

Ammunition Reloading Guide

The background of the cover features a close-up of a green hand loader with a brass die and a silver punch. In the upper right, a dial caliper and a gauge are visible. The title 'Ammunition Reloading Guide' is prominently displayed in large, orange, outlined letters.

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to Reload!***

- Easy-to-Use Guide
- Load Pistol and Rifle Ammunition
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- Create Custom Loads

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Introduction to Reloading Ammunition

A Complete Step-By-Step Guide



Stan Trzoniec

I hear it all the time: “Why handload your own ammunition when commercial ammunition today is just as accurate?” Naturally, there is no easy answer, but if you could condense it all into a few words, they might be fun, saving money and the ability to turn out custom ammunition that will perform well for whatever purpose – small game, big game, target shooting, plinking, etc. with loads that produce best accuracy in your rifle or handgun.

A Redding starter kit includes a press, case trimmer, powder trickler, lube pad, case neck brush, chamfering tool, funnel, scale and powder measure.

The fun factor in handloading is my favorite. First, I believe everyone needs a hobby, and the reloading of ammunition is a great place to start. You can review the history of ballistics, see how propellants have changed over the last 100 years and dig into the past with reference to firearms and how they evolved into modern state-of-the-art handguns and rifles. Choosing a cartridge from times gone by and figuring out how to make it fit into modern times is a personal passion, and since I enjoy varmint hunting, I like to resurrect older .22-caliber wildcats like the .219 Donaldson Wasp, .220 Weatherby Rocket or the .22 K-Hornet. Going along with that also in-

Pistol Ammunition

volves the process of perhaps re-fitting a barrel to an existing rifle to chamber the new round or scouring the countryside for a vintage rifle already made to order, just waiting to be taken in the game fields again. Better yet, if time and money permit, having a custom rifle built to your specifications – fit, finish and chambering – all topped off with a scope of your choice is yet another alternative.

Saving money is a good deal for most folks in these times when a hobby is an enjoyable pastime,

and you don't have to spend tons of money to pursue it. Sure, the initial investment is moderate, but if you shop wisely, it's possible to find a reloading "kit" that includes all the tools and a press to get you started in a very smart and efficient way. Bullets, primers and powders are part of the expense, but as you move along, they start to gather on your shelf as "stock," and the cost process is less painful. Brass cases are good for sometimes hundreds of reloads, and a press, dies and related tools will last many lifetimes. If you are a novice to shooting and reloading, sooner or later you will develop an interest in a special part of hunting or

competition, and when you need a lot of ammunition in a short period of time, handloading starts to pay off.

Finally, the tuning of a rifle to shoot groups under .5 inch at 100 yards or more is a bit of a challenge, which most of us can handle with aplomb. Small game hunting demands small groups to rid the farmer's north forty of annoying woodchucks, and it is your job as a hunter to take such game in a quick, efficient manner. Accurate rifles not only get the job done, but go a long way in instilling pride of ownership and confidence in the field as well.



1. Using new brass, visually check all the cases for grit, packaging or brass chips before lubing, for steel dies, or running them into a carbide-sizing die.



2. Lubricate all cases if you are using standard dies, but eliminate this step if carbide dies are employed. The latter are getting more popular for loading handgun ammunition, as they are cleaner and eliminate the need for cleaning all the cases after lubing.



3. Insert the sizing (first of three) die into the press. Die sets are adjustable and allow the hand-loader to set the base of the die so it just touches the shellholder on the up or downstroke of the handle, depending on how the press is set up.



4. Insert the cartridge case (we are using the .38 Special throughout this sequence) in the shellholder that you installed on the press.



5. Run all the cases all the way up and into the sizing die. If a fired case is used, the primer will be expelled at this time also.

GETTING STARTED

Since most aspiring handloaders will be using a press that generates sufficient force to resize cases, a corner of a basement is a good place to start; a walled in "gun" room is even better. Make the bench sturdy by employing 2x4 bench work, covered with a pine, oak or, better yet, a Formica top. Bolting the table to both the wall and floor is a good idea, as a compound press develops a lot of force, and the last thing you need is to have the bench moving around as you work.

Below is a list of equipment to get you started in either the pistol or rifle reloading process. Items with an asterisk (*) can be purchased in a reloading kit, saving money over the purchase of individual pieces. Double marked (**) products are those you need with the kit, and unmarked items can be purchased as you move along. Individual reloading dies are needed for each cartridge you load, but like anything else, there are exceptions. For instance, in pistol calibers, the same die works for the .38 Special and .357 Magnum; the same for the .44 Special and .44 Magnum. Get yourself a good loading manual or subscribe online to LoadData.com. A manual (and/or the website) is the bible for all your work, and for the most part, one will last for many years. Manuals are published by Barnes, Hornady, Lyman, Sierra, Swift and a host of other independents, including the powder manufacturers, like Hodgdon, Accurate Arms and Ramshot. (LoadData.com offers online over 200,000 loads for a wide variety of cartridges.) In addition, most if not all will give you a complete rundown on loading practices, bullet types and weights and primers, helping to fill in the blanks and answer questions on items not covered in this insert.



6. After cleaning (if a case lube was used), check each case for the proper overall length. This is easily done on a dial micrometer or the inexpensive plastic gauges sold by many of the loading manufacturers.



7. If any of the cases exceed recommended length, trim them to ensure proper chambering and a uniform crimp on all rounds.



8. After trimming, where necessary, a deburring tool is used to clean up the case mouth. Using the pointed end creates a slight chamfer in the case mouth; the opposite end is for the outside edge.



9. Replace the sizer die with the neck expander (second die in the set) setting the case flare to accommodate the bullet base. Do not over flare the case mouth.



10. The amount of flare (or bell) of the case mouth is shown here. In seating the bullet, make sure it goes in straightly.



11. Pick the appropriate primer from the listing in any loading manual. In this case, CCI 500 Small Pistol primers are correct for the .38 Special cartridge.



12. Seat primers carefully. One method is on the press, as shown, with the attached primer arm. Another is to use a hand-priming tool, and a third would be a special automatic priming tool. Make sure the primer is fully seated to the bottom of the pocket.

LIST OF EQUIPMENT:

1. a good, high-quality bench press in either a C or O configuration with provisions for a primer feed and a spent primer catcher*
2. one set of appropriate dies – carbide for pistols, standard for rifle calibers*
3. shellholder to match the caliber*
4. powder scale*
5. powder measure*
6. case trimmer with the appropriate pilot*
7. deburring tool*
8. case lube kit*
9. powder funnel*
10. primer flipper**
11. loading block**
12. case neck brushes*
13. primer pocket cleaners*
14. reliable handloading manual**
15. powder trickler*
16. dial calipers**
17. cartridge storage boxes**
18. bullet puller
19. notebook – for record keeping*
20. case tumbler

You'll also need unprimed brass cases, bullets, powder and primers for the cartridge you are loading.

PUTTING IT ALL TOGETHER – HANDGUN AMMUNITION

Reloading handgun ammunition amounts to nothing more than taking a cartridge case and running it through a number of predetermined steps. As simple as it may

sound, there are a few items to be considered as you progress through any loading session.

The first is loading data. Research all your work from this in-



13. On the left is an unprimed case. On the right is the primed case flared and ready for a powder charge.



14. Consult a manual or other reliable loading data to ensure you are using the right powder and charge for the cartridge. In this example, we are using a Barnes 110-grain bullet and a starting load of 4.9 grains of Ramshot Zip pistol powder for a velocity of 918 feet per second (fps). Also, note the overall cartridge length is 1.435 inches with the bullet seated, which will allow it to function properly in any .38 Special revolver.



15. The next step is set up the scale and zero it. With faster-burning powders like Bullseye, attention to details is mandatory, as over-charging could result in damage to the firearm and the user.



16. With all the various weights on the scale zeroed out, the far end of the scale must balance at zero.



17. Now is the time to set up the powder measure on a rigid surface or use the screw clamps some companies offer.



18. Adjust the powder measure to drop your load choice – from the loading manual. Adjust the measure until you get the exact weight, as confirmed on the powder scale.

sert and loading manuals available at any retail sporting goods store or online. Never guess at any load, powder charge or primer size, and always consult a reputable and updated handbook. To do otherwise is foolhardy at best.

General safety precautions are a must. Never smoke or indulge in alcoholic beverages in your gun room or work area. Keep the bench clean. Only the components relative to the cartridge you are working with should be on the deck. Nothing else. Wear eye protection, especially when priming cartridge cases. Accumulated “dust” in the filler tubes can and has led to detonation of primers after months of heavy loading sessions. Blow the dust out periodically or just push a cloth patch from one end to the other.

If any problems crop up, **stop!** Don't force any equipment. Investigate the situation and then apply the corrective action.

Record all data. Labels are supplied with each box of bullets, so use them on your storage boxes. Use or make up printed forms that can be installed in common three-ring binders, and use both as a cross reference. Take nothing for granted.

Loading handgun cartridges is a serious shortcut to more shooting because it saves money. The photo sequence that follows shows a cartridge case moving through the various loading stages. Fifty or even 100 cases at a time can be done at one station before moving to the next to save time and to ensure consistency from round to round. Note that not all the smaller steps are shown in complete detail. A quick check of any loading manual, die set instructions or loading press literature will round out your sources of information, leaving common sense and experience to do the rest. ●



19. Tip: to determine the average charge, throw 10 charges into the pan and weight them as a single batch, then divide by 10.



20. Charge all cases in an orderly fashion by row until all are filled. Visually check all cases for a double charge, which can happen with light target loads. With a small charge, it's easy to mistakenly put multiple charges into one case.

21. Follow all the instructions for the seating die. Stan finds it easy to adjust the die to stop when the case mouth contacts the crimping



shoulder in the die. Then insert the bullet seater (top part), adjusting it for overall length as the bullet is pushed into the case. Insert the bullet by hand into the charged case mouth as shown, making sure it is straight and true with the sides of the case.



22. Screw the seating body down until it just touches the mouth of the case. Adjust the seating stem downward by alternately raising and lowering the cartridge case while adjusting the bullet seating depth.



23. To crimp the bullet for a revolver, back off the seating screw about a quarter-turn and tighten it finger tight. Next turn the die body down about three-quarters of a turn and tighten. This is the crimp position, or where the die will turn

the case mouth into the crimping cannelure to ensure the bullet doesn't move during recoil.

24. The finished product. Make a visual inspection to ensure the crimp is even around the case mouth, the primer is just below



flush with the bottom of the case and, with the first cartridge, the overall length is what the manual specified. Record all the data for the next session at the loading bench.

LOADING RIFLE AMMUNITION

Good quality rifle ammunition is loaded in virtually the same manner as handgun ammunition. And, unless there is a dramatic change in metallic components in the near future, the process will stay essentially the same.

There are differences, minor in most instances but different. Basically, the loading of present-day bottleneck cartridges involves four operations: sizing/decapping, priming, powder charging and bullet seating. Some steps are similar to those followed in loading handgun ammunition; others are unique to rifle cartridges and require complete understanding before proceeding.

One obvious difference is that powder charges tend to be larger in rifle cases. Consequently, the powder measure must be able to dispense bulky, coarse-grained propellants. The powder measure supplied with the Redding kit is more than adequate for all your handgun and rifle needs.

With coarse-grained powders, some folks prefer to weigh each individual charge a few grains under the specified charge weight, then trickle the charge up to balance the beam on the



Loading rifle ammunition is no different from handgun ammunition, and components are available on a grand scale.

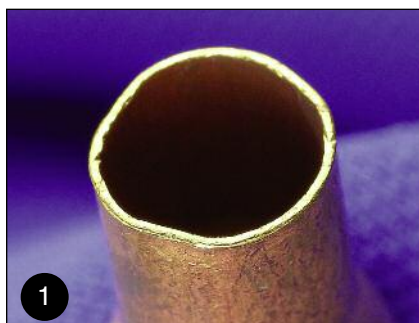
scale. It does slow things down a bit, but most rifle shooters don't mind the slightly slower (relaxed) pace if it makes for accurate ammunition.

Depending on your rifle, cartridge or load, most cases require trimming every fifth or sixth reload; full-power loads, more often. For the .30-06 case that we are loading here, the case can be allowed to grow to no more than 2.494 inches. Trimming back to 2.484 inches would allow for many reloads before trimming is required again.

Neck tension is very important in rifle cases. It not only holds the bullet in place when loaded,

but also assures more consistent powder combustion. Therefore, pay proper attention to the expander plug in the sizing die. If, when seating bullets, there is little or no resistance, the plug should be checked for proper diameter.

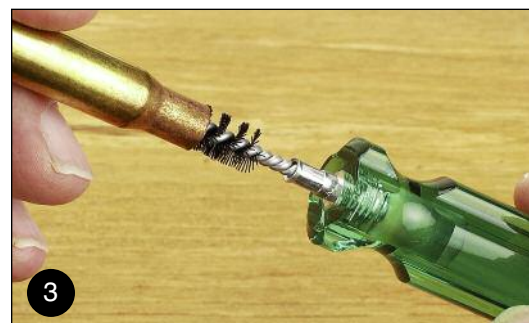
Incipient head separation caused by improper headspacing in a rifle is reason to check your sizing die for proper adjustment. Overall or improper bullet/cartridge length can lead to difficult chambering. If you are getting small dents in the shoulders of your bottleneck cases during sizing, perhaps too much lube is the culprit.



1. *The first thing you want to do is inspect all the new cases for factory defects, such as mouth splits or irregular-shaped case mouths as shown here. The sizing die will take care of this problem.*



2. *Lube all the cases sparingly before they go into the sizing die. Take a half-dozen or so, roll them on the lube pad, then one by one insert them into the sizing die.*



3. *Lubricate the inside of the case necks for an easy return out of the die. Another possibility would be to use carbide expander plugs (not the dies), thus eliminating this step.*

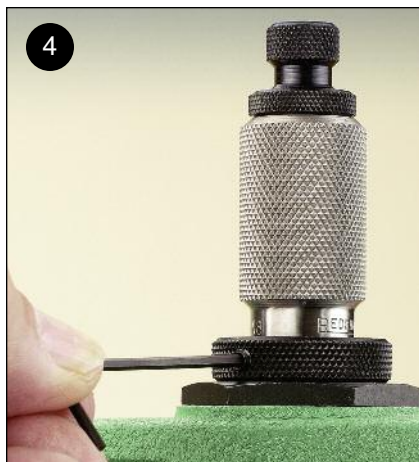
Finally, double-check everything you do, every step of the way. At the bench, monitor procedures; at the range check for signs of abnormal pressure. Flattened primers, hard extraction or ejector markings on the base of the case are a cause for concern, and **never** start charging cases with the maximum loads in the manuals. Always start at least 10

percent below the maximum, working up from there by firing the rifle at each advance in powder charge weight. If you see problems, stop shooting, take the loads home and by using a bullet puller (inertia or mechanical design – or pliers), empty the suspect cases and start again.

Keep a record of what you have just loaded. I mark the storage

boxes with the loads to be tested. Stick-on labels work just as well. Maintain a three-ring binder for records and see how the firearm reacts to various powders and/or charge weights.

Keep in mind accidents never take a holiday. Attention to all phases of the reloading operation will assure a safe and more than satisfying hobby. ●



4. Insert the sizing/decapper die (first one) into the press and adjust it according to the die maker's instructions. The usual procedure is to screw this die into the press until it touches the shellholder when the ram (with the shellholder) is in the up position.



5. Slide a cartridge case into the shellholder, making sure it is touching the rear of the holder and enters the sizing die straightly.



6. Raise the cartridge case into the die by running it up completely for full-length resizing. If it's a previously fired case, the primer will be expelled at this time. Clean the primer pocket with a few turns of the cleaning tool.



7. Clean all the cases with a solvent or by tumbling in a media powder before going on.



8. After sizing (new case out of the box) or resizing a case (after firing), check it for overall length.



9. If your cases are over length, you have to trim them back to factory specifications. Like handguns, you can use either a trim die or a case trimmer, as illustrated here. A case trimmer utilizes a pilot in different diameters to fit most popular rifle cartridges.



10. After trimming, chamfer the inside of the case mouth.

11. Turn the tool around and do the outside of the case mouth to remove burrs.



Rifle Ammunition

12. Before loading, go back to the loading manual to pick a powder charge and the velocity desired. Barnes bullets were used atop a starting load of 49.7 grains of Ramshot Big Game for a velocity of 2,625 fps.



16. Working if possible at eye level, zero the powder scale, then use the powder trickler to bring the charge up to the correct weight.



20. Lower the case back down and install the bullet, making sure it is straight.



13. Priming is done using the primer feed included with the Redding press.



17. Load each case with the correct powder charge, as verified on the scale. Move down the line until all the cases are charged, then visually check them for the proper volume.



21. Raise the case again and adjust the bullet seater stem until the correct bullet depth is attained as listed for "overall length with bullet" in the loading manual. Verify this with your dial calipers. Now is a good time to make a dummy round (with no powder or primer) and check it for functioning in your rifle. If it's a hunting round, make three or four, load the magazine and cycle each round through the action. This will guarantee flawless operation in the field.

14. The powder measure should be mounted on a solid shelf. The only powder that should be on the bench is the one you are working with.



18. The next step is bullet seating, so install the seating/crimping die (second die in the set).



15. After filling the powder reservoir, set up the powder measure to throw a charge a couple of grains below the chosen load.



19. After placing a primed and charged case into the press, raise the case and install the seater die until the crimping ring touches the case mouth. Unscrew the die about a quarter turn, then tighten the lock ring by hand.



22. Turn down the die assembly until the proper crimp is achieved. The bullet on the left is uncrimped. The bullet on the right has a medium crimp for a rifle with a magazine. The crimp ensures the bullet will not shift in the case during recoil.

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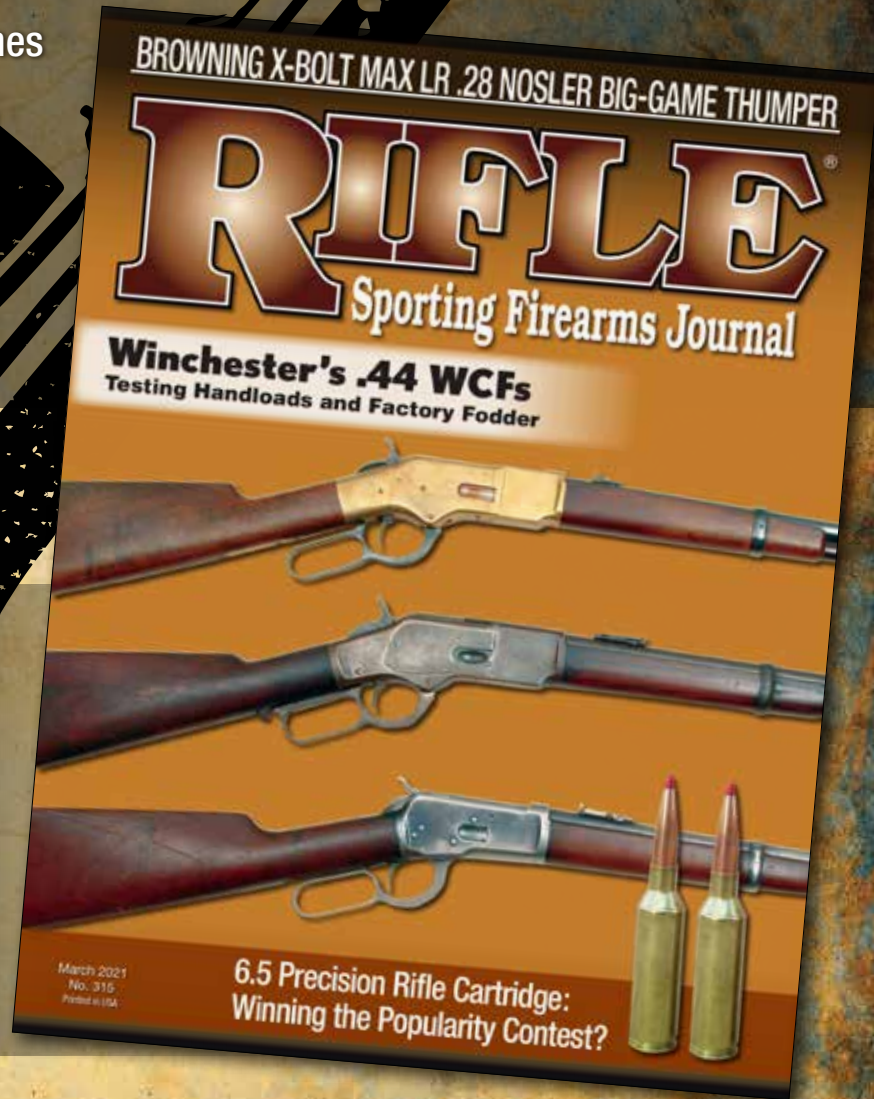
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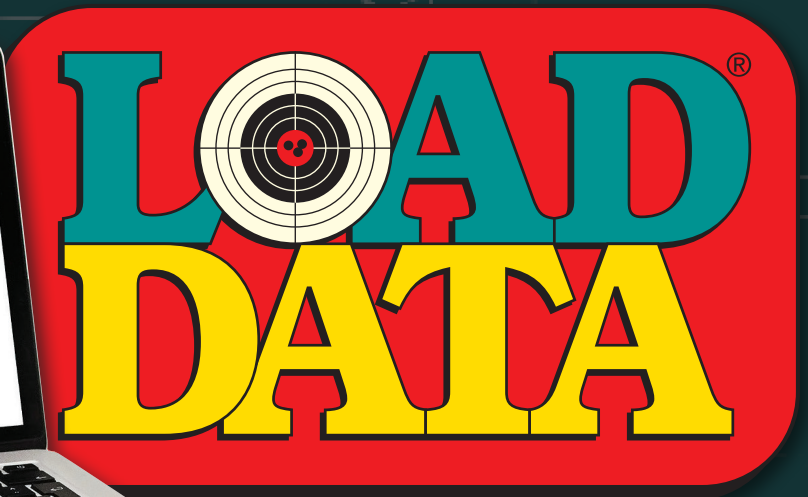
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