

**ARMY \*TM 9-1010-230-23&P  
AIR FORCE TO 11W2-5-16-2  
MARINE CORPS TM 08521B/09761A-OI  
NAVY SW 363-C3-MMM-020**

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**TECHNICAL MANUAL  
FIELD MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
FOR**

**MACHINE GUN, 40 MM, MK19 MOD 3,  
NSN 1010-01-126-9063 (EIC 4AE)**

**MACHINE GUN, 40 MM, MK19 MOD 3,  
WITH SIGHT BRACKET  
NSN 1010-01-490-9697**

**MACHINE GUN, 40 MM, MK19,  
UPGUNNED WEAPONS STATION (UGWS)  
NSN 1010-01-362-6513**

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This Technical Manual (TM) is authenticated for Marine Corps use and is effective upon receipt.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS

OFFICIAL

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## WARNING SUMMARY

This warning summary contains general safety warnings 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

Army personnel refer to FM 4-25.11  
USAF personnel refer to AFMANN 44-163(1)  
USMC personnel refer to MCRP 3-02G  
Navy personnel refer to NTRP 4-02.1.1

### EXPLANATION OF SAFETY WARNING ICONS



**FALLING PARTS** - Arrow bouncing off human shoulder and head shows that falling parts present a danger to life or limb.



**FLYING PARTICLES** - Arrows bouncing off face shield show that particles flying through the air will harm face.



**FLYING PARTICLES** - Arrows bouncing off face show that particles flying through the air will harm face.



**HEAVY OBJECT** - Human figure stooping over heavy object shows physical injury potential from improper lifting technique.



**MOVING PARTS** - Hand with fingers caught between rollers shows that the moving parts of the equipment present a danger to life or limb.

## WARNING SUMMARY - Continued

### GENERAL SAFETY WARNINGS DESCRIPTION

#### WARNING



#### MOVING PARTS

- Do not allow the top cover to slam shut from raised position when loading. Hand injury or equipment damage may result.
- Be sure to put bolt in forward position before removing the backplate pin assembly. Failure to observe this warning will result in injury.
- In case of a runaway gun, never try to break the ammo belt with your hands. Injury could result. Lower one charging handle to prevent the gun from firing.
- To avoid injury, keep fingers clear of the cocking lever when firing pin fires.
- Ensure safety slide block is installed in the position shown. If safety slide block is improperly installed, the thumb safety will not function, endangering personnel.

#### WARNING



#### FLYING PARTICLES

- The shuttle spring and spring housing are held under pressure. Always use the feed slide tool to secure the spring before removing the screws. Failure to observe this warning will result in injury.
- Do not attempt to remove three self-locking shoulder screws from the feed slide housing. Springs will fly out causing injury.
- The firing pin is under heavy spring tension. Always shield the tip of the firing pin whenever it is exposed and cocked. This will prevent injury if the firing pin sear is accidentally depressed.
- Helical spring is under tension. Shield helical spring while pulling out pawl rod. This will prevent injury.

## WARNING SUMMARY - Continued

### GENERAL SAFETY WARNINGS DESCRIPTION - Continued

#### WARNING



#### FALLING PARTS

Ensure stow pin and depression stop are installed before attaching MK 64 mount to tripod. Refer to TM 9-1010-231-13&P.

#### WARNING



#### HEAVY OBJECT

The MK19 machine gun weighs 77.6 lb (35.2 kg). A two-man lift is required for the MK19 machine gun and each fully loaded M548 ammunition container.

#### WARNING



#### EYE PROTECTION

Appropriate eye protection is recommended when cleaning your weapon and/or its parts.

## WARNING SUMMARY - Continued

### EXPLANATION OF HAZARDOUS MATERIAL 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.



**EYE PROTECTION** - person with goggles shows that the material will injure the eyes.



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



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

## WARNING SUMMARY - Continued

### HAZARDOUS MATERIALS DESCRIPTION

#### WARNING



#### EXPLOSION

- Before performing any procedure, ensure weapon is clear of any ammunition. Performing maintenance on a loaded weapon can lead to unexpected firing. Failure to comply may result in injury to personnel or damage to equipment.
- Do not approach or handle a dud (a fired round which fails to explode on impact). The dud could explode at any time after firing, causing injury or death.
- Be prepared to catch dropped/ejected live round from weapon. Ejected live rounds may detonate if dropped. Failure to comply may result in injury to personnel or damage to equipment.
- Ensure all ammunition and non-essential personnel are at least 213 feet (65 meters) to the rear of the weapon.
- Any unusual occurrence during firing (e.g., short recoil, out-of-battery, excess smoke, flash, loud or muffled report, malfunction, or stoppage) warrants immediate inspection of the weapon. Clear weapon; check barrel for obstruction; and inspect feeder, bolt face, and receiver for damage and/or unusual debris.
- If the bolt jams during firing do not let the bolt slam forward as top cover is being opened; it could fire a round.
- Do not use a bayonet to remove an empty case or live round.
- During training, firing will not be conducted from enclosures.
- Do not fire High-Explosive (HE) ammunition at targets less than 1,017 feet (310 meters) away during training or 246 feet (75 meters) away during combat. Fragmentation can reach the gunner position at a distance less than 1,017 feet (310 meters).
- Empty the catch bag frequently during firing. If the bag becomes too full, spent cases can jam the weapon causing stoppage and out-of-battery firing. Should such a stoppage or out-of-battery occur, check for bore obstruction using the bore obstruction device. Failure to comply may result in serious injury or death to personnel and damage to equipment.
- Do not re-link or fire ammunition that has been cycled through the weapon.
- Keep ammunition dry, clean, and away from direct heat.
- Do not drop, strike, or destroy ammunition by mechanical means.
- Use only ammunition authorized for use with the MK19 machine gun: M383E4, M385A1, M918TP, M383HE, M384HE, and M430HEDP.
- When firing approved 40 mm ammunition, observe all WARNINGS in the front of this manual.

## WARNING SUMMARY - Continued

### HAZARDOUS MATERIALS DESCRIPTION - Continued

#### WARNING



#### CHEMICAL, FIRE, AND VAPOR

Cleaning compound solvent is flammable and toxic and must be kept away from open flames and used in a well-ventilated area. Use of rubber gloves is necessary to protect the skin when washing parts.

## LIST OF EFFECTIVE PAGES/WORK PACKAGES

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FOR  
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MACHINE GUN, 40 MM, MK19 MOD 3,  
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## HOW TO USE THIS MANUAL

### GENERAL

The safest, easiest, and best way to maintain the MK19 (40 mm Machine Gun) is to use this manual. Learning to use the TM is as easy as reading through this section. Knowing the contents of this manual and how to use it will save time and work and will help avoid exposure 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 MK19 40 mm Machine Gun. The manual is divided into seven chapters. Chapters are divided into Work Packages. The seven 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 MK19 you would look in the Table of Contents and discover that Chapter 4 provides all pertinent information about the field maintenance of the system. Since Chapter 4 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 maintenance tasks. The work packages provide such information as additional references (i.e., other TMs or FMs), as in (WP 0086), and the Maintenance Allocation Chart (MAC), as in (WP 0088). 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 system in the manner for which it was designed.



**CHAPTER 1**

**GENERAL INFORMATION, EQUIPMENT DESCRIPTION, AND  
THEORY OF OPERATION**



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**FIELD MAINTENANCE  
GENERAL INFORMATION**

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**SCOPE****Type of Manual**

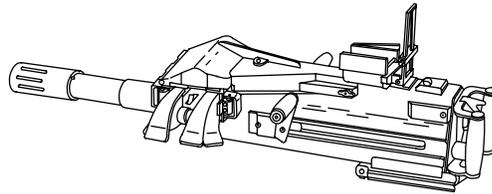
Field Maintenance, including Repair Parts and Special Tools List.

**Model Number and Equipment Name**

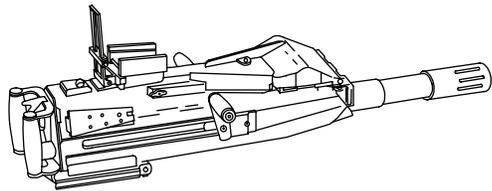
MK19 MOD 3 40 MM Machine Gun, MK19 MOD 3 40 MM Machine Gun with Sight Bracket, and MK19 40 MM Upgunned Weapons Station.

**Purpose of Equipment**

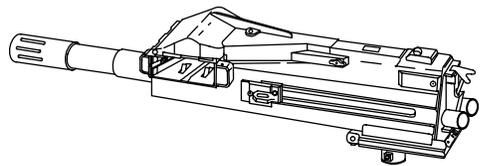
Provides a machine gun that fires a 40 mm grenade with antipersonnel fragmentation and light-armor capability.



G2001M19

*Figure 1. MK19 MOD 3 40 MM Machine Gun.*

G2002M19

*Figure 2. MK19 MOD 3 40 MM Machine Gun with Sight Bracket.*

G2003M19

*Figure 3. MK19 40 MM Upgunned Weapons Station.*

## MAINTENANCE FORMS, RECORDS, AND REPORTS

**Army:** Forms and procedures used for equipment maintenance will be those prescribed by DA PAM 750-8, Functional Users Manual for The Army Maintenance Management System (TAMMS).

**Air Force:** Users refer to TO 11W1-10 for applicable forms and records.

**Marine Corps:** Users refer to those forms and procedures used for equipment maintenance as prescribed by the current edition of TM 4700-15/1.

**Navy:** Users refer to those forms and procedures used for equipment maintenance as prescribed by the current edition of TM 4700-15/1, Equipment Record Procedures.

Accidents involving injury to personnel or damage to equipment will be reported on DA Form 285 (U.S. Army Accident Report) In Accordance With (IAW) AR 385-40. Explosives and ammunition malfunctions will be reported in accordance with AR 750-1.

## REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

**Army:** If your MK 19 40 mm machine gun needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you do not like about your equipment. Let us know why you do not like the design or performance.

ALL non-Aviation/Missile, EIR and PQDRs must be submitted through the Product Data Reporting and Evaluation Program (PDREP) Web site. The PDREP site is: <https://pdrep.cssd.disa.mil/>.

If you do not have Internet access, you may also submit your information using an SF 368 (Product Quality Deficiency Report). You can send your SF 368 using e-mail, regular mail, or fax using the addresses/fax numbers specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual. We will send you a reply.

**Air Force:** Users submit PQDR in Accordance with (IAW) TO 00-35D, USAF Deficiency Reporting, Investigation, and Air Force Joint Manual (AFJMAN) 23-215, Reporting of Supply Discrepancies.

**Marine Corps:** If the weapon has been damaged during shipment, if shipment is incomplete, if the incorrect item is received, or if an incorrect quantity of Marine Corps supply system responsibility items (SSRI), Marine Corps collateral material (CM) items, submit SF 364, "Supply Discrepancy Report (SDR)", in accordance with SECNAVINST 4355.18, Reporting of Supply Discrepancies.

If the weapon has deficiencies in materiel or design or nonconforming conditions which limit or prohibit the item from fulfilling its intended purpose, submit a SF 368, "Product Quality Deficiency Report (PQDR)", in accordance with MCO 4855.10, Product Quality Deficiency Report, and TM 4700-15/1.

Mail it to: Commander (Code 808-1) Marine Corps Logistics Bases, 814 Radford Blvd, Albany, GA 31704-1128 (DSN 567- 5292/5482, Commercial (912) 439-5292/5482; FAX: DSN 567-5631; Commercial (912) 439-5631; Email: [mbp@ala.usmc.mil](mailto:mbp@ala.usmc.mil)) or via Naval message. A reply will be furnished.

**Navy:** Submit SF 368 to Commander, Code 20, NACSURFWARCENDIV, 300 Highway 361, Crane, IN 47522-5001.

**REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR) - Continued****CORROSION PREVENTION AND CONTROL (CPC)**

(A) Corrosion prevention and control 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 ultraviolet) processes. The most common exposures are excessive heat or light. Damage from these processes will appear as cracking, softening, swelling, and/or breaking. SF Form 368, Product Quality Deficiency Report should be submitted to the address specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual."

(F) Submit Material Deficiency Report (MDR) and Quality Deficiency Report (QSR) to: Director Material Management, Robins AFB, GA.

(M) Carry out corrosion prevention in accordance with TM 4795-12/1, Organizational Corrosion Prevention and Control Procedures for USMC Equipment. Report a recurring corrosion problem on SF 368 in accordance with MCO 4855.10. Use key words such as "corrosion", "rust", "deterioration:", or "cracking" to ensure that the information is identified as a CPC problem.

**HAZARDOUS WASTE DISPOSAL INFORMATION**

When servicing this weapon, performing maintenance, or disposing of materials such as cleaning fluids, cleaning compounds, sealants, and lubricants (or items, such as cleaning rags, contaminated with these substances) consult your unit/local hazardous waste disposal center or safety office for local regulatory guidance. If further information is needed, please contact The Army Environmental Hotline at 1-800-872-3845 / OCONUS: 410-436-1244 or online at <http://aec.army.mil/usaec/contactus.html>. Accidental or intentional introduction of contaminants into the environment violates military, state, and federal regulations. Failure to comply may adversely affect the public or environment.

**DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE**

(A) For destruction of materiel to prevent enemy use, refer to TM 750-24407.

(F) Refer to Air Force Pamphlet (AFPAM) 10-219, Vol. 3.

(M) Destroy by any method that will prevent disclosure of contents or reconstruction.

**DEMILITARIZATION OF SMALL ARMS RESIDUE**

To prevent the unauthorized use of replaced (used) components/sub-assemblies of weapons and associated small arms equipment following repair, demilitarization is normally performed by the Defense Logistics Agency (DLA) in accordance with DOD M4160.28-M-V1, V2, V3.

**PREPARATION FOR STORAGE OR SHIPMENT**

(A) Prepare materiel for storage or shipment In Accordance With (IAW) TM 9-1010-230-23&P.

(F) Package machine guns for long-term storage and shipping IAW Special Packaging Instruction (SPI) 00-322-9715.

**LIST OF ABBREVIATIONS AND ACRONYMS**

<b><u>Acronym/Abbreviation</u></b>	<b><u>Name</u></b>
AFTO	Air Force Technical Order
AMCOM	Aviation and Missile Command
AR	Army Regulation
ASB	Adjustable Sight Bracket
BOD	Bore Obstruction Detector
BOI	Basis of Issue
CAC	Common Access Card
CAGEC	Commercial and Government Entity Code
CECOM	Communications-Electronics Command
cm	Centimeter
CPC	Corrosion Prevention and Control
CTA	Common Table of Allowances
DA PAM	Department of Army Pamphlet
dia.	Diameter
DLA	Defense Logistics Agency
DOD	Department of Defense
DR	Deficiency Report
DSN	Defense Switched Network
DTI	Detailed Technical Inspection
EIR	Equipment Improvement Recommendation(s)
EMP	Electromagnetic Pulse
EOD	Expended Ordnance Disposal
"F"	Fire
FM	Field Manual
GMD	Grease, Molybdenum Disulfide
HCI	Hardness Critical Item
HE	High-Explosive
HEDP	High-Explosive, Dual Purpose
IAW	In Accordance With
in.	Inch
JCALs	Joint Computer-aided Acquisition and Logistics Support
kg	kilogram
LAW	Lubricating Oil
lb	pound
LH	Left-Hand
LSA	Lubricating Oil
LSAT	Lubricating Oil
LTI	Limited Technical Inspection
MAC	Maintenance Allocation Chart
MAJCOM	Major Command
mm	Millimeter
MOD	Modified
MTOE	Modified Table of Organization and Equipment
NSN	National Stock Number
PDF	Portable Document Format
PKI	Public Key Infrastructure
PMCS	Preventive Maintenance Checks and Services
P/N	Part Number
PQDR	Product Quality Deficiency Report
QTY	Quantity
RH	Right-Hand
RBC	Rifle Bore Cleaner

**LIST OF ABBREVIATIONS AND ACRONYMS - Continued**

<b><u>Acronym/Abbreviation</u></b>	<b><u>Name</u></b>
ROD	Report of Discrepancy
RPSTL	Repair Parts and Special Tool List
"S"	Safe
SF	Standard Form
SH	Shortcoming
SMR	Source, Maintenance, and Recovery
SRA	Specialized Repair Activity
TACOM	Tank-Automotive Command
TAMMS	The Army Maintenance Management System
T&E	Traversing and Elevating
TM	Technical Manual
TMDE	Test, Measurement, and Diagnostic Equipment
TO	Technical Order
TP	Training Practice
UGWS	Upgunned Weapons Station
UOC	Usable On Code
URL	Uniform Resource Locator
WP	Work Package

**QUALITY OF MATERIAL**

Material used for replacement, repair, or modification must meet the requirements of this manual. If quality or material requirements are not stated in this manual, 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**

Refer to AR 385-64 and DA PAM 385-64 for general ammunition safety, care, and handling.

**SUPPORTING INFORMATION FOR REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT****Common Tools and Equipment**

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), 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, as applicable to your unit.

**Special Tools, TMDE, and Support Equipment**

Special tools required for Field Support are listed in (WP 0088) and (WP 0081).

**Repair Parts**

Repair parts are listed and illustrated in Chapter 6 of this manual.

**END OF WORK PACKAGE**



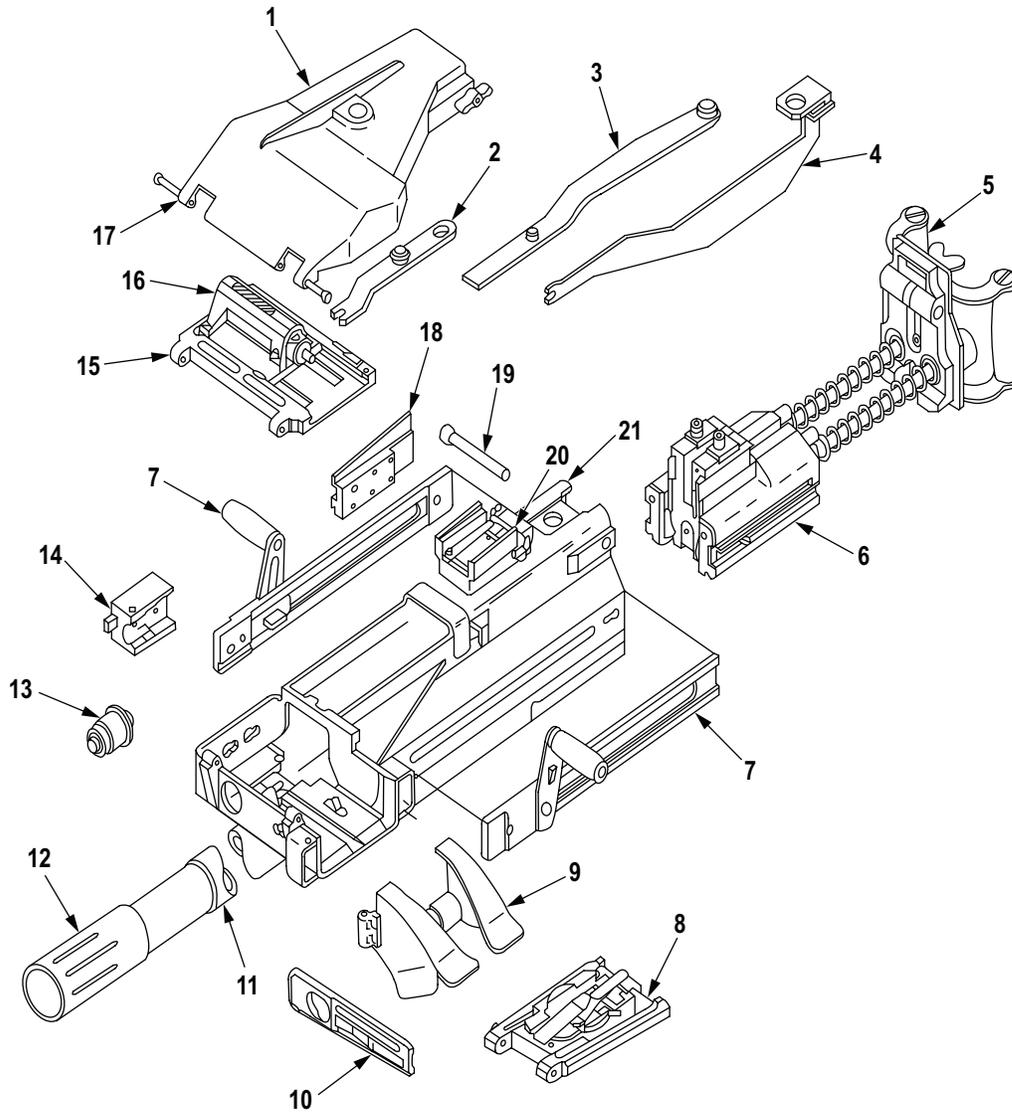
**FIELD MAINTENANCE  
EQUIPMENT DESCRIPTION AND DATA**

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**EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES**

The MK19 Machine Gun is air cooled, blowback operated (with advanced primer ignition), belt fed, and can be mounted on the ground or on a vehicle.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS



G2004M19

Figure 1. MK19 M0D 3 Machine Gun and MK MOD 3 Machine Gun with Sight Bracket.

Table 1. MK19 M0D 3 Machine Gun and MK MOD 3 Machine Gun with Sight Bracket.

Item Number	Component	Function/Description
1	Top Cover Assembly	Hinged to the receiver at the forward end by two straight pins. Locks by a latch assembly attached to the rear left side of the cover.
2	Secondary Drive Lever	Consists of a lever and permanently installed retaining ring. The forked end of the lever connects to the inner feed slide pin. The slot-

**Table 1. MK19 MOD 3 Machine Gun and MK MOD 3 Machine Gun with Sight Bracket - Continued.**

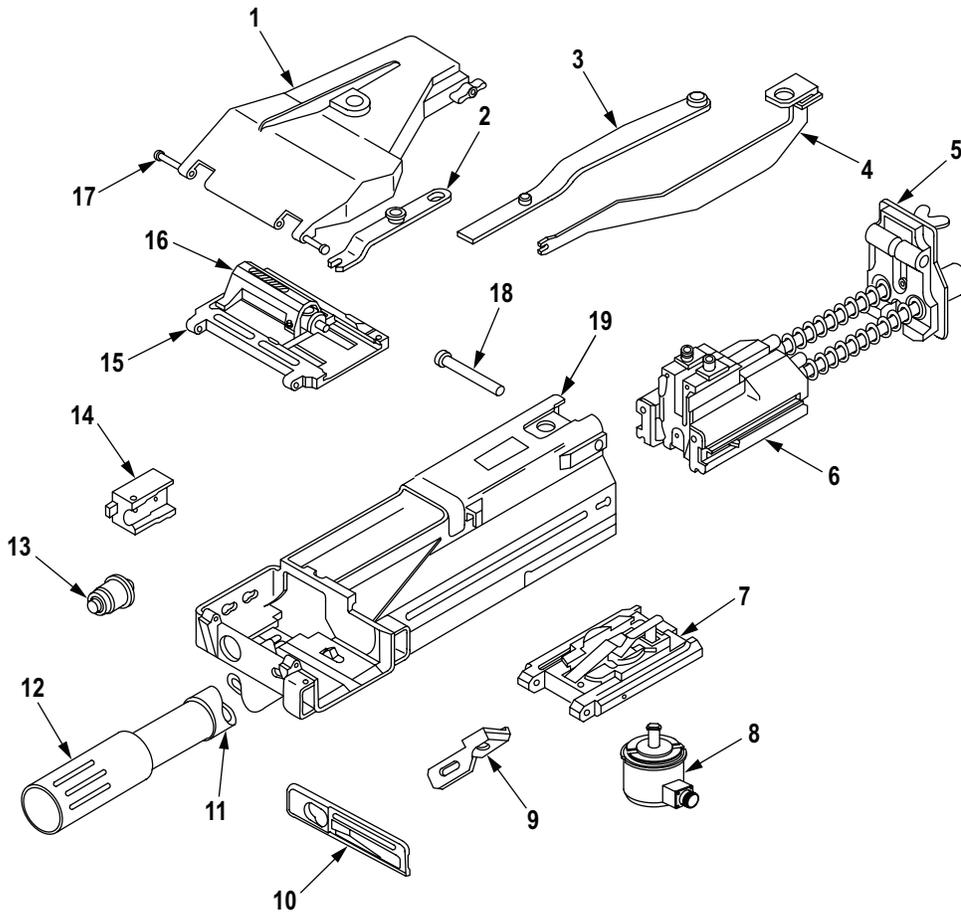
Item Number	Component	Function/Description
		end engages the pivot post on the primary drive lever. The secondary drive lever's pivot post engages the hole in the top cover assembly. The retaining ring is attached to the pivot post.
3	Primary Drive Lever	Located on the top of the vertical cam assembly. Features a large and small pivot post. The large post protrudes through the raised portion of the vertical cam assembly and through the receiver. The small pivot post engages the slot in the secondary drive lever.
4	Vertical Cam Assembly	Extends down the receiver's long axis and passes through the center of the bolt. The raised portion attaches to the receiver and to the primary drive lever.
5	Control Grip Assembly (MK 19 MOD 3 Only)	Attached to the backplate on the rear of the bolt and backplate assembly. Consists of two handgrips and a butterfly-type trigger located between the two grips.
5	Backplate Assembly (UGWS ONLY)	Attached to the backplate on the rear of the bolt and backplate assembly.
6	Bolt and Backplate Assembly	Consists of a machined steel bolt attached to a backplate by a set of telescoping rods, tubes, and recoil springs.
7	Charger Assemblies, Left-Hand and Right-Hand (MK 19 MOD 3 Only)	Each assembly consists of a charger housing to which is attached the arm with handle assembly and charger handle lock. The charger housings are installed on the sides of the receiver.
8	Sear Assembly	Consists of the receiver sear and safety mechanism components inside a sear housing. The gun's safety is mounted on the rear of the assembly.
9	Feed Throat Assembly	Assists feeding of 40 mm ammunition. The feed throat attaches to the forward left side of the receiver by two sets of spring-loaded shoulder pins. Without a feed throat, machine gun stoppages may occur because of twisted or misaligned rounds.
10	Alignment Guide Assembly	Consists of the steel alignment guide and a flat spring held by a flat head screw and shoulder screw. The shoulder screw holds the alignment guide against the forward wall of the receiver's ammunition-feed area. The ogive plunger

**Table 1. MK19 MOD 3 Machine Gun and MK MOD 3 Machine Gun with Sight Bracket - Continued.**

Item Number	Component	Function/Description
		assembly protrudes through the elongated opening in the alignment guide.
11	Barrel	The 40 mm grenade barrel screws into the receiver. The chromed bore is rifled to impart spin to the fired round.
12	Flash Suppressor	The threaded end of the flash suppressor screws onto the end of the barrel and is secured with a slotted spring pin.
13	Ogive Plunger Assembly	Protrudes through the forward wall of the ammunition-feed area of the receiver and is held in place by the alignment guide assembly. Consists of a housing, plunger, and compression spring. The rearward end of the assembly is contoured to cushion the ogive of the round.
14	Round Positioning Block	Consists of a block with machined pins and springs. The pins are mounted to key slots in the right-hand wall of the receiver's ammunition-feed area.
15	Feed Tray	Hinges to the underside of the top cover assembly and to the receiver by two knurled straight pins. Holds the feed slide assembly, which slides on the rails of the tray. A feed tray pawl and spring are attached to the feed tray by a grooved pin. The UGWS configuration has a flexible chute attached, which feeds rounds from an ammunition bin on the left side of the weapon.
16	Feed Slide Assembly	Consists of a steel outer feed slide, feed pawls, a housing, and the internal components of the housing. The shuttle spring is compressed inside the housing and is held in place by three self-locking shoulder screws to the outer feed slide. Two feed slide pawls protrude from the underside of the outer feed tray. The pawls are held in position by a flat leaf-type spring and pin.
17	Knurled Straight Pins	Connect the top cover assembly with the feed tray and receiver. Each pin contains a crosspin to prevent it from slipping out.
18	Sight Bracket Mount (Army Only)	Consists of a bracket and five machine bolts.
19	Backplate Pin Assembly	Consists of a steel pin with knurled head, and a permanently installed retaining ring. The

**Table 1. MK19 MOD 3 Machine Gun and MK MOD 3 Machine Gun with Sight Bracket - Continued.**

Item Number	Component	Function/Description
		backplate pin assembly secures the bolt and backplate assembly to the receiver.
20	Rear Sight Assembly	Hinged to the rear sight base hinge support on top of the receiver. The rear sight base is held by four socket head cap screws and is designed to hold the AN/TVS-5 Night Vision Sight. The M2 bracket interfaces between the rear sight and the AN/TVS-5 Night Vision Sight. The sight frame holds a scale labeled from 300 to 1,500 meters, an elevation mechanism, and a windage mechanism.
21	Receiver	The steel housing which supports all the other components. The ammunition-feed area of the receiver contains a primary and a secondary positioning pawl. The groove from the right-hand wall to the mouth of the feed area is called the "link guide". The grooved rails on the inside of the receiver support the bolt.



G2005M19

Figure 2. MK19 Upgunned Weapon Station (UGWS).

Table 2. MK19 Upgunned Weapon Station (UGWS).

Item Number	Component	Function/Description
1	Top Cover Assembly	hinged to the receiver at the forward end by two straight pins. locks by a latch assembly attached to the rear left side of the cover.
2	Secondary Drive Lever	consists of a lever and permanently installed retaining ring. the forked end of the lever connects to the inner feed slide pin. the slot-end engages the pivot post on the primary drive lever. the secondary drive lever's pivot post engages the hole in the top cover assembly. the retaining ring is attached to the pivot post.

**Table 2. MK19 Upgunned Weapon Station (UGWS) - Continued.**

Item Number	Component	Function/Description
3	Primary Drive Lever	Located on the top of the vertical cam assembly. Features a large and small pivot post. The large post protrudes through the raised portion of the vertical cam assembly and through the receiver. The small pivot post engages the slot in the secondary drive lever.
4	Vertical Cam Assembly	Extends down the receiver's long axis and passes through the center of the bolt. The raised portion attaches to the receiver and to the primary drive lever.
5	Backplate Assembly (UGWS Only)	Attached to the backplate on the rear of the bolt and backplate assembly.
6	Bolt and Backplate Assembly	Consists of a machined steel bolt attached to a backplate by a set of telescoping rods, tubes, and recoil springs.
7	Sear Assembly	Consists of the receiver sear and safety mechanism components inside a sear housing. The gun's safety is mounted on the rear of the assembly.
8	Solenoid (UGWS Only)	Consist of an electric solenoid to electrically fire the weapon.
9	Charger Block (UGWS Only)	Block used for attaching the turret charging system.
10	Alignment Guide Assembly	Consists of the steel alignment guide and a flat spring held by a flat head screw and shoulder screw. The shoulder screw holds the alignment guide against the forward wall of the receiver's ammunition-feed area. The ogive plunger assembly protrudes through the elongated opening in the alignment guide.
11	Barrel	The 40 mm grenade barrel screws into the receiver. The chromed bore is rifled to impart spin to the fired round.
12	Flash Suppressor	The threaded end of the flash suppressor screws onto the end of the barrel and is secured with a slotted spring pin.

**Table 2. MK19 Upgunned Weapon Station (UGWS) - Continued.**

Item Number	Component	Function/Description
13	Ogive Plunger Assembly	Protrudes through the forward wall of the ammunition-feed area of the receiver and is held in place by the alignment guide assembly. Consists of a housing, plunger, and compression spring. The rearward end of the assembly is contoured to cushion the ogive of the round.
14	Round Positioning Block	Consists of a block with machined pins and springs. The pins are mounted to key slots in the right-hand wall of the receiver's ammunition-feed area.
15	Feed Tray	Hinges to the underside of the top cover assembly and to the receiver by two knurled straight pins. Holds the feed slide assembly, which slides on the rails of the tray. A feed tray pawl and spring are attached to the feed tray by a grooved pin. The UGWS configuration has a flexible chute attached, which feeds rounds from an ammunition bin on the left side of the weapon.
16	Feed Slide Assembly	Consists of a steel outer feed slide, feed pawls, a housing, and the internal components of the housing. The shuttle spring is compressed inside the housing and is held in place by three self-locking shoulder screws to the outer feed slide. Two feed slide pawls protrude from the underside of the outer feed tray. The pawls are held in position by a flat leaf-type spring and pin.
17	Knurled Straight Pins	Connect the top cover assembly with the feed tray and receiver. Each pin contains a crosspin to prevent it from slipping out.
18	Backplate Pin Assembly	Consists of a steel pin with knurled head, and a permanently installed retaining ring. The backplate pin assembly secures the bolt and backplate assembly to the receiver.
19	Receiver	The steel housing which supports all the other components. The ammunition-feed area of the receiver contains a primary and a secondary positioning pawl. The groove from the right-hand wall to the mouth of the feed area is called the "link guide". The grooved rails on the inside of the receiver support the bolt.

**EQUIPMENT DATA**

Sustained	40 rounds per minute
Rapid	60 rounds per minute
Cyclic Rate of Fire	325-375 rounds per minute
Maximum Effective Range	1,500 meters (4,921.2 feet) (point target) 2,212 meters (7, 257.2 feet) (area target)
Muzzle Velocity	244 feet per second
Angle of Fire	Capable of automatic fire at any angle between 70 degrees depression and 70 degrees elevation, based upon the mounting arrangement.
Mean Time to Repair	3.5 minutes (removal/replacement of a critical part)
Belt Pull	28-round belt from vertical position without reduction in rate of fire.

**END OF WORK PACKAGE**



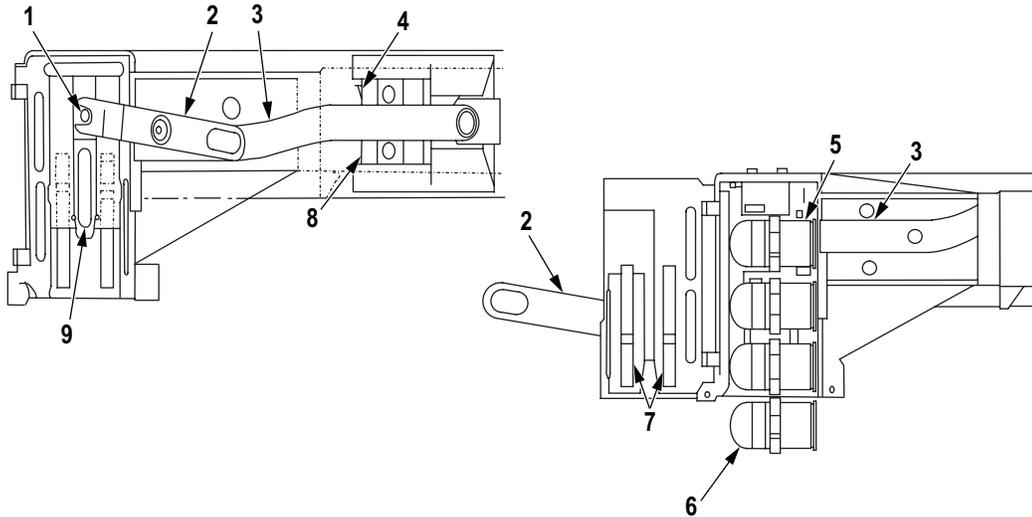
**FIELD MAINTENANCE  
THEORY OF OPERATION**

**GENERAL**

The weapon has six major mechanical functions which occur during its cycle of operation: charging, extracting, cocking, firing, recoil, and automatic feeding. Within each paragraph is a description of the function.

**CHARGING**

Charging is the process of manually pulling the bolt (Figure 1, Item 4) to the rear by pulling the charging handle assemblies. The bolt assembly's rearward movement causes the primary drive lever (Figure 1, Item 3) to move to the left. The primary drive lever rotates the adjustable secondary drive lever (Figure 1, Item 2). The forked end of the secondary drive lever, which rests on the inner feed slide pin (Figure 1, Item 1), moves the feed slide assembly (Figure 1, Item 9) to the right. The feed pawls (Figure 1, Item 7) on the feed slide assembly move the linked rounds (Figure 1, Item 6) over one place in the ammunition-feed area of the receiver. The leading round (Figure 1, Item 5) is now in line with the bolt face (Figure 1, Item 8).

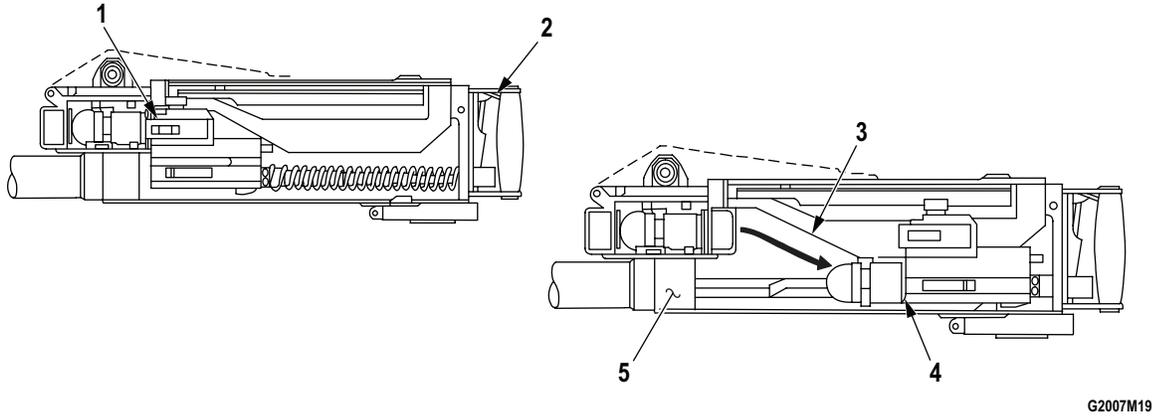


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Figure 1. Theory of Operation.

**EXTRACTING (DELINKING THE ROUND FROM THE BELT)**

When the operator presses the trigger (Figure 2, Item 2) after charging the gun, the bolt slams forward under spring tension. The bolt's extractors (Figure 2, Item 1) snap over the cartridge of the leading round. As the operator charges the gun a second time, the link on the second round in the feeder contacts a depression in the receiver forcing the male and female links apart. As the round is pulled rearward by the extractors (Figure 2, Item 1), the curved edge of the vertical cam assembly (Figure 2, Item 3) forces the round down the face of the bolt, out of the extractors, and into the bolt fingers (Figure 2, Item 4). When the bolt is fully to the rear, the round is lined up with the chamber (Figure 2, Item 5). The primer of the round is aligned with the firing pin, ready for firing. The rounds in the ammunition-feed area have been moved over one place (see CHARGING).

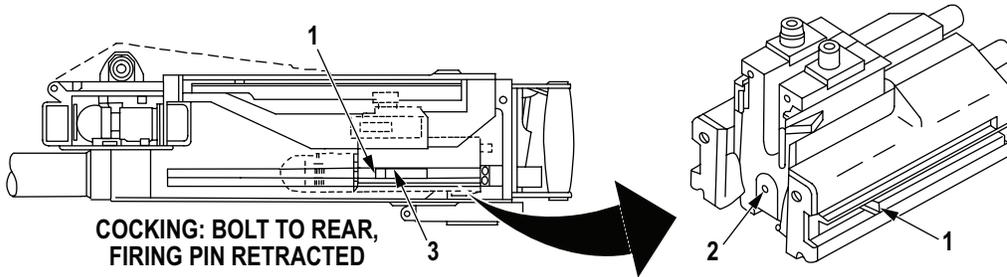


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Figure 2. Theory of Operation.

**COCKING**

The rearward movement of the bolt causes the cocking lever (Figure 3, Item 1) to retract the firing pin (Figure 3, Item 2). The firing pin is held rearward by the firing pin sear (Figure 3, Item 3). The firing pin sear and the cocking lever each prevent the gun from firing until the bolt is released forward.



G2008M19

Figure 3. Theory of Operation.

## FIRING

The releasing of the firing pin detonates the primer. Before the MK19 MOD 3 will fire:

- The bolt must be to the rear with the firing pin cocked.
- A round must be centered on the face of the bolt by the bolt fingers.
- Both charger handle assemblies must be forward, up, and locked. If either charger handle assembly is down, the bolt sear will not come in contact with the forward end of the receiver to allow the firing pin to fire the round.
- The thumb safety (Figure 4, Item 3) must be on "F" (FIRE).

When the operator presses the trigger, the trigger depresses the operating rod (Figure 4, Item 1), which depresses the tip of the receiver sear (Figure 4, Item 2). The receiver sear disengages the bolt sear (Figure 4, Item 4). The bolt is released forward under spring tension, with a round in its bolt fingers. When the cocking lever hits the forward end of the left-hand receiver rail slot, it is forced rearward. The bolt sear hits a plate in the bottom of the receiver, pushing the firing pin sear up to release the firing pin. The firing pin is driven forward, under tension by the firing pin spring. The firing pin detonates the primer of the round, igniting the propellant. At the moment of firing, the round, which has a reinforced propellant chamber, is not fully within the barrel's chamber (the bolt never locks in the weapon). Thus, the cartridge case (Figure 4, Item 5) protrudes from the chamber, still held by the bolt fingers. The exploding powder then forces the projectile down the bore and out the muzzle of the gun. The bolt is fully forward with a new round in its extractors.

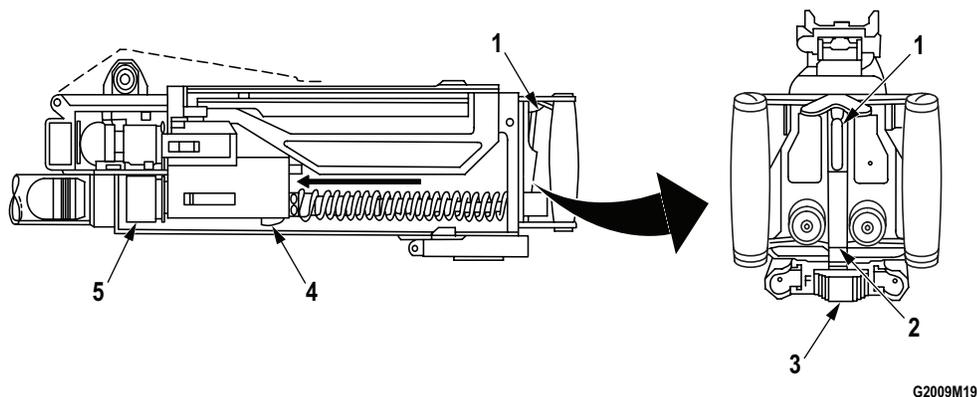


Figure 4. Theory of Operation.

## RECOIL AND AUTOMATIC FEEDING

The gases from the burning powder blow the bolt rearward with a new round in its extractors. During recoil, several functions happen almost at once. The new round is extracted and is cammed down on top of the spent case by the vertical cam's curved rail. The spent case with its link still attached is forced from the bolt fingers and out the bottom of the gun (ejection). The feed slide assembly pulls the round to the right in the receiver's ammunition-feed area, where a new round is now ready to be delinked and extracted (automatic feeding). During the bolt's rearward travel, the cocking lever is pushed forward, which cocks the firing pin. When the bolt reaches the limit of its rearward travel, the recoil springs (Figure 5, Item 2) are completely compressed. Any over-travel is absorbed by the bolt buffer assembly (Figure 5, Item 3) and receiver buffer bodies (Figure 5, Item 1) thus reducing trunnion load (recoil force) at the gun/mount attaching points. If the trigger is still depressed, the bolt sear will not engage the receiver sear and another firing cycle occurs. If the trigger is released, the bolt sear engages the receiver sear, which prevents the bolt from going forward, thus stopping firing.

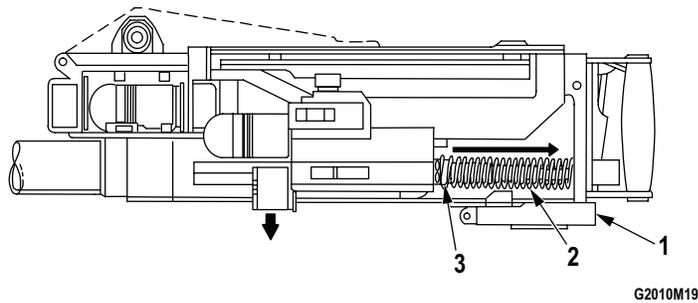


Figure 5. Theory of Operation.

## SAFETY MECHANISMS

Components which prevent the weapon from firing accidentally or interrupt the firing cycle intentionally are considered safety mechanisms. These include:

1. Thumb safety (Figure 6, Item 1). Activates the safety slide inside the sear assembly. The safety slide blocks the sear from being depressed by the operator as long as the safety is on "S" (SAFE).

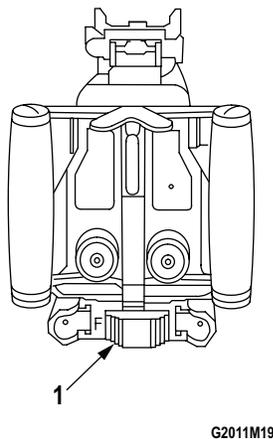


Figure 6. Theory of Operation.

**SAFETY MECHANISMS - Continued**

2. Charger handle assemblies down. The safety slide on the inside edge of each charger arm slides rearward as the handle assembly is rotated down. With a handle assembly down, the bolt sear cannot come in contact with the forward end of the receiver to release the firing pin, so firing cannot occur. One or both handle assemblies may be lowered. Remember "CHARGER HANDLE ASSEMBLY DOWN" is the action for a runaway gun.

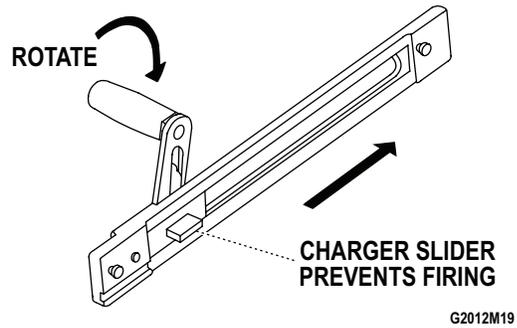


Figure 7. Theory of Operation.

**END OF WORK PACKAGE**



**CHAPTER 2**

**FIELD TROUBLESHOOTING PROCEDURES**



**FIELD MAINTENANCE  
TROUBLESHOOTING INDEX**

**GENERAL**

This section contains Field Maintenance troubleshooting information for locating and correcting most of the operating troubles that may develop in the MK19 MOD 3/Upgunned Weapons Station. Each malfunction for the individual part or assembly is followed by a list of tests or inspections that will help you to determine the corrective actions to take. 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, see the individual repair sections in the maintenance procedures for each major assembly.

**MALFUNCTION/SYMPTOM INDEX**

Refer to Troubleshooting Work Packages for malfunctions, tests, and corrective actions. The Malfunction/Symptom Index is provided for a quick reference to the malfunctions covered.

<u>Malfunction/Symptom</u>	<u>Troubleshooting Procedure</u>
1. Bolt Jams During Charging or Firing.....	WP 0005
2. Gun Difficult to Charge.....	WP 0006
3. Bolt Does Not Reach Sear.....	WP 0007
4. Gun Will Not Shoot.....	WP 0008
5. Rounds Will Not Feed.....	WP 0009
6. Rounds Will Not Extract/Eject.....	WP 0010
7. Rounds Will Not Fire.....	WP 0011
8. Erratic Firing.....	WP 0012
9. Sluggish Firing.....	WP 0013
10. Hard Firing (Excess Recoil).....	WP 0014
11. Runaway Gun (Uncontrolled Automatic Fire).....	WP 0015
12. Premature Firing.....	WP 0016
13. Deformed Case or Round (Short Recoil, Uncontrolled Round).....	WP 0017
14. Charger Handle(s) Overrides Bolt.....	WP 0018
15. Obstructed Bore.....	WP 0019

**END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
TROUBLESHOOTING PROCEDURES  
BOLT JAMS DURING CHARGING OR FIRING**

---

**INITIAL SETUP:****Tools and Special Tools**

Dial Caliper (WP 0090, Table 1, Item 13)  
Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps only) (WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only) (WP 0090, Table 1, Item 35)

**Materials/Parts**

Cap Screws, Self-Locking (WP 0061, Figure 3, Item 1) Qty: 2  
Cap Screws, Socket Head (WP 0063, Figure 5, Item 31) Qty: 2  
Cap Screws, Socket Head, Self-Locking (WP 0063, Figure 5, Item 28) Qty: 2  
Cloth, Abrasive, Crocus (WP 0089, Table 1, Item 7)  
Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)

**Materials/Parts (cont.)**

Lubricating Oil (LAW) (WP 0089, Table 1, Item 10)  
Lubricating Oil (LSAT) (WP 0089, Table 1, Item 12)  
Set Screw, Nylon Point (WP 0063, Figure 5, Item 29) Qty: 2

**References**

WP 0021  
WP 0026  
WP 0030  
WP 0041

**Equipment Condition**

Weapon on "S" (SAFE), clear of ammo, bolt in forward position (TM 9-1010-230-10)

---

**TROUBLESHOOTING PROCEDURE****WARNING**

- If bolt jams during firing, do not let bolt slam forward as top cover is being opened; it could fire a round.
- Do not allow top cover to slam shut from raised position. Hand injury or equipment damage may result.
- Be prepared to catch dropped/ejected live round from weapon. Ejected live rounds may detonate if dropped. Failure to comply may result in injury to personnel or damage to equipment.

**WARNING****EMERGENCY ACTION TO CLEAR BOLT JAM**

Hold one charger handle as far to the rear as possible to support the bolt. While holding the charger handle back, open the top cover. Slowly pull both charger handles back until the bolt clicks (locks) in the rear position. Place the weapon on "S" (SAFE). Be prepared to catch any ammunition that may fall from the underside of the weapon. Have assistant gunner or other personnel assist you. Remove any ammunition from the bolt face and from the receiver. Ease the bolt forward. Move the feed slide assembly to the left. Close the top cover.

**SYMPTOM**

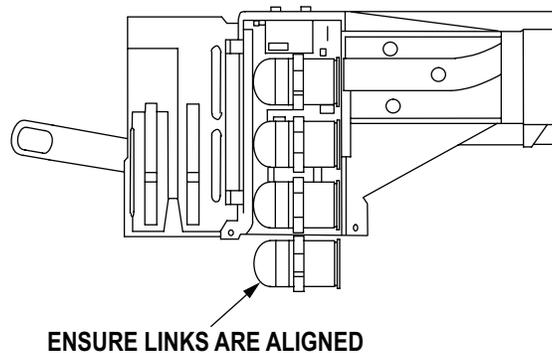
BOLT JAMS DURING CHARGING OR FIRING

**MALFUNCTION**

Misaligned Rounds/Links.

**CORRECTIVE ACTION**

Ensure rounds/links are properly aligned.



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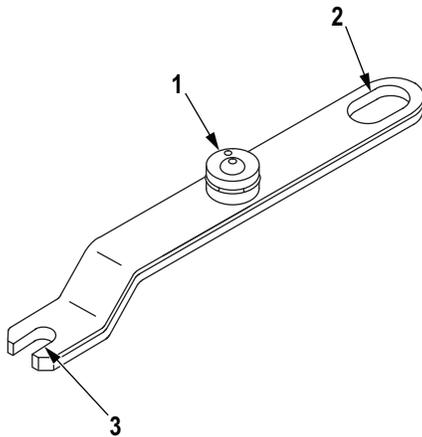
Figure 1. Round Links.

**MALFUNCTION**

Damaged or Burred Secondary Drive Lever.

**CORRECTIVE ACTION**

1. Open top cover and remove secondary drive lever (WP 0030).
2. Check for burrs around pivot post (Figure 2, Item 1), fork (Figure 2, Item 2), and slot (Figure 2, Item 3). Also check for deformation to fork and slot.
3. Verify retaining ring is present on pivot post (Figure 2, Item 1).



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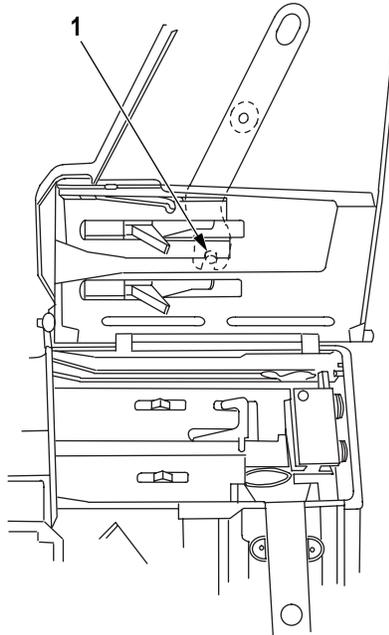
Figure 2. Secondary Drive Lever.

**MALFUNCTION**

Deformed Lever or Missing Retaining Ring.

**CORRECTIVE ACTION**

Install new secondary drive lever (WP 0030). Also inspect inner feed slide pin (Figure 3, Item 1) for damage. If damaged, remove feed slide assembly from tray (WP 0041) and install a new inner feed slide. With the weapon assembled, function check feed operation (WP 0021). Check for improper alignment of ammo link, improper alignment of feed slide, or damage to feed throat assembly.



T2060M19

Figure 3. Lever and Retaining Ring.

**MALFUNCTION**

Burred Secondary Drive Lever, Fork, Slot, or Post Pivot.

**CORRECTIVE ACTION**

Remove burrs with crocus cloth or sharpening stone.

**MALFUNCTION**

Obstruction on Sides of Bolt and in T-slot, Between Bolt and Receiver, or Between Bolt and Vertical Cam.

**CORRECTIVE ACTION**

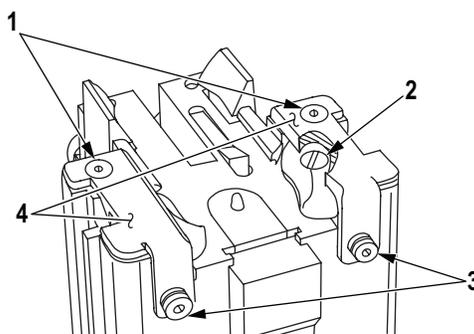
1. Remove bolt and backplate assembly (WP 0026), vertical cam assembly, and primary drive lever (WP 0030).
2. Remove the obstruction.
3. Identify and replace any broken parts.

**MALFUNCTION**

Loose or Missing Screws; Loose Right-Hand (RH) and Left-Hand (LH) Covers.

**CORRECTIVE ACTION**

1. Check for self-locking screws (Figure 4, Item 1) and self-locking socket head cap screws (Figure 4, Item 3).
2. Manually attempt to move RH and LH covers (Figure 4, Item 4). They should not move at all.
3. Place large screwdriver on combination tool under each bolt finger and lift to check for loose shoulder bolts.
4. Remove two self-locking screws (Figure 4, Item 1), self-locking socket head cap screws (Figure 4, Item 3), RH and LH covers (Figure 4, Item 4), and nylon point setscrews (not shown) beneath the self-locking socket head cap screws (Figure 4, Item 3). Discard self-locking screws and self-locking socket head cap screws.
5. Tighten loose shoulder bolts (Figure 4, Item 2).
6. Remove any nylon tip from setscrew and install new self-locking screws, self-locking socket head cap screws, and nylon point setscrews upon assembly.
7. Verify the RH and LH covers are tight.



T2061M19

Figure 4. Right-Hand and Left-Hand Covers.

**MALFUNCTION**

Bent, Burred, or Aluminum Buildup on Vertical Cam Assembly.

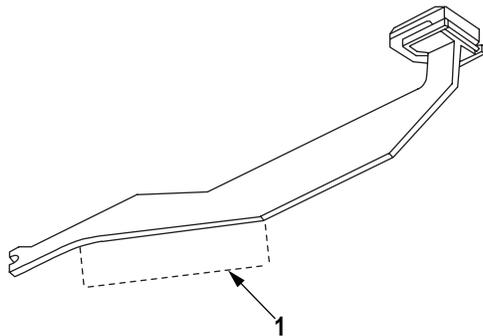
**CORRECTIVE ACTION**

1. Check for bent vertical cam. If vertical cam is bent or damaged, replace vertical cam assembly (WP 0030).
2. Remove vertical cam assembly and primary drive lever (WP 0030).

**NOTE**

Do not use any abrasive other than crocus cloth or sharpening stone. Use of other abrasives could cause damage to the vertical cam.

3. Inspect chromed surface (Figure 5, Item 1) of vertical cam for nicks, pits, burrs, scratches, and aluminum buildup.
4. Using a dial caliper, measure the distance of pits from the edge on the chromed surface. If pits are farther than 0.030 inch from edge, replace vertical cam (WP 0030).
5. Remove any aluminum buildup, surface imperfection, or dullness using crocus cloth. Remove any sharp edges with sharpening stone. If the center of cam surface cannot be polished to a smooth mirror-like finish, replace vertical cam assembly (WP 0030).
6. Preserve with Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT).



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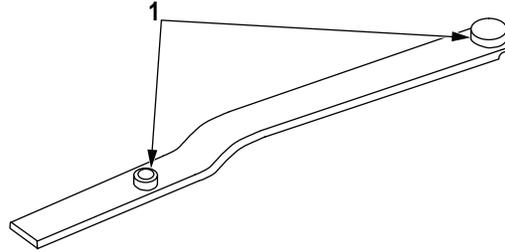
Figure 5. Vertical Cam.

**MALFUNCTION**

Burred Primary Drive Lever.

**CORRECTIVE ACTION**

1. Check pivot posts (Figure 6, Item 1) and all surfaces of primary drive lever for burrs.
2. Remove burrs with crocus cloth or sharpening stone and preserve with GMD or LSAT .
3. If smaller pivot post is burred, check the slot on secondary drive lever for burrs or deformed metal.

**CORRECTIVE ACTION - Continued**

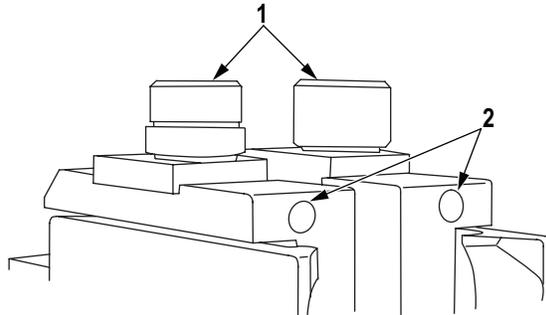
T2063M19

*Figure 6. Primary Drive Lever.***MALFUNCTION**

Loose or Cracked RH and LH Cam Followers.

**CORRECTIVE ACTION**

1. Manually test RH and LH cam followers (Figure 7, Item 1) for looseness and check for cracks on top.
2. Check for loose RH or LH cam followers (Figure 7, Item 1) or nylon point setscrew (Figure 7, Item 2). Tighten cam followers and nylon point setscrew as required.
3. Check for cracks in RH and/or LH cam followers (Figure 7, Item 1). If cracked, replace RH and/or LH cam follower. Install new nylon point setscrew (Figure 7, Item 2) (WP 0026).



T2064M19

*Figure 7. Left-Hand and Right-Hand Cam Followers.***END OF WORK PACKAGE**



**FIELD MAINTENANCE  
TROUBLESHOOTING PROCEDURES  
GUN DIFFICULT TO CHARGE**

**INITIAL SETUP:****Tools and Special Tools**

Dial Caliper (WP 0090, Table 1, Item 13)  
 Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
 Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
 Tool Set, Intermediate (Marine Corps only) (WP 0090, Table 1, Item 33)  
 Tool Set, Organizational (Marine Corps only) (WP 0090, Table 1, Item 35)

**Materials/Parts (cont.)**

Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)  
 Lubricating Oil (LSAT) (WP 0089, Table 1, Item 12)  
 Stone, Sharpening (WP 0089, Table 1, Item 15)

**Materials/Parts**

Cloth, Abrasive Crocus (WP 0089, Table 1, Item 7)

**References**

WP 0026  
 WP 0030  
 WP 0032

**TROUBLESHOOTING PROCEDURE****SYMPTOM**

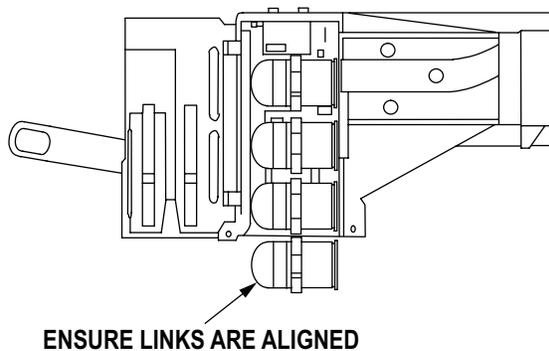
GUN DIFFICULT TO CHARGE

**MALFUNCTION**

Ammo Links Not Correctly Aligned.

**CORRECTIVE ACTION**

1. Ensure proper fit between link and toggle on ammunition.
2. Open top cover and inspect link and toggle connection of the ammunition in the feed tray area.



T2008M19

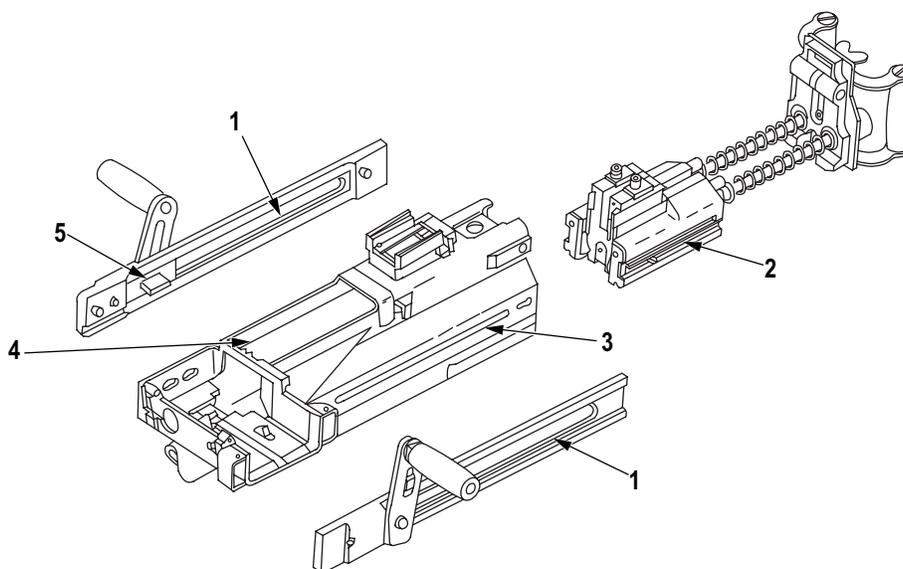
*Figure 1. Round Links*

**MALFUNCTION**

Burred Bolt Rails, Charger Housing Rails, or Receiver Rails.

**CORRECTIVE ACTION**

1. Remove bolt and backplate assembly (WP 0026). Check bolt rails (Figure 2, Item 2) for burrs.
2. Remove Right-Hand (RH) and Left-Hand (LH) charger assemblies (WP 0032). Check grooved rails (Figure 2, Item 1) and charger slide (Figure 2, Item 5) for burrs. Remove burrs with crocus cloth or sharpening stone. Preserve with Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT).
3. Check RH and LH receiver rails (Figure 2, Item 3) for burrs. Also check right-rail (Figure 2, Item 4) inside receiver housing for burrs.



T2065M19

Figure 2. Bolt Rails, Charger Housing Rails and Receiver Rails.

**MALFUNCTION**

Eroded Firing Pin Cover.

**CORRECTIVE ACTION**

Check firing pin cover for pits and metal erosion. Remove bolt sear and other components. Clean and lubricate parts using GMD or LSAT. If damaged, install new firing pin cover upon assembly.

**MALFUNCTION**

Burrs or Aluminum Buildup on Vertical Cam Assembly.

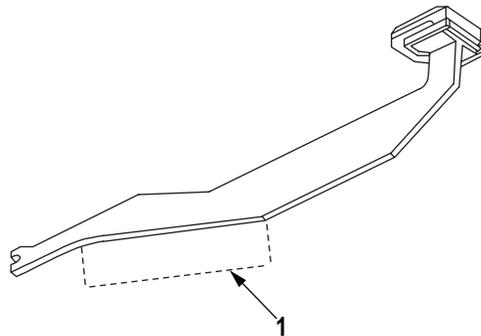
**CORRECTIVE ACTION**

1. Remove vertical cam assembly and primary drive lever (WP 0030).

**NOTE**

Do not use any abrasive other than crocus cloth or sharpening stone. Use of any other abrasives could cause damage to the vertical cam.

2. Inspect the chromed surface (Figure 3, Item 1) of vertical cam for nicks, pits, burrs, scratches, and aluminum buildup and perform substeps as required:
  - a. If pitting is found use a dial caliper, measure the distance of pits from the edge on the chrome surface. If pits are farther than 0.030 inch from the edge, replace vertical cam (WP 0030).
  - b. Remove any aluminum buildup, surface imperfection, or dullness using crocus cloth or sharpening stone.
  - c. Remove any sharp edges with sharpening stone. If the center of the cam surface cannot be polished to a smooth mirror-like finish, replace vertical cam assembly (WP 0030).
  - d. Preserve with GMD or LSAT.



T2066M19

Figure 3. Vertical Cam.

**MALFUNCTION**

Bent Vertical Cam.

**CORRECTIVE ACTION**

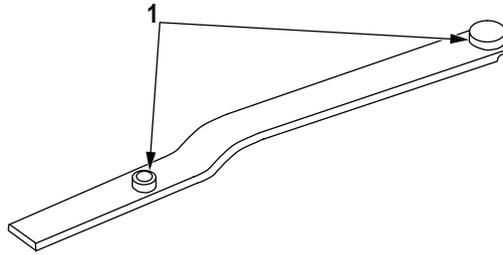
Install new vertical cam assembly (WP 0030).

**MALFUNCTION**

Burred Primary Drive Lever.

**CORRECTIVE ACTION**

1. Check pivot posts (Figure 4, Item 1) and all surfaces of primary drive lever for burrs.
2. Remove burrs with crocus cloth or sharpening stone, and preserve with GMD or LSAT.
3. If smaller pivot post is burred, check slot on secondary drive lever for burrs or deformed metal.



T2067M19

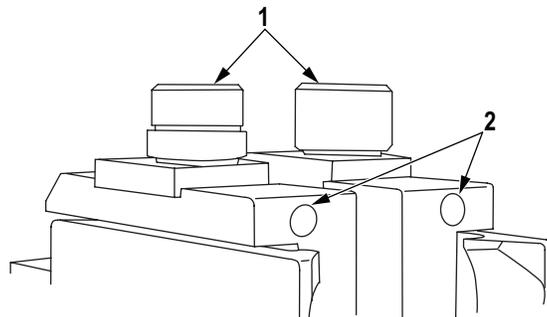
Figure 4. Primary Drive Lever.

**MALFUNCTION**

Loose or Cracked RH and LH Cam Followers.

**CORRECTIVE ACTION**

1. Manually test RH and LH cam followers (Figure 5, Item 1) for looseness and check for cracks on top.
2. Tighten RH and LH cam followers (Figure 5, Item 1) and nylon point setscrew (Figure 5, Item 2) as required.
3. If cracked, replace RH and/or LH cam follower. Install new nylon point setscrew (Figure 5, Item 2).



T2068M19

Figure 5. Left-Hand and Right-Hand Cam Followers.

**END OF WORK PACKAGE**

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**FIELD MAINTENANCE  
TROUBLESHOOTING PROCEDURES  
BOLT DOES NOT REACH SEAR**

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**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps  
Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps only)  
(WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only)  
(WP 0090, Table 1, Item 35)

**Materials/Parts (cont.)**

Grease, Molybdenum Disulfide (GMD) (WP 0089,  
Table 1, Item 8)  
Lubricating Oil (LAW) (WP 0089, Table 1, Item  
10)  
Lubricating Oil (LSAT) (WP 0089, Table 1, Item  
12)  
Stone, Sharpening (WP 0089, Table 1, Item 15)

**Materials/Parts**

Cloth, Abrasive Crocus (WP 0089, Table 1, Item  
7)

**References**

WP 0030  
WP 0054

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**TROUBLESHOOTING PROCEDURE****WARNING**

Before performing any procedure, ensure weapon is clear of any ammunition. Performing maintenance on a loaded weapon can lead to unexpected firing. Failure to comply may result in injury to personnel or damage to equipment.

**SYMPTOM**

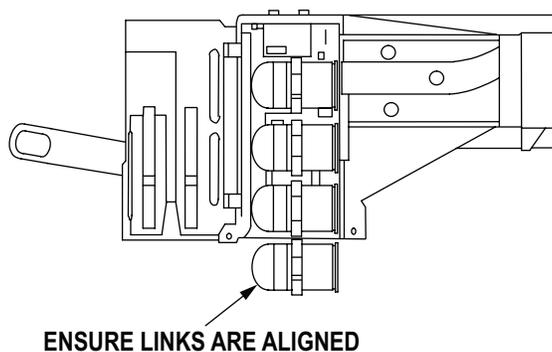
BOLT DOES NOT REACH SEAR

**MALFUNCTION**

Ammo Links Incorrectly Aligned.

**CORRECTIVE ACTION**

Correctly align ammo links.



T2013M19

Figure 1. Rounds Links.

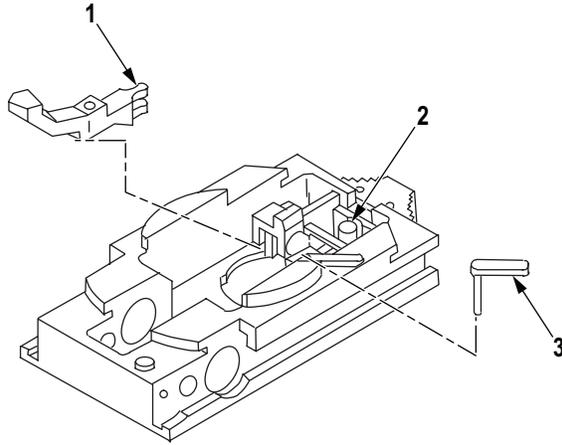
**MALFUNCTION**

Broken Safety Lever, Safety Lever Pin, or Sear Spring.

**CORRECTIVE ACTION**

1. With weapon assembled, bolt forward, place safety on "S" (SAFE).
2. Rotate charger handles down and attempt to charge weapon.
3. If bolt will not lock to the rear (sear up) with safety on "S" (SAFE), safety lever (Figure 2, Item 1), safety lever pin (Figure 2, Item 3) or sear spring (Figure 2, Item 2) may be broken or missing. Replace broken or missing component (WP 0054).

**CORRECTIVE ACTION - Continued**



T2069M19

Figure 2. Safety Lever, Safety Pin and Sear Spring.

**MALFUNCTION**

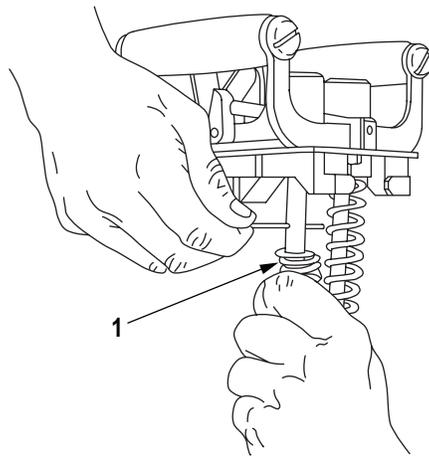
Broken or Missing Spring Washers.

**CORRECTIVE ACTION**

**CAUTION**

Ensure spring washer is properly seated.

1. With weapon assembled, bolt forward, place safety on "F" (FIRE).
2. Charge weapon.
3. If bolt moves forward when charger handles are released, spring washer (Figure 3, Item 1) may be broken or missing. Replace spring washer (WP 0054).



T2070M19

Figure 3. Spring Washers.

**MALFUNCTION**

Burrs or Aluminum Buildup on Vertical Cam Assembly.

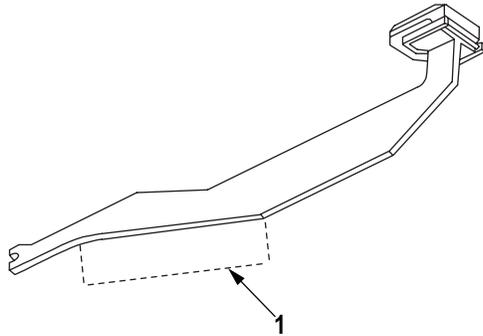
**CORRECTIVE ACTION**

1. Remove vertical cam assembly and primary drive lever (WP 0030).

**NOTE**

Do not use any abrasive other than crocus cloth or sharpening stone. Use of any other abrasives could cause damage to the vertical cam.

2. Inspect the chromed surface (Figure 4, Item 1) of vertical cam for nicks, pits, burrs, scratches, and aluminum buildup.
3. Using a dial caliper, measure the distance of pits from the edge on the chromed surface. If pits are farther than 0.030 inch from edge, replace vertical cam (WP 0030).
4. Remove any aluminum buildup, surface imperfection, or dullness using crocus cloth or sharpening stone. Remove any sharp edges with sharpening stone.
5. If the center of the cam surface cannot be polished to a smooth mirror-like finish, replace vertical cam assembly (WP 0030).
6. Preserve with Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT).



T2071M19

Figure 4. Vertical Cam.

**MALFUNCTION**

Bent Vertical Cam.

**CORRECTIVE ACTION**

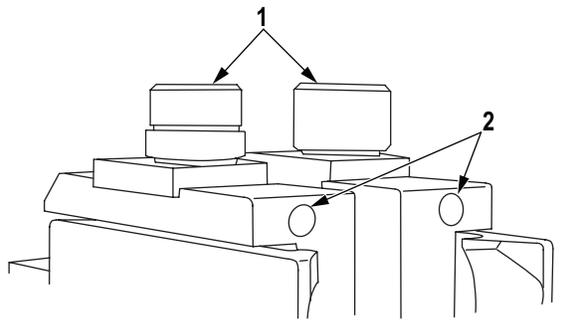
Install new vertical cam assembly (WP 0030).

**MALFUNCTION**

Loose or Cracked Right-Hand (RH) and Left-Hand (LH) Cam Followers.

**CORRECTIVE ACTION**

1. Manually test RH and LH cam followers (Figure 5, Item 1) for looseness and check for cracks on top.
2. Tighten RH and LH cam followers (Figure 5, Item 1) and nylon point screws (Figure 5, Item 2) as required.
3. If cracked, replace RH and/or LH cam follower. Install new nylon point setscrew (WP 0054).



T2072M19

Figure 5. Left-Hand and Right-Hand Cam Followers.

**END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
TROUBLESHOOTING PROCEDURES  
GUN WILL NOT SHOOT**

---

**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
 Tool Kit, Small Arms Repairman (Marine Corps  
 Only) (WP 0090, Table 1, Item 37)  
 Tool Set, Intermediate (Marine Corps only)  
 (WP 0090, Table 1, Item 33)  
 Tool Set, Organizational (Marine Corps only)  
 (WP 0090, Table 1, Item 35)

**References (cont.)**

WP 0009  
 WP 0010  
 WP 0011  
 WP 0021

**References**

WP 0005

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**TROUBLESHOOTING PROCEDURE****SYMPTOM**

GUN WILL NOT SHOOT

**MALFUNCTION**

Functional Problem with Weapon.

**CORRECTIVE ACTION**

1. Perform Function Check (WP 0021). Locate specific problem area and troubleshoot.
2. If the function check did not locate the problem area, perform the following symptom malfunctions in sequence until the problem is identified.
  - a. Rounds will not feed (WP 0009).
  - b. Rounds will not extract/eject (WP 0010).
  - c. Rounds will not fire (WP 0011).
  - d. Bolt jams during charging or firing (WP 0005).

**END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
TROUBLESHOOTING PROCEDURES  
ROUNDS WILL NOT FEED**

---

**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
 Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
 Tool Set, Intermediate (Marine Corps only) (WP 0090, Table 1, Item 33)  
 Tool Set, Organizational (Marine Corps only) (WP 0090, Table 1, Item 35)

**Materials/Parts**

Cloth, Abrasive Crocus (WP 0089, Table 1, Item 7)  
 Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)  
 Lubricating Oil (LSAT) (WP 0089, Table 1, Item 12)

**Materials/Parts (cont.)**

Stone, Sharpening (WP 0089, Table 1, Item 15)  
 Screws, Self-Locking, Socket-Head (WP 0069, Figure 11, Item 1) Qty: 3

**References**

WP 0021  
 WP 0028  
 WP 0031  
 WP 0033  
 WP 0037  
 WP 0038  
 WP 0041  
 WP 0044  
 WP 0052  
 WP 0061

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**TROUBLESHOOTING PROCEDURE****SYMPTOM**

ROUNDS WILL NOT FEED

**MALFUNCTION**

Bent, Burred, or Missing Feed Throat.

**CORRECTIVE ACTION****WARNING**

Do not relink or fire ammunition which has been cycled through the weapon. Failure to comply may result in injury to personnel or damage to equipment.

**NOTE**

Feeding problems can be caused by a missing, burred, or bent feed throat; improper feed slide alignment; or misaligned ammo link.

1. Ensure feed throat is present and properly installed.
2. Check feed throat for bends or burrs that will prevent round(s) from feeding correctly. Remove burrs with crocus cloth or sharpening stone.
3. If feed throat is missing or damage prevents proper feeding, replace the feed throat (WP 0033).

**MALFUNCTION**

Burred Feed Tray or Damaged, Weak, or Binding Feed Tray Pawl.

**CORRECTIVE ACTION**

1. Move the feed slide assembly (Figure 1, Item 3) back and forth on feed tray rails (Figure 1, Item 2) to test for burrs or binding.
2. Press feed tray pawl (Figure 1, Item 1). It should be hard to press and should snap back crisply with no binding.
3. Remove secondary drive lever (WP 0031), feed slide assembly (WP 0041), top cover (WP 0028), and feed tray.
4. Inspect feed tray rails for burrs. Deburr with crocus cloth or sharpening stone as required.
5. If pawl is damaged, disassemble feed tray pawl, pin, and spring. Install new feed tray pawl. Function test feed operation (WP 0021).
6. Inspect spring for proper strength. Remove weak spring, and install new spring.
7. If feed tray pawl is binding, lubricate feed tray. If binding persists, disassemble feed tray and remove burrs and sharp edges with crocus cloth or sharpening stone. Lubricate with Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT) and assemble.

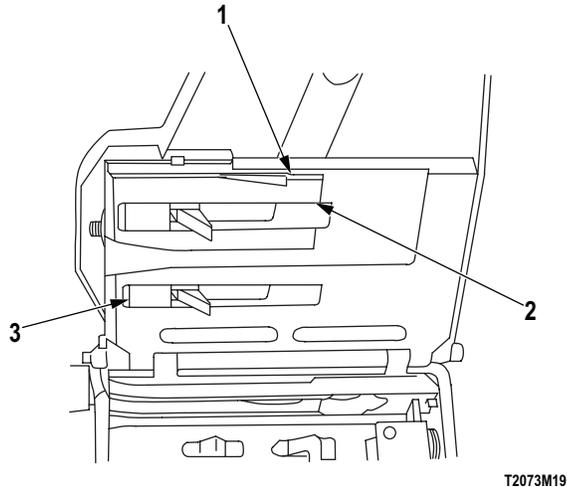


Figure 1. Feed Tray and Pawl.

**MALFUNCTION**

Feed Slide Mechanism Out of Adjustment.

**CORRECTIVE ACTION****WARNING**

Do not relink or fire ammunition which has been cycled through the weapon. Failure to comply may result in injury to personnel or damage to equipment.

1. Function test the feed operation (WP 0021).
2. Ensure primary pawl snaps up as dummy round is fed across the receiver's feed area. If primary pawl does not snap up, adjust feed slide assembly (WP 0041).

**MALFUNCTION**

Welded Pins Missing From Receiver; Link Guide Burred or Galled.

**CORRECTIVE ACTION**

1. Inspect for missing pins. If pins are missing, notify Maintenance Supervisor.
2. Function check feed operation (WP 0044) using six linked dummy rounds. If link guide surface in receiver or fed tray has been scored sufficiently to prevent feeding, attempt to remove raised surfaces using crocus cloth or sharpening stone. Perform function check again (WP 0044). If rounds will still not feed, notify Maintenance Supervisor.
3. If link guide shows burrs, remove with crocus cloth or sharpening stone.

**MALFUNCTION**

Feed Pawls Burred; Binding or Weak Flat Springs.

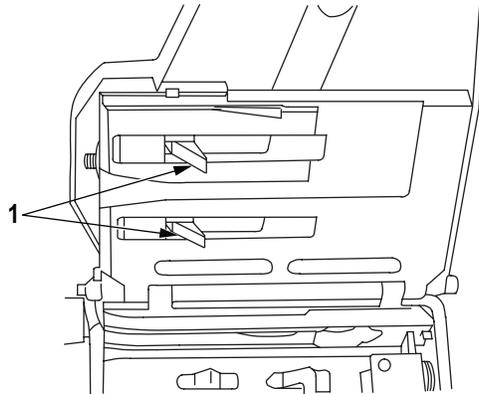
**CORRECTIVE ACTION**

1. Press two feed pawls (Figure 2, Item 1) on feed slide assembly. They should depress all the way and snap back crisply.
2. Remove feed slide assembly from feed tray (WP 0041).
3. Remove feed pawls, straight headless pins, and feed pawl flat springs. If one of feed pawl flat springs is broken, replace both flat springs (WP 0041).
4. Clear any obstructions between feed pawl flat spring and feed pawl.

**CAUTION**

If raised surfaces cannot be removed without removal of chrome surface, notify Maintenance Supervisor.

5. Deburr with crocus cloth or sharpening stone. Lubricate lightly with GMD or LSAT and assemble.



T2074M19

Figure 2. Feed Pawls.

**MALFUNCTION**

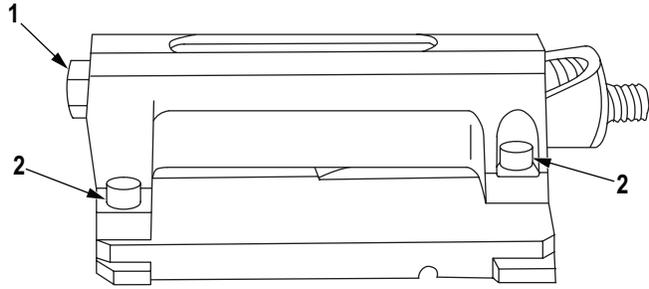
Loose Guide Rod; Loose or Missing Self-Locking Socket Head Screws.

**CORRECTIVE ACTION****WARNING**

Use care if removal of three self-locking socket head screws from feed slide housing is necessary. Springs will fly out and may cause injury.

1. Manually try to move guide rod (Figure 3, Item 1) and three self-locking socket head screws (Figure 3, Item 2) on feed slide housing. There should be no movement.
2. Replace loose or missing self-locking socket head screws (WP 0041) with new ones observing the WARNING. Discard used self-locking socket head screws.

**CORRECTIVE ACTION - Continued**



T2075M19

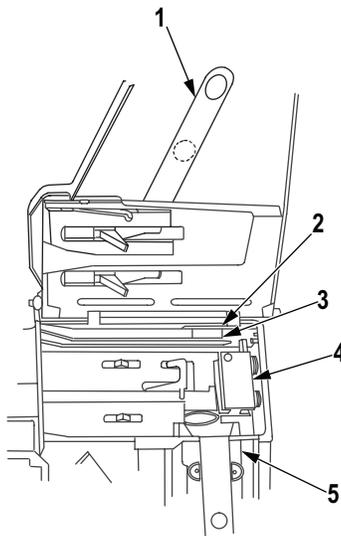
Figure 3. Guide Rod.

**MALFUNCTION**

Missing or Improperly Installed Receiver Components.

**CORRECTIVE ACTION**

1. Verify presence of the following components: secondary drive lever (Figure 4, Item 1), primary drive lever (Figure 4, Item 5) ogive plunger assembly (Figure 4, Item 3), alignment guide assembly (Figure 4, Item 2) and round positioning block (Figure 4, Item 4). Ensure proper installation.
2. Replace any missing components. If primary or secondary drive levers were replaced, function check feed operation (WP 0021) after assembly.
3. If problem persists, proceed to next malfunction.



T2076M19

Figure 4. Receiver Components.

**MALFUNCTION**

Missing Crosspins From Primary Pawl Rod or Secondary Pawl Rod.

**CORRECTIVE ACTION**

1. Depress primary pawl (Figure 5, Item 1) while attempting to retract primary pawl rod (Figure 5, Item 2) with your fingers. Primary pawl rod should not come out if crosspin is present. With your fingers, attempt to remove secondary pawl rod. If secondary pawl rod crosspin is present, secondary pawl rod cannot be removed.
2. Remove barrel (WP 0052) and install new primary pawl rod (WP 0037). Install new secondary pawl rod (WP 0038).

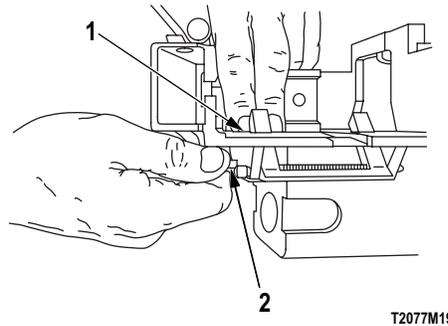


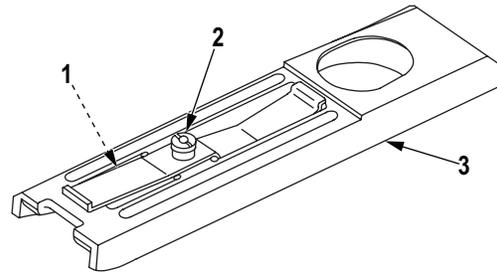
Figure 5. Crosspins.

**MALFUNCTION**

Damaged Alignment Guide; Cracked Flat Spring; Loose Flat Head Screw.

**CORRECTIVE ACTION**

1. Remove alignment guide assembly (WP 0031) and inspect for damaged alignment guide (Figure 6, Item 3), loose flat head screw (Figure 6, Item 2), or cracked alignment guide flat spring (Figure 6, Item 1).
2. Inspect for damaged alignment guide (Figure 6, Item 3).
3. If alignment guide is damaged, install new alignment guide assembly (WP 0031).
4. If alignment guide flat spring (Figure 6, Item 1) is cracked, disassemble and install new flat spring (WP 0031).
5. Flat head screw (Figure 6, Item 2) and alignment guide flat spring (Figure 6, Item 1) should not move relative to each other. If they move freely, remove alignment guide flat head screw, shoulder screw, and flat alignment guide flat spring (WP 0061). Inspect components. Reassemble or install new parts as necessary.

**CORRECTIVE ACTION - Continued**

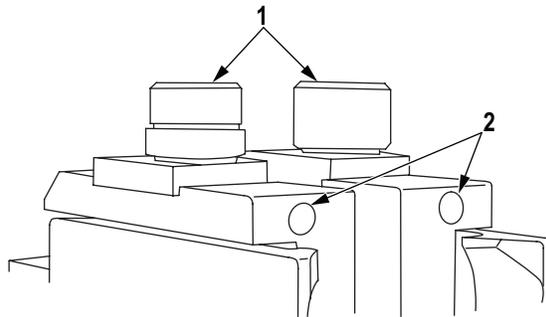
T2078M19

*Figure 6. Alignment Guide Assembly.***MALFUNCTION**

Loose or Cracked Right-Hand (RH) and Left-Hand (LH) Cam Followers.

**CORRECTIVE ACTION**

1. Manually test RH and LH cam followers (Figure 7, Item 1) for looseness and check for cracks on top.
2. Tighten RH and LH cam followers (Figure 7, Item 1) and nylon point setscrews (Figure 7, Item 2) as required.
3. If cracked, replace RH and/or LH cam follower. Install new nylon point setscrew.



T2079M19

*Figure 7. Left-Hand and Right-Hand Cam Followers.***END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
TROUBLESHOOTING PROCEDURES  
ROUNDS WILL NOT EXTRACT/EJECT**

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**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps  
Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps only)  
(WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only)  
(WP 0090, Table 1, Item 35)

**Materials/Parts (cont.)**

Cleaning Compound, Solvent (WP 0089, Table 1,  
Item 6)  
Cloth, Abrasive Crocus (WP 0089, Table 1, Item  
7)  
Grease, Molybdenum Disulfide (GMD) (WP 0089,  
Table 1, Item 8)  
Stone, Sharpening (WP 0089, Table 1, Item 15)

**Materials/Parts**

Cleaning Compound, Rifle Bore (WP 0089, Table  
1, Item 12)

**References**

WP 0026  
WP 0027

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**TROUBLESHOOTING PROCEDURE****SYMPTOM**

ROUNDS WILL NOT EXTRACT/EJECT

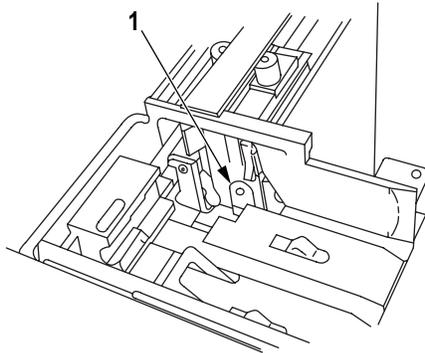
**MALFUNCTION**

Rough or Burred Firing Pin Cover.

**CORRECTIVE ACTION****NOTE**

If rounds feed across receiver's feed area, but are not pulled to the rear and down the face of the bolt during charging or recoil, check components as noted in this symptom's malfunctions.

Remove rough spots from firing pin cover (Figure 1, Item 1) with crocus cloth. Remove burrs with crocus cloth or sharpening stone.



T2080M19

Figure 1. Firing Pin Cover.

**MALFUNCTION**

Firing Pin Will Not Retract (Defective Firing Pin, Cocking Lever, Pin, or Spring).

**CORRECTIVE ACTION**

1. With weapon assembled, charge weapon and place on "S" (SAFE). Observe through the receiver whether firing pin is protruding. If pin is protruding with bolt to the rear, cocking lever, pin, or spring is defective.
2. If firing pin will not retract, replace defective parts (WP 0026).

**MALFUNCTION**

Incorrect, Obstructed, Worn, or Broken Extractors; Broken or Weak Springs.

**CORRECTIVE ACTION**

1. Check tips (Figure 2, Item 1) of Right-Hand (RH) and Left-Hand (LH) cartridge extractors for obvious wear or breakage. Ensure wider tip is on top.

**CORRECTIVE ACTION - Continued**

2. Attempt to force RH and LH cartridge extractors apart to test for weak or unequal spring tension or obstruction between RH and LH cartridge extractor and bolt. Remove RH and LH cartridge extractors and springs (WP 0026). Measure spring length. Replace springs, in pairs, if critical lengths are not In Accordance With (IAW) requirements.

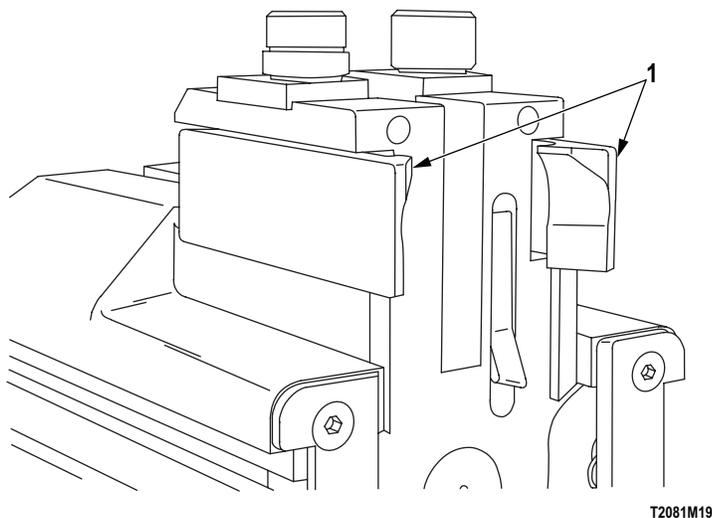


Figure 2. Left-Hand and Right-Hand Cartridge Extractors.

**MALFUNCTION**

Loose or Cracked Right-Hand (RH) and Left-Hand (LH) Cam Followers.

**CORRECTIVE ACTION**

1. Manually test RH and LH cam followers (Figure 3, Item 1) for looseness and check for cracks on top. Tighten nylon point setscrews (Figure 3, Item 2) as required.
2. Tighten RH and LH cam followers (Figure 4, Item 1) and nylon point setscrews (Figure 4, Item 2) as required.
3. If cracked, replace RH and/or LH cam follower. Install new nylon point setscrew (WP 0026).

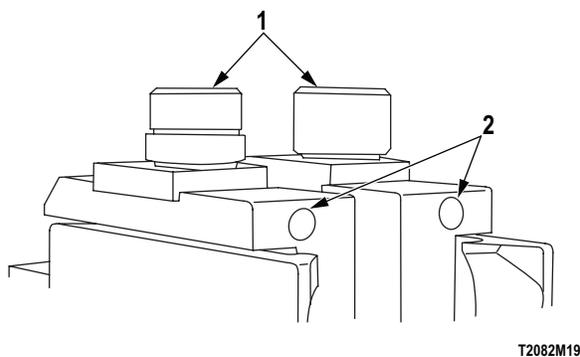


Figure 3. Left-Hand and Right-Hand Cam Followers.

**MALFUNCTION**

Obstructed Pawl; Weak Helical Spring.

**CORRECTIVE ACTION**

Press pawl (Figure 4, Item 1) to test for weak spring action or an obstruction under pawl. Replace helical spring if action is weak; clear obstruction.

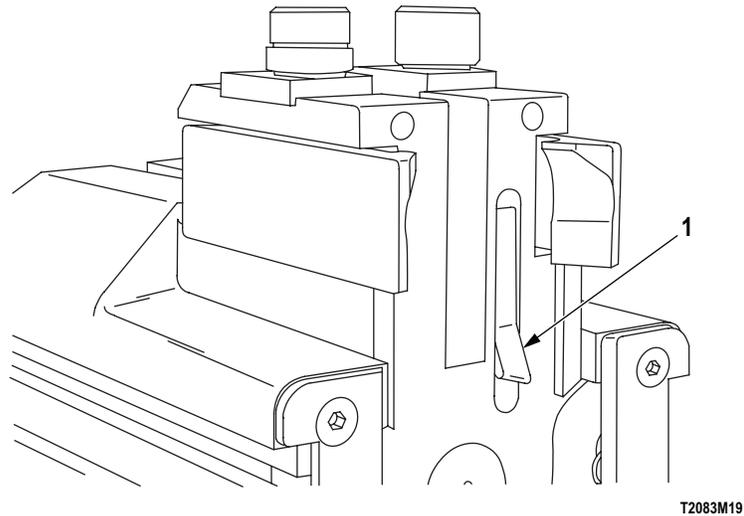


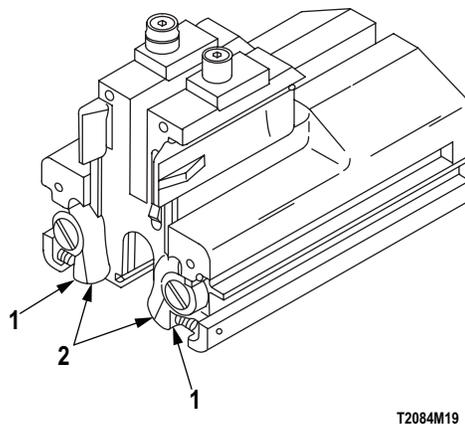
Figure 4. Pawl.

**CORRECTIVE ACTION - Continued****MALFUNCTION**

Obstructed Bolt Fingers; Broken or Weak Finger Springs.

**CORRECTIVE ACTION**

1. Ensure welded pins (Figure 5, Item 1) are present in bolt finger area, and on bolt face. Force RH and LH bolt fingers (Figure 5, Item 2) apart to test for weakness or unequal finger spring tension. If weak or unequal finger spring tension, notify Maintenance Supervisor. (Marine Corps: Repair at Unit Maintenance.)
2. Remove covers. Remove shoulder bolts and lift out bolt fingers and finger springs. Check for presence of welded keeper pins (Figure 5, Item 1) on bolt fingers and bolt.
3. If keeper pin bolt is missing, install new bolt (WP 0026).
4. If keeper pin bolt finger is missing, install new bolt (WP 0026).
5. If springs are broken or weak, install new finger spring on both sides and reassemble (WP 0026).



T2084M19

Figure 5. Finger Springs.

**CORRECTIVE ACTION - Continued****MALFUNCTION**

Broken Ogive Plunger Slotted Washer.

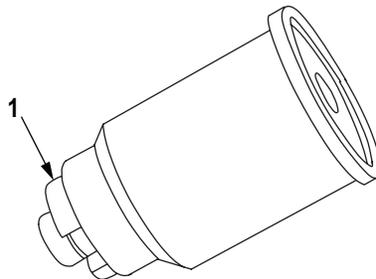
**CORRECTIVE ACTION**

1. Remove ogive plunger assembly (WP 0027) and inspect for broken slotted washer (Figure 6, Item 1).

**WARNING**

Cleaning compound solvent is flammable and toxic and must be kept away from open flames and used in a well-ventilated area. Use of rubber gloves is necessary to protect the skin when washing parts.

2. Disassemble ogive plunger (WP 0027). Inspect interior of ogive spring housing and helical compression spring for proper lubrication. If lubrication is required, ensure parts are washed in cleaning compound solvent or Rifle Bore Cleaning Compound, dried, generously lubricated, and reassemble.
3. If slotted washer is broken, disassemble ogive plunger assembly and replace broken slotted washer and assemble ogive plunger assembly (WP 0027).



T2085M19

Figure 6. Ogive Plunger Slotted Washer.

**END OF WORK PACKAGE**

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**FIELD MAINTENANCE  
TROUBLESHOOTING PROCEDURES  
ROUNDS WILL NOT FIRE**

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**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps  
Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps only)  
(WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only)  
(WP 0090, Table 1, Item 35)

**Materials/Parts**

Cleaning Compound, Solvent (WP 0089, Table 1,  
Item 6)

**References**

WP 0026  
WP 0040

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**TROUBLESHOOTING PROCEDURE****SYMPTOM**

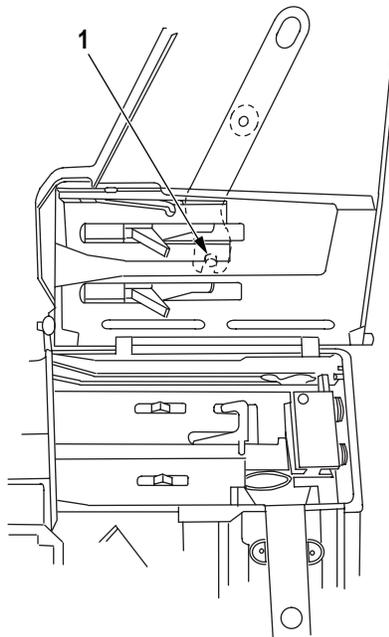
ROUNDS WILL NOT FIRE

**MALFUNCTION**

Bent, Broken, or Missing Helical Compression Spring.

**CORRECTIVE ACTION**

1. With feed slide assembly assembled, check presence and condition of helical compression spring (Figure 1, Item 1).
2. If helical compression spring is damaged, remove damaged helical compression spring and install a new one (WP 0026).



T2086M19

Figure 1. Compression Spring.

**MALFUNCTION**

Defective Firing Pin, Firing Pin Sear, or Springs.

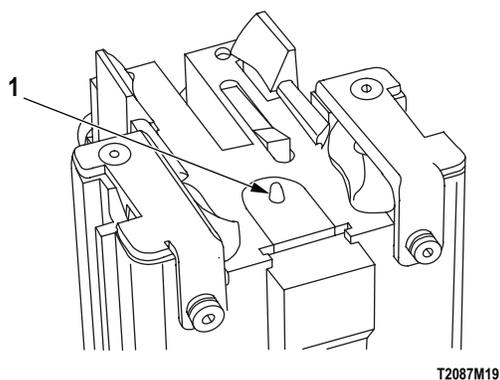
**CORRECTIVE ACTION****WARNING**

Before performing any procedure, ensure weapon is clear of any ammunition. Performing maintenance on a loaded weapon can lead to unexpected firing. Failure to comply may result in injury to personnel or damage to equipment.

1. Charge weapon and press the trigger to release the bolt forward under spring tension.
2. Check tip of firing pin (Figure 2, Item 1). It should be protruding. If not, check for the following:

**WARNING**

- Cleaning compound solvent is flammable and toxic and must be kept away from open flames and used in a well-ventilated area. Use of rubber gloves is necessary to protect the skin when washing parts.
  - To avoid injury, appropriate eye protection is recommended when cleaning the weapon and/or its parts.
3. If excessive fouling around front of firing pin and firing pin cover is present, clean firing pin with cleaning compound solvent.
  4. If firing pin tip, firing pin sear or firing pin spring is damaged, install new components (WP 0026). When installing new firing pin, adjust bolt timing (WP 0040).
  5. If bolt sear is damaged, replace bolt sear and receiver sear (WP 0026). Check and adjust bolt timing prior to reassembly (WP 0040).

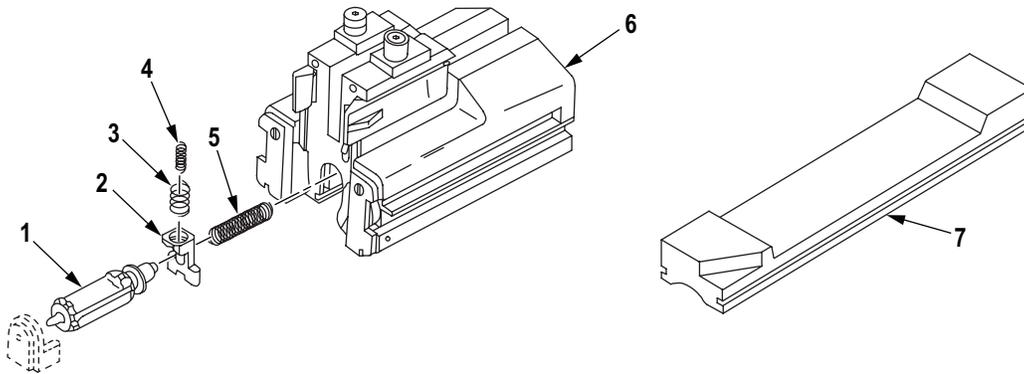


T2087M19

Figure 2. Firing Pin.

**CORRECTIVE ACTION - Continued**

6. Check tip of firing pin (Figure 3, Item 1) for pits or damage. If damaged, install new firing pin (WP 0026). Adjust bolt (Figure 3, Item 6) timing (WP 0040).
7. If firing pin (Figure 3, Item 1) does not spring forward, perform the following substeps:
  - a. Check bolt sear (Figure 3, Item 7) for damage.
  - b. Check firing pin sear (Figure 3, Item 2) for damage.
  - c. Measure springs (Figure 3, Items 3, 4 and 5).
  - d. Replace any worn or broken parts. Test firing pin (Figure 3, Item 1) operation again.
  - e. Verify that pin (Figure 3, Item 1) springs forward.
  - f. Adjust bolt (Figure 3, Item 6) timing (WP 0040).



T2088M19

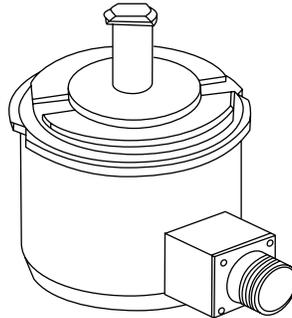
*Figure 3. Firing Pin Sear and Bolt Sear.*

**MALFUNCTION**

Firing Solenoid is Defective (UGWS ONLY).

**CORRECTIVE ACTION**

Replace solenoid.



T2032M19

*Figure 4. Firing Solenoid.*

**END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
TROUBLESHOOTING PROCEDURES  
ERRATIC FIRING**

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**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps  
Only) (WP 0090, Table 1, Item 37)

**Tools and Special Tools (cont.)**

Tool Set, Intermediate (Marine Corps only)  
(WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only)  
(WP 0090, Table 1, Item 35)

**References**

WP 0026  
WP 0031  
WP 0040

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**TROUBLESHOOTING PROCEDURE****SYMPTOM**

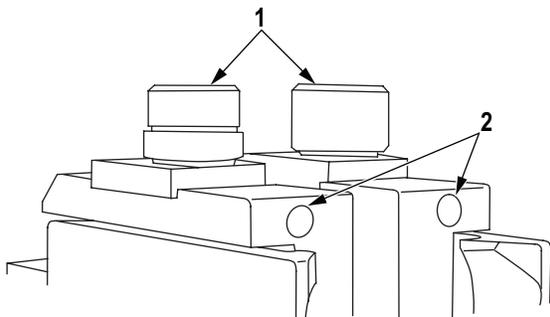
ERRATIC FIRING

**MALFUNCTION**

Loose or Cracked Right-Hand (RH) and Left-Hand (LH) Cam Followers.

**CORRECTIVE ACTION**

1. Manually test RH and LH cam followers (Figure 1, Item 1) for looseness and check for cracks on top. Tighten nylon point setscrews (Figure 1, Item 2) as required.
2. Tighten RH and LH cam followers (Figure 1, Item 1) and nylon point setscrews (Figure 1, Item 2) as required.
3. If cracked, replace RH and/or LH cam follower. Install new nylon point setscrew (WP 0026).



T2089M19

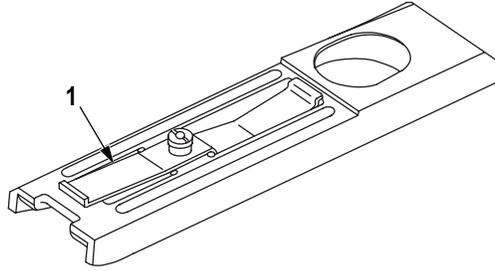
Figure 1. Left-Hand and Right-Hand Cam Followers.

**MALFUNCTION**

Cracked or Broken Alignment Guide Flat Spring.

**CORRECTIVE ACTION**

1. Remove alignment guide assembly from receiver (WP 0031). Check alignment guide flat spring (Figure 2, Item 1) for cracks around flat head screw and for breakage.
2. If cracks or other damage is found, replace alignment guide flat spring and reassemble (WP 0031).



T2090M19

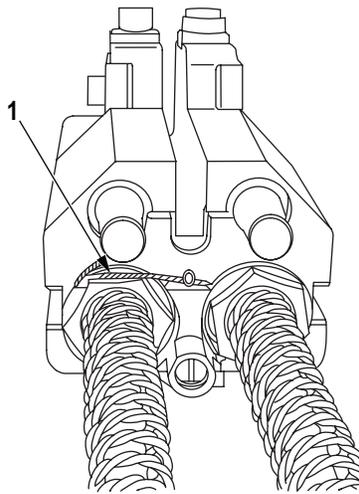
Figure 2. Alignment Guide.

**MALFUNCTION**

Non-Electrical Wire Missing or Broken on Bolt Sleeves.

**CORRECTIVE ACTION**

1. Remove bolt and backplate assembly from receiver. Check for presence of non-electrical wire (Figure 3, Item 1) on bolt sleeves.
2. If non-electrical wire is missing or broken, install new non-electrical wire after adjusting bolt timing (WP 0040).



T2091M19

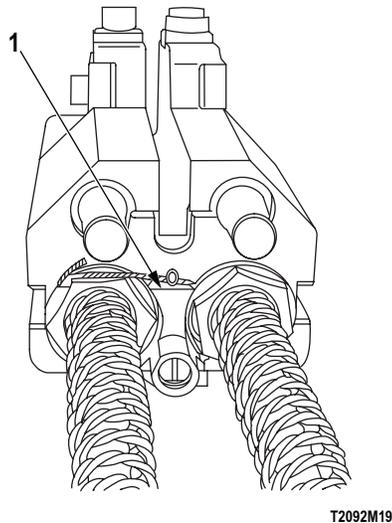
Figure 3. Bolt Sleeves.

**MALFUNCTION**

Broken Lock Plate.

**CORRECTIVE ACTION**

1. With bolt and backplate assembly removed from receiver (WP 0026), check for broken lock plate (Figure 4, Item 1).
2. If lock plate is broken, remove non-electrical wire, bolt sleeve, and damaged lock plate. Install new lock plate assembly (WP 0026), and adjust bolt timing (WP 0040).



T2092M19

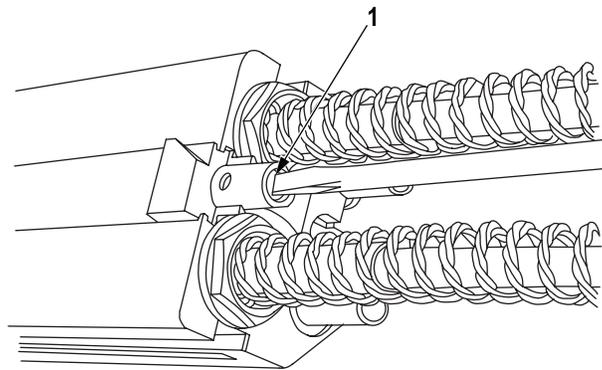
Figure 4. Lock Plate.

**MALFUNCTION**

Worn Adjusting Screw or Spring Plunger.

**CORRECTIVE ACTION**

1. Turn adjusting screw (Figure 5, Item 1) an equal number of turns in both directions. The screw should click each 1/4 turn. If it does not click, spring plunger and/or adjusting screw are worn.
2. If adjusting screw or spring plunger are worn, perform the following substeps:
  - a. Remove non-electrical wire, bolt sleeves, and lock plate assembly (WP 0026).
  - b. Inspect lock plate assembly for damage to spring plunger or adjusting screw. If damaged, replace lock plate assembly (WP 0026).
  - c. Adjust bolt timing (WP 0040).



T2093M19

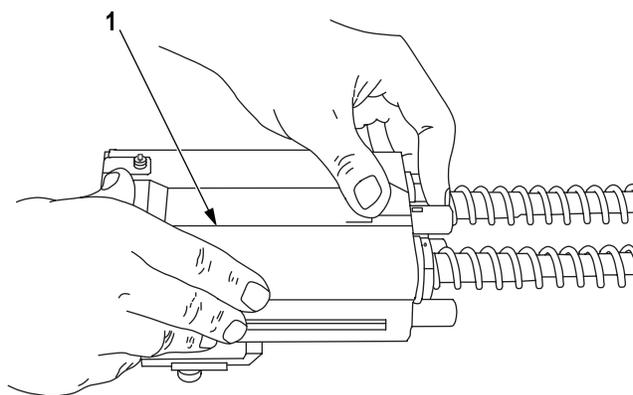
Figure 5. Adjusting Screw and Plunger.

**MALFUNCTION**

Broken or Worn Helical Compression Spring; Missing or Out of Position Sear Buffer Components.

**CORRECTIVE ACTION**

1. Turn bolt upside down or on its face. Manually attempt to move bolt sear (Figure 6, Item 1). The bolt sear should not move easily. If it does, helical compression spring is worn or broken, or buffer components are out of position or missing.
2. If damaged, worn or missing components are found, remove components (WP 0026) and inspect for broken helical compression spring and for components out of position or missing. If helical compression spring is intact, measure it. Replace any broken, worn, or missing components. Before reassembly, adjust bolt timing.

**CORRECTIVE ACTION - Continued**

T2094M19

Figure 6. Adjusting Screw and Plunger.

**MALFUNCTION**

Bolt Timing Out of Adjustment.

**CORRECTIVE ACTION**

Adjust bolt timing (WP 0040). Install components as directed (WP 0026).

**MALFUNCTION**

Broken Firing Pin Sear or Bolt Sear.

**CORRECTIVE ACTION**

Disassemble bolt (WP 0026). Check for broken firing pin sear and firing pin sear springs. While disassembling bolt, check bolt sear. Assemble and adjust bolt timing (WP 0040).

**END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
TROUBLESHOOTING PROCEDURES  
SLUGGISH FIRING**

---

**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps  
Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps only)  
(WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only)  
(WP 0090, Table 1, Item 35)

**Materials/Parts**

Cloth, Abrasive Crocus (WP 0089, Table 1, Item  
7)  
Grease, Molybdenum Disulfide (GMD) (WP 0089,  
Table 1, Item 8)

**Materials/Parts (cont.)**

Lubricating Oil (LSAT) (WP 0089, Table 1, Item  
12)  
Stone, Sharpening (WP 0089, Table 1, Item 15)

**References**

WP 0026  
WP 0029  
WP 0030  
WP 0039  
WP 0040  
WP 0050  
WP 0054

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**TROUBLESHOOTING PROCEDURE****SYMPTOM**

SLUGGISH FIRING

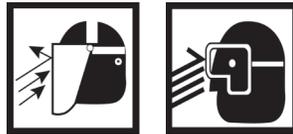
**MALFUNCTION**

Carbon Buildup or Chrome Erosion on Bore and Chamber.

**CORRECTIVE ACTION****NOTE**

A noticeable slowing down in rate of fire indicates sluggish firing. After corrective action, test fire (WP 0050) the gun to verify proper functioning.

1. Remove bolt and backplate assembly (WP 0026). Inspect bore and chamber for carbon rings and chrome erosion.

**WARNING**

To avoid injury, appropriate eye protection is recommended when cleaning weapon and/or its parts.

2. If carbon rings or chrome erosion is found, perform the following substeps:
  - a. Clean bore and chamber (WP 0054).
  - b. Remove caked-on carbon in chamber with crocus cloth.
  - c. Inspect for chrome erosion in chamber.
  - d. If chrome erosion is found in chamber  $\frac{3}{8}$  inch or more from beginning of rifling and extends more than halfway around chamber, replace barrel (WP 0039).

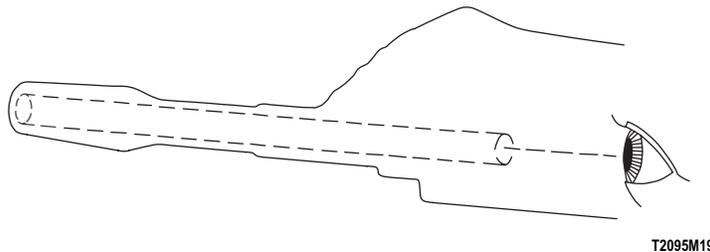


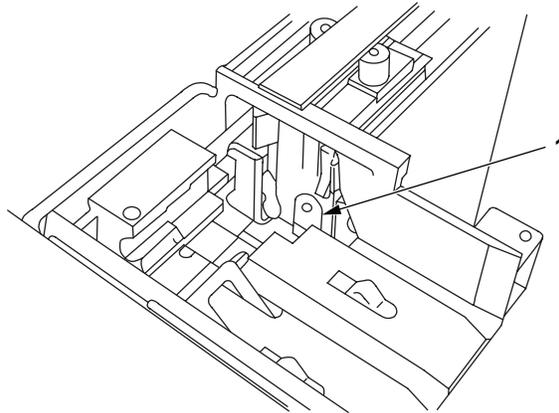
Figure 1. Bore Inspection.

**MALFUNCTION**

Dry Firing Pin Cover and Bolt Face.

**CORRECTIVE ACTION**

Lubricate firing pin cover (Figure 2, Item 1) and bolt face.

**CORRECTIVE ACTION - Continued**

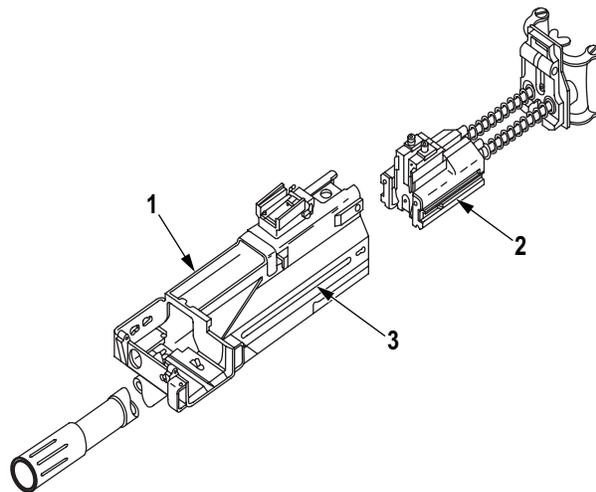
T2096M19

*Figure 2. Pin Cover and Bolt Face.***MALFUNCTION**

Burred Bolt or Receiver Rails.

**CORRECTIVE ACTION**

1. Remove bolt and backplate assembly (WP 0026) and charger assemblies (WP 0032). Inspect for burrs along bolt rails (Figure 3, Item 2) and external receiver rails (Figure 3, Item 3). Also, check right-hand inner rail (Figure 3, Item 1) inside the receiver.
2. If burrs are found, remove with crocus cloth or sharpening stone.



T2097M19

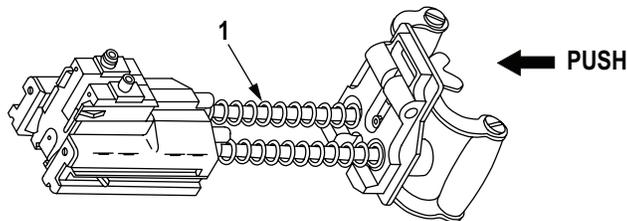
*Figure 3. Bolt and Receiver Rails.*

**MALFUNCTION**

Weak Helical Compression Springs; Broken Strands.

**CORRECTIVE ACTION**

1. Place bolt and backplate assembly face down on a hard surface. Push against control grip assembly. The helical compression springs (Figure 4, Item 1) should be hard to depress and should bounce back immediately.
2. If springs are weak, remove helical compression springs and measure them. If either helical compression spring is too short, replace both helical compression springs (WP 0026). Complete malfunction actions for out-of-position or missing buffer washers and bolt timing out-of-adjustment, in this work package.
3. If strand(s) are broken on one or both helical compression springs, replace both helical compression springs.



T2040M19

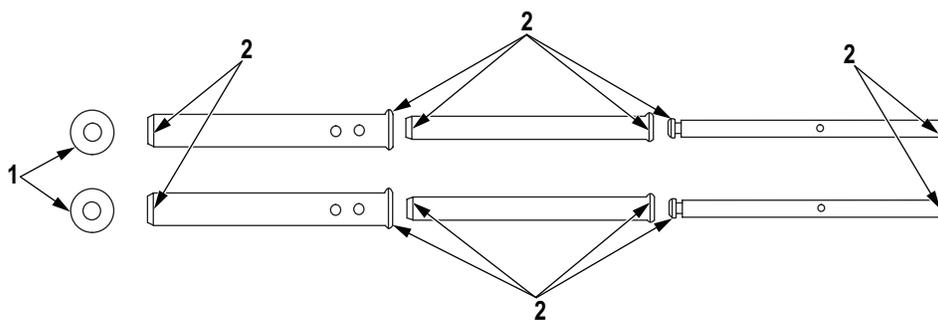
Figure 4. Helical Compression Springs.

**MALFUNCTION**

Broken Spring Washers; Burred Tubes or Rods.

**CORRECTIVE ACTION**

1. Disassemble bolt and backplate assembly (WP 0026). Inspect front washers and spring washers (Figure 5, Item 1) for damage. Check tubes and rods for damage around mouth (Figure 5, Item 2) of each tube.
2. If one or both spring washers are broken, Replace both spring washers (WP 0026), ensuring convex side is seated against the recoil spring.
3. If rods or tubes show burrs, remove burrs using crocus cloth or sharpening stone. If damaged, replace all rods and tubes (WP 0026).
4. If front washers are worn, replace both front washers (WP 0026). Assemble components. Adjust bolt timing (WP 0040).

**CORRECTIVE ACTION - Continued**

T2099M19

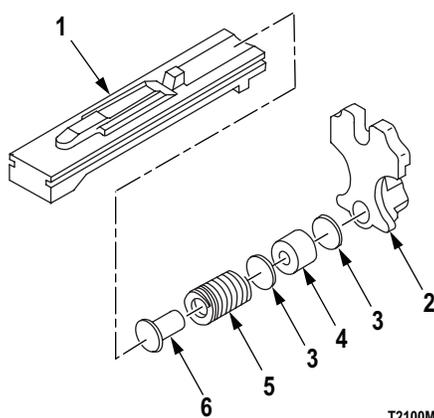
Figure 5. Spring Washers, Tubes and Rods.

**MALFUNCTION**

Out-of-Position or Missing Buffer Washers.

**CORRECTIVE ACTION**

1. Remove non-electrical wire and lock plate (Figure 6, Item 2) (WP 0026). Partially remove bolt sear (Figure 6, Item 1). Ensure components (Figure 6, Items 3, 4, 5 and 6) in cavity formed by bolt and bolt sear are all present and positioned as shown below.
2. Replace any missing washers (Figure 6, Item 5). Before reassembly, adjust bolt timing (WP 0040). Assemble all buffer components (Figure 6, Items 3, 4, 5 and 6) correctly (WP 0026). Install lock plate (Figure 6, Item 2), bolt sleeves, and non-electrical wire.



T2100M19

Figure 6. Buffer Washers.

**MALFUNCTION**

Bolt Timing Out of Adjustment.

**CORRECTIVE ACTION**

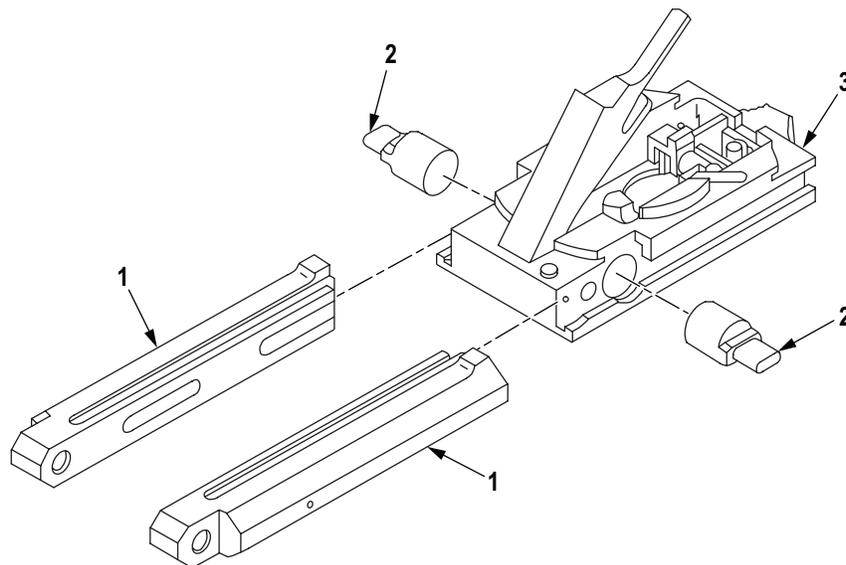
Adjust bolt timing (WP 0040) whether or not new components were installed.

**MALFUNCTION**

Broken Recoil Pin(s).

**CORRECTIVE ACTION**

1. Remove sear assembly (Figure 7, Item 3) from receiver (WP 0026). Remove receiver buffer bodies (Figure 7, Item 1) and recoil pins (Figure 7, Item 2). Inspect recoil pins for breakage.
2. If recoil pin(s) (Figure 7, Item 2) is broken, install new recoil pin(s) (WP 0029).



T2101M19

Figure 7. Recoil Pins.

**MALFUNCTION**

Burrs or Aluminum Buildup on Vertical Cam Assembly.

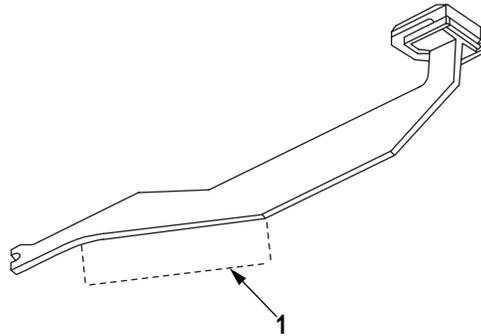
**CORRECTIVE ACTION**

1. Remove vertical cam assembly and primary drive lever (WP 0030).

**NOTE**

Do not use any abrasive other than crocus cloth or sharpening stone. Use of any other abrasive could cause damage to the vertical cam.

2. Inspect the chromed surface (Figure 8, Item 1) of vertical cam for nicks, pits, burrs, scratches, and aluminum buildup.
3. Using a dial caliper, measure the distance of pits from the edge on the chromed surface. If pits are farther than 0.030 inch from edge, replace vertical cam (WP 0030).
4. Remove any aluminum buildup, surface imperfection, or dullness using crocus cloth or sharpening stone. Remove any sharp edges with sharpening stone.
5. If the center of the cam surface cannot be polished to a smooth mirror-like finish, replace vertical cam assembly (WP 0030).
6. Preserve with Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT).



T2102M19

Figure 8. Vertical Cam Assembly.

**MALFUNCTION**

Bent Vertical Cam.

**CORRECTIVE ACTION**

Install new vertical cam assembly.

**MALFUNCTION**

Loose or Cracked Right-Hand (RH) and Left-Hand (LH) Cam Followers.

**CORRECTIVE ACTION**

1. Manually test RH and LH cam followers (Figure 9, Item 1) for looseness and check for cracks on top.
2. Tighten RH and LH cam followers (Figure 9, Item 1) and nylon point setscrews (Figure 9, Item 2) as required.
3. If cracked, replace RH and/or LH cam follower. Install new nylon point setscrew (WP 0026).

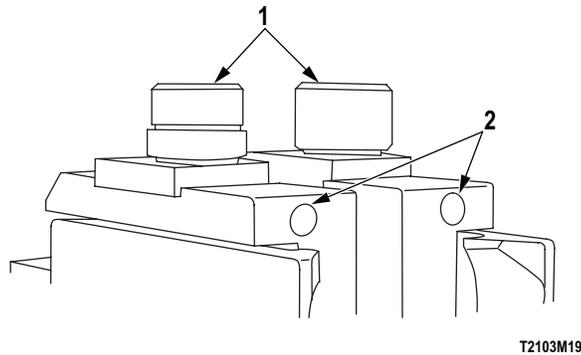


Figure 9. Left-Hand and Right-Hand Cam Followers.

**END OF WORK PACKAGE**

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**FIELD MAINTENANCE  
TROUBLESHOOTING PROCEDURES  
HARD FIRING (EXCESS RECOIL)**

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**INITIAL SETUP:****Tools and Special Tools**

Dial Caliper (WP 0090, Table 1, Item 13)  
Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps only) (WP 0090, Table 1, Item 33)  
Tool Set, Organizational Maintenance (Marine Corps only) (WP 0090, Table 1, Item 35)

**Materials/Parts**

Cloth, Abrasive Crocus (WP 0089, Table 1, Item 7)  
Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)

**Materials/Parts (cont.)**

Lubricating Oil, Weapons (LAW) (WP 0089, Table 1, Item 10)  
Lubricating Oil (LSAT) (WP 0089, Table 1, Item 12)  
Stone, Sharpening (WP 0089, Table 1, Item 15)

**References**

WP 0026  
WP 0029  
WP 0030  
WP 0040

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**TROUBLESHOOTING PROCEDURE****SYMPTOM**

HARD FIRING (EXCESS RECOIL)

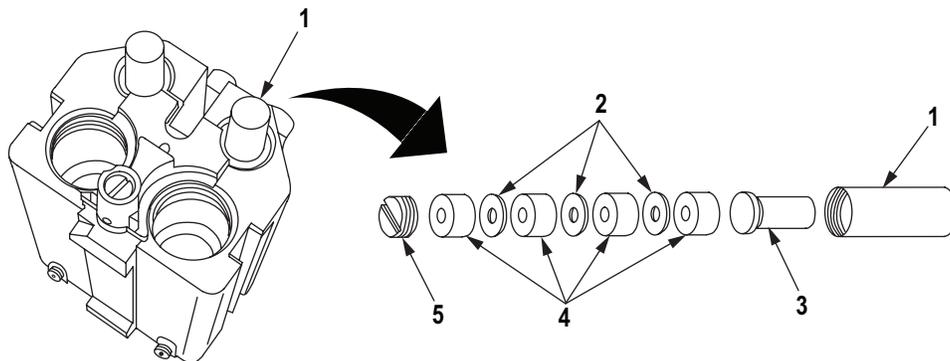
**MALFUNCTION**

Bolt Buffers Contaminated with Oil, Water, or Dust.

**CORRECTIVE ACTION****NOTE**

Hard firing occurs when one of the weapon's buffer components is worn out, broken, missing, or exposed to oil, water, and/or dust. The shock of the bolt's recoil, instead of being absorbed by these components, is transmitted to the attaching points of the gun and mount.

1. Remove non-electrical wire, bolt sleeves, and bolt buffers (Figure 1, Item 1) (WP 0026). Disassemble both bolt buffers (WP 0029). Inspect interiors for missing spring washers (Figure 1, Item 2) and for presence of any oil, water, or dust.
2. Replace any missing or contaminated spring washer (Figure 1, Item 2), ensuring internal components (Figure 1, Items 2, 3, 4 and 5) are clean, dry, and are in the correct order upon reassembly. Install bolt sleeves and nonelectrical wire (WP 0026).



T2104M19

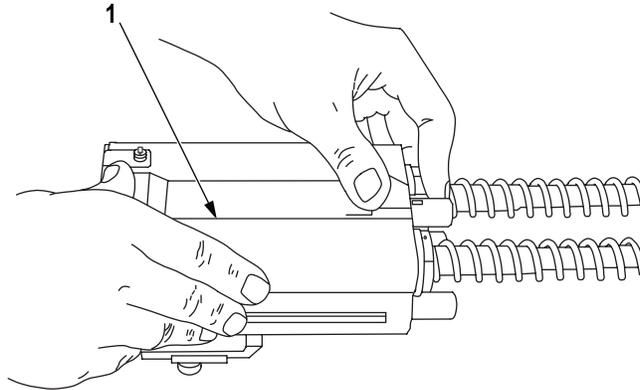
*Figure 1. Bolt Buffers.*

**MALFUNCTION**

Broken Helical Compression Spring; Out-of-Position or Missing Buffer Components.

**CORRECTIVE ACTION**

1. Remove bolt and backplate assembly from receiver (WP 0026). Turn bolt face down and manually attempt to move bolt sear (Figure 2, Item 1). The bolt sear should not move easily. If it does, helical compression spring may be broken or one of the components in the cavity between bolt and bolt sear may be missing.
2. If bolt sear is loose, perform substeps below:
  - a. Remove components (WP 0026).
  - b. Inspect for a broken helical compression spring or components out of order or missing.
  - c. Install new components as necessary before adjusting bolt timing (WP 0040).



T2105M19

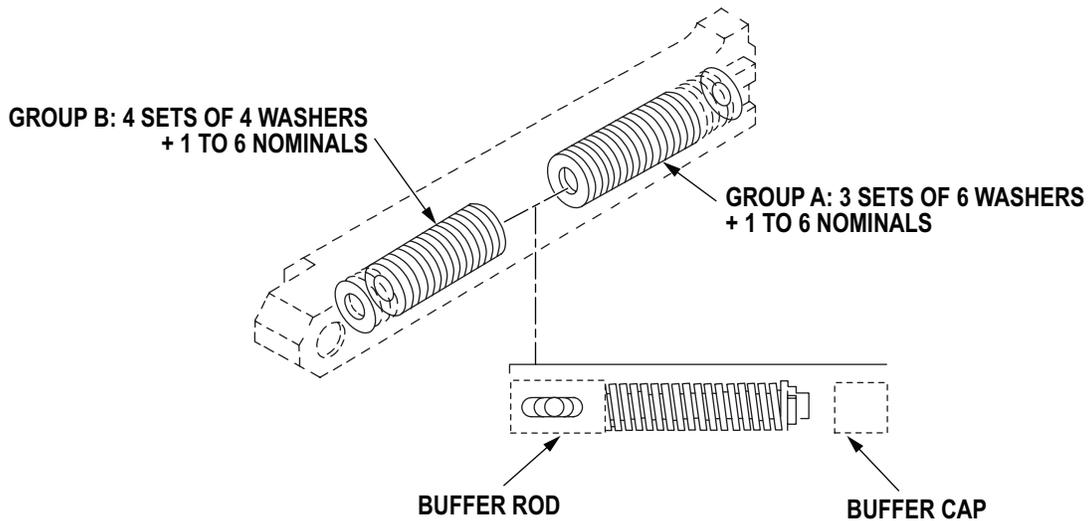
Figure 2. Bolt Sear.

**MALFUNCTION**

Loose Buffer Bodies; Broken, Out-of-Position, or Missing Receiver Buffer Components.

**CORRECTIVE ACTION**

1. Remove sear assembly from receiver (WP 0029). Remove LH and RH receiver buffer bodies and recoil pins. Disassemble LH and RH receiver buffer bodies one at a time (WP 0029). The sequence of components inside buffer bodies should match the following illustration. Inspect for broken/missing washers or parts out of sequence.
2. Install new components as necessary, replacing all spring washers in both receiver buffer bodies if any of the old spring washers were broken. Lubricate and reassemble the components, ensuring they are installed correctly (WP 0029).



T2106M19

Figure 3. Buffer Bodies.

**MALFUNCTION**

Burrs or Aluminum Buildup on Vertical Cam Assembly.

**CORRECTIVE ACTION**

1. Remove vertical cam assembly and primary drive lever (WP 0030).

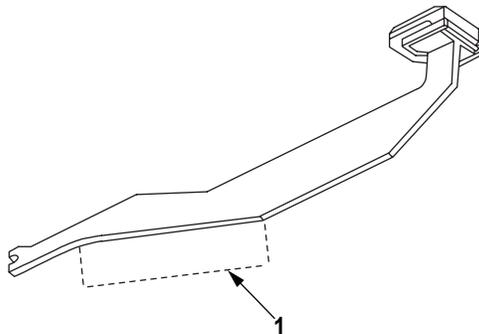
**NOTE**

Do not use any abrasive other than crocus cloth or sharpening stone. Use of any other abrasive could cause damage to the vertical cam.

2. Inspect the chromed surface (Figure 4, Item 1) of vertical cam for nicks, pits, burrs, scratches, and aluminum buildup.
3. Using a dial caliper, measure the distance of pits from the edge on the chromed surface. If pits are farther than 0.030 inch from edge, replace vertical cam (WP 0030).
4. Remove any aluminum buildup, surface imperfection, or dullness using crocus cloth or sharpening stone. Remove any sharp edges with sharpening stone.

**CORRECTIVE ACTION - Continued**

5. If the center of the cam surface cannot be polished to a smooth mirror-like finish, replace vertical cam assembly (WP 0030).
6. Preserve with Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT).



T2107M19

*Figure 4. Vertical Cam.***MALFUNCTION**

Bent Vertical Cam.

**CORRECTIVE ACTION**

Install new vertical cam assembly (WP 0030).

**END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
TROUBLESHOOTING PROCEDURES  
RUNAWAY GUN (UNCONTROLLED AUTOMATIC FIRE)**

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**INITIAL SETUP:****Tools and Special Tools**

Dial Caliper (WP 0090, Table 1, Item 13)  
Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps only) (WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only) (WP 0090, Table 1, Item 35)

**Materials/Parts**

Cloth, Abrasive Crocus (WP 0089, Table 1, Item 7)

**Materials/Parts (cont.)**

Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)  
Lubricating Oil (LSAT) (WP 0089, Table 1, Item 12)  
Stone, Sharpening (WP 0089, Table 1, Item 15)

**References**

TI-09761A-35/1  
WP 0026  
WP 0029  
WP 0040

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**TROUBLESHOOTING PROCEDURE****SYMPTOM**

RUNAWAY GUN (UNCONTROLLED AUTOMATIC FIRE)

**MALFUNCTION**

Broken/Worn Lock Plate; Loose Bolt Buffer Cap(s).

**CORRECTIVE ACTION**

1. Remove bolt and backplate assembly from receiver (WP 0026). Inspect lock plate (Figure 1, Item 1) for breakage.

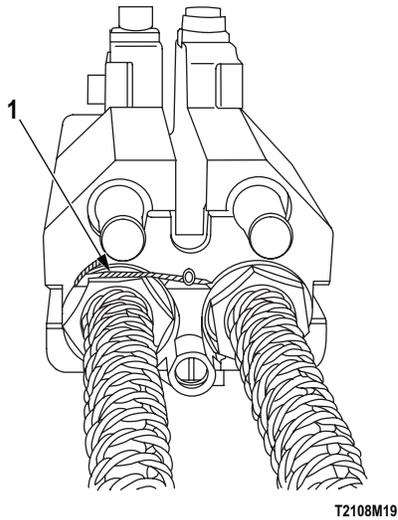
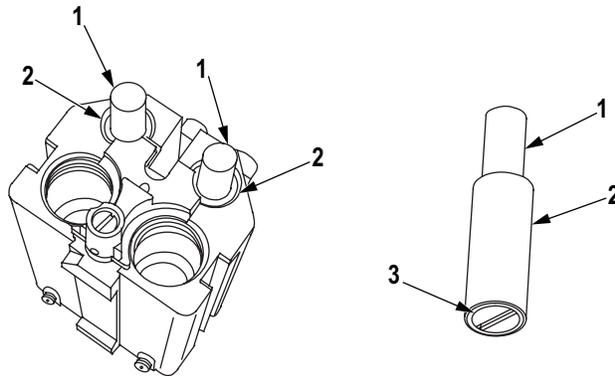


Figure 1. Lock Plate.

**CORRECTIVE ACTION - Continued**

2. If lock plate is broken, perform the following substeps:
  - a. Remove non-electrical wire and bolt sleeves.
  - b. Lift off assembly.
  - c. Ensure bolt buffer caps are properly stacked. If loose, replace bolt buffer cap assembly (WP 0026).
  - d. Install a new lock plate assembly and adjust bolt timing (WP 0026).
3. Place bolt face down, check position of the two bolt buffers (Figure 2, Item 1) to be sure that the body (Figure 2, Item 2) (wider diameter part of each buffer) does not extend above the bolt. If it does, bolt buffer cap (Figure 2, Item 3) is probably loose. Tighten caps as required.



T2109M19

Figure 2. Lock Plate and Buffer Caps.

**MALFUNCTION**

Burrs or Aluminum Buildup on Vertical Cam Assembly.

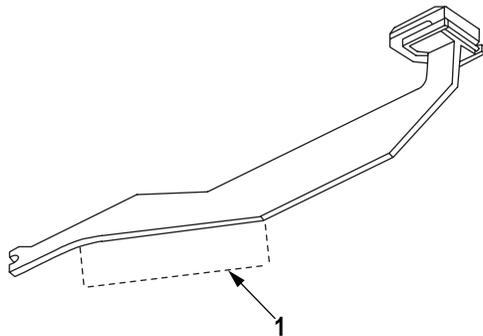
**CORRECTIVE ACTION**

1. Remove vertical cam assembly and primary drive lever (WP 0030).

**NOTE**

Do not use any abrasive paper other than 600-grit silicone carbide abrasive paper. Other abrasive paper could cause damage to the vertical cam.

2. Inspect the chromed surface (Figure 3, Item 1) of vertical cam for nicks, pits, burrs, scratches, and aluminum buildup.
3. Using a dial caliper, measure the distance of pits from the edge on the chromed surface. If pits are farther than 0.030 inch from edge, replace vertical cam (WP 0030).
4. Remove any aluminum buildup, surface imperfection, or dullness using crocus cloth or sharpening stone. Remove any sharp edges with sharpening stone.
5. If the center of the cam surface cannot be polished to a smooth mirror-like finish, replace vertical cam assembly (WP 0030).
6. Preserve with Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT).



T2110M19

Figure 3. Vertical Cam.

**MALFUNCTION**

Bent Vertical Cam.

**CORRECTIVE ACTION**

Install new vertical cam assembly (WP 0030).

**MALFUNCTION**

Broken Receiver Sear or Sear Spring.

**CORRECTIVE ACTION**

1. Remove sear assembly from receiver. Remove bolt and backplate assembly from receiver (WP 0026). Raise receiver sear (Figure 4, Item 1) and check sear spring (Figure 4, Item 2) for breakage. Check receiver sear for breakage or extreme wear on rear surface and bolt sear.
2. If sear spring is broken, remove sear spring and install a new one (WP 0029).
3. If sear shoulder is broken, perform substeps below:
  - a. Remove receiver buffer bodies and sear pin (WP 0029).
  - b. Lift out sear.
  - c. Install a new receiver sear and bolt sear (WP 0029).

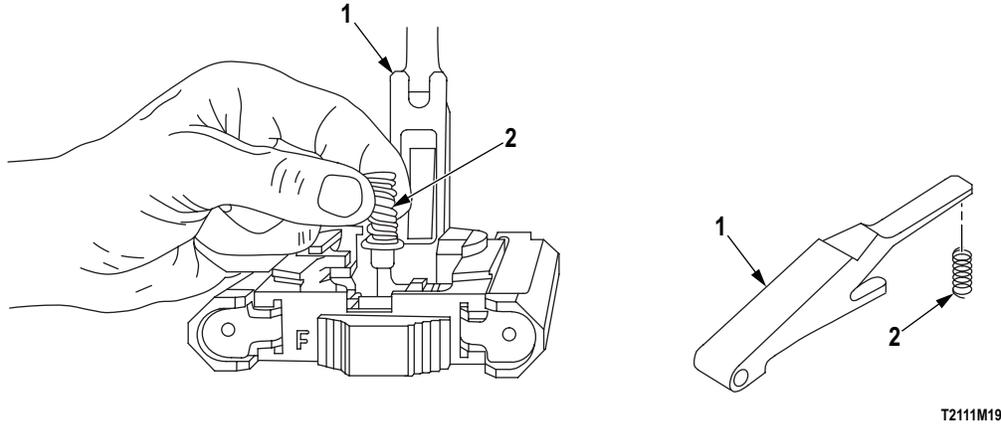


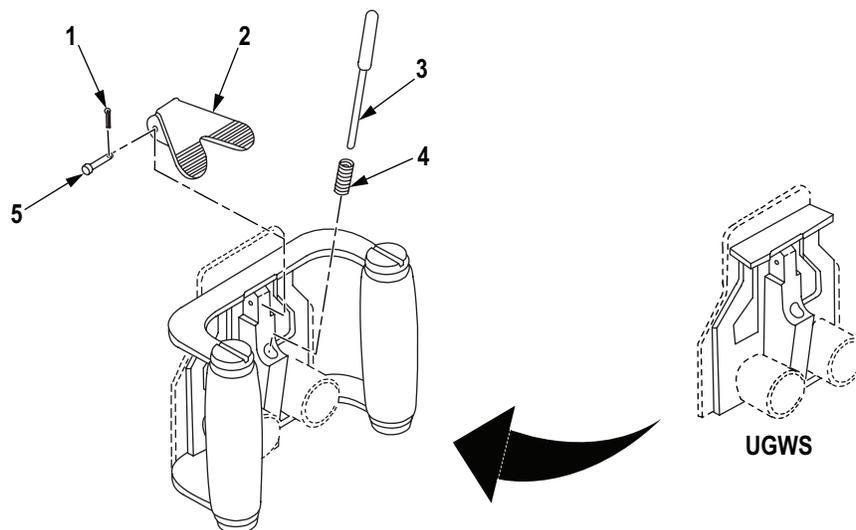
Figure 4. Receiver Sear.

**MALFUNCTION**

Trigger Obstructed in Down Position.

**CORRECTIVE ACTION**

1. Depress trigger and release. Spring action should be crisp.
2. If trigger mechanism is obstructed, perform substeps below:
  - a. Remove cotter pin (Figure 5, Item 1) and panhead straight pin (Figure 5, Item 5).
  - b. Lift off manual trigger plate (Figure 5, Item 2), operating rod (Figure 5, Item 3) and helical compression spring (Figure 5, Item 4) (WP 0026).
  - c. Remove obstruction. Replace any damaged parts.



T2112M19

Figure 5. Trigger Mechanism.

**MALFUNCTION**

Electric Firing Solenoid Defective (UGWS ONLY).

**CORRECTIVE ACTION**

Refer to TI-09761A-35/1 for repair of solenoid.

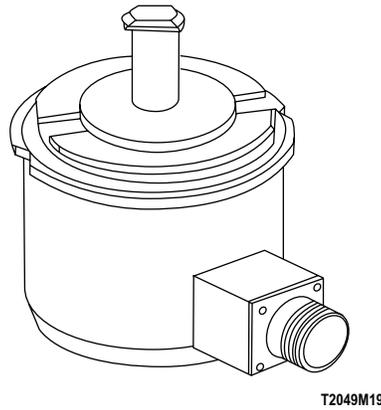


Figure 6. *Electric Firing Solenoid.*

**END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
TROUBLESHOOTING PROCEDURES  
PREMATURE FIRING**

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**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps  
Only) (WP 0090, Table 1, Item 37)

**Tools and Special Tools (cont.)**

Tool Set, Intermediate (Marine Corps only)  
(WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only)  
(WP 0090, Table 1, Item 35)

**References**

WP 0019  
WP 0026  
WP 0040

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**TROUBLESHOOTING PROCEDURE****WARNING**

- Any unusual occurrence during firing (e.g., short recoil, out-of-battery, excess smoke, flash, loud or muffled report, malfunction or stoppage) warrants immediate inspection of the weapon. Clear weapon, check barrel for obstruction, feeder, bolt face, and receiver for damage and/or unusual debris.
- Improper installation of the MK93 mount catch bag or excessive accumulation of the spent cartridge cases in the bag can cause an out-of-battery fire by allowing spent cases to pile up under the bolt. This can cause a weapon stoppage and possibly out-of-battery functioning by physically interfering with the bolt action. The out-of-battery early functioning is the result of the bolt hitting a spent cartridge case that did not fully enter the catch bag. As a result, the firing pin can deploy early (premature firing) hitting the primer before the chamber is fully chambered. The case ruptures and the projectile can then lodge in the barrel due to lack of gas pressure to propel it through the barrel.

**NOTE**

A weapon stoppage is listed as an unusual occurrence requiring an inspection of the weapon barrel for an obstruction. Such an obstruction is the projectile from the previous fired round even if some projectiles are observed to go downrange.

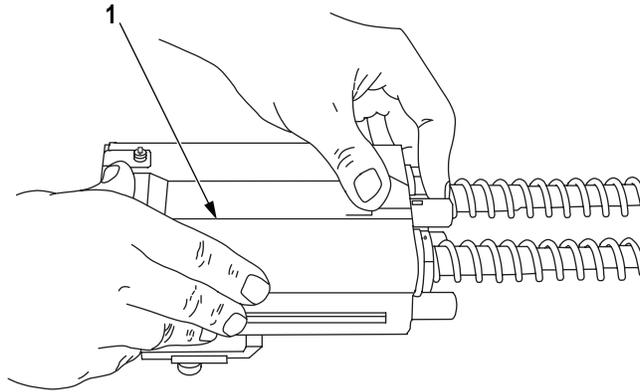
**SYMPTOM****PREMATURE FIRING****MALFUNCTION**

Loose or Broken Bolt Sear; Broken Lock Plate or Helical Compression Spring; Damaged or Missing Buffer Components.

**CORRECTIVE ACTION**

1. Remove bolt and backplate assembly from receiver.
2. Manually attempt to move bolt sear (Figure 1, Item 1). If it moves easily, remove components (WP 0026). Check for a broken lock plate, bolt sear, helical compression spring, damaged or missing components.
3. Replace any missing or damaged components after completing malfunction actions(s) for broken firing pin, firing pin sear, or springs in following malfunction.

**CORRECTIVE ACTION - Continued**



T2113M19

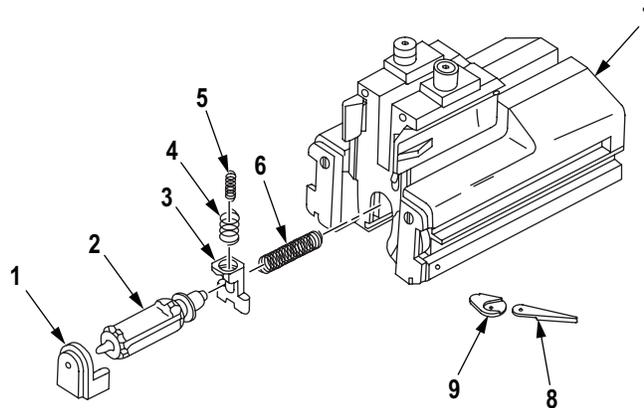
Figure 1. Bolt and Backplate.

**MALFUNCTION**

Broken Firing Pin, Firing Pin Sear, or Springs.

**CORRECTIVE ACTION**

1. With bolt sear removed, remove cocking lever (Figure 2, Items 8 and 9) and firing components (Figure 2, Item 1) (WP 0026). Inspect for breakage.
2. Replace any broken parts with new ones. Adjust bolt (Figure 2, Item 7) timing (WP 0040) and assemble components (Figure 2, Items 1, 2, 3, 4, 5 and 6) (WP 0026).



T2114M19

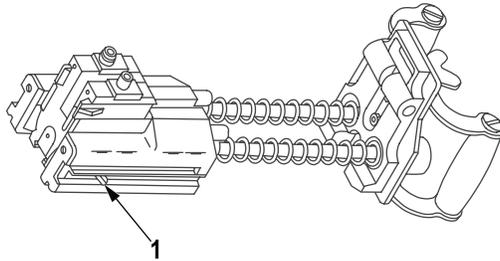
Figure 2. Firing Pin, Firing Pin Sear, and Springs.

**MALFUNCTION**

Broken or Worn Two-Piece Cocking Lever.

**CORRECTIVE ACTION**

1. With bolt and backplate removed (WP 0026), inspect for broken cocking lever (Figure 3, Item 1).
2. Remove broken two-piece cocking lever and install a new one (WP 0026).



T2115M19

Figure 3. Cocking Lever.

**MALFUNCTION**

Damaged Receiver or Chamber from Premature Firing.

**CORRECTIVE ACTION**

Inspect forward area of receiver and chamber area for damage. If a case or round is lodged in bore, see OBSTRUCTED BORE (WP 0019).

**MALFUNCTION**

Full Cartridge Catch Bag (Not For Marine Corps Use).

**CORRECTIVE ACTION**

**WARNING**



Empty cartridge catch bag frequently during firing. If cartridge catch bag becomes too full, spent cases can jam weapon causing stoppage and out-of-battery firing. Should such a stoppage or out-of-battery firing occur, check for bore obstruction.

Empty cartridge catch bag.

**END OF WORK PACKAGE**

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**FIELD MAINTENANCE  
TROUBLESHOOTING PROCEDURES  
DEFORMED CASE OR ROUND (SHORT RECOIL, UNCONTROLLED ROUND)**

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**INITIAL SETUP:****Tools and Special Tools**

Dial Caliper (WP 0090, Table 1, Item 13)  
Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps only) (WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only) (WP 0090, Table 1, Item 35)

**Materials/Parts (cont.)**

Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)  
Lubricating Oil (LSAT) (WP 0089, Table 1, Item 12)  
Sealing Compound (WP 0089, Table 1, Item 14)  
Set Screw, Nylon Point (WP 0063, Figure 5, Item 29) Qty: 2  
Stone, Sharpening (WP 0089, Table 1, Item 15)

**Materials/Parts**

Cap Screws, Socket Head (WP 0063, Figure 5, Item 31) Qty: 2  
Cap Screws, Socket Head, Self-Locking (WP 0063, Figure 5, Item 28) Qty: 2  
Cap Screws, Socket Head, Self-Locking (WP 0066, Figure 8, Item 10) Qty: 3  
Cleaning Compound, Solvent (WP 0089, Table 1, Item 4)  
Cloth, Abrasive Crocus (WP 0089, Table 1, Item 7)

**References**

TM 9-1010-230-10  
WP 0019  
WP 0026  
WP 0030  
WP 0040  
WP 0041  
WP 0054

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## TROUBLESHOOTING PROCEDURE

### NOTE

A deformed case or round occurs when the bolt fails to secure the round during charging or recoil or when there is a short recoil. When the round is not held securely, it can fall and become lodged between the bolt and receiver. In a short recoil, the round is not positioned for chambering and hits the receiver during the bolt's forward travel. Loose, damaged, burred or broken parts are the primary causes. Short recoil can also result from premature firing. Troubleshoot as follows.

### SYMPTOM

DEFORMED CASE OR ROUND (SHORT RECOIL, UNCONTROLLED ROUND)

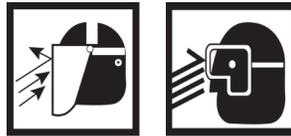
### MALFUNCTION

Case or Projectile Lodged in Bore or Chamber.

### CORRECTIVE ACTION

1. Remove bolt and backplate assembly (WP 0026). Look through receiver to check bore for obstructions.
2. Use Bore Obstruction Detector (BOD) to check for bore obstruction (TM 9-1010-230-10).

### WARNING



To avoid injury, appropriate eye protection is recommended when cleaning weapon and/or its parts.

### NOTE

Do not use any abrasive other than crocus cloth or sharpening stone.

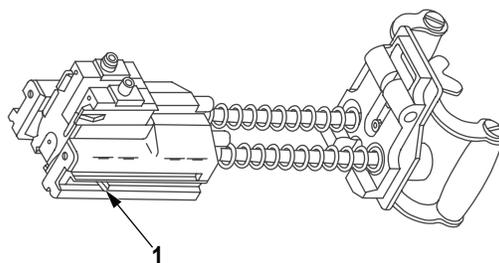
3. See OBSTRUCTED BORE (WP 0019). If only carbon buildup is present, clean bore and chamber. Remove caked-on carbon in chamber with crocus cloth.

### MALFUNCTION

Broken or Worn Cocking Lever.

### CORRECTIVE ACTION

1. With bolt and backplate removed (WP 0026), inspect for broken cocking lever (Figure 1, Item 1).
2. If cocking lever (Figure 1, item 1) is worn or broken, remove cocking lever and install a new one (WP 0026).

**CORRECTIVE ACTION - Continued**

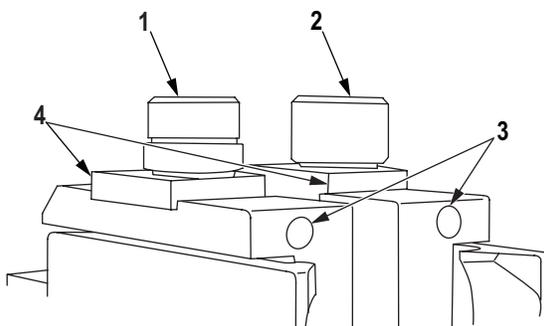
T2116M19

*Figure 1. Cocking Lever.***MALFUNCTION**

Worn, Frozen, Loose, or Missing Right-Hand (RH) or Left-Hand (LH) Cam Follower(s).

**CORRECTIVE ACTION**

1. Inspect bolt for loose or missing RH or LH cam followers (Figure 2, Item 1 and 2).
2. If cam followers are worn, frozen, loose or missing, perform substeps below:
  - a. Remove nylon point setscrew (Figure 2, Item 3) from side on which the cam follower is worn, frozen, loose, or missing and discard.
  - b. If cam follower is loose, remove it.
  - c. Be sure to remove all the nylon tip from each hole after cam followers have been removed.
  - d. Install cam follower (replace if necessary), ensuring pin retainers (Figure 2, Item 4) are in place during installation.
  - e. Install new nylon point setscrews (Figure 2, Item 3).



T2117M19

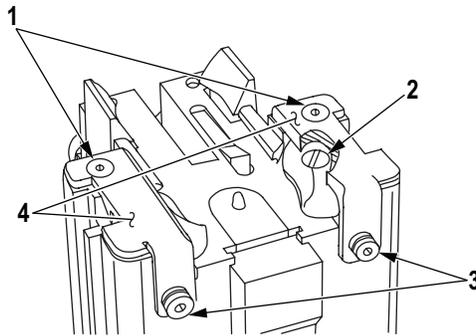
*Figure 2. Cam Followers.*

**MALFUNCTION**

Loose or Missing Screws; Loose Bolt Fingers.

**CORRECTIVE ACTION**

1. Inspect bolt for loose or missing self-locking screws (Figure 3, Item 1) and self-locking socket head capscrews (Figure 3, Item 3). Inspect RH and LH covers (Figure 3, Item 4) for damage and ensure they are tight.
2. Place large screwdriver on combination tool under each bolt finger and lift to check for loose shoulder bolt.
3. If screws are loose or missing, perform substeps below:
  - a. Remove two self-locking screws (Figure 3, Item 1) and two self-locking socket head capscrews (Figure 3, Item 3). Discard self-locking screws and self-locking socket head capscrews.
  - b. Replace damaged covers as needed. Assemble with two new self-locking screws (Figure 3, Item 1) and new self-locking socket head capscrews (Figure 3, Item 3).
4. If bolt fingers are loose, perform substeps below:
  - a. Remove two self-locking screws (Figure 3, Item 1), self-locking socket head capscrews (Figure 3, Item 3), RH or LH cover (Figure 3, Item 4), and nylon point setscrews (Figure 3, Item 2) beneath self-locking socket head capscrews. Discard self-locking screws and self-locking socket head capscrews.
  - b. Tighten loose shoulder bolts.
  - c. Remove any remaining nylon tip from setscrew hole(s) and install two new self-locking screws, new self-locking socket head capscrews, and new nylon point setscrews upon assembly.
  - d. Verify the RH and LH covers are tight.



T2118M19

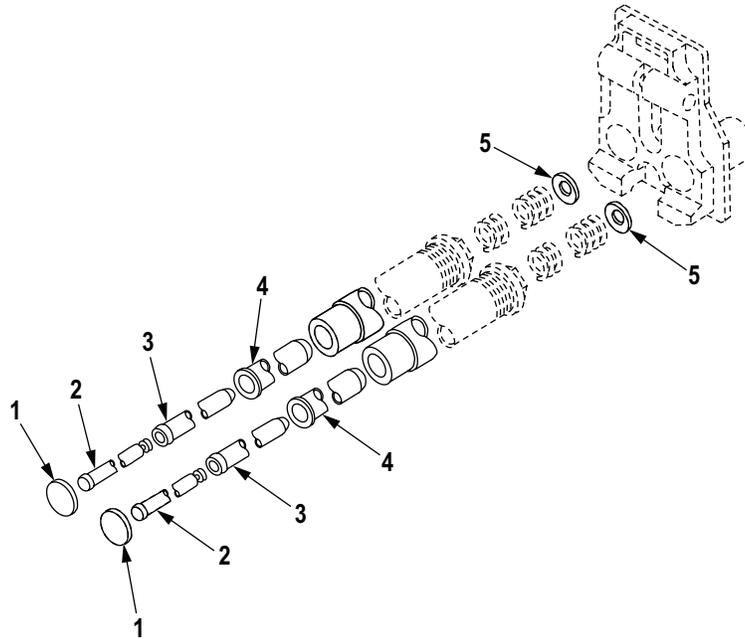
Figure 3. Bolt Fingers.

**MALFUNCTION**

Broken Spring Washers; Burred Tubes or Rods.

**CORRECTIVE ACTION**

1. Disassemble bolt and backplate assembly (WP 0026). Inspect front washers (Figure 4, Item 1) and spring washers (Figure 4, Item 5) for damage. Check tubes and rods (Figure 4, Items 2, 3, and 4) for damage around the mouth of each.
2. If one or both spring washers (Figure 4, Item 5) are broken, replace both spring washers, ensuring convex side is seated against the helical.
3. If rods or tubes (Figure 4, Items 2, 3, and 4) have burrs, remove using crocus cloth or sharpening stone. If damaged, replace all rods and tubes (WP 0026).
4. If one or both front washers (Figure 4, Item 1) are worn, replace both washers. Assemble components (WP 0026). Adjust bolt timing (WP 0040).

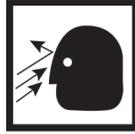


T2125M19

Figure 4. Tubes, Rods and Spring Washers.

**MALFUNCTION**

Loose or Missing Feed Slide Assembly Components.

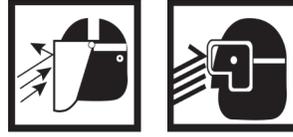
**CORRECTIVE ACTION****WARNING**

The shuttle spring and housing are held under pressure. Always use the feed slide tool to hold the helical compression spring before removing the self-locking shoulder screws. Failure to observe this warning will result in injury.

1. Detach secondary drive lever from top cover (WP 0028) and fold down the feed tray with feed slide assembly.
2. Check for bent, broken or missing helical compression spring (Figure 5, Item 3).
3. Check guide rod (Figure 5, Item 1) for looseness. It should not move.
4. Check to see if any of the three self-locking socket head screws (Figure 5, Item 2) are loose or missing from feed slide housing.
5. Check for proper feed slide adjustment (WP 0041).

**CORRECTIVE ACTION - Continued**

**WARNING**



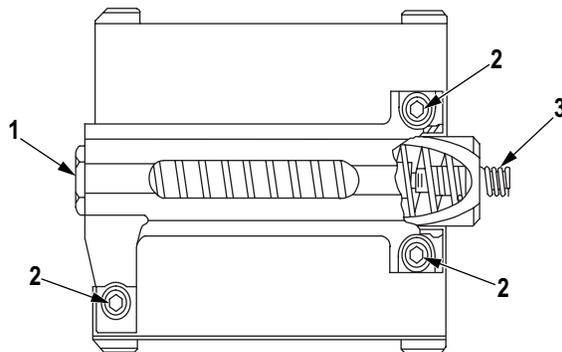
To avoid injury, appropriate eye protection is recommended when cleaning weapon and/or its parts.

**WARNING**



Cleaning compound solvent is flammable and toxic and must be kept away from open flames and used in a well-ventilated area. Use of rubber gloves is necessary to protect the skin when washing parts.

6. If shuttle spring is bent, broken or missing, or guide rod is loose, perform substeps below:
  - a. Remove feed slide assembly from tray. Remove housing.
  - b. Remove loose guide rod (Figure 5, Item 1).
  - c. Clean threads of guide rod (Figure 5, Item 1) and housing using cleaning compound solvent.
  - d. Apply sealing compound to guide rod (Figure 5, Item 1) before tightening. Replace broken shuttle spring.
  - e. Perform feed slide adjustment (WP 0041).
7. If self-locking socket head screws (Figure 5, Item 2) are loose or missing, install new self-locking socket head screws.



T2120M19

Figure 5. Guide Rod and Drive Lever.

**MALFUNCTION**

Burrs or Aluminum Buildup on Vertical Cam Assembly.

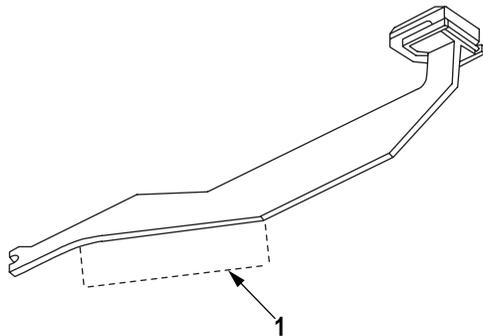
**CORRECTIVE ACTION**

1. Remove vertical cam assembly and primary drive lever (WP 0030).

**NOTE**

Do not use any abrasive other than crocus cloth or sharpening stone. Use of any other abrasive could cause damage to the vertical cam.

2. Inspect the chromed surface (Figure 6, Item 1) of vertical cam for nicks, pits, burrs, scratches, and aluminum buildup.
3. Using a dial caliper, measure the distance of pits from the edge on the chromed surface. If pits are farther than 0.030 (0.076 cm) inch from edge, replace vertical cam (WP 0030).
4. Remove any aluminum buildup, surface imperfection, or dullness using crocus cloth or sharpening stone. Remove any sharp edges with sharpening stone.
5. If the center of the cam surface cannot be polished to a smooth mirror-like finish, replace vertical cam assembly (WP 0030).
6. Preserve with Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT).



T2121M19

Figure 6. Vertical Cam.

**MALFUNCTION**

Bent Vertical Cam.

**CORRECTIVE ACTION**

Install new vertical cam assembly (WP 0030).

**MALFUNCTION**

Incorrect, Obstructed, Worn, or Broken Right-Hand (RH) or Left-Hand (LH) Cartridge Extractors;  
Broken or Weak Springs.

**CORRECTIVE ACTION**

1. Check tips (Figure 7, Item 1) of RH and LH cartridge extractors for obvious wear or breakage. Ensure wider tip is on top.
2. If wear or breakage is observed, replace the RH or LH cartridge extractors/springs (WP 0054).

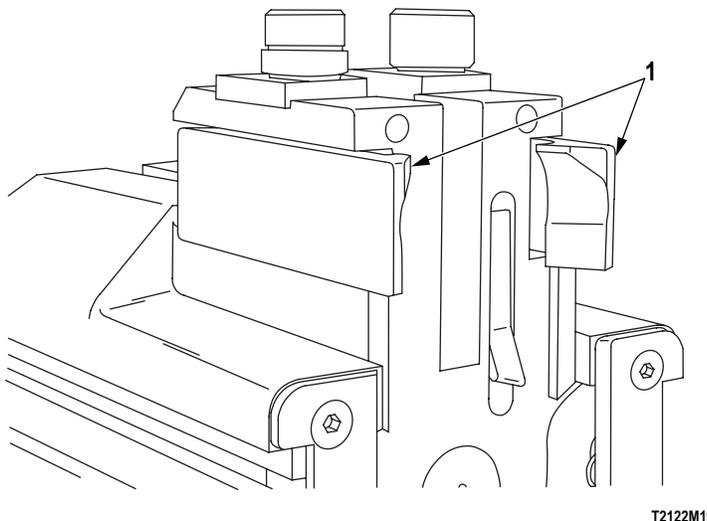


Figure 7. Cartridge Extractors.

**END OF WORK PACKAGE**



---

**FIELD MAINTENANCE  
TROUBLESHOOTING PROCEDURES  
CHARGER HANDLE(S) OVERRIDES BOLT**

---

**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps  
Only) (WP 0090, Table 1, Item 37)

**Tools and Special Tools (cont.)**

Tool Set, Intermediate (Marine Corps only)  
(WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only)  
(WP 0090, Table 1, Item 35)

**References**

WP 0026  
WP 0032

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**TROUBLESHOOTING PROCEDURE****SYMPTOM**

CHARGER HANDLE(S) OVERRIDES BOLT

**MALFUNCTION**

Slot in Bolt is Deformed.

**CORRECTIVE ACTION**

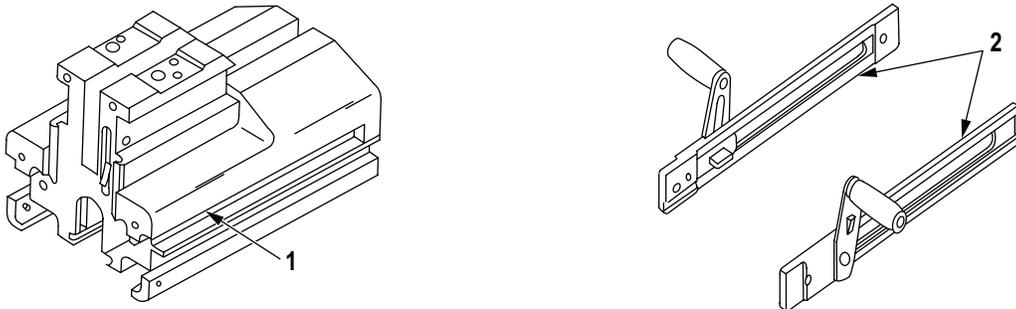
If slot (Figure 1, Item 1) in bolt is deformed more than 50 percent of its depth, replace bolt (WP 0026).

**MALFUNCTION**

Charger Handle Assembly(s) Housing is Bent or Bowed.

**CORRECTIVE ACTION**

Inspect charger handle assembly housings (Figure 1, Item 2). If bent or broken, replace charger housing (WP 0032).



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Figure 1. Bolt and Charger Handle Assemblies.

**END OF WORK PACKAGE**

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**FIELD MAINTENANCE  
TROUBLESHOOTING PROCEDURES  
OBSTRUCTED BORE**

---

**INITIAL SETUP:****Tools and Special Tools**

Rod, Cleaning, Small Arms (WP 0090, Table 1, Item 27)  
Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)

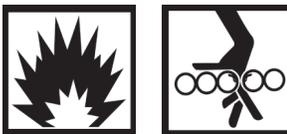
**Tools and Special Tools (cont.)**

Tool Set, Intermediate (Marine Corps only)  
(WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only)  
(WP 0090, Table 1, Item 35)

**References**

TM 9-1010-230-10  
WP 0039

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**TROUBLESHOOTING PROCEDURE****WARNING**

- Before performing any procedure, ensure the weapon is clear of any ammunition.
- Ensure all ammunition and non-essential personnel are at least 213 feet (65 meters) to the rear of the weapon.
- Be prepared to catch dropped/ejected live round from weapon.
- Do not use a bayonet to remove an empty case or live round.
- Do not let the bolt slam forward as top cover is being opened; it could fire a round.
- Do not allow top cover to slam shut from raised position. Hand injury or equipment damage may result.
- Be sure to put the bolt in forward position before removing the backplate pin assembly. Failure to observe this warning will result in injury.

**SYMPTOM**

## OBSTRUCTED BORE

**MALFUNCTION**

Bore Obstructed.

**CORRECTIVE ACTION**

1. Place weapon on "S" (SAFE).
2. Charge gun and hold bolt to rear.
3. Open top cover.
4. Insert Bore Obstruction Device (BOD) into bore to check for a live round.

**MALFUNCTION**

Live Round Lodged in Bore.

**CORRECTIVE ACTION**

Perform substeps below:

- a. If vehicle is mounted, remove empty catch bag.
- b. Depress feed pawl, release ammunition belt, and clear feed area. Move ammunition belt and can to a safe area.
- c. Holding bolt to the rear, insert cleaning rod through receiver rail to top of shell casing and as close to the bolt as possible.
- d. Place left hand underneath as close to the round as possible. Vigorously raise cleaning rod upward forcing the round off the bolt face into the hand. Remove round to designated area for Expended Ordnance Disposal (EOD).
- e. Place selector lever on "F" (FIRE). Ease the bolt forward. Remove backplate pin, bolt and backplate assembly (WP 0026). Check for type of obstruction.
- f. Remove obstruction per round removal procedures (TM 9-1010-230-10).

**MALFUNCTION**

Spent Case Lodged in Bore.

**CORRECTIVE ACTION**

1. Remove barrel (WP 0039).
2. Install new barrel (WP 0039).

**MALFUNCTION**

Projectile in Receiver, Separated from Case.

**CORRECTIVE ACTION**

Ammunition defective. Remove and dispose of separated projectile IAW local directives. No further corrective action is required.

**END OF WORK PACKAGE**



## **CHAPTER 3**

# **PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)**



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## FIELD MAINTENANCE PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION

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### GENERAL

This section contains the procedures and instructions necessary to perform Field Preventive Maintenance Checks and Services (PMCS). These services are to be performed by Field Maintenance personnel.

Wherever the MK19 MOD 3 is specified it shall also include the MK19 MOD 3 with Bracket and MK19 Upgunned Weapons Station (UGWS) unless otherwise indicated.

### PREVENTIVE MAINTENANCE CHECKS AND SERVICES

#### General

The PMCS procedures are contained in the following table. They are arranged in logical sequence requiring a minimum amount of time and motion on the part of the persons performing them, and are arranged so that there will be minimum interference between persons performing checks simultaneously on the same end item.

1. Unless otherwise noted, perform PMCS as indicated in (WP 0021) to keep the weapon ready for use.
2. If the weapon has not been used for 90 days, PMCS in the operator's manual (TM 9-1010-230-10) should also be performed. If you see rust or other signs of wear on a weapon, the PMCS should be performed immediately.

#### Explanation of Columns

1. **Item No. Column.** Checks and services are numbered in disassembly sequence. This column shall be on used as a source of numbers for "TM Number" column DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording results of PMCS.
2. **Interval Column.** This column gives the designated interval when each check is to be performed.
3. **Item To be Checked or Serviced Column.** This column lists the items to be checked or serviced. Items identified "DTI" indicate Detailed Technical Inspection, to be performed every six months or 1,000 rounds, whichever is first. Items identified as "LTI" indicate Limited Technical Inspection performed before issuing system back to lower echelon units and prior to embarkation after debarkation from tactical employment. Also perform every time the gun has been immersed in water or exposed to other extreme conditions, is rusty, or appears extremely dirty or worn.
4. **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. Information marked "SH" indicates a specific equipment shortcoming and the procedure needed to correct the shortcoming.
5. **Equipment Not Ready/Available If: Column.** This column contains a brief statement of the condition (e.g., malfunction, shortage) that would cause the covered equipment to be less than fully ready to perform its assigned mission.

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**PREVENTIVE MAINTENANCE CHECKS AND SERVICES - Continued****PMCS PROCEDURES**

Inspect all assemblies for missing, broken, or loose parts. Inspect parts for cracks, dents, burrs, excessive wear, rust, or corrosion. Inspect external surfaces for adequate finish. Repair or replace defective parts if authorized, or notify Field Support Maintenance if repair is not authorized.

**LUBRICATION**

Make sure all items are cleaned and lubricated (TM 9-1010-230-10). Do not use lubricants on any composite/rubber components (WP 0046). Refinish if necessary using solid film lubricant.

**NOTE**

Used/waste grease, sealing compounds, cleaning compounds, solvents, and lubricants as well as items contaminated with these substances (such as cleaning rags) must be disposed of properly. See Hazardous Waste Disposal Information in (WP 0001) for more information.

**END OF WORK PACKAGE**

**FIELD MAINTENANCE  
BEFORE PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)**

**INITIAL SETUP:****Tools and Special Tools**

Feed Adjustment Tool (WP 0090, Table 1, Item 16)  
 Rod, Cleaning, Small Arms (WP 0090, Table 1, Item 27)  
 Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
 Tool Set, Intermediate (Marine Corps only) (WP 0090, Table 1, Item 33)  
 Tool Set, Organizational (Marine Corps only) (WP 0090, Table 1, Item 35)

**Materials/Parts**

Cleaning Compound, Solvent (WP 0089, Table 1, Item 6)  
 Cleaning Compound, Rifle Bore (WP 0089, Table 1, Item 5)  
 Cloth, Abrasive Crocus (WP 0089, Table 1, Item 7)

**Materials/Parts (cont.)**

Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)  
 Lubricating Oil (LSAT) (WP 0089, Table 1, Item 12)  
 Lubricating Oil (LSA) (WP 0089, Table 1, Item 11)  
 Lubricant, Solid Film (WP 0089, Table 1, Item 9)  
 Rag, Wiping (WP 0089, Table 1, Item 13)

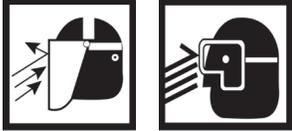
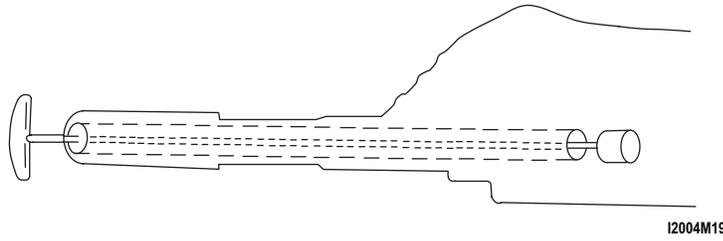
**References**

TM 9-1010-230-10  
 WP 0024  
 WP 0026  
 WP 0029  
 WP 0030  
 WP 0041

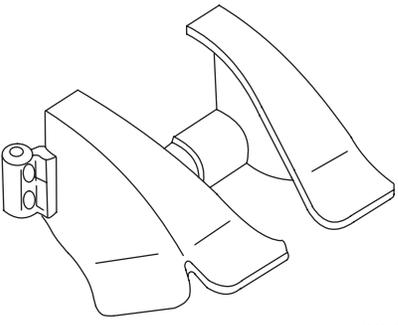
**Table 1. Preventive Maintenance Checks and Services for the MK19 MOD 3 Machine Gun.**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	Before, During, After	MK19 Machine Gun	See TM 9-1010-230-10 for before during and after PMCS procedures.	Rust is present. Slotted washer is worn, split, or not properly lubricated.
2	Before	Feed Slide	Check feed slide alignment before firing (Field Maintenance, with Feed Slide Adjustment Tool).	Feed slide out of alignment.
3	Before	Cam Followers	Inspect cam followers, feed pawl, LH and RH bolt fingers for spring tension, rust, flat spots, and lubrication.	Not serviceable and/or properly lubricated.

**Table 1. Preventive Maintenance Checks and Services for the MK19 MOD 3 Machine Gun - Continued.**

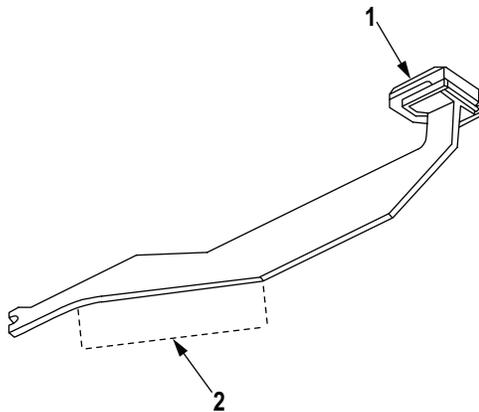
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	Quarterly	Bore and Chamber	<p style="text-align: center;"><b>WARNING</b></p> <div style="text-align: center;">  </div> <p>To avoid injury, appropriate eye protection is recommended when cleaning weapon and/or its parts.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>If possible, clean bore and chamber immediately after firing.</p> <ol style="list-style-type: none"> <li>a. Soak borebrush (on a cleaning rod) with Rifle Bore Cleaner (RBC).</li> <li>b. Insert borebrush into the muzzle and chamber.</li> <li>c. Resoak the brush and repeat until bore and chamber are clean. Carbon may be removed from the chamber using crocus cloth.</li> <li>d. Wipe bore and chamber dry and apply a light coat of Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT).</li> </ol>	<p>Bore and/or chamber has carbon buildup (caked on carbon), pitting, burrs, or bulges.</p>
 <p style="text-align: right; margin-right: 50px;">12004M19</p> <p><i>Figure 1. Bore and Chamber PMCS.</i></p>				
5	Quarterly	Feed Throat (MK19 MOD 3 only)	<ol style="list-style-type: none"> <li>a. Check plungers for condition of the following components: weak springs, knurled pins (test by squeezing each set together).</li> <li>b. Feed throat (check for cracks and bent areas). If bent, install on gun's receiver. Perform dummy round function test.</li> </ol>	<p>Plungers do not firmly secure the feed throat. Springs are weak or pin is missing or broken.</p> <p>Dummy (round) does not pass through the feed throat.</p>

**Table 1. Preventive Maintenance Checks and Services for the MK19 MOD 3 Machine Gun - Continued.**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p>c. Check for and remove rust with crocus cloth. Preserve with light coat of GMD or LSAT.</p>  <p style="text-align: right; margin-right: 50px;">I2005M19</p> <p style="text-align: center;"><i>Figure 2. Feed Throat PMCS.</i></p>	Interior of feed throat is rusted.
6	Quarterly	Top Cover Assembly	<p>a. Raise top cover. Ensure handle is not loose, dry, or binding. Ensure spring is not broken.</p> <p>b. Separate secondary drive lever from top cover (WP 0024). Remove any rust with wiping rag and lubricant. Lubricate lightly.</p>	<p>Lock handle and spring do not move as a unit with no relative movement between them. Spring is broken.</p> <p>Rust is present in the pivot post hole.</p>
7	Quarterly	Secondary Drive Lever Assembly	Inspect for burrs. Remove with a stone. Verify presence of the retaining ring on pivot post.	Retaining ring is worn or missing.
8	Quarterly	Feed Slide Assembly	<p>a. Verify feed slide assembly slides in the feed tray.</p> <p>b. Press feed slide pawls to verify crisp spring action.</p> <p>c. Install feed tray, feed slide assembly (WP 0041), and adjustable secondary drive lever (WP 0024). With bolt in the forward position and feed slide assembly to the left, make sure helical compression spring is touching the inside wall of top cover.</p>	<p>Feed slide/tray binds.</p> <p>Any spring is binding.</p> <p>Top cover will not close. Guide rod spring is bent or out of adjustment. Primary/secondary drive levers do not properly interconnect.</p>
9	Quarterly	Bolt and Backplate Assembly	<p>a. Check for broken or missing safety wire (WP 0026).</p> <p>b. Check for loose or missing screw (WP 0026).</p>	<p>Safety wire is broken or missing (Notify Maintenance Supervisor).</p> <p>Screw is loose or missing (Notify Maintenance Supervisor).</p>

**Table 1. Preventive Maintenance Checks and Services for the MK19 MOD 3 Machine Gun - Continued.**

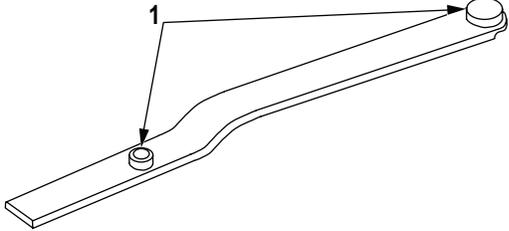
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
10	Quarterly	Vertical Cam Assembly	<p>a. Remove vertical cam assembly and primary drive lever (WP 0030).</p> <p>b. Inspect chromed surface (Figure 3, Item 2) for burrs, pits, nicks, scratches, and aluminum buildup. Remove any aluminum deposits (buildup), surface imperfection, or dullness using crocus cloth or sharpening stone. Remove any sharp edges with sharpening stone.</p> <p>c. If pits are found, measure distance of the pit from the edge. If pits are farther than 0.030 inch (0.076 cm) from the edge, replace vertical cam assembly. (Army: Notify Maintenance Supervisor).</p> <p>d. Verify free movement of drive lever lock (Figure 3, Item 1).</p>	<p>Vertical cam is bent.</p> <p>Aluminum buildup or rust is present on the chromed surface.</p> <p>Pits are visible within 0.030 inch (0.076 cm) from edge on chromed surface.</p> <p>Drive lever pin is loose or missing. Lever binds.</p>



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Figure 3. Vertical Cam Assembly, PMCS.

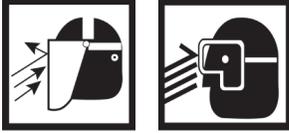
**Table 1. Preventive Maintenance Checks and Services for the MK19 MOD 3 Machine Gun - Continued.**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
11	Quarterly	Primary Drive Lever	Inspect for burrs around pivot post (Figure 4, Item 1) and all surfaces. Remove burrs with crocus cloth or sharpening stone.	Lever is burred. Pivot post is worn or burred.
 <p>I2009M19</p> <p>Figure 4. Primary Drive Lever, PMCS.</p>				
12	Quarterly	Charger Assemblies, LH and RH (MK 19 MOD 3); Charger Block (UGWS)	<p>a. Inspect function and general condition of the following (MK19 MOD 3 only):</p> <ul style="list-style-type: none"> <li>• Handle locks</li> <li>• Slides</li> <li>• Arm mechanism</li> <li>• Lock plungers (tips)</li> </ul> <p>b. Check grooved rails for burrs. Remove burrs with crocus cloth or sharpening stone.</p> <p>c. Apply light coat of lubricant under each handle lock and between each charger housing and receiver.</p>	<p>Parts are missing, broken, bent, or show signs of wear.</p> <p>Rails are bent or burred.</p>

**Table 1. Preventive Maintenance Checks and Services for the MK19 MOD 3 Machine Gun - Continued.**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
13	Semi-Annually	Bolt and Backplate Assembly (DTI) (Not for Army Use) Marine Corps Only	<p style="text-align: center;"><b>WARNING</b></p> <div style="display: flex; justify-content: center; gap: 20px;">   </div> <p>To avoid injury, appropriate eye protection is recommended when cleaning weapon and/or its parts.</p> <p style="text-align: center;"><b>CAUTION</b></p> <ul style="list-style-type: none"> <li>• Do not immerse cam followers, sear buffer, or the assembled bolt buffer assemblies in cleaning solvent. Solvent damages these parts.</li> <li>• Do not lubricate internal components in bolt buffer assemblies. Ensure components are clean, dry, and not lubricated during assembly or excess recoil will result.</li> </ul> <ol style="list-style-type: none"> <li>a. Detail strip, clean, and inspect bolt and backplate assembly.</li> <li>b. Replace any parts required.</li> <li>c. Verify springs are not bent, broken, or worn on outer coils.</li> <li>d. Inspect the mouth of the rods and tubes for burrs. Remove burrs with a stone. Verify rods and tubes are not bent.</li> </ol> <p style="text-align: center;"><b>NOTE</b></p> <p>Anytime cam followers or the covers, RH and LH, are removed, install new nylon point set-screws, flat head screws, and socket head screws.</p> <ol style="list-style-type: none"> <li>e. Adjust bolt timing and check feed slide adjustment each time bolt is detail stripped or any of the following items are installed as new parts: <ul style="list-style-type: none"> <li>• Bolt sear</li> <li>• Sear spring</li> <li>• Buffer washers</li> <li>• Firing pin</li> <li>• Firing pin sear</li> <li>• Lock plate assembly</li> </ul> </li> <li>f. Lubricate and reassemble observing all NOTES mentioned above.</li> </ol>	

**Table 1. Preventive Maintenance Checks and Services for the MK19 MOD 3 Machine Gun - Continued.**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
14	Semi-Annually	Receiver Sear Assembly (DTI) (Not for Army Use)	<p style="text-align: center;"><b>WARNING</b></p> <div style="text-align: center;">  </div> <p>To avoid injury, appropriate eye protection is recommended when cleaning weapon and/or its parts.</p> <p style="text-align: center;"><b>CAUTION</b></p> <p>Do not mix up the order or position of components inside the receiver buffer bodies. Improper sequence or position of these components will cause excess recoil with possible parts damage (WP 0029).</p> <ol style="list-style-type: none"> <li>a. Detail strip, clean, inspect, and lubricate sear assembly.</li> <li>b. Replace any parts required.</li> <li>c. Verify springs are not bent, broken, or worn on outer coils.</li> <li>d. Lubricate and reassemble sear assembly components.</li> </ol>	
15	Semi-Annually	Other Assemblies (DTI) (Not for Army Use)	<ol style="list-style-type: none"> <li>a. Clean other assemblies removing only parts specified in the maintenance procedures for each assembly.</li> <li>b. Inspect for worn, burred, broken, or missing parts.</li> <li>c. Discard unserviceable parts and install new parts as required.</li> <li>d. Verify springs are not bent, broken, or worn on outer coils.</li> <li>e. Lubricate and reassemble the weapon.</li> </ol>	

**END OF TASK**

**END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)  
LIMITED TECHNICAL INSPECTION (LTI)**

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**INITIAL SETUP:****Tools and Special Tools**

Rod, Cleaning, Small Arms (WP 0090, Table 1, Item 27)  
Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps only) (WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only) (WP 0090, Table 1, Item 35)

**Materials/Parts (cont.)**

Cloth, Abrasive Crocus (WP 0089, Table 1, Item 7)  
Lubricant, Solid Film (WP 0089, Table 1, Item 9)  
Rag, Wiping (WP 0089, Table 1, Item 13)

**References**

TM 9-1010-231-13&P  
WP 0026

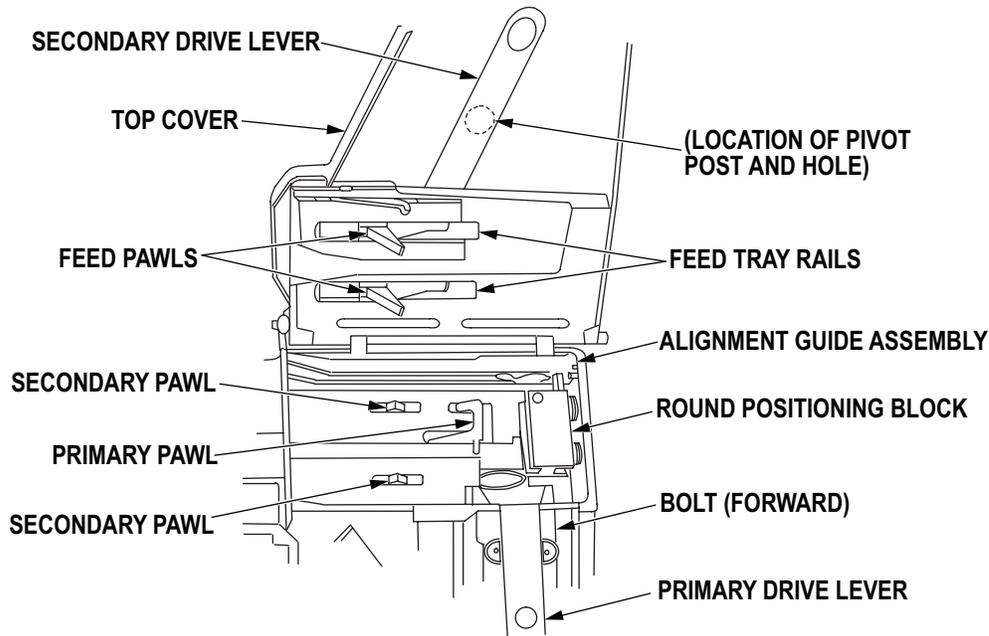
**Materials/Parts**

Cleaning Compound, Rifle Bore (WP 0089, Table 1, Item 7)

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**Table 1. Preventive Maintenance Checks and Services for the MK19 MOD 3 Machine Gun.**

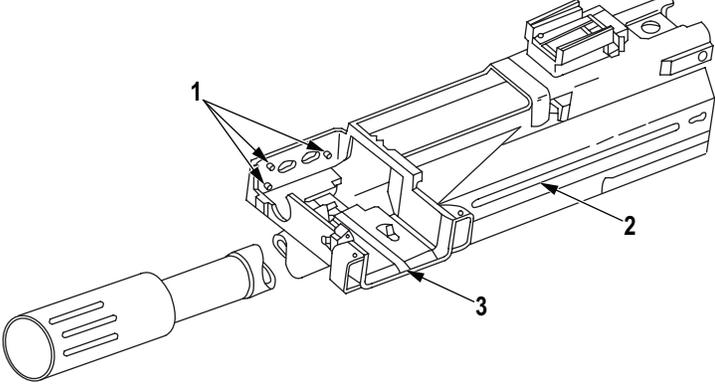
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	LTI	Feed Tray and Feed Tray Pawl	a. Check feed tray for cracks and burrs along rails of the tray. Inspect for rust. Ensure rails are well lubricated.  b. Press and release feed tray pawl to verify crisp spring action without binding.	Feed tray is cracked. Rails are burred. Rust is present.  There is relative movement between pin and the pawl or pawl binds.
2	LTI	Primary and Secondary Pawls	Press and release to verify crisp spring action.	Springs are weak or broken. Pawl is broken.
3	LTI	Round Positioning Block	a. Slide block in keyholes to verify it is tight.  b. Check for movement of pins. Pins may turn but should not have any side to side or inward and outward movement.	Pins are bent or missing.  Pins moving side to side or in and out.



I2006M19

*Figure 1. Feed Tray and Feed Tray Pawl PMCS.*

**Table 1. Preventive Maintenance Checks and Services for the MK19 MOD 3 Machine Gun - Continued.**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	LTI	Alignment Guide Assembly	Verify alignment guide pin is tight.	There is relative movement between the spring and pin.
5	LTI	Receiver	<p>a. Verify the three welded pins (Figure 2, Item 1) are present.</p> <p>b. Remove bolt and backplate assembly (WP 0026). Inspect internal rails (Figure 2, Item 2) for burrs. Inspect feeder link guide (Figure 2, Item 3) for galling or burrs. Check for cracks on weld seams. Inspect all surfaces for rust.</p> <p>c. Inspect receiver interior and right-hand inner rail for cracks and rust.</p>	<p>One or more pins are missing.</p> <p>Rails or feeder link guide are burred (galled). Weld seams are cracked. Rust is present.</p> <p>Cracks are visible. Rust is present.</p>
 <p>I2007M19</p> <p>Figure 2. Receiver PMCS.</p>				
6	LTI	Bolt and Backplate Assembly	<p style="text-align: center;"><b>WARNING</b></p> <p>Do not relink or fire ammunition which has been cycled through the weapon. Failure to comply may result in injury to personnel or damage to equipment.</p> <p>a. Verify assembly is clean, lubricated, and has no rust.</p> <p>b. With bolt and backplate assembly removed from receiver (WP 0026), the firing pin should retract.</p>	<p>Rust is present.</p> <p>Firing pin does not retract.</p>

**Table 1. Preventive Maintenance Checks and Services for the MK19 MOD 3 Machine Gun - Continued.**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
7	LTI	Secondary Pawl	<p>Conduct dummy round test:</p> <p>a. Manually push dummy round across feed tray. Verify pawl snaps behind the rim of the case prior to compression of the bolt fingers.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>If erosion (chipped) is severe enough to interfere with the function of the round being fed into the bolt fingers, replace bolt.</p> <p>b. Push dummy round out of bolt fingers. Verify round passes easily out of bolt fingers. If still binding, disassemble, inspect, and replace damaged parts. (Army: Notify Maintenance Supervisor.)</p>	<p>Secondary pawl does not snap back to retain dummy round.</p> <p>Dummy round binds when manually pushed through bolt fingers.</p>
8	LTI	Sear Assembly	<p style="text-align: center;"><b>NOTE</b></p> <p>Whenever a new receiver sear is installed, also install a new bolt sear. Adjust the gun's timing. (Army: Notify Maintenance Supervisor.)</p> <p>a. Inspect receiver sear (Figure 3, Item 1) for wear. Replace if worn, operating NOTE, above.</p> <p>b. Using dial caliper, sear spring (Figure 3, Item 2). If it is shorter than 0.960 inch (2.44 cm), discard and install a new spring. (Army: Notify Maintenance Supervisor.)</p> <p>c. Move thumb safety (Figure 3, Item 3) back and forth to ensure it snaps into and remains in both the "S" (SAFE) and "F" (FIRE) positions. (Army: Notify Maintenance Supervisor.)</p>	<p>Receiver sear shoulder is worn.</p>

**Table 1. Preventive Maintenance Checks and Services for the MK19 MOD 3 Machine Gun - Continued.**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
9	LTI	Sear Assembly	<p>a. Inspect for broken parts and adequate lubrication.</p> <p>b. Ensure that safety lever pin (Figure 3, Item 4) is installed.</p> <div style="text-align: center;"> <p style="text-align: right; margin-right: 50px;">I2011M19</p> </div> <p style="text-align: center;">Figure 3. Preventive Maintenance Checks and Services.</p>	Parts are broken or missing.
10	LTI	Solenoid (MK19 UGWS only)	Inspect electrical connector receptacle for damage.	Connector is damaged.
11	LTI	Round Removal Tool	<p style="text-align: center;"><b>WARNING</b></p> <div style="text-align: center;"> </div> <p>To avoid injury, appropriate eye protection is recommended when cleaning weapon and/or its parts.</p>	Cup is cracked. Setscrew or capscrew(s) are missing.

**Table 1. Preventive Maintenance Checks and Services for the MK19 MOD 3 Machine Gun - Continued.**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
12	LTI	Functional Check	<p>Check feed slide adjustment.</p> <p style="text-align: center;"><b>WARNING</b></p> <div style="display: flex; justify-content: center; gap: 20px;">   </div> <ul style="list-style-type: none"> <li>• Ensure stow pin and depression stop are installed before attaching MK 64 mount to tripod (TM 9-1010-231-13&amp;P).</li> <li>• Do not relink or fire ammunition which has been cycled through the weapon.</li> </ul> <p>Assemble the weapon and mount it on the MK 64 Machine Gun Mount, MK 16 MOD 0 Stand, or M3 Tripod.</p> <ol style="list-style-type: none"> <li>a. Raise top cover and assure bolt is in forward position.</li> <li>b. Feed two linked dummy rounds of 40 mm ammunition into the weapon until the first round is to the right of secondary pawl.</li> <li>c. Move feed slide assembly to the left and close top cover. Charge weapon and push chargers forward and up. Verify that chargers do not bind when weapon is charged.</li> <li>d. Without opening top cover, verify the second round is now to the right of the secondary pawl. The feed pawl will protrude when felt from the front underside of the feed tray area. Primary and secondary pawls should be in the up position.</li> <li>e. Move safety to "F" (FIRE). Press trigger to release bolt forward under spring tension. Raise top cover. Verify extractors are seated properly on ammunition case rim and delinking has occurred. Close top cover.</li> <li>f. Pull bolt to the rear until the primary pawl clicks prior to complete charging of the bolt. Push chargers fully forward and up.</li> </ol>	<p style="text-align: center;"><b>NOTE</b></p> <p>If out of adjustment, feed slide adjustment (adjustable secondary drive lever) will be performed by the Unit Armorer. Notify Maintenance Supervisor.</p>

**Table 1. Preventive Maintenance Checks and Services for the MK19 MOD 3 Machine Gun - Continued.**

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			<p style="text-align: center;"><b>CAUTION</b></p> <p>Catch ejected dummy round as it comes out the bottom of the weapon. The round's ogive may become dented if the round is dropped.</p> <p>g. Press trigger to release bolt forward. Charge weapon, catching ejected round. Place thumb safety on "S" (SAFE).</p> <p>(1) Raise top cover and verify ammunition is seated firmly against bolt face and that the round stop pawl protrudes from bolt face above seated ammunition.</p> <p>(2) Verify no malfunctions occurred and no discrepancies were noted during accomplishment of Steps (a) through (g).</p> <p>(3) Remove dummy ammunition from weapon using cleaning rod section.</p> <p>(4) Install feed throat and insert a belt of six linked dummy rounds. Verify weapon met requirements of Steps (c) through (f) when repeated with six linked rounds of dummy ammunition.</p> <p style="text-align: center;"><b>CAUTION</b></p> <p>To prevent dented ogive, catch the ejected dummy round as it comes out of the bottom of the weapon.</p> <p>(5) Remove last dummy round from weapon, using cleaning rod section.</p> <p>(6) With rounds removed, charge weapon and return charging handles forward and in up position. Press trigger and release bolt. Raise cover and inspect bolt face to ensure that firing pin protrudes.</p> <p>(7) Charge weapon again and return charging handles to forward position, leaving one charging handle down. Press trigger and release the bolt. Raise cover and inspect bolt face to ensure that the firing pin does not protrude. This procedure is to confirm stoppage of a runaway gun.</p>	

**END OF TASK**

**END OF WORK PACKAGE**



**CHAPTER 4**  
**FIELD MAINTENANCE INSTRUCTIONS**



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**FIELD MAINTENANCE  
SERVICE UPON RECEIPT**

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**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps Only) (WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps Only) (WP 0090, Table 1, Item 35)

**References (cont.)**

SF 364  
TM 9-1010-230-10  
WP 0089

**Materials/Parts**

Grease, Molybdenum Disulfide GMD (WP 0089, Table 1, Item 8)  
Lubricating Oil (LSAT) (WP 0089, Table 1, Item 12)

**References**

DA PAM 750-8 (TM 4700-15/1 Marine Corps)

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**SERVICE UPON RECEIPT OF MATERIEL**

1. Inspect the MK19 MOD 3/MK19 Upgunned Weapons Station for damage incurred during shipment. If it has been damaged, report the damage on SF 364, Report of Discrepancy (ROD).
2. Check the MK19 MOD 3/MK19 Upgunned Weapons Station against the packing slip to see if the shipment is complete. Users will report all discrepancies In Accordance With (IAW) DA PAM 750-8 (Marine Corps use TM 4700-15/1).
3. Check to see whether the MK19 MOD 3/MK19 Upgunned Weapons Station has been modified.

**Table 1. Service Upon Receipt.**

Location	Item	Action	Remarks
1. Container	Banding straps	Remove.	
	Barrier bag	Cut outer and inner bags carefully.	
	Contents	Remove. Check inventory list for presence of all items.	See inventory list in Table 2.
	Outer container	Dispose. (Container may be used to evacuate the gun for maintenance.)	
2. MK19 MOD 3	Exterior	<ol style="list-style-type: none"> <li>1. Inspect for rust, dents, and deformation.</li> <li>2. Reject the weapon if:                             <ol style="list-style-type: none"> <li>a. Barrel is bent.</li> <li>b. Control grip assembly is cracked or bent.</li> <li>c. Top cover or receiver is cracked.</li> </ol> </li> </ol>	
	Preliminary servicing	<ol style="list-style-type: none"> <li>1. Field strip the gun (see TM 9-1010-230-10). Remove lubricant from exterior surfaces, dry, and lubricate all exterior surfaces with appropriate lubricant as specified in (WP 0089).</li> </ol> <p style="text-align: center;"><b>CAUTION</b></p> <p>Do not lubricate the interior of the bolt buffer assemblies. Lubricant will cause excess recoil with possible part damage inside gun.</p> <ol style="list-style-type: none"> <li>2. Lubricate bolt and backplate assembly.</li> <li>3. Lubricate sear assembly.</li> </ol>	

**SERVICE UPON RECEIPT OF MATERIEL - Continued**

**Table 1. Service Upon Receipt - Continued.**

Location	Item	Action	Remarks
		<ol style="list-style-type: none"> <li>4. Lubricate the ogive plunger assembly.</li> <li>5. Lubricate/preserve the other assemblies and components on the weapon.</li> <li>6. Assemble the weapon.</li> <li>7. Function check feed operation. (Army: Fixed feed slide adjustment will be performed at the Field Support level only. Unit Armorer can perform adjustment correction on weapons with adjustable secondary drive lever. Inspect feed slide alignment (Unit Armorer)).</li> </ol>	
3. Left rear of receiver	Serial number	<ol style="list-style-type: none"> <li>1. Check the number against the shipping document. Serial numbers should match.</li> <li>2. Report any discrepancy.</li> </ol>	

## SERVICE UPON RECEIPT OF MATERIEL - Continued

*Table 2. Inventory of Machine Gun Container.*

Item Number	NSN	Nomenclature	U/I	Qty
1		Container, Packing Assembly, for 40 MM Machine Gun, MK19 MOD 3	EA	1
2	1010-01-126-9063	40 MM Machine Gun, MK19 MOD 3 (3269419) (12997550)	EA	1
3		Box, Fiberboard	EA	1
4		Bag, Barrier	EA	1
5	5140-00-473-6256	Bag, Tool, Satchel (not for Army issue)	EA	1
6	1005-00-494-6602	Brush, Cleaning, Small Arms (Tooth)	EA	1
7	8020-00-297-6657	Brush, Paint, Oval with Chisel Edge (Sash) (not for Army issue)	EA	1
8	1005-00-653-5441	Rod, Cleaning, Small Arms (.50 Caliber) (5 sections)	EA	1
9	1010-01-150-9983	Bore Cleaning Brush Assembly, 40 mm	EA	1
10	8105-00-837-7756	Bag, Plastic, Waterproof	EA	1
11	0000-00-005-9811	Weapon Record Book, Part II (with Q/A entries by manufacturer)	EA	1
12		Operator's Manual, Machine Gun, 40 MM, MK19 MOD 3 (TM 9-1010-230-10)	EA	1
13	1005-00-791-5420	Carrying Case, Barrel	EA	1

END OF TASK

END OF WORK PACKAGE

**FIELD MAINTENANCE**  
**SECONDARY DRIVE LEVER ASSEMBLY (FIXED OR ADJUSTABLE) MAINTENANCE**

**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
 Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
 Tool Set, Intermediate (Marine Corps Only) (WP 0090, Table 1, Item 33)  
 Tool Set, Organizational (Marine Corps Only) (WP 0090, Table 1, Item 35)

**Materials/Parts (cont.)**

Ring, Retaining (WP 0061, Figure 3, Item 4)  
 Stone, Sharpening (WP 0089, Table 1, Item 15)

**References**

WP 0059

**Equipment Condition**

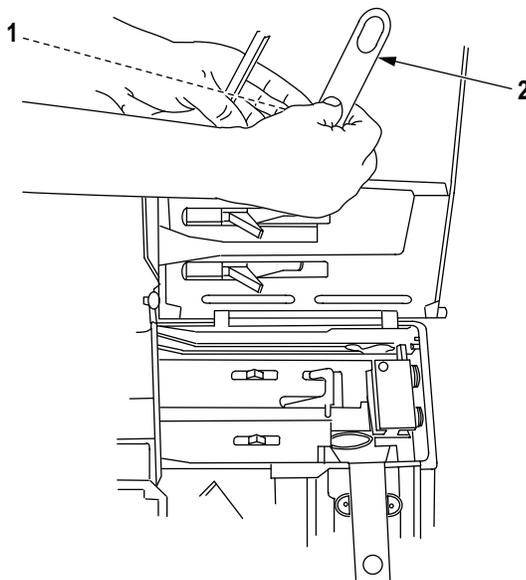
Weapon on "S" (SAFE), bolt in the forward position.  
 (TM 9-1010-230-10)

**Materials/Parts**

Cloth, Abrasive Crocus (WP 0089, Table 1, Item 7)

**REMOVAL**

Open top cover assembly. Locate center hole in outside of top cover. Press pivot post (Figure 1, Item 1) through hole toward the inside of top cover. Lift up on secondary drive lever (Figure 1, Item 2) to remove it from feed slide assembly.



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Figure 1. Secondary Drive Lever Assembly (Fixed or Adjustable) Removal.

**END OF TASK**

**DISASSEMBLY****NOTE**

This procedure applies only to the adjustable secondary drive lever.

1. Remove blank bolt (Figure 2, Item 1) from thrust washer bearing (Figure 2, Item 2).
2. Remove thrust washer bearing (Figure 2, Item 2).
3. Remove retaining ring (Figure 2, Item 3) from selector bushing (Figure 2, Item 4). Discard retaining ring.
4. Remove selector bushing (Figure 2, Item 4) from adjustable secondary drive lever (Figure 2, Item 5).

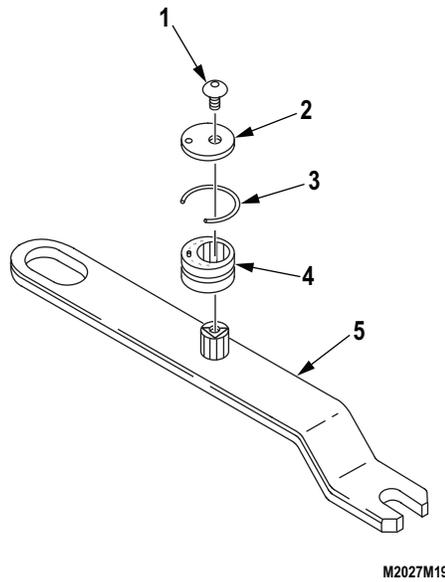


Figure 2. Secondary Drive Lever Assembly (Fixed or Adjustable) Disassembly.

**END OF TASK****REPAIR OR REPLACEMENT**

1. Ensure retaining ring is present on pivot post (Figure 3, Item 2). If it is missing or worn, install new adjustable secondary drive lever (Figure 3, Item 4).
2. Inspect for burrs, especially around pivot post (Figure 3, Item 2), slot (Figure 3, Item 3), and forked end (Figure 3, Item 1). Use crocus cloth or sharpening stone to remove burrs.
3. Replace defective parts as authorized by (WP 0059).

**REPAIR OR REPLACEMENT - Continued**

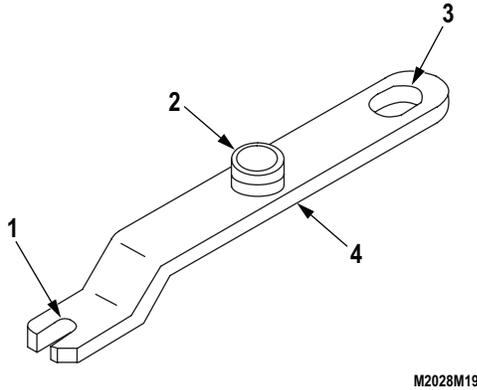


Figure 3. Secondary Drive Lever Assembly (Fixed or Adjustable) Repair or Replacement.

**END OF TASK**

**ASSEMBLY**

**NOTE**

This procedure applies only to the adjustable secondary drive lever.

1. Install selector bushing (Figure 4, Item 4) on adjustable secondary drive lever (Figure 4, Item 5).
2. Install new retaining ring (Figure 4, Item 3) on selector bushing (Figure 4, Item 4).
3. Align pin on selector bushing (Figure 4, Item 4) with hole in thrust washer bearing (Figure 4, Item 2). Install thrust washer bearing and secure with blank bolt (Figure 4, Item 1).

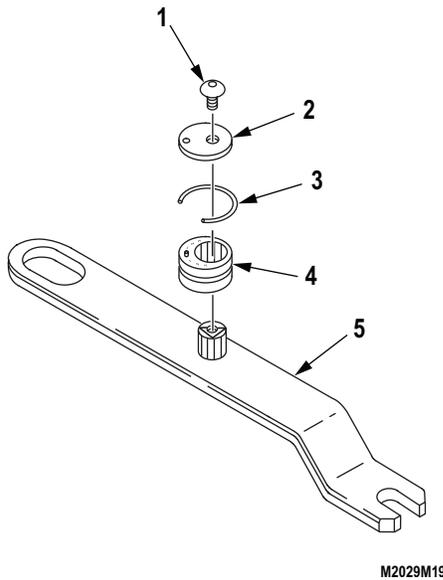


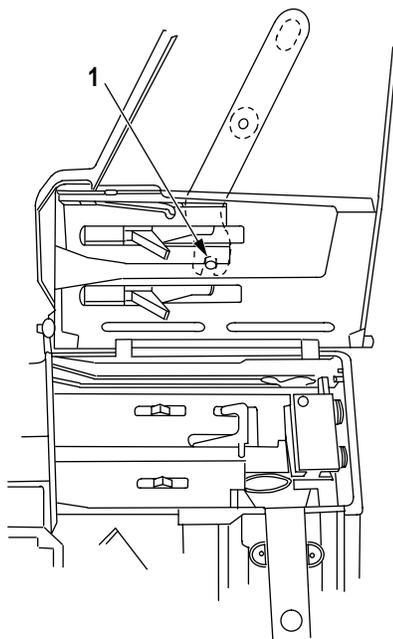
Figure 4. Secondary Drive Lever Assembly (Fixed or Adjustable) Assembly.

**END OF TASK**

**INSTALLATION****NOTE**

- Whenever a new secondary drive lever is installed, function check feed slide components.
- If the secondary drive lever is not properly engaged with the inner feed slide pin, the weapon will not feed.

Engage forked end with the headless straight pin (Figure 5, Item 1) of feed slide assembly. Raise feed tray with feed slide assembly and secondary drive lever attached. Press pivot post through hole in top cover. It should snap in place.



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Figure 5. Secondary Drive Lever Assembly (Fixed or Adjustable) Installation.

**END OF TASK****END OF WORK PACKAGE**

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**FIELD MAINTENANCE  
ROUND POSITIONING BLOCK MAINTENANCE**

---

**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps  
Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps only)  
(WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only)  
(WP 0090, Table 1, Item 35)

**Equipment Condition**

Alignment guide assembly removed from receiver.  
(WP 0026)  
Weapon on "S" (SAFE), bolt in the forward position.  
(TM 9-1010-230-10)

**References**

WP 0059

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**REMOVAL**

Depress and push-slide round positioning block (Figure 1, Item 1) forward until it stops. Pull round positioning block away from receiver.

**END OF TASK****REPAIR OR REPLACEMENT**

Inspect round positioning block.

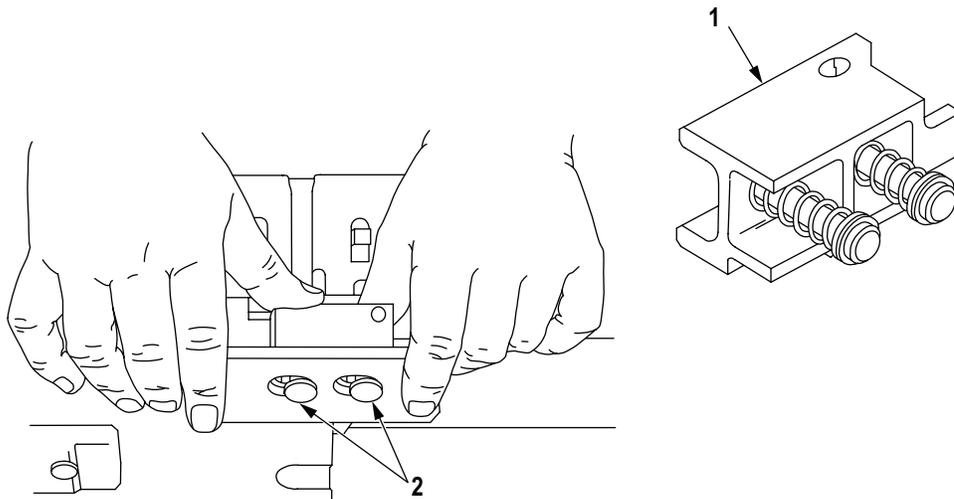
**NOTE**

Pins may turn but should not have any side to side or inward and outward movement.

Inspect round positioning block (Figure 1, Item 1). Replace if pins (Figure 1, Item 2) or springs are bent or damaged (WP 0059).

**END OF TASK****INSTALLATION**

Insert pins (Figure 1, Item 2) on the round positioning block (Figure 1, Item 1) into keyslots in receiver wall. Push slide round positioning block rearward until it clicks in place.



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Figure 1. Round Positioning Block Maintenance.

**END OF TASK****FOLLOW-ON MAINTENANCE**

Install alignment guide assembly on receiver (WP 0026).

**END OF TASK****END OF WORK PACKAGE**

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**FIELD MAINTENANCE  
BOLT, BACKPLATE, AND CONTROL GRIP ASSEMBLY MAINTENANCE**

---

**INITIAL SETUP:****Tools and Special Tools**

Brass-Head Hammer (WP 0090, Table 1, Item 5)  
 Combination Tool (WP 0090, Table 1, Item 11)  
 Dial Caliper (WP 0090, Table 1, Item 13)  
 Propane Torch (WP 0090, Table 1, Item 25)  
 Rod, Cleaning, Small Arms (WP 0090, Table 1, Item 27)  
 Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
 Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
 Tool Set, Intermediate (Marine Corps only) (WP 0090, Table 1, Item 33)  
 Tool Set, Organizational (Marine Corps only) (WP 0090, Table 1, Item 35)  
 Vise, Copper-Jawed (WP 0090, Table 1, Item 40)

**Materials/Parts**

Cap Screw, Self-Locking (WP 0066, Figure 8, Item 10) Qty: 3  
 Cap Screw, Socket Head (WP 0063, Figure 5, Item 30) Qty: 2  
 Cap Screw, Socket Head, Self-Locking (WP 0063, Figure 5, Item 27) Qty: 2  
 Cleaning Compound, Solvent (WP 0089, Table 1, Item 6)

**Materials/Parts (cont.)**

Cloth, Abrasive Crocus (WP 0089, Table 1, Item 7)  
 Cotter Pin (WP 0066, Figure 8, Item 2)  
 Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)  
 Lubricating Oil (LAW) (WP 0089, Table 1, Item 10)  
 Lubricating Oil (LSAT) (WP 0089, Table 1, Item 12)  
 Rag, Wiping (WP 0089, Table 1, Item 13)  
 Sealing Compound (WP 0089, Table 1, Item 14)  
 Set Screw, Nylon Point (WP 0063, Figure 5, Item 28) Qty: 4  
 Stone, Sharpening (WP 0089, Table 1, Item 15)

**References**

WP 0037  
 WP 0040  
 WP 0059

**Equipment Condition**

Bolt and backplate assembly removed from weapon (WP 0026)

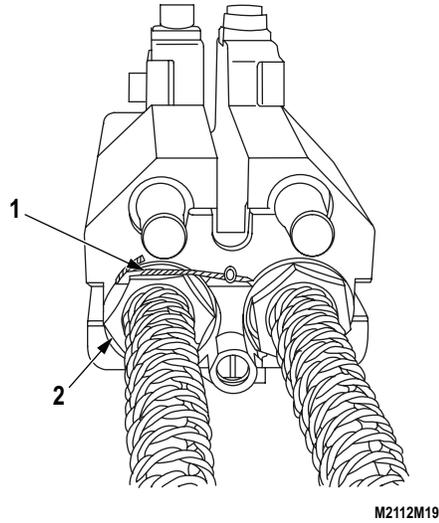
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**NOTE**

The MK19 MOD 3 is shown unless otherwise indicated.

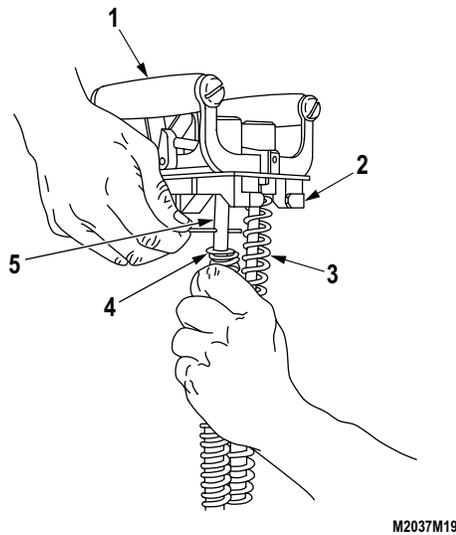
**DISASSEMBLY**

1. Clip non-electrical wire (Figure 1, Item 1) from bolt sleeves (Figure 1, Item 2) and remove non-electrical wire.



*Figure 1. Bolt and Backplate Assembly Disassembly.*

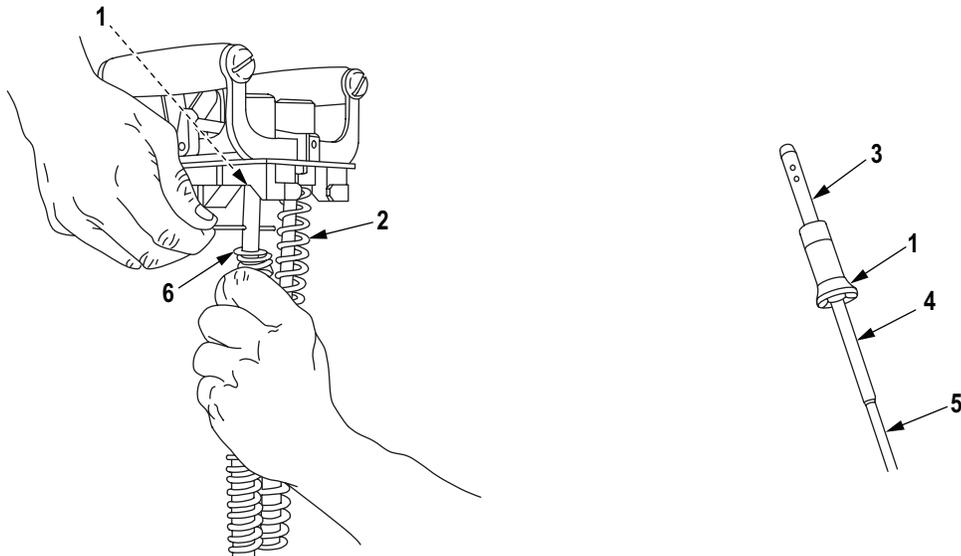
2. Pull helical compression spring (Figure 2, Item 3) away from backplate (Figure 2, Item 2).
3. Rattle backplate (Figure 2, Item 2) to make spring washer (Figure 2, Item 4) slide down rod.
4. Insert a 1/8 inch punch, cotter pin, or equal, into small hole at end of inner rod (Figure 2, Item 5) to hold helical compression spring (Figure 2, Item 3) away from backplate (Figure 2, Item 2). Repeat procedure for other helical compression spring.
5. Push inner rod (Figure 2, Item 5) off-center to release it from backplate (Figure 2, Item 2). Repeat for other inner rod. Separate control grip assembly (Figure 2, Item 1) and backplate from rods.



*Figure 2. Bolt, Backplate, and Control Grip Assembly Disassembly.*

**DISASSEMBLY - Continued**

6. Using the 1-1/4 inch open-end wrench (on the combination tool), unscrew two bolt sleeves (Figure 3, Item 1) all the way. (A brass-head hammer can be used to tap the wrench to loosen the bolt sleeves first.)
7. Separate the bolt sleeves (Figure 3, Item 1), helical compression springs (Figure 3, Item 2), spring washers (Figure 3, Item 6), outside tubes (Figure 3, Item 3), middle tubes (Figure 3, Item 4), and inner rods (Figure 3, Item 5).
  - a. Hold back the helical compression springs (Figure 3, Item 2) while removing the 1/8 inch punch. Slowly release the helical compression springs back to position and remove spring washers (Figure 3, Item 6) and helical compression springs. Be careful not to lose the spring washers.
  - b. Tip the bolt sleeves (Figure 3, Item 1) upside down. The bolt sleeves, outside tubes (Figure 3, Item 3), middle tubes (Figure 3, Item 4), and inner rods (Figure 3, Item 5) should slide out together. Set aside the bolt sleeves.
  - c. Tip the outside tubes (Figure 3, Item 3) to let the middle tubes (Figure 3, Item 4) and inner rods (Figure 3, Item 5) slide out.

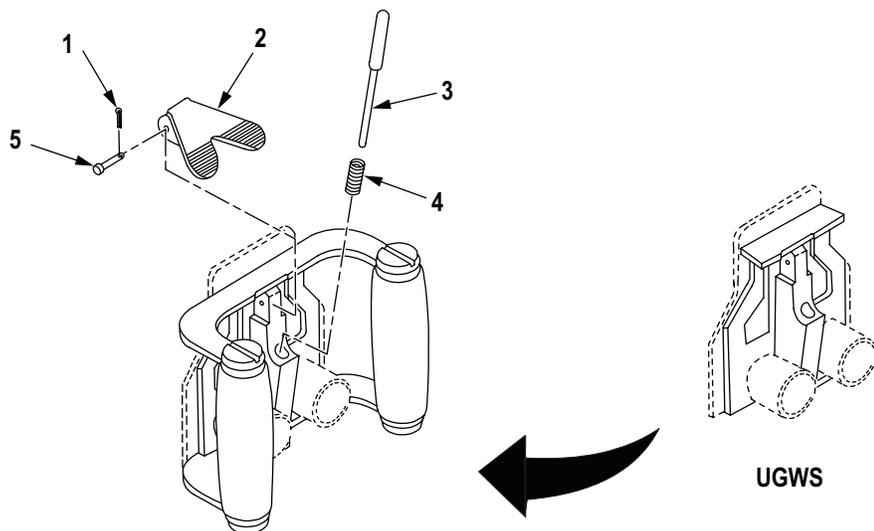


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Figure 3. Bolt and Backplate Assembly Disassembly.

**DISASSEMBLY - Continued**

8. Remove cotter pin (Figure 4, Item 1).
9. Remove straight pin (Figure 4, Item 5).
10. Lift off manual trigger plate (Figure 4, Item 2).
11. Lift out operating rod (Figure 4, Item 3) and helical compression spring (Figure 4, Item 4).



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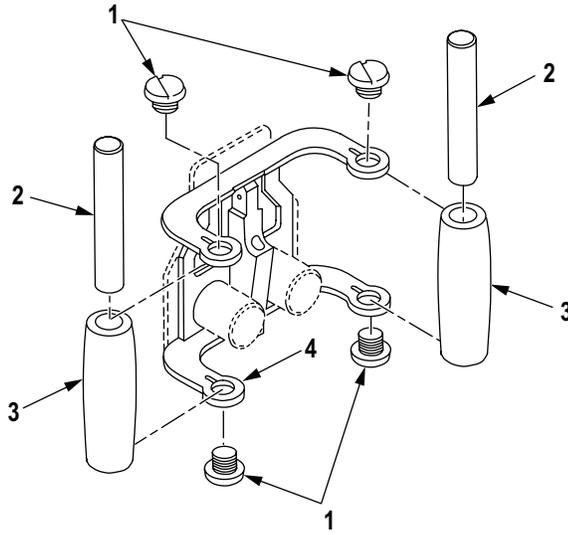
Figure 4. Bolt, Backplate, and Control Grip Assembly Disassembly.

**NOTE**

Apply pressure on the tool to break the staking on the machine screws.

12. Using one raised side on combination tool, remove four top and bottom machine screws (Figure 5, Item 1).
13. Separate the two handle grips (Figure 5, Item 3) from body mounting plate (Figure 5, Item 4). Push handle grip tubes (Figure 5, Item 2) from handle grips.

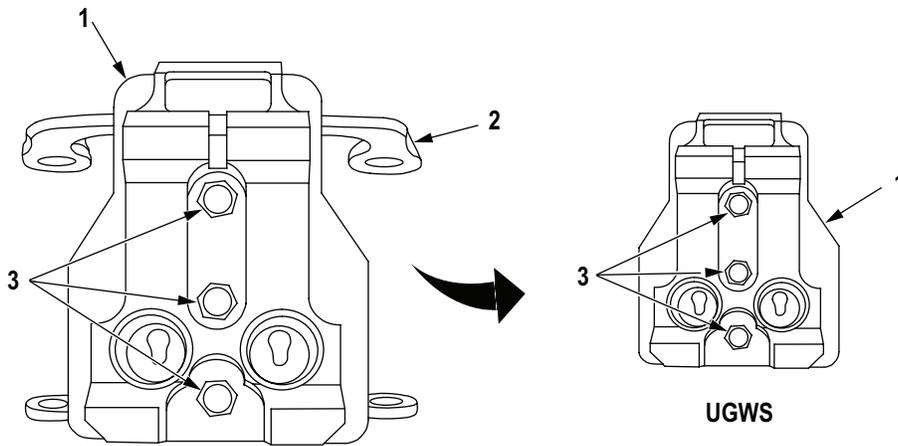
DISASSEMBLY - Continued



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Figure 5. Bolt, Backplate, and Control Grip Assembly Disassembly.

14. Using a socket wrench with a 1/2 inch socket, remove three hexagon head self-locking cap screws (Figure 6, Item 3) holding body mounting plate (Figure 6, Item 2) to backplate (Figure 6, Item 1). Separate body mounting plate from backplate. Discard hexagon head self-locking screws.

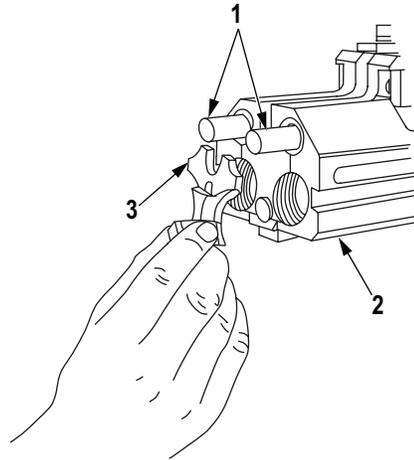


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Figure 6. Bolt, Backplate, and Control Grip Assembly Disassembly.

**DISASSEMBLY - Continued**

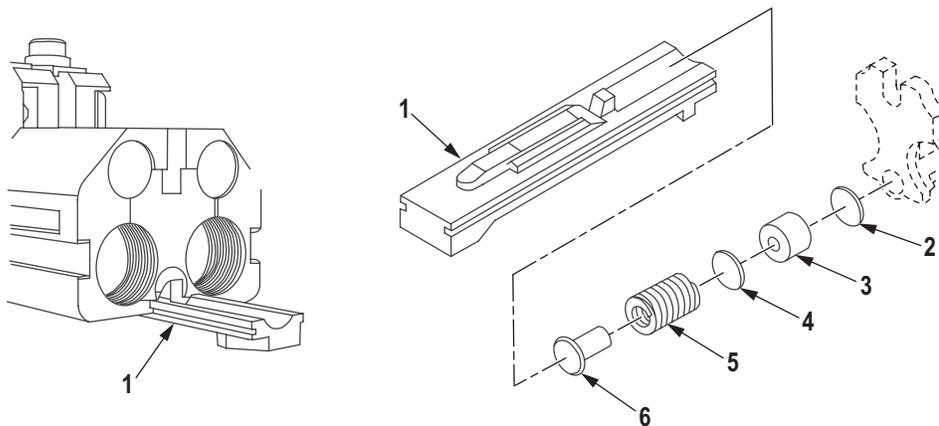
15. Lift off the lock plate assembly (Figure 7, Item 3). Pull two bolt buffer assemblies (Figure 7, Item 1) from the rear of the bolt (Figure 7, Item 2).



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*Figure 7. Bolt and Backplate Assembly Disassembly.*

16. Remove blank buffer washer (Figure 8, Item 2).
17. With the bolt face down on a flat surface, slide the bolt sear (Figure 8, Item 1) rearward and remove it. Use care not to lose the parts beneath the bolt sear.
18. Lift out the sear buffer (Figure 8, Item 3), blank buffer washer (Figure 8, Item 4), helical compression spring (Figure 8, Item 5), and sear buffer rod (Figure 8, Item 6).



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*Figure 8. Bolt and Backplate Assembly Disassembly.*

## DISASSEMBLY - Continued

**CAUTION**

Do not immerse the cam followers in cleaning compound solvent. Solvent dissolves the greases in the packed bearings.

**NOTE**

If it is difficult to remove the front washers, first remove the cam followers; then immerse the bolt in cleaning compound solvent (noting CAUTION, above). The washers can then be easily removed.

19. Remove two front washers (Figure 9, Item 2) from the bolt (Figure 9, Item 1).

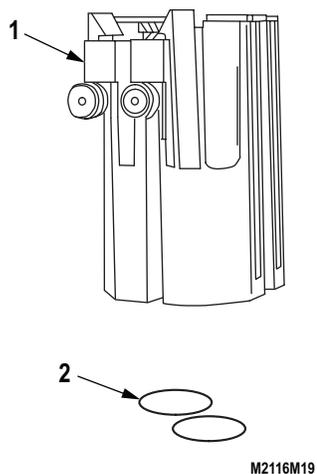


Figure 9. Bolt and Backplate Assembly Disassembly.

20. Turn the bolt (Figure 10, Item 1) upside down. Push the cocking lever (Figure 10, Item 3) toward the bolt face to retract the firing pin until it clicks into position. Remove firing pin cover (Figure 10, Item 2).

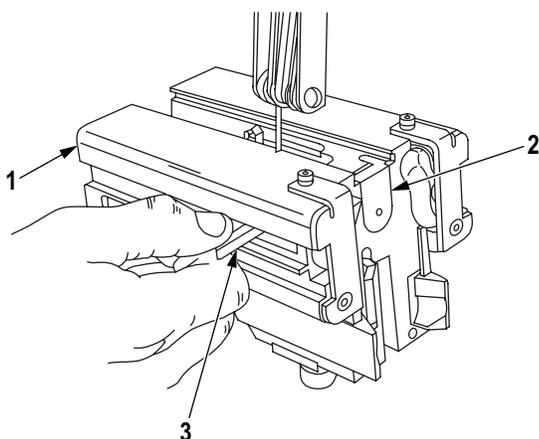


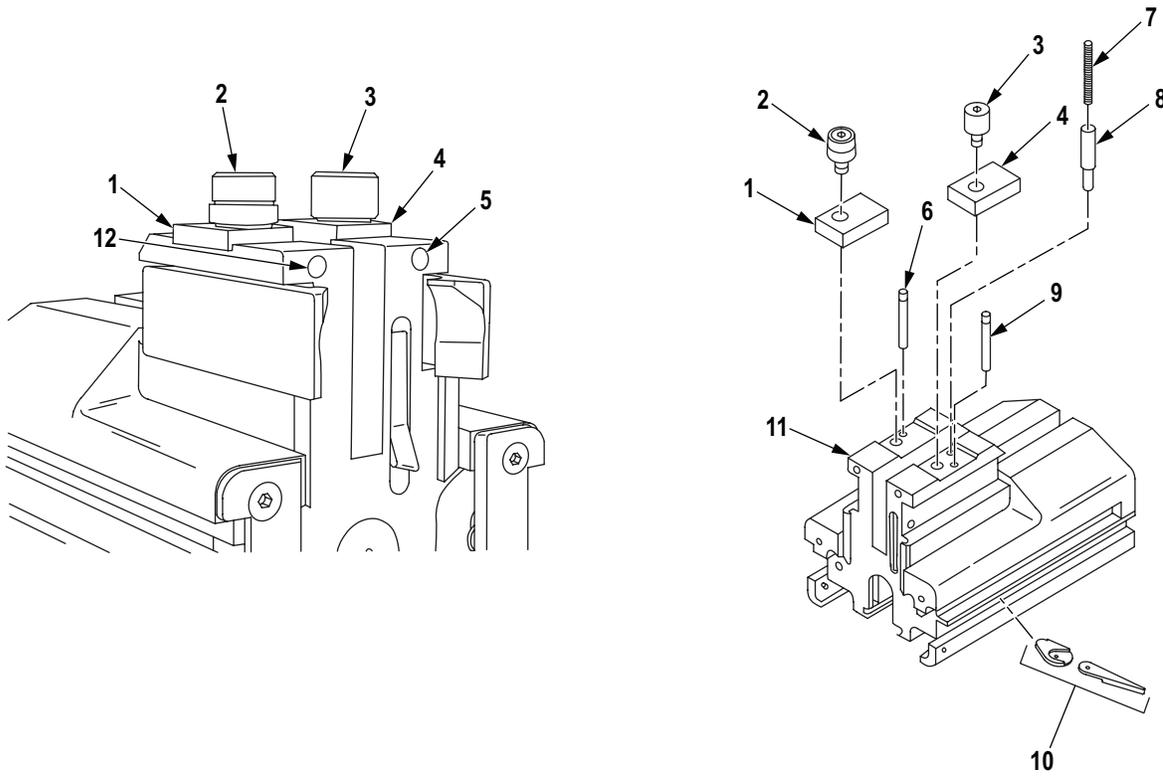
Figure 10. Bolt and Backplate Assembly Disassembly.

**DISASSEMBLY - Continued****WARNING**

Left side cam follower is under spring tension. Remove carefully.

21. Loosen nylon point setscrew (Figure 11, Item 5) on LH cam follower (Figure 11, Item 3) and pin retainer (Figure 11, Item 4), approximately two turns using a 3/32 inch key wrench.
22. Unscrew LH cam follower (Figure 11, Item 3), using 3/16 inch key wrench.
23. Lift out the LH cam follower (Figure 11, Item 3), pin retainer (Figure 11, Item 4), pawl spring (Figure 11, Item 7), and headless grooved pin (Figure 11, Item 9).
24. Invert bolt (Figure 11, Item 11) and insert 1/8 inch key wrench, cotter pin, or equivalent through access hole in the underside of the bolt.
25. Push shoulder pin (Figure 11, Item 8) through the top of the bolt (Figure 11, Item 11) and remove two-piece cocking lever (Figure 11, Item 10).
26. Loosen nylon point setscrew (Figure 11, Item 12) on RH cam follower (Figure 11, Item 2) and pin retainer (Figure 11, Item 1), approximately two full turns using a 3/32 inch key wrench.
27. Unscrew RH cam follower (Figure 11, Item 2), using 3/16 inch key wrench.
28. Lift out the RH cam follower (Figure 11, Item 2), pin retainer (Figure 11, Item 1), and headless grooved pin (Figure 11, Item 6).

DISASSEMBLY - Continued



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Figure 11. Bolt and Backplate Assembly Disassembly.

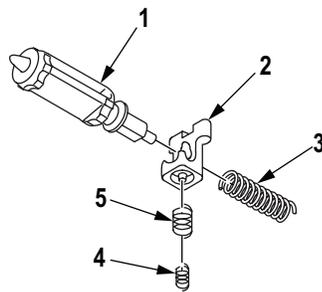
DISASSEMBLY - Continued

**WARNING**



The firing pin is under heavy spring tension. Always shield the tip of the firing pin whenever it is exposed and cocked. This will prevent injury if the firing pin sear is accidentally depressed.

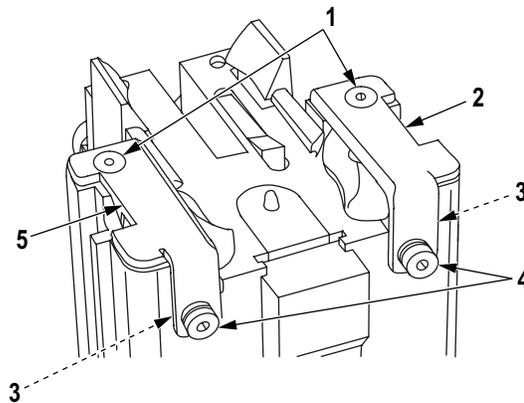
29. Tip the bolt. Depress the firing pin sear (Figure 12, Item 2) using the combination tool. This will release the firing pin (Figure 12, Item 1). Remove firing pin, helical compression spring (Figure 12, Item 3), firing pin sear, sear spring (Figure 12, Item 5), and inner sear spring (Figure 12, Item 4).



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Figure 12. Bolt and Backplate Assembly Disassembly.

30. Remove two self-locking screws (Figure 13, Item 1) on the front face of LH and RH covers (Figure 13, Items 2 and 5). Discard self-locking screws.
31. Remove two self-locking socket head capscrews (Figure 13, Item 4) on the underside of LH and RH covers (Figure 13, Items 2 and 5). Discard self-locking socket head capscrews.
32. Lift off LH and RH covers (Figure 13, Items 2 and 5).
33. Remove two nylon point setscrews (Figure 13, Item 3) and discard. Be sure to remove nylon tip from each hole.



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Figure 13. Bolt and Backplate Assembly Disassembly.

**DISASSEMBLY - Continued****CAUTION**

Do not use a small screwdriver or screw head damage will occur.

34. Unscrew both slotted head shoulder bolts (Figure 14, Item 3); compress LH and RH bolt fingers (Figure 14, Items 1 and 2) with the open wrench on the combination tool.
35. Lift off LH and RH bolt fingers (Figure 14, Items 1 and 2) and two finger springs (Figure 14, Item 4).

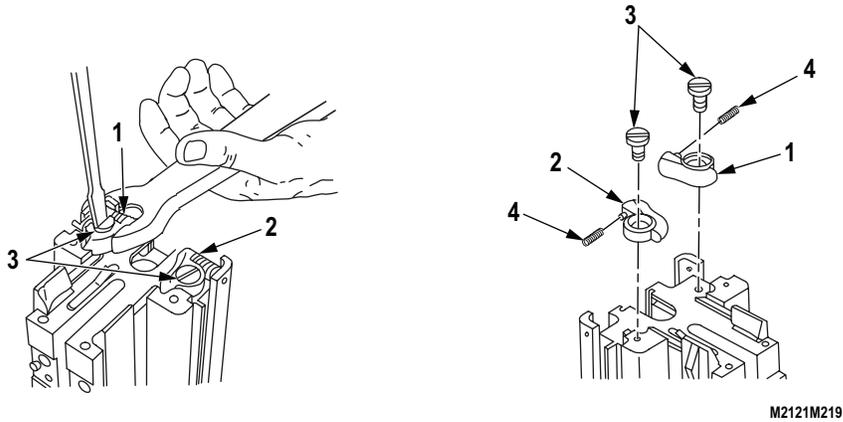


Figure 14. Bolt and Backplate Assembly Disassembly.

**DISASSEMBLY - Continued**

36. While pushing inward on the rear of the cartridge extractor (Figure 15, Item 2), retract the headless grooved pin (Figure 15, Item 1) using a screwdriver tip.
37. Pull out headless grooved pin (Figure 15, Item 1).
38. Lift off helical compression spring (Figure 15, Item 3).
39. Repeat Steps 40 through 42 on other side.

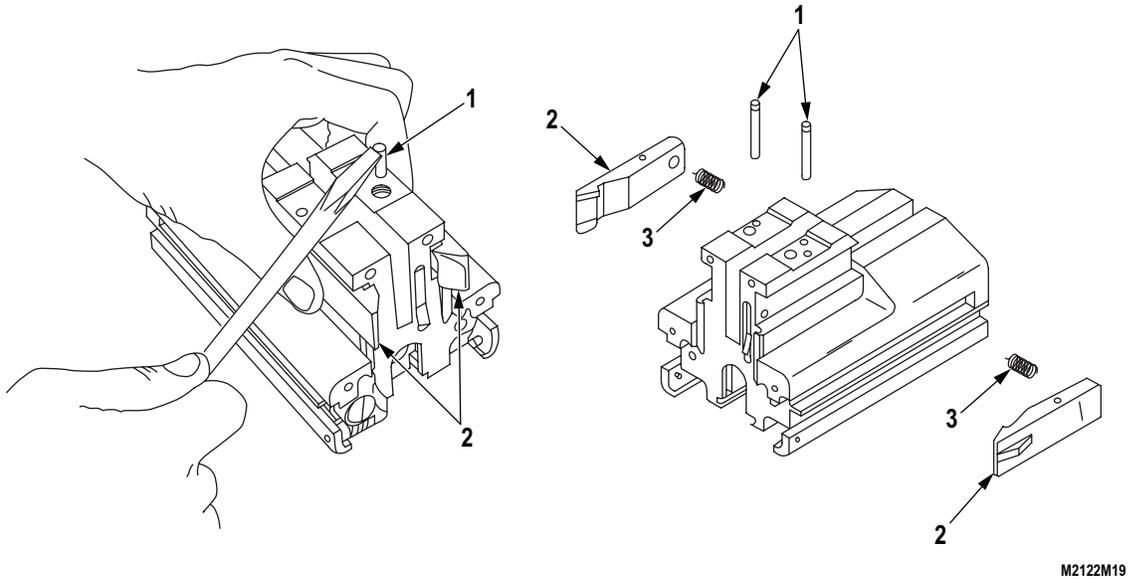


Figure 15. Bolt and Backplate Assembly Disassembly.

**NOTE**

The shoulder pin is held in place with locking compound. Heat is required to remove. Do not remove the pawl, helical spring, or shoulder pin except as required for part replacement.

40. Using a propane blow torch, lightly heat the area around the shoulder pin (Figure 16, Item 3) until it can be removed.
41. Unscrew the shoulder pin (Figure 16, Item 3), using a 1/4 inch, flat-blade screwdriver. Remove shoulder pin, pawl (Figure 16, Item 1), and helical spring (Figure 16, Item 4) from the bolt (Figure 16, Item 2).

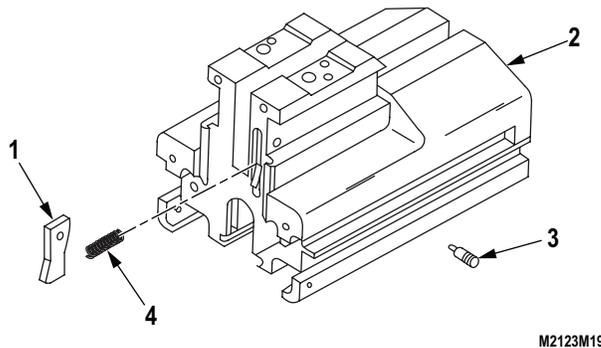


Figure 16. Bolt and Backplate Assembly Disassembly.

**DISASSEMBLY - Continued**

**NOTE**

- Do not routinely disassemble the bolt buffer assemblies. If they are accidentally immersed in solvent replace the bolt buffer assembly. If the bolt buffers need replacement due to excessive recoil (high trunnion load), disassemble them as follows. Ensure all parts are dry and not lubricated when reassembling.
- The cap is staked.

42. Place the bolt buffer assembly in a copper-jawed vise, cap side up. Remove bolt buffer cap (Figure 17, Item 1) using a large flat-blade screwdriver.

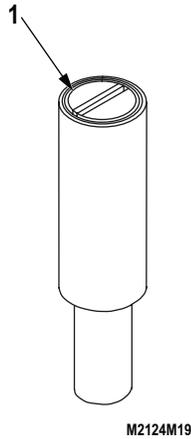


Figure 17. Bolt and Backplate Assembly Disassembly.

43. Turn the buffer body upside down in a vise. Place a towel over the bolt buffer body (Figure 18, Item 4) to protect the bolt buffer plunger (Figure 18, Item 3). Using the 3/8 inch diameter punch, carefully push out four recoil mechanism buffers (Figure 18, Item 1) and three spring washers (Figure 18, Item 2), being careful not to damage washers.

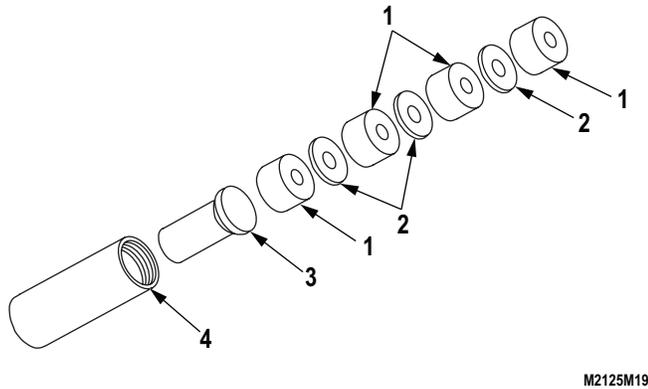
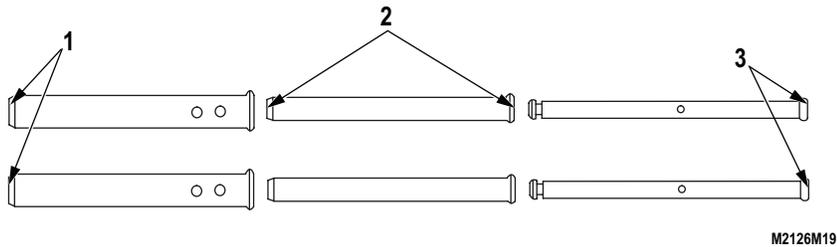


Figure 18. Bolt and Backplate Assembly Disassembly.

**END OF TASK**

**INSPECTION**

1. Inspect the bolt and backplate assembly each time it is detail stripped, as follows:
  - a. Measure the length of all springs as listed in (WP 0037), using a dial caliper to measure any spring under six inches long. Use a tape measure to measure springs more than six inches long.
  - b. Inspect the general condition of all parts, especially those noted below. Make repairs/replacements as authorized in (WP 0059).
  - c. Always adjust the bolt timing (WP 0040) upon reassembly of the bolt.
2. Inspect straight pin, manual trigger plate, and operating rod. Examine the edges of the trigger plate for burrs. Remove burrs with a stone and preserve with lubricant. Replace the straight pin, trigger plate, or operating rod if damaged or worn. Inspect for rust. Remove rust with lubricant and cloth. Preserve with a light coat of lubrication.
3. Examine handle components for burrs, cracks, damaged or broken components. Remove any burrs. Replace damaged or broken components.
4. Examine body and backplate for burrs or rust. Remove any rust. Replace if bent, cracked, or broken.
5. Inspect inner rods (Figure 19, Item 3), middle tubes (Figure 19, Item 2), and outside tubes (Figure 19, Item 1). Inspect for burrs, especially around the openings of the tubes and rods. Remove burrs, using crocus cloth or sharpening stone and preserve with a Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT). If a rod or tube is bent, install a new one. Ensure that rods and tubes slide freely upon assembly without binding.



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Figure 19. Bolt and Backplate Assembly Inspection.

**INSPECTION - Continued**

6. Inspect front washers (Figure 20, Item 1).

Visually inspect the round grooves in the two front washers. If the groove in either front washer is more than halfway through the washer (1/16 inch deep), replace both front washers with new ones.

7. Inspect spring washers (Figure 20, Item 1).

Inspect for radial cracks from the outside in. If either of the spring washers is cracked, badly worn, or shows signs of rust, replace both spring washers with new ones.

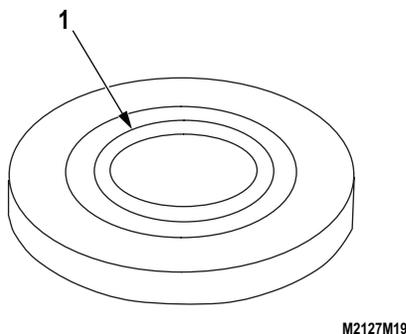


Figure 20. Bolt and Backplate Assembly Inspection.

8. Inspect bolt sear (Figure 21, Item 1).

Inspect for cracks on the raised inside edge of the bolt sear, as shown. If cracked in this area, install a new bolt sear. Whenever a new bolt sear is installed, also install a new receiver sear. Whenever the bolt sear is removed or a new one is installed, check and adjust bolt timing prior to reassembly.

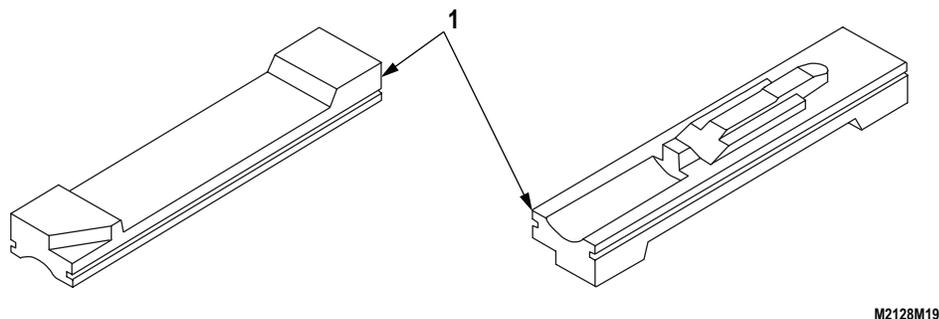


Figure 21. Bolt and Backplate Assembly Inspection.

**INSPECTION - Continued**

9. Inspect cam followers (Figure 22, Item 1).

**CAUTION**

Do not immerse cam followers in cleaning compound solvent or use a high pressure spray. Solvent dilutes the grease in the packed bearings in these assemblies. To clean, wipe with a rag.

**NOTE**

When wear on the head of the cam follower is severe enough to cause the inside roller not to turn, replace the RH cam follower.

- a. During maintenance procedures or replacement of the LH cam follower:
  - (1) If the plug is installed, ensure plug is flush and staked in place.
  - (2) If plug is present but not installed, discard. (If plug is not present, cam follower is still serviceable.)

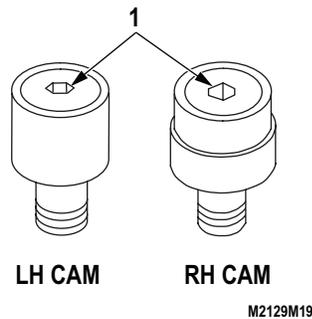


Figure 22. Bolt and Backplate Assembly Inspection.

- b. Ensure no rust is present. If rust is seeping from the interior of either cam follower or if cam follower is accidentally immersed in solvent or water, install new ones. Remove exterior rust with lubricant and wiping rag.
10. Inspect bolt fingers.

Ensure the welded pins (Figure 23, Item 1) are not broken on either bolt finger. If pin is broken on either bolt finger, replace bolt finger.

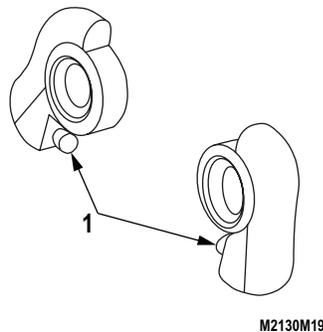
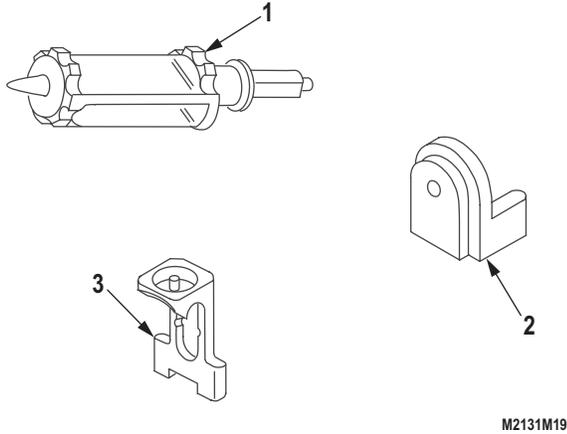


Figure 23. Bolt and Backplate Assembly Inspection.

**INSPECTION - Continued**

11. Inspect firing pin (Figure 24, Item 1), firing pin cover (Figure 24, Item 2), and firing pin sear (Figure 24, Item 3).

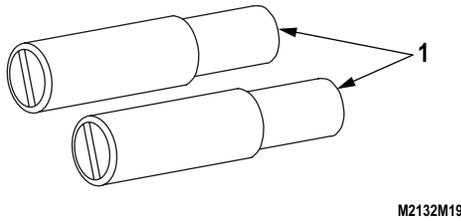
If firing pin is pitted or worn, firing pin cover is eroded or cracked, or firing pin sear is cracked, install new component.



*Figure 24. Bolt and Backplate Assembly Inspection.*

12. Inspect bolt buffer assemblies.

Disassemble only if the assemblies have been accidentally immersed in water or solvent, are oozing rust, or when troubleshooting excess recoil. Ensure the interior of bolt buffer bodies (Figure 25, Item 1) are clean and dry. Do not lubricate before reassembling. Using a sharp knife, trim any material extruded beyond the ends of the bolt buffers. Ensure each cap is staked to the internal threads of the bolt buffer body.



*Figure 25. Bolt and Backplate Assembly Inspection.*

**INSPECTION - Continued**

## 13. Inspect bolt.

Make sure the welded pins (Figure 26, Item 1) on the lower sides of the bolt are not broken. If either pin is broken, replace the bolt. Check all accessible surfaces (Figure 26, Item 2) for burrs. Deburr any rough edges with crocus cloth or sharpening stone and preserve with GMD or LSAT.

**NOTE**

- Where erosion is severe enough to interfere with the function of the round being fed into the bolt fingers or the rear of the slot is deformed more than 50 percent of its depth, replace the bolt.
- Breakthrough/bulge of the cocking lever pin retaining spring hole (Figure 26, Item 3) under the LH cam recess is not cause for rejection.

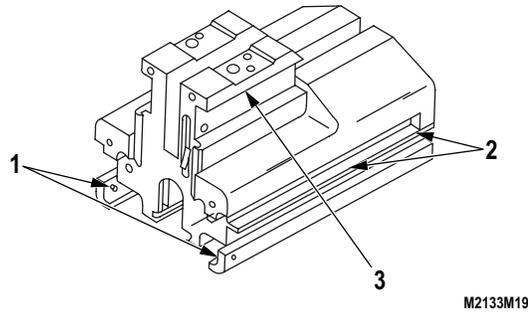
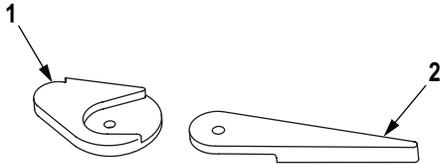


Figure 26. Bolt and Backplate Assembly Inspection.

**INSPECTION - Continued**

14. Inspect cocking lever (Figure 27, Item 1) and cocking cam (Figure 27, Item 2).

Measure the amount of wear on the inside of the tip using a dial caliper. If the length of the flat exceeds 0.100 inch (0.254 cm), discard the cocking lever and install a new one.

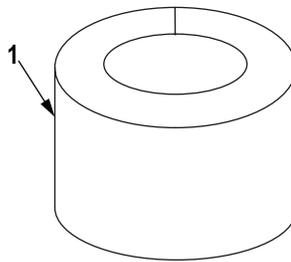


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*Figure 27. Bolt and Backplate Assembly Inspection.*

15. Inspect sear buffer (Figure 28, Item 1).

Using a sharp knife, trim away any material extruded beyond the ends. Do not remove any material from the diameter. The part will be reassembled as removed.



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*Figure 28. Bolt and Backplate Assembly Inspection.*

**END OF TASK**

**ASSEMBLY****WARNING**

To avoid injury, appropriate eye protection is recommended when cleaning weapon and/or its parts.

**CAUTION**

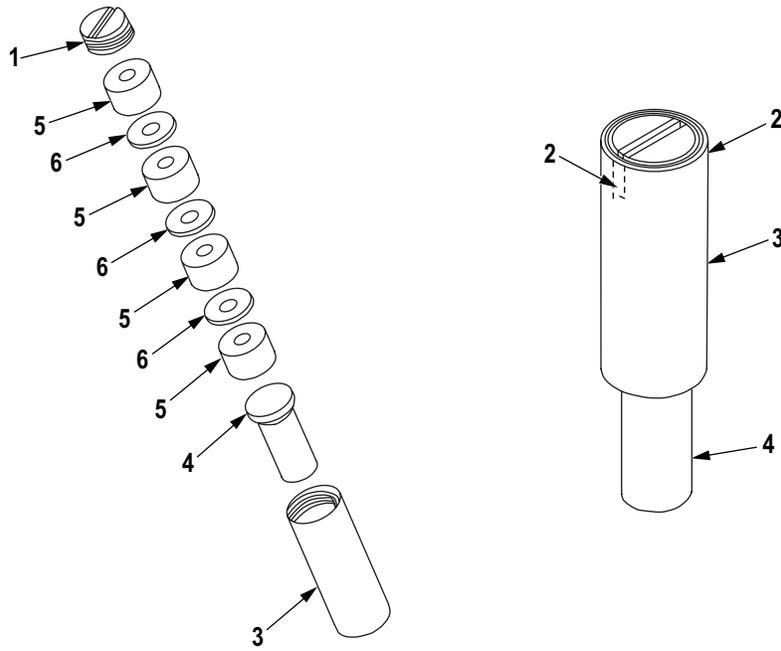
- Do not immerse the following components in cleaning compound solvent: cam followers, sear buffer, and bolt buffer assemblies (while assembled). Solvent damages these components. To clean, wipe with a rag.
- Do not lubricate the components inside the bolt buffer assemblies. Any oil in these assemblies will cause excess recoil in the weapon.
- Do not immerse the bolt buffer assemblies in water or cleaning compound solvent. Do not lubricate the internal parts. Ensure all parts are clean, dry, and not lubricated when assembling.

**NOTE**

All components, except those noted in the CAUTION above, should be cleaned and lubricated prior to assembly.

1. Place the bolt buffer body (Figure 29, Item 3) in a copper-jawed vise, threaded end upward.
2. Insert the narrow end of the bolt buffer plunger (Figure 29, Item 4) into the bolt buffer body (Figure 29, Item 3).
3. Alternate the four recoil mechanism buffers (Figure 29, Item 5) and three spring washers (Figure 29, Item 6) on top of the bolt buffer plunger (Figure 29, Item 4), exactly in the order shown. Push them down all the way, using a large punch covered with a towel.
4. Install bolt buffer cap (Figure 29, Item 1) and tighten with a 1/2 inch screwdriver until the bolt buffer cap is flush with the bolt buffer body (Figure 29, Item 3). Using a center punch, stake the inside of the slot (Figure 29, Item 2) in the bolt buffer cap to the thread of the bolt buffer body in one place.

ASSEMBLY - Continued



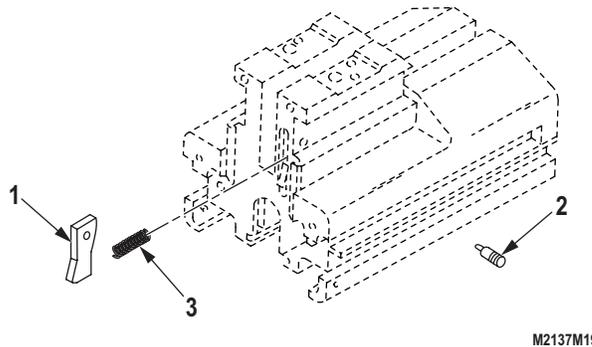
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Figure 29. Bolt and Backplate Assembly Assembly.

**ASSEMBLY - Continued****WARNING**

Cleaning compound solvent is flammable and toxic and must be kept away from open flames and used in a well-ventilated area. Use of rubber gloves is necessary to protect the skin when washing parts.

5. Using cleaning compound solvent, clean the threads of the pawl (Figure 30, Item 1) and shoulder pin (Figure 30, Item 2) before installation.
6. Insert the pawl (Figure 30, Item 1) into the access groove with the helical spring (Figure 30, Item 3). Hold pawl and helical spring in place while inserting and slightly tightening the shoulder pin (Figure 30, Item 2), using a 1/4 inch flat-blade screwdriver.
7. Apply sealing compound to the remaining threads of the shoulder pin (Figure 30, Item 2). Tighten securely.



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Figure 30. Bolt and Backplate Assembly Assembly.

**NOTE**

The LH cartridge extractor has a raised portion on its outside flat surface.

8. Position the cartridge extractor (Figure 31, Item 1) against the side of the bolt (Figure 31, Item 4) so the helical compression spring (Figure 31, Item 2) fits into the hole in the cartridge extractor. The wider edge of the tip should be upward.
9. Push in the cartridge extractor (Figure 31, Item 1) and insert the headless grooved pin (Figure 31, Item 3) into the access hole in the top of the bolt (Figure 31, Item 4). Ensure the headless grooved pin is pushed all the way in and holds the cartridge extractor in place.
10. Repeat this procedure for the other side.

## ASSEMBLY - Continued

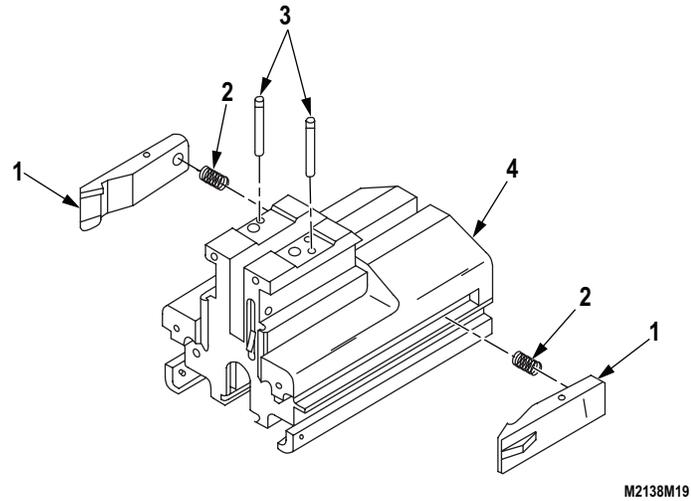


Figure 31. Bolt and Backplate Assembly Assembly.

11. Drop the shoulder pin (Figure 32, Item 2) into the top of the bolt (Figure 32, Item 3) so the shouldered pin's tapered diameter end is down.
12. Place the pawl spring (Figure 32, Item 1) on top of the shoulder pin (Figure 32, Item 2). The pawl spring should stick up slightly.

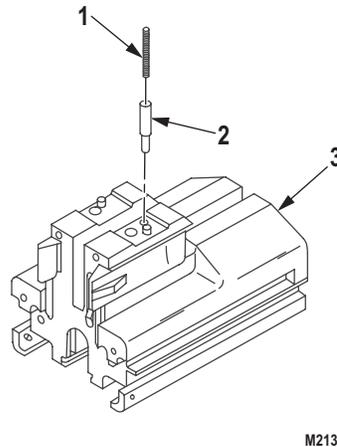


Figure 32. Bolt and Backplate Assembly Assembly.

**ASSEMBLY - Continued**

13. Place the LH pin retainer (Figure 33, Item 3) on top of the bolt (Figure 33, Item 4), holes aligned.

**NOTE**

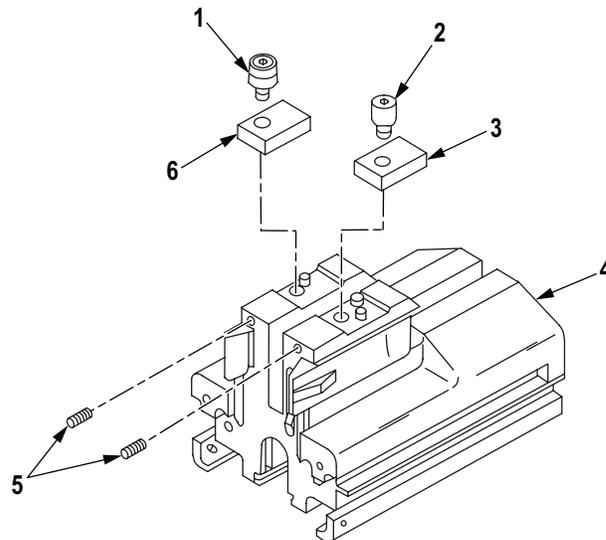
The RH cam follower is divided to roll in two directions. Be sure to install it on the RH side.

14. Insert the LH cam follower (Figure 33, Item 2) into the LH pin retainer (Figure 33, Item 3) and tighten with a 3/16 inch key wrench. Ensure the pin retainer does not slip out of place while the cam follower is being tightened. Repeat for the RH pin retainer (Figure 33, Item 6) and cam follower (Figure 33, Item 1). Lubricate the RH cam follower only.

**CAUTION**

Do not over tighten the nylon point setscrews. Too much pressure will strip the heads.

15. Install two new nylon point setscrews (Figure 33, Item 5) on upper face of bolt (Figure 33, Item 4).

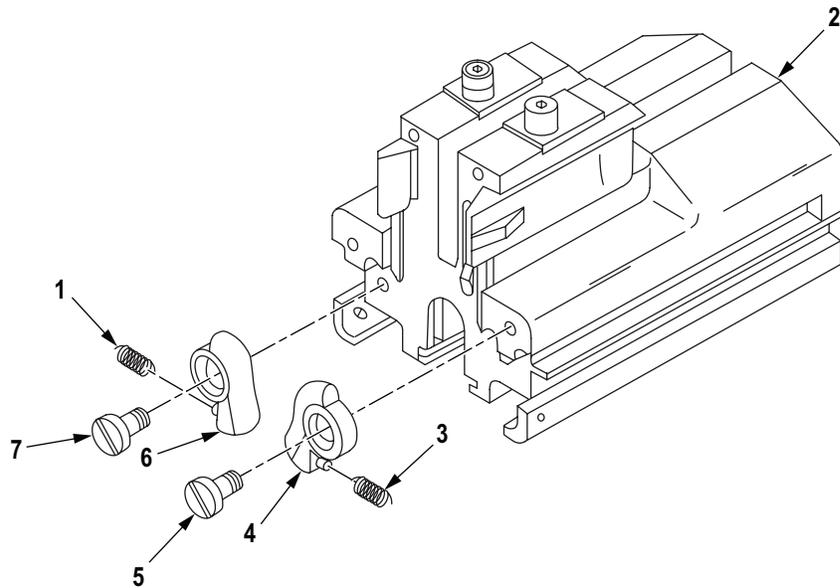


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Figure 33. Bolt and Backplate Assembly Assembly.

**ASSEMBLY - Continued**

16. Install the ends of the finger spring (Figure 34, Item 1) between the welded pin on the RH bolt finger (Figure 34, Item 6) and the pin on the bolt (Figure 34, Item 2).
17. Using open end wrench on combination tool, squeeze the finger spring (Figure 34, Item 1) and RH bolt finger (Figure 34, Item 6) against the front of the bolt (Figure 34, Item 2). Install and tighten the slotted head shoulder bolt (Figure 34, Item 7).
18. Install the ends of the finger spring (Figure 34, Item 3) between the welded pin on the LH bolt finger (Figure 34, Item 4) and the pin on the bolt (Figure 34, Item 2).
19. Using open end wrench on combination tool, squeeze the finger spring (Figure 34, Item 3) and LH bolt finger (Figure 34, Item 4) against the front of the bolt (Figure 34, Item 2). Install and tighten the slotted head shoulder bolt (Figure 34, Item 5).



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*Figure 34. Bolt and Backplate Assembly Assembly.*

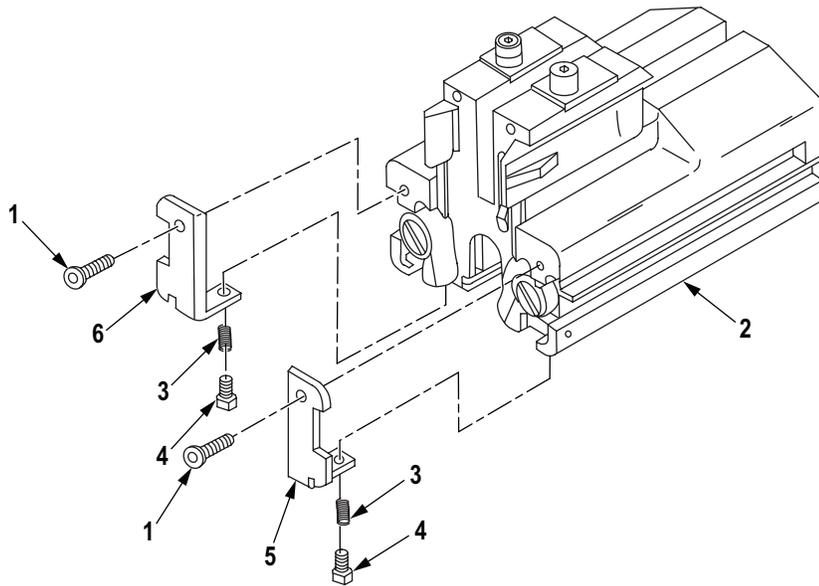
**ASSEMBLY - Continued**

20. Install two new nylon point setscrews (Figure 35, Item 3) into the bottom of the bolt (Figure 35, Item 2).
21. Hold either the LH or RH cover (Figure 35, Items 5 or 6) in place on the front of the bolt, screw holes aligned.

**NOTE**

Tighten self-locking screws first or covers will be misaligned.

22. Install two new self-locking screws (Figure 35, Item 1) and tighten with the 1/8 inch key wrench. Install two new self-locking socket head capscrews (Figure 35, Item 4) and tighten with 5/32 inch key wrench.
23. Repeat for other cover.



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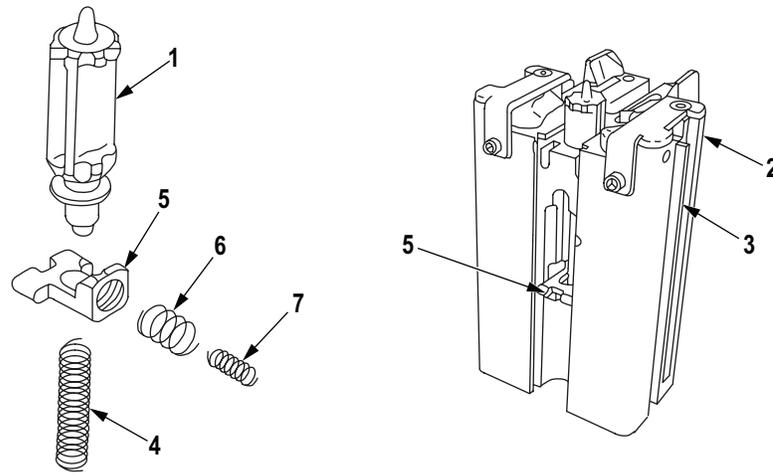
Figure 35. Bolt and Backplate Assembly Assembly.

## ASSEMBLY - Continued

**NOTE**

Ensure the firing pin, firing pin sear, bolt sear, and mating bolt surface are well lubricated during assembly.

24. Turn the bolt (Figure 36, Item 2) face up and install inner sear spring (Figure 36, Item 7) and sear spring (Figure 36, Item 6) into the firing pin sear (Figure 36, Item 5).
25. Install firing pin sear (Figure 36, Item 5) with assembled springs (Figure 36, Items 6 and 7) into the center of the bolt (Figure 36, Item 2), in the position shown.
26. Push down on the firing pin sear (Figure 36, Item 5) and insert the helical compression spring (Figure 36, Item 4). Install firing pin (Figure 36, Item 1) in front of helical compression spring, aligning the slot in the firing pin with the cocking lever slot (Figure 36, Item 3) in the bolt. Release the firing pin sear.



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Figure 36. Bolt and Backplate Assembly Assembly.

## ASSEMBLY - Continued

**WARNING**

The firing pin is under heavy spring tension. Always shield the tip of the firing pin whenever it is exposed and cocked. This will prevent injury if the firing pin sear is accidentally depressed.

27. Using the middle tube of the gun or .50 caliber cleaning rod T-section handle, depress the firing pin (Figure 37, Item 7) until it clicks into the cocked position.
28. Observing the WARNING above, install firing pin cover (Figure 37, Item 6) all the way over the firing pin (Figure 37, Item 7).
29. Using a 1/4 inch flat-blade screwdriver, align the firing pin slot with the slot (Figure 37, Item 5) in the bolt (Figure 37, Item 3).
30. Using a 3/32 inch key wrench, depress the shoulder pin (Figure 37, Item 8).
31. Insert the assembled two-piece cocking lever (Figure 37, Item 1) so the inside curve is against the side of the bolt (Figure 37, Item 3). Release the shoulder pin (Figure 37, Item 8). Be sure the shoulder pin passes through the hole in the cocking lever.
32. Ensure the firing pin cover (Figure 37, Item 6) is in place. Depress the firing pin sear (Figure 37, Item 2) to release the firing pin forward. This relieves tension on the helical compression spring and sear springs.
33. Install two new front (plastic) washers (Figure 37, Item 4), if removed.

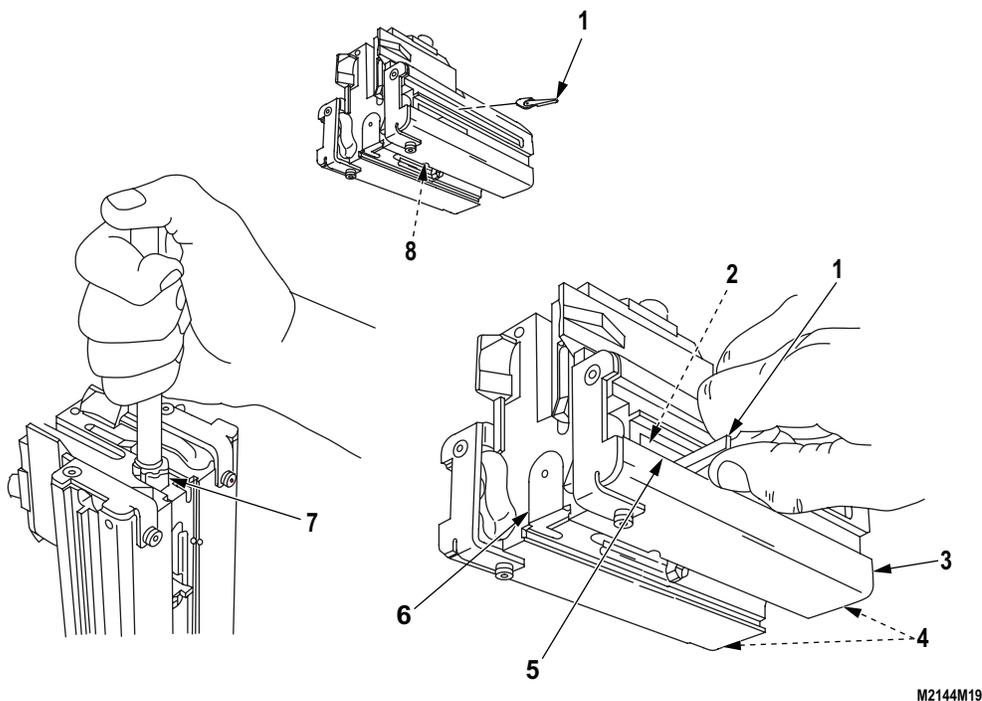
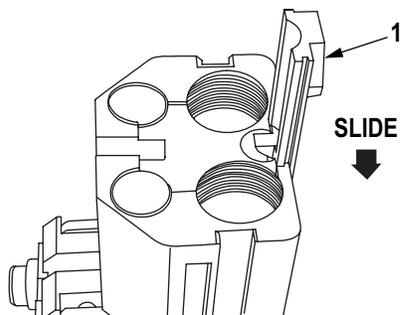


Figure 37. Bolt and Backplate Assembly Assembly.

**ASSEMBLY - Continued**

34. Ensure the firing pin is not cocked. While holding the cocking lever forward, slide the bolt sear (Figure 38, Item 1) forward into the bolt's center groove from the rear, so the bolt and bolt sear form a hole, as shown.



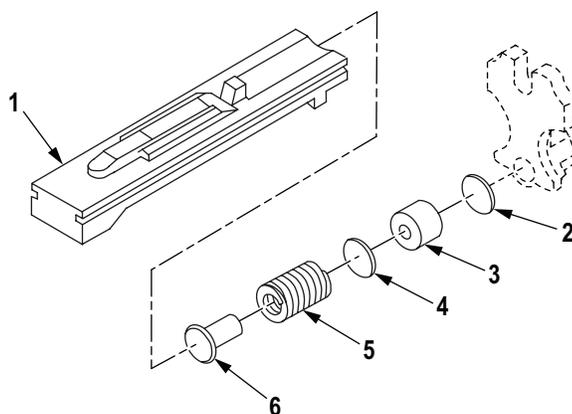
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Figure 38. Bolt and Backplate Assembly Assembly.

**NOTE**

Before continuing assembly of bolt and backplate assembly, perform bolt timing procedure (WP 0040).

35. Insert the following components in sequence into the hole created by the bolt and bolt sear (Figure 39, Item 1):
- Sear buffer rod (Figure 39, Item 6).
  - Helical compression spring (Figure 39, Item 5).
  - Blank buffer washer (Figure 39, Item 4).
  - Sear buffer (Figure 39, Item 3).
  - Blank buffer washer (Figure 39, Item 2).



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Figure 39. Bolt and Backplate Assembly Assembly.

**ASSEMBLY - Continued**

36. Insert the cap end (wider end) of each bolt buffer assembly (Figure 40, Item 2) into the rear of the bolt (Figure 40, Item 3).

**NOTE**

Ensure bolt buffer body does not extend beyond rear of bolt.

37. Lay the lock plate assembly (Figure 40, Item 1) on the rear center of the bolt (Figure 40, Item 3) with the cutouts aligned.

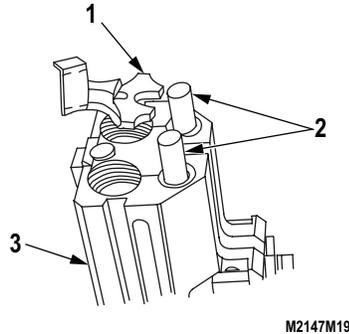


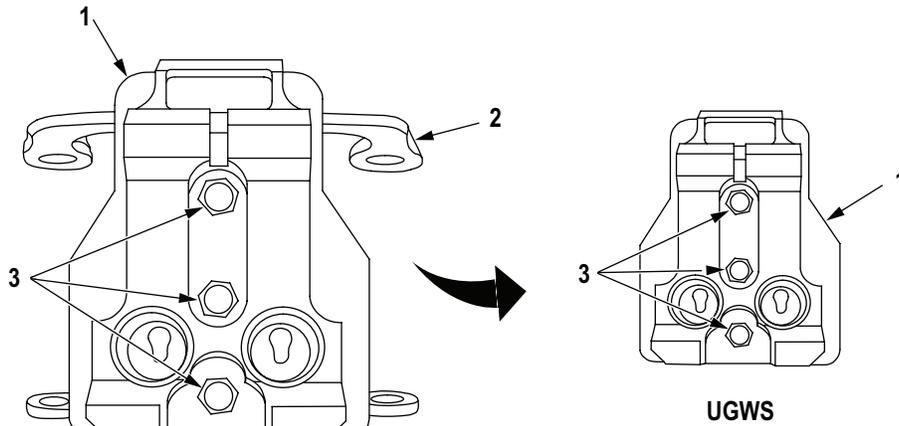
Figure 40. Bolt and Backplate Assembly Assembly.

**CAUTION**

When installing, be certain not to cross-thread the bolt sleeves.

38. Slide middle tube into outside tube.
39. Slide inner rod into middle tube.
40. Slip the small end of the .50 caliber cleaning rod T-section handle through the rods and tubes to hold them in place.
41. Position body mounting plate (Figure 41, Item 2) against backplate (Figure 41, Item 1) with screw holes aligned (MK19 MOD 3 only). Insert and tighten three new hexagon head self-locking capscrews (Figure 41, Item 3), using a socket wrench with a 1/2 inch socket.

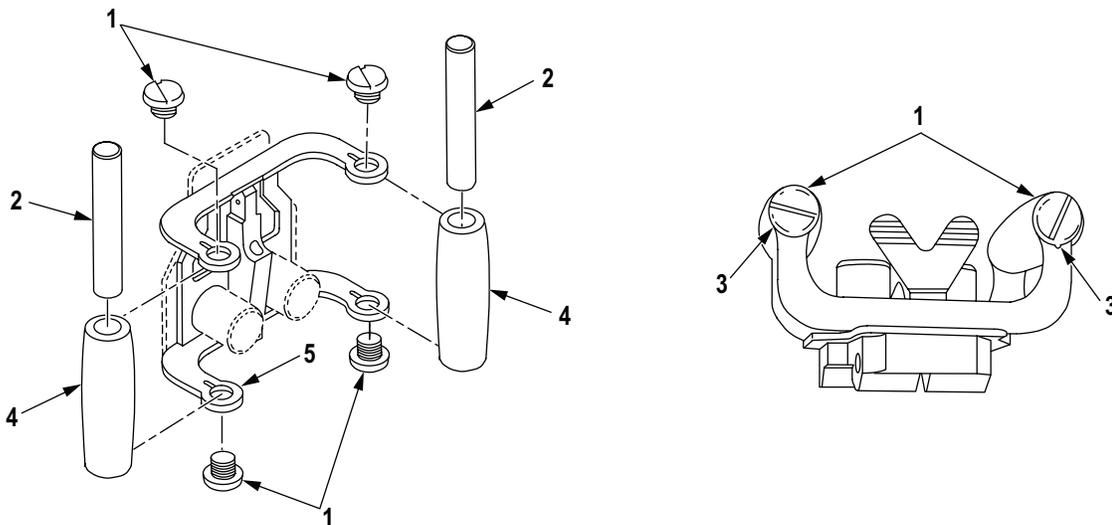
ASSEMBLY - Continued



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Figure 41. Bolt, Backplate, and Control Grip Assembly Installation.

42. Position the two handle grips (Figure 42, Item 4) on body mounting plate (Figure 42, Item 5) with top and bottom holes aligned.
43. Slip handle grip tubes (Figure 42, Item 2) inside handle grips (Figure 42, Item 4).
44. Insert and screw in the four machine screws (Figure 42, Item 1), using screwdriver on the combination tool, until tight.
45. With a center punch, stake the head of each machine screw (Figure 42, Item 1) to staking slot (Figure 42, Item 3) in body mounting plate (Figure 42, Item 5). This prevents slippage.



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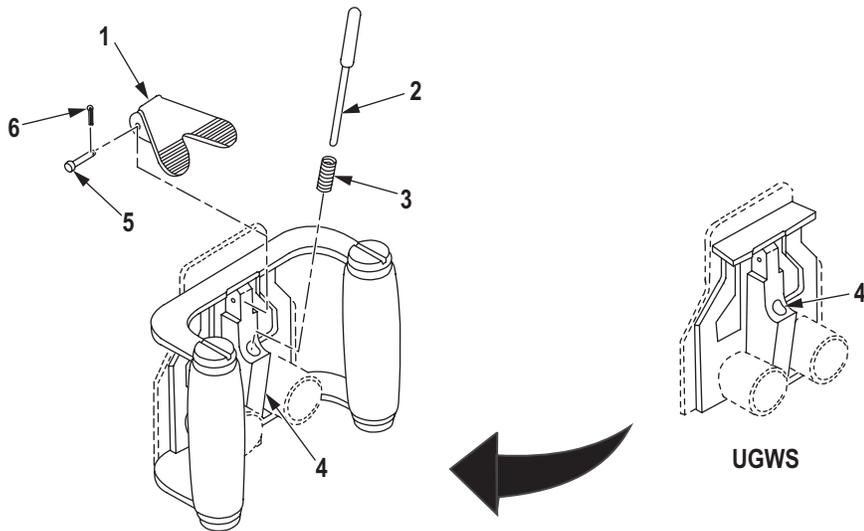
Figure 42. Bolt, Backplate, and Control Grip Assembly Installation.

**ASSEMBLY - Continued**

**NOTE**

Install new cotter pin upon assembly.

46. Drop helical compression spring (Figure 43, Item 3) into hole in body mounting plate (Figure 43, Item 4). Insert narrower tip of operating rod (Figure 43, Item 2) through the helical compression spring.
47. Position manual trigger plate (Figure 43, Item 1) on top of operating rod (Figure 43, Item 2). Align pinholes in manual trigger plate with those in the body mounting plate (Figure 43, Item 4).
48. Insert straight pin (Figure 43, Item 5) through pinholes. Insert new cotter pin (Figure 43, Item 6) to secure.

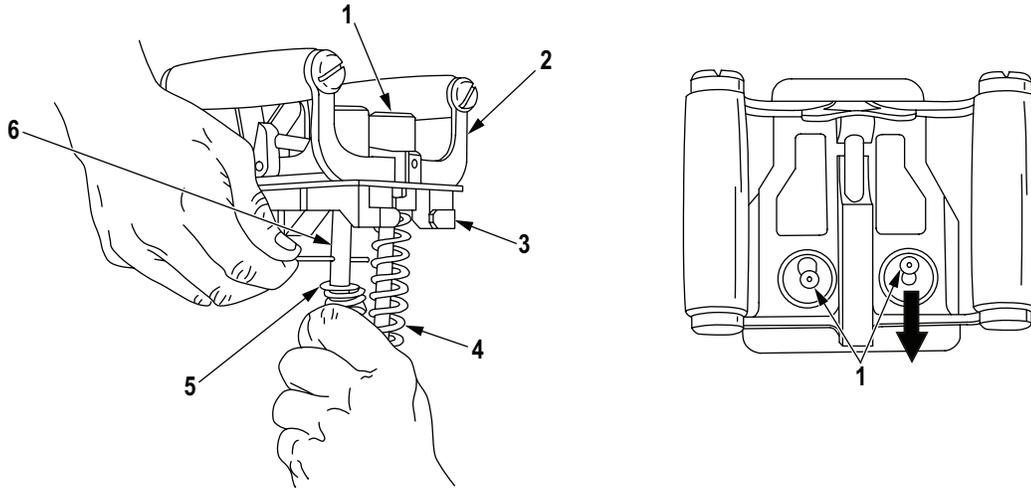


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*Figure 43. Bolt, Backplate, and Control Grip Assembly Installation.*

49. To install control grip assembly (Figure 44, Item 2) and backplate (Figure 44, Item 3), insert the tip of the inner rods (Figure 44, Item 6) into off-center holes in backplate tubes (Figure 44, Item 1). Move inner rods slightly to center them in the tubes.
50. Pull out the two 1/8 inch punches, or equal, to release spring washers (Figure 44, Item 5) and helical compression springs (Figure 44, Item 4) into place.

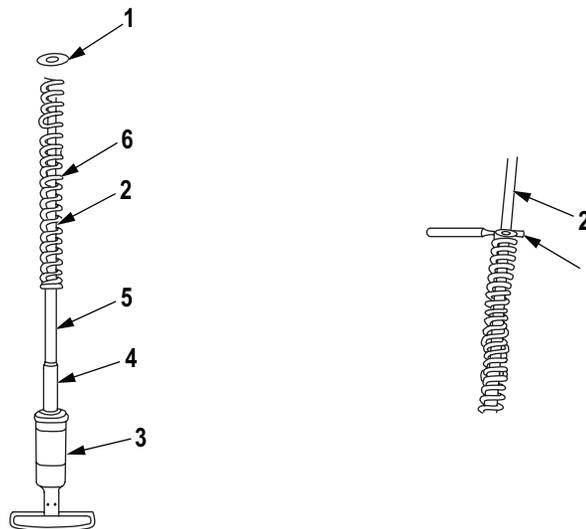
ASSEMBLY - Continued



M3406M19

Figure 44. Bolt, Backplate, and Control Grip Assembly Installation.

51. Slide bolt sleeve (Figure 45, Item 3) over rod and tubes (Figure 45, Items 4 and 5).
52. Slip the helical compression spring (Figure 45, Item 6) over the entire assembly.
53. Compress the helical compression spring (Figure 45, Item 6) on both sides and slip the spring washer (Figure 45, Item 1) over the end of the inner rod (Figure 45, Item 2). Be sure the convex side of the washer is seated against the helical compression spring.
54. Insert a 1/8 inch punch, cotter pin or equal, into the hole to hold the helical compression spring (Figure 45, Item 6) in place.
55. Repeat Steps 38 through 54 on other side.



M2148M19

Figure 45. Bolt and Backplate Assembly Assembly.

**ASSEMBLY - Continued**

- 56. Ensure the front washers are in the bolt (Figure 46, Item 2). Insert the bolt sleeves (Figure 46, Item 1) into the round cutouts in the bolt and over the front washers.

**NOTE**

If bolt sleeves cannot be threaded into bolt, back off lock plate screw (COUNT CLICKS). Start to thread the bolt sleeves into bolt. Tighten lock plate screw the same number of clicks as were backed off.

- 57. Using the open-end wrench on the combination tool, alternately tighten each bolt sleeve (Figure 46, Item 1) one full turn at a time until both are snug.

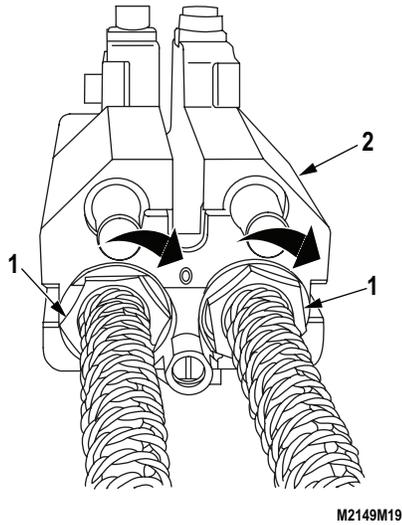


Figure 46. Bolt and Backplate Assembly Assembly.

- 58. Using non-electrical wire (Figure 47, Item 2), safety wire the bolt sleeves (Figure 47, Item 1) from bottom right to top left as shown in illustration.

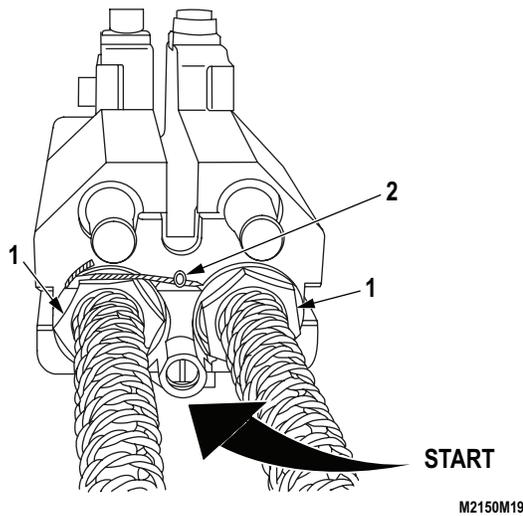


Figure 47. Bolt and Backplate Assembly Assembly.

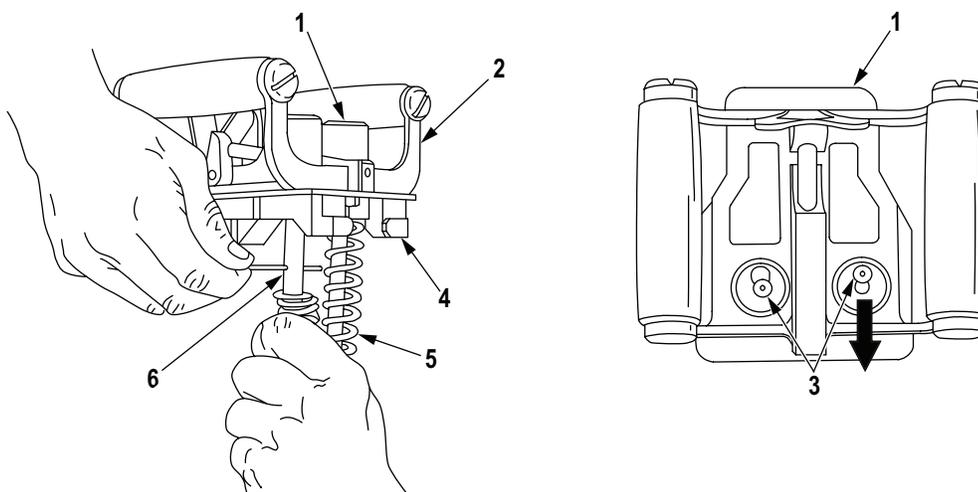
**ASSEMBLY - Continued**

59. Ensure the body mounting plate (Figure 48, Item 1) does not move relative to the backplate (Figure 48, Item 2).
60. Check that machine screws (Figure 48, Item 3) are well staked to the staking slots in the body mounting plate (Figure 48, Item 1).
61. Ensure the trigger action is snappy and the manual trigger plate (Figure 48, Item 4) springs back when released. If binding, inspect for burrs and blockage where the operating rod (Figure 48, Item 6) contacts the body mounting plate (Figure 48, Item 1). If the manual trigger plate does not spring back, replace the helical compression spring (Figure 48, Item 5).

**NOTE**

Install new cotter pin upon assembly.

62. Drop helical compression spring (Figure 48, Item 5) into hole in body mounting plate (Figure 48, Item 1).



M2044M19

Figure 48. Bolt, Backplate, and Control Grip Assembly Installation.

**END OF TASK****FOLLOW-ON MAINTENANCE**

Install bolt and backplate assembly on weapon (WP 0026).

**END OF TASK****END OF WORK PACKAGE**



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**FIELD MAINTENANCE**  
**OGIVE PLUNGER ASSEMBLY MAINTENANCE**

---

**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
Ogive Plunger Assembly Tool (WP 0090, Table 1, Item 23)  
Tool Set, Intermediate (Marine Corps only) (WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only) (WP 0090, Table 1, Item 35)

**References**

WP 0059

**Equipment Condition**

Alignment guide assembly removed from receiver (WP 0031)

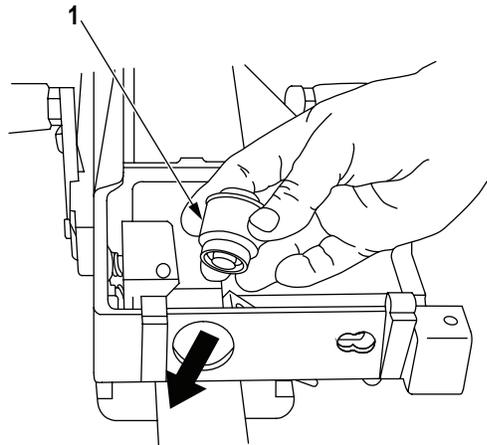
**Materials/Parts**

Cleaning Compound, Solvent (WP 0089, Table 1, Item 6)  
Lubricating Oil (LSAT) (WP 0089, Table 1, Item 11)

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**REMOVAL**

Pull ogive plunger assembly (Figure 1, Item 1) out through inside wall of receiver.



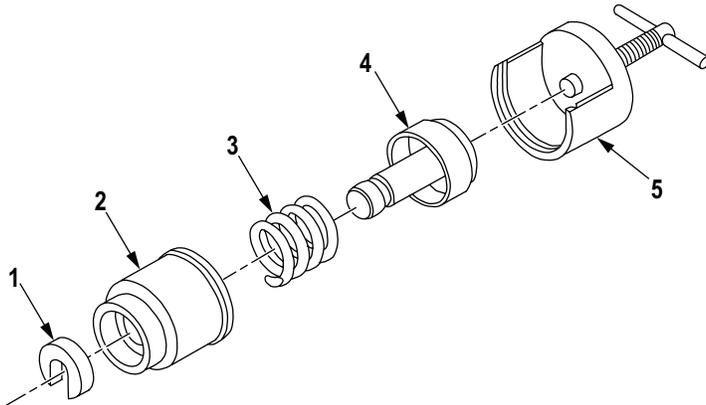
M2045M19

Figure 1. Ogive Plunger Assembly Removal.

**END OF TASK**

**DISASSEMBLY**

1. Place the wider end of ogive plunger assembly (Figure 2, Item 4) in lip of ogive plunger assembly tool (Figure 2, Item 5).
2. Turn tool's handle to compress assembly until slotted washer (Figure 2, Item 1) on assembly can be removed.
3. Remove slotted washer (Figure 2, Item 1).
4. With slotted washer (Figure 2, Item 1) removed, fully unscrew ogive plunger assembly tool (Figure 2, Item 5).
5. Remove ogive spring housing (Figure 2, Item 2), helical compression spring (Figure 2, Item 3), and ogive plunger (Figure 2, Item 4).



M2046M19

Figure 2. Ogive Plunger Assembly Disassembly.

**END OF TASK**

**REPAIR OR REPLACEMENT**

**WARNING**



- Cleaning compound solvent is flammable and toxic and must be kept away from open flames and used in a well-ventilated area. Use of rubber gloves is necessary to protect the skin when washing parts.
- To avoid injury, appropriate eye protection is recommended when cleaning the weapon and/or its parts.

**CAUTION**

Do not immerse assembled ogive plunger assembly in cleaning compound solvent. Solvent dilutes internal lubricant.

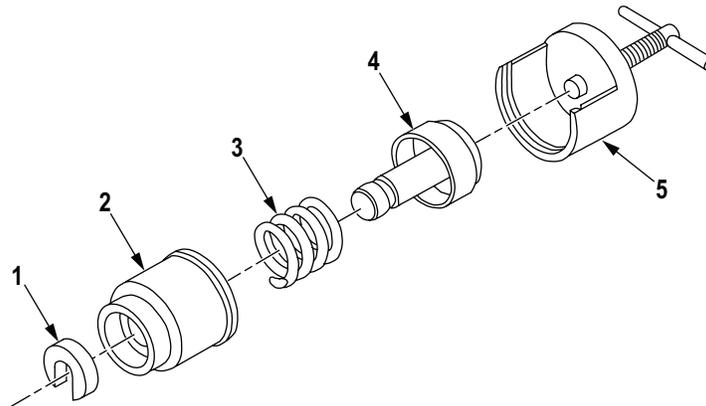
**REPAIR OR REPLACEMENT - Continued**

1. Inspect ogive plunger assembly whenever it is disassembled for cleaning. Ensure there is no rust or damage, and that internal components are well lubricated before assembly.
2. Replace defective parts as authorized by (WP 0059).

**END OF TASK****ASSEMBLY****NOTE**

Lubricate ogive plunger assembly well before assembling.

1. Insert helical compression spring (Figure 3, Item 3) over ogive plunger (Figure 3, Item 4). Place assembly, spring first, into ogive spring housing (Figure 3, Item 2).
2. Place ogive spring housing (Figure 3, Item 2) with helical compression spring (Figure 3, Item 3) and ogive plunger (Figure 3, Item 4) into ogive plunger assembly tool (Figure 3, Item 5).
3. Compress components by turning the tool handle until the slotted washer (Figure 3, Item 1) will fit in the groove of the ogive plunger (Figure 3, Item 4).
4. Install slotted washer (Figure 3, Item 1) in the groove of the ogive plunger (Figure 3, Item 4).
5. Unscrew and remove ogive plunger assembly tool (Figure 3, Item 5).



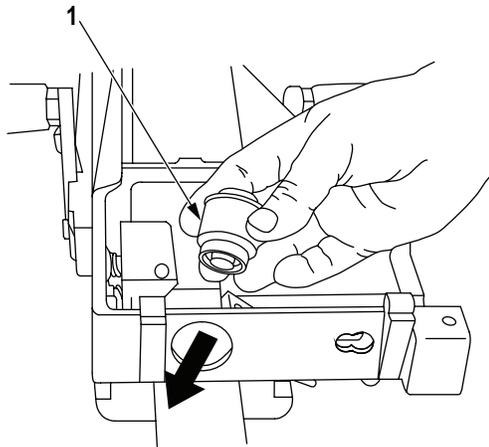
M2047M19

Figure 3. Ogive Plunger Assembly Assembly.

**END OF TASK**

**INSTALLATION**

Install ogive plunger assembly (Figure 4, Item 1) through inside wall of receiver.



M2048M19

*Figure 4. Ogive Plunger Assembly Installation.*

**END OF TASK****FOLLOW-ON MAINTENANCE**

Install alignment guide assembly on receiver (WP 0031).

**END OF TASK****END OF WORK PACKAGE**

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## FIELD MAINTENANCE TOP COVER ASSEMBLY MAINTENANCE

---

### INITIAL SETUP:

#### Tools and Special Tools

Bench Block (WP 0090, Table 1, Item 4)  
Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps only) (WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only) (WP 0090, Table 1, Item 35)  
Vise, Copper-Jawed (WP 0090, Table 1, Item 40)

#### Materials/Parts (cont.)

Pin, Straight (WP 0060, Figure 2, Item 1)  
Spring, Helical (WP 0068, Figure 10, Item 2)

#### References

WP 0059

#### Materials/Parts

Pin, Grooved (WP 0068, Figure 10, Item 6)

---

### REMOVAL

With feed tray down, hold top cover assembly (Figure 1, Item 2) straight up and pull out the two knurled head straight pins (Figure 1, Item 1). Lift top cover assembly from receiver (Figure 1, Item 3).

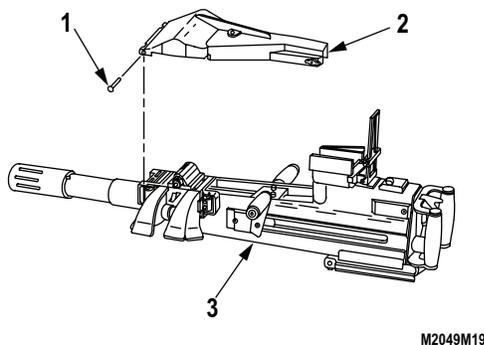


Figure 1. Top Cover Assembly Removal.

### END OF TASK

**DISASSEMBLY****NOTE**

Do not disassemble the top cover assembly unless part replacement is necessary.

1. Rotate lock handle (Figure 2, Item 1) to expose the headless grooved pin (Figure 2, Item 5). Place a screwdriver under the headless grooved pin to hold it in place. Tap out the headless grooved pin, grooved end first.
2. Pull lock handle (Figure 2, Item 1) out from top cover (Figure 2, Item 3).
3. Remove helical torsion spring (Figure 2, Item 2) and cover lock (Figure 2, Item 4).

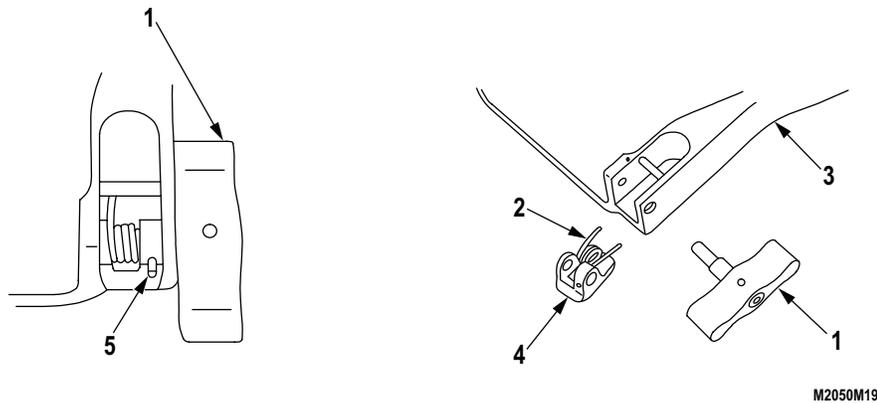


Figure 2. Top Cover Assembly Disassembly.

4. Place lock handle (Figure 3, Item 2) on a bench block. Tap out the headless grooved pin (Figure 3, Item 1) which holds the lock shoulder pin (Figure 3, Item 3) to lock handle. Separate components.
5. Pull out lock shoulder pin (Figure 3, Item 3).

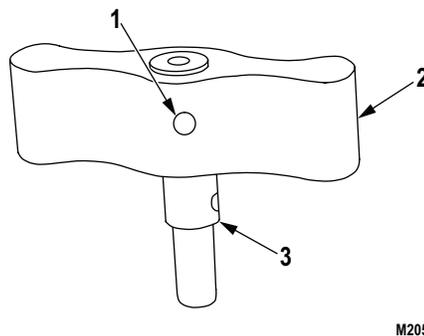


Figure 3. Top Cover Assembly Disassembly.

**END OF TASK****INSPECTION**

Inspect latch mechanism by moving it. The lock handle and helical torsion spring should move as a unit with no relative movement between them. Ensure all parts are lightly lubricated with no binding. Do not remove components unless part replacement is necessary.

**END OF TASK**

**REPLACEMENT**

**NOTE**

The cover lock and lock shoulder pin must be drilled as a unit when installed as new items. When installing the new cover lock, do not forget to install a new headless grooved pin, lock shoulder pin, headless grooved pin, and lock handle. The lock handle must also be drilled when installed as a new item.

1. If cover lock (Figure 4, Item 4) is replaced, also install new headless grooved pin (Figure 4, Item 5), lock shoulder pin (Figure 4, Item 2), headless grooved pin (Figure 4, Item 1), and lock handle (Figure 4, Item 3).
2. Headless grooved pin (Figure 4, Items 1 and 5) may be replaced by itself.
3. Enlarge pilot holes in cover lock and lock shoulder pin.
  - a. Clamp assembled cover lock and lock shoulder pin in a vise with soft jaws and align predrilled holes in the cover lock (Figure 4, Item 4) and lock shoulder pin (Figure 4, Item 2).

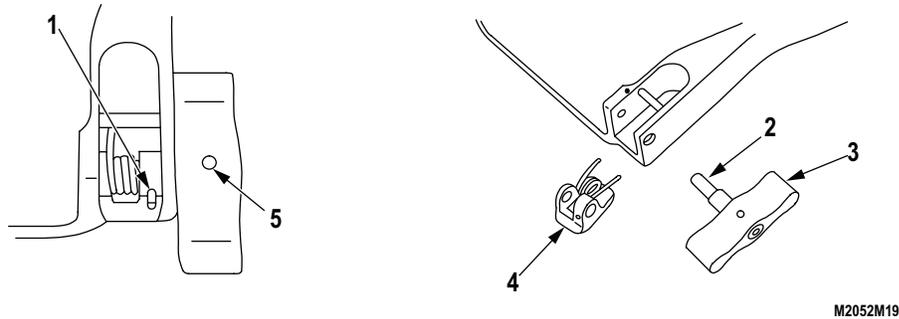


Figure 4. Top Cover Assembly Repair.

- b. Using 3/32 inch drill bit and drill press, enlarge holes (Figure 5, Items 1 and 2) as shown.

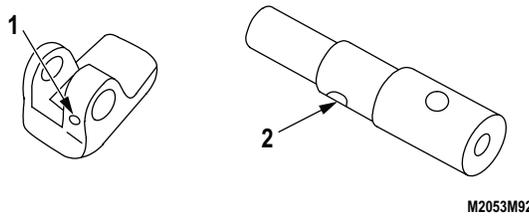


Figure 5. Top Cover Assembly Repair.

**REPLACEMENT - Continued**

4. Enlarge pilot holes in lock shoulder pin and lock handle.
  - a. Clamp assembled lock shoulder pin and lock handle so predrilled pilot holes (Figure 6, Items 1 and 2) are aligned.
  - b. Using 1/8 inch drill bit and drill press, enlarge holes (Figure 6, Items 1 and 2) as shown.

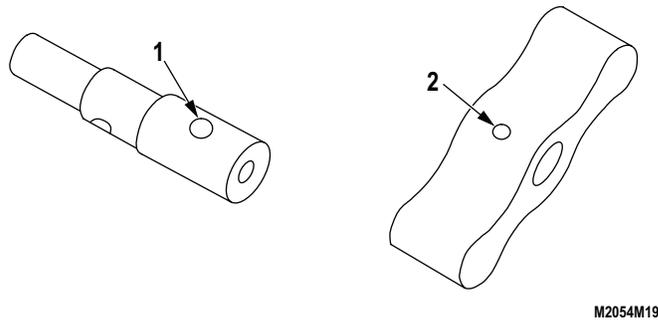


Figure 6. Top Cover Assembly Replacement.

5. Replace defective parts as authorized by (WP 0059).

**END OF TASK****ASSEMBLY**

1. Install lock handle (Figure 7, Item 3) over lock shoulder pin (Figure 7, Item 1), pin holes aligned. Insert headless grooved pin (Figure 7, Item 2) into lock handle. Lay assembly on a bench block and tap in headless grooved pin with 1/8 inch punch and hammer.

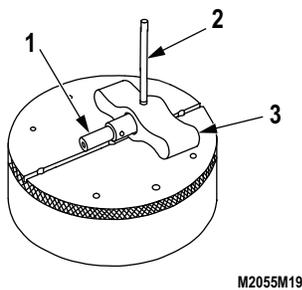


Figure 7. Top Cover Assembly Assembly.

**ASSEMBLY - Continued**

2. Insert new helical torsion spring (Figure 8, Item 5) and cover lock (Figure 8, Item 4) in top cover (Figure 8, Item 2). Ensure arm on spring is under the welded crosspin (Figure 8, Item 1) on cover. Insert lock shoulder pin (Figure 8, Item 3) to secure.

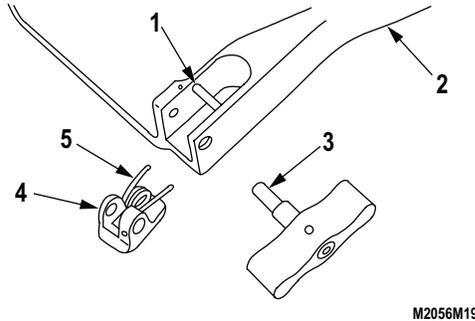


Figure 8. Top Cover Assembly Assembly.

3. Turn lock handle so flush end of headless grooved pin (Figure 9, Item 2) is upward. Insert new headless grooved pin (Figure 9, Item 1) into cover and lock pin. Tap in with punch and hammer. Outside edge of the headless grooved pin must be flush with cover lock. Ensure latch mechanism moves with no binding and no relative movement among parts.

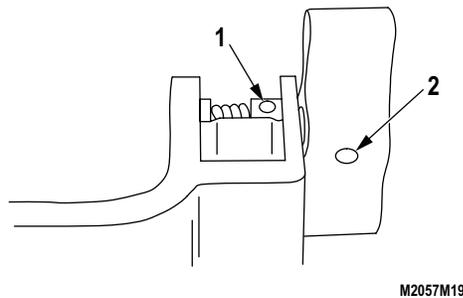


Figure 9. Top Cover Assembly Assembly.

**END OF TASK**

**INSTALLATION**

Line up pin holes in top cover assembly (Figure 10, Item 2), feed tray, and receiver (Figure 10, Item 3). Hold top cover straight up and push in knurled head straight pins (Figure 10, Item 1) on each side. Ensure knurled heads of pins touch top cover.

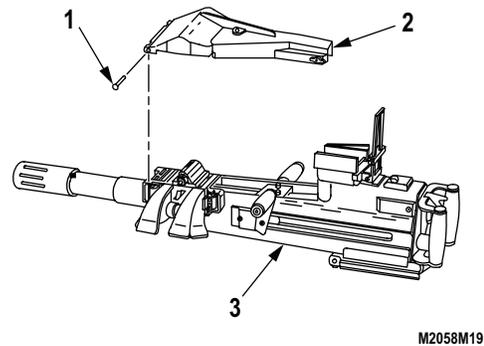


Figure 10. Top Cover Assembly Installation.

**END OF TASK**

**END OF WORK PACKAGE**

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**FIELD MAINTENANCE  
SEAR ASSEMBLY MAINTENANCE**

---

**INITIAL SETUP:****Tools and Special Tools**

Dial Caliper (WP 0090, Table 1, Item 13)  
Rod, Cleaning, Small Arms (WP 0090, Table 1, Item 27)  
Tool, Combination (WP 0090, Table 1, Item 11)  
Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
Tool, Safety Slide (WP 0090, Table 1, Item 28)  
Tool Set, Intermediate (Marine Corps only) (WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only) (WP 0090, Table 1, Item 35)

**Materials/Parts**

Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)

**Materials/Parts (cont.)**

Lubricating Oil (LSAT) (WP 0089, Table 1, Item 6)  
Pin, Spring (WP 0070, Figure 12, Item 8)  
Wire, Safety (WP 0083, Figure BULK, Item 6)

**References**

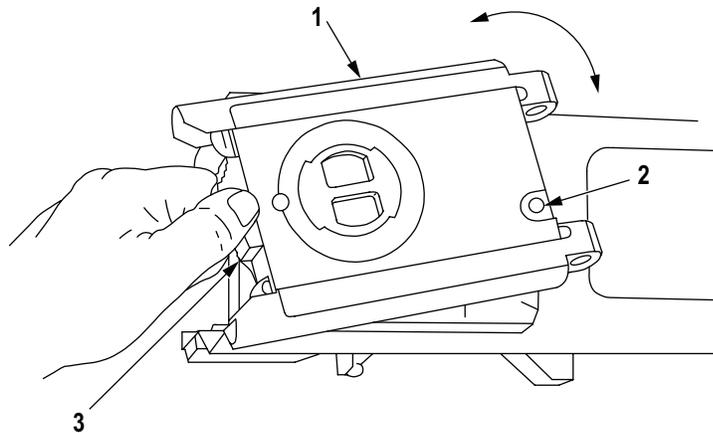
WP 0037  
WP 0059

**Equipment Condition**

Bolt and backplate assembly removed (WP 0026)

**REMOVAL**

1. Place the safety in "F" (FIRE) position.
2. Turn receiver over. Retract lock plunger (Figure 1, Item 2) on sear housing (Figure 1, Item 1), using a screwdriver tip on the combination tool. Squeeze sear (Figure 1, Item 3) and safety together. Rotate sear assembly 90 degrees either way, pressing down on safety as you rotate.
3. Place safety on "S" (SAFE) before sear assembly is lifted from receiver. Lift out sear assembly.



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Figure 1. Sear Assembly Removal.

**END OF TASK****DISASSEMBLY****CAUTION**

Do not immerse assembled receiver buffer bodies in a cleaning compound solvent. Solvent dilutes lubricant in packed washers, leading to equipment damage.

1. Place thumb safety (Figure 2, Item 4) in "F" (FIRE) position.
2. Lift receiver sear (Figure 2, Item 1). Remove sear helical compression spring (Figure 2, Item 2) and sear spring pin (Figure 2, Item 3).
3. MK19 MOD 3: Rotate sear housing cap (Figure 2, Item 1) 90 degrees in either direction and remove. (Upgunned Weapons Station: Rotate solenoid (Figure 2, Item 2) 90 degrees in either direction and remove.)

## DISASSEMBLY - Continued

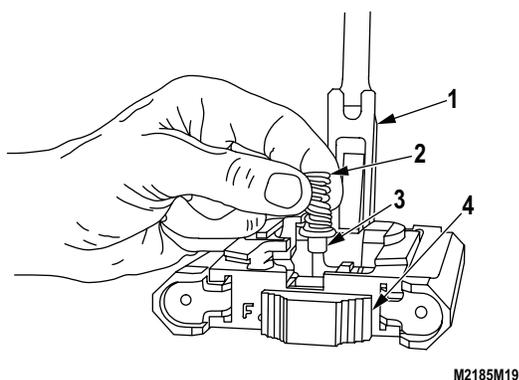


Figure 2. Sear Assembly Disassembly.

4. Raise receiver sear (Figure 3, Item 1). Using 1/8 inch key wrench or 1/8 inch punch, push recoil pin (Figure 3, Item 2) on right-hand side through access hole in receiver buffer body (Figure 3, Item 4). Push it far enough to allow receiver buffer body to move.
5. Slide receiver buffer body (Figure 3, Item 4) forward and remove it. Push recoil pin (Figure 3, Item 2) out of sear housing (Figure 3, Item 3).
6. Repeat this procedure to remove receiver buffer body (Figure 3, Item 4) and recoil pin (Figure 3, Item 2) on left-hand side.

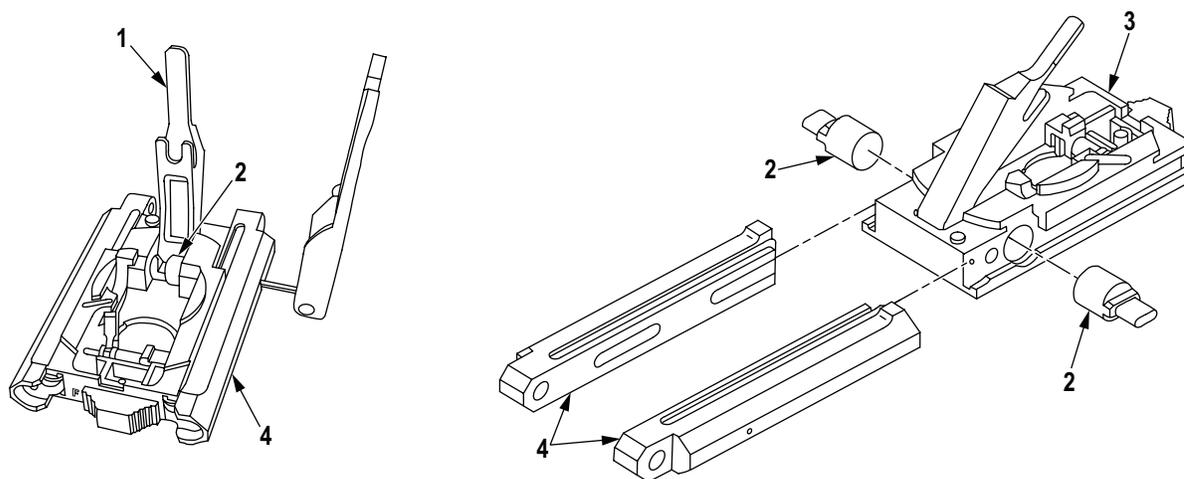
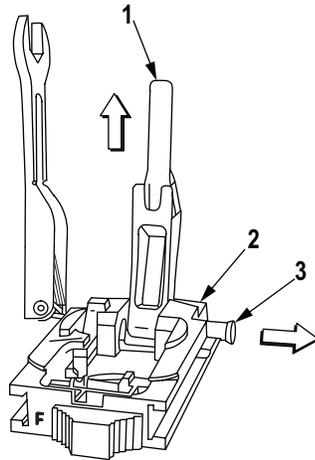


Figure 3. Sear Assembly Disassembly.

**DISASSEMBLY - Continued**

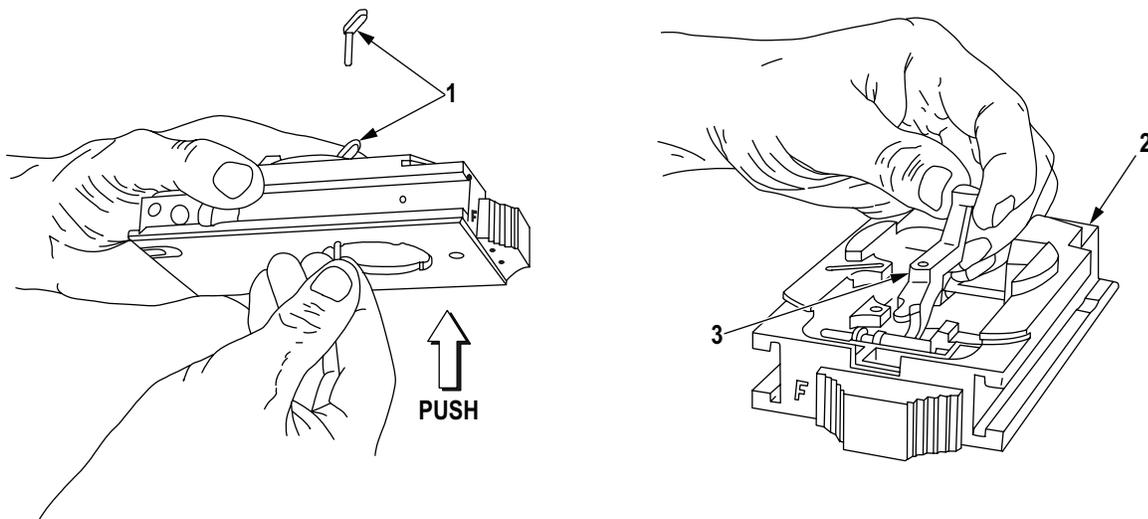
7. Using 1/8 inch key wrench or 1/8 inch punch, push headed straight pin (Figure 4, Item 3) from left-hand side so that it slides out the right-hand side of sear housing (Figure 4, Item 2).
8. Lift to remove receiver sear (Figure 4, Item 1).



M2188M19

Figure 4. Sear Assembly Disassembly.

9. Using 1/16 inch punch, push safety lever pin (Figure 5, Item 1) through top of sear housing (Figure 5, Item 2).
10. Lift to remove safety lever (Figure 5, Item 3).

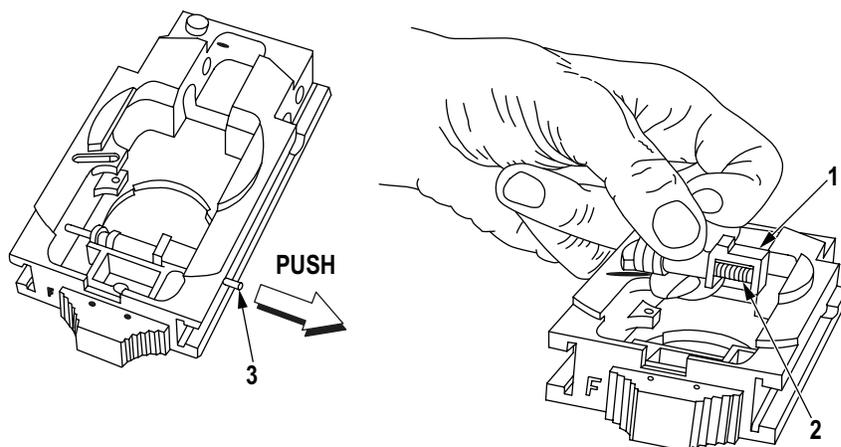


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Figure 5. Sear Assembly Disassembly.

**DISASSEMBLY - Continued**

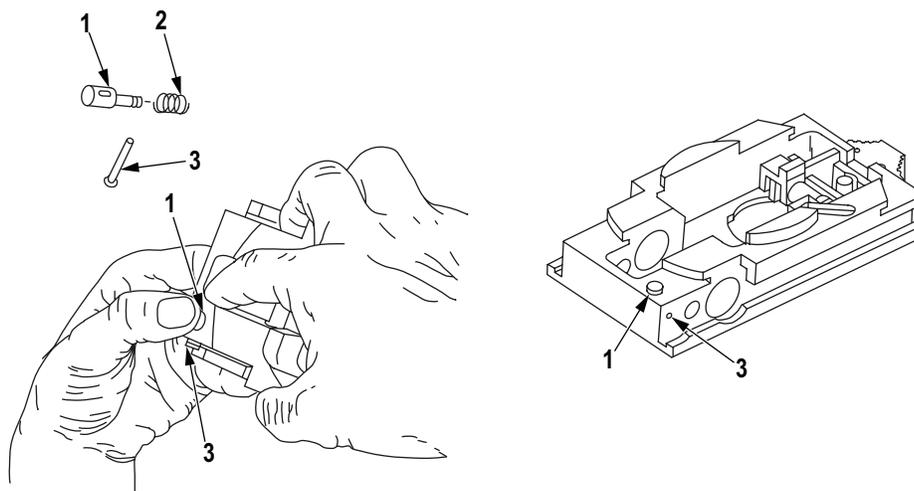
11. Push headless straight pin (Figure 6, Item 3) from left to right, using 1/16 inch punch, and remove.
12. Lift to remove safety slide (Figure 6, Item 1) and compression helical spring (Figure 6, Item 2) together, as a unit.
13. Separate safety slide (Figure 6, Item 1) and compression helical spring (Figure 6, Item 2).



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Figure 6. Sear Assembly Disassembly.

14. Depress grooved pin (Figure 7, Item 1) and remove headed straight pin (Figure 7, Item 3).
15. Lift to remove grooved pin (Figure 7, Item 1) and helical compression spring (Figure 7, Item 2).



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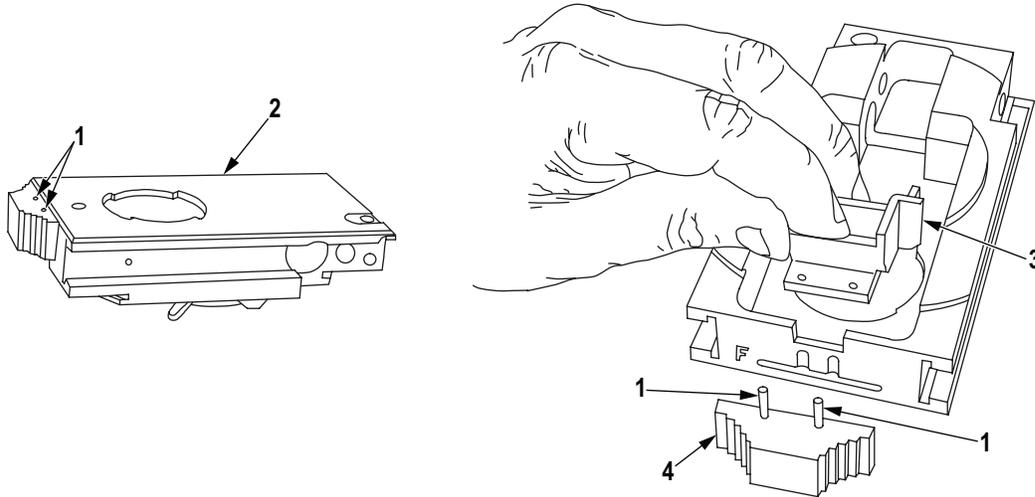
Figure 7. Sear Assembly Disassembly.

## DISASSEMBLY - Continued

**NOTE**

Do not remove except for part replacement. If either safety slide block or thumb safety must be replaced, replace slotted spring pins each time removed.

16. Turn sear housing (Figure 8, Item 2) upside down. Tap out the two slotted spring pins (Figure 8, Item 1) from thumb safety (Figure 8, Item 4). Discard slotted spring pins. Remove thumb safety and safety slide block (Figure 8, Item 3).



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Figure 8. Sear Assembly Disassembly.

**DISASSEMBLY - Continued****NOTE**

Do not remove spring plunger from thumb safety unless part replacement is necessary.

17. Attach 5/16 inch socket-to-socket wrench handle. Attach safety slide tool to socket. Insert tip of the safety slide tool into thumb safety (Figure 9, Item 2), press, and twist counterclockwise to remove spring plunger (Figure 9, Item 1).

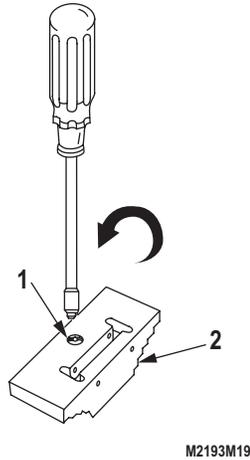


Figure 9. Sear Assembly Disassembly.

**CAUTION**

Do not change the order or position of the components in each receiver buffer body. There are approximately 40 spring washers in each assembly which must be replaced exactly in the reverse order they were removed. If this sequence is not followed, heavy recoil (hard fire) will occur, with possible part damage within the gun.

18. Slide buffer retainer (Figure 10 Item 1) from receiver buffer body (Figure 10, Item 2).

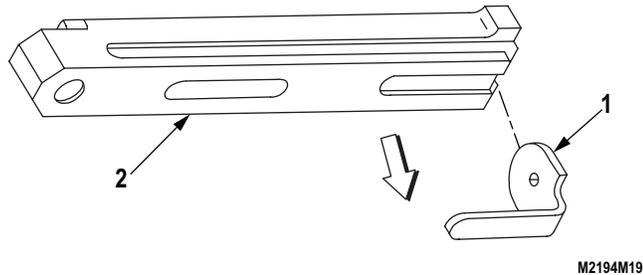


Figure 10. Sear Assembly Disassembly.

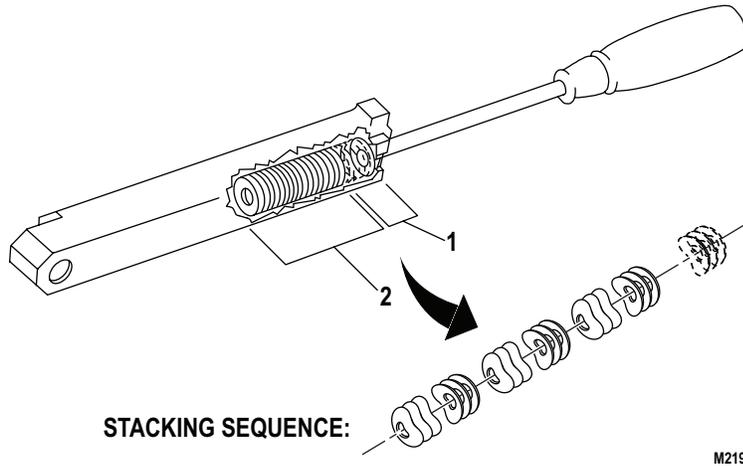
**DISASSEMBLY - Continued**

19. Slide first set of washers (Figure 11, Item 2) (rear group) (about 21 washers), onto a .50 caliber cleaning rod. Note the washers are curved back-to-back and front-to-front in sets of three. The first washers removed are placed parallel to the first set of three. These are called nominal washers (Figure 11, Item 1).

**NOTE**

Rear group washers are arranged in three sets of six, followed by one to six nominal washers which serve as shims.

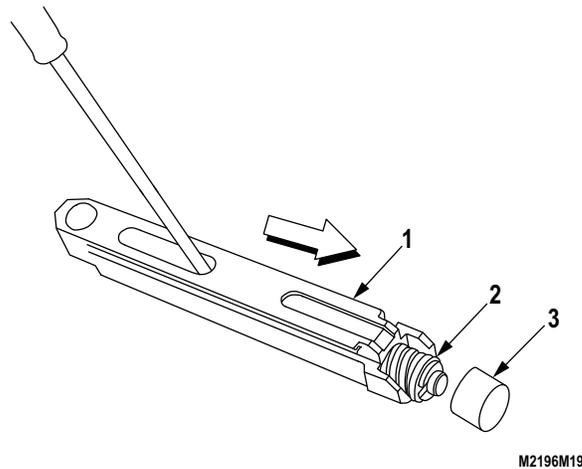
20. For cleaning, inspection, and lubrication, transfer the rear group washers (Figure 11, Item 2) to a length of safety wire about 10 inches (25.4 cm) in length. Twist the ends of the safety wire to prevent loss of the washers.



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Figure 11. Sear Assembly Disassembly.

21. Place receiver buffer body (Figure 12, Item 1) horizontally, slot side up. Using small screwdriver, push out buffer cap (Figure 12, Item 3) and buffer rod assembly (Figure 12, Item 2) from receiver buffer body. Use care not to spill the remaining spring washers.



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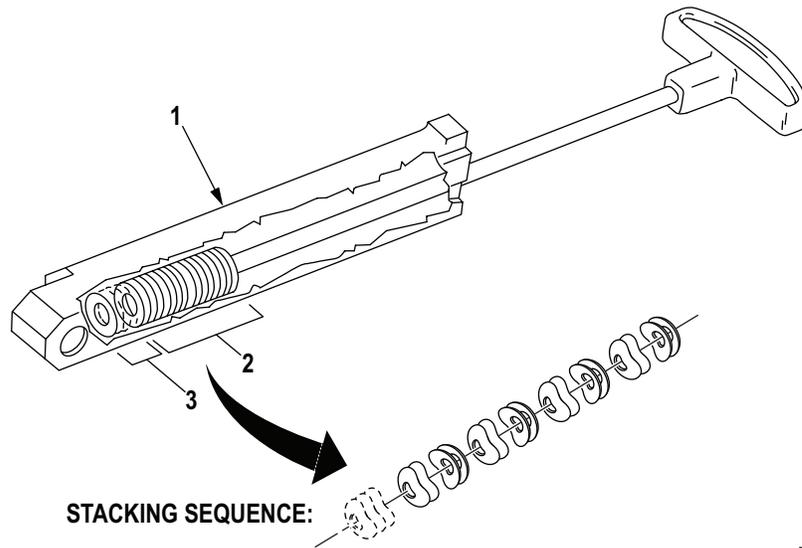
Figure 12. Sear Assembly Disassembly.

**DISASSEMBLY - Continued**

22. Slide the remaining front group washers (Figure 13, Item 2) (total of about 19 washers) onto the handle section of a .50 caliber cleaning rod. The rod must reach all the way to the bottom of the receiver buffer body (Figure 13, Item 1). Ensure all washers, including nominal washers (Figure 13, Item 3), are removed.

**NOTE**

Group B (front) washers are arranged in four sets of four followed by one to six nominal washers which serve as shims.



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Figure 13. Sear Assembly Disassembly.

**DISASSEMBLY - Continued**

23. Transfer front group washers to another length of safety wire to prevent loss or mixup.
24. Repeat above procedure for the other receiver buffer body.

**NOTE**

Army uses disassembly only to lubricate components.

25. Place buffer rod assembly (Figure 14, Item 6) in buffer assembly tool (Figure 14, Item 1) so that slotted washer (Figure 14, Item 3) is showing.
26. Compress buffer rod assembly (Figure 14, Item 2) by twisting handle of buffer assembly tool (Figure 14, Item 1) clockwise until slotted washer (Figure 14, Item 4) can be removed. Remove slotted washer.
27. Unscrew buffer assembly tool (Figure 14, Item 1) all the way. The headed grooved pin (Figure 14, Item 7), buffer bushing (Figure 14, Item 6), helical compression spring (Figure 14, Item 5), and buffer flat washer (Figure 14, Item 4) will separate easily.

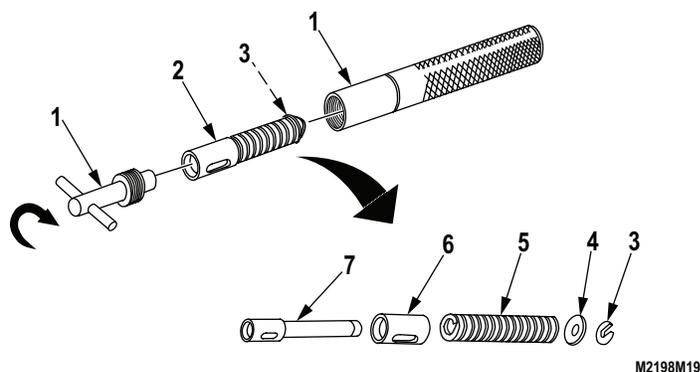


Figure 14. Sear Assembly Disassembly.

**END OF TASK****REPAIR OR REPLACEMENT****WARNING**

Wear eye protection when removing and installing spring-loaded parts to avoid injury to eyes. Ensure the spring is pointed away from all personnel. Failure to comply may result in serious injury to personnel.

1. Using dial caliper, measure the length of the helical compression spring. If it is shorter than the dimension given in (WP 0037), discard and install a new helical compression spring.
2. Inspect washers for radial cracks. If one spring washer needs replacement, install all new spring washers in both receiver buffer bodies.

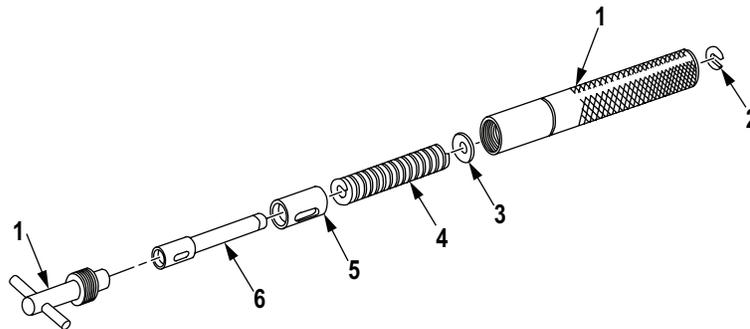
**REPAIR OR REPLACEMENT - Continued**

3. If a new receiver sear is installed, also install a new bolt sear and adjust bolt timing.
4. Replace defective parts as authorized by (WP 0059).

**END OF TASK****ASSEMBLY****NOTE**

Items 3 through 6 should be lubricated prior to assembly.

1. Slide buffer bushing (Figure 15, Item 5) over headed grooved pin (Figure 15, Item 6) so slots are aligned.
2. Insert helical compression spring (Figure 15, Item 4) over headed grooved pin (Figure 15, Item 6).
3. Lay buffer flat washer (Figure 15, Item 3) on top of helical compression spring (Figure 15, Item 4).
4. Holding headed grooved pin (Figure 15, Item 6) upright, place assembled components into buffer assembly tool (Figure 15, Item 1), as shown.
5. Twist handle on buffer assembly tool (Figure 15, Item 1) to compress assembly. Twist until slotted washer (Figure 15, Item 2) can be snapped over the end of the rod.
6. Perform the above steps for the other buffer rod assembly.



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Figure 15. Sear Assembly Assembly.

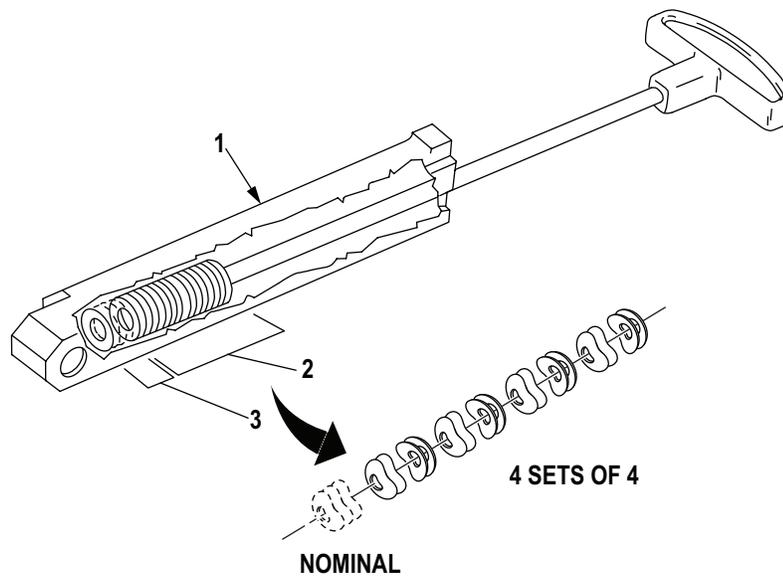
**ASSEMBLY - Continued****CAUTION**

Do not change the order or position of the components in each receiver buffer body. There are approximately 40 spring washers in each assembly which must be replaced exactly in the reverse order they were removed. If this sequence is not followed, heavy recoil (hard fire) will occur, with possible part damage within the gun.

**NOTE**

The stacked washers should be lubricated prior to assembly.

7. Transfer front group washers (Figure 16, Item 2) (four sets of four plus one or more nominal washers (Figure 16, Item 3)) from the safety wire onto the handle of a .50 caliber cleaning rod. The nominal washers should enter the receiver buffer body first and be closest to the tip of the cleaning rod.
8. Using care not to spill the washers, insert the cleaning rod with front group washers (Figure 16, Item 2) (four sets of four plus the nominal washers (Figure 16, Item 3)) into the receiver buffer body (Figure 16, Item 1), ensuring washers are positioned on the bottom.



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Figure 16. Sear Assembly Assembly.

**ASSEMBLY - Continued**

9. Using small screwdriver, align small slot in headed grooved pin (Figure 17, Item 1) with large slot in receiver buffer body (Figure 17, Item 2) as buffer rod assembly (Figure 17, Item 3) is inserted. Insert buffer cap (Figure 17, Item 4) on top of buffer rod assembly.

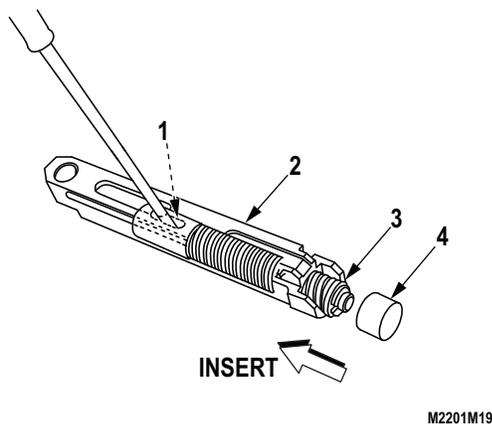


Figure 17. Sear Assembly Assembly.

10. Transfer rear group washers (Figure 18, Item 3) (three sets of six plus one or more nominal washers (Figure 18, Item 2)) from the safety wire to a caliber .50 cleaning rod.
11. Install rear group washers (Figure 18, Item 3), using care not to spill them. Ensure the nominal washers (Figure 18, Item 2) are the last to go into the receiver buffer body (Figure 18, Item 1).

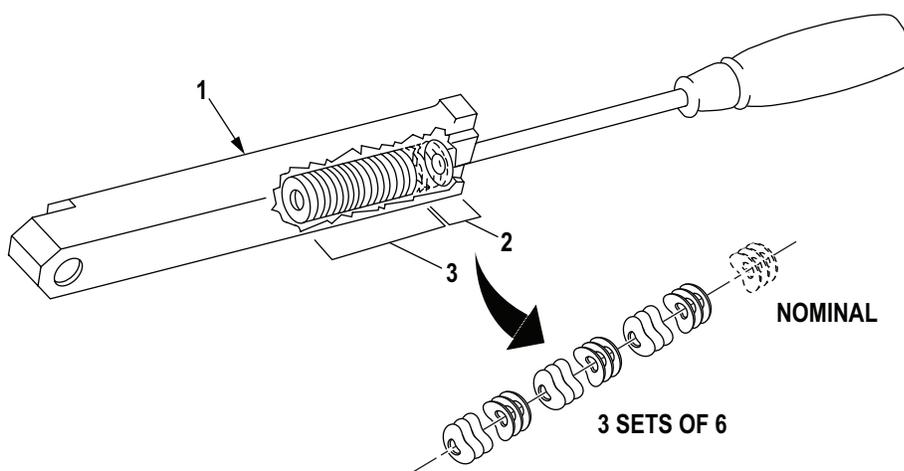


Figure 18. Sear Assembly Assembly.

**ASSEMBLY - Continued**

12. Slide buffer retainer (Figure 19, Item 1) onto receiver buffer body (Figure 19, Item 2) to secure components.

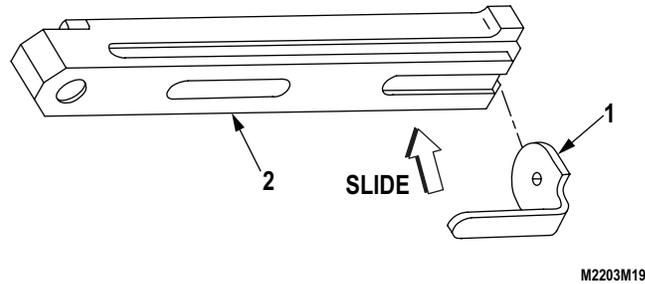


Figure 19. Sear Assembly Assembly.

13. Perform the above steps for the components in the other receiver buffer body.
14. Attach 5/16 inch socket-to-socket wrench handle. Attach safety slide tool in socket. Insert threaded end of spring plunger (Figure 20, Item 2) into thumb safety (Figure 20, Item 1). Press and twist clockwise with tip of safety slide tool until body of spring plunger is flush with thumb safety and spring plunger tip is protruding.

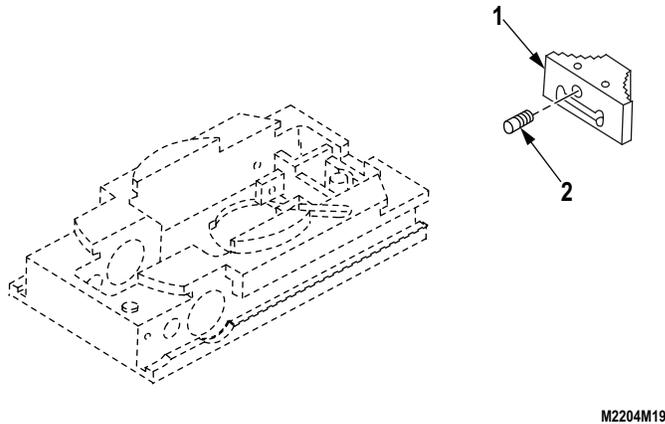


Figure 20. Sear Assembly Assembly.

**NOTE**

Lubricate sear housing detents before assembly.

15. Insert two new slotted spring pins (Figure 21, Item 3) about 1/4 inch into top of the thumb safety (Figure 21, Item 4) (plunger side).

**WARNING**

Ensure safety slide block is installed in the position shown. If safety slide block is improperly installed, the thumb safety will not function, endangering personnel.

16. Insert safety slide block (Figure 21, Item 1) into sear housing (Figure 21, Item 2) in the position shown.
17. With sear housing (Figure 21, Item 2) right side up, press thumb safety (Figure 21, Item 4) against housing. Tap in the two slotted spring pins (Figure 21, Item 3), until they are flush with thumb safety.
18. Move thumb safety (Figure 21, Item 4) back and forth to ensure it snaps crisply into "S" (SAFE) and "F" (FIRE) positions. Verify detent action.

ASSEMBLY - Continued

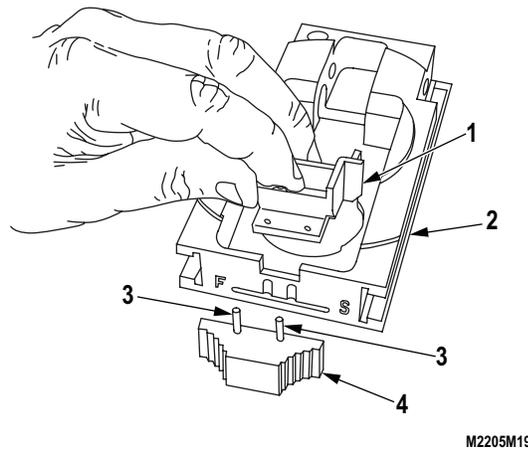


Figure 21. Sear Assembly Assembly.

19. Drop helical compression spring (Figure 22, Item 3) into hole in sear housing (Figure 22, Item 1). Drop grooved pin (Figure 22, Item 2) into same hole.
20. Push down on grooved pin (Figure 22, Item 2) aligning slot with hole in sear housing (Figure 22, Item 1) and install headed straight pin (Figure 22, Item 4).

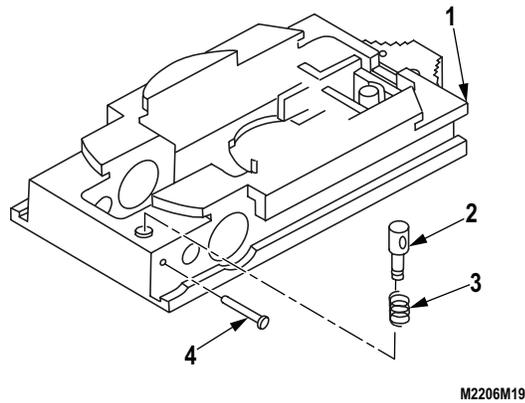


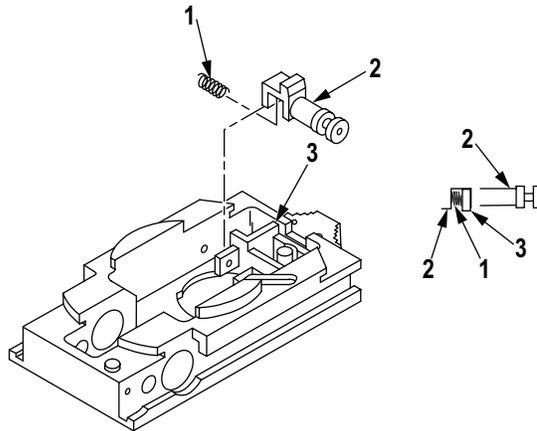
Figure 22. Sear Assembly Assembly.

**ASSEMBLY - Continued**

**WARNING**

Be sure to install the safety slide in the position shown. If it is not installed correctly, the thumb safety will not function, endangering personnel.

21. Insert compression helical spring (Figure 23, Item 1) all the way into the safety slide (Figure 23, Item 2).
22. Position tang (Figure 23, Item 4) of safety slide (Figure 23, Item 2) with compression helical spring (Figure 23, Item 1) over safety slide block (Figure 24, Item 3). Compression helical spring will be compressed to the side shown in the inset drawing above.



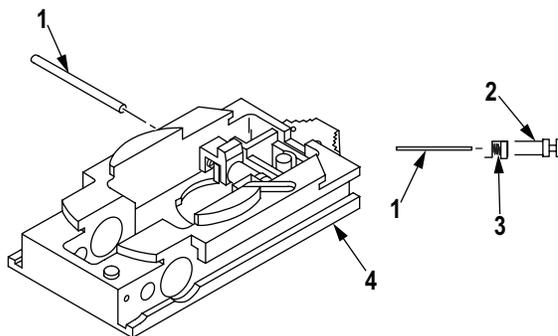
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Figure 23. Sear Assembly Assembly.

**NOTE**

The headless straight pin can fall out until the buffer assemblies are installed.

23. Insert headless straight pin (Figure 24, Item 1) through right-hand side of sear housing (Figure 24, Item 4). Push headless straight pin through safety slide (Figure 24, Item 2) and compression helical spring (Figure 24, Item 3), flush with left wall of sear housing.



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Figure 24. Sear Assembly Assembly.

**ASSEMBLY - Continued**

24. Install safety lever (Figure 25, Item 1) so forked end fits over groove in safety slide (Figure 25, Item 2).
25. Secure safety lever (Figure 25, Item 1) by inserting safety lever pin (Figure 25, Item 3). Safety lever pin should be flush with sear housing (Figure 25, Item 4).

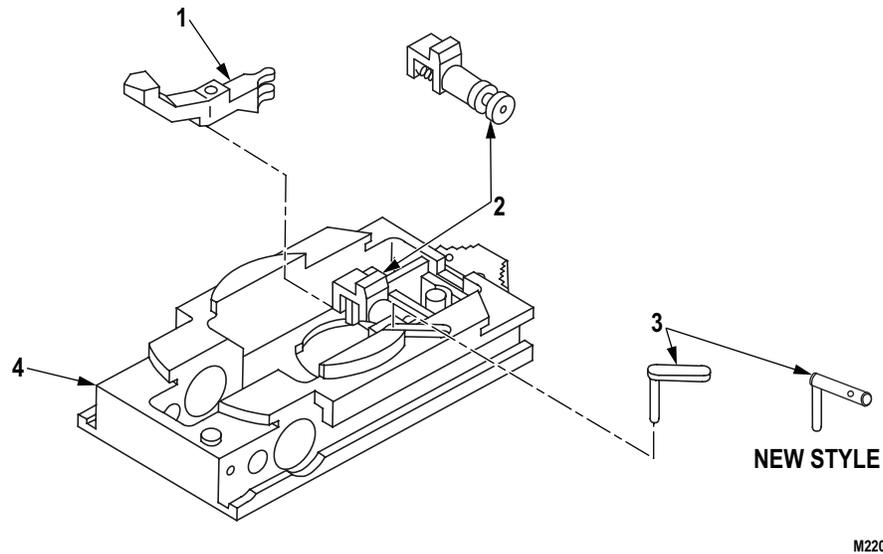
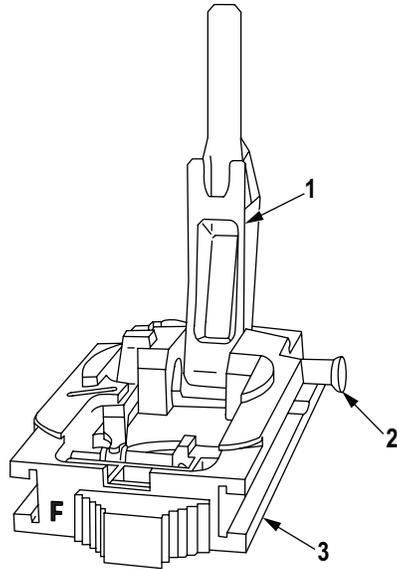


Figure 25. Sear Assembly Assembly.

**ASSEMBLY - Continued**

26. Position receiver sear (Figure 26, Item 1) straight up in sear housing (Figure 26, Item 3) so pinholes are lined up. Insert headed straight pin (Figure 26, Item 2) from right to left.



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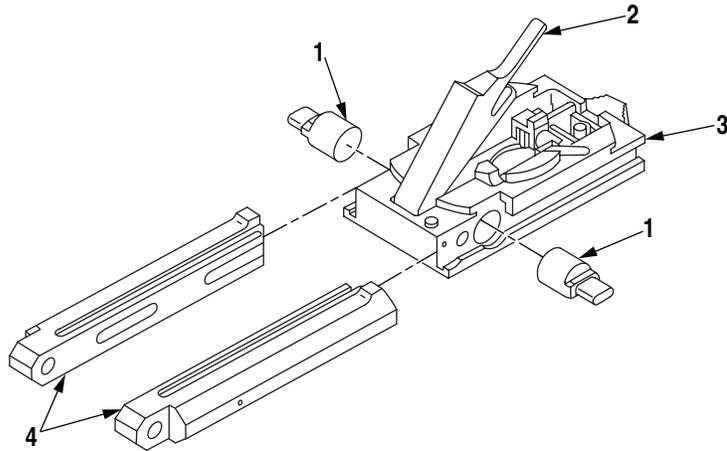
Figure 26. Sear Assembly Assembly.

**NOTE**

The receiver sear cannot be lowered if the recoil pins are in the way. Ensure the recoil pins are pushed toward the outside of the sear housing before attempting to lower the receiver sear.

27. Raise receiver sear (Figure 27, Item 2). Insert either recoil pin (Figure 27, Item 1), round end first, into either side of sear housing (Figure 27, Item 3) until narrow (flat) end is flush with outside of sear housing. Ensure narrow (flat) end is horizontal to sear housing.
28. Slide receiver buffer body (Figure 27, Item 4) onto sear housing (Figure 27, Item 3) until access holes are aligned. Then push recoil pin (Figure 27, Item 1) through hole until round end of recoil pin is flush with inner surface of sear housing.
29. Repeat for the other receiver buffer body and recoil pin.

ASSEMBLY - Continued



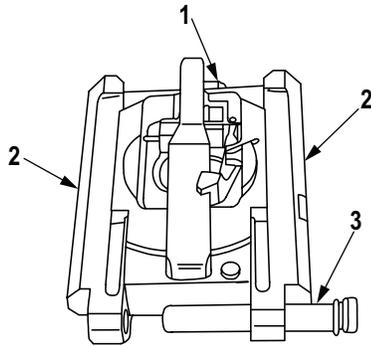
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Figure 27. Sear Assembly Assembly.

**NOTE**

Anytime the internal components of the receiver buffer bodies have been reinstalled after accidental mix-up or have been replaced with new components, perform the following procedure.

30. Insert weapon's backplate pin assembly (Figure 28, Item 3), from the right side, through the large holes in each receiver buffer body (Figure 28, Item 2).
31. Squeeze backplate pin assembly (Figure 28, Item 3) toward sear housing (Figure 28, Item 1). Remove squeezing pressure to allow backplate pin assembly to relax. Exert slight pressure on the side of the backplate pin assembly (retaining ring end). This ensures there is no slack between backplate pin assembly, receiver buffer body (Figure 28, Item 2), and sear housing.



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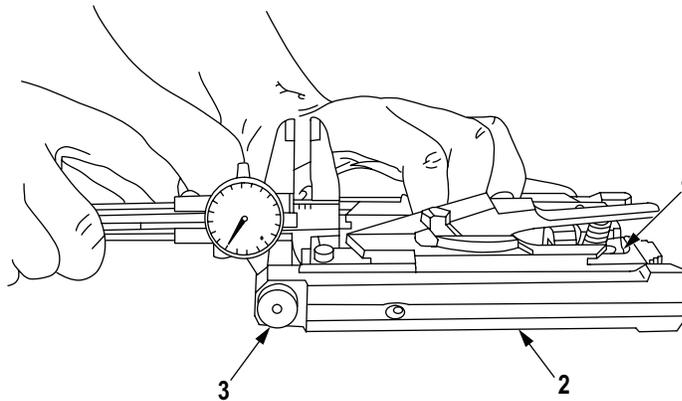
Figure 28. Sear Assembly Assembly.

**ASSEMBLY - Continued**

32. Using dial caliper, spread the smaller blades between inner edge of backplate pin assembly (Figure 29, Item 3) and right-hand wall of sear housing (Figure 29, Item 1) where sear housing contacts receiver buffer body (Figure 29, Item 2). Measure the exact distance.
33. Repeat Steps 31 and 32 for the other side.
34. The distance between the wall of the sear housing (Figure 29, Item 1) and the inner edge of the backplate pin assembly (Figure 29, Item 3) on each side should be  $0.298 + 0.015$  inch (0.283 to 0.313 inch (0.718 to 0.795 cm)).

**NOTE**

- If the dimension is less than 0.283 inch (0.718 cm), go to Step 35.
  - If it is more than 0.313 inch (0.795 cm), go to Step 36.
  - If no further measurement is necessary, continue with Steps 37 through 39.
35. If the dimension for either receiver buffer body in Step 31 was LESS than 0.283 inch (0.718 cm):
    - a. Remove receiver buffer body (Figure 29, Item 2) from sear housing (Figure 29, Item 1).
    - b. Remove inner components from receiver buffer body (Figure 29, Item 2).



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*Figure 29. Sear Assembly Assembly.*

**ASSEMBLY - Continued**

- c. Take one washer from the extra (nominal) washers in rear group (Figure 30, Item 1) (three sets of six) and place it parallel (curved in the same direction) with the nominal washers in front group (Figure 31, Item 2) (four sets of four).
- d. Assemble components in receiver buffer body as directed in assembly Steps 7 through 11. Now, however, there will be one less washer in rear group (Figure 30, Item 1) and one more washer in front group (Figure 30, Item 2).
- e. If the washers in the top of the rear group cavity (Figure 30, Item 1) do not fill the cavity, add washers in parallel to the top washer until the cavity is filled. Then install buffer retainer.
- f. Install receiver buffer body back into sear housing.
- g. Repeat the procedure beginning with Step a, until the dimension measures from 0.283 to 0.313 inch (0.718 to 0.795 cm).

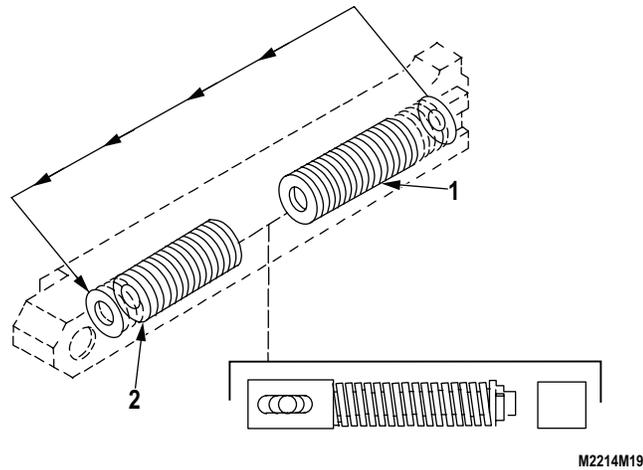
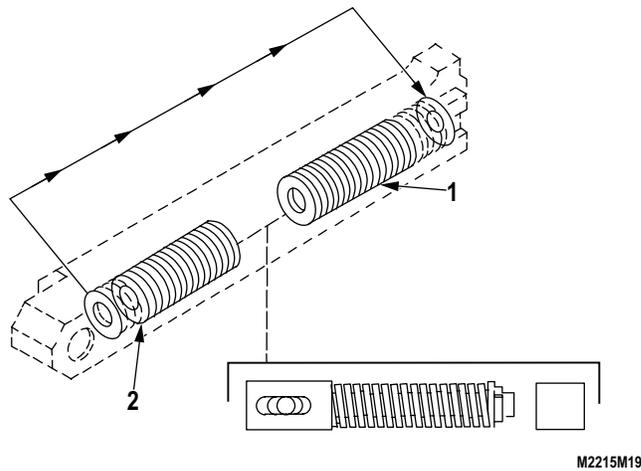


Figure 30. Sear Assembly Assembly.

**ASSEMBLY - Continued**

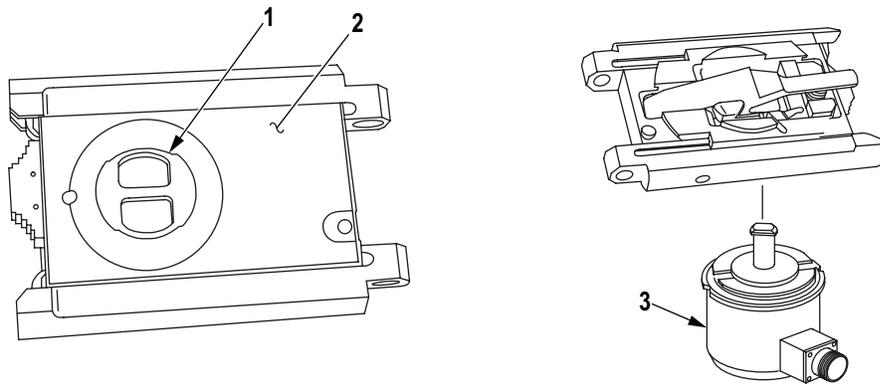
36. If the dimension was MORE than 0.313 inch (0.795 cm):
  - a. Remove receiver buffer body from sear housing.
  - b. Remove inner components from receiver buffer body.
  - c. Take one washer from the extra (nominal) washers in front group (Figure 31, Item 2) (four sets of four) and place it parallel (curved in the same direction) to the nominal washers in rear group (Figure 31, Item 1) (three sets of six).
  - d. Assemble the components in the receiver buffer body as directed in assembly Steps 7 through 11. Now, however, there will be one more washer in rear group (Figure 31, Item 1) and one less washer in front group (Figure 31, Item 2).
  - e. If the washers in the top of the rear group cavity (Figure 31, Item 1) do not fill the cavity, add washers in parallel to the top washer until the cavity is filled. Then install buffer retainer.
  - f. Install receiver buffer body back into sear housing.
  - g. Repeat the procedure beginning with step a until the dimension measures from 0.283 to 0.313 inch (0.718 to 0.795 cm).



*Figure 31. Sear Assembly Assembly.*

**ASSEMBLY - Continued**

37. Make sure safety is on "F" (FIRE) position.
38. Line up cutout on sear housing cap (Figure 32, Item 1) with cutout in sear housing (Figure 32, Item 2).
39. MK19 MOD 3: Push in on sear housing cap (Figure 32, Item 1) and rotate it 90 degrees so notch in sear housing cap mates with lock pinhole. Upgunned Weapons Station: Push on solenoid (Figure 32, Item 3) and rotate it 90 degrees so notch in the solenoid mates with lock pinhole.



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Figure 32. Sear Assembly Assembly.

**ASSEMBLY - Continued****NOTE**

Be sure to depress the receiver sear and place the thumb safety on "S" (SAFE) after installing the sear housing cap. The "S" (SAFE) position prevents the recoil pins from slipping out of place and blocking the receiver sear.

40. Ensure thumb safety (Figure 33, Item 5) is in "F" (FIRE) position.
41. Assemble helical compression spring (Figure 33, Item 2) over sear spring pin (Figure 33, Item 3).
42. Insert sear spring pin (Figure 33, Item 3) and helical compression spring (Figure 33, Item 2) into sear housing (Figure 33, Item 4) from the top.
43. Hold receiver sear (Figure 33, Item 1) down and place thumb safety (Figure 33, Item 5) in "S" (SAFE) position until sear assembly has been installed in weapon.
44. Place thumb safety (Figure 33, Item 5) in "F" (FIRE) position. Squeeze receiver sear (Figure 33, Item 1) and thumb safety together during installation. Align sear housing (Figure 33, Item 4) with the cutout in bottom of receiver. Holding thumb safety pressed down, twist sear assembly 90 degrees so thumb safety is toward the rear of receiver. Sear assembly should click into place. Place thumb safety on "S" (SAFE).

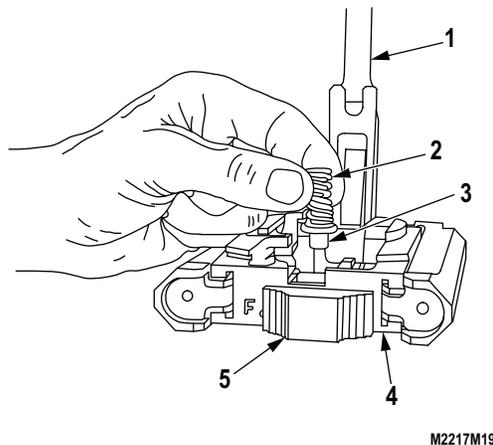
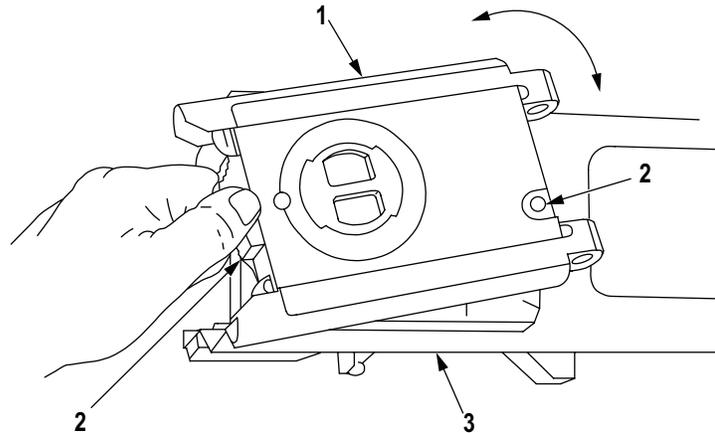


Figure 33. Sear Assembly Assembly.

**END OF TASK**

**INSTALLATION**

Place safety in "F" (FIRE) position. Squeeze sear (Figure 34, Item 2) and safety together during installation. Align sear housing (Figure 34, Item 1) with cutout in bottom of receiver (Figure 34, Item 3). Holding safety pressed down, twist sear assembly 90 degrees so safety lever pin is toward the rear of receiver. The assembly should click into place. Place safety on "S" (SAFE).



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*Figure 34. Sear Assembly Installation.*

**END OF TASK****FOLLOW-ON MAINTENANCE**

Install bolt and backplate on weapon (WP 0026).

**END OF TASK****END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
PRIMARY DRIVE LEVER AND VERTICAL CAM ASSEMBLY MAINTENANCE**

---

**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps only) (WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps only) (WP 0090, Table 1, Item 35)  
Vise, Copper-Jawed (WP 0090, Table 1, Item 40)

**Materials/Parts**

Cloth, Abrasive Crocus (WP 0089, Table 1, Item 7)  
Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)  
Lubricating Oil, Weapons (LAW) (WP 0089, Table 1, Item 10)

**Materials/Parts (cont.)**

Lubricating Oil (LSAT) (WP 0089, Table 1, Item 11)  
Pin, Spring (WP 0072, Figure 14, Item 3)  
Stone, Sharpening (WP 0089, Table 1, Item 15)

**References**

WP 0059

**Equipment Condition**

Bolt and backplate assembly removed from the weapon (WP 0026)  
Primary drive lever and vertical cam assembly removed from receiver (WP 0030)

---

**DISASSEMBLY****NOTE**

Do not disassemble the vertical cam assembly unless part replacement is necessary. The vertical cam assembly's spring pin must be discarded each time it is removed and a new pin must be installed.

1. Place vertical cam assembly's drive lever lock (Figure 1, Item 3) in copper-jawed vise. This keeps the two ends of the lock from bending during disassembly.
2. Drive out spring pin (Figure 1, Item 2) at least 1/2 inch.
3. Pull out and discard spring pin (Figure 1, Item 2).
4. Remove assembly from vise and separate drive lever lock (Figure 1, Item 3) from vertical cam (Figure 1, Item 1).

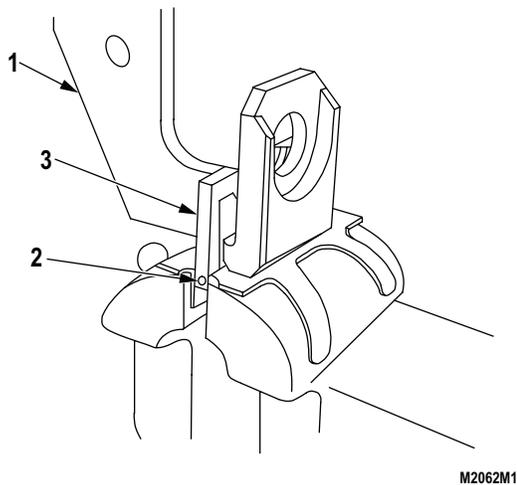


Figure 1. Primary Drive Lever and Vertical Cam Assembly Disassembly.

**END OF TASK****INSPECTION**

1. Inspect for obvious defects. Inspect for burrs on underside of lever and around both pivot posts (Figure 2, Item 1). Inspect pivot post for flat surfaces. Remove burrs using crocus cloth or sharpening stone and preserve with a light coat of Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT).

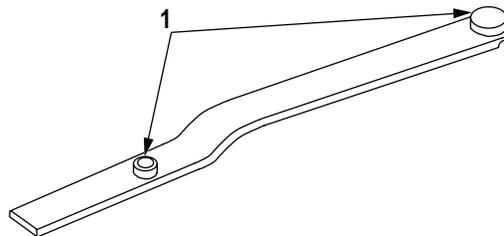
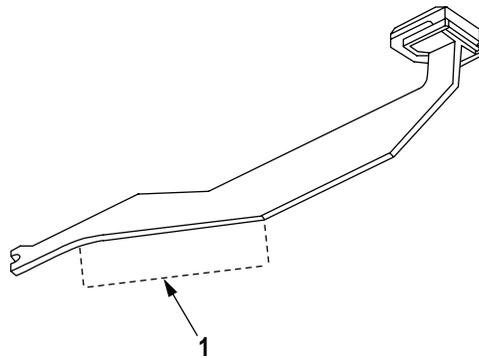


Figure 2. Primary Drive Lever and Vertical Cam Assembly Inspection.

**INSPECTION - Continued****NOTE**

Do not use any abrasive other than crocus cloth or sharpening stone. Use of any other abrasive could cause damage to the vertical cam.

2. Inspect for nicks, pits, burrs, scratches, and aluminum buildup. Remove any aluminum buildup or surface imperfections of dullness using crocus cloth or sharpening stone.
3. Remove burrs and sharp edges with sharpening stone and preserve with GMD or LSAT.
4. If the center of the cam surface (Figure 3, Item 1) cannot be polished to a smooth mirror-like finish, replace the vertical cam assembly.
5. Check for obvious damage and rust.
6. Preserve with a light coat of GMD or LSAT.



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*Figure 3. Primary Drive Lever and Vertical Cam Assembly Inspection.*

**END OF TASK****REPLACEMENT**

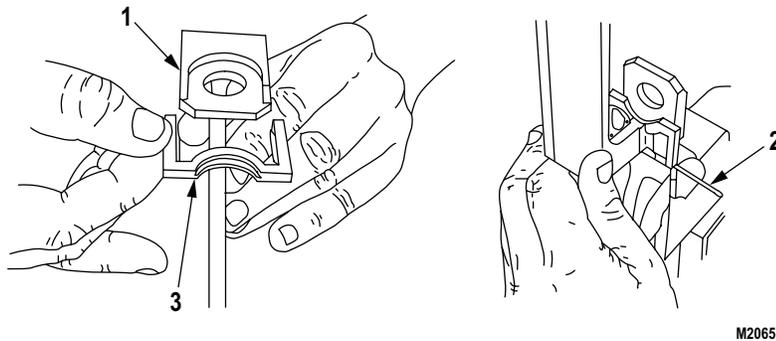
Replace defective parts as authorized by (WP 0059).

**END OF TASK**

**ASSEMBLY****NOTE**

Install a new spring pin each time the old spring pin is removed.

1. Position drive lever lock (Figure 4, Item 3) on vertical cam (Figure 4, Item 1), so that curved step on drive lever lock is upward as shown.
2. Place the two ends of the drive lever lock (Figure 4, Item 3) in a vise. This keeps the ends of the lock from bending during assembly.
3. Tap a new spring pin (Figure 4, Item 2) into aligned holes on one side. Guide pin as it is tapped into position, until pin enters aligned holes on the other side of the drive lever lock (Figure 4, Item 3). Ensure pin is flush on both ends.
4. Move drive lever lock (Figure 4, Item 3) to check for binding. If binding, lubricate lightly with GMD or LSAT. Ensure the spring pin (Figure 4, Item 2) is not loose.



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Figure 4. Primary Drive Lever and Vertical Cam Assembly Assembly.

**END OF TASK****FOLLOW-ON MAINTENANCE**

1. Install primary drive lever and vertical cam assembly on receiver (WP 0030).
2. Install bolt and backplate assembly on the weapon (WP 0026).

**END OF TASK****END OF WORK PACKAGE**

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**FIELD MAINTENANCE  
ALIGNMENT GUIDE ASSEMBLY MAINTENANCE**

---

**INITIAL SETUP:****Tools and Special Tools**

Propane Torch (WP 0090, Table 1, Item 25)  
Tool, Combination (WP 0090, Table 1, Item 11)  
Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps  
Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps only)  
(WP 0090, Table 1, Item 33)

**Tools and Special Tools (cont.)**

Tool Set, Organizational (Marine Corps only)  
(WP 0090, Table 1, Item 35)  
Vise, Copper-Jawed (WP 0090, Table 1, Item 40)

**Materials/Parts**

Sealing Compound (WP 0089, Table 1, Item 14)

**References**

WP 0073

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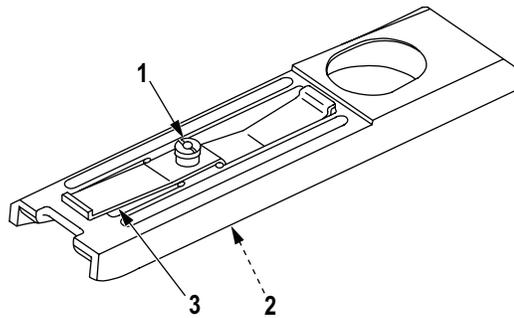
**REMOVAL**

Depress tip of the alignment guide flat spring with screwdriver tip or fingernail and slide alignment guide assembly left and out of the receiver. Slide alignment guide assembly out of receiver, pulling assembly slightly rearward.

**END OF TASK****INSPECTION****NOTE**

Inspect alignment guide while assembled. Do not disassemble alignment guide unless part replacement is necessary.

Ensure shoulder screw (Figure 1, Item 1) and alignment guide flat spring (Figure 1, Item 3) do not move relative to each other. It is permissible for the shoulder screw and flat head screw (Figure 1, Item 2) to turn together as long as alignment guide flat spring is not loose.



M2066M19

Figure 1. Alignment Guide Assembly Inspection.

**END OF TASK****DISASSEMBLY****NOTE**

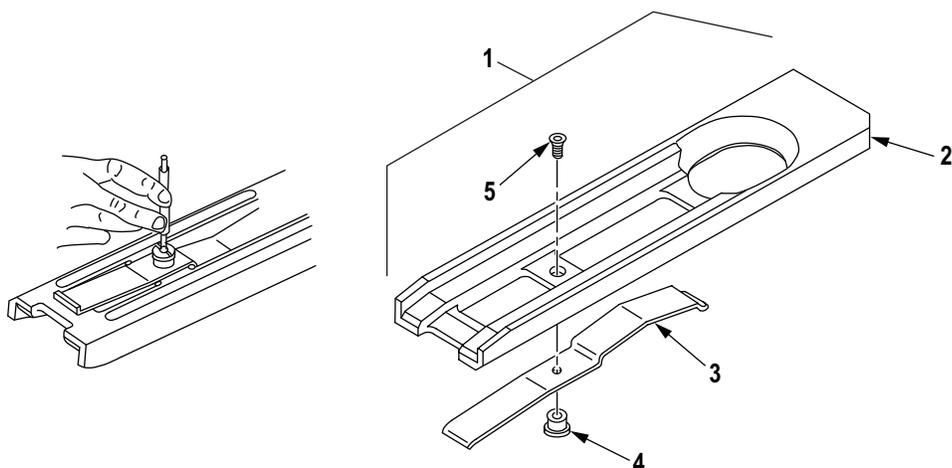
Do not disassemble unless part replacement is required.

1. Holding alignment guide assembly (Figure 2, Item 1) in brass-jawed vise, heat the area around the shoulder screw (Figure 2, Item 4) with propane torch to loosen locking compound.

**NOTE**

Hold the flat head screw in place with a 1/8 inch key wrench.

2. Unscrew shoulder screw (Figure 2, Item 4), using raised tang on edge of combination tool.
3. Separate flat head screw (Figure 2, Item 5), alignment guide (Figure 2, Item 2), and alignment guide flat spring (Figure 2, Item 3).

**DISASSEMBLY - Continued**

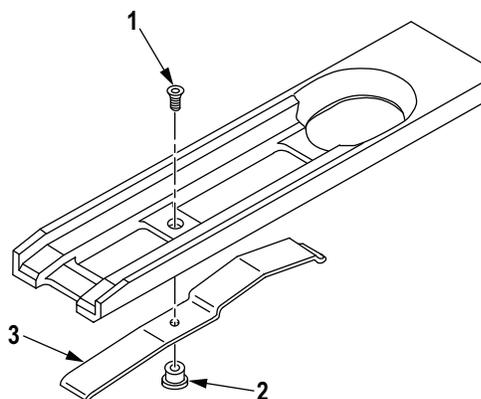
M2068M19

Figure 2. Alignment Guide Assembly Disassembly.

**END OF TASK****REPAIR OR REPLACEMENT****NOTE**

Inspect alignment guide while assembled. Do not disassemble alignment guide unless part replacement is necessary.

1. If shoulder screw (Figure 3, Item 2) or flat head screw (Figure 3, Item 1) are damaged, replace IAW (WP 0073).
2. If alignment guide flat spring (Figure 3, Item 3) is damaged or cracked, replace IAW (WP 0073).



M2069M19

Figure 3. Alignment Guide Assembly Repair.

**END OF TASK**

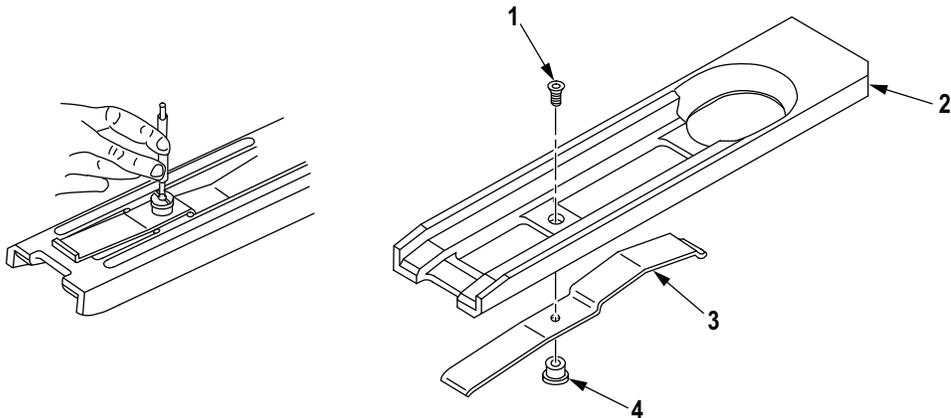
**ASSEMBLY**

1. Position alignment guide flat spring (Figure 4, Item 3) against the flat side of alignment guide (Figure 4, Item 2).
2. Ensure the curved part of flat spring fits slot in alignment guide and pin holes are aligned.
3. Apply sealing compound to threads of new flat head screw (Figure 4, Item 1).
4. Insert new flat head screw through holes in alignment guide flat spring and alignment guide, as shown.
5. Insert new shoulder screw (Figure 4, Item 4) over the tip of the flat head screw (Figure 4, Item 1). Hold flat head screw in place.
6. Tighten shoulder screw fully, using raised edge of combination tool. No relative movement should exist. Stop tightening when alignment guide flat spring (Figure 4, Item 3) cannot be moved and when the flat head screw tip is about flush with head of shoulder screw.

**NOTE**

Staking the shoulder screw to the flat head screw is an additional precaution to prevent it from loosening during operations.

7. Use center punch to stake shoulder screw (Figure 5, Item 4) in two places, 90 degrees to the slots.
8. Depress tip of alignment guide flat spring as you slide alignment guide assembly into forward part of receiver. Ensure large hole slides over ogive plunger assembly and that alignment guide assembly shoulder screw mates with keyhole in receiver.



M2070M19

Figure 4. Alignment Guide Assembly Assembly.

**END OF TASK****FOLLOW-ON MAINTENANCE**

Install alignment guide on receiver.

**END OF TASK****END OF WORK PACKAGE**

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**FIELD MAINTENANCE**  
**GUN CHARGER (RIGHT-HAND/LEFT-HAND) MAINTENANCE**

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**INITIAL SETUP:****Tools and Special Tools**

Bench Block (WP 0090, Table 1, Item 4)  
 Brass-Head Hammer (WP 0090, Table 1, Item 5)  
 Lock Plunger Tool (Manufactured) (WP 0055, Figure 1)  
 Tool, Combination (WP 0090, Table 1, Item 11)  
 Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
 Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
 Tool Set, Intermediate (Marine Corps only) (WP 0090, Table 1, Item 33)  
 Tool Set, Organizational (Marine Corps only) (WP 0090, Table 1, Item 35)  
 Vise, Copper-Jawed (WP 0090, Table 1, Item 40)

**Materials/Parts**

Cloth, Abrasive Crocus (WP 0089, Table 1, Item 7)  
 Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)  
 Lubricating Oil (LAW) (WP 0089, Table 1, Item 10)  
 Lubricating Oil (LSAT) (WP 0089, Table 1, Item 12)  
 Nut, Self-Locking (WP 0074, Figure 16, Item 7) (Left Hand)

**Materials/Parts (cont.)**

Nut, Self-Locking (WP 0075, Figure 17, Item 8) (Right Hand)  
 Pin, Cotter (WP 0074, Figure 17, Item 7) (Right Hand)  
 Pin, Cotter (WP 0074, Figure 16, Item 8) (Left Hand)  
 Pin, Spring, Slted (WP 0075, Figure 17, Item 2) (Right Hand)  
 Pin, Spring, Slted (WP 0074, Figure 16, Item 2) (Left Hand)  
 Pin, Spring, Slted (WP 0074, Figure 16, Item 11) (Left Hand)  
 Pin, Spring, Slted (WP 0074, Figure 17, Item 7) (Right Hand)  
 Stone, Sharpening (WP 0089, Table 1, Item 15)  
 Qty: 2

**References**

WP 0055  
 WP 0059

**Equipment Condition**

Bolt and backplate assembly removed from receiver (WP 0026)

---

**NOTE**

- The charger assemblies consist of both left-hand (LH) and right-hand (RH) mechanisms. As the removal, disassembly, inspection, assembly and installation procedures are exactly the same for both the LH and RH mechanisms, only one set of instructions is provided. It is recommended each assembly be serviced separately.
- Do not remove the spring pins, lock plungers, or helical springs for cleaning or lubrication. Remove only for part replacement.

**REMOVAL**

1. Retract lock plunger (Figure 1, Item 4) at base of the charger arm, using screwdriver tip on the combination tool.
2. Slide charger housing (Figure 1, Item 3) rearward to disengage lugs (Figure 1, Item 1) from keyslots (Figure 1, Item 2) in receiver.
3. Lift assembly away from receiver.

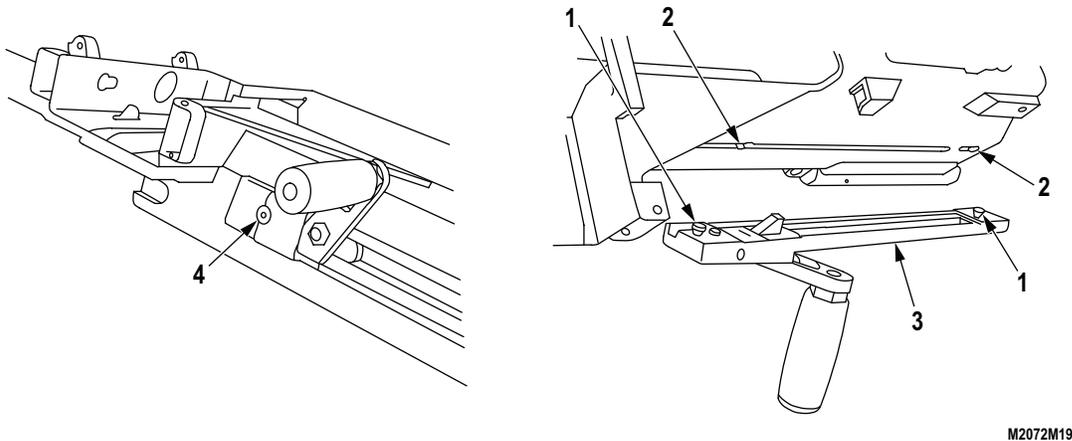
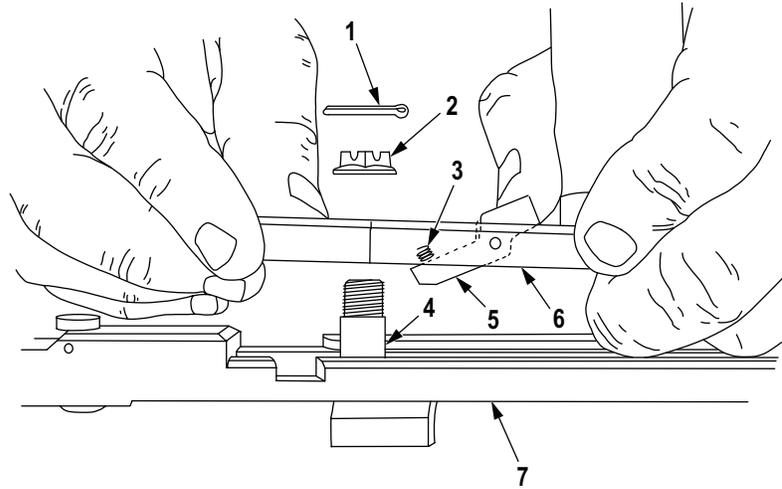


Figure 1. Gun Charger (Right Hand/Left Hand) Removal.

**END OF TASK****DISASSEMBLY**

1. Remove cotter pin (Figure 2, Item 1). Using box end wrench on combination tool, remove self-locking nut (Figure 2, Item 2). Discard cotter pin and self-locking nut.
2. Separate arm (Figure 2, Item 6) and charger slide (Figure 2, Item 4) from charger housing (Figure 2, Item 7).
3. Lift out helical compression spring (Figure 2, Item 3) and charger handle lock (Figure 2, Item 5) from arm (Figure 2, Item 6).

**DISASSEMBLY - Continued**



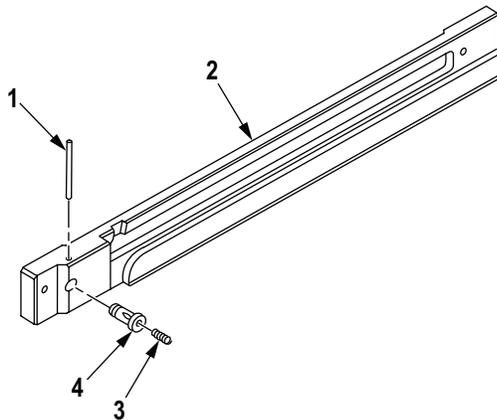
M2073M19

Figure 2. Gun Charger (Right-Hand/Left-Hand) Disassembly.

**NOTE**

Remove for part replacement only.

4. Place charger housing (Figure 3, Item 2) on a bench block. Partially drive out slotted spring pin (Figure 3, Item 1).
5. Insert lock plunger tool into lock plunger (Figure 3, Item 4) to prevent loss of helical compression spring (Figure 3, Item 3). While depressing the lock plunger tool into lock plunger, punch slotted spring pin (Figure 3, Item 1) from charger housing. Discard slotted spring pin.
6. Pull lock plunger (Figure 3, Item 4) and helical compression spring (Figure 3, Item 3) from charger housing (Figure 3, Item 2).

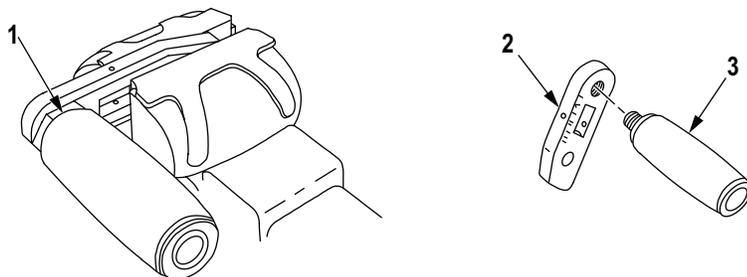


M2074M19

Figure 3. Gun Charger (Right-Hand/Left-Hand) Disassembly.

**DISASSEMBLY - Continued**

7. Place arm (Figure 4, Item 2) in a vise with copper jaws or on a bench block.
8. Turn the nut (Figure 4, Item 1) on handle counterclockwise to remove handle assembly (Figure 4, Item 3).

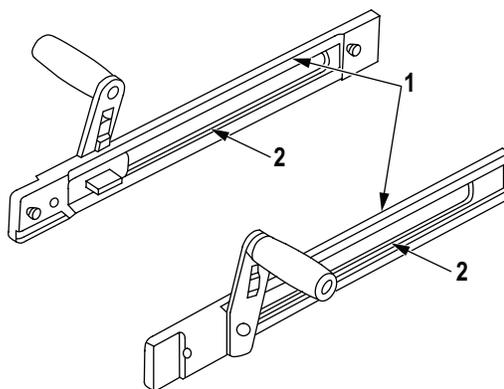


M2075M19

Figure 4. Gun Charger (Right-Hand/Left-Hand) Disassembly.

**END OF TASK****INSPECTION**

1. Inspect functioning of each charger handle lock and arm mechanism.
2. Inspect general condition of charger housings.
3. Ensure charger housing (Figure 5, Item 1) is not bent.
4. Inspect for and remove burrs along grooved edges (Figure 5, Item 2) of housing using crocus cloth or a sharpening stone.
5. Preserve with Grease, Molybdenum Disulfide (GMD) or Lubricating Oil (LSAT).



M2071M19

Figure 5. Gun Charger (Right-Hand/Left-Hand) Inspection.

**END OF TASK**

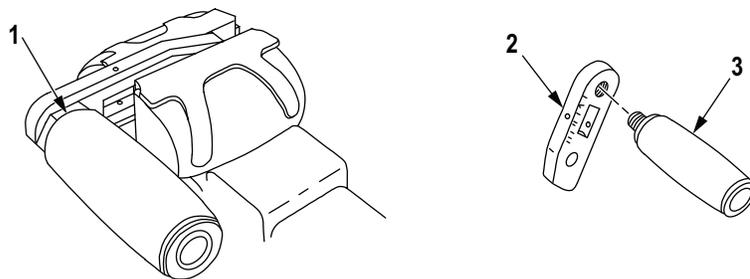
**REPAIR OR REPLACEMENT**

1. Inspect helical compression springs. If deformed or bent, install new spring.
2. Inspect lock plunger. Inspect for wear on the tip. Wear will eventually cause the charger assembly to fall off during operation. Replace the lock plunger if worn or damaged.
3. Replace defective parts as authorized by (WP 0059).

**END OF TASK****ASSEMBLY****NOTE**

The outside of the arm is the side opposite the recessed slot.

1. Position handle assembly (Figure 6, Item 3) against outside of arm (Figure 6, Item 2) and screw it in as far as possible.
2. Place arm (Figure 6, Item 2) in vise with copper jaws.
3. Tighten nut (Figure 6, Item 1) on handle assembly (Figure 6, Item 3).



M2076M19

Figure 6. Gun Charger (Right-Hand/Left-Hand) Assembly.

**ASSEMBLY - Continued**

4. Insert lock plunger (Figure 7, Item 4) into hole in charger housing (Figure 7, Item 2) from outside to inside.
5. Place charger housing (Figure 7, Item 2), topside up, on a flat surface, so lock plunger (Figure 7, Item 4) is exposed. Insert helical compression spring (Figure 7, Item 3) into lock plunger.

**CAUTION**

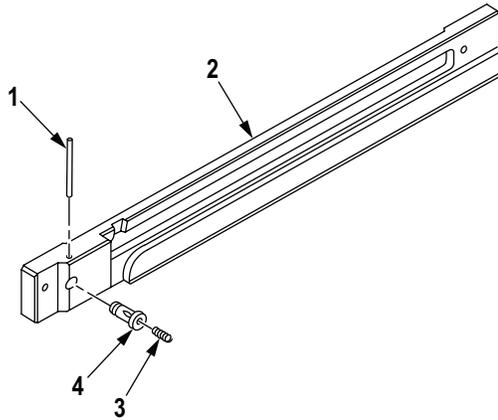
Be sure to compress the helical compression spring far enough to prevent damage by the spring pin.

6. Insert new slotted spring pin (Figure 7, Item 1) about 1/8 inch into top of charger housing (Figure 7, Item 2).

**NOTE**

Instructions for creating lock plunger tool can be found in (WP 0055).

7. Using lock plunger tool, compress helical compression spring (Figure 7, Item 3) as far as possible in lock plunger (Figure 7, Item 4) while driving slotted spring pin with brass-head hammer, until slotted spring pin (Figure 7, Item 1) is flush with charger housing.

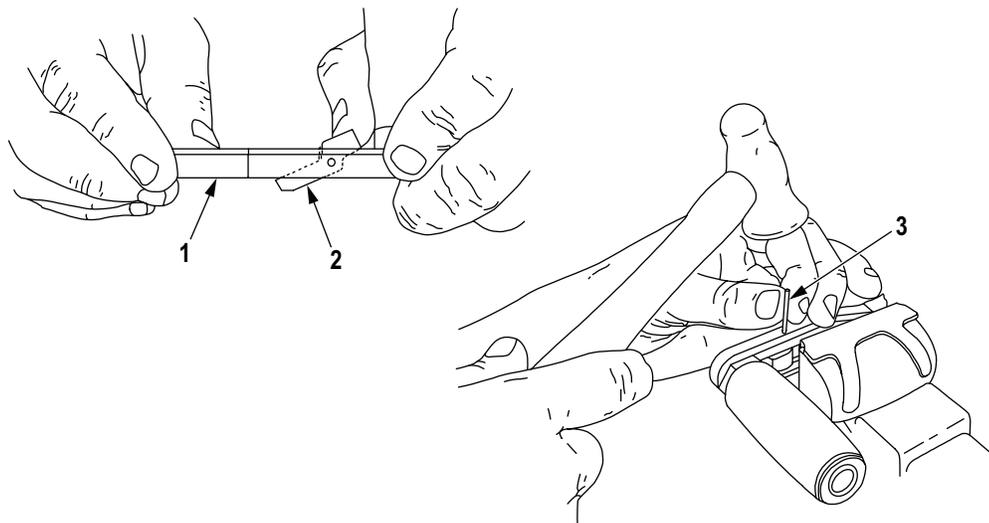


M2077M19

Figure 7. Gun Charger (Right-Hand/Left-Hand) Assembly.

**ASSEMBLY - Continued**

8. Position charger handle lock (Figure 8, Item 2) in slot of arm (Figure 8, Item 1). Align pin holes in arm and charger handle lock.
9. Place arm (Figure 8, Item 1) with charger handle lock (Figure 8, Item 2) in vise. Drive in slotted spring pin (Figure 8, Item 3) using brass-head hammer. Ensure ends of slotted spring pin are flush with arm.

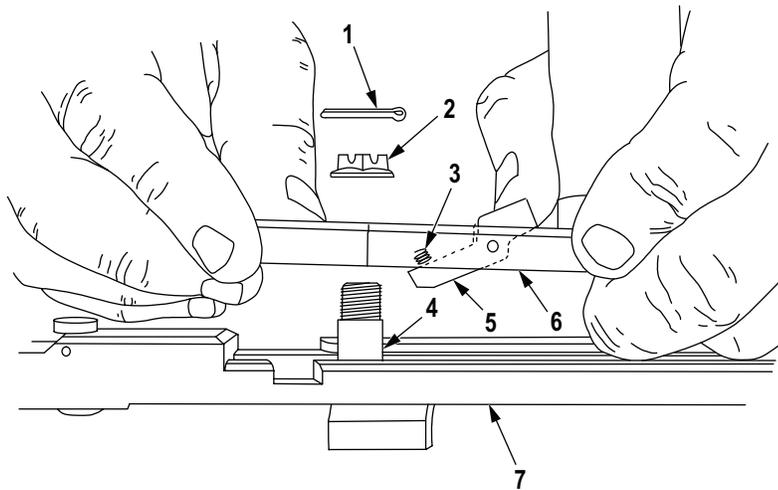


M2078M19

Figure 8. Gun Charger (Right-Hand/Left-Hand) Assembly.

**ASSEMBLY - Continued**

10. Insert threaded end of charger slide (Figure 9, Item 4) through center groove on charger housing (Figure 9, Item 7). Ensure threaded end is to the outside of the housing.
11. Position helical compression spring (Figure 9, Item 3) in hole in charger handle lock (Figure 9, Item 5).
12. Slip arm with handle assembly (Figure 9, Item 6) over charger slide's (Figure 9, Item 4) threaded end.
13. Install a new self-locking nut (Figure 9, Item 2) onto charger slide (Figure 9, Item 4).
14. Move handle up and down to test functioning. If handle does not move easily, loosen self-locking nut (Figure 9, Item 2) slightly.
15. Install new cotter pin (Figure 9, Item 1) to secure self-locking nut (Figure 9, Item 2).
16. Press charger handle lock (Figure 9, Item 5) and release. It should spring back crisply, without binding.
17. Press charger handle lock (Figure 9, Item 5) and rotate handle assembly up and down. If handle is hard to rotate, self-locking nut (Figure 9, Item 2) is too tight. Remove cotter pin (Figure 9, Item 1) and gradually loosen self-locking nut until handle moves easily. Install new cotter pin upon assembly.



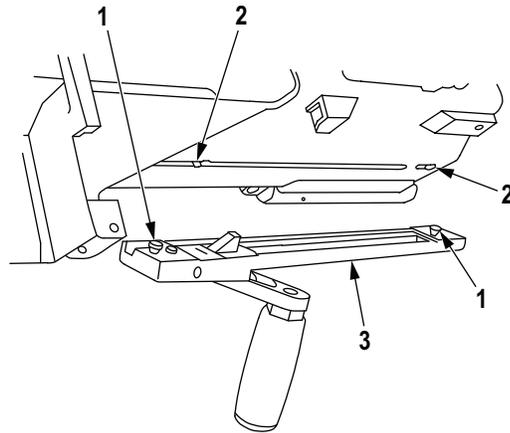
M2079M19

Figure 9. Gun Charger (Right-Hand/Left-Hand) Assembly.

**END OF TASK**

**INSTALLATION**

Position charger housing (Figure 10, Item 3) so lugs (Figure 10, Item 1) are aligned with keyslots (Figure 10, Item 2) in receiver wall. Press against charger housing and slide it forward until charger assembly locks in place.



M2080M19

Figure 10. Gun Charger (Right-Hand/Left-Hand) Installation.

**END OF TASK****FOLLOW-ON MAINTENANCE**

Install bolt and backplate assembly on receiver (WP 0026).

**END OF TASK****END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
FEED THROAT ASSEMBLY MAINTENANCE**

---

**INITIAL SETUP:****Tools and Special Tools**

Tool, Combination (WP 0090, Table 1, Item 11)  
Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps  
Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps Only)  
(WP 0090, Table 1, Item 32)  
Tool Set, Organizational Maintenance (Marine  
Corps Only) (WP 0090, Table 1, Item 34)

**Materials/Parts**

Plunger, Feed Throat (WP 0077, Figure 19, Item  
1) Qty: 2

**Materials/Parts (cont.)**

Plunger, Feed Throat (WP 0077, Figure 19, Item  
2) Qty: 2  
Spring, Helical (WP 0077, Figure 19, Item 3)  
Qty: 2

**References**

WP 0059

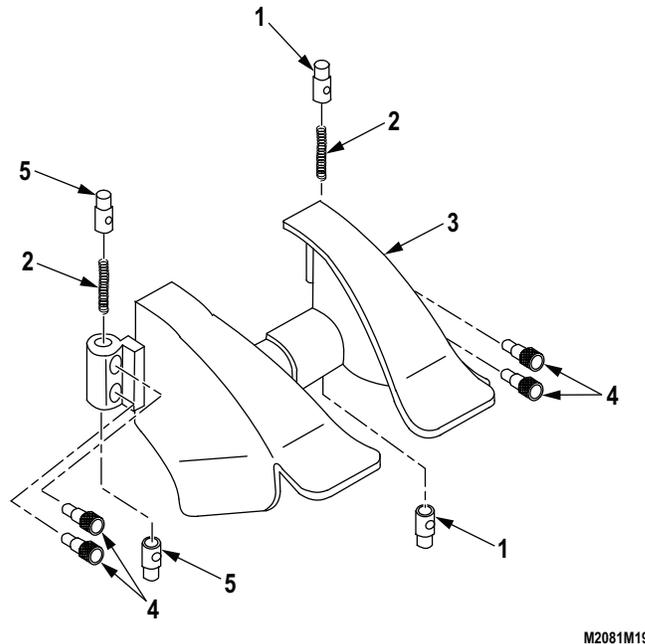
**Equipment Condition**

Feed throat assembly removed from weapon

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**DISASSEMBLY**

1. Place ear of feed throat (Figure 1, Item 3) over an open vise and secure, so tips of shoulder pins (Figure 1, Item 4) are exposed.
2. Insert 3/32 inch punch into holes behind feed throat (Figure 1, Item 3) over shoulder pins (Figure 1, Item 4) and tap out.
3. Pull out two feed throat plungers (Figure 1, Item 1 and 5) and remove two helical springs (Figure 1, Item 2). Discard feed throat plungers and helical springs.



M2081M19

Figure 1. Feed Throat Assembly Disassembly.

**END OF TASK****REPAIR OR REPLACEMENT**

Replace defective parts as authorized by (WP 0059).

**END OF TASK****ASSEMBLY**

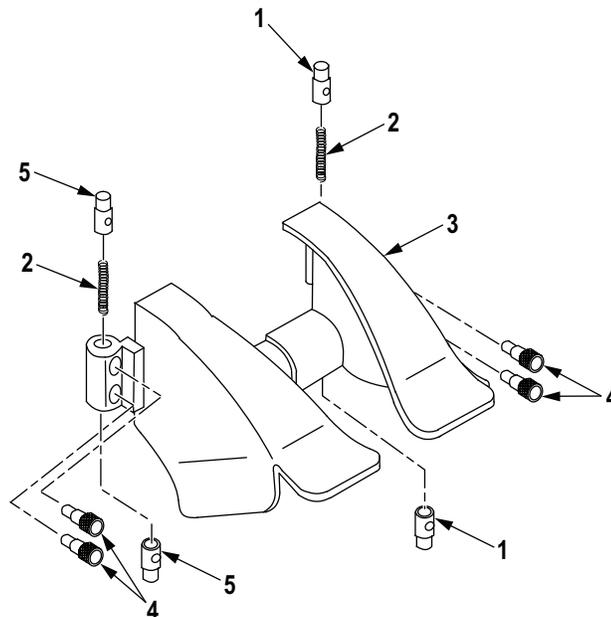
1. Place feed throat (Figure 2, Item 3) over an open vise and secure so plunger holes are exposed.
2. Apply light coat of lubrication in plunger holes.
3. Install new feed throat plunger (Figure 2, Item 5), larger end first, into plunger hole.

**CAUTION**

Excessive staking will cause binding when plungers are exercised. Do not overstake. Exercise feed throat plungers after assembly to ensure there is no binding. If there is binding between shoulder pins and feed throat plungers, restake.

**ASSEMBLY - Continued**

4. Align holes, insert shoulder pin (Figure 2, Item 4), and stake.
5. Insert new helical spring (Figure 2, Item 2) and new feed throat plunger (Figure 2, Item 5), larger end first, into plunger hole.
6. Align holes, insert shoulder pin (Figure 2, Item 4), and stake.
7. Install new feed throat plunger (Figure 2, Item 1), larger end first, into plunger hole.
8. Align holes, insert shoulder pin (Figure 2, Item 4), and stake.
9. Insert new helical spring (Figure 2, Item 2) and new feed throat plunger (Figure 2, Item 1), larger end first, into plunger hole.
10. Align holes, insert shoulder pin (Figure 2, Item 4), and stake.



M2082M19

Figure 2. Feed Throat Assembly Assembly.

**END OF TASK**

**FOLLOW-ON MAINTENANCE**

Install feed throat assembly on weapon.

**END OF TASK**

**END OF WORK PACKAGE**



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## FIELD MAINTENANCE SIGHT MOUNT BRACKET MAINTENANCE

---

### INITIAL SETUP:

#### Tools and Special Tools

- Propane Torch (WP 0090, Table 1, Item 25)
- Tool Kit, Small Arms (WP 0090, Table 1, Item 36)
- Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)
- Tool Set, Intermediate (Marine Corps Only) (WP 0090, Table 1, Item 33)
- Tool Set, Organizational (Marine Corps Only) (WP 0090, Table 1, Item 35)

#### References

WP 0059

#### Equipment Condition

- Bolt and backplate assembly removed from receiver (WP 0026)
- Vertical cam assembly removed from receiver (WP 0030)

#### Materials/Parts

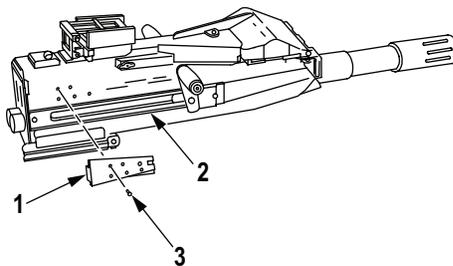
- Sealing Compound (WP 0089, Table 1, Item 14)
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### REMOVAL

#### NOTE

This procedure applies only to weapons with sight mounting bracket.

1. Access five machine bolts (Figure 1, Item 3) through rear of receiver (Figure 1, Item 2). Remove machine bolts. Apply heat if necessary to loosen bolts prior to removal. Discard machine bolts.
2. Remove sight mounting bracket (Figure 1, Item 1) from receiver (Figure 1, Item 2). If damaged, discard bracket.



M2083M19

Figure 1. Sight Mount Bracket Removal.

### END OF TASK

### REPLACEMENT

Replace defective parts as authorized by (WP 0059).

### END OF TASK

**INSTALLATION****NOTE**

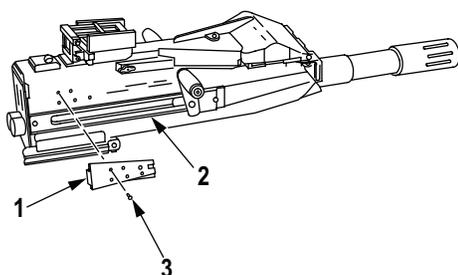
This procedure applies only to weapons with sight mounting bracket.

1. Clean drilled holes in sight mounting bracket (Figure 2, Item 1) and receiver (Figure 2, Item 2).
2. Apply sealing compound to threads of five new machine bolts (Figure 2, Item 3).

**CAUTION**

Use care to avoid overtightening of machine bolts. Overtightening may cause damage to threads of sight mounting bracket.

3. Align holes in sight mounting bracket (Figure 2, Item 1) with holes in receiver (Figure 2, Item 2). Install five machine bolts (Figure 2, Item 3). Tighten bolts.



M2084M19

Figure 2. Sight Mount Bracket Installation.

**END OF TASK****FOLLOW-ON MAINTENANCE**

1. Install vertical cam assembly on receiver (WP 0030).
2. Install bolt and backplate assembly on receiver (WP 0026).

**END OF TASK****END OF WORK PACKAGE**

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**FIELD MAINTENANCE  
ADJUSTABLE SIGHT BRACKET (ASB) MAINTENANCE**

---

**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps Only) (WP 0090, Table 1, Item 32)  
Tool Set, Organizational (Marine Corps Only)

**Materials/Parts**

Alcohol, Isopropyl (WP 0089, Table 1, Item 1)  
Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)

**Materials/Parts (cont.)**

Lubricant, Solid Film (WP 0089, Table 1, Item 9)  
Lubricating Oil (LSAT) (WP 0089, Table 1, Item 12)  
Pin, Spring (WP 0078, Figure 20, Item 6)  
Pin, Spring (WP 0078, Figure 20, Item 9)  
Pin, Spring (WP 0078, Figure 20, Item 11)  
Rag, Wiping (WP 0089, Table 1, Item 13)

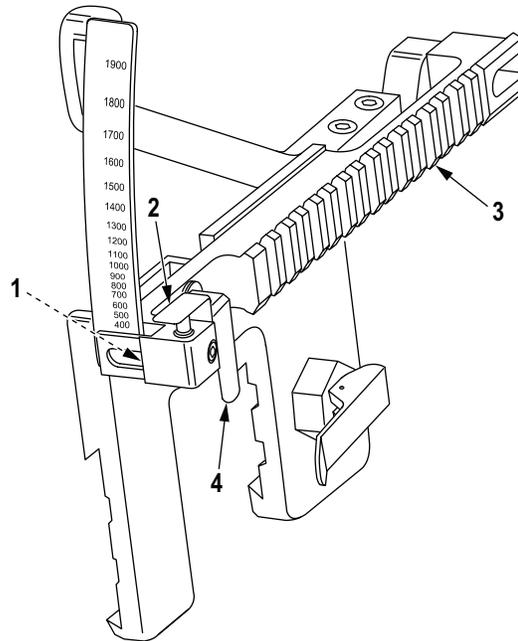
**References**

TB 43-0134  
WP 0059

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**INSPECTION**

1. Visually inspect for damaged, chipped, bent, broken, or missing parts.
2. Visually inspect surface for scratched and missing finish.
3. Release offset cam assembly (Figure 1, Item 4) and slide arm assembly (Figure 1, Item 3) up and down. Check range of motion of arm.
4. Depress switch guard (Figure 1, Item 2) and ensure diode (Figure 1, Item 1) lights. If diode does not light, replace arm assembly.



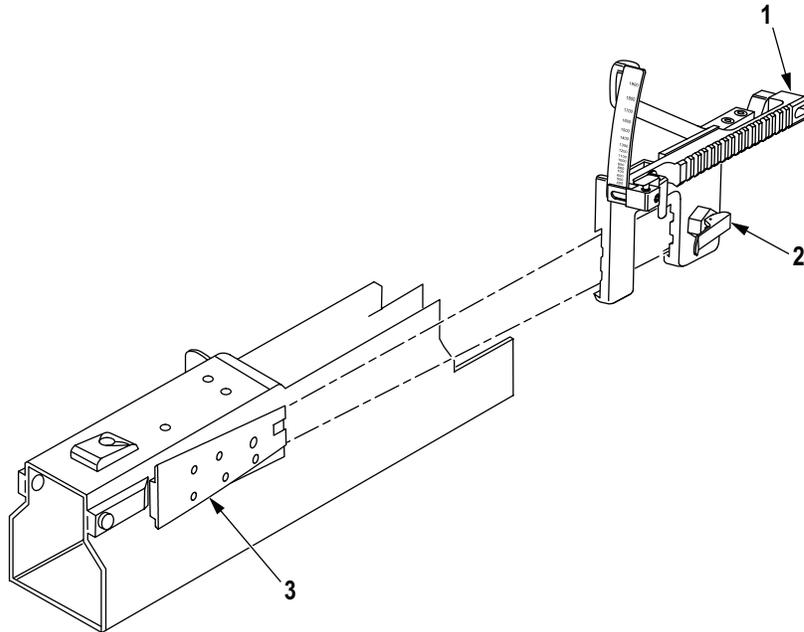
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Figure 1. Adjustable Sight Bracket (ASB) Inspection.

**END OF TASK**

**REMOVAL**

Pull out locking pin (Figure 2, Item 2). Push ASB (Figure 2, Item 1) forward to disengage the dovetails and remove ASB from the sight mounting bracket (Figure 2, Item 3).



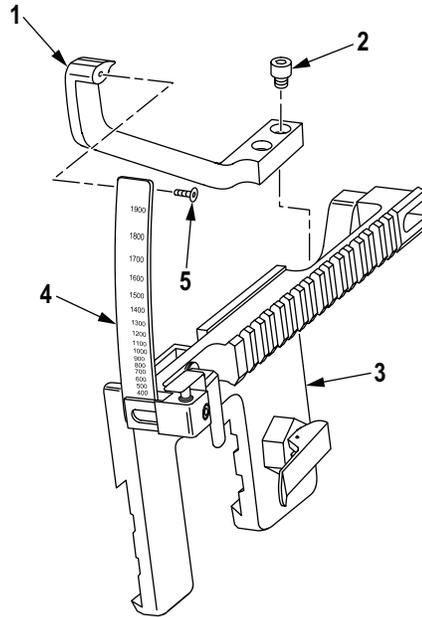
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Figure 2. Adjustable Sight Bracket (ASB) Removal.

**END OF TASK**

**DISASSEMBLY**

1. Remove two socket head capscrews (Figure 3, Item 2) from base plate (Figure 3, Item 3) and one socket head shoulder screw (Figure 3, Item 5) from scale (Figure 3, Item 4). Remove support arm (Figure 3, Item 1).

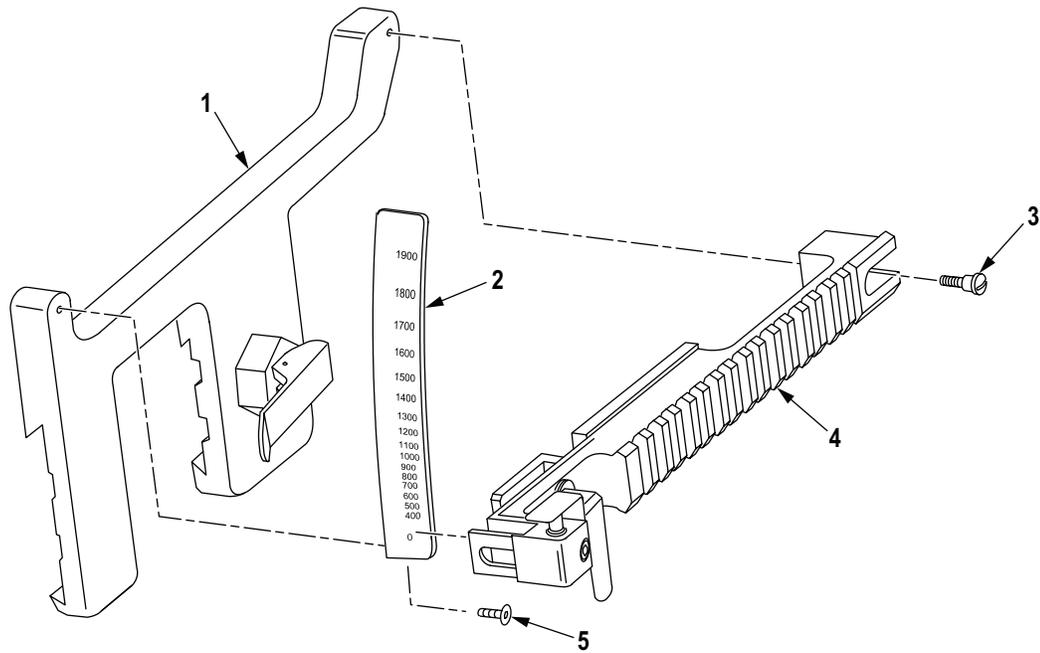


M2087M19

*Figure 3. Adjustable Sight Bracket (ASB) Disassembly.*

2. Remove slotted shoulder screw (Figure 4, Item 3) from base plate (Figure 4, Item 1) and slide arm assembly (Figure 4, Item 4) off the end of scale (Figure 4, Item 2).
3. Remove socket head shoulder screw (Figure 4, Item 5) from the scale (Figure 4, Item 2) and remove scale from base plate (Figure 4, Item 1).

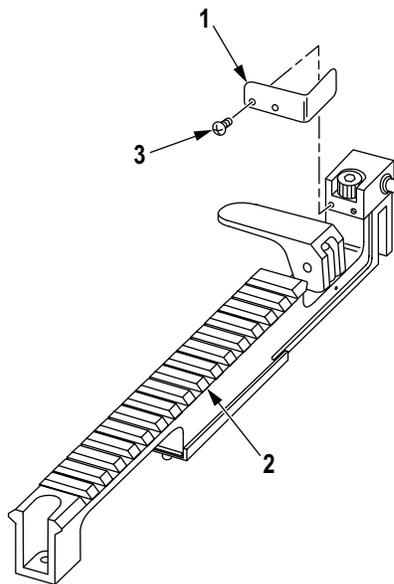
DISASSEMBLY - Continued



M2088M19

Figure 4. Adjustable Sight Bracket (ASB) Disassembly.

4. Remove two cross tip pan head screws (Figure 5, Item 3) and switch guard (Figure 5, Item 1) from arm assembly (Figure 5, Item 2).



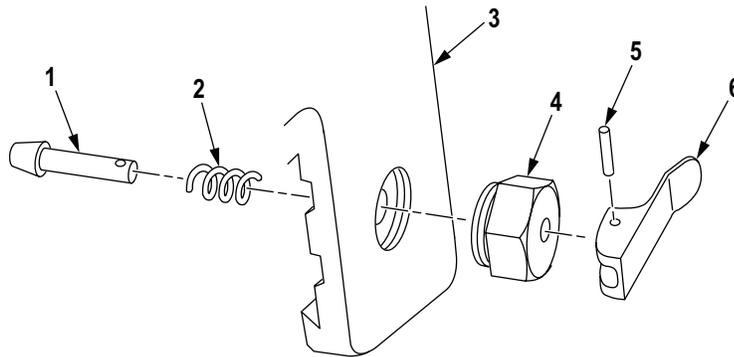
M2089M19

Figure 5. Adjustable Sight Bracket (ASB) Disassembly.

**DISASSEMBLY - Continued****WARNING**

The helical spring is under tension. Wear safety goggles when disassembling cam lever. Cover cam lever assembly with hand to prevent personnel injury or parts loss.

5. Drive out spring pin (Figure 6, Item 5) and remove cam lever (Figure 6, Item 6) from base plate (Figure 6, Item 3). Discard spring pin.
6. Remove tapered pin (Figure 6, Item 1) and helical spring (Figure 6, Item 2) from tapered mount (Figure 6, Item 4).
7. If damaged, remove tapered mount (Figure 6, Item 4).

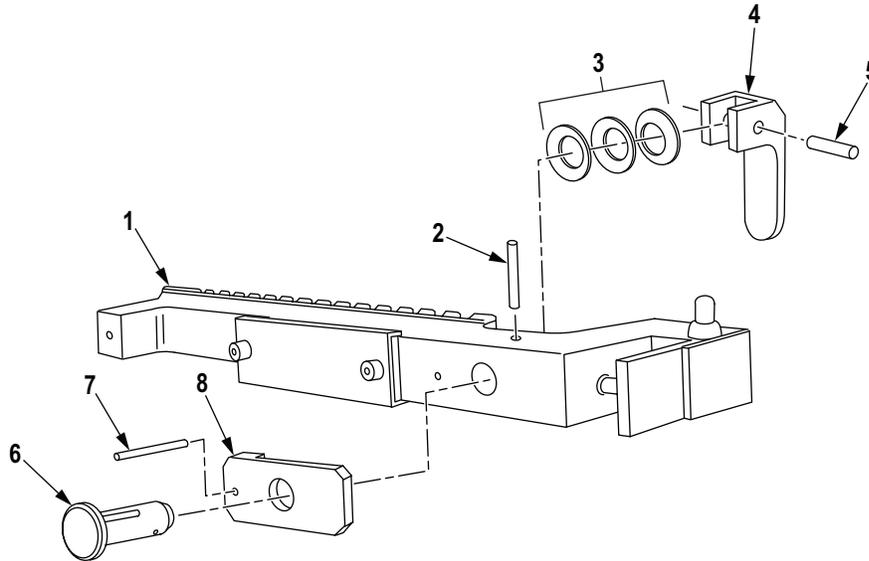


M2090M19

Figure 6. Adjustable Sight Bracket (ASB) Disassembly.

**DISASSEMBLY - Continued**

8. Drive out spring pin (Figure 7, Item 2) from arm assembly (Figure 7, Item 1). Then drive out spring pin (Figure 7, Item 5) from offset cam (Figure 7, Item 4) and remove offset cam. Discard spring pins.
9. Remove clamping shaft (Figure 7, Item 6) and three spring washers (Figure 7, Item 3). If clamp (Figure 7, Item 8) is damaged, remove spring pin (Figure 7, Item 7) and clamp from arm assembly (Figure 7, Item 1).



M2091M19

Figure 7. Adjustable Sight Bracket (ASB) Disassembly.

**DISASSEMBLY - Continued**

10. Remove two socket head capscrews (Figure 8, Item 1) and battery box cover (Figure 8, Item 2) from arm assembly (Figure 8, Item 4).
11. If damaged, remove gasket (Figure 8, Item 3) from battery box cover (Figure 8, Item 2). Remove all residue.
12. Remove old adhesive from battery box cover (Figure 8, Item 2) using isopropyl alcohol and wiping rag.

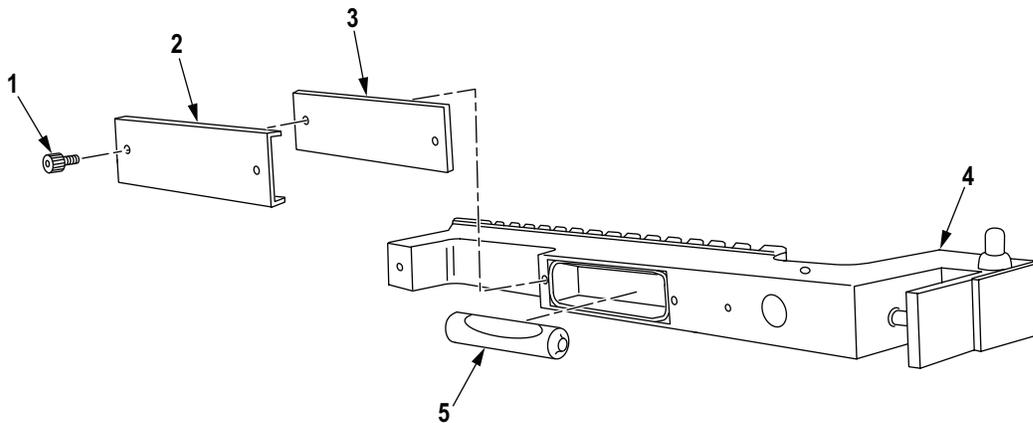
**CAUTION**

To prevent equipment damage, do not use tool or implement to pry battery from battery holder.

**NOTE**

Depending on their contents, batteries can be considered hazardous waste and must be disposed of properly in accordance with federal, state and local regulations. For additional information on battery disposal, refer to Battery Disposition and Disposal Technical Bulletin (TB 43-0134) or consult the installation environmental office for proper disposal guidance.

13. Remove battery (Figure 8, Item 5) by lifting from non-spring end.



M2092M19

Figure 8. Adjustable Sight Bracket (ASB) Disassembly.

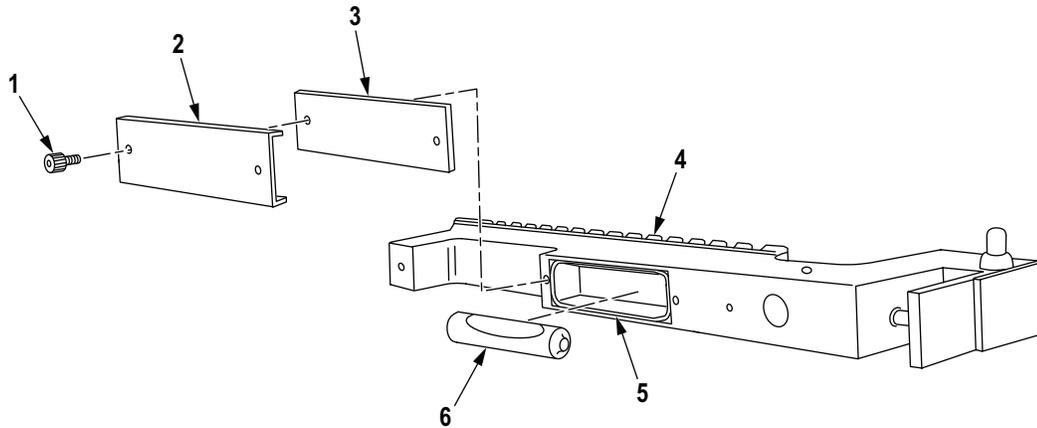
**END OF TASK**

**REPLACEMENT**

1. Use solid film lubricant as a spot paint for repair of chips and scratches.
2. Replace defective parts as authorized by (WP 0059).

**END OF TASK****ASSEMBLY**

1. Install battery (Figure 9, Item 6) into battery holder (Figure 9, Item 5) by placing rear (flat end) of battery against the spring. While pushing against the spring, also push the opposite end of battery down until firmly seated into battery holder.
2. If removed, apply adhesive to new gasket (Figure 9, Item 3) and carefully install gasket to battery box cover (Figure 9, Item 2).
3. Align two holes in battery box cover (Figure 9, Item 2) with two holes in arm assembly (Figure 9, Item 4) and secure battery box cover with two socket head capscrews (Figure 9, Item 1). Ensure the gasket (Figure 9, Item 3) maintains proper orientation while tightening screws.

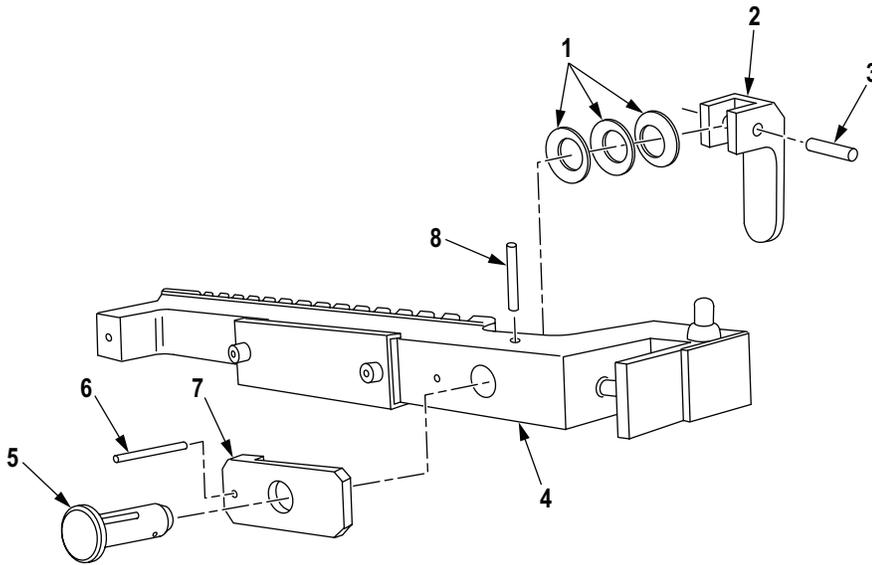


M2093M19

Figure 9. Adjustable Sight Bracket (ASB) Assembly.

**ASSEMBLY - Continued**

4. If removed, position clamp (Figure 10, Item 7) onto the bottom of the arm assembly (Figure 10, Item 4) and align the holes. Insert a new spring pin (Figure 10, Item 6).
5. Install clamping shaft (Figure 10, Item 5) through the clamp (Figure 10, Item 7) and arm assembly (Figure 10, Item 4), aligning the hole in the arm assembly with the slot in the clamping shaft. Secure by inserting a new spring pin (Figure 10, Item 8) through the hole in the arm assembly.
6. While holding the clamping shaft (Figure 10, Item 5) fully into the clamp (Figure 10, Item 7) and arm assembly (Figure 10, Item 4), place two spring washers (Figure 10, Item 1) atop the arm assembly with crown side up; then place one spring washer on top, crown side down. Position the offset cam (Figure 10, Item 2) over the clamping shaft, aligning the holes. Secure by inserting a new spring pin (Figure 10, Item 3) through the holes.

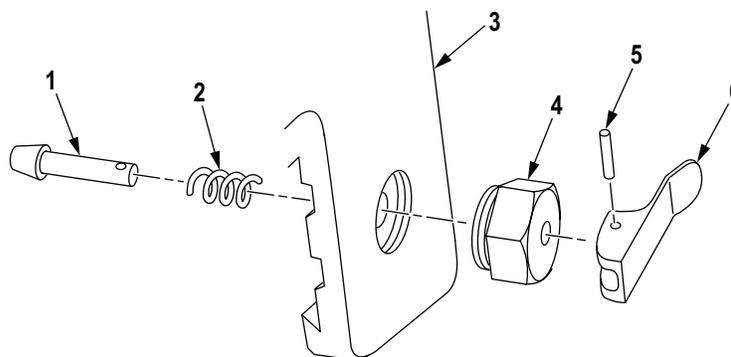


M2094M19

Figure 10. Adjustable Sight Bracket (ASB) Assembly.

**ASSEMBLY - Continued**

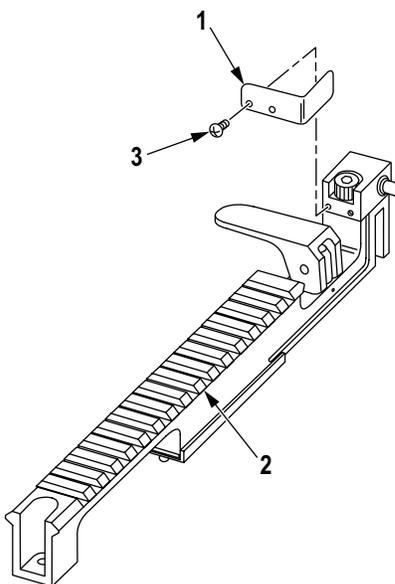
7. If removed, install new tapered mount (Figure 11, Item 4) to base plate (Figure 11, Item 3).
8. Install helical spring (Figure 11, Item 2) onto the shaft of the tapered pin (Figure 11, Item 1).
9. Insert tapered pin (Figure 11, Item 1) into the tapered mount (Figure 11, Item 4) until the rear of the tapered pin protrudes from the face of the tapered mount.
10. Align the hole in the tapered pin (Figure 11, Item 1) with the hole in the cam lever (Figure 11, Item 6) and secure with new spring pin (Figure 11, Item 5).



M2095M19

Figure 11. Adjustable Sight Bracket (ASB) Assembly.

11. Position switch guard (Figure 12, Item 1) onto the arm assembly (Figure 12, Item 2) and secure into place using two cross tip pan head screws (Figure 12, Item 3).

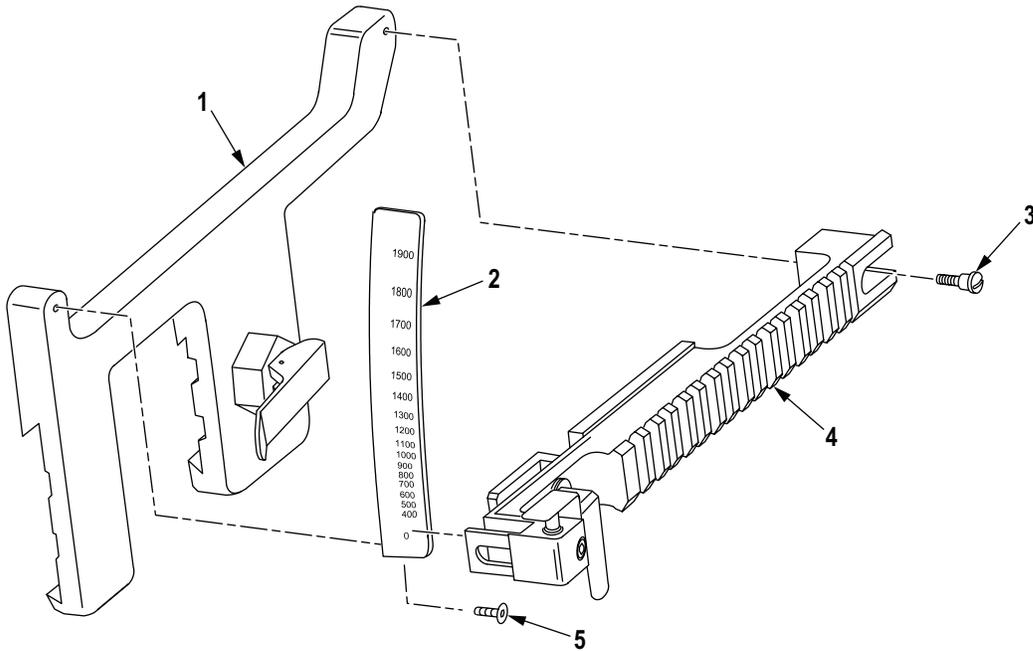


M2096M19

Figure 12. Adjustable Sight Bracket (ASB) Assembly.

**ASSEMBLY - Continued**

12. Install scale (Figure 13, Item 2) by positioning it onto the front of the base plate (Figure 13, Item 1). Secure scale with socket head shoulder screw (Figure 13, Item 5).
13. Slide arm assembly (Figure 13, Item 4) over top of scale (Figure 13, Item 2). Position arm assembly on base plate (Figure 13, Item 1) and install slotted shoulder screw (Figure 13, Item 3).

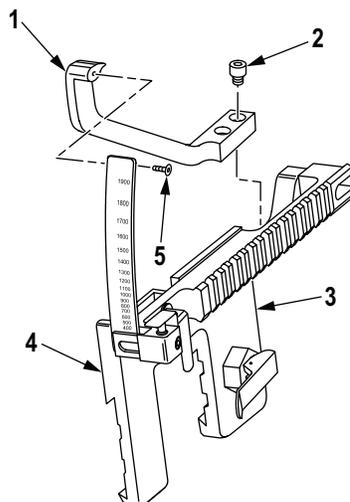


M2097M19

Figure 13. Adjustable Sight Bracket (ASB) Assembly.

**ASSEMBLY - Continued**

14. Position support arm (Figure 14, Item 1) on the base plate (Figure 14, Item 3) and the back of the scale (Figure 14, Item 4).
15. Install two socket head capscrews (Figure 14, Item 2) onto base plate (Figure 14, Item 3) and one socket head shoulder screw (Figure 14, Item 5) onto scale (Figure 14, Item 4).



M2098M19

Figure 14. Adjustable Sight Bracket (ASB) Assembly.

**END OF TASK**

**INSTALLATION****WARNING**

Before beginning the following installation procedures, always start with a clear, safe weapon and ensure no rounds are on the bolt face or in the feeder. A second person should ensure that the weapon is unloaded (if on a firing range, the second person should be the Range Safety Officer). Ensure bolt is forward before starting installation. Injury or death to personnel or damage to equipment can occur if weapon is loaded and is accidentally discharged.

**NOTE**

Ensure locking pin and interfacing surfaces between the ASB and the sight mounting bracket are properly lubricated. This will ensure proper engagement and ease of future removal of the ASB.

1. Using lubricating oil (LSAT), or Grease, Molybdenum Disulfide (GMD), lubricate the interfacing surfaces between the dovetail of the ASB (Figure 15, Item 1) and dovetail of sight mounting bracket (Figure 15, Item 3).
2. Using LSAT, or GMD, lubricate the tapered head of the locking pin (Figure 15, Item 2) located at the forward end of the ASB (Figure 15, Item 1).

**WARNING**

Improper engagement of the Adjustable Sight Bracket (ASB) can cause injury to personnel or damage to equipment during weapon discharge.

**CAUTION**

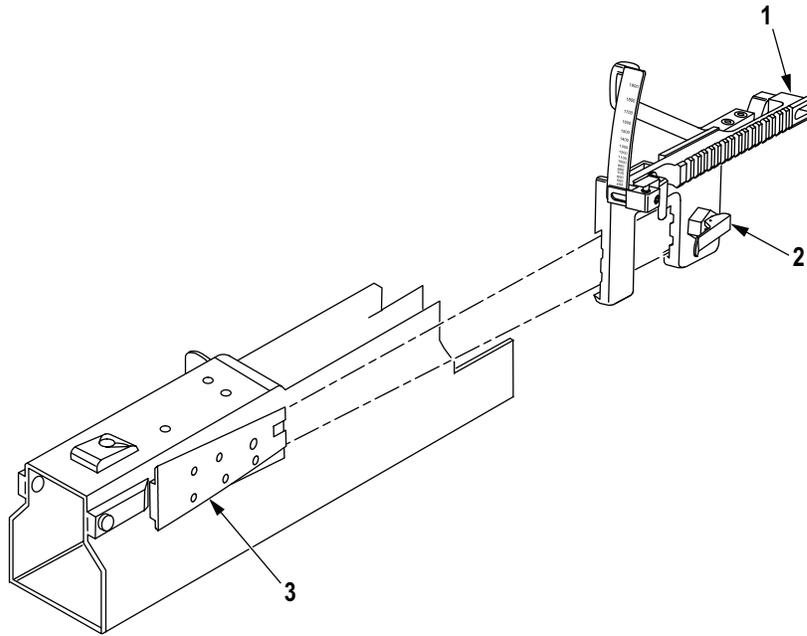
Do not remove rear sight assembly.

**NOTE**

Additional force applied to the locking pin is not required to achieve engagement. Additional applied force will jam engagement mechanism and make removal of the ASB difficult.

3. Align the dovetail of the ASB (Figure 15, Item 1) approximately six inches in front of the sight mounting bracket (Figure 15, Item 3) on the receiver of the MK19.
4. Pull ASB (Figure 15, Item 1) rearward to engage dovetails. When the locking pin (Figure 15, Item 2) drops in detent and an engagement sound is heard, sufficient engagement has been achieved.
5. If an engagement sound is not heard, pull out the locking pin (Figure 15, Item 2), push the ASB (Figure 15, Item 1) forward to disengage the dovetails, and repeat the procedure until sufficient engagement is achieved.

**INSTALLATION - Continued**



M2099M19

*Figure 15. Adjustable Sight Bracket (ASB) Installation.*

**END OF TASK**

**END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
RECEIVER INSPECTION**

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**INITIAL SETUP:****Tools and Special Tools**

- Tool Kit, Small Arms (WP 0090, Table 1, Item 36)
- Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)
- Tool Set, Intermediate (Marine Corps Only) (WP 0090, Table 1, Item 33)
- Tool Set, Organizational (Marine Corps Only) (WP 0090, Table 1, Item 35)

**Materials/Parts**

- Cloth, Abrasive Crocus (WP 0089, Table 1, Item 7)

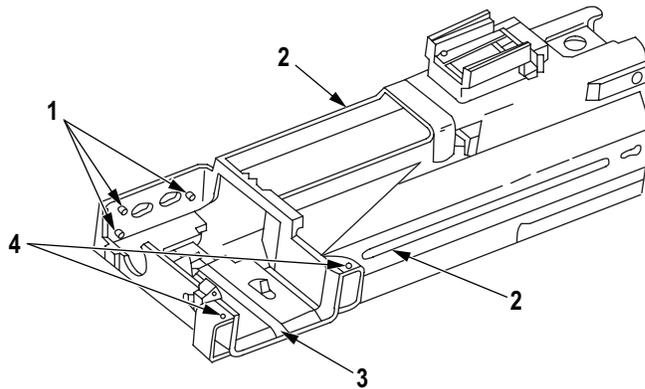
**Materials/Parts (cont.)**

- Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)
  - Lubricant, Solid Film (WP 0089, Table 1, Item 9)
  - Lubricating Oil (LAW) (WP 0089, Table 1, Item 10)
  - Lubricating Oil (LSAT) (WP 0089, Table 1, Item 12)
  - Rag, Wiping (WP 0089, Table 1, Item 13)
  - Stone, Sharpening (WP 0089, Table 1, Item 15)
-

## INSPECTION

The receiver may be inspected without removing the barrel or the positioning pawls. Check for the following:

1. Pins. Ensure the three pins (Figure 1, Item 1) in the right-hand forward wall of the receiver are present. If loose or missing, notify Maintenance Supervisor.
2. Burrs. Remove any burrs on the receiver rails (Figure 1, Item 2) and on the link guide (Figure 1, Item 3), using crocus cloth or sharpening stone.
3. Rust.
  - a. Exterior: Remove exterior rust with Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT) and wiping rag. Apply solid film lubricant to shiny surfaces following manufacturer's instructions.
  - b. Interior: Remove interior rust with crocus cloth; then preserve with a light coat of GMD or LSAT.
  - c. Cracks. Check for cracks (Figure 1, Item 4) in the areas indicated below, as well as along all weld seams. If cracks are found, note the location and length of the crack, and notify Maintenance Supervisor.
  - d. Check all holes for cracks/elongation.



M2100M19

Figure 1. Receiver Inspection.

END OF TASK

END OF WORK PACKAGE

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**FIELD MAINTENANCE  
PRIMARY PAWL MAINTENANCE**

---

**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps  
Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps Only)  
(WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps Only)  
(WP 0090, Table 1, Item 35)

**Materials/Parts**

Cloth, Abrasive Crocus (WP 0089, Table 1, Item  
7)  
Grease, Molybdenum Disulfide (GMD) (WP 0089,  
Table 1, Item 8)

**Materials/Parts (cont.)**

Lubricating Oil (LSAT) (WP 0089, Table 1, Item  
12)  
Stone, Sharpening (WP 0089, Table 1, Item 15)

**References**

WP 0059

**Equipment Condition**

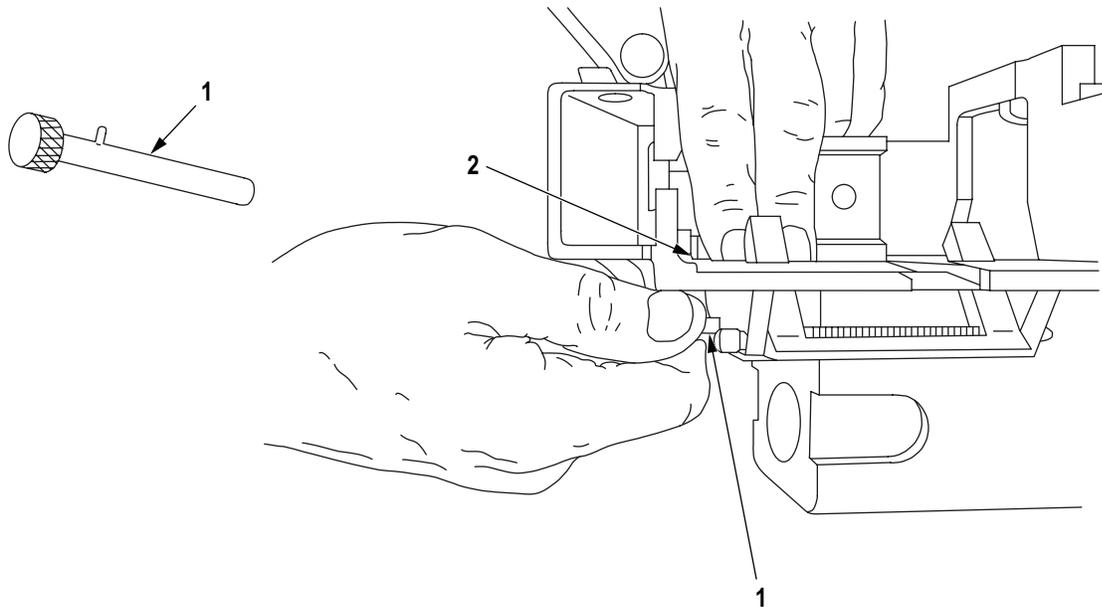
Barrel removed from receiver (WP 0039)

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**REMOVAL****CAUTION**

Use fingers, not pliers, to pull out pawl rod. Force can break the small crosspin on the pawl rod if not properly aligned in the slot.

With the barrel removed, depress the primary pawl (Figure 1, Item 2) and pull out the pawl rod (Figure 1, Item 1) using fingers. Lift out the primary pawl and pawl spring.



M2101M19

Figure 1. Primary Pawl Removal.

**END OF TASK**

**REPAIR OR REPLACEMENT**

1. Examine the edges of the primary pawl (Figure 2, Item 2) for burrs. Remove burrs with crocus cloth or sharpening stone. Before installation, ensure the hole in the receiver for the pawl spring and primary pawl has been cleared of all dirt and debris.
2. Inspect pawl rod (Figure 2, Item 4) for rust. Remove rust with Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT) and crocus cloth. Preserve with a light coat of GMD or LSAT. Replace the pawl rod if bent or if the crosspin (Figure 2, Item 1) is missing (WP 0059).
3. Test spring action of pawl spring (Figure 2, Item 3) while assembled. Press primary pawl (Figure 2, Item 2) and release. Spring action should be crisp. If spring action is not crisp, replace pawl spring (WP 0059).

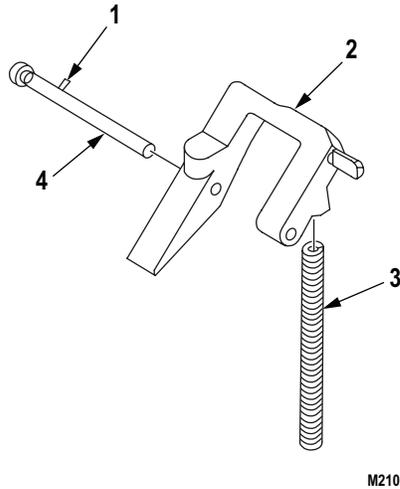


Figure 2. Primary Pawl Repair.

**END OF TASK**

**INSTALLATION**

1. Turn receiver upright. Insert the pawl spring (Figure 3, Item 3) into the hole (Figure 3, Item 4) in the receiver. Install the primary pawl (Figure 3, Item 2).
2. Position the primary pawl (Figure 3, Item 2) so the pinholes align with the pinholes in the receiver. Partially insert the pawl rod (Figure 3, Item 1).
3. With one hand, depress the primary pawl (Figure 3, Item 2). With the other hand, push the pawl rod (Figure 3, Item 1) into the pinhole until the crosspin in the pawl rod enters the small hole in the receiver. Push the pawl pin's knurled head until it touches the receiver.

**NOTE**

Insert spring into hole on underside of pawl.

4. Press the primary pawl (Figure 3, Item 2) and release. Spring action should be crisp.

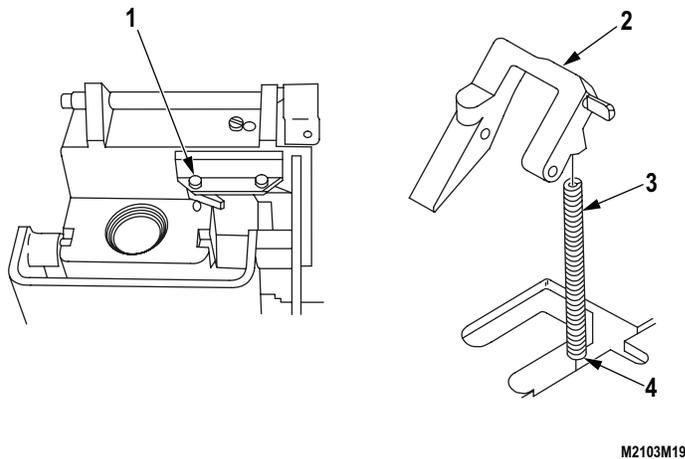


Figure 3. Primary Pawl Installation.

**END OF TASK****FOLLOW-ON MAINTENANCE**

Install barrel on receiver (WP 0039).

**END OF TASK****END OF WORK PACKAGE**

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**FIELD MAINTENANCE  
SECONDARY PAWL MAINTENANCE**

---

**INITIAL SETUP:****Tools and Special Tools**

Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps  
Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps Only)  
(WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps Only)  
(WP 0090, Table 1, Item 35)

**Materials/Parts**

Cloth, Abrasive Crocus (WP 0089, Table 1, Item  
7)

**Materials/Parts (cont.)**

Grease, Molybdenum Disulfide (GMD) (WP 0089,  
Table 1, Item 8)  
Lubricating Oil (LSAT) (WP 0089, Table 1, Item  
12)  
Stone, Sharpening (WP 0089, Table 1, Item 15)

**References**

WP 0059

**REMOVAL****WARNING**

Helical spring is under tension. Shield helical spring while pulling out pawl rod. This will prevent injury.

**CAUTION**

Use fingers, not pliers, to pull out pawl rod. Force can break small crosspin on pawl rod if not properly aligned in slot.

**NOTE**

Do not remove secondary pawl except to replace secondary pawl, helical spring, or pawl rod. Turn receiver upside down. Depress secondary pawl (Figure 1, Item 1) and pull out pawl rod (Figure 1, Item 2). Lift out secondary pawl and helical spring (Figure 1, Item 3).

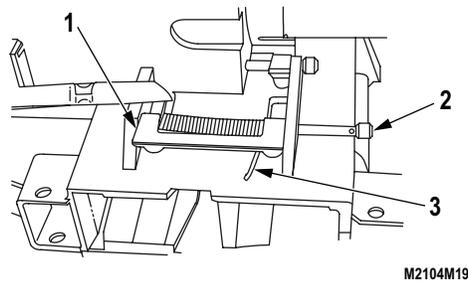


Figure 1. Secondary Pawl Removal.

**END OF TASK**

**REPAIR OR REPLACEMENT**

1. Examine edges of secondary pawl (Figure 2, Item 2) for burrs. Remove burrs with crocus cloth or sharpening stone.
2. Inspect pawl rod (Figure 2, Item 1) for rust. Remove any rust with Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT) and a rag. Preserve with a light coat of GMD or LSAT. Replace if bent or broken or if crosspin is missing.
3. Test spring action of helical spring (Figure 2, Item 3) while assembled. Press secondary pawl (Figure 2, Item 2) and release. Spring action should be crisp.
4. Replace defective parts as authorized by (WP 0059).

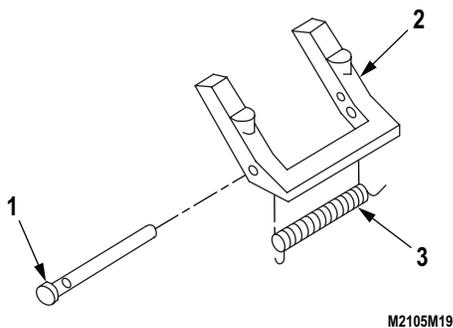
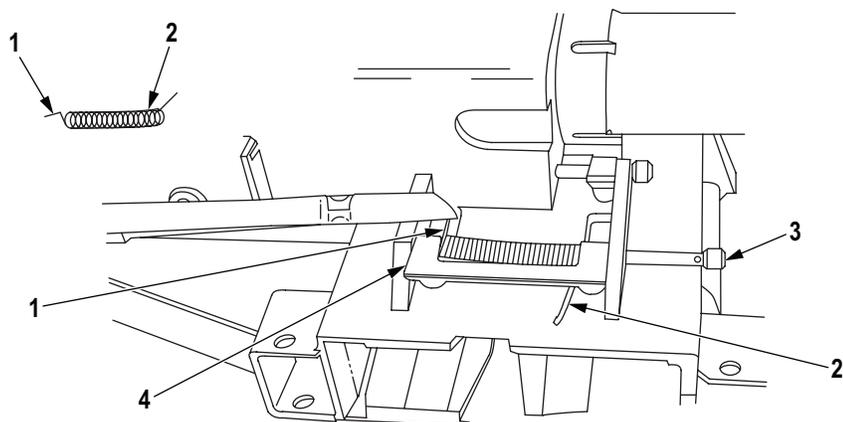


Figure 2. Secondary Pawl Repair.

**END OF TASK**

**INSTALLATION**

1. Position secondary pawl (Figure 3, Item 4) in receiver so pinholes are aligned.
2. Partially insert pawl rod (Figure 3, Item 3) pinholes.
3. Slip helical spring (Figure 3, Item 2), straight end first, over end of pawl rod (Figure 3, Item 3).
4. Lock the wire twister pliers on L-shaped end (Figure 3, Item 1) of helical spring (Figure 3, Item 2) and tighten one full turn. Push pawl rod (Figure 3, Item 3) through hole, depressing secondary pawl (Figure 3, Item 4) to allow pawl rod to go in. Ensure crosspin in pawl rod enters small slot in receiver.
5. Unlock pliers and release helical spring (Figure 3, Item 2) into place. The straight end of helical spring should rest against receiver. L-shaped end of helical spring should fit in notch in the secondary pawl (Figure 3, Item 4).
6. Depress secondary pawl (Figure 3, Item 4) again and push pawl rod (Figure 3, Item 3) in until knurled head touches the receiver. Press secondary pawl to test spring action.



M2106M19

*Figure 3. Secondary Pawl Installation.***END OF TASK****END OF WORK PACKAGE**

## FIELD MAINTENANCE BARREL ASSEMBLY MAINTENANCE

### INITIAL SETUP:

#### Tools and Special Tools

Gage Assembly, Bore Constriction (WP 0090, Table 1, Item 18)  
 Rod, Cleaning, Small Arms (WP 0090, Table 1, Item 27)  
 Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
 Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
 Tool Set, Intermediate (Marine Corps Only) (WP 0090, Table 1, Item 33)  
 Tool Set, Organizational (Marine Corps Only) (WP 0090, Table 1, Item 35)  
 Wrench, Spanner (WP 0090, Table 1, Item 41)

#### Materials/Parts (cont.)

Lubricating Oil (LAW) (WP 0089, Table 1, Item 10)  
 Lubricating Oil (LSAT) (WP 0089, Table 1, Item 12)  
 Pin, Spring (WP 0062, Figure 4, Item 3)  
 Rag, Wiping (WP 0089, Table 1, Item 13)

#### References

WP 0059

#### Materials/Parts

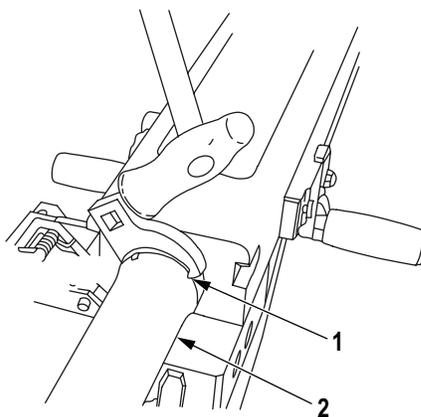
Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)

### REMOVAL

#### NOTE

Barrel should be removed only for replacement.

Turn receiver upside down. Hook end of barrel wrench into slots (Figure 1, Item 1) in barrel close to receiver. Tap barrel wrench counterclockwise with hammer to loosen. Unscrew barrel (Figure 1, Item 2) from receiver.



M2107M19

Figure 1. Barrel Assembly Removal.

### END OF TASK

**DISASSEMBLY**

1. Inspect for rust, dents, and cracks. Remove rust with Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT) and rag. Ensure flash suppressor (Figure 2, Item 1) is slightly loose. If flash suppressor is tight or dents interfere with functioning, drive out the slotted spring pin (Figure 2, Item 2). Discard slotted spring pin.

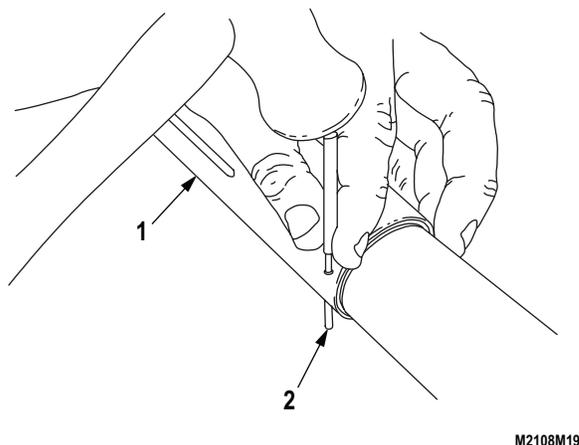


Figure 2. Barrel Assembly Disassembly.

**WARNING**

To avoid injury, appropriate eye protection is recommended when cleaning weapon and/or its parts.

2. Clean bore and chamber.
3. Screw bore constriction gage (Figure 3, Item 2) onto tip of the cleaning rod.
4. Insert gage into flash suppressor (Figure 3, Item 1) to ensure any dents do not affect functioning.
5. If gage will not pass through flash suppressor, remove flash suppressor. Continue inserting gage into bore all way through chamber. Verify bore constriction gage passes through freely; if not, replace barrel (Figure 3, Item 3).

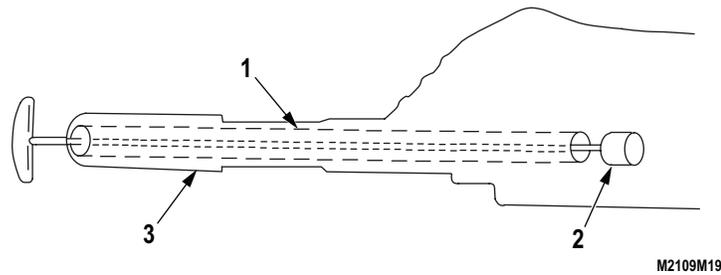
**DISASSEMBLY - Continued**

Figure 3. Barrel Assembly Disassembly.

**END OF TASK****REPAIR OR REPLACEMENT**

1. Inspect barrel exterior for rust, dents, and cracks. Remove rust with GMD or LSAT and wiping rag.
2. Inspect flash suppressor for rust, dents, and cracks. Remove rust with GMD or LSAT and wiping rag.
3. Inspect barrel as follows:
  - a. Bore and chamber must be clean and free of corrosion.
  - b. Pits in chamber are allowable if they are not large enough to cause extraction difficulties.
  - c. Pits less than width of a land or groove in width or length are allowable. Replace if pits are greater than width of a land or groove, and if pits are 50 percent cumulative or 25 percent continuously.
  - d. Scattered or uniformly fine pits are allowable.
  - e. Tool marks or scratches are acceptable regardless of length. Tool marks will appear as lines running laterally in grooves or they may run spirally across top of lands.
  - f. Definitely ringed bores or bores ringed sufficiently to bulge outside surface barrel are cause for rejection. However, faint rings or shadowy depressions do not indicate an unserviceable barrel and should not be cause for rejection.
  - g. Lands that appear dark due to a coating of gilding metal from projectiles should not be cause for rejection.
4. Replace defective parts as authorized in (WP 0059).

**END OF TASK**

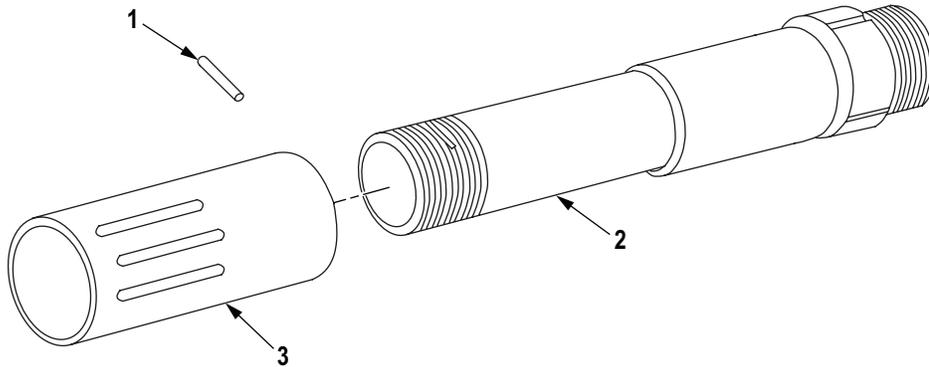
**ASSEMBLY**

1. Screw threaded end of flash suppressor (Figure 4, Item 3) all way into smaller end of barrel (Figure 4, Item 2) until none of threads are showing. Then slightly reverse rotation of flash suppressor until both pin holes in flash suppressor can be seen. This indicates holes are aligned with the flat threaded surface of barrel.

**NOTE**

Be sure to install new slotted spring pin.

2. Insert a 3/32 inch punch through pin holes of flash suppressor (Figure 4, Item 3) and barrel (Figure 4, Item 2) to ensure proper hole alignment. Tap in new slotted spring pin (Figure 4, Item 1) from side opposite punch, ensuring that flash suppressor is slightly loose. This will not affect its functioning. Ensure slotted spring pin is equally extended on both sides.

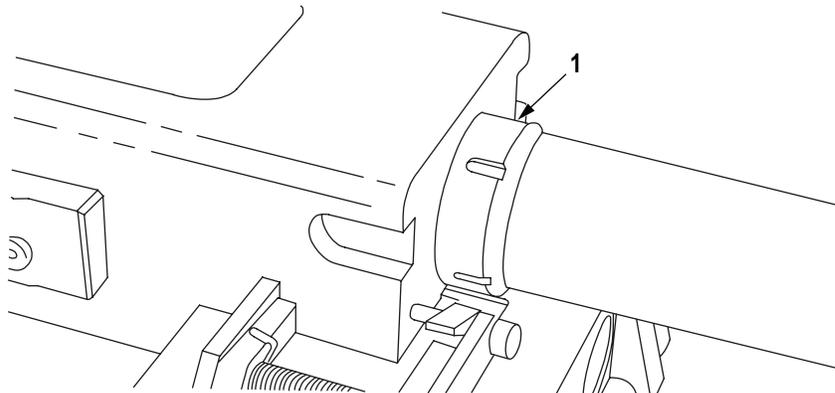


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Figure 4. Barrel Assembly Assembly.

**ASSEMBLY - Continued**

3. Screw larger threaded end of barrel (Figure 5, Item 1) all way into receiver until barrel is flush against receiver. Tighten barrel by tapping barrel wrench lightly with a hammer in a clockwise direction. Ensure any dents in barrel do not interfere with functioning.



M2111M19

*Figure 5. Barrel Assembly Assembly.*

**END OF TASK****END OF WORK PACKAGE**



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## FIELD MAINTENANCE BOLT TIMING PROCEDURE

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### INITIAL SETUP:

#### References

WP 0026

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### GENERAL

Timing is the maximum forward movement of the bolt after the firing pin releases.

### PURPOSE

#### NOTE

Bolt timing should be adjusted when the weapon fires sluggishly or erratically, when the bolt is detail disassembled, or when the following components are installed new: firing pin, firing pin sear, lock plate assembly, bolt sear, sear buffer rod, blank buffer washers, and sear buffer.

Accurate timing will ensure that the firing pin strikes the primer at the proper moment.

### TIMING PROCEDURE

#### NOTE

Be sure the firing pin mechanism and the contact surfaces between the bolt and bolt sear are well lubricated before adjusting bolt timing.

1. Remove bolt and backplate assembly from the weapon (WP 0026).
2. Remove non-electrical wire (WP 0026).
3. Unscrew both bolt sleeves (WP 0026).
4. Lift off the lock plate assembly (Figure 1, Item 1). Remove both bolt buffer assemblies (Figure 1, Item 2).

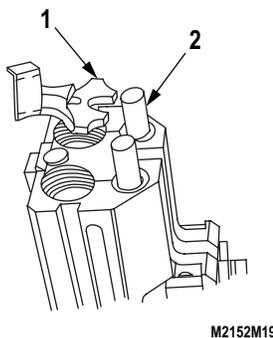


Figure 1. Bolt Timing.

**TIMING PROCEDURE - Continued**

**NOTE**

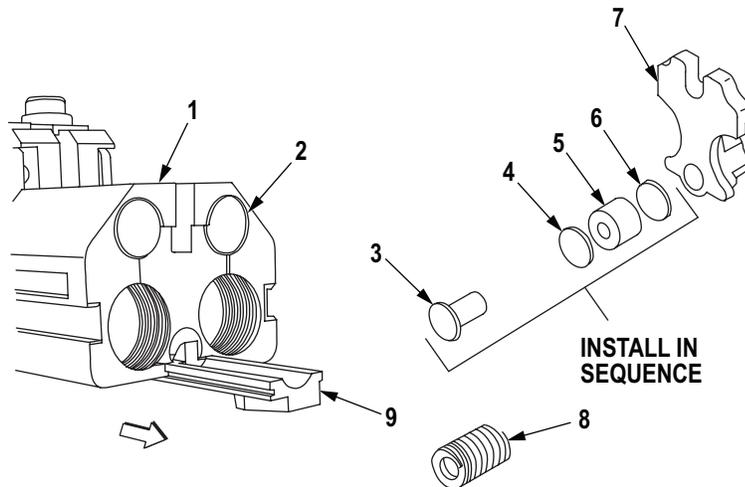
- To aid in reassembly, mark top side of sear buffer during removal.
- Ensure sear buffer rod, blank buffer washer, sear buffer, and blank buffer washer are well lubricated prior to adjustment of bolt timing.

5. Slide the bolt sear (Figure 2, Item 9) rearward. Remove sear buffer rod (Figure 2, Item 3), blank buffer washer (Figure 2, Item 4), sear buffer (Figure 2, Item 5), blank buffer washer (Figure 2, Item 6), and helical compression spring (Figure 2, Item 8). Lay the helical compression spring aside. Assemble the other components into the bolt as follows:

**NOTE**

Use end of middle tube to seat items (Figure 2, Item 3) through (Figure 2, Item 6) into bolt.

- a. Install sear buffer rod (Figure 2, Item 3) (head end first) into the bolt (Figure 2, Item 1).
- b. Install blank buffer washer (Figure 2, Item 4) into the bolt (Figure 2, Item 1).
- c. Install sear buffer (maintaining previous assembly orientation) (Figure 2, Item 5) into the bolt (Figure 2, Item 1).
- d. Install blank buffer washer (Figure 2, Item 6) into the bolt (Figure 2, Item 1).
- e. Install bolt buffer assemblies (Figure 2, Item 2) into the bolt (Figure 2, Item 1).
- f. Unscrew adjusting screw of lock plate assembly (Figure 2, Item 7) to flush. Ensure the end of the adjusting screw is tightened 10 clicks beyond flush with the lock plate assembly. Install lock plate assembly into bolt (Figure 2, Item 1).



M2153M19

Figure 2. Bolt Timing.

**TIMING PROCEDURE - Continued****NOTE**

If completely assembled, install original bolt sleeves instead of the whole assembly.

6. Reinstall bolt sleeves, helical compression springs, and inner rods (do not need to be attached) back into the bolt (WP 0026).
7. Alternately tightening each bolt sleeve one full turn at a time until both are snug.
8. Starting from 10 clicks beyond flush, tighten the adjusting screw (Figure 3, Item 1) on the lock plate assembly (Figure 3, Item 2) clockwise for 12 more clicks (for a total of 22 clicks).

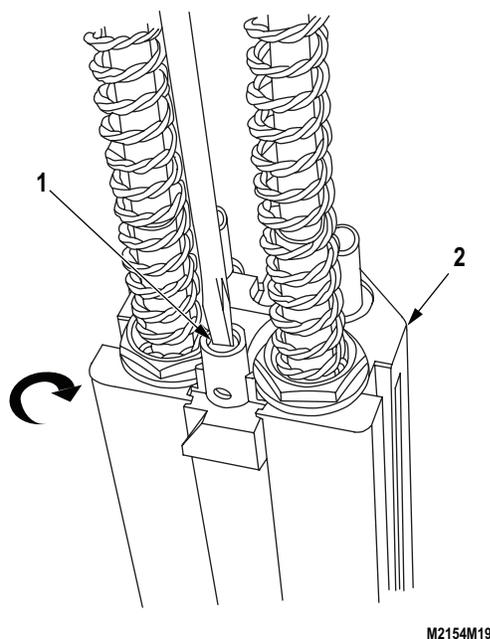


Figure 3. Bolt Timing.

9. Cock the cocking lever toward the bolt face until it clicks.

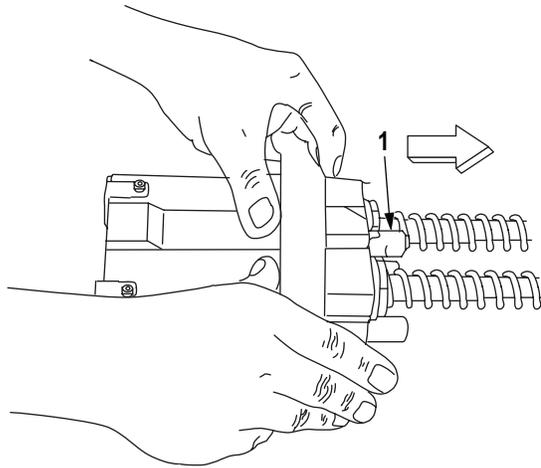
**WARNING**

To avoid injury, keep fingers clear of the cocking lever when the firing pin fires.

10. Ensure the bolt is laying face down. To adjust the timing properly, it must be in this position.
11. Using the flat surface of the combination wrench, place it horizontally to the bolt sear and push rearward. Observe the WARNING above; note whether or not the bolt sear causes the firing pin to fire. If bolt fires, go to Step 1. If bolt does not fire, go to Step 14.

**TIMING PROCEDURE - Continued**

12. If pulling the bolt sear rearward caused the firing pin to fire, tighten the adjusting screw (Figure 4, Item 1) ONE CLICK AT A TIME, push the sear forward, cock the firing pin, and try to fire, until pushing the bolt sear rearward will not cause the firing pin to fire. Test the accuracy of the findings by loosening the screw one click (pin should fire), then tightening one click back to position (pin should not fire). Repeat several times.
13. Loosen one click and fire. Then loosen the adjusting screw (Figure 4, Item 1) counterclockwise seven clicks. This sets the timing. Go to Step 16.
14. If pulling the bolt sear rearward in Step 11 did not cause the firing pin to fire, loosen the adjusting screw (Figure 4, Item 1) ONE CLICK AT A TIME and try to fire, until pulling the bolt sear rearward fires the firing pin. Cock the firing pin and test the accuracy of the findings by tightening the screw one click (pin should not fire), then loosening one click back to position (pin should fire).
15. Loosen the adjusting screw (Figure 4, Item 1) seven more clicks. This sets the timing. Go to Step 16.

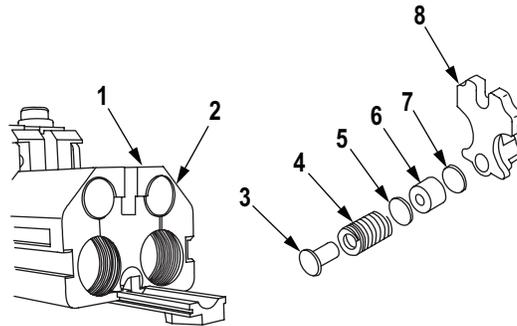


M2155M19

*Figure 4. Bolt Timing.*

**TIMING PROCEDURE - Continued**

16. Remove bolt sleeves, lock plate assembly (Figure 5, Item 8), bolt buffer assemblies (Figure 5, Item 2), bolt sear (Figure 5, Item 1), blank buffer washers (Figure 5, Items 5 and 7), sear buffer (Figure 5, Item 6), and sear buffer rod (Figure 5, Item 3).
17. Install above components, along with the helical compression spring (Figure 5, Item 4), as directed.



M2156M19

*Figure 5. Bolt Timing.***END OF TASK****END OF WORK PACKAGE**



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**FIELD MAINTENANCE**  
**FEED SLIDE ASSEMBLY MAINTENANCE**

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**INITIAL SETUP:****Tools and Special Tools**

Combination Tool (WP 0090, Table 1, Item 11)  
Dial Caliper (WP 0090, Table 1, Item 13)  
Feed Adjustment Tool (WP 0090, Table 1, Item 16)  
Feed Slide Tool (WP 0090, Table 1, Item 17)  
Linked Dummy Rounds (WP 0090, Table 1, Item 14)  
MK 16 MOD 0 Stand or M3 Tripod Mount (WP 0090, Table 1, Item 20)  
MK 64 Mount, Gun (WP 0090, Table 1, Item 21)  
Propane Torch (WP 0090, Table 1, Item 25)  
Table Stand (WP 0090, Table 1, Item 29)  
Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Set, Intermediate (Marine Corps Only) (WP 0090, Table 1, Item 32)  
Tool Set, Organizational (Marine Corps Only) (WP 0090, Table 1, Item 34)

**Materials/Parts**

Sealing Compound (WP 0089, Table 1, Item 14)

**Materials/Parts (cont.)**

Screw, Cap, Socket Head (WP 0069, Figure 11, Item 1) Qty: 3  
Stop Kit, Feed Slide (WP 0069, Figure 11, Item 6)

**Personnel Required**

(2)

**References**

TM 9-1005-245-13&P  
TM 9-1010-231-13&P  
WP 0021  
WP 0024  
WP 0033  
WP 0037  
WP 0059

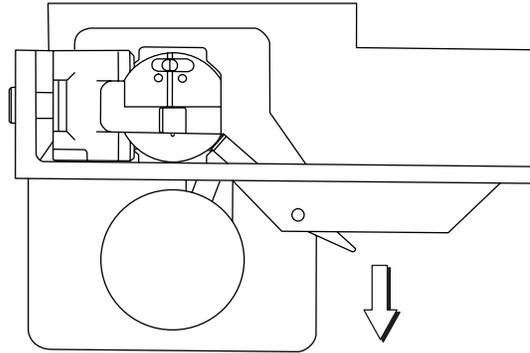
**Equipment Condition**

Alignment guide removed from receiver (WP 0031)  
Ogive plunger assembly removed from receiver (WP 0027)  
Secondary drive lever assembly removed from weapon (WP 0024)  
Feed slide assembly removed from weapon  
Weapon on "S" (SAFE), clear of ammo, bolt in forward position

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**INSPECTION**

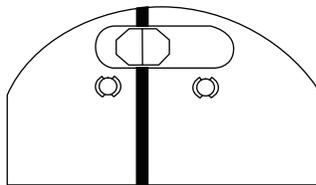
1. Close top cover.
2. Using fingers, access the feed adjustment tool from the ammunition entrance. Push the feed adjustment tool against round positioning block and ensure that the primary pawl is in the full up position by pulling downward on the pawl from under the feeder base.



M2175M19

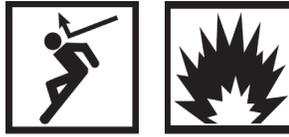
*Figure 1. Adjustment of Feed Slide Inspection.*

3. Push on round positioning block pins to ensure feed adjustment tool is in contact with primary pawl.
4. Retract the bolt to sear position (fully to rear, without pause or stopping); then move the handles forward and up.
5. View the feed adjustment tool through the ogive plunger hole. The left edge of the indicator should be on the very left edge of the white line (W/I, one painted line over but not bottomed out) or within the width of the white painted line if the adjustment is correct. If properly aligned, return the weapon to functional condition.



M2176M19

*Figure 2. Adjustment of Feed Slide Inspection.*

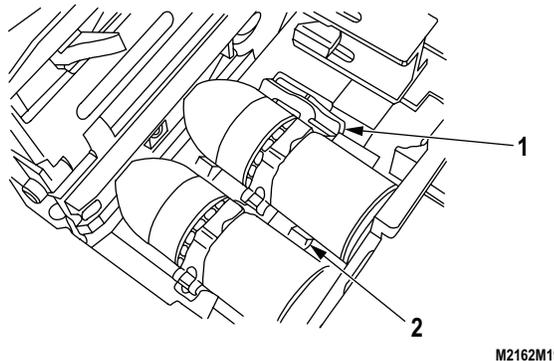
**INSPECTION - Continued****WARNING**

- Ensure stow pin and depression stop are installed before attaching MK 64 mount to tripod (TM 9-1010-231-13&P).
- Do not relink or fire ammunition which has been cycled through the weapon.

**CAUTION**

If the top cover will not close, do not force it. Ensure the round is well seated between the feed pawls. Adjust the feed slide assembly until the cover will close.

6. Mount the assembled weapon on the MK 64 Machine Gun Mount (TM 9-1010-231-13&P), on M3 tripod (TM 9-1005-245-13&P), or table stand.
7. Open the top cover. Place the bolt in the forward position. Slide two dummy rounds, female link first, across the secondary pawl (Figure 3, Item 2). The round should be between the secondary pawl and primary pawl (Figure 3, Item 1).

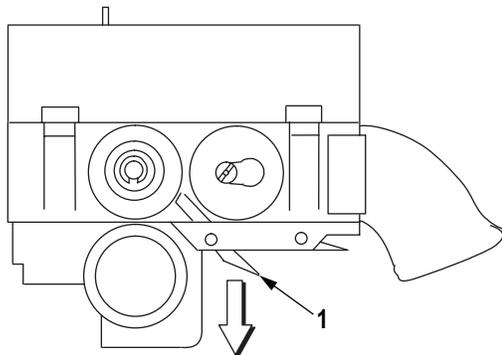


M2162M19

*Figure 3. Feed Slide Assembly Inspection.*

**INSPECTION - Continued**

8. Position the feed slide assembly fully to the left while in the feed tray. Close the top cover, observing the CAUTION.
9. Charge the weapon slowly. Place the safety on "S" (SAFE).
10. Go to the front of the receiver and check the primary pawl lever (Figure 4, Item 1), located under the receiver feed tray area. If it is flush with the receiver, the pawl is down (flush) in the feed area. Repair the weapon. If the primary pawl is protruding downward, perform Step 8.



M2163M19

*Figure 4. Feed Slide Assembly Inspection.*

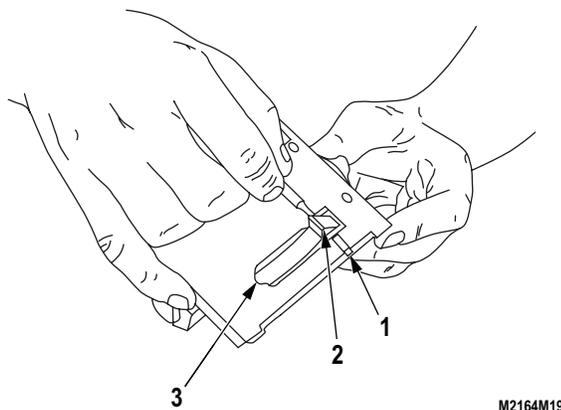
11. Place the safety on "F" (FIRE). Return one charger handle forward to the locked position. Hold the other charger handle firmly and ride the bolt forward slowly about 3-3/4 inches (or the length of one charger arm). Check the round positioning block tabs, which protrude from the right receiver wall; they should retract inward approximately the width of the tab heads. If this happens, the feed slide is adjusted correctly. If the tab heads protrude inward more or not at all, repair the weapon. (Marine Corps: Repair at Unit Maintenance.)

**END OF TASK**

**DISASSEMBLY****NOTE**

Remove only the feed pawls, headless straight pins, and feed pawl flat springs for routine cleaning and inspection. Remove the spring housing only for part replacement or adjustment.

1. Push out the two headless straight pins (Figure 5, Item 1) from sides of the two feed pawls (Figure 5, Item 2) using a 3/32 inch punch.
2. Lift off the two feed pawl flat springs (Figure 5, Item 3) and the feed pawls (Figure 5, Item 2).



M2164M19

Figure 5. Feed Slide Assembly Disassembly.

## DISASSEMBLY - Continued

**WARNING**

The shuttle spring and housing are held under pressure. Always use the feed slide tool to hold the helical compression spring before removing the self-locking shoulder screws. Failure to observe this warning will result in injury.

**NOTE**

Do not remove spring housing unless part replacement is necessary. Do not remove guide rod or the helical compression spring unless installation of a new helical compression spring or guide rod is needed.

3. Note the WARNING above. Place feed slide assembly (Figure 6, Item 2) in the feed slide tool and twist the tool handle until snug.
4. Remove three self-locking socket head screws (Figure 6, Item 3) from the spring housing (Figure 6, Item 1). Retain the old self-locking socket head screws for use in assembly task.
5. Release pressure on the feed slide tool slowly, squeezing the assembly and tool to keep them aligned.

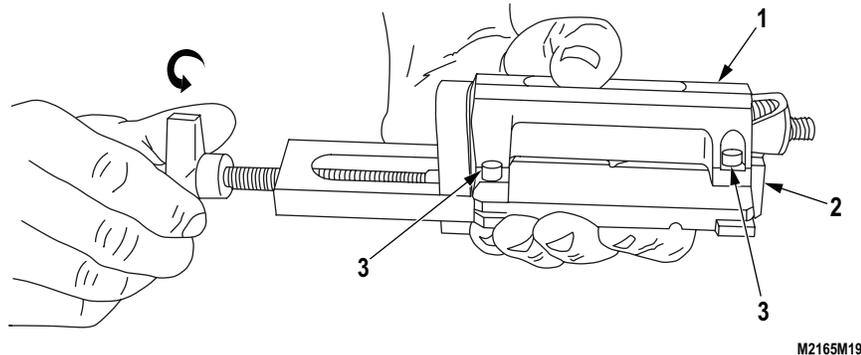
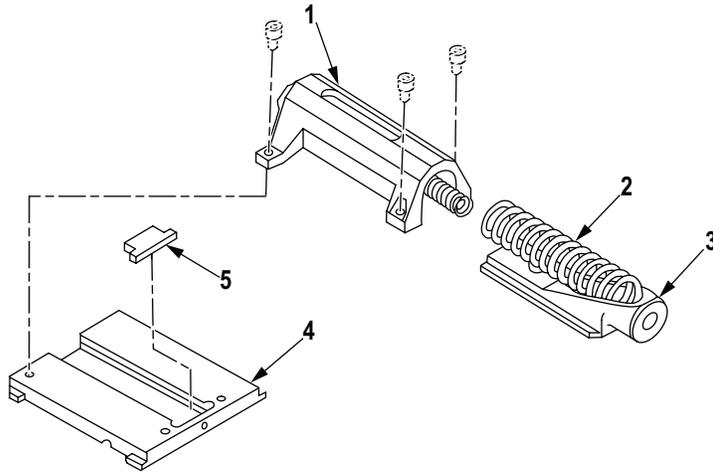


Figure 6. Feed Slide Assembly Disassembly.

6. Lift off the spring housing (Figure 7, Item 1) and remove following internal components:
  - Inner feed slide (Figure 7, Item 3).
  - Shuttle spring (the larger spring) (Figure 7, Item 2).
  - Outer feed slide (Figure 5, Item 4).
  - Stop/shim (Figure 5, Item 5).

**DISASSEMBLY - Continued**

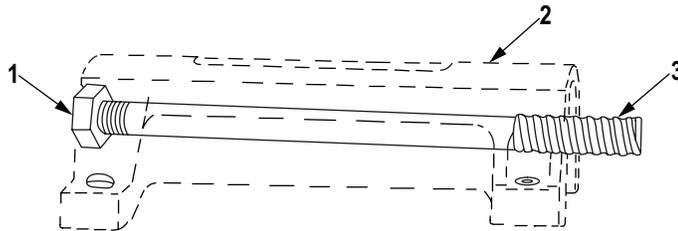


M2166M19

Figure 7. Feed Slide Assembly Disassembly.

**NOTE**

- Do NOT remove helical compression spring or guide rod unless part replacement is necessary.
  - If the helical compression spring will not slide off the guide rod while twisting the spring counterclockwise, apply heat to remove the rod.
7. Do NOT remove helical compression spring (Figure 8, Item 3) (smaller spring) from the guide rod (Figure 8, Item 1) unless spring replacement is necessary. Replace only when the secondary drive lever cannot be positioned to permit closing of the top cover.
  8. To remove guide rod (Figure 8, Item 1) from spring housing (Figure 8, Item 2), first heat the head of the guide rod with a propane torch to melt the locking compound. Then unscrew the guide rod, using a 5/8 inch box wrench or open-end wrench.
  9. Remove helical compression spring (Figure 8, Item 3) by twisting it off the guide rod.



M2167M19

Figure 8. Feed Slide Assembly Disassembly.

**END OF TASK**

**REPAIR OR REPLACEMENT**

1. With the feed slide assembly either removed or installed, press the feed pawls to verify crisp spring action. If either feed pawl is weak, install a new feed pawl flat spring on both sides.
2. Apply adequate lubrication.
3. Whenever the housing is removed for part replacement, measure the shuttle spring using a caliper. See (WP 0037) for critical dimension of the shuttle spring.
4. Replace defective parts as authorized by (WP 0059).

**END OF TASK****ASSEMBLY****NOTE**

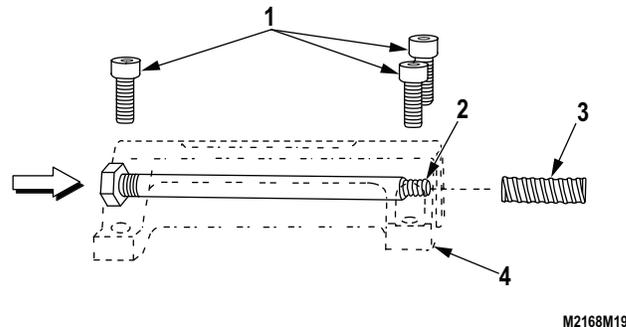
Perform Steps 1 through 10 only if helical compression spring or guide rod has been removed for replacement.

1. Before installing a new helical compression spring (Figure 9, Item 3), first determine how far the helical compression spring should protrude from the spring housing (Figure 9, Item 4).

**NOTE**

Use the old self-locking socket head screws until Step 8 has been completed.

2. Install self-locking socket head screws (Figure 9, Item 1) and guide rod (Figure 9, Item 2) (without helical compression spring) in the spring housing (Figure 9, Item 4) (refer to Steps 2 and 3).



M2168M19

*Figure 9. Feed Slide Assembly Assembly.*

3. Install feed slide assembly and adjustable secondary drive lever (WP 0024) in the gun. Ensure the bolt (Figure 10, Item 2) is forward. Rotate the top cover down on top of the receiver and manually move the feed slide pawls (Figure 10, Item 4) until the slot in the secondary drive lever (Figure 10, Item 1) and the post (Figure 10, Item 3) on the primary drive lever mate, and the top cover can be fully closed.

ASSEMBLY - Continued

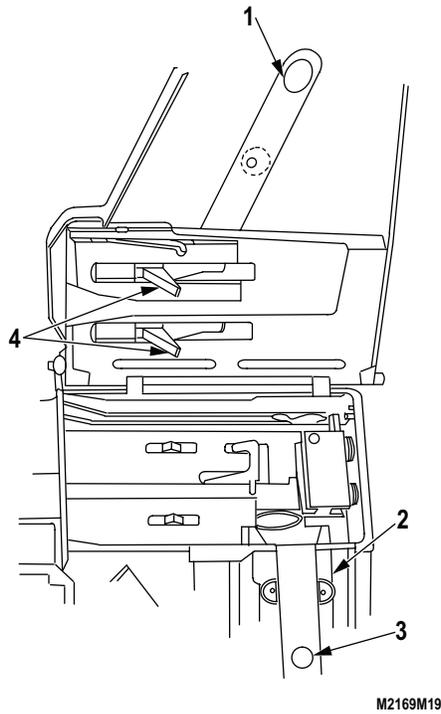
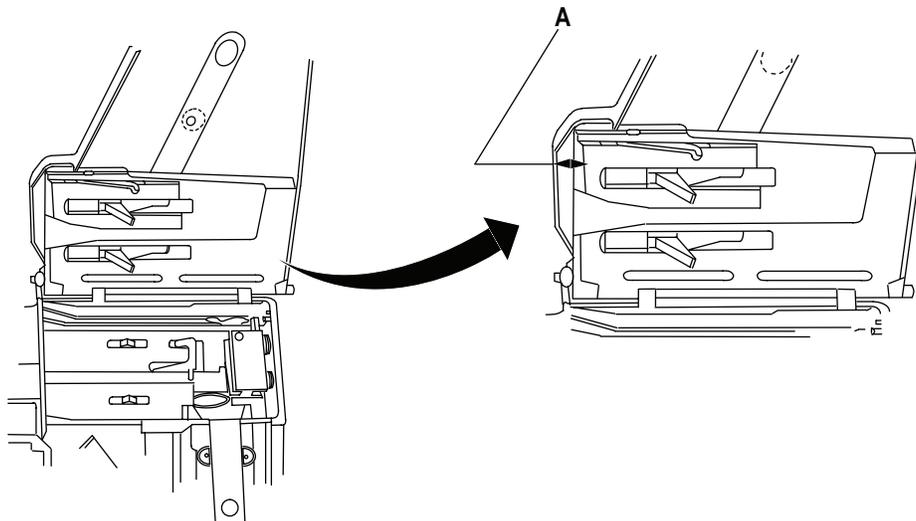


Figure 10. Feed Slide Assembly Assembly.

4. Without disturbing the feed slide assembly, open the top cover. Using dial calipers, measure distance "A" (from the interior wall of the top cover to the edge of the housing). This is the appropriate distance for protrusion of the helical compression spring.



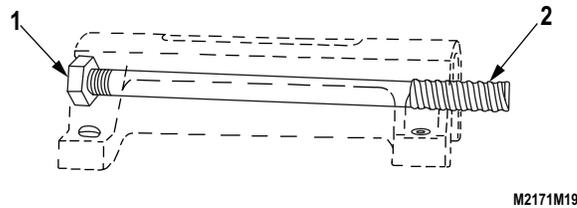
M2170M19

Figure 11. Feed Slide Assembly Assembly.

**ASSEMBLY - Continued****CAUTION**

Do not twist the helical compression spring too far onto the guide rod. It cannot be loosened without damage to the helical compression spring. Grip the helical compression spring where it contacts the guide rod to prevent damage to the helical compression spring.

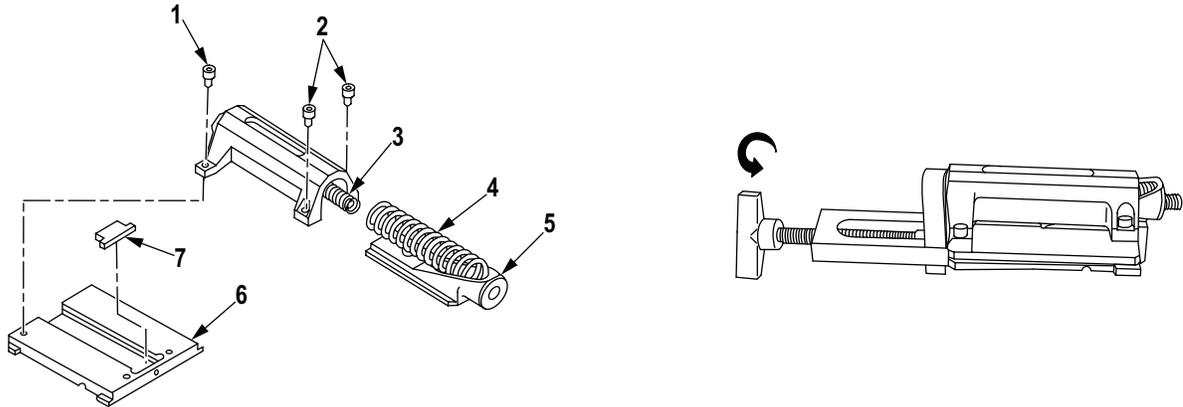
5. Remove feed slide assembly. Using a 5/8 inch wrench, disassemble the guide rod (Figure 12, Item 1) from the feed slide assembly. Using pliers, twist the rounded end of the new helical compression spring (Figure 12, Item 2) onto the end of the guide rod until the helical compression spring protrudes from the housing slightly farther than the distance "A" obtained in Step 4. Do not twist the helical compression spring too far (note CAUTION above).
6. Install guide rod (Figure 12, Item 1) into feed slide assembly. Install the assembly in the weapon and ensure that the top cover will close when the feed slide assembly is fully to the left and the bolt is forward. If the helical compression spring is too long to allow the cover to close, twist the helical compression spring clockwise to tighten it (note CAUTION above).
7. Remove guide rod (Figure 12, Item 1) from feed slide assembly" degrease guide rod threads and threaded hole in feed slide assembly. Apply locking compound on threads and install guide rod into the feed slide assembly. Tighten with 5/8 inch wrench.



*Figure 12. Feed Slide Assembly Assembly.*

8. Install stop/shim (Figure 13, Item 7) into the outer feed slide (Figure 13, Item 6). Insert the inner feed slide (Figure 13, Item 5) into the outer feed slide. Install shuttle spring (Figure 13, Item 4) in the inner feed slide. Insert the assembled guide rod and helical compression spring (Figure 13, Item 3) through the shuttle spring.
9. Place the assembled components in the feed slide tool, as shown. Turn the handle on the tool (squeeze the assembly and the tool together for better performance) until the screw holes are aligned. Insert a new self-locking socket head screw (Figure 13, Item 1), but do not tighten.
10. Turn the tool's handle until the two sets of screw holes (on the side with two screws) are aligned. Insert two new self-locking socket head screws (Figure 13, Item 2). Alternately tighten the three self-locking socket head screws (Figure 13, Items 1 and 2). Unscrew the tool and remove feed slide assembly.

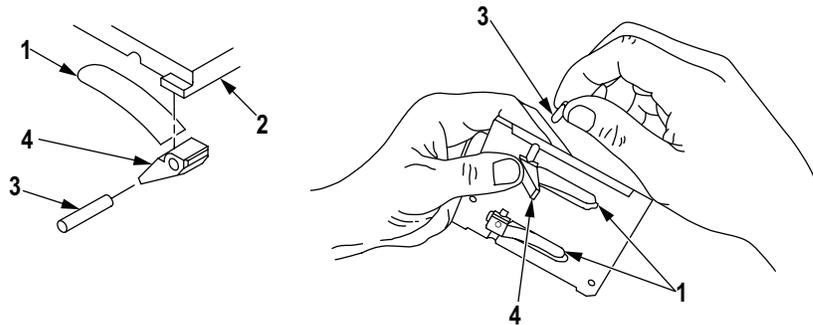
ASSEMBLY - Continued



M2172M19

Figure 13. Feed Slide Assembly Assembly.

11. Position the feed pawl flat spring (Figure 14, Item 1) into the indicated area of the outer feed slide (Figure 14, Item 2), as shown.
12. Holding the feed pawl (Figure 14, Item 4) and feed pawl flat spring (Figure 14, Item 1) in place, insert the headless straight pin (Figure 14, Item 3). Ensure the headless straight pin is equally extended on both sides. Follow this procedure for both feed pawls.



M2173M19

Figure 14. Feed Slide Assembly Assembly.

**ASSEMBLY - Continued**

13. Align the tabs on the feed slide assembly with the slots in the feed tray, and insert the feed slide assembly into the feed tray. Ensure exposed spring is on left side of receiver.
14. Perform function check (WP 0021) of the feed slide assembly following completion of maintenance and/or installation of any of the following new parts:
  - Feed slide assembly
  - Inner feed slide
  - Outer feed slide
  - Feed pawls
  - Secondary drive lever
  - Primary drive lever
  - Primary pawl
  - Bolt
  - Top cover
  - Feed tray

**END OF TASK****ADJUSTMENT****WARNING**

Ensure stow pin and depression stop are installed before attaching MK 64 mount to tripod.  
Refer to TM 9-1010-231-13&P.

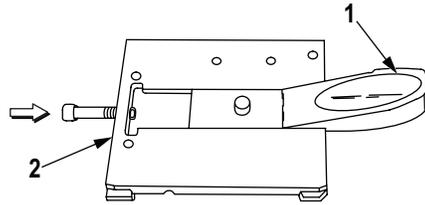
1. Mount the weapon on the MK 64 Gun Mount, MK 16 MOD 0 Stand, M3 Tripod Mount, or lay weapon on any flat clean surface.

**WARNING**

The feed slide spring and spring housing are held under pressure. Always use the feed slide tool to hold the spring before removing the screws. Failure to observe this warning will result in injury.

2. Remove secondary drive lever and the feed slide assembly from the feed tray. Remove spring housing from the feed slide assembly, and separate the components.
3. With the feed slide stop/shim removed, insert the feed slide stop kit assembly screw (MS 16997-38) through the threaded hole in the outer feed slide (Figure 15, Item 2).
4. Turn the inner feed slide (Figure 15, Item 1) around and install it backward as far as possible into the outer feed slide (Figure 15, Item 2).

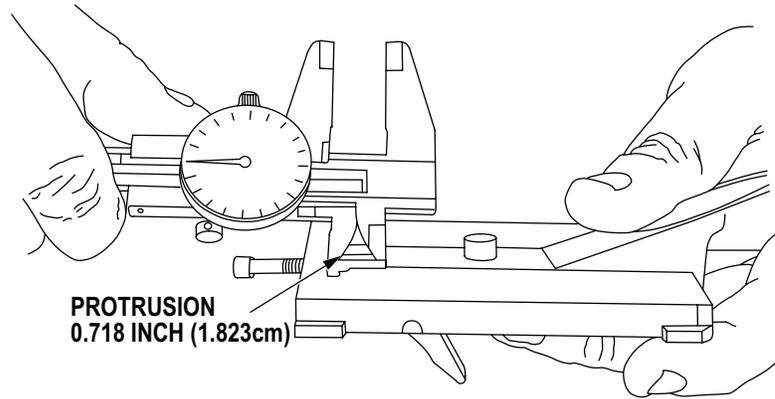
ADJUSTMENT - Continued



M2177M19

Figure 15. Adjustment of Feed Slide Assembly.

5. Using the 9/64 inch hex head screwdriver bit in the socket wrench handle, tighten the feed slide stop kit assembly screw until the feed slide stop kit assembly screw protrudes into the outer feed slide about 0.718 inch (1.823 cm). Measure the distance using a dial caliper, keeping the blades as close to the screw as possible. This is only an initial measurement. It is not necessarily the size of feed slide stop/shim to select in Step 23.



M2178M19

Figure 16. Adjustment of Feed Slide Assembly.

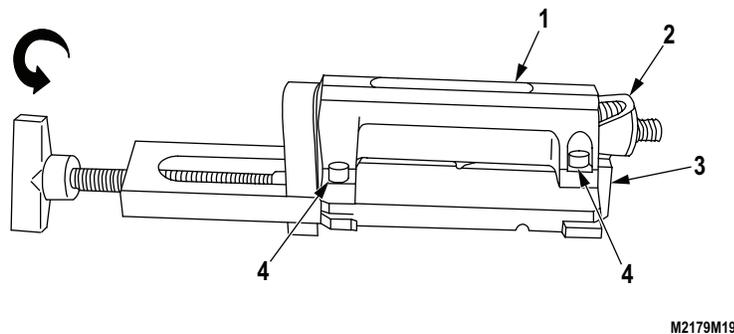
**ADJUSTMENT - Continued**

6. Leaving the feed slide stop kit assembly screw in place, turn the inner feed slide (Figure 17, Item 2) around and install it properly. Install components (except the feed slide stop/shim) back in the spring housing (Figure 17, Item 1).

**NOTE**

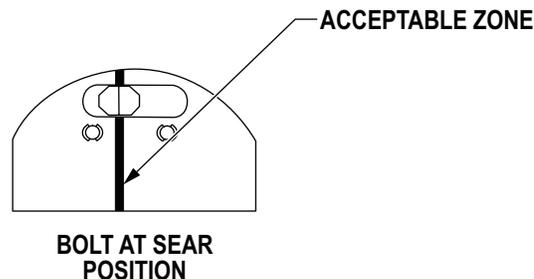
Use the old self-locking socket head screws until Steps 12 through 33 have been successfully performed. This saves screws and makes the job easier.

7. Compress the feed slide assembly in the feed slide tool as far as possible. If the feed slide assembly cannot be compressed far enough to install self-locking socket head screws (Figure 17, Item 4) onto the housing, loosen the cap screw in the outer feed slide (Figure 17, Item 3) little by little and tighten the tool until the screw holes in the spring housing (Figure 17, Item 1) and outer feed slide are aligned. Insert and tighten the self-locking socket head screws. Release pressure on the tool and remove.
8. Install feed slide assembly back into the feed tray. Install adjustable secondary drive lever.



*Figure 17. Adjustment of Feed Slide Assembly.*

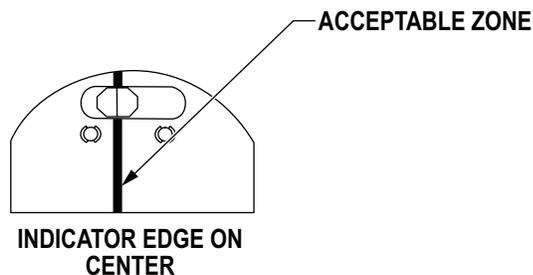
9. Perform inspection Steps 1 through 6.
10. Viewing the feed adjustment tool through the ogive plunger hole, the gray indicator edge should be to the right of the white paint line.



*Figure 18. Adjustment of Feed Slide Assembly.*

11. Back out the feed slide stop kit assembly screw until the indicator edge is centered in the white paint line. Do not make any further adjustments to the feed slide stop kit assembly screw.

## ADJUSTMENT - Continued

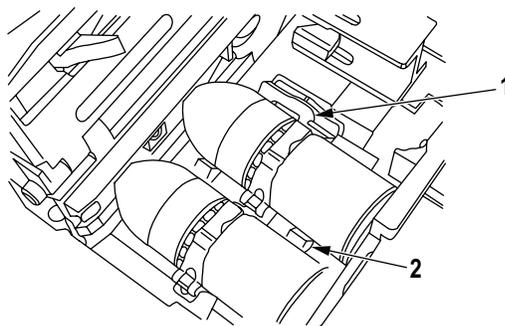


M2181M19

Figure 19. Adjustment of Feed Slide Assembly.

**WARNING**

- Do not allow the top cover to slam shut from raised position when loading. Hand injury or equipment damage may result.
  - Do not relink or fire ammunition that has been cycled through the weapon.
12. Open the top cover. Place the bolt in the forward position. Slide two dummy rounds, female link first, into the ammunition feed area of the receiver, between the secondary pawl (Figure 20, Item 2) and primary pawl (Figure 20, Item 1). The left-hand side of the round should be snug against the secondary pawl.



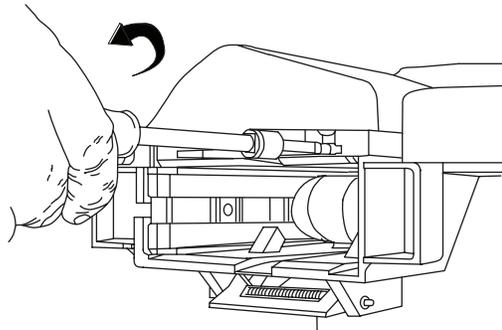
M2182M19

Figure 20. Adjustment of Feed Slide Assembly.

**ADJUSTMENT - Continued****CAUTION**

If top cover will not close, do not force it. Ensure the round is well seated between the pawls. Align the secondary drive lever post with the primary drive lever pivot post. Gently pull the protruding end of the feed slide stop kit assembly screw to the left, using pliers, until the cover closes.

13. Move the feed slide assembly fully to the left. Ensure that the bolt is forward; then close the cover, observing the CAUTION.
14. Charge the gun once to move the round to the right in the feeder.
15. Place the weapon thumb safety on "S" (SAFE).
16. Go to the front of the receiver and check the primary pawl located under the receiver feed tray area. Observe whether the primary pawl is up or down. If down, go to Step 17. If up, screw in clockwise and repeat Steps 1 through 12 until the primary pawl does not click up during Steps 10 through 12. Then go on to Step 17.
17. Without opening the top cover, slowly loosen the feed slide stop kit assembly screw until the primary pawl clicks into the up position. The primary pawl should now hold the dummy rounds in place, next to the round positioning block.
18. Loosen the feed slide stop kit assembly screw two full turns.

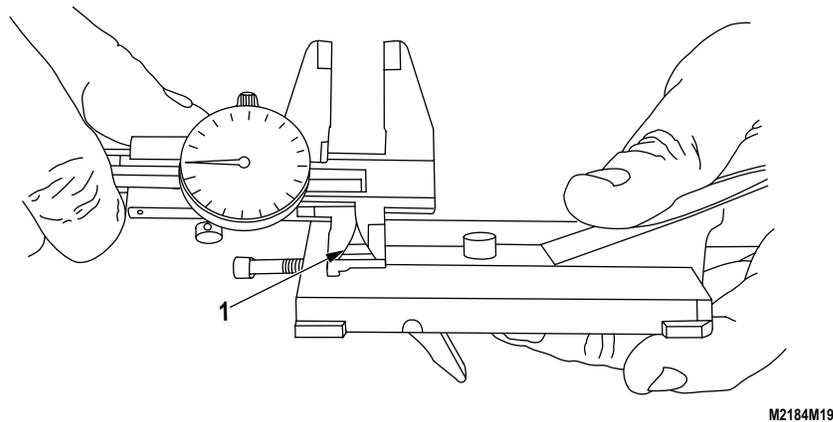


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Figure 21. Adjustment of Feed Slide Assembly.

**ADJUSTMENT - Continued**

19. Open the cover. Remove the round. Ease the bolt forward. Open the top cover and remove feed slide assembly (WP 0033). Do not disturb the feed slide stop kit assembly screw.
20. Using the feed slide tool, compress the spring housing. Alternately loosen and remove socket head screws on the spring housing.
21. Separate the internal components. Remove inner feed slide, turn it around, and install it backward until it contacts the tip of the screw.
22. Using the dial caliper, measure the protrusion of the feed slide stop kit assembly screw (Figure 22, Item 1) into the cavity of the outer feed slide. Keep the caliper blades as close to the feed slide stop kit assembly screw as possible to get an accurate measurement. Note the reading. This will be used to select the proper length of feed slide stop/shim.
23. Select a feed slide stop/shim which is the next smaller size than the dimension obtained in Step 22.
24. Remove feed slide stop kit assembly screw (Figure 22, Item 1). Install feed slide stop/shim into the slot in the outer feed slide.



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*Figure 22. Adjustment of Feed Slide Assembly.*

25. Install inner feed slide in its proper position.
26. Assemble the feed slide assembly using three new self-locking socket head screws.
27. Install feed slide assembly into the feed tray of the weapon. Install secondary drive lever and the feed slide assembly with feed tray into the top cover.
28. With the bolt forward, install dummy rounds between the secondary and primary pawls.

**ADJUSTMENT - Continued****CAUTION**

If top cover will not close, do not force it. Ensure that the secondary drive lever post and primary drive lever post are properly aligned, and the round is well seated between the pawls.

29. Ensure that the feed slide assembly is to the left. Attempt to close the top cover. If the top cover will not close, ensure the bolt is forward, and follow the CAUTION.
30. Charge the weapon once, slowly. Listen for the click of the primary pawl snapping into position. This should occur just before the bolt has reached the limit of its rearward travel. Pull the bolt all the way to locked position.
31. Open top cover and remove the dummy rounds.
32. Release the bolt forward, slowly.
33. Perform the complete function check in PMCS (WP 0021), using at least six linked dummy rounds. Ensure that all six rounds are cycled through the weapon without binding or failure to feed.
34. Verify correct adjustment by performing inspection Steps 1 through 7.

**END OF TASK****FOLLOW-ON MAINTENANCE**

1. Install feed slide assembly on weapon.
2. Install secondary drive lever assembly on weapon (WP 0024).
3. Install ogive plunger assembly on receiver (WP 0027).
4. Install alignment guide on receiver (WP 0031).

**END OF TASK****END OF WORK PACKAGE**

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**FIELD MAINTENANCE  
REAR SIGHT ASSEMBLY MAINTENANCE**

---

**INITIAL SETUP:****Tools and Special Tools**

Bench Block (WP 0090, Table 1, Item 4)  
Combination Tool (WP 0090, Table 1, Item 11)  
Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 37)  
Tool Set, Intermediate (Marine Corps Only) (WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps Only) (WP 0090, Table 1, Item 35)

**Materials/Parts**

Cloth, Abrasive Crocus (WP 0089, Table 1, Item 7)

**Materials/Parts (cont.)**

Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 11)  
Lubricating Oil (LSAT) (WP 0089, Table 1, Item 6)  
Rivet, Solid Scale (WP 0076, Figure 18, Item 15)  
Qty: 2

**References**

WP 0047  
WP 0059

**DISASSEMBLY**

**NOTE**

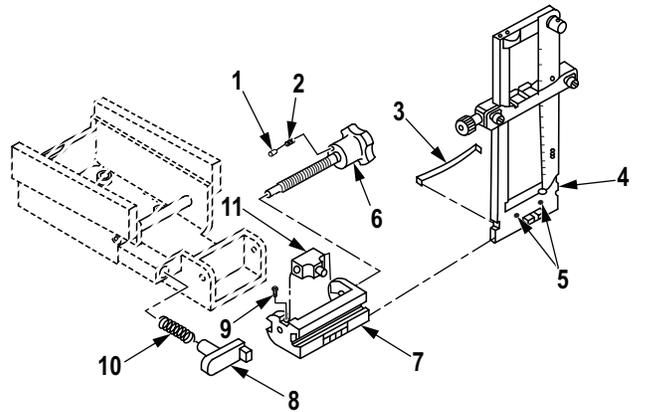
Do not routinely disassemble. Disassemble only for boresighting. Do not remove any of the sight components for part replacement. If disassembled, do not mix components with other sight components. Part interchangeability is not assured. If the scale or socket head cap screws are removed, the weapon must be boresighted.

1. Punch out the slotted spring pin (Figure 1, Item 9) through the bottom of the frame base (Figure 1, Item 7).
2. Turn the windage screw (Figure 1, Item 6) counterclockwise to remove it. Also remove straight pin (Figure 1, Item 1) and the helical compression spring (Figure 1, Item 2) from the base of the windage screw.
3. Remove frame base (Figure 1, Item 7) with the frame assembly (Figure 1, Item 4) attached. Slide the frame assembly from the frame base.
4. Lift out the windage screw key (Figure 1, Item 11).
5. Remove sight lock (Figure 1, Item 8) and helical compression spring (Figure 1, Item 10).
6. Remove leaf spring (Figure 1, Item 3) from the frame assembly (Figure 1, Item 4).

**NOTE**

Do not remove the two headless setscrews unless they are loose or damaged. Replace both setscrews if one or both is loose or missing.

7. If loose or damaged, remove two headless setscrews (Figure 1, Item 5) from the frame assembly (Figure 1, Item 4).

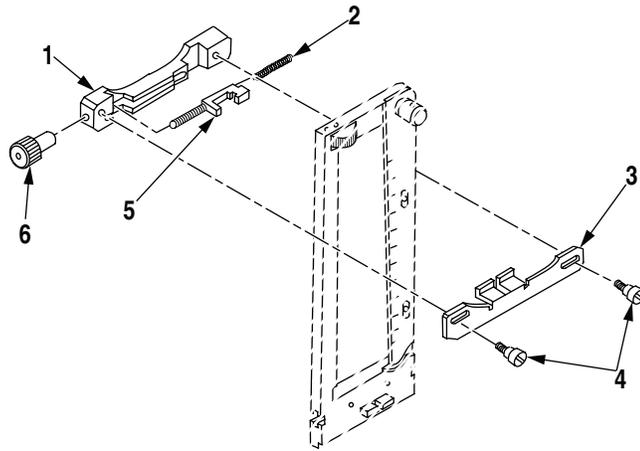


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*Figure 1. Rear Sight Assembly Disassembly.*

8. Twist the retainer plain nut (Figure 2, Item 6) counterclockwise to remove it.
9. Unscrew the two shoulder screws (Figure 2, Item 4). Separate the aperture carrier (Figure 2, Item 1) from the rear sight slide (Figure 2, Item 3).
10. Separate the aperture retainer (Figure 2, Item 5) and helical spring (Figure 2, Item 2) from the aperture carrier (Figure 2, Item 1).

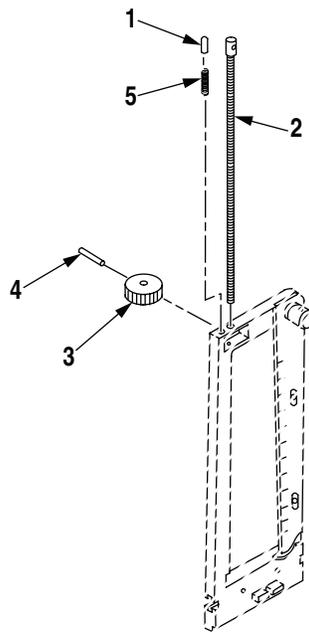
DISASSEMBLY - Continued



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Figure 2. Rear Sight Assembly Disassembly.

11. Punch out the slotted spring pin (Figure 3, Item 4) from the elevating wheel (Figure 3, Item 3).
12. Push upward on the screw (Figure 3, Item 2). Slide out the elevating wheel (Figure 3, Item 3), the straight pin (Figure 3, Item 1), and helical spring (Figure 3, Item 5).

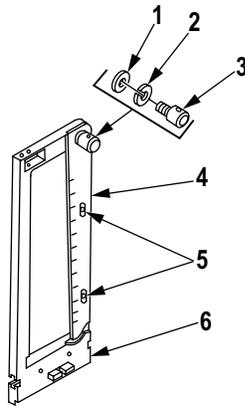


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Figure 3. Rear Sight Assembly Disassembly.

**DISASSEMBLY - Continued**

13. Lay the frame assembly (Figure 4, Item 6) with the scale side down on a bench block. Punch out the two solid scale rivets (Figure 4, Item 5) from the scale (Figure 4, Item 4). Discard solid scale rivets.
14. Insert a 3/32 inch punch into the scale lock screw (Figure 4, Item 3) and twist counterclockwise to remove. Lift out the lockwasher (Figure 4, Item 2) and flat washer (Figure 4, Item 1).
15. Lift off the scale (Figure 4, Item 4).



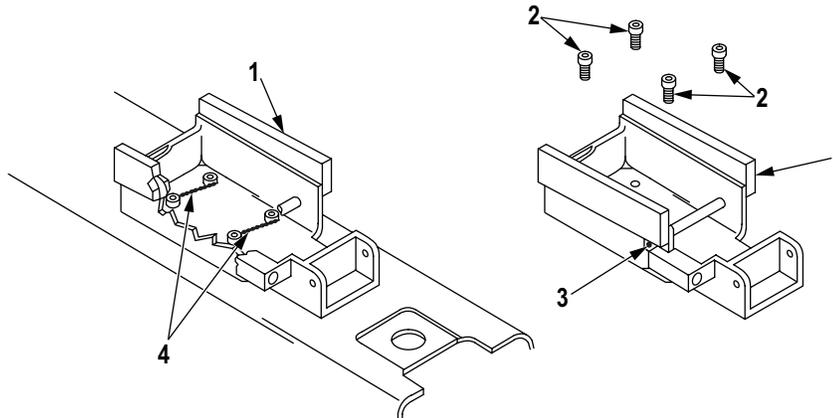
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Figure 4. Rear Sight Assembly Disassembly.

**NOTE**

Do not remove the rear sight base hinge support unless a new one must be installed. Boresight (WP 0047) after assembly.

16. Clip the non-electrical wire (Figure 5, Item 4) on the socket head cap screws (Figure 5, Item 2) and remove the non-electrical wire.
17. Remove four socket head cap screws (Figure 5, Item 2). Lift off rear sight base hinge support (Figure 5, Item 1). Do not remove cap screw (Figure 5, Item 3). Replace if missing.



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Figure 5. Rear Sight Assembly Disassembly.

**END OF TASK**

**REPAIR OR REPLACEMENT**

1. Ensure all moving parts operate freely without binding. Lubricate as necessary.
2. Remove external rust with Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT) and crocus cloth.
3. Replace defective parts as authorized by (WP 0059).

**END OF TASK****ASSEMBLY****NOTE**

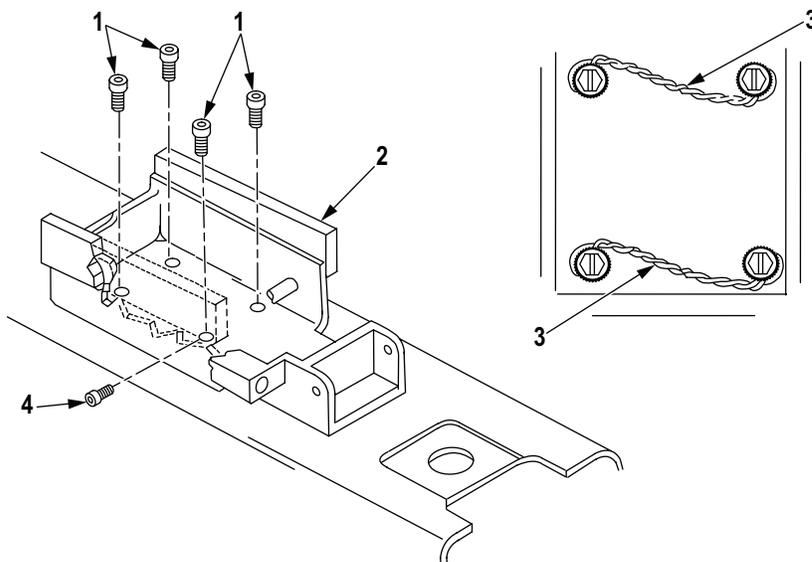
If the sight or socket head cap screws are removed, the weapon must be boresighted (WP 0047).

1. Align the four holes in the rear sight base hinge support (Figure 6, Item 2) with those in the top of the receiver.
2. Insert and lightly tighten the four socket head cap screws (Figure 6, Item 1).
3. Boresight (WP 0047) the gun prior to safety wiring.

**NOTE**

The non-electrical wire can be applied parallel (as shown) or perpendicular to the gun's centerline.

4. Apply non-electrical wire (Figure 6, Item 3) from right to left to each set of socket head cap screws.
5. If missing, insert and tighten new cap screw (Figure 6, Item 4). Stake the cap screw to the inside surface of the rear sight base hinge support (Figure 6, Item 2).



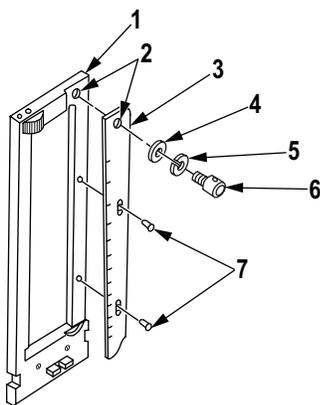
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Figure 6. Rear Sight Assembly Assembly.

**ASSEMBLY - Continued****NOTE**

Be sure to install new solid scale rivets if the old rivets were removed. Boresight (WP 0047) weapon after assembly.

6. Position the scale (Figure 7, Item 3) on the frame assembly (Figure 7, Item 1) so the holes (Figure 7, Item 2) for the scale lock screw are aligned.
7. Slide the lockwasher (Figure 7, Item 5), then the flat washer (Figure 7, Item 4) over the tip of the scale lock screw (Figure 7, Item 6).
8. Install scale lock screw with washers into the hole in the top of the scale. Tighten the scale lock screw using a 3/32 inch punch.
9. Insert two new solid scale rivets (Figure 7, Item 7) through the scale side of the frame assembly (Figure 7, Item 1). Lay the frame assembly, with scale side down, on a bench block or anvil. Pound the stems of the solid scale rivets flat.

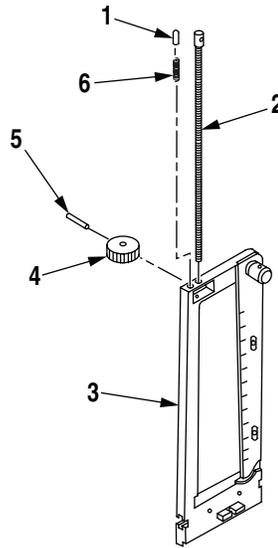


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Figure 7. Rear Sight Assembly Assembly.

**ASSEMBLY - Continued**

10. Insert the helical spring (Figure 8, Item 6) and straight pin (Figure 8, Item 1) into the top of the frame assembly (Figure 8, Item 3).
11. Slide the elevating wheel (Figure 8, Item 4) into the frame assembly (Figure 8, Item 3).
12. Insert the screw (Figure 8, Item 2) through the top of the frame assembly (Figure 8, Item 3), through the hole in the elevating wheel (Figure 8, Item 4), and downward until the top of the screw is flush with the top of the frame assembly.
13. Align the pinholes in the elevating wheel (Figure 8, Item 4) and screw (Figure 8, Item 2). Tap in the slotted spring pin (Figure 8, Item 5), until the slotted spring pin is flush on both sides.

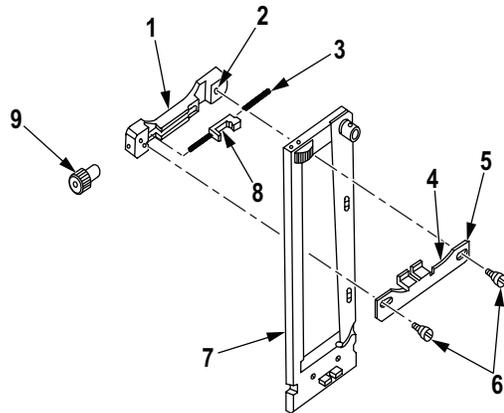


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*Figure 8. Rear Sight Assembly Assembly.*

**ASSEMBLY - Continued**

14. Install aperture retainer (Figure 9, Item 8) into the aperture carrier (Figure 9, Item 1). Position the aperture carrier at the rear of the frame assembly (Figure 9, Item 7).
15. Place one end of the helical spring (Figure 9, Item 3) in the right-hand side of the aperture carrier (Figure 9, Item 1), against the aperture retainer (Figure 9, Item 8). Hold the other end of the helical spring up at approximately 45 degrees. Lower the rear sight slide (Figure 9, Item 4) down toward the aperture carrier until the helical spring contacts the tang on the rear sight slide. Lower the rear sight slide and helical spring together into the aperture carrier.
16. Hold the aperture carrier (Figure 9, Item 1) and rear sight slide (Figure 9, Item 4) compressed while installing the two shoulder screws (Figure 9, Item 6) through the slots (Figure 9, Item 5) and holes (Figure 9, Item 2). Tighten the shoulder screws.
17. Insert and tighten the retainer plain nut (Figure 9, Item 9) into the left side of the aperture carrier (Figure 9, Item 1).



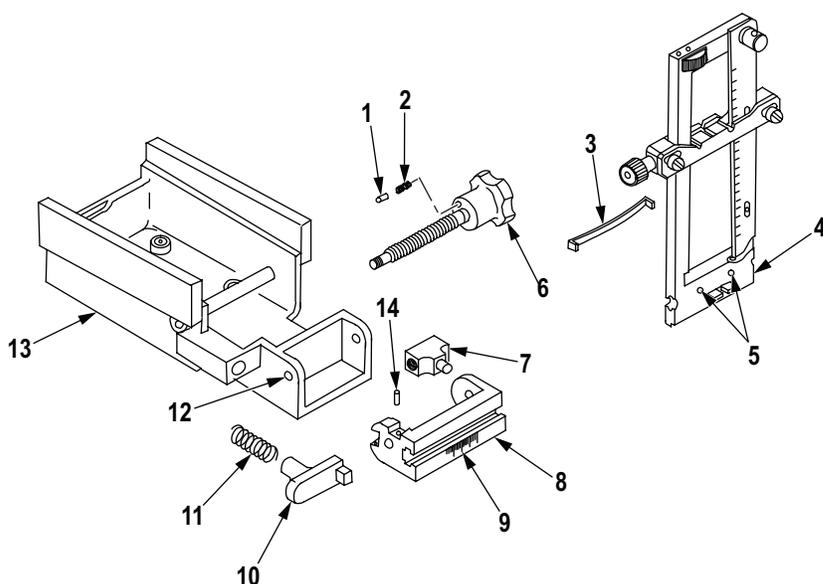
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*Figure 9. Rear Sight Assembly Assembly.*

18. If removed, install two new headless setscrews (Figure 10, Item 5) in the frame assembly (Figure 10, Item 4) and tighten with a jeweler's flat-blade screwdriver. Stake each setscrew.
19. Install the leaf spring (Figure 10, Item 3) onto the frame assembly (Figure 10, Item 4) (side without the scale and battlesight). Slide the frame assembly, with spring attached, onto the frame base (Figure 10, Item 8). (Ensure the windage scale (Figure 10, Item 9) on the frame base is on the bottom.)
20. Insert the helical compression spring (Figure 10, Item 11) and sight lock (Figure 10, Item 10) into the rear sight base hinge support (Figure 10, Item 13).

**ASSEMBLY - Continued**

21. Position the windage screw key (Figure 10, Item 7) in the slot in the frame base (Figure 10, Item 8).
22. Insert the frame base (Figure 10, Item 8) with frame assembly (Figure 10, Item 4) into the rear sight base hinge support (Figure 10, Item 13), with pinholes (Figure 10, Item 12) aligned on each side.
23. With the frame assembly (Figure 10, Item 4) centered in the frame base (Figure 10, Item 8), insert the helical compression spring (Figure 10, Item 2) and straight pin (Figure 10, Item 1) into the head of the windage screw (Figure 10, Item 6). Insert the windage screw from right to left through the rear sight base hinge support (Figure 10, Item 13), frame base, and windage screw key (Figure 10, Item 7). Hold the straight pin compressed and hold the windage screw key in place. Tighten the windage screw until flush with the left side of the rear sight base hinge support.
24. Push the windage screw (Figure 10, Item 6) to align the pinholes. Insert the slotted spring pin (Figure 10, Item 14) into the top of the frame base (Figure 10, Item 8) and tap it in, until both ends are flush.
25. Rotate the windage screw (Figure 10, Item 6) to zero on the windage scale (Figure 10, Item 9) before attempting to lower the frame assembly (Figure 10, Item 4).



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*Figure 10. Rear Sight Assembly Assembly.***END OF TASK****END OF WORK PACKAGE**



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**FIELD MAINTENANCE**  
**ROUND REMOVAL TOOL DISASSEMBLY, REPAIR OR REPLACEMENT, ASSEMBLY**

---

**INITIAL SETUP:****Tools and Special Tools**

Combination Tool (WP 0090, Table 1, Item 11)  
Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Set, Intermediate (WP 0090, Table 1, Item 32)  
Tool Set, Organizational (WP 0090, Table 1, Item 35)

**Materials/Parts**

Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)

**Materials/Parts (cont.)**

Lubricating Oil (LSAT) (WP 0089, Table 1, Item 12)  
Pin, Lock (WP 0081, Figure 23, Item 6)  
Rag, Wiping (WP 0089, Table 1, Item 13)

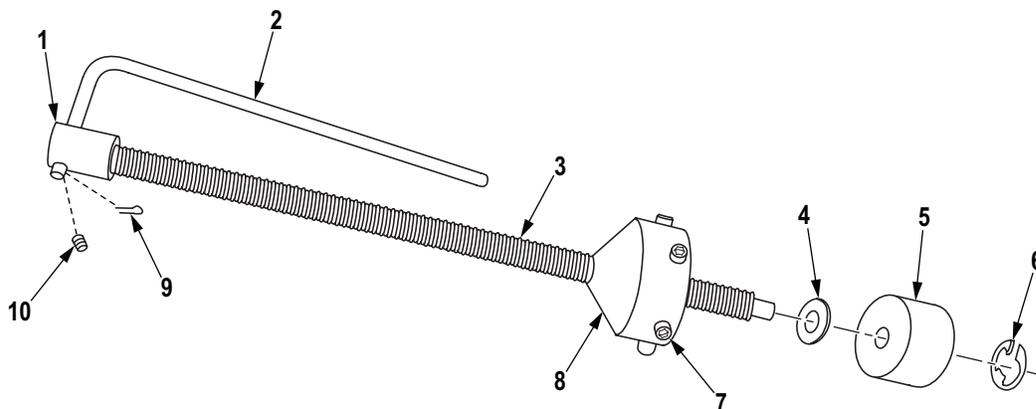
**References**

WP 0059

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**DISASSEMBLY**

1. Remove retaining ring (Figure 1, Item 6).
2. Separate cup (Figure 1, Item 5) and brass washer (Figure 1, Item 4) from shouldered shaft (Figure 1, Item 3).
3. Remove cotter pin (Figure 1, Item 9) and discard.
4. Slide handle (Figure 1, Item 2) from drive rod (Figure 1, Item 1).
5. Unscrew and remove setscrew (Figure 1, Item 10) from the drive rod (Figure 1, Item 1). Separate drive rod from shouldered shaft (Figure 1, Item 3).
6. Remove shaft collar (Figure 1, Item 8) from shouldered shaft (Figure 1, Item 3).
7. Unscrew and remove five socket capscrews (Figure 1, Item 7) from shaft collar.



M2228M19

Figure 1. Round Removal Tool Disassembly.

**END OF TASK****REPAIR OR REPLACEMENT**

1. Visually inspect for broken or missing parts.
2. Lightly lubricate with Grease, Molybdenum Disulfide (GMD) or lubricating oil (LSAT).
3. Remove rust with GMD or LSAT and wiping rag.
4. Replace defective parts as authorized by (WP 0059).

**END OF TASK**

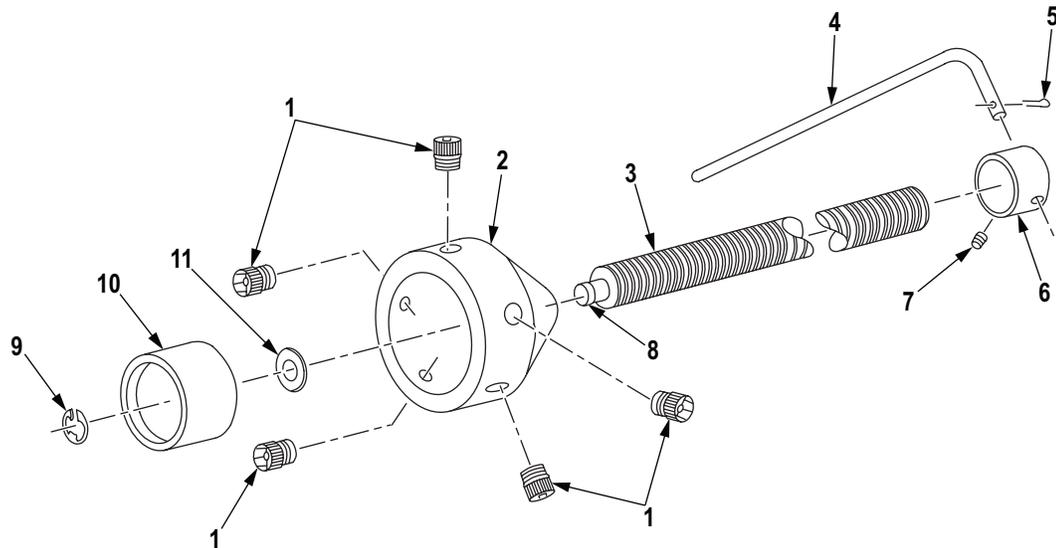
**ASSEMBLY**

1. Screw the five socket capscrews (Figure 2, Item 1) into the shaft collar (Figure 2, Item 2) until each is fully seated.
2. Install shaft collar onto shouldered shaft (Figure 2, Item 3) with the concave surface of shaft collar pointed toward the retaining ring groove (Figure 2, Item 8).
3. Seat brass washer (Figure 2, Item 11) and cup (Figure 2, Item 10) onto shouldered shaft (Figure 2, Item 3) and install retaining ring (Figure 2, Item 9).

**NOTE**

Ensure setscrew hole is aligned with the detent on the shouldered shaft when installing drive rod.

4. Place the drive rod (Figure 2, Item 6) onto the shouldered shaft (Figure 2, Item 3) and insert and tighten the setscrew (Figure 2, Item 7).
5. Slide handle (Figure 2, Item 4) through hole in drive rod (Figure 2, Item 6) and install new cotter pin (Figure 2, Item 5).



M2229M19

Figure 2. Round Removal Tool Assembly.

**END OF TASK****END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
FEED OPERATION FUNCTION CHECK INSPECTION OF INSTALLED ITEMS**

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**INITIAL SETUP:****Tools and Special Tools**

Linked Dummy Rounds (2) (WP 0090, Table 1,  
Item 14)  
MK 64 Mount, Gun (WP 0090, Table 1, Item 21)  
Mount, Tripod, Machine Gun (WP 0090, Table 1,  
Item 22)  
Table Stand (WP 0090, Table 1, Item 29)

**References (cont.)**

TM 9-1010-231-13&P  
WP 0003  
WP 0041

**References**

TM 9-1005-245-13&P

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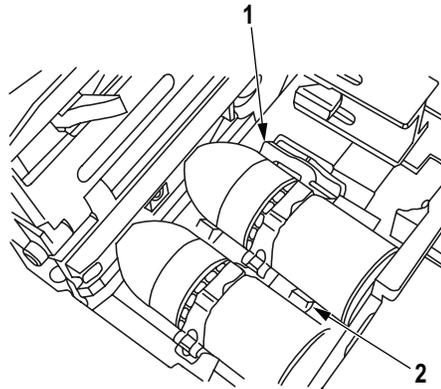
**INSPECTION****WARNING**

- Before performing any procedure, ensure the weapon is clear of any ammunition. Performing maintenance on a loaded weapon can lead to unexpected firing. Failure to comply may result in injury to personnel or damage to equipment.
  - Ensure stow pin and depression stop are installed before attaching MK 64 mount to tripod. Refer to TM 9-1010-231-13&P.
  - Do not allow the top cover to slam shut from raised position when loading. Hand injury or equipment damage may result.
1. Mount the assembled weapon on the MK 64 Machine Gun Mount, M3 tripod, or table stand (TM 9-1010-231-13&P/TM 9-1005-245-13&P).
  2. Open the top cover.
  3. Place the bolt in the forward position.
  4. Slide two dummy rounds, female link first, across the secondary pawl (Figure 1, Item 2). The round should be between the secondary pawl and primary pawl (Figure 1, Item 1).

**CAUTION**

If top cover will not close, do not force it. Ensure the round is well seated between the pawls. Adjust the feed slide assembly until the cover will close.

5. Position the feed slide assembly fully to the left.
6. Close cover, observing the CAUTION.



M2230M19

Figure 1. Feed Operation Function Inspection.

**INSPECTION - Continued**

7. Charge the weapon slowly (WP 0003). Place the thumb safety on "S" (SAFE).
8. Go to the front of the receiver and check the primary pawl, located under the receiver feed tray area. Check the primary pawl to ensure it is flush with the receiver. If so, then the primary pawl is down (flush) in the feed area. For a quick check, perform Step 6. If the primary pawl is protruding downward, perform Step 7.
9. If the primary pawl is up, open the top cover and remove the rounds. Place the thumb safety on "F" (FIRE). Ride the bolt forward. Slide the round between the pawls as in Step 2. Move the feed slide assembly fully to the left. Close the top cover.
10. Charge the weapon slowly until the primary pawl clicks into the up position. Return one charger handle forward to the locked position. Hold the other charger handle firmly and ride the bolt forward slowly about 3 3/4 inches (9.525 cm) (or the length of one charger arm). Check the round positioning block tabs, which protrude from the right receiver wall; they should retract inward approximately the width of the tab heads. If this happens, the feed slide is adjusted correctly. If this does not happen, perform feed slide adjustment (WP 0041).

**END OF TASK****END OF WORK PACKAGE**



**FIELD MAINTENANCE  
MK19 MACHINE GUN – CLEANING**

---

**INITIAL SETUP:****Tools and Special Tools**

Brush Assembly, Bore (WP 0090, Table 1, Item 7)  
Rod, Cleaning, Small Arms (WP 0090, Table 1, Item 27)

**References**

TM 9-1010-230-10  
WP 0089

**Materials/Parts**

Cleaning Compound, Rifle Bore (WP 0089, Table 1, Item 5)  
Cleaning Compound, Solvent (WP 0089, Table 1, Item 6)

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**CLEANING****WARNING**

- Cleaning compound solvent is flammable and toxic and must be kept away from open flames and used in a well-ventilated area. Use of rubber gloves is necessary to protect the skin when washing parts.
- To avoid injury, appropriate eye protection is recommended when cleaning the weapon and/or its parts.

**CAUTION**

Do not immerse the following assemblies and components in cleaning compound solvent:

Cam followers  
 Bolt buffer assemblies (while assembled)  
 Bolt buffer  
 Sear buffer  
 Ogive plunger assembly (while assembled)  
 Receiver buffer body (while assembled)

**NOTE**

- Make sure the weapon is clean and lubricated before reissuing. Observe the instructions and CAUTIONS for cleaning and lubricating each assembly. A list of cleaning and lubrication materials is provided in (WP 0089).
  - Used/waste grease, sealing compounds, cleaning compounds, solvents, and lubricants as well as items contaminated with these substances (such as cleaning rags) must be disposed of properly. See Hazardous Waste Disposal Information in (WP 0001) for more information.
1. Prior to cleaning, field strip the weapon. Disassemble only those assemblies, or parts or assemblies, listed in Step 4. Apply the cleaning materials listed in (WP 0089) as instructed for each assembly or component. Observe the CAUTION above for immersion of certain components.
  2. Do NOT disassemble the following items. Immerse the entire assembly or component in cleaning compound solvent. Dry thoroughly before lubricating.
    - a. Backplate pin assembly
    - b. Secondary drive lever
    - c. Top cover assembly
    - d. Feed tray, feed tray pawl, and pawl spring
    - e. Vertical cam assembly
    - f. LH and RH gun charger assemblies
    - g. Alignment guide assembly
    - h. Round positioning block
    - i. Receiver (with secondary pawl, pawl rod, helical spring, and rear sight assembly attached)
    - j. Barrel and flash suppressor
  3. Clean the bore and chamber, using a caliber .50 cleaning rod (in five sections), the 40 mm borebrush adapter assembly and bore brush, and Rifle Bore Cleaner (RBC).

**CLEANING - Continued**

4. Disassemble the following assemblies and clean as instructed below. Do NOT immerse in cleaning compound solvent any of the components listed in the CAUTION at the beginning of this work package.
  - a. Bolt and backplate assembly. Remove all components from the bolt except the shoulder pin, pawl, and helical compression spring. Do not remove the backplate weldment from the control grip assembly. Immerse all components (except those listed in the CAUTION at the beginning of this work package) in cleaning compound solvent. Dry thoroughly before lubricating.
  - b. Feed slide assembly. Do not immerse the feed slide without first disassembling. Remove only the feed pawls, headless straight pin, and feed pawl flat spring. Do not remove the three self-locking socket head screws. Immerse feed pawls, headless straight pin, and feed pawl flat spring in cleaning compound solvent. Dry thoroughly before lubricating.
  - c. Ogive plunger assembly. Do not immerse while assembled (see CAUTION at the beginning of the work package). Disassemble it first; then immerse all parts in cleaning compound solvent. Dry thoroughly and lubricate before assembly.
  - d. Sear assembly. Do not immerse the assembled receiver buffer bodies with internal components in cleaning compound solvent (see CAUTION at the beginning of this work package); disassemble, then immerse them in cleaning compound solvent. Dry thoroughly before lubricating.
  - e. Primary pawl, pawl rod, and pawl spring. Remove from the receiver. Immerse all parts in cleaning compound solvent. Dry thoroughly before lubricating.
  - f. Feed throat. Remove from receiver. Clean all accessible surfaces with a rag.

**END OF TASK****END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
LUBRICATION INSTRUCTIONS**

---

**INITIAL SETUP:****Materials/Parts**

Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)  
Lubricating Oil, Weapons (LAW) (WP 0089, Table 1, Item 10)

**Materials/Parts (cont.)**

Lubricating Oil (LSA) (WP 0089, Table 1, Item 11)  
Lubricating Oil, Semifluid w/Teflon (LSAT) (WP 0089, Table 1, Item 12)  
Rag, Wiping (WP 0089, Table 1, Item 13)

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**LUBRICATION****CAUTION**

- Do not lubricate the internal bolt buffer assemblies. All parts must be clean and dry. Otherwise, excess recoil (hard firing) will occur upon firing, causing parts damage.
- CLP is NOT authorized for use on the MK19. If it is used, damage to the sear buffer and cam followers will occur.

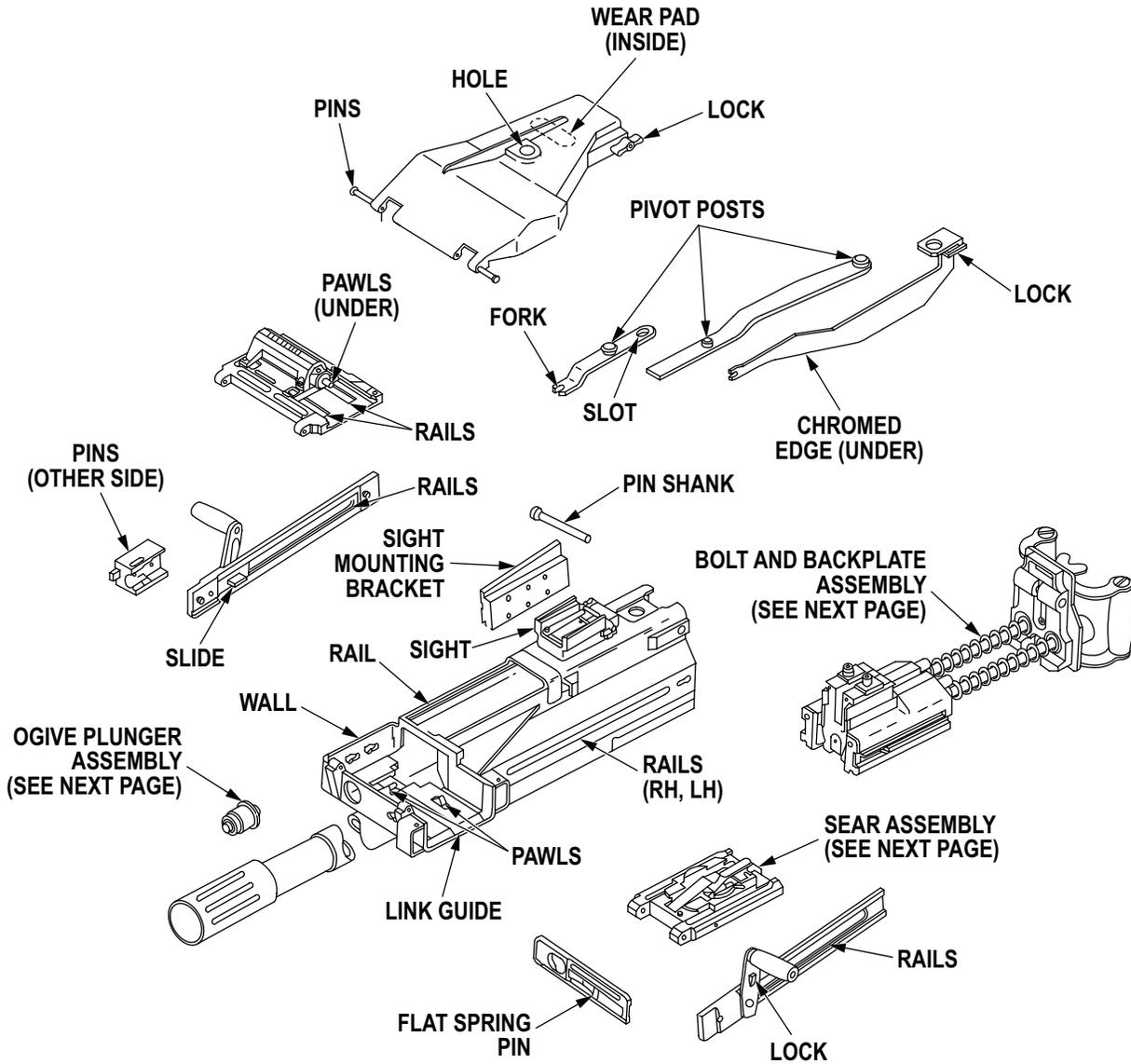
**NOTE**

Used/waste grease, sealing compounds, cleaning compounds, solvents, and lubricants as well as items contaminated with these substances (such as cleaning rags) must be disposed of properly. See Hazardous Waste Disposal Information (WP 0001) for more information.

**Normal Conditions**

In all temperatures down to 0 degrees, use Lubricating Oil, Semifluid w/Teflon (LSAT), Lubricating Oil, Semifluid (LSA), or Grease, Molybdenum Disulfide (GMD). Lubricate by brushing a thin coat of lubricant on each component before assembly. Moderately lubricate all special lubrication points shown on the following pages.

LUBRICATION - Continued



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Figure 1. Lubrication Instructions.

LUBRICATION - Continued

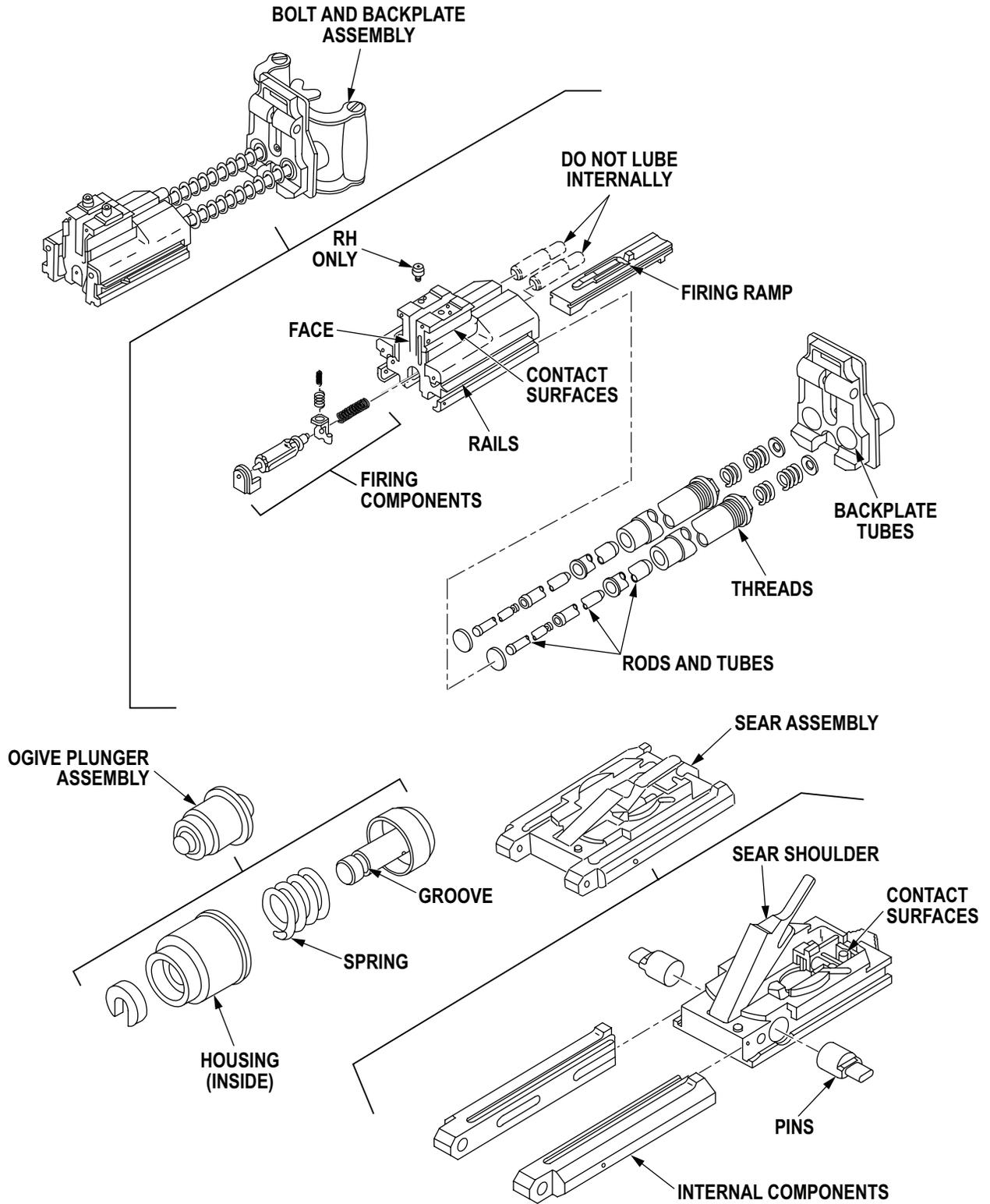


Figure 2. Lubrication Instructions.

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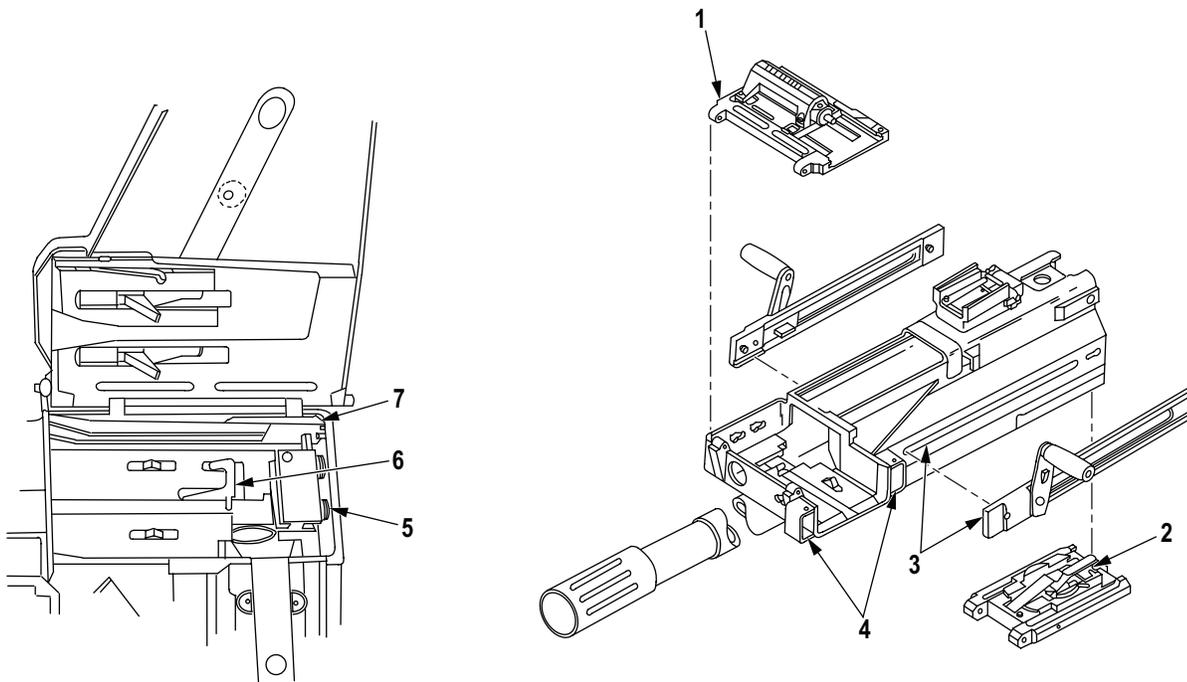
## LUBRICATION - Continued

### Sand and Dust

Brush a generous coat of lubricant on all critical points shown in the illustration. Upon assembly, pack more lubricant into the following areas:

- a. Between the round positioning block (Figure 3, Item 5) and forward receiver wall.
- b. Between the alignment guide assembly (Figure 3, Item 7) and forward receiver wall.
- c. Under the primary pawl (Figure 3, Item 6).
- d. Under the charger handle locks and between the charger housing and receiver (Figure 3, Item 3).
- e. Inside the feed tray (Figure 3, Item 1).
- f. Inside the sear assembly, under the receiver sear, and inside the sear housing and receiver buffer bodies (Figure 3, Item 2).
- g. Between the feed throat plungers and receiver slots (Figure 3, Item 4).

Apply lubrication to exterior surfaces and wipe off with a clean wiping rag.



M2233M19

Figure 3. Lubrication Instructions.

**LUBRICATION - Continued****Extreme Cold**

Subzero weather causes the lubricant to become thicker. In temperatures 0 degrees and below, use LAW after first cleaning all parts to remove previous lubricants. When using LAW, brush on a thin coat, especially on those parts cited in, Step 2. If the metal "sweats" when the gun is brought indoors, field strip, wipe dry, then allow parts to return to room temperature before lubricating and reassembling.

**Wet, Salty Conditions**

Preserve and lubricate all surfaces generously to protect parts from rust.

**END OF TASK****END OF WORK PACKAGE**



---

**FIELD MAINTENANCE  
BORESIGHTING INSTRUCTIONS**

---

**INITIAL SETUP:****Tools and Special Tools**

Adapter Assembly, 40 MM (WP 0090, Table 1, Item 1)  
Boresight Kit Assembly, 40 MM (WP 0090, Table 1, Item 6)  
Carriage and Cradle (WP 0090, Table 1, Item 10)  
Fabricated Target (WP 0090, Table 1, Item 15)  
Mount, Tripod, Machine Gun (WP 0090, Table 1, Item 22)

**Tools and Special Tools (cont.)**

Tape Measure (WP 0090, Table 1, Item 30)  
Traversing And Elevating (T&E) Mechanism (WP 0090, Table 1, Item 39)

**References**

TM 10004A-10/A  
TM 9-1010-231-13&P  
WP 0039  
WP 0050

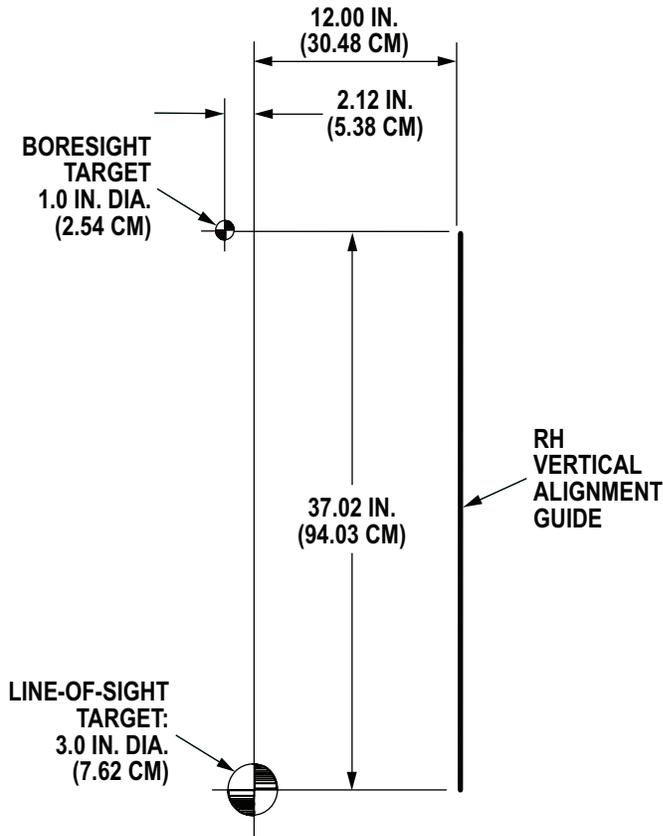
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**BORESIGHTING INSTRUCTIONS**

**NOTE**

For boresighting of the Upgunned Weapons Station (UGWS) refer to TM 10004A-10/A.

1. Construct a target to the dimensions shown:



M2234M19

Figure 1. Boresighting Instructions.

2. Remove weapons flash suppressor.

**WARNING**

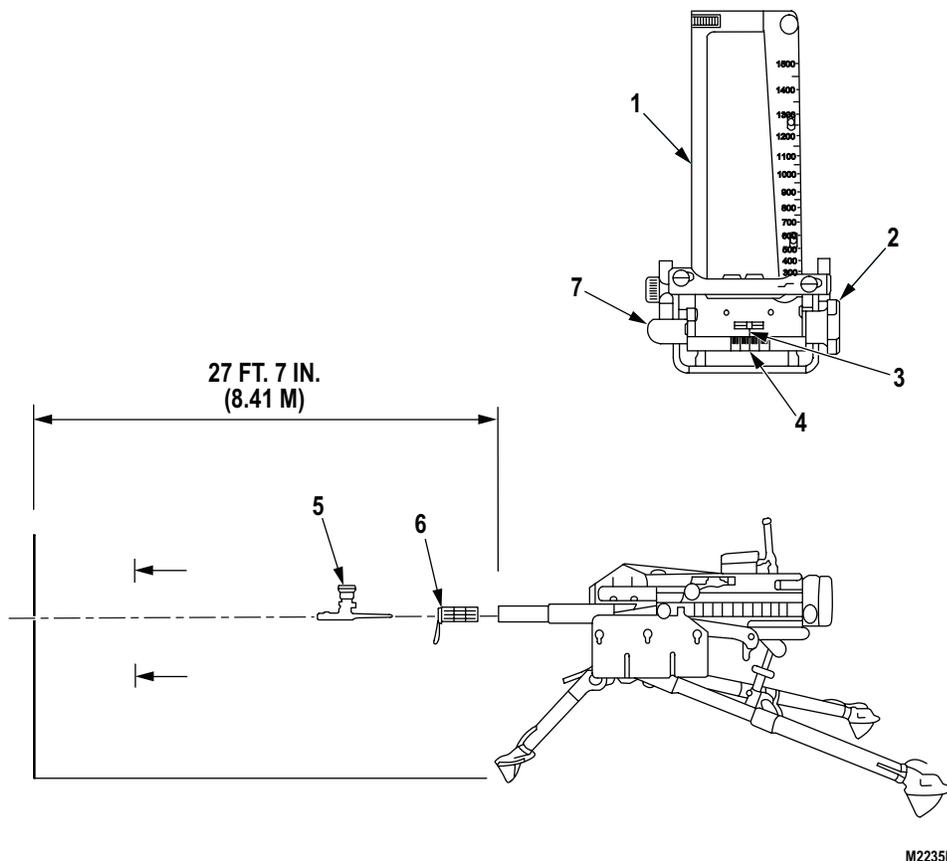


Ensure stow pin and depression stop are installed before attaching MK 64 mount to tripod. Refer to TM 9-1010-231-13&P.

3. Install the weapon in the MK 64 carriage and cradle assembly on the M3 tripod ground mount equipped with a T&E mechanism (for attaching the T&E mechanism to the MK 64 mount see TM 9-1010-231-13&P).

**BORESIGHTING INSTRUCTIONS - Continued**

4. Position the weapon so the centerline of the barrel is perpendicular to the target and on approximate center of boresight target crosshairs with muzzle end of barrel at 27 feet 7 inches (8.41 m) from the target.
5. Install boresight adapter (Figure 2, Item 6) in the end of the muzzle. Install boresight (Figure 2, Item 5) in the adapter, as shown.
6. Raise the rear sight on the weapon by pressing the sight lock (Figure 2, Item 7) while rotating the frame assembly (Figure 2, Item 1) upward until it clicks. Turn the windage screw (Figure 2, Item 2) until the windage indicator (Figure 2, Item 3) is aligned with the 0 mark (Figure 2, Item 4) on the windage scale.

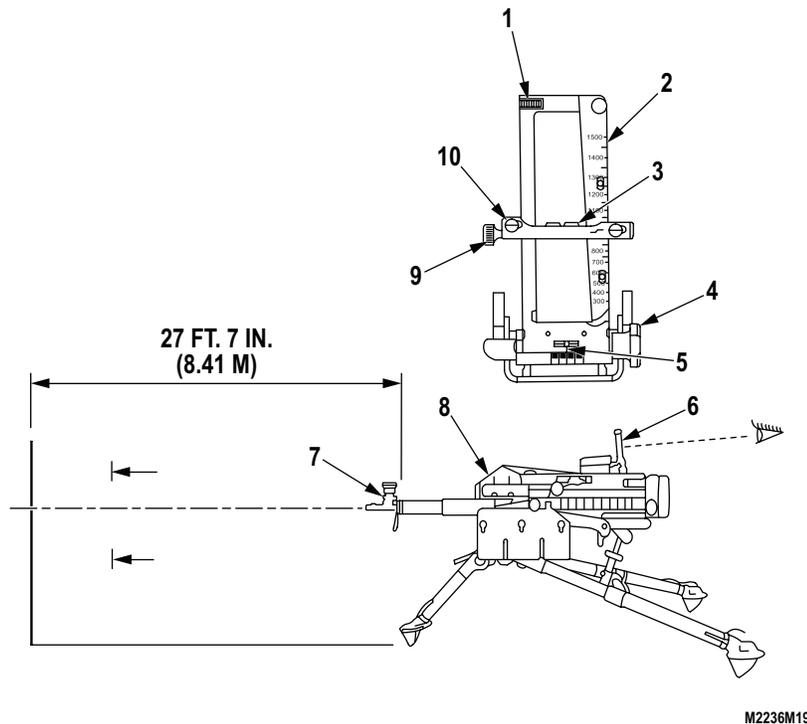


M2235M19

*Figure 2. Boresighting Instructions.*

**BORESIGHTING INSTRUCTIONS - Continued**

7. Turn the boresight (Figure 3, Item 7) so the eyepiece is out of the way. Stand at arm's length from the rear of the weapon. Sight past the right-hand side of the frame assembly (Figure 3, Item 2). The right-hand side of the frame assembly should be parallel with the vertical alignment guide on the target. If it is not, tilt the target until the frame assembly and vertical alignment guide are parallel.
8. With the boresight (Figure 3, Item 7) in the upright position, look through the top of the scope and align the boresight's crosshairs with the boresight crosshairs on the target. Use only the T&E mechanism to move the muzzle into alignment.
9. Without disturbing the weapon, slightly unscrew and press in the weapon's retainer plain nut (Figure 3, Item 9). Slide the aperture carrier (Figure 3, Item 10) upward on the scale to the 1,000 meter mark.
10. Stand at arm's length from the rear of the gun and sight through the sight aperture of the rear sight slide (Figure 3, Item 3) down the front sight blade (Figure 3, Item 8). The center of the line of sight target should be approximately lined up with the top of the front sight blade and the top edge of the notch on the sight aperture.
11. Loosen the four socket head cap screws and move the rear sight assembly to align the notch in the windage indicator (Figure 3, Item 5) with the front sight and vertical crosshair on the line of sight target. Tighten the four socket head cap screws and non-electrical wire. If moving the sight does not bring it into alignment, use the elevating wheel (Figure 3, Item 1) and windage screw (Figure 3, Item 4) to bring the sight into alignment with the target.
12. If the rear sight assembly is in acceptable alignment, the top edge of the aperture carrier (Figure 3, Item 10) will be aligned with the 1,000 meter mark, as shown. If the top edge of the aperture carrier is at the 1,000 meter mark, go to Step 14. If it is above or below the 1,000 meter mark, go to Step 13.

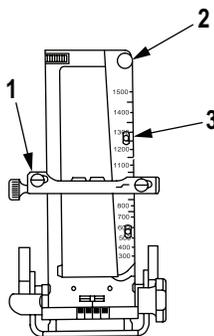


M2236M19

Figure 3. Boresighting Instructions.

**BORESIGHTING INSTRUCTIONS - Continued**

13. Adjust the position of the scale.
  - a. If the top edge of the aperture carrier (Figure 4, Item 1) was not aligned with the 1,000 meter mark (in Step 12), the scale (Figure 4, Item 3) must be physically moved up or down. Do not move the aperture carrier. Loosen the scale lock screw (Figure 4, Item 2) at the top of the scale by inserting a punch or key wrench into the holes and turning the screw counterclockwise, until the scale can be moved.
  - b. Carefully slide the scale (Figure 4, Item 3) up or down until the 1,000 meter mark is exactly aligned with the top of the aperture carrier (Figure 4, Item 1). Tighten the scale lock screw (Figure 4, Item 2). Go to Step 14.



M2237M19

*Figure 4. Boresighting Instructions.*

14. Verify alignment.
  - a. Ensure vertical alignment guide on target is parallel with the right-hand side of the frame assembly.
  - b. Ensure intersection of boresight crosshairs is within the 1 inch diameter circle on the target.
  - c. Ensure line of sight is within the 3 inch diameter circle on the target.
15. Remove boresight and 40 mm adapter from the muzzle of the weapon.
16. Install flash suppressor on the muzzle (WP 0039).

**WARNING**

In case of a runaway gun, never try to break the ammo belt with your hands. Injury could result. Lower one charging handle to prevent the gun from firing.

17. Test fire (WP 0050) the weapon, if possible.

**END OF TASK****END OF WORK PACKAGE**



---

**FIELD MAINTENANCE**  
**BORESIGHTING WEAPON EQUIPPED WITH AN/TVS-5 NIGHT SIGHT ASSEMBLY**

---

**INITIAL SETUP:****Tools and Special Tools**

Adapter Assembly, 40 MM (WP 0090, Table 1, Item 1)  
Boresight Kit Assembly, 40 MM (WP 0090, Table 1, Item 6)  
Carriage and Cradle (WP 0090, Table 1, Item 10)  
Fabricated Target (WP 0090, Table 1, Item 15)  
Mount, Tripod, Machine Gun (WP 0090, Table 1, Item 22)

**Tools and Special Tools (cont.)**

Tape Measure (WP 0090, Table 1, Item 30)  
Traversing and Elevating (T&E) Mechanism (WP 0090, Table 1, Item 39)

**References**

TM 9-1010-231-13&P  
WP 0039

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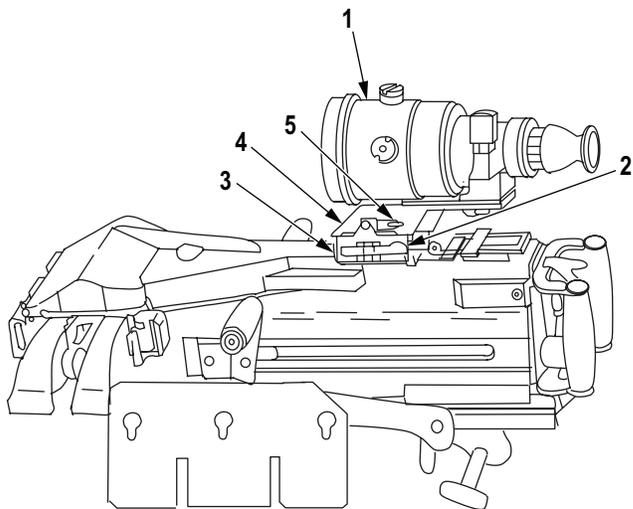
**BORESIGHTING INSTRUCTIONS**

1. Set up the equipment.
  - a. Remove weapon's flash suppressor (WP 0039).

**WARNING**

Ensure stow pin and depression stop are installed before attaching MK 64 mount to tripod. Refer to TM 9-1010-231-13&P.

- b. Install the weapon in the MK 64 carriage and cradle assembly on the M3 tripod ground mount equipped with a T&E mechanism (for attaching the T&E to the MK 64 mount, see TM 9-1010-231-13&P).
- c. Attach the AN/TVS-5 night vision sight (Figure 1, Item 1) to the night vision sight adapter (Figure 1, Item 4) and slide the night sight assembly onto the MK19 MOD 3 rear sight assembly (Figure 1, Item 3) until it stops. Hold the sight against the stop and tighten the side clamp (Figure 1, Item 5) and then the two top clamps (Figure 1, Item 2).



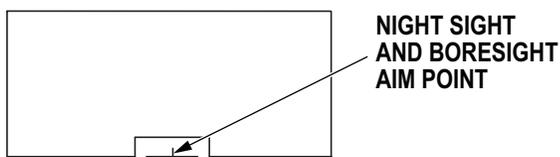
M2258M19

Figure 1. Boresighting Weapon Equipped with AN/TVS-5 Night Sight Assembly.

**BORESIGHTING INSTRUCTIONS - Continued**

## 2. Fabricate target.

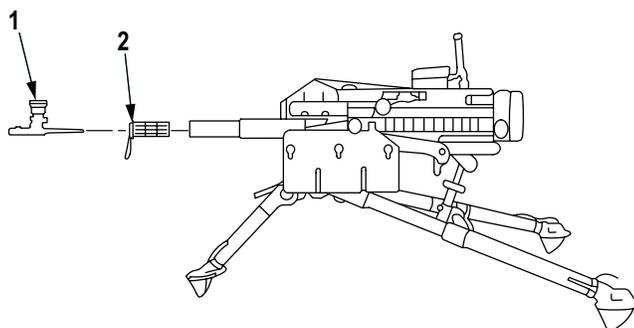
Construct target as shown below and place in front of weapon at 1,000 inches (25.4 m) from the objective lens of the night sight.



M2238M19

*Figure 2. Boresighting Weapon Equipped with AN/TVS-5 Night Sight Assembly.*

## 3. Install boresight adapter (Figure 3, Item 2) in the end of the muzzle. Install boresight (Figure 3, Item 1) in the adapter, as shown.



M2239M19

*Figure 3. Boresighting Weapon Equipped with AN/TVS-5 Night Sight Assembly.*

4. Align the weapon to bring the optical boresight to coincide with the aiming point of the target.
5. Without disturbing the alignment of the weapon, locate the night sight reticle by adjusting the azimuth and elevation actuators so that the 100 meter range mark and the optical boresight are both aligned to the same point of aim.
6. Remove boresight and 40 mm adapter from the muzzle end of the gun.
7. Install flash suppressor on the muzzle (WP 0039).

**BORESIGHTING INSTRUCTIONS - Continued****WARNING**

In case of a runaway gun, never try to break the ammo belt with your hands. Injury could result. Lower one charging handle to prevent the gun from firing.

**CAUTION**

Do not fire the weapon on the 1,000 inch target.

8. Test fire.

**NOTE**

- Always fasten left side cam on mounting bracket first.
- Under extreme dark conditions, it may be necessary to orient the night vision sight in the direction of a higher level in order to see the back grid reticle more clearly (i.e., point the night vision sight toward the horizon).

Fire one or two rounds to settle the sight on the weapon and retighten the mounting bracket and lever screw assembly.

**END OF TASK**

**END OF WORK PACKAGE**

---

**FIELD MAINTENANCE  
WHEN TO TEST FIRE**

---

**INITIAL SETUP:****References**TM 9-1010-230-10 (WP 0086)

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**WHEN TO TEST FIRE****WARNING**

- In case of a runaway gun, never try to break the ammo belt with your hands. Injury could result. Lower one charging handle to prevent the gun from firing.
- When firing approved 40 mm ammunition, observe all WARNINGS in the front of this manual.

## 1. AFTER BORESIGHTING THE WEAPON.

Test fire the weapon for accuracy after boresighting.

## 2. AFTER CLEARING AN OBSTRUCTION (GENERAL).

See round removal procedure in TM 9-1010-230-10.

## 3. AFTER ANY FIRING MALFUNCTIONS HAVE BEEN CORRECTED.

If possible, test fire the weapon for proper functioning after performing corrective action for the following deficiencies:

- (1) runaway gun (uncontrolled automatic fire)
- (2) erratic firing
- (3) sluggish firing
- (4) premature firing
- (5) hard firing (excess recoil)

**END OF TASK****END OF WORK PACKAGE**



---

## FIELD MAINTENANCE TEST FIRING PROCEDURES (ARMY ONLY)

---

**INITIAL SETUP:****Tools and Special Tools**

Ammunition Containers (M548 or PA120 Containers) (WP 0090, Table 1, Item 2)  
 Catch Bag Assembly (WP 0090, Table 1, Item 9)  
 Linked 40 MM Ammunition As Specified For Each Test (WP 0090, Table 1, Item 19)  
 MK 64 Gun Mount (Gun Cradle)  
 Mount, Tripod, Machine Gun (WP 0090, Table 1, Item 22)  
 Six Linked Dummy Rounds (WP 0090, Table 1, Item 14)

**Tools and Special Tools (cont.)**

Tool, Combination (WP 0090, Table 1, Item 11)  
 Traverse And Elevating (T&E) Mechanism (WP 0090, Table 1, Item 39)

**References**

TM 9-1010-231-13&P  
 WP 0004  
 WP 0026  
 WP 0040

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**TEST FIRING PROCEDURES****WARNING**

- All personnel within 1,017 ft (310 m) of impact area must wear a helmet and body armor.
- All personnel within 66 ft (20 m) of firing area shall also wear eye protection and single hearing protection. Sleeves shall be rolled down and gloves worn.
- Firing will not be conducted from enclosures.
- Do not fire High-Explosive (HE) ammunition at targets less than 1,017 ft (310 m) away during training or 246 ft (75 m) away during combat. Fragmentation can reach the gunner position at a distance less than 1,017 ft (310 m).
- Do not relink or fire ammunition that has been cycled through the weapon.
- In case of a runaway gun, never try to break the ammo belt with your hands. Injury could result. Lower one charging handle to prevent the gun from firing.

**1. HIGH-EXPLOSIVE (HE) PROJECTILES:**

- a. Observe all WARNINGS in the front of this manual.
- b. Ensure a clear path (i.e., tree, buildings, hills) of fire for at least 310 meters.
- c. Use only the ammunition types authorized in Chapter 6 of this technical manual.

**2. SET UP AND INSPECT EQUIPMENT AS FOLLOWS:**

- a. Equipment and tools required:
  - MK 64 gun mount (gun cradle)
  - M3 tripod ground mount
  - traverse and elevating (T&E) mechanism
  - ammunition containers (M548 or PA120 containers)
  - linked 40 mm ammunition as specified for each test
  - six linked dummy rounds
  - combination tool (PN 3269494)
  - empty case catch bag

**TEST FIRING PROCEDURES - Continued**

- b. Perform a visual inspection of the assembled gun (including feed throat) for completeness, workmanship, or visible damage that could adversely affect life, function, and reliability. Do not fire if deficiencies are present.

**WARNING**



Ensure stow pin and depression stop are installed before attaching MK 64 mount to tripod. Refer to TM 9-1010-231-13&P.

- c. Install the weapon on the MK 64 Gun Mount on the M3 Tripod with T&E Mechanism (see TM 9-1010-231-13&P).

**WARNING**



Do not allow the top cover to slam shut from raised position when loading. Failure to comply may result in accidental discharge of a round, hand injury or equipment damage.

- d. Raise the top cover assembly and verify the following parts operate freely:
  - round positioning block
  - alignment guide assembly
  - primary pawl
  - secondary pawl
  - feed slide assembly
  - feed pawls
  - feed tray pawl
  - RH cartridge extractor
  - LH cartridge extractor
  - receiver sear (with bolt removed)
  - LH bolt finger (with bolt removed, run dummy round through bolt face and ensure round passes freely through LH and RH bolt fingers)
  - RH bolt finger (with bolt removed, run dummy round through bolt face and ensure round passes freely through LH and RH bolt fingers)
  - pawl (with bolt removed, run dummy round through bolt face and ensure round stop pawl snaps behind round case rim prior to compression of LH and RH bolt finger springs)
  - ogive plunger assembly
  - cocking lever (check with bolt in and MK 16 MOD 0 (LH) charger removed)
  - safety lever (with safety in "S" (SAFE) position)
  - cover lock (with top cover closed, then opened)
  - charger handle lock (RH)
  - charger handle lock (LH)
- e. With the bolt in battery position and top cover raised, position feed slide assembly fully to the left and verify top cover closes freely.
- f. With the thumb safety in "F" (FIRE) position, use charger handles to pull the bolt to the rear until receiver sear is engaged. The bolt and gun chargers shall move freely, without binding.

**TEST FIRING PROCEDURES - Continued**

- g. Hold the gun chargers to the rear to retain the bolt. Disengage the receiver sear and allow the bolt to return slowly to battery. There shall be no binding of the sear, bolt, or gun chargers.
- h. Repeat Step f. With thumb safety in "S" (SAFE) position, after searing, depress trigger to assure bolt will not return to battery.
- i. Move thumb safety to "F" (FIRE) position. Hold the chargers to the rear to restrain the bolt. Disengage the receiver sear and allow the bolt to return slowly to battery. There shall be no binding of the receiver sear, bolt, or gun chargers.
- j. Repeat Steps f through i (retracting and releasing the bolt with thumb safety in "F" (FIRE) and "S" (SAFE) positions five times. Verify no malfunctions occurred and no discrepancies were noted.
- k. If the bolt timing has not been set, remove bolt and backplate assembly (WP 0026) and adjust bolt timing In Accordance With (IAW) (WP 0040).
- l. Reinstall bolt and backplate assembly (WP 0026), charge gun, return gun chargers to stow position, move thumb safety to "F" (FIRE) position, depress manual trigger plate, raise top cover, and verify firing pin is protruding from bolt face. Return thumb safety to "S" (SAFE) position.
- m. Verify the firing pin is being retracted as the bolt travels rearward (being pulled by the gun chargers). This can be determined by watching the firing pin point disappear into the bolt face as the bolt is moved rearward from the battery position.
- n. Raise the top cover and ensure the bolt is in the battery position.
- o. Feed two linked dummy rounds of 40 mm ammunition into the gun until the first round is latched in position by the secondary pawl.
- p. Move feed slide assembly to the left and close top cover. Charge gun, return gun chargers to stow position, and verify receiver sear is engaged and rounds have been fed across feeder. Ensure primary pawl is in up position.
- q. Move the thumb safety to "F" (FIRE) position, release the receiver sear, and verify ogive plunger assembly returns to rest position.
- r. Raise top cover; verify the extractors are seated properly on the ammunition case rim.
- s. Holding the top cover open, pull the bolt to the rear until it sears and return the gun chargers fully forward to stow position.
- t. Place the thumb safety in "S" (SAFE) position.
- u. Verify no malfunctions occurred and no discrepancies were noted during accomplishment of Steps n through t.

**CAUTION**

Catch the ejected dummy round as it comes from the bottom of the weapon. The round's ogive may become dented if the round is dropped.

- v. Remove dummy ammunition from the gun, using the combination tool assembly.
- w. Pulling the gun chargers to the rear, hold one gun charger to restrain the bolt. Disengage the receiver sear and allow the bolt to return safely to battery.
- x. Install feed throat assembly and repeat Steps n through q using linked dummy rounds. Verify gun meets requirements of Steps n through q when repeated with six linked rounds of dummy ammunition.
- y. Remove last dummy round from the gun, using the combination tool assembly.

**TEST FIRING PROCEDURES - Continued****3. GUN PROOF FIRING**

Conduct the following before loading the weapon for tests 4 and 5:

- Load one round of 40 mm high velocity ammunition and fire the gun.
- Inspect the gun and verify there are no signs of failure, deformation, or loosening of any parts.

**4. SINGLE ROUND, SHORT BURST ACCURACY TEST**

If possible, conduct this test after boresighting or after corrective action for runaway gun:

- Load nine linked rounds into the weapon.
- Raise the gun sight aperture to 1,000 meters and adjust the T&E mechanism to acquire a 14 meter target at a known 1,000 meter range.
- Fire the nine rounds singly or in bursts of three.
- Verify all nine rounds hit the target.
- Inspect the weapon and verify there is no evidence of damage, malfunction, or stoppage.

**5. FIRING RATE TEST TO VERIFY NORMAL RATE OF FIRE AND RECOIL LOAD**

If possible, conduct this test after performing corrective action for erratic or sluggish rate of fire or for excess recoil:

- Load 10 linked rounds into the weapon.
- Raise the gun sight aperture to 1,000 meters and adjust the T&E mechanism to acquire a target at a known 1,000 meter range.
- Fire the 10 rounds in a single burst of automatic fire.
- Verify the ammunition was expended without excess recoil, damage, or stoppage, and that the firing rate during the test was neither sluggish or erratic.
- If the firing was hard, erratic, or sluggish, or if any malfunctions occurred, troubleshoot (WP 0004).

**END OF TASK**

**END OF WORK PACKAGE**

---

**FIELD MAINTENANCE  
POST-FIRING CHECKS**

---

**INITIAL SETUP:****Materials/Parts**

Cloth, Abrasive (WP 0089, Table 1, Item 7)  
Stone, Sharpening (WP 0089, Table 1, Item 15)

**References (cont.)**

WP 0030  
WP 0049

**References**

WP 0026

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**POST-FIRING CHECKS**

1. Repeat the inspection procedures in (WP 0049), Step 3.

**WARNING**

Appropriate eye protection is recommended when cleaning your weapon and/or its parts.

2. Clean bore and chamber.

**NOTE**

If possible, clean bore and chamber immediately after firing to minimize carbon buildup.  
Remove caked-on carbon with crocus cloth.

3. Remove bolt and backplate assembly (WP 0026), the vertical cam assembly, and the primary drive lever (WP 0030). Examine the chromed edge and entire surface of the vertical cam assembly for bends, burrs, nicks, pits, scratches, or dull spots. Remove with crocus cloth or sharpening stone.

**END OF TASK****END OF WORK PACKAGE**



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**FIELD MAINTENANCE**  
**MODIFICATION OF MK19 MOD 3 MACHINE GUN TO MK19 MOD 3 UPGUNNED WEAPONS STATION (UGWS)**  
**(MARINE CORPS ONLY)**

---

**INITIAL SETUP:****Tools and Special Tools**

Band Saw (WP 0090, Table 1, Item 3)  
Tool Kit, Small Arms Repairman (Marine Corps Only) (WP 0090, Table 1, Item 38)  
Tool Kit, Small Arms (WP 0090, Table 1, Item 36)  
Tool Set, Intermediate (Marine Corps Only) (WP 0090, Table 1, Item 33)  
Tool Set, Organizational (Marine Corps Only) (WP 0090, Table 1, Item 35)

**Materials/Parts**

Block, 40 Millimeter (UGWS Only) (WP 0060, Figure 2, Item 9)  
Cotton Tip Swab  
Plate, Identification (UGWS Only) (WP 0060, Figure 2, Item 31)  
Screw, Machine (UGWS Only) (WP 0060, Figure 2, Item 30)  
Sealing Compound, Grade A Red (WP 0089, Table 1, Item 14)

**Materials/Parts (cont.)**

Lubricant, Solid Film (WP 0089, Table 1, Item 9)  
Rag, Wiping (WP 0089, Table 1, Item 13)

**Personnel Required**

Machinist MOS 2161 (1)  
Repairer/Technician MOS 2111 (1)

**References**

MCO P4400.84  
TM 4700-15/1  
UM 4790-5  
WP 0003  
WP 0025  
WP 0026  
WP 0029

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**Special Instructions**

Send all excess parts to:  
Director (Code 886/20)  
Marine Corps Multi-Commodity Maintenance Center  
ATTN: Shop 729  
Albany, GA 31704-1128

This work package shows complete instructions for the modification of the MK19 MOD 3 machine gun to the MK19 MOD 3 Upgunned Weapons Station (UGWS).

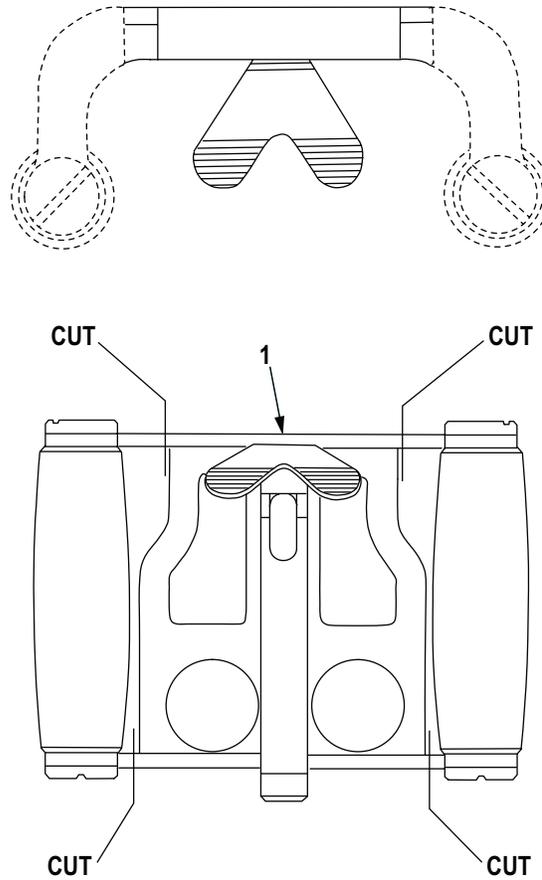
**DISASSEMBLY**

1. Remove control grip assembly from bolt and backplate assembly (WP 0026).
2. Remove sear housing cap from sear assembly (WP 0029).
3. Remove RH and LH charging handle assemblies (WP 0003).
4. Remove non-electrical wire from socket head cap screws on rear sight assembly. Using a 9/64 inch key wrench, remove four socket head cap screws and rear sight assembly from the receiver.

**END OF TASK**

**MODIFICATION**

1. Using a band saw, cut the handles of control grip assembly (Figure 1, Item 1) at locations shown.



M2240M19

Figure 1. Modification of MK19 MOD3 Machine Gun to MK19 MOD 3 Upgunned Weapons Station (UGWS) (Marine Corps Only).

2. Using a file, remove all burrs, sharp edges, and sharp corners from cut surfaces. Treat all exposed (cut) surfaces with solid film lubricant using a wiping rag or cotton tip swab. Allow solid film lubricant to dry in accordance with manufacturer's instructions.

**END OF TASK**

**ASSEMBLY**

1. Install modified control grip assembly onto bolt and backplate assembly (WP 0026).
2. Install solenoid to the sear assembly (WP 0029).
3. Install round positioning block onto left side of receiver (WP 0025).
4. Position identification plate on top of the receiver (ensuring the markings are legible) in back of the cover. Align the holes in the identification plate with the four existing holes in the receiver.
5. Apply sealing compound to threads of four machine screws, and secure the identification plate to the receiver.
6. Record the modification in accordance with TM 4700-15/1.
7. Report the modification in accordance with MCO P4400.84 (units supported by Automated Information System use UM 4790-5).

**END OF TASK****END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
PREPARATION FOR STORAGE OR SHIPMENT (NOT FOR MARINE CORPS USE)**

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**INITIAL SETUP:****References**

NAVSEAINST 8370.2 (Navy only)  
Special Packaging Instruction Sheet  
TB 9-1000-247-34

**References (cont.)**

WP 0046  
WP 0048

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**NOTE**

This section is not for Marine Corps use.

**WEAPON NOT BEING RETURNED TO UNIT**

Packaging of the MK 19 MOD 3 shall be In Accordance With (IAW) Special Packaging Instruction Sheet (P3269419). If assistance is required contact: Commander, U. S. Army Armament Research Development and Engineering Center, ATTN: AMSTA-AR-ESK,, IL 61299-7630.

**WEAPON BEING RETURNED TO UNIT**

Packaging, if required, for storage shall not exceed 90 days. Clean and preserve in accordance with cleaning and lubricating instructions contained in work package (WP 0046) and (WP 0048).

**PREPARATION FOR SHIPMENT/STORAGE**

NAVY: Security, shipment, and storage shall be IAW NAVSEAINST 8370.2, Small Arms and Weapons Management Policy and Guidance Manual.

ARMY: Conduct overseas shipment procedures IAW Army TB 9-1000-247-34.

**END OF TASK****END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
GENERAL MAINTENANCE INSTRUCTIONS**

---

**INITIAL SETUP:****Tools and Special Tools**

Brush Assembly, Bore (WP 0090, Table 1, Item 7)  
Rod, Cleaning, Small Arms (WP 0090, Table 1, Item 27)

**Materials/Parts**

Cleaning Compound, Rifle Bore (WP 0089, Table 1, Item 5)  
Cleaning Compound, Solvent (WP 0089, Table 1, Item 6)  
Grease, Molybdenum Disulfide (GMD) (WP 0089, Table 1, Item 8)

**Materials/Parts (cont.)**

Lubricating Oil, Weapons (LAW) (WP 0089, Table 1, Item 10)  
Lubricating Oil (LSAT) (WP 0089, Table 1, Item 12)  
Rag, Wiping (WP 0089, Table 1, Item 13)

**References**

TM 9-1010-230-10  
WP 0089

---

**INITIAL SETUP**

The following information will reduce the space required for the initial setup portion of the maintenance procedures.

- a. Materials/Parts required are not listed unless they apply to the procedure.
- b. Personnel Required is listed only if the task requires more than one person. If Personnel Required is not listed, it means one person can do the job.
- c. The approximate time required is listed on the applicable Maintenance Allocation Chart (MAC).
- d. When the term "notify Maintenance Supervisor" is used, the entire MK19 MOD 3/Upgunned Weapon Station (UGWS) Machine Gun must be sent.

**END OF TASK**

**CLEANING****WARNING**

- Cleaning compound solvent is flammable and toxic and must be kept away from open flames and used in a well-ventilated area. Use of rubber gloves is necessary to protect the skin when washing parts.
- To avoid injury, appropriate eye protection is recommended when cleaning the weapon and/or its parts.

**CAUTION**

Do not immerse the following assemblies and components in cleaning compound solvent:

Cam followers  
 Bolt buffer assemblies (while assembled)  
 Bolt buffer  
 Sear buffer  
 Ogive plunger assembly (while assembled)  
 Receiver buffer body (while assembled)

**NOTE**

- Make sure the weapon is clean and lubricated before reissuing. Observe the instructions and CAUTIONs for cleaning and lubricating each assembly. A list of cleaning and lubrication materials is provided in (WP 0089).
  - Used/waste grease, sealing compounds, cleaning compounds, solvents, and lubricants as well as items contaminated with these substances (such as cleaning rags) must be disposed of properly. See Hazardous Waste Disposal Information on page 0001-3 for more information.
1. Prior to cleaning, field strip the weapon. Disassemble only those assemblies, or parts or assemblies, listed in Step 4. Apply the cleaning materials listed in (WP 0089) as instructed for each assembly or component. Observe the CAUTION above for immersion of certain components.
  2. Do NOT disassemble the following items. Immerse the entire assembly or component in cleaning compound solvent. Dry thoroughly before lubricating.
    - a. Backplate pin assembly
    - b. Secondary drive lever
    - c. Top cover assembly
    - d. Feed tray, feed tray pawl, and pawl spring
    - e. Vertical cam assembly
    - f. LH and RH gun charger assemblies
    - g. Alignment guide assembly
    - h. Round positioning block
    - i. Receiver (with secondary pawl, pawl rod, helical spring, and rear sight assembly attached)

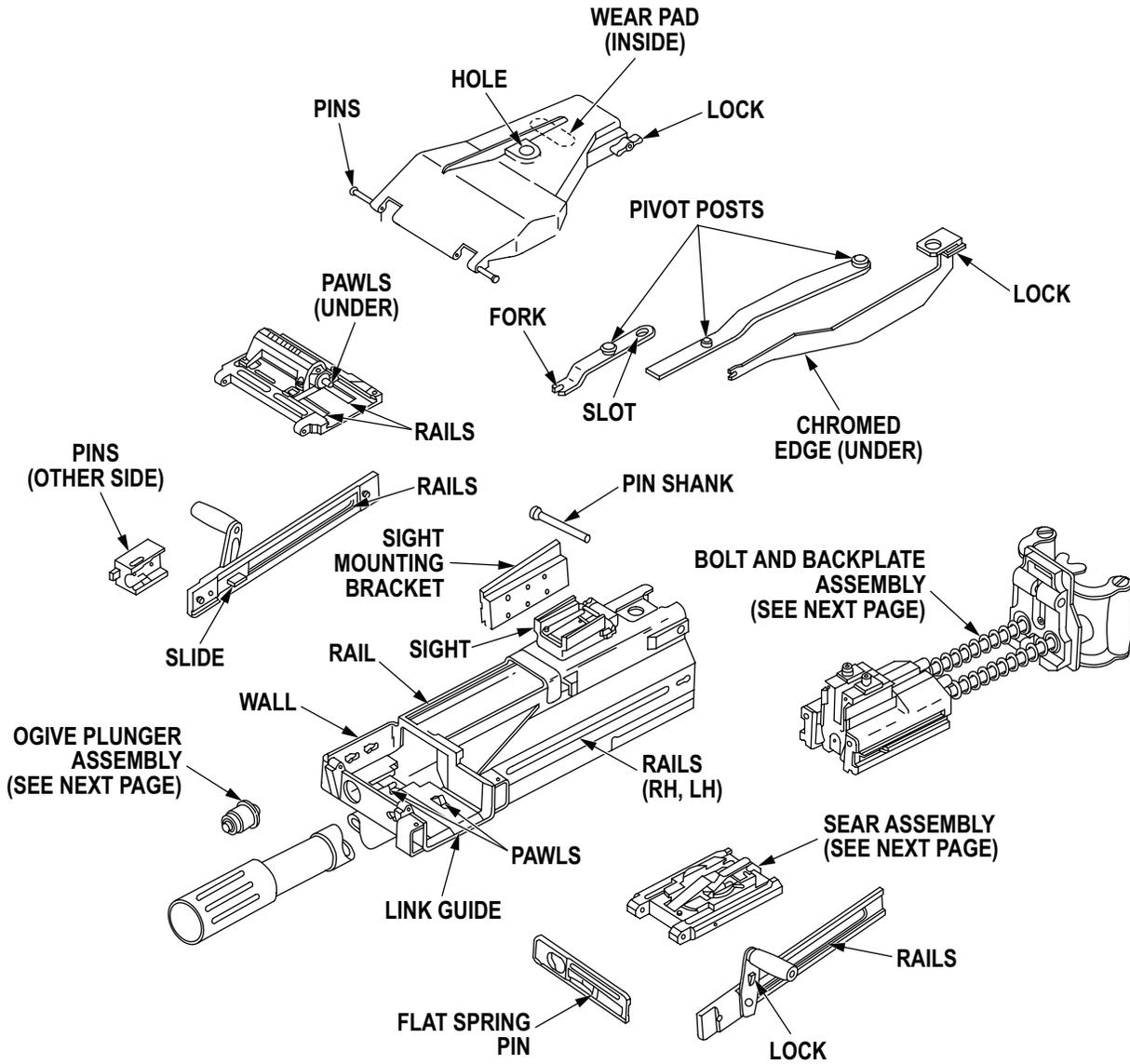
**CLEANING - Continued**

- j. Barrel and flash suppressor
3. Clean the bore and chamber, using a caliber .50 cleaning rod (in five sections), the 40 mm bore brush adapter assembly and bore brush, and Rifle Bore Cleaning Compound.
  4. Disassemble the following assemblies and clean as instructed below. Do NOT immerse in cleaning solvent any of the components listed in the CAUTION at the beginning of this work package.
    - a. Bolt and backplate assembly. Remove all components from the bolt except the shoulder pin, pawl, and helical compression spring. Do not remove backplate weldment from the control grip assembly. Immerse all components (except those listed in the CAUTION at the beginning of this work package) in cleaning compound solvent. Dry thoroughly before lubricating.
    - b. Feed slide assembly. Do not immerse the feed slide without first disassembling. Remove only the feed pawls, headless straight pin, and feed pawl flat spring. Do not remove the three self-locking socket head screws. Immerse feed pawls, headless straight pin, and feed pawl flat spring in cleaning compound solvent. Dry thoroughly before lubricating.
    - c. Ogive plunger assembly. Do not immerse while assembled (see CAUTION at the beginning of the work package). Disassemble it first; then immerse all parts in cleaning compound solvent. Dry thoroughly and lubricate before assembly.
    - d. Sear assembly. Do not immerse the assembled receiver buffer bodies with internal components in cleaning solvent (see CAUTION at the beginning of this work package); disassemble, then immerse them in cleaning compound solvent. Dry thoroughly before lubricating.
    - e. Primary pawl, pawl rod, and pawl spring. Remove from the receiver. Immerse all parts in cleaning compound solvent. Dry thoroughly before lubricating.
    - f. Feed throat. Remove from receiver. Clean all accessible surfaces with a rag.

**END OF TASK****LUBRICATION****CAUTION**

- Do not lubricate the internal bolt buffer assemblies. All parts must be clean and dry. Otherwise, excess recoil (hard firing) will occur upon firing, causing part damage.
  - CLP is NOT authorized for use on the MK19. If it is used, damage to the sear buffer and cam followers will occur.
1. Normal Conditions. In all temperatures down to 0 degrees, use lubricating oil (LSAT) or Grease, Molybdenum Disulfide (GMD). Lubricate by brushing a thin coat of lubricant on each component before assembly. Moderately lubricate all special lubrication points shown on the following pages.

LUBRICATION - Continued



M2231M19

Figure 1. Lubrication Instructions.

LUBRICATION - Continued

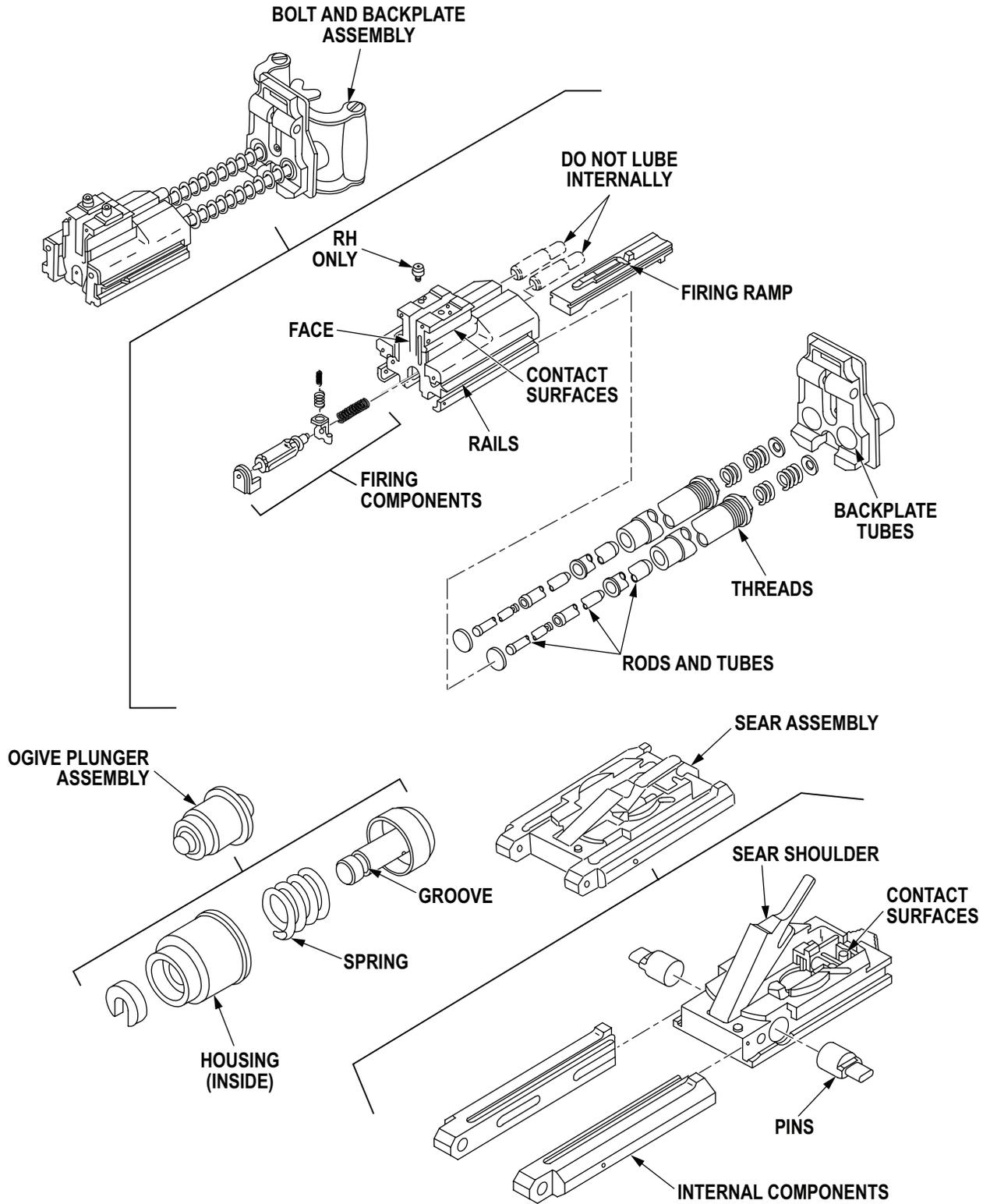


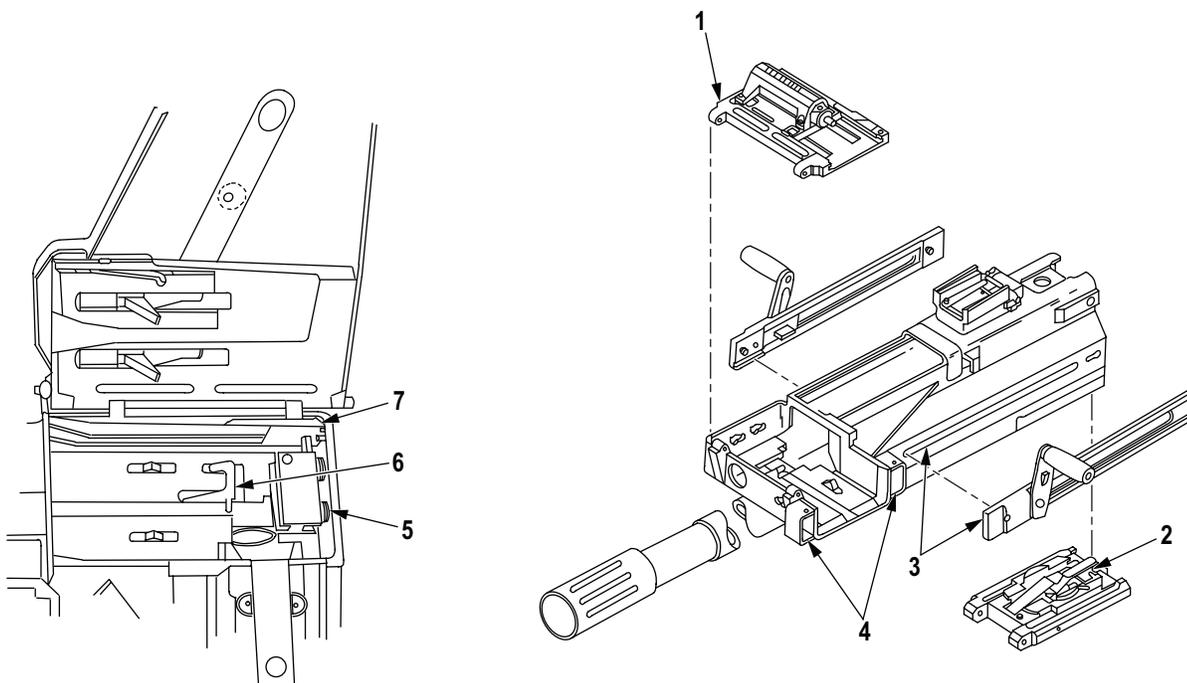
Figure 2. Lubrication Instructions.

M2232M19

**LUBRICATION - Continued**

2. Sand and Dust. Brush a generous coat of GMD or LSAT on all critical points shown in the illustration. Upon assembly, pack more lubricant into the following areas:
  - a. Between the round positioning block (Figure 3, Item 5) and forward receiver wall.
  - b. Between the alignment guide assembly (Figure 3, Item 7) and forward receiver wall.
  - c. Under the primary pawl (Figure 3, Item 6).
  - d. Under the charger handle locks and between the charger housing and receiver (Figure 3, Item 3).
  - e. Inside the feed tray (Figure 3, Item 1).
  - f. Inside the sear assembly, under the receiver sear, and inside the sear housing and receiver buffer bodies (Figure 3, Item 2).
  - g. Between the feed throat plungers and receiver slots (Figure 3, Item 4).

Apply GMD or LSAT to exterior surfaces and wipe off with a clean wiping rag.



M2233M19

Figure 3. Lubrication Instructions.

**LUBRICATION - Continued**

3. Extreme cold. Subzero weather causes the lubricant to become thicker. In temperatures 0 degrees and below, use Lubricating Oil, Weapons (LAW) after first cleaning all parts to remove previous lubricants. When using LAW, brush on a thin coat, especially on those parts cited in (WP 0047), Step 2. If the metal "sweats" when the gun is brought indoors, field strip, wipe dry, then allow parts to return to room temperature before lubricating and reassembling.
4. Wet, salty conditions. Preserve and lubricate all surfaces generously to protect parts from rust.

**END OF TASK****END OF WORK PACKAGE**



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**FIELD MAINTENANCE  
ILLUSTRATED LIST OF MANUFACTURED ITEMS**

---

**INITIAL SETUP:**

Not Applicable

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**INTRODUCTION****Scope**

This work package includes complete instructions for making items authorized to be manufactured.

**How to Use the Index of Manufactured Items**

A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the page which covers fabrication criteria.

**Explanation of the Illustrations of Manufactured Items**

All instructions needed by maintenance personnel to manufacture the item are included on the illustrations. All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

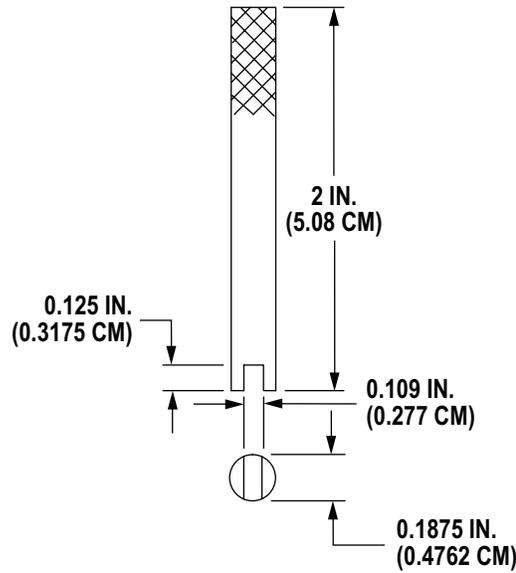
*Table 1. Manufactured Items Index.*

ITEM NO.	PART NUMBER/ (CAGEC)	DESCRIPTION	DRAWING NUMBER	FIGURE NUMBER
1		Lock Plunger Tool		1

**Lock Plunger Tool**

**NOTES**

1. Fabricate lock plunger tool from:
  - rod, steel, 0.1875 inch (0.4762 cm) diameter, 2 inch (5.08 cm) long
2. Mill a groove 0.109 inch (0.277 cm) wide, 0.125 inch (0.3175 cm) deep into the center of one end of the rod.
3. Knurl the other end of the rod.
4. All dimensions are in inches with metric conversion to centimeters in parentheses.



M2241M19

*Figure 1. Lock Plunger Tool (Used in Removal/Installation of Spring in Charging Handle).*

**END OF WORK PACKAGE**

**CHAPTER 5**

**AMMUNITION MAINTENANCE INSTRUCTIONS**



**FIELD MAINTENANCE  
AMMUNITION MAINTENANCE**

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**INITIAL SETUP:**

**Materials/Parts**

Rag, Wiping (WP 0089, Table 1, Item 13)

---

## GENERAL INFORMATION

This work package contains information and instructions on the types of ammunition used with the MK19 Machine Gun.

### WARNING

- Use only ammunition authorized for use with the MK19 Machine Gun.
- Keep ammunition dry, clean, and away from direct heat.
- Do not drop, strike, or destroy ammunition by mechanical means.
- In case of a runaway gun, never try to break the ammo belt with your hands. Injury could result. Lower one charging handle to prevent the gun from firing.
- Do not approach or handle a dud (a fired round which fails to explode on impact). The dud could explode any time after firing, causing injury or death.
- Do not relink or fire ammunition that has been cycled through the weapon.
- The MK19 Machine Gun weighs 77.6 lb (35.2 kg). A two-man lift is required for the MK19 Machine Gun and each fully loaded M548 ammunition container.
- Ensure ammunition link is aligned evenly on ammunition. Ensure link is aligned, touching copper band on both sides of ammunition.
- Misaligned ammunition links are caused during ammunition separation when twisting the ammunition belt in preparation for loading the MK19. After ammunition belt has been separated, ensure ammunition links are aligned evenly and touching the copper band on both sides of the ammunition when loading.

#### 1. PROTECT AMMUNITION FROM MUD, SAND, AND WATER.

If the ammunition gets wet or dirty, wipe it off with a clean rag. Wipe off light corrosion as soon as it is discovered. Turn in heavily corroded rounds In Accordance With (IAW) local procedures.

#### 2. DO NOT EXPOSE AMMUNITION TO THE DIRECT RAYS OF THE SUN.

If the powder is hot, excessive pressure may be developed when the weapon is fired.

#### 3. DO NOT OIL OR GREASE AMMUNITION.

Dust and other abrasives that collect on greased ammunition may cause damage to the operating parts of the weapon. Moreover, oiled ammunition produces excessive chamber pressure.

#### 4. DO NOT FIRE DENTED ROUNDS, ROUNDS WITH LOOSE PROJECTILES, OR OTHERWISE DEFECTIVE ROUNDS.

Dispose of defective rounds in accordance with local procedures.

## END OF TASK

## END OF WORK PACKAGE

**DEPOT MAINTENANCE**  
**MK19 MOD 3 40 MM MACHINE GUN**  
**(NSN 1010-01-126-9063)**  
**MK19 MOD 3 40 MM MACHINE GUN, WITH SIGHT BRACKET**  
**(NSN 1010-01-490-9697)**  
**UPGUNNED WEAPONS STATION MK19 40 MM MACHINE GUN**  
**(NSN 1010-01-362-6513)**

**AMMUNITION MARKING INFORMATION**

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**INITIAL SETUP:**

**Tools and Special Tools**

Tool Set, Field Level (WP 0090, Table 1, Item 31)

Tool Set, Organizational (WP 0090, Table 1, Item  
34)

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## DUMMY ROUNDS

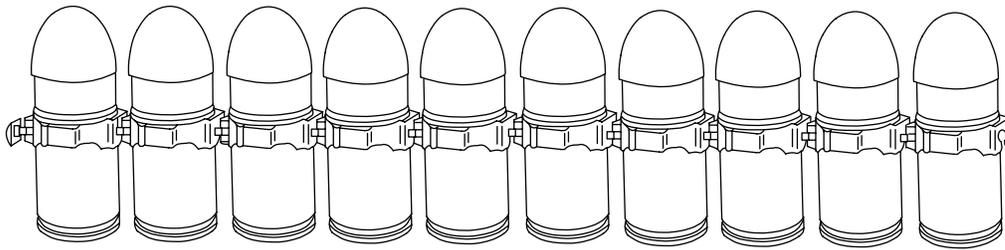
### NOTE

Tool sets referenced in this work package for Organizational and Direct Support Level Maintenance are for Marine Corps/Navy use only.

The dummy cartridge, 40 mm, M922/M922A1 (DODIC B472) linked with M16A2 links, 10 rounds per belt, packed in an M2A1 metal box will be authorized for each MK19 MOD 3 and for each Tool Set, Organizational Level Maintenance and Tool Set, Direct Support Level Maintenance. Dummy cartridges for the tool sets are to be requisitioned from normal Class V (W) supply sources by units concerned after initial issue tool sets are received. These dummy cartridges are totally inert and are used for checking gun function and for gun crew training. Although inert items are normally on time, initial issue items are only replaced when worn out in service. It is anticipated that approximately 50 percent of the initial issue rounds may require replacement annually.

### WARNING

- Ensure ammunition link is aligned evenly on ammunition. Ensure link is aligned, touching copper band on both sides of ammunition.
- Misaligned ammunition links are caused during ammunition separation when twisting the ammunition belt in preparation for loading the MK19. After ammunition belt has been separated, ensure ammunition links are aligned evenly and touching the copper band on both sides of the ammunition when loading.



M2242M19

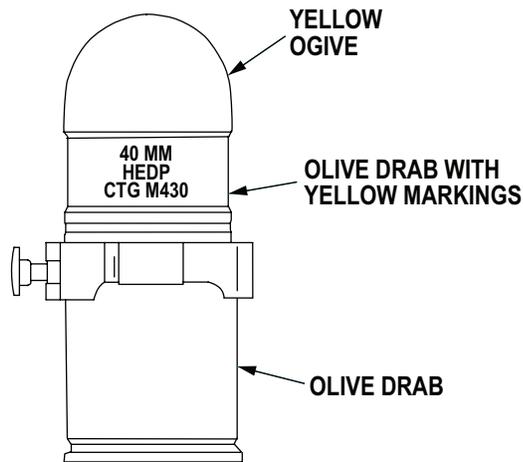
*Figure 1. Ammunition Marking Information.*

## END OF TASK

**STANDARD A AMMUNITION**

**M430/M430A1 Round**

1. The cartridge, 40 mm, High-Explosive Dual Purpose (HEDP), M430/M430A1, linked with M16A2 links, is the current standard round designated for use with the MK19 MOD 3. This round is a high-explosive, dual purpose, impact type round designed to penetrate two inches of steel armor at 0 degrees of obliquity and to inflict personnel casualties in the target area. This round is packed in PA120 or M548 metal ammunition containers (32 and 48 round belts).
2. **Type/Use:** A high-explosive, dual purpose grenade; Impact type round designed to penetrate two inches of steel armor at 0 degrees and to inflict personnel casualties.



M2243M19

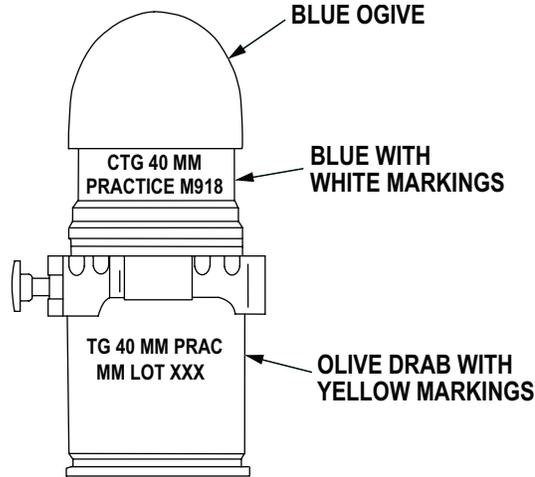
*Figure 2. M430/M430A1 Round.*

**Table 1. M430/M430A1 Round.**

<b>M430/M430A1 ROUND Characteristics</b>	
Identification:	Olive drab with yellow markings
Components:	Fuze: PIBD, M549; Filler: Comp A5
Arming distance:	18 to 30 meters
Wound radius:	15 meters

**STANDARD A AMMUNITION - Continued**

The cartridge, 40 mm, M918 TP, linked with M16A2 links is the companion training cartridge to the M430/ M430A1. This round contains a pyrotechnic charge, which, on impact, emits a flash-bang signature to simulate the service ammunition.



M2244M19

*Figure 3. M918 Round.*

**Table 2. M918 Round.**

<b>M918 ROUND</b>	
Type/Use:	A target practice round with flash signature
Identification:	Blue with white markings
Components:	Fuze: M550 escapement; Propellant: M2
Arming distance:	18 to 30 meters
Wound radius:	15 meters

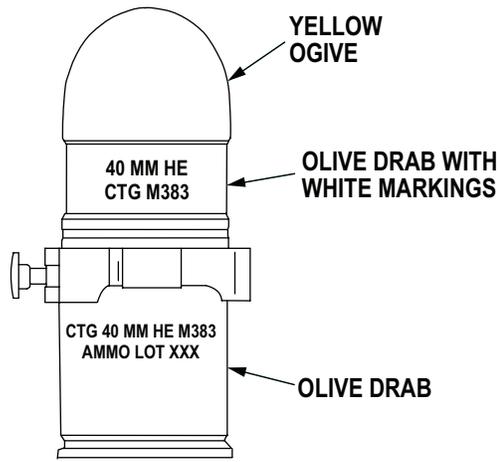
**END OF TASK**

**STANDARD B AMMUNITION****NOTE**

Use only ammunition linked with M16A2 links. Use of 40 mm ammunition with either M16 or M16A1 links will cause weapon stoppages.

1. (Not for Army Use.) This category of item will no longer be procured but may be available in Navy stock and may be issued as a substitute item for the Standard A item until stock is exhausted. Ammunition containing either the M16 or M16A1 links is not to be used in the MK19 MOD 3 as weapon stoppages will occur. The M16A2 link is the only link compatible with the weapon and can be identified by four finger-like tabs holding the rotating band.
2. The two High-Explosive (HE) cartridges listed below are high explosive rounds designed to inflict personnel casualties in the target area using ground burst effects. The HE filler and body materials of these rounds differ; however, the performance characteristics are the same and neither has the armor penetrating characteristics of the Standard A M430/M430A1 High-Explosive Dual Purpose (HEDP) round.
  - a. Cartridge, 40 mm, HE, M383, linked with M16A2 links (DODIC B571), is a high-explosive round designed to inflict personnel casualties in the target area using ground burst effects. This round does not have the armor penetrating characteristics of the Standard A M430/M430A1 HEDP round. The M383 HE cartridge is available in a 50 round belt packed in a wooden box (NSN 1310-00-976- 0907) as a 48 round belt.
  - b. (Not for Army Use.) Cartridge, 40 mm, HE, M384, linked with M16A2 links (DODIC B470), 50 round belt per wooden box. Limited quantities remain in Navy stock.

STANDARD B AMMUNITION - Continued



M2245M19

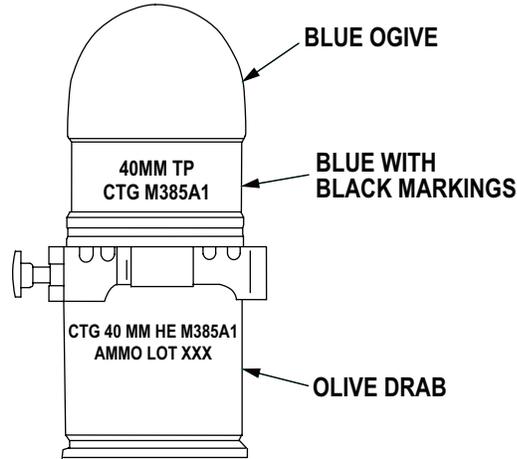
Figure 4. M383 HE Round.

Table 3. M383 HE Round.

<b>M383 HE ROUND</b>	
Type/Use:	A high-explosive grenade designed to inflict casualties
Identification:	Olive drab with white markings
Components:	Fuze: PD, M533; Filler: RDX, Comp A5
Arming distance:	18 to 36 meters
Wound radius:	15 meters

**STANDARD B AMMUNITION - Continued**

Cartridge, 40 mm, practice M385A1, linked with M16A1 or M16A2 links (DODIC B480), 50 round belt per wooden box, 48 round belt per M548 container, or 32 round belt per PA120 container. This round contains a projectile which has a solid aluminum body and is designed only for practice or proof testing of weapons. Limited quantities remain in Navy stock.



M2246M19

*Figure 5. M385A1 TP Round.*

**Table 4. M385A1 TP Round.**

<b>M385A1 TP ROUND</b>	
Type/Use:	Training practice (TP), inert rounds with a propelling charge
Identification:	Blue with black markings
Components:	Propellant: M2
Muzzle velocity:	244 feet per second
Maximum range:	2,200 meters

**END OF TASK**

**END OF WORK PACKAGE**



**CHAPTER 6**  
**PARTS INFORMATION**



**FIELD MAINTENANCE  
REPAIR PARTS AND SPECIAL TOOLS LIST INTRODUCTION**

**SCOPE**

The Repair Parts and Special Tools List (RPSTL) work package 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 the MK19 40 MM Machine Gun. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the, 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.
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 contains supply/requisitioning information, maintenance level authorization criteria, and disposition instruction, as shown in the following breakout. This entry may be subdivided into four subentries, one for each service.

*Table 1. SMR Code Explanation.*

<u>Source Code</u> XX	<u>Maintenance Code</u> XX	<u>Recoverability Code</u> 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.

## EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES - Continued

**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.

<u>Source Code</u>	<u>Application/Explanation</u>
PA PB PC PD PE PF PG PH PR PZ	<b>NOTE</b>  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.
MF-Made at field MH-Made at below depot/sustainment level ML-Made at SRA 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 a higher level, order the item from the higher level of maintenance.
AF-Assembled by field AH-Assembled by below depot sustainment level AL-Assembled by SRA 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 part number.
XC	Installation drawings, diagrams, instruction sheets, field service drawings; identified by manufacturer's part number.

## EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES - Continued

<u>Source Code</u>	<u>Application/Explanation</u>
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 items 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:

<u>Maintenance Code</u>	<u>Application/Explanation</u>
F-	Field Maintenance can remove, replace, and use the item.
H-	Below Depot Sustainment maintenance can remove, replace, and use the item.
L-	Specialized repair activity 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 F.

**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).

**EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES - Continued**

**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.

<u>Maintenance Code</u>	<u>Application/Explanation</u>
F-	Field 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 (enter specialized repair activity or TASMG designator) 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 the item (Navy only).
K-	Complete repair is done at contractor facility.
Z-	Nonreparable. No repair is authorized.
B-	No repair is authorized. No parts of special tools are authorized for 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 shown in the fifth position of the SMR code as follows:

<u>Recoverability Code</u>	<u>Application/Explanation</u>
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.
F-	Reparable item. When uneconomically repairable, condemn and dispose of the item at the field level.
H-	Reparable item. When uneconomically repairable, condemn and dispose of the item at the below depot sustainment level.

## EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES - Continued

<u>Recoverability Code</u>	<u>Application/Explanation</u>
D-	Reparable item. When beyond lower level repair capability, return the item to depot. Condemnation and disposal of the item are not authorized below depot level.
L-	Reparable item. Condemnation and disposal are not authorized below Specialized Repair Activity (SRA).
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. Condemnation and disposal to be performed 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 than 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.
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.
  - a. **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.
  - b. **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.
  - c. **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 list.
  
2. **Part Number (P/N) Index Work Package.** Part numbers in this index are listed in ascending alphanumeric sequence (vertical arrangement of letter and number combinations which places the first letter of 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).
  - a. **PART NUMBER Column.** Indicates the part number assigned to the item.
  - b. **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.
  - c. **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. Identification of the UOCs used in the RPSTL are:

Code	Used On
M69	MK19 Mod 3
BJ5	MK19 Mod 3 With Sight
BX8	MK19 Upgunned Weapons Station

**Fabrication Instructions.** Bulk materials required to manufacture items are listed in the bulk material functional group of this RPSTL. Part numbers for bulk material 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 TM 9-1010-230-23&P.

**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.

**Associated Publications.** The publication(s) listed below pertains to the (enter item name):

**SPECIAL INFORMATION - Continued**

<u>Publication</u>	<u>Short Title</u>
TM 9-1010-230-10	Operator's Manual: MK19

**Illustrations List.** The illustrations in this RPSTL contain field authorized items. Illustrations published in TM 9-1010-230-23&P that contain field authorized items also appear in this RPSTL. The tabular list in the repair parts list work package contains only those parts coded "F" in the third position of the SMR code, therefore, there may be a break in the item number sequence.

**HOW TO LOCATE REPAIR PARTS****1. When NSNs or Part Numbers Are Not Known.**

- a. 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.
- b. Second. Find the figure covering the functional group or the subfunctional group to which the item belongs.
- c. Third. Identify the item on the figure and note the number(s).

**2. When NSN is Known.**

- a. 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.
- b. 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.**

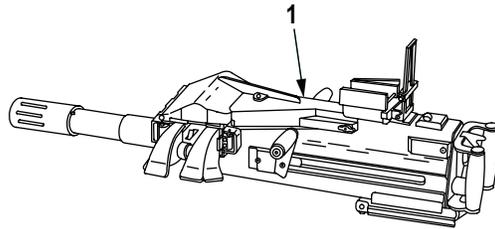
- a. First. If you have the part number and not the NSN, look in the PART NUMBER column of the part number index work package. Identify the figure and item number.
- b. Second. Look up the item on the figure in the applicable repair parts list work package.

**END OF WORK PACKAGE**

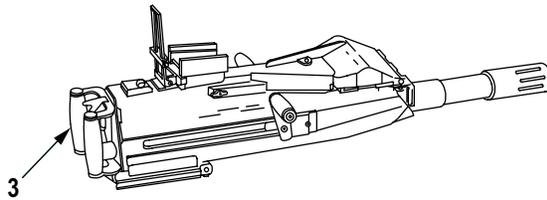


**FIELD MAINTENANCE  
MK19 MACHINE GUN  
REPAIR PARTS LIST**

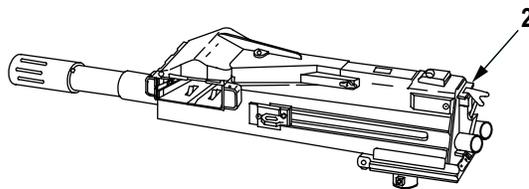
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**MK19 MOD 3 (PN 3269419)**



**MK19 MOD 3 WITH SIGHT MOUNTING BRACKET AND BII (PN 12297550)**



**MK19 MOD 3, UPGUNNED WEAPONS STATION (PN 7004160)**

R2001M19

*Figure 1. Machine Gun, 40 MM, MK19 MOD 3, PN 3269419; Machine Gun, 40 MM, MK19 MOD 3 with Sight Mounting Bracket and BII, PN 12997550; and Machine Gun, 40 MM, MK19 MOD 3, Upgunned Weapons Station, PN 7004160.*

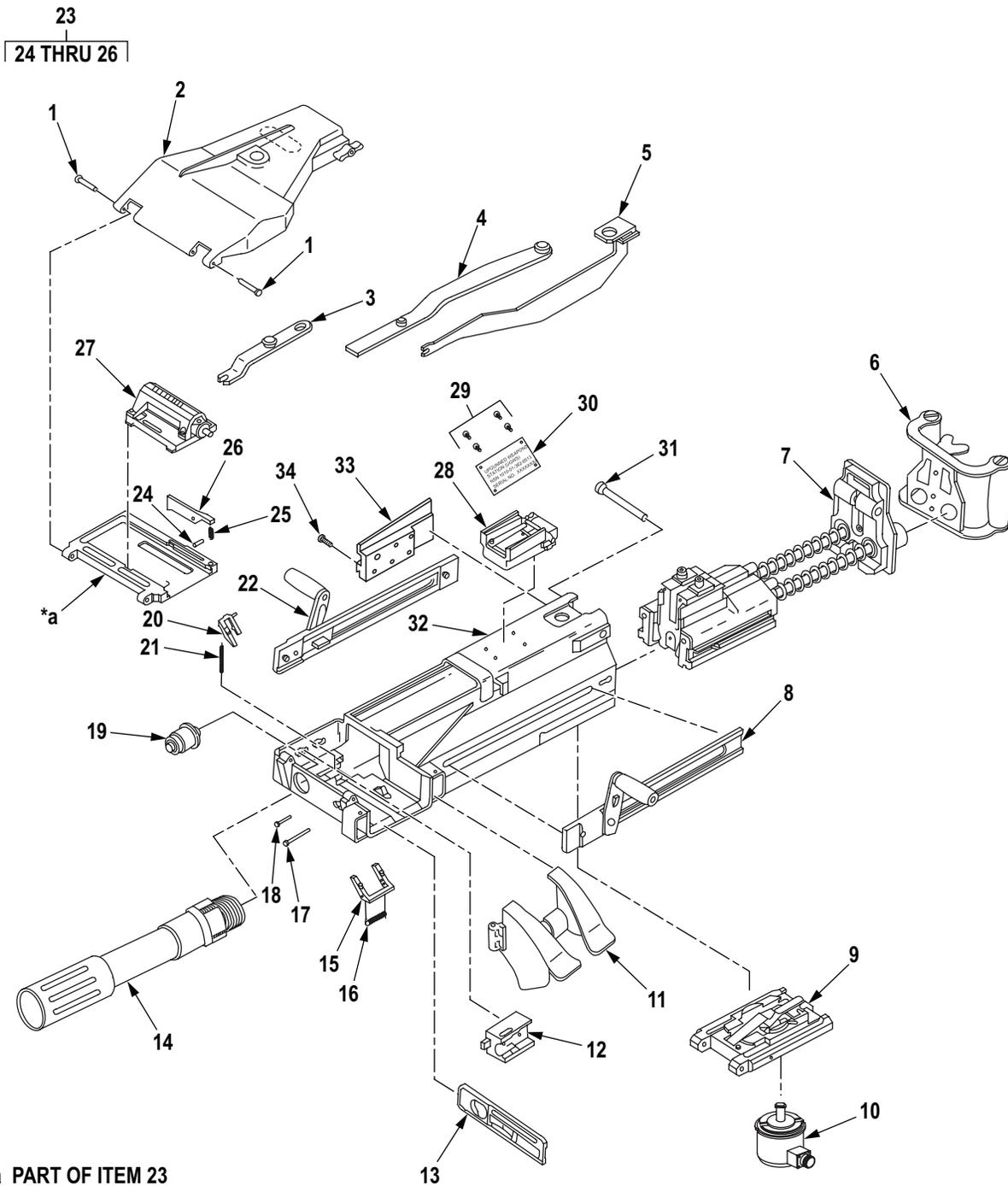
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					<b>GROUP 00 40 MM MACHINE GUN MK19 MOD 3 3269419 AND 12997550</b>	
					<b>FIG. 1. MACHINE GUN, 40 MM, MK19 MOD 3, PN 3269419; MACHINE GUN, 40 MM, MK19 MOD 3 WITH SIGHT MOUNTING BRACKET AND BII, PN 12997550; AND MACHINE GUN, 40 MM, MK19 MOD 3, UPGUNNED WEAPONS STATION, PN 7004160.</b>	
1	PAFDA	1010-01-126-9063	19200	3269419	MACHINE GUN,40MM, MK 19 MOD 3 UOC: M69 .....	1
2	PAFDA	1010-01-362-6513	OMLM6	7004160	MACHINE GUN,40 MM, MK 19 MOD 3, UPGUNNED WEAPONS STATION UOC: BX8 .....	1
3	PAFDD	1010-01-490-9697	19200	12997550	GUN,MACHINE,40MM MK 19 MOD3, W/MOD UOC: BJ5 .....	1

**END OF FIGURE**



**FIELD MAINTENANCE  
MK19 MACHINE GUN  
REPAIR PARTS LIST**

---



R2002M19

Figure 2. MK19 MOD 3 40 MM Machine Gun, PN 3269419; MK19 MOD 3 40 MM Machine Gun with Sight Mounting Bracket and BII, PN 12997550; and Upgunned Weapons Station MK19 MOD 3 40 MM Machine Gun, PN 7004160 Assemblies and Components.

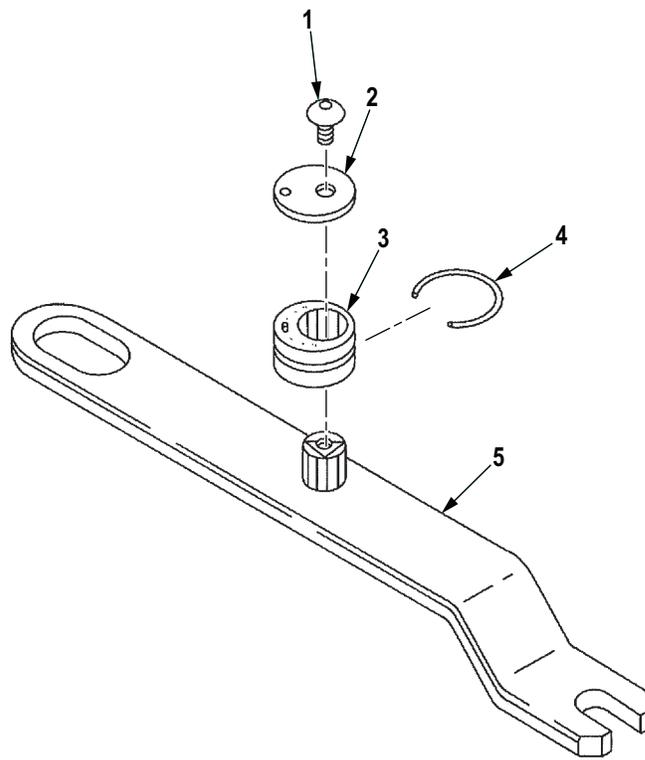
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<p><b>GROUP 01 MACHINE GUN ASSEMBLIES AND COMPONENTS (3269400 AND 12997551)</b></p> <p><b>FIG. 2. MK19 MOD 3 40 MM MACHINE GUN, PN 3269419; MK19 MOD 3 40 MM MACHINE GUN WITH SIGHT MOUNTING BRACKET AND BII, PN 12997550; AND UPGUNNED WEAPONS STATION MK19 MOD 3 40 MM MACHINE GUN, PN 7004160 ASSEMBLIES AND COMPONENTS.</b></p>						
1	PAFZZ	5315-01-123-6092	19200	3269472	PIN,STRAIGHT, KNURLED HD .....	2
2	PAFFF	1010-01-133-6979	19200	3269406	TOP COVER ASSEMBLY SEE FIG. 10 FOR BREAKDOWN .....	1
3	PAFFF	3040-01-475-2685	19200	12997788	LEVER,REMOTE CONTRO SEE FIG. 3 FOR BREAKDOWN .....	1
4	PAFZZ	3040-01-123-6097	19200	3269426	CONNECTING LINK,RIGID, PRIMARY .....	1
5	PAFFF	1010-01-123-6705	19200	3269411	CAM ASSEMBLY,VERTIC SEE FIG. 14 FOR BREAKDOWN .....	1
6	PAFFF	1010-01-129-1232	19200	3269415	CONTROL GRIP ASSEMB SEE FIG. 8 FOR BREAKDOWN .....	1
7	AFFFF		19200	3269401	BOLT AND BACKPLATE SEE FIG. 5 FOR BREAKDOWN .....	1
8	PAFFF	1010-01-129-1247	19200	3269409	LOADER,GUN,LH, SEE FIG. 16 FOR BREAKDOWN UOC: BJ5,M69 .....	1
8	XDFFF		19200	3269409-MOD	LOADER,GUN,LH, SEE FIG. 16 FOR BREAKDOWN UOC: BX8 .....	1
9	PAFFF	1010-01-133-6990	19200	3269410	SEAR ASSEMBLY, SEE FIG. 12 FOR BREAKDOWN .....	1
10	PAFZZ	5945-01-133-6985	19200	3269501	SOLENOID UOC: BX8 .....	1
11	PAFFF	1010-01-149-5468	19200	5830095	FEED THROAT ASSEMBLY SEE FIG. 19 FOR BREAKDOWN UOC: BJ5,M69 .....	1
12	PAFZZ	1010-01-123-6094	19200	3269439	BLOCK,ROUND POSITION .....	1
13	PAFFF	1010-01-129-1235	19200	3269403	ALIGNMENT GUIDE SEE FIG. 15 FOR BREAKDOWN .....	1
14	PAFFF	1010-01-440-3474	19200	12012058	BARREL,GRENADE LAUN SEE FIG. 4 FOR BREAKDOWN .....	1
15	PAFZZ	3040-01-123-6282	19200	3269438	PAWL, SECONDARY .....	1
16	PAFZZ	5360-01-123-6200	19200	3269486	SPRING,HELICAL,TORS .....	1
17	PAFZZ	5315-01-123-6096	19200	3269434	PIN,STRAIGHT,HEADLE .....	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
18	PAFZZ	5315-01-123-6095	19200	3269435	PIN,SHOULDER,HEADLE .....	1
19	PAFFF	1010-01-133-6977	19200	3269405	OGIVE PLUNGER ASSEM SEE FIG. 9 FOR BREAKDOWN .....	1
20	PAFZZ	3040-01-123-6283	19200	3269436	PAWL,PRIMARY .....	1
21	PAFZZ	5360-01-122-9671	19200	3269502	SPRING,HELICAL,COMP .....	1
22	PAFFF	1010-01-129-1233	19200	3269408	LOADER,GUN,RH,MK16, SEE FIG. 17 FOR BREAKDOWN .....	1
23	PAFZZ	1010-01-129-1236	19200	3269431	TRAY,FEED .....	1
24	PAFZZ	5315-01-133-0830	19200	5526204	. PIN,GROOVED,HEADLES .....	1
25	PAFZZ	5360-01-122-9670	19200	3269515	. SPRING,HELICAL,COMP .....	1
26	PAFZZ	1010-01-123-6281	19200	3269490	. PAWL,FEED TRAY .....	1
27	PAFFF	1010-01-133-6980	19200	3269407	FEED SLIDE ASSEMBLY SEE FIG. 11 FOR BREAKDOWN .....	1
28	PAFFF	1010-01-133-6983	19200	3269545	SIGHT,REAR,MK40, SEE FIG. 18 FOR BREAKDOWN UOC: BJ5,M69 .....	1
29	PAFZZ	5305-01-392-1665	80205	MS51958-40B	SCREW,MACHINE UOC: BX8 .....	4
30	PAFZZ	9905-01-421-0350	OMLM6	7004224	PLATE,IDENTIFICATIO UOC: BX8 .....	1
31	PAFZZ	1010-01-123-6706	19200	3269404	PIN ASSEMBLY,BACK .....	1
32	PAFFF	1010-01-492-2118	19200	12997555	RECEIVER,CARTRIDGE .....	1
33	PBFZZ	1010-01-491-8630	19200	12993610	BASE,REAR SIGHT UOC: BJ5 .....	1
34	PAFZZ	5306-00-150-9105	80205	AN4-4A	. BOLT,MACHINE UOC: BJ5 .....	5

END OF FIGURE

**FIELD MAINTENANCE  
ADJUSTABLE SECONDARY DRIVE LEVER  
REPAIR PARTS LIST**

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R2003M19

Figure 3. Adjustable Secondary Drive Lever, PN 12997788.

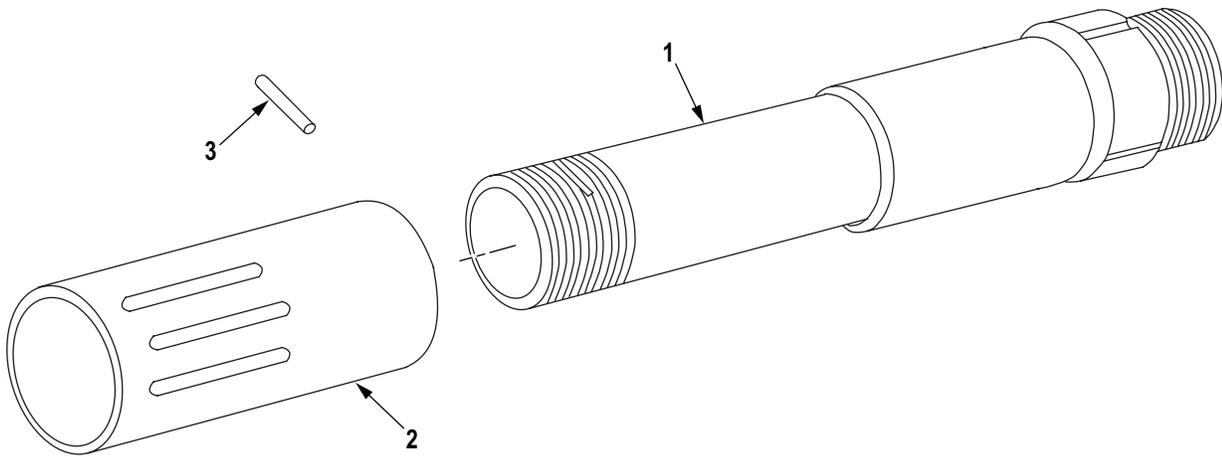
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					<b>GROUP 0101 ADJUSTABLE SECONDARY DRIVE LEVER (12997788)</b>	
					<b>FIG. 3. ADJUSTABLE SECONDARY DRIVE LEVER, PN 12997788.</b>	
1	PAFZZ	5305-01-519-2130	19200	13011857	SCREW,CAP,SOCKET HE .....	1
2	PAFZZ	3120-01-492-0354	19200	13011853	BEARING,WASHER,THRU .....	1
3	PAFZZ	1007-01-546-0569	19200	13011854	BUSHING,SELECTOR .....	1
4	PAFZZ	5365-01-123-6820	19200	3269469-1	RETAINING RING .....	1
5	PAFZZ	3040-01-475-2685	19200	13011856	LEVER,SECONDARY DRI .....	1

**END OF FIGURE**



**FIELD MAINTENANCE  
BARREL ASSEMBLY  
REPAIR PARTS LIST**

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R2004M19

Figure 4. Barrel Assembly, PN 12012058.

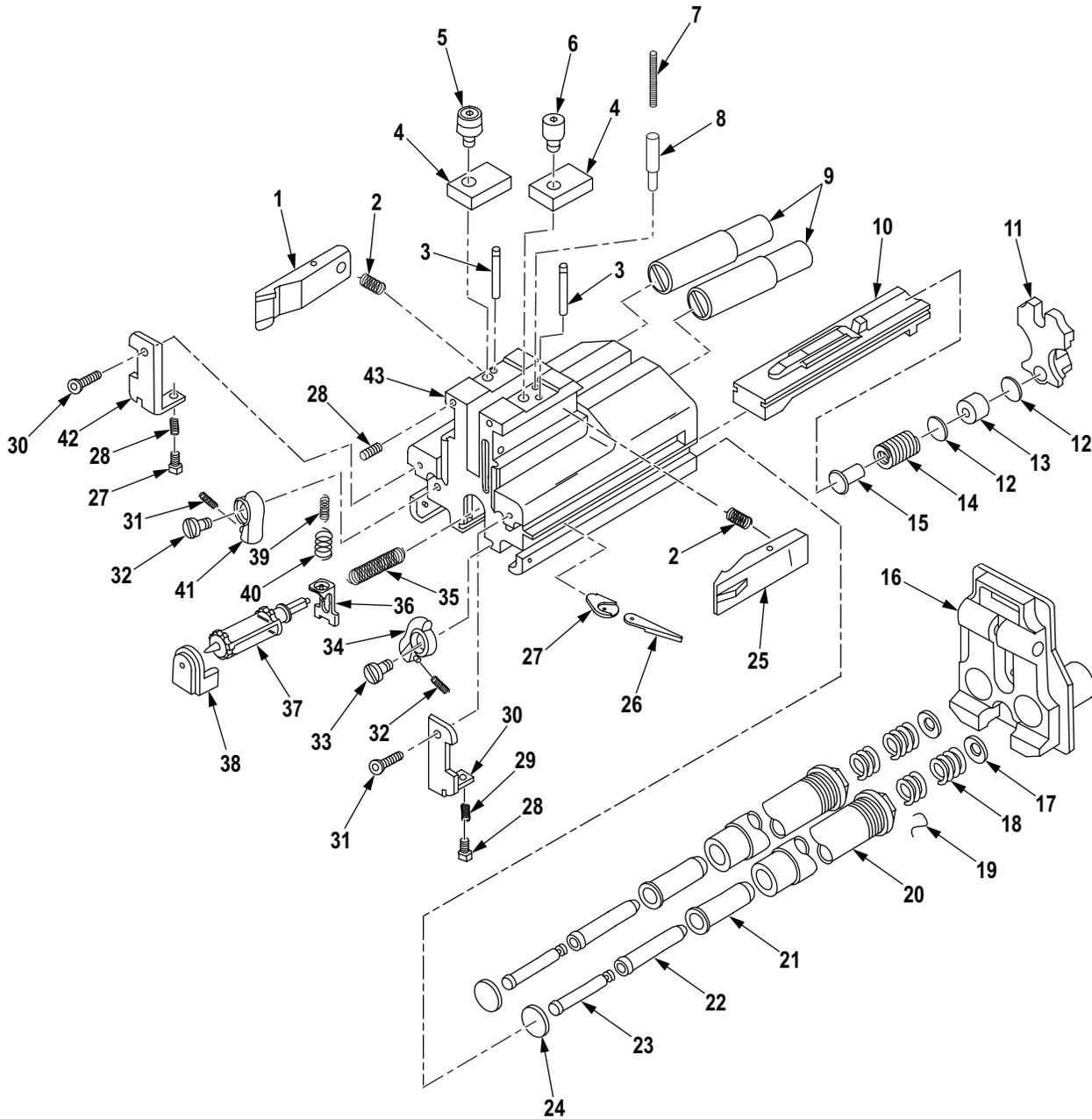
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					<b>GROUP 0102 BARREL ASSEMBLY (12012058)</b>	
					<b>FIG. 4. BARREL ASSEMBLY, PN 12012058.</b>	
1	PAFZZ	1055-01-122-9538	19200	3269422	BARREL,GRENADE LAUN .....	1
2	PAFZZ	1010-01-394-9913	19200	12012009	SUPPRESSOR,FLASH .....	1
3	PAFZZ	5315-00-058-9737	80205	MS16562-217	PIN,SPRING .....	1

**END OF FIGURE**



**FIELD MAINTENANCE  
BOLT AND BACKPLATE ASSEMBLY  
REPAIR PARTS LIST**

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R2005M19

Figure 5. Bolt and Backplate Assembly, PN 3269401

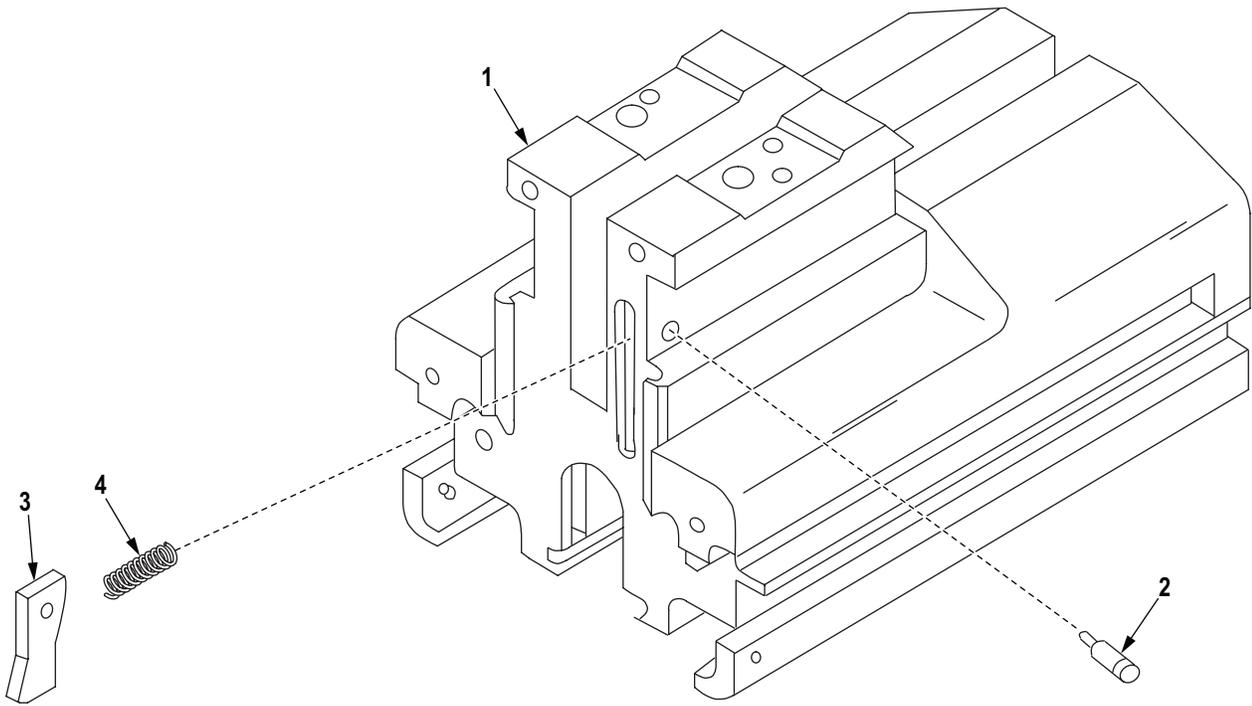
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 02 BOLT AND BACKPLATE ASSEMBLY (3269401)</b>						
<b>FIG. 5. BOLT AND BACKPLATE ASSEMBLY, PN 3269401</b>						
1	PAFZZ	1010-01-122-9540	19200	3269449	EXTRACTOR,CARTRIDGE .....	1
2	PAFZZ	5360-00-133-8266	19200	2813531	SPRING,HELICAL,COMP .....	2
3	PAFZZ	5315-01-123-6186	19200	3269476	PIN,GROOVED,HEADLES .....	2
4	PAFZZ	1010-01-122-9539	19200	3269450	RETAINER,PIN .....	2
5	PAFZZ	3110-01-235-0389	19200	5526209	CAM FOLLOWER,NEEDLE .....	1
6	PAFZZ	3120-00-122-5878	19200	2680964	ROLLER,LINEAR-ROTAR .....	1
7	PAFZZ	5360-01-122-9671	19200	3269502	SPRING,HELICAL,COMP .....	1
8	PAFZZ	5315-01-122-9641	19200	3269475	PIN,SHOULDER,HEADLES .....	1
9	PAFZZ	5303-01-129-1248	19200	3269402	BOLT,INTERNATIONAL SEE FIG. 7 FOR BREAKDOWN .....	2
10	PAFZZ	1010-01-122-9678	19200	3269457	SEAR,BOLT .....	1
11	PAFZZ	1010-01-133-0824	19200	5526198	LOCK PLATE ASSEMBLY .....	1
12	PAFZZ	5340-01-133-0829	19200	5526203	DISK,SOLID,PLAIN BL .....	2
13	PAFZZ	5365-01-133-0827	19200	5526201	SPACER,SLEEVE SEAR .....	1
14	PAFZZ	5360-01-122-9603	19200	3269425	SPRING,HELICAL,COMP .....	1
15	PAFZZ	5315-01-133-0828	19200	5526202	PIN,STRAIGHT,HEADLE .....	1
16	PAFZZ	1010-01-129-1245	19200	3269512	BACK PLATE .....	1
17	PAFZZ	5310-01-122-9631	19200	3269474	WASHER,SPRING TENSI .....	2
18	PAFZZ	5360-01-122-9602	19200	3269433	SPRING,HELICAL,COMP .....	2
19	MFFZZ		80205	MS20995C32-AR	WIRE,NONELECTRICAL (MAKE FROM PN MS20995C32 CAGE 80205,AS REQUIRED .....	AR
20	PAFZZ	1010-01-122-9542	19200	3269444	SLEEVE,BOLT .....	2
21	PAFZZ	1010-01-122-9544	19200	3269440	TUBE,OUTSIDE .....	2
22	PAFZZ	1010-01-122-9548	19200	3269441	TUBE,MIDDLE .....	2
23	PAFZZ	5315-01-122-9543	19200	3269442	PIN,GROOVED,HEADLES .....	2
24	PAFZZ	5340-01-122-9554	19200	3269459	DISK,SOLID,PLAIN, .....	2
25	PAFZZ	1010-01-122-9541	19200	3269448	EXTRACTOR,CARTRIDGE .....	1
26	PAFZZ	1010-01-491-8628	19200	12997553	LEVER,BREECH BLOCK, REPLACE OLD PN 3269443 WITH PN 12997552 AND 12997553 .....	1
27	PAFZZ	1010-01-491-8627	19200	12997552	CAM,BREECHBLOCK,OPE .....	1
28	PAFZZ	5305-00-869-1097	80205	MS21295-16	SCREW,CAP,SCH,SLFLK .....	2

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
29	PAFZZ	5305-00-133-8276	00141	CS18	SETSCREW,NYLON POIN .....	4
30	PAFZZ	1010-01-122-9551	19200	3269464	COVER,LH .....	1
31	PAFZZ	5305-00-366-6236	19200	2680889-1	SCREW,CAP,SOCKET HE .....	2
32	PAFZZ	5360-00-122-5890	19200	2813528	SPRING,HELICAL,COMP .....	2
33	PAFZZ	5305-00-133-8270	19200	2680962	SCREW,SHOULDER .....	2
34	PAFZZ	3040-00-122-5870	19200	2680959	PAWL,LH .....	1
35	PAFZZ	5360-01-158-1207	19200	3269417	SPRING,HELICAL,COMP .....	1
36	PAFZZ	1010-01-491-8632	19200	12997556	SEAR,FIRING PIN REPLACE OLD PN 3269467 WITH PN 12997556 AND 12997554 .....	1
37	PAFZZ	1010-01-491-8631	19200	12997554	PIN,FIRING REPLACE OLD PN 3269456 WITH PN 12997554 AND 12997556 .....	1
38	PAFZZ	1010-01-122-9555	19200	3269452	COVER,FIRING PIN .....	1
39	PAFZZ	5360-01-171-0008	19200	5526208	SPRING,HELICAL,COMP .....	1
40	PAFZZ	5360-01-123-2356	19200	3269525	SPRING,HELICAL,COMP .....	1
41	PAFZZ	3040-00-122-5867	19200	2680956	PAWL,FINGER,RH .....	1
42	PAFZZ	5340-01-122-9552	19200	3269463	COVER,ACCESS RH .....	1
43	PAFFF	1055-01-443-8386	19200	12012073	BOLT,BREECH SUBASSEMBLY SEE FIG. 6 FOR BREAKDOWN .....	1

END OF FIGURE

**FIELD MAINTENANCE  
BOLT SUBASSEMBLY  
REPAIR PARTS LIST**

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R2006M19

Figure 6. Bolt Subassembly, PN 12012073.

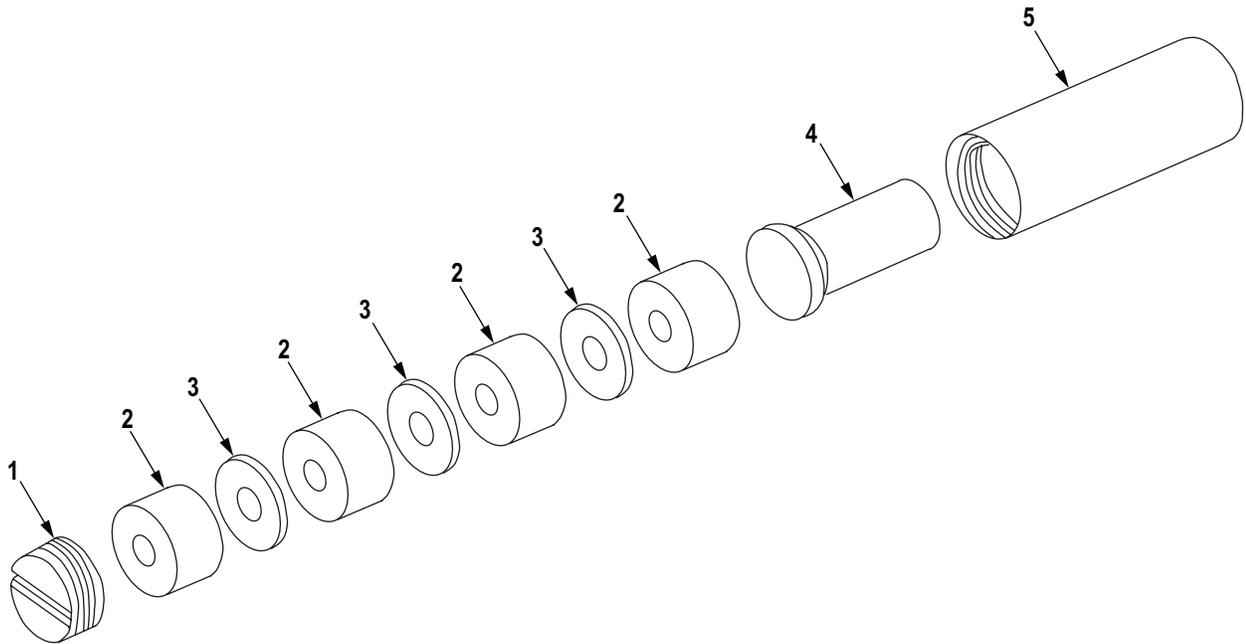
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 0201 BOLT SUBASSEMBLY (12012073)</b>						
<b>FIG. 6. BOLT SUBASSEMBLY, PN 12012073.</b>						
1	PAFZZ	1055 -01-122-9553	53711	3269461	BOLT,BREECH .....	1
2	PAFZZ	5315-01-122-9639	19200	3269526	PIN,SHOULDER,HEADLE .....	1
3	PAFZZ	3040-01-122-9672	19200	3269489	PAWL .....	1
4	PAFZZ	5360-01-217-2841	96906	MS24585-2121	SPRING,HELICAL,COMP .....	1

**END OF FIGURE**



**FIELD MAINTENANCE  
BOLT BUFFER ASSEMBLY  
REPAIR PARTS LIST**

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R2007M19

Figure 7. Bolt Buffer Assembly, PN 3269402.

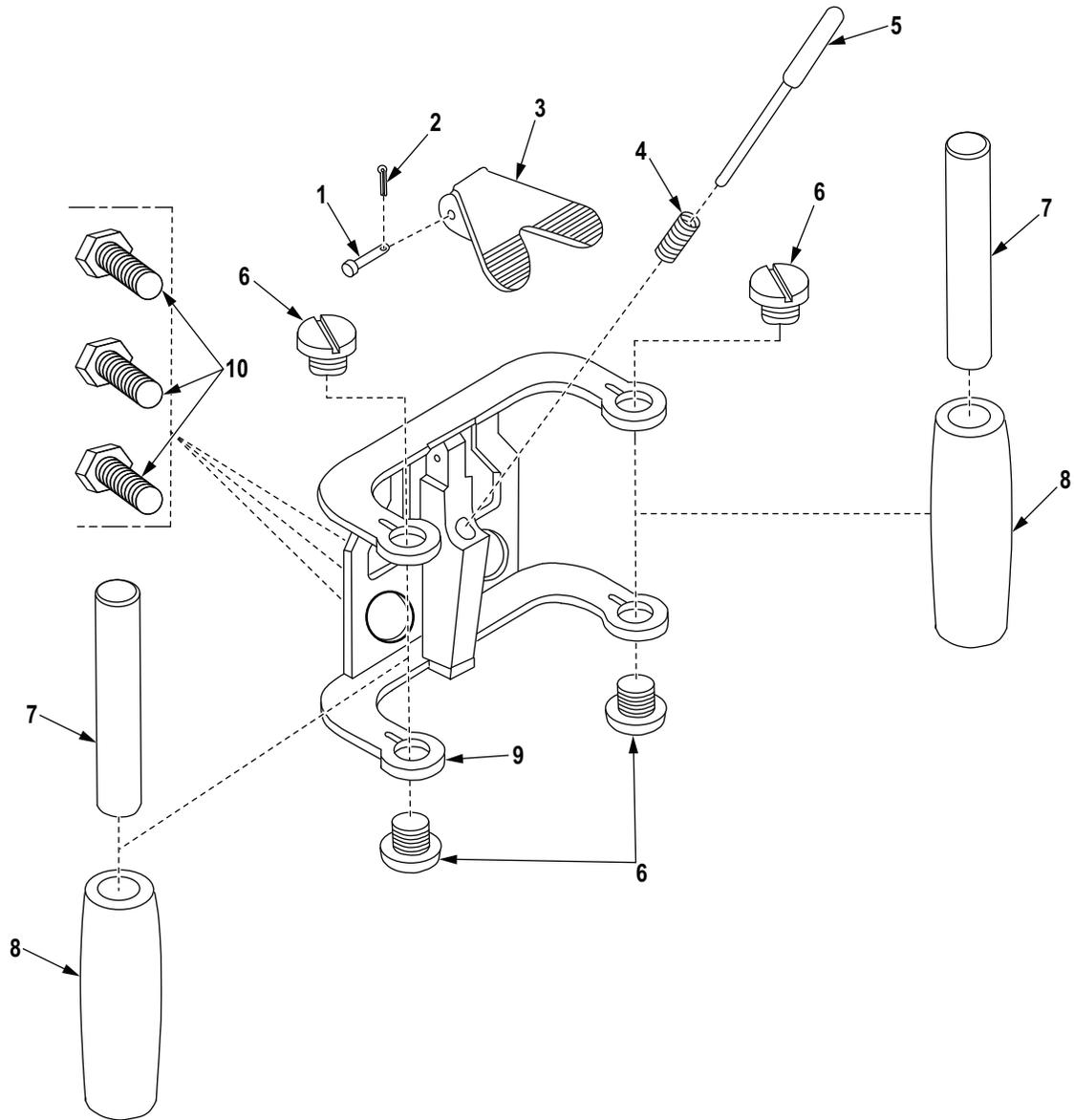
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<p><b>GROUP 0202 BOLT BUFFER ASSEMBLY (3269402)</b></p> <p><b>FIG. 7. BOLT BUFFER ASSEMBLY, PN 3269402.</b></p>						
1	PAFZZ	5365-01-122-9546	19200	3269446	PLUG,MACHINE THREAD .....	1
2	PAFZZ	1010-01-138-4810	19200	3269451	BUFFER,RECOIL MECHA .....	4
3	PAFZZ	5310-01-123-6266	19200	3269482	WASHER, SPRING TENSI .....	3
4	PAFZZ	1010-01-129-1246	10001	3269445	PLUNGER,BUFFER,BOLT .....	1
5	PAFZZ	1010-01-122-9545	19200	3269447	BODY,BUFFER,BOLT .....	1

**END OF FIGURE**



**FIELD MAINTENANCE  
CONTROL GRIP ASSEMBLY  
REPAIR PARTS LIST**

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R2008M19

Figure 8. Control Grip Assembly, MK19 MOD 3, PN 3269415.

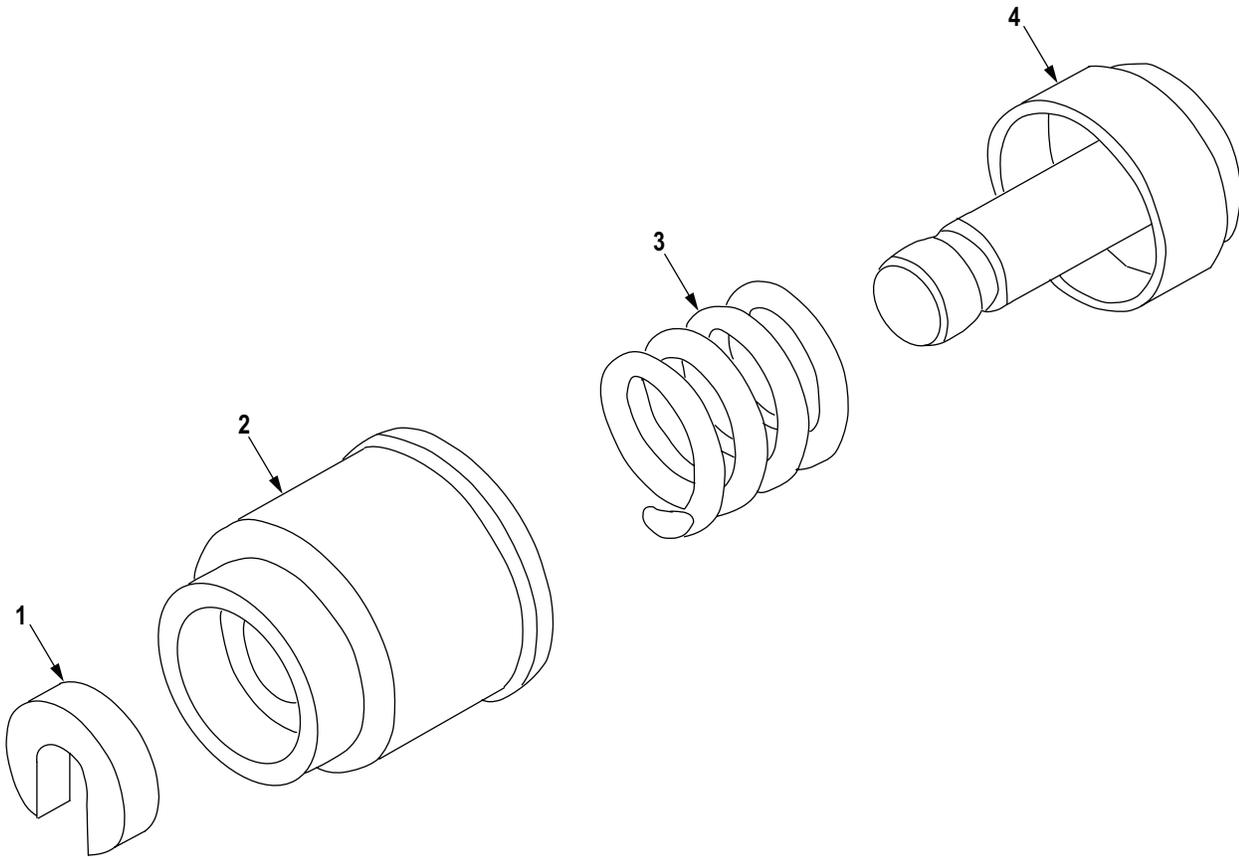
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 0203 CONTROL GRIP ASSEMBLY (3269415)</b>						
<b>FIG. 8. CONTROL GRIP ASSEMBLY, MK19 MOD 3, PN 3269415.</b>						
1	PAFZZ	5315-00-812-3757	96906	MS20392-1C21	PIN,STRAIGHT,HEADED .....	1
2	PAFZZ	5315-00-551-4246	80205	MS9245-21	PIN,COTTER .....	1
3	PAFZZ	1010-01-129-1234	19200	3269533	PLATE,TRIGGER,MANUA .....	1
4	PAFZZ	5360-00-897-6014	80205	MS24585C181	SPRING,HELICAL,COMP .....	1
5	PAFZZ	1010-01-123-6086	19200	3269535	ROD,OPERATING .....	1
6	PAFZZ	5305-00-500-9394	19200	5009394	SCREW,MACHINE UOC: BJ5,M69 .....	4
7	PAFZZ	1005-00-918-2617	19200	5009369	TUBE,HANDLE GRIP UOC: BJ5,M69 .....	2
8	PAFZZ	1005-00-726-5561	19200	7265561	GRIP,MACHINE GUN UOC: BJ5,M69 .....	2
9	PAFZZ	1010-01-133-6982	19200	3269534	BODY,MGT PLATE UOC: BJ5,M69 .....	1
9	XDFZZ		19200	3269534-MOD	BODY,MGT PLATE UOC: BX8 .....	1
10	PAFZZ	5305-01-457-4537	80204	B1821BH031F044N	SCREW,CAP,SELF-LOCK .....	3

**END OF FIGURE**



**FIELD MAINTENANCE  
OGIVE PLUNGER ASSEMBLY  
REPAIR PARTS LIST**

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R2009M19

Figure 9. Ogive Plunger Assembly, PN 3269405.

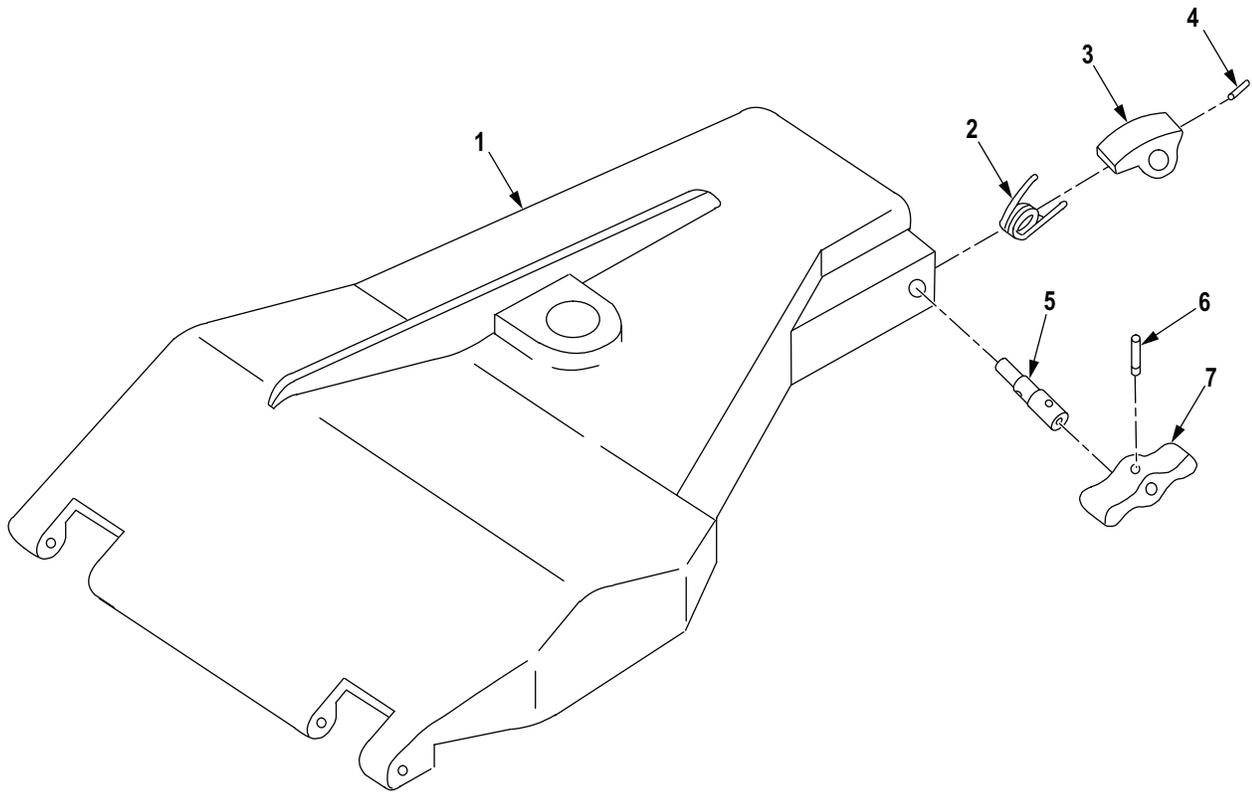
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 03 OGIVE PLUNGER ASSEMBLY (3269405)</b>						
<b>FIG. 9. OGIVE PLUNGER ASSEMBLY, PN 3269405.</b>						
1	PAFZZ	5310-01-123-6265	19200	3269493	WASHER,SLOTTED .....	1
2	PAFZZ	1010-01-129-1244	19200	3269437	HOUSING,SPRING,OGIV .....	1
3	PAFZZ	5360-01-124-4410	19200	3269455	SPRING,HELICAL,COMP .....	1
4	PAFZZ	1010-01-123-6075	19200	3269483	PLUNGER,OGIVE .....	1

**END OF FIGURE**



**FIELD MAINTENANCE  
TOP COVER ASSEMBLY  
REPAIR PARTS LIST**

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R2010M19

Figure 10. Top Cover Assembly, PN 3269406.

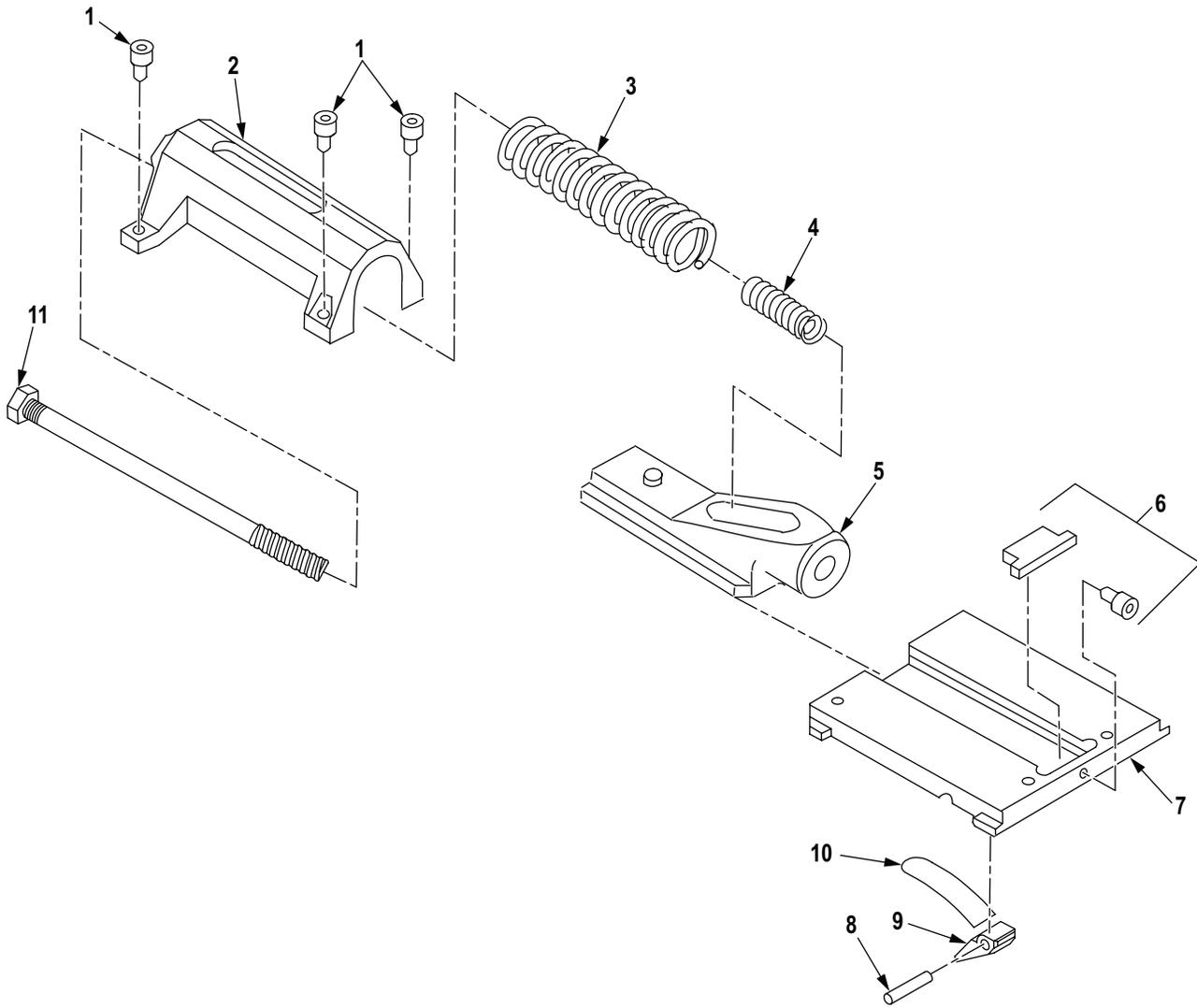
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 04 TOP COVER ASSEMBLY (3269406)</b>						
<b>FIG. 10. TOP COVER ASSEMBLY, PN 3269406.</b>						
1	PAFZZ	1010-01-129-1243	19200	3269484	TOP COVER .....	1
2	PAFZZ	5360-01-123-6201	19200	3269488	SPRING,HELICAL TORS .....	1
3	PAFZZ	1010-01-122-9556	19200	3269478	LOCK,COVER .....	1
4	PAFZZ	5315-00-281-3054	80205	MS51605-13	PIN,GROOVED,HEADLES .....	1
5	PAFZZ	5315-01-123-6268	19200	3269479	PIN,SHOULDER,LOCK .....	1
6	PAFZZ	5315-00-150-3838	96906	MS51605-19	PIN,GROOVED,HEADLES .....	1
7	PAFZZ	1010-01-123-6697	19200	3269477	HANDLE,LOCK .....	1

**END OF FIGURE**



**FIELD MAINTENANCE  
FEED SLIDE ASSEMBLY  
REPAIR PARTS LIST**

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R2011M19

Figure 11. Feed Slide Assembly, PN 3269407.

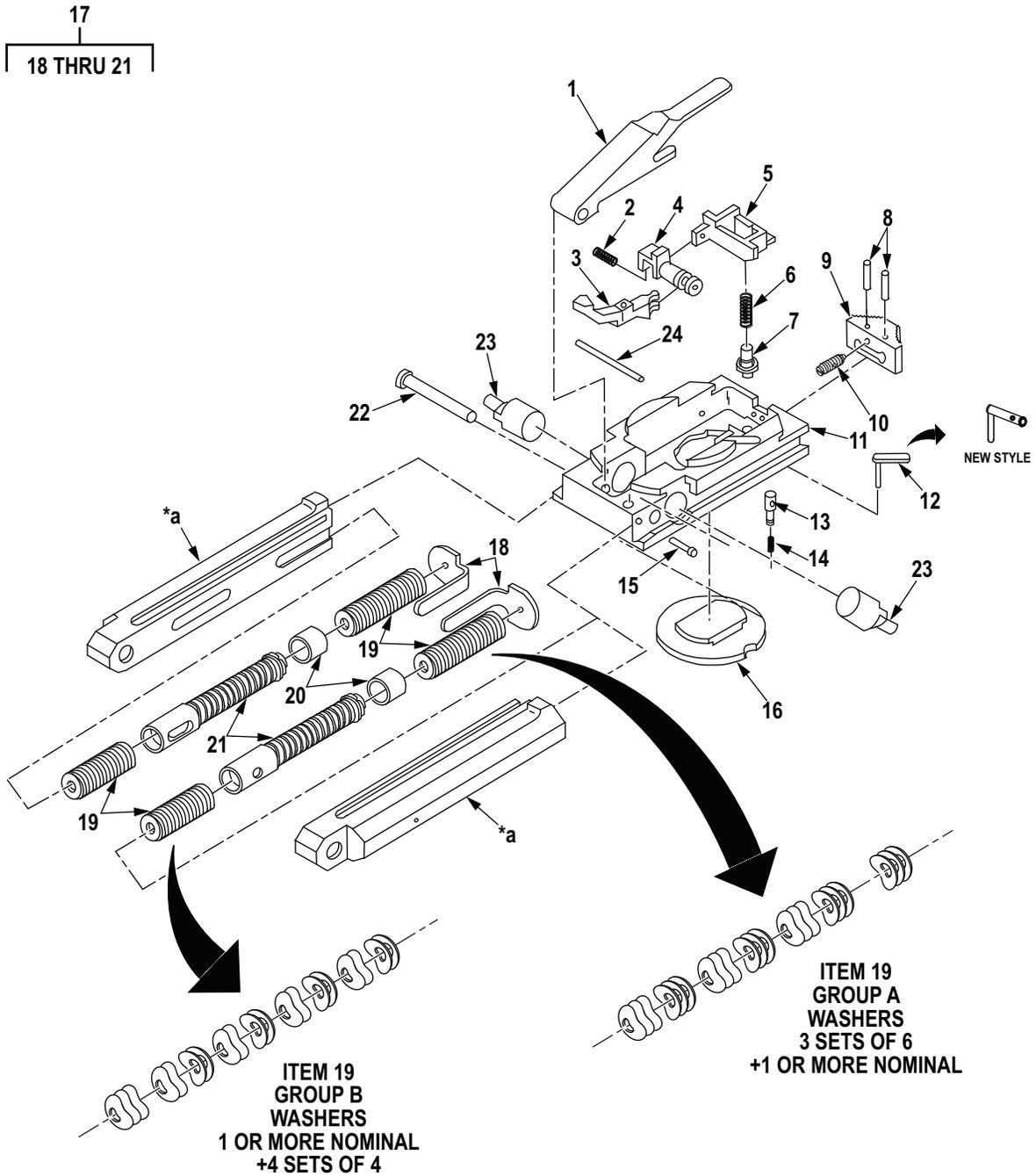
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 05 FEED SLIDE ASSEMBLY (3269407)</b>						
<b>FIG. 11. FEED SLIDE ASSEMBLY, PN 3269407.</b>						
1	PAFZZ	5305-00-269-0783	80205	NAS1351C3LN10	SCREW,CAP,SOCKET HE .....	3
2	PAFZZ	1010-01-129-1242	19200	3269429	HOUSING,SPRING .....	1
3	PAFZZ	5360-01-122-9547	19200	3269462	SPRING,HELICAL,COMP .....	1
4	PAFZZ	5360-01-123-6197	19200	3269487	SPRING,HELICAL,COMP .....	1
5	PAFZZ	1010-01-123-6074	19200	3269430	SLIDE,FEED,INNER .....	1
6	PAFZZ	1010-01-170-9940	19200	3269416	. STOP KIT,FEED SLIDE .....	1
6	PAFZZ	1010-01-329-4865	19200	3269416-5	. STOP,CARTRIDGE PART OF KIT P/N 3269416 0.438 IN. ....	1
6	PAFZZ	1010-01-329-4866	19200	3269416-6	. STOP,CARTRIDGE PART OF KIT P/N 3269416 0.469 IN. ....	1
6	PAFZZ	1010-01-329-4867	19200	3269416-7	. STOP,CARTRIDGE PART OF KIT P/N 3269416 0.500 IN. ....	1
6	PAFZZ	1010-01-329-4868	19200	3269416-8	. STOP,CARTRIDGE PART OF KIT P/N 3269416 0.531 IN. ....	1
6	PAFZZ	1010-01-330-2787	19200	3269416-9	. STOP,CARTRIDGE PART OF KIT P/N 3269416 0.563 IN. ....	1
6	PAFZZ	1010-01-329-4869	19200	3269416-10	. STOP,CARTRIDGE PART OF KIT P/N 3269416 0.594 IN. ....	1
6	PAFZZ	1010-01-329-4870	19200	3269416-12	. STOP,CARTRIDGE PART OF KIT P/N 3269416 0.625 IN. ....	1
6	PAFZZ	1010-01-329-4871	19200	3269416-13	. STOP,CARTRIDGE PART OF KIT P/N 3269416 0.656 IN. ....	1
6	PAFZZ	1010-01-329-4872	19200	3269416-14	. STOP,CARTRIDGE PART OF KIT P/N 3269416 0.687 IN. ....	1
6	PAFZZ	1010-01-329-4873	19200	3269416-15	. STOP,CARTRIDGE PART OF KIT P/N 3269416 0.718 IN. ....	1
6	PAFZZ	5305-00-978-9376	96906	MS16997-18	. SCREW,CAP,SOCKET HE PART OF KIT P/N 3269416 .....	1
7	PAFZZ	1010-01-129-1230	19200	3269432	SLIDE,FEED,OUTER .....	1
8	PAFZZ	5315-00-464-2682	96906	MS9389-84	PIN,STRAIGHT,HEADLE .....	2
9	PAFZZ	3040-01-123-6280	19200	3269428	PAWL,FEED .....	2
10	PAFZZ	5360-01-123-6308	19200	3269497	SPRING,FLAT,PAWL,FE .....	2
11	PAFZZ	5306-01-123-6088	19200	3269481	BOLT,SHOULDERED,ROD .....	1

END OF FIGURE



**FIELD MAINTENANCE  
SEAR ASSEMBLY AND RECEIVER BUFFER BODIES AND INTERNAL COMPONENTS  
REPAIR PARTS LIST**

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\*a PART OF ITEM 17

R2012M19

Figure 12. Sear Assembly, PN 3269410, and Receiver Buffer Bodies and Internal Components, PN 3269551.

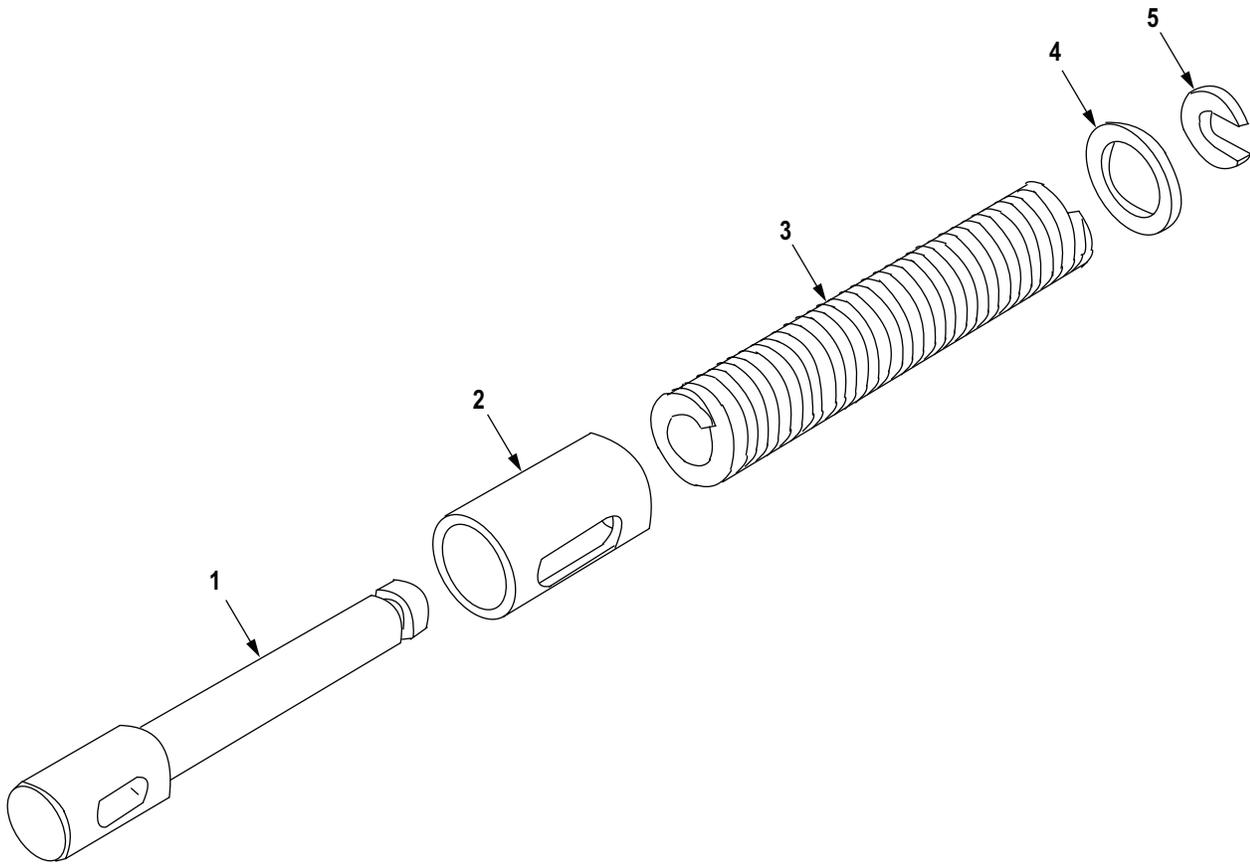
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<p><b>GROUP 06, 0601 SEAR ASSEMBLY (3269410) AND RECEIVER BUFFER BODIES AND INTERNAL COMPONENTS</b></p> <p><b>FIG. 12. SEAR ASSEMBLY, PN 3269410, AND RECEIVER BUFFER BODIES AND INTERNAL COMPONENTS, PN 3269551.</b></p>						
1	PAFZZ	1010-01-123-6084	19200	3269470	SEAR,RECEIVER .....	1
2	PAFZZ	5360-00-089-2366	96906	MS24585C56	SPRING,HELICAL,COMP .....	1
3	PAFZZ	1010-01-123-6080	19200	3269518	LEVER,SAFETY .....	1
4	PAFZZ	1010-01-123-6082	19200	3269499	SLIDE,SAFETY .....	1
5	PAFZZ	1010-01-359-2835	19200	12011993	BLOCK,SAFETY SLIDE .....	1
6	PAFZZ	5360-00-123-6196	19200	3269517	SPRING,HELICAL,COMP .....	1
7	PAFZZ	5315-01-123-6085	19200	3269420	PIN,SHOULDERED,HEAD .....	2
8	PAFZZ	5315-00-823-8745	80205	NAS561C3-10	PIN,SPRING,SLTD,CRE .....	2
9	PAFZZ	1010-01-123-6079	19200	3269519	SAFETY,SMALL ARMS T .....	1
10	PAFZZ	5305-01-123-6078	19200	3269520	PLUNGER,SPRING .....	1
11	PAFZZ	1010-01-129-1239	19200	3269473	HOUSING,SEAR .....	1
12	PAFZZ	1010-01-460-7941	19200	12938263	PIN,SAFETY LEVER .....	1
13	PAFZZ	5315-01-123-6076	19200	3269491	PIN,GROOVED,HEADED .....	1
14	PAFZZ	5360-00-464-7070	96906	MS24585C140	SPRING,HELICAL,COMP .....	1
15	PAFZZ	5315-01-151-8394	96906	MS9842-14	PIN,STRAIGHT,HEADED .....	1
16	PAFZZ	5340-01-129-1237	19200	3269471	CAP,PLUG,PROTECTIVE .....	1
17	PAFZZ	1010-01-138-4812	19200	3269551	BUFFER,RECOIL MECH .....	2
18	PAFZZ	1010-01-138-4807	19200	3269554	. RETAINER,BUFFER,STL .....	1
19	PAFZZ	5310-01-122-9630	19200	2680901	. WASHER,SPRING,TENSI .....	V
20	PAFZZ	1010-01-138-4806	19200	3269555	. CAP,BUFFER .....	2
21	PAFFF	1010-01-138-4804	19200	3269552	. BUFFER ROD ASSEMBLY SEE FIG. 13 FOR BREAKDOWN .....	2
22	PAFZZ	5315-01-123-6182	19200	3269523	PIN,STRAIGHT,HEADED .....	1
23	PAFZZ	5315-01-138-4805	19200	3269553	PIN,RECOIL .....	2
24	PAFZZ	5315-01-123-6185	19200	3269522	PIN,STRAIGHT,HEADLE .....	1

END OF FIGURE



**FIELD MAINTENANCE  
BUFFER ROD ASSEMBLY  
REPAIR PARTS LIST**

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R2013M19

Figure 13. Buffer Rod Assembly, PN 3269552.

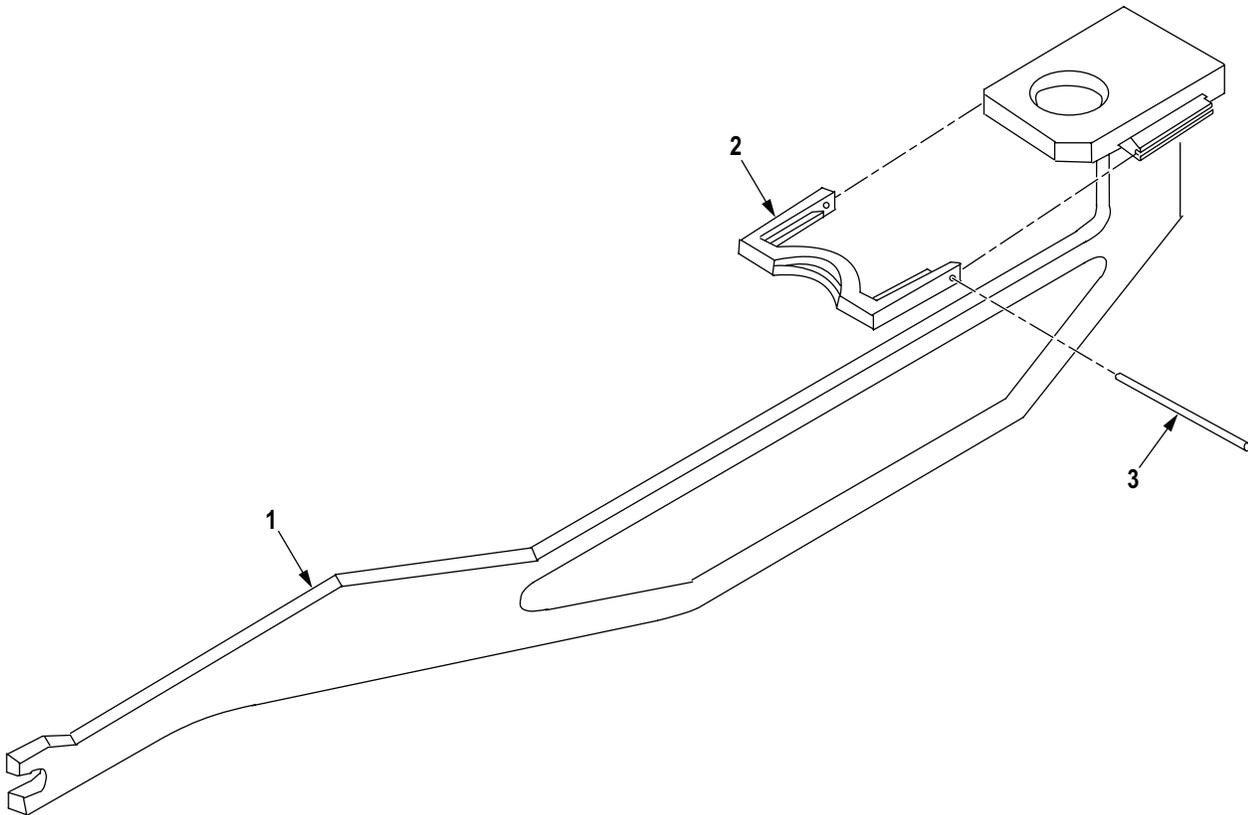
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 060101 BUFFER ROD ASSEMBLY</b>						
<b>FIG. 13. BUFFER ROD ASSEMBLY, PN 3269552.</b>						
1	PAFZZ	5315-01-138-4801	10001	3269537	PIN,GROOVED,HEADED .....	1
2	PAFZZ	5365-01-138-4802	19200	3269538	BUSHING,BUFFER .....	1
3	PAFZZ	5360-01-138-4803	19200	3269539	SPRING,HELICAL,COMP .....	1
4	PAFZZ	5310-01-138-4809	19200	3269543	WASHER,FLAT,BUFFER .....	1
5	PAFZZ	5310-01-138-4808	19200	3269544	WASHER,SLOTTED .....	1

**END OF FIGURE**



**FIELD MAINTENANCE  
VERTICAL CAM ASSEMBLY  
REPAIR PARTS LIST**

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R2014M19

Figure 14. Vertical Cam Assembly, PN 3269411.

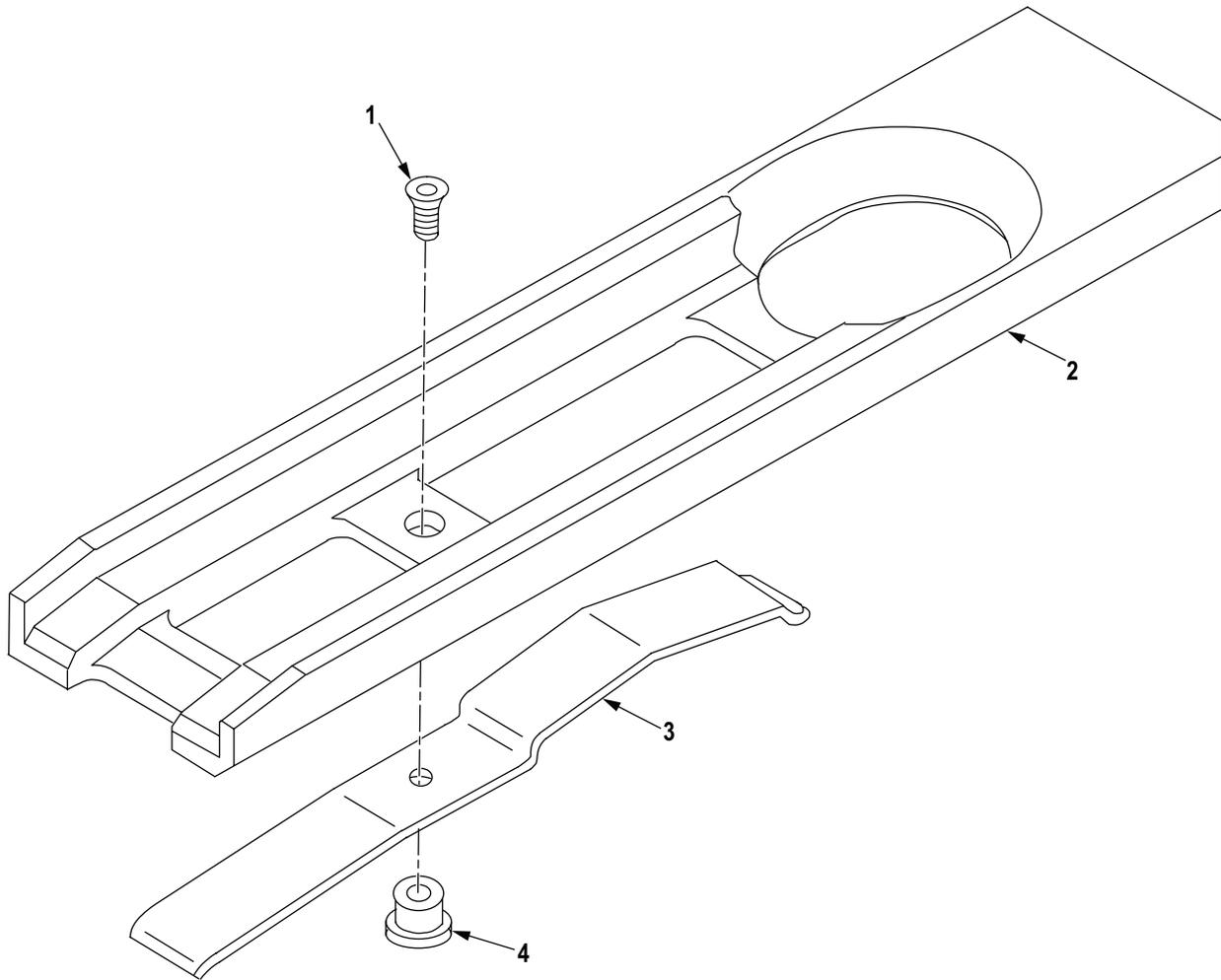
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 07 VERTICAL CAM ASSEMBLY</b>						
<b>FIG. 14. VERTICAL CAM ASSEMBLY, PN 3269411.</b>						
1	PAFZZ	1010-01-123-6704	10001	3269427	CAM,CONTROL VERTICA .....	1
2	PAFZZ	1010-01-123-6699	19200	3269492	LOCK,LEVER,DRIVE .....	1
3	PAFZZ	5315-00-598-2933	80205	MS171512	PIN,SPRING,SLTD,CRE .....	1

**END OF FIGURE**



**FIELD MAINTENANCE  
ALIGNMENT GUIDE ASSEMBLY  
REPAIR PARTS LIST**

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R2015M19

Figure 15. Alignment Guide Assembly, PN 3269403.

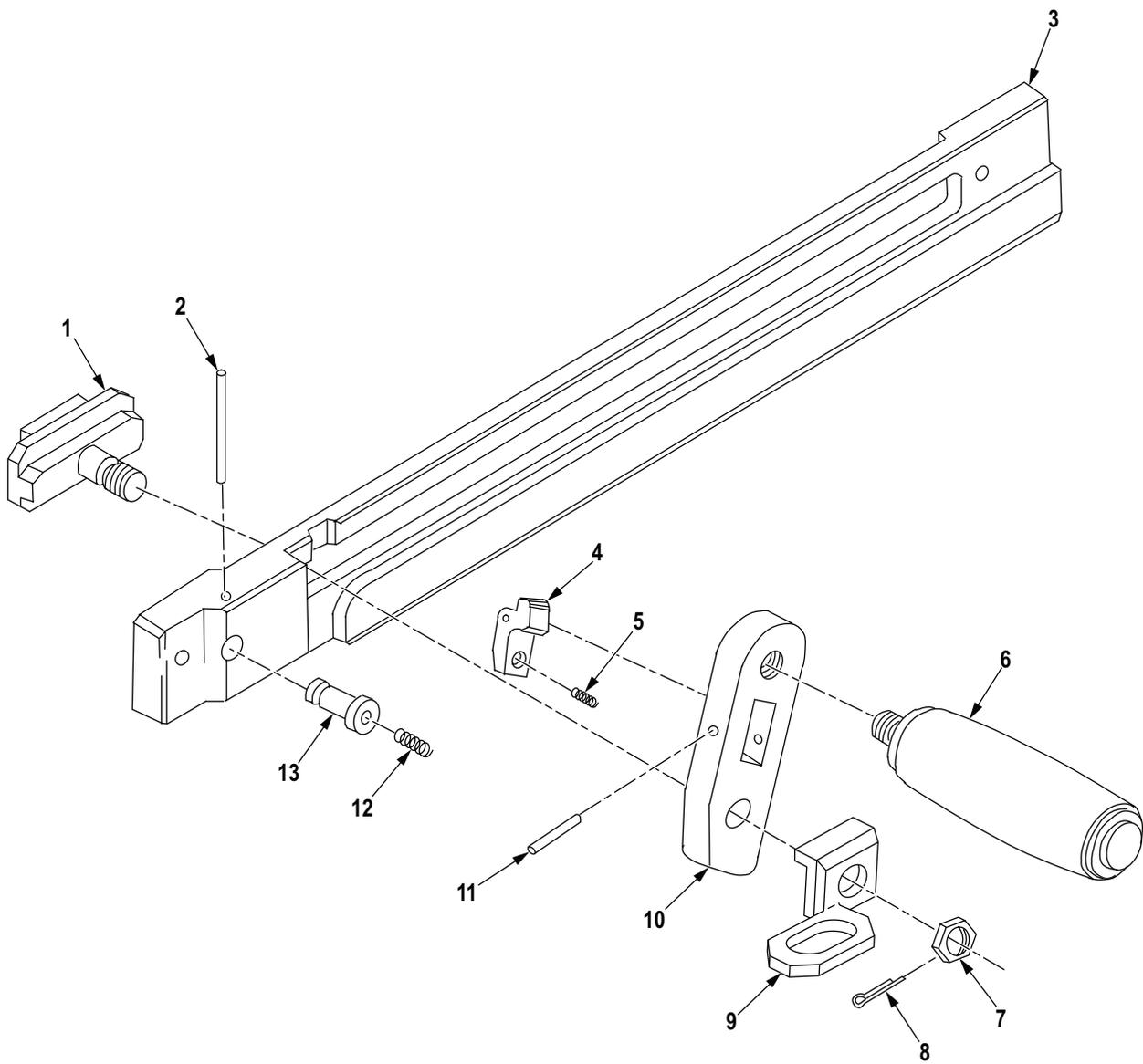
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 08 ALIGNMENT GUIDE ASSEMBLY</b>						
<b>FIG. 15. ALIGNMENT GUIDE ASSEMBLY, PN 3269403.</b>						
1	PAFZZ	5305-01-217-8035	19200	5526211	SCREW,FLATHEAD .....	1
2	PAFZZ	1010-01-123-6708	19200	3269458	GUIDE,ALIGNMENT .....	1
3	PAFZZ	5360-01-123-6852	19200	3269468	SPRING,FLAT GDE,ALI .....	1
4	PAFZZ	5305-01-124-4336	19200	3269454	SCREW,SHOULDER .....	1

**END OF FIGURE**



**FIELD MAINTENANCE  
GUN CHARGER, LH  
REPAIR PARTS LIST**

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R2016M19

Figure 16. Charger, Gun, LH, MK16, MOD 0, PN 3269409.

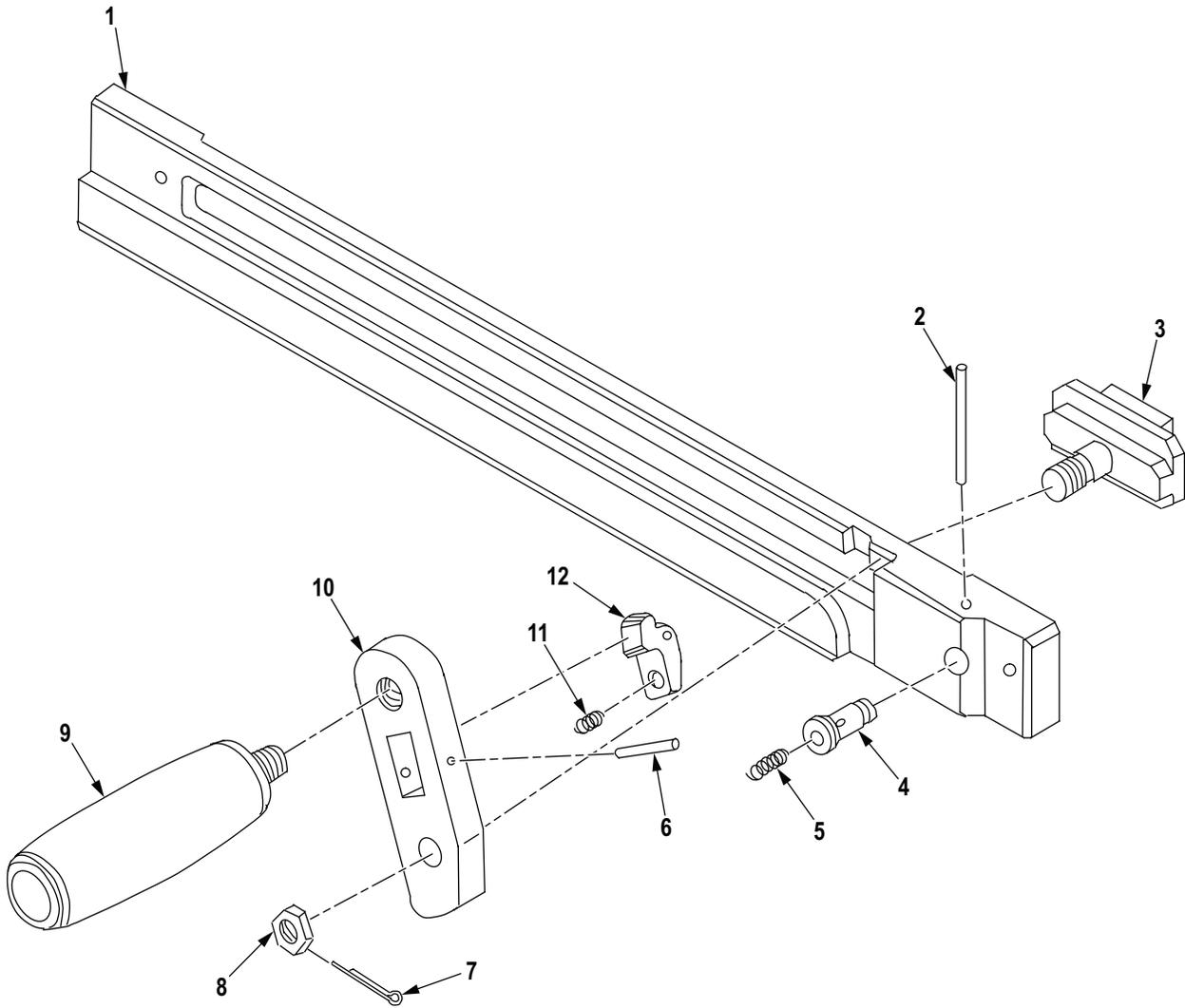
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 09 GUN CHARGER, LH</b>						
<b>FIG. 16. CHARGER, GUN, LH, MK16, MOD 0, PN 3269409.</b>						
1	PAFZZ	1010-01-129-1231	19200	3269480	SLIDE,CHARGER .....	1
2	PAFZZ	5315-00-811-6552	80205	NAS561C3-20	PIN,SPRING,SLTD,CRE .....	1
3	PAFZZ	1010-01-133-6984	10001	3269507	CHARGER ASSEMBLY HO .....	1
4	PAFZZ	1010-01-123-6087	19200	3269516	LOCK,CHARGER HANDLE UOC: BJ5,M69 .....	1
5	PAFZZ	5360-00-194-5471	81343	AS24585C13	SPRING,HELICAL,COMP UOC: BJ5,M69 .....	1
6	PAFZZ	1005-00-631-3800	19200	6313800	HANDLE ASSEMBLY UOC: BJ5,M69 .....	1
7	PAFZZ	5310-01-055-3853	80205	MS14145-L6	NUT,SELF-LOCKING,EX .....	1
8	PAFZZ	5315-00-234-1863	80205	MS24665-300	PIN,COTTER,CRES .....	1
9	PAFZZ	1010-01-258-1467	53711	6289494	BLOCK,40 MILLIMETER UOC: BX8 .....	1
10	PAFZZ	1010-01-129-2091	19200	3269524	ARM,LEFT HAND .....	1
11	PAFZZ	5315-00-619-0899	80205	MS171533	PIN,SPRING,SLTD,CRE .....	1
12	PAFZZ	5360-00-405-2554	96906	MS24585-1063	SPRING,HELICAL,COMP .....	1
13	PAFZZ	1010-01-123-6698	19200	3269513	PLUNGER,LOCK .....	1

**END OF FIGURE**



**FIELD MAINTENANCE  
GUN CHARGER, RH  
REPAIR PARTS LIST**

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R2017M19

Figure 17. Charger, Gun, RH, MK16, MOD 0, PN 3269408.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 10 GUN CHARGER, RH</b>						
<b>FIG. 17. CHARGER, GUN, RH, MK16, MOD 0, PN 3269408.</b>						
1	PAFZZ	1010-01-133-6986	10001	3269506	CHARGER HOUSING, RI UOC: BJ5,M69 .....	1
2	PAFZZ	5315-00-811-6552	80205	NA5561C3-20	PIN,SPRING SLTD,CRE UOC: BJ5,M69 .....	1
3	PAFZZ	1010-01-129-1231	19200	3269480	SLIDE,CHARGER UOC: BJ5,M69 .....	1
4	PAFZZ	1010-01-123-6698	19200	3269513	PLUNGER,LOCK UOC: BJ5,M69 .....	1
5	PAFZZ	5360-00-405-2554	96906	MS24585-1063	SPRING,HELICAL,COMP UOC: BJ5,M69 .....	1
6	PAFZZ	5315-00-619-0899	80205	MS171533	PIN,SPRING,SLTD,CRE UOC: BJ5,M69 .....	1
7	PAFZZ	5315-00-234-1863	80205	MS24665-300	PIN,COTTER,CRES UOC: BJ5,M69 .....	1
8	PAFZZ	5310-01-055-3853	80205	MS14145L6	NUT,SELF LOCKING,EX UOC: BJ5,M69 .....	1
9	PAFZZ	1005-00-631-3800	19200	6313800	HANDLE UOC: BJ5,M69 .....	1
10	PAFZZ	3040-01-129-1229	19200	3269503	ARM,RH UOC: BJ5,M69 .....	1
11	PAFZZ	5360-00-194-5471	81343	AS24585C13	SPRING,HELICAL,COMP UOC: BJ5,M69 .....	1
12	PAFZZ	1010-01-123-6087	19200	3269516	LOCK,CHARGER HANDLE UOC: BJ5,M69 .....	1

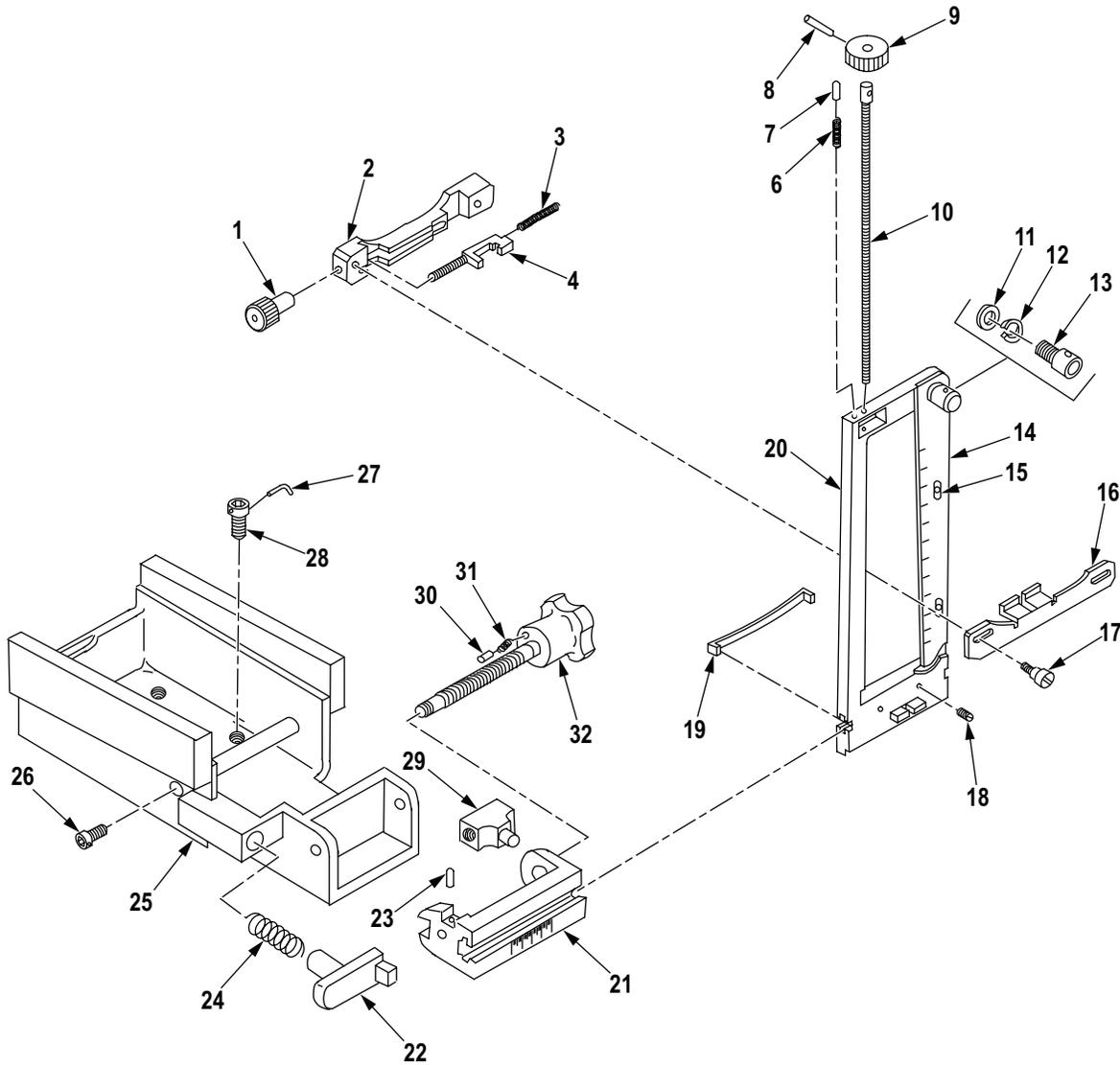
**END OF FIGURE**



**FIELD MAINTENANCE  
REAR SIGHT ASSEMBLY  
REPAIR PARTS LIST**

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5  
6 THRU 20



R2018M19

Figure 18. Rear Sight Assembly, MK 40, MOD 0, PN 3269545.

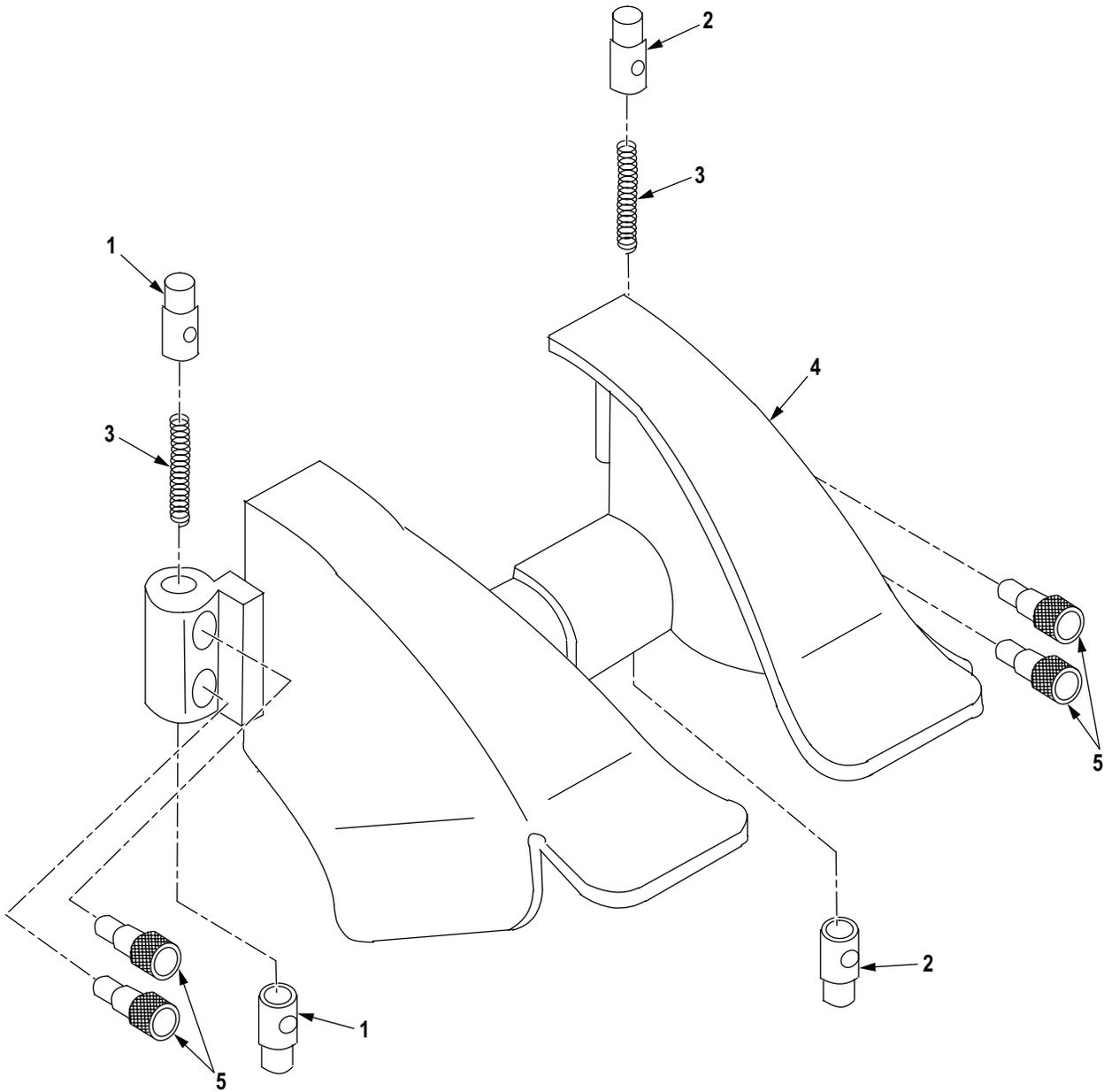
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 11 REAR SIGHT ASSEMBLY</b>						
<b>FIG. 18. REAR SIGHT ASSEMBLY, MK 40, MOD 0, PN 3269545.</b>						
1	PAFZZ	5310-00-440-3355	19204	7791021	NUT,PLAIN,KNURLED UOC: BJ5,M69 .....	1
2	PAFZZ	1010-00-439-6249	19204	7791014	CARRIER,APERTURE UOC: BJ5,M69 .....	1
3	PAFZZ	5360-00-439-6255	19204	7791027	SPRING,HELICAL UOC: BJ5,M69 .....	1
4	PAFZZ	1010-00-439-6252	19200	7791023	RETAINER,APERTURE UOC: BJ5,M69 .....	1
5	PAFZZ	1010-01-477-4318	19200	12993777	SIGHT,GUN INDICATOR UOC: BJ5,M69 .....	1
6	PAFZZ	5360-00-440-3356	19200	7791028	. SPRING,HELICAL,COMP UOC: BJ5,M69 .....	2
7	PAFZZ	5315-00-439-6251	19200	7791022	. PIN,STRAIGHT,HEADLE UOC: BJ5,M69 .....	1
8	PAFZZ	5315-00-597-5086	80205	MS16562-98	. PIN,SPRING SLOTTED UOC: BJ5,M69 .....	1
9	PAFZZ	5355-01-294-9879	19204	7791029	. KNOB UOC: BJ5,M69 .....	1
10	PAFZZ	5305-01-296-0623	19200	7791025	. SCREW,MACHINE UOC: BJ5,M69 .....	1
11	PAFZZ	5310-01-294-9877	19200	11010390	. WASHER,FLAT UOC: BJ5,M69 .....	1
12	PAFZZ	5310-00-274-8702	96906	MS35338-60	. WASHER,LOCK SPR,HEL UOC: BJ5,M69 .....	1
13	PAFZZ	5305-01-295-9655	19200	7791018	. SCREW,MACHINE LOCK UOC: BJ5,M69 .....	1
14	PAFZZ	1220-01-133-6987	19200	3269548	. SCALE UOC: BJ5,M69 .....	1
15	PAFZZ	5320-01-133-6988	19200	3269557	. RIVET,SOLID SCALE UOC: BJ5,M69 .....	2
16	PAFZZ	1010-00-440-3353	19204	7791011	. SLIDE,REAR SIGHT UOC: BJ5,M69 .....	1
17	PAFZZ	5305-00-439-6253	19204	7791024	. SCREW,SHOULDER UOC: BJ5,M69 .....	2
18	PAFZZ	5305-00-899-7436	19204	7791199	. SETSCREW,HEADLESS UOC: BJ5,M69 .....	2
19	PAFZZ	5340-00-859-7933	19200	7791200	. SPRING,LEAF UOC: BJ5,M69 .....	1
20	XAFZZ		19204	7791016	. FRAME ASSEMBLY UOC: BJ5,M69 .....	1
21	PAFZZ	5340-01-388-8350	19200	12938262	BRACKET,MOUNTING BA UOC: BJ5,M69 .....	1

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
22	PAFZZ	1010-01-384-9478	19200	12938261	LOCK,SIGHT UOC: BJ5,M69 .....	1
23	PAFZZ	5315-00-240-1014	80205	MS16562-5	PIN,SPRING,SLOTTED UOC: BJ5,M69 .....	1
24	PAFZZ	5360-00-838-6934	80205	AS24585-105	SPRING,HELICAL,COMP UOC: BJ5,M69 .....	1
25	PAFZZ	1010-01-133-6989	19200	3269550	BASE,REAR SIGHT HING UOC: BJ5,M69 .....	1
26	PAFZZ	5305-01-158-1197	19200	5526205	SCREW,CAP,SOCKET HE UOC: BJ5,M69 .....	4
27	MFFZZ		80205	MS20995C32-AR	WIRE,NONELECTRICAL MAKE FROM PN MS20995C32 CAGE 80205, AS REQUIRED UOC: BJ5,M69 .....	1
28	PAFZZ	5305-00-978-9346	96906	MS16997-18	SCREW,CAP,SOCKET HE UOC: BJ5,M69 .....	1
29	PAFZZ	5315-00-440-3354	19204	7791020	KEY,MACHINE SCREW UOC: BJ5,M69 .....	1
30	PAFZZ	5315-00-439-6251	19200	7791022	PIN,STRAIGHT,HEADLE UOC: BJ5,M69 .....	1
31	PAFZZ	5360-00-440-3356	19200	7791028	SPRING,HELICAL,COMP UOC: BJ5,M69 .....	2
32	PAFZZ	5305-00-439-6254	19200	7791026	SCREW,SHOULDERED UOC: BJ5,M69 .....	1

END OF FIGURE

**FIELD MAINTENANCE  
FEED THROAT ASSEMBLY  
REPAIR PARTS LIST**

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R2019M19

Figure 19. Feed Throat Assembly, PN 5830095.

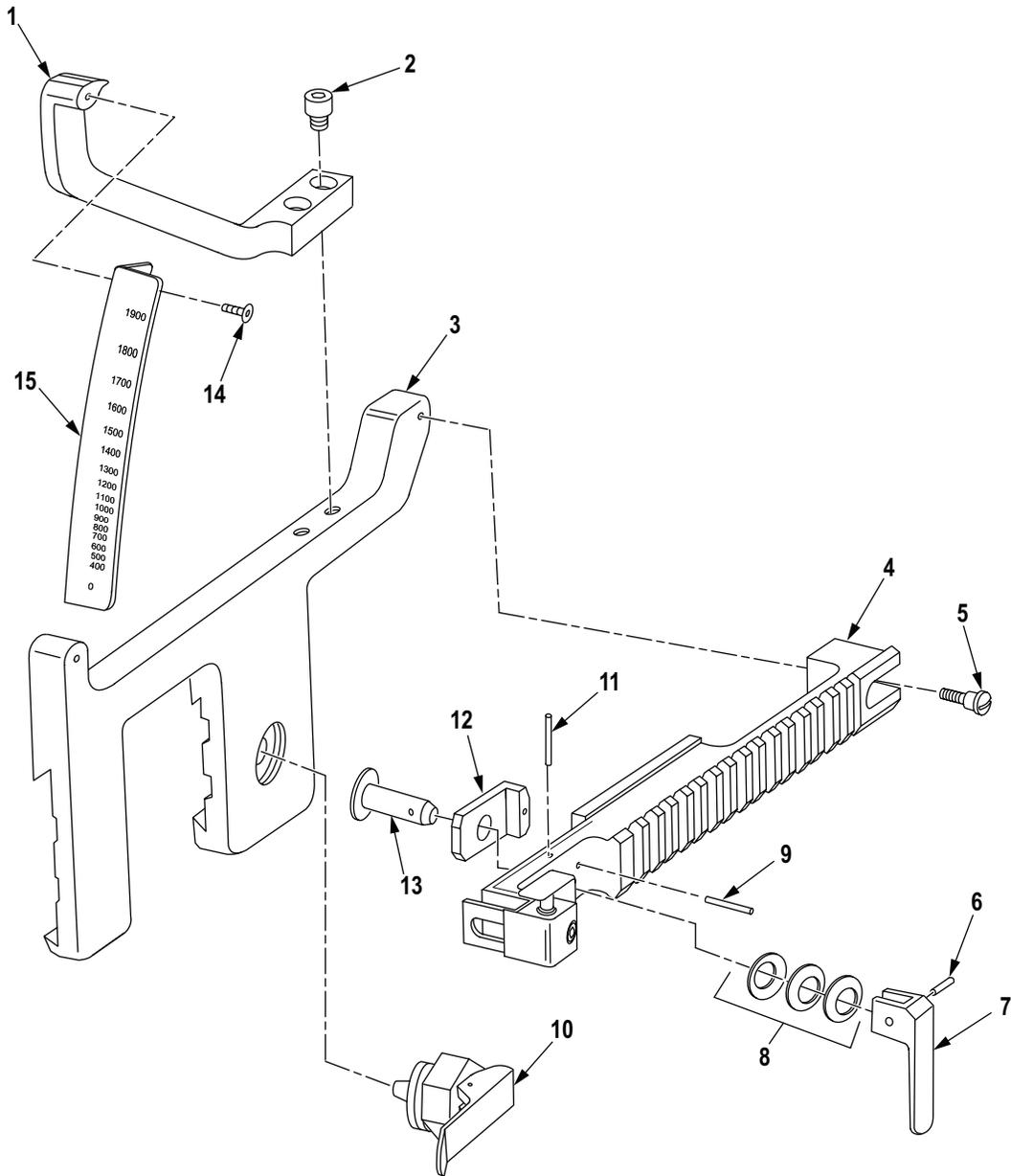
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 12 FEED THROAT ASSEMBLY</b>						
<b>FIG. 19. FEED THROAT ASSEMBLY, PN 5830095.</b>						
1	PAFZZ	1010-01-151-6216	19200	3010127-1	PLUNGER,FEED THROAT UOC: BJ5,M69 .....	2
2	PAFZZ	1010-01-151-6215	19200	3010127-2	PLUNGER,FEED THROAT UOC: BJ5,M69 .....	2
3	PAFZZ	5360-01-149-5513	19200	3010126	SPRING,HELICAL,COMP UOC: BJ5,M69 .....	2
4	XAFZZ		53711	5830096	FEED THROAT UOC: BJ5,M69 .....	1
5	PAFZZ	5315-01-149-5530	19200	3010125-2	PIN,SHOULDER,HEADED UOC: BJ5,M69 .....	4

**END OF FIGURE**



**FIELD MAINTENANCE  
ADJUSTABLE SIGHT BRACKET  
REPAIR PARTS LIST**

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R2020M19

Figure 20. Adjustable Sight Bracket, 12997464.

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 13 ADJUSTABLE SIGHT BRACKET</b>						
<b>FIG. 20. ADJUSTABLE SIGHT BRACKET, 12997464.</b>						
1	PBFZZ	5340-01-522-7618	19200	12997466	BRACKET,MOUNTING SU UOC: BJ5,M69 .....	1
2	PAFZZ	5305-00-421-7914	80205	MS16995-50B	SCREW,CAP,SOCKET HE UOC: BJ5,M69 .....	2
3	XAFFF		19200	12997465	PLATE,BASE UOC: BJ5,M69 .....	1
4	PBFFF	1090-01-517-4789	19200	12997488	ARM ASSEMBLY,WEAPON SEE FIG. 21 FOR BREAKDOWN UOC: BJ5,M69 .....	1
5	PBFZZ	5305-01-517-4786	19200	12997469	SCREW,SHOULDER UOC: BJ5,M69 .....	1
6	PAFZZ	5315-01-253-6728	80205	MS51923-51	PIN,SPRING PART OF KIT P/N 13010447 UOC: BJ5,M69 .....	1
7	PAFZZ	3040 -01-517-4785	19200	12997472	CAM CONTROL OFFSET PART OF KIT P/N 13010447 UOC: BJ5,M69 .....	1
8	PAFZZ	5310-01-148-0253	81349	M12133/1-5P	WASHER,SPRING TENS PART OF KIT P/N 13010447 UOC: BJ5,M69 .....	3
9	PAFZZ	5315-00-688-2778	80205	MS51923-249	PIN,SPRING PART OF KIT P/N 13010447 UOC: BJ5,M69 .....	1
10	PBFFF	1010-01-541-7229	19200	13008566	INSERT,LOCKING PLUN SEE FIG. 22 FOR BREAKDOWN UOC: BJ5,M69 .....	1
11	PAFZZ	5315-00-965-1875	80205	MS51923-99	PIN,SPRING PART OF KIT P/N 13010447 UOC: BJ5,M69 .....	1
12	PAFZZ	5340 -01-517-4787	19200	12997471	CLAMP,BLOCK PART OF KIT P/N 13010447 UOC: BJ5,M69 .....	1
13	PAFZZ	3040 -01-517-4779	19200	12997470	SHAFT,SHOULDERED CL PART OF KIT P/N 13010447 UOC: BJ5,M69 .....	1
14	PBFZZ	1220-01-517-4782	19200	12997467	SCALE,GRAPHICAL FIR UOC: BJ5,M69 .....	1
15	PAFZZ	5305-00-068-5396	96906	MS24667-9	SCREW,CAP,SOCKET HE UOC: BJ5,M69 .....	1

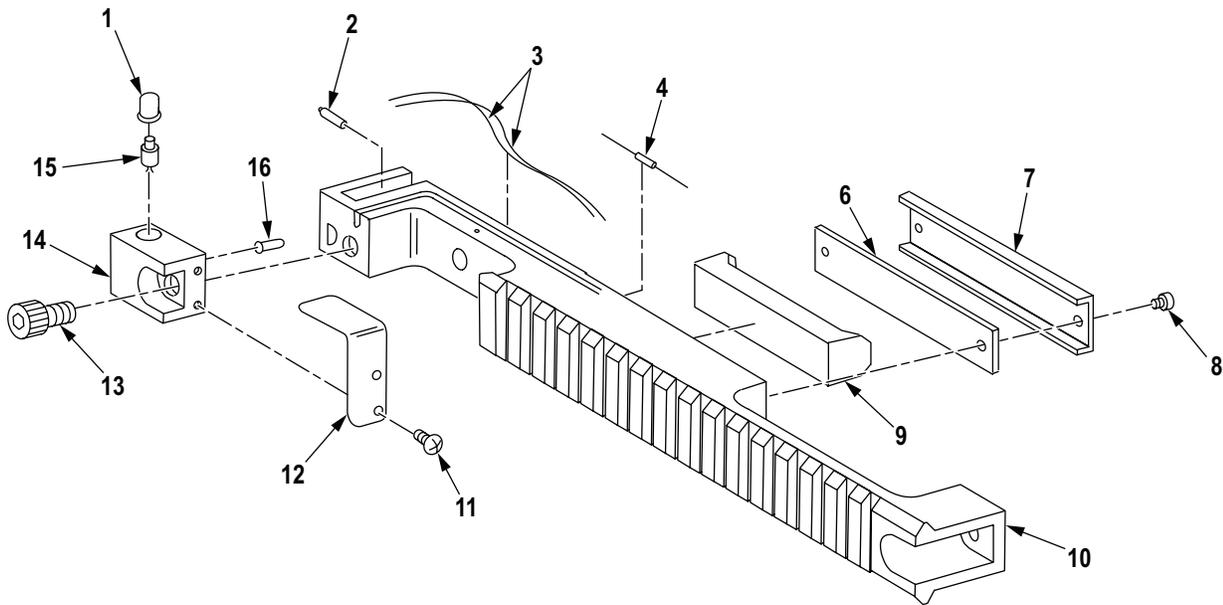
**END OF FIGURE**



**FIELD MAINTENANCE  
ARM ASSEMBLY AND COVER ASSEMBLY  
REPAIR PARTS LIST**

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5  
6 AND 7



R2021M19

Figure 21. Arm Assembly, 12997488, and Cover Assembly, 12997481.

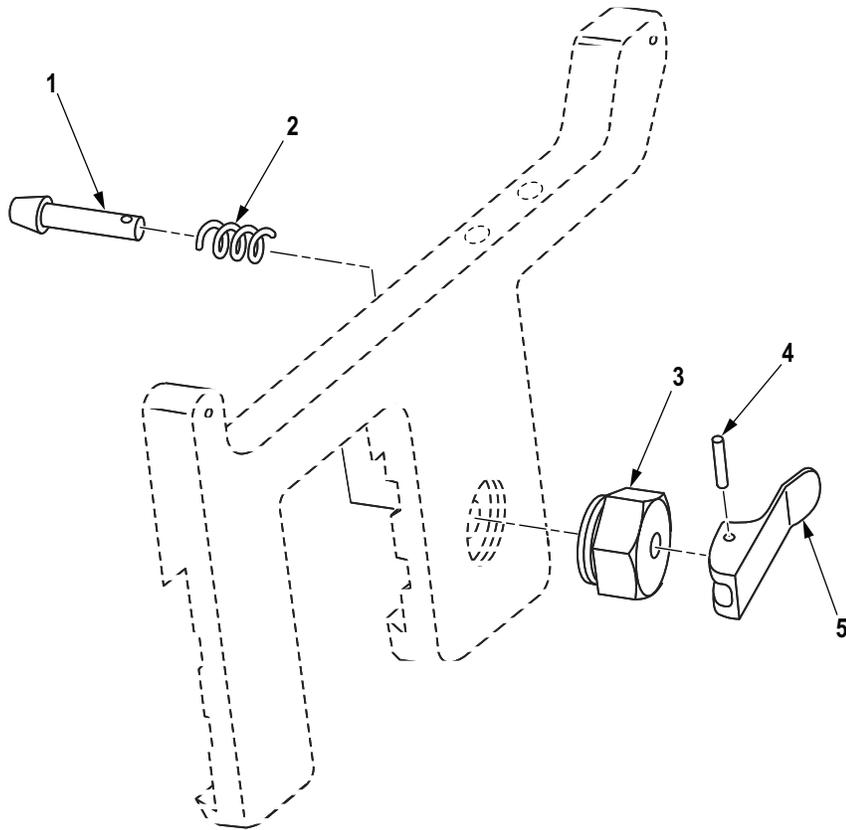
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 1301 ARM ASSEMBLY</b>						
<b>FIG. 21. ARM ASSEMBLY, 12997488, AND COVER ASSEMBLY, 12997481.</b>						
1	PBFZZ	5340-01-517-4991	19200	12997489	BOOT,DUST AND MOIST UOC: BJ5,M69 .....	1
2	PBFZZ	5340-01-517-6142	19200	12997474	PLUNGER,QUICK RELEA UOC: BJ5,M69 .....	1
3	PBFZZ		19200	ASB1044/7-24	WIRE UOC: BJ5,M69 .....	V
4	PBFZZ	5905-01-517-4790	19200	12997487	RESISTOR,FIXED,FILM UOC: BJ5,M69 .....	1
5	PBFFF	5340-01-526-3299	19200	12997481	COVER,ACCESS UOC: BJ5,M69 .....	1
6	PBFZZ	5330-01-517-6144	19200	12997482	. GASKET UOC: BJ5,M69 .....	1
7	PBFZZ	6160-01-517-8449	19200	12997479	. COVER,BATTERY RETAI UOC: BJ5,M69 .....	1
8	PAFZZ	5305-00-150-3485	80205	MS16995-9B	SCREW,CAP,SOCKET HE UOC: BJ5,M69 .....	2
9	PBFZZ	6160-01-517-6148	19200	12997483	RETAINER,BATTERY UOC: BJ5,M69 .....	1
10	XAFZZ		19200	12997468	ARM UOC: BJ5,M69 .....	1
11	PAFZZ	5305-00-054-5635	96906	MS51957-1	SCREW,MACHINE PAN H UOC: BJ5,M69 .....	2
12	PBFZZ	5930-01-517-4788	19200	12997490	GUARD,SWITCH UOC: BJ5,M69 .....	1
13	PAFZZ	5305-00-052-6456	80205	MS16996-10	SCREW,CAP,SOCKET UOC: BJ5,M69 .....	1
14	PBFZZ	5340-01-517-4783	19200	12997485	COVER,ACCESS UOC: BJ5,M69 .....	1
15	PBFZZ	5980-01-517-4784	19200	12997484	LIGHT EMITTING DIOD UOC: BJ5,M69 .....	1
16	PBFZZ	5930-01-419-5557	19200	12997486	SWITCH,PUSH BUTTON UOC: BJ5,M69 .....	1

END OF FIGURE



**FIELD MAINTENANCE  
PLUNGER ASSEMBLY  
REPAIR PARTS LIST**

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R2022M19

Figure 22. Plunger Assembly, 13008566.

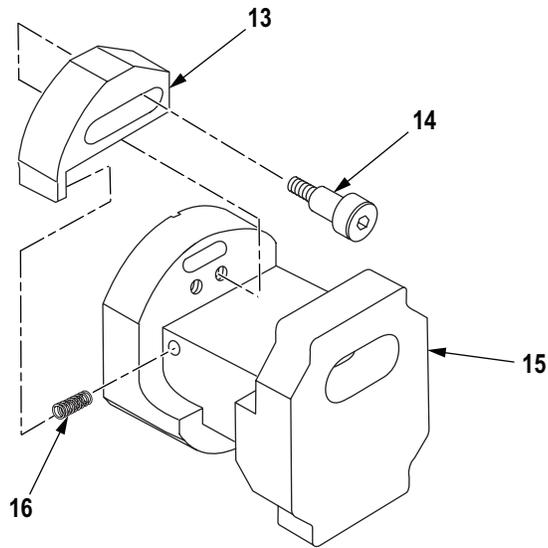
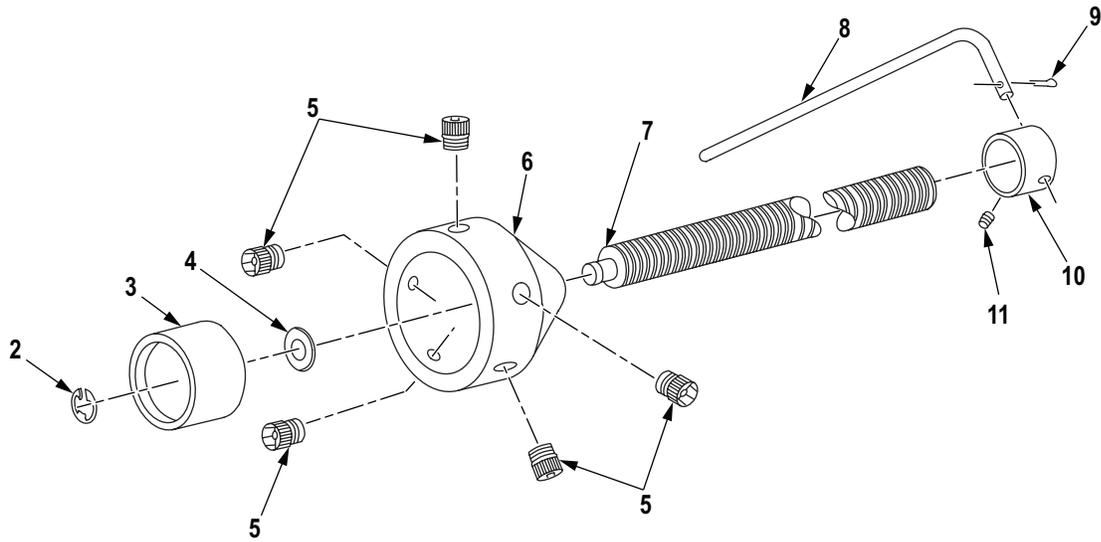
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 1302 PLUNGER ASSEMBLY</b>						
<b>FIG. 22. PLUNGER ASSEMBLY, 13008566.</b>						
1	PBFZZ	5315-01-538-0188	19200	13008567	PIN,STRAIGHT,HEADED UOC: BJ5,M69 .....	1
2	PAFZZ	5315-00-351-3977	96906	MS24585C246	SPRING,HELICAL,COMP UOC: BJ5,M69 .....	1
3	XAFZZ		19200	13008568	MOUNT,TAPERED PIN UOC: BJ5,M69 .....	1
4	PAFZZ	5315-01-519-1111	80205	MS51923-52	PIN,SPRING UOC: BJ5,M69 .....	1
5	PBFZZ	1010-01-517-6146	19200	12997477	LEVER,RELEASE,SMALL UOC: BJ5,M69 .....	1

**END OF FIGURE**



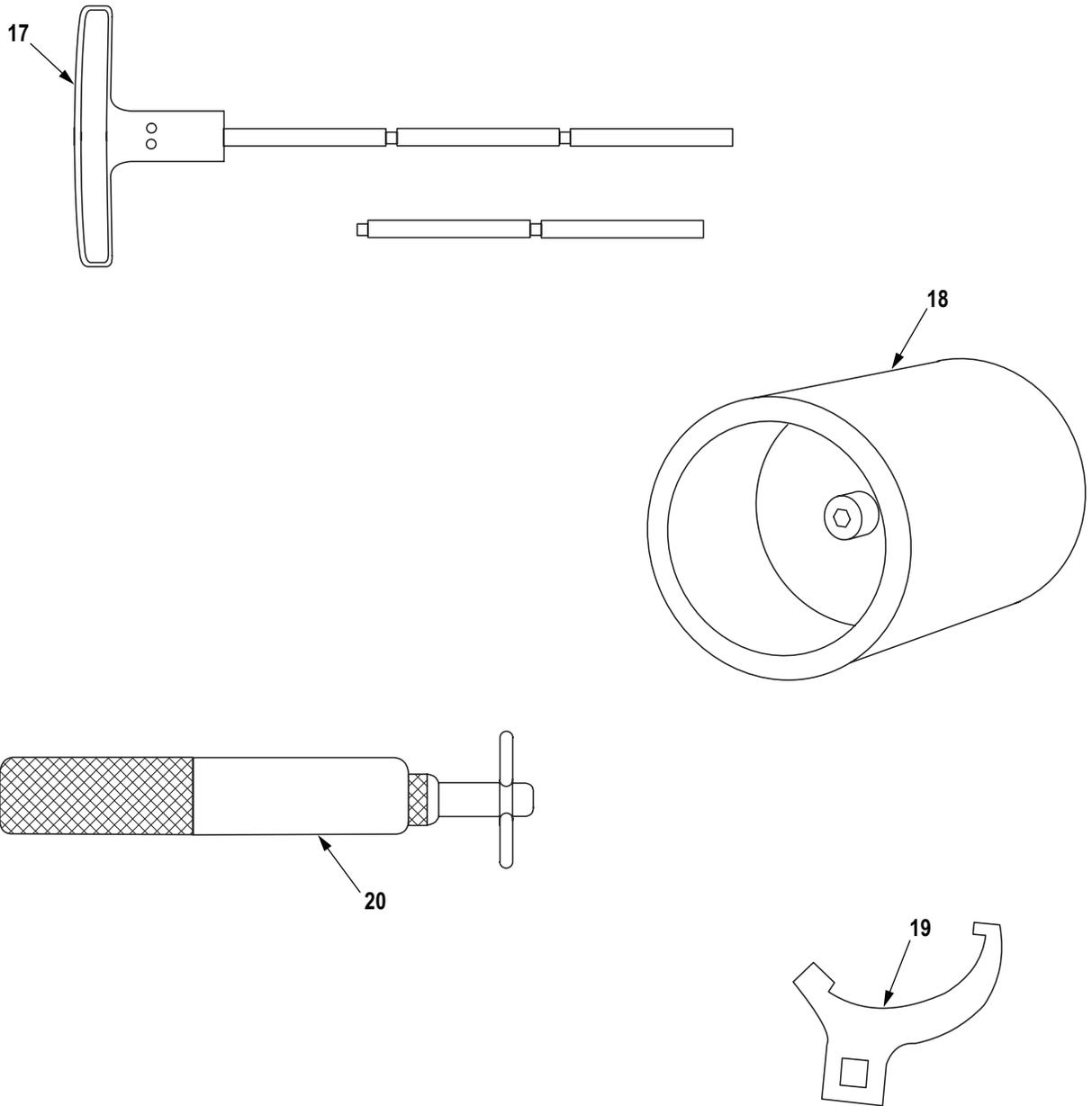
**FIELD MAINTENANCE  
SPECIAL TOOLS LIST**

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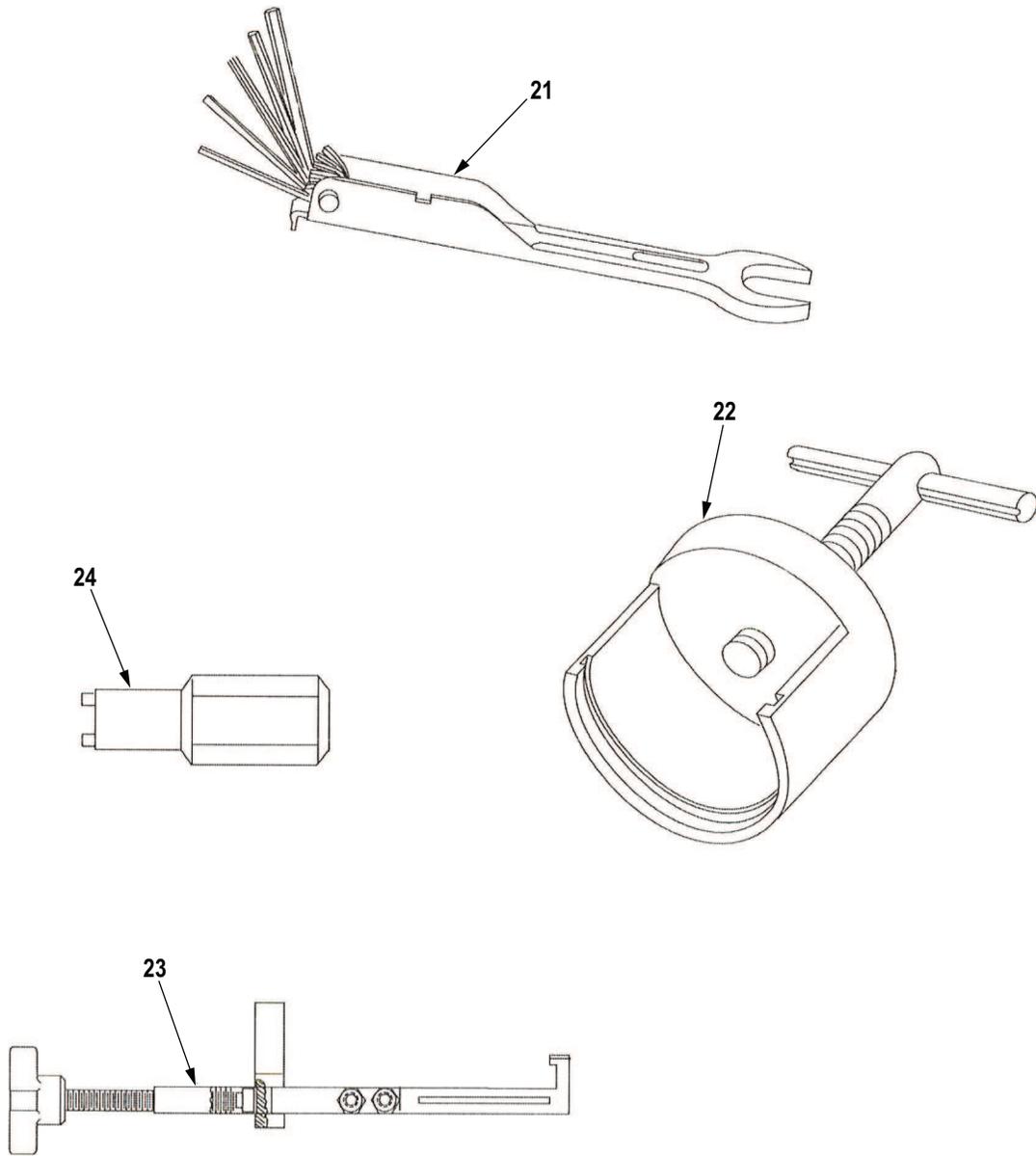
R2023M19

Figure 23. Special Tools. (Sheet 1 of 3)



R2024M19

Figure 23. Special Tools. (Sheet 2 of 3)



R2025M19

Figure 23. Special Tools. (Sheet 3 of 3)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
<b>GROUP 9500 SPECIAL TOOLS - ROUND REMOVAL TOOL</b>						
<b>FIG. 23. SPECIAL TOOLS.</b>						
1	PAFFF	5120-01-347-1884	19200	12926849	REMOVAL TOOL,ROUND .....	1
2	PAFZZ	5365-01-396-8408	80204	ANSI B27.7 3CM1-10.	RING,RETAINING .....	1
3	PAFZZ	1010-01-355-9553	19200	12926848	. CUP,ROUND REMOVAL .....	1
4	PAFZZ	5365-01-368-0429	19200	12926844	. SPACER,RING BRASS .....	1
5	PAFZZ	5305-01-349-7520	19200	12926842	. SCREW,CAP,SOCKET HE .....	5
6	PAFZZ	3040-01-352-9065	19200	12926847	. COLLAR,SHAFT .....	1
7	PAFZZ	3040-01-355-7661	19200	12926845	. SHAFT,SHOULDERED .....	1
8	PAFZZ	1010-01-348-8758	19200	12926843	. BAR,ELBOW .....	1
9	PAFZZ	5315-01-385-1540	39428	90149AO30	. PIN,LOCK .....	1
10	PAFZZ	1010-01-355-9554	26978	12926846	. DRIVE,ROD .....	1
11	PAFZZ	5305-00-724-6755	96906	MS51965-78	. SETSCREW .....	1
12	PAFFF	1005-01-467-9435	19200	13005722	FEED ADJUSTMENT TOO .....	1
13	PAFZZ	1010-01-508-5551	19200	13005724	. SLIDE .....	1
14	PAFZZ	5305-01-510-1275	19200	13005726	. SCREW,SHOULDER .....	2
15	XAFZZ		19200	13005725	. HOUSING,SLIDE .....	1
16	PAFZZ	5360-01-509-6006	19200	13005723	. SPRING,HELICAL,COMP .....	1
17	PAFZZ	1005-00-653-5441	19204	6535441	ROD,CLEANING, SMALL ARMS M7 .....	1
18	PAFZZ	1010-01-138-4862	19200	3269536	GAUGE ASSEMBLY,BORE .....	1
19	PAFZZ	5120-01-138-4797	53711	3269541	WRENCH,SPANNER .....	1
20	PAFZZ	5120-01-138-4796	19200	3269540	BUFFER TOOL .....	1
21	PAFZZ	1010-01-130-3435	53711	DL3269494	COMBINATION TOOL .....	1
22	PAFZZ	1010-01-130-3434	19200	3269505	PLUNGER TOOL,OGIVE .....	1
23	PAFZZ	1010-01-138-4798	53711	3269542	FEED SLIDE TOOL .....	1
24	PAFZZ	5120-01-138-4811	19200	3269547	SAFETY SLIDE TOOL .....	1

END OF FIGURE



**FIELD MAINTENANCE  
KITS**

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**KITS NOT ILLUSTRATED**

*Figure KITS.*

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
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**GROUP KITS REPAIR KITS**

**FIG. KITS.**

1	PBFFF	1010-01-550-8778	19200	13010447	PARTS KIT,GUN .....	1
					CAM,CONTROL (001) 20-8	
					CLAMP,BLOCK (001) 20-13	
					PIN,SPRING (001) 20-7	
					PIN,SPRING (001) 20-10	
					PIN,SPRING (001) 20-11	
					SHAFT,SHOULDERE (001) 20-14	
					D	
					WASHER,SPRING (003) 20-9	
					TENSI	
2	PAFZZ	1010-01-170-9940	19200	3269416	STOP KIT,FEED SLIDE .....	1
					SCREW,CAP,SOCKE (001) 11-6	
					T HE	
					STOP,CARTRIDGE (001) 11-6	
					STOP,CARTRIDGE (001) 11-6	
					STOP,CARTRIDGE (001) 11-6	
					STOP,CARTRIDGE (001) 11-6	
					STOP,CARTRIDGE (001) 11-6	
					STOP,CARTRIDGE (001) 11-6	
					STOP,CARTRIDGE (001) 11-6	
					STOP,CARTRIDGE (001) 11-6	
					STOP,CARTRIDGE (001) 11-6	
					STOP,CARTRIDGE (001) 11-6	

**END OF FIGURE**



**FIELD MAINTENANCE  
BULK ITEMS**

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**BULK NOT ILLUSTRATED**

*Figure BULK.*

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(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
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GROUP 9999 BULK MATERIAL

FIG. BULK.

1	PAFZZ	9505-00-293-4208	80205	MS20995C32	WIRE,NONELECTRICAL .....	1
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END OF FIGURE



**FIELD MAINTENANCE  
NATIONAL STOCK NUMBER (NSN) INDEX**

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
-	2	8	5315-00-551-4246	8	2
	5	19	5315-00-597-5086	18	8
	8	9	5315-00-598-2933	14	3
5305-00-052-6456	21	13	5315-00-619-0899	16	11
5305-00-054-5635	21	11		17	6
5315-00-058-9737	4	3	1005-00-631-3800	16	6
5305-00-068-5396	20	15		17	9
5360-00-089-2366	12	2	1005-00-653-5441	23	17
3040-00-122-5867	5	41	5315-00-688-2778	20	9
3040-00-122-5870	5	34	5305-00-724-6755	23	11
3120-00-122-5878	5	6	1005-00-726-5561	8	8
5360-00-122-5890	5	32	5315-00-811-6552	16	2
5360-00-123-6196	12	6		17	2
5360-00-133-8266	5	2	5315-00-812-3757	8	1
5305-00-133-8270	5	33	5315-00-823-8745	12	8
5305-00-133-8276	5	29	5360-00-838-6934	18	24
5305-00-150-3485	21	8	5340-00-859-7933	18	19
5315-00-150-3838	10	6	5305-00-869-1097	5	28
5306-00-150-9105	2	34	5360-00-897-6014	8	4
5360-00-194-5471	16	5	5305-00-899-7436	18	18
	17	11	1005-00-918-2617	8	7
5315-00-234-1863	16	8	5315-00-965-1875	20	11
	17	7	5305-00-978-9346	18	28
5315-00-240-1014	18	23	5305-00-978-9376	11	6
5305-00-269-0783	11	1	5310-01-055-3853	16	7
5310-00-274-8702	18	12		17	8
5315-00-281-3054	10	4	1055-01-122-9538	4	1
9505-00-293-4208	BULK	1	1010-01-122-9539	5	4
5315-00-351-3977	22	2	1010-01-122-9540	5	1
5305-00-366-6236	5	31	1010-01-122-9541	5	25
5360-00-405-2554	16	12	1010-01-122-9542	5	20
	17	5	5315-01-122-9543	5	23
5305-00-421-7914	20	2	1010-01-122-9544	5	21
1010-00-439-6249	18	2	1010-01-122-9545	7	5
5315-00-439-6251	18	7	5365-01-122-9546	7	1
	18	30	5360-01-122-9547	11	3
1010-00-439-6252	18	4	1010-01-122-9548	5	22
5305-00-439-6253	18	17	1010-01-122-9551	5	30
5305-00-439-6254	18	32	5340-01-122-9552	5	42
5360-00-439-6255	18	3	1055 -01-122-9553	6	1
1010-00-440-3353	18	16	5340-01-122-9554	5	24
5315-00-440-3354	18	29	1010-01-122-9555	5	38
5310-00-440-3355	18	1	1010-01-122-9556	10	3
5360-00-440-3356	18	6	5360-01-122-9602	5	18
	18	31	5360-01-122-9603	5	14
5315-00-464-2682	11	8	5310-01-122-9630	12	19
5360-00-464-7070	12	14	5310-01-122-9631	5	17
5305-00-500-9394	8	6	5315-01-122-9639	6	2

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5315-01-122-9641	5	8	1010-01-129-1230	11	7
5360-01-122-9670	2	25	1010-01-129-1231	16	1
5360-01-122-9671	2	21		17	3
	5	7	1010-01-129-1232	2	6
3040-01-122-9672	6	3	1010-01-129-1233	2	22
1010-01-122-9678	5	10	1010-01-129-1234	8	3
5360-01-123-2356	5	40	1010-01-129-1235	2	13
1010-01-123-6074	11	5	1010-01-129-1236	2	23
1010-01-123-6075	9	4	5340-01-129-1237	12	16
5315-01-123-6076	12	13	1010-01-129-1239	12	11
5305-01-123-6078	12	10	1010-01-129-1242	11	2
1010-01-123-6079	12	9	1010 -01-129-1243	10	1
1010-01-123-6080	12	3	1010-01-129-1244	9	2
1010-01-123-6082	12	4	1010-01-129-1245	5	16
1010-01-123-6084	12	1	1010-01-129-1246	7	4
5315-01-123-6085	12	7	1010-01-129-1247	2	8
1010-01-123-6086	8	5	5303-01-129-1248	5	9
1010-01-123-6087	16	4	1010-01-129-2091	16	10
	17	12	1010-01-130-3434	23	22
5306-01-123-6088	11	11	1010-01-130-3435	23	21
5315-01-123-6092	2	1	1010-01-133-0824	5	11
1010-01-123-6094	2	12	5365-01-133-0827	5	13
5315-01-123-6095	2	18	5315-01-133-0828	5	15
5315-01-123-6096	2	17	5340-01-133-0829	5	12
3040-01-123-6097	2	4	5315-01-133-0830	2	24
5315-01-123-6182	12	22	1010-01-133-6977	2	19
5315-01-123-6185	12	24	1010-01-133-6979	2	2
5315-01-123-6186	5	3	1010-01-133-6980	2	27
5360-01-123-6197	11	4	1010-01-133-6982	8	9
5360-01-123-6200	2	16	1010-01-133-6983	2	28
5360-01-123-6201	10	2	1010-01-133-6984	16	3
5310-01-123-6265	9	1	5945-01-133-6985	2	10
5310-01-123-6266	7	3	1010-01-133-6986	17	1
5315-01-123-6268	10	5	1220-01-133-6987	18	14
3040-01-123-6280	11	9	5320-01-133-6988	18	15
1010-01-123-6281	2	26	1010 -01-133-6989	18	25
3040-01-123-6282	2	15	1010-01-133-6990	2	9
3040-01-123-6283	2	20	5120-01-138-4796	23	20
5360-01-123-6308	11	10	5120-01-138-4797	23	19
1010-01-123-6697	10	7	1010-01-138-4798	23	23
1010-01-123-6698	16	13	5315-01-138-4801	13	1
	17	4	5365-01-138-4802	13	2
1010-01-123-6699	14	2	5360-01-138-4803	13	3
1010-01-123-6704	14	1	1010-01-138-4804	12	21
1010-01-123-6705	2	5	5315-01-138-4805	12	23
1010-01-123-6706	2	31	1010-01-138-4806	12	20
1010-01-123-6708	15	2	1010-01-138-4807	12	18
5365-01-123-6820	3	4	5310-01-138-4808	13	5
5360-01-123-6852	15	3	5310-01-138-4809	13	4
5305-01-124-4336	15	4	1010-01-138-4810	7	2
5360-01-124-4410	9	3	5120-01-138-4811	23	24
1010 -01-126-9063	1	1	1010-01-138-4812	12	17
3040-01-129-1229	17	10	1010-01-138-4862	23	18

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5310-01-148-0253	20	8	5365-01-396-8408	23	2
1010-01-149-5468	2	11	5930-01-419-5557	21	16
5360-01-149-5513	19	3	9905-01-421-0350	2	30
5315-01-149-5530	19	5	1010-01-440-3474	2	14
1010-01-151-6215	19	2	1055-01-443-8386	5	43
1010-01-151-6216	19	1	5305-01-457-4537	8	10
5315-01-151-8394	12	15	1010-01-460-7941	12	12
5305-01-158-1197	18	26	1005-01-467-9435	23	12
5360-01-158-1207	5	35	3040-01-475-2685	2	3
1010-01-170-9940	11	6		3	5
	KITS	2	1010-01-477-4318	18	5
5360-01-171-0008	5	39	1010 -01-490-9697	1	3
5360-01-217-2841	6	4	1010-01-491-8627	5	27
5305-01-217-8035	15	1	1010-01-491-8628	5	26
3110-01-235-0389	5	5	1010-01-491-8630	2	33
5315-01-253-6728	20	6	1010-01-491-8631	5	37
1010-01-258-1467	16	9	1010-01-491-8632	5	36
5310-01-294-9877	18	11	3120-01-492-0354	3	2
5355-01-294-9879	18	9	1010-01-492-2118	2	32
5305-01-295-9655	18	13	1010-01-508-5551	23	13
5305-01-296-0623	18	10	5360-01-509-6006	23	16
1010-01-329-4865	11	6	5305-01-510-1275	23	14
1010-01-329-4866	11	6	3040 -01-517-4779	20	13
1010-01-329-4867	11	6	1220-01-517-4782	20	14
1010-01-329-4868	11	6	5340-01-517-4783	21	14
1010-01-329-4869	11	6	5980-01-517-4784	21	15
1010-01-329-4870	11	6	3040 -01-517-4785	20	7
1010-01-329-4871	11	6	5305-01-517-4786	20	5
1010-01-329-4872	11	6	5340 -01-517-4787	20	12
1010-01-329-4873	11	6	5930-01-517-4788	21	12
1010-01-330-2787	11	6	1090-01-517-4789	20	4
5120-01-347-1884	23	1	5905-01-517-4790	21	4
1010-01-348-8758	23	8	5340-01-517-4991	21	1
5305-01-349-7520	23	5	5340-01-517-6142	21	2
3040-01-352-9065	23	6	5330-01-517-6144	21	6
3040-01-355-7661	23	7	1010-01-517-6146	22	5
1010-01-355-9553	23	3	6160-01-517-6148	21	9
1010-01-355-9554	23	10	6160-01-517-8449	21	7
1010-01-359-2835	12	5	5315-01-519-1111	22	4
1010-01-362-6513	1	2	5305-01-519-2130	3	1
5365-01-368-0429	23	4	5340-01-522-7618	20	1
1010-01-384-9478	18	22	5340-01-526-3299	21	5
5315-01-385-1540	23	9	5315-01-538-0188	22	1
5340-01-388-8350	18	21	1010-01-541-7229	20	10
5305-01-392-1665	2	29	1007-01-546-0569	3	3
1010-01-394-9913	4	2	1010-01-550-8778	KITS	1

END OF WORK PACKAGE



**FIELD MAINTENANCE  
PART NUMBER INDEX**

<b>PART NUMBER</b>	<b>FIG.</b>	<b>ITEM</b>	<b>PART NUMBER</b>	<b>FIG.</b>	<b>ITEM</b>
AN4-4A	2	34	MS9245-21	8	2
ANSI B27.7 3CM1-10	23	2	MS9389-84	11	8
AS24585-105	18	24	MS9842-14	12	15
AS24585C13	16	5	NA5561C3-20	17	2
	17	11	NAS1351C3LN10	11	1
ASB1044/7-24	21	3	NAS561C3-10	12	8
B1821BH031F044N	8	10	NAS561C3-20	16	2
CS18	5	29	11010390	18	11
DL3269494	23	21	12011993	12	5
M12133/1-5P	20	8	12012009	4	2
MS14145-L6	16	7	12012058	2	14
MS14145L6	17	8	12012073	5	43
MS16562-217	4	3	12926842	23	5
MS16562-5	18	23	12926843	23	8
MS16562-98	18	8	12926844	23	4
MS16995-50B	20	2	12926845	23	7
MS16995-9B	21	8	12926846	23	10
MS16996-10	21	13	12926847	23	6
MS16997-18	11	6	12926848	23	3
	18	28	12926849	23	1
MS171512	14	3	12938261	18	22
MS171533	16	11	12938262	18	21
	17	6	12938263	12	12
MS20392-1C21	8	1	12993610	2	33
MS20995C32	BULK	1	12993777	18	5
MS20995C32-AR	5	19	12997465	20	3
	18	27	12997466	20	1
MS21295-16	5	28	12997467	20	14
MS24585-1063	16	12	12997468	21	10
	17	5	12997469	20	5
MS24585-2121	6	4	12997470	20	13
MS24585C140	12	14	12997471	20	12
MS24585C181	8	4	12997472	20	7
MS24585C246	22	2	12997474	21	2
MS24585C56	12	2	12997477	22	5
MS24665-300	16	8	12997479	21	7
	17	7	12997481	21	5
MS24667-9	20	15	12997482	21	6
MS35338-60	18	12	12997483	21	9
MS51605-13	10	4	12997484	21	15
MS51605-19	10	6	12997485	21	14
MS51923-249	20	9	12997486	21	16
MS51923-51	20	6	12997487	21	4
MS51923-52	22	4	12997488	20	4
MS51923-99	20	11	12997489	21	1
MS51957-1	21	11	12997490	21	12
MS51958-40B	2	29	12997550	1	3
MS51965-78	23	11	12997552	5	27

PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
12997553	5	26	3269416-8	11	6
12997554	5	37	3269416-9	11	6
12997555	2	32	3269417	5	35
12997556	5	36	3269419	1	1
12997788	2	3	3269420	12	7
13005722	23	12	3269422	4	1
13005723	23	16	3269425	5	14
13005724	23	13	3269426	2	4
13005725	23	15	3269427	14	1
13005726	23	14	3269428	11	9
13008566	20	10	3269429	11	2
13008567	22	1	3269430	11	5
13008568	22	3	3269431	2	23
13010447	KITS	1	3269432	11	7
13011853	3	2	3269433	5	18
13011854	3	3	3269434	2	17
13011856	3	5	3269435	2	18
13011857	3	1	3269436	2	20
2680889-1	5	31	3269437	9	2
2680901	12	19	3269438	2	15
2680956	5	41	3269439	2	12
2680959	5	34	3269440	5	21
2680962	5	33	3269441	5	22
2680964	5	6	3269442	5	23
2813528	5	32	3269444	5	20
2813531	5	2	3269445	7	4
3010125-2	19	5	3269446	7	1
3010126	19	3	3269447	7	5
3010127-1	19	1	3269448	5	25
3010127-2	19	2	3269449	5	1
3269401	2	7	3269450	5	4
3269402	5	9	3269451	7	2
3269403	2	13	3269452	5	38
3269404	2	31	3269454	15	4
3269405	2	19	3269455	9	3
3269406	2	2	3269457	5	10
3269407	2	27	3269458	15	2
3269408	2	22	3269459	5	24
3269409	2	8	3269461	6	1
3269409-MOD	2	8	3269462	11	3
3269410	2	9	3269463	5	42
3269411	2	5	3269464	5	30
3269415	2	6	3269468	15	3
3269416	11	6	3269469-1	3	4
	KITS	2	3269470	12	1
3269416-10	11	6	3269471	12	16
3269416-12	11	6	3269472	2	1
3269416-13	11	6	3269473	12	11
3269416-14	11	6	3269474	5	17
3269416-15	11	6	3269475	5	8
3269416-5	11	6	3269476	5	3
3269416-6	11	6	3269477	10	7
3269416-7	11	6	3269478	10	3

PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
3269479	10	5	3269544	13	5
3269480	16	1	3269545	2	28
	17	3	3269547	23	24
3269481	11	11	3269548	18	14
3269482	7	3	3269550	18	25
3269483	9	4	3269551	12	17
3269484	10	1	3269552	12	21
3269486	2	16	3269553	12	23
3269487	11	4	3269554	12	18
3269488	10	2	3269555	12	20
3269489	6	3	3269557	18	15
3269490	2	26	5009369	8	7
3269491	12	13	5009394	8	6
3269492	14	2	5526198	5	11
3269493	9	1	5526201	5	13
3269497	11	10	5526202	5	15
3269499	12	4	5526203	5	12
3269501	2	10	5526204	2	24
3269502	2	21	5526205	18	26
	5	7	5526208	5	39
3269503	17	10	5526209	5	5
3269505	23	22	5526211	15	1
3269506	17	1	5830095	2	11
3269507	16	3	5830096	19	4
3269512	5	16	6289494	16	9
3269513	16	13	6313800	16	6
	17	4		17	9
3269515	2	25	6535441	23	17
3269516	16	4	7004160	1	2
	17	12	7004224	2	30
3269517	12	6	7265561	8	8
3269518	12	3	7791011	18	16
3269519	12	9	7791014	18	2
3269520	12	10	7791016	18	20
3269522	12	24	7791018	18	13
3269523	12	22	7791020	18	29
3269524	16	10	7791021	18	1
3269525	5	40	7791022	18	7
3269526	6	2		18	30
3269533	8	3	7791023	18	4
3269534	8	9	7791024	18	17
3269534-MOD	8	9	7791025	18	10
3269535	8	5	7791026	18	32
3269536	23	18	7791027	18	3
3269537	13	1	7791028	18	6
3269538	13	2		18	31
3269539	13	3	7791029	18	9
3269540	23	20	7791199	18	18
3269541	23	19	7791200	18	19
3269542	23	23	90149AO30	23	9
3269543	13	4			

END OF WORK PACKAGE



**CHAPTER 7**  
**SUPPORTING INFORMATION**



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## FIELD MAINTENANCE REFERENCES

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**SCOPE**

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

**AIR FORCE FORMS AND MANUALS**

AFTO Form 22	Technical Order System Publication Improvement Report and Reply
TO 11W1-10	Recording of Inspection, Maintenance, and Firing Data for Ground Weapons

**ARMY REGULATIONS AND PAMPHLETS**

AR 385-40	Accident Reporting and Records
AR 385-64	U.S. Army Explosives Safety Program
AR 750-1	Malfunction Involving Ammunition and Explosives
DA PAM 385-64	Ammunition and Explosives Safety Standards
DA PAM 750-8	Functional Users Manual for The Army Maintenance Management System (TAMMS)

**DEPARTMENT OF THE ARMY FORMS**

AEPS Web Site ( <a href="http://AEPS@us.army.mil">http://AEPS@us.army.mil</a> )	Product Quality Deficiency Report
AEPS Web Site ( <a href="http://AEPS@us.army.mil">http://AEPS@us.army.mil</a> )	Supply of Discrepancy
DA Form 285	U.S. Army Accident Report
DA Form 2028	Recommended Changes to Publications and Blank Forms
DA Form 2404	Equipment Inspection and Maintenance Worksheet
SF 364	Report of Discrepancy (ROD)
SF 368	Product Quality Deficiency Report

**FIELD MANUALS**

FM 4-25.11	First Aid
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**MISCELLANEOUS PUBLICATIONS**

CTA 8-100	Army Medical Department Expendable/Durable Items
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**MISCELLANEOUS PUBLICATIONS - Continued**

CTA 50-970	Expendable/Durable Items (Except: Medical, Class V, Repair Parts, and Heraldic Items)
DOD 4160.21-M-1	Defense Demilitarization Manual
TI-09761A-35/1	TBD
UM 4790-5	TBD

**NAVY/MARINE CORPS FORMS AND MANUALS**

MCO P4400.84	TBD
NAVMC Form 10772	Publications/Logistics - Maintenance Data Coding
NAVSEAINST 8370.2	Small Arms and Weapons Management Policy and Guidance Manual
TM 4700-15/1	Equipment Record Procedures

**TECHNICAL BULLETINS**

TB 43-0134	Battery Disposition and Disposal Technical Bulletin
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 MANUALS**

TM 9-1005-245-13&P	Operator's, Unit, and Direct Support Maintenance Manual with Repair Parts and Special Tools List (RPSTL) for Machine Gun Mounts and Combinations for Tactical/Armored Vehicles
TM 9-1010-230-10	Operator's Manual and Components for Machine Gun, 40 MM, MK19 MOD 3
TM 9-1010-231-13&P	Operator's, Organizational, and Intermediate Maintenance Manual with Repair Parts and Special Tools List for Mount, Machine Gun, MK 64
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
TM 10004A-10/A	Upgunned Weapons Station (UGWS) Assault Amphibious Vehicle, Personnel, Model 7A1, AAVP7A1

**END OF WORK PACKAGE**

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## FIELD MAINTENANCE MAINTENANCE ALLOCATION CHART (MAC) 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.

This 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 two subcolumns, C (Crew) and F (Maintainer).

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

The maintenance to be performed at field and sustainment levels is described as follows:

1. **Crew Maintenance.** The responsibility of a using organization to perform maintenance on its assigned equipment. It normally consists of inspecting, servicing, lubricating, adjusting, and replacing parts, minor assemblies, and subassemblies. The replace function for this level of maintenance is indicated by the letter "C" in the third position of the SMR code. A "C" appearing in the fourth position of the SMR code indicates complete repair is possible at the crew maintenance level.
2. **Field Maintenance.** Maintenance accomplished on a component, accessory, assembly, subassembly, plug-in unit, or other portion either on the system or after it is removed. The replace function for this level of maintenance is indicated by the letter "F" appearing in the third position of the SMR code. An "F" appearing in the fourth position of the SMR code indicates complete repair is possible at the Field Maintenance level. Items are returned to the user after maintenance is performed at this level.
3. **Below Depot Sustainment.** Maintenance accomplished on a component, accessory, assembly, subassembly, plug-in unit, or other portion either on the system or after it is removed. The replace function for this level of maintenance is indicated by the letter "H" appearing in the third position of the SMR code. An "H" appearing in the fourth position of the SMR code indicates complete repair is possible at the below depot sustainment maintenance level. Items are returned to the supply system after maintenance is performed at this level.
4. **Depot Sustainment.** Maintenance accomplished on a component, accessory, assembly, subassembly, plug-in unit, or other portion either on the system or after it is removed. The replace function for this level of maintenance is indicated by the letter "D" or "K" appearing in the third position of the SMR code. Depot sustainment maintenance can be performed by either depot personnel or contractor personnel. A "D" or "K" appearing in the fourth position of the SMR code indicates complete repair is possible at the depot sustainment maintenance level. Items are returned to the supply systems after maintenance is performed at this level.

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

The remarks table (immediately following the tools and test equipment requirements) contains 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.
  - 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. **Paint (ammunition only).** To prepare and spray color coats of paint so that the ammunition can be identified and protected. The color indicating primary use is applied, preferably, to the entire exterior surface as the background color of the item. Other markings are to be repainted as original so as to retain proper ammunition identification.
9. **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.
10. **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.

## Maintenance Functions - Continued

### 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.
11. **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.
  12. **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 material 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 numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly.

**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).

**Column (4), Maintenance Level.** Specifies each level of maintenance authorized to perform each function listed in Column 3, by indicating work time required (expressed as man-hours in whole hours or decimals) in the appropriate subcolumns. This work-time figure represents the active time required to perform that maintenance function. The work-time figure represents the average time required to restore an item 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. The symbol designations for the various maintenance levels are as follows:

Field:

- C Crew maintenance
- F Maintainer 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 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.

**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 alphabetical 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)**

**Table 1. MAC for MK19 MOD 3 Machine Gun.**

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			FIELD		SUSTAINMENT			
			CREW	MAINTAINER	BELOW DEPOT	DEPOT		
			C	F	H	D		
00	40 MM Machine Gun MK19 MOD 3 (3269419 and 12997550)	Repair		1.8				
		Overhaul				15.4	1, 2, 4, 14, 16, 18	
01	Machine Gun Assemblies and Components (3269400 and 12997551)	Repair		0.2			15, 18	
0101	Adjustable Secondary Drive Lever (12997788)	Replace	0.1					
		Repair		0.2			5, 15, 18, 19	
0102	Barrel Assembly (12012058)	Repair		0.5			8, 10, 13, 18	
02	Bolt and Backplate Assembly (3269401)	Replace	0.2					
		Repair		0.2				
0201	Bolt Subassembly (12012073)	Repair		0.5			15, 18	
0202	Bolt Buffer Assembly (3269402)	Repair		0.4			15, 19	

**Table 1. MAC for MK19 MOD 3 Machine Gun - Continued.**

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			FIELD		SUSTAINMENT			
			CREW	MAINTAINER	BELOW DEPOT	DEPOT		
			C	F	H	D		
0203	Control Grip Assembly (3269415)	Repair		0.2			15, 18	
03	Ogive Plunger Assembly (3269405)	Replace	0.1					
		Repair		0.3			6, 15, 18	
04	Top Cover Assembly (3269406)	Replace	0.1					
		Repair		0.3			15, 18	
05	Feed Assembly (3269407)	Replace	0.1					
		Repair		0.5			5, 11, 15, 18, 19	
06	Sear Assembly (3269410)	Replace	0.1					
		Repair		0.4			12, 15, 18, 19	
0601	Receiver Buffer Bodies and Internal Components	Repair		0.4			18	
060101	Buffer Rod Assembly	Repair		0.4			3, 18	
07	Vertical Cam Assembly	Replace	0.1					
		Repair		0.5			18	
08	Alignment Guide Assembly	Replace	0.1					
		Repair		0.2			15, 18	
09	Gun Charger, LH	Replace	0.1					
		Repair		0.3			15, 17, 18	

**Table 1. MAC for MK19 MOD 3 Machine Gun - Continued.**

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIPMENT REFERENCE CODE	(6) REMARKS CODE
			FIELD		SUSTAINMENT			
			CREW	MAINTAINER	BELOW DEPOT	DEPOT		
			C	F	H	D		
10	Gun Charger, RH	Replace	0.1					
		Repair		0.3			15, 17, 18	
11	Rear Sight Assembly	Repair		0.3			18	
1101	Base Rear Sight (3269550)	Repair		0.1			18	
12	Feed Throat Assembly	Replace	0.1					
		Repair		0.4			17, 18	
13	Adjustable Sight Bracket	Repair		0.6			18	
1301	Arm Assembly	Repair		0.2			18	
130101	Cover Assembly	Repair		0.2			18	
1302	Plunger Assembly	Repair		0.2				
9500	Special Tools - Round Removal Tool	Replace	0.1					
		Repair		0.2			18	

**Table 2. Tools and Test Equipment for MK19 MOD 3 Machine Gun (Army and Other Services (Special)).**

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	F	Adapter Assembly, 40 MM	4933-00-102-6798	11686402 (19204)
2	F	Boresight Kit, 40 MM	4933-00-930-1957	11686583 (19204)
3	C	Detector, Bore Obstruction	1010-01-428-3233	12012025 (19200)
4	C	Removal Tool, Round	5120-01-347-1884	12926849 (19200)
5	F	Feed Adjustment Tool	1005-01-467-9435	13005722 (19200)
6	F	Tool, Ogive Plunger Assembly	1010-01-130-3434	3269505 (19200)
7	C	Brush Assembly, Bore	1010-01-150-9983	3269511 (19200)
8	F	Gage Assembly, Bore Constriction	1010-01-138-4862	3269536 (19200)
9	F	Buffer Tool	5120-01-138-4796	3269540 (19200)
10	F	Wrench, Spanner	5120-01-138-4797	3269541 (53711)
11	F	Feed Slide Tool	1010-01-138-4798	3269542 (53711)
12	F	Safety Slide Tool	5120-01-138-4811	3269547 (19200)
13	C	Rod, Cleaning, Small Arms	1005-00-653-5441	6535441 (19204)
14	F	Pliers, Slip Joint	5120-01-021-7472	B107.23 (05047)
15	F	Combination Tool	1010-01-130-3435	DL3269494 (53711)
16	F	Fabricated Target		Fabricated per WP 0061
17	F	Rod, Cleaning, Small Arms	1005-00-653-5441	
18	F	Tool Kit, Small Arms Repairman	5180-01-506-8287	GOV92608 (08292)
19	F	Shop Set, Small Arms	4933-00-754-0664	SC4933-95CLA11 (19204)

**Table 3. Remarks for MK19 MOD 3 Machine Gun.**

REMARK CODE	REMARKS
A	There are no remarks for this Maintenance Allocation Chart

**END OF WORK PACKAGE**

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**FIELD MAINTENANCE  
EXPENDABLE AND DURABLE ITEMS LIST**

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## INTRODUCTION

### Scope

This work package lists expendable and durable items that you will need to operate and maintain the MK19 MOD 3 Machine Gun. 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), or CTA 8-100, Army Medical Department Expendable/Durable Items.

### Explanation of Columns in the Expendable/Durable Items List

**Column (1) – Item Number.** This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., "Use abrasive cloth.")

**Column (2) – Level.** This column identifies the lowest level of maintenance that requires the listed item:

**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, Commercial and Government Entity Code (CAGEC), and Part Number (P/N).** This column provides the other information you need to identify the item.

**Column (5) – Unit of Issue (U/I).** Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (3).

Table 1. Expendable and Durable Item List.

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER/ (CAGEC)	(5) U/I
1	F	6810-00-983-8551	Alcohol, Technical 839889 (19203)	QT
2	F	6135-00-826-4798	Battery, Nonrechargeable 24A (80204)	PG
3	F	5140-00-473-6256	Bag, Tool, (Not for Army Use) 11655979 (34623)	EA
4	F	6850-00-224-6665	Cleaning Compound, Solvent: 1-gallon can MIL-PRF-11090 (81349)	GL
5	F	6850-00-224-6656 6850-00-224-6557 6850-00-224-6663	Cleaning Compound, Rifle Bore MIL-PRF-372 (81349) 2 ounce can 8 ounce can 1 gallon can	CN CN GL
6	C	6850-01-378-2319	Cleaning Compound, Solvent 1-gallon can MIL-PRF-680 Type II (81349)	GL
7	C	5350-00-221-0872	Cloth, Abrasive Crocus 50-sheet package ANSI B74.18 (80204)	PG
8	C	9150-00-935-4018 9150-00-223-4004 9150-00-965-2003	Grease, Molybdenum Disulfide (GMD) ROYCO 64 (07950) 14 ounce can 6.5 ounce can 35 gallon can	CA OZ CN
9	F	9150-01-260-2534	Lubricant, Solid Film 16-ounce can MIL-L-23398D (34227)	OZ
10	C	9150-00-292-9689	Lubricating Oil (LAW) 1-quart bottle MIL-PRF-14107 (81349)	QT
11	C	9150-00-935-6597 9150-00-889-3522 9150-00-870-4241 9150-00-753-4686	Lubricating Oil (LSA) 2 ounce bottle MIL-L-46000 (81349) 4 ounce bottle 8436793 (19204) 32 ounce bottle 1 gallon can MIL-L-46000 (81349)	TU TU TU GL
12	F	9150-00-949-0323 9150-01-109-7793	Lubricating Oil (LSAT) 8 ounce tube BRAYCOTE650 (2R128) 1 pound can MIL-L-46150 (81349)	TU LB
13	C	7920-00-205-1711	Rag, Wiping 50-pound bundle 7920-00-205-1711 (64067)	BE
14	F	8030-01-025-1692	Sealing Compound, Grade A Red, Type 3 (Locking Compound) 50-milliliter bottle ASTM D5363 AN0321 P15 (81346)	BT
15	C	5345-00-224-6596	Stone, Sharpening	GL

*Table 1. Expendable and Durable Item List - Continued.*

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER/ (CAGEC)	(5) U/I
			ANSI B74.18 (80204)	

END OF WORK PACKAGE



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## FIELD MAINTENANCE TOOL IDENTIFICATION LIST

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### INTRODUCTION

#### Scope

This work package lists all common tools and supplements and special tools/fixtures needed to maintain the MK 19.

Most PM-SKOT products have lifetime warranties and replacement capabilities and are supported world-wide through PM-SKOT. The PM-SKOT implemented a Web-based tool replacement and warranty program in May 2005 for tools authorized in SKO. User may access the online program by first accessing the PM-SKOT Web site at <https://pmskot.army.mil> and clicking on the Tool Replacement/Warranty banner.

#### Explanation of Columns in the Tool Identification List

**Column (1) - Item No.** This number is assigned to the entry in the list and is referenced in the initial setup to identify the item (e.g., "Extractor (WP 0090, Item 32)").

**Column (2) - Item Name.** This column lists the item by noun nomenclature and other descriptive features (e.g., "Gage, belt tension").

**Column (3) - National Stock Number (NSN).** This is the National Stock Number (NSN) assigned to the item; use it to requisition the item.

**Column (4) - Part Number/(CAGEC).** 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. The manufacturer's Commercial and Government Entity Code (CAGEC) is also included.

**Column (5) - Reference.** This column identifies the authorizing supply catalog or RPSTL for items listed in this work package.

Table 1. Tool Identification List.

(1) ITEM NO.	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER (NSN)	(4) PART NUMBER /(CAGEC)	(5) REFERENCE
1	Adapter Assembly, 40 MM	4933-00-102-6798	11686402 (19204)	
2	Ammunition Containers (M548 or PA120 Containers)	M548 - 1301-01-159-3161 PA120 - 1301-01-315-1636	9370129 (19200) 12934556 (19200)	
3	Band Saw	-		
4	Bench Block	5120-00-240-7308	10-087B (33164)	
5	Brass-Head Hammer	5120-00-242-7410	10545649-5 (19200)	
6	Boresight Kit, 40 MM	4933-00-930-1957	11686583 (19204)	
7	Brush Assembly, Bore	1010-01-150-9983	3269511 (19200)	
8	Buffer Tool	5120-01-138-4796	3269540 (19200)	
9	Catch Bag Assembly	1005-01-388-5679	6650723 (53711)	
10	Carriage and Cradle	1010-01-160-6115	5830052 (53711)	
11	Combination Tool	1010-01-130-3435	DL3269494 (53711)	
12	Detector, Bore Obstruction	1010-01-428-3233	12012055 (19200)	
13	Dial Caliper	5210-01-010-4522	020X227 (62764)	
14	Dummy Round, 40MM Linked (8 required) (DODIC B472)	1310-01-154-6525	12624616 (19200)	
15	Fabricated Target	-		Fabricated per WPs 0047 and 0048
16	Feed Adjustment Tool	1005-01-467-9435	13005722 (19200)	

Table 1. Tool Identification List - Continued.

(1) ITEM NO.	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER (NSN)	(4) PART NUMBER /(CAGEC)	(5) REFERENCE
17	Feed Slide Tool	1010-01-138-4798	3269542 (53711)	
18	Gage Assembly, Bore Constriction	1010-01-138-4862	3269536 (19200)	
19	Linked 40 MM Ammunition As Specified For Each	-		
20	MK 16 MOD 0 Stand or M3 Tripod Mount	-		
21	MK 64 Mount, Gun	1010-01-412-3159	12972474 (19200)	
22	Mount, Tripod, Machine Gun	1005-00-322-9716	A20152 (U4574)	
23	Ogive Plunger Assembly Tool	1010-01-130-3434	3269505 (19200)	
24	Pliers, Slip-Joint, 7 Inch	5120-01-021-7472	272PL052 (30239)	
25	Propane Torch	3439-00-542-0531	A-A-51128 (58536)	
26	Removal Tool, Round	5120-01-347-1884	12926849 (19200)	
27	Rod, Cleaning, Small Arms	1005-00-653-5441	6535441 (19204)	
28	Safety Slide Tool	5120-01-138-4811	3269547 (19200)	
29	Table Stand	-		
30	Tape Measure	-		
31	Tool Set, Field Level Maintenance	5180-01-143-9604	001004SL82 (01365)	
32	Tool Set, Intermediate	-		
33	Tool Set, Intermediate (Marine Corps Only)	5180-01-143-9604	001004SL82 (01365)	

**Table 1. Tool Identification List - Continued.**

(1) ITEM NO.	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER (NSN)	(4) PART NUMBER /(CAGEC)	(5) REFERENCE
34	Tool Set, Organizational	5180-01-143-9605	001003SL82 (01365)	
35	Tool Set, Organizational (Marine Corps Only)	-	SL-3-08668A	
36	Tool Kit, Small Arms	5180-01-506-8287	GOV92608 (08292)	
37	Tool Kit, Small Arms Repairman (Marine Corps Only)	-		
38	Tool Kit, Small Arms Repairman SC 5180-95-B71 With Addition of SL-3-00607A (Marine Corps Only)	-		
39	Traversing and Elevating (T&E) Mechanism	-		
40	Vise, Copper-Jawed	5120-00-221-1506	GGG-C-137 (81348)	
41	Wrench, Spanner	5120-01-138-4797	3269541 (53711)	

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<b>RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS</b>						Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE <i>Date you filled out this form.</i>
For use of this form, see AR 25-30; the proponent agency is OAASA.							
<b>TO</b> (Forward to proponent of publication or form) (Include ZIP Code) U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000						<b>FROM</b> (Activity and location) (Include ZIP Code) <i>Your mailing address</i>	
<b>PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS</b>							
PUBLICATION/FORM NUMBER <i>TM Number</i>						DATE <i>Date of the TM</i>	TITLE <i>Title of the TM</i>
ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON (Exact wording of recommended change must be given)	
	0007-3					<i>Figure 2, Item 9 should show a lockwasher. Currently shows a flat washer.</i>	
	0018-2					<i>Cleaning and inspection, Step 6, reference to governor support pin (14) is wrong reference. Reference should be change to (12).</i>	
<h1>SAMPLE</h1>							
TYPED NAME, GRADE OR TITLE  <i>Your Name</i>						TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION  <i>Your Phone Number</i>	SIGNATURE  <i>Your Signature</i>

<b>TO</b> (Forward direct to addressee listed in publication) U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	<b>FROM</b> (Activity and location) (Include ZIP Code)  <i>Your Address</i>	<b>DATE</b> <i>Date you filled out this form</i>
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**PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS**

PUBLICATION NUMBER <i>TM Number</i>	DATE <i>Date of the TM</i>	TITLE <i>Title of the TM</i>
----------------------------------------	-------------------------------	---------------------------------

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
<h1>SAMPLE</h1>								

**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 <i>Your Name</i>	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION <i>Your Phone Number</i>	SIGNATURE <i>Your Signature</i>
------------------------------------------------	------------------------------------------------------------------------	------------------------------------

<b>RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS</b>						Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	<b>DATE</b>
For use of this form, see AR 25-30; the proponent agency is OAASA							
<b>TO</b> (Forward to proponent of publication or form) (Include ZIP Code) U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000						<b>FROM</b> (Activity and location) (Include ZIP Code)	
<b>PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS</b>							
PUBLICATION/FORM NUMBER TM 9-1010-230-23&P						DATE 31 August 2012	TITLE Field Maintenance Manual including RPSTL for Machine Gun, 40 MM, MK19
	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON	
TYPED NAME, GRADE OR TITLE						TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

<b>TO</b> <i>(Forward direct to addressee listed in publication)</i> U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	<b>FROM</b> <i>(Activity and location) (Include ZIP Code)</i>	<b>DATE</b>
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**PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS**

<b>PUBLICATION/FORM NUMBER</b> TM 9-1010-230-23&P	<b>DATE</b> 31 August 2012	<b>TITLE</b> Field Maintenance Manual including RPSTL for Machine Gun, 40 MM, MK19
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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
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<b>RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS</b>						Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	<b>DATE</b>
For use of this form, see AR 25-30; the proponent agency is OAASA							
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Official  
  
JOYCE E. MORROW  
*Administrative Assistant to the  
Secretary of the Army*

1220102

RAYMOND T. ODIERNO  
*General, United States Army  
Chief of Staff*

Army Distribution: To be distributed in accordance with the Initial Distribution Number 400697 requirements for TM 9-1010-230-23&P.

By Order of the Secretary of the Air Force:

NORTON A. SCHWARTZ  
*General, United States Air Force  
Chief of Staff and AFMC*

By Order of the Secretary of the Navy :

JONATHAN W. GREENERT  
*Admiral, United States Navy  
Chief of Naval Operations*

By Direction of the Commandant of the Marine Corps:

J. J. STOWER  
*Lt. Col. U.S. Marine Corps  
Product Manager, IW (PMM-113)  
Marine Corps Systems Command*

Marine Corps Distribution: To be distributed in accordance with PCN 184 085210 00.



## THE METRIC SYSTEM AND EQUIVALENTS

<p><b>Linear Measure</b></p> <p>1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches              1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches              1 Kilometer = 1000 Meters = 0.621 Miles</p> <p><b>Weights</b></p> <p>1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces              1 Kilogram = 1000 Grams = 2.2 Pounds              1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons</p> <p><b>Liquid Measure</b></p> <p>1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces              1 Liter = 1000 Milliliters = 33.82 Fluid Ounces</p>	<p><b>Square Measure</b></p> <p>1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches              1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet              1 Sq Kilometer = 1,000,000 Sq Meters = 0.0386 Sq Miles</p> <p><b>Cubic Measure</b></p> <p>1 Cu Centimeter = 1,000 Cu Millimeters = 0.06 Cu Inches              1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet</p> <p><b>Temperature</b></p> <p><math>9/5 \text{ } ^\circ\text{C} + 32 = \text{ } ^\circ\text{F}</math>  <math>5/9 (\text{ } ^\circ\text{F} - 32) = \text{ } ^\circ\text{C}</math>              212° Fahrenheit is equivalent to 100° Celsius              90° Fahrenheit is equivalent to 32.2° Celsius              32° Fahrenheit is equivalent to 0° Celsius</p>
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## APPROXIMATE CONVERSION FACTORS

To Change	To	Multiply By
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Sq Inches	Sq Centimeters	6.451
Sq Feet	Sq Meters	0.093
Sq Yards	Sq Meters	0.836
Sq Miles	Sq Kilometers	2.590
Acres	Sq 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 per Sq Inch	Kilopascals	6.895
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
Sq Centimeters	Sq Inches	0.155
Sq Meters	Sq Feet	10.764
Sq Meters	Sq Yards	1.196
Sq Kilometers	Sq Miles	0.386
Sq 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 Sq Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621

