

UniqueTek “Tips” File #18: “Bullet Pullers”

Rev. 3; 07/2022

By Lee Love

Sooner or Later you’ll need to pull the bullet from a loaded cartridge. There are many reasons that you might need to do it, including;

1) Incorrectly handloaded cartridges.

We all screw up from time to time and have cartridges that were loaded incorrectly ... or that we suspect may have been loaded incorrectly. The list of possible errors is almost endless. Regardless of the reason, you’ll want to recover the components and try again.

- Powder Errors: No powder, over charge, under charge, wrong powder,
- Primer Errors: Deformed primer, wrong primer, no primer, upside down primer.
- Bullet Errors: Wrong bullet weight, COL too long or too short.
- Case Errors: Buckled case, cracked case neck, wrong brass, I thought those were the trimmed cases.

2) Disassembly of factory loaded cartridges.

I know some guys who load obsolete military cartridges and have some original ammo that is too old to risk shooting.

- Only need the Bullet: The powder and primer may be untrustworthy and even the brass may be too corroded, but the bullet is likely good.
- Corrosive Primers: The cartridge may be perfectly functional but has a corrosive primer. The cartridge can be disassembled, the primer replaced and the cartridge reloaded with the original powder and bullet.

Historically, pulling bullets became popular after WWII because lots of surplus military ammo (mostly .30-06 Springfield) was available. But it often had Black Tip (armor piercing) bullets ... which could not be used for hunting. So, they’d pull the AP bullet and replace it with a new bullet of the same grain weight for hunting. Initially any handy pair of pliers was used, but collet type bullet pullers soon became common.

Types of Bullet Pullers:

Bullet pullers fall into three general categories;

- Plier
- Collet
- Kinetic

Plier Type Bullet Pullers:

The first bullet pullers were nothing more than a pair of pliers ... and just about any pair of pliers from your toolbox would get the job done. But tool marks from the pliers usually left the bullet unusable. Modern plier type bullet pullers have caliber specific cutouts in the jaws that provide a uniform grip on the bullet ... significantly reducing bullet damage.

To use a plier type bullet puller, you place the cartridge in the appropriate size shellholder on your press ram, raise the ram, grip the bullet with the pliers, and then lower the ram. As the ram is lowered, the press frame stops the pliers, and the bullet is pulled from the case. No special die is required.



Most bottleneck rifle cartridges are long enough that the bullet is above the press frame with the ram fully up. But most pistol cartridges are too short for the bullets to be above the press frame with the ram fully up. The GRIP-N-Pull Pistol model includes an “Accessory Tube” that slips over the ram and acts as a “stripper” on the down stroke. Of course, you can make a stripper for other manufacturer’s pullers from a piece of metal or PVC pipe cut to the appropriate length.

Plier type bullet pullers are quick to use and do a good job if you are using only neck tension or a light taper crimp to hold the bullet. The Corbin is the exception because it is based on a pair of locking jaw pliers with precision shaped jaws to grasp the bullet. It can pull .50 BMG bullets without damage ... but it must have at least 0.15" of parallel shank projecting above the case mouth. They are also available with custom sized jaw blocks for whatever caliber you need.



Corbin

Tip: Use a Steel Flat Washer to Protect the Press

Place a steel flat washer on top of the press to protect it from the pliers. I prefer a Fender Washer as it has a larger OD compared to a standard Flat Washer of the same ID. Select a washer with an ID slightly larger than the bullet diameter. You can also use a Lyman Std Adapter (7/8"-14 outside x 5/8"-30 inside) [\$9.25].

- Davidson Bullet Puller (calibers: .22, .243, and .30) \$?? / \$24.99 at Brownells
- Davidson Bullet Puller (calibers: .264, .284, and .30) \$?? / \$24.99 at Brownells
- Corbin Bullet Puller CBP-50 (calibers: .50 only, but will make custom calibers) \$69.50
- GRIP-N-PULL, Standard Rifle (calibers: .17, .20, .22, .24, .25, .26, .27, .28 and .30) \$59.99
- GRIP-N-PULL, Large Rifle (calibers: 8mm, .338, .358, .375, .416 and .458) \$59.99
- GRIP-N-PULL, Pistol (calibers: 9mm/.357, .40, .44, .45 and .50) \$79.99
- GRIP-N-PULL, Mil Spec (calibers: 5.56, 7.62 and 50BMG) \$49.99
- R W Hart Plier, Standard Rifle (calibers: .22, .24, and .30) \$59.99

ADVANTAGES:

- **Faster than a Kinetic Bullet Puller.**
- **Less setup than a Collet Bullet Puller.**
- **Can generate more pulling force than a Kinetic Bullet Puller, but less than a Collet Bullet Puller.**
- **Gunpowder remains in the case for easy recovery.**

DISADVANTAGES:

- **They are intended only for jacketed bullets. Pure lead and hard cast lead bullets may be distorted.**
- **You must use your press ... which may not be convenient if you are in the middle of a handloading session.**

Collet Type Bullet Pullers:

These are essentially a die body with a collet inside to grip the bullet and a lever to tighten the collet onto the bullet. The collets are caliber specific and are available for a wide range of calibers. Collets are specific to the puller and cannot be swapped between any of the four models shown at right.



To use a collet bullet puller, raise the ram so the bullet enters the collet, clamp the collet onto the bullet, and then lower the ram. The bullet remains in the collet. When the collet is released, the bullet simply drops out the bottom of the die and into your hand.

If the collet is tightened too much, the bullet can be damaged. Even under normal use, the collet can leave some sort of mark on the bullet. But the mark may be so minimal that the bullet can be reused. One advantage of the Hornady® Cam Lock® is that, once it has been adjusted, the Cam Lock® mechanism grips the bullet with the same tension each time ... reducing the potential for bullet damage. The Cam Lock® also makes it a bit faster to use than the RCBS® or Forster pullers.

The collet must grip the bullet immediately above the case mouth. The drawing at right shows the proper location for the collet to grip the bullet. You must be careful not to tighten the collet onto the case mouth instead of the bullet. The collet should be adjusted just loose enough to allow the bullet to enter the collet, but tight enough that the case mouth will not enter the collet.. You won't be able to see this as the collet of Forster and Hornady® pullers is up inside the die body. One advantage of the RCBS® bullet puller is that the collet is almost flush with the bottom of the die body ... so you can visually confirm if the collet is clamping onto the bullet correctly. In practice, you must "feel" for the case mouth to just make contact with the collet. It sounds complicated, but you will quickly develop a feel for it. That said, you will find some cartridges with overall lengths (COL) in the "Goldilocks zone" where you will be able to adjust the die to clamp onto the bullet with the ram raised fully. When this is possible, it significantly speeds up operation.

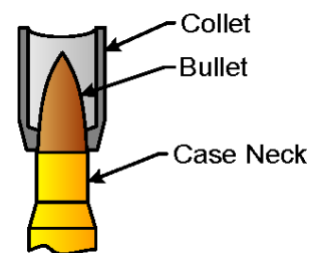


Image from Forster Standard Bullet Puller Instructions.

It should be noted that there is a slight difference between the way the RCBS® works compared to the Forster and Hornady®. The RCBS® collet is pulled upward to grip the bullet. The Forster and Hornady® collets are pushed down to grip the bullet. Will this make a difference? Probably not. But it is always good to have a thorough understanding of how your tools work.

Tip: Tap to Release Bullet

The bullet may occasionally not drop out of the die. A light tap on the die body will make it drop free. But if this is a chronic issue, it can be an indication of overtightening the collet. Try backing off the clamping force slightly. You should also try cleaning the collet jaws and lubricating the taper at the tip of the collet.

Tip: Proper Lubrication is Critical

A lot of force is exerted between the die body and the taper at the tip of the collet. To prevent wear and ensure a smooth release of the pulled bullet, a very small amount of grease must be applied to the tapered portion of the collet. This should be done every time you clean or change collets.

Tip: Never Tighten the Collet Without a Bullet.

If you fully tighten the collet without a bullet of the proper caliber to clamp onto, you can overstress the collet fingers such that they will never fully spring back. If this happens, the only way to fix it is to replace the collet. As added insurance, back off the adjustment to release all pressure on the collet when it is going to be unused for an extended period. If you have multiple collets and change calibers frequently, you may want to simply remove the collet and store it with the others.

- Forster Standard Bullet Puller \$26.00
- Hornady® Cam Lock® Bullet Puller \$36.32
- RCBS® Standard Bullet Puller \$25.45

ADVANTAGES:

- **Faster than a Kinetic Bullet Puller.**
- **Can generate more pulling force than a Kinetic Bullet Puller.**
- **Can grip the bullet tighter than a Plier Type Bullet Puller.**
- **Gunpowder remains in the case for easy recovery.**

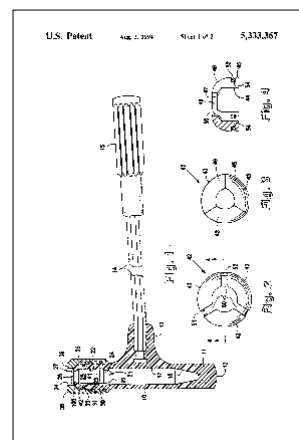
DISADVANTAGES:

- **They almost always leave some mark on the bullet.**
- **If over tightened, they can grip the bullet so tightly as to damage the bullet beyond use.**
- **You must install it in your press ... which may not be convenient if you are in the middle of a handloading session.**
- **They are intended for jacketed bullets. Pure lead, hard cast lead and plated lead bullets may be distorted beyond use.**

Kinetic Bullet Pullers:

Kinetic Bullet Pullers are essentially hammers with a hollow head designed to hold a loaded cartridge. They rely on kinetic energy to separate the bullet from the case. The cartridge is clamped in a collet inside the hammer's head and a cap screwed on tightly. The hammer is struck against a solid surface causing the bullet to dislodge from the case mouth. The bullet and powder are captured inside the hammer's head for reuse. A piece of foam in the bottom protects the bullet when it comes loose.

The kinetic bullet puller was invented by Clifford Ashbrook of Quinetics Corporation and granted a patent in 1994. The drawing at right was submitted with the patent application. Since then it has received two additional patents. [Patents: 5333367, 5490313 and 5533246]



There are two slightly different styles currently on the market. The original style has a plastic handle and head connected by an aluminum shaft. The other is one-piece molded plastic (bottom photo). I haven't found any strong opinions on which one lasts longer or works better.

The models below have a plastic handle and head with an aluminum shaft.

- Frankford Arsenal® Quick-N-EZ™ Impact Bullet Puller (3 collets) \$18.99
- Hornady Impact Bullet Puller (3 collets) \$34.95
- Lyman Magnum Impact Bullet Puller (2 collets) \$24.25
- Quinetics Ultimate Kinetic® Bullet Puller (3 collets) \$26.99



Frankford Arsenal Quick-N-EZ™

The models below are one-piece plastic.

- Berry's Preferred Bullet Puller (rubberized grip / 4 collets) \$24.95
- Cabella's Bullet Puller (rubberized grip / 4 collets) \$19.99
- Midsouth Reloading Impact Bullet Puller (rubberized grip / 4 collets) \$16.33
- RCBS® Pow'r Pull® Kit (hard plastic grip / 2 collets) \$24.95



RCBS® Pow'r Pull®

A bit of technique is required to use a kinetic bullet puller effectively.

“Rap the bullet puller against a hard, solid, non-metallic surface - end cap up, gripping the handle mainly with the thumb and forefinger. Easy extraction results from the handle shaft being PARALLEL to the surface struck AT THE MOMENT OF IMPACT. Thus, the plastic head, and cartridge within, are PERPENDICULAR to the striking surface.” “It is the “bounce” that counts – the puller's operation is

based upon principles of kinetic energy. So, don't "punch through" the striking surface; to pull the bullet, "pull your punch" to allow the needed "bouncing" action."¹

¹ From the Quinetics Corporation Ultimate Kinetic Bullet Puller instructions.

The striking surface is also important. Most kinetic pullers recommend striking a hard wood surface ... preferably the end grain of a block of wood ... and warn against striking steel or concrete. Striking against an unyielding surface like steel or concrete can result in the head shattering. Regardless, being made of plastic, they can eventually develop cracks ... even if you are careful to strike it only against a wood surface. If you can see even the tiniest crack anywhere in the plastic, just toss it in the trash and get a new one. Of course, you should ALWAYS WEAR SAFETY GLASSES when using them.

Tip: Try Using a Lead Ingot as a Striking Surface

A lead brick or ingot has more mass than a block of wood of the same size, but is just soft enough to yield slightly upon impact.

WARNINGS

NEVER use with rimfire cartridges!

NEVER use with ammunition identified as "Explosive", Observation, Spotting, or "Incendiary"!

NEVER use with black powder cartridges!

NEVER use to disassemble cartridges with "high primers"!

NEVER substitute a shell holder for the collets that come with the bullet puller. Doing so can result in detonation of the round. This is especially dangerous with high primers.

<https://www.shootersforum.com/warning-notice-recalls/50347-inertial-bullet-puller-warning.html>

ALWAYS tighten the cap after every strike!

ADVANTAGES:

- You don't need a press.
- Bullet damage is much less likely than with any other type of bullet puller.

DISADVANTAGES:

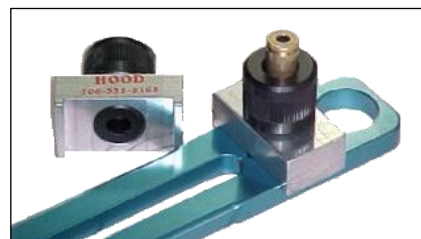
- They are slow to use compared to Collet and Plier type pullers.
- They require more technique to work well compared to other types of bullet pullers.
- They can shatter.
- Gunpowder is ejected from case and must be poured from inside puller and separated from bullet.

Other Bullet Pullers:

I discovered a few other bullet pullers that don't fit conveniently into one of the three general categories.

Hood Custom Products Bullet Puller

This device works in conjunction with a Davidson Bullet Puller. It eliminates the need for a press, making it a handy tool to use at the range. In some instances, the cases can be reloaded without resizing the neck again. Just insert a loaded round into the device and grasp the bullet with the Davidson puller. Then unscrew black knob until the bullet separates from the cartridge case. You'll want to hold it bullet up so you don't lose the powder when the bullet separates from the case. Unfortunately, this product was discontinued several years ago. Indeed, Hood Custom Products has closed, and Charlie Hood has retired. But there are likely many of them still in use.



Hood Custom Products Bullet Puller
(shown on Davidson Bullet Puller)

- Hood Custom Products Bullet Puller \$19.00

PMA Tool Bullet Puller

The good news is that PMA Tool is manufacturing a puller, based on the Hood Bullet Puller design, but that eliminates the need for separate bullet puller pliers. To use the bullet puller simply drop the loaded or dummy cartridge into the false chamber, tighten the clamp on the bullet, and back out the false chamber by unscrewing it from the main body. A few rotations and the bullet is free from the case. Loosen the clamp and the bullet drops free. While bullets are undamaged, PMA doesn't recommend shooting pulled bullets on record targets. It is available in two version for 6mm and 30 cal. benchrest cartridges.



- PMA Tool Bullet Puller for 6mm PPC/BR/Grendel – \$69.95
- PMA Tool Bullet Puller for 30BR/30Major/30x47 – \$69.95

Tip: Use a Loading Block

When using either the Hood or PMA bullet pullers, the case will drop free when the bullet separates from the case. If you hold the bullet puller over a loading block, and oriented with the bullet up, you can let the case drop directly into the loading block. This will minimize powder spillage.

Both the **Hood** and **PMA** Bullet Pullers share the same Advantages and Disadvantages, save one. The PMA has the additional advantage of an integrated bullet clamp, so a separate pair is bullet puller pliers not needed.

ADVANTAGES:

- **You don't need a press.**
- **Super compact so it is easy to take to the range.**

DISADVANTAGES:

- **The cartridge is not clamped into the puller and will fall free when the bullet releases.**
- **They are designed for benchrest cartridges only where neck tension alone holds the bullet in the case. So, a crimped case neck may be difficult to pull.**
- **A bit cumbersome to use as you have to hold onto everything.**

Forster Superfast Bullet Puller

Forester used to make the "Superfast" bullet puller. It is essentially a collet type puller but is caliber specific and not adjustable. The bullet pushes between the four fingers causing them to flex upward slightly. On the down stroke of the press, the fingers spring back down, clamping onto the bullet and pulling it from the case. The next bullet pushes the first bullet on through. The last bullet must be removed with pliers. Unfortunately, every bullet that passes through the fingers will be scratched and may not be usable. This may explain why Forster discontinued this product. I have also seen it under the Bonanza name but that too appears to be out of production. However, a few can still be found on eBay and other online sources.



The Forster instructions state that, "To prevent damage to your puller, be sure the mouth of the case only lightly contacts the underside of the puller's spring steel jaws", and "CAUTION — Do not run your case mouth into the S.F. Jaws." Indeed, I've read a couple of forum postings saying that one or more of the jaws broke after only a handful of rounds, and I wonder this may have contributed to the failure.

- Forster Superfast Bullet Puller \$?.??
- Bonanza Bullet Puller (.222, .243, .25, .264 and .284 available) \$?.??

Tip: Last Bullet Ejector

Getting that last bullet out of the Superfast or Bonanza bullet puller is easy if you use a rod that is a bit smaller in diameter than the bullet (just small enough so that it easily passes through the puller) and is approximately the same length as the loaded cartridge. Just drop the rod into an empty case, place it on the shellholder and raise the ram. The rod will push the last bullet out but will not be captured by the puller jaws. Wrap tape around the rod to hold it centered in the case neck. You can also epoxy the rod permanently into the case. The rod can be steel, brass, plastic or wood ... whatever is convenient.

Which Bullet Puller is Best?

Each of these bullet pullers has their own advantages and disadvantages. How well each of them works is highly dependent on the type of crimp (taper crimp, roll crimp or simple neck tension). If you are using only neck tension, bullets will be much easier to pull and less likely to be damaged in the process regardless of the type of bullet puller. Taper crimped bullets will be a bit more difficult and roll crimped the most difficult. The most difficult of all are military cartridges with case mouth sealant. It may be impossible to get the bullet pulled without some amount of damage.

Tip: Case Mouth Sealant – Breaking the Seal!

Most military and some civilian ammunition is assembled using a case mouth sealant. Pulling the bullet from a case that has case mouth sealant is difficult at best and nearly impossible with kinetic bullet pullers. But if you break the seal first, by seating the bullet deeper using a seating die of the appropriate caliber (just 5 to 6 thousandths is enough), it will make pulling the bullet easier. If they still won't pull with a kinetic bullet puller, you'll need to use a collet type bullet puller.

What About Lead Cast Bullets?

Lead cast bullets are more likely to be damaged due to the softness of the lead (see the Brinell Hardness comparison below). Kinetic pullers have an advantage as there is nothing gripping the bullet. But make sure that the foam is still in the hammer's head to provide a soft landing pad for the bullet.

Brinell Hardness:

- Pure Lead = 4
- Hard Cast Lead Bullet Alloy = 11 to 30
- Copper Alloy Bullet Jacket = 100 to 130

Can I Use a Collet Bullet Puller on a Progressive Press?

The short answer is yes, but you'll need to operate the press in a semi-progressive or single-stage mode. Running loaded ammo through a progressive press in full progressive mode is a recipe for disaster.

NEVER put live ammunition in any case feeder! If you use the case feeder, you'd be dropping loaded cartridges down the case feed tube. The primer of the second cartridge would be landing on the bullet point of the first cartridge ... potentially detonating the primer!

It is far safer to manually insert a cartridge onto the station where you installed the collet bullet puller (e.g. the bullet seat station) and take it off at the next station (e.g. the crimp station). On some auto-indexing progressive presses, it may be possible to disable the auto-index function. On manually indexed progressive presses (e.g. Dillon RL 550B) there is no problem.

There is a general concern that the upward force on the shellplate may damage it. Indeed, some progressive press manufacturers discourage such practices. But most progressive presses are built sturdy enough that occasional use with a collet bullet puller or plier type bullet puller is unlikely to cause a problem.

Tip: Pulling Sealed Bullets using a Dillon RL 550B

Using the progressive capability of the RL 550B press can speed up pulling bullets from military cartridges that have case mouth sealant. Install a bullet seat die in Station 2 and set it up to break the seal by seating the bullet 5 to 6 thousandths deeper in the case. Install a collet bullet puller in Station 3. Remove the Locator Buttons from Stations 2 and 3 so cartridges can be manually inserted and removed from the shellplate. Now you can break loose the bullet sealant at Station 2, index the shellplate, and pull the bullet at Station 3. This will greatly speed up the process.

Separating the Components after Pulling:

If you are using a Plier type or Collet type bullet puller, the gunpowder remains contained in the brass case for easy recovery. But with a Kinetic bullet puller, the powder is disgorged from the case and contained, along with the bullet, within the head of the puller. You must first unscrew the cap, remove the collet and case, then pour the bullet and powder out and into a container. The bullet must then be picked out of the powder and the powder poured back into your powder measure.

The Component Recovery Cup™ makes recovering and separating the powder, bullet and case an easy task. Simply pour the components directly from your bullet puller into the Component Recovery Cup™. A few shakes and the powder falls through the holes in the bottom of the cup. The Component Recovery Cup™ can be placed on any convenient container to collect the powder. But if placed onto the top of your powder measure (see photo at right), the powder is recovered directly into the powder hopper for immediate reuse.

- UniqueTek Component Recovery Cup™: \$14.95



Since the Rev. 2 of this document, additional manufacturers have designed their own version of a Component Recovery Cup.

Entirely Crimson

The EC Strainer is CNC machined aluminum and designed to fit snugly into the powder hopper tube. The original Dillon powder hopper lid then fits onto the top of the strainer. Due to the snug fit, you tend to shake the entire powder hopper which can upset your powder drop consistency.

- EC Aluminum Strainer for Dillon Powder Measure: \$25.00



eBay Seller pdbarab

This is a 3D printed plastic Powder Funnel and Component Separator for Dillon Powder Dispenser. It fits into the top of the powder hopper tube and is significantly larger diameter at the top ... making it less likely that you will miss and spill powder. It has an optional plastic lid that is used instead of the original Dillon lid. The central hole is sized to pass the rod of the Dillon Powder Alarm ... although I think it is cumbersome, the alarm will sound at approximately 1" higher powder level, and the powder will end up on top of the flat washer that floats the alarm rod on top of the powder. It is also available for the powder measure on the Hornady L-N-L Press.

- Powder Funnel and Component Separator w/o Lid: \$13.50
- Powder Funnel and Component Separator with Lid: \$18.50



Sunbro Designs

This is a 3D printed plastic Bullet/Powder Separator for the Dillon Powder Measure. It fits into the top of the powder hopper tube and has slots instead of holes for the powder to drain through ... so should drain faster. But between the slots is flat, so some shaking will still be required. It was not stated if the original Dillon lid fits on top of it.

- Bullet/Powder Separator: \$6.00



3D Print Your Own

You can also find a few 3D Model STL files that you can download for free (e.g., thingiverse.com and stlfinder.com) and print your own ... assuming you have, or have access to, a 3D printer. The one shown at right is very similar to the Sunbro Designs product.



Mark 7 Reloading has two new Powder Measures with an integrated powder screen. But I think their intention is to screen out any lumps or clumps in the powder, and maybe to capture any other odd objects that might fall in. One significant advantage is that uses metal screen instead of holes or slots ... so the powder will fall straight through without any shaking at all. But I did not see the powder screen available separately.

- Mark 7 Mechanical Powder Measure: \$286.95
- Mark 7 Digital Powder Measure: \$695.00



My personal preference out of all of these component separator cups is the UniqueTek version, primarily for one simple reason ... it only sits loosely in the powder hopper tube. So, you can easily lift it just a bit to shake the powder through and not upset the way the powder has settled in the powder measure. Which, in turn, preserves the powder drop consistency. I also has the flexibility of fitting many powder measures other than Dillon and can even be used on a water glass or other convenient container.

Closing Thoughts

I hope you find this “Tips” file informative. When I started researching bullet pullers, I was expecting to find more options available than I did, and hoping that I’d find something truly new and unique. But that just means there is room for innovation ... perhaps a hydraulic or pneumatic bullet puller???

Prices:

The prices shown for all products are MSRP (Manufacturers Suggested Retail Price). Street prices may be significantly less. A few products list the resellers price because I was unable to find the manufacturer. And some discontinued products, where I was unable to find a price at all, list the price as \$?.??.

Trademarks:

Every effort has been made toward giving proper credit to manufacturers trademarks. If any were missed or incorrectly credited, it is strictly accidental.

- Frankford Arsenal is a registered trademark of Battlefield Technologies, Inc.
- Quick-N-EZ is a trademark of Battlefield Technologies, Inc.
- Hornady and Cam Lock are registered trademarks of Hornady Manufacturing.
- RCBS and Pow’r Pull are registered trademarks of RCBS.

Disclaimer: UniqueTek, Inc. is not liable for damages or personal injury that may be incurred as a result of using the information contained in this document. Failure to follow manufacturers recommendations may void warranties and/or result in potentially hazardous situations. Using products that are not recommended by the equipment manufacturer, or using products for purposes for which they were not designed or tested, is not recommended and should be done with extreme caution. Never use reloading equipment for a purpose for which it was not designed. Never use reloading equipment that has been improperly maintained or operated. It is your responsibility to ensure that your reloading equipment is properly assembled, is maintained in proper working condition, and is used according to the manufacturer’s instructions and safe reloading practices.