SECTION 3—MAINTENANCE INSPECTIONS

2-4. General

This section provides specific instructions for inspection of material 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. For inspection procedures, refer to Table 2-3, page 8.

2-7. Inspection of Material in the Field

This is the inspection of equipment to detect probable failure 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 Inspections

2-8.1 Initial Inspection. This is an inspection of material 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.

- **2-8.2 In Process Inspections.** These are inspections performed in the process of repairing the material, 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.
- **2-8.3 Final Inspection.** This is an acceptance inspection performed by a final inspector, after repairs have been completed, to insure that the material is acceptable for return to user or for return to replacement stock, according to established procedures.

2-9. Inspection Procedures

The inspection procedures for the weapon and bipod after disassembly are shown in Table 2-3, page 8, and specific instructions on inspection prior to disassembly are shown in paragraph 2-10 below.

CAUTION:

- 1. ENSURE THAT MAGAZINE IS REMOVED AND THE WEAPON IS NOT LOADED BEFORE STRIPPING, CLEANING OR INSPECTING SO THAT IT WILL NOT FIRE.
- 2. WEAR SAFETY GLASSES IN CASE YOU LOSE CONTROL OF SOME SPRING LOADED COMPONENT WHICH COULD INJURE YOUR EYES.
- 3. DO NOT PERMIT LIVE AMMUNITION IN OR NEAR THE WORK AREA.

2-10. Inspection Prior to Disassembly

NOTE: Check to see that the weapon and accessories 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.

- **2-10.1** Make an overall inspection of the weapon and accessories for general appearance, condition and operation.
- **2-10.2** On material 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.
- **2-10.3** Carry out a functional check as described in CM101 2nd Edition Chapter II Section 5. For weapons with 3 round burst fire control also see Appendix D to this manual.

Field Inspection			Action	Reference
Spot Check	Initial	In Process		
UPPER REC	EIVER GF	ROUP (CON	т.)	
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	Χ	_	(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	Х	_	(5) When viewed with the naked eye, lands that appear dark due to coating of gilding metal from projectiles are allowable.	
X	X	_	(6) Definitely ringed bores or bores ringed sufficiently to bulge the outside surface of the barrel are cause for rejection.	

TABLE 2-3—MAINTENANCE INSPECTIONS

Field Inspection	Direct and General Support Inspection		Action	Reference
Spot Check	Initial	In Process		
1. MAGAZII	NE ASSEME	BLY		
X	X		A. Visually inspect magazine box for bulges, dents, cracks, bent cover lips, excessive wear, damaged feeder lips or bent or broken base plate retaining tabs.	
X	X	_	B, Check rear area of magazine follower for chips or excessive wear which would impair functioning of the bolt catch.	
X	X		C. Examine springs for breaks, corrosion, or improper assembly to the follower.	
2. UPPER I	RECEIVER	GROUP		
			A. General	
X	Х		(1) Inspect for cracks or mutilation which would affect function. Small dents or gouges should not be cause for rejection.	
X	X		(2) Inspect all parts for wear or damage.	
Х	Х	X	(3) Check springs for breaks or deformations.	
			B. Handguard Assembly	
Х	X	_	(1) Inspect for breaks and separation of handguard from liner.	

Field Inspection			Action	Reference
Spot Check	Initial	In Process		
UPPER REC	EIVER GF	ROUP (CON	Т.)	
χ	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.	
Х	X		(8) Inspect chamber for cleanliness and freedom from carbon deposits and corrosion.	Figure 2-3, page 16
X	X	_	(9) 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 so that the reflected light will illuminate the chamber walls. A pit or pits as large as 1/32 inch (0.794 mm) in diameter shall be cause for rejection. A small number of uniformly fine pits, (approximately .010 in. (0.254 mm 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 16

Field Inspection	Ger Sup	et and neral port ection	Action	Reference	
Spot Check	Initial	In Process			
UPPER REC	EIVER GF	ROUP (CON	т.)		
X	X	Х	(10) Check headspace, using Headspace Gage T-27921.	Figure 2-2, page 15	
Χ	X	-	D. Front Sight and Gas Tube		
X	X	_	(1) Check front sight for cracks and general condition.		
X	Х	_	(2) Check front sight post and detent for rust or other deficiencies which could cause restricted movement.		
X	Х	_	(3) Check gas tube for cracks, deformities, or eccentric wear at rear tip. Also check by feel the slight lip near end of gas tube extension.		
X	X		E. Ejection Port Cover Assembly		
Χ	X		(1) Check for bent, twisted or dented cover.		
Χ	X	X	(2) Check detent and C ring for breakage or corrosion.	i I	
Х	Х	X	(3) Check for broken or distorted cover spring.		
X	Х	_	F. <u>Forward Assist.</u> Check for corrosion and free function with spring force sufficient to ensure a crisp return.		
Х	X	_	G. Rear Sight. Check for broken or corroded parts and for their correct and full movement.		
3. BOLT CARRIER GROUP					
			A. <u>Bolt</u>		
X	Х	-	(1) Check for cracks or deformities in bolt, particularly around cam pin hole area.		
Х	X	_	(2) Inspect bolt for pitted or chipped bolt face, elongated firing pin hole, or corroded ejector.		

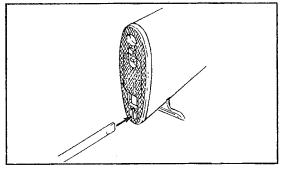
Field Inspection	Direct and General Support Inspection		Action	Reference
Spot Check	Initial	In Process		
BOLT CAR	RIER GROU	JP (CONT.)		
X	X	X	(3) Each bolt locking lug should be inspected periodically for cracks by fluorescent penetration test when equipment is available; otherwise, use a glass of no 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. Bolt with lugs exhibiting cracking, or which are definitely suspect, will be replaced.	
X	X	X	(4) Inspect for broken bolt rings and proper spacing in ring gaps. Ring gaps are to be staggered to prevent loss of gas pressure. Check effectiveness of rings as follows: With firing pin and cam pin removed, and bolt assembled to bolt carrier, hold carrier vertically with key pointing downward. Bolt should not drop out of carrier; if bolt drops out, replace bolt rings.	
			B. <u>Firing Pin</u>	
Х	X		(1) Inspect firing pin for wear and burrs.	
X	X	Х	(2) Check firing pin protrusion, using gage Pt No. 62679. Protrusion should be between 0.028 & 0.036 in. (0.711 mm-0.914 mm).	Figure 2-4, page 16
			C. Key and Bolt Carrier Assembly	
X	X	_	(1) Check key and bolt carrier assembly for cracks, burrs, chips, rust and for a bent or dented carrier key. Use a pipe cleaner or something similar to check for blockage of the key bore and gas passages.	

Field Inspection	Direct Gene Supp Inspe	eral oort	Action	Reference
Spot Check	Initial	In Process		
BOLT CARE	RIER GROU	P (CONT.)		
Х	Х	Х	(2) Check socket head cap screws for tightness. They must be properly tightened and staked. Check for evidence of gas leakage between carrier and key.	Figure 6-3, page 39
			D. Extractor Assembly	
Х	X	X	(1) Inspect for cracks in the claw areas, elongated pivot holes, a bent or broken extractor spring, and damaged or missing rubber insert.	
Χ	X	X	(2) Check for broken extractor pivot pin.	
4. LOWER F	RECEIVER	GROUP		
			A. General	
X	X	_	(1) Inspect for cracks, corrosion or damage 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.	
Х	Х	X	(3) Check springs for breaks or deformation.	
	X	X	(4) Check trigger pull, minimum 5.5 lb., maximum 8.5 lb (2.49 kg-3.86 kg).	
			(5) Check for correct magazine catch engagement, using an empty magazine. Magazine should drop clear before magazine release button is flush with receiver.	
X	X	_	B. Stock Assembly	
			(1) Inspect for breaks and separation of material which prevent proper retention or which interfere with proper functioning of weapon.	

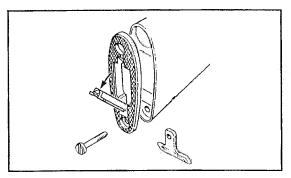
Field Inspection	Ger Sup	et and neral eport ection	Action	Reference	
Spot Check	Initial	In Process			
LOWER RE	CEIVER G	ROUP (CON	IT.)		
Х	X	_	(2) Inspect for dents, cracks and chipping that would impair the functioning of components or weapon.		
5. BIPOD (L	LIGHT) AND	CASE	ř		
X	X Z	_	A. Inspect the bipod legs; they shall move freely from closed to open position under spring tension. Inspect for rust and shiny areas. Any found must be cleaned and touched-up.		
Χ	X	_	B. Bipod must hold securely to the rifle.		
Х	X		C. Check case for holes or torn stitches.		
6. BIPOD (H	HEAVY) (FC	R HBAR)			
X	X	*****	A. Inspect bipod legs; they shall move freely and lock firmly at both closed and open positions.		
Х	Х		B. Inspect for cracks, corrosion, wear or damage which would affect functioning. Small dents or gouges will not be cause for rejection. Corroded areas should be noted for immediate repair.		
7. BAYONET AND SCABBARD					
Х	X		A: Inspect bayonet for chipped or broken grips, missing grip screws, bent, rusted, or missing latches. Latches must open and close freely and bayonet must hold securely to weapon.		
X	X	_	B. Inspect scabbard for missing rivets, torn webbing, broken or cracked body and torn or missing lace. Check that snap fastener holds firmly.		

NOTE: The following Figures illustrate procedures identified in Table 2-3 which starts on page 8.

FIGURE 2-1. DISASSEMBLY OF REAR SWIVEL—RIFLE (Not applicable to Carbine or Commando)

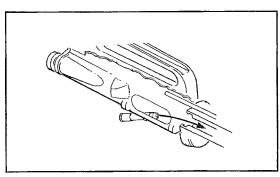


1. REMOVING SWIVEL RETAINING SCREW

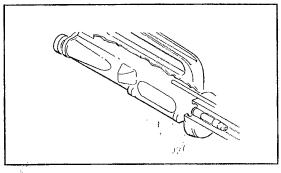


2. REAR SWIVEL REMOVED

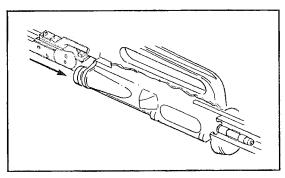
FIGURE 2-2. HEADSPACE CHECK



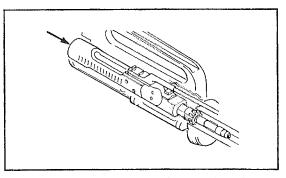
1. HEADSPACE GAGE INSTALLATION (P/N T27921)



2. HEADSPACE GAGE INSTALLED



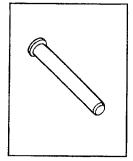
3. BOLT INSTALLATION

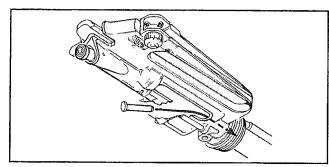


4. PROPER HEAD SPACE INDICATION

Bolt will not go to locked position with light force of finger applied to rear of bolt carrier.

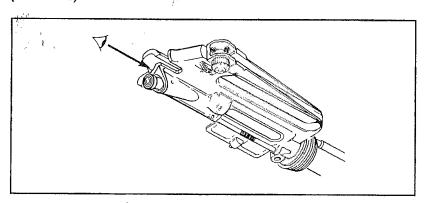
FIGURE 2-3. CHAMBER INSPECTION





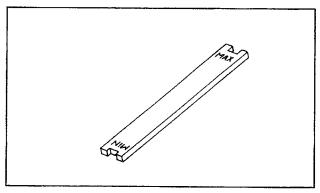
CHAMBER REFLECTOR TOOL (PN 62694)

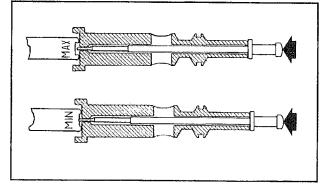
1. CHAMBER REFLECTOR TOOL INSTALLATION



2. CHAMBER VISUAL INSPECTION

FIGURE 2-4. FIRING PIN PROTRUSION CHECK





1. FIRING PIN PROTRUSION GAGE (PN 62679)

2. FIRING PIN PROTRUSION CHECK

NOTE: With the firing pin held firmly forward in the bolt, the end of the firing pin protrusion gage marked "MAX" ("GO" -.036 in, 0.91 mm) **should pass over** the end of the pin (see Figure 2-4) without touching it, and the end marked "MIN" ("NO-GO" -.028 in, 0.71 mm) should hit the end of the firing pin and **not pass over** it.

CHAPTER V-FINAL INSPECTION

5-1. General

This chapter contains instructions for the final inspection of weapons and bipods which must be checked in accordance with the procedures outlined in Table 2-3, page 8, and in paragraphs 5-1.1 through 5-1.3 which follow. Weapons that have been repaired shall be function fired to assure proper function. Weapons that have been rebarreled should be both function fired and fired for accuracy; see CM 101, p 58, for zeroing instructions.

- 5-1.1 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. Weapons 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 embodied.
- **5-1.2 Functional Check.** The instructions for a functional check are contained in CM101, 2nd Edition, Chapter II, Section 5. Additional functional checks for weapons with 3 Round Burst fire control are at Appendix D of this manual, (CM102).
- **5-1.3 Inspection of Critical Dimensions.** Inspect for dimensional acceptability of headspace, firing pin protrusion, and extent of barrel erosion in accordance with the instructions contained in Table 2-3 which starts on page 8.

CHAPTER VI—REPAIR, REFINISHING, AND REASSEMBLY

6-1. Repair and Refinish Procedures

Approved procedures for repair and refinishing of various surfaces of the weapon 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. USE EXTREME CARE to prevent change of weapon characteristics. Bare surfaces should be touched up as soon as possible to prevent contamination or corrosion.

6-1.1.1 Dents and Gouges

- A. **Smooth** the edges of the damaged surface 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.
- B. Wash the area with solvent cleaning compound (Table 2-2, item 3, page 4) to remove all dust, grease, or other foreign particles.
- C. **Dry** the surface, **apply** the touch-up finish, and **cure** it in accordance with the instructions furnished by the manufacturer. The lacquer in Table 2-2, item 6, page 4 should be used on all exposed, exterior surfaces of aluminum parts. The touch-up lacquer may also be used on clean steel surfaces which are exposed and are not subjected to heat.
- **6-1.1.2 Corroded Components.** Corroded components may be repaired when possible by light sanding or buffing. Surfaces must be smooth and clean for touch-up. Affected areas shall be cleaned and refinished as specified in paragraph 6-1.1.1 above.

6-1.2 Corrective Action for Unusual Malfunctions

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. Use tool reflector chamber Part No. 62694 to inspect chamber surfaces . . . see Fig. 2-3, page 16. If chamber surfaces are found to be pitted or otherwise damaged, replace the barrel and front sight assembly.

6-2. Reassembly

Reassembly of the major groups shall include all necessary adjustments. Specified torque must be applied as indicated, using properly calibrated and maintained equipment. A constant quality assurance surveillance must also be maintained to insure that included parts, components, subassemblies, and/or assemblies conform to all criteria as specified in this manual. Torque wrenches must be used but those listed in Table 2-1, page 2, shall not be considered as mandatory. However, the wrenches listed should 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 too far. Slave-pins of the proper diameter can be used to hold certain assemblies in proper relationship for easier installation of roll pins, e.g., rear windage drum, bolt catch, forward assist assembly, etc. See page A-3 for special setter punch designed for windage drum pin.

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

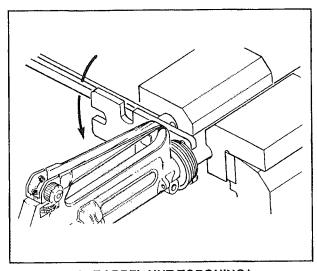
The material shall be reassembled as specified in the following paragraphs.

6-2.1 Upper Receiver Group

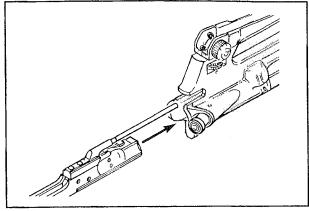
The upper receiver group shall be reassembled by reversing the disassembly procedure and in accordance with the following instructions.

- **6-2.1.1 Front Sight.** Visually align 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.
- **6-2.1.2 Barrel.** Use extreme care when installing the barrel assembly into the upper receiver. Care is necessary to ensure both barrel and receiver mating parts are clean and to prevent the upper receiver alignment slot from being damaged 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 disulfide grease, page 4, item 5, prior to assembly. Initial torque applied to the barrel nut shall be 30 lb-ft (40.67 N•m) using torque limiting wrench, p/n 94162, and the 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 6-1.1) 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 6-1, 2 and 3.

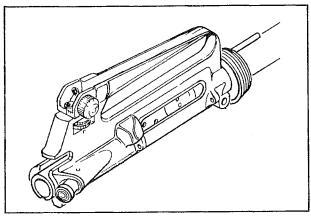
FIGURE 6-1. BARREL NUT AND GAS TUBE/FRONT SIGHT ASSEMBLY INSTALLATION



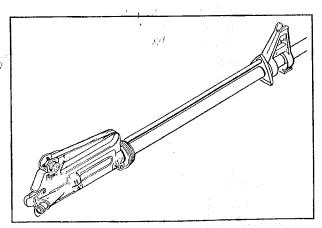
1. BARREL NUT TORQUING* using Combination wrench P/N 62696, Torque wrench P/N 94162 and Vise jaws P/N 62695.



2. BARREL NUT ALIGNMENT TOOL (P/N 62693) INSTALLED IN KEY.



3. BARREL NUT INSTALLED AND ALIGNED.



4. GAS TUBE AND FRONT SIGHT ASSEMBLY INSTALLED.

*NOTE: WHEN TIGHTENING MAKE CERTAIN ALL THREE PINS OF THE COMBINATION WRENCH ARE FULLY ENGAGED WITH THE BARREL NUT AND THE WRENCH IS PRESSED SQUARELY AGAINST THE NUT. ALSO MAKE CERTAIN THAT THE ALIGNMENT TOOL IS FULLY CLEAR OF THE BARREL NUT BEFORE ROTATING IT, EVEN DURING FINAL FINE ADJUSTMENTS.

6-2.1.4 Compensator

<u>Important</u>—Correct alignment of the compensator is important in maintaining the performance of M16A2 weapons.

- **6-2.1.4.1** Secure barrel in bench vise, using barrel removal vise jaws (P/N 62695). NOTE: On the M16A2 HBAR make sure the bipod is assembled to the barrel before installing the compensator.
- **6-2.1.4.2** Check that screw threads on barrel and compensator are clean and free from burrs and corrosion.
- **6-2.1.4.3** Compensator Assembly: Assemble spacer, part number 64503, to barrel by sliding it over the muzzle with laminations forward toward compensator. Correct installation is important to give maximum support to the thin laminations and prevent their distortion.
- **6-2.1.4.4** Assemble compensator by screwing it onto muzzle of barrel and turning it clockwise until it is hand tight.
- **6-2.1.4.5** Using wrench, combination, part number 62696 and wrench, torque-limiting, 1/2 in. square drive, part number 94162, apply a torque of 25-30 lb. ft. (33.90 40.67 N m) to the compensator.
- **6-2.1.4.6** Check the position of the slots in the compensator. The center slot must be in line with the top of the barrel or within 10 degrees right or left of that position; see Figure 6-2.1. Half a slot width is approximately 10 degrees.
- **6-2.1.4.7** If compensator is not aligned, remove it, then peel off laminations from the spacer to correctly align the compensator when it is reassembled and torqued. See Figure 6-2.2. Each lamination of the spacer is 0.002 in. thick. By removing one, the angular position of the compensator will move 10 degrees clockwise; 2 laminations = 20 degrees; 3 laminations = 30 degrees, and so on.
- 6-2.1.4.8 Repeat steps 2 through 5 until the compensator is correctly aligned.

FIGURE 6-2. COMPENSATOR INSTALLATION

TOTAL
TOLEHANCE
FRONT SIGHT
POST

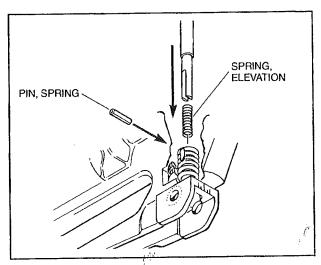
TOTAL
TOLEHANCE
10°

1. ALIGNING COMPENSATOR SLOTS

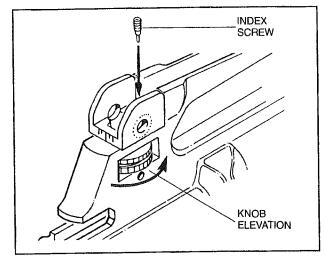
2. PEELING OFF LAMINATIONS FROM SPACER, COMPENSATOR

CENTER SLOT COMPENSATOR



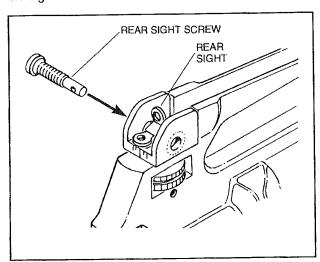


5. With receiver upside down push elevation spring into bottom of sight base using wrench, rearsight assembly part No. 64685 and drive in the spring pin to hold elevation spring secure and under tension.

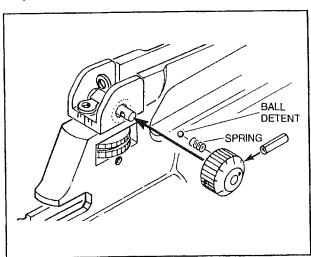


6. Screw elevation knob down until it bottoms on receiver, then back it off to first full detent; rotate elevation index until "8/3" is aligned with the mark. Insert and tighten the index screw to lock elevation index to elevation knob.

Note: Step 6 describes the basic setting for the elevation knob index. However, some users prefer to bottom the elevation knob, then back it off 2 or even 3 full clicks of the detent before aligning the elevation index at 8/3 (low) and securing it with the index screw. This allows the rear sight to be adjusted lower when firing at short range after the sights have been zeroed. But it also reduces the range of adjustment beyond the 8/3 (high) setting.



Assemble leaf spring and rear sight into rear sight base and secure with rear sight screw, installed from left to right.

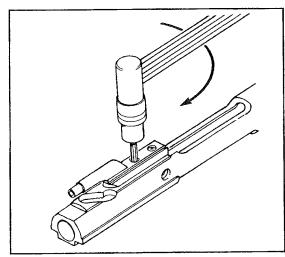


8. Assemble detent spring and ball to windage knob and assemble it to sight screw. Secure with pin.

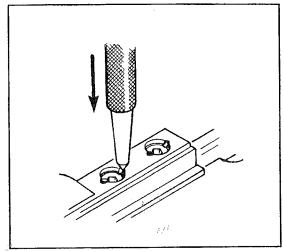
6-2.2 Bolt Carrier Group

See Colt Manual CM101, 2nd Edition, page 35, for assembly instructions. When installing the bolt carrier key, apply a thin coat of sealing compound (Table 2-2, item 12, page 4) 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 lb. - in. (3.95 - 4.52 N • m) using the torque limiting wrench (P/N 94161) and the socket head hex bit wrench socket (P/N 94158) as shown in Figure 6-4.1. 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 6-4.2 below.

FIGURE 6-4. BOLT CARRIER KEY INSTALLATION



1. TORQUING KEY SCREWS (35-40 lb.-in.) (3.95 - 4.52 N • m)



2. STAKING KEY SCREWS (FIELD REPLACEMENT STAKING)

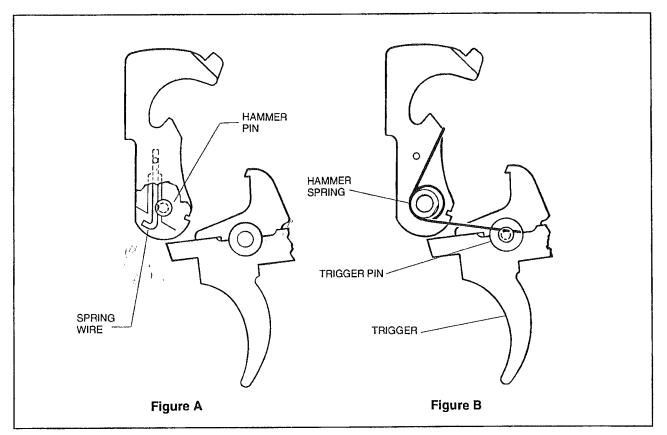


FIGURE 6-6. HAMMER SPRING AND TRIGGER PIN INSTALLATION

6-2.3.2 Inside the hammer a spring wire engages the center groove on the hammer pin to center and retain it; Figure A. Similarily, one of the twin legs of the hammer spring engages in a groove at one end of the trigger pin to center and retain it; Figure B. Correct positioning and the tension on the springs are critical in both cases to prevent the pins from "walking" out during automatic fire.