

The Complete Guide to



Reloading for the M1 Garand

WARNING - The author has no control over how the reloading is done by the individual. The individual accepts all risk of reloading and shooting reloaded ammunition. Improperly loaded ammunition caused by not following the correct procedure can result in serious injury or death to the shooter and bystanders. This guide contains a brief process on reloading, but is by no means a replacement for a more descriptive manual describing the reloading in greater detail.

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Why should I reload for the M1 Garand?

The Garand is picky on what ammunition it will function correctly with. It must not be too hot or it will break the operating rod. It must not be loaded too light or it will not cycle the action. The bullet weight must be within a certain range. The powder must be within the correct burn rate and the correct amount used.

The best ammunition to use is military surplus. This can be bought for about 25 to 30 cents per round. But the supply of this is running low and the price is increasing. The next option is commercial ammunition. There are only a few commercial manufacturers producing a round that will correctly function in the Garand. But the price of these is over a dollar per round and increasing. The next option is to reload your own.

If you ask the question, "How do I reload for the M1 Garand," the response will almost always be, "Don't! Its too dangerous." But you CAN safely reload for your Garand. This guide will tell you how.

Why is it so dangerous?

Ammunition reloaded with normal reloading practices for the Garand is a danger to both you and your rifle. The M1 Garand is prone to, like most semi-automatic rifles, slam-fires. The Garand has a free-floating firing pin which actually hits and indents the primer when chambering a new round. Under normal conditions, this is not enough to ignite the primer. But with the right conditions, the primer can ignite. This is known as a slam-fire. If this happens when the gun is out-of-battery, which is typical in the Garand, it will send the bolt out of the rear of the receiver into the face of the shooter. This will destroy the rifle and possibly cause injury or death to the shooter.

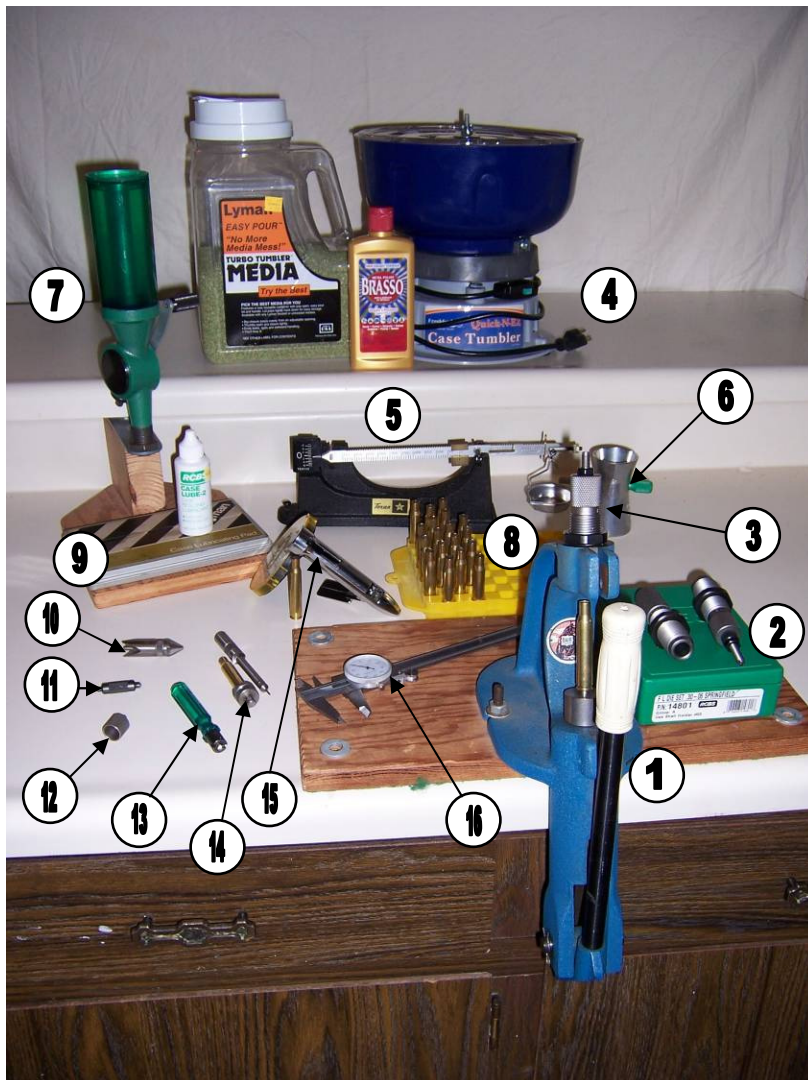
Slam-fires cannot be completely eliminated, as there is always a risk with a semi-auto rifle. But by adding a few steps to the reloading process, the likelihood of a slam-fire with reloaded ammunition can be the same as surplus or commercial ammunition.

Slam-fires can be caused by many factors. Most are caused by primers which are set too high. Primers with too soft of primer cups are also a cause. Neck sized and untrimmed cases, important to the benchrest shooter, may cause the cartridge to not freely chamber and possibly cause a slam-fire.

Slam-fires may sound freightening, but by following the information in this guide, you will take the necessary precautions required to safely reload ammunition for the M1 Garand.

What do I need to get started?

These are the tools that you will need to start reloading for your Garand. Most of the tools needed are basic reloading tools. Other tools are used by benchrest shooters for accuracy. Both sets of tools are used in reloading for the Garand to insure safe reloading. While not all of these tools are essential to reload a useable round, each tool listed below performs a function which makes the round more safe, reducing the chance of a slam-fire. This guide does not go over the basic principles of reloading. If you are unfamiliar with reloading, read Lyman's Reloading Handbook. This will teach you the basics of reloading and the reasons behind the steps. But beware, when reloading for the Garand, a few more steps and extra caution is needed.



1. Reloading Press
2. Reloading Die Set
3. Swager Die
4. Case Tumbler and Media
5. Powder Scale
6. Powder Trickler
7. Powder Thrower
8. Loading Block
9. Case Lubricant/Pad
10. Deburring Tool
11. Primer Pocket Cleaner
12. Lee Military Crimp Remover
13. Primer Pocket Uniformer
14. Case Trimmer
15. Hand Priming Tool
16. Calipers

Not pictured

Reloading Manual

Powder Funnel

The following is a table of tools needed for reloading, along with the approximate price and function of each of the tools. The price of each tool is an approximate price. There are many different brands and quality of tools on the market, all with greatly varying prices. The prices below reflect the price for mid-range priced products.

<u>Component</u>	<u>Price</u>	<u>Function</u>
Reloading Press	\$100	This is the center of reloading. For a beginner, a single stage press is recommended. This allows for greater control over the reloaded rounds. It does take longer, but it is easier to reload better quality rounds. Although a turret or progressive press can be used.
Die Set 30-06 Springfield	\$30	Forms cases back to the original dimensions, seat bullets, and crimps cases. A full-length resizing die is required. DO NOT USE A NECK-SIZING DIE.
Swager Die	\$30	<i>Need either the swager die or the Lee military crimp remover if reloading military brass</i> Removes the military primer crimp from military cases by pushing the crimp out of the primer pocket.
Case Tumbler and Media	\$50	Cleans and polishes cases. Media either crushed corn cobs or walnuts. Cheap media can be bought as pet bedding in pet stores. When the media stop polishing, recharge it with about a teaspoon of metal or brass polish.
Powder Scale	\$50	Measures powder and bullet weights.
Powder Trickler	\$10	Allows powder to be dispensed in small amounts.
Powder Thrower	\$70	Dispenses powder in uniform charges.
Loading Block	\$5	Holds cases for reloading.
Case Lubricant/Pad	\$10	Lubricates cases for resizing.
Deburring Tool	\$10	Removes burrs and chamfers trimmed cases.
Primer Pocket Cleaner	\$5	Cleans primer pocket.

Lee Chamfer Tool (Military Crimp Remover)	\$5	<i>Need either the swager die or the Lee military crimp remover if reloading military brass</i> Removes the military primer crimp from military cases by cutting the primer pocket. This tool can also be used as a deburring tool.
Primer Pocket Uniformer	\$15	Cuts the primer pocket to uniform dimensions and increases primer pocket depth to insure that primers are seated deeply enough.
Case Trimmer	\$10	Cuts cases back to the original length. Note: The Lee case trimmer is by far the cheapest case trimmer on the market. Other case trimmers can cost from \$50 to \$150. In the author's opinion, the Lee case trimmer does the best quality trim and trims each case uniformly every time.
Hand Primer Tool	\$30	Primes cases.
Calipers	\$25	Measures length.
Reloading Manual	\$20	Contains detailed information the reloading process.
Powder Funnel	\$5	Allows for powder to easily be poured into cases.
Total Cost:	\$480	<i>Note: Prices are intended to be in the middle of the price range. There are many products to choose with a wide variety of prices.</i>

Once you have all of these tools, you are ready to buy your components for your cartridges. The following section will explain the various components.

What components do I need?

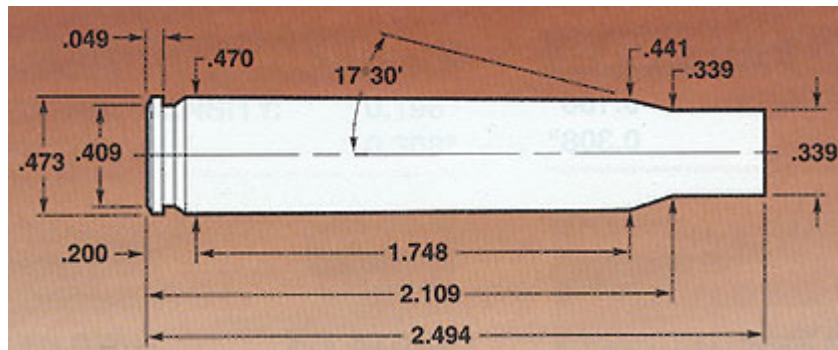


Components Needed:

1. Brass
2. Primers
3. Powder
4. Bullets

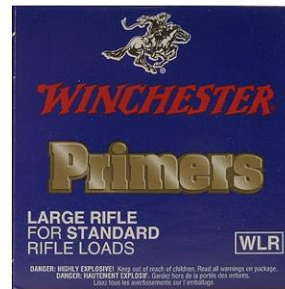
BRASS The best brass to use is military surplus, especially Lake City brass, identified by an L C # # headstamp. This can be bought at gun shows, but be sure that it is not machine-gun fired brass. Machine-guns have larger chambers to ease chambering rounds at an extreme rate. This leads to early fatigue of the brass, making it not suitable or safe for reloading. The other option is to buy loaded surplus ammunition once and save the brass. This is the easiest and normally cheapest option. Military brass can be safely reloaded four to five times before showing fatigue due to the larger chamber dimensions of the M1 Garand compared to a bolt-action rifle. Commercial brass can also be used, but due to the lesser thickness of commercial brass compared to military brass, you can only get about three to four reloads per brass.

Maximum 30-06 Springfield case dimensions



Picture from Hornady Manufacturing Co.

Primers Primer selection is crucial to reducing slam-fires. You must select primers with hard cups. This is because, as explained earlier, the firing pin indents the primer while chambering the round. Too soft a primer cup will cause the primer to ignite, causing a slam-fire. The best primer to use is the CCI #34 Mil-Spec 7.62mm primer. This primer can be found easily online, but your local reloading store may not have it. It is considered a magnum primer, so subtract one grain of powder from your powder load. The alternative is to use Winchester Large Rifle primers. While not as hard as CCI #34, they are hard enough to help prevent a slam-fire. Do not use regular CCI, Federal, and Remington primers due to their relatively weaker cups.



Images from MidwayUSA

Bullets Bullet selection is also crucial to insure the longevity of your rifle. The Garand will not reliably feed round nose bullets, so pointed bullets are a must. Full metal jacketed bullets are the best, but spitzer bullets will work as well. Try to stick with plastic spitzer tip bullets, but lead spitzer tips will also work as long as you limit the amount of exposed lead. Avoid using any cast lead bullets. Pieces of lead can get into the gas cylinder, damaging it. Use bullets in the weight range of 150 to 180 grains. Anything over 180 grains can damage the operating rod. You can use bullets fewer than 150 grains, such as 110 and 124 grains, but there is no loading data for such bullet weights.



Full Metal Jacket with crimping cannelure



Lead-tipped spitzer with crimping cannelure



Polymer-tipped spitzer without crimping cannelure

Pictures from Hornady Manufacturing Co.

Powder The M1 Garand needs a medium burning powder to create enough pressure at the gas port to cycle to action. Fast burning powders will not generate this pressure and thus, will not cycle to action. Slow burning powders create too high of a pressure at the gas port and places too much force on the operating rod. This will either immediately break the operating rod or slowly damage the rod over hundreds of rounds until a failure. The powder that best replicates M2 Ball ammunition is IMR 4895. Another great powder is IMR 4064. There are a few more powders which can be used, but the beginning reloader for the M1 Garand should stick with these two. To duplicate M2 Ball, use a 150 grain FMJ bullet and 50 grains of IMR 4895; which produces a velocity of 2,700 feet per second (fps). As a rule of thumb to avoid damaging your rifle, keep 150 grain bullets below 2850 fps, 165/168 grains below 2750, and 173/175/178 grains below 2650 fps. Just remember, because the reloading book shows 30-06 velocities well above these velocities, this does not mean it is safe in your Garand. Another 200 fps will not make any difference to your target, but will to your rifle.

The powder chart below is for use with commercial brass; if using military brass, drop the powder charges by 1 to 2 grains to compensate for the reduced internal volume. These loads were developing using IMR 4895. If using IMR 4064, increase powder charge by 1 grain.

Charges in grains	Velocity (feet per second)			
Bullet weight (grains)	<u>2300</u>	<u>2400</u>	<u>2500</u>	<u>2600</u>
150	-	43.2	44.8	46.4
165/168	39.6	42.1	44.6	47.1
173/175/178	41.6	43.4	45.2	46.1

The maximum overall length is 3.340", do not exceed this. This is length of M2 ball ammunition, but M2 ball bullets are longer than current production 150 grain FMJ bullets. Optimum case length is 3.240", while the Garand will reliably function down to about 3.150". Most bullets have a crimping cannelure. The bullet should be seated to the cannelure.

Now that I have everything, how do I reload?

This section will tell you, step by step, how to reload for your M1 Garand. Pay close attention to the steps in red. These steps are vital to ensuring that your loaded ammunition is safe from a slam-fire.

Step 1 – Choose your components

Select brass, primers, powder, and bullets according to the previous section.



Step 2 – Inspect your brass

Look for any signs of brass fatigue. Toss any brass that show split necks, pending case separation, or any other visual defects.

Step 3 – Clean your brass

Put your brass in a case tumbler for about half an hour to clean the brass. To polish the brass, add about a teaspoon of brass polish and run the machine until the brass is shiny (1 to 4 hours).



Step 4 – Lubricate the cases

Using the lubricating pad, roll five to ten cases across the pad until they are coated. Be careful not to get too much lubricant on the cases, as this will cause dents in the shoulder area of the case. If this does happen, the cases are fine and the dents will pop out once the cartridge is fired.



Step 5 – De-prime and re-size the cases

BE SURE TO FULL-LENGTH RESIZE THE CASES.

Set the sizing die in the press according to the manufacturer's instructions. Run each case through the die.



Step 6 – Trim and deburr the cases

Trim each case to 2.484".

Deburr and chamber the necks.



Note: These next two steps only need to be done on the first reloading of the brass. The next step only needs to be done with military brass.

Step 7 – Remove the military crimp

If using a swager:
Follow the manufacturer's instructions to remove the military crimp.



If using Lee's chamfer tool:
Place the protruding end into the primer pocket and rotate the tool until a small chamfer can be seen on the upper edge of the primer pocket.



Step 8 – Uniform the primer pocket

Place the uniformer tool into the primer pocket and rotate until no more shavings are produced.



Step 9 – Clean the primer pocket

Twist the primer pocket cleaning tool in the primer pocket to clean it.



Step 9 – Seat the primers

Using the hand priming tool, seat each primers into the case. **The primers should be at least flush with case head. For even more protection against slam-fires primers should be:**

Minimum 0.002" below flush
Optimum 0.004" below flush
Maximum 0.010" below flush

If primers are seated above flush: add oil into the case, remove primers with a universal decapping die (not in equipment list), adjust primer pocket uniformer for a greater cut depth, and go back to step 8.



Step 10 – Charge the cases

Set the powder thrower to dispense about one grain less than your intended charge. Dispense this charge onto the scale and use the powder trickler to bring the powder charge to the correct amount. This will insure that you have the correct charge every time.



Step 11 – Seat the bullet

Using the bullet seating die, seat each bullet to the correct overall length by following the manufacturer's instructions.

Overall Cartridge Lengths:

Minimum 3.150"

Optimum 3.240"

Maximum 3.340"



Step 12 – Crimp the bullet

If your bullets have a cannelure, crimp them in place with a light crimp. If your bullets do not have a cannelure, insure that all bullets are held tightly in place.



Step 13 – Final inspection

Inspect each reloaded cartridge for any defects. Be sure to check the primer again for proper seating depth. Discard any round with any defect.

Now that you have successfully reloaded your ammunition, there is one more thing that will help prevent slam-fires. Most recorded slam-fires were caused by placing a round directly into the chamber and releasing the bolt onto the round. Because the clip is not in the gun, the bolt reaches a higher velocity than with the clip, causing a harder primer strike and igniting it. To reduce the velocity of the bolt, even when loading single rounds, use a clip.

If you regularly reload single rounds into your Garand, consider purchasing a single loading enhancement device, or SLED. This device will not eject and will stay in the gun until manually removed, so you won't be chasing it around the firing line. It can be purchased for less than \$10 and can save you and your rifle.

Another alternative to reloading is an adjustable gas plug. There are two on the market and cost from \$25 to \$50. They are simple to install, requiring the replacement of the gas plug. The modification is not permanent and can be changed back to stock in a matter of minutes. They work by venting some of the gas out, while keeping just enough to cycle the action. The most popular gas plug is the Schuster gas plug. This has a screw in the center of it. Rotating this screw changes the amount of gas vented. The McCann gas plug consist of different inserts which controls the amount of gas vented. They prevent damage to the rifle and allow hotter loads to be used in the Garand. However, they must be properly adjusted. Always start with the configuration which allows the most gas to be vented from the plug. Fire a round. If it cycles the action, that is the setting that should be used. If it does not cycle the action, try the next setting. Repeat until the action is cycle by a round. Remember, that setting is only for that particular load. If switching rounds, whether manufacturers or bullet weights, you must recalibrate the plug.

This guide gives a complete overview to reload your own ammunition for the M1 Garand, but there is much more information to be learned. If you have any questions that are not answered in this guide, the best place to get them is on the forums at www.ar15.com under the reloading section.

Be sure to follow all of the information in this guide. Do not skip steps or take shortcuts, as this can cause disastrous or fatal results. Happy shooting!

Reloading for the M1 Garand: Overview

- **Components**
 - Brass
 - Military brass: Lake City or Pyrkal(Greek)
 - Commercial
 - Primers
 - Best: CCI #34 7.62 Mil-Spec Primers
 - Other: Winchester Large Rifle
 - Bullets
 - FMJ or Spitzer Tipped
 - No cast lead
 - Weight: 150 to 180 grains
 - Powder
 - IMR 4895 or IMR 4064

Powder charge table

Charges in grains	Velocity (feet per second)			
Bullet weight (grains)	<u>2300</u>	<u>2400</u>	<u>2500</u>	<u>2600</u>
150	-	43.2	44.8	46.4
165/168	39.6	42.1	44.6	47.1
173/175/178	41.6	43.4	45.2	46.1

Notes: Chart is produced using IMR 4895 powder in commercial cases.

If using IMR 4064, add one grain of powder to amount listed in table.

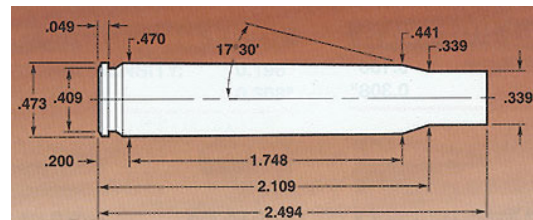
If using CCI #34 primers, subtract one grain of powder from amount listed in table.

If using military brass, subtract two grains of powder from amount listed in table.

Cartridge Overall Length:

Minimum 3.150"
 Optimum 3.240"
 Maximum 3.340"

30-06 Springfield maximum case dimensions:



- **Important steps**
 - Full-length resize
 - Trim to 2.848"
 - Remove military crimp from military brass
 - Uniform the primer pocket
 - Seat primers to:
 - Minimum 0.002" below flush
 - Optimum 0.004" below flush
 - Maximum 0.010" below flush