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X-Ring

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Current Issue of X-Ring



Technical Newsletter From
Your Ballistic Technicians
Volume 11, No. 1

Q. What is the proper method of pressure detection in working up loads to the manual max loads? I don't want to overstress anything.

By Rich Machholz

A. Your brass and primer are the keys to pressure detection. First watch the primer appearance. The primer face will gradually flatten and the edges will begin to lose the radius. About the time the radius becomes relatively square a ring around the firing pin indentation, called a crater, will appear in some rifles. Second is bolt lift. As the loads are worked up and the primer appearance is noted you will experience a slight resistance in bolt lift in the form of a hitch about halfway in the full lift stroke of the bolt handle. If you are using matched weight cases you will feel this on the first case and usually the rest as well but not necessarily always. The next increment will certainly give you a hitch in the bolt lift on all the cases however and it is time to quit. That hitch is the result of brass flowing into the ejector plunger hole in the bolt face and is visible as a bright burnish mark on the case head in the headstamp. One last item, incremental load increases, I use 1% of the total case capacity for that powder. A good for instance is the 223; it will hold approximately 30 grains of H335. The proper incremental increase would be 0.3 (3/10ths of a grain). So if you were using a 55 grain BlitzKing bullet a good starting charge would be 25.0 increasing by 0.3 of a grain, so your loading block would have at least three cases with charges of 25.0, 25.3, 25.6, 25.9, 26.2, 26.5, 26.8 and 27.1 grains, a minimum of 24 shots. By using increments of this size you get uniform results that are predictable and safe, as long as you pay attention to the symptoms.

Q. In general heavier bullets for the caliber have a higher BC so they will have less drag and buck the wind better. However lighter bullets for the caliber have a better trajectory. How do you decide which way to go? Is it different for target and for hunting?

A. If you have access to an exterior ballistic program such as our Infinity you can plot the trajectories and wind drift to the point one surpasses the other and make a decision based upon those findings. Lacking that keep in mind that flat trajectory is important over unknown distances but wind will affect you more than drop. For long range prairie dogs I like a 50 grain bullet as fast as I can get it or a 55 grain BlitzKing with the high BC. These are for 22s of course. I have found that I can make either system work because 22s are effective under most circumstances to moderate ranges of 350 to 450 yards. Really long ranges or strong winds mean high BCs which usually means bigger bullets and the longer the range the bigger the bullets and the higher the BC. A high BC will have a greater effect on wind drift than drop which most shooters have overlooked so be sure to look into this very important facet of shooting. We can determine the distance with a range finder or a scope reticle but wind velocity is still an unknown and very hard to ascertain even for the most seasoned of shooters.

Things that work

During the course of the shooting season I get the opportunity to try all types of tools and gadgets. Some work and some don't. Here are a few that worked for me.

Leupold ScopeSmith Magnetic Boresighter

By Rich Machholz

I got acquainted with this nifty piece of equipment at the Varmint Hunters Jamboree last year. I needed to change scopes on my stock rifle entry but didn't want to go through the hassle of re-zeroing the day of the match. A friend had one of these tools and said it all but eliminated the normal problems of a re-zero. My previous experiences with bore sighters have been less than good so to say I was skeptical would be a true understatement. He attached the magnetic ScopeSmith to the muzzle of the Ruger 77 and instructed me to make a careful note of the location of the crosshairs of the original scope before we removed it knowing it was carefully zeroed. I looked at the muzzle and the Boresighter was on crooked. When I protested he said it wouldn't affect the outcome. I didn't believe him but I did as instructed and removed the old scope and installed the new scope and rings, being careful to have both centered. Then I removed the turret caps and adjusted the new scope to the same settings according to the carefully recorded sight picture previously noted as provided by the ScopeSmith and headed for the shooting bench. I was going to shoot at 100 yard paper but my friend steered me to the regular line. I hit the 107 yard gong with the first shot a little high and right. After making the adjustment we moved to the 362 yard gong where I missed high at 1 o'clock by about 2 inches. One small correction resulted in a dead center direct hit on the

second shot. I was zeroed at 362 yards in 3 shots. Unbelievable! I watched in amazement as he installed three other scopes in the same manner and the results were very nearly identical. I can attest to the fact that if you are replacing a scope there is not a more precise way to do it. Installation of a new scope with no reference may be considerably trickier and I haven't tried that yet but I have replaced several scopes since with equal efficiency. The key is to have the old scope zeroed as precisely as possible and make careful note of that zero on a copy of the grid furnished in the instructions. This piece will save its cost in ammo alone if you replace many scopes not to mention time. This is still no substitution for actual range time however so get your shots down range.

Bore-Tech Eliminator Bore Solvent

By Rich Machholz

When the guys at Bore-Tech told me this product removed copper as well as any product on the market and had no odor. When they said it cleaned up with water I just knew this was one of those products that wasn't worth my time to even open. Out of courtesy I did open the bottle and there was no odor. I put some on a patch and pushed it through the bore and the patch emerged black as expected. I pushed another through and I came out with an aqua blue color. Nothing new there except it actually did change colors which I had doubted it would do. I knew from experience that normally if a bore solvent doesn't stink it probably doesn't work. Eliminator worked quickly. I pushed two wet patches through the bore and waited a few minutes, about three, and wet a nylon brush and gave the bore 10 strokes leaving the brush protruding from the muzzle on the tenth stroke. I replenished the chemical at the muzzle and gave the bore 10 more strokes and withdrew the brush and waited another three minutes or so. I pushed a clean patch through and it was gray from carbon and blue from copper. I pushed a new patch through and all I got was some bright blue. I wet another patch and pushed it through and followed it with another wet patch and waited another three minutes and pushed another dry patch through. No color and I decided the barrel was clean. I pushed another couple of dry patches through the bore and went to the line. My first shot was on target and I chased it to fine tune my zero and followed it up with another which went in the same spot. I didn't have to fire any foulers and went directly to record and that day I shot a 6.569" group at 1000 yards with only 4 sight-in shots. Just the fact that there is no odor and it doesn't affect my skin is excellent. That it actually removes copper quickly and thoroughly makes it eligible for "the things that work" page.

Sierra Announces Four New Bullets for 2004

#5350 .50 caliber, 350 grain JHP

#5400 .50 caliber, 400 grain JSP

Sierra Bullets is proud to announce the addition of 2 new bullets to its extensive line of hunting and target bullets. These new heavy duty bullets are designed for use in the powerful new .500 S&W cartridge. These bullets sport an extremely tough, heavy jacket for deep penetration and a cannellure to reduce



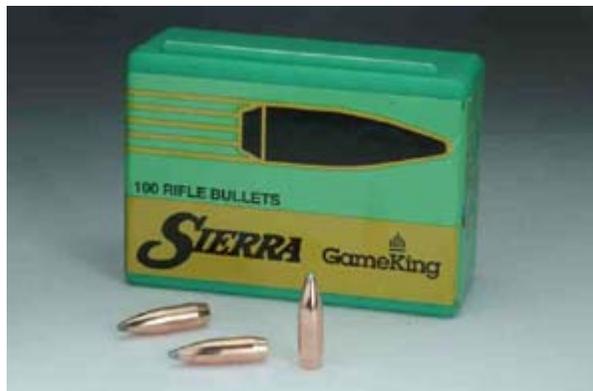
bullet movement during recoil. The jacket has six skives to aid uniformed expansion. Manufactured to Sierras' strict tolerances' and packaged in boxes of 50, Sierra #5350 is a 350 grain JHP (Jacketed Hollow Point) and Sierra #5400 is a 400 grain JSP (Jacketed Soft Point). For large game where deep penetration is required, the #5400 will be an excellent choice. For more expansion and less penetration, the #5350 will be a great choice. As always with Sierra bullets, accuracy with both bullets is outstanding.

Suggested retail pricing for #5350, 50 caliber, 350 grain bullet is \$22.92 per box of 50 bullets, and for the #5400, 400 grain JSP bullet, \$23.84 per box of 50 bullets.

Stock #	Dia. (inches)	Weight (grains)	Bullet Type	Sectional Density	Ballistic Coefficients and Velocity Ranges
5350	.500	350	Jacketed Hollow Point	.200	.155 @ 1775 fps and above .158 between 1620 and 1775 fps .169 between 1620 and 1470 fps .177 between 1470 and 1300 fps .188 @ 1300 fps and below
5400	.500	400	Full Profile Jacket	.229	.185 @ 1600 fps and above .198 between 1600 and 1450 fps .212 between 1450 and 1280 fps .227 between 1280 and 1150 fps .234 @ 1150 fps and below

#1395 .22 Caliber, 65 grain SBT GameKing

Sierra Bullets announces a .22 caliber bullet designed specifically for varmints and game up to deer. This new bullet is best suited for 1x10" or faster twists. The new Sierra 65 grain GameKing bullet is a superb bullet for deer-sized game in the .224" bore diameter. The classic aerodynamic Sierra Boattail shape is crafted from carefully selected and alloyed components to yield dependable bullet performance for all game up to deer.

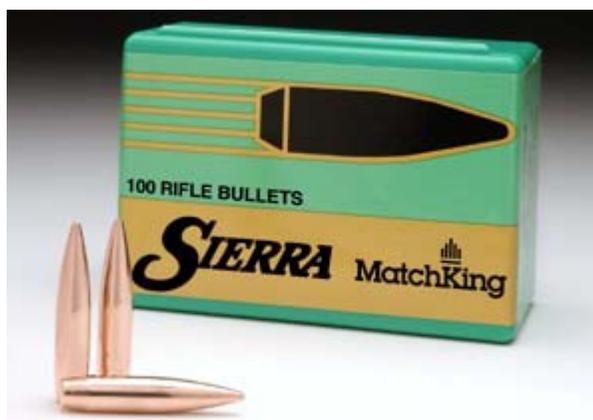


The stock number for the new .22 caliber GameKing is #1395 and it has a suggested retail price of \$14.79 per box of 100 bullets. When bullet placement is important Sierra is the logical choice.

Stock #	Dia. (inches)	Weight (grains)	Bullet Type	Sectional Density	Ballistic Coefficients and Velocity Ranges
1395	.224	65	Spitzer Boat Tail	.185	.303 @ 2750 fps and above .297 between 2750 and 2450 fps .293 between 2450 and 2150 fps .287 between 2105 and 1800 fps .270 @ 1800 fps and below

7mm/ .284" dia., 175 grain HPBT MatchKing (#1975)

The Bulletsmiths are pleased to announce our new 7mm 175 grain MatchKing. Prompted by the phenomenal success of our record setting 6.5mm 142 grain MatchKing, this new .284" diameter projectile utilizes the same refined design characteristics to enhance its long-range performance. With a longer ogive, smaller meplat and improved boat tail, the 175 grain MK provides improved downrange energy and accuracy, while reducing wind-drift compared to the old standard, our venerable 168 grain MatchKing. Designed for Rifle Silhouette competition, this bullet will be equally at home in HighPower and Long Range events as well.



This new HPBT MatchKing bullet has a suggested retail price of \$24.28

per box of 100 bullet.

Stock #	Dia. (inches)	Weight (grains)	Bullet Type	Sectional Density	Ballistic Coefficients and Velocity Ranges
1975	.284	175	Hollow Point Boat Tail MatchKing	.310	.608 @ 2100 fps and above .582 between 2100 and 1530 fps .532 between 1530 and 1300 fps .500 @ 1300 fps and below

IMPORTANT SAFETY NOTICE

It has come to our attention that some of the printed loads for the Remington 300 Ultra Mag in our 5th Edition Rifle and Handgun Reloading Manual and Infinity Suite Computer Software exceed the SAAMI maximum pressure suggestions. **Use of these loads may result in damage to firearms and or bodily injury.**

For purchasers of the 5th Edition Rifle and Handgun Reloading Manual, please contact Sierra directly at 888-223-3006 or by email at sierra@sierrabullets.com. Please look at the data pages for the 300 RUM (page 617). If there is an "r" after the page number in the right corner, you have the revised data. If not, let us know and we'll send you a replacement section of data immediately. Please remove and discard the pages 617-622 currently in your manual.

For purchasers of the Infinity Suite Computer Software, a program patch is available on our website, www.sierrabullets.com. Please click the Download Patch link to receive the program patch. For those of you who do not have internet access, please contact Sierra Bullets.

If you need any additional information concerning this notice, please call 800-223-8799 or send an e-mail to Sierra@Sierrabullets.com.

Thank you for your cooperation in this matter.

INFINITY Updates now online!!

Bullet and ammunition manufacturer database updates are now available at www.sierrabullets.com for all owners of the INFINITY and INFINITY Suite version 5.0 programs. These new libraries contain new bullets and ammunition for 2004 and now contain rimfire ammunition from a select number of companies. The updates are located in the Reloading/Ballistics section of the web site.

Testimonial photos & articles:



George Calef of Canada took this huge bull caribou and this Dall's sheep, each with one shot at a little over 100 yards with the Sierra 7mm 150 grain SBT GameKing in his 7x57 Ackley Improved. Recovered bullets are also shown.



Geoffrey Miller, Managing Director of the John Rigby & Company in California recovered these three .30 caliber, 150 grain SBT GameKings from game at ranges from 160 to 381 yards in a .308 Winchester and a .300 H&H Magnum. Geoffrey reports

shooting his 500,000 Sierra bullet in 73 barrels. "In today's era of ever complex super premium bullet nonsense, I have found nothing as accurate and as devastating on game as a Sierra of the proper weight and caliber for the game at hand. All of the small caliber (.375 and under) rifles we make for clients and the demo guns we use are all regulated and zeroed with Sierras.

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