# OPERATOR'S MANUAL



TM 9-1005-249-10

**APRIL 1977** 

TM 9-1005-249-10
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CHANGE

HEADQUARTERS

DEPARTMENT OF THE ARMY
WASHINGTON, DC 20 March 1979

# OPERATOR'S MANUAL M16A1 RIFLE

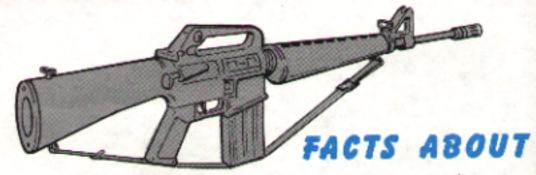
# WARNING

### **DANGEROUS PROCEDURES**

- Be sure the cam pin is installed in the bolt group. If it isn't, your rifle can still fire, but it could possibly explode, causing you harm.
- If you're using the blank ammo attachment, don't use any other ammo except the blank round, M200.
- DO NOT exchange or switch bolt assemblies from one M16A1 to another...lt could cause damage to both you and the rifle.
- If your rifle stops firing with a live round in the chamber of a hot barrel, remove the round fast. However, during training, if you cannot remove it within 10 seconds, wait 15 minutes with the rifle pointing in a safe direction. This way you won't get hurt by a possible ammo cook-off, which could happen 10 seconds after contact with a hot chamber.
- Use only authorized ammo that is manufactured to U.S. specs.

- If your bolt fails to unlock and you try to free it by banging the butt stock on the ground, keep yourself clear of the muzzle.
- If there's water in the barrel, don't fire the rifle.
  It could explode.
- If a noticeable difference in sound or recoil is experienced, STOP FIRING. Either condition could indicate an incomplete propellant burn and a bullet still in the bore. Retract bolt slowly and remove fired cartridge case. Clear weapon and check for unburned powder grains in the receiver or bore and for a bullet in the bore. Remove unburned propellant or bullet from bore before resuming firing, or barrel could explode. If bullet is lodged in bore, turn in rifle to direct support maintenance.

IF YOU GO BY ALL THE INSTRUCTIONS IN THIS BOOK, AND PERFORM PREVENTIVE MAINTENANCE (PM), YOUR M16A1 RIFLE WILL SHOOT, AND SHOOT AND SHOOT. IF YOU'VE DONE YOUR PART AND IT STOPS SHOOTING, TAKE YOUR M16A1 RIFLE TO YOUR SERGEANT. HE HAS THE ANSWERS.



The M16A1 rifle system consists of a rifle, one magazine and a sling. It is a lightweight, gas operated, air cooled, magazine fed, shoulder fired weapon that can be fired either automatic or semi-automatic.

#### Other features:

The barrel assembly has an adjustable sight and a flash suppressor.

Upper and lower receivers are easily opened for cleaning and inspection.

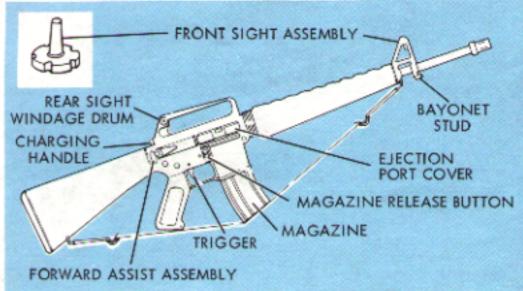
 Bolt group and barrel extension designed with locking lugs that lock bolt group to barrel extension.

An aluminum receiver reduces the weight of the rifle.

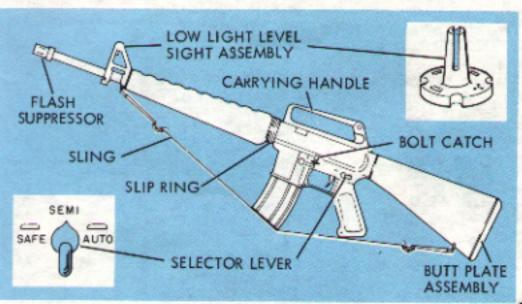
 Some rifles are equipped with the Low Light Level Sight to increase effectiveness during periods of limited visibility.



# RIFLE PARTS AND

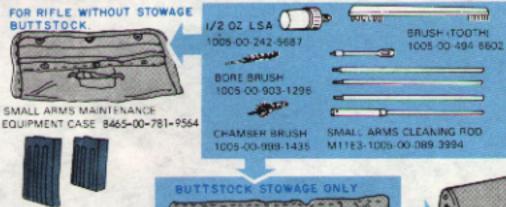


# WHERE THEY ARE



### ITEMS TROOP INSTALLED OR AUTHORIZED

Items which, at the discretion of the unit CO, may accompany the M16A1 rifle but are not subject to be turned in with the rifle



MAGAZINE ASSEMBLY 1005-00-056-2237 (20 RD) (ISSUED UNTIL STOCK EXHAUSTED)

1005-00-921-5004 (30 PD)



### AUXILIARY EQUIPMENT

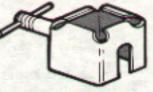


Get your MUZZLE CAP 5340-00-880-7666 MAG BAG 1005-00-052-6942 (20 RD) 1005-00-193-8306 (30 RD)

from your UNIT SUPPLY

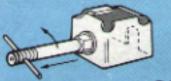


# M15A2 BLANK FIRING ATTACHMENT (BFA)



WARNING Use ONLY blank M200 with the BFA

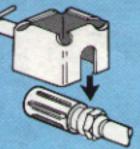
1005-00-118-6192



1. Unscrew and slide all the way back

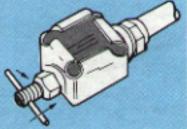
NOTE: After 50 rounds. check to see if it is still tight. Make sure to clean carbon buildup after each use

2 Hook behind first groove of flash suppressor



CAUTION: Do not use tools to tighten attachment, HANDS ONLY

3. Slide into flash suppressor and HAND TIGHTEN





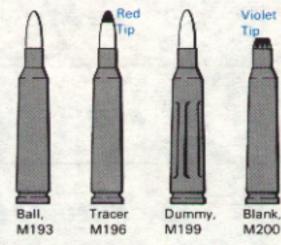
## **AMMUNITION**

#### WARNING

#### DO NOT FIRE . . .

- Seriously corroded ammunition
- Dented cartridges
- Cartridges with loose bullets
- Cartridges exposed to extreme heat (135°) until they have cooled

Use only authorized ammo that is manufactured to US specs.



KEEP DRY, CLEAN, AND FREE OF CRUD YOUR LIFE DEPENDS ON IT!

9

### USE OF SELECTOR LEVER



safe

Rifle will not fire. Selector lever cannot be on safe unless rifle is cocked. Always place in SAFE. when loading and unloading



SAFE AUTO Semi-automatic

Rifle will fire one round each time the trigger is pulled



automatic

Rifle will continue to fire until the magazine is empty or the trigger is released

# CLEAR YOUR RIFLE

3 To lock bolt open, pull charging handle rearward, areas bottom of bolt cotch allow bolt to move forward until n engages bolt carch. Return charging handle to forward iff you haven t before place on SAFE.



7 Place selector un SAFE II weapon is not cocked, lever cannot be pointed toward SAFE



4 Eyeball receiver and chamber to insure these areas contain no ammo



2. Remove magazine



b With selector lever pointing roward SAFS allow bolt to go forward by pressing upper portion of bolt carch.



### DISASSEMBLY

# first

# CLEAR YOUR RIFLE





2 Remove sling

### NOTE

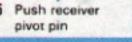


Remove & clean only if dirt & corrosion can be seen through vent holes











6 Separate upper and lower receivers





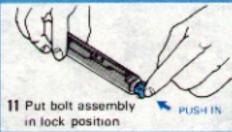
Remove bolt carrier and bolt



9 Remove charging handle

### DISASSEMBLY cont.











14 Remove bolt assembly from carrier

### DISASSEMBLE STEPS 15 THRU 18 ONLY WHEN DIRTY OR DAMAGED



#### NOTE

Press top of extractor to check spring function.

See your ARMORER

Do not damage tip of firing pin.









## CLEAN ... INSPECT... LUBE

With the rifle disassembled, thoroughly clean, inspect and lube, so you have a reliable weapon you can always depend on.

After firing, clean your weapon for 3 consecutive days with <u>Rifle Bore</u> Cleaner (RBC). Wipe dry and lube according to lubrication instructions.



Cleaning materials: swabs, pipe cleaners and RBC are expendable items that are available from Company Supply.

If any parts are missing or defective see your ARMORER.

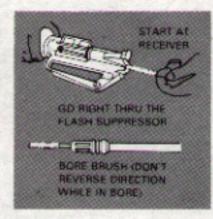
# THOROUGH CLEANING

# upper receiver



#### CLEAN WITH RBC

- Powder Fouling, Corrosion, Dirt & RUST
- Bore & Chamber
- Locking Lugs
- Gas Tube





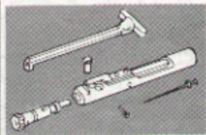
Use a worn bore brush to get outside surface of protruding gas tube (get sides and bottom from bottom of receiver)

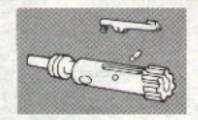
# THOROUGH CLEANING

# bolt carrier group

- Outer & Inner Surfaces of Bolt Carrier
- Carrier Key
- Firing Pin Recess and Firing Pin
- Firing Pin Hole (Use Pipe Cleaner There)
- Carbon Deposits & Dirt from Locking Lugs
- Areas Behind Bolt Ring and Under Lip of Extractor





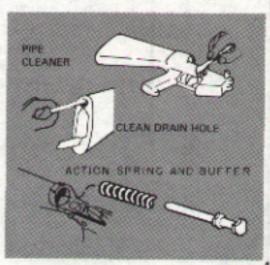


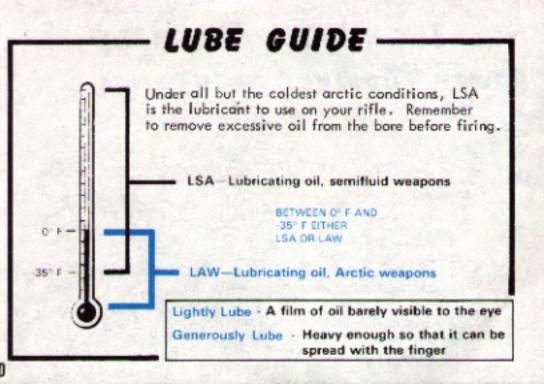
# THOROUGH CLEANING lower receiver group

- All Areas of Powder Fouling, Corrosion and Dirt
- Wipe Dirt from Trigger Mechanism
- Clean Buffer and Inside Lower Receiver Extension

#### CAUTION

Do not use wire brush or any type of abrasive material to clean aluminum surfaces





# LUBRICATING

# upper receiver





#### LIGHTLY LUBE

BORE & CHAMBER, OUTER SURFACES OF BARREL AND FRONT SIGHT, SURFACES UNDER HANDGUARD, DEPRESS FRONT SIGHT DETENT SEVERAL TIMES TO WORK LUBE INTO THE SPRING





### LUBRICATING

# bolt carrier group

# CAUTION

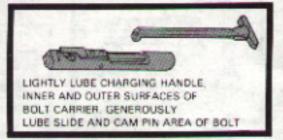
Lightly lube firing pin and tiring pin recess en bodt

GENEROUSLY LUBE OUTSIDE OF THESE PARTS

MAKE CERTAIN TO GET CAM PIN AREA, PISTON RINGS, AND OUTSIDE OF THE BOLT BODY

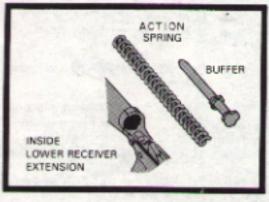






### LUBRICATING

lower receiver group





# INSPECT-before assembly

WARNING DO NOT interchange bolts between rifles



BOLT Cracks or fractures, especially in the cam pin hole area Bolts

that contain pits extending into



FIRING PIN RETAINING PIN -Bent, busted, badly worn



CAM PIN - Cracked, chipped or missing





FIRING PIN - Bent, cracked or blunted end

EXTRACTOR AND EXTRACTOR SPRING-

Check extractor for chipped or broken edges in the area of the lip that engages the cartridge rim.

IF PARTS ARE MISSING OR DEFECTIVE, SEE YOUR ARMORER

## ASSEMBLY





If the spring comes loose. put the large end of spring in the extractor and seat



Insert extractor and spring



3 Push in extractor pin

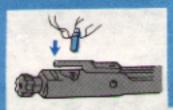


Slide bolt into carrier



STAGGER RING GAPS TO STOP GAS LOSS

### ASSEMBLY cont.



5 Replace bolt cam pin



GIVE CAM PIN A 1/4 TURN AFTER ASSEMBLY



6. Drop in and seat



7 Pull bolt back



NOTE

Firing pin should not fall out when bolt carrier group is turned upside down

8 Replace retaining pin



9 Engage, then push charging handle part way



10 Slide in bolt carrier group



11 Push in charging handle and bolt carrier group together



12 Join upper and lower receivers



13 Engage receiver pivot pin

## ASSEMBLY cont.

#### CAUTION:

Selector lever must be on safe or semi before closing upper receiver

SEMI







15 PUT HANDGUARDS IN PLACE



CHECK FOR FULL ENGAGEMENT



16 Snap on sling

# DID YOU INSTALL EVERYTHING?

- extractor & spring WORK SLICK IF YOU
- extractor pin
- bolt
- cam pin
- firing pin
- retaining pin

WORK SLICK IF YOU HAVE ASSEMBLED ALL THE PARTS CORRECTLY

CHECK THE

# selector lever

BY PERFORMING THE

# FUNCTIONAL CHECK

SEE PAGE 33

# MAGAZINE DISASSEMBLY



Jiggle spring and follower to remove



NOTE: Do not remove follower from spring

# MAGAZINE ASSEMBLY

If THE SPRING COMES LOOSE FROM THE FOLLOWER TURN IN THE PIECES DON'T TRY TO FIX IT YOUR SELF CLEAN & LUBE
Wipe dirt from
tube, spring, and
follower, then
lightly lube spring

Jiggle spring and follower to install

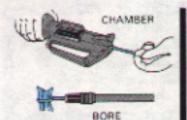


Slide the base under all four tabs



MAKE SURE PRINTING IS ON THE OUTSIDE

# PMCS\* before operation and ..



1 Remove excessive oil



2 Retract boil to assure free movement between bolt carrier and gas tube



4 Mag secure?



5 Proper tension?

3 Perform functional check to assure selector lever works properly

then back to step 4

 Preventive Maintenance Checks and Services

## FUNCTIONAL CHECK

(REMOVE MAG ... CHECK CHAMBER)



#### SELECTOR LEVER ON:

safe

Pull charging handle to rear and release. Place on sale. Pull trigger. Hammer should not fall



# semi

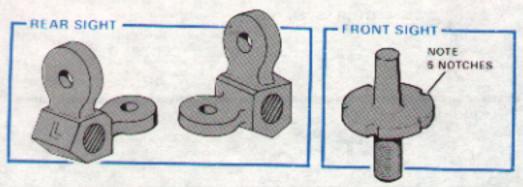
Place selector in semi Pull trigger and hold to rear. Hammer should fall. Pull charging handle to rear and release. Release trigger and pull again. Hammer should fail



auto

Place selector in auto Pull charging handle to rear and release. Pull trigger and hold to roar, hammer should fall. Pull charging handle to rear and rolease. Release trigger and pull again. Hammer should not fall.

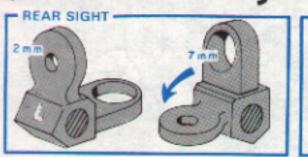
#### STANDARD DAYLIGHT SIGHT

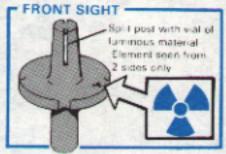


REAR SIGHT - Has two apertures for range Unmarked aperture 0 - 300 meter range. Lunder aperture 300-460 meter range

See page 39 for sight usage

## LOW LIGHT LEVEL SIGHT SYSTEM (Promethium Sight) NOTE: Not every rifle will have this sight





#### PURPOSE

Used during limited visibility. A weapon equipped with the PROMETHIUM front sight has only 4 "notches" of elevation per revolution, whereas the original sight had 5. The 7mm rear sight aperture is for night firing and limited visibility. The 2mm aperture is used to zero the weapon and engage targets to 460 M under normal conditions (see page 40 for sight usage).

CAUTION: The front sight post contains a small glass vial of radioactive Promethium
147. Take care not to bump, abuse, tamper or after the past in any manner.
DO NOT blacken or saot-up the front sight.

## OPERATION - loading and





1 With hammer cocked, place selector lever on SAFE



2 Open bolt and eyeball chamber. Clear?



 Push upward until magazine catch engages and holds magazine



4 Tap upward to make sure it's seated right MAGAZINE MAY BE LOADED WITH BOLT ASSEMBLY OPEN OR CLOSED

## chambering a round

#### BOLT ASSEMBLY OPEN



of boilt catch



TAP forward assist to insure bolt is fully forward & locked

#### BOLT ASSEMBLY CLOSED



Pull charging handle fully rearward



Release the charging handle



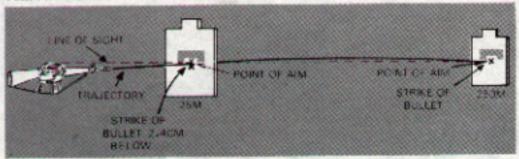
Never "ride" the charging handle. Let it go on its own



forward assist to insure bolt is fully forward & locked

## BATTLESIGHT ZERO

TO ZERO THE RIFLE, YOU MUST HAVE THE FRONT SIGHT (ELEVATION) AND THE REAR SIGHT (WINDAGE) ADJUSTED SO THAT IT CAN HIT YOUR POINT OF AIM AT A GIVEN RANGE



#### NOTE.

In order to battlesight zero you adjust your sights so you can hit an aiming point at 250 meters. Zeroing can also be accomplished on a 25 meter range by adjusting the sights so that the bullet will strike 2.4 centimeters below the point of aim. If M16A1 has "promethium" sight and you can't see the vial after zeroing, turn front sight post one click down for use during periods of limited visibility

#### SIGHT ADJUSTMENT

LOW LIGHT & STANDARD



REAR SIGHT. To adjust windage, depress detant and rotate drum to desired direction. To move point of impact to right, turn drum clockwise in direction of arrow and letter R. To move left, move drum counterclockwise. Each graduation (notch) moves the point of impact of bullet as indicated in chart.



detent, rotate post. To raise strike of bullet, rotate post in the direction of arrow marked up. Reverse the direction of rotation to lower strike of bullet. Each graduation (notch) moves the point of impact of bullet as indicated in chart.

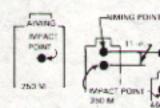
IMPACT		DISTANCE
STANDARD	LOW LIGHT LEVEL	
3 7cm (1 7 64cm) 7 8cm (1 -3 32cm) 5 8cm (2 13 64cm)	0 30m (23 64m) 2 30m (1 3 4m) 7 60m (2 3 4m)	25 nations 3900 meters 2000 meters

# USING LOW LIGHT LEVEL (PROMETHIUM) SIGHT SYSTEM

## daylight firing



Use aperture marked L. Effective range is 250 meters (prignal battle sight reno beyond which "Hold-Off" (aiming above desired point of impacts must be used. Aim about 11 in. at 350 meters, 22 in. at 460 meters. To become end remain proficient, practice, "Hold-Off"

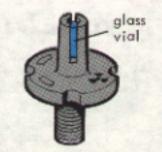


## night and limited visibility



Use unmarked (7mm) aperture. Obtain good eight picture using davlight hours procidure. After target detection, obtain good sight alignment by centering top of luminous portion of front sight local within 7-mm aperture on target, and fire Under centain. light conditions, front sight post can be seen, but you can bettermine whether you are toking through above, or to the side of near sight aperture. Practice positioning stock against shoulder and looking through rear aperture.

# CARE & CLEANING of PROMETHIUM SIGHT handling and care



- The front post has a small glass vial containing radioactive Promethium 147.
- Take care when handling, not to bump the front sight post.
   DO NOT abuse, tamper or alter the post in any manner.
- Frequently check the sight post for damage. If damage is evident or suspected, have it checked by your unit armorer.

## cleaning of front sight post

CAUTION: DO NOT use a wire brush to clean the sight.

Clean with toothbrush, bore swabs and Rifle Bore Cleaner (RBC), then dry.

#### IMMEDIATE ACTION

If your rifle stops firing before you do . S.P.O.R.T.S. S.P.O.R.T.S. is an acronym\* to help you remember the following actions -- Slap, Pull, Observe, Release, Tap, Shoot.

\*ac-ro-nym: a word formed from the initial letters of each word in a group of words that convey a meaning or action.



BLAP upward on magazine to make sure it's properly seated.



2 PULL charging handle all the way back. OBSERVE ejection of case or cartridge. Eyeball chamber and check for obstruction.



If cartridge or case is ejected or chamber is clear. RELEASE charging handle to feed new round (Don't ride the charging handle)



4 TAP forward assist



5 Now SHOOT if it won't fire, look for trouble and apply remedial action

#### REMEDIAL ACTION

#### WARNING

If your rifle stops firing with a live round in the chamber of a hot barrel, remove the round fast. However, during training, if you cannot remove it within 10 seconds, wait 15 minutes with the rifle pointing in a safe direction. This way you won't get hurt by a possible ammo cook-off, which could happen 10 seconds after contact with a hot chamber.

If your rifle fails to fire after performing steps 1 thru 5, check again for jammed cartridge case





If a cortridge case is in the chamber, tap out with a cleaning rod.

## PROJECTILE LODGED IN BORE

#### WARNING

If an audible "POP" or reduced RECOIL is experienced during firing, immediately CEASE FIRE, remove the magazine (1), lock the bolt to the rear (2), and place the selector lever on the "SAFE" position (3).

Visually inspect and/or insert a cleaning rod into the bore to insure there is not a projectile lodged in the bore (4).

#### DO NOT APPLY IMMEDIATE ACTION.



If a projectile is lodged in the barrel of the weapon, DO NOT attempt to remove it. Turn the weapon in to the armorer.

#### LIMITED PM CLEANING

#### CLEAR YOUR RIFLE



 Look for fouling in bore and chamber



Remove bolt carrier group and clean carbon and oil from firing pin and all surfaces of bolt/bolt carrier with dry swabs. Clean

firing pin hole and bolt carrier key with pipe cleaner. Apply light coating of LSA paying special attention to slide and cam pin area



3 "Swab out" (from chamber to muzzle)
CAUTION: Don't bend or flex cleaning rod.
Oh yeah, make sure swab goes clear
through flash suppressor



4 After cleaning, apply a light coat of LSA. Lightly lubricate lugs in barrel extension

#### UNUSUAL CONDITIONS

#### EXTREME COLD -

- Clean and lubricate rifle with LAW.
   Keep it moisture free
- Operate controls thru their entire range at intervals, to keep them from freezing up
- When your rifle is not being used and kept outside, protect it with a cover



#### HOT CLIMATES

- Inspect rifle and bipod more frequently, especially the hidden surfaces
  of bolt cerner group, forward assist assembly and lower receiver components. Make certain they are lubricated using LSA
- When handling, make certain to wipe dry, as moisture could cause cerrosion. After drying, lubricate with LSA

#### HOT, DRY CLIMATES

Clean and oil rifle more frequently with LSA

#### DUSTY AND SANDY AREAS

- a. Clean and lubricate your rifle more frequently
- b. Keep sand out of parts when inspecting, lubricating, or assemblying rifle.
  Apply only a very light amount of lubrication on autside of rifle.
- c. Use magazine bag and muzzle cap for dust and sand protection

CAUTION: Do not use magazine bag and muzzle cap on stored rifles.

#### AFTER

## FORDING

WARNING DO NOT FIRE RIFLE IF WATER IS PRESENT IN BARREL

HERE'S WHAT YOU DO!



#### AFTER YOU REMOVE THE CAP

POINT THE MUZZLE DOWN



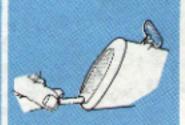
PULL CHARGING HANDLE 2 TO 3 INCHES REARWARD AND ALLOW WATER TO DRAIN



RELEASE CHARGING HANDLE AND STRIKE FORWARD ASSIST TO SEAT ROUND AND LOCK BOLT



CLEAR THE DRAIN HOLE WITH A PIPE CLEANER AND DRAIN



PROBLEM	CHECK FOR	WHAT TO DO
WON'T FIRE	Selector lever on SAFE Improper assembly of firing pin	Put it on SEMI or AUTO  Assemble correctly  RETAINING PIN GOES IN BACK OF LARGE SHOULDER OF FIRING PIN
	Too much oil in firing pin recess Defective ammo	Wipe off Remove and discard
	Too much carbon on firing pin	Clean
BOLT WON'T UNLOCK	Dirty or burred bolt	See your NCO or your unit ARMORER

PROBLEM	CHECK FOR	WHAT TO DO
WON'T EXTRACT	Broken extractor spring	See your ARMORER
	Dirty or corroded ammo	Remove. Push out stuck round with cleaning rod
	Carbon in chamber	Clean chamber
	Fouling or carbon in extractor recess or lip	Clean
WON'T FEED	Dirty or corroded ammo	Clean
	Dirty magazine	Clean
	Defective magazine	Replace
	Too many rounds in magazine	Take out excess
	Restricted buffer assembly action	Take out the buffer and spring, and clean

PROBLEM	CHECK FOR	WHAT TO DO
WON'T FEED	Magazine not fully seated,	PRESS BUTTON ON RIGHT SIDE  TURN CATCH ON OPPOSITE SIDE
		Turn catch clockwise to tighten and counterclockwise to loosen
	Defective magazine	Replace

WON'T CHAMBER

Dirty or corroded ammo Damaged ammo Carbon in chamber Clean

Replace



WON'T LOCK

Dirt. corrosion, or carbon buildup in barrel locking lugs

Frozen extractor

Restricted buffer assembly

Restricted movement of bolt carrier group Clean lugs



Remove and clean

Remove and clean

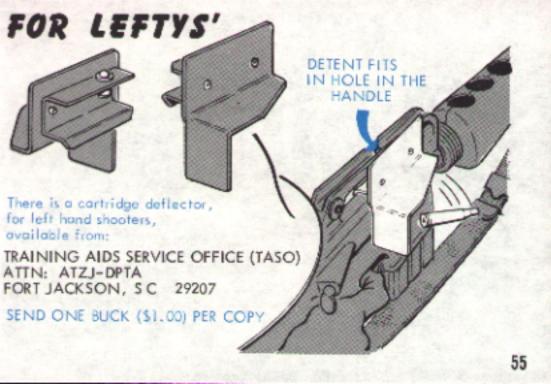
Remove, clean, and lube. (When putting bolt back in, make sure gas tube fits into carrier key and moves freely)



PROBLEM	CHECK FOR	WHAT TO DO
SHORT RECOIL	Gaps in bolt rings (not staggered)	Stagger ring gaps
	Carbon or dirt in carrier key or on outside of gas tube	Clean
BOLT FAILS TO LOCK AFTER LAST ROUND	Dirty or corroded bolt latch Faulty magazine	Clean
SELECTOR LEVER BINDS	Needs oil	Lubricate with LSA

PROBLEM	CHECK FOR	WHAT TO DO
BOLT CARRIER "HUNG UP"	Round jammed be- tween bolt and charging handle	1 Remove magazine 2 Hold charging handle back and bang rifle butt an ground. KEEP CLEAR OF MUZZLE  CAUTION After round is remove bolt is under tension 3 While bolt is held to rear, push charging handle for- ward. Round should fall through magazine well

PROBLEM	CHECK FOR	WHAT TO DO
CAN'T SEE PROMETHIUM SIGHT POST	Check for alignment of illuminous elements Luminous element dirty	Rotate front sight post up or down one click Clean with dry cleaning solvent
	Luminous element broken ar missing	Tum in to ARMORER



#### SARGE'S INSPECTION



Sarge'll gig ya if the following items are not clean....

BOLT,
SIGHTS,
RECEIVER,
CHARGING HANDLE,
HANDGUARDS,
GAS TUBE & PORTS,
STOCK DRAIN HOLE,
BORE & FLASH SUPPRESSOR,
MAGAZINE CATCH &
MAGAZINE WELL

He'll also check the overall condition of the SIGHTS, BIPOD, STOCK, & HANDGUARDS

So, be prepared, keep it clean and lubed.

DID WE GOOF? OO YOU KNOW A BETTER WAY? ON'T KEEP THOSE GRIPES TO YOURSELF VE'D LIKE TO HAVE YOUR IDEAS All Pulls, All court parties partie and Sc. RESE. -JSE D.A. FORM write 028 OR WHATEVER OU HAVE HANDY COMMANDER US ARMY ARMAMENT MATERIEL READINESS COMMAND ATTN: DRSAR-MAS ROCK ISLAND, IL 61201

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