



---

SOCIALIST RIFLE  
ASSOCIATION

---

**AMMO RELOADING**



# **Intro to Reloading**

This introductory manual will cover the basics of handloading ammunition. It will include information regarding necessary equipment, required materials, and the reloading process. This is not intended to be a comprehensive guide. Reloading is an in-depth, complex subject. This guide is a starting point for absolute beginners. Further information should be sought out for your specific calibers you are reloading, your specific brand and models of equipment, and your specific reloading components and materials. Follow all instructions that come with your equipment and materials.

When someone who has never reloaded their own ammo looks into it, the needed equipment list is daunting and expensive. It is the intention of this guide to make reloading seem easy and accessible. Anyone, even children, can reload ammunition if shown the steps. My 8 year old is more than eager to help me de-prime, drop powder, or resize shells. Hopefully the knowledge presented here will increase your confidence when it comes to starting your reloading journey.



# Why Reload?

**Self Sufficiency:** A decade ago, the generally accepted wisdom was “You will always be able to find .22lr. You will always be able to find .223. You will always be able to find .30-06. You will always be able to find XYZ.” After Sandy Hook in 2012, that all changed. For YEARS afterward, certain kinds of ammo were simply non-existent on store shelves. In this Time of Trump, it may not seem to make sense to spend \$.10-\$.25 more on each round you would make vs just buying the factory ammo. I disagree. When it comes to ammo, if you don’t have it on hand, you will not be able to get ahold of it in a crisis buying situation. While it is true that .223 Remington, 9mm and many others are stacked deep and cheap on the shelves right now, it will not always be so. Being able to actually use your firearms when others can't is the primary reason to reload.

**Quality:** Even though reloading for bulk shooting/storage is primary, the average round made at home can be far more accurate than factory ammo. This is because companies like Winchester and Remington have to make ammo that works reasonably well in every firearm chambered in the caliber they are making. Handloading allows the shooter to tailor the ammunition for their specific guns.

By choosing quality components and buying them in bulk, you can ensure that the time spent on making your own ammo will convert to better groupings at the range and fewer ammo-based failures from your firearms.

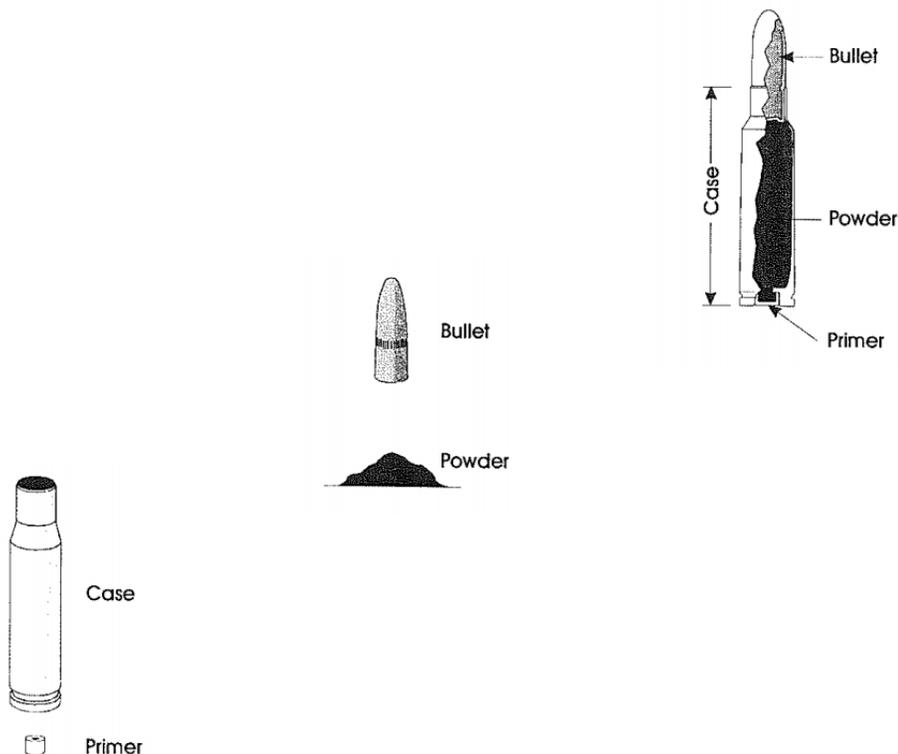
**Cost Per Round and Shooting More:** A box of decent .308 Winchester hunting ammo manufactured by Hornady is between [\\$18](#) and [\\$30](#) depending on where you buy it. Reloading .308 brass cases with quality primers, powder and the same Hornady AMAX bullet comes in at half that with equal or better accuracy. The expensive parts of reloading are the tools, most of which will outlast most of our lives. Many claim that reloading makes shooting cheaper, I hold that reloading makes shooting more possible.



# Ammunition Basics

All ammunition functions in essentially the same way. The gun's **hammer** strikes a **firing pin** which sets off the **primer**. The primer ignites the **powder**. The explosive force of the powder launches the **bullet** out of the **case** or **shell**.

Together these components make up a **round**. It is common for people outside of the firearms community to call the entire round a "bullet" in a colloquial manner. However, this is technically incorrect. The **bullet** is only the projectile that is launched from the gun.



The reloading process involves combining these components together to form a usable round. In reloading, these components may be recycled or actually created from other materials. E.g. re-using spent brass, or casting bullets.



**Bullets:** The projectile that launches from the end of the barrel can come in many different forms. For self defense purposes, you want your bullets to stay in your target's body as long as possible, transferring the full energy of the round into the target. Bullets that expand upon penetration of the target are ideal for this. This expansion causes greater tissue disruption, and greater drag as the bullet passes through the target, therefore limiting the penetration of the bullet.

Bullets that do not expand are more likely to pass clean through the target, thereby not transferring their full energy potential into the target. Instead, the bullet keeps on travelling, expelling all of its energy into whatever else it strikes. Less drag upon impact translates to greater penetration.

These different ballistic properties have led to several different options when it comes to choosing projectiles to reload. We will cover the most common varieties here.

### Full Metal Jacket (FMJ)

A full metal jacket (FMJ) bullet is a small-arms projectile consisting of a soft core (often lead) encased in a shell of harder metal, such as gilding metal, cupronickel, or less commonly a steel alloy. In firearms nomenclature, it is often labeled **ball ammunition**.

By design, fully jacketed projectiles have less capacity to expand after contact with the target than a hollow-point projectile. While this can be an advantage when engaging in targets behind cover, it can also be a disadvantage as an FMJ bullet may pierce completely through a target, leading to less severe wounding, and possibly failing to disable the target. Furthermore, a projectile that goes completely through a target can cause unintentional damage downrange of the target.

**PROS:** Greater penetration

**CONS:** Less expansion in soft tissue.

### Hollow Point (HP) and Jacketed Hollow Point (JHP)

A hollow-point bullet is an expanding bullet that has a pit or hollowed out shape in its tip often intended to cause the bullet to expand upon entering a target as it penetrates and disrupts more tissue. When a hollow point strikes its target, the hollow causes the bullet to deform. It looks like a mushroomed gob of lead pushing through the target.



**PROS:** Big messy holes in soft targets.

**CONS:** Decreased penetration in steel and concrete.

### Overpressurized Ammunition (+P)

Overpressure ammunition, commonly designated as +P or +P+, is small arms ammunition that has been loaded to a higher internal pressure than is standard for ammunition of its caliber. The intention is for the end product to have faster muzzle velocity and greater penetration.

**PROS:** Higher muzzle velocity.

**CONS:** Greater stress on the barrel.

### Soft Point Bullet (SP or JSP)

A Soft Point bullet is a jacketed expanding bullet with a soft metal core enclosed by a stronger metal jacket left open at the forward tip. This is a bullet with an exposed lead up. It can also sometimes be called a “partially jacketed bullet”. Like Hollow Points, a soft-point bullet is intended to expand upon striking flesh to cause a wound diameter greater than the bullet diameter. Jacketed soft point is usually abbreviated JSP in the ammunition and reloading industry.

**PROS:** Greater muzzle velocity than HP

**CONS:** Slower expansion than HP



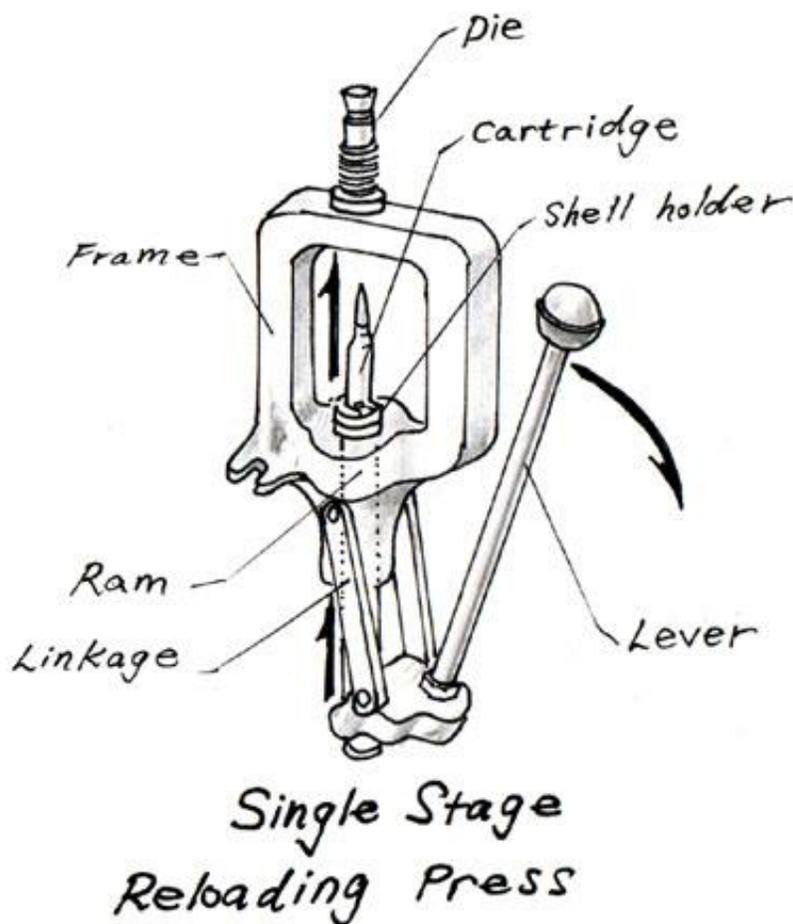
# Equipment

## Necessary

### Reloading Press

The basis of every reloading setup is the press. A press is a device that uses compound leverage to push the cases into the dies that perform the loading operations. Presses vary from simple, inexpensive single stage models, to complex progressive models that will eject a loaded cartridge with each pull of a lever, at rates of 10 rounds a minute.

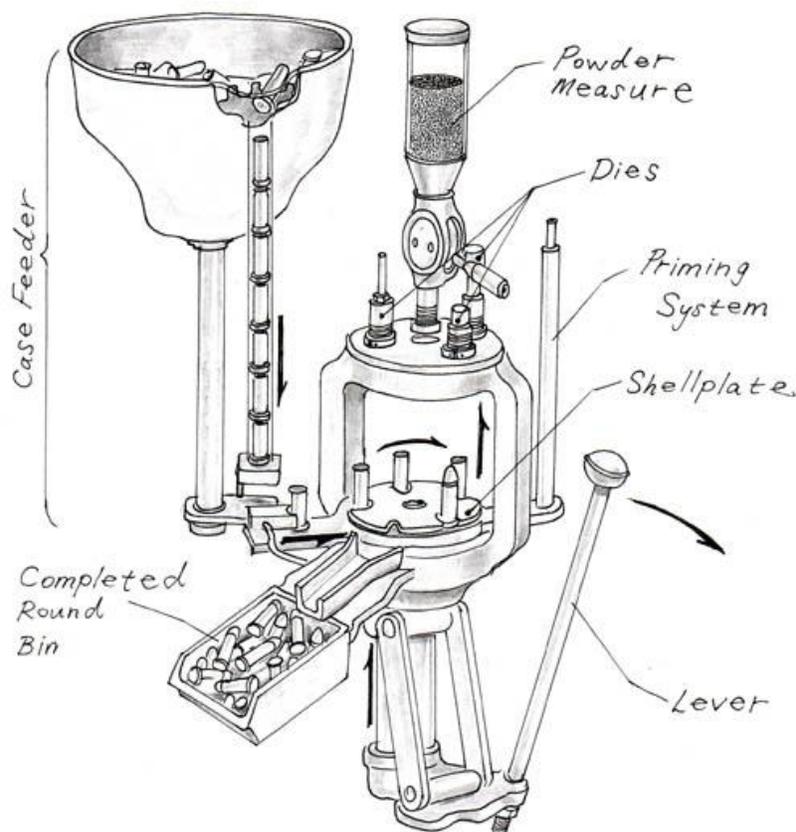
### Single Stage Press



Single Stage Presses are the simplest and least expensive. They perform one step on one case at a time. This is the kind of press that I use.



## Progressive/Turret Press



*Auto Indexing Progressive  
Reloading Press with  
Case Feeder*

Progressive/Turret presses are similar to single stage presses, but permit mounting all of the dies for one cartridge (or sometimes two cartridges) simultaneously, with each die being installed and correctly locked in position onto the press at the same time. Progressive presses handle several shells at once, with each pull of the lever performing a single step on all of the cases at once. Progressive presses hold all the dies needed, plus a powder measure and a primer feed, and often also include an additional station where the powder levels are checked, to prevent over or under charges. This allows the user to complete all of the stages of the reloading process without having to change out dies between stages. They are much faster for cranking out more rounds. They are also more expensive in general.



## **Dies**

Dies lock into the reloading press and perform some operation on the cartridge that is being pressed, depending on the type of die being used and the stage of the reloading process. Dies are caliber specific. You will have to buy a separate set of dies for every caliber you plan to reload. Dies are usually sold in sets of 2, 3, or even 4 dies. As an example, a set of 4 carbide 9mm dies from Lee retails for \$45 on Amazon currently. Sets generally come with a caliber-specific shellholder used to hold the cartridge in the press as it is being pressed into the die.

## **Powder Measure**

Unless you want to go the primitive route with the equivalent of a measuring spoon and a funnel, I highly recommend a powder measure. A powder measure is a device that allows you to consistently measure out a certain amount of powder for each charge. Generally they look like a clear plastic tube, called the hopper, with a spout-like exit and a handle. They allow you to set a specific volume of powder that will eject out of the spout every time you work the handle. This allows for consistent charges per round.

## **Scale**

A precision scale is a near necessity for consistent reloading. A scale is used to measure the necessary powder for the each round. It allows you to quickly spot check the charges your powder measure is giving you. It can also be used to weigh bullets and cases for even greater consistency.

## **Calipers**

Calipers are used to measure case-length and head-space for completed ammunition. The chamber and barrel of specific firearms will vary slightly for each caliber. Reloading manuals generally specify a maximum case-length for various calibers. It is important to not exceed the specifications regarding case-length and head-space for your firearm.

## **Priming Tool**

Inserting a new primer into each de-primed brass case requires a tool that mounts to your press, or a separate hand-priming tool. (I prime on the press rather than with a separate tool)



## Optional:

### **Tumbler**

A tumbler is used for cleaning spent brass.

### **Case Trimmer**

Periodically cases need to be trimmed to bring them back into proper specifications. Most reloading manuals list both a trim size and a max length. Long cases can create a safety hazard through improper headspace and possible increased pressure.

### **Bullet Puller**

A bullet puller allows the handloader to disassemble mistakes. Most pullers use inertia to pull the bullet; they are shaped like hammers, and the case is locked in place inside. A sharp blow on a hard surface will suddenly stop the case, and the inertia of the heavy bullet will pull it free of the case in a few blows, trapping the powder and bullet in the body of the puller.

### **Trays and Ammo Boxes**

Plastic trays and ammo boxes are nice for organizational purposes. Sorting cartridges throughout the reloading process based on stages goes a long way to keeping things running smooth.



# Example Equipment Setups

(current estimated prices April 2018)

## Inexpensive

• Lee Single Stage Press (comes with priming tool)	\$69.99
• Lee Perfect Powder Measurer	\$25.99
• Lee 9mm Carbide Die set	\$45
• Hornady Battery Electronic Scale	\$22.49
• Neiko Digital Calipers	<u>\$16.85</u>
<b>Total</b>	\$180.32

## Medium Expensive

• Lee Classic 4 Hole Turret Press	\$116.99
• Lee Perfect Powder Measurer	\$25.99
• Lee 9mm Carbide Die set	\$45
• Hornady 50108 Plug-In Electronic Scale	\$87.73
• Neiko Digital Calipers	\$16.85
• Chicago Rotary Tumbler	<u>\$59.99</u>
<b>Total</b>	\$352.55

## Expensive

• Hornady Lock-N-Load AP Progressive Press	\$399.99
• Hornady 3-Die Set 9mm	\$47.99
• Frankford Ds750 Digital Reloading Scale	\$28.15
• Frankford Arsenal Electronic Caliper 6" Stainless Steel	\$27.89
• Frankford Arsenal Quick-n-Ez Case Tumbler	\$40.59
• Hornady Lock-N-Load AP Progressive Press Shellplate #8	\$31.49
• Frankford Arsenal Quick-n-EZ Impact Bullet Puller	<u>\$18.99</u>
<b>Total</b>	\$595.09



# Components and Materials

## **Cases/Brass**

Cases are the component that store the powder, primer, and projectile.

Steel and aluminum cases do not have the correct qualities for reloading, so a brass case is essential. Brass can be bought, but it can also be collected at gun ranges that allow it, or from your own spent casings.

## **Powder**

Smokeless powder of an appropriate type. Generally, handgun cartridges and shotshells use faster powders, rifle cartridges use slower powder. Powder is generally of the "smokeless" type in modern cartridges, although on occasion the older "black" powder more commonly known as "gunpowder" may be used. (Note: powder purchased online will have hazardous material shipping fees associated with it)

## **Bullets**

The projectile expelled from the firearm's barrel

## **Primers**

The primer is a metal cup containing a primary explosive inserted into a recess in the center of the base of the cartridge. The firearm firing pin crushes this explosive between the cup and an anvil to produce hot gas and a shower of incandescent particles to ignite the powder charge.

On brass that has already been fired, it is necessary to remove the spent primer and insert a fresh primer that has not been exploded.

## **Lubricant**

Lubricant is not a requirement for carbide die sets, but it can make things go smoother in general. For non-carbide die sets, it is a necessity to prevent stuck cases.



# The Reloading Process

**The reloading process is as follows:**

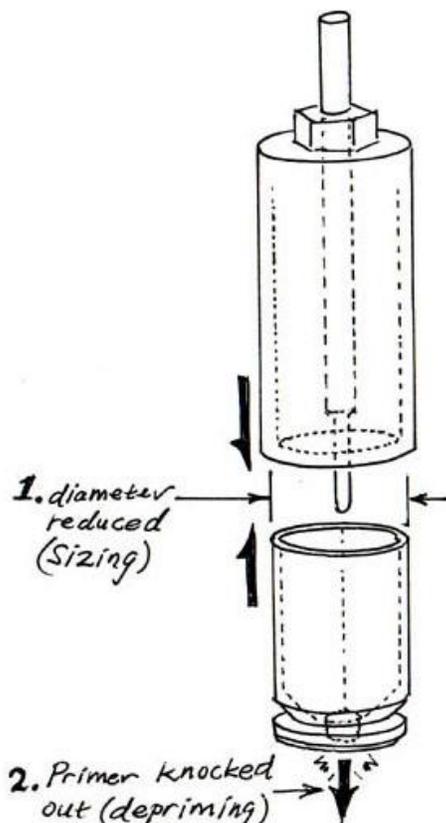
1. Case inspection
2. De-priming/De-capping
3. Cleaning (Optional)
4. Lubricate cases (Optional)
5. Size/Resize the cases
6. Measure and trim cases as needed
7. Deburr case mouth (Optional)
8. Clean primer pocket (Optional)
9. Expand or chamfer case mouth
10. Seat a new primer
11. Add powder
12. Seat the bullet
13. Crimp the bullet
14. Cartridge inspection

## **Case Inspection**

When previously fired cases are used, they must be inspected before loading. As brass ages and breaks down it can become brittle, cracked, or otherwise compromised. Cracked necks, non-reloadable cases (steel, aluminum, or Berdan primed cases), and signs of head separation are all reasons to reject a case.



## De-priming/De-Capping



De-priming involves using the de-priming die, which has a steel pin at the bottom, to punch the used primer out of the bottom of the spent case on the downward stroke of the reloading press.

To perform this step, lock the de-priming die into the press. Place your cartridge holder onto the ram. Put your shell into the cartridge holder. Firmly and smoothly push down on the lever of the press until the cartridge inserts into the de-priming die and the primer is pushed out of the primer pocket on the bottom of the case. Most presses have an ejection port somewhere in the ram of the press to allow the spent primer to fall free in a specific direction.

## Cleaning

Cases that are dirty or tarnished are often polished in a tumbler to remove oxidation and allow easier inspection of the case. Cleaning in a tumbler will also clean the interior of cases, which is often considered important for handloading high-precision target rounds. Using a solution of water, white vinegar, and dish soap to soak the brass in has worked perfectly adequately for my purposes.



## Lubrication

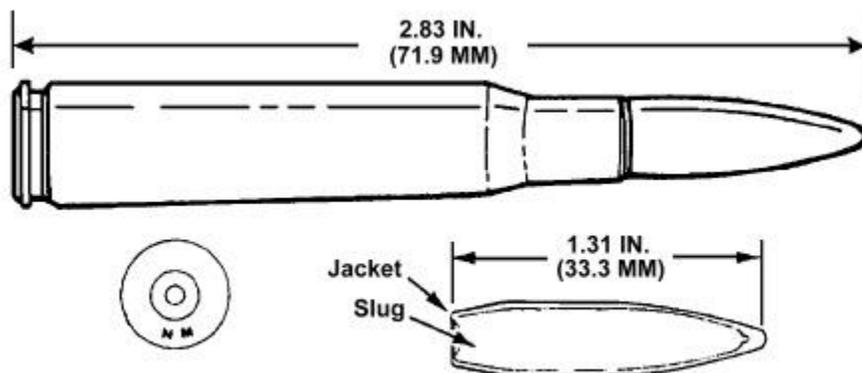
Depending on the type of dies used, this step can be optional. Otherwise, spraying your cases with a case lubricant is recommended.

## Size/Resize the Case

With most die sets, the resizing takes place as the case is being de-primed. When a cartridge is fired, the internal pressure expands the case to fit the chamber in a process called obturation. To allow ease of chambering the cartridge when it is reloaded, the case is swaged back to size.

## Measure and Trim Cases

Using calipers, check the length of the case. If the case has stretched beyond specifications in the resizing process, it may be necessary to trim the case.



## Deburr the Case Mouth

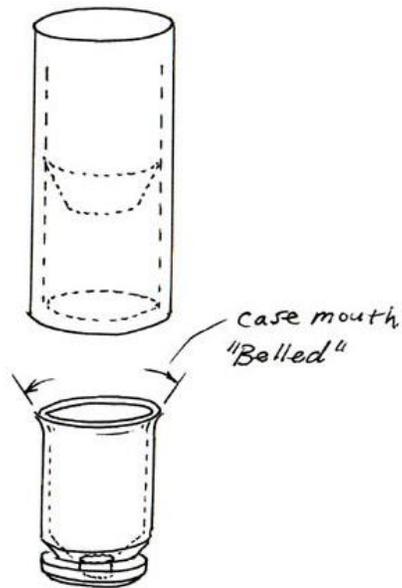
This step is optional, as-needed; trimmed cases need to be deburred.

## Clean the Primer Pocket

This step is optional. Primer pockets will have deposits from combustion



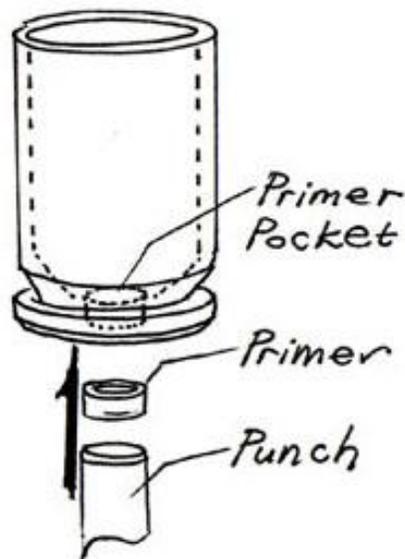
## Expand the Case Mouth



Once the case is sized, the inside of the neck of the case will actually be slightly smaller than the bullet diameter. To allow the bullet to be seated, the end of the neck is slightly expanded to allow the bullet to start into the case for seating.

To perform this step, lock the case expander die into the reloading press. Use the lever to press the cartridge into the case expander until the top of the stroke. This will flare the mouth of the case enough to accept a new bullet.

## Seat a New Primer

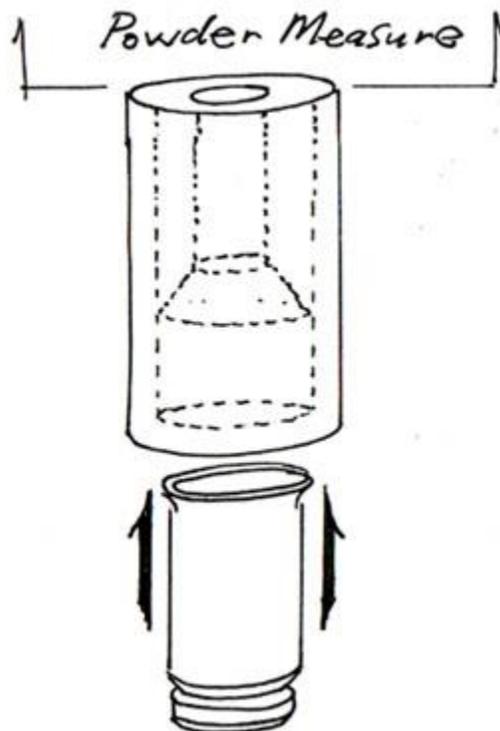




Using a primer seating tool, either on the reloading press or a hand primer, this step involves inserting a fresh primer into the primer pocket. Priming the case is the most dangerous step of the loading process, since the primers are pressure-sensitive. A correctly seated primer will sit slightly below the surface of the case.

To perform this step using the press, a primer tool will need to be inserted into the ram underneath the shell holder. As the lever is lifted upward, the ram will descend onto this primer tool allowing you to press a fresh primer into the empty primer pocket on the bottom of a case. Use your finger and visually check to make sure the primer is seated at an appropriate depth below flush of the surface of the case.

### Add Powder



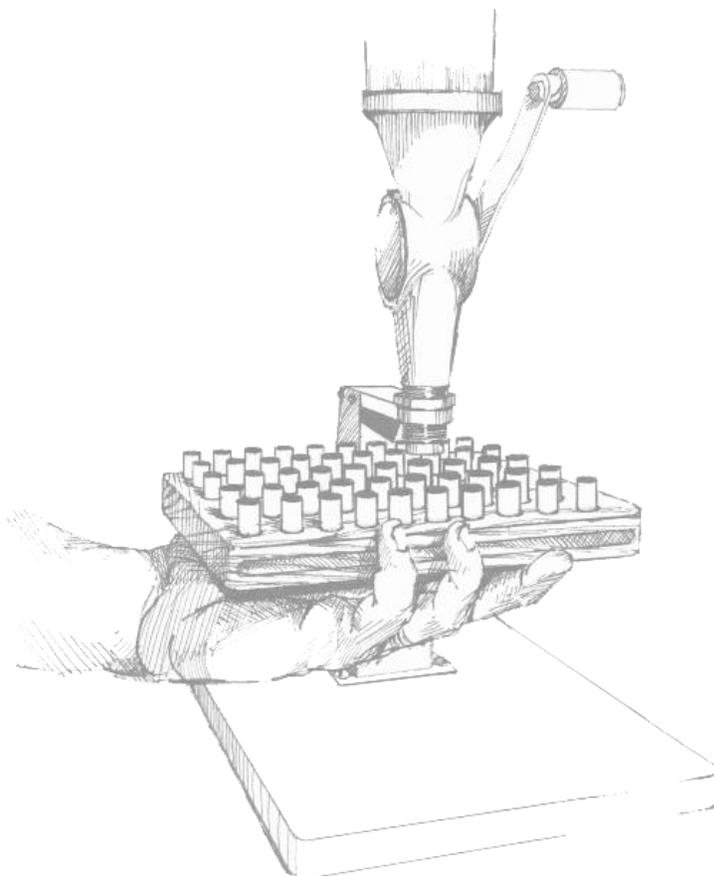
The quantity of gunpowder is specified by weight measured in grains. There are 7000 grains in a pound of powder. How many grains for each charge will be determined by the brand and specific type of powder, the caliber of the cartridge, as well as the weight and type of projectile. This information, known as reloading data, is generally given out by the powder manufacturer.



For example, Hodgdon powder has a “Reloading Data Center” on their website. If you were using Hodgdon Titegroup powder to reload 9mm Luger 115 grain Gold Dot Hollow Point(GDHP) projectiles, you would use this database to find handgun reloading data, 9 mm luger, 115 grain, Hodgdon Titegroup powder, and under GDHP projectiles it will specify 4.5 grains of powder per round as the Starting Load and 4.8 grains per round as the Maximum Load.

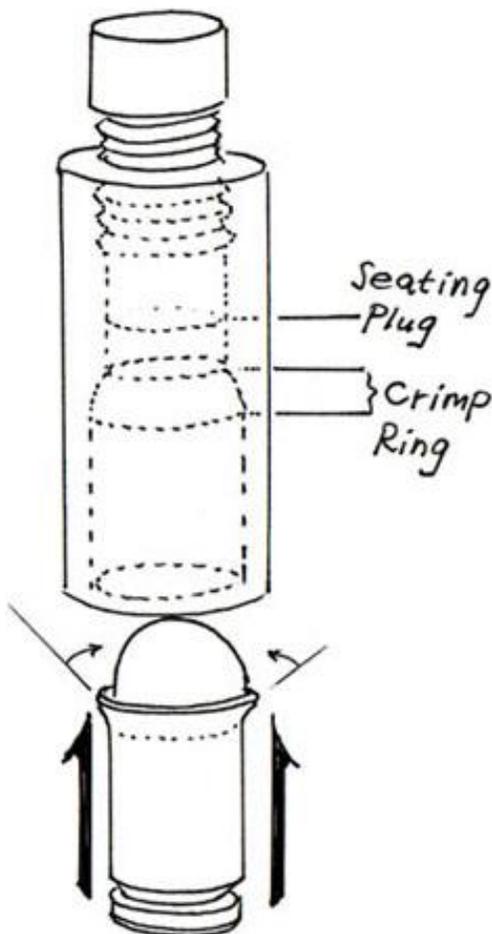
Using greater than max loads can lead to dangerously high pressures and a significant chance of bursting the chamber of the firearm. It is important to spot check using the digital scale the amount of powder being thrown by the powder measurer from time to time during reloading.

To perform this step, load powder into the hopper of the powder measurer. Next, use your digital scale and tray to measure the weight of powder being throw by each upward and downward stroke of the powder measurer’s handle. This is the weight of the charge for each round. Adjust the throw of the powder measurer up or down until you get the correct weight in grains for each charge. Hold the primed shells under the spout of the powder measurer and work the handle up and down to load each case with powder.





## Seat the Bullet



Using the bullet seating die and reloading press to seat the bullet into the case for the correct cartridge overall length.

To perform this step, lock the bullet seating die into the press. Next, use your hands to set the bullet within the case mouth of the case that has been loaded with powder. Next, load the case into the shell holder, and work the lever of the press until the case and bullet are pressed firmly into the die. Check the overall case length to make sure the bullet and case are within tolerances for their caliber and your firearm. If they are too long or too short, adjustments to the bullet seating die will need to be made to achieve the appropriate dimensions.



## **Crimp the Bullet**

Crimping involves using the crimping die to crimp the case and secure the bullet into place.

To perform this step, lock the crimping die into the press. Load the shell into the shell holder and work the lever of the press until the case is pressed firmly into the die. This will create a crimping of the brass around the edge of the case mouth securing the bullet into the case.

## **Cartridge Inspection**

After a round is completed, spot checking with calipers for correct overall length, as well as visual inspection for defects is recommended.



# Concluding

There you have it. Reloading can be an enjoyable, even meditative, hobby. You will be learning a useful skill that may prove to serve you well in the years to come. You will also be saving money along the way. Hopefully this guide has made the process of getting your feet wet in reloading less intimidating. Stay frosty, comrades.



# Appendix

## Learning Resources

<https://www.reddit.com/r/reloading/>

## Deals on Components and Equipment

<http://ammoseek.com>

<http://gun.deals>

## Additional places to buy equipment

- Amazon.com
- [Midway USA](#) - Carries almost anything you need. Usually good prices. Quite often they have coupons for free shipping or a discount.
- [Lee Factory Sales](#) - Discounted prices on Lee equipment. Usually the cheapest, but sometimes items are on sale elsewhere for less.
- [Natchez Shooters Supplies](#)
- [Powder Valley, Inc](#) - Cheap powder, primers and bullets.
- [Graf and Sons](#) - The Reloading Authority
- [Sinclair International](#) - Reloading tools and equipment.
- [Midsouth Shooters Supply](#) - Lots of reloading goodies!
- [Huntington Die Specialties](#) -