

10044S

**MAINTENANCE INSTRUCTIONS**  
**C7 FAMILY OF COMBAT WEAPONS**  
2005-09-20



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## **PART 1 INTRODUCTION**

### **SECTION 1 GENERAL INFORMATION**

#### **PURPOSE**

1. This Manual details the disassembly, inspection, repair and assembly procedures to be followed when carrying out inspection, maintenance, or repair of the C7 Family of Weapons, including:

- a. C7, C7A1, C7A2;
- b. C8, C8A1, C8A2, C8CQB;
- c. SFW, SFSW; and
- d. LSW.

2. The tasks detailed in this instruction shall be carried out by Qualified Weapons Technicians.

#### **SCOPE**

3. This instruction contains the following:

- a. Part 1 - Introduction;
- c. Part 2 - Apparatus and Tools;
- d. Part 3 - Repair Techniques; and
- e. Part 4 - Tests and Adjustments.

#### **OBSERVATIONS**

4. Any observations, comments or criticisms which would assist in increasing the value of this publication should be addressed to:

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## SECTION 2 C7 FAMILY TECHNICAL SPECIFICATIONS

### TABLE OF SPECIFICATIONS

	C7	C7A1	C7A2	C8	C8A1	C8A2	SFW	SFSW	C8CQB	LSW
<b>TOTAL LENGTH (m)</b>	1.0	1.0	1.0 Ex. 0.915 Col. * 4 pos	.76, & .84	.76, & .84	.76, & .84	.78, & .85, & .88	.78, & .85 & .88	0.67 & 0.75	1.0
<b>BARREL LENGTH(m)</b>	.51	.51	.51	.37	.37	.37	.41	.41	.25	.51
<b>WEIGHT unloaded without accessories (kg)</b>	3.34	3.23	3.23	2.68	2.68	2.68	3.4	3.4	2.68	5.42
<b>SYSTEM OF OPERATION</b>	Gas Operated Magazine fed	Gas Operated Magazine Fed	Gas Operated Magazine Fed	Gas Operated Magazine fed	Gas Operated Magazine fed	Gas Operated Magazine fed	Gas Operated Magazine fed	Gas Operated Magazine fed	Gas Operated Magazine Fed	Gas Operated Magazine fed
<b>MODES OF OPERATION</b>	Safe, Auto, Semi-auto	Safe, Auto, Semi-auto	Safe, Auto, Semi-auto	Safe, Auto, Semi-auto	Safe, Auto, Semi-auto	Safe, Auto, Semi-auto	Safe, Auto, Semi-auto	Safe, Auto, Semi-auto	Safe, Auto, Semi-auto	Safe, Auto, Semi-auto
<b>UPPER RECIEVER</b>	Carry Handle Fixed Sight	Weaver or Mil Std 1913	Weaver or Mil Std 1913	Carry Handle Fixed Sight	Weaver or Mil Std 1913	Weaver or Mil Std 1913	Weaver or Mil Std 1913	Weaver or Mil Std 1913	Weaver or Mil Std 1913	Weaver or Mil Std 1913
<b>HAND-GUARDS</b>	Std long	Std long	Std Long	Std short	Std short	Std short	R.A.S.	R.A.S.	Std Short	Heavy
<b>RETURN SPRING Approx. LENGTH (m)</b>	.32	.32	.27	.27	.27	.27	.27	.27	.27	.22
<b>BUFFER TYPE/ LENGTH (m)</b>	Five weights/.15	Five weights/.15	Type HH .08	Three Weights/.08	Three Weights/.08	Type H .08	Type HH .08	Rate Reducer .08	Type HH .08	Hydraulic .15
<b>MAX . EFF. RANGE (m)</b>	400	550	550	300	400	400	550	550	250	600
<b>SEMI-AUTO RATE OF FIRE (rpm)</b>	45 to 65	45 to 65	45 to 65	45 to 65	45 to 65	45 to 65	45 to 65	45 to 65	45 to 65	45 to 65
<b>AUTOMATIC RATE OF FIRE (rpm)</b>	150 to 200	150 to 200	150 to 200	150 to 200	150 to 200	150 to 200	150 to 200	150 to 200	150 to 200	150 to 200
<b>SUSTAINED RATE OF FIRE (rpm)</b>	12 to 15	12 to 15	12 to 15	12 to 15	12 to 15	15 to 20	15 to 20	30 to 40	12 to 15	30 to 40
<b>CYCLIC RATE OF FIRE (rpm)</b>	700 to 900	700 to 900	750 to 950	750 to 950	750 to 950	750 to 950	700 to 950	600 to 725	750 to 950	600 to 725
<b>MUZZLE VELOCITY (m/s)</b>	940	940	940	868	868	868	895	895	790	940
<b>RIFLING: NUMBER OF GROOVES</b>	6	6	6	6	6	6	6	6	6	6
<b>PITCH OF RIFLING</b>	1 turn in 17.8 cm	1 turn in 17.8 cm	1 turn in 17.8 cm	1 turn in 17.8 cm	1 turn in 17.8 cm	1 turn in 17.8 cm	1 turn in 17.8 cm	1 turn in 17.8 cm	1 turn in 17.8 cm	1 turn in 17.8 cm
<b>DIRECTION OF TWIST</b>	Right Hand	Right Hand	Right Hand	Right Hand	Right Hand	Right Hand	Right Hand	Right Hand	Right Hand	Right Hand
<b>AMMO DESIGNATION/ DIMENSION</b>	5.56mm x 45mm NATO	5.56mm x 45mm NATO	5.56mm x 45mm NATO	5.56mm x 45mm NATO	5.56mm x 45mm NATO	5.56mm x 45mm NATO	5.56mm x 45mm NATO	5.56mm x 45mm NATO	5.56mm x 45mm NATO	5.56mm x 45mm NATO

## TABLE OF SPECIFICATIONS (Cont)

	C7	C7A1	C7A2	C8	C8A1	C8A2	SFW	SFSW	C8CQB	LSW
<b>REAR SIGHT TYPE</b>	Flip Type Two Aperture									
<b>FRONT SIGHT TYPE</b>	ROUND POST									
<b>SIGHT RADIUS (Iron Sight) (cm)</b>	50.2	50.2	50.2	36.7	36.7	36.7	36.7	36.7	36.7	50.2
<b>HEADSPACE MIN. (GO GAUGE) (mm)</b>	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1
<b>HEADSPACE MAX. (NOT GO GAUGE) (mm)</b>	37.42	37.42	37.42	37.42	37.42	37.42	37.42	37.42	37.42	37.42
<b>TRIGGER PULL (kg)</b>	2.5 to 3.9									
<b>FIRING PIN MAX. PROTRUSION (mm)</b>	.91	.91	.91	.91	.91	.91	.91	.91	.91	.91
<b>FIRING PIN MIN. PROTRUSION (mm)</b>	.71	.71	.71	.71	.71	.71	.71	.71	.71	.71
<b>MODE OF FIRE</b>	Semi to Full Auto									
<b>RECOMMENDED MAGAZINE CAPACITY</b>	30	30	30	30	30	30	30/100	30/100	30	30/100
<b>30 ROUND MAGAZINE (AL) WEIGHT E/F (kg)</b>	.11/.48	.11/.48	.11/.48	.11/.48	.11/.48	.11/.48	.11/.48	.11/.48	.11/.48	.11/.48
<b>30 ROUND MAGAZINE (PL) WEIGHT E/F (kg)</b>	.12/.49	.12/.49	.12/.49	.12/.49	.12/.49	.12/.49	.12/.49	.12/.49	.12/.49	.12/.49
<b>100 ROUND MAGAZINE WEIGHT E/F (kg)</b>	1.0/2.2	1.0/2.2	1.0/2.2	1.0/2.2	1.0/2.2	1.0/2.2	1.0/2.2	1.0/2.2	1.0/2.2	1.0/2.2
<b>BARREL TYPE</b>	Hammer Forged & Chromed									

## PART 2 APPARATUS AND TOOLS

### GENERAL

1. Tools and gauges listed in Figure 2-1 are required by the technician to perform various stages of stripping, assembling, replacement of broken or damaged parts, testing and adjusting of the C7 Family of Weapons.

ITEM No.	Part No.	Description	NSN	Qty
18	08061C-1	Gauge, Headspace, NOT GO.	5220-21-897-9674	1
19	09078C-1	Extractor, Ruptured Cartridge.	4933-21-913-3928	1
8	08063C-1	Slave Pin Tool.	5315-21-912-8444	1
13	09074C-1	Gauge, Firing Pin Protrusion.	5220-21-912-7636	1
12	09077C-1	Tool, Reflector, Chamber.	4933-21-897-3781	1
16	12006472	Plug Gauge Not Go Spl.	5220-01-043-9473	1
7	8490126-1	Wrench, Front & Rear Sight Adj, C7, C8.	5120-21-897-3784	1
4	CF62693	Tool, Alignment, Barrel Nut.	4933-21-897-3782	1
15	8576410-1	Gauge, Straightness, Bore, 5.56mm.	5220-21-900-3911	1
5	09079C-1	Vise Jaw Kit.	5120-21-913-3206	1
6	09072C-1	Tool, Pivot, Pin, Detent, Install.	1005-01-148-6501	1
2	09075C-1	Wrench, Combination.	4933-21-897-2238	1
17	08062C-1	Gauge, Headspace, GO.	5220-21-897-9675	1
3	CF62680	Punch, Pin, Bolt Catch Pivot.	5120-21-896-7514	1
14	8790190-1	Gauge, Bore, Erosion.	4933-21-902-8230	1
11	CF62692	Setter, Punch.	5120-21-896-7520	1
10	CF62697	Punch, Pin, Drive.	5120-21-896-7539	1
9	CF62715	Tool, Rivet Swaging.	4933-21-897-2239	1
1	09076C-1	Wrench, Receiver, C8.	5120-21-897-2453	1

Figure 2-1 Tools and Gauges



**PART 3  
REPAIR TECHNIQUES**

**SECTION 1  
REPAIR INFORMATION**

**GENERAL**

1. **DO NOT** attempt to disassemble or repair those parts of the C7 Family of Weapons that are not specifically detailed in this instruction.
2. Unless otherwise specified all pins are normally removed from left to right and reassembled in the reverse direction. **DO NOT** disassemble items or assemblies secured by spring tension pins except to repair or replace non-serviceable components. **DO NOT** reuse spring tension and roll pins.

**LUBRICATION**

3. Refer to C7 Family Operators Manual - 10047S, for general lubrication information.

**REFINISHING**

4. Inspect finished metal surfaces for areas of wear. If more than thirty per cent of the finish is worn off, refinish the weapon. Touch up minor wear on steel surfaces with gun blue. Touch up minor wear on non-ferrous metal surfaces with black solid film lubricant.

**CLEANING**

5. Refer to The C7 Family Operators Manual - 10047S or Cleaning Instructions for C7 Family of Combat Weapons - instruction sheet for general cleaning information.

**CARE AND SERVICING**

6. Refer to C7 Family Operators Manual - 10047S, or local procedures for information relating to the care and servicing of the C7 Family of Weapons during periods of non-use.

**TORQUE LIMITS**

7. The following general torque limits apply to the C7 Family of Weapons.

ITEM	TORQUE LIMITS
Suppressor - Constant Torque Washer	90° min to 460° max from first contact
Suppressor - Peel Washer	62.4 - 69.1 N·m (46-51 ft-lb)
Barrel Nut	41 - 110 N·m (30-81 ft-lb)
Carrier Key Screws	4.0 - 4.5 N·m (35-40 in-lb)
Receiver Extension	52 - 57 N·m (38-42 ft-lb)

Figure 3-1-1 Torque Limits



## **SECTION 2 REPAIR PROCEDURES**

### **INTRODUCTION**

1. Repair procedures detailed in this instruction apply to the C7 Family of Weapons. Where the procedures applicable to specific models differ from those specified for the rifle, the differences are detailed in a “NOTE” or described more completely in a separate paragraph.
2. Disassembly, inspection, repair and assembly procedures are detailed under the following headings:
  - a. Safety Precautions;
  - b. Rifles and Carbine;
  - c. Barrel and Upper Receiver Assemblies;
  - d. Sights;
  - d. Bolt Carrier Groups;
  - e. Lower Receiver and Butt Groups;
  - f. Buffer Assemblies;
  - g. Magazines;
  - h. Bayonet; and
  - j. Assembled Weapon Serviceability Inspection.

### **SAFETY PRECAUTIONS**

3. Observe safety precautions at all times and especially in the following situations:
  - a. On taking receipt of the weapon;
  - b. While preparing to fire the weapon;
  - c. During maintenance of the weapon; and
  - d. At all other times when directed to do so in the weapon documentation.
4. Other Precautions:
  - a. Never leave a loaded weapon unattended.
  - b. Ensure that the cam pin is installed in the bolt carrier group. If the cam pin is not installed, firing the weapon may cause a breech explosion.

- c. Danger of cook-off exists after firing more than 120 rounds in rapid succession. If the rifle stops firing with a live round in the chamber: remove unfired the cartridge immediately (within 5 seconds), or wait 2 minutes to allow the cook-off period to pass.
- d. **DO NOT** fire the rifle if there is water or other foreign material in the barrel. Firing the weapon with a bore obstruction may cause a breech or bore explosion.
- e. If you notice a difference in sound or recoil, **STOP FIRING**. Check for an obstruction in the bore. Firing the weapon with a bore obstruction may cause a breech or bore explosion.

### PROVING WEAPONS “SAFE”

- 5. Prove C7 Family weapons safe by the following procedure:
  - a. Depress the magazine catch and remove the magazine. See Figure 3-2-1;
  - b. Pull the cocking handle (1) fully rearward, then hold it to the rear. See Figure 3-2-2;
  - c. Check through the ejection opening (2) to ensure that the chamber and the interior of the receiver (3) are clear;
  - d. Allow the bolt carrier group to go forward under control;
  - e. Squeeze the trigger to “Fire” the action; and
  - f. Close the ejection port cover.

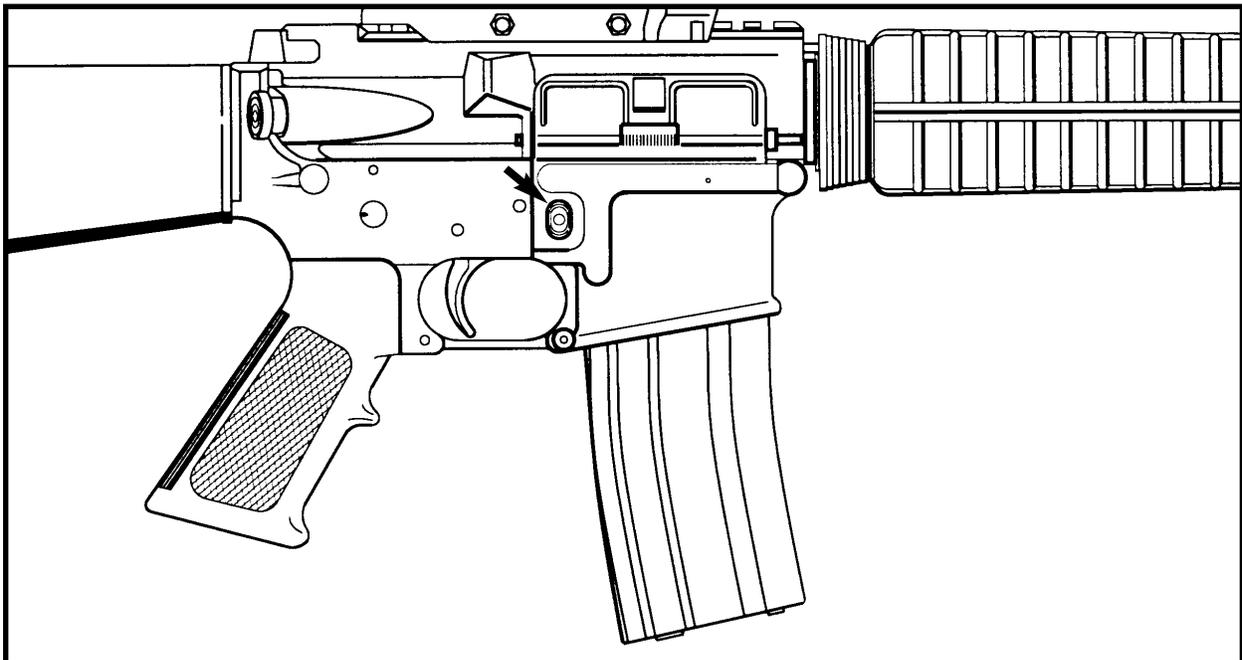


Figure 3-2-1 Magazine Removal

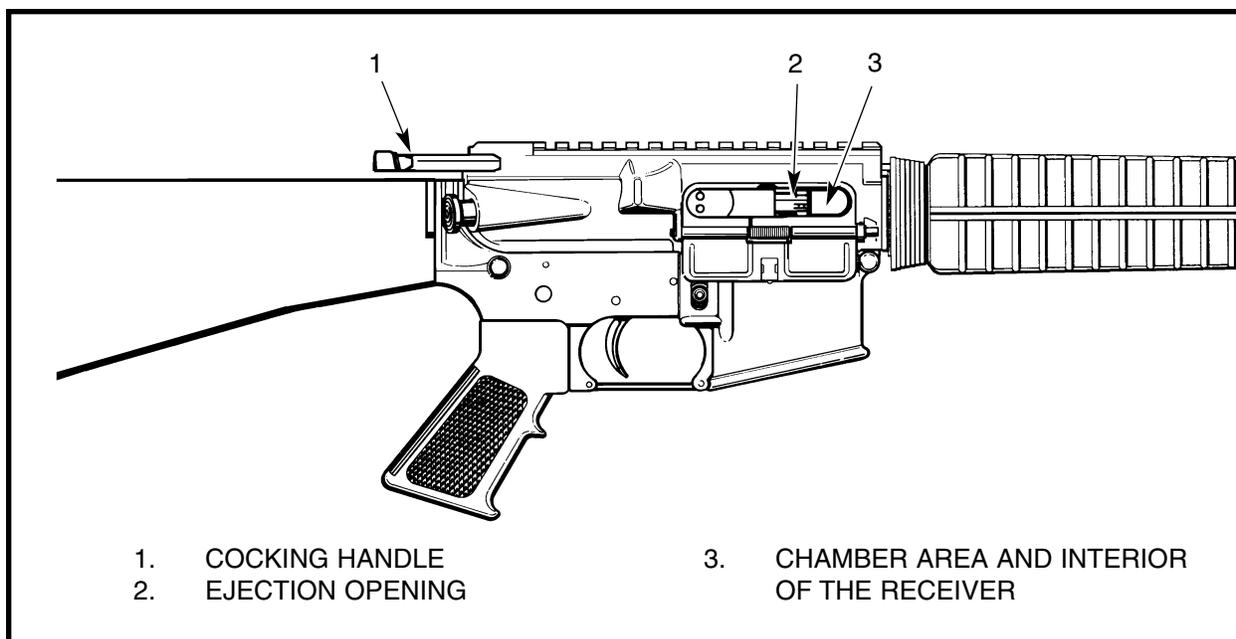


Figure 3-2-2 Proving the Weapon

### COMPLETE WEAPON

#### DISASSEMBLY INTO MAJOR GROUPS

5. With the weapon cocked and the fire control selector set to the “S” position, disassemble the weapon into major groups by the following procedure:
  - a. Loosen the wing-nut(s) on Optical Sight, Detachable Iron Sight (DIS), or Back Up Sight, and remove the sight from the sight rail. See Figure 3-2-3;

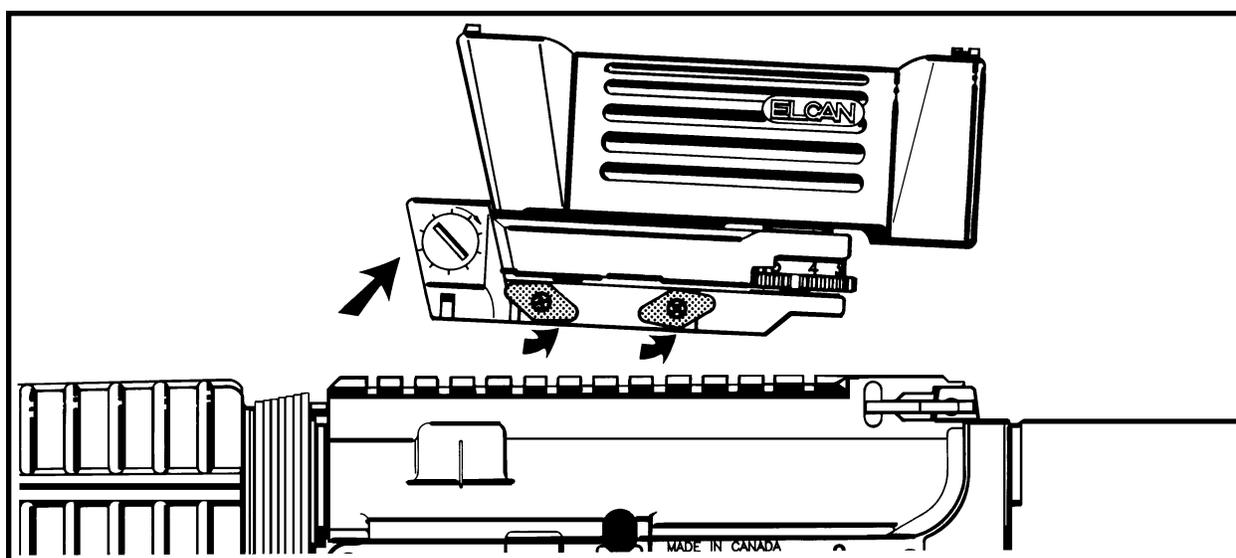


Figure 3-2-3 Removing Sights

- b. Push the takedown pin all the way to the right and pivot the upper receiver upward. See Figure 3-2-4;
- c. Pull the cocking handle rearward approximately 8 cm (3 in.) to withdraw the bolt carrier group. See Figure 3-2-5;
- d. Remove the bolt carrier group;
- e. Remove the cocking handle by pulling it rearward until its guide lugs drop down out of the guideways. See Figure 3-2-6.
- f. Push the receiver pivot pin all the way to the right. See Figure 3-2-7;

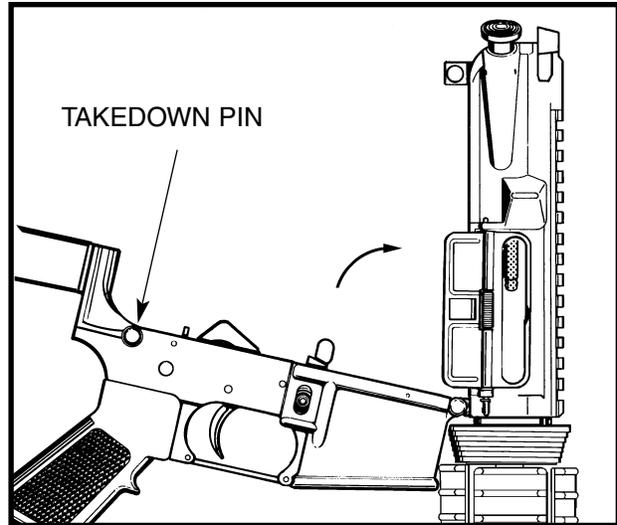


Figure 3-2-4 Opening the Receiver

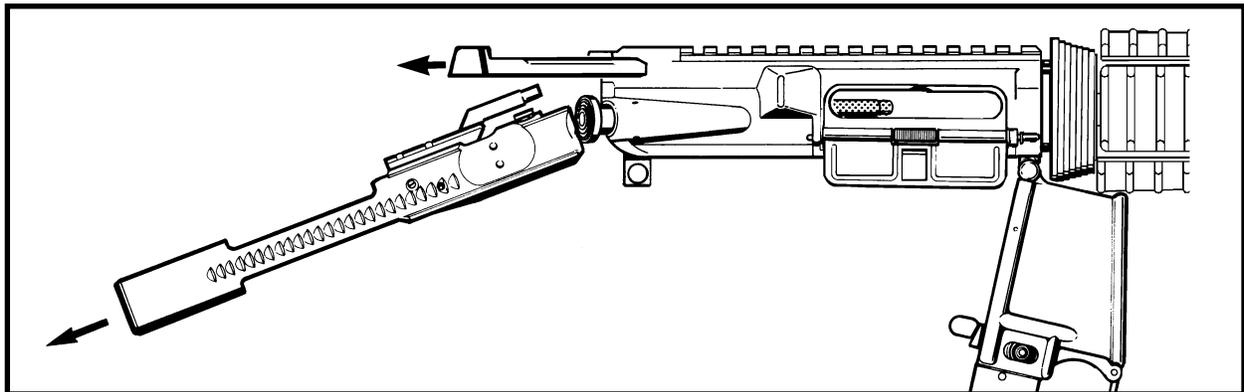


Figure 3-2-5 Removing the Bolt Carrier Group

- g. Separate the upper and lower receivers;

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 • CAUTION •  
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Exercise caution when removing the buffer assembly as the return spring is under considerable compression.

- h. Push in slightly on the buffer assembly and maintain control against the pressure of the return spring. Depress the buffer retainer with a suitable object. See Figure 3-2-8;

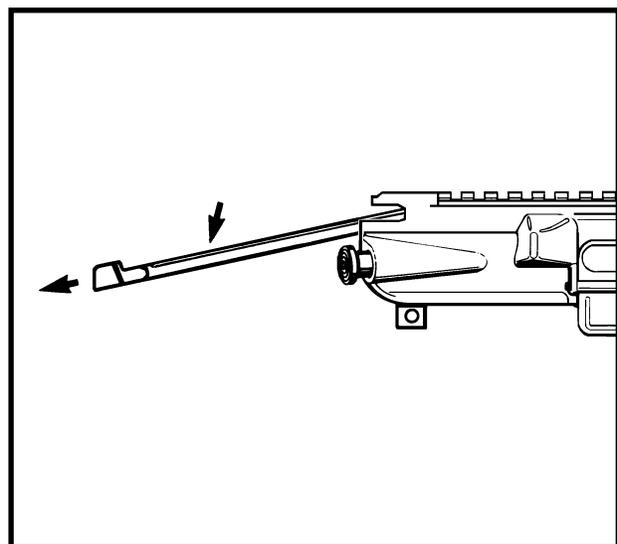


Figure 3-2-6 Removing the Cocking Handle

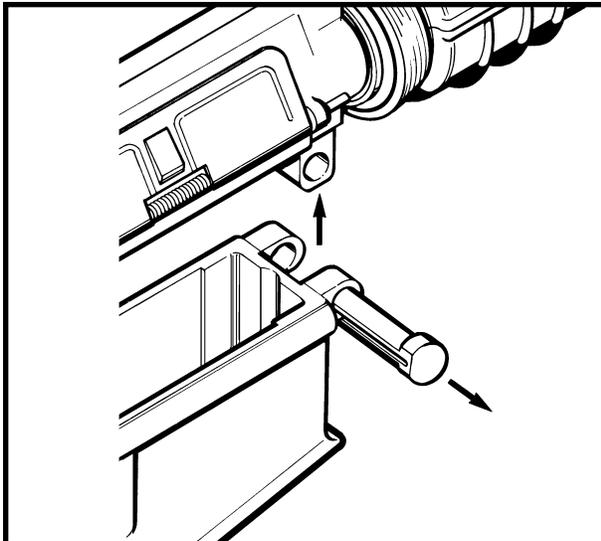


Figure 3-2-7 Separating the Receivers

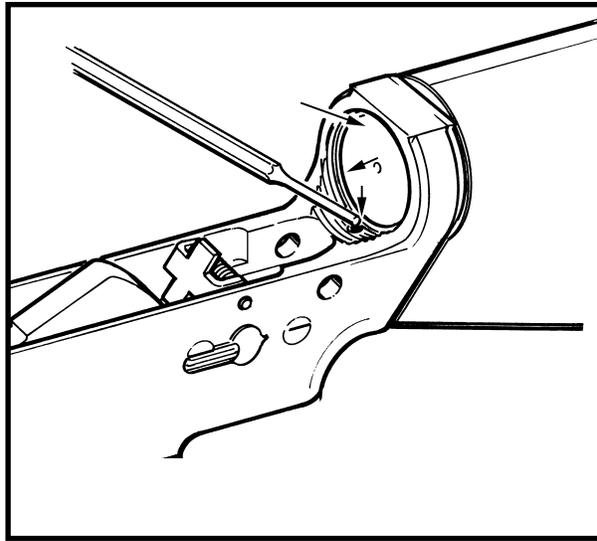


Figure 3-2-8 Releasing the Buffer Assembly

- j. Allow part of the buffer assembly to move forward past the buffer retainer;
- k. Depress the hammer slightly to create sufficient clearance for the buffer assembly to pass; and
- m. Carefully remove the buffer assembly and return spring.

## REASSEMBLY OF MAJOR GROUPS

6. With the hammer cocked and fire control selector set to the “S” position, reassemble the major groups of the weapon as follows:

● ● ● ● ● ● ● ●  
● CAUTION ●  
● ● ● ● ● ● ● ●

**DO NOT** attempt to close the receivers with the fire control selector in the “AUTO” position as damage to the automatic sear may occur when contact is made with the bolt carrier.

- a. Insert the buffer assembly and return spring into the receiver extension;
- b. Depress the hammer slightly to allow passage of the buffer assembly;
- c. Push the buffer rearward until it passes over the buffer retainer and the buffer retainer snaps up into position;
- d. Place the cocking handle into the upper receiver and position its lugs in the guideways at the top of the receiver;
- e. Push the cocking handle forward leaving approximately 8 cm (3 in.) protruding rearward from the upper receiver;

- f. Pull the bolt fully forward in the bolt carrier and position the bolt carrier group below the cocking handle with the bolt carrier key in the cocking handle slot;
- g. Push the bolt carrier group and cocking handle forward until the cocking handle latches on the upper receiver;
- h. Align the receiver pivot pin holes in the upper and lower receiver and push the pivot pin fully to the left; and
- j. Carefully close the receivers and push the takedown pin fully to the left.

## **BARREL AND UPPER RECEIVER ASSEMBLIES**

### **SEPARATING THE BARREL AND UPPER RECEIVER ASSEMBLIES**

7. Separate the upper and lower receiver groups as detailed under Disassembly into Major Groups. Separate the barrel and upper receiver assemblies by the following procedure:
  - a. Remove the handguards as follows:
    - (1) Support the upper receiver and barrel group vertically on a work bench with the compensator pointing upward;
    - (2) Pull downward on the handguard slip ring; and
    - (3) Rotate the rear end of the handguards outward and down to disengage each one in turn from the handguard cap. See Figure 3-2-9.
  - b. Remove the RAS as follows. See Figure 3-2-10:
    - (1) Press the retaining clip (1) and slide the top hand protector (4) forward;
    - (2) Press the retaining clip (1) and slide the bottom hand protector (2) forward or remove it;
    - (3) Remove the rear clamp screws (3);

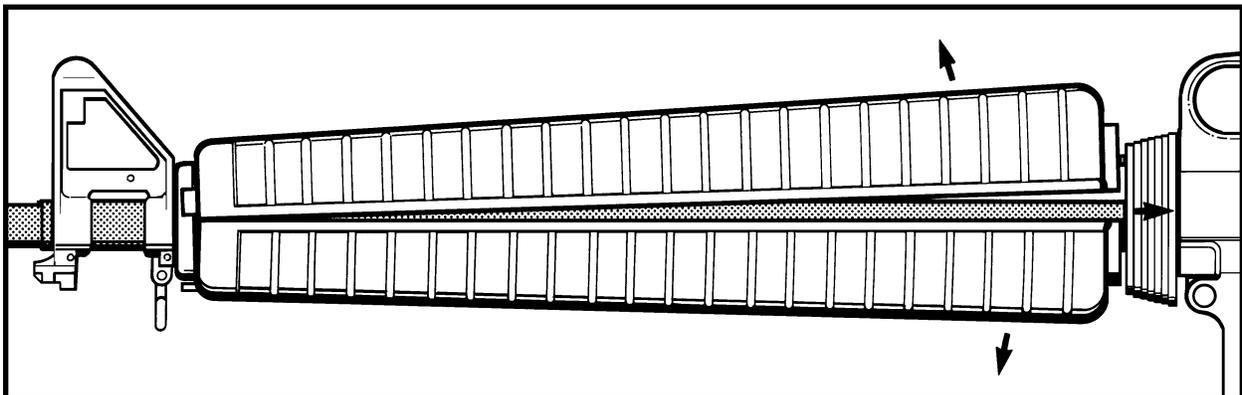


Figure 3-2-9 Removing the Handguards

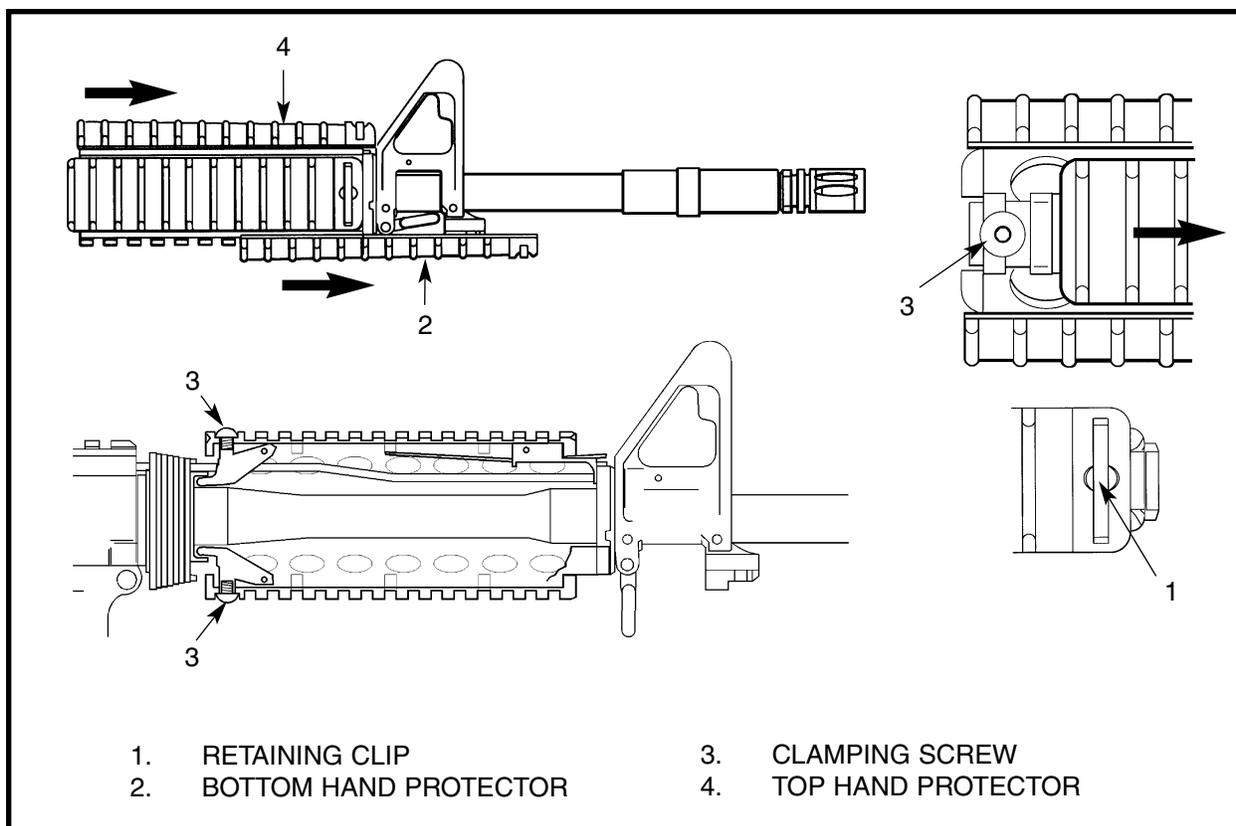


Figure 3-2-10 RAS

- (4) Pull the handguard slip ring to the rear; rotate the rear of the lower RAS down; and remove it; and
  - (5) Pull the slip ring to the rear; rotate the rear of the upper RAS up; and remove it.
- c. Remove the LSW handguards as follows:
- (1) Support the upper receiver and barrel group vertically on a work bench with the compensator pointing upward;
  - (2) Pull downward on the handguard slip ring; and
  - (3) Rotate the rear end of the handguards outward and down to disengage each one in turn from the handguard cap.
- d. On all weapons except the LSW, remove the gas tube as follows:
- (1) With the front sight adequately supported, carefully drive out the gas tube pin using a suitable punch. See Figure 3-2-11; and

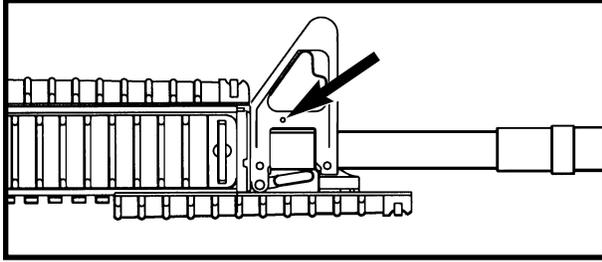


Figure 3-2-11 Removing the Gas Tube Pin

**NOTE**

Removal of the gas tube may be difficult due to the buildup of carbon between the tube and front sight or upper receiver. To remove, grip the gas tube lightly with a pair of vise grips, being careful not to damage or restrict the tube, and tap it lightly to the rear with a small hammer.

- (2) Slide the gas tube rearward into the receiver (1); rotate it slightly and raise the front end (2); and pull forward to remove it (3). See Figure 3-2-12.

e. Remove the LSW gas tube as follows:

- (1) Drive out the gas tube spring pin (1);
- (2) Support the front sight and drive out the two tapered pins (2) that position the front sight on the barrel; and
- (3) Slide the front sight (3) forward until it is clear of the gas tube and rotate it until the gas tube can be removed to the front. See Figure 3-2-13

**NOTE**

If the front sight is removed ensure that the same front sight is re-installed on the barrel as they are factory matched.

f. Unscrew the barrel nut assembly as follows:

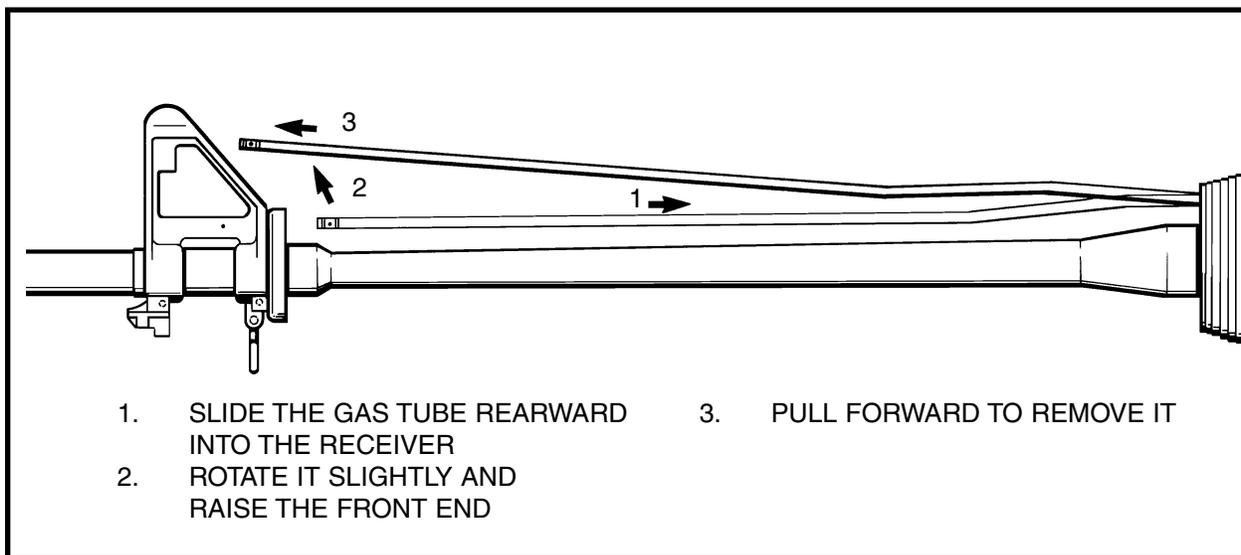


Figure 3-2-12 Removing the Gas Tube

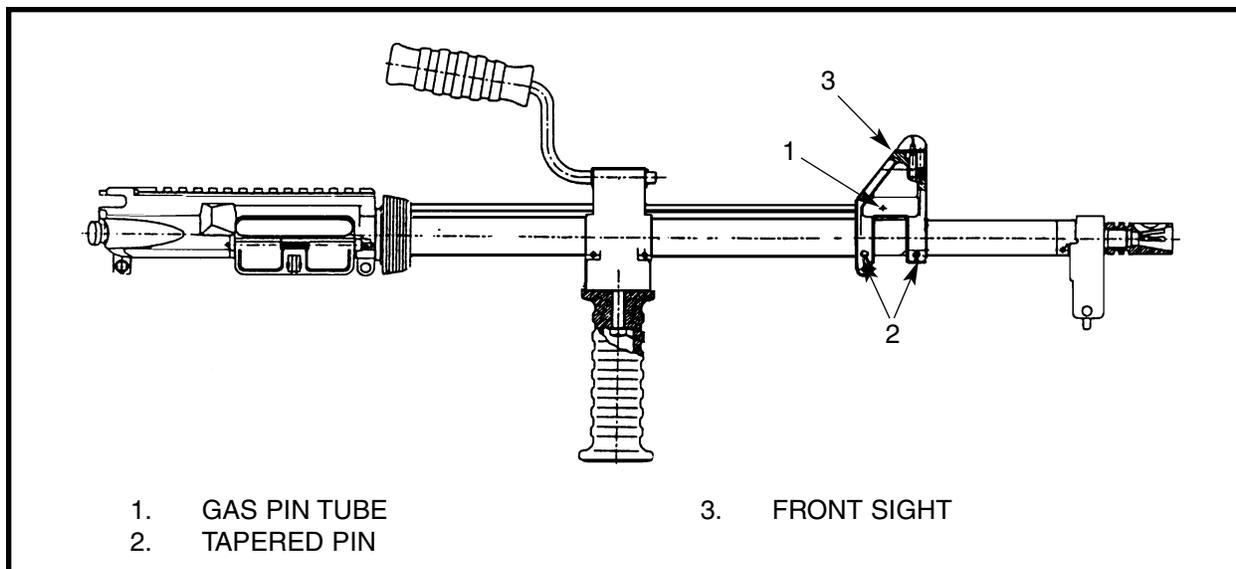


Figure 3-2-13 Removing the LSW Gas Tube

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• CAUTION •  
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**DO NOT** clamp the front sight or upper receiver assembly at any point during removal or disassembly of the barrel assembly, as damage or misalignment of these components may result.

- (1) Clamp the barrel in a vise equipped with vise jaw caps to ensure an adequate grip without damage to the barrel; and

•••••  
• CAUTION •  
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**DO NOT** use a torque wrench for loosening the barrel nut. Using a torque wrench to loosen the barrel nut may cause damage to the torque wrench.

- (2) Using the combination wrench and a 1/2 inch drive ratchet, unscrew the barrel nut assembly in a counter-clockwise direction, as viewed from the front. See Figure 3-2-14.

••~••  
• CAUTION •  
••~••

Ensure that all three drive pins of the combination wrench are evenly engaged in the notches of the barrel nut. The combination wrench must be held fully rearward against the pressure of the handguard slip ring spring. Failure to keep pressure against the combination wrench may allow the drive pins to slip out of the notches causing damage to the barrel nut.

- g. Separate the barrel assembly and upper receiver by pulling rearward on the upper receiver. See Figure 3-2-15.

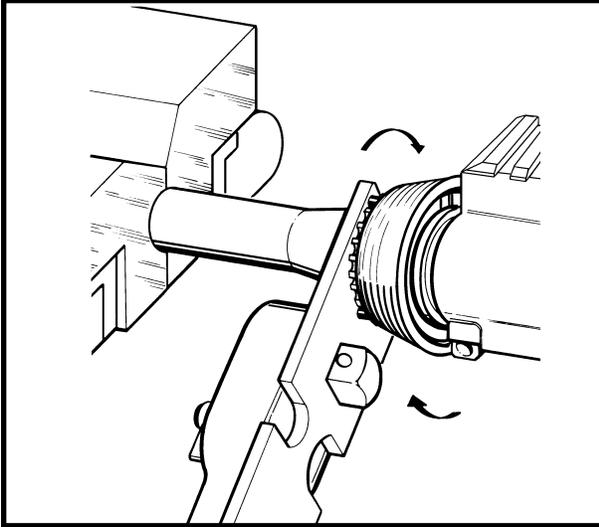


Figure 3-2-14 Unscrewing the Barrel Nut

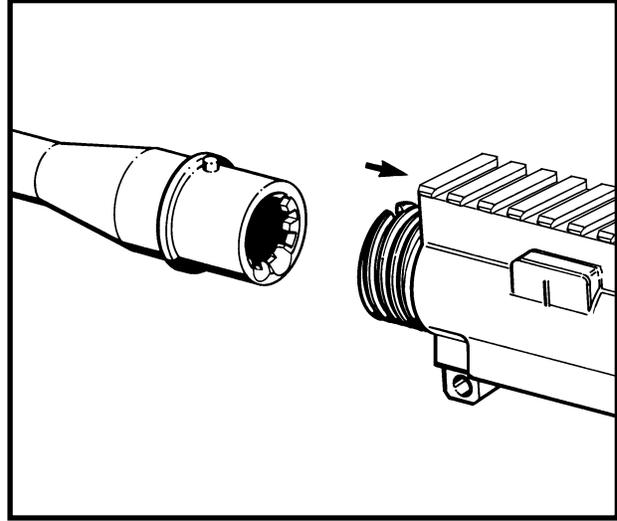


Figure 3-2-15 Separating the Barrel and Upper Receiver Assemblies

### DISASSEMBLING THE BARREL ASSEMBLY

8. With the barrel assembly and upper receiver assembly separated, the barrel assembly may be further disassembled by the following procedures:

a. Remove the compensator as follows:

- (1) Clamp the barrel in a vise, equipped with vise jaw caps to ensure an adequate grip without damage to the barrel;
- (2) Using the combination wrench and a 1/2 inch drive ratchet, unscrew the compensator in a counter-clockwise direction, as viewed from the front. See Figure 3-2-16; and
- (3) Remove the compensator and compensator spacer. See Figure 3-2-17.

b. Remove the front sight post as follows:

- (1) Position the front sight post adjusting tool over the post and press down to depress the detent;
- (2) Unscrew the front sight post in a counter-clockwise direction, as viewed from above; and
- (3) Remove the post, detent and spring. See Figure 3-2-18.

c. To disassemble the barrel nut components, see Figure 3-2-19 and proceed as follows:

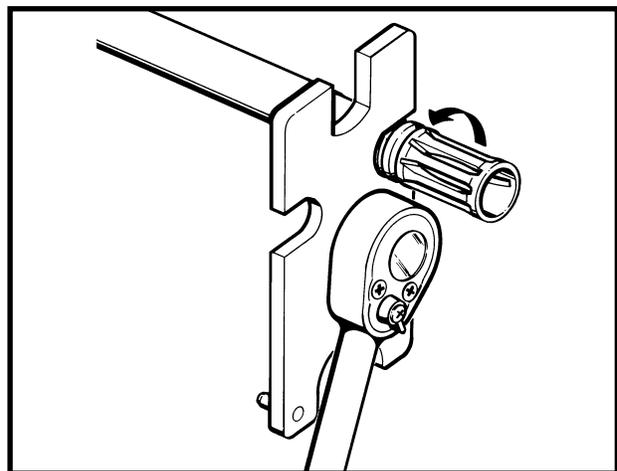


Figure 3-2-16 Unscrewing the Compensator

- (1) Remove the handguard snap ring (3) with a suitable pair of snap ring pliers; and
- (2) Remove the handguard slip ring spring (2) and the handguard slip ring (1) from the barrel nut.

**NOTE**

**DO NOT** attempt to disassemble the barrel nut from the barrel assembly.

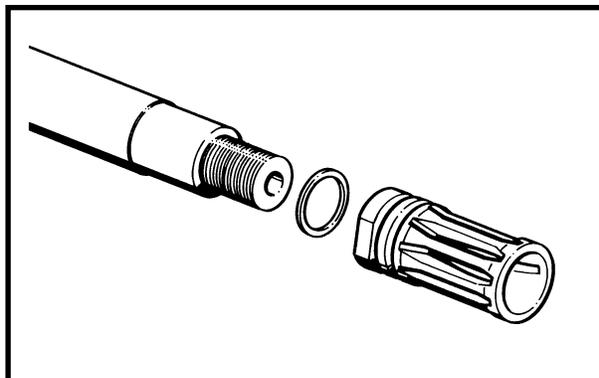


Figure 3-2-17 Removing the Compensator and Compensator Spacer

**INSPECTING THE BARREL ASSEMBLY**

9. Inspect the barrel assembly components as follows:

- a. **Handguards.** Ensure that the handguards are not cracked or deformed. Check the fit of the handguard liners, ensuring that they are correctly formed with no broken retaining tabs;
- b. **RAS.** Inspect the RAS for security. Check screws and springs for security. Ensure that the hand protectors are not cracked or deformed, and that they fit securely.

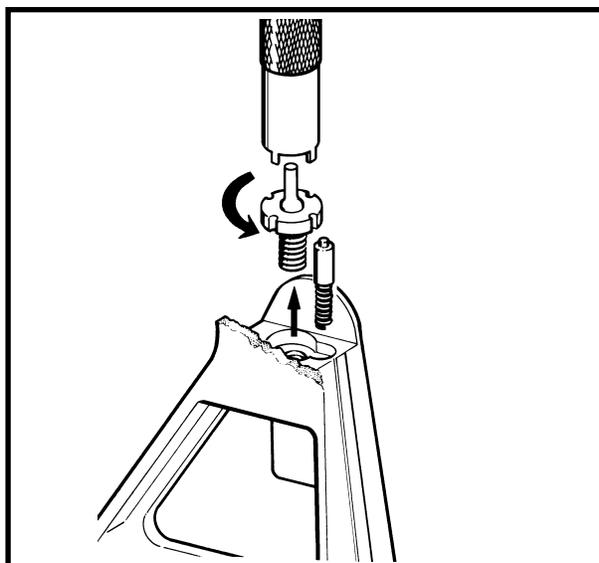


Figure 3-2-18 Removing the Front Sight Components

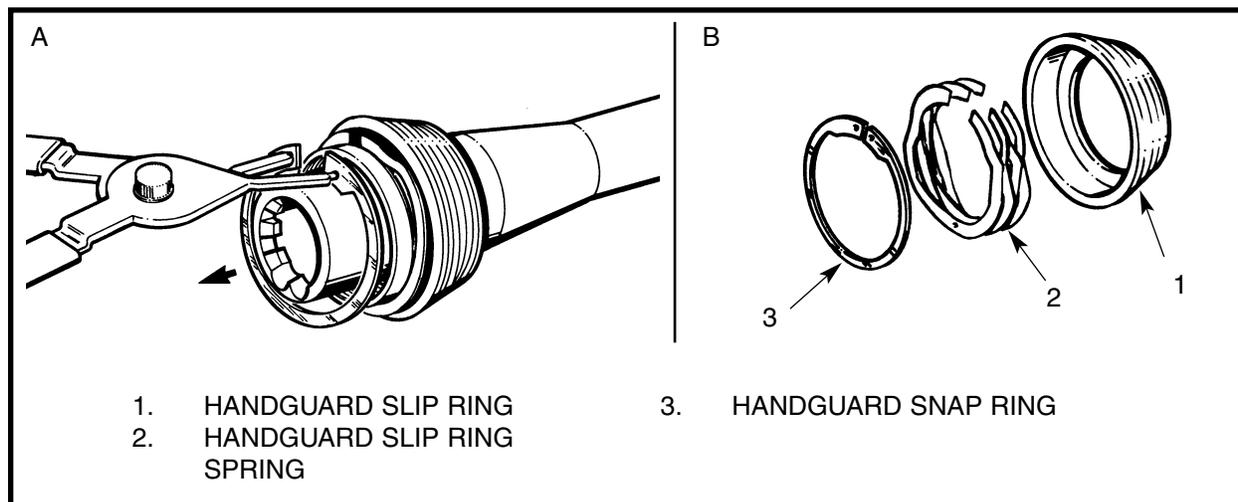


Figure 3-2-19 Disassembly of the Barrel Nut Assembly

- c. **Gas Tube.** Ensure that the gas tube is free of deformation, cracks and carbon deposits;
- d. **Compensator.** The compensator shall be free of burrs, cracks or dents. Check the compensator spacer to ensure that the laminations are uniform with no protruding sharp edges which could present an injury hazard;
- e. **Front Sight.** Ensure that the front sight post is not burred or distorted. Check the spring to ensure that it is not kinked or corroded. Check the detent for correct form and function;
- f. **Barrel Nut Assembly Components.** Ensure that the slip ring is not cracked, burred or distorted and that it effectively secures the handguards. Check the slip ring spring to ensure that it is not kinked or broken and that it holds the slip ring forward under uniform pressure. Check the condition of the snap ring; ensure that it retains the slip ring spring effectively. Ensure that the barrel nut is not cracked, burred or distorted, and that the threads are not damaged; and
- g. **Barrel Assembly.** Inspect the barrel assembly for the following:
  - (1) Security and correct form of the front sight;
  - (2) Security and correct form of the barrel indexing pin;
  - (3) Cracks, rust, bulges or pitting in the bore;
  - (4) Amount of gilding (coppering) of the rifling, as denoted by the darkness of the lands; and
  - (5) Condition of the chamber, determined by using the reflector tool. See Figure 3-2-20.

#### NOTE

If doubt exists as to the serviceability or accuracy of the barrel, test it as detailed in Part 4 - Tests and Adjustments, of this instruction.

#### REPAIRING THE BARREL ASSEMBLY

- 9. Repair the barrel assembly components by the following procedures:
  - a. **Handguard Assemblies.** Replace defective handguard assemblies, and RAS parts.
  - b. **Gas Tube Assembly.** Remove carbon from the exterior of the gas tube as required to facilitate reassembly. Replace gas tube assemblies that are restricted with carbon, have worn furels, or are otherwise defective.

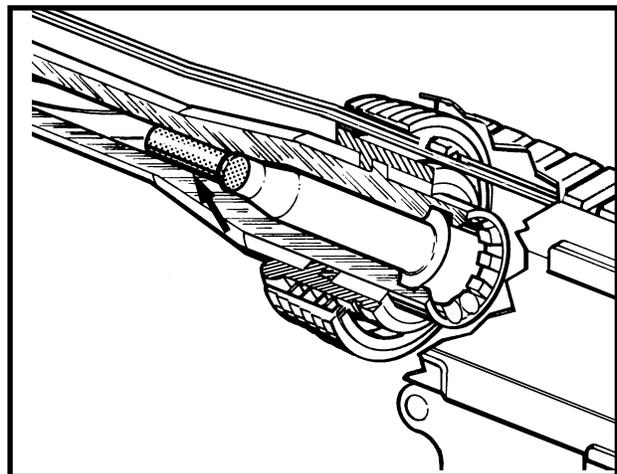


Figure 3-2-20 Inspecting the Chamber

- c. **Compensator.** Remove nicks or burrs by stoning and touch up affected areas with gun blue. Replace defective compensators.
  - d. **Front Sight.** Replace defective components as required.
  - e. **Barrel Nut Assembly Components.** Replace defective handguard slip rings, slip ring springs or handguard snap rings as required. Backload the weapon for replacement of a defective barrel nut.
  - f. **Front Sling Swivel.** Replace defective sling swivels as follows:
    - (1) Using a file or drill, remove sufficient material from the rivet head to allow removal of the rivet;
    - (2) Support the front sight and drive out the sling swivel rivet with a suitable punch;
    - (3) Replace the non-serviceable front sling swivel and replace the new rivet from right to left;
    - (4) Support the head of the rivet and swage the other end with a rivet swaging tool; and
    - (5) Ensure that the swivel moves freely after the riveting procedure is complete.
  - g. **Barrel Assembly.** Repair the barrel assembly as follows:
    - (1) Remove burrs or nicks by stoning. **DO NOT** alter original critical dimensions;
    - (2) Touch-up the finish of affected areas as detailed in Part 3, Section 1 of this instruction; and
    - (3) Repair bent front sight protectors by the following procedure:
      - (i) Carefully, clamp the barrel at the front sight in a vise equipped with protected vice jaws;
      - (ii) Remove the front sight post, detent and spring;
 

•••••

• CAUTION •

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- Avoid prolonged or excessive application of heat to the front sight as it is a heat treated forging.
- (iii) Apply heat lightly to the area immediately surrounding the deformation;
  - (iv) Reform the bent front sight protector with slip joint pliers. See Figure 3-2-21;
  - (v) Roughen the heated area with crocus cloth and clean with a suitable evaporative solvent; and

- (vi) Touch-up the damaged surface finish as detailed in Part 3, Section 1 of this instruction.
- (4) Remove carbon from the gas tube hole of the front sight using a 5.56 mm bore brush;
- (5) Replace loose or missing barrel indexing pins; and
- (6) Replace barrel assemblies that have defective barrels.

### REASSEMBLING THE BARREL ASSEMBLY

11. The barrel nut assembly components, front sight assembly and compensator will be assembled to the barrel assembly prior to reassembly of the barrel and upper receiver assemblies. To assemble these components proceed in reverse order to the disassembly procedure with the following notes:

- a. Assemble the barrel nut assembly as follows:
  - (1) Slide the barrel nut as far rearward on the barrel as possible;
  - (2) Slide the handguard slip ring forward over the nut;
  - (3) Insert the slip ring spring into the recess at the rear of the slip ring; and
  - (4) Using a pair of retaining ring pliers, compress the slip ring spring and release the snap ring into the groove at the rear of the barrel nut.
- b. Replace the front sight detent spring, front sight detent and front sight post.
- c. When using a constant torque washer, replace the compensator as follows:
  - (1) Install the constant torque washer on the barrel with concave face facing the compensator;
  - (2) Screw the compensator on until it contacts the face of constant torque washer; and
  - (3) Use the combination wrench and a 1/2 inch drive ratchet to tighten the compensator 90° minimum to 460° maximum, from first contact; or
- d. When using a laminated compensator spacer, replace the compensator as follows:

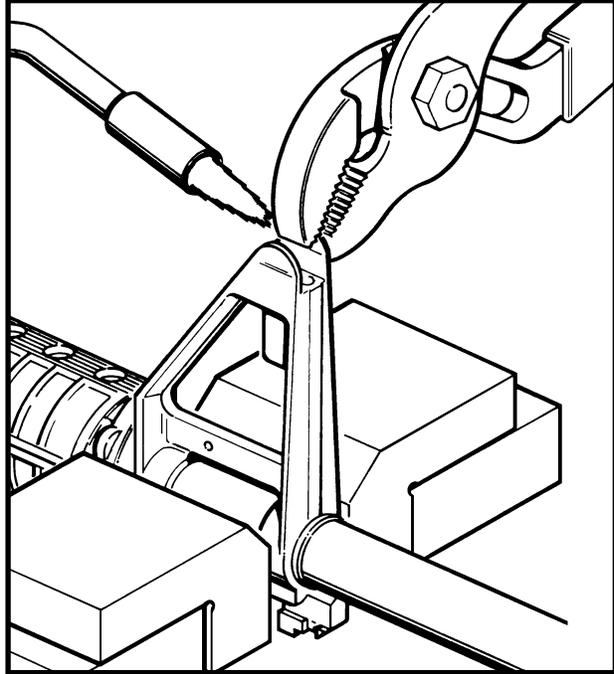


Figure 3-2-21 Reforming the Front Sight Protector

- (1) Install the compensator spacer on the barrel with the laminations facing the compensator;
- (2) Screw the compensator on hand tight; and
- (3) Use the combination wrench and a 1/2 inch drive torque wrench to tighten the compensator to a torque of between 62.4 and 69.1 N·m (46 and 51 ft-lb).

#### NOTE

If upon installation and torquing the middle slot of the compensator is not uppermost and aligned with the front sight, remove the compensator and reduce the thickness of the compensator spacer by removing sufficient laminations to facilitate correct alignment after torquing is carried out.

12. Reassemble the barrel assembly to the upper receiver assembly as follows:

- a. Clamp the barrel in a vise equipped with vise jaw caps to ensure an adequate grip without damage to the barrel, ensuring that the barrel indexing pin faces upward. See Figure 3-2-22;

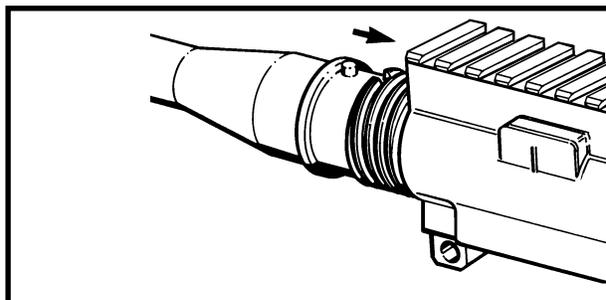


Figure 3-2-22 Installing the Barrel Assembly

- b. Install the upper receiver over the barrel extension, checking to see that there is very little or no rotational movement between the barrel and upper receiver assemblies;
- c. Wipe the threads of the upper receiver clean and ensure that there are no burrs;
- d. Apply molybdenum disulfide grease MIL-G-21164 to the threads of both the barrel nut and upper receiver;
- e. Screw the barrel nut onto the threads of the upper receiver hand tight;

13. **Breeching New Barrel.** Using the combination wrench and a 1/2 inch drive torque wrench, torque the barrel nut assembly to between 41 and 108.5 N·m (30 and 80 ft-lb) by the following procedure:

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● CAUTION ●  
● ● ● ● ● ● ● ●

**DO NOT** use the torque wrench for loosening the barrel nut.

- a. Ensuring that all three drive pins of the combination wrench are evenly engaged in the barrel nut, tighten the barrel nut to the recommended torque.
- b. Using the combination wrench and a 1/2 inch drive torque ratchet, loosen the nut; and

- c. Repeat the above, torquing the nut a total of three times.

#### NOTE

The multiple torquing procedure provides for a better thread fit and ensures that the barrel nut will not work loose.

14. **Rebreeching Existing Barrel.** Using the combination wrench and a 1/2 inch drive torque wrench, torque the barrel nut assembly to between 41 and 108.5 N·m (30 and 80 ft-lb), ensuring that all three drive pins of the combination wrench are evenly engaged in the barrel nut.

15. Refer to Figure 3-2-23 and check the alignment of the barrel nut with the upper receiver as follows:

- a. Insert the alignment tool in the bolt carrier key;
- b. Insert the bolt carrier into the upper receiver from the rear;

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• CAUTION •  
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If the barrel alignment tool does not pass freely through a notch in the barrel nut, tighten barrel nut until the barrel alignment tool passes freely. **DO NOT** torque over 108.5 N·m (80 ft-lb) as damage to the upper receiver threads will result.

- c. Tighten the barrel nut as required to allow passage of the alignment tool.

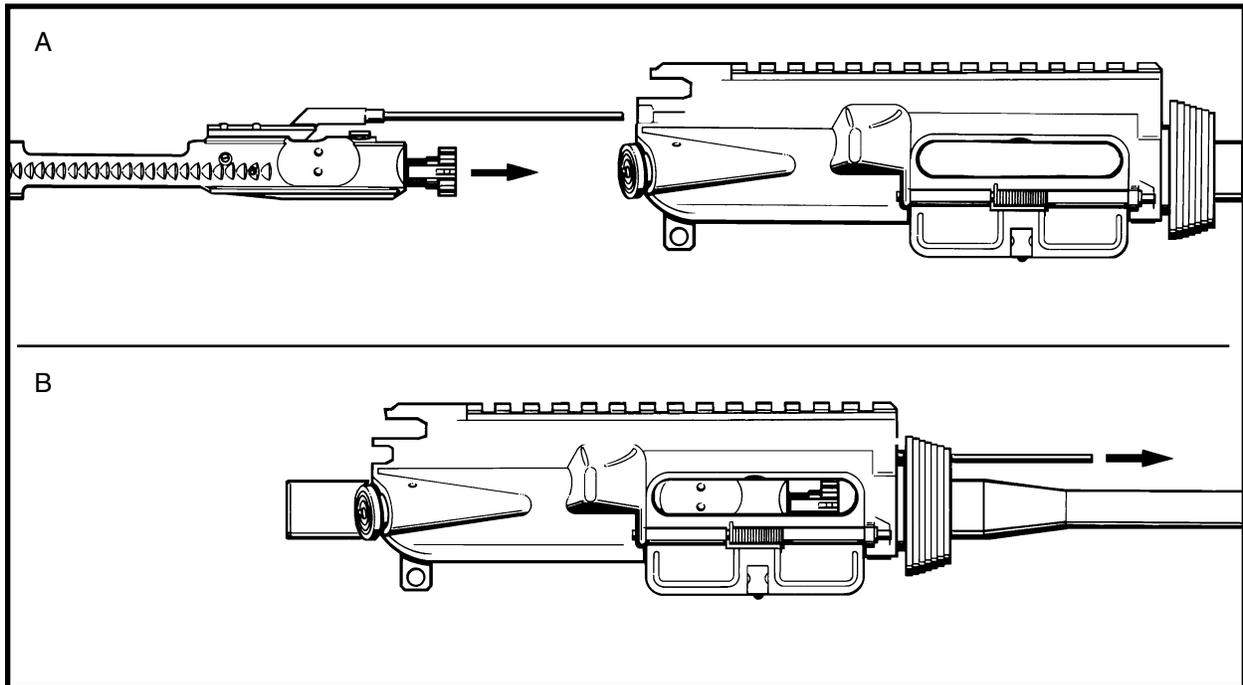


Figure 3-2-23 Using the Barrel Nut Alignment Tool

**NOTE**

The barrel nut is correctly installed and aligned when the alignment tool passes freely through the assembly and is centred over the barrel.

16. Finish reassembly of the upper receiver and barrel group by installing the gas tube and handguard assemblies by the following procedures:

a. Remove the assembled upper receiver and barrel from the vise and install the gas tube assembly as follows:

- (1) Insert the rear of the gas tube assembly through the barrel nut assembly into the upper receiver;
- (2) Rotate the gas tube assembly to align it with the hole in the front sight;

**NOTE**

The gas port in the gas tube assembly will be on the bottom when the gas tube is correctly aligned.

- (3) Insert the front end of the gas tube assembly into the front sight;
- (4) Align the retaining pin holes in the tube and front sight; and
- (5) Secure the gas tube assembly with a new gas tube pin.

**NOTE**

Replace the gas tube pin whenever the gas tube assembly is replaced as the pin may have been heat affected in use.

b. Assemble the handguards to the upper receiver and barrel group as follows:

- (1) Support the upper receiver and barrel group vertically on a work bench with the compensator pointing upward;
- (2) Pull downward on the handguard slip ring;
- (3) In turn, push the forward ends of each of the handguard assemblies up into the handguard cap and swing the rear end of the handguard assembly into place; and
- (4) Release the handguard slip ring, ensuring that it engages the handguard assemblies effectively.

c. Assemble the RAS to the upper receiver and barrel group as follows:

- (1) Depress the retaining clip and slide the top RAS hand protector forward;

- (2) Install the upper RAS segment with the front locking clamp under the handguard cap;
- (3) Remove the rear clamping screw and position the clamp over the gas tube and into the flange of the barrel nut;
- (4) Pull downward on the handguard slip ring and position the flange of the upper RAS segment under the lip of the slip ring.
- (5) When the RAS is correctly positioned tighten the clamping screw to secure the rear of the RAS;
- (6) Slide the top hand protector back in place on the RAS;
- (7) Repeat for the lower RAS segment; and
- (8) Slide the bottom hand protector back onto the RAS.

#### NOTE

All current configurations of weapons in the C7 Family utilize an attached sight either iron or optical. Repair procedures for these sights are located near the end of Section 3. Repair procedures for the original integral C7 iron sight will be found in those procedures.

#### DISASSEMBLING THE UPPER RECEIVER ASSEMBLY

17. With the barrel assembly and upper receiver assembly separated the upper receiver assembly may be further disassembled for inspection and repair by sub-assemblies.

#### FORWARD ASSIST ASSEMBLY

18. **Removal.** Remove the forward assist assembly from the upper receiver by the following procedure:

- a. Drive out the forward assist assembly pin using a suitable punch. See Figure 3-2-24;
- b. Maintaining forward pressure on the forward assist plunger cap, remove the punch; and
- c. Carefully release the pressure on the forward assist plunger cap then remove the forward assist assembly and forward assist plunger spring from the upper receiver.

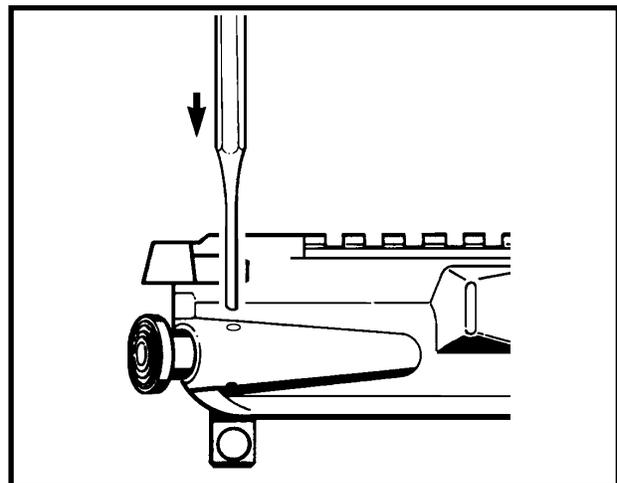


Figure 3-2-24 Removing the Forward Assist Assembly

19. **Disassembly.** To disassemble the forward assist assembly see Figure 3-2-25 and proceed as follows:

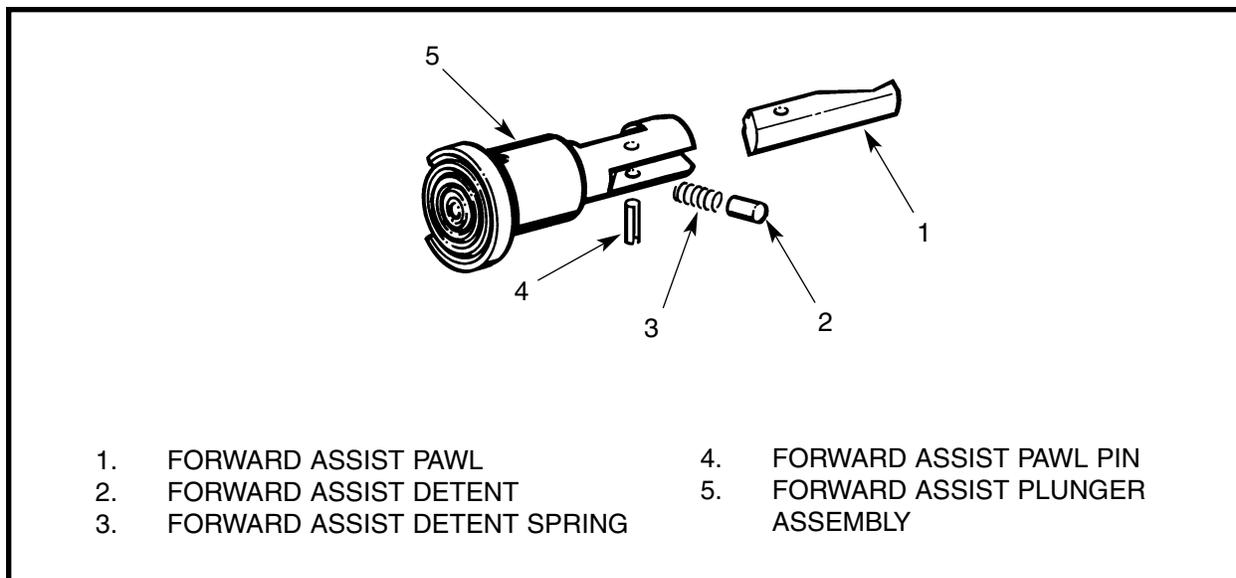


Figure 3-2-25 Disassembling the Forward Assist Assembly

- a. Drive out the forward assist pawl pin (4) with a suitable punch;
  - b. Take control of the forward assist pawl (1) and remove the punch from the forward assist plunger assembly (5); and
  - c. Remove the forward assist detent (2) and forward assist detent spring (3) from the plunger assembly.
20. **Inspection and Repair.** To inspect and repair the forward assist assembly proceed as follows:
- a. Inspect the forward assist pawl, forward assist pawl detent and plunger cap for wear, burrs, chips and breaks;
  - b. Minor burrs may be removed with a smooth file or fine stone, taking care not to alter the original dimensions or contours;
  - c. Check the forward assist spring for kinks, broken coils and wear;
  - d. Replace defective forward assist springs as required; and
  - e. Replace defective parts as required.
21. **Reassembly and Replacement.** Reassembly and replacement of the forward assist assembly are in the reverse order of the removal and disassembly procedure. Ensure that both the forward assist pawl axis pin and the forward assist assembly pin, are installed flush or slightly below the surface upon replacement.

## EJECTION PORT COVER

22. **Disassembly.** To disassemble the ejection port cover from the upper receiver, see Figure 3-2-26 and proceed as follows:

- a. Using the tips of two small punches or flat tip screwdrivers remove the ejection port cover hinge pin snap ring (1) from the ejection port cover hinge pin (2);
- b. Take control of the ejection port cover (4) and ejection port cover spring (3) to prevent their loss;
- c. Remove the ejection port cover hinge pin to the rear; and
- d. Remove the ejection port cover and the ejection port cover spring.

23. **Inspection and Repair.** Inspect and repair the ejection port cover assembly as follows:

- a. Inspect all components of the ejection port cover assembly for serviceability, security, and function; and
- b. Replace all non-functional, damaged or defective components.

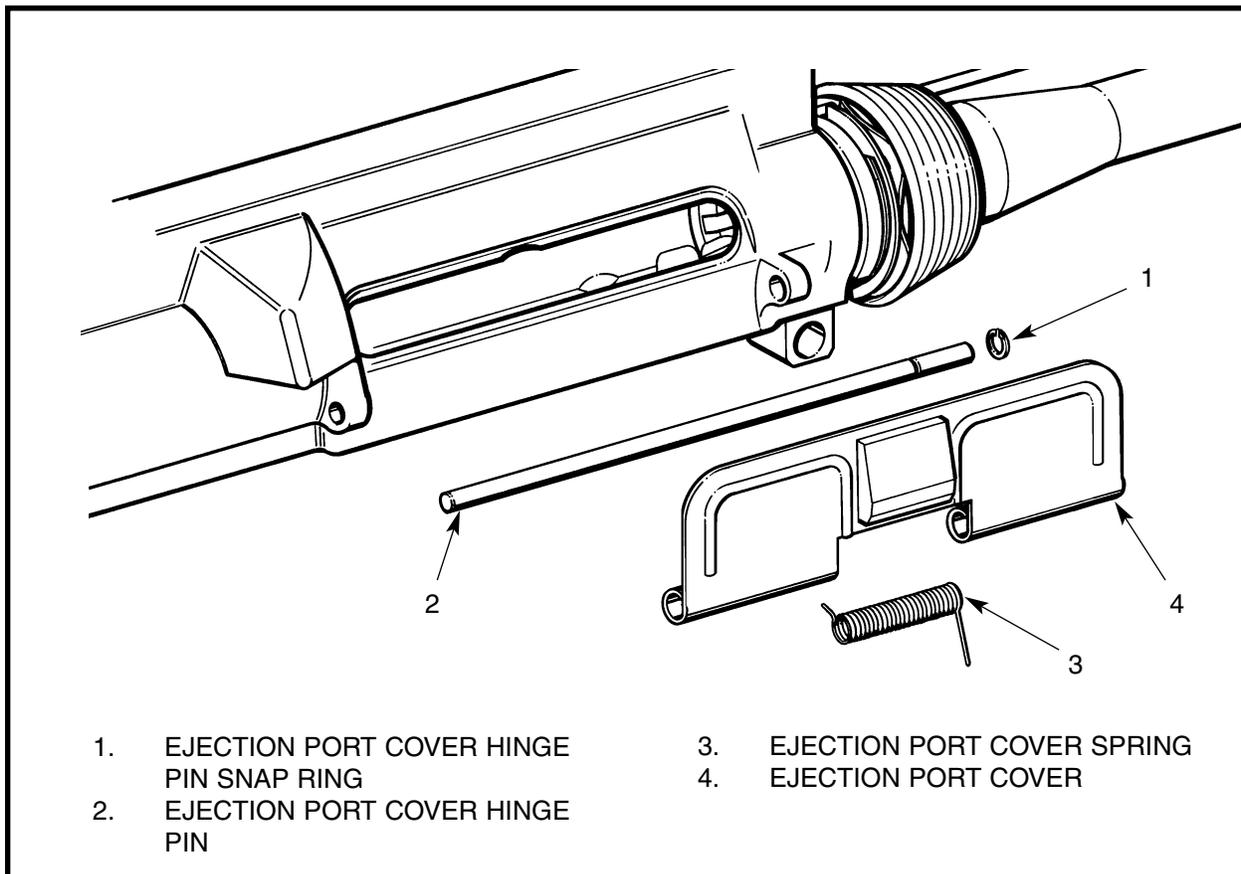


Figure 3-2-26 Removing the Ejection Port Cover

24. **Reassembly.** Install the ejection port cover and apply tension to the cover spring by the following procedure:
- a. Position the cover and spring on the upper receiver, with the short spring leg against the upper receiver, at the rear of the spring housing and pointing upward;
  - b. Insert the hinge pin through the rear axis lug on the receiver, through the rear hinge section of the ejection port cover, and midway into the spring;
  - c. Grasp the long leg of the spring and pre-tension the spring by rotating the leg clockwise, when viewed from the front;
  - d. Hook the leg behind the ejection port cover;
  - e. Push the hinge pin fully forward; and
  - f. Install the snap ring on the hinge pin to secure it.

## COCKING HANDLE

25. To carry out maintenance on the cocking handle, proceed as follows:
- a. **Removal.** Depress the latch and slowly draw the cocking handle rearward until the forward lugs drop down out of the guideways in the receiver.
  - b. **Disassembly.** The cocking handle is disassembled by driving out the latch axis pin to release the latch and spring.
  - c. **Inspection.** Check the cocking handle components for burrs, cracks or distortion.
  - d. **Repair.** Replace defective latches or springs as required. Replace handles which are distorted sufficiently to bind in the receiver or against the carrier key.
  - e. **Reassembly and Replacement.** Reassemble and replace the cocking handle in reverse order, ensuring that the latch axis pin does not protrude from the handle upon assembly.

## UPPER RECEIVER

26. **Inspection.** Inspect the upper receiver for dents, cracks, gouges, corrosion or distortion. Small dents which do not effect the operation of the weapon shall not be cause for rejection. However, upper receivers containing cracks or holes shall be condemned. When inspecting the C7A1 upper receiver ensure that the optical sight grooves are correctly formed.
27. **Repair.** Backload weapons with non-serviceable upper receivers. Repair minor damage to the upper receiver by the following procedures:
- a. Remove nicks and gouges with a smooth file or fine stone, taking care not to alter any original critical dimensions;

- b. Touch up affected areas as detailed in Part 3, Section 1 of this instruction;
- c. Repair distorted carrying handles as follows:
  - (1) Remove rear sight components if damage may result during repairs to the carrying handle;
  - (2) Clamp the receiver, by the carrying handle, in a vise fitted with protected jaws;
  - (3) Using two 6 inch adjustable wrenches, straighten the bent carrying handle. See Figure 3-2-27;

#### NOTE

When straightening the handle, a slight over bending will be required to compensate for a partial return of the metal upon releasing the bending pressure. Gradually bend the handle beyond the straight position before releasing.

- (4) Using a smooth file or fine stone to remove nicks and burrs, return the handle to approximate original contours and dimensions; and
- (5) Touch up affected areas with black solid film lubricant.

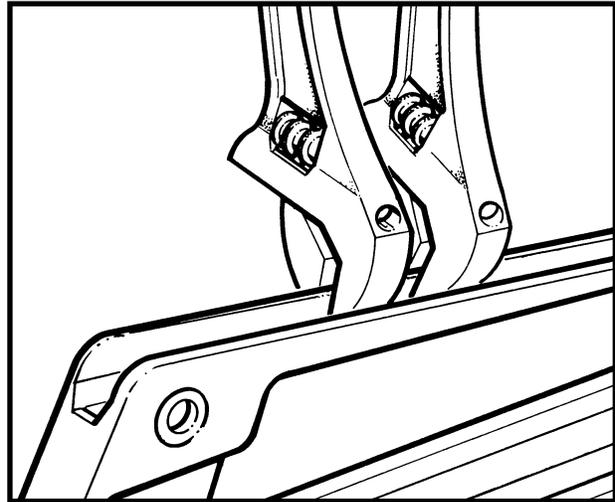


Figure 3-2-27 Straightening the Carrying Handle

#### REASSEMBLY

28. Reassemble the component sub-assemblies in reverse order to the disassembly procedures. Reassemble the barrel assembly to the upper receiver assembly if previously disassembled.

#### BOLT CARRIER GROUP

##### DISASSEMBLY

29. With the bolt carrier group removed from the weapon, proceed with disassembly by the following procedure:

- a. Using a suitable punch, push the firing pin retaining pin out of the bolt carrier. See Figure 3-2-28;
- b. Remove the firing pin from the rear of the bolt carrier. See Figure 3-2-29;

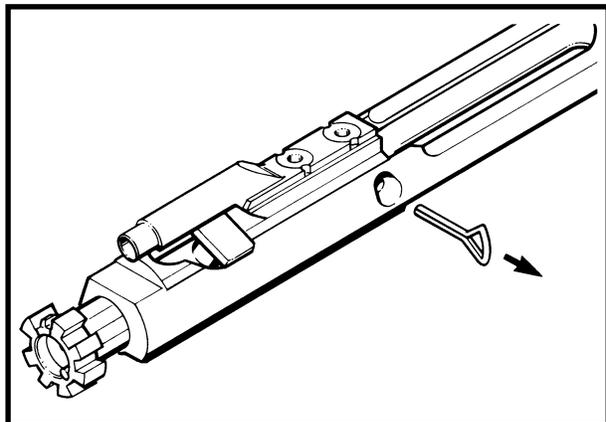


Figure 3-2-28 Removing the Firing Pin Retaining Pin

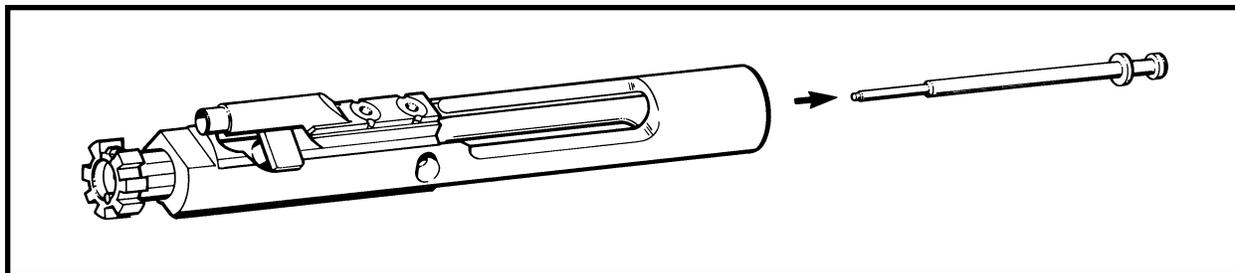


Figure 3-2-29 Removing the Firing Pin

- c. Push the bolt rearward;
- d. Rotate the cam pin 1/4 turn; and
- e. Withdraw the cam pin from the bolt carrier group and pull the bolt out of the bolt carrier. See Figure 3-2-30.

30. **Disassembling the Bolt.** The bolt may be disassembled as follows:

- a. Using a suitable punch, push out the extractor pin and remove the extractor. See Figure 3-2-31;

•••••  
• CAUTION •  
•••••

**DO NOT** attempt to remove the extractor spring and spring insert from the extractor. The spring is captive and could be damaged upon removal.

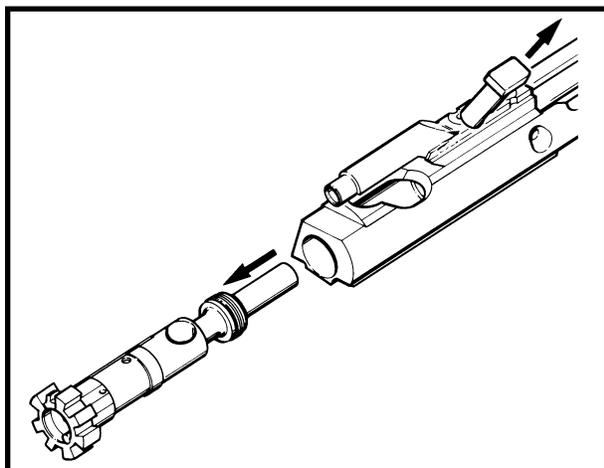


Figure 3-2-30 Removing the Bolt

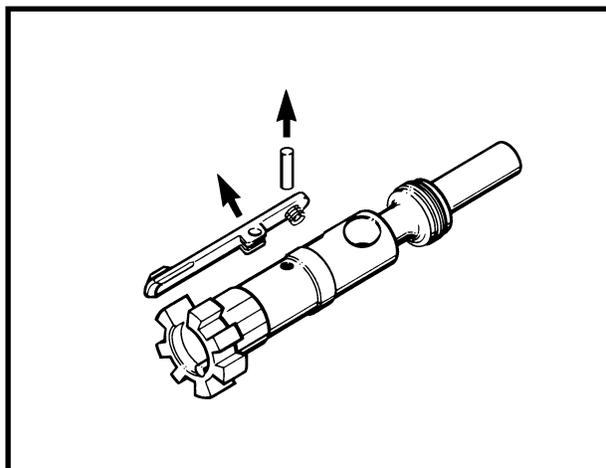


Figure 3-2-31 Removing the Extractor

- b. The ejector and ejector spring are not removed except to replace defective or damaged components. See Figure 3-2-32.
- c. The bolt rings are not removed except for replacement. Replace all three rings if damage or defects exist. In the event that replacement is required, the rings are removed with the tip of the jeweller's screwdriver. See Figure 3-2-33.

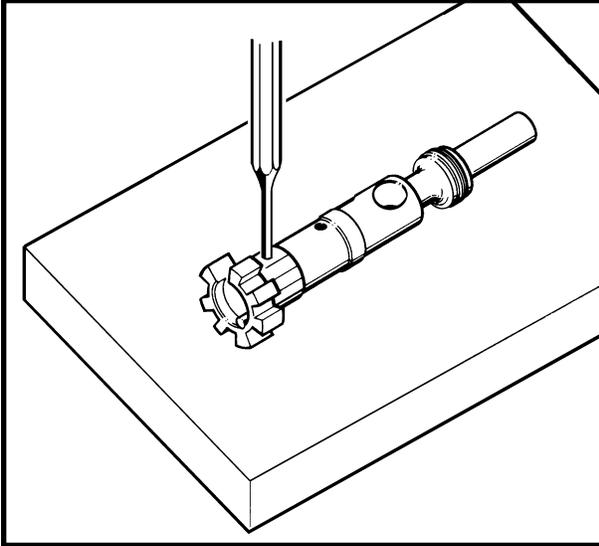


Figure 3-2-32 Removing the Ejector Spring and Ejector

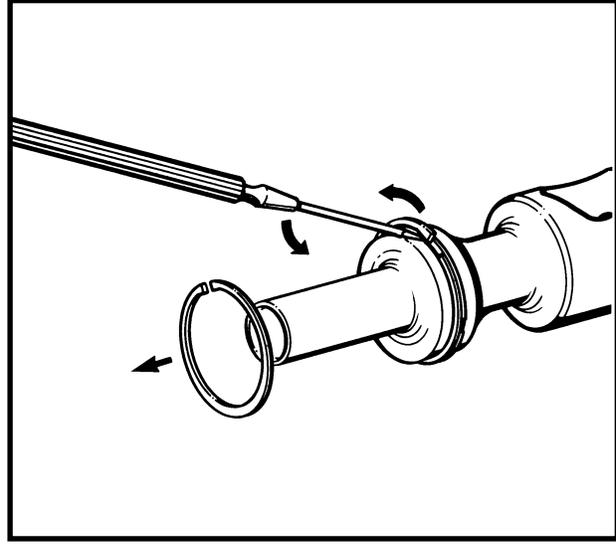


Figure 3-2-33 Removing the Bolt Rings

43. **Disassembling the Bolt Carrier.** The bolt carrier is not normally disassembled, except for the replacement of defective or damaged components, since the carrier key is sealed to the carrier and the securing screws are heavily staked in position. However, should disassembly be required, unscrew the two socket head screws with a hexagonal bit socket on a socket wrench and separate the carrier key from the carrier. See Figure 3-2-34.

### INSPECTION AND REPAIR

32. Inspect and repair the bolt carrier group as follows:

- a. Inspect all bolt carrier components for cracks, bends, burrs or other forms of damage. Springs are to be checked for bends, kinks or distortion;

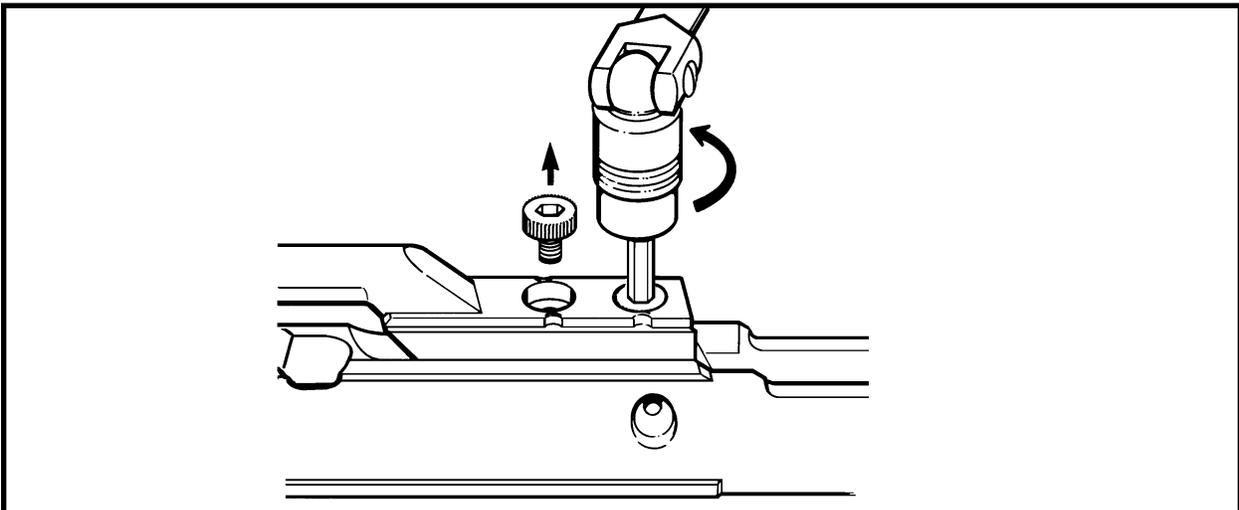


Figure 3-2-34 Removing the Bolt Carrier Key

- b. Visually inspect the bolt rings for bends, kinks or breaks. If one or more of the rings are damaged, replace all three rings;
- c. Visually inspect the bolt carrier key screws for looseness and security of the staking. If the bolt carrier key screws are found to be loose, retorque them to 5.54 to 5.88 N·m (35 to 40 in-lb) and restake; and

#### NOTE

**DO NOT** attempt to retorque if there is no loosening of the screws indicated at the staking marks.

- d. Replace non-serviceable components as required.

#### REASSEMBLY

- 33. Reassemble the bolt assembly as follows:

- a. Install the bolt rings onto the bolt taking care not to distort the new rings. To install the bolt rings, see Figure 3-2-35 and proceed as follows:

- (1) Carefully position one end of the bolt ring in the bolt groove and hold in place;
- (2) Gently guide the circumference of the bolt ring into the groove until it snaps into position;

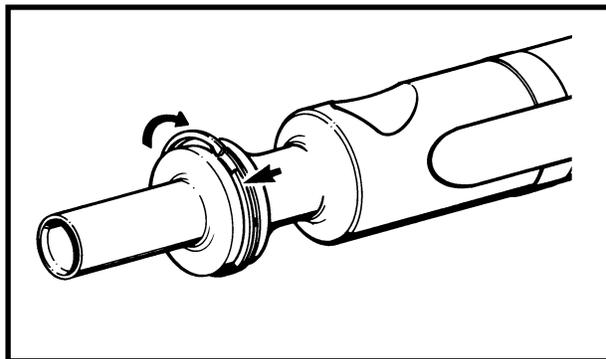


Figure 3-2-35 Installing Bolt Rings

- (3) Repeat for the other two bolt rings; and
- (4) Stagger the gaps in the bolt rings, creating a labyrinth sealing effect, to reduce gas loss during operation.

- b. Install the ejector as follows:

- (1) With the bolt adequately supported, start the ejector retaining pin into its hole, being careful to leave clearance for installing the ejector;
- (2) Position the ejector spring and ejector in the bolt;
- (3) Depress the ejector to compress the ejector spring; and
- (4) Secure it with the ejector pin, ensuring that the ends of the pin are flush or below the outer surface of the bolt body.

- c. To install the extractor, hold the extractor and spring in position, see Figure 3-2-36 and insert the extractor pin.

34. Reassemble the key to the bolt carrier as follows:

- a. Clean the mating surfaces of the bolt carrier key, and bolt carrier, thoroughly;
- b. Apply a light layer of sealing compound, to the under surface of the bolt carrier key around the gas port, to form a seal;

•••••  
• CAUTION •  
•••••

Apply the sealing compound sparingly and only to the area immediately surrounding the gas porthole. **DO NOT** allow it to enter the gas port or screw holes. Ensure that the gas port is not plugged.

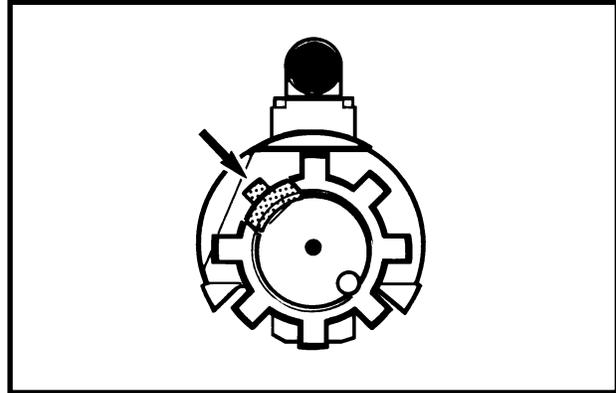


Figure 3-2-36 Assembling the Extractor

- c. Position the key on the bolt carrier;

**NOTE**

**DO NOT** re-use the old bolt carrier key securing screws.

- d. Tighten the two carrier key screws to a torque of 5.54 to 5.88 N·m (49 to 52 in-lb);
- e. Secure both screws by staking the top of the key against each screw head at three positions; and
- f. Check the key after installation to ensure that it is parallel to the rails machined on the top of the bolt carrier, and that the key slides freely onto the end of the gas tube at assembly.

**NOTE**

Allow the sealing compound to cure for at least 24 hours before exposing it to any solvents or firing the weapon.

35. Reassemble the bolt and bolt carrier into one group as follows:

**NOTE**

Before assembling the bolt to the bolt carrier ensure that the bolt ring gaps are staggered to reduce gas loss.

- a. Insert the bolt into the carrier with a rotating motion, to prevent damage to the bolt rings and push it fully to the rear;

- b. Rotate the bolt to position the extractor on the right and insert the cam pin into the bolt;

#### NOTE

The cam pin hole in the bolt is swaged so that the cam pin can only be inserted from one direction. This is to prevent the bolt from being assembled with the extractor in the wrong position.

- c. Rotate the cam pin 1/4 turn either way;
- d. Pull the bolt forward;
- e. Insert the firing pin into the bolt and push it fully forward; and
- f. Insert the firing pin retaining pin into the bolt carrier, from the left, to secure the firing pin.

### LOWER RECEIVER AND BUTT GROUP

#### REMOVING THE BUTT ASSEMBLY

36. Separate the upper receiver and barrel group from the weapon.
37. **SOLID BUTTSTOCK.** To remove the butt assembly, see Figure 3-2-37 and proceed as follows:
- a. Unscrew the butt plate screw (1);

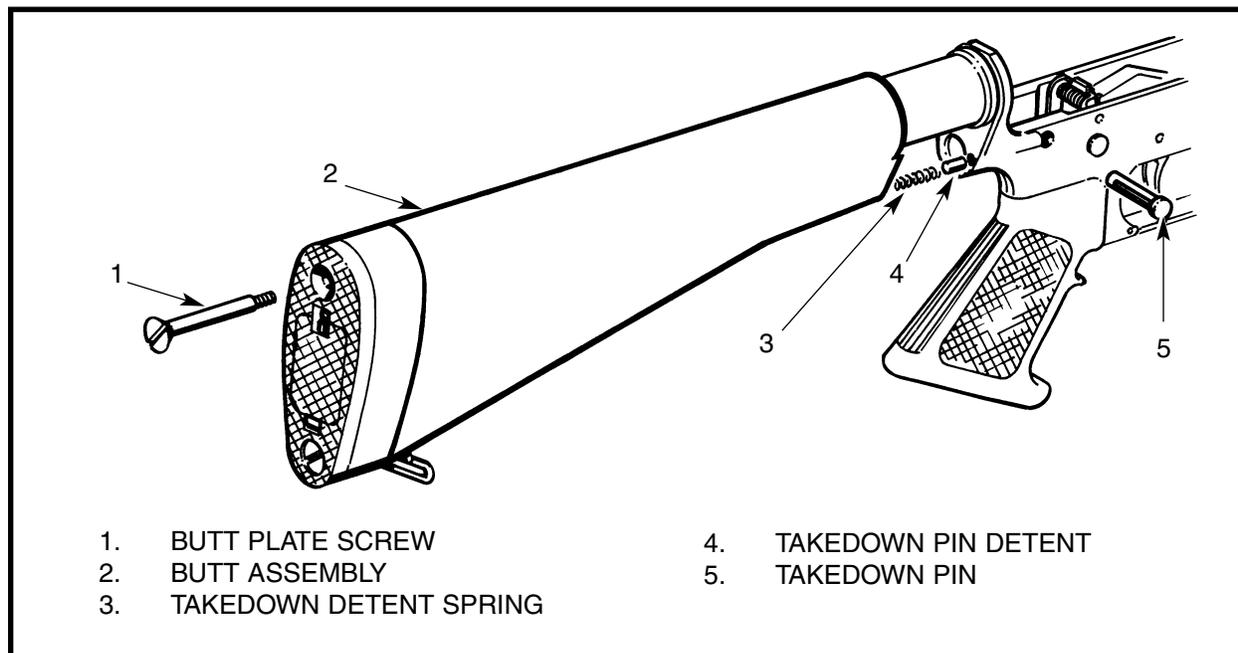


Figure 3-2-37 Removing the Butt Assembly

**NOTE**

The takedown pin detent and spring are retained in the lower receiver by the butt. Take care to ensure that neither of these parts is lost or damaged during disassembly/assembly procedures.

- b. Cover the lower half of the lower receiver assembly and butt assembly where the two meet, to prevent loss of the takedown pin detent (4) and takedown pin detent spring (3);
  - c. Remove the butt assembly (2) rearward from the lower receiver assembly; and
  - d. Remove the takedown pin (5) from the lower receiver.
38. **SLIDING BUTTSTOCK.** See figure 3-2-38 and remove the sliding butt as follows:
- a. Pull down fully on the front end of the release lever; and
  - b. Pull the butt rearward off of the receiver extension;

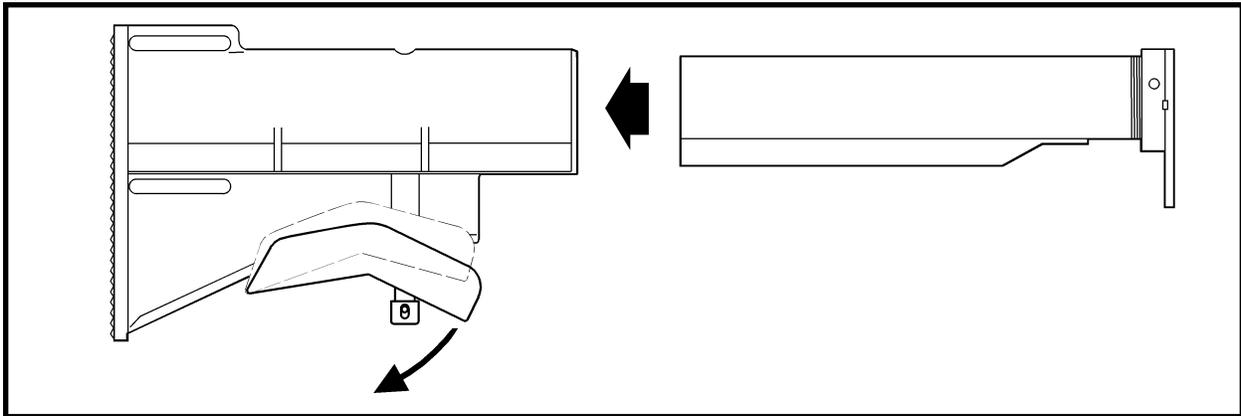


Figure 3-2-38 Removing the Sliding Buttock Assembly

**LOWER RECEIVER ASSEMBLY**

39. Proceed with the disassembly, inspection, repair and reassembly by subassembly.

**PISTOL GRIP**

40. **Removal.** To remove the pistol grip, see Figure 3-2-39 and proceed as follows:
- a. Using a suitable screwdriver, remove the pistol grip screw (1) and lockwasher (2);
  - b. Carefully withdraw the pistol grip (3) and take control of the selector detent spring (4);

**NOTE**

The selector detent spring is under moderate compression. Remove the pistol grip carefully to prevent loss of the spring.

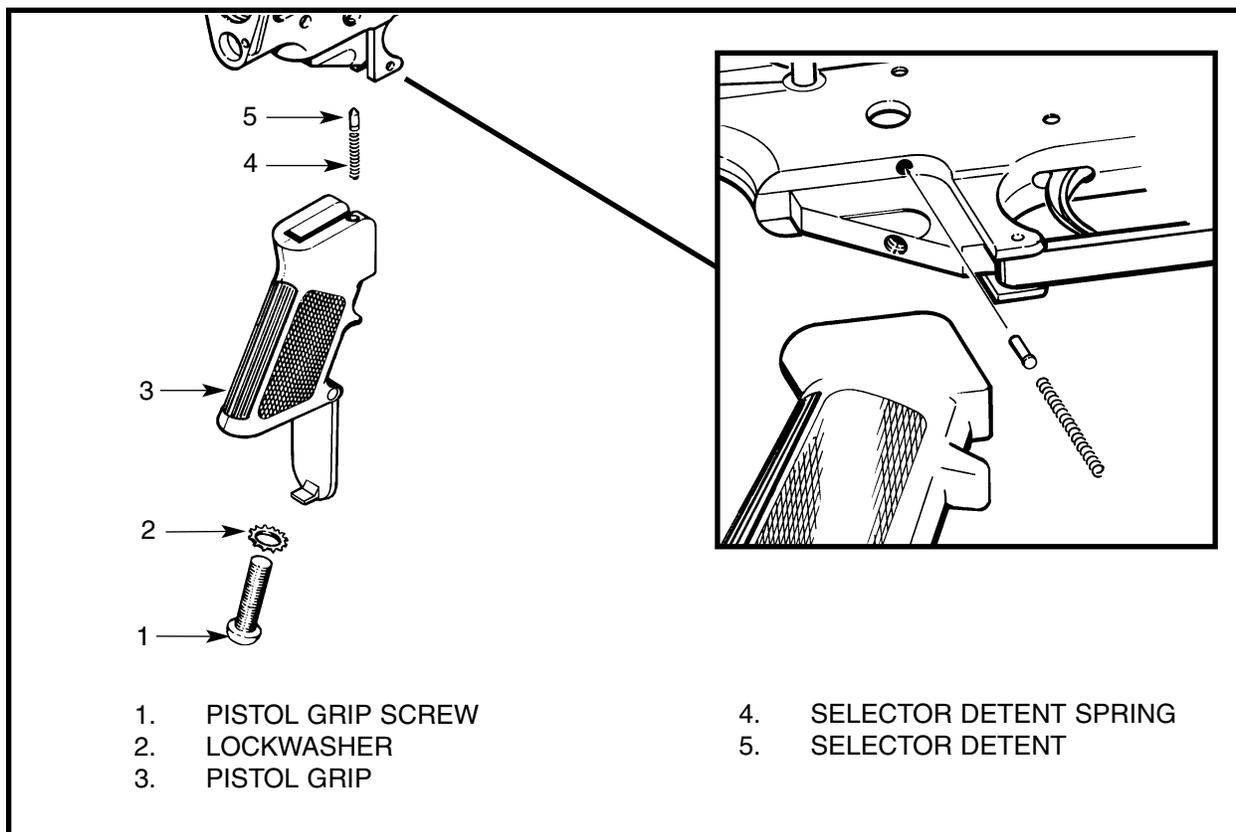


Figure 3-2-39 Removing the Pistol Grip

- c. Remove the pistol grip, selector detent spring and selector detent (5); and
- d. Remove the fire control selector.

41. **Inspection and Repair.** Inspect and repair the pistol grip and fire control selector components as follows:

- a. Ensure that the grip is free of cracks, distortions and deformation;
- b. Ensure that the fire control selector, selector detent and spring are in good form; and
- c. Replace non-serviceable components as required.

42. **Reassembly.** Reassemble the pistol grip components in reverse order to the disassembly procedure. Ensure that the detent is properly installed, with the pointed end facing the selector. Also ensure that the selector detent spring is installed without kinking and that it is properly contained in the lower receiver by the pistol grip.

## BOLT CATCH

43. **Removal.** Remove the bolt catch as follows:

- a. Remove the bolt catch pin with the special punch. See Figure 3-2-40;
- b. Apply slight pressure to the bolt catch to control spring pressure when removing the punch; and
- c. Carefully release pressure and remove the bolt catch (1) bolt catch plunger (2) and the bolt catch spring (3). See Figure 3-2-41.

44. **Inspection and Repair.** Inspect and repair the bolt catch as follows:

- a. Ensure that the bolt catch spring and plunger are free of wear, cracks or distortion;
- b. Ensure that the finger serrations and the bolt contact point of the bolt catch are clearly defined; and

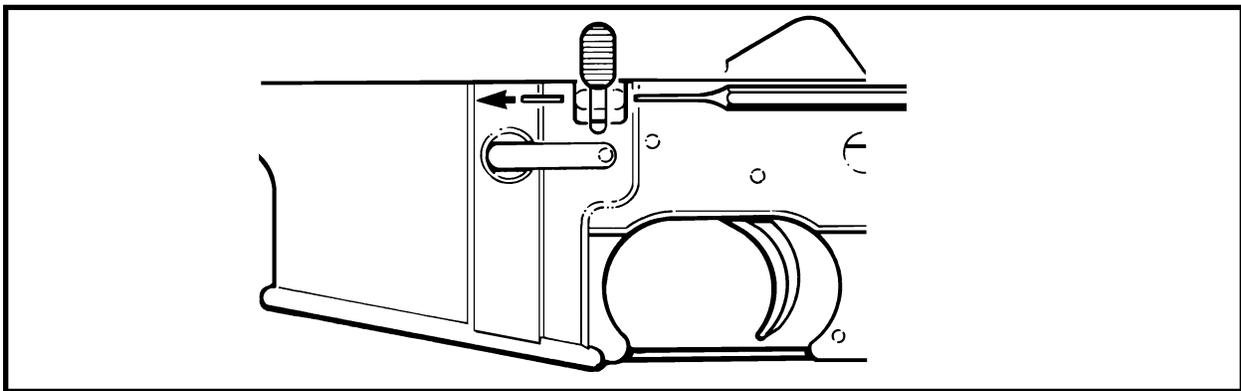


Figure 3-2-40 Removing the Bolt Catch Pin

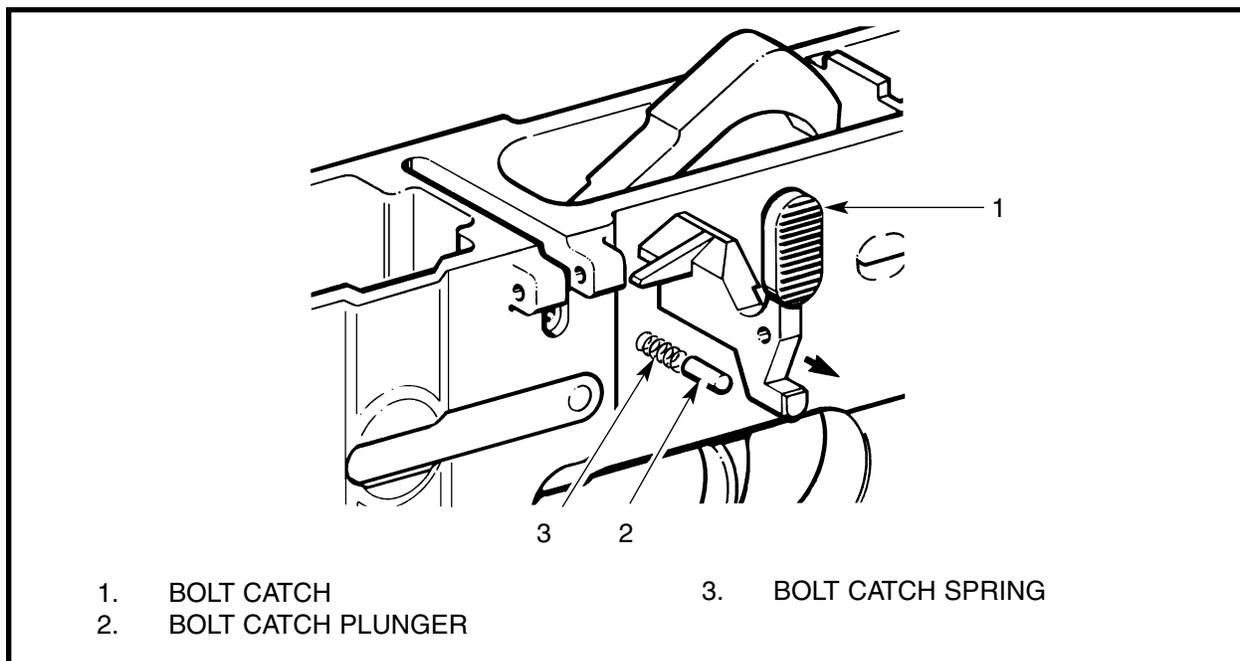


Figure 3-2-41 Removing the Bolt Catch Components

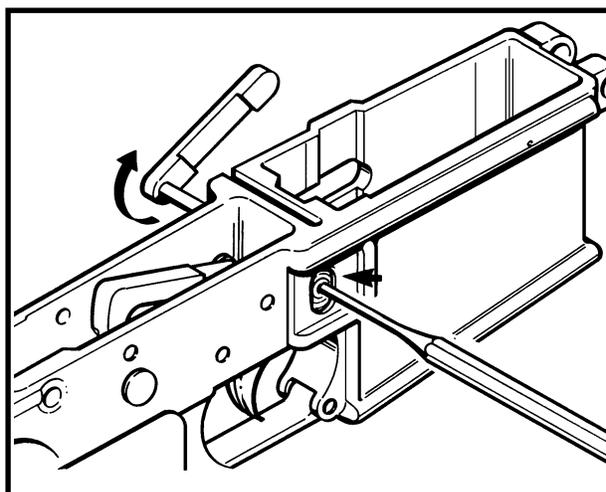
- c. Replace non-serviceable components as required.

45. **Reassembly.** Reassemble the bolt catch components in reverse order to the disassembly.

## MAGAZINE CATCH

46. **Removal.** Remove the magazine catch as follows:

- a. Push the magazine release button fully into the receiver and unscrew the magazine catch. See Figure 3-2-42;
- b. Slowly release pressure on the magazine release button, taking control of the magazine catch spring as it is exposed; and
- c. Remove the magazine catch (1), magazine release button (2) and magazine catch spring (3). See Figure 3-2-43.



47. **Inspection and Repair.** Inspect and repair the magazine catch components as follows:

- a. The magazine catch shall be free of burrs, cracks and deformation; the surface that contacts the magazine shall be well defined;

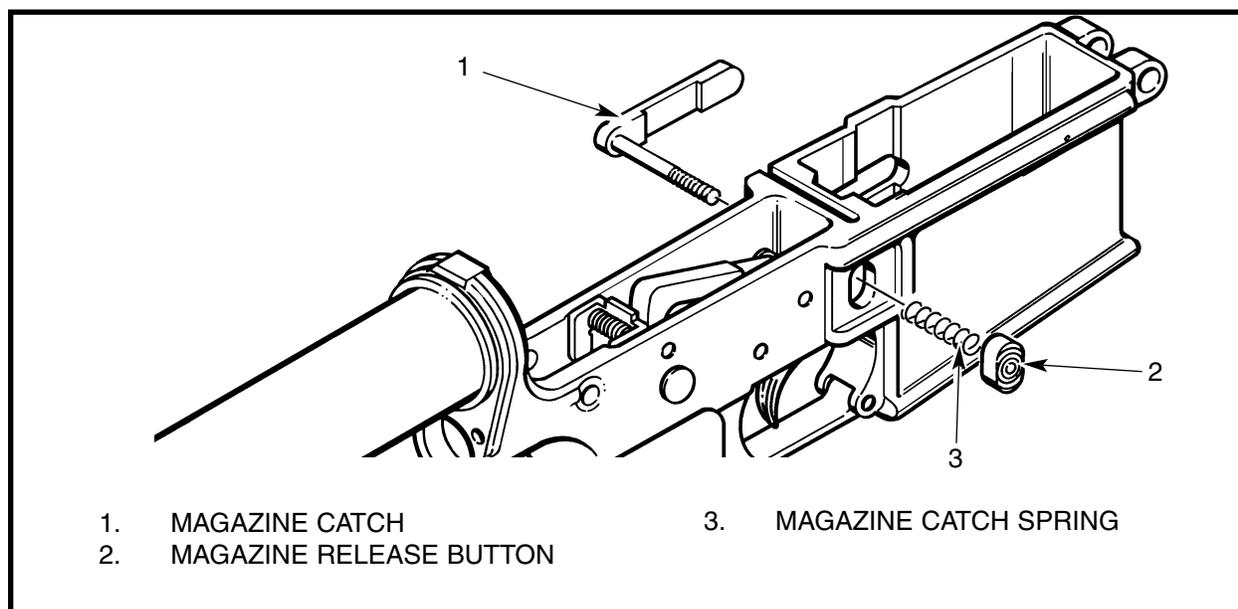


Figure 3-2-43 Disassembling the Magazine Catch

- b. The plate and shaft of the magazine catch shall be securely assembled;
- c. The magazine catch spring shall not be kinked, set or broken; and
- d. Replace non-serviceable components as required.

48. **Reassembly.** Reassemble the magazine catch to the lower receiver in reverse order to the disassembly procedure. Ensure that the end of the threaded shaft is flush or slightly below the serrated surface of the magazine release button.

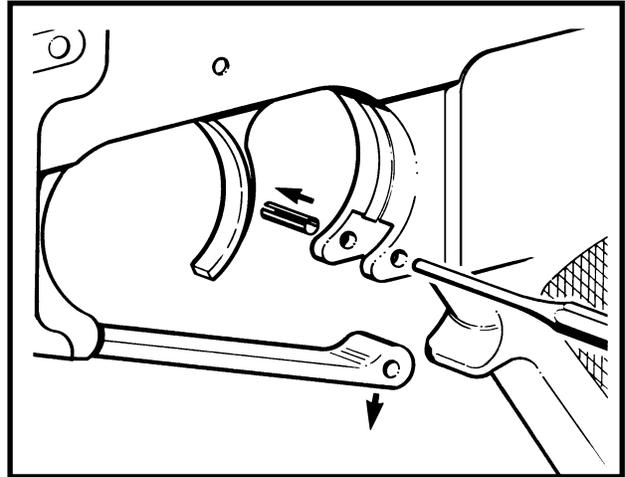
## TRIGGER GUARD

49. **Removal and Disassembly.** Remove and disassemble the trigger guard by the following procedure:

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● CAUTION ●  
● ● ● ● ● ● ● ●

Extreme care must be taken to properly support the lower receiver in the area around the trigger guard pivot pin hole when driving out the trigger guard pivot pin. Failure to do so may result in a broken or cracked lower receiver.

- a. Drive out the trigger guard pivot pin with a suitable punch. See Figure 3-2-44;
- b. Depress the plunger located at the front of the trigger guard and remove the trigger guard;
- c. Drive out the trigger guard plunger pin with suitable punch;
- d. Cover the end of the hole in the trigger guard as the punch is removed, to control the release of the spring; and



- e. Remove the trigger guard plunger and the trigger guard plunger spring.

Figure 3-2-44 Removing the Trigger Guard Pivot Pin

50. **Inspection and Repair.** Inspect and repair as follows:

- a. The trigger guard shall be free of bends, burrs or distortion;
- b. The trigger guard plunger shall depress without binding, and operate positively against spring pressure;
- c. The trigger guard plunger spring shall be free of kinks, cracks, or broken coils; and

- d. Replace non-serviceable components as required.

51. **Reassembly and Replacement.** Reassemble the trigger guard and replace in reverse order to the disassembly procedure. Ensure that the area around the trigger pivot hole of the lower receiver is properly supported when reinstalling the trigger guard pivot pin.

## FIRE CONTROL MECHANISM

52. **Disassembly.** The fire control mechanism shall only be disassembled if there is excessive side play or if the mechanism malfunctions. Disassemble the faulty mechanism only to the extent required to make repairs. Should disassembly be required, allow the hammer to be released under control and proceed as follows:

- a. **Automatic Sear.** See Figure 3-2-45 and remove the automatic sear as follows:
  - (1) Move the fire control selector to the "Auto" position;
  - (2) Press out the automatic sear pin, from the left side, with a suitable punch;
  - (3) Take control of the automatic sear and automatic sear spring while removing the punch; and
  - (4) Remove the assembled automatic sear.
- b. **Fire Control Selector.** With the pistol grip, selector detent and selector detent spring removed from the receiver, remove the fire control selector from the receiver.
- c. **Hammer.** Remove the hammer assembly as follows:
  - (1) Push out the hammer pin, from the left side, with a suitable punch. See Figure 3-2-46;

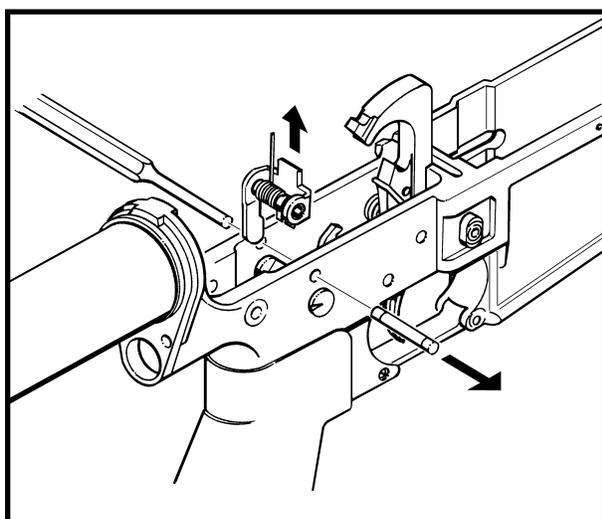


Figure 3-2-45 Removing the Automatic Sear

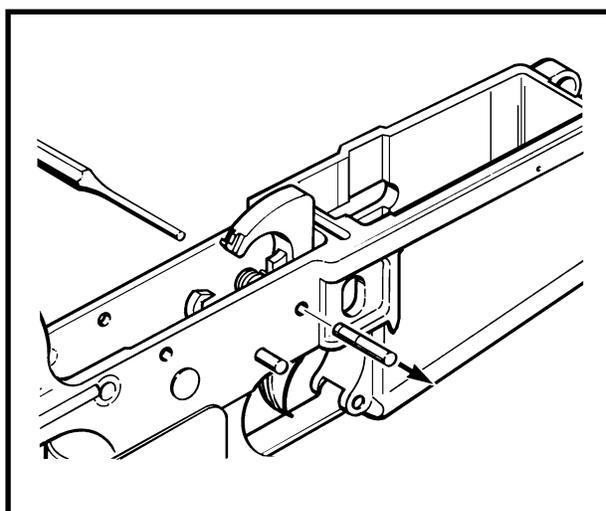


Figure 3-2-46 Removing the Hammer Pin

- (2) Take control of the hammer and remove the punch;
- (3) Remove the hammer assembly; and
- (4) If required for replacement, carefully remove the hammer spring from the hammer by spreading out one side at a time to prevent distortion of the spring.

#### NOTE

On C7 Family weapons capable of 3 round burst firing mode, the burst cam and clutch spring can be removed from the right boss of the hammer once the hammer spring has been removed.

d. **Trigger Mechanism.** To remove the trigger mechanism, proceed as follows:

- (1) See Figure 3-2-47. Insert a slave pin (1) from the left side of the receiver, to displace the trigger pin (2);

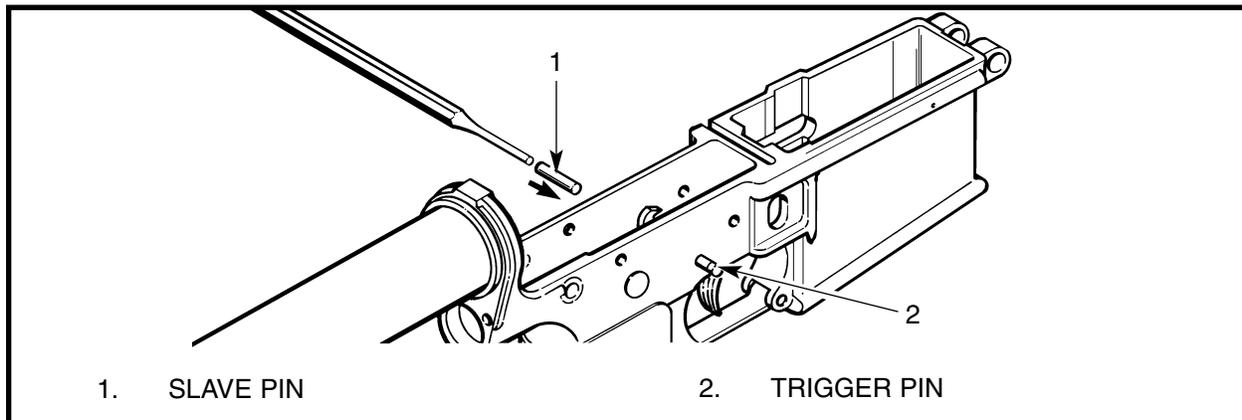


Figure 3-2-47 Removing the Trigger Mechanism

#### NOTE

Locally manufacture a slave pin 16.75 mm (0.660 in.) long by 3.90 mm (0.154 in.) in diameter, to aid with removal and disassembly of the trigger mechanism.

- (2) Remove the trigger mechanism, which is now held together by the slave pin, from the lower receiver; and
- (3) To disassemble the auto trigger mechanism, see Figure 3-2-48 and proceed as follows:
  - (i) Apply downward pressure on the semi disconnect (1) to take control of the disconnect spring (3);
  - (ii) Remove the slave pin (2) and release pressure on the disconnect;
  - (iii) Remove the disconnect and disconnect spring; and

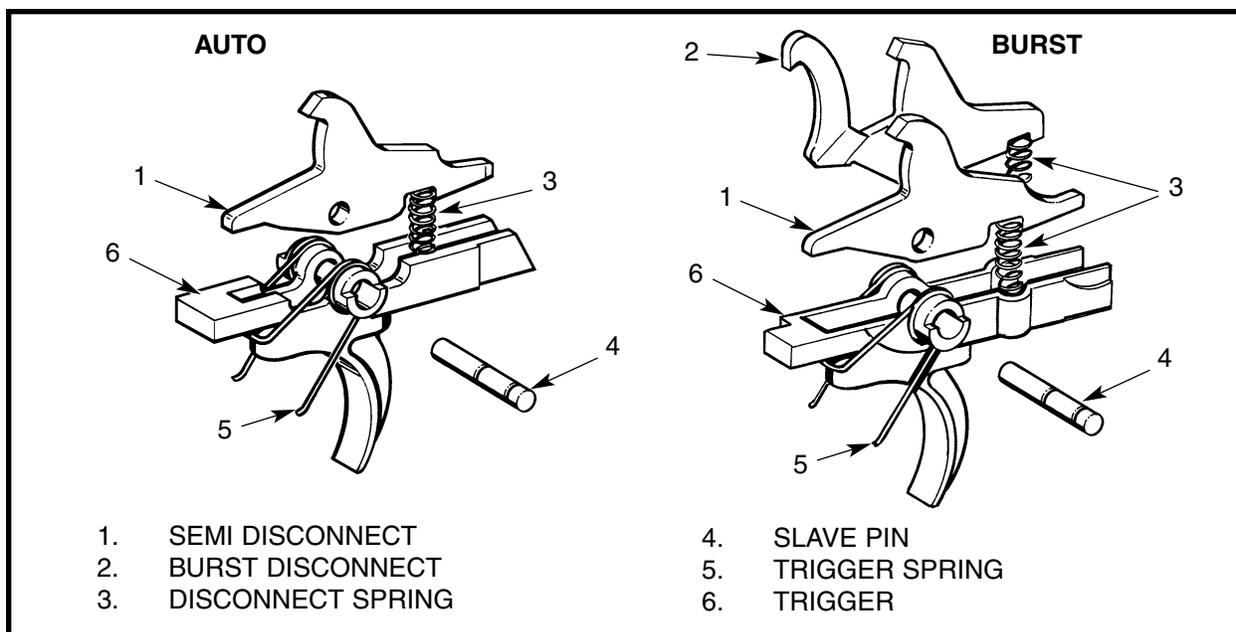


Figure 3-2-48 Disassembling the Trigger Mechanism

(iv) If required for replacement, carefully remove the trigger spring (4) from the trigger (5).

(4) To disassemble the burst trigger mechanism, see Figure 3-2-48 and proceed as follows:

(i) Apply downward pressure on the semi disconnect (1) and burst disconnect (2) to take control of the disconnect springs (3);

(ii) Remove the slave pin (2) and release pressure on the disconnects;

(iii) Remove the disconnects and disconnect springs; and

(iv) If required for replacement, carefully remove the trigger spring (4) from the trigger (5).

53. **Inspection and Repair.** Inspect and repair the fire control mechanism as follows:

- a. Inspect all trigger mechanism components for cracks, corrosion, and damage that would effect mechanism function;
- b. Ensure that the three hammer bent surfaces of the trigger, disconnecter, and automatic sear are sharp, well defined and that the original contours have not been altered;

•••••  
• CAUTION •  
•••••

The trigger assembly for the carbine is assembled with a different disconnecter spring than the rifle. The spring used for the carbine semi disconnect is colour coded red or black for identification. The springs for the rifle semi disconnect and all burst disconnects are the same.

- c. Check the springs both helical and torsion, for kinks, cracks or distortion;
- d. Check for sticking or drag between the hammer and disconnecter. Polish the mating surfaces to correct the problem;
- e. Ensure that the trigger mechanism passes all safety, function, and trigger pull criteria detailed in Part 4 of this instruction; and
- f. Replace non-serviceable parts as required.

54. **Reassembly and Replacement.** Reassemble the fire control mechanism and replace it in the receiver as follows:

- a. Clean all parts prior to reassembly;
- b. Reassemble the trigger mechanism using the slave pin to hold the mechanism together prior to installation;
- c. Position the trigger mechanism in the receiver and insert the trigger pin from the right, with the grooved end leading;
- d. Install the hammer assembly by the following procedure:

(1) Position the assembled hammer and hammer spring with the torsion legs resting on top of the trigger pin. See Figure 3-2-49;

(2) Align the hammer pin holes; and

(3) Insert the hammer pin from the left with the ungrooved end leading.

- e. Manually cock the hammer, then install the fire control selector and position it in the "Auto" position;

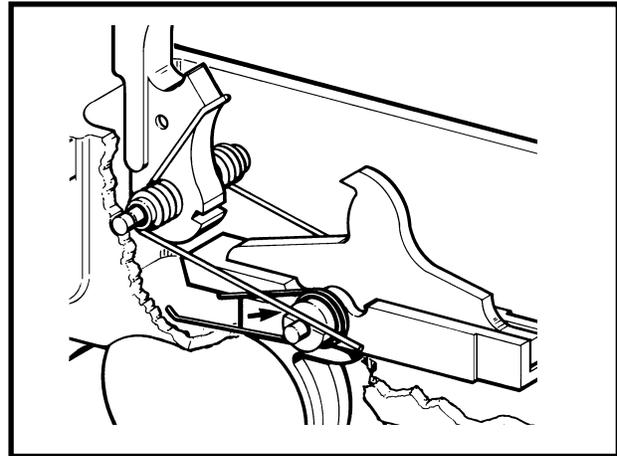


Figure 3-2-49 Position of the Hammer Spring

- f. Install the pistol grip, selector detent and selector detent spring to retain the fire control selector;

- g. Install the automatic sear as follows:

(1) Position the automatic sear with the long leg of the spring positioned in front of the fire control selector;

(2) Align the automatic sear pin holes; and

(3) Install the automatic sear pin from the right.

## RECEIVER PIVOT PIN

55. **Removal.** Remove the receiver pivot pin by the following procedure:

- a. Insert the end of a suitable punch into the hole in the pivot pin, to depress the detent. See Figure 3-2-50;

- b. Rotate the pivot pin 90 degrees;

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● CAUTION ●  
● ● ● ● ● ● ● ●

The receiver pivot pin detent is under considerable spring tension. Before removing the pin, cover the front of the receiver, with a cloth, to prevent loss of the detent or spring.

- c. Slowly remove the receiver pivot pin; and

- d. Remove the receiver pivot pin detent and receiver pivot pin detent spring from the receiver.

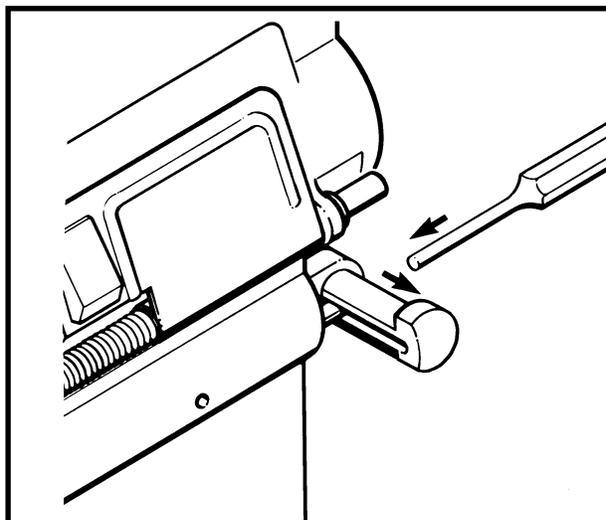


Figure 3-2-50 Removing the Receiver Pivot Pin

56. **Inspection and Repair.** Inspect and repair the receiver pivot pin components as follows:

- a. Ensure that the receiver pivot pin is free of burrs, cracks and distortion;
- b. Ensure that the receiver pivot pin detent is in correct form;
- c. Check the receiver pivot pin detent spring for cracks, kinks or broken coils;
- d. Remove burrs with a smooth file or fine stone, and touch up affected areas; and
- e. Replace defective components as required.

57. **Reassembly.** To reassemble the receiver pivot pin to the lower receiver, see Figure 3-2-51 and proceed as follows:

- a. Insert the receiver pivot pin installation tool through the hinge of the lower receiver. See Figure 3-2-51A;
- b. Align the hole in the installation tool with the cavity provided for the pivot pin spring and detent;
- c. Insert the spring and detent through the tool, into the cavity;
- d. Using a suitable punch, depress the receiver pivot pin detent only sufficiently to allow rotation of the tool. See inset in Figure 3-2-51A;

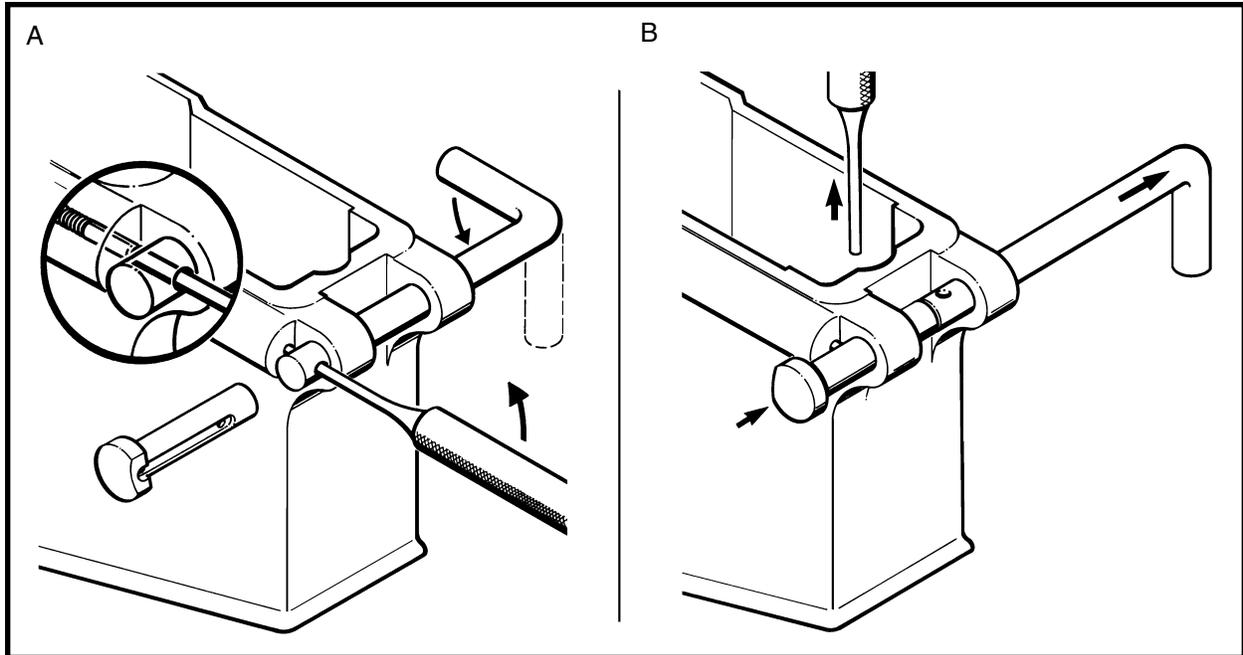


Figure 3-2-51 Replacing the Receiver Pivot Pin

- e. Rotate the tool and punch 90 degrees.
- f. Hold the pivot pin, with the groove outward, firmly against the end of the assembly tool;
- g. Push the pivot pin into the right receiver lug; and
- h. Rotate the pin 180 degrees and allow the detent to take up its position in the groove of the pivot pin. See Figure 3-2-51B;

### RECEIVER EXTENSION - SOLID BUTTSTOCK

58. **Removal.** To remove the receiver extension from the lower receiver, proceed as follows:

● ● ● ● ● ● ● ●  
● CAUTION ●  
● ● ● ● ● ● ● ●

When clamping the lower receiver in a vise, ensure that the vise is closed over a solid portion of the receiver body. Tighten the vise only sufficiently to provide a firm grip on the receiver.

- a. Carefully clamp the lower receiver in a vise equipped with protected jaws;
- b. Using the combination wrench and a 1/2 inch drive ratchet, unscrew the receiver extension in a counter-clockwise direction. See Figure 3-2-52; and

### NOTE

Unscrewing the receiver extension will release the buffer assembly retainer and spring. Cover the receiver, to prevent the loss of these parts, as the extension is disassembled.

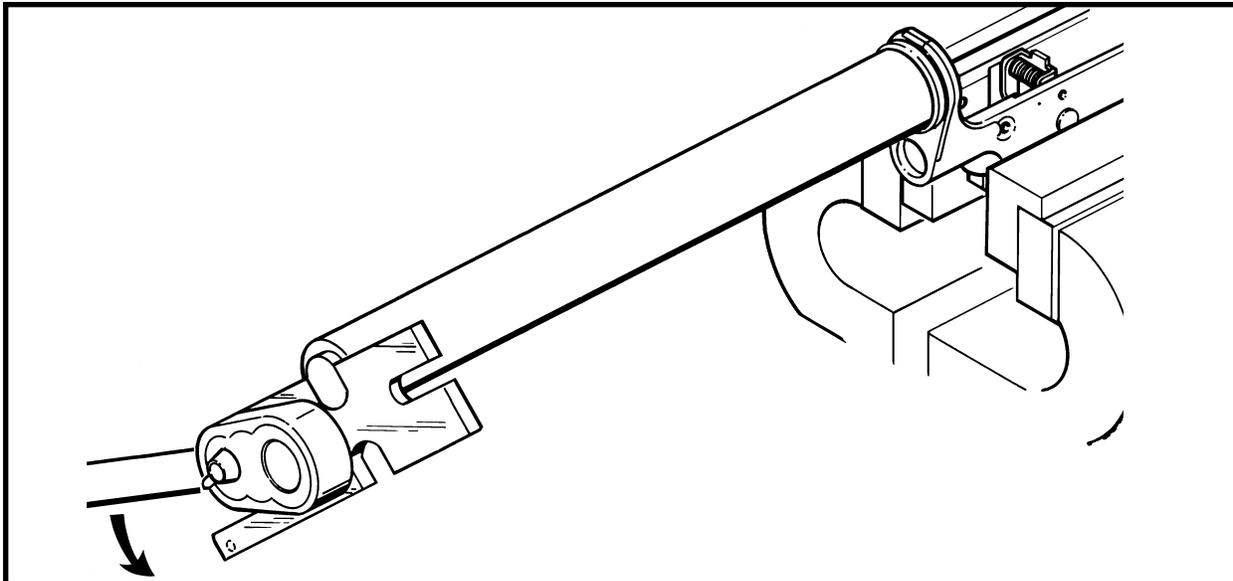


Figure 3-2-52 Unscrewing the Receiver Extension

- c. Remove the buffer retainer, buffer retainer spring, takedown pin detent spring, takedown pin detent and the takedown pin.
59. **Inspection and Repair.** Inspect the receiver extension to ensure that it is free of cracks, dents or other deformation which would impede the return spring or the buffer assembly. Replace a defective extension.
60. **Reassembly.** Proceed as follows:
- a. Clean the threads of the lower receiver and receiver extension thoroughly;
  - b. Lubricate the threads of both components with molybdenum disulfide grease MIL-G-21164;
  - c. Screw the extension part way into the receiver;
  - d. Position the spring and buffer retainer in the hole in the lower receiver;
  - e. Depress the buffer retainer and screw the receiver extension by hand; and
  - f. Torque the receiver extension to between 51.5 and 56.9 N·m (38 to 42 ft-lb) using the combination wrench and a 1/2 inch drive torque wrench.

### RECEIVER EXTENSION - SLIDING BUTTSTOCK

61. **Removal and Disassembly.** Remove the receiver extension from the lower receiver, by the following procedure:



When clamping the lower receiver in a vise, ensure that the vise is closed over a solid portion of the receiver body. Tighten the vise only sufficiently to provide a firm grip on the receiver.

- a. Carefully clamp the lower receiver in a vise equipped with protected jaws;
- b. Unscrew the receiver extension nut, in a counter-clockwise direction, when viewed from the rear, with the hook wrench (CF62420) and a 1/2 inch drive ratchet. See Figure 3-2-53;

**NOTE**

Unscrewing the receiver extension nut will release the takedown pin detent and spring. Maintain control of the receiver end plate to retain the detent and spring.

- c. Cover the extension and receiver with a cloth to ensure that no parts are lost and turn the receiver end plate clockwise sufficiently to release the takedown pin detent spring;
- d. Remove the detent spring, detent and takedown pin. See Figure 3-2-54;
- e. Unscrew the receiver extension in a counter-clockwise direction, when viewed from the rear; and

**NOTE**

Unscrewing the lower receiver extension will release the buffer retainer and spring. Cover the receiver, to prevent loss of these parts, as the extension is disassembled.

- f. Remove the extension, buffer retainer and buffer retainer spring from the lower receiver.

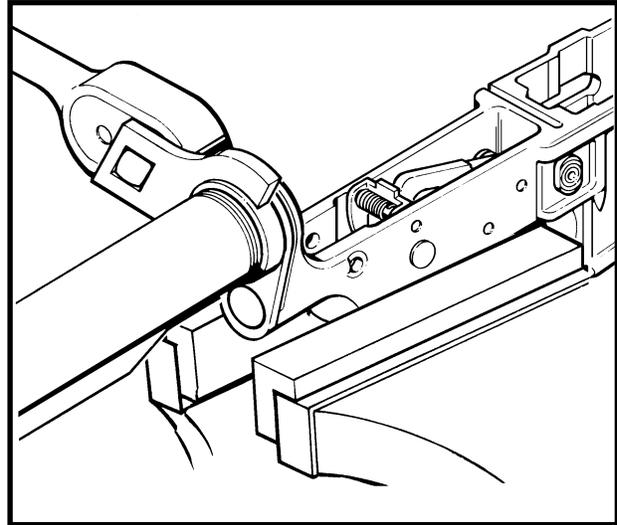


Figure 3-2-53 Unscrewing the Receiver Extension Nut

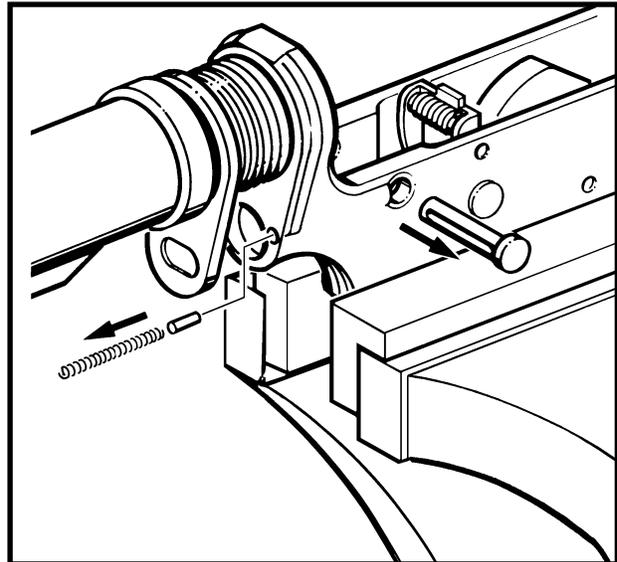


Figure 3-2-54 Removing the Takedown Pin, Detent and Spring

62. **Inspection and Repair.** Inspect and repair the receiver extension components as follows:

- a. Inspect the receiver extension for dents, cracks and other deformation that would impede the action of the sliding buttstock, buffer assembly, or return spring;
- b. Ensure that the receiver extension vent hole is clear;
- c. Check the receiver end plate and receiver extension nut for cracks or deformation that would affect security of the receiver extension or takedown pin detent;
- d. Remove nicks and burrs with a smooth file or fine stone, taking care not to alter original critical dimensions. Touch up affected areas as detailed in Part 3, Section 1 of this instruction; and
- e. Replace defective components as required.

63. **Reassembly and Replacement.** Replace the receiver extension as follows:

- a. Assemble the receiver extension nut and receiver end plate to the receiver extension with the staking slots of the nut facing the end plate;
- b. Screw the receiver extension into the lower receiver until it is flush with the rear edge of the buffer retainer hole;
- c. Insert the buffer retainer spring and the retainer into the hole in the receiver;
- d. Screw the receiver extension forward far enough to trap the buffer retainer leaving sufficient clearance to allow correct function of the retainer;
- e. Rotate the receiver end plate to allow insertion of the takedown pin detent and spring into the receiver;
- f. Assemble the takedown pin, detent and detent spring to the receiver;
- g. Realign the receiver end plate with the receiver contours and press the end plate forward to trap the detent spring in the receiver. See Figure 3-2-55;
- h. Tighten the extension nut with the hook-spanner wrench and a 1/2 inch drive torque wrench;
- j. Check the action of buffer retainer;

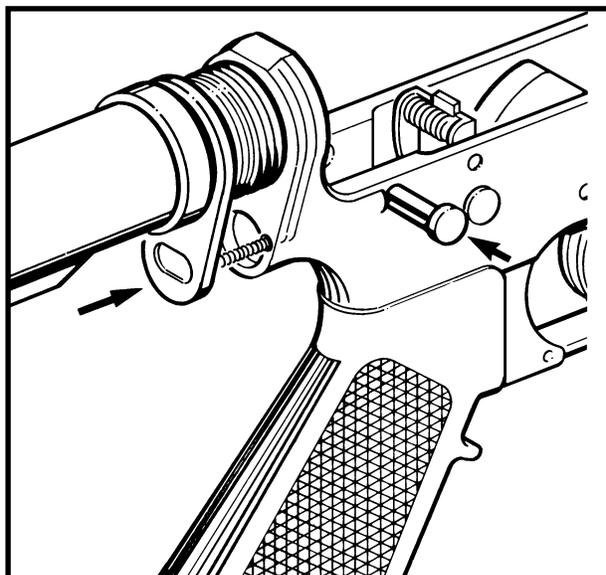


Figure 3-2-55 Reassembling the Receiver Extension

- k. Torque the receiver extension nut to between 51.5 and 56.9 N·m (38 and 42 ft-lb); and
- m. Stake the end plate securely into at least two of the receiver extension nut staking slots.

## LOWER RECEIVER

64. **Inspection.** Inspect the lower receiver assembly as follows:
- a. Inspect the lower receiver for burrs, dents, cracks and shiny surfaces;
  - b. Inspect the axis holes of the hinge pin and takedown pin for corrosion;
  - c. Gauge the hammer and trigger mechanism axis pin holes as detailed in Part 4 of this instruction; and
  - d. Check the action of the pivot and takedown pin detents to ensure that they operate effectively under positive spring tension.
65. **Repair.** Repair the lower receiver as follows:
- a. Remove burrs with a smooth file or fine stone, taking care not to alter original critical dimensions;
  - b. Touch-up shiny or reworked areas as detailed in Part 3, Section 1 of this instruction;
  - c. Replace defective receiver pivot pin or takedown pin components as required;
  - d. Disregard dents of a minor nature that do not affect operation of the weapon; and
  - e. Backload the weapon if the receiver is severely dented or damaged, or if the hammer or trigger pin holes gauge beyond tolerance limits.

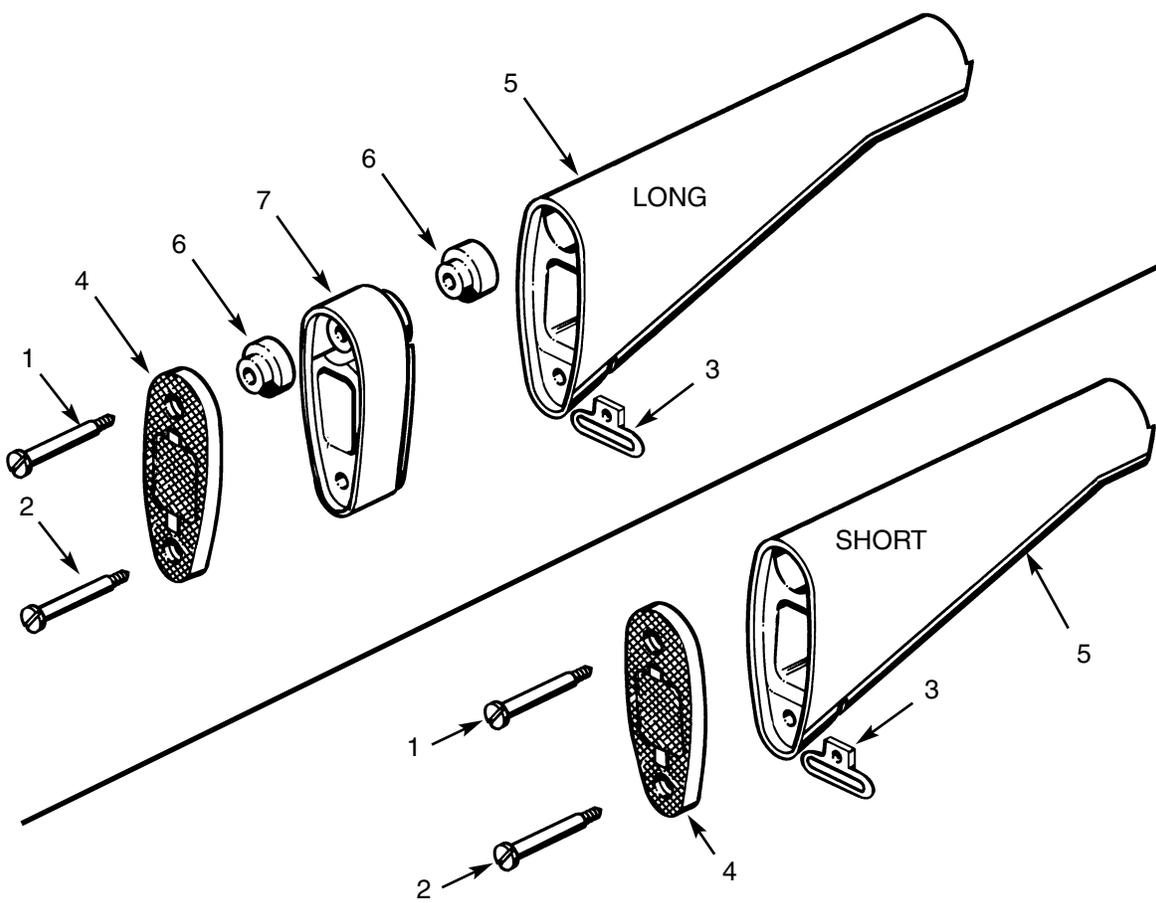
## BUTT ASSEMBLY - SOLID BUTTSTOCK

66. The normal and short butt assemblies on the C7 or C7A1 rifles may be fitted with buttstock extensions. When a buttstock extension is fitted to a weapon, longer screws are required, both rifles require an extra butt plate spacer to be fitted. For the purpose of this instruction, procedures detailed will be for butt assemblies with the buttstock extension.

67. When extensions are removed from buttstock assemblies, care must be taken to ensure that the correct screws are used in reassembly. Care must also be taken to ensure that when the short butt assembly is reassembled, the short butt plate screw is used. If the standard butt plate screw is used the buffer assembly will impact on it during recoil. Refer to table in Figure 3-2-64 to determine the correct screws for each combination of buttstock and extension.

68. **Removal and Disassembly.** Unscrew the buttsock securing screw (1) and remove the buttsock assembly from the rifle, see Figure 3-2-56. Further disassemble the buttstock assembly by the following procedure:

APPLICATION	BUTTSTOCK SECURING SCREW (1)	BUTTSTOCK SWIVEL SCREW (2)
SHORT BUTTSTOCK	CF64540	CF64573
STANDARD BUTTSTOCK	8690174-1	CF64573
STANDARD BUTTSTOCK WITH EXTENSION	8690174-2	8890076-1



- |                             |                        |
|-----------------------------|------------------------|
| 1. BUTTSTOCK SECURING SCREW | 5. BUTTSTOCK           |
| 2. SWIVEL SCREW             | 6. BUTT PLATE SPACER   |
| 3. REAR SLING SWIVEL        | 7. BUTTSTOCK EXTENSION |
| 4. BUTT PLATE               |                        |

Figure 3-2-56 Disassembling the Butt Assembly - Short and Normal with Buttstock Extension

- a. Unscrew the swivel screw (2) that secures the rear sling swivel (3) and butt plate (4) to the buttstock (5);
- b. Remove the sling swivel, butt plate, butt plate spacer (6) and the buttstock extension (7);
- c. Hold the butt plate face down over a work bench and push the butt plate door open; and
- d. Disassemble the butt plate door assembly as follows:
  - (1) Push out the butt plate door hinge pin and remove the butt plate door hinge;
  - (2) Depress the butt plate door plunger;
  - (3) Drive out the butt plate door plunger pin with a suitable punch; and
  - (4) Remove the butt plate door plunger and plunger spring from the door.

69. **Inspection and Repair.** Proceed as follows:

- a. Inspect all parts for damage, cracks, corrosion and distortion that could affect function;
- b. The butt shall be free of any evidence of material separation which could prevent proper function or present a risk of personal injury. Minor dents or chips that do not affect weapon function shall not be cause for rejection or replacement;
- c. Ensure that the vent hole in the butt cap screw is open;
- d. Remove burrs with a smooth file or fine stone taking care not to alter any original critical dimensions;
- e. Touch up any areas lacking the correct surface finish; and
- f. Replace defective components as required.

70. **Reassembly and Replacement.** Reassemble and replace the butt assembly taking note of the following:

- a. Reassemble the butt plate in reverse order to the disassembly procedure;
- b. Reassemble the butt assembly in reverse order to the disassembly procedure;
- c. Position the rear sling swivel in the butt with the angle facing forward;
- d. Position the butt plate assembly on the end of the buttstock;
- e. Secure the butt plate assembly and sling swivel with the rear sling swivel screw.
- f. Insert the takedown pin into the lower receiver with the detent groove facing rearward;

- g. Insert the detent and spring into the hole in the rear of the lower receiver. See Figure 3-2-57;
- h. Replace the butt assembly ensuring that the spring does not kink, but that it is compressed into the hole in the lower receiver;
- j. Hold the butt in position while replacing the butt plate spacer, and buttstock extension; and
- k. Secure the buttstock to the weapon with the buttstock securing screw.

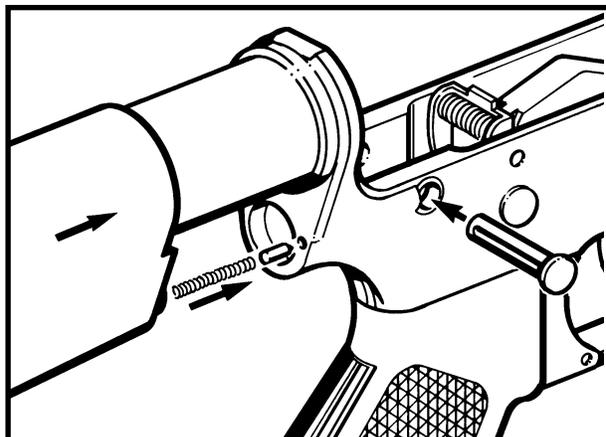


Figure 3-2-57 Replacing the Butt Assembly

### BUTT ASSEMBLY - SLIDING BUTTSTOCK

71. **Disassembly.** With the sliding buttstock assembly removed from the lower receiver assembly disassemble the buttstock by the following procedure:

- a. With the buttstock release lever nut adequately supported, drive out the release, lever nut pin. See Figure 3-2-58;
- b. Insert a suitable punch through the hole on top of the sliding buttstock, to control the release lever lock pin spring, and unscrew the release lever lock pin from the lock pin nut. See Figure 3-2-59;
- c. Remove the lock pin nut (1), release lever (2), release lever lock pin (3) and release lever lock pin spring (4) from the sliding buttstock (5). See Figure 3-2-60.

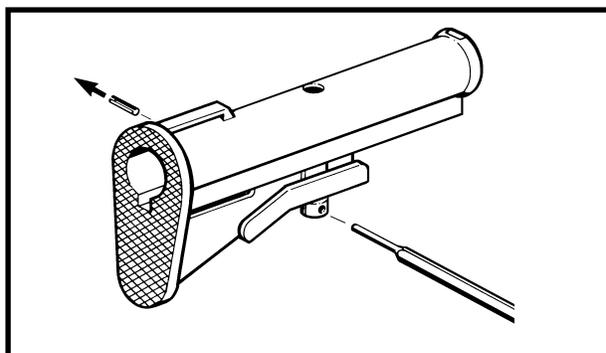


Figure 3-2-58 Removing the Release Lever Nut Pin

72. **Reassembly and Replacement.** Reassemble and replace the sliding buttstock assembly in reverse order to the disassembly procedure noting the following:

- a. Ensure that the release lever lock pin height is adjusted to allow free movement of the sliding butt when the release lever is depressed;

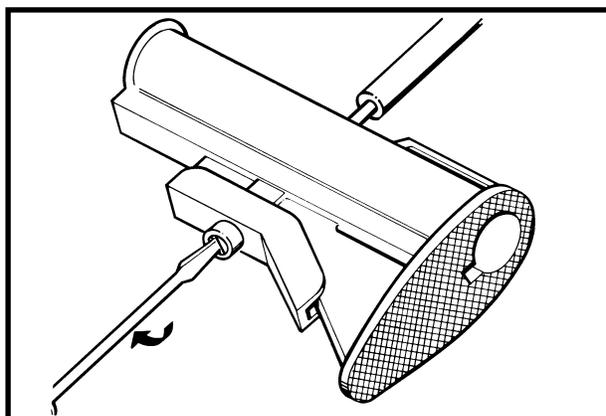


Figure 3-2-59 Unscrewing the Release Lever Lock Pin

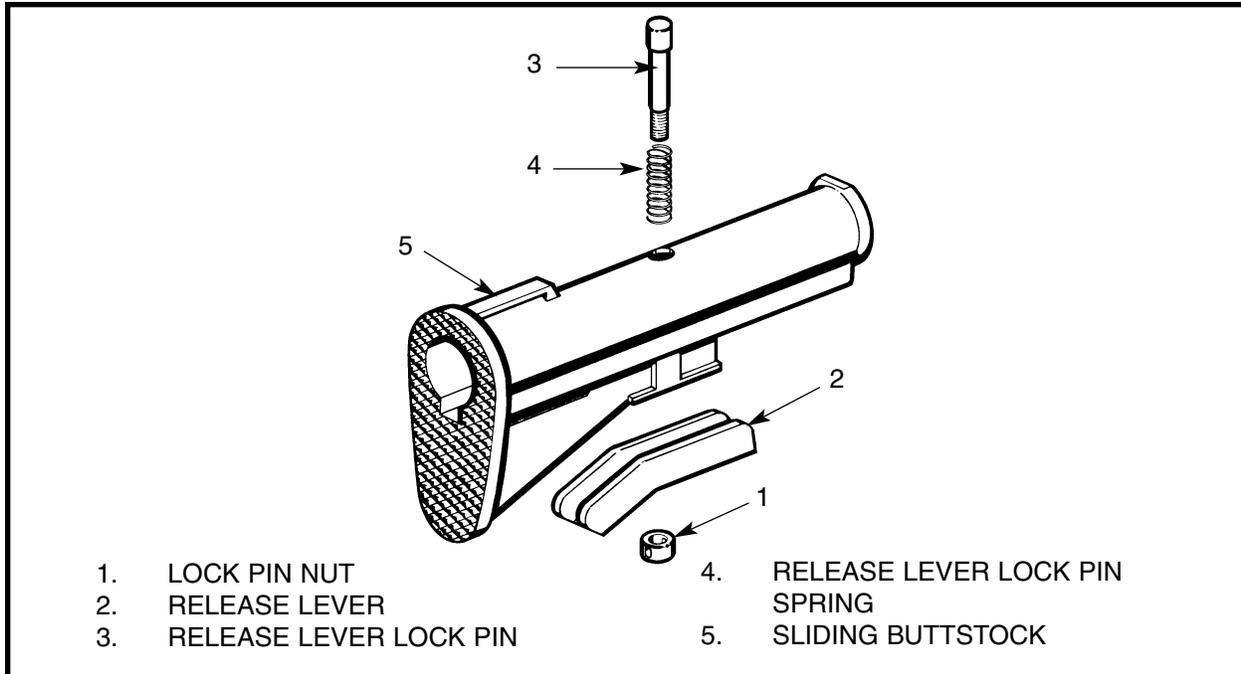


Figure 3-2-60 Disassembling the Sliding Butt Assembly

- b. Ensure that the release lever nut pin is installed flush with the outside surfaces of the nut; and
- c. Replace the sliding butt assembly in reverse order to the removal procedure.

### BUFFER ASSEMBLY

#### INSPECTION

- 73. Inspect the buffer assembly as follows:
  - a. Ensure that the buffer is free from burrs, dents and deformation;
  - b. Shake the buffer body to check for perceptible movement of the internal weights; and
  - c. Ensure that the return spring is free of kinks, cracks or distortion.

#### NOTE

The return spring and buffer assemblies for the rifles are different than the return spring and buffer assemblies for the carbines. See Table of Specifications, in Part 1, Section 2 of this instruction, for the correct length for each weapon.

## STANDARD BUFFER ASSEMBLY

74. Repair the buffer assembly as follows:
- a. Remove nicks and burrs from the buffer body with a smooth file or fine stone taking care not to alter any original critical dimensions; and
  - b. Replace buffer assemblies that exhibit restriction of the interior weights and those that bind in the receiver extension.

## DISASSEMBLY

75. Disassemble the buffer assembly as follows, see figure 3-2-61:
- a. Remove the riveted end of the guide and plunger retaining pin (1), and remove the pin using a suitable pin punch;
  - b. Slide the assembled guide (2), and plunger (3) off of the buffer tube (4);
  - c. To further disassemble the guide and plunger assembly, remove the "O" ring (11) from the plunger and slide the plunger forward out of the guide. The three piece scraper assembly (5) and the steel retaining ring (6) can now be removed from the rear of the guide;
  - d. Drain the hydraulic fluid from the tube and remove the bumper (7) and piston spring (8) to the rear;

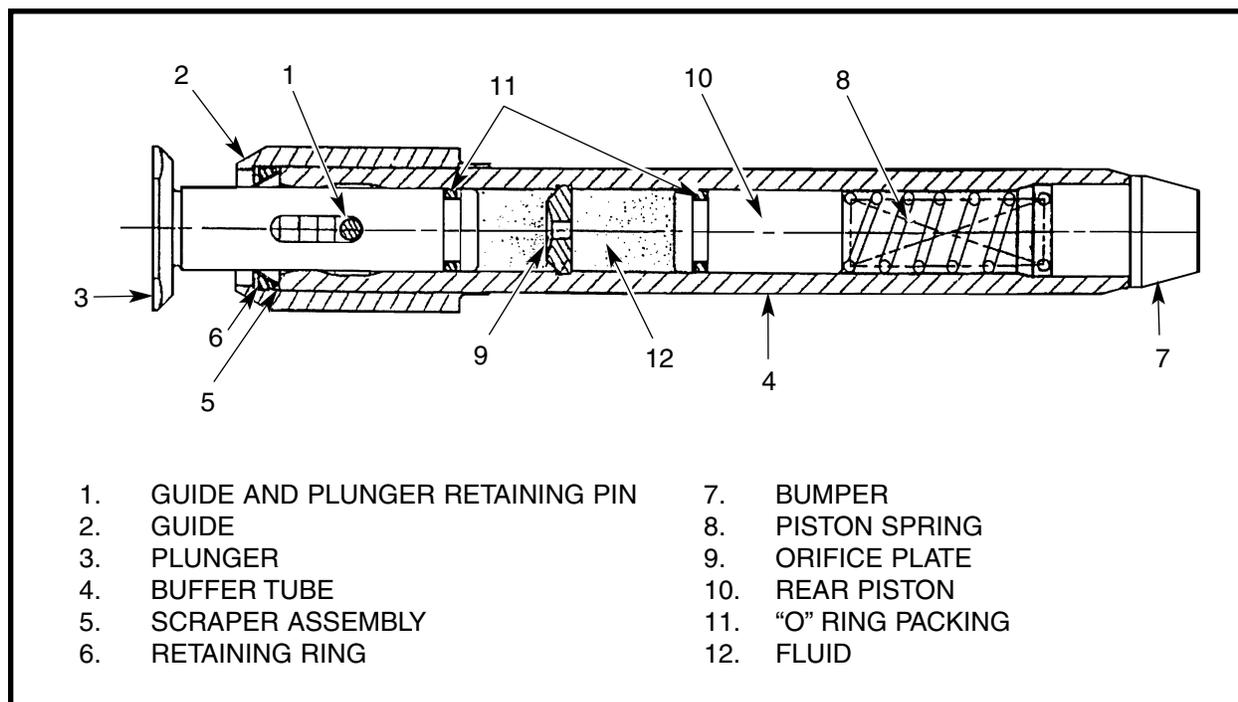


Figure 3-2-61 Hydraulic Buffer Assembly

**NOTE**

The bumper is normally damaged during removal and is not reused.

- e. Carefully position a 0.092 in. (2.3 mm) pin punch through the hole in the orifice plate (9) and push out the rear piston (10). Remove the "O" ring from the piston.

**NOTE**

**DO NOT** move the orifice plate (9) or scratch the inside of the buffer tube with the punch. Tubes with damaged cylinders or orifice plates, are not repairable.

**REPAIR**

76. To repair the buffer, carefully inspect the tube and polish out any scratches in the "O" ring bearing area of the tube and replace non-servicable components. Then reassemble the buffer as follows:

- a. Assemble the plunger and guide assembly in the reverse order to the disassembly:
  - (1) Lightly lubricate the guide (2), plunger (3), retaining ring (6), and scraper assembly (5) components with an inert silicon grease to facilitate assembly and to prevent corrosion;
  - (2) Install the retaining ring and slide it forward to the front of the guide;
  - (3) Assemble the tapered rubber element and the two brass scrapers of the scraper assembly, ensuring that the slots in the two brass scrapers are not aligned, and press them forward in the guide until they are seated against the retaining ring;
  - (4) Insert the buffer tube (4) into the guide to support the scraper assembly;
  - (5) Insert the plunger into the front of the guide, until the head of the plunger is seated against the front face of the guide;
  - (6) Carefully remove the assembled guide and plunger from the buffer tube;
  - (7) Assemble the "O" ring (11) to the plunger; and
  - (8) Set the assembled guide and plunger aside.
- b. Lightly lubricate the rear piston (10), buffer tube, and "O" ring (11) with an inert silicon grease to facilitate assembly and to prevent corrosion;
- c. Place a new "O" ring on the rear piston and insert the piston into the tube, from the rear, "O" ring end first;
- d. Oil the piston spring (8) and insert it into the tube, from the rear;

- e. Place the bumper (7) in the tube and carefully press it into place;
- f. Carefully clamp the assembly upright in a vice and fill the tube to the level of the guide and plunger retaining pin hole with approximately 3.5 cc of hydraulic fluid MIL-H-5606 (NATO H-515) or equivalent;
- g. Carefully press the plunger into the buffer tube from the front, until the "O" ring enters the slightly enlarged section of the tube;

#### **NOTE**

This enlarged section is designed to permit the escape of air and excess fluid during assembly.

- h. Slide the guide onto the buffer tube with the hole for the guide and plunger retaining pin aligned with the hole in the buffer tube;
- j. Press the plunger in until the elongated hole aligns with the holes in the buffer tube and guide; and

#### **NOTE**

A pin punch is useful as a slave pin during this alignment procedure.

- k. Install a new guide and plunger retaining pin and rivet both ends, flush with the surface of the guide, to secure it in the assembly.

#### **NOTE**

After assembly, manually depress and release the plunger to check for correct function. Ensure that there is no free end play in the plunger. Check the buffer for leaks to ensure that the "O" rings were not damaged during installation.

### **HYDRAULIC BUFFER ASSEMBLY**

77. Hydraulic buffer assemblies that have become unserviceable or leak hydraulic fluid can be reconditioned and returned to service by using the Hydraulic Buffer Repair Kit 10039C-1.

### **METAL MAGAZINE**

#### **DISASSEMBLY**

78. To disassemble the metal magazine check figure 3-2-62 and proceed as follows:
  - a. Insert a suitable punch through the hole in the baseplate;
  - b. Lift the baseplate lug clear of the magazine box;
  - c. Take control of the base plate to control the magazine spring;

- d. Slide the baseplate rearward and clear of the magazine box; and
- e. Remove spring and follower.

### INSPECTION AND REPAIR

79. Inspect and repair the metal magazine as follows:

- a. Ensure the components are free from nicks, burrs, cracks, gouges or distortion;
- b. Ensure the lips and locking surfaces of the magazines are correctly formed and undamaged;
- c. Check the security of the spot welds; and
- d. Replace non-serviceable magazines.

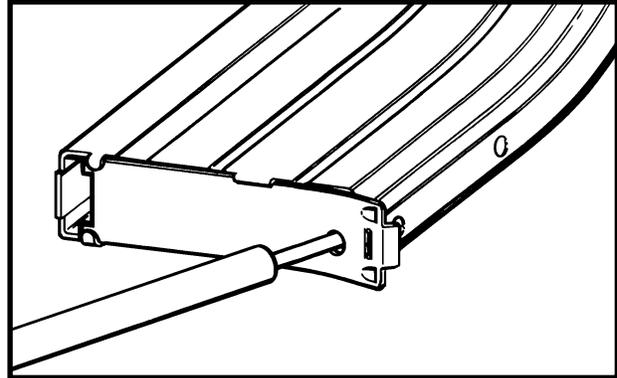


Figure 3-2-62 Lifting the Metal Magazine Bottom Plate

### REASSEMBLY

80. To reassemble the metal magazine see figure 3-2-63 and proceed as follows:

- a. Assemble the spring (2) to the follower (3);
- b. Insert the follower and spring into the magazine box (4);
- c. Use the bottom plate (1) to control the spring and push it into the magazine box; and

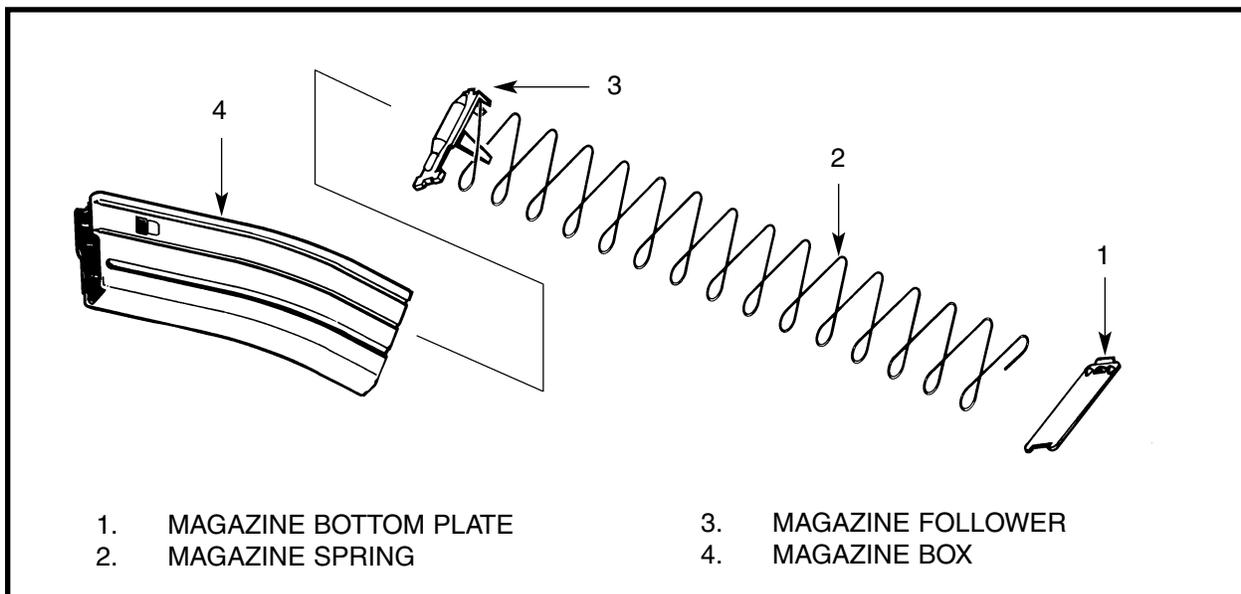


Figure 3-2-63 Assembling and Disassembling the Metal Magazine

- d. Slide the baseplate into position and ensure that the baseplate engages the lugs on the box.

## PLASTIC MAGAZINE

### DISASSEMBLY

81. To disassemble the plastic magazine see figure 3-2-64 and proceed as follows:
  - a. Take control of the baseplate (1) to control the spring; and

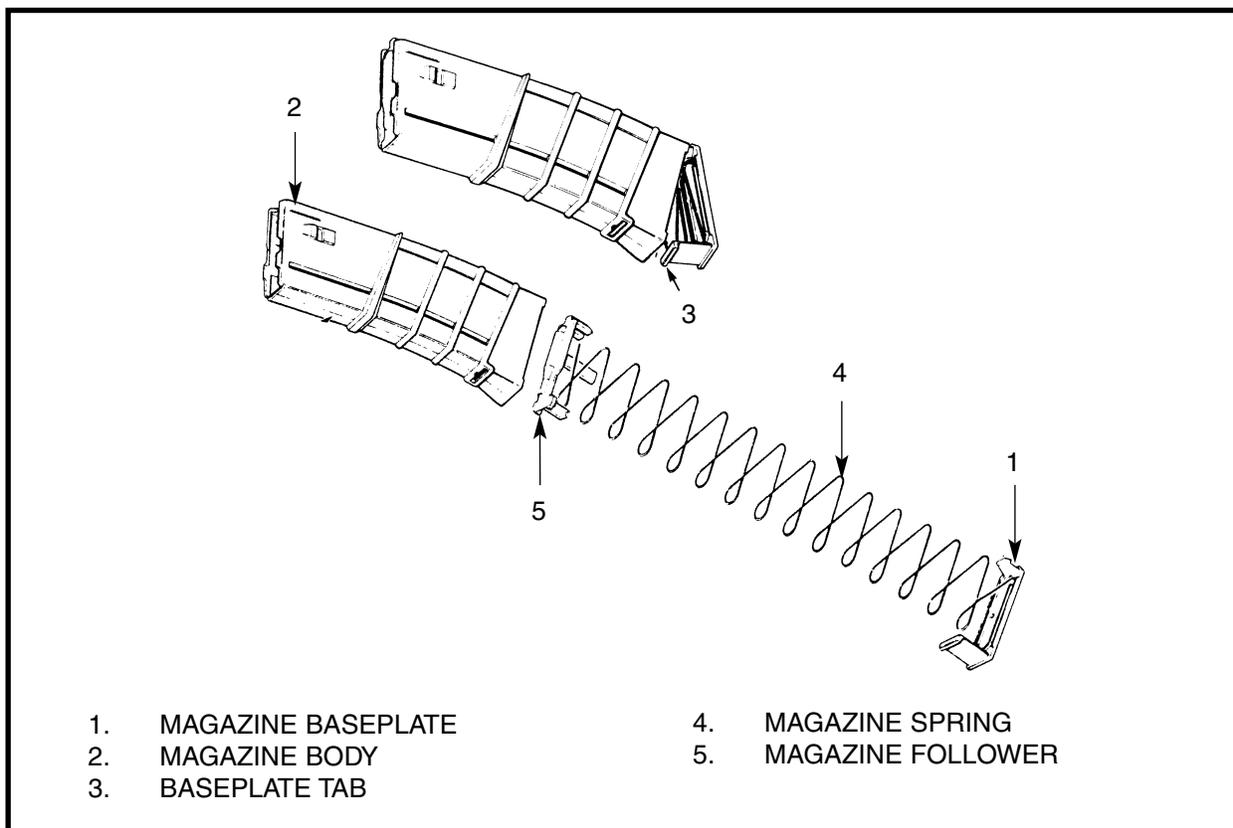


Figure 3-2-64 Assembling and Disassembling the Plastic Magazine

- b. Insert a suitable punch into the hole at the front of the body (2) and push in on the baseplate tab (3);
- c. Rotate the front of the baseplate down and remove baseplate, spring (4) and follower (5).

### INSPECTION AND REPAIR

82. Inspect and repair the plastic magazine as follows:
  - a. Ensure the components are free from nicks, burrs, cracks, gouges or distortion;
  - b. Ensure the lips and locking surfaces of the magazines are correctly formed and undamaged; and

- c. Replace non-serviceable magazines.

## REASSEMBLY

83. To reassemble the plastic magazine proceed as follows:
- a. Assemble the spring to the follower;
  - b. Insert the follower and spring into the magazine body;
  - c. Position baseplate on spring and compress the spring into the magazine body;
  - d. Hook the baseplate into the slot at the rear of the body; and
  - e. Rotate the front of the baseplate up to engage the body of the magazine.

## SIGHTS

### IRON SIGHT

84. **Disassembly.** Disassemble the Detachable Iron Sight assembly as follows:

#### NOTE

The DIS, Back-up and Iron Sight all share the same aperture and mechanism. The disassembly procedure is similar for all sights.

- a. Carefully drive out the windage drum pin with a suitable punch. See Figure 3-2-65;
- b. Maintain control of the windage drum and remove the punch;
- c. Remove the windage drum, the rear sight detent and rear sight detent spring. See Figure 3-2-66;
- d. Using the flat tip screwdriver, unscrew the rear sight windage screw to release the rear sight and spring; and
- e. Remove the rear sight windage screw (1), rear sight (2) and rear sight spring (3). See Figure 3-2-67.

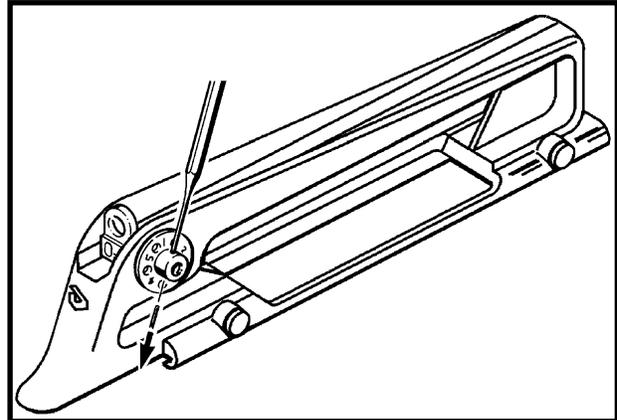


Figure 3-2-65 Removing the Windage Drum Pin

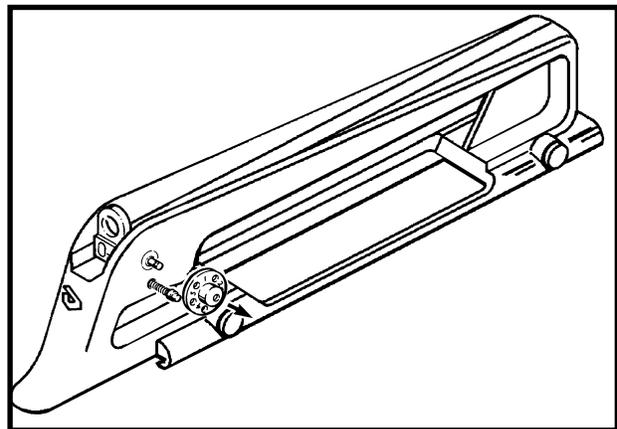


Figure 3-2-66 Removing the Windage Drum

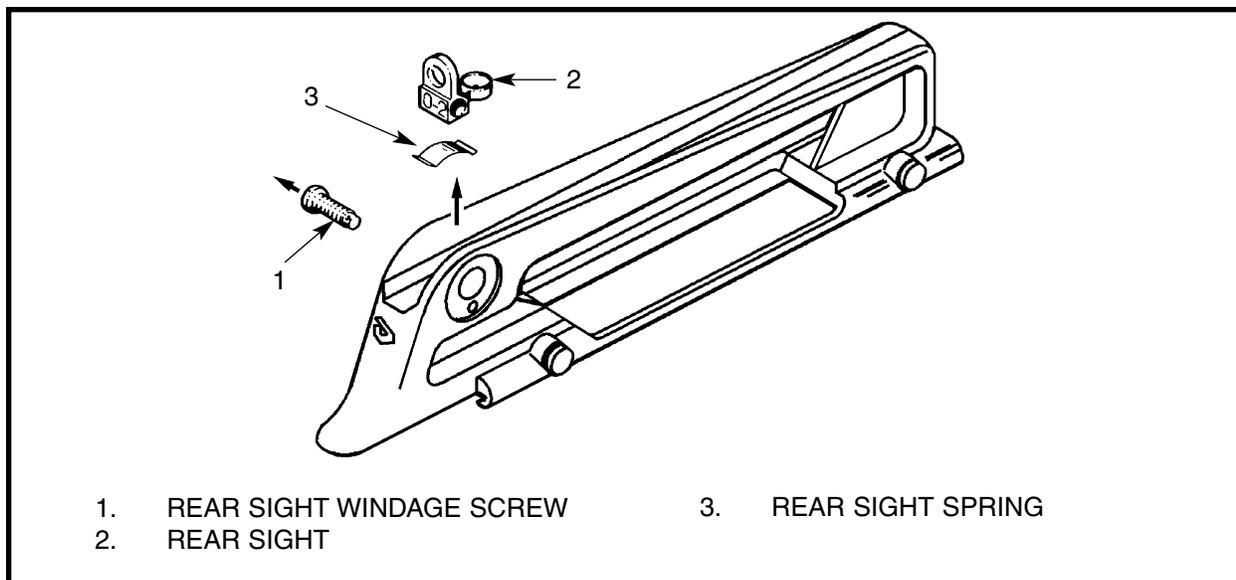


Figure 3-2-67 Removing the Rear Sight

•••••  
• CAUTION •  
•••••

The clamping shafts of these sights are staked to prevent inadvertent removal and loss of the wing nuts. The wing nuts are not normally removed except for replacement of parts.

- f. To remove the wing nuts, refer to figure 3-2-68 and proceed as follows:
- (1) Unscrew the wing nut as far as allowed by the staking;
  - (2) Secure the sight body in a vice and cut the clamping shaft (1), through the threaded section, with a hacksaw;
  - (2) Remove the wing nut (4) with the cut-off end of the clamping shaft still in place, the spring washer (3), and the clamping plate (2); and

•••••  
• CAUTION •  
••~••

Before removing the cut-off end of the clamping shaft from the wing nut, clean up the threads on the cut end to remove burrs that may damage the wing nut threads.

- (3) Unscrew the wing nut over the cut end of the clamping shaft.

85. **Inspection and Repair.** Inspect and repair the rear sight components as follows:

- a. Check the sight components for burrs, cracks and distortion;
- b. Check the threads of the windage screw and rear sight to ensure that they are free of damage, and that they do not bind on assembly;

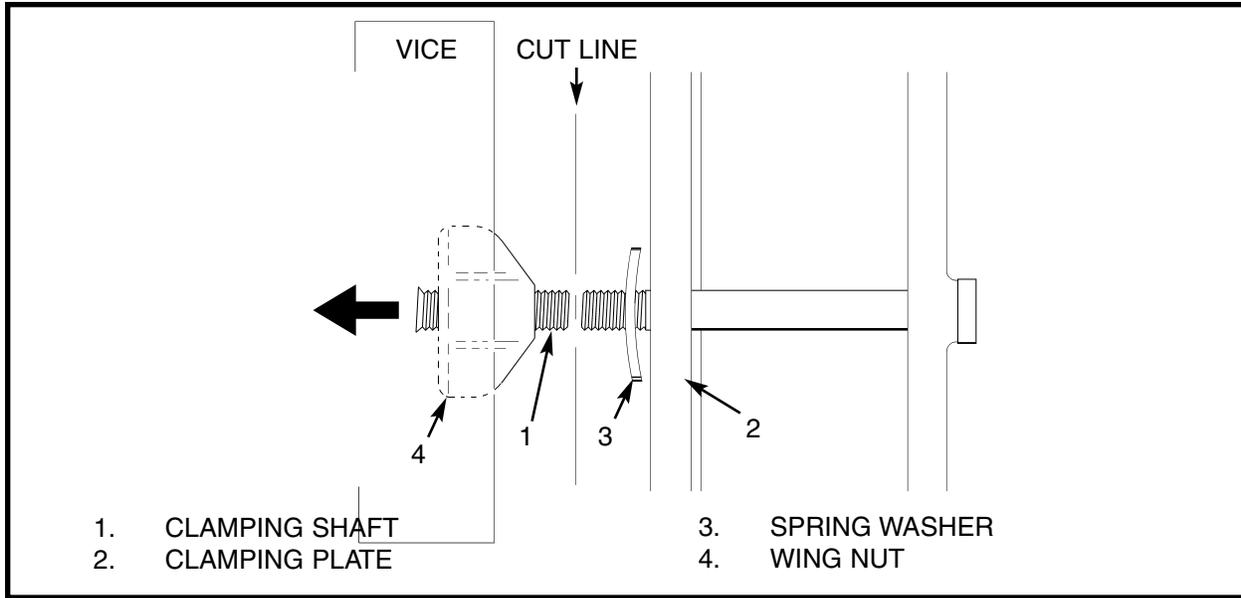


Figure 3-2-68 Removing the Wing Nuts from the DIS

- c. Remove nicks and burrs with a smooth file or fine stone, taking care not to alter original critical dimensions; and
  - d. Replace non-serviceable parts as required.
86. **Reassembly.** Reassemble the sight in reverse order to the disassembly procedure. Stake the clamping shafts to secure the wing nuts as follows:
- a. Screw the wing nut onto the clamping shaft until approximately 3 mm (1/8 in.) of thread is exposed in the recess of the wing nut;
  - b. Support the head of the clamping shaft and carefully cross stake the end of the clamping shaft with a narrow straight chisel; and
  - c. Screw the wing nut in and out against the staking to ensure free movement and retention.

### ASSEMBLED WEAPON SERVICEABILITY INSPECTION

#### GENERAL

87. Inspect the exterior visually for condition of finish, signs of fractures, chipping, cracking, splitting or other damage.

#### UPPER RECEIVER AND BARREL GROUP

88. Check the assembled upper receiver and barrel group as follows:
- a. Ensure that the compensator is not loose or bent;

- b. Ensure that the front sight protectors are not bent or cracked, and that the front sight post is secure;
- c. Inspect the barrel to ensure that it is straight, free from fouling or other obstruction, and meets gauging requirements. Rifles which show evidence of erosion at the commencement of rifling (C of R) should be range tested for accuracy and incidents of keyholing;
- d. Ensure that the chamber is free of roughness or burrs, and that the chromium plating is intact;
- e. Inspect all parts of the gas system to ensure that carbon deposits are removed and vent holes are clear, and that the gas tube aligns with the carrier key.
- f. Inspect the handguards for cracks or chips, and ensure that the two half sections fit together properly. Check also for gaps or sharp edges which could cause injury to the hands;
- g. Ensure that the positive retention of the back sight in each position;
- h. Ensure that the rear sight protectors are not bent or cracked; and
- j. Ensure that the ejection port cover is held closed by its latch.

### **BOLT CARRIER GROUP**

89. Check the bolt carrier group serviceability as follows:
- a. Inspect the extractor for wear or chipping;
  - b. Inspect the bolt carrier for fractures or burrs; and
  - c. Ensure that bolt carrier key screws are tight and properly staked.

### **BLANK FIRING ATTACHMENT**

90. The blank firing attachment shall be maintained in serviceable condition so that it may be securely fastened to the compensator. The blank firing attachment with the exception of the threads, shall be painted with yellow or red, heat resisting enamel for identification purposes. See Figure 3-2-69.

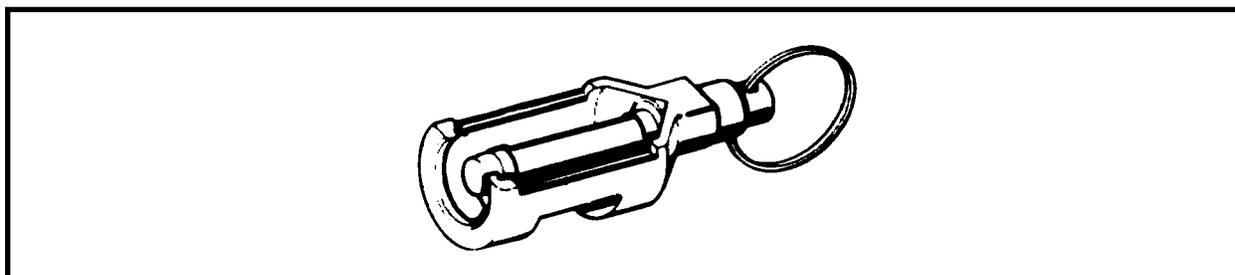


Figure 3-2-69 Blank Firing Attachment



## PART 4 TESTS AND ADJUSTMENTS

### FIRING PIN PROTRUSION

1. Test firing pin protrusion as follows:
  - a. Disassemble the firing pin and bolt from the bolt carrier;
  - b. Thoroughly clean the firing pin, bolt and firing pin protrusion gauge;
  - c. Insert the firing pin into the bolt from the rear and hold it fully forward; and
  - d. Gauge firing pin protrusion. See Figure 4-1.
  
2. Should the firing pin protrusion not meet gauging limits, that is if it is not within the 0.71 to 0.91 mm (0.028 to 0.036 in.) range, ensure that carbon build-up or burring in the bolt are not causing the problem. Determine the cause of the problem and replace defective parts as required.

### BORE EROSION

3. Bore wear is gauged by using the barrel erosion gauge 8790190-1. To determine barrel life proceed as follows:

- a. Remove the bolt carrier group and separate the upper and lower receivers;
- b. Thoroughly clean the chamber, bore and barrel erosion gauge;
- c. With the barrel in the horizontal position insert the gauge into the breech end until it stops, **DO NOT** force; and
- d. Determine barrel life by reading the gauge marking that is in line with the rear face of the upper receiver. See Figure 4-2.

4. When erosion and wear of the barrel result in the reject line of the gauge entering the upper receiver, past the rear face, the weapon shall be backloaded.

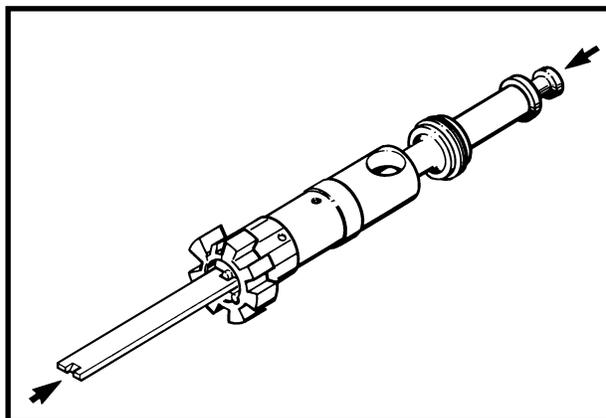


Figure 4-1 Gauging Firing Pin Protrusion

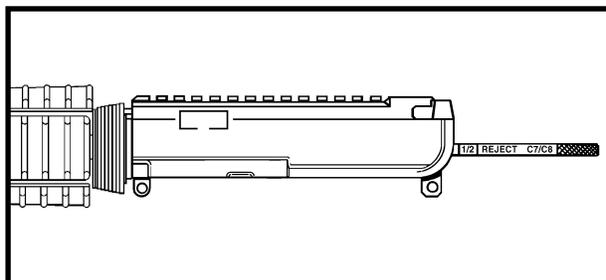


Figure 4-2 Gauging the Barrel

### BORE STRAIGHTNESS

5. Test bore straightness by the following procedure:

- a. Break open the weapon and remove the bolt carrier group;
- b. Thoroughly clean the bore and 5.49 mm bore straightness "GO" gauge;
- c. Hold the weapon over a work bench with the barrel vertical; and
- d. Insert the gauge into the barrel from the breech end. See Figure 4-3.

**NOTE**

**DO NOT** allow the gauge to fall onto a hard surface.

6. The gauge shall pass freely through the barrel. Clean and retest weapons failing to pass the gauge freely.

- a. Using a commercial chemical fouling remover, brush out the fouling with the bore brush in accordance with normal cleaning procedures;
- b. Repeat as necessary; and
- c. Inspect bore for straightness using barrel straightness gauge 8576410-1.

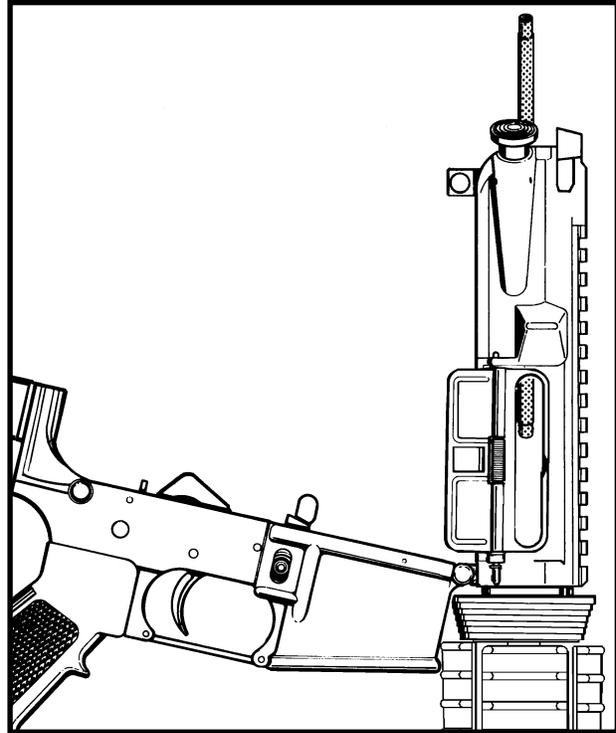


Figure 4-3 Testing Bore Straightness

**HEADSPACE**

7. See Figure 4-4. The headspace dimension (1) is the distance between the face of the cartridge seat of the bolt (2) and the datum diameter (3) of the cone at the front of the chamber. Headspace for the C7 and C8 weapons shall be between 37.10 and 37.42 mm. Check headspace with the "GO" and "NOT GO" headspace gauges by the following procedure:

- a. Separate the upper receiver and barrel group from the weapon;
- b. Withdraw the bolt carrier group far enough to allow the headspace gauge to be positioned in the chamber;
- c. Insert the headspace gauge into the chamber; and
- d. Push the bolt carrier group forward with a slight, steady finger pressure.

8. The bolt shall close and lock over the "GO" headspace gauge. It shall not lock over the "NOT GO" headspace gauge. See Figure 4-5. If the weapon does not pass the test, retest it with a known serviceable bolt assembly to determine the source of the problem. If after retesting with

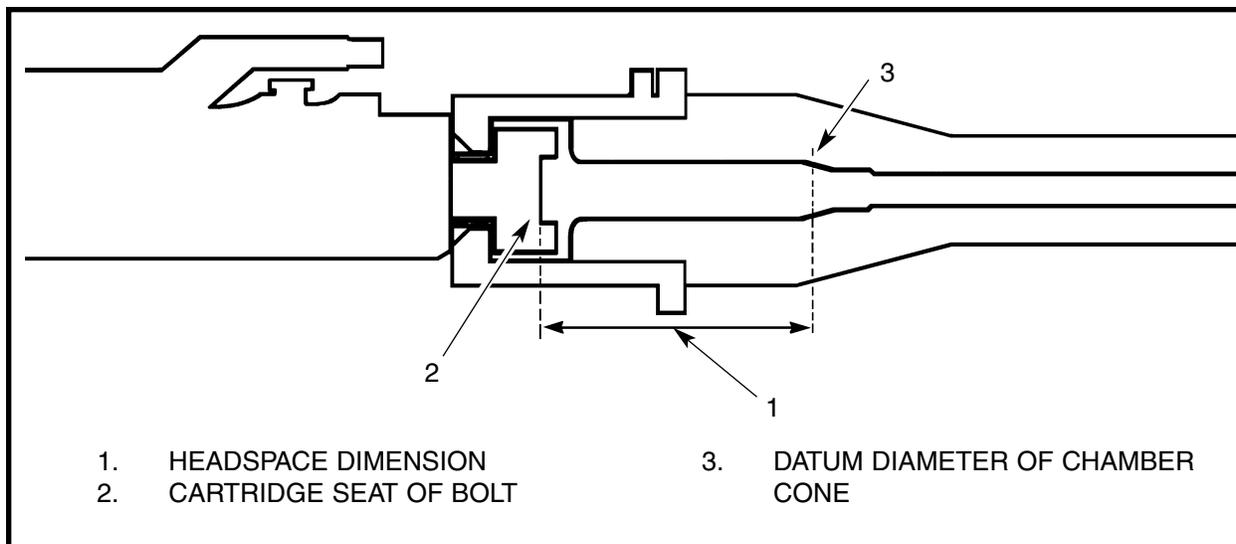


Figure 4-4 Headspace Dimension Detail

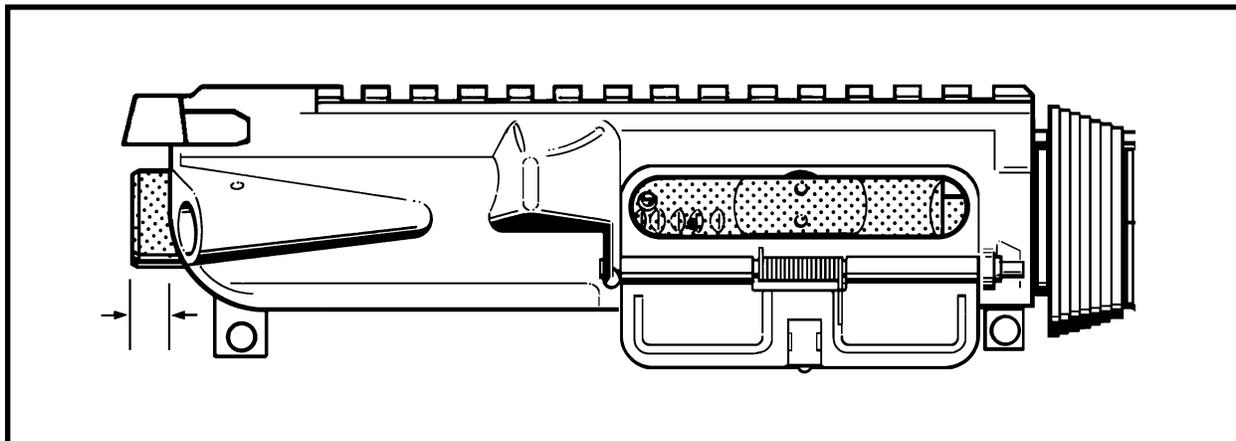


Figure 4-5 Correct Indication with "NOT GO" Headspace Gauge

a serviceable bolt, it is determined that the barrel assembly is non-serviceable, replace the barrel assembly.

### BOLT RING WEAR

9. Check for worn bolt rings as follows:
  - a. Remove the bolt carrier group from the weapon;
  - b. Remove the bolt from the bolt carrier;
  - c. Thoroughly clean the bolt and bolt carrier;
  - d. Re-install the bolt in the bolt carrier but do not install the cam pin;

- e. Move the bolt in and out to check for binding in the bolt carrier; and
  - f. Hold the bolt carrier with the bolt facing downward. See Figure 4-6.
10. The bolt shall not drop out of the bolt carrier on its own weight. If the bolt drops out, replace all three bolt rings.

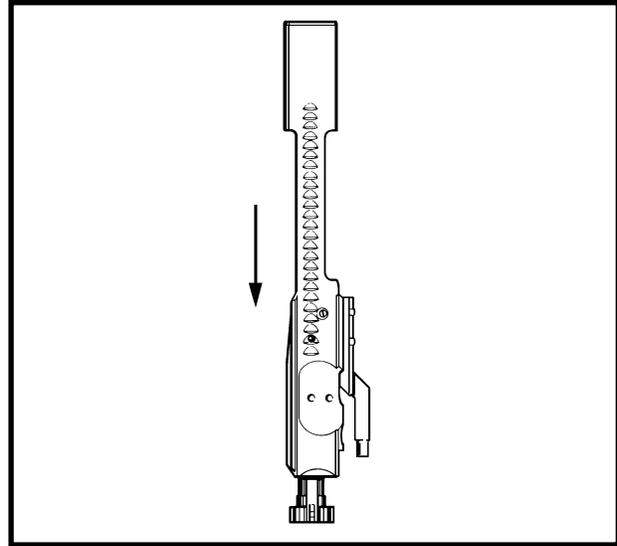


Figure 4-6 Bolt Ring Wear Test

### RETURN SPRING LENGTH

11. See Table of Specifications for approximate return spring lengths.
12. Replace Defective Springs. **DO NOT** attempt to adjust spring length by stretching the spring.

### HAMMER AND TRIGGER AXIS PIN HOLE WEAR

13. Gauge the diameter of the hammer and trigger axis pin holes from both sides of the receiver with the “NOT GO” plug gauge. If the “NOT GO” gauge passes completely through the receiver wall the axis pin hole is no longer serviceable. Backload weapons failing this test.

### NOTE

Hammer and trigger axis pin holes shall only be gauged if the trigger mechanism has been removed for other work, if there is side play evident in the trigger mechanism or if the weapon malfunctions and the trigger mechanism is suspect.

### TRIGGER PULL

14. Check the trigger mechanism for cleanliness and smooth operation. Test trigger pull by the following procedure:
  - a. Cock the weapon and move the fire control selector to the “R” position;
  - b. Place a trigger test scale on the trigger and apply a steady pressure in line with the bore of the weapon; and
  - c. Note the weight at which the trigger releases the hammer.
15. The trigger pull shall be between 2.26 and 3.85 kg (5 and 8-1/2 lb). Adjust trigger pull by exchanging parts in the trigger mechanism as required.

● ● ● ● ● ● ● ●  
● CAUTION ●  
● ● ● ● ● ● ● ●

**DO NOT** adjust trigger pull by altering the shape or dimension of the sear or hammer bents.

**TRIGGER MECHANISM SAFETY TEST**

16. Test the function and safety of the trigger mechanism as follows:
- a. With the fire control selector set at “S”:
    - (1) Remove the magazine;
    - (2) Clear the chamber;
    - (3) Open the receivers; and
    - (4) Depress the trigger: the hammer shall not move forward.
  - b. With the fire control selector at “R”:
    - (1) Take control of the cocked hammer, to restrain it upon release, and depress the trigger; the trigger shall release the hammer;
    - (2) Hold the trigger fully rearward;
    - (3) Cock the hammer manually: the disconnecter shall catch and hold the hammer rearward;
    - (4) Slowly release the trigger: the disconnecter shall release the hammer and the hammer shall rise slightly and be positively engaged by the sear; and
    - (5) Repeat the above test to verify these actions.
  - c. With the fire control selector at “Auto”:
    - (1) Take control of the cocked hammer, to restrain it upon release, and depress the trigger: the hammer shall release;
    - (2) Hold the trigger fully rearward;
    - (3) Cock the hammer manually: the automatic sear shall catch and hold the hammer;
    - (4) With the trigger depressed, push forward on the top of the automatic sear; the hammer shall release;
    - (5) Recock the hammer manually: the automatic sear shall catch and hold the hammer;
    - (6) Release the trigger: the automatic sear shall maintain control over the hammer; and
    - (7) Push forward on the automatic sear: the hammer shall rise slightly and be positively engaged by the trigger sear.
  - d. With the weapon cocked and uncocked, check to ensure that the trigger returns forward under the action of its spring when either partially or completely depressed.

## ZEROING

### IRON SIGHTS

17. **General.** Zeroing the rifle is accomplished through adjustments to both the front sight and the rear sight. See Figure 4-7.

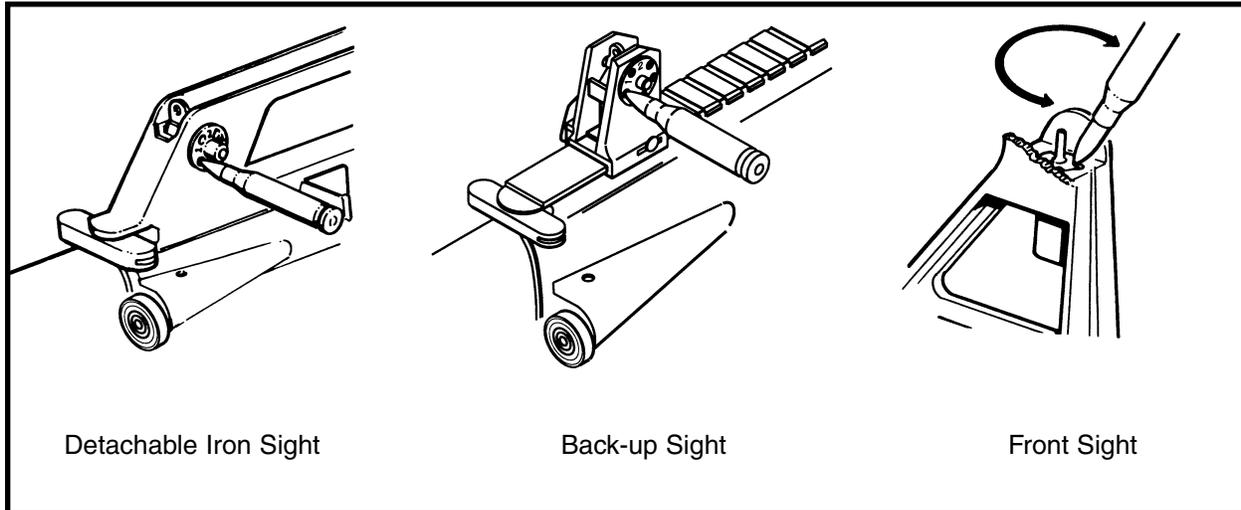


Figure 4-7 Sight Adjustment

18. **Adjusting the Rear Sight.** The sight on the DIS and Back-up sights has two apertures. The large aperture (battle sight) is used for shooting at short range or during low light conditions. The small aperture can be used at all ranges. To zero the sight in azimuth or to adjust windage, depress the detent with a punch or suitable object and rotate the windage drum left or right. To move the mean point of impact (MPI) to the right: rotate the windage drum clockwise.

### NOTE

The DIS or back-up sight is fitted to the rifle with the windage drum on the right, when viewed from the rear.

19. **Front Sight Adjustment.** To zero or adjust elevation, depress the front sight detent with a punch, and rotate the front sight post clockwise or counter-clockwise. To move the MPI up: rotate the front sight clockwise.

- END -

