Instructional Guidance on the Operation and Maintenance of M1 Garand Rifle Firing the M1909 Blank Cartridge

Springfield M1 Garand Cal. .30-06 Rifle

OPERATIONS SUPPORT COMMAND

Small Caliber Team

Rock Island, IL 61299

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INSTRUCTIONAL GUIDANCE ON THE OPERATION AND MAINTENANCE OF M1 GARAND RIFLE FIRING THE M1909 BLANK CARTRIDGE

Technical Bulletin: Caliber .30 Blank Cartridge (M1909) fired in the M1 Garand Rifle:

Background Information: The M1909 Cartridge as loaded by Lake City Army Ammunition Plant (LCAAP) during the 1998 year has had several complaints from user groups on unacceptable operation. Typical problems are poor functioning and failure to chamber the second or third cartridge. This technical bulletin will try to identify possible weapon problems and offer solutions for these problems as well. A parts list of typical replacement parts required for healthy functioning of an M1 Garand is included as well. As with any firearm, if any operation of the weapon seems questionable or out of the ordinary, brings the weapon to a competent professional gunsmith and have a professional evaluation conducted.

Technical Information:

1. First, start with a clean and healthy rifle. Start by disassembling and cleaning the weapon, and being careful not to use too much or the wrong lube. If unfamiliar with the cleaning and or operation of the weapon, refer to a publication such as "The U.S. .30 Caliber Gas Operated Service Rifles, A Shop Manual, Volumes I & II", by Jerry Kuhnhausen. This is available for a cost see website http://www.fulton-armory.com. This website for the copy of the free Field Manual is http://biggerhammer.net/garand/m1.htm. Other manuals can provide the same information.

2. It is recommended that break free is used as a lube (CLP). The receiver, bolt, lower action components, op rod saddle, op rod catch and op rod bearing friction surfaces must be kept lubricated for smooth action operation and to minimize component wear. Do not put excess lubricant in the action and magazine areas. Use only enough lubricant to protect bearing and friction surfaces, and remember to wipe off excess lube. Do not under any circumstances put any oil on the gas piston and cylinder!!!!! A detailed cleaning procedure can be referenced from many shop manuals, for example "The U.S. .30 Caliber Gas Operated Service Rifles, A Shop Manual, Volumes I & II", by Jerry Kuhnhausen. This manual covers the US .30 M1 Garand Rifle, the US 7.62mm NATO M14 Rifle and the commercial M14, M14A and M1A variants. Appendix A provides guidance for Cleaning and Maintenance of M1 Garand Rifle and the Caliber .30 Blank Ammunition. A diagram of the oiling positions is included in Appendix B. This lubrication procedure recommends "Lubriplate" grease on all bearing surfaces. "Lubriplate" grease is out of production, a recommended replacement grease is "Tetra-Gun", about $4.95 per tube.

Identification of Problem Areas: As far as problem areas are concerned, the following parts should be checked: (Parts list diagram is included in Appendix C):

1. Blank firing Adapter
2. Operating Rod Spring
3. Ejector Spring/Plunger
4. Extractor Spring/Plunger
5. Firing Pin
6. Operating Rod
7. Gas Cylinder
8. Gas Cylinder Lock

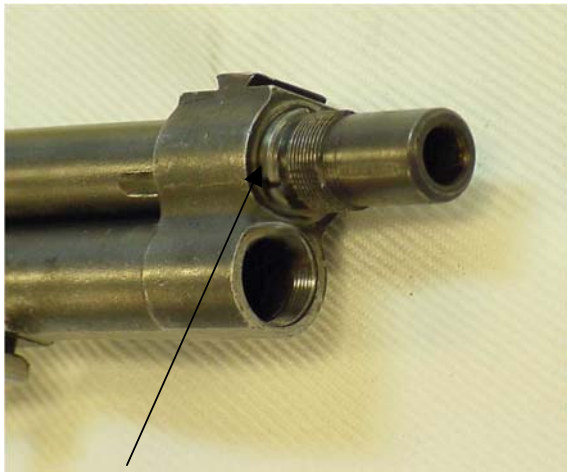
1. Blank firing Adapter - Through testing it has been found that the hole size in the outlet end of the typical blank firing adapter is too small. The optimal size is .172", or a #18 Drill. You can buy blank firing adapters pre-drilled to this size, or you may simply remove the existing BFA and drill the adapter out. This change will typically result in the best increase in performance on an M1 Rifle in good operating condition.

New Guidance: Blank Firing Adaptor (BFA) hole size, in a good serviceable Garand (all parts gauge, good springs, properly lubricated, ...and all other things are right with the world) should be around 0.172"-0.185" for use with the new Army Issue Ceremonial Crimped Blanks.

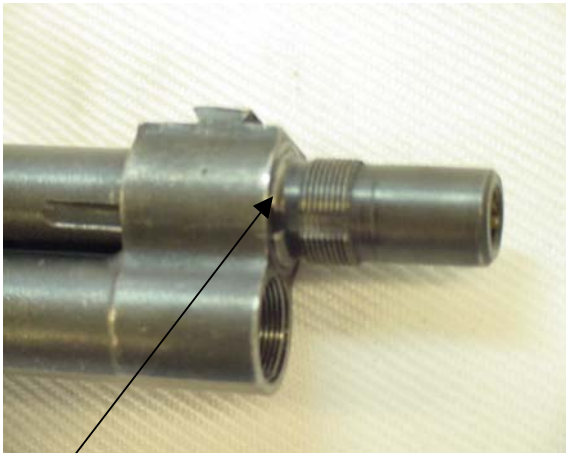
For well worn rifles, 0.172" is a good starting point. If the rifle always loads the second round, but *never* the third, continue opening up the hole in the BFA until all 8 rounds fire flawlessly, and they will with the issue crimped ceremonial blanks.

Be certain the gas cylinder lock screw (gas plug) is not missing the valve. We recommend the solid screws/plugs, as well as a heavy duty clip latch spring.

We also recommend, when everything is running right, to LockTite® the BFA and gas plug in place with red 271 for "blank only guns" and blue 242 for mixed use, and, to be certain to tighten the gas plug *tightly* against the BFA, thereby forming a "compressed shoulder."



Gas Cylinder on too far – Figure 1



Gas Cylinder Positioned Correctly - Figure 2

Gas Cylinder Positioned Correctly - Figure 2

When installing the BFA on your M1 Grand you need to insure that the chamfer behind the barrel threads are lined up with the front edge of the Gas Cylinder – Figure 2. Then install the BFA until it just touches the Gas Cylinder. Lock the BFA in place with the Gas Cylinder Plug. If this process is not followed, the Gas Cylinder can be pushed on too far, see Figure 1.

This procedure insures the proper alignment of the Barrel and Gas Cylinder ports. Misalignment could reduce the reliability of your M1.

2. **Operating Rod Spring** – Many operating rod springs are old and worn out. Replacing them with new heavy-duty replacement parts will insure proper operation.
3. **Ejector Spring/Plunger** – If the spent cases are not ejecting to a satisfactory location then the ejector spring and plunger may be defective. Replace both. A combination M1/ M14 bolt disassembly tool will be required.
4. **Extractor Spring/Plunger** – If case extraction problems are occurring, replace the extractor spring and plunger. Again, a combination M1/ M14 bolt disassembly tool will be required.
5. **Firing Pin** – If the cartridge is not firing, and a good visible indent (about .007”-.008”) is not witnessed on the primer, replacement of the firing pin may be required. Once more, your combination M1/M14 bolt disassembly tool will be required.
6. **Operating Rod** – Many operating rods are either bent, have burs in the catch hook area, or the gas piston is worn or pitted. This is an expensive part, but may be required to ensure proper operation. Along with the operating rod, if the catch hooks are burred, check the operating rod catch as well, which may need replacement if damaged
7. **Gas Cylinder** – The most common problem with gas cylinders is the tubes are pitted or the walls are bent. Replacement is again required. This is another expensive part.
8. **Gas Cylinder Lock** – The gas cylinder lock can be stripped or otherwise worn.
9. **Spare Parts List:** - Listed below are prices for frequently replaced parts, which can be obtained from various suppliers. One supplier is listed below for example only.

Part Name	**Cost per part**
Blank Firing Adapter	$9.95.
Operating Rod Spring	$4.95
Ejector Spring	$4.95
Extractor/Spring with Plunger	$8.95/$3.95
Firing Pin	$8.95
Operating Rod	$99.95
Gas Cylinder	$59.95
Clip Latch Spring	$14.95
Gas Cylinder Lock	$8.95

Supplier/Source: Fulton Armory
Website: http://www.fulton-armory.com/M1parts.htm

Order Number: **1-800-878-9485**

Fulton Army Technical Questions/Help: Clint McKee 1-301-490-9485

Technical Point of Contact:
The Technical Point of Contact for the operational information on the Caliber .30 M1909 Blank is Orest Hrycak, 973-724-6937.

APPENDIX A

Cleaning and Maintenance of M1 Garand Rifle and the Caliber .30 Blank Ammunition

Springfield M1 Garand Cal. .30-06 Rifle

The M1, designed by John C. Garand, was the standard issue military rifle used by the U.S. Army from 1936 to 1957. The M1 was one of the first semi-automatic rifles to see action in combat. It offers a great improvement in firepower over the bolt-action M1903 series rifle it replaced. The M1 is rugged, reliable, and tolerant to the abuses experienced in the field. The rifle uses .30-06 caliber cartridges in eight-round clips.

The preliminary finding shows that the ammunition starts to malfunction after firing 80 rounds if the rifle has not been cleaned and maintained. To increase performance of the ammunition and the rifle, the following steps need to be completed:

After each use where the rifle has been fired, perform the following prior to storage:

Make sure the rifle is clear of ammunition.

Clean the chamber area by using a chamber brush and bore cleaner.

Using a clean patch, swab out the chamber and assure that it is clean and dry. The chamber area should only be lightly lubed if the rifle is to be stored for an extended period of time, typically over 90 days. The lube on the chamber should be removed prior to firing.

Lubricate lightly the bearing surfaces of the bolt locking lugs and receiver rails.

When the rifle is ready to be stored, pull the trigger and drop the hammer to forward position. This keeps the spring from taking a set and assures a strong hammer strike to the firing pin.

Store the rifle with the bolt in the forward position. This relaxes the recoil spring and will ensure a strong bolt return (proper feeding) during firing.

Additionally, after every two or three firings the following procedures should be accomplished:

Disassemble the rifle and clean the gas system. Use rifle bore cleaner and patches/clean rags to completely clean the gas piston surface at the end of the operating rod and the inside walls of the gas cylinder assembly. If needed, a soft bristle brush can be used, as this will not score the internal walls of the gas cylinder.

Clean and dry the components completely. NOTE: Do not lubricate these parts. The carbon gases that pass through the gas system will burn the lubricant and causes it to become gummy and result in short recoil (malfunction).

The rifle is ready to be reassembled, once this is completed, make sure that the blank firing attachment (BFA) and the gas plug are installed tightly. This is necessary for proper functioning.

Ensure that the rifle is assembled correctly by manually functioning the rifle. Website for field manual
http://www.biggerhammer.net/manuals/garand/m1.htm

Additional information can be obtained by contacting:

US Army Joint Munitions Command, ATTN: SFSJM-CDS, Mike Richard, 309-782-6523, or Dawn Folland, 309-782-4608, 1 Rock Island Arsenal, Rock Island, IL 61299-6000

or

US Army TACOM-ARDEC, ATTN: AMSTA-AR-CCL-B, Orest Hrycak, 973-724-6937, Bldg 65, Picatinny Arsenal, NJ 07806-5000

The U.S. Rifle, Cal. .30, M1

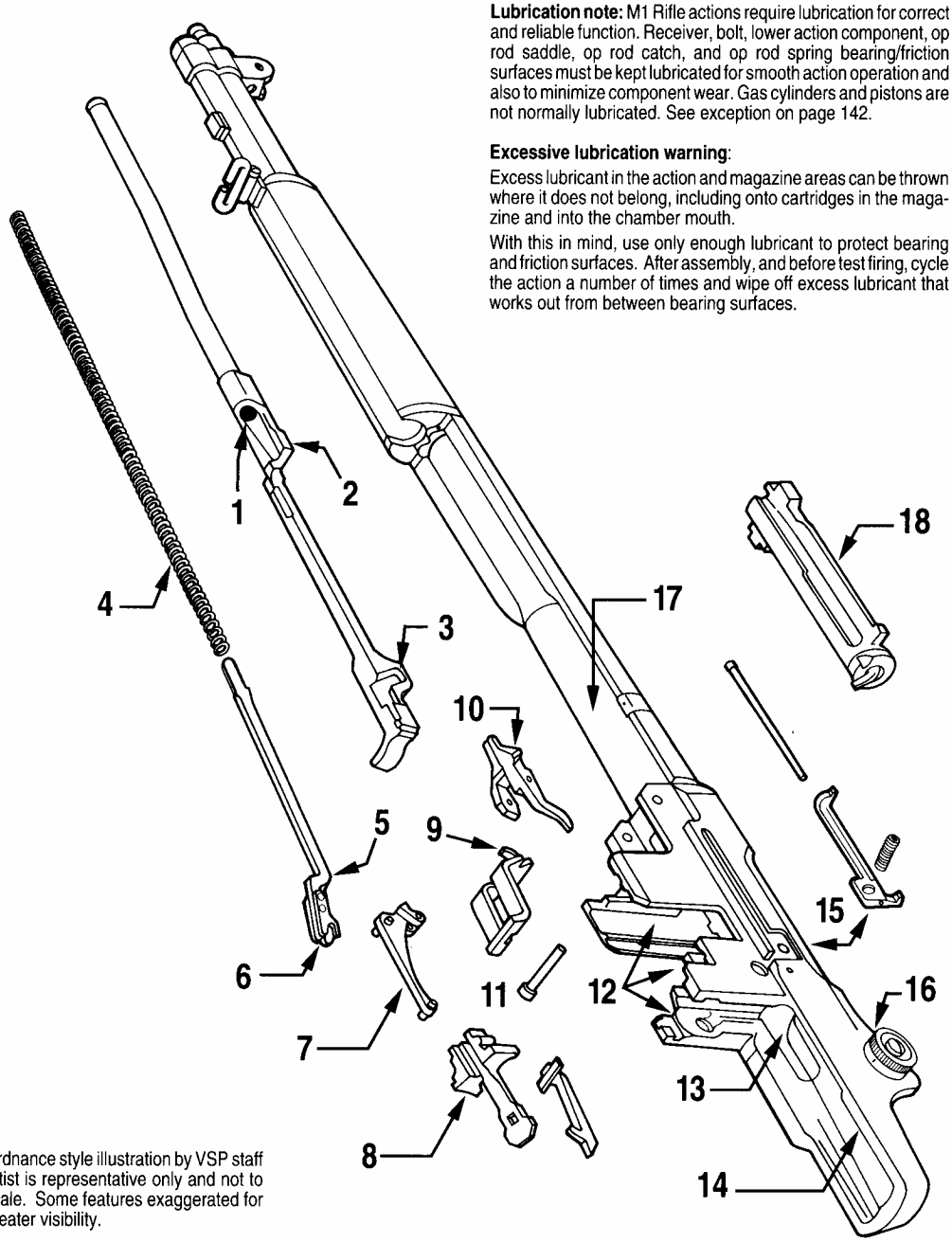
PARTS INSPECTION AND REASSEMBLY

Lubrication note: M1 Rifle actions require lubrication for correct and reliable function. Receiver, bolt, lower action component, op rod saddle, op rod catch, and op rod spring bearing/friction surfaces must be kept lubricated for smooth action operation and also to minimize component wear. Gas cylinders and pistons are not normally lubricated. See exception on page 142.

Excessive lubrication warning:

Excess lubricant in the action and magazine areas can be thrown where it does not belong, including onto cartridges in the magazine and into the chamber mouth.

With this in mind, use only enough lubricant to protect bearing and friction surfaces. After assembly, and before test firing, cycle the action a number of times and wipe off excess lubricant that works out from between bearing surfaces.



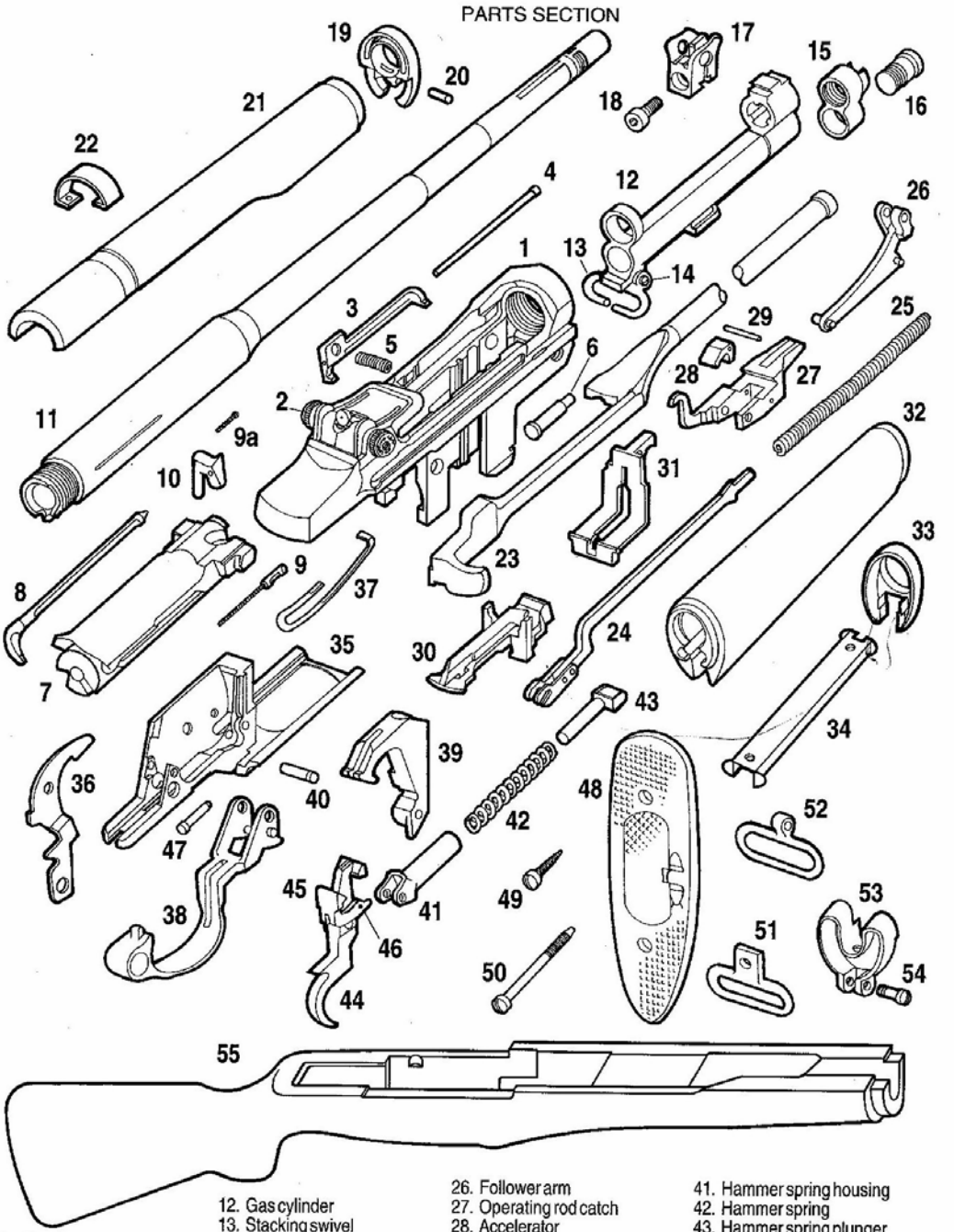
Ordnance style illustration by VSP staff artist is representative only and not to scale. Some features exaggerated for greater visibility.

Figure 162- Illustration shows M1 Rifle barreled receiver parts group preassembly lubrication points. Bearing surfaces, indicated above, that must be lubricated are: (1) op rod tube spring passage; (2) op rod saddle and catch hooks; (3) rod handle camming surfaces and receiver guide stud; (4) op rod spring; (5) follower rod op rod catch cycling cam; (6) follower rod forks; (7) follower arm (at 3 points: both stirrup pins and the accelerator pickup surface); (8) follower slots and guide arms; (9) bullet guide accelerator bearing point; (10) op rod catch hooks; (11) follower arm pivot pin; (12) all receiver lower action component bearing surfaces; (13) receiver bridge; (14) all receiver bolt and bolt lug bearing surfaces; (15) clip latch components and receiver recess; (16) rear sight components and receiver bearing surfaces; (17) op rod saddle bearing surface on barrel; (18) bolt body, locking lugs, and camming lug.

Lubricant note: In normal humidity conditions, apply a light coating of gun oil to all components and wipe off excess. Then, apply Lubriplate grease, or equal, to the above listed bearing surfaces with a small brush. Wipe off any excess after assembly. Consult TM's for lubricants for arctic and tropical climates.

The U.S. Rifle, Cal. .30, M1

PARTS SECTION



1. Receiver
2. Rear sight assy.
3. Clip latch
4. Clip latch pin
5. Clip latch spring
6. Follower arm pin
7. Bolt
8. Firing pin
9. Ejector spring/plunger
9a. Extractor spring/plunger
10. Extractor
11. Barrel
12. Gas cylinder
13. Stacking swivel
14. Stacking swivel screw
15. Gas cylinder lock
16. Gas cylinder lock screw
17. Front sight
18. Front sight screw
19. Lower band
20. Lower band pin
21. Rear handguard
22. Rear handguard band
23. Operating rod
24. Follower rod
25. Operating rod spring
26. Follower arm
27. Operating rod catch
28. Accelerator
29. Accelerator pin
30. Slide/follower assy.
31. Bullet guide
32. Front handguard
33. Front handguard ferrule
34. Front handguard spacer
35. Trigger housing
36. Safety lever
37. Clip ejector/safety spring
38. Trigger guard
39. Hammer
40. Hammer pin
41. Hammer spring housing
42. Hammer spring
43. Hammer spring plunger
44. Trigger
45. Sear
46. Sear pin
47. Trigger pin
48. Buttplate assy.
49. Buttplate screw, upper (wood)
50. Buttplate screw, lower
51. Butt swivel
52. Stock ferrule swivel
53. Stock ferrule
54. Stock ferrule/swivel screw
55. Buttstock

M1 Rifle exploded parts diagram with nomenclature. Also see trigger group, early/late style rear sight, buttplate assy., and bolt assembly exploded parts diagrams on pages 63, 64, 74, and 88.