

Tools of the trade... avoiding the pitfalls of unnecessary gadgetry...

When I first decided to get into handloading my own rifle cartridges I perused the various catalogs and store shelves searching for the necessary items. I asked a few questions around the local gun shops and read various points of view over the internet and in magazines. After collecting all of the information I could, and trying to make some sense of it all, I decided not to bother. The information was simply too overwhelming, and all too often contradictory in nature.

A year or so passed. I was in a local gun shop one day and a guy offered me a used "Lee Loader" kit for ten dollars. It was all contained in a small red box not much bigger than my wallet. I was told that all I needed would be primers, powder, and bullets and with the objects contained in that small red box I could reconstitute .308 Winchester cartridges.

I bought the Lee Loader, and I also purchased a box of 180 grain Sierra Gameking bullets, a pound of IMR 4831 powder (not a good choice, but it worked) and some CCI 200 primers. I toiled with the little Lee Loader one evening for about three hours, and had about 40 to 45 shells to show for my trouble. Once I got the routine down I found that I could turn out a loaded cartridge every ninety seconds or so. Some folks are much faster.

I took these shells to the range and used a healthy dose of beginner's luck to shoot more than a couple sub MOA groups from my then new Savage 10FP.

It was then that I was really bitten hard by the reloading bug. And it was also then that I realized that a full majority of the equipment regularly marketed to aspiring and experienced reloaders was overkill. If I could shoot sub 1" groups at 100 yards with crude loads put together with the lowly Lee Loader it seemed logical to conclude that much of what the market was offering by way of reloading equipment was unnecessary for my purposes.

I looked afresh at the reloading kits available for under 100 dollars. With one of these, I could turn out good ammo much faster than with the "one at a time" Lee Loader. Lee offered the "Anniversary" kit for under 75 dollars. RCBS offered their "Partner" kit for about 100 dollars. I ended up choosing the latter since it came with what appeared to be a better scale.

I began using the RCBS Partner press over six years ago, and ten to fifteen thousand rounds ago. It's warranted for life, but I've not needed any repairs. It continues to work just as it did when I first bought it, standing in stark defiance of the "buy bigger and better and buy only once" mantra. The Partner press works.

And so do the Lee dies. I bought a set of Lee "RGB" (stands for "really great buy" according to Lee) for every caliber I loaded for. I found that these dies did the job nicely, and I have had no trouble turning out sub 1/2 MOA ammo with these ten dollar a set dies. This is, I believe, worthy of note since there are actually die sets on the market which cost more than my entire loading apparatus did! I've shot

along side the users of these dies, and found that they produce no better ammo than the cheaper dies do--at least insofar as the rifles we use. Perhaps if one had a dedicated benchrest rifle he could tell the difference, but for 1/2 MOA performance I'm convinced you'll never see the advantage of spending more than 15 to 20 dollars max on a set of loading dies.

One tool which does fill a useful niche is a concentricity gauge. RCBS calls theirs the "Case Master" and with it you can tell whether your loaded cartridges are straight. If the bullet seats into the case crooked (this is known as "runout") it might be inaccurate. Most tests have shown that .004" of runout is tolerable and even undetectable for 1/2 MOA rifles firing 30 caliber bullets. Much more than that usually does enlarge group sizes.

By sharing my own experience and philosophy I hope to convince even more folks out there to dive right into reloading without fear of being overwhelmed by the cost and the ever expanding number of "gotta have it" gadgets available to the reloader. For 99 percent of us, an unassuming 75 to 150 dollar "beginner's kit" may be all we'll ever really need to make years and years worth of very accurate ammo.

Below you'll find what I consider to be the "need it's" and the "need it not's" of reloading for the 1/2 minute practical rifle.

ABSOLUTELY NECESSARY:

Good reloading manual. (This will be your most important and most valuable piece of reloading "equipment.") Most loading kits will come with a loading manual which includes instructional material as well as load data. Read and understand the instructional portions of the loading manual before proceeding to set up your equipment. If you have questions you can always contact the company which wrote the manual and they'll help you understand the text. Sierra, Speer, Nosler, Lee, Hornady and Lyman all publish excellent instructional and data manuals. The RCBS, Lyman, and Lee kits will often come with manuals.

Decent loading press. Some of the less expensive models can serve really well for loading non-magnum standard rifle cartridges. This said, the RCBS Partner will handle most of the big magnum rifle cartridges.

Loading dies. I use RCBS and Lee for the most part. I've found that the Hornady "New Dimension" dies are worth a look as well. If you spend more than thirty dollars for your loading dies and you're not a top level benchrest competitor you've probably wasted your money.

Case lube. The brass cases must be lubed prior to inserting them into the sizing dies. There are various types of lube on the market. I've always used the RCBS case lube, but others will certainly

work as well or better.

Decent scale. I would avoid the electronic types unless you plan on buying a 200 dollar or better one. A good beam scale can be had for well under 50 dollars. The small (mostly plastic) scale which comes in the Lee kits will work, but a better choice would be one of the Ohaus made RCBS models.

Calipers. A decent set of measuring calipers will cost about 25 to 30 dollars. You can spend much more for calipers which are guaranteed to be more precise. You don't need "ten thousandth of an inch" precision. The main function of the calipers will be to ensure that the brass cases are of a safe length. So long as you trim the cases to the recommended "trim to" length in the loading manual, any minor amount of error in the 25 dollar calipers won't affect the safety of the loaded cartridge. It might be successfully argued that with the use of the Lee case length gauge and cutter, you won't need the calipers to measure your cases, as this system trims the brass to spec automatically. See the Lee website at link below...

This said, a caliper will be necessary to determine the actual overall length of the loaded cartridge. (The seating depth of the bullet). If you adjust your bullet seating die to seat the bullet approximately a caliber's depth into the case that'll get you started without a caliper--but be sure to seat the bullet at least deep enough that it is not jammed into the lands. This all said, you'll find that a decent dial caliper will have many uses to the reloader.

Loading block. If you're in a pinch, you can use an empty cartridge (MTM type, where the cartridges set up vertically) box. Better yet you can take a piece of 2 by 6 or 2 by 8 and drill it with forty to fifty holes large enough to use as a loading block. You need straight, even rows. A loading block helps you keep up with the individual stages of preparation during loading. Working without a loading block of some sort is a dangerous practice (because of the possibility of double charging some cases).

Case mouth chamfering tool. I like to put a light chamfer on new brass before loading it. Slightly smoothing the outside and inside edge of the brass case with an inexpensive chamfering tool will allow the bullets to seat more easily, and the cartridges to feed more smoothly (in the case of a sharp outside neck angle). If you don't have this tool, a pocket knife can be used. I've not done this, but the folks at Lee mention as much in their literature, so take that for what it's worth. Use a wad of steel wool to smooth the case mouth after chamfering. (This will also clean the gunk from case necks being reloaded).

Primer pocket cleaner. It is normally a good idea to clean the primer fouling out of the primer pocket prior to seating a fresh primer. If this build up is allowed to get out of hand, eventually the primer won't seat flush with the case head--a potentially dangerous situation. Lee sells a three dollar primer pocket cleaner which is actually a double ended scraper. One end cleans large primer pockets, the other end cleans small pockets. The RCBS kits will come with a primer pocket steel brush. I like the Lee

"scraper" better since it doesn't seem to attack the brass. A small pocket screwdriver can also do a nice job of cleaning the primer pocket. You can make a really nice primer pocket cleaner by grinding an old flat screwdriver blade to fit the primer pocket perfectly. Just be sure that it isn't so sharp that it cuts into the brass. All you want to do is to remove the fouling.

Primer seating tool. RCBS, Hornady, and Lee among others make these inexpensive devices. These devices do allow for faster priming of the prepped brass. Most can be had for under twenty dollars. If your loading press has a priming arm on it, move this item to the next category...

NICE, BUT NOT NECESSARY:

Powder measure. Some of the better powder measures can cost you a bundle. The powder measure simply "throws" a pre-set amount of powder for each pull of the handle, and by doing so it does speed up the loading process. If you don't have one of these, you'll have to dip the powder from a paper cup or the like. The good news is that I said some of the better powder measures are expensive. One of the best on the market is the Lee Perfect Powder Measure, and you can have it for about twenty dollars. It's very repeatable, and mine is still throwing accurate charges after more than three years of steady use.

Powder trickler. This is a little unit that allows you to "trickle" small amounts of powder into the scale pan by turning a knob. If you use your powder measure to "throw" a charge which is just a shade under the intended amount, you can then use the powder trickler to bring the scale slowly to the zero line. (Powder measures--even the higher dollar ones--don't always get the charge weight just right. The powder trickler allows you to "fine tune" the charge to the exact weight you desire). For my part, I no longer use my powder trickler. I just scoop a tiny amount of powder from the hopper (using a Lee dipper--these come with some models of the Lee dies) and "shake" it into the scale pan. Some folks pinch a bit of powder between their fingers and sprinkle it into the pan to achieve zero. I've heard it advised that touching the powder isn't a good idea, so I think I'd avoid the "pinch" method.

Case lube pad. This is really about the same thing as an ink blotter. You apply case lube to the pad and "roll" the cases on the pad to coat them lightly with sizing lube prior to sizing. Some lubes are of the "spray on" type, and in this case you won't need the pad. If you don't have a pad, you can simply use your fingers to put a light coat of lube all over each case.

Brass tumbler. Clean brass is nice. It keeps the dies in better working order by reducing the amount of debris that accumulates inside them. You can get a fairly decent vibrating tumbler for under fifty dollars, or you can spend a couple hundred bucks for a nice "drum" or "rotary" tumbler. The drum tumblers generally hold more brass, and operate more quietly than the vibrating models. This said, you can simply use some four ought (0000) steel wool and some white vinegar (or any number of other substances) to clean your cases one at a time. I don't tumble brass nearly as often as I used to. I've found that so long as the case is free from protruding debris they will size and

function just fine. A quick wipe with a shop towel dampened with white vinegar is usually good. Wiping cases at the range or in the field with a polishing cloth will get the soot off of them while it's still warm, which makes it much easier to come off.

Primer pocket uniformer. This tool is designed to square the primer pocket and make it even so that the primer seats flush into the case head. Again, the benefits of performing this maneuver are debatable. If you have a lot of brass that seems to have uneven primer pockets, you might want to spend the twenty bucks on the tool, but in my opinion if the primer pockets are that out of square you should probably replace the brass.

Case trimmer. What? A case trimmer "nice but not necessary?" Yes. Granted you cannot safely load brass after it has exceeded the maximum safe length but if your brass has not stretched beyond this limit you're fine to continue reloading it until it stretches to that point. If you do not have a case trimmer, you'll have to discard your over length cases. You might find--as I have--that in certain rifle chamberings trimming is rarely necessary. There might be some initial stretch, but it tends to settle down after reaching a certain length. Your sizing practices will also affect how much your brass stretches.

If you want to get a dozen or more loadings out of your cases, a case trimmer is worth the investment. Lee actually markets the most economical system, which is simply a mandrel with a cutter that you insert into the case as far as it will fit. It only cuts the necessary amount to bring the case back into spec. These are only about six dollars for the case length gauge (the mandrel) and about four or five bucks for the cutter, which works with all of the case length gauges. Other makers such as RCBS sell their case trimmers for around fifty bucks a unit.

Concentricity gauge. As mentioned earlier, this unit will allow you to check the straightness of your loaded cartridges. If something goes wrong with the set-up of the sizing or seating die, your cartridges may end up with really crooked bullets. Bad brass is another cause of high runout. A concentricity gauge will help you identify the problem. If you don't have the seventy bucks to spend on this unit, simply roll your completed cartridges on a mirror surface and watch the bullet tips for an obvious oscillation of the tip against its image. If you have excess runout, you can usually see the evidence of it in the mirror. This isn't a precise measurement, but it's better than no check at all. Runout amounts too small to be seen on a mirror roll are not likely to harm accuracy as much as some folks might lead you to believe.

Electronic scale. These are handy for making quick measurements of brass cases (to ensure that the cases are of about the same weight, a presumed accuracy advantage). I wouldn't advise using an electronic scale for measuring the powder charge unless it is of exceptional quality. The scales which cost under 200 dollars are not in that category. They can lose their zero while you're in the middle of weighing charges and you may actually end up over-charging some shells. A fifty dollar beam scale is much more reliable than a 150 dollar electronic scale.

Bullet ogive comparator. These devices allow you to precisely measure the cartridge's overall length from the ogive of the bullet instead of its tip. Often the bullet tips are not of equal length. Lead tipped bullets can batter five or ten thousandths during shipment. Plastic tipped bullets and even match hollow points aren't always uniform in length. With the ogive comparator, you can measure the COL (cartridge overall length) from the bullet's ogive. This would tend to yield a more uniform measure. Is it necessary? Not really. Even though there is some disparity in the length of the bullet tips, a properly fitting seater die will seat the bullet with pressure on the ogive, not on the tip. Once you've found an accurate and repeatable seating depth you can measure the COL from the bullet tips and average the measurements. That should get you where you need to be. If you simply must have an ogive comparator, you'll find them for around 30 dollars.

Flash hole deburring tool. Since all indications are that the benefits of flash hole deburring are questionable, I would include the flash hole deburring tool in this category. This is a tool, normally under 20 dollars in price, which is designed to cut the burr on the inside of the case away from the flash hole (the hole through which the primer's fire reaches the powder charge). This burr occurs on some, but not all of the cases during manufacture. If you see obvious brass burrs obstructing the flash hole, you can simply insert a jeweler's screwdriver or even a toothpick and move the burr aside where it won't interfere with the primer's flame.

COMPLETELY UNNECESSARY:

A brief preface: Remember that we're discussing the 1/2 MOA rifle here. Keep in mind that a good batch of Federal Gold Medal Match ammo will maintain 1/2 MOA groups from a well put together rifle. This factory ammo does this without the benefit of deburred flash holes, squared primer pockets, meticulously seated bullets, et al.

Expensive sizing and seating dies. With the commonly available dies, provided you're using them correctly, you will be able to assemble ammo which is more accurate than your 1/2 MOA rifle likely is. Fancy and expensive seating dies will rarely improve your groups--provided you're using a good load recipe to begin with. The other tolerances in the entire chain of variables will probably eclipse any presumed benefit from a precision loading die. The standard RCBS dies and the Lee dies (especially the Lee Collet neck sizing dies) are more than adequate for the 1/2 MOA rifle.

Case neck turning devices. When brass cases are made, they are rarely perfect. The case neck may be a bit thicker on one side than the other. This condition will often cause the bullet to seat crooked in the case, and a crooked bullet (excess runout, remember?) can cause the shot to go outside the group. The thing is, though, that for the 1/2 MOA rifle you're not likely to benefit one iota from doing this. These tools can cost as much as sixty dollars for some models, perhaps more for others. However, it has been noted (even by the advocates of neck turning) that unless there is more than .002" (two

thousandths of an inch) of disparity in the neck wall thickness, the case needn't be corrected. And what about the cases which do have more than this amount of neck thickness variation? Toss 'em in the trash, or use them for fouler shots. The quality control has to deteriorate to near rock bottom before a case will be this bad. It will likely have other QC issues in addition to the poor case neck symmetry. As an aside, you would measure the case neck thickness with specialty gauges, such as the RCBS Casemaster, NECO, or other such tools made for the purpose. But don't be anal. You can get a well made rifle shooting 1/2 MOA groups by simply buying a decent batch of Winchester brass and properly developing the load. If you'd rather spend the extra money for Lapua brass, I won't argue with you there ;) ...

Chamber length gauging tools. These devices are designed to allow you to find the magic "distance to the lands" of a particular bullet in your particular rifle. This practice is one of the most bizarre of them all. Remember the aforementioned Federal Gold Medal Match ammo? It doesn't enjoy the presumed benefit of being seated "X thousandths off the lands." So how does it shoot so doggone well? The truth is that the distance of the bullet to the lands doesn't really matter a whole lot--provided all cartridges are loaded to the same length. It's true that you don't want to seat the bullet too close to the lands with a maximum pressure load, as pressure does increase as we move toward the lands. You also don't want to seat the bullet too deep either. This uses up powder space and it will mean that the bullet will have to "jump" through mid air for a finite amount of time before engaging the rifling. If the bullet is seated crooked (excess runout) it will collide with the lands off center. The longer the jump, the faster the bullet will be moving when it collides off center. The damage to the bullet's integrity is directly proportional to the velocity at which it hits the riflings off center. This is one possibility why many folks note improved accuracy by seating closer to the lands, as doing so tends to negate (to a degree) the ill effects of runout. All this said, the exact amount of distance to the lands is largely immaterial. Often the rifle's magazine length will dictate a maximum length far away from the lands. Find an accurate overall length of the cartridge and stay in that general zone. If a .005" change of cartridge length spoils your accuracy, move ten thousandths in the other direction (if possible) and test the accuracy of that COL. If it's acceptable, you'll likely be closer to the actual optimum length for the cartridge. How far am I from the lands? Who cares! :)

The above observations are, of course, my opinions. I do base these opinions on my own experiences as well as the acute observation and study of the experiences of others. If there is one certain thing about the craft of handloading, it's that everyone has his own method and madness. Again, I offer the above in the hopes that some folks heretofore not involved in the making of their own ammunition will seriously consider giving it a try. With an understanding that making accurate ammunition doesn't necessarily have to involve several hundred dollars worth of equipment (to include the seemingly obligatory battery of tangential accessories) I think more folks will be inclined to get involved in handloading thier own ammunition. And that's a good thing! :)

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