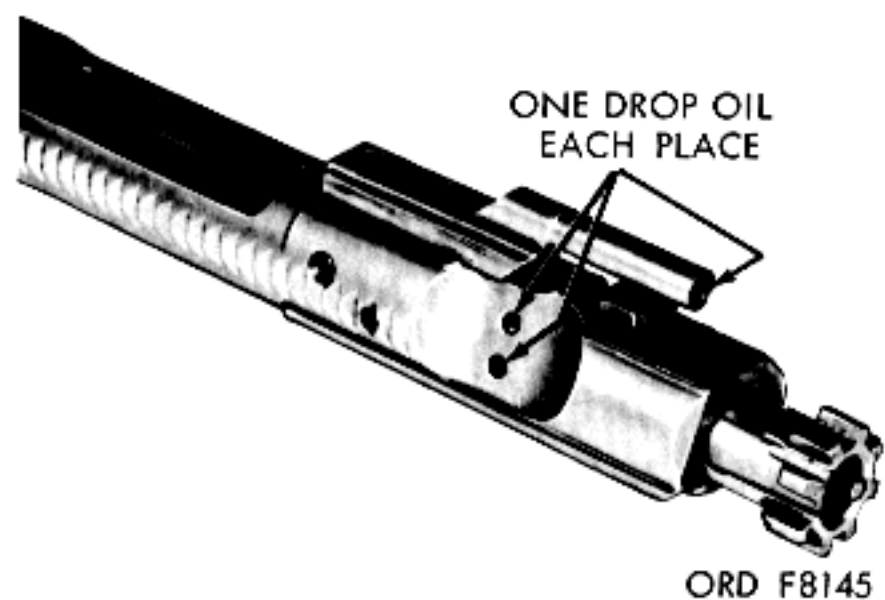


Figure 3-7. Oiling Bolt Rings

b. Using a small brush dipped in solvent cleaning compound, scrub all carbon deposits and dirt from the locking lugs of the bolt.

CAUTION

Brush the face of the bolt, paying particular attention to area behind the rings and under the face of extractor. Do not attempt to remove discoloration caused by heat.

When dry, place a drop of oil in each hole on the bolt rings and gas tube (figure 3-7). Add a light coat of oil to all surfaces of bolt and bolt carrier.

3-28. CLEANING AND LUBRICATING THE LOWER RECEIVER GROUP.

a. Wipe any particles of dirt from the trigger mechanism with a clean patch or brush.

b. Place a drop of oil on each of the pins for lubrication.

3-28A. CLEANING OF SCABBARD M8A1 AND SLING.

a. To prevent mildew, shake out and air sling and scabbard at frequent intervals. Mildewed canvas is cleaned by scrubbing with a dry brush.

b. If mildew is present, examine fabric carefully for evidence of rotting or weakening of fabric by stretching and pulling. If fabric shows indication of loss of tensile strength, turn in for replacement.

c. If water is necessary to remove dirt, it must not be used until mildew has been removed. Oil and grease may be removed by scrubbing with issue soap and water. Rinse well with water and dry.

CAUTION

At no time is gasoline or any solvent to be used to remove oil or grease from canvas. Canvas should be dried thoroughly.

3-28B. CLEANING AND MAINTENANCE OF BAYONET-KNIFE, M7.

a. Clean bayonet-knife of dirt and/or grease.

b. Release shall work freely and return to lock position.

c. Nicks, dents, and burrs shall be removed by organizational support.

3-29. FUNCTION CHECK.

Note

Remove magazine.

3-30. A complete function check of the rifle consists of checking the operation of the rifle while the selector lever 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.

Note

Disengage takedown pin and open receivers. Hammer shall be in the cocked position.

a. SAFE position. Pull trigger, hammer shall not fall.

b. SEMI position. Pull trigger, 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.

c. 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. The hammer should fall. Still holding trigger to the rear, recock hammer, release trigger and push forward on automatic sear. Hammer should fall to the sear engagement.

Note

Close receivers and engage takedown pin. ■

d. SEMI position. Close the upper and lower receiver groups and push the take down pin into place. Pull the charging handle to the rear. Inspect the chamber for safety and release charging handle. Pull the trigger. Hammer should fall.

CHAPTER IV PREVENTIVE MAINTENANCE

4-1. GENERAL.

4-2. Preventive maintenance is the systematic care, inspection, and servicing of equipment to maintain it in serviceable condition, prevent breakdowns, and assure maximum operational readiness. The operator's role in the performance of preventive maintenance service is:

a. To perform the daily service each day the rifle is operated.

b. To assist the organizational maintenance mechanics in the performance of any other sche-

duled periodic services specified by pertinent technical manuals.

4-3. RESPONSIBILITY.

4-4. Operators are responsible for assigned equipment. Squad, flight, or platoon leaders are charged supervisory responsibility for equipment pertaining to their commands.

4-5. SPECIFIC PROCEDURES.

4-6. Table 4-1 gives the specific procedures to be performed on the rifle by the operator for each daily service.

Table 4-1. Preventive Maintenance Checks and Services

Interval & Sequence No.			Operator		
Before Firing	During Firing	After Firing	Item to be Inspected	Procedures	Daily Schedule
					Paragraph References
1			Rifle	Wipe oil from bore and chamber.	Para. 3-7
2			Rifle	Retract bolt to assure free movement between bolt carrier and gas tube.	Para. 3-1
3			Rifle	Hand function to assure proper operation.	Para. 3-29
4			Rifle	Check magazine for positive retention and functioning of bolt catch.	Para. 3-11
		5	Rifle	Clean and lubricate. Particular attention to clean bolt carrier key.	Para. 3-25

CHAPTER V AMMUNITION

5-1. GENERAL.

5-2. The ammunition (figure 5-1) for the 5.56-mm rifles M16 and XM16E1 is classified as small-arms ammunition and is issued in the form of a complete round. A complete round (cartridge) consists of all the components necessary to fire the weapon once, that is, projectile (bullet), cartridge case, propellant, and primer.

5-3. CLASSIFICATION.

5-4. Based upon type of projectile, ammunition when available for use in this rifle will be classified as outlined in paragraphs a through d.

a. Ball cartridge, for use against light materiel targets and personnel.

b. Blank cartridge, for simulated fire, in maneuvers, and in firing salutes.

c. Tracer cartridge, for observation of fire, incendiary effect, and signaling.

5-5. IDENTIFICATION.

5-6. GENERAL. The type, caliber, model, and ammunition lot number, including the symbol of the manufacturer are necessary for complete identification of small-arms ammunition. Ammunition for the 5.56-mm weapon is completely identified by its appearance, the painting of the bullet tip, and the markings on the packing containers.

5-7. STAMPING. Because of its small size, the marking on small-arms ammunition consists of the stamping of the manufacturer's initials and year of manufacture on the base of the cartridge case.

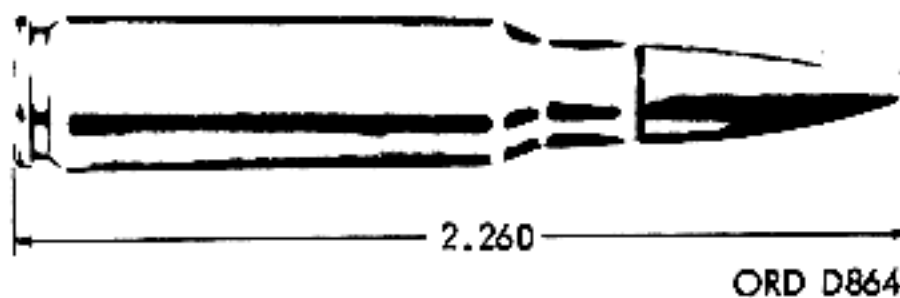


Figure 5-1. Cartridge, 5.56-MM, Ball, M193

5-8. TYPES. When removed from their original packing containers, the cartridges may be identified by physical characteristics as follows:

<u>Type</u>	<u>Distinguishing Characteristics</u>
Ball	Gilding metal or gilding metal clad steel jacket on bullet (no markings).
Blank	Not known - under development.
Tracer	Tip of bullet is painted orange for a distance of approximately 5/16 inch.

5-9. GRADES. Small-arms ammunition is graded primarily on the qualities which make the lot especially suited for use in a particular class of weapons; for example, a lot of ammunition assigned grade R is especially suited for use in rifles. Current grades of all existing lots of small-arms ammunition are established by the Army Materiel Command and are published in Department of the Army Technical Bulletin, TB 9-AMM-4. Only those lots of appropriate grade will be fired. Grade 3 indicates unserviceable ammunition that will not be issued or fired or cartridges for which the ammunition lot number has been lost. However, ammunition placed in grade 3 because of loss of ammunition lot number, but which can be identified as having been in serviceable lots issued to a specific organization, may be reissued after visual inspection, but only for local training purposes. When cartridges are removed from original packings, they should be marked or tagged so that the ammunition lot number may be preserved.

5-10. MODEL. To identify a particular design, a model designation is assigned at the time the item is classified as an adopted type. This model designation becomes an essential part of the standard nomenclature and is included in the marking on the packing container. The present system of model designation consists of the letter "M" followed by an arabic numeral;

for example, "M61". Modifications are indicated by adding the letter "A" and appropriate arabic numeral. Thus, "M61A" indicates the first modification of an item for which the original designation was "M61". Similarly, a system applied to development items involves the use of a "T" or "XM" designation to indicate the basic design and an "E" to indicate modifications thereof. Thus, "T102E1" would indicate the first modification of a development item originally designated "T102".

5-11. AMMUNITION LOT NUMBER. When ammunition is manufactured, an ammunition lot number, which becomes an essential part of the marking, is assigned in accordance with pertinent specifications. This lot number is marked on all packing containers. Since it is impracticable to mark the ammunition lot number of each cartridge, every effort should be made to maintain the ammunition lot number of cartridges removed from their original packings. Cartridges for which the ammunition lot number has been lost automatically are classified grade 3.

5-12. CARE, HANDLING, AND PRESERVATION.

a. Ammunition for the 5.56-mm rifle (small-arms), as compared with other types of ammunition, is not dangerous to handle.

b. Ammunition is packed to withstand conditions ordinarily encountered in the field. Care must be observed to keep packings from becoming broken or damaged. All broken packings must be repaired immediately and careful attention given to the transfer of all markings to the new parts. The ammunition may be packed in metal-lined wooden boxes or metal boxes. If the damaged box contains a metal liner, it should be air-tested and sealed, providing that equipment for this work is available.

c. When necessary to store ammunition in the open, raise it on dunnage at least six inches from the ground and protect it with paulin or other cover, leaving enough space for the circulation of air. Where practicable, dunnage strips should be placed under each layer of boxes. Suitable trenches should be dug to prevent water from running under the pile.

d. Since ammunition and explosives are adversely affected by moisture and high temperature, due consideration should be given to (1) and (2) below.

- (1) Do not open boxes until ammunition is to be used. Ammunition removed from

airtight containers, particularly in damp climates, is apt to corrode, thereby rendering the ammunition un-serviceable.

- (2) Protect ammunition from high temperature and direct rays of the sun. More uniform firing is obtained if rounds are at the same temperature. The combination of high temperatures and a humid atmosphere is particularly detrimental to the stability of the propellant and to tracer mixtures in tracer ammunition.

e. Do not attempt to disassemble the cartridge or any of its components.

f. The use of oil or grease on cartridge is prohibited.

g. Ammunition should be protected from sand, mud, moisture, frost, snow, ice, grease, and other foreign matter. If it gets wet or dirty, it should be wiped off at once. If corrosion forms on the cartridges, it should be wiped off with a clean dry cloth. However, cartridges should not be polished to make them look better or brighter.

h. Brass cartridge cases are easily dented and should be protected from hard knocks or blows. Dented cartridge cases may cause incomplete obturation, jamming in the chamber, and difficulty in extraction.

i. Ammunition, when stored, should be segregated by caliber, type, and ammunition lot number.

j. When only a part of a box of ammunition is used, the ammunition remaining in the box should be protected against unauthorized handling and use by firmly fastening the box cover in place.

5-13. AUTHORIZED ROUNDS.

5-14. The ammunition authorized for use in the 5.56-mm rifles M16 and XM16E1 is listed in table 5-1. Standard nomenclature, which is used in the listing, completely identifies each item except for ammunition lot number. Only authorized cartridges will be used in the weapon; unauthorized assembly and use of cartridges are extremely dangerous. Ordinarily, issue of this ammunition is in proportion by types to meet tactical requirements, so that substitution of unauthorized rounds in the field is not required.

TABLE 5-1 AUTHORIZED ROUNDS

Standard Nomenclature	Complete round		Projectile	
	Length (in.)	Weight (grains) (approx)	Length (in.)	Weight (grains) (approx)
CARTRIDGE, 5.56-MILLIMETER: ball, M193	2.26	179	0.755	55
*CARTRIDGE, 5.56-MILLI- METER: blank, XM200				
*CARTRIDGE, 5.56-MILLI- METER: tracer, XM196				

* Items are under development.

5-15. PREPARATION FOR FIRING.

5-16. After removal from packing materials, cartridges for this weapon are ready for firing. Cartridges prepared for firing, but not fired, will be returned to their original packings or packed in suitable packing boxes. The packing boxes should be appropriately marked to indicate the nomenclature of the cartridges, the quantity of cartridges therein, and the appropriate ammunition lot number. Such cartridges will be used first in subsequent firings in order that stocks of opened packings may be kept at a minimum.

5-17. PRECAUTIONS IN FIRING.

5-18. The precautions in "a" through "k" below should be closely observed in order to prevent injury to personnel or damage to materiel.

a. The cartridges should be free of sand, mud, moisture, frost, snow, ice, grease, or other foreign matter before loading into the magazine.

b. Ammunition which is seriously corroded should not be fired.

c. Brass cartridge cases are easily dented and should be protected from hard knocks and blows. Dented cartridge cases may cause incomplete obturation, jamming in the chamber and difficulty in extraction.

d. Cartridges which have been seriously damaged, or those having loose bullets, should not be used.

e. Before firing, blank cartridges should be visually inspected for evidence of any foreign matter within the cartridge case mouth. Any foreign matter therein would be expelled as a projectile in firing.

f. Blank cartridges should not be fired at a representative enemy at distances less than 20 feet. The unburned propellant grains may cause injury within this distance.

g. Ammunition should not be fired unless it has been identified by ammunition lot number and the grade.

h. Do not fire cartridges which have become overheated due to exposure to the direct rays of

AR-15, CAR-15, M16

the sun or other sources of high temperature. Such cartridges, if fired, may develop hazardous chamber pressures.

i. If, at the time firing is interrupted, a cartridge is in the chamber of a very hot weapon, the cartridge should be removed promptly to prevent the possibility of a cook-off.

j. Misfires and hangfires will be handled as indicated in par. 3-16 through 3-18. Specific instructions, for M16 and XM16E1 rifle, are to wait ten seconds from the failure to fire before retracting bolt to remove the round.

5-19. PACKING AND MARKING.

5-20. PACKING. The individual cartridges for this weapon are packed in cartons (table 5-2). The cartridges are then packed into metal boxes in wirebound wooden boxes.

5-21. Refer to applicable manuals for marking instructions.

TABLE 5-2 PACKING DATA FOR 5.56-MM AMMUNITION

	Volume (cu ft)	Weight (lb)
Packed 20/carton, 36 carton (720)/per metal box M2A1, 2 box (1440 cartridge)/wire-bound box. Dimensions of box; 14-1/2 x 12-3/4 x 8-3/8	0.85	59.0

CHAPTER VI

DESTRUCTION OF MATERIAL TO PREVENT ENEMY USE

6-1. GENERAL.

6-2. Destruction of the 5.56-mm rifles M16 and XM16E1 when subject to capture or abandonment in the combat zone, will be undertaken by the using arm only when, in the judgement of the unit commander concerned, such action is necessary in accordance with orders of, or policy established by, the Army Commander or Air Force Commander.

6-3. The information which follows is for guidance only. Certain of the procedures outlined require the use of explosives and incendiary grenades which normally may not be authorized items of issue to the using organization. The issue of these and related materials, and the conditions under which destruction will be affected, are command decisions in each case, according to the tactical situation. Of the several means of destructions, those most generally applicable are:

Mechanical ----- Requires axe, pick mattock, sledge, crowbar, or similar implement.

Burning ----- Requires gasoline, oil, incendiary grenades, or other flammables, or welding or cutting torch.

Demolition ----- Requires suitable explosives or ammunition. (See note.)

Gunfire ----- Includes artillery, machine guns, rifles using rifle grenades, and launchers using antitank rockets. Under some circumstances hand grenades may be used. (See note.)

Disposal ----- Requires burying in the ground, dumping in streams or marshes, or scattering so widely as to preclude recovery of essential parts.

Note

Generally applicable only when the rifle is to be destroyed in conjunction with other equipment.

In general, destruction of essential parts followed by burning will usually be sufficient to render the rifle useless. However, selection of the particular method of destruction requires imagination and resourcefulness in the utilization of the facilities at hand under the existing conditions. Time is usually critical.

6-4. If destruction to prevent enemy use is resorted to, the rifle must be so badly damaged that it cannot be restored to a usable condition in the combat zone either by repair or cannibalization. Adequate destruction requires that all parts essential to the operation of the rifle, including essential spare parts, be destroyed or damaged beyond repair. However, when lack of time and personnel prevents destruction of all parts, priority is given to the destruction of those parts most difficult to replace. Equally important, the same essential parts must be destroyed on all like materiel so that the enemy cannot construct one complete unit from several damaged ones.

6-5. If destruction is directed, due consideration should be given to observance of appropriate safety precautions.

6-6. DESTRUCTION OF THE 5.56-MM RIFLES M16 AND XM16E1.

6-7. METHOD NO. 1 -- BY MECHANICAL MEANS.

6-8. Using an axe, pick mattock, sledge, or other heavy implement, destroy the rifle by smashing the receiver groups, front and rear sights, trigger and trigger guard, magazine, stock, and controls. Also bend the barrel of the rifle and cut the sling into several pieces. Elapsed time: about 3 minutes.

6-9. METHOD NO. 2 -- BY BURNING.

a. Place the rifle on a suitable pile of combustible material. Pour gasoline or oil over the rifle and the combustible material. Ignite and take cover. A hot fire is required to render the rifle useless. Elapsed time: about 3 minutes.

WARNING

When igniting gasoline, due consideration should be given to the highly flammable nature of gasoline and its vapor. Carelessness in its use may result in painful burns.

b. If a welding or cutting torch is available, burn through the barrel and receiver assembly. Destroy the stock and sling as described in paragraph 6-8 above.

6-10. METHOD NO. 3 -- BY DISPOSAL.

6-11. Bury the rifle in a suitable hole or dump it into a stream. Elapsed time: about 3 minutes.

CHAPTER VII INSPECTIONS

SECTION 1 GENERAL

7-1. SCOPE.

7-2. This chapter provides specific instructions for the inspection by maintenance personnel of materiel in the hands of troops in the field, in maintenance shops, and in alerted units scheduled for oversea duty. Trouble shooting information is incorporated wherever applicable as a normal phase of inspection.

7-3. PURPOSE OF INSPECTION.

7-4. Inspections are made for the purpose of (1) determining the condition of an item as to serviceability, (2) recognizing conditions that would cause failure, (3) assuring proper application of maintenance policies at prescribed levels, and (4) determining the ability of a unit to accomplish its maintenance and supply missions.

7-5. CATEGORIES OF INSPECTION.

7-6. In general, three categories of inspection are performed by direct and general maintenance personnel. (Par. 7-7, 7-8 and 7-9).

7-7. INSPECTION OF MATERIEL IN THE HANDS OF TROOPS IN THE FIELD.

a. SPOT-CHECK INSPECTION. This is an inspection performed on a percentage of materiel in order to ascertain the adequacy and effectiveness of organizational maintenance and supply. Included within this scope is inspection of equipment to detect incipient failures before unserviceability occurs; inspection to ascertain the availability and use of technical and supply manuals and lubrication instructions; inspection to determine the accuracy of records, authorized levels of equipment and supplies, practice of supply economy, preservation, and knowledge of the proper procedures for requisitioning supplies and equipment and follow-up thereon.

b. COMMAND MAINTENANCE. (Army) Command maintenance inspections will be performed, at least, annually. The purpose of the

inspection is to ascertain the serviceability of equipment, to predict maintenance and supply requirements, and to determine the adequacy of facilities and effectiveness of procedures. Information obtained during the inspection should indicate future requirements for maintenance and for replacement, as well as disclose immediate needs for maintenance and application of modification work orders. During inspection, correction of deficiencies will be made on the spot when practical. For additional information relative to these inspections and the forms to be used therewith, refer to AR 750-8.

7-8. SHOP INSPECTION.

a. INITIAL INSPECTION. This is an inspection of materiel received in maintenance shops for purpose of determining the degree of repair and parts requirement. This includes determination of modification work orders or TCTO's to be applied.

b. IN-PROCESS INSPECTIONS. These are inspections performed in the process of repairing the materiel, to insure that all parts conform to the prescribed repair standards, that the workmanship is in accordance with approved methods and procedures, and that deficiencies not disclosed by the initial inspection are found and corrected.

c. FINAL INSPECTION. This is an acceptance inspection performed by a final inspector after repairs have been completed, to insure that the materiel is acceptable for return to user or for return to replacement stock according to the standards established.

7-9. PREEMBARKATION INSPECTION.

7-10. This inspection is conducted on materiel in alerted units scheduled for oversea duty to insure that such materiel will not become unserviceable or worn out in a relatively short time. It prescribes a higher percentage of remaining usable life in serviceable materiel to meet a specific need beyond minimum serviceability.

SECTION 2
INSPECTION PROCEDURES

7-11. GENERAL.

WARNING

Before starting an inspection, be sure to clear the rifle. Do not actuate the trigger until the rifle has been cleared. Inspect the chamber to insure that it is empty and check to see that no ammunition is in position to be introduced. Avoid having live ammunition in the vicinity of the work area.

7-12. Check to see that the rifle has been cleaned of all grease, oil, dirt, or foreign matter which might interfere with proper functioning or obscure the true condition of the parts.

7-13. INSPECTION PRIOR TO DISASSEMBLY.

7-14. VISUAL INSPECTION. Make an overall inspection of the rifle for general appearance, condition and operation.

7-15. INITIAL INSPECTION. Initial inspection performed upon receipt of materiel turned in for repair determines the extent of repair required and provides the basis for procuring the parts, assemblies, or supplies necessary to accomplish the repair.

7-16. FUNCTIONAL INSPECTION. Refer to paragraph 3-29. Do not use live cartridges.

CHAPTER VIII REPAIR OPERATIONS

SECTION I TROUBLE SHOOTING

8-1. GENERAL.

8-2. The information contained in this manual is to aid personnel whose responsibility it is to restore worn, damaged, or inoperative equipment to satisfactory condition. This information includes both determination of cause (trouble shooting) and corrective action.

8-3. All repair maintenance shall be done with standard service equipment by all personnel trained in the use of such equipment, using techniques in accordance with procedures in applicable regulations. Personnel using this section of the manual shall have acquired basic skills in trouble shooting, i. e., inspections and analysis of symptoms.

8-4. TROUBLE SHOOTING PROCEDURES.

8-5. USE OF ILLUSTRATIONS. Illustrations in this manual provide information on placement

and identification. Be familiar with normal appearance and placement of the various components and their associated connections.

8-6. INTERNAL AND EXTERNAL TROUBLES. When a malfunction is observed, insure that all operating procedures have been followed exactly as specified, decide if the cause can be identified and the trouble eliminated without dismantling the equipment.

8-7. USE OF THE TROUBLE SHOOTING TABLE. The table of trouble shooting information is designed to aid in locating and correcting malfunctions. Find the trouble that has developed in the first column; then find the cause in the probable cause column. Follow over to the right in the remedy column and take necessary action to correct malfunction.

Table 8-1. Trouble Shooting

Malfunction	Probable cause	Remedy
Bolt fails to lock to the rear after the last round.	<ol style="list-style-type: none"> 1. Faulty magazine. 2. Broken bolt catch and/or spring. 	<p>Replace magazine. Replace bolt catch and/or spring.</p>
Failure to feed.	<ol style="list-style-type: none"> 1. Faulty magazine. 2. Binding bolt and bolt carrier in locked position. 3. Restricted action spring guide assembly 	<p>Replace magazine. Disassemble and clean (On a new weapon, one or two drops of oil on the bolt rings may remedy this trouble). Remove action spring and action spring guide assembly and clean.</p>
Failure to cycle with safety set at automatic.	<ol style="list-style-type: none"> 1. Broken automatic sear or spring. 2. Faulty selector lever. 3. Frozen ejector. 	<p>Replace automatic sear assembly. Replace selector lever. Disassemble and clean.</p>

Table 8-1. Trouble Shooting - (Continued)

Malfunction	Probable cause	Remedy
Failure to fire.	<ol style="list-style-type: none"> 1. Improper assembly of firing pin. 2. Broken hammer spring. 3. Broken disconnect or spring. 4. Misaligned or worn trigger or hammer spring. 5. Improperly installed hammer or trigger spring. 	Reinstall firing pin and check firing pin retaining pin for damage. Replace hammer spring. Replace disconnect or spring. Replace trigger or hammer spring. Disassemble and install properly.
Fires with selector lever on SAFE.	<ol style="list-style-type: none"> 1. Faulty selector lever. 2. Faulty or misaligned trigger pin. 3. Faulty hammer or trigger. 	Replace selector lever. Replace trigger pin. Replace hammer or trigger.
With selector lever on SEMI, fires when trigger is released.	<ol style="list-style-type: none"> 1. Faulty or misaligned trigger pin. 2. Faulty hammer or trigger. 	Replace trigger pin. Replace hammer or trigger.
Bolt seizes, will not rotate.	Carbon dirty or burred bolt group.	Hold rifle in vertical position and strike butt <u>sharply</u> on ground, while pulling back on charging handle. <div style="border: 1px dashed black; padding: 2px; text-align: center; width: fit-content; margin: 10px auto;">CAUTION</div> Strike butt squarely on ground to prevent breakage of stock. Remove bolt group and clean.

SECTION 2 DISASSEMBLY AND ASSEMBLY

8-8. GENERAL.

8-9. This section contains instructions on disassembly and assembly.

Note

The number in the upper left-hand corner of illustration gives the sequence of disassembly.



Note

The number in the lower right-hand corner of illustration gives the sequence of assembly.



The rifle is composed of three groups: bolt carrier group, lower receiver group, and upper receiver group (figure 3-4). Disassembly and assembly for operator is covered in chapter III.

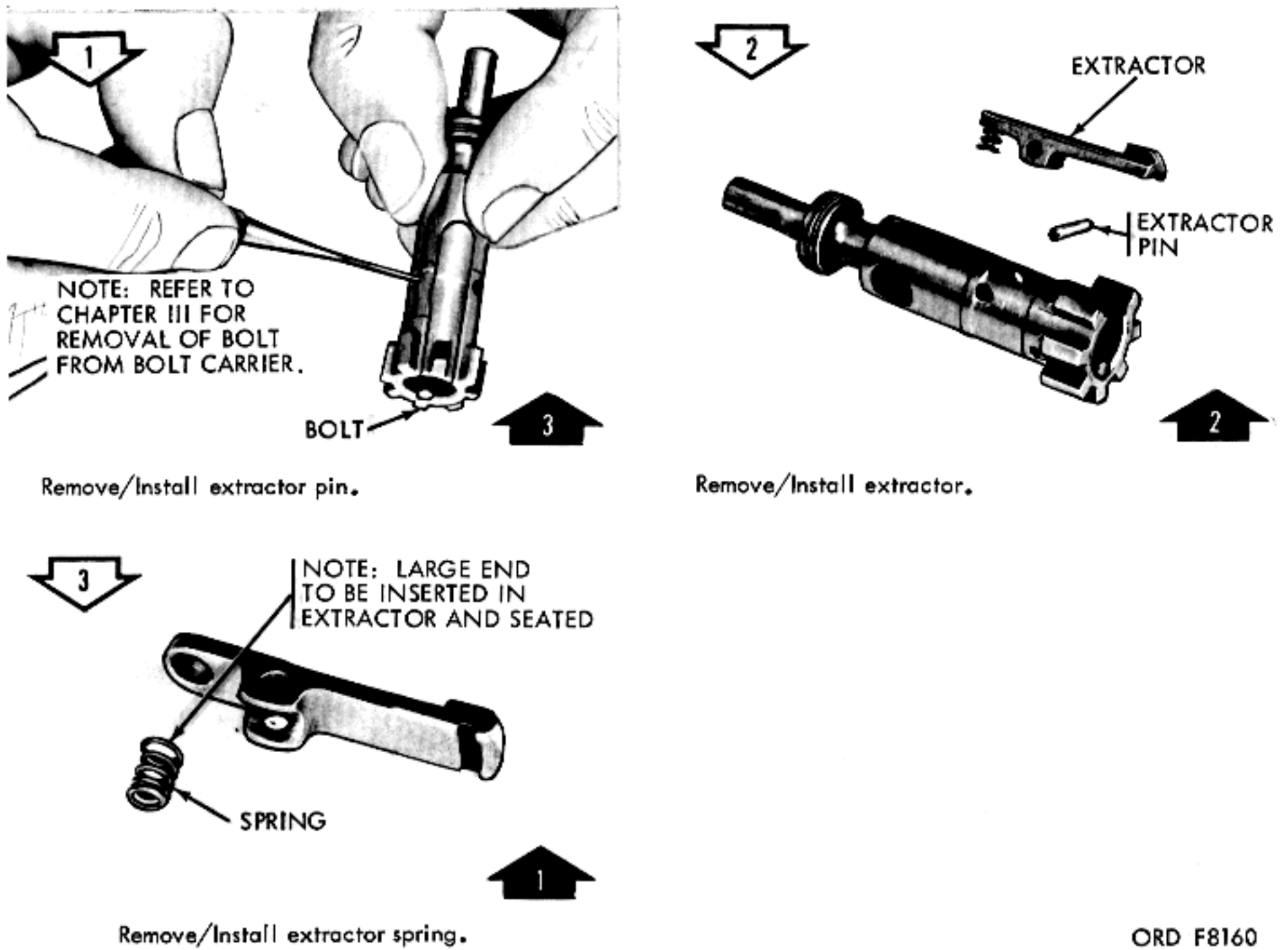


Figure 8-1. Organizational Disassembly/Assembly

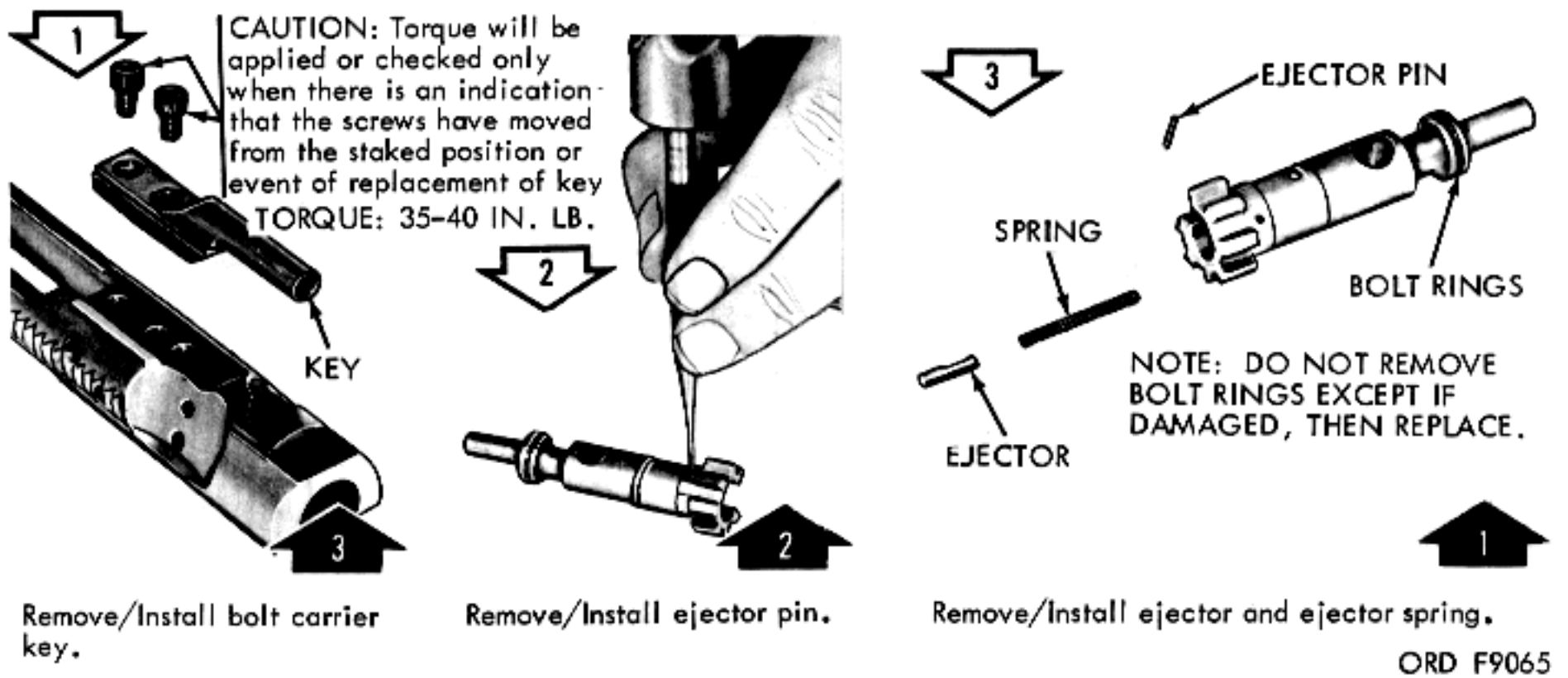
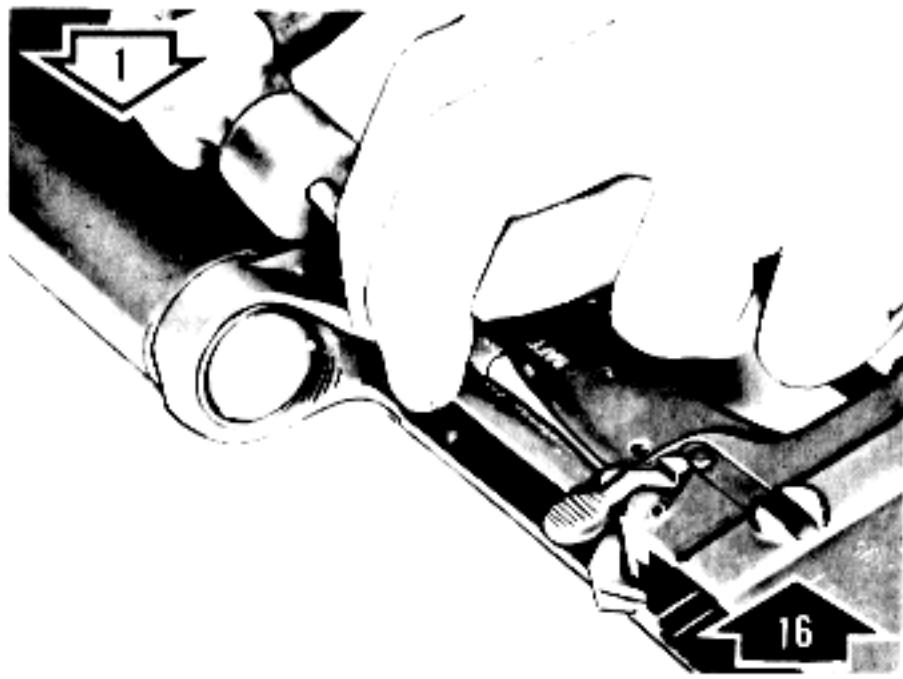
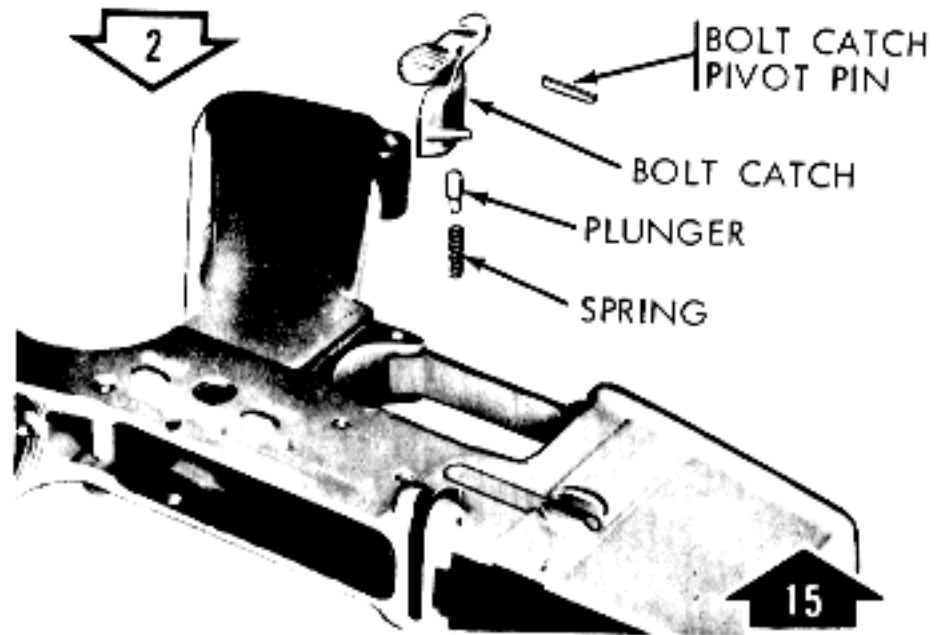


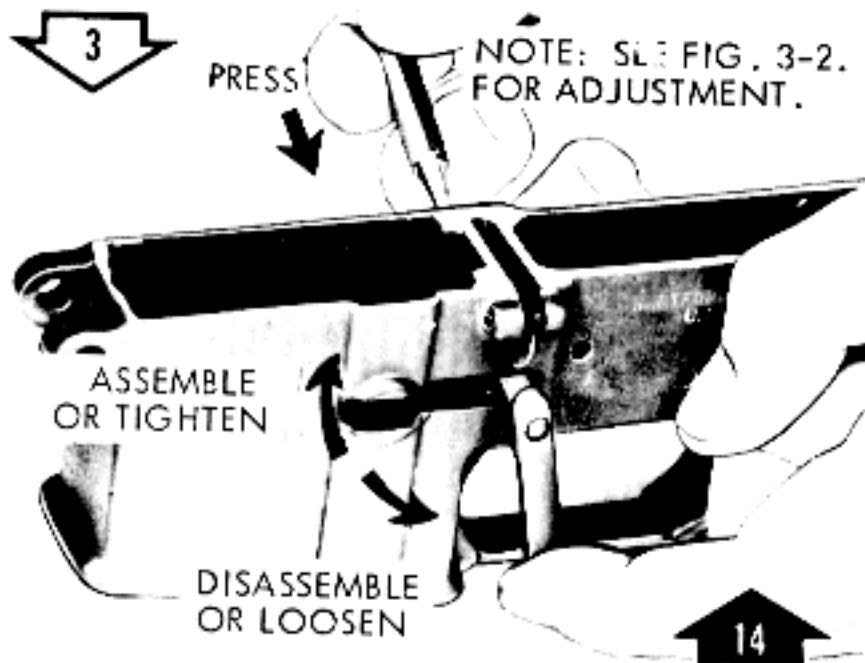
Figure 8-2. Direct Support Maintenance Disassembly/Assembly Bolt Carrier Group



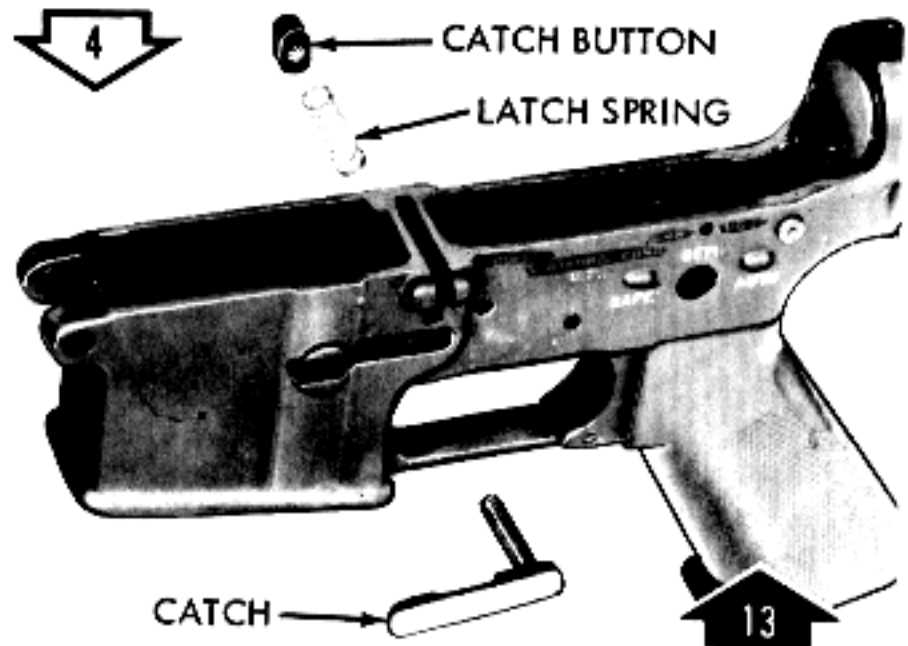
Remove/Install bolt catch pivot pin



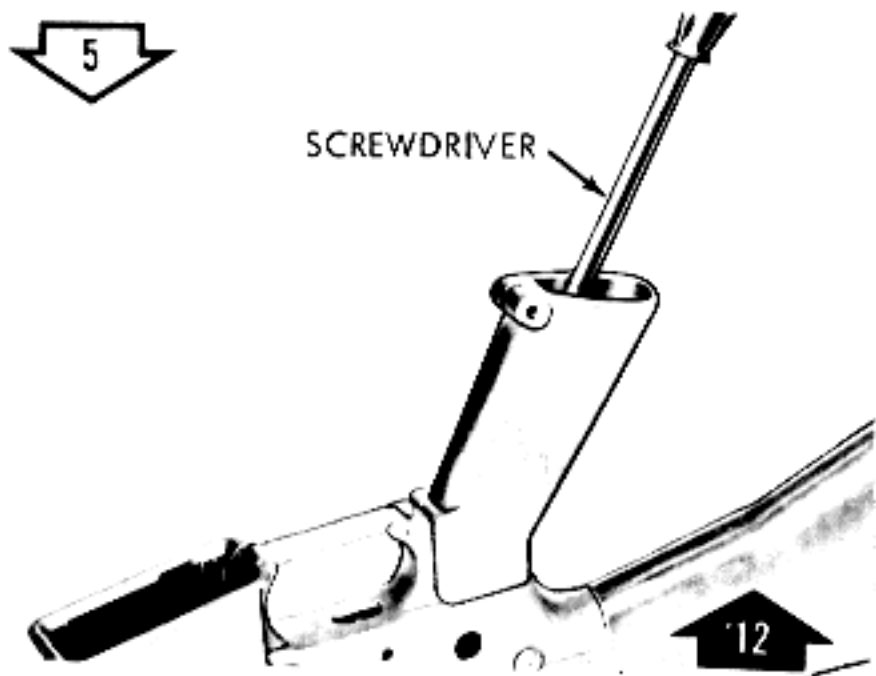
Remove/Install bolt catch, bolt catch plunger, and bolt catch spring.



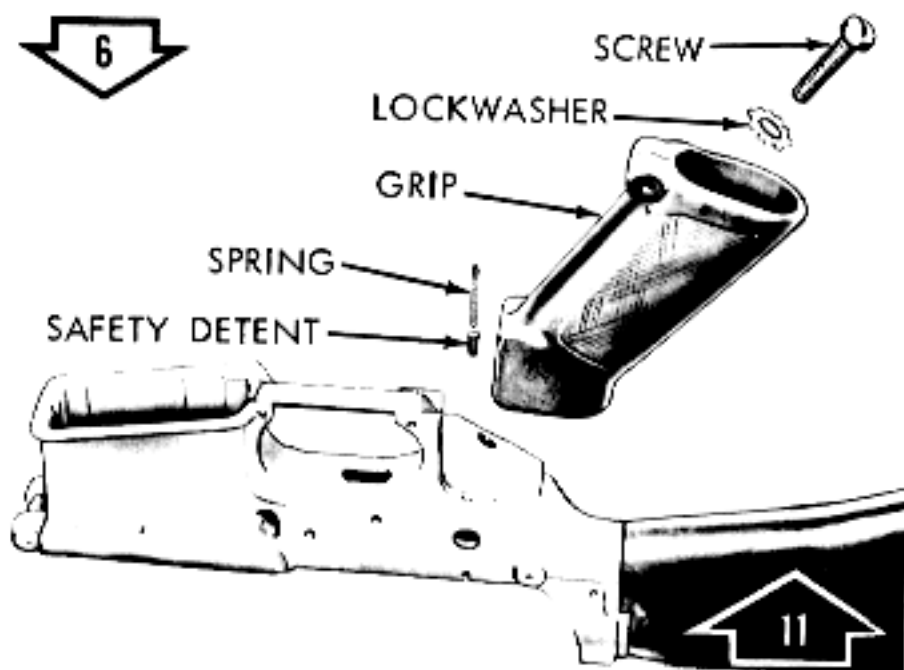
Remove/Install magazine catch.



Remove/Install magazine catch button, and magazine catch spring.



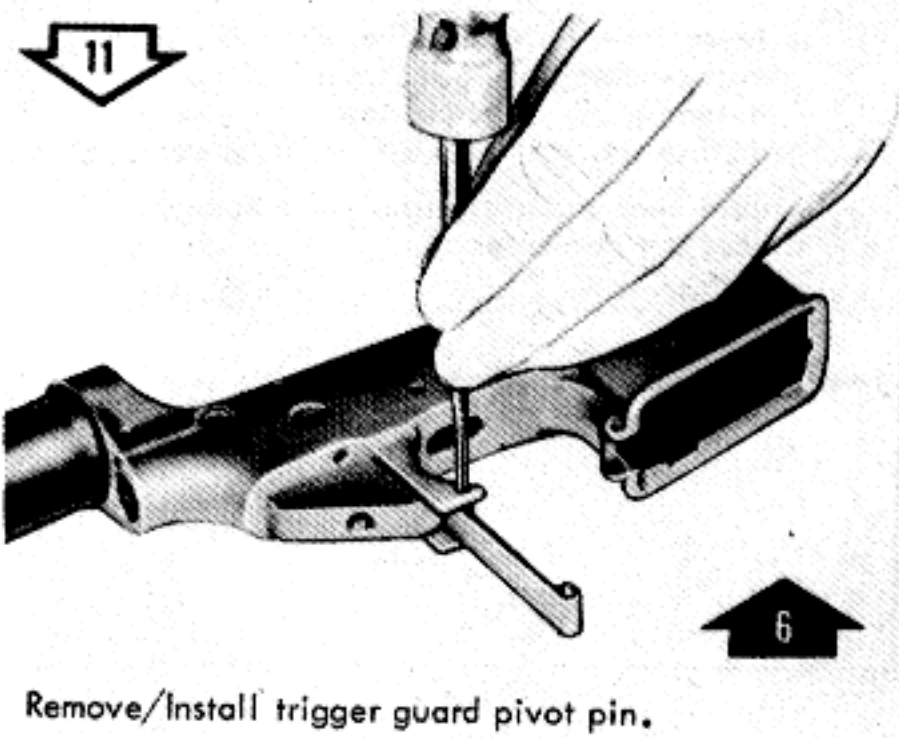
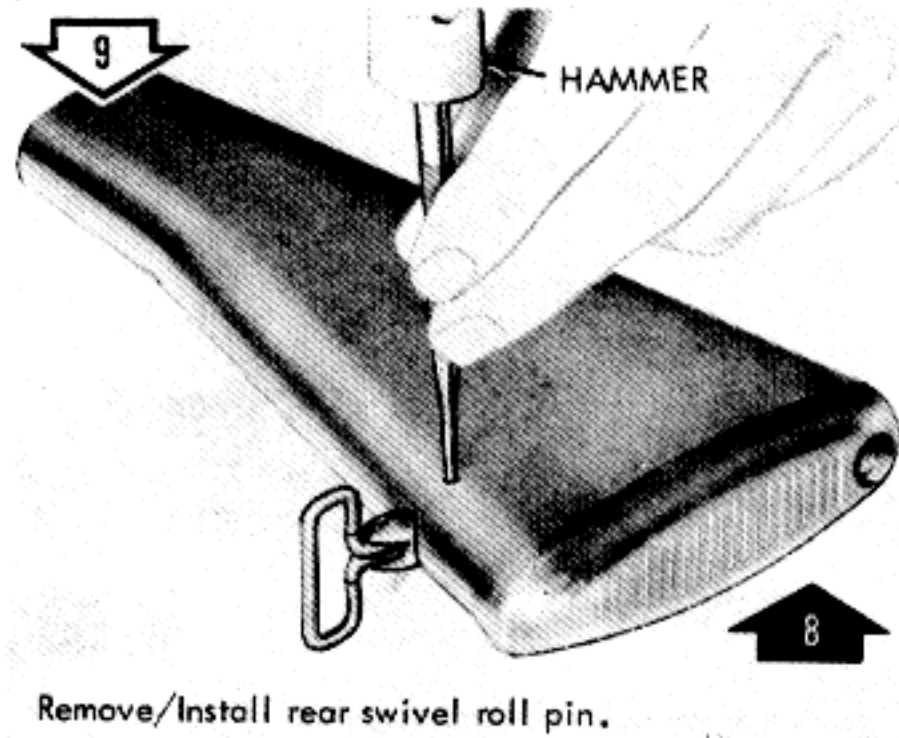
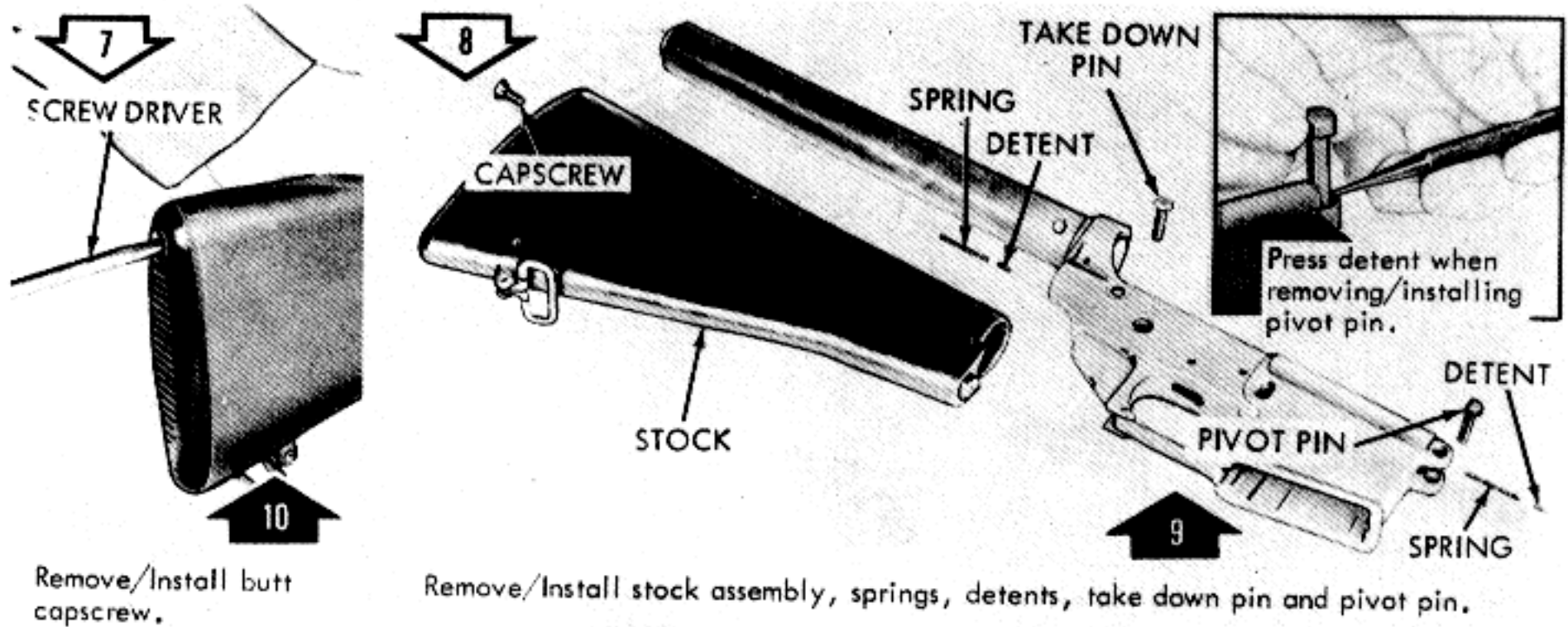
Remove/Install pistol grip screw.



Remove/Install lockwasher, pistol grip, safety detent and safety detent spring (ejector spring).

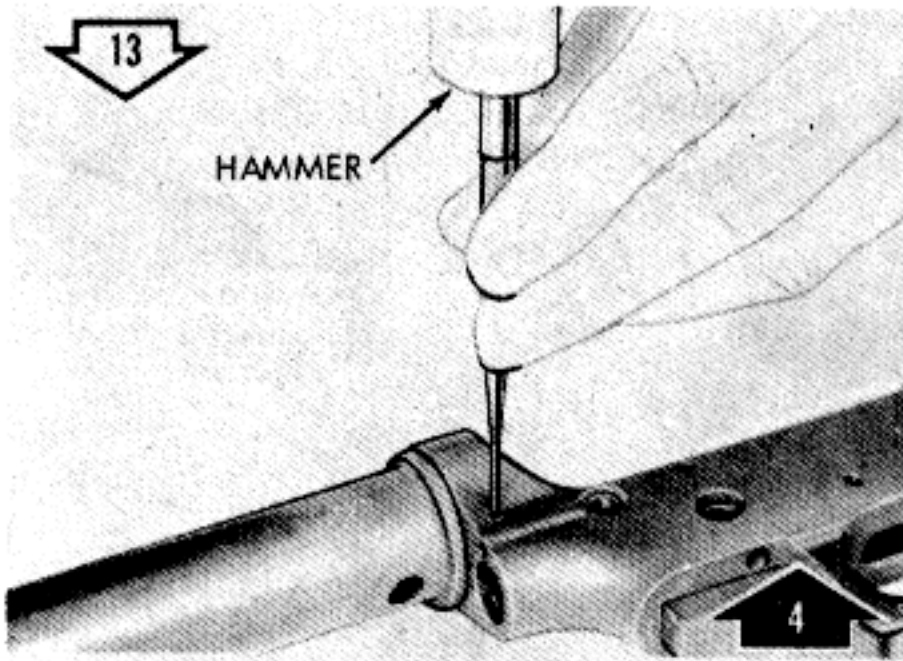
ORD F8147

Figure 8-3. Disassembly/Assembly Lower Receiver Group (Page 1 of 3)

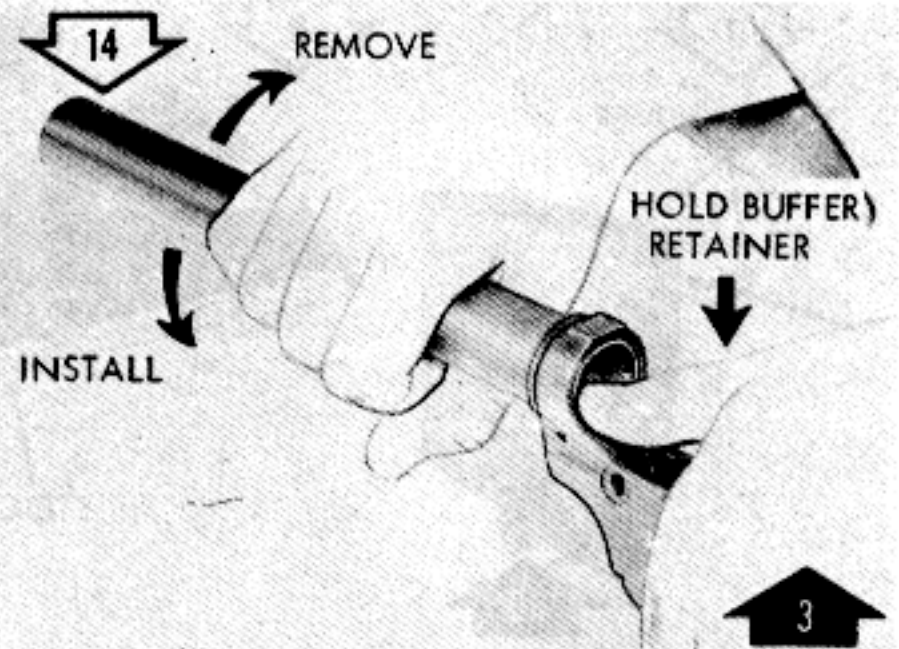


ORD F8148

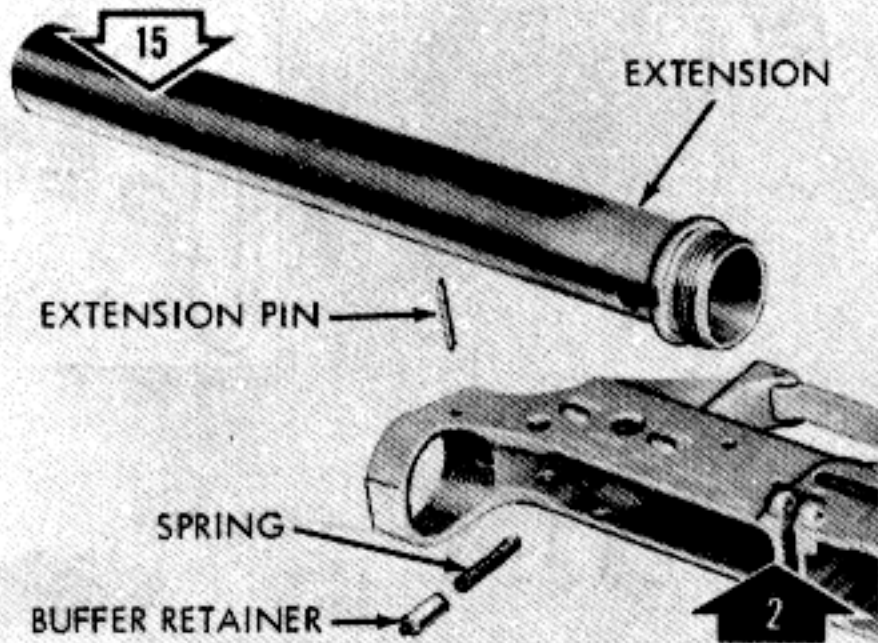
Figure 8-3. Disassembly/Assembly Lower Receiver Group (Page 2 of 3)



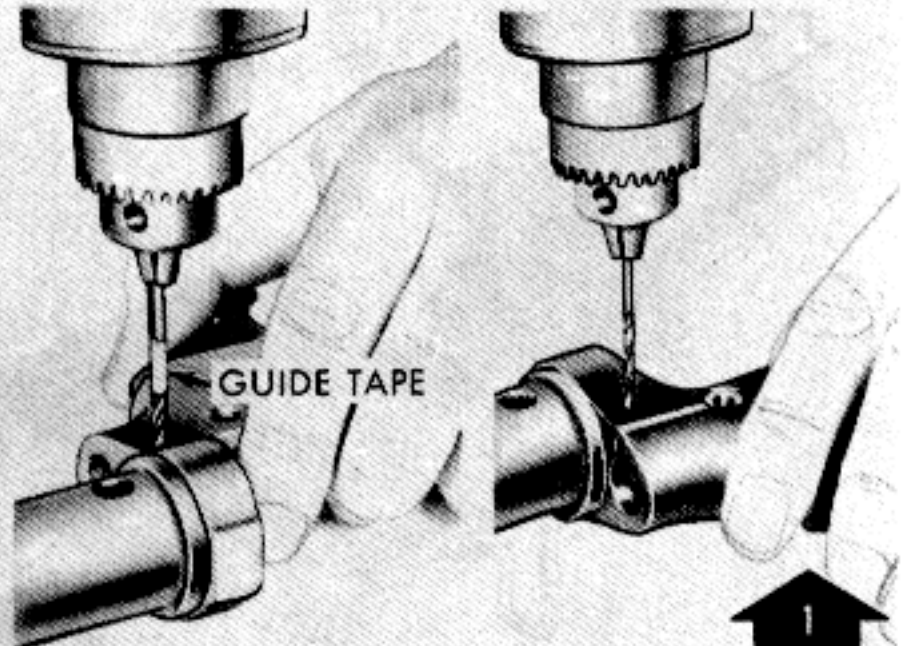
Remove/Install lower receiver extension pin.



Remove/Install lower receiver extension from/to receiver.



Remove/Install lower receiver extension, buffer retainer and buffer retainer spring from/to receiver.



Replacing new receiver extension.

1. Tighten extension securely in receiver.
2. Using receiver as a guide, drill ($3/32$ drill) approximately $7/16$ in. into receiver and extension. (A piece of tape may be put on drill as a guide for the $7/16$ in. dimension).
3. Turn over and drill completely through receiver and extension.

ORD F8129

Figure 8-3. Disassembly/Assembly Lower Receiver Group (Page 3 of 3)

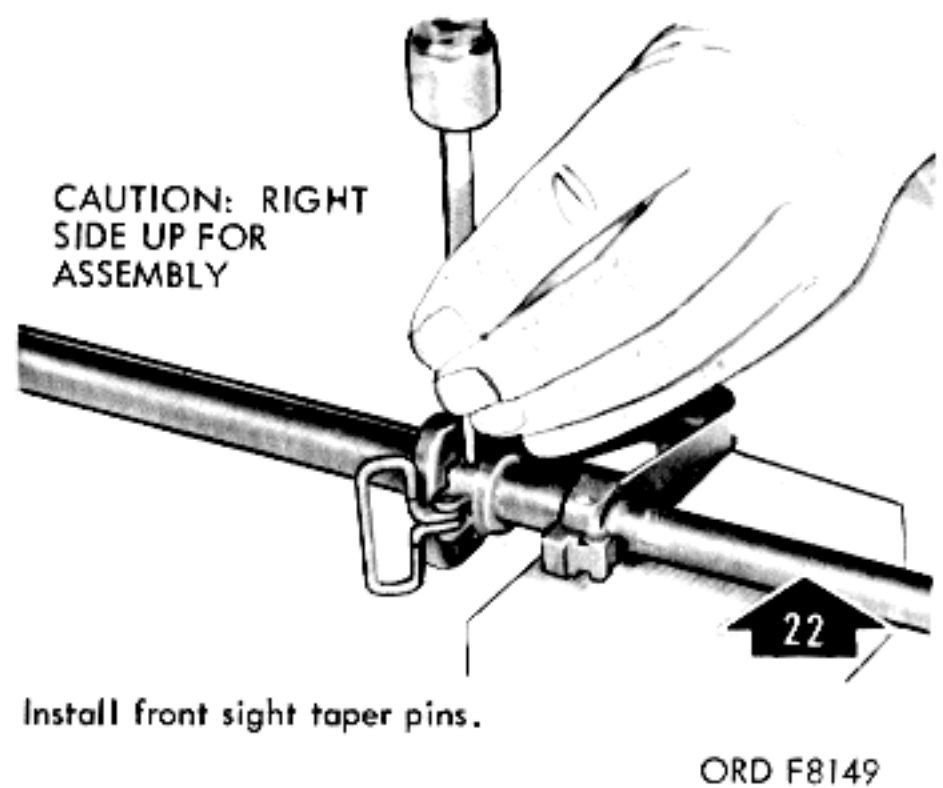
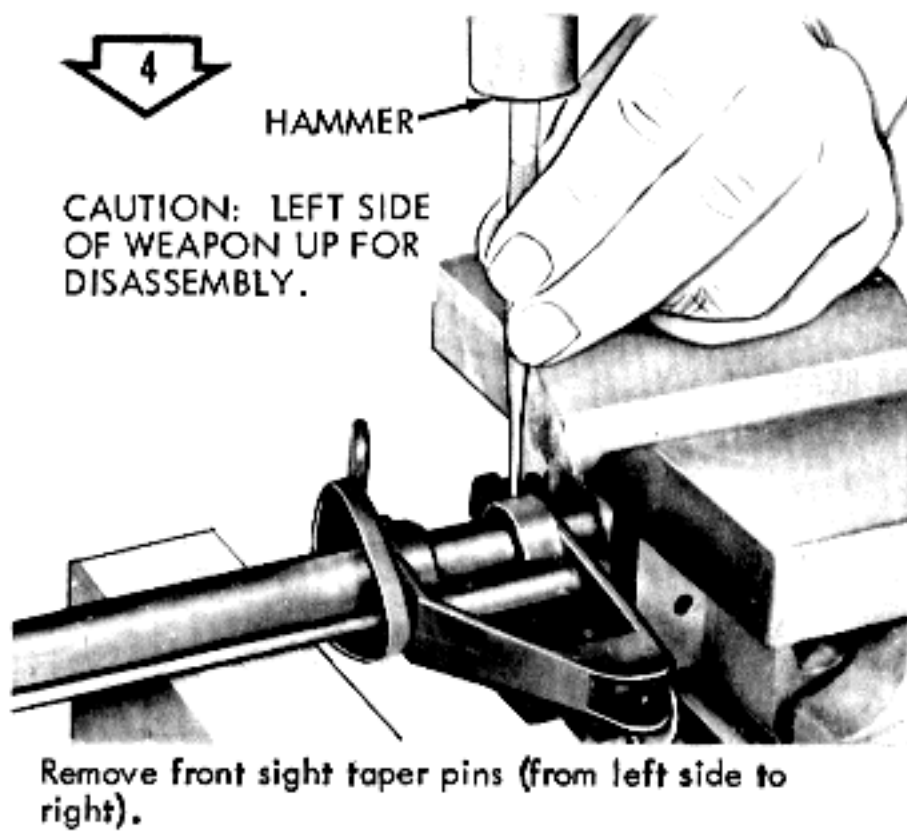
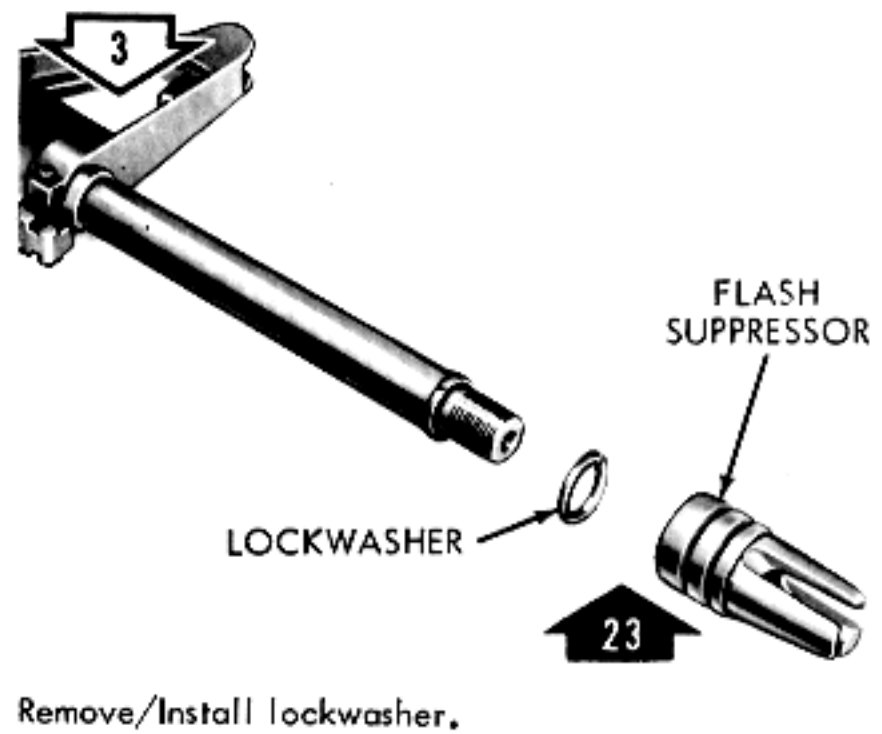
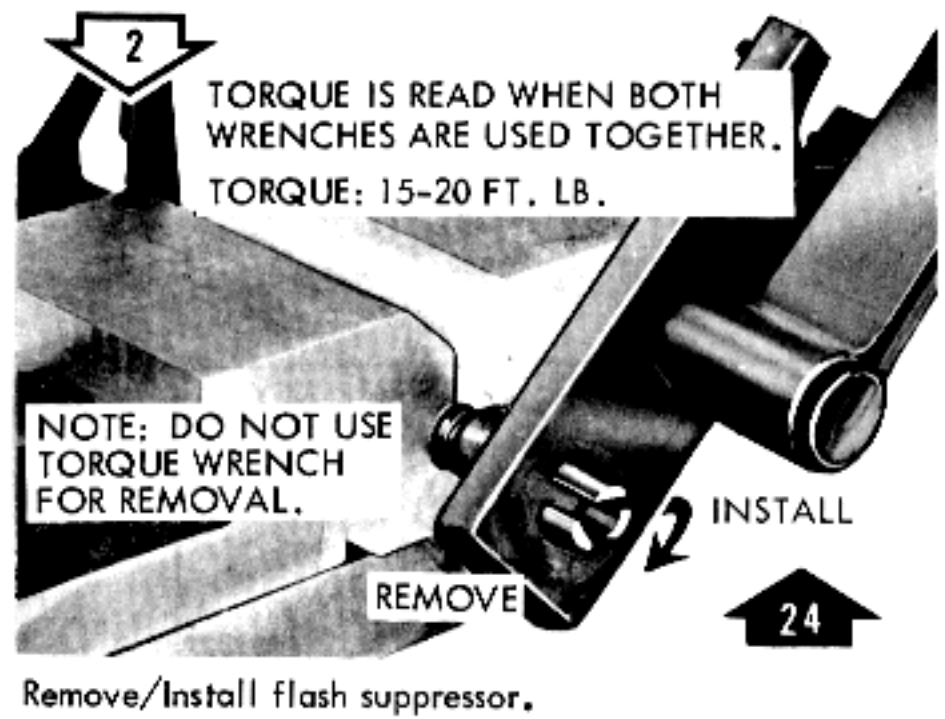
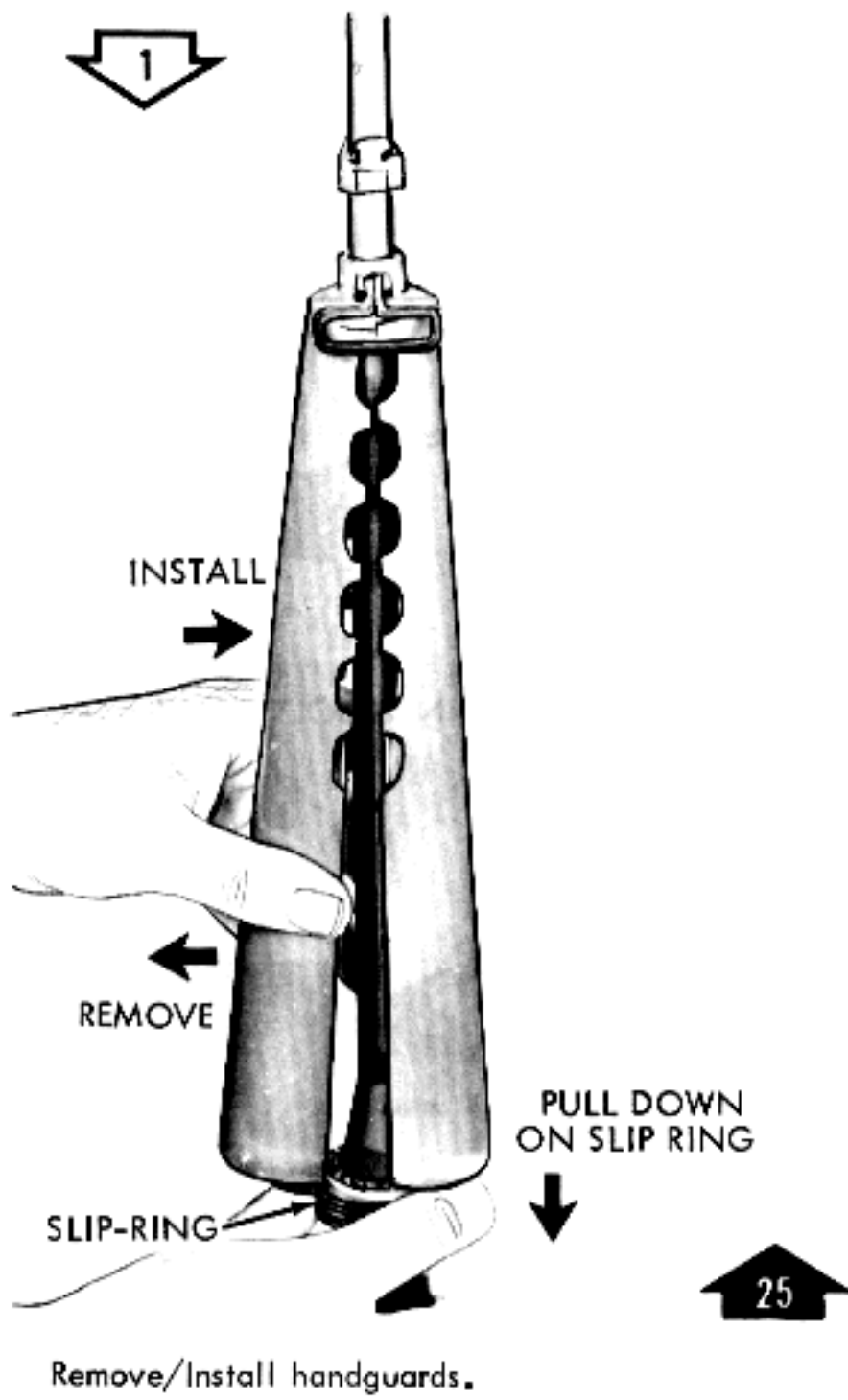
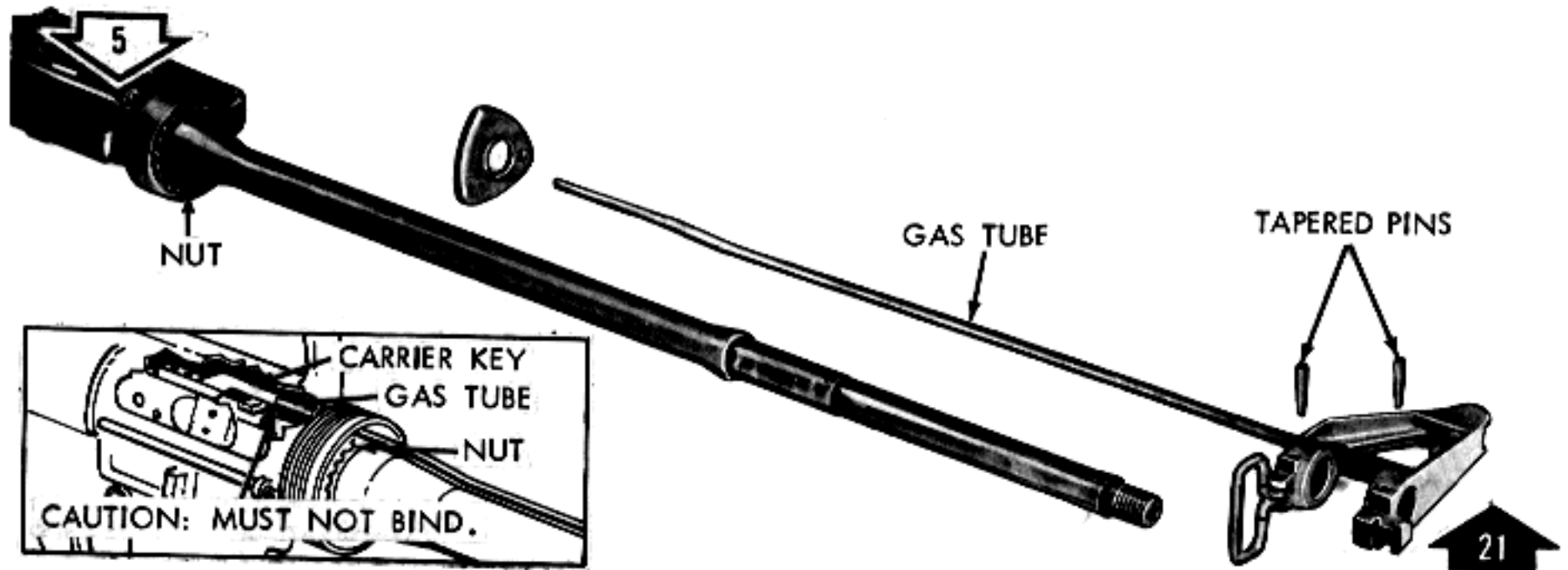
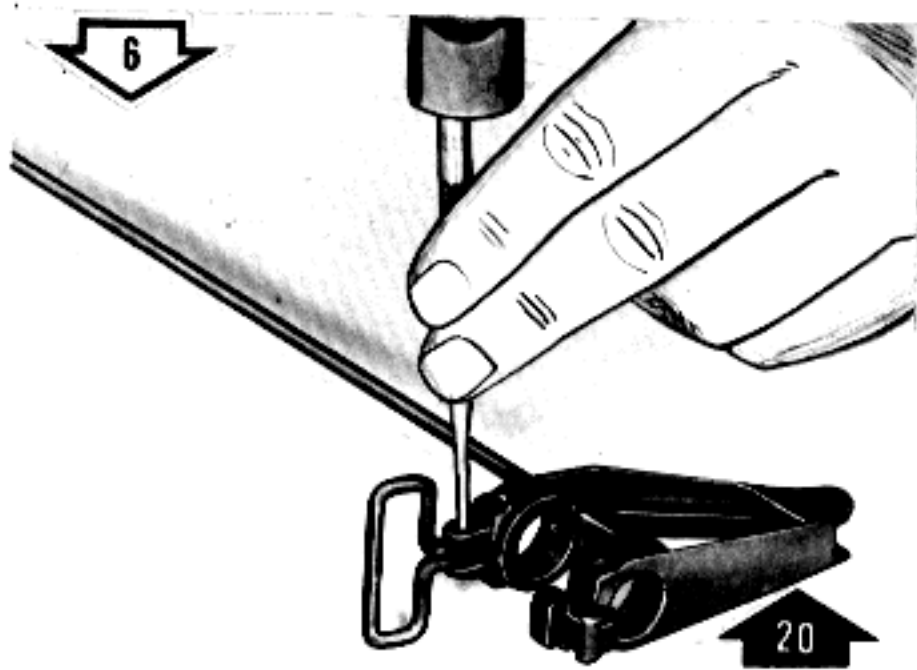


Figure 8-4. Disassembly/Assembly Upper Receiver Group (Page 1 of 6).

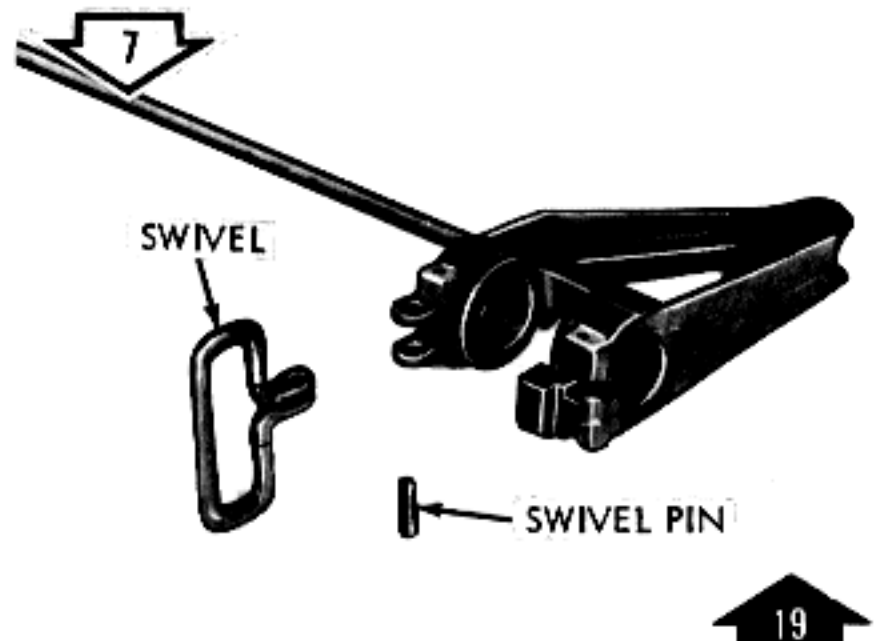


Remove/Install front sight and gas tube.

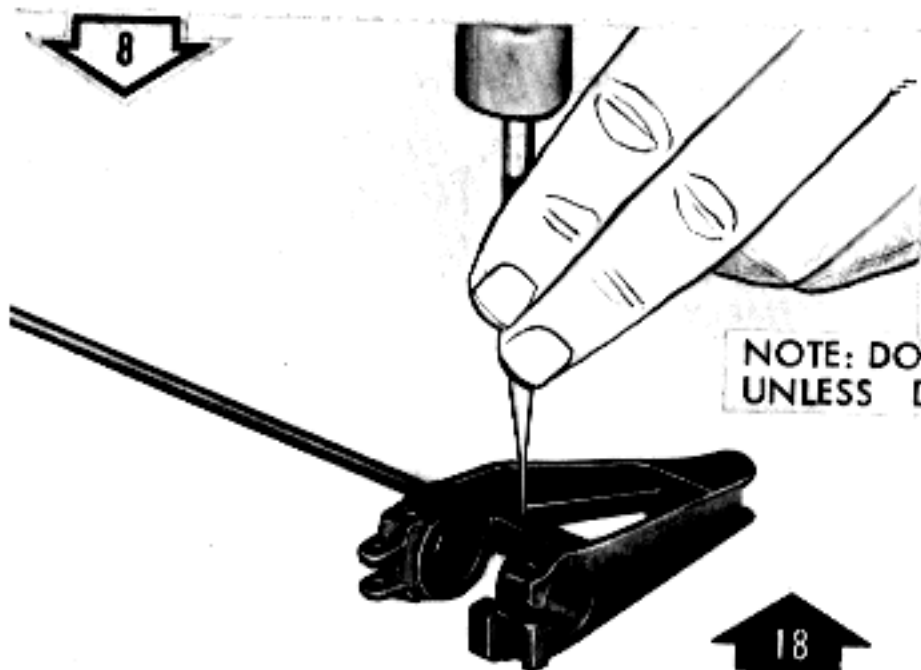
NOTE: WHEN INSTALLING GAS TUBE, THERE SHALL BE FREE MOVEMENT OF GAS TUBE INTO BOLT CARRIER KEY.



Remove/Install front swivel pin.

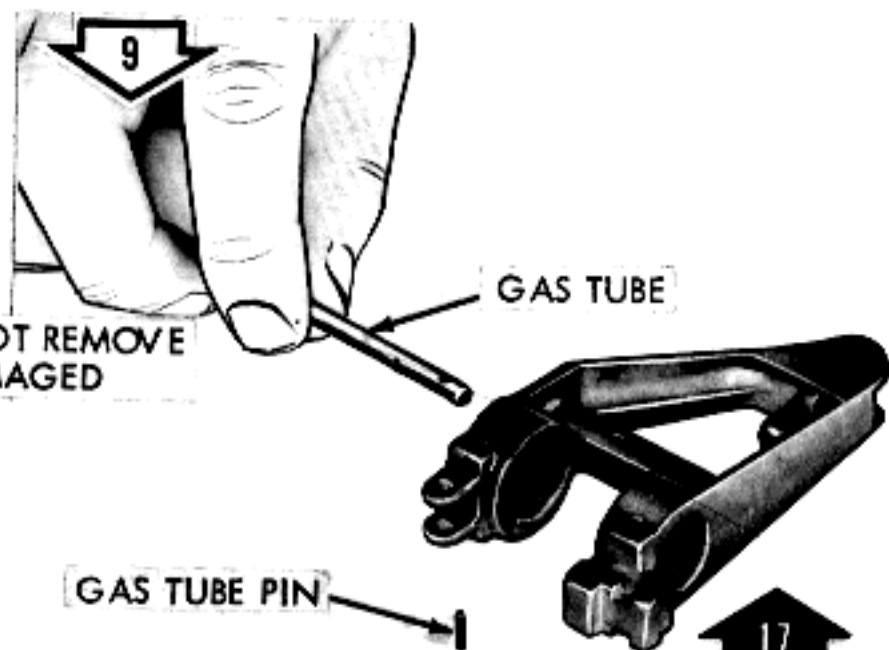


Remove/Install swivel.



Remove/Install gas tube pin.

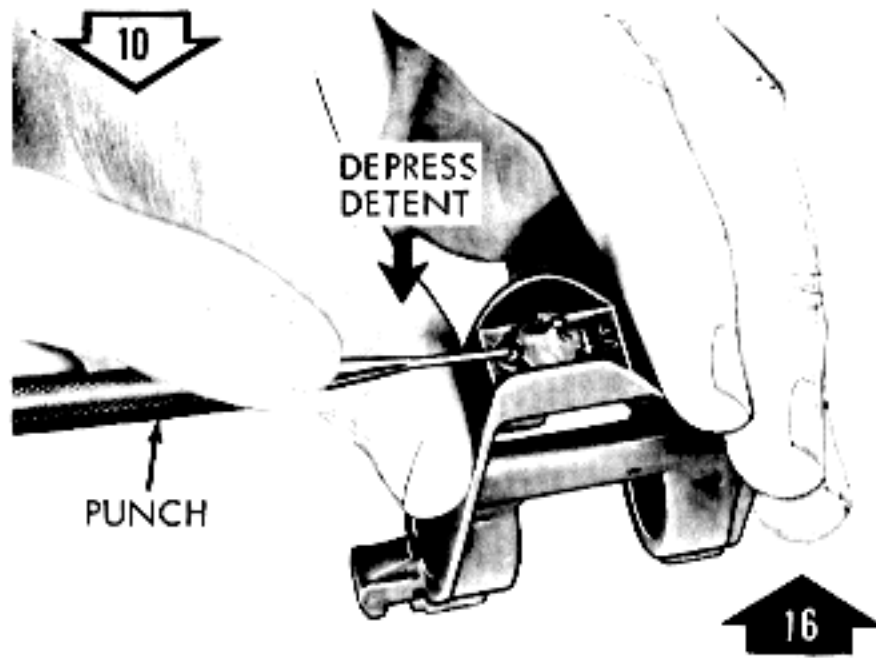
NOTE: DO NOT REMOVE UNLESS DAMAGED



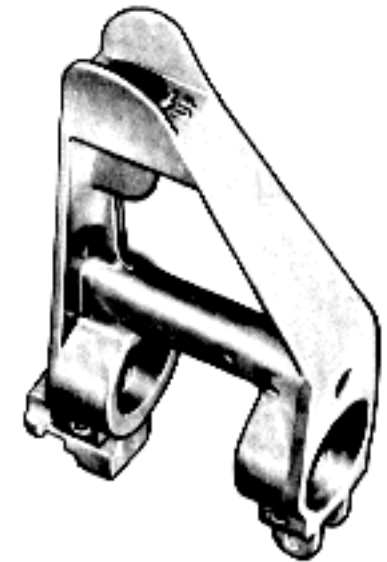
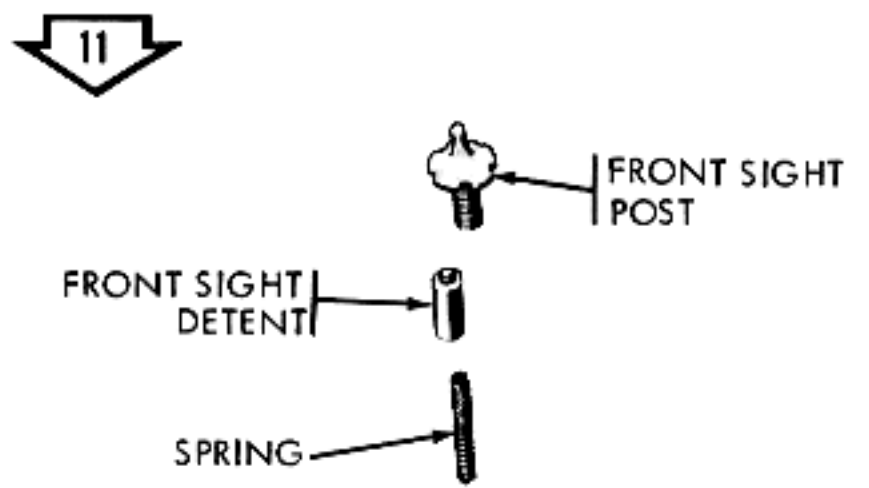
Remove/Install gas tube.

ORD F8150

Figure 8-4. Disassembly/Assembly Upper Receiver Group (Page 2 of 6)



Remove/Install front sight post.

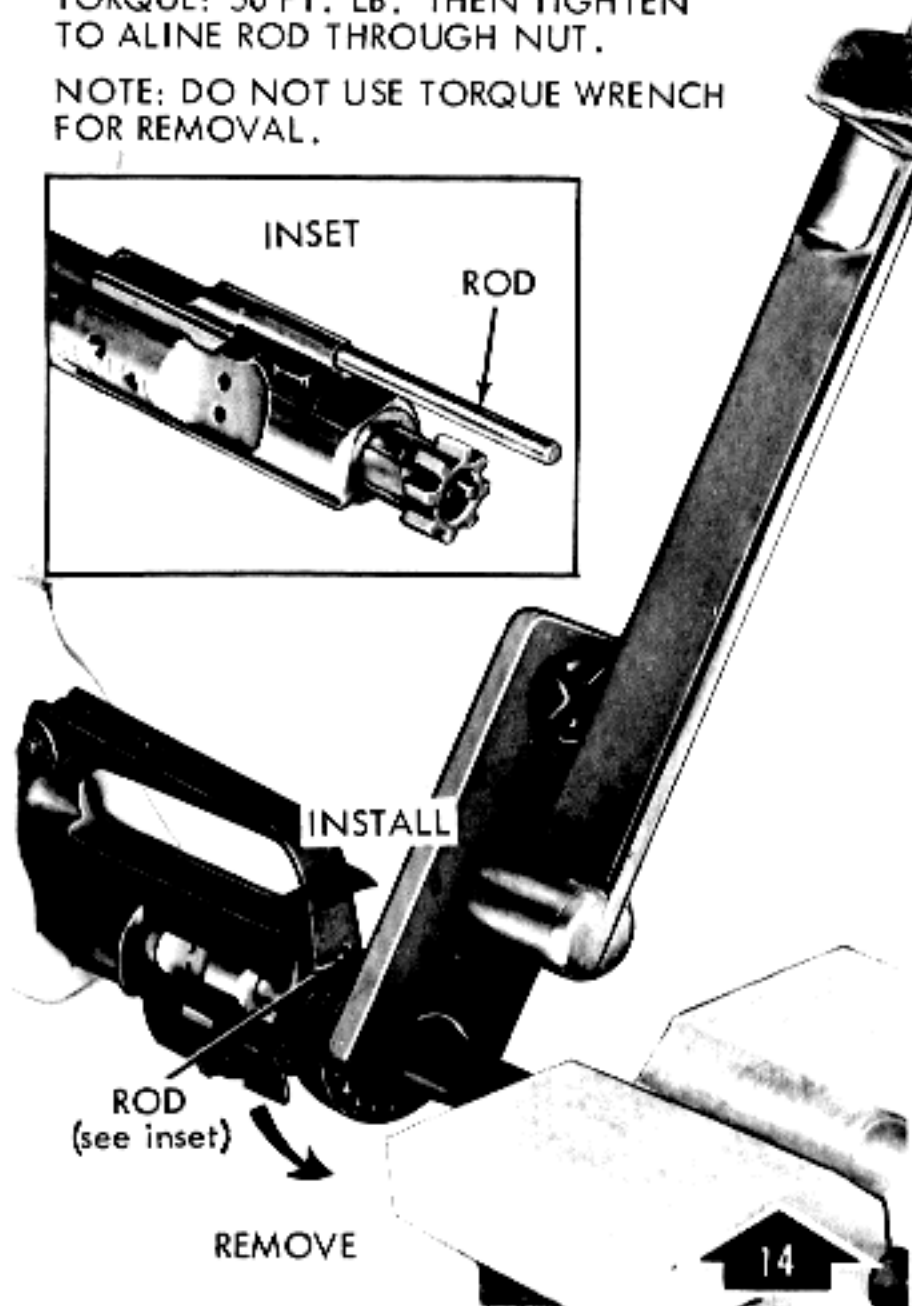
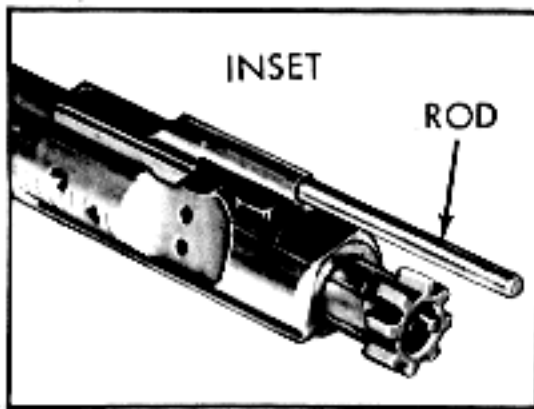


Remove/Install front sight detent and front sight spring.

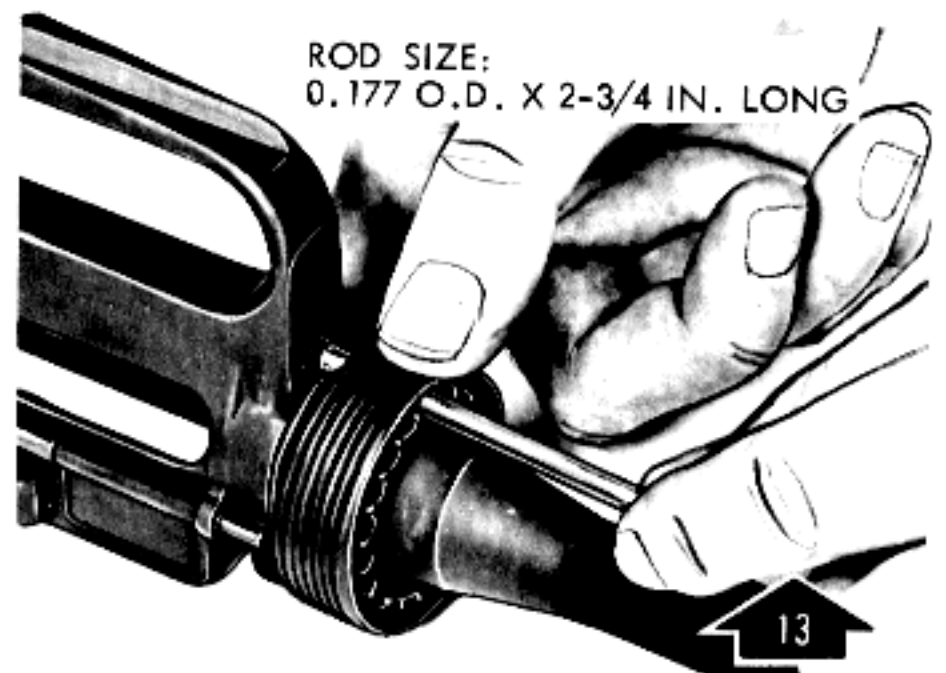
12 TORQUE IS READ WHEN BOTH WRENCHES ARE USED TOGETHER.

TORQUE: 50 FT. LB. THEN TIGHTEN TO ALINE ROD THROUGH NUT.

NOTE: DO NOT USE TORQUE WRENCH FOR REMOVAL.



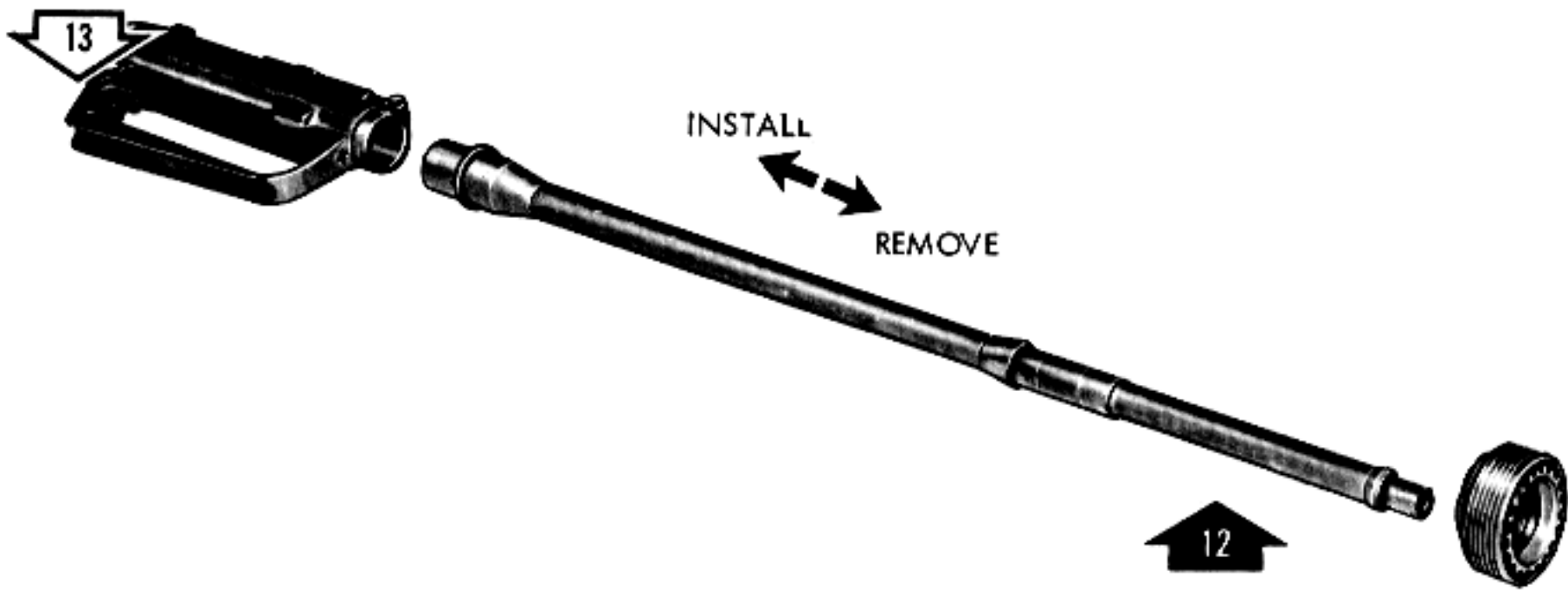
Remove/Install barrel nut and slip ring assembly.



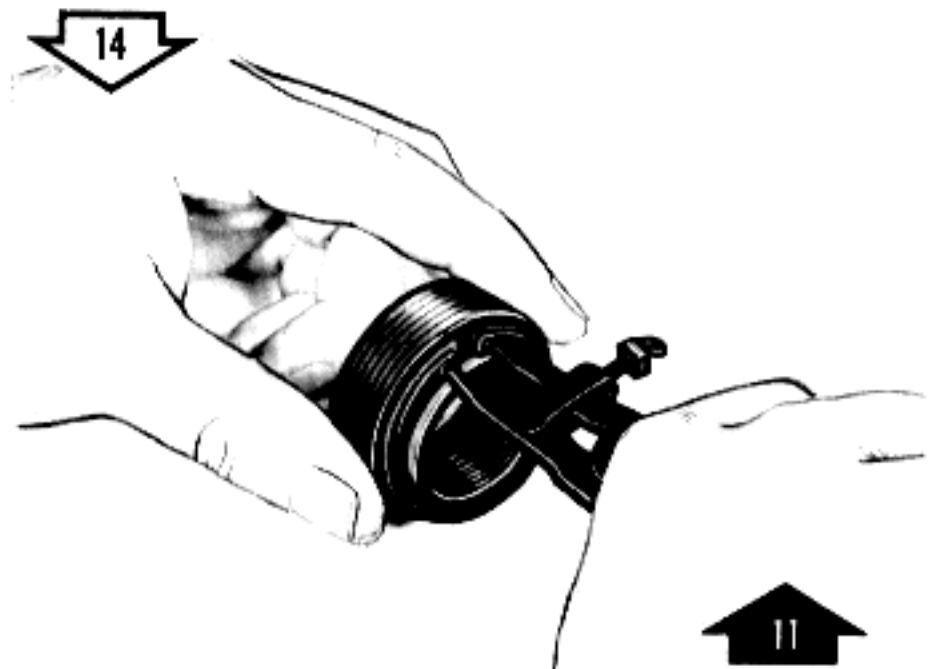
Install and aline slip ring assembly.

Figure 8-4. Disassembly/Assembly Upper Receiver Group (Page 3 of 6).

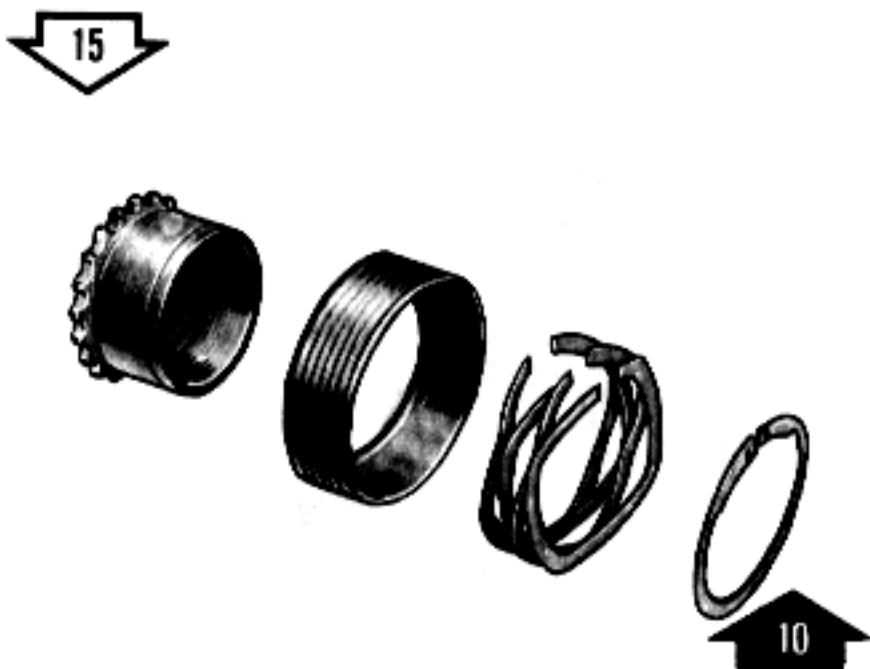
ORD F8151



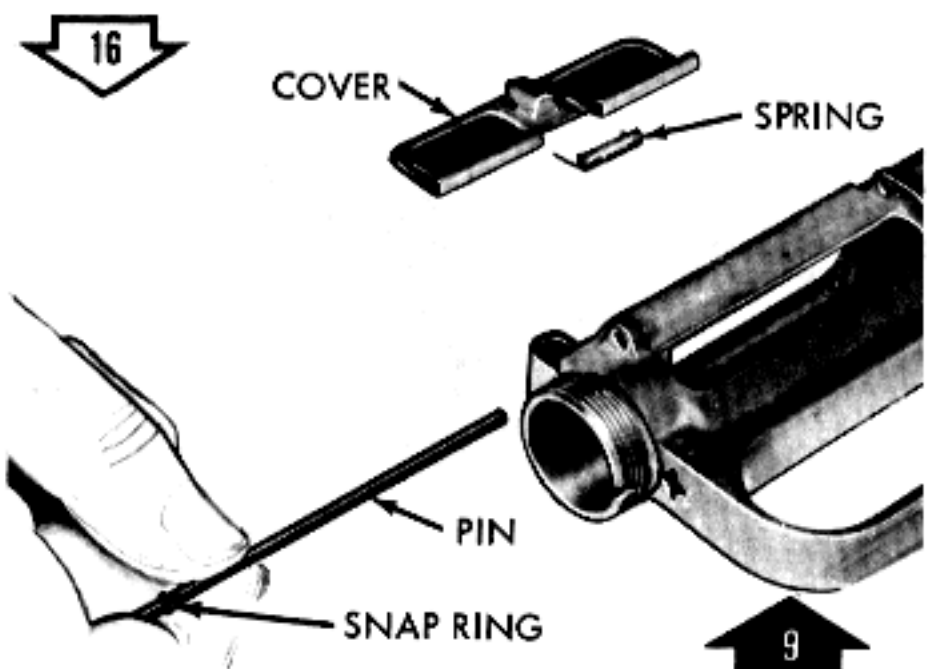
Remove/Install barrel assembly from receiver.



Remove/Install handguard snap ring.



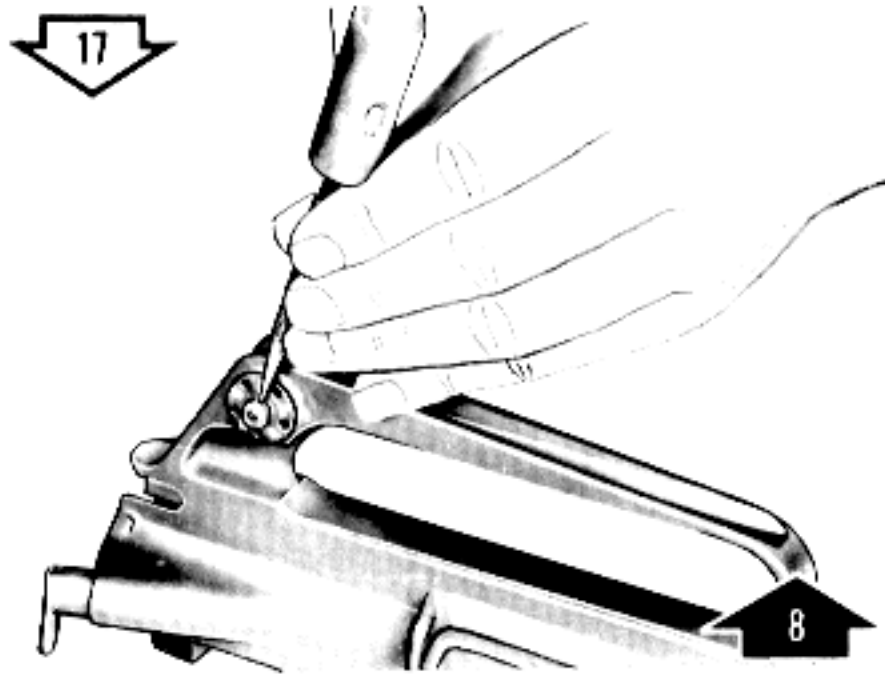
Disassemble/Assemble slip ring assembly.



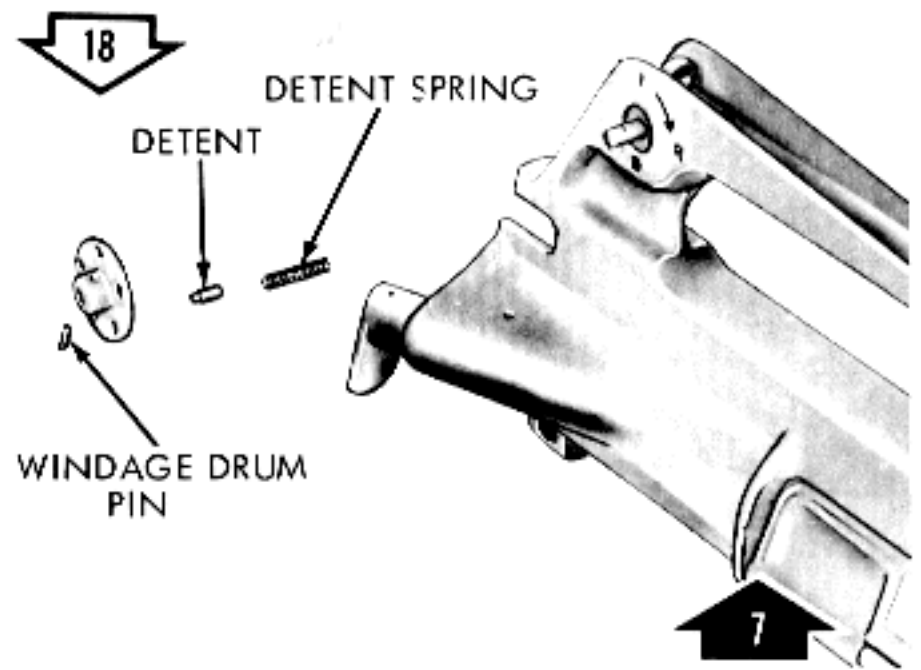
Remove/Install ejector port pin, ejector port spring and ejector port cover.

ORD F8152

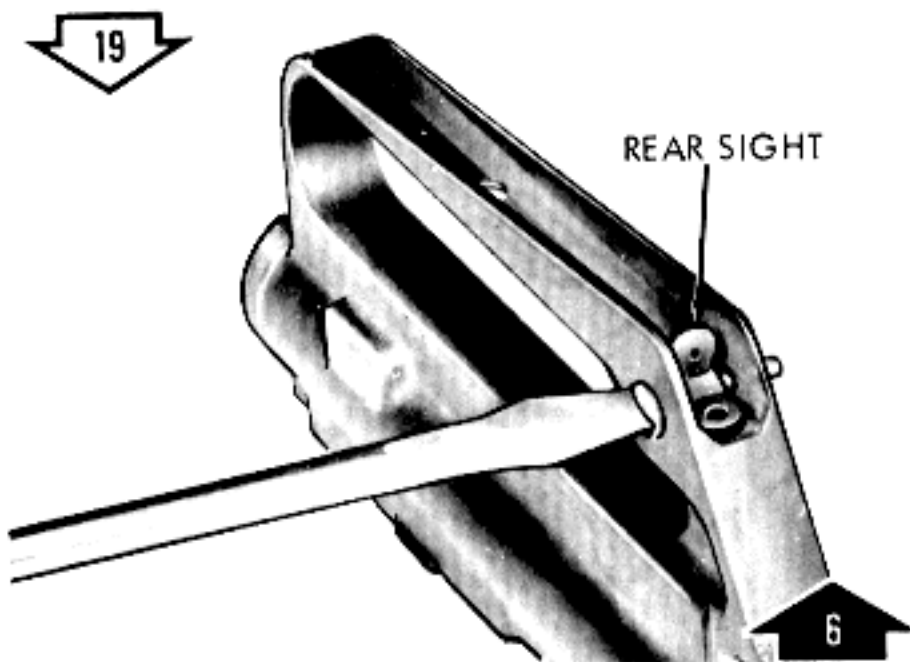
Figure 8-4. Disassembly/Assembly Upper Receiver Group (Page 4 of 6)



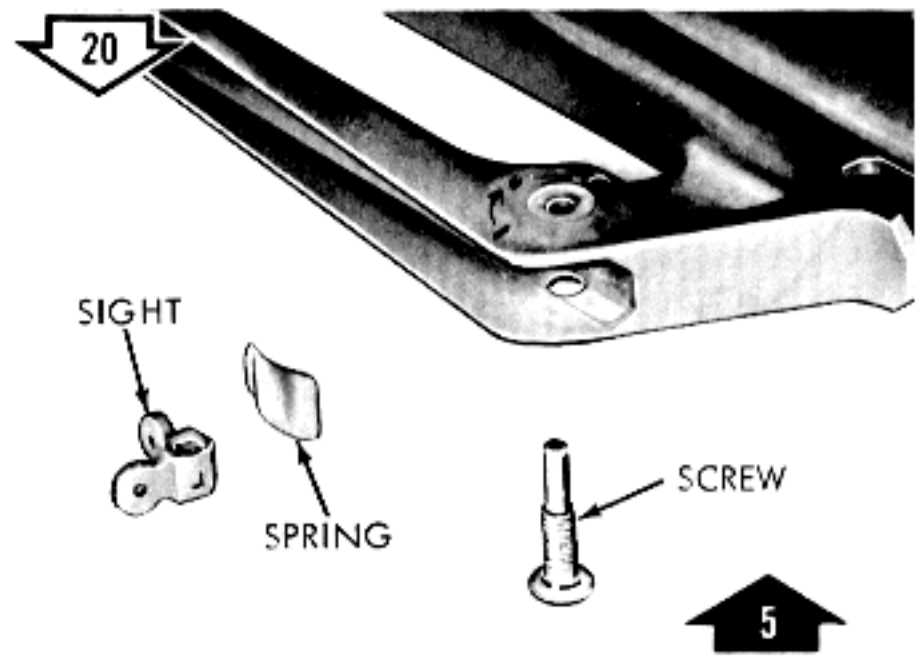
Remove/Install rear sight windage drum pin.



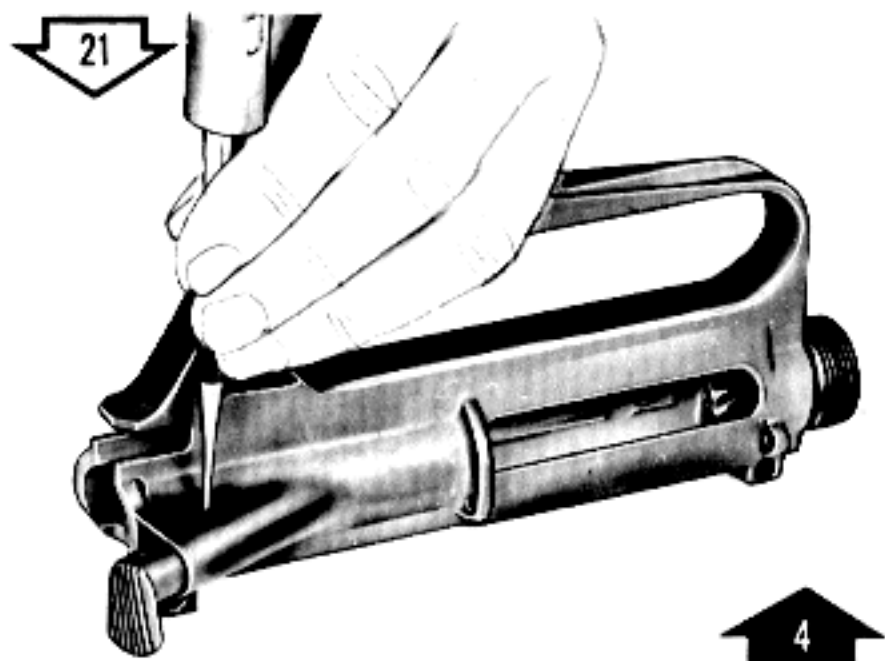
Remove/Install rear sight windage drum, rear sight detent and rear sight detent spring.



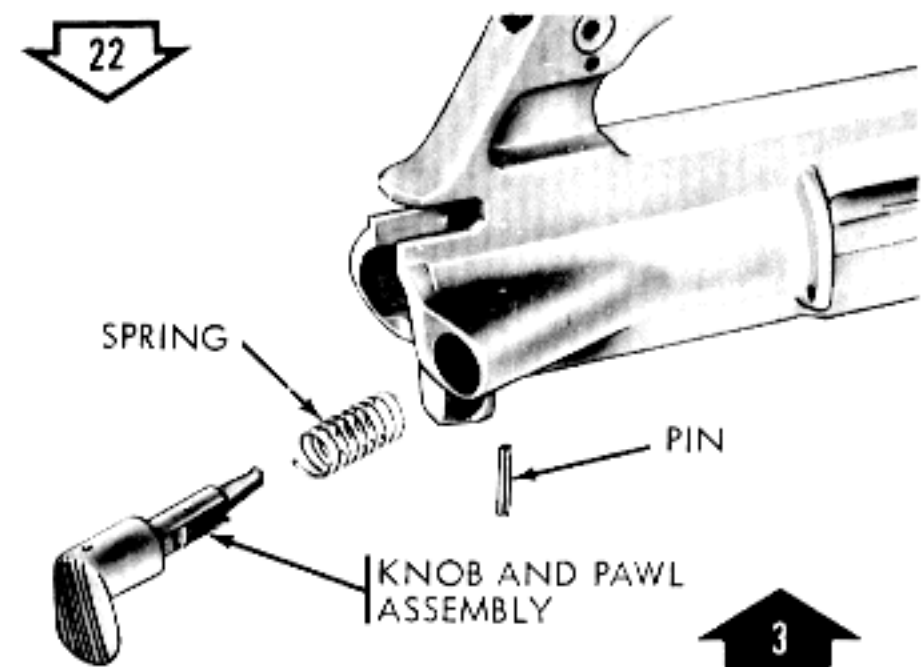
Remove/Install rear sight screw.



Remove/Install rear sight and rear sight spring.



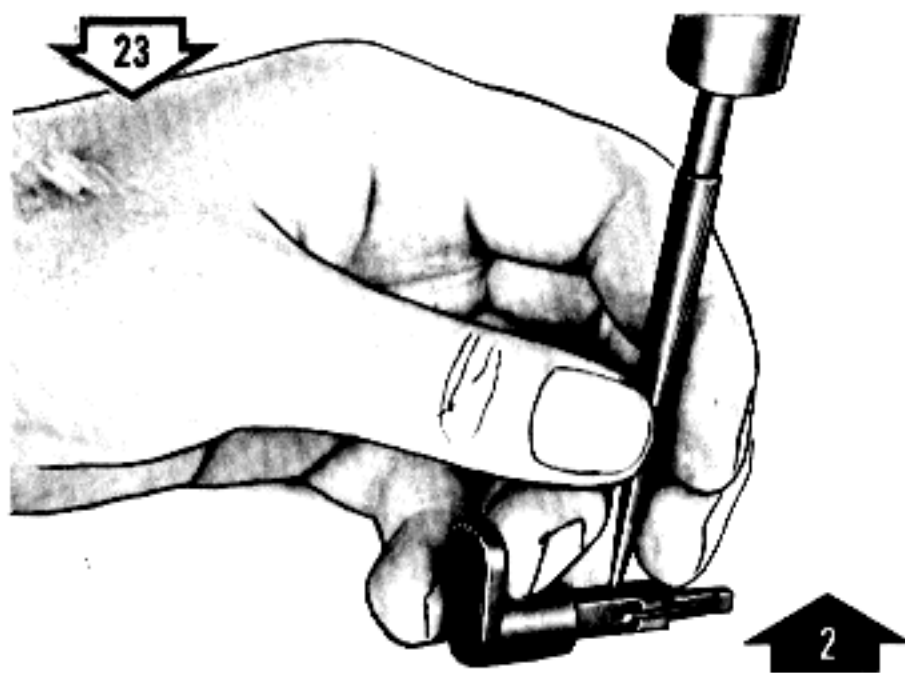
Remove/Install pin (XM16E1).



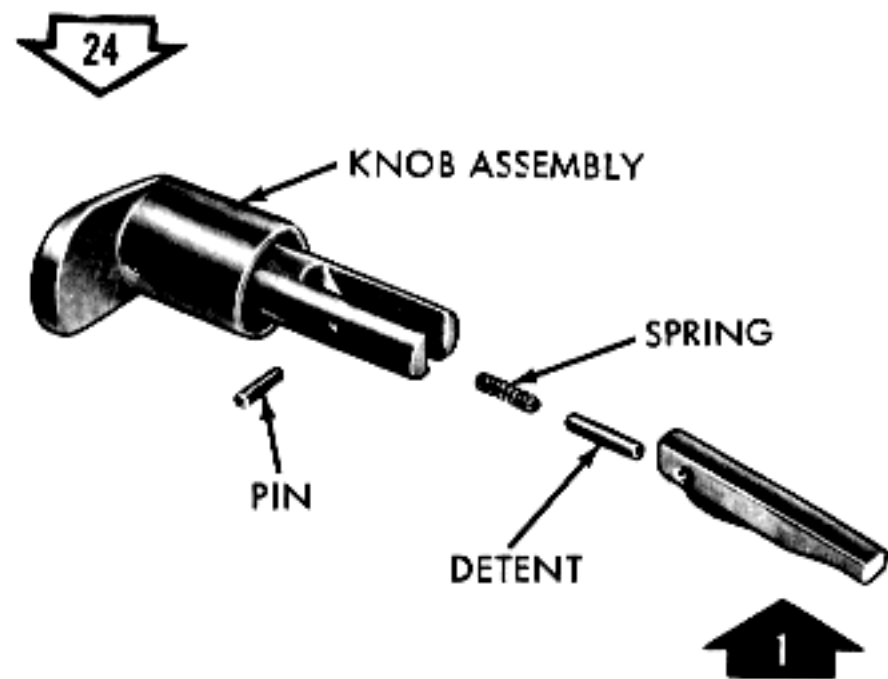
Remove/Install forward assist assembly (XM16E1).

ORD F8153

Figure 8-4. Disassembly/Assembly Upper Receiver Group (Page 5 of 6).



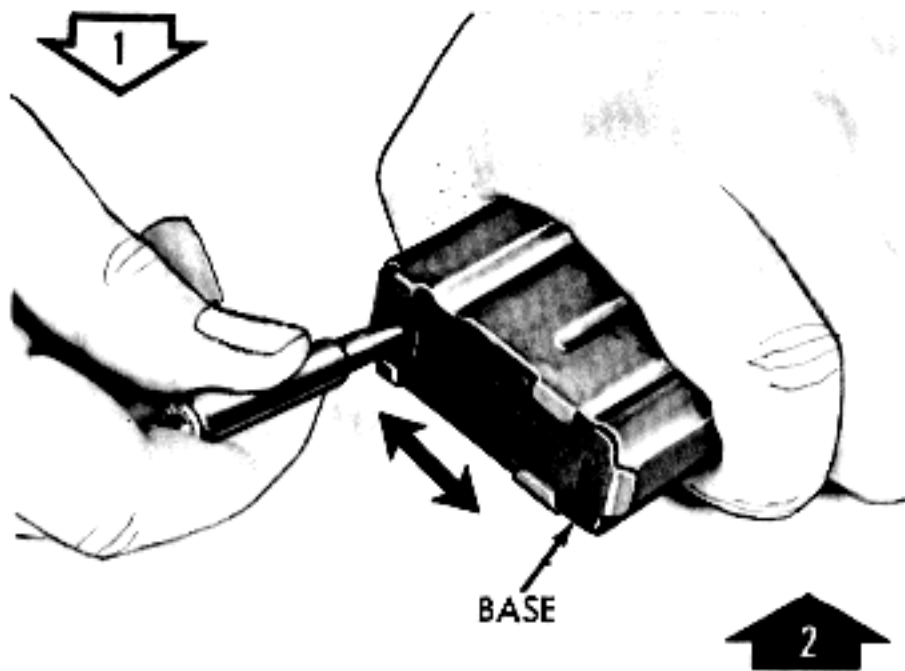
Remove/Install pin (XM16E1).



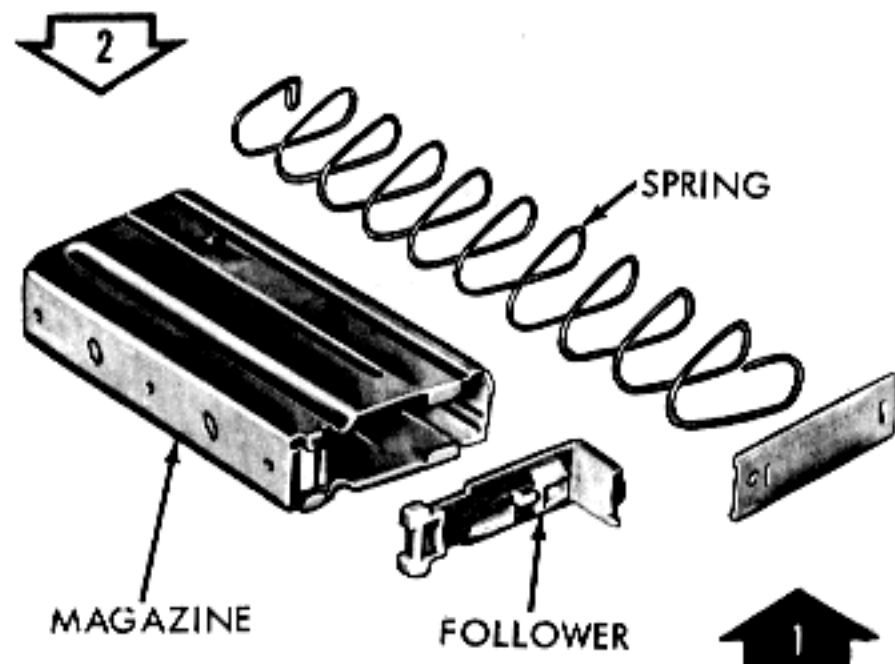
Remove/Install pawl (XM16E1).

ORD F8161

Figure 8-4. Disassembly/Assembly Upper Receiver Group (Page 6 of 6)



Remove/Install base.



Remove/Install follower.

ORD F8154

Figure 8-5. Disassembly/Assembly of Magazine

SECTION 3 CLEANING AND LUBRICATION

8-10. GENERAL.

8-11. Refer to paragraph 3-25 which supplements this section for cleaning and lubrication.

8-12. Table 8-2 contains procedures for cleaning.

CAUTION

Only the cleaning agents in this manual and a vapor degreaser are authorized for cleaning.

Table 8-2. Cleaning

Part, Components or Area	Instructions
Barrel extension	Remove carbon and dirt.
Barrel gas port	Remove carbon with a hand-held No. 43 (0.089) drill.
Gas tube	Remove carbon deposits from the tube surface.
Bolt and bolt carrier	Clean extractor recess. Clean gas relief ports with a hand-held No. 36 (0.106) drill.

SECTION 4

INSPECTION, TEST, AND ADJUSTMENT

8-13. INSPECTION.

8-14. Table 8-3 contains procedures for inspection.

Table 8-3. Inspection

Part, Components or Area	Instructions
Barrel and barrel extension	Inspect surfaces for cracks or defects. Check barrel extension for burrs, broken or worn locking lugs. Inspect bore for damage.
Front sight and gas tube	Check front sight for cracks and general condition. Check gas tube for cracks.
Upper and lower receiver groups	Inspect the receivers and all parts for cracks. Inspect all parts for wear or damage. Check springs for condition, straightness and tension.
Bolt and bolt carrier	Check for cracks in bolt. Inspect bolt for condition of locking lugs, pitted or chipped bolt face, and elongated firing pin hole. Inspect for broken bolt rings and proper spacing of bolt ring gaps. Ring gaps are not to be in line. Inspect firing pin for wear and burrs. Insert the firing pin into the bolt and with tool 7799735 check firing pin protrusion beyond the bolt face; should be between 0.028 and 0.036 (figure 8-6). Inspect bolt carrier for cracks, burrs and chips. Check socket head cap screws for being staked.

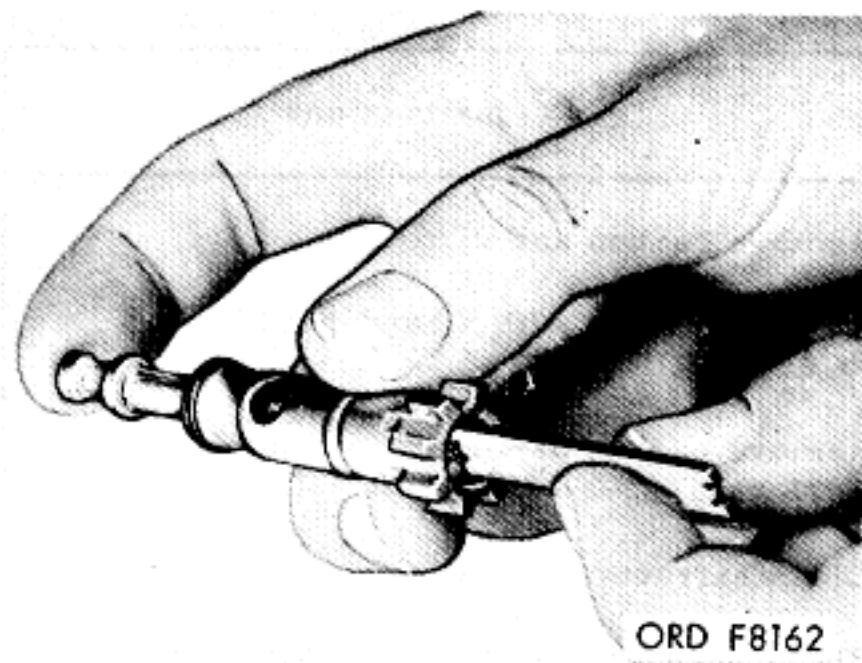


Figure 8-6. Checking Bolt with Firing Pin Protrusion Gage - 7799734

8-15. REPLACEMENT OF PARTS.

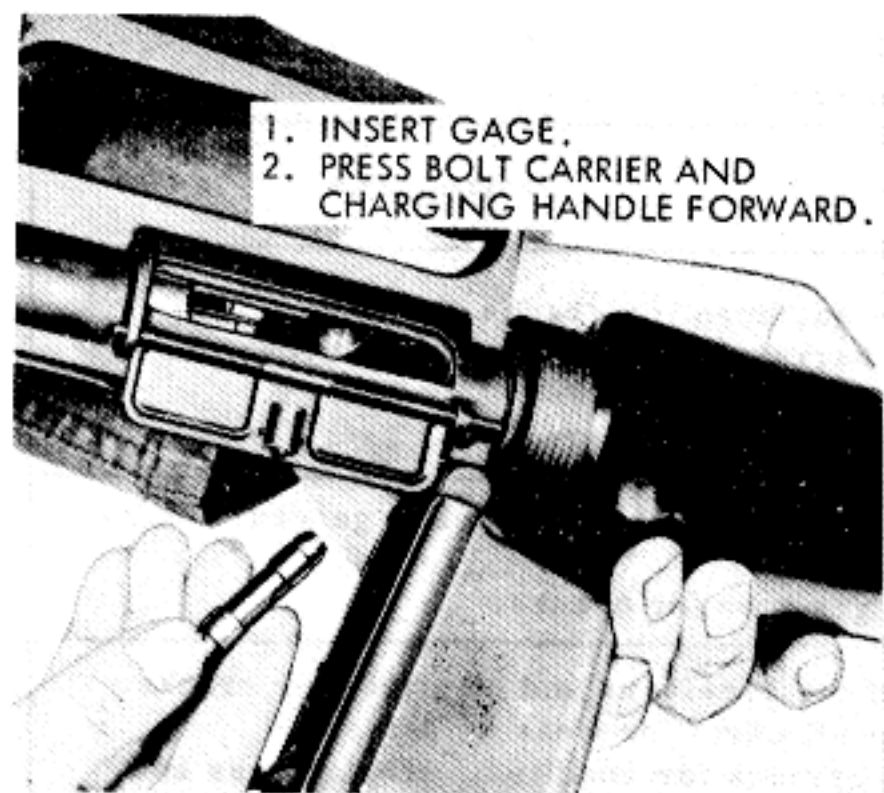
8-16. All replacement parts are interchangeable and require no adjustments when being installed in this rifle. However, to insure proper function and full reliability, the following precautions should be taken:

- a. Do not interchange bolts and bolt carriers. Keep a bolt with its original bolt carrier.
- b. If replacement of either part becomes necessary, carefully check the new part to see that it fits properly, operates smoothly and that proper headspace is provided (figure 8-7).

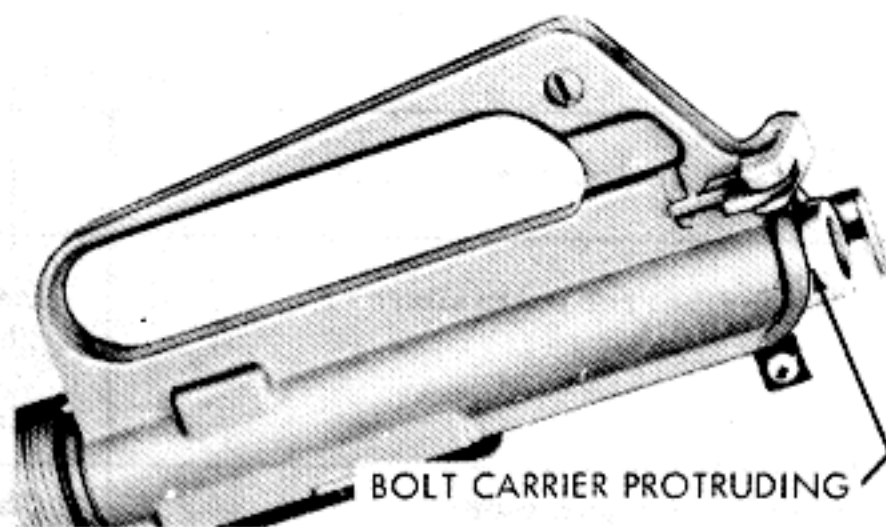
8-17. TEST.

8-18. The testing of the rifle will consist of:

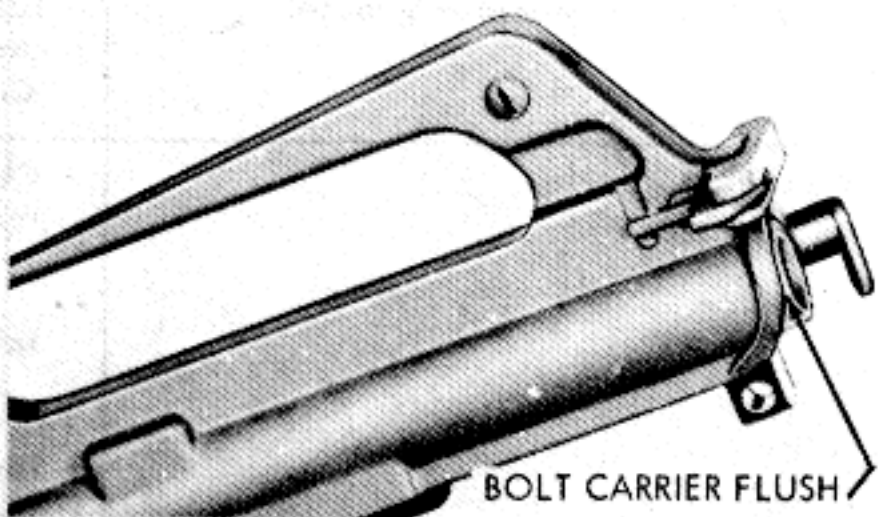
- a. Checking headspace (figure 8-7).
- b. Function check (paragraph 3-29).



1. Inserting headspace gage.



2. Correct headspace.



3. Incorrect headspace.

ORD F8155

Figure 8-7. Checking Headspace with Headspace Gage - 7799734

CHAPTER IX

BASIC ISSUE ITEMS TOOLS, AND REPLACEMENT PARTS

9-1. GENERAL.

9-2. This chapter lists the basic issue items, tools, equipment and replacement parts for Rifles, 5.56-mm, M16 and XM16E1.

9-3. EXPLANATION OF COLUMNS.

9-4. GENERAL. The group listings are a breakdown of the equipment by physical description which is supported by illustrations.

9-5. FIGURE AND INDEX. (Column (1)).

a. The figure and index numbers are arranged numerically in the Group Assembly Parts List. The primary use of figure and index numbers is to aid in locating a part in the Group Assembly Parts List after the part has been located in the Illustration. Parts not illustrated will be marked - NI.

b. If a part number is known, the figure and index numbers are found in the Group Assembly Parts List. The index number will provide the part number and nomenclature in the Group Assembly Parts List.

9-6. SOURCE AND MAINTENANCE CODES.

a. AIR FORCE SOURCE CODE (Column (2) (a)). The explanation of source codes is as follows:

P1 - Identifies parts which may be requisitioned and installed by any maintenance level consistent with the Command's authorized scope of maintenance. This code is applied to parts which are impractical to manufacture.

P1D - Identifies parts which may be requisitioned and installed by USAF activities authorized depot-level maintenance only. This code is applied to parts which are impractical for service manufacture.

P2 - Identifies insurance-type spare parts which can be installed by any USAF activity consistent with the Command's authorized scope of maintenance. This code is applied to parts which are basi-

cally structural and for which no usage is anticipated or known and parts which require special tools, templates and/or jigs and are very difficult, impractical, or uneconomical to manufacture by USAF activities. These items are not subject to periodic replacement or wearout but may require infrequent replacement as a result of accidents or other unexpected occurrences. Delayed procurement items, as defined in AMCR 65-41, are included under this code.

A - Identifies items capable of being assembled at any level of maintenance and is applied to assemblies of two or more parts the majority of which are purchased and/or service manufacture.

X - Parts considered impractical for service manufacture or procurement and for which no usage is anticipated. Code X is applied to main structure members or similar parts which, if repaired, would suggest extensive repair. The need for a part or parts coded X should normally result in a recommendation to retire the article from service.

X1 - Identifies parts applicable at any level of maintenance consistent with the Command's authorized scope of maintenance, and for which procurement of the next larger assembly so coded P1 is normally justified; for example, an integral detail part such as a welded segment inseparable from its assembly; a part machined in a matched set; or a part of any assembly which, if required, would suggest extensive reconditioning of each assembly. In some cases X1 may be used to indicate an integral detail part of an assembly for which there is no anticipated usage and as an assembly was coded M or M1 to be manufactured as a matched set, welded assembly, etc.

b. AIR FORCE MAINTENANCE REPAIR LEVEL CODE (Column (2) (b)). The explanation of maintenance repair level codes is as follows:

- S** - NO REPAIR. Identifies items which are nonreparable and have no reclamation value. When these items fail they will be disposed of at user level as condemned material.
- B** - NO REPAIR: RECONDITION. Identifies assemblies or parts that will be reconditioned at the user level by adjusting, cleaning, soldering broken connection, etc. If these items cannot be returned to serviceable condition by such means they will be disposed of at user level as condemned material. No repair parts or tools are specially procured for maintenance of these items.
- F** - FIELD LEVEL MAINTENANCE. Identifies items which will be repaired by the field level maintenance activities or contracted for repair at base level in accordance with T.O. 00-25-68. Normal servicing will be done by organizational level maintenance. Selected parts, tools, and technical order data are procured and provided to applicable field level maintenance activities for repair of these items. No specialized repair activity (SRA) is established for these items. If they cannot be returned to serviceable condition by the field level maintenance activity with the parts and tools provided they will be disposed of as condemned material. Hi Valu and Critical Items, however, will be turned in to supply and disposition instructions obtained from the applicable IM.
- D** - LIMITED FIELD REPAIR: DEPOT OVERHAUL. Identifies items on which a limited degree of repair can be accomplished by field level maintenance activities. Normal servicing will be done at organizational level. SRA is established for overhaul of these items. A range of repair parts, tools, and technical order data consistent with the capability of repair are procured and provided to applicable field maintenance activities. Because of the design characteristics and complexity of repair, the degree of repair which is authorized on these items at field maintenance level is necessarily determined by the degree of technical skills required and the cost of special tools, special test equipment, spare parts, and the predicted frequency of failure generation. If these items cannot be returned to serviceable condition with authorized parts and tools they will be returned to supply for shipment to the designated SRA.
- DM** - LIMITED FIELD REPAIR: MOBIL DEPOT OVERHAUL. Identifies items to which all the conditions of code "D" apply except that repair beyond field capability will be done by the Mobile Depot Activity (MDA). If the MDA cannot repair these items, they will determine whether these items should be condemned or sent to the SRA.
- L** - DEPOT LEVEL MAINTENANCE ONLY. Identifies items that will be repaired only at designated SRA. Repair parts and tools for repair are procured and provided only to these authorized activities. Required functional checkout and bench check equipment may be provided to applicable organizational and field level maintenance activities for accomplishing external adjustment or calibration and for verifying serviceability of these items. If they are found unserviceable they will be turned in to supply for shipment to the SRA.
- LM** - DEPOT LEVEL MAINTENANCE ONLY; MOBILE DEPOT ACTIVITY. Identifies items to which all conditions of Code "L" apply except that repair will be accomplished by MDA. If MDA cannot repair these items, they will determine whether these items should be condemned or sent to the SRA.
- c.** ARMY SOURCE CODE (Column (2) (c)).
The explanation of source codes is as follows:
- P1** - Applied to repair parts which are low mortality parts, stocked in or supplied from technical service depots, and authorized for installation at indicated maintenance support levels.
- A** - Requisition components under their individual Federal stock number and assembly.
- X1** - Applied to repair parts which are not procured or stocked, the requirement for which will be supplied by use of next higher assembly or component. No maintenance level code will be shown for X1 items.
- X** - When this part fails, the end item should be turned in for replacement.

d. ARMY MAINTENANCE LEVEL (Column (2) (d)). The explanation of maintenance level code is as follows:

- O - Organization.
- F - Direct Support
- H - General Support
- R - Items which are economically repairable at direct and general support maintenance activities and are normally furnished by supply on an exchange basis. Gages will be forwarded to gage laboratories in accordance with SB 9-75.

9-7. FEDERAL STOCK NUMBER (Column (3)). This column lists the federal stock number which has been assigned by the Cataloging Division, Defense Logistics Service Center.

9-8. DESCRIPTION (Column (4)). This column lists the Federal Item Name (shown in capital letters) and any additional description required for supply operations. The manufacturers part number is also included for reference.

9-9. UNIT OF ISSUE - DS AND GS SUPPORT (Column (5)). This column lists the package quantity to be requisitioned singly or in multiples by Army or Air Force Direct and General Support units. For requisitioning quantities other than listed refer to AR 725-50 for requisitioning procedures.

9-10. QUANTITY INCORPORATED IN UNIT (Column (6)). This column lists the quantity of each listed part incorporated in the major item. When a part is common to two or more functional groups, the quantity shown will be the total quantity for the major item. Subsequent listings of the item will refer back to the first listing of the item.

9-11. 15-DAY MAINTENANCE ALLOWANCE PER 100 EQUIPMENTS (COLUMN (7)).

a. This column lists an allowance factor which is based on the latest mortality data and is the estimated average quantity to provide maintenance and, where applicable, supply support for 100 equipments for a 15-day period under combat conditions. A decimal fraction system is used to express the allowance factors.

b. When an allowance factor is inclosed in parentheses, the item is designated as a "combat essential item of a critical nature" and must be stocked at all times, regardless of demand.

c. Since the allowance factors are based on 100 equipments, it is necessary to compute the exact quantity authorized. This quantity is determined by use of a simple mathematical formula. Resulting fractional values of 0.5 or larger will be rounded to the next higher whole number. Fractional values below 0.5 will be rounded to the next lower whole number.

Example 1: If the number of equipments supported is 30 and the allowance factor for 100 equipments is 1.9, the following formula would be used:

$$\frac{30 \times 1.9}{100} = 0.57$$

Since the resulting figure is larger than 0.5 the support would be authorized a quantity of 1.

Example 2: If the number of equipments supported is 89 and the allowance factor for 100 equipments is 3.4, the following formula would be used:

$$\frac{89 \times 3.4}{100} = 3.026$$

In this instance, the result is rounded to the next lower whole number since the fractional value is less than 0.5 and the support would be authorized a quantity of 3.

d. Additional items not expected to fail during the first year, but which may be required to perform authorized direct and general support maintenance in subsequent years, are listed with no allowance factor shown. These parts are identified by an asterisk (*) in the allowance columns and are to be requisitioned as required for immediate use only.

e. The quantity determined in accordance with (2) above represents the initial stockage for a 15-day period. Major commanders will prescribe the period of time that will be used to compute stockage for each support.

Note

The 15-day level is not applicable to tools for direct and general support maintenance.

9-12. SUPPORT UNITS.

9-13. ORGANIZATIONAL. Organizational maintenance is that maintenance normally authorized for, performed by, and the responsibility of a using organization on equipment in its possession. This maintenance consists of functions and repairs within the capabilities of authorized personnel, skills, tools, and test equipment as prescribed in appropriate Department of the Army TOE's or TD's. Maintenance exceeding the authorized scope of maintenance may be performed when authorized by the next higher maintenance support commanders.

9-14. DIRECT SUPPORT. Direct support maintenance is that maintenance normally authorized and performed by designated maintenance

activities in direct support of using organizations. This category of maintenance is limited to the repair of end items or unserviceable assemblies in support of using organizations on a return to user basis.

9-15. GENERAL SUPPORT. General support maintenance is that maintenance authorized and performed by designated TOE and TD organizations in support of the Army supply system. Normally TOE and TD general support maintenance organizations will repair or overhaul materiel to required maintenance standards in a ready to issue condition based upon applicable supported Army area supply requirements.

(1) Figure and Index No.	(2) SOURCE AND MAINT CODES				(3) FEDERAL STOCK NO.	(4) DESCRIPTION	(5) Unit of Issue /DS & GS Support	(6) Quantity Incorporated in Unit	(7) 15 - DAY MAINT ALLOW PER 100 EQUIPMENT		
	USAF		ARMY						(a)	(b)	(c)
	(a) Source	(b) Maintenance Repair Level	(c) Source	(d) Maintenance Level							
9- 1-1 1-2 1-3 1-4 1-5 1-6					1005-856-6885	RIFLE, 5.56-MM: M16 (USAF) (62500)					
					1005-073-9421	RIFLE, 5.56-MM: XM16E1 W/E (ARMY) (8427000)					
						BOLT CARRIER GROUP					
		P1	B	P1 O	1005-992-7296	. PIN, FIRING PIN RETAINING: (61561)	10	1	(1.0)	(0.4)	(0.1)
		P1	B	P1 O	1005-017-9547	. PIN, FIRING: (62294)	10	1	(1.0)	(0.2)	(0.1)
		P1	B	P1 O	1005-992-7294	. PIN, BOLT CAM: (61704)	1	1	(1.0)	(0.1)	(0.1)
		P1D	F	P1 F	1005-992-7285	. BOLT ASSEMBLY: (62116)	1	1		(0.1)	(0.1)
	P1	B	P1 O	1005-992-7290	. . PIN, EXTRACTOR: (61563)	10	1	(1.0)	(0.4)	(0.1)	
	P1	B	P1 O	1005-992-7288	. . EXTRACTOR, SMALL ARM CARTRIDGE: (61562)	1	1	(1.0)	(0.1)	(0.1)	

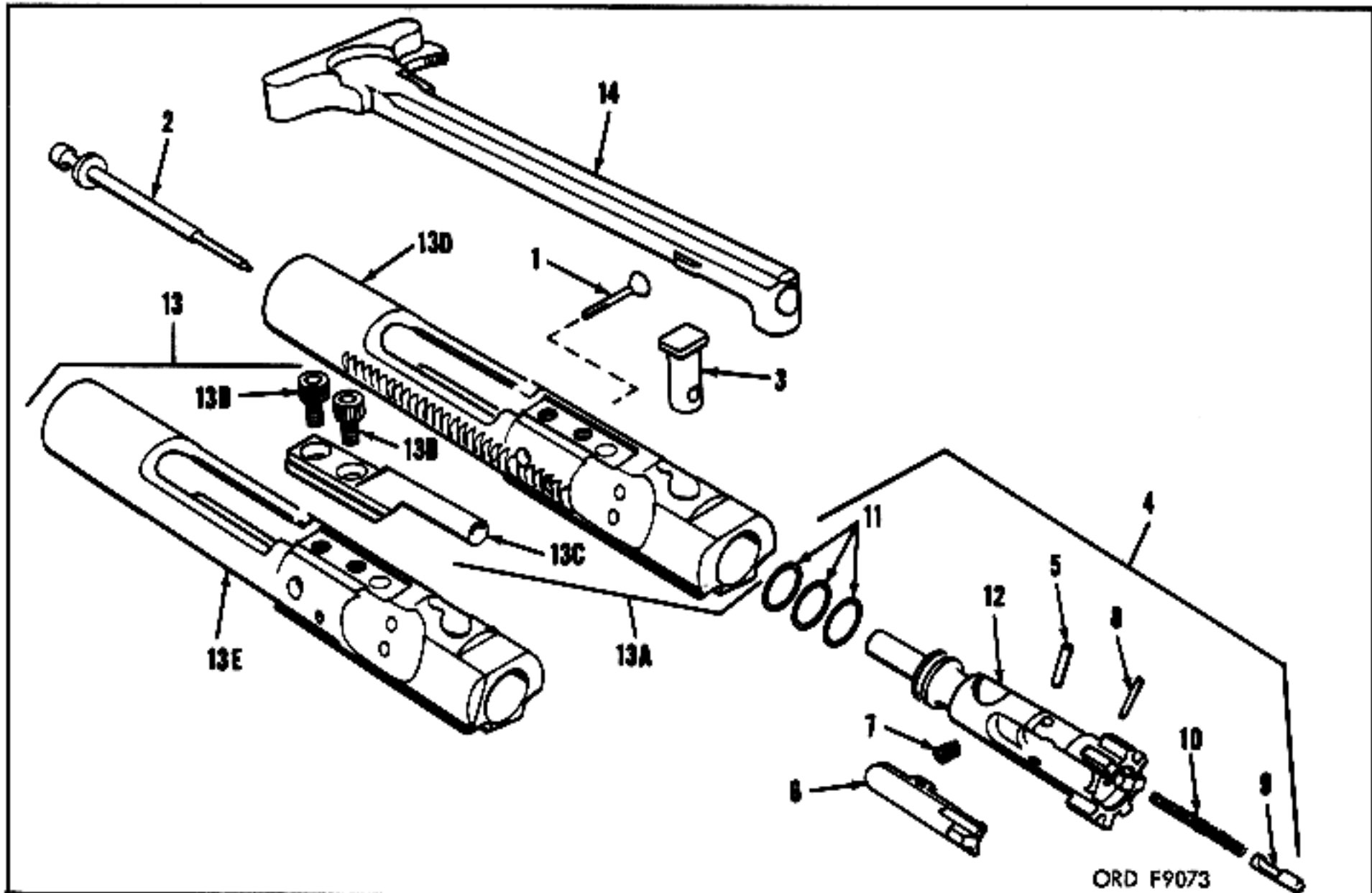
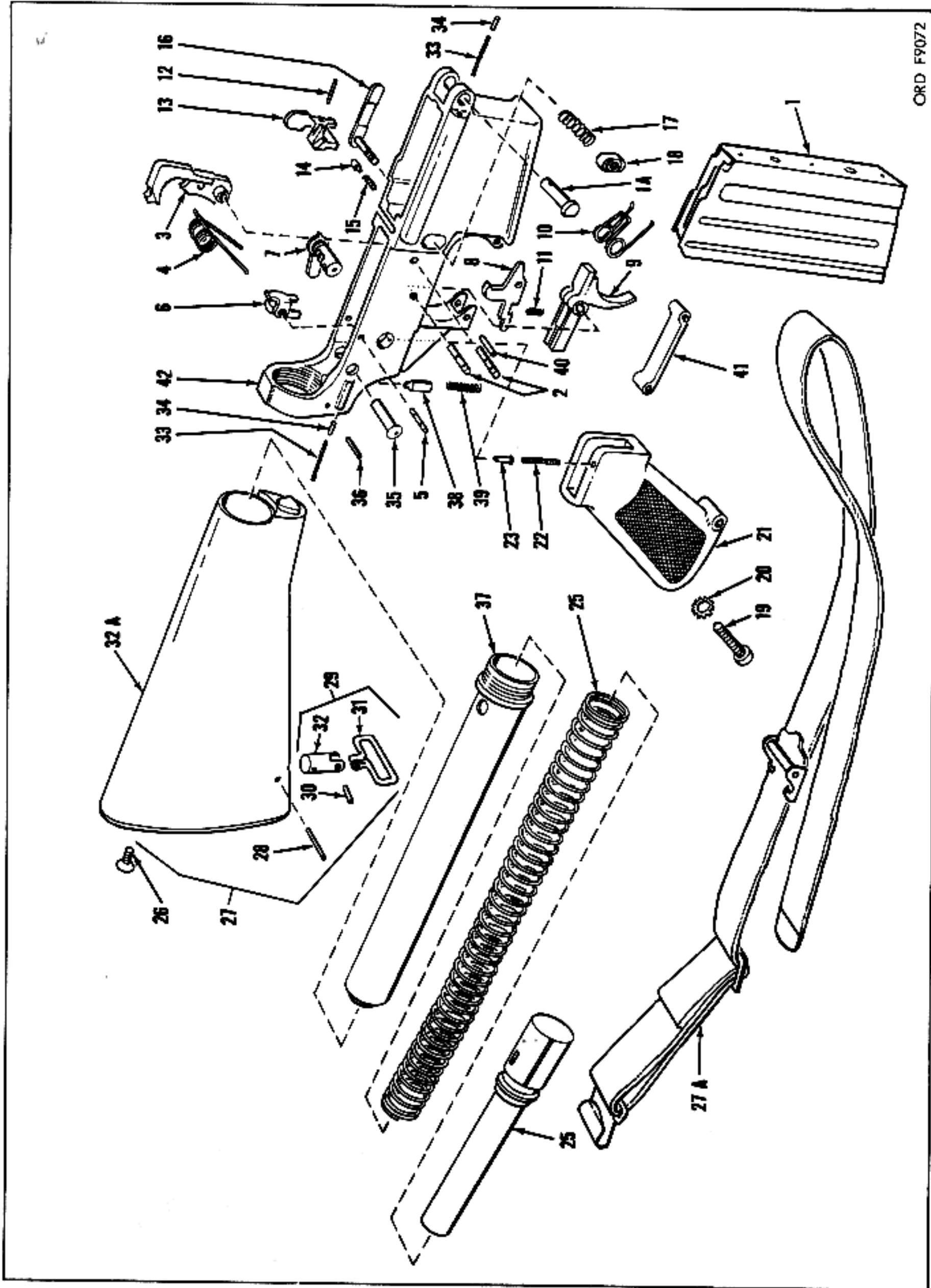


Figure 9-1. Bolt Carrier Group.



ORD F9072

Figure 9-2. Lower Receiver Group

AR-15, CAR-15, M16

(1) Figure and Index	(2) SOURCE AND MAINT CODES				(3) FEDERAL STOCK NO.	(4) DESCRIPTION	(5) Unit of Issue/DS & GS Support	(6) Quantity Incorporated in Unit	(7) 15 - DAY MAINT ALLOW PER 100 EQUIPMENT		
	USAF		ARMY						(a) Organizational	(b) Direct Support	(c) General Support
	(a) Source	(b) Maintenance Repair Level	(c) Source	(d) Maintenance Level							
1-7	P1	B	P1	O	1005-992-7289	. . SPRING, EXTRACTOR: 5 coils, 0.145 od, 0.222 o/a lg (61568)	10	1	(1.0)	(0.4)	(0.1)
1-8	P1	B	P1	F	1005-992-7293	. . PIN, EJECTOR: (95102)	10	1		(0.1)	(0.1)
1-9	P1	B	P1	F	1005-992-7291	. . EJECTOR, SMALL ARMS CARTRIDGE: (61564)	10	1		(0.1)	(0.1)
1-10	P1	B	P1	F	1005-992-7292	. . SPRING, EJECTOR AND SAFETY DETENT: 28 coils, 0.100 od, 0.904 o/a lg (61569)	10	1		(0.8)	(0.2)
1-11	P1	B	P1	F	1005-992-7287	. . RING, BOLT: (61540)	10	3		(0.4)	(0.1)
1-12	X1	B	X1			. . BOLT: (61538)		1			
1-13	A	B				. CARRIER AND KEY: M16 ONLY (61826)		1			
1-13	A	B	A	F		. CARRIER AND KEY: M16 and XM16E1 (62286)		1			
1-13	P1	B	P1	F	1005-992-7284	. . . SCREW, CARRIER KEY: (92201)	10	2		(0.2)	(0.1)
1-13	P1	B	P1	F	1005-992-7283	. . . KEY, BOLT CARRIER: (61547)	1	1		(0.1)	(0.1)
1-13	P1	F	P1	F	1005-738-6213	. . . CARRIER, BOLT: M16 and XM16E1 (62274)	1	1		(0.1)	(0.1)
1-13	U	F				. . . CARRIER, BOLT: M16 (61544)					
1-14	P1	B	P1	F	1005-017-9546	. HANDLE, CHARGING: (62290)	1	1		(0.1)	(0.1)
2-						LOWER RECEIVER GROUP					
2-1	P1	B	P1	O	1005-056-2237	. MAGAZINE ASSEMBLY: Aluminum (20 cartridge capacity) (62103)	4	1		(4.0)	(6.2)
2-NI	P1	B			1005-992-6671	. PIN, PIVOT: early M16 (95601)	10	1		(0.2)	(0.1)
2-1A	P1	B	P1	F	1005-017-9537	. PIN, PIVOT: M16 and XM16E1 (62221)	10	1		(0.2)	(0.1)
2-2	P1	B	P1	F	1005-992-7309	. PIN, HAMMER AND TRIGGER: (61654)	20	2		(0.4)	(0.1)
2-3	P1	B	P1	F	1005-017-9551	. HAMMER ASSEMBLY: (62317)	1	1		(0.2)	(0.1)
2-4	P1	B	P1	F	1005-992-6648	. SPRING, HAMMER: (61697)	10	1		(0.1)	(0.1)
2-5	P1	B	P1	F	1005-992-6650	. PIN, AUTOMATIC SEAR: (61615)	10	1		(0.1)	(0.1)
2-6	P1	B	P1	F	1005-992-6649	. SEAR, AUTOMATIC: (61622)	1	1		(0.1)	(0.1)
2-7	P1	B	P1	F	1005-992-6666	. LEVER, SELECTOR: safety and firing (61959)	1	1		(0.1)	(0.1)
2-8	P1	B	P1	F	1005-992-7310	. DISCONNECT: (61918)	10	1		(0.2)	(0.1)
2-9	P1	B	P1	F	1005-992-7307	. TRIGGER: (61955)	1	1		(0.1)	(0.1)
2-10	P1	B	P1	F	1005-992-7308	. SPRING, TRIGGER: (61657)	10	1		(0.1)	(0.1)

AR-15, CAR-15, M16

(1) Figure and Index No.	(2) SOURCE AND MAINT CODES				(3) FEDERAL STOCK NO.	(4) DESCRIPTION	(5) Unit of Issue /DS & GS Support	(6) Quantity Incorporated in Unit	(7) 15 - DAY MAINT ALLOW PER 100 EQUIPMENT		
	USAF		ARMY						(a) Organizational	(b) Direct Support	(c) General Support
	(a)	(b)	(c)	(d)							
	Source	Maintenance Repair Level	Source	Maintenance Level							
2-11	P1	B	P1	F	1005-992-7311	. SPRING, DISCONNECT: 7 coils, 0.150 od, 0.35 o/a lg (61925)	10	1		(0.2)	(0.1)
2-12	P1	B	P1	F	1005-992-7306	. PIN, BOLT CATCH: (95105)	10	1		(0.1)	(0.1)
2-13	P1	B	P1	F	1005-017-9548	. CATCH, BOLT: (62301)	1	1		(0.1)	(0.1)
2-14	P1	B	P1	F	1005-056-2247	. PLUNGER, BOLT CATCH: (62178)	10	1		(0.1)	(0.1)
2-15	P1	B	P1	F	1005-056-2246	. SPRING, BOLT CATCH: 11 coils, 0.152 od, 0.517 o/a lg (62177)	10	1		0.1	0.1
2-16	P1	B	P1	F	1005-056-2201	. CATCH, MAGAZINE: (61604)	1	1		(0.1)	(0.1)
2-17	P1	B	P1	F	1005-992-7301	. SPRING, MAGAZINE CATCH: 8 coils, 0.298 od, 1.15 o/a lg (61759)	10	1		(0.1)	(0.1)
2-18	P1	B	P1	F	1005-992-7302	. BUTTON, MAGAZINE CATCH: (62032)	10	1		(0.1)	(0.1)
2-19	P1	B	P1	F	1005-992-6669	. SCREW, PISTOL GRIP: (92701)	10	1		(0.1)	(0.1)
2-20	P1	B	P1	F	1005-992-6670	. WASHER, LOCK, PISTOL GRIP: (90001)	10	1		0.1	0.1
2-21	P1	B	P1	F	1005-056-2250	. GRIP, PISTOL: black (62194)	1	1		0.1	0.1
2-22	P1	B	P1	F	1005-992-7292	. SPRING, EJECTOR AND SAFETY DETENT: 28 coils, 0.100 od, 0.904 o/a lg (61569) See allow- ance under item 1-10	10	1		0.1	0.1
2-23	P1	B	P1	F	1005-992-6667	. DETENT, SELECTOR LEVER: (61785)	10	1		(0.2)	(0.1)
2-24	P1	B	P1	F	1005-992-6658	. GUIDE ASSEMBLY, ACTION SPRING: (62119)	1	1		(0.1)	(0.1)
2-25	P1	B	P1	F	1005-992-6665	. SPRING, ACTION: 44 coils, 0.940 od, 12.5 o/a lg (61581)	1	1		0.1	0.1
2-26	P1	B	P1	F	1005-992-6657	. SCREW, BUTT CAP: (92601)	10	1		0.1	0.1
2-27	P1	F	P1	F	1005-017-9549	. STOCK ASSEMBLY, MOLD- ED; w/swivel, black (62302)	1	1		(0.1)	(0.1)
2-27 A	P1	B	P1	O	1005-654-4058	. SLING, SMALL ARMS: MI, cotton webbing, olive drab, clampkeeper type adjust- ment (6544058)	10	1	1.0		
2-28	P1	B	P1	F	1005-056-2266	. PIN, ROLL, REAR SWIVEL: (95111)	10	1		0.1	0.1
2-29	P1	B	P1	F	1005-017-9544	. SWIVEL ASSEMBLY, GUN SLING: (62282)	10	1		0.1	0.1
2-30	P1	B	P1	F	1005-992-7278	. PIN, FRONT SWIVEL: (95103)	10	1		0.1	0.1
2-31	P1	B	P1	F	1005-017-9543	. SWIVEL, GUN SLING: (62280)	10	1		0.1	0.1
2-32	X1		X1			. BASE, SWIVEL: (62097)		1			

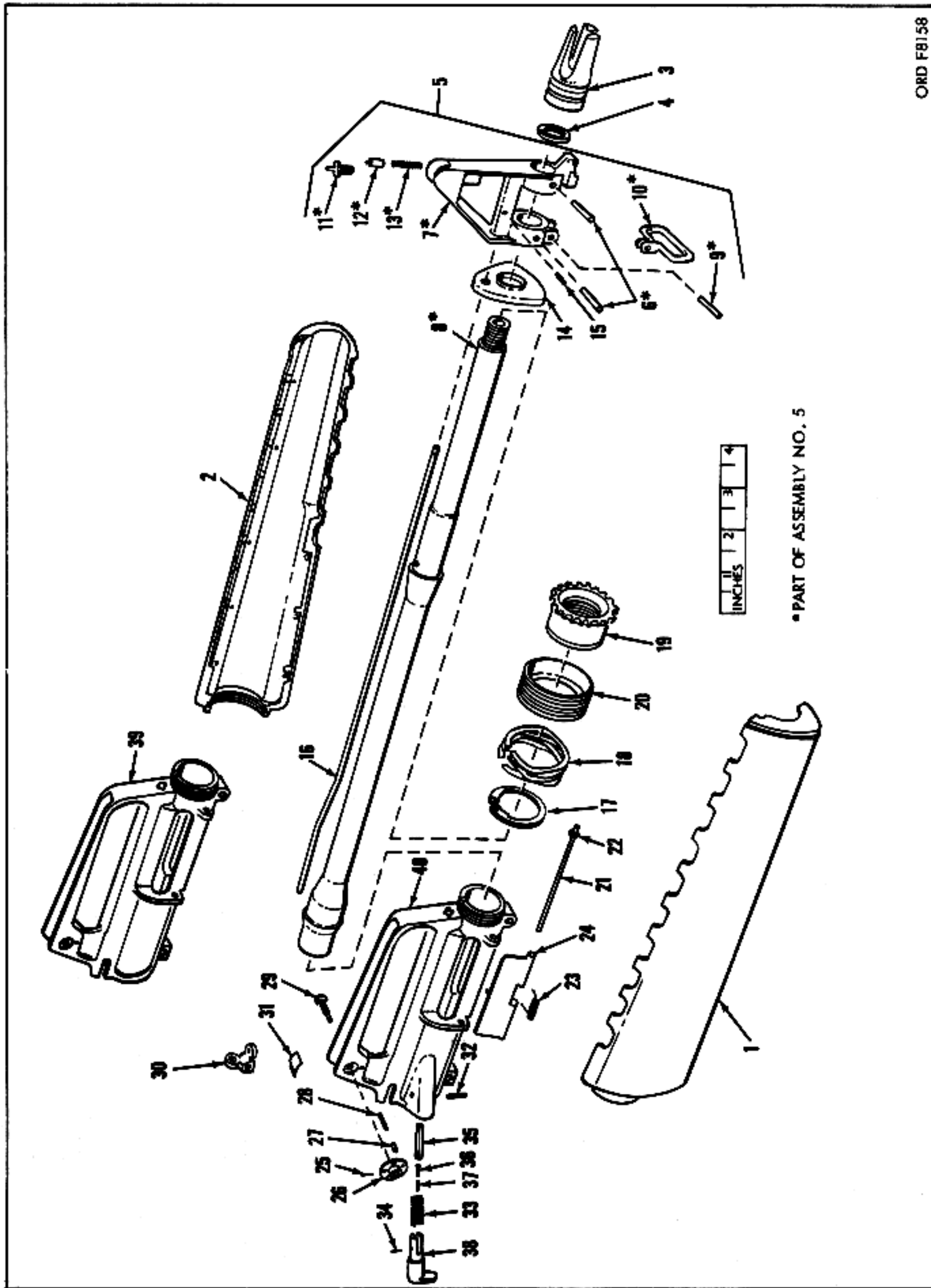


Figure 9-3. Upper Receiver Group

AR-15, CAR-15, M16

(1) Figure and Index No.	(2) SOURCE AND MAINT CODES				(3) FEDERAL STOCK NO.	(4) DESCRIPTION	(5) Unit of Issue / DS & GS Support	(6) Quantity Incorporated in Unit	(7) 15 - DAY MAINT ALLOW PER 100 EQUIPMENT		
	USAF		ARMY						(a) Organizational	(b) Direct Support	(c) General Support
	(a) Source	(b) Maintenance Repair Level	(c) Source	(d) Maintenance Repair Level							
2-32 A	X1		X1				1				
2-33	P1	B	P1	F	1005-992-6655	. . . STOCK: (62204) . SPRING, DETENT, TAKE-DOWN PIN: 40 coils, 0.088 od, 1.10 o/a lg (61692)	10	1		0.2	0.1
2-34	P1	B	P1	F	1005-992-6654	. DETENT, TAKEDOWN PIN: (61698)	10	1		(0.2)	(0.1)
2-35	P1	B	P1	F	1005-992-6653	. PIN, TAKEDOWN: (61655)	10	1		(0.1)	(0.1)
2-36	P1	B	P1	F	1005-992-7298	. PIN, EXTENSION, LOWER: (95107)	10	1		0.1	0.1
2-37	P1D	F	P1	F	1005-992-7297	. EXTENSION, LOWER RECEIVER: (61574)	1	1		0.1	0.1
2-38	P1	B	P1	F	1005-992-6651	. RETAINER, BUFFER: (61582)	10	1		(0.2)	(0.1)
2-39	P1	B	P1	F	1005-992-6652	. SPRING, BUFFER RETAINER: 14 coils, 0.180 od, 0.940 o/a lg (61694)	10	1		(0.2)	(0.1)
2-40	P1	B	P1	F	1005-992-7300	. PIN, TRIGGER GUARD, PIVOT: (95106)	10	1		(0.1)	(0.1)
2-41	P1	B	P1	F	1005-992-7299	. GUARD, TRIGGER: (61970)	1	1		(0.1)	(0.1)
2-42	X	D	X			. RECEIVER, LOWER: (62300)		1		(0.1)	(0.1)
3-						UPPER RECEIVER GROUP					
3-1	P1	B	P1	F	1005-056-2252	. GUARD, HAND, GUN: R.H. black (62198)	1	1		(0.1)	(0.1)
3-2	P1	B	P1	F	1005-056-2251	. GUARD, HAND, GUN: L.H. black (62196)	1	1		(0.1)	(0.1)
3-3	P1	B	P1	F	1005-056-2248	. SUPPRESSOR, FLASH: (62182)	1	1		0.1	0.1
3-4	P1	B	P1	F	1005-992-7280	. WASHER, LOCK, FLASH SUPPRESSOR: (62126)	10	1		0.1	0.1
3-5	P1D	F	P1	F	1005-056-2253	. BARREL AND SIGHT ASSEMBLY: (62206)	1	1		(0.1)	(0.1)
3-6	P1	B	P1	F	1005-979-3926	. . PIN, FRONT SIGHT, TAPERED: (62086)	10	2		(0.1)	(0.1)
3-7	X1	F	X1			. . SIGHT, FRONT: (62068)		1			
3-8	X1	F	X1			. . BARREL ASSEMBLY: (62180)		1			
3-9	P1	B	P1	F	1005-992-7278	. . PIN, FRONT SWIVEL: (95103) See allowance under item 2-30	10	1			
3-10	P1	B	P1	F	1005-017-9543	. . SWIVEL, FRONT: (62280) See allowance under item 2-31	10	1			
3-11	P1	B	P1	F	1005-979-3929	. . POST, FRONT SIGHT: (61706)	1	1		(0.1)	(0.1)
3-12	P1	B	P1	F	1005-979-3930	. . DETENT, FRONT SIGHT: (61705)	10	1		(0.1)	(0.1)
3-13	P1	B	P1	F	1005-979-3931	. . SPRING, FRONT SIGHT, DETENT: 20 coils, 0.115 od, 0.750 o/a lg (61709)	10	1		(0.1)	(0.1)
3-14	P1	B	P1	F	1005-979-3924	. CAP, HAND GUARD: (62087)	1	1		0.1	0.1

AR-15, CAR-15, M16

(1) Figure and Index No.	(2) SOURCE AND MAINT CODES				(3) FEDERAL STOCK NO.	(4) DESCRIPTION	(5) Unit of Issue/DS & GS Support	(6) Quantity Incorporated in Unit	(7) 15 - DAY MAINT ALLOW PER 100 EQUIPMENT		
	USAF		ARMY						(a) Organizational	(b) Direct Support	(c) General Support
	(a) Source	(b) Maintenance Repair Level	(c) Source	(d) Maintenance Level							
3-15	P1	B	P1	F	1005-979-3923	. PIN, GAS TUBE: (95108)	10	1		(0.1)	(0.1)
3-16	P1	B	P1	F	1005-978-1038	. TUBE, GAS: (61645)	1	1		(0.1)	(0.1)
3-17	P1	B	P1	F	1005-978-1037	. RING, SNAP, HAND GUARD: (90403)	1	1		0.1	0.1
3-18	P1	B	P1	F	1005-978-1036	. SPRING, SLIP RING, HAND GUARD: (61962)	10	1		(0.1)	(0.1)
3-19	P1	B	P1	F	1005-978-1034	. NUT, BARREL: (61902)	1	1		0.1	0.1
3-20	P1	B	P1	F	1005-978-1035	. RING, SLIP, HAND GUARD: (61901)	1	1		0.1	0.1
3-21	P1	B	P1	F	1005-978-1023	. PIN, EJECTION PORT COVER: (61658)	10	1		0.1	0.1
3-22	P1	B	P1	F	1005-978-1024	. RING, RETAINING, EJECTION PORT COVER PIN: (90402)	10	1		0.1	0.1
3-23	P1	B	P1	F	1005-978-1025	. SPRING, EJECTION PORT COVER: (61518)	10	1		0.1	0.1
3-24	P1	B	P1	F	1005-978-1022	. COVER, EJECTION PORT: (62112)	10	1		0.1	0.1
3-25	P1	B	P1	F	1005-978-1031	. PIN, REAR SIGHT WINDAGE DRUM: (95101)	10	1		(0.1)	(0.1)
3-26	P1	B	P1	F	1005-978-1029	. DRUM, REAR SIGHT WINDAGE: (61703)	1	1		0.1	0.1
3-27	P1	B	P1	F	1005-978-1030	. DETENT, REAR SIGHT: (61755)	10	1		(0.1)	(0.1)
3-28	P1	B	P1	F	1005-978-1032	. SPRING, DETENT, REAR SIGHT: 13 coils, 0.118 od, 0.500 o/a lg (61754)	10	1		(0.1)	(0.1)
3-29	P1	B	P1	F	1005-978-1028	. SCREW, REAR SIGHT WINDAGE: (61702)	1	1		0.1	0.1
3-30	P1	B	P1	F	1005-978-1026	. SIGHT, REAR: (61700)	1	1		0.1	0.1
3-31	P1	B	P1	F	1005-978-1027	. SPRING, REAR SIGHT: (61708)	10	1		(0.1)	(0.1)
3-32			P1	F	1005-017-9553	. PIN, FORWARD ASSIST: XM16E1 (95126)	10	1		(0.1)	(0.1)
3-33			P1	F	1005-017-9541	. SPRING, PLUNGER: XM16E1, 9 coils, 0.420 od, 1.171 o/a lg (62271)	1	1		(0.1)	(0.1)
3-34			P1	F	1005-017-9552	. PIN, PAWL PIVOT: XM16E1 (95113)	10	1		(0.1)	(0.1)
3-35			P1	F	1005-017-9539	. PAWL, FORWARD ASSIST: XM16E1 (62269)	1	1		(0.1)	(0.1)
3-36			P1	F	1005-017-9540	. DETENT, PAWL: XM16E1 (62270)	10	1		(0.1)	(0.1)
3-37			P1	F	1005-523-8084	. SPRING, BOLT: XM16E1, 10 1/2 coils, 0.079 od, 0.290 o/a lg (50381)	10	1		(0.1)	(0.1)
3-38			P1	F	1005-017-9538	. PLUNGER ASSEMBLY: XM16E1 (62266)	1	1		0.1	0.1
3-39	P1D	F			1005-017-9550	. RECEIVER, UPPER: M16 (62306)	1	1		0.1	0.1
3-40			P1	F	1005-017-9542	. RECEIVER, UPPER: XM-16E1 (62278)	1	1		0.1	0.1

AR-15, CAR-15, M16

(1) Figure and Index No.	(2) SOURCE AND MAINT CODES				(3) FEDERAL STOCK NO.	(4) DESCRIPTION	(5) Unit of Issue/DS & GS Support	(6) Quantity Incorporated in Unit	(7) 15 - DAY MAINT ALLOW PER 100 EQUIPMENT		
	USAF		ARMY						(a) Organizational	(b) Direct Support	(c) General Support
	(a) Source	(b) Maintenance Repair Level	(c) Source	(d) Maintenance Level							
					<p>BASIC ISSUE ITEMS (ARMY)</p> <p>ITEMS MAY BE REQUISITIONED AS REQUIRED FOR REPLACEMENT UNDER THEIR INDIVIDUAL STOCK NUMBERS</p> <p>1005-073-9421 RIFLE, 5.56-MM: XM16E1 w/e (8427000)</p> <p>COMPOSED OF:</p> <p>1-RIFLE, 5.56-MM: XM16E1 (62400)</p> <p>1005-992-6676 1-BIPOD: XM3 (62122)</p> <p>1005-017-9647 1-CASE, BIPOD: (62309)</p> <p>1005-070-7813 1-BRUSH, CLEANING, SMALL ARMS: caliber .22, M6 (11010021)</p> <p>9150-248-3480 1-GREASE, RIFLE: lubr. (RG) 5cc cntr (5621059)</p> <p>1005-056-2237 6-MAGAZINE ASSEMBLY: aluminum (20 cartridge capacity) (62103)</p> <p>1005-070-7812 1-ROD, CLEANING: M11 (11010020)</p>						

AR-15, CAR-15, M16

(1) Figure and Index No.	(2) SOURCE AND MAINT CODES				(3) FEDERAL STOCK NO.	(4) DESCRIPTION	(5) Unit of Issue / DS & GS Support	(6) Quantity Incorporated in Unit	(7) 15 - DAY MAINT ALLOW PER 100 EQUIPMENT		
	USAF		ARMY						(a) Organizational	(b) Direct Support	(c) General Support
	(a) Source	(b) Maintenance Repair Level	(c) Source	(d) Maintenance Level							
					(TOOLS AND EQUIPMENT) ITEMS MAY BE REQUISITIONED AS REQUIRED FOR REPLACEMENT UNDER THEIR INDIVIDUAL STOCK NUMBERS						
					4933-056-7106 TOOL SET, DIRECT AND GENERAL SUPPORT MAINTENANCE (8426685)	1					
					COMPOSED OF:						
					4933-070-9152 1-WRENCH, COMBINATION: barrel nut and flash suppressor (11010033)						
					4933-070-9151 1-FIXTURE, BARREL REMOVER: vise jaws (11010032)						
			R		4933-070-7815 1-GAGE, FIRING PIN PROTRUSION: (7799735)						
			R		4933-070-7814 1-GAGE, HEADSPACE: field type (7799734)						
					1005-288-3565 SWAB, SMALL ARMS CLEANING: cotton, 1000 in pkg	PKG		(1)	(1.0)		
					CLEANING AND PRESERVING MATERIALS The following items are requisitioned as required						
					8020-244-0153 BRUSH, ARTIST: metal ferrule, flat, chisel edges, 7/16 w, 1-1/8 lg, exposed bristle (96906-16840)						
					7920-205-2401 BRUSH, CLEANING, TOOL AND PARTS: rd 100 percent tampico fiber, 1-1/16 at ferrule brush dia, 2-7/8 clear of block brush lg (96906-16746-29)						

AR-15, CAR-15, M16

(1) Figure and Index No.	(2) SOURCE AND MAINT CODES				(3) FEDERAL STOCK NO.	(4) DESCRIPTION	(5) Unit of Issue/DS & GS Support	(6) Quantity Incorporated in Unit	(7) 15 - DAY MAINT ALLOW PER 100 EQUIPMENT		
	USAF		ARMY						(a) Organizational	(b) Direct Support	(c) General Support
	(a) Source	(b) Maintenance Repair Level	(c) Source	(d) Maintenance Level							
					6850-682-6835	CLEANING COMPOUND, SOLVENT: Small arms bore cleaner, solution type (PD 126) 2 oz can					
					6850-682-6834	6 oz can					
					6850-682-6833	1 qt can					
					6850-682-6832	1 gal can					
					5350-221-0872	CLOTH, ABRASIVE: Crocus, ferric oxide and quartz, jean-cloth-backing, closed coating, 9 w, 11 lg (42-C-20420-50)					
					6850-281-1985	DRY CLEANING SOLVENT: (SD) (1 gal can)					
					8010-582-5382	LACQUER: Black (jet) lusterless, type I, color 37038, 16 oz, aerosol can, Spec TT-L-50D, type I, nitrocellulose base					
						LUBRICATING OIL, GENERAL PURPOSE: (PL special)					
					9150-273-2389	4 oz can					
					9150-231-6689	1 qt can					
					9150-292-9689	LUBRICATING OIL, WEAPONS: (LAW) for below zero operations (1 qt can)					
					7920-205-1711	RAG, WIPING: Cotton, for general purpose use (96906-16746-131) (50 lb bale)					

CHAPTER X MAINTENANCE ALLOCATION CHART

10-1. PURPOSE.

To allocate specific maintenance operations to the proper level on the basis of time and skills normally available to various maintenance levels and influenced by maintenance policy and sound practices as outlined in AR 750-6 (Army).

10-2. EXPLANATION AND DEFINITIONS.

The maintenance allocation chart designates overall responsibility for the maintenance func-

tion on an enditem or assembly. Repair and/or overhaul of major assemblies is designated by authority of the Army commander representative, except for the specific repair subfunctions listed in the maintenance allocation charts. Deviation from maintenance operations allocated in the maintenance allocation charts is authorized only upon approval of the Army commander representative.

- SERVICE** To clean, preserve, and lubricate.
- REPLACE** To substitute serviceable assemblies, subassemblies, and parts for unserviceable components.
- REPAIR** To restore to a serviceable condition by replacing unserviceable parts or by any other action required utilizing tools, equipment and skills available, to include riveting, straightening, adjusting, etc.
- SYMBOL "X"** The symbol "X" placed in the appropriate column indicates the level responsible for performing that particular maintenance operation, but does not necessarily indicate that repair parts will be stocked at that level. Maintenance levels higher than the level marked by "X" are authorized to perform the indicated operation.

MAINTENANCE ALLOCATION CHART

(1) Group No.	(2) Component and related operations	(3) Maintenance Levels				
		O/C	O	DS	GS	D
1	Magazine:					
	Service	X				
	Repair			X		
2	Bolt Carrier Group:					
	Service	X				
	Repair		X			
3	Upper Receiver Group:					
	Service	X				
	Repair			X		
4	Barrel and Front Sight Assembly:					
	Service	X				
	Repair			X		
	Replace			X		

MAINTENANCE ALLOCATION CHART - continued

(1) Group No.	(2) Component and related operations	(3) Maintenance Levels				
		O/C	O	DS	GS	D
5	Rear Sight:					
	Service	X				
	Repair			X		
6	Hand Guard Assembly:					
	Service	X				
	Replace			X		
7	Lower Receiver Group:					
	Service	X				
	Repair			X		
8	Stock Assembly:					
	Service	X				
	Repair			X		
	Replace			X		
9	Rifle Bipod					
	Service	X				
	Replace			X		

10-3. EXPLANATION OF MAINTENANCE LEVELS.

O/C	Operator or Crew
O	Organizational
DS	Direct Support
GS	General Support
D	Depot

CHAPTER XI

BAYONET-KNIFE, M7 AND BAYONET-KNIFE SCABBARD, M8A1

11-1. GENERAL.

11-2. The bayonet-knife (figure 1-2) is utilized for close combat, guarding of prisoners, riot duty, etc. It can also be used as a general utility knife. The blade has a full cutting edge on the bottom and a 3 1/8" cutting edge on top running from the point. The handle fits comfortably and has a knurled surface for a firm grip. The bayonet-scabbard (figure 1-2) is used to carry the bayonet-knife when not being used on the rifle.

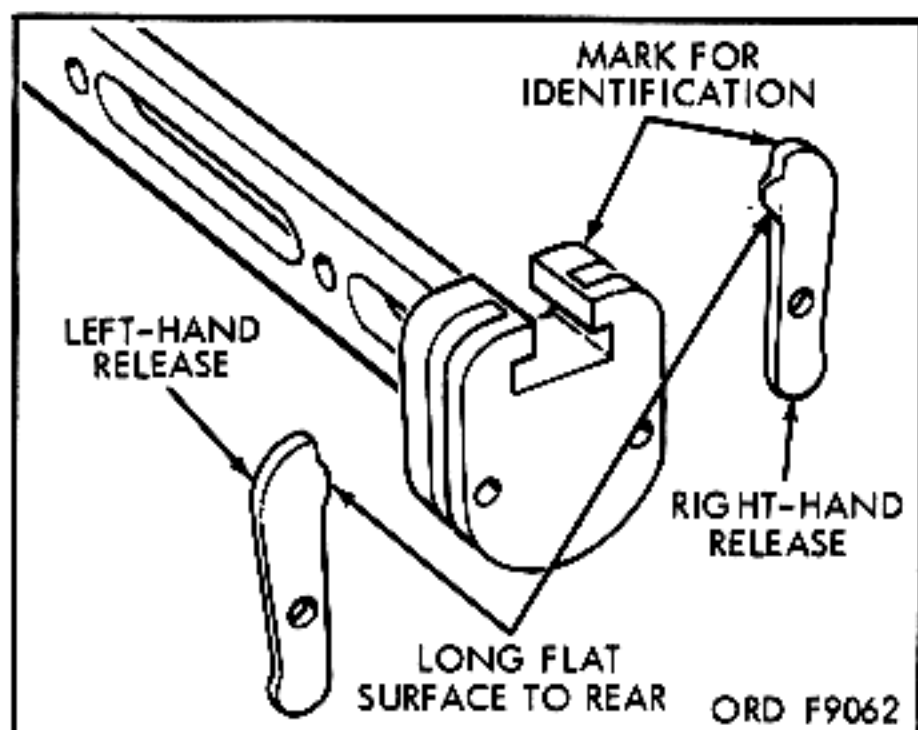


Figure 11-1. Bayonet-Knife Marking and Identification of Releases

11-3. BAYONET.

11-4. INSTALLATION.

11-5. Refer to figure 3-3.

11-6. TROUBLE SHOOTING.

11-7. If the bayonet-knife fails to slide over the bayonet stud or can be removed from the rifle without compressing the releases, the releases are probably incorrectly assembled. If the releases are assembled correctly, inspect for a weak or broken release spring.

11-8. DISASSEMBLE/ASSEMBLE. Refer to paragraph 3-28B for operator (user) maintenance.

Note

Prior to disassembly, it is recommended that the right hand release and plate be marked to assist in identification when assembling the left and right hand releases (Figure 11-1).

11-9. Remove screws (1, figure 11-2) and lock washers (2). Remove left (3) and right-hand grips (4). Remove spring pins (5) and releases (6 & 7). Remove spring (8).

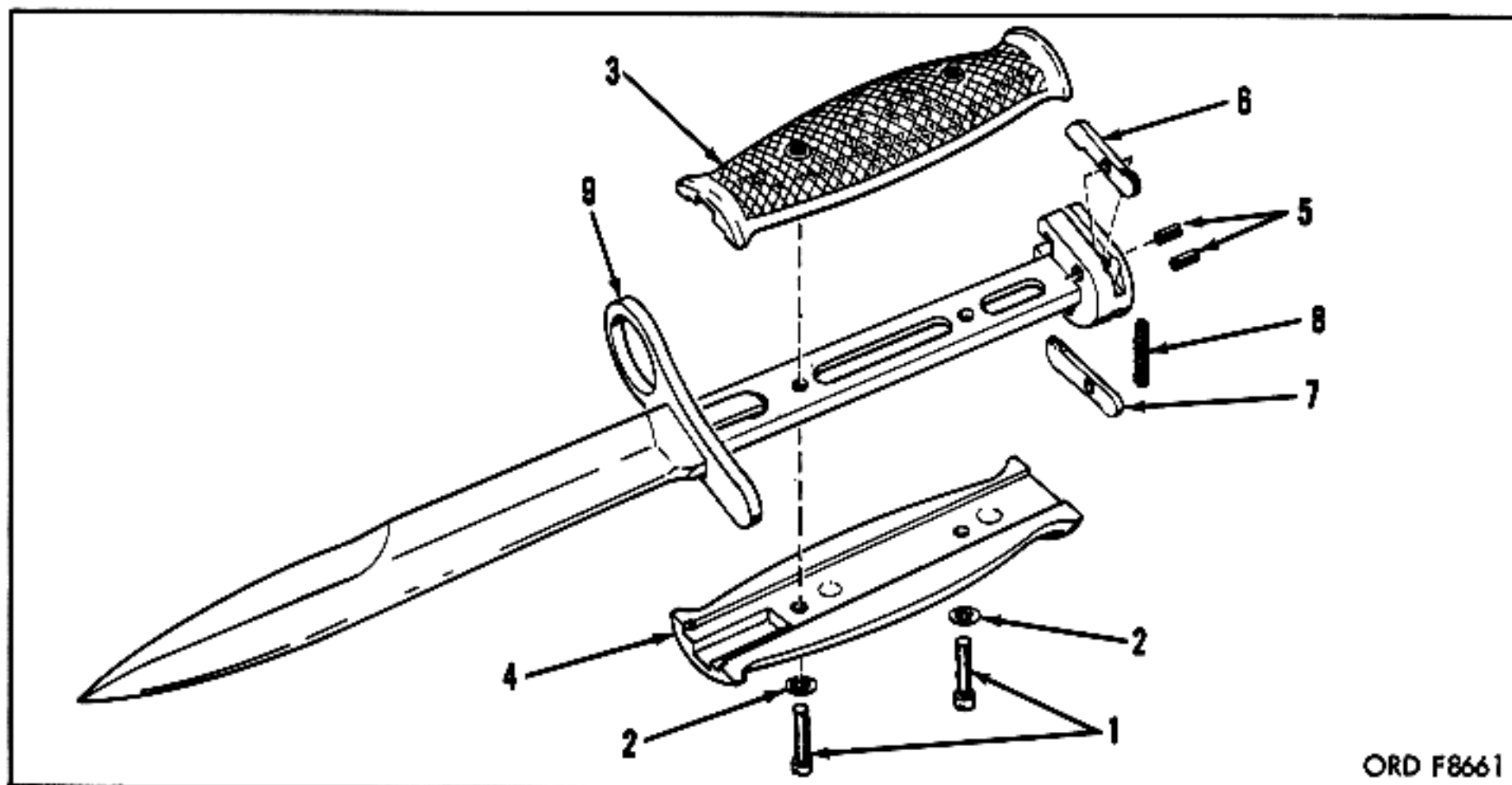


Figure 11-2. Bayonet-Knife M7 - exploded view

AR-15, CAR-15, M16

11-10. Assemble in reverse order of disassembly.

Note

The grips may be installed on either side of bayonet-knife but the right-hand grip (4) has the recesses for the screwheads.

11-11. CLEANING.

11-12. Clean all parts of grease, oil, and dirt.

11-13. INSPECT AND REPAIR.

- a. Replace screws, if threads are stripped.
- b. Replace cracked grips or replace left-hand grip, if threads in grip are stripped.
- c. Replace spring pin, if worn or damaged.
- d. Replace spring if, kinked, set, or broken.
- e. Remove nicks and dents, as required, by grinding and/or stoning.

f. If wear is noted on the release camming area and positive retention to the rifle is questionable, replace as required. If binding is noted due to a bent release, repair by straightening or replace.

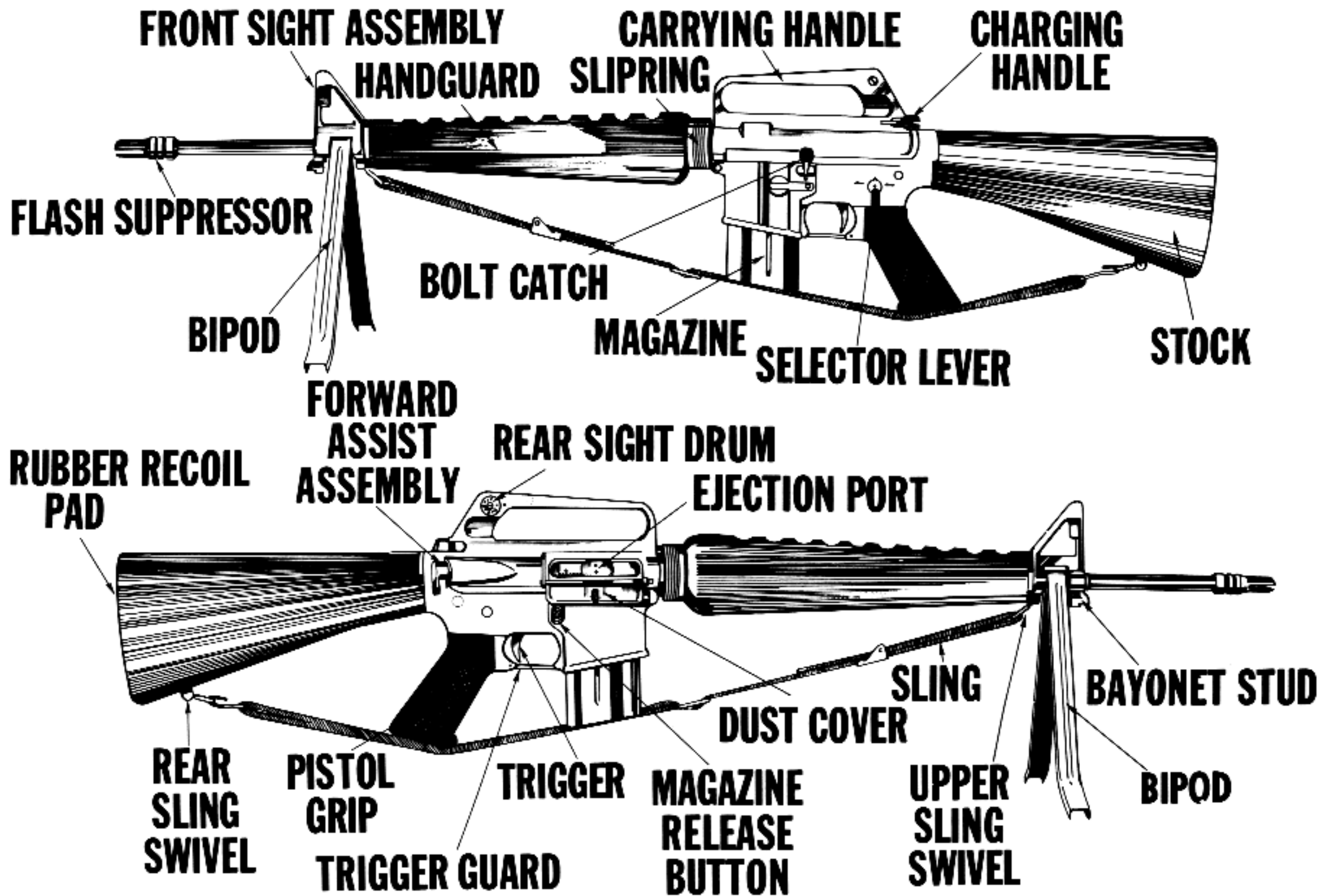
11-14. BAYONET-KNIFE SCABBARD, M8A1.

11-15. Metal parts will be dark. If finish of metal is worn, a rust inhibiting enamel or flat black lacquer may be applied to metal parts.

11-16. If the scabbard is chipped exposing the fabric or the surface is scratched or marred, smooth as required and paint with olive drab lusterless enamel.

11-17. Clean and/or replace broken or damaged restraining lace.

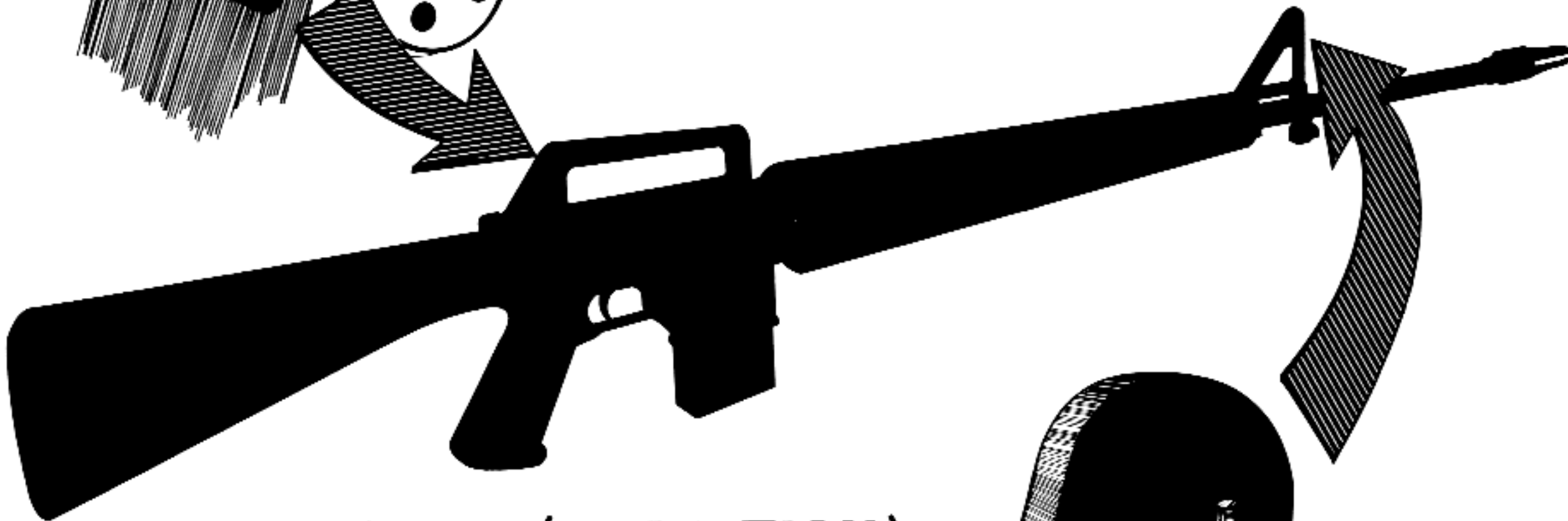
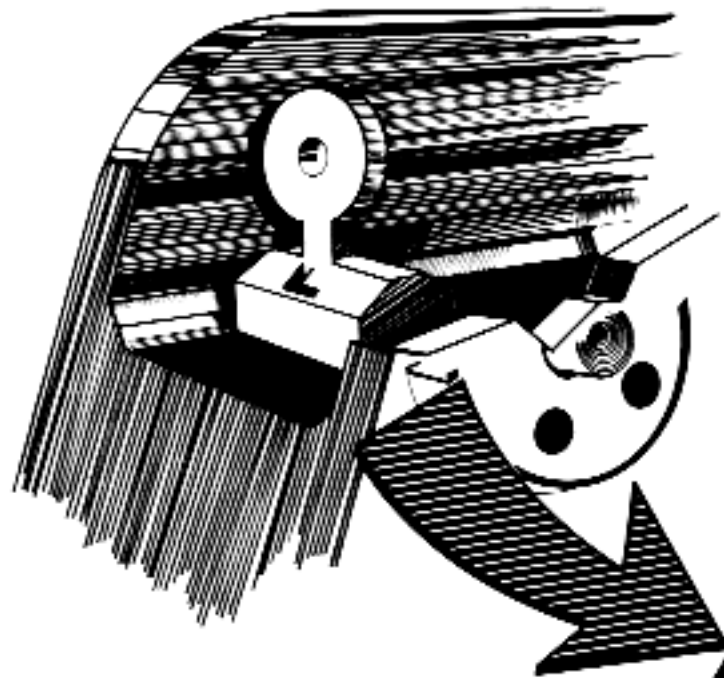
RIFLE, 5.56-mm, M16, RIGHT AND LEFT SIDE VIEWS



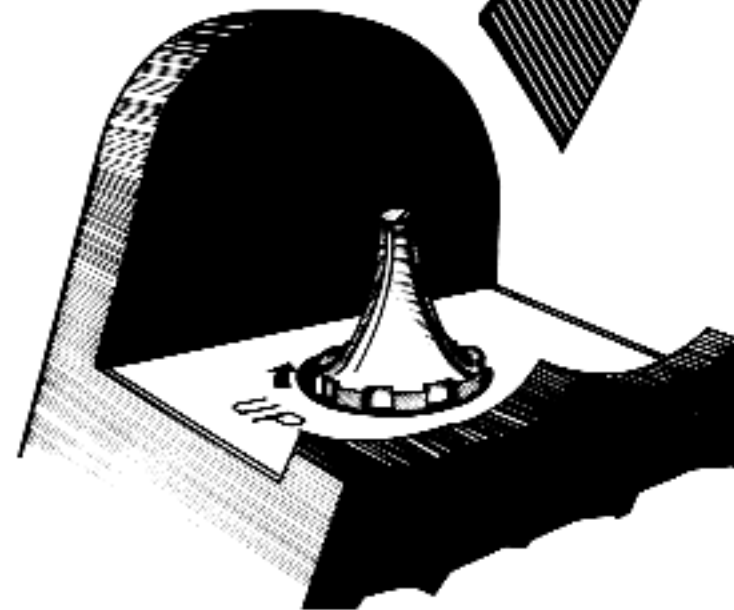
AR-15, CAR-15, M16

FRONT AND REAR SIGHTS

**REAR SIGHT (WINDAGE)
ADJUSTABLE "FLIP" TYPE**

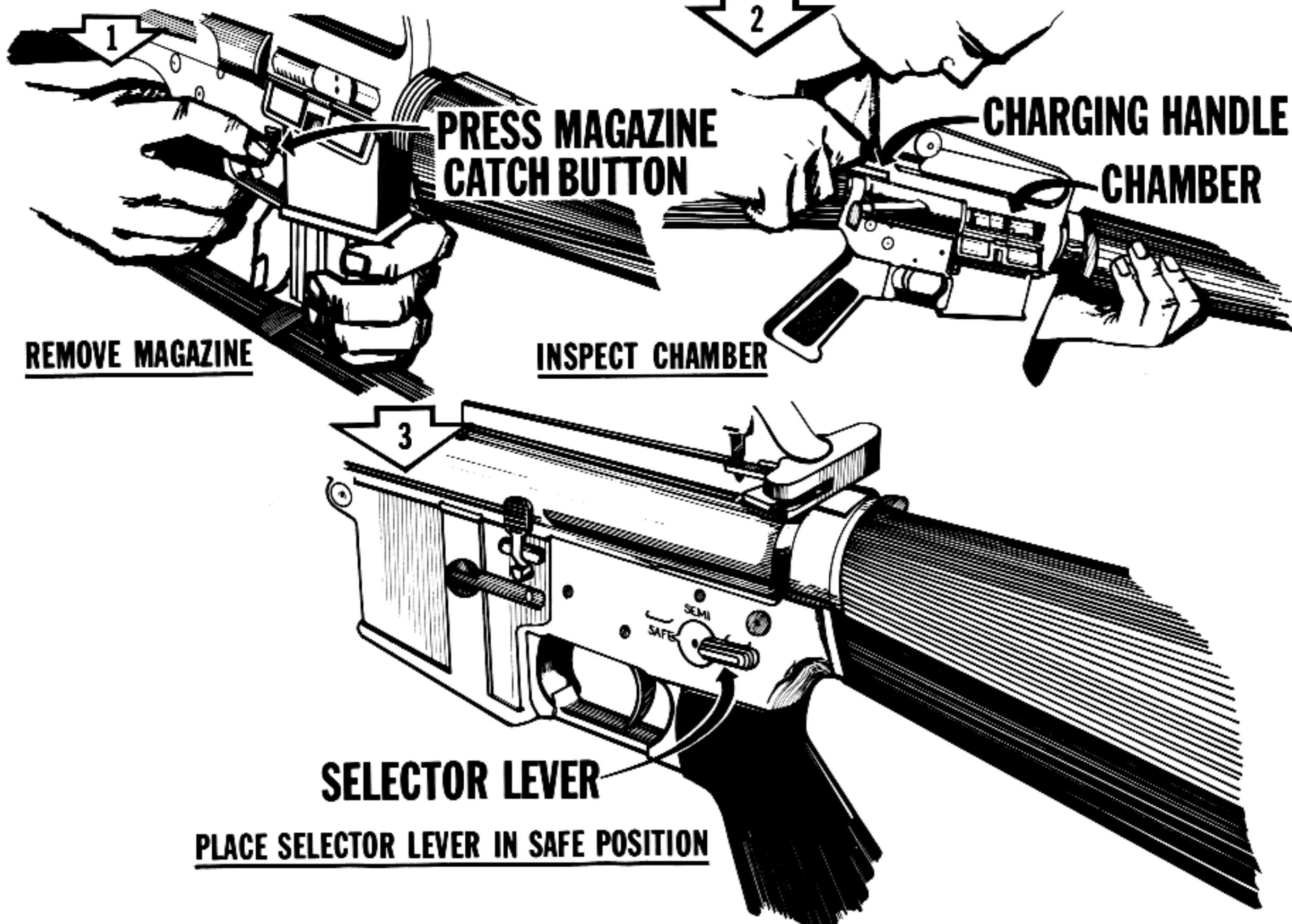


**FRONT SIGHT (ELEVATION)
ADJUSTABLE SIGHT POST**

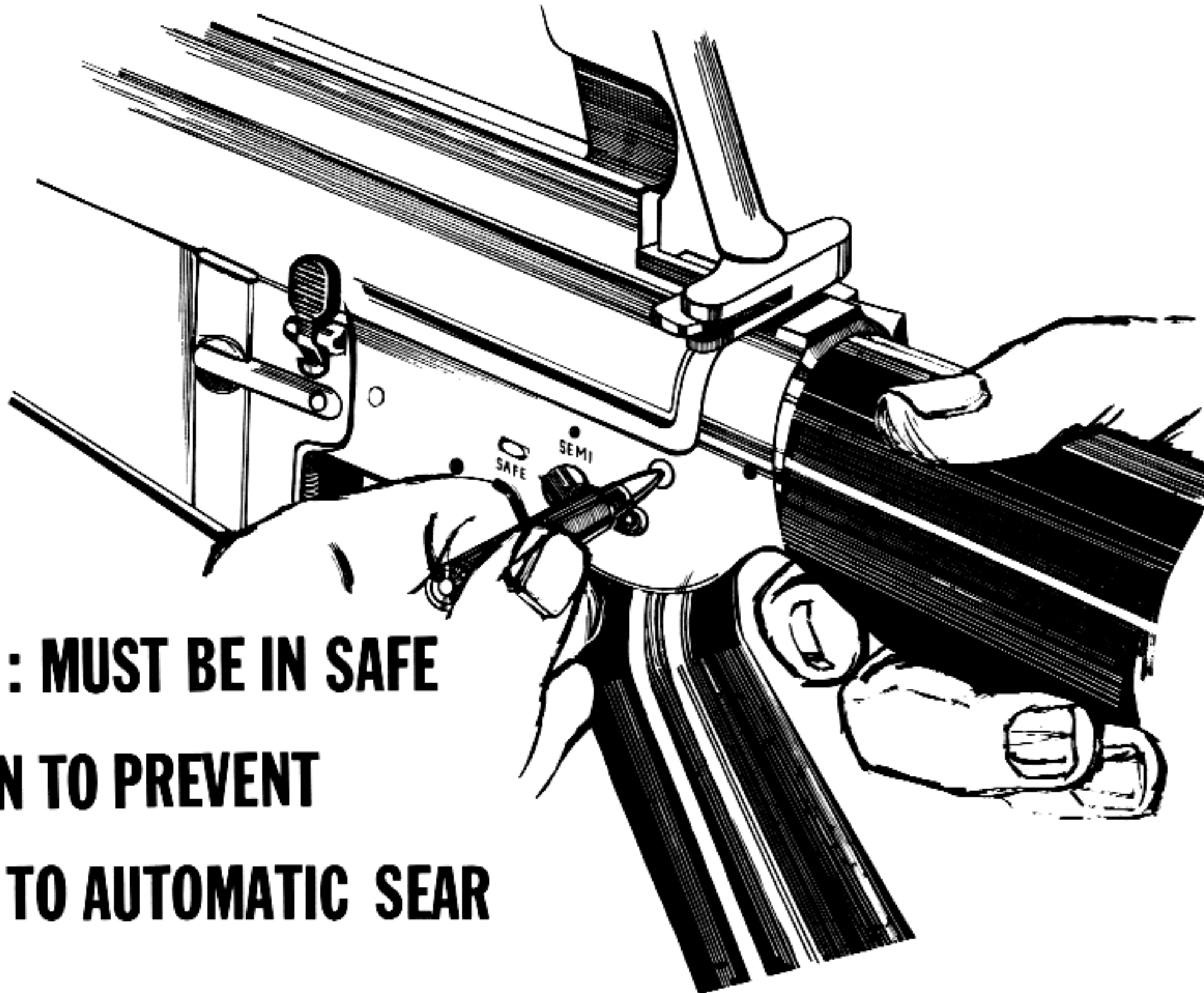


AR-15, CAR-15, M16

CLEARING THE RIFLE



REMOVING THE TAKEDOWN PIN



AR-15, CAR-15, M16

**CAUTION: MUST BE IN SAFE
POSITION TO PREVENT
DAMAGE TO AUTOMATIC SEAR**

REMOVING THE RECEIVER PIVOT PIN



AR-15, CAR-15, M16

UPPER AND LOWER RECEIVER GROUPS

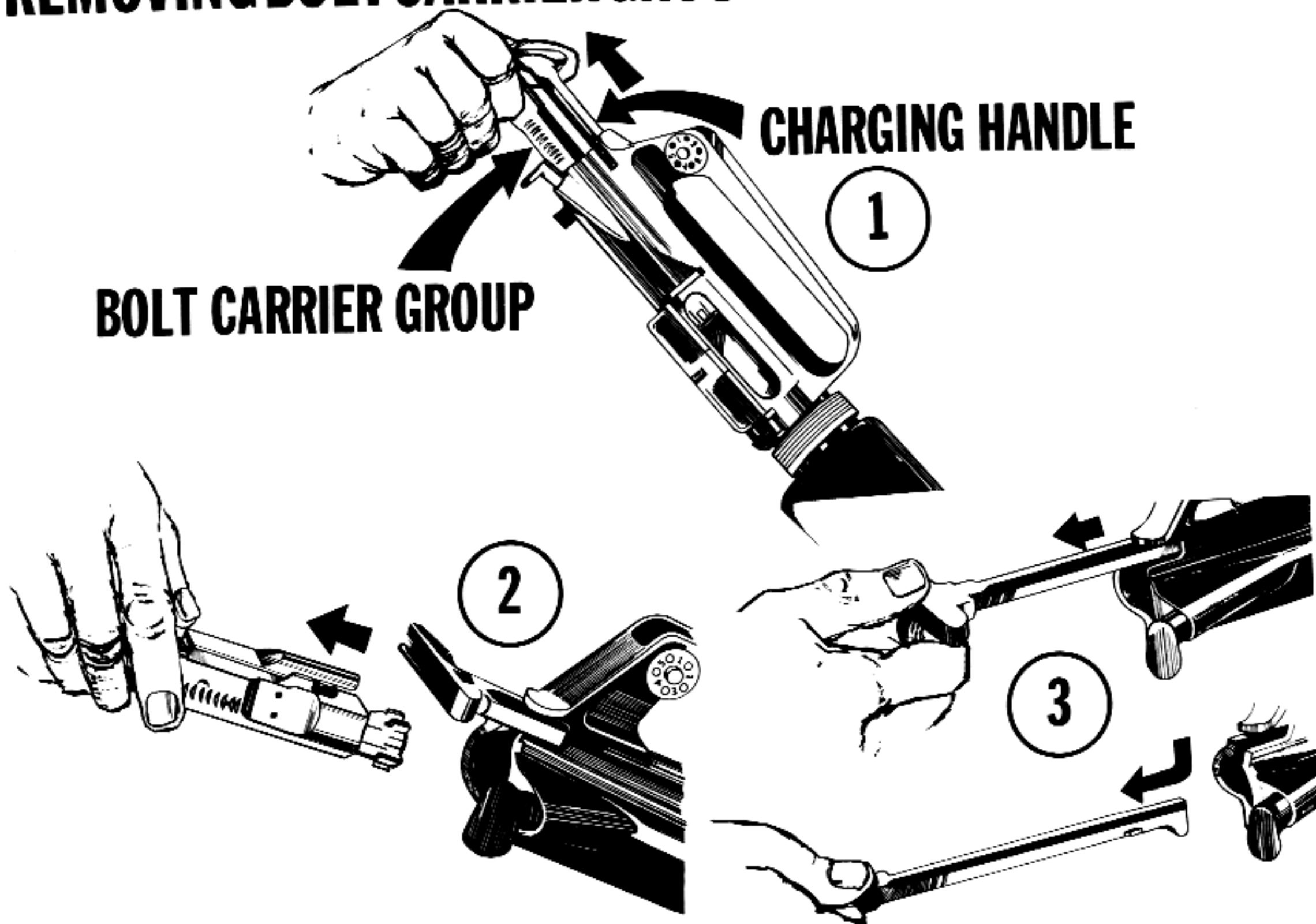
UPPER RECEIVER GROUP



LOWER RECEIVER GROUP

AR-15, CAR-15, M16

REMOVING BOLT CARRIER GROUP AND CHARGING HANDLE



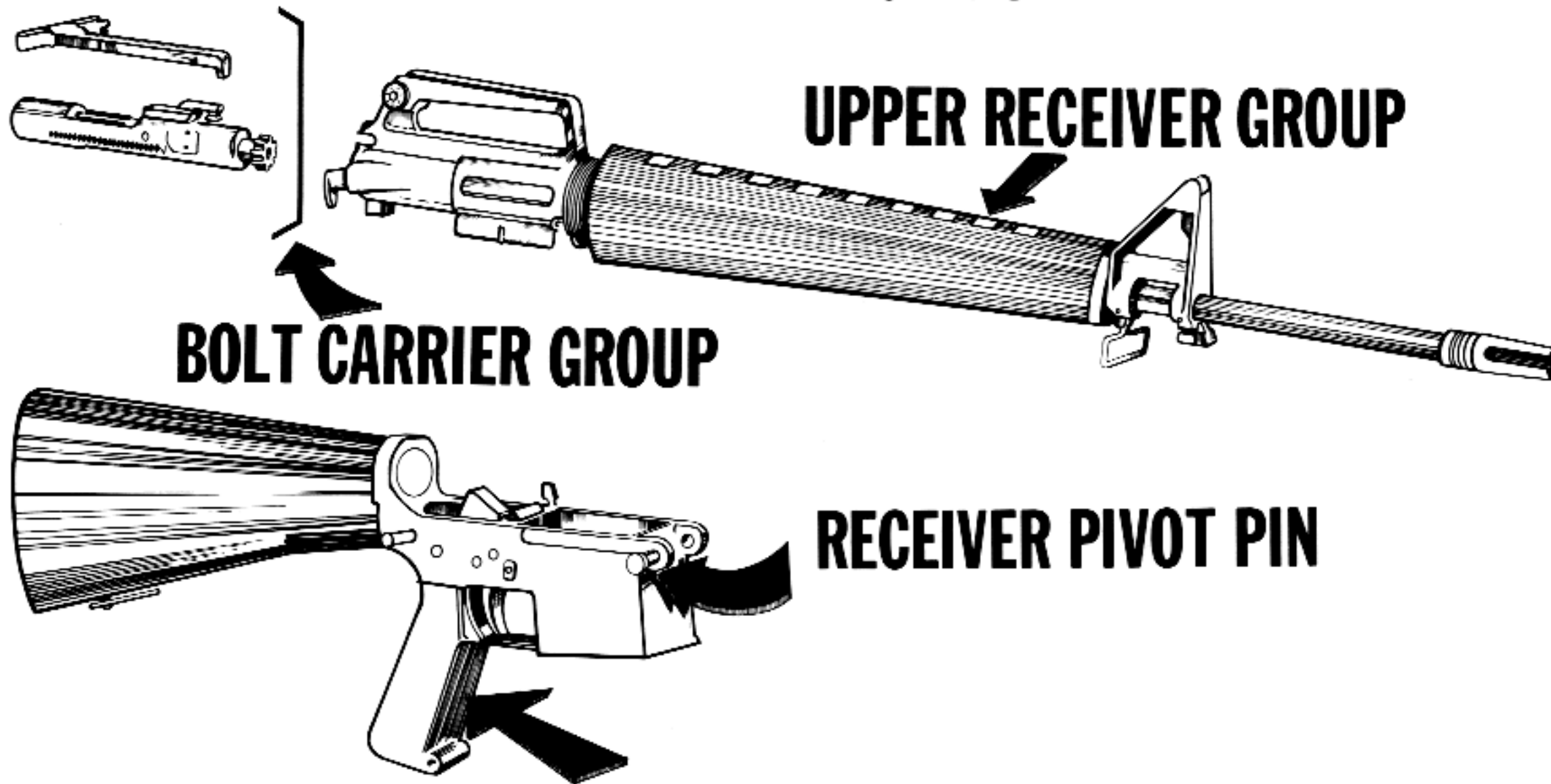
THREE MAIN GROUPS

UPPER RECEIVER GROUP

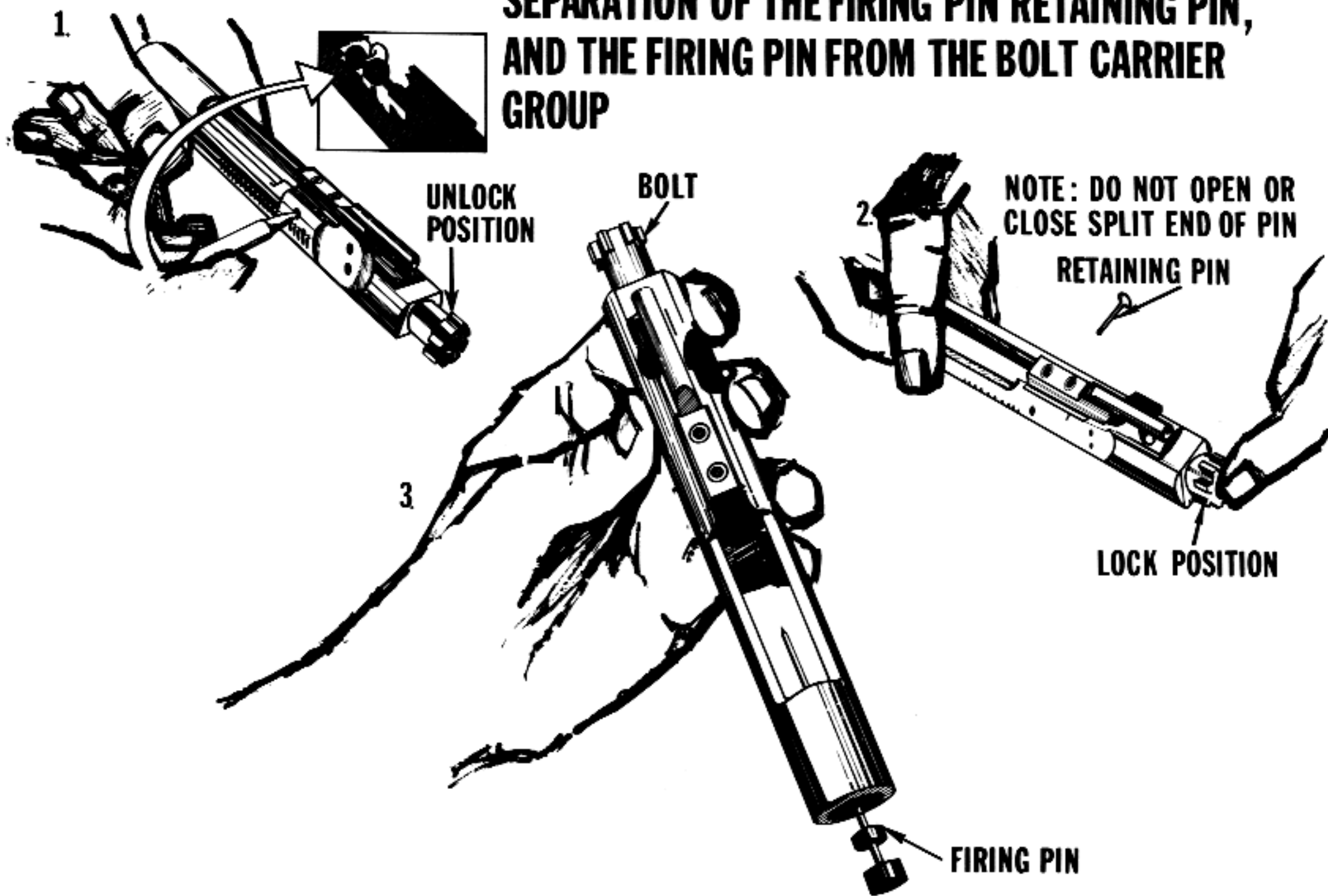
BOLT CARRIER GROUP

RECEIVER PIVOT PIN

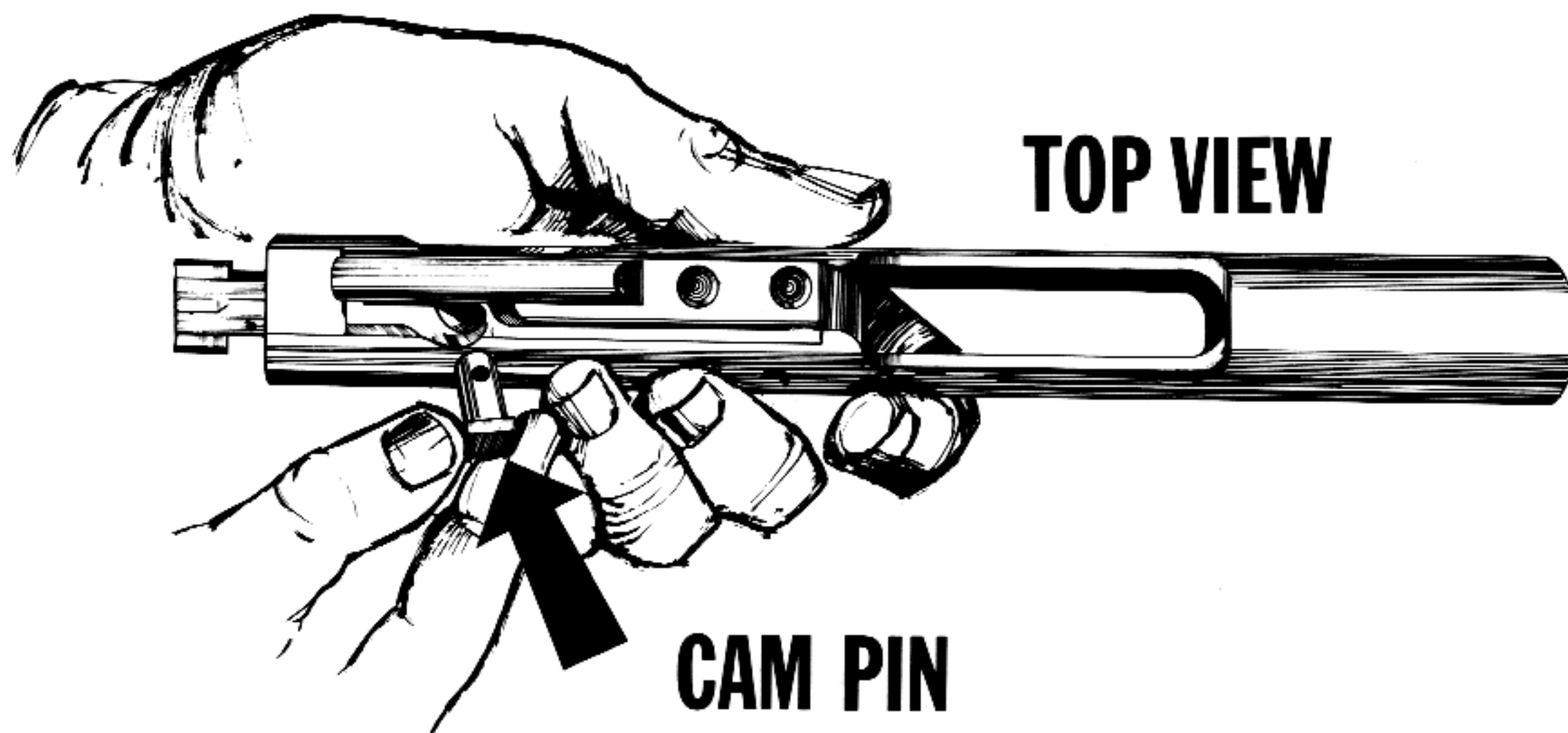
LOWER RECEIVER GROUP



SEPARATION OF THE FIRING PIN RETAINING PIN, AND THE FIRING PIN FROM THE BOLT CARRIER GROUP

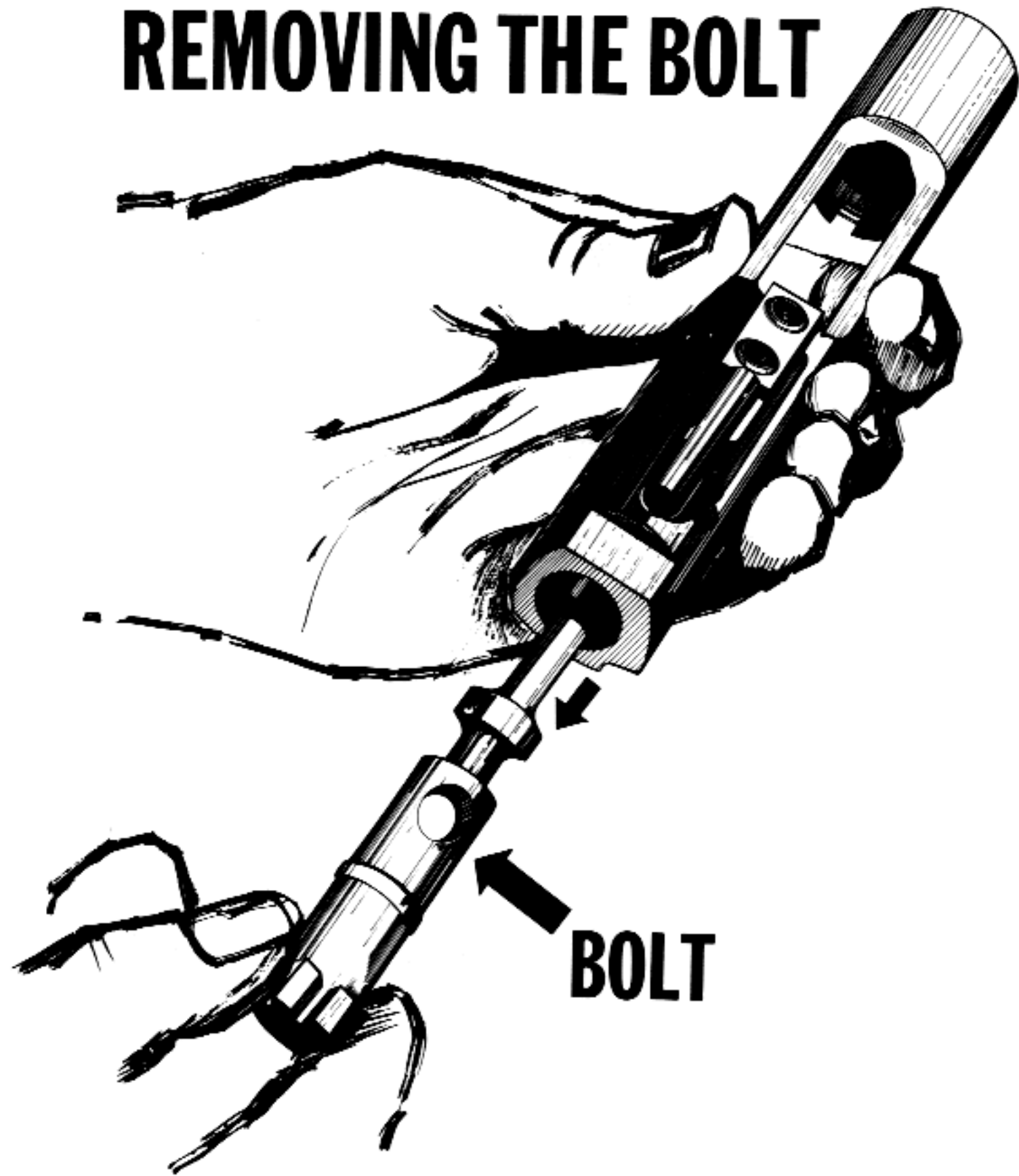


REMOVING THE CAM PIN FROM THE BOLT CARRIER GROUP



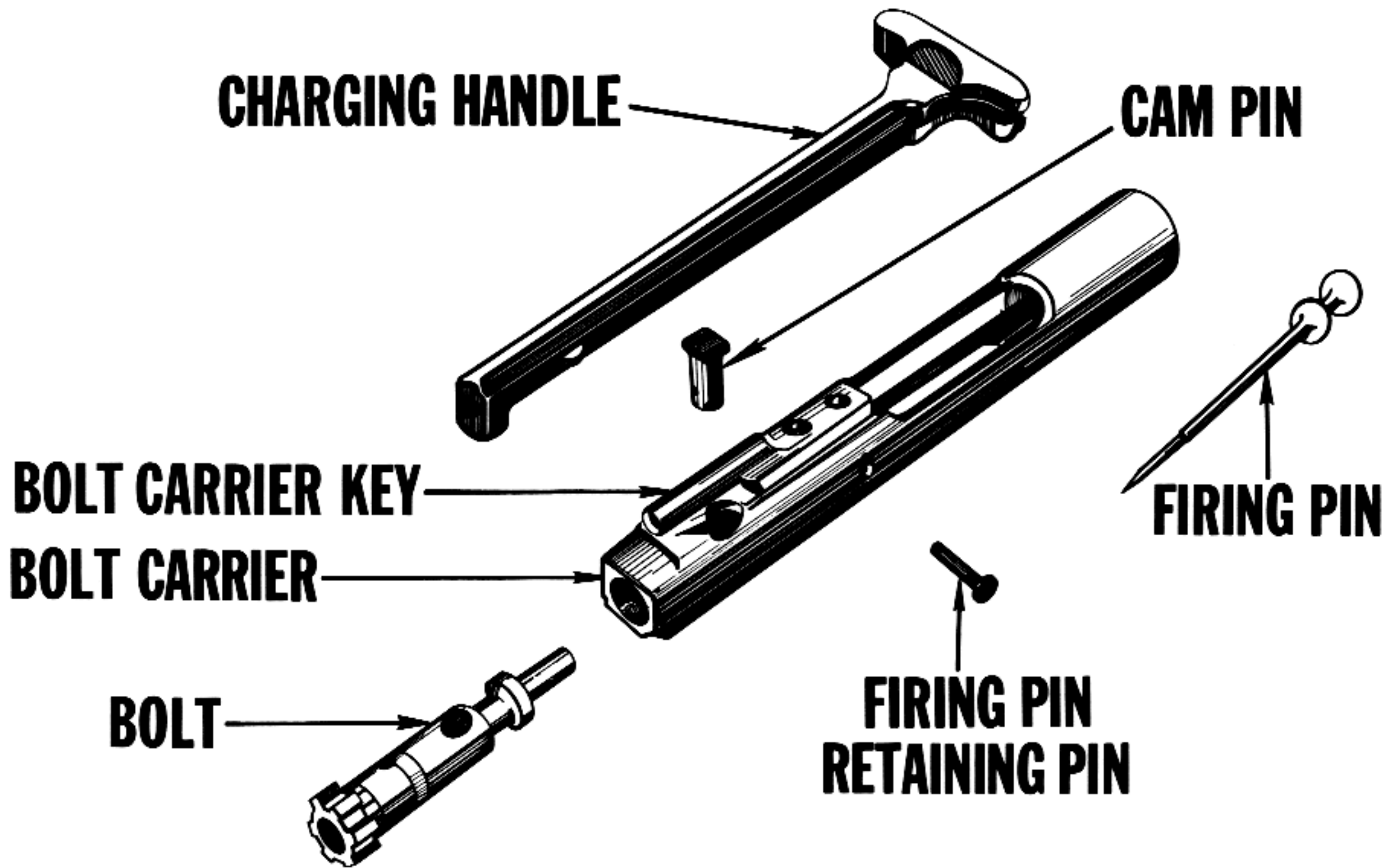
AR-15, CAR-15, M16

REMOVING THE BOLT



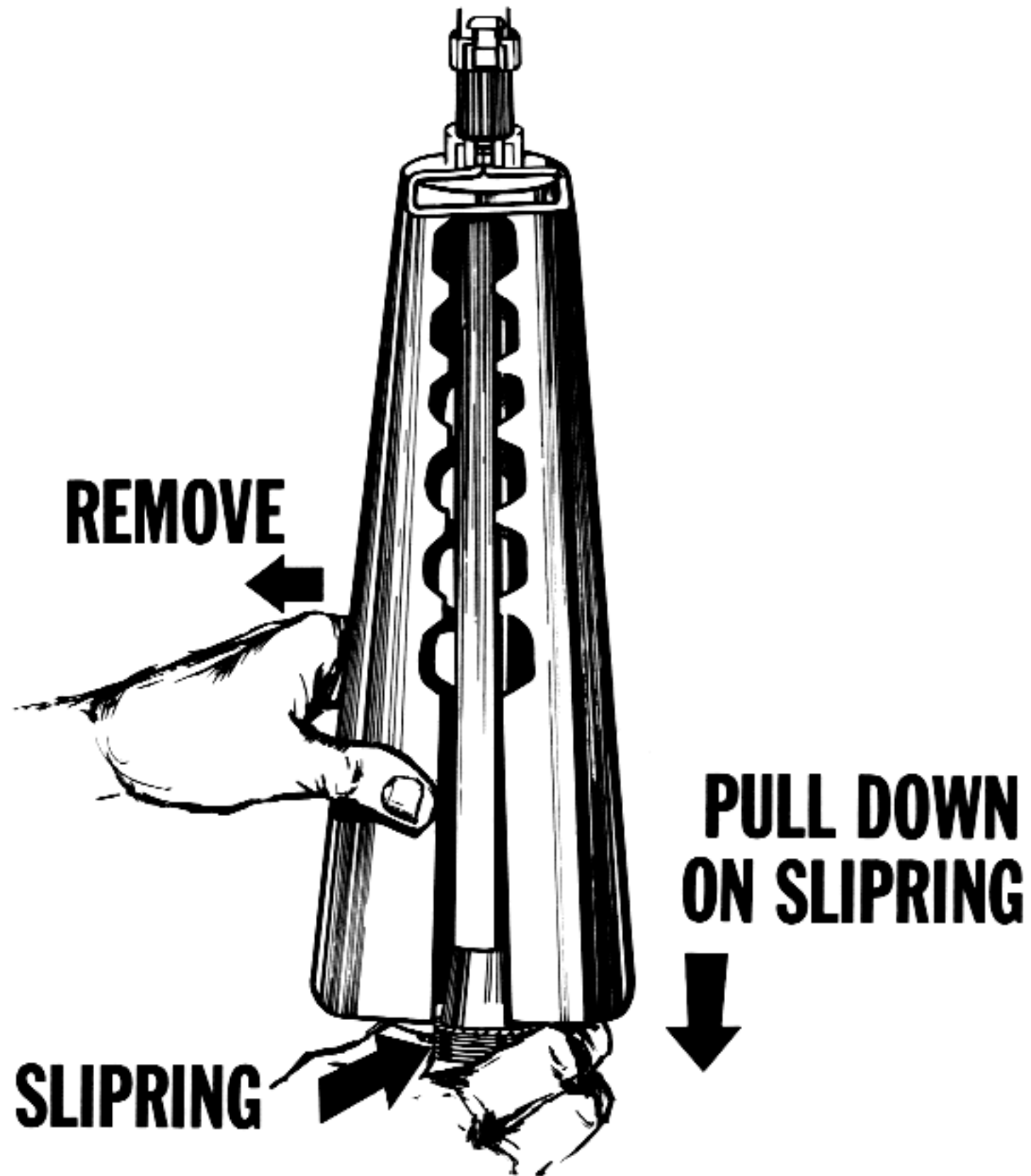
AR-15, CAR-15, M16

BOLT CARRIER GROUP DISASSEMBLED



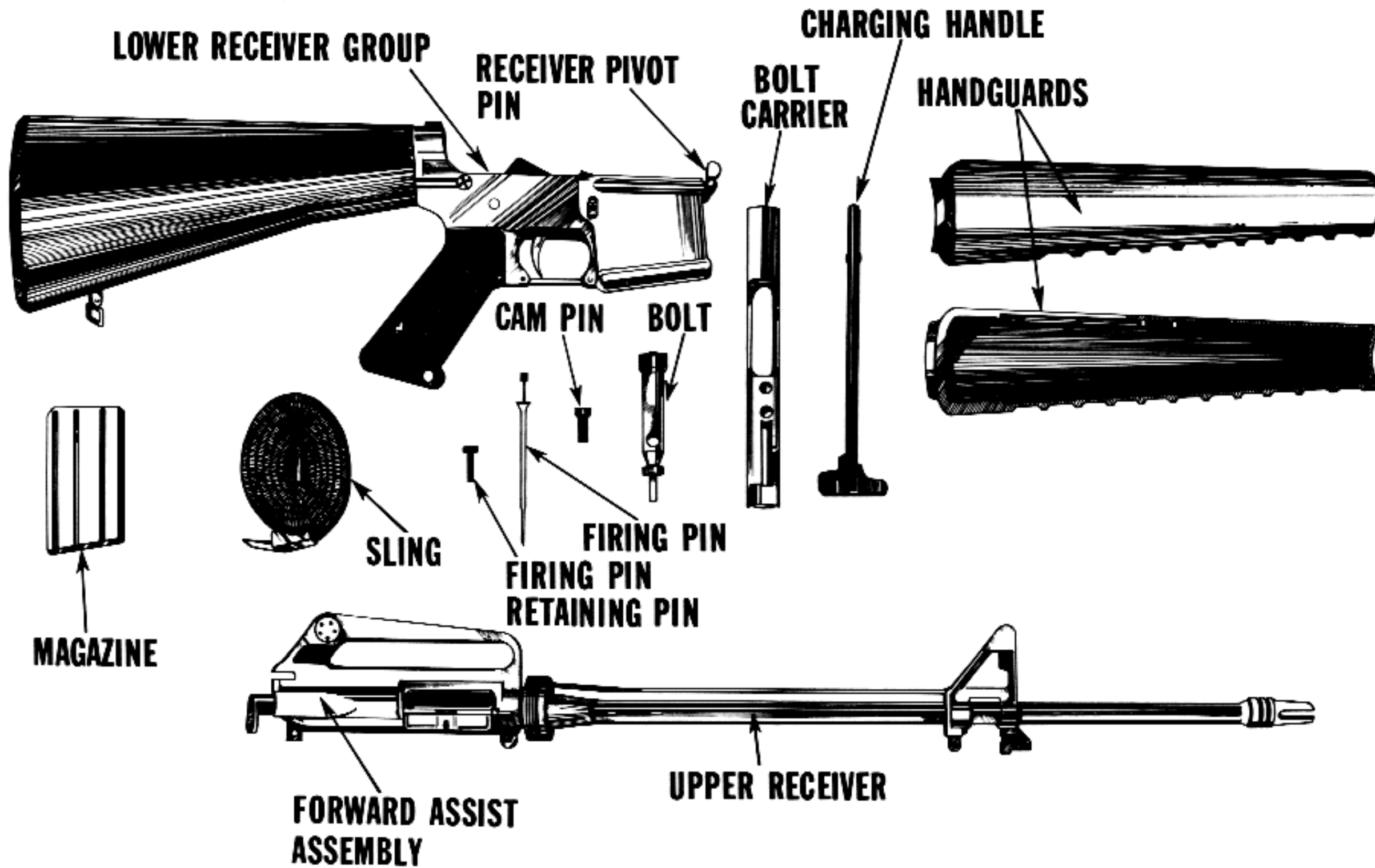
AR-15, CAR-15, M16

REMOVING THE HANDGUARDS



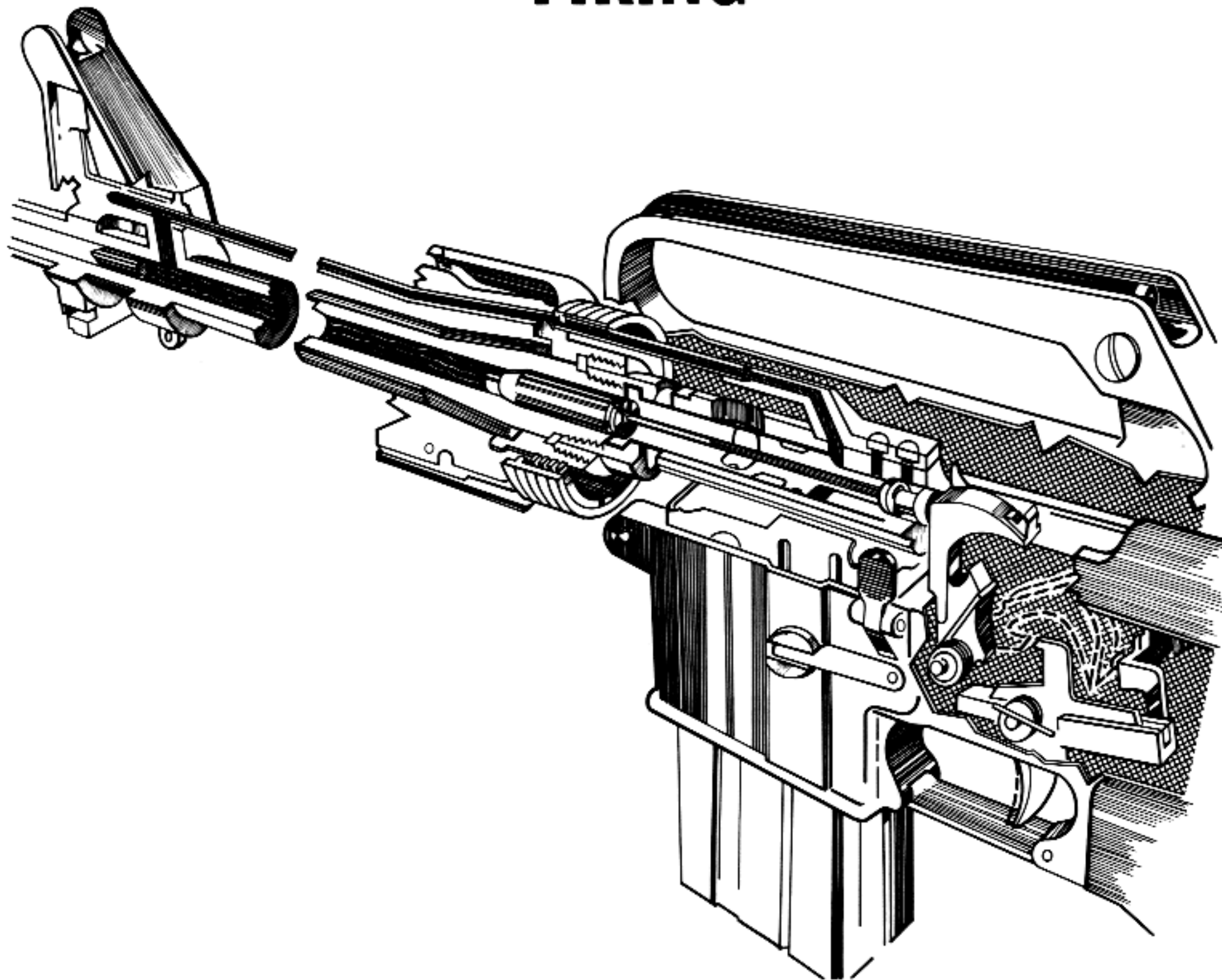
AR-15, CAR-15, M16

THE M16 RIFLE, FIELD STRIPPED



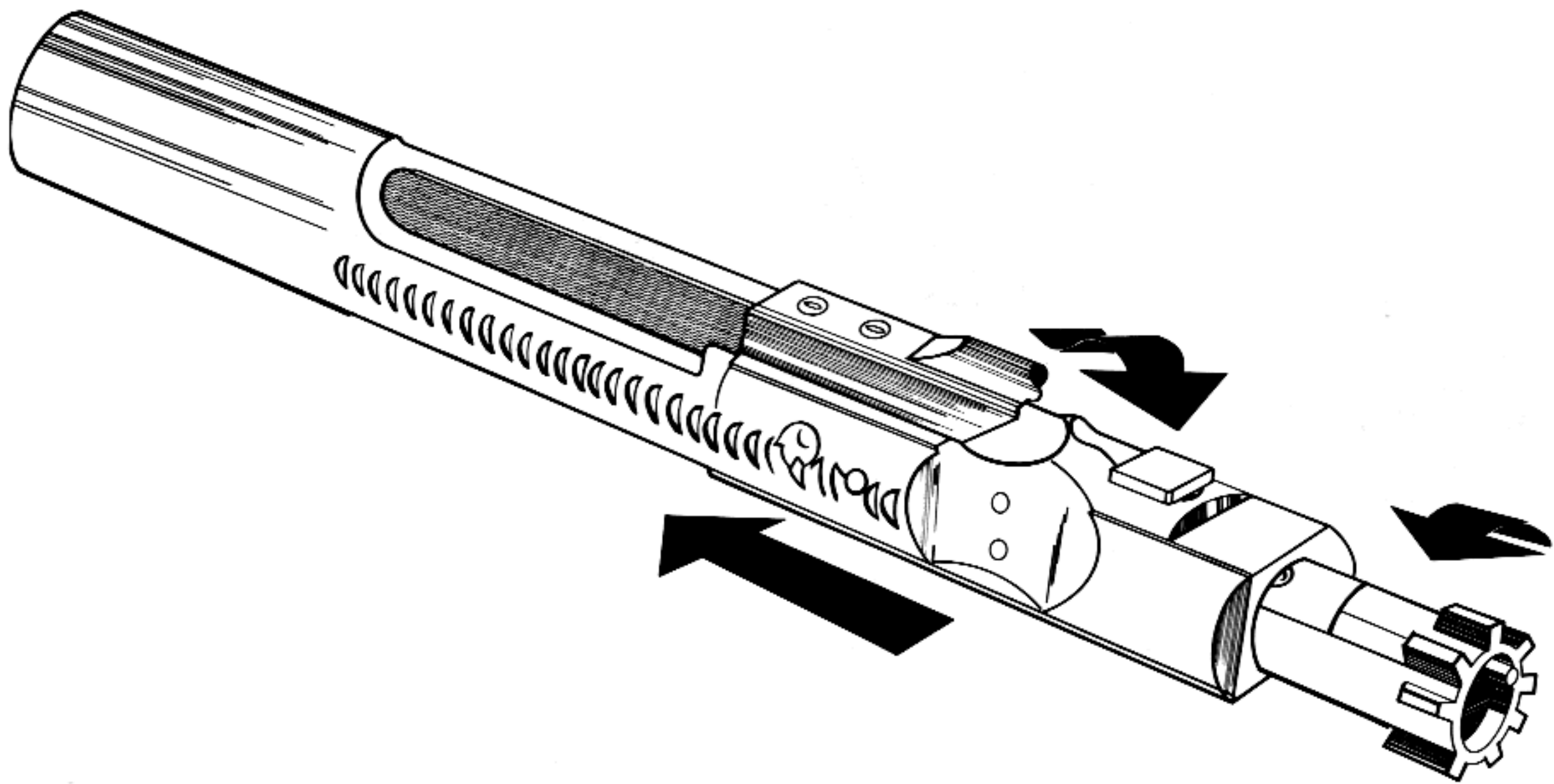
AR-15, CAR-15, M16

FIRING



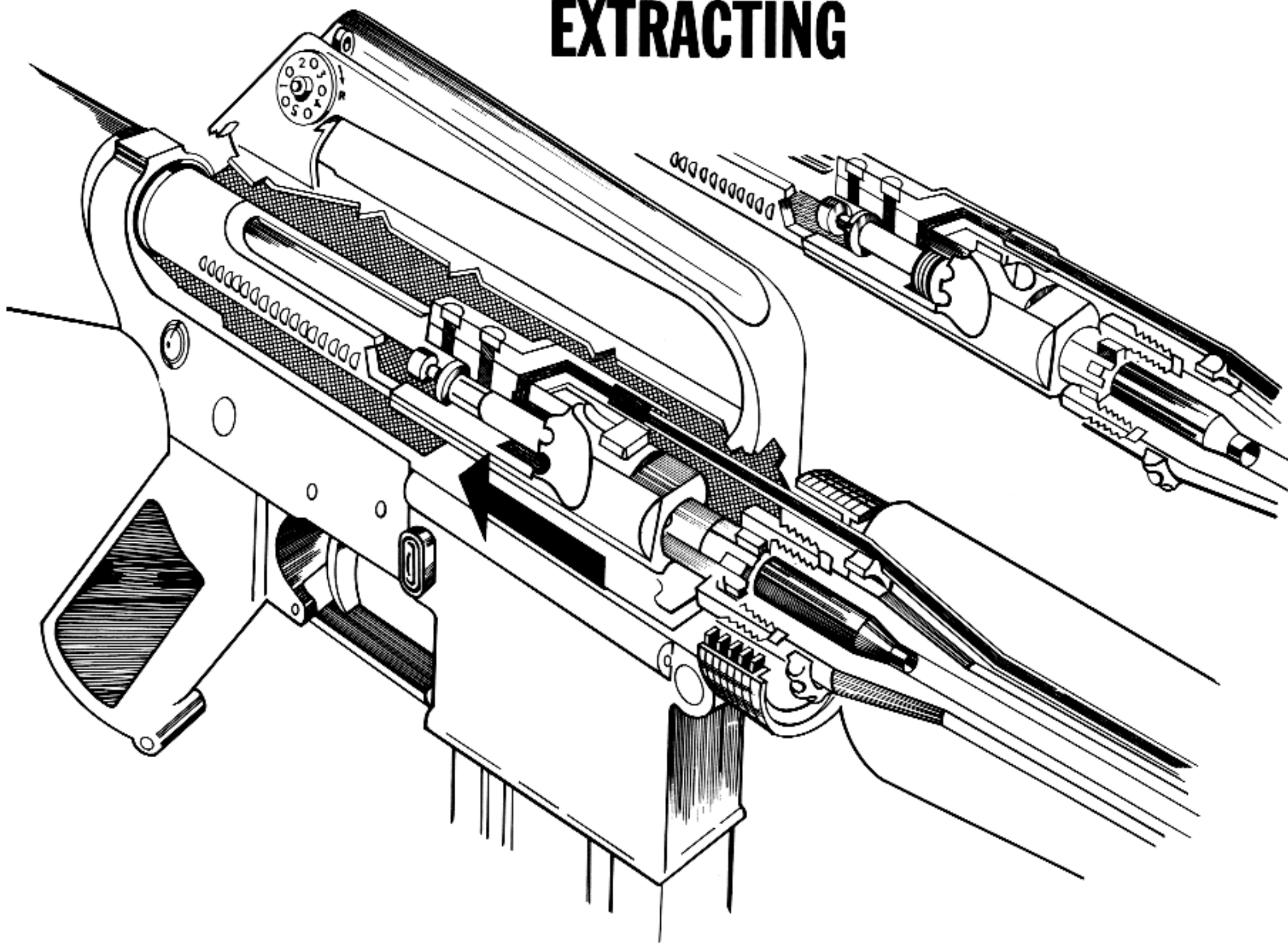
AR-15, CAR-15, M16

UNLOCKING



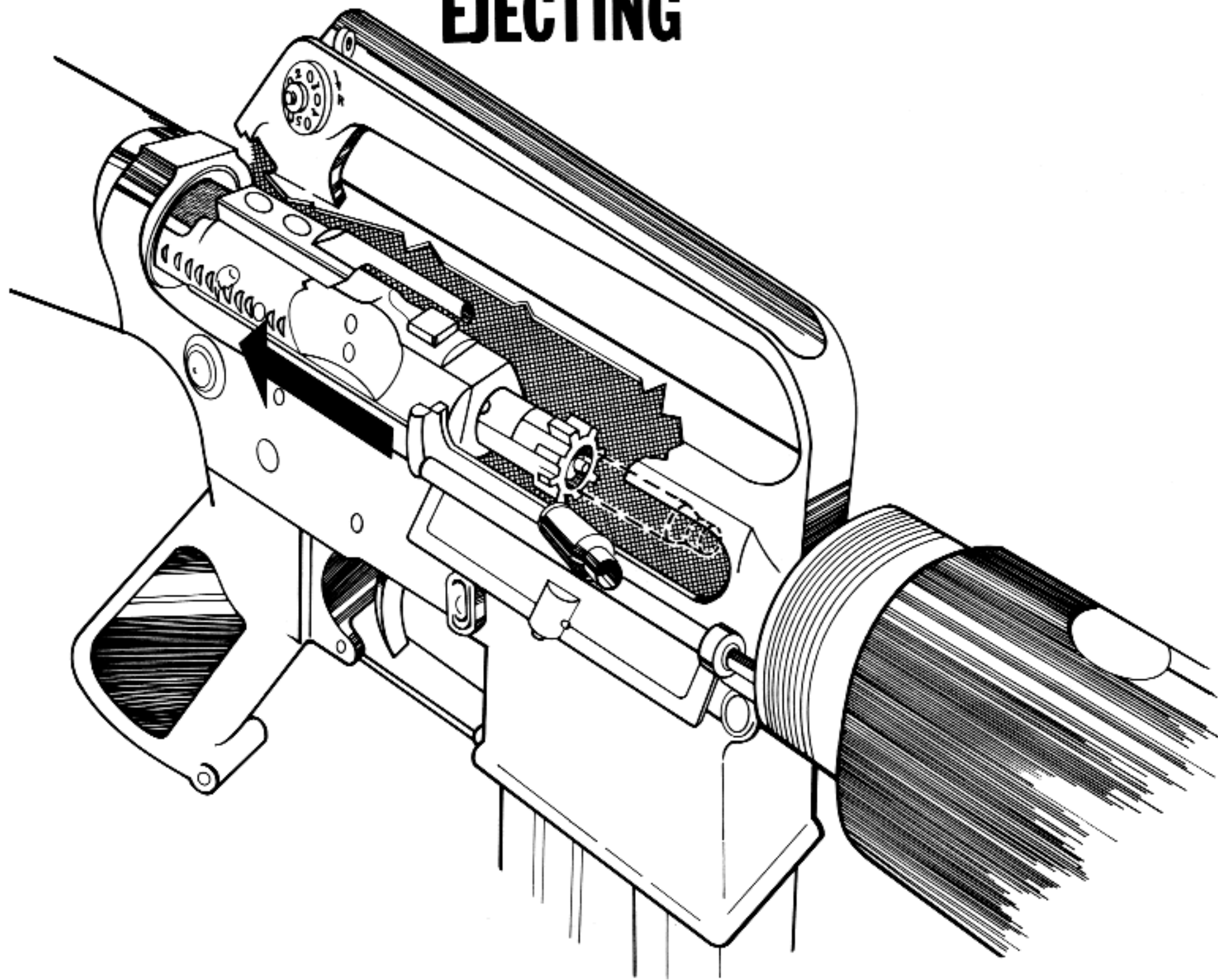
AR-15, CAR-15, M16

EXTRACTING



AR-15, CAR-15, M16

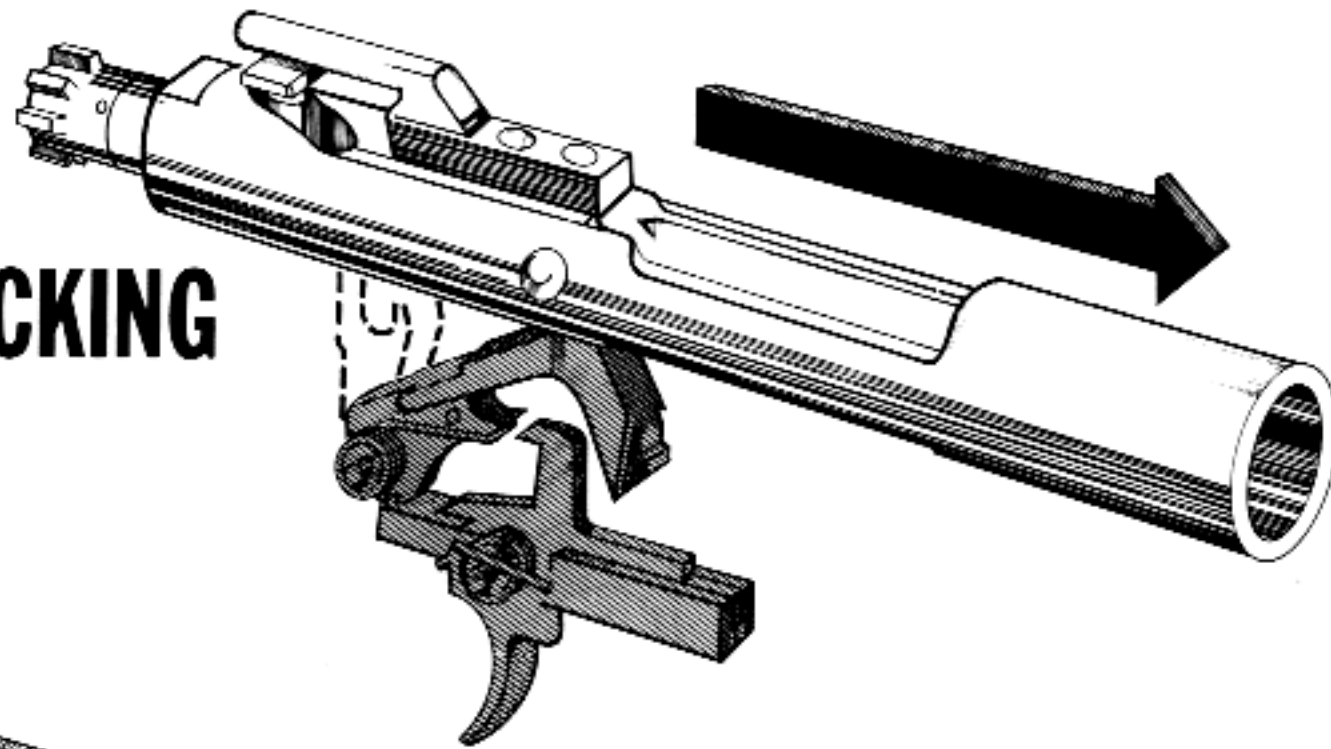
EJECTING



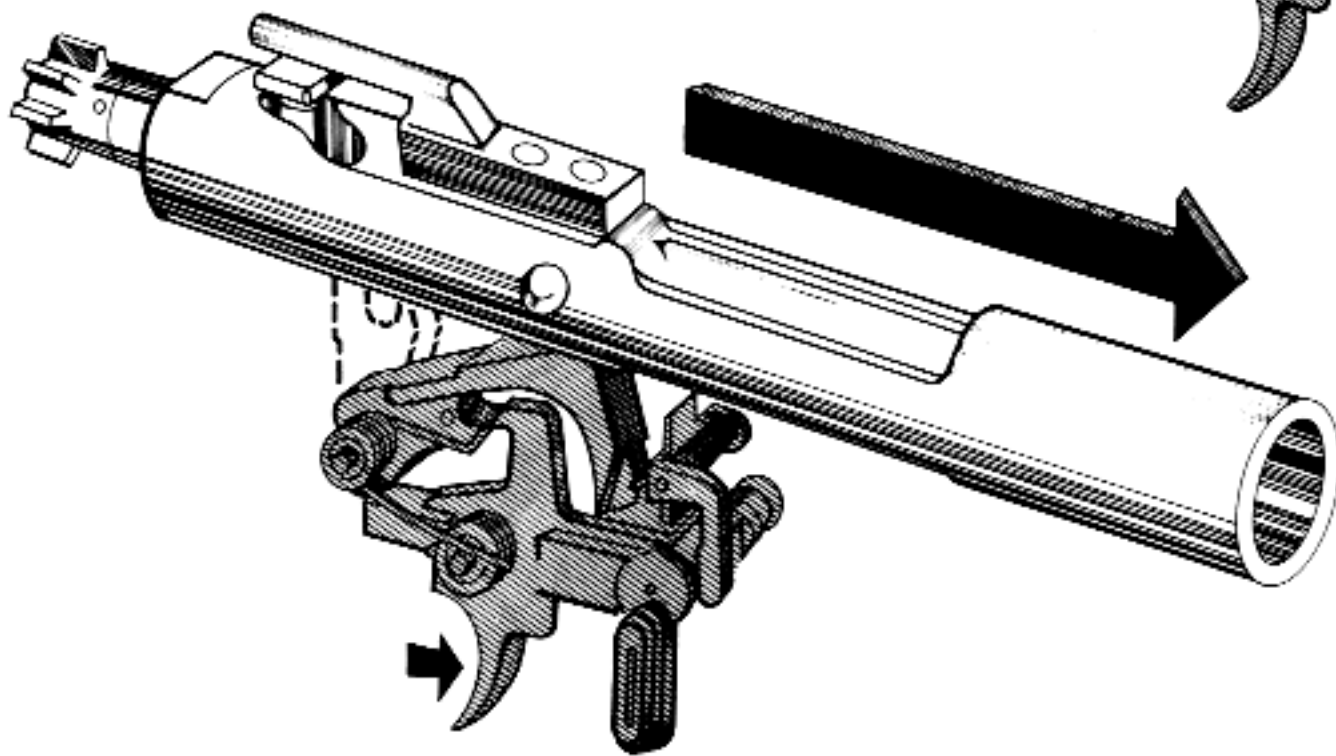
AR-15, CAR-15, M16

COCKING

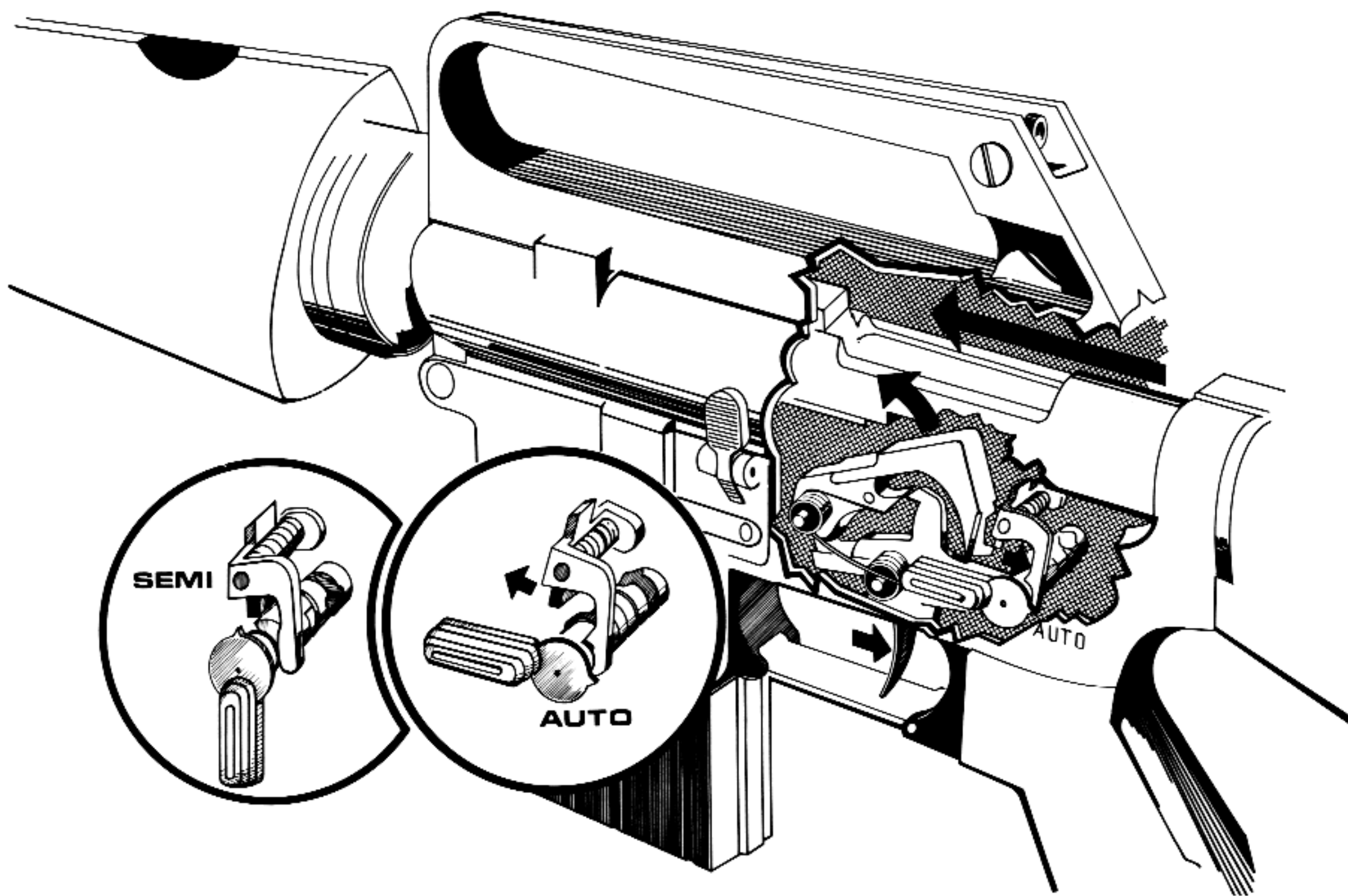
NORMAL COCKING



COCKING WHEN TRIGGER IS HELD BACK DURING SEMI-AUTOMATIC FIRING

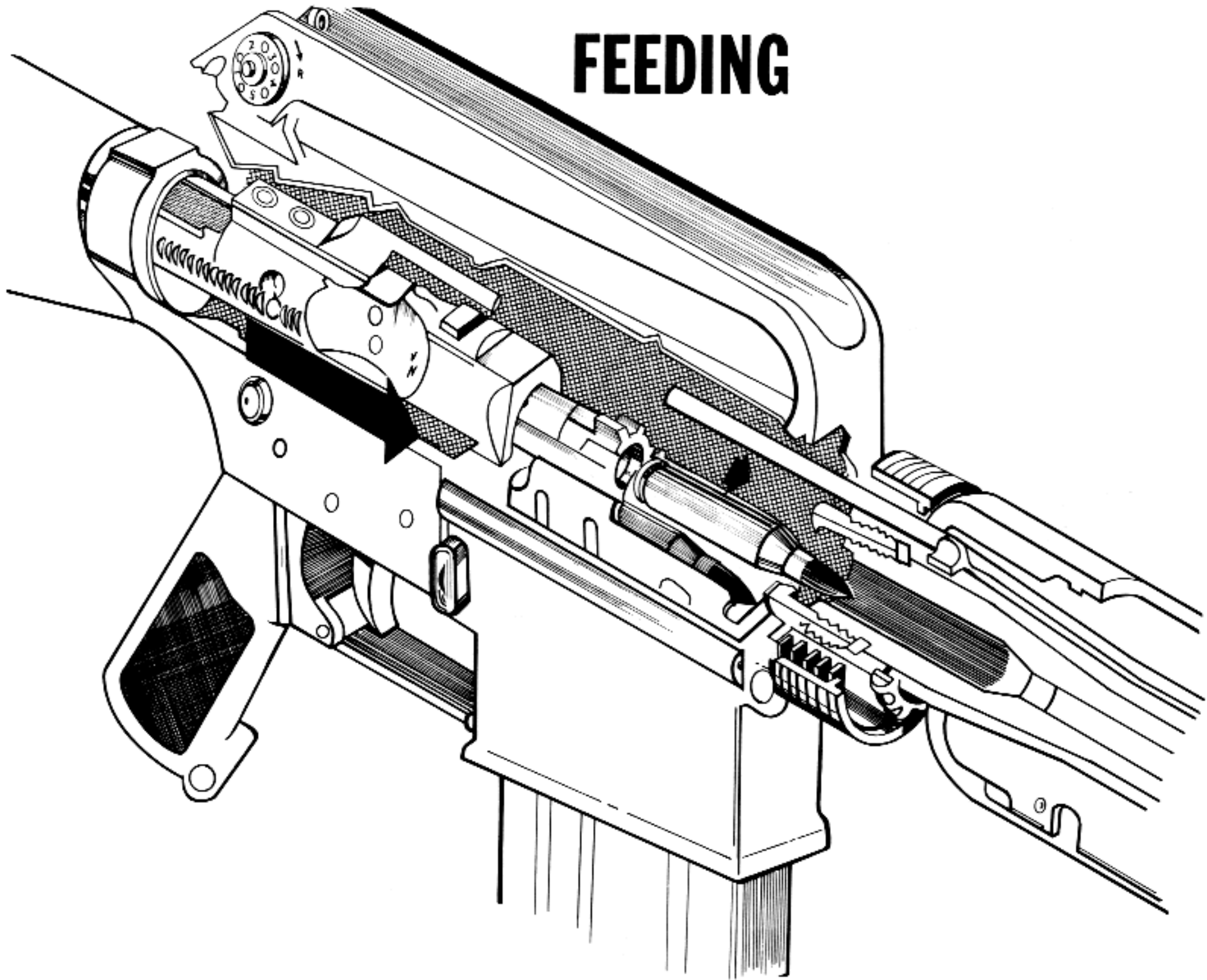


AUTOMATIC SEAR



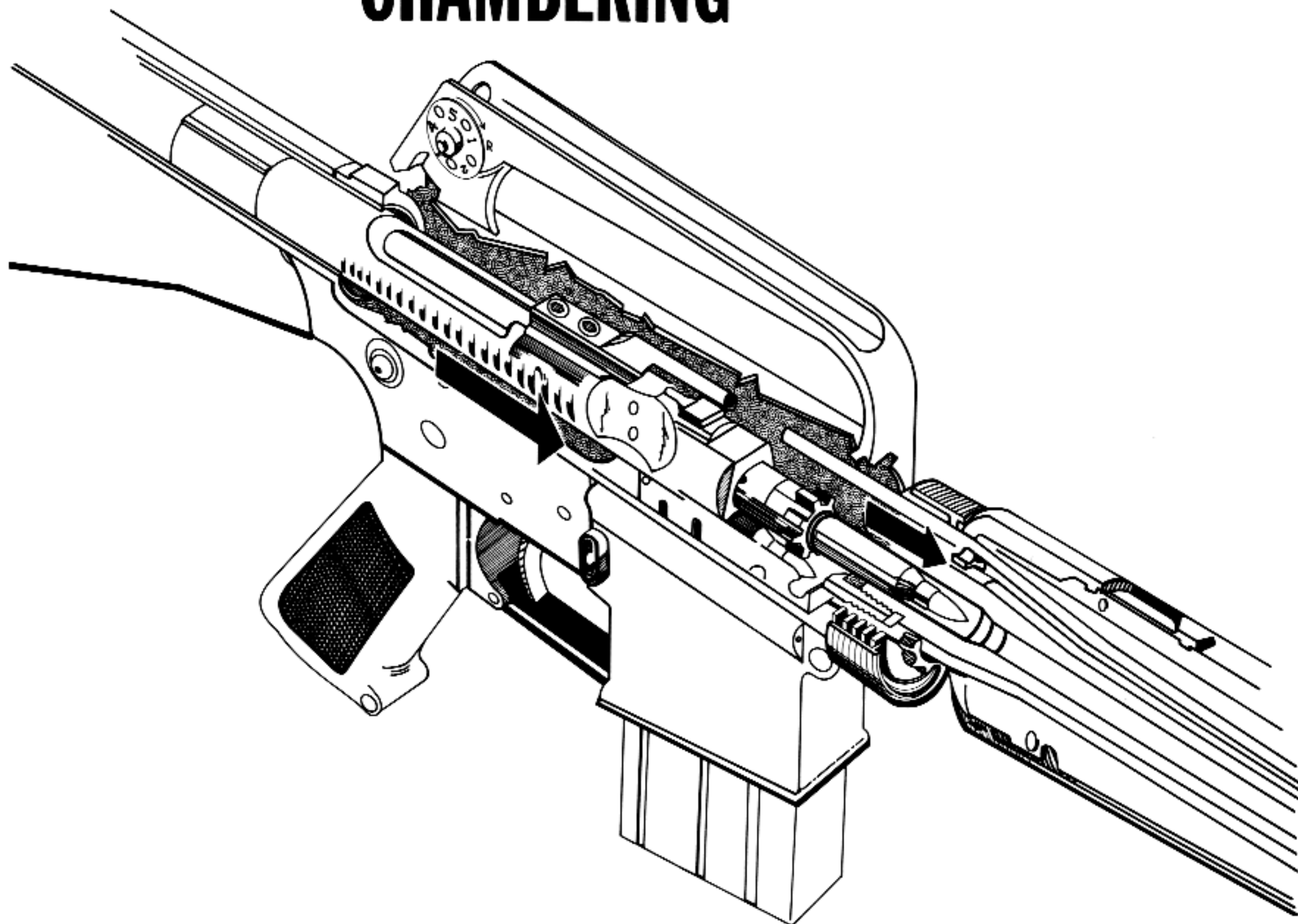
AR-15, CAR-15, M16

FEEDING



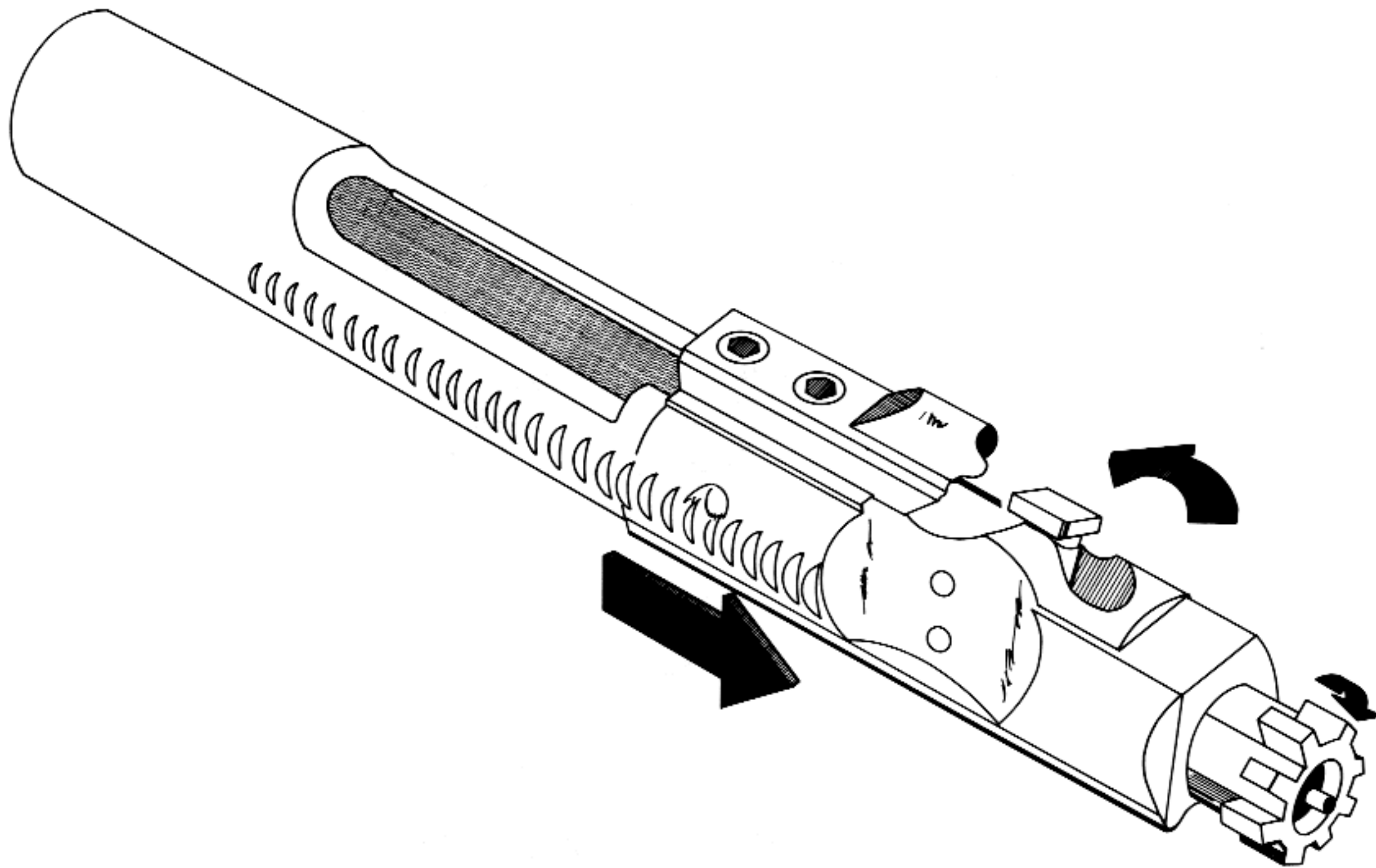
AR-15, CAR-15, M16

CHAMBERING



AR-15, CAR-15, M16

LOCKING



AR-15, CAR-15, M16

STOPPAGES AND IMMEDIATE ACTION

A STOPPAGE IS ANY UNINTENTIONAL INTERRUPTION IN THE CYCLE OF OPERATION . IMMEDIATE ACTION MUST BE TAKEN TO REDUCE THE STOPPAGE.

IMMEDIATE ACTION FOR REDUCING A STOPPAGE WITH THE XM16E1 CONSISTS OF THE FOLLOWING STEPS :

- 1. PULL THE CHARGING HANDLE TO THE REAR AND RELEASE IT.**
- 2. STRIKE THE FORWARD ASSIST ASSEMBLY TO INSURE THAT THE BOLT IS FULLY SEATED.**
- 3. STRIKE UPWARD ON THE BASE OF THE MAGAZINE TO INSURE IT IS FULLY SEATED.**
- 4. ATTEMPT TO FIRE.**

CLEANING EQUIPMENT



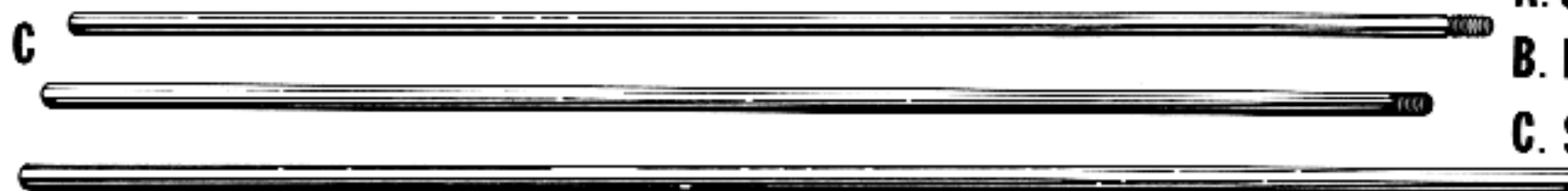
A



B



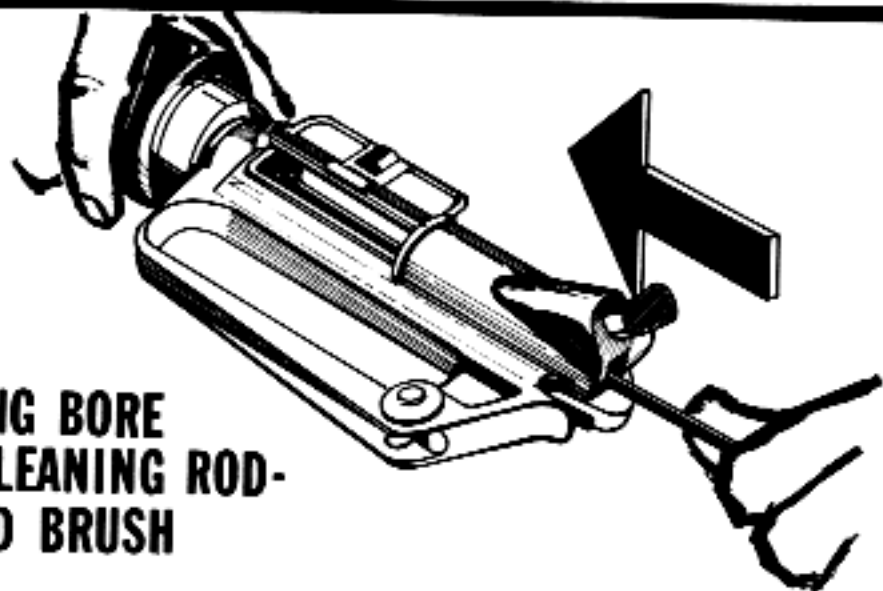
C



CARE AND CLEANING

- A. SMALL ARMS CLEANING BRUSH
- B. RIFLE GREASE - 5cc CONTAINER
- C. SMALL ARMS CLEANING ROD - (4 SECTIONS)

CLEANING BORE
WITH CLEANING ROD-
M11 AND BRUSH



ONE DROP OIL EACH PLACE
OILING BOLT RINGS



CLEANING CARRIER KEY



CLEANING GAS TUBE IN RECEIVER



AR-15

TO

M-16

**CONVERSION
BOOK**

INDEX

CHAPTERS

INTRODUCTION.....	2
ONE.....M-18 DUPLICATION.....	3
TWO..... BOLT CARRIER CONVERTER.....	18
THREE.....DROP-IN AUTO-SEAR.....	21
FOUR..... LIGHTNING LINK.....	25
FIVE..... BARREL LENGTH.....	30
SIX.....PART AND TOOL SUPPLIERS.....	31

NOTICE

This book contains information that gives explicit details on the construction and/or conversion of fully automatic firearms.

This is offered as information for academic study only.

On May 19th, 1985, a new N.F.A. full-auto firearms law went into effect. As of that date it is no longer legal for an unlicensed individual to convert a semi-automatic firearm into a machinegun or sub-machinegun.

The B.A.T.F. form I will not be accepted by the Bureau of Alcohol, Tobacco and Firearms, if it was not postmarked by midnight, May 19th, 1985.

Full-auto conversions listed in this book may legally be used only in TITLE II receivers by licensed TITLE II Manufacturers.

If you have any doubts about your position in this matter, contact your local B.A.T.F. office for further information.

INTRODUCTION

I was thinking when I started this book "Laudy, Laudy, I wish I'd had something like this when I first started converting AR-15's to full-auto." No such luck. Back then it was trial and error, and try again.

Don't get me wrong. There were those that seemed to have the required information. They hung out at Gun Shows and ran ads in underground newspapers. After paying any amount from \$20.00 to \$75.00 you would breathlessly be told how their brother-in-law, cousin, neighbor, friend, [pick one] did it! This gem of wisdom was usually "File da sear"!

Sadder, but no wiser, you would find yourself at the next gun show searching for someone in the know.

In the mid-seventies the drop-in auto-sear was born. This little piece of hardware was a boon to the full-auto fan. It would fit in any Colt AR-15 without any machine work or special tools.

Although using a drop-in auto-sear required replacing the AR-15 trigger, hammer, disconnect, selector and bolt carrier with M-16 parts, the parts were inexpensive and easily attainable.

Best of all, from the time U.P.S. hit the door with your conversion parts until you were on the way to the range to test fire your new machinegun, was only about 30 minutes.

The early eighties were just the opposite of the late sixties. It seemed you couldn't pick up any firearm publications that wasn't over run with AR-15 conversion ads. Most tried to sell drop-in auto-sears. Others would show where to drill the hole for the original military auto-sear (most of these were incomplete and also incorrect), and then of course, for your ten bucks you could still buy the wisdom of the ages. "File da sear".

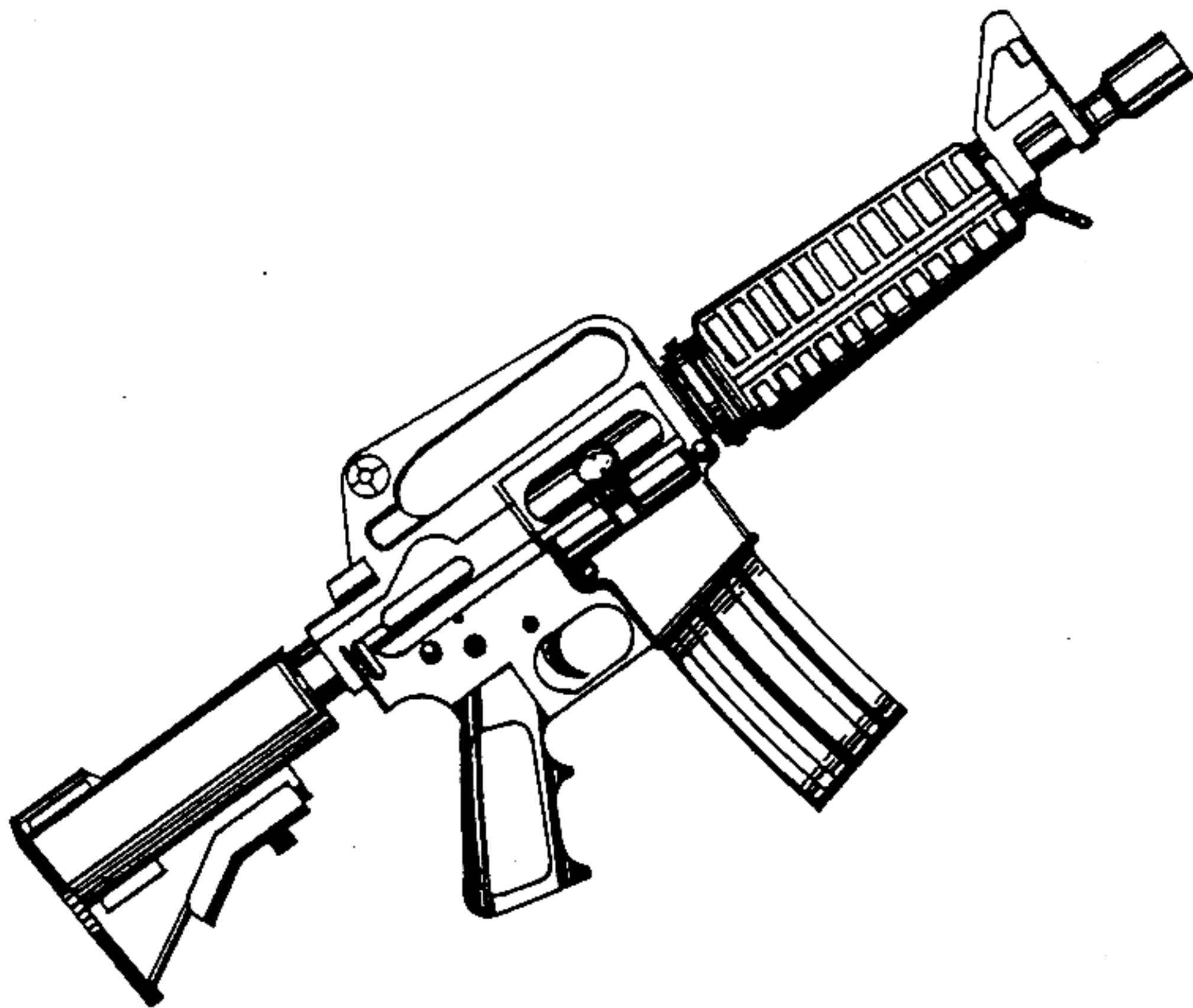
This AR-15 full-auto conversion book contains three methods of converting the AR-15 Sporter into a machinegun. One of them is full-auto only (the lightning link), the other two convert the Sporter to select-fire.

Whether you're interested in acquiring the knowledge to duplicate the original military select-fire M-16, or your interests run to how a drop-in auto-sear is manufactured and used, the information is here.

The lightning link (chapter three) is a story all by itself. Without changing any parts in the AR-15, without doing any machine work on the firearm, without so much as touching a screwdriver, file or punch to the firearm, it can be turned into a full-auto assault rifle.

NOTE.....The information contained in this book is for academic study only. For an unlicensed person to use the information to convert a semi-auto firearm into a machinegun is illegal. Severe penalties are authorized for violators.

M-16 DUPLICATION



M-16 DUPLICATION

The M-16 was developed as a fully automatic (selective fire) weapon by the Armalite Company. It was subsequently sold to Colt Firearms. They developed a semi-auto version known as the AR-15 to be sold as a sporting rifle to the civilian market.

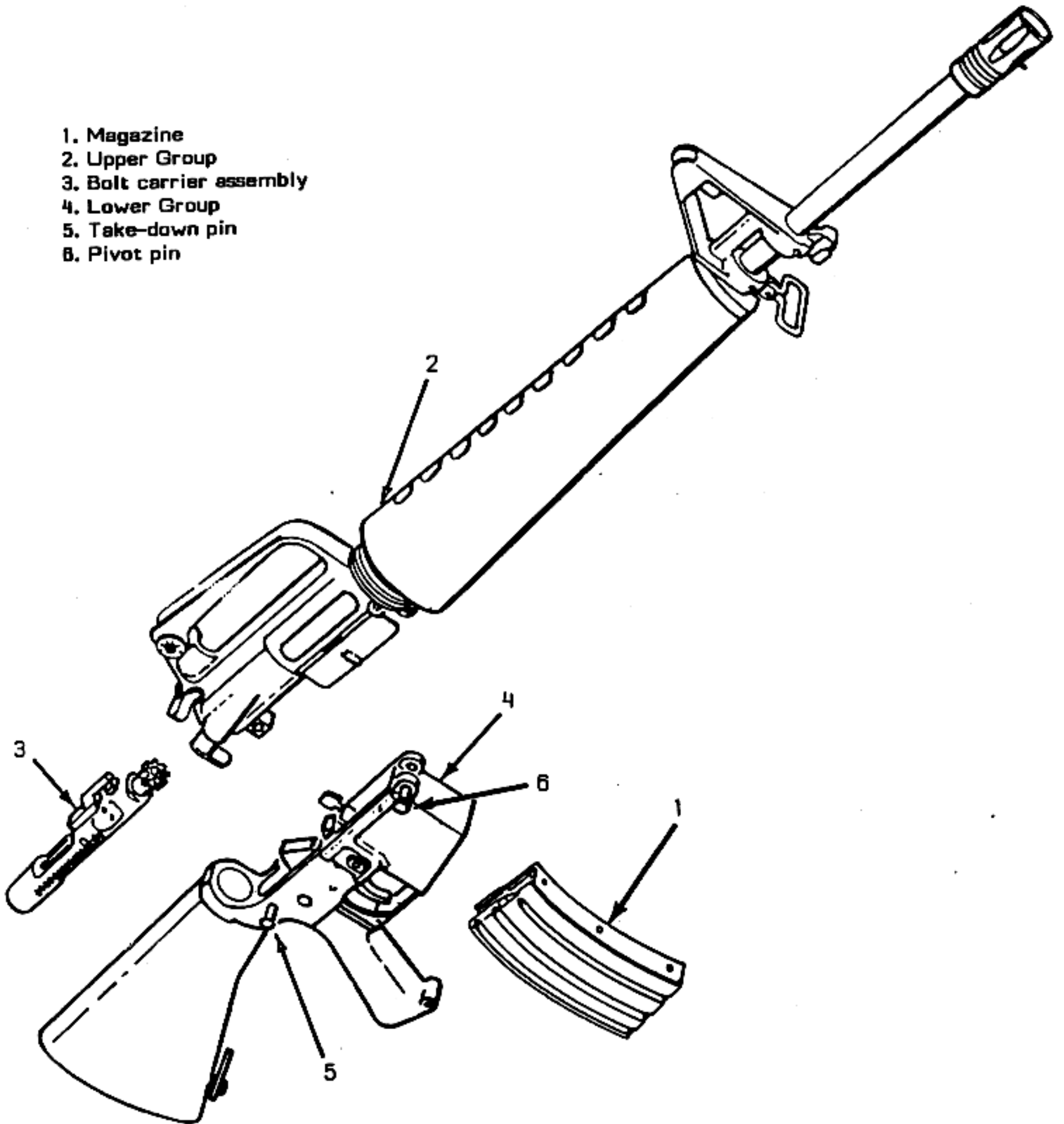
The AR-15 is mechanically the same as the M-16 except the parts used to produce fully automatic fire have been changed or deleted, and the upper and lower receivers have been slightly modified.

All AR-15 lower receivers, whether they are Colt or after market, have been machined in such a way as to leave an excess of metal on the inner rear walls and no auto-sear pin hole is drilled. This is done so the M-16 style auto-sear can't be installed.

What must be done, simply put, is change it to accept the M-16 auto-sear. To accomplish this you must remove the excess metal from the inner walls of the lower receiver, and drill one small hole for the M-16 auto-sear pin.

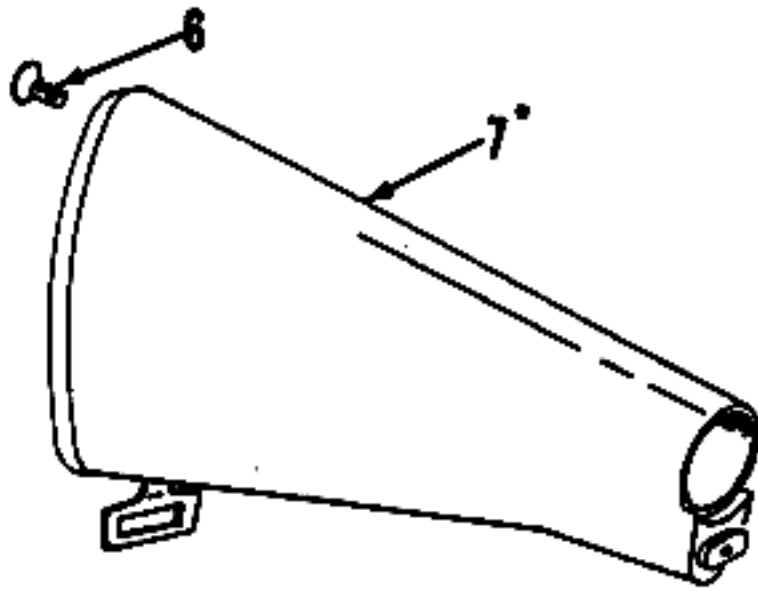
SEPARATING THE UPPER

1. Magazine
2. Upper Group
3. Bolt carrier assembly
4. Lower Group
5. Take-down pin
6. Pivot pin

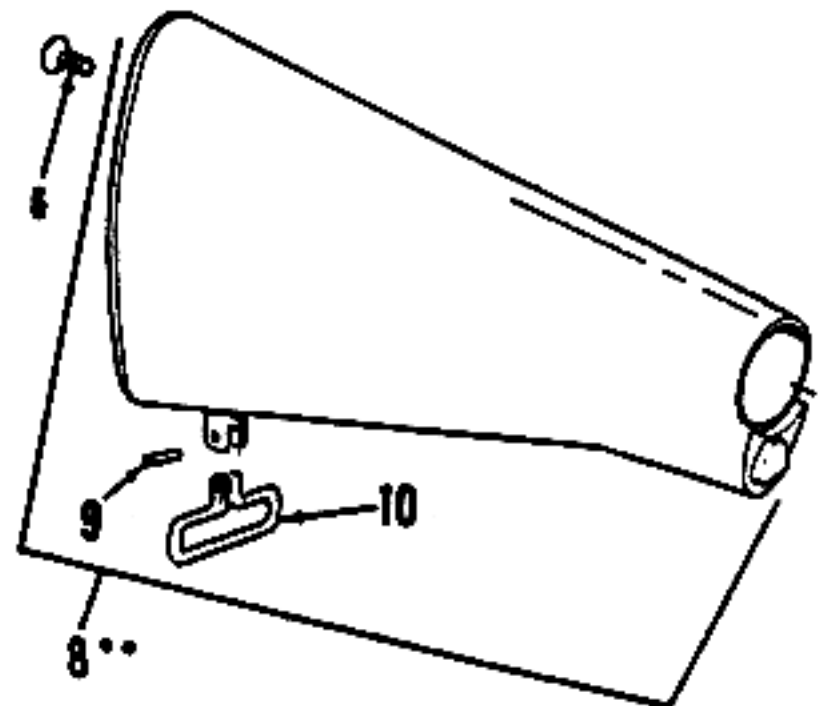
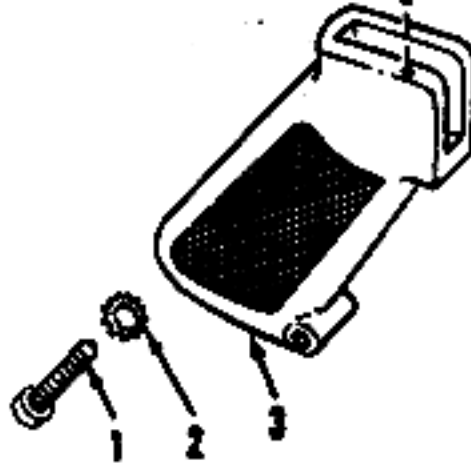
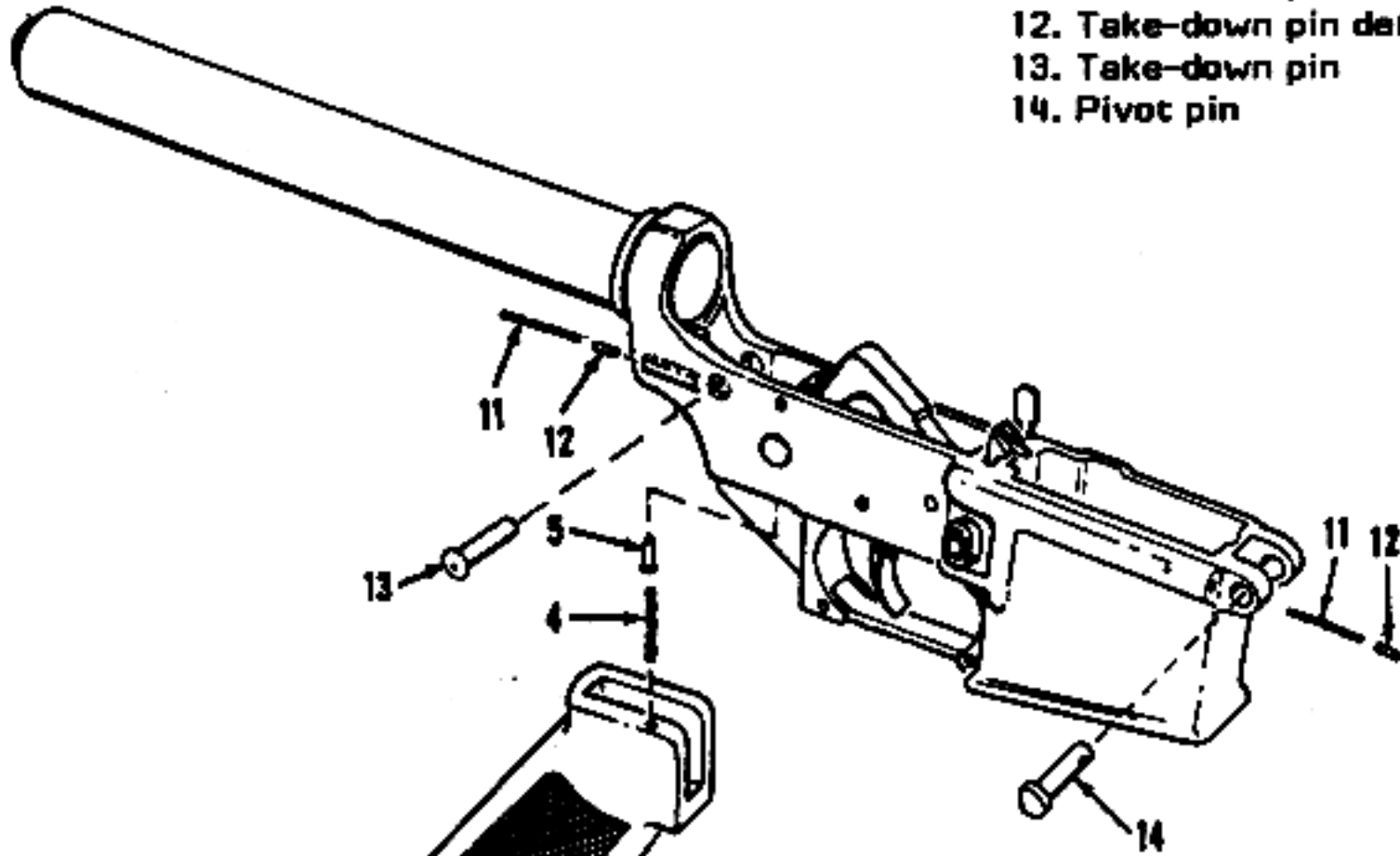


Separating the upper receiver and barrel from the lower receiver and stock is simply a matter of pushing the take-down pin from the left to right and removing the pivot pin located at the forward upper part of the magazine well.

STOCK AND LOWER RECEIVER

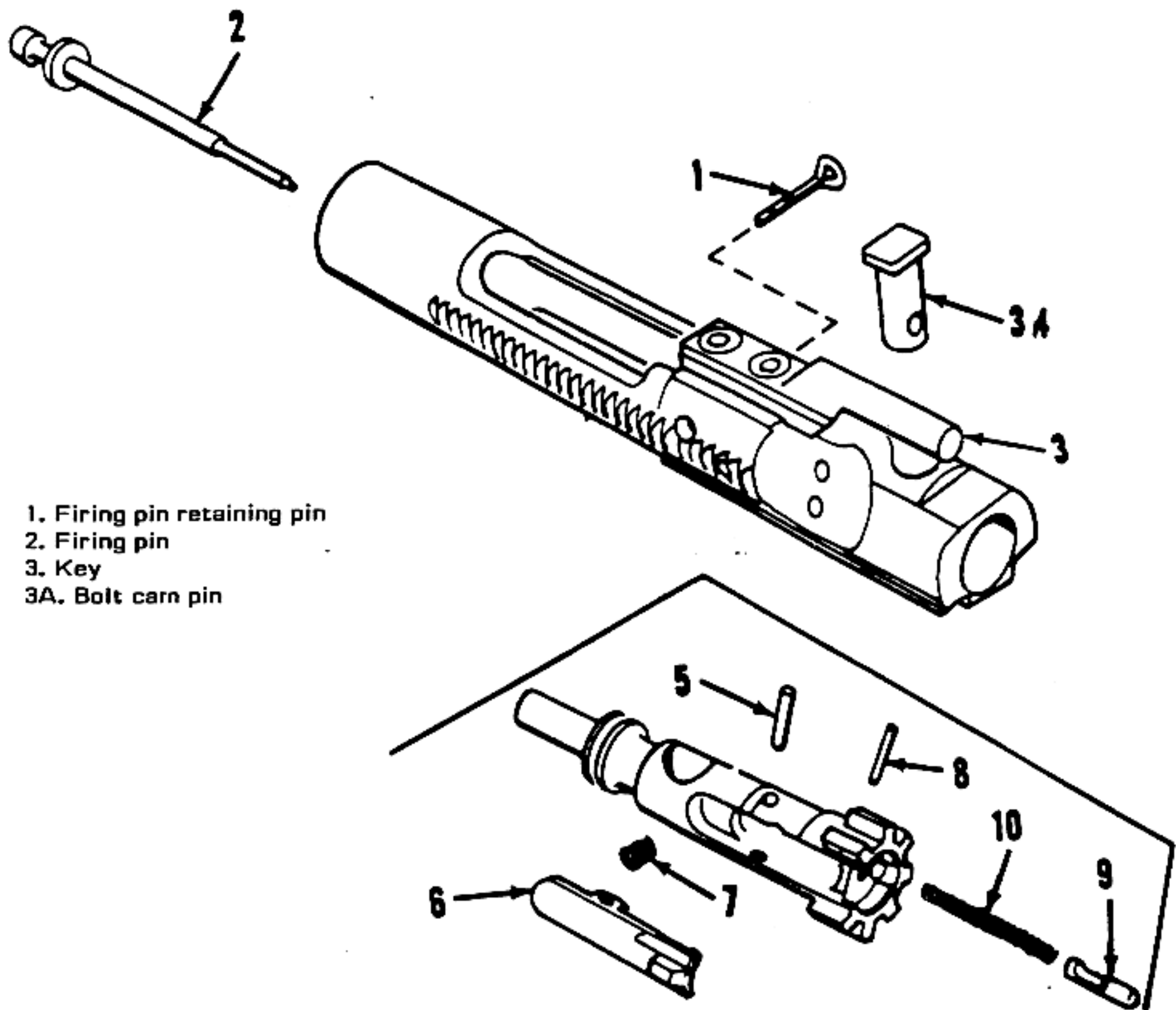


1. Pistol grip screw
2. Pistol grip washer
3. Pistol grip
4. Selector detent spring
5. Selector detent
6. Stock screw
7. Stock (new style)
8. Stock (old style)
9. Swivel roll pin
10. Swivel
11. Take-down pin detent spring
12. Take-down pin detent
13. Take-down pin
14. Pivot pin



* NEW STOCK ASSEMBLY
 ** OLD STOCK ASSEMBLY

DISASSEMBLE CARRIER



- 1. Firing pin retaining pin
- 2. Firing pin
- 3. Key
- 3A. Bolt cam pin

It will be necessary to disassemble the AR-15 bolt carrier. The parts will be reassembled in the M-16 carrier.

Step 1..... Remove the firing pin, retaining pin (part 1) from the carrier.

Step 2..... Let the firing pin (part 2) drop out the rear of the bolt and carrier.

Step 3..... Remove the key (part 3) from the top of the bolt carrier. Note..... the two allen head key screws will be staked in place.

Step 4..... Pull the bolt cam pin (part 3-A) out the top of the carrier.

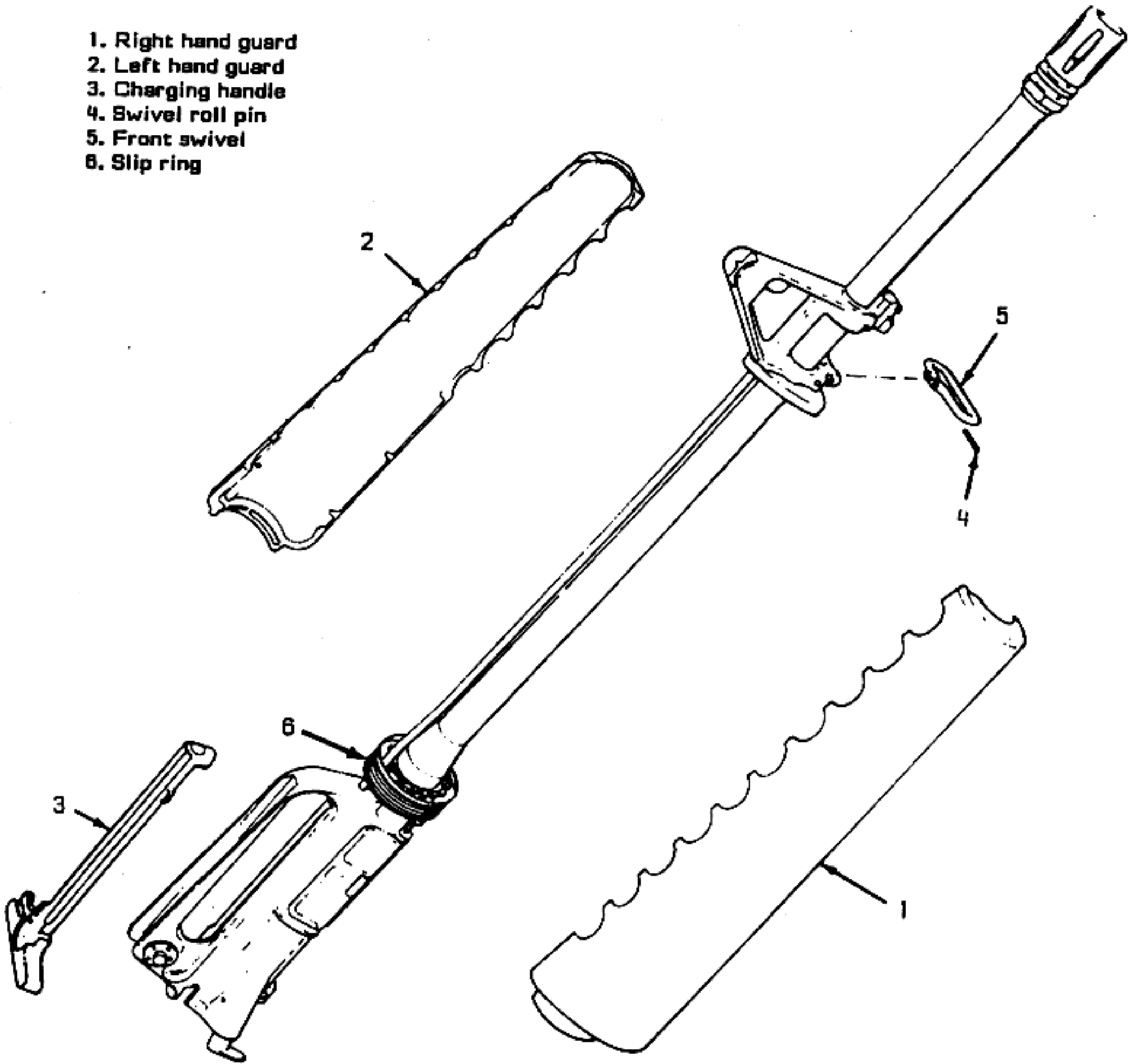
Step 5..... Pull the bolt out the front of the bolt carrier, it is not necessary to disassemble parts 5, 6, 7, 8, 9, and 10.

Reassemble in the M-16 bolt carrier in reverse order.

NOTE... The two allen head key screws are 8 X 32 X 1/4 inch, if you should need to replace them.

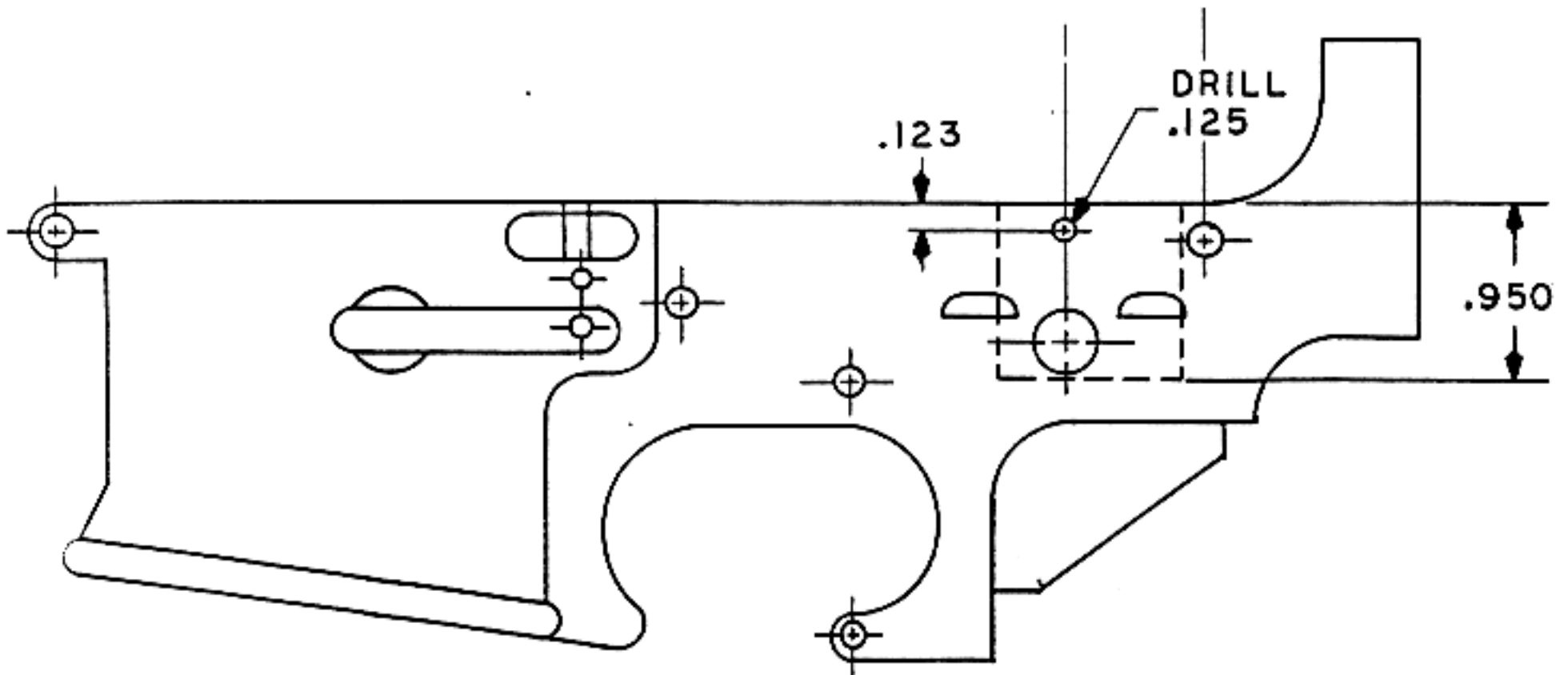
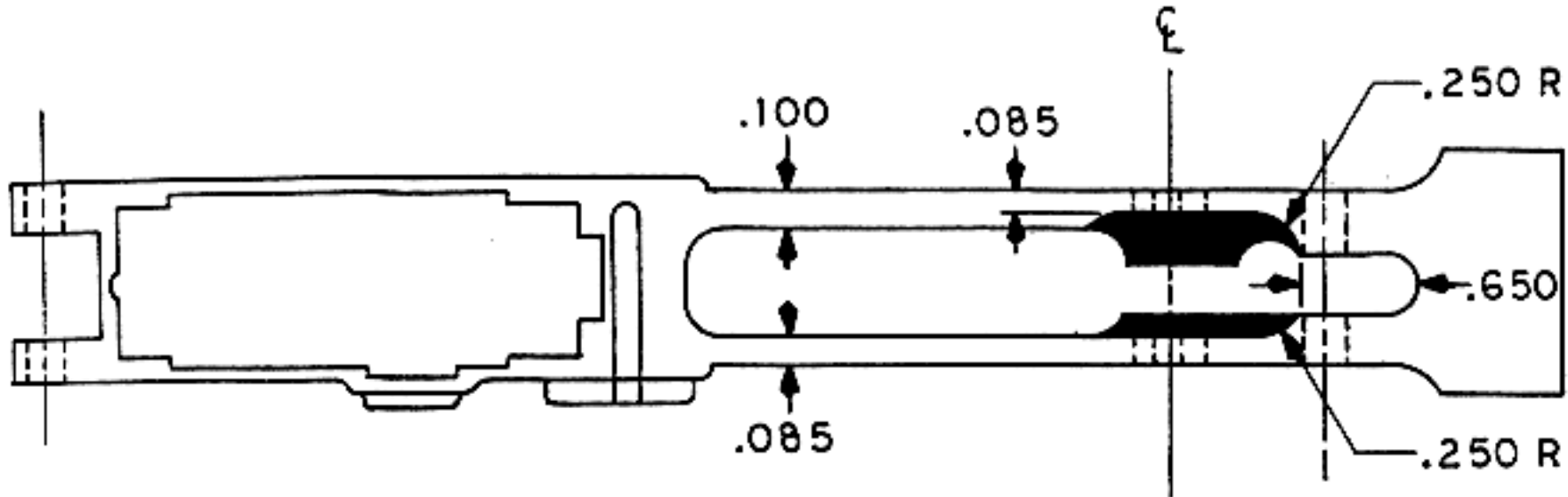
REMOVING HANDGUARDS

1. Right hand guard
2. Left hand guard
3. Charging handle
4. Swivel roll pin
5. Front swivel
6. Slip ring



Removing the handguards will not be necessary unless you intend to shorten the barrel. If you want them off, pull back on the large slip ring at the front of the upper receiver to release them. Remove one side at a time.

A - TOP VIEW



B - LEFT SIDE VIEW

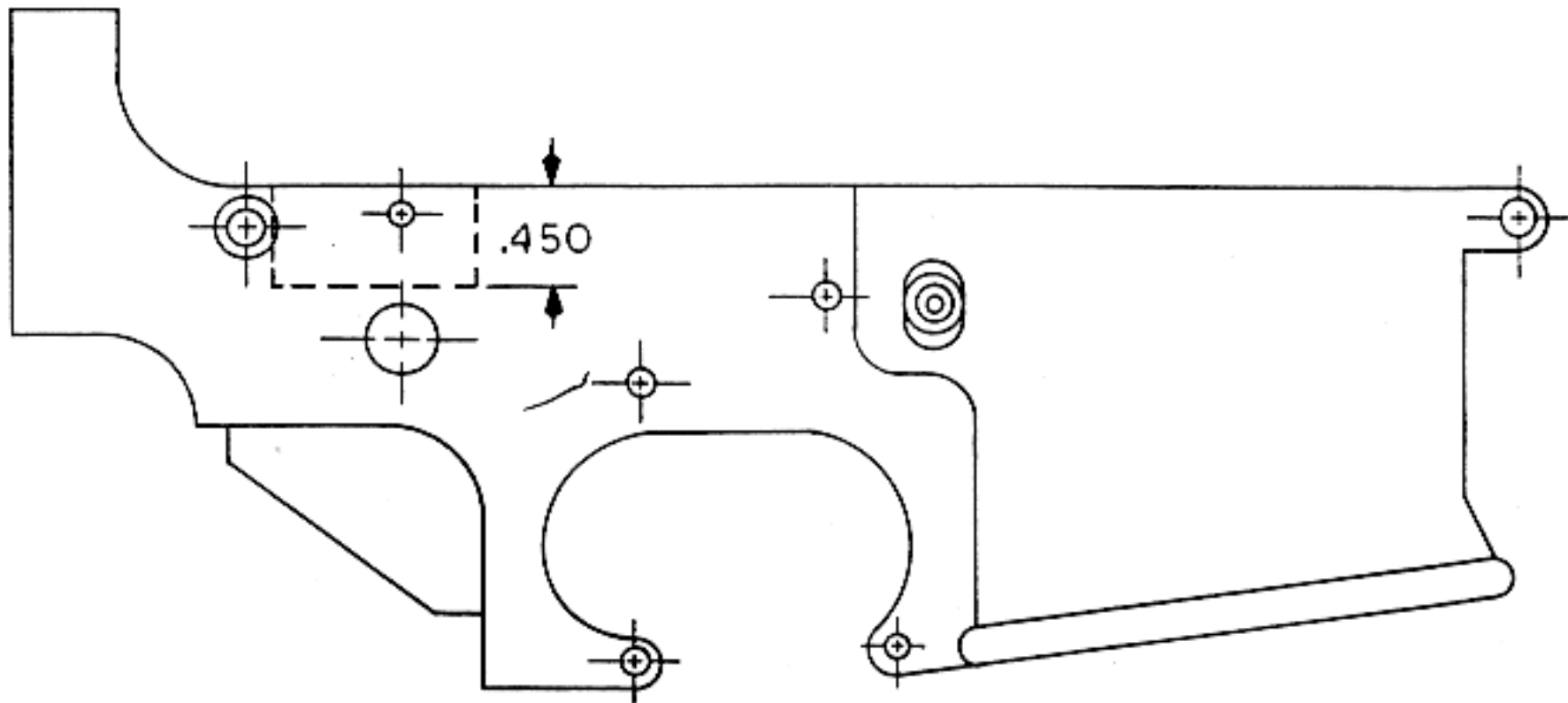
DOING IT TO IT

After removing the upper receiver and barrel assembly, disassemble the lower receiver. The hammer and trigger/disconnector pins come out from the right to the left. Remove the hammer first, then the trigger/disconnector. The selector comes out from the right to the left. To remove, place it half way between the safe and the fire positions. Use a 1/8 inch punch and knock it straight out of the receiver from the right side.

The selector detent plunger and spring are removed from the receiver by taking off the pistol grip.

You will most likely not need to disassemble the lower receiver any further.

C - RIGHT SIDE VIEW



Looking straight down at the top of the lower receiver compare it with drawing [A]. The shaded part on the drawing shows the metal that must be removed to make room for the M-16 auto-sear.

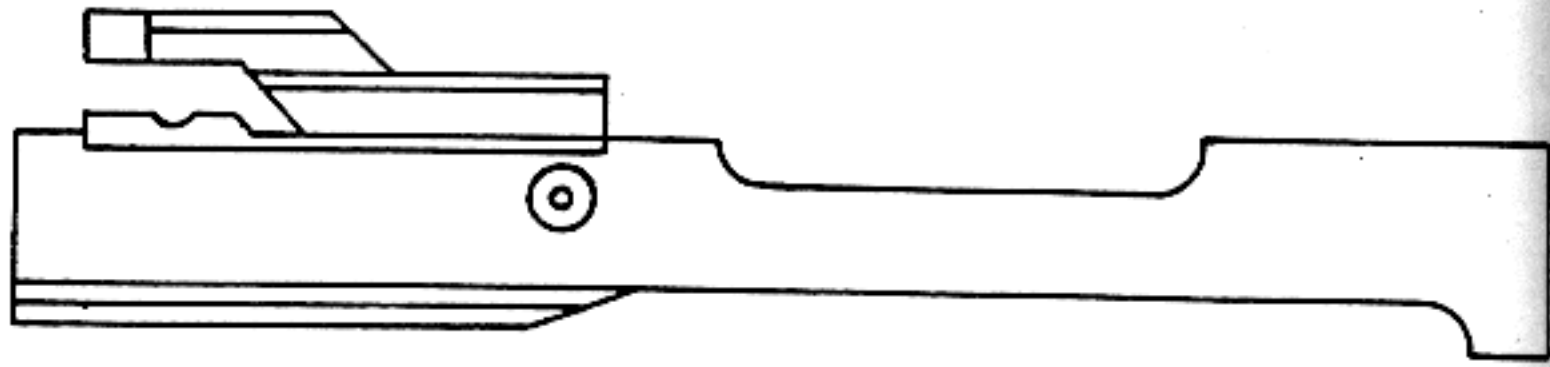
Drawing [B] indicates the metal removed from the left hand side of the lower receiver must be cut out to a depth of .950.

Drawing [C] shows the milling cut on the right side of the lower receiver to be only .450 deep.

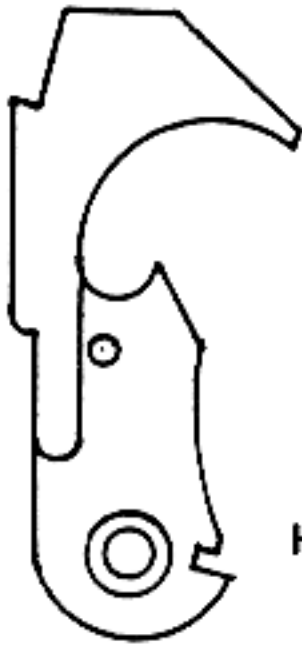
NOTE.....If, like most people, you don't have access to a milling machine, the work can be done using a dremel[™] tool, by hand, with a rotary file. (Grinding will work but it would take forever because the aluminum cuttings will load up the stone and it won't cut.)

The next step is to drill the hole for the M-16 auto-sear pin. Refer to drawing [B]. This hole is drilled all the way through both sides of the lower receiver. This is best done with a drill press as the hole must be a true 90 degrees from the walls of the receiver.

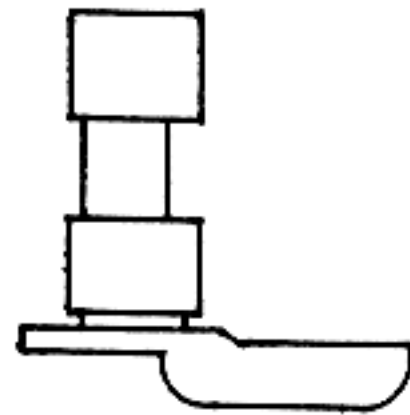
AR-15 PARTS



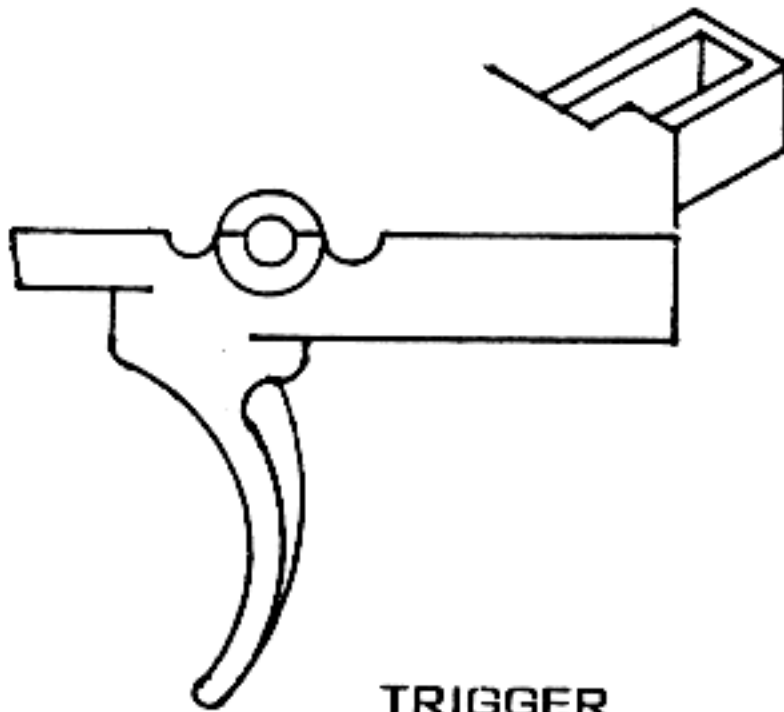
BOLT CARRIER



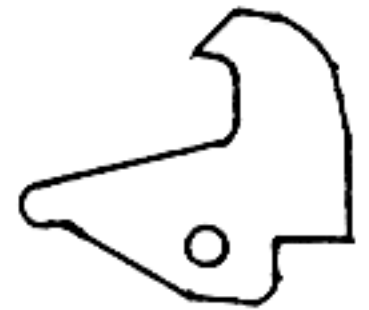
HAMMER



SELECTOR



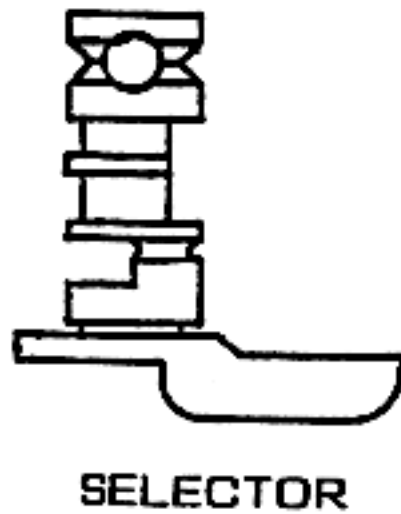
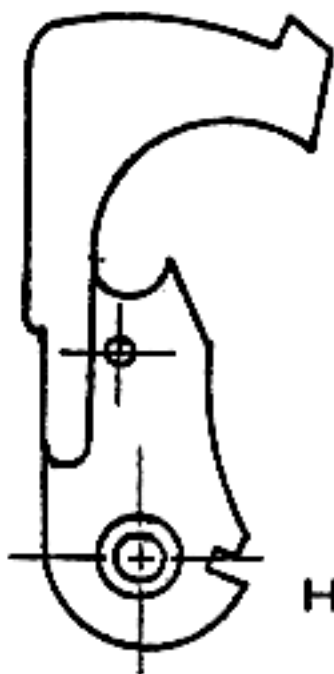
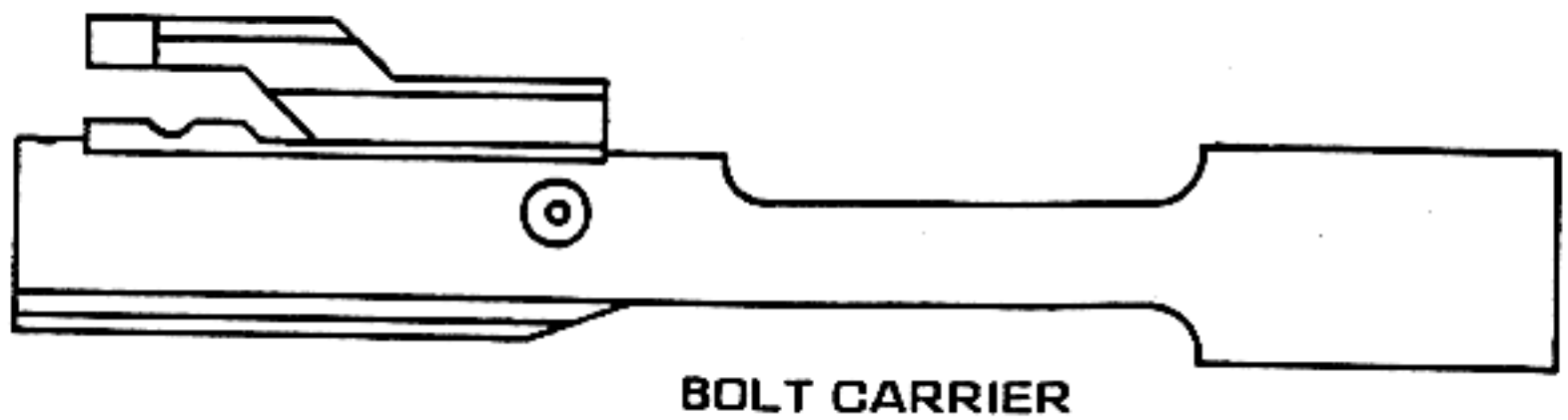
TRIGGER



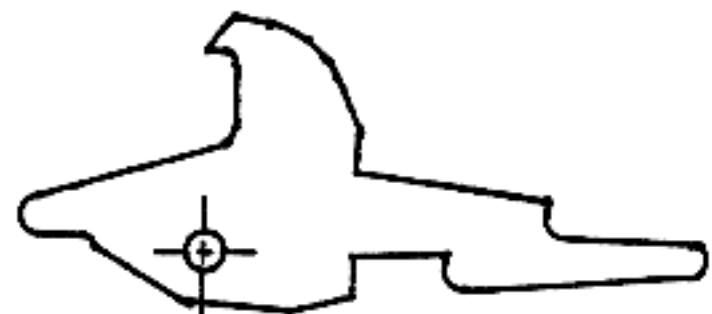
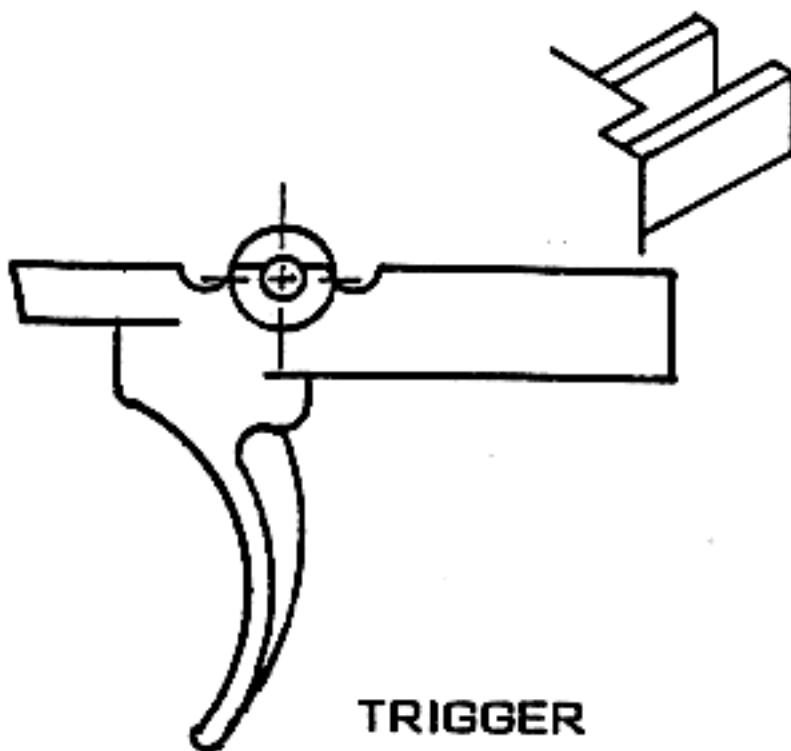
DISCONNECTOR

AR-15 PARTS TO BE DISCARDED

M-16 PARTS



AUTO SEAR

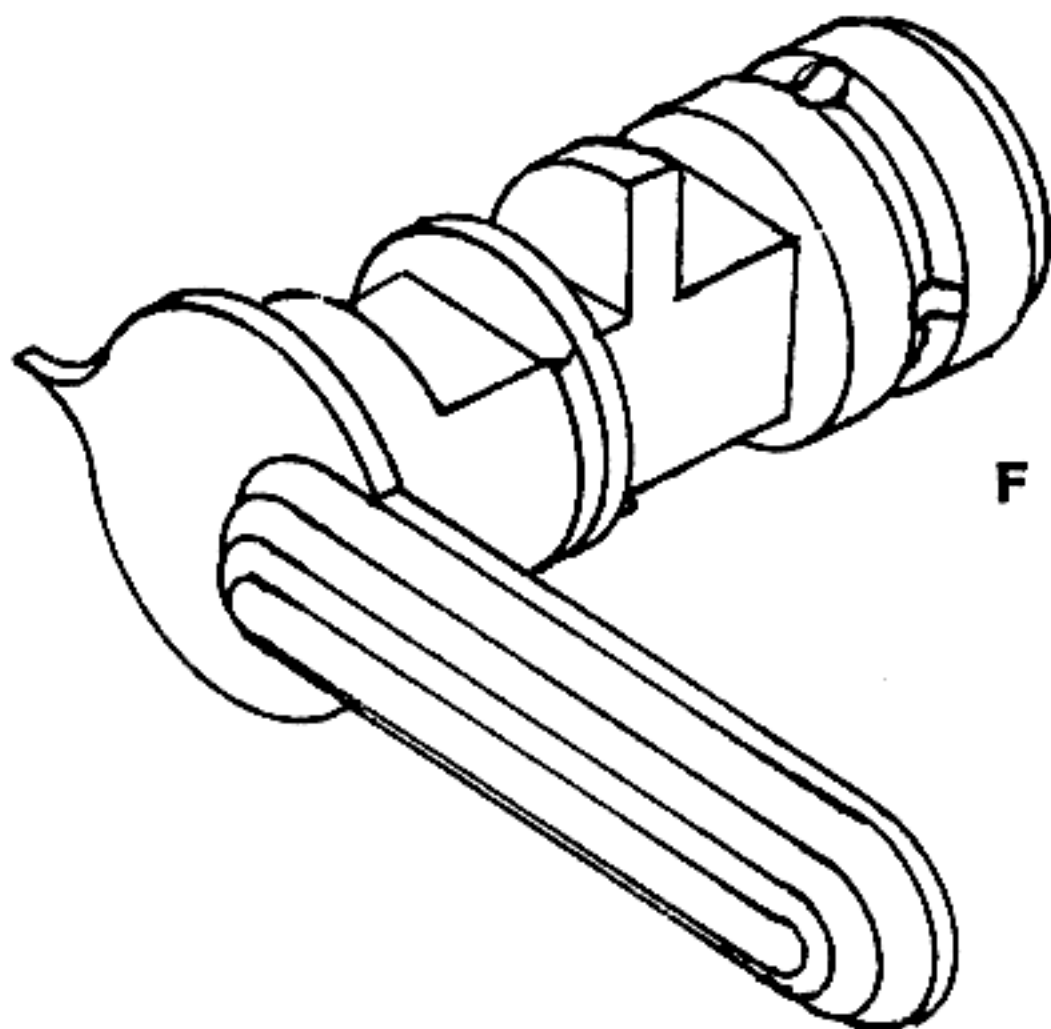


DISCONNECTOR

Comparing the M-16 parts on this page to the AR-15 parts on page 10, the differences become readily apparent.

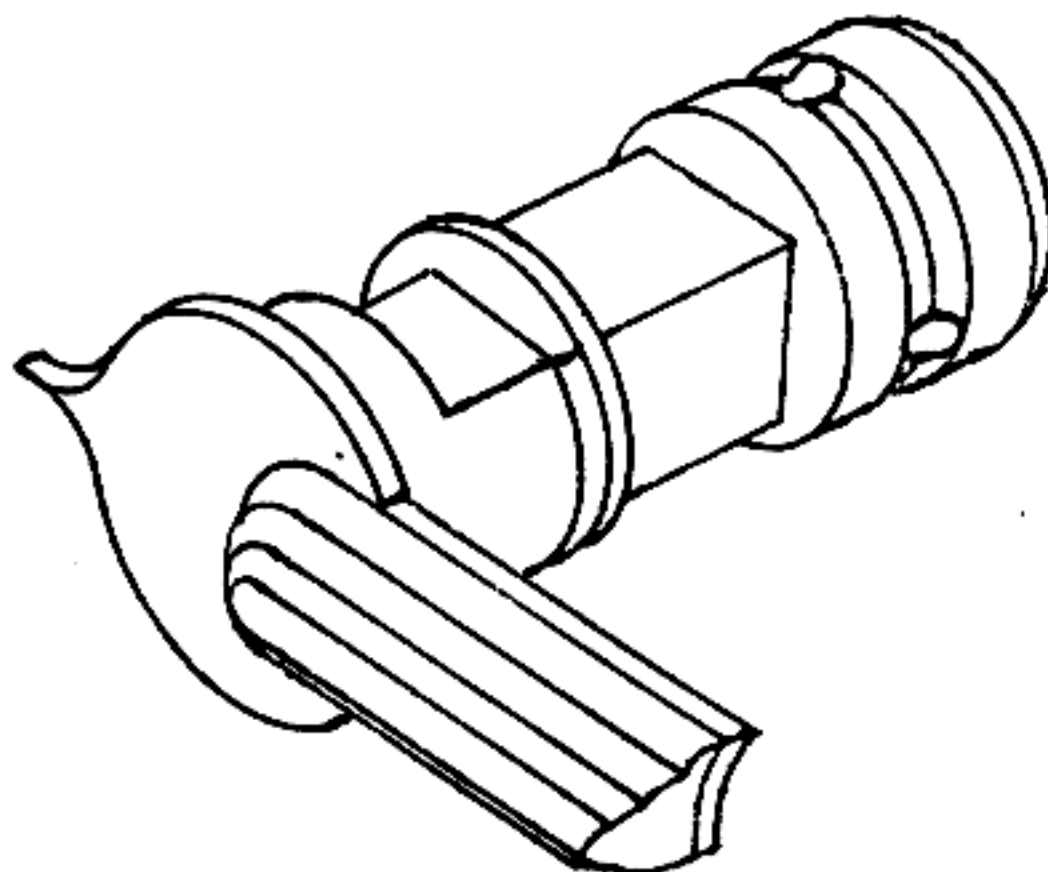
The M-16 carrier has not had the lower sear contact lip machined short... The hammer for the M-16 has an extended spur, with a notch cut into it... The only difference in the triggers is the M-16 one has been machined through the rear wall... An M-16 disconnecter has a long tail... The M-16 selector switch has a third detent position for full-auto, a camming surface for the disconnecter and a machined area for the auto-sear tail.

M-16 SELECTOR



M-16 SELECTOR

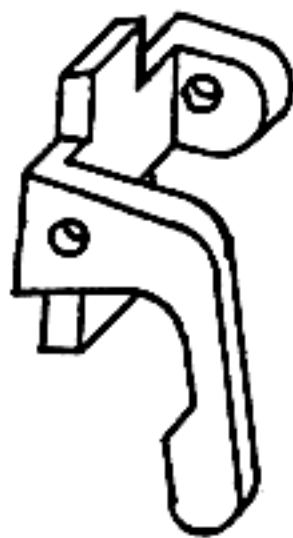
MODIFIED



NOTICE

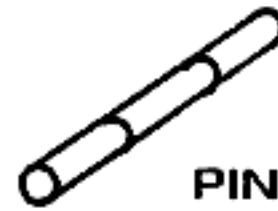
Numerous M-16 parts sets have been sold with an M-16 selector switch that has been altered. If the selector switch you have has had the cam surface removed as shown in the drawing marked modified, it will not work as a full-auto selector. The selector must be unaltered as shown in Drawing F.

MILITARY STYLE M-16 AUTO-SEAR



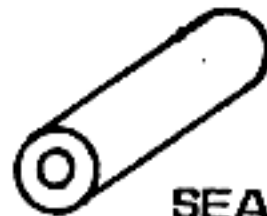
4

SEAR BODY



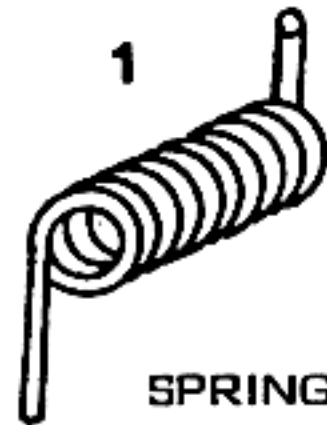
2

PIN



3

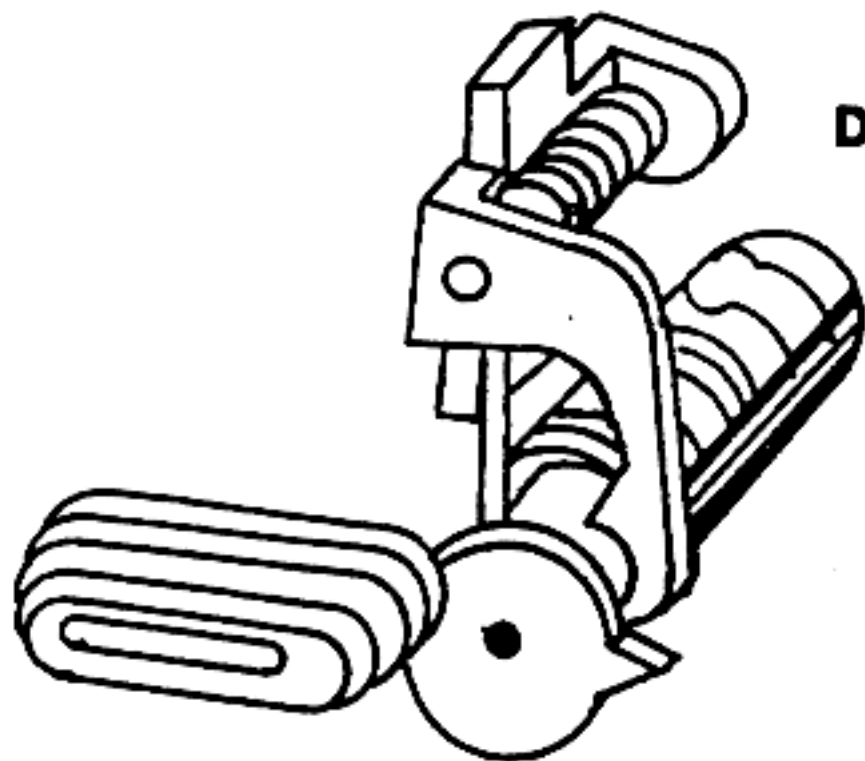
SEAR BUSHING



1

SPRING

The military auto-sear in the correct position on the selector switch.



D

PUTTIN' IT ALL TOGETHER

Reassembly of the lower receiver is next.

For the parts needed to convert the AR-15 to M-16 configuration, other than the M-16 auto-sear parts, refer to drawings page 13, numbers 1, sear spring, 2, sear pin, 3, sear bushing, and 4, sear body [parts 1, 3, and 4 are normally assembled when you purchase them] are M-16 hammer, disconnecter, trigger, selector switch, and bolt carrier, shown on page 11.

The AR-15 parts and their M-16 counterparts are shown on pages 10 and 11.

Step 1..... Install the M-16 Selector.

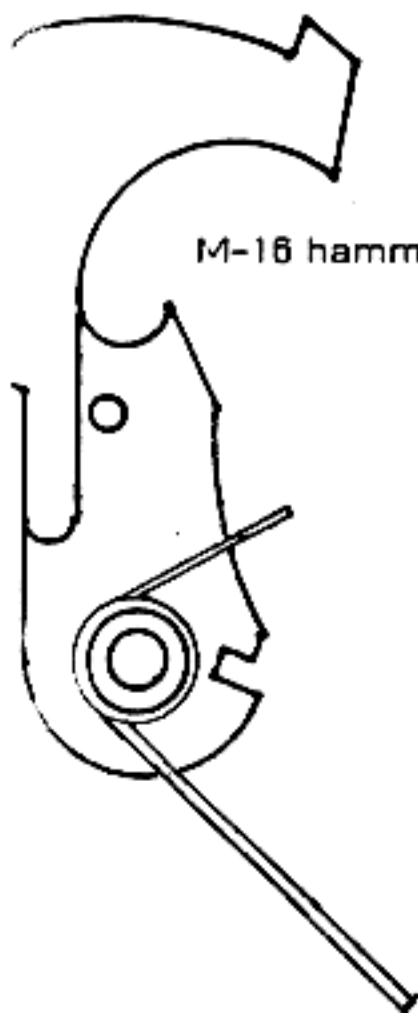
Step 2..... Install the selector detent, detent spring, and pistol grip.

Step 3..... Install the assembled M-16 auto-sear. Refer to drawing (D). NOTE..... Make sure the auto-sear moves freely on its pin and doesn't drag on the receiver walls.

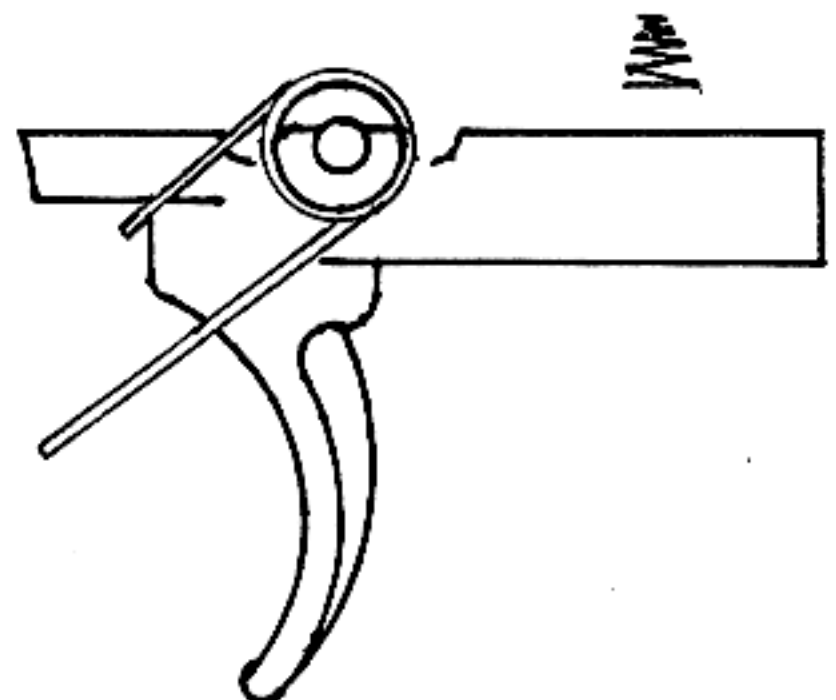
Step 4..... Assemble the trigger, trigger spring, disconnecter and disconnecter spring outside the receiver using a short 1/8 inch slave pin to hold the parts together.

Step 5..... Install the trigger/disconnector assembly in the receiver. You may need to move the selector from the full-auto to the semi-auto position, and jiggle things a bit to get the trigger/disconnector to slide in place with its tail under the selector switch. When it's all lined up, install the trigger pin from left to right, driving the slave pin out of the receiver. NOTE..... The legs of the trigger spring should be pointed to the front of the receiver and resting on the bottom.

Step 6..... Install the M-16 hammer and hammer spring. The legs of the hammer spring point to the rear of the receiver and rest on the coils of the trigger spring when it's installed correctly. The trigger pin goes in from the left to the right.

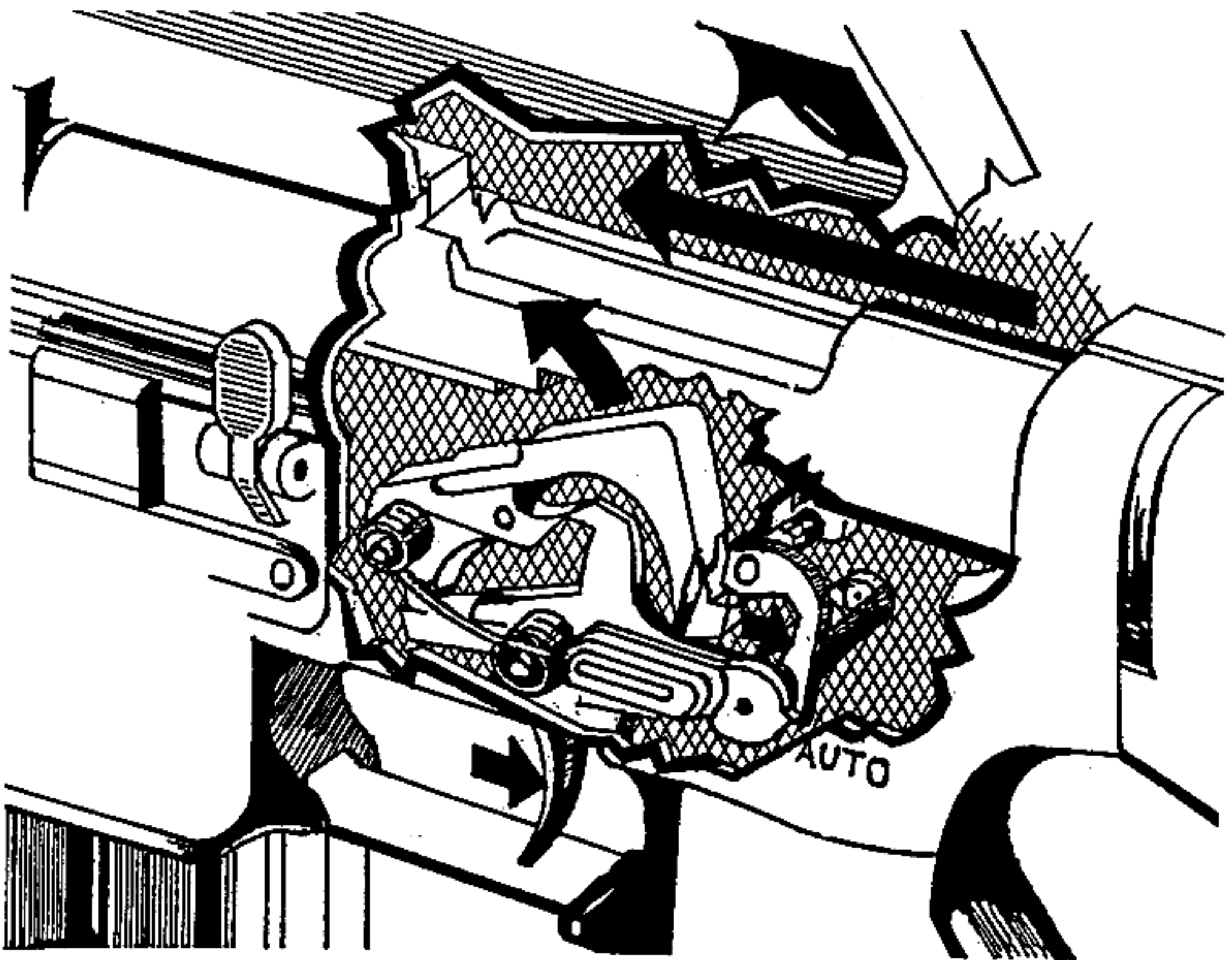


M-16 hammer with spring installed correctly.



M-16 trigger with spring installed correctly. The disconnecter spring fits into the trigger with the large end down.

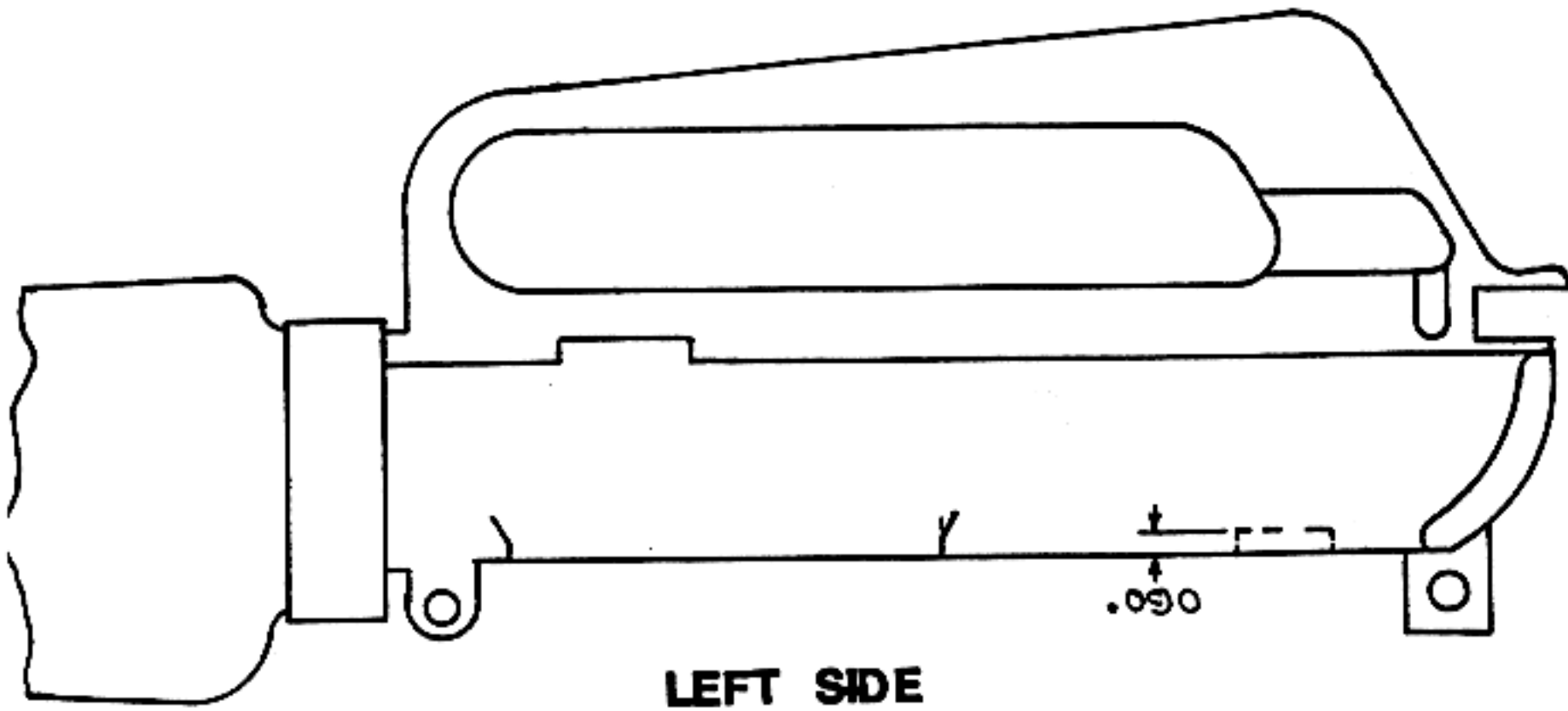
THE WAY IT WORKS



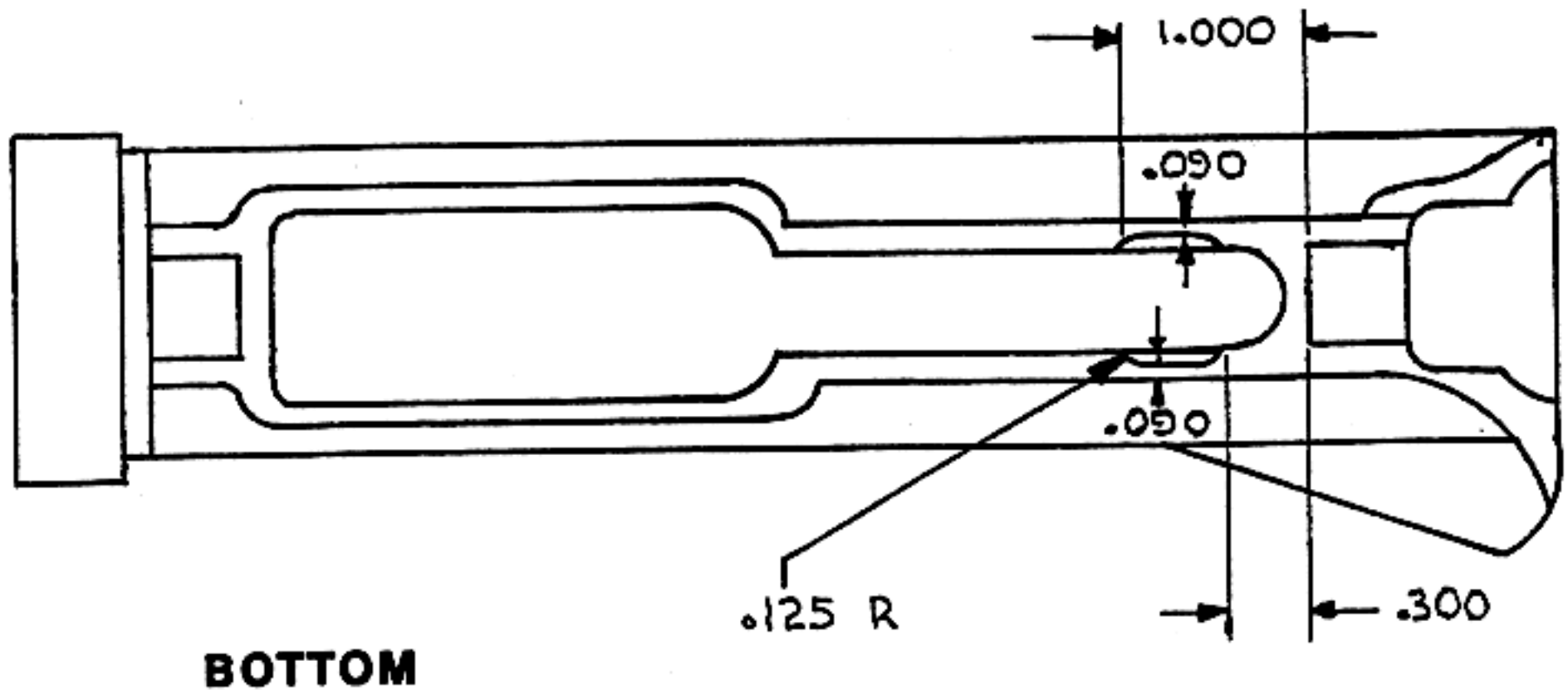
TESTING FOR FUNCTION

- Step 1..... Cock the hammer, place the selector in the safe position. Pull the trigger, the hammer should not fall.
- Step 2..... With the selector in the semi-auto position, pull the trigger, the hammer should fall. Keep holding the trigger to the rear, recock the hammer and release the trigger. The hammer should release from the hammer hook and reengage in the hammer sear. NOTE..... The hammer should not fall from this position until you pull the trigger again.
- Step 3..... With the selector in the full-auto position, pull the trigger, the hammer should fall. Hold the trigger to the rear and recock the hammer. The hammer is now caught under the auto-sear. Still holding the trigger to the rear, push forward on the top of the auto-sear. The hammer should fall. Still holding the trigger to the rear, recock the hammer, release the trigger, then push forward on the top of the auto-sear. The hammer should fall only to the sear engagement.
- Step 4..... If you understood steps 1, 2, and 3 the first time you read them, and everything worked as it should, put the lower receiver to one side, have a shot of bourbon, pat your sweet thing on the fenny and get ready to start on the upper receiver.

THE LAST CUT



E



THE LAST CUT

The upper receiver needs a clearance cut machined into it. Refer to drawing (E). The purpose of the cut is to clear the shoulders of the auto-sear which protrudes about .050 above the top of the lower receiver walls. Whether you mill, rout, file or grind this clearance, makes no difference, as long as you make sure the auto-sear will not rub.

TEST FIRE

You may think, after reading this part that I'm a real nit picker. All I can say is, this is the way I do it and I still have my eyes, ears and most other needed parts, wear shooting or safety glasses and use ear protection. Test fire with factory ammunition only.

Step 1,.... Load one round in the magazine, insert the magazine, chamber the round. With the selector in the semi-auto position, fire the one round.

Step 2,.... Is the same as step 1, except load two rounds.

Step 3,.... The same once more, but this time load and fire five rounds.

Step 4,.... Load two rounds, place the selector on full-auto, and fire them.

Step 5,.... The same as step 4, except load and fire five rounds.

If all is well, no problems and the fired brass looks good (no bulges, no popped or flattened primers or other signs of trouble), load a twenty or thirty round magazine and ROCK AND ROLL!!

NOTES

BOLT CARRIER CONVERTER

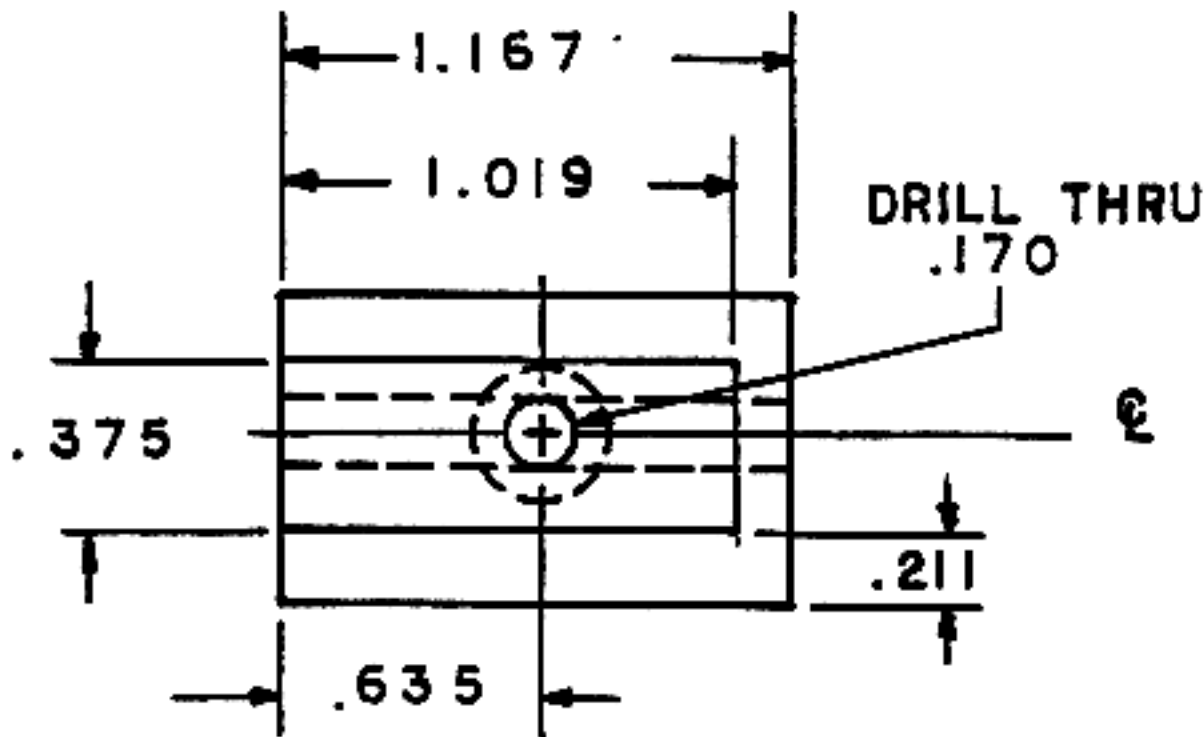
The bad news is: the days of inexpensive M-16 bolt carriers is a thing of the past.

The good news is: with a little work the AR-15 carrier can be modified to M-16 specifications.

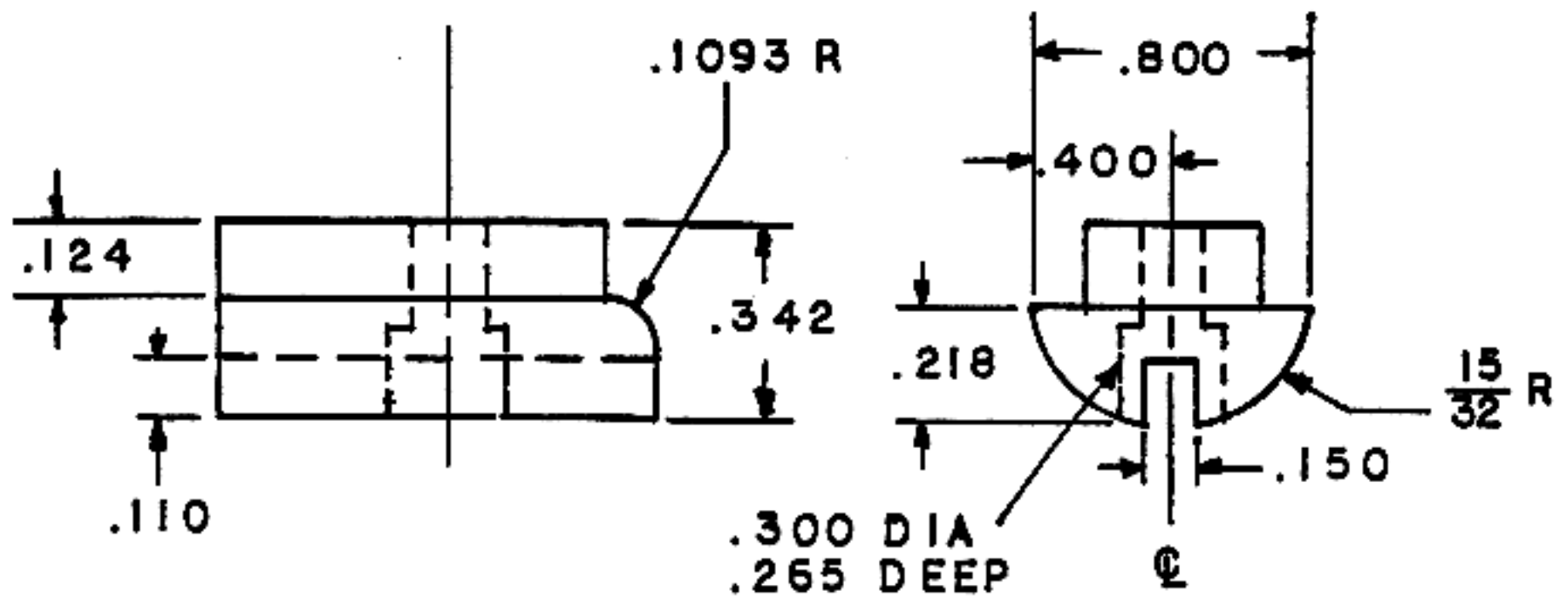
The only difference between the two carriers is that the AR-15 has had the area that trips the auto-sear machined off.

By manufacturing the bolt-on adapter shown in the drawings, the AR-15 bolt carrier can be adapted for use in a machinegun.

You not only save fifty or sixty bucks, you can also keep the old lady happily busy for two or three days filing the part out of that old piece of railroad rail you bought at the flea-market, (and she thought it wasn't good for anything).



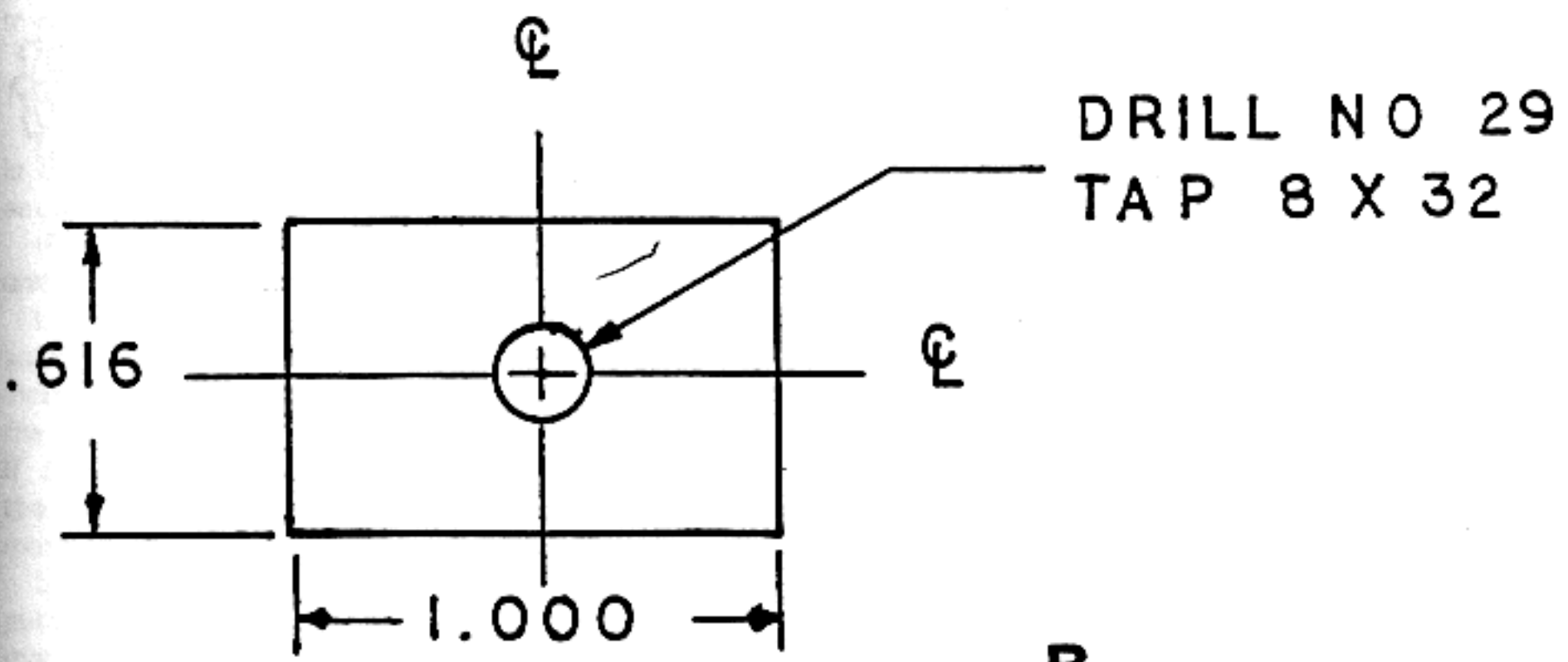
A



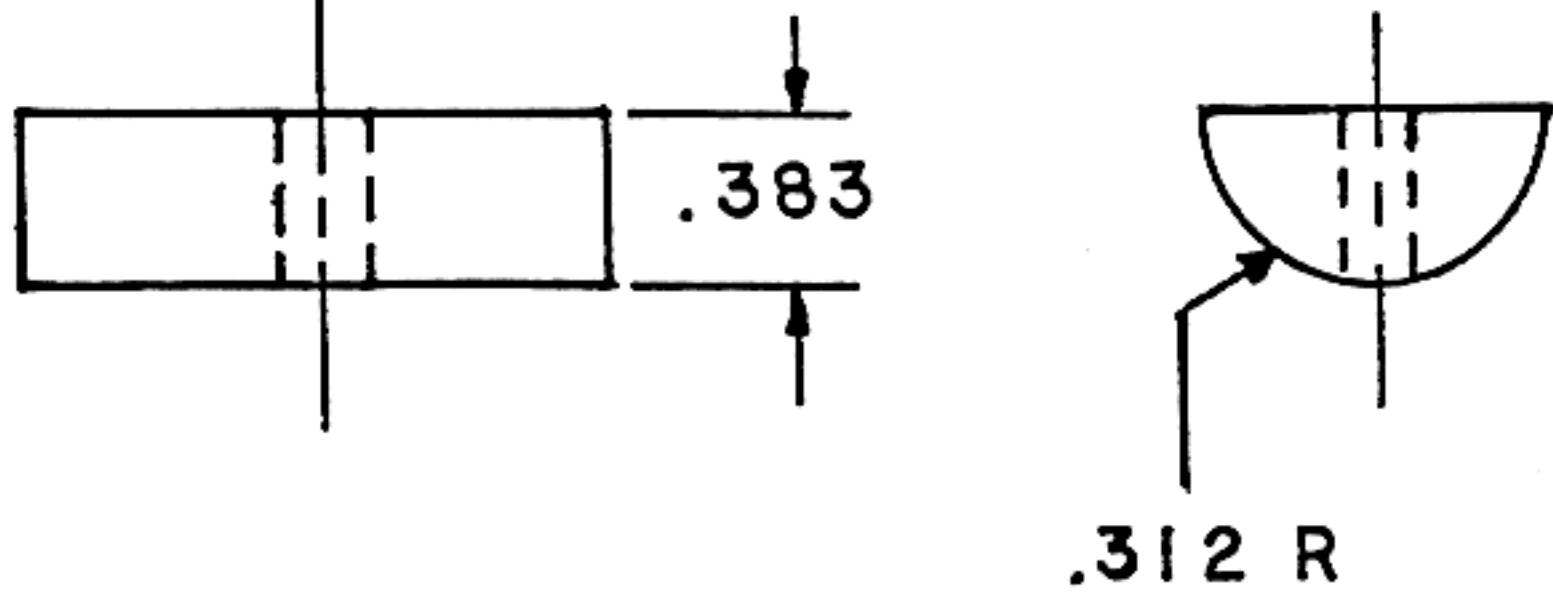
CONVERTER TRIP

The carrier converter can be made from low carbon steel and case hardened, using a product like Kasenit® surface hardening compound. NOTE..... Complete hardening instructions come with Kasenit®. Better yet, build the parts from oil hardening carbon steel drill rod. This can be hardened with a torch by heating the part a bright cherry color and immediately dropping the heated part in 10 WT. motor oil. WARNING..... Do this outside, because you're going to get some smoke.

To temper the parts after hardening, place in your kitchen oven at 500 degrees for one hour. Let the parts cool in the oven with the door closed. DANGER..... DO NOT USE A MICROWAVE!



B



CONVERTER NUT

CHAPTER THREE

DROP-IN AUTO-SEAR

I don't like drop-in auto-sears! Not because they don't work, because they do. They not only work, but in my experience an AR-15 equipped with a drop-in auto-sear works as well as an original government issue M-16.

The problem's not with the auto-sear, it's with the laws governing its use.

The drop-in auto-sear was designed in the mid 1970's for the sole purpose of converting the AR-15 to fire full-auto (select fire).

If you buy a drop-in auto-sear that was manufactured after November 1st, 1981, it is by itself classified a machinegun, and must be serial numbered and registered with B.A.T.F. as such. If it was manufactured before then, it in itself is not a machinegun. Of course, if you put it in your AR-15 then it is a machinegun, and as such is illegal, because although it was manufactured before, but not registered before midnight May 19, 1986 it can not be registered after that date.

Also, for the drop-in auto-sear to work in the AR-15 you need an M-16 hammer, disconnecter, trigger, selector switch, and bolt carrier.

If you have all of the above listed parts BUT NO GUN, under federal law you have a machinegun. That may sound crazy, but that's the law.

The fact that a post November 1st, 1981 drop-in auto-sear must be registered as a machinegun is bad news. If you bust it, to get your gun working again you must not only buy a new one for anywhere from two to three hundred dollars, you must also pay the \$200.00 tax on the new one.

If that's not bad enough, if you should lose it, you have lost a machinegun and B.A.T.F. gets very unhappy about that.

One last thing about using the drop-in auto-sear. With the sear removed from the weapon, you would think you once more have a legal semi-auto firearm. NOT SO! With the necessary M-16 parts installed, if you put the selector on full-auto the disconnecter will not work. The hammer will follow the bolt forward if you hold the trigger back. This causes what is known as slap fire and is dangerous. If the bolt has not locked before the cartridge fires you will have one hell of a blast coming out the ejection port. That's bad, but worse is yet to come. B.A.T.F. has ruled, if a weapon will fire more than one shot with each pull of the trigger, it's a machinegun.

Even though you believe you did everything right and paid the tax on the drop-in auto-sear, by putting the other M-16 parts in your AR-15, you have unwittingly manufactured an unregistered machinegun.

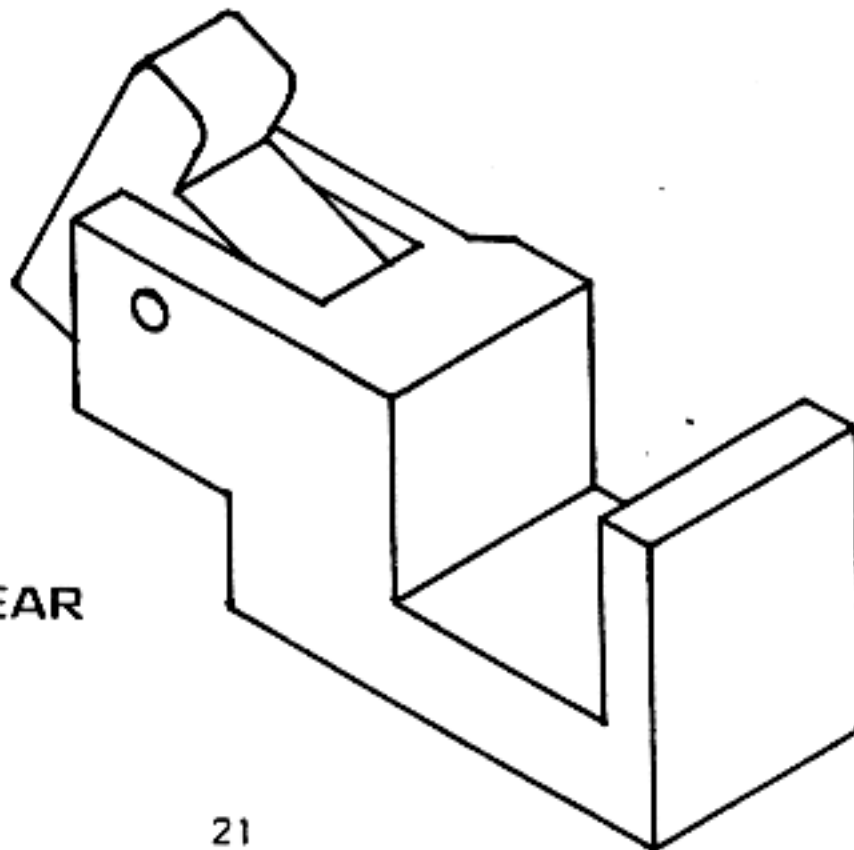
You would at that time be liable for a fine and imprisonment.

TO RECAP: to buy a registered post November 1st, 1981, drop-in auto-sear from a Class III dealer is legal.

To have an AR-15 with M-16 parts installed is illegal

To have M-16 parts although you have no gun is illegal.

To have an unregistered drop-in auto-sear is illegal.



DROP-IN AUTO SEAR

PARTS IS PARTS

The four parts of the drop-in auto-sear are a pretty straight-forward proposition.

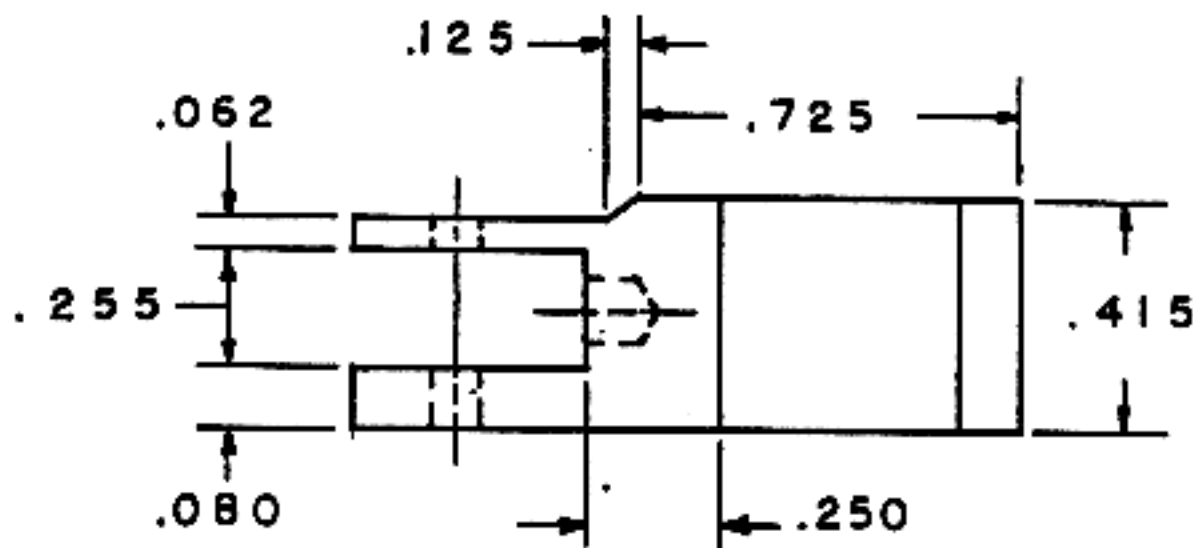
The sear housing can be made from either mild steel or aluminum. The housing bears very little stress, so a hardened housing is not needed.

The sear trip is another story. This is the part of the drop-in sear that takes the beating. It not only catches the hammer in a cocked position, it also is struck with the full force of the bolt carrier each time the weapon cycles. Firing at a rate of 750 rounds a minute, it takes a real beating.

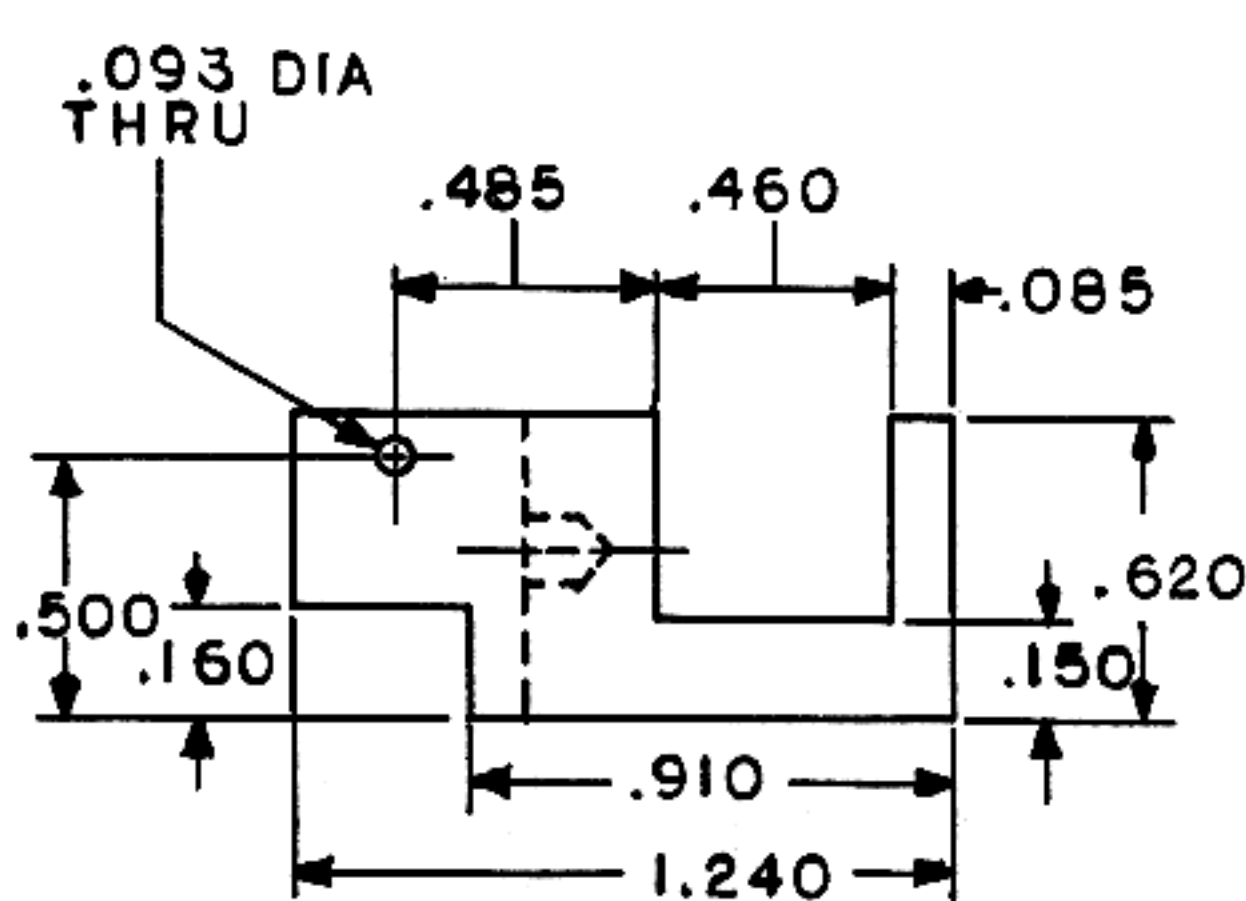
Manufacture the trip from high carbon oil quenching steel.

It can be hardened by heating it a bright cherry red with a torch and dropping it immediately into 10 wt. motor oil. This is best done outside because of smoke from the oil.

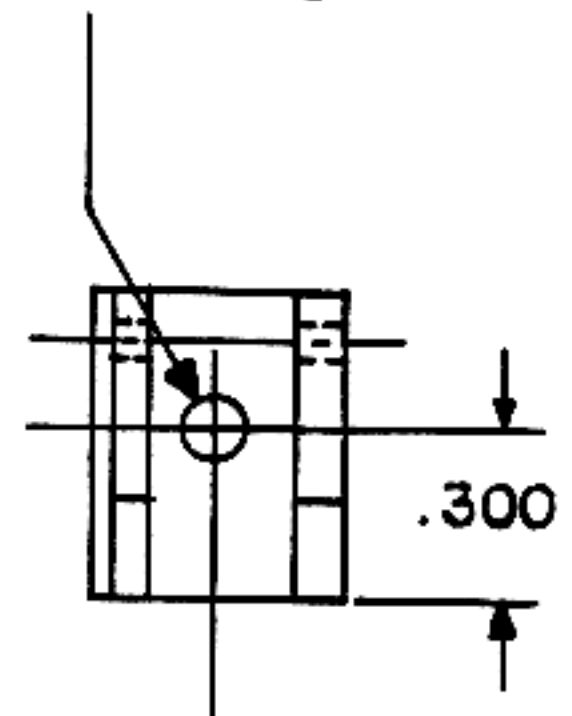
To temper the part after hardening, place it in your kitchen oven for one hour at 500 degrees. Let it cool with the oven door closed. **WARNING.....DO NOT USE A MICROWAVE!**

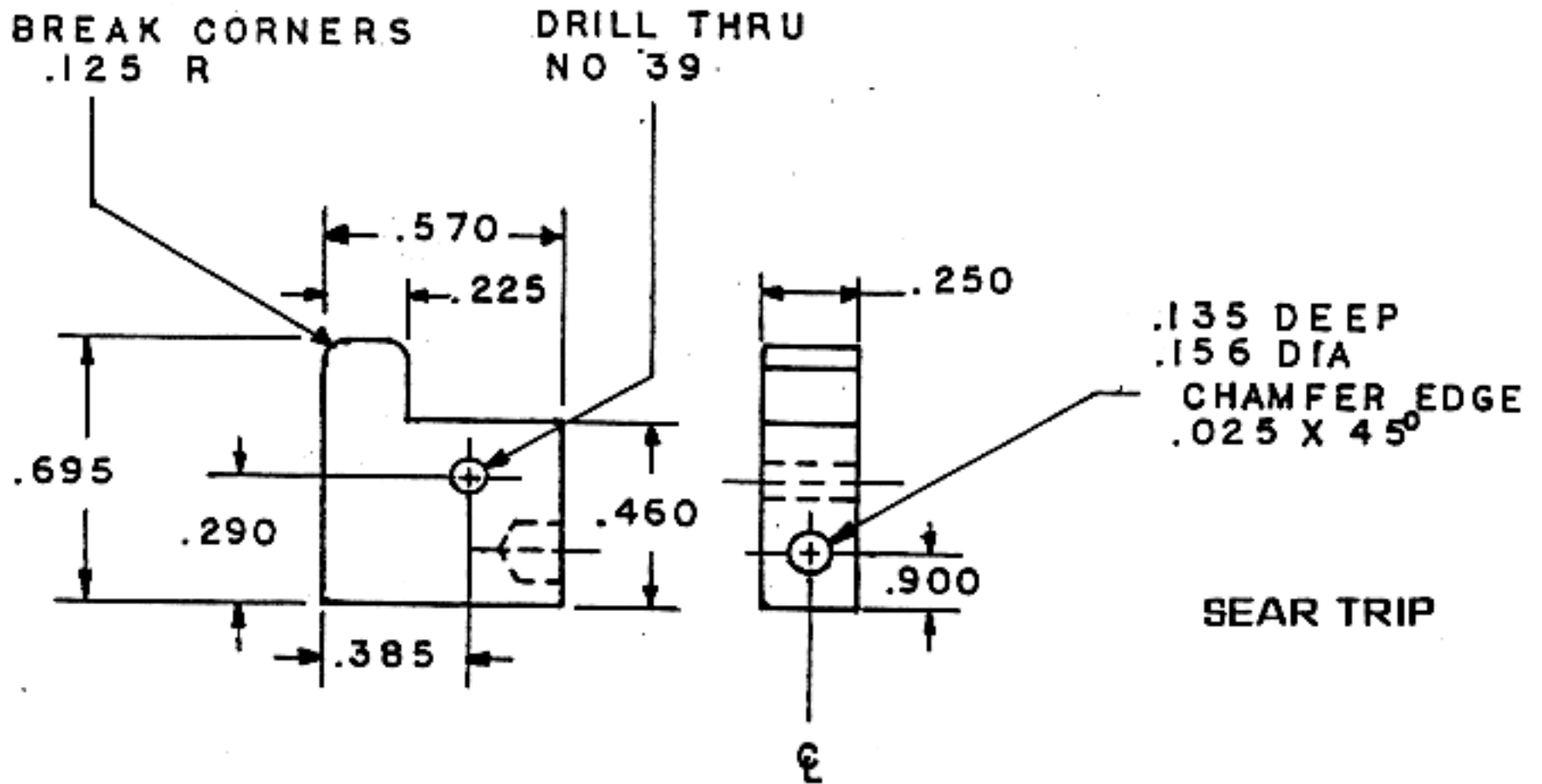


SEAR HOUSING



.156 DIA
.170 DEEP

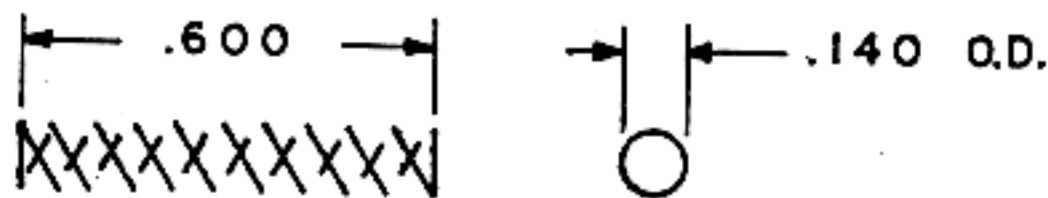




The spring is made from No. 18 wire. Wind it around a mandrel that has been turned on a lathe. You will have a spring exactly like the one shown in the drawing.

OR

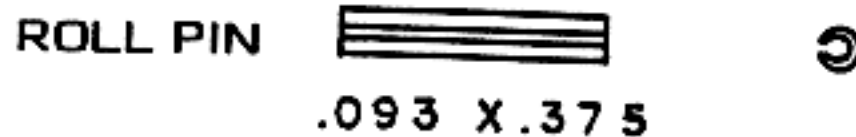
Find a hunk of spring that fits in the hole at the front of the sear body without dragging, chop it off at the right length, and call it a job well done.



10 TURNS NO. 18 MUSIC WIRE
RATE : 8 lbs / in

The trip pin can be made from drill rod stock. Although I find a roll pin works as well without the need for a precision fit in the sear housing.

Whichever is used, make sure the trip rocks freely on the pin when it's assembled.



TEST FIRE

Test fire as outlined at the end of CHAPTER ONE.

CHAPTER FOUR

LIGHTNING LINK

This thing's as slick as owl do! do! No worries about M-16 parts. No machining or drilling on a six hundred dollar gun.

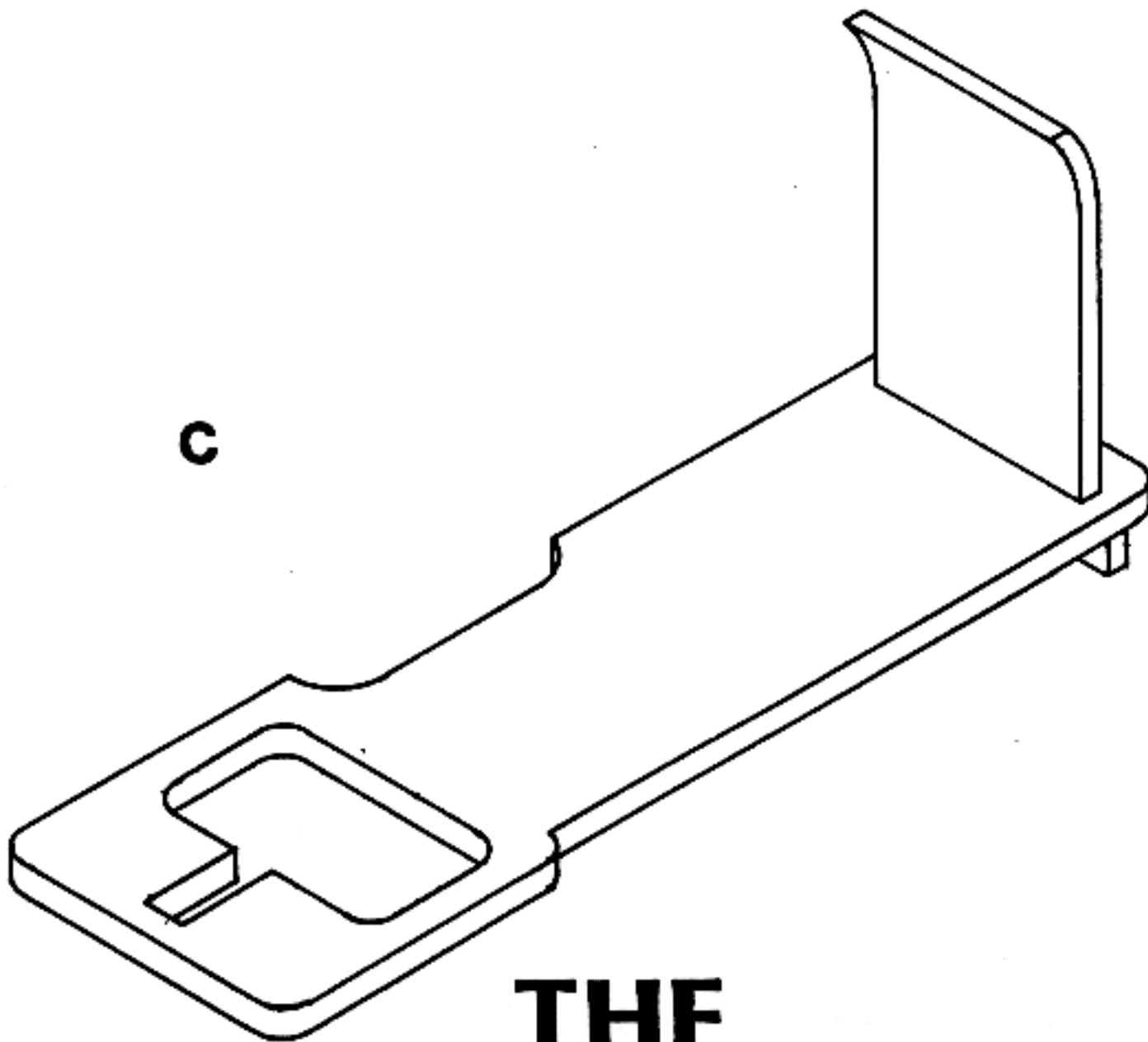
The parts can be made from tool steel, machined with great precision, hardened and tempered with loving care, then polished to a high gloss that your mother would be proud of.

On the other hand, using only a couple pieces of power hacksaw blade to make the parts from, a dremel[™] tool, hand drill, and one or two files to do the work, you can cut out the "Lightning Link" in about an hour.

The first description will make a link that you could most likely pass on to your great grandkids. The second may not last that long, but I know of one made from mild steel, that has never been hardened or tempered. It's been used to fire over 5,000 rounds, and's still going strong. All that ever goes wrong with it is the part the bolt carrier hits gets peened over after about five or six hundred rounds. When that happens, the gal that owns it drops it out of the gun, puts it on the rear bumper of her Jeep and beats it back in shape with a rock. She's then back in business for a few hundred more rounds.

The only complaint I've ever heard about the Lightning Link is it converts the firearm to full-auto only. I can't see that's a problem. No one says you have to hold the trigger down until the magazine's empty. I've found with a little practice it's easy to fire two shot bursts using the link.

Also keep in mind, that it takes only about ten seconds to install the Lightning Link in a standard unaltered AR-15, and only about six seconds to remove it. Going from semi-auto to full and back to semi is only a matter of seconds.

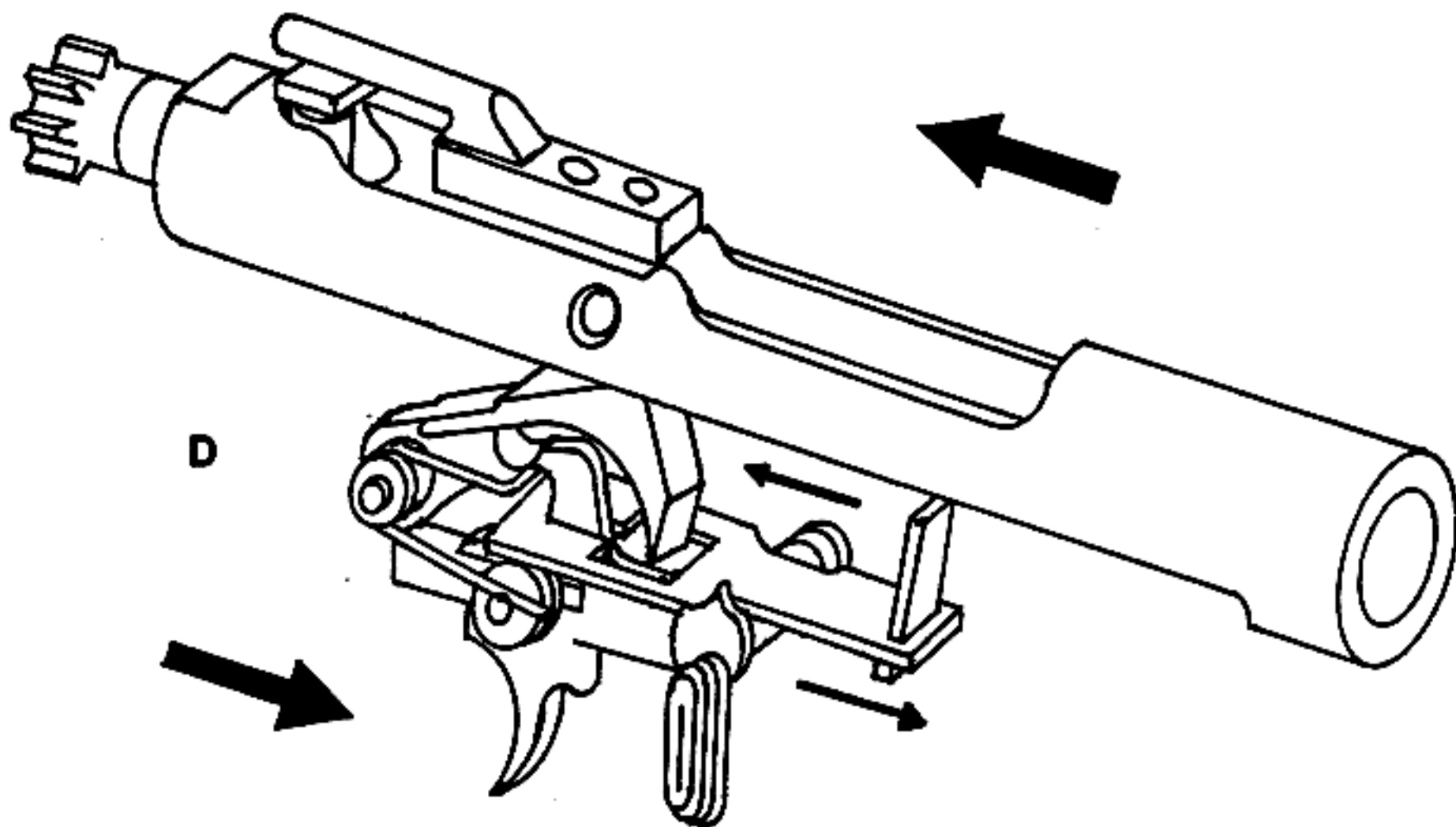


THE "LIGHTNING LINK"

THE WAY IT WORKS

In normal semi-auto operation the hammer is cocked by a rearward movement of the bolt carrier, as the carrier moves forward, the hammer is caught and held in the cocked position by the sear located on the forward part of the trigger catching in the sear notch, on the hammer. If you hold the trigger after a shot's fired the sear will not catch in the hammer's sear notch when the hammer cocks because the sear is depressed below the arc of the hammer notch.

What happens is because the trigger is being held back, the disconnecter hook is tipped forward and in position to catch the hammer, stopping it from following the bolt carrier forward. When the trigger is released, it allows the hammer to slip from under the disconnecter hook and be caught by the trigger sear in the hammer sear notch. Making it necessary to pull the trigger for each shot.



LIGHTNING LINK

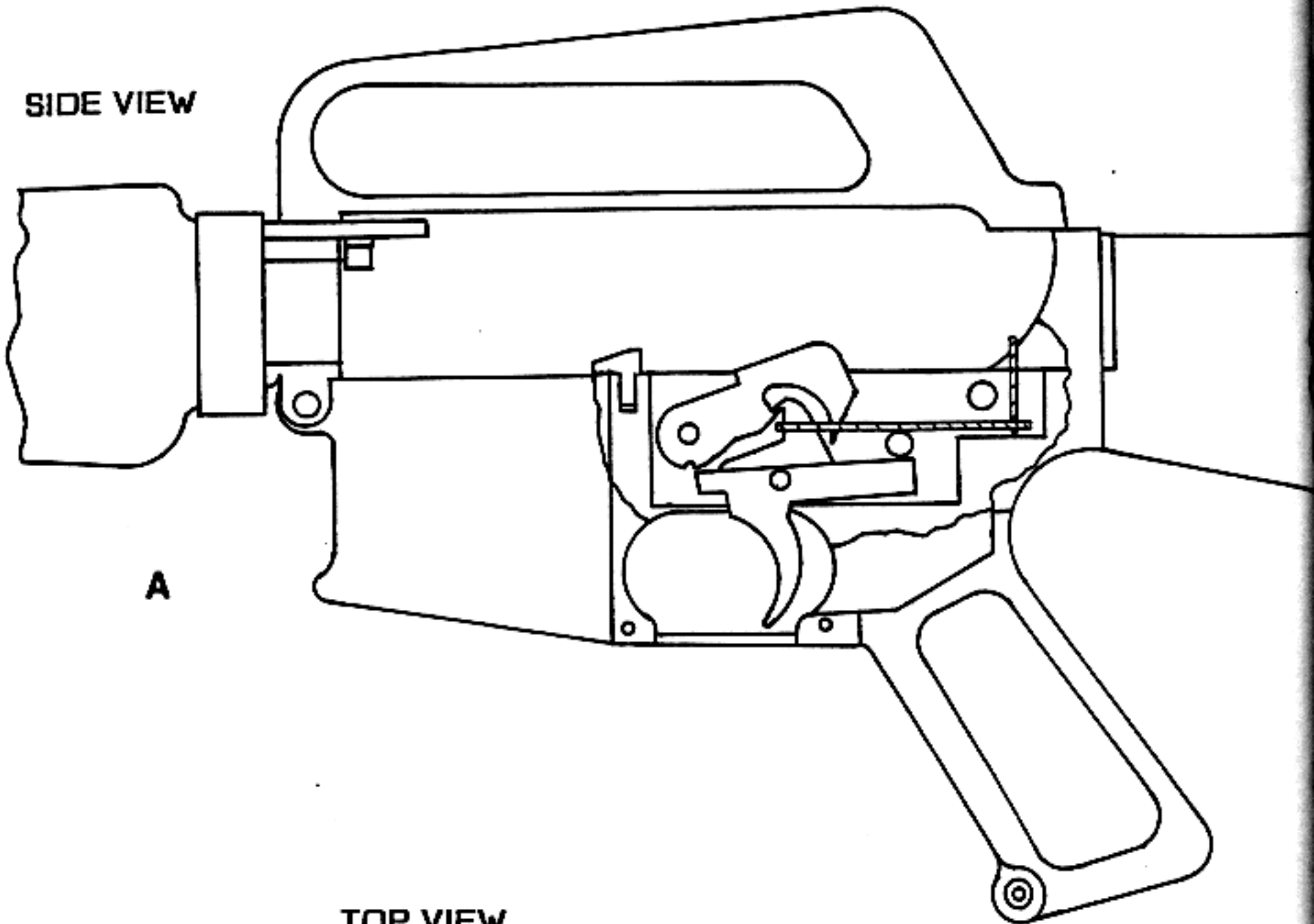
As long as the trigger is held back, the sear is held below the arc of the hammer notch. The only thing holding the hammer in the cocked position is the disconnecter.

The lightning link accomplishes full-auto fire by pulling the disconnecter to the rear forcing it to release the hammer.

The assembled link lays flat in the lower receiver, with the opening at the front fitting over the hook of the disconnecter, and the upright resting between the upper receiver take-down pin post, and the bolt carrier.

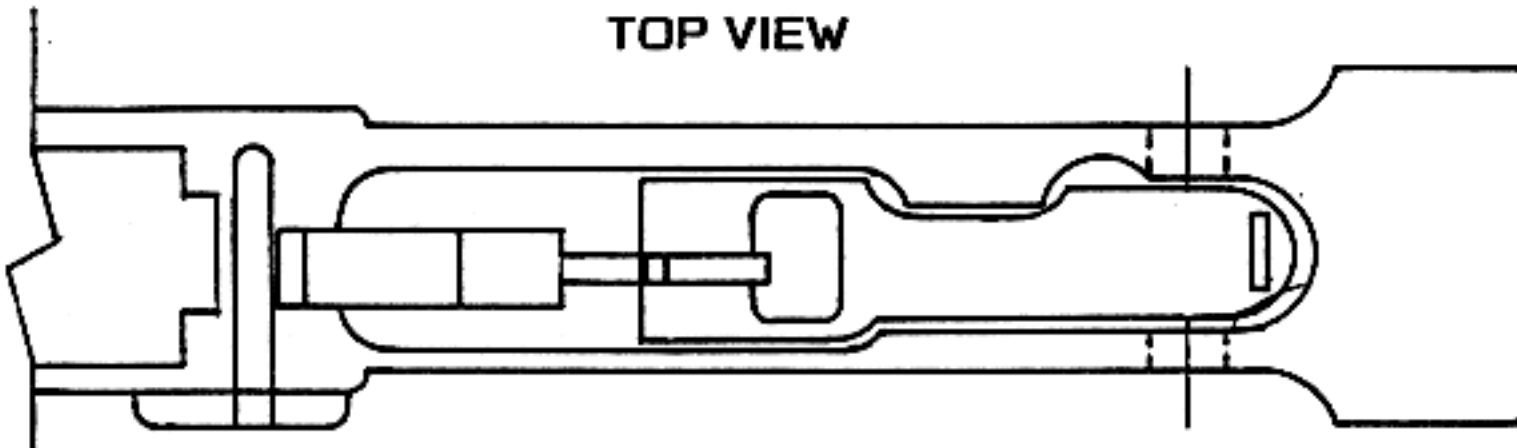
In operation the take-down pin post acts as a fulcrum point. When the bolt carrier strikes the top of the links upright the lower end is rocked to the rear, moving the body of the link backward about 1/16 inch, releasing the hammer from under the disconnecter hook. As long as the trigger is held back the rearward movement of the bolt carrier will cock the hammer under the disconnecter hook. The forward movement of the carrier will strike the upright of the link just as the bolt locks in battery, releasing the hammer, and firing the weapon. When the trigger is released, the sear will stop the hammer in the cocked position negating the operation of the disconnecter and lightning link.

SIDE VIEW



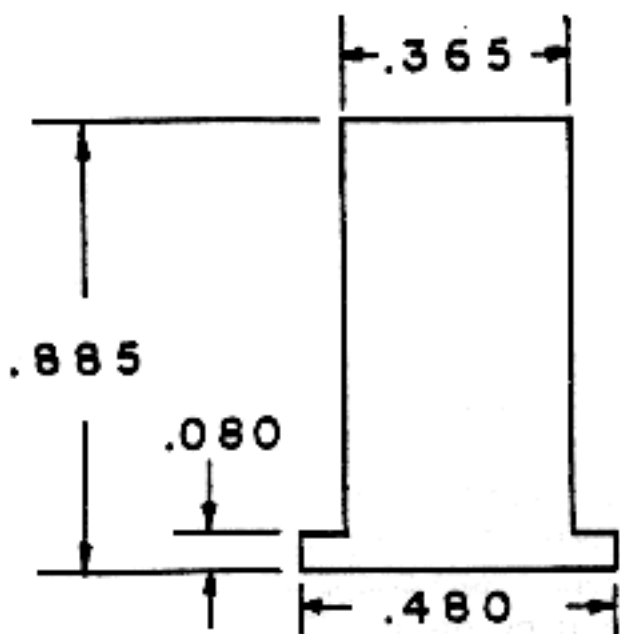
A

TOP VIEW



B

BEVEL



UPRIGHT

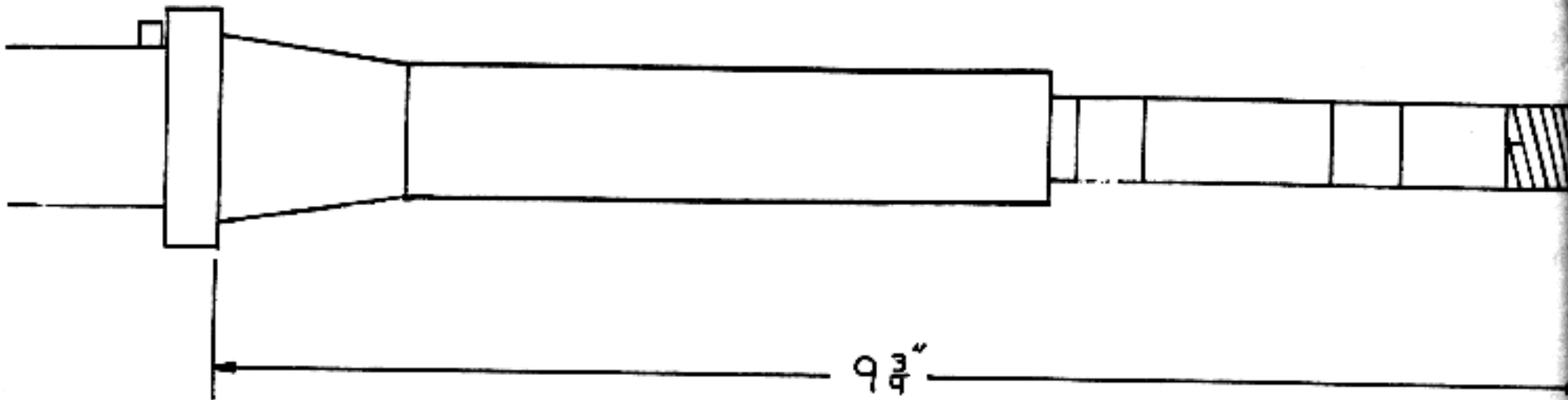
Cut the upright part to length and file or grind it to shape. File a slight bevel at the top rear side of the upright.

BARREL LENGTH

Shortening the barrel is a job that's best done on a lathe. It's just about impossible to cut it off and rethread it by hand and get everything straight.

Whether you chop it off with a hacksaw and rethread it with a die or cut, crown and thread on a lathe, keep in mind a barrel is measured from the bolt face to the muzzle, not from the front of the receiver to the muzzle.

The drawing and table indicate how to measure and cut the barrel for the most popular lengths.



TABLE

9 3/4 inches equal a 10 1/2 inch barrel
 10 3/4 inches equal a 11 1/2 inch barrel
 13 3/4 inches equal a 14 1/2 inch barrel

NOTES

PARTS AND TOOL SUPPLIERS

It's hard to do a job without the proper tools, and darn near impossible without the right parts. I want to thank the companies that are listed below, for graciously giving permission to include their names and addresses, that you may obtain tools, parts or services directly from them.

SUPPLIERS

Nesard
P.O. Box 56
Lake Zurich, Illinois 60047

L.H. Manufacturing Company
Route 1, Box 210
Devine, Texas 78016

Texas Armament Co.
905 Pecan Street
Brownwood, Texas 76801

Federal Ordnance Inc.
P.O. Box 6050
So. El Monte, California 91733

Sherwood International
18714 Parthenia Street, Dept. SGN 6
Northridge, California 91324

The Southwest Trading Co.
P.O. Box 10952
Houston, Texas 77018

Numrich Arms Corp.
West Hurley, New York 12491

Quality Parts Company
P.O. Box 6659 Woodfords
Portland, Maine 04103

Cadre Supply
Box 22074
Memphis, Tennessee 38122

TOOLS

Kitts Industrial Tools
22384 Grand River Avenue
Detroit, Michigan 48219

Frank Mittermeier, Inc.
3577 E. Tremont Avenue
Bronx, New York 10465

Brownell's Inc.
Route 2, Box 1
Montezuma, Iowa 50171

J & L Industrial Supply
P.O. Box 40625
Detroit, Michigan 48240