

FIELD MAINTENANCE MANUAL

COLT CGL-4 40 MM GRENADE LAUNCHER

ATTACHMENT

FOR

RIFLE 5.56 MM XM16E1

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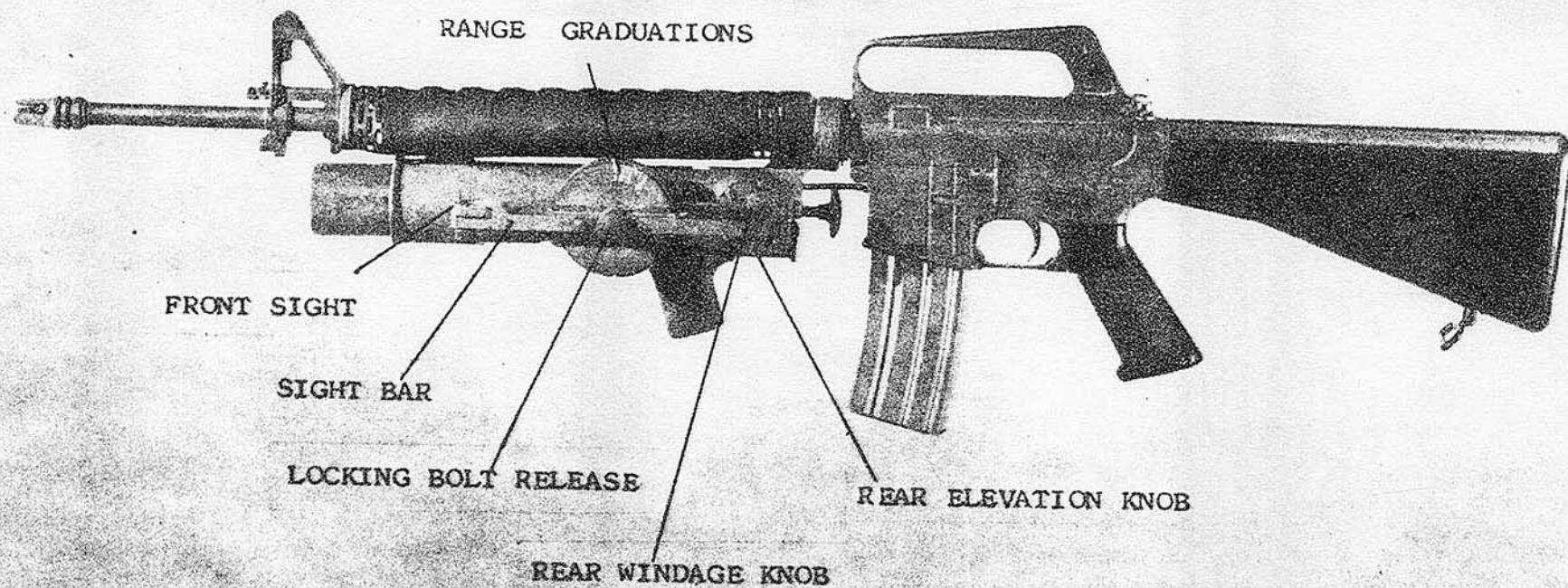


FIGURE 1-1 LEFT SIDE

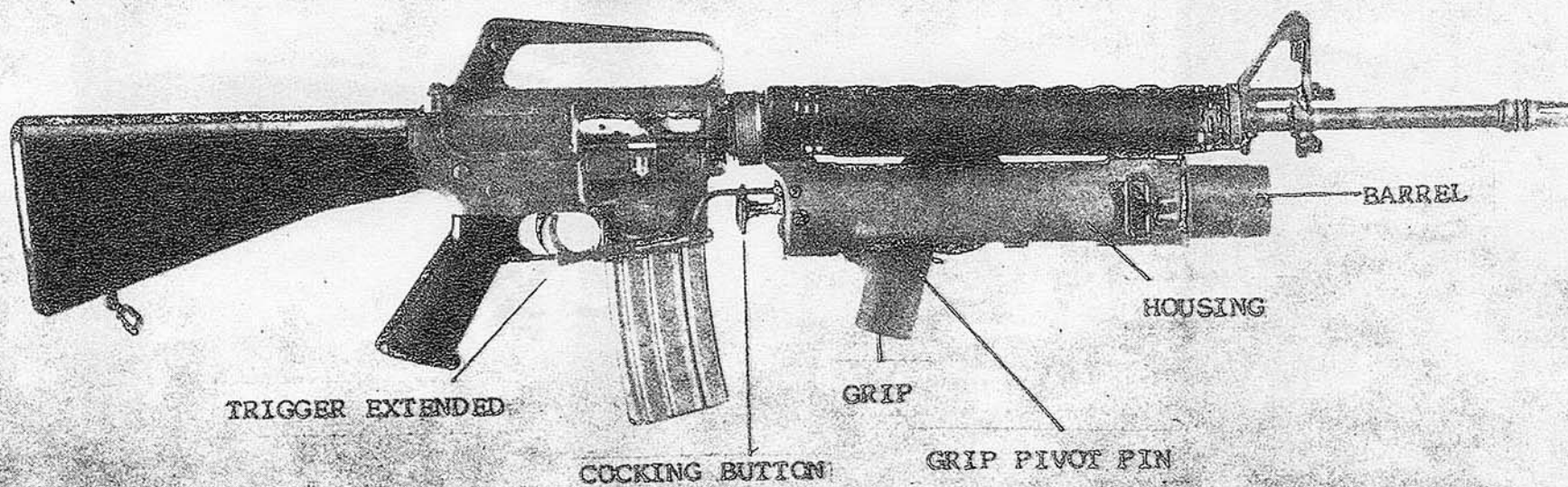


FIGURE 1-1 RIGHT SIDE

CHAPTER I

INTRODUCTION

SECTION I GENERAL

1.1 SCOPE

This manual has been prepared for the information and guidance of ordnance personnel responsible for the installation and maintenance of the Colt Grenade Launcher Attachment CGL-4 40 mm.

SECTION II DESCRIPTION

1.2 GENERAL

The launcher attachment is designed to provide the user with an accurate, uncomplicated, minimum maintenance, rifle mounted device for launching the standard 40 mm grenade. While designed for use on the Colt AR-15 series of infantry weapons, the launcher is readily adaptable for installation on most shoulder weapons. The sight assembly has been designed to permit accurate sighting in any combat position. Sight range and windage controls are provided with visual marking and with click positioning which can be counted by sound and feel for sighting in darkness.

1.3 MAJOR ITEMS

Colt Grenade Launcher Attachment CGL-4 consists of three major components:

- (a) Launcher Assembly
- (b) Sight Assembly
- (c) One Piece Hand Guard

1.4 DESCRIPTION - LAUNCHER

The launcher consists of an aluminum housing with integral mounting points. Contained in the housing is a sliding aluminum barrel and the firing mechanism. A small pistol grip is attached to the barrel housing by a pivot pin which passes through a lug in the bottom rear of the barrel. Housed in the front top of the pistol grip is a spring loaded cartridge retaining pin which passes through a hole in the barrel to hold the cartridge in place during loading. Spring pressure from this pin also serves to pivot the pistol grip locking lug towards the locking notch located in the bottom of the housing just behind the breech face. The pistol grip is held in an open position by a spring loaded plunger which is located in a longitudinal hole in the lug. This plunger contacts the breech face and moves forward against its spring's pressure when the barrel is moved back to the closed position. When the plunger moves forward it frees the pistol grip which rotates into the locked position under hand pressure. The barrel is locked in battery position by a latch detent which engages the grip. The barrel is guided by two additional

lugs at the bottom of the barrel which slide in the slot in the bottom of the housing. The barrel is held open by a spring loaded friction pin located in the base of the front mount.

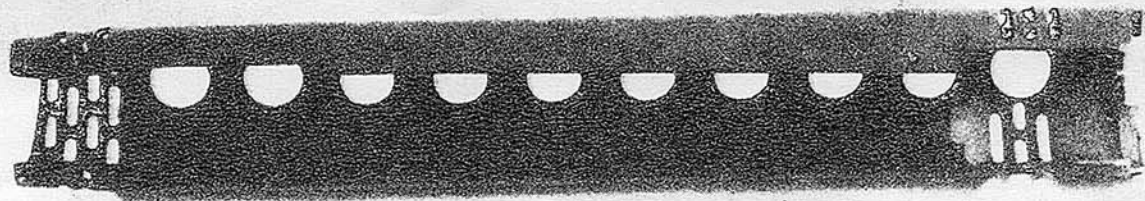
The extractor is a flat piece of spring steel with a hook on one end. It is located in a slot on top of the launcher housing and is held in place by a single screw. When the barrel is pushed forward this extractor rides down a ramp in the top of the barrel to engage the cartridge rim. The firing mechanism is located in the rear of the housing, behind the breech face. There are three moving parts, trigger; firing pin and sear. The firing pin operates through a recoil plate which is screwed into the breech face. A heavy firing spring supplies forward motion to the inertia firing pin. A lighter buffer spring located just behind the recoil plate returns the firing pin from fixed position to a neutral (uncocked) position in the safety sear notch. The firing pin extends through the rear of the housing where it is screwed into the cocking button. The sear is located laterally through the center section of the housing underneath the firing pin. Two notches in the firing pin engage the sear. The forward notch is a cocking notch. The rearward notch is a safety notch which prevents the firing pin from moving forward when in uncocked

condition. The extension trigger end is mounted in a bearing hole in the housing. A trigger guide rod mounted laterally in the housing supplies added support to the trigger bar. A trigger spring mounts on the trigger bar between the guide rod and the sear lever which is attached to the sear by a screw. Sear lever fingers engage a flat spot in the trigger bar between the trigger spring and the housing. When the trigger is pulled it pulls the sear lever back which rotates the sear to release the firing pin. A trigger is mounted on the trigger bar. This trigger is held in place by friction provided by an "O" ring. A screw in the end of the trigger rod holds the ring in place and provides adjustment of friction. The trigger can be moved longitudinally and rotated on the trigger bar for adjustment to the stowed or firing positions. To stow the trigger, push forward on bar and rotate upwards to lay flat against rifle receiver. For firing, pull trigger to extended position alongside rifle trigger. To fire with winter mittens, rotate trigger to down position.

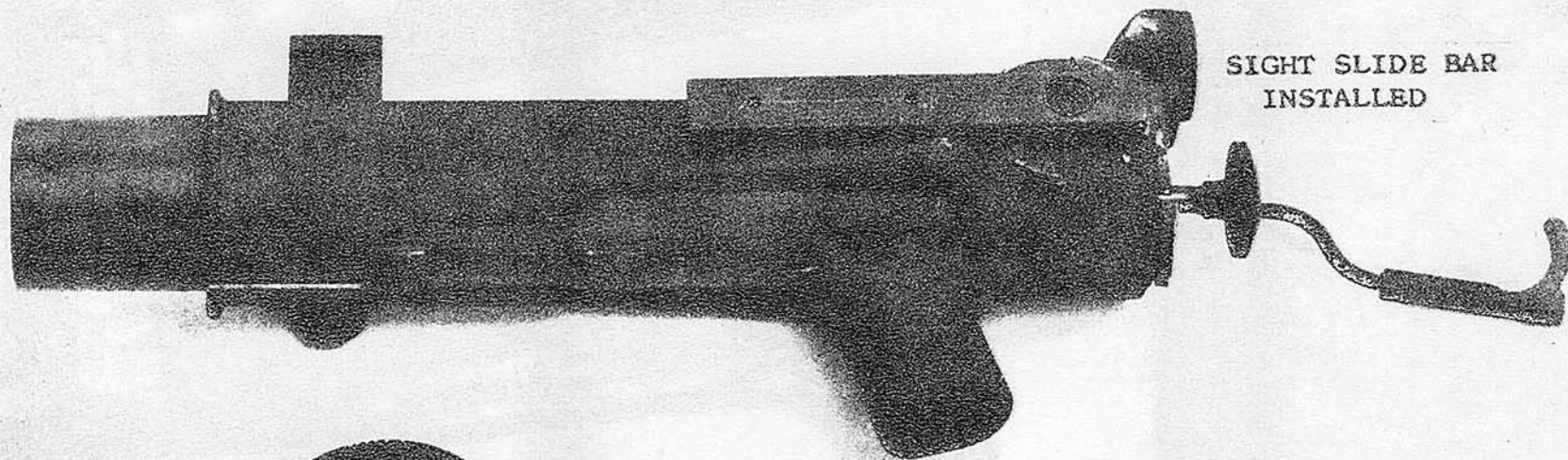
1.5 DESCRIPTION SIGHT ASSEMBLY

The sight assembly consists of a sight slide bar installed on the launcher; a sight bar; front post sight with windage adjustment for zeroing; a flat spring type rear peep sight with elevation adjustment for zeroing and windage adjustment

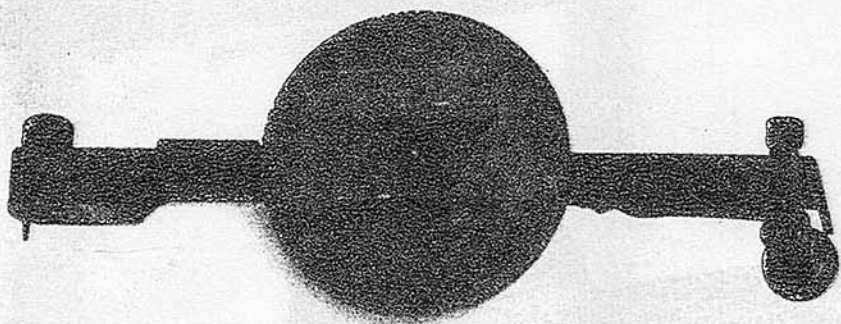
for firing; and a large graduated disc for range adjustment. The sight slide bar is mounted on the left side of the housing by a nut, bolt and spring assembly. Slots in the housing permit the sight slide bar to be placed in up, down, forward or rear positions by lifting against the spring pressure and rotating until it engages the slots. The sight is mounted on the sight slide bar by an interlocking sight base. The base contains a spring which takes up play between mating parts. The sight base has detent notches on its circumference. These notches provide click positioning for range adjustments. The sight bar and disc are a permanent assembly. The disc rides within the sight base providing a predetermined frictional engagement. These two parts are held together by a pair of friction screws and a Belleville spring which provides friction pressure. The sight may be moved along the sight slide bar to any of three locations. The sight is held in these positions by a spring-loaded locking bolt which passes through the friction screws and which is screwed to a knob at the left side of the sight bar. The front sight windage adjustment is provided with a click detent. The front sight is retained in the sight bar by a roll pin through the knob and sight stem. The rear sight and windage knob is a factory assembly riveted to the sight bar. Rear sight elevation knob and shaft are prevented from being unscrewed from the sight bar by a roll pin.



ONE PIECE HAND GUARD



SIGHT SLIDE BAR
INSTALLED



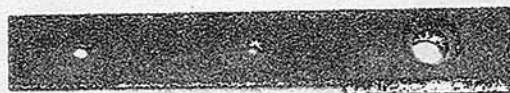
SIGHT BASE



FEMALE NUT



TENSION SPRING



SIGHT SLIDE BAR



MALE NUT

FIGURE 2-1

CHAPTER II
INSTALLATION

SECTION I LAUNCHER INSTALLATION

2.1 HAND GUARD REMOVAL

Remove standard two piece AR-15 hand guard by pulling back slip ring at rear of guard. Swing rear of hand guard halves to the side and pull back to disengage from front guard cap.

2.2 ATTACHING LAUNCHER TO RIFLE

- (a) Refer to Figure 2-1 and 1-1 for identification of parts.
- (b) Rear mount of the launcher is circular with a slot at the top. This slot is slightly larger than the small diameter of the rifle barrel. Slip rear mount over small diameter rifle barrel from the bottom. Holding the launcher parallel to the barrel, slide the launcher to the rear until rear mount fits over the larger diameter of the rifle barrel and is seated firmly against the barrel nut. A pin in the launcher housing directly under the rear mount should engage notch in the bottom center of the rifle barrel nut to prevent rotation of the launcher around the barrel.
- (c) Push launcher housing up until front mount base is firmly seated against barrel. Place the front mount clamp on front mount base so that clamp lip hooks the base on the left. The bar on the clamp must point

forward. Tighten clamp evenly with two Allen head screws by turning screws into holes on right side of front mount base.

NOTE

If the holes in the clamp mismatch with the front mount, file the clamp bar off at the front until holes are in alignment. It is important that the clamp bar remain as long as possible and fit against the hand guard cap to prevent launcher movement on the barrel during rifle fire.

2.3 INSTALLING ONE PIECE HAND GUARD

Hold hand guard directly above rifle barrel behind front launcher mount. Slide hand guard forward so that it surrounds front launcher mount. Push the hand guard forward until it fits into the hand guard cap. Let rear of guard slip down. Pull back slip ring, seat the hand guard firmly over gas tube, release slip ring.

2.4 INSTALLING SIGHT ASSEMBLY

Attach sight slide bar to launcher housing with male and female screws and spring. Place sight slide bar into a slot in the left rear side of housing with the large hole

aligned with hole in housing and counterbore facing out. Place spring over male nut (external threads) and place inside housing from the rear so that it aligns the hole in the housing. Push female nut through and tighten assembly with socket and open end hex wrench set. Sight assembly attaches to the sight slide bar. Holding sight assembly with post sight forward, slip the sight base over the sight slide bar with the lips on the sight base engaging grooves along edges of sight slide bar. Pull out locking knob at left of sight bar to permit the locking bolt shaft to clear end of sight slide bar. Slide sight bar along sight slide bar until the shaft engages one of the holes in the sight bar with a click.

CHAPTER III

SPECIAL TOOLS AND EQUIPMENT

SECTION I SPECIAL TOOLS

3.1 Special tools required for the disassembly, assembly, maintenance and repair of Colt Grenade Launcher CGL-4 40 mm will be found in the parts list in CHAPTER VII.

SECTION II IMPROVISED TOOLS

3.2 A short length of wire with a small hook on one end will be helpful in assembling the trigger assembly. The hook is used to pull back the trigger spring while installing the sear lever.

CHAPTER IV

LUBRICATION AND CLEANING

SECTION I GENERAL LUBRICATION PROCEDURES

- 4.1 All moving parts in the launcher assembly and sight assembly have been provided with a lubricant during manufacture.

SECTION II CLEANING

- 4.2 All parts should be thoroughly cleaned and oiled during disassembly.
- 4.3 Refer to TM 9-208-2 and TM 9-247 for cleaning equipment and materials.
- 4.4 The barrel is anodized aluminum. Do not apply rust preventive materials after cleaning.

CHAPTER V
TROUBLESHOOTING

TABLE 1
LAUNCHER ASSEMBLY

<u>Malfunction</u>	<u>Probable Cause</u>	<u>Remedy</u>
Fails to Cock	Dirty Trigger Spring or Damaged Spring	Clean or Replace
Fails to Fire	Broken Firing Pin	Replace
Fails to Extract	Extractor Bent, Broken or Loose	Replace or Tighten Screw

TABLE 2
SIGHT ASSEMBLY

<u>Malfunction</u>	<u>Probable Cause</u>	<u>Remedy</u>
Range Adjustment too Loose	Loose Friction Bolts	Tighten in Clockwise Direction
Range Adjustment too Tight	Tight Friction Bolts	Loosen in Counterclock- wise Direction

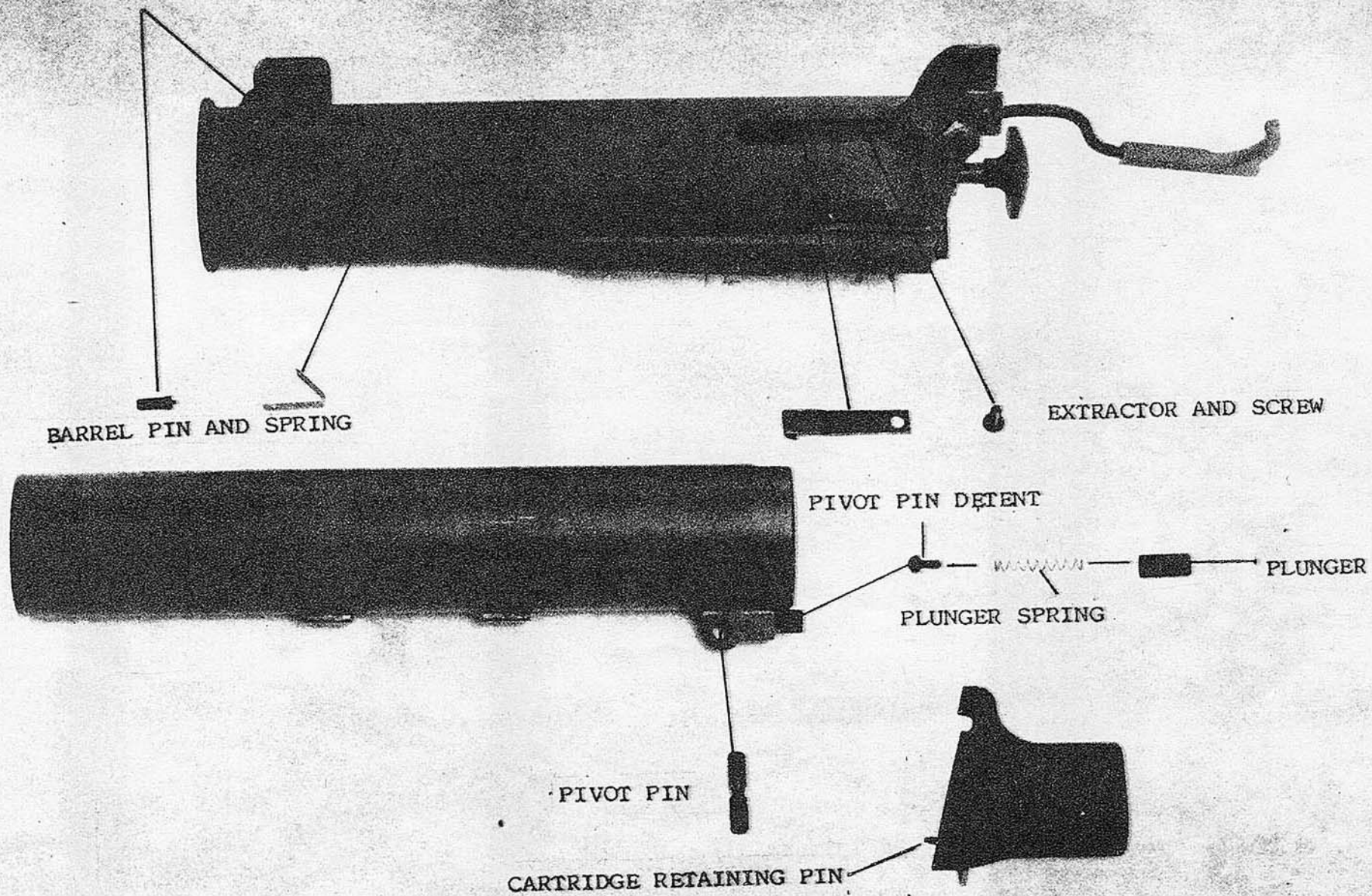


FIGURE 6-1

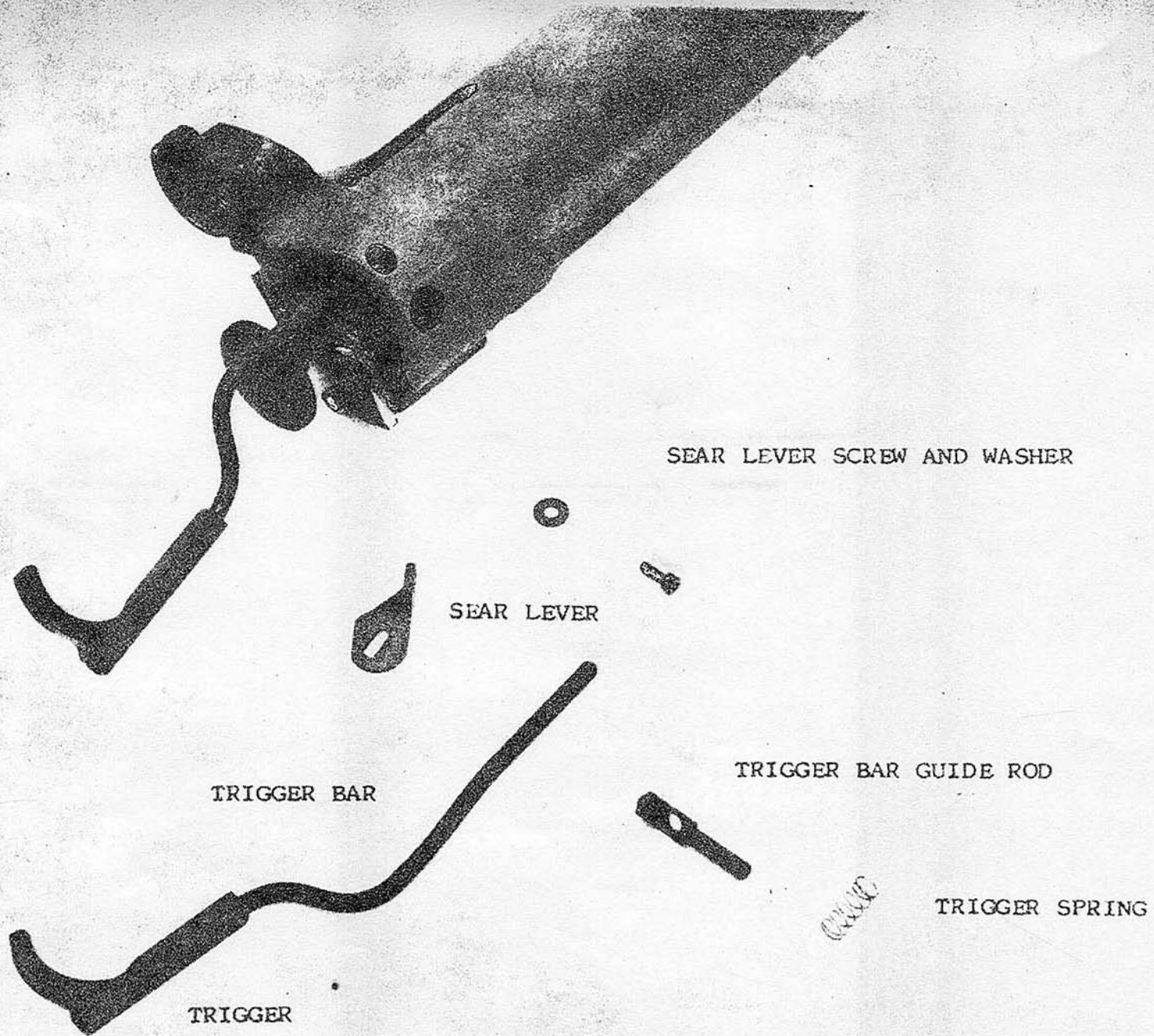


FIGURE 6-2

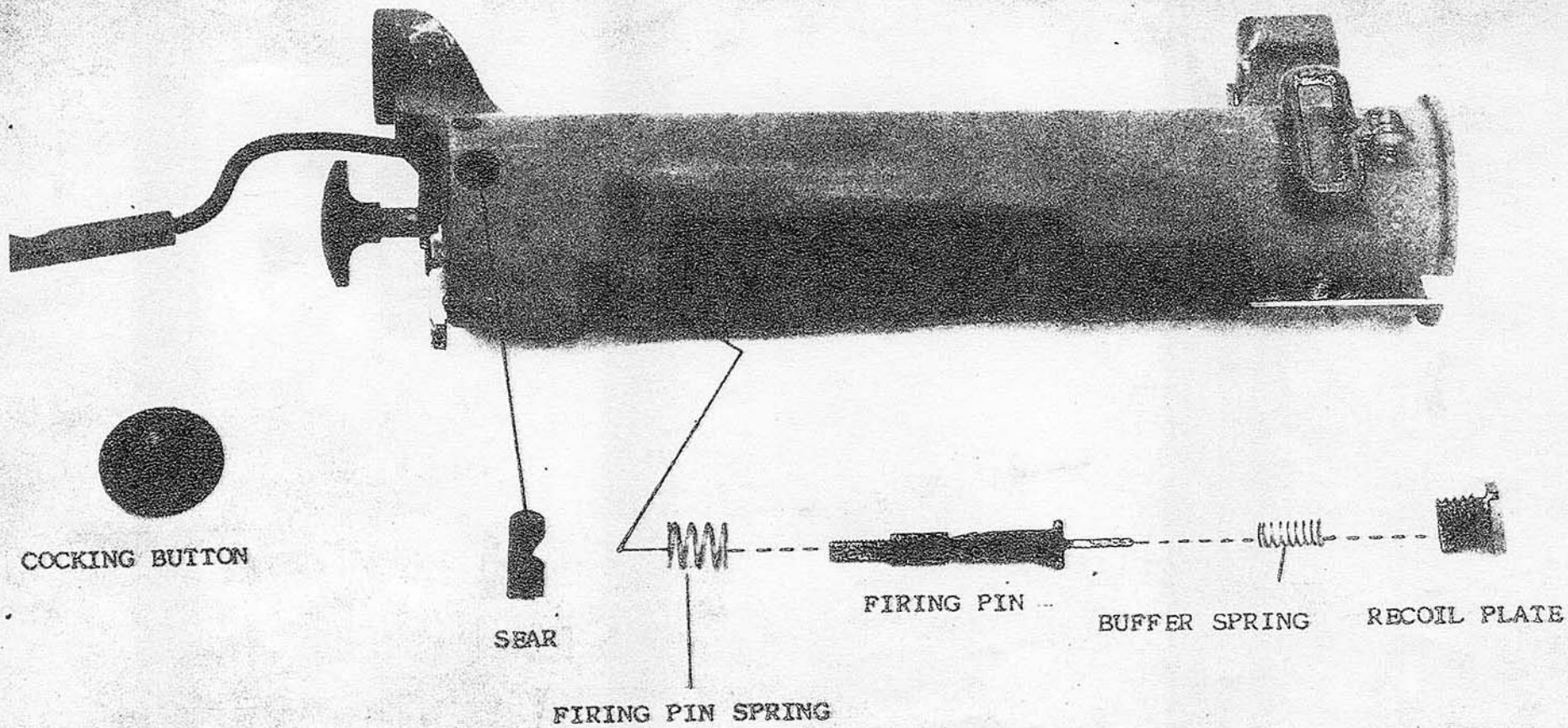


FIGURE 6-3

CHAPTER VI

MAINTENANCE OPERATIONS

SECTION I GENERAL

- 6.1 This chapter contains detailed instructions on the disassembly and assembly of the launcher assembly and sight assembly.

NOTE

All screws have been installed with anti-vibration liquid (Loctite, Grade C, Federal Stock #8030-08-2333). It is recommended that Loctite be applied after approximately 10 disassemblies.

SECTION II LAUNCHER DISASSEMBLY/ASSEMBLY

Refer to Figures 6-1 through 6-3.

6.2 BARREL GROUP

- (a) Press out pistol grip pivot pin in either direction using a punch or nose of cartridge.
- (b) Slide barrel forward to remove from housing.
- (c) To remove spring loaded plunger and pivot pin detent from lug in rear end of barrel, press out roll pin with 1/16" punch. Remove plunger, plunger spring and detent. Take care that spring does not jump out.
- (d) Remove cartridge retaining pin and spring from forward end of pistol grip by pressing out roll pin with 1/16" punch. Take care spring does not jump out.

- (e) To remove extractor from slot in top of launcher housing, remove screw with 3/32" Allen head wrench.
- (f) The barrel friction pin is located in the base of the front launcher mount. To remove pin insert a narrow screwdriver or punch under forward end of the spring and lift so that the hole in the spring clears the pin. Push spring to the rear with a narrow screwdriver. Turn housing over and shake out pin.

6.3 TRIGGER ASSEMBLY

Using 3/32" Allen head wrench, remove sear lever screw through the hole on the right rear side of the housing. Remove washer lying under the screw head. Disengage sear lever from sear shaft. Pull sear lever down and to the rear to disengage sear lever fingers from trigger bar. Pull trigger bar to rear taking care that the trigger spring does not jump out. Remove trigger spring. Slide out trigger guide rod from launcher housing.

6.4 FIRING PIN

To remove cocking button from firing pin, pull back pin until a hole in the pin is exposed. Insert a pin or punch through firing pin hole to hold the pin from rotating. Unscrew firing button from firing pin. To remove firing pin, unscrew recoil plate from breech using spanner wrench, unscrewing in a counter clockwise direction. When the

recoil plate is removed the firing pin buffer spring, the large end of which is frictionally fitted into the plate hole, will come out with the plate. Rotate the sear counterclockwise to release the firing pin. Lift out firing pin and firing pin spring.

6.5 SEAR

After removing the firing pin, the sear may be removed through the hole in the right rear side of the launcher housing.

6.6 SAFETY LEVER

It is recommended the safety lever not be removed during normal maintenance. If removal becomes necessary, use 3/32" Allen head wrench to remove the screw holding the safety lever. When removing the screw, hold safety lever firmly against rear of housing. This will hold detent spring in place. Carefully release safety lever to release detent spring pressure. Remove detent and spring. To remove grip latch detent, drive out roll pin in bottom of housing with 1/16" punch.

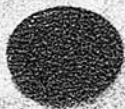
6.7 ASSEMBLY

To assemble the launcher reverse above procedures.

NOTE

In assembling the sear lever to the trigger bar use a short piece of wire with a small hook at one end to hold back trigger spring while inserting sear lever.

LOCKING BOLT RELEASE BUTTON



LOCKING BOLT SPRING

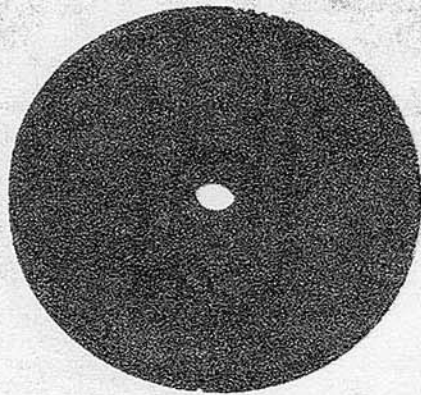


LOCKING BOLT

FIGURE 6-4



FRICTION BOLT



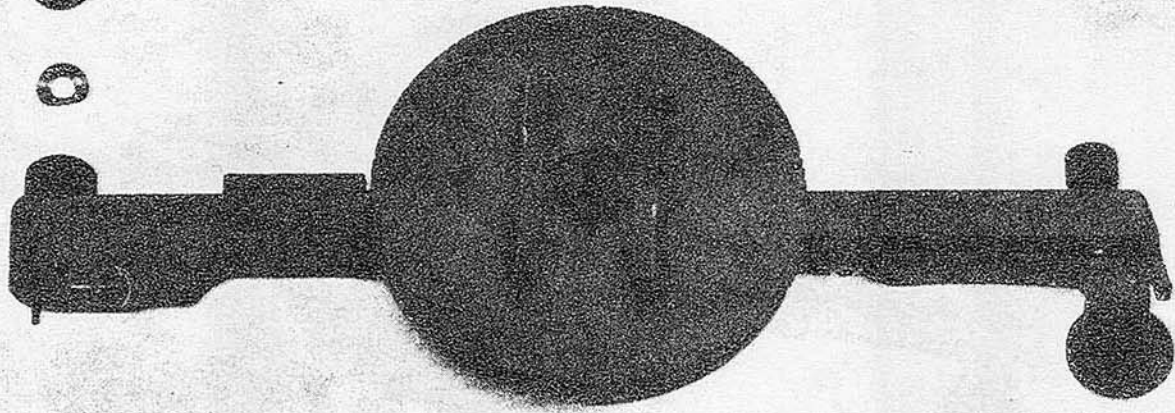
SIGHT BASE



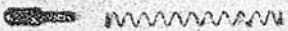
FRONT SIGHT KNOB



WASHER



REAR SIGHT ASSEMBLY



DETENT & SPRING



FRONT SIGHT



BELLEVILLE SPRING



FRICTION SCREW

FIGURE 6-5

SECTION III SIGHT DISASSEMBLY/ASSEMBLY

6.8 GENERAL

The sight assembly is designed to be maintenance free. It is recommended strongly that the sight not be disassembled under normal circumstances.

To remove sight assembly from launcher see Paragraph 2.4, CHAPTER II - INSTALLATION.

Refer to Figures 6-4 through 6-5 to identify parts.

6.9 LOCKING BOLT

To remove locking bolt hold bolt shaft at right side of sight bar with pliers and unscrew locking bolt release knob. Lift locking bolt and locking bolt spring from sight bar on right side.

6.10 SIGHT BASE

To separate sight base from sight bar and disc assembly, use the socket hex wrench and open end wrench. Place socket wrench on friction nut in recess in sight base. Place open end wrench on nut at left side of sight bar. Turn nuts counterclockwise to unscrew. The male friction screw will remove from the left. A Belleville spring is mounted on this screw and will come away with it. Remove remaining bolt from the right.

6.11 SIGHT BASE DETENTS

These detents act in the notches around the circumference of the sight base and provide the click adjustment for

range increments. The detents are located in a housing integral to the sight bar. Two roll pins hold the detents and springs in place. The roll pin nearest the sight base retains the detents and prevents them from rotating.

The second roll pin retains the detent springs. Use a 1/16" punch to remove the roll pins. Caution: removal of either roll pin will release detent spring compression. Use care when disassembling.

6.12 FRONT SIGHT

Drive out roll pin in knurled knob. Remove knob and spring washer. Remove sight body from sight bar by lifting upward. Caution: removal of sight body will release front sight detent and spring. Use care to prevent detent from jumping out of sight bar.

6.13 REAR SIGHT ASSEMBLY

The rear sight and windage adjustment are assembled at the factory. This assembly is permanently assembled to the sight bar. If damaged, cut rivet with a cold chisel and replace entire assembly.

6.14 ELEVATION KNOB

The elevation knob may be removed only when rear sight assembly is removed. Turn elevation screw up until a roll pin is exposed. Drive out roll pin with 1/16" punch. Elevation screw may then be unscrewed from sight bar.

6.15 ASSEMBLY

To assemble, reverse above procedures.

NOTE

When assembling front sight, insert detent and spring through hole in front end of sight bar. Hold detent in place with a short pin or wire. When front sight body is inserted this pin will be pushed out.

CHAPTER VII

REPLACEMENT PARTS AND SPECIAL TOOL LIST

SECTION I LAUNCHER

<u>Part Number</u>	<u>Name</u>
GX 5404	Rear Mount Lock Pin
GX 5405	Inserts
GX 5406	Extractor
GX 5407	Cap Screw
GX 5413	Recoil Plate
GX 5414	Spring
GX 5416	Spring - Firing Pin
GX 5417	Cocking Button
GX 5423	Barrel with Lugs
GX 5424	Pivot Pin Lock
GX 5425	Spring
GX 5426	Plunger
GX 5427	Grip Pivot Pin
GX 5428	Grip
GX 5429	Grip Finger Guard
GX 5430	Cartridge Retainer
GX 5431	Front Mount Clamp
GX 5434	Cap Screw Front Mount
GX 5440	40 mm Grenade Launcher
GX 5441	Housing Assembly (Permanent Parts)
GX 5442	Housing
GX 5444	Spring - Buffer
GX 5445	Safety Lever
GX 5446	Hand Guard and Liner Assembly
GX 5447	Shoulder Cap Screw
GX 5449	Roll Pin 1/8 x 7/16 (Standard Part No. 95103)
GX 5451	Firing Pin
GX 5452	Trigger Retaining Ring
GX 5453	Washer, Trigger Bar
GX 5454	Trigger Bar Support
GX 5455	Trigger Bar
GX 5456	Trigger
GX 5457	Trigger Retaining Screw
GX 5459	Sear
GX 5460	Sear Lever
GX 5461	Washer, Sear Lever
GX 5462	Cap Screw

REPLACEMENT PARTS AND SPECIAL TOOL LIST

SECTION I LAUNCHER (Continued)

<u>Part Number</u>	<u>Name</u>
GX 5463	Spring - Barrel Retaining Pin
GX 5464	40 mm Barrel - Slotted Alternate
GX 5465	Barrel Retaining Pin
GX 5466	Front Mount Insert
62280	Front Sling Swivel

SECTION II SIGHT

GX 5470	Sight Assembly Complete
GX 5474	Sight Bar Assembly
GX 5476	Rivet - Rear Sight
GX 5477	Washer - Rear Sight
GX 5478	Spring - 5 on Sight - 1 on Launcher
GX 5479	Detent Pin - 2 on Sight - 1 on Launcher
GX 5480	Front Sight
GX 5481	Curved Washer
GX 5482	Adjusting Knob
GX 5483	Elevation Adjusting Screw
GX 5484	Rear Sight Detent Housing
GX 5485	Detent Pin - 2 on Sight - 1 on Launcher
GX 5488	Belleville Washer
GX 5489	Friction Nut
GX 5490	Sight Base
GX 5491	Spring - Sight Base Tension
GX 5492	Friction Bolt
GX 5494	Locking Bolt
GX 5495	Locking Bolt Release Button
GX 5496	Sight Slide Complete
GX 5498	Sight Slide Bolt
GX 5499	Spring (Sight Slide Tension)
GX 5500	Sight Slide Nut
GX 5597	Rear Sight Leaf
GX 5598	Rear Sight Blade
GX 5599	Rear Sight Adjusting Screw
GX 5600	Rear Sight Adjusting Button
GX 5667	Roll Pin 1/16 x 5/16 Long - 4 on Sight - 2 on Launcher

SECTION III SPECIAL TOOLS

GX 5436	Screw Driver (Spanner), Recoil Plate
GX 5437	Allen Wrench 3/32 Hexagon
GX 5487	7/16 Wrench Open End
GX 5450	Hexagon Socket Wrench Assembly