Manual No. CM 102

COLT'S AUTOMATIC RIFLE

AR-15 MODEL 613
AND
AR-15 MODEL 614

ARMORER / DEPOT
MAINTENANCE AND REPAIR MANUAL

1 September 1970

Colt Industries
Colt's Inc
Military Arms Division

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CHAPTER I - INTRODUCTION

Section 1 - General

1-1. Scope.

This manual provides specific instructions for the inspection and maintenance of the 5.56 mm, AR-15 Automatic Rifles, Models 613 and 614, and the Bipod, U. S. Model M3, by armorer and depot shop personnel. The information and instructions provided are normally beyond the scope of tools and equipment available to the operator and/or his operational unit.

Figure 1-1. AR-15 Automatic Rifle - Model 613 shown with 30 Round Magazine (U. S. Army Model M16A1).

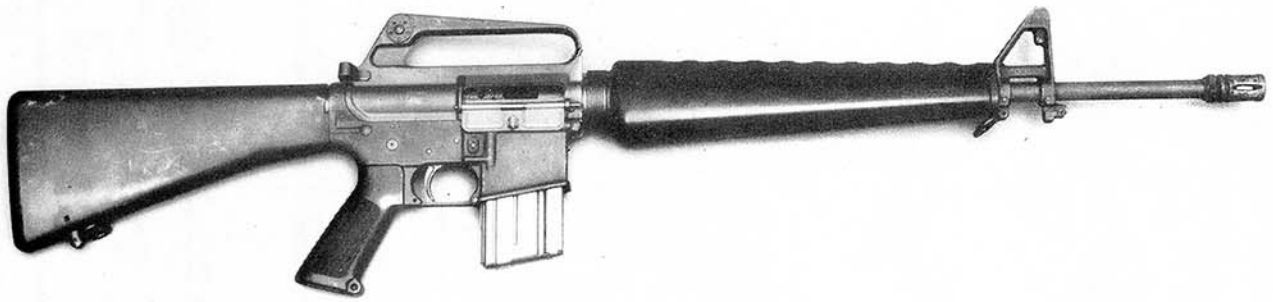


Figure 1-2. AR-15 Automatic Rifle - Model 614 shown with 20 Round Magazine (U. S. Army Model M16).

1-2. Recommendations for Improvement of this Manual.

User reports of errors or ommissions and recommendations for improving this manual are encouraged. It is requested that such reports be submitted to:

Colt's Inc
Military Arms Division
150 Huyshope Avenue
Hartford, Connecticut 06102

Section 2 - Description and Data

1-3. General.

Refer to Colt's Manual No. CM 101, Chapter I, Section 2, Page 2, for the AR-15 Automatic Rifle description and data.

CHAPTER II - REPAIR AND MAINTENANCE INSTRUCTIONS

Section 1 - Repair Parts, Special Tools, and Equipment

2-1. Repair Parts.

a. Repair parts for operator and unit maintenance are listed in Colt's Manual No. CM 101, Appendix B, Page 65.

b. Repair parts for armorer and depot maintenance are listed and illustrated in Appendix B of this manual.

2-2. Special Tools and Equipment.

The special tools and equipment required for the maintenance and repair operations described in this manual are listed in Tables 2-1 and 2-2, which follow, and in Appendix A of this manual.

Table 2-1, Armorer's Kit, AR-15 Rifle.

Tool	Colt's Part No.	Figure No.	Page No.
Armorer's Kit, AR-15 Rifle	62675	--	--
Tool Box, Steel	91414	--	--
Brush, Bore Cleaning	94144	A1	41
Brush, Chamber Cleaning	94145	A1	41
Punch, Center	94146	6-2b	38
Depressor, Front Sight Detent	62672	A12	45
Depressor, Pivot Pin Detent	62673	A11	44
Extractor, Ruptured Cartridge Case	62674	A3	42
Gage, Bore Straightness	T32571	2-1	16
Gage, Firing Pin Protrusion	62679	A7	43
Gage, Headspace	T27921	A4	42
Wrench Handle, Flexible	94147	3-2p	22
Hammer, Ball Peen 8 oz.	94148	--	--
Hammer, Ball Peen 16 oz.	94149	--	--
Hammer, Soft Face	94150	--	--
Pliers, External Retaining Ring	94151	3-2s	23
Punch, Drive Pin - 1/16"	94152	3-2a	21

Table 2-1 - Armorer's Kit, AR-15 Rifle (Cont.)

Tool	Colt's Part No.	Figure No.	Page No.
Punch, Drive Pin (Gas Tube)	62697	A10	44
Punch, Drive Pin - 3/32 in.	94154	A5	43
Punch, Drive Pin - 1/8 in.	94155	3-2k	22
Punch, Drive Pin - 1/4 in.	94156	Para. 6-2	36
Punch, Bolt Catch Pivot Pin	62680	A9	44
Punch, Taper Pin Starter	62682	A5	43
Punch, Taper Pin Insertion	62683	A5	43
Rod, Cleaning, 5.56 mm	62684	A1	41
Screwdriver, Flat Blade Mechanics	94157	4-1a	31
Setter, Punch - .180 ID x 3-1/2 in. long	62688	--	--
Setter, Punch - .190 ID x 3-1/2 in. long	62689	--	--
Setter, Punch - .190 ID x 6 in. long	62690	--	--
Setter, Punch - .220 ID x 3-1/2 in. long	62691	--	--
Setter, Punch - (with flat)	62692	A8	43
Socket, Hex-bit Wrench - (with short bit)	94158	6-3	38
Tool, Alignment, Barrel Nut	62693	6-2	37
Tool, Pivot Pin Detent Installation	62698	A6	43
Tool, Reflector, Chamber	62694	2-3	17
Vise Jaws, Barrel Removal	62695	A13	46
Vise, Bench, Machinists 4 in.	94154	--	--
Wrench, Combination	62696	A2	42
Wrench, Front Sight Post	CE1008	A12	45
Wrench, Socket Head Hex Screw	94160	6-3	38
Wrench, Torque Limiting, 3/8 in. Square Drive	94161	6-3	38
Wrench, Torque Limiting, 1/2 in. Square Drive	94162	6-2	37

Table 2-2, Consumable Supplies Requirement

Item No.	Nomenclature	Qty.
1.	Cleaner, Tobacco Pipe (Dills)	AR
2.	Cleaning Compound, Rifle Bore (U.S. Fed. Spec. P-C-111 or equivalent	AR
3.	Cleaning Compound, Solvent (U.S. Spec. Mil-C-372 or equivalent)	AR
4.	Cloth, Abrasive: crocus ferric oxide and quartz	AR
5.	Coating Compound, Bituminous, Solvent Type: polyvinyl butyrol resin and phosphoric acid (touch-up)	AR
6.	Grease, Molybdenum Disulfide (U.S. Spec. Mil-G-21164 or equivalent)	AR
7.	Lacquer: black (jet) lusterless acrylic nitrocellulose type (touch-up) (U.S. Fed Spec TT-L-50D, Type 1 or U.S. Spec Mil-L-19538; Color 37038)	AR
8.	Lubricating Oil, Semi-Fluid (LSA), (U.S. Spec Mil-L-46000)	AR
9.	Lubricating Oil, Weapons (LAW) (U.S. Spec Mil-L-14107)	AR
10.	Lubricating Oil, General Purpose Preservative (U.S. Fed. Spec VV-L-800 or equivalent)	AR
11.	Penetrating Oil,(U.S. Fed. Spec VV-P-216 or equivalent)	AR
12.	Primer Coating: yellow, cellulose nitrate, corrosion inhibiting (touch-up) (U.S. Spec Mil-P-7962 or equivalent)	AR
13.	Rag, Wiping: Cotton	AR
14.	Sealing Compound, "Permatex No. 3D Aviation Form-A-Gasket" (Permatex Co., Brooklyn, N.Y.)"	AR
15.	Swab, Small Arms Cleaning	AR

Section 2 - Troubleshooting

2-3. General.

Trouble shooting instructions are contained in Colt's Manual No. CM 101, Chapter III, Section 5, Page 51.

Section 3 - Maintenance Inspections

2-4. General.

This section provides specific instructions for inspection of materiel in the field or in maintenance shops. Troubleshooting information is incorporated wherever applicable as a normal phase of inspection.

2-5. Purpose of Inspection.

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

2-6. Categories of Inspection.

The categories of inspection performed by direct and general support maintenance personnel are listed in paragraphs 2-7 and 2-8 following. For inspection procedures, refer to Table 2-3, Page 9.

2-7. Inspection of Materiel in the Field.

This is the inspection of equipment to detect probable failures before unserviceability occurs; inspection to determine the availability and use of technical and supply manuals and lubrication instructions; inspection to determine the accuracy of records, authorized levels of equipment and supplies, practice of supply economy, preservation, and knowledge of the proper procedures for requisitioning supplies and equipment, and follow-up thereon.

2-8. Direct and General Support Inspection.

a. Initial inspection. This is an inspection of materiel received in maintenance shops for purposes of determining the degree of repairs and parts requirements. This includes determination of modification work orders to be applied.

b. In-Process Inspections. These are inspections performed in the process of repairing the materiel, to insure that all parts conform

to the prescribed repair standards, that the workmanship is in accordance with approved methods and procedures, and that deficiencies not disclosed by initial inspection are found and corrected.

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

2-9. Inspection Procedures.

The inspection procedures for the rifle and bipod after disassembly are shown in Table 2-3, Page 9, and specific instructions on inspection prior to disassembly are shown in Paragraph 2-10 below.

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

2-10. Inspection Prior to Disassembly.

NOTE: Check to see that the rifle and bipod have been cleaned of all grease, oil, dirt, or foreign matter which might interfere with proper functioning or obscure the true condition of the parts.

a. Make an overall inspection of the rifle and bipod for general appearance, condition, and operation.

b. On materiel turned in for repair, make an initial inspection to determine the extent of repair required and the basis of procuring the parts or assemblies necessary to accomplish the repair.

c. Refer to Chapter 5, Page 32, for functional inspections.

Table 2-3 - Maintenance Inspections

Field Inspection	Direct and General Support Inspection		Action	Reference
Spot-Check	Initial	In-Process		
1. MAGAZINE ASSEMBLY				
X	X	--	a. Visually inspect magazine box for bulges, dents, cracks, bent cover lips, excessive wear, or damaged feeder lips.	
X	X	--	b. Check rear area of follower for chips or excessive wear which would impair functioning of the bolt catch.	
X	X	--	c. Examine spring for breaks, corrosion, or improper assembly to the follower.	
2. UPPER RECEIVER GROUP				
			a. General	
X	X	--	(1) Inspect for cracks or mutilation which would affect function. Small dents or gouges will not be cause for rejection.	
X	X	--	(2) Inspect all parts for wear or damage.	
X	X	X	(3) Check springs for breaks or deformations.	
			b. Handguard Assembly.	
X	X	--	(1) Inspect for breaks or separations which prevent proper	

Table 2-3 - Maintenance Inspections (Cont.)

Field Inspection	Direct and General Support Inspection		Action	Reference
Spot-Check	Initial	In-Process		
			retention or interfere with proper function of the weapon.	
X	X	--	(2) Inspect for dents, cracks, or chipping that would impair the functioning of components or the weapon.	
			c. Barrel and Barrel Extension.	
X	X	--	(1) Inspect surfaces for cracks or other defects.	
X	X	--	(2) Check barrel extension for burrs, or broken or worn locking lugs.	
X	X	--	(3) Check bore for cleanliness and freedom from corrosion.	
X	X	--	(4) Individual pits as large in diameter as a land or groove width are allowable in the bore only. Uniformly fine pits are acceptable in the bore.	
X	X	--	(5) Lands that appear dark due to coating of gilding metal, when viewed with the naked eye, from projectiles are allowable.	

Table 2-3 - Maintenance Inspections (Cont.)

Field Inspection	Direct and General Support Inspection			Reference
	Spot-Check	Initial	In-Process	
	X	X	--	(6) Definitely ringed bores or bores ringed sufficiently to bulge the outside surface of the barrel are cause for rejection.
	X	X	--	(7) Inspect for barrel erosion. A borescope or cystoscope will greatly assist in this inspection. Appreciable erosion can exist and the rifle may still target satisfactorily. Target group size obtained by test firing should be the final criterion used to judge the acceptability of the barrel. The maximum permissible group size should be established by the user.
	X	X	--	(8) Inspect for barrel straightness using gage P/N T3257. With the barrel held vertically, the gage should drop through the barrel by its own weight.
	X	X	--	(9) Inspect chamber for cleanliness and freedom from carbon deposits and corrosion.

Figure 2-2, Page 16

Figure 2-3, Page 17

Table 2-3 - Maintenance Inspections (Cont.)

Field Inspection	Direct and General Support Inspection		Action	Reference
Spot-Check	Initial	In-Process		
X	X	--	(10) Inspect chamber for pitting using chamber reflecting tool, P/N 62694. Position tool in chamber as shown in Figure 2-3. Slowly rotate the upper receiver group so that the reflected light will illuminate the chamber walls. A pit or pits as large as 1/32 inch in diameter shall be cause for rejection. A small number of uniformily fine pits, (approximately .010 in. diameter) shall be acceptable provided that cartridges fired in the weapon do not exhibit cases with unusual or noticeable deformation or marking of the case body or excessive offset of the extractor groove flange.	Figure 2-3, Page 17
X	X	X	(11) Check headspace, using Headspace Gage T-27921.	Figure 2-2, Page 16
X	X	--	d. Front sight and Gas Tube.	
X	X	--	(1) Check front sight for cracks and general condition.	
X	X	--	(2) Check front sight post and detent for rust or other deficiencies which could cause restricted movement.	
X	X	--	(3) Check gas tube for cracks, deformities, or eccentric wear at rear tip.	
3. BOLT CARRIER GROUP				
X	X	--	a. Check for cracks in bolt (cam pin hole area).	

Table 2-3 - Maintenance Inspections (Cont.)

Field Inspection	Direct and General Support Inspection		Action	Reference
Spot-Check	Initial	In-Process		
X	X	--	b. Inspect bolt for pitted or chipped bolt face, elongated firing pin hole, or corroded ejector.	
X	X	X	c. Each bolt locking lug should be inspected periodically for cracks. Use a black light if available, otherwise use a glass of no more than 3X magnification. Particular attention must be given to the lugs adjacent to the extractor slot, particularly where the rear shoulder of the lug meets the bolt body. Bolts with lugs exhibiting cracking, or which are definitely suspect, will be replaced.	
X	X	X	d. Inspect for broken bolt rings and proper spacing in ring gaps. Ring gaps are to be staggered to prevent loss of gas pressure. Replace bolt rings when drag cannot be felt while sliding the bolt into the bolt carrier.	
X	X	--	e. Inspect firing pin for wear and burrs.	
X	X	X	f. Check firing pin protrusion, using gage 62679. Protrusion should be between 0.028 and 0.036.	Figure 2-4, Page 17
X	X	--	g. Check key and bolt carrier assembly for cracks, burrs, chips, or rust or blockage of the key bore and gas passages, or a bent carrier key.	

Table 2-3 - Maintenance Inspections (Cont.)

Field Inspection	Direct and General Support Inspection		Action	Reference
Spot-Check	Initial	In-Process		
X	X	X	h. Check socket head capscrews. They must be properly tightened and staked.	Figure 6-3, Page 38
X	X	X	i. Inspect extractor assembly for cracks in the claw area, elongated pivot holes, and for a bent or broken extractor spring.	
			j. Check for broken extractor pivot pin.	
4. LOWER RECEIVER GROUP				
			a. General	
X	X	--	(1) Inspect for cracks, corrosion, or mutilation which would affect functioning. Small dents or gouges will not be cause for rejection. Corroded areas should be noted for immediate repair.	
X	X	--	(2) Inspect all parts for wear and damage.	
X	X	X	(3) Check springs for breaks or deformation.	
	X	X	(4) Check trigger pull, minimum 5.5 lbs., maximum 8.5 lbs.	
			b. Stock Assembly	
X	X	--	(1) Inspect for breaks and separations of material which prevent proper retention or interference with proper functioning of weapon.	

Table 2-3 - Maintenance Inspections (Cont.)

Field Inspection	Direct and General Support Inspection		Action	Reference
Spot-Check	Initial	In-Process		
X	X	--	(2) Inspect for dents, cracks and chipping that would impair the functioning of components or weapon.	
5. BIPOD				
X	X	--	a. Inspect the bipod legs; they shall move freely from closed to open position under spring tension. Inspect for rust and shiny areas. Any found must be touched-up.	
X	X	--	b. Bipod must hold securely to the rifle.	

Figure 2-1. BORE STRAIGHTNESS GAGE.

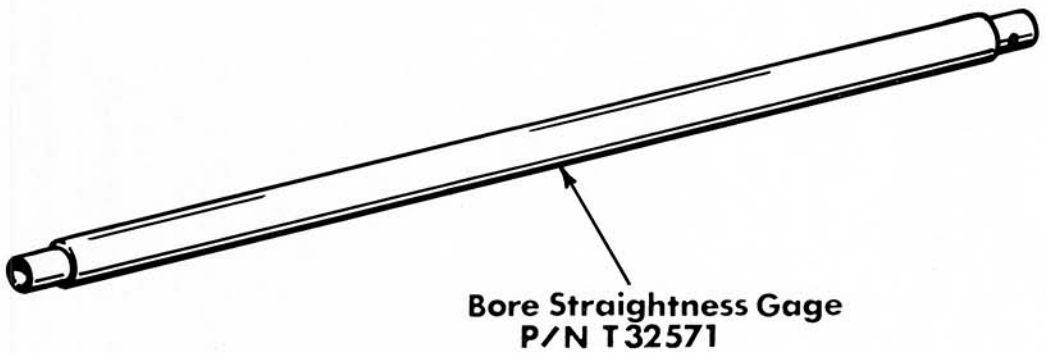
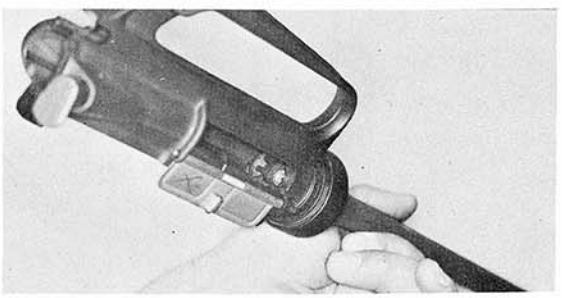
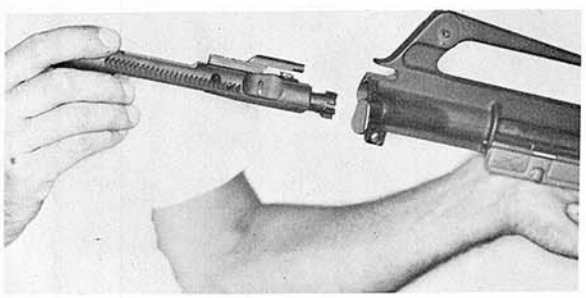


Figure 2-2. HEADSPACE CHECK.

a. Headspace Gage Installation



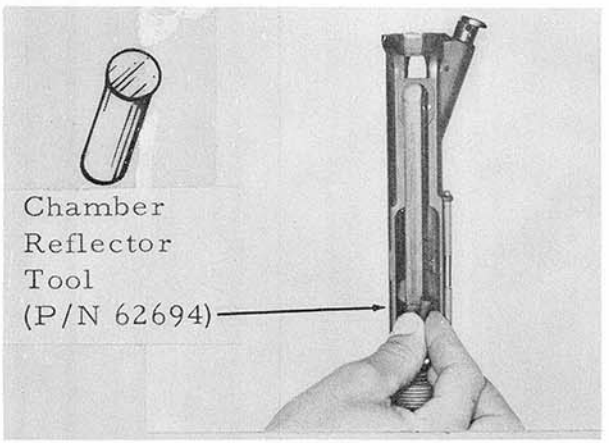
Headspace Gage Installed



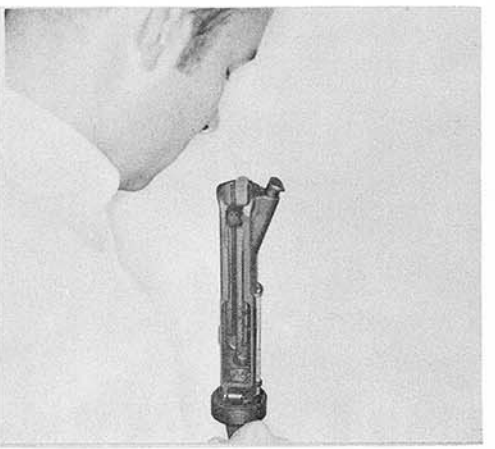
c. Bolt Installation

d. Proper Headspace Indication
Bolt Will Not Go To Locked Position.

Figure 2-3. CHAMBER INSPECTION

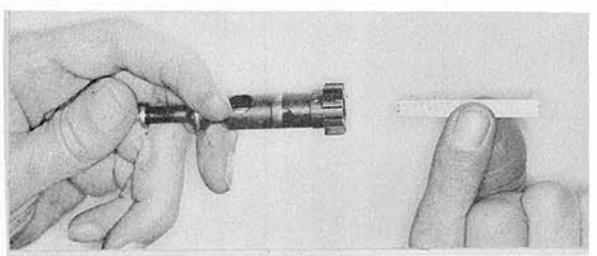


a. Chamber Reflector Tool Installation

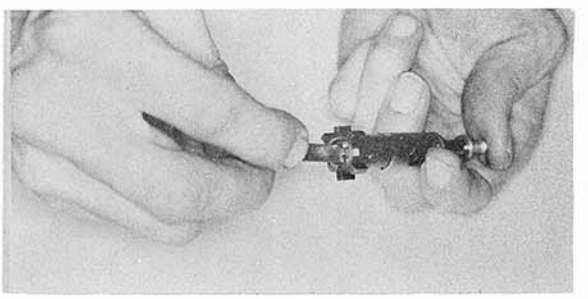


b. Chamber Visual Inspection

Figure 2-4. Firing Pin Protrusion Check



a. Firing Pin Protrusion Gage (P/N 62679)



b. Firing Pin Protrusion Check

NOTE: With the firing pin held firmly forward in the bolt, the end of the firing pin protrusion gage marked "GO" (.036 in.) should pass over the end of the pin (See Fig. 2-4b) without touching it and the end marked "NO-GO" (.028 in.) should hit the end of the firing pin and not pass over it.

CHAPTER III - REPAIR INSTRUCTIONS

Section 1 - General Maintenance

3-1. General.

a. This section contains repair instructions and authorized direct and general support maintenance in the removal, disassembly, cleaning, inspection, lubrication, repair, and assembly of major groups and assemblies for Rifles, Models 613 and 614, and Bipod, Rifle, U. S. Model M3.

b. Refer to Table 3-1, Page 19, for maintenance function.

c. Disassemble in accordance with the instructions contained in Colt's Manual No. CM 101, Page 29, and Figures 3-1, 3-2, and 3-3 of this manual following.

Table 3-1. Guide to Maintenance Functions

Item	Colt's Manual No. CM 101					Colt's Manual No. CM 102			
	Removal/ Installation	Disassembly	Cleaning	Lubrication	Assembly	Disassembly	Cleaning	Assembly	Repair
Magazine Assembly	Fig. 2-10, P. 13	Para. 3-4, P. 29 and 3-10, P. 43	Para. 3-5, P. 29 and 3-11, P. 48	Para. 3-7, P. 40 and 3-14, P. 49	Para. 3-8, P. 42 and 3-13, P. 49	Fig. 3-1, P. 20			
Upper Receiver Group		Para. 3-4, P. 29 and 3-10, P. 43	Para. 3-5, P. 29 and 3-11, P. 48	Para. 3-7, P. 40 and 3-14, P. 49	Para. 3-8, P. 42 and 3-13, P. 49	Fig. 3-2, P. 21	Table 3-2, P. 27	Para. 6-2, P. 36	Chapter VI, P. 33
Bolt Carrier Group		Para. 3-4, P. 29 and 3-10, P. 43	Para. 3-5, P. 29 and 3-11, P. 48	Para. 3-7, P. 40 and 3-14, P. 49	Para. 3-8, P. 42 and 3-13, P. 49		Table 3-2, P. 27	Para. 6-2, P. 36	Chapter VI, P. 33
Lower Receiver Group		Para. 3-4, P. 29 and 3-10, P. 43	Para. 3-5, P. 29 and 3-11, P. 48	Para. 3-7, P. 40 and 3-14, P. 49	Para. 3-8, P. 42 and 3-13, P. 49	Fig. 3-3, P. 26	Table 3-2, P. 27	Para. 6-2, P. 36	Chapter VI, P. 33 (See Note Below)
Bayonet and Scabbard	Para. 4-3, P. 57		Para. 4-4, P. 58	Para. 4-4, P. 58		Para. 4-2, P. 30		Para. 4-2, P. 30	Para. 4-2, P. 30
Bipod	Para. 4-8, P. 59		Para. 4-9, P. 59	Para. 4-9, P. 59					

Note: Weapons turned in to direct support maintenance because of frozen pivot pin detents and springs will be repaired as follows:

a. Place the forward portion of lower receiver in a container of penetrating oil, rifle bore cleaner or carbon removing compound (cleaning solvent) and allow to soak for a period of 24 hours.

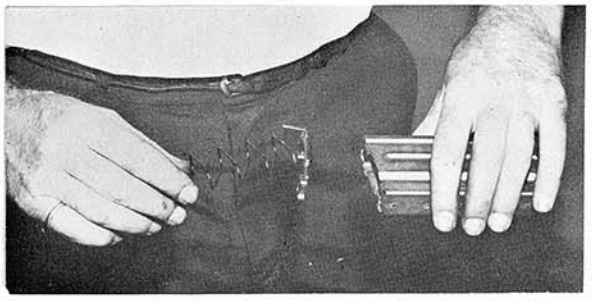
b. Remove the pivot pin, detent and spring using a small piece of wire.

c. After removal of parts the recess and parts must be thoroughly cleaned and lubricated with LSA oil before assembly.

Figure 3-1. MAGAZINE DISASSEMBLY.

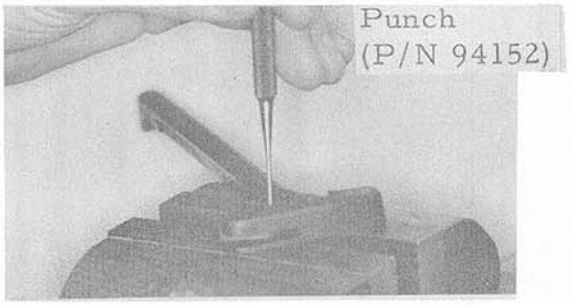
a. Remove Bottom Plate

b. Remove Spring and Follower

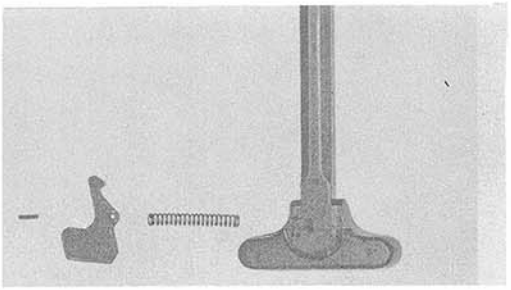


c. Spring and Follower Removed

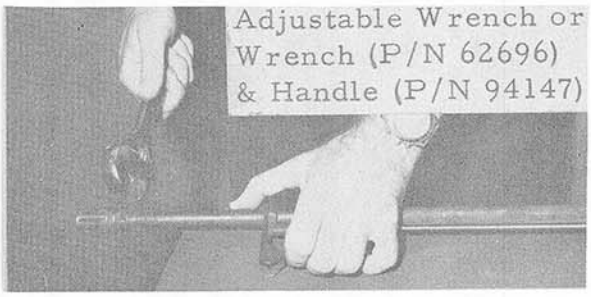
Figure 3-2. DISASSEMBLY OF UPPER RECEIVER GROUP



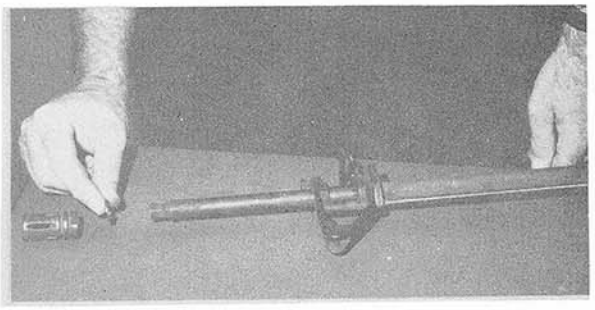
a. Charging Handle Roll Pin Removal



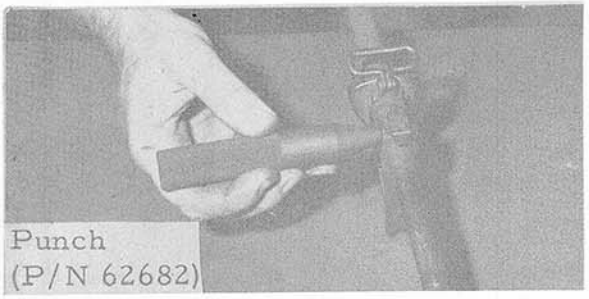
b. Charging Handle Latch Disassembled.



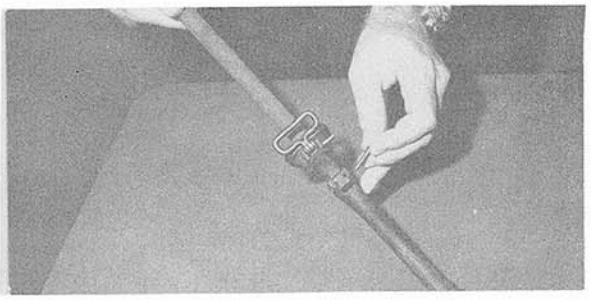
a. Flash Suppressor Removal



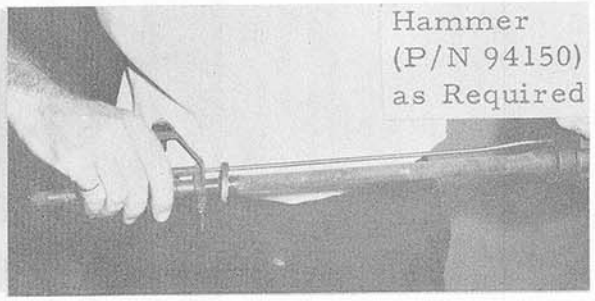
d. Flash Suppressor Removed



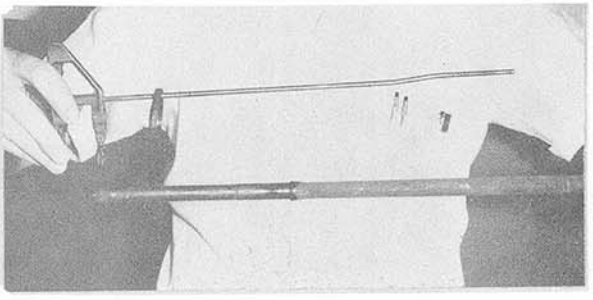
e. Front Sight Taper Pin Removal



f. Front Sight Taper Pins Removed

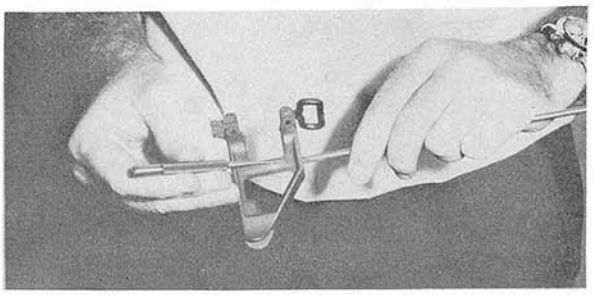


g. Front Sight Removal

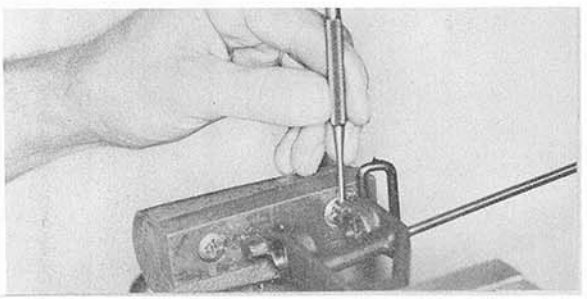


h. Front Sight Removed

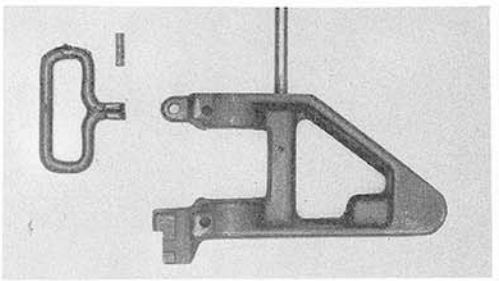
Figure 3-2. DISASSEMBLY OF UPPER RECEIVER GROUP (continued)



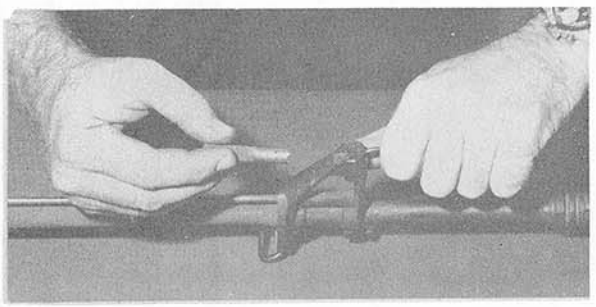
j. Gas Tube Toll Pin Removal
(5/64" Punch, P/N 62697)



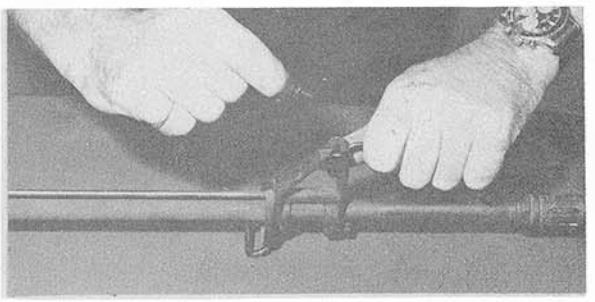
k. Front Swivel Roll Pin Removal
(1/8" Punch P/N 94155)



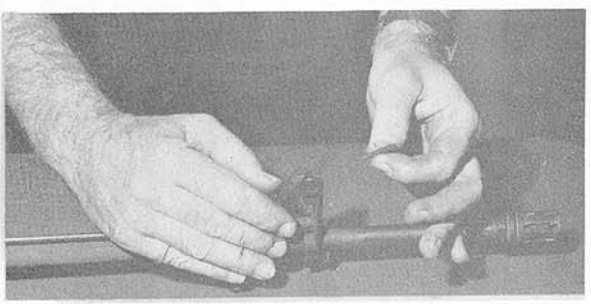
l. Front Swivel Removed.



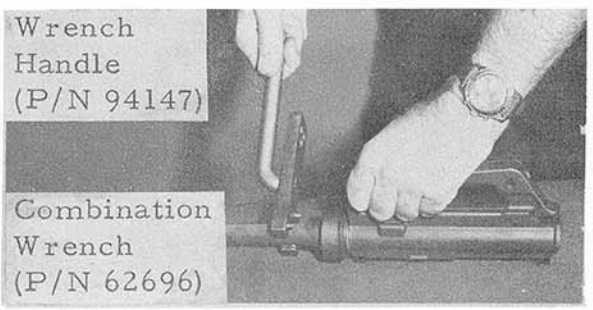
m. Front Sight Post Removal
(Wrench P/N CE 1008,
Depressor P/N 62672)



n. Front Sight Post Removed

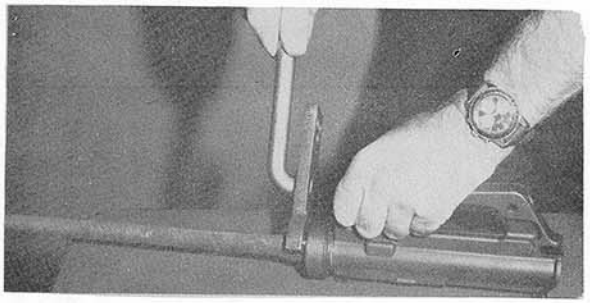


o. Front Sight Detent Removed

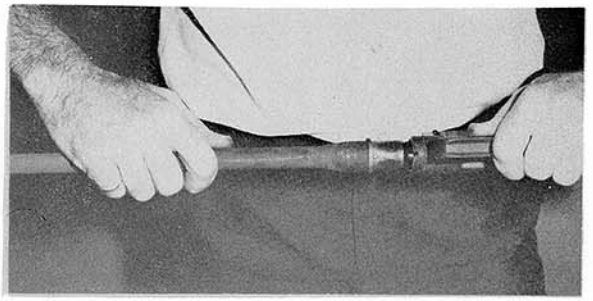


p. Barrel Nut Removal Tools.

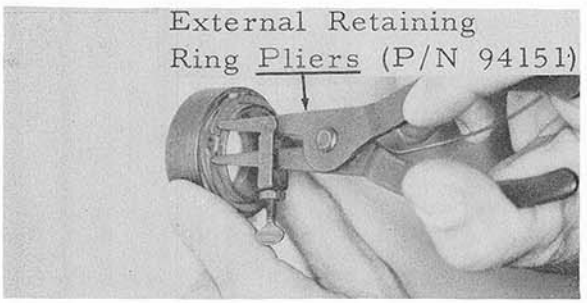
Figure 3-2. DISASSEMBLY OF UPPER RECEIVER(Continued)



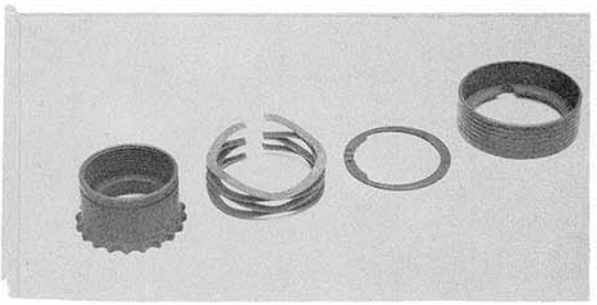
q. Barrel Removal



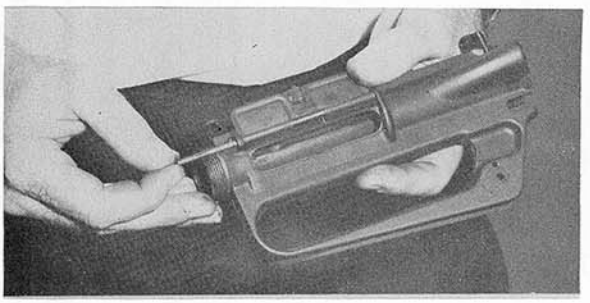
r. Barrel Removed



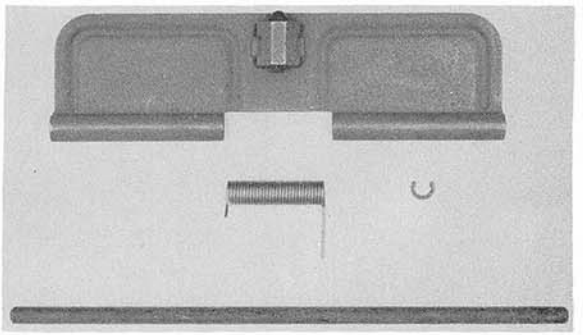
s. Barrel Nut Disassembly



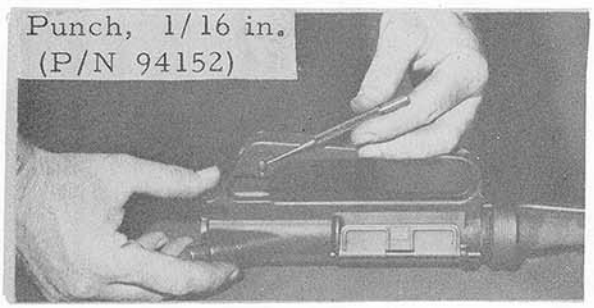
t. Barrel Nut Disassembled



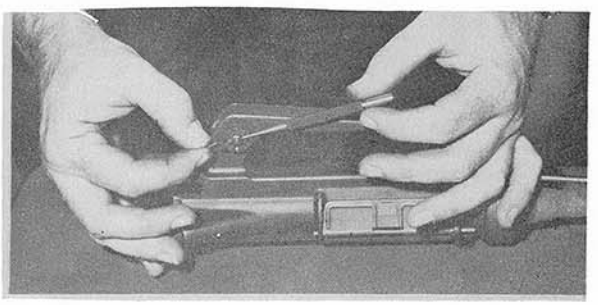
u. Ejection Port Cover Pin Removal



v. Ejection Port Cover Removed

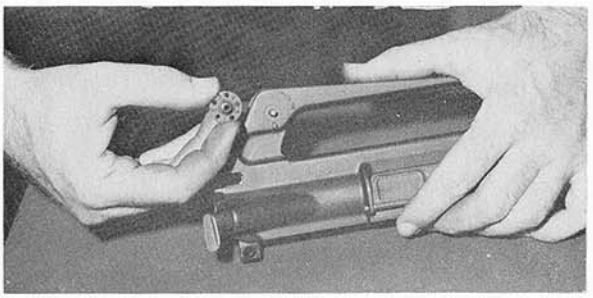


w. Windage Drum Roll Pin Removal

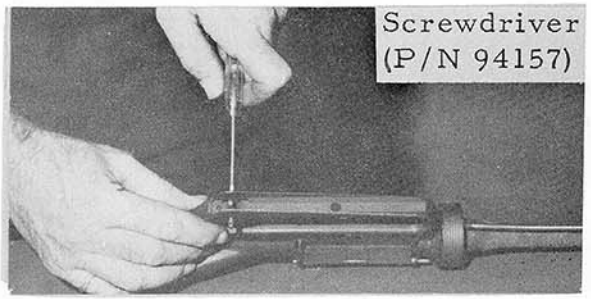


x. Windage Drum Roll Pin Removed

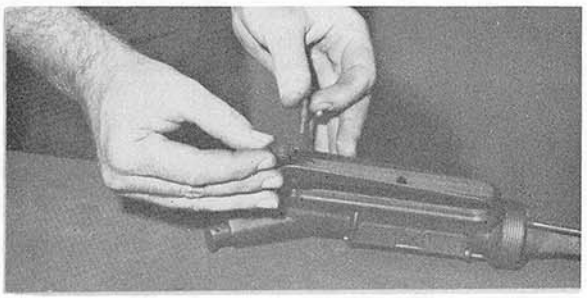
Figure 3-2. DISASSEMBLY OF UPPER RECEIVER GROUP(continued)



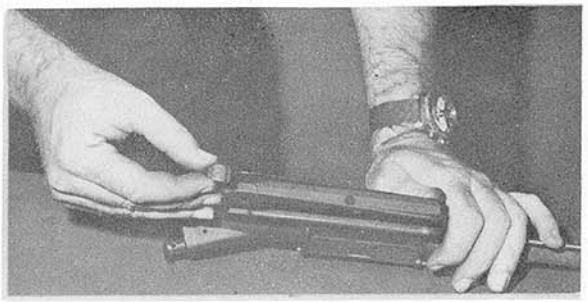
y. Windage Drum Removed



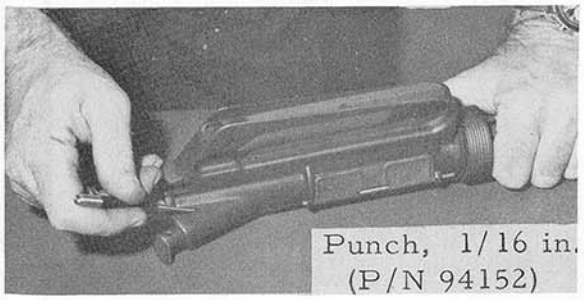
z. Windage Screw Removal



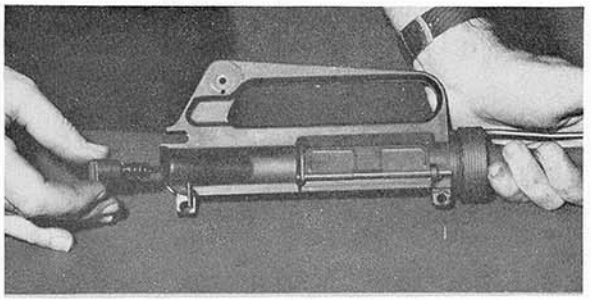
aa. Windage Screw and Sight Leaf Removed



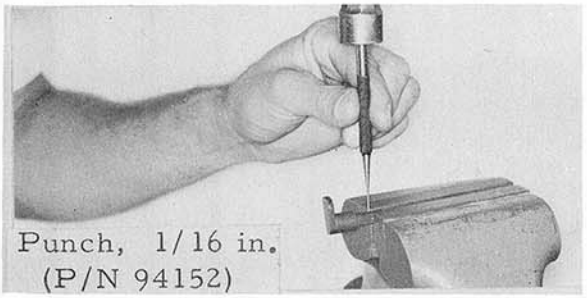
ab. Rear Sight Spring Removed



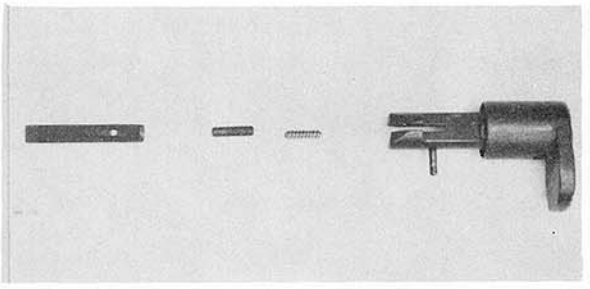
ac. Forward Assist Assembly Roll Pin Removal



ad. Forward Assist Assembly Removed

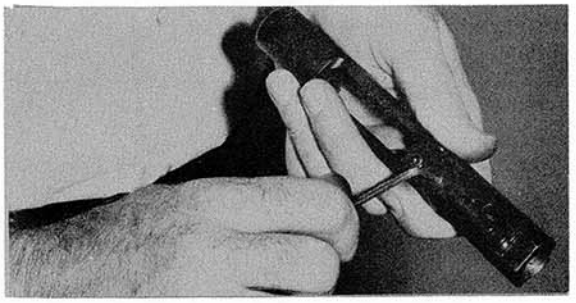


ae. Forward Assist Pawl Roll Pin Removal



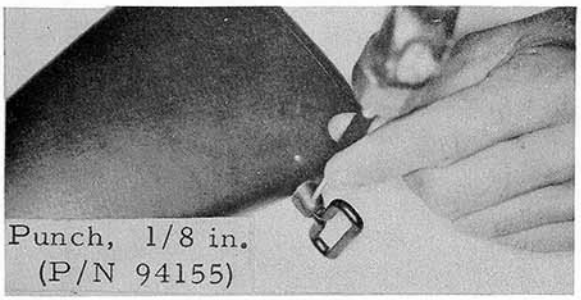
af. Forward Assist Pawl Disassembled

Figure 3-2. DISASSEMBLY OF UPPER RECEIVER GROUP (Cont.)

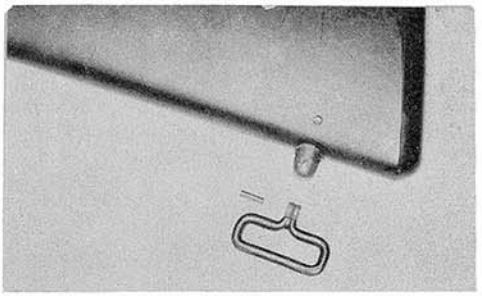


ag. Bolt Carrier Key Removal.

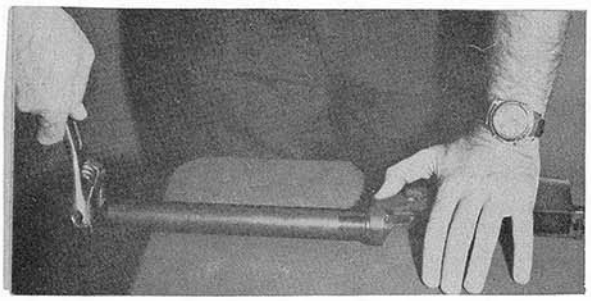
Figure 3-3. DISASSEMBLY OF LOWER RECEIVER GROUP.



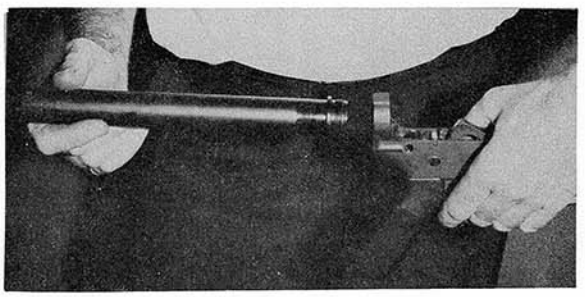
a. Rear Swivel Roll Pin Removal.



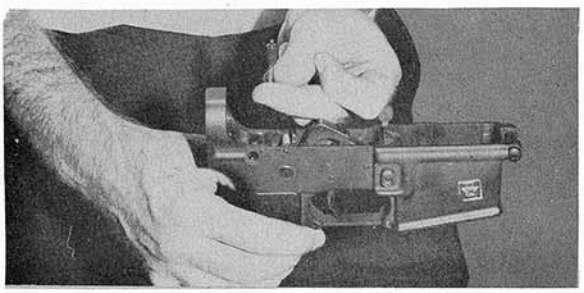
b. Rear Swivel Removed.



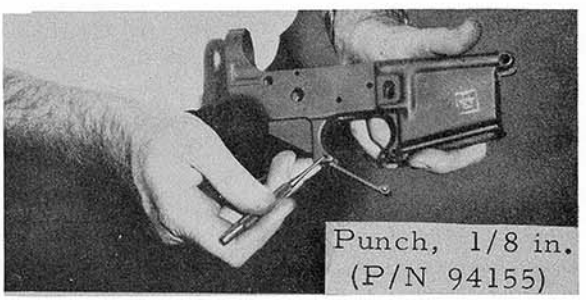
c. Lower Receiver Extension Removal.



d. Lower Receiver Extension Removed.



e. Buffer Retainer and Spring Removed.



f. Trigger Guard Roll Pin Removal.

3-2. Cleaning and Lubrication.

Clean and lubricate the material as instructed in Colt's Manual No. CM 101, paragraphs 3-5, Page 29. Also comply with the additional instructions in Table 3-2 below.

Table 3-2 - Cleaning and Lubrication

Item	Action Required
Barrel	If hard carbon is still evident in the chamber after cleaning, dip soak chamber and reclean. Dry thoroughly with swabs.
Barrel Nut Assembly	a. Remove all evidence of dirt or rust. b. Prior to assembly, apply a coating of LSA oil to components of barrel nut assembly with the exception of the barrel nut threads which shall be coated with molybdenum disulfide grease.
Front Sight Assembly	Apply a generous coat of LSA oil to the front sight post, detent, and spring prior to assembly.
Gas Tube	Remove carbon deposits from the exterior surface of the tube. CAUTION: Do not use any type of abrasive material to clean the gas tube. A .063 to .076 in. dia. music wire may be used to dislodge deposits inside the tube.
Upper Receiver Group	a. Apply a generous coat of LSA oil to all internal surfaces and a light coat to all external surfaces prior to assembly. CAUTION: Do not use a wire brush on aluminum surfaces such as the receivers. b. Prior to assembly, thoroughly lubricate the ejection port cover, and all components of the forward assist and front sight assemblies with LSA oil. NOTE: The ejection port cover latch shall not be disassembled. If the latch is inoperative, the ejection port cover assembly must be replaced.

Table 3-2 - Cleaning and Lubrication (Cont.)

Item	Action Required
Bolt Carrier Group	a. Clean the extractor recess in the bolt. b. Clean the gas exhaust ports in the bolt carrier with a hand-held No. 36 drill (. 106 in.).
Lower Receiver Group	a. Prior to assembly, apply a generous coat of LSA oil to all functional parts. b. Lubricate the threads of the lower receiver extension with a coat of molybdenum disulfide grease. NOTE: Dry cleaning solvent may be used to clean or wash grease or oil from all parts of rifle and bipod.
General	Components parts which contain a hard carbon, such as the flash suppressor, barrel bore, bolt carrier group, will require special cleaning using carbon removing compound. WARNING: Avoid skin contact. The compound should be washed off thoroughly with running water if it comes in contact with the skin. After exposure to the compound, a good lanolin base cream is helpful. The use of gloves and protective equipment is recommended. a. Fill a suitable container with fresh compound. b. Remove all grease, dirt, and oil before soaking components in compound. Completely immerse parts to be cleaned in container of compound. c. Soak for 2 to 16 hours. Remove parts and allow to drain. Rinse in dry cleaning solvent. Brush with a stiff bristle brush under running water to effectively remove carbon.

Section 2 - Replacement of parts.

3-2. General

Replace all parts that are worn, damaged, cracked, or broken. All replacement parts are interchangeable and require no adjustments at installation. However, to insure proper function and reliability, the following precautions should be taken:

a. Do not interchange bolts and bolt carriers unless replacement is necessary. Keep the bolt with the original bolt carrier.

b. If replacement of either part becomes necessary, carefully check the new part to see that it fits properly, operates smoothly, and that the proper head space is provided. (See Figure 2-2 , Page 16)

c. If one or more rings of the bolt assembly are damaged, replace the three rings as a set.

d. When assembling a bolt with new rings into the bolt carrier, rotate the bolt to prevent damaging the rings. Move the bolt in and out several times to seat the rings.

e. If the bolt carrier key is replaced, it may be necessary to create a seal between the bolt carrier and key by firing 5 to 8 rounds. (Manual operation of the rifle may be required) Sealing compound (Table 2-2, Item 14, Page 5, may also be required prior to assembly of the key and bolt carrier. (See Chapter VI, Paragraph 6-2.1d, Page 38)

CHAPTER IV - MATERIEL USED IN CONJUNCTION WITH MAJOR ITEM

4-1. General.

The Bayonet-Knife, U. S. Model M7, and Bayonet-Knife Scabbard, U. S. Model M8A1, are used in conjunction with the major item. Refer to Manual CM 101 for for operator and organization maintenance instructions.

4-2. Direct and General Support Maintenance.

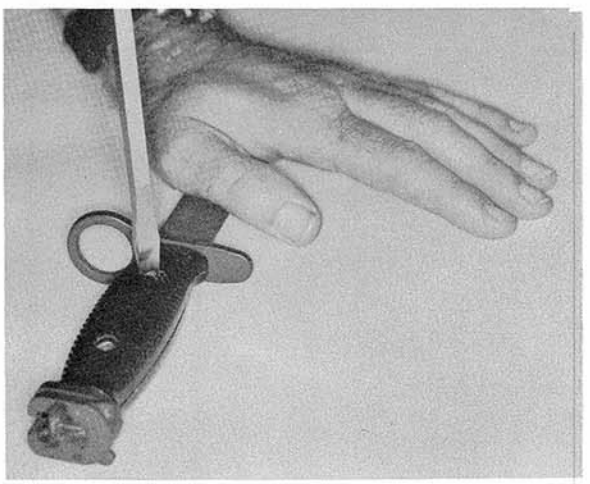
a. Disassembly.
Refer to Figure 4-1, Page 31.
NOTE: Prior to disassembly, it is recommended that the right hand release and plate be marked to assist in identification when assembling the left and right hand releases. (See Figure 4-1, Page 31)

b. Cleaning.
Refer to Manual CM 101, Page 29.

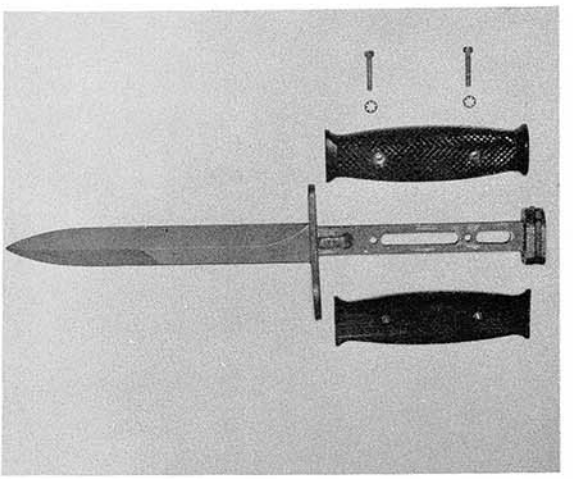
c. Inspection and Repair.
(1) Bayonet-Knife.
(a) Replace screws, if threads are stripped.
(b) Replace cracked grips. Replace left-hand grip if threads in grip are stripped.
(c) Replace spring pin if worn or damaged.
(d) Replace spring if kinked, set, or broken.
(e) Remove nicks and dents, as required, by grinding and/or stoning.
(f) If wear is noted on the release camming area and positive retention to the rifle is questionable, replace as required. If binding is noted due to a bent release, repair by straightening or replace release.
(g) Use flat black lacquer if shiny surfaces are on handle of blade.

(2) Bayonet-Knife Scabbard, U. S. Model M8A1.
(a) Metal parts will be dark. If the finish of metal is worn, flat black lacquer may be applied.
(b) If the scabbard is chipped, exposing the fabric or the surface is scratched or marred, smooth as required and paint with olive drab lusterless enamel.
(c) Clean and/or replace broken or damaged lace.

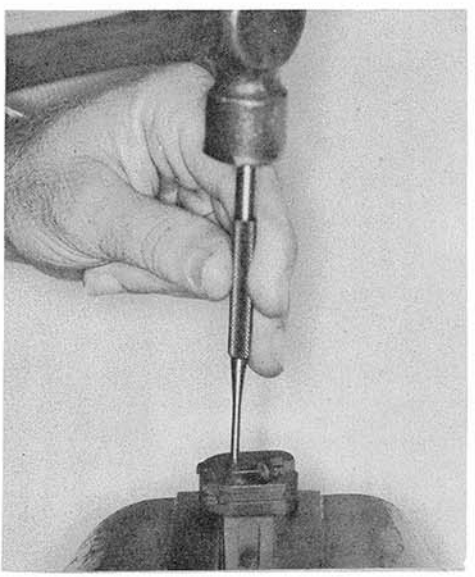
Figure 4-1. BAYONET-KNIFE DISASSEMBLY



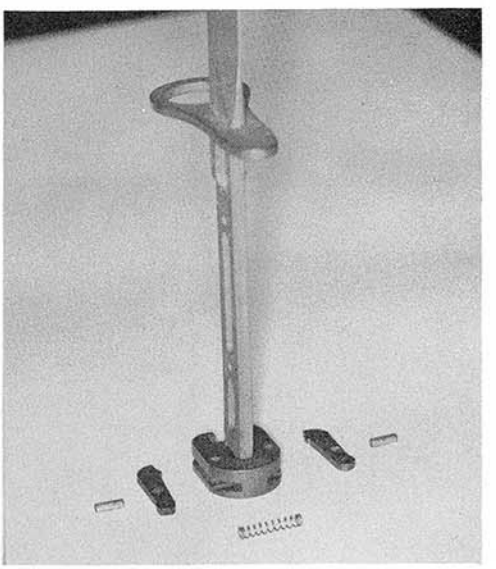
a. Grip Removal



b. Grips Removed



c. Release Disassembly



d. Releases Disassembled

d. Assembly.

Assemble by reversing procedure in Figure 4-1. The grips may be installed on either side but the right hand grip has the recesses for the screw heads.

CHAPTER V - FINAL INSPECTION

5-1. General.

This chapter contains instructions for the final inspection of repaired rifles and bipods. As applicable, the rifles and bipods must be checked in accordance with the procedures outlined in Table 2-3, page 9, and in paragraphs a through c which follow. Rifles that have been repaired shall be function fired to assure proper function. Rifles that have been rebarreled should be both function fired and fired for accuracy.

a. Visual Inspection.

Overall appearance shall be approximately that of a new weapon. All exposed metal surfaces are to have a dull, rust or corrosion resistant finish with no burrs or deep scratches. Barrels must be straight, clean, free of rust, powder fouling, large pits, bulges, or rings. Fine pitting is allowable, however. Rifles must be complete with no missing parts. The serial numbers must be legible. All steel parts must be free of rust. Roll pins must be secure and screws must be tight. Check to be sure that all modifications authorized to date have been incorporated.

b. Functional Inspection.

The instructions for accomplishing a functional inspection are contained in Colt's Manual No. CM101, Chapter II, Section 5, page 23.

c. Inspection of Critical Dimensions.

Inspect for dimensional acceptability of headspace, firing pin protrusion, barrel straightness, and extent of barrel erosion in accordance with the instructions contained in Table 2-3, page 9.

CHAPTER VI - REPAIR, REFINISHING, AND REASSEMBLY

6-1. Repair and Refinishing Procedures

Approved procedures for repair and refinishing of various surfaces of the rifle are as follows:

6-1.1 Repair Procedures

The recommended repair procedures are by the application of touch-up coatings and/or replacement of parts.

NOTE: Stoning in accordance with standard shop procedures is permitted in non-critical areas for removal of minor burrs, nicks, or slight surface imperfections. Extreme care must be exercised to preclude alteration of critical characteristics. Touch-up of the stoned surface should be done as soon as possible after stoning or other abrasive procedures to prevent contamination or corrosion of the exposed surface.

a. Dents and Gouges

(1) Smooth the periphery of the defect by filing, scraping, sanding, buffing, or other appropriate means to improve the appearance and to establish a clean, firm contact area for the touch-up material.

(2) Wash the area with solvent cleaning compound (Table 2-2, Item 3, Page 5) to remove all dust, grease, or other foreign particles.

(3) Dry the surface, apply the touch-up finish, and cure it in accordance with the instructions furnished by the manufacturer. The primer and lacquer in Table 2-2, Page 5, should be used on all exposed, exterior surfaces of aluminum parts. The touch-up lacquer may be used alone on clean steel surfaces which are exposed and are not subject to heat.

b. Corroded Components

Corroded components, particularily the upper and lower receivers and lower receiver extension, may be repaired when removal of the corrision is possible by light sanding or buffing operations which will return the affected surface to a smooth condition for touch-up. Affected area shall be cleaned and refinished as specified in paragraph 6-1.1a above.

6-1.2 Corrective Action for Unusual Malfunctions.

a. Cartridge Case Rim Shear

If the case cannot be removed from the chamber by the standard procedure (actuation of the bolt assembly), a cleaning rod may be inserted into the muzzle and the case may be pushed out of the chamber. If the chamber is found to be pitted, replace the barrel and front sight assembly.

b. Separated Cartridge Case in Chamber (See Figure 6-1, Page 35).

The remaining front section of the case may be removed by the following method:

(1) Place the Ruptured Cartridge Case Extractor, P/N 62674, ahead of the bolt through the ejection port, or through the rear of the upper receiver.

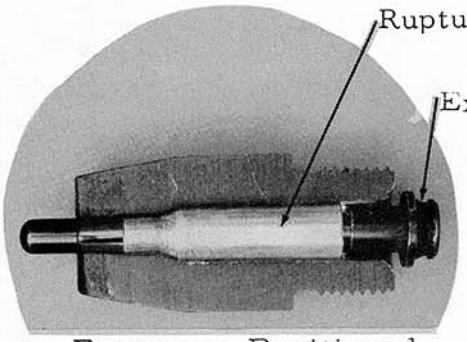
(2) Push the bolt carrier assembly forward, until the extractor engages the case.

(3) Retract the bolt carrier assembly while holding a hand over the ejection port to catch the extractor and case.

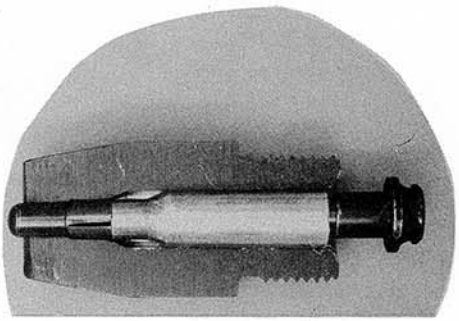
(4) Unscrew the nut at the rear of the extractor, and remove case. Replace nut and store extractor.

(5) Check weapon for headspace. If headspace is correct, record cartridge lot number and report this deficiency as required. If headspace is excessive, check bolt and barrel separately, and replace faulty component.

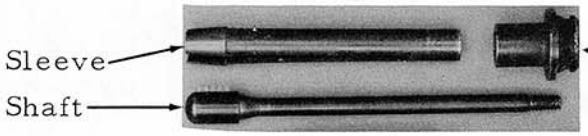
Figure 6-1. SEPARATED CARTRIDGE CASE REMOVAL.



a. Extractor Positioned to Remove Ruptured Case.



b. Ruptured Case Partially Removed.



c. Extractor Parts.

6-2. Reassembly.

Reassembly of the major groups shall include all necessary adjustments, specified torque applications (as indicated, using properly calibrated and maintained equipment), and a constant quality assurance surveillance to insure that included parts, components, subassemblies, and/or assemblies conform to all criteria as specified in this manual. Torque wrenches listed in Table 2-1, page 3, shall not be considered as mandatory, However, the wrenches listed, with their inherent functional characteristics, fully satisfy all requirements contained in this manual. When installing the various roll pins, the 1/4 in. punch (P/N 94156) shall be used in all cases in order to avoid damaging the pins or driving them in too far.

NOTE: LSA oil shall be applied to all moving contact surfaces during reassembly. Emphasis is directed to all coil springs, particularly detent springs, and associated detents, plungers, and/or retainers. The fire control selector must also be lubricated at assembly.

The material shall be reassembled as specified in the following paragraphs:

6-2.1 Upper Receiver Group

The Upper Receiver Group shall be reassembled by reversing the disassembly procedure and in accordance with the following instructions:

a. Front Sight

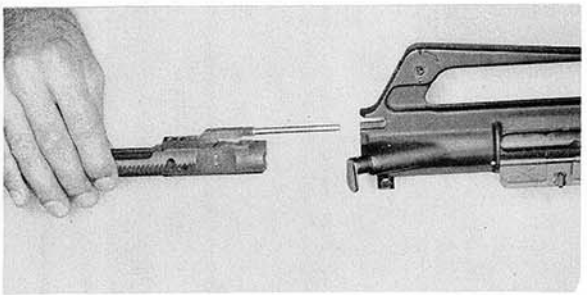
Visually aline front sight taper pin holes before installation of new taper pins. Install pins from right side with uniform application of force, using Punch, P/N 62682. Support the front sight on a block of wood. Force applied shall not cause larger end of taper pin to enter to the point of being flush with sight frame surface. However, leading or small end of taper pin shall be flush or above sight frame surface after application of above force.

b. Barrel

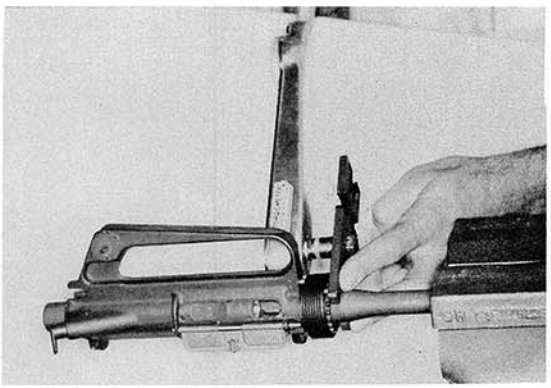
During installation of barrel assembly into the upper receiver, extreme care must be exercised to preclude damage to the upper receiver alignment slot by the barrel assembly alignment pin. Pin must enter slot, without deformation of the slot walls, to the

depth necessary to accomplish full contact between the barrel assembly collar and the receiver. The threads of the barrel nut and the receiver shall be coated with molybdenum disulphide prior to assembly. Initial torque applied to the barrel nut shall be 30 ft lbs using torque limiting wrench P/N 94162, and combination wrench P/N 62696, and with the barrel held in the barrel removal vise jaws P/N 62695, in a bench vise. (See Figure 6-2b below) Additional torque shall be applied as necessary to create clearance for free entry of the gas tube through the barrel nut, using the barrel nut alignment tool P/N 62693, as shown in Figure 6-2a and c below.

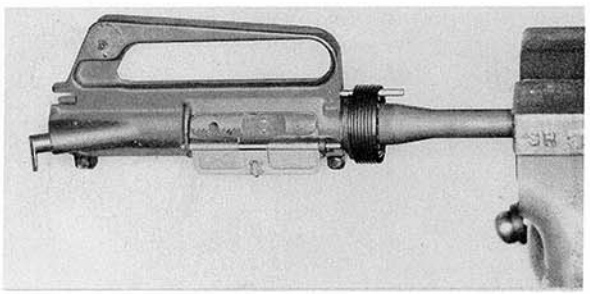
Figure 6-2. BARREL NUT INSTALLATION.



a. Barrel Nut Alignment Tool (P/N 62693) Installed in Key.



b. Barrel Nut Torquing.



c. Barrel Nut Installed and aligned.

NOTE: Make certain all three pins of the combination wrench are fully engaged with the barrel nut.

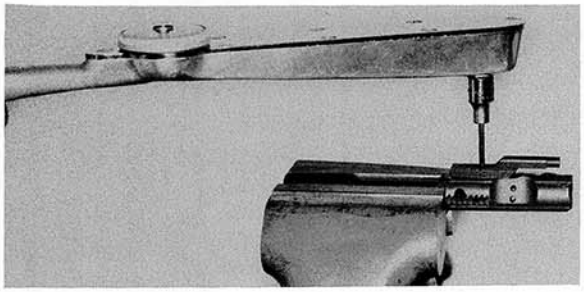
c. Flash Suppressor.

Install the flash suppressor and lock washer with a torque of 25-30 ft lbs, using the combination wrench (P/N 62696) and the torque limiting wrench (P/N 94162), with the barrel held in the barrel removal vise jaws (P/N 62695) in a bench vise.

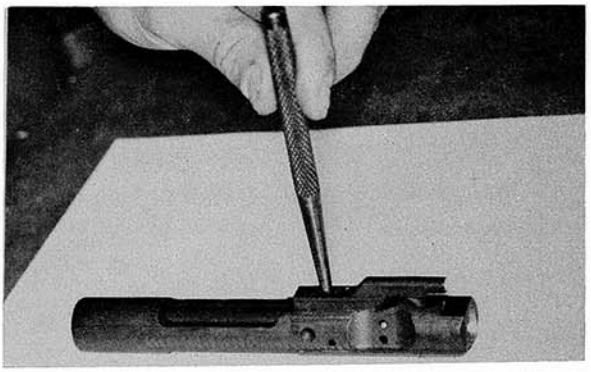
d. Bolt Carrier Group.

See Colt's Manual CM 101, Page 49, for assembly instructions. When installing the bolt carrier key, apply a thin coat of sealing compound (Table 2-2, Item 14, Page 5) to the undersurface of the key, being careful not to plug the gas port. Tighten the two socket head cap screws to a torque of 35-40 in. lbs, using the torque limiting wrench (P/N 94161) and the socket head hex xcrew wrench (P/N 94160) as shown in Figure 6-3a below. The two socket head screws shall then be staked to the key at two points using the center punch (P/N 94146) as shown in Figure 6-3b below.

Figure 6-3. BOLT CARRIER KEY INSTALLATION.



a. Torquing Key Screws.

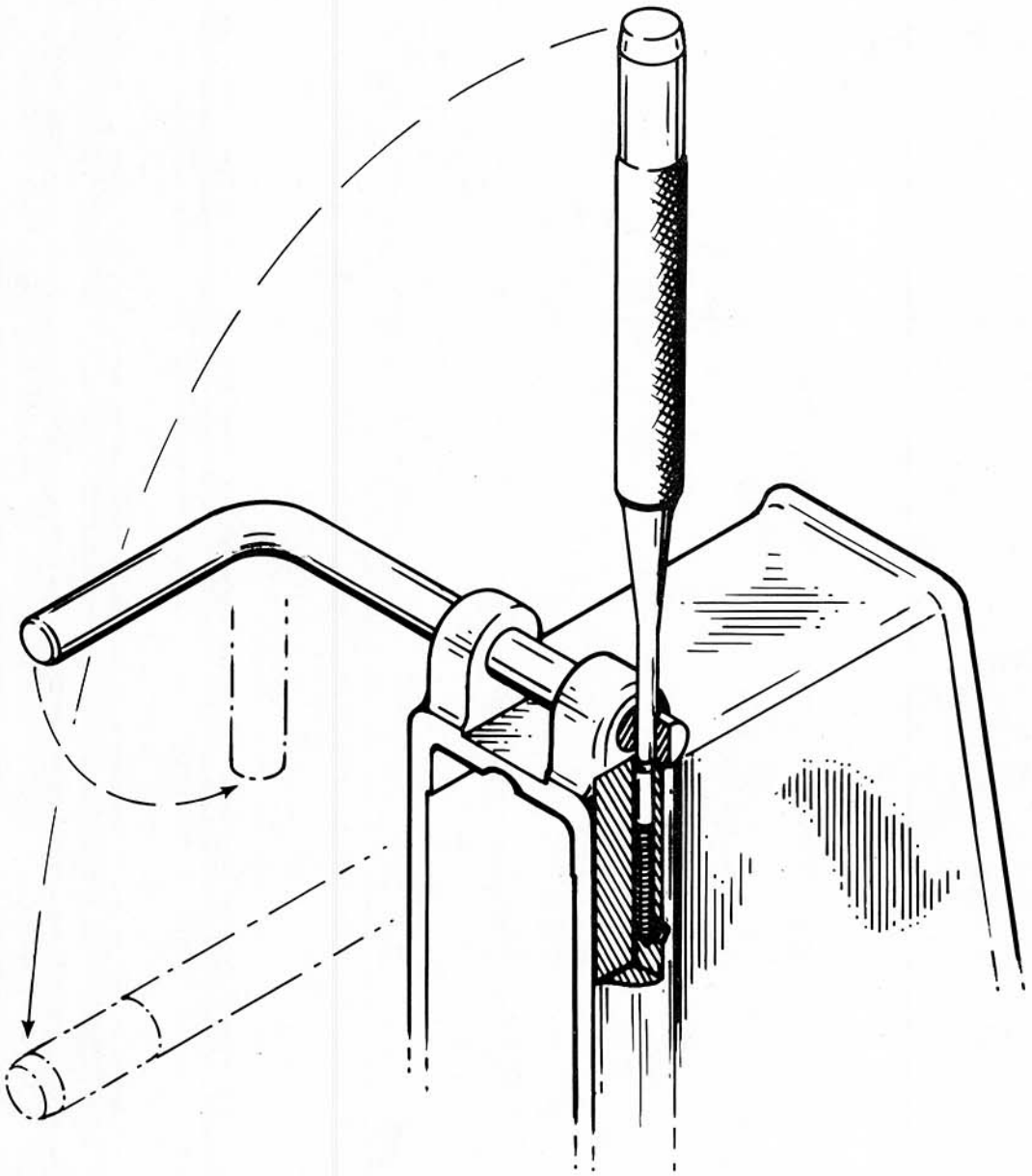


b. Staking Key Screws.

e. Lower Receiver Group.

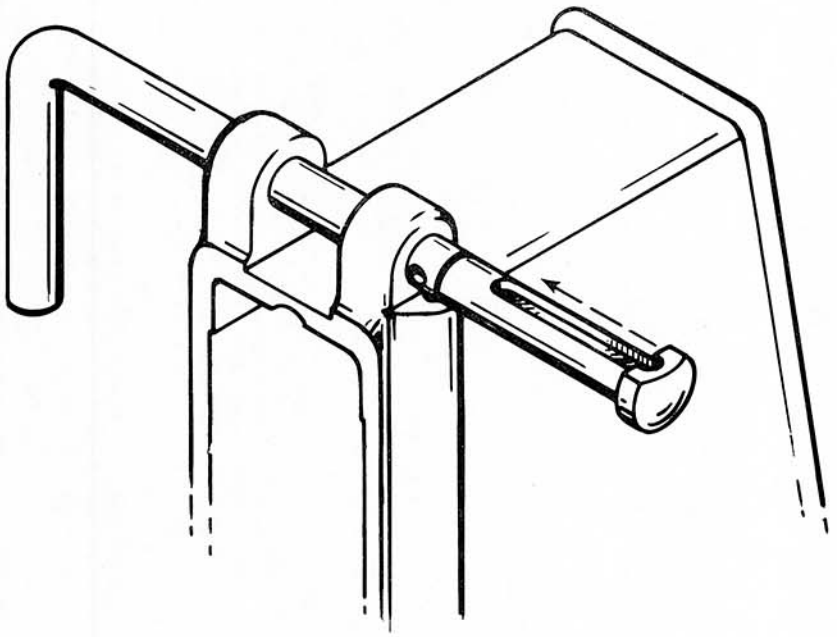
See Colt's Manual No. CM 101, Page 49, for assembly instructions. Refer to Figure 6-4, Page 39, for installation of the pivot pin detent and spring using the pivot pin detent installation tool. Particular care should be exercised during installation of the hammer assembly to insure that the ends of the hammer spring are resting on the upper surface of the trigger pin as the hammer spring acts as a retainer for the trigger pin. (See Figure 6-5, Page 40)

Figure 6-4 - PIVOT PIN DETENT INSTALLATION



a. Detent and Detent Spring Installation.

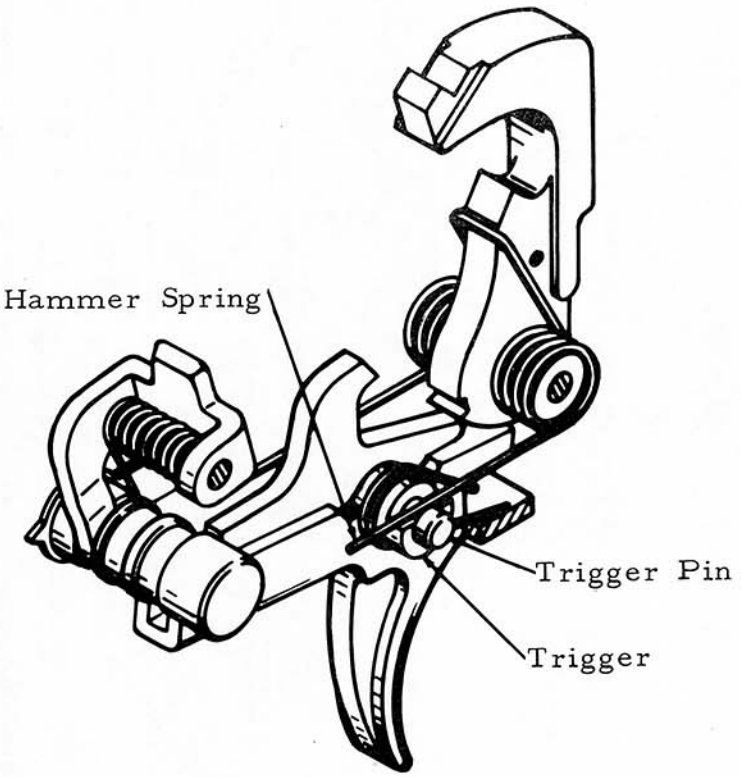
Figure 6-4 - Pivot Pin Detent Installation (Cont.)



b. Pivot Pin Installation

Step	Action
a.	Insert the pivot pin detent installation tool (P/N 62698) in the pivot pin holes of the lower receiver as shown in Figure 6-4a above.
b.	Slide the installation in sufficient to locate its hole directly over the detent cavity.
c.	Insert detent spring and detent through the hole in the installation tool and into the detent cavity.
d.	Press the detent into the cavity with the 3/32 in. punch (P/N 94154) but stop the punch just at the top of the cavity.
e.	Rotate the installation tool and punch 90°.
f.	Hold the pivot pin firmly against the installation toll and push the installation tool out.
g.	Rotate the pivot pin until the pivot pin drops into the pivot pin detent groove.

Figure 6-5. HAMMER SPRING AND TRIGGER PIN INSTALLATION.



APPENDIX A

ARMORER'S TOOLS

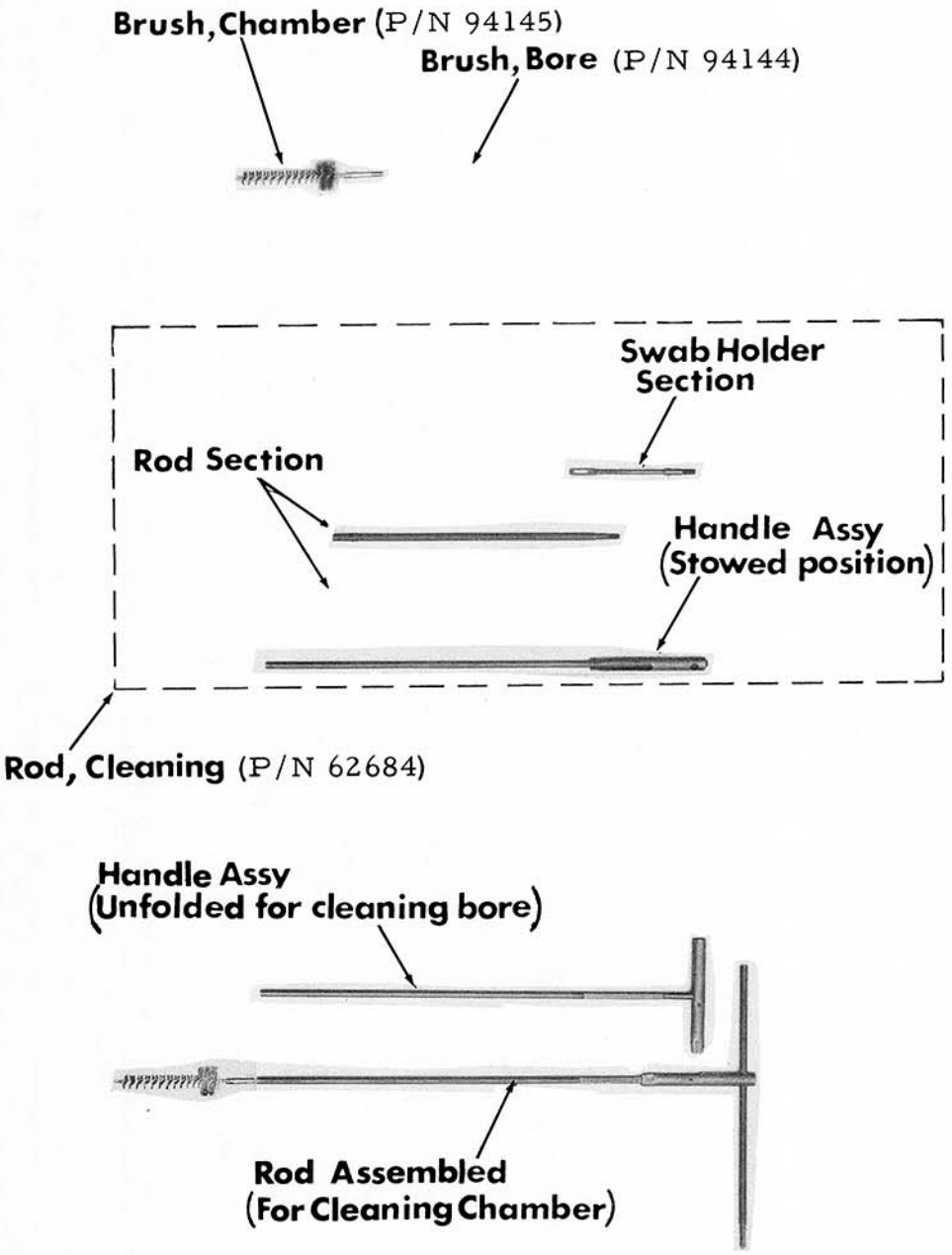


Figure A1. Bore and Chamber Cleaning Tools

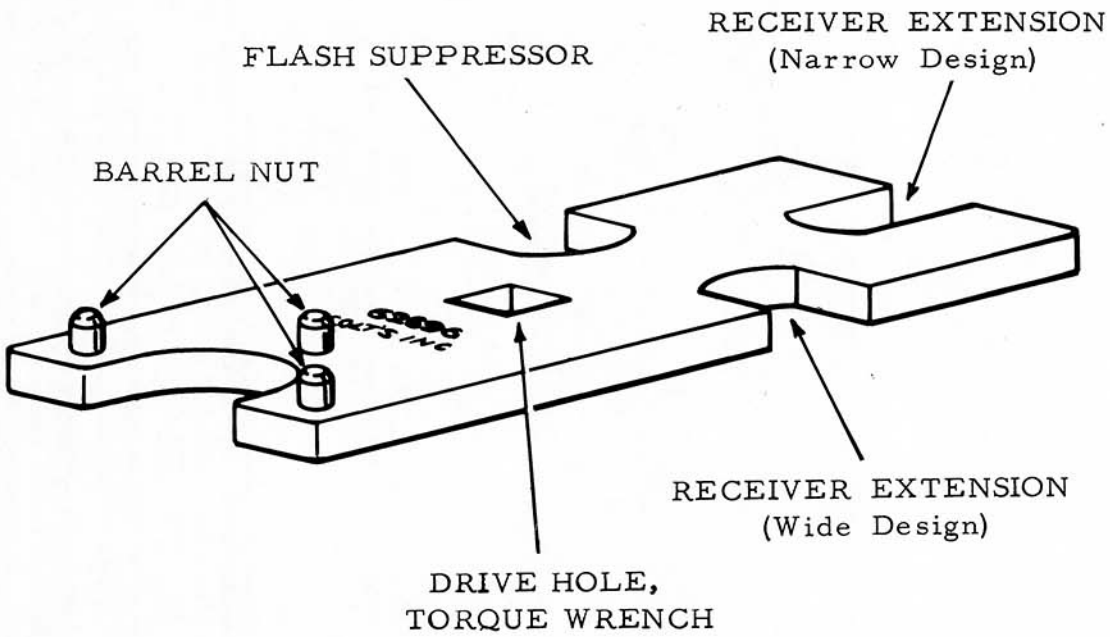


Figure A2. Combination Wrench (P/N 62696)

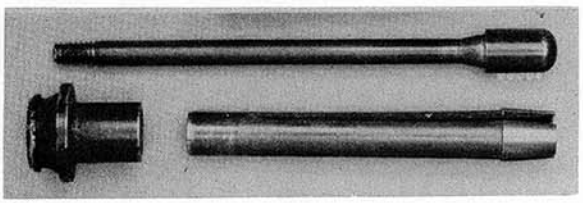


Figure A3. Ruptured Cartridge Case Extractor (P/N 62674)

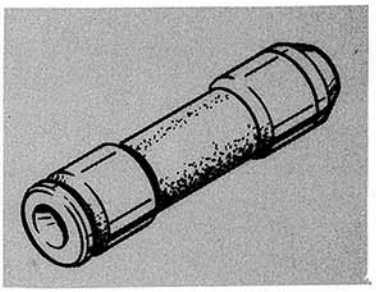


Figure A4. Headspace Gage (P/N T27921)

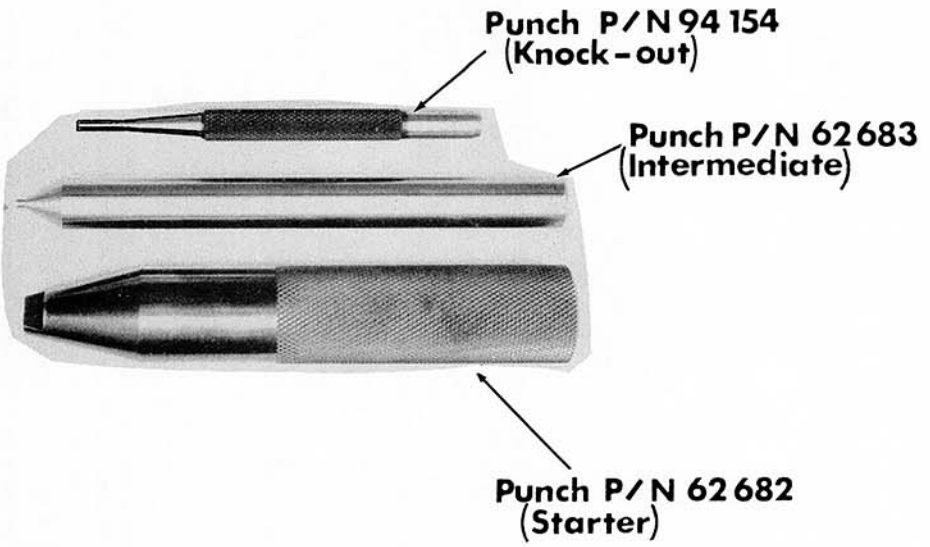


Figure A5. Punch Set for Front Sight Taper Pin Removal and Installation

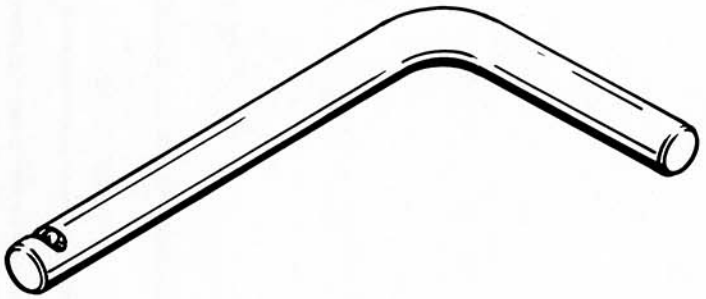


Figure A6. Pivot Pin Detent Installation Tool (P/N 62698).

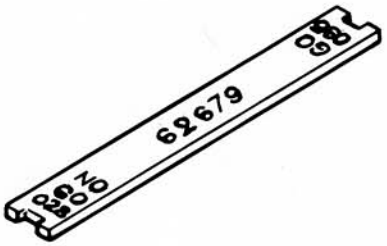


Figure A7. Firing Pin Protrusion Gage (P/N 62679).

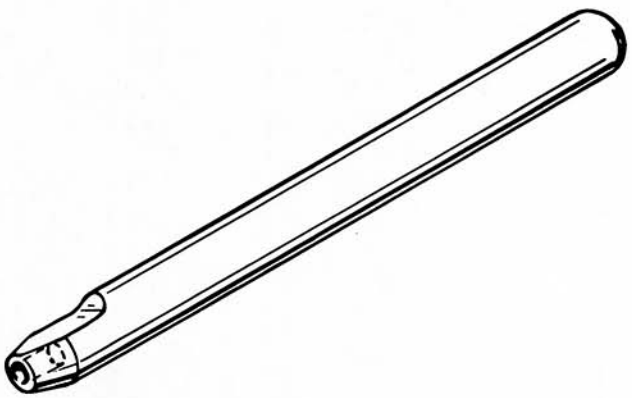


Figure A8. Punch Setter (P/N 62692)

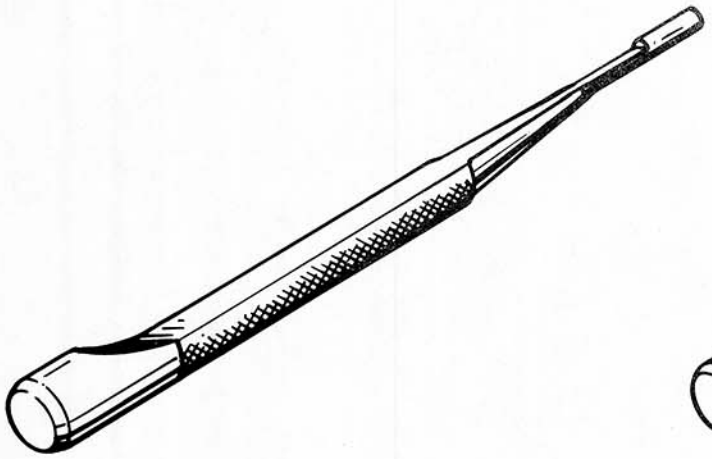


Figure A9. Bolt Catch Pivot Pin Punch (P/N 62680)

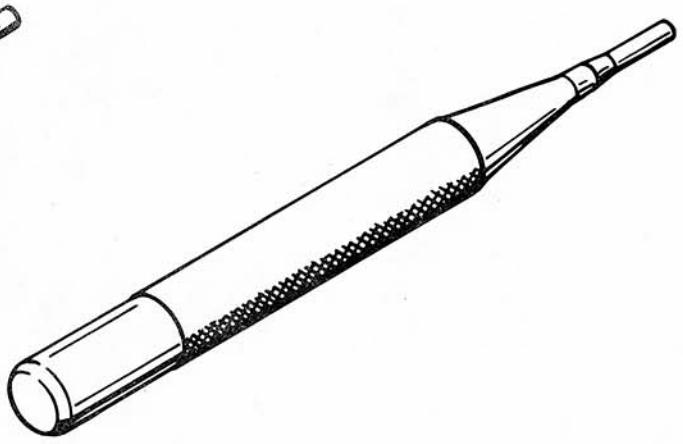


Figure A10. Gas Tube Roll Pin Punch (P/N 62697)

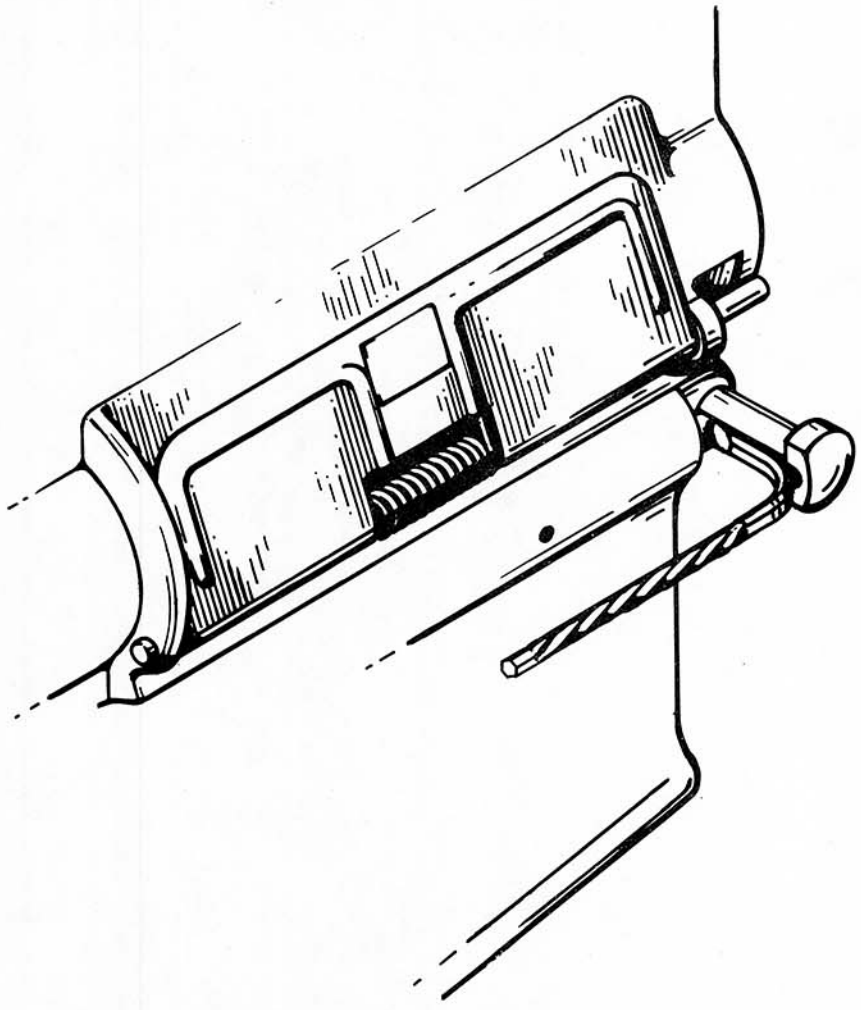


Figure A11. Pivot Pin Detent Depressor (P/N 62673).

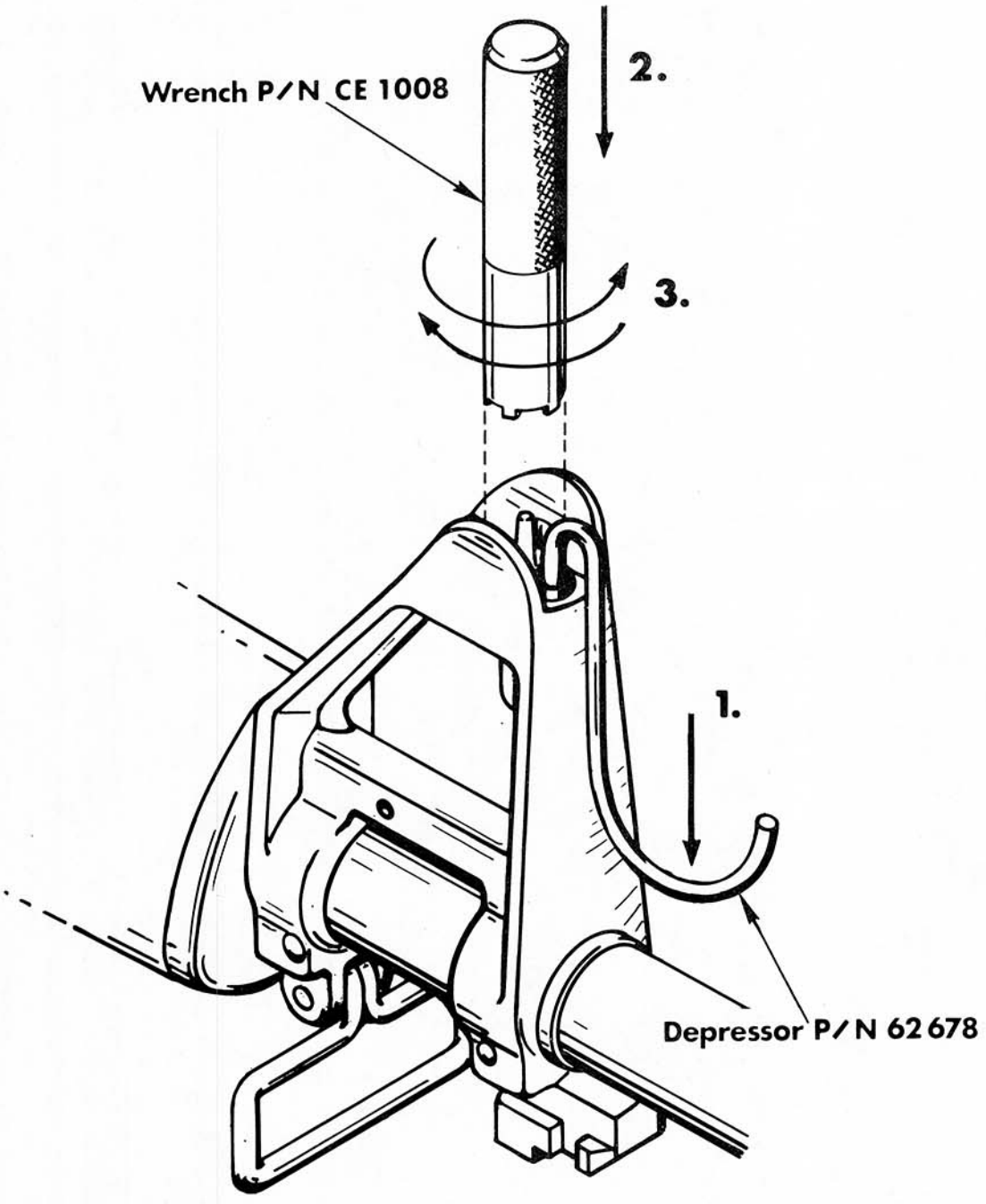


Figure A12. Front Sight Post Tools.

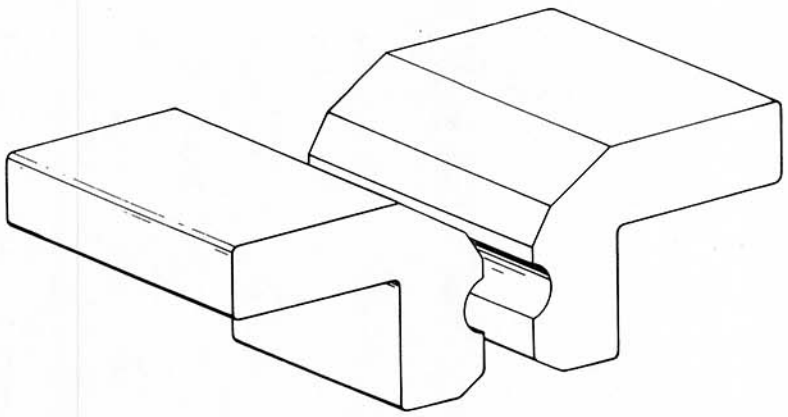


Figure A-13. Barrel Removal Vise Jaws (P/N 62695).

APPENDIX B

ESTIMATED PARTS REQUIRED PER 100 WEAPONS

Fig. No.	Qty.	Nomenclature	Part No.
		UPPER RECEIVER GROUP	
B1- 1	10	Charging Handle Assembly	62290
B1- 2	10	Pin, Roll, Pivot **	95113
B1- 3	10	Latch, Charging Handle	62289
B1- 4	10	Spring, Charging Handle Latch	61875
B1- 5	N/A	Handle, Charging	62288
B1- 6	25	Handguard Assembly, R.H.	62198
B1- 7	25	Handguard Assembly, L.H.	62196
B1- 8	20	Suppressor, Flash	62348
B1- 9	20	Washer, Lock	62126
B1-10	20	Replacement Barrel & Front Sight Assembly	62516
B1-11	N/A	Barrel and Barrel Extension Assembly	N/A
B1-12	N/A	Sight, Front	N/A
B1-13	10	Post, Front Sight	61706
B1-14	10	Detent, Front Sight	61705
B1-15	15	Spring, Front Sight Detent	61709
B1-16	200	Pin, Taper, Front Sight	62086
B1-17	75	Swivel, Sling, Forward	62280
B1-18	45	Pin, Roll (Swivel)	95103
B1-19	10	Cap, Handguard	62087
B1-20	100	Pin, Roll (Gas Tube)	95108
B1-21	20	Gas Tube Assembly	61645
B1-22	N/A	Barrel Nut Assembly	
B1-23	10	Snap Ring, Handguard	90403
B1-24	10	Spring, Weld Assy, Handguard Slip Ring	61962
B1-25	10	Nut, Barrel	61902
B1-26	10	Slip Ring, Handguard	61901
B1-27	20	Pin, Cover Hinge	61658
B1-28	100*	Ring, Retaining, Ejection Port Cover	90402
B1-29	100*	Spring, Ejection Port Cover	61518
B1-30	25	Ejection Port Cover, Assembly	62112
B1-31	100*	Pin, Roll, Rear Sight Drum**	95101
B1-32	10	Drum, Windage	61703
B1-33	10	Detent, Rear Sight	61755
B1-34	100*	Spring, Rear Sight Detent	61754
B1-35	10	Screw, Rear Sight Windage	61702
B1-36	10	Sight, Rear	61700
B1-37	100*	Spring, Rear Sight	61708
B1-38	100*	Pin, Roll, (Forward Assist Assy.)	95126***
B1-39	10	Forward Assist Assembly	62265***

ESTIMATED PARTS REQUIRED PER 100 WEAPONS (continued)

Fig. No.	Qty.	Nomenclature	Part No.
		UPPER RECEIVER GROUP	
B1-40	100*	Spring, Plunger	62271***
B1-41	100*	Pin, Roll, (Pawl Pivot)**	95113***
B1-42	20	Pawl, Forward Assist	62269***
B1-43	20	Detent, Pawl	62270***
B1-44	100*	Spring, Detent, Forward Assist	50381***
B1-45	N/A	Plunger Assembly	62266***
B1-46	20	Receiver, Upper, Model 614(w/o Forward Assist)	62306
B1-47	20	Receiver, Upper, Model 613(w/forward Assist)	62278

NOTE :

* = 100% Replacement
** = Multiple Use Item
*** = Model 613 only
N/A = Not Available

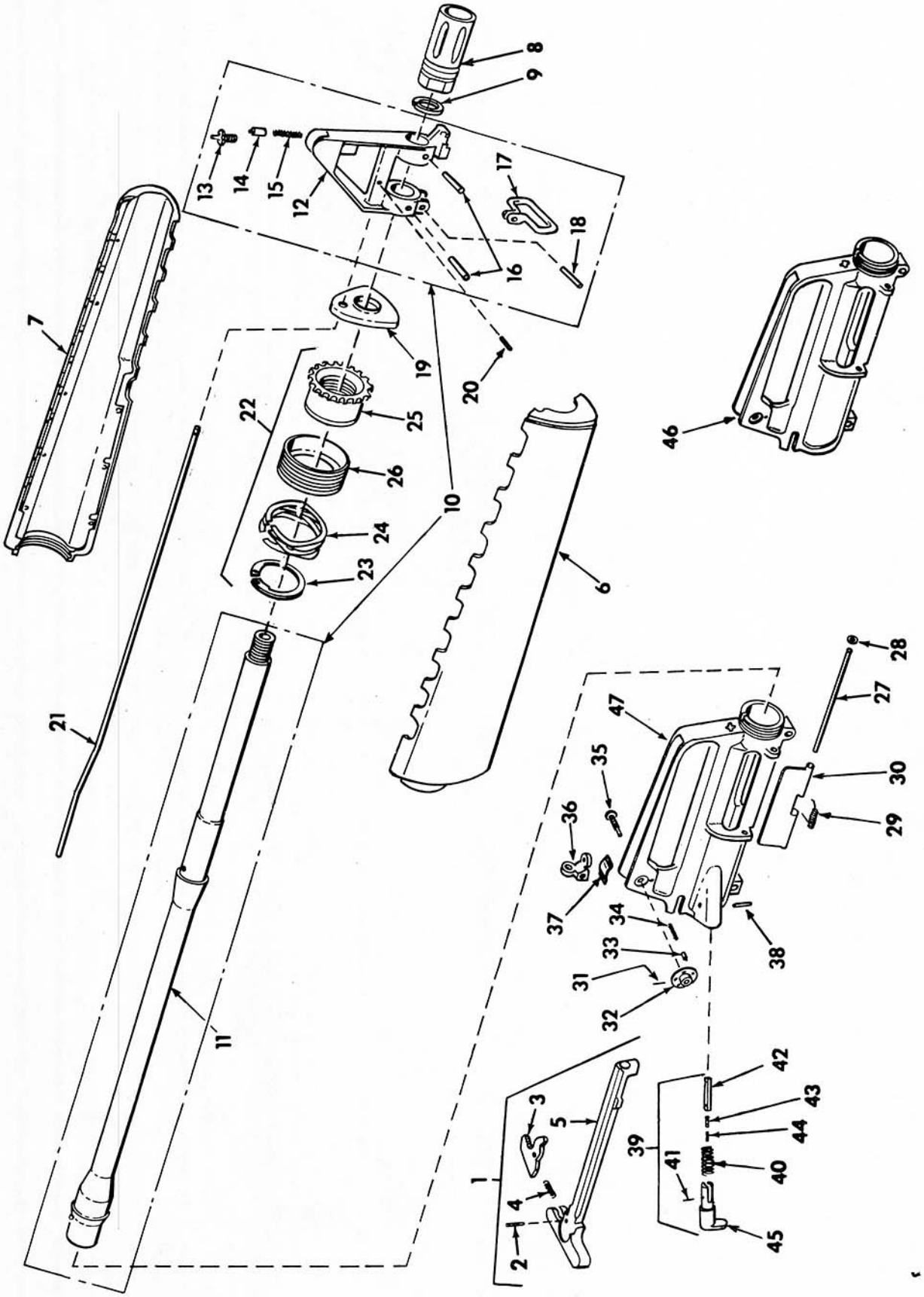


Figure B-1. Upper Receiver Group.

APPENDIX B

ESTIMATED PARTS REQUIRED PER 100 WEAPONS

Fig. No.	Qty.	Nomenclature	Part No.
		BOLT CARRIER GROUP	
B2- 1	10	Pin, Retaining, Firing Pin	62335
B2- 2	20	Pin, Firing	62294
B2- 3	20	Pin, Cam	61704
B2- 4	15	Bolt Assembly	62116
B2- 5	100*	Pin, Extractor	61563
B2- 6	20	Extractor	61562
B2- 7	100*	Spring, Extractor	61568
B2- 8	100*	Pin, Roll (Ejector)	95102
B2- 9	10	Ejector	61564
B2-10	100*	Spring, Ejector	61569
B2-11	300*	Ring, Bolt	61540
B2-12	N/A	Bolt	
B2-13	10	Key & Bolt Carrier Assembly	62286
B2-14	100	Screw, Cap, Hex Socket Head	92201
B2-15	20	Key, Bolt Carrier	61547
B2-16	N/A	Carrier - Bolt	

NOTE:

* = 100% Replacement
N/A = Not Available

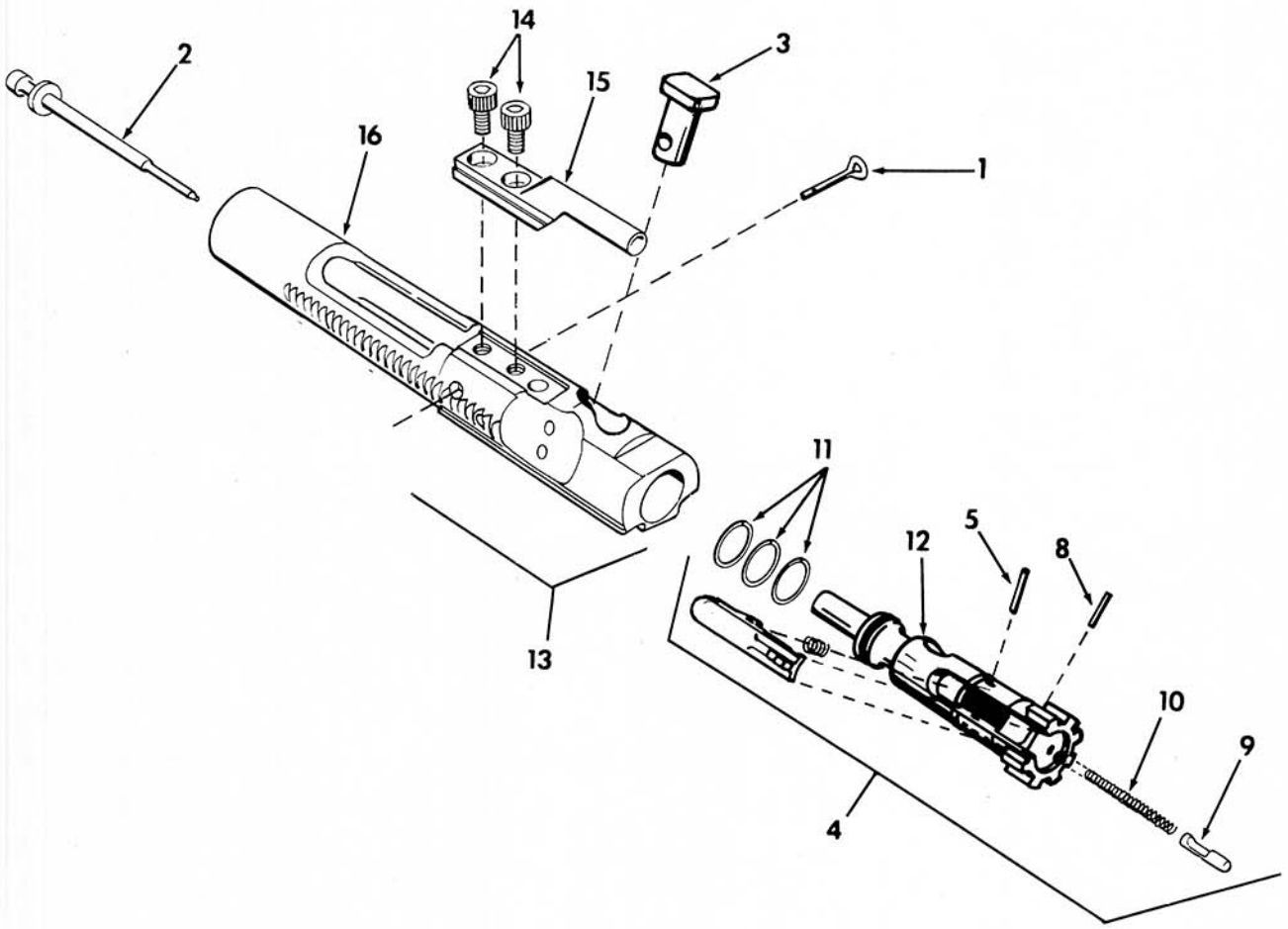


Figure B-2. Bolt Carrier Group

APPENDIX B

ESTIMATED PARTS REQUIRED PER 100 WEAPONS

Fig. No.	Qty.	Nomenclature	Part No.
		LOWER RECEIVER GROUP	
B3- 1	10	Screw, Pistol Grip	92701
B3- 2	100*	Washer, Lock	90001
B3- 3	10	Grip, Pistol	62194
B3- 4	100*	Spring, Ejector and Safety Detent	61569**
B3- 5	50	Detent, Fire Control Selector	61785
B3- 6	100*	Screw, Butt Cap	92601
B3- 7	20	Buttstock and Swivel Assembly	62302
B3- 8	100*	Pin, Roll (Rear Swivel)	95111
B3- 9	N/A	Base, Swivel	
B3-10	100*	Pin, Roll (Swivel Pin)	95103
B3-11	25	Swivel, Sling	62280**
B3-12	N/A	Buttstock and Buttstock Cap Assembly	
B3-13	200*	Spring, Detent, Takedown Pin	61692**
B3-14	100	Detent, Takedown Pin	61698**
B3-15	15	Pin, Takedown	61655
B3-16	15	Buffer Assembly	62339
B3-17	10	Spring, Action	61581
B3-18	15	Extension, Receiver	61574
B3-19	15	Retainer, Buffer	61582
B3-20	100*	Spring, Buffer Retainer	61694
B3-21	20	Pin, Hammer and Trigger	61654**
B3-22	15	Hammer & Hammer Pin Retaining Assembly	62317
B3-23	10	Spring, Hammer	61697
B3-24	15	Pin, Automatic Sear	61615
B3-25	15	Assembly, Automatic Sear	61622
B3-26	10	Selector, Fire Control	61959
B3-27	10	Disconnect	62334
B3-28	15	Trigger	61955
B3-29	10	Spring, Trigger	61657
B3-30	100*	Spring, Disconnect	61925
B3-31	100*	Pin, Roll (Bolt Catch)	95105
B3-32	10	Catch, Bolt	62301
B3-33	10	Plunger, Bolt Catch	62178
B3-34	100*	Spring, Bolt Catch	62177
B3-35	10	Catch, Magazine	61604
B3-36	10	Button, Magazine Release	62032

ESTIMATED PARTS REQUIRED PER 100 WEAPONS (continued)

Fig. No.	Qty.	Nomenclature	Part No.
		LOWER RECEIVER GROUP	
B3-37	100*	Spring, Magazine Catch	61759
B3-38	100*	Pin, Roll (Trigger Guard)	95101**
B3-39	10	Trigger Guard Assembly	61970
B3-40	15	Pin, Receiver Pivot	62221
B3-41	N/A	Receiver, Lower	

NOTE:

* = 100% Replacement
** = Multiple Use Item
N/A = Not Available

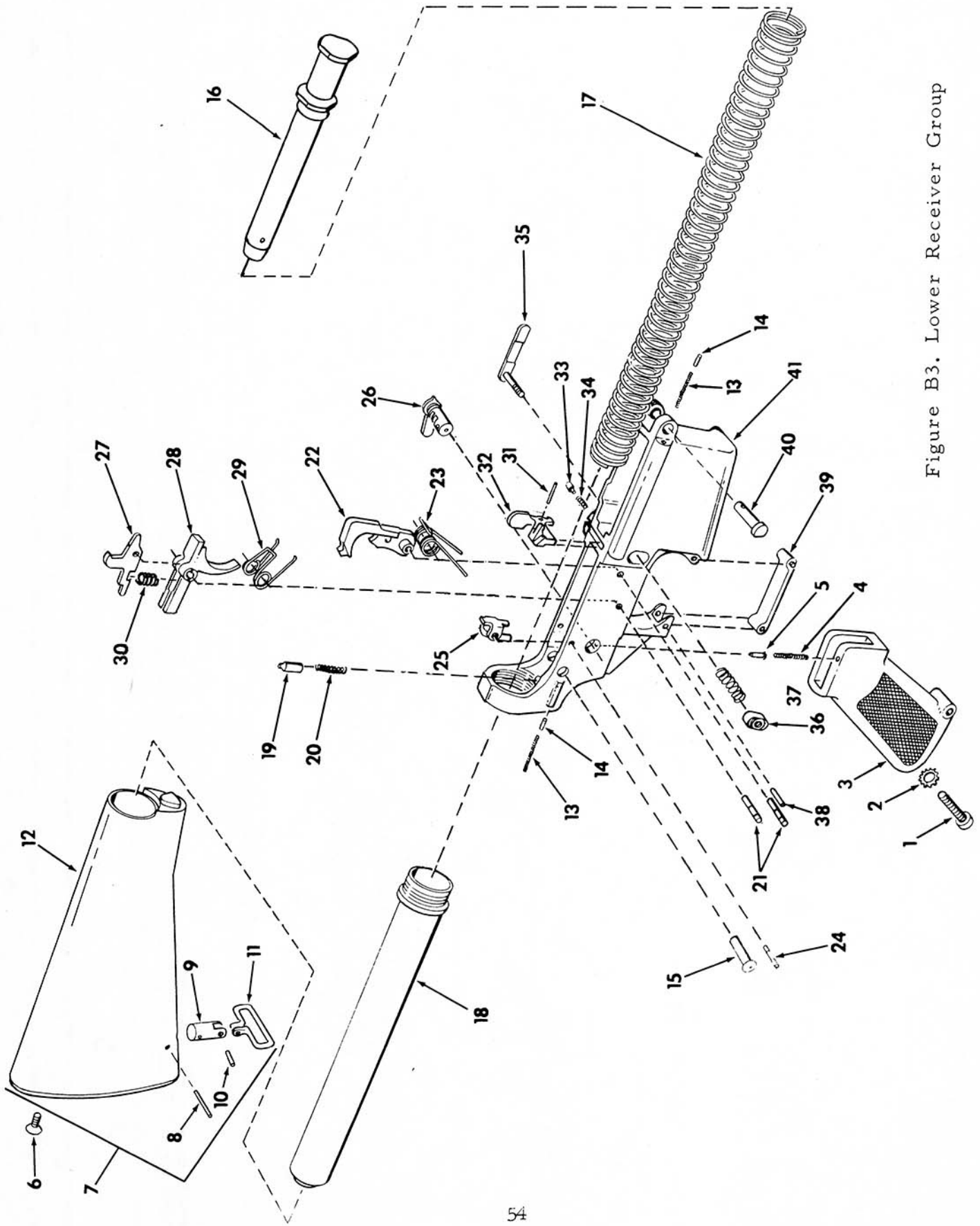


Figure B3. Lower Receiver Group