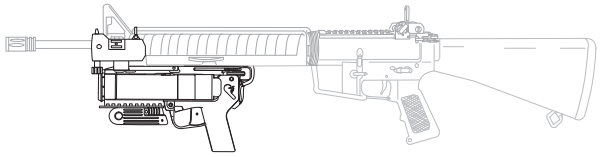
TM 9-1010-232-23&P

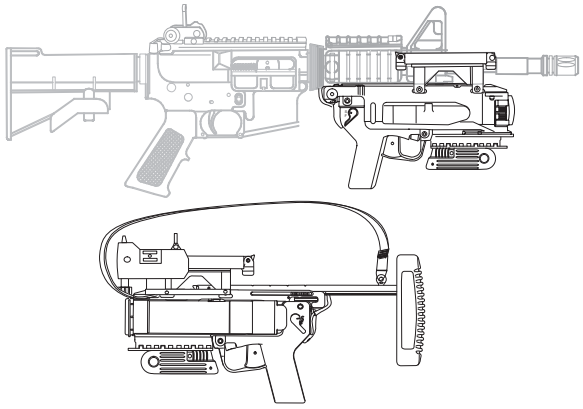
TECHNICAL MANUAL

FIELD MAINTENANCE MANUAL
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST
FOR

GRENADE LAUNCHER, 40 MM, M320, W/E
NSN 1010-01-566-9083



GRENADE LAUNCHER, 40 MM, M320A1,W/E
NSN 1010-01-557-2542



HEADQUARTERS, DEPARTMENT OF THE ARMY
November 2008

WARNING SUMMARY

This warning summary contains general safety warning and hazardous materials warnings that must be understood and applied during operation and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to personnel. Also included are explanations of safety and hazardous materials icons used within the technical manual.

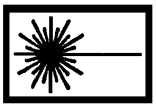
FIRST AID

For first aid information, refer to FM 4-25.11, First Aid.

EXPLANATION OF SAFETY WARNING ICONS

EXPLOSION - rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources of ignition, or high pressure.

FLYING PARTICLES - arrows bouncing off face shows that particles flying through the air will harm face.



LASER LIGHT - laser light hazard symbol indicates extreme danger for eyes from laser beams and reflections.

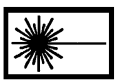
WEAPON FIRE - weapon could accidentally discharge causing serious injury or death.

GENERAL SAFETY WARNINGS DESCRIPTION

WARNING

To avoid injury to eyes, use safety glasses or goggles when removing and installing spring-loaded parts.

WARNING



LASER LIGHT

Do not stare into the laser beams. Do not look into laser beams through binoculars or telescopes. Do not point laser beams at mirror-like surfaces. Do not shine laser beams into another person's eyes.

WARNING SUMMARY - Continued

GENERAL SAFETY WARNINGS DESCRIPTION - Continued

WARNING

WEAPON FIRE

Before starting an inspection, be sure to clear the weapon. Do not pull the trigger until the weapon has been cleared. Inspect the chamber to ensure that it is empty and no ammunition is in position to be chambered.

EXPLANATION OF HAZARDOUS MATERIALS ICONS

CHEMICAL - drops of liquid on hand shows that the material will cause burns or irritation to human skin or tissue.

EXPLOSION - rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources of ignition, or high pressure.

FIRE - flame shows that a material may ignite and cause burns.

VAPOR - human figure in a cloud shows that material vapors present danger to life or health.

HAZARDOUS MATERIALS DESCRIPTION

WARNING

CLEANING SOLVENT

Cleaning solvent is flammable. Do not clean parts near an open flame or in a smoking area. Cleaning solvent evaporates quickly and has a drying effect on the skin. When used without protective gloves, this chemical may cause irritation to, or cracking of, the skin. Always ensure adequate ventilation is available to avoid inhalation of toxic vapors.

WARNING SUMMARY - Continued

WARNING

LITHIUM MANGANESE BATTERY

Under no circumstance should lithium batteries be recharged. Such actions could lead to venting, rupturing, and possible fire.

- Explosive: Never open, puncture, crush, short circuit, mutilate or dispose of lithium manganese dioxide (LiMnO2) batteries in fire or in any way expose lithium batteries to heat. Do not install incorrectly. Keep in cool, dry, well ventilated area, below 130 °F.
- Venting: During a venting, the battery is hot to the touch and may even bulge, crack, or leak. A hissing noise can usually be heard and a sweet smell of ether gas can be identified. Personnel must immediately evacuate and ventilate the area until the battery has completed venting.
- Fire: Do not smoke or have open flames in the area since the electrolyte is flammable. Ensure that fire extinguishers are available. Use a type ABC extinguisher to fight fires involving small quantities of batteries in which packaging ignites. A type D extinguisher should be used by professional fire fighters to fight a lithium metal related fire.
- Toxic: The gases are highly corrosive and may cause grave injury to personnel if inhaled.
- Hazardous Waste: Wear chemical resistant gloves when handling leaking batteries. Dispose in accordance with TB 43-0134. More information is available at: https://www.monmouth.army.mil/cecom/safety/battery.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE: Zero in the "Change No." column indicates an original page or work package.

Date of issue for the original manual is:

Original .....0..... 28 November 2008

TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 32 AND TOTAL NUMBER OF WORK PACKAGES IS 32 CONSISTING OF THE FOLLOWING:

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *28 November 2008*

TECHNICAL MANUAL

FIELD MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST FOR GRENADE LAUNCHER, 40 MM, M320, W/E NSN 1010-01-566-9083 GRENADE LAUNCHER, 40 MM, M320A1, W/E NSN 1010-01-557-2542

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any errors, or if you would like to recommend improvements to the procedures in this publication, please let us know. The preferred method is to submit your DA Form 2028 (Recommended Changes to Publications and Blank Forms) through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is https://aeps.ria.army.mil. The DA Form 2028 is located under the Public Applications section in the AEPS Public Home Page. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, email, or fax your comments or DA Form 2028 directly to U.S. Army TACOM Life Cycle Management Command. The postal mail address is U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LC-LMPP/ TECH PUBS, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The e-mail address is tacomlcmc.daform2028@us.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

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HOW TO USE THIS MANUAL

The safest, easiest, and best way to maintain the M320/M320A1 Grenade Launcher (GL) is to use this manual. Learning to use this technical manual (TM) is as easy as reading through the next few pages of this section. Knowing what is in this manual and how to use it will save you time and work and will help you to avoid exposing yourself to unnecessary hazards while performing your job.

So where do you start?

Right here, if this is the first time you are using this TM. Be sure to completely read this section on how to use this manual first. There's a lot of information here that you need to know.

Organization

This manual covers the maintenance of the GL. The manual itself is divided into six chapters. Chapters are divided into Work Packages. The six chapters, and what they contain, are found in the Table of Contents in the front of this manual. For example, to learn about field maintenance of the GL, you would look in the table of contents and discover that Chapter 3 provides all pertinent information about the field maintenance of the weapon. Since Chapter 3 covers a great deal of information, you will have to scan the chapter to find the specific information you will need.

In the final chapter of this manual, you will find supporting information. Each work package provides specific information that will assist you in performing the various operational tasks. The work packages provide such information as additional references (i.e., other TMs or FMs), as in WP 0029, and Maintenance Allocation Chart (MAC), as in WP 0031. Others provide information unique to the needs of the weapon. Become familiar with all supporting information before beginning any maintenance task.

Am I ready to use this TM?

If you've taken the time necessary to read this section, and are sure of the location and arrangement of the different sections of this TM, you are ready to begin. Remember, this TM has been arranged with you, the user, in mind. Your safety and ability to perform the maintenance tasks in the most efficient manner hinge on your ability to perform and understand the information contained in this manual. If you fully understand the arrangement and purpose of this TM, and have taken the time to read through this section, you will have no trouble maintaining this weapon in the manner for which it was designed.

CHAPTER 1

GENERAL INFORMATION, EQUIPMENT DESCRIPTION, AND THEORY OF OPERATION FOR M320/M320A1 GRENADE LAUNCHER (GL)

FIELD MAINTENANCE

GENERAL INFORMATION

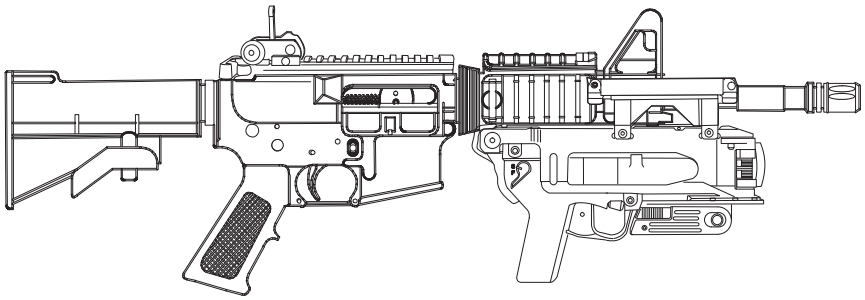


Figure 1. Grenade Launcher, M320A1 (Mounted on M4 Carbine).

SCOPE

Type of Manual. Field maintenance manual.

Model Number and Equipment Name. M320/M320A1 40 mm Grenade Launcher (GL).

Purpose of Equipment. The purpose of the M320/M320A1 GL is to provide personnel with an offensive/defensive capability to engage targets in the field. These weapons provide a lightweight, operator friendly, flexible, lethal, and reliable tool.

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual.

Accidents involving injury to personnel or damage to materiel will be reported on DA Form 285 (Accident Report) in accordance with AR 385-40. Explosives and ammunition malfunctions will be reported on DA Form 4379 in accordance with AR 75-1. Electronic copies of the DA Forms and Army Regulations can be accessed at http://www.apd.army.mil.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your M320/M320A1 GL needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to us at: Commander, ATTN: AMSRD-AAR-QEP-C, RDECOM, 1 Rock Island Arsenal, Rock Island, IL 61299-7300 (Fax: DSN 793-6653, Commercial (309) 782-6653) (E-mail: qawqdrs@conus.army.mil). We will send you a reply.

CORROSION PREVENTION AND CONTROL (CPC)

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

Corrosion specifically occurs with metals. It is an electrochemical process that causes the degradation of metals. It is commonly caused by exposure to moisture, acids, bases, or salts. An example is the rusting of iron. Corrosion damage in metals can be seen, depending on the metal, as tarnishing, pitting, fogging, surface residue, and/or cracking.

Plastics, composites, and rubbers can also degrade. Degradation is caused by thermal (heat), oxidation (oxygen), solvation (solvents), or photolytic (light, typically UV) processes. The most common exposures are excessive heat or light. Damage from these processes will appear as cracking, softening, swelling, and/or breaking.

If a corrosion problem is identified, it can be reported using SF 368, Product Quality Deficiency Report. Use of key words such as "corrosion", "rust", "deterioration", or "cracking" will ensure that the information is identified as a CPC problem.

The form should be submitted to:

Commander
ATTN: AMSRD-AAR-QEP-C
RDECOM
1 Rock Island Arsenal
Rock Island, IL 61299-7300

Fax: DSN 793-6653, Commercial (309) 782-6653
E-Mail: qawqdrs@conus.army.mil

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Procedures and materials used for the destruction of the M320/M320A1 GL in order to prevent enemy use will be found in TM 750-244-7.

PREPARATION FOR STORAGE OR SHIPMENT

For storage and shipping requirements, see WP 0019.

WARRANTY INFORMATION

The grenade launcher and Day/Night Sight are warranted for three years. The Laser Range Finder is warranted for two years. This warranty starts on the date found in block 23 of DA Form 2408-9, Equipment Control Record. Report all defects to your supervisor, who will take appropriate action.

LIST OF ABBREVIATIONS/ACRONYMS

Abbreviation/Acronym	
AAL	Additional Authorization List
BII	Basic Issue Items
COEI	Components of End Item
DNS	Day/Night Sight
fps	feet per second
GL	Grenade Launcher
LRF	Laser Range Finder
m	meters
mps	meters per second
SOP	Standard operating procedures

QUALITY OF MATERIAL

Material used for replacement, repair, or modification must meet the requirements of this TM 9-1010-232-23&P. If quality of material requirements is not stated in this TM 9-1010-232-23&P, the material must meet the requirements of the drawings, standards, specifications, or approved engineering change proposals applicable to the subject equipment.

SAFETY, CARE, AND HANDLING

Care must be taken when handling the M320/M320A1 GL. Always clear the weapon before inspection or maintenance. Follow product cautions when using cleaning materials.

Always wear appropriate eye and ear protection when firing the weapon.

END OF WORK PACKAGE

FIELD MAINTENANCE

EQUIPMENT DESCRIPTION AND DATA

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

Characteristics

The M320/M320A1 Grenade Launcher (GL) is a lightweight grenade launcher that attaches under the barrel of the M16 series rifles (M320) and the M4 series carbines (M320A1). Ambidextrous operating controls and sling mounting point allow the weapon to be fitted to the operator. The swing out barrel aids the operator in rapid reloading. Sighting is done with the leaf sight or with the use of the Day/Night Sight (DNS).

Capabilities and Features

GL uses a double action trigger system.

GL features an aluminum rifled barrel, allowing operator to accurately engage targets with a variety of ammunition to a distance of 350 m (1,148 ft).

DNS is mounted only on left side and leaf sight can be mounted on right or left side.

Laser range finder (LRF) provides the ability to determine distance to target.

DNS and LRF are used to place round on target.

GL can be used as a stand-alone weapon with the addition of a buttstock system that allows adjustment for length.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

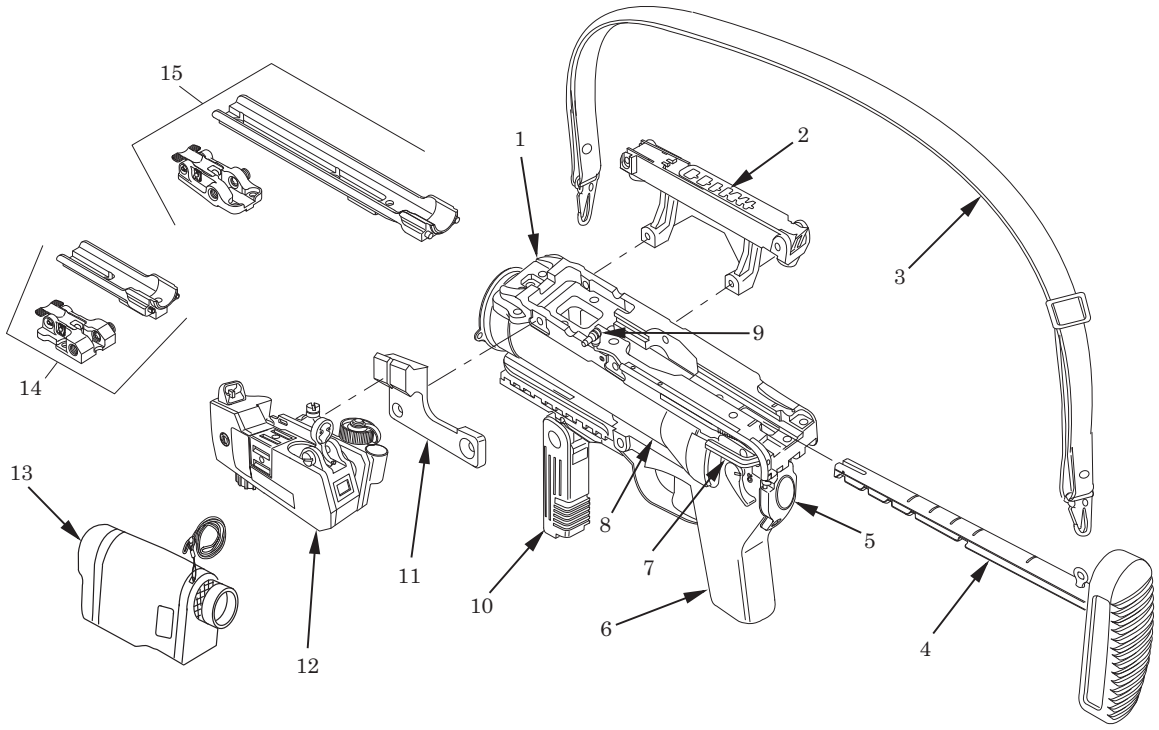


Figure 1. Location of Major Components.

Receiver Assembly (1). Houses the barrel assembly and the bolt face. The receiver provides mounting location for host weapon bayonet adapter and mounting interfaces for host weapon mounting adapters and sight attachments.

Leaf Sight Assembly (2). Provides a foldable leaf rear sight and a foldable front sight post. Windage and elevation adjustments can be made.

Sling (3). Provides means for carrying when weapon is used as stand alone weapon.

Buttstock Assembly (4). Provides an adjustable stock when weapon is used as a stand alone weapon.

Remote Cable Switch (5). Remotely activates the Day/Night Sight.

Pistol Grip Assembly (6). Houses the ambidextrous selector lever.

Stowed Hexagon Key Wrench (7). Provides means to adjust, maintain, and reconfigure the M320/M320A1 GL.

Barrel Assembly (8). Chambers the cartridge and guides the projectile. The barrel is hinged to pivot outward to facilitate loading and unloading.

Remote Switch Assembly (9). Provides connection to Day/Night Sight.

Vertical Grip Assembly (10). Provides a handhold for the weapon when used as a stand alone weapon.

Day/Night Sight Mount (11). Provides means of attachment of Day/Night Sight to weapon.

Day/Night Sight Assembly (12). Provides firing accuracy for both point and area targets from 40 m (131 ft) to 400 m (1,312 ft). The Day/Night Sight (DNS) is a battery operated sight with integrated infrared (IR) aim and illumination lasers.

Laser Range Finder (13). Establishes range to target.

M4 Mounting Adapters (14). Provide means of attachment and quick release of M320A1 GL to M4 series carbines.

M16 Mounting Adapters (15). Provide means of attachment and quick release of M320 GL to M16 series rifles.

EQUIPMENT DATA

PHYSICAL CHARACTERISTICS

Caliber	40mm x 46 mm
Weight, M320/M320A1 (without buttstock)	5.0 lb (2.3 kg)
Weight, M320/M320A1 (with buttstock)	7.0 lb (3.2 kg)
Length (without buttstock)	11.18 in. (28.40 cm)
Length (with buttstock retracted)	14.37 in. (36.50 cm)
Length (with buttstock extended)	19.69 in. (50.01 cm)
Height (without sights or weapon adapters)	6.38 in. (16.21 cm)
Height (with mechanical sights - down)	8.39 in. (21.31 cm)
Height (with mechanical sights - up)	12.05 in. (30.61 cm)
Width (with mechanical sights)	3.62 in. (9.19 cm)
Width (without mechanical sights)	2.56 in. (6.50 cm)
Barrel Length	8.46 in. (21.49 cm)
Line of Sight	5.51 in. (14.00 cm)
Mechanical Features	Lands and grooves rifling

FIRING CHARACTERISTICS

Muzzle Velocity	236 fps (72 mps)
Trigger Pull	11.25 to 15.75 lb (60 ± 10 N-m)
Maximum Effective Range	
Area Target	1,148 ft (350 m)
Point Target	492 ft (150 m)
Maximum Range	1,312 ft (400 m)
Modes of Operation	Safe and Fire

DAY/NIGHT SIGHT CHARACTERISTICS

Weight (with battery and interface bracket)	15.5 oz (439.4 g)
Length	5.5 in. (14.0 cm)
Width	2.9 in. (7.4 cm)
Height	4.0 in. (10.2 cm)
Range	1,312 ft (400 m) maximum
Accuracy	Within 16.4 ft (5.0 m)
Battery	One 3-volt DL 123A

END OF WORK PACKAGE

FIELD MAINTENANCE

THEORY OF OPERATION

THEORY

With the selector lever of the weapon in safe position and the muzzle cap removed, a round is inserted into the launcher barrel. The Laser Range Finder is used to determine the range to the target and the range is dialed into the Day/Night Sight. While keeping the muzzle pointed at the target, the selector lever is moved from the safe position to fire position and the trigger is squeezed. Squeezing the trigger cocks and releases the hammer, causing the firing pin to impact the primer of the round. The primer ignites the propellant in the round. Gas from the burning propellant pushes the projectile along the barrel of the grenade launcher.

END OF WORK PACKAGE

CHAPTER 2

FIELD
TROUBLESHOOTING PROCEDURES
FOR
M320/M320A1 GRENADE LAUNCHER (GL)

FIELD MAINTENANCE

OPERATIONAL CHECKOUT AND TROUBLESHOOTING PROCEDURES

INITIAL SETUP:

References
WP 0008
WP 0009
WP 0010
WP 0011
WP 0014
WP 0015

Equipment Conditions
Function check has been performed (WP 0007)

GENERAL

Troubleshooting procedures are limited to those listed in the troubleshooting table. The table lists the common malfunctions which you may find during the maintenance of the M320/M320A1 Grenade Launcher (GL) or its components. You should perform the tests/inspections and corrective actions in the order listed.

This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

MALFUNCTION/SYMPTOM INDEX

TROUBLESHOOTING PROCEDURES

Table 1. Troubleshooting Procedures.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. CARTRIDGE DOES NOT PROPERLY SEAT IN CHAMBER.	a. Check for dent or obstruction in breech end of barrel.	Barrel may require replacement. See WP 0008.
	b. Check cartridge for physical damage or deformity.	

TROUBLESHOOTING PROCEDURES - Continued

Table 1. Troubleshooting Procedures - Continued.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
2. CARTRIDGE DOES NOT FIRE.	a. Check for broken firing pin protrusion on hammer. Using light finger pressure, place finger over firing pin hole and squeeze trigger. Firing pin should strike finger.	a. Hammer may require replacement. See WP 0009.
	b. Check for bent or damaged hammer strut.	b. Hammer strut may require replacement. See WP 0011.
	c. Check for fouling of trigger mechanism.	c. Clean trigger mechanism. See WP 0009.
3. HAMMER IS NOT COCKED WHEN TRIGGER IS PULLED.	Check for weak or damaged trigger bar spring.	Trigger bar spring may require replacement. See WP 0010.
4. SAFETY SELECTOR LEVER IS STUCK/UNABLE TO ROTATE.	Check for bent or broken selector lever.	Selector lever(s) may require replacement. See WP 0011.
5. BARREL DOES NOT PIVOT WHEN BARREL RELEASE LEVER IS DISENGAGED.	a. Check for weak elbow spring.	a. Elbow spring may require replacement. See WP 0008.
	b. Check for damage to barrel release lever.	b. Barrel release lever may require replacement. See WP 0009.
	c. Check for damaged or bent receiver.	c. Receiver may require replacement. See WP 0009.
6. BARREL DOES NOT LOCK INTO RECEIVER WHEN CLOSED.	a. Check for weak or damaged barrel release spring.	a. Barrel release spring may require replacement. See WP 0009.
	b. Check for bent or damaged contact surfaces of barrel release lever.	b. Barrel release lever may require replacement. See WP 0009.
7. WEAPON EXHIBITS POOR ACCURACY.	a. Check for damage to and/or looseness of leaf sight assembly and/or Day/Night Sight.	a. Repair leaf sight assembly as required. See WP 0014. Repair Day/Night Sight. See WP 0015.
	b. Check for worn rifling in barrel.	b. Barrel may require replacement. See WP 0008.

END OF TASK

END OF WORK PACKAGE

CHAPTER 3

FIELD
MAINTENANCE INSTRUCTIONS
FOR
M320/M320A1 GRENADE LAUNCHER (GL)

FIELD MAINTENANCE

SERVICE UPON RECEIPT

GENERAL

When a new or reconditioned weapon is first received, it is the responsibility of the officer-in-charge to determine whether the weapon has been properly prepared for service by supplying organization and whether it is in proper condition to perform its mission.

SERVICE UPON RECEIPT OF MATERIEL

WARNING

WEAPON FIRE

Before starting an inspection, be sure to clear the weapon. Do not actuate the trigger until the weapon has been cleared. Inspect the chamber to be sure that it is empty. Check to see that there are no obstructions in the barrel.

Table 1. Service upon Receipt of Materiel.

Location	Item	Action	Remarks
1. Container	a. M320/M320A1 Grenade Launcher W/E	Remove launcher from container. Inspect equipment for damage incurred during shipment.	If equipment has been damaged, report the damage on SF 364, Report of Discrepancy (ROD).
	b. Components of End Item (COEI) and Basic Issue Items (BII)	Check equipment against packing list to see if shipment is complete. Check for missing items.	Report all discrepancies in accordance with DA PAM 750-8.
2. M320 Grenade Launcher	a. Barrel Assembly	If volatile corrosion inhibitor (VCI) is in barrel, remove and discard.	
	b. All Parts	Inspect for missing, damaged, and rusted or corroded parts.	
		Clean and lubricate.	Refer to TM 9-1010-232-10.
		Function check.	See WP 0007.

END OF WORK PACKAGE

FIELD MAINTENANCE

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION GENERAL, EXPLANATION OF COLUMN ENTRIES

GENERAL

Preventive Maintenance Checks and Services (PMCS) (WP 0007) must be performed by field maintenance personnel to be sure the M320/M320A1 Grenade Launcher (GL) is in good operating condition and ready for its primary mission.

To ensure maximum operational readiness, it is necessary that the M320/M320A1 GL be inspected at regular intervals so that any defects can be discovered and corrected before serious damage or failure occurs.

EXPLANATION OF COLUMN ENTRIES

Item No. Column. Checks and services are numbered in disassembly sequence. This column shall be used as a source of item numbers for the "TM Number" column on DA Form 5988-E, Equipment Inspection and Maintenance Worksheet - Electronic, or DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording results of PMCS.

Interval Column. This column gives the designated interval when each check is to be performed.

Man-Hour Column. This column indicates the amount of time required to perform the check or service.

Item To Be Checked or Serviced Column. This column lists the items to be checked or serviced.

Procedure Column. This column contains a brief description of the procedure by which the check is to be performed. It contains all the information required to accomplish the checks and services.

Equipment Not Ready/Available If: Column. This column contains a brief statement of the condition (e.g., malfunction, deficiency) that would cause the covered equipment to be unavailable to perform its assigned mission.

END OF WORK PACKAGE

FIELD MAINTENANCE

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS), INCLUDING LUBRICATION INSTRUCTIONS

INITIAL SETUP:

Materials/Parts
Cleaning solvent (WP 0032, item 10)
Solid film lubricant (WP 0032, item 6)

References
TM 9-1010-232-10
WP 0021

PMCS PROCEDURES

Table 1. Preventive Maintenance Checks and Services for M320/M320A1 Grenade Launcher (GL).

Item No.	Interval	Man-Hour	Item To Be Checked or Serviced	Procedure	Equipment Not Ready/Available If:
				WARNING  **WEAPON FIRE** **Clear weapon before starting inspection.**	
1	Quarterly		Grenade Launcher with or without M16 Series Rifles or M4 Series Carbines	a. Check weapon for cleanliness, sufficient lubrication, and proper assembly.	a. Weapon cannot be properly assembled or repaired.
				b. Check grenade launcher for dents.	b. Grenade launcher dents prohibit proper functioning.
				c. Check for positive retention to rifle/carbine.	c. Grenade launcher cannot be positively retained on rifle/carbine.

PMCS PROCEDURES - Continued

Table 1. Preventive Maintenance Checks and Services for M320/M320A1 Grenade Launcher (GL) - Continued.

Item No.	Interval	Man-Hour	Item To Be Checked or Serviced	Procedure	Equipment Not Ready/Available If:
1 (Cont)	Quarterly (Cont)		Grenade Launcher with or without M16 Series Rifles or M4 Series Carbines (Cont)	**WARNING**  **CLEANING SOLVENT**	

NOTE

Solid film lubricant (SFL) (WP 0032, item 6) is the authorized touchup for grenade launcher and may be used on up to one third of the exterior finish of the receiver.

FOR CONUS USE ONLY: SFL may be used as a touchup without limitation on the receiver assembly. Units which DO NOT fall under the category of Divisional Combat Units or rapid deployment type units may have up to 100 percent of the exterior surface of the receiver assembly protected with SFL. Prior to application of SFL, the surface must be thoroughly cleaned and inspected for corrosion and/or damage. If corroded or damaged, the part must be repaired or replaced prior to application of SFL. Continued use under combat conditions would result in an unprotected surface when the SFL wears off. This would result in a large light reflecting surface and accelerated deterioration of the unprotected surface. Therefore, Divisional Combat Units and units which fall under the definition of Rapid Deployment type must adhere to the limitation of NOT over one third of their exterior surface covered by SFL.

If one third or more of the receiver is missing its exterior protective finish, resulting in an unprotected or light reflecting surface, it is a candidate for overhaul. The missing finish is considered a shortcoming. This shortcoming requires action to obtain a replacement weapon. When a replacement has been received, evacuate the original weapon to depot for overhaul. If the missing exterior protective finish of the receiver has exceeded one third of its total surface, the probability of reclaiming the receiver during overhaul diminishes rapidly.

Table 1. Preventive Maintenance Checks and Services for M320/M320A1 Grenade Launcher (GL) - Continued.

Item No.	Interval	Man-Hour	Item To Be Checked or Serviced	Procedure	Equipment Not Ready/Available If:
				d. In order to extend the life of the receiver, which is the serial numbered item, evacuate the weapon to depot once the missing finish reaches one third of the total surface of the receiver. Thoroughly clean areas that are to be touched up using cleaning solvent (WP 0032, item 10). Touch up shiny exterior surfaces with SFL (WP 0032, item 6).	
2	Quarterly		Function Check	a. Ensure selector lever rotates from "S" to "F" and back to "S". Selector lever must seat firmly at each position with an audible click.	a. Selector lever fails to rotate in either direction or fails to seat firmly into either position.
				b. With weapon unloaded, pointed in a safe position, and selector lever in "S" position, attempt to pull trigger rearward. Trigger must remain in forward position with little or no rearward travel.	b. Trigger shows excessive movement toward rearward (Fire) position.
				c. With barrel pivoted outward and selector lever in "F" position, pull trigger and detect firing pin protrusion with light finger pressure on breech face.	c. Firing pin protrusion cannot be detected.
				d. Press barrel release button allowing barrel to pivot outward. Place selector lever in "S" position. Firing pin, located on hammer, must not protrude from bolt face into chamber.	d. Firing pin, located on hammer, protrudes from bolt face into chamber.

PMCS PROCEDURES - Continued

Table 1. Preventive Maintenance Checks and Services for M320/M320A1 Grenade Launcher (GL) - Continued.

Item No.	Interval	Man-Hour	Item To Be Checked or Serviced	Procedure	Equipment Not Ready/Available If:
2 (Cont)	Quarterly (Cont)		Function Check (Cont)	e. Press barrel release allowing barrel to pivot outward. Place selector lever in "F" position. Press barrel release while attempting to pull trigger. It must not be possible to pull trigger rearward enough to raise and release hammer while pressing upward (release position) on barrel release.	e. Trigger can be pulled rearward enough to raise and release hammer while barrel release is pressed upward to release position.
3	Quarterly		Receiver Assembly	Inspect for burrs, nicks, wear, or other damage.	Receiver assembly has burrs, nicks, wear, or damage that prohibits proper functioning.
4	Quarterly		Barrel Assembly	Visually inspect barrel assembly for bulges, dents, or cracks.	Barrel has bulges, dents, or cracks.
5	Quarterly		Leaf Sight Assembly	Check for looseness or damage to leaf sight.	Leaf sight is loose or damaged.
6	Quarterly		Barrel Rubber Stop	With barrel assembly installed on receiver assembly, move barrel assembly outward to barrel rubber stop. Check for missing or cracked barrel rubber stop.	Barrel rubber stop is missing or cracked.
7	Quarterly		Barrel Rubber Pin	**NOTE** A missing rubber pin is considered a shortcoming but does not prohibit use of the weapon. Check for missing rubber pin. If missing, replace when possible.	

Table 1. Preventive Maintenance Checks and Services for M320/M320A1 Grenade Launcher (GL) - Continued.

Item No.	Interval	Man-Hour	Item To Be Checked or Serviced	Procedure	Equipment Not Ready/Available If:
8	Quarterly		Barrel Release Lever	Pivot barrel assembly inward to close. Barrel release lever must lock barrel assembly fully closed.	Barrel release lever does not lock barrel assembly fully closed.
9	Quarterly		Day/Night Sight Assembly	**NOTE** Verification of laser functions requires Night Vision Goggles and low light environment.	
				a. Inspect for damaged parts.	a. Day/Night Sight is damaged.
				b. Check function of range adjustment knob and modes of operation. Refer to TM 9-1010-232-10.	b. Range adjustment knob does not function or modes of operation for the laser do not function.
				c. Check for presence of safety block.	c. Safety block is missing.
10	Quarterly		Laser Range Finder	Ensure Laser Range Finder is operating properly. Refer to TM 9-1010-232-10.	Laser Range Finder is not operating properly.
11	Annually		Grenade Launcher with or without M16 Series Rifles or M4 Series Carbines	Perform annual test (see WP 0021).	Annual test has not been performed within the last year.

END OF WORK PACKAGE

FIELD MAINTENANCE

M320 40 MM GRENADE LAUNCHER MAINTENANCE
DISASSEMBLY, INSPECTION, REPAIR OR REPLACEMENT, ASSEMBLY

INITIAL SETUP:

Tools and Special Tools
Small Arms Shop Set, SC 4933-95-A11
Small Arms Tool Kit, SC 5180-95-B71
Stepped punch (WP 0026, item 1)

References
WP 0025

Equipment Condition
Day/Night Sight, buttstock assembly, sling, and mounting adapters removed (TM 9-1010-232-10)

DISASSEMBLY

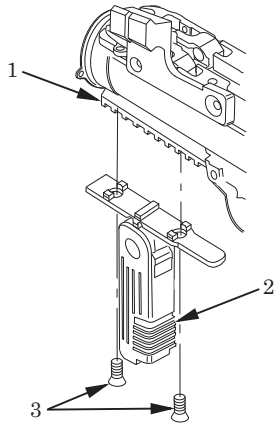


Figure 1. Removal of Vertical Grip Assembly.

NOTE

Do not remove bracket of vertical grip assembly if not cracked, bent, or damaged.

1. Remove two socket head capscrews (3) and vertical grip assembly (2) from rail on receiver (1).

DISASSEMBLY - Continued

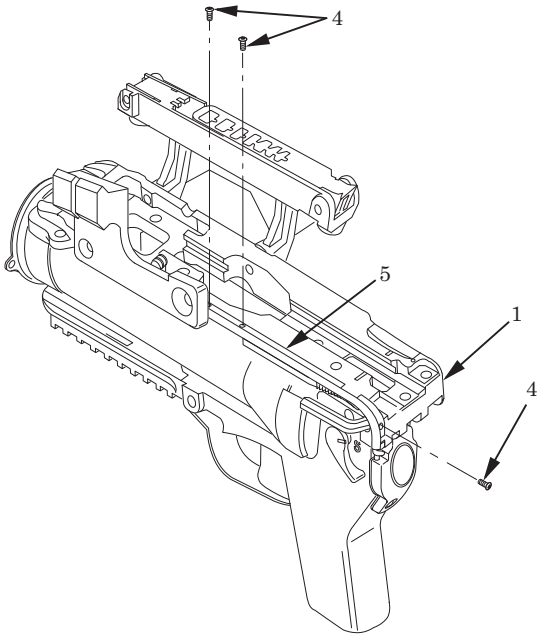


Figure 2. Removal of Remote Switch Assembly from Receiver.

2. Remove three socket head screws (4) securing remote switch assembly (5) to receiver (1).

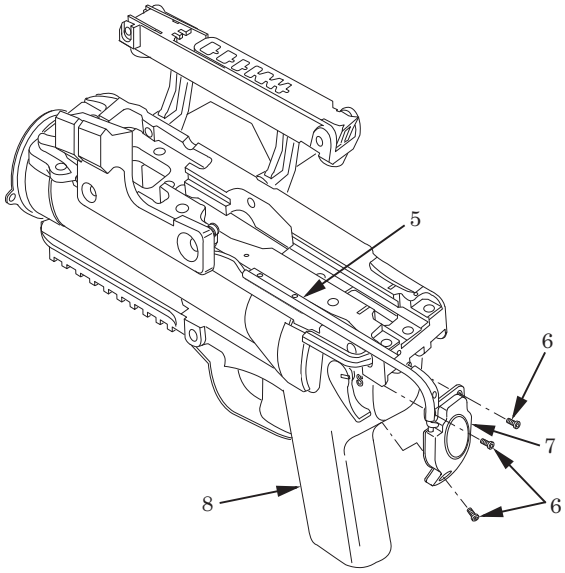


Figure 3. Removal of Remote Switch Assembly from Pistol Grip Assembly.

CAUTION

Step 3 is for removal of the three screws securing the remote cable switch to the pistol grip assembly. DO NOT perform step 3 unless replacement of the remote switch assembly or repair of the pistol grip assembly is required.

3. Remove three socket head screws (6) securing remote cable switch (7) to pistol grip assembly (8) and remove remote switch assembly (5).

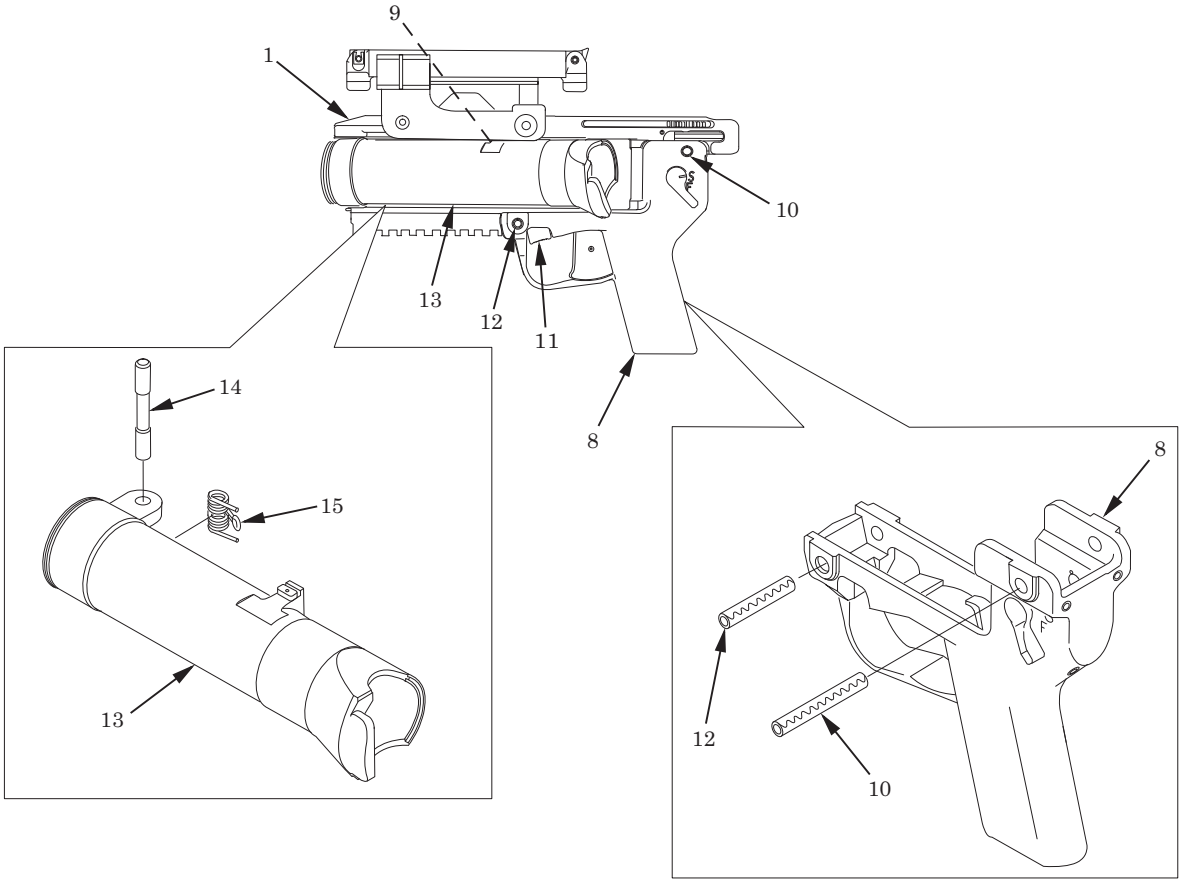


Figure 4. Removal of Barrel Assembly and Pistol Grip Assembly.

4. Using stepped punch and hammer, tap out roll pin (10) and roll pin (12) and remove pistol grip assembly (8) from receiver (1).

5. Engage barrel release lever (11) and pivot barrel (13) to open position.

6. Depress stop pin (9) into receiver (1), allowing barrel (13) to pivot fully open until there is no longer spring tension.

7. Using 5/32 in. punch, push out shouldered pin (14) and remove helical torsion spring (15) and barrel (13) from receiver (1).

END OF TASK

INSPECTION

1. Inspect grenade launcher components for bends, breaks, cracks, and other damage.

2. Inspect barrel for elongated pivot pin holes.

END OF TASK

REPAIR OR REPLACEMENT

Replace defective parts as authorized by WP 0025.

END OF TASK

ASSEMBLY

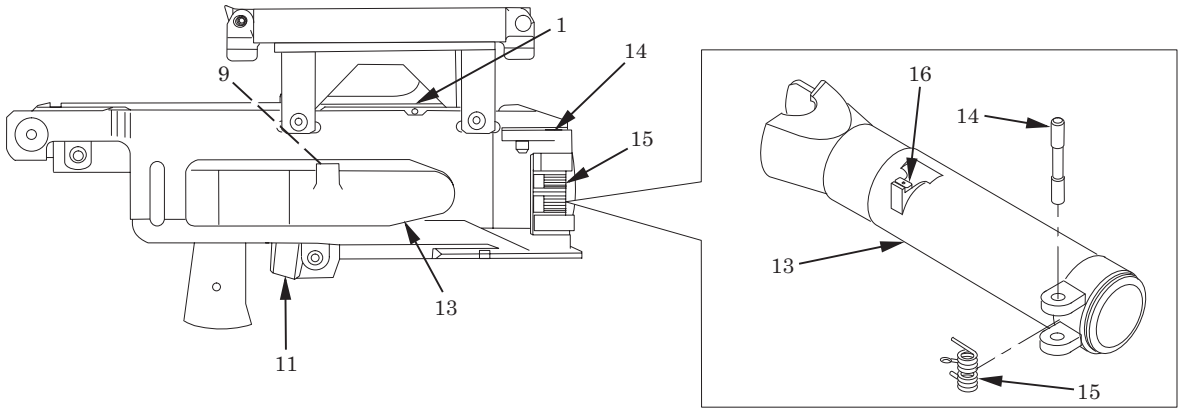


Figure 5. Assembly of Barrel Assembly to Receiver Assembly.

1. Install helical torsion spring (15) between hinges of barrel (13) with central spring legs in position to contact barrel between barrel hinges. Both open spring legs should face receiver (1).

2. Install barrel (13) with helical torsion spring (15) into front of receiver (1), ensuring there is no pressure on spring.

3. Align shouldered pin (14) with hinges of barrel (13), helical torsion spring (15), and receiver (1), and install shouldered pin in receiver. Ensure spring rests in recessed portion of shouldered pin.

4. Manually pivot barrel (13) into receiver (1) until rubber stop (16) on barrel contacts stop pin (9) on receiver.

5. Depress stop pin (9) into receiver (1) and pivot barrel (13) into receiver until rubber stop (16) on top of barrel clears depressed stop pin.

6. Release stop pin (9) and push barrel (13) completely into receiver (1). Ensure barrel release lever (11) engages locking slot at bottom of barrel and locks barrel securely into receiver.

7. Open and close barrel (13) several times to check proper operation of barrel release lever (11), helical torsion spring (15), and stop pin (9) with rubber stop (16).

8. Ensure that barrel (13) pivots around shouldered pin (14), properly closes, and properly locks, all without play.

9. Check that barrel (13) automatically pivots outward from receiver (1) when barrel release lever (11) is pushed.

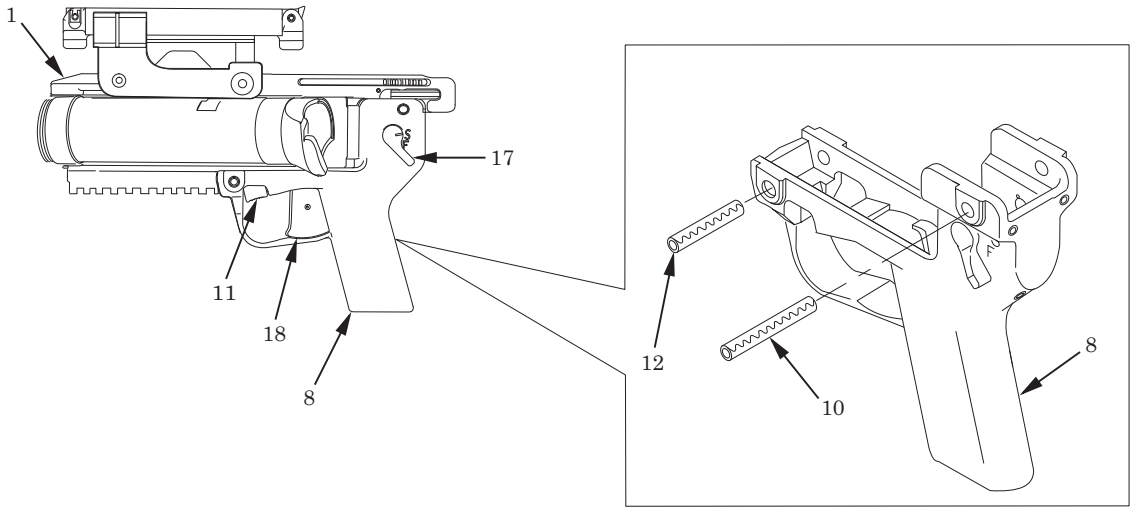


Figure 6. Installation of Pistol Grip Assembly to Receiver Assembly.

10. With hammer in forward position, slide pistol grip assembly (8) over barrel release lever (11) and trigger (18) onto receiver (1). Ensure that hammer is in forward position.

11. Align holes in pistol grip assembly (8) with holes in receiver (1). Install roll pin (12) and then roll pin (10) using stepped punch, centering pins within receiver.

12. Conduct function check. Pistol grip assembly (8) should fit snugly to receiver (1) and trigger (18); barrel release lever (11) and selector lever (17) should function smoothly.

ASSEMBLY - Continued

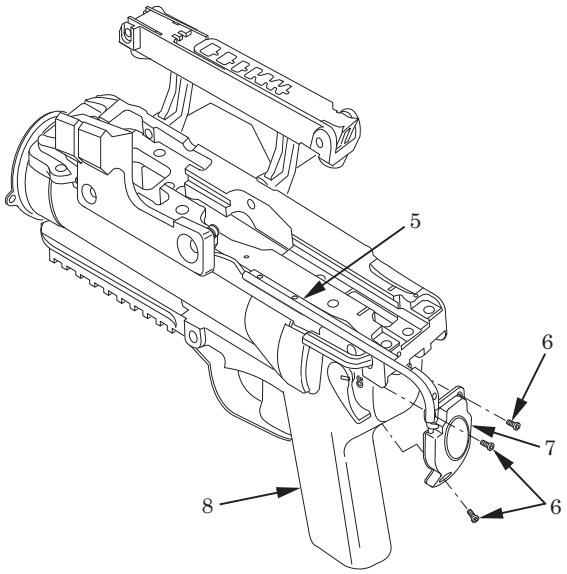


Figure 7. Installation of Remote Switch Assembly on Pistol Grip Assembly.

13. If remote switch assembly (5) was removed, position remote cable switch (7) on pistol grip assembly (8) and install three socket head screws (6).

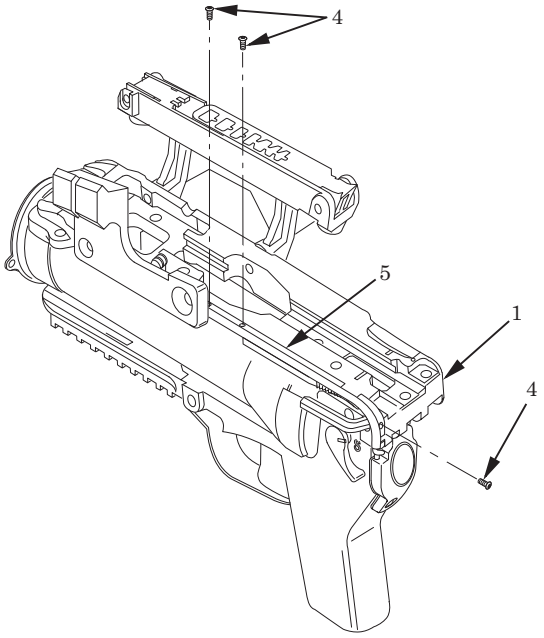


Figure 8. Installation of Remote Switch Assembly on Receiver.

14. Position remote switch assembly (5) on receiver (1) and install three socket head screws (4).

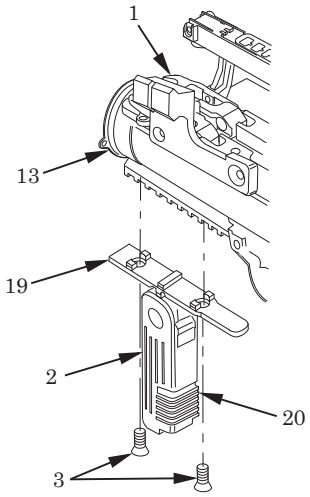


Figure 9. Installation of Vertical Grip Assembly.

15. With squared end (19) toward muzzle of barrel (13), install vertical grip assembly (2) on rail of receiver (1) and tightly secure with two socket head capscrews (3).

CAUTION

Always pull downward on slide before folding vertical grip assembly. Failure to do so may result in damage to equipment.

16. Pull down on slide (20) and fold up vertical grip assembly (2).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

RECEIVER ASSEMBLY MAINTENANCE
DISASSEMBLY, SERVICE, INSPECTION, REPAIR OR REPLACEMENT, ASSEMBLY

INITIAL SETUP:

Tools and Special Tools
Hexagon key wrench (WP 0025, Figure 3, item 20)
Small Arms Shop Set, SC 4933-95-A11
Small Arms Tool Kit, SC 5180-95-B71
Trigger slave pin (WP 0026, item 2)

Materials/Parts
Cleaner, lubricant, and preservative (CLP) (WP 0032, item 6)
Small arms cleaning brush (WP 0032, item 5)
Socket head screw (2) (WP 0025, Figure 3, item 27)
Spring pin (WP 0025, Figure 3, item 7)
Wiping rag (WP 0032, item 12)

References
WP 0007
WP 0010
WP 0025

Equipment Conditions
Barrel removed from receiver (WP 0008)
Day/Night Sight, buttstock assembly, sling, and mounting adapters removed from receiver (TM 9-1010-232-10)
Pistol grip assembly removed from receiver (WP 0008)
Remote switch assembly removed from receiver (WP 0008)
Vertical grip assembly removed from receiver (WP 0008)

WARNING

To avoid injury to eyes, use safety glasses or goggles when removing and installing spring-loaded parts.

DISASSEMBLY

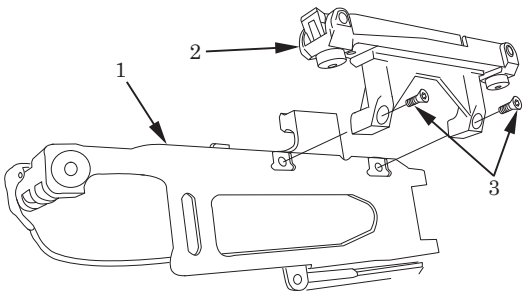


Figure 1. Removal of Leaf Sight Assembly.

1. Remove two socket head screws (3) and leaf sight assembly (2) from receiver (1) using 3 mm end of stowed hexagon key wrench.

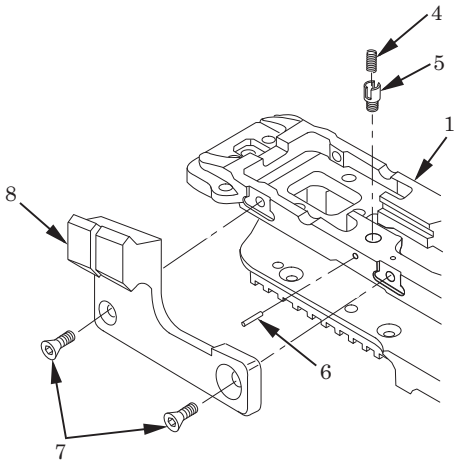


Figure 2. Removal of Day/Night Sight Mount and Stop Pin.

2. Remove two socket head screws (7) and day/night sight mount (8) from receiver (1). Discard socket head screws.

NOTE

Use care when removing headless straight pin to avoid loss of parts. Ensure that barrel is locked into receiver.

3. Using 1/16 in. punch, drive headless straight pin (6) into receiver (1) and remove from receiver.

4. Remove helical compression spring (4) and stop pin (5) from borehole in receiver (1).

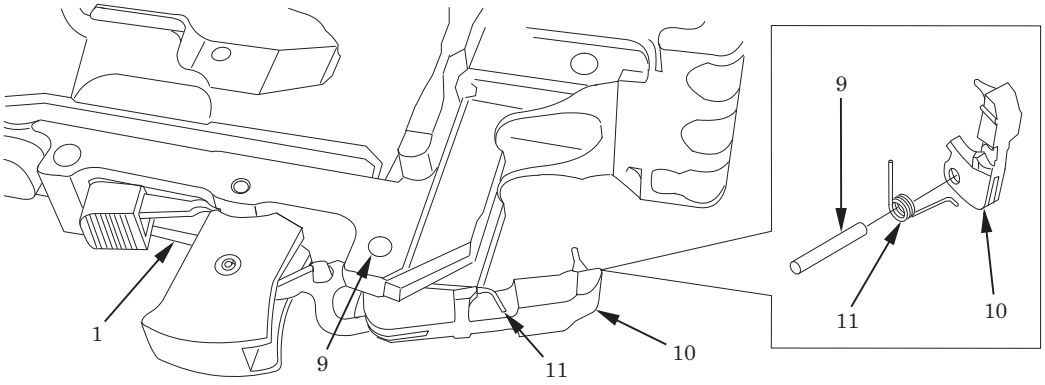


Figure 3. Removal of Hammer.

5. Using 3/16 in. punch, remove straight pin (9), hammer (10), and torsion spring (11) from receiver (1).

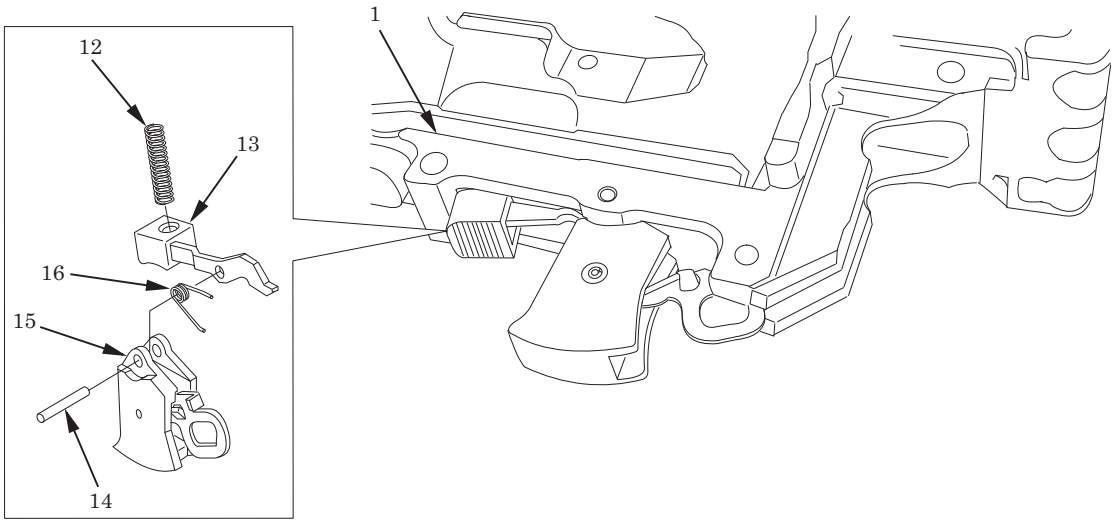


Figure 4. Removal of Barrel Release Lever and Trigger Assembly.

6. Unhook torsion spring (16) to relieve tension. Using punch, remove straight pin (14), trigger assembly (15), torsion spring, barrel release lever (13), and helical compression spring (12) from receiver (1).

DISASSEMBLY - Continued

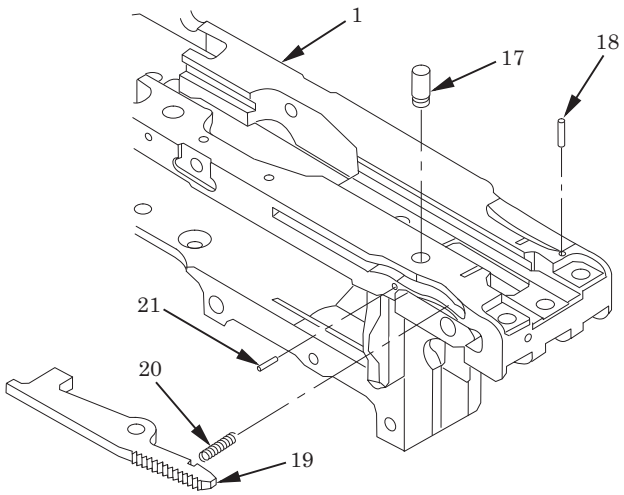


Figure 5. Removal of Buttstock Release and Straight Pin.

7. Using 1/16 in. punch, drive headless straight pin (21) into center of receiver (1) and remove.

8. Push out pin (17) from underneath with 1/16 in. punch and remove buttstock release (19) and spring (20) from receiver (1).

9. If spring pin (18) does not retain stowed hex key wrench, remove spring pin from receiver (1). Discard spring pin.

END OF TASK

SERVICE

Clean the trigger and hammer mechanism in the trigger assembly with a wiping rag (WP 0032, item 12) or small arms cleaning brush (WP 0032, item 5) dipped in cleaner, lubricant, preservative (CLP) (WP 0032, item 6). When clean, lightly lubricate with CLP.

END OF TASK

INSPECTION

1. Inspect receiver assembly (WP 0007).

2. Inspect trigger assembly for bent or broken components.

3. Inspect all components for bends, breaks, cracks, and other damage.

END OF TASK

REPAIR OR REPLACEMENT

1. Replace defective receiver parts as authorized by WP 0025.
2. If trigger assembly repair is required, see WP 0010.

END OF TASK

ASSEMBLY

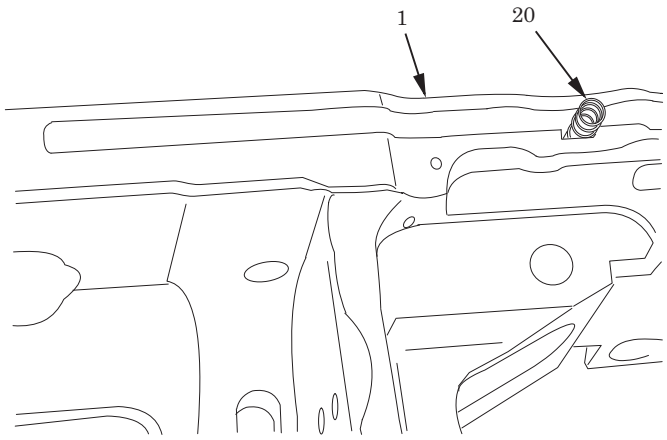


Figure 6. Preparation for Buttstock Release Installation.

1. Position spring (20) in hole in receiver (1).

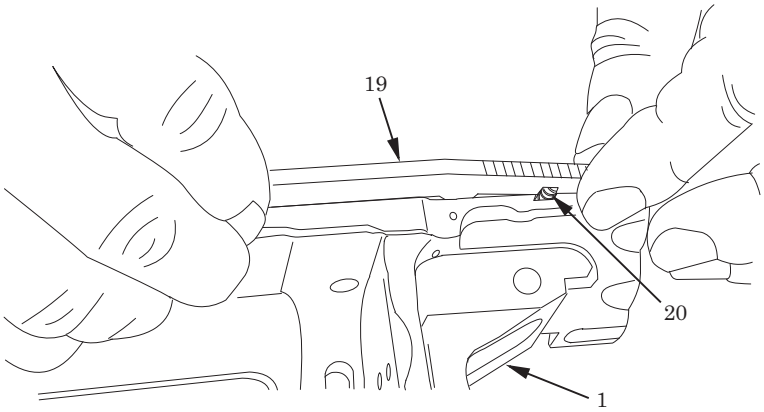


Figure 7. Alignment of Buttstock Release.

2. Position buttstock release (19) in slot of receiver (1) so that spring (20) is aligned in notch of buttstock release.

ASSEMBLY - Continued

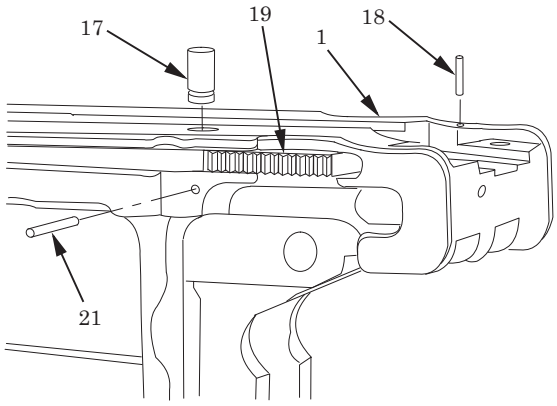


Figure 8. Securing of Buttstock Release and Installation of Straight Pin.

3. Install pin (17), grooved end first, to secure buttstock release (19) in receiver (1). Ensure that end of pin is flush with top of receiver.

4. Install headless straight pin (21) to secure pin (17). Ensure that headless straight pin is flush with outside of receiver (1).

5. If removed, install new spring pin (18) to receiver (1).

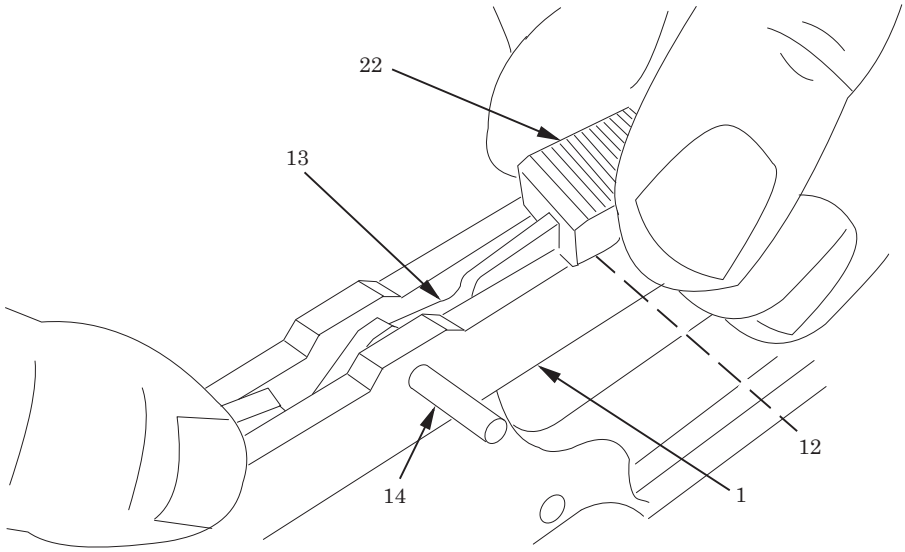


Figure 9. Installation of Barrel Release Lever.

6. Place helical compression spring (12) into forward area of trigger cavity in receiver (1).

7. Place back of barrel release lever (13) into slot located on right side of trigger cavity of receiver (1) with spring positioning hole, located under barrel release (22), aligned with helical compression spring (12).

8. Insert smaller straight pin (14) through receiver (1) into barrel release lever (13) just far enough to hold but not extend past inside edge of barrel release lever.

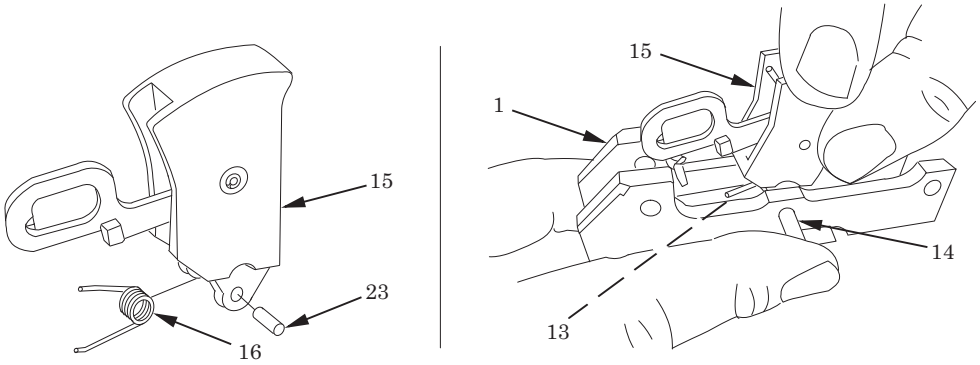


Figure 10. Installation of Trigger Assembly.

9. Install torsion spring (16) in recess at rear of trigger assembly (15) and secure with trigger slave pin (23) (WP 0026, item 2).

10. Place trigger assembly (15) in trigger cavity of receiver (1). Continue installing smaller straight pin (14) through barrel release lever (13) and into trigger assembly, pushing trigger slave pin (23) completely out of trigger assembly and receiver.

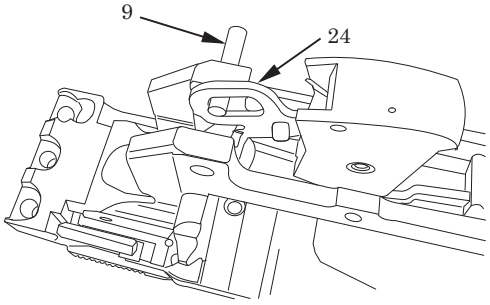


Figure 11. Capturing Trigger Bar.

11. Push trigger bar (24) rearward and capture trigger bar by partially installing larger straight pin (9).

ASSEMBLY - Continued

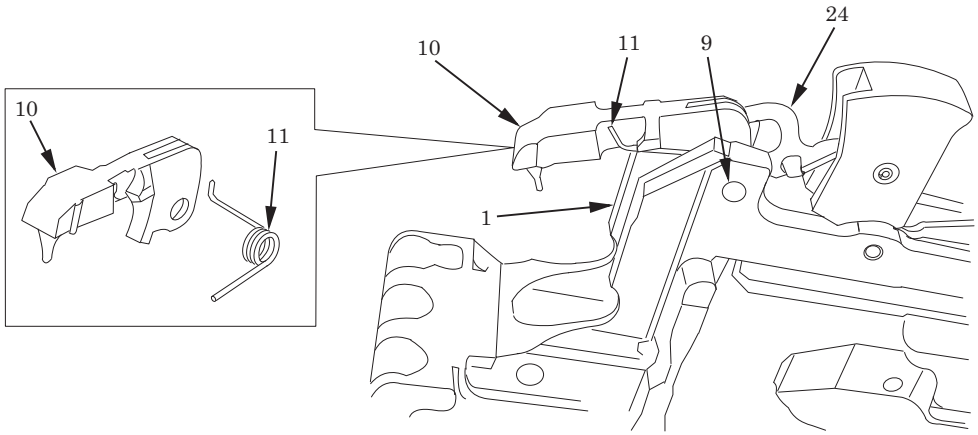


Figure 12. Installation of Hammer.

12. Install hammer (10), with firing pin facing downward and toward chamber of receiver (1), and torsion spring (11) with hook upwards and secure with straight pin (9). Capture trigger bar (24).

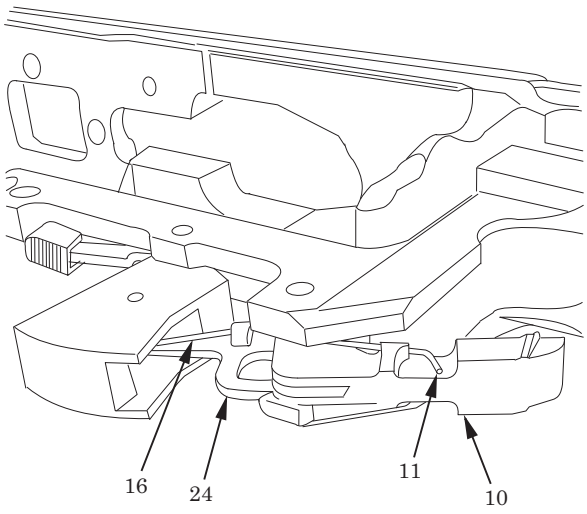


Figure 13. Emplacement of Springs.

13. Position bent leg of torsion spring (11) on notched opening on hammer (10) and long end of torsion spring (16) on notched opening on trigger bar (24).

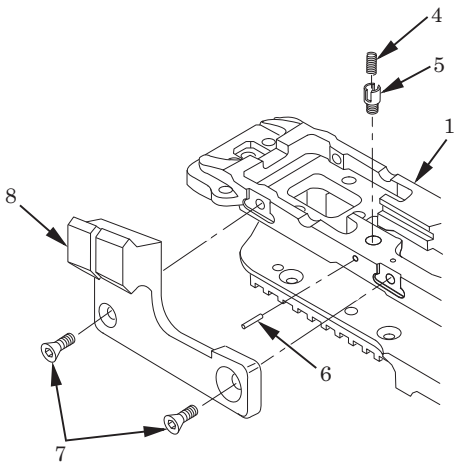


Figure 14. Installation of Day/Night Sight Mount and Stop Pin.

14. Ensure that barrel is closed into receiver (1).

15. Align headless straight pin (6) in receiver (1) and begin installation.

16. Install stop pin (5) into borehole in receiver (1) and place helical compression spring (4) into stop pin. Ensure slots in stop pin are aligned with holes.

17. Compress helical compression spring (4) with screwdriver and install headless straight pin (6) using hammer and 1/16 in. punch until pin is positioned in both side holes of receiver (1) and secures spring.

18. Align day/night sight mount (8) with holes in left side of receiver (1). Install and tighten two new socket head screws (7).

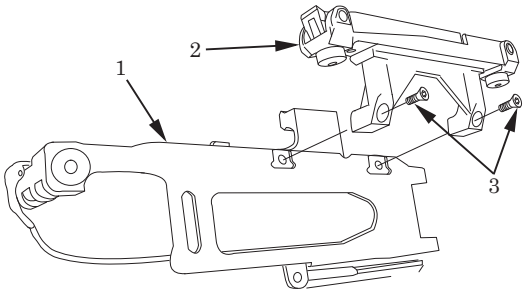


Figure 15. Installation of Leaf Sight Assembly.

19. Install leaf sight assembly (2) on receiver (1) and secure with two socket head screws (3) using 3 mm end of stowed hexagon key wrench.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

TRIGGER ASSEMBLY MAINTENANCE
DISASSEMBLY, INSPECTION, REPAIR OR REPLACEMENT, ASSEMBLY

INITIAL SETUP:

Tools and Special Tools
Small Arms Shop Set, SC 4933-95-A11
Small Arms Tool Kit, SC 5180-95-B71

References
WP 0021
WP 0025

Equipment Conditions
Trigger assembly removed from receiver (WP 0009)

DISASSEMBLY

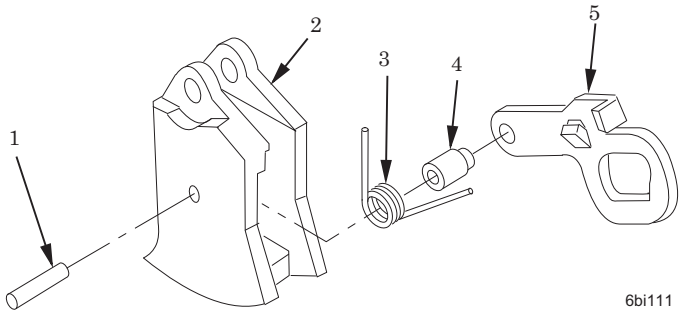


Figure 1. Disassembly/Assembly of Trigger Assembly.

1. Using 3/32 in. punch, drive out trigger spring pin (1) and remove internal parts from trigger housing (2).

2. Disengage end of torsion spring (3) from notched opening of trigger bar (5).

3. Remove torsion spring (3) and trigger bushing (4) from trigger bar (5).

END OF TASK

INSPECTION

Inspect for bent or broken components.

END OF TASK

REPAIR OR REPLACEMENT

Replace defective parts as authorized by WP 0025.

END OF TASK

ASSEMBLY

1. Insert recessed side of trigger bushing (4) into hole of trigger bar (5).
2. Install torsion spring (3) onto trigger bushing (4) with long end of spring engaging notched opening of trigger bar (5).
3. Insert assembled trigger bar (5) into rear of trigger housing (2). Position short leg of torsion spring (3) toward top of trigger housing.
4. Start installation of trigger spring pin (1) into side of trigger housing (2).
5. Align trigger bushing (4) with hole in side of trigger housing (2) and drive in trigger spring pin (1).
6. Ensure that long end of torsion spring (3) is engaged in notched opening of trigger bar (5).
7. After trigger assembly is installed in receiver assembly and pistol grip assembly is installed on receiver assembly, perform trigger pull test (WP 0021).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

PISTOL GRIP ASSEMBLY MAINTENANCE
DISASSEMBLY, INSPECTION, REPAIR OR REPLACEMENT, ASSEMBLY

INITIAL SETUP:

Tools and Special Tools
Assembling pins, 1.5 mm x 10 mm (WP 0026, item 4)
Hammer strut tool (WP 0026, item 3)
Small Arms Shop Set, SC 4933-95-A11
Small Arms Tool Kit, SC 5180-95-B71
Stepped punch (WP 0026, item 1)

Materials/Parts
Helical compression spring (2) (WP 0025, Figure 4, item 2)
Spring pin (WP 0025, Figure 4, item 9)

References
WP 0025
WP 0031

Equipment Conditions
Pistol grip assembly removed from receiver (WP 0008)

WARNING

To avoid injury to eyes, use safety glasses or goggles when removing and installing spring-loaded parts.

DISASSEMBLY

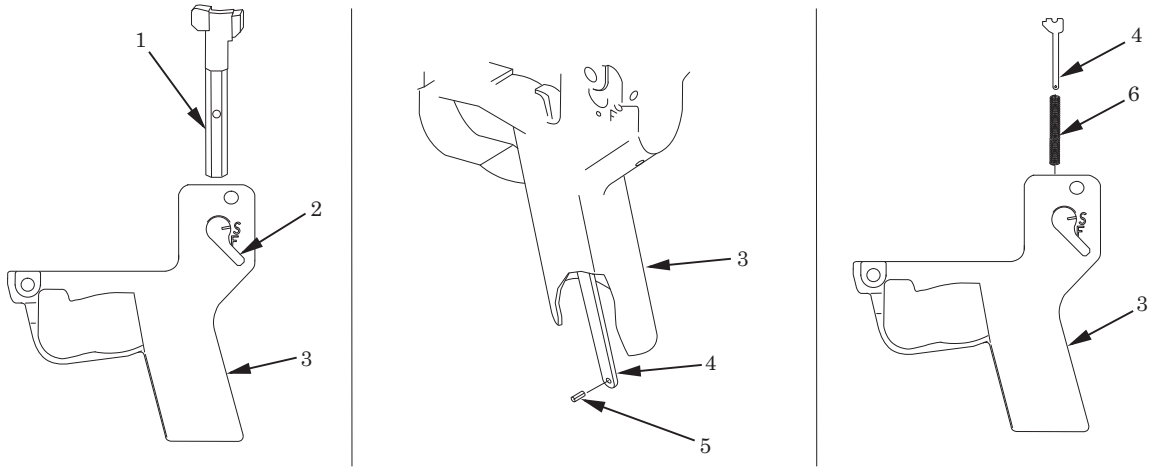


Figure 1. Removal of Hammer Strut.

1. Move selector lever (2) to "S" (safe).

2. Insert hammer strut tool (1) into topside of pistol grip (3) and push downward on tool. While maintaining downward pressure, move tool rearward so that locking surface on back rear of tool is allowed to engage underside of selector levers. Bottom of hammer strut (4) should protrude from bottom of pistol grip.

3. Using 1/16 in. pin punch, tap out spring pin (5). Discard spring pin.

4. Remove hammer strut tool (1), hammer strut (4), and helical compression spring (6) from pistol grip (3).

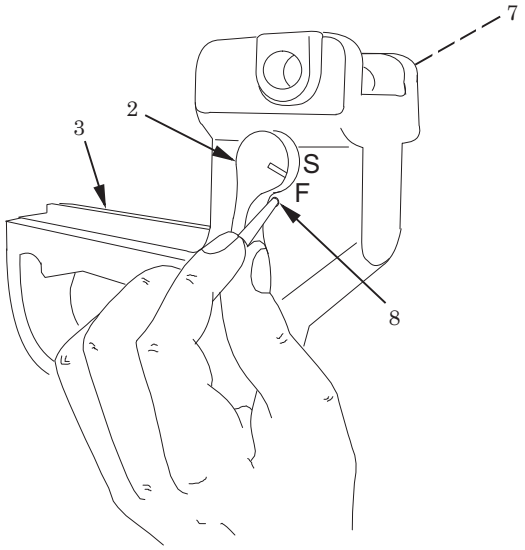


Figure 2. Insertion of Assembling Pins.

5. Move selector lever (2) to "F" (fire) position to allow insertion of the assembling pins.

NOTE

When selector lever is disassembled for repair, ensure two new helical compression springs are included for reassembly.

6. Insert assembling pins (8) (WP 0026, item 4) into assembling pin holes underneath right side selector lever (7) and left side selector lever (2). Make sure pins are flush with right and left outer surfaces of pistol grip (3).

DISASSEMBLY - Continued

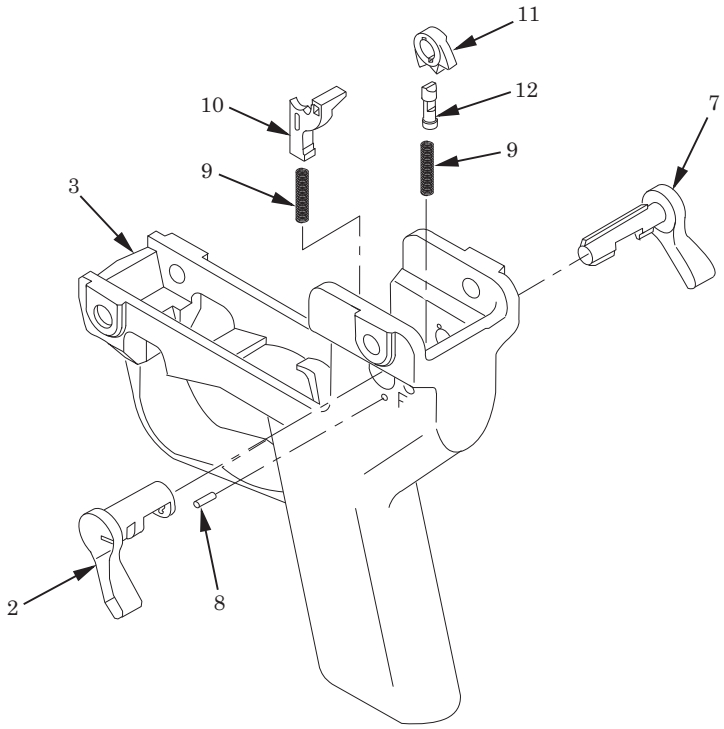


Figure 3. Disassembly of Selector Levers.

7. Turn left side selector lever (2) back to "S" (safe) position.

8. Push selector lever catch (10) downward and remove left side selector lever (2).

9. Push selector lever catch (10) downward and slide selector lever index (11) from right side selector lever (7).

10. Move right side selector lever (7) to "S" (safe) position, push downward on selector lever catch (10), and remove right side selector lever and selector lever index (11).

11. Remove assembling pins (8) using a 1.5 mm punch and remove selector lever catch (10), selector lever pin (12), and two helical compression springs (9). Discard two helical compression springs.

END OF TASK

INSPECTION

Inspect all components for burrs, bends, breaks, cracks, and other damage.

END OF TASK

REPAIR OR REPLACEMENT

Replace defective parts as authorized by WP 0025.

END OF TASK

ASSEMBLY

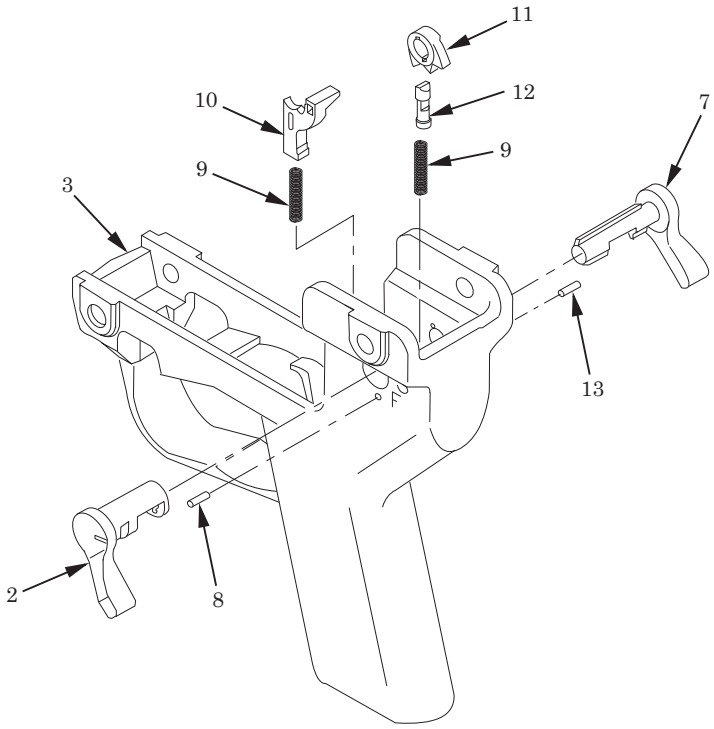


Figure 4. Assembly of Selector Levers.

1. Install two new helical compression springs (9) into pistol grip (3).

2. Install selector lever catch (10) on left side of pistol grip (3) and install assembling pin (8) to retain selector lever catch.

3. Install selector lever pin (12) on right side, with recessed portion of pin to rear; install pin into its bearing and insert assembling pin (13).

4. Install right side selector lever (7) from right side into its bearing with selector lever on "S" (safe) position.

5. Slide selector lever index (11) onto right side selector lever (7).

6. Hold selector lever index (11) against inner wall of pistol grip (3) and seat right side selector lever (7) into grip by simultaneously pushing down on selector lever catch (10) while ensuring selector lever index remains against inner wall of grip.

7. Hold right side selector lever (7) in place, press down on selector lever catch (10), and install left side selector lever (2) all the way into pistol grip (3). Ensure that both left and right side selector levers are in "S" (safe) position.

ASSEMBLY - Continued

8. Using a 1/16 in. punch, remove assembling pins (8 and 13) from holes underneath left and right selector levers.

9. Check function of left and right side selector levers (2 and 7) by moving levers from "S" (safe) to "F" (fire) and back again. Selector levers must be firmly retained on pistol grip (3) and must click into both positions.

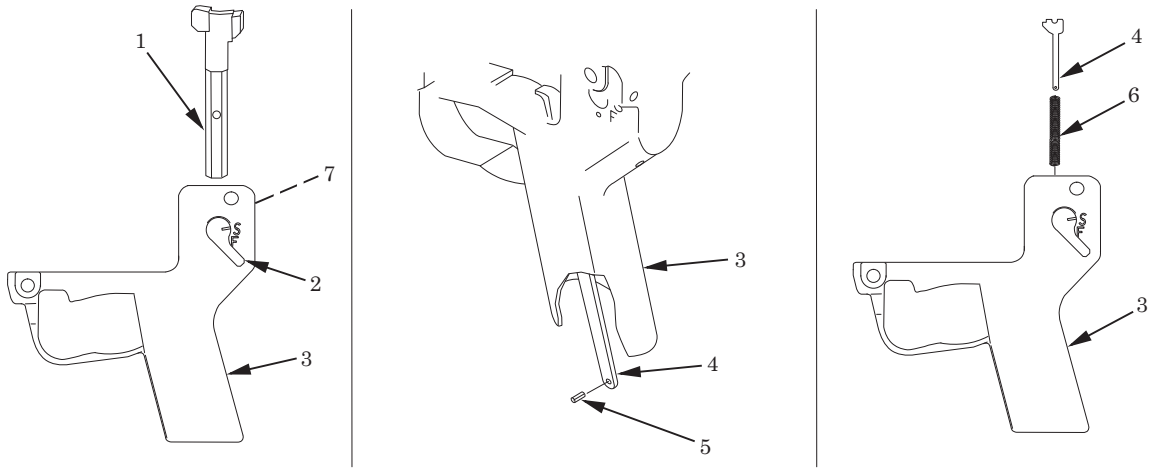


Figure 5. Installation of Hammer Strut.

10. With selector lever on "S" (safe), position helical compression spring (6) and hammer strut (4) into pistol grip (3) and insert hammer strut tool (1) onto hammer strut and helical compression spring.

11. Push downward on tool and move tool rearward so that locking surface on back rear of tool is allowed to engage underside of left and right side selector levers (2 and 7). Bottom of hammer strut (4) should protrude from bottom of pistol grip (3).

12. Install new spring pin (5) into hammer strut (4) until spring pin is centered in hammer strut.

13. Remove hammer strut tool (1) from pistol grip (3).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

VERTICAL GRIP ASSEMBLY MAINTENANCE
DISASSEMBLY, INSPECTION, REPAIR OR REPLACEMENT, ASSEMBLY

INITIAL SETUP:

Tools and Special Tools
Small Arms Shop Set, SC 4933-95-A11
Small Arms Tool Kit, SC 5180-95-B71

Materials/Parts
Retaining clip (WP 0025, Figure 5, item 3)

References
WP 0025

WARNING

To avoid injury to eyes, use safety glasses or goggles when removing and installing spring-loaded parts.

DISASSEMBLY

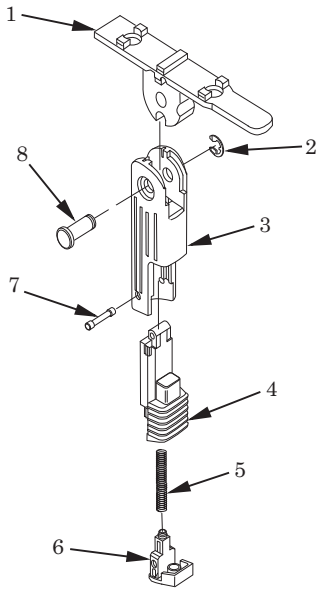


Figure 1. Disassembly/Assembly of Vertical Grip Assembly.

1. Remove and discard retaining clip (2).
2. Remove grooved pin insert (8) from bracket (1) and grip (3).
3. Remove retaining pin (7) from grip (3).
4. Remove insert (6), helical compression spring (5), and slide (4) from grip (3).

END OF TASK

INSPECTION

Inspect components for bends, breaks, cracks, and other damage.

END OF TASK

REPAIR OR REPLACEMENT

Replace defective parts as authorized by WP 0025.

END OF TASK

ASSEMBLY

1. Install helical compression spring (5) onto insert (6) so spring seats properly.
2. Install helical compression spring (5) and insert (6), and slide (4), into grip (3). Align holes in bottom of grip with holes in insert and install retaining pin (7).
3. Align holes in grip (3) with hole in bracket (1).
4. Install grooved pin insert (8) and secure with new retaining clip (2).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

BARREL ASSEMBLY MAINTENANCE
DISASSEMBLY, INSPECTION, REPAIR OR REPLACEMENT, ASSEMBLY, TEST AND INSPECTION

INITIAL SETUP:

Tools and Special Tools
Bore constriction tool (WP 0022)
Small Arms Shop Set, SC 4933-95-A11
Small Arms Tool Kit, SC 5180-95-B71

Materials/Parts
Rubber pin (WP 0025, Figure 6, item 4)
Rubber stop (WP 0025, Figure 6, item 3)

References
TM 9-1010-232-10
WP 0007
WP 0021
WP 0025

Equipment Conditions
Mounting adapters removed from receiver assembly (TM 9-1010-232-10)

DISASSEMBLY

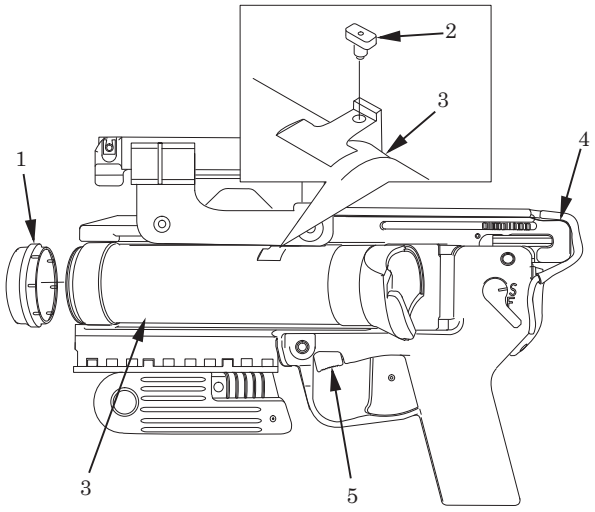


Figure 1. Removal/Installation of Muzzle Cap and Rubber Stop.

1. Pivot barrel all the way open (WP 0008).
2. Remove muzzle cap (1) from barrel (3).
3. Press barrel release (5) and pivot barrel (3) to halfway open position to visually inspect rubber stop (2).

NOTE

Perform step 4 only if rubber stop is damaged.

4. If damaged, pull rubber stop (2) from barrel (3) and discard rubber stop.

DISASSEMBLY - Continued

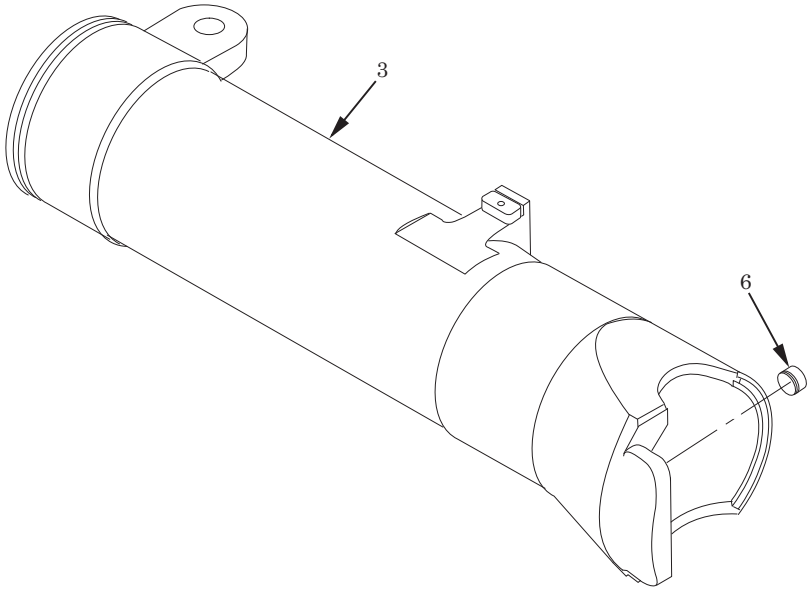


Figure 2. Removal/Installation of Rubber Pin.

NOTE

Perform step 5 only if rubber pin is damaged.

5. If damaged, remove rubber pin (6) from barrel (3) using jeweler's screwdriver. Discard rubber pin.

END OF TASK

INSPECTION

1. Inspect rubber stop for damage and deterioration.
2. Inspect rubber pin for damage and deterioration.
3. Inspect barrel assembly (WP 0007).

END OF TASK

REPAIR OR REPLACEMENT

Replace defective parts as authorized by WP 0025.

END OF TASK

ASSEMBLY

NOTE

If rubber pin is removed, perform step 1.

1. If removed, install new rubber pin (6) with shouldered end in hole. Press by hand until rubber pin pops into place.

NOTE

If rubber stop is removed, perform steps 2 and 3.

2. If removed, press new rubber stop (2) into hole in barrel (3).

3. Pivot barrel (3) completely into receiver (4).

4. Install muzzle cap (1) onto barrel (3).

END OF TASK

TEST AND INSPECTION

1. Ensure barrel is clean prior to bore constriction inspection. Clean barrel if necessary (TM 9-1010-232-10).

2. Perform annual barrel bore check (see WP 0021).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

LEAF SIGHT ASSEMBLY MAINTENANCE
DISASSEMBLY, INSPECTION, REPAIR OR REPLACEMENT, ASSEMBLY

INITIAL SETUP:

Tools and Special Tools
Hexagon key wrench (WP 0025, Figure 3, item 20)
Small Arms Shop Set, SC 4933-95-A11
Small Arms Tool Kit, SC 5180-95-B71

Materials/Parts
Retaining clip (WP 0025, Figure 7, item 13)
Retaining ring (2) (WP 0025, Figure 7, item 5)

References
WP 0025

WARNING

To avoid injury to eyes, use safety glasses or goggles when removing and installing spring-loaded parts.

DISASSEMBLY

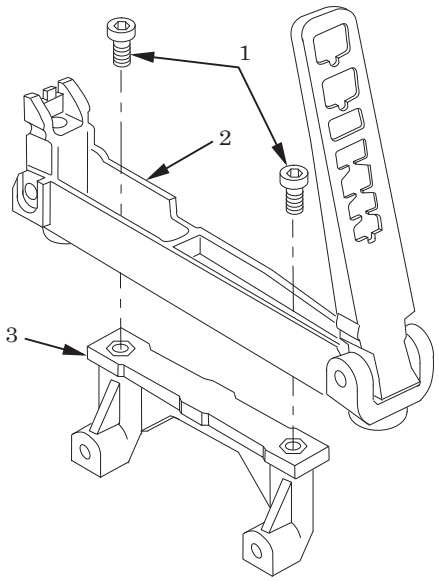


Figure 1. Removal/Installation of Sight Support.

1. Remove two screws (1) using 3 mm end of stowed hexagon key wrench and remove sight base (2) with assembled parts from sight support (3).

DISASSEMBLY - Continued

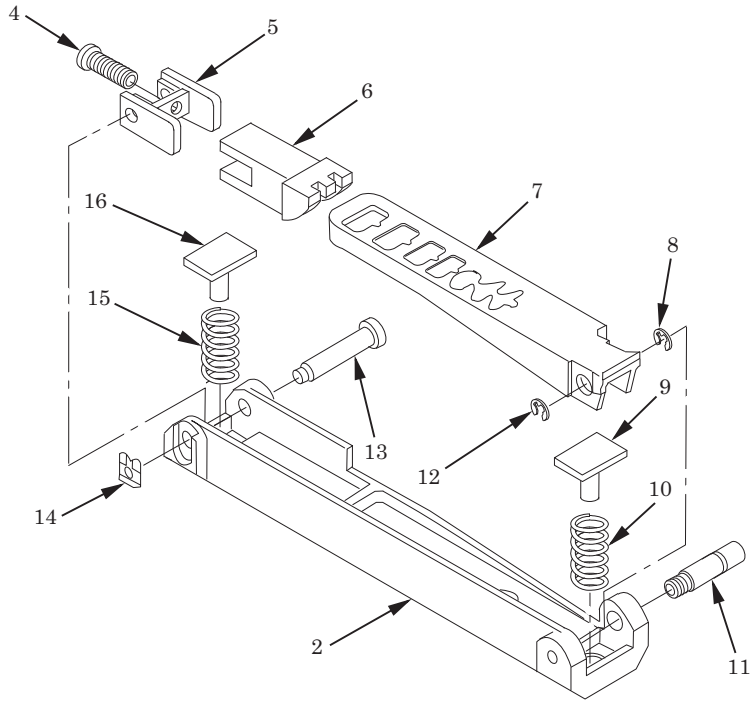


Figure 2. Disassembly/Assembly of Leaf Sight.

2. Remove retaining clip (14) by lifting clip at its outstanding bottom lip and pushing it off top of sight pin (13). Discard retaining clip.

3. Press down weapon sight spring piston (16) and remove sight pin (13) to right.

4. Remove weapon sight (6), spring piston (16), and helical compression spring (15).

5. Using 3 mm end of stowed hexagon key wrench, turn height adjustment screw (4) right until it separates from weapon sight (6) and separate sight base (5) and weapon sight.

6. Fold rear sight (7) up. Turn windage screw (11) counterclockwise to move aperture of rear sight all the way left and remove retaining ring (8) on right side of rear sight by pushing retaining ring out with screwdriver. Discard retaining ring.

7. Turn windage screw (11) clockwise to move aperture of rear sight (7) all the way right and remove retaining ring (12) on left side of rear sight by pushing retaining ring out with screwdriver. Discard retaining ring.

8. Push rear sight (7) down onto spring piston (9). Turn windage screw (11) out of its threaded bearing on left side of sight base (2) and push out windage screw.

9. Remove rear sight (7), spring piston (9), and helical compression spring (10) from sight base (2).

END OF TASK

INSPECTION

Inspect components for bends, breaks, burrs, cracks, damaged threads, and other damage.

REPAIR OR REPLACEMENT

Replace defective parts as authorized by WP 0025.

END OF TASK

ASSEMBLY

1. Install helical compression spring (10) and spring piston (9) into rear sight bearing. Position rear sight (7) with markings toward rear and push down rear sight onto sight base (2). Insert windage screw (11) completely from right through right rear sight hinge and rear sight.

2. Hold rear sight (7) pushed down and turn windage screw (11) with 3 mm end of stowed hexagon key wrench into engagement with left sight hinge.

3. Turn windage screw (11) into sight base (2) until right recess of windage screw is even with right side of rear sight (7).

4. With screwdriver, press new retaining ring (8) into recess of windage screw (11).

5. Turn windage screw (11) to right and push rear sight (7) manually right until it engages retaining ring (8) on windage screw.

6. If left recess on windage screw (11) is not yet visible, insert screwdriver between left rear sight hinge and rear sight (7) and turn windage screw carefully clockwise until left recess on windage screw becomes visible.

7. With screwdriver, press new retaining ring (12) into left recess of windage screw (11).

8. Check function of windage screw (11) by rotating left and right. Rear sight (7) must move correspondingly with minimum play.

9. Fold rear sight (7) up and down. It must properly engage in upper and lower positions without play.

10. Install sight base (5) completely into weapon sight (6).

11. Install height adjustment screw (4) through sight base (5) into weapon sight (6) and turn screw counterclockwise with 3 mm end of stowed hexagon key wrench completely into weapon sight.

12. Install helical compression spring (15) and spring piston (16) into front of sight base (2).

ASSEMBLY - Continued

NOTE

Position weapon sight with height adjustment screw to rear.

13. Position weapon sight (6) with its bottom on spring piston (16) and push down completely.

14. Push sight pin (13) from right side completely through sight base (5) and sight base (2).

15. Slide new retaining clip (14) from top into recess of protruding sight pin (13) on left side of sight base (2).

16. Check function by folding weapon sight (6) up and down. Weapon sight must move without play and firmly engage in both upright and down positions.

17. Align holes of sight base (2) with holes in sight support (3).

18. Install two screws (1) using 3mm end of stowed hexagon key wrench and tighten.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

DAY/NIGHT SIGHT ASSEMBLY MAINTENANCE
DISASSEMBLY, INSPECTION, REPAIR OR REPLACEMENT, ASSEMBLY

INITIAL SETUP:

Tools and Special Tools
Small Arms Shop Set, SC 4933-95-A11
Small Arms Tool Kit, SC 5180-95-B71

Materials/Parts
O-ring (WP 0025, Figure 8, item 3)
Rear sight kit (WP 0025, Figure 8, item 4)
Safety block (WP 0025, Figure 8, item 7)
Silicone compound (WP 0032, item 7)

References
WP 0025

Equipment Conditions
Day/Night Sight removed from grenade launcher (TM 9-1010-232-10)
Battery removed from Day/Night Sight (TM 9-1010-232-10)

DISASSEMBLY

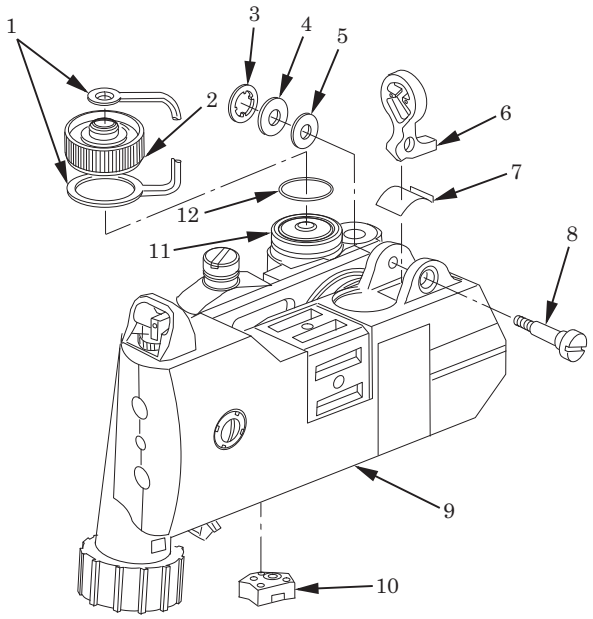


Figure 1. Disassembly/Assembly of Day/Night Sight Assembly.

NOTE

Steps 1 through 4 apply to battery cap and retaining strap.

1. Remove small end of retaining strap (1) from stud of battery cap (2).
2. Remove battery cap (2).
3. Remove O-ring (12) from groove of battery compartment (11). Discard O-ring.
4. Remove large end of retaining strap (1) from threads of battery compartment (11).

NOTE

Step 5 applies to safety block.

5. If damaged, use .050 key wrench and remove safety block (10). Discard safety block.

NOTE

Steps 6 through 9 apply to rear sight.

6. Remove retaining ring (3) from rear sight screw (8). Discard retaining ring.

7. Remove flat washer (4) and nylon washer (5) while turning rear sight screw (8) counterclockwise. Discard flat washer and nylon washer.

8. Continue to turn rear sight screw (8) counterclockwise and remove from sight unit (9). Discard rear sight screw.

9. Remove rear sight (6) and rear sight spring (7) from sight unit (9). Discard rear sight and rear sight spring.

END OF TASK

INSPECTION

Inspect components for bends, breaks, cracks, and other damage.

END OF TASK

REPAIR OR REPLACEMENT

Replace defective parts as authorized by WP 0025.

END OF TASK

ASSEMBLY

NOTE

Steps 1 through 6 apply to rear sight.

1. Install new rear sight spring (7) (WP 0025, Figure 8, item 4) into cutout of sight unit (9).

2. Install new rear sight (6) (WP 0025, Figure 8, item 4) on top of rear sight spring (7).

3. Lubricate threads of new rear sight screw (8) (WP 0025, Figure 8, item 4) with silicone compound (WP 0032, item 5) and install screw into sight unit (9).

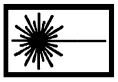
4. Install new nylon washer (5) (WP 0025, Figure 8, item 4) and new flat washer (4) (WP 0025, Figure 8, item 4) over threaded end of rear sight screw (8).

5. Install new retaining ring (3) (WP 0025, Figure 8, item 4) into groove of rear sight screw (8).

6. Rotate rear sight screw (8) to center rear sight (6) and verify smooth operation. Ensure rear sight locks into both positions and fold rear sight into stowed position.

ASSEMBLY - Continued

WARNING



LASER LIGHT

For training mode the safety block must be installed with the blue side visible. For tactical mode install the safety block with the black side visible. Do not stare into the laser beams. Do not look into laser beams through binoculars or telescopes. Do not point laser beams at mirror-like surfaces. Do not shine laser beams into another person's eyes.

NOTE

Step 7 applies to safety block.

7. If removed, install new safety block (10) and secure, using .050 key wrench.

NOTE

Steps 8 through 11 apply to battery cap and retaining strap.

8. Install large end of retaining strap (1) over threads of battery compartment (11).
9. Install new O-ring (12) to groove of battery compartment (11).
10. Install battery cap (2).
11. Install small end of retaining strap (1) over stud of battery cap (2).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

M16 MOUNTING ADAPTER ASSEMBLY MAINTENANCE
REMOVAL, DISASSEMBLY, INSPECTION, REPAIR OR REPLACEMENT, ASSEMBLY, INSTALLATION

INITIAL SETUP:

Tools and Special Tools
Hexagon key wrench (WP 0025, Figure 3, item 20)
Small Arms Shop Set, SC 4933-95-A11
Small Arms Tool Kit, SC 5180-95-B71

Materials/Parts
Lock screw (WP 0025, Figure 9, item 5)

References
WP 0025

Equipment Conditions
M320 Grenade Launcher in M16 configuration

REMOVAL

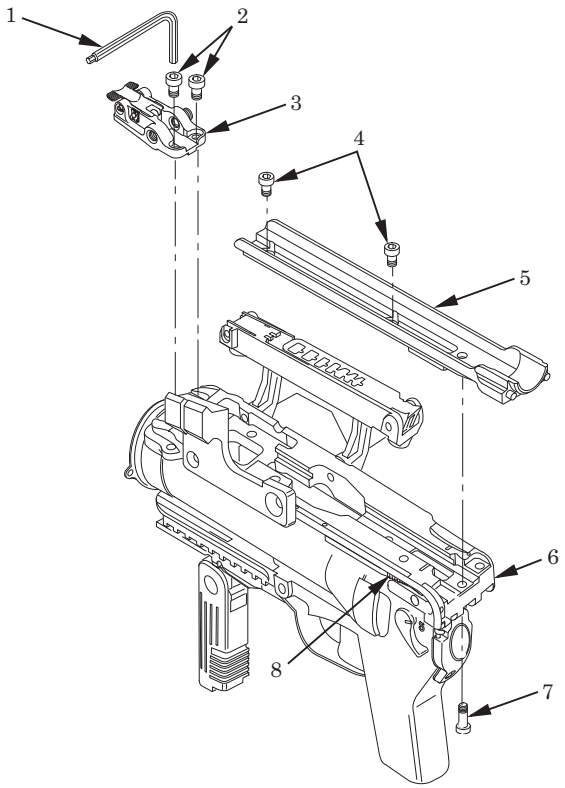


Figure 1. Removal/Installation of Mounting Bracket and Front Mounting Adapter.

1. Remove stowed hexagon key wrench (1) from rear of receiver (6).

2. Using 5 mm end of stowed hexagon key wrench (1), remove two socket head capscrews (4) and socket head capscrew (7).

3. Press buttstock release (8) and remove rear mounting bracket (5) from receiver (6).

4. Using 5 mm end of stowed hexagon key wrench (1), remove two socket head capscrews (2). Lift front mounting adapter (3) from receiver (6).

END OF TASK

WARNING

To avoid injury to eyes, use safety glasses or goggles when removing and installing spring-loaded parts.

DISASSEMBLY

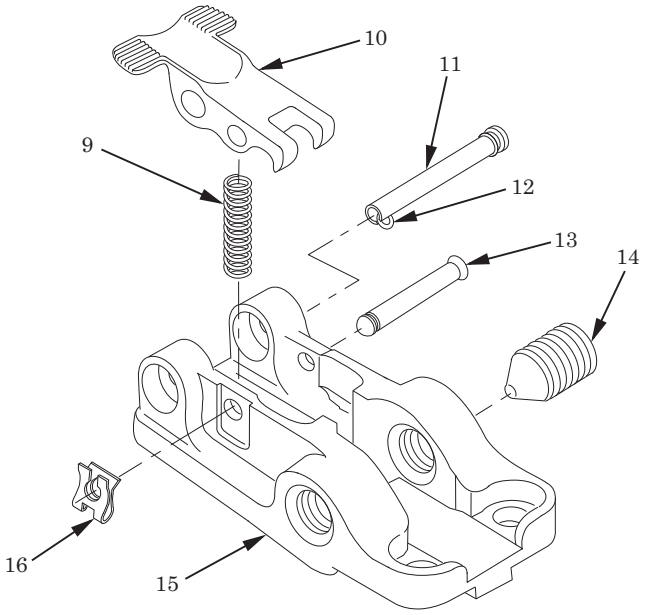


Figure 2. Disassembly/Assembly of Front Mounting Adapter.

1. Push/Pull front locking pin (11) from left to right. Slide front locking pin to the right until it stops to release latch (10).

2. Remove clip (16) from headed straight pin (13).

3. Remove headed straight pin (13), latch (10), and helical compression spring (9) from front mounting bracket (15).

4. Depress spring (12) on left end of front locking pin (11) and pull front locking pin from right side of front mounting bracket (15).

5. If damaged, remove lock screw (14) from front mounting bracket (15). Discard lock screw.

END OF TASK

INSPECTION

Inspect components for burrs, breaks, bends, and damaged threads.

END OF TASK

REPAIR OR REPLACEMENT

Replace defective parts as authorized by WP 0025.

END OF TASK

ASSEMBLY

1. If removed, install new lock screw (14) in front mounting bracket (15).
2. Position helical compression spring (9) and latch (10) in front mounting bracket (15). Ensure that helical compression spring fits into hole in latch and recess in base of front mounting bracket.
3. Install headed straight pin (13) in front mounting bracket (15).
4. Install clip (16) on headed straight pin (13) from the top.
5. Depress spring (12) on front locking pin (11) and install pin from right side into front hole of front mounting bracket (15).

END OF TASK

INSTALLATION

1. Position front mounting adapter (3) over cutout in front part of receiver (6) and align holes. Install two socket head capscrews (2) to secure front mounting adapter. Tighten using 5 mm end of stowed hexagon key wrench (1).
2. Press buttstock release (8) and position rear mounting bracket (5) in slot in rear of receiver (6), aligning holes.
3. Install two shorter socket head capscrews (4) in front of rear mounting bracket (5). Install from top of rear mounting bracket. Tighten using 5 mm end of stowed hexagon key wrench (1).
4. Install longer socket head capscrew (7) in rear of rear mounting bracket (5). Install from bottom of receiver (6). Tighten using 5 mm end of stowed hexagon key wrench (1).
5. Install stowed hexagon key wrench (1) in rear of receiver (6).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

M4 MOUNTING ADAPTER ASSEMBLY MAINTENANCE
REMOVAL, DISASSEMBLY, INSPECTION, REPAIR OR REPLACEMENT, ASSEMBLY, INSTALLATION

INITIAL SETUP:

Tools and Special Tools
Hexagon key wrench (WP 0025, Figure 3, item 20)
Small Arms Shop Set, SC 4933-95-A11
Small Arms Tool Kit, SC 5180-95-B71

Materials/Parts
Lock screw (WP 0025, Figure 10, item 5)

References
WP 0025

Equipment Conditions
M320A1 Grenade Launcher in M4 configuration

REMOVAL

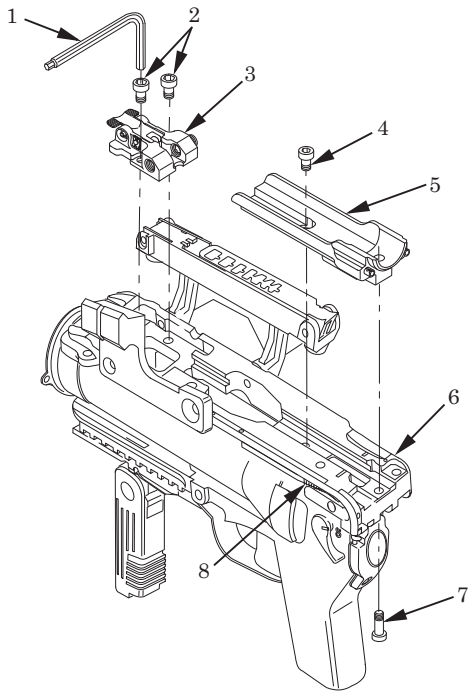


Figure 1. Removal/Installation of Mounting Bracket and Front Mounting Adapter.

1. Remove stowed hexagon key wrench (1) from rear of receiver (6).

2. Using 5 mm end of stowed hexagon key wrench (1), remove socket head capscrew (4) and socket head capscrew (7).

3. Press buttstock release (8) and remove rear mounting bracket (5) from receiver (6).

4. Using 5 mm end of stowed hexagon key wrench (1), remove two socket head capscrews (2). Lift front mounting adapter (3) from receiver (6).

END OF TASK

WARNING

To avoid injury to eyes, use safety glasses or goggles when removing and installing spring-loaded parts.

DISASSEMBLY

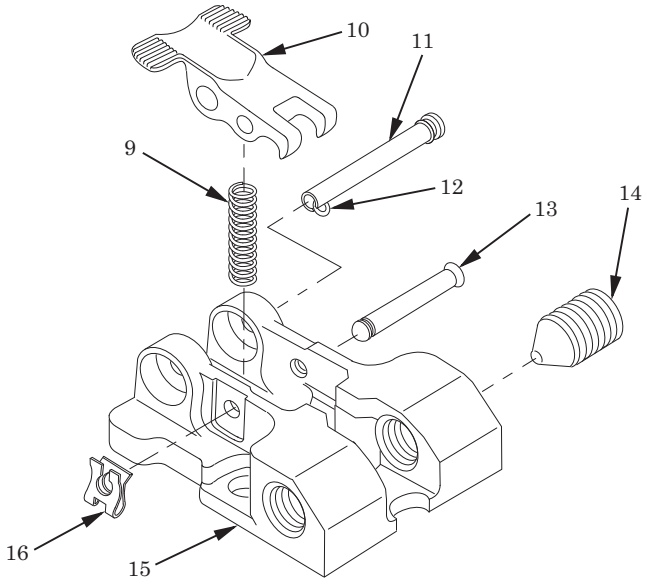


Figure 2. Disassembly/Assembly of Front Mounting Adapter.

1. Push/Pull front locking pin (11) from left to right. Slide front locking pin to the right until it stops to release latch (10).

2. Remove clip (16) from headed straight pin (13).

3. Remove headed straight pin (13), latch (10), and helical compression spring (9) from front mounting bracket (15).

4. Depress spring (12) on left end of front locking pin (11) and pull front locking pin from right side of front mounting bracket (15).

5. If damaged, remove lock screw (14) from front mounting bracket (15). Discard lock screw.

END OF TASK

INSPECTION

Inspect components for burrs, breaks, bends, and damaged threads.

END OF TASK

REPAIR OR REPLACEMENT

Replace defective parts as authorized by WP 0025.

END OF TASK

ASSEMBLY

1. If removed, install new lock screw (14) in front mounting bracket (15).
2. Position helical compression spring (9) and latch (10) in front mounting bracket (15). Ensure that helical compression spring fits into hole in latch and recess in base of front mounting bracket.
3. Install headed straight pin (13) in front mounting bracket (15).
4. Install clip (16) on headed straight pin (13) from the top.
5. Depress spring (12) on front locking pin (11) and install pin from right side into front hole of front mounting bracket (15).

END OF TASK

INSTALLATION

1. Position front mounting adapter (3) over cutout in front part of receiver (6) and align holes. Install two socket head capscrews (2) to secure front mounting adapter. Tighten using 5 mm end of stowed hexagon key wrench (1).
2. Press buttstock release (8) and position rear mounting bracket (5) in slot in rear of receiver (6), aligning holes.
3. Install shorter socket head capscrew (4) in front of rear mounting bracket (5). Install from top of rear mounting bracket. Tighten using 5 mm end of stowed hexagon key wrench (1).
4. Install longer socket head capscrew (7) in rear of rear mounting bracket (5). Install from bottom of receiver (6). Tighten using 5 mm end of stowed hexagon key wrench (1).
5. Install stowed hexagon key wrench (1) in rear of receiver (6).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

BUTTSTOCK ASSEMBLY MAINTENANCE
DISASSEMBLY, INSPECTION, REPAIR OR REPLACEMENT, ASSEMBLY

INITIAL SETUP:

Tools and Special Tools
Small Arms Shop Set, SC 4933-95-A11
Small Arms Tool Kit, SC 5180-95-B71

References
WP 0025

Materials/Parts
Flat spring (WP 0025, Figure 11, item 5)
Spring pin (WP 0025, Figure 11, item 6)

Equipment Conditions
Buttstock removed from grenade launcher (TM 9-1010-232-10)

WARNING

To avoid injury to eyes, use safety glasses or goggles when removing and installing spring-loaded parts.

DISASSEMBLY

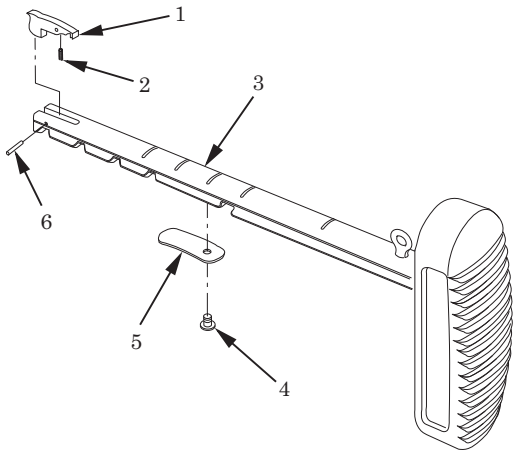


Figure 1. Repair of Buttstock Assembly.

1. If spring tension is lost, use 2.5 mm key wrench to remove screw (4) and flat spring (5). Discard flat spring.

2. If damage exists, remove spring pin (6) with 3/32 in. punch and remove latch (1) and latch spring (2) from buttstock (3). Discard spring pin and damaged parts.

END OF TASK

INSPECTION

Inspect components for burrs, bends, cracks, and damaged threads.

END OF TASK

REPAIR OR REPLACEMENT

Replace defective parts as authorized by WP 0025.

END OF TASK

ASSEMBLY

1. If removed, install latch spring (2) and latch (1) to buttstock (3). Secure with new spring pin (6).
2. If removed, install new flat spring (5) and secure with screw (4), using 2.5 mm key wrench.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

LASER RANGE FINDER ASSEMBLY MAINTENANCE
DISASSEMBLY, REPAIR OR REPLACEMENT, ASSEMBLY

INITIAL SETUP:

Materials/Parts
Battery, 9-volt (WP 0032, item 2)

References
WP 0025

DISASSEMBLY

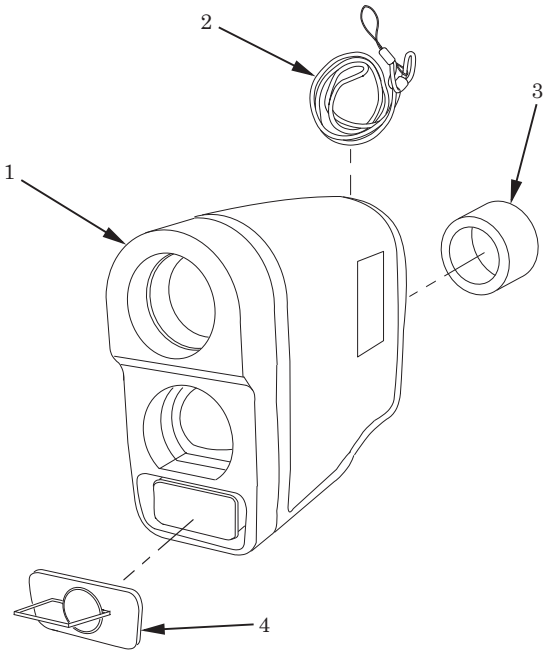


Figure 1. Disassembly/Assembly of LRF.

1. If necessary to replace battery, remove battery compartment cover (4) from Laser Range Finder (LRF) (1). Remove battery and discard in accordance with unit standard operating procedure (SOP).

2. If damaged, remove and discard eyecup (3).

3. If damaged, remove and discard carrying strap (2).

END OF TASK

REPAIR OR REPLACEMENT

Replace defective parts as authorized by WP 0025.

END OF TASK

ASSEMBLY

1. If removed, install new carrying strap (2) to LRF (1).
2. If removed, install new eyecup (3) to LRF (1).
3. If removed, install new battery (WP 0032, item 2) into LRF (1). Install battery compartment cover (4).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

PREPARATION FOR STORAGE OR SHIPMENT

INITIAL SETUP:

References
TB 9-1000-247-34
TM 9-1010-232-10
WP 0007

Equipment Conditions
Weapon cleared (TM 9-1010-232-10)

SHIPPING

1. Ensure that weapon and accessories are cleaned and lubricated (TM 9-1010-232-10).
2. Perform a function check on weapon prior to shipping (WP 0007).
3. Set selector lever on "S" (safe) before shipment.
4. Ship weapon without ammunition in chamber or same container.
5. Ship weapon with barrel in closed position.
6. Ensure that any mounted electro-optical sight is turned off and that all batteries are removed prior to shipping.
7. Ensure weapon is shipped in a suitable container that will protect weapon and included accessories during transit.

END OF TASK

STORAGE

1. Ensure that weapon and accessories are cleaned and lubricated (TM 9-1010-232-10).
2. Perform a function check on weapon prior to storage (WP 0007).
3. Set selector lever on "S" (safe) before storage.
4. Store weapon without ammunition in chamber or same container.
5. Store weapon with barrel in closed position.
6. Ensure weapon is stored in a clean, dry environment with regulated temperature controls.

STORAGE - Continued

7. Clean, lubricate, and perform a function check every 90 days (TM 9-1010-232-10).

8. Ensure that any mounted electro-optical sight is turned off and that all batteries are removed prior to storage.

END OF TASK

PRE-EMBARKATION INSPECTION

Refer to TB 9-1000-247-34 for standard requirements prior to embarkation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

ANNUAL TEST REQUIREMENTS

INITIAL SETUP:

Tools and Special Tools
Bore constriction tool (WP 0022)
Small Arms Shop Set, SC 4933-95-A11

References
TM 9-1010-232-10
WP 0022
WP 0031

Equipment Conditions
Grenade launcher cleared of ammunition (TM 9-1010-232-10)
Grenade launcher removed from host weapon (TM 9-1010-232-10)

ANNUAL TEST

Trigger Pull

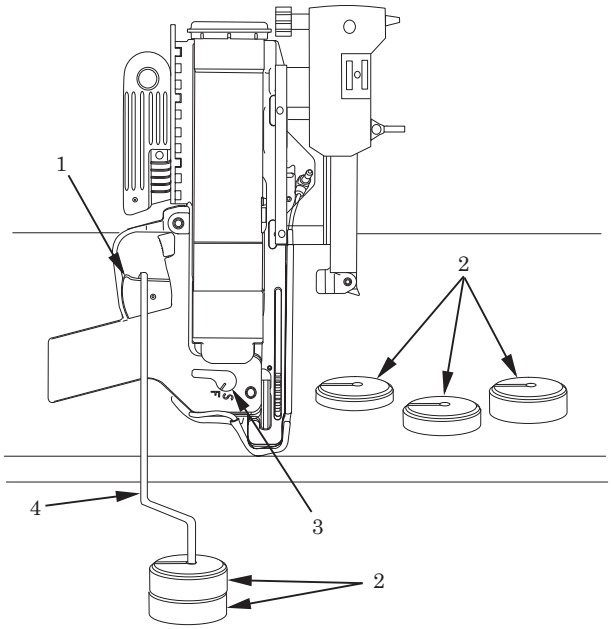


Figure 1. Trigger Pull Test.

NOTE

Trigger pull fixture is found in the Small Arms Shop Set, SC 4933-95-A11 (WP 0031).

Minimum trigger pull is 11.25 lb (5.0 kg); maximum trigger pull is 15.75 lb (7.0 kg).

1. Ensure weapon is cleared.
2. Place selector lever (3) on "F" (fire).
3. Place grenade launcher on edge of table, barrel end up. Support grenade launcher firmly with hand.
4. Place rod (4) on trigger (1) and let it hang freely.
5. Begin adding weights (2) to rod (4) until trigger (1) releases firing pin. Record the weight.

Barrel Bore

1. Check for bore constriction using bore constriction tool (WP 0022). Clean barrel if necessary (TM 9-1010-232-10).

2. Carefully insert bore constriction tool into chamber end of barrel and allow it to slide to muzzle end of barrel. Tool should pass through barrel from end to end.

3. Replace barrel if bore constriction tool fails to pass smoothly through entire barrel.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

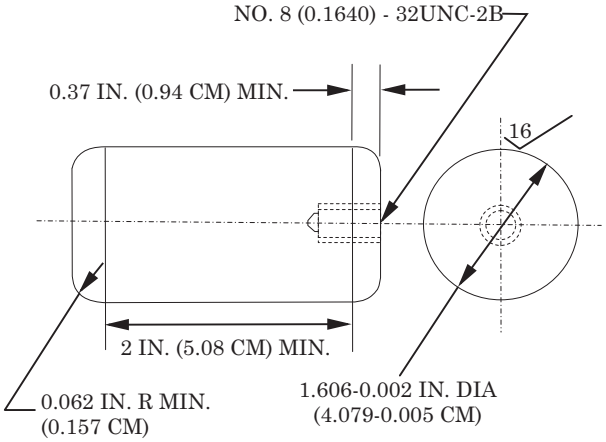
ILLUSTRATED LIST OF MANUFACTURED ITEMS

INTRODUCTION

1. This work package includes complete instructions for making items authorized to be manufactured or fabricated at direct support level.

2. All bulk materials needed for manufacture of an item are listed by part number or specification number on the illustration.

MANUFACTURED ITEMS



NOTES:
1. MATERIAL: MILD STEEL (1018) BAR STOCK, 1-3/4 IN. DIA., NSN 9510-00-813-5335; UNIT OF ISSUE: FOOT, QQ-S-634 OR EQUIVALENT.
2. PURPOSE OF TOOL: TO DETECT DENTS AND/OR MINOR DAMAGE SUFFICIENT TO IMPEDE FORWARD PROGRESS OF FIRED PROJECTILE.
3. USE HANDLE SECTION OF SMALL ARMS CLEANING ROD (SMALL ARMS REPAIRMAN TOOL KIT).
4. TOOL MUST PASS FREELY THROUGH ENTIRE BARREL BORE.

Figure 1. Fabrication of Bore Constriction Tool.

END OF TASK

END OF WORK PACKAGE

CHAPTER 4

AUXILIARY EQUIPMENT MAINTENANCE INSTRUCTIONS FOR M320/M320A1 GRENADE LAUNCHER (GL)

FIELD MAINTENANCE

AUXILIARY EQUIPMENT MAINTENANCE

INITIAL SETUP:

References
WP 0029

SCOPE

This work package contains information and instructions to keep auxiliary equipment used with the M320/M320A1 Grenade Launcher in good repair.

GENERAL

1. The following items of auxiliary equipment are used in conjunction with the M320/M320A1 Grenade Launcher:

   a. Laser Borelight System, NSN 5850-01-471-2091.

   b. Night Vision Goggles, NSN 5855-01-228-0937.

   c. 40-mm Mandrel (part of boresighting kit), Part Number 135A1.

2. For maintenance of auxiliary equipment, see WP 0029, References.

END OF WORK PACKAGE

CHAPTER 5

PARTS INFORMATION
FOR
M320/M320A1 GRENADE LAUNCHER (GL)

FIELD MAINTENANCE

INTRODUCTION TO REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)

INTRODUCTION

Scope

This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of field maintenance of the M320/M320A1 Grenade Launcher. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the source, maintenance, and recoverability (SMR) codes.

General

In addition to the Introduction work package, this RPSTL is divided into the following work packages.

1. Repair Parts List Work Packages. Work packages containing lists of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. These work packages also include parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Sending units, brackets, filters, and bolts are listed with the component they mount on. Bulk materials are listed by item name in FIG. BULK at the end of the work packages. Repair parts kits are listed at the end of the individual work packages. Repair parts for reparable special tools are also listed in a separate work package. Items listed are shown on the associated illustrations.

2. Special Tools List Work Packages. Work packages containing lists of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE (UOC) column). Tools that are components of common tool sets and/or Class VII are not listed.

3. Cross-Reference Indexes Work Packages. There are two cross-reference indexes work packages in this RPSTL: the National Stock Number (NSN) Index work package and the Part Number (P/N) Index work package. The National Stock Number Index work package refers you to the figure and item number. The Part Number Index work package refers you to the figure and item number.

Explanation of Columns in the Repair Parts List and Special Tools List Work Packages

ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

SMR CODE (Column (2)). The SMR code containing supply/requisitioning information, maintenance level authorization criteria, and disposition instruction, as shown in the following breakout:

Explanation of Columns in the Repair Parts List and Special Tools List Work Packages - Continued

Table 1. SMR Code Explanantion.

Source Code	Maintenance Code		Recoverability Code
___ xx ___	___ xx ___		___ x ___
1st two positions: How to get an item.	3rd position: Who can install, replace, or use the item.	4th position: Who can do complete repair* on the item.	5th position: Who determines disposition action on unserviceable items.

*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

Source Code	Application/Explanation
PA PB PC PD PE PF PG PH PR PZ	**NOTE** Items coded PC are subject to deterioration. Stock items; use the applicable NSN to requisition/request items with these source codes. They are authorized to the level indicated by the code entered in the third position of the SMR code.
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance level indicated in the third position of the SMR code. The complete kit must be requisitioned and applied.
MO-Made at service/AMC level MF-Made at field/ASB level MH-Made at below depot sustainment level ML-Made at SRA/TASMG MD-Made at depot MG-Navy only	Items with these codes are not to be requisitioned/requested individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group work package of the RPSTL. If the item is authorized to you by the third position code of the SMR code, but the source code indicates it is made at higher level, order the item from the higher level of maintenance.

AO-Assembled by service/AMC level AF-Assembled by field/ASB level AH-Assembled by below depot sustainment level AL-Assembled by SRA/TASMG AD-Assembled by depot AG-Navy only	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the third position of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.
XA	Do not requisition an XA-coded item. Order the next higher assembly. (Refer to NOTE below.)
XB	If an item is not available from salvage, order it using the CAGEC and P/N.
XC	Installation drawings, diagrams, instruction sheets, field service drawings; identified by manufacturer's P/N.
XD	Item is not stocked. Order an XD-coded item through local purchase or normal supply channels using the CAGEC and part number given, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to use and repair support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

Third Position. The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to the following levels of maintenance:

Maintenance Code	**Application/Explanation**
O* -	Field (Service) level/AMC maintenance can remove, replace, and use the item.
F -	Field/ASB maintenance can remove, replace, and use the item.
H -	Below Depot Sustainment maintenance can remove, replace, and use the item.
L -	Specialized repair activity/TASMG can remove, replace, and use the item.
G -	Afloat and ashore intermediate maintenance can remove, replace, and use the item (Navy only).
K -	Contractor facility can remove, replace, and use the item.
Z -	Item is not authorized to be removed, replaced, or used at any maintenance level.
D -	Depot can remove, replace, and use the item.

*NOTE - Army may use C in the third position. However, for joint service publications, Army will use O.

Explanation of Columns in the Repair Parts List and Special Tools List Work Packages - Continued

Fourth Position. The maintenance code entered in the fourth position tells you whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (perform all authorized repair functions).

NOTE

Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

Maintenance Code	Application/Explanation
O -	Field (Service)/AMC is the lowest level that can do complete repair of the item.
F -	Field/ASB is the lowest level that can do complete repair of the item.
H -	Below Depot Sustainment is the lowest level that can do complete repair of the item.
L -	Specialized repair activity/TASMG is the lowest level that can do complete repair of the item.
D -	Depot is the lowest level that can do complete repair of the item.
G -	Both afloat and ashore intermediate levels are capable of complete repair of item. (Navy only)
K -	Complete repair is done at contractor facility.
Z -	Nonreparable. No repair is authorized.
B -	No repair is authorized. No parts or special tools are authorized for the maintenance of "B" coded item. However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR code as follows:

Recoverability Code		Application/Explanation
Z	-	Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the third position of the SMR code.
O	-	Reparable item. When uneconomically reparable, condemn and dispose of the item at the service/AMC level.
F	-	Reparable item. When uneconomically reparable, condemn and dispose of the item at the field/ASB level.
H	-	Reparable item. When uneconomically reparable, condemn and dispose of the item at the below depot sustainment level.
D	-	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item are not authorized below depot level.
L	-	Reparable item. Condemnation and disposal not authorized below Specialized Repair Activity (SRA) or theater aviation sustainment maintenance group (TASMG).
A	-	Item requires special handling or condemnation procedures because of specific reasons (such as precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.
G	-	Field level reparable item. Condemn and dispose at either afloat or ashore intermediate levels. (Navy only)
K	-	Reparable item. Condemnation and disposal to be performed at contractor facility.

NSN (Column (3)). The NSN for the item is listed in this column.

CAGEC (Column (4)). The Commercial and Government Entity Code (CAGEC) is a five-digit code which is used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

PART NUMBER (Column (5)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the number listed.

DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). This column includes the following information:

1. The federal item name and, when required, a minimum description to identify the item.

2. Part numbers of bulk materials are referenced in this column in the line entry to be manufactured or fabricated.

Explanation of Columns in the Repair Parts List and Special Tools List Work Packages - Continued

3. Hardness Critical Item (HCI). A support item that provides the equipment with special protection from electromagnetic pulse (EMP) damage during a nuclear attack.

4. The statement END OF FIGURE appears just below the last item description in column (6) for a given figure in both the repair parts list and special tools list work packages.

QTY (Column (7)). The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column instead of a quantity indicates that the quantity is variable and quantity may change from application to application.

Explanation of Cross-Reference Indexes Work Packages Format and Columns

1. National Stock Number (NSN) Index Work Package. NSNs in this index are listed in National Item Identification Number (NIIN) sequence.

STOCK NUMBER Column. This column lists the NSN in NIIN sequence. The NIIN consists of the last nine digits of the NSN. When using this column to locate an item, ignore the first four digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

For example, if the NSN is 5385-01-574-1476, the NIIN is 01-574-1476.

FIG. Column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in the repair parts list and special tools list work packages.

ITEM Column. The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

2. Part Number (P/N) Index Work Package. P/Ns in this index are listed in ascending alphanumeric sequence (vertical arrangement of letter and number combinations which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

PART NUMBER Column. Indicates the part number assigned to the item.

FIG. Column. This column lists the number of the figure where the item is identified/located in the repair parts list and special tools list work packages.

ITEM Column. The item number is the number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

Special Information

UOC. The UOC appears in the lower left corner of the Description Column heading. Usable on codes are shown as "UOC:..." in the Description Column (justified left) on the first line under the applicable item/nomenclature. Uncoded items are applicable to all models.

Code	Used On
BV6	M320
BU5	M320A1

Fabrication Instructions. Bulk materials required to manufacture items are listed in the bulk material functional group of this RPSTL. Part numbers for bulk materials are also referenced in the Description Column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in the appropriate maintenance work packages of this manual.

Index Numbers. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the NSN / Part Number (P/N) Index work packages and the bulk material list in the repair parts list work package.

How To Locate Repair Parts

1. When NSN or Part Numbers Are Not Known.

First. Using the table of contents, determine the assembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and lists are divided into the same groups.

Second. Find the figure covering the functional group or the subfunctional group to which the item belongs.

Third. Identify the item on the figure and note the number(s).

Fourth. Look in the repair parts list work packages for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

2. When NSN Is Known.

First. If you have the NSN, look in the STOCK NUMBER column of the NSN index work package. The NSN is arranged in NIIN sequence. Note the figure and item number next to the NSN.

Second. Turn to the figure and locate the item number. Verify that the item is the one you are looking for.

3. When Part Number Is Known.

First. If you have the part number and not the NSN, look in the PART NUMBER column of the part number index work package. Identify the figure and item number.

Second. Look up the item on the figure in the applicable repair parts list work package.

END OF WORK PACKAGE

FIELD MAINTENANCE

GRENADE LAUNCHER, 40 MM, M320, WITH EQUIPMENT 13019490; GRENADE LAUNCHER, 40 MM, M320A1, WITH EQUIPMENT 13019500

REPAIR PARTS LIST

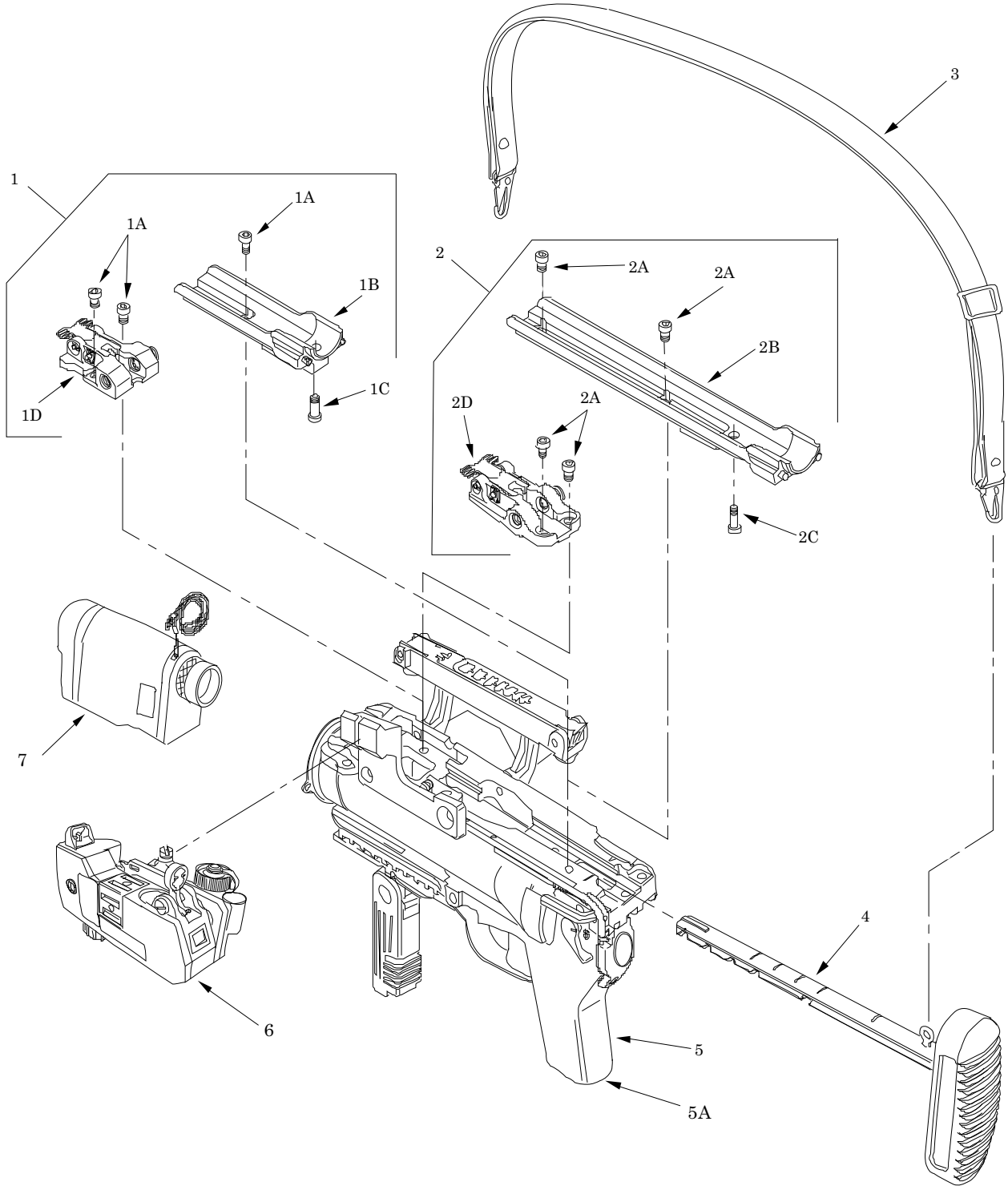


Figure 1. M320 40 mm Grenade Launcher with Equipment 13019490 and M320A1 40 mm Grenade Launcher with Equipment 13019500.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 00	
					FIG. 1 GRENADE LAUNCHER, 40 MM, M320, WITH EQUIPMENT 13019490; GRENADE LAUNCHER, 40 MM, M320A1, WITH EQUIPMENT 13019500	
1	PAFFF	1005-01-563-0155	19200	13019498	MOUNTING ADAPTER ASSEMBLY,M4 ..... UOC:BU5	1
1A	PAFZZ	5305-01-563-0160	3HN73	979420	.SCREW,SOCKET HEAD UOC:BU5	3
1B	PAFZZ	1005-01-563-0158	3HN73	234246	.MOUNTING BRACKET,REAR,M4 .... UOC:BU5	1
1C	PAFZZ	5305-01-562-8093	3HN73	928821	.SCREW,SOCKET HEAD UOC:BU5	1
1D	PAFFF	1005-01-562-9461	3HN73	233455	.MOUNTING ADAPTER,FRONT,M4 (FOR ASSY BREAKDOWN SEE FIG. 10) UOC:BU5	1
2	PAFFF	1005-01-562-6591	19200	13019497	MOUNTING ADAPTER ASSEMBLY,M16 ..... UOC:BV6	1
2A	PAFZZ	5305-01-563-0160	3HN73	979420	.SCREW,SOCKET HEAD UOC:BV6	4
2B	PAFZZ	1005-01-562-6592	3HN73	234245	.MOUNTING BRACKET, REAR,M16..... UOC:BV6	1
2C	PAFZZ	5305-01-562-8093	3HN73	928821	.SCREW,SOCKET HEAD UOC:BV6	1
2D	PAFFF	5340-01-562-6593	3HN73	233446	.MOUNTING ADAPTER, FRONT,M16 (FOR ASSY BREAKDOWN SEE FIG. 9) UOC:BV6	1
3	PACZZ	1010-01-563-1636	19200	13019495	SLING (BLACK)	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
4	PAFFF	1010-01-563-1628	19200	13019496	BUTTSTOCK ASSEMBLY (FOR ASSY BREAKDOWN SEE FIG. 11)	1
5	XAFFA		19200	13019499	GRENADE LAUNCHER,40 MM, M320 (FOR ASSY BREAKDOWN SEE FIG. 2).....	1
5A	XAFFA		19200	13019489	GRENADE LAUNCHER, 40MM, M320A1 (FOR ASSY BREAKDOWN SEE FIG. 2).....	1
6	PAFFF	1010-01-564-0735	19200	13019494	DAY/NIGHT SIGHT ASSEMBLY (FOR ASSY BREAKDOWN SEE FIG. 8).....	1
7	PAFFF	1240-01-562-9459	19200	13019493	LASER RANGE FINDER (FOR ASSY BREAKDOWN SEE FIG. 12)	1
					END OF FIGURE	

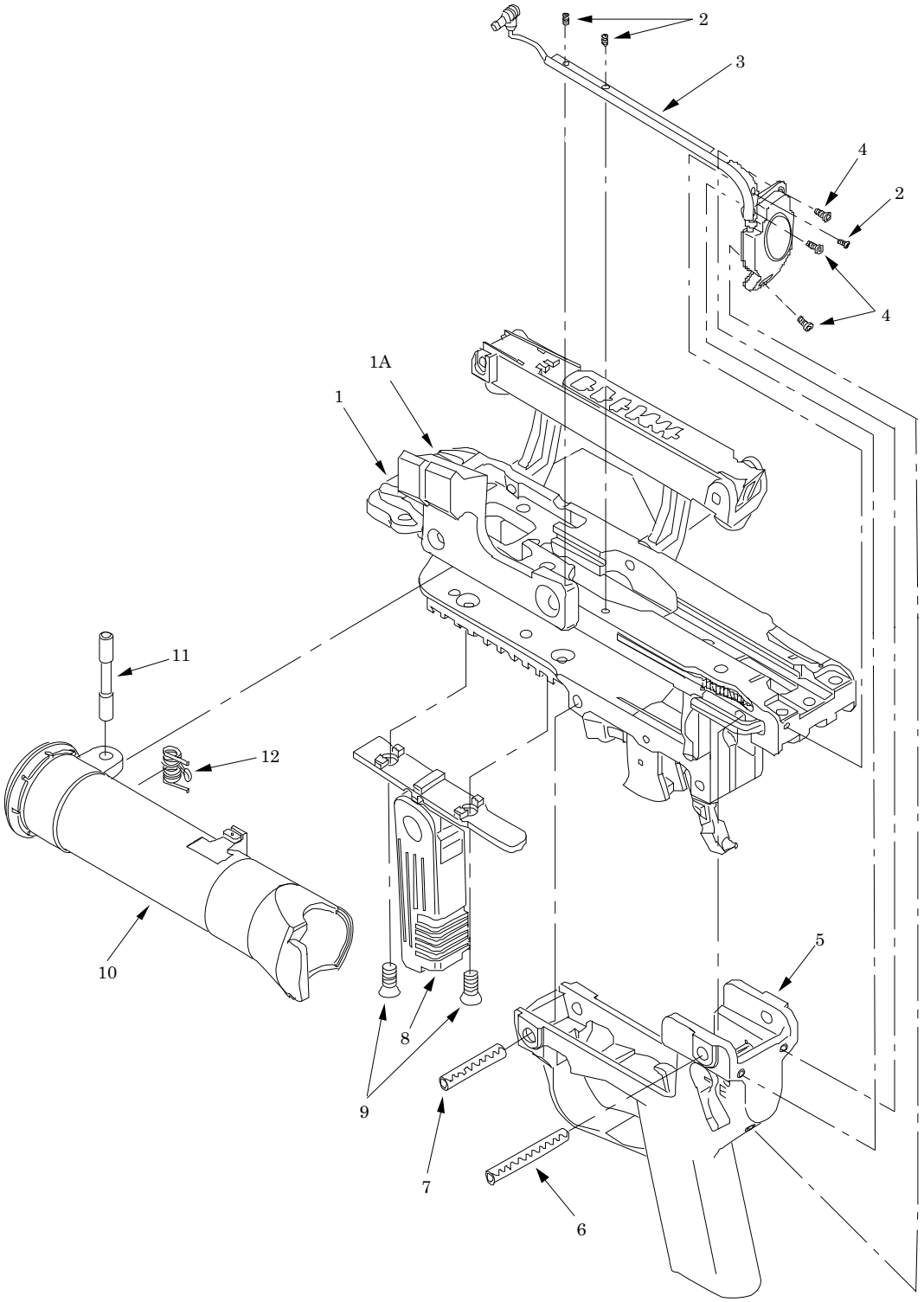


Figure 2. M320 40 mm Grenade Launcher 13019499 and M320A1 40mm Grenade Launcher 13019480.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 01	
					FIG. 2 GRENADE LAUNCHER, 40 MM, M320, 13019499 40 MM, M320A1, 13019480	
1	XAFFD		3HN73	233229	RECEIVER ASSEMBLY, M320 (FOR ASSY BREAKDOWN SEE FIG. 3).....	1
1A	XAFFD		3HN73	13019480	RECEIVER ASSEMBLY, M320A1 (FOR ASSY BREAKDOWN SEE FIG. 3).....	1
2	PAFZZ	5305-01-564-1839	0B107	MHW306-004AB	SCREW,SOCKET HEAD (REMOTE) ..	3
3	PAFZZ	1090-01-563-5473	0B107	EGL-514-A1	REMOTE SWITCH ASSEMBLY.....	1
4	PAFZZ	5305-01-564-1838	0B107	MHW306-003AB	SCREW,SOCKET HEAD (REMOTE) ..	3
5	PAFFF	1010-01-558-6668	3HN73	227781	PISTOL GRIP ASSEMBLY (FOR ASSY BREAKDOWN SEE FIG. 4).....	1
6	PAFZZ	5365-12-375-4880	3HN73	988669	PIN,RETAINING REAR	1
7	PAFZZ	5315-12-353-8679	D2330	987690	PIN,RETAINING FRONT	1
8	PAFFF	1010-12-375-3547	3HN73	234627	VERTICAL GRIP ASSEMBLY (FOR ASSY BREAKDOWN SEE FIG. 5).....	1
9	PAFZZ	5305-01-564-1841	3HN73	978478	SCREW,SOCKET HEAD, VERTICAL GRIP.....	2
10	PAFFF	1010-01-559-6664	3HN73	233228	BARREL ASSEMBLY (FOR ASSY BREAKDOWN SEE FIG. 6).....	1
11	PAFZZ	5315-12-353-8422	D2330	217862	PIN,SHOULDERED.....	1
12	PAFZZ	5360-12-353-9771	D2330	217863	SPRING,HELICAL TORSION	1
					END OF FIGURE	

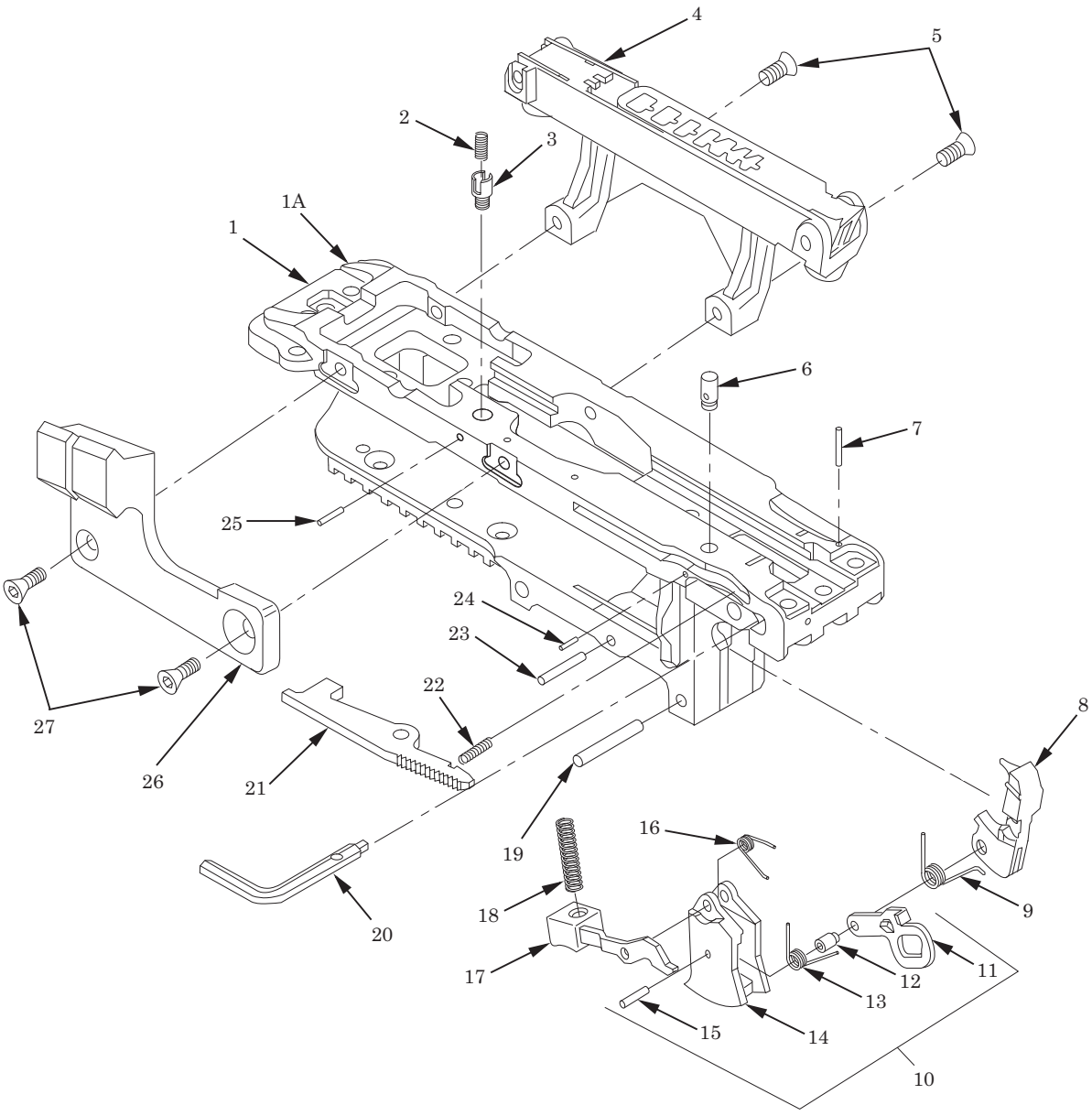


Figure 3. Receiver Assembly 233229/13019480 and Trigger Assembly 217875.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 02, 0201	
					FIG. 3 RECEIVER ASSEMBLY 233229/13019480 AND TRIGGER ASSEMBLY 217875	
1	XAFZA		3HN73	233232	RECEIVER,M320	1
1A	XAFZA		19200	13019479	RECEIVER,M320A1	1
2	PAFZZ	5360-12-353-9578	D2330	218509	SPRING,HELICAL COMPRESSION	1
3	PAFZZ	1010-12-353-8667	D2330	218508	PIN,BARREL STOP	1
4	PAFFF	1005-01-564-2663	19200	13019492	LEAF SIGHT ASSEMBLY (FOR ASSY BREAKDOWN SEE FIG. 7)	1
5	PAFZZ	5305-12-353-9037	3HN73	971994	SCREW,SOCKET HEAD	2
6	PAFZZ	5315-01-558-6665	3HN73	203069	PIN,GROOVED BUTTSTOCK	1
7	PAFZZ	5315-12-344-9644	3HN73	979969	PIN, SPRING	1
8	PAFZZ	1010-12-353-8668	D2330	219082	HAMMER	1
9	PAFZZ	5360-12-353-9768	D2330	217199	SPRING,TORSION,HAMMER	1
10	PAFFF	1010-12-353-8685	D2330	217875	TRIGGER ASSEMBLY	1
11	PAFZZ	1010-12-353-8665	D2330	217878	.BAR,TRIGGER	1
12	PAFZZ	3120-12-353-7858	D2330	217877	.BUSHING,TRIGGER	1
13	PAFZZ	5360-12-353-9765	D2330	217879	.SPRING,TORSION	1
14	XAFZZ		D2330	217876	.TRIGGER	1
15	PAFZZ	5315-12-360-3776	3HN73	928485	.PIN,TRIGGER SPRING	1
16	PAFZZ	5360-12-353-9766	D2330	217871	.SPRING,TORSION,TRIGGER	1
17	PAFZZ	1010-12-353-8666	D2330	217882	LEVER,RELEASE,BARREL	1
18	PAFZZ	5360-12-353-9767	3HN73	233236	SPRING,HELICAL COMPRESSION	1
19	PAFZZ	5315-12-353-8418	D2330	217873	PIN,STRAIGHT,HEADLESS, HAMMER	1
20	PACZZ	5120-12-354-1599	D2330	218510	WRENCH,HEXAGON	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
21	PAFZZ	5340-01-558-6669	3HN73	233230	LEVER,LOCKING,BUTTSTOCK	1
22	PAFZZ	5360-01-558-6666	3HN73	203067	SPRING,HELICAL COMPRESSION, BUTTSTOCK	1
23	PAFZZ	5315-12-353-8419	D2330	217874	PIN,STRAIGHT,HEADLESS, TRIGGER	1
24	PAFZZ	5315-12-143-0212	3HN73	929081	PIN,STRAIGHT,HEADLESS	1
25	PAFZZ	5315-12-126-6719	D2330	928690	PIN,STRAIGHT,HEADLESS	1
26	PAFZZ	5340-01-563-6730	19200	13019491	DAY/NIGHT SIGHT MOUNT	1
27	PAFZZ	5305-01-563-1632	0B107	MHW305-082ABN	SCREW,SOCKET HEAD,NYLOK.....	2

END OF FIGURE

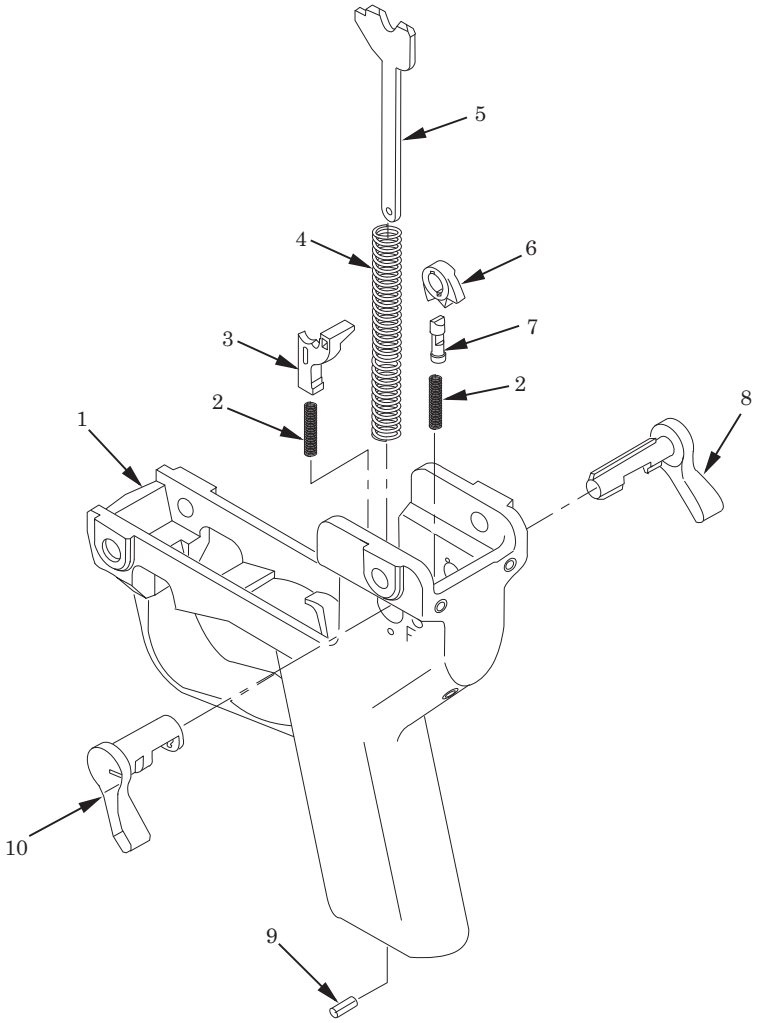


Figure 4. Pistol Grip Assembly 227781.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 03	
					FIG. 4 PISTOL GRIP ASSEMBLY 227781	
1	XAFZZ			NPN	PISTOL GRIP	1
2	PAFZZ	5360-12-353-9770	D2330	217895	SPRING,HELICAL COMPRESSION	2
3	PAFZZ	1010-12-353-8672	D2330	217897	CATCH,SELECTOR LEVER	1
4	PAFZZ	5360-12-353-9769	D2330	217887	SPRING,HELICAL COMPRESSION STRUT	1
5	PAFZZ	1010-12-353-8670	D2330	217886	STRUT,HAMMER	1
6	PAFZZ	1010-12-353-8673	D2330	217898	INDEX,SELECTOR LEVER	1
7	PAFZZ	1010-12-353-8671	D2330	217896	PIN,SELECTOR LEVER	1
8	PAFZZ	1055-12-353-9031	D2330	217899	LEVER,SELECTOR,RIGHT	1
9	PAFZZ	5315-99-891-0178	D2330	980717	PIN,SPRING	1
10	PAFZZ	1055-12-353-9032	D2330	217998	LEVER,SELECTOR,LEFT	1
					END OF FIGURE	

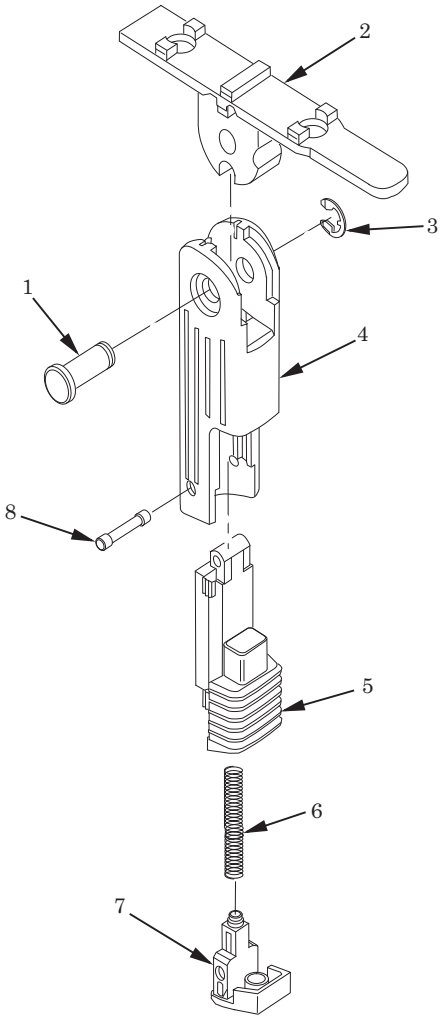


Figure 5. Vertical Grip Assembly 234627.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 04	
					FIG. 5 VERTICAL GRIP ASSEMBLY 234627	
1	PAFZZ	1005-12-367-1912	D2330	209466	INSERT,PIN,GROOVED	1
2	XAFZZ		3HN73	227745	BRACKET	1
3	PAFZZ	5305-01-564-1840	3HN73	926321	CLIP,RETAINING	1
4	PAFZZ	1010-12-367-1910	D2330	209501	GRIP	1
5	PAFZZ	1010-12-367-1911	3HN73	241772	SLIDE	1
6	PAFZZ	5360-12-367-2146	D2330	209503	SPRING,HELICAL COMPRESSION	1
7	PAFZZ	5320-01-565-2918	3HN73	209504	INSERT	1
8	PAFZZ	5315-12-367-2027	D2330	209505	GRIP CAP,RETAINING PIN	1
					END OF FIGURE	

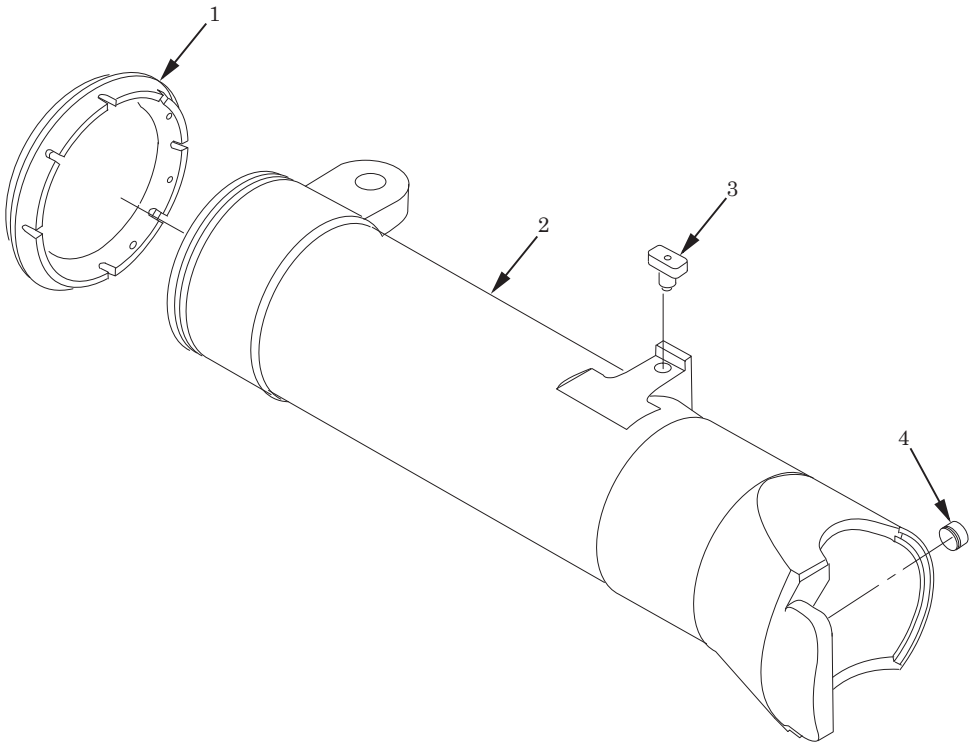


Figure 6. Barrel Assembly 233228.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 05	
					FIG. 6 BARREL ASSEMBLY 233228	
1	PAFZZ	5340-01-558-8740	3HN73	233234	PLUG,PROTECTIVE	1
2	XAFZZ		3HN73	233227	BARREL.....	1
3	PAFZZ	5340-12-354-0503	D2330	217678	STOP,RUBBER	1
4	PAFZZ	5315-01-558-6667	3HN73	233235	PIN,RUBBER.....	1
					END OF FIGURE	

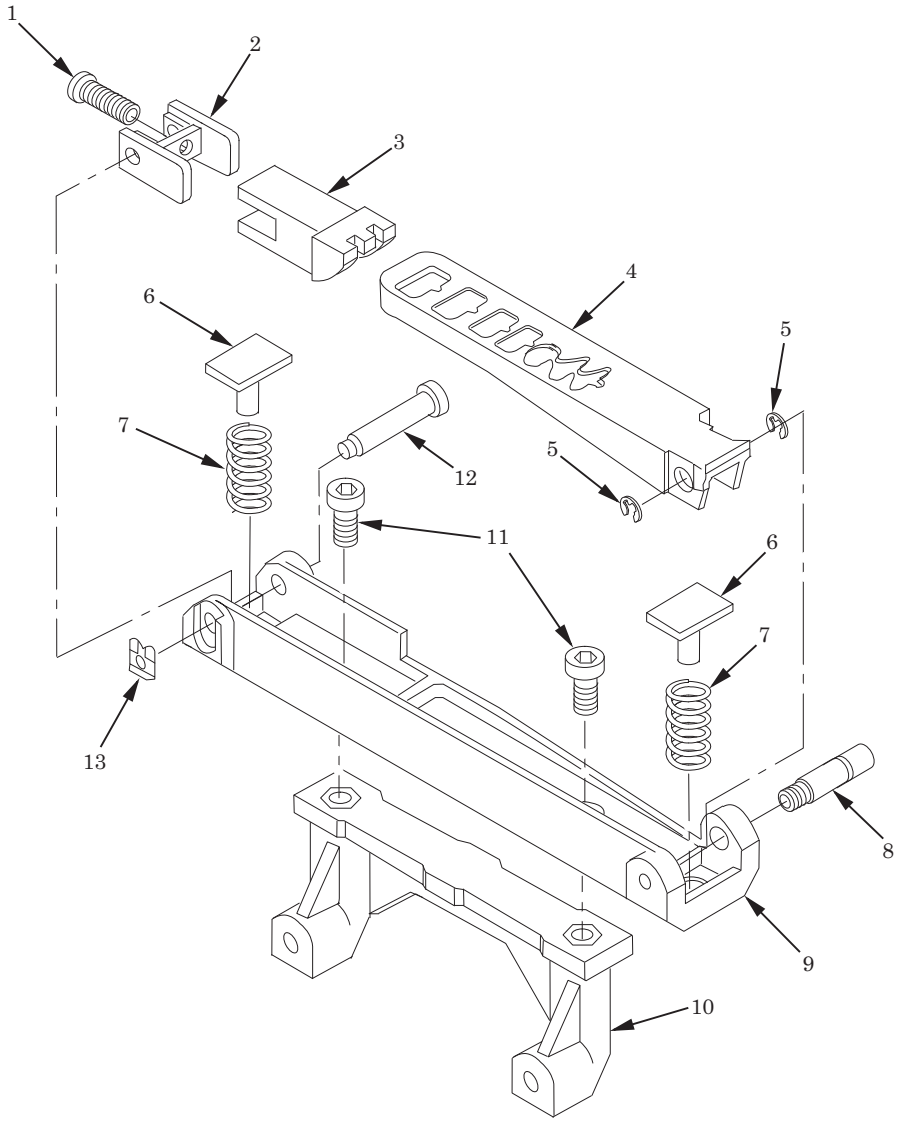


Figure 7. Leaf Sight Assembly 13019492.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 06	
					FIG. 7 LEAF SIGHT ASSEMBLY 13019492	
1	PAFZZ	5306-12-353-7859	D2330	219305	SCREW	1
2	PAFZZ	1010-12-353-8676	D2330	219303	BASE,SIGHT	1
3	PAFZZ	1010-12-353-9036	D2330	219304	SIGHT,WEAPON	1
4	PAFZZ	1010-12-353-9034	3HN73	227995	SIGHT,REAR	1
5	PAFZZ	5325-12-156-4667	D2330	926005	RING,RETAINING	2
6	PAFZZ	5315-12-353-8420	D2330	219301	PISTON,SPRING	2
7	PAFZZ	5360-12-353-8677	D2330	988633	SPRING,HELICAL COMPRESSION	2
8	PAFZZ	5305-12-353-9035	D2330	219302	SCREW	1
9	PAFZZ	1010-12-353-8675	D2330	219138	BASE,SIGHT	1
10	XAFZZ		D2330	218437	SUPPORT,SIGHT	1
11	PAFZZ	5305-12-356-5350	D8286	DIN7984-M5X10-8.8-A2D	SCREW	2
12	PAFZZ	5315-12-353-8521	D2330	219306	PIN,SIGHT	1
13	PAFZZ	5340-12-145-4978	D2330	986551	CLIP,RETAINING	1
					END OF FIGURE	

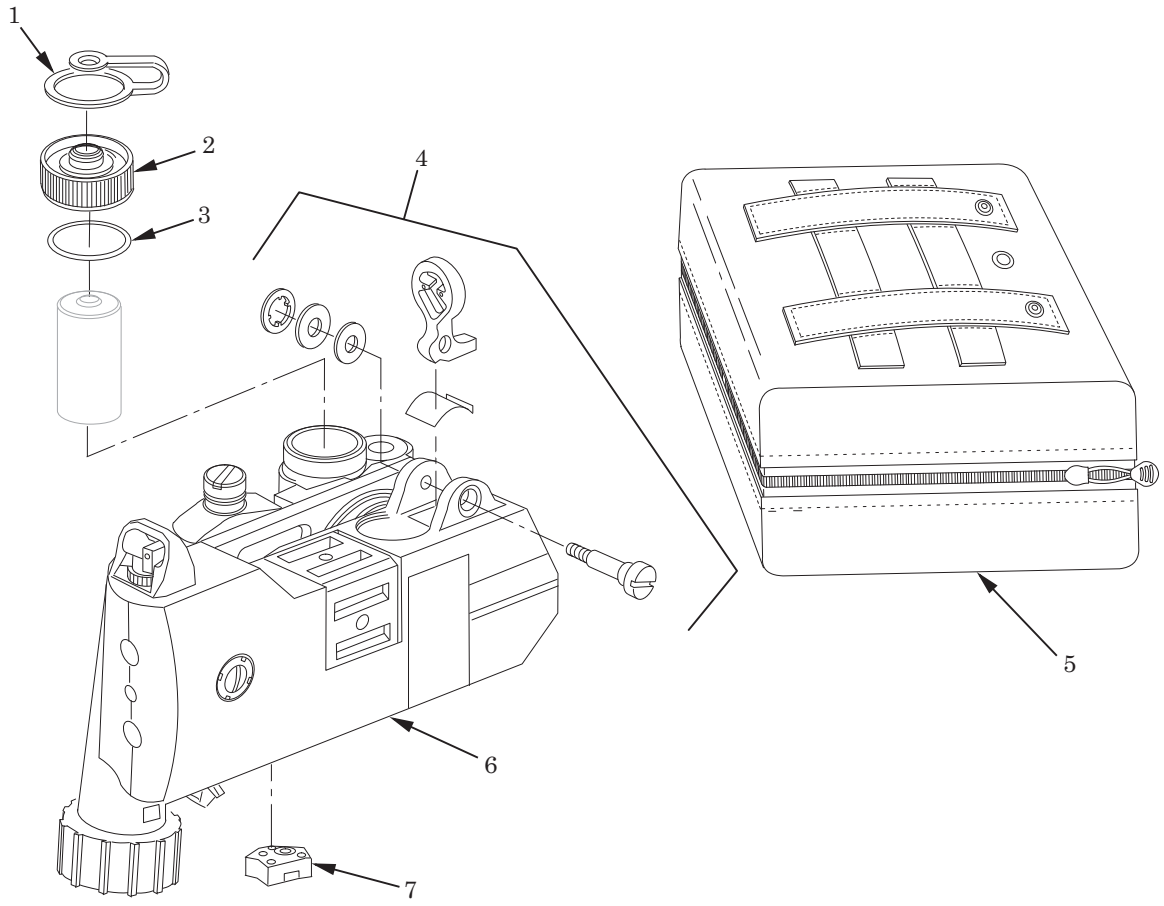


Figure 8. Day/Night Sight Assembly 13019494.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 07	
					FIG. 8 DAY/NIGHT SIGHT ASSEMBLY 13019494	
1	PAFZZ	1240-01-536-9661	0B107	MFL-173	STRAP,RETAINING	1
2	PAFZZ	6160-01-563-2601	0B107	XM8-249	CAP,BATTERY	1
3	PAFZZ	5331-01-537-0498	0B107	AS-568A-018S70	O-RING	1
4	PAFZZ	6680-01-564-2662	0B107	EGL-320-A1	REAR SIGHT KIT	1
					CONSISTING OF:	
					RING,RETAINING (PART OF REAR SIGHT KIT EGL-320-A1)	1
					WASHER,FLAT (PART OF REAR SIGHT KIT EGL-320-A1)	1
					WASHER,NYLON (PART OF REAR SIGHT KIT EGL-320-A1)	1
					SIGHT,REAR (PART OF REAR SIGHT KIT EGL-320-A1)	1
					SPRING,REAR SIGHT (PART OF REAR SIGHT KIT EGL-320-A1)	1
					SCREW,REAR SIGHT (PART OF REAR SIGHT KIT EGL-320-A1)	1
5	PAFZZ	8465-01-565-2725	0B107	EGL-442	CASE,CARRYING	1
6	XAFZZ			NPN	SIGHT UNIT	1
7	PAFZZ	5355-01-454-4026	0B107	ITP-022	BLOCK,SAFETY	1
					END OF FIGURE	

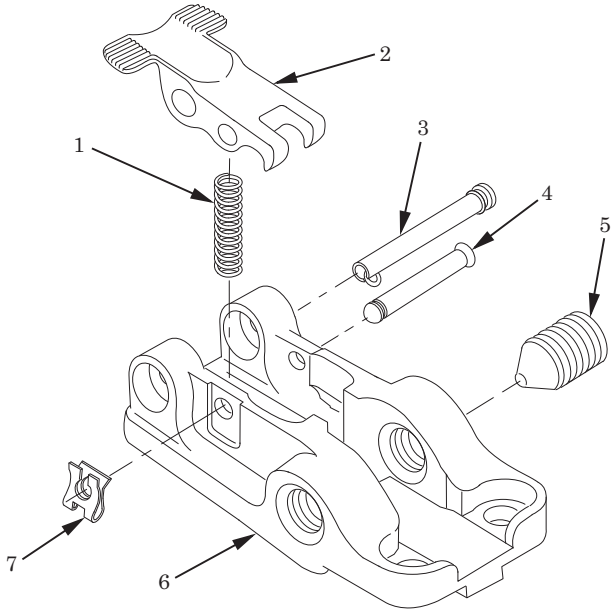


Figure 9. M16 Front Mounting Adapter 233446.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 08	
					FIG. 9 MOUNTING ADAPTER, FRONT, M16 233446	
1	PAFZZ	5360-01-562-8094	3HN73	227751	SPRING	1
2	PAFZZ	1005-01-563-1631	3HN73	227748	LATCH	1
3	PAFZZ	5315-01-562-8096	3HN73	241773	PIN,LOCKING	1
4	PAFZZ	5315-01-563-0154	3HN73	227749	PIN	1
5	PAFZZ	5305-01-563-0159	3HN73	218507	SCREW	1
6	XAFZZ		3HN73	233447	MOUNTING BRACKET,FRONT	1
7	PAFZZ	5340-01-562-8095	3HN73	986551	CLIP	1
					END OF FIGURE	

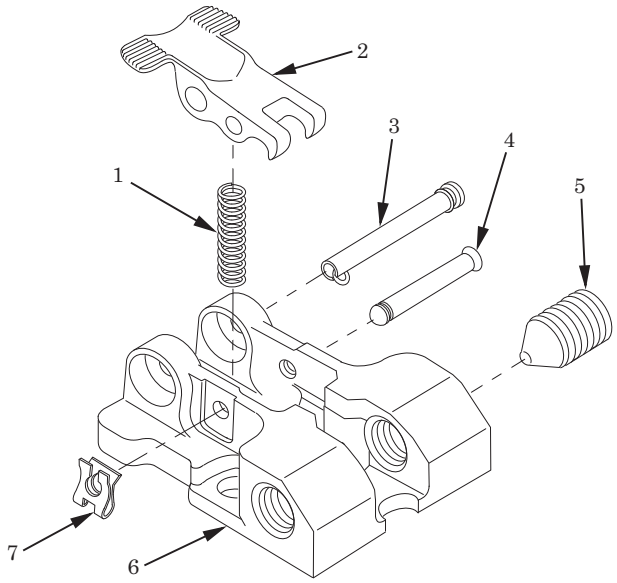


Figure 10. M4 Front Mounting Adapter 233455.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 09	
					FIG. 10 MOUNTING ADAPTER, FRONT, M4 233455	
1	PAFZZ	5360-01-562-8094	3HN73	227751	SPRING	1
2	PAFZZ	1005-01-563-1631	3HN73	227748	LATCH	1
3	PAFZZ	5315-01-562-8096	3HN73	241773	PIN,LOCKING	1
4	PAFZZ	5315-01-563-0154	3HN73	227749	PIN	1
5	PAFZZ	5305-01-563-0159	3HN73	218507	SCREW	1
6	XAFFF		3HN73	233456	MOUNTING BRACKET,FRONT	1
7	PAFZZ	5340-01-562-8095	3HN73	986551	CLIP	1
					END OF FIGURE	

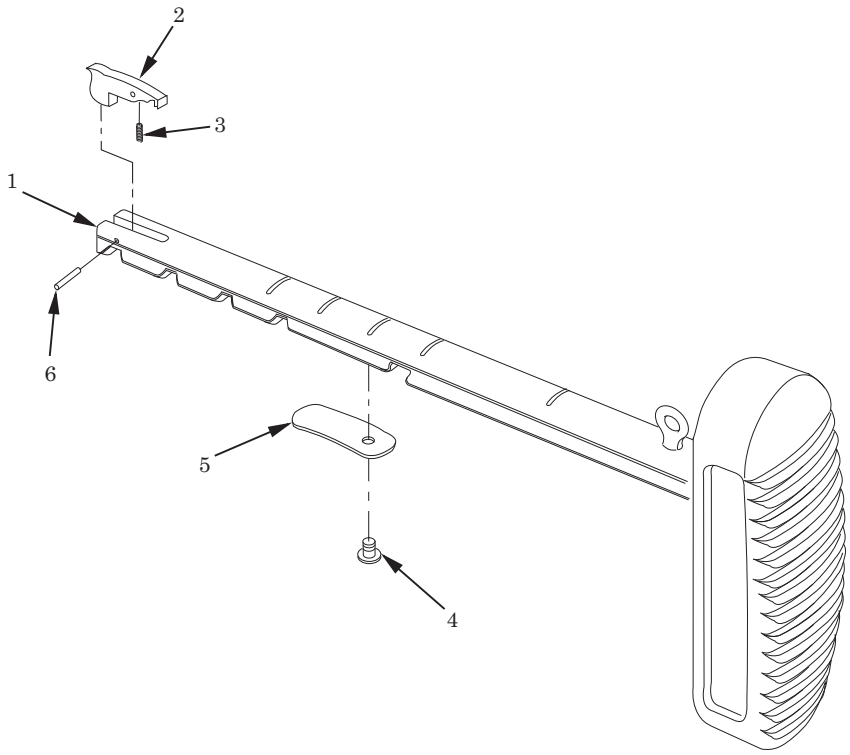


Figure 11. Buttstock Assembly 13019496.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 10	
					FIG. 11 BUTTSTOCK ASSEMBLY 13019496	
1	XAFZZ		3HN73	233500	BUTTSTOCK	1
2	PAFZZ	5340-01-563-2597	3HN73	203080	LATCH	1
3	PAFZZ	5360-01-563-2599	3HN73	234076	LATCH,SPRING	1
4	PAFZZ	5305-01-565-6688	3HN73	979431	SCREW	1
5	PAFZZ	5360-01-563-1626	3HN73	233499	SPRING,FLAT	1
6	PAFZZ	5315-01-563-2600	3HN73	929174	PIN,SPRING	1
					END OF FIGURE	

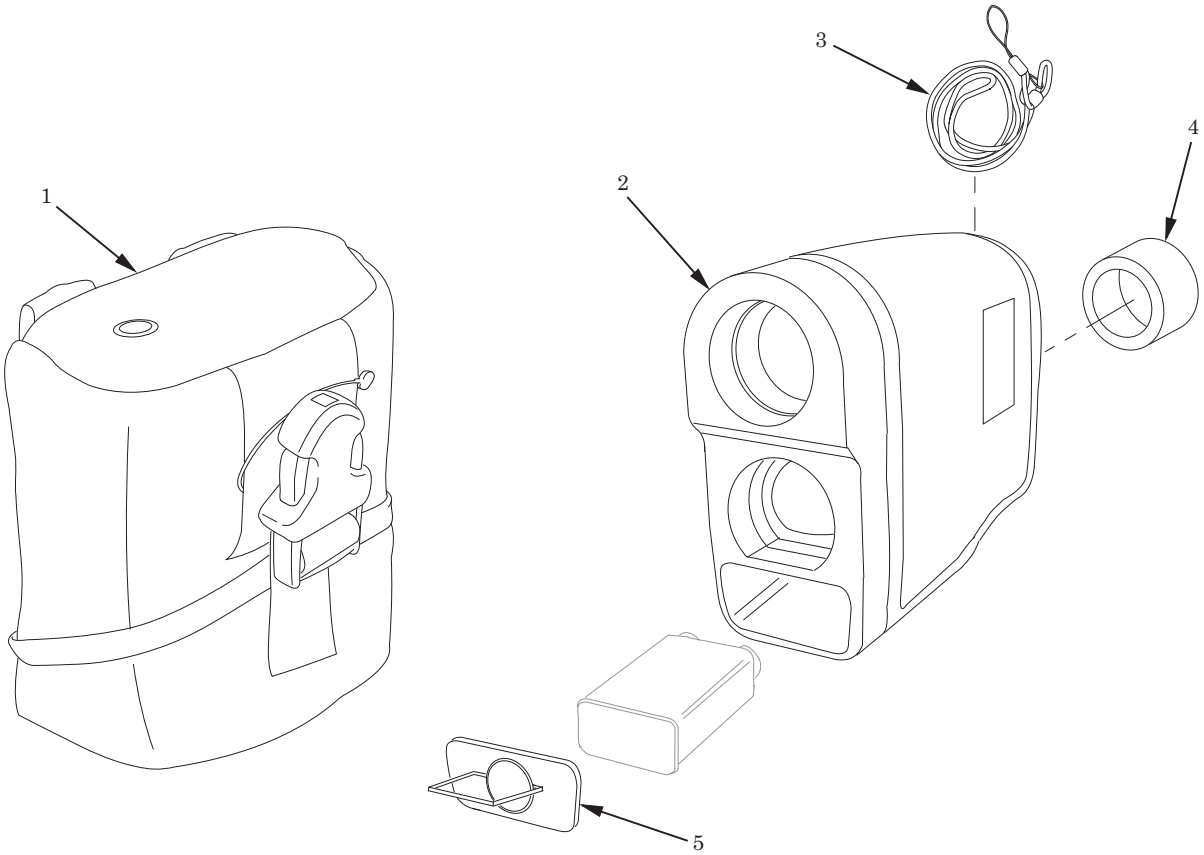


Figure 12. Laser Range Finder Assembly 13019493.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 11	
					FIG. 12 LASER RANGE FINDER ASSEMBLY 13019493	
1	PACZZ	8465-01-567-0900	13711	2544	CASE	1
2	XACKK			NPN	LASER RANGE FINDER UNIT	1
3	PACZZ	5340-01-563-2598	13711	LR02	STRAP, CARRYING	1
4	PACZZ	1240-01-562-8088	13711	LR04	EYECUP	1
5	PACZZ	6160-01-562-8089	13711	LR03	COVER, BATTERY COMPARTMENT	1
					END OF FIGURE	

END OF WORK PACKAGE

FIELD MAINTENANCE

SPECIAL TOOLS

REPAIR PARTS LIST

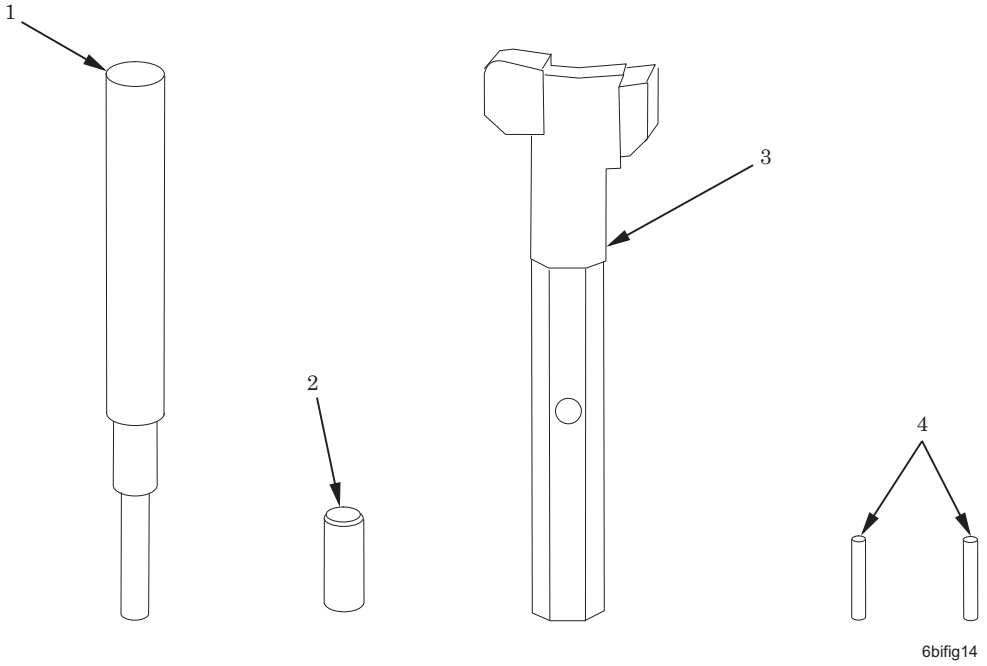


Figure 13. Special Tools.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 9500	
					FIG. 13 SPECIAL TOOLS	
1	PAFZZ	5315-01-565-5502	3HN73	352486	STEPPED PUNCH	1
2	PAFZZ	5315-01-565-4813	3HN73	978227	TRIGGER SLAVE PIN	1
3	PAFZZ	4933-12-375-8147	3HN73	352485	HAMMER STRUT TOOL	1
4	PAFZZ	5315-01-135-4802	19200	1348416	ASSEMBLING PIN	2
					END OF FIGURE	

END OF WORK PACKAGE

FIELD MAINTENANCE

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5315-01-135-4802	13	4	5360-01-563-2599	11	3
5355-01-454-4026	8	7	5315-01-563-2600	11	6
1240-01-536-9661	8	1	6160-01-563-2601	8	2
5331-01-537-0498	8	3	1090-01-563-5473	2	3
5315-01-558-6665	3	6	5340-01-563-6730	3	26
5360-01-558-6666	3	22	1010-01-564-0735	1	6
5315-01-558-6667	6	4	5305-01-564-1838	2	4
1010-01-558-6668	2	5	5305-01-564-1839	2	2
5340-01-558-6669	3	21	5305-01-564-1840	5	3
5340-01-558-8740	6	1	5305-01-564-1841	2	9
1010-01-559-6664	2	10	6680-01-564-2662	8	4
1005-01-562-6591	1	2	1005-01-564-2663	3	4
1005-01-562-6592	1	2B	8465-01-565-2725	8	5
5340-01-562-6593	1	2D	5320-01-565-2918	5	7
1240-01-562-8088	12	4	5315-01-565-4813	13	2
6160-01-562-8089	12	5	5315-01-565-5502	13	1
5305-01-562-8093	1	1C	5305-01-565-6688	11	4
	1	2C	8465-01-567-0900	12	1
5360-01-562-8094	9	1	5315-12-126-6719	3	25
	10	1	5315-12-143-0212	3	24
5340-01-562-8095	9	7	5340-12-145-4978	7	13
	10	7	5325-12-156-4667	7	5
5315-01-562-8096	9	3	5315-12-344-9644	3	7
	10	3	3120-12-353-7858	3	12
1240-01-562-9459	1	7	5306-12-353-7859	7	1
1005-01-562-9461	1	1D	5315-12-353-8418	3	19
5315-01-563-0154	9	4	5315-12-353-8419	3	23
	10	4	5315-12-353-8420	7	6
1005-01-563-0155	1	1	5315-12-353-8422	2	11
1005-01-563-0158	1	1B	5315-12-353-8521	7	12
5305-01-563-0159	9	5	1010-12-353-8665	3	11
	10	5	1010-12-353-8666	3	17
5305-01-563-0160	1	1A	1010-12-353-8667	3	3
	1	2A	1010-12-353-8668	3	8
5360-01-563-1626	11	5	1010-12-353-8670	4	5
1010-01-563-1628	1	4	1010-12-353-8671	4	7
1005-01-563-1631	9	2	1010-12-353-8672	4	3
	10	2	1010-12-353-8673	4	6
5305-01-563-1632	3	27	1010-12-353-8675	7	9
1010-01-563-1636	1	3	1010-12-353-8676	7	2
5340-01-563-2597	11	2	5360-12-353-8677	7	7
5340-01-563-2598	12	3	5315-12-353-8679	2	7

NATIONAL STOCK NUMBER INDEX - Continued

STOCK NUMBER	FIG.	ITEM
1010-12-353-8685	3	10
1055-12-353-9031	4	8
1055-12-353-9032	4	10
1010-12-353-9034	7	4
5305-12-353-9035	7	8
1010-12-353-9036	7	3
5305-12-353-9037	3	5
5360-12-353-9578	3	2
5360-12-353-9765	3	13
5360-12-353-9766	3	16
5360-12-353-9767	3	18
5360-12-353-9768	3	9
5360-12-353-9769	4	4
5360-12-353-9770	4	2
5360-12-353-9771	2	12
5340-12-354-0503	6	3
5120-12-354-1599	3	20
5305-12-356-5350	7	11
5315-12-360-3776	3	15
1010-12-367-1910	5	4
1010-12-367-1911	5	5
1005-12-367-1912	5	1
5315-12-367-2027	5	8
5360-12-367-2146	5	6
1010-12-375-3547	2	8
5365-12-375-4880	2	6
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5315-99-891-0178	4	9

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FIELD MAINTENANCE

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DIN7984-M5X10-8.8-A2D	7	11	217998	4	10
EGL-320-A1	8	4	218437	7	10
EGL-442	8	5	218507	9	5
EGL-514-A1	2	3		10	5
ITP-022	8	7	218508	3	3
LR02	12	3	218509	3	2
LR03	12	5	218510	3	20
LR04	12	4	219082	3	8
MFL-173	8	1	219138	7	9
MHW305-082ABN	3	27	219301	7	6
MHW306-003AB	2	4	219302	7	8
MHW306-004AB	2	2	219303	7	2
XM8-249	8	2	219304	7	3
2544	12	1	219305	7	1
203067	3	22	219306	7	12
203069	3	6	227745	5	2
203080	11	2	227748	9	2
209466	5	1		10	2
209501	5	4	227749	9	4
209503	5	6		10	4
209504	5	7	227751	9	1
209505	5	8		10	1
217199	3	9	227781	2	5
217678	6	3	227995	7	4
217862	2	11	233227	6	2
217863	2	12	233228	2	10
217871	3	16	233229	2	1
217873	3	19	233230	3	21
217874	3	23	233232	3	1
217875	3	10		3	1A
217876	3	14	233234	6	1
217877	3	12	233235	6	4
217878	3	11	233236	3	18
217879	3	13	233446	1	2D
217882	3	17	233447	9	6
217886	4	5	233455	1	1D
217887	4	4	233456	10	6
217895	4	2	233499	11	5
217896	4	7	233500	11	1
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241773	9	3		9	7
	10	3		10	7
352485	13	3	987690	2	7
352486	13	1	988633	7	7
926005	7	5	988669	2	6
926321	5	3	1348416	13	4
928485	3	15	13014479	3	1A
928690	3	25	13019480	2	1A
928821	1	1C	13019489	1	5A
	1	2C	13019491	3	26
929081	3	24	13019492	3	4
929174	11	6	13019493	1	7
971994	3	5	13019494	1	6
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979420	1	1A	13019497	1	2
	1	2A	13019498	1	1
979431	11	4	13019499	1	5

END OF WORK PACKAGE

CHAPTER 6

SUPPORTING INFORMATION
FOR
M320/M320A1 GRENADE LAUNCHER (GL)

FIELD MAINTENANCE

REFERENCES

SCOPE

This work package lists all field manuals, forms, miscellaneous publications, and technical manuals referenced in this manual.

FIELD MANUALS

FM 4-25.11	First Aid

FORMS

DA Form 285	Accident Report
DA Form 2028	Recommended Changes to Publications and Blank Forms
DA Form 2404	Equipment Inspection and Maintenance Worksheet
DA Form 2408-9	Equipment Control Record
DA Form 4379	Ammunition Malfunction Report Installations
DA Form 5988-E	Equipment Inspection and Maintenance Worksheet - Electronic
SF 364	Report of Discrepancy (ROD)
SF 368	Product Quality Deficiency Report

MISCELLANEOUS PUBLICATIONS

AR 75-1	Malfunctions Involving Ammunition and Explosives
AR 385-40	Accident Reporting and Records
AR 750-1	Army Materiel Maintenance Policy
CTA 8-100	Army Medical Department Expendable/Durable Items
CTA 50-909	Field and Garrison Furnishings and Equipment
CTA 50-970	Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)
DA PAM 750-8	The Army Maintenance Management System (TAMMS) Users Manual
SC 4933-95-A11	Shop Set, Small Arms: Field Maintenance, Basic, Less Power
SC 5180-95-B71	Small Arms Tool Kit

MISCELLANEOUS PUBLICATIONS - Continued

TB 9-1000-247-34	Standards for Overseas Shipment of Small Arms, Aircraft Armament, Towed Howitzers, Mortars, Recoilless Rifles, Rocket Launchers, and Associated Fire Control Equipment

TECHNICAL BULLETINS

TB MED 524	Occupational and Environmental Health: Control of Hazards to Health from Laser Radiation
TB 43-0134	Battery Disposition and Disposal

TECHNICAL MANUALS

TM 9-1010-232-10	Operator's Manual for Grenade Launcher, 40 mm, M320, W/E; Grenade Launcher, 40 mm, M320A1, W/E
TM 9-5860-226-13&P	Operator and Unit Maintenance Manual Including Repair Parts and Special Tools List for the AN/PEM-1 Laser Borelight System (LBS-300) (NSN 5860-01-471-2091) (EIC: N/A)
TM 11-5855-262-10-2	Night Vision Goggles AN/PVS-7B (NSN 5855-01-228-0937) (EIC: IPS) and AN/PVS-7D (5855-01-422-54 (EIC: N/A) {TO 12S10-2PVS7-11; TM 09500A-10/1A; NAVSEA SW215-AT
TM 11-5855-262-23&P	Night Vision Goggles AN/PVS-7B (NSN 5855-01-228-0937) (EIC: IPS) {TO 12S10-2PVS7-12; TM 09500A-23&P/2}
TM 750-244-7	Procedures for Destruction of Equipment in Federal Supply Classifications 1000, 1005, 1010, 1015, 1020, 1025, 1030, 1055, 1090, and 1095 to Prevent Enemy Use

END OF WORK PACKAGE

FIELD MAINTENANCE

MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION

INTRODUCTION

The Army Maintenance System MAC

This introduction provides a general explanation of all maintenance and repair functions authorized at the two maintenance levels under the Two-Level Maintenance System concept.

The MAC (immediately following the introduction) designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component shall be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:

Field - Includes three subcolumns, Crew maintenance (C), Service maintenance (O), and Field maintenance (F).

Sustainment - Includes two subcolumns, Below Depot (H) and Depot (D).

The tools and test equipment requirements (immediately following the MAC) list the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.

The remarks (immediately following the tools and test equipment requirements) contain supplemental instructions and explanatory notes for a particular maintenance function.

Maintenance Functions

Maintenance functions are limited to and defined as follows:

1. **Inspect.** To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel). This includes scheduled inspection and gagings and evaluation of cannon tubes.

2. **Test.** To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.

3. **Service.** Operations required periodically to keep an item in proper operating condition; e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases. This includes scheduled exercising and purging of recoil mechanisms. The following are examples of service functions:

    a. **Unpack.** To remove from packing box for service or when required for the performance of maintenance operations.

    b. **Repack.** To return item to packing box after service and other maintenance operations.

Maintenance Functions - Continued

c. **Clean.** To rid the item of contamination.

d. **Touch up.** To spot paint scratched or blistered surfaces.

e. **Mark.** To restore obliterated identification.

4. **Adjust.** To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.

5. **Align.** To adjust specified variable elements of an item to bring about optimum or desired performance.

6. **Calibrate.** To determine and cause corrections to be made or to be adjusted on instruments of test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

7. **Remove/Install.** To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

8. **Replace.** To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and assigned maintenance level is shown as the third position code of the Source, Maintenance and Recoverability (SMR) code.

9. **Repair.** The application of maintenance services, including fault location/troubleshooting, removal/installation, disassembly/assembly procedures, and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

NOTE

The following definitions are applicable to the "repair" maintenance function:

Services. Inspect, test, service, adjust, align, calibrate, and/or replace.

Fault location/troubleshooting. The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or Unit Under Test (UUT).

Disassembly/assembly. The step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).

Actions. Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

10. **Overhaul.** That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

11. **Rebuild.** Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles) considered in classifying Army equipment/components.

Explanation of Columns in the MAC

Column (1) - Group Number. Column (1) lists Functional Group Code (FGC) numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA).

Column (2) - Component/Assembly. Column (2) contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

Column (3) - Maintenance Function. Column (3) lists the functions to be performed on the item listed in column (2). (For a detailed explanation of these functions refer to "Maintenance Functions" outlined above).

Column (4) - Maintenance Level. Column (4) specifies each level of maintenance authorized to perform each function listed in column (3), by indicating work time required (expressed as manhours in whole hours or decimals) in the appropriate subcolumn. This work time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work time figures are to be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels are as follows:

Field:
C - Operator or Crew maintenance
O - Service maintenance
F - Field maintenance

Sustainment:
L - Specialized Repair Activity (SRA)
H – Below depot maintenance
D - Depot maintenance

NOTE

The "L" maintenance level is not included in column (4) of the MAC. Functions to this level of maintenance are identified by a work time figure in the "H" column of column (4), and an associated reference code is used in the REMARKS column (6). This code is keyed to the remarks and the SRA complete repair application is explained there.

Explanation of Columns in the MAC - Continued

Column (5) - Tools and Equipment Reference Code. Column (5) specifies, by code, those common tool sets (not individual tools), common Test, Measurement and Diagnostic Equipment (TMDE), and special tools, special TMDE and special support equipment required to perform the designated function. Codes are keyed to the entries in the tools and test equipment table.

Column (6) - Remarks Code. When applicable, this column contains a letter code, in alphabetic order, which is keyed to the remarks table entries.

Explanation of Columns in the Tools and Test Equipment Requirements

Column (1) - Tool or Test Equipment Reference Code. The tool or test equipment reference code correlates with a code used in column (5) of the MAC.

Column (2) - Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

Column (3) - Nomenclature. Name or identification of the tool or test equipment.

Column (4) - National Stock Number (NSN). The NSN of the tool or test equipment.

Column (5) - Tool Number. The manufacturer's part number.

Explanation of Columns in the Remarks

Column (1) - Remarks Code. The code recorded in column (6) of the MAC.

Column (2) - Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC.

END OF WORK PACKAGE

FIELD MAINTENANCE

MAINTENANCE ALLOCATION CHART (MAC)

MAINTENANCE ALLOCATION CHART (MAC)

Table 1. MAC for M320/M320A1 Grenade Launcher (GL).

(1)	(2)	(3)	(4) MAINTENANCE LEVEL					(5)	(6)
			FIELD			SUSTAINMENT		TOOLS	
GROUP NUMBER	COMPONENT/ ASSEMBLY	MAINTENANCE FUNCTION	CREW C	SERVICE O	FIELD F	BELOW DEPOT H	DEPOT D	AND EQUIPMENT REF CODE	REMARKS CODE
00	Grenade Launcher, 40 mm, M320, with Equipment 13019490; Grenade Launcher, 40 mm, M320A1, with Equipment 13019500	Inspect Service Remove/Install Repair Test	0.2 0.2 0.3 0.1		0.3 0.5 0.3			 1,2 1,2	
01	Grenade Launcher, 40 mm, M320, 13019499 M320A1, 13019489	Inspect Service Repair	0.1 0.1		0.2 0.5			 1,2	
02	Receiver Assembly 233229, 13019480	Inspect Service Repair	0.1 0.1		0.1 0.3			 1,2	
0201	Trigger Assembly 217875	Inspect Service Repair	0.1		0.1 0.1 0.2			 1,2	
03	Pistol Grip Assembly 227781	Inspect Replace Repair	0.1		0.1 0.1 0.3			 1,2	
04	Vertical Grip Assembly 234627	Inspect Repair	0.1		0.1 0.2			 1,2	
05	Barrel Assembly 233228	Inspect Service Replace Repair	0.1		0.1 0.1 0.1 0.1			 1,2	
06	Leaf Sight Assembly 13019492	Inspect Remove/Install Repair	0.1 0.1		0.1 0.3			 1,2 1,2	

MAINTENANCE ALLOCATION CHART (MAC) - Continued

Table 1. MAC for M320/M320A1 Grenade Launcher (GL) - Continued.

(1)	(2)	(3)	(4) MAINTENANCE LEVEL					(5)	(6)
					FIELD	SUSTAINMENT			
GROUP NUMBER	COMPONENT/ ASSEMBLY	MAINTENANCE FUNCTION	CREW C	SERVICE O	FIELD F	BELOW DEPOT H	DEPOT D	TOOLS AND EQUIPMENT REF CODE	REMARKS CODE
07	Day/Night Sight Assembly 13019494	Inspect	0.1		0.1				
		Remove/Install	0.1					1,2	
		Replace			0.1			1,2	
		Repair			0.2			1,2	
		Service	0.1						
08	M16 Front Mounting Adapter 233446	Inspect	0.1		0.1				
		Remove/Install	0.1						
		Replace			0.1			1,2	
		Repair			0.2			1,2	
09	M4 Front Mounting Adapter 233455	Inspect	0.1		0.1				
		Remove/Install	0.1						
		Replace			0.1			1,2	
		Repair			0.1			1,2	
10	Buttstock Assembly 13019496	Inspect	0.1		0.1				
		Service	0.1						
		Remove/Install	0.1						
		Repair			0.2			1,2	
11	Laser Range Finder Assembly 13019493	Inspect	0.1						
		Replace			0.1			1,2	
		Repair	0.1					1,2	
		Service	0.1						

Table 2. Tools and Test Equipment for M320/M320A1 Grenade Launcher (GL).

(1) TOOL OR TEST EQUIPMENT REF CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL STOCK NUMBER	(5) TOOL NUMBER
1	F	Shop Set, Small Arms: Field Maintenance, Basic, Less Power	4933-00-754-0664	SC 4933-95-A11
2	F	Tool Kit, Small Arms	5180-01-462-4254	SC 5180-95-B71

Table 3. Remarks for M320/M320A1 Grenade Launcher (GL).

REMARKS CODE	REMARKS
	Not Applicable.

END OF WORK PACKAGE

FIELD MAINTENANCE

EXPENDABLE AND DURABLE ITEMS LIST

INTRODUCTION

Scope

This work package lists expendable and durable items that you will need to operate and maintain the M320/M320A1 Grenade Launcher (GL). This list is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items); CTA 50-909, Field and Garrison Furnishings and Equipment; or CTA 8-100, Army Medical Department Expendable/Durable Items.

Explanation of Columns in the Expendable/Durable Items List

Column (1) Item No. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., Use cleaning solvent (WP 0032, item 13)).

Column (2) Level. This column identifies the lowest level of maintenance that requires the listed item (C = Operator/Crew, O = Service, F = Field).

Column (3) National Stock Number (NSN). This is the NSN assigned to the item which you can use to requisition it.

Column (4) Item Name, Description, Part Number/(CAGEC). This column provides the other information you need to identify the item. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

Column (5) U/I. Unit of Issue (U/I) code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

EXPENDABLE AND DURABLE ITEMS LIST

Table 1. Expendable and Durable Items List.

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER/(CAGEC)	(5) U/I
1	C	6810-00-983-8551	ALCOHOL, ISOPROPYL 1 qt can TT-I-735 (81348)	QT
2	C		BATTERY, ALKALINE, 9-VOLT 2 pack	
		6135-01-447-0949	1604A (80204)	EA
			12 pack	
		5135-00-900-2139	7FXEE-92-239TY2 (80244)	EA
3	C	6135-01-351-1131	BATTERY, LITHIUM, 3-VOLT DL123A (80204)	EA

EXPENDABLE AND DURABLE ITEMS LIST - Continued

Table 1. Expendable and Durable Items List - Continued.

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER/(CAGEC)	(5) U/I
4	C	8125-00-824-9058	BOTTLE: for isopropyl alcohol 1 oz A-A-685 (58536)	EA
5	C	1005-00-494-6602	BRUSH, CLEANING, SMALL ARMS: tooth 8448462 (19204)	EA
6			CLEANER, LUBRICANT, AND PRESERVATIVE (CLP)	
	F	9150-01-079-6124	4 oz (118.30 ml) bottle	EA
	F	9150-01-054-6453	1 pt (0.47 l) bottle	EA
	F	9150-01-053-6688	1 gal. (3.79 l) can MIL-L-63460 (27412)	EA
7	F	7850-00-177-5094	COMPOUND, SILICONE DC4-2OZ (71984)	TB
8	F		LUBRICANT, SOLID FILM	
		9150-00-260-2534	16 oz. (0.45 kg) aerosol can MIL-L-23398 (81349)	OZ
		9150-01-360-1908	1 qt (0.95 l) can (brush applied)	CN
		9150-00-142-9361	1 gal. (3.79 l) can (brush applied) MIL-PRF-46147 TYPE 1 (81349)	CN
9	C	9150-00-292-9689	LUBRICATING OIL, WEAPONS (LAW) 1 qt (0.95 l) can MIL-L-14107 (81349)	QT
10			LUBRICATING OIL, WEAPONS (LSA): semifluid	
	C	9150-00-935-6597	2 oz (59.15 ml) plastic bottle	OZ
	C	9150-00-889-3522	4 oz (118.30 ml) plastic bottle	OZ
	F	9150-00-687-4241	1 qt (0.95 l) can	CN
	F	9150-00-753-4686	1 gal. (3.79 l) can MIL-L-46000 (81349)	CN
11	C		PAPER, LENS Book of 50 sheets	
		6640-00-663-0832	65-4900 (25518) 100 sheet package	BK
		6640-00-240-5851	NNNP40 (81348)	PK
12	C	7920-00-205-1711	RAG, WIPING A-A-531 (58536)	LB

Table 1. Expendable and Durable Items List - Continued.

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER/(CAGEC)	(5) U/I
13	F	6850-01-474-2319	SOLVENT, CLEANING 1 gal. can MIL-PRF-680, Type 2 (81349)	GL

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RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS

For use of this form, see AR 25-30; the proponent agency is ODISC4.

Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).

DATE

Date you filled out this form

TO: *(Forward to proponent of publication or form) (Include ZIP Code)*
AMSTA-LC-LMPP / TECH PUBS, TACOM-RI
1 Rock Island Arsenal
Rock Island, IL 61299-7630

FROM: *(Activity and location) (Include ZIP Code)*

Your mailing address

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-1010-232-23&P	28 November 2008	Field Maint. Manual for Grenade Launcher, 40 mm, M320, W/E (NSN 1010-01-566-9083); M320A1, W/E (NSN 1010-01-557-2542)

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*
1	0025-3			1		The part number for M4 mounting adapter assembly, P/N 13019498, is incorrect.

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
Your Name		Your Signature

TO: (*Forward direct to addressee listed in publication*)	**FROM:** (*Activity and location) (Include ZIP Code)*	**DATE**
AMSTA-LC-LMPP / TECH PUBS, TACOM-RI 1 Rock Island Arsenal Rock Island, IL 61299-7630	Your address	Date you filled out this form

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE
TM 9-1010-232-23&P	28 November 2008	Field Maint. Manual for Grenade Launcher, 40 mm, M320, W/E (NSN 1010-01-566-9083); M320A1, W/E (NSN 1010-01-557-2542)

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
Your Name		Your Signature

USAPPC V3.00

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1 Rock Island Arsenal
Rock Island, IL 61299-7630

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PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-1010-232-23&P	28 November 2008	Field Maint. Manual for Grenade Launcher, 40 mm, M320, W/E (NSN 1010-01-566-9083); M320A1, W/E; (NSN 1010-01-557-2542)

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO: (*Forward direct to addressee listed in publication)* AMSTA-LC-LMPP / TECH PUBS, TACOM-RI 1 Rock Island Arsenal Rock Island, IL 61299-7630	**FROM:** (*Activity and location) (Include ZIP Code)*	**DATE**

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE
TM 9-1010-232-23&P	28 November 2008	Field Maint. Manual for Grenade Launcher, 40 mm, M320, W/E (NSN 1010-01-566-9083); M320A1, W/E (NSN 1010-01-557-2542)

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

USAPPC V3.00

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS

For use of this form, see AR 25-30; the proponent agency is ODISC4.

Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).

DATE

TO: *(Forward to proponent of publication or form) (Include ZIP Code)*
AMSTA-LC-LMPP / TECH PUBS, TACOM-RI
1 Rock Island Arsenal
Rock Island, IL 61299-7630

FROM: *(Activity and location) (Include ZIP Code)*

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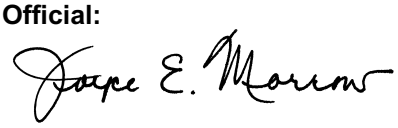
By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:



JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
0830502

DISTRIBUTION: To be distributed in accordance with the Initial Distribution Number (IDN) 401252 requirements for TM 9-1010-232-23&P.

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meter = 0.3937 Inch
1 Decimeter = 10 Centimeters = 3.94 Inches
1 Meter =10 Decimeters = 100 Centimeters
= 1000 Millimeters = 39.37 Inches
1 Dekameter = 10 Meters = 32.8 Feet
1 Hectometer =10 Dekameters = 328.08 Feet
1 Kilometer =10 Hectometers = 1000 Meters
= 0.621 Mile = 3,280.8 Feet
Millimeters = Inches times 25.4
Inches = Millimeters divided by 25.4

WEIGHTS

1 Centigram = 10 Milligrams = 0.154 Grain
1 Decigram = 10 Centigrams = 1.543 Grains
1 Gram = 0.001 Kilogram = 10 Decigrams
=1000 Milligrams = 0.035 Ounce
1 Dekagram = 10 Grams = 0.353 Ounce
1 Hectogram = 10 Dekagrams = 3.527 Ounces
1 Kilogram = 10 Hectograms = 1000 Grams
= 2.205 Pounds
1 Quintal = 100 Kilograms = 220.46 Pounds
1 Metric Ton = 10 Quintals = 1000 Kilograms
= 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liter = 0.034 Fluid Ounce
1 Centiliter = 10 Milliliters = 0.34 Fluid Ounce
1 Deciliter = 10 Centiliters = 3.38 Fluid Ounces
1 Liter = 10 Deciliters = 1000 Milliliters
= 33.82 Fluid Ounces
1 Dekaliter = 10 Liters = 2.64 Gallons
1 Hectoliter = 10 Dekaliters = 26.42 Gallons
1 Kiloliter = 10 Hectoliters = 264.18 Gallons

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inch
1 Sq Decimeter = 100 Sq Centimeters = 15.5 Sq Inches
1 Sq Meter (Centare) = 10 Sq Decimeters
= 10,000 Sq Centimeters = 10.764 Sq Feet
1 Sq Dekameter (Are) = 100 Sq Meters = 1,076.4 Sq Feet
1 Sq Hectometer (Hectare) = 100 Sq Dekameters
= 2.471 Acres
1 Sq Kilometer = 100 Sq Hectometers
= 1,000,000 Sq Meters = 0.386 Sq Mile

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.061 Cu Inch
1 Cu Decimeter = 1000 Cu Centimeters = 61.02 Cu Inches
1 Cu Meter = 1000 Cu Decimeters
= 1,000,000 Cu Centimeters= 35.31 Cu Feet

TEMPERATURE

5/9 (°F - 32°) = °C
(9/5 x °C) + 32° = °F
-35° Fahrenheit is equivalent to -37° Celsius
0° Fahrenheit is equivalent to -18° Celsius
32° Fahrenheit is equivalent to 0° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
100° Fahrenheit is equivalent to 38° Celsius
212° Fahrenheit is equivalent to 100° Celsius

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds-Inches	Newton-Meters	0.11375
Pounds per Square Inch	Kilopascals	6.895
Ounce-Inches	Newton-Meters	0.007062
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621
°Fahrenheit	°Celsius	°C = (°F-32)x5/9
°Celsius	°Fahrenheit	°F = (9/5x°C)+32

PIN: 085182-000