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Knowing how to properly set up your reloading dies is an important part of reloading. If you dont set your reloading dies up properly, your ammo can be inaccurate, unreliable, and even dangerous.Most reloading dies will come with instructions that show how to set them up properly. You should always follow the manufacturers instructions, especially when dealing with specialty dies that may require a special set up.This article is mainly meant for those who received their dies second-hand, without instructions. This was the situation that I was in when I first started reloading. I inherited my reloading dies from my grandfather, and he misplaced the instructions sometime during the 15 or 20 years that he owned them. Below are instructions for how to set up reloading dies for pistol and rifle.How to Set Up a Full-Length Sizing Die (Non-Carbide)Types of Cartridges: Rifle and PistolThe first step of the reloading process (after sorting and cleaning your brass) is to full-length size your brass. Full-length sizing is the preferred method for resizing most types of brass as it will return it to its original factory specifications. This helps it to chamber and cycle reliably, which is especially important when reloading for semi-automatic rifles and pistols.Related: Reloading Ammo for AR-15 RiflesA caliber-specific full-length sizing die will remove the spent primer from your case as well. The part of the die that does this is called a decapping pin. It is very important that this pin is protruding the proper distance. If it doesnt protrude enough, it wont remove the primer all the way. This could result in the case getting stuck in the shell holder.Click here for reloading equipment and components from Brownells.comIf the decapping pin protrudes too far, it could break. Excessive protrusion could also result in deforming the primer pocket by pushing it from the inside out. This would make seating a primer impossible. Most advice suggests that the pin should stick out 1/8 to 3/16-in below the bottom of the die. I try to adjust mine so that they protrude just enough to knock out the old primer.This resizing dies decapping pin is set at 3/16 of an inch.When working with bottleneck cartridges, such as 30-06 and .223, the decapping rod contains an expander ball that spreads out the case neck as it travels into the case. Resizing dies for straight-wall cartridges do not have this feature. They require the use of a separate expander die to prepare the case to accept a new bullet.Here are steps you can take to adjust your decapping pin and set up your full-length resizing die:How to Adjust the Decapping Pin (Rod)RCBS, Redding, and Lyman DiesLoosen the round lock nut at the top of the dieTurn the screw to adjust the decapping pin up or down.Tighten the lock nut.Lee Resizing DiesInsert the resizing die into your press.Find a 3/4-inch and 1/2-inch box wrench.Use the wrenches to loosen the decapping rod collet. The 3/4-inch wrench will go on the main body of the die. The 1/2-inch wrench will be used to rotate the decapping rod collet.When you are attempting to loosen the collet you will need to use quite a bit of force.Adjust the decapping pins depth while the collet is loose.Tighten the collet, being careful to not lose your newly-adjusted decapping pin depth. Be sure to tighten the collet very tight. If you dont, the pin will slip while decapping a case.How to Set Up Resizing Dies on Your Reloading PressInsert the proper shell holder into your press.Raise the ram on your reloading press all the way to the top.Loosen the large lock ring on the body of your die.Turn the die into the press until it touches the top of the shell holder.Lower the presss ram.Turn the die one more quarter turn into the press.Lower the presss ram again, allowing it to cam over this time.Turn the lock ring until it touches the top of your press.Tighten the lock rings set screw, it present, to set your adjustment.Test your adjustment by raising the ram all the way. The shell holder should touch the bottom of the die before the press handle is all the way down. You should still be able to lower the handle all the way due to the presss camming action.How to Set Up Carbide Full-Length Sizing Dies for ReloadingTypes of Cartridges: Mainly pistol, but some rifle as wellCarbide dies are made of a different material than regular reloading dies. They have a higher concentration of carbon, making them harder and slicker. This allows reloaders to resize cases without using case lube. They are mainly used when reloading straight-walled pistol cases, such as 9mm and 45 ACP.Their hardness also makes them more brittle than regular steel dies. Because of this, they must be adjusted differently. When operating a press, you must not allow the shell holder to contact the die. If the shell holder touches the die and the press handle cams over, the pressure could cause the die to crack or break.Although the dies themselves are installed in a press differently, the decapping pins are adjusted on carbide dies the same way that they would be on regular steel dies.How to Set Up a Carbide Resizing Die on Your Reloading PressInsert the proper shell holder into your press.Raise the ram on your reloading press all the way to the top.Loosen the large lock ring on the body of your die.Turn the die into the press until it touches the top of the shell holder.Reverse the die one quarter turn out of the press.Turn the lock ring until it touches the top of your press.Tighten the lock rings set screw to set your adjustment.Test your adjustment by raising the ram all the way. The shell holder should not touch the bottom of the die. It should be just slightly below the bottom of the die to prevent damage.How to Set Up Expander Reloading DiesTypes of Cartridges: Straight-wall pistol and rifle (9mm, 45 ACP, 45-70 Govt)Expander dies are used on straight-wall cartridges. Most of these are pistol calibers, but some rifle cartridges, such as 45-70 Govt use them as well. After a brass case is run through the resizing die, the case mouth is too narrow to accept a new bullet. The bullet may go into the case, but the jacket will probably get shaved in the process.An expander die bells the end of the case slightly, which allows a reloader to set a bullet much easier. It is important that you dont set up your expander die so that it expands the case excessively. If this happens, you run the risk of splitting your case, which would make it unusable. Expanding a case mouth too much will also reduce the number of times that you can reload the case.The case should be belled only enough to allow a bullet to seat without the jacket being shaved. Most expander dies can be set up using the first set of instructions. The Lee Powder Through Expanding Die is has a different design, so it has its own set of instructions.When properly expanded, the case mouth will be able to accept a new bullet.Here is how to set up most expander dies:Install the proper shell holder in your press.Raise the ram all the way to the top.Screw the expander die into the press until it touches the shell holder.Tighten the lock ring.Lower the ram and install a resized case into the shell holder.Raise the ram all the way, allowing the case to go into the expander die.Lower the ram and attempt to place a bullet in the case mouth. (The bullet shouldnt go all the way in, but it should be far enough in the case to not have to worry about the case shaving it.)If the case isnt belled enough, screw the expander plug slightly further into the die.If the case is belled too much, back the expander plug out of the die slightly.Here is how to set up a Lee Powder Through Expander DieInstall the proper shell holder into your reloading press.Raise the presss ram all the way to the top.Screw the powder through expander die in until it touches the shell holder.Reverse the die back out one full turn. (For magnum cases, reverse it 2 3/4 turns.)Finger tighten the lock ring.Run a sized case into the die.If the case isnt belled enough, screw the expander die slightly further into the press.If the case is belled too much, back the expander plug out of the press slightly.A Note About CrimpingBefore we go over how to set up bullet seating reloading dies, its a good idea to talk a little bit about crimping. Crimping is the act of deforming a cases mouth in order to have a better hold on the bullet.*Important: Only bullets with a cannelure (a channel running around the diameter of the bullet) should be crimped. The only exception to this is the taper crimp performed on semi-automatic pistol rounds such as 9mm and 45 ACP.The first type of crimp is a roll crimp. It is most commonly used on straight-wall revolver cartridges and is meant to keep bullets in place while firing. Heavy recoil can cause bullets to walk out of their case. If a bullet walks out too far, this can cause the revolver to freeze up. A roll crimp is added by adjusting the seating die.This 38 Special Round has been roll crimped. Notice how the case mouth rolls into the bullets cannelure.The second type of crimp is a taper crimp. It is most commonly used on semi-automatic pistol cartridges, such as 9mm and 45 ACP. The taper crimp helps ensure that rounds will cycle reliably in a firearm and ensures proper headspacing. A taper crimp can be added using a taper crimp seating die or a separate taper crimping die.The third type of crimp is a variation of a roll crimp and is found on bottleneck cartridges. When using the Lee Factory Crimp Die, a collet presses in the sides of the case mouth. The round has been properly crimped when there are four split marks around the case mouth. It is primarily used for ammunition that will be fired from a semi-automatic rifle.How to Set Up Bullet Seating Reloading Dies for Bottleneck CartridgesTypes of Cartridges: Bottleneck Rifle (ex. 30-06) and Bottleneck Pistol (5.7x28mm)When reloading ammo, properly seating a bullet is crucial. If not done correctly, your ammunition may not chamber or be able to hit the broad side of a barn, In some situations, improper bullet seating depth could cause your ammo to have excessive pressure. This excessive pressure could result in damage to your firearm and personal injury.Because of this, have a set of calipers to ensure that your cartridge overall cartridge length (COAL) is within specification. To do this, refer to load data provided by the bullets manufacturer as well as the maximum overall length specifications of your caliber.Here is how to set up an RCBS bullet seating die for bottleneck cartridges:Install the proper shell holder into your reloading press.Place a sized case into the shell holder and raise the ram all the way to the top.Turn the seating die into the press until it touches the case.Back the die out one turn.Secure the lock ring.Loosen the locknut and unscrew the seater plug enough to ensure your first bullet wont be seated too deep into the case.Place a sized and primed case with the proper amount of powder into the shell holder.Place a bullet on top of the case and raise the ram all the way.Check the overall length with your calipers.Alternate between measuring the overall length with your calipers and adjusting the seater plug until you reach the desired seating depth and cartridge overall length.Tighten the lock ring to prevent the seater plug from moving.Here is how to set up a Lee Easy Adjust Dead Length Bullet Seating Die for bottleneck cartridges:Install the proper shell holder into your reloading press.Raise the ram all the way to the top.Install the die into your press and turn it until it touches the shell holder.Lower the ram slightly.Turn the die into the press and additional 1/4 turn.Secure the lock ring.Turn the adjusting screw out to ensure your first bullet isnt seated too far into the case.Insert a sized and primed case with the proper amount of powder into the shell holder.Place a bullet on top of the case and raise the ram all the way.Check the overall length with your calipers.Alternate between measuring the overall length with your calipers and adjusting the seater plug until you reach the desired seating depth and cartridge overall length.How to Set Up Bullet Seating Reloading Dies for Straight-Wall Cartridges with a Roll CrimpTypes of Cartridges: Straight-Wall Revolver (ex. 38 Special)As stated above, most revolver cartridges benefit from having a roll crimp added while the bullet is being seated. Doing this will prevent the bullet from walking in or out of the case while firing. Here is how you set up a bullet seating die with a roll crimp for revolvers:Install the proper shell holder into your reloading press.Place a sized case into the shell holder and raise the ram all the way to the top.Turn the seating die into the press until it touches the case.Back the die out one turn.Secure the lock ring.Loosen the locknut and unscrew the seater plug enough to ensure your first bullet wont be seated too deep into the case.Place a sized and primed case with the proper amount of powder into the shell holder.Place a bullet on top of the case and raise the ram all the way.Inspect the bullets seating depth and adjust it until the case mouth is in the middle of the bullets cannelure.After the proper seating depth has been achieved, back the seater plug out several turns. (Keep the ram at the top of its stroke.)Loosen the lock ring and turn the die into the press until it touches the case.Lower the ram and turn the die 1/8th of a turn.Raise the ram to the top with the round in the shell holder.Lower the ram and check the crimp. Make adjustments as necessary, but dont crimp too much.When you are happy with the crimp, tighten the lock ring.Raise the ram to insert the round into the die again. Then, lower the seater plug until it touches the top of the bullet. This will reset your seating depth.If present, tighten the lock nut to prevent the seating depth from changing accidentally.How to Set Up Bullet Seating Reloading Dies for Straight-Wall Cartridges with a Taper CrimpTypes of Cartridges: Straight-Wall Pistol (ex. 9mm and 45 ACP)The process for setting up a taper crimp bullet seating die is similar to the one for setting up a roll crimp die, with a couple of minor exceptions. It is important to note that taper crimping seating dies are designed differently than those that add roll crimps. Many times, they are labeled as taper crimp dies on the die body or instructions.Install the proper shell holder into your reloading press.Place a sized case into the shell holder and raise the ram all the way to the top.Turn the seating die into the press until it touches the case.Back the die out one turn.Secure the lock ring.Loosen the locknut and reverse the seater plug enough to ensure your first bullet wont be seated too deep into the case.Place a sized and primed case with the proper amount of powder into the shell holder.Place a bullet on top of the case and raise the ram all the way.Adjust the seating depth the desired cartridge overall length is reached. Use calipers to check this.After the proper seating depth has been achieved, back the seater plug out several turns. (Keep the ram at the top of its stroke.)Loosen the lock ring and turn the die into the press until it touches the case.Lower the ram and turn the die 1/8th of a turn.Raise the ram to the top to insert the round into the die.Lower the ram and check the crimp. Make adjustments as necessary by turning the die in for more crimp or backing it out for less.When you are happy with the crimp, tighten the lock ring.Raise the ram to insert the round into the die again. Then, lower the seater plug until it touches the top of the bullet. This will reset your seating depth.If present, tighten the lock nut to prevent the seating depth from changing accidentally.How to Set Up a Lee Factory Crimp DieTypes of Cartridges: Bottleneck rifle and pistol cartridgesSome Lee dies for bottleneck cartridges are not designed to perform a crimping action, such as the one that came with my .223 Pacesetter set. To add a crimp, Lee includes what they call their Factory Crimp Die. It is called this because it adds a crimp to the case mouth similar to some factory-produced ammunition. Here is how you set up a Lee Factory Crimp Die:Install the proper shell holder into your reloading press.Raise the press ram all the way to the top.Screw the Factory Crimp Die into the press until it touches the shell holder.Lower the press ram.Screw the Factory Crimp Die one more half turn into the press.Place a completed cartridge into the shell holder and raise the ram all the way.Lower the ram and inspect the cartridge.If the crimp is too little, screw the Factory Crimp Die a little further into the press.If the crimp is too much, back the Factory Crimp Die out of the press slightly.Once the desired crimp is reached, tighten the lock ring.How to Set Up a Lee Carbide Factory Crimp DieTypes of Cartridges: Straight-wall pistol cartridges that require a taper crimp (ex. 9mm)The Lee Carbide Factory Crimp Die is different than the regular Factory Crimp Die. It crimps differently and is made of different materials. The Carbide Factory Crimp Die is similar to a sizing die and it helps ensure that your reloaded rounds will fit in even the tightest chamber. Here is how you set up a Lee Carbide Factory Crimp Die:Install the proper shell holder in your reloading press.Insert a completed cartridge into the shell holder.Raise the ram all the way to the top.Back out the adjusting screw on the die.Screw the Carbide Factory Crimp Die into the press until it barely makes contact with the shell holder.Turn the adjusting screw until it touches the case mouth.Lower the press ram.For a light crimp, rotate the adjustment screw an additional half turn.For a heavy crimp, rotate the adjustment screw an additional full turn.ConclusionI hope that this article has helped you learn how to set up your reloading dies. If you found this article useful, click below to check out my other reloading articles:For additional information, check out the following links: In the first RCBS Lock-Out Die article, I discussed how the RCBS Lock-Out Die works. In this article, well take a look at how to setup the die, and also how to disassemble and reassemble the die for cleaning and maintenance.There are multiple ways to skin a cat, and likewise, there are multiple ways to setup the RCBS Lock-Out Die. You can either set it up on the bench, or on the press. Ill demonstrate how to setup the die on the bench, and fine tune on the press. I feel this is the easiest and quickest way to get this die setup.Here are the basic steps:Charge a case (with spent primer) and set it on your benchInstall the correct foot on the RCBS Lock-Out diePlace the die on top of the case and press down, note the level of the indicator line on the die detector rodAdjust as needed by rotating the ends of the die detector rod assembly (tighten or loosen) the goal is to split the line where the top of the die body meets up with the die detector rod Install the die on the press exact height is not critical, but instructions suggest bottom of die approximately 1/4 from the shellplate Check the setting and fine tune by cycling the press with a charged case in the RCBS Lock-Out Die station, adjust die detector rod as neededValidate setting by cycling the press a few times with charged case in placeSo those are the basic setup steps- but if youre like me, youd rather see the setup, so heres an HD video showing setup of the RCBS Lock-Out die on the Dillon XL-650: So now that you know how to setup the die, how about disassembly, cleaning, and re-assembly? Before we jump into this procedure, lets review the parts that make up the die, this time in more detail (we covered conceptual part assemblies in the first RCBS Lock-Out Die article):Top: Complete RCBS Lock-Out Die assembly, Bottom: Disassembled RCBS Lock-Out Die assembly - Image copyright 2010 Ultimate ReloaderHere, we see a complete die assembly, and a disassembled RCBS Lock-Out Die next to each other. In order to make sense of these parts and assemblies, Ill show you the complete disassembly and assembly process by means of an HD video of course! Now that weve covered the basic bases for the RCBS Lock-Out Die, you should be ready to claim RCBS Armorer status, or something like that.Do you have tips and tricks that youd like to share? Please submit your comments and join in on the discussion! PRIMERS AND POWDER Store primers and powder beyond the reach of children and away from heat, dampness, open flames and electrical equipment. Avoid areas where static electricity is evident. Do not use primers of unknown identity. Scrap unknown primers in accordance with applicable regulations. Keep primers in the original factory container until ready to use. Return unused primers to the same factory packaging for safety and to preserve their identity. Primer packaging is designed to provide safe storage. DO NOT store primers in bulk. The blast of just a few hundred primers is sufficient to cause serious injury to anyone nearby. DO NOT force primers. Use care in handling primers. DO NOT have more than one can of powder on the bench at one time. Powder cans should be stored away from the bench to avoid picking up the wrong one. DO NOT use any powder unless its identity is positively known. The only positive identification is the manufacturers label on the original canister. Discard all mixed powders and those of uncertain identity. If you use a powder measure, replace the lids on both the powder hopper and powder can after the powder hopper has been filled. When using a powder measure, settle the powder in the powder hopper before charging any cases. Throw and check the weight of at least ten charges. This will assure you that the correct powder charge is being thrown. When you finish a reloading session, pour any remaining powder back into its original factory container. This will preserve the identity and shelf life of the powder. DO NOT smoke while reloading.RECORD KEEPING Keep complete records of reloads. Apply a descriptive label to each box showing the date produced, and the primer, powder and bullet used. Labels for this purpose are packed with SPEER bullets. Never attempt to guess at the identity of your ammunition.Because RCBS has no control over the type and condition of firearms used, components selected, assembly of those components and the use of this product, we assume no responsibility, expressed or implied, for the use of this product for reloading. Skill level and experience: Amateur ReloaderThis is a great piece of equipment. I have to give it 5 stars even with the problem of .223 Remington and 5.56mm NATO brass not fitting over the .22 caliber pilot as described below under cons, along with the reason this problem occurred and it's fix. I caused this problem and I am an amateur with no expectations that the learning process will be completely painless.It cost me about $102 with the pilots and once you are accustomed to it, you can work pretty fast. I have been shooting many years, but only reloading for about a month. My greatest gain in speed came when I realized I did not have to line the cases up perfectly in the spring loaded shell holder; just stick it in there reasonably straight and move the pilot up to the case mouth and then touch the release handle with one or two fingers and the pilot will slip right in aiding in the alignment. Occasionally I have to touch the handle twice after the initial load and/or give the case a slight rotation while it is released.I am checking every tenth case and so far it holds the settings perfectly. Just lube it a little now and then and it is very easy to work. I have probably trimmed about 3,000 5.56mm NATO cases now which I have accumulated over the last few years. I am feeding my AR 15 much cheaper now.Con number one and this has been the hardest one. The case mouths of the .223 and 5.56mm cases stopped slipping over the pilot and my case trimming came to a screeching halt... problem now fixed; read on if it has happened to you.I just finished a hard lesson in it's use and while it is fresh on my mind here is the story; hope it helps someone.This really has more to do with the resizing/decapping dies. Yesterday, I found myself unable to trim almost ALL of the brass I tried to do. The problem was that the pilot would not enter the mouth on about 90% of the cases, which coincidentally happened to be my own new American Eagle 5.56 rounds which I had just fired and collected for the first time reload.As an amateur my first thought was this must have something to do with American Eagles brass and out came the quantity 500 (once fired) 5.56 x 45mm NATO brass cases I just purchased. After trying a large number of these I was really puzzled to be having the same problem. The dial caliper and visual inspection showed no variation in the size of the pilot (yes I am one of those amateurs who checks everything and writes down lessons learned).Ok, out came my own now thrice fired ammo which has been trimmed on this same Trimmer pro each time. The problem seemed maybe a little less pronounced, but definitely not an acceptable work flow.Hold these thoughts while I digress to the _real_ reason for this frustrating educational endeavor.I will not bore you with the details of the tests I performed trying to figure this out; here is the reason and solution. Like most people who use the .223 loading dies I have had _many_ stuck cases and tried several youtube fixes.The first problem with freeing stuck cases is that the decap pin can't be screwed out through the top and the stuck case prevents it's removal through the bottom. I first tried liberal coating with wd40 and vise grips and then the vice. No banana. Over to the bench, drilled out the cap hole and used a small butane torch to heat the case and tried a new bolt extractor. No banana. I drilled with a bigger bit till the case spun and out came the case, but the die was damaged by the bit.Back to youtube. I watched a couple of videos where the die was inserted in a vise and the Expander Decapping Pin _was_ removed through the top by simply grasping it with needle nose pliers and striking the pliers with a hammer. Hold this thought too; I did this several times to free stuck cases.**Now it was a simple matter to drill the primer hole with a 7/32" bit, tap the hole with a 1/4" tap with 20 gauge threads and using a socket for a spacer and threading a 1/4 bolt with 20 gauge threads (and a couple of washers between it and the socket) into the brass till the case comes out.This has worked every time, but there is one more step to avoid the trimming dilemma which got me writing this in the first place. Remember the 2nd thought on hold?**Sure enough, my decapper pin collet was now undersized and was no longer opening the case mouth enough to fit over the trimmer pilot. I installed my spare Expander Decapping Pin assembly and ran all the troublesome cases back through the sizing die (easy the second time) and now every one of them slipped right over the pilot and trimmed with ease.***BOTTOM LINE: Stick with the 1/4" tapping/threading fix above and I still knock out the decapper pin as it is the only workable method I have found. HOWEVER, keep a supply of decapper pin collets if you can get them or the whole Expander Decapping Pin as I am doing and __change it every time a stuck case must be removed__. The part of the collet that expands the case mouth will certainly get smaller by knocking it out through the top of the die. I might add I now carefully lube the inside of the neck before moving to the trimmer.I still knock the expander pin out though the top because it is by far the easiest method I have tried and it always works; none of the other methods worked at all.The life of an amateur reloader is not always easy, but I guess the price of experience never is easy. Great equipment and definitely recommended.=======The 2nd con I have encountered and it isn't really important to me concerns 9mm Luger cases. I am something of a perfectionist by nature and I really wanted to trim my 9mm cases (despite many folks telling me it isn't necessary). I admit most of the ones I have checked are acceptable and give me no problems either expanding or crimping. It's just that being an amateur at this I want to eliminate all possible variables from reloading while checking accuracy at various shooting distances.The problem is that the .35 caliber pilot which everyone says is the correct one will not enter the case mouth of the 9mm brass. Not even close. If you approach the problem mathematically, the ratio of 9 mm to the 25.4 mm in one inch yields 0.354330708661 which it seems might sneak over the pilot, but I tried many cases and it will not. The digital caliper verifies there is too much pilot diameter to enter the case.I may revisit this 9mm case trimming problem some time in the future. For now, my .45 ACP rounds and 5.56mm rounds are already better than most factory ammo that I have used and I may even eventually save some money. The real goal is to achieve perfect match of ammo to firearms.Well made, easy to learn to operate and consistent results even for an amateur. Recommended.

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